STATE OF SOUTH DAKOTA
Archie Gubbrud, Governor

STATE GEOLOGICAL SURVEY
Allen F. Agnew, State Geologist

SPECIAL REPORT 25

GROUND WATER SUPPLY FOR THE CITY OF CLAREMONT, SOUTH DAKOTA

by
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Vermillion, South Dakota
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CONTENTS

INTRODUCTION

Present Investigation

This report is the result of a special investigation by the South Dakota State Geological Survey during the summer of 1962 in and around the city of Claremont, Brown County, South Dakota (fig. 1), for the purpose of assisting the city in locating future water supplies. Presently the city's water is supplied by a well which produces from the Dakota Sandstone aquifer at a depth of 975 feet. Both the quality and quantity of water produced from this well is inadequate. Consequently, in the fall of 1961, the Claremont Town Council requested a survey of the ground water conditions in and around the city.

An investigation was made of the ground water conditions in an area of about 50 square miles around the city, between July 23 and August 17, 1962. This investigation consisted of geologic mapping, the drilling of 23 shallow test holes (average depth, 66 feet) with one of the Survey's jeep-mounted auger drills, the drilling and electric logging of 5 deeper test holes (average depth, 150 feet) with the Survey's rotary drill, the inventory of all farm wells in the area, and the collecting and analyzing of nine water samples.

Unfortunately, no aquifer of adequate size to supply the city of Claremont was found in the mapped area. Instead, for future needs the city will have to rely upon the Dakota Sandstone aquifer in which the present city well is located.

The field work and preparation of this report were performed under the supervision of Assistant State Geologist, Merlin J. Tipton. Geologic assistance was given by geologist-driller, Robert Schoon, assisted by Keith Munneke, Allan Wood, and Lynn Huenemann of the State Geological Survey. Nathaniel Lufkin of the Survey made partial chemical analyses of the water samples collected during the study. The writer wishes to thank the residents of the Claremont area for their cooperation, especially W. R. Beever, Chairman of the Claremont Town Council. The writer also wishes to thank Dick Wismer, a local well driller, for unselfishly relinquishing his time to assist the writer in the field.

Location and Extent of Area

The city of Claremont is located in Brown County in northeastern South Dakota, and has a population of 247 (1960 census). The area is in the Lake Dakota Plain area of the James Basin Division of the Central Lowland physiographic province (fig. 1).

Climate

The climate is continental temperate, with large daily fluctuations in temperature. The mean annual temperature is 43.6 degrees F., and the average annual precipitation is 18.49 inches at the U. S. Weather Bureau Station in Britton, 15 miles northeast of the city of Claremont.

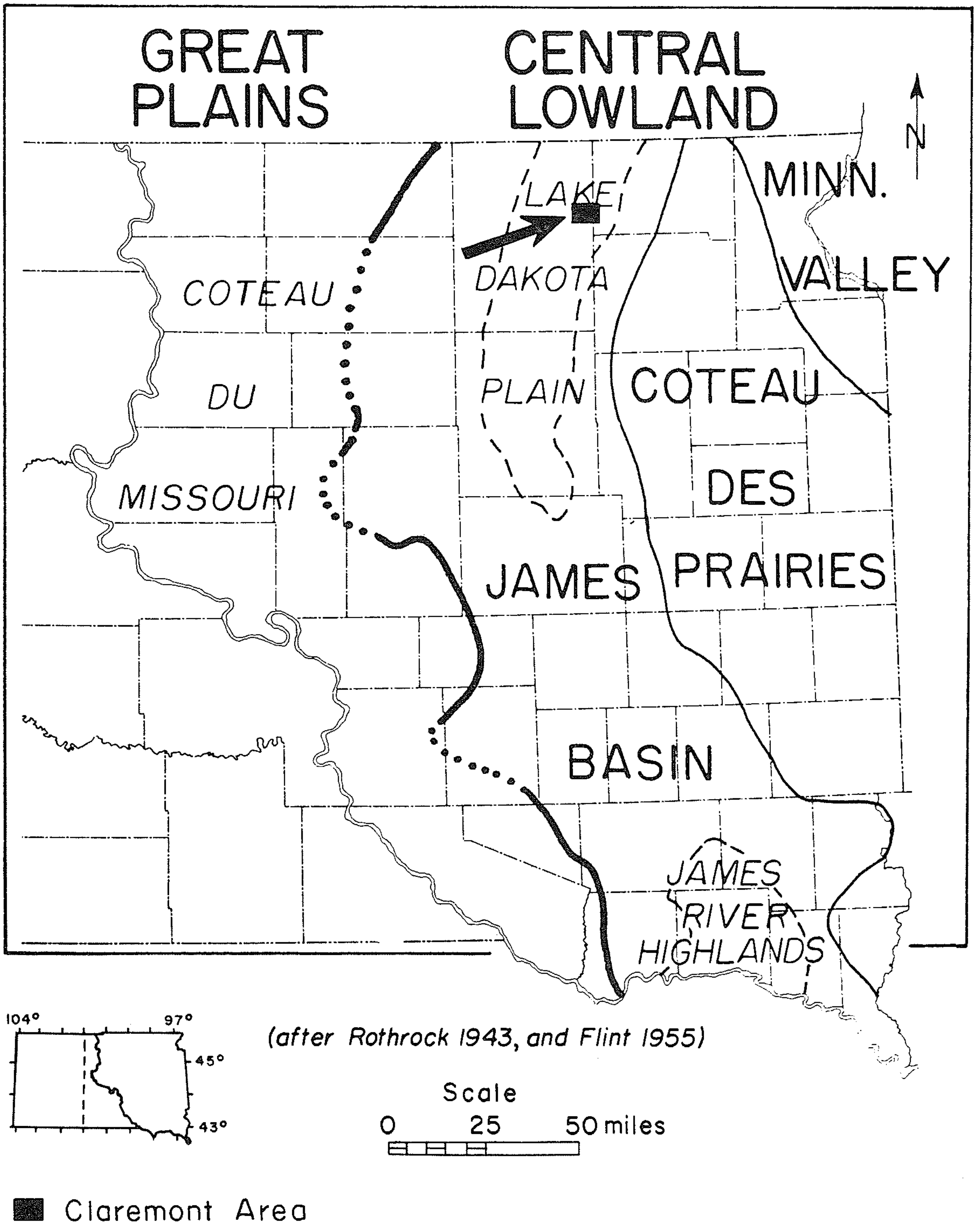


Figure I. Major Physiographic Divisions of Eastern South Dakota and Location of the Claremont Area

Topography and Drainage

The topography of the area is essentially flat, as it is in the floor of glacial Lake Dakota. Glacial Lake Dakota occupied this area shortly after the retreat of the last ice sheet. The lake was about 90 miles long in South Dakota and extended 15-20 miles farther north into North Dakota. Throughout most of its length it is 25-30 miles wide, but becomes narrower at both ends. The eastern shore of the lake was about 12 miles east of Claremont. Winds have modified the lake bottom with deflation hollows and dunes,giving rise to a maximum relief of twenty-five feet.

The flatness of the terrain causes it to be very poorly drained and results in many marshes and swampy areas (fig. 2).

GENERAL GEOLOGY

Surficial Deposits

The surficial deposits of the Claremont area are chiefly the result of glaciation in the Pleistocene Epoch. These glacial deposits can be divided into lake sediments and till. The lake sediments consist of clay, silt, and fine-grained sand, having been brought into the lake by the meltwater from the wasting glaciers.

Till consists of a jumbled mixture of clay, silt, sand, pebbles and boulders, carried and deposited by the ice itself. The till in the area is thin, and is covered by as much as 70-120 feet of lake sediments (Appendix B).

Subsurface Bedrock

Stratified rocks of Cretaceous age lie beneath the surficial deposits in the Claremont area. The Pierre Shale underlies the surficial deposits and is in turn underlain in descending order by the Niobrara, Carlile, Greenhorn, and Graneros Formations, and the Dakota Group.

The Pierre consists of light-gray fissile shale with bands of iron concretions.

The Niobrara consists of light to medium blue-gray shale which contains numerous microscopic white calcareous specks.

The Carlile is medium- to dark-gray bentonitic shale with pyrite concretions and layers of fine brown siltstone.

The Greenhorn consists of a hard layer of white to cream limestone containing numerous fossil fragments.

The Graneros is hard light- to dark-gray siliceous shale.

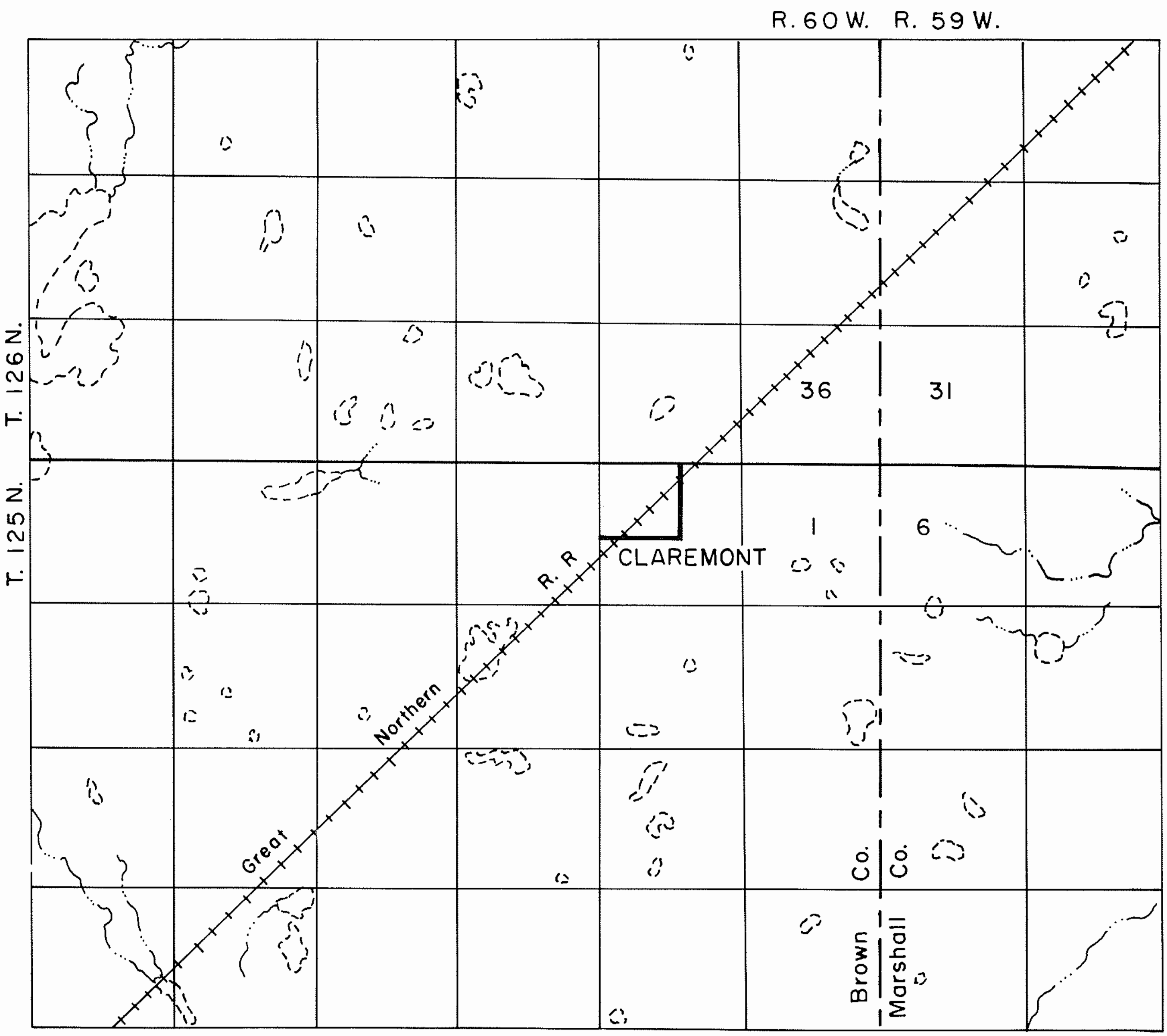
The Dakota Group consists of fine to coarse light-colored sandstones interbedded with gray shales.

OCCURRENCE OF GROUND WATER

Principles of Occurrence

Contrary to popular belief, ground water does not occur in "veins" that criss-cross the land at random. Instead, it can be shown that water occurs nearly everywhere beneath the surface, but at varying depths. The top of this zone of saturation is known as the water table.

Figure 2. Generalized Geologic Map of Claremont Area



Explanation

Dakota Lake Sediments

marsh

Scale

0 ½ 1 2 miles

N

by

G. K. Baker, 1963

drafted by Elizabeth Garnos

Nearly all ground water is derived from precipitation. Rain or melting snow either percolates downward to the water table and becomes ground water, or drains off as surface water. Surface water may percolate downward and become ground water, or it may evaporate or drain to the sea by means of streams. In general, ground water moves laterally down the hydraulic gradient, and is in transient storage.

Recharge is the addition of water to an aquifer, and is accomplished in three main ways: (1) by downward percolation of water from the ground surface, (2) by the downward percolation of water from surface bodies such as lakes and streams, and (3) by lateral underflow of water in transient storage.

Discharge, or the removal of ground water from an aquifer, is accomplished in four ways: (1) by evaporation and transpiration from plants, (2) by seepage upward or laterally into surface bodies of water as by springs, (3) by lateral underflow of water in transient storage, and (4) by pumping of wells.

The amount of water that is contained in the rock is controlled by the porosity and permeability of the rock. Porosity is a measure of the amount of voids in a rock and is expressed in the ratio of pore space to the total volume of rock.

Porosity is dependent on : (1) the shape and arrangement of individual particles, (2) the degree of sorting of the particles, (3) the degree of cementation and compaction of the particles, and (4) the amount of material that has been removed by percolating ground water. Sands and gravels usually have porosities of 20-40 percent, whereas sandstones have porosities of 15-25 percent. Sandstones have lower porosities owing to their higher degree of compaction and cementation.

Permeability is a measure of the rate at which a fluid will pass through a material. A material that has a high percentage of interconnected pores likewise has a high permeability, whereas a material in which the pores are not connected will have low permeability, although it may have high porosity. Therefore, it can be seen that porosity and permeability are not synonymous but are nevertheless related.

Ground Water in Glacial Deposits

Till does not yield water readily because of its highly unsorted nature and low porosity and permeability. In this area the Lake Dakota sediments, if they contain enough sand, will yield small amounts of water.

The lake sediments in most places in the Claremont area contain a layer of fine-grained sand 13-35 feet below the surface (fig. 3). The shallow farm wells in the area are located in this sand. This layer of sand probably would not produce enough water to satisfy the needs of the city of Claremont.

The fine sand which occurs at a depth of 13-35 feet and the overlying silt is called Lake Dakota II in this report. An older glacial Lake Dakota was probably present in this area as represented by the lake sediments below this shallow fine sand (Test Hole C, App. B, fig. 4). These older lake sediments consist of about 55 feet of silt overlying a few feet of sand and are called Lake Dakota I in this report. The Lake Dakota I sediments are underlain by till. Current and wave action from Lake Dakota I removed the finer silt and clay from the till, thus concentrating small patches of sand and gravel which occur between the till and Lake Dakota I sediments.

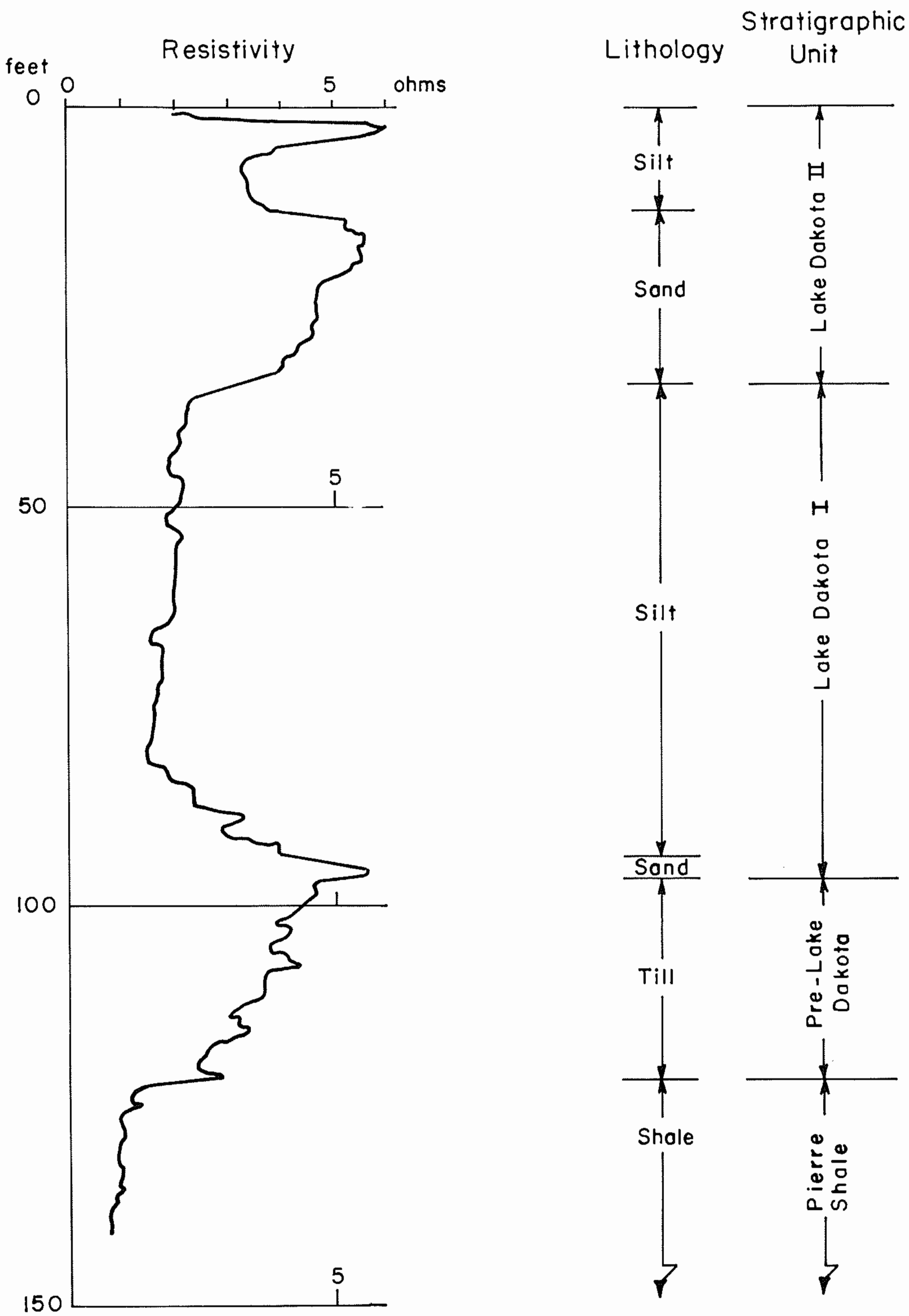


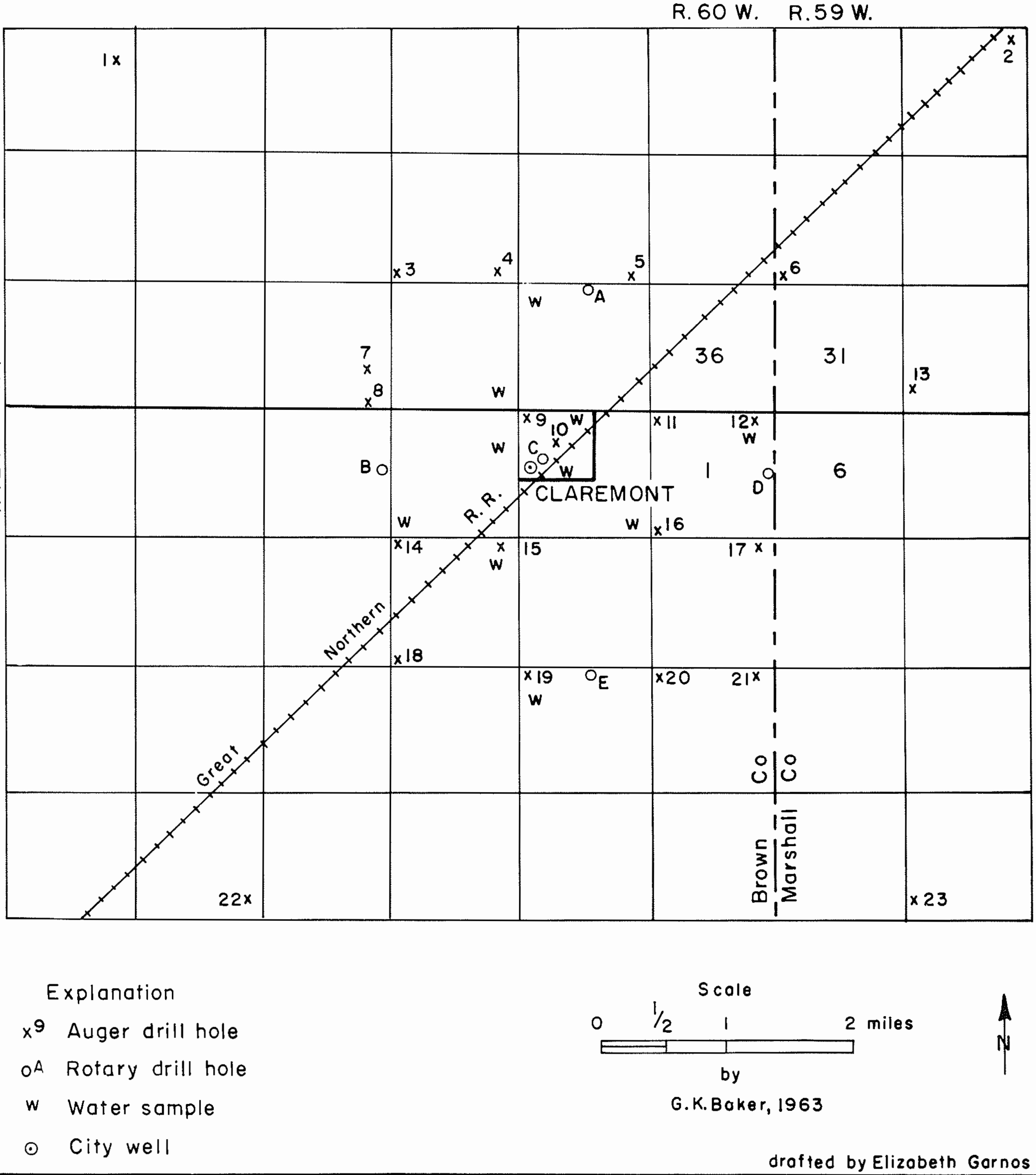
Figure 3. Electric Log of State Geological Survey Test Hole C

(for location see fig. 4)

by G. K. Baker, 1963

drafted by Elizabeth Garnos

Figure 4. Data Map of Claremont Area



The electric resistivity characteristics of these sediments and the underlying Pierre Shale are shown on the electric log of Test Hole C (fig. 3).

These glacial deposits will yield water only in sufficient quantity for domestic use, as they are not thick enough or extensive enough to supply the needs of the city of Claremont.

Ground Water in Bedrock

In the Claremont area, sandstones of the Dakota Group are the only bedrock which will yield water in appreciable quantities. The present city well is drawing water from this aquifer at a depth of 975 feet. Although the quality of the water from the Dakota is poor, and the quantity is diminishing, it remains the only available ground water supply for the city.

Quality of Ground Water

Precipitated water is nearly pure before it reaches the ground. However, all ground water contains minerals which are obtained: (1) from the atmosphere, (2) from soil and underlying deposits as the water percolates downward to the water table, and (3) from deposits below the water table, in which the water is circulating. In general, the more minerals water contains, the poorer its quality.

Table 1 shows the chemical properties of various waters in the Claremont area, as compared with the present city water and with the standards for drinking water established by the U. S. Department of Public Health. Water samples 1 through 8 were taken from farm wells in the Lake Dakota II sand. Samples 9 and 10 were taken from sands and gravels at the base of Lake Dakota I.

The present city well (B, Table 1) is high in chloride, sulfate, iron, fluoride, and total solids. A small amount of fluoride in water is desirable; however, an excess will cause a discoloration of teeth.

CONCLUSIONS AND RECOMMENDATIONS

Although there is a small aquifer in the Lake Dakota I sediments in the Claremont area, it probably would not produce enough water for the city needs. Likewise, the patches of sand and gravel between the Lake Dakota II sediments and till are probably insufficient. The only aquifer which would yield sufficient water in the Claremont area is the Dakota Group, from which the present city well is drawing its water.

It is suggested that future ground water supplies be obtained from the Dakota Group at a depth of approximately 975 feet, by means of a larger well and pump.

It is further suggested that if the city decides to put in a well, that it contact a commercial drilling company licensed by the State of South Dakota to drill the well. The city officials should also consult the State Water Resources Commission with regard to obtaining a water right and a permit to drill a city well, and the State Department of Health with regard to the biological and chemical suitability of the water. A consulting engineering firm licensed in South Dakota should be hired to design the well and the water system.

Table 1--Chemical Analyses of Water Samples
from the Claremont Area

Geologic Source: D, Dakota Sandstone; LD II, Lake Dakota II; LD I, Lake Dakota I.

Sample	Source	Calcium	Sodium	Magnesium	Chloride	Sulfate	Iron	Manganese	Nitrate	Fluoride	pH	Hard-ness $CaCo_3$	Total Solids
A		--	--	50	250	500*	0.3	0.05	10*	0.9-1.7**	--	--	1000*
B	D	18	849	0	322	1188	0.8	0.0	1.5	4.8	7.7	47	2560
1	LDII	206	450	309	475	1549	8.25	0.6	none	0.8	7.2	1788	3868
2	LDII	353		-10	120	486	0.5				7.2	840	1935
3	LDII	212		-40	36	243	0.5				7.4	370	791
4	LDII	254	39	95	71	825	3.4	none	trace	none	7.0	1025	1684
5	LDII	480		97	248	780	2.5				6.9	1590	3185
6	LDII	366		21	264	633	1.3				7.2	1000	2930
7	LDII	536		155	96	1210	10.0				6.8	1960	3490
8	LDII	366		-23	132	340	0.3				7.0	820	1760
9	LDI	49	370	60	317	259	0.4	0.3	none	none	--	371	1574
10	LDI	119		29	250	214		0.38				422	

* Modified for South Dakota by State Department of Health (written communication, February 5, 1962).

** Optimum

A. U. S. Dept. of Public Health Drinking Water Standards (1961)
B. Claremont City Well
1. V. Odland farm, NW$\frac{1}{4}$ sec. 35, T. 126 N., R. 60 W.
2. V. Cutler farm, SW$\frac{1}{4}$ sec. 3, T. 125 N., R. 60 W.
3. D. Hinrichs, NE$\frac{1}{4}$ sec. 10, T. 125 N., R. 60 W.
4. E. Swanson farm, SE$\frac{1}{4}$ sec. 2, T. 125 N., R. 60 W.
5. C. Olson farm, NE$\frac{1}{4}$ sec. 1, T. 125 N., R. 60 W.
6. M. Elsberry farm, SE$\frac{1}{4}$ sec. 34, T. 126 N., R. 60 W.
7. I. Sanderson farm, NW$\frac{1}{4}$ sec. 14, T. 125 N., R. 60 W.
8. K. Cutler farm, NE$\frac{1}{4}$ sec. 3, T. 125 N., R. 60 W.
9. Stohr residence, NW$\frac{1}{4}$ sec. 2, T. 125 N., R. 60 W.
10. L. Sanderson Lumber Yard, NW$\frac{1}{4}$ sec. 2, T. 125 N., R. 60 W.

Samples B and 10 were analyzed by the South Dakota Dept. of Public Health, Samples 1, 4, and 9 were analyzed by the State Chemical Laboratory, Vermillion, and Samples 2, 3, 5, 6, 7, and 8 were analyzed by the State Geological Survey, Vermillion.

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Koopman, F. C., 1957, Ground Water in the Crow Creek-Sand Lake Area, Brown and Marshall Counties, South Dakota: U. S. Geol. Survey Water-Supply Paper 1425, 125 p.

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APPENDIX A

Logs of Auger Test Holes in the Claremont Area

(for location see figure 4)

Test Hole No. 1
Surface elevation: 1280 feet
Depth to water: 5 feet

0-14	sand, brownish-gray, fine grained, silty
14-20	silt, dark gray, sandy
20-26	sand, dark gray, fine grained, silty
26-34	silt, dark gray, sandy
34-44	sand, dark gray, fine grained, silty
44-54	silt, dark gray, sandy

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Test Hole No. 2
Surface elevation: 1309 feet
Depth to water: 24 feet

0-24	silt, dark brown, clayey
24-34	silt, gray
34-59	silt, gray, sandy
59-64	silt, gray

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Test Hole No. 3
Surface elevation: 1301 feet
Depth to water: 14 feet

0-14	silt, dark brown
14-49	sand, dark buff, fine grained, silty
49-59	silt, dark gray, sandy

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Test Hole No. 4
Surface elevation: 1303 feet
Depth to water: 10 feet

0-4	topsoil, black
4-34	silt, dark buff, clayey
34-49	silt, dark gray, sandy
49-64	sand, dark gray, fine grained, silty

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Test Hole No. 5
Surface elevation: 1297 feet
Depth to water: 13 feet

0-4	topsoil, black, silty
4-13	silt, dark buff, clayey
13-44	sand, dark gray, fine grained, silty
44-49	silt, dark gray

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Test Hole No. 6
Surface elevation: 1302 feet
Depth to water: 9 feet

0-9	silt, dark buff, clayey
9-69	sand, dark gray, fine grained, silty
69-79	silt, dark gray, sandy

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Test Hole No. 7
Surface elevation: 1305 feet
Depth to water: 9 feet

0-2	topsoil
2-17	silt, dark buff
17-34	sand, dark gray, fine grained, silty

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Test Hole No. 8
Surface elevation: 1305 feet
Depth to water: 17 feet

0-2	topsoil, black
2-17	silt, dark buff, clayey
17-39	silt, dark buff, sandy
39-59	silt, dark gray

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Test Hole No. 9
Surface elevation: 1300 feet
Depth to water: 17 feet

0-12	silt, dark buff, clayey
12-49	sand, light gray, fine grained, silty
49-84	silt, dark gray, clayey

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Test Hole No. 10
Surface elevation: 1300 feet
Depth to water: 9 feet

0-19	silt, dark brown, clayey
19-39	sand, dark gray, fine grained, silty
39-74	silt, dark gray, clayey
74-117	till, dark bluish-gray, clayey, pebbly

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Test Hole No. 11
Surface elevation: 1298 feet
Depth to water: 14 feet

0-14	silt, dark buff, clayey
14-24	silt, dark gray, sandy
24-44	sand, dark gray, fine grained, silty
44-49	silt, dark gray, sandy
49-64	silt, dark gray

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Test Hole No. 12
Surface elevation: 1307 feet
Depth to water: 30 feet

0-19	silt, dark buff, clayey, sandy
19-84	sand, dark gray, fine grained
	broke auger, ceased drilling

* * * * * *

Test Hole No. 13
Surface elevation: 1305 feet
Depth to water: 14 feet

0-8	topsoil
8-14	silt, dark buff, clayey
14-44	sand, dark buff, fine grained, silty
44-59	sand, dark gray, fine grained, silty
59-89	silt, dark gray

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Test Hole No. 14
Surface elevation: 1303 feet
Depth to water: 15 feet

0-2	topsoil, black
2-21	silt, dark buff, clayey
21-54	sand, dark gray, fine grained, silty
54-64	silt, dark gray, slightly sandy

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Test Hole No. 15
Surface elevation: 1309 feet
Depth to water: 24 feet

0-4	topsoil, black
4-29	silt, dark brown
29-44	sand, brownish-gray, fine grained
44-59	silt, dark gray, slightly sandy

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Test Hole No. 16
Surface elevation: 1298 feet
Depth to water: 17 feet

0-12	silt, dark buff, clayey, sandy
12-17	silt, dark gray, clayey
17-19	sand, buff, fine grained, silty
19-56	sand, dark gray, fine grained, silty
56-69	silt, dark gray, sandy

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Test Hole No. 17
Surface elevation: 1300 feet
Depth to water: 14 feet

0-14	silt, yellowish-buff, clayey
14-19	augered water, no cuttings
19-49	sand, dark gray, fine grained, slightly silty
49-54	augered water, no cuttings
54-59	silt, dark gray

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Test Hole No. 18
Surface elevation: 1306 feet
Depth to water: 19 feet

0-19	silt, dark buff
19-64	sand, dark buff to dark gray, fine grained, silty, broke auger, ceased drilling

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Test Hole No. 19
Surface elevation: 1303 feet
Depth to water: 11 feet

0-3	topsoil
3-11	clay, dark buff, silty
11-31	silt, light gray, clayey
31-65	sand, dark gray, fine grained, silty
65-69	silt, dark gray

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Test Hole No. 20
Surface elevation: 1307 feet
Depth to water: 19 feet

0-3	topsoil, black
3-29	silt, dark buff, clayey
29-54	sand, dark gray, fine grained, silty
54-64	silt, dark gray, slightly sandy

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Test Hole No. 21
Surface elevation: 1303 feet
Depth to water: 14 feet

0-19	silt, dark buff, clayey
19-59	sand, dark gray, fine grained, silty
59-64	silt, dark gray, slightly sandy

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Test Hole No. 22
Surface elevation: 1300 feet
Depth to water: 9 feet

0-9	topsoil, black
9-19	silt, dark buff
19-54	silt, dark gray, sandy

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Test Hole No. 23
Surface elevation: 1300 feet
Depth to water: 9 feet

0-9	topsoil
9-27	silt, dark buff
27-54	silt, dark gray

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APPENDIX B

Logs of Rotary Test Holes in the Claremont Area

(for location see figure 4)

Test Hole No. A
Surface elevation: 1301 feet

0-14	silt, buff to light tan, clayey
14-39	sand, gray, fine grained, coal fragments
39-122	silt, gray, clayey
122-140	Pierre Shale

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Test Hole No. B
Surface elevation: 1317 feet

0-23	silt, buff, clayey
23-56	sand, gray, fine grained, silty, coal fragments
56-126	silt, gray, clayey
126-140	Pierre Shale with a bentonite

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Test Hole No. C
Surface elevation: 1300 feet

0-38	silt, buff, clayey; becomes gray at 22 feet
38-50	sand, fine grained, silty, slightly clayey
50-88	clay, gray, very silty
88-94	sand, medium grained and grit size
94-122	till, gray, clay with small pebbles
122-140	Pierre Shale

* * * * * *

Test Hole No. D
Surface elevation: 1303 feet

0-51	sand, buff, fine grained, silty; becomes gray at 22 feet
51-121	silt, gray, clayey
121-123	sand, grit size
123-130	clay, gray, sandy
130-145	Pierre Shale

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Test Hole No. E
Surface elevation: 1303 feet

0-17	silt, buff, clayey
17-45	sand, gray, fine grained, silty, coal fragments
45-70	silt, gray, clayey
70-122	clay, gray, sandy, till
122-157	Pierre Shale
157-185	Niobrara Chalk

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APPENDIX C

Table 2.--Records of Wells in the Claremont Area

Well location: Letters stand for quarter section, first number for section, second for township north, third for range west.
Type of well: Du, Dug; D, drilled; w, washed
Water-bearing material: ss, sandstone; l, lake sand
Use of water: S, stock; D, domestic

Well Location	Owner or Tenant	Type of Well	Depth of Well (feet)	Geologic Source	Water-Bearing Material	Use of Water
SE-5-125-59	P. Freden	D	950	Dakota	ss	S,D
NE-6-125-59	C. Vietmar	D	850	Dakota	ss	S,D
NW-7-125-59	V. Cutler	D	900+	Dakota	ss	S,D
SW-8-125-59	C. Hansen	D	990	Dakota	ss	S,D
SE-8-125-59	C. Hanson	D	22	Glacial	l	S,D
SW-8-125-59	G. Hanson	D	38	Glacial	l	S,D
SW-8-125-59	G. Hanson	D	42	Glacial	l	S,D
SW-17-125-59	H. Foote	D	46	Glacial	l	S,D
SE-18-125-59	G. Bistodean	D	37	Glacial	l	S,D
NE-18-125-59	J. Tunheim	D	1100	Dakota	ss	S,D
NW-19-125-59	H. Cutler	D	950	Dakota	ss	S,D
NW-19-125-59	H. Cutler	D	40	Glacial	l	S,D
NW-19-125-59	H. Cutler	Du	20	Glacial	l	S,D
NE-19-125-59	R. Gullickson	D	1000	Dakota	ss	S,D
SW-19-125-59	N. Rust	D	960	Dakota	ss	S,D
SE-19-125-59	N. Rust	Du	30	Glacial	l	S,D

Appendix C-Records of Wells--continued

Well Location	Owner or Tenant	Type of Well	Depth of Well (feet)	Geologic Source	Water-Bearing Material	Use of Water
SW-19-126-59	A. Suther	D	25	Glacial	l	S
NW-19-126-59	J. Symens	D	38	Glacial	l	S,D
NW-19-126-59	J. Symens	D	900	Dakota	ss	S,D
NE-20-126-59	C. Rademachor	D	1000	Dakota	ss	S,D
SE-20-126-59	E. Simmons	D	800+	Dakota	ss	S,D
SE-29-126-59	R. Curr	D	900	Dakota	ss	S,D
NW-29-126-59	M. Witham	D	860	Dakota	ss	S,D
NE-30-126-59	M. Wieker	D	930	Dakota	ss	S,D
NE-31-126-59	E. Luitjens	D	1000	Dakota	ss	S,D
NE-31-126-59	E. Luitjens	D	25	Glacial	l	S,D
NW-31-126-59	H. Sudemeier	D	875	Dakota	ss	S,D
NW-31-126-59	H. Sudemeier	D	24	Glacial	l	D
SW-33-126-59	S. Curr	D	963	Dakota	ss	S,D
SW-33-126-59	S. Curr	D	36	Glacial	l	S,D
SE-19-126-60	B. Nietert	D	31	Glacial	l	S,D
SW-21-126-60	D. Cutler	D	970	Dakota	ss	S,D
SE-22-126-60	W. Cutler	Du	25	Glacial	l	S,D
SW-23-126-60	F. Freeman	D	930	Dakota	ss	S,D
SE-23-126-60	F. Kimball	Du	30	Glacial	l	S,D
NE-24-126-60	K. Frey	D	1000	Dakota	ss	S,D
NW-24-126-60	H. Cearson	Du	34	Glacial	l	S,D

Appendix C-Records of Wells--continued

Well Location	Owner or Tenant	Type of Well	Depth of Well (feet)	Geologic Source	Water Bearing Material	Use of Water
SE-25-126-60	R. Puffrey	w	28	Glacial	l	S,D
NE-26-126-60	H. Frey	D	1000	Dakota	ss	S,D
NE-27-126-60	C. Feser	D	1000	Dakota	ss	S,D
NE-27-126-60	C. Feser	D	52	Glacial	l	S,D
SE-27-126-60	A. Gould	D	900	Dakota	ss	S,D
SW-27-126-60	L. Swanson	D	35	Glacial	l	S,D
SW-28-126-60	G. Micko	D	42	Glacial	l	S,D
NE-29-126-60	R. Olson	D	800	Dakota	ss	S,D
SE-30-126-60	N. Huett	D	35	Glacial	l	S,D
SE-31-126-60	R. Olson	D		Dakota	ss	S,D
NE-31-126-60	R. Olson	D	44	Glacial	l	S,D
NE-32-126-60	H. Hanson	D	80	Glacial	l	S,D
SE-33-126-60	B. Gibbs	D	28	Glacial	l	S,D
SW-33-126-60	R. Miller	D	30	Glacial	l	S,D
SE-34-126-60	M. Elsberry	D	28	Glacial	l	S,D
SE-35-126-60	R. Miller	D	875	Dakota	ss	S,D
SW-35-126-60	C. Nietert	w	20	Glacial	l	D
NW-35-126-60	V. Odland	D	38	Glacial	l	S