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DEPARTMENT OF NATURAL RESOURCE DEVELOPMENT
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GEOLOGICAL SURVEY
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SAND AND GRAVEL RESOURCES IN MINER COUNTY, SOUTH DAKOTA

by

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Prepared in cooperation with
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Lower James Conservancy Sub-District,
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INTRODUCTION

This pamphlet is the first in a series of reports being completed on the geology and hydrology of Miner County, South Dakota. Its purpose is to indicate areas in which to search for sources of coarse aggregate material. The quality of the deposits encountered was not analyzed nor the quantity of available reserves measured. These would require a larger auger in order to obtain a more representative sample, prior knowledge of the material specifications for each intended use, and more extensive drilling.

Other upcoming reports include "Geology and Water Resources of Miner County, South Dakota" and "The Major Aquifers in Miner County, South Dakota." The first of these two contains the technical aspects of the study. It defines and explains the distribution of landforms in the County and answers questions of geologic and hydrologic interest. The other report shows the areal distribution of major glacial aquifers, discusses the bedrock aquifers, and contains a generalized evaluation of their expected yield and quality.

EXPLANATION OF TABLES

Table 1 is a list of test holes drilled in Miner County along with their locations. Most of them have been drilled by the South Dakota Geological Survey. Logs of the rest have been supplied by the United States Geological Survey, private drillers, or the Water Rights Commission.

Table 2 is a list of sand and gravel pits on file with the South Dakota Department of Highways. Where the information is available, it also includes the average thickness of the sand and/or gravel being removed, the average thickness of overburden, and the type of material it contains. Average thickness values with a plus sign after them mean that the bottom of the pit is still in sand or gravel. In some cases the depth of the pit is determined by the water table and in others it is due to the predominance of medium to fine sand.

EXPLANATION OF MAP

The map shows the location of test holes, gravel pits, a few landmarks, and the areas of good, fair, and poor probability of finding sand and gravel. Test holes are indicated by a filled circle (●), a filled square (■), or an unfilled circle (O). The unfilled circle represents a location where no sand and/or gravel was encountered in the upper 25 feet of drilling. As such they are not numbered because they are not listed in the tables. The other two symbols refer to holes that have sand and/or gravel in this interval. A filled circle represents locations with 0 to 5 feet of overburden and a filled square 6 to 25 feet of overburden. The numbers beside each symbol refer to table 1 which lists the amount of sand and/or gravel present.

Gravel pits are designated by crossed pick and shovel (⚒). Those with numbers are listed in table 2 and have additional data on file with the District Highway Office of the South Dakota Department of Highways in Huron, South Dakota. No attempt has been made to differentiate the active from the inactive pits.

Using the test holes, gravel pit locations, topographic maps, air photos, and field observations, the County has been divided into three types of areas describing the probability of finding sand or gravel--good, fair, and poor. Each area designated as either good or fair has been assigned a capital letter and is discussed in some detail below.

Most "good" and "fair" areas are concentrated along major drainageways. Two exceptions are Area C along with a small northern extent of D and Areas J and K. These take the form of ice marginal accumulations caused by temporary stabilization of downcutting. This resulted in outwash deposits. Also, most "good" and "fair" areas are quite extensive.

An area designated as "good" contains deposits that are about 15 feet thick and are covered by about 4 feet of overburden. The presently existing gravel pits are in the more choice locations as they average only 2.3 feet of overburden. This is due to the economics of past site selection. Area C has only 1 foot of overburden as compared to 4 and 5 feet for Areas E, H, and J. The thickest deposits are in Area J averaging 19 feet. Many gravel pits are located in flat-topped hills in this area. These have probably been left behind in the process of erosion of more extensive deposits.

Areas designated as "fair" contain deposits that are about 10 feet thick and are covered by about 6 feet of overburden. Again, the presently existing pits have been located in areas with less overburden. Areas B, K, and N average 11 feet of overburden whereas the remaining average only 4 feet. But even though these 7 areas average only 4 feet of overburden, the same as the "good" areas, they have a lower percent of test holes penetrating sand and gravel. Therefore, these deposits are more patchy in distribution.

An area designated as "poor" contains few sand and gravel pits. Some may be very productive but the deposits are localized and difficult to find without intensive exploration. One area that may show some limited potential is in the vicinity of the gravel pit located in Section 7, Township 105 North, Range 58 West. Test hole 146 leads one to believe that a fairly thick deposit exists even though the present workings are only stripping about 4 feet of material.

TABLE 1. List of test holes in Miner County, South Dakota, which contain sand and/or gravel in the upper 25 feet.

Lithologic descriptions, as listed, have been condensed from data contained in driller's logs on file at the South Dakota Geological Survey office, Vermillion, South Dakota, and contain only information which has been deemed most useful for this study. Numbered test holes with a letter following them (i.e., 43A) designate additional holes with approximately the same location as the numbered test hole (i.e., 43). They are plotted on the map only as a single test hole.

Test Hole No.	Location	Lithologic Description	From-to Feet
1	SE SE SE SE 36-109-59	Sand, medium to coarse	13-15
2	NW NE NE NE 12-108-59	Sand, coarse	18-20
		Clay, gray; unoxidized (till) and coarse sand	20-25
		Sand, medium and gray clay	25-30
3	NW NW NW NW 6-108-58	Gravel, fine and coarse sand	7- 8
4	NW NE NW NW 9-108-58	Sand, brown, clayey, pebbly; dry, dirty	0- 7
5	NW NE NE NE 17-108-58	Sand, brown, silty and gravel (topsoil)	0- 1
		Sand, light-brown, silty and gravel	1- 4
		Sand, dark-brown, coarse, silty and gravel	4-11
		Sand, brown, coarse and fine gravel, silty; saturated	11-14
6	NE NE NE NE 19-108-58	Sand, dark-brown, silty and gravel (topsoil)	0- 1
		Sand and gravel, brown, silty	1- 4
7	NW NE NW NE 19-108-58	Sand, yellow-brown, medium, silty; saturated	1- 4
8	SW SW SW SW 30-108-58	Sand, rock at 9 feet	4-13
		Clay and sand, interbedded	15-37
		Sand, coarse, clayey	37-60
		Sand, fine; lignite, clay and sand layers from 67 to 70 feet	60-85
		Sand, fine to coarse; lignite	85-92
9	SW SW SW SE 32-108-58	Sand, gray, coarse and fine gravel; slightly silty, saturated	15-20
10	SE SE SE SE 33-108-58	Sand, brown and gravel; some clay and coal	22-27
11	NW NE NW NW 18-108-57	Sand, brown, fine, clayey; dry	2-11
		Sand, gray, fine to medium, clayey; saturated	11-14
12	NE NE NE NE 5-108-57	Gravel, medium, silty and medium sand	0- 5
13	NE NW NW SW 4-108-57	Gravel, sandy; oxidized, dry	0- 4
14	SE SE SW SW 4-108-57	Gravel, brown, medium, sandy; oxidized, dry	1- 3
		Gravel, fine to coarse sand, brown; oxidized, moist, clean	3-11
		Gravel, fine to coarse sand, brown; oxidized, saturated, clean	11-25

Test Hole No.	Location	Lithologic Description	From-to Feet
15	NW NW NW SW 9-108-57	Sand, silty, very pebbly	0- 3
		Gravel, reddish-brown, silty, clayey; oxidized, saturated at 8.5 feet	3-15
16	SW SW SE SW 9-108-57	Sand, brown, very coarse, very pebbly; dry	3- 9
		Sand, brown, very coarse, very pebbly; saturated	9-21
17	NE NE NE NE 17-108-57	Sand, brown, fine to medium, well sorted; moist, slightly silty	3- 6
		Sand, gray, fine to medium, well sorted; saturated, slightly silty	6-11
		Sand, gray, fine, silty; saturated, some clay	11-13
18	NE NW NE NW 15-108-57	Silt, sand and gravel, dark brown (topsoil)	0- 1
		Sand and gravel, brown, silty	1- 6
19	SW SW SE SW 16-108-57	Sand, brown, very coarse, pebbly; oxidized, saturated at 7 feet, clean, grading to medium gravel	6-24
20	NE NE NE NE 21-108-57	Gravel, red-brown, coarse (fill?)	1- 3
21	SE SE SW SW 22-108-57	Sand, fine; saturated	11-23
22	NE NE NE NE 28-108-57	Gravel, gray, fine; unoxidized, saturated, fairly clean	18-30
23	NW NE NE NW 34-108-57	Sand, brown, very coarse, very pebbly, clayey; oxidized, saturated, grading to medium gravel	11-24
24	SE SE SE SW 34-108-57	Sand, brown, coarse and fine gravel; saturated, dirty, high silt content with clay	7-11
		Sand, gray, coarse and fine gravel; saturated, slightly silty	11-24
		Sand, gray, coarse and fine gravel; saturated, silty	24-26
		Sand, gray, coarse and fine gravel; saturated, very muddy	26-31
25	SE SE SE SE 34-108-57	Sand, brownish black, silty; dry (topsoil)	0- 3
		Sand, brown, fine, silty; oxidized, dry	3- 7
26	NW NW NW NE 4-108-56	Sand, brown, medium to coarse, pebbly	0- 3
		Sand, brown, medium to coarse, pebbly; saturated	3- 5
27	NE NE NW NE 9-108-56	Sand, light brown, fine; some pebbles	0- 6
28	NE NW NE NE 16-108-56	Sand, brown, coarse and medium gravel	0- 5
29	NW NW NE NE 21-108-56	Sand, brown, fine to medium, pebbly	0- 5

Test Hole No.	Location	Lithologic Description	From-to Feet
30	SE SE SE SE 21-108-56	Sand, coarse and fine gravel, clayey	0- 3
		Sand, coarse and fine gravel; fairly clean	10-18
31	NW NW NW NW 6-108-55	Sand, light brown, fine to medium, subangular	8-10
32	NE NE NE NE 4-108-55	Sand, brown, coarse and medium gravel	0- 6
33	SW NW SW NW 11-108-55	Sand, very light-tan, gravelly; dry, caliche	0- 1
		Sand, light reddish-brown and fine gravel; dry	1- 5
34	SW SE SE SE 13-108-55	Gravel stringer	12-13
35	NW NW SW NW 23-108-55	Sand and gravel, dark-gray, silty, clayey	4- 6
36	SW SW SW SW 24-108-55	Sand and gravel, olive-brown, fine, silty, clayey; saturated	6-23
37	SW SE SE SE 23-108-55	Sand and gravel, medium, silty, clayey; moist at 4 feet	0- 5
38	SE SE SW SE 19-108-55	Sand, brown, medium, silty; dry	9-10
39	NW NE NE NW 31-108-55	Gravel, brown, medium; dry	3- 5
		Sand, brown, medium to fine, subrounded to rounded; saturated, clean	5-15
		Sand, gray, medium to fine, subrounded to rounded; saturated, clean	15-35
		Sand, gray, fine, silty; saturated	35-48
		Sand, gray, very fine, very silty; saturated	48-57
40	SE SE SW SW 25-108-55	Gravel, medium to coarse, sandy; small amount of coal	9-21
41	SE SW SW SW 36-108-55	Sand, medium-brown, medium to fine; dry	0- 3
42	SW SW SW SW 6-107-58	Sand	23-25
43	SE NW SW 7-107-58	Sand, brown, fine to coarse and fine to coarse gravel, clayey	13-19
43A	SE NW SW 7-107-58	Sand, fine to medium	6-12
44	SW SW SW SW 5-107-58	Sand, brown, clayey; saturated, sticky	8-13
		Sand, gray, fine to medium, silty; saturated	13-17
		Sand, gray, coarse, silty; saturated	17-25
45	SE SE SE SE 9-107-58	Sand, gray, coarse, silty, clayey; saturated	18-25
46	NW NE NW NE 15-107-58	Sand, black, silty, pebbly (topsoil)	0- 1
		Gravel, dark-brown and gray, fine and coarse sand, very clayey, layered	3-11

Test Hole No.	Location	Lithologic Description	From-to Feet
		Sand, gray, medium to coarse; saturated, slightly silty	11-15
47	NE NE NE NE 21-107-58	Sand and gravel; clean	17-21
48	NE NE NE NE 19-107-58	Sand, brown, fine to medium, silty; saturated	14-17
49	SE SE SE SE 19-107-58	Sand, brown, silty (topsoil)	0- 1
		Sand, yellow, silty; calcified (topsoil)	1- 2
50	SW SW SW SW 31-107-58	Clay, fine sand and silt, dark-brown; moist	3- 8
51	NE NE NE NE 24-107-58	Sand, yellow	0- 5
52	NE NE NE NE 4-107-57	Sand, brown, medium to coarse	11-13
53	NW NW NE NE 10-107-57	Sand, light-brown and fine gravel	0- 2
		Sand, brown and fine gravel, silty; moist	2- 5
		Gravel, brown, fine, very silty; saturated	8-10
54	SE SE SE SE 15-107-57	Sand, brown, very coarse, silty, pebbly; saturated	5- 9
		Sand, gray, very coarse, silty, pebbly; saturated	9-20
55	SE SE SE SE 22-107-57	Gravel, brown, fine to medium and medium sand	0- 6
		Silt and fine sand, gray; unoxidized	14-20
56	SE SE SE SW 22-107-57	Sand, dark-brown, silty, pebbly (topsoil)	0- 1
		Sand, light-brown, silty, pebbly (topsoil)	1- 4
57	NW NW NE NW 34-107-57	Sand, dark-brown, silty (topsoil)	0- 1
		Sand, light-brown, silty, clayey (topsoil)	1- 2
		Sand and gravel, brown, coarse	2- 6
58	NW NE NW NW 35-107-57	Sand, brown, coarse; slightly silty	5- 7
		Sand, gray, coarse; unoxidized, slightly silty	7-11
		Sand, coarse and fine gravel; clean	11-30
59	SW SE SW SE 3-107-56	Sand, very coarse; fairly clean	14-18
60	SE SW NE NE 10-107-56	Sand, light-brown, medium to coarse; saturated, some clay, fairly clean	2- 6
		Sand, gray, very coarse and fine gravel; saturated, quite clean	6-15
		Sand, gray, coarse and fine gravel; saturated, some clay, dirty	15-20
61	SW SW SW SW 11-107-56	Sand, gray, coarse and fine gravel, silty; unoxidized	9-13
		Gravel, medium	13-17

Test Hole No.	Location	Lithologic Description	From-to Feet
61A	SW SW SW SW 11-107-56	Gravel, dark-gray and very coarse sand, very clayey; saturated	9-24
		Sand, dark gray, coarse; saturated, some fine gravel	24-43
62	SE SW NE NW 14-107-56	Sand, dark-brown and gravel, very clayey; dry	1- 6
63	NE NW NW SW 14-107-56	Sand and gravel, very clayey; dry, very hard drilling	0-13
		Gravel, dark gray-brown and very coarse sand; saturated	15-33
		Sand, coarse to very coarse, very clayey; saturated, very dirty	33-40
64	SE SE NE SE 15-107-56	Gravel, brown, fine; dry	0- 1
65	SE SW SW SW 14-107-56	Gravel layers, coarse in brown clay; saturated at 18 feet	17-22
66	SE SE SE SE 15-107-56	Gravel, bright rusty-brown; dry, little sand	0- 3
67	SW NW 23-107-56	Sand, fine	17-39
		Sand, fine to medium	39-64
68	SW NW 23-107-56	Clay and gravel	4- 5
		Clay and coarse sand	5- 9
69	NE SW 23-107-56	Gravel and clay	15-19
70	NW SW 23-107-56	Gravel	3-11
		Sand, medium	17-44
		Sand and clay	44-64
70A	NW SW 23-107-56	Gravel, sand, and clay	0-10
		Sand; clean	10-39
		Sand and clay	39-44
70B	NW SW 23-107-56	Gravel and sand	2-11
		Sand, fine to medium	21-49
		Sand, fine to medium, clayey	49-54
71	SW SW SW NW 27-107-56	Sand and gravel; clean	25-28
72	SW SW SW SW 23-107-56	Sand, brown, silty, pebbly (topsoil)	0- 1
		Sand, light-brown, silty, pebbly (topsoil)	1- 3
		Sand, brown, medium and gravel; slightly silty	3- 5
		Sand, brown, medium to fairly coarse; saturated	5- 9
		Sand, gray, medium to coarse; saturated, clean	9-16
72A	SW SW 23-107-56	Gravel and clay	5- 9
72B	SW SW 23-107-56	Gravel and clay	0- 9

Test Hole No.	Location	Lithologic Description	From-to Feet
72B -- continued.		Gravel and sand	9-27
		Sand, medium to fine	27-64
73	NE SE SE SW 23-107-56	Sand, dark-brown and gravel; dry to moist, some clay	6-11
		Gravel, deep rusty-brown and coarse sand; saturated, some clay	11-14
		Gravel, deep rusty-brown and coarse sand; saturated, little clay	14-19
		Gravel, deep brownish-gray and coarse sand, clayey; saturated, less coarse	19-23
74	NE NW NE NW 25-107-56	Sand, dark-brown and gravel, silty (topsoil)	0- 1
		Sand, brown and gravel, silty (topsoil)	1- 2
		Gravel, brown with sand and silt	2- 6
75	NE SW SE NW 25-107-56	Sand, dark-brown, coarse to very coarse; saturated	6- 9
76	SW SE 26-107-56	Gravel	14-19
		Sand	24-29
77	SW SE SW SE 35-107-56	Sand, brown and gravel; dry, some clay	0- 6
		Sand, brown, coarse and gravel; saturated, boulders	6- 9
78	NW NW NE NE 7-107-55	Sand, brown, coarse and gravel; saturated	13-15
		Sand, coarse and gravel, clayey; saturated	17-41
79	NW NW NW NW 8-107-55	Sand, brown and gravel; dry	1- 5
80	NE NE NW SW 8-107-55	Sand, brown, very coarse and gravel; dry, rocks	4-10
		Sand, dark-brown, very coarse and gravel; saturated, rocks	10-44
81	SE SW SW SW 8-107-55	Sand, brown to green, coarse, gravelly; saturated	8-35
82	NE NW SE NW 17-107-55	Sand, coarse and gravel, clayey; saturated, grading to very little clay	3-31
83	NE SE NE SW 17-107-55	Sand, coarse and gravel with gray clay; saturated	6-12
84	SE SW SW SE 17-107-55	Gravel, coarse	2- 6
85	SE SE SW SE 21-107-55	Sand, brown, medium, silty; oxidized, saturated	12-37
		Sand, gray, medium, silty; unoxidized, saturated	37-49
86	NW SW NW NW 34-107-55	Sand, rusty-brown, fine; saturated, some clay, fairly clean	8-14
		Sand, rusty-brown, medium to coarse; saturated, some clay, fairly clean	14-22

Test Hole No.	Location	Lithologic Description	From-to Feet
86 -- continued		Sand, dark rusty-brown, medium to coarse; saturated, some clay, fairly clean	22-30
		Sand, dark grayish-brown, coarse to very coarse; saturated, clean	30-33
		Sand, dark grayish-brown, medium to coarse; saturated, more clay	33-47
87	SE SE SE NE 33-107-55	Sand, dark-gray, fine to medium, very clayey; saturated	24?-52?
		Sand, dark-gray, medium to coarse, very clayey; saturated	52?-61
88	SE SE SW SW 33-107-55	Sand, dark-brown, abundant pebbles; dry	0- 2
		Gravel, brown, coarse and sand, abundant boulders; moist, little clay	2- 7
		Gravel, dark-brown, very coarse, clayey; saturated, some coarse sand	7- 9
89	SE SE SE SE 13-106-59	Sand, dark red-brown, coarse and medium gravel, clayey	8-10
		Sand, yellow-brown, fine to fine gravel; poorly sorted, poorly rounded, mostly coarse sand	10-15
90	NW NW NW NW 3-106-58	Sand with silt layers	5- 8
		Gravel, brown, medium to coarse	8-15
91	SW SW NW NW 17-106-58	Sand, black, silty (topsoil)	0- 1
		Gravel and coarse sand, pebbly, silty	1- 5
		Sand, brown, coarse and fine gravel; saturated	5-13
92	NW NW NW NW 19-106-58	Sand, brown, silty; some pebbles (topsoil)	0- 1
		Gravel, brown and coarse sand	1- 6
93	SE SE SE SE 20-106-58	Sand, brown, silty (topsoil)	0- 1
		Sand, yellow and silt; calcified	1- 4
94	SW SW SW SW 34-106-58	Sand, yellow-brown, fine	0- 6
95	SE SE SE SW 36-106-58	Sand, brown, medium, very silty, pebbly; dry	3- 7
96	SE SE SE SE 36-106-58	Sand, yellow, fine, very silty	0- 8
97	SE SE SE SW 31-106-57	Sand, dark-brown, silty; some granules (topsoil)	0- 1
		Sand, tan, silty; some pebbles	1- 4
98	NE NE NE NE 19-106-57	Silt and fine sand, yellow	2- 5
99	NE NE NE NE 4-106-57	Gravel, brown, very sandy, subangular, poorly sorted	4-12
100	NE NW NW NE 3-106-57	Sand, black, clayey; saturated, boulder at 14 feet (alluvium)	8-22

Test Hole No.	Location	Lithologic Description	From-to Feet
101	SE SW SW SE 3-106-57	Sand, brown, medium to coarse; dry	4- 7
		Sand, brown, coarse, very clayey; moist	7- 9
102	SW NE 11-106-57	Gravel and sand	4- 6
		Sand and clay	6- 9
		Sand and gravel	9-10
		Gravel, medium	10-19
		Gravel, medium and clay	19-29
		Sand and clay	29-34
103	NW NE NE NE 15-106-57	Sand, brown, fine to medium, clayey; moist	7-10
104	NE NW NW NE 27-106-57	Sand, brown, coarse; moist, dirty	8- 9
		Sand, grayish, coarse; saturated, dirty	9-12
		Gravel, gray, fine; saturated, dirty	12-17
		Sand, gray, coarse; saturated, dirty	17-25
		Gravel, gray, fine; saturated, some clay, fairly clean	25-45
105	NW NE NW NE 27-106-57	Sand, dark reddish-brown, gravelly; dry	2- 5
		Sand, dark-brown and fine gravel, silty; moist at 10 feet	5-13
		Sand, dark-brown and fine gravel, silty; saturated	13-17
		Sand, gray, medium to very coarse	17-22
		Sand, gray and fine to medium gravel	22-31
106	NW NW NW NE 25-106-57	Gravel, red-brown; oxidized, dry	0- 8
107	SE SE SE SE 25-106-57	Gravel, red-brown; oxidized, dry	2- 5
108	NW NE NW NE 34-106-57	Sand, brown, medium; saturated	7- 8
		Sand, blue-gray, medium; saturated	8-10
		Gravel, gray, fine; saturated, dirty	10-17
109	SW SW SW SE 34-106-57	Sand, red-brown; oxidized, dry	0- 5
110	NE NE NE NE 5-106-56	Sand	20-22
111	SW SW SE SW 31-106-56	Sand, light-brown, fine; dry	0- 2
		Gravel, brown, medium; dry	2- 6
		Sand, brown, medium to coarse; dry, dirty	6- 8
112	SW NW 2-106-56	Gravel and sand	3-16
		Sand and clay	17-19
113	NW SW SW NE 2-106-56	Sand and gravel	0-12
114	SW NE NW NE 2-106-56	Sand, dark-brown and gravel, very clayey; moist	4-10
		Sand, very coarse and fine gravel, very clayey; saturated, clay stringers	22-34
115	SW SW SW NW 1-106-56	Sand, coarse and fine to medium gravel	23-31
116	SE SE SW NE 2-106-56	Sand, dark-brown and gravel; some dry clay	1-11

Test Hole No.	Location	Lithologic Description	From to Feet
116 -- continued.		Sand, deep rusty-brown and gravel; saturated, some clay	11-18
117	SW SW SW NE 2-106-56	Sand, brown, coarse, some clay	3 18
117A	SW SW SW NE 2-106-56	Sand, dark gray-black, very coarse and very fine gravel	25 27
		Sand, dark gray-black, very coarse and very fine gravel; saturated	27 33
118	SW NE NE SW 2-106-56	Gravel; poorly sorted, highly weathered	0 6
		Gravel, coarse; abundant basalt	17 20
119	NW SE 2 106-56	Gravel and tan clay	9 10
		Gravel, medium rounded	10 16
119A	NW SE 2-106-56	Gravel, unsorted and clay	4 9
120	SW SE 2-106-56	Gravel, unsorted and clay	6 13
		Gravel, unsorted and clay	15 20
120A	SW SE 2-106-56	Silt and gravel	14 24
120B	SW SE 2 106-56	Gravel, medium with sand and clay	14 26
		Sand, coarse and clay	26 29
		Sand, medium and clay	29 34
121	SE SW 2-106-56	Sand and gravel	0 15
121A	SE SW 2-106-56	Gravel, coarse	0 17
		Sand, gray, fine	25 60
122	NW NE 11-106-56	Sand and gravel	4 8
		Clay and gravel	8 22
		Sand, medium	22 39
123	SW SW NE NE 11-106-56	Sand, brown and gravel; some clay	1 6
		Sand, brown to light-brown, medium to coarse; saturated, some gravel	10 17
124	SW NE 11 106-56	Gravel and sand	4 6
		Sand and clay	6 9
		Sand and gravel	9 10
		Gravel, medium	10 19
		Gravel, medium and clay	19 29
		Sand and clay	29 34
125	SE SE SE NE 10-106 56	Gravel, coarse	3 10
126	SE SW 11-106-56	Gravel and clay	0 7
127	NE NW NW NE 14-106-56	Sand, dark-brown, very coarse, very clayey; saturated	6 12
127A	NW NW NW NE 14-106-56	Sand, brown, coarse and gravel; saturated	5 10
128	NE NE SE NW 14-106-56	Gravel, coarse and sand, clayey; saturated	11 16

Test Hole No.	Location	Lithologic Description	From-to Feet
128 - continued		Sand, light-gray, very coarse, very clayey; saturated	16-18
129	SW NW NE SE 14-106-56	Sand, dark gray brown, coarse to very coarse and gravel; saturated, some clay, boulders	7-22
130	SW NW SW NW 24-106-56	Sand, brown, very coarse and gravel; dry, rocks	0- 5
		Sand, coarse to very coarse and gravel; saturated, rocks, some clay	11-23
131	NW SW 23-106-56	Gravel	3-11
		Sand, medium; clean	17-44
		Sand and clay	44-64
132	SE SW NW SW 24-106-56	Sand, dark-brown, silty, pebbly (topsoil)	0- 2
		Sand, brown, silty, pebbly (topsoil)	2- 4
		Sand, brown, coarse and gravel, silty	4- 7
133	NW SE NW SW 24-106-56	Sand, brown and gravel, very silty	11-16
134	NE NE SW SW 24-106-56	Sand, dark-brown, coarse to very coarse; saturated, some gravel	11-19
		Sand, dark-gray, coarse to very coarse; saturated, very clayey	21-29
135	NE NW NE NW 25-106-56	Sand, brown, very coarse and gravel; dry, rocks, some clay	0- 6
		Sand, blue-gray, coarse and gravel; saturated, rocks, some clay	26-38
136	NE NE NE NE 25-106-56	Gravel, coarse; clean	0- 5
137	SE SE SE SE 8-106-55	Gravel, coarse	14-38
		Sand, black	38-40
138	SE SW SE SW 9-106-55	Gravel, medium to coarse; some clay	1- 3
		Sand, yellow-brown, fine to medium; dry, clean	3- 8
		Gravel, silty, sandy, clayey; saturated	16-18
		Sand, brown to gray, fine to medium; saturated, some silt	18-26
139	NW NE 11-106-55	Sand and gravel	4- 8
		Clay and gravel	8-22
		Sand, medium	22-39
140	NE SE 2-106-55	Sand, medium	24-27
		Clay, sand and gravel	27-29
141	NE NE NE NW 1-106-55	Sand, yellow-brown, very silty	3- 7
142	SW SW SW SE 11-106-55	Sand, brown, medium to coarse, silty, pebbly; oxidized, saturated	12-19
143	SW SE NW NW 24-106-55	Gravel, brown, silty; dry, very dirty	4-11

Test Hole No.	Location	Lithologic Description	From-to Feet
143 - continued.		Gravel, brown, very silty; oxidized, saturated, dirty	11-19
		Gravel, gray, very silty; unoxidized, saturated, dirty	19-29
144	NW SW SW NW 24-106-55	Gravel, brown, fine, silty; oxidized, saturated, dirty	7-19
145	SW SE SE SE 6-105-58	Sand, dark-brown, silty, pebbly (topsoil)	0- 2
		Sand, brown and clay, silty, pebbly (topsoil)	2- 4
146	SW SW SE SW 7-105-58	Gravel, brown, fine to medium, silty, sandy; saturated at 8 feet	1-20
147	SW SW SW SW 10-105-58	Sand, gray, fine, very silty, very clayey; unoxidized, saturated, grading to a soft silt	17-32
148	NE NE NE NE 21-105-58	Sand, brown, medium	17-20
149	SE SE SE SE 21-105-58	Sand	14-20
150	SW SW SW SW 31-105-58	Silt and fine sand, brown; saturated	11-16
		Silt and fine sand, gray-brown, clayey; saturated, fairly compact	16-17
		Silt and fine sand, gray; saturated, some clay	17-21
		Sand, gray, fine to medium; saturated, fairly clean	21-23
		Silt and fine sand, gray; saturated	23-27
151	SE SW SW SE 26-105-58	Sand, dark-brown, silty, pebbly (topsoil)	0- 1
		Sand, brown, silty, pebbly (topsoil)	1- 4
		Silt and medium to coarse sand, clayey; saturated	13-15
		Silt and medium to coarse sand; saturated, some clay	17-24
152	SW SW SW SE 3-105-57	Gravel, brown; saturated, dirty	10-17
153	SW SW SW SE 10-105-57	Gravel, brown; moist, dirty	6- 8
		Gravel, brown; saturated, dirty	8-11
		Gravel, brown, pea-size; saturated	11-13
		Gravel, gray, pea-size; saturated	13-35
154	SE SE SE SW 10-105-57	Gravel, dark-brown, fine and sand, silty; saturated	6-12
		Gravel, gray, fine and sand	12-21
		Gravel, gray, fine to medium and sand	21-24
155	SE NE SE NE 16-105-57	Sand, reddish-brown, gravelly; dry	0- 4
		Sand, dark reddish-brown, fine and gravel; saturated	4- 8
156	SE SW SE SE 16-105-57	Gravel, brown	4- 5
		Gravel, brown	9-10

Test Hole No.	Location	Lithologic Description	From-to Feet
157	NE NE NE NW 22-105-57	Gravel, dark-brown; dry, dirty	2- 5
		Sand, brown, medium to coarse and gravel; dry	5- 7
		Sand, brown, coarse to medium; dry, some clay	7- 9
158	SE SE SE NE 21-105-57	Sand, gray, very clayey; saturated	10-13
159	SW SW SW SE 21-105-57	Sand, brown, fine to medium; dry	2- 6
		Sand, brown, fine to medium; dry, some clay	6- 8
160	NE NE NE NE 29-105-57	Sand, brown, coarse; moist, dirty	8-10
		Sand, brown to gray, coarse, very clayey; saturated	10-12
		Gravel, gray, pea-size, clayey; saturated	12-13
		Sand, gray, very coarse, clayey; saturated	13-17
161	NW NW NW NW 32-105-57	Gravel, brown; dry, dirty	3- 6
		Sand, brown, coarse; dry, dirty	6- 8
		Sand, red-brown, medium to coarse; oxidized, dry, clean	8-10
		Sand, red-brown, medium; oxidized, dry, clean	10-14
		Sand, brown, medium; oxidized, moist, some clay	14-16
162	NW NW NW NW 6-105-56	Sand, brown, fine	18-23
		Sand, brown, fine	26-33
163	SW SE SE SW 6-105-56	Sand, light-brown, medium; saturated, dirty	12-14
164	SE SE SE SW 31-105-56	Gravel, brown; dry, dirty	2-11
165	NW NE NE NE 9-105-55	Gravel, dark-brown, fine, sandy; saturated, very dirty	4-13
166	NW NE NW NE 16-105-55	Sand, brown, very coarse, silty; saturated, dirty	11-30
167	SW SW SW NW 18-105-55	Sand, brown, coarse and gravel, silty, clayey; saturated, quite sticky	8-18
168	NE NE NW NW 19-105-55	Gravel, red-brown, coarse, some clay	0- 5
		Gravel, red-brown, coarse; saturated, some clay	5- 9
169	NW NW NE NW 19-105-55	Silt and sand, dark-brown (topsoil)	0- 1
		Silt and sand, gray-brown (topsoil)	1- 5
		Sand, brown, coarse and gravel; slightly silty	5-11
		Sand, gray, coarse, very silty; saturated	16-20
170	SW SW SE SE 21-105-55	Gravel, brown, coarse; dry	2- 5
171	NE SE NE SE 30-105-55	Silt and fine sand, yellow	1- 4

Test Hole No.	Location	Lithologic Description	From-to Feet
172	NE NW NW NW 32-105-55	Sand, dark-brown, silty (topsoil)	0- 1
		Sand, brown and gravel; some silt	1- 5
173	SW SW SE SE 32-105-55	Sand, black, silty (topsoil)	0 1
		Sand, brown, coarse and gravel, silty	1- 6
174	SE SE SE SE 13-105-55	Sand, brown, medium to fine, poorly sorted; some thin layers of coarse sand	0-29
175	NE NE SE NE 24-105-55	Gravel, brown, medium to coarse, silty; dry	4- 8
176	SE SE SE SW 25-105-55	Gravel, brown, fine; dry	2 7
177	SE SE SE SE 36-105-55	Sand, brown, medium	24-28
178	SW SW SE SW 18-105-54	Sand, brown, fine; oxidized, dry, clean	0-15
		Sand, gray, silty, pebbly; unoxidized, saturated	15-33

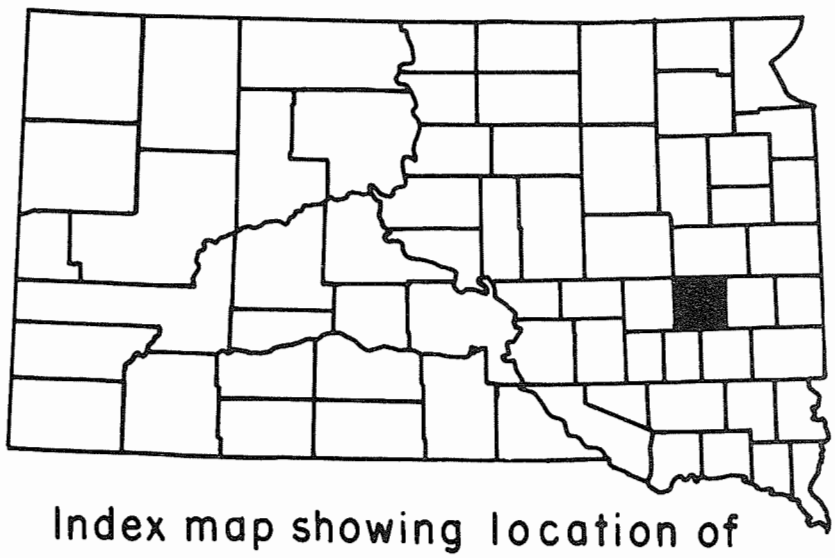
TABLE 2. List of sand and gravel pits in Miner County, South Dakota, which are on file at the District Office, South Dakota Department of Highways, Huron, South Dakota.

Pit No	Owner and Address	Location	Type	Average Depth in Feet	Average Thickness of Stripping in Feet
1		SE¼ 18-108-58	Gravel		
2		NE¼ 5-108-57	Gravel		
3	Freed, D. A. – Carthage	SE¼ 4-108-57	Gravel		
4	Wilson, Ben – Madison	SW¼SE¼ 4-108-56	Sand & Gravel	1.0	6.0+
5	Gudahl, Peter	NE¼NW¼ 9-108-56	Sand & Gravel	1.9	7.3
6	Slatten, Lillian M. – Beresford	SE¼NE¼ 28-108-56	Gravel	2.6	5.5
7	Abrahamson, John L.	SW¼ 1-108-56	Gravel	1.5	12.7
8	Theofeldt, Fred – Howard	NE¼ 1-108-56	Gravel		
9	Theofeldt, Fred – Howard	NW¼ 1-108-56	Sand	5.2	12.9
10	Hagerman	NW¼SW¼ 36-108-55	Filler & Gravel		
11		NW¼ 22-107-58	Gravel		
12	Austreim, John – Howard	NE¼ 10-107-56	Gravel	1.7	8.0
13	Feldhaus, Robert – Howard	SE¼ 10-107-56		2.1	4.5
14	Colling, John – Granville, Iowa	SE¼SE¼ 15-107-56	Gravel	2.0	7.0

Table 2 -- continued

Pit No.	Owner and Address	Location	Type	Average Depth in Feet	Average Thickness of Stripping in Feet
15	Reisch, Marcel – Howard	NW¼NW¼ 23-107-56	Sand & Gravel	1.7	6.9
16	Neises, Dennis – Howard	SW¼ 23-107-56	Gravel	2.5	9.0
17	Lynde, C. – Howard	NW¼ 26-107-56		1.8	6.1
18	Feldhaus, Bernard – Howard	NW¼ 35-107-56	Gravel	3.1	5.6
19	Karleen Bros. – Roswell	NE¼ 3-106-57	Gravel	3.0	7.5
20	Best, Mrs. Fred & Buck, Margaret – South Sioux Falls	SE¼ 22-106-57	Gravel		
21	Neises, Wm. J. – Howard	NE¼ 34-106-57	Gravel	2.5	5.0
22	Christopherson, O. M. – Howard	NW¼NE¼ 11-106-56	Gravel	1.8	6.8
23	Christopherson, O. M. – Howard	SW¼NE¼ 11-106-56	Gravel	1.8	8.6
24	St. Agatha Church	NE¼ 14-106-56	Gravel	1.7	6.3
25	Feldhaus, Theo – Howard	NW¼ 24-106-56		1.4	7.0
26		SW¼ 24-106-56	Gravel		
27	McCain, Vincent – Howard	SW¼SE¼ 25-106-56	Gravel	1.5	5.5
28	McCain, Vincent – Howard	NW¼NE¼ 36-106-56	Gravel	1.5	9.0
29	Gehring, Wesley F. – Howard	NE¼ 3-105-57	Gravel		
30	Hofer, Wallace – Roswell	NE¼ 10-105-57	Clay		
31	Mentelle, Joe & Andrew – Howard	NE¼ 15-105-57	Gravel		

32	Mentelle, Andrew & Joe – Epiphany	NW¼ 15-105-57	Gravel	1.5	8.0
33	Hofer, Wallace – Roswell	S½NE¼ 16-105-57	Gravel	3.0	5.1
34	Muilenburg, John – Alexandria	SE¼ 21-105-57	Sand & Gravel	1.3	5.0
35	Schmidt, Joe – Mitchell	NW¼ 28-105-57	Gravel	3.5	8.0
36	Miller, Leo – Canova	NW¼NE¼ 29-105-57	Gravel	2.1	6.0
37		NW¼ 32-105-57	Gravel		
38	Lindblom, Carl - Canova	NW¼ 19-105-55	Gravel	1.5	10.0+
39	Wobig, Ernest – Canova	NW¼ 32-105-55	Gravel	1.6	9.2
40	Ecklein, Howard – Salem	SW¼ 34-105-55	Gravel	1.9	9.5



Index map showing location of Miner County.

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Sectionized township

KINGSBURY CO.

SANBORN CO.

LAKE CO.

HANSON CO. | McCOOK CO.

97°45'

97°30'

44°

SEE INSET

Good probability of finding sand or gravel deposits.

Fair probability of finding sand or gravel deposits.

Poor probability of finding sand or gravel deposits.

Letters A through N designate areas described in the text.

39 Test hole containing sand or gravel in upper 25 feet with 0-5 feet of overburden. Number refers to table 1.

40 Test hole containing sand or gravel in upper 25 feet with 6-15 feet of overburden. Number refers to table 1.

Test hole containing no sand or gravel in upper 25 feet.

(7) Gravel pit; those with a number are listed in table 2.

N

1 Mile

0 1 2 3 4 5 6 7 Miles

0 1 2 3 4 5 6 7 8 9 10 11 Kilometers

Map showing test holes, gravel pits, and sand and gravel deposits in Miner County.