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COUNTY GROUND WATER STUDIES 8

GEOLOGY and GROUND WATER RESOURCES

of

CASS COUNTY, NORTH DAKOTA

PART II

GROUND WATER BASIC DATA

By

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Prepared by the United States Geological Survey in cooperation with the North Dakota State Water Commission, North Dakota Geological Survey, and Cass County Board of Commissioners.

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This is one of a series of county reports published cooperatively by the North Dakota Geological Survey and the North Dakota State Water Conservation Commission. The reports are in three parts; Part I describes the geology, Part II represents ground water basic data, and Part III describes the ground water resources. Parts I and III will be published later and will be distributed as soon as possible.

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GEOLOGY AND GROUND WATER RESOURCES OF CASS COUNTY, NORTH DAKOTA
PART II - GROUND WATER BASIC DATA

By

Robert L. Klausing

INTRODUCTION

Purpose and Scope

The purposes of the investigation of the geology and ground-water resources of Cass County, North Dakota were to determine the location and extent of the ground-water reservoirs (aquifers); to evaluate the occurrence and movement of ground water, including the source of recharge and discharge; and to determine the chemical quality of the ground water. The investigation should provide sufficient information about the occurrence of ground water to plan its safe and intelligent development for irrigation, domestic, industrial, and municipal purposes (fig. 1).

The investigation has been made cooperatively by the U. S. Geological Survey, North Dakota State Water Commission, North Dakota Geological Survey, and the Cass County Board of Commissioners. The results of the investigation will be published in three separate parts of the bulletin series of the North Dakota Geological Survey and the County ground-water studies series of the North Dakota State Water Commission. Part I is an interpretive report describing the geology, Part II is a compilation of the ground-water basic data, and Part III is an interpretive report describing the ground-water resources. Part II makes available data collected during the investigation and functions as a reference for Parts I and III.

The information in this report was collected between 1962 and 1964 and consists of the following: (1) data on about 1,600 wells, springs, and test holes; (2) water-level measurements in 140 observation wells; (3) chemical analyses of 151 water samples; and (4) logs of about 150 test holes and selected wells.

The data in this report are useful for predicting geologic and ground-water conditions in Cass County. For example, a person considering the construction of a new well can locate the proposed site on figures 3 and 4. The characteristics of nearby wells may be determined from table 1 and the water-level fluctuation in the area may be determined from table 2. The chemical quality of water in adjacent wells may be determined from table 3 and the type of material encountered in nearby wells may be determined from table 4. Extrapolations based on these data should be conservative because of the irregular distribution of the water-bearing rocks.

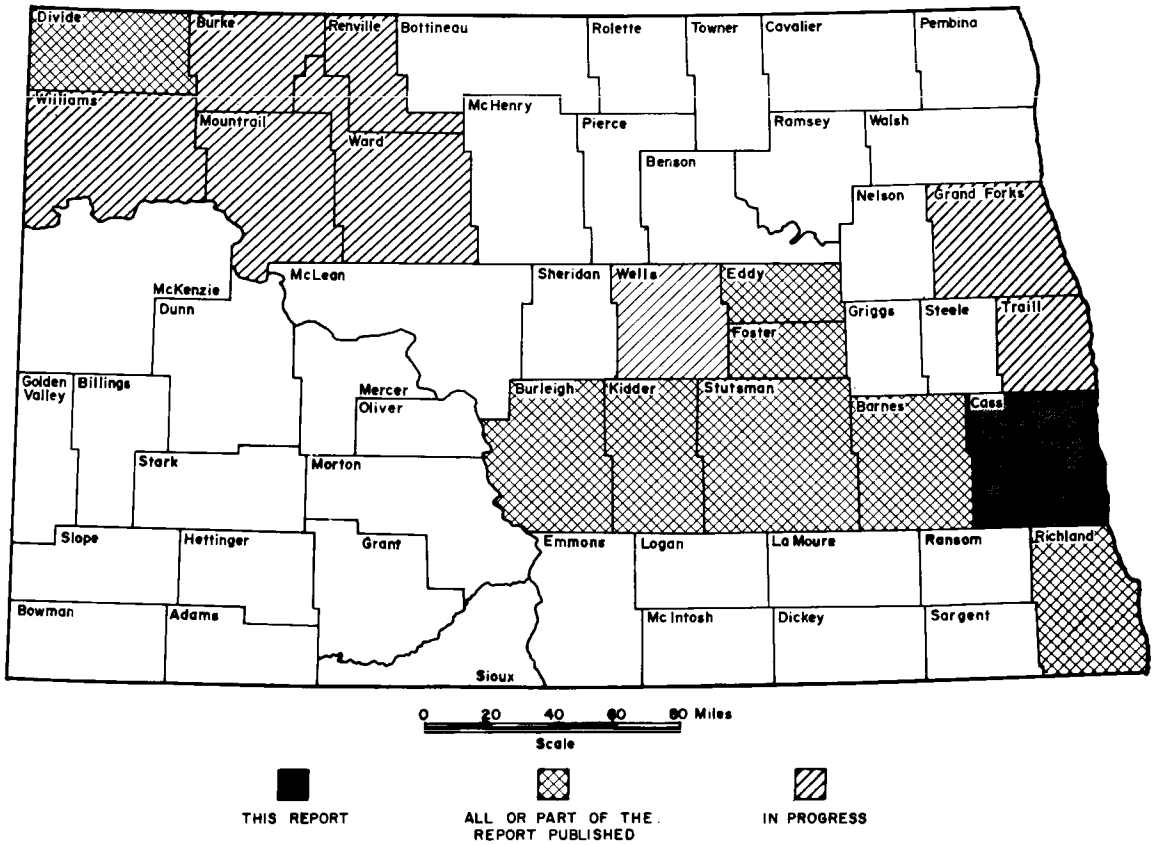

FIGURE 1.–Map of North Dakota showing the location of Cass County.

Well-Numbering System

The wells, springs, and test holes in the tables are numbered according to a system based on the location in the public land classification of the United States Bureau of Land Management. It 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 sections, quarter-quarter sections, and quarter-quarter-quarter sections (10-acre tract). For example, well 138-50-15daa is in the NE¼NE¼SE¼ sec. 15, T. 138 N., R. 50 W. Consecutive terminal numerals are added if more than one well is recorded within a 10-acre tract. The location of each well, spring, and test hole listed in the tables is shown on figures 3 and 4 (in pocket).

Acknowledgments

Thanks are due to the County Commissioners, township assessors, and the people of Cass County for their cooperation in the collection of these data. The geologic logs were compiled principally by R. W. Schmid and L. L. Froelich of the North Dakota State Water Commission. The author is especially grateful to Fredrickson's Inc., Great Northern Railway, U. S. Bureau of Reclamation, Layne-Minnesota Co., and McCarthy Well Co. and other drillers who supplied logs and information for this report.

EXPLANATION OF TABLES

Most of the numbered test holes listed in table 1 were drilled as part of this investigation. Test holes 1322-1 to 1322-6 were drilled by the North Dakota State Water Commission as part of a special study for the Village of Amenia. Test holes 1-12 were drilled by a private contractor for the Village of Buffalo. The location of each test hole is shown on figure 4. The locations of about 50 selected wells for which subsurface data were available are also shown on figure 4.

Excepting the Buffalo test-hole logs, the numbered test-hole logs are a composite from the drillers log, sample analysis log, and electric log (where available). Logs of the Buffalo test holes and the unnumbered test holes and wells were furnished by the company or agency shown in the heading of the log. The

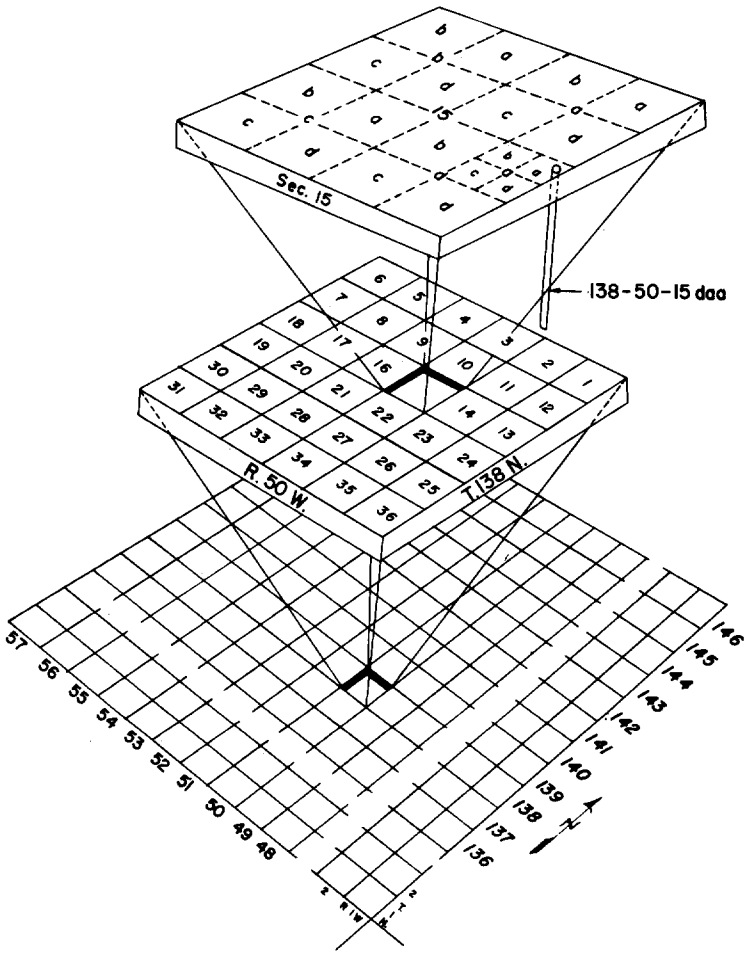

FIGURE 2.–System of numbering wells, springs, and test holes.

terminology used is that of the individual driller with the exception that the order has been changed to present the principal lithology first.

The well logs noted in table 1 but not listed in table 4 may be obtained from the U. S. Geological Survey, Bismarck, North Dakota, or from the North Dakota State Water Commission, Bismarck, North Dakota.

Sample description logs for all test holes having numbers greater than 1300 were prepared at each test-hole site. Visual examination, while the samples were still wet and fresh, was made by using a binocular microscope. Color descriptions were determined by comparing the sample with the color charts of Goldman (1928). If the cuttings reacted (effervesced) when treated with diluted hydrochloric acid, the material was described as calcareous. Grain-size determinations used in the logs refer to the Wentworth (1922) size scale. Plastic is a term generally applied to clay and indicates that the material may be molded into any form without fracturing. Cohesion is used to indicate the capacity of the material to stick together. Because most clays and silts are cohesive to some degree, the term was used only to differentiate cohesive silt from non-cohesive silt.

The term "till" indicates an unsorted, unstratified, cohesive, agglomeration of rock particles ranging from clay to boulders. Generally clay is the dominant particle size. If a particle size other than clay is dominant, that particle size is used as a modifying term. Consequently, terms such as clayey, silty, sandy, or gravelly are textural terms used to indicate that the material described contains an appreciable, but not a dominant amount of the modifying material.

Observation wells were developed in selected test holes. These consist for the most part of 1¼-inch plastic pipe slotted in the lower 10 or 20 feet, or screened in the lower 5 feet. They were pumped for a few hours and a water sample was collected for chemical analysis (table 3).

The monthly water-level measurements listed in table 2 were made during this investigation. Records of water-level fluctuations in wells in Cass County prior to this study have been published in the following Water-Supply Papers of the U. S. Geological Survey: 845, p. 351; 886, p. 533; 908, p. 246-251; 938, p. 191-197; 946, p. 236-240; 988, p. 310-314; 1018, p. 235-240; 1025, p. 225-229; 1073, p. 314-318; 1098, p. 294-298; 1128, p. 264-267; 1158, p. 303-306; 1167, p. 141-143; 1193, p. 169-170; 1223, p. 165-167; 1267, p. 180-182; 1323, p. 199-200; 1406, p. 196-197; 1456, p. 47-48; 1781, p. 90-93.

WATER-QUALITY DATA

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

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

Mineral Constituents in Solution

Silica (SiO_2)

Silica is dissolved from practically all rocks. Some natural waters contain less than 5 ppm (parts per million) of silica and few contain more than 50 ppm, but the more common range is from 10 to 30 ppm. Silica affects the usefulness of a water because it contributes to the formation of scale in pipes, water heaters, and boilers.

Iron (Fe)

Iron is dissolved from many rocks and soils. On exposure to air, normal basic waters that contain more than 1 ppm of iron soon become turbid with the insoluble reddish ferric oxide produced by oxidation. Surface waters, therefore, seldom contain as much as 1 ppm of dissolved iron, although some acid waters carry large quantities of iron in solution. Ground waters commonly contain up to 10 ppm. Rarely, concentrations over 50 ppm may occur in waters with a pH of 5 to 8 (Hem, 1959). Iron causes reddish-brown stains on porcelain or enameled ware and fixtures and on fabrics washed in the water. The U. S. Public Health Service (1962) recommends an upper limit of 0.3 ppm of iron in drinking water.

Calcium (Ca)

Calcium is dissolved from almost all rocks and soils. Calcium and magnesium cause hard water and are largely responsible for the formation of scale in pipes, water heaters, and boilers. Water associated with granite or silicious sands may contain less than 10 ppm of calcium, whereas water associated with dolomite and limestone may contain from 30 to 100 ppm. Water that has been in contact with deposits of gypsum may contain several hundred parts per million of calcium.

Magnesium (Mg)

Magnesium is dissolved from many rocks, particularly from dolomitic rocks. Its effect in water is similar to that of calcium. The magnesium in soft waters may amount to only 1 or 2 ppm, but water in areas that contain large quantities of dolomite or other magnesium-bearing rocks may contain from 20 to 100 ppm or more of magnesium.

Sodium and potassium (Na and K)

Sodium and potassium are dissolved from practically all rocks. Sodium is the predominant cation in some of the more highly mineralized waters found in the western United States. Natural waters that contain only 3 or 4 ppm of the two together are likely to carry almost as much potassium as sodium. As the total quantity of these constituents increases, the proportion of sodium becomes much greater. However, the potassium concentration in water does not often exceed 50 ppm. Moderate quantities of sodium and potassium have little effect on the usefulness of the water for most purposes, but waters that carry more than 50 or 100 ppm of the two may require careful operation of steam boilers to prevent foaming. More highly mineralized waters that contain a large proportion of sodium salts may be unsatisfactory for irrigation. The presence of several hundred parts per million of sodium in water makes it unsuitable for use in sodium-restricted diets used as therapy for cardiovacular diseases.

Bicarbonate and carbonate (HCO_3 and CO_3)

Bicarbonate and carbonate are sometimes reported as alkalinity. Since the major causes of alkalinity in most natural waters are carbonate and bicarbonate ions dissolved from carbonate rocks, the results are usually reported in terms of these constituents. Although alkalinity is primarily due to the presence of carbonate and bicarbonate, other ions also contribute to alkalinity such as silicates,

phosphates, borates, possibly fluoride, and certain organic anions which may occur in colored waters. The significance of alkalinity to the domestic, agricultural, and industrial user is usually dependent upon the nature of the cations (Ca, Mg, Na, K) associated with it. However, moderate amounts of alkalinity do not adversely affect most use.

Sulfate (SO_4)

Sulfate is dissolved from many rocks and soils--in especially large quantities from gypsum and from beds of shale. It is formed also by the oxidation of sulfides of iron and may therefore be present in considerable quantities in mine waters. The concentration of sulfate in waters is generally limited to about 1,500 ppm by the solubility of calcium sulfate. Sulfate in waters that contain much calcium and magnesium causes the formation of hard scale in steam boilers and may increase the cost of softening the water. The U. S. Public Health Service (1962) recommends that 250 ppm of sulfate should be the upper limit for drinking water.

Chloride (Cl)

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

Fluoride (F)

Fluoride has been reported as being present in igneous and some sedimentary rocks to about the same extent as chloride. However, most fluorides, unlike the chlorides, are low in solubility so that the quantity of fluoride in natural waters is ordinarily very small compared to that of chloride. Hem (1959) reported that fluoride concentrations in excess of 10 ppm are rare. Investigations have proved that fluoride concentrations of about 0.6 to 1.7 ppm reduced the incidence of dental caries and that concentrations greater than 1.7 ppm also protect the teeth from cavities but cause an undesirable black stain (Durfor and Becker, 1964). U. S. Public Health Service (1962, p. 8) states, "When fluoride is naturally present in drinking water, the concentration should not average more than the appropriate upper control limit (0.6 to 1.7 ppm). Presence of fluoride in average concentrations greater than two times the optimum values shall constitute grounds for rejection of the supply."

Concentration higher than the stated limits may cause mottled enamel in teeth, endemic cumulative fluorosis, and skeletal effects.

Nitrate (NO_3)

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

Boron (B)

Boron in small quantities has been found essential for plant growth, but irrigation water containing more than 1 ppm boron is detrimental to navy beans and other boron-sensitive crops.

Dissolved solids

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

Properties and Characteristics of Water

Temperature

Temperature is an important factor in properly determining the quality of water. This is very evident for such a direct use as an industrial coolant. Temperature is also important, but perhaps not so evident, for its indirect influence upon concentrations of dissolved gases and distribution of chemical solutes in ground water. Normally, the temperature of ground water within 60 feet of the surface approximates the mean annual air temperature and increases 1° F for each 60 to 100 feet increase with depth.

Hardness

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

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

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

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

Although many people talk about soft water and hard water, there has been no firm line of demarcation. Water that seems hard to an easterner may seem soft to a westerner. In this report hardness of water is classified as follows:

Hardness range (calcium carbonate in ppm)	Hardness description
0-60	Soft
61-120	Moderately hard
121-180	Hard
more than 180	Very hard

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

Sodium-adsorption-ratio (SAR)

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

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

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

Waters are divided into four classes with respect to sodium or alkali hazard: low, medium, high, and very high, depending upon the SAR and specific conductance. At a conductance of 100 micromhos per centimeter the dividing points are at SAR values of 10, 18, and 26, but at 5,000 micromhos the corresponding dividing points are SAR values of approximately 2.5, 6.5, and 11. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Specific conductance (micromhos per centimeter at 25° C)

Specific conductance is a convenient, rapid determination used to estimate the amount of dissolved solids in water. It is a measure of the ability of water to conduct an electrical current. Commonly, the amount of dissolved solids (in parts per million) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from well to well and it may even vary in the same source with changes in the composition of the water (Durfor and Becker, 1964).

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

Hydrogen-ion concentration (pH)

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

The degree of acidity or alkalinity of water, as indicated by the hydrogen-ion concentration, expressed as pH, is related to the corrosive properties of water and

is useful in determining the proper treatment for coagulation that may be necessary at water-treatment plants. A pH of 7.0 indicates that the water is neither acid nor alkaline. pH readings progressively lower than 7.0 denote increasing acidity and those progressively higher than 7.0 denote increasing alkalinity. The pH of most natural ground waters ranges between 5.5 and slightly more than 8.

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TABLE 1.–Records of wells, springs and test holes, Cass County, N. Dak.

Owner: USGS, United States Geological Survey; USBR, United States Bureau of Reclamation

Depth to well: Reported depths are given in feet; measured depths are in tenths.

Type of well: B, bored; Dr, drilled; Du, dug; Dv, driven; J, jetted.

Depth to water: Reported depths are given in feet; measured depths are in hundredths.

Yield: Reported and estimated yields are given in gallons per minute; measured yields are given in tenths; reported or estimated yields of less than 1 gallon per minute are indicated by the symbol 1.

Use of water: D, domestic; DS, domestic-stock; Ind, industrial; O, observation; PS, public supply; U, unused; T, test hole.

Water-bearing material: C, clay; G, gravel; S, sand; S & C, sand and clay; S & G, sand and gravel, St, silt.

Geological source: Kd, Dakota Sandstone; Qow, outwash deposits of sand and gravel; Qla, Lake Agassiz silt, sand and gravel deposits; Qd, glacial drift and associated sand and gravel deposits; Qsd, Sheyenne River delta sand and gravel deposits.

Pump type: Cen, centrifugal; Cy, cylinder; J, jet; R, rotary; S, submersible; T, turbine.

Remarks: L, log available; E, electric log available; MP measuring point; A, adequate; I, inadequate; C, chemical analysis; P, partial chemical analysis; TH, test hole.

Location no.	Owner or name	Depth of well (feet)	Diameter or size (inches)	Type	Date completed	Depth to water below land surface (feet)	Date of measurement	Use of water	Water-bearing material	Geologic source	Pump type	Specific conductance (micromhos at 25°C.)	Date of measurement	Elevation of land surface	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
137-48															
6bdd	Arthur Anderson	180	4	Dr	1959	.....	....	D,S	S	Qd	Cy	.....	.....	910	
7baa	Orville Haugstad	97	3	Dr	1928	.....	....	D,S	S&G	Qd	Cy	.....	.....	910	
18baa	Wm. Bye	137	4	Dr	1958	.....	....	D,S	S	Qd	Cy	.....	.....	910	
30ccd	Ole Mathison	160	4	Dr	1930	.....	....	D	S&G	Qd	J	.....	.....	915	
31cbd	Bruce Harris	150	2	Dr	1930	.....	....	D,S	S	Qd	J	.....	.....	915	
137-49															
2adb	Elvin Egge	190	3	Dr	1950	.....	....	D,S	S	Qd	Cy	811	11-18-64	911	C.
3daa	Louis Duval	100	6	Dr	1930	.....	....	D,S	G	Qd	Cy	.....	.....	913	
4baa	Ernest Dubard	80	14	B	1923	.....	....	D,S	S	Qd	Cy	.....	.....	911	
5baa	E. Duval	123	4	Dr	1955	.....	....	D,S	S	Qd	J	.....	.....	914	
6bcb	Einer Sjorbotten	150	6	Dr	1925	.....	....	D,S	...	Qd	Cy	2,200	6-24-64	920	C.
7add	Henry Montplaiser	90	3	Dr	1957	.....	....	D,S	S	Qd	Cy	.....	.....	917	
8aaa	Frank Burnette	85	4	Dr	1961	.....	....	D,S	S	Qd	Cy	.....	.....	913	
9ccc	Armand Richard	90	4	Dr	1948	.....	....	D,S	...	Qd	Cy	.....	.....	913	
9dcd	Adrian Richard	75	3	Dr	1952	.....	....	D,S	G	Qd	Cy	1,350	11-18-64	911	C.
10dac	J. Hanson	117	2	Dr	1958	.....	....	D,S	S	Qd	J	.....	.....	911	
12bbb	Leonard Egge	176	3	Dr	1933	.....	....	D	S	Qd	Cy	.....	.....	906	
12cdd	Arthur Bye	98	3	Dr	1951	.....	....	D,S	S	Qd	Cy	1,220	5-13-65	911	C.
14cbc	Ramstad Bros.	160	2	Dr	1951	.....	....	D,S	S	Qd	J	.....	.....	911	
14ddc	Jay Stoutenburg	86	3	Dr	1962	.....	....	D	S	Qd	Cy	.....	.....	911	
17aaa	Test hole 2347	210	..	..	6-10-65	.....	....	T	S&G	Qd	..	.....	.....	914	L.
17daal	Trottier Bros.	102	4	Dr	5-60	26	5-60	D,S	S	Qd	Cy	1,270	11-18-64	911	L. C.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
137-49 Cont.															
17daa2	Trottier Bros.	104	.	B	5-55	26.71	10-24-63	U	...	Qd	..	.....	.....	911	MP 1.85 above ls.
18bbd	Paul Johnson	105	4	Dr	1950	.....	....	D,S	S	Qd	Cy	2,390	6-17-64	920	C.
19bbb	Henry Owen	83	6	Dr	....	.....	....	D,S	...	Qd	J	3,000	11-18-64	924	C.
19dcc	Fred Broderud	94	3	Dr	1927	.....	....	D	S	Qd	Cy	.....	.....	924	
20bdd	B. A. Bale	107	4	Dr	1928	.....	....	D,S	S	Qd	Cy	.....	.....	920	Supply reported I.
21bba	Egbert Gilbertson	86	4	Dr	9-61	24	9-61	U	S	Qd	..	.....	.....	911	L.
22cdd	George Roen	127	2	Dr	....	.....	....	D	...	Qd	J	.....	.....	915	
24aaa	Elmer Bakke	175	4	Dr	1955	.....	....	D,S	G	Qd	Cy	.....	.....	911	
24bda	Carl Sall	107	3	Dr	1962	.....	....	D	S	Qd	J	861	11-17-64	914	C.
25aac	Nate Smith	80	6	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	914	
25ccc	Test hole 3158	240	1 1/4	Dr	8-19-64	25.56	9-3-64	O	S	Qd	..	1,760	8-21-64	919	MP 2.0 ft above ls, E, L, C., TH depth 257.
26ccb	Grant Sundet	88	3	Dr	1963	.....	....	D,S	S	Qd	Cy	.....	.....	920	
26dad	Olaf Brekke Est.	100	..	Dr	1959	.....	....	D,S	...	Qd	Cy	.....	.....	917	
28cdd	Melford Oldegaard	190	4	Dr	6-60	31	6-60	D,S	S	Qd	S	1,110	11-18-64	915	L, C.
29aaa	Gordon Grinaker	110	2	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	921	
30aaa	Test hole 3138	180	1 1/4	Dr	7-31-64	25.57	9-3-64	O	S&G	Qd	..	.....	.....	919	MP 2.0 ft above ls, E, L.
30cdc	Allen Christianson	80	4	Dr	1913	.....	....	D,S	...	Qd	Cy	.....	.....	928	
32ddd	John Nellermoe	89	4	Dr	1962	34	1962	D,S	S	Qd	Cy	.....	.....	920	L.
34bda	K. Sundet	86	3	Dr	1955	.....	....	D,S	S	Qd	Cy	.....	.....	921	
137-50															
1bba	E. Krabbenhoft	120	3	Dr	1961	.....	....	D,S	S	Qd	Cy	.....	.....	917	
2bdd	Alfred Johnson	180	3	Dr	....	.....	....	D,S	S	Qd	J	.....	.....	916	
3ddc	M. A. Severson	80	42x42	Du	....	.....	....	S	...	Qd	Cy	.....	.....	925	
4baal	R. L. Lahren	177	3	Dr	6-61	25	6-61	D	S	Qd	Cy	.....	.....	924	L, P.
4baa2	..do...	147.1	3	B	1938	30.90	5-17-63	U	...	Qd	..	.....	.....	924	MP 6.7 ft below ls.
5dcc	Carl Lahren	167	3	Dr	....	.....	....	U	...	Qd	Cy	.....	.....	925	
6bab	Arvid Haugen	132	36	Dr	....	.....	....	D	...	Qd	Cen	.....	.....	919	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
137-50 Cont.															
6ddc	Clarence Jermstad	178	3	Dr	1936	.....	....	D,S	...	Qd	Cy	.....	.....	924	
7daal	Herman Gust	125	4	Dr	1954	.....	....	D	...	Qd	Cy	.....	.....	928	
7daa2	..do...	145	4	Dr	....	.....	....	S	S	Qd	Cy	.....	.....	928	
8caa	M. G. Kruse	142	4	Dr	7-60	95	7-22-60	D,S	S	Qd	Cy	810	11-17-64	928	L, C.
8ddd	Elder Braaten	240	3	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	930	
9dcc	..do...	88	12	B	1934	.....	....	D	...	Qd	Cy	.....	.....	928	
10dca	Eveleyn Scott	60	6	Dr	....	.....	....	D,S	...	..	J	.....	.....	927	
11dba	Willie Perhus	107	3	Dr	1928	.....	....	D,S	S&G	Qd	Cy	.....	.....	925	
11ddd	Test hole 3137	212	..	Dr	7-31-64	.....	....	T	...	Qd	..	.....	.....	926	L, E.
13ccc	Henry Trangsrud	133	5	Dr	1930	.....	....	D,S	S	Qd	Cy	.....	.....	931	
14bdb	F. Hendrickson	135	12	Dr	....	.....	....	D	G	Qd	J	.....	.....	930	
15cdd	Henry Fjelstad	120	3	Dr	1943	.....	....	D,S	...	Qd	J	.....	.....	936	
16add	Ingewald Braaten	188	3	Dr	1958	.....	....	D,S	S	Qd	Cy	.....	.....	932	
17dcb	S. A. Rustad	165	4	..	....	.....	....	U	...	Qd	Cy	.....	.....	936	
17dcc	..do...	20	18	Du	....	.....	....	D	...	Qla	Cy	.....	.....	937	
18ddd	Alex Hedland	140	3	Dr	1928	.....	....	D,S	...	Qd	Cy	.....	.....	936	
19ddc	Morris Frosaker	246	3	Dr	1936	.....	....	D,S	...	Qd	Cy	4,040	6-17-64	939	C.
20cdc	Henry Borreson	370	4	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	939	
20dac	Edwin Overboe	154	3	Dr	1-60	.....	....	D	S	Qd	..	.....	.....	941	L, P.
21cdb	Peter Lykken	20	36	Du	1945	.....	....	D	...	Ql	J	.....	.....	941	
22dcd	Stella Hertsgaard	126	3	Dr	1925	.....	....	D	...	Qd	Cy	.....	.....	937	
25bdb	Ole Olsgard	100	3	Dr	....	.....	....	D	S	Qd	J	.....	.....	926	
26daa	Englebret Brakke	108	4	Dr	10-58	.....	....	D	S	Qd	Cy	2,590	11-18-64	931	L, C, Supply rept'd I.
28abc	Irvin Hemsing	60	18	Du	1940	.....	....	D,S	...	Qla	Cy	.....	.....	945	
29dad	City of Kindred	49	8	Dr	1961	.....	....	P,S	S	Qla	S	.....	.....	943	L, P.
29dca	..do... 1/	65.17	12	..	....	8.27	1-20-64	U	...	Qla	..	.....	.....	942	MP at land surface.
30cad	Herman Olson	183	3	Dr	1940	.....	....	D	...	Qd	Cen	3,340	11-17-64	937	C.
31aaa	Irvin Braaten	167	3	..	....	.....	....	D	...	Qd	Cy	.....	.....	939	

1/ Well 137-50-29dca formerly published as 137-50-29dda5 in WSP 1128, p. 267 by J. E. Powell (1948).

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
137-50 Cont.															
32aab	N. B. Swenson	270	..	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	942	
33dac	L. A. Perhus	100	15	B	1930	.....	....	D,S	S	Qd	Cy	.....	.....	941	
34cdb	Arnold Nipstad	106	2	Dr	1953	.....	....	D,S	S	Qd	J	.....	.....	941	
35ccb	Joe Fjelstad	138	4	Dr	7-58	.....	....	D	C	Qd	..	.....	.....	933	L, yield 3 gpm.
36bba	Einar Erstad	100	4	Dr	1920	.....	....	D	S	Qd	Cy	.....	.....	933	
137-51															
1bbb1	Alvin Nockleberg	100	3	..	....	.....	....	D	...	Qd	S	.....	.....	918	
1bbb2	Davenport School	147	6	Dr	1957	.....	....	P,S	G	Qd	S	.....	.....	917	
1bbd	Otto Nockleberg	132	4	Dr	1955	.....	....	D	...	Qd	Cy	.....	.....	918	
1bcb	Great Northern Railway	140	6	Dr	6-23	.....	....	S	S	Qd	..	.....	.....	922	L, well destroyed.
2ddd	Allen Mickleson	153	3	Dr	4-62	.....	....	D,S	G	Qd	J	.....	.....	924	
4ddd	Paul Schroeder	235	4	Dr	5-63	.....	....	D,S	S	Qd	Cy	.....	.....	925	
5aba	Milton Hans	85	..	Du	....	.....	....	D,S	...	Qd	J	.....	.....	924	
6cbb	W. A. Plath	107	3	Dr	1948	.....	....	D,S	G	Qd	Cy	1,300	11-17-64	935	C.
8ddd1	Kellerman Bros.	313	4	Dr	1958	.....	....	...	SS	Qd	..	.....	.....	...	L, well destroyed.
8ddd2	..do...	200	4	J	1960	.....	....	S	S	Qd	Cy	.....	.....	931	
10bca	Paul Schroeder	207	3	Dr	1910	3.18	6-14-63	D	...	Qd	..	.....	.....	924	MP 1.0 ft above ls.
11ccc	Edwin Simenson	185	3	Dr	....	.....	....	D,S	...	Qd	Cen	.....	.....	926	
14acb	Oscar Liudahl	207	6	Dr	1948	.....	....	D	...	Qd	Cy	.....	.....	930	
14bab	George Enger	320	3	Dr	....	.....	....	U	...	..	Cy	.....	.....	928	
15ddd	Alfred Vangness	160	3	Dr	....	.....	....	D,S	...	Qd	S	.....	.....	931	
16bba	Erwin Johnson	267	2	Dr	....	Flow	6-14-63	D	...	..	..	3,740	8-63	932	
16ddd	John Myher	188	3	Dr	1917	Flow	6-14-63	D	...	..	..	3,030	8-63	935	Yield 0.5.
17aaa1	D. Kellerman	280	3	B	....	2.50	6-14-63	D	...	..	..	.....	.....	933	MP 0.5 ft above ls.
17aaa2	..do...	276	3	Dr	1946	.....	....	S	...	..	Cy	3,690	8-63	934	
18cbb	Rheinhold Greuel	102	6	Dr	1957	.....	....	D,S	...	Qd	S	.....	.....	947	
19bcb1	Edwin Nygaard	90	4	Dr	1955	.....	....	D	S	Qd	Cy	.....	.....	953	
19bcb2	..do...	300	..	Dr	1900	Flow	6-14-63	S	..	..	J	4,130	8-63	953	
20baa	Morris Lahren	105	3	Dr	1947	....	....	D,S	..	Qd	Cy	.....	.....	946	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
137-51 Cont.															
21bcc	Henriette Nygard	167	1 1/4	Dr	.....	Flow	6-14-63	D,S	...	Qd	..	2,320	6-25-64	945	C, yield 3.0 gpm.
22bab	J. Milton Myhre	178	3	Dr	4-62	.....	....	D	...	Qd	J	2,810	8-63	931	
24ddd	Peder Borreson	168	4	Dr	1958	.....	....	D	S	Qd	Cy	.....	.....	935	
25ccc	Oscar Trom	150	..	..	....	.....	....	U	...	Qd	Cy	.....	.....	941	
26ccc	Archie Rich	330	4	Dr	4-61	Flow	....	D,S	S	..	S	.....	.....	944	L, Yield 3 gpm.
27ddd	M. L. Vangerud	270	3	Dr	10-61	.....	....	D	...	..	S	.....	.....	945	
28cdc	Lloyd Andvik	84	2	Dr	....	Flow	6-13-63	D,S	...	..	..	1,240	6-24-64	955	C.
28dcc	Melvin Anderson	96	2	..	....	Flow	6-13-63	U	...	..	..	1,080	8-63	954	
29cda	D. Taylor	143	4	Dr	8-17-62	.....	....	D,S	S	Qd	Cy	.....	.....	968	L, yield 4 gpm.
30dcd	R. Thomeson	29	2	Dr	1913	.....	....	S	S	Qsd	Cy	.....	.....	993	
31bac	Lester Olson	55	..	J	1947	.....	....	S	S	Qsd	Cy	.....	.....	1,025	
32daa	Elma Swiggum	46	..	B	1945	.....	....	S	S	Qsd	Cy	.....	.....	1,005	
34ccc	Erick L. Lee	205	4	Dr	1-58	.....	....	D,S	S	Qd	S	.....	.....	984	Yield 20 gpm.
35bbb	T. G. Simmons	330	4	Dr	3-14-58	.....	....	D	...	...	S	.....	.....	946	L, yield 3 gpm.
35cdd1	Thorwald Andvik	188	3	Dr	1935	124.90	10-24-63	U	...	...	..	.....	.....	960	MP 1.05 ft above ls.
35cdd2	..do...	207	4	Dr	6-59	.....	....	D	S	Qd	S	3,090	11-17-64	960	L, C.
137-52															
2cdd	Ray Heuer	...	..	Dr	....	Flow	6-16-63	D,S	...	...	..	.....	.....	945	
3cdb	Earl Roesler	290	4	Dr	1945	Flow	7-10-63	S	G	...	..	.....	.....	950	
4dad	Arthur Wickmann	97	18	B	....	14.77	7-10-63	D,S	G	Qd	Cy	.....	.....	949	MP 1.3 ft above ls.
6daal	Carl C. Laske	135	..	..	....	.....	....	D	S	Qd	Cy	3,800	9-64	958	
6daa2	..do...	286	3	..	....	Flow	7-10-63	S	S	..	..	.....	.....	958	Yield 1.5.
7ddc	Donald Heuer	420	1	Dr	....	Flow	7-11-63	D,S	..	..	..	3,750	9-64	992	Yield < 1.
8bcc	Ervin Dittmer	285	4	Dr	....	Flow	7-11-63	S	..	..	..	3,950	9-64	969	Yield 6 gpm.
9ada	W. Salzwedel	180	3	Dr	....	Flow	7-11-63	D	G	..	..	3,300	9-64	955	
10baa	Earl Roesler	62	4	Dr	1938	....	....	D,S	S	Qd	Cy	.....	.....	950	
11dcd1	Gust Heller	115	1 1/4	Dr	1948	....	....	...	S	Qd	J	.....	.....	.....	
11dcd2	..do...	410	3	Dr	1930	Flow	7-16-63	S	..	..	..	.....	.....	951	Yield < 1 gpm.
12cdd	David Gust	100	2	..	....	....	....	D,S	G	Qd	Cy	.....	.....	947	
13dbb	Woods Farmers Coop.	350	3	Dr	1935	Flow	7-16-63	D	..	..	..	3,450	9-64	950	Yield 4 gpm.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
137-52 Cont.															
14baa	Reinhold Haak	415	4	Dr	1940	Flow	7-16-63	D,S	S	..	J	.....	.....	952	Reported corrosive.
14ddd	Ben Gust	328	3	Dr	1959	Flow	7-16-63	S	S	..	..	.....	.....	955	Yield 5.0 gpm.
15bcc	John Toussaint	203	4	Dr	1947	Flow	7-16-63	D,S	G	Qd	Cy	.....	.....	968	
16ddc	Frank Schroeder	160	36	Dr	1938	+0.43	10-24-63	S	S	Qd	Cy	3,480	11-17-64	991	C, MP 2.46 ft above ls.
17cdd	R. D. Roesler	38	2	Dr	1958	.....	....	D,S	S	Qsd	J	.....	.....	1,030	
19cdd	Edwin Sandvig	26	1 1/4	Dr	....	20	1962	D,S	S	Qsd	J	.....	.....	1,051	
19ddc	Peter Frey	20	1 1/4	Dr	....	4.84	7-11-63	S	S	Qsd	Cy	.....	.....	1,051	MP at land surface.
20ddd	..do...	20	36x36	Du	....	11.02	1-20-64	D,S	S	Qsd	Cy	.....	.....	1,051	MP 1.6 ft above ls.
22ccc	E. A. Goltz	82	1 1/4	Dr	....	.....	....	D,S	S	Qsd	J	680	9-24	1,042	
23cca	Lee Nesemeir	525	4	Dr	....	.....	....	S	S	..	Cy	4,400	9-24	1,004	
24aaa	John Heuer	340	4	Dr	1948	Flow	7-16-63	D,S	G	..	J	.....	.....	950	
25ccd1	Christ Hoyum	170	2	Dr	1960	.....	....	D,S	S	Qd	Cy	.....	.....	1,031	
25ccd2	..do...	177	3	Dr	1923	34.14	7-12-63	U	S	Qd	..	.....	.....	1,031	MP 2.0 ft above ls.
25ccd3	..do...	39	1 1/2	Dr	....	.....	....	S	S	Qsd	Cy	.....	.....	.....	
27aaa	Test hole 3156	471	..	Dr	8-14-64	.....	....	T	...	..	..	.....	.....	1,025	L, E.
27cbo	Walter Stevens	90	2	Dr	....	.....	....	D,S	S	Qd	Cen	.....	.....	1,048	
28cbd	Harriet Scilley	25	1 1/4	Dr	1920	.....	....	D,S	S	Qsd	Cy	.....	.....	1,051	
28dba	City of Leonard	23	216	Du	....	11.00	7-12-63	P,S	S	Qsd	Cen	.....	.....	1,051	MP 5.25 ft below ls.
29cdd	Lyle Olson	17	1 1/4	Dv	1961	.....	....	D	S	Qsd	Cy	.....	.....	1,056	
31bab	Leon Beadles	55	2	Dr	....	.....	....	D,S	S	Qsd	Cy	853	11-17-64	1,055	C.
31bbb	Test hole 3157	20	1 1/4	Dr	8-18-64	5.66	9-3-64	O	S	Qsd	..	818	8-19-64	1,056	TH depth 317, L, C, E.
32ddd	Ole Pearson	17	1 1/4	Dv	1945	....	....	D	S	Qsd	Cy	1,050	9-64	1,060	
33oba	Clarence Haney	27	1 1/4	Dv	1947	....	....	S	G	Qsd	Cy	.....	.....	1,055	
137-53															
1ccb	Andrew L. Watt	435	1 1/4	Dr	1910	Flow	7-25-63	D,S	...	Kd	..	.....	.....	986	Yield 1.5 gpm.
2bdc	Richard Zick	450	3	Dr	....	Flow	7-25-63	D,S	S	Kd	..	.....	.....	981	Yield 1.0 gpm.
3ddc	Elmer Greuel	495	3	Dr	1908	Flow	7-25-63	D,S	S	Kd	..	4,590	9-64	1,012	P.
4bdc	John H. Morris	420	3	Dr	....	Flow	8-2-65	D,S	...	Kd	..	.....	.....	1,000	
4dbb	E. Erbstoesser	420	2 1/2	Dr	1957	Flow	8-2-63	D,S	...	Kd	..	4,630	11-17-64	1,000	C.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
137-53	Cont.														
5aadl	John Vining	15	12	Du	1961	.....	....	S	S	Qsd	Cy	.....	.....	1,025	Supply reported I.
5aad2	..do...	34	24	B	1964	18	1964	D	S	Qsd	Cy	650	9-64	1,025	
6add	Floyd Bullis	465	3	Dr	1919	Flow	8-2-63	D,S	S	Kd	..	.....	.....	1,035	Yield 0.5 gpm.
6baa	E. Manthei	435	3	Dr	....	Flow	8-2-63	D,S	S	Kd	..	.....	.....	1,040	Yield 3.0 gpm.
6ccc	Wm. J. Martin	490	3	Dr	....	Flow	8-2-63	D,S	S	Kd	..	.....	.....	1,051	
7dcc	D. Speikermeir	460	3	Dr	1960	Flow	8-2-63	D,S	S	Kd	..	.....	.....	1,036	Yield 2.0 gpm.
8ccc	Glennis Hamre	600	3	Dr	1950	Flow	8-2-63	D,S	S	Kd	..	3,650	9-64	1,036	Yield 3.0 gpm.
9bda	Rueben Haugen	460	3	Dr	1942	Flow	8-2-63	D,S	S	Kd	..	.....	.....	982	Rept'd unfit for watering plants.
9dad	Clarence Schimming	465	3	Dr	1914	Flow	7-25-63	D,S	...	Kd	..	.....	.....	1,032	Yield 1.5 gpm.
10acc	Paul Grauel	516	3	Dr	1960	Flow	7-25-63	D,S	S	Kd	..	.....	.....	1,025	Yield 1.3 gpm.
10cbb	Koetz Bros.	460	3	Dr	1948	Flow	7-25-63	D,S	...	Kd	..	.....	.....	1,032	
11bab	Gordon Linke	496	3	Dr	1948	Flow	7-25-63	D,S	...	Kd	..	.....	.....	1,005	Yield 3.0 gpm.
12bac	Alex Watt	425	3	Dr	1930	Flow	7-25-63	D,S	S	Kd	..	.....	.....	988	Yield 2.0 gpm.
14baa	F. Erbstoesser	26	1 1/2	Dv	1960	.....	....	D,S	...	Qsd	S	.....	.....	1,032	Supply rept'd I.
15abb	Gordon Zaeske	...	3	Dr	....	Flow	7-25-63	D,S	...	..	..	.....	.....	1,038	Yield 1.3 gpm.
15bbb	Test hole 2205	105	..	Dr	10-10-63	....	....	T	...	..	..	.....	.....	1,036	L, E.
15ccb	Francis Saunders	...	2 1/2	Dr	....	Flow	7-25-63	U	...	..	..	.....	.....	1,041	Yield 3.0 gpm.
17bbb	Malford Hamre	590	3	Dr	1960	Flow	8-2-63	D,S	...	Kd	..	.....	.....	1,040	Yield 1.5 gpm.
18cdb	Elmer Geyer	350	3	Dr	....	Flow	8-2-63	D,S	S	..	..	3,740	9-64	991	Yield 3.0 gpm.
19bcd	Ted Schimming	450	2 1/2	Dr	....	Flow	7-26-63	D,S	...	Kd	..	3,750	9-64	1,051	Yield 3.0 gpm.
19ccb	Walter Golz	33	22	B	1960	....	....	D,S	S	Qsd	Cy	2,770	11-17-64	1,061	C.
20aaa	Theo. A. Thompson	456	2 1/2	Dr	1939	Flow	7-26-63	D,S	S	Kd	..	.....	.....	1,050	Yield 2.0 gpm.
20bcc	Rudolph Schimming	115	2	Dr	....	....	....	D,S	S	Qd	Cy	530	9-64	1,054	
21ddd	Richard McAtee	530	2 1/2	Dr	....	Flow	7-26-63	D,S	S	Kd	..	.....	.....	1,051	Yield 3.0 gpm.
22abc	Fred Thompson	17	36	..	....	6.56	6-25-63	S	S	Qsd	Cy	.....	.....	1,048	MP at ls.
23bcc	Francis Saunders	225	2	Dr	1914	Flow	7-25-63	S	S	..	..	2,800	9-64	1,049	Yield 1.3 gpm.
24aab	D. Randy	16	1 1/4	Dv	....	....	....	S	...	..	Cy	.....	.....	1,043	
26dad	Hilman Mehus	25	1 1/4	Dv	....	....	....	S	S	Qsd	Cy	.....	.....	1,056	
27dcc	Albert Gust	22	1 1/4	Dr	1948	....	....	D	S	Qsd	Cy	.....	.....	1,059	
28daa	Laurence Baarstad	22	1 1/2	Dr	1945	....	....	D	...	Qsd	J	.....	.....	1,055	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
137-53 Cont.															
29dad	Barfuss Bros.	27	1 1/4	Dv	....	.....	....	S	S	Qsd	Cy	.....	.....	1,057	
30aad	USBR	25	..	..	....	.....	....	...	S	Qsd	..	.....	.....	1,059	L, Well destroyed.
30abc	Walter Golz	600	2	Dr	....	Flow	7-26-63	U	...	Kd	..	.....	.....	1,060	Yield 1.5 gpm.
30ccc1	Wilbert Kellerman	589	3	Dr	1960	Flow	7-26-63	D,S	S	Kd	..	.....	.....	1,060	Yield 17 gpm.
30ccc2	..do...	587	3/4	Dr	....	Flow	7-26-63	D,S	S	Kd	..	.....	.....	1,060	Supply rept'd I.
31baa	E. Koetz	15	2	Dr	....	.....	....	D,S	S	Qsd	Cy	1,880	9-64	1,061	
32aad	Manfred Walhood	492	1	Dr	1948	Flow	7-26-63	D,S	S	Kd	..	.....	.....	1,061	Yield 6.0 gpm.
34abb	Harold Kurtz	23	1 1/4	Dr	....	.....	....	S	S	Qsd	Cy	.....	.....	1,060	
34ccc	Test hole 2206	40	1 1/4	Dr	10-31-63	+1.06	10-31-63	0	S	Qsd	..	.....	.....	1,058	L, E, MP 2.1 ft above ls. TH depth 136.
35aaa	Gertrude Loebrick	22	1 1/2	Dr	....	.....	....	S	S	Qsd	Cy	.....	.....	1,060	
36ccc	Roger Morris	65	2	Dr	1961	.....	....	P,S,D	S	Qsd	J	.....	.....	1,059	Reported hard.
137-54															
1bcb	Gerold Shea	550	2	Dr	....	Flow	7-29-63	D,S	...	Kd	..	.....	.....	1,067	
2cbc	Max Scharbow	610	1 1/2	Dr	1955	Flow	7-29-63	D,S	G	Kd	..	.....	.....	1,070	Yield 3 gpm
4dad	Harold Luther	620	2	Dr	1948	Flow	7-29-63	D,S	...	Kd	..	.....	.....	1,086	
6bbc	John Bryon	271	3	Dr	1957	Flow	7-29-63	D,S	G	..	..	4,450	9-64	1,111	Yield 3 gpm.
7ccd	Ernest Utke	...	2	Dr	1929	Flow	7-29-63	D,S	...	..	..	.....	.....	1,082	Yield 3 gpm.
8cbb	Wendell Wiseman	586	2	Dr	....	Flow	7-29-63	S	...	Kd	..	.....	.....	1,082	
9aad	Glenn Sprunk	40	18	B	1962	.....	....	D	G	Qd	J	.....	.....	1,071	L.
9ada	..do...	530	3/4	Dr	1910	Flow	7-29-63	S	...	Kd	..	.....	.....	1,070	Yield 3 gpm.
11aaa	Roger Shea	500	1 1/2	Dr	1910	Flow	7-29-63	D,S	...	Kd	..	3,350	9-64	1,066	
12daa	Charles Zaeske	33.6	30	..	....	7.58	4-4-64	U	...	..	Cy	.....	.....	1,056	MP 1.1 ft above ls.
13daa	J. Bartholomay	12	1 1/4	Dv	....	.....	....	D,S	S	Qow	J	1,780	9-64	1,015	
17obc	James Runck	600	2	Dr	1953	Flow	8-2-63	D,S	..	Kd	..	.....	.....	1,080	
17ccb	..do...	...	1 1/2	Dr	1951	Flow	8-2-63	U	..	..	..	.....	.....	1,085	Yield 10 gpm.
18cbb	Fred Oehlke	650	1 1/4	Dr	1942	Flow	7-20-63	D,S	..	Kd	..	3,410	9-64	1,085	
20bbb	Maynard Lindemann	600	1 1/4	Dr	1910	Flow	8-2-63	D,S	..	Kd	..	.....	.....	1,080	Yield 4 gpm.
21dba	Arthur Pfefferle	15	1 1/4	Dr	....	.....	....	D,S	..	Qow	Cy	.....	.....	1,029	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
137-54 Cont.															
22cdd	Frank Mark	500	2	Dr	1951	Flow	7-26-63	D,S	...	Kd	..	.....	.....	1,065	Yield 4.5 gpm.
23cba	Harold Reynolds	560	3/4	Dr	1916	Flow	7-26-63	D,S	...	Kd	..	.....	.....	1,066	Yield 2 gpm.
25dccl	Ken Kellerman	...	1	Dr	....	Flow	7-26-63	S	...	..	..	.....	.....	1,055	Yield 1.0 gpm.
25dcc2	..do...	40	2	Dr	1961	....	....	D	...	..	J	.....	.....	1,055	
26dba	Robert Kellerman	586	1	Dr	1949	Flow	7-26-63	D,S	...	Kd	..	.....	.....	1,061	Yield 7 gpm.
27cbcl	Fred Menge	537	2	Dr	1920	Flow	7-26-63	S	...	Kd	..	.....	.....	1,063	Yield 2.5 gpm.
27cbc2	..do...	54	24	B	1961	.....	....	D	S	J	..	3,600	9-64	1,063	
28ccc	John Anderson	12	1 1/4	Dr	1960	.....	....	D,S	S	Qow	Cen	833	11-17-64	1,033	
29ddd	Miller Bros.	800	3	Dr	1924	Flow	7-29-63	D,S	S	Kd	..	3,580	9-64	1,031	Yield 5 gpm.
30ccd	Robert Geske	600	1 1/4	Dr	1920	Flow	7-29-63	D,S	...	Kd	..	.....	.....	1,096	Yield 3 gpm.
32ccd	Benson Hjilmer	24	2	Dv	....	.....	....	D,S	S	Qow	Cy	.....	.....	1,065	
32ddd	Test hole 3146	227	..	Dr	8-8-63	.....	....	T	...	..	..	.....	.....	1,072	L, E.
34ccc	Leon Heuer	565	2	Dr	1961	Flow	7-26-63	D,S	S	Kd	..	3,820	9-64	1,067	Yield 7 gpm.
34dbd	E. Spitzer	561	2	Dr	1960	Flow	7-26-63	D,S	...	Kd	..	.....	.....	1,060	Yield 3 gpm.
35abd	Robert Offerman	554	2 1/4	Dr	1926?	Flow	7-26-63	D,S	S	Kd	..	.....	.....	1,057	Yield 4 gpm.
36bba	George Becker	548	2	Dr	1960	Flow	7-26-63	D,S	...	Kd	..	.....	.....	1,063	Yield 2 gpm.
36ccc	Test hole 2204	20	1 1/4	Dr	10-15-63	8.93	10-15-63	O	St	Qd	..	.....	.....	1,064	L, E, Destroyed TH depth 231.
137-55															
1ccd	Elmer Utke	430	1 1/2	Dr	1910	Flow	8-15-63	D,S	...	..	..	3,510	9-64	1,106	Yield 2 gpm.
2aad	G. Schatzke	820	1 1/2	Dr	1942	Flow	8-14-63	D,S	S	Kd	..	.....	.....	927	Yield 4.0 gpm.
3bcb	Evan Mueller	680	1 1/4	Dr	1910	Flow	8-15-63	D,S	...	Kd	..	.....	.....	1,152	Yield 1.5 gpm.
4ccb	Eva Lindeman	780	2	Dr	1960	Flow	8-15-63	D,S	S	Kd	..	.....	.....	.....	Yield 4.0 gpm.
4ccd	..do...	650	2	Dr	1946	Flow	8-15-63	S	...	Kd	..	3,690	9-64	.....	Yield 3.0 gpm.
7cbb	Janz Bros.	7	24	B	1955	....	....	D	G	Qd	J	1,750	9-64	.....	Supply rept'd I.
8bab	Leo Lemna	650	1 1/2	Dr	1945	Flow	8-16-63	D,S	...	Kd	..	.....	.....	.....	Yield 5 gpm.
10cbb	Alfred Huske	680	1 1/4	Dr	1944	Flow	8-15-63	D,S	...	Kd	..	.....	.....	1,145	Yield 2 gpm.
11baa	Myron Golz	685	1 1/2	Dr	1943	Flow	8-14-63	D,S	...	Kd	..	.....	.....	1,136	Yield 2.5 gpm.
12dac	Martha Wendlandt	580	1 1/2	Dr	1910	Flow	8-15-63	D,S	...	Kd	..	.....	.....	1,092	Yield 3.0 gpm.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
137-55 Cont.															
13dac	Alvin Kurtz	600	1	Dr	1925	Flow	8-15-63	D,S	...	Kd	..	.....	.....	1,086	Yield 2 gpm.
14ccd	Emil Geske	630	1 1/2	Dr	1940	Flow	....	D,S	...	Kd	..	.....	.....	1,128	Yield 3.0 gpm.
15dad	Eldon Schatzke	...	1 1/2	Dr	....	Flow	8-14-63	D,S	...	..	..	.....	.....	1,135	
17bab	Anton Johnson	60	36	B	1928	22.69	1-21-64	D,S	S,G	Qd	Cy	4,500	9-64	.....	MP 0.5 ft above ls.
18bbb	Vernon Johnson	18	12	B	1960	....	....	D	...	Qd	J	.....	.....	.....	Rept'd unfit for drinking.
18ddd	Test hole 3140	62	..	Dr	8-5-64	....	....	T	...	Qd	..	.....	.....	1,182	L, E.
20ccc	Verner Lindemann	835	1 1/2	Dr	1953	Flow	8-16-63	D,S	...	Kd	..	5,400	6-25-64	.....	C, yield 1 gpm.
24cdd	Paul Peck	608	1 1/4	Dr	1956	Flow	8-15-63	D,S	...	Kd	..	3,920	9-64	1,100	Rept'd corrosive and unfit for watering plants.
26ddd	Hubert Bleese	...	1 1/2	Dr	1948	Flow	8-15-63	D,S	...	..	..	.....	.....	1,105	Yield 3 gpm.
27ddd	F. W. Petrich	700	1 1/2	Dr	1900	Flow	8-14-63	D,S	...	Kd	..	3,510	9-64	1,116	Rept'd corrosive.
28bab	E. H. Kraft	825	1 1/2	Dr	1937	Flow	8-16-63	D,S	...	Kd	..	.....	.....	.....	Rept'd corrosive.
28dad	Leonard Anderson	400	1 1/2	Dr	1910	Flow	8-15-63	D,S	...	..	..	.....	.....	1,105	
29aaa	Test hole 3142	62	..	Dr	8-6-64	....	....	T	...	..	..	.....	.....	1,157	L, E.
29ddd	Test hole 3143	77	..	Dr	8-6-64	....	....	T	...	..	..	.....	.....	1,155	L, E.
30abb	Harold Spitzer	29.6	36	B	1942	23.20	8-16-63	D,S	...	Qd	Cy	.....	.....	.....	MP 0.75 ft above ls.
30bcb	Test hole 3139	80	1 1/4	Dr	8-4-64	22.46	9-2-64	O	S,G	Qd	..	1,780	8-6-64	1,179	L, C.
30cbb	Gordon Lund	48	30	B	1930	.....	....	D,S	..	Qd	Cy	.....	.....	.....	
31cdd	Robert Hanson	30	18	B	....	.....	....	S	G	Qd	Cy	.....	.....	.....	
32ddd1	Arthur Ritter	63	28	B	1949	.....	....	S	G	Qd	Cy	.....	.....	.....	Supply rept'd I.
32ddd2	Test hole 3144	77	..	Dr	8-6-64	.....	....	T	S	Qd	..	.....	.....	1,155	L, E., TH depth 137.
33cdd	E. N. Kittelson	52.8	24	B	....	38.57	8-16-63	U	G	Qd	Cy	.....	.....	.....	MP 2.3 ft above ls.
34cdc	John Hanson	700	1 1/2	Dr	1930	Flow	8-14-63	D,S	...	Kd	..	.....	.....	1,125	Yield 2.5 gpm.
34dcb	Edwin Fernow	621	1 1/4	Dr	1953	Flow	8-14-63	D,S	...	Kd	..	.....	.....	1,114	Yield 16.0 gpm.
35ddc	Erwin Utke	60	1 1/2	Dr	1951	.....	....	D,S	S	Qd	J	.....	.....	1,115	
35ddd	Test hole 3145	125	1 1/4	Dr	8-7-64	47.90	9-2-64	O	S	Qd	..	1,440	8-16-64	1,114	L, C, E.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
138-48															
7bdt	Fred M. Hector	180	4	Dr	1957	.....	....	D,S	...	Qd	T	1,120	6-64	904	
7ccc	F. B. Sharp	146	4	Dr	8-61	41.86	10-4-63	D	S	Qd	S	930	6-64	900	Yield 100 gpm, L.
7ccd	Bud Anderson	136	4	Dr	6-61	38.48	1-30-64	D	S	Qd	S	950	6-64	900	L, MP 1.5 ft above ls.
7cdd	..do...	153	4	Dr	7-60	40	7-11-60	D	S	Qd	S	1,030	11-13-64	900	L, C.
18acd	David Jonnson	200	4	Dr	5-62	34.20	5-14-63	D	S	Qd	S	.....	.....	892	L, P, MP 1.3 ft above ls.
18adc	L. Frederekkson	148	4	Dr	5-61	.....	....	U	S	Qd	..	.....	.....	890	L, P, Yield 5 gpm.
18add	Dr. V. G. Borland	146	4	Dr	5-61	.....	....	U	S	Qd	..	.....	.....	888	
18bda	Dr. H. J. Weyers	180	4	Dr	12-59	36	12-16-59	D	S	Qd	S	2,870	6-64	893	L, C, yield 5 gpm.
18dab1	Harold Erpelding	148	4	Dr	4-61	47	4-27-61	D	S	Qd	S	.....	.....	895	L, P, Supply rept'd I.
18dab2	Rolf Hofstad	191	4	Dr	12-59	30	12-7-59	U	S	..	..	.....	.....	895	L, E.
19bbb	Ivan Cœssette	92	4	Dr	5-59	.....	.....	D	...	Qd	Cy	1,110	6-64	906	
30dcd	Harold Anderson	140	4	Dr	5-62	28	5-28-62	D	S	Qd	Cy	960	6-64	910	L, P, Yield 4 gpm.
138-49															
1abb	Ralph Scilley	325	4	Dr	4-58	.....	....	D,S	...	..	Cy	2,320	6-64	905	
2aaa	Orville Young	273	3	Dr	10-62	43	10-3-62	D	S	Qd	Cy	.....	.....	906	L.
3aab	T. MacDonald	120	3	..	....	.....	.....	D	...	Qd	Cy	1,040	6-64	907	
4aaa	Test hole 3104	150	1 1/4	Dr	6-4-54	38.48	7-1-64	O	S&G	Qd	..	670	6-6-64	905	L, E, TH depth 355.
5bbb	John C. Rustad	123	4	Dr	1950	.....	.....	D,S	...	Qd	Cy	1,180	6-64	901	
6bca	T. O. Grant	165	4	Dr	9-46	.....	.....	D,S	...	Qd	Cy	2,000	6-64	906	
6dca	Hammer Farms	75	16	B	1936	39.62	6-5-63	D	...	Qd	Cy	1,730	6-64	901	MP 1.0 ft above ls.
6ddb	Paul Berg	42	4	Dr	11-62	.....	.....	D	...	..	Cy	.....	.....	901	
8aab	Gust Arneson	97	4	Dr	1919	.....	.....	D,S	...	Qd	Cy	1,150	6-64	906	
8ccd	Test hole 2346	252	..	Dr	6-8-65	.....	.....	T	S	Qd	..	.....	.....	915	L.
10dcd	Alpha Rheault	90	24	B	1940	.....	.....	D,S	...	Qd	Cy	1,540	6-64	905	
12aab	P. E. Peterson	320	2	Dr	1956	80	.....	D	...	..	J	5,680	11-13-64	907	C.
12aba	Homer Berglund	89	4	Dr	6-59	.....	.....	D	...	Qd	Cy	1,200	6-64	906	
12ddd	Cyril Walsh	138	4	Dr	4-63	42.82	1-30-64	D	S	Qd	S	.....	.....	906	L, MP 3.0 ft above ls.
13aaa	Wm. J. Martin	132	4	Dr	6-62	44.16	11-2-64	D	S	Qd	S	1,000	11-13-64	906	L, C, MP 1.2 ft above ls.
13baa	Test hole 3114	302	..	Dr	7-7-64	.....	.....	T	...	...	..	.....	.....	906	L, E.
13dad	Paul Knox	250	4	Dr	....	.....	.....	D	S	Qd	S	.....	.....	907	L.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
138-49 Cont.															
15aad	G. Geauvauglaw	235	4	Dr	1950	.....	....	D,S	S	Qd	Cy	700	6-64	903	
15bab	Leon Burnelle	179	..	Dr	1956	.....	....	D,S	...	Qd	Cy	577	6-25-64	906	C.
16ccd	Alfred Trottier	84	4	..	....	.....	....	D,S	...	Qd	Cy	1,230	6-64	905	
16ddd	Test hole 3105	319	..	Dr	6-5-64	.....	....	T	...	..	..	.....	.....	907	L,E.
17ddc	Marian Tessier	...	4	..	....	.....	....	D,S	...	..	Cy	1,140	6-64	905	
18ddc	Village of Horace	112	4	Dr	11-62	44.20	6-4-63	P,S	...	Qd	S	.....	.....	910	MP 1.0 ft above ls.
19aaa	Horace School District	303	4	Dr	1958	.....	....	P,S	S	Qd	J	1,660	3-4-64	916	C.
20bbb	Village of Horace	110	4	Dr	1955	.....	....	P,S	...	Qd	J	1,210	11-13-64	914	C.
20dda	Lowell Ramsett	75	10	Dr	1934	.....	....	S	S	Qd	Cy	4,740	6-64	906	Supply rept'd I.
21bab	Anna Richard	66.9	8	Dr	....	23.01	6-11-63	U	...	Qd	Cy	.....	.....	907	MP 2.0 ft above ls.
21ddc	Adrian Rheault	74	20	..	....	.....	....	D,S	...	Qd	..	1,270	6-64	911	
22bab	Anthony Richard	56	8	B	1893	44	1956	D,S	...	Qla	Cy	830	6-64	906	Supply rept'd I.
24cbc	Anton Rutten	80	12	Dr	....	.....	....	D,S	S	Qd	J	1,060	6-64	910	
25aba	D. G. Tessier	100	24	Dr	....	.....	....	D	...	Qd	Cy	1,670	6-64	906	Adequate for house only
26daa	Orie Langseth	143	6	Dr	1950	.....	....	D,S	S	Qd	J	1,050	6-64	910	
27baa	Henry Tessier	240	2	Dr	1948	.....	....	D,S	S	Qd	Cy	745	11-13-64	909	
27ddd	Francis Bellemare	183	3	Dr	1954	.....	....	D,S	S	Qd	Cy	760	6-64	909	
28dcc	Lionel Trottier	90	4	Dr	1951	.....	....	D,S	G	Qd	J	1,160	11-13-64	910	C.
29bbb	Arthur Bailly	187	3	Dr	1960	.....	....	D,S	S	Qd	Cy	1,380	6-64	916	
29ccc	Test hole 3115	280	1 1/4	Dr	7-7-64	32.17	8-1-64	O	S&G	Qd	J	2,020	8-20-64	912	MP 2.0 ft above ls. E, L, C, TH depth 317 ft.
30bbb	Adolf Clemenson	217	4	Dr	1958	.....	....	D,S	S	Qd	J	4,040	6-64	916	
31bab	A. M. Johnson	243	4	Dr	1930	.....	....	D,S	...	Qd	Cy	2,820	11-13-64	916	C.
32adb	Ovila Rheault	83	3	Dr	1949	.....	....	D,S	S	Qd	J	1,080	6-64	910	
34ccc	Test hole 3106	100	1 1/4	Dr	6-6-64	25.04	6-30-64	O	S&G	Qd	..	858	6-11-64	910	MP 1.98 ft above lsd, L,C, E, TH depth 345 ft.
34ccd	Servet Cossette	115	3	Dr	1945	.....	....	D	G	Qd	Cy	810	6-64	910	
35adb	Clarence Solberg	135	3	Dr	1938	.....	....	D,S	S	Qd	Cy	1,060	6-64	910	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
138-49 Cont.															
36aca	Reitan Bros	64	18	B	1940	.....	....	D,S	G	Qd	J	1,360	6-64	910	
36ddal	KXGO Inc.	138	4	Dr	6-61	.....	....	D	S&C	Qd	Cy	1,510	6-64	910	L, P.
36dda2	..do...	70	3	Dr	....	20.70	5-15-63	U	...	Qd	..	.....	.....	910	MP 1.65 ft above ls.
138-50															
1bdc1	Jerome Qualley	90	4	Dr	1945	.....	....	D,S	...	Qd	Cy	1,750	6-64	904	Well used to flow.
1bdc2	..do...	89	4	Dr	6-18-63	39	6-19-63	D,S	S	Qd	S	.....	.....	904	L.
2ddd	Howard Qualley	150	4	Dr	1940	8	1940	D,S	S	Qd	Cy	1,370	6-64	905	
3bdd	R. S. Lewis Estate	100	3	Dr	1956	.....	....	D,S	...	Qd	Cy	.....	.....	908	
4cda	Adele Hajek	108	3	Dr	1959	.....	....	S	G	Qd	Cy	1,960	6-64	912	
4dcc	Ray Eggert	133	3	Dr	1956	.....	....	D,S	S	Qd	Cy	1,680	6-64	911	
5add	Frank Parsley	455	3	..	1938	.....	....	D	...	Kd	Cy	3,790	3-4-64	913	C.
5bbb	Test hole 3116-A	240	1 1/4	Dr	7-10-64	18.81	8-1-64	O	S&G	Qd	..	1,440	7-14-64	913	MP 0.7 ft above ls, L, C, E, TH depth 377 ft.
8cdc1	Thom Ebens	70	18	..	....	.....	....	D,S	...	Qd	Cy	1,860	6-64	910	
8cdc2	L. G. Sautebin	182	4	Dr	3-64	35	3-64	D,S	S	Qd	S	.....	.....	910	Yield 75 gpm, L.
9bbb	Emil Hendrikson	150	6	..	....	20	1956	D,S	...	Qd	Cy	1,810	6-64	913	
11aad	H. M. Skrove	90	3	Dr	1948	.....	....	D	S	Qd	Cy	1,170	6-64	906	
12ddc	Leseth Trygve	80	3	Dr	1953	.....	....	D	...	Qd	Cy	2,690	6-64	908	
13bcb	A. Libbrecht	123.0	4	Dr	4-60	26.17	10-23-63	D,S	S	Qd	S	1,740	11-13-64	909	L, C, MP 0.5 ft. above ls.
14aad	Martin Rustad	289	4	Dr	1955	.....	....	D,S	...	Qd	Cy	3,080	6-64	909	
16bba	Arthur Benson	160	3 1/2	Dr	....	40	1960	D,S	...	Qd	Cy	1,350	6-64	914	
17ddd	Delmer Schultz	85	3	..	....	20	1962	D	S	Qd	J	.....	.....	920	
20aab	Driscoll Bros.	300	4	..	....	21	1962	D	...	..	Cy	2,050	6-64	911	
20cdd	Ray Huhner	180	4	Dr	5-61	35	5-61	D,S	S	Qd	S	1,660	11-13-64	918	L, C, Yield 100 gpm.
24cad	Oscar Wester	115	3 1/2	Dr	1943	.....	....	D	...	Qd	Cy	1,530	6-64	912	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
138-50 Cont.															
25bcb	Andrew Stenberg	40	48x48	Du	....	.....	....	U	...	Qla	Cy	.....	.....	914	
27bcc	Robert Brodhaug	90	4	Dr	1940	.....	....	D,S	...	Qd	Cy	950	6-64	914	
27ddd	Curtis Sorenson	134	4	Dr	1947	.....	....	D	...	Qd	Cy	.....	.....	915	
28bcc	August Alber	18	10	B	1961	.....	....	D	...	Qla	Cy	.....	.....	916	Supply rept'd I.
28cbd	John Broselle	80	4	Dr	....	.....	....	D	...	Qd	Cy	1,090	6-64	916	
29add	Oline Lahren	22	10	B	1953	.....	....	D	...	Qla	Cy	2,130	6-64	916	Supply rept'd I.
31dbb	Louis Swisher	248	4	Dr	1962	.....	....	D,S	...	Qd	S	2,700	6-64	918	
32dcd	C. O. Sorenson	90	18	Dr	.....	.....	....	D	...	Qd	Cy	1,600	6-64	918	Supply rept'd I.
33bcd	Walter Gulsvig	312	3	Dr	1961	.....	....	D,S	G	..	Cy	1,650	6-64	916	
34ccc	Joseph Engen	131	4	Dr	5-60	32	5-60	D,S	S	Qd	Cy	1,160	6-64	920	L, P.
35aaa	Test hole 3136	100	1 1/4	Dr	7-30-64	27.56	12-9-64	O	S	Qd	..	1,920	7-31-64	913	L, C, MP 0.7 ft above land surface, E, TH depth 227 ft.
36bdd	Adolf Johnson	120	3	Dr	1948	.....	....	D,S	S	Qd	Cy	2,140	6-64	917	
138-51															
1cba	Marvin Erdman	45	48	Du	1913	.....	....	U	...	Qla	Cy	.....	.....	911	
2bcb	Willie Miller	130	4	Dr	....	.....	....	D	G	Qd	Cy	1,670	6-64	911	
3bbc	..do...	325	8	Dr	....	.....	1962	S	S	..	Cy	5,090	6-64	914	
4bbb	Leslie Bucholz	380	6	Dr	1943	6	1962	S	...	..	Cy	5,650	7-24-64	918	
5bcb	Hilbert Baumgarten	337	3	Dr		1	1962	D,S	...	..	Cy	4,120	6-64	920	
5cab	Leo Vanisch	180	3	Dr	....	.....	....	D	...	Qd	Cy	2,820	6-64	920	
5dcc	Raymond Bernstein	215	4	Dr	9-63	.....	....	D,S	S	Qd	S	.....	.....	923	L.
7ada	W. Bernstein	231	3	Dr	1950	6.64	7-9-63	D	S	Qd	J	.....	.....	926	MP 1.2 ft above ls.
8bad	Ralph Powers	193	4	Dr	1960	15	1960	D,S	S	Qd	S	2,910	6-64	920	L, P, E.
9ccd	Victor Gohdes	80	48x48	Du	1920	51.97	7-9-63	D,S	G	Qd	Cy	1,770	11-18-64	920	MP 1.6 ft above ls, Supply I.
10ddd	L. E. Cromwell	87.0	16	B	....	8.90	6-27-63	U	...	Qd	Cy	.....	.....	916	MP 0.5 ft above ls.
11ddd	Arthur Schneider	350	4	Dr	1917	27.69	6-27-63	D,S	...	..	Cy	.....	.....	915	MP 1.1 ft above ls.
12bcc	Allen Hans	125	3	..	....	.....	....	S	...	Qd	Cy	.....	.....	913	
14bcb	Eleanor Schwarz	90	48	Du	....	19.60	6-27-63	S	...	Qd	Cy	5,260	.....	916	MP 1.0 ft above ls.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
138-51 Cont.															
17baa	Ben Stange	80	..	B	1959	.....	....	S	G	Qd	Cy	2,060	6-64	925	
18bab	Irvin Piper	68	18	B	1933	12.90	1-22-64	D	...	Qd	Cy	.....	.....	925	MP 0.8 ft above ls.
19ccb1	Clifford Glasow	75	10	B	....	32.10	7-10-63	D	...	Qd	J	3,100	6-64	928	MP at ls.
19ccb2	..do...	378	..	..	....	12.70	7-10-63	S	...	..	Cy	3,890	6-64	928	MP 1.3 ft above ls.
20cba	Allen Hans	80	48x48	Du	....	30.60	7-10-63	D,S	...	Qd	Cy	.....	.....	923	MP 0.3 ft above ls.
21bba	Hubert Hans	80	24	B	....	35	1962	D,S	...	Qd	Cy	1,570	6-64	923	
24ccb	Robert Cockerill	80	24	B	....	.....	....	D,S	...	Qd	J	1,620	11-18-64	915	C.
26abc	Minnie Westphal	80	3	Dr	....	30	1962	...	...	Qd	..	1,430	6-64	915	
29ddc	Irvin Friese	82	3	Dr	1948	.....	....	D	G	Qd	Cy	1,030	6-64	923	
30bca	John Bucholz	80	24	B	....	10.80	7-10-63	U	S	Qd	Cy	.....	.....	929	MP 0.5 ft above ls.
32cbb	Albert Piper	69	4	Dr	8-5-62	23	8-5-62	D,S	S	Qd	S	1,530	11-18-64	925	L, Yield 30 gpm.
32dcd	Lawrence Ottow	85	36	Du	1909	.....	....	D,S	...	Qd	J	1,950	6-64	923	
33cbd	Clemens Hans	87	3	Dr	1932	.....	....	D	...	Qd	Cy	1,330	6-64	922	
33cca	..do...	227	3	Dr	1959	.....	....	D,S	S	Qd	J	3,520	6-64	922	
34ddd	Donald Kellerman	118	4	Dr	....	.....	....	U	...	Qd	Cy	1,830	6-64	920	
35bbc	Carl Grindberg	165	3	Dr	1935	17	1958	D	S	Qd	J	2,060	6-64	917	
35cdd	Carl Heuer	148	3	Dr	1957	8	1957	D	G	Qd	S	1,760	6-64	915	
36ddd	A. L. Stenjem	96	3	Dr	1945	.....	....	D	...	Qd	J	1,280	6-64	917	
138-52															
1aba	Hoffman Bros.	27	1 1/4	Dr	1948	.....	....	D,S	S	Qla	J	3,690	6-64	926	
2bab	Berthold Jahnke	300	4	Dr	1930	.....	....	D,S	...	..	Cy	1,980	6-64	925	
3aab	Myrtle Jahnke	390	4	Dr	1959	.....	....	D,S	S	..	S	5,850	6-64	940	L, P, Yield 40 gpm.
3bba	A. K. Stolzman	22	36	Du	1920	.....	....	D	...	Qla	Cy	1,300	6-64	936	
3cbc	Elmer Saar	410	3	Dr	1920	Flow	7-18-63	D,S	...	..	..	5,700	6-64	935	
4cab1	Richard Wiesbach	120	3	Dr	1935	Flow	7-18-63	S	G	Qd	..	.....	.....	.....	
4cab2	..do...	69	6	Dr	1948	.....	....	D	G	Qd	Cy	1,660	6-54		
5dab	Ernie Buchholz	384	2	Dr	1920	Flow	7-18-63	D,S	...	..	J	5,710	6-64	.....	Yield 1 gpm.
7dad	Hilton Saewert	365	2	Dr	1900	Flow	7-18-63	D,S	S	..	..	5,330	6-64	.....	
8dadl	Ted Piper	300	2	Dr	1930	.....	....	U	...	..	..	.....	.....	.....	Well used to flow.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
138-52 Cont.															
8dad2	Ted Piper	80	3	Dr	1949	14	1963	D,S	...	Qd	Cy	940	6-64	.....	
9add	Clark Baumgartner	71	4	Dr	6-59	11.67	1-22-64	S	S&C	Qd	S	.....	.....	.....	L, P, MP 1.55 ft above ls.
9ccc	Ted Piper	160	3	Dr	1958	25	1958	D	S	Qd	Cy	970	6-64	.....	
10cbb	A. Miller	71	3	Dr	1962	.....	....	S	...	Qd	Cy	2,160	6-64	945	
11ccc	W. L. Haggert	276	4	Dr	1959	Flow	6-4-59	D,S	G	..	..	4,800	11-10-64	935	L, C, Yield 200 gpm.
12aab	William Piper	18	1 1/2	Dv	....	.....	....	D	G	Qla	Cy	2,710	6-64	930	
13aab	A. Ratchenski	16	3	Dv	1940	4	7-63	U	S	Qla	..	1,640	6-64	930	
15aaal	Hugo Greuel	74	36	Dr	1934	12	7-63	D,S	S	Qd	Cy	1,660	6-64	937	
15aaa2	..do...	58	24	B	....	8	7-63	U	S	Qd	..	1,330	6-64	937	
16ddd	Wesley Priewe	15	36	Du	....	9.90	7-18-63	D	S	Qla	Cy	3,260	6-64	940	MP at ls.
17dcd	Bill Powers	119	3	Dr	1952	60	7-63	D,S	G	Qd	Cy	1,410	6-64	.....	
18baal	Ruth Peeler	81	5	Dr	1963	.....	....	D	S	Qd	S	1,500	6-64	.....	L.
18baa2	..do...	570	3	Dr	1928	Flow	7-18-63	U	S	Kd	..	.....	.....	.....	
19ddd	George Paulson	72	3	Dr	1953	.....	1953	D,S	S	Qd	Cy	2,690	6-64	950	
21aad	Dora Seiwert	25	48	B	....	11.67	7-17-63	D,S	G	Qla	Cy	.....	.....	940	MP 1.0 ft above ls.
23bcb1	John Runck	65	6	Dr	1933	.....	....	D	S	Qd	Cy	1,290	6-64	935	
23bcb2	..do...	400	3	Dr	1958	Flow	7-17-63	D,S	G	..	..	4,780	6-64	935	
24abc	Ed Piper	375	3	Dr	1935	Flow	....	D,S	...	..	..	4,780	6-64	930	Yield 1 gpm.
25bbb	Harold Glasow	311	4	Dr	....	.....	.....	D,S	S	..	S	.....	.....	932	L, P.
26bba	Fred Zick	82	3	Dr	1952	20	7-63	D,S	G	Qd	J	1,510	6-64	932	
27daa	Herman Salzwedel	130	48	B	1900	5.25	7-17-63	D,S	...	Qd	Cy	1,560	6-64	935	MP 0.8 ft above ls.
28bcd	E. C. Wichmann	500	6	Dr	....	Flow	7-17-63	D	G	Kd	..	4,750	6-64	946	Yield 1 gpm.
28ccb1	E. Powers	85	4	Dr	8-61	20	1961	D,S	G	Qd	Cy	1,360	6-64	945	
28ccb2	..do...	60	12	B	....	9.44	4-3-64	U	...	Qd	..	.....	.....	945	MP 0.3 ft above ls.
29dcb	Gordon Roesler	480	4	Dr	1953	Flow	7-17-63	D,S	S	Kd	...	5,210	6-64	946	
29ddc	Wesley Belter	387	3	Dr	1953	Flow	7-17-63	D,S	S	..	..	4,700	6-64	945	Yield 2.0 gpm.
30bcb	Lester Friese	380	3	Dr	....	Flow	7-17-63	D,S	G	..	..	5,100	6-64	948	Yield 2.0 gpm.
32ccd	Harold Dittmer	300	1	Dr	1913	Flow	7-17-63	D,S	...	..	..	4,410	6-64	956	Yield 6.0 gpm.
34ddd	Elmer Heuer	68	21	B	1953	10.50	7-16-63	D	S	Qd	Cy	2,350	6-64	940	MP 1.5 feet above ls, Supply I.
36cdd1	Herbert Buchholz	40	48	Du	1900	9.9	7-16-63	S	S	Qla	Cy	.....	.....	938	MP 1.5 ft above ls, Supply I.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
138-52 Cont.															
36cdd2	Herbert Buchholz	260	3	Dr	1953	Flow	7-16-63	D	...	..	J	.....	.....	938	Yield 1.0 gpm.
138-53															
1aba	Martha Schwager	86	4	Dr	1948	.....	....	D,S	G	Qd	Cy	2,830	6-64	.....	
2cdd	Gordon Krueger	300	3	Dr	....	Flow	7-23-63	D,S	...	..	..	5,590	6-64	.....	Yield 2.0 gpm.
3ddc	Ervin Pfeiff	360	3	Dr	1903	Flow	7-23-63	D,S	...	..	..	5,000	6-64	.....	..Do...
4baa	Lawrence Baumler Jr.	360	3	Dr	....	Flow	7-23-63	D,S	...	..	..	5,250	6-64	.....	Yield 1.5 gpm.
4dcd	W. Allan Watt	435	3	Dr	1949	Flow	7-23-63	D,S	S	Kd	..	4,540	6-64	.....	Yield 1.1 gpm.
5aba	Leonard Brown	275	3	Dr	1933	Flow	7-23-63	D,S	...	..	..	4,030	6-64	.....	Yield 3.0 gpm.
5bdc	Robert Reed	398	2	Dr	....	Flow	7-23-63	D,S	...	..	..	4,110	6-64	.....	Yield 1.3 gpm.
6abb	Wes Summerfield	32	42	B	....	10.64	6-23-63	D,S	...	Qla	Cy	2,610	11-10-64	.....	C, MP 0.3 ft above ls.
7add	Alfred Kickertz	...	4	Dr	....	Flow	7-23-63	D,S	...	..	..	4,190	6-64	.....	Yield 3.0 gpm.
8addl	Wm. Freitag	30	30	B	....	3.94	7-23-63	S	...	Qla	Cy	.....	.....	.....	MP 0.4 ft above ls.
8add2	..do...	83	63	B	1958	.....	....	D	S	Qd	J	3,030	6-64	.....	Yield 6 gpm.
9daa	Lewis Levos	378	3	J	6-63	Flow	6-63	D,S	S	..	..	4,360	6-64	.....	Yield 15 gpm.
10cdd	C. M. Dahl	424	4	Dr	1961	Flow	7-22-63	D,S	S	Kd	..	4,700	6-64	.....	L, E.
10dcc	Dennis Pagel	110	4	Dr	11-25-6011		11-25-60	D	S	Qd	Cy	.....	.....	.....	L, P.
10dcdl	Donald Slocum	67	3	Dr	1949	5	1949	D	S	Qd	J	2,140	6-64	.....	
10dcd2	Village of Chaffee	375	3	Dr	1900	Flow	7-22-63	U	...	..	..	.....	.....	.....	
10ddc	Chaffee Public School	115	4	Dr	1961	.....	....	P,S	S	Qd	Cy	2,500	11-11-64	.....	C, Yield 14 gpm, L.
11acd	Louis Hahn	420	3	Dr	1918	Flow	7-23-63	D,S	S	Kd	..	5,890	6-64	.....	Yield 1.0 gpm.
13aad	Keith Jensen	360	..	Dr	1959	Flow	7-22-63	D,S	...	..	..	5,050	6-64	.....	
13babl	James Jensen	68	4	Dr	1950	.....	....	D,S	...	Qd	Cy	3,510	6-64	.....	Supply rept'd I.
13bab2	..do...	415	2	Dr	7-63	Flow	....	S	...	Kd	..	.....	.....	.....	L.
14aaa	Melvin Pagel	483	1 1/2	Dr	1923	Flow	7-22-63	D,S	S	Kd	..	6,170	6-64	.....	Yield 0.3 gpm.
14bbb	Franklin Liebenow	...	2 1/4	Dr	1951	Flow	7-22-63	D,S	...	..	..	4,600	6-64	.....	Yield 2.0 gpm.
16bbb	Wm. Martin	440	2	Dr	1912	Flow	7-23-63	D,S	...	Kd	..	4,190	6-64	.....	Yield 3.0 gpm.
16ddd	Henrietta Oertlie	408	1 1/4	Dr	1924	Flow	7-19-63	D,S	...	..	..	4,360	6-64	.....	Yield 2.0 gpm.
17aaa	Adolph Kensak	420	3	Dr	....	Flow	7-23-63	D,S	...	Kd	..	5,380	6-64	.....	..Do...
18bcc	..do...	400	3	Dr	....	Flow	7-23-63	D,S	...	..	..	4,110	6-64	.....	Yield 1 gpm.
19aba	Leo Heger	...	..	Dr	....	Flow	7-19-63	D,S	...	..	..	4,100	6-64	.....	Supply rept'd I.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
138-53 Cont.															
20ddc	Lonley Vining	390	1 1/4	Dr	1908	Flow	....	D,S	...	..	..	4,540	6-64	1,005	
21abb	H. E. Combs	53.3	36	B	....	17.18	6-19-63	S	...	Qd	Cy	.....	.....	.....	MP 1.0 ft above ls.
22aaa	Walter Martin	490	3 1/2	Dr	1920	Flow	7-22-63	D,S	...	Kd	..	4,540	6-64	.....	
22bbb	E. P. Bracht	40	36	Du	....	11.00	7-19-63	U	...	Qla	..	.....	.....	.....	MP 1.5 ft above ls.
24ccd	Mike Havelange	68	16	B	1948	.....	....	D,S	G	Qd	Cy	1,960	6-64	944	
24dcd	Edwin Pietsch	...	2 1/4	Dr	1913	Flow	7-22-63	D,S	...	..	..	5,190	6-64	955	Yield 1.5 gpm.
25aac	A. O. Bartholomaus	85	4	Dr	1960	.....	....	D	S&G	Qd	Cy	1,350	6-64	950	
25adb	..do...	390	..	Dr	....	Flow	7-22-63	S	...	..	..	.....	.....	950	Yield <1 gpm.
25ccb	Fred Zaeske	400	..	Dr	1940	Flow	7-17-63	D,S	...	..	..	4,910	6-64	960	Yield 0.5 gpm.
26cdc	Margaret Watt	500	4	Dr	....	Flow	7-22-63	D,S	...	Kd	..	4,700	6-64	970	Yield 5 gpm.
26ddc	August Zaeske	375	3 1/2	Dr	1957	Flow	7-17-63	D,S	S	..	..	4,910	6-64	960	Yield 6.0 gpm.
27bbc	D. Watt	400	3	Dr	1944	Flow	7-19-63	D,S	...	..	..	4,910	6-64	979	
28ccd	Max Billing	600	2 1/2	Dr	....	Flow	7-19-63	D,S	...	Kd	..	4,310	6-64	1,005	
28dcc	Clarence Liebenow	...	2	Dr	....	Flow	7-19-63	D,S	...	..	..	4,000	6-64	999	Yield 3.0 gpm.
30ada	Clarence Ziek	...	2	Dr	....	Flow	7-19-63	S	...	..	..	.....	.....	1,025	
30cbb	..do...	481	2	Dr	1916	Flow	7-19-63	D,S	...	Kd	..	3,950	6-64	1,051	Yield 2.0 gpm.
31ccd	Arthur T. Zaeske	461	2 1/2	Dr	1930	Flow	7-19-63	D,S	...	Kd	..	3,750	6-64	1,048	Yield 9 gpm.
32daa1	Hamilton Wills	427	2 1/4	Dr	1923	Flow	7-19-63	S	...	Kd	..	4,270	6-64	1,016	Yield 0.75 gpm.
32daa2	..do...	140	4	Dr	1957	.....	....	D,S	S	Qd	Cy	1,930	6-64	1,018	
33ddd	Verne Sprunk	460	2 1/2	Dr	....	Flow	7-19-63	D,S	...	Kd	..	4,390	6-64	975	Yield 1.5 gpm.
34add	John Jackson	360	3	Dr	1913	Flow	7-17-63	D,S	S	..	..	4,500	6-64	965	Yield 2.0 gpm.
35abd1	O. R. Hagen	250	1	Dr	1913	Flow	7-17-63	S	...	..	..	710	6-64	960	
35abd2	..do...	19	30	Du	1948	.....	....	D	S	Qla	Cen.	700	6-64	965	
35abd3	..do...	19.3	36	Du	1910	11.69	6-17-63	S	S	Qla	Cen.	.....	.....	960	MP 1.3 ft above ls, Supply I.
36cbb	Emilie Zaeske	300	1	Dr	1925	Flow	7-12-63	D,S	...	..	..	4,910	6-64	960	
138-54															
1aaa	E. Schobinger	20	..	Du	1903	.....	....	D	S	Qla	Cy	1,910	6-64	.....	
1ddd	Russel Quisberg	22	32	B	1945	.....	....	D,S	S	Qla	Cy	.....	.....	.....	
2cdd	Fred Zierke	13	24	Du	1957	.....	....	D	S	Qla	Cy	780	6-64	.....	
3acb	Gibbard & Schmidt	494	3	Dr	....	Flow	7-24-63	S	...	Kd	..	4,120	6-64	.....	Yield 10.0 gpm.
4bcc	Frank Schmidt	522	2	Dr	....	Flow	7-24-63	D,S	...	Kd	..	.....	.....	.....	Yield 3.0 gpm.
6cbb	Lawrence Dimmer	102	24	Dr	1962	.....	....	D,S	G	Qd	S	4,420	6-64	.....	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
138-54 Cont.															
6ddd	Test hole 3148	152	..	Dr	8-11-64	.....	....	T	...	..	..	.....	.....	1,126	L, E.
7baa	Dimmer Bros.	103	48	Du	1890	20	1961	D,S	G	Qd	S	1,930	6-64	.....	
8bbb	F. W. Oison	70	36	B	1920	Flow	7-24-63	D,S	G	Qd	Cy	1,650	6-25-64	.....	C.
9dad	Verrill Sprunk	...	2	Dr	1941	Flow	7-24-63	D,S	...	..	..	.....	....	.....	
10ddc	Fred Luther	450	1 1/4	Dr	1913	Flow	7-24-63	D,S	...	Kd	..	4,170	6-64	.....	Yield 2 gpm.
12abb	Sherwood Monroe	450	3	Dr	....	Flow	7-23-63	D,S	...	Kd	Cy	1,980	6-64	.....	
14baa	Edwin Grabow	640	3	Dr	1920	Flow	7-24-63	D,S	...	Kd	..	4,040	6-64	.....	
17ddc	Mary Schmidt	125	4	Dr	1953	.....	7-24-63	S	...	Qd	Cy	1,400	6-64	.....	
18bbc	Clemens Heinz	665	4	Dr	1960	Flow	7-25-63	D,S	...	Kd	..	.....	.....	.....	Yield 15 gpm.
18cbd	E. Ralph	80	36	Du	1921	.....	....	D,S	...	Qd	Cy	1,380	6-64	.....	MP 0.6 ft below ls.
20bbb	Dimmer Bros.	60.0	12	..	....	11.51	1-22-64	U	...	Qd	..	.....	.....	.....	
20ccb	Julius Christl	86	32	Dr	1936	.....	....	D,S	...	Qd	Cy	2,070	6-64	1,109	
22aaa	Albert Summerfield	610	3	Dr	1957	Flow	7-24-63	D,S	...	Kd	..	4,120	6-64	.....	Yield 1 gpm.
23bcb	Frank Erdman	645	2	Dr	....	Flow	7-24-63	D,S	...	Kd	..	4,580	6-64	.....	
25bab	Leo Blumer	13	36	Dr	1955	.....	....	D,S	S	Qla	..	2,170	6-64	1,071	
26bcc	Eugene Beck	500	3	Dr	1900	Flow	7-25-63	D,S	...	Kd	..	4,230	6-64	1,092	Yield 2 gpm.
28dad	Art Scharbow	535	3	Dr	....	Flow	7-25-63	D,S	...	Kd	..	.....	.....	1,115	
30daa	Howard Kemmer	630	4	Dr	1949	Flow	7-25-63	D,S	...	Kd	..	.....	.....	1,110	Yield 3.0 gpm.
31ccc	Art Scharbow	636	3/4	Dr	1954	Flow	7-29-63	D,S	...	Kd	..	4,150	6-64	1,111	Well reported to have flowed 47 gpm in 1962.
32aad	Lester Kemmer	72	30	Du	1924	.....	....	D,S	S	Qd	Cy	2,670	6-64	1,106	
32bbc	R. Kemmer	637	3	Dr	1963	Flow	7-25-63	D	S	Kd	..	.....	.....	1,103	
33bbc1	Edwin Luther	635	3	Dr	1945	Flow	1945	S	...	Kd	..	.....	.....	1,120	Yield 3 gpm.
33bbc2	..do...	70	24	B	1961	13.00	7-25-63	U	S	Qd	..	.....	.....	1,120	MP 0.2 ft above ls.
34baa	Joe Blasl	450	3	Dr	1916	Flow	7-25-63	D,S	...	Kd	..	.....	.....	1,095	Yield 1 gpm.
35dcc	G. Fleischfresser	630	4	Dr	1950	Flow	7-25-63	D,S	...	Kd	..	.....	.....	1,071	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
138-55															
1add	C. Boyle	670	3	Dr	1958	Flow	8-15-63	D,S	...	Kd	..	5,150	6-64	.....	Yield 20.0 gpm.
3ccc	John Hanson	56	28	B	....	.....	...	D	...	Qd	Cy	3,120	6-64	.....	
5cac	A. J. Kapaun	750	2	Dr	1943	Flow	8-15-63	S	...	Kd	..	2,670	6-64	.....	
6bbc	Rudolph Lindner	900	3	Dr	1953	Flow	8-15-63	D,S	...	Kd	..	5,770	6-24-64	.....	C, yield 5 gpm.
7add	D. Anderson	800	3	Dr	....	Flow	8-15-63	S	...	Kd	..	.....	.....	.....	Yield 1.0 gpm.
8ddd	Eldon Langer	870	2	Dr	1951	Flow	8-15-63	D,S	...	Kd	..	5,420	6-64	.....	Yield 5.0 gpm.
9dca	J. Kapaun	65	30	B	....	.....	.....	D	...	Qd	Cy	4,380	6-64	.....	
11cbb	Julius Langer	700	2	Dr	....	Flow	8-16-63	D,S	...	Kd	..	5,420	6-64	.....	Yield 6.0 gpm.
12bba	Lee Habiger	750	4	Dr	1928	Flow	8-15-63	D,S	...	Kd	..	5,720	6-64	.....	Yield 7.5 gpm.
13aad	Jules Wellentin	650	2	Dr	1959	Flow	8-15-63	D,S	...	Kd	..	5,330	6-64	.....	Yield 9.0 gpm.
13ddd	Max Scharbow	70	4	..	....	.....	....	D	S	Qd	Cy	1,910	6-64	.....	
14aaa	Rodney Hartl	565	2	Dr	1949	Flow	8-15-63	D,S	...	Kd	..	5,570	6-64	.....	Yield 4 gpm.
15ddd	Ernest Laufenberg	70	18	B	1960	.....	....	D,S	S	Qd	J	2,020	6-64	.....	
17bbb	Frank Langer	790	4	Dr	....	Flow	8-15-63	D,S	...	Kd	..	5,720	6-64	.....	Yield 1.5 gpm.
20add	Jewell Wadeson	738	2	Dr	....	Flow	8-16-63	S	...	Kd	..	4,290	6-64	.....	Yield 3.0 gpm.
21cca	F. L. Wadeson	735	2	Dr	1935	Flow	8-16-63	D,S	...	Kd	..	4,480	6-64	.....	Yield 2.0 gpm.
22ccc	Harvey Dehn	650	2	Dr	1946	Flow	8-16-63	D,S	...	Kd	..	5,330	6-64	1,141	Yield 2.0 gpm.
24ccc	Julius Hartl	65	30	B	1941	.....	....	D,S	S	Qd	Cy	2,730	11-10-64	1,127	C.
26bab	Ernest Kapaun	650	2	Dr	....	Flow	8-16-63	D	...	Kd	..	5,330	6-64	1,145	Yield 3.0 gpm.
26ddd	Frank Hartl	635	2 1/2	Dr	1943	Flow	8-16-63	D,S	...	Kd	..	4,730	6-64	1,135	Yield 8.5 gpm.
28ddd	Frank Fruhauf	16	24	B	....	.....	.....	D,S	S	Qaw	J	1,310	6-64	1,117	
29aab	Richard Wavra	700	2	Dr	1943	Flow	8-16-63	D,S	...	Kd	..	4,290	6-64	.....	Yield 3.8 gpm.
30aab	Darrell Wadeson	32	30	B	1960	18.52	1-21-64	D	S	Qd	J	.....	.....	.....	MP 1.0 ft above ls.
30bcc	Frank Schlagel	48	24	B	1949	.....	....	D,S	C	Qd	J	3,810	6-64	.....	
31bbb	Test hole 3141	62	..	Dr	8-6-64	.....	....	T	...	Qd	..	.....	.....	1,138	L.
32aaa	Virgil Warner	35	24	B	1959	.....	....	D	...	Qd	J	4,520	6-64	.....	
34aba	Teresa Stangler	65	36	B	....	25	8-16-63	D,S	...	Qd	Cy	2,820	6-64	1,152	
36cdd	Test hole 3147	287	..	Dr	8-10-64	.....	....	T	...	Qd	..	.....	.....	1,100	L, E.
139-48															
6ccd	The Pierce Co.	180	6	Dr	1923	48.88	1-11-63	Ind.	S&C	Qd	J	.....	.....	899	L, MP 5.0 ft below ls.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
139-48 Cont.															
6cdd	Gardner Hotel	382	18	Dr	....	.....	....	U	...	..	..	.....	.....	898	
7acc	City of Fargo	228.0	10	Dr	....	46.43	1-11-63	U	G	Qd	..	.....	.....	896	MP 2.80 ft above ls,L, well abandoned.
19acb	Fargo Country Club	150	4	Dr	1956	.....	....	Irr	...	Qd	Cy	.....	.....	904	
139-49															
1cbd	City of Fargo	191.7	24	Dr	1936	.....	....	U	S&G	Qd	..	.....	.....	901	See ND GW Study no. 11 for drillers log,L, well abandoned.
1cdb	Cass-Clay Creamery	192	16	Dr	1956	32	2-1-56	Ind	S&G	Qd	T	.....	.....	900	Yield 5.0 gpm, L.
2bdd	James Stack	200	4	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	898	Supply rept'd I.
2caa	Clifford Johnson	20	48	Du	1923	10	5-24-63	S	S	Qla	Cy	3,780	9-64	898	Rept'd unfit for drinking.
2ccc	Nodak Supply	357	4	Dr	1962	74.95	10-1-63	Ind	...	..	S	.....	.....	898	L, MP 1.5 ft above ls.
2ccd1	Import Motors	25	24	Du	1959	.....	....	Ind	...	Qla	S	1,380	5-13-65	900	C, rept'd unfit for drinking.
2ccd2	Self Service Furniture	27	24	Du	1957	.....	....	Ind	...	Qla	S	.....	.....	900	..Do...
3aaa	Steve Dubois	110	4	Dr	1955	.....	....	D	...	Qd	Cy	.....	.....	898	
3acd	Marvin Miller	132	4	Dr	8-59	80	8-59	D	S	Qd	Cy	.....	.....	899	Yield 2 gpm, L.
3ada1	John Preboske	134	4	Dr	1945	.....	....	D	S	Qd	Cy	.....	.....	898	
3ada2	Kenneth O'Leary	198	..	Dr	1949	.....	....	D	...	Qd	J	.....	.....	898	
3cdc	N. Dak. Wool Growers	290	3	Dr	1957	.....	....	Ind	S	Qd	J	.....	.....	900	
3cdd1	F. Persellin	250	5	Dr	1959	.....	....	Ind.	...	Qd	Cy	.....	.....	900	Reported unfit for drinking.
3cdd2	International Harvester Co.	358	6	Dr	1961	.....	....	Ind	S	..	Cy	.....	.....	900	L, E, supply rept'd I.
3dcc	Dayton Warehouse	171	4	Dr	8-62	.....	....	Ind	S	Qd	S	.....	.....	900	L, reported unfit for drinking.
3dcd	Pierce Trailer Court	247	8	Dr	1958	.....	....	P,S	S	Qd	T	.....	.....	900	
3ddd1	Trading Post	20	30	Du	1957	.....	....	Ind	S	Qla	J	.....	.....	900	..Do...
3ddd2	Fargo Grain King Inc.	25	36	Du	1958	.....	....	Ind	S	Qla	J	.....	.....	900	..Do...
4bbb	Arch Jacob	13	..	Du	....	.....	....	D	...	Qla	Cy	.....	.....	900	
4bbc	John A. Hanson	135	3	J	1959	70	1963	D	G	Qd	Cy	.....	.....	898	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
139-49 Cont.															
4bcb	Mike Flink	18	60	Du	1963	6	1963	D	G	Qla	Cy	.....	.....	898	Not used for drinking.
4bcc	Herman Suket	16	16	Du	....	3	1963	D	...	Qla	..	.....	.....	898	Reported unfit for drinking.
4dcc1	George Thoemke	135	3 1/2	Dr	1930	.....	....	D	...	Qd	Cy	.....	.....	900	
4dcc2	Martin Dahl	122	3 1/2	Dr	1958	.....	....	Ind	...	Qd	J	.....	.....	900	
4dcc3	Richard Fuller	132	4	Dr	1938	97	1962	D	S	Qd	Cy	.....	.....	900	
4dcc4	Texaco Inc.	157	6	Dr	11-59	100	8-11-59	Ind	S	Qd	S	.....	.....	900	L, P, Yield 15 gpm.
4dcc5	Earl Benton	115	4	Dr	1935	.....	....	U	...	Qd	Cy	.....	.....	900	Supply rept'd I.
4dcd1	R. Gaughan	154	4	Dr	1-14-59	48	1-14-59	P,S	S	Qd	S	.....	.....	899	L, Yield 100 gpm.
4dcd3	Oscar Eurey	120	..	..	....	.....	....	D	...	Qd	Cy	.....	.....	899	
4ddc1	Dakota Trailers Inc.	...	4	Dr	1952	.....	....	P,S	...	..	J	.....	.....	900	
4ddc2	..do...	159	6	Dr	1958	.....	....	P,S	...	Qd	S	.....	.....	900	Yield 75 gpm.
4ddc3	Home Sweet Home Motel	170	4	Dr	1958	.....	.....	P,S	...	Qd	Cy	.....	.....	900	
4ddd1	M. A. Berend	150	3 1/2	Dr	1947	.....	....	Ind	...	Qd	Cy	.....	.....	899	
4ddd2	Bert Hemm	110	4	Dr	1942	.....	....	D	...	Qd	Cy	.....	.....	899	
5add	Wally Kensinger	122	4	Dr	1961	100.48	10-22-63	D	S	Qd	S	.....	.....	896	L, MP 0.9 ft above ls.
5baa	Goldena Mills	170	4	Dr	1962	96	1962	Ind	S	Qd	S	.....	.....	897	Yield 75 gpm, ..
5ddd	WDAY Inc.	94	4	Dr	....	.....	....	Ind	...	Qd	Cy	.....	.....	900	
6abal	Balthauser & Meyer	186	8	Dr	1957	.....	....	S	S&G	Qd	T	.....	.....	892	
6aba2	..do...	183	8	Dr	1948	.....	....	D,S	S&G	Qd	T	.....	.....	892	
6abd	Union Stockyards	240	24	Dr	....	.....	....	U	S&G	Qd	..	.....	.....	892	Log in ND GW Study No. 11.
6acc	..do...	208	16	Dr	10-31-57	78	10-31-57	S	S&G	Qd	T	1,760	6-14-65	892	L, C.
6acd	..do...	236	8	Dr	....	.....	....	S	S&G	Qd	Cen.	.....	.....	891	L, Log in ND GW Study No. 11.
6adb 2/	..do...	230	8	Dr	....	104.95	1-11-63	O	S&G	Qd	...	.....	.....	891	MP 0.4 ft above ls, L.
6bcc	Kenneth Pyle	283.5	6	Dr	....	90.30	7-17-63	U	S&G	Qd	...	.....	.....	896	MP 1.6 ft above ls, L.
6bda	Siouxland Dressed Beef Co.	210	16	Dr	1960	90	10-5-60	Ind	S&G	Qd	T	.....	.....	893	L.
6cdd	Goldberg Feed & Grain Co.	191.7	8	Dr	....	.....	....	D	S&G	Qd	S	2,280	3-13-64	900	C.

2/ Well 139-49-6adb formerly published as 139-49-6ad1 in WSP 845, p. 351 by L. K. Wenzel and W. W. Voedisch (1938).

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
139-49															
6dcd1	Cityof W. Fargo	215.5	12	Dr	10-19-63	102.60	10-21-63	P,S	S&G	Qd	T	2,420	11-9-63	892	L, MP 1.4 ft above ls, C.
6dcd2	Test hole 1	182	2 3/8	Dr	11-3-63	102.89	11-4-63	O	S	Qd	..	2,420	11-3-63	892	MP 1.04 ft above ls, L, C.
6ddc	Test hole 2	182	2 3/8	Dr	11-4-63	103.00	11-4-63	O	S	Qd	..	2,090	11-4-63	892	MP 1.14 ft above ls, L, C.
7aab	L. E. Roisen	107.0	3	Dr	1940	.....	....	U	S	Qd	..	.....	.....	900	
7aac	Steve Murray	197	3	Dr	1947	.....	....	D	S&G	Qd	Cy	.....	.....	900	
7abb1	John McDonald	197.0	3	Dr	1955	104.99	10-12-63	U	S	Qd	..	.....	.....	899	MP 1.9 ft above ls.
7abb2	City of S. W. Fargo	204	16	Dr	1960	105.13	11-6-63	P,S	S	Qd	T	1,590	6-18-65	899	L, C.
7ddc	T. Tollefson	193.0	4	Dr	1963	95.96	11-5-63	U	S	Qd	..	.....	.....	901	MP 1.8 ft above ls, L.
8bba1	City of S. W. Fargo	131.7	8	Dr	1942	100.53	8-22-62	O	S	Qd	..	.....	.....	898	P, MP 1.12 ft above ls, well abandoned.
8bba2	..do...	112	8	Dr	1946	.....	....	U	S	Qd	..	.....	.....	898	P, well abandoned.
8bda	..do...	155	16	Dr	1954	73	1954	P,S	S	Qd	T	1,250	6-18-65	896	L, C, Yield 600 gpm.
8ddc	Meyers Bros.	210	4	Dr	1961	.....	....	D,S	S	Qd	S	.....	.....	901	
9aab	Iseman Corp.	153	4	Dr	8-61	63.77	10-1-63	P,S	S	Qd	S	.....	.....	900	MP 1.1 ft above ls, L.
9aba	A. H. Barnes	210	4	Dr	1957	.....	....	Ind	S	Qd	J	.....	.....	900	
9aab1	..do...	145	6	Dr	1951	.....	....	Ind	S	Qd	J	.....	.....	900	
9abb2	Lloyd Hills	140	4	Dr	1957	.....	....	P,S	S	Qd	Cy	.....	.....	900	
9baa	..do...	160	3 1/2	Dr	1954	.....	....	P,S	S	Qd	Cy	.....	.....	900	
9bbb	W. Fargo Invest.Corp.	160	8	Dr	1942	.....	....	Ind	S	Qd	Cy	.....	.....	900	
9cbb	A. Hamilton Barnes	158	..	Dr	6-8-60	90	6-8-60	...	S	Qd	..	.....	.....	900	L, Well destroyed.
9ddd1	Carl Rabanus	168	4	Dr	1954	.....	....	D,S	...	Qd	J	.....	.....	901	
9ddd2	..do...	100	4	Dr	1941	.....	....	D,S	...	Qd	J	.....	.....	900	
9ddd3	Test hole 3113	180	1 1/4	Dr	7-6-64	43.16	8-1-64	O	S&G	Qd	..	838	7-9-64	905	L, C, MP 2.0 ft above ls, TH depth 257 ft.
10aab	Biltmore Motel	320	8	Dr	1959	.....	....	P,S	S	Qd	T	.....	.....	900	
10abb	Cummins Diesel	214	..	Dr	7-61	90	7-61	Ind	S	Qd	S	.....	.....	900	L, Yield 20 gpm.
10bab1	Branick-Swedberg	365	8	Dr	1957	.....	....	Ind	...	..	..	.....	.....	900	
10bab2	General Diesel Co.	239	4	Dr	1959	102	11-59	Ind	S	Qd	S	1,290	9-64	900	L.
10bab3	..do...	70.1	48	Dr	1957	7.50	11-1-63	U	...	Qd	..	.....	.....	900	MP at ls reported unfit for drinking .
10bab4	..do...	380	..	Dr	1959	.....	....	...	...	..	..	.....	.....	900	Well destroyed.
10bab5	Dakota Tractor & Equip. Co.	80	2	Dr	1954	.....	....	Ind	...	Qd	..	.....	.....	900	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
139-49 Cont.															
10bbd	R. Loberg	150	4	Dr	1955	.....	....	D,S	...	Qd	Cy	.....	.....	900	
10ccc	Adolp Henke	105	4	Dr	1949	.....	....	D,S	...	Qd	Cy	.....	.....	900	
11aaa	N. P. Railroad Co.	168	12	Dr	9-18-46	52	9-17-46	...	S&G	Qd	..	.....	.....	898	L, Well destroyed.
11baa	Valley Veterinary Clinic	15.5	18	Du	1938	5.90	10-1-63	U	...	Qla	..	312	10-5-64	900	MP 0.6 ft above ls - rept'd unfit for drinking, L.
11bba	Butler Machinery Co.	292	6	Dr	8-58	.....	....	Ind	...	Qd	T	.....	.....	900	
11cbb	Fredrickson's Inc.	403	8	Dr	4-11-63	74.96	5-15-63	Ind	S	Qd	S	1,120	3-13-64	902	MP at ls, L, C.
11cda	K. R. Johnson	30	24	Du	1957	.....	....	U	...	Qla	Cy	.....	.....	902	
11cdc1	Olvena Ostwald	197	4	Dr	1951	.....	....	U	...	Qd	Cy	.....	.....	901	
11cdc2	..do...	311	4	Dr	7-28-61	80	7-28-61	D,S	S	Qd	S	1,080	9-64	901	Yield 5 gpm, L.
11dcb	Jane Burke	30	24	Du	1957	12	10-4-62	U	...	Qla	...	.....	.....	901	
11dcd2	Anthony Darval	12	3	Dr	1962	.....	....	D	...	Qla	...	.....	.....	900	Rept'd unfit for drinking.
12aca	E. Spiker	130.0	4	Dr	....	39.90	10-22-63	U	...	Qd	...	.....	.....	901	MP at ls.
12ccd	A. M. Jacobson	200	4	Dr	1950	.....	....	D	...	Qd	Cy	.....	.....	900	
12cdc	Clarence Braunberger	200	..	Dr	....	.....	....	Ind	...	Qd	Cy	.....	.....	901	
13bbd	Harold A. Janson	150	..	Dr	1930	.....	....	D	...	Qd	..	.....	.....	901	Supply rept'd L.
13ccc	Test hole 2174	178	..	Dr	8-30-63	.....	....	[illegible]	...	..	..	.....	.....	902	L, E.
15cdc	Charles Asp	281	4	Dr	9-64	.....	....	Ind	...	Qd	S	.....	.....	905	L.
17cbd	Harvey Loberg	117	4	Dr	6-1-63	85	6-1-63	D	S&G	Qd	Cy	.....	.....	885	
18aab	R. W. Simpson	203	4	Dr	1951	.....	....	D,S	S	Qd	Cy	.....	.....	900	
18aad	Woodlee Water Co.	198	8	Dr	11-57	84	11-57	D,S	S	Qd	S	.....	.....	900	L.
18bbb	Test hole 2169	210	1 1/4	Dr	8-26-63	59.77	8-30-63	D	S	Qd	..	2,616	8-26-63	900	L, C, MP 2.02 ft above ls, E, TH Depth 231 ft.
18ccd	Test hole 2177	204	..	Dr	9-5-63	.....	....	T	...	..	..	.....	.....	895	L, E.
18daa	Kenneth Beaton	102	3	Dr	1945	.....	....	D	...	Qd	..	.....	.....	900	
19aaa	Test hole 2170	242	..	Dr	8-26-63	.....	....	T	...	..	..	.....	.....	900	L, E.
19dad	Herman Heiden	120	..	..	....	.....	....	D	...	Qd	Cy	.....	.....	900	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
139-49	Cont.														
21aaa	L. C. Barnes	145	..	Dr	1943	.....	....	D,S	...	Qd	Cy	.....	.....	906	
21bbb	Test hole 2171	294	..	Dr	8-27-63	.....	....	T	...	..	..	.....	.....	903	L, E.
22baa	George Anderson	200	6	Dr	....	49.50	10-3-63	D,S	...	Qd	T	.....	.....	905	MP 1.9 ft above ls.
22bbb	Test hole 2172	236	1 1/4	Dr	8-28-63	47.82	9-17-63	O	S&G	Qd	..	1,046	8-30-63	911	L, C, MP 2.0 ft above ls, E, TH depth 464 ft.
23baa	Arthur Montplaisir	170	3	Dr	.....	.....	....	D,S	...	Qd	Cy	.....	.....	905	
23bbb	Test hole 2173	440	..	Dr	8-29-63	.....	....	T	...	..	..	.....	.....	904	L, E.
24aaa	Oak Manor Motel	298	..	Dr	2-20-60	.....	....	...	S	Qd	..	.....	.....	904	L, Well destroyed.
24ada	Wm. Anderson	132	4	Dr	1960	.....	....	D	...	Qd	Cy	.....	.....	906	
24cbc	Ernest Rheault	106	4	..	....	.....	....	D,S	...	Qd	Cy	.....	.....	906	
24daa	Baker Nursery Gardens	90	4	Dr	1960	.....	....	Irr	...	Qd	Cy	4,370	5-13-65	906	C, Supply rept'd inadequate and unfit for drinking.
24ddd	Am. Tel. & Tel.	100	..	Dr	1957	.....	....	Ind	...	Qd	S	.....	.....	906	..Do...
25aaa	Test hole 2175	518.5	..	Dr	9-3-63	.....	....	T	...	..	..	.....	.....	903	L, E.
25bab	Mike Brunelle	152	..	Dr	1928	.....	....	D,S	...	Qd	Cy	.....	.....	904	
26dcc	Kenneth Hennen	236	4	Dr	1962	37.37	10-3-63	D,S	S	Qd	S	.....	.....	905	MP 1.2 ft above ls, L.
27ada	Adolph Asleson	120	3	..	....	.....	....	D	...	Qd	Cy	.....	.....	905	
28bab	Test hole 2176	309	..	Dr	9-4-63	.....	....	T	...	..	..	.....	.....	906	L, E.
28cbb	George Kounovsky	118	3	Dr	1939	30	5-63	D	...	Qd	Cy	.....	.....	910	
29bcd	Loberg Bros.	238	4	Dr	9-61	43.28	10-3-63	D,S	S	Qd	S	1,350	.....	902	L, C, MP 1.5 ft above ls.
29cba	John Runert	219	4	Dr	.....	40.22	4-16-64	D,S	S	Qd	S	.....	.....	902	L, MP 2.4 ft above ls.
30bad	Everett Olson	200	4	Dr	.....	.....	....	D,S	...	Qd	Cy	.....	.....	903	
31ddd	Horace Sauvageau	111	6	Dr	1948	.....	....	D,S	...	Qd	Cy	.....	.....	903	
32bba	Oscar Furnberg	180	3	Dr	1947	.....	....	D	S	Qd	J	.....	.....	903	
32cca	Earl Northrup	183.0	4	Dr	6-60	40.15	10-3-63	D,S	S	Qd	S	1,120	11-18-64	900	L, C, MP 1.5 ft above ls.
36aadl	W. A. Sweeney	386	4	Dr	1958	.....	.....	D	...	..	J	.....	.....	893	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(1)	(11)	(12)	(13)	(14)	(15)	(16)
139-49															
36aad2	W. A. Sweeney	86	4	Dr	1960	.....	....	D	S	Qd	S	.....	.....	893	Supply rept'd I.
36aad3	Dr. G. A. Dodd	216	4	Dr	12-61	37.13	5-14-63	U	S	Qd	...	.....	.....	893	MP 2.0 ft above ls, L.
36aad4	Loren Oliver	215	4	Dr	9-60	32	9-60	D	S	Qd	S	1,620	9-64	893	Yield 5 gpm, L.
36acd	Westly Chandler	355	4	Dr	1963	50	9-63	Ind	S	..	S	.....	.....	906	L.
36dac1	Ray Anderson	108	4	Dr	9-61	39.30	10-7-63	D	S	Qd	S	.....	.....	905	MP 1.2 ft above ls, L.
36dac2	Bruce Brownlee	184	4	Dr	....	.....	....	D	S	Qd	S	.....	.....	905	L, Yield 7 gpm.
36dac3	Vern Otterson	108.0	3	J	10-7-63	14.80	10-7-63	D	S	Qd	Cy	.....	.....	905	MP 1.5 ft above ls.
36dca	Norman Przybilla	282.0	4	Dr	7-6-61	43.06	10-4-63	D	S	Qd	S	.....	.....	900	L, MP 0.8 ft above ls.
139-50															
1dcd	Howard Emerson	212	4	Dr	10-60	52.16	5-22-63	U	S	Qd	..	.....	.....	899	L, MP 2.22 ft above ls.
2aaa	Ed Robinson	246	4	Dr	5-59	35	5-59	D	S	Qd	S	1,820	9-64	898	L, Yield 35 gpm.
2aab	Ervin Wiebusch	175	4	Dr	1960	.....	....	D	...	Qd	Cy	.....	.....	898	
2abb	Wayne Wateland	196	4	Dr	12-62	.....	....	D	...	Qd	Cy	.....	.....	901	
2dbc	Jack Hledechuk	250.0	4	Dr	....	45.94	10-2-63	D,S	...	Qd	S	1,860	5-13-65	900	C, MP 2.0 ft above ls, L.
4dcd	Charles Thompson	60	12	..	1875	.....	....	D,S	...	Qd	S	.....	.....	901	Supply rept'd I.
5cda	Wayne Cross	65	5	B	1931	.....	....	D,S	...	Qd	S	.....	.....	902	
6bbb1	Village of Mapleton	75	2	Dr	1946	.....	....	U	...	Qd	Cy	.....	.....	904	
6bbb2	..do...	165	6	Dr	12-60	34	12-16-60	P,S	S	Qd	T	4,060	10-5-64	904	L, C.
8dcc	Arnold Utke	52	18	B	1958	.....	....	D,S	S	Qla	Cy	.....	.....	900	
9abb	Cliff Moe	160	3	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	900	
10add	Fargo Catholic Diocese	116	4	Dr	8-64	32.17	8-64	...	...	Qd	S	1,360	7-15-64	900	L, C, Well destroyed
10daa1	..do...	100	2	Dr	8-64	31.90	8-64	...	S	Qd	..	.....	.....	900	Well destroyed, L.
10daa2	..do...	106	2	Dr	8-64	32.67	8-64	...	S	Qd	...	.....	.....	900	..Do...
10daa3	..do...	110	2	Dr	8-64	32.46	8-64	...	S	Qd	...	.....	.....	900	..Do...
10dac	..do...	99	4	Dr	8-64	32.88	8-64	...	S	Qd	...	.....	.....	900	..Do...
10dcd	Emil Coster	160	4	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	902	
11bba	Libbrecht Bros.	170	..	Dr	1936	.....	....	D,S	...	Qd	Cy	1,530	9-64	902	
12bbc	Test hole 2178	280	..	Dr	9-6-63	.....	....	T	...	Qd	..	.....	.....	898	L, E.
13ddc	George Coster	180	4	..	....	.....	....	D	...	Qd	Cy	.....	.....	901	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
139-50 Cont.															
14aab	Bernard Lisberg	72	6	..	....	.....	....	D,S	...	Qd	Cy	.....	.....	901	
14ccb	Frank Norman	105	4	Dr	1948	.....	....	D	...	Qd	Cy	.....	.....	905	Supply rept'd I.
15bbb1	M. Piersall	120	..	Dr	1949	.....	....	D	...	Qd	Cy	.....	.....	905	
15bbb2	..do...	108.7	..	..	....	5.49	6-3-63	U	...	Qd	..	.....	.....	905	MP 1.0 ft above ls.
15bbb3	..do...	117.7	3	Dr	1919	27.30	10-24-63	U	...	Qd	..	.....	.....	905	MP 0.7 ft above ls.
16baa	Leo Murphy	150	8	..	....	.....	....	D	...	Qd	Cy	.....	.....	905	
17abb1	Gerald Hagenson	244	4	Dr	10-58	12	10-58	D	S	Qd	S	.....	.....	901	L, Supply rept'd I.
17abb2	..do...	80	..	Dr	....	.....	....	U	S	Qla	S	.....	.....	901	E.
18bcc	Arlo Lindsay	68	4	B	1938	.....	.....	S	...	Qla	Cy	.....	.....	906	
22cbc	John Murphy	166	3	Dr	1951	.....	....	D	...	Qd	Cy	.....	.....	910	
22ddc	Fern Eggert	80	..	B	1937	.....	....	D,S	...	Qla	Cy	.....	.....	906	Supply rept'd I.
23aaa	Test hole 3103	150	1 1/4	Dr	6-3-64	26.09	6-5-64	O	S	Qd	..	1,400	7-9-64	900	L, C, MP 1.98 ft above ls, E, TH depth 219 ft.
23ccd	Leo Murphy	350	4	Dr	....	.....	....	D,S	...	..	Cy	2,110	9-64	901	
23ddd	USBR test hole	255	..	..	....	.....	....	T	...	..	..	.....	.....	907	L.
24ccd	USBR test hole	282	..	Dr	4-7-54	.....	....	T	...	..	..	.....	.....	904	L.
24cdd1	USBR test hole	150	6	Dr	8-55	32.40	5-20-63	Ind	S	Qd	T	.....	.....	903	MP 7.55 ft below ls.
24cdd2	..do...	150	6	Dr	8-55	32.89	5-20-63	Ind	S	Qd	T	.....	.....	903	MP 7.55 ft below ls.
24cdd3	..do... 3-B	220	..	Dr	4-15-54	23	4-15-54	T	...	..	..	.....	.....	903	L.
24ddd	Harold Gaard	173	4	Dr	1928	.....	....	D,S	...	Qd	Cy	.....	.....	901	
25ddc	E. W. Hartmann	86	3	..	1922	.....	....	D,S	...	Qla	Cy	.....	.....	903	
26aba	Paul Matthys	80	36	B	....	17.65	1-21-64	U	...	Qla	..	.....	.....	901	MP 1.0 ft above ls.
26bbb	Robert Dobrinz	120	4	Dr	....	20.02	10-2-63	U	...	Qd	..	.....	.....	901	MP 1.2 ft above ls.
27add	..do...	219	4	Dr	7-21-60	28.00	5-20-63	D,S	S	Qd	S	.....	.....	902	L, MP 0.5 ft above ls.
28aaa	Test hole 3135	227	..	Dr	7-29-64	.....	....	T	...	..	..	.....	.....	911	L, E.
28bdc	Leo Murphy	236	5	Dr	1950	.....	....	D	...	Qd	Cy	.....	.....	905	
31bbb	Lawrence Kraft	417	3	Dr	1958	18	1958	D,S	...	..	Cy	3,930	3-4-64	909	C.
32ccc	Test hole 3116	82	..	Dr	7-10-64	.....	....	T	...	..	..	.....	.....	914	L.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
33baa1	Leo Murphy	190	4	Dr	1943	.....	....	D	...	Qd	Cy	.....	.....	906	
33baa2	..do...	200	..	..	....	20	1962	S	...	Qd	Cy	.....	.....	909	
34aba	Wm. Rutten	95	4	..	....	.....	....	D,S	...	Qd	J	1,680	9-64	907	
35add	Lowman Trust	70	4	..	....	.....	....	D,S	...	Qla	Cy	.....	.....	907	
35ddd	Test hole 3107	320	..	Dr	6-11-64	.....	....	T	...	...	..	.....	.....	904	L, E.
139-51															
1aaa	Henry Schweitzer	107	4	Dr	9-19-59	29	9-9-59	D	S	Qd	S	3,450	9-64	905	L, Yield 90 gpm.
5abb	Leo Askew	40.0	48x48	Du	....	13.00	7-2-63	U	...	Qla	Cy	.....	.....	915	
7cbc	Gerald Maderow	300	..	Dr	....	6	7-3-63	D,S	...	...	Cy	4,100	9-64	915	
8baa	A. Rachenski	35.0	18	Du	.....	11.85	7-3-63	U	...	Qla	Cy	.....	.....	915	MP 1.0 ft above ls.
10cad	Hilbert Gohdes	400	6	Dr	1948	20	1962	D,S	...	...	Cy	4,120	9-64	906	
14add1	John Ellison	403	3	Dr	1954	16	1962	S	...	...	Cy	.....	.....	906	
14add2	..do...	125	3	Dr	1952	.....	....	D	...	Qd	Cy	.....	.....	906	Supply rept'd I.
14bbb1	Maurice Hartz	184	4	Dr	12-61	.....	....	D,S	...	Qd	S	2,880	9-4	905	L, Yield 20 gpm.
14bbb2	..do...	480	3	Dr	....	Flow	....	U	...	Kd	..	.....	.....	905	Flow shut off.
15bab	Royal Berstler	390	3	Dr	1930	3	7-63	D,S	...	..	Cy	.....	.....	905	
18cbb	Kenneth Christl	120	6	..	....	.....	....	S	...	Qd	Cy	.....	.....	919	
19add	Ernest Pietsch	85	6	Dr	....	.....	....	D,S	...	..	Cy	.....	.....	924	
19ccd1	E. Olson	400	6	Dr	1937	10	1962	D,S	...	..	Cy	.....	.....	925	
19ccd2	Test hole 3118	463	..	Dr	7-11-64	.....	....	T	...	..	..	.....	.....	928	L, E.
20baa	Frank Lynch	470	6	Dr	....	15	1962	D	...	Kd	..	.....	.....	924	
21ccc	Test hole 3117	152	..	Dr	7-11-64	.....	....	T	...	Qd	..	.....	.....	915	E.
23aaa	John Zurcher	52	4	Dr	1961	32	1962	D,S	S	Qla	Cy	.....	.....	905	L, Yield 6 gpm.
26aaa	James Simpson	160	3	Dr	12-59	20	12-59	D,S	S	Qd	Cy	.....	.....	906	Yield 8 gpm, L.
27ccd	C. E. Gust	186	6	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	912	
30daa	D. C. Schulze	405	3	Dr	1960	Flow	....	S	...	..	Cy	.....	.....	915	L.
31bba	Richard Baumgarten	300	3	Dr	1943	30	1962	D,S	...	..	J	.....	.....	916	
32caa	Durbin Elevator	159	4	Dr	10-63	.....	....	D	S	Qd	Cy	.....	.....	916	L.
32cab1	Durbin School	180	3	Dr	1950	.....	....	P,S	...	Qd	Cy	1,390	5-13-65	919	C.
32cab2	Wallace Jahnke	87	4	Dr	7-58	18	7-17-58	D	S	Qla	S	.....	.....	919	L.
32cab3	Great Northern R. R.	60	6	Dr	4-22	.....	....	...	...	Qla	..	.....	.....	919	Well destroyed, L.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
139-51 Cont.															
33caa	Evelyn Miller	186	3	Dr	....	.....	....	S	...	Qd	Cy	.....	.....	916	
33cba	..do...	86	18	B	....	.....	....	D	...	Qla	J	.....	.....	915	
34dda	D. Gust	385	4	Dr	1932	5	1962	D,S	...	..	Cy	.....	.....	910	
35aaa	Louise Miller	45	20	B	....	21.70	7-5-63	D,S	...	Qla	Cy	.....	.....	908	MP 1.0 ft above ls.
36cba	..do...	40	30	B	....	18.73	7-5-63	D,S	...	Qla	..	.....	.....	.....	MP 1.4 ft above ls.
139-52															
2aaa	E. Bautz	120	2	Dr	1935	.....	....	D,S	S&G	Qd	J	.....	.....	930	
2abb	Robert Askew	188	4	Dr	9-61	.....	....	Irr	S	Qd	S	.....	.....	936	C.
2dcc	Warner Richman	296	4	Dr	10-19-61	15.98	10-30-63	Ind	S	Qd	S	3,910	11-10-64	930	L, MP 2.25 ft above ls, C.
3dcc	NDSU Agronomy Farm	70	6	Dr	1955	14	1955	D	G	Qla	Cy	.....	.....	937	
3ddd	Casselton Elevator	97	8	Dr	1937	.....	....	Ind	G	Qd	Cy	2,540	9-64	936	Rept'd unfit for drinking.
4aaa	E. Mark	40	18	Dr	....	.....	....	S	...	Qla	Cy	.....	.....	940	
5abb	Henry Langer	380	2	Dr	1911	Flow	7-23-63	D,S	...	..	..	.....	.....	.....	Yield 0.3 gpm.
8dcc	Frank Fiebiger	400	4	Dr	1912	Flow	7-22-63	D,S	...	..	..	.....	.....	.....	Yield 1.0 gpm.
9daa	Bill Geerdes	400	..	Dr	1900	Flow	....	D,S	...	..	..	.....	.....	935	
10acd	Weber Bros.	410	3	Dr	1922	Flow	....	S	...	..	Cen	3,900	9-64	935	
11bcc	Oscar Spoerl	410	4	Dr	1953	Flow	7-19-63	D,S	G	..	..	.....	.....	935	
12cbc1	John Dalrymple	208	4	Dr	1963	19	1963	D,S	S	Qd	S	4,090	9-64	925	Yield 60 gpm, L.
12cbc2	..do...	400	4	Dr	1918	Flow	7-19-63	S	...	..	..	.....	.....	925	
13bcb	Sinner Bros.	400	3	Dr	1920	0.63	7-19-63	D	...	..	Cen	.....	.....	930	MP 2.0 ft above ls, rept'd unfit for drinking.
14ada	..do...	90	1 1/2	..	....	.....	....	D	...	Qd	Cy	.....	.....	930	
15abal	A. J. Lux	450	3	Dr	1947	Flow	....	D,S	...	Kd	Cy	.....	.....	935	
15aba2	..do...	80	18	B	1945	20	7-19-63	S	S&G	Qla	Cy	.....	.....	935	
17abb	Leo Heger	403	4	Dr	1951	Flow	1951	D,S	...	..	..	.....	.....	..	Yield 4 gpm.
22daa	Victor Roesler	535	2	Dr	1952	Flow	7-22-63	D,S	...	Kd	..	3,800	9-64	925	Yield 2.0 gpm.
23bbb	Clarence Hendrickson	420	3	Dr	....	Flow	....	D,S	S&G	..	..	.....	.....	930	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
139-52 Cont.															
25ddb	E. C. Marschke	400	3	Dr	1953	Flow	....	D,S	S	..	Cy	.....	.....	926	
26abb	Frank Nilles	378	2	Dr	1936	Flow	1936	...	S	..	J	.....	.....	927	Yield 3 gpm.
27aaa	Test hole 3119	467	..	Dr	7-14-64	.....	....	T	...	..	..	.....	.....	926	L.
27daa1	Clayton Runck Sr.	440	3	Dr	1950	Flow	7-22-63	D,S	S	..	..	.....	.....	925	
27daa2	..do...	75	4	Dr	1941	20	1961	D	G	Qla	Cy	.....	.....	925	
28bbc1	Fluegal Bros.	450	3	Dr	1916	Flow	7-22-63	D,S	...	Kd	..	.....	.....	.....	Yield 1 gpm.
28bbc2	..do...	63	4	Dr	1950	12	1950	D	S	Qla	Cy	.....	.....	.....	
29daa	Arthur Dittmer	57	3	Dr	1950	2.00	7-22-63	D	...	Qla	..	.....	.....	.....	
30bbb	..do...	290	3	Dr	1910	Flow	....	D,S	S	Qd	..	4,080	9-64	.....	
32cdd	B. Bautz	480	3	Dr	1918	Flow	7-22-63	D,S	S	Kd	..	4,210	9-64	.....	Yield 1.3 gpm.
33cdc1	Rienhold Rieck	25	18	B	1962	17	1962	D	S	Qla	..	2,130	9-64	.....	
33cdc2	..do...	22	48	Du	....	12.26	7-22-63	S	S	Qla	..	.....	.....	.....	MP 0.4 ft above ls rept'd unfit for drinking.
34bbb	A. Glasow	62	4	Dr	1935	8	1959	D,S	...	Qla	Cy	.....	.....	935	
36dcd	G. Buchholz	30	36	Du	1935	18	1963	D,S	S	Qla	Cy	.....	.....	927	
139-53															
1cdc	Linus Kensok	...	..	..	....	Flow	....	S	...	..	..	.....	.....	.....	
5adal	R. S. Locket	395	3	Dr	1955	Flow	....	S	...	..	..	.....	.....	.....	
5ada2	..do...	29	1 1/2	Dr	1940	.....	....	D	...	Qla	..	3,120	9-64	.....	
5ddd1	E. Frietag	497	3	Dr	1950	Flow	....	D,S	...	Kd	..	.....	.....	.....	
5ddd2	..do...	22	36	Du	1948	.....	....	D	S	Qla	..	.....	.....	.....	Supply rept'd I.
9bcb	Ruben Wittmar	110	4	Dr	1960	10	1960	D,S	G	Qd	J	1,140	9-64	.....	
10daa	Ward Sheldon	18	1 1/4	Dr	....	.....	....	D,S	G	Qla	J	.....	.....	.....	
11bcc	Albert Frey	23	1 1/4	Dr	1939	.....	....	D	G	Qla	J	1,300	11-10-64	.....	C.
14add	Norbert Kensok	400	3	Dr	1944	Flow	8-14-63	D,S	...	..	..	.....	.....	.....	Yield 3.0 gpm.
15aaa	Chris Madsen	420	1	Dr	1945	Flow	8-9-63	D,S	...	..	..	3,400	9-64	.....	Yield 2.0 gpm.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
139-53 Cont.															
16aaa	E. Frietag	...	36	B	1940	.....	....	D,S	G	..	Cy	.....	.....	.....	
17aad	W. O. Peterson	560	1 3/4	Dr	1959	Flow	8-13-63	S	...	Kd	..	3,980	9-64	.....	Yield 3 gpm.
18baa1	Frank Smylie	27.4	36	Du	1900	13.06	8-13-63	S	G	Qla	Cy	.....	.....	.....	MP 1.2 ft above ls, rept'd unfit for drinking.
18baa2	..do...	30	30	Du	1900	.....	....	S	G	Qla	Cy	.....	.....	.....	Rept'd unfit for drinking.
18baa3	..do...	90	4	Dr	1953	14	1953	D	...	Qd	J	.....	.....	.....	
19abb	Hugo Hoffman	480	3	Dr	1961	Flow	8-13-63	D,S	...	Kd	..	.....	.....	.....	Yield 3.0 gpm.
21ccd	Edwin Martin	614	1 3/4	Dr	1919	Flow	8-13-63	D,S	...	Kd	..	.....	.....	.....	
22dca	W. E. Marshall	400	1 1/2	Dr	1915	Flow	8-14-63	D,S	...	..	..	.....	.....	.....	Yield 2.5 gpm.
24ccb	Francis Weber	400	3	Dr	....	Flow	8-13-63	D,S	...	..	..	.....	.....	.....	
26aaa	..do...	600	1	Dr	1920	Flow	8-12-63	D,S	...	Kd	..	.....	.....	.....	
26bba	Eugene Dooley	360	3	Dr	1920	Flow	8-12-63	D,S	...	..	..	.....	.....	.....	Yield 1 gpm.
27dda	E. Ownes	350	3	Dr	1935	Flow	8-12-63	D,S	...	..	..	4,290	9-64	.....	Yield 1 gpm.
28dcc	Walter Opperman	315	1 1/2	Dr	1931	Flow	8-12-63	D,S	...	..	..	.....	.....	.....	
29aaa	John Duckstad	640	4	Dr	5-19-61	Flow	8-13-63	D,S	...	Kd	S	4,020	9-64	.....	Yield 1 gpm.
30baa	Arno Kresse	370	1 1/4	Dr	1933	Flow	8-13-63	D,S	...	..	..	.....	.....	.....	Yield 2 gpm.
31dda	Carl Schultz	530	3	Dr	1940	Flow	8-12-63	D,S	...	Kd	..	.....	.....	.....	..Do...
32cdc	Carlie Schultz	33	36	Du	1926	.....	....	D,S	G	Qla	Cy	.....	.....	.....	
34cbc	Lawrence Baumler	365	3	Dr	1937	Flow	8-12-63	D,S	...	..	..	.....	.....	.....	..Do...
35bbb1	Clarence Reed	402	2	Dr	1951	Flow	8-12-63	D,S	...	..	..	.....	.....	.....	..Do...
35bbb2	..do...	247	2	Dr	1937	Flow	8-12-63	S	...	..	..	4,220	9-64	.....	..Do...
36caa	Harold Schatzke	80	18	Dr	1940	9.10	8-12-63	S	...	Qls	Cy	.....	.....	.....	MP 1.5 ft. above ls.
139-54															
2ccc	Walter Fraase	60	18	B	1952	.....	....	D,S	...	Qla	J	3,520	9-64	.....	
2ccd	..do...	500	2	Dr	1929	Flow	8-8-63	D,S	...	Kd	..	3,800	9-64	.....	
3ddd	..do...	450	3	Dr	1950	Flow	8-8-63	S	...	Kd	..	.....	.....	.....	Yield 4 gpm.
6aaa	Robert von Bank	500	4	Dr	....	6.06	8-9-63	S	...	Kd	Cy	.....	.....	.....	MP 1.22 ft above ls, well used to flow.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
139-54 Cont.															
6dad	Clayton Nudell	800	3	Dr	1920	Flow	8-9-63	S	...	Kd	J	4,050	9-64	.....	Supply rept'd I.
7dda	Gerold Burns	760	3	Dr	....	Flow	....	D,S	...	..	..	.....	.....	.....	
8bbb1	Lorne Nudell	670	4	Dr	1961	Flow	8-6-63	S	...	Kd	..	.....	.....	.....	Yield 2 gpm.
8bbb2	..do...	50	..	Du	1915	.....	....	D	G	Qd	J	.....	.....	.....	Supply rept'd I.
9ccc	Dwight Biggers	718	4	Dr	1912	Flow	8-8-63	D,S	...	Kd	..	.....	.....	.....	
11ddd	Test hole 3151	212	1 1/4	Dr	8-12-64	Flow	8-12-64	D	S	Qd	..	.....	.....	1,074	L, C, E, TH depth 467 ft.
12aaa	Walter Fraase	120	2	Dr	1920	.....	....	S	S	Qd	Cy	.....	.....	.....	
12dcc	Arnold Hoffman	50	48	Du	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
14dad1	Edwin Keiffer	222	2	Dr	1945	Flow	8-6-63	D,S	G	..	..	.....	.....	.....	Yield 1.0 gpm.
14dad2	..do...	60	36	Du	1930	10.78	8-6-63	S	S	Qd	Cy	.....	.....	.....	MP 1.4 ft above ls.
16ddd	Henry Beilke	900	4	Dr	1910	Flow	8-6-63	D,S	...	Kd	..	3,990	9-64	.....	
18aaa	Test hole 3150	332	..	Dr	8-11-64	.....	....	T	...	Qd	..	.....	.....	1,156	L, E.
20ccc	James Pfeifer	700	3	Dr	1939	Flow	8-8-63	D,S	...	Kd	..	4,550	9-64	.....	
22ada	Dwight Biggers	...	3	Dr	1930	Flow	8-8-63	D,S	...	..	..	.....	.....	.....	
23aaa	Charles Fraase	500	4	Dr	1910	Flow	8-6-63	D,S	...	Kd	..	.....	.....	.....	
23baa	W. Beilke	...	2	Dr	....	Flow	8-6-63	D,S	...	..	..	.....	.....	.....	Yield 3.0 gpm.
24cdb	F. Buttke	95	24	Du	1932	.....	....	S	...	Qd	Cy	2,500	9-64	.....	Supply rept'd I.
25ddc	Kenneth Manthei	250	1 1/2	Dr	1953	Flow	8-6-63	S	...	..	..	.....	.....	.....	Yield 15.0 gpm.
26aab	Albert Buttke	600	8	Dr	1910	Flow	8-6-63	U	...	Kd	..	.....	.....	.....	Yield 1 gpm.
26dcd	Clarence Kresse	443	1	Dr	1900	Flow	8-8-63	D,S	...	..	..	.....	.....	.....	
27bbb	Ralph Smith	171	4	Dr	1-4-61	5.94	12-5-63	D,S	...	Qd	S	.....	.....	.....	L, Yield 70 gpm, MP 0.3 ft above ls.
28aaa	Emma Grommesh	485	4	Dr	1950	Flow	8-8-63	D,S	...	Kd	..	.....	.....	.....	Yield 2.5 gpm.
29bbb	Joe Langer	72	24	B	1950	.....	....	D	...	Qd	J	.....	.....	.....	
30dda	Marvin Ries	90	36	B	1941	12.91	12-5-63	D,S	G	Qd	J	1,610	11-10-64	.....	C, MP 0.5 ft above ls.
31dda	Clem Pollock	515	3	Dr	1909	Flow	8-8-63	D,S	...	Kd	..	.....	.....	.....	Yield 1 gpm.
33dad	Robert Prischman	490	3	Dr	1906	Flow	8-8-63	D,S	...	Kd	..	.....	.....	.....	Yield 3.0 gpm.
35abb	R. E. Gust	24	30	Dr	1940	.....	....	D	S	Qla	Cy	.....	.....	.....	Supply rept'd I.
35dad	..do...	400	..	Dr	1954	Flow	8-8-63	D,S	...	..	..	3,500.0	9-64	.....	Yield 3 gpm.
36dcd	A. F. Gust	40	36	B	1959	9.90	8-2-63	D	S	Qd	J	.....	.....	.....	MP 0.5 ft above ls.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
139-55															
1daa	Gordon W. Coon	604	3	Dr	1946	10	1963	D,S	...	Kd	Cy	4,110	9-64	.....	
2add	Herman Anderson	105	3	Dr	....	.....	....	D	S	Qd	Cy	.....	.....	.....	
2bba	Gordon W. Coon	700	3	Dr	....	Flow	8-13-63	S	...	Kd	..	4,090	9-64	.....	Yield 4.0 gpm.
3bbb	Fred Bayliss	60	24	B	.....	.....	....	D,S	G	Qd	Cy	.....	.....	.....	
4abb	Fred Buschold	80	28	B	1951	35	8-13-63	D,S	G	Qd	J	4,410	11-10-64	.....	
5baa	Leif Erickson	60	36	B	.....	....	....	D	S	Qd	Cy	1,860	9-64	.....	
6acc	Joe Aljoe Sr.	32	24	B	1961	4	8-13-63	D,S	S	Qd	Cy	.....	.....	.....	Supply rept'd I.
7baa	L. Pommerer	...	2	Dr	....	Flow	8-13-63	U	...	..	..	.....	.....	.....	Yield 2.0 gpm.
8daa	Harry Japel	600	4	Dr	5-24-62	Flow	5-24-62	D,S	...	Kd	..	.....	.....	1,188	Yield 6.5 gpm, L.
14bab	William Rakow	690	3	Dr	1956	Flow	8-14-63	D,S	...	Kd	..	.....	.....	.....	Yield 2.0 gpm.
15bbb	Arthur Beyer	100	18	B	....	.....	....	D,S	S	Qd	Cy	2,600	9-64	.....	
15ddb	Duane Miller	50	30	B	....	20	8-14-63	D,S	G	Qd	J	.....	.....	.....	
16ddd	Test hole 3149	69	..	Dr	8-11-64	.....	....	T	...	Qd	..	.....	.....	1,164	L, E.
17ada	Herbert Rutherford	129	3	Dr	1959	30	8-13-63	S	G	Qd	Cy	.....	.....	.....	
18abc	Leif Erickson	32	28	Dr	1939	16	8-14-63	D,S	G	Qd	J	.....	.....	.....	
20bbb	James Griffin	37	24	Dr	1960	18	8-13-63	D,S	...	Qd	J	.....	.....	.....	
23ada	L. A. Saunders	907	3	Dr	....	Flow	8-14-63	D,S	...	Kd	..	.....	9-64	.....	Yield 6.5 gpm.
24aaa	Robert Miller	80	30	B	.....	45	8-14-63	D,S	...	Qd	J	.....	.....	.....	
25ccd	Wesley Anderson	90	3	Dr	1963	27	8-14-63	D	...	Qd	J	.....	.....	.....	
26ddd	Frank Matzke	80	18	B	1953	30	8-14-63	D,S	S	Qd	J	.....	.....	.....	
28acc	Ella Maloney	560	2	Dr	1945	Flow	8-14-63	D,S	...	Kd	..	.....	.....	.....	Yield 10.0 gpm.
30bbb	Donald Kapaun	650	3	Dr	1953	Flow	8-13-63	S	...	Kd	..	.....	.....	.....	Yield 3.5 gpm.
31ccc	Lawrence Lindner	25	30	B	1943	12	8-13-63	D,S	S	Qd	Cy	1,530	9-64	.....	
31dcd	John Pommerer	...	2	Dr	....	Flow	8-13-63	U	...	..	..	.....	.....	.....	Yield 2.0 gpm.
32aaa	Alma Spraul	39.00	18	B	....	15.00	8-14-63	U	...	Qd	Cy	.....	.....	.....	MP 1.7 ft above ls.
32bbb	Alice Kapaun	820	2	Dr	....	Flow	8-13-63	S	...	Kd	..	3,780	9-64	.....	Yield 3.0 gpm.
34aaa	A. W. Paul	703	3	Dr	1942	.....	8-14-63	D,S	...	Kd	Cy	.....	.....	.....	Well would flow if permitted.
34ccc	Robert Card	72	4	Dr	5-28-62	17.66	12-5-63	D	S&G	Qow	S	.....	.....	.....	L, MP 1.64 ft above ls.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
140-48															
18bcb	A. G. Larson	128	8	Dr	1932	25	6-20-63	D,S	S	Qd	Cy	.....	.....	885	
19bdd	Paul Utke	138	3	Dr	1957	30	6-20-63	D,S	G	Qd	Cy	.....	.....	890	
19ddd1	Test hole 3094	135	..	Dr	5-15-64	.....	....	T	...	..	..	.....	.....	897	L, S.
19ddd2	Test hole 3094 A	132	..	Dr	5-16-64	.....	....	T	...	..	..	.....	.....	897	L, E.
20acb	Fargo Park District	144	4	Dr	12-26-6030		6-20-63	P,S	S	Qd	S	.....	.....	896	L, Yield 75 gpm.
29abb	F. H. Peterson	160	3	Dr	1958	.....	....	D,S	G	Qd	Cy	.....	.....	892	
29cdb	Test hole 2165	388.5	..	Dr	9-17-63	.....	....	T	...	..	..	.....	.....	890	L, E.
30bcc	Lawrence Yunker	190	3	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	896	
30ccc	Ken Hill	278	3	Dr	1955	.....	....	P,S	...	Qd	Cy	.....	.....	896	
140-49															
1dcd1	Lambert Vogel	256	..	Dr	1963	.....	....	T	...	Qd	..	.....	.....	890	L, well destroyed.
1dcd2	..do...	176	..	Dr	1963	.....	....	T	...	Qd	..	.....	.....	890	..Do...
1ddd	Westlund Bros.	300	3	Dr	1945	.....	....	D,S	...	..	Cy	1,330	7-64	891	
3add	E. T. Conmy	300	4	Dr	....	.....	....	D	...	..	Cy	.....	.....	891	
4caa	Alton Barker	126	3	Dr	1949	.....	....	D,S	S	Qd	Cy	.....	.....	886	
5cab	John Storely	128	2	Dr	1955	.....	....	D	...	Qd	J	1,120	7-64	897	
5dcd	Edgar Olsen	150	4	Dr	1955	.....	....	D	G	Qd	J	.....	.....	896	
6cdb	Edwin Borg	120	5	Dr	1950	.....	....	D,S	...	Qd	Cy	1,330	7-64	891	
7daa	Robert Olson	96	4	Dr	1961	75.60	10-18-63	D	S	Qd	S	.....	.....	895	L, MP 1.4 ft above ls.
7dab	Ralph Dallman	130	4	Dr	1961	68	10-11-61	D	S	Qd	J	.....	.....	905	L, Yield 50 gpm.
7dad1	Waa Bros.	140	4	Dr	....	60	6-19-63	D,S	S	Qd	Cy	1,360	7-64	893	
7dad2	Eugene Kapaun	141	3	Dr	1961	68	4-28-61	D	S	Qd	J	.....	.....	893	L, Yield 35 gpm.
7dca1	Everett Barker	154	4	Dr	1961	71	5-15-61	D	S	Qd	S	1,170	5-12-65	890	L, C, Yield 65 gpm.
7dca2	Glen Cole	154	4	Dr	1959	.....	....	D	S	Qd	Cy	.....	.....	890	
8aba	Edgar Olson	190	4	Dr	1963	.....	....	D,S	G	Qd	Cy	.....	.....	896	
8bbd	Maurice Mulvaney	129	4	Dr	1961	73.50	10-18-63	D	S	Qd	S	.....	.....	892	L, MP 2.0 ft above ls.
8bcc	Jacob Bros.	106	3	Dr	1961	62	5-20-61	D	S	Qd	Cy	.....	.....	887	L.
9cdc	Charles Shur	180	3	Dr	....	.....	....	D,S	S	Qd	Cy	1,050	7-64	890	
11aaa	Harold Gill	125	3	Dr	1949	30	6-20-63	D,S	...	Qd	Cy	1,230	7-64	891	
12acd	Ward Harris	148	6	Dr	1932	.....	....	D	...	Qd	Cy	1,410	7-64	891	Supply rept'd I.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
140-49 Cont.															
13aac	Quentin Sodata	90	3	Dr	....	.....	....	D	...	Qd	J	.....	.....	891	
14dcd	Test hole 3093	275	..	Dr	5-14-64	.....	....	T	...	...	..	.....	.....	890	L, E.
14dda	Richard Kilfoyl	150	4	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	891	
14ddc	Gary Griffith	265	4	Dr	1956	10	6-20-63	D,S	...	Qd	Cy	.....	.....	891	
15ddc1	Kenneth Holmquist	80	24	B	....	30	6-20-63	S	S	Qd	Cy	12,400	6-24-64	893	C.
15ddc2	..do...	71	24	B	.....	14.92	6-20-63	U	...	Qla	..	.....	.....	893	MP 0.3 ft above ls.
16daa	Curtis Johnke	146	2	Dr	1957	60	6-20-63	D	S	Qd	Cy	912	6-26-64	894	C.
17ddd	Herman Heiden	145	3	Dr	....	.....	....	D	...	Qd	J	1,050	7-64	890	
18ada	Wm. Keller	37	4	Dr	6-9-61	28	6-9-61	S	S	Qla	Cy	3,160	7-64	891	L, Yield 10 gpm.
18bbb	Test hole 3095	290	..	Dr	5-18-64	.....	....	T	...	..	..	.....	.....	895	L.
18cad	Bertha Landblom	160	4	Dr	1951	.....	....	D,S	S	Qd	Cy	.....	.....	895	
19baa	Helen Rust	133	3	Dr	4-11-63	60	4-11-63	D	S	Qd	Cy	.....	.....	890	L, Yield 15 gpm.
19caa	C. R. Landblom	150	4	Dr	1958	.....	....	D	...	Qd	Cy	1,400	7-64	891	
19ccc	Eugene Christl	177	4	Dr	1963	100	1963	D	...	Qd	S	.....	.....	890	L, Yield 50 gpm.
19ddd	Test hole 3091	100	1 1/4	Dr	5-11-64	90.08	5-25-64	O	S	Qd	..	.....	.....	897	L, MP 2.0 ft above ls, E, TH depth 230.
20ddd	A. J. Anderson	140	4	Dr	1958	.....	....	D,S	...	Qd	Cy	1,040	7-64	888	
21aaa	Test hole 3092	165	..	Dr	5-13-64	.....	....	T	...	Qd	..	.....	.....	893	L, E.
21dda	E. F. Hehr	130	3	Dr	1960	.....	....	D,S	...	Qd	Cy	.....	.....	888	
23cdc	Henry Dorval	200	3	Dr	1956	.....	....	D,S	...	Qd	Cy	300	7-64	894	
23dda	Norman Hanson	140	3	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	897	
24ddd	Mary Holland	80	30	B	....	40	6-20-63	S	...	Qd	Cy	2,090	3-12-65	895	C, Rept'd unfit for drinking.
26bab	W. E. Brentzel	13.0	48	Du	....	7.10	8-20-63	U	...	Qla	Cy	.....	.....	891	MP 0.3 ft above ls.
26ddc	Selma Merrin	150	4	Dr	1958	20	6-20-63	D	S	Qd	Cy	.....	.....	895	Supply rept'd I.
26ddd	Test hole 2164	226	..	Dr	8-8-63	.....	....	T	...	Qd	..	.....	.....	895	L, E.
28ccc	Kelly Sherlock	190	4	Dr	....	.....	....	D,S	G	Qd	Cy	.....	.....	895	
28dda	Clarence Hayek	127	4	Dr	1958	80	6-19-63	D,S	G	Qd	Cy	3,220	7-64	892	
28ddd	Test hole 2161	189	..	Dr	8-5-63	.....	....	T	S&G	Qd	..	.....	.....	894	E. L.
29ddd	Test hole 2160	210.7	1 1/4	Dr	7-30-63	91.10	8-19-63	O	S&G	Qd	..	.....	.....	894	MP 2.02 ft above ls, E, TH depth 212 ft.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
140-49 Cont.															
30aba	W. T. Selberg	130	4	Dr	....	40	6-19-63	D,S	...	Qd	Cy	1,060	7-64	891	
30dbb	E. Crugle	160	4	Dr	1956	.....	....	D,S	S	Qd	Cy	.....	.....	892	Supply rept'd I.
30dcc	Robert Dougherty	185	3	Dr	1962	.....	....	S	...	Qd	Cy	.....	.....	894	
30dcd	Earl Highness	165	3	Dr	1948	.....	....	D,S	S	Qd	Cy	.....	.....	891	
31aab	Ray Quam	180	3	Dr	1955	.....	....	D,S	G	Qd	Cy	1,540	7-64	891	
31aacl	H. Allen Drake	183	2 1/2	Dr	1960	.....	....	D	S	Qd	Cy	.....	.....	892	
31aac2	Russell Ferch	200	4	Dr	1962	.....	....	D	...	Qd	Cy	.....	.....	892	
31aac3	Frank Bayer	185	2	Dr	....	60	8-21-63	D,S	S	Qd	Cy	1,520	7-64	892	
31aadl	Howard Bessette	190	1 1/2	Dr	1961	.....	....	D	...	Qd	Cy	.....	.....	892	
31aad2	Louis Sternberg	190	4	Dr	1962	.....	....	D	S	Qd	Cy	.....	.....	892	
31acb	E. Ornberg	18	42	Du	....	12	8-21-63	D	...	Qla	Cy	1,830	5-12-65	890	C.
31acc	Kenneth Johnson	217	4	Dr	1951	80	8-21-63	D	S	Qd	Cy	.....	.....	890	
31bab	Test hole 2167	250.5	..	Dr	8-14-63	.....	....	T	...	Qd	..	.....	.....	895	E, L.
31cdc	Test hole 2168	200.0	1 1/4	Dr	8-20-63	101.46	8-28-63	O	...	Qd	..	2,025	8-23-63	894	L, C, MP 2.01 ft above ls, E, TH depth 241.5.
31dca	Paul Federa	147	4	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	891	
32adc	Ernest Quam	135	3	Dr	....	.....	....	D,S	...	Qd	Cy	1,610	7-64	895	
32bbb	Test hole 2166	237	1 1/4	Dr	8-12-63	97.41	8-19-63	O	S&G	Qd	..	.....	.....	894	L, MP 2.01 ft above ls, E.
32bbc	Walter Quam	170	4	Dr	....	.....	....	D,S	S&G	Qd	S	1,670	6-16-65	892	L, C, Yield 75 gpm.
32cdc	Goldena Mills	132.0	4	Dr	6-17-61	106.01	10-1-63	Ind	...	Qd	S	1,360	7-64	894	L, MP 1.2 ft above ls, yield 6 gpm.
34caa	E. B. Pederson	130	6	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	898	
34cadl	Arlow Dahl	17	10	B	....	7.60	8-19-63	S	...	Qla	..	4,770	7-64	898	MP 1.4 ft above ls.
34cad2	Henry Palm	125	3	Dr	....	40	8-19-63	D	...	Qd	Cy	950	7-64	898	Supply rept'd I.
34cca	Amos Whiteside	18	12	Du	.....	7.40	8-19-63	U	...	Qla	..	.....	.....	896	MP 2.6 ft above ls.
34ccd	Schultz and Lindsay Const. Co. Test hole 9	248	..	Dr	....	.....	....	T	...	..	..	.....	.....	.....	L.
34cdc	Arvel Gulsvig	112	4	Dr	1957	.....	....	D	G	Qd	Cy	.....	.....	898	
34cdd	Isabel Dewandler	17	3	Dr	....	.....	....	U	...	Qla	Cy	.....	.....	898	
35bbb	Test hole 2162	187.5	..	Dr	8-6-63	.....	....	T	...	..	..	.....	.....	897	L, E.
35ddd	Western Fruit Express	189	8	Dr	12-22-60	92	12-22-60	Ind	S	Qd	S	1,180	3-13-64	901	L, C, Yield 60 gpm.
36aaa	Test hole 2163	223.0	1 1/4	Dr	8-7-63	52.25	8-19-63	O	S&G	Qd	...	1,793	8-8-63	896	L, C, MP 2.0 ft above ls, E, TH depth 291 ft.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
140-50															
2adb	Laura Krough	140	3	Dr	1938	.....	....	D,S	...	Qd	Cy	1,980	6-64	889	Supply rept'd I.
3bcc	D. W. Backstrom	171	3	Dr	1945	.....	....	D,S	S	Qd	Cy	.....	.....	894	Yield 100 gpm.
3ddd	Dean Rust	146	4	Dr	10-28-61	27	10-28-61	D,S	S	Qd	S	2,390	6-64	893	
4bcc	Ken McIntyre	303	4	Dr	6-23-61	31.50	10-25-63	D,S	S	Qd	S	.....	.....	900	MP 1.0 ft above ls, L.
5cdd	George Rust	125	3	Dr	.....	....	....	D	...	Qd	J	2,560	6-64	899	
6abb	Mabel Larson	165	3	Dr	1959	30	6-21-63	D,S	...	Qd	Cy	1,390	6-64	904	
6ccb	Mandius Ueland	150	6	Dr	.....	15	6-21-63	D,S	...	Qd	Cy	2,840	6-64	904	
7aaa	Ralph Peterson	247	4	Dr	5-21-62	30	5-21-62	D,S	S	Qd	S	2,060	6-64	899	L, Yield 10 gpm.
8aaa	C. J. Bowman	100	3	Dr	1962	30	1962	D,S	S	Qd	S	1,760	6-64	897	Yield 35 gpm, L.
8baa	Great Northern Railroad	121	4	Dr	8-25-49	17	8-25-49	U	S	Qd	Cy	.....	.....	899	L.
9ccc	Charles Bowman	70	4	Dr	....	20	6-21-63	D,S	...	Qd	Cy	.....	.....	897	
10baa	Emma Hogland	240	3	Dr	1935	60	6-24-63	D,S	...	Qd	Cy	2,360	6-64	894	
12bbc	Louis Sundberg	167	4	Dr	1959	30	6-24-63	D	...	Qd	J	2,120	6-64	892	
13add	Archie Kyllo	115	4	Dr	1948	.....	....	D,S	S	Qd	Cy	1,430	6-64	894	
14bcc	Clarence Stromberg	115	3	Dr	....	.....	....	S	...	Qd	Cy	.....	.....	894	Reported unfit for drinking.
15cbb	Oscar Johnson	264	3	Dr	1957	.....	....	D,S	S	Qd	Cy	2,480	6-64	895	
18dbd	D. Warner	80	4	Dr	1961	.....	....	D,S	...	Qd	Cy	1,750	6-64	901	
19cbb	Nellie Dale	60	18	B	1957	20	6-21-63	S	...	Qla	Cy	3,820	6-64	911	..Do...
19dad	Test hole 3133	197	..	Dr	7-28-64	.....	....	T	...	..	..	.....	.....	913	L, E.
20add1	Mark Andrews	257.0	4	Dr	1960	22.30	6-24-63	D,S	...	Qd	S	.....	.....	903	MP 1.0 ft above ls.
20add2	..do...	101	4	Dr	1955	.....	....	D	S	Qd	Cy	1,650	6-64	903	
21bcc	..do...	178	4	Dr	1955	.....	....	D	S	Qd	S	3,150	6-64	906	Yield 35 gpm.
21cbb	..do...	174	4	Dr	1960	19	1960	D,S	S	Qd	S	3,430	6-64	896	L.
22bbd	Liebrecht Bros.	252	4	Dr	8-23-60	32	8-23-60	D,S	S	Qd	S	2,970	6-64	901	
24add	Emil Bjorkman	148	4	Dr	5-8-61	.....	....	D,S	S	Qd	S	1,490	6-64	891	L, E, Yield 8 gpm.
24bcc	Leo Murphy	280	4	Dr	1948	.....	....	D,S	...	Qd	Cy	.....	.....	896	
24ddd	Orville Erickson	191	4	Dr	1963	.....	....	D	S	Qd	J	.....	.....	895	L.
25aba	S. P. Swisher	134	4	Dr	1939	.....	....	D,S	S	Qd	Cy	1,490	6-64	895	
26cdc	Edward Johnson	159	4	Dr	10-10-60	37	10-10-60	D	S	Qd	J	.....	.....	896	Yield 100 gpm, L.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
140-50 Cont.															
28ddd	K. McKinnon	100	6	Dr	....	30	6-21-63	D,S	...	Qd	Cy	2,000	6-64	898	
32dcc	Harry Warner	198	4	Dr	....	30	6-21-63	D	..	Qd	Cy	2,480	6-64	902	
33ccb	L. M. Baugh	...	24	B	....	31.65	6-21-63	D	...	..	J	.....	.....	901	Rept'd unfit for drinking.
33ccc	Merton Sheldon	82	4	Dr	12-29-6332		12-29-63	D	S	Qd	Cy	.....	.....	901	L, Yield 60 gpm.
34ccc1	M. Sigbert Awes	198.0	4	Dr	....	25.00	10-25-63	U	...	Qd	..	.....	.....	901	MP 2.0 ft below ls.
34ccc2	Test hole 3134	242	..	Dr	7-28-64	.....	....	T	...	..	..	.....	.....	900	L, E.
35cdc	Albert Akason	96	4	Dr	1932	40	6-21-63	D,S	...	Qd	Cy	1,260	11-6-64	898	P.
35ddd	Oscar Bjorkman	70	3	Dr	1937	.....	....	D	S	Qla	Cy	1,100	11-5-64	898	P.
36cdd	E. Swanson	130	2	Dr	1925	.....	....	U	...	Qd	Cy	.....	.....	896	
140-51															
1aaa	Waxler Bros.	70	24	B	1955	20	7-3-63	D,S	...	Qla	J	2,520	6-64	906	
3bdb	Murray Baldwin	255	4	Dr	4-29-58	36	4-29-58	D,S	S	Qd	Cy	1,230	6-64	915	L, E.
6ccc	Albert Sinner	84	5	Dr	1962	23	1962	D	S	Qd	S	1,270	5-13-65	936	L, C, Yield 7 gpm.
6ddd1	Ernest Pyle	65	4	Dr	....	.....	....	U	...	Qla	Cy	.....	.....	929	
6ddd2	..do...	90	4	Dr	1964	.....	....	D	S	Qd	Cy	2,280	6-64	929	L.
12ddd	J. G. Milles	50	24	B	1920	.....	....	U	S	Qla	Cy	.....	.....	904	
13dda	Waxler Bros.	150	3	Dr	1957	.....	....	D,S	...	Qd	Cy	1,460	6-64	904	
14ddb	Merton Sheldon	325	4	Dr	11-1-60	21	11-1-60	D,S	S	Qd	S	.....	.....	909	L.
15ccc	Lloyd Roden	285	4	Dr	1-13-59	13	1-13-59	D,S	S	Qd	S	3,890	6-64	916	L, Yield 10 gpm.
17bbb	George Howe	235	4	Dr	1958	20	1958	D,S	S	Qd	Cy	1,160	6-64	929	L.
18ddd	..do...	307	4	Dr	4-30-58	3	4-30-58	D	S	Qd	S	3,620	6-64	926	Yield 7 gpm.
20ccb	Austin Estates	400	3	Dr	....	.....	....	S	...	..	Cy	1,170	6-64	922	Well rept'd to have flowed at one time.
21ccb	Sinner Bros.	80	..	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	917	
22cbb	John Coster	80	24	B	1947	.....	....	D	S	Qd	Cy	.....	.....	914	
23ccc	Howard Nelson	300	3	Dr	1928	5	1960	U	...	..	..	.....	.....	909	
24dcd1	R. M. Sullffson	75	3	Dr	1900	.....	....	D,S	...	Qd	Cy	.....	.....	911	
24dcd2	..do...	84	4	Dr	7-6-60	27.19	10-29-63	U	S	Qd	..	3,960	6-64	911	L, MP 1.5 ft above ls.
26ccd	Otis Nelson	80	3	Dr	1950	.....	....	D,S	S	Qd	Cy	.....	.....	914	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
140-51 Cont.															
28bcc	J. Kasowski	67	6	Dr	1958	15	7-2-63	D,S	G	Qd	S	2,060	6-64	914	L.
29cbb	Vernon Grommesh	46	6	Dr	....	.....	....	S	...	Qla	J	3,210	6-64	921	
31ccc	John Dalrymple	327	3	Dr	1936	.....	....	D,S	...	..	J	.....	.....	924	
33abb	J. Kasowski test hole	350	..	Dr	5-58	.....	....	T	...	..	..	.....	.....	914	L, E.
34add	Albert Kasowski	90	3	Dr	1900	20	7-2-63	D,S	...	Qd	Cy	3,810	6-64	914	
35bba	Melvin Scherweit	34	30	B	1940	.....	....	S	S	Qla	Cy	3,220	6-64	916	
36cdd	H. Donald Otos	135	3	Dr	1944	.....	....	D,S	...	Qd	Cy	4,150	6-64	901	
140-52															
1cbb	Oscar Johnson	250	2	Dr	1886	.....	....	D,S	...	Qd	Cy	2,150	6-64	942	
4aaa	J. Larson	75	24	B	1928	22	8-1-63	D,S	S	Qd	Cy	.....	.....	949	
5ccc	Earl Vining	400	3	Dr	1945	Flow	8-1-63	D,S	...	..	..	.....	.....	.....	Yield 5 gpm.
6cbc1	D. McIntyre	475	4	Dr	6-30-59	Flow	6-30-59	D,S	S	Kd	..	3,970	6-64	.....	L.
6cbc2	..do...	511	4	Dr	1963	Flow	....	D,S	S	Kd	..	.....	.....	.....	L.
7bbb	Earl Vining	500	2	Dr	....	Flow	8-1-63	D	...	Kd	..	4,110	6-64	.....	Yield 10.0 gpm.
7ddd	Marjorie Bell	400	2	Dr	1955	Flow	8-1-63	S	...	..	..	.....	.....	.....	Yield 0.8 gpm.
8ddd	Pollock Estates	450	3	Dr	1900	Flow	8-1-63	D,S	...	Kd	..	3,770	6-64	.....	Yield 2.0 gpm.
9dab	J. Tarkington	90	4	Dr	....	40	8-1-63	D,S	...	Qd	J	.....	.....	949	
10ddd	Fred Niemeyer	131	4	Dr	12-12-58	41	12-12-58	D,S	S	Qd	Cy	1,350	11-17-64	945	L, C, Yield 15 gpm.
12caa	Ralph Johnson	316	4	Dr	12-19-59	30	12-19-59	S	S	..	S	3,290	6-64	936	
13bbc	E. Nesemeir	320	4	Dr	....	.....	....	D,S	S	..	S	3,750	6-64	938	L.
15dcd	Dayton Byram	60	36	Du	....	.....	....	D,S	S	Qd	Cy	1,470	6-64	941	
16cdd	A. V. Stoll	70	24	B	....	.....	....	D,S	...	Qd	J	2,490	6-64	.....	Supply rept'd I.
17dcc	Cass County School Dist.	172	3	Dr	1940	Flow	4-3-64	U	...	Qd	Cy	3,900	6-64	.....	Yield < 1.gpm.
18dcc	Fred Kingsley	...	2	Dr	....	Flow	8-1-63	D,S	...	..	..	4,340	6-64	.....	
19baa	J. Tyrlick	465	4	Dr	1953	Flow	8-1-63	D,S	...	Kd	..	4,020	6-64	.....	
20caa	Earl Vining	398	2	Dr	....	Flow	8-1-63	D	...	..	..	.....	.....	.....	Yield 1.0 gpm.
21abb	D. McIntyre	318	3	Dr	1953	Flow	8-1-63	D	...	..	..	4,160	6-64	.....	Yield 1.3 gpm.
22add	John Sinner Sr.	196	3	Dr	1945	15	8-1-63	D,S	S	Qd	Cy	3,290	6-64	939	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
140-52															
22dda	Hulda Esser	350	..	Dr	....	.....	....	D,S	...	..	..	.....	.....	939	
23dcc	Robert Runck	384	2	Dr	1914	Flow	8-2-63	S	...	..	..	4,180	6-64	936	Yield 1 gpm.
24bcc	George Nesemeier	296	4	Dr	11-11-58	2	11-11-58	D,S	S	Qd	S	3,630	6-64	936	Yield 9 gpm.
25ddd	Sinner Bros.	259	4	Dr	11-4-59	6	11-4-59	D,S	S	Qd	S	2,930	6-64	926	Yield 15 gpm.
27dcc	Henry Woell	320	3	Dr	1914	Flow	8-2-63	D,S	...	..	..	4,460	6-64	940	Yield <1 gpm.
30ddb	Eugene Kieffer	393	3	Dr	1948	Flow	8-2-63	D,S	...	..	..	4,370	6-64	.....	Yield 2.0 gpm.
31bbc1	Pearl G. English	390	4	Dr	1953	Flow	8-2-63	D	S	..	..	4,550	6-64	.....	Yield 0.8 gpm.
31bbc2	..do...	84	24	B	....	.....	....	U	S	Qd	Cy	.....	.....	.....	
32bac	D. McIntyre	...	..	Dr	....	Flow	....	D	...	..	..	4,200	6-64	.....	Yield 1 gpm.
33aaa	..do...	220	..	Dr	1964	.....	....	U	S	Qd	..	.....	.....	.....	Supply rept'd I.
33aad	..do...	...	..	Dr	....	Flow	8-12-63	D,S	...	..	..	.....	.....	940	Yield 0.3 gpm.
35abc	Grant Matson	78	4	Dr	4-25-61	.....	....	D	S	Qla	S	.....	.....	935	L, Yield 25 gpm.
35adb	City of Casselton	315	16	Dr	1947	.....	....	U	...	..	T	.....	.....	931	P, **well abandoned.**
35bcb	Great Northern Railroad	350	10	Dr	1907	.....	....	...	S	..	..	.....	.....	935	L, Well destroyed.
140-53															
1ddd	Justus Peterson	...	4	Dr	....	Flow	7-31-63	D,S	...	..	..	.....	.....	.....	Yield 4.5 gpm.
2bcd	Earl Vining	450	3	Dr	....	Flow	7-31-63	D,S	...	Kd	..	4,260	6-64	.....	Yield 2.0 gpm.
3baa	Alan Marshall	22	30	B	1943	9	7-31-63	D	S	Qd	J	1,330	6-64	.....	
5aba	Curt Punton	35	24	B	1955	.....	....	D	...	Qd	Cy	745	11-10-64	.....	C.
7add	Bell Bros.	32	18	..	....	.....	....	D,S	S	Qd	Cy	1,630	6-64	.....	Well rept'd to go dry occasionally.
8aba	Jules Morris	32	30	B	1904	.....	....	D	S	Qd	J	1,050	6-64	.....	..Do...
9bca	Fletcher Roach	35	36	B	....	15	7-31-63	D	...	Qd	J	2,250	6-64	.....	
10bdd	Erickson Bros.	500	4	Dr	....	Flow	7-31-63	D,S	...	Kd	..	.....	.....	.....	Yield 5.5 gpm.
12cdc	L. Madsen	505	3	Dr	1938	Flow	8-1-63	D,S	...	Kd	..	4,340	6-64	.....	Yield 13.0 gpm.
13ddd	Joseph Tyrlick	463	4	Dr	1963	Flow	7-31-63	U	...	Kd	..	3,960	6-64	.....	
14ccc	Carl Lauritsen	400	2	Dr	1935	Flow	8-1-63	S	...	..	..	4,040	6-64	.....	
15cdc	Bertha McLean	395	2	Dr	....	Flow	8-1-63	D,S	...	..	..	4,290	6-64	.....	
17aad	Oliver Klauss	600	4	Dr	1915	Flow	7-31-63	D,S	...	..	..	2,420	6-64	.....	
19bab	Ronald McLean	30	24	B	1957	.....	....	D	S	Qd	J	.....	.....	.....	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
140-53 Cont.															
20ddd	L. D. Sharp	535	4	Dr	1940	Flow	7-31-63	D,S	...	Kd	..	4,430	6-64	.....	Yield 1.0 gpm.
21dcd	Albert Johnson	60	24	B	1953	.....	....	D	S	Qd	..	3,920	6-64	.....	
22cdb	Fred Swanson	24	20	B	1959	.....	....	D	S	Qd	J	1,730	6-64	.....	
23dcc	Ray Kieffer	50	24	P	....	6	7-31-63	D,S	S	Qd	J	2,020	6-64	.....	
24bbc	D. Kingsley	360	4	Dr	1918	Flow	7-31-63	D,S	...	..	..	4,290	6-64	.....	Yield 0.3 gpm.
25cca	J. Kensok	475	2	Dr	1963	Flow	7-29-63	D,S	...	Kd	S	4,120	6-64	.....	Yield 4.0 gpm.
25ccc	Test hole 3155	32	..	Dr	8-14-64	.....	....	T	...	..	..	.....	.....	967	L.
26bda	Truman Kingsley	397	4	Dr	1959	Flow	4-16-59	D,S	S	..	S	4,200	6-64	.....	Yield 5 gpm , L.
26cbd	Test hole 3154	107	..	Dr	8-14-64	.....	....	T	...	..	..	.....	.....	989	L, E.
26ccb	Northern Pacific Railroad	20	28	Du	....	.....	....	D	S	Qd	Cy	1,020	8-2-64	.....	C.
28bdc	H. H. Wheeler	25	48	Du	....	8	7-29-63	D,S	S	Qd	Cy	1,620	6-64	.....	
29bbb	Harry Smith	...	3	Dr	....	Flow	7-29-63	D,S	...	..	..	4,760	6-64	.....	Yield 1.3 gpm.
30ddc	Ella Garsteig	...	2	Dr	1910	Flow	7-29-63	D,S	...	..	..	4,860	6-64	.....	Yield 3.0 gpm.
31aaa	Test hole 3153	32	..	Dr	8-14-64	.....	....	T	...	..	..	.....	.....	1,106	L.
31baa	Margaret Carlisle	...	3	Dr	....	Flow	7-29-63	S	...	..	..	4,610	6-64	.....	Yield 20.0 gpm.
32cdd	R. C. Bartholomew	672	4	Dr	1957	Flow	7-29-63	D,S	...	Kd	..	4,670	6-64	.....	Yield 3.5 gpm.
33aaa	Clayton Jendra	498	4	Dr	1960	Flow	1960	D,S	...	Kd	..	4,370	6-64	.....	Yield 40 gpm.
34baa	Wm. Grieger	425	3	Dr	....	Flow	7-29-63	D,S	...	Kd	..	3,890	6-64	.....	Yield 2.0 gpm.
35bbb	W. S. Lowman Trust	...	3	Dr	1940	Flow	7-29-63	D,S	...	..	..	4,040	6-64	.....	
36dad	Morgan Ford	400	4	Dr	Flow	.....	7-29-63	D,S	...	..	..	4,280	6-64	.....	
140-54															
1daa	Earl Kasowski	750	4	Dr	1949	Flow	7-26-63	D,S	...	Kd	..	5,530	6-64	.....	Yield 4.5 gpm.
2bcc	Ewald Moderow	700	4	Dr	....	6	7-26-63	S	...	Kd	Cy	5,570	6-64	.....	
2daa1	Elsie Hans	52	24	B	1961	.....	....	S	...	Qd	Cy	3,190	11-10-64	.....	C.
2daa2	..do...	161	..	Dr	1963	20	1961	U	...	Qd	..	.....	.....	.....	L, Supply rept'd I.
2daa3	..do...	48	18	B	1957	.....	....	D	...	Qd	J	.....	.....	.....	
4ccc	Frank Indra	50	24	B	....	.....	....	D,S	...	Qd	Cy	3,950	6-64	.....	
4dad	Vern Smith	700	3	Dr	1949	15	7-25-63	D,S	...	Kd	Cy	.....	.....	.....	
7daa	Edward Eastley	30	36	B	....	.....	....	D	...	Qd	J	3,130	6-64	.....	
9dcb	Jack Peterson	700	4	Dr	....	8	7-25-63	D,S	...	Kd	J	5,470	6-64	.....	
10bbc	Floyd Larson	735	3	Dr	1941	10	7-25-63	D,S	...	Kd	Cy	4,930	6-64	.....	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
140-54 Cont.															
11cbc	Ray Kasowski	70	30	B	1934	45	7-25-63	D,S	...	Qd	Cy	1,250	6-64	.....	
12bcb	Harold Kasowski	666	4	Dr	1962	Flow	7-26-63	D,S	...	Kd	..	5,410	6-64	.....	Yield 10 gpm.
13add	Richard Schock	670	3	Dr	1939	Flow	7-26-63	D,S	...	Kd	..	4,340	6-64	.....	P, Yield 3 gpm.
15cbb	Clarence Beilke	700	3	Dr	....	Flow	7-26-63	S	...	Kd	J	2,550	6-64	.....	Yield 15 gpm.
18d	Village of Buffalo No. 7	53	..	Dr	9-64	.....	....	T	...	..	..	.....	.....	.....	L.
18dda	Francis Killoran	40	36	B	1920	10	7-25-63	D,S	S	Qd	Cy	1,940	6-64	.....	
19cdal	Village of Buffalo No. 9	311	..	Dr	9-64	.....	....	T	...	..	..	.....	.....	.....	L.
19cda2	Village of Buffalo No. 10	56	..	Dr	9-64	.....	....	T	...	..	..	.....	.....	.....	L.
19cdb	Village of Buffalo No. 11	254	..	Dr	9-64	.....	....	T	...	..	..	.....	.....	.....	L.
19cdd	Village of Buffalo	768	6	Dr	6-18-65	49	....	P,S	S	Kd	S	.....	.....	1,207	L.
19dcc	Frank Sproul	750	4	Dr	....	50	7-25-63	S	...	Kd	..	.....	.....	.....	
20aab	E. Buttke	26	36	B	.....	15	7-25-63	D	...	Qd	Cy	3,730	6-64	.....	
20ccc	Quincy Smith	30	18	B	1957	20	7-25-63	D	...	Qd	J	2,480	6-64	.....	Supply rept'd I.
22bbb	Orin Hogen	30	24	Du	....	4	7-26-63	D,S	S	Qd	Cy	2,830	6-64	.....	..Do...
23ccb	N. Holland	64	4	Dr	1960	15	7-26-63	D	S	Qd	Cy	.....	.....	.....	
24bbb	Zephon Smith	510	4	Dr	1944	Flow	7-26-63	D,S	...	Kd	..	4,380	6-64	.....	
25add	J. Tyrlick	55	24	B	1951	13	7-26-63	U	G	Qd	Cy	.....	.....	.....	Supply rept'd I.
26dad	Glenn Strain	425	3	Dr	1938	Flow	7-26-63	D,S	...	Kd	..	4,200	6-64	.....	
27bba	I. O. Nilles	750	3	Dr	1957	Flow	7-25-63	D,S	...	Kd	..	5,890	6-64	.....	
29caa	Pehrson Bros.	730	3	Dr	1955	4	7-25-63	U	...	Kd	..	4,790	6-64	.....	
30abc	Harry Marcks	29	36	B	....	.....	....	D,S	S	Qd	S	2,340	6-64	.....	
30bbb	Village of Buffalo No. 12	269	..	Dr	9-64	.....	....	T	...	..	..	.....	.....	.....	L.
30d	Village of Buffalo No. 8	47	..	Dr	9-64	.....	....	T	...	..	..	.....	.....	.....	L.
31aaa	Ervin Marcks	900	4	Dr	1927	24	7-25-63	D,S	...	Kd	J	.....	.....	.....	
34bbb	Curtiss Hogen	560	4	Dr	1959	.....	....	D,S	...	Kd	..	4,790	6-64	.....	
35aad	Test hole 3152	32	..	Dr	8-14-64	.....	....	T	...	..	..	.....	.....	1,186	L.
35ccb	Walter Fraase	460	3	Dr	1957	Flow	7-23-63	S	...	Kd	..	.....	.....	.....	
140-55															
3ddd	Duane Grieger	85	4	Dr	1953	10	7-18-63	D,S	S	Qd	Cy	1,340	6-64	.....	
4bdb	Wm. Stuber	60	..	Dr	1957	.....	....	D	S	Qd	J	.....	.....	.....	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
140-55 Cont.															
8add	Carl Smith	825	3	Dr	1937	Flow	7-18-63	D,S	...	Kd	..	5,280	6-64	.....	
8bca	Arnold Glemming	60	18	B	1938	55.00	7-19-63	D,S	S	Qd	Cy	.....	.....	.....	Supply rept'd I.
10ccc	Dagmar Gubrud	28	48	Du	1870	12	7-18-63	D,S	...	Qd	Cy	1,830	6-64	.....	
13dac	Mary Norgard	800	4	Dr	....	.....	....	D,S	...	Kd	Cy	5,590	6-64	.....	
14aac	Elmer Holland	750	3	Dr	....	.....	....	S	...	Kd	Cy	5,370	6-64	.....	
15dcc	Henry Richman	835	3	Dr	1946	Flow	7-23-63	D,S	...	Kd	..	6,060	6-64	.....	
15dcd	..do...	Spring	2	..	....	Flow	7-23-63	S	...	Qd	..	.....	.....	.....	
17cbb	Martin Richman	40	30	B	1948	22	7-18-63	D,S	S	Qd	Cy	3,320	6-64	.....	
18acb	Edwin Richman	700	3	Dr	1943	Flow	7-18-63	D,S	...	Kd	..	.....	.....	.....	Yield 7 gpm.
19acc	Charles Easton	40	8	B	1925	.....	....	D	S	Qd	Cy	3,760	6-64	.....	Water rept'd to be contaminated and is used only for watering lawn.
19bac1	Tower City	27	3	Dr	1960	11.93	12-5-63	O	S	Qow	..	.....	.....	.....	MP 2.84 ft above ls.
19bac2	..do...	28	10	Dr	7-18-60	13	7-18-60	P,S	S	Qow	T	785	6-16-64	.....	L, Yield 70 gpm, C.
19caa	..do...	31.5	12	B	....	19.93	12-5-63	U	...	Qd	Cy	.....	.....	.....	MP at ls.
20cab	Otto Wilner	620	2	Dr	1939	Flow	7-18-63	D,S	...	Kd	..	.....	.....	.....	
22add	T. Knight	62.0	15	B	....	7.00	7-19-63	U	...	Qd	Cy	.....	.....	.....	MP 0.5 ft above ls.
22cda	Village of Buffalo No. 3	47	..	Dr	9-64	.....	....	T	...	..	..	.....	.....	.....	L.
22dbb	Village of Buffalo No. 4	32	..	Dr	9-64	.....	....	T	...	..	..	.....	.....	.....	L.
22dbc1	Village of Buffalo No. 1	71	..	Dr	9-64	.....	....	T	...	..	..	.....	.....	.....	L.
22dbc2	Village of Buffalo No. 2	32	..	Dr	9-64	.....	....	T	...	..	..	.....	.....	.....	L.
22dca	Test hole 3121	17	..	Dr	7-16-64	.....	....	T	...	..	..	.....	.....	1,135	L.
22dcd	Village of Buffalo No. 5	32	..	Dr	9-64	.....	....	T	...	...	..	.....	.....	.....	L.
24dda	K. Alinder	640	3	Dr	1943	19	7-19-63	S	...	Kd	Cy	.....	.....	.....	
25aaa	Test hole 3120	220	1 1/4	Dr	7-15-64	30.20	7-15-64	O	S	Qd	..	1,290	7-17-64	1,195	MP 1.96 ft above ls, TH depth 392, L. C.
25bab	Victor Pfeifer	740	3	Dr	1945	.....	7-23-63	D,S	...	Kd	J	.....	.....	.....	
27bab	A. L. Holter	540	4	Dr	....	Flow	7-19-63	D,S	...	Kd	..	5,220	11-10-64	.....	C, Yield 1.0 gpm.
27caa	Village of Buffalo No. 6	32	..	Dr	9-64	.....	....	T	...	..	..	.....	.....	.....	L.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
140-55 Cont.															
28bbb	Raymond Langer	65	30	B	....	25	7-19-63	D,S	...	Qd	Cy	2,050	6-64	.....	
29dcb	Ray Hinrichs	45	18	Dr	....	18	7-19-63	D	S	Qd	J	.....	.....	.....	
30baa	O. J. Redmann	40	24	B	1956	25	7-19-63	D,S	...	Qd	J	.....	.....	.....	Well rept'd to pump dry occasionally.
31acc	Wayne Redmann	30	18	B	....	10	7-19-63	U	...	Qd	Cy	1,700	6-64	.....	Supply rept'd I and unfit for drinking.
33aaa	Wiley Estate	70	26	B	1935	20	7-19-63	D,S	S	Qd	J	1,390	6-64	.....	
34bbb	Myron Stenseth	70	28	B	1958	28.77	12-5-63	D,S	S	Qd	S	.....	.....	.....	MP at ls.
35ada	Wm. Fraase	710	2 1/2	Dr	1967	5	7-18-63	S	...	Kd	Cy	5,940	6-64	.....	
141-49															
3ccc	John Posch	220	3	Dr	1956	.....	....	D,S	S	Qd	J	1,590	6-64	884	
4cdc	Paul Lasburg	280	4	Dr	1955	.....	....	D,S	...	Qd	Cy	3,650	6-64	885	
6cdb	Great Northern Railroad	225	6	Dr	1951	.....	....	D	...	Qd	Cy	2,310	5-12-65	885	L, C.
9baa1	Test hole 3096	73	..	Dr	5-19-64	.....	....	T	...	..	..	.....	.....	886	L.
9baa2	Test hole 3096A	274	..	Dr	5-20-64	.....	....	T	...	..	..	.....	.....	886	L, E.
9ddd	Luella Keith	180	3	Dr	....	.....	....	U	...	Qd	Cy	.....	.....	886	
11cbc	Kenneth Soberg	120	2	Dr	1943	.....	....	D,S	S	Qd	Cy	1,030	6-64	884	
12aba	Ray Olsen	152	3	Dr	1958	.....	....	D,S	S	Qd	J	7,770	6-64	883	
12dcd	Lloyd Kragnes	122	18	Dr	1956	22	6-18-63	D,S	S	Qd	Cy	.....	.....	886	Supply rept'd I.
14adb	Arne Stangeland	120	2	Dr	1930	35	6-18-63	D,S	S	Qd	Cy	.....	.....	886	
15bdc	Karl Brunsdale	140	4	Dr	1955	.....	....	D,S	S	Qd	Cy	.....	.....	886	
16ddd	Oscar Simonson	125	3	Dr	1952	22	6-18-63	D,S	G	Qd	Cy	.....	.....	887	
17dab	Victor Simonson	196	3	Dr	1943	60	6-18-63	D,S	...	Qd	Cy	.....	.....	886	
20ddc	Inar Amundson	207	3	Dr	1930	40	6-18-63	D	G	Qd	Cy	.....	.....	888	
21dac	Wallace Tvedt	125	3	Dr	1961	.....	....	D,S	S	Qd	Cy	.....	.....	889	
24bcb	Evert Flesberg	212	3	Dr	1930	12	6-18-63	D	G	Qd	Cy	.....	.....	886	
25ecc	W. H. Wright	72.0	3	Dr	....	23.00	6-20-63	U	...	Qla	Cy	.....	.....	887	
26baa	Wm. Rabanus	220	3	Dr	1940	10	6-18-63	D	G	Qd	Cy	.....	.....	885	
26daa	Henry Matthys	130	3	Dr	1953	40	6-18-63	D	S	Qd	Cy	830	6-64	887	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
141-49 Cont.															
27aba	Elfreda Hatlen	125	2	Dr	1920	50	6-18-63	D	S	Qd	Cy	.....	.....	887	
28aca	Wm. Timke	193	3	Dr	1963	60	6-18-63	D	S	Qd	Cy	.....	.....	890	L, Yield 40 gpm.
28bdb	ASP Construction Co.	206	4	Dr	8-22-61	63	8-22-61	D	...	Qd	..	.....	.....	890	L, Yield 100 gpm.
30dda	C. Brandvick	170	2	Dr	1910	50	6-18-63	D	...	Qd	Cy	.....	.....	891	
33bba	G. Freedland	160	3	Dr	....	40	6-18-63	D	...	Qd	Cy	.....	.....	891	
33cab	David Sayre	185.0	4	Dr	5-19-61	67.37	10-18-63	D,S	S	Qd	S	1,330	5-12-65	891	L, C, MP 0.7 ft above ls, Yield 75 gpm.
33cac	Philip Martins	190	3	Dr	1940	.....	....	D,S	S	Qd	Cy	.....	.....	891	
33cda	George Lind	150	3	Dr	....	20	6-18-63	D	...	Qd	Cy	.....	.....	891	
33daa	Robert Miller	116	4	Dr	1961	61.91	5-5-64	D	S	Qd	S	.....	.....	893	L, MP 0.95 ft above ls.
34bcb	Fred Cory	128	3	Dr	1931	50	6-18-63	D	S	Qd	Cy	940	6-64	892	
34ccc	John Weeks	155	4	Dr	9-19-61	58	9-19-61	D	S	Qd	Cy	.....	.....	891	L, Yield 8 gpm.
35aaa	Henry Matthys	136	3	Dr	....	.....	.....	D	S	Qd	Cy	.....	.....	887	
36dcd	John S. Westlund	80.0	18	B	....	9.35	6-20-63	U	...	Qd	Cy	.....	.....	891	MP 0.7 ft above ls.
141-50															
1abc	Harold Sorvaag	146	3	Dr	1952	30	6-26-63	D	...	Qd	J	.....	.....	887	
2add	Veitch Estate	159	3	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	890	P.
4bbb	Sam Pachalke	212	3	Dr	1951	.....	....	D	S	Qd	Cy	.....	.....	903	
4ddc	Bonnie Hagemeister	156	3	Dr	1957	.....	....	D,S	S	Qd	J	390	6-64	900	
5ddc	Sigurd Sorvaag	226	3	Dr	1942	.....	....	D,S	S	Qd	Cy	.....	.....	905	
6bcc	Harold Veitch	420	4	Dr	1952	14	1952	D,S	...	Kd	Cy	910	6-64	913	
6ddd	Test hole 3098	130	1 1/4	Dr	5-23-64	29.41	5-27-64	O	S	Qd	..	1,700	5-26-64	908	L, C, TH depth 355, MP 1.29 ft above ls, E.
7baa	Chester Bergman	360	2 1/2	Dr	1950	14	6-26-63	D,S	S	..	J	1,890	6-64	911	
9aaa1	Test hole 3097	80	..	Dr	5-22-64	.....	....	T	...	..	..	.....	.....	898	L.
9aaa2	Test hole 3097A	280	1 1/4	Dr	5-22-64	24.15	5-25-64	O	S	Qd	..	4,560	5-23-64	898	MP 2.0 ft above ls, E, TH depth 312.5, L, C.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
141-50 Cont.															
11cdc	Robert Erickson	195	4	Dr	2-22-61	21.90	10-28-63	D	S	Qd	S	4,580	5-12-65	893	MP 1.2 ft above ls,L,C.
13bcb	Otis Mays	200	3	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	890	
17cbc	Harry Bergman	77	3	Dr	....	18	....	D,S	S	Qla	Cy	980	6-64	906	
18bcc	Victor Mattson	193	3	Dr	1934	.....	....	D,S	S	Qd	Cy	.....	.....	911	
20bcb	Carl Aabye	210	3	Dr	....	8	6-26-63	D,S	...	Qd	Cy	.....	.....	906	
20dcd	Ludvig Ganges	130	3	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	902	
22baa	Gordon Erickson	206	4	Dr	6-1-62	26.52	11-2-64	D	S	Qd	S	.....	.....	896	L, MP 1.3 ft above ls.
22ddd	Gordon Langseth	150	3	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	895	
23bbb	Margaret Schlosser	250	3	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	895	
29ddd	Alvin Anderson	121	4	Dr	1948	.....	....	D,S	S	Qd	J	4,280	6-24	904	
30bab	R. F. Kelly	146	3	Dr	1952	.....	....	D,S	S	Qd	Cy	.....	.....	907	
31ccc	G. Schutt	270	3	Dr	1955	.....	....	D	S	Qd	Cy	.....	.....	909	
32bcc	Henry Eggert	252	3	Dr	1952	.....	....	D	S	Qd	J	.....	.....	906	
33abb	Duane Rust	120	2	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	902	
34bcc	R. P. Chamberlin	96	4	Dr	1953	8	6-25-63	D	S	Qd	Cy	2,960	6-24	898	
35dcc	E. Rust	310	4	Dr	1953	.....	....	D	S	..	Cy	.....	.....	892	
141-51															
1bbb	Alick Lundwall	131	4	Dr	9-24-63	33	9-24-63	D,S	S	Qd	S	.....	.....	923	L.
1dcd	Schwarz Bros.	187	4	Dr	1962	27.80	10-29-63	D,S	S	Qd	S	1,230	7-64	916	L, MP 0.5 ft above ls.
2abb	Albin Olson	65	3	Dr	1948	20	8-8-63	D,S	S	Qla	J	.....	.....	929	
2ccc	Walter Olson	157	4	Dr	1960	14	8-8-63	D,S	S	Qd	Cy	1,360	7-64	929	
4bcb	Charles Turner	120	4	Dr	....	3	8-8-63	D,S	S	Qd	J	.....	.....		
5ccc	Lester Zimmerman	119	3	Dr	1945	.....	....	D,S	S	Qd	Cy	.....	.....		
7abd	Lloyd Zimmerman	120	3	Dr	1948	.....	....	D,S	S	Qd	J	.....	.....		
8dad	Johann Weerts	300	4	Dr	....	Flow	8-8-63	D,S	...	..	..	.....	.....	.....	Yield 0.8 gpm.
9aba	Allan Knight	192	4	Dr	1958	44	6-5-58	D,S	S	Qd	S	.....	.....	.....	L, Yield 10 gpm.
9ddc	Raymond Cramer	72	24	B	1959	.....	....	U	S	Qd	Cy	.....	.....	.....	Rept'd unfit for drinking.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
141-51 Cont.															
11aab	Gene Pearson	125	4	Dr	1951	.....	....	D,S	S	Qd	Cy	.....	.....	924	Supply rept'd I.
11dcc	George Blixt	59	24	B	1951	25	8-12-63	S	S	Qla	Cy	770	7-64	924	
12dcc	Philip Bergman	300	3	Dr	1960	.....	....	D,S	S	...	Cy	.....	.....	914	
14cdd	Dallas Lehman	165	3	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	923	
15cdd	Allen Knight	85	4	Dr	1924	15	8-12-63	D,S	...	Qd	Cy	.....	.....	.....	
16bcc	Frank Cramer	151	4	Dr	8-22-60	52	8-22-60	D,S	S	Qd	Cy	.....	.....	.....	L, Yield 10 gpm.
17cdd	George Smith	180	3	Dr	....	6	8-8-63	D,S	S	Qd	S	.....	.....	.....	
19cdd	Mabel Lorshbough	319	4	Dr	1962	Flow	....	D,S	...	Qd	S	3,880	6-25-64	947	L, C.
20ccc	Walter Colberg	97.7	4	Dr	1910	1.7	10-29-63	U	S	Qd	..	.....	.....	945	MP at ls.
21cdd	Fred Cederberg	...	24	B	....	.....	....	D,S	S	..	Cy	.....	.....	935	
22dcc	Allan Knight	180	4	Dr	1952	10	8-9-63	D	S	Qd	Cy	.....	.....	924	
25aad	Lawrence Kuklok	400	4	Dr	1958	.....	....	D,S	...	Qd	Cy	690	7-64	910	
25ddd	Test hole 3132	257	..	Dr	7-27-64	.....	....	S	...	..	..	.....	.....	909	L, E.
26cbb	Ellis McConnel	350	3	Dr	....	20	8-9-63	D,S	S	..	Cy	.....	.....	922	
28bcc	Wendell Jonas	100	4	Dr	....	15	8-9-63	D,S	...	Qd	Cy	.....	.....	.....	
29ddc	..do...	100	3	Dr	....	20	8-9-63	D,S	S	Qd	Cy	.....	.....	.....	
30ccc	E. Fowler	55	48	Du	....	15	8-9-63	D,S	...	Qd	J	3,140	7-64	.....	
31ccb	Gladys McKinnon	365	4	Dr	10-27-61	.....	....	D	S	..	J	1,650	7-64	.....	Well rept'd to have flowed when drilled,L.
32dad	Mabel Andrist	170	3	Dr	....	Flow	....	D,S	S	Qd	..	.....	.....	.....	Rept'd unfit for drinking.
33cbc	..do...	170	3	Dr	1900	Flow	....	D,S	S	Qd	..	.....	.....	.....	..Do...
34bbb	Armond Nilles	300	6	Dr	....	.....	....	D,S	S	..	Cy	.....	.....	.....	
35ddd	Gunnard Nelson	80	2	Dr	....	12	8-9-63	D,S	S	Qd	Cy	.....	.....	913	
141-52															
1dab	George Iwen	380	2	Dr	....	Flow	8-7-63	D,S	...	..	..	.....	.....	.....	Yield 0.3 gpm.
2dcd	Rosa Rode	140	4	Dr	....	.....	....	D	S	Qd	Cy	.....	.....	.....	
3ccd	Williams Bros.	160	3	Dr	1959	.....	....	D,S	...	Qd	Cy	2,950	9-64	.....	
4baa	E. Steffes	200	4	Dr	1950	5	....	D,S	S	Qd	Cy	1,280	9-64	.....	
4cdd	Hugo Priewe	340	3	Dr	1963	Flow	8-7-63	D,S	...	..	..	.....	.....	.....	Yield 0.5 gpm.
5cdc	Frank Branstad	330	3	Dr	1941	.....	....	D,S	...	..	Cy	.....	.....	.....	Rept'd to flow occasionally.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
141-52 Cont.															
6ccd	Gideus Hersch	450	2	Dr	....	Flow	8-7-63	D,S	S	Kd	..	.....	.....	.....	Yield 5 gpm.
7daa	Roger Foster	325	2	Dr	1959	Flow	8-7-63	D	...	..	..	.....	.....	.....	Yield 4.0 gpm.
8bab	Frank Branstad	333	3	Dr	1940	.....	....	D,S	...	..	Cy	.....	.....	.....	Rept'd to flow occasionally.
11bad	Floyd Longlet	280	3	Dr	....	.....	....	D,S	...	..	Cy	.....	.....	.....	
12ada	Orville Iwen	127	3	Dr	1943	.....	....	S	G	Qd	Cy	.....	.....	.....	
13bbb	Great Northern Railroad	200	12	Dr	6-5-26	Flow	4-3-64	U	S&G	..	..	.....	.....	.....	L, Yield 1 gpm.
13dcc	E. Nesemeier	167	4	Dr	....	Flow	8-6-63	D,S	...	Qd	..	.....	.....	.....	Yield 7 gpm.
14cdc	Frank King	280	3	Dr	....	Flow	8-6-63	D,S	...	..	..	.....	.....	.....	Yield 2.0 gpm.
15cdc	Elmer Nohr	117	3	Dr	8-12-60	.....	....	D,S	S	Qd	Cy	1,050	9-64	.....	Yield 10 gpm, L.
16cdd	Clemence Kuklak	135	3	Dr	....	60	8-7-63	D,S	S	Qd	Cy	.....	.....	.....	
17cca	Victor Holgerson	420	3	Dr	....	Flow	8-7-63	D	...	..	..	.....	.....	.....	Yield 1 gpm.
18bbb	B. R. Farr	400	3	Dr	....	Flow	8-7-63	S	...	..	..	4,100	9-64	.....	Yield 1.3 gpm.
20aaa	A. Roden	300	3	Dr	....	Flow	....	D,S	...	..	..	.....	.....	.....	
21cdd	Village of Amenia No. 1322-6	63	..	Dr	6-22-63	.....	....	T	...	..	..	.....	.....	.....	Drilled by State Water Commission, L.
23daa	Village of Amenia No. 1322-2	357	..	Dr	6-18-63	.....	....	T	...	..	..	.....	.....	.....	L.
24add	L. F. Chaffee	72	18	B	....	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
24dcc	Village of Amenia No. 1322-3	357	..	Dr	6-19-63	.....	....	T	...	..	..	.....	.....	.....	L, drilled by State Water Commission.
24ddd	WDAY, Inc.	216	4	Dr	...	Flow	....	Ind	...	Qd	Cy	2,370	6-13-63	.....	Well rept'd to have flowed 12 gpm when drilled.
25bbc	Village of Amenia	280	1 1/4	Dr	....	Flow	....	P,S	...	Qd	S	3,168	6-13-63	.....	C.
26aad	..do...	260	1 1/4	Dr	....	Flow	....	P,S	...	Qd	S	3,574	6-13-63	.....	C.
26adc	Monroe Farms	305	3	Dr	1920	Flow	....	D,S	...	Qd	..	.....	.....	.....	
26bbb	Village of Amenia No.1322-1	614	..	Dr	6-13-63	.....	....	T	...	..	..	.....	.....	.....	L, drilled by State Water Commission.
27bbb	Village of Amenia No. 1322-5	357	..	Dr	6-20-63	.....	....	T	...	..	..	.....	.....	.....	L.
27ddd	Wesley Platt	90	36	B	....	60	8-6-63	U	S	Qd	Cy	.....	.....	.....	Rept'd unfit for drinking.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
141-52 Cont.															
29aac	Berna Olson	456	4	Dr	4-18-62	Flow	....	D,S	...	Kd	..	.....	.....	.....	Pumped 65 gpm, L.
29dcc	Lester Chaffee	330	2	Dr	1955	Flow	8-6-63	D,S	...	..	..	.....	.....	.....	
30ccb	Tom Hanson	20 -	24	B	1948	4	8-6-63	D,S	S	Qla	J	540	9-64		
31daa	Harley Sell	550	2	Dr	1923	Flow	8-6-63	D,S	...	Kd	..	4,000	9-64	.....	
32bab	Paul Henson	525	2	Dr	1959	Flow	8-6-63	D,S	...	Kd	..	.....	.....	.....	
33addl	Leo Baumler	420	3	Dr	1952	Flow	9-23-64	D	...	Kd	..	.....	.....	.....	Supply rept. I.
34ddd	A. Schneider	350	3	Dr	....	5	8-6-63	D,S	...	..	Cy	.....	.....	.....	
35aaa	Village of Amenia No.1322-4	357	..	Dr	6-19-63	.....	....	T	...	..	..	.....	.....	.....	L, drilled by State Water Commission.
36bab	Bill Sinz	360	3	Dr	1954	.....	....	D,S	...	..	J	.....	.....	.....	
141-53															
1bbb	L. Grieger	70	36	B	1920	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
1ddd	..do...	65	2	Dr	10-12-63	20	10-12-63	D	...	Qd	Cy	.....	.....	.....	L.
3dcd	G. Hersch	21.0	24	B	....	9.40	12-4-63	U	...	Qal	J	1,500	9-64	.....	MP 1.5 ft above ls .
4ddd	G. Mitchell	22	48	Du	1948	3	7-25-63	D,S	S	Qal	Cy	.....	.....	.....	
6dcd	Wm. Rose	141	4	Dr	1-20-64	36	1-20-64	D,S	S	Qd	S	.....	.....	.....	L, Yield 35 gpm.
6ddc	Norman Nelson	110.0	4	Dr	5-24-61	17.35	12-4-63	D	S	Qd	S	1,290	9-64	.....	L, Yield 30 gpm.
8dbb	G. Schmeck	76	3	Dr	1925	20	7-24-63	D,S	S	Qd	Cy	.....	.....	.....	
9ada	Thomas Palmer	30	36	B	1958	15	7-25-63	D,S	...	Qd	J	.....	.....	.....	
10add	Minnie Bissett	625	4	Dr	1961	Flow	1961	D,S	...	Kd	..	.....	.....	.....	Rept'd to have flowed 300 gpm when drilled.
12bca	Gerald Grieger	40	..	Dr	1961	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
13daa	Robert Smith	520	3	Dr	1949	Flow	7-24-63	D,S	...	Kd	..	.....	.....	.....	Yield 1.0 gpm.
14cba	Howard Pueppke	480	1 1/2	Dr	1912	Flow	7-24-63	D,S	...	Kd	..	.....	.....	.....	Yield 5.5 gpm.
15dad	Glen Pueppke	580	2	Dr	1948	Flow	7-24-63	D,S	...	Kd	..	.....	.....	.....	Yield 27.0 gpm.
17aab	H. Brainerd	60	3	Dr	1958	.....	....	U	...	Qd	Cy	.....	.....	.....	
18dcd	J. Beattie	80	2	Dr	1963	.....	....	S	S	Qd	Cy	.....	.....	.....	
19dda	L. W. Eckert	660	3	Dr	1958	.....	....	D,S	...	Kd	J	.....	.....	.....	Will flow if permitted.
20add	Leo Hagemeister	675	1 1/2	Dr	1961	.....	....	D,S	...	Kd	J	4,040	10-8-64	.....	C.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
141-53															
21dcd	Irvin Boyce	47	36	B	1943	15	7-24-63	D,S	...	Qd	Cy	.....	.....	.....	
22cdd	John Hocking	28	24	B	1959	3	7-24-63	D	S	Qd	Cy	.....	.....	.....	
23dda	Russel Idso	31	36	Du	....	.....	....	D	G	Qd	J	.....	.....	.....	
24aab	Robert Hill	50	36	B	1949	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
25cda	Elmer Krueger	496	3	Dr	1941	Flow	7-24-63	D,S	...	Kd	..	.....	.....	.....	
26add	Adeline Krueger	20	36	B	1928	.....	....	D,S	...	Qla	Cy	.....	.....	.....	
27bcb	Clarence Gulland	40	24	B	1958	30	7-24-63	D	...	Qd	J	.....	.....	.....	
29baa	Wallace McLeod	530	..	Dr	1923	Flow	7-19-63	S	...	Kd	..	.....	.....	.....	Yield 3 gpm.
29ccc	L. R. Faught	60	24	B	....	.....	....	D	...	Qd	J	.....	.....	.....	
30bcc	Donald Eckert	Spring	24	..	....	Flow	....	D,S	...	Qd	Cen	1,310	9-64	.....	
30ccc	Kenneth Marshall	60	30	B	....	.....	....	D	S	Qd	Cen	.....	.....	.....	Rept'd unfit for drinking.
32aab	Fred Gavin	30	36	Du	1915	.....	....	D,S	...	Qd	J	.....	.....	.....	Supply rept'd I.
32bbb	Henry Corniea	520	3	Dr	1915	Flow	7-19-63	D,S	...	Kd	J	3,820	9-64	.....	Yield 1.1 gpm.
33dcc	Great Northern Railroad	12.55	14	Dr	....	9.44	4-3-64	U	S	Qla	Cyl	.....	.....	.....	MP .75 ft above ls.
33dcd	C. V. Nepp	31.0	24	B	5-2-64	16.60	5-6-64	D	S	Qd	..	.....	.....	.....	
34caa	I. N. Hocking	675	3	Dr	1959	Flow	....	D	...	Kd	..	.....	.....	.....	
35dcc	Wayne Hocking	25	24	Du	1920	15	7-23-63	D,S	...	Qla	Cy	.....	.....	.....	
36dcc	E. Brandt	400	4	Dr	....	Flow	7-23-63	D,S	...	..	..	3,700	9-64	.....	Yield 5 gpm.
141-54															
2cba	Harvey Wheeler, Jr.	146	2	Dr	....	.....	....	D,S	S	Qd	J	.....	.....	.....	
4bbc	A. Mitchell	136	2	Dr	1958	.....	....	D,S	S	Qd	Cy	770	9-64	.....	
4cdd	Howard Fox	158	2	Dr	1943	45	7-17-63	D,S	S	Qd	Cy	1,200	5-12-65	.....	C.
8dcd	Harry Wilcox	140	3	Dr	1951	.....	....	D,S	S	Qd	J	.....	.....	.....	
10bdc	Murlen Hagen	136	2	Dr	1955	40	7-10-63	D	S	Qd	Cy	.....	.....	.....	
11cca	E. W. Rand	145	2	Dr	....	.....	....	D	S	Qd	Cy	.....	.....	.....	
11cdc	Test hole 2344	210	..	Dr	6-8-65	.....	....	T	...	..	..	.....	.....	.....	L.
12ccc	Josephine Rueckert	135	4	..	1958	.....	....	..	...	..	Cy	.....	.....	.....	L.
13caa	Emma Rueckert	128	2	Dr	1948	.....	....	D	S	Qd	J	.....	.....	.....	
14baa	Bernard Mullen	136	3	Dr	6-13-60	32	6-13-60	D	S	Qd	J	.....	.....	.....	L, Yield 30 gpm.
14ccc	Tom Cameron	164	5	Dr	12-21-61	40	12-21-61	S	S	Qd	S	.....	.....	.....	L, Yield 15 gpm.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
141-54															
15aab	Nathan Idso	128	2	Dr	....	.....	....	D	T&G	Qd	Cy	.....	.....	.....	
17bdc	A. R. Pilgrim	135	3	Dr	....	40	7-17-63	D	S	Qd	Cy	.....	.....	.....	
18cdc	Erwin Buhr	30	2	Dr	....	.....	....	D	G	Qd	Cy	1,150	9-64	.....	
19ddc	A. Buhr	30	30	Du	....	.....	....	D,S	G	Qd	J	.....	.....	.....	Supply rept'd I.
21ddc1	James Burns	126	2	Dr	....	.....	....	D,S	G	Qd	Cy	.....	.....	.....	
21ddc2	..do...	166	3	Dr	8-15-63	.....	....	S	S	Qd	Cy	.....	.....	.....	L.
23cdc	Fargo Loan Agency	138	2	Dr	1945	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
26bcc	Thompson Sisters	140	2	Dr	1948	.....	....	D	...	Qd	Cy	.....	.....	.....	
27add	Lloyd Hutchinson	140	2	Dr	1949	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
28bcb	Maggie Hovland	28	24	B	1961	.....	....	D	...	Qd	J	.....	.....	.....	
30bdd	Norman Marcks	30	3	Dr	1952	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
30cda	Arnold Kaim	740	3	Dr	1955	.....	....	S	...	Kd	Cy	.....	.....	.....	
31dad	Jack Wilcox	600	3 1/2	Dr	....	.....	....	D,S	...	Kd	Cy	5,250	9-64	.....	
32bcb	..do...	800	3 1/2	Dr	1946	40	7-17-63	D,S	S	Kd	J	.....	.....	.....	Well rept'd to have flowed at one time.
32ddc	Dewey Grieve	25.0	30	Du	.....	16.72	12-4-63	D	...	Qd	J	.....	.....	.....	MP 0.3 ft above ls, supply rept'd I and unfit for drinking.
33bdc1	Elmer Grieve	147	2	Dr	1955	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
33bdc2	..do...	29.0	24	Du	....	15.00	7-17-63	U	...	Qd	..	.....	.....	.....	MP 2.0 ft above ls.
34abd	Clara Boyd	145	2	Dr	1951	.....	....	D	...	Qd	Cy	1,160	11-1-64	.....	C.
34cbb	Moum Bros.	140	2	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
35aba	Ben Rueckert	42	24	B	....	20	7-17-63	D	...	Qd	J	.....	.....	.....	Supply rept'd I.
141-55															
1daa	Paul Feder	52	4	Dr	....	.....	....	D,S	...	Qd	J	.....	.....	.....	
2cdc	Warren L. Bayley	45	24	B	....	15.35	12-4-63	D,S	G	Qd	J	.....	.....	.....	
2dcd	Mike Bankers	85	2	Dr	....	.....	....	D,S	S	Qd	S	1,820	7-64	.....	
3cdc1	Warren L. Bayley	57	2	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	MP 2.0 ft above ls.
3cdc2	..do...	65	3	Dr	8-63	12	....	D,S	...	Qd	Cy	.....	.....	.....	L.
4dcc	Robert W. Brock	24	36	Du	....	.....	....	S	S	Qow	Cy	1,550	7-64	.....	Supply rept'd I.
5dab	Henry Baasch	32	18	B	....	.....	....	D,S	S	Qow	Cy	1,390	7-64	.....	
7adal	William O. Clark	48	36	B	....	23.34	12-4-63	D,S	S	Qd	Cy	.....	.....	.....	MP at ls, rept'd unfit for drinking.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
141-55 Cont.															
7ada2	William O. Clark	43	20	B	1945	.....	....	D	S	Qd	J	3,910	11-10-64	.....	C, MP at ls, supply rept'd I.
9ccd	Daniel Dobler	58	18	Du	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	..Do...
12ddc	Virgil E. Miller	86	2	Dr	1946	.....	....	D,S	S	Qd	Cy	1,000	11-17-64	.....	C.
15abb	Raymond Miller	660	4	Dr	....	.....	....	D,S	...	Kd	Cy	4,890	7-64	.....	Well rept'd to have flowed at one time.
16add	Clara Grieve	65	24	B	....	.....	....	D,S	...	Qd	..	.....	.....	.....	
19daa	Philip Miles, et. al.	42.0	36	B	....	18.60	7-16-63	U	...	Qd	Cy	.....	.....	.....	MP 1.4 ft above ls.
20add	Lyle Wical	26.0	36	Du	....	11.50	7-16-63	U	...	Qd	..	.....	.....	.....	MP 1.5 ft above ls.
20ccd	Claude Schmitz	835	4	Dr	1950	Flow	7-16-63	D,S	...	Kd	..	5,170	7-64	.....	Well rept'd to have flowed 9 gpm when drilled.
20dda	John Dunham	38	..	B	....	.....	....	D,S	...	Qd	Cy	2,070	7-64	.....	
24aaa	Lorenz Buhr	100	2	Dr	1929	.....	....	D	S	Qd	Cy	1,750	7-64	.....	
24ddb	George Killoran	107	4	Dr	1960	.....	....	S	S	Qd	Cy	1,790	7-64	.....	
27dcc	Loren Muir	16	..	Du	....	.....	....	D	...	Qd	..	1,250	7-64	.....	
28cdd	Edith Lonney	60	24	B	....	.....	....	D,S	S	Qd	..	3,520	7-64	.....	
31add	Floyd Preston	818	3	Dr	1953	Flow	7-16-63	D,S	...	Kd	J	4,840	7-64	.....	Yield ∠1 gpm.
32bbb	Wm. O. Hills	1200	3	Dr	....	Flow	....	D	...	..	..	.....	.....	.....	
33bcc	Edward Krueger	50	20	B	....	.....	....	D	G	Qd	Cy	.....	.....	.....	
33ccd	Rice Bros.	60	36	Du	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
34aaa	Loren Muir	640	2 1/2	Dr	....	Flow	....	D,S	...	Kd	..	.....	.....	.....	P.
34dab	Elmer Schneekloth	640	4	Dr	1947	Flow	7-16-63	D,S	...	Kd	..	.....	.....	.....	Yield 2 gpm.
35cbb	Wm. Peterson	640	3	Dr	....	Flow	7-16-63	D,S	...	Kd	..	.....	.....	.....	Yield 4.0 gpm.
36ccd	Donovan Astrup	75	20	B	....	.....	....	D,S	S	Qd	J	.....	.....	.....	
142-49															
2baa1	Joseph Reierson	175	2	Dr	1950	10	6-14-63	D,S	...	Qd	..	.....	.....	876	
2baa2	..do...	138.0	3	Dr	....	17.65	10-28-63	U	...	Qd	..	.....	.....	876	MP 2.65 ft above ls.
3bda	Trygve Risdahl	140	3	Dr	1957	10	6-14-63	D,S	...	Qd	..	2,190	6-64	879	
4aba	Wayne Thurlow	120	2	Dr	....	20	6-14-63	D,S	S	Qd	..	.....	.....	879	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
142-49 Cont.															
6add	Deane Barker	150	3	Dr	1955	.....	....	D	G	Qd	..	760	6-64	881	
8bcb	Kenneth Larson	168	2 1/2	Dr	1943	15	6-14-63	D	...	Qd	..	.....	.....	881	
9dcc	Donald Wieers	120	3	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	881	
11ddc	Leland Melbostad	187	3	Dr	....	50	6-13-63	D,S	S	Qd	Cy	.....	.....	867	
12bab	Benny Ohnstad	162	3	Dr	1959	20	6-13-63	D,S	...	Qd	..	.....	.....	875	
17bbb	James Melander	130	..	Dr	1953	15	6-14-63	D	...	Qd	..	.....	.....	882	
18cdd	Benny Nedrepo	240	..	Dr	1955	20	6-14-63	D	...	Qd	..	4,680	6-16-65	884	C.
19ccc	Henry Wischer	210	3	Dr	1945	27	6-14-63	D	...	Qd	J	.....	.....	885	
24dac	George Sebestl	185	3	Dr	....	20	6-14-63	D	G	Qd	..	.....	.....	881	
25bda	Robert Richards	121	3	Dr	....	60	6-14-63	D	G	Qd	..	.....	.....	881	
26baa	Ohnstad Bros.	125	2	Dr	1962	28.75	10-28-63	D,S	...	Qd	S	1,610	6-16-65	880	MP 0.9 ft above ls.
27ddc	Severin Ohnstad	141	2	Dr	1935	18	6-14-63	D	...	Qd	..	.....	.....	881	
28ddc	Jerry Costello	160	..	Dr	....	.....	....	D	S	Qd	..	.....	.....	882	
30ccd	Wilma Stair	110	2	Dr	1930	35	6-14-63	D	...	Qd	J	4,050	6-64	886	
32dad	Einar Buringrad	228	..	Dr	1956	28	6-14-63	D,S	...	..	..	5,610	6-64	885	
35dad	Wm. Ihnken	115	..	Dr	1956	.....	....	D,S	...	Qd	..	810	6-64	881	
142-50															
1bcc	Barker Bros.	200	4	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	888	
2bbb	Cecil Barker	180	4	Dr	1962	.....	....	D	S	Qd	Cy	.....	.....	891	
2dab	Great Northern Railroad	107.00	6	Dr	1924	12.02	5-8-63	...	S	Qd	..	.....	.....	888	L.
3bba	Barker Bros.	275	3	Dr	1950	10	7-9-63	D,S	S	Qd	Cy	.....	.....	895	
3bbb	Test hole 3100	355	..	Dr	5-27-64	.....	....	T	...	..	..	.....	.....	895	L, E.
5bbb	Robert Krueger	208	3	Dr	1956	80	7-4-63	D,S	S	Qd	Cy	.....	.....	914	
6dda	John Stimmal	196	3	Dr	1953	15	7-4-63	D,S	S	Qd	Cy	.....	.....	911	
7aaa	L. A. Meyer	165	2	Dr	1939	.....	....	D	S	Qd	J	5,590	6-64	911	
8aab1	Arthur Burley	337	2	Dr	...	14.55	7-9-63	U	...	..	..	.....	.....	905	MP 4.20 ft above ls.
8aab2	..do...	342	4	Dr	1959	.....	....	D	S	..	S	2,140	6-16-65	905	L, C.
10aad	Edison Colwell	180	2	Dr	1953	.....	....	U	S	Qd	Cy	.....	.....	893	
11ccc	E. L. Burley	200	2	Dr	....	12	7-12-63	D,S	S	Qd	Cy	1,290	6-64	892	Well rept'd to flow
14ccc	Taft Burley	230	4	Dr	1953	12	7-12-63	D,S	S	Qd	Cy	.....	.....	890	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
142-50	Cont.														
15cdd	Duane Sullivan	221	4	Dr	1953	.....	....	D,S	S	Qd	Cy	.....	.....	896	
16aad	Alex Zimney	247	2	Dr	....	10	7-3-63	D	S	Qd	Cy	.....	.....	898	
18ccc	Kent Hodgson	200	3	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	918	
19acc	Clarence Classon	80	3	Dr	....	.....	....	S	...	Qd	Cy	1,220	6-64	916	
19bcc	Rudolph Classon	120	3	Dr	1962	.....	....	D,S	G	Qd	Cy	3,790	6-16-65	921	C.
21cdd	Barbara Burley	136.0	3	Dr	1959	27.00	7-1-63	S	...	Qd	Cy	.....	.....	902	
22cdd	Robert Haworth	190	3	Dr	1948	.....	....	D,S	S	Qd	Cy	.....	.....	897	
24bcb	Dima Waterfall	180	3	Dr	1959	.....	....	D,S	...	Qd	Cy	.....	.....	889	
26cbb	Guy Bush	230	3	Dr	1952	.....	....	D,S	...	Qd	Cy	.....	.....	893	
27dcc	W. F. Eggert	200	3	Dr	1960	.....	....	D	S	Qd	J	.....	.....	896	
28ddd	Alice Hodgson	385	3	Dr	1948	.....	....	D,S	S	Kd	Cy	6,290	6-64	898	
29bab	Victor Pacholke	217	3	Dr	1961	.....	....	D	S	Qd	Cy	.....	.....	910	
30cbc	Ray Anderson	222	3	Dr	1962	.....	....	D,S	S	Qd	Cy	.....	.....	918	
32add	Warron Walkinshaw	190	3	Dr	1957	.....	....	D	...	Qd	Cy	.....	.....	904	
33ddc	W. F. Eggert	285	4	Dr	1948	.....	....	D,S	S	Qd	J	.....	.....	901	
35add	Ralph Burmeister	219	4	Dr	5-25-60	15	5-25-60	D	S	Qd	S	4,770	6-16-65	891	L, C, Yield 75 gpm.
142-51															
2dcc	J. Burgum	85	3	Dr	....	.....	....	D	S	Qd	Cy	.....	.....	937	
5cbc	Ellen Murch	201.0	2	Dr	....	5.20	7-16-63	U	...	Qd	..	.....	.....	.....	MP 2.1 ft above ls.
6ccb	Melvin Nyberg	135	2 1/2	Dr	1950	15	7-16-63	D	S	Qd	J	.....	.....	.....	
9aad	Gunard Pearson	400	3	Dr	1930	.....	....	D,S	S	Kd	J	.....	.....	.....	
9cca	August Nelson	156	3	Dr	1961	10	7-16-63	D,S	S	Qd	J	.....	.....	.....	
10bba	Randolph Moen	250	4	Dr	1961	.....	....	D	S	Qd	J	912	7-64	931	
11cdc	Cedarberg Bros.	122	3	Dr	1960	.....	....	D	...	Qd	..	.....	.....	939	
12baa	Frank Waxler	134	4	Dr	1937	20	7-16-63	D,S	S	Qd	Cy	.....	.....	919	
13bbc	Wilmer Zimmerman	110	3	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	929	
13dca	Carl Swanson	230	4	Dr	1937	.....	....	D,S	S	Qd	Cy	.....	.....	923	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
142-51															
16ccd	Alvin Wilson	280	2	Dr	....	6	7-16-63	D,S	S	Qd	Cy	.....	.....	.....	
17daa	Harold Quaife	411	3	Dr	1938	Flow	7-16-63	D,S	...	Kd	..	4,990	6-16-65	.....	C, Yield 2 gpm.
18dcd	H. B. Farnham	212	4	Dr	1948	Flow	7-17-63	D	...	Qd	S	4,980	6-16-65	.....	C, Yield <1 gpm.
19cbc	Joe Pelter	150	4	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	970	
20dcd	George Parkhouse	160	4	Dr	1920	Flow	7-17-63	D	...	Qd	..	.....	.....	946	Yield <1 gpm.
21bab	Melvin Zimmerman	185	3	Dr	1958	Flow	....	D,S	...	Qd	Cy	.....	.....	943	
22baa	Sam Lako	275	3	Dr	1953	.....	....	D,S	S	Qd	Cy	.....	.....	940	
23bba	Pauline Lako	120	3	Dr	1955	.....	....	D	S	Qd	J	.....	.....	936	
26bbb	M. F. Gogolin	28	36	Du	....	15	7-17-63	D	...	Qla	Cy	930	7-64	939	
27dcc	Rollo Winings	100	4	Dr	1951	12	7-17-63	D,S	S	Qd	Cy	.....	.....	941	
30cdd	Dorothy Burgum	136	4	Dr	6-7-58	124	6-7-58	D,S	S	Qd	Cy	1,070	6-16-65	.....	L, C, E.
31dbc	Emil Iwen	24	32	Du	1929	12	7-17-63	D,S	S	Qla	Cy	3,570	7-64	.....	
32bcc	Wm. Senn	108	3	Dr	1945	10	7-17-63	D,S	S	Qd	Cy	2,440	7-64	.....	
33cbb	Myrtle Wiesbach	73	3	Dr	1952	.....	....	D	...	Qd	J	.....	.....	.....	
34baa	Rollo Winings	98	4	Dr	1951	18	7-17-63	D,S	S	Qd	Cy	960	7-64	941	
35bcb	Walter Pearson	40	24	E	1957	.....	....	D	...	Qla	J	.....	.....	931	
36abb	K. Dickson	104	3	Dr	1952	.....	....	D,S	S	Qd	Cy	.....	.....	921	
142-52															
2baa	Fred Williams Jr.	20	48	Du	....	.....	....	D	S	Qla	Cy	1,310	9-64	.....	
3cdd	H. F. Gale	20	..	Du	....	.....	....	D	S	Qla	J	.....	.....	.....	Supply rept'd I.
4bba	Irving Bratholt	28.0	48	Du	....	6.0	6-18-63	D	...	Qla	Cy	.....	.....	.....	MP at 1s, supply rept'd I.
5bba	Clifford Rosendahl	180	..	Dr	....	.....	....	U	...	Qd	Cy	.....	.....	.....	..do...
6add	Ben Frost	200	4	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
7dcc	Edward Steffes	198	3	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
8add	Vernon Smith	148	..	Dr	....	Flow	....	S	...	Qd	J	.....	.....	.....	Yield <1 gpm.
11aab	Herbert Johnson	...	4	Dr	1958	.....	....	D	...	..	Cy	.....	.....	.....	
12ddd	Rudolph Grieger	135	2	Dr	4-23-63	.....	....	D,S	S	Qd	Cy	.....	.....	.....	L.
16cdd	Fred Williams	180	3	Dr	....	8	7-11-63	D,S	C	Qd	Cy	1,050	9-64	.....	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
142-52 Cont.															
17aaa	Lloyd Williams	180	3	Dr	....	4.34	10-30-63	D,S	...	Qd	Cen	1,370	6-25-64	.....	MP 1.65 ft above ls.
18ddd	Edna Sommerfeld	210	3	Dr	....	.....	....	D,S	S	Qd	Cy	1,320	9-64		
21dcc	Charles Viestenz	23	42	Du	....	.....	....	D	...	Qla	J	.....	.....	.....	
22add	John Lako	200	3	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	.....	L.
22daa	..do...	485	..	Dr	7-63	.....	....	...	S	Kd	..	.....	.....	.....	L, Well destroyed.
23dbc	..do...	140.0	4 1/2	Dr	8-10-63	.....	....	D,S	S&G	Qd	Cy	.....	.....	.....	L, Yield 14 gpm.
24bbc	Village of Arthur	170.0	6	Dr	....	46.34	7-24-62	U	...	Qd	..	.....	.....	.....	MP 1.2 ft above ls, Well abandoned
24bca	..do...	189	8	Dr	1961	53.24	4-1-64	P,S	...	Qd	T	1,694	8-4-61	.....	MP 1.7 ft above ls.
25bbd	Elmer Wilhelm	180	3	Dr	1950	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
29dcc	Herbert Schultz	199	4	Dr	1953	.....	....	D	...	Qd	Cy	.....	.....	.....	
30dcc	E. Mergner	50	24	B	....	.....	....	S	...	Qd	Cy	2,610	9-64	.....	
31ccc	Gerald Viestenz	207	2	Dr	....	.....	....	D	S	Qd	Cy	.....	.....	.....	Supply rept'd I.
33ada	Edward Steffes	178	3	Dr	1951	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
35abb	Clark Lincoln	130	4	Dr	1929	.....	....	S	S	Qd	Cy	1,090	9-64	.....	..Do...
36cbb	Wm. Boettcher	148	4	Dr	1959	.....	....	D	S	Qd	Cy	.....	.....	.....	..Do...
142-53															
1bab	Test hole 3130	317	..	Dr	7-24-64	.....	....	T	...	..	..	.....	.....	1,052	L, E.
1ddd	Lee Lawyer	36.0	36	Du	....	5.00	7-8-63	U	...	Qd	..	.....	.....	.....	
3bdc	Ervin Berndt	50	36	Du	....	.....	....	D,S	...	Qd	Cy	1,020	9-64	.....	
3dad	..do...	32	24	Du	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
4ccc	Wayne Kyser	45	3	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
5ada	Frank Ferguson	300	2	Dr	....	.....	....	D,S	...	..	J	4,000	9-64	.....	
7ddd	Hulett & Berg	80	2 1/2	Dr	1958	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
8ddd	W. R. Kyser	41	2	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	.....	
11ccb	Willis Schroeder	20	16	Du	....	.....	....	D	...	Qla	Cy	.....	.....	.....	
13cdd	Eunice Iwen	...	3	Dr	....	Flow	7-8-63	S	...	..	..	.....	.....	.....	
15cba	Harry Albert	57.0	18	B	....	35.80	7-9-63	D,S	S	Qd	Cy	.....	.....	.....	MP 2.2 ft above ls, supply rept'd I.
16ada	Wm. J. Jenkins	30	..	Dr	....	.....	....	D	...	Qd	J	.....	.....	.....	
18dad	Mosher Bros.	65	2	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
142-53 Cont.															
20cdd	Louis Rieke	55	2	Dr	1951	.....	....	D,S	S	Qd	J	894	11-5-64	.....	C.
21cdd	Robert Schroeder	65	4	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	.....	
22daa	Melvin Kopp	56	2	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
25cdc	Earl Franke	340	4	Dr	....	Flow	7-8-63	S	...	..	..	.....	.....	.....	Yield 2.0 gpm.
27aaa	Thomas Tate	20	48	Du	....	.....	....	D,S	...	Qla	J	.....	.....	.....	Supply rept'd I.
28cdd	J. W. Morrow	68	2	Dr	1938	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
28ddc	Ted Godejohn	90	2	Dr	1958	30	7-5-63	D,S	S	Qd	Cy	1,160	9-64	.....	
30ddc	Ralph Kephart	145	3	Dr	.....	.....	....	D	S	Qd	Cy	960	9-64	.....	
31cbb	Harry Brown	120	4	Dr	1955	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
32abb1	Wayne Berndt	80	2	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
32abb2	..do...	120	3	..	10-10-63	.....	....	D,S	S	Qd	Cy	.....	.....	.....	L.
33bbb	Test hole 2345	168	..	Dr	6-8-65	.....	....	T	S	Qd	..	.....	.....	.....	L.
34cda	Harry Albert	60	2	Dr	1960	.....	....	S	S	Qd	Cy	.....	.....	.....	
35bbc	Fred Peach	10	8	B	....	.....	....	D	...	Qla	J	1,510	9-64	.....	Supply rept'd I.
36abb	L. F. Chaffee	...	14	B	....	15.10	1-22-64	U	...	..	..	.....	.....	.....	MP 0.5 ft above ls.
36add	John Grieger	20	..	Du	....	.....	....	D,S	S	Qla	Cy	.....	.....	.....	
36cdb	Dalice Grieger	413	3	Dr	1963	Flow	....	S	S	..	..	.....	.....	.....	L.
142-54															
1bbb	Test hole 3129	160	1 1/4	Dr	7-22-64	7.48	7-30-64	O	S	Qd	..	543	11-6-54	1,180	L, C, E, TH depth 447 ft, MP 2.0 ft above ls.
2ccd	Alfred Huso	66	3	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	.....	
3cbb	Robert Eastly	100	2	Dr	1957	.....	....	D,S	...	Qd	Cy	810	9-64	.....	
4aaa	Ione McClellan	113	2	Dr	1960	.....	....	D	...	Qd	Cy	.....	.....	.....	
6ddd	Great Northern Railroad	124	8	Dr	1936	13.78	2-4-64	R R	...	Qd	J	.....	.....	.....	L, MP at ls.
7aab	Melvin Moen	80	2	Dr	1953	.....	....	D,S	S	Qd	J	800	9-64	.....	
8aab	Henry Suhr	88	2	Dr	....	.....	....	D,S	S	Qd	J	.....	.....	.....	
8ddd	Test hole 3125	100	1 1/4	Dr	7-20-64	28.21	7-30-64	O	S	Qd	..	474	11-6-64	1,189	L, C, TH depth 257.
10dcd	T. E. Thompson	47	2	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
12ddd	Rudolph Grieger	120	2	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
142-54															
14bac	Ralph Thompson	175	3	Dr	4-15-64	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
17abb	Harold Nelson	110	2	Dr	1962	.....	....	D,S	S	Qd	J	.....	.....	.....	
20ccc	Hall Bros.	92	3	Dr	1957	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
23daa	Alex Punton	90	2 1/2	Dr	....	30	7-5-63	D	S	Qd	J	.....	.....	.....	
25cbc	M. Warmington	136	..	Dr	1955	.....	....	D	...	Qd	J	869	11-5-64	.....	C.
26bcb	Mabel Hassing	40	3	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	.....	
29daa	John Anderson	34	2	Dr	....	.....	....	D,S	...	Qd	Cy	720	9-64	.....	
32bdd	R. M. Brock	125	3	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
34aad	Test hole 2343	90	1 1/4	Dr	6-7-65	18.49	....	O	S	Qd	J	1,120	6-9-65	.....	L, C, TH depth 115.5 ft, MP 2.45 above ls
34bcb	Norman Alm	150	2	Dr	1955	.....	....	D,S	S	Qd	Cy	780	9-64	.....	
35daa	Ralph Cameron	160	..	Dr	1961	.....	....	D	...	Qd	Cy	.....	.....	.....	
142-55															
1bba	Test hole 3124	96	1 1/4	Dr	7-20-64	29.70	7-30-64	O	S	Qd	..	.....	.....	1,184	TH depth 137 ft, MP 2.01 ft above ls.
2aab	Riney Reger	80	2	Dr	....	.....	....	D	...	Qd	Cy	1,360	8-64	.....	
2baa	Harry Unsted	85	2	Dr	1951	.....	....	D	...	Qd	J	1,330	8-64	.....	
4cab	John Baasch	34.5	33	Du	....	11.22	12-3-63	D	...	Qd	J	.....	.....	.....	MP at ls.
6ddd	Harry Davis	24	33	Du	....	.....	....	D,S	...	Qd	J	1,900	8-64	.....	Supply rept'd I.
8cbc	Wm. Suhr	23	24	B	....	.....	....	D	S	Qd	J	1,940	8-64	.....	
8ddd	Frieda Suhr	800	3	Dr	1919	Flow	....	D,S	...	Kd	..	5,530	6-25-64	.....	C.
11bab	Earl Davis	70	2 1/2	Dr	1950	.....	....	D	S	Qd	J	1,390	8-64	.....	
12bcc	Wesley Retterath	80	3	Dr	....	.....	....	D	...	Qd	J	.....	.....	.....	
12daa	J. Harbeke	96	2	Dr	....	.....	....	D	S	Qd	J	1,290	8-64	.....	
14ddd	Dwayne Davis	87	2 1/2	Dr	....	.....	....	D,S	S	Qd	J	1,320	8-64	.....	
18ddd	Leo Lammers	57	2	Dr	....	.....	....	D	S	Qd	Cy	2,440	8-64		
26baa	Test hole 3122	107	..	Dr	7-17-64	.....	....	T	...	..	..	.....	.....	1,161	L, E.
28acc	Chester Tysdal	700	4	Dr	....	Flow	7-1-63	U	...	Kd	..	5,280	8-64	.....	Yield 1.3 gpm.
30ddd	James Zerface	16	22	Du	....	.....	....	D	S	Qow	J	1,640	8-64	.....	Supply rept'd I.
32baa	Blanche McInnes	20.0	36	Du	....	12.50	7-1-63	D,S	...	Qow	Cy	.....	.....	.....	MP 1.5 ft above ls, Supply rept'd I.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
142-55 Cont.															
33bba	Test hole 3126	107	..	Dr	7-21-64	.....	....	T	...	..	..	.....	.....	1,149	L, E.
34dac	Charles Jannsen	29.0	18	B	....	16.02	2-4-64	U	...	Qd	..	2,320	8-64	.....	MP at ls.
143-49															
2dac	James McAndrew	171.5	2	Dr	1939	11.93	10-31-63	D	...	Qd	J	.....	.....	874	MP 0.7 ft above ls.
6ccc	Christ Anderson	150	..	..	....	6	6-12-63	D	...	Qd	..	710	6-64	882	
7dcc	Louis Grage	280	..	Dr	1935	10	6-13-63	D	...	Qd	..	.....	.....	880	Rept'd unfit for drinking.
8abb	Lewie Jalbert	150	..	Dr	1958	10	6-13-63	D	...	Qd	J	.....	.....	877	
8ccd	Louis Grage	133.2	2	Dr	....	20.05	10-31-63	U	...	Qd	..	.....	.....	878	MP 0.65 ft above ls.
9dac	Carl Ellenson	128	..	Dr	1910	8	6-13-63	D	...	Qd	Cy	.....	.....	876	
10bbb	Emil Ellenson	125	3	Dr	....	20	6-12-63	D	...	Qd	..	.....	.....	876	
10dda	Albert Anderson	160	2	Dr	1920	.....	....	D	...	Qd	Cy	4,920	6-64	874	
11ada	S. H. Hogstad	145	2	Dr	1885	15	6-12-63	D	S	Qd	Cy	.....	.....	875	
15daa	Johnson Bros.	145	..	..	1953	35	6-13-63	D	...	Qd	Cy	.....	.....	874	
16cdc	Alan Ellenson	163	2	Dr	1935	20	6-13-63	D,S	...	Qd	J	.....	.....	877	
19ccc	Lindgren Bros.	108	3	Dr	1942	5	6-13-63	D,S	...	Qd	Cy	1,690	6-64	882	
20ccb	Walter Durkop	110	..	Dr	1945	.....	....	D,S	...	Qd	Cy	1,910	6-64	879	
22ddd	Lloyd Lougheed	120	..	Dr	1950	20	6-13-63	D	...	Qd	J	.....	.....	876	
23bac1	G. A. Larson	250	..	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	872	
23bac2	..do...	271	..	Dr	1963	.....	....	...	...	Qd	..	.....	.....	872	L, well destroyed.
25cda	Harold Malen	220	..	Dr	1944	6	6-13-63	D	...	Qd	J	.....	.....	876	
26daa	C. O. Swenson	144	2	Dr	....	10	6-13-63	D	...	Qd	J	.....	.....	876	
27cdd	Otto Hual	224	..	Dr	1956	.....	....	D	...	Qd	J	.....	.....	877	
29ccb	Robert Bell	400	..	Dr	....	.....	....	D	...	..	Cy	840	6-64	880	
30cdd	Arthur Monson	460	4	Dr	....	150	6-13-63	D	...	..	Cy	4,980	4-27-65	883	C.
33bcc	Test hole 3101	265	..	Dr	5-27-64	.....	....	T	...	..	..	.....	.....	876	L, E.
33cad	Nils Buringrud	150	..	Dr	1958	.....	....	D,S	...	Qd	..	.....	.....	880	
34dda	Milton Aasen	140	..	Dr	1955	15	6-13-63	D	...	Qd	J	.....	.....	878	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
143-50															
2ccb	Oscar Linderen	105	3	Dr	1946	.....	....	D	S	Qd	Cy	1,640	6-64	890	
3bac	Gunkelman Elev.	220	4	Dr	1947	.....	....	D	S	Qd	Cy	.....	.....	892	
5bab	Grathman Bros.	535	3	Dr	1959	8	7-11-63	D,S	S	Kd	Cy	.....	.....	903	
6bab	G. W. Dockson	65	3	Dr	1948	24	7-11-63	U	S	Qd	..	.....	.....	921	
7daa	George Haworth	80	4	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	916	
8daa	Francis Foster	320	3	Dr	1960	15	7-10-63	D,S	S	..	Cy	.....	.....	901	
9cbc	Lester Satram	235	3	Dr	1960	.....	....	D,S	S	Qd	Cy	.....	.....	900	
11cbb	V. E. Linderen	120	3	Dr	1947	.....	....	D,S	S	Qd	Cy	2,280	6-64	890	
14abb	Hanna Skunes	200	2	Dr	....	.....	....	U	...	Qd	..	.....	.....	889	
14dcc	L. M. Lawrence	130	3	Dr	1880	.....	....	U	...	Qd	..	.....	.....	890	Rept'd to have flowed until 1948.
16dad	Arthur Woitzel	103	2	Dr	1959	8	7-11-63	D	S	Qd	Cy	.....	.....	896	
17bbb	Daniel Backstrom	320	3	Dr	1961	18	7-10-63	D,S	...	..	Cy	.....	.....	919	
18baa	Blake Humphrey	335	4	Dr	1918	.....	....	D,S	S	..	Cy	.....	.....	916	
19aba	George Stockman	80	3	Dr	1959	13	7-10-63	D,S	S	Qd	Cy	572	5-12-65	927	C.
21aaa	Conrad Woitzel	280	3	Dr	1958	.....	....	S	S	Qd	Cy	.....	.....	897	
22ccd	J. Hestbeck	125	2	Dr	1940	.....	....	D	S	Qd	Cy	.....	.....	895	
24cbc	John Brorson	220	2	Dr	1950	.....	....	D	...	Qd	Cy	.....	.....	888	
25bcc	Stirling Bros.	186	3	Dr	1938	.....	....	U	S	Qd	Cy	.....	.....	887	
26baa	M. H. Gifford	110	2	Dr	1949	12	7-9-63	D	S	Qd	J	.....	.....	889	
28dbb	Gus Woitzel	153	2	Dr	1939	2	7-11-63	S	S	Qd	Cy	.....	.....	899	Well rept'd to have flowed when drilled.
29daa	Elmer Woitzel	370	3	Dr	....	.....	....	D,S	S	...	Cy	4,910	4-27-65	902	C.
30bab	Wm. Grage	60	4	Dr	1956	20	7-11-63	D,S	S	Qd	Cy	5,090	6-64	922	
31cccl	E. Biwer	28	36	Du	....	3	7-11-63	D,S	...	Qla	Cy	4,980	6-64	922	
31ccc2	Test hole 3099	455	..	Dr	5-24-64	.....	....	T	...	..	..	.....	.....	923	L, E.
32bcd	Johnson Bros.	80	2	Dr	1943	.....	....	D,S	S	Qd	Cy	.....	.....	912	
32dcd	Carl Carlson	365	2	Dr	1950	.....	....	D,S	S	..	Cy	1,090	6-64	905	
33bab	George Adamson	240	3	Dr	1937	.....	....	U	S	Qd	Cy	.....	.....	899	
34ddd	Howard Dullum	200	2	Dr	1942	10	7-11-63	D	S	Qd	Cy	.....	.....	892	Supply rept'd I.
35ccd	Ellis McConnell	250	3	Dr	1950	.....	....	D	S	Qd	Cy	.....	.....	891	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
143-51															
1baa	Rudolph Rosenau	125	3	Dr	1955	15	7-16-63	D,S	S	Qd	Cy	1,230	8-64	917	
1ddc	L. G. Radebaugh	150	4	Dr	1955	.....	....	D,S	S	Qd	Cy	1,180	8-64	917	
6ccb	August Judisch	370	4	Dr	....	Flow	7-12-63	U	...	..	..	.....	.....	.....	Yield < 1 gpm.
7ccd	C. D. McAuley	117	3	Dr	1962	5	7-12-63	D,S	S	Qd	..	.....	.....	.....	
8dcc	Anderson Bros.	98	2	Dr	1960	.....	....	U	S	Qd	..	.....	.....	.....	
11dba	Haugen Bros.	275	4	Dr	....	10	7-16-63	D,S	...	Qd	Cy	.....	.....	914	
12baa	Berton Graalum	125	3	Dr	1956	30	7-16-63	D,S	S	Qd	Cy	.....	.....	918	
13ada	Norman Griffin	500	4	Dr	....	30	7-15-63	D,S	...	Kd	Cy	7,710	8-64	916	
14aba	Fred Quittschreiper	200	4	Dr	....	6	7-17-63	D,S	...	Qd	..	.....	.....	914	
15ddd	Ann Hull	390	3	Dr	1959	7	7-16-63	D,S	...	Kd	Cy	.....	.....	911	
18dad	Bernard Holes	352	4	Dr	1963	Flow	....	D,S	...	..	S	4,970	4-27-65	911	L, C.
19cbc	Murray Baldwin	370	4	Dr	1942	Flow	7-12-63	S	...	..	..	.....	.....	959	Yield 3.0 gpm.
21ccc	C. R. Hanson	60	32	Du	1900	25	7-12-63	D,S	...	Qd	S	2,710	8-64	930	
22aad	Hans Peter	95	3	Dr	1937	12	7-15-63	D,S	S	Qd	Cy	1,360	8-64	916	
23baa	Gust Johnson	500	1 1/2	Dr	....	6	7-15-63	D,S	...	Kd	..	.....	.....	916	
30ddd	Melvin Lien	199	2	Dr	1945	.....	....	D	G	Qd	Cy	.....	.....	.....	
32aaal	Harvey Madsen	118	48x48	Dr	....	11.67	10-29-63	S	...	Qd	Cy	.....	.....	.....	WP 1.0 ft above ls.
32aaa2	..do...	145	4	Dr	4-28-58	.....	....	D	S	Qd	S	.....	.....	.....	L, Yield 7 gpm.
32bcc	Louis Sutton	450	3	Dr	1955	4	7-12-63	D,S	S	Kd	Cyl	.....	.....	.....	
33ddd1	Test hole 3102	117	..	Dr	5-28-64	.....	....	T	...	Qd	..	.....	.....	925	L.
33ddd2	Test hole 3102A	135	..	Dr	5-30-64	.....	....	T	...	Qd	..	.....	.....	925	L.
34ccc	Test hole 3102B	138	..	Dr	6-2-64	.....	....	T	...	Qd	..	.....	.....	925	L.
34ddd	Robert Schroeder	400	4	Dr	....	.....	....	D,S	...	..	Cy	.....	.....	925	
35daa	Roy Bell	225	4	Dr	5-2-58	28	5-2-58	D,S	S	Qd	S	.....	.....	928	L, Yield 40 gpm.
143-52															
4cdd	Emma Stibbe	515	3	Dr	....	10	6-18-63	S	...	Kd	Cy	4,400	10-64	.....	
5aaa	Arthur Rasmussen	640	4	Dr	1954	60	6-18-63	S	...	Kd	J	4,100	10-64	.....	Rept'd unfit for drinking.
6add	Kay Kloth	18	54x54	Du	....	6	6-19-63	D,S	...	Qla	Cy	.....	.....	.....	
8aad	Clyde Larson	16	48	B	.....	.....	....	D	...	Qla	J	1,060	10-64	.....	
9ada	Carl Olson	28.0	36	Du	.....	12.00	6-18-63	U	...	Qla	Cy	.....	.....	.....	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
143-52															
9cdd	Earl Amel	400	2	Dr	....	.....	....	Dr	...	..	Cy	3,300	10-64	.....	
12cdc	Howard Larsen	94	4	Dr	9-5-63	12	9-5-63	D	...	Qd	J	.....	.....	.....	L.
12cdd	Victor Larsen	35	..	Du	....	.....	....	S	...	Qla	Cy	.....	.....	.....	
13bcc	L. O. Lane	124	3	Dr	1955	.....	....	D	...	Qd	Cy	.....	.....	.....	
14cdd	Albert Peterson	145	3	Dr	....	.....	....	D	...	Qd	Cy	1,250	10-64	.....	
15aad	Emma Stibbe	500	3	Dr	1959	8	6-18-63	S	...	Kd	Cy	.....	.....	.....	Rept'd corrosive.
17cdc	J. Redman	24.0	48	Du	....	11.00	6-19-63	D,S	...	Qla	Cy	.....	.....	.....	MP 2.0 ft above ls.
18baa	Hudson Bros.	15.0	..	Du	....	6.50	6-19-63	D	S	Qla	Cy	.....	.....	.....	Supply rept'd I.
18ddd	Rolland Doe	20	60	Du	....	10	6-19-63	D,S	...	Qla	Cy	.....	.....	.....	
21aaa	Karl Schmusser	165	2	Dr	....	20	6-19-63	D,S	...	Qd	R	.....	.....	.....	..Do...
22aad	Earl Maker	160	3	Dr	1953	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
22cdc	Dwight Marvel	411	2	Dr	1947	.....	....	S	...	..	R	.....	.....	.....	Rept'd unfit for drinking.
23bda	Bertha Hoganson	30	36	Du	....	.....	....	D	S	Qla	Cy	.....	.....	.....	
24cbd	Lloyd Otteson	20	48x48	Du	....	.....	....	D,S	S	Qla	Cy	.....	.....	963	
25ccd	Ruth Warner	480	..	Dr	....	Flow	....	S	...	Kd	..	.....	.....	.....	
26cbb1	Elsie Leidal	160	..	Dr	.....	.....	....	U	...	Qd	Cy	.....	.....	.....	
26cbb2	..do...	18	..	Du	....	.....	....	D	...	Qla	Cy	.....	.....	.....	Rept'd to go dry occasionally.
27baa	Ernest Maker	17	18	Du	....	5.0	6-17-63	U	...	Qla	Cy	.....	.....	.....	MP 1.0 ft above ls.
27cbb	Clarence Martin	490	4	Dr	....	Flow	....	S	...	Kd	..	.....	.....	.....	
28ccd	Leslie Powlison	27	36	B	....	.....	....	U	...	Qla	Cy	.....	.....	.....	
30baa	George Burchill	460	2	Dr	....	Flow	....	U	...	Kd	..	.....	.....	.....	
32cbb	H.H. Worsley	165	2	Dr	1936	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
32daa	W. C. Peterson	206	6	Dr	....	.....	....	D	S	Qd	Cy	.....	.....	.....	
33aba	Ray Martin	392	4	Dr	11-1-61	3	11-1-61	D,S	S	..	J	4,890	11-5-64	.....	L, C, Yield 100 gpm.
35ada	Lloyd Martin	128	3/4	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
36ddd	Test hole 3131	272	..	Dr	7-25-64	.....	....	U	...	..	..	.....	.....	969.0	L, S.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
143-53															
1aba	Bert Ban Zee	45	24	B	....	.....	....	D	...	..	J	.....	.....	.....	
2abb	Wilmer Moen	42	36	Dr	....	.....	....	D	...	..	J	.....	.....	.....	Supply rept'd I.
4cdd	Albert Amb	100	3	Dr	....	.....	....	D,S	...	Qd	J	1,190	10-64	.....	
7aba	C. J. Ahrlin	31.0	48	Du	....	8.00	6-21-63	D	...	..	Cy	.....	.....	.....	MP 1.0 ft above ls.
8daa	Orville Satrom	80	6	Dr	....	3	6-20-63	D	G	Qd	..	.....	.....	.....	
10bbb	Borund Bros.	70	4	B	....	12	6-20-63	S	...	Cy	..	.....	.....	.....	
10ddc	Rubin Borud	468	2	Dr	1951	Flow	6-20-63	D,S	...	Kd	..	4,400	10-64	.....	
11dac	Alfred Johnson	14.0	48	Du	....	7.00	6-19-63	U	...	Qla	..	.....	.....	.....	MP 1.0 ft above ls.
12bdd	James Borud	446	2	Dr	....	Flow	6-19-63	D,S	...	..	..	.....	.....	.....	
12ddd	Harry Grage	19	36	B	....	.....	....	D	...	Qla	J	2,740	10-64	.....	Rept'd unfit for drinking.
13bbb	George Benzmiller	22.0	40	Du	....	10.00	6-19-63	D,S	...	Qla	Cy	.....	.....	.....	MP 3.0 ft above ls, supply rept'd I.
15cdb1	W. R. Stibbe	24	36	Du	1944	.....	....	D,S	S	Qla	Cy	.....	.....	.....	Supply rept'd I and unfit for drinking.
15cdb2	..do...	60	..	Dr	1962	.....	....	D	S&G	Qla	..	1,630	11-5-64	.....	C.
16cbc	J. K. Miller	135	2	Dr	....	.....	.....	D,S	S	Qd	Cy	550	10-64	.....	
17abb	Carl Richtmeier	80	3	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
18aab	Lawrence Benzmiller	36.0	48x48	Du	....	8.00	6-21-63	D	...	..	Cy	.....	.....	.....	MP 0.9 ft above ls.
19bbb	George Schur	160	3	Dr	....	.....	....	D	...	Qd	J	.....	.....	.....	
20cdd	S. N. Rosevold	100	2	Dr	1940	30	6-21-63	D	...	Qd	J	.....	.....	.....	
21aaa	Evelyn Meyers	45	48	Du	....	.....	....	D	...	..	J	.....	.....	.....	
22aaa	George Dickson	46	60x60	Du	1907	7	6-20-63	S	...	..	Cy	.....	.....	.....	Supply rept'd I.
22dcd	Ole Robberstad	20	24	B	....	12.0	6-20-63	U	...	Qla	Cy	.....	.....	.....	MP 1.0 ft above ls.
24ddd	George Burchill	447	2 1/2	Dr	1937	Flow	6-19-63	D,S	...	..	..	.....	.....	.....	Yield 15.0 gpm.
25aaa	..do...	48	20	B	....	7	6-19-63	D	...	..	J	3,550	10-64	.....	
26ddd	George Dickson	15.0	36	Du	....	6.00	6-19-63	U	...	Qla	Cy	.....	.....	.....	MP 1.0 ft above ls.
27bcd	Arnold Albert	60	3	Dr	1962	.....	....	D,S	G	..	Cy	.....	.....	.....	
27ddb	Elmer Herold	75	3	Dr	1952	.....	....	D	...	Qd	J	.....	.....	.....	
28bda	Paul Stibbe	521	3	Dr	1962	100	6-20-63	S	...	Kd	Cy	4,150	10-64	.....	
31ddc	John Vos	30	2	Dr	1957	.....	....	D	...	..	J	.....	.....	.....	
34bdc	John Conrad	20	3	Dr	1955	.....	....	D	...	Qla	J	.....	.....	.....	
34dad	Cledith Dows	23	4	Dr	1947	.....	....	S	S	Qla	Cy	.....	.....	.....	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
143-54															
2abb	Pauli Olstad	141	2	Dr	1955	.....	....	D,S	S	Qd	Cy	940	10-64	.....	
5ada	Carl Johnson	56	4	Dr	....	.....	....	D,S	S	Qd	Cy	890	10-64	.....	
6add	Alvin Langdahl	75	2	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
6cca	Anton Drogen	65	2	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
8aaa	Arnold Erickson	65	3	Dr	....	25	6-24-63	D,S	S&G	Qd	J	.....	.....	.....	
11dda	George Jefferson	120	2	Dr	....	.....	....	D,S	G	Qd	Cy	960	10-64	.....	
12aaa	Ronald Kyllo	60	2	Dr	....	.....	....	D,S	...	Qd	J	.....	.....	.....	
18cdd	Yvonne Bower	40	3	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
20dcd	R. Gronn	120	3	Dr	....	.....	....	D,S	S	Qd	J	.....	.....	.....	
23bba	Wm. Larson	120	2	Dr	1956	30	6-21-63	D,S	S	Qd	J	920	11-5-64	.....	C.
23ccc	Ella Port	134	2	Dr	1961	.....	....	D,S	...	Qd	J	.....	.....	.....	
24dcc	Mike Amb	42	2	Dr	....	.....	....	U	S	Qd	Cy	.....	.....	.....	
26dcd	Wm. Conrad	90	3	Dr	1962	.....	....	D	S	Qd	J	1,500	10-64	.....	
28dcc	James Noble	120	2	Dr	....	.....	....	D,S	S	Qd	J	.....	.....	.....	
29ccc	Albert Johnk	72	2	Dr	1956	30	6-25-63	D	S	Qd	J	.....	.....	.....	
30bdc	Max Walz	70	2	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
31bdd	Village of Page	121	8	Dr	1962	23.95	12-3-63	P,S	S	Qd	T	869	11-5-64	.....	C, MP 3.7 ft above ls, Yield 230 gpm.
31cab	Page Lutheran Church	102	3	Dr	7-22-60	.....	....	D	S	Qd	S	.....	.....	.....	L, Yield 50 gpm.
31cac	Great Northern Railroad	93	6	Dr	9-10-51	25.50	9-10-51	D	S	Qd	Cy	.....	.....	.....	L.
31cca	..do...	115	6	Dr	8-13-29	.....	....	...	S	Qd	Cy	.....	.....	.....	Well destroyed, L.
31daa	Howard Speers	70	3	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
33ccd	Mary Smith	100	2	Dr	....	.....	....	D	...	Qd	J	.....	.....	.....	
34aaa	B. Webber	120	3	Dr	1960	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
35ccc	George Hagen	100	2	Dr	....	.....	....	D,S	...	Qd	Cy	.....	.....	.....	
143-55															
1aba	Sigurd Londahl	65	2	Dr	....	.....	....	D	S	Qd	Cy	850	10-64	.....	
2caa	Sven Langager	65	3	Dr	....	.....	....	D,S	S	Qd	Cy	.....	.....	.....	
4aba	D. Whitmore	60	..	Dr	....	.....	....	D,S	S	Qd	J	.....	.....	.....	
6dda	Alfred Johnson	20	30	Du	....	10	6-25-63	D	...	Qd	J	1,240	10-64	.....	
7dac	Walter Satrom	755	3	Dr	....	55	6-25-63	S	...	Kd	Cy	4,890	10-64	.....	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
143-55 Cont.															
3aad	Martin Grey	35	30	Du	....	.....	....	D	S	Qd	Cy	.....	.....	.....	
10bab	A. F. Cole	56	2	Dr	....	30	6-26-63	D,S	S	Qd	J	.....	.....	.....	
15dcd	John Suhr	62	2	Dr	1950	20	6-26-63	D	S	Qd	Cy	929	11-6-64	.....	C.
16aad	Test hole 3128	122	..	Dr	7-22-64	.....	....	T	...	..	..	.....	.....	1,173	L, E.
16ddā	Willard Davis	52	2	Dr	....	.....	....	D	...	Qd	Cy	.....	.....	.....	
19aba	Forest Brudevold	30	24	Du	....	.....	....	S	S	Qd	Cy	.....	.....	.....	
24dcc	Kenneth Koenig	89	3	Dr	11-21-61	40	11-21-61	D,S	S	Qd	Cy	790	10-64	.....	L, Yield 25 gpm.
25adc	Esther Koenig	80	2	Dr	....	.....	....	D	...	Qd	J	.....	.....		
26bba	Frank Lemmers	30	3	Dr	....	.....	....	D,S	S	Qd	Cy	450	2-24-56	.....	P.
27bda	R. Carl Satram	75	2	Dr	....	.....	....	D	...	Qd	J	.....	.....	.....	
30adc	Kathryn Tiernan	25	30	B	....	20	6-26-63	D,S	S	Qd	Cy	.....	.....	.....	
31baa	Test hole 3127	137	..	Dr	7-21-64	.....	....	T	...	..	..	.....	.....	1,167	L, E.
31ddd	Ken Warner	30	42	Du	....	24	6-26-63	D	S	Qd	Cy	.....	.....	.....	Supply rept'd I.
32daa	Irma Davis	40	36	Du	1884	.....	....	D	...	Qd	Cy	.....	.....	.....	
33ddd	Test hole 3123	347	..	Dr	7-17-64	.....	....	T	...	..	..	.....	.....	1,151.0	L, E.

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.

Water levels are referred to land-surface datum (lsd). The symbol + indicates that the water level was above land surface. Numbers that are not preceded by any symbol indicate that the water level in the well was below land surface.

137-49-17daa2

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
Oct. 24	26.71	April 2	26.70	July 1	26.11
1964		May 7	26.45	Aug. 1	26.37
Jan. 30	26.67	June 1	26.71		

137-49-25ccc

1964		1964		1964	
Sept. 3	25.56	Nov. 2	21.99	Dec. 9	22.02
Oct. 1	20.85				

137-49-30aaa

1964		1964		1964	
Sept. 3	25.57	Nov. 2	30.56	Dec. 9	30.43
Oct. 1	30.43				

137-50-4baa2

1963		1964		1964	
May 17	30.90	April 2	31.66	July 31	31.75
Oct. 24	31.40	May 7	31.39	Sept. 3	31.83
1964		June 1	31.64	Nov. 2	31.90
Jan. 30	31.63	July 1	31.65		

137-50-29dca 1/

1964		1964		1964	
Jan. 20	8.27	July 1	5.39	Oct. 1	6.90
April 3	7.45	Aug. 1	6.40	Nov. 2	7.73
May 7	4.30	Sept. 3	7.13	Dec. 9	7.99
June 1	8.56				

137-51-10bca

1963		1964		1964	
June 14	3.18	April 2	3.79	June 1	3.50
Oct. 24	3.9	May 7	4.26	July 1	5.1
1964					
Jan. 30	3.47				

137-51-17aaa1

1963		1964		1964	
June 14	2.50	April 2	1.11	Aug. 1	1.30
Oct. 24	3.00	May 7	3.00	Sept. 3	1.35
1964		June 1	1.96	Oct. 1	1.09
Jan. 30	0.91	July 1	1.07		

137-51-35cdd1

1963		1964		1964	
Oct. 24	124.90	July 1	134.74	Oct. 1	139.75
1964		Aug. 1	135.08	Nov. 3	140.68
May 7	134.15	Sept. 3	138.78	Dec. 9	141.25
June 1	135.35				

1/ Well 137-50-29dca formerly published as 137-50-29dda5 in WSP 1128 by J. E. Powell (1948)

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

137-52-4dad

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
July 10	14.77	April 2	17.80	Aug. 1	21.10
Oct. 24	20.17	May 7	17.75	Sept. 3	30.12
1964		June 1	19.60	Oct. 1	10.54
Jan. 30	19.32	July 1	22.45		

137-52-16ddc

1963		1964		1964	
Oct. 24	+0.43	May 7	+1.41	Sept. 3	+0.49
1964		June 1	+1.22	Oct. 1	+1.71
Jan. 30	+0.28	July 1	+1.27		
April 2	+0.29	Aug. 1	+0.90		

137-52-25ccd2

1963		1964		1964	
July 12	34.14	April 3	34.47	June 1	34.40
Oct. 24	34.43	May 7	34.30	July 1	34.53
1964					
Jan. 30	34.40				

137-52-28dba

1963		1964		1964	
July 12	11.00	April 2	13.00	May 7	12.15
1964					
Jan. 30	12.91				

137-52-31bbb

1964		1964		1964	
Sept. 3	5.66	Nov. 3	6.10	Dec. 9	6.47
Oct. 1	5.55				

137-53-22abc

1963		1964		1964	
June 25	6.56	May 7	4.65	Sept. 3	7.30
1964		May 28	7.26	Oct. 1	9.58
Jan. 20	9.79	July 1	6.20		
April 2	8.56	Aug. 1	7.36		

137-53-34ccc

1963		1964		1964	
Oct. 31	+1.06	Feb. 5	2.62	July 30	2.29
Nov. 16	+1.06	March 9	3.22	Aug 27	1.77
Dec. 2	0.89	April 9	3.58	Sept. 29	2.22
1964		April 28	0.24	Nov. 10	2.84
Jan. 2	1.77	May 27	1.48	Dec. 10	3.12

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

137-54-12daa

Date	Water level	Date	Water level	Date	Water level
1964		1964		1964	
April 4	7.58	May 28	6.27	Aug. 1	7.84
May 7	6.04	July 1	5.80	Sept. 2	7.02

137-54-36ccc

1963		1964		1964	
Oct. 15	8.93	Feb. 5	10.12	July 30	8.78
Oct. 31	9.04	March 9	10.30	Aug. 27	8.14
Nov. 18	9.23	April 9	9.07	Sept. 29	8.91
Dec. 2	9.28	April 28	7.84		
1964		May 27	6.61		
Jan. 2	9.74	June 26	4.59		

137-55-30abb

1963		1964		1964	
Aug. 16	23.20	April 3	26.07	May 7	25.45
1964					
Jan. 21	25.06				

137-55-33cdd

1963		1964		1964	
Aug. 16	38.57	April 3	39.83	June 30	39.01
1964		May 7	39.09	Aug. 1	39.20
Jan. 21	38.78	May 28	39.29	Sept. 2	38.85

137-55-35ddd

1964		1964		1964	
Sept. 2	47.90	Nov. 3	48.04	Dec. 9	47.86
Oct. 1	47.93				

137-56-30bcb

1964		1964		1964	
Sept. 2	22.46	Nov. 3	22.33	Dec. 9	22.64
Oct. 1	22.35				

138-48-7ccc

1963		1964		1964	
Oct. 4	41.86	May 7	41.13	Oct. 1	41.85
Oct. 23	41.82	June 1	41.47	Nov. 2	41.68
1964		July 1	41.69	Nov. 10	41.42
Jan. 30	41.43	Aug. 1	41.24		
April 2	41.23	Sept. 3	42.02		

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

138-48-18acd

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
May 14	34.20	May 7	45.35	Oct. 1	35.65
Oct. 23	48.70	June 2	43.56	Nov. 2	37.98
1964		July 1	44.70	Dec. 10	34.91
Jan. 30	34.08	Aug. 1	44.15		
April 2	33.62	Sept. 3	35.65		

138-49-4aaa

1964		1964		1964	
July 1	38.48	Aug. 26	38.60	Nov. 2	38.58
Aug. 1	38.75	Oct. 1	38.47	Dec. 9	38.60

138-49-18ddc

1963		1964		1964	
June 4	44.20	April 2	38.83	April 2	45.50
Oct. 24	41.18	May 6	48.85*	July 1	41.70
1964					
Jan. 21	39.86				

138-49-29ccc

1964		1964		1964	
Aug. 1	32.17	Oct. 1	33.90	Dec. 9	34.05
Sept. 3	34.00	Nov. 2	34.02		

138-49-34ccc

1964		1964		1964	
June 30	25.04	Sept. 3	23.57	Nov. 3	23.52
Aug. 1	24.88	Oct. 1	23.45	Dec. 9	23.49

138-49-36dda2

1963		1964		1964	
May 15	20.70	Jan. 21	23.87	May 7	23.55
Oct. 23	24.05	April 2	23.90		

138-50-13bcb

1963		1964		1964	
Oct. 23	26.17	April 2	27.29	June 2	27.86
1964		May 7	27.12		
Jan. 21	27.30				

*Pumping

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

138-51-7ada

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
July 9	6.64	April 2	6.60	Aug. 1	6.65
Oct. 24	6.84	May 7	6.40	Sept. 3	6.74
1964		June 1	7.64		
Jan. 21	6.73	July 1	7.55		

138-51-11ddd

1963		1964		1964	
June 27	27.69	April 2	26.15	Aug. 1	26.94
Oct. 24	27.64	May 7	28.89	Sept. 3	36.31
1964		June 1	31.21	Oct. 1	29.44
Jan. 20	32.57	July 1	27.77		

138-51-18bab

1964		1964		1964	
Jan. 22	12.90	May 7	13.24	July 1	14.8
April 2	12.30	June 1	17.21		

138-52-9add

1964		1964		1964	
Jan. 22	11.67	June 1	10.16	Sept. 3	10.20
April 2	11.87	July 1	10.12		
May 7	10.78	Aug. 1	10.25		

138-52-21aad

1963		1964		1964	
July 17	11.67	April 2	12.47	July 1	12.04
1964		May 7	12.40		
Jan. 22	12.27	June 1	13.60		

138-53-6abb

1963		1964		1964	
June 23	10.64	April 3	12.93	July 1	10.59
1964		May 7	11.01		
Jan. 20	11.14	May 28	11.09		

138-53-21abb

1963		1964		1964	
June 19	17.18	May 7	18.74	Sept. 3	19.66
1964		May 28	19.31	Oct. 1	19.00
Jan. 20	18.38	July 1	19.01		
April 2	20.52	Aug. 1	18.94		

138-53-35abd3

1963		1964		1964	
June 17	11.69	April 2	12.55	July 1	12.75
1964		May 7	12.42		
Jan. 20	12.43	June 1	15.64		

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

138-54-20bbb

Date	Water level	Date	Water level	Date	Water level
1964		1964		1964	
Jan. 22	11.51	May 28	9.17	Sept. 2	9.60
April 3	11.22	July 1	9.20		
May 7	10.52	Aug. 1	9.32		

138-55-30aab

1964		1964		1964	
Jan. 21	18.52	May 7	17.76	June 30	17.22
April 3	19.21	May 28	16.49	Aug. 1	17.50

139-49-2ccc

1963		1964		1964	
Oct. 1	74.95	April 1	74.38	Aug. 1	75.45
Nov. 1	78.07	May 5	75.36	Aug. 24	75.54
1964		May 28	75.67	Nov. 2	74.74
Jan. 15	74.23	June 29	76.20	Dec. 10	75.89

139-49-5add

1963		1964		1964	
Oct. 22	100.48	April 1	100.33	July 29	99.80
Nov. 1	101.15	May 6	99.76	Aug. 24	100.00
1964		May 28	101.26		
Jan. 15	100.46	July 2	99.31		

139-49-6bcc

1963		1964		1964	
July 17	90.30	Jan. 14	102.51	Sept. 30	95.90
Sept. 17	101.73	May 6	101.54	Oct. 29	100.16
Sept. 24	101.66	May 27	98.00	Dec. 10	96.90
Oct. 22	101.83	July 2	96.40		
Nov. 1	101.91	July 27	95.40		
Dec. 2	102.31	Aug. 31	95.60		

139-49-6dcd2

1963		1963		1964	
Nov. 4	102.89	Dec. 2	103.21	May 6	101.70
Nov. 5	102.90	1964			
Nov. 6	103.28	Jan. 14	102.16		
Nov. 7	103.24	April 1	101.97		

139-49-6ddc

1963		1963		1964	
Nov. 4	103.00	Dec. 2	102.76	May 6	101.22
Nov. 5	102.57	1964			
Nov. 6	102.86	Jan. 14	101.71		
Nov. 7	102.82	April 1	101.54		

TABLE 2.--Water-level measurements in selected wells in Cass County, N.Dak.--Cont.

139-49-7abb1

Date	Water level	Date	Water level	Date	Water level
1963		1963		1964	
Oct. 17	104.99	Dec. 2	103.47	Aug. 1	105.73
Oct. 22	105.72	1964		Aug. 24	104.14
Oct. 31	103.70	Jan. 14	103.43	Sept. 30	101.95
Nov. 1	104.81	April 1	102.27	Nov. 2	104.72
Nov. 5	103.29	April 22	104.90	Dec. 10	104.77
Nov. 6	103.56	May 28	103.45		
Nov. 8	103.48	June 3	103.20		

139-49-7ddc

1963		1964		1964	
Nov. 5	95.96	April 1	95.57	Aug. 1	96.14
Dec. 2	96.41	May 6	95.15	Sept. 4	96.79
1964		May 27	96.37		
Jan. 14	95.78	July 1	93.47		

139-49-8bba1

1962		1963		1964	
Aug. 22	100.53	May 22	101.64	March 13	101.34
Sept. 5	100.20	June 14	101.45	March 29	102.84
Sept. 19	101.70	June 29	101.37	April 13	101.42
Sept. 30	101.01	July 11	101.66	April 18	102.75
Oct. 16	100.97	July 29	102.27	May 6	101.55
Oct. 25	102.06	Aug. 16	101.60	May 19	103.76
Nov. 2	101.80	Aug. 30	102.20	June 1	103.08
Nov. 20	99.99	Sept. 11	101.68	June 9	101.81
Dec. 12	101.31	Sept. 21	102.62	July 5	102.61
Dec. 28	99.90	Oct. 5	101.19	July 27	103.43
1963		Oct. 11	102.85	Aug. 21	103.09
Jan. 8	99.35	Nov. 12	103.47	Aug. 31	103.98
Jan. 11	100.75	Nov. 26	102.63	Sept. 11	104.51
Feb. 4	99.83	Dec. 15	103.36	Sept. 26	103.23
Feb. 21	100.77	Dec. 25	101.85	Oct. 7	103.45
March 21	101.18	1964		Oct. 22	104.65
March 29	99.98	Jan. 2	101.51	Nov. 10	103.43
April 16	100.32	Jan. 12	102.96	Nov. 29	104.47
April 30	102.00	Feb. 20	102.40	Dec. 17	104.93
May 7	100.75	Feb. 24	101.30	Dec. 23	103.60

139-49-9aab

1963		1964		1964	
Oct. 1	63.77	May 6	55.65	Sept. 30	56.57
Nov. 1	55.59	May 28	57.20	Nov. 2	57.08
1964		July 2	60.46	Dec. 10	57.43
Feb. 14	55.39	July 29	58.60		
April 1	55.58	Aug. 24	58.14		

139-49-9ddd3

1964		1964		1964	
Aug. 1	43.16	Sept. 30	42.82	Dec. 10	42.91
Aug. 25	43.53	Nov. 2	42.90		

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

139-49-10bab3

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
Nov. 1	7.50	May 28	6.35	Aug. 24	6.44
1964		July 2	5.40		
April 1	8.60	July 29	6.10		
May 6	5.89				

139-49-12aca

1963		1964		1964	
Oct. 22	39.90	March 1	42.03	July 27	22.28
Nov. 1	38.29	April 1	42.39	Aug. 31	27.60
Dec. 2	39.27	May 6	17.84	Sept. 30	37.37
1964		May 28	22.85	Nov. 2	38.80
Jan. 15	40.95	June 26	13.98	Dec. 10	39.95

139-49-18bbb

1963		1964		1964	
Aug. 30	59.77	Jan. 14	60.23	Sept. 4	61.13
Sept. 17	59.80	April 1	59.87	Sept. 30	61.23
Sept. 24	59.83	May 6	59.51	Nov. 2	61.42
Oct. 22	60.00	May 28	60.10	Dec. 10	61.58
Nov. 1	60.28	July 1	60.20		
Dec. 2	60.48	Aug. 1	60.48		

139-49-22bbb

1963		1964		1964	
Sept. 17	47.82	March 1	47.76	Oct. 1	48.36
Sept. 24	47.81	April 1	47.68	Nov. 2	48.48
Oct. 3	47.87	May 6	47.46	Dec. 9	48.46
Nov. 1	47.92	June 1	47.22		
Dec. 2	47.92	July 1	47.89		
1964		Aug. 1	47.48		
Jan. 14	47.82	Aug. 26	48.03		

139-49-26dcc

1963		1964		1964	
Oct. 3	37.37	March 1	39.72	June 1	40.30
1964		April 2	38.67	July 1	41.65
Jan. 30	38.62	May 6	37.95	Nov. 2	38.68

139-49-29bcd

1963		1964		1964	
Oct. 3	43.28	April 1	44.55	July 31	43.47
1964		May 6	43.45	Sept. 3	44.73
Jan. 21	43.45	June 2	43.60	Nov. 2	44.43
March 1	44.04	July 1	42.45		

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

139-49-32cca

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
Oct. 3	40.15	March 1	41.20	June 1	41.84
1964		April 1	42.94		
Jan. 21	41.62	May 6	40.29		

139-49-36aad3

1963		1964		1964	
May 14	37.13	Jan. 30	37.88	April 2	37.65
Oct. 23	39.07	March 1	37.68		

139-49-36dac1

1963		1964		1964	
Oct. 7	39.30	April 1	32.01	Sept. 3	36.40
Oct. 23	33.03	May 7	31.79	Oct. 1	36.30
1964		June 1	31.44	Nov. 2	35.03
Jan. 30	31.74	July 1	30.74	Dec. 10	33.70
March 1	32.04	Aug. 1	31.12		

139-49-36dca

1963		1964		1964	
Oct. 4	43.06	March 1	49.43	July 1	43.60
Oct. 23	43.30	April 1	43.07	Aug. 1	44.42
1964		May 7	44.67	Sept. 3	53.08
Jan. 30	54.34	June 2	45.20		

139-50-1dcd

1963		1963		1964	
May 22	52.16	Dec. 2	53.11	June 29	52.77
Oct. 2	52.51	1964		July 27	53.10
Oct. 22	52.64	Jan. 14	52.89	Aug. 31	53.30
Nov. 1	52.77	April 1	52.60	Sept. 30	53.46
Nov. 8	52.81	April 29	52.53	Nov. 2	53.60
Nov. 9	52.81	May 28	52.84	Dec. 10	53.75

139-50-2dbc

1963		1964		1964	
Oct. 2	45.94	April 1	46.11	July 2	48.28
1964		May 6	45.84	July 29	47.34
Jan. 22	46.11	May 27	46.88	Sept. 4	46.38

139-50-15bbb2

1963		1964		1964	
June 3	5.49	Jan. 20	6.81	July 1	7.90
Oct. 23	6.10	June 1	4.10		

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

139-50-15bbb3

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
Oct. 24	27.30	April 1	27.37	May 6	27.18
1964					
Jan. 20	27.39				

139-50-23aaa

1964		1964		1964	
June 5	26.09	Sept. 3	26.61	Dec. 9	26.80
July 1	26.43	Oct. 1	26.16		
Aug. 1	26.40	Nov. 2	26.54		

139-50-24cdd2

1963		1964		1964	
May 20	32.89	Jan. 14	34.23	May 6	33.90
Oct. 3	34.18	April 1	34.11	June 1	34.20

139-50-26bbb

1963		1964		1964	
Oct. 2	20.02	April 1	19.97	May 6	18.54
1964					
Jan. 20	20.08				

139-50-27add

1963		1964		1964	
May 20	28.00	May 6	28.97	July 1	29.86
Oct. 2	24.09	June 2	29.83	Nov. 2	29.50

139-51-36cba

1963		1964		1964	
July 5	18.73	April 1	18.57	July 1	18.06
1964		May 7	18.17		
Jan. 21	19.37	June 1	19.54		

139-52-2dcc

1963		1964		1964	
Oct. 30	15.98	May 7	14.93	Aug. 24	13.08
1964		May 28	13.34	Oct. 1	12.35
Jan. 22	15.97	June 30	14.04	Nov. 3	11.92
April 3	15.25	July 29	15.07		

139-52-13bcb

1963		1964		1964	
July 19	0.63	June 1	+1.46	Oct. 1	+1.28
1964		July 1	+1.33	Nov. 3	+0.96
April 3	+0.72	July 31	+0.82		
May 7	+1.60	Sept. 3	+1.01		

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

139-53-18baal

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
Aug. 13	13.06	May 7	13.55	Sept. 2	10.80
1964		May 28	12.66	Oct. 1	11.51
Jan. 22	13.90	July 1	11.39		
April 3	14.67	July 31	11.08		

139-53-36caa

1963		1964		1964	
Aug. 12	9.10	April 3	9.67	July 1	7.50
1964		May 7	9.38		
Jan. 22	8.27	June 1	8.90		

139-54-27bbb

1963		1964		1964	
Dec. 5	5.94	May 7	8.28	Sept. 2	5.86
1964		May 28	7.43	Oct. 1	5.34
Feb. 5	5.96	July 1	6.89		
April 5	6.18	July 31	6.57		

139-55-32aaa

1963		1964		1964	
Aug. 14	15.00	Feb. 5	17.22	May 7	18.26
Dec. 5	17.54	April 3	18.19		

139-55-34ccc

1963		1964		1964	
Dec. 5	17.66	May 7	16.30	Sept. 2	15.65
1964		May 28	16.86	Oct. 1	15.43
Feb. 5	16.54	June 30	16.70	Nov. 3	15.55
April 3	17.72	July 31	15.65	Dec. 9	15.58

140-49-7daa

1963		1964		1964	
Oct. 18	75.60	May 5	74.25	Aug. 24	75.30
1964		May 27	73.40	Nov. 2	75.52
Feb. 14	74.29	June 29	76.35		
April 1	74.90	July 30	74.80		

140-49-19ddd

1964		1964		1964	
May 25	90.08	Aug. 24	90.62	Dec. 9	91.25
June 28	90.38	Sept. 30	90.91		
July 30	90.78	Nov. 2	91.10		

TABLE 2.--Water-level measurements in selected wells in Cass County, N.Dak.--Cont.

140-49-29ddd

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
Aug. 19	91.10	Jan. 14	91.99	Aug. 24	92.57
Sept. 17	91.47	April 1	91.62	Sept. 30	91.31
Sept. 24	91.50	May 5	91.70	Nov. 2	91.48
Oct. 22	91.68	May 27	92.40	Dec. 9	91.28
Nov. 1	92.26	June 28	92.19		
Dec. 21	92.51	July 30	92.71		

140-49-31cdc

1963		1964		1964	
Aug. 28	101.46	Jan. 20	101.16	Aug. 24	102.22
Sept. 17	102.04	April 1	101.80	Sept. 30	103.89
Sept. 24	102.20	May 5	101.92	Nov. 2	103.99
Oct. 22	102.78	June 2	104.14	Dec. 9	104.64
Nov. 1	103.79	June 28	101.54		
Dec. 2	102.97	July 30	102.22		

140-49-32bbb

1963		1964		1964	
Aug. 19	97.41	Jan. 14	98.15	Aug. 24	98.91
Sept. 17	97.76	April 1	97.82	Sept. 30	99.45
Sept. 24	97.73	May 5	99.50	Nov. 2	99.64
Oct. 22	97.82	May 27	98.95	Dec. 9	99.49
Nov. 1	98.63	June 28	98.85		
Dec. 2	98.80	July 30	99.01		

140-49-32cdc

1963		1964		1964	
Oct. 1	106.01	April 1	102.33	Aug. 24	104.54
Oct. 22	103.25	May 5	102.35	Sept. 30	104.07
Nov. 1	105.36	May 27	106.24	Nov. 2	102.90
1964		June 28	106.78	Dec. 9	110.04
Jan. 15	102.23	July 29	105.77		

140-49-36aaa

1963		1964		1964	
Aug. 19	52.25	March 1	50.87	Sept. 30	18.10
Sept. 17	52.04	April 1	50.02	Nov. 2	17.94
Sept. 24	51.64	May 4	44.14	Dec. 9	14.10
Nov. 1	51.61	May 27	31.60		
Dec. 2	51.22	June 28	22.30		
1964		July 24	18.90		
Jan. 14	51.15	July 30	19.83		

140-50-4bcc

1963		1964		1964	
Oct. 25	31.50	April 1	31.27	May 29	31.00
1964		May 5	30.33	June 30	31.89
Jan. 20	29.87	May 27	31.74	Aug. 24	31.24

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

140-50-20addl

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
June 24	22.30	April 1	23.00	Aug. 24	23.39
Oct. 28	22.94	May 5	22.92		
1964		June 29	22.98		
Jan. 20	22.94	July 30	23.52		

140-50-34ccc1

1963		1964		1964	
Oct. 25	25.00	April 1	25.10	June 28	25.23
1964		May 5	25.00	July 29	25.11
Jan. 20	25.05	May 27	25.27	Aug. 24	25.37

140-51-24dcd2

1963		1964		1964	
Oct. 29	27.19	April 1	28.93	June 29	29.00
1964		May 5	28.64	July 30	30.17
Jan. 20	27.77	May 27	30.88	Aug. 24	29.95

140-55-19bac1

1963		1964		1964	
Dec. 5	11.93	May 6	10.41	Aug. 25	12.03
1964		May 28	10.20	Sept. 30	10.56
Feb. 5	11.99	June 30	9.92	Nov. 3	10.67
April 2	12.23	July 30	10.76	Dec. 9	10.88

140-55-19caa

1963		1964		1964	
Dec. 5	19.93	April 2	20.70	June 30	19.10
1964		May 6	18.91	July 30	19.31
Feb. 5	20.30	May 28	18.75	Aug. 25	18.75

140-55-22add

1963		1964		1964	
July 19	7.00	Feb. 4	7.87	May 6	8.18
Dec. 5	7.59	April 2	8.30	May 28	8.40

140-55-25aaa

1964		1964		1964	
July 15	30.20	Aug. 25	28.75	Nov. 3	28.16
July 29	29.60	Sept. 30	28.34	Dec. 9	27.46

141-49-33daa

1964		1964		1964	
May 5	61.91	July 30	62.92	Nov. 2	63.38
May 21	62.32	Aug. 24	63.01	Dec. 9	63.53
June 29	61.45	Sept. 30	63.12		

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

141-50-6ddd

Date	Water level	Date	Water level	Date	Water level
1964		1964		1964	
May 27	29.41	July 30	29.84	Aug. 24	29.81
June 29	28.50				

141-50-9aaa2

1964		1964		1964	
May 25	24.15	Aug. 24	24.68	Dec. 9	24.25
June 29	24.13	Sept. 30	24.07		
July 30	24.53	Nov. 2	24.22		

141-50-11cdc

1963		1964		1964	
Oct. 28	21.90	April 1	21.91	June 29	24.33
1964		May 5	21.78	Sept. 30	23.97
Jan. 20	21.86	May 27	23.77	Nov. 2	25.80

141-51-1dcd

1963		1964		1964	
Oct. 29	27.80	April 1	26.93	May 27	23.98
1964		May 5	28.50		
Jan. 20	29.09				

141-51-20ccc

1963		1964		1964	
Oct. 29	1.70	April 1	0.0	May 27	1.44
1964		May 5	1.40		
Jan. 22	1.50				

141-53-6ddc

1963		1964		1964	
Dec. 4	17.35	April 3	18.73	June 30	18.69
1964		May 6	18.57	July 30	20.09
Jan. 22	17.81	May 28	18.89	Aug. 24	18.90

141-53-33dcc

1964		1964		1964	
April 3	9.44	May 25	4.96	July 30	4.22
May 6	4.23	June 30	3.88	Aug. 24	4.85

141-53-33dcd

1964		1964		1964	
May 6	16.60	June 30	14.47	Aug. 24	13.88
May 28	13.92	July 30	13.65		

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

141-54-32ddc

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
Dec. 4	16.72	May 6	15.63	June 30	18.50
1964		May 27	14.22		
Feb. 4	17.40				

141-55-7adal

1963		1964		1964	
Dec. 4	23.34	April 2	27.10	June 30	22.30
1964		May 6	22.00	July 30	22.44
Feb. 4	25.09	May 28	24.33	Aug. 25	21.07

141-55-19daa

1963		1964		1964	
July 16	18.60	Feb. 4	21.33	May 6	20.59
Dec. 4	20.89	April 2	20.07	May 28	19.95

142-49-2baa2

1963		1964		1964	
Oct. 28	17.65	May 5	17.18	July 30	17.85
1964		May 27	18.08	Aug. 24	18.44
Feb. 14	18.90	June 29	12.04		

142-49-26baa

1963		1964		1964	
Oct. 28	28.75	April 1	27.95	June 29	29.80
1964		May 5	28.30		
Jan. 20	28.78	May 27	29.10		

142-50-8aab1

1963		1964		1964	
July 9	14.55	April 1	15.50	July 30	15.20
Oct. 28	16.40	May 5	15.84	Aug. 24	14.33
1964		May 27	16.69		
Jan. 20	15.58	June 29	16.45		

142-51-5cbc

1963		1964		1964	
July 16	5.20	April 2	5.53	June 29	1.85
Oct. 29	5.86	May 5	1.70		
1964		May 27	2.89		
Jan. 22	5.81				

142-52-4bba

1963		1964		1964	
June 18	6.00	April 3	16.28	June 30	6.40
Oct. 30	10.10	May 5	6.73		
1964		May 27	6.67		
Jan. 22	11.00				

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

142-52-17aaa

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
Oct. 30	4.34	April 3	7.08	June 30	4.60
1964		May 5	4.48	July 30	4.20
Jan. 22	4.16	May 27	16.75	Aug. 24	4.30

142-52-24bbc

1962		1962		1964	
July 24	46.34	Oct. 24	48.14	May 4	49.65
Aug. 2	47.35	Nov. 30	47.48	May 27	53.75
Aug. 10	48.34	Dec. 14	47.55	June 25	52.47
Aug. 17	46.86	1963		July 30	56.90
Aug. 23	47.60	Jan. 10	46.60	Aug. 24	53.24
Sept. 5	48.80	Feb. 5	47.16	Sept. 30	51.44
Sept. 18	48.50	March 5	47.07	Nov. 3	51.55
Sept. 23	49.23	Oct. 28	51.97	Dec. 9	54.24
Oct. 5	47.36	1964			
Oct. 12	50.00	Jan. 22	52.04		
Oct. 17	47.50	April 2	50.07		

142-53-15cba

1963		1964		1964	
July 9	35.80	May 6	39.51	Sept. 30	41.58
Dec. 4	43.64	May 27	40.04	Nov. 3	40.72
1964		June 30	39.38	Dec. 9	43.31
Jan. 22	42.77	July 30	40.50		
April 3	41.01	Aug. 24	40.91		

142-53-36abb

1964		1964		1964	
Jan. 22	15.10	May 27	11.56	July 30	10.08
May 6	14.43	June 30	9.82	Aug. 24	10.24

142-54-1bbb

1964		1964		1964	
July 30	7.48	Sept. 30	2.16	Dec. 9	2.68
Aug. 25	3.91	Nov. 3	2.45		

142-54-8ddd

1964		1964		1964	
July 30	28.21	Sept. 30	23.38	Dec. 9	23.27
Aug. 25	24.17	Nov. 3	23.40		

142-55-1bba

1964		1964		1964	
July 30	29.70	Sept. 30	28.31	Dec. 9	28.58
Aug. 25	29.36	Nov. 3	28.34		

TABLE 2.--Water-level measurements in selected wells in Cass County, N. Dak.--Cont.

142-55-4cab

Date	Water level	Date	Water level	Date	Water level
1963		1964		1964	
Dec. 3	11.22	April 2	10.83	June 30	9.25
1964		May 6	10.16	July 30	9.50
Feb. 4	11.77	May 28	9.75	Aug. 25	9.85

142-55-32baa

1963		1964		1964	
July 1	12.50	April 2	13.23	June 31	14.41
Dec. 3	14.29	May 6	13.68		
1964		May 28	13.84		
Feb. 4	14.36				

143-49-8ccd

1963		1964		1964	
Oct. 31	20.05	April 1	20.22	June 29	20.11
1964		May 5	20.19	July 30	19.85
Jan. 20	20.20	May 27	20.19	Aug. 24	20.44

143-51-32aaa1

1963		1964		1964	
Oct. 29	11.67	April 2	11.04	June 29	4.79
1964		May 5	9.29	July 30	9.04
Jan. 22	10.88	May 27	9.13	Aug. 24	9.47

143-52-17cdc

1963		1964		1964	
June 19	11.00	April 2	14.04	July 30	11.65
Oct. 31	13.29	May 6	11.77	Aug. 24	12.33
1964		May 27	11.66		
Jan. 22	14.12	June 30	11.00		

143-53-13bbb

1963		1964		1964	
June 19	10.00	Jan. 22	14.06	April 2	14.00
Oct. 31	12.76				

143-53-18aab

1963		1964		1964	
June 21	8.00	April 2	10.64	June 30	8.89
Oct. 31	8.61	May 6	8.20		
1964		May 27	8.19		
Jan. 22	9.60				

143-54-31bdd

1963		1964		1964	
Dec. 3	23.95	May 6	24.66	Aug. 25	24.04
1964		May 27	24.60	Dec. 9	21.71
Feb. 4	23.95	June 30	32.66		
April 2	25.03	July 30	32.83		

TABLE 3. – Chemical analyses of selected water samples, Cass County, N. Dak.

Source of water: Qd, glacial drift and associated sand and gravel deposits; Qla, Lake Agassiz silt, sand, and gravel deposits; Qsd, Sheyenne River Delta sand and gravel deposits; Kd, Dakota Sandstone; Qow, outwash deposits of sand and gravel. Remarks: Analyses by North Dakota State Laboratory Department, Bismarck, N. Dak. unless otherwise noted; a, deviation between equivalents per million (epm) of cations and anions exceeds one percent of sum of cation and anion epm; b, analysis by North Dakota State Health Department, Bismarck, N. Dak.; c, apparently $CaCO_3$ precipitated before analysis; d, sample frozen.

[Analytical results in parts per million except as indicated]

Location	Depth	Source	Date of collection	Temperature (°F)	Silica (SiO_2)	Total iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Sum	Dissolved solids: Residue on evaporation at 180°C	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption-ratio	Specific conductance (micromhos at 25°C)	pH	Remarks
137-49-22adb	190	Qd	11-18-64	48	22	0.37	35	9.4	132	5.3	344	0	58	56	0.5	0.0	0.35	488	498	126	0	68	5.1	811	8.0	
137-49- 6bcb	150	Qd	6-24-64	53	22	.17	146	38	320	16	309	0	550	290	.4	3.0	.95	1,540	1,600	520	267	56	6.1	2,200	8.2	
137-49- 9dcd	75	Qa	11-18-64	49	22	.07	78	35	152	10	376	0	130	173	.2	1.0	.15	786	780	338	30	48	3.6	1,350	7.8	
137-49-12cdd	98	Qa	5-13-65	48	23	.12	64	17	144	8.6	334	0	139	100	.4	1.8	.25	663	743	228	0	57	4.1	1,220	8.0	
137-49-17daa1	102	Qd	11-18-64	42	23	.48	85	24	142	8.0	382	0	132	139	.2	1.0	.32	743	737	310	0	49	3.5	1,270	7.9	a
137-49-18bbd	105	Qd	6-17-64	56	21	.26	156	47	285	10	295	0	480	331	.6	3.0	.85	1,478	1,590	585	344	51	5.7	2,390	8.2	
137-49-19bbb	83	Qd	11-18-64	45	20	2.9	191	46	400	13	295	0	624	476	.2	1.0	.65	1,920	2,030	665	423	56	6.8	3,000	8.1	
137-49-24bda	107	Qd	11-17-64	..	24	.13	56	19	97	7.3	305	0	129	45	.3	.0	.00	528	530	219	0	48	2.9	861	7.9	
137-49-25ccc	240	Qd	8-21-64	..	25	.40	147	81	131	8.2	393	0	583	48	.4	2.0	.00	1,220	1,260	700	378	29	2.1	1,760	7.6	
137-49-28cdd	190	Qd	11-18-64	45	23	.44	55	15	167	4.8	442	0	46	113	.6	.0	.00	643	638	200	0	64	5.1	1,110	8.1	
137-50- 8caa	142	Qd	11-17-64	48	20	.26	60	14	82	6.3	333	0	22	76	.4	.0	.35	445	430	208	0	45	2.5	810	8.1	6
137-50-19ddc	246	Qd	6-17-64	51	22	.36	86	39	742	18	337	0	612	838	.6	30 ?	1.5	2,480	2,590	375	99	80	17	4,040	8.2	
137-50-26daa	108	Qd	11-18-64	..	20	.13	112	38	396	12	305	0	595	316	.3	1.0	1.0	1,640	1,750	435	185	66	8.2	2,590	8.1	
137-50-28dad	49	Qla	3-30-61	..	.....	8.3	162	50		71	561	0	300	.5	.55	11	.....	1,170	.....	610	150	.....	.....	.....	7.3	b
137-50-30cad	183	Qd	11-17-64	47	23	1.3	63	23	656	12	371	0	504	625	.4	1.0	2.3	2,090	2,010	250	0	84	18	3,340	8.0	
137-51- 6cbb	107	Qd	11-17-64	46	22	.29	92	21	181	14	506	0	227	51	.2	.0	.90	858	834	314	0	54	4.4	1,300	8.2	
137-51-21bcc	167	Qd	6-25-64	52	23	.36	120	52	358	16	336	0	606	300	.6	2.0	1.0	1,640	1,670	515	240	59	6.9	2,320	8.2	
137-51-28cdc	84	Qla	6-24-64	52	24	.40	120	26	133	14	578	0	196	21	.4	11	1.0	830	836	405	0	40	2.9	1,240	7.8	
137-51-35cdd2	207	Qa	11-17-64	46	26	1.8	43	18	635	10	569	0	441	476	.4	1.0	2.0	1,930	1,900	180	0	88	21	3,090	8.2	
137-52-16ddc	160	Qd	11-17-64	45	21	2.3	140	48	584	20	298	0	891	461	.4	1.0	2.4	2,320	2,330	545	301	69	11	3,480	8.1	
137-52-31bab	55	Qsd	11-17-64	..	24	.36	106	38	14	6.5	403	0	115	15	.4	.0	.15	518	528	420	90	7	.3	853	8.2	a
137-52-31bbb	17	Qsd	8-19-64	..	26	7.2	21	57	58	19	429	34	25	4.0	.2	2.0	.00	464	512	288	0	29	1.5	818	8.7	c
137-53- 3ddc	495	Kd	1963	..	.....	.6	.....	.....	.....	.....	276	0	1,350	560	....	0	....	2,985	2,790	44	.....	.....	.....	.....	8.2	
137-53- 4dbb	420	Kd	11-17-64	..	6.0	.48	10	4.0	1,000	12	376	10	1,070	639	3.8	2.0	3.6	2,940	2,970	41	0	98	68	4,630	8.3	
137-53-19ccb	33	Qsd	11-17-64	45	22	.14	256	105	214	18	278	0	739	380	.2	.0	.75	1,870	1,980	1,070	843	30	2.8	2,770	7.9	
137-54-28ccc	12	Qow	11-17-64	50	23	.11	113	26	24	8.5	417	0	86	6.0	.4	7.0	.00	499	511	388	46	12	.5	833	8.1	
137-55-20ccc	835	Kd	6-25-64	58	7.8	4.7	146	39	1,100	63	212	0	1,490	925	4.3	36	2.4	3,910	3,940	525	.....	80	21	5,400	8.0	
137-55-30bcb	80	Qd	8-6-64	..	24	.36	132	51	227	28	343	0	610	109	.2	3.0	1.5	1,350	1,350	540	259	46	4.2	1,780	7.8	
137-55-35ddd	125	Qd	8-16-64	..	26	.56	112	110	66	8.7	362	0	473	46	.4	3.0	.00	1,020	1,030	700	404	17	1.1	1,440	7.9	c
138-48- 7cdd	153	Qd	11-13-64	..	21	.90	43	14	158	6.2	342	0	159	55	.4	.0	.35	633	614	164	0	67	5.4	1,030	8.0	
138-49- 4aaa	150	Qd	6-6-64	..	21	.27	44	10	80	5.2	283	0	22	50	.4	6.4	.00	377	376	153	0	52	2.8	670	8.2	
138-49-12aab	320	...	11-13-64	50	6.4	.40	26	9.0	1,250	14	322	0	1,360	852	3.4	1.5	2.8	3,690	3,720	102	0	96	54	5,680	8.0	
138-49-13aaa	132	Qd	11-13-64	46	20	.21	52	12	148	6.5	337	0	171	46	.4	.0	.48	623	608	178	0	63	4.8	1,000	8.0	
138-49-15bab	179	Qd	6-25-64	51	22	.20	33	12	66	5.5	222	0	46	37	.5	.0	.40	331	354	132	0	51	2.5	577	8.2	
138-49-19aaa	303	Qd ?	3-4-64	..	8.5	.62	16	3.6	345	13	327	0	323	156	1.4	1.0	1.9	1,030	1,070	55	0	91	20	1,660	7.4	
138-49-20bbb	110	Qd	11-13-64	..	24	.53	76	30	135	7.9	356	0	162	105	.4	1.0	.20	718	713	312	21	48	3.3	1,210	8.1	
138-49-27baa	240	Qd	11-13-64	49	17	.46	34	11	126	5.2	373	0	22	58	.5	.0	.48	459	467	131	0	67	4.8	745	8.0	
138-49-28dcc	90	Qd	11-13-64	46	19	.31	53	23	156	8.0	390	0	114	105	.4	.0	.55	671	652	226	0	59	4.5	1,160	8.2	
138-49-29ccc	280	Qd	8-20-64	..	24	.24	108	41	273	8.0	281	0	358	315	.5	3.0	.00	1,270	1,280	440	210	57	5.6	2,020	7.8	
138-49-31bab	243	Qd	11-13-64	50	3.5	.56	17	8.4	610	10	329	0	576	383	3.4	2.0	2.8	1,780	1,820	77	0	94	30	2,820	7.9	
138-49-34ccc	100	Qd	6-11-64	..	23	.47	38	14	123	6.4	349	0	39	70	.6	4.4	.30	490	482	152	0	63	4.3	858	8.2	
138-50- 5add	455	...	3-4-64	..	5.5	.64	16	4.9	830	18	383	0	756	557	5.9	1.0	3.9	2,380	2,480	60	0	96	46	3,790	7.5	
138-50- 5bbb	240	Qd	7-14-64	..	22	.28	44	16	263	10	634	0	33	163	.5	142	.85	1,000	925	176	0	75	8.6	1,440	8.1	a
138-50-13bcb	123.0	Qd	11-13-64	50	23	2.3	80	21	264	8.8	349	0	252	231	.2	1.0	.85	1,060	1,120	285	0	66	6.8	1,740	8.1	
138-50-20cdd	180	Qd	11-13-64	49	12	.24	80	20	246	7.2	387	0	64	310	.3	.0	.00	931	931	280	0	65	6.4	1,660	8.1	

TABLE 3. – Chemical analyses of selected water samples. Cass County, N. Dak. Cont.

[Analytical results in parts per million except as indicated]

Location	Depth	Source	Date of collection	Temperature (°F)	Silica (SiO_2)	Total iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Sum	Dissolved solids: Residue on evaporation at 180°C	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption-ratio	Specific conductance (micromhos at 25°C)	pH	Remarks
138-50-35aaa	100	Qd	7-31-64	..	20	0.24	104	42	240	18	332	0	302	288	0.5	0.0	0.00	1,180	1,190	432	160	53	5.0	1,920	8.1	
138-51- 4bbb	320	...	6-25-64	55	5.0	.52	26	9.2	1,320	64	232	17	1,440	928	4.5	53	4.3	3,980	4,060	103	0	94	56	5,650	8.4	
138-51- 9ccd	80	Qd	11-18-64	48	22	.04	94	30	250	14	366	0	384	158	.3	1.0	.80	1,130	1,140	358	58	59	5.8	1,770	8.0	
138-51-24ccb	80	Qd	11-18-64	50	21	.20	117	41	171	14	409	0	278	162	.2	1.0	.60	1,010	1,030	462	127	44	3.5	1,620	7.8	
138-51-32ebb	69	Qd	11-18-64	44	23	.12	103	37	180	15	407	0	418	42	.2	.0	.65	1,020	1,040	410	77	48	3.9	1,530	7.8	
138-52-11ccc	276	Qd	11-10-64	49	23	1.2	130	37	980	19	422	0	1,280	682	.6	.0	1.8	3,360	3,470	475	129	81	20	4,800	7.9	
138-53- 6abb	32	Qla	11-10-64	48	18	.26	274	150	74	55	391	0	744	209	.1	178	.00	1,900	2,100	1,300	980	11	.9	2,610	7.9	
138-53-10ddc	115	Qd	11-11-64	..	24	.41	66	23	479	15	446	0	490	319	.4	1.0	1.3	1,640	1,610	260	0	79	13	2,500	8.1	
138-54- 8bbb	70	Qd	6-25-64	51	24	.13	154	36	190	18	360	0	638	16	.4	1.0	.00	1,250	1,230	535	240	42	3.6	1,650	7.9	
138-55- 6bbc	900	Kd	6-24-64	53	6.8	.24	137	35	1,150	60	282	0	1,360	1,010	3.3	.0	2.6	3,900	3,990	485	254	82	23	5,770	7.8	
138-55-24ccc	65	Qd	11-10-64	46	20	.16	282	109	226	20	325	0	1,100	152	.1	52	.35	2,120	2,210	1,150	884	29	2.9	2,730	7.9	
139-49- 2ccd1	25	Qla	5-13-65	44	22	.26	35	15	255	6.6	337	0	168	178	.5	5.7	1.3	854	822	150	0	78	9.1	1,380	7.8	
139-49- 6acc	208	Qd	6-14-65	48	23	.66	67	14	303	9.1	377	0	151	310	.5	5.3	.48	1,070	1,030	224	0	74	8.8	1,760	7.9	
139-49- 6cdd	191.7	Qd	3-13-64	..	21	1.8	52	17	415	15	417	0	134	450	1.0	1.0	.55	1,310	1,370	200	0	80	13	2,280	7.4	
139-49- 6dcd1	215.5	Qd	11-9-63	..	24	.96	57	20	450	13	410	0	207	478	.9	1.0	.70	1,450	1,510	224	0	80	13	2,420	7.5	d
139-49- 6dcd2	182	Qd	11-3-63	..	15	.52	57	19	440	14	388	0	217	472	.8	1.0	.75	1,430	1,470	220	0	80	13	2,420	7.8	d
139-49- 6ddc	182	Qd	11-4-63	..	18	.40	57	19	372	13	346	0	179	410	.9	1.0	1.1	1,240	1,270	220	0	77	11	2,090	7.7	d
139-49- 7abb2	204	Qd	6-18-65	43	20	.44	45	12	287	9.1	366	0	168	238	.6	2.4	1.0	970	949	162	0	78	9.8	1,590	8.0	
139-49- 8bba1	131.7	Qd	5-22-53	..	.....	.38	47.6	14.8	240	.....	334	19.2	39.7	252	.7	4.4	.....	953	.....	180	.....	..	.....	.....	...	b
139-49- 8bba2	112	Qd	5-22-53	..	.....	.70	52.9	19.0	151	.....	322	24	10	160	.4	4.4	.....	745	.....	210	.....	..	.....	.....	...	b
139-49- 8bda	155	Qd	6-18-65	45	23	.12	41	12	214	8.1	344	0	130	146	.6	1.6	.82	746	751	150	0	74	7.6	1,250	7.9	
139-49- 9ddd3	180	Qd	7-9-64	..	20	.29	50	14	101	6.6	256	6	92	72	.4	.0	0.60	488	501	184	0	53	3.2	838	8.5	
139-49-11baa	30	Qla	10-5-64	59	3.2	.12	18	9.7	28	3.6	70	3.8	70	11	1.1	.0	.00	182	204	86	22	40	1.3	312	8.5	
139-49-11cbb	403	Qd	3-13-64	..	20	.46	38	9.0	191	7.0	351	0	108	112	.9	1.0	.00	659	680	132	0	75	7.2	1,120	7.7	
139-49-18bbb	210	Qd	8-26-63	..	23	.54	62	23	470	20	381	0	300	472	1.0	1.0	1.55	1,562	1,624	250	0	79	13	2,616	7.3	
139-49-22bbb	236	Qd	8-30-63	..	20	.20	48	17	128	8.0	264	0	112	108	.5	0	1.45	573	596	192	0	58	4.2	1,046	7.6	
139-49-24daa	90	Qd	5-13-65	46	19	.11	352	524	322	4.4	654	0	2,790	15	.4	12	.50	4,360	4,540	3,030	2,500	19	2.5	4,370	7.8	a
139-49-29bcd	238	Qd	11-18-64	45	16	.48	28	9.2	257	8.2	432	0	140	125	1.1	1.0	.85	800	796	108	0	83	10	1,350	7.8	
139-49-32cca	183	Qd	11-18-64	..	22	.12	56	37	142	9.0	317	0	113	140	.4	9.8	.15	685	640	291	30	51	3.6	1,120	7.8	
139-50- 2dbc	250	Qd	5-13-65	47	22	.12	54	23	340	9.7	361	0	170	345	.5	3.2	1.8	1,150	1,080	228	0	75	9.8	1,860	7.7	
139-50- 6bbb2	165	Qd	10-5-64	57	5.0	.32	102	46	808	24	379	0	1,070	573	1.3	5.0	3.1	2,820	2,900	445	135	79	17	4,060	7.9	
139-50-10add	116	Qd	7-13-64	46	18	.31	51	21	227	17	381	0	126	209	.6	.0	.00	877	886	214	0	68	6.7	1,380	8.2	
139-50-10add	116	Qd	7-14-64	46	25	.28	54	19	215	11	371	0	94	202	.4	17	.00	824	818	214	0	67	6.4	1,380	7.5	
139-50-10add	116	Qd	7-15-64	46	24	.28	53	20	215	11	368	0	94	205	.4	17	.00	821	820	216	0	67	6.4	1,360	7.3	
139-50-23aaa	150	Qd	7-9-64	..	24	1.6	139	58	90	8.5	784	0	42	76	.2	.0	.65	825	849	585	0	25	1.6	1,400	8.0	
139-50-31bbb	417	...	3-4-64	..	22	.24	98	24	740	16	412	0	500	793	1.0	1.0	1.5	2,400	2,530	344	6	82	17	3,930	7.2	
139-51-32cab1	180	Qd	5-13-65	48	21	.11	76	26	189	11	339	0	238	132	.2	1.9	1.2	863	859	295	10	57	4.8	1,390	7.8	
139-52- 2dcc	296	Qd	11-10-64	..	5.2	1.5	40	15	884	16	376	0	1,040	511	3.1	2.0	4.1	2,710	2,680	160	0	91	30	3,910	8.0	
139-53-11bcc	23	Qla	11-10-64	50	24	.18	162	54	70	11	388	0	408	41	.2	1.5	.00	963	1,010	625	307	20	1.2	1,300	7.9	
139-54-11ddd	212	Qd	8-21-64	..	25	.78	26	20	217	11	478	0	149	61	.5	1.0	3.0	746	760	148	0	74	7.7	1,160	8.1	
139-54-30dda	90	Qd	11-10-64	47	21	.21	147	37	184	15	373	0	594	12	.1	.0	.40	1,190	1,250	520	214	43	3.5	1,610	7.8	
139-55- 4abb	80	Qd	11-10-64	46	22	.06	516	464	76	14	442	0	2,140	241	.1	540	.00	4,230	4,590	3,200	2,840	5	.6	4,410	7.8	
140-49- 7dca1	154	Qd	5-12-65	47	23	.86	81	28	159	7.3	693	0	17	58	.3	1.2	.90	718	690	318	0	51	3.9	1,170	7.7	
140-49-15ddc1	80	Qd	6-24-64	53	15	.40	446	996	2,000	83	585	0	7,480	568	4.0	556	.0	12,400	13,000	5,210	4,740	45	12	12,400	7.9	
140-49-16daa	146	Qd	6-26-64	58	24	.44	40	13	145	10	412	5	19	84	.4	2.0	.65	545	572	154	0	65	5.1	912	8.3	

TABLE 3. – Chemical analyses of selected water samples. Cass County, N. Dak. Cont.

[Analytical results in parts per million except as indicated]

Location	Depth	Source	Date of collection	Temperature (°F)	Silica (SiO_2)	Total iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Sum	Dissolved solids: Residue on evaporation at 180°C	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption-ratio	Specific conductance (micromhos at 25°C)	pH	Remarks
140-49-24ddd	80	Qd	5-12-65	46	21	0.10	268	123	85	5.3	617	0	749	28	0.2	46	0.25	1,630	1,740	1,180	670	14	1.4	2,090	7.6	
140-49-31acb	18	Qla	5-12-65	42	16	.38	160	124	74	14	373	0	435	95	.1	210	.35	1,310	1,440	910	105	15	1.1	1,830	7.7	a
140-49-31cdc	200	Qd	8-23-63	..	20	.72	34	18	402	12	517	0	18	430	1.3	2.0	1.55	1,190	1,090	160	0	83	14	2,025	7.9	
140-49-32bbc	170	Qd	6-16-65	48	22	.50	81	15	247	9.5	494	0	48	305	.3	1.2	.50	973	904	263	0	66	6.6	1,670	7.8	a
140-49-35ddd	191	Qd	3-13-64	..	18	.35	49	15	200	6.0	315	0	162	143	.7	1.0	.0	750	762	185	0	69	6.4	1,180	7.6	
140-49-36aaa	223	Qd	8-8-63	..	23	.39	35	77	220	5.0	305	15	370	166	.7	2.0	.18	1,063	1,129	400	150	54	4.9	1,793	8.3	
140-50-35cdc	96	Qd	11-6-64	..	....	.8	...	.....	.....	....	365	0	91	145	...	6	1.05	672	.....	170	.....	73	7.1	1,260	...	
140-50-35ddd	70	Qla ?	11-5-64	..	....	.3	...	.....	.....	....	420	0	89	59	...	0	.15	487	.....	250	.....	55	3.8	1,100	...	
140-51- 6ccc	84	Qd	5-13-65	47	21	.12	91	26	150	11	329	0	262	90	.2	1.0	1.0	815	808	332	55	49	3.6	1,270	7.9	
140-52-10ddd	131	Qd	11-17-64	46	22	.25	59	28	212	10	379	0	298	87	.3	.0	.00	904	850	264	0	63	5.7	1,350	7.9	
140-52-35adb	315	...	5-28-47	..	..	.15	7.2	4.4	851	....	364	..	1,129	330	4.5	.....	....	.....	2,760	36	.....	..	....	.....	8.0	b
140-53- 5aba	35	Qd	11-10-64	50	23	.12	102	31	13	7.0	329	0	107	25	.2	2.0	.35	473	502	384	115	7	.3	745	7.9	
140-53-26ccb	20	Qla	8-25-64	54	26	.19	114	62	17	4.0	439	0	213	6.0	.5	.0	.00	658	715	540	180	6	.3	1,020	7.4	
140-54- 2daa1	52	Qd	11-10-64	46	23	.12	222	84	445	27	371	0	1,060	341	.1	27	1.2	2,410	2,420	900	596	51	6.5	3,190	7.7	
140-54-13add	670	Kd	4-15-57	..	....	....	...	.....	.....	....	344	Trace	.....	.....	...	0	....	.....	2,810	160	.....	..	....	.....	8.3	b
140-55-19bac2	28	Qow	6-16-64	..	21	.11	90	40	24	3.2	300	4	151	17	.5	8.0	.00	505	505	390	138	12	.5	785	8.3	
140-55-25aaa	220	Qd	7-17-64	..	22	.14	40	36	188	22	289	0	391	20	.4	15	.60	876	890	246	9	60	5.2	1,290	8.1	
140-55-27bab	540	Kd	11-10-64	51	6.2	.28	46	9.7	1,140	44	368	0	900	1,040	3.9	.0	3.2	3,370	3,420	155	0	91	36	5,220	8.1	
141-49- 6cdb	225	Qd	5-12-65	46	6.4	.38	14	8.5	492	11	381	5	180	450	.6	3.6	1.9	1,360	1,330	70	0	93	26	2,310	8.5	
141-49-33cab	185	Qd	5-12-65	47	20	.42	44	18	221	8.0	325	0	139	189	.5	1.1	1.2	800	784	186	0	71	7.1	1,330	8.0	
141-50- 2add	159	Qd	7-10-63	..	....	....	...	.....	574	.....	372	Trace	.....	.....	...	7.9	....	.....	2,378	240	.....	..	....	.....	...	b
141-50- 6ddd	130	Qd	5-26-64	..	23	.73	56	17	278	10	508	5	52	248	.5	1.0	.00	940	948	210	0	73	8.3	1,700	8.3	
141-50- 9aaa2	280	Qd	5-23-64	..	25	.36	91	33	930	30	401	0	789	913	.9	.00	2.7	3,010	2,940	365	37	83	21	4,560	8.1	
141-50-11cdc	195	Qd	5-12-65	..	23	.22	128	50	866	18	353	0	760	975	.1	6.4	2.6	3,000	2,960	525	236	77	16	4,580	7.6	
141-51-19cdd	317	Qd	6-25-64	52	8.9	.36	46	14	862	26	305	0	991	545	3.5	16	2.6	2,660	2,680	172	0	90	29	3,880	7.8	
141-52-24ddd	216	Qd	6-13-63	..	20	.30	124	54	302	13	249	0	571	294	.6	5.0	.86	1,508	1,576	530	325	55	5.8	2,370	7.9	
141-52-25bbc	280	Qd	6-13-63	..	23	.60	120	49	524	17	298	0	818	402	.8	6.0	2.10	2,109	2,162	500	255	69	11	3,168	8.1	
141-52-26aad	260	Qd	6-13-63	..	17	.56	40	19	720	14	273	14	900	394	2.7	5.5	2.70	2,264	2,230	180	0	89	24	3,574	8.4	
141-53-20add	675	Kd	10-8-64	..	5.2	.85	124	41	966	42	241	0	1,380	710	.5	.0	2.6	3,380	3,340	480	283	80	19	4,940	7.9	
141-54- 4cdd	158	Qd	5-12-65	48	22	.33	172	32	57	12	423	0	343	2.5	.3	.9	.00	850	866	560	214	18	1.0	1,200	7.6	
141-54-34abd	145	Qd	11-11-64	..	17	4.0	90	28	130	16	487	0	230	6.7	.1	.0	1.1	763	762	342	0	44	3.1	1,160	7.8	
141-55- 7ads2	43	Qd	11-10-64	48	23	.30	480	98	503	25	283	0	2,240	140	.1	2.0	.65	3,650	3,740	1,600	1,370	40	5.5	3,910	7.8	
141-55-12ddc	86	Qd	11-17-64	48	20	.20	85	32	82	13	337	0	250	2.8	.0	.0	.35	651	650	346	70	33	1.9	1,000	7.8	
141-55-34aaa	640	Kd	10-25-60	..	....	....	...	.....	.....	.....	451	0	750	.....	.9	0	.....	.....	3,810	145	.....	..	....	.....	...	b
142-49-18ddd	210	Qd	6-16-65	48	23	.48	138	38	323	23	336	0	275	975	.7	4.0	1.9	3,020	2,890	500	225	78	17	4,680	7.9	
142-49-26baa	125	Qd	6-16-65	49	26	.14	91	10	244	10	308	0	156	299	.4	1.6	.40	991	971	270	18	65	6.5	1,610	7.8	a
142-50- 8aab2	342	Qd ?	6-16-65	47	36	.37	272	78	90	12	1,190	0	48	192	.2	.9	.00	1,320	1,280	1,000	25	16	1.2	2,140	7.8	a
142-50-19bcc	120	Qd	6-16-65	46	25	1.4	98	8.1	737	15	652	0	213	847	.6	13	2.2	2,280	2,260	278	0	84	19	3,790	8.1	a
142-50-35add	219	Qd	6-16-65	46	25	.48	107	25	959	28	416	0	835	910	.8	3.1	2.5	3,100	3,000	370	29	84	21	4,770	8.2	
142-51-17daa	411	Kd	6-16-65	46	5.0	.40	32	8.0	1,120	23	362	0	1,200	776	2.9	4.0	3.3	3,350	3,190	113	0	94	46	4,990	8.2	a
142-51-18dcd	212	Qd	6-16-65	47	20	.60	48	7.3	1,010	18	336	0	1,240	697	2.8	2.2	3.8	3,220	3,220	150	0	93	36	4,980	8.0	a
142-51-20dcd	160	Qd	6-16-65	56	24	.08	58	17	980	11	312	0	1,200	659	2.6	5.8	3.0	3,110	3,200	216	0	90	29	4,590	7.9	a
142-51-30cdd	136	Qd	6-16-65	48	25	.17	85	9.2	130	9.7	280	0	217	75	.4	.5	.39	690	665	250	21	52	3.6	1,070	7.8	a
142-52-17aaa	180	Qd	6-25-64	56	21	.68	51	22	220	11	295	7	246	166	.7	1.0	.35	891	868	220	0	67	6.4	1,370	8.3	
142-52-24bca	189	Qd	8-4-61	..	....	.6	...	.....	.....	.....	....	..	237	197	0	Trace	....	921	887	172	.....	..	.....	1,694	7.9	
													98													

TABLE 3. – Chemical analyses of selected water samples. Cass County, N. Dak. Cont.

[Analytical results in parts per million except as indicated]

Location	Depth	Source	Date of collection	Temperature (°F)	Silica (SiO_2)	Total iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Sum	Dissolved solids: Residue on evaporation at 180°C	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption-ratio	Specific conductance (micromhos at 25°C)	pH	Remarks
142-53-20cdd	55	Qd	11-5-64	50	25	13	133	26	14	11	415	0	140	2.9	.1	0.0	0.00	569	564	440	100	6	0.3	894	7.5	
142-54- 1bbb	160	Qd	11-6-64	46	21	.14	65	17	24	10	295	0	51	1.9	.2	2.0	.00	337	330	232	0	17	.7	543	7.7	
142-54- 8ddd	100	Qd	11-6-64	46	21	.19	63	17	8.4	7.1	264	0	40	1.0	.2	.0	.00	288	323	226	10	7	.2	474	7.9	a
142-54-25cbc	136	Qd	11-5-64	..	23	1.3	114	27	38	12	482	0	97	3.8	.0	.0	.35	553	544	394	0	17	.8	869	7.3	
142-54-34aad	90	Qd	6-9-65	..	32	.11	152	49	32	11	344	0	365	1.9	.4	.4	.00	812	810	580	298	10	.6	1,120	7.9	
142-55- 8ddd	800	Kd	6-25-64	53	6.2	2.1	30	5.6	1,170	34	485	0	259	1,420	4.5	3.0	4.0	3,170	3,210	98	0	95	51	5,530	7.7	
143-49-30ddd	460	...	4-27-65	..	4.8	1.4	15	5.5	1,130	9.4	293	0	912	954	.6	8.9	4.5	3,190	3,180	60	0	97	63	4,980	8.0	
143-50-19aba	80	Qd	5-12-65	47	22	.13	74	27	3.7	2.8	311	0	48	.5	.0	.0	.00	331	320	294	39	2.6	.1	572	7.9	
143-50-29daa	370	...	4-27-65	48	22	.82	135	34	974	30	315	0	979	930	.7	14	2.5	3,140	3,320	475	217	80	19	4,910	7.6	
143-51-18dad	352	...	4-27-65	44	6.4	.26	30	5.6	1,150	23	322	0	1,260	797	3.6	..0	3.6	3,440	3,340	98	0	95	50	4,970	8.2	a
143-52-33aba	392	...	11-5-64	54	19	2.2	120	27	1,020	43	254	0	1,350	767	2.0	3.5	2.9	3,480	3,430	410	202	83	22	4,890	7.5	
143-53-15cdb2	60	Qla	11-5-64	46	20	.09	202	71	83	7.2	422	0	454	51	.2	120	.10	1,220	1,180	795	449	18	1.3	1,630	7.6	
143-54-23bba	120	Qd	11-5-64	..	24	8.6	134	34	13	9.6	392	0	190	3.4	.2	1.0	.00	611	648	475	154	5	.3	920	7.2	
143-54-31bdd	121	Qd	11-5-64	47	24	.18	124	25	37	11	395	0	164	2.9	.2	2.0	.25	586	614	412	88	16	.8	869	7.4	
143-55-15dcd	62	Qd	11-6-64	48	20	.49	126	34	19	11	415	0	160	3.8	.1	.0	.00	579	626	456	116	8	.4	929	7.9	
143-55-26bba	80	Qd	2-6-56	..	..	....	...	.....	.....	....	115	14.4	.....	.....	....	Trace	....	.....	360	220	80	..	....	.....	...	b
													99													

TABLE 4.–Logs of test holes and selected wells.

137-49-17aaa
Test hole 2347

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, silty, dusky-yellow to light-olive-gray; scattered lignite flakes, calcareous	16	17
	Clay, silty, olive-gray to dark-greenish-gray; scattered lignite flakes, calcareous	35	52
Till and associated glacioaqueous deposits:			
	Clay, silty, gravelly, olive-gray; calcareous	9	61
	Sand, coarse, gravelly, predominantly quartz and limestone	11	72
	Sand, coarse, gravelly, clay lenses; predominantly quartz and limestone	25	97
	Clay, silty, gravelly, olive-gray; highly calcareous	70	167
	Boulder, limestone	1	168
Graneros Shale:			
	Clay, dark-greenish-gray; white silt and sand laminations, noncalcareous	22	190
	Clay, silty, brownish-black to black; scattered lignite flakes, noncalcareous	10	200
Granite(?):			
	Decomposed granite; clay, cohesive, grayish-orange-pink; noncalcareous	10	210

137-49-25ccc
Test hole 3158

Lake Agassiz deposits:			
	Topsoil, black	2	2
	Silt, clayey, moderate yellowish-brown; cohesive, scattered sand, calcareous	27	29
	Clay, silty, olive-gray; plastic, calcareous	42	71
Till and associated glacioaqueous deposits:			
	Clay, olive-gray	2	73
	Gravel, fine to medium, sandy; subrounded, predominantly limestone	5	78
	Clay, silty, sandy, gravelly, olive-gray; numerous boulders, highly calcareous	15	93
	Clay, silty, sandy, gravelly, olive-black; highly calcareous	25	118
	Clay, silty, olive-gray; scattered lignite fragments, highly calcareous	20	138
	Sand, fine to coarse, gravelly; subangular to subrounded, scattered lignite fragments, predominantly limestone	109	247
Granite:			
	Decomposed granite; clay, sandy, pale-blue-green	10	257

1/ Geologic names used herein conform to the usage followed by the North Dakota Geological Survey rather than that of the U. S. Geological Survey.

137-49-28cdd
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	2	2
	Clay, yellow	26	28
	Clay; blue	39	67
Till and associated glacioaqueous deposits:			
	Clay, sandy, boulders; blue	8	75
	Clay, sandy, hard; blue	23	98
	Clay; blue	23	121
	Clay, sandy; blue	6	127
	Sand, fine, dirty; gray	5	132
	Sand, fine; gray	9	141
	Clay, soft; blue	3	144
	Sand, fine; gray	5	149
	Clay, sandy, soft; blue	25	174
	Sand; gray	18	192

137-49-30aaa
Test hole 3138

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, silty, sandy, olive-gray; plastic, calcareous-	1	2
	Clay, dusky-yellow; plastic, calcareous	22	24
	Clay, olive-gray; plastic, scattered lignite fragments, calcareous	40	64
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, dark-greenish-gray; occasional boulders	19	83
	Sand and gravel, unsorted; abundant lignite fragments, predominantly quartz, shale, and limestone	69	152
	Gravel, fine to very coarse; numerous boulders, scattered lignite fragments, predominantly limestone	27	179
	Clay, silty, sandy, gravelly, dark-greenish-gray; occasional boulders, highly calcareous	21	200
Graneros Shale:			
	Shale, silty, olive-black; pockets of very fine white sand, slightly calcareous to noncalcareous-	36	236
Granite:			
	Decomposed granite; clay, greenish-gray; noncalcareous	21	257

137-50-11ddd
Test hole 3137

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	1	1
	Silt, sandy, olive-gray; scattered lignite flakes, calcareous	1	2
	Clay, sandy, light-olive-gray; scattered lignite flakes, calcareous	3	5
	Clay, sandy, yellowish-brown; plastic, lignite fragments, calcareous	12	17
	Clay, olive-gray; plastic, calcareous	12	29
	Clay, dark-greenish-gray; plastic, scattered fine sand, calcareous	34	63
Till and associated glacioaqueous deposits:			
	Clay, sandy, olive-gray; soft, calcareous	24	87
	Clay, sandy, dark-greenish-gray; hard, calcareous	75	162
Graneros Shale:			
	Shale, silty, olive-black; numerous pockets of fine white sand-some containing lignite fragments, slightly calcareous to noncalcareous	46	208
Granite:			
	Decomposed granite; clay, grayish-green; numerous quartz fragments	4	212

137-50-29dad
Kindred Municipal well
Driller's log by Frederickson's Inc.

Lake Agassiz deposits:			
	Topsoil, black	2	2
	Clay, yellow	12	14
	Clay, blue	4	18
	Sand, fine, gray	24	42
	Sand	5	47
	Clay, blue; soft	22	69
Till and associated glacioaqueous deposits:			
	Clay, blue; hard	2	71

137-50-35ccb
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil; black	1	1
	Clay; brown	4	5
	Sand, fine, dirty; brown	25	30
	Clay; green	19	49
	Clay; blue	32	81
Till and associated glacioaqueous deposits:			
	Clay, hard; blue	78	159
	Clay, sandy, soft; gray	17.5	236.5
	Sand; gray	1.5	238
	Clay, sandy; gray	14	252
	Sand, dirty; gray	3	255
	Clay, sandy; gray	13	268
	Sand; gray	2	270
	Clay, sandy; gray	13	283
Granite:			
	Decomposed granite; white	95	378

137-51-29cda
Driller's log by Frederickson's Inc.

Lake Agassiz deposits:			
	Topsoil; black	1	1
	Sand, fine; brown	6	7
	Clay; brown	20	27
	Clay; blue	64	91
Till and associated glacioaqueous deposits:			
	Clay; blue	42	133
	Sand	2	135
	Clay with sand lenses; blue	5	140
	Sand	3	143
	Clay; blue	3	146

137-51-35bbb
Driller's log by Frederickson's Inc.

Lake Agassiz deposits:			
	Topsoil; black	2	2
	Clay; brown	19	21
	Clay; blue	72	93
Till and associated glacioaqueous deposits:			
	Clay with boulders; blue	11	104
	Clay, soft; blue	11	115
	Clay, hard; blue	6	121
	Sand; brown	1	122
	Clay, hard; blue	9.5	131.5
	Sand; brown	.5	132
	Clay, hard; blue	3	135
	Sand, fine; brown	6	141
	Clay with boulders; blue	14	155
	Clay, soft; blue	23	178
	Sand; brown	1	179
	Clay, sandy, hard; blue	68	247
	Clay, soft; gray	18	265
Granite:			
	Decomposed granite; white	78	343

137-52-27aaa
Test hole 3156

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	2	2
	Silt, clayey, moderate yellowish-brown; soft, cohesive, calcareous	20	22
	Silt, olive-gray; soft, cohesive, scattered lignite fragments, calcareous	10	32
	Sand, very fine; scattered lignite fragments, predominantly quartz; silt lenses 76-82 feet	50	82
	Clay, silty, olive-gray; soft, calcareous	77	159
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; numerous boulders, calcareous	105	264
	Silt, olive-gray	8	272
	Clay, silty, sandy, gravelly, olive-gray; numerous boulders, calcareous	38	310
	Silt, clayey, light-olive-gray; cohesive, scattered lignite fragments, calcareous	45	355
	Sand, fine to medium, clayey; subangular to rounded, predominantly quartz	67	422
Granite:			
	Decomposed granite; clay, sandy, light-greenish-gray; hard, quartz fragments	49	471

137-52-31bbb
Test hole 3157

Lake Agassiz deposits:			
	Topsoil, silty, clayey, yellow	3	3
	Sand, fine to medium; angular to rounded, scattered lignite fragments, predominantly quartz	40	43
	Silt, clayey, olive-gray; soft, cohesive, few lignite fragments, scattered shale pebbles	19	62
	Sand, very fine to fine; scattered shale pebbles and lignite chips	62	124
	Clay, silty, olive-gray; soft, calcareous	28	152
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; soft, calcareous	30	182
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous; gravel lense at 224 feet, sand lenses 242-251 feet, numerous boulders 251-266 feet	113	295
Graneros Shale:			
	Shale, olive-black; hard, very fine sand and silt, laminae, fish scales, highly calcareous	22	317

137-53-15bbb
Test hole 2205

Lake Agassiz deposits:			
	Topsoil, sandy, black	1	1
	Sand, very fine to fine; dry	5	6
	Silt, clayey, light-yellowish-gray; soft, cohesive, calcareous	5	11
	Silt, clayey, olive-gray; soft, cohesive	9	20
	Clay, olive-gray; plastic, occasional silt lense, calcareous	60	80
Till and associated glaciofluvial deposits:			
	Clay, silty, sandy, olive-gray; soft, numerous pebbles and cobbles, calcareous	25	105

137-53-30aad

U. S. Bureau of Reclamation

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Sand	12	12
	Silt, sandy	11	23
Till and associated glacioaqueous deposits:			
	Till	2	25

137-53-34ccc

Test hole 2206

Lake Agassiz deposits:			
	Topsoil, sandy, black	1	1
	Sand, fine to medium, brown; rounded	9	10
	Sand, fine to medium, clayey, olive-gray; scattered shale pebbles and lignite chips	10	20
	Sand, fine to medium, olive-gray	20	40
	Sand, fine to coarse, olive-gray	10	50
	Silt, clayey, olive-gray; soft, cohesive	10	60
	Sand, silty, fine to medium, rounded	20	80
	Clay, silty, olive-gray; plastic	10	90
	Silt, clayey, olive-gray; soft, cohesive, scattered granules, calcareous	20	110
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; soft	10	120
	Clay, gravelly, olive-gray	16	136

137-54-32ddd

Test hole 3146

Till and associated glacioaqueous deposits:			
	Topsoil, silty, yellow	3	3
	Sand and gravel, unsorted; subrounded, predominantly quartz, limestone, and shale	39	42
	Sand, very fine to very coarse, silty; scattered lignite fragments, predominantly quartz and limestone	10	52
	Silt, olive-gray; soft, calcareous; scattered lignite fragments	10	62
	Clay, silty, sandy, gravelly, olive-gray; numerous shale pebbles and lignite chips; sand lenses 117-146 feet and from 152-158 feet; shale boulder 174-183 feet	143	205
Greenhorn Formation:			
	Shale, silty, olive-black; hard, white specks, fish scales, highly calcareous	9	214
	Shale, silty, olive-black; hard, numerous hard thin limestone lenses, highly calcareous	13	227

137-54-36ccc

Test hole 2204

Lake Agassiz deposits:			
	Topsoil, sandy, brown	1	1
	Clay, silty, sandy, dusky-yellow; calcareous	9	10
	Clay, silty, sandy, olive-gray; calcareous	20	30
	Clay, silty, olive-gray; calcareous	20	50
Till and associated glacioaqueous deposits:			
	Silt, clayey, olive-gray; soft, scattered sand grains, calcareous	30	80
	Silt, clayey, sandy, olive-gray; abundant granules, calcareous	20	100
	Clay, sandy, gravelly, olive-gray; calcareous	110	210
Greenhorn Formation:			
	Shale, olive-black; soft, mottled, calcareous	10	220
	Shale, olive-black; hard	11	231

137-55-18ddd
Test hole 3140

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, dark-yellowish-orange; calcareous	14	14
	Clay, silty, sandy, gravelly, olive-gray; calcareous, numerous shale and quartz fragments	16	30
	Sand, fine to coarse, gravelly; subrounded to rounded; predominantly shale and limestone; abundant lignite fragments	10	40
	Clay, silty, sandy, gravelly, olive-gray; numerous shale and lignite fragments, calcareous	22	62

137-55-29aaa
Test hole 3142

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, silty, sandy, gravelly, moderate yellowish-gray, calcareous	25	26
	Clay, silty, olive-gray; scattered sand and gravel, calcareous	11	37
	Gravel, coarse, sandy; predominantly shale and limestone	10	47
	Clay, silty, sandy, gravelly; olive-gray, calcareous	15	62

137-55-29ddd
Test hole 3143

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, silty, sandy, gravelly, yellowish-brown; calcareous	18	19
	Clay, silty, sandy, gravelly, olive-gray; calcareous	1	20
	Sand	2	22
	Clay, silty, sandy, gravelly, olive-gray, calcareous	10	32
	Clay, silty, olive-gray; calcareous	5	37
	Clay, silty, sandy, gravelly, olive-gray; calcareous	30	67
	Clay, silty, olive-gray; calcareous	10	77

137-55-30bcb
Test hole 3139

Till and associated glaciofluvial deposits:			
	Clay, silty, sandy, gravelly, dark-yellowish-orange; abundant shale granules	22	22
	Sand, fine to coarse; gravelly, subangular to well rounded, predominantly quartz, shale and limestone	20	42
	Gravel, fine to coarse; sandy, numerous boulders, predominantly limestone and shale	60	102
	Silt, clayey, olive-gray; cohesive, scattered lignite fragments, calcareous	8	110
	Clay, silty, sandy, gravelly, olive-gray; hard, scattered shale and lignite fragments	27	137

137-55-32ddd
Test hole 3144

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, silty, sandy, gravelly, dark-yellowish-brown; calcareous	17	18
	Clay, silty, olive-gray; calcareous, scattered sand and gravel	16	34
	Sand, gravelly; predominantly rounded shale and limestone fragments	7	41
	Clay, silty, olive-gray; calcareous, scattered sand and gravel	11	52
	Clay, silty, sandy, olive-gray; calcareous, scattered gravel and lignite fragments	25	77

137-55-35ddd
Test hole 3145

Till and associated glacioaqueous deposits:			
	Topsoil, black	2	2
	Clay, silty, sandy, gravelly, moderate yellowish-brown; calcareous, numerous shale pebbles; sand lenses 22-32 feet	30	32
	Sand, fine to medium, subangular to rounded; scattered lignite fragments; predominantly quartz and limestone	30	62
	Sand, very fine to coarse; scattered lignite fragments, predominantly quartz and limestone	15	77
	Sand, coarse; silty, gravelly, predominantly quartz and lignite	30	107
	Gravel, medium; sandy, angular to well rounded, predominantly limestone	29	136
	Clay, silty, sandy, gravelly, olive-gray; soft becoming hard at 145 feet, scattered lignite fragments, calcareous	56	192
	Clay, silty, olive-gray; hard, scattered lignite fragments, calcareous	63	255
	Clay, silty, sandy, gravelly, olive-gray; hard, scattered lignite fragments, calcareous	17	272
Greenhorn Formation:			
	Shale, olive-black; hard, white specks, fish scales, highly calcareous	30	302

138-49-4aaa
Test hole 3104

Lake Agassiz deposits:			
	Topsoil, black	2	2
	Clay, silty, grayish-orange; calcareous	16	18
	Clay, silty, olive-gray; calcareous	40	58
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; scattered boulders and lignite fragments, highly calcareous	53	111
	Sand and gravel, unsorted; subangular to rounded, predominantly limestone and quartz	111	222
Graneros Shale:			
	Silt, brownish-gray; soft, cohesive, scattered lignite fragments, non-calcareous	78	300
	Clay, sandy, light-gray to medium-gray; occasional seams of lignitic material, non-calcareous	10	310
	Silt, brownish-gray, soft, cohesive, abundant lignite fragments, non-calcareous	8	318

138-49-4aaa--Continued
Test hole 3104

Geologic source	Material	Thickness (feet)	Depth (feet)
Granite:			
	Decomposed granite; clay, white; scattered sand grains, non-calcareous	22	340
	Clay, pale-blue-green; scattered sand grains, calcareous	15	355

138-49-8ccd
Test hole 2346

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, silty, light-olive-gray to greenish-gray; calcareous	11	12
	Clay, silty, dark-greenish-gray to medium-bluish gray; plastic, scattered sand, calcareous	7	19
	Sand, fine to coarse, predominantly shale and quartz	20	39
	Clay, dark greenish gray, plastic, calcareous	34	73
Till and associated glacioaqueous deposits:			
	Clay, silty, gravelly, dark-greenish-gray, calcareous	7	80
	Boulder, limestone	1	81
	Clay, silty, gravelly, dark-greenish-gray, calcareous	36	117
	Gravel, fine to coarse, sandy; predominantly limestone and granite	2	119
	Clay, silty, gravelly, dark-greenish-gray; occasional boulders, calcareous	96	215
	Clay, silty, gravelly, dark-greenish-gray; calcareous--interbedded with olive-black, non-calcareous clay	8	223
Graneros Shale:			
	Clay, silty, sandy, brownish-black to black; scattered lignite fragments, non-calcareous	29	252

138-49-13baa
Test hole 3114

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, silty, dark-yellowish-brown; calcareous	14	15
	Clay, silty, olive-gray; calcareous	67	80
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous	46	126
	Sand, fine to coarse, rounded; scattered gravel	8	134
Graneros Shale:			
	Shale, silty, olive-gray to black, hard, slightly calcareous; occasional shell fragments	57	191
	Clay, sandy, white	3	194
	Clay, silty, olive-gray; hard, non-calcareous	6	200
	Boulder, yellowish-gray to bluish-gray; non-calcareous	1	210
	Clay, silty, dark-yellowish-brown; abundant lignite fragments, non-calcareous	12	222
	Clay, silty, medium light-gray; metallic luster, non-calcareous	7	229
	Clay, silty, variegated (brownish-black, yellowish-brown, light-gray); non-calcareous	31	260
	Clay, silty, yellowish-gray; scattered quartz grains, non-calcareous	18	278
	Clay, silty, dark-yellowish-brown; abundant lignite fragments, non-calcareous	6	284
	Clay, sandy, yellowish-gray to yellowish-brown, non-calcareous	4	288

138-49-13baa--Continued
Test hole 3114

Geologic source	Material	Thickness (feet)	Depth (feet)
Granite:			
	Decomposed granite; clay, bluish-white, abundant angular quartz grains, non-calcareous----------	14	302

138-49-16ddd
Test hole 3105

Lake Agassiz deposits:			
	Topsoil----------	2	2
	Clay, silty, sandy, light-olive-gray; highly calcareous----------	5	7
	Clay, silty, grayish-orange; calcareous----------	9	16
	Clay, silty, olive-gray; calcareous----------	45	61
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; abundant shale and lignite fragments, highly calcareous--	10	71
	Sand, gravelly, coarse; subangular to rounded; numerous lignite fragments, predominantly shale and limestone----------	7	78
	Clay, silty, sandy, gravelly, olive-gray, highly calcareous----------	7	85
	Clay, silty, sandy, gravelly, light-olive-gray, highly calcareous----------	50	135
	Clay, sandy, mottled light-olive-gray to olive-gray; highly calcareous----------	25	160
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous----------	14	174
	Shale boulder; silt, brownish-black; abundant lignite fragments, scattered organic material, non-calcareous----------	16	190
	Clay, sandy, dark-greenish-gray; abundant shale pebbles, calcareous----------	93	283
	Clay, silty, olive-gray; scattered sand and gravel, highly calcareous----------	31	314
Granite:			
	Decomposed granite; clay, light-brown to pale-orange, abundant white sand grains, non-calcareous----------	4.5	318.5
	Granite, dusky-green; hard chips----------	.5	319

138-49-29ccc
Test hole 3115

Lake Agassiz deposits:			
	Topsoil----------	1	1
	Silt, clayey, yellowish-brown; cohesive, calcareous	13	14
	Clay, silty, olive-gray; calcareous----------	50	64
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; soft, highly calcareous----------	10	74
	Sand, fine to coarse, angular to rounded; predominantly quartz with limestone, shale, granite, and lignite; scattered pebbles----------	15	89
	Clay, silty, sandy, gravelly, olive-gray, highly calcareous----------	53	142
	Silt, clayey, olive-gray; cohesive, highly calcareous----------	30	172
	Sand, very fine to very coarse; subrounded to well rounded, predominantly quartz and limestone, scattered lignite fragments----------	38	210
	Sand, medium to coarse; subangular to well rounded, predominantly quartz and limestone, scattered lignite fragments----------	37	247
	Sand, coarse with abundant gravel and numerous boulders----------	48	295

138-49-29ccc--Continued
Test hole 3115

Geologic source	Material	Thickness (feet)	Depth (feet)
Granite:			
	Decomposed granite; clay, pale-green; abundant angular and subangular quartz grains, non-calcareous	22	317

138-49-34ccc
Test hole 3106

Lake Agassiz deposits:			
	Topsoil	1	1
	Clay, silty, olive-gray; laminated, highly calcareous	.5	1.5
	Clay, silty, yellowish-brown; few laminations, calcareous	12.5	14
	Clay, mottled brown and greenish-gray; calcareous	4	18
	Clay, silty, grayish-orange to olive-gray; calcareous	4	22
	Clay, silty, olive-gray; calcareous	43	65
Till and associated glacioaqueous deposits:			
	Clay, gravelly, olive-gray; scattered sand, highly calcareous	8	73
	Clay, silty, olive-gray; abundant sand and gravel, highly calcareous	6	79
	Gravel, sandy; subrounded to rounded; predominantly limestone and quartz	21	100
	Clay, silty, sandy, gravelly, olive-gray, highly calcareous	30	130
	Clay, silty, sandy, gravelly, greenish-gray; hard, scattered lignite fragments, highly calcareous	86	216
Graneros Shale:			
	Silt, clayey, brown to black; abundant organic and lignitic material, non-calcareous	17	233
Granite:			
	Decomposed granite; clay, silty, white changing to green at 245 feet; soft, scattered quartz grains, non-calcareous	47	280
	Granite, pink and green chips; hard, scattered angular quartz grains, non-calcareous	65	345

138-50-5bbb
Test hole 3116-A

Lake Agassiz deposits:			
	Topsoil, black	2	2
	Clay, silty, olive-gray; scattered sand grains, highly calcareous	7	9
	Clay, silty, yellowish-brown; occasional sand grains and gypsum crystals, highly calcareous	14	23
	Clay, silty, olive-gray; calcareous	31	54
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous	46	100
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, silt lenses 137-170 feet, highly calcareous	123	223
	Gravel, sandy, subrounded to rounded; predominantly limestone	17	240
	Sand, gravelly, coarse to very coarse; subangular, predominantly limestone and shale	16	256
	Clay, silty, greenish-gray; hard, highly calcareous	10	266
	Sand, very fine to granules, subrounded; predominantly shale and limestone	14	280

138-50-5bbb--Continued
Test hole 3116-A

Geologic source	Material	Thickness (feet)	Depth (feet)
Graneros Shale:			
	Silt, variegated (olive-gray, gray, greenish-gray, brownish-gray, black); organic material and lignite fragments common, slightly calcareous to non-calcareous	23	302
	Silt, clayey, sandy, olive-gray; few pyrite crystals	36	338
	Sand, very fine to coarse, angular to subangular quartz grains; white; some pyrite cemented quartz grains	8	346
Granite:			
	Decomposed granite; clay, sandy, greenish-gray grading to blue-green with depth; numerous angular to subangular quartz grains	31	377

138-50-35aaa
Test hole 3136

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, sandy, silty, olive-gray; highly calcareous	1	2
	Clay, sandy, silty, olive-black; hard, scattered lignite fragments, non-calcareous	6	8
	Clay, silty, variegated (olive-brown, olive-gray, greenish-gray); hard, scattered lignite fragments, calcareous	22	30
	Clay, olive-gray; plastic, scattered lignite fragments, calcareous	32	62
Till and associated glacioaqueous deposits:			
	Clay, sandy, olive-gray; soft, calcareous; occasional boulder	9	71
	Sand, coarse, gray; angular to rounded, predominantly quartz	11	82
	Clay, silty, sandy, greenish-gray to light-olive gray; soft, highly calcareous	2	84
	Sand, coarse, gray; angular to rounded, predominantly quartz	16	100
	Clay, silty, sandy, greenish-gray to light-olive-gray; soft, highly calcareous	6	106
	Sand, coarse, gray; angular to rounded, occasional boulder, predominantly quartz	10	116
	Clay, silty, sandy, dark-greenish-gray; soft, scattered lignite fragments, highly calcareous	20	136
	Clay, silty, olive-gray to dark-greenish-gray; scattered lignite particles, highly calcareous	8	144
	Clay, sandy, dark-greenish-gray to olive-black; scattered lignite fragments, highly calcareous	10	154
Graneros shale:			
	Shale, silty, olive-black; hard, pockets of fine white sand, non-calcareous	45	199
Granite:			
	Decomposed granite; clay, sandy, pale-blue to greenish-gray; angular to rounded quartz grains-	25	227

138-54-6ddd
Test hole 3148

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Sand, fine, gravelly, brown	1.5	1.5
	Clay, silty, sandy, gravelly, yellowish-brown; highly calcareous	17.5	19
	Clay, silty, sandy, gravelly, olive-gray; numerous lignite fragments, calcareous	53	72
	Silt, sandy, olive-gray; soft, cohesive, lignite fragments and shale pebbles, granite boulder 106-107 feet, calcareous	49	121
	Clay, sandy, olive-gray; scattered gravel, few lignite fragments, sand lenses 132-146 feet, calcareous	31	152

138-55-31bbb
Test hole 3141

Till and associated glacioaqueous deposits:			
	Topsoil, black	.5	.5
	Clay, silty, sandy, dusky-yellow; slightly calcareous	2.5	3
	Sand, gravelly, dusky-yellow; angular to rounded; clay lenses, predominantly limestone and shale	6	9
	Clay, silty, sandy, gravelly, olive-gray; numerous boulders 9-42 feet, highly calcareous	53	62

138-55-36cdd
Test hole 3147

Till and associated glacioaqueous deposits:			
	Topsoil, black	2	2
	Clay, brown	2	4
	Clay, yellow	4	8
	Clay, yellow and orange; sand and gravel lenses	3	11
	Clay, silty, sandy, gravelly, yellowish-brown; calcareous	10	21
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, calcareous	21	42
	Silt, olive-gray; soft, few lignite flakes, calcareous laminae	39	81
	Clay, sandy, gravelly, olive-gray; numerous lignite fragments, highly calcareous--extremely silty 157-172 feet, numerous boulders 187-207 feet and 232-249 feet	181	262
	Clay, sandy, olive-black; some lignite fragments	8	270
Greenhorn Formation:			
	Shale, silty, clayey, olive-black; hard, white specks, abundant shell fragments, highly calcareous	17	287

139-49-1cdb
Cass-Clay Creamery
Driller's log by Layne-Minnesota Co.

Lake Agassiz deposits:			
	Clay	92	92
Till and associated glacioaqueous deposits:			
	Clay, hard, numerous boulders	58	150
	Sand and gravel	44	194
	Clay	?	

139-49-6acc
Union Stockyards
Driller's log by McCarthy Well Co.

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil	2	2
	Clay	61	63
Till and associated glacioaqueous deposits:			
	Clay and boulders	10	73
	Clay, boulders, and gravel	8	81
	Clay and boulders	5	86
	Clay with lenses of fine sand, numerous boulders	4	90
	Clay and boulders with lenses of gravel and fine sand	8	98
	Clay and boulders	3	101
	Gravel, coarse; numerous boulders	6	107
	Clay, hard	4	111
	Clay and boulders	4	115
	Gravel, coarse, numerous boulders and clay lenses	3	118
	Gravel, coarse	12	130
	Gravel, coarse; clay lenses	56	186
	Gravel, coarse; numerous boulders	3	189
	Sand, gravelly, coarse	19	208

139-49-6bda
Siouxland Dressed Beef Co.
Driller's log by McCarthy Well Co.

Lake Agassiz deposits:			
	Clay	76	76
Till and associated glacioaqueous deposits:			
	Clay and boulders	27	103
	Sand, gravelly, fine; numerous boulders	14	117
	Sand, fine	18	135
	Sand, gravelly, fine	10	145
	Sand, fine	10	155
	Sand and gravel	55	210

139-49-6dcd$_1$
West Fargo Municipal Well
Driller's log by Frederickson's Inc.

Lake Agassiz deposits:			
	Topsoil, black	3	3
	Clay, silty, grayish-yellow-brown; cohesive	9	12
	Clay, dark-olive-gray; plastic	55	67
Till and associated glacioaqueous deposits:			
	Clay, sandy, dark-olive-gray; scattered gravel	4	71
	Clay, sandy, gravelly, bluish-gray; scattered lignite fragments	13	84
	Clay, sandy, gravelly, bluish-gray; abundant boulders	2	86
	Clay, sandy, gravelly, olive-gray	5	91
	Clay, silty, olive-gray; numerous fine sand lenses	10	101
	Clay, sandy, gravelly, olive-gray	27	128
	Sand, very fine to very coarse; clean, scattered fine gravel	3	131
	Sand, silty, very fine to very coarse; scattered fine gravel	12	143
	Clay, sandy, olive-gray; scattered fine gravel	8	151
	Sand, clayey, fine	9	160
	Sand, very fine to very coarse	59	219
	Clay, sandy, dark-olive-gray	3	222
	Clay, sandy, dark-greenish-gray	15	237

139-49-6dcd2
Test hole 1

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	3	3
	Clay, silty, grayish-yellow-brown; plastic, laminated	9	12
	Clay, dark-olive-gray; plastic	48	60
Till and associated glacioaqueous deposits:			
	Clay, sandy, dark-olive-gray; scattered fine gravel	12	72
	Clay, sandy, gravelly, olive-gray; boulders 107-109 feet	50	122
	Sand, fine (?) no samples	10	132
	Clay, silty, olive-gray; lenses of fine sand	5	137
	Clay, sandy, olive-gray; scattered fine gravel	12	149
	Clay, sandy, olive-gray	3	152
	Sand, very fine to fine; occasional clay lenses	10	162
	Sand, silty, very fine to fine	5	167
	Sand, very fine to very coarse	15	182

139-49-6ddc
Test hole 2

Lake Agassiz deposits:			
	Topsoil, black	3	3
	Clay, silty, yellowish-brown; plastic	9	12
	Clay, dark-olive-gray; plastic	48	60
Till and associated glacioaqueous deposits:			
	Clay, sandy, olive-gray; scattered fine gravel	40	100
	Sand, clayey, very fine to very coarse	30	130
	Sand, very fine to very coarse; predominantly quartz	50	180

139-49-7abb2
South west Fargo municipal well
Driller's log by Layne-Minnesota Co.

Lake Agassiz deposits:			
	Clay	69	69
Till and associated glacioaqueous deposits:			
	Clay and gravel	6	75
	Clay and boulders	45	120
	Clay and gravel	41	161
	Clay, gravel, and lignite	29	190
	Sand and gravel	14	204

139-49-8bda
South west Fargo municipal well
Driller's log by Layne-Minnesota Co.

Lake Agassiz deposits:			
	Topsoil	6	6
	Clay, gravelly	58	64
Till and associated glacioaqueous deposits:			
	Clay, gravel, and boulders	24	88
	Sand and gravel	2	90
	Clay, gravel, and boulders	8	98
	Sand, medium, gray	10	108
	Clay and boulders	13	121
	Clay, gray	6	127
	Sand, medium to coarse	29	156
	Clay, blue	8	164

139-49-9ddd3
Test hole 3113

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, silty, yellowish-brown; scattered fine sand, highly calcareous	13	14
	Clay, silty, olive-gray; plastic, lenses of very fine sand, calcareous	1	15
	Sand, very fine to coarse, brown; subrounded, predominantly quartz, scattered lignite fragments	5	20
	Clay, silty, olive-gray; plastic, calcareous	59	79
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; calcareous	19	98
	Silt, clayey, sandy, olive-gray; cohesive, scattered lignite fragments, calcareous	9	107
	Clay, silty, sandy, gravelly, olive-gray; calcareous--few boulders	11	118
	Sand, very fine to coarse, gravelly; subrounded to rounded; scattered lignite fragments, predominantly quartz and limestone	104	222
Graneros Shale:			
	Silt, brownish-black; cohesive, contains organic and lignitic material, non-calcareous	15	237
Granite:			
	Decomposed granite; clay, white; hard, scattered angular quartz grains	20	257

139-49-13ccc
Test hole 2174

Lake Agassiz deposits:			
	Topsoil, black	2	2
	Clay, silty, yellowish-gray; plastic, scattered pebbles, calcareous	8	10
	Clay, silty, yellowish-gray; plastic, calcareous	10	20
	Clay, silty, olive-gray; plastic, calcareous	68	88
	Sand, fine to coarse, subangular to subrounded; predominantly quartz and limestone	3	91
Till and associated glacioaqueous deposits:			
	Clay, sandy, gravelly, olive-gray; numerous boulders, calcareous	9	100
	Clay, silty, sandy, olive-gray; lenses of sand and gravel	16	116
	Granite boulder	1	117
	Clay, silty, sandy, olive-gray; lenses of gravel	13	130
	Clay, sandy, silty, olive-gray; scattered gravel, numerous boulders	36	166
	Gravel and boulders, predominantly limestone	11	177
Granite:			
	Granite, green; hard	1	178

139-49-18aad
Woodlee Water Co.
Driller's log by Frederickson's Inc.

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, brown	10	11
	Sand, silty, brown	5	16
	Clay, silty, blue	6	22
	Clay, blue, plastic	58	80

139-49-18aad--continued
Woodlee Water Co.
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Clay, gray; numerous limestone pebbles	3	83
	Clay, blue, hard	14	97
	Clay, sandy, blue; soft	3	100
	Clay, sandy, blue; hard	2	102
	Clay, gravelly, blue	2	104
	Clay, blue; hard	2	106
	Clay, blue; soft	16	122
	Clay, blue; hard	47	169
	Clay, sandy, blue	19	188
	Sand, coarse, multicolored	10	198
Granite:			
	Decomposed granite; clay, brown and white	4	202

139-49-18bbb
Test hole 2169

Lake Agassiz deposits:			
	Fill	4	4
	Clay, silty, dusky-yellow; plastic, calcareous	13	17
	Clay, silty, olive-gray; plastic, calcareous	48	65
Till and associated glacioaqueous deposits:			
	Clay, silty, gravelly, olive-gray; numerous boulders, calcareous	17	77
	Sand, fine to medium	3	80
	Clay, silty, olive-gray; scattered gravel and boulders	10	90
	Sand, fine to coarse; subrounded, predominantly quartz	10	100
	Clay, sandy, silty, olive-gray; calcareous	15	115
	Sand, fine to coarse, subrounded; predominantly quartz	31	146
	Clay, silty, olive-gray; plastic, calcareous	4	150
	Sand, fine to coarse, subrounded, lenses of clay and gravel	12	162
	Sand, fine to medium, well sorted, subrounded to rounded; predominantly quartz	48	210
Granite:			
	Decomposed granite; clay, sandy, light-greenish-gray; soft, non-calcareous	21	231

139-49-18ccd
Test hole 2177

Lake Agassiz deposits:			
	Topsoil and fill	11	11
	Clay, silty, sandy, brownish-gray; plastic, calcareous	5	16
	Clay, silty, sandy, yellowish-brown; plastic, calcareous	5	21
	Clay, silty, olive-gray; plastic, calcareous	37	58
Till and associated glacioaqueous deposits:			
	Clay, sandy, silty, gravelly, olive-gray; soft, calcareous	29	87
	Sand, fine, gray; angular to subrounded, scattered lignite fragments, predominantly quartz	5	92
	Clay, sandy, silty, gravelly, olive-gray; soft, calcareous	13	105
	Sand, fine, gray; angular to rounded, scattered lignite fragments, predominantly quartz	12	117
	Clay, sandy, silty, gravelly, olive-gray; soft, calcareous	30	147
	Clay, silty, bluish-gray; plastic, numerous hard nodules, calcareous	10	157

139-49-18ccd--Continued
Test hole 2177

Geologic source	Material	Thickness (feet)	Depth (feet)
Graneros Shale:			
	Clay, silty, grayish-black; plastic, numerous hard nodules, non-calcareous----------	27	186
	Clay, silty, grayish-black; plastic, few clay cemented nodules composed of quartz, sand, shale, and decomposed granitic material, occasional lignite fragments, non-calcareous----	45	231
Granite:			
	Decomposed granite; clay, silty, sandy, white to green; numerous angular quartz fragments, non-calcareous----------	63	294

139-49-19aaa
Test hole 2170

Lake Agassiz deposits:			
	Topsoil, black----------	3	3
	Clay, silty, yellowish-gray; soft, calcareous------	17	20
	Clay, silty, light-olive-gray; plastic, calcareous-	42	62
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; soft, calcareous----------	9	71
	Gravel, fine to coarse, sandy, subangular to subrounded; predominantly limestone and shale------	7	78
	Clay, silty, sandy, olive-gray; numerous cobbles, calcareous----------	18	96
	Sand, fine to coarse, subangular to subrounded; clay lenses, few pebbles, granitic material predominant----------	12	108
	Clay, silty, sandy, gravelly, olive-gray; sand lenses, calcareous----------	22	130
	Sand, fine to coarse, clayey; subrounded, scattered gravel, granitic material predominant----------	27	157
	Clay, silty, sandy, olive-gray; scattered gravel, calcareous----------	19	176
Graneros Shale:			
	Clay, silty, sandy, olive-gray to olive-black; soft, thinly laminated, moderately to highly calcareous	47	223
Granite:			
	Decomposed granite; clay, greenish-gray; non-calcareous----------	19	242

139-49-21bbb
Test hole 2171

Lake Agassiz deposits:			
	Topsoil and fill, black----------	4	4
	Clay, silty, yellowish-gray; plastic, calcareous----	13	17
	Clay, silty, olive-gray; plastic, calcareous--------	53	70
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, olive-gray; soft, numerous pebbles and cobbles, calcareous----------	30	100
	Silt, clayey, sandy, olive-gray; soft, calcareous--	90	190
	Sand, silty, clayey, olive-gray; cohesive, occasional gravel----------	68	258
	Sand, fine to coarse, gravelly; subrounded---------	12	270
	Sand, fine to medium, clayey, olive-gray; firm, scattered gravel, predominantly quartz----------	10	280
Granite:			
	Decomposed granite; clay, brown and black grading to green and red; soft, non-calcareous----------	14	294

139-49-22bbb
Test hole 2172

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, silty, black	2	2
	Clay, silty, yellowish-gray; soft, calcareous	17	19
	Clay, sandy, olive-gray; slightly plastic, calcareous	11	30
	Sand, fine to medium, subrounded; predominantly quartz, numerous pelecypod shells	16	46
	Clay, silty, olive-gray; soft, calcareous	40	86
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; few boulders, calcareous	27	113
	Gravel, fine to very coarse, sandy, subrounded to angular; predominantly limestone	7	120
	Clay, silty, olive-gray; soft, calcareous	10	130
	Sand, medium to very coarse, gravelly; subangular to subrounded, predominantly quartz	28	158
	Sand, fine to coarse; predominantly quartz	57	215
	Sand, fine to coarse; abundant fine gravel, predominantly quartz	12	227
Graneros Shale:			
	Clay, silty, light-olive-gray to olive-black; soft, organic material 250-260 feet, non-calcareous	51	278
Granite:			
	Decomposed granite; clay, sandy, gray with green and red splotches; soft, non-calcareous	66	344
	Clay, green; soft, non-calcareous	119	463
	Granite, green; hard	1	464

139-49-23bbb
Test hole 2173

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, silty, yellowish-gray; soft, calcareous	13	14
	Clay, silty, olive-gray; plastic, calcareous	64	78
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; few boulders, calcareous	30	108
	Sand, fine to medium, clayey, olive-gray	18	126
	Boulder, granite	1	127
	Clay, silty, sandy, olive-gray; scattered gravel, calcareous	33	160
	Clay, sandy, light-olive-gray; numerous pebbles and cobbles, calcareous	119	279
	Clay, silty, olive-black; plastic, occasional sand lenses, thinly laminated, calcareous	10	289
	Clay, sandy, olive-gray; numerous lenses of fine to coarse gravel, calcareous	118	407
	Sand, fine to coarse, gravelly, subangular to subrounded; predominantly limestone	18	425
Granite:			
	Decomposed granite; clay, greenish-gray; soft, contains fragments of partially decomposed granite, non-calcareous	14	439
	Granite, green, hard	1	440

139-49-24aaa
Oak Manor Test 1
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, yellow	15	16
	Clay, blue, soft, plastic	76	92
Till and associated glacioaqueous deposits:			
	Clay, sandy, blue; hard	15	107
	Clay, sandy, blue; soft	12	119
	Clay, sandy, blue; hard	9	128
	Sand, dirty, white	3	131
	Clay, sandy, gray; hard, numerous boulders	18	149
	Clay, blue; hard	35	184
	Clay, sandy, blue	9	193
Graneros (?) Shale:			
	Clay, black; lenses of lignite	8	201
	Clay, multicolored; hard	22	223
	Clay, hard; sandstone lenses	16	239
Granite:			
	Decomposed granite; clay, white, green, and blue	59	298

139-49-25aaa
Test hole 2175

Lake Agassiz deposits:			
	Topsoil, black	3	3
	Clay, silty, yellowish-brown; plastic, calcareous	18	21
	Clay, olive-gray; plastic, calcareous	65	84
	Sand, fine to coarse, gravelly; predominantly quartz	16	100
	Sand, coarse, gravelly; predominantly quartz	3	103
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, dark-olive-gray; occasional lenses of fine to medium gravel, calcareous	73	176
Graneros Shale:			
	Shale, silty, sandy, dark-olive-gray; plastic, non-calcareous	26	202
	Clay, silty, dark-olive-black; plastic, laminated with very fine white sand, occasional wood and lignite fragments, non-calcareous	73	275
Granite:			
	Decomposed granite; clay, gray to green; plastic, occasional orange splotches, slightly calcareous	50	325
	Clay, green; plastic, numerous fine to medium quartz grains 441-518, slightly calcareous	193	518
	Granite, white and pink, hard	.5	518.5

139-49-28bab
Test hole 2176

Lake Agassiz deposits:			
	Clay, silty, sandy, yellowish-brown; plastic, calcareous	12	12
	Clay, olive-gray; plastic, calcareous	6	18
	Sand, very fine to medium, gray; angular to subrounded, numerous gastropod and pelecypod shells, wood and lignite fragments, predominantly quartz	22	40
	Clay, silty, olive-gray; plastic, calcareous	33	73
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray, calcareous	21	94
	Sand, fine to coarse; angular to subrounded, scattered gravel, predominantly quartz	14	108
	Clay, silty, sandy, gravelly, olive-gray; calcareous	7	115
	Clay, silty, sandy, olive-gray; calcareous	11	126

139-49-28bab--Continued
Test hole 2176

Geologic source	Material	Thickness (feet)	Depth (feet)
Older till and associated glacioaqueous deposits (?):	Clay, silty, sandy, brownish-gray; plastic, calcareous	42	168
	Clay, sandy, olive-gray; plastic, numerous lignite fragments, calcareous	136	304
Granite:	Decomposed granite; clay, silty, greenish-gray to white	4	308
	Granite, white, black, and pink chips; hard	1	309

139-50-6bbb2
Mapleton municipal well
Driller's log by Frederickson's Inc.

Lake Agassiz deposits:	Topsoil, black	2	2
	Clay, brown	20	22
	Clay, blue	21	43
Till and associated glacioaqueous deposits:	Clay, blue	31	74
	Sand, coarse	5	79
	Clay, blue	71	150
	Sand, fine	15	165
	Clay, sandy	42	207

139-50-12bbc
Test hole 2178

Lake Agassiz deposits:	Topsoil, black	3	3
	Clay, silty, yellowish-brown; plastic, calcareous	16	19
	Clay, silty, olive-gray; plastic, calcareous	40	59
Till and associated glacioaqueous deposits:	Clay, silty, sandy, gravelly, olive-gray; calcareous	76	135
	Sand, fine to coarse; angular to subangular, predominantly quartz	5	140
	Clay, silty, sandy, gravelly, olive-gray; calcareous	47	187
	Clay, silty, olive-gray; calcareous	2	189
	Sand, very fine to medium, subrounded to well rounded; scattered fine gravel, predominantly quartz	7	196
	Clay, silty, sandy, gravelly; olive-gray, calcareous	9	205
	Sand, fine to coarse, gravelly; subrounded to well rounded, predominantly limestone	16	221
	Clay, silty, sandy; olive-gray, calcareous	51	272
Granite:	Granite, green, hard	8	280

139-50-23aaa
Test hole 3103

Lake Agassiz deposits:	Silt, clayey, grayish-orange; cohesive, scattered fine sand, occasional laminae, calcareous	18	18
	Silt, clayey, olive-gray; cohesive, calcareous	35	53
Till and associated glacioaqueous deposits:	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous	75	128
	Silt, clayey, sandy; olive-gray; soft, cohesive, calcareous	5	133

139-50-23aaa--Continued
Test hole 3103

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:(Cont.)			
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite and wood fragments, highly calcareous---	12	145
	Sand, very fine to coarse, gravelly; angular to rounded, predominantly quartz----------	9	154
	Clay, silty, sandy, olive-gray; scattered gravel, few lignite fragments, highly calcareous--------	15	169
	Sand, very fine to very coarse, gravelly; angular to rounded, predominantly quartz----------	18	187
	Silt, brownish-black to light-olive-gray; soft, laminated, scattered sand grains and lignite fragments, gastroped shells at 205 feet, highly calcareous----------	27	214
Graneros Shale:			
	Clay, silty, greenish-gray with brownish-black splotches, some lignite and organic material, hard, slightly calcareous----------	5	219

139-50-23ddd
U. S. Bureau of Reclamation
Test hole

Lake Agassiz deposits:			
	Topsoil----------	2	2
	Clay, silty, tan; plastic----------	18	20
	Sand, silty, fine; well sorted----------	15	35
	Silt, sandy, tan----------	4	39
	Sand, silty, fine, tan----------	13	52
	Sand, clayey, fine, tan----------	8	60
	Sand, silty, fine, gray; well sorted----------	5	65
Till and associated glacioaqueous deposits:			
	Clay, gravelly, gray; compact ----------	50	115
	Sand----------	14	129
	Clay, gravelly, gray; compact----------	98	227
	Sand, gravelly, coarse----------	4	231
	Clay, gravelly, gray; compact----------	24	255

139-50-24ccd
U. S. Bureau of Reclamation
Test hole

Lake Agassiz deposits:			
	Topsoil, black----------	2	2
	Clay, gray; plastic----------	65	67
Till and associated glacioaqueous deposits:			
	Clay, gravelly, gray; compact----------	15	82
	Sand, silty, very fine, gray----------	18	110
	Sand, fine, gray; well sorted----------	2	112
	Clay, silty, gray; firm, laminated----------	51	163
	Clay, gravelly, gray----------	119	282

139-50-24cdd3
U. S. Bureau of Reclamation
Test hole

Lake Agassiz deposits:			
	Topsoil, black----------	2	2
	Clay, silty, gray; plastic----------	60	62
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, gray----------	18	80
	Silt, clayey, sandy, gray; laminated----------	5	85
	Sand, very fine, light-gray; loose, clay lense 97-100 feet----------	20	105

139-50-24cdd3--Continued
U. S. Bureau of Reclamation
Test hole 3-B

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits: (cont.)			
	Sand, fine, light-gray; loose	5	110
	Sand, fine to medium, light-gray; loose, scattered silt lenses and gravel	15	125
	Sand, medium to coarse, light-gray; loose	10	135
	Sand, coarse, light-gray; loose scattered fine gravel	19	154
	Sand, clayey, gray	1	155
	Sand, coarse, gray; loose	2	157
	Sand, clayey, fine, gray	1	158
	Silt, clayey, sandy, gray	3	161
	Sand, medium, gray	3	164
	Silt, sandy, clayey, gray	1	165
	Sand, coarse, gray; scattered gravel	9	174
	Sand, silty, coarse	1	175
	Sand, gravelly, medium	14	189
	Sand, silty, fine, gray	12	201
	Sand, gravelly	7	208
	Sand, silty, fine to medium	2	210
	Sand, gravelly, fine to medium	10	220

139-50-28aaa
Test hole 3135

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, silty, yellowish-brown; soft, laminated, calcareous	6	7
	Clay, yellowish-brown; soft, calcareous	13	20
	Clay, olive-gray; soft, few lignite fragments, calcareous	6	26
	Boulder, granite	1	27
	Clay, olive-gray; soft, few lignite fragments	23	50
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly; olive-gray; hard to moderately soft, scattered lignite fragments, highly calcareous	39	89
	Sand, coarse, gravelly; angular to rounded, predominantly shale and limestone	10	99
	Clay, sandy, olive-gray; hard, highly calcareous	25	124
	Sand, medium to coarse, angular to rounded; predominantly quartz	12	136
	Clay, sandy, dark-greenish-gray; hard, scattered fine white sand, few laminae, very small lignite particles, highly calcareous	10	146
	Sand, medium to very coarse; angular to rounded, predominantly quartz	16	162
	Clay, sandy, dark-greenish-gray; hard, scattered fine white sand, few laminae, very small lignite fragments, highly calcareous	5	167
	Sand, medium to very coarse; angular to rounded, predominantly quartz	7	174
	Clay, sandy, dark-greenish-gray; hard, scattered fine white sand, few laminae, very small lignite particles, highly calcareous	10	184
	Sand, medium to very coarse; angular to rounded, predominantly quartz	2	186
Graneros Shale:			
	Shale, olive-gray; hard, numerous pockets of fine white sand, highly calcareous	8	194
	Shale, olive-black; hard, laminated with fine white sand, scattered lignite fragments and pyrite crystals, non-calcareous	33	227

139-50-32ccc
Test hole 3116

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil and fill	6	6
	Clay, silty, yellowish-brown; scattered sand and gypsum crystals, highly calcareous	16	22
	Clay, silty, olive-gray; calcareous	34	56
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous	26	82

139-50-35ddd
Test hole 3107

Lake Agassiz deposits:			
	Topsoil	1	1
	Clay, silty, grayish-orange; calcareous	12	13
	Clay, silty, olive-gray; calcareous	11	24
	Clay, silty, yellowish-brown; calcareous	4	28
	Clay, silty, olive-gray; calcareous	24	52
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; soft, scattered lignite fragments, highly calcareous	14	66
	Boulder, limestone	3	69
	Clay, silty, sandy, gravelly, gray; hard, scattered lignite fragments, highly calcareous	25	94
	Sand, coarse to very coarse, gravelly; angular to rounded, predominantly shale and limestone--wood fragments 95-102 feet	10	104
	Clay, sandy, silty, gravelly, olive-gray; highly calcareous	51	155
	Clay, silty, sandy, gravelly, light-olive-gray to dark-greenish-gray; highly calcareous	20	175
	No record	42	222
Graneros Shale:			
	Silt, clayey, variegated, light-brownish-gray, olive-gray and black; cohesive, abundant lignitic and organic material, noncalcareous	53	275
	Sand, very fine to granules, angular	5	280
	Silt, clayey, variegated light-brownish-gray, olive-gray, and black; noncalcareous	20	300
Granite:			
	Decomposed granite; clay, silty, greenish-gray; noncalcareous	20	320

139-51-14bbb1
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil; black	2	2
	Clay, brown	10	12
	Clay; blue	34	46
Till and associated glacioaqueous deposits:			
	Clay, sandy; brown	6	52
	Sand	2.5	54.5
	Clay, sandy, hard; brown	6.5	61
	Clay, sandy, hard; blue	15	76
	Clay, sandy, soft; blue	5	81
	Clay, sandy, hard; blue	24	105
	Clay, sandy, with boulders	26	131
	Sand; gray	15	146
	Clay, sandy, soft; blue	10	156
	Clay, sandy, hard; blue	9	165
	Sand; blue	19	184

139-51-19ccd2
Test hole 3118

Lake Agassiz deposits:			
	Topsoil	1	1
	Silt, yellowish-brown; cohesive, laminated, calcareous	8	9
	Sand, very fine to coarse; subrounded, predominantly shale and limestone	22	31
	Silt, clayey, olive-gray; cohesive, calcareous	25	56
Till and associated glacioaqueous deposits:			
	Clay, olive-gray; scattered sand and gravel, highly calcareous	16	72
	Silt, clayey, olive-gray; soft to hard	5	77
	Gravel, coarse, sandy; subrounded to well rounded, predominantly limestone	2	79
	Clay, gravelly, silty, olive-gray; scattered lignite fragments, calcareous	18	97
	Clay, sandy, gravelly, silty, olive-gray; hard, scattered lignite fragments, highly calcareous	99	196
	Sand, gravelly, very fine to coarse; angular to rounded, scattered lignite fragments--clay lenses 202-209 feet	23	219
	Clay, sandy, gravelly, olive-gray; highly calcareous	19	238
	Silt, clayey, olive-gray; cohesive, laminated, scattered fine sand, highly calcareous	46	284
	Clay, gravelly, sandy, olive-gray; hard, lenses of silt, highly calcareous	34	318

139-51-19ccd2--Continued
Test hole 3118

Geologic source	Material	Thickness (feet)	Depth (feet)
Graneros Shale:			
	Silt, clayey, sandy, olive-gray to black; soft, cohesive, scattered lignite fragments and organic material, calcareous	14	332
	Sand, very fine to very coarse, angular to well rounded; scattered lignite fragments, predominantly quartz	18	350
	Silt, clayey, sandy, olive-gray; scattered lignite fragments, gravel lenses, noncalcareous	13	363
	Sand, fine to medium; angular to rounded, predominantly quartz	13	376
	Silt, clayey, sandy, olive-gray; scattered lignite fragments, noncalcareous	14	390
	Boulder	1	391
Dakota (?) Sandstone:			
	Silt, clayey, light-bluish-gray; cohesive, scattered sand grains and lignite fragments, sand lenses, noncalcareous	48	439
Granite:			
	Decomposed granite; clay, silty, light-brown, cohesive, noncalcareous	7	446
	Clay, greenish-gray; abundant angular sand grains, noncalcareous	16	462
	Granite, white to green; hard	1	463

139-51-21ccc
Test hole 3117

Lake Agassiz deposits:			
	Topsoil	1	1
	Clay, silty, yellowish-brown; highly calcareous	5	6
	Clay, silty, yellowish-brown; calcareous	21	27
	Clay, olive-gray; calcareous	19	46
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous	10	56
	Clay, silty, gravelly, sandy, olive-gray; scattered lignite fragments and boulders, sand lenses 82-87 feet, highly calcareous	63	119
	Silt, clayey, olive-gray; cohesive, highly calcareous	6	125
	Gravel, fine to medium; subangular to well rounded, predominantly limestone	7	132
	Silt, clayey, sandy, greenish-gray; cohesive, abundant shale particles, calcareous	20	152

139-51-26aaa
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil; black	1	1
	Clay; blue	2	3
	Clay; yellow	21	24
	Clay; blue	24	48
Till and associated glacioaqueous deposits:			
	Clay, sandy; blue	13	61
	Clay with gravel lenses; blue	11	72
	Clay, sandy, hard; blue	32	104
	Clay with gravel lenses; blue	10	114
	Sand, gravelly	13	127
	Clay, hard; blue	3	130
	Sand; gray	2	132
	Clay, hard; blue	15	147
	Sand, gray	13	160

139-51-32cab3
Great Northern Railroad

Lake Agassiz deposits:			
	Topsoil	4	4
	Clay, yellow	14	18
	Clay, blue	36	54
	Gravel	6	60

139-52-27aaa
Test hole 3119

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil	1	1
	Clay, silty, yellowish-brown; calcareous	30	31
	Clay, silty, olive-gray; calcareous	14	45
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous	16	61
	Gravel, fine to coarse, sandy; subangular to rounded, predominantly limestone	1	62
	Clay, silty, sandy, gravelly, olive-gray; abundant limestone fragments, highly calcareous	10	72
	Gravel, medium, sandy; subangular to rounded, predominantly limestone and shale -- lenses of olive-gray, lignitic silt	9	81
	Clay, sandy, silty, olive-gray; scattered gravel, highly calcareous	102	183
	Sand, fine to very coarse; subrounded to well rounded, scattered lignite fragments, predominantly shale	5	188
	Clay, sandy, silty, gravelly, olive-gray; firm, scattered lignite fragments, highly calcareous	34	222
Graneros Shale:			
	Silt, clayey, sandy, light-olive-gray, to olive-black; cohesive, laminated with fine white sand, non-calcareous	51	273
	Sand, fine to coarse, clayey, silty; angular to rounded, predominantly quartz	11	284
	Silt, clayey, olive-gray; firm, cohesive, laminated, non-calcareous	7	291
Dakota Sandstone:			
	Silt, clayey, brownish-black to olive-gray; scattered lignite and wood fragments, non-calcareous	76	367
	Sand, very fine to coarse, silty; subangular to rounded, scattered lignite fragments, predominantly quartz and shale	11	378
	Sand, very fine to very coarse; predominantly coarse, angular quartz	13	391
	Clay, silty, various shades of gray; scattered lignitic and organic material, non-calcareous	15	406
	Boulder, sandstone, coarse, angular quartz grains; cementing material, calcareous	2	408
	Clay, sandy, light-bluish-gray; non-calcareous	27	435
	Clay, sandy, light-bluish-gray to brownish-gray, scattered lignite fragments	7	442
	Sand, coarse, mostly angular; predominantly quartz	7	449
Granite (?):			
	Decomposed granite; clay, sandy, white; non-calcareous, scattered fine quartz	18	467
	Sand		

139-54-11ddd
Test hole 3151

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, silty, sandy, gravelly, yellowish-orange; calcareous	18	19
	Clay, silty, sandy, gravelly, olive-gray; calcareous-	43	62
	Silt, clayey with very fine sand, olive-gray; few laminae, scattered lignite particles, calcareous	59	121

139-54-11ddd--Continued
Test hole 3151

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits: (cont.)			
	Clay, silty, sandy, gravelly, olive-gray; firm, highly calcareous	41	162
	Gravel, fine to medium, sandy; predominantly limestone	6	168
	Clay, silty, sandy, gravelly, olive-gray; firm, scattered lignite fragments, highly calcareous	41	209
	Sand, very fine to coarse; angular to rounded, predominantly shale and limestone--silt lenses 218-235 feet	44	253
	Clay, gravelly, silty, sandy, olive-gray	19	272
	Clay, silty, sandy, gravelly, olive-gray	150	422
	Clay, sandy, silty, gravelly, olive-gray; highly calcareous	25	447
Graneros(?) Shale:			
	Silt, clayey, olive-gray to black; cohesive, highly calcareous	20	467

139-54-18aaa
Test hole 3150

Till and associated glacioaqueous deposits:			
	Topsoil, black	3	3
	Clay, silty, sandy, gravelly, yellowish-brown; calcareous	17	20
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous	7	27
	Clay, silty, sandy, olive-gray; scattered lignite fragments, highly calcareous	63	90
	Clay, silty and silt, clayey, gray; silt laminated-	39	129
	Clay, sandy, silty, gravelly, olive-gray; scattered lignite fragments, highly calcareous	44	173
	Shale boulder, greenish-gray; non-calcareous--shale fragments mixed with sand and gravel	4	177
	Silt, sandy, olive-gray; cohesive, scattered lignite fragments, calcareous	5	182
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, calcareous--gravel lenses 197-203	65	247
	Clay, silty, sandy, gravelly, olive-gray; firm, scattered lignite fragments,calcareous--numerous boulders 270-302 feet	55	302
	Gravel, fine; few shell fragments, predominantly shale and limestone	10	312
	Clay, silty, sandy, gravelly, olive-gray; hard, scattered lignite fragments, highly calcareous--	4	316
Greenhorn Formation:			
	Shale, silty, olive-black; hard, white specks, abundant shell fragments, highly calcareous	16	332

139-55-16ddd
Test hole 3149

Till and associated glacioaqueous deposits:			
	Topsoil	1	1
	Gravel, sandy, fine to medium, brown; predominantly limestone and shale	9	10
	Clay, silty, sandy, gravelly, yellowish-brown, calcareous	1	11
	Clay, silty, sandy, gravelly, greenish-gray; few lignite fragments, calcareous	10	21
	Clay, silty, greenish-gray; scattered sand and gravel, few lignite fragments, calcareous	22	43
	Clay, sandy, olive-brown; scattered gravel, slightly calcareous	6	49
	Clay, silty, sandy, gravelly, greenish-gray; scattered lignite fragments, calcareous--numerous boulders 62-69 feet	20	69

140-48-19ddd1
Test hole 3094

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil	1	1
	Clay, silty, yellowish-brown; laminated, highly calcareous	18	19
	Silt, clayey, fine sand, dark-gray; scattered organic material, calcareous	9	28
	Clay, silty, greenish-gray; plastic, calcareous	69	97
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, greenish-gray; calcareous	9	106
	Gravel, medium, sandy; scattered shell fragments, predominantly shale and limestone	8	114
	Clay, silty, sandy, gravelly, greenish-gray; calcareous	8	122
	Clay, silty, sandy, gravelly, olive-gray; numerous small boulders	12	134
Granite (?):			
	Granite, blue-green; hard	1	135

140-48-19ddd2
Test hole 3094-A

Lake Agassiz deposits:			
	Topsoil	1	1
	Clay, silty, sandy, yellowish-brown; laminated, highly calcareous	18	19
	Silt, clayey, fine sand, dark-gray; scattered organic material, laminated, calcareous	11	30
	Clay, silty, olive-gray; plastic, calcareous	74	104
Till and associated glacioaqueous deposits:			
	Clay, gravelly, sandy, silty, olive-gray; highly calcareous	1	105
	Gravel, fine to coarse; predominantly shale and limestone	5	110
	Clay, silty, sandy, gravelly, olive-black; abundant shale pebbles, calcareous	8	118
	Clay, silty, olive-gray; scattered sand and gravel, highly calcareous	4	132
Granite (?):			
	Granite, blue-green; hard		132

140-48-29cdb
Test hole 2165

Lake Agassiz deposits:			
	Topsoil, black	3	3
	Clay, silty, yellowish-brown; plastic, highly calcareous	13	16
	Clay, silty, olive-gray; plastic, scattered sand, highly calcareous	78	94
	Sand, very fine to coarse, silty, gravelly, well rounded to angular; predominantly limestone	5	99
Till and associated glacioaqueous deposits:			
	Clay, sandy, silty, dark-greenish gray; scattered gravel, highly calcareous	14	113
	Sand, very fine to coarse, angular to well rounded, gray; predominantly quartz and shale	9	122
	Clay, silty, sandy, dark-greenish gray; scattered gravel and lignite fragments	4	126
	Clay, silty, sandy, gravelly, dark-greenish-gray; highly calcareous	10	136

140-48-29cdb--Continued
Test hole 2165

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits: (cont.)			
	Clay, gravelly, sandy, olive-gray; highly calcareous	19	155
	Sand, coarse, subangular to well rounded, gravelly, clayey, greenish-gray; predominantly shale and limestone	4	159
	Clay, sandy, silty, dark-greenish-gray; scattered gravel, highly calcareous	47	206
	Clay, silty, olive-gray to dark-greenish-gray; scattered sand and limestone pebbles, highly calcareous	114	320
Older till and associated glacioaqueous deposits: (?)			
	Clay, sandy, silty, gravelly, olive-gray to brownish-gray; highly calcareous	40	360
	Sand, very fine to very coarse, gravelly, clayey; angular to subrounded, predominantly quartz	28	388.5

140-49-14dcd
Test hole 3093

Lake Agassiz deposits:			
	Silt, clayey, yellowish-brown; laminated, calcareous	13	13
	Clay, silty, olive-gray; laminated, calcareous	77	90
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, calcareous	20	110
	Clay, silty, sandy, light-olive-gray; scattered gravel, highly calcareous--limestone boulders 131-145 feet	32	142
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous	44	186
Older till and associated glacioaqueous deposits: (?)			
	Clay, silty, sandy, gravelly, pale-brown; highly calcareous	31	217
	Gravel, fine, sandy; predominantly granitic derivatives and limestone	5	222
	Clay, silty, sandy, gravelly, pale-brown; sand and gravel constituents, highly weathered	9	231
	Sand, very fine to coarse, gravelly; angular to subrounded, predominantly quartz	26	257
Granite:			
	Decomposed granite; clay, blue-green; soft to hard, calcareous	16	275

140-49-18bbb
Test hole 3095

Lake Agassiz deposits:			
	Topsoil, black	4	4
	Silt, clayey, yellowish-brown; laminated, highly calcareous	13	17
	Clay, silty, olive-gray; plastic, calcareous	52	69
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; abundant shale pebbles, highly calcareous	11	80
	Granite boulder	1	81
	Clay, silty, sandy, greenish-gray; scattered gravel and lignite fragments, abundant wood fragments, few shell fragments, highly calcareous	138	219
	Clay, silty, greenish-gray; laminated, calcareous	7	226
	Clay, silty, greenish-gray; abundant sand and gravel, numerous lignite fragments, highly calcareous	52	278
Granite:			
	Decomposed granite, blue-green to pale-green, hard	12	290

140-49-19ddd
Test hole 3091

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	3	3
	Silt, clayey, sandy, light-olive-gray; highly calcareous	2	5
	Silt, sandy, grayish-orange; laminated, highly calcareous	13	18
	Clay, silty, olive-gray; plastic, calcareous	54	72
	Gravel, sandy, angular to subrounded; predominantly limestone and shale	3	75
Till and associated glacioaqueous deposits:			
	Clay, gravelly, olive-gray; scattered lignite fragments, highly calcareous	10	85
	Gravel, fine to medium, sandy, angular to rounded; predominantly limestone	17	102
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous	12	114
	Gravel, fine to medium, sandy, angular to well rounded; predominantly quartz and limestone	16	130
	Sand, very fine to very coarse, angular to well rounded; predominantly quartz, gravel and boulders 150-185 feet	48	178
Granite:			
	Decomposed granite; clay, pale-green to pale-blue; soft, calcareous	47	225
	Granite, grayish-blue-green; hard	5	230

140-49-21aaa
Test hole 3092

Lake Agassiz deposits:			
	Topsoil, black	2	2
	Clay, sandy, olive-gray; organic material, calcareous	3	5
	Clay, silty, sandy, light-olive-gray; organic material, calcareous	3	8
	Silt, pale-yellowish-brown; some very fine sand laminations	7	15
	Silt, olive-gray; some very fine sand laminations	5	20
	Clay, silty, olive-gray; plastic, calcareous	62	82
Till and associated glacioaqueous deposits:			
	Clay, sandy, silty, olive-gray; firm, scattered gravel and lignite fragments, highly calcareous	16	98
	Gravel, fine, sandy, angular to rounded; scattered lignite fragments, predominantly limestone	6	104
	Clay, gravelly, sandy, olive-gray; numerous boulders	11	115
	Sand, coarse, gravelly, angular to rounded, predominantly limestone	4	119
	Clay, sandy	7	126
	Gravel, fine to medium, sandy, angular to well rounded; predominantly granite and limestone	10	136
	Clay, silty, sandy; light-olive-gray; scattered gravel and few boulders	5	141
	Gravel, medium, boulders; predominantly granite and limestone	12	153
	Clay--no record	11	164
	Boulder	1	165

140-49-26ddd
Test hole 2164

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	3	3
	Clay, silty, light-olive-gray; plastic, highly calcareous	3	6
	Clay, silty, light-olive-gray; plastic, highly calcareous	25	31
	Clay, silty, olive-gray; plastic, calcareous	53	84
	Clay, silty, olive-gray; plastic, scattered sand grains and pebbles, calcareous	8	92
	Sand, very fine to very coarse, gravelly, angular to well rounded	4	96
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; calcareous	9	105
	Clay, silty, sandy, olive-gray; calcareous	10	115
	Clay, silty, sandy, gravelly, olive-gray; calcareous	11	126
	Gravel, fine, sandy, clayey, gray; angular to well rounded, predominantly granite and limestone fragments	26	152
	Clay, gravelly, sandy, olive-gray; highly calcareous	21	173
	Clay, sandy, gravelly, olive-gray; highly calcareous	16	189
	Clay, sandy, olive-gray; scattered gravel, highly calcareous	5	194
	Clay, gravelly, olive-gray; scattered sand, highly calcareous	5	199
	Clay, sandy, gravelly, olive-gray; highly calcareous	26	225
Granite:			
	Granite, greenish-black; hard	1	226

140-49-28ddd
Test hole 2161

Lake Agassiz deposits:			
	Topsoil, black	3	3
	Clay, olive-gray to yellowish-brown; plastic, calcareous	7	10
	Clay, silty, greenish-gray; plastic, laminated, few scattered pebbles, trace of organic material, calcareous	5	15
	Clay, silty, greenish-gray; plastic, slightly calcareous	6	21
	Clay, silty, dark-olive gray; plastic, calcareous--scattered sand 52-63 feet and 73-84 feet	63	84
Till and associated glacioaqueous deposits:			
	Clay, sandy, dark-olive-gray; plastic, scattered pebbles, calcareous	15	99
	Sand, fine to coarse, gravelly, clayey; loose to cohesive	11	110
	Sand, fine to coarse, subangular to well rounded, predominantly quartz	11	121
	Sand, fine to coarse, gravelly; subangular to well rounded; predominantly quartz	21	142
	Sand, coarse, gravelly; angular to well rounded, predominantly quartz	5	147
	Sand, fine to coarse, gravelly; subangular to well rounded, predominantly quartz	20	167
	Boulder	1	168
Granite:			
	Decomposed granite; clay, sandy, gravelly, white to red; non-calcareous	21	189

140-49-29ddd
Test hole 2160

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	4	4
	Clay, pale-brown; plastic, slightly calcareous	7	11
	Clay, dark-olive-gray; plastic, few pebbles, calcareous	6	17
	Clay, dark-olive-gray; plastic, calcareous	18	35
	Clay, silty, dark-olive-gray; plastic, calcareous	4	39
	Clay, dark-olive-gray; plastic, few pebbles 53-70 feet, calcareous	33	72
Till and associated glacioaqueous deposits:			
	Clay, sandy, gravelly, dark-olive-gray; calcareous	19	91
	Sand, fine to coarse, gravelly, slightly clayey; subangular to well rounded, predominantly quartz	24	115
	Sand, fine to coarse and gravel; subangular to well rounded, predominantly quartz	10	125
	Sand, fine to coarse and fine gravel; subangular to well rounded, predominantly quartz	32	157
	Gravel, sandy, subangular to well rounded; predominantly shale and limestone	5	162
	Sand, coarse, gravelly, angular to well rounded; predominantly quartz	6	168
	Clay, silty, sandy, gravelly, olive-gray; plastic, few wood fragments, calcareous	6	174
Older till and associated glacioaqueous deposits: (?)			
	Clay, silty, sandy, reddish-brown to blue-green; scattered fine gravel, slightly calcareous	4	178
	Clay, sandy, gravelly, dark-olive-gray; calcareous	11	189
Granite:			
	Decomposed granite; clay, greenish-gray to black; numerous angular to rounded quartz grains, calcareous to non-calcareous	23	212

140-49-31bab
Test hole 2167

Lake Agassiz deposits:			
	Topsoil	2	2
	Clay, silty, light-olive-gray; plastic, scattered sand grains, highly calcareous	6	8
	Clay, silty, yellowish-brown; plastic, highly calcareous	13	21
	Clay, dark-greenish-gray; plastic, scattered silt and sand, highly calcareous	47	68
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, dark-greenish-gray; scattered fine gravel, highly calcareous	12	80
	Clay, sandy, gravelly, dark-greenish-gray, highly calcareous	4	84
	Clay, silty, dark-greenish-gray to olive-black; plastic, scattered fine sand and some organic material, highly calcareous	37	121
	Clay, sandy, silty, dark-greenish-gray; scattered fine gravel, highly calcareous	15	136
	Clay, sandy, silty, gravelly, dark-greenish-gray; highly calcareous--numerous boulders 157-168 feet	32	168
	No record	73	241
	Gravel, fine; sand, coarse; angular to well rounded; predominantly quartz and limestone	9	250
Granite:			
	Granite, multicolored	.5	250.5

140-49-31cdc
Test hole 2168

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black----------	4	4
	Clay, light-olive-brown; plastic, scattered organic material, calcareous----------	12	16
	Clay, silty, olive-gray; plastic, calcareous-------	42	58
Till and associated glacioaqueous deposits:			
	Clay, sandy, gravelly, olive-gray; highly calcareous----------	21	79
	Sand, fine to coarse, subrounded to well rounded; predominantly quartz and limestone----------	15	94
	Clay, silty, olive-gray with yellowish-brown streaks; plastic, highly calcareous----------	2	96
	Sand, fine to coarse, subrounded to well rounded, predominantly quartz and limestone----------	6	102
	Clay, silty, olive-gray; plastic, highly calcareous	4	106
	Sand, fine to coarse, subrounded to well rounded, predominantly quartz and limestone----------	9	115
	Sand, fine to coarse, gravelly, well rounded; predominantly quartz----------	11	126
	Sand, fine to coarse, well rounded; scattered lignite fragments, predominantly quartz----------	68	194
	Sand, fine to medium, gravelly, subangular to well rounded, predominantly quartz----------	11	205
Granite:			
	Decomposed granite; chert (?), yellowish-gray; hard, vitreous----------	10	215
	Clay, moderate-reddish-brown; plastic, non-calcareous----------	6	221
	Clay, light-bluish-gray; plastic, scattered sand grains, non-calcareous----------	19.5	241.5

140-49-32bbb
Test hole 2166

Lake Agassiz deposits:			
	Topsoil----------	3	3
	Clay, silty, light-olive-gray; plastic, highly calcareous----------	8	11
	Clay, silty, moderate-yellowish-brown; plastic, highly calcareous----------	5	16
	Clay, silty, moderate-yellowish-brown; plastic, non-calcareous----------	6	22
	Clay, silty, dark-greenish-gray; plastic, highly calcareous----------	45	67
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, dark-greenish-gray; highly calcareous----------	6	73
	Clay, silty, sandy, dark-greenish-gray; plastic, scattered pebbles, highly calcareous----------	4	77
	Gravel, fine, sandy, angular to well rounded; predominantly limestone and sandstone----------	4	81
	Clay, silty, sandy, gravelly, dark-greenish-gray; scattered shale pebbles, highly calcareous------	24	105
	Clay, silty, sandy, dark-greenish-gray; scattered coarse gravel, highly calcareous----------	33	138
	Gravel, fine to coarse, sandy, clayey----------	9	147
	Clay, silty, sandy, dark-greenish-gray; scattered coarse gravel, highly calcareous----------	21	168
	Clay, silty, dark-greenish-gray; scattered sand and gravel, highly calcareous----------	6	174
	Sand, fine to coarse, gravelly; angular to well rounded, scattered lignite fragments----------	15	189
	Gravel, fine to coarse, sandy, angular to well rounded----------	10	199

140-49-32bbb--Continued
Test hole 2166

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits: (cont.)			
	Sand, fine to coarse, gravelly, angular to well rounded; few clay lenses, predominantly quartz--	21	220
	Gravel, fine, sandy, angular to well rounded; few clay lenses----------	8	228
Granite:			
	Decomposed granite; clay, grayish-blue-green; plastic----------	9	237

140-49-35bbb
Test hole 2162

Lake Agassiz deposits:			
	Topsoil, black----------	1	1
	Clay, silty, grayish-brown; plastic, calcareous----	4	5
	Clay, silty, yellowish-brown; plastic, calcareous--	10	15
	Clay, silty, dark-olive-gray; plastic, calcareous--	6	21
	Sand, very fine to medium, olive-gray; subangular to well rounded, predominantly quartz----------	5	26
	Clay, silty, olive-gray; plastic, calcareous-------	4	30
	Clay, silty, olive-gray; plastic, scattered sand and gravel, calcareous----------	60	90
	Sand, gravelly, clayey, angular to well rounded; cohesive, predominantly limestone and shale-----	8	98
Till and associated glacioaqueous deposits:			
	Clay, sandy, olive-gray; scattered gravel, calcareous----------	10	108
	Sand, gravelly, clayey; angular to well rounded, loose to cohesive----------	55	163
	Boulder, granite----------	1	164
	Gravel, sandy, angular to well rounded; predominantly limestone----------	3	167
	Gravel, fine to coarse, sandy, clayey, angular to well rounded; abundant cobbles and small boulders	17	184
Granite:			
	Granite, hard----------	3.5	187.5

140-49-36aaa
Test hole 2163

Lake Agassiz deposits:			
	Topsoil, black----------	2	2
	Clay, silty, moderate-olive-brown; plastic, calcareous----------	14	16
	Clay, silty, light-olive-gray; plastic, calcareous-	15	31
	Clay, dark-olive-gray; plastic, calcareous---------	67	98
Till and associated glacioaqueous deposits:			
	Sand, gravelly, clayey, well rounded; predominantly quartz----------	7	105
	Clay, sandy, light-olive-gray; scattered gravel, calcareous----------	15	120
	Sand, fine to coarse, gravelly, well rounded; predominantly quartz----------	6	126
	Clay, sandy, gravelly, olive-gray; scattered lignite fragments, calcareous----------	31	157
	Sand, fine to medium, gravelly, well rounded; predominantly quartz----------	21	178
	Sand, fine to coarse, gravelly, well rounded; predominantly quartz----------	37	215
	Gravel, sandy, subrounded to angular----------	5	220

140-49-36aaa--Continued
Test hole 2163

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits: (cont.)			
	Sand, fine to coarse, gravelly, well rounded; predominantly quartz	8	228
	Clay, silty, olive-gray; scattered sand and wood fragments, calcareous	24	252
	Clay, silty, light-olive-gray; scattered sand, calcareous	38	290
Granite:			
	Granite, reddish-brown; hard	1	291

140-50-19dad
Test hole 3133

Lake Agassiz deposits:			
	Topsoil, black	2	2
	Silt, sandy, brownish-black, cohesive, highly calcareous	1	3
	Clay, silty, dark-yellowish-brown; scattered sand and lignite fragments, calcareous	6	9
	Silt, dark-greenish-gray; soft, cohesive, scattered lignite fragments, calcareous	6	15
	Clay, silty, dark-greenish-gray; calcareous	7	22
	Sand, silty, clayey, dark-yellowish-brown; scattered lignite fragments, predominantly quartz	14	36
	Clay, olive-gray; soft, calcareous	20	56
Till and associated glacioaqueous deposits:			
	Clay, olive-gray; hard, scattered coarse sand and lignite fragments, few boulders, highly calcareous	82	138
	Sand, gravelly, medium, angular to rounded; clay lenses, scattered wood fragments, predominantly limestone	22	160
Graneros Shale:			
	Shale, dark-greenish-gray to black; hard, scattered lignite fragments near top, numerous calcite pockets, highly calcareous to non-calcareous	37	197

140-50-34ccc2
Test hole 3134

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, pale-yellowish-brown; scattered lignite fragments, calcareous	13	14
	Clay, dark-greenish-gray; calcareous	30	44
Till and associated glacioaqueous deposits:			
	Clay, sandy, olive-gray; calcareous	34	78
	Boulder, limestone	1	79
	Clay, silty, sandy, olive-gray; calcareous	43	122
	Clay, sandy, olive-gray; calcareous	56	178
	Sand, medium to coarse, angular to well rounded; scattered lignite fragments, predominantly quartz	7	185
	Silt, sandy, olive-gray; scattered lignite fragments, calcareous	11	196
	Clay, silty, olive-gray; hard, occasional brown spots, scattered lignite fragments, highly calcareous	6	202
	Clay, dark-greenish-gray; scattered shale pebbles and lignite fragments	6	208
	Gravel, fine, angular to well rounded; scattered lignite fragments, predominantly quartz	17	225
Granite:			
	Decomposed granite; clay, greenish-gray; scattered quartz fragments, non-calcareous	17	242

140-51-33abb
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	2	2
	Clay, yellow	18	20
	Clay, blue	27	47
Till and associated glacioaqueous deposits:			
	Clay, sandy, blue	55	102
	Clay, blue	8	110
	Sand, multicolored	2	112
	Clay, blue	83	195
	Clay, sandy, blue	8	203
	Sand, fine, blue	3	206
Graneros (?) Shale:			
	Shale, gray	79	285
	Shale, variegated	20	305
Granite:			
	Decomposed granite; clay, green	45	350

140-53-25ccc
Test hole 3155

Lake Agassiz deposits:			
	Topsoil, black	3	3
	Silt, dark-yellowish-brown; cohesive, highly calcareous	10	13
Till and associated glacioaqueous deposits:			
	Clay, sandy, moderate-yellowish-brown; scattered gravel, highly calcareous	13	26
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous	6	32

140-53-26cbd
Test hole 3154

Lake Agassiz deposits:			
	Topsoil	1.5	1.5
	Clay, silty, sandy, moderate-yellowish-brown; plastic, calcareous	7.5	9
	Clay, silty, olive-gray; plastic, calcareous	5	14
Till and associated glacioaqueous deposits:			
	Clay, sandy, gravelly, olive-gray; calcareous	8	22
	Silt, clayey, olive-gray; cohesive, brown spots, calcareous	67	89
	Sand, gravelly, coarse, subrounded; predominantly shale and limestone	4	93
	Clay, sandy, olive-gray; scattered gravel and lignite fragments, highly calcareous	14	107

140-53-31aaa
Test hole 3153

Till and associated glacioaqueous deposits:			
	Topsoil, black	2	2
	Clay, silty, sandy, gravelly, dark-yellowish-orange; highly calcareous	11	13
	Clay, silty, sandy, gravelly, olive-gray; calcareous	19	32

140-54-18d
Buffalo Test 7
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Topsoil, black	2	2
	Clay, yellow	13	15
	Sand, brown	3	18
	Sand, blue	5	23
	Clay, blue	16	39
	Sand, blue; clay lenses	9	48
	Clay, blue	5	53

140-54-19cdal
Buffalo Test 9
Driller's log by Frederickson's Inc.

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, yellow	18	19
	Clay, blue	12	31
	Sand, silty, fine, blue	10	41
	Clay, silty, blue; soft	44	85
	Clay, blue	37	122
	Clay, sandy, blue; soft	5	127
	Clay, sandy, blue; hard	18	145
	Clay, sandy, blue; soft	8	153
	Sand, fine, blue	8	161
	Silt, blue; soft	22	183
	Sand, fine, blue	4	187
	Clay, sandy, blue; hard, scattered boulders	22	209
	Clay, sandy, blue; hard, scattered shale fragments	13	222
	Sand, scattered shale fragments	5	227
	Clay, sandy, blue; hard	17	244
	Clay, sandy, blue; soft	9	253
	Clay, blue; soft, sand lenses	18	271
	Clay, blue; hard, scattered shale fragments	6	277
	Sand, scattered shale fragments	2	279
	Clay, blue; hard, scattered shale fragments	16	295
	Sand, clean	5	300
	Clay, sandy, blue; hard	10	310
	Boulder	1	311

140-54-19cda2
Buffalo Test 10
Driller's log by Frederickson's Inc.

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, sandy, yellow	18	19
	Clay, sandy, blue	13	32
	Sand, fine, blue; clay lenses	3	35
	Sand, fine, blue	13	48
	Clay, sandy, blue	8	56

140-54-19cdb
Buffalo Test 11
Driller's log by Frederickson's Inc.

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, brown	15	16
	Clay, blue	4	20
	Sand, blue	4	24
	Clay, sandy, blue	1	25
	Sand, silty, blue	4	29

140-54-19cdb--Continued
Buffalo test 11
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits: (cont.)			
	Clay, silty, blue	81	110
	Clay, silty, blue; scattered limestone pebbles	47	157
	Clay, sandy, blue; soft	25	182
	Sand, silty, blue	7	189
	Clay, sandy, blue	38	227
	Sand, blue	1	228
	Clay, sandy, blue	6	234
	Clay, blue; sand lenses	3	237
	Sand, blue	4	241
	Clay, sandy, blue	13	254

140-54-19cdd
Buffalo Village
Driller's log by Frederickson's Inc.

Till and associated glacioaqueous deposits:			
	Topsoil, black	2	2
	Clay, brown	12	14
	Sand, brown	3	17
	Clay, sandy, hard, blue	53	70
	Clay, blue	71	141
	Sand, blue	6	147
	Clay, sandy, soft, blue	13	160
	Clay, sandy with shale fragments, blue	9	169
	Sand, blue	5	174
	Clay, sandy, soft, blue	10	184
	Clay, sandy with boulders, blue	61	245
	Clay, sandy, hard, blue	29	274
	Sand	8	282
	Clay, sandy with boulders, blue	17	299
	Clay, sandy with sand lenses and boulders, blue	40	339
	Clay, sandy, soft, blue	50	389
	Clay, sandy with shale fragments, gray	31	420
Greenhorn Formation:			
	Shale, soft, black	104	524
	Shale, hard, black	6	530
Graneros Shale:			
	Shale, hard, with sandstone lenses, black	59	589
	Shale, hard, black	13	602
	Sand, gray	4	606
	Shale, hard, black	4	610
	Sand, gray	3	613
	Shale, sandy, hard, black	16	629
	Shale, soft, with sand lenses, black	7	636
	Shale, sandy, hard, black	3	639
	Sand, white	6	645
	Shale, soft, with sand lenses, gray	9	654
Dakota (?) Sandstone:			
	Shale, sandy, soft, black	9	663
	Shale, sandy, hard, black	3	666
	Sand, white	3	669
	Shale, sandy, hard, white and black	4	673
	Shale, sandy, soft, black	5	678
	Shale, sandy, hard, black	6	684
	Shale, with sand lenses, gray	13	697
	Shale, sandy, hard, gray and black	17	714
	Sandstone, white	45	759
	Shale, black	1	760
	Sand, white	7	767
	Shale, sandy, hard, gray	21	788
	Sandstone, white	2	790

140-54-30bbb
Buffalo test 12
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, yellow	24	25
	Clay, blue	7	32
	Clay, sandy, blue; soft	5	37
	Clay, silty, blue	93	130
	Clay, silty, blue; soft	7	137
	Clay, silty, blue	7	144
	Clay, sandy, blue	3	147
	Sand, fine, blue	7	154
	Clay, sandy, blue; soft	15	169
	Clay, sandy, blue	12	181
	Sand, fine, blue	2	183
	Clay, sandy, blue	1	184
	Sand, blue; clay lenses	5	189
	Sand, fine, blue	4	193
	Clay, sandy, blue	16	209
	Clay, blue; sand lenses	5	214
	Sand, blue	6	220
	Clay, sandy, blue	7	227
	Sand, blue; clay lenses, scattered shale fragments-	42	269

140-54-30d
Buffalo test 8
(Driller's log)

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, yellow	13	14
	Clay, blue	28	42
	Clay, blue; sand lenses	3	45
	Clay, blue	2	47

140-54-35aad
Test hole 3152

Lake Agassiz deposits:			
	Topsoil, gravelly, black	2	2
	Gravel, sandy, fine to very coarse, subrounded to rounded; predominantly shale and limestone	6	8
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, dark-yellowish-orange; calcareous	10	18
	Clay, silty, olive-gray; scattered sand and gravel, calcareous	14	32

140-55-19bac2
Tower City municipal well
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Sand and gravel, brown	22	23
	Clay, blue	7	30
	Clay, sandy, blue	2	32

140-55-22cda
Buffalo Test 3
Driller's log by Frederickson's Inc.

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, yellow	1	2
	Sand	7	9
	Clay, blue	4	13
	Gravel	5	18
	Clay, blue	6	24
	Sand	3	27
	Clay, blue; lenses of gravel	6	33
	Clay, blue	14	47

140-55-22dbb
Buffalo Test 4
Driller's log by Frederickson's Inc.

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, yellow	8	9
	Clay, blue	23	32

140-55-22dbc1
Buffalo Test 1
Driller's log by Frederickson's Inc.

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, yellow	11	12
	Clay, blue	3	15
	Sand, black; shale fragments	1	16
	Clay, blue	37	53
	Clay, sandy, blue	18	71

140-55-22dbc2
Buffalo Test 2
Driller's log by Frederickson's Inc.

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, yellow	4	5
	Sand, dirty	2	7
	Clay, blue	25	32

140-55-22dca
Test hole 3121

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Silt, clayey, sandy, dusky-yellow; cohesive, few laminae, highly calcareous	3	4
	Gravel, sandy, unsorted, subrounded to rounded; predominantly limestone and shale	6	10
	Clay, silty, olive-gray; scattered sand, calcareous	7	17

140-55-22dcd
Buffalo Test 5
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Topsoil, black	2	2
	Clay, yellow	3	5
	Sand	2	7
	Clay, blue	25	32

140-55-25aaa
Test hole 3120

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, silty, moderate-yellowish-brown; abundant sand and gravel, scattered lignite fragments, calcareous	10	11
	Clay, silty, olive-gray; scattered sand and few lignite fragments	31	42
	Clay, silty, light-olive-gray; scattered sand and granules, calcareous	120	162
	Clay, sandy, olive-gray; scattered gravel and lignite fragments, highly calcareous	35	197
	Sand, medium, gray; predominantly quartz	32	229
	Clay, sandy, olive-gray; scattered gravel and lignite fragments, highly calcareous	73	302
	Clay, silty, sandy, gravelly, olive-gray; abundant shale pebbles, scattered lignite fragments, highly calcareous	68	370
Greenhorn Formation:			
	Shale, silty, olive-black, mottled-dark-brown and white; shell fragments	22	392

140-55-27caa
Buffalo Test 6
(Driller's log)

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, yellow	2	3
	Sand, brown	6	9
	Clay, yellow	6	15
	Clay, blue	17	32

141-49-9baa1
Test hole 3096

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, silty, moderate-yellowish-brown; plastic, few laminae, highly calcareous	14	15
	Clay, silty, dark-greenish-gray; plastic, calcareous	56	71
	Boulder, granite	2	73

141-49-9baa2
Test hole 3096-A

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	2	2
	Clay, silty, moderate-olive-brown; plastic, few laminae, highly calcareous	13	15
	Clay, silty, olive-gray; plastic, calcareous	57	72
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, light-olive-gray; numerous boulders, highly calcareous	20	92
	Gravel, sandy, fine to medium, subangular to rounded, predominantly limestone	15	107
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous	142	249
Older till and associated glacioaqueous deposits: (?)			
	Clay, sandy, gravelly, pale-brown; highly calcareous	24	273
Granite:			
	Granite, pale-blue-green to dusky-blue-green; hard-	1	274

141-50-6ddd
Test hole 3098

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, silty, moderate-yellowish-brown; slightly calcareous	5	6
	Clay, silty, grayish-orange; plastic, calcareous	11	17
	Clay, silty, olive-gray; plastic, calcareous	47	64
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous	18	82
	Silt, clayey, olive-gray; soft, scattered lignite fragments, highly calcareous	3	85
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous	18	103
	Sand, very fine to coarse; silty, scattered gravel; predominantly quartz	12	115
	Sand, very fine to very coarse, subrounded to rounded; predominantly limestone	20	135
	Gravel, fine to coarse; sandy, scattered boulders	8	143
	Clay, silty, brownish-black to olive-gray	102	245
Graneros Shale:			
	Silt, clayey, brownish-black to olive-gray; soft, cohesive, laminated; scattered lignite, non-calcareous	86	331
Granite:			
	Decomposed granite; clay, light-olive-brown to pale-green; soft, non-calcareous	24	355

141-50-9aaa1
Test hole 3097

Lake Agassiz deposits:			
	Silt, pale-yellowish-brown; cohesive, highly calcareous	13	13
	Silt, light-olive-gray; cohesive, highly calcareous	12	25
	Silt, clayey, olive-gray; plastic, highly calcareous	20	45
	Clay, silty, olive-gray; plastic, slightly calcareous	20	65
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous	14	79
	Boulder	1	80

141-50-9aaa2
Test hole 3097-A

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Silt, pale-yellowish-brown; cohesive, highly calcareous	13	13
	Silt, clayey, pale-yellowish-brown to olive-gray; cohesive, highly calcareous	12	25
	Silt, clayey, olive-gray; plastic, highly calcareous	15	40
	Clay, silty, olive-gray; plastic, scattered sand grains, highly calcareous	22	62
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; few lignite fragments, highly calcareous	23	85
	Silt, clayey, sandy, olive-gray; cohesive, scattered lignite fragments, highly calcareous	15	100
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous	17	117
	Clay, silty, sandy, olive-gray; scattered gravel, highly calcareous	30	147
	Silt, sandy, olive-gray; laminated, highly calcareous	63	210
	Clay, sandy, olive-gray; scattered gravel, highly calcareous	50	260
	Sand, fine to very coarse, gravelly, angular to well rounded; few lignite fragments, predominantly shale and limestone	52	312
Granite:			
	Decomposed granite; clay, pale-blue-green; soft	.5	312.

141-51-25ddd
Test hole 3132

Lake Agassiz deposits:			
	Topsoil, black	2	2
	Silt, pale-yellowish-brown; cohesive, few lignite fragments, slightly calcareous	23	25
	Silt, olive-gray; cohesive, few lignite fragments, slightly calcareous	27	52
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, olive-gray; scattered gravel, highly calcareous	35	87
	Clay, silty, olive-gray; scattered sand, shell fragments, highly calcareous	29	116
Older till and associated glacioaqueous deposits: (?)			
	Silt, dusky-yellowish-brown; scattered wood and lignite fragments	17	133
	Silt, dark-greenish-gray; cohesive, laminated, highly calcareous	3	136
	Clay, sandy, dark-yellowish-brown; few lignite fragments, highly calcareous	7	143
	Silt, sandy, dark-greenish-gray; scattered lignite fragments, highly calcareous	7	150
	Silt, sandy, dark-greenish-gray; highly calcareous	10	160
	Sand, fine to medium, angular to rounded, gray; predominantly quartz	20	180
	Silt, clayey, greenish-gray; soft, cohesive, scattered fine sand and lignite fragments, highly calcareous	51	231
Graneros Shale:			
	Shale, dark-greenish-gray; hard, laminated, slightly calcareous	26	257

141-52-21cdd
Amenia test 1322-6
(N. D. State Water Comm.)

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	2	2
	Clay, sandy, yellowish-gray	3	5
	Clay, silty, sandy, dusky-yellow to moderate-olive-brown; plastic, scattered fine gravel, calcareous	18	23
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, olive-gray; scattered fine gravel, calcareous	17	40
	Silt, clayey, olive-gray; cohesive, scattered sand and fine gravel, calcareous	23	63

141-52-23daa
Amenia test 1322-2
(N. D. State Water Comm.)

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, silty, sandy, yellowish-gray; soft, calcareous	2	3
	Clay, sandy, dusky-yellowish-brown; soft, calcareous	7	10
	Clay, dusky-yellow to light-olive-brown; plastic, calcareous	29	39
Till and associated glacioaqueous deposits:			
	Clay, silty, olive-gray; scattered shale pebbles; calcareous	26	65
	Clay, silty, olive-gray; soft, calcareous	5	70
	Gravel, fine to coarse; subangular to subrounded, predominantly limestone	1	71
	Clay, silty, olive-gray; soft, calcareous	2	73
	Gravel, fine to coarse; subangular to subrounded, predominantly limestone	2	75
	Clay, silty, sandy, olive-gray; soft, scattered shale pebbles, calcareous	32	107
	Clay, silty, olive-gray; soft, scattered gravel, calcareous	23	130
	Gravel, fine to coarse; subangular to subrounded, predominantly limestone and shale	3	133
	Clay, silty, sandy, olive-gray; soft, occasional boulder, calcareous	17	150
	Boulder, limestone	2	152
	Clay, silty, sandy, olive-gray; soft, scattered gravel, calcareous	58	210
	Clay, silty, olive-gray; soft, occasional boulder, calcareous	27	237
	Clay, silty, sandy, olive-gray; gravel lenses, calcareous	25	262
	Gravel, fine to coarse; clayey	8	270
	Clay, sandy, silty, gravelly, olive-gray; occasional boulder, calcareous	22	292
	Clay, sandy, light-olive-gray; soft, scattered gravel, calcareous	48	340
Graneros Shale:			
	Clay, silty, sandy, olive-gray to olive-black; soft, non-calcareous	10	350
	Silt, sandy, light-greenish-gray; soft, non-calcareous	7	357

141-52-24dcc
Amenia test 1323-3
(N. D. State Water Comm.)

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	2	2
	Silt, clayey, olive-black; loose to slightly cohesive	3	5
	Clay, silty, yellowish-gray; soft, calcareous	5	10
	Clay, yellowish-gray to dusky-yellow; soft, plastic, calcareous	10	20
	Clay, silty, dusky-yellow to greenish-gray; soft, plastic, calcareous	10	30
	Silt, clayey, olive-gray; soft, cohesive, calcareous	6	36
Till and associated glacioaqueous deposits:			
	Silt, sandy, clayey, olive-gray; soft, scattered pebbles, calcareous	44	80
	Clay, silty, sandy, olive-gray; soft, scattered pebbles, calcareous	10	90
	Sand, fine, silty, clayey, olive-gray to light-olive gray; loose to cohesive, scattered gravel	40	130
	Clay, silty, sandy, gravelly, olive-gray; soft, calcareous	60	190
	Sand, fine, clayey, silty, light-olive-gray; loose to cohesive	20	210
	Clay, sandy, silty, gravelly; light-olive-gray; cohesive to slightly loose, calcareous	80	290
	Clay, silty, sandy, olive-gray; soft to hard, scattered pebbles, calcareous	50	340
Graneros Shale:			
	Clay, silty, olive-black; soft, non-calcareous	17	357

141-52-26bbb
Amenia test 1322-1
(N. D. State Water Comm.)

Lake Agassiz deposits:			
	Sand, medium, gravelly; moderately well sorted, subrounded, predominantly quartz and limestone	5	5
	Clay, silty, light-olive-gray; plastic, calcareous	5	10
	Clay, silty, brownish-gray; plastic, calcareous	16	26
	Clay, silty, olive-gray; plastic, calcareous	14	40
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, olive-gray; soft, cohesive, scattered pebbles, highly calcareous	30	70
	Clay, silty, sandy, olive-gray; soft, cohesive, numerous sand and gravel lenses, highly calcareous	10	80
	Clay, silty, sandy, olive-gray; soft, numerous shale and limestone pebbles, highly calcareous	20	100
	Clay, sandy, gravelly, olive-gray; soft, occasional boulder, highly calcareous	110	210
	Clay, silty, olive-gray; soft, plastic	20	230
	Clay, silty, sandy, olive-gray; soft, scattered gravel, occasional boulder, highly calcareous	127	357
Graneros Shale:			
	Clay, silty, olive-black; cohesive, slightly calcareous	3	360
	Clay, sandy, reddish-brown; soft, abundant black organic material, slightly calcareous	10	370
Dakota (?) Sandstone:			
	Sand, very fine, clayey, light-greenish-gray; micaceous subrounded to rounded, predominantly quartz	10	380
	Clay, yellowish-gray; soft, non-calcareous	10	390

141-52-26bbb--Continued
Amenia test 1322-1
(N. D. State Water Comm.)

Geologic source	Material	Thickness (feet)	Depth (feet)
Dakota (?) Sandstone: (cont.)			
	Silt, clayey, olive-gray; soft, non-calcareous-----	3	393
	Clay, white to light-gray; soft, non-calcareous----	6	399
	Clay, white to light-gray; soft, with lenses of olive-gray; calcareous silt and moderate olive-brown, slightly calcareous clay----------	11	410
	Clay, silty, olive-gray; contains moderate olive-brown, calcareous streaks----------	20	430
Granite:			
	Decomposed granite; clay, light-green to white, soft, non-calcareous----------	170	600
	Granite, green, hard, non-calcareous----------	14	614

141-52-27bbb
Amenia test 1322-5
(N. D. State Water Comm.)

Lake Agassiz deposits:			
	Topsoil, black----------	2	2
	Silt, yellowish-gray to dark-yellowish-brown; slightly cohesive, calcareous----------	8	10
	Clay, silty, yellowish-gray; soft, plastic, calcareous----------	15	25
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, greenish-gray; scattered pebbles, calcareous----------	7	32
	Clay, silty, sandy, olive-gray; soft, calcareous---	29	61
	Clay, olive-gray; soft, plastic, calcareous--------	12	73
	Clay, silty, sandy, olive-gray; scattered gravel, calcareous----------	10	83
	Gravel, fine to coarse; subrounded, predominantly limestone and shale----------	3	86
	Clay, silty, sandy, olive-gray; soft, scattered gravel; calcareous----------	11	97
	Gravel----------	2	99
	Clay, silty, sandy, light-olive-gray; soft, scattered gravel, calcareous----------	35	134
	Sand, fine to medium, clayey, light-olive-gray; loose to slightly cohesive----------	4	138
	Clay, silty, sandy, olive-gray; scattered pebbles and boulders, calcareous----------	42	180
	Clay, sandy, light-olive-gray to olive-gray; soft, scattered gravel, calcareous----------	30	210
	Clay, silty, sandy, olive-gray; soft, scattered gravel and boulders, calcareous----------	124	334
Graneros Shale:			
	Clay, sandy, olive-black; soft, non-calcareous-----	23	357

141-52-35aaa
Amenia test 1322-4
(N. D. State Water Comm.)

Lake Agassiz deposits:			
	Topsoil, black----------	2	2
	Silt, sandy, yellowish-gray; soft----------	3	5
	Sand, fine, dark-yellowish-brown; subrounded, dry--	5	10
	Clay, yellowish-gray; soft, plastic, calcareous----	7	17
	Clay, silty, sandy, moderate-olive-brown, soft, calcareous----------	22	39

141-52-35aaa--Continued
Amenia test 1322-4
(N. D. State Water Comm.)

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, greenish-gray; soft, scattered pebbles, calcareous	24	63
	Clay, silty, olive-gray; soft, scattered pebbles, calcareous	9	72
	Clay, silty, olive-gray; soft, scattered gravel and boulders, calcareous	34	106
	Clay, silty, sandy, light-olive-gray; soft, calcareous	54	160
	Clay, silty, sandy, olive-gray; soft, calcareous	20	180
	Clay, silty, gravelly, olive-gray; soft, calcareous	7	187
	Clay, sandy, light-olive-gray to olive-gray; soft, calcareous	23	210
	Clay, silty, sandy, olive-gray; scattered gravel and boulders, calcareous	63	273
	Gravel, fine to coarse; cemented, numerous boulders	8	281
	Clay, silty, sandy, olive-gray; soft to slightly hard, scattered gravel, calcareous	63	344
Graneros Shale:			
	Clay, sandy, olive-black; soft, noncalcareous	13	357

141-54-11cdc
Test hole 2344

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, silty, grayish-orange to dark-yellowish-orange; abundant shale pebbles, calcareous	5	6
	Clay, silty, grayish-orange to pale-olive, calcareous	8	14
	Silt, clayey, soft, cohesive, yellowish-brown to pale-olive; scattered lignite fragments	5	19
	Silt, clayey, soft, cohesive, olive-gray to dark-greenish-gray; scattered sand and gravel	99	118
	Sand, fine to medium, dark-gray; angular to rounded, clay lenses	28	146
	Silt, clayey, sandy, cohesive, olive-gray to dark-greenish-gray; scattered lignite fragments, calcareous	64	210

142-50-2dab
Great Northern Railroad

Lake Agassiz deposits:			
	Topsoil	4	4
	Clay, blue	58	62
	Clay, gray	8	70
Till and associated glacioaqueous deposits:			
	Clay, sandy	12	82
	Clay, blue	6	88
	Sand	20	108
	Clay, sandy, blue	12	120
	Clay, blue	2	122
	Sand and gravel	10	132

142-50-3bbb
Test hole 3100

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Clay, silty, moderate-yellowish-brown; highly calcareous	32	32
	Clay, silty, olive-gray; highly calcareous	25	57
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, olive-gray; scattered gravel, highly calcareous	51	108
	Clay, sandy, silty, olive-gray; scattered gravel and few lignite fragments, highly calcareous	44	152
	Silt, sandy, olive-gray; cohesive, laminated, highly calcareous	72	224
	Silt, gray; soft, cohesive; scattered fine sand, abundant lignite fragments, calcareous	13	237
	Silt, sandy, gray; abundant lignite fragments, calcareous	81	318
	Silt, light olive-gray; soft, laminated with fine lignite, calcareous	14	332
Older till and associated glacioaqueous deposits: (?)			
	Clay, silty, sandy, gravelly, pale-brown; numerous cobbles, highly calcareous	6	338
	Boulders, limestone, granite	2	340
Dakota (?) Sandstone:			
	Shale, variegated gray, white, and orange; laminated, scattered pyrite and quartz grains, highly calcareous	4	344
Granite:			
	Decomposed granite; clay, light-olive to pale-green; hard, noncalcareous	11	355

142-53-1bab
Test hole 3130

Lake Agassiz deposits:			
	Topsoil, black	2	2
	Silt, grayish-orange; cohesive, scattered lignite fragments, highly calcareous	9	11
	Clay, silty, dark-greenish-gray; soft, scattered lignite fragments, few pebbles	15	26
Till and associated glacioaqueous deposits:			
	Silt, dark-greenish-gray; cohesive, laminated, scattered pebbles, calcareous	134	160
	Clay, sandy, gravelly, dark-greenish-gray; scattered lignite fragments	24	184
	Clay, sandy, olive-gray; scattered gravel	33	217
Older till and associated glacioaqueous deposits: (?)			
	Clay, sandy, dark-yellowish-brown; scattered gravel	5	222
	Clay, silty, sandy, dark-greenish-gray; scattered lignite fragments, highly calcareous	30	258
	Sand, gravelly, gray	3	261
	Clay, sandy, gravelly, olive-gray; highly calcareous	25	286
Greenhorn Formation:			
	Shale, silty, olive-black; soft, cohesive, numerous small white specks, highly calcareous	29	317

142-53-33bbb
Test hole 2345

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Silt, clayey, cohesive, pale-orange to grayish-orange; scattered sand	4	5
	Clay, silty, sandy, grayish-orange to olive-gray; calcareous	7	12
	Silt, clayey, cohesive, dark-yellowish-orange; scattered sand and shale fragments, calcareous	10	22
	Silt, clayey, cohesive, olive-gray to dark-greenish-gray; highly calcareous	41	63
	Sand, fine to medium, dark-gray; predominantly quartz	9	72
	Clay, sandy, olive-gray to dark-greenish-gray; calcareous	12	84
	Sand, fine to medium, dark-gray; predominantly quartz	5	89
	Clay, olive-gray to dark-greenish-gray; scattered lignite fragments, calcareous	79	168

142-54-1bbb
Test hole 3129

Till and associated glacioaqueous deposits:			
	Topsoil, black	2	2
	Clay, silty, sandy, moderate-yellowish-brown; highly calcareous	7	9
	Sand, fine to coarse, blue; angular to rounded, scattered lignite fragments, predominantly quartz	78	87
	Clay, silty, sandy, olive-gray; scattered lignite fragments, highly calcareous	27	114
	Sand, medium to coarse, blue; angular to rounded, scattered lignite fragments, predominantly quartz	51	165
	Silt, olive-gray; cohesive, laminated, highly calcareous	72	237
	Clay, silty, sandy, gravelly, olive-gray; numerous boulders, highly calcareous	18	255
	Boulder, dolomite	3	258
	Clay, silty, olive-gray; few sand and gravel lenses, highly calcareous	34	292
	Sand, medium to very coarse; gravelly, angular to well rounded, predominantly quartz and shale	10	302
	Clay, silty, sandy, gravelly, olive-gray; numerous boulders, scattered lignite fragments, highly calcareous	54	356
	Clay, sandy, olive-gray; scattered lignite fragments, highly calcareous	36	392
	Clay, silty, sandy, gravelly; scattered lignite fragments, highly calcareous	28	420
Greenhorn Formation:			
	Shale, silty, olive-black; cohesive, numerous small white specks, highly calcareous	27	447

142-54-6ddd
Great Northern Railroad

Till and associated glacioaqueous deposits:			
	Clay, yellow	45	45
	Clay, blue	23	68
	Clay and sand, blue	6	74
	Sand, fine	30	104
	Sand, fine and blue clay	20	124

142-54-8ddd
Test hole 3125

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, silty, sandy, gravelly, moderate-yellowish-brown; highly calcareous	13	14
	Sand, very fine to fine, brown; subangular, few lignite fragments, predominantly quartz	10	24
	Clay, silty, olive-gray; scattered sand and gravel, few lignite fragments, highly calcareous	7	31
	Sand, very fine to fine, blue; angular to rounded, predominantly quartz, few lignite fragments	29	60
	Clay, silty, olive-gray; scattered sand, few lignite fragments, highly calcareous	27	87
	Sand, very fine to medium, gray; angular to rounded, predominantly quartz; abundant fine to coarse lignite fragments	50	137
	Silt, clayey, olive-gray; cohesive, scattered fine sand, lignite fragments, highly calcareous	36	173
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous; gravel lenses 187-192 feet, 205-257 feet	84	257

142-54-34aad
Test hole 2343

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, silty, grayish-orange to dark-yellowish-orange; highly calcareous	5	6
	Clay, silty, moderate-yellowish-brown; scattered sand, calcareous	13	19
	Sand, clayey, fine to medium, dark-gray	42	61
	Clay, silty, dark-greenish-gray; scattered sand and lignite fragments, calcareous	23	84
	Sand, fine to medium, dark-gray	8	92
	Clay, silty, dark-greenish-gray; scattered sand and lignite fragments, calcareous	23.5	115.5

142-55-1bba
Test hole 3124

Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, moderate-yellowish-brown; highly calcareous	24	24
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous	38	62
	Silt, clayey, sandy, olive-gray; cohesive, few lignite fragments	15	77
	Sand, fine to medium, gray; angular to rounded, scattered lignite fragments, predominantly shale	27	104
	Gravel, fine, sandy; abundant lignite fragments, predominantly shale and limestone	20	124
	Clay, silty, sandy, gravelly, olive-gray; abundant shale pebbles, highly calcareous	13	137

142-55-26baa
Test hole 3122

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Topsoil, light-olive-gray	3	3
	Gravel, sandy, fine, brown; subangular to rounded	5	8
	Clay, sandy, moderate-yellowish-brown; scattered gravel, calcareous	1	9
	Gravel, sandy, fine, brown; subangular to rounded	1	10
	Clay, sandy, olive-gray; scattered gravel and lignite fragments, highly calcareous	10	20
	Clay, silty, olive-gray; scattered sand, few lignite fragments, highly calcareous	50	70
	Silt, olive-gray; soft, cohesive, few lignite fragments, highly calcareous	10	80
	Sand, very fine to coarse, gray; subangular to rounded, predominantly quartz	10	90
	Clay, silty, sandy, olive-gray; scattered gravel, few lignite fragments, calcareous	17	107

142-55-33bba
Test hole 3126

Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, moderate-yellowish-brown; highly calcareous	11	11
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous	4	15
	Silt, sandy, olive-gray; cohesive, scattered lignite fragments, highly calcareous	15	30
	Clay, silty, sandy, gravelly, moderate-olive-brown; frequent gypsum crystals, highly calcareous	2	32
	Sand, fine to medium, blue; angular to rounded, predominantly quartz	2	34
	Clay, sandy, olive-gray; scattered gravel lenses, few lignite fragments, highly calcareous	73	107

143-49-33bcc
Test hole 3101

Lake Agassiz deposits:			
	Topsoil, yellowish-brown	6	6
	Clay, silty, moderate-yellowish-brown; calcareous	30	36
	Clay, silty, olive-gray; calcareous	41	77
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; numerous boulders, calcareous	21	98
	Clay, sandy, silty, olive-gray; scattered gravel, highly calcareous	12	110
	Gravel, fine to medium; rounded, predominantly limestone	5	115
	Clay, silty, sandy, light-olive-gray; scattered gravel and lignite fragments	63	178
	Gravel, sandy, fine; angular to rounded, few lignite fragments, predominantly limestone	6	184
	Sand, silty, clayey, gray; angular to rounded, predominantly limestone	16	200
	Gravel, sandy, fine; angular to rounded, few lignite fragments, predominantly limestone	2	202

143-49-33bcc--Continued
Test hole 3101

Geologic source	Material	Thickness (feet)	Depth (feet)
Graneros Shale:			
	Clay, silty, dark-greenish-gray; noncalcareous-----	48	250
Dakota (?) Sandstone:			
	Clay, sandy, dark-reddish-brown; scattered gravel, highly calcareous----------	8	258
Granite:			
	Decomposed granite; clay, grayish-blue-green; non-calcareous----------	7	265

143-50-31ccc2
Test hole 3099

Lake Agassiz deposits:			
	Topsoil, black----------	1	1
	Clay, moderate-yellowish-brown; calcareous---------	25	26
	Clay, silty, olive-gray; slightly calcareous-------	4	30
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray, highly calcareous----------	2	32
	Sand, fine, silty; few lignite fragments, predominantly shale and quartz----------	34	66
	Gravel, sandy, fine; subangular to rounded, predominantly limestone----------	8	74
	Clay, silty, sandy, gravelly, olive-gray; abundant shale pebbles, few lignite fragments, highly calcareous----------	45	119
	Sand, fine to coarse, gravelly; subangular to rounded, predominantly quartz----------	5	124
	Clay, gravelly, olive-gray; abundant shale pebbles, highly calcareous----------	25	149
	Sand, very fine to coarse; angular to rounded, predominantly quartz----------	4	153
	Clay, silty, sandy, gravelly, olive-gray; highly calcareous----------	15	168
	Silt, olive-gray; laminated, highly calcareous-----	40	208
	Clay, sandy, olive-gray; abundant silt lenses, scattered lignite fragments, highly calcareous--	65	273
Graneros Shale:			
	Silt, clayey, sandy, variegated-olive-black, light-olive-gray, and light-brownish-gray; laminated, some lignite, noncalcareous----------	129	402
Dakota (?) Sandstone:			
	Sandstone, fine, moderate-yellowish-brown; scattered pyrite crystals----------	20	422
Granite:			
	Decomposed granite; clay, light-brown to light-greenish-gray; soft, noncalcareous----------	8	430
	Clay, light-greenish-gray; soft, numerous granitic fragments, noncalcareous----------	20	450
	Clay, pale-blue-green; hard, noncalcareous---------	5	455

143-51-18dad
Driller's log by Frederickson's Inc.

Lake Agassiz deposits:			
	Topsoil, black----------	3	3
	Clay, tan----------	27	30
	Clay, blue----------	35	65
Till and associated glacioaqueous deposits:			
	Clay, sandy, blue----------	20	85
	Clay with sand lenses, blue----------	7	92
	Clay, sandy, blue----------	20	112
	Sand----------	2.5	114.5
	Clay, sandy, blue----------	23.5	138

143-51-18dad--Continued
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits: (cont.)			
	Clay with sand lenses, blue	7	145
	Clay, sandy, blue	61	206
	Clay, sandy, with boulders, blue	14	220
Graneros Shale:			
	Shale, blue	28	248
	Sandstone, brown	2	250
	Shale, blue	13	263
	Sandstone	3	266
	Shale, blue	2	268
	Sandstone	3	271
	Shale, sandy, blue	17	288
	Sandstone, white	2	290
	Shale, blue	14	304
	Sandstone, white	3	307
Dakota Sandstone:			
	Shale	36	343
	Sandstone, white	15	358

143-51-32aaa2

Lake Agassiz deposits:			
	Topsoil, black	2	2
	Clay, blue	3	5
	Clay, brown	22	27
	Clay, blue	25	52
	Clay, blue	10	62
Till and associated glacioaqueous deposits:			
	Clay, gravelly, blue	8	70
	Clay, blue	11	81
	Boulder	3	84
	Clay, blue	16	100
	Gravel, brown	2	102
	Clay, blue	28	130
	Sand, blue	15	145

143-51-33ddd1
Test hole 3102

Lake Agassiz deposits:			
	Topsoil, black	3	3
	Clay, silty, dark-yellowish-brown; scattered gypsum crystals, calcareous	23	26
	Clay, silty, olive-gray; calcareous	7	33
	Clay, silty, dark-yellowish-brown; scattered sand, few pebbles	7	40
	Silt, clayey, sandy, moderate-olive-brown; cohesive, calcareous	10	50
Till and associated glacioaqueous deposits:			
	Clay, sandy, olive-gray; scattered gravel, few lignite fragments, highly calcareous	54	104
	Clay, silty, dark-greenish-gray; scattered sand and gravel, highly calcareous	12	116
	Boulder, granite	1	117

143-51-33ddd2
Test hole 3102-A

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	2	2
	Clay, silty, moderate-olive-brown; numerous gypsum crystals, calcareous	23	25
	Clay, silty, olive-gray; calcareous	3	28
	Clay, silty, grayish-orange; scattered sand, calcareous	12	40
	Silt, clayey, moderate-olive-brown; cohesive, calcareous	10	50
	Gravel, fine to medium, brown; subrounded, predominantly limestone	1	51
Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous	19	70
	Gravel, fine to medium; predominantly shale	2	72
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous	12	84
	Clay, sandy, light-olive-gray; highly calcareous	41	125
	Clay, silty, sandy, gravelly, dark-greenish-gray; scattered lignite fragments, calcareous	10	135

143-51-34ccc
Test hole 3102-B

Lake Agassiz deposits:			
	Topsoil, black	2	2
	Silt, clayey, dark-yellowish-brown; cohesive, numerous gypsum crystals, calcareous	36	38
	Silt, light-olive-brown; cohesive, laminated, numerous gypsum crystals, calcareous	11	49
	Gravel, sandy, fine to coarse; subrounded, predominantly limestone	2	51
Till and associated glacioaqueous deposits:			
	Clay, sandy, moderate-olive-brown; few lignite fragments, calcareous	4	55
	Clay, gravelly, sandy, olive-gray; numerous boulders, scattered lignite fragments, highly calcareous	82	137
	Boulder	1	138

143-51-35daa
Driller's log by Frederickson's Inc.

Lake Agassiz deposits:			
	Topsoil	2	2
	Clay, silty, yellow	26	28
	Clay, silty, blue	58	86
Till and associated glacioaqueous deposits:			
	Clay, hard, dark-green	12	98
	Clay, soft, gray	17	115
	Clay, blue	37	152
	Clay with sand lenses, blue	18	170
	Sand, clayey, blue	12	182
	Clay, sandy, soft, blue	5	187
	Sand, fine, blue	38	225

143-52-33aba
Driller's log by Frederickson's Inc.

Geologic source	Material	Thickness (feet)	Depth (feet)
Lake Agassiz deposits:			
	Topsoil, black	1	1
	Clay, yellow	13	14
	Clay, sandy; yellow	11	25
	Clay, hard; blue	4	29
Till and associated glacioaqueous deposits:			
	Clay, sandy, hard; blue	56	85
	Shale, soft; blue	40	125
	Clay, sandy, soft; blue	10	135
	Clay, sandy, hard; blue	30	165
	Sand, brown	2	167
	Clay, sandy, hard; blue	3	170
	Sand, brown	3	173
	Clay, sandy, hard; blue	17	190
	Sand, white	5	195
	Clay, sandy, hard; blue	5	200
	Sand, gray	1	201
	Clay, sandy, hard; blue	11	212
	Sand, gray	1	213
	Clay, sandy, hard; blue	41	254
Greenhorn Formation:			
	Shale, hard; black	44	298
Graneros Shale:			
	Shale, soft; black	54	352
Dakota Sandstone:			
	Sandstone	47	399

143-52-36ddd
Test hole 3131

Lake Agassiz deposits:			
	Topsoil, black	1	1
	Silt, sandy, dark-yellowish-brown; cohesive, highly calcareous	16	17
	Silt, sandy, moderate-yellowish-brown; cohesive, scattered lignite fragments, highly calcareous	38	55
	Silt, sandy, dark-greenish-gray; cohesive, scattered lignite fragments, highly calcareous	10	65
	Silt, olive-gray; cohesive, highly calcareous	12	77
Till and associated glacioaqueous deposits:			
	Boulder, limestone	2	79
	Clay, sandy, dark-greenish-gray; scattered lignite fragments, highly calcareous	38	117
	Clay, sandy, olive-gray; scattered lignite fragments, highly calcareous	11	128
	Sand, coarse, gray; angular to well rounded, few shell fragments, predominantly quartz	3	131
	Clay, sandy, olive-gray; scattered lignite fragments, occasional boulder, highly calcareous	66	197
	Clay, dark-greenish-gray; scattered sand, highly calcareous	22	219
Graneros Shale:			
	Shale, olive-black, hard, laminated, shell fragments, slightly calcareous	43	262
	Shale, dark-greenish-gray; laminated, abundant fine sand disseminated through shale and concentrated in laminations, slightly calcareous	10	272

143-54-31cac
Great Northern Railroad

Till and associated glacioaqueous deposits:			
	Clay	19	19
	Clay, blue	31	50
	Clay and gravel, hard	8	58
	Sand	35	93

143-54-31cca
Great Northern Railroad

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Gravel fill	2	2
	Soil, black	2	4
	Clay and boulders, yellow	23	27
	Clay, soft, gray	41	68
	Clay, blue	14	82
	Sand, fine	33	115

143-55-16aad
Test hole 3128

Till and associated glacioaqueous deposits:			
	Clay, silty, sandy, gravelly, moderate-yellowish-brown; highly calcareous	2	2
	Sand, medium to coarse; subangular to subrounded, predominantly quartz	3	5
	Clay, silty, sandy, gravelly, moderate-yellowish-brown; highly calcareous	3	8
	Gravel, sandy, medium; subangular, predominantly limestone	6	14
	Clay, silty, sandy, gravelly, moderate-yellowish-brown; highly calcareous	7	21
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous	11	32
	Silt, olive-gray; cohesive, laminated, few lignite fragments	28	60
	Sand, fine to coarse; subangular to rounded, few lignite fragments, predominantly limestone and shale	10	70
	Clay, silty, sandy, gravelly, olive-gray; few lignite fragments, calcareous	52	122

143-55-31baa
Test hole 3127

Till and associated glacioaqueous deposits:			
	Topsoil, black	1	1
	Clay, silty, sandy, gravelly, moderate-yellowish-brown; highly calcareous	10	11
	Silt, olive-gray; cohesive, few lignite fragments, highly calcareous	8	19
	Sand, gravelly, medium, black; rounded, predominantly shale and limestone	2	21
	Silt, olive-gray; cohesive, few lignite fragments, highly calcareous	3	24
	Clay, sandy, olive-gray; abundant shale pebbles, few lignite fragments, calcareous; sand lenses 42-47 feet, 47-55 feet	31	55
	Silt, olive-gray; cohesive, few lignite fragments, calcareous	11	66
	Boulder, granite	2	68
	Clay, silty, sandy, gravelly, olive-gray; scattered lignite fragments, highly calcareous; sand lenses 92-102 feet	69	137

143-55-33ddd
Test hole 3123

Geologic source	Material	Thickness (feet)	Depth (feet)
Till and associated glacioaqueous deposits:			
	Topsoil	2	2
	Clay, sandy, light-olive-gray; highly calcareous	2	4
	Clay, sandy, gravelly, moderate-yellowish-brown; highly calcareous	4	8
	Clay, silty, sandy, olive-gray; scattered gravel, few lignite fragments, highly calcareous	24	32
	Silt, olive-gray; cohesive, laminated, few lignite fragments, calcareous	13	45
	Gravel, sandy, fine to very coarse; flat to well rounded, predominantly shale	14	59
	Clay, silty, sandy, gravelly, olive-gray; numerous boulders, scattered lignite fragments, highly calcareous	25	84
	Gravel, fine to very coarse; numerous boulders, predominantly shale and limestone	4	88
	Clay, silty, sandy, gravelly, olive-gray; numerous boulders, scattered lignite fragments, highly calcareous	236	324
Greenhorn Formation:			
	Shale, silty, clayey, olive-black; hard, numerous white specks and pyrite crystals, highly calcareous	23	347