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MADISON COUNTY

A summary of sand and gravel deposits.

Date of field examination: June 30, July 1, 5, 1949

Geologist: Donald R. Coates

Number of sand and gravel pits:

- 11 active
- 6 active on demand
- 3 inactive
- 61 abandoned

Size of operations: There is a large variability between the plants operated in the active pits. The largest concern is the Myers Gravel and Sand Company which produces 1000 tons daily of all sizes of materials from three working pits. The Western Indiana Gravel Company maintains two pits, one in Anderson and one at Orestes, each equipped with washing, screening, and crushing plants which produce 500 tons daily. These plants and the Myers are the only ones in the county capable of producing washed sand and gravel screened to all sizes and specifications. The Pendleton Sand and Gravel Company near Pendleton is equipped with a small washing and screening plant. The nine smaller active concerns produce an average of 40 tons daily.

Origin of deposits and pit characteristics: The great majority of the sand and gravel resources of Madison County are located in valley train terraces and valley train outwash in the various streams. A major sluiceway traverses the county from north to south, but is not now occupied by a stream throughout its length. In part the present streams that do approximate the old valley are Mud Creek in the north, Little Kilbuck Creek in the center, and a tributary of Fall Creek in the south. The Myers pits are typical examples in addition to being the largest known deposits along this glacial artery. The Myers pit (NW $\frac{1}{4}$, NW $\frac{1}{4}$ sec. 6, 19 N, 8E) was worked in detail (see special report). The gravel veins average 40' in thickness and reach maximum thicknesses of 60'. The material is of excellent quality.

MADISON COUNTY REPORT

Valley train terraces and outwash along the West Fork White River are common and produce much of the sand and gravel being used in the county. Excellent pits can be found east of Anderson, Western Indiana Gravel pit and the Stiner Gravel pit. Here the material covers many acres and is found in dry banks up to 20' thick. Workings have not yet proceeded below water level. The material is somewhat sandy (75% and over) but of excellent quality. A third important sluiceway is that of Pipe Creek in the northwestern part of the county. The Western Indiana plant south of Orestes is typical. The sand and gravel vein is over 50' thick and covers many acres. Fall Creek and Lick Creek also have many pits along their courses but in general they are small and shallow.

The most important exception to the sluiceway deposits which produce the major supply of sand and gravel is the esker south of Anderson. It is oriented somewhat east of a true north-south alignment, and extends more than four miles to Pendleton. The Yost pit is the largest and only active pit at present. The gravel vein extends 30' above the water level- the present operations are dry and the diggings are 6" above the water line- and an unknown depth below, probably another 30'. The deposit is quite sandy but of excellent quality. Overburden averages less than 4' but varies between 2' and 12'.

In general the Madison County pits are composed of materials of good quality in abundance. The pits are about evenly divided between wet and dry operations, many pits being abandoned as soon as water is reached. The pits vary greatly in size from ones in which a few wagonloads have been extracted to those that cover several acres and have produced 100,000's of yards of materials.

MADISON COUNTY REPORT

Future Possibilities: Madison County has an abundance of gravel. At present all pits operate below capacity and have considerable reserves in sight. Many of the abandoned pits could be reopened as few of them have exhausted the gravel veins. The same areas with similar type deposits will continue to be the main sources of materials in the future viz, the major north-south sluiceway, West Fork White River, Fall, Pipe, Kilbuck, and Lick creeks. The Anderson esker also contains large reserves. There is no part of the county without some sand and gravel but Stony Creek, Jackson, and Duck Creek townships are the poorest.

Glacial geology: The Union City moraine in the northeast and several of the aforementioned sluiceways serve to break the monotony of the county that is predominantly a till plain. The features were formed during the Wisconsin glaciation of the Pleistocene Epoch.

Best information sources: George Latendresse, S & L Gravel Company of Marion; Ralph Mittendorf, Rosehill Gravel Co; F.W. Loser, Burke Gravel Co.; Raymond Akers, Western Indiana Gravel Co. at Anderson.

References: Leverett and Taylor, The Pleistocene of Indiana and Michigan,
USGS Monograph 53, 1915
30th Annual Report, Indiana Dept. of Geology and Natural
Resources, 1905.

MEMORANDUM REPORT
of the
MYERS GRAVEL AND SAND COMPANY PIT

Date of field examination: July 15, 1949.

Geologist: Donald R. Coates.

Location: Madison County, $1\frac{3}{4}$ miles north of the Anderson square, on the west side of old State Road # 9. The pit is located in T. 19 N; R. 8 E, in the NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 6.

Management and Ownership: The Myers Gravel and Sand Company is owned and managed by Claude P. Myers. Myers owns three different pits, property all adjacent to Big Kilbuck Creek. An abandoned pit is located in T. 20 N; R. 8 E in the SW part of Section 31, while an active pit used exclusively for sand is located in the SE part of the same section. The company owns 68 acres in this area. Information for this report was given by Claude P. Myers, and by his son Robert Myers.

Equipment: The following is a list of equipment available for use by the Myers Gravel and Sand Company. Some of the equipment is owned by the Carter-Myers Company, Inc., and some by the Robert Myers Trucking Company but all of it is available when needed.

- 8 trucks
- 5 cranes with drag lines
- 4 loaders (2 Barber-Green, 1 Nelson, 1 Haiss)
- 1 rig and slack line with 1 yard bucket (not being used)
- Washing plant and equipment with vibrating screens
- Primary and secondary crushers (crush up to 12")
- All of the equipment is powered by gas.

Products and production: Washed sand and gravel is produced and is screened to all sizes and specifications. The average daily

production is 1000 tons, but a capacity of 1500 tons a day is possible. The total production of all sand and gravel products was 110,000 in 1948.

Transportation: All products of the pit are hauled by truck. The nearest railroad lines are located in Anderson, a distance of one mile. The Pennsylvania and Big Four are similar in accessibility for rail transport.

Size of pit and characteristics: The pit is square-shaped with ground dimensions of 450' x 450'. The average depth of the pit is 25' with variations of 31' on the east to 18' on the west. The following variations are most interesting: the north and west parts of the pit are more bouldery and cobbly than the south and east sides; the blue clay hardpan rises from 30' on the south to 15' on the north; the overburden is 4' on the southwestern sides and only 2' on the northeastern sides. The gravel vein dips southward and on the western part of the pit the dip is westward. To the west of the pit drilling indicates 3 blue-brown dirt layers which make operations in that direction unfeasible. The pit is wet and the water depth varies from 10' to 25'. The gravel vein is 60' thick in part but averages 40' in thickness. The overburden averages 3'.

Geology: The pit is situated on the east bank of Big Kilbuck Creek. The deposit is of valley train origin and was deposited during the later stages of the Wisconsin glaciation during the Pleistocene Epoch. The materials in the deposit seemed to be crudely bedded but not very well sorted.

MYERS

3

Samples: The samples of the pit were obtained by means of a crane with drag line which dipped the sample from a depth of 31'. The total weight of the sample was 2640 pounds. This sample, much too bulky for use, was coned and quartered and coned and quartered again. The remaining working sample was 1/16 of the original. This sample was then screened and weighed. The entire sampling procedure was wet.

The following is a breakdown of the various sizes:

Cobbles	- total weight, 6 pounds; 2 limestone, 1 quartzite. The cobbles were angular in shape.	3.6%
2"	- total weight, 8 pounds. A high percentage of limestone was present. Very little shale present, no chert, some minor amounts of igneous and metamorphics. The shape was angular.	4.8
1.05"	- total weight, 13 pounds.	7.8
.525"	- total weight, 31 pounds.	18.8
.185"	- total weight, 107 pounds.	65
<hr/> Grand total of working sample - 165 pounds.		<hr/> 100.0%

The deposit is running 65% sand as of July 15, 1949. It is felt that this sample is not representative of other parts of the pit. It has already been noted that there are many variables. This sample was taken from the southeastern part of the pit and as a result is considerably finer than other parts of the pit.

Respectfully submitted,

Donald R. Coates

Donald R. Coates
Geologist

Reference: Leverett and Taylor, The Pleistocene of Indiana and Michigan, USGS Monograph 53, 1915.

August 10, 1950

MYERS GRAVEL COMPANY, MADISON COUNTY

RESAMPLING

Date of resampling -- July 5, 1950.

Resampling procedure -- Since this pit was a wet operation, and is now closed, sample S5015 was taken from a pit run stockpile left beside the pit. This sample is probably not as representative as would be desired.

Respectfully submitted,




A handwritten signature in cursive script, reading "Robert E. Sargent".

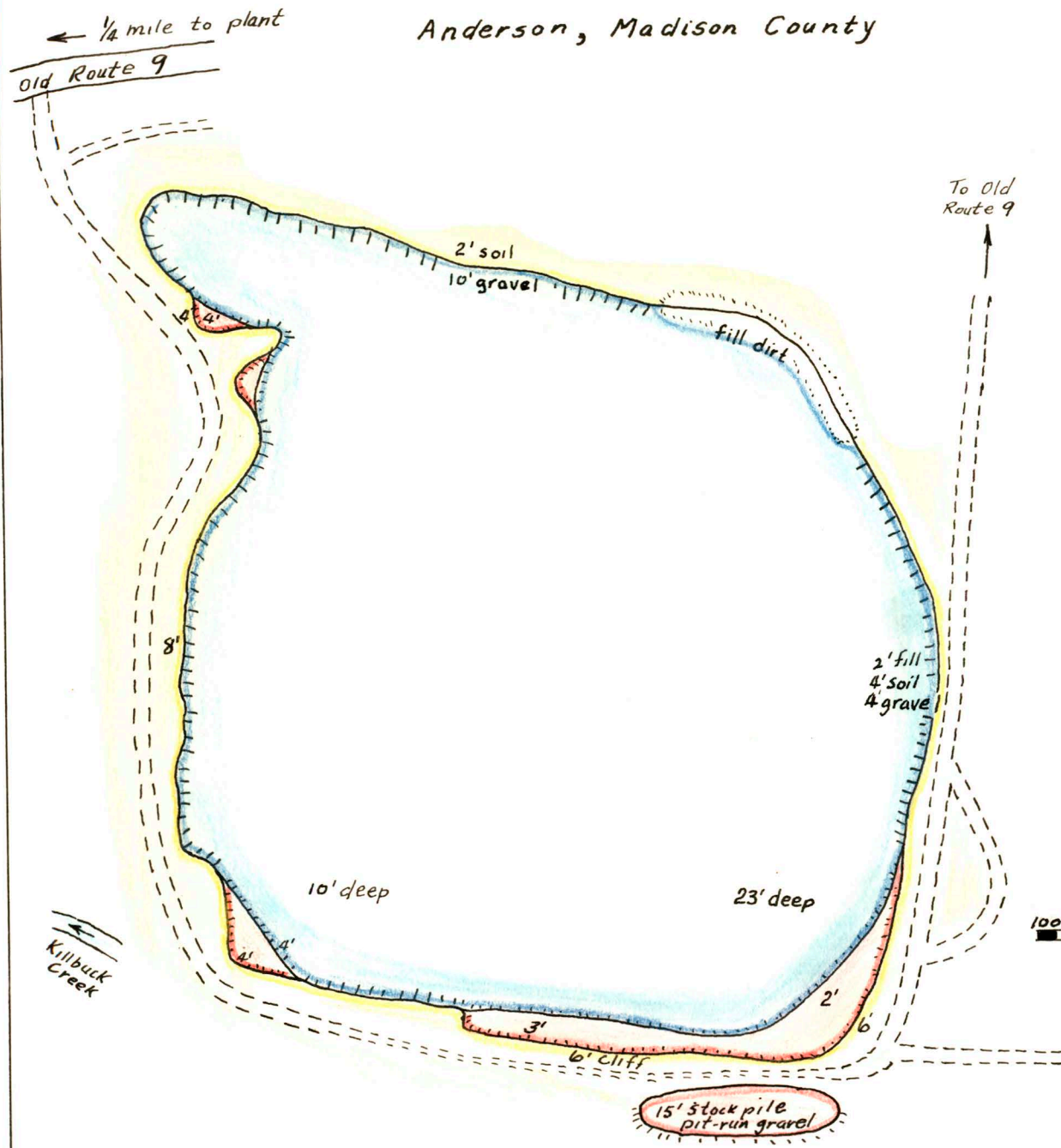
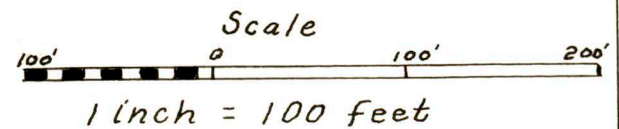
Robert E. Sargent
Party Chief

MYERS GRAVEL PIT

Anderson, Madison County

EXPLANATION

-  Fox Soil
-  Gravel
-  Water
- Roads ----



Control: Brunton Compass and
Open-sight Alidade

Mapped by Donald R. Coates
July 15, 1949

MEMORANDUM REPORT
of the
ROSE HILL GRAVEL COMPANY

Date of field examination: August 5, 1953

Geologist: William J. Wayne

Location: Madison County, 4 miles northwest of Anderson in NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 32,
T. 20 N., R. 7 E.

Management and ownership: The Rose Hill Gravel Company is owned and operated
by Ralph Mittendorf, Route 5, Anderson.

Equipment: The pit is operated with one crane with a 3/4 yard³ and 1 yard³
bucket and a 3/4 inch screen over a loading bin.

Products and production: Sand and gravel for use as aggregate in the manu-
facture of concrete blocks (Cook Block and Brick Company, Anderson) is the
main product; pit run gravel is also sold. According to the operator-owner,
production is about 100 yards³ per day. Pit was opened in 1949.

Transportation: All products are hauled by truck. Nearest rail service
is three miles northeast of the pit, where the Pennsylvania line passed
through Florida.

Size and characteristics of pit: The pit is approximately 80 feet wide by
500 feet long, elongate in a southerly direction. The operation is wet, and
gravel is stockpiled to drain before it is passed through the screen.
In the center of the pit the overburden is 1 1/2 - 2 1/2 feet of alloviaior
colluvial material, but toward the east side of the pit where the slope
rises to the upland, 2 feet of colluvium overlies 2-3 feet of gray, calcareous,
sandy till to make 4-5 feet of overburden. Eastward farther, the thickness of
overburden probably will increase even more.

Geology: This pit is located in an outwash deposit of Wisconsinan age which was apparently buried by the Tazewellian ice advance, then partly re-excavated by subglacial drainage as the Tazewell glacier stagnated and melted in place. The operator-owner had the deposit test drilled and reported the following section from the boring:

Gravel - - - - - 0 to 30

Clay: blue (till?) - - - - - 30 to 32

Gravel: light gray - - - - - 32 to 92

Seemingly, this shallow trough is along the site of a valley which served as an active sluiceway throughout the Wisconsinan glacial age except during the last deglaciation from the area.

Samples: On the day the pit was examined, a fairly large stockpile was on hand along the east side of the opening. The stockpile was channeled at three places, one of them the end from which gravel was being dug for market. The total sample taken (Sample No. WJW-53-52) was 284 pounds, moist. Oversize (greater than 1 inch) totalled 19 pounds, leaving a remainder of 264 pounds that passed the 1 inch screen. This sample was coned and quartered, so that the sample brought to the laboratory for processing weighed 56 pounds, or 21.2% of the original sample. The following breakdown of the oversize was made:

Retained on 2" screen - - - - - none

Retained on 1" screen: 108 pebbles, sub-rounded - - - 19 lbs., 7.1%

Granite	2	
Granodiorite	1	
Quartz diorite	1	
Diorite	1	
Gabbro	2	
Basalt	1	
Total	8	(igneous)

Quartzite	5
Gneiss	2
Phyllite	1
Greenstone	1
Total	9 (metamorphics)

Shale	5
Limestone	27
Dol. ls.	17
Dolomite	33
Chert	9
Total	91 (Sedimentary)

Respectfully submitted,

William J. Wayne
William J. Wayne, Head
Glacial Geology Section

MEMORANDUM REPORT

RIGGS EQUIPMENT COMPANY GRAVEL PIT

Date of field examination: August 5, 1953

Geologist: William J. Wayne

Location: Three miles southwest of Anderson courthouse, half a mile east of intersection of Indiana highways 9 and 67; in NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 35, T. 19 N., R. 7 E.

Management and ownership: The Riggs Equipment Company is operated and owned by Donald Riggs, 1705 State Road 67, Anderson. The company operates excavating equipment. Information for this report was provided by F. W. Losser. The company has two full time employees who work in the gravel pit regularly.

Equipment: Any or all of the excavating equipment owned and operated by the Riggs Equipment Company is available for use in the pit if needed. At the present time, however, a front end loader, bulldozer, and crane with 1/2 yard³ drag bucket are in use.

Products and production: Pit run gravel and sand is produced, mainly for use as fill. Mr. Riggs stated that he hopes eventually to put in additional equipment to screen the gravel and sand.

Transportation: Products are hauled by truck. The nearest rail line is the Big Four Railway, 3/4 mile west of the pit.

Size and Characteristics of pit: Maximum operating face is 30 feet. Overburden is thin gravelly soil (Bellefontaine) which is stripped. Gravel is reported to extent about 10 feet below water level in the active part of the pit. The gravel is underlain by bluish-gray, calcareous siltstone (Mississinewa shale lithology.)

Geology: This pit is located in an esker. It is Wisconsinan in age, and was deposited in a sub-glacial stream while the stagnant ice sheet melted in central Indiana during the Tazewellian subage. Direction of stream currents in the sub-glacial stream was to the south, as indicated by cross-bedding within the deposit.

Samples: The active face of the pit was channeled at three places in order to obtain as representative a sample as possible (SAMPLE NO. WJW-53-53). Slump covered the lower third of the face at one of the places selected for channeling, however.

The total sample taken weighed 402 pounds. Of this amount, 15 lbs. were retained on the 2" screen, and 21 lbs. were retained on the 1" screen. The remainder, 366 lbs., was coned and quartered and a 72 lb. sample was brought back for laboratory study.

The oversize broken down further as follows:

Retained on 2" screen;	10 cobbles, weight 15 lbs. - - - 3.7%
Quartzite 2	Limestone 2
	Dol. limestone 2
Shale 2	Dolomite 2

Retained on 1" screen, passed 2" screen: 144 pebbles,	
weight 21 lbs. - - - - - 5.2%	

Granite 1	Quartzite 4
Quartz diorite 1	Gneiss 3
Diorite 1	Schist 4
Gabbro 5	Greenstone 3
Syenite 1	Total
Andesite 1	metamorphic 14
Basalt 2	
Total	Sandstone 2
Igneous 12	Shale 12
	Limestone 32
	Dol. limestone 28
	Dolomite 36
	Chert 8
	Total
	Sedimentary 118

Passed 1" screen, 366 lbs. - - - - - 91.1%

Respectfully submitted,

A handwritten signature in cursive script, reading "William J. Wayne". The signature is written in dark ink and is positioned above the printed name and title.

William J. Wayne, Head
Glacial Geology Section

MEMORANDUM REPORT
of the
WESTERN INDIANA GRAVEL COMPANY

Date of field examination: August 4, 1953

Geologist: William J. Wayne

Location: Madison County, Indiana, 2 1/2 miles southeast of the Anderson square; the pit is located in NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 17, T. 19 N., R. 8 E.

Management and ownership: The Western Indiana Gravel Company owns 260 acres in this location in Madison County, and owns and operates another gravel pit in the northern part of the county. Present superintendent of this pit and plant is D. Rittenhouse, who provided information to prepare this report in addition to the information obtained by D. R. Coates from Raymond Akers, who was superintendent of the pit in 1949.

Equipment: The following is a list of equipment in use at the Western Indiana Gravel Company pit:

- 2 cranes (3/4 yard³ and 1 3/4 yard³ drag buckets) (Marion)
- 1 self-propelled bucket loader (Barber-Green)
- 2 crushers, cone
- 4 vibrating screens

Products and production: Washed sand and gravel, screened to all sizes and specifications, is produced. Production at the time visited was reported as 120 tons per hour. Total 1948 production was 88,000 tons (Coates); no figure was obtained for more recent years.

Transportation: All products are hauled by truck. The nearest rail line is a half mile south of the pit, on the south side of White River.

Size and characteristics of pit: The pit is roughly trapezoidal in shape (see map), with the greatest dimensions approximately 600 feet by 700 feet.

The average depth of the pit is 35 feet; the pit is dry and about 25 feet deep at the north end, but is wet below 33 feet elsewhere. Bluish-gray till floors the gravel in the dry part of the pit, and limestone may underlie the gravel at a depth of about 40 feet below the original surface. About 4 feet of soil is stripped off the gravel; some of this is sold for fill.

Geology: This pit is located in a valley train gravel terrace on the north side of East Fork of White River. The outwash which comprises this valley train deposit was laid down during the Wisconsin age and probably includes both Tazwellan and Caryan deposits. During at least part of the time that this deposit was being formed, the ice must have been a relatively short distance away, because the cross-bedded part consists of a series of varve sequences in sand and gravel. Within each part of a varve, the materials are well sorted. Each varve grades from clean gravel about 1/2 inch in diameter to fine sand, there to be abruptly overlain by clean gravel. Each varve is 6 inches to 12 inches thick, and the gravel makes up about 1/3 of the thickness. Each entire varve may represent a diurnal deposit. The following section was measured in the north part of the pit:

5. Soil: gravelly (not included in sample) - - - - - 5 feet
4. Sand: tan, medium to fine, upper and lower contacts
gradational into gravel. Lenticular. - - - - - -2 feet
3. Gravel: poorly sorted, contains many cobbles; horizontally
bedded. - - - - - -6 feet
2. Gravel and sand: cross-bedded and varved, with beds
truncated top and bottom; exposed, - - - - - -10 feet
1. Till: brown to gray, hard, tough. Exposed beneath gravel
at north end of pit; deepens beneath water and may be ab-
sent elsewhere in pit. Maximum exposed. - - - - - -10 feet

Total above water 33 feet

Samples: A channel sample was taken at three places in the face of the dry part of the pit (see map). Units 1 and 5 in the measured section were not sampled, and because excessive slump covered the lower part of unit 4 where it thickened southwestward, only 8 to 10 feet of the unit was sampled. Total weight of the original sample was 307 pounds, but the sample was moist when weighed. All material larger than one inch was screened from the original sample, and the remainder coned and quartered to 65 pounds. (SAMPLE NO. WJW-53-51) Of the original sample, 283 pounds passed the 1" screen. After coning and quartering, 65 pounds were left, or 23% of the original sample less that retained on the 2" and 1" screens. Oversize gravel broke down as follows:

Greater than 2" - weight 4 lbs. Three cobbles, sub-round to sub-angular; 2 quartzites, 1 dolomite. 1.3%

Less than 2", greater than 1" - 133 pebbles, weight 20 lbs. 6.5%

Granite	7
Granodiorite	1
Quartz diorite	1
Diorite	2
Gabbro	2
Basalt	2

Total igneous 15

Quartzite	1
Gneiss	2
Total metamorphic	3

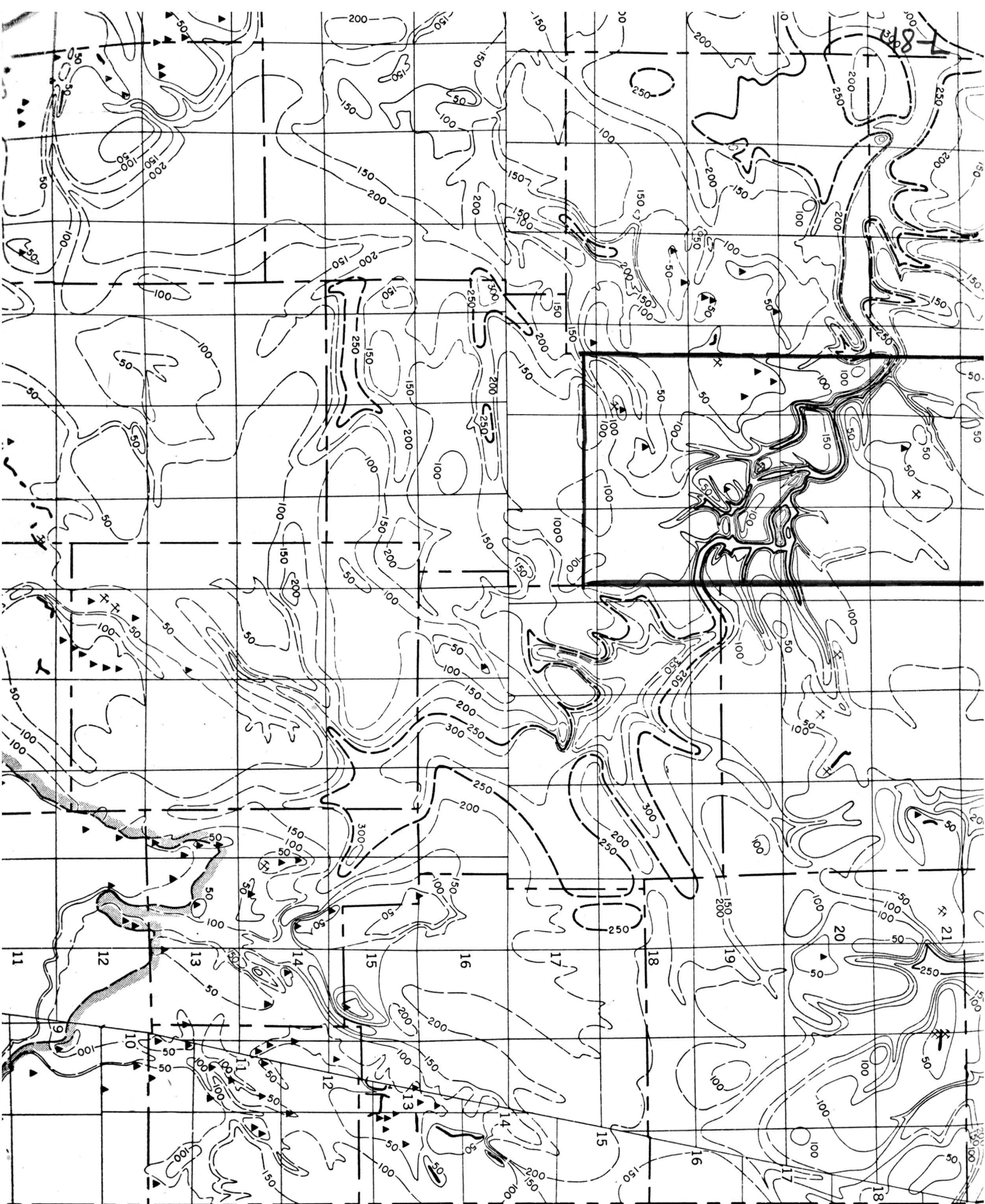
Sandstone	1
Shale	13
Black shale	6
Limestone	31
Dol. limestone	16
Dolomite	36
Chert	8
Till balls	4

Total sedimentary 115

Passed 1" screen - 283 lbs. ----- -92.2%

Respectfully submitted,

William J. Wayne
William J. Wayne, Head
Glacial Geology Section



RESULTS OF GEOLOGICAL AND GEOPHYSICAL INVESTIGATIONS
NEAR ANDERSON, INDIANA

By Maurice E. Biggs and William J. Wayne

SCOPE OF PROJECT

This report summarizes the results of a geologic and geophysical investigation of an area in central Madison County, Indiana. The purpose of this work was to trace the courses of the buried valleys which were cut by preglacial streams that converged near the present location of Anderson and to examine the characteristics of the materials with which these valleys have been filled. This work included the field examination of the surface geology; collection, evaluation, and plotting of depth to bedrock data obtained from the records of water wells drilled in the area; extension of bedrock depth information by refraction seismograph shots; electrical resistivity measurements to obtain data concerning the types of glacial materials which fill the buried valleys and lie above the bedrock surface; the location of five test wells; and the interpretation of drilling results.

SUMMARY OF GEOLOGICAL CONDITIONS

Two kinds of bedrock, limestone and shale, immediately underlie the glacial deposits in the Anderson area (pl. 1). The oldest of these, a pale-greenish-gray to black shale, lies approximately 250 feet beneath the present average surface level. This formation is the first bedrock found below the glacial deposits in the buried valleys.

Limestone bedrock is found above the shale and directly below the glacial drift in most of the Anderson area. This limestone may be seen in several places in and around Anderson where glacial and post-glacial erosion has removed the drift (pl. 2).

Before the glaciers moved down from the north and gave Madison County its present land features (pl. 3), streams flowed across the limestone surface and eroded narrow valleys as much as 300 feet below the surface of that ancient land. These valleys were part of an extensive drainage system (pl. 4) that crossed Indiana from east to west. The present streams in the Anderson area do not follow these old drainage lines.

Glaciers advanced over central Indiana and deposited a cover of sand, gravel, and clay at least three, and probably four, times. Each glaciation was followed by a period of warmer climate during which erosion removed some of the drift which had been left behind. However, much of this material still remains, as is shown by the drift thickness map (pl. 5) and by the numerous gravel pits on the outskirts of Anderson.

POSSIBLE GROUND WATER SOURCES NEAR ANDERSON

In the Anderson area, sands and gravels of glacial origin are the only possibilities for large-scale supplies of ground water. These buried sands and gravels can be grouped into four units on the basis of origin and depth below the surface (pl. 1).

The most deeply buried and oldest of the gravel and sand aquifers is found at depths greater than 150 feet below the present mean surface. For identification in this report, this gravel is called "zone 4." Electrical resistivity measurements and the small number of wells which penetrate them show that these buried gravels are discontinuous. Where present, they are found in the buried bedrock valleys. They are so limited in extent, however, that they may be absent from other test holes in the same bedrock valley in which they are found. Because of their limited extent, this group of buried gravels probably would be of little value for a large-scale water supply. Such gravel was found in test hole no. 4 from a depth of 152 feet to a depth of 172 feet (pl. 6).

Above gravel zone 4 are three gravel deposits which are fairly extensive, and which follow approximately the courses of the present valleys. The top of the deepest of these three deposits (zone 3) generally is encountered at a depth of 70 to 100 feet beneath the present upland surface. This gravel in most places is 10 to 30 feet thick, and the upper few feet may be tightly cemented. Where the gravel bed is thick, the small amount of cemented gravel does not affect the water-yielding capacity of this zone. Several small industrial and domestic wells receive their water from this gravel but do not tax its capacity. This gravel was found between 95 and 123 feet in depth in test well no. 1 and between depths of 90 and 100 feet in test hole no. 4.

The next gravel above this layer is called "zone 2." The top of this gravel is found at a depth of about 20 to 30 feet. This bed consists of gravel and sand and ranges from 20 to 40 feet in thickness. This gravel layer is an aquifer that supplies many of the shallow wells, both domestic and industrial, of the area. Although the upper part commonly extends above the water table, this gravel bed is relatively thick and permeable and provides large quantities of water. The present collector system along Killbuck Creek taps this gravel and also induces infiltration into it from the permanent stream flow. This gravel bed is exposed along White River west of Anderson and underlies the alluvium there, as well as in the eastern part of the city (pl. 5). In the vicinity of the Guide Lamp Corporation this gravel is unusually thick. A well that was completed there recently tested approximately 750,000 gallons per day. Analyses that show the amounts of dissolved solids in water from this aquifer are not available, but the amounts of dissolved solids likely would be high. In several gravel pits in and near Anderson, this gravel contains fairly large amounts of iron oxides and manganese oxides.

Wells and electrical resistivity measurements indicate that zone 3 probably is the most widespread of all the gravel zones. In the test wells it was found between 28 and 73 feet in no. 1, between 20 and 32 feet in no. 2, and between 55 and 90 feet in no. 4. Resistivity measurements indicate that it is present under much of the area around test hole no. 1, as well as in the vicinity of the Guide Lamp Corporation and along White River in the vicinity of the city well field (pl. 2). It is present beneath the terraces and floodplain along White River throughout most of the eastern part of Anderson, although it becomes relatively thin in some places.

Gravel zone 2 may be in contact with the one immediately below it (zone 3) in a few places, and this condition may account for the unusually thick section at the Guide Lamp Corporation well field.

The youngest and shallowest gravels constitute zone 1 and are relatively thin, although they may lie directly on older gravels. In general, they are not significant as a source of water.

Sand and gravel occur locally in the alluvial deposits of the White River. Some of these deposits may be water-bearing, although they are thin, are not very extensive, and lie at or above the water table.

SUMMARY

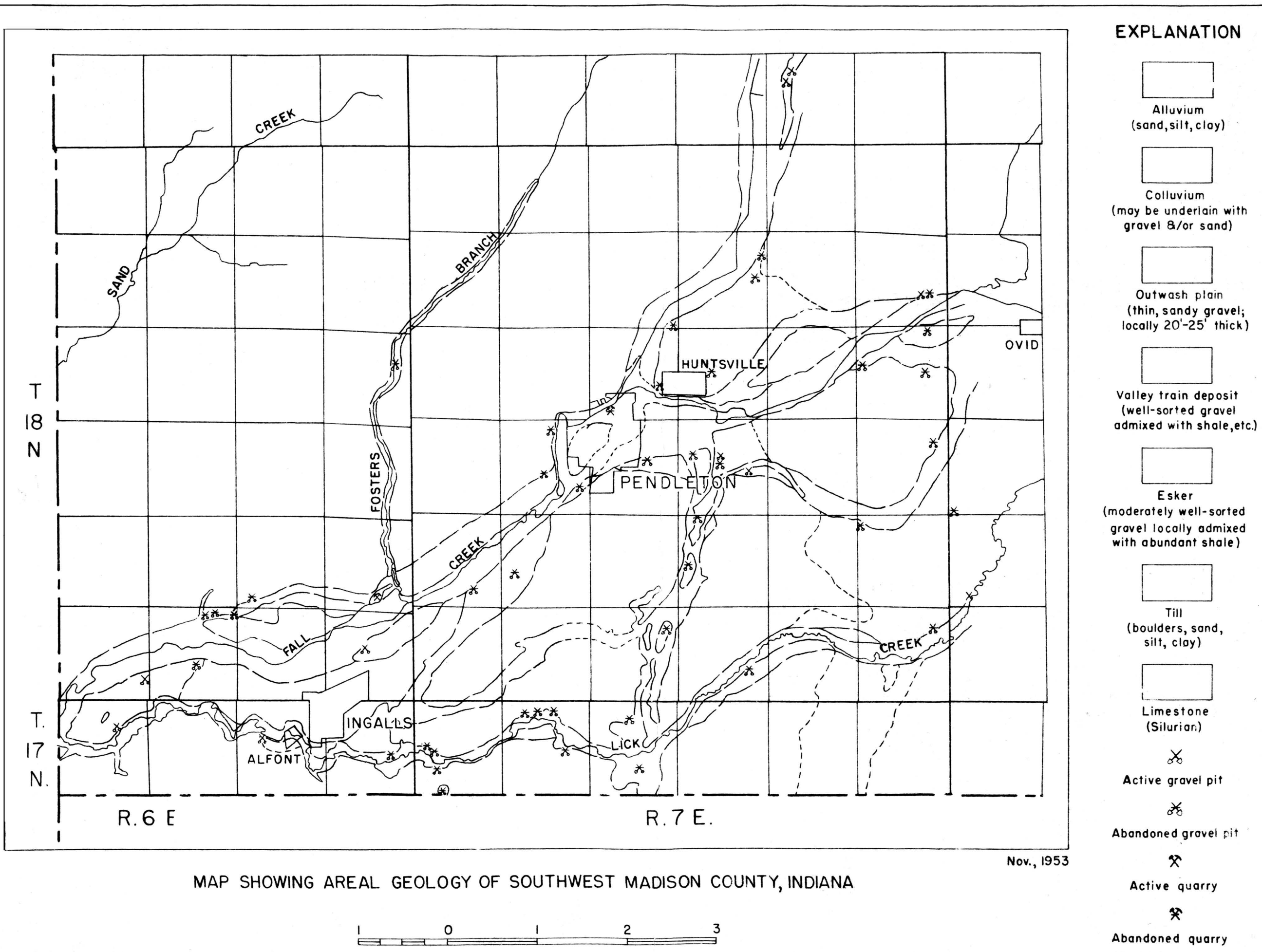
Some areas within the city of Anderson could not be examined by seismic methods. Of the areas that were examined for this report, most of which were on the outskirts of the city, four seem capable of supporting large well fields. One, in the southern part of Anderson, now is used by the Guide Lamp Corporation for an industrial water supply; a second, along Killbuck Creek, supports the present city well field. As a reservoir and aquifer it seems to be taxed to capacity during periods of low rainfall and probably would yield little more water if additional wells were placed in it. A third

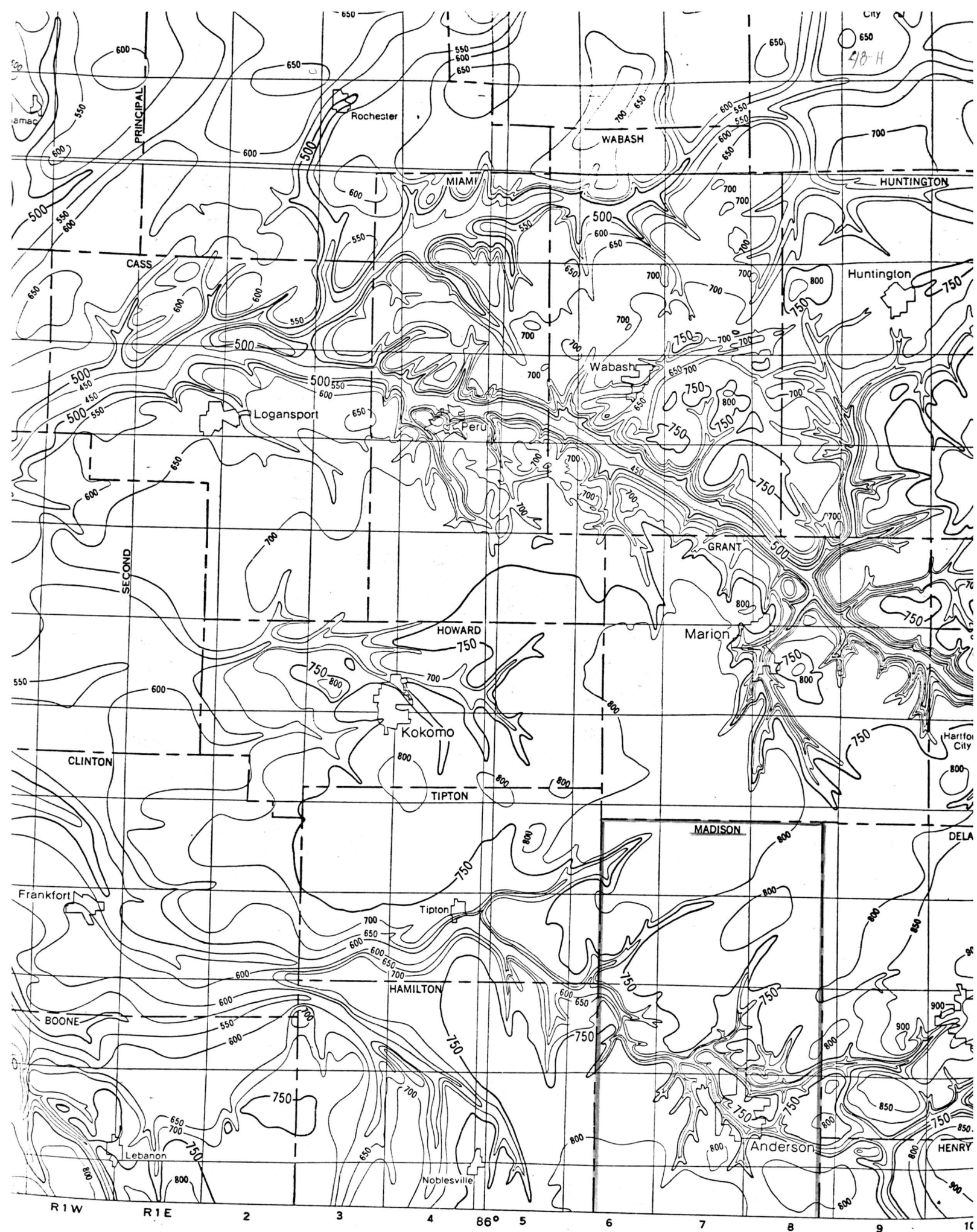
area lies in the city of Anderson between Second Street and White River at Henry Street and west of the city dump. Resistivity measurements in this area indicate that water-bearing gravels are present, but these measurements can give no idea concerning the quantity of water available.

The fourth area lies in the center of the E $\frac{1}{2}$ SE $\frac{1}{4}$ sec. 9, and the SW $\frac{1}{4}$ sec. 10, T. 19 N., R. 7 E., at the west end of the Eighth Street Road. The field to the south of this intersection is underlain by zone 2 and zone 3 gravel beds and probably would make a satisfactory well field. Both the 28- to 73-foot and the 95- to 123-foot zones should be tested for volume yield and quality.

Gravel zone 2 also crops out along White River for about half a mile directly north of this location. This gravel zone should be tested for thickness and yield along the river, where the water table is high and infiltration might be induced.

Gravel pits have been opened in gravel zones 1 and 2 along White River east of Anderson and in the eastern part of the city. Although the saturated part of this gravel is relatively thin, it still could be exploited by installations which depend largely upon the principle of inducing infiltration from a permanent stream.





Memorandum Report
by
Michael C. Moore
December 18, 1973

County: Madison
Company: Jerry Riddle Excavating and Gravel Co., Inc.
Mailing address: R. R. #1, Box 240-D, Anderson, Indiana 46011
Descriptive location: 3/4 miles northeast of Moonville
U.S.G.S. topographic location: NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 11, T. 20N., R. 8E.,
Gilman 7 $\frac{1}{2}$ ' quad.
Officer: Jerry Riddle, Pres.
Phone: 642-0968
No. of employees: 2
Products: pit run sand and gravel
Shipped by: truck

This small pit is run by Mr. Riddle as a part of his excavating business. The material, which is used only for fill, is removed with a crane and dozer. He has owned the 10 acre property for 5 years, having begun after Reith-Riley finished using it for road construction. Madison County operates a pit on adjoining property in the valley of Killbuck Creek. It appeared that they had a portable screening plant in place at the time of my visit.

Date of field visit: December 17, 1973
Informant: Mrs. Jerry Riddle.

Memorandum Report
by
Michael C. Moore
December 18, 1973

County: Madison
Company: Aggregates of Anderson
Mailing address: R. R. 2, Box 117, Anderson, Indiana 46011
Descriptive location: 2 miles north of Anderson and $\frac{1}{2}$ mile east of SR 9.
U.S.G.S. Topographic location: A SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 18, T. 20N., R. 8 E.,
Anderson North 7 $\frac{1}{2}$ ' quad; elevation
approx. 855 feet.
Officers: Noel Reeker, Pres.; Jack Himelick, Sec. Treas.
Phone: 317-644-3351
No. of employees: 5
Products: Processed sand and gravel.
Shipped by: truck

Date of field visit: December 17, 1973
Informants: Mr. Noel Reeker, Mrs. Noel Reeker

Aggregates of Anderson has operated under the present management for 7 years. Prior to that time Mr. Armfield was the owner. The company also operates a pit near Upland in Grant County. County zoning applies to this location, but the city of Anderson is very near. A remonstrance against the location of a house pre-fabricating plant directly across the road was recently successful. Thus, increasingly stringent zoning may hamper desired expansion of this company's holdings. Presently, 42 acres are owned, of which approximately 50% have been mined to a depth of 30 feet.

The deposit, which is in outwash in the valley of Little Killbuck Creek, has been tested to a depth of 90 feet, but present equipment cannot mine that deep. Mr. Reeker states that he would like to find a dragline to replace his 1 $\frac{1}{2}$ yard crane. The sand to gravel ratio is about 70/30.