# LAND UTILIZATION IN THE FORT WAYNE SPILLWAY

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Armin K. Ludwig

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This is to certify that the

thesis entitled

presented by

Armin K Ludwig

has been accepted towards fulfillment
of the requirements for

Master of Arts degree in Geography

Major professor

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# LAND UTILIZATION IN THE FORT WAYNE SPILLWAY

By

Armin K. Ludwig

AN ABSTRACT

Submitted to the School of Graduate Studies of Michigan
State College of Agriculture and Applied Science
in partial fulfillment of the requirements
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MASTER OF ARTS

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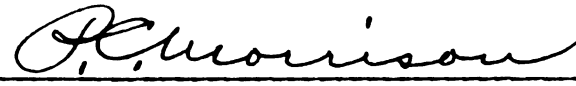
Approved 

The problem undertaken in this thesis is the determination and description of types of land use in the Fort Wayne spillway. This spillway, located in northeastern Indiana between the cities of Huntington and Fort Wayne, is a channel scoured in glacial till by water discharged from glacial Lake Maumee.

The 16,622 acres studied consist of a stretch of flat, wet bottom land, twenty miles long and on the average a mile in width, bordered by banks with slopes ranging from six to eighteen per cent. Since climate is essentially uniform throughout, differences in land utilization are partly determined by the varied soil, slope and drainage conditions in different parts of the spillway. A close relationship exists between the distribution of these features and the location of urban development and transportational facilities.

Agricultural development of the area was retarded, and population remained sparse until the late 1880's, when new lands were opened by draining of the swamps in the bottom. Despite extensive tiling of fields and dredging and straightening of water courses, farm management problems still stem primarily from drainage conditions, shown by the fact that over a third of the land remains marginal or submarginal for agriculture. Nearly sixteen per cent of the total area is idle land, thirteen per cent is woodland, and six per cent is permanent pasture. The remaining sixty-five per cent is cropped land. When properly drained most of the bottom is excellent agricultural land, but the rough, somewhat dissected banks, are used mainly for pasture along with limited amounts of small grains. Corn occupies over thirty-eight per cent of all the cropped land; small grains, twenty-four per cent; soybeans, twenty per cent; hay, eleven

per cent; rotation pasture, four per cent; and truck crops, two per cent. The raising of hogs, beef cattle, dairy cattle, and poultry are also important. Generally, farms in the region are becoming less numerous and larger.

The majority of the families resident in the spillway, however, are not dependent, or are only partly dependent, upon agriculture for their livelihood. Their income is from employment in the twenty-four commercial establishments within the area, or from working in Fort Wayne and Huntington.

Only 97 of the 304 dwellings in the area are farm homes. Of these, sixteen are located on the right bank along the highway, forty-one on the left bank, and forty in the bottom lands. Of the rural non-farm dwellings, ninety-seven are on the right bank, ninety-seven in the bottom, and only thirteen on the left bank. The four lane highway, completed in 1940, has been the most important factor in determining the location of rural non-farm residences because it facilitates access to the Fort Wayne urban area.

The value of the spillway as a route of transportation has been demonstrated since early times. Indian trails, a canal, and an inter-urban line followed it in the past; the four lane highway, a railroad, and power lines today. At present, as in the past, however, the spillway is primarily a through transportation route. The Wabash Railroad and the now abandoned Wabash-Erie Canal aided greatly in settlement of the surrounding country, but only incidentally in the development of the immediate area. In addition to serving as an axis of suburban expansion from Fort Wayne, the four lane highway has given impetus to some

commercial development, but it has added little to the region commercially in proportion to the traffic it carries.

The spillway appears to offer some industrial and commercial potentialities despite limited present development of this character. The physical, locational, and transportational conditions are suitable for certain kinds of heavy industry. Additional commerical ventures may be established in the future to attract business from users of the highway or from increased residential development. That the spillway, especially its banks, will become more and more a suburban area for Fort Wayne seems certain, although the need for additional hard surfaced roads now hinders this expansion.

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The writer wishes to express his sincere thanks to Dr. Paul C. Morrison under whose supervision and unfailing interest this investigation was undertaken and brought to a conclusion. He also wishes to thank Dr. Lawrence M. Sommers for his many helpful suggestions. A grateful acknowledgement is also due Mrs. Paul Sidell for her aid in proofreading the copy, and to the author's wife, Martha, whose help in proofreading and typing and whose constant inspiration made this thesis possible.

-- the author

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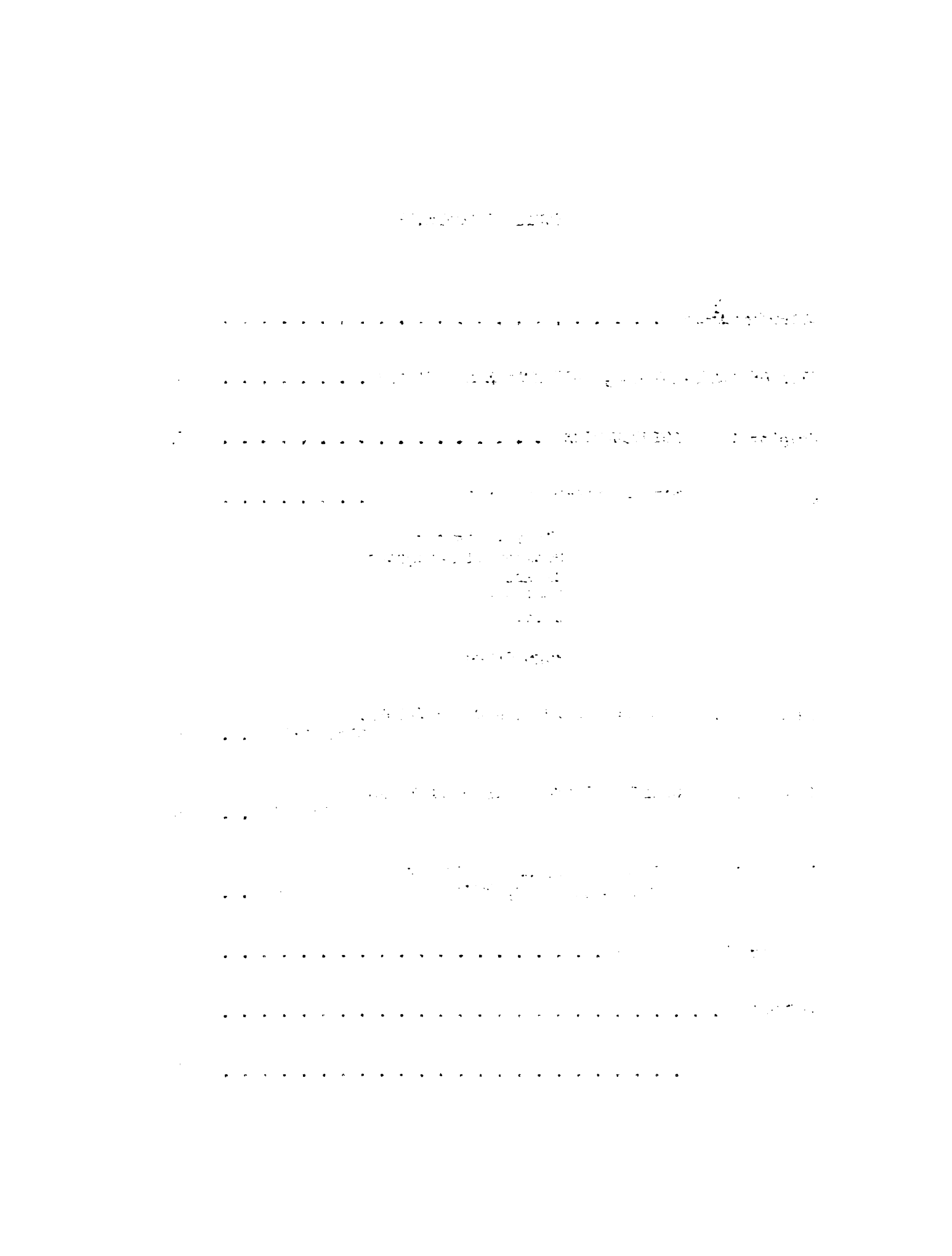

LIST OF ILLUSTRATIONS, PHOTOGRAPHS AND TABLES

LIST OF ILLUSTRATIONS, PHOTOGRAPHS AND TABLES con.

## Chapter I

## INTRODUCTION

The Fort Wayne Spillway[1] is a channel scoured in glacial till by water discharged from glacial Lake Maumee. It is located in the northeastern part of the state of Indiana in Allen, Whitley and Huntington Counties. (Fig. 1) The city of Fort Wayne is situated at the northern end, or head, of the channel. To the south, where the spillway joins the Wabash River valley, is situated the city of Huntington. The channel between these two cities forms a crude "S" pattern, approximately twenty-four miles in length and trending in a general northeast-southwest direction. Its average width is about one mile, but near each end it widens to more than two miles.

A variety of physical features is exhibited in the spillway. The banks are characterized by short steep slopes, some portions of which have been so eroded by intermittent run-off from the bordering uplands as to give them a corrugated expression. Near Fort Wayne large sand mounds, probably dunes, rise from the floor. The spillway is drained in two directions from the Great Lakes-Mississippi divide which cuts it laterally near Fort Wayne. The divide is low and areas on either side are

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[1] Frank Leverett, and Frank Taylor, The Pleistocene of Indiana and Michigan and the History of the Great Lakes, U. S. Geological Survey Monograph No. 53 (Washington: Government Printing Office, 1915), p. 334, plate XIV. Leverett and Taylor refer to the feature as the "Fort Wayne Outlet". The writer prefers the term "spillway" which denotes a feature with areal extent rather than a point. The spillway region covers that portion from the top of the right bank to the top of the left, including the slopes and the bottom.

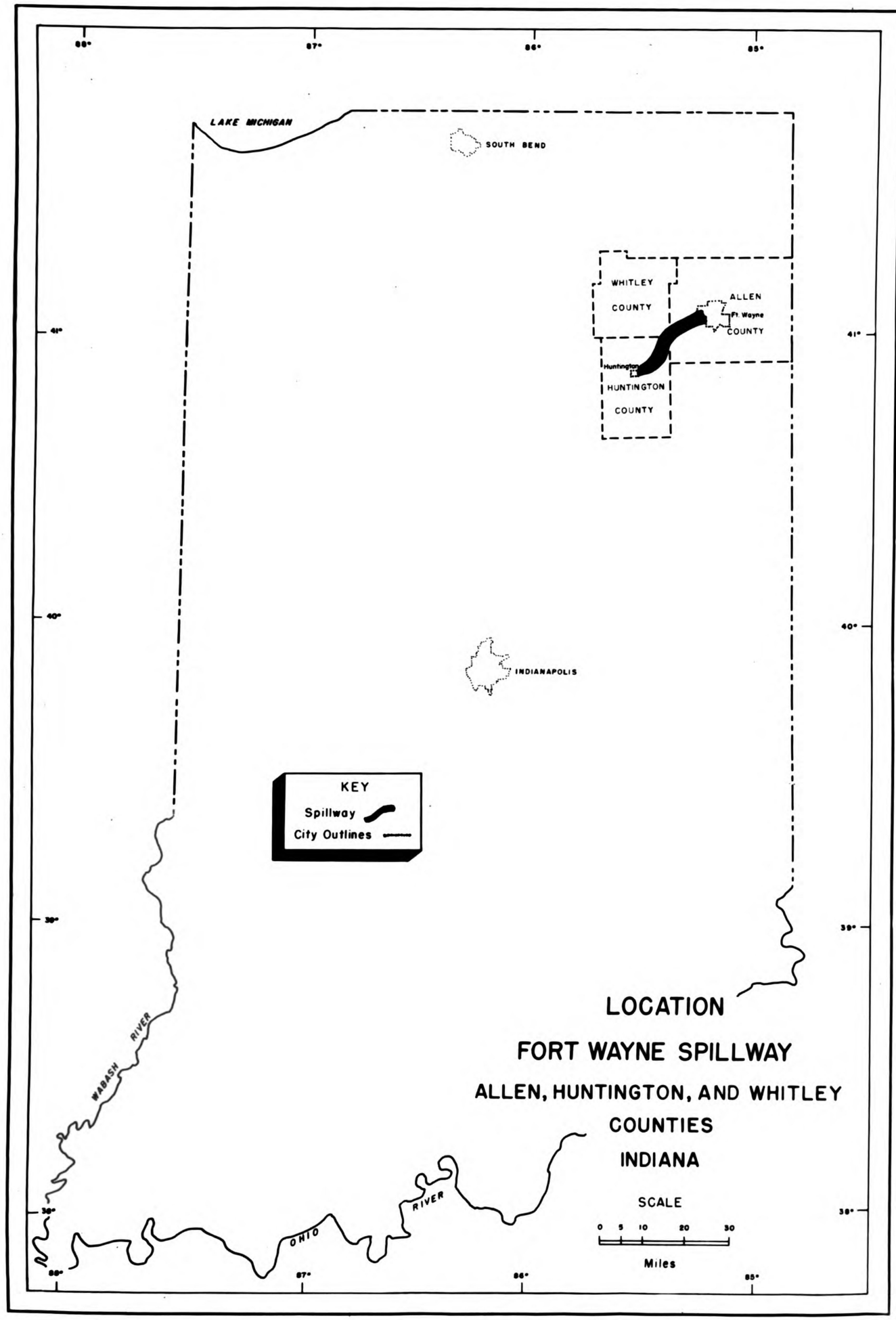
LAKE MICHIGAN
SOUTH BEND
WHITLEY COUNTY
ALLEN COUNTY
Ft. Wayne
Huntington
HUNTINGTON COUNTY
INDIANAPOLIS
KEY
Spillway
City Outlines
WABASH RIVER
OHIO RIVER
LOCATION
FORT WAYNE SPILLWAY
ALLEN, HUNTINGTON, AND WHITLEY COUNTIES
INDIANA
SCALE
0 5 10 20 30
Miles

Fig. 1

swampy. Even an elaborate network of ditches fails to drain the headward part of the channel, but towards the south drainage improves. The banks are fairly well drained as a result of their greater slopes.

In general, the soils of the surrounding upland areas are heavier than are those in the bottom. Mixed soils are found in the northern portion of the spillway. Muck and peat lie beside sand and loam, and some clay areas exist where water was once ponded. Farther down the channel towards Huntington the soils are more uniform in character. The wetter bottom lands support a dense growth of black willow shrubs; while along the water courses elm, beech, cottonwood and black willow flourish. Elsewhere, because of vast tracts of marsh grass the name "prairie" has been given to the area. Oak is predominant on the sand mounds and on the uplands. Near Huntington deep scouring of the till has uncovered bedrock, a good quality limestone, which has been the basis for quarrying operations for many years. Near Fort Wayne, where a covering of till remains, commercial deposits of gravel and sand are obtained. Climatic records indicate a uniform climate for the entire spillway, characterized by hot humid summers and cold damp winters.

The cultural uses of the land can be grouped into three major categories: settlement, agriculture, and transportation and commerce. At either end of the spillway a city is located with typical urban and suburban type settlement. Along the entire length of the channel bottom farms and rural non-farm holdings are interspersed, with one another. The agriculture of the spillway is relatively uniform throughout. Corn, winter wheat, oats, and soybeans are the major crops, although there are limited areas of crop specialization. The value of the spillway as

a route of transportation has been demonstrated since early times. Indian trails, a canal, and an interurban line followed it in the past; a modern four-lane highway, a railroad, and power lines use it today. Much of the commercial value is a result of service establishments built along the transportation routes. Some, however, is derived from the exploitation of mineral wealth.

This thesis is concerned primarily with land use in the Fort Wayne spillway. Each of the three cultural categories to be discussed represents a human adjustment to the physical features of the area. These in turn have been partially altered by the cultural features superposed upon them. Consequently, it is the writer's purpose in this paper to map and describe the distribution and characteristics of both the cultural and natural phenomena. In this way it is hoped that a regional study may evolve that will accurately present to the reader the nature and variety of land use in the spillway.

## Chapter II

## NATURAL FEATURES AND CONDITIONS

### Glacial History

The Fort Wayne spillway was formed during the Wisconsin stage, the last of the great continental ice advances. In the late Cary substage of the Wisconsin, the Erie lobe retreated from the Wabash moraine and then laid down the Fort Wayne moraine. In its steady retreat from the Fort Wayne moraine into the Lake Erie basin the melting ice lobe provided great volumes of water. This meltwater, impounded between the ice front and the Fort Wayne moraine, formed glacial Lake Maumee. Continued melting caused the lake to rise until an outlet was established through a low col in the Fort Wayne moraine at the site of the present city of Fort Wayne. (Fig. 2) The waters were discharged in a southwesterly direction to the Wabash River at Huntington and ultimately, via the Ohio and Mississippi Rivers, to the Gulf of Mexico.[2] The outlet governed the elevation of the surface of the lake which stood at 785 feet, or 212 feet above the present surface of Lake Erie. Later, a northward retreat of the ice opened a lower outlet at Imlay City in the "Thumb District" of Michigan, and discharge through the Fort Wayne channel ceased.[3]

The St. Joseph and St. Marys Rivers draining along the west edge of the Fort Wayne moraine into Lake Maumee continued deposition of their heavy

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[2]Leverett and Taylor, op. cit., plate VI.

[3]Stanard G. Bergquist and Donald C. MacLachlan, Guidebook to the Study of Pleistocene Features of the Huron-Saginaw Lobes in Michigan, Prepared for the Glacial Field Trip of the Geological Society of America, Detroit, November, 1951, p. 23.

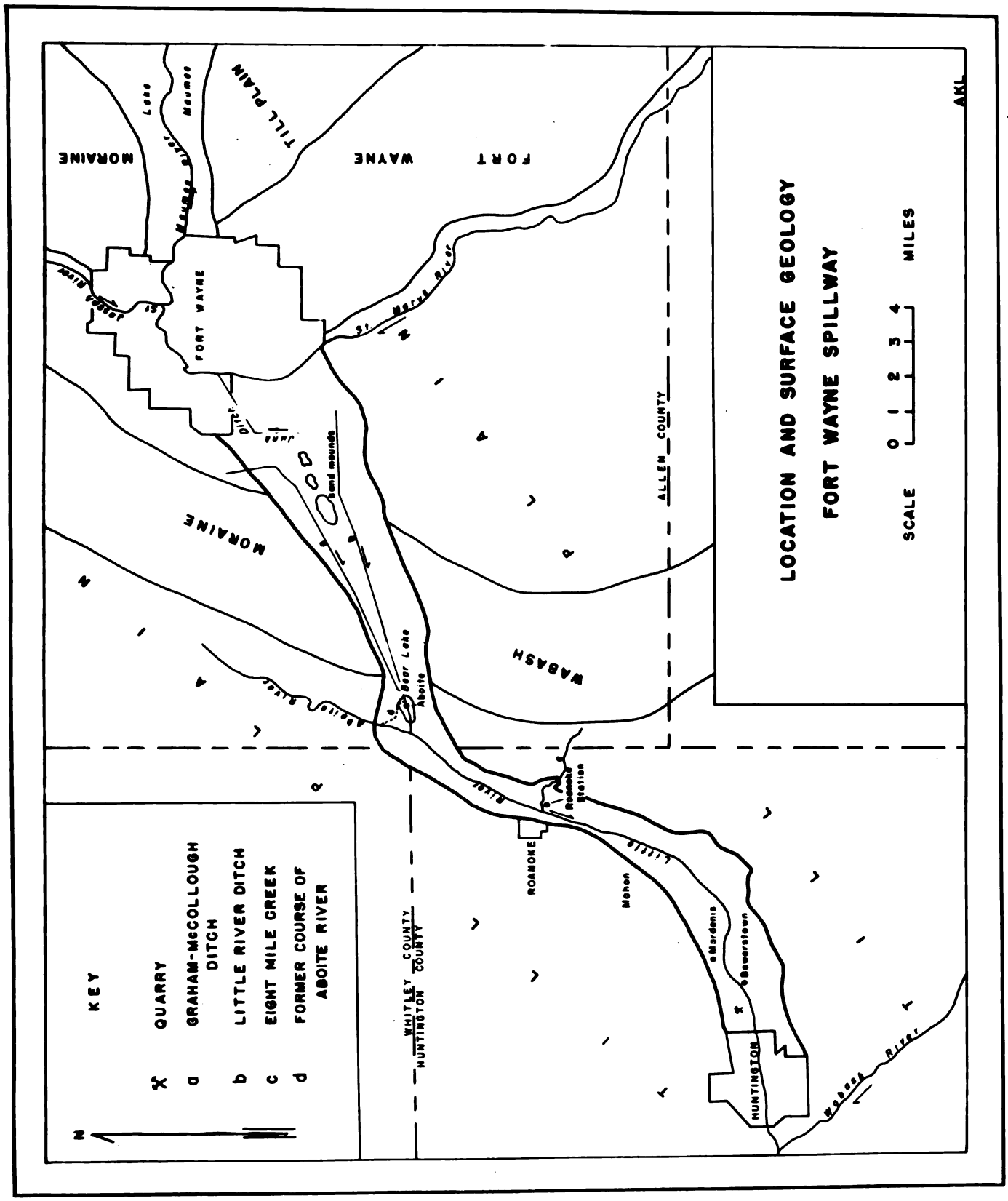
LOCATION AND SURFACE GEOLOGY
FORT WAYNE SPILLWAY
SCALE 0 1 2 3 4 MILES
KEY
QUARRY
a GRAHAM-McCOLLOUGH DITCH
b LITTLE RIVER DITCH
c EIGHT MILE CREEK
d FORMER COURSE OF ABOITE RIVER
N
MORAINE
TILL PLAIN
FORT WAYNE
WABASH
ALLEN COUNTY
WHITLEY COUNTY
HUNTINGTON COUNTY
FORT WAYNE
ROANOKE
HUNTINGTON
Mahon
Mordenis
Bowerstown
Roanoke Station
Bear Lake
Aboite
Sand mounds
St. Marys River
Aboite River
Little River
Wabash River

Fig. 2

loads of alluvium after the lake level fell. This material originally was cleared by the discharge from Lake Maumee down the spillway, but with diminished flow from the lake, silting up of the area resulted and a divide was formed. The Maumee River came into existence, flowing toward the retreating water in the lake basin, and captured the discharge of both the St. Marys and St. Joseph Rivers. All drainage in the immediate Fort Wayne area was consequently reversed from the southwest to the northeast, thus completing the abandonment of the Fort Wayne Spillway.[4] At present, a broad, extremely flat clay plain with portions bordered by well defined ridges (old beaches), delineates the former position of glacial Lake Maumee. In some parts the lake plain is over sixty miles wide in a north-south direction, but it narrows to two miles at the outlet just east of Fort Wayne.

In addition to cutting the col in the Fort Wayne moraine the meltwaters also breached the Wabash moraine to the southwest. Both moraines in the area are low, ill-defined, difficult to distinguish from till plain, and appear to have little effect on the topography. However, the spillway channel narrows where it passes through the Wabash moraine. The remainder of its course to the south and west was cut in till plain and is narrow except at the two places where the discharge changed direction and cut into the bank.

The upper portions[5] of the spillway are covered to considerable depth with glacial drift. Near Fort Wayne well defined mounds of sand

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[4]Charles R. Dryer, "The Wabash-Maumee Waterway", Annals of the Association of American Geographers, IX (1919), p. 44.

[5]Hereafter, the part of the spillway near Fort Wayne will be called the upper portion; that nearest Huntington, the lower portion; and between these, the middle portion.

rise from the floor, which farther to the east presents a rolling aspect. In the middle portion, where the surface is smoother, more than thirty feet of sand, gravel, peat, and clay cover the bedrock, but near Huntington these deposits are thinner or entirely absent.

## Geology

Immediately to the east of Huntington, bedrock crops out on the floor of the spillway. Here, the overlying drift was swept away by the discharging water. The rock consists primarily of limestone of Silurian age whose slightly dipping beds strike at right angles to the spillway axis. Where quarrying has reached lower beds, Silurian shale has been found. The general dip of the beds is to the northeast, down and away from a large Silurian reef which forms the core of the bedrock in the exposures.[6]

New Corydon limestone underlies the spillway to the east of Huntington, but is nowhere exposed. (Fig. 3) A bed of Huntington dolomite, outcropping immediately to the west of the New Corydon, is being quarried. The rock has been used primarily for lime burning and agricultural purposes. Liston Creek limestone outcrops in the remainder of the spillway to the west and underlies the city of Huntington. It is quarried to provide crushed stone for road surfacing and cement aggregate. Mississinawa shale has been uncovered under the Liston Creek formation. In one limestone quarry contact with the Mississinawa stopped work in that portion of the pit. In other parts of the state the shale has been quarried exclusively as a raw material for rock wool. All the beds named rest comformably upon one another.

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[6]Edgar R. Cumings and Robert R. Shrock, The Geology of the Silurian Rocks of Northern Indiana, Department of Conservation, State of Indiana, Division of Geology, Publication No. 75 (Indianapolis: 1928), p. 142.

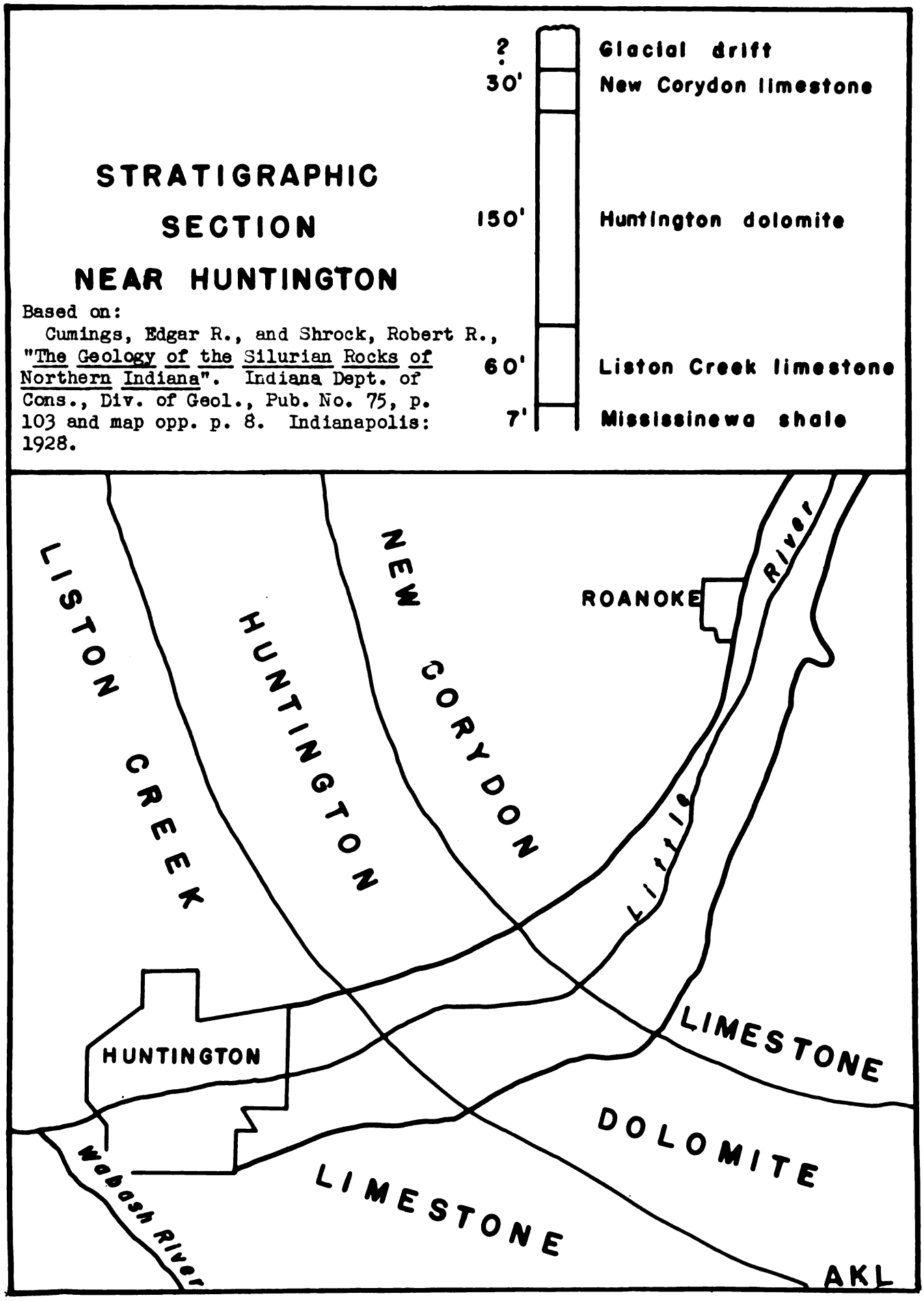
STRATIGRAPHIC
SECTION
NEAR HUNTINGTON
Based on:
Cumings, Edgar R., and Shrock, Robert R., "The Geology of the Silurian Rocks of Northern Indiana". Indiana Dept. of Cons., Div. of Geol., Pub. No. 75, p. 103 and map opp. p. 8. Indianapolis: 1928.
?
Glacial drift
30'
New Corydon limestone
150'
Huntington dolomite
60'
Liston Creek limestone
7'
Mississinewa shale
LISTON CREEK
HUNTINGTON
NEW CORYDON
ROANOKE
River
Little
HUNTINGTON
LIMESTONE
DOLOMITE
LIMESTONE
Wabash River
AKL

Fig 3

## Climate

Weather records from stations at Fort Wayne and Huntington present a fairly accurate picture of the climate of the spillway region. Conditions at the two stations are nearly the same. . (Table 1) The average annual rainfall at Huntington is 36.82 inches, or about two and one-half inches more than at Fort Wayne where the mean is 34.13. May, June and July are the months of greatest rainfall. May is the wettest month for both stations with an average of 3.86 inches at Huntington and 3.46 inches at Fort Wayne, while February is the driest month with only 2.02 and 1.82 inches. This includes melted snow. The annual snow cover received at Fort Wayne is 27.0 inches.[7] The entire region has at least a one inch snow cover for a forty to sixty day period annually. Thirty to forty days a year, thunderstorms are common in the region. The greater percentage of these occur during the growing season. On a July morning relative humidity averages 70 to 75 per cent, dropping to 50 to 55 per cent at noon.

Temperature readings at the two places likewise are similar. The greatest difference in mean temperature between the two stations for any given month is only one and one-half degrees. The highest monthly temperatures are recorded in June, July and August. July is the warmest month, averaging over seventy-four degrees. These high temperatures coincide with the period of greatest rainfall. The coldest month is January with a 26.4 degree average at Huntington and a 26.3 average at Fort Wayne. The maximum temperatures ever reached were 110 degrees at Huntington,

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[7] U. S. Weather Bureau, Local Climatological Summary with Comparative Data, (Kansas City: Government Printing Office, 1953), Fort Wayne Section.

and 106 degrees at Fort Wayne; the minimum, -20 degrees at Huntington, and -24 degrees at Fort Wayne. In the climatic system devised by Koppen the spillway region would fall into the Dfa classification, since the coldest month averages less than 26.6 degrees, the warmest month over 71.6 degrees, and precipitation is evenly distributed throughout the year.

At Huntington the growing season averages sixteen days less than at Fort Wayne. This is probably because Huntington is so situated in the spillway and in the Wabash River valley that cold air may settle, accounting for the later frosts in the spring and earlier frosts in the fall. It appears that Huntington's 160 day growing season is probably more characteristic of the spillway proper than is the Fort Wayne season of 176 days. Between 9.5 and 10.0 hours of sunshine are received daily in the growing season.

Table 1

| | Temperature Comparison[8] | | Precipitation Comparison[9] | |
|---|---|---|---|---|
| | Fort Wayne | Huntington | Fort Wayne | Huntington |
| J | 26.3 | 26.4 | 2.38 | 2.68 |
| F | 27.8 | 27.3 | 1.82 | 2.02 |
| M | 36.9 | 38.3 | 3.31 | 3.30 |
| A | 48.3 | 49.5 | 3.04 | 3.10 |
| M | 59.6 | 60.6 | 3.46 | 3.86 |
| J | 69.4 | 69.9 | 3.33 | 3.84 |
| J | 74.1 | 74.6 | 3.34 | 3.30 |
| A | 71.8 | 72.5 | 2.98 | 3.54 |
| S | 64.8 | 66.3 | 3.20 | 3.19 |
| O | 53.7 | 53.5 | 2.56 | 2.92 |
| N | 40.4 | 40.5 | 2.33 | 2.59 |
| D | 29.3 | 29.7 | 2.38 | 2.48 |

[8]U. S. Weather Bureau, Climatological Data. Annual Summary, Vol. LVIII, No. 13 (Chattanooga: Government Printing Office, 1952), p. 136-137.

[9]U. S. Department of Agriculture, Climate and Man, (Washington: Government Printing Office, 1941), p. 852-853.

## Drainage

For the purpose of describing drainage, the land in the spillway can be classified as wet, poorly drained and adequately drained. That portion of the spillway nearest Fort Wayne where water stands at or immediately below the surface for all but the driest months of the year, is classified as wet land. (Fig. 4) By far the largest portion of the area is poorly drained land which is less wet than the spillway floor nearest Fort Wayne. (Fig. 5) This poorly drained area (essentially bottom land) is subject to flooding during the spring of the year, but is capable of maintaining good crops when tiled and drained. The banks and higher ground associated with the spillway, and the land which has been well tiled is classified as having adequate or good drainage. (Fig. 6)

The direction of drainage in all but the easternmost part is southwest toward Huntington. (Figs. 2 and 10) Beyond the low divide near Fort Wayne the drainage is to the northeast, via the Junk Ditch, but during the 1913 floods fully one-third of the water discharged by the St. Joseph and St. Marys Rivers flowed over the divide to the southwest instead of moving northeast down the swollen Maumee to Lake Erie.

Two small rivers, the Little and the Aboite, drain the spillway to the southwest. The source of the Little River is in the divide area near Fort Wayne, while the Aboite flows from the north, entering the spillway at the outer edge of the Wabash moraine. It seems entirely possible that the Aboite River was the border drainage of glacial meltwater when the ice stood on the Wabash moraine sometime before the spillway was cut, and that later the rising water of Lake Maumee found this channel and, discharging through it, enlarged it. The valley of this river is at grade for some

Fig. 4

Fig. 5

Fig. 6

Fig. 4 Wet land with heavy weed growth in Allen County "prairie" area. The Wabash Railroad grade is seen in the background. The trees beyond are on the right bank.

Fig. 5 Poorly drained land in the divide area, Allen County. Note the low spot which is holding the water in the center of the field. This same field produced an excellent crop of corn the year before this picture was taken.

Fig. 6 Adequately drained land prepared for planting, Huntington County.

distance north of the right bank of the spillway, a fact which tends to support the conclusion that the Aboite was border drainage along the ice front standing on the Wabash moraine.

In 1881, two longitudinal ditches, the Graham-McCollough (Fig. 7) and the Little River Ditch, were dredged by the counties. Bear Lake, a large pond that formerly existed just east of Aboite, was drained at this time and its bottom converted to farmland. The wide bend in the Aboite River at the town of Aboite was eliminated by the dredging of a new and more direct channel. A confluence of all longitudinal ditches occurs in northern Huntington County, resulting in only a single major ditch (Little River) reaching the Wabash River at Huntington. A new drain plan is pending for Allen County, and near Huntington, the grade of the Little River was increased recently by the blasting of a deeper channel through bedrock. (Fig. 8)

A number of changes in the features of the natural landscape have been brought about by shifts in the drainage. Several drainways on the left bank[10] begin as natural intermittent streams flowing from the uplands. Upon reaching the base of the slope, these have been dredged to facilitate maximum flow of water. To a lesser extent this is true also on the right bank. Eight Mile Creek is an example of one of these dredged drainways. (Fig. 9)

## Slope

The nature of the spillway (an abandoned river bed) causes almost all the slope to be on its banks. (Fig. 10) From the very flat bottom land

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[10]Hereafter, the terms "right" and "left" bank will be used to describe the location of banks when the observer is looking in the direction of the original flow of glacial water through the channel, i. e. southwest.

Fig. 7 View looking up the Graham-McColloch Ditch. Note the lack of flow in the ditch itself. One of the sand islands lies to the right across the Wabash Railroad grade.

Fig. 8 Little River near Bowerstown, Huntington County. Note the chunks of limestone that make up the spoil banks here. This portion of the river was blasted through the bedrock.

Fig. 9 Looking up the Little River from where it is joined by Light Lick Creek. Both streams have been dredged here and the material spread out so there are no high spoil banks.

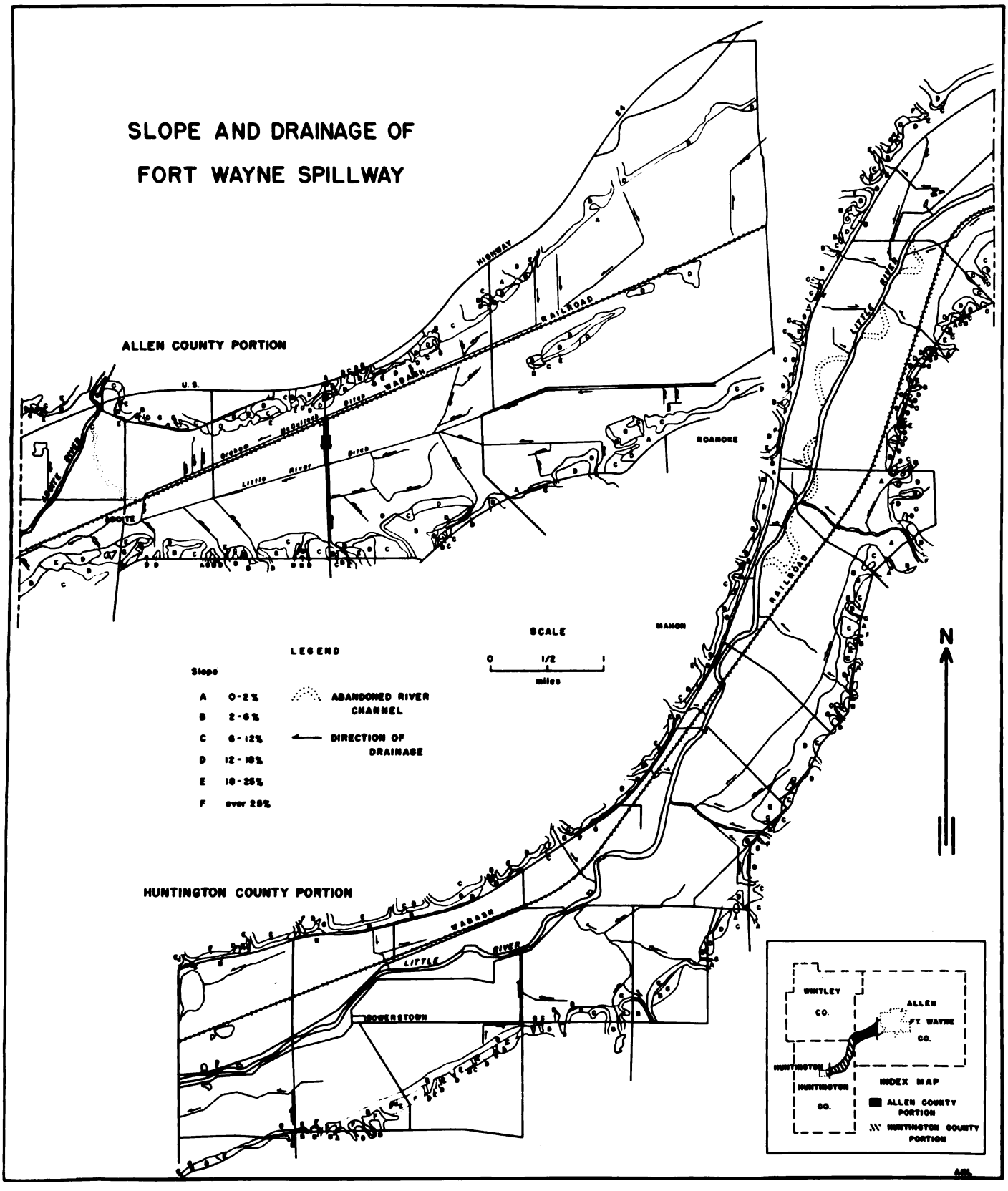
SLOPE AND DRAINAGE OF
FORT WAYNE SPILLWAY
ALLEN COUNTY PORTION
HUNTINGTON COUNTY PORTION
LEGEND
Slope
A 0-2%
B 2-6%
C 6-12%
D 12-18%
E 18-25%
F over 25%
ABANDONED RIVER CHANNEL
DIRECTION OF DRAINAGE
SCALE
0 1/2
miles
N
HIGHWAY
RAILROAD
WABASH
RIVER
LITTLE
ROANOKE
MANOR
ROUSERSTOWN
WHITLEY CO.
ALLEN CO.
FT. WAYNE
HUNTINGTON
HUNTINGTON CO.
INDEX MAP
ALLEN COUNTY PORTION
HUNTINGTON COUNTY PORTION

Fig. 10

the sides rise steeply with slopes between six and eighteen per cent, or "C" or "D" slopes by Soil Conservation Service standards.[11] Many farms cover both slope and bottom, so that land use is associated with both aspects.

The right bank, which is followed by the highway, has much shorter, and therefore steeper slopes, than does the left bank which has been more severely eroded by run-off from the bordering uplands. This differential erosion seems to have lessened the steepness of the left bank by creating many breaks in the slope, giving what appears to be a more gentle drop into the bottom. There is the possibility also that the left bank is lower than the right, but no data are available to substantiate this. The short, steep slopes of the right bank have a high erosion potential and thus cultivation is not as frequent as on the longer slopes of the left bank. The construction of the highway was accompanied by the use of many cuts and fills that give the right bank a more subdued appearance. Because a greater portion of the left bank is under cultivation erosion scars occur more often on that side.

Near Fort Wayne the sand mounds, three in number, rise from the floor of the spillway to a height of twenty feet or more. (Figs. 7 and 11) Their sides are very steep—"D" and "E" (12 to 25%) types. These "islands" probably were deposited by wind transporting material from the bottom of the spillway during low water episodes.[12]

There seems to have been enough compact till in the composition of the Wabash moraine to lessen cutting by the glacial waters and as a result

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[11] 0 to 2% A slope, 2 to 6% B slope, 6 to 12% C slope, 12 to 18% D slope, 18 to 25% E slope, over 25% F slope.

[12] Frank Leverett, Glacial Map of Indiana, U. S. Geological Survey Monograph LIII, (Washington: Government Printing Office, 1914), plate VI.

the channel narrows considerably at this point and widens again at the outer edge of the moraine where the channel changes direction. Here the Aboite River joins the spillway. (Fig. 12) The slopes where the spillway cuts through the moraine, however, are about the same elevation and of the same steepness as elsewhere on the right bank. In fact, with the exception of the portion nearest Fort Wayne where the spillway sides are low and the slopes are long, there is not much slope variance within either bank.

## Soil

The soil of Allen County was mapped by the United States Department of Agriculture in 1908. Most of the information gathered then, with the exception of the delineation of textural boundaries, would have to be modified in the light of present day mapping techniques. The textural boundaries, though, give a fair indication of the distribution of the classes of soils found in the spillway. No attempt is made to give series names from this old map, as they have also been greatly modified. However, the Soil Conservation Service has mapped individual farms in the area during the last few years, and the results of such work can be used to establish soil type samples of both the bottom and the banks of the spillway.

Soils of the area can be grouped as follows: clay and clay-loam soils on the banks and on the uplands; dark-colored, wet mineral soils of varying texture along the bottom at the edge of the slope, and in spots where water was ponded (Bear Lake); mucks and peats in the upper part of the channel and on the divide; and sandy and sandy loam soils in the mounds and on the rolling bottom near Fort Wayne.

One of the farms mapped in Allen County, a 138 acre tract occupying both the bordering uplands and the bottom of the spillway, can be considered

Fig. 11 View of one of the sand islands in Allen County, taken from the Wabash Railroad grade. Wet land may be seen in foreground.

Fig. 12 General view of the right bank showing the Wabash River valley which is cut to grade into the right bank.

fairly typical so far as soil types are concerned.[13] The upland soils include St. Clair and Washtenaw; the bottom, Shoals, Eel, and Brookston types. The St. Clair is generally a silt loam over a plastic or silty clay occurring on level to rolling upland with associated shallow depressions[14] such as are found on the banks and uplands bordering the spillway. The Washtenaw series represents a colluvial soil washed into the shallow depressions, and is generally light and fairly well drained. In the bottom the Eel series is predominant. This is a light gray, fertile alluvial soil varying in texture which was deposited on the level valley floor. The Shoals differs from the Eel only in that it is subject to more frequent flooding for longer periods of time, and is therefore wetter.[15] The Brookston is a loam or clay loam high in fertility and organic matter and generally moist or wet. The Soil Conservation Service notations for this farm indicate that the sloping land is subject to severe erosion and suggests that it be used for hay and pasture, and that sod waterways be left in all fields wherever practicable.

Another Soil Conservation Service report concerns a 100 acre farm in Allen County, situated in the middle of the spillway bottom.[16] The

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[13] Farm Conservation Plan for the Perry Mills Farm (Fort Wayne: Soil Conservation Service, October, 1950), second plate.

[14] Jethro O. Veatch. Agricultural Land Classification and Land Types of Michigan, Michigan Agricultural Experiment Station, Michigan State College Special Bulletin No. 231, (East Lansing, Michigan: Agricultural Experiment Station, October, 1941), pp. 23-32.

[15] T. M. Bushnell, The Story of Indiana Soils, Purdue University Agricultural Experiment Station, Special Circular No. 1, (Lafayette, Indiana: Agricultural Experiment Station, June, 1944), figure 51.

[16] Farm Conservation Plan for the Ray Reichenbach Farm (Fort Wayne: Soil Conservation Service, November, 1946), second plate.

Shoals soil series is the only one differentiated. This is the site of old Bear Lake where the slope rarely exceeds one per cent, thus making drainage the major problem on the farm.

The Soil Conservation Service has also developed a farm plan and a soil map for a 323 acre farm in the bottom near the sand mounds in Allen County.[17] The predominant soil on this farm is the Westland-Abington series. This is composed of silty clay loam overlying an unrelated horizon of stratified gravel and sand. The soil generally occurs in old glacial drainageways. The Bronson and Homer series are also found here. These consist of silt loams overlying an unrelated "D" horizon of stratified gravel and sand. All these soils are associated with the sand mounds, and form a catena ranging from the moderately well-drained Bronson through Homer and Westland to the very poorly drained Abington soils. Coloma loamy fine sand is present on the crest of the sand mounds. Some wet, heavy Brookston silty clay lies in the level bottom adjacent to the sand mounds.

Near the Allen-Huntington County line the Soil Conservation Service has mapped another farm which lies both on the banks and in the bottom.[18] In the bottom the Eel and Griffin series predominate. These closely resemble the characteristics and position of the Shoals previously discussed. Miami, Nappanee and St. Clair series dominate the hillside, while a strip of Washtenaw colluvium lies in a gully which runs down the bank.

There is no soil map of any kind available for Huntington County, consequently all the findings presented were observed by the author in the

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[17] Farm Conservation Plan for the Virgil Harrold Farm (Fort Wayne: Soil Conservation Service, February, 1949), second plate.

[18] Farm Conservation Plan for the John Grayson Farm (Fort Wayne: Soil Conservation Service, November, 1950), second plate.

field. The soil in upper Huntington County is characterized by a greater uniformity in color and texture than that in the Allen County portion. The higher percentage of land in production indicates better drainage in this section. From near Bowerstown to Huntington the soil becomes progressively thinner and in the quarry district bedrock, overlain by a veneer of soil from one to six feet in depth, impedes tillage as well as drainage. (Figs. 13 and 14)

## Vegetation

Vegetation in the spillway varies greatly as a result of drainage and soil variations. An oak-hickory association is characteristic of the banks and uplands. (Fig. 15) Black willow, basswood and cottonwood trees, cat-tails and marsh grass flourish on the wet, organic soils of the divide area just west of Fort Wayne. It was here that the presence of open tracts of marsh grass suggested the name "prairie". In this portion of the spillway, a variety of vegetation flourishes on the well-drained sand of the "island". Elm, sassafras, shagbark hickory, wild red cherry, dogwood, beech, tulip, and black, white and pin oak trees grow through a tangle of blackberry and wild grape vines, and shade countless ferns and wild flowers.

In the remainder of the spillway, where farming has resulted in the removal of much of the natural vegetation, elm predominates in local patches which also contain ash, shagbark hickory, and swamp white oak. Elm is also dominant along the drainage lines where sycamore, hickory, ash, beech and wild red cherry flourish.

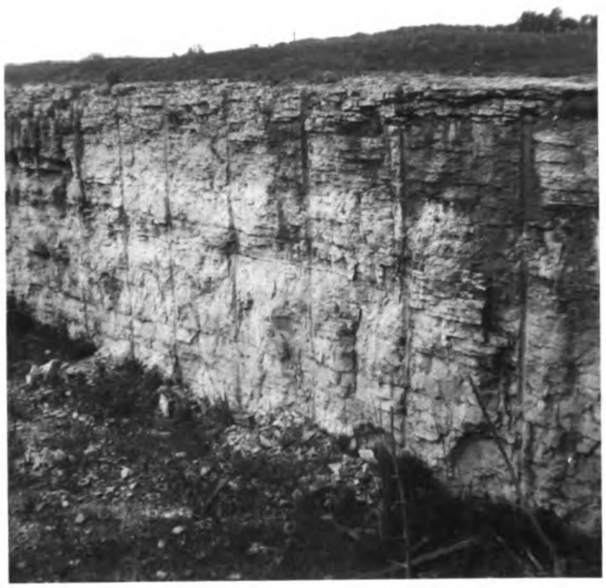

Fig. 13 Face of quarry in Liston Creek limestone showing depth of soil overburden.

Fig. 14 Profile of soil overlying bedrock, Huntington County. The spade, whose nose is resting on the bedrock gives an indication of soil depth. Note weathered pieces of rock to left of spade.

Fig. 15 Oak-Hickory vegetation on the right bank, Huntington County.

## Chapter III

## CULTURAL FEATURES AND CONDITIONS: SETTLEMENT

### Background

The first recorded rural settlement in what is now Wayne Township,[19] Allen County, was made in 1814, but it was not until October 1823, that lands in this township were officially opened for sale.[20] Prior to 1823 only a few squatters composed the total rural population. Thirty persons arrived in Aboite Township from Maryland in 1833; but Lafayette Township had no residents within its borders until 1842.

Vast tracts of swamp (the spillway bottom then presumably constituted one of the major swamps) made construction of roads difficult in Aboite Township; consequently the population remained scattered. The township was isolated from arteries of transportation for many years and development of cultural features was retarded. In the 1870's assessment was made on Aboite Township property owners for road improvements. These roads greatly aided in the occupancy of the upland, but in the spillway development was slow. Actually population remained sparse in all three townships until the late 1880's, when new lands were opened up by draining of the swamps.

The initial settlement in Jackson and Union Townships of Huntington County was made on the right bank of the spillway along the Wabash-Erie

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[19] The spillway traverses Wayne, Aboite, and Lafayette Townships in Allen County; Jefferson Township in Whitley County; Jackson, Union, and Huntington Townships in Huntington County.

[20] Mrs. Samuel R. Taylor, "The Story of the Townships of Allen County", The Pictorial History of Fort Wayne, Indiana, by B. J. Griswold (Chicago: Robert O. Law Company, 1917), p. 588.

Canal.[21] In Jackson Township the first white landowner settled near Roanoke in 1837. The first permanent white inhabitant in Union Township located along the canal in 1834. All settlement was made on higher ground to avoid the "low swampy prairie". The present location of the city of Huntington was the site of early military encampments, but the first permanent settlement was not made until 1811.

## Method of Settlement Classification

Dwellings and landholdings are the major features of settlement to be discussed in this chapter. Each of these features has been grouped into three categories: urban, rural non-farm, and farm. (Fig. 16) The category into which an individual item was placed was determined by its location, and/or means of livelihood of its occupants.

The urban type of dwelling is located in close proximity to a large group of houses of similar kind, and is generally, though not always, associated with an incorporated area. The occupants of both this type and the rural non-farm type gain the major part of their living from sources other than farming, but the rural non-farm home is seldom found in close association with other dwellings. The criteria for the location of a farmstead[22] are the same as for the rural non-farm residence. However, in order to be classified as a farmstead, the occupant must obtain a major portion of his income from the land upon which he lives, or from land which he farms.

It might be noted that the criteria for the foregoing categories apply specifically when the occupant of a dwelling was interviewed and the

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[21] History of Huntington County Indiana, (Chicago: Brant and Fuller Publishers, 1887), p. 635.

[22] The term farmstead in this thesis denotes only the dwelling (i.e. the farm house), and does not include the outbuildings or farmland.

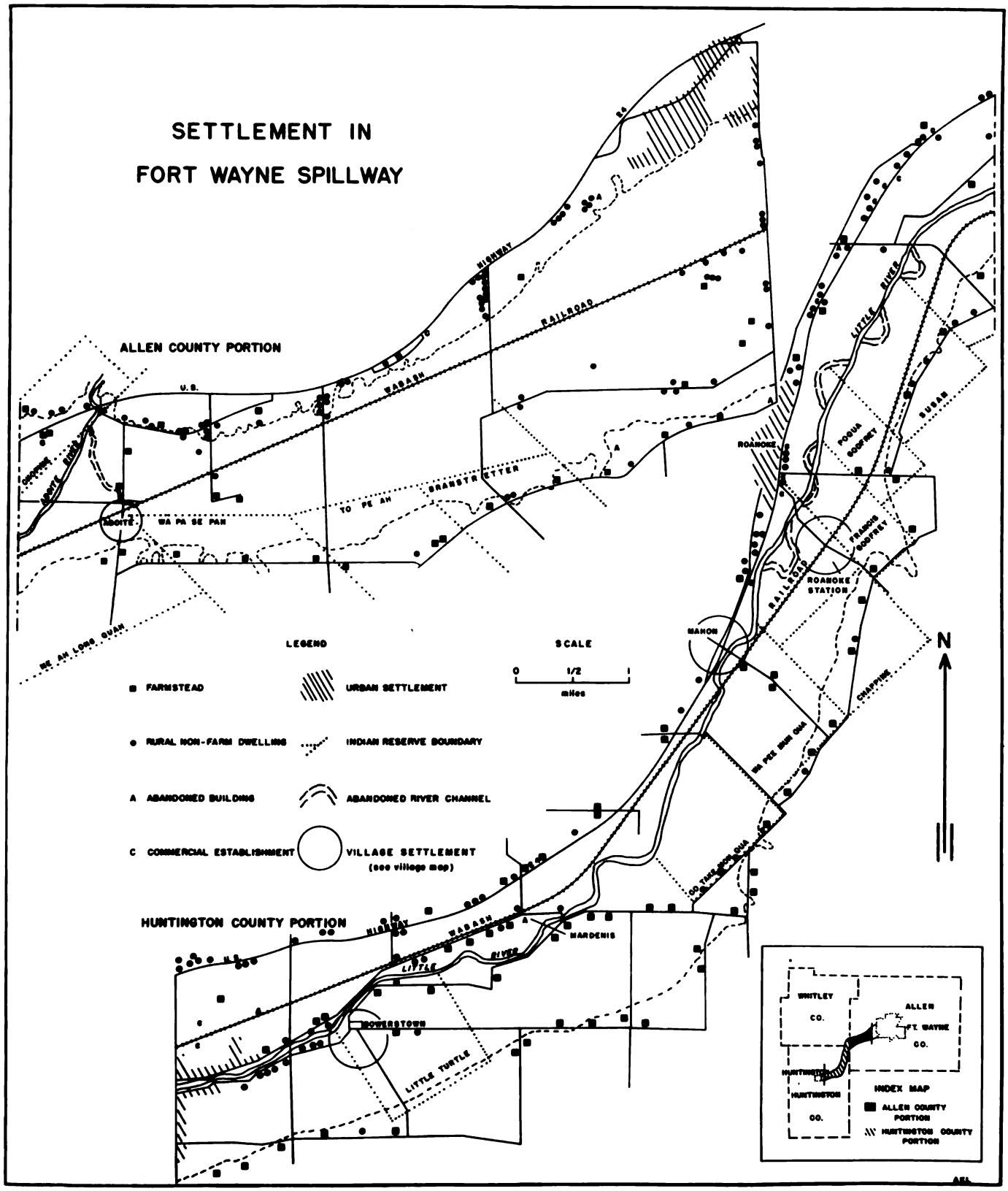
SETTLEMENT IN
FORT WAYNE SPILLWAY
ALLEN COUNTY PORTION
HUNTINGTON COUNTY PORTION
HIGHWAY
RAILROAD
WABASH
LITTLE RIVER
ROANOKE
ROANOKE STATION
MARION
HARDENIS
ROWERSTOWN
LITTLE TURTLE
CHAPPINE
SUGAR
LEGEND
FARMSTEAD
RURAL NON-FARM DWELLING
ABANDONED BUILDING
COMMERCIAL ESTABLISHMENT
URBAN SETTLEMENT
INDIAN RESERVE BOUNDARY
ABANDONED RIVER CHANNEL
VILLAGE SETTLEMENT
(see village map)
SCALE
0 1/2
miles
N
INDEX MAP
ALLEN COUNTY PORTION
HUNTINGTON COUNTY PORTION
WHITLEY CO.
ALLEN CO.
FT WAYNE
HUNTINGTON
HUNTINGTON CO.

Fig. 16

origin of his income determined. Otherwise, the machinery, the number of outbuildings, and the amount of land surrounding the home were used as a basis for classifying a dwelling in one of the three categories.

In determining dwelling sizes, the terms large, average and small are employed. Unless a dwelling was conspicuously large or small when viewed among others it was designated as average. Likewise, the condition of dwellings was rated as good, fair or poor, i. e. first, second or third class, depending primarily upon the amount of noticeable repair or lack of repair. Figures 17 to 22 will give the reader an idea of the condition of dwelling classes.

## Landholdings

The size of the holdings gives a general indication of the type of settlement features located in the spillway. (Fig. 23) It was found that no full-time general farmers occupy fewer than fifty acres of land. Therefore, the landholdings from less than one to twenty-four acres in size almost always indicate a rural non-farm type of settlement; while those ranging from twenty-five to forty-nine acres are generally utilized as small farms from which the owner receives only a part of his income. In the spillway there are fifty-five properties in the former group and forty-six in the latter.

Fifty to 149 acre holdings can be considered to be average sized spillway farms (116 acres is the mathematical average). This is the largest tenure group, 120 such holdings having been mapped. Large properties are those in the 150 to 249 acreage class, while farms over 250 acres are designated as extra large. Fulltime farming constitutes the major land use in both the latter categories. There are fourteen large and nine extra-large parcels of land in the spillway tract.

Fig. 17 First class rural non-farm home along the highway. Upkeep of the grounds and of the buildings is superior.

Fig. 18 First class farmstead in Huntington County. The dwelling has recently been remodeled from an older and smaller type. Note larger size of the farmstead in comparison with the rural non-farm dwelling in Figure 17. Both, however, are average sized for their type.

Fig. 19 Second class rural non-farm dwelling. The general deterioration of the dwelling and of the grounds is apparent.

Fig. 20 Second class farmstead. There is a lack of paint and the shingles on the porch roof are in poor condition.

Fig. 21 Third class rural non-farm dwelling. The house faces on the old highway at Mahon. Note the almost complete deterioration of both the dwelling and the grounds.

Fig. 22 Third class dwelling in quarry district near Huntington. Lack of paint and the poor general repair is noticeable. The grounds, however, show some care given them.

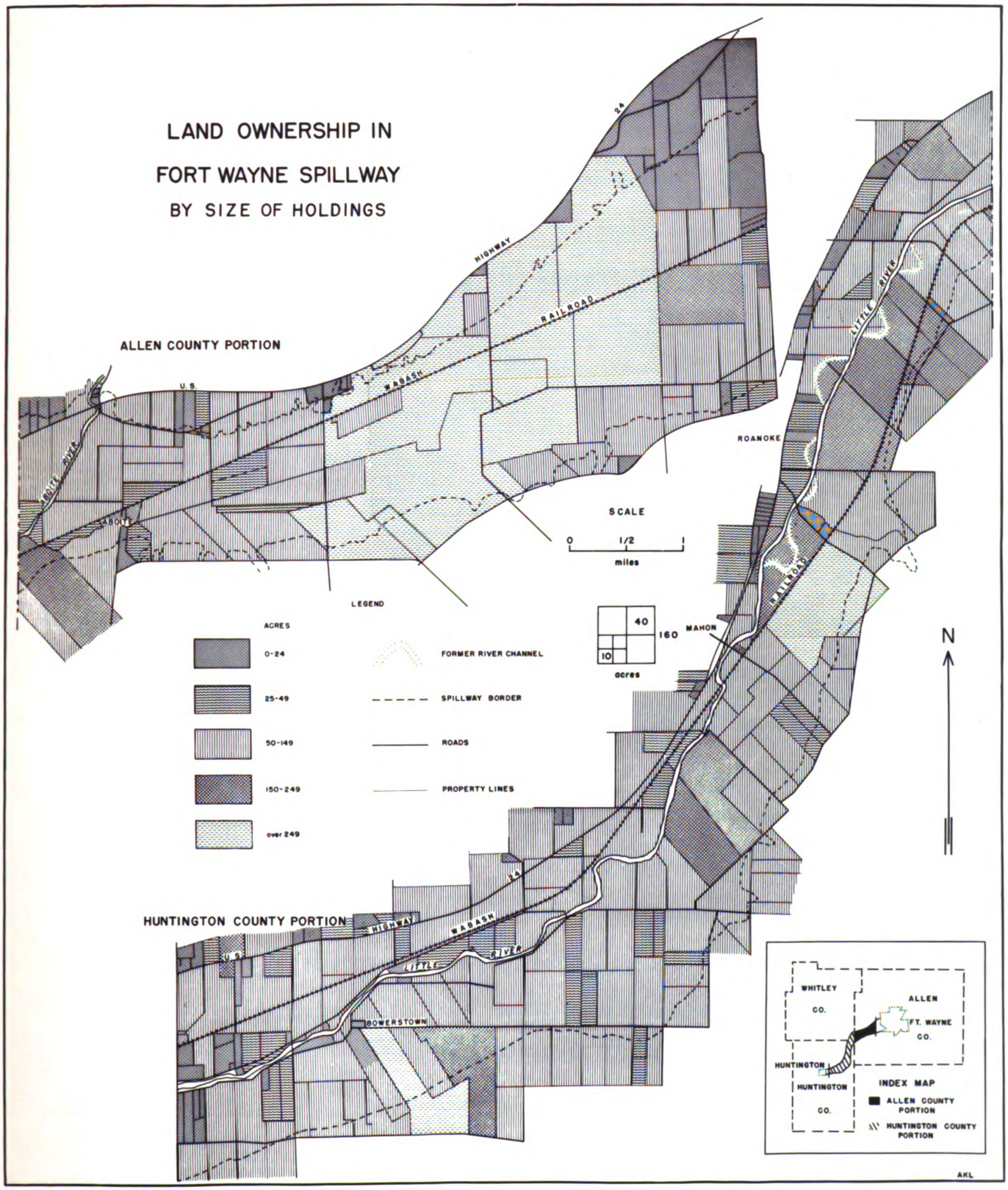
LAND OWNERSHIP IN
FORT WAYNE SPILLWAY
BY SIZE OF HOLDINGS
ALLEN COUNTY PORTION
HUNTINGTON COUNTY PORTION
ROANOKE
MAHON
BOWERSTOWN
HIGHWAY
RAILROAD
WABASH
RIVER
LITTLE
U.S.
24
SCALE
0 1/2 1
miles
LEGEND
ACRES
0-24
25-49
50-149
150-249
over 249
FORMER RIVER CHANNEL
SPILLWAY BORDER
ROADS
PROPERTY LINES
40
160
10
acres
N
WHITLEY CO.
ALLEN CO.
FT. WAYNE
HUNTINGTON
HUNTINGTON CO.
INDEX MAP
ALLEN COUNTY PORTION
HUNTINGTON COUNTY PORTION
AKL

Fig. 23

The largest number of zero to twenty-four acre holdings are associated with the fringes of Fort Wayne and Huntington and with highway U. S. 24 near Roanoke. The platting of the fringe areas is a natural outgrowth of the expansion of urban centers, but the concentration of these small plats along the highway is probably the result of the transportation offered by it. Many of these properties are situated north of Roanoke between the old and new highways (Fig. 23), but to the south of Roanoke there are fewer plats of this size. Most of the landholdings 249 acres and over are found in the wet and poorly drained divide area in Allen County. It was probably necessary here to purchase large tracts of land in order to obtain enough productive farm land.

## Urban Settlement

General distribution. - - There are three concentrations of urban settlement in the spillway proper, or closely related to it. Of these, Fort Wayne (population, 133,607)[23] and Huntington (population, 15,079) are incorporated cities. Roanoke (population, 905) is a small unincorporated town.

The city of Huntington is situated within the spillway, and with the exception of a small north side section is confined to the channel bottom where there is a bedrock foundation. The growth of urban settlement on the east edge of the city has been limited to some extent by a square mile of quarrying operations, which makes platting there impossible. However, no expansion of newer settlement is in evidence either to the north or to the south of the quarries, where additional development could take place. Only very poor residences are found near the quarries giving the area the characteristics of a "suburban slum". (Fig. 22)

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[23] All population figures are taken from the 1950 census.

At the northern end of the spillway the larger city of Fort Wayne, unlike Huntington, is not confined to the channel, but extends several miles to the north and south on the morainic topography, and to the east on the Maumee Lake Plain. Urban development on the right bank along highway U. S. 24 extends more than two miles farther west than does the same type of settlement in the bottom or along the left bank of the spillway. Easy, rapid access to Fort Wayne over the four lane highway is a major reason for the more extensive development along the right bank. Lack of adequate drainage appears to be the reason for the dearth of development in the bottom land, which here forms the Great Lakes-Gulf divide.

The town of Roanoke, the smallest urban center, is located on the right bank of the spillway eight miles northeast of Huntington. (Fig. 24) It lies almost wholly on the upland and the bank, and exhibits only slight evidence of expansion into the bottom, east of the highway.

Size of dwellings. - - Along the highway and up on the right bank just west of Fort Wayne there is a considerable concentration of average to large size homes. Much of the area has been platted from old farms. The rolling terrain and the wooded banks have been a great inducement to suburban development. In certain of these developments a minimum is placed on the size of the home that can be built, so that large dwellings are the rule. The town of Roanoke, on the other hand, exhibits average size dwellings with no outstanding small or large homes. That small portion of Huntington which extends eastward around the quarries contains mostly average to small size dwellings. The size and condition of dwellings in Fort Wayne and Huntington proper was not determined because these areas were not included in the study.

Fig. 24 First and second class dwellings along the right bank in the town of Roanoke.

Age and Condition of dwellings. - - The dwellings in the Fort Wayne area, because of their relatively new construction, largely dating from 1946, are in very good condition. No lack of paint or of external repairs is in evidence, and the appearance of the grounds reflects the great care given them by the occupants. The greater number of Roanoke dwellings are older and in good to fair condition, while in the quarry district near Huntington most houses are in poor condition. Painting, many basic external repairs, and installation of sanitation facilities, as well as a general improvement in upkeep of the grounds are distinct needs in the quarry district. The houses have been in existence forty to fifty years or more.

## Village Settlement

Four very small clusters of settlement include the named villages of Aboite in Allen County, and Roanoke Station, Mahon, and Bowerstown in Huntington County. (Fig. 25)

Aboite is located eight miles west of Fort Wayne on the Wabash Railroad. Seventeen dwellings, one church, and one general store constitute this settlement. Roanoke Station, likewise situated on the Wabash Railroad, is located three-fourths of a mile southeast of Roanoke. Eight homes are clustered around a grain elevator and a depot, which in the past served the town of Roanoke. The village of Mahon lies on the right bank two miles south of Roanoke. Ten houses (one abandoned) and a farmstead comprise the major part of the village, which, like Roanoke, has not spread into the bottom east of the highway. The four business establishments here serve the travelers along the four lane thoroughfare. The village of Bowerstown is spread out to a greater degree than the three

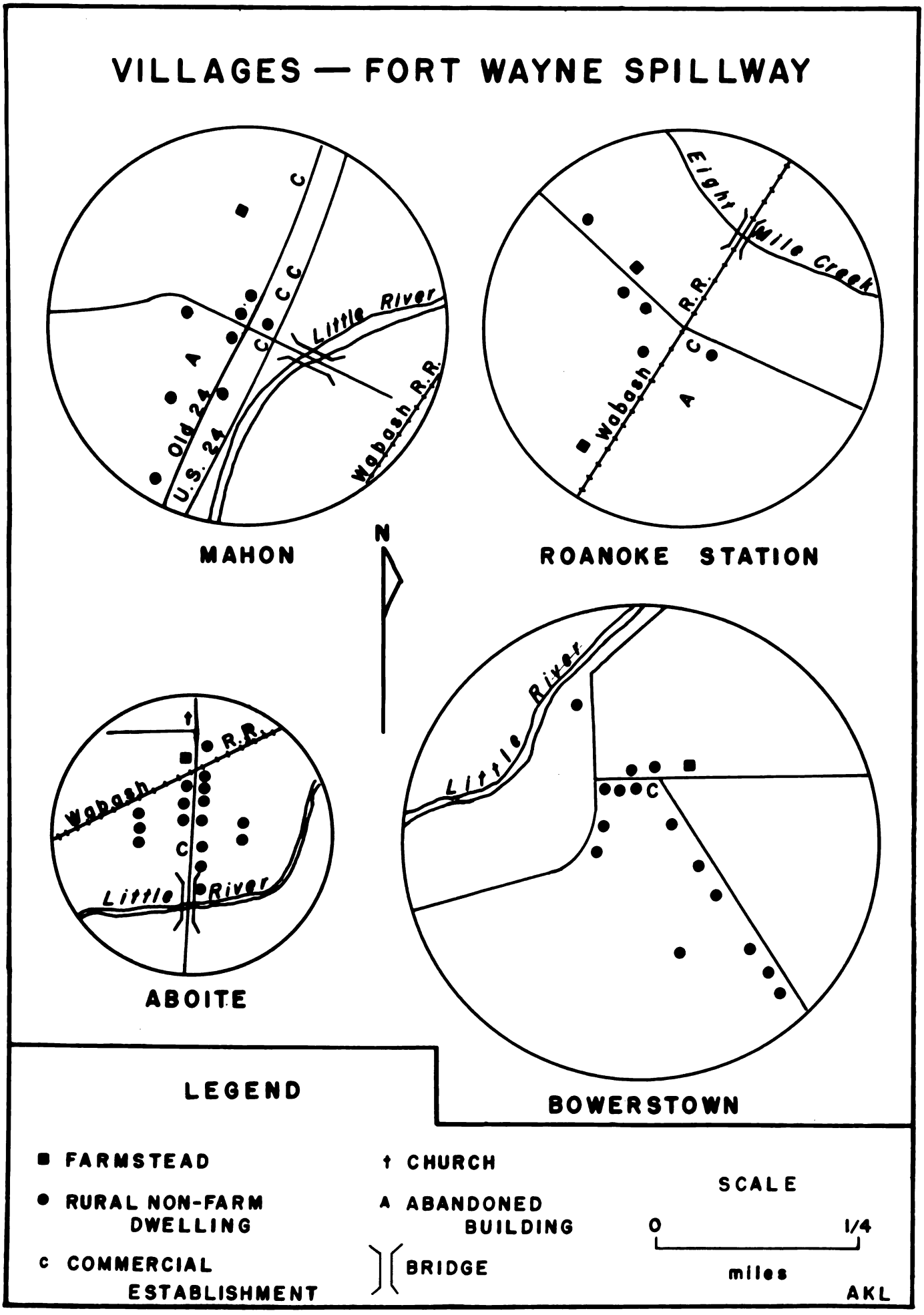
VILLAGES — FORT WAYNE SPILLWAY
C
C C C
A
Old 24
U.S. 24
Little River
Wabash R.R.
MAHON
N
Eight Mile Creek
R.R.
Wabash
C
A
ROANOKE STATION
R.R.
Wabash
C
Little River
ABOITE
Little River
C
BOWERSTOWN
LEGEND
FARMSTEAD
RURAL NON-FARM DWELLING
C COMMERCIAL ESTABLISHMENT
CHURCH
A ABANDONED BUILDING
BRIDGE
SCALE
0
1/4
miles
AKL

Fig. 25

previously mentioned. Fifteen residences, a farmstead, and a furniture factory are included. This village is situated in the middle of the spillway bottom two miles east of Huntington. Mardenis, another village now defunct, probably should be mentioned. At one time several dwellings, a country club with an eighteen hole golf course, two grain elevators, and a U. S. Post Office made up the settlement which formerly was located along the Wabash Railroad, four miles east of Huntington. Ruins of two buildings, an occupied home, and an abandoned mansion are all that now remain of Mardenis. The size and unusual architecture of the mansion make it unique in this region.

The houses of the villages have been classified as either farmsteads or rural non-farm homes, depending upon how they fit the previously mentioned criteria. The urbanization of these areas is not complete enough to warrant their inclusion in the urban settlement section.

## Rural Non-Farm Settlement

General distribution. - - The lack of rural non-farm development along the left bank is the most striking feature of the distribution of this type settlement in the spillway. (Fig. 16) Out of 207 rural non-farm dwellings mapped, ninety-seven are distributed along the right bank, while only thirteen are found on the left one. (Appendix I) Almost all the occupants of this type of home along the right bank indicate that easy access to the city afforded by the highway was one of the major reasons for their choice of the site. Several of the large farms have been platted to accommodate the demand for country living space here. On the other hand, the lack of transportational facilities on the left bank is probably the major reason for the dearth of new development there.

A large portion of the thirteen rural non-farm homes on this side are at present occupied by families of owners who farm over sixty acres while holding jobs in the city.

Thirty of the rural non-farm dwellings mapped in the spillway bottom are located near the fringes of Huntington and Fort Wayne. Few of these are new, the majority resulting from the agricultural decline which accompanies expansion of an urban center. Forty rural non-farm dwellings are found in Bowerstown, Roanoke Station and Aboite. These two groups, plus an additional twenty-seven scattered abodes, bring the total of this class in the bottom to ninety-seven, equalling the number of such homes on the right bank.

First class condition. - - Fifty per cent of the rural non-farm homes are in good condition. Ninety per cent of these are of average size. Small homes in good condition are almost non-existent, while a few large dwellings have been remodeled from older buildings and farmsteads. Most of the first class houses are post-1946 in age; many are still under construction. The remodeling of the older buildings has been done largely since the close of the Second World War. Only a few first class dwellings were constructed prior to 1940, the year the four lane highway was completed.

Invariably the occupants are also the owners. They are employed in the cities, which are easily reached via the highway. It was found that about half of the first class dwellings are situated on plats of four acres or less, many of which were once parts of large farms, sold as pressure from the expanding cities increased. Because of the type and condition of improvements on these landholdings, the value of the land is

less than that of the improvements. In many cases the land of the smaller plats is worth less than five hundred dollars, while the total value of the property is considerably higher. The landholdings for the other half of the first class group are much larger, averaging sixty-nine acres in size. These belong to the part-time farmers, some of whom farm eighty acres or more while working full-time elsewhere. In this group the value of the land exceeds the value of the improvements.

There are fifty-four first class rural non-farm dwellings located along the right bank between Fort Wayne and Huntington. Only eleven and thirty-six are located on the left bank and in the bottom respectively. The larger number of first class homes on the right bank is probably the result of the combination of post-war expansion of the cities and the easy access to them afforded by the highway. Near Fort Wayne there are certain small concentrations both along the highway and for short distances to the south between the highway and the spillway. The forty-seven houses located in the bottom and on the left bank are scattered among the farmsteads. Generally they are well kept former farmsteads whose owners work in town and farm only part-time. These dwellings account for most of the rural non-farm development in an area where the farmer-owner prefers the farm land and the privacy to the money that would be gained from platting the land. Most of the roads in the bottom and on the left bank are narrow and gravel covered, lessening the desirability of these locations as sites for new country homes.

Second class condition. - - With a few exceptions the rural non-farm dwellings in this class are of average size. The majority of them are older than the first class homes, a fact which may account for their poorer

condition. Most of the occupants are also owners. Some were once full-time farmers who sold parts of their property for platting, or rented the arable land to neighboring farmers, and sought work in the city. Some, who retained land, farm it part-time. Unlike the first class homes, however, some of these dwellings are occupied by renters. Commonly, these are former farmsteads which have been made available for lease because of the sale of the surrounding land. Many second class residences were built several decades ago in the villages when these communities were more active than at present. Landholdings in this group correspond in size and number to those in the first class group.

Twenty-one second class dwellings are located along the right bank, with slight concentrations apparent in Allen County along the old highway[24] and at points where gravel roads cross it. These are older homes, built at least thirty years ago on what was then the main artery of traffic. Along the new highway second class residences are interspersed with first class dwellings. Only two second class houses are located along the left bank, but in the spillway bottom there are forty-one, thirty-one of which are associated with the villages of Aboite, Bowerstown and Roanoke Station. In all sixty-four second class homes are located in the spillway.

Third class condition. - - Most third class dwellings in the spillway are of average size. Their age and the economic status and living habits of the occupants appear to be the major causes of the poor condition of these homes. Many are old farmsteads, fifty years or more in age, now serving as rural non-farm homes. Some were originally rural non-farms located along the earlier arteries of transportation. Over the years these dwellings

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[24]This refers to old U.S. 24 located south of the new highway, and roughly paralleling it.

have fallen into disrepair, and their location and/or condition has influenced the owners to rent them cheaply. The areas of associated land-holdings vary. If the occupant is also the owner he is likely to farm part-time on the land around the home. Most of the occupant-renters are either employed in the city, are farm laborers, or are on relief.

Only forty-two third class dwellings are located in the spillway; twenty-two on the right bank, twenty in the bottom, and none along the left bank. Fifteen concentrated in a two square mile area just west of Fort Wayne (Fig. 16) compose a rural "slum". Half of this group of third class dwellings is the direct result of agricultural decline. One owner who holds twelve hundred acres of land rents out the arable portion for crop production, and rents the third class farmsteads and outbuildings to low income families. Generally, in the remainder of the region, residences of this class are interspersed with those of other classes and are also probably the result of agricultural curtailment. The latter is especially true along the right bank where other types of development have superseded farming.

## Farm Homes

The right bank is characterized by a dearth of farm homes. (Fig. 16) Of a spillway total of ninety-seven only seventeen are located here, while forty are distributed on the left bank, and forty more are located in the bottom. (Appendix I) There is evidence that the better transportation facilities along the right bank have caused the development of more non-agricultural type settlement there than is exhibited in the bottom or along the left bank. However, it is probable that in the past, less of this right bank was used for agricultural purposes because of the steepness of

the slopes and the greater degree of erosion. The amount of tree covered land here is indicative of this. Where a farm is situated both on the banks and in the bottom, the farm home has been built on the higher ground. This no doubt was due to the better drainage, a more solid foundation, and the fact that roads followed the top of the banks where possible.

Over half of the ninety-seven spillway farm homes are in good condition; twenty-nine are in fair condition, and only ten are in poor state of repair. There appears to be no clustering of the farm homes in any particular condition group. The thirty-nine second and third class farm dwellings are interspersed among those of the first class group, which in turn are well scattered throughout the spillway. So far as can be determined the condition of a farm home here cannot be correlated with other factors to the extent that a rural non-farm dwelling may be. The large number of first class farm dwellings may be an indication of the value of the land, or it may be a result of income earned elsewhere.

Certain of the first class farm homes have been rebuilt from older dwellings. Some of these original houses were small "frontier type" log cabins over seventy-five years of age. Most, however, were newer farm dwellings that have been added to or remodeled. The second and third class consist generally of the older farm homes that have been allowed to fall into various degrees of disrepair. For the most part the average farm home is larger than the average rural non-farm dwelling. Those remodeled from the very early types tend to be smaller; while the somewhat newer ones tend to be larger in size. Only a very few might be classified as distinctly large or small. The occupants of most of

the farm dwellings are also the owners. However, on some of the larger farms tenants live in the farm homes and work the land. On one large farm near Fort Wayne there are four tenant homes, but this is an exception in the spillway area.

## Farms

The occupants of twenty-one of the ninety-seven farms in the spillway were interviewed, after being selected on a random sample basis. The results obtained from these interviews form the basis for this section. (Appendix II) Nineteen of the twenty-one farmers own the land which they farm. In addition, five of them rent land from their neighbors in order to increase crop production. Two of the twenty-one interviewed own none of the land which they farm. One is a tenant; the other a sharecropper. The amount of land farmed by the owners totals 2433 acres. They rent and farm an additional 880 acres, while 480 acres are worked by the two non-owners.

The nineteen owner-operated farms interviewed average 116 acres in size, five acres larger than the Indiana average.[25] However, the amount of land worked by each farmer (land owned plus land rented) averages 169 acres. This greater acreage can be accounted for by the fact that a large number of rural non-farm residents rent out the land they own and gain most of their income from the city.

The shape of a given farm may be governed by any one or all of three things: (1) stream channels, (2) Indian Reserves, (3) General Land Office Survey lines. Stream channels undoubtedly are the basis for the original land survey in the spillway which resulted in the laying out

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[25]Harry Hansen (ed.), The World Almanac (New York: New York World Telegram, 1953), p. 445.

of Indian Reserves. (Fig. 16) These reserves are plats of land given by the U. S. government after the War of 1812 to certain members of the Miami tribe, whose original homeland (northeastern Indiana) was then being opened for white settlement. In platting, many of the reserves fronted along Little River. This was probably done to give the owners access to a water supply and transportation route. Parts or all of twelve reserves are located in the spillway, but this is only a small portion of the large number located all along the Wabash River valley southwest of Huntington. The boundaries of the reserves are known locally as "nine o'clock lines" because they were drawn parallel to the shadow cast by a tree at nine o'clock in the morning. Many of the subsequent property lines have been drawn parallel to the original reserve lines. The General Land Office Survey lines are found on the uplands and in more than half of the spillway, and were not cut through the reserves but merely made to join the reserve lines. Consequently the shape of many farms is governed in part by Indian Reserve lines and in part by General Land Office Survey lines, depending upon the location of the farm. Present descriptions of landholdings within boundaries of reserves are still referred to as being in a given reserve and are not associated with any section.

Sixteen of the twenty-one farms upon which interviews were made have been classified as general, a type which does not specialize in any particular type of production. (Figs. 26 and 27) In varied amounts they produce most of the different crops and types of livestock found in the region. Of the three farms that specialize in dairy products, two are situated on the right bank, which is primarily suitable for permanent pasture. One fifty-eight acre truck farm is located in the bottom.

Fig. 26 General farm in bottom as seen from the left bank in Huntington County. Farmstead, barn, chicken house, machine shed and grain crib are shown. Note also the water hole and power lines at the base of left bank of the spillway in the foreground, and the right bank in the distance.

Fig. 27 View of general farm in bottom, Allen County. Photo shows farmstead, barn, grain crib and machine shed.

The smallest farm in the group is a seven acre commercial chicken farm located in the village of Roanoke Station.

A study of land values would require more detail than a thesis of this type will allow. However, assessed valuation as determined by the county assessors serves to give a relative comparison of value for each farm. A sampling of ten farms located on the banks shows an average of thirty-one dollars per acre, while ten farms in the bottom averaged thirty-nine dollars per acre. It is probable that the eight dollar difference results from the greater amount of cash crop production on the more level land in the bottom. There is also considerable difference in values from place to place in the bottom as well as on the banks. This might be accounted for by the differences in production on each farm resulting from soil fertility, but in most cases there is no apparent reason for the difference in valuation.

## Chapter IV

# CULTURAL FEATURES AND CONDITIONS: AGRICULTURE

### Background

The background of agricultural development in the spillway is linked closely to the master drainage plan of the 1880's. As a consequence general farming in the region dates from about 1890. Prior to this time only small areas in the bottom were high enough to permit some kind of cultivation. Farms of the earliest settlers were located at the top of the right bank to take advantage of the better drained upland soils and to have access to the road and canal which followed the right bank.

Prior to the draining of the spillway, individual subsistence farms were located on small plats of land in the bottom. Some of the old farmsteads still stand, although many of them have been completely remodeled. As the land in the bottom was drained and its fertility recognized, further development of the farm land and the construction of new farmsteads ushered in the era of large general farms. This chapter will consider the general agricultural land utilization, including sections on fields, crops, and roughland. (Fig. 28) Included also are discussion of crop hazards, livestock, farm improvements, and farm labor.

### Field Size and Shape

The average field in the spillway is about fifteen acres in size. In certain portions, however, fields vary greatly from this average.

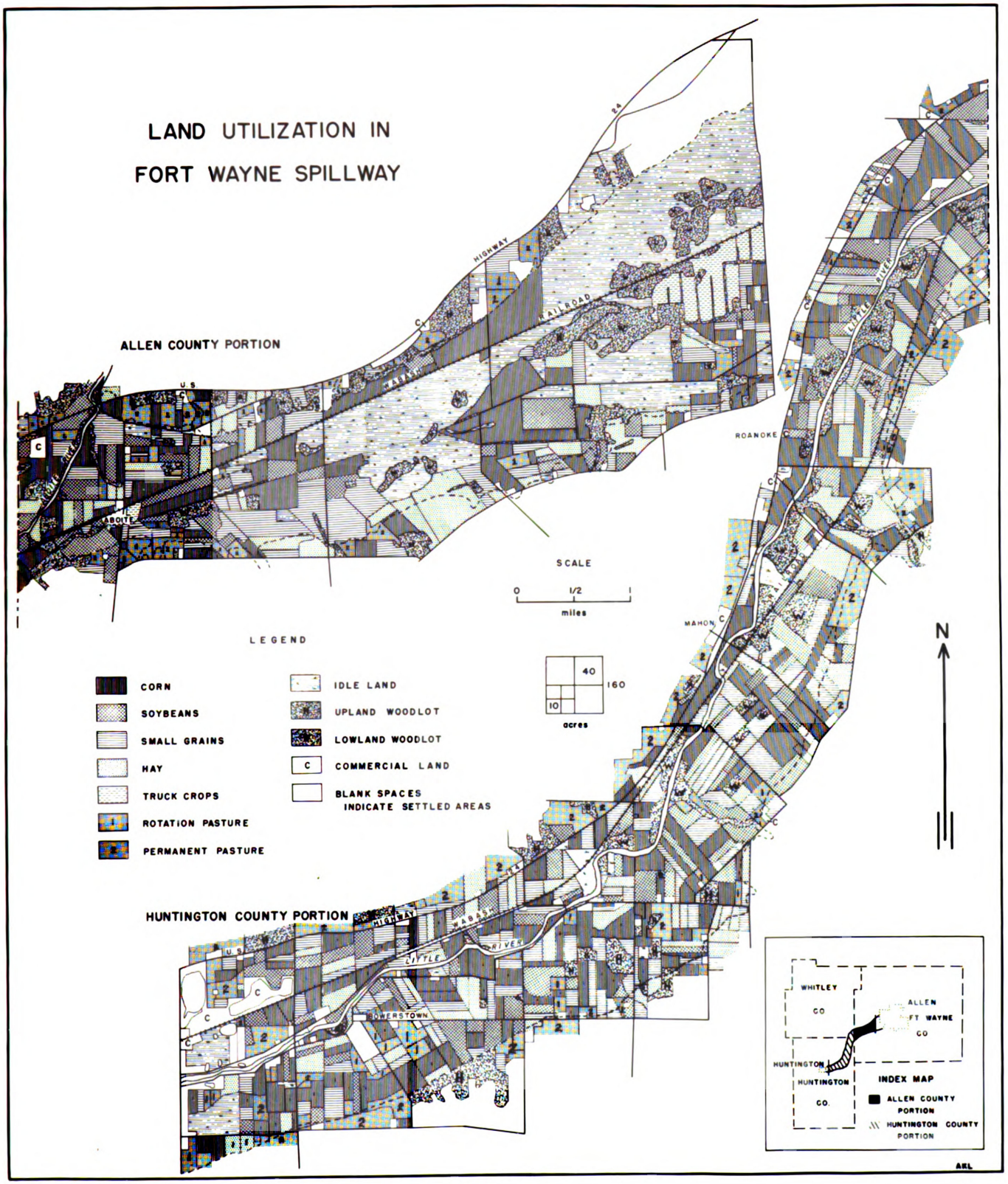
LAND UTILIZATION IN
FORT WAYNE SPILLWAY
ALLEN COUNTY PORTION
HUNTINGTON COUNTY PORTION
ROANOKE
BOWERSTOWN
SCALE
0 1/2 1
miles
LEGEND
CORN
SOYBEANS
SMALL GRAINS
HAY
TRUCK CROPS
ROTATION PASTURE
PERMANENT PASTURE
IDLE LAND
UPLAND WOODLOT
LOWLAND WOODLOT
COMMERCIAL LAND
BLANK SPACES
INDICATE SETTLED AREAS
40
160
10
acres
N
WHITLEY CO
ALLEN CO
FT WAYNE
HUNTINGTON
HUNTINGTON CO.
INDEX MAP
ALLEN COUNTY PORTION
HUNTINGTON COUNTY PORTION
AEL

Fig. 28

Along the right bank, where the steeper slopes and non-agricultural development have reduced the farming area, the fields average only six acres, while in Huntington County near the Allen-Huntington County line they average twenty-nine acres in size. In the quarry district where good agricultural land is negligible, the fields average but ten acres. (Fig. 28) The trend in some parts of the region is toward consolidation of fields in order to facilitate the use of large farm machinery. This consolidation requires the removal of fences and tree lined fence rows. As a result open expanses of crops occur in many parts of the spillway, and the only way by which a field may be determined is by the difference in crops grown. The almost perfect levelness of the bottom area near the Allen-Huntington County line may account for the consolidation of fields there. This consolidation is noticeably absent in the fringe areas near Fort Wayne and Huntington.

The factors governing the outlines of fields are the same as those that determine the boundaries of farms. In addition, the roads and the railroad also have a tendency to influence field configuration. These two factors, added to stream channels, Indian Reserve lines, and General Land Office Survey lines, result in a very decided difference in shape of fields in the bottom from those on the upland. Roads are a determining factor where they deviate from survey lines in order to avoid wet ground or to cross stream channels at given sites. The railroad cuts the spillway into two parts longitudinally; although farms may lay on either side of the right-of-way, it necessarily forms one border of abutting fields.

## Cropland Utilization and Distribution

With the exception of the areas in rough land, cropland is found everywhere in the spillway. (Fig. 28) Only along water courses and in the divide area near Fort Wayne is there a conspicuous lack of agricultural land. In the fringe area near Huntington, and on the right bank along the highway there is noticeably less land in agricultural use, but the extent of non-agricultural land here is not so great as in the two previously mentioned areas. (Fig. 29)

Four major types of crops in the spillway were mapped for purposes of this thesis. These were corn, small grains, soybeans, and hay. Truck crops and rotation pasture land are minor types which were also included.

Over twenty-four per cent of the total land area is in corn (Appendix III); a small part is in popcorn. The small grains include winter wheat, oats, and rye, and make up more than fifteen per cent of the total land use. Soybeans are grown on approximately thirteen per cent of the area, while over seven per cent of the surface is in a hay crop of one kind or another. This includes grasses, clover, alfalfa, or other legumes which are cut for livestock feed. Of the two minor crops, truck includes vegetables grown commercially for the market or grown in gardens for home consumption; while rotation pasture has been classified with the crops because it is only temporarily out of production. Nearly four per cent of the land is in rotation pasture; less than three per cent is in truck crop land.

Corn. - - Corn is the dominant crop in the region. The 4096 acres of this crop represent over thirty-eight per cent of the total cropland. A little less than one per cent of all corn acreage consists of popcorn.

Fig. 29 Panoramic view looking toward the right bank near Huntington. Steep land in foreground is permanent pasture on the left bank. Road leads to Bowerstown (in trees in center of view). Roads and fence rows here are governed by Indian Reserve lines.

Fields containing corn are the largest in the spillway, averaging over eighteen acres in size. The yield per acre ranges from fifty to eighty-five bushels; the average is sixty-seven bushels. The greater part of the corn harvested is fed to livestock; the remainder is marketed as a cash crop. Drainage and slope are the two physical features that appear to govern the distribution of corn land. Many fields of corn are traversed by strips of idle land resulting from poor drainage. This is especially true where there are minor swells alternating with swales, a situation which is prevalent on the fringes of the wet idle land and near the stream channels. When corn is rotated with other crops these are likewise affected by the wet strips. Little corn is grown on the banks where slope creates an erosional problem in such a wide-row crop.

Small grains. - - Almost twenty-four per cent (2553 acres) of the total crop acreage is in small grains. Some sixty-three per cent of the total of small grains sown is oats; thirty-seven per cent winter wheat; and a negligible amount rye. Fields of small grain average fifteen acres in size. The average yield for winter wheat is about thirty-five bushels per acre, that for oats is fifty-two bushels. All the wheat is sold on the open market, but most of the oats go into feed mixtures for livestock. The fact that oats, unlike winter wheat, do not interfere with corn planting, cultivation, or harvesting probably helps account for the greater amount of oats produced in the region. Most of the small amount of rye is grown as a "green manure" which is turned under to increase the fertility and humus of the soil. On the banks the number of small grain fields is more than double that of the corn fields. This is probably due to the close-row nature of the small grains, which aids in retarding the runoff and preventing soil erosion. Moreover, small grains require less water and better drainage than corn. Corn is generally not included in the rotation plan for the slopes.

Soybeans. - - A little more than one-fifth of the total crop acreage in the spillway is in soybeans. The 2200 acres of beans are broken into large fields, the average being more than eighteen acres. Soybean yields range from fifteen to thirty-five bushels per acre, averaging about twenty-six bushels. This crop is not confined to any particular section, but is a part of the general rotation scheme with corn, the small grains, hay, and pasture. So far as could be determined, the total soybean crop is marketed, none being held by the farmer for feed.

Hay. - - Grass, clover, alfalfa, and other legumes make up the hay crop which comes from 1200 acres, or eleven per cent of the total crop area. The fields average fourteen acres in size. In wetter years after the hay crop is harvested the field is often turned to pasture. The hay crop is also a part of the crop rotation scheme in the region.

Rotation pasture. - - Only four per cent of the crop total is in rotation pasture. This amounts to 450 acres, some of which may yield a crop of hay prior to being pastured. Like hay, rotation pasture is part of the general crop rotation scheme and is confined to no particular portion of the region. Rotation pasture is largely in the spillway as compared to permanent pasture on steep slopes of the banks.

Truck crops. - - Merely 295 acres of truck crop are found in the spillway. This constitutes 2.3 per cent of the total crop land. There are two commercial farms; one over 275 acres, the other about ten acres in size. Cabbage, celery, lettuce, onions, and green peppers are grown commercially. The remainder of the truck land is in home garden plots.

## Crop Hazards

Flooding generally occurs in the spring when the drainage ditches are unable to carry the vast amount of water from the bottom and the

surrounding uplands. However, prolonged rain at any time may create flash floods in the area. The material underlying the surface soil probably has much to do with the wet conditions which follow the recession of floodwaters. Land underlain by sand or by gravel drains quickly and danger to crops is less; while land overlying clay or bedrock may be wet much of the time, with the result that crops on these lands may be ruined.

In a prolonged drought the reverse is true. Clay and bedrock based soil may retain sufficient moisture to maintain good crop growth; while crops on soil underlain by sand or gravel may be ruined because of a lack of water. In the bottom, however, the water table is considerably higher than in the uplands, so in general, areas of the bottom, regardless of subsoil, are less subject to drought and more liable to flooding than are the upland areas.

The depth to which crops are sown may also affect their growth. In the drought of the summer of 1953 some acres of corn which were not sown deep enough received too little moisture to sustain growth. In cases where fields are well tiled they can be worked as early in spring as the heavier soil on the uplands. It was found that frosts do little or no crop damage either in late spring or early fall. Hail occurs on one or two days during the summer causing some crop damage and the corn borer is a constant threat in the region.

## Rough Land

Rough land is defined as that not being used for the production of crops. This includes 5800 acres, seventeen per cent of which are in permanent pasture, forty-six per cent in idle land, and thirty-seven per cent in woodland. (Fig. 28) The total amount of rough land accounts for thirty-five per cent of the spillway area. (Appendix III)

Permanent pasture. - - Six per cent of the total land in the spillway is in permanent pasture. This pasture land constitutes a little over 1000 acres, which are either wooded, or too rough or stony to permit cultivation. (Fig. 30) Only a very small portion of the permanent pasture is wooded, and an even smaller amount is stony land. There are stony pastures near the sand islands in Allen County, in Huntington County near Mardenis, and in the quarry district. The remainder of the permanent pasture, about eighty-five per cent, is rough sloping land associated with the banks and with the stream channels which have been cut into the banks. A scattering of hardwood trees may be found in most of these permanent pastures in the spillway.

Idle land. - - Idle land constitutes more than fifteen per cent of the total spillway surface. About 2600 unused acres were mapped. More than three quarters of this is located in Allen County, just west of the divide. This land will likely remain idle for some time because of the difficulty in getting enough fall in ditches to drain it, and the prohibitive cost of pumping such a large area.

In the quarry district near Huntington the shallow soil and poor drainage have resulted in about 300 acres of idle land. Elsewhere in the spillway unemployed wet spots occur along the drainage lines. Along the Little River ditch high spoil banks were built when the channel was dug. (Fig. 8) Most land on the spoil banks and that immediately behind them is not used, either because of the steep slopes, the infertility of the debris—which in Huntington County includes chunks of bedrock--or because the land has no direct drainage route through the spoil banks to the river. Almost all the idle land is grass covered, and much of it supports

Fig. 30 Permanent pasture on right bank near Mahon. Note gravel pocket and gullies on the slope.

a sparse growth of scrub trees. Black willow is a common tree on such areas in Allen County; stands of locust trees and some hardwoods are found on them in Huntington County.

Woodlot. - - Woodland makes up thirteen per cent of the total spillway area. The only large oak-hickory hardwood stand in the bottom is located on the sand islands near Fort Wayne and encompasses about fifty acres. Elm and ash are prominent in the remaining 2100 acres of woodland. In certain areas on the banks solid stands of locust trees are found, while elsewhere in this situation oak and hickory are dominant in plots containing mixed hardwoods. Along the drainways the wet hardwoods (cottonwood, sycamore, and beech) are mixed with ash and hickory, although much of the latter species has been removed for use as saw timber. Poor drainage, resulting in wet land, is probably the major reason for the extensive amount of woodland along the drainage lines. (Fig. 28) These woodlots are often in the shape of the old loops of the natural watercourse, which look like meander scars, but were left when the channel was straightened by dredging.

## Livestock and Poultry

Information concerning livestock was gathered from interviews with twenty-one per cent of the farmers in the spillway. It therefore should permit a fairly accurate estimate of the number and types of livestock raised. Milk cows, beef cattle, and hogs, are the major kinds of stock raised. Two minor types, sheep and horses, are small in number. Milk cows represent about fifteen per cent of the total number of livestock raised in the region. Almost all the owners of cows market their milk, each owner selling between 250 and 500 gallons per

day. A few farmers sell only the cream and feed the skim milk to pigs. About twenty-eight per cent of the livestock are beef cattle being fattened for market. Much of the corn grown in the spillway is fed to the beef, but supplementary feed is often needed. One farm, raising seventy-three head of beef, buys over one hundred tons of supplementary feed each year, while on an even larger farm two hundred head require of 2000 tons of supplement annually.

Hogs constitute about fifty-four per cent of the total amount of livestock. Corn and skim milk, the chief hog feeds, are produced on the farm, but some supplement is necessary. Sheep and horses together constitute slightly less than three per cent of the livestock total.

All but five of the farmers interviewed raise chickens, either for home consumption or for the market. Flocks range in size from twenty-four to one thousand. This total does not include 5000 chickens raised for meat on a specialized chicken farm. Some of the general farms raising chickens for eggs or for meat find supplement necessary. Most of the livestock on general farms is marketed locally (Fort Wayne, Roanoke, or Huntington). However, the large cattle farm and the commercial chicken farm sell often on the Chicago market.

## Farm Improvements

Tiling, fencing, and ditching of fields and construction of outbuildings constitute the major farm improvements in the region. Water wells, and water holes represent other common improvements made in the spillway. Outbuidlings are almost always associated with the farmsteads. Generally four buildings, including barn, chicken house, hog house, and corn crib, are found on each farm, depending, of course, on the kind of

livestock being raised. In the case of the dairy farms the barns are generally very large and usually painted white. The remainder of the barns in the spillway are of average size and most are painted red, although a few are unpainted. Many of the barns are as old as the farmsteads, but despite their age, sturdy construction has made them useful for many years. Chicken houses, hog houses, and corn cribs, the latter often merely wire enclosures, are present on most of the farms.

About seventy-five per cent of the farmers have the greater part of their fields tiled in order to carry off excess water. A few, having no tile in any fields, are working the poorly drained bottom in Allen County. One of the big problems involved in tiling is the tendency for the tile to "wash out" when large amounts of water are being carried. Practically all of the open ditching present is public, although a few owners in the poorly drained bottom in Allen County have constructed private ditches and installed pumps to remove the excess water quickly.

About sixty-five per cent of the owners have permanently fenced more than half their land so that rotation of pasture will not necessitate building temporary fencing every year. A third of the owners, however, prefer land without permanent fencing so that strip cropping may be practiced and field shapes easily changed. These farmers use barbed wire strands or electric fencing to keep livestock in the rotation pasture land.

Eighty per cent of the owners have deep wells sunk into bedrock. They range in depth from thirty-three to one hundred feet depending on the location. One such well in Huntington County is sunk merely thirty-three feet, while those in the upper part of the spillway average seventy feet in depth. A well bore on the banks must penetrate more glacial drift

to reach bedrock than one in the bottom. About twenty per cent of the owners have shallow wells sunk in sand and gravel. Other sources of water in the spillway are water holes in the bottom and hillside catch basins. Where intermittent streams from the uplands join the floor of the spillway, sod dams have often been constructed forming catch basins to impound the run-off. (Figs. 31 and 32) In the spillway floor, where the water table is close to the surface, holes have been dug. These fill up with ground water and are used primarily for the watering of stock. (Fig. 33)

## Labor

Over half the farmers in the region hire labor and machinery to bale hay, pick corn, and combine small grains. There is some exchange of labor between farmers; the major part of the labor is part-time, much of it being done by school boys. Fifteen per cent of the farmers interviewed in the region are either tenants or sharecroppers. One large cattle farm has four full-time tenant-operators living on the land.

Fig. 31 Dam (background) constructed across gully on the left bank. The pond is stocked with pan fish.

Fig. 32 Another pond formed by damming a gully. It is also stocked with fish.

Fig. 33 Waterhole in the bottom at the base of the left bank. Located in permanent pasture, it provides water for livestock.

## Chapter V

## TRANSPORTATION, COMMERCE AND RECREATION

### Transportation

Background. - - The Fort Wayne spillway has long been an important transportation route linking the eastern Great Lakes with the Mississippi and lower Wabash Rivers. The earliest users of this route, the Indians, paddled canoes up the Maumee River to its head at the present site of Fort Wayne, then portaged four miles over the low, swampy divide to the point where the Little River began its flow to the southwest. Early maps show the course of the river, which since has been dredged and straightened. The earliest white men to use the route were probably French fur traders working with the Indians. During the American Revolution the spillway was used continually by the British and Americans moving from Detroit to Vincennes and St. Louis. It was during this period at the bend in the Aboite River (since straightened), that a band of American irregulars was ambushed and massacred by Indians. Some remnants of the battle have been uncovered in recent years.

In 1832, work was begun on the section of the Wabash-Erie Canal between Fort Wayne and Huntington.[26] The canal followed the base of the right bank. It was opened in July, 1835, and aided considerably in settling and developing the two cities and the surrounding land. The

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[26] The Wabash-Erie Canal, (Fort Wayne: Public Library of Fort Wayne and Allen County, 1952), p. 4.

spillway, however, remained a vast, low swamp. During the same period the Fort Wayne-Huntington road was constructed, paralleling the canal.

In 1852 construction of the Wabash Railraod was begun.[27] The railroad was completed in 1856, linking Fort Wayne and Huntington via the spillway. Shortly after that, the canal traffic decreased, and within a decade the canal was abandoned. An electric inter-urban line was built along the spoil bank of the canal in the early 1900's. Following the draining of the bottom, roads were constructed across the spillway; while continued improvements were made on the main highway along the right bank. In 1927, this highway (U. S. 24) was paved with concrete, and a decade later work was begun on the route of a projected four lane highway. (Fig. 34) This new highway, completed in 1940, was in part built on the inter-urban right of way which had been abandoned a few years earlier. At present the Wabash Railraod and the highway are the major transportation routes in the valley.

Roads. - - Over eighty miles of roads are located in the spillway bottom and along the banks. About forty-three miles are hard surfaced (concrete or blacktop); thirty-seven miles are gravel covered. The high percentage of hard surfaced roads may be accounted for by the fact that both U. S. 24 and segments of the old road paralleling it have concrete surfaces. In the quarry district east of Huntington all of the roads have hard surfaces. Toward the middle of the spillway, in the less populated areas, the roads are gravelled. The Lower Huntington Road, which parallels the left bank in Allen County, is hard surfaced but the remainder of the roads in this county, with the exception of new and old

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[27] The History of the Wabash Railroad, (St. Louis: The Wabash Railroad Company, 1953), p. 7.

U. S. 24, are gravel topped. Of the nine bridges that span the stream channels all but one cross the Little River. (Fig. 35) Almost all of the bridges have old steel frameworks, and one has been labelled unsafe. Two are newer steel and concrete structures.

The road patterns in the spillway are an unusual mixture of lines running in all directions. They appear to be based on any one or a combination of five factors: (1) an attempt to build roads parallel to or right on General Land Office Survey lines, (2) an effort to do the same in regards to Indian Reserve lines, (3) a desire to construct roads on higher, or better drained land, (4) a tendency to follow previously developed lines of transportation, and (5) an inclination to follow drainage channels to avoid bridging them. The Lower Huntington Road and the old highway along the right bank exhibit the best examples of attempts of the builders to keep the roads on high ground. New U. S. 24, following the right bank, is built on the old canal bed and the old inter-urban grade. In the lower portion of the valley near Huntington some of the roads parallel the Little River then cross only at points where several roads may be served by one bridge. Most of the roads which run laterally across the spillway are affected by Indian Reserve lines. This is particularly true in Huntington County. Roads follow political boundaries determined by General Land Office Survey lines only in level, well drained areas. Otherwise the aforementioned factors supersede General Land Office Survey lines. In some cases, however, the direction of a given road may be governed by two or more factors.

With the exception of the old highway, all roads in the spillway, both hard surfaced and gravel, are in good condition. The new highway is

Fig. 34 Looking east to where highway U.S. 24 drops from the upland into the bottom. The right bank of the spillway crosses the picture laterally.

Fig. 35 New steel bridge spanning the Little River in Huntington County.

in excellent repair; the gravel roads, some of which are quite narrow, are frequently graded and regravelled, and have a good base. Maintenance of the segments of the old highway has reverted to the counties, who are allowing the road to fall into disrepair. It is little used by anyone except those who live on it or those who drive from the new highway to parts of Roanoke.

The four lane highway is heavily travelled. The number of vehicles using the highway ranges from 5700 to 7600 every twenty-four hours through the year.[28] In some sections the average is smaller where Roanoke and side roads tap the traffic. The writer made a traffic count and found that 344 vehicles passed a given location during an hour's time between 10:30 and 11:30 A. M. Forty-two per cent were from Indiana; the greater part of these were local. Thirteen per cent were from Michigan (Detroit is the northern terminus of this highway); three per cent carried Ohio license plates (Toledo is the large Ohio city on the highway); and some seven per cent were from Illinois. About one-fourth of the total number of vehicles were trucks or busses. (Appendix V)

Railroads. - - The Wabash Railroad Company operates 18.2 miles of right-of-way in the spillway. It is double tracked from Fort Wayne to Roanoke Station, a distance of about eleven miles. The rail road also maintains five bridges (two spanning the Little River) and fifteen grade crossings, of which two are protected by flasher lights. The railroad uses diesel motive power. The only facilities in the region for handling freight are located at Roanoke Station and near the Allen-Huntington County line. At Roanoke Station a side track is used to spot cars at the

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[28] Traffic Flow Map, Indiana, (Indianapolis: State Highway Commission of Indiana, 1952).

grain elevator. Near the county lines the Indiana and Michigan Electric Company has built a short spur to transport heavy materials for a new power substation under construction. Upon completion of the station the spur is to be removed.

No scheduled freight or passenger stops are made any place in the spillway. Stops, however, are made at Fort Wayne and Huntington. The major terminals of the road to the east are Toledo and Detroit; to the west Kansas City and St. Louis. In the earlier days the railroad was the chief mode of transportation, but today it appears to add little to the development of the spillway and to receive little revenue from it. The spillway is essentially a convenient route for the railroad to follow between more important outside areas. The Erie Railroad operates a spur about one-fourth of a mile in length which parallels the Wabash Railroad and connects the main line of the Erie at Huntington with the stone quarries.

In 1901 an electric inter-urban route was constructed between Fort Wayne and Huntington along the base of the right bank. It carried both freight and passengers. Operations ceased in 1938, and a part of the right-of-way was used for construction of the new highway. Another portion is being used at present by the Indiana and Michigan Electric Company for a power line right-of-way.

## Commerce

Background. - - Despite the fact that the Fort Wayne spillway is largely agricultural, twenty-five commercial establishments are located in the valley and along the banks. Sixteen of these are located along the highway and are placed to take advantage of the traffic; nine are situated in the bottom, and none are found along the left bank. Concentrations of

undertakings of this type of establishment are mapped in Allen County and at the villages of Roanoke and Mahon. From Mahon to Huntington, a distance of six miles, no business places are found along the highway. In the bottom the locations are often dictated by the location of materials, such as deposits of gravel.

Types of commercial establishments. - - Commercial establishments are of four distinct types: (1) service, (2) communicational, (3) manufacural, and (4) exploitative. Eighteen service establishments account for over sixty-nine per cent of the total number. These make direct contact with the purchaser of goods or services. The three communicational businesses, which make up eleven per cent of the total, deal primarily with radio and power transmission. Two manufactural enterprises (seven per cent of the total) are concerned with producing goods for distribution to industry and to the public. Three exploitative industries comprise about eleven per cent of the total. All three are located in the bottom where they are engaged in removing stone or gravel.

Service establishments. - - Of the eighteen service establishments located in the spillway, only two are found in the bottom. The other sixteen are on the highway, and gain almost all their income from the heavy traffic along the road. Nine of these businesses are service stations, five of which have small lunch rooms attached. (Fig. 36) It was found through questioning the operator that about seventy-five per cent of the patrons are transients. The service stations are small and are not prepared to do much more than pump gasoline. None of the lunch rooms is large or in good condition, most being of the "truck stop" type. Three grocery stores, one in conjunction with a trailer court, are located along

Fig. 36 Service establishment (small lunch room and gas station) at Mahon. U. S. 24 is in foreground.

the highway. For these small establishments local trade outnumbers transient. Two motels are also found here. The motels and the trailer court are placed to take advantage of the heavy highway traffic. The motels, however, have a decided lull in business in the winter months--November to March. A trailer sales and a gift shop complete the list of service establishments along the highway. In the bottom a grain elevator is located at Roanoke Station beside the railroad, and a small grocery is active in Aboite. Almost all of the small businesses in the spillway are owner operated. Only one or two hire extra full-time help. Most of them were initiated as a result of the construction of the four lane highway. Many operators were merely landholders until the highway offered an opportunity to expand into business.

Communicational establishments. - - The Indiana-Michigan Electric Company maintains several miles of power lines in the region. A three mile portion of line runs through the vast expanse of idle land in the divide area, and then turns northwest out of the spillway onto the right bank. A longer section, four miles in length, is built in the valley of the Aboite River. From the right bank it crosses the spillway laterally to the new substation on the left bank almost on the Allen-Huntington County line. (Fig. 37) The power line continues along the left bank for about a mile and then leaves the region toward the southeast. A new line is being constructed from the southeast, paralleling the older one to the new substation. This line will bring power from the new plant at Lawrenceburg, Indiana, on the Ohio River. With the exception of the use of the level land in Aboite River Valley, topography appears to have little effect on location of the towers.

Fort Wayne radio station WOWO has, in the last year, built a 50,000 watt transmitter in the bottom along the highway in upper Huntington County. (Fig. 38) A whole farm of eighty-six acres was purchased for locating a building and three towers. The site was chosen for several reasons. The four hundred foot towers had to be located some distance from the air lanes so as not to interfere with air traffic. The need for a damp site was indicated. Dampness at the base of a tower is a factor in powerful transmitting. Availability of power and telephone lines was also a factor in the choice.

Several telephone lines and electrical lines follow alongside many of the roads in the region. Another secondary Indiana and Michigan power line is built on the abandoned roadbed of the old inter-urban line at the base of the right bank in Allen County.

Manufactural industries. - - Two manufactural industries are located in the bottom of the spillway, one at Bowerstown, and one in the quarry district at the east edge of Huntington. At Bowerstown a small furniture factory is in operation. It began as a home shop making wagon parts, but now turns out cheap furniture (mostly wooden tables). The supply of local raw material for wagon parts was once plentiful, but now the soft basswood used in the furniture is shipped in from the South. All seven of the employees, including the owner, live in Bowerstown. The company is housed in an old, one story brick structure which has considerable floor space. Accounts held by the company are scattered all over the eastern half of the United States.

The other manufactural industry, a rock wool company, is much larger than the furniture factory, having fifty local employees. (Fig. 39) It is

Fig. 37 Indiana and Michigan Electric Company power substation on the left bank in Huntington County. Series of new towers are visible in background.


Fig. 38 Radio transmitter building and towers of station WOWO Fort Wayne, as seen from the highway along the right bank in Huntington County.

Fig. 39 Rock wool company in quarry district of Huntington. At the right of the photograph are waste dumps. The Erie Railroad spur and the Wabash Railroad main line are seen in the foreground.

now a subsidiary of a large national corporation, Baldwin-Hill, that specializes in insulation materials. The plant, originally owned by another company, was located here in 1935 in order to use the limestone as a raw material for the rock wool. Too high a lime content made the rock unsuitable for this purpose. All the raw material has more recently been shipped in either by the Wabash or the Erie Railroad. At present, lead slag from Alton, Illinois and steel slag from Chicago are the raw materials used in the manufacture of the rock wool. These materials are melted and then blasted by a jet of steam to give the finished product a woolly character suitable for insulation. The wool is shipped by truck to surrounding states.

Exploitative industries. - - Two gravel pits and a stone quarry constitute this type of activity in the spillway. The gravel pits lie in the bottom on either side of the Allen-Huntington County line. The pit in Huntington County is waterfilled and small, covering about two acres. Material is dug and piled around the edge of the pit by a power shovel mounted on a truck. The unsorted sand and gravel is then transferred into trucks by a mobile loader, the only permanent piece of equipment on the premises.

The workings in Allen County are much larger, covering approximately seven acres to a depth of fifty feet. The pit here is also waterfilled. The land is leased by the W and W Gravel Company, who began operations about fifteen years ago. The gravel which lies beneath about four feet of muck, clay, and till, was discovered by a farmer digging post holes along the Aboite River channel. It is estimated that over 150 acres of land in this area are underlain at some depth by gravel. This is the same gravel base

which drains farm land so well in wet seasons and makes the soil droughty in dry years in this section of the spillway. Material is dredged from beneath the water table by a large drag-line bucket, which dumps it beside the pit. It is then sorted by size and repiled ready for sale. (Fig. 40) The company has a fleet of trucks, but many private haulers transport their own material. Easy access to the cities via the highway is available to the haulers, but, needless to say, the highway had little effect in locating the workings.

The oldest industry in the spillway, and the largest in area utilized, is the stone quarry, operated by the Erie Stone Company in the bottom immediately to the east of Huntington. (Fig. 41) In 1906 work was begun in the quarry now occupied by Lake Claire. The diggings had reached a depth of approximately sixty feet and had covered an area of about fifty-five acres when they were abandoned in 1935. The Erie Stone Company now operates a quarry immediately to the east, which was begun by the Kelley Island Lime and Transportation Company. These workings now cover about seventy-five acres and are estimated to be about fifty feet in depth. Until 1942 lime was kilned at the quarry but this operation was abandoned when the lime could not be produced economically. (Fig. 42) The bedrock is blasted, the pieces loaded into trucks and taken to the crusher. After crushing and screening it is piled on the property to await shipment either by truck or by the Erie Railroad. (Fig. 43) All of the markets are local, Fort Wayne being the largest. Capital equipment of the company consists mainly of six buildings (including the crusher), two well drillers for drilling holes for dynamite charges, two power shovels for loading blasted bedrock, several large-bed dump trucks, about 5,000

Fig. 40 Storage piles of the W and W Gravel Company. The gravel pit is just to the right of the photograph. The dredge is coming out of the water with a load of material.

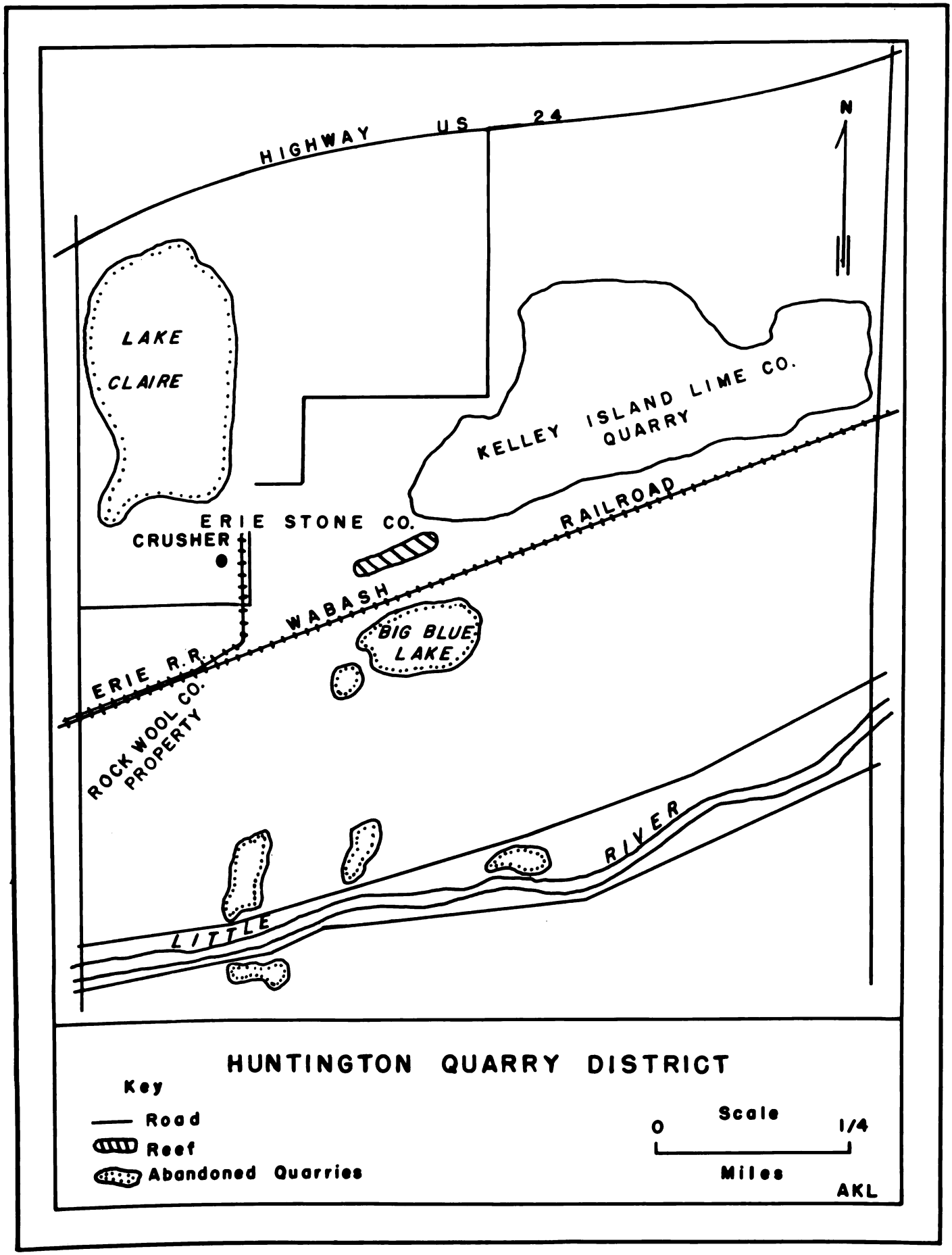
HIGHWAY US 24
N
LAKE CLAIRE
KELLEY ISLAND LIME CO. QUARRY
ERIE STONE CO.
CRUSHER
RAILROAD
WABASH
BIG BLUE LAKE
ERIE R.R.
ROCK WOOL CO. PROPERTY
RIVER
LITTLE
HUNTINGTON QUARRY DISTRICT
Key
Road
Reef
Abandoned Quarries
Scale
0
1/4
Miles
AKL

Fig. 41

Fig. 42 Views of the workings of the Erie Stone Company. This is the quarry originally begun by the Kelley Island Lime and Transportation Company. The block-shaped building in the left photograph is part of the abandoned lime burning equipment. Three drilling machines are visible in bottom. These are used to sink holes into which explosives are placed to blast the rock. At present, workings are confined to a deeper level -- smaller than the main quarry.

Fig. 43 Panorama of the equipment and storage piles of the Erie Stone Company. In the left background Lake Claire may be seen. The stone crusher is in the right background. In the foreground one of the old company gravel cars is visible. The right bank lies behind Lake Claire.

feet of standard gauge trackage on the storage piles and in the spur from the railroad, a small steam locomotive, and about a dozen pieces of old rolling stock to carry stone from the crusher to the storage piles. The operating personnel is composed of twenty-five men, all of whom reside in Huntington.

There are six abandoned water-filled quarries in the district in addition to Lake Claire. (Fig. 44) The largest of these, Blue Lake, covers about fifteen acres, the others range from two to five acres in size. (Fig. 45) At one time these small quarries provided limestone for lime kilns that were located along the Little River. They have been abandoned for more than thirty years.

## Recreation

In the divide area much of the marginal land supports wildlife. Some of the muck swamps serve as stopping places for migrant ducks, and the ditches provide homes for fur bearing animals. This land could be stocked with game and improved for recreational purposes. The owners, of course, would have to initiate any such move. At present there are two wildlife reserves in the area; one is situated on the right bank near the Allen-Huntington County line; the other is a long narrow woodlot along the old inter-urban grade in Allen County. In some respects wildlife reserves are unpopular in an agricultural area such as this because they harbor small marauding animals like raccoon and opossum. Further steps to maintain these animals have proven unpopular in some cases.

Fig. 44 Looking across Lake Claire toward the Erie Stone Company crusher and storage piles.

Fig. 45 A small abandoned stone quarry in the quarry district. It does not appear usable for watering stock, although it is surrounded by permanent pasture.

## Chapter VI

## SUMMARY

Physically the Fort Wayne spillway is but a small part of the complex features that make up the glaciated central lowlands of the United States. It probably resembles in general many another spillway formed by glacial discharge, in that it is characterized by the presence of steep and somewhat dissected banks, a flat bottom, wet type vegetation, poorly drained soils, and a uniform climate throughout. In the sum-total of its physical attributes, however, it is unique. Among other things, the facts that bedrock outcrops in its bottom and that it is drained in two different directions from a continental divide, contribute to the spillway's individuality.

Agriculturally the region is a portion of the American Corn Belt. Not only is a very high percentage of corn in relation to other crops grown, but farming in the region exhibits most of the traits commonly associated with "corn belt economy". The maximum rainfall occurs at the time of highest temperatures and together they create high humidity, giving the region a typical "corn belt climate". However, the spillway does appear to contain more wet land than the bordering uplands or most other areas practicing this kind of agriculture. At present the trend in farming here, as elsewhere in the corn region, is toward consolidation of both fields and farmland. The individual farmer seeks more land to work so that he will get optimum usage from his machinery. Large production, thus achieved, is some security against falling farm prices.

The spillway, situated between two industrial cities and containing an excellent route of transportation, is an ideal location for rural non-farm homes. The tendency in the region is toward more rural non-farm homes and fewer full time farms. People who work in the city are seeking rural home sites; while farmers who already live in the country are seeking work in the city. The end result might conceivably be a continuous suburban development between Fort Wayne and Huntington. This type of development might receive a great impetus if the land along the left bank were platted and the road paved, for there are many desirable home sites in that section.

The spillway has benefited little from being the important transportation route that did so much for the development of the surrounding lands and the cities at either end. Indirectly the region profited from the early settlement of the right bank which can be attributed to the canal. However, the major part of the area was not opened until the late 1880's, after the canal was no longer in use. The railroad which was built in the 1850's, merely used the low, swampy valley as a through route and, like the earlier canal, had little direct effect upon the settlement and development of the spillway itself. Today the highway is facilitating some commercial growth along the right bank, but it does not appear to be in proportion to the amount of traffic the highway carries. The highway's greatest value to the immediate area lies in the easy access it affords to the cities and the consequent encouragement to suburban expansion in the spillway.

It has been noted that the number of service establishments present is small in proportion to the amount of traffic on the highway.

The services offered are limited and few stops are made by cars travelling through the region from one city to another. This lack of services might be attributed to the short distance between Fort Wayne and Huntington, two fair-sized urban centers which offer large numbers of varied services. There seems to be ample opportunity for the opening of larger and more modern service establishments along the route.

The physical nature of the spillway meets the requirements for the radio transmitter, but has little effect on the location of the power lines. They are apparently placed without regard for type of terrain. The possible exception to this is the line built in the level Aboite River valley.

The opportunities for manufactural industries in the region seem promising, even though only two are located here at present. Railroad and highway facilities are near at hand. In fact, a building could be located so that it would have direct access to both railroad and highway. A solid base for even the heaviest industry is provided by the bedrock, which lies less than thirty feet beneath the surface of the bottom. The same bedrock could supply a permanent source of water for the industry. A large labor force is available in the nearby cities. Markets would also be close. The present trend toward dispersal of industry could bring this type of development to the region in the near future. However, the fact that there might be conflict for home and industrial sites indicates a need for county zoning.

The exploitative industries presently operating in the spillway appear to have extensive sources of raw material. Their business should remain stable or increase because of a continued demand for their products

in construction work. Possibly there is some opportunity for additional individuals to make a livelihood exploiting resources of the region. One person, for example, is removing and selling peat from the divide area. In the past small gravel pits and stone quarries were worked, the clay deposits near Aboite supported a tile mill, and a chemical company dug peat as a fertilizer conditioner. With enterprise some of these activities might be revived, but the markets for the products would largely be limited to the local area.

The conservation of water, although not a problem, has been given consideration by some of the inhabitants. The gullies, ditches, and streams flowing into the spillway from the uplands carry a great amount of water to the Little River. Only a small part of this flow is available for later use. To insure a sufficient supply during dry periods a few landowners have dug water holes in the bottom, and several have dammed streams flowing from the uplands in order to impound water. More of these dams could well be built to prevent water losses during dry years and to provide recreational resources for the owners.

# APPENDIX I.

## DWELLING LOCATIONS, FORT WAYNE SPILLWAY

### Number of Rural Non-Farm Dwellings

| | Right Bank | Left Bank | Bottom | Total |
|---|---|---|---|---|
| Allen County | 45 | 5 | 42 | 92 |
| Huntington County | 52 | 8 | 55 | 115 |
| Spillway Total | 97 | 13 | 97 | 207 |

### Number of Farmsteads

| | Right Bank | Left Bank | Bottom | Total |
|---|---|---|---|---|
| Allen County | 5 | 13 | 11 | 29 |
| Huntington County | 11 | 28 | 29 | 68 |
| Spillway Total | 16 | 41 | 40 | 97 |

As determined by the writer in the field and shown in Figure 16, page 28.

## APPENDIX II.

### FORT WAYNE SPILLWAY FARM TENURE, TYPE AND VALUATION*

| Land Owned (acres) | Land Rented (acres) | Total Farmed (acres) | Type of Farm | Value per Acre |
|---|---|---|---|---|
| 600 | | 600 | Dairy | |
| | 80 | 80 | Dairy | 31 |
| 68 | | 68 | General | 43 |
| 210 | 160 | 370 | General | |
| 90 | 350 | 440 | General | 23 |
| 58 | | 58 | Truck | |
| 111 | | 111 | General | |
| | 400 | 400 | General | |
| 160 | | 160 | General | |
| 50 | | 50 | General | |
| 152 | | 152 | General | |
| 70 | | 70 | General | |
| 80 | | 80 | General | 40 |
| 101 | | 101 | General | 32 |
| 100 | 300 | 400 | General | 34 |
| 7 | | 7 | Poultry** | 34 |
| 91 | | 91 | General | 44 |
| 139 | | 139 | General | 32 |
| 99 | | 99 | General | |
| 97 | | 97 | Dairy | 41 |
| 160 | 150 | 310 | General | 36 |
| 900 | | 900 | Cattle | |

*Facts concerning the twenty-two interviewed farms out of ninety-seven in the spillway.

**Poultry farm, due to small size and extreme specialization, was not included in farm statistics presented in the chapter on agriculture.

# APPENDIX III.

## FORT WAYNE SPILLWAY CROPS, 1953

| Crop | Acreage | % of Total Crop Acreage | Number of Fields | % of Spillway Acreage | Average Field Size |
|---|---|---|---|---|---|
| Corn | 4096 | 38.4% | 228 | 24.3% | 18 A |
| Small Grain | 2553 | 23.7% | 165 | 15.4% | 15 A |
| Soybeans | 2207 | 20.2% | 122 | 13.3% | 18 A |
| Hay | 1219 | 11.1% | 87 | 7.3% | 14 A |
| Rotation Pasture | 456 | 4.3% | 53 | 2.7% | |
| Truck | 295 | 2.3% | | 1.7% | |

## ROUGH LAND UTILIZATION, 1953

| Land Use | Acreage | % of Rough Land Total | % of Spillway Acreage |
|---|---|---|---|
| Permanent Pasture | 1012 | 17% | 6.1% |
| Idle Land | 2629 | 46% | 15.8% |
| Woodlot | 2160 | 37% | 13.0% |

Total Crop Acreage: 10,821
Total Rough Land Acreage: 5,801

Total Spillway Acreage: 16,622

As calculated from field study and the resultant maps of "Land Ownership" and "Land Utilization", Figures 23 and 28, pages 33 and 50.

# APPENDIX IV.

## INDIANA FARM INFORMATION

| | |
|---|---|
| Number of Farms: | 166, 627 |
| Land in Farms: | 19, 658, 677 |
| Total Acreage Harvested: | 11, 003, 000 |
| Average Value of Land and Buildings: | |
| per farm | $16, 550. 00 |
| per acre | $ 136. 90 |

Chief Harvested Crops

| | |
|---|---|
| Corn | 241, 415, 000 bushels |
| Oats | 50, 875, 000 bushels |
| Wheat | 23, 529, 000 bushels |
| Hay | 2, 674, 000 tons |
| Rye | 625, 000 bushels |

Harry Hansen (ed.), The World Almanac (New York: New York World Telegram, 1953), pp. 445 and 451.

## APPENDIX V.

## HIGHWAY TRAFFIC INFORMATION

Results of a traffic count taken by the writer between 10:30 and 11:30 A.M. on August 13, 1953 along highway U.S. 24 and Indiana State Road 37 between Fort Wayne and Huntington.

Total Passenger Cars: 262

Trucks and Busses: 82

Total Traffic, One Hour: 344

Passenger Cars

| State Registered | Number | State Registered | Number |
|---|---|---|---|
| Indiana | 147 | New York | 4 |
| Michigan | 45 | California | 4 |
| Illinois | 26 | Florida | 3 |
| Ohio | 11 | Texas | 3 |
| Missouri | 8 | Tennessee | 3 |
| Oklahoma | 5 | Oregon | 2 |

One each from:

Wisconsin, Louisiana, Kansas, New Hampshire, Alabama Pennsylvania, Iowa, Kentucky, New Jersey, and New Mexico. One from the Province of Ontario, Canada and ten unknown.

# BIBLIOGRAPHY

Bergquist, Stanard G., and MacLachlan, Donald C. Guidebook to the Study of Pleistocene Features of the Huron-Saginaw Lobes in Michigan. A Report Prepared for the Glacial Field Trip of the Geological Society of America. Detroit: 1951.

Bushnell, T. M. The Story of Indiana Soils. Purdue University Agricultural Experiment Station, Special Circular No. 1. Lafayette, Indiana: Agricultural Experiment Station, 1944.

Cumings, Edgar R., and Shrock, Robert R. The Geology of the Silurian Rocks of Northern Indiana. Department of Conservation, State of Indiana, Division of Geology, Publication No. 75. Indianapolis: 1928.

Dryer, Charles R. "The Wabash-Maumee Waterway," Annals of the Association of American Geographers, Vol. IX, 1919.

Farm Conservation Plan for the John Grayson Farm. A Report Prepared by the Soil Conservation Service. Fort Wayne: 1950.

Farm Conservation Plan for the Perry Mills Farm. A Report Prepared by the Soil Conservation Service. Fort Wayne: 1950.

Farm Conservation Plan for the Virgil Harrold Farm. A Report Prepared by the Soil Conservation Service. Fort Wayne: 1949.

Farm Conservation Plan for the Ray Reichenbach Farm. A Report Prepared by the Soil Conservation Service. Fort Wayne: 1946.

Hansen, Harry (ed.), The World Almanac. New York: New York World Telegram, 1953.

History of Huntington County Indiana. Chicago: Brant and Fuller Publishers, 1887.

Leverett, Frank, and Taylor, Frank. The Pleistocene of Indiana and Michigan and the History of the Great Lakes. U. S. Geological Survey, Monograph LIII. Washington: Government Printing Office, 1915.

Leverett, Frank. Glacial Map of Indiana. U. S. Geological Survey, Monograph LIII. Washington: Government Printing Office, 1915.

Taylor, Mrs. Samuel R. "The Story of the Townships of Allen County," The Pictorial History of Fort Wayne, Indiana, by B. J. Griswold. Chicago: Robert O. Law Co., 1917.

BIBLIOGRAPH (con.)

The History of the Wabash Railroad. A Report Prepared by the Wabash Railroad Company. St. Louis: 1953.

The Wabash-Erie Canal. A Report Prepared by the Staff of the Public Library of Fort Wayne and Allen County. Fort Wayne: 1952.

Traffic Flow Map, Indiana. A Map Prepared by the State Highway Commission of Indiana. Indianapolis: 1952.

U. S. Department of Agriculture. Climate and Man. Washington: Government Printing Office, 1941.

U. S. Weather Bureau. Climatological Data. Annual Summary. Vol. LVIII, No. 13. Chattanooga: Government Printing Office, 1952.

U. S. Weather Bureau. Local Climatological Summary with Comparative Data. Kansas City: Government Printing Office, 1953.

Veatch, Jethro O. Agricultural Land Classification and Land Types of Michigan. Michigan Agricultural Experiment Station, Michigan State College, Special Bulletin No. 231. East Lansing, Michigan: Agricultural Experiment Station, 1941.