

STATE OF SOUTH DAKOTA
Richard Kneip, Governor

DEPARTMENT OF NATURAL RESOURCE DEVELOPMENT
Vern W. Butler, Secretary

GEOLOGICAL SURVEY
Duncan J. McGregor, State Geologist

Information Pamphlet No. 17

SAND AND GRAVEL RESOURCES
IN WALWORTH COUNTY, SOUTH DAKOTA

by

Wayne Schroeder

Prepared in cooperation with the
United States Geological Survey,
Oahe Conservancy Sub-District,
South Dakota Department of Highways,
and Walworth County

Science Center
University of South Dakota
Vermillion, South Dakota
1978

This publication was printed at a cost of 15 cents per copy. A total of 500 copies were printed for dissemination of geologic information.

CONTENTS

| | Page |
|-----------------------------|------|
| INTRODUCTION | 1 |
| EXPLANATION OF TABLES | 1 |
| EXPLANATION OF MAP | 1 |

TABLES

| | |
|---|----|
| 1. Comparison of average thicknesses of overburden and sand and gravel, average depths to the water table and types of material encountered | 3 |
| 2. List of test holes in Walworth County, South Dakota, which contain sand and/or gravel in the upper 25 feet | 4 |
| 3. List of sand and gravel pits in Walworth County, South Dakota, which are on file at the District Office, South Dakota Department of Highways, Aberdeen, South Dakota | 25 |

ILLUSTRATION

| | |
|--|--------------|
| Map showing test holes, gravel pits, and sand and gravel deposits in Walworth County, South Dakota | Following 30 |
|--|--------------|

INTRODUCTION

This pamphlet is the first in a series of reports being completed on the geology and hydrology of Walworth 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 data 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 Walworth County, South Dakota" and "The Major Aquifers in Walworth 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

By the use of 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 (A through S). Table 1 is a comparison of the good and fair areas of the map. Columns 3 through 6 and column 9 are average values computed from test hole data. Columns 7 and 8 are averages calculated from gravel pit information supplied by the Highway Department.

Table 2 is a list of test holes drilled in Walworth County along with their locations. Most of the test holes have been drilled by the South Dakota Geological Survey. Others have been supplied by the United States Geological Survey, private drillers, the Water Rights Commission, or the Bureau of Reclamation. Only that part of the log which indicates sand and/or gravel has been included in this table in order to reduce the amount of extraneous information.

Table 3 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 type of material it contains, the average thickness of overburden and the average thickness of the sand and/or gravel being removed. The depths of some pits are determined by the water table and others by the predominance of medium to fine sand or clay.

EXPLANATION OF MAP

The map shows the location of test holes, gravel pits, a few land marks, 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 (○). The unfilled circle represents a location where no sand and/or gravel was encountered in the upper 25 feet of drilling. They are not numbered because they are not listed in the tables. The other two symbols refer to holes which did encounter sand and/or gravel in the upper 25 feet. A filled circle represents a location 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 2 which lists the amount of sand and/or gravel present if that information is available.

Gravel pits are designated by crossed pick and shovel (⌘). Those with numbers are listed in table 3 and have additional data on file with the District Highway Office of the South Dakota Department of Highways in Aberdeen, South Dakota. No attempt has been made to differentiate the active from the inactive pits.

An area designated as "good" contains deposits that are generally (1) fairly thick, (2) covered by little overburden, and (3) encompass an extensive area, or are quite thick but less continuous laterally.

Of the good areas, Area G has the thickest deposits but also the thickest overburden. In contrast, the sand and gravel in Areas R and S is shallower and coarser in texture with Area R having the coarser deposits of the two. Area D has the coarsest material along with the deepest water table and has been extensively developed.

Areas J and K have been mapped strictly on air photo interpretation and are thought to be coarse, thick, quite clayey in spots and have a fairly shallow water table.

In the good areas, most test holes contained saturated material at depths of 15 to 20 feet and this being measured in a dry year, 1976. Dredging operations would probably be necessary below that depth.

An area designated as "fair" contains deposits that are fairly thick but are covered by a greater thickness of overburden. Seldom can a single deposit be traced for any great distance.

Area Q has been classified as fair rather than good because 30 percent of the test holes hit no aggregate material in the upper 25 feet. This indicates that

there are numerous clayey regions scattered throughout the enclosed boundary.

Area P contains scattered lenses of gravel along the western edge with the rest of the area containing medium to very fine, clean, well sorted sand. With intensive exploration some bodies of coarse to very coarse sand can be located. Most of the sand is too fine for construction purposes so the area has its greatest potential along the western edge.

Areas L, M, N, and O are very small, contain a lot of clay and are thin deposits. Areas I and B are quite clayey and generally finer in texture. This does not always hold true because the pits north of Mobridge in Area B contain some very coarse gravel in places. Area C is generally fine in texture, clayey, and has a shallow water table.

Area A contains good gravel but is localized in extent. Exposures are concentrated along the gullies.

Back away from the gully it is buried by an increasing thickness of overburden to the point where it is uneconomical to extract.

Areas E and F are scattered deposits which vary in thickness and contain clay interbedded with the sand and gravel. Area H is a topographic low regulated by the geologic history of the area and therefore contains some coarse to fine gravel but in discontinuous pockets.

The rest of the County has been designated as "poor." The "poor" area contains some sand and gravel pits which are very productive but the deposits are localized and difficult to find without intensive exploration. A few potentially economical places to check would be along Reiger Creek, the west slope of the Java Hills, along Hiddenwood Creek, and 2 miles west of Selby. Some of these areas have been utilized to some extent in the past.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-------------|------|-------------------------|--|------------------------------------|----------------------|------------|----------------------------|--|
| Probability | Area | Thickness of Overburden | Thickness of sand & gravel in upper 25 feet. | Total thickness of sand and gravel | Depth to water table | Overburden | Excavated sand and gravel | Type of material |
| | D | 2.1 | 11.9 | 15.1 | 25.0 | 5.2 | 8.4 | 67% very coarse sand to fine gravel |
| | G | 4.7 | 20.6 | 38.3 | 17.0 | 1.1 | 7.3 | 72% medium to very coarse sand |
| GOOD | J | ID | ID | ID | ID | ID | ID | |
| | K | ID | ID | ID | ID | ID | ID | |
| | R | 2.0 | 20.0 | 25.0 | 20.5 | 2.2 | 8.3 | 44% medium to coarse sand; 35% fine to medium gravel |
| | S | 2.0 | 16.8 | 21.9 | 14.6 | 2.9 | 7.1 | 50% medium to coarse sand; 25% fine to medium gravel |
| | AV. | 2.8 | 18.3 | 29.1 | NC | 2.9 | 7.5 | |
| FAIR | A | 12.5 | 12.5 | 17.0 | ID | 3.0 | 9.3 | 94% fine to medium sand |
| | B | 10.1 | 13.5 | 29.8 | 29.0 | 4.6 | 6.0 | 70% fine to medium sand |
| | C | 3.5 | 12.5 | 15.5 | 10.0 | ID | ID | 62% very coarse sand to fine gravel; 28% fine to medium sand |
| | E | 4.4 | 11.8 | 20.4 | ID | ID | ID | 91% fine to medium sand |
| | F | 3.8 | 12.0 | 12.3 | 19.0 | 3.1 | 6.4 | 89% fine to coarse sand |
| | H | 7.3 | 11.3 | 11.7 | 10.0 | ID | ID | 77% fine to medium gravel |
| | I | 7.5 | 11.0 | 16.8 | ID | ID | ID | 100% fine to coarse sand |
| | L | ID | ID | ID | ID | ID | ID | |
| | M | ID | ID | ID | ID | ID | ID | |
| | N | ID | ID | ID | ID | ID | ID | |
| | O | ID | ID | ID | ID | ID | ID | |
| P | 4.8 | 14.0 | 22.1 | 21.0 | 1.7 | 10.6 | 82% very fine to fine sand | |
| Q | 2.3 | 16.6 | 22.4 | ID | 2.3 | 9.9 | 62% fine to medium sand | |
| AV. | 4.3 | 14.5 | 21.4 | NC | 2.9 | 8.4 | | |

ID-insufficient data

NC-not calculated

all calculations in feet

Table 1. Comparison of average thicknesses of overburden and sand and gravel, average depths to water table and types of material encountered.

TABLE 2. List of test holes in Walworth 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 pertinent information.

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|---|--------------|
| 1 | NE NW SW SW 34-125-79 | Sand, brown, fine; oxidized, dry | 12- 17 |
| | | Sand, brown, medium; oxidized, dry | 17- 30 |
| | | Sand, dark-brown, medium, very clayey; oxidized, moist | 30- 33 |
| 2 | SW SW SW SW 35-125-77 | Sand(?), very fine or silt (only silt in cuttings, poor return) | 24- 85 |
| 3 | SE SE SE SE 35-125-77 | Sand, brown, fine to medium | 0- 10 |
| | | Sand, brownish-gray, medium to coarse | 10- 19 |
| 4 | SE SE SW SE 36-125-77 | Sand, brown, medium to coarse, silty; dry, some gravel, moist at 8 feet, saturated at 15 feet | 2- 37 |
| 5 | SW SW SW SW 31-125-76 | Sand | 5- 36 |
| | | Sand, gray, very fine; few clay stringers | 36- 85 |
| 6 | SE SE SE SE 31-125-76 | Sand, brown | 5- 10 |
| 7 | SE SE SE SE 32-125-76 | Sand, yellow, silty | 6- 9 |
| | | Sand, light-brown and gravel; saturated | 9- 14 |
| | | Sand, dark-brown, silty | 14- 25 |
| | | Sand, dark-brown to light-gray, and gravel, silty, clayey | 25- 34 |
| 8 | SW SW SW SW 33-125-76 | Sand, brown, coarse, some medium | 0- 10 |
| | | Sand, gray, medium to coarse | 10- 20 |
| | | Sand, gray and gravel | 20- 30 |
| 9 | SE SE SE SE 33-125-76 | Sand, fine to medium | 1- 6 |
| | | Gravel, fine to medium | 6- 25 |
| 10 | SW SW SW SW 34-125-76 | Sand, brown | 0- 24 |
| 11 | SW SW SW SW 35-125-76 | Sand, brown | 0- 35 |
| 12 | SE SE SE SW 36-125-76 | Sand, brown | 0- 10 |
| | | Sand, coarser at depth | 10- 53 |
| 13 | SW SW SW SW 31-125-75 | Sand, brown, fine to medium | 4- 9 |
| | | Sand, brown, medium to coarse | 9- 19 |
| | | Sand, brown, coarse and gravel, turning gray at 39 feet | 19- 39 |
| | | | |
| 14 | SE SE SE SW 32-125-75 | Sand, dark-brown, fine | 0- 9 |
| | | Sand, gray, fine, clayey | 9- 17 |
| | | Gravel, light-gray, coarse and sand, clayey 22 to 24 feet | 17- 24 |
| | | Gravel, light-brown and fine to coarse sand | 24- 41 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|--|---|
| 15 | SE SE SE SE 33-125-75 | Gravel and rocks | 4- 6 |
| 16 | SE SW SE SE 36-125-74 | Gravel, 50 percent shale pebbles | 19- 27 |
| 17a | SE SE SW SE 12-124-80 | Sand, brown, medium; oxidized, dry, caving Gravel, sandy; moist Gravel, brown, medium, sandy, silty; moist, hit rocks, moved 20 feet | 10- 15 15- 19 19- 22 |
| 17b | SE SE SW SE 12-124-80 | Sand, brown, medium; oxidized, moist, few pebbles, thin layer of black silty sand Sand, brown, medium; oxidized, moist, some medium gravel Gravel, brown, medium, sandy; oxidized, moist, hit rocks, abandoned | 7- 14 14- 17 17- 24 |
| 18 | SW NE SW SE 4-124-79 | Sand, red-brown, medium; dry, dirty Sand, red-brown, medium to coarse; dry, some small pebbles Sand, brown, coarse, gravelly; dry | 13- 20 20- 24 24- 26 |
| 19 | NW NW NE NW 19-124-79 | Sand, dark-brown, medium; dry, some clay Gravel, dark-brown, fine, sandy; moist Gravel, dark-brown, medium to coarse; moist Gravel, dark-brown, medium to coarse, clayey; moist | 14- 16 23- 27 27- 34 34- 38 |
| 20 | SE SW SW NW 19-124-79 | Gravel, medium to coarse Sand, fine, silty, clayey; oxidized Gravel, medium; oxidized | 15- 25 25- 36 36- 42 |
| 21 | SE SW SE NE 19-124-79 | Sand | 10- 80 |
| 22 | SE SW NW 29-124-79 | Sand and clay Gravel, coarse | 2- 45 45- 55 |
| 23 | NE SE SE SE 20-124-79 | Clay, silty and some fine sand grains, gray Sand and gravel, rocks, oxidized | 15- 31 31- 38 |
| 24 | SW NE SW SW 28-124-79 | Sand, brown, medium; dry, some small pebbles Gravel, brown, fine, sandy; dry Sand, brown, fine to medium; dry Gravel, brown, fine, sandy; dry Gravel, light-brown, fine, sandy, clayey; dry Sand, medium; saturated | 8- 11 11- 15 15- 19 19- 24 24- 26 29- 34 |
| 25 | NW NW NW NW 14-124-79 | Gravel Gravel, fine, sandy; clay breaks | 1- 3 19- 54 |
| 26 | SE SW 13-124-79 | Clay and gravel Sand; saturated | 1- 17 17- 24 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|---|---------------------------|
| 27 | NE SE SE SE 7-124-78 | Sand, dark-brown, clayey and gravel | 8- 9 |
| 28 | NE NE NE SE 10-124-78 | Gravel, brown; dry, dirty | 0- 2 |
| 29 | SE SE SE SE 10-124-78 | Sand, tan, silty Gravel, fine | 0- 2 2- 4 |
| 30 | SW SW NE NE 11-124-78 | Sand, clayey | 22- 43 |
| 31a | SE 12-124-78 | Sand, yellow, fine; dark Sand, white, medium Sand, whitish, fine | 0- 20 20- 40 40- 50 |
| 31b | SE 12-124-78 | Sand, yellow, fine Sand and gravel | 0- 20 20- 25 |
| 32 | SE SE SE NE 20-124-78 | Sand, light-brown, very fine, clayey; dry | 6- 9 |
| 33 | NW NE 28-124-78 | Gravel; saturated | 10- 20 |
| 34 | SE SE NE NE 29-124-78 | Sand, tan, very fine, clayey; dry | 4- 10 |
| 35 | SW SW SW SE 31-124-78 | Sand, fine to medium | 0- 9 |
| 36 | SW SW SW SW 32-124-78 | Sand, fine to medium Sand, coarse, to fine gravel | 0- 8 8- 37 |
| 37 | SW SW SW SE 32-124-78 | Sand, brown, fine to medium; moist Sand, brown, fine to coarse, silty; moist, some fine to coarse gravel Sand, brown, fine to coarse, clayey; moist | 1- 5 5- 12 12- 15 |
| 38 | NE NE SE NE 32-124-78 | Sand, brown, medium to coarse, very silty and clayey; dry Sand, brown, medium to coarse, silty; dry | 7- 10 10- 17 |
| 39 | NE NE NE NW 33-124-78 | Gravel and sand Gravel | 0- 8 24- 28 |
| 40 | NW NW NW NE 33-124-78 | Sand, brown, clayey; moist, some gravel Sand, brown, medium to coarse, silty; moist, some gravel | 1- 4 4- 9 |
| 41 | NE NE SW SW 27-124-78 | Gravel, clayey | 5- 11 |
| 42 | SE NE NW SW 27-124-78 | Gravel, brown, very sandy, silty; moist, poorly sorted Gravel, brown, medium to coarse; moist | 1- 9 9- 12 |
| 43 | NW NW SW SW 26-124-78 | Sand, light-brown, very fine; dry Sand, brown, medium to coarse and gravel; dry | 3- 4 4- 6 |
| 44 | SE SW SE SE 26-124-78 | Sand and gravel, silty, clayey | 16- 25 |
| 45 | NE NE NE NE 35-124-78 | Sand and gravel, medium to coarse | 12- 28 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|--|--|
| 46 | SE SE SE SW 2-124-77 | Sand and gravel, gray Sand | 12- 21 21- 28 |
| 47 | SW SW NW SW 12-124-77 | Sand | 2- 40 |
| 48 | NE NE NE NE 13-124-77 | Gravel, fine and sand | 4- 33 |
| 49 | NE NW NW NW 14-124-77 | Sand, medium to coarse Sand and gravel, medium to coarse Sand and gravel; abundant coal, very coarse from 50 to 150 feet | 0- 10 10- 18 21-150+ |
| 50 | NE 15-124-77 | Sand, dark, fine; takes water Sand, dark, fine Sand, blue, fine to medium Sand, medium to coarse; coal, takes water Sand, coarse Gravel Sand and gravel Sand, coarse and gravel; large deposits of coal | 2- 20 20- 27 27- 35 35- 50 50- 55 55- 75 75- 80 80- 95+ |
| 51 | SW SW SE SW 14-124-77 | Sand, brown, fine to coarse; dry, some silt, interbedded with brown, sandy, moist clay | 6- 18 |
| 52 | SW SW SW SW 16-124-77 | Sand, medium to coarse and fine gravel | 10- 19 |
| 53 | SW SW NW SW 17-124-77 | Sand, yellow-brown, very fine; dry, some clay | 0- 6 |
| 54 | SE SE SE SE 20-124-77 | Gravel, sandy | 24- 32 |
| 55 | SE SE SW SE 21-124-77 | Sand, light-brown, medium to coarse and gravel; dry | 0- 5 |
| 56 | SE SE SE NE 28-124-77 | Sand, tan, medium to coarse and gravel; dry Sand, dark-brown; moist, some clay Sand, tan; saturated, some clay | 0- 3 3- 13 19- 26 |
| 57 | SW SW SW SW 26-124-77 | Sand, brown; dry, some clay, hard drilling Sand, brown, clayey and gravel; moist Sand, brown; moist, hard drilling Sand, blue-gray, medium, clayey; saturated | 5- 10 10- 13 13- 15 19- 22 |
| 58 | SE SE NW NW 33-124-77 | Gravel, brown; dry | 4- 5 |
| 59 | SE SE SE NE 34-124-77 | Sand and gravel | 10- 15 |
| 60 | SW SW SW SW 35-124-77 | Sand, tan; dry, some clay Sand, tan, pebbly; dry Sand, tan to brown and gravel; dry | 0- 3 3- 4 4- 6 |
| 61 | SE SE SE SE 36-124-77 | Gravel, brown; dry, very dirty Gravel, brown to black; moist, very dirty Gravel, brown to black; saturated, very dirty | 5- 11 11- 13 13- 15 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|----------------------|--|---|
| | | Gravel, dark-brown; saturated | 19- 23 |
| 62 | NW NE NE NW 6-124-76 | Sand, tan, clayey; dry Sand, red-brown, gravelly, clayey; dry Sand, brown, clayey; moist Sand, brown, coarse, clayey; saturated | 6- 11 11- 20 20- 25 25- 49 |
| 63 | SW SE SE SW 6-124-76 | Sand, brown; dry Sand, brown, gravelly; dry Sand, brown, clayey; moist Sand, brown, clayey; saturated | 9- 17 17- 24 24- 33 33- 43 |
| 64 | NW 5-124-76 | Sand, coarse and gravel | 22- 58 |
| 65 | NE SE NW SE 5-124-76 | Sand, red-brown, gravelly, clayey; moist Sand, brown, gravelly; saturated Sand, brown; saturated | 0- 6 6- 15 15- 40 |
| 66 | NW NE SW SE 5-124-76 | Gravel, coarse and coarse sand; moist Sand, coarse and fine gravel; saturated Sand, blue, coarse, clayey; saturated | 4- 9 9- 29 29- 34 |
| 67 | NE NE NW NE 8-124-76 | Sand, tan, fine; dry, dirty Gravel, tan to brown, medium, sandy; dry Sand, brown, medium; moist Sand, brown, medium; saturated Sand, brown, coarse; saturated | 1- 5 5- 10 10- 13 13- 17 17- 31 |
| 68 | SE NE NE NE 8-124-76 | Gravel, coarse and medium to coarse sand Gravel, medium to very coarse and fine sand Sand, medium Sand, medium and brown clay Sand, fine; saturated | 4- 14 14- 19 19- 29 29- 34 34- 39 |
| 69 | NW NW SW NE 8-124-76 | Sand, fine to coarse Sand, fine Sand, medium Sand, fine Sand and coal | 4- 10 10- 30 30- 50 50- 60 60- 63 |
| 70 | SW NW SW NW 9-124-76 | Sand, brown, fine; dry, dirty Sand, brown, medium; dry, some clay Gravel, brown; dry, some clay, dirty Gravel, brown; moist Gravel, brown; saturated Gravel, brownish-gray; saturated, some clay Sand, brown; saturated, clean | 0- 3 3- 5 5- 8 8- 9 9- 13 13- 19 19- 24 |
| 71 | NE NE NE SE 8-124-76 | Sand, tan, fine, clayey; saturated Sand, tan, gravelly; saturated | 11- 33 33- 34 |
| 72 | SW NW SW SW 9-124-76 | Gravel, fine and coarse sand | 0- 32 |
| 73 | SW 8-124-76 | Sand and gravel Sand, fine | 0- 50 50- 60 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|---|--------------|
| 74 | NW SW SW NW 8-124-76 | Gravel, coarse, silty | 0- 4 |
| | | Sand, fine to coarse and gravel | 4- 9 |
| | | Sand, fine to coarse and medium gravel | 9- 14 |
| | | Sand, coarse and coarse gravel | 14- 19 |
| | | Sand, coarse and medium gravel; saturated | 19- 54 |
| 75 | SE SE NE SE 7-124-76 | Sand | 5- 30 |
| 76 | SW SW SW SE 7-124-76 | Sand, brown, very coarse; dry, dirty | 7- 8 |
| | | Sand, brown, medium; dry, dirty | 8- 9 |
| | | Sand, brown, medium; moist, some clay | 9- 10 |
| | | Sand, brown, medium, clayey; saturated | 10- 28 |
| 77 | SE 7-124-76 | Sand and gravel | 0- 37 |
| 78 | SE NE NE NE 18-124-76 | Sand, coarse and coarse gravel | 9- 14 |
| | | Sand, fine to coarse and gravel | 14- 24 |
| | | Sand, fine to coarse and gravel; moist | 24- 29 |
| | | Sand, fine to coarse and gravel; saturated | 29- 49 |
| 79 | SW NW NW NW 18-124-76 | Gravel and sand | 9- 14 |
| | | Sand, fine to coarse; dry | 14- 19 |
| | | Sand, fine to coarse; moist | 19- 24 |
| | | Sand, coarse; saturated | 24- 29 |
| 80 | SW NE NE NE 19-124-76 | Sand, fine; saturated | 14- 19 |
| 81 | SE 17-124-76 | Sand and gravel, yellow | 0- 20 |
| | | Sand, yellow, medium | 20- 35 |
| 82 | SE SE NE SE 17-124-76 | Gravel, coarse to medium and coarse sand; moist | 4- 9 |
| | | Gravel, coarse and coarse sand; moist | 9- 14 |
| | | Gravel, fine and coarse sand; saturated | 14- 24 |
| 83 | NE NE NE NE 16-124-76 | Sand and gravel; some yellow clay | 0- 26 |
| 84 | NW SE SE SE 9-124-76 | Sand, brown, clayey | 4- 9 |
| | | Sand, brown, medium, clayey | 9- 14 |
| | | Sand, medium and fine to medium gravel | 14- 19 |
| | | Sand, medium; saturated | 19- 34 |
| | | Sand, brown, medium; saturated | 34- 39 |
| 85 | NE SE NE NE 9-124-76 | Sand, clayey; saturated, dirty | 4- 9 |
| | | Gravel and coarse sand; saturated | 9- 39 |
| 86 | NE 10-124-76 | Sand and gravel, yellow | 5- 20 |
| | | Sand, medium to coarse | 20- 48 |
| 87a | SE SE SE SE 3-124-76 | Sand, brown, fine, clayey; dry | 5- 7 |
| | | Sand, brown, fine to medium; saturated | 8- 10 |
| | | Sand, brown, fine to medium, clayey; saturated | 10- 23 |
| | | Sand, brown and gravel; saturated | 23- 39 |
| 87b | SE SE SE SE 3-124-76 | Sand and gravel | 8- 42 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|--|---|
| 88 | SE SE SE SE 2-124-76 | Sand, brown, fine; dry, dirty Sand, brown, fine, clayey; moist Sand, brown, gravelly, clayey; moist Gravel, brown, sandy; dry Sand, red-brown; dry | 0- 14 14- 18 18- 23 23- 27 27- 29 |
| 89 | NW SE SW SW 13-124-76 | Gravel, coarse and sand Sand, medium Gravel, medium to coarse | 0- 4 4- 9 9- 24 |
| 90 | NW NE NE NW 24-124-76 | Sand, brown, silty; dry, some gravel, poorly sorted | 1- 7 |
| 91 | SE SW SW SW 14-124-76 | Sand, light-brown, fine; dry, some clay Sand, light-brown, clayey; dry | 0- 4 4- 5 |
| 92 | SW SW NW SW 15-124-76 | Sand, fine and brown clay Sand, brown, fine; saturated | 9- 14 14- 19 |
| 93 | SE NE NE NE 21-124-76 | Sand, medium and medium gravel | 9- 14 |
| 94 | SE SE SE SE 21-124-76 | Sand, yellow-brown | 0- 2 |
| 95 | SW SW SW SW 31-124-76 | Gravel | 2- 28 |
| 96 | NE SW SE SW 31-124-76 | Gravel, medium and medium sand; moist Sand, medium; moist | 4- 9 9- 14 |
| 97 | SW SW SW SW 5-124-75 | Gravel, coarse | 0- 4 |
| 98 | SW SW SW SW 2-124-75 | Gravel | 12- 26 |
| 99 | SW SW NW SW 1-124-75 | Sand, tan, very fine; dry, few pebbles Gravel, tan to brown, medium; dry | 0- 1 1- 14 |
| 100 | SW SW SW SW 1-124-75 | Sand, tan, clayey; saturated | 10- 17 |
| 101 | SW SW SW SE 13-124-75 | Sand, light-brown, clayey; saturated | 8- 9 |
| 102 | SW SW SW SW 18-124-75 | Sand, yellow-brown, gravelly Gravel | 0- 12 12- 24 |
| 103 | NE NE SE SE 20-124-75 | Gravel, fine to coarse, silty, sandy | 3- 6 |
| 104 | SE SE SE SW 34-124-75 | Sand, very fine, silty | 3- 5 |
| 105 | SE SE SE SE 35-124-75 | Sand and gravel Gravel, medium to coarse | 0- 9 20- 29 |
| 106 | SE SW SW SE 36-124-75 | Sand, brown, medium to coarse and gravel; dry Sand, brown, medium, clayey; dry, dirty Sand, brown, clayey and gravel; moist, very dirty | 0- 4 4- 9 15- 21 |
| 107 | SE SE SW SE 36-124-75 | Sand, brown, fine to medium; dry, some clay | 0- 9 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|---|---|
| 108a | NE SE SE SE 36-124-75 | Sand, brown, fine, clayey; dry | 0- 7 |
| 108b | SE SE SE SE 36-124-75 | Gravel, fine to medium Gravel, medium to coarse and sand | 1- 16 20- 25 |
| 109 | NW NW NW SW 27-124-74 | Gravel, light-brown, medium; moist | 0- 6 |
| 110 | SW SW SW NW 34-124-74 | Sand, dark-brown, medium, pebbly; dry Gravel, dark-brown, medium; dry | 0- 5 5- 8 |
| 111 | SW NE NE SW 2-123-79 | Sand, light-brown, very fine, clayey; dry | 8- 13 |
| 112 | NW NW NW SW 5-123-78 | Sand, coarse and fine gravel | 0- 45 |
| 113 | NW SW SW NW 9-123-78 | Sand, red-brown, fine; dry, some clay | 0- 6 |
| 114 | SE SE SE NE 29-123-78 | Sand, light-brown, clayey; moist Sand, red-brown to brown, medium to coarse and gravel; moist, dirty Sand, yellow-brown, medium to fine, clayey; moist Sand, brown, medium to coarse and gravel; moist | 3- 5 5- 9 19- 29 31- 33 |
| 115 | SE SE SE NW 28-123-78 | Sand | 10- 15 |
| 116 | NE NE NE SW 28-123-78 | Sand, yellow-brown, clayey; dry Sand, brown, clayey; dry, dirty Sand, brown, clayey; moist | 12- 16 16- 19 36- 41 |
| 117 | SW SW NW SE 33-123-78 | Sand, gray to brown, fine to medium; dry Sand, dark-brown, fine and gravel; moist, dirty Sand, dark-brown to black, coarse; moist, very dirty Sand, dark-brown to black, medium; moist, very dirty Sand, dark-brown, fine; moist, dirty | 5- 10 10- 17 17- 26 26- 30 30- 37 |
| 118 | SW NE NE NE 1-123-77 | Gravel, medium and fine sand; dry, some moist, brown clay Sand, fine to medium; saturated Sand, medium and blue clay; saturated | 9- 14 14- 19 19- 24 |
| 119 | NW NW NW NW 25-123-77 | Gravel, fine | 16- 18 |
| 120 | NE SW NW NW 6-123-76 | Sand, coarse and fine gravel Gravel, medium, clayey; saturated | 4- 9 9- 14 |
| 121 | SE SE NE NW 6-123-76 | Gravel, fine to medium and coarse sand, clayey Sand, fine to medium; moist Sand, fine to medium; saturated Sand, fine, clayey; saturated | 0- 4 4- 14 14- 19 19- 29 |
| 122 | SW SE NW NE 6-123-76 | Gravel, fine and coarse sand; some brown clay | 9- 14 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|---|-----------------------------------|
| 123 | SW NW NE NE 6-123-76 | Sand, clayey; saturated Sand, medium; saturated | 14- 19 19- 24 |
| 124 | SW NW NW NW 5-123-76 | Sand, fine and coarse gravel | 4- 9 |
| 125 | SE SE NW NW 5-123-76 | Sand, coarse and fine gravel; saturated | 9- 14 |
| 126 | SW SE SE SE 8-123-76 | Sand, fine to medium Gravel, fine to medium | 1- 3 3- 5 |
| 127 | NW NW NW NW 3-123-76 | Sand and gravel | 1- 24 |
| 128 | SW SW NW NW 3-123-76 | Gravel, coarse, clayey; brown at 4 feet, trace of sand | 4- 9 |
| 129 | SW NW NW SW 3-123-76 | Gravel, coarse | 6- 8 |
| 130 | SE NE NE NE 3-123-76 | Gravel, medium with light-brown laminated clay; saturated Sand, fine, clayey; saturated Sand, brown, medium to coarse; saturated | 4- 9 9- 14 14- 24 |
| 131 | SE NE SE NE 3-123-76 | Sand, coarse and fine gravel; moist, some brown clay Sand, dark-gray, fine, clayey; saturated | 4- 9 9- 14 |
| 132 | SW NW SW SW 2-123-76 | Gravel, brown to black, clayey; dry | 4- 5 |
| 133 | NE NE NE NE 14-123-76 | Sand and gravel; some clay | 25- 30 |
| 134 | SW NW NW SW 35-123-76 | Gravel, brown, clayey; moist, dirty | 5- 7 |
| 135 | NW NW NW NW 36-123-76 | Sand, fine to medium; thin clay(?) stringers Sand, fine to medium; mixed glacial and western | 19- 28 33- 38 |
| 136 | SE SE SE SW 25-123-76 | Gravel, light-brown, coarse, silty; dry, dirty Sand, brown, medium; dry, dirty Gravel, brown, coarse; dry, dirty Sand, light-brown, fine; saturated, some clay | 4- 7 7- 11 12- 15 27- 31 |
| 137 | SW SW SW NW 6-123-75 | Gravel, brown; dry | 1- 6 |
| 138 | NW NW SW SW 15-123-75 | Sand, brown, gravelly; dry, dirty Sand, brown, gravelly; dry, some clay | 0- 3 3- 8 |
| 139 | SW SW SW SW 28-123-75 | Sand, yellow, silty Gravel, fine to medium | 1- 4 15- 18 |
| 140 | SW SW SW SW 32-123-75 | Sand, fine, silty Gravel, medium to coarse Gravel and gravelly clay | 1- 2 2- 3 38- 46 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|---|---|
| 141 | SW SE SE SE 27-123-75 | Sand, yellow, silty; black organics at 10 feet Gravel | 1- 14 37- 44 |
| 142 | SE SE NE NE 26-123-75 | Sand, yellow-brown Gravel | 0- 21 21- 28 |
| 143 | NE NE NE NE 24-123-75 | Gravel, fine to medium, clay stringers Sand, medium to coarse; shell fragment from 50 to 60 feet | 26- 34 44- 60 |
| 144 | NW NW NW NE 3-123-74 | Gravel, light-brown and fine sand; dry | 0- 5 |
| 145 | NE NE NE NE 1-123-74 | Sand and gravel; some clay Sand, medium to coarse | 0- 15 29- 38 |
| 146a | SW SE SE SW 12-123-74 | Gravel, fine to medium, sandy; some clay from 4 to 8 feet Gravel, medium, sandy; saturated, slightly clayey | 0- 8 8- 14 |
| 146b | SW SE SE SW 12-123-74 | Sand, tan, fine; some gravel Gravel, brown, fine, sandy; some silt and clay from 5 to 9 feet Sand, coarse, silty, clayey; saturated, trace of gravel Gravel, fine, to medium sand, brown; slightly silty and clayey | 0- 2 2- 9 10- 13 13- 17 |
| 147 | SE SE SW SW 10-123-74 | Sand, coarse, silty Gravel, gray, fine, very silty; some sand Sand, medium to coarse, silty Sand, fine; slightly silty Silt and very fine sand, brown | 10- 13 13- 16 16- 20 20- 24 24- 34 |
| 148 | NW SW NW SW 15-123-74 | Gravel, dark-brown, medium, very silty | 0- 3 |
| 149 | NW SW SW SW 14-123-74 | Gravel, medium to coarse | 0- 5 |
| 150 | NE NE NE NE 22-123-74 | Sand, very fine; some silt Gravel, fine; some clay and sand | 6- 9 15- 19 |
| 151 | NE SE SE NE 22-123-74 | Gravel, brown; dry Gravel, brown; moist Gravel, brown; saturated | 0- 8 8- 9 9- 10 |
| 152 | NW SW SW NW 23-123-74 | Gravel, brown, fine; saturated, some clay | 10- 12 |
| 153 | SE SE SE NE 14-123-74 | Sand, brown, fine Gravel, brown, fine, sandy Sand, medium; trace of gravel Gravel, brown, fine and fine sand; saturated at 26 feet, silty and clayey from 24 to 27 feet Sand, brown, fine, silty, clayey Gravel, fine, sandy; very silty and clayey from 34 to 39 feet | 0- 2 2- 7 7- 14 14- 27 27- 29 29- 39 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|--|--------------|
| 154 | NE NW NW NW 24-123-74 | Sand and gravel, red, clayey | 0- 3 |
| | | Sand and gravel, red; saturated, some clay | 3- 14 |
| | | Sand and gravel, brown; saturated, some clay | 14- 29 |
| 155 | NE NE SE NE 24-123-74 | Sand, medium; clean | 3- 12 |
| | | Gravel, fine to medium; very loose | 12- 36 |
| 156 | SE SW SE SW 23-123-74 | Gravel, brown, fine, sandy; saturated at 5 feet, silty and clayey from 4 to 10 feet, gray at 10 feet | 1- 12 |
| 157 | NE NE NE NW 25-123-74 | Sand, tan, fine, gravelly | 0- 3 |
| | | Gravel, brown, medium | 3- 6 |
| | | Gravel, brown, fine | 6- 10 |
| | | Sand, fine, gravelly; some silt and clay | 10- 13 |
| | | Sand, brown, fine to coarse, silty, clayey | 13- 16 |
| | | Gravel, brown, fine; slightly silty and clayey | 16- 17 |
| | | Sand, brown, fine, silty, clayey | 17- 19 |
| | | Sand, brown, coarse, silty, clayey | 19- 20 |
| 158 | NE SE SE NE 25-123-74 | Sand, fine, very gravelly | 0- 2 |
| | | Sand, medium, very gravelly | 2- 4 |
| 159 | NW NE NE NW 36-123-74 | Sand and gravel, brown; saturated, unsorted | 9- 19 |
| 160 | NE NE SE NE 35-123-74 | Silt and very fine sand, brown | 0- 3 |
| | | Sand, fine to medium; trace of gravel | 3- 7 |
| | | Sand, medium; saturated at 12 feet, clayey from 12 to 15 feet | 7- 15 |
| | | Sand, medium to coarse, clayey; gray at 23 feet | 15- 26 |
| | | Sand, gray, coarse, gravelly, clayey | 26- 34 |
| 161 | NE NE NE SE 36-123-74 | Sand, very fine to fine; trace of gravel | 0- 4 |
| | | Sand, medium, silty; trace of gravel | 4- 6 |
| | | Sand, medium to coarse, silty; saturated at 9 feet | 6- 14 |
| | | Sand, coarse; slightly silty | 14- 16 |
| | | Sand, gray, medium; slightly silty | 16- 18 |
| 162 | NE SE SW SW 18-123-73 | Clay, brown; some gravel | 0- 14 |
| | | Clay and fine sand; saturated | 14- 44 |
| 163 | SE SE SE SW 30-123-73 | Sand, white, very fine | 2- 3 |
| | | Sand, brown, fine; trace of gravel | 3- 5 |
| 164 | NW NW NW SW 31-123-73 | Sand, fine; some gravel | 0- 6 |
| | | Sand, medium; saturated, some clay, gray and clayey from 9 to 12 feet | 6- 12 |
| | | Sand, gray, coarse, to fine gravel; some clay | 12- 14 |
| 165 | SE SE SW SW 15-122-78 | Sand, light-tan, very fine and silt | 2- 16 |
| | | Gravel, fine to medium, silty, clayey | 16- 20 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|---|---|
| 166 | NE SE NE NE 35-122-77 | Sand, tan, medium to coarse, very clayey and gravelly; dry, dirty, easy drilling | 0- 5 |
| 167 | SW SW NW SW 4-122-76 | Gravel, brown, very clayey; saturated Sand, brown, very clayey, rocky; saturated Sand, tan, clayey; saturated | 13- 16 16- 18 20- 24 |
| 168 | SE SE NE NE 4-122-76 | Gravel, light-tan, silty, clayey; dry Sand, brown; dry, some gravel stringers | 3- 6 6- 8 |
| 169 | SW SW SW SW 9-122-76 | Gravel, fine to medium | 3- 6 |
| 170 | SE SE NE NE 9-122-76 | Gravel, brown; dry, some clay, dirty | 8- 9 |
| 171 | NW NE SE SE 1-122-76 | Sand, light-brown, fine; dry, some clay Sand, light-brown and gravel; dry, some clay, dirty Sand, light-brown, medium; dry, some clay Gravel, brown, clayey; moist | 0- 5 5- 6 8- 11 11- 21 |
| 172 | SE SE SE SE 11-122-76 | Gravel, medium | 2- 5 |
| 173 | NE NW 23-122-76 | Clay and sand Sand; saturated | 1- 25 25- 30 |
| 174 | SE SE SE SW 24-122-76 | Sand, tan, very fine, very clayey; dry Sand, tan, fine to medium, very clayey; moist | 18- 31 33- 35 |
| 175 | SW SW SW SE 23-122-76 | Sand, light-tan, very fine; dry Sand, light-tan, fine; dry | 0- 14 14- 24 |
| 176 | SW SE SW SW 23-122-76 | Sand, yellow-brown, very fine, silty; coarser at depth Sand, coarse, to fine gravel Sand, very fine, silty | 0- 16 16- 18 22- 61 |
| 177 | SE SE SE SE 22-122-76 | Sand, light-tan, medium; dry Sand, light-tan, fine; moist, some clay Sand, light-tan, fine to medium; moist, some clay and small pebbles Sand, tan, clayey; moist | 0- 10 10- 21 21- 26 26- 40 |
| 178 | NE NW NE NE 18-122-76 | Gravel, brown, very clayey; dry | 7- 8 |
| 179 | NE NW NW NW 29-122-76 | Sand, brown, medium to coarse, clayey and gravel; dry Sand, brown, medium to coarse, clayey | 3- 6 6- 14 |
| 180 | NW SW SW NW 29-122-76 | Sand, light-brown, very fine and medium gravel; dry Sand, brown, fine to medium, very clayey and gravelly; dry Sand, brown, very clayey, pebbly; dry Sand, brown, clayey; dry, easy drilling, caving Sand, brown, clayey and gravel; moist, dirty | 7- 10 10- 13 13- 16 16- 18 18- 19 |
| 181 | NW NW NW NW 28-122-76 | Gravel, fine to medium; high shale pebble content | 16- 21 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|--|--------------|
| | | Sand, tan, very fine | 21- 27 |
| | | Sand, light-gray, very fine; grading downward to silt | 27- 47 |
| | | Gravel, fine, to medium sand | 47- 58 |
| 182 | NW NE NE NE 34-122-76 | Sand, very light-tan, very fine and silt | 1- 3 |
| | | Sand, reddish-brown, very fine | 3- 12 |
| 183 | SW SE SE SE 7-122-75 | Sand, fine to medium | 2- 3 |
| 184 | SW SW SW SW 9-122-75 | Gravel | 18- 19 |
| | | Gravel | 20- 25 |
| 185 | NE NE NE NW 15-122-75 | Gravel, dark-brown; dry, dirty | 0- 5 |
| | | Sand, dark-brown, medium to coarse; dry, some gravel | 5- 7 |
| 186 | NE NE NE NE 13-122-75 | Sand, coarse, to fine gravel | 26- 43 |
| 187 | SW SW SW SW 19-122-74 | Gravel, fine to medium | 4- 6 |
| 188 | SE SE SE NE 2-122-74 | Sand, gray-brown, very fine; trace of gravel increasing downward | 0- 8 |
| | | Sand, brown, fine | 8- 13 |
| | | Sand, brown, fine to coarse; some fine gravel | 13- 15 |
| | | Gravel, brown, fine, sandy, clayey | 15- 17 |
| | | Sand, brown, fine, silty, clayey; saturated, coarse sand from 20 to 21 feet | 17- 21 |
| | | Sand, gray, fine; some silt and clay and medium to coarse sand | 21- 23 |
| 189 | NW NW NW NW 1-122-74 | Sand, dark-brown, medium, silty; saturated | 5- 7 |
| | | Sand, gray, medium to coarse | 7- 11 |
| 190 | NE NE NE NW 1-122-74 | Sand, tan, fine with granules | 1- 4 |
| | | Sand, brown, fine; some silt, clay and medium to coarse sand | 4- 6 |
| | | Sand, brown, fine; saturated at 7 feet, less silt and clay, some medium sand from 10 to 12 feet | 6- 12 |
| | | Sand, brown, fine to medium, very silty and clayey | 12- 13 |
| | | Sand, brown, fine, silty, clayey; some medium sand | 13- 22 |
| | | Sand, gray, fine, silty, clayey; some medium to coarse sand, more silt and clay from 25 to 27 feet | 22- 27 |
| 191 | NE NE NE SE 1-122-74 | Gravel, fine | 3- 6 |
| | | Sand, brown, fine to medium | 6- 8 |
| | | Gravel, brown, fine, sandy | 8- 16 |
| | | Sand, brown, medium to coarse, gravelly; some silt and clay | 16- 19 |
| | | Gravel, brown, fine; some silt and clay | 19- 24 |
| | | Sand, brown, fine to medium, silty, clayey; some coarse sand from 33 to 36 feet, gray at 46 feet | 24- 48 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|---|--------------|
| 192 | SE SE SE SE 1-122-74 | Sand, fine; few granules and some clay | 0- 4 |
| | | Sand, fine to medium, clayey; some fine gravel | 4- 12 |
| | | Sand, medium; trace of gravel | 12- 19 |
| | | Sand, medium, very clayey | 19- 22 |
| | | Sand, medium to coarse, clayey; saturated at 22 feet, gray at 27 feet | 22- 36 |
| | | | |
| 193 | NE NE NE NW 12-122-74 | Sand, tan, very fine; some gravel | 1- 8 |
| | | Sand, brown, medium, gravelly, silty, clayey | 8- 11 |
| | | Sand, brown, coarse, gravelly | 11- 12 |
| | | Sand, brown, fine | 12- 16 |
| | | Sand, coarse and fine gravel; some fine sand, silt and clay | 16- 22 |
| | | Sand, brown, medium, silty, clayey; gray at 29 feet, more sand and less clay from 29 to 33 feet | 22- 33 |
| | | Sand, medium to coarse; clayey from 36 to 41 feet | 33- 41 |
| 194 | SE SE NW NE 12-122-74 | Sand, fine to medium, gravelly, clayey | 2- 4 |
| | | Sand, medium, gravelly, clayey | 4- 14 |
| | | Gravel, fine, sandy, clayey | 14- 20 |
| | | Sand, medium, gravelly, clayey; saturated at 26 feet, gray at 30 feet | 20- 35 |
| | | Sand, gray, medium to coarse; slightly on coarse side | 35- 44 |
| 195 | SE SE NE NE 12-122-74 | Sand, brown, very fine to fine | 0- 2 |
| | | Sand, tan, fine; slightly gravelly | 2- 4 |
| | | Gravel, brown to tan, fine | 4- 9 |
| | | Sand, brown, medium, gravelly; sand becoming coarser and more gravelly | 9- 18 |
| | | Sand, brown, coarse and gravel | 18- 25 |
| | | Sand, brown, fine to coarse, silty, clayey; saturated, some gravel, gray at 26 feet | 25- 30 |
| 196 | SE SE SE NE 12-122-74 | Sand, very fine; some gravel | 0- 4 |
| | | Sand, fine; gravel content increasing | 4- 10 |
| | | Sand, fine to medium, gravelly | 10- 13 |
| | | Sand, medium, gravelly; some clay | 13- 20 |
| | | Sand, brown, fine to medium; saturated, some clay, gray at 24 feet | 20- 29 |
| 197 | SE SE SE SW 12-122-74 | Sand, very fine; occasional pebble | 0- 5 |
| | | Sand, brown, fine, gravelly; becoming silty and clayey | 5- 16 |
| | | Sand, brown, medium; saturated, some silt and clay | 16- 17 |
| | | Sand, brown, fine to medium, much coarse sand; gray at 23 feet, some silt and clay | 17- 26 |
| | | Sand, gray, medium; silty and clayey from 35 to 42 feet | 26- 42 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|--|---|
| 198 | NE NW NW NE 14-122-74 | Sand, coarse; clean Sand, medium, clayey | 1- 5 5- 25 |
| 199 | SE SE SW SE 14-122-74 | Sand, brown, fine; saturated, trace of coarse sand Sand, gray, fine | 6- 9 9- 17 |
| 200 | SE SE SE SW 13-122-74 | Sand, very fine, silty Sand, medium; saturated, gray at 11 feet Sand, medium to coarse, gravelly Sand, coarse to very coarse Sand, fine to medium; some clay Sand, medium, pebbly, clayey | 2- 5 5- 15 15- 18 18- 26 26- 29 29- 35 |
| 201 | SE SE SE SE 13-122-74 | Sand, fine Sand, fine to medium | 1- 2 24- 26 |
| 202 | NE NE NE SE 23-122-74 | Sand, red-brown, very clayey; saturated, dirty Sand, gray, very clayey; saturated, dirty | 7- 11 11- 17 |
| 203 | NE NE NE NE 28-122-74 | Sand, gray, fine, clayey; saturated | 11- 19 |
| 204 | NW NW NW NW 33-122-74 | Sand | 15- 17 |
| 205 | SW SW SW SE 28-122-74 | Sand, light-tan to gray, medium; moist, some clay | 13- 18 |
| 206 | SE SW SE SW 27-122-74 | Sand, brown, medium, silty; dry | 12- 21 |
| 207 | NE NW NE NW 34-122-74 | Sand, yellow-brown, very fine, clayey; dry Sand, yellow-brown, fine, clayey; dry | 5- 12 12- 15 |
| 208 | SW SW SW NW 34-122-74 | Sand, light-brown, medium; moist Sand, light-brown, fine; moist Sand, brown, medium; moist, clean | 8- 10 10- 14 14- 43 |
| 209 | SE SE SE SE 26-122-74 | Sand, light-tan, medium to coarse; some granules and pebbles Sand, light-brown, fine to medium Gravel, fine, very sandy Sand, fine to medium Gravel, fine, very sandy Sand, light-gray, fine to medium; very well sorted Sand, gray, medium to coarse, clayey; moist Sand, gray, fine to medium, very clayey; saturated | 2- 6 6- 8 8- 14 14- 15 15- 20 20- 37 37- 38 38- 64 |
| 210 | NW NW NW NW 6-122-73 | Sand, light-tan, fine Sand, reddish-brown, medium to coarse; saturated, slightly clayey and silty Sand, medium; some gravel Sand, coarse; gray at 20 feet, some gravel | 1- 7 7- 11 11- 13 13- 23 |
| 211 | NE NE NE NW 6-122-73 | Sand, fine; trace of gravel Sand, fine, gravelly; very clayey from 18 to 26 feet Sand, medium to coarse, very clayey; saturated, gray at 30 feet | 0- 4 4- 26 26- 36 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|--|---|
| 212 | NE NE NE NW 7-122-73 | Sand, fine, gravelly Sand, medium, gravelly Gravel, fine, sandy; slightly clayey Gravel, medium to coarse Sand, medium, clayey; saturated, slightly gravelly Sand, gray, medium to coarse, gravelly, clayey | 0- 4 4- 9 9- 14 14- 17 17- 23 23- 26 |
| 213 | SW SW NW SW 31-122-73 | Gravel, medium to coarse Gravel, coarse | 0- 17 23- 26 |
| 214 | NW NE SW SW 5-121-77 | Gravel, fine to coarse | 1- 7 |
| 215 | NW NE NW NE 4-121-77 | Sand, brown, fine to medium; saturated, very dirty, clayey at base | 16- 29 |
| 216 | SW SE NE SW 4-121-77 | Sand, tan, very fine to coarse and gravel; dry | 2- 6 |
| 217 | NW SW NW SW 11-121-77 | Sand, tan, fine, clayey; dry | 0- 5 |
| 218 | NE SE SE NE 12-121-77 | Sand, brown, medium to coarse, silty; dry, some gravel Gravel, brown, fine to coarse, silty, sandy; dry | 1- 7 7- 13 |
| 219 | SE SW 3-121-76 | Clay and sand; saturated | 17- 20 |
| 220 | NW SW SW SE 3-121-76 | Sand, brown, fine to coarse, silty; moist, some gravel | 0- 5 |
| 221 | SE SW 2-121-76 | Sand; saturated | 1- 17 |
| 222 | NW NW 7-121-75 | Sand; saturated | 15- 20 |
| 223 | SW SW SW NW 4-121-75 | Sand and gravel | 26- 37 |
| 224 | SE SE SE NW 4-121-75 | Sand | 3- 5 |
| 225 | NW NW NE SE 4-121-75 | Gravel, fine to medium and fine to coarse sand, silty | 6- 14 |
| 226 | NE SE 30-121-75 | Sand and clay | 1- 15 |
| 227 | NW NW 17-121-74 | Sand; saturated | 10- 15 |
| 228 | NW NW NW SW 17-121-74 | Sand, fine; some gravel Gravel, fine to medium; some sand, a little clay Sand, fine to medium, gravelly Sand, medium to coarse, clayey; saturated Sand, gray, medium, clayey; saturated, some gravel | 2- 6 6- 10 10- 16 16- 20 20- 27 |
| 229 | SW SW SW NW 16-121-74 | Sand, fine, very clayey Sand, fine, gravelly, clayey Gravel, fine to medium, very sandy Gravel, fine to medium, very sandy and clayey; moist Sand, coarse, to fine gravel, very clayey; saturated | 0- 4 4- 8 8- 14 14- 22 22- 26 |
| 230 | SW SW NW NW 15-121-74 | Sand, light-tan, very fine | 0- 3 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|--|--------------|
| | | Gravel, medium-brown, fine to medium, sandy | 3- 11 |
| | | Sand, medium-brown, medium, gravelly | 11- 14 |
| | | Gravel, medium-brown, fine, very sandy | 14- 20 |
| | | Sand, medium-brown, fine to medium, very gravelly | 20- 25 |
| | | Sand, medium-brown, fine to coarse; saturated at 26 feet, turning gray at 29 feet, slightly clayey and silty with few granules | 25- 33 |
| 231 | SW SW SW SW 11-121-74 | Sand, fine, clayey; slightly gravelly | 0- 6 |
| | | Sand, medium, clayey; slightly gravelly | 6- 11 |
| | | Gravel, fine to medium, sandy, clayey | 11- 15 |
| | | Sand, coarse, to fine gravel, clayey | 15- 21 |
| | | Sand, medium to coarse, very gravelly, clayey; saturated, unoxidized at 26 feet | 21- 30 |
| | | Sand, medium, very clayey | 30- 40 |
| 232 | SW SW SW SW 2-121-74 | Sand, fine | 0- 5 |
| | | Gravel, fine to medium | 5- 13 |
| | | Sand, coarse, gravelly, clayey; saturated | 13- 14 |
| 233 | SE SE SE SE 2-121-74 | Gravel, brown, fine to coarse, very silty; moist | 5- 8 |
| | | Sand, brown, medium to coarse, very clayey and gravel; moist | 8- 27 |
| 234 | SE SE SE NE 2-121-74 | Sand, medium-brown, fine; some fine gravel | 2- 4 |
| | | Gravel, medium-brown, medium to coarse | 4- 5 |
| | | Sand, medium-brown, medium; some gravel | 5- 6 |
| | | Gravel, medium-brown, medium to coarse | 6- 10 |
| | | Gravel, medium-brown, fine to medium | 10- 12 |
| | | Gravel, medium-brown, medium | 12- 13 |
| | | Gravel, medium-brown, medium to coarse | 13- 21 |
| 235 | SE SE SE SE 12-121-74 | Sand, dark-brown, medium, very clayey; saturated, very dirty | 24- 26 |
| | | Sand, dark-gray, medium, very clayey; saturated, very dirty | 26- 31 |
| | | Sand, dark-gray, fine to medium; saturated, very dirty | 31- 46 |
| 236 | NE NE NE NE 13-121-74 | Sand, fine to medium | 0- 5 |
| | | Gravel, medium to coarse | 13- 14 |
| 237 | SE SE SE SE 15-121-74 | Sand, very fine, silty with few granules | 4- 6 |
| | | Sand, light-tan, very fine | 6- 7 |
| | | Gravel, medium-brown, fine to medium | 7- 9 |
| | | Sand, brown, medium; some coarse sand and granules | 9- 17 |
| | | Sand, dark-brown, fine to coarse, silty, clayey; abundant granules | 17- 22 |
| | | Sand, brown, medium, clayey, silty; saturated | 22- 25 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|--|--------------|
| | | Sand, brown, medium to coarse; some silt and clay | 25- 28 |
| | | Sand, brown, fine; some silt and clay | 28- 30 |
| | | Sand, brown, medium to coarse; some silt and clay | 30- 40 |
| | | Sand, dark-brown, medium; less silt and clay, few granules | 40- 42 |
| | | Gravel, gray, fine; some sand, silt and clay | 42- 46 |
| 238 | SW SW SW SW 15-121-74 | Sand, light-tan, very fine; few granules | 2- 5 |
| | | Sand, medium-brown, fine; some gravel | 5- 10 |
| | | Gravel, brown, fine to medium, sandy; moist from 22 to 27 feet, some silt and clay | 10- 27 |
| | | Sand, brown, medium; some gravel with silt and clay | 27- 28 |
| | | Gravel, brown, fine to medium, very sandy, silty and clayey | 28- 30 |
| | | Sand, dark-brown, fine to coarse, very silty and clayey; some gravel | 30- 33 |
| | | Sand, brown, medium to coarse; some silt and clay | 33- 36 |
| 239 | SW SW SW NW 22-121-74 | Sand, fine | 0- 4 |
| | | Sand, fine to medium, gravelly, clayey; more gravel from 9 to 16 feet | 4- 16 |
| | | Sand, medium, clayey; saturated | 16- 27 |
| | | Sand, coarse, clayey | 27- 34 |
| | | Sand, coarse, to fine gravel, clayey | 34- 40 |
| 240 | SW SW SW SE 16-121-74 | Sand, fine | 0- 5 |
| | | Sand, fine, gravelly; slightly clayey | 5- 9 |
| | | Sand, fine to medium, gravelly, very clayey | 9- 14 |
| | | Sand, coarse, to fine gravel, clayey; saturated at 22 feet | 14- 26 |
| 241 | SW SW NE SW 21-121-74 | Sand; saturated at 4 feet | 3- 30 |
| 242 | NE NE NE SE 20-121-74 | Gravel, fine to medium | 4- 24 |
| 243 | SE NE SE SE 20-121-74 | Sand, fine, very silty | 0- 6 |
| | | Sand, medium, gravelly, very clayey; saturated | 6- 9 |
| | | Sand, coarse, to fine gravel, clayey; unoxidized, saturated | 9- 15 |
| | | Sand, coarse, to fine gravel; saturated | 15- 27 |
| 244 | NE NE NE SE 19-121-74 | Gravel, brown, fine, sandy; saturated at 4 feet, moderate silt and clay | 0- 6 |
| | | Gravel, gray, fine; some sand | 6- 8 |
| | | Gravel, gray, medium; slightly silty and clayey | 8- 13 |
| | | Gravel, gray, medium | 13- 18 |
| 245 | SW SE SE SE 19-121-74 | Sand and gravel; dirty | 4- 13 |
| | | Sand, very clayey | 13- 20 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|---|---|
| 246 | NW SW SW NW 30-121-74 | Sand, fine to medium; slightly gravelly, some clay | 0- 7 |
| 247 | SW SW SW NW 29-121-74 | Sand, fine, gravelly Sand, medium; some gravel and clay Sand, medium to coarse, gravelly, clayey Sand, coarse, very clayey; saturated Sand, coarse, to fine gravel, very clayey | 0- 5 5- 7 7- 9 9- 12 12- 14 |
| 248 | SW SE SE SE 30-121-74 | Sand, tan, very fine; some gravel | 2- 10 |
| 249 | SW SW SE SE 31-121-74 | Gravel, brown, medium and very fine sand Sand, tan, very fine to fine, gravelly | 1- 5 5- 7 |
| 250 | NE NE NE SE 32-121-74 | Sand, fine Sand, fine to medium, clayey; a little gravel Sand, medium to very coarse, clayey; saturated Sand, coarse, to fine gravel, clayey; turning gray at 20 feet | 0- 6 6- 10 10- 14 14- 24 |
| 251 | SE SE SE SW 29-121-74 | Sand, tan, very fine to fine | 3- 4 |
| 252 | NW NW NW NW 33-121-74 | Sand, brown, very fine; dry, some clay, dirty Sand, brown, fine to medium; dry, some clay, dirty Gravel, dark-brown, clayey; saturated, very dirty Sand, brown, clayey; saturated Gravel, brown, fine; saturated | 5- 7 7- 12 14- 17 17- 22 22- 25 |
| 253 | NE NE NE NE 32-121-74 | Sand, fine; some gravel Sand, medium, gravelly, clayey Sand, fine to coarse, clayey; saturated, less clay from 14 to 20 feet, gray at 20 feet | 2- 6 6- 11 11- 24 |
| 254 | NE NE NE SE 29-121-74 | Sand, yellow, very fine; contains occasional granules Sand, brown, medium; dark-brown from 12 to 15 feet, saturated at 15 feet, medium-brown from 15 to 21 feet, some silt and clay Sand, brown, coarse, silty, clayey; gray at 23 feet Gravel, gray, fine; some silt and clay | 1- 5 5- 21 21- 26 26- 30 |
| 255 | NW SW SW NW 28-121-74 | Sand and gravel Gravel, rocky | 0- 7 20- 22 |
| 256 | NE NE NE NW 27-121-74 | Clay and gravel Gravel, pea-sized Sand, medium; loose | 3- 7 7- 45 45- 55 |
| 257 | NE NW NW NE 27-121-74 | Gravel Gravel, fine to medium | 1- 2 5- 14 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|-----------------------|--|---|
| | | Gravel, coarse | 14- 30 |
| 258 | SE SE SE SE 24-121-74 | Sand and gravel, coarse Sand and gravel, medium to coarse | 2- 10 25- 45 |
| 259 | NW NW NW NE 34-121-74 | Sand, fine; slightly gravelly Sand, fine to medium; slightly gravelly, very clayey from 9 to 14 feet Sand, coarse, to fine gravel, clayey Gravel, fine to medium, very clayey Sand, coarse, to fine gravel, very clayey | 0- 4 4- 14 14- 19 19- 26 26- 34 |
| 260 | NW NW NW NW 34-121-74 | Gravel, brown, fine; some fine sand Gravel, fine; some fine sand Sand, dark-brown, fine; a little gravel Sand, fine to coarse, gravelly, silty, clayey; very silty and clayey from 16 to 19 feet Sand, brown, fine to medium, silty, clayey; saturated, some coarse sand and gravel Sand, brown, coarse, gravelly; slightly silty and clayey Gravel, brown, fine, sandy; gray at 37 feet, some silt and clay | 2- 4 4- 8 8- 12 12- 19 19- 23 23- 26 26- 40 |
| 261 | NW NW NW SW 34-121-74 | Sand, tan, very fine; trace of gravel Sand, dark-brown, medium; some clay and silt Sand, fine to coarse, gravelly, very clayey and silty Sand, brown, fine to coarse, silty, clayey; saturated Sand, brown, fine to medium; some silt and clay Sand, brown, medium, gravelly; gray at 28 feet | 2- 4 4- 9 9- 15 18- 20 20- 26 26- 30 |
| 262 | NE SW SW SE 33-121-74 | Sand; some clay Sand and gravel | 0- 17 17- 46 |
| 263 | SE SE SE SE 33-121-74 | Sand, tan, very fine Gravel, tan, fine Sand, medium, gravelly Sand, brown, fine to coarse, silty and clayey with granules | 3- 9 9- 10 10- 13 13- 14 |
| 264 | SW SW SW SE 34-121-74 | Gravel, tan, fine to medium, sandy Gravel, brown, medium, sandy | 0- 5 5- 9 |
| 265 | SE SE SE SE 35-121-74 | Sand and gravel | 2- 4 |
| 266a | SW SW NW NW 6-121-73 | Sand, light-brown, very coarse to very fine, gravelly; saturated, poorly sorted Sand, brown, very coarse to fine, gravelly | 5- 40 40- 45 |

| Test Hole No. | Location | Lithologic Description | From-to Feet |
|---------------|----------------------|--|---|
| 266b | SW SW NW NW 6-121-73 | Sand, light-brown, gravelly, boulders; saturated at 10 feet, calcareous | 5- 14 |
| 267 | NW NW NW NW 7-121-73 | Sand, brown, very fine to coarse, silty; dry, some gravel | 5- 9 |
| 268 | NW NW NW NE 1-120-75 | Sand, light-tan, very fine; occasional granules Gravel, medium-brown, fine to medium and very fine sand | 2- 4 4- 10 |
| 269 | NW NW NW NW 6-120-74 | Sand, fine Gravel, fine to medium | 0- 5 5- 6 |
| 270 | NW NW NW NE 6-120-74 | Sand, fine Sand, fine to medium; moderately clayey, slightly gravelly Sand, medium, very clayey; slightly gravelly | 2- 12 12- 16 16- 18 |
| 271 | NW NW NW NW 5-120-74 | Sand, light yellowish-brown, very fine | 2- 6 |
| 272 | NE NW NE NW 5-120-74 | Gravel, coarse Sand and gravel | 5- 18 20- 28 |
| 273 | NW NW NW NW 4-120-74 | Sand, fine Sand, fine; moderately clayey, slightly gravelly Sand, fine to medium; moderately clayey, slightly gravelly Sand, medium, very clayey Sand, medium, very clayey; slightly gravelly Sand, medium, very clayey; moderately gravelly Sand, coarse, very clayey; saturated, slightly gravelly Sand, coarse, to fine gravel; saturated, unoxidized at 37 feet, moderately clayey Sand, coarse, to fine gravel; slightly gravelly | 2- 4 4- 8 8- 14 14- 18 18- 26 26- 30 30- 35 35- 39 39- 44 |

TABLE 3. List of sand and gravel pits in Walworth County, South Dakota, which are on file at the District Office, South Dakota Department of Highways, Aberdeen, South Dakota.


| Pit No. | Owner and Address | Description | Type | Average Depth in Feet | Average Depth of Stripping in Feet |
|---------|--------------------------------------|------------------|-----------------|-----------------------|------------------------------------|
| 1 | Schirber, Leo — Moberidge | NW¼ 13-124-80 | Gravel & Filler | 5.7 | 8.2 |
| 2 | | SW¼NE¼ 13-124-80 | Filler | | |
| 3 | Jensen Rock & Sand, Inc. — Moberidge | SW¼NE¼ 4-124-79 | Sand & Gravel | | |
| 4 | Skillinstad, Warren — Moberidge | NE¼ 4-124-79 | Gravel | | |
| 5 | Jones, W. P. — Moberidge | SW¼SE¼ 4-124-79 | Gravel | | |
| 6 | Jones, W. P. — Moberidge | NW¼SE¼ 4-124-79 | Gravel | 3.0 | 9.3 |
| 7 | City of Moberidge | SW¼ 29-124-79 | Gravel | | |
| 8 | City of Moberidge | SE¼ 29-124-79 | Filler & Gravel | 2.8 | 3.9 |
| 9 | Mickelson, Albert — Moberidge | NE¼ 32-124-79 | Gravel | 5.3 | 6.0 |
| 10 | U.S. Govt. (Oahe taking area) | SW¼ 34-124-79 | Sand | | |
| 11 | Oster, Charles F. — Moberidge | SW¼NW¼ 31-124-78 | Gravel | 2.0 | 9.3 |
| 12 | Lindeman, Jacob — Moberidge | SW¼ 8-124-78 | Gravel | 1.0 | 10 |
| 13 | Arndt, Paul — Glenham | SE¼ 10-124-78 | Gravel | | |
| 14 | Anderson, Ravane — Glenham | NE¼ 11-124-78 | Sand | | |
| 15 | Lanan, Dick — Glenham | NW¼ 1-124-78 | Sand | | |


| Pit No. | Owner and Address | Description | Type | Average Depth in Feet | Average Depth of Stripping in Feet |
|---------|---|------------------|------------------|--------------------------|--|
| 16 | Smith, George — Glenham | SE¼ 28-124-78 | Gravel | 6 | 8 |
| 17 | Smith, George — Glenham | SW¼ 28-124-78 | Gravel | | |
| 18 | Brink, Paul E. — Kansas City, Mo. | NW¼ 33-124-78 | Gravel | 5.4 | 10.1 |
| 19 | | NE¼ 33-124-78 | Gravel | | |
| 20 | Hagen, Ray — Glenham | SE¼ 27-124-78 | Gravel | 4.5 | 11.0 |
| 21 | Schlomer, William M. — Glenham | NW¼SW¼ 27-124-78 | Gravel | 4 | 5 |
| 22 | Schnaible, Ottilia — Java | NW¼ 27-124-78 | Sand & Gravel | 5.5 | 8.4 |
| 23 | Opheim, Lars | SW¼ 11-124-77 | Gravel | | |
| 24 | Jensen Rock & Sand, Inc. — Mobridge | SE¼ 21-124-77 | Gravel | | |
| 25 | Mindt, Arnold — Glenham (Jensen Rock & Sand, Inc. — Mobridge) | NE¼ 28-124-77 | Gravel | 2.0 | 6.7 |
| 26 | Van Orman, Max G. — Selby | NW¼ 27-124-77 | Gravel | 4.1 | 5.9 |
| 27 | Olson, Earl — Selby | SW¼ 27-124-77 | Gravel | 2.5 | 8 |
| 28 | Secker, Steve — Selby | NW¼ 33-124-77 | Gravel | 1.0 | 6.7 |
| 29 | Thorstenson, August — Selby | NE¼ 35-124-77 | Gravel | | |
| 30 | Lee, George — Selby | SW¼ 25-124-77 | Gravel | 3.7 | 5 |
| 31 | Tisdall, Jake | NW¼ 25-124-77 | Gravel | | |
| 32 | Walworth County — Selby | SW¼ 5-124-76 | Gravel | 0 | 4 |


| | | | | | |
|----|-------------------------------|--------------------|--------|-----|------|
| 33 | Walworth County — Selby | SE¼ 5-124-76 | Gravel | | |
| 34 | Nusz, Susanna — Selby | SW¼ 4-124-76 | Gravel | 2.0 | 8.0 |
| 35 | Walworth County — Selby | NE¼ 8-124-76 | Gravel | 0 | 7.0 |
| 36 | Franks, Olton — Selby | SW¼ 9-124-76 | Gravel | | |
| 37 | | SE¼ 8-124-76 | Gravel | | |
| 38 | Moak, Herbert — Selby | NE¼SE¼NW¼ 8-124-76 | Gravel | | |
| 39 | Moak, Herbert — Selby | N½ NW¼ 8-124-76 | Gravel | 2.5 | 10 |
| 40 | Ekrem, Orville — Selby | NE¼ 30-124-76 | Gravel | | |
| 41 | Ekrem, Orville — Selby | NW¼ 29-124-76 | Gravel | | |
| 42 | Ekrem, Orville — Selby | SE¼ 29-124-76 | Gravel | | |
| 43 | Thorstenson, Melvin — Selby | SW¼ 32-124-76 | Gravel | 2 | 5 |
| 44 | Brockel, John J., Jr. — Selby | NW¼ 12-124-76 | Gravel | | |
| 45 | Krause, I. C. — Java | NW¼ 11-124-75 | Gravel | | |
| 46 | Krause, I. C. — Java | NW¼SW¼ 11-124-75 | Gravel | | |
| 47 | Stiegelmeier, Ben — Java | N½ 14-124-75 | Gravel | | |
| 48 | Haux, John M. — Java | S½ 20-124-75 | Gravel | | |
| 49 | Haux, Irwin — Java | S½ 19-124-75 | Gravel | | |
| 50 | Sieler, Elmer — Stockton, Ca. | NE¼ 30-124-75 | Gravel | | |
| 51 | Wolf, Harold — Java | SW¼ 30-124-75 | Sand | 1.0 | 10.0 |
| 52 | Hettich, Lawrence — Java | SE¼ 33-124-74 | Gravel | 1 | 10 |
| 53 | Corps of Engineers — Omaha | S½ 2-123-79 | Gravel | | |

| Pit No. | Owner and Address | Description | Type | Average Depth in Feet | Average Depth of Stripping in Feet |
|---------|---|------------------|------------------|--------------------------|--|
| 54 | Thomas, Kenny — Mobridge | SE¼ 18-123-78 | Sand | | |
| 55 | Walth, Fred — Mobridge | E½E½ 23-123-78 | Gravel | 8 | 10 |
| 56 | Raba, George — Mobridge | NE¼ 35-123-76 | Gravel | | |
| 57 | Kosters, John — Selby | SW¼ 30-123-75 | Gravel | | |
| 58 | Carlson, Oscar — Java | S½ 15-123-75 | Gravel | | |
| 59 | Vandermartin, H. — Java | SW¼ 24-123-75 | Sand | | |
| 60 | Weiszhaar, Ruben J. — Bowdle | NE¼ 14-123-74 | Gravel | | |
| 61 | Milwaukee, R. R. — Aberdeen | NW¼ 24-123-74 | Gravel | 3.9 | 12.2 |
| 62 | Milwaukee, R. R. — Aberdeen | NE¼ 24-123-74 | Gravel | | |
| 63 | Buechler, John J. | NE¼ 26-123-74 | Gravel | | |
| 64 | Leidholt, Albert — Bowdle | NW¼ 26-123-74 | Gravel | 2 | 7.5 |
| 65 | Boehmer, Dean - Akaska | SE¼ 10-122-78 | Sand & Gravel | 2.0 | 12.5 |
| 66 | Schilling, Jacob — Akaska | SW¼ 28-122-77 | Gravel | 1.3 | 4.5 |
| 67 | Barnes, Billy & Huber, John — Akaska | SE¼ 35-122-77 | Gravel | 0.8 | 8.2 |
| 68 | School & Public Lands — Pierre | SW¼NW¼ 36-122-77 | Gravel | 0.6 | 8.9 |
| 69 | Sawinsky, Elizabeth — Selby | NW¼NE¼ 3-122-76 | Gravel | | |
| 70 | Knecht, William — Selby | SE¼ 19-122-76 | Filler | 1.0 | 5.5 |
| 71 | Reede, Arthur — Selby | NW¼ 29-122-76 | Sand | 4 | 6 |

| | | | | |
|----|--|-----------------|-----------------|-----|
| 72 | | NW¼ 32-122-76 | Sand | |
| 73 | Bade, Ben — Selby | SW¼ 32-122-76 | Sand | |
| 74 | Bollinger, Ruben — Bowdle | NW¼ 1-122-74 | Sand | |
| 75 | Bollinger, Ruben — Bowdle | N½SE¼ 35-122-74 | Sand | |
| 76 | Triple "U", Inc., L. R. Hauck, Adm. | E½ 2-121-78 | Gravel | |
| 77 | Beckman, Dave — Selby | NW¼ 9-121-77 | Gravel | 5.5 |
| 78 | Starks, Milton — Akaska | NW¼ 1-121-77 | Gravel | 4.2 |
| 79 | Reuer, Rudolph — Lowry | E½ 17-121-76 | Gravel | 0.9 |
| 80 | Lutz, Fred — Lowry | SE¼ 3-121-76 | Gravel | 1 |
| 81 | Arbach, Frank — Hoven | NW¼ 17-121-74 | Gravel | 3.9 |
| 82 | Arbach, Math — Hoven | NE¼ 17-121-74 | Gravel | 1.1 |
| 83 | Arbach, Math — Hoven | SE¼ 8-121-74 | Gravel | 3.5 |
| 84 | Arbach, Math — Hoven | NW¼ 16-121-74 | Gravel | 5.5 |
| 85 | Arbach, Urban — Hoven | SW¼SE¼ 9-121-74 | Gravel | 0.6 |
| 86 | Goebel, Ben — Hoven | SE¼SE¼ 9-121-74 | Gravel | 0.7 |
| 87 | Schaefer, Mike — Hoven | NW¼ 10-121-74 | Gravel | |
| 88 | Goebel, Ben — Hoven | N½SE¼ 10-121-74 | Gravel | 1.8 |
| 89 | Schaefer, Mike — Hoven | NE¼ 16-121-74 | Gravel | 4.0 |
| 90 | Rausch, William — Hoven | SE¼ 30-121-74 | Sand, coarse | |

 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 S designate areas described in Table 1 and in the text.

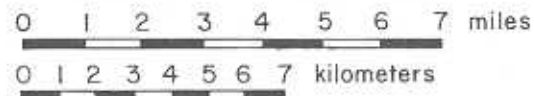
⁶⁷ • Test hole with sand or gravel in upper 25 feet with 0 to 5 feet overburden. Number refers to Table 2.

⁵⁶ ■ Test hole with sand or gravel in upper 25 feet with 6 to 25 feet overburden. Number refers to Table 2.

○ Test hole with no sand or gravel in upper 25 feet.

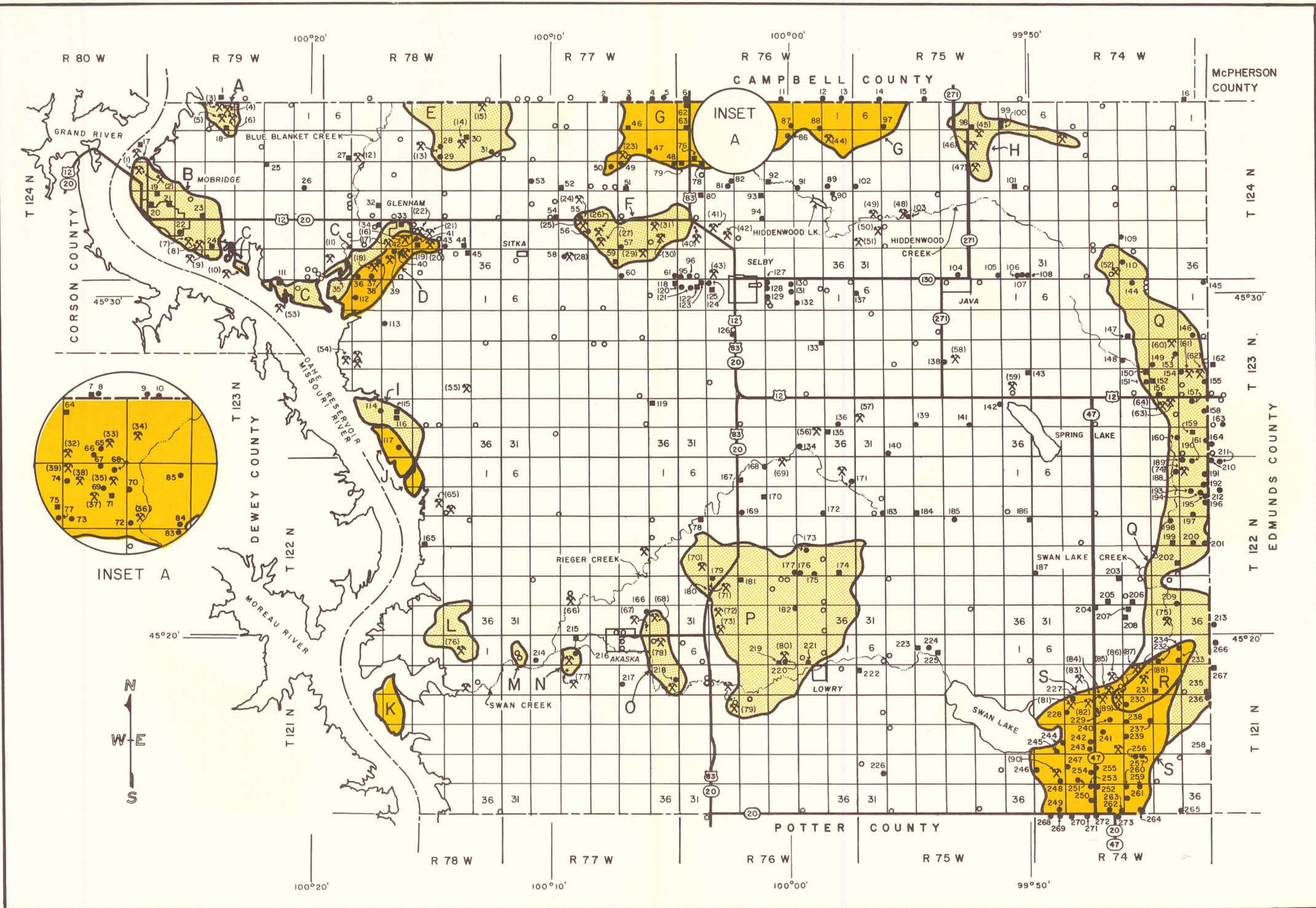


Index map of South Dakota showing location of Walworth County



⁽¹²⁾ ✕ Gravel pit; those with a number are listed in Table 3.

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



INSET
A

