

79.

TIPPECANOE COUNTY

- A. A summary of sand and gravel deposits
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Sand and Gravel in Tippecanoe County, Indiana, 1949.

General: Tippecanoe County has resources of sand and gravel which have scarcely been touched. This statement is especially true for the terraces of the Wabash River and Wildcat Creek, as well as for a number of glacial sluices which have not been adequately explored.

The Northwest: In general, this territory is covered with till. The gravel locations observed are in an eskerine ridge in western Tippecanoe Township, and in the glacial channel which is followed in part by the present Indian Creek. This channel cuts diagonally southwestward across Tippecanoe, Wabash, and Shelby townships.

The Wabash River: Low and high terraces, more or less eroded, characterize the Wabash Valley. Glacial torrents rushed down this valley, burying old preglacial features and channels with silt, sand, and gravel. Later stream erosion has carved the glacial-choked valley, leaving high terrace remnants and reworked lower banks. One of the high terraces near the southwest limits of West LaFayette is now being exploited by the Western Sand and Gravel Company in one of the largest operations in the state. Sites for future gravel operations can readily be found along the Wabash Valley

The East: Glacial channels and terraces, associated with present valleys of Wildcat Creek and South Fork of Wildcat Creek have been exploited for gravel in several locations. Other prospects will provide gravel when the demand arises. Kames and small eskers are common in the east-central districts near Dayton and Crane. Abandoned pits in the southeast align with probable glacial drainage lines. Future pits are likely to be opened on or near old glacial channels, when the channels are adequately mapped.

The Southwest: Eolian sand is preserved as sand hills near the Wabash Valley in Wayne Township, and in patches, hugs the north side of High Gap Ridge. High Gap Ridge is a conspicuous morainic and outwash complex trending eastward from West Point. The Raub Esker, one of the large eskers of the state, and a prominent feature of the district, trends southwestward from South Raub. As outlined by Ulrich \* the feature can be traced for nearly ten miles. Future detailed studies may subdivide the ridge into two or more separate eskers. Other eskerine areas are eastward from West Point and two miles southeast of Romney. Kames are associated with the eskers. Many of the kames have provided small gravel pits. A prominent land form of the southwest is Shaunee Mound, a probable kame.

\* Personal conversation with H.P. Ulrich, Purdue University.

Notes on glacial geology observation: The moraines mapped by Leverett and Malott are not conspicuous. Save for the extreme southwest, and High Gap Ridge east of West Point, it is doubtful, as viewed from this brief survey, that moraines should be mapped. Certainly no major sand and gravel deposits are associated with the majority of the mapped moraines. It is along the glacial channels that much of the gravel has accumulated. The moraines are secondary to the features produced by the great outwash floods which came mainly from the east and northeast.

Active pits observed ----- 22

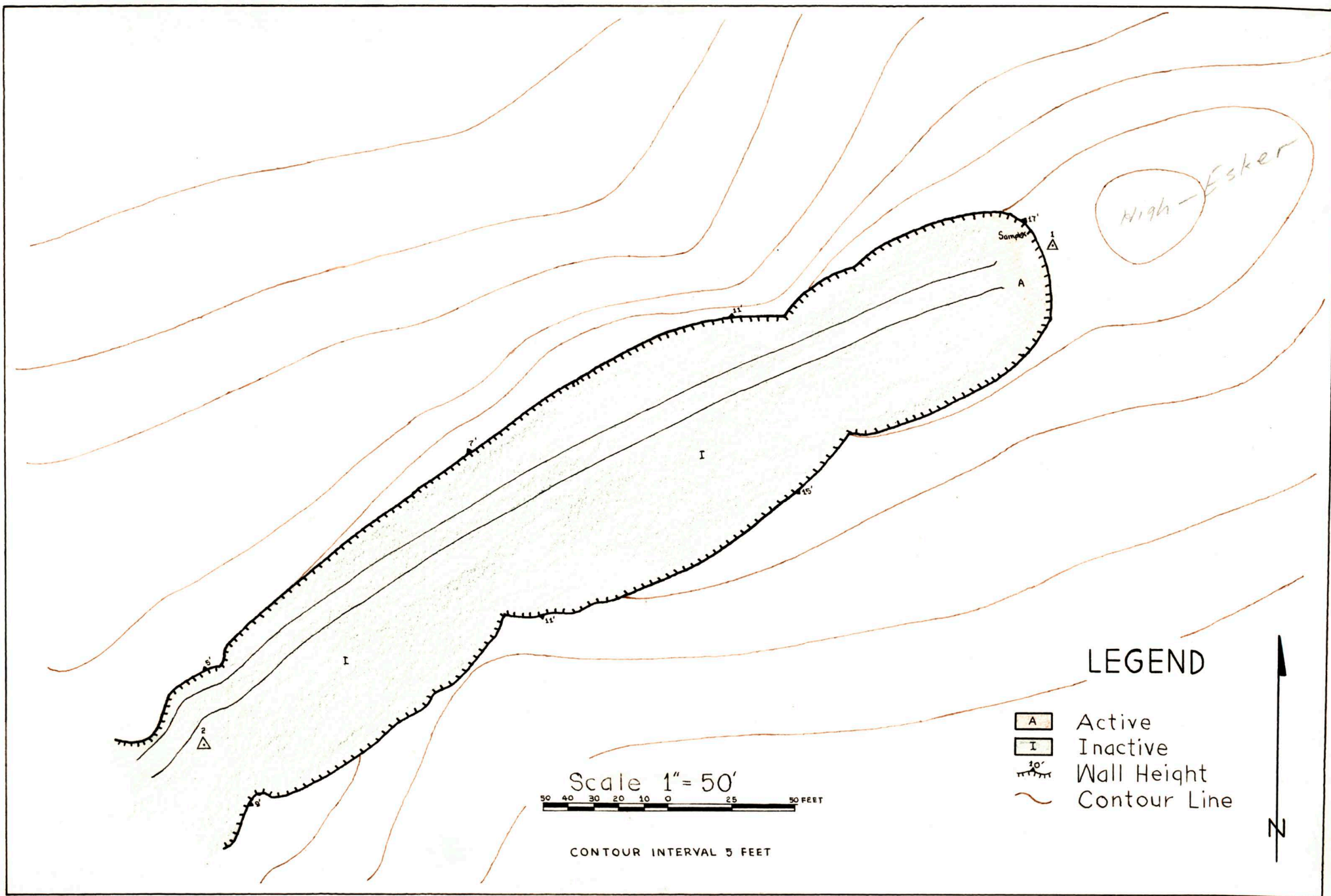
Inactive or abandoned pits observed ----- 108

Helpful bibliography and aids:

1. Price, J.A., Road materials of Tippecanoe County: 30th. Ann. Rep't. pp. 575 - 594, 1905.
2. Leverett, Frank and Taylor, F.B., The Pleistocene of Indiana and Michigan: U.S.G.S. Monograph 53, pp. 95, 96, 104, and glacial map, 1915.
3. Neill, N.P. and Tharp, W.E., Soil survey of Tippecanoe County: 37th Ann. Rep't. Dep't. of Geology and Natural Resources, pp. 248 - 273, 1912.
4. Indiana Handbook of Geology, map by Malott of glacial moraines, 1922.
5. Horberg, Leland, A major buried valley in East-Central Illinois and its regional relationships: Jour. of Geol., Vol. 53, pp. 349 - 359, 1945.
6. Fidler, M.M., The Preglacial Teays Valley in Indiana: Jour. of Geol., vol. 51, 1943.
7. Geol. of Tippecanoe County: Dep't. Geol. and Nat. Res., 15th. Ann. Rep't., 1886.

*C. L. Bieber*

C. L. Bieber  
Aug. 29, 1949



Control: Brunton Compass, Aneroid Barometer,  
and Open-Sight Alidade

Mapped by C.L. Bieber & G.C. Grender  
August 18, 1949

## THE HEDWORTH PIT

79-B  
August 6, 1950

MEMORANDUM REPORT BY ROBERT E. SARGENT

WESTERN INDIANA SAND AND GRAVEL CO., TIPPECANOE COUNTY

PLANT NUMBER ONE

Date of field examination -- August 3, 1950.

Location -- The Western Indiana plant is located at the southwest limits of West Lafayette, in Tippecanoe County, in the NW $\frac{1}{4}$  sec. 30, T.23N., R.4W. and NE $\frac{1}{4}$  sec. 25, T.23N., R.5W..

Ownership -- The plant is owned and operated by the Western Indiana Sand and Gravel Company. The land on which the plant is located is owned by the Big 4 Railroad, Mitchell Land Co., M. A. Neville, Western Indiana Gravel Company and others.

The superintendant of the plant is Clarence Snider and the plant manager is H. E. Alberts.

Information for this report was furnished by H. E. Alberts, plant manager, and J. H. Law, Secretary-Treasurer of Western Indiana Sand and Gravel Company.

Geology -- The plant is located in a Pleistocene terrace along the glacial sluiceway now occupied by the Wabash River ( See Leverett and Taylor, 1915, Pl. 6 ). Near the northwest corner of the present (new) pitting operation 38.4 feet of sand and gravel was measured. The gravel is well stratified, but generally quite poorly sorted. The deposit is cross bedded. The gravel is rounded to subrounded in texture.

At the west end of the stripped zone, west of the pit, 2.5 feet of black, gravelly, clay loam was measured.

Samples -- Sample S5049 was taken near the northwest corner of the new pitting operation ( see sketch map ). It represents the upper 23.1 feet of the 38.4 foot gravel face described above. It should be quite

representative of the deposit.

Operations -- Only the most western portion of the pit area shown on the sketch map is now in operation. Sand and gravel is being removed with a Bucyrus dragline with a 4 yard bucket. Other equipment in use includes a washing and grading plant, steam and diesel locomotives and cars, and crushers.

Sand and gravel are transported by truck and railroad. The main line of the New York Central Railroad passes between Plant 1 and Plant 2, and there is a spur to Plant 1.

Production -- The average daily production of the plant is 3000 tons. The average yearly production is from 300,000 to 350,000 tons according to Mr. J. H. Law, Secretary-Treasurer of Western Indiana Sand and Gravel Company.

The plant produces washed and graded sand and gravel in all standard sizes.

Reserves -- The company has approximately 62 acres which has not been worked. The present pitting in this area shows approximately 39 feet of sand and gravel. It is not known if this thickness will remain constant under the remaining acreage.

Respectfully submitted,

*Robert E. Sargent*

Robert E. Sargent  
Party Chief

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Leverett, F. and Taylor, F. B. (1915) The Pleistocene of Indiana and Michigan and the history of the Great Lakes, U. S. Geol. Sur., Monograph vol. 53, 529 pp., 32 Pls., 11 figs..

August 17, 1950

HEDWORTH GRAVEL PIT, TIPPECANOE COUNTY

RESAMPLING

Date of resampling -- August 3, 1950.

Resampling procedure -- Sample S5048 was taken from a 22.9 foot face at the east end of the pit. The sample represents the entire face. This sample should be quite representative of the deposit.

Respectfully submitted,

*Robert E. Sargent*

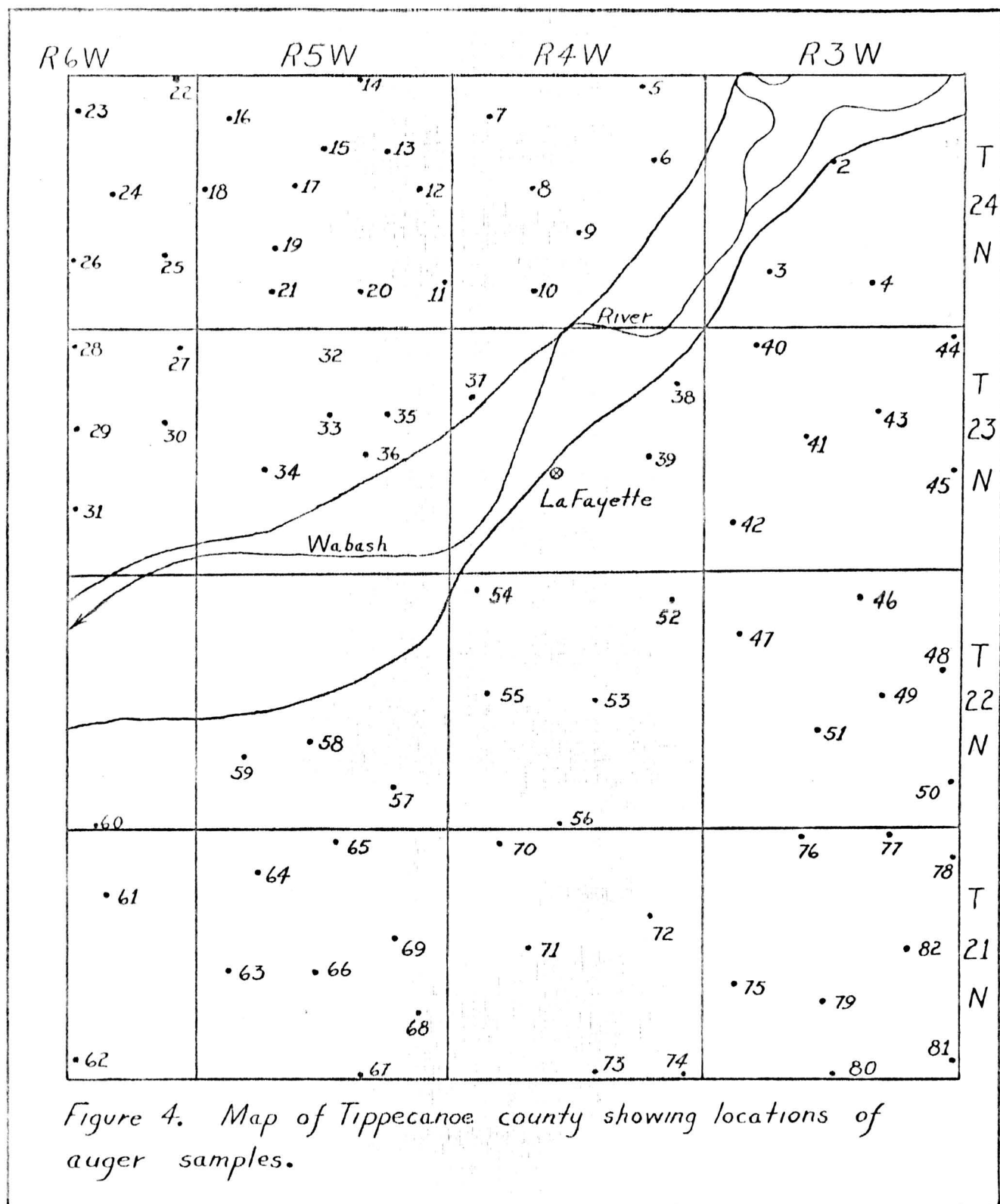
Robert E. Sargent  
Party Chief



Table 2: Mechanical analyses of the auger samples.

Sample No.	Sand	Percent Silt	Clay	Sample No.	Sand	Percent Silt	Clay
1	47.3	38.4	14.3	42	49.3	38.0	12.7
2	41.7	44.0	14.3	43	48.1	41.2	10.7
3	42.2	41.9	15.9	44	50.5	37.2	12.3
4	46.6	34.5	18.9	45	45.0	42.3	12.7
5	38.9	42.6	18.5	46	46.5	39.2	14.3
6	36.9	46.6	16.5	47	49.0	40.9	10.1
7	42.1	44.1	13.8	48	48.6	37.8	13.6
8	39.2	44.1	16.7	49	44.0	43.7	12.3
9	45.1	33.0	18.9	50	58.3	32.2	9.5
10	39.8	43.3	16.9	51	57.8	32.8	9.4
11	45.7	41.0	13.3	52	47.3	39.4	13.3
12	43.8	39.6	16.6	53	63.5	27.5	9.0
13	49.7	36.8	13.5	54	43.9	40.8	15.3
14	41.8	44.9	13.3	55	50.5	38.8	10.7
15	30.2	48.3	21.5	56	47.4	38.2	14.4
16	36.7	44.3	19.0	57	44.7	41.4	13.9
17	30.6	55.8	13.6	58	50.1	35.6	14.3
18	45.5	31.9	22.6	59	49.0	40.1	11.9
19	38.0	40.0	22.0	60	49.8	34.7	15.5
20	41.1	42.2	16.7	61	46.0	41.0	13.0
21	46.1	39.4	14.5	62	43.9	40.7	15.4
22	32.8	55.8	11.4	63	43.1	43.1	13.8
23	34.8	45.0	20.2	64	48.6	34.7	16.7
24	36.6	44.2	19.2	65	46.7	46.3	7.0
25	31.6	43.7	24.7	66	46.6	39.4	14.0
26	39.3	42.3	18.4	67	45.5	40.3	14.2
27	38.3	44.8	16.9	68	45.3	45.4	9.3
28	38.7	44.8	16.5	69	55.1	35.7	9.2
29	59.8	32.2	8.0	70	49.8	37.6	12.6
30	75.8	15.0	9.2	71	60.2	28.1	11.7
31	41.8	43.5	14.7	72	55.5	32.4	12.1
32	51.9	39.5	8.6	73	55.1	35.5	9.4
33	36.0	48.5	15.5	74	52.7	35.6	11.7
34	46.3	44.3	9.4	75	56.3	32.3	10.9
35	71.7	19.0	9.3	76	58.9	31.3	9.8
36	33.7	46.0	20.3	77	58.7	30.4	10.9
37	35.9	49.9	14.2	78	47.4	41.6	11.0
38	41.8	40.8	17.4	79	52.2	37.0	10.8
39	40.3	43.7	16.0	80	46.4	46.4	7.2
40	43.8	42.0	14.2	81	46.8	39.0	14.2
41	56.4	26.0	17.6	82	49.4	39.4	11.2

Treadway M.S.



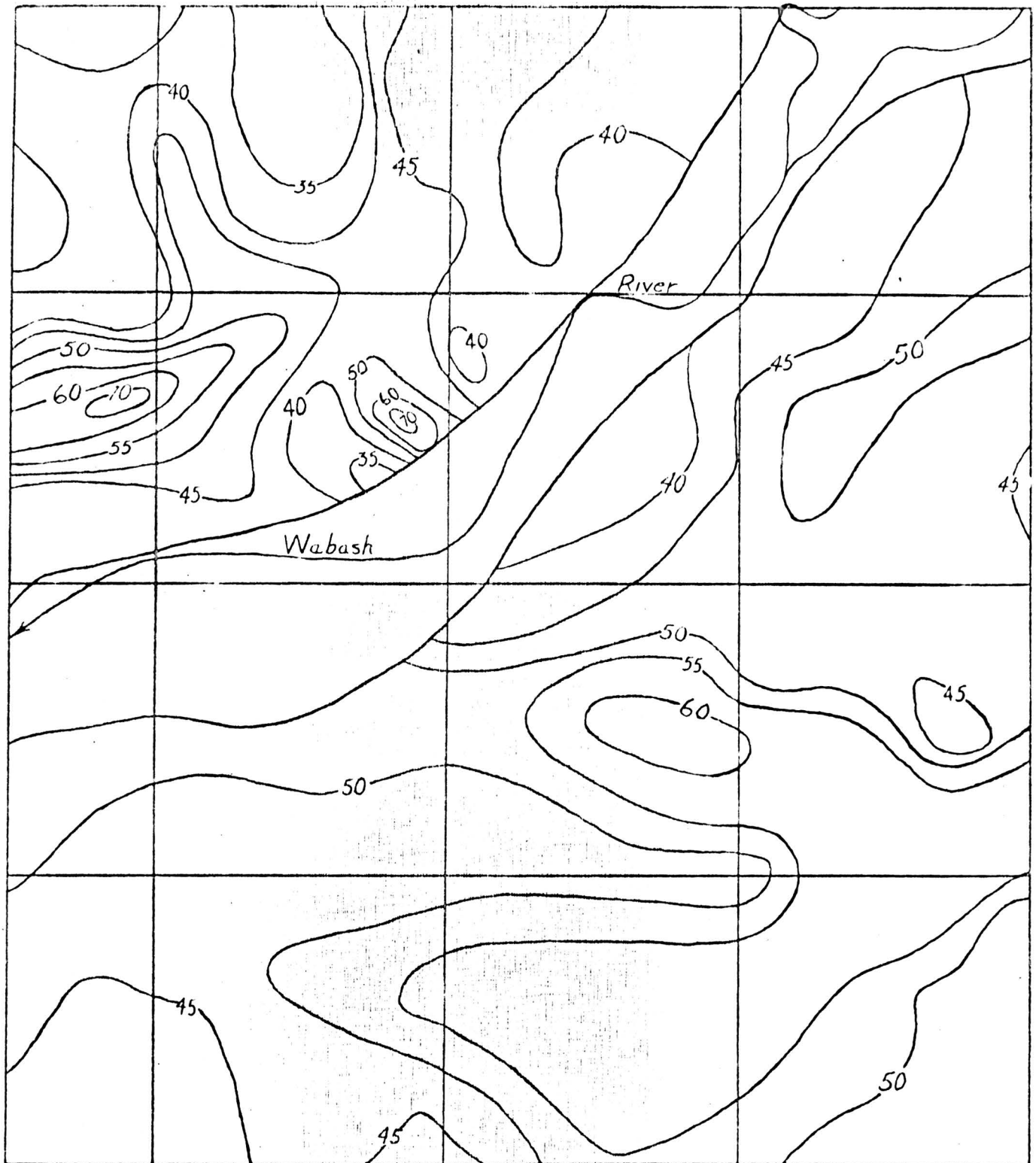


Figure 1: Lithofacies map of Tippecanoe County, Indiana, indicating percentage of sand in the surface till sheet.

**LITHOFACIES MAP, TIPPECANOE COUNTY, INDICATING PERCENT  
OF SAND IN SURFACE TILL SHEET**

**TREADWAY  
M.S.**

Table 3: Mechanical Analysis of the outcrop till  
and silt samples.

<u>Sample No.</u>	<u>Sand</u>	<u>Silt</u>	<u>Clay</u>
1-A	54.5	34.4	11.1
1-B	34.7	41.5	23.8
2-A	31.3	55.4	13.3
2-B	51.7	37.2	11.1
3-A	50.6	39.4	10.0
3-B	34.3	47.8	17.9
4-A	34.2	47.2	18.6
4-B	53.7	32.5	13.8
5-A	45.8	43.8	10.4
5-B	51.4	35.8	12.8
5-C	31.4	50.1	18.5
6-A	50.6	38.7	10.7
6-B	52.1	34.5	13.4
6-C	54.7	34.9	10.4
7-A	43.7	42.9	13.4
7-B	23.2	52.0	24.8
8-A	49.4	42.5	18.1
8-B	42.5	45.2	12.3
8-C	34.1	52.6	13.3
9-A	43.2	42.3	14.5
9-B	40.7	44.4	14.9
10-A	58.0	23.5	18.5
10-B	43.7	41.0	15.3
11-A	36.2	51.1	12.7
11-B	35.5	46.4	18.1
12-A	54.2	36.1	9.7
12-B	52.9	34.9	12.2
13-A	44.5	39.5	16.0
13-B	48.5	36.3	15.2
14-A	45.5	39.6	14.9
14-B	41.8	39.7	18.5
15-A	69.8	27.1	3.1
15-M	17.9	60.6	21.5
15-N	12.3	76.2	11.5
15-O	6.6	78.7	14.7
16-A	51.6	36.1	12.3
16-B	67.7	23.9	8.4
17-A	28.2	49.4	22.4
17-B	45.7	38.2	16.1
18-A	46.4	37.7	15.9
18-B	55.0	33.1	11.9
19-A	32.8	46.7	20.5
19-B	29.9	48.1	22.0
20-A	45.0	43.5	11.5
20-B	43.8	43.8	12.4

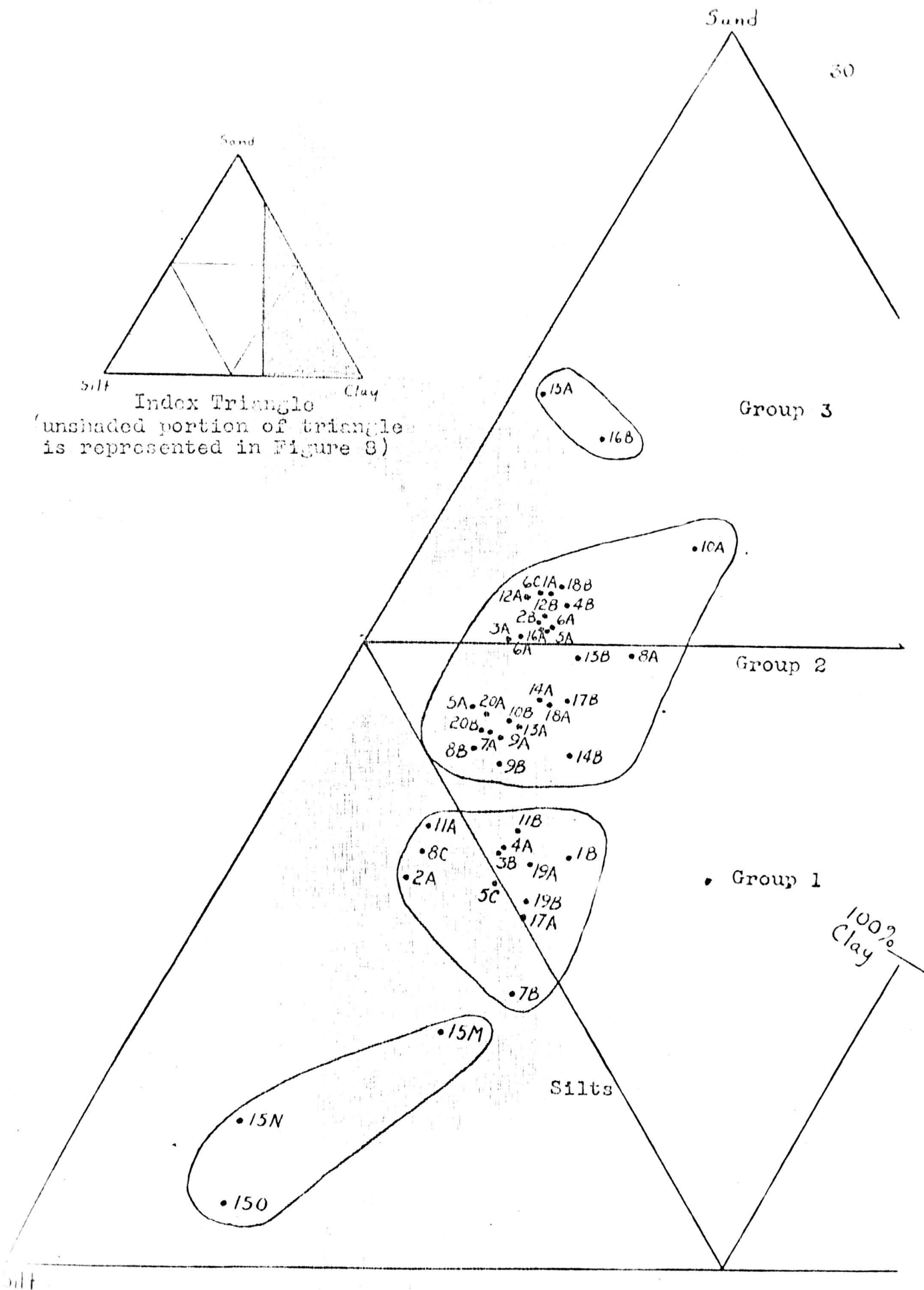
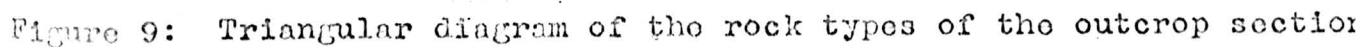


Figure 8: Triangular diagram of the textural components of the outerop till and silt samples.

Table 4: Rock type analyses of the pebble collections from the outcrop sections.

Sample No.	Pre-Cambrian	Carbonates & Chert	Sandstone & Siltstone	Shale	Limestone/dolomite/ratio
1-A	13.9	69.9	8.1	8.1	1.0
1-B	15.1	52.0	26.8	6.1	4.3
2-A	10.7	35.3	44.2	9.8	1.6
2-X	17.8	71.7	8.8	1.7	0.7
2-B	17.3	61.0	17.6	4.3	1.6
3-X	9.7	49.5	35.1	5.7	0.4
4-A	7.6	48.8	34.3	9.3	1.4
4-X	16.3	67.9	9.4	6.4	0.7
4-B	16.2	64.7	11.1	8.0	1.0
4-Y	17.9	60.9	18.3	2.9	1.0
5-A	16.5	60.5	14.3	8.7	8.8
5-B	18.6	66.0	10.2	5.1	4.5
5-C	10.2	39.3	21.3	29.1	66.0
6-A	13.3	75.6	8.7	2.3	77.0
6-B	15.1	71.2	8.5	5.2	1.7
6-C	14.8	73.2	7.9	4.1	2.5
7-X	14.5	71.0	11.4	3.1	0.4
8-A	12.1	73.6	4.3	10.0	2.1
8-C	9.7	65.7	15.5	9.1	7.6
9-A	10.5	69.3	9.2	11.0	3.5
9-B	15.4	66.4	15.4	2.8	0.7
10-A	2.5	29.8	44.7	23.0	21.6
10-B	8.4	54.0	27.4	10.2	1.0
11-A	7.9	59.2	21.5	11.4	11.1
11-X	9.4	64.0	24.0	2.6	0.5
11-B	10.4	62.4	20.8	6.4	0.4
12-A	15.7	64.8	12.4	7.1	2.8
12-B	10.9	61.8	13.7	13.7	4.2
13-A	5.8	46.0	30.9	7.7	4.6
13-X	23.8	53.2	20.0	3.0	0.6
13-B	5.9	47.3	28.3	18.5	3.7
15-A	7.0	70.8	18.9	3.3	2.9
15-X	18.9	55.7	22.9	2.5	0.4
16-A	12.2	60.6	12.2	15.0	1.7
16-X	18.6	60.1	11.1	10.2	0.6
16-B	21.1	69.3	3.2	6.4	1.4
17-A	10.1	45.5	29.1	16.3	1.1
17-B	16.2	58.8	22.4	2.6	1.0
18-A	12.4	65.8	14.2	7.6	1.5
18-X	10.5	64.9	19.0	5.6	0.8
18-B	16.7	61.2	19.4	2.7	2.7
18-Y	11.7	65.2	23.1	0.0	0.8
18-Z	24.0	61.8	10.9	3.3	1.6
19-A	3.7	39.7	30.6	26.0	0.3
19-B	6.2	53.9	22.6	17.3	0.5
20-A	13.2	79.2	3.8	3.8	1.6
20-B	16.8	74.1	5.5	3.6	1.2



Project 49 -5 -1, Detailed Report # 9, The Hedron Pit.

Location:  $2\frac{1}{4}$  miles southwest of South Raub, on the Raub Esker.

SE.  $\frac{1}{4}$  NW.  $\frac{1}{4}$  sec. 11, T. 21 N., R. 5 W., Tippecanoe County.

Owner: Mrs. Charles E. Hedworth.

Products and production: The pit has been in operation for many years. Most of the gravel taken out, however, has been during the past five years according to Mr. Hedworth, a son. Some 300 yds., along the axis of the esker, has been excavated. The width of the working is about 60 ft. on the average. The depth ranges between five and twenty feet.

The gravel is used for roads, and where clean and sharp, as in the center of the ridge, is said to be used successfully with cement. Production is irregular, and for local farm use.

Equipment: Tractor and high lift attachment; truck.

Pit detail:

Overburden: gravel shows at the surface along the top of the ridge, where undisturbed by excavation. Several large boulders are strewn over the top of the ridge, and are presumed to be nearly in place. Clay loam is on the margins of the ridge.

Problems: As the center of the ridge is excavated, side-walls slip back into the pit. The gravel becomes dirty and mixed with till outward from the center. Both top and bottom of the gravel deposit undulates. In this instance the floor of the pit rises to meet the saddle in the esker.



Hedworth Pit cont'd.

Geology: The Hedworth Pit is located in one of the higher sections of the Raub esker. (For a description of the esker, see Leverett and Taylor, The Pleistocene of Indiana and Michigan: U.S.G.S. Monograph 53, Raub Esker.) At the place of the present active pit the relief averages about 30 ft. above the lowland. The general trend is S. 50° W. Very few stones are found in the aggregate which will be held on the 2" screen. Generally fine gravel and sand prevails on the southeast side of the pit cross section. Coarser gravel is to the north. The pit follows slightly to the north of the axial line of the ridge.

The altitude of the top of the gravel ridge undulates, as does the floor of the pit. As stated in another paragraph, the floor of the pit rises in the vicinity of the saddles in the ridge. The width of the deposit is remarkably uniform. The esker was probably formed when the moraines of the Bloomington System were in recessional stages.

<u>Sieve Analysis:</u> *					%	
Remaining	on the	2"	screen	-----	.75	
"	"	"	1"	"	-----	5.58
"	"	$\frac{1}{2}$ "	"	-----	7.94	
"	"	$\frac{1}{4}$ "	"	-----	27.10	
Passing	the	"	"	-----	58.40	

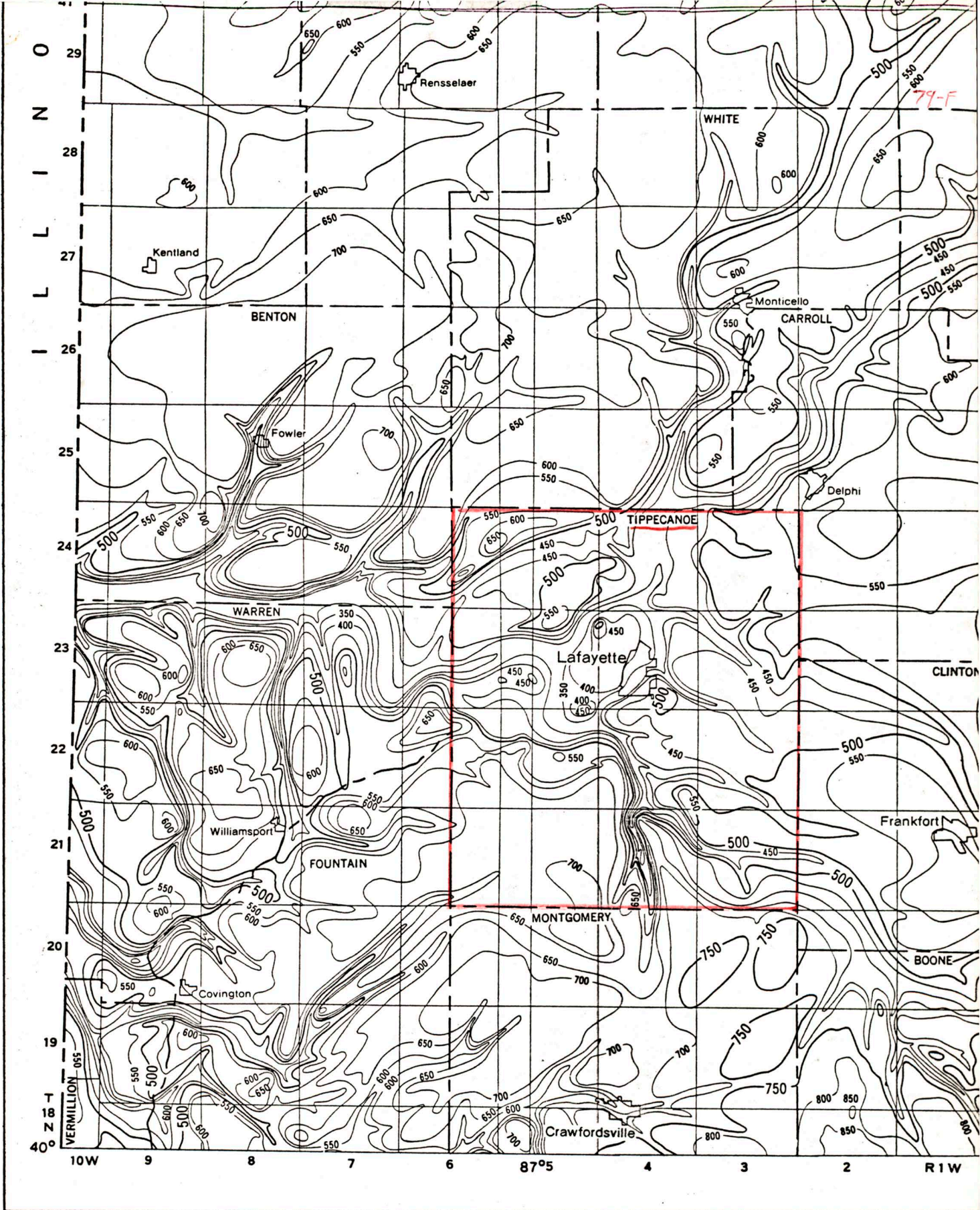
\* Gram scale used.

Hedworth Pit cont'd.

Sample: B49 - 19, notebook page 31, 32, 33. Sample taken  
at east end of pit(see map) from the base of the pit  
upward to within four feet of the top.

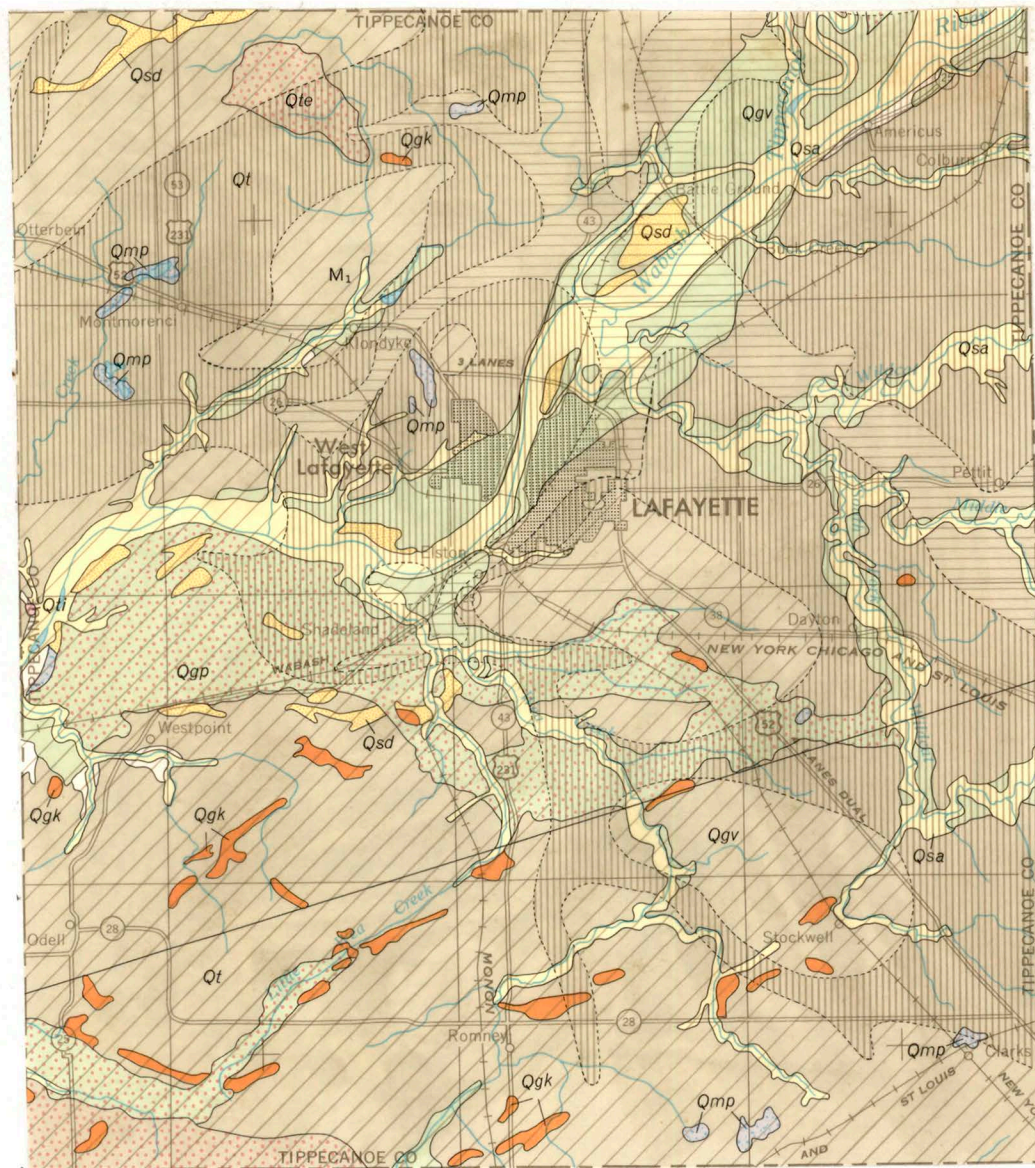
C. L. Bieber

C.L.Bieber  
Aug. 18, 1949



Base compiled from Army Map Service  
1° X 2° quadrangle maps.





R 6 W

R 5 W

R 4 W

R 3 W

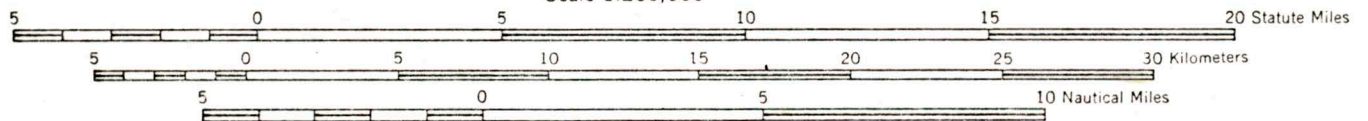
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