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IMPROVED LOCAL PLANNING FOR RESERVOIR-ORIENTED RECREATION OPPORTUNITIES

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ABSTRACT

IMPROVED LOCAL PLANNING FOR RESERVOIR-
ORIENTED RECREATION OPPORTUNITIES

Water-based recreation is becoming an increasingly important aspect of water-resources management. However, there is a great deal of uncertainty about its local socio-economic impact. This uncertainty has played a key role in debates over the construction of reservoirs in Illinois. While much attention has been given to predicting expected impacts of reservoirs, there has been little investigation of the actual impacts, and very little attention has been given to evaluating the effectiveness of various approaches to dealing with those local impacts that do indeed result from water-resources-management projects. This study looks at the actual recreation-induced local impacts of Lake Shelbyville, a multipurpose reservoir constructed by the U. S. Army Corps of Engineers in central Illinois. The reservoir began filling in 1969 and is a major recreation attraction (three million visitor days annually) in a predominately agricultural region. The study is exploratory. It identifies significant impacts and suggests how these impacts may be predicted and dealt with. Significant attention is given to impacts on local government costs and revenues as well as needed intergovernmental cooperation. It is clear that local impacts were significantly different from what was expected and that local residents and recreationists using the lake could benefit from improvements in local planning and intergovernmental cooperation.

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Preface

This study represents the initial exploratory effort in a long-range program of the Center to identify significant local impacts of the water-based recreation activities associated with large multipurpose reservoirs and suggest how these impacts may be predicted and dealt with. The study has been responsible for two major ongoing research efforts aimed at improved water resources planning. Additional studies are being planned.

An interdisciplinary ex post reservoir impact study is currently under way. The study, administered by the Institute for Environmental Studies and funded by the Division of Water Resources of the Illinois Department of Transportation, is examining a broad range of environmental, economic, and social reservoir-induced impacts.

A study of the contribution of water-based recreation to national economic development is under way with funding from the Office of Water Research and Technology, U. S. Department of the Interior, under Title II of the Water Resources Research Act. That study will provide improved procedures for estimating recreation benefits for benefit-cost analysis. Thus it will contribute directly to improved allocation of water resources in the growing number of circumstances where recreation is an important consideration. The need for this study was specified by the U. S. Water Resources Council, and the technical direction of the study was provided by the Bureau of Outdoor Recreation of the Department of the Interior.

In sum, this report, and the ongoing research efforts that have been initiated in response to it, will contribute significantly to water resources planning in the Midwest and in other areas of the U. S. in the years ahead.

Glenn E. Stout
Director
Water Resources Center

Acknowlegment

Much of the support for this study was provided by the Water Resources Center. The staff of the center and is director, Glenn E. Stout, supplied support and direction throughout the study. H. J. Schweitzer, Assistant Director, Cooperative Extension Service and Agricultural Experiment Station, provided supplemental funding under Title V of the Rural Development Act of 1972.

In the initial phase of the study we benefited from the advice of a number of Cooperative Extension personnel familiar with the Lake Shelbyville area. They included Edward N. Ballard, O. Thomas Booker, Robert L. Carlock, Robert R. Harris, Robert F. Long, Sr., and Glen F. Sons. Their advice was invaluable in getting the research effort under way.

Early phases of the study involved a considerable amount of searching through reports, local records, and newspapers as well as numerous discussions with local residents. Much of this effort was completed by Paul Opryszek, Research Assistant on the project, and Roger Guthrie, Extension Assistant on the project.

The research effort benefited from the efforts of a number of other graduate students at the University of Illinois who, while not supported by the project, were working in related areas and made important contributions to the research.

David L. McLaughlin, a graduate student in the Institute of Government and Public Affairs and a former resident of the Lake Shelbyville area, provided much insight into local attitudes and decision making. He was also helpful in locating local documents. His forthcoming master's thesis, "The Interaction Between a Multi-Purpose Reservoir and Local Government Decision Making: Lake Shelbyville, Illinois," is an extension of this project.

Kim Herzinger, a graduate student in Agricultural Economics, reviewed most of the early history of efforts to secure construction of Lake Shelbyville. He made significant contributions to Chapters 3 and 4.

Michael Hatmaker, a graduate student in Urban and Regional Planning, provided important assistance in analyzing the impact of recreationists on local retail sales (Chapter 5). His current research on the economic impact of the Shawnee National Forest on local communities is an outgrowth of this project.

Janine Hatmaker, a graduate student in Urban and Regional Planning, reviewed several drafts of this manuscript and made significant improvements in it.

Any errors or deficiencies in the manuscript are, of course, the responsibility of the authors.

1 INTRODUCTION

Water-based recreation is becoming an increasingly important aspect of water-resources management. However, there is a great deal of uncertainty about its local impact. This study focuses on selected local socio-economic impacts of water-based recreation. Its purpose is exploratory, to identify significant impacts. Furthermore, suggestions will be made as to how these impacts may be predicted and dealt with. Primary attention will be given to recreation, although other project outputs which affect the local socio-economic impact of recreation and local planning efforts will be considered.

Recent debate over proposed water-resource-management projects in Illinois[1] has revealed a wide range of expectations concerning the local impact of water-resources-management projects. An important aspect of the controversy has been the socio-economic impact of reservoir-related recreation on local communities. An examination of the literature dealing with the local impact of water-resources-management projects has indicated that while much attention has been given to predicting *expected* impacts of dams and other water resource developments, there has been little investigation of the actual impacts of a completed project. In addition, very little attention has been given to evaluating the effectiveness of various approaches to dealing with those local impacts that do indeed result from water-resources-management projects. Actual impact information is particularly sketchy with respect to the socio-economic impact of water-based recreation. Exploring these impacts and efforts to deal with them are important steps in developing and refining useful models for impact prediction and deriving methods to control these impacts.

Actual information on the local socio-economic impact of water-resources-management projects and useful procedures for predicting these impacts are not now available and do not promise to become available in the near future. This study is a first step towards providing the necessary background

[1] Particularly the Lake Springer project proposed by the U. S. Army Corps of Engineers and the Middlefork Reservoir proposed by Vermillion County and the State of Illinois.

information and predictive procedures so that policy makers can know what to expect when a water resources project is proposed.

The study focuses on Lake Shelbyville, a large multipurpose reservoir constructed by the U. S. Army Corps of Engineers in central Illinois. Lake Shelbyville began filling in 1969 and is a major recreation attraction in a region that previously provided few recreational opportunities. Although the study deals primarily with Lake Shelbyville, the results will be applicable to other types of water-resources-management projects that provide a lot of water-based recreation.

Reservoirs are seldom constructed only for providing recreation, but are rather designed to provide a number of goods and services. Reservoir construction and operation are important aspects of the management of river systems. Rivers often provide a wide range of goods and services including transportation, irrigation, industrial and municipal water supplies, fish and wildlife, recreation, and aesthetic beauty. At the same time, they periodically extract a heavy toll in flood damage. Management of river resources is undertaken to increase the quantity and quality of goods and services that the river provides, while reducing flood damages. Management efforts are often aimed at influencing the flow of a river and may include the construction of dams and reservoirs, locks, levees, and flood walls, as well as channelization, canalization, and dredging. These developments have potential for significant physical, biological, and socio-economic impacts on surrounding areas. The extent of these impacts, and the manner with which they are dealt, often have a major influence on the effectiveness of water-resources-management programs.

Local areas and communities play a key role in determining project benefits in that they are often the areas most heavily impacted by project construction, the sites for water-related industrial development, and the source of services needed by recreationists. Local residents need a clear indication of the potential socio-economic impact of water-resources-management alternatives at early project planning stages so they can decide if they will

support a particular alternative. Local support is often a key factor in water-resources-management programs. If the local community is not an integral part of the planning process, key local services may not be available and a number of expected project benefits may not materialize. Adequate knowledge of expected impacts is particularly important with projects that provide a lot of water-based recreation. For example, large multipurpose reservoirs may bring a substantial number of recreationists to a region that previously attracted very few. Local government administrators and businessmen may have little experience with handling large groups of "outsiders" and providing them with services. Local residents need guidance concerning what to expect and how to handle the new problems and opportunities. Thus, the development of improved local impact models and methodology for influencing these impacts is essential for effective water resource planning.

This report consists of seven chapters, including this introduction. Chapter 2 describes Lake Shelbyville, the Kaskaskia River on which it is located, other water-resources-management projects on the Kaskaskia, and the Kaskaskia Basin. This broader geographic area is essential for the analysis since Lake Shelbyville is but one component of a system of interrelated water-resources-management projects on the Kaskaskia. These projects operate together and have a significant impact on the river, the basin, and beyond.

Chapter 3 looks at the chain of events that brought Lake Shelbyville into existence. This historical perspective, extending back more than 50 years, is important in understanding the development of local expectations and local attitudes toward lake-related development. The close ties between support for and expected benefits from Lake Shelbyville and other projects on the Kaskaskia will become more apparent in this discussion.

Chapter 4 will document expectations concerning selected socio-economic impacts of Lake Shelbyville. Particular attention will be given to the expectations of local supporters, the Corps of Engineers, and the State of Illinois.

Chapter 5 will look at developments which have occurred since the lake began filling in 1969. Attention here will be given to documentation of actual local impacts and comparing them with expectations. The differences between actual and expected impacts will be analyzed and explained.

Chapter 6 presents two issues that are of significance to local residents: regulation of the level of Lake Shelbyville and the extent of future public and private recreation development.

Chapter 7 is a summary that highlights needed improvements in procedures for estimating the local socio-economic impacts of water-based recreation and presents guidelines for dealing with these impacts.

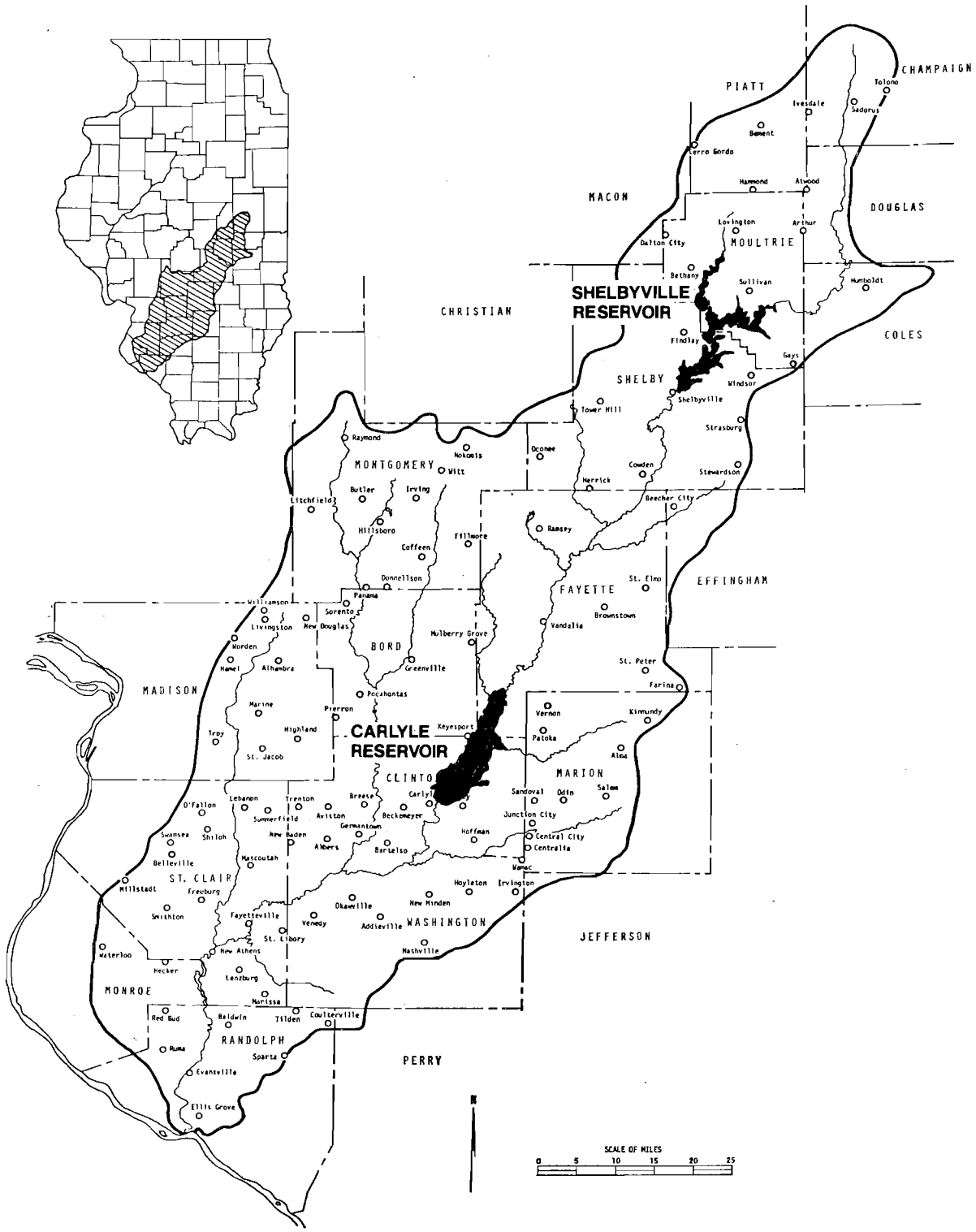

Figure 1. **Kaskaskia River Basin**

2 THE SETTING

This chapter outlines the water and related resources that are the focus of the study. The discussion begins with Lake Shelbyville and then expands to the Kaskaskia River and the Kaskaskia River Basin. (See Figure 1.)

LAKE SHELBYVILLE

Lake Shelbyville is a large multipurpose reservoir (11,100 acreas [a.] at normal pool) in central Illinois that was completed by the U. S. Army Corps of Engineers. The lake began filling in 1969. It is the uppermost of two impoundments on the Kaskaskia River and is located 222 miles (mi.) upstream from its confluence with the Mississippi. The lake is a key component of a comprehensive water-resources-management plan for the Kaskaskia. Lake Shelbyville Dam is located at the edge of the Shelbyville Moraine, which was formed by the most recent (Wisconsonian) glaciation. The Kaskaskia cut a deep, narrow, and steep-sided valley through the moraine. Thus, the lake is fairly deep in a region where topographic relief is minimal. Its 172-mi. shoreline, nearly all of which is forested, extends into numerous narrow and fairly steep valleys.[1] The lake provides a distinctive environment for outdoor recreation in an area with few nearby alternative sites for water-based recreation.

The construction of Lake Shelbyville was authorized by the Flood Control Act of July 3, 1958, for the purpose of flood control on the Kaskaskia and Mississippi Rivers, domestic and industrial water supplies, navigation releases for the Kaskaskia, fish and wildlife conservation, and recreation. Current estimates by the Corps of Engineers indicate that recreation accounts for nearly three-quarters of the primary benefits (contribution to national economic development) attributed to Lake Shelbyville.[2] Recreation occupies a similar position of prominence in the benefit estimations for other completed and proposed multipurpose reservoirs in Illinois.

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[1] U. S. Army Corps of Engineers, *Environmental Impact Statement of Operation and Maintenance, Lake Shelbyville, Illinois* (St. Louis, MO: St. Louis District [1975], p. I-1.

[2] Ibid., p. I-30.

THE KASKASKIA RIVER

Lake Shelbyville is one of several water-resource-management projects constructed by the Corps of Engineers on the Kaskaskia River. Carlyle Lake, a large multipurpose reservoir (26,000 a. at normal pool) is located 115 mi. downstream from Lake Shelbyville.[3] A flood wall has been constructed to protect the village of New Athens. The Kaskaskia Navigation Project in the lower reaches of the river is partially completed. The navigation project will provide a 9- by 225-foot (ft.) channel 36.2 mi. in length linking Fayetteville, Illinois, with the Mississippi River. This project consists of channelization and canalization of the lower 50.5 mi. of the Kaskaskia and construction of a lock and dam near the river's mouth. The lock and dam is in operation, and the lower 28 mi. of the project are in use. The remaining portion will become operational with the relocation of two bridges near New Athens and completion of 0.9 mi. of channelization in the vicinity of the old bridges. The project is expected to be fully operational in 1978.[4]

Other projects have been authorized but not completed, including flood-control levees below Carlyle Lake and Lake Shelbyville.[5] All five levee districts below Carlyle are inactive, while one of the six levee districts authorized below Shelbyville is completing a levee and one other district is in the preplanning state. Completion of the levees has been seriously hampered by a lack of local support, and there are at present few signs of local interest. Farmers question the effectiveness of the proposed levees in protecting farmland and are reluctant to invest in them.

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[3] U. S. Army Corps of Engineers, *Final Environmental Statement, Carlyle Lake, Illinois* (St. Louis District [1974]), p. 3.

[4] U. S. Army Corps of Engineers, *Final Environmental Statement, Kaskaskia Navigation Project, Illinois (Operation and Maintenance)* (St. Louis, MO: St. Louis District [1975]), p. I-7.

[5] U. S. Congress, House, *Kaskaskia River*, Illinois, H. Doc. 232, 85th Cong., 1st sess., August 23, 1958, pp. 23,27.

It is important to look at Lake Shelbyville in context with the other water-resources-management projects on the Kaskaskia. All the projects are designed to work in concert to alter the flow of the Kaskaskia and thus increase the benefits the river provides. Because it is the project located the farthest upstream, regulation of the Lake Shelbyville Dam has an influence on flooding in downstream areas and on the level and operation of Lake Carlyle and will influence the Kaskaskia Navigation Project and, to some extent, even the Mississippi River. The impact on downstream areas and activities is an important concern in the operating policy for Lake Shelbyville. In fact, it will subsequently be shown that balancing upstream and downstream interests is one of the *major issues* that has been encountered in regulating the lake.

OPERATION OF LAKE SHELBYVILLE DAM

The Lake Shelbyville Dam is a compacted earth structure with a concrete chute-type spillway section containing three tainter gates and a gravity outlet structure. Operation of the dam influences downstream flow as well as pool elevation and size.[6] Water release must equal or exceed 10 cubic feet per second (cfs) and may not exceed 1800 cfs without downstream damage.[7]

In order to maintain the pool at a prescribed elevation, it is necessary to vary releases with the varying inflow. In times of downstream flooding, releases are held back to minimize the impact downstream.

The operation of a multipurpose reservoir is not an easy task because of the highly variable inflow and the different pool and release requirements

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[6]U. S. Army Corps of Engineers, *Environmental Impact Statement of Operation and Maintenance, Lake Shelbyville, Illinois* (St. Louis, MO: St. Louis District [1975], pp. I-12 - I-16.

[7]Krishan P. Singh, John B. Stall, and Carl Lonnquist, *Analysis of the Operation of Lake Shelbyville and Carlyle Lake to Maximize Agricultural and Recreation Benefits* (Urbana, IL: Illinois State Water Survey, [1975]).

for the various purposes. The following discussion outlines these purposes and their requirements.[8]

Water Supply

Twenty-five thousand a. ft. of the storage in Lake Shelbyville are allocated for municipal and industrial water supply. Allocation of this water is controlled by the State of Illinois. To date, no portion of this storage has been used; consequently water supply is not currently a factor in lake operation. The implications of withdrawals for water supply on lake operation would depend on the amount, seasonality, and location of withdrawls; but these withdrawls will likely increase the drawdown of the lake during drought conditions. It is possible that the water-supply storage in Lake Shelbyville will be released from the lake and withdrawn downstream.

Navigation

One hundred fifty-five thousand a. ft. of storage in Lake Shelbyville are allocated for navigational purposes. During periods of low flow in the Kaskaskia River, releases would be made for the benefit of the Kaskaskia Navigation Project. When that project goes into full operation, possibly in 1978, additional storage will be carried in Lake Shelbyville and Carlyle Lake over the winter for release during low flows. The two reservoirs will share equally in making up the navigational requirements.

Recreation

A pool elevation of 599.7 ft. is optimal for recreation, although a range of lake levels near that elevation is satisfactory. To lessen the effects of high water, all permanent structures (such as picnic shelters and comfort stations) have been placed above elevation 610 ft., with most being

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[8]U. S. Army Corps of Engineers, *Environmental Impact Statement of Operation and Maintenance, Lake Shelbyville, Illinois* (St. Louis, MO: St. Louis District [1975], pp. I-12 - I-16.

well above this elevation. To lessen the effects of low water levels, special navigation channels have been dredged to link the boat-launching ramps with deep-water areas. To lessen the effects of fluctuating water levels, boat-launching ramps have been constructed with very long approach and launching ramps, and floating docks and marina facilities have been provided for. However, it is clear that severe water-level fluctuations can have an adverse effect and resultant impact on lake use, particularly for boating and swimming.

Flood Control

The water level is lowered during the winter months to provide storage for holding back the typically high spring flow that could produce damaging floods downstream. High flows are released according to a schedule that attempts to minimize these potential damages.

Lake Shelbyville was designed to be generally maintained at 599.7-ft. normal pool elevation, except for the winter months when it would be "drawn down" to a lower level or for short periods in the spring when the levels might exceed the normal pool level before release schedules bring it down.

A number of regulatory plans have been proposed and several have been implemented.[9,10,11] The most recent plan, which was proposed by the Corps of Engineers in the summer of 1976, will keep the lake at a higher level during the winter months than has been the case in the past. Under the current plan, each year the Corps would begin lowering the lake to elevation 595.0 ft.

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[9] U. S. Army Corps of Engineers, *Environmental Impact Statement of Operation and Maintenance, Lake Shelbyville, Illinois* (St. Louis, MO: St. Louis District [1975]), pp. I-12 - I-16.

[10] Krishan P. Singh, John B. Stall, and Carl Lonnquist, *Analysis of the Operation of Lake Shelbyville and Carlyle Lake to Maximize Agricultural and Recreation Benefits* (Urbana, IL: Illinois State Water Survey, [1975]).

[11] The Illinois State Water Survey will publish a new study of the regulatory policy for Lake Shelbyville and Carlyle Lake in June 1977.

(previously 590.0 ft.) on October 1, begin raising the elevation to 596.0 ft. on February 1, and begin raising the elevation to 599.7 ft. on May 1.[12] Thus the lake will be maintained at a minimum level higher than the maximum level that it reached in the summer of 1976.

To date, most conflicts over reservoir operation have concerned trade-offs between the recreation and flood-control objectives. This conflict is dealt with in detail in Chapter 6.

THE KASKASKIA BASIN

The Kaskaskia River is some 325 mi. in length. The river and its tributaries drain an area of 5840 sq. mi. (all or part of 22 counties) lying entirely in Illinois. The basin averages 175 mi. in length and 33 mi. in width and represents 10% of the land area of the state of Illinois. The river flows southwesterly on a meandering course from a point west of Champaign, Illinois, to its confluence with the Mississippi River approximately 50 mi. southeast of St. Louis. The river flows through more rugged topography upstream of Shelbyville than it does downstream.

The Kaskaskia Basin has 115 small- to medium-sized towns.[13] The upper portion of the basin (near Lake Shelbyville) is primarily rural, and agriculture is the dominant land use. Agriculture also predominates in the middle portion of the basin (near Lake Carlyle), but the cropland is not as productive as in the upper basin. The mining of coal and limestone is important in the lower portion of the basin, and there is also more manufacturing in communities in this area. The lower basin is heavily influenced by the St. Louis metropolitan area. The residents of many towns in the lower basin commute to the St. Louis area.

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[12] "Lake Shelbyville to Stay at 595 Foot Level in Winter," *Moultrie* (Illinois) *County News*, 22 July 1976.

[13] K. P. Singh, A. P. Visocky, and C. G. Lonnquist, *Plans for Meeting Water Requirements in the Kaskaskia River Basin, 1970-2020* (Urbana, IL: Report of Investigation 70, Illinois State Water Survey [1972]).

The Kaskaskia River has had an important influence on residents of the Kaskaskia Basin. The lower Kaskaskia has historically served as an important transportation link. A number of communities and industries have looked to the Kaskaskia for water supply.[14] The Kaskaskia River and adjacent lands have been the focal point for local recreational activities. The river experiences significant variation in flow, which has also been a problem to those who lived along its banks. Farmers have adjusted their operations to annual flooding, but there has been a history of major floods. These floods occurred in May 1908, August 1915, May 1943, April 1944, December 1949, March 1950, February 1951, June-July 1957, and February 1959.[15] Flooding has occurred in all months but is most common in February through May.[16]

In recent years, water resources planners have looked to enhance the river's contribution to the well-being of those located near it, including efforts to control floods, improve navigation on the lower Kaskaskia, and provide increased water supply, recreation, and fish and wildlife benefits. Lake Shelbyville is one such development which, in concert with the other projects, is designed to help meet these multiple purposes.

Local support for the construction of Lake Shelbyville and other projects on the Kaskaskia was based on anticipated benefits that would accrue to local residents. It is to this support that we now turn. It will become apparent that the support for these projects was closely tied together. Local residents expected a multitude of benefits throughout the basin from the management of Kaskaskia water resources.

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[14] Ibid.

[15] U. S. Army Corps of Engineers, *Environemtnal Impact Statement of Operation and Maintenance, Lake Shelbyville, Illinois* (St. Louis, MO: St. Louis District [1975]), p. I-3.

[16] U. S., Congress, House, *Kaskaskia River*, Illinois, H. Doc. 232, 85th Cong., 1st. sess., August 23, 1958, p. 15.

3 A HISTORICAL PERSPECTIVE

Management of the Kaskaskia Basin water resources was supported by a number of public and private groups who saw management of the river, including construction of Lake Shelbyville, as contributing to their interests. Prominent among their expectations was improvement in socio-economic conditions in the Kaskaskia Basin. These groups, their expectations, activities, and motivating forces are the focus of this chapter. The purpose of this discussion is to develop background for subsequent analyses of local expectations and actual impacts.

The socio-economic impacts of Lake Shelbyville occur over a wide area. The lake's influence on recreational behavior extends well over 100 mi. from the reservoir.[1] The reservoir's influence on streamflow extends down the Kaskaskia and on into the Mississippi. The expected impact of Lake Shelbyville on the flow of the Kaskaskia prompted much of the early support for construction of the lake. This support will now be examined in detail. We will then return to a discussion of recreation impacts.

DOWNSTREAM CONCERN FOR NAVIGATION, WATER SUPPLY, AND FLOOD CONTROL

A number of downstream[2] groups saw the possibility of advancing their economic interests through the development of Kaskaskia water resources. They were concerned with securing additional flood control, navigation, and water-supply benefits. Their efforts were responsible for much of the support for managment of Kaskaskia River resources, including the construction of Lake Shelbyville.

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[1] U. S. Army Corps of Engineers, *Environmental Impact Statement of Operation and Maintenance, Lake Shelbyville, Illinois* (St. Louis, MO: St. Louis District [1975]), p. II-57.

[2] For the purpose of this discussion, the downstream area will be defined as that portion of the Kaskaskia River Basin downstream of the present dam at Carlyle Lake.

The forces that motivated these groups had a portion of their roots in local geology, local economic conditions, and the character of the Kaskaskia River. The downstream portion of the basin held a large reservoir of recoverable coal, but the value of this resource was restricted, in part, by the lack of low-cost transportation. Economic growth of the area was further frustrated by a water supply that was not sufficient for expansion of communities or industry. At the same time, periodic flooding of the Kaskaskia was responsible for significant damage to crops as well as to the village of New Athens. Thus, management of Kaskaskia water resources was sought to enhance water transportation of coal and other goods, to provide a surface water supply for municipal and industrial use, and to provide flood protection, all of which offered promise for a substantial contribution to the area's economic development. This promise was particularly significant in light of the generally "depressed" nature of the local economy.

Navigation

Downstream businessmen were interested in improving navigation on the Kaskaskia. The lower reaches of the river were shallow and meandering. Low water levels, particularly in the summer, hampered shipping. A lock and dam near the mouth of the river would create a deeper slack-water channel. Straightening and dredging the channel would further enhance navigation. Upstream storage would help maintain a suitable depth of water in the channel as well as protect it and related facilities from flood damage. Upstream storage would also provide other benefits in the form of flood control, water supply, low flow augmentation, and recreation. Some of these benefits would accrue to the residents of upstream areas. Thus, the multipurpose nature of upstream storage tied the supporters of navigational improvements to other supporters of upstream storage reservoirs. It will become apparent from subsequent discussion that the multipurpose nature of upstream reservoirs including Lake Shelbyville, contributed significantly to the local support generated for management of Kaskaskia water resources.

Water Supply

Upstream storage would also play a key role in water supply for municipal and industrial use. Much of the lower Kaskaskia Basin is presently

short of water or is expected to experience a shortage by the year 2020.[3] The lower Kaskaskia Basin (unlike much of Illinois, including the upper one-third of the basin) lacks good groundwater resources. This problem was identified prior to 1948, and it was indicated that, in the absence of groundwater resources, surface water reservoirs provided the only alternative for municipal and industrial water supply.[4] These supplies were seen as essential to the area's growth and development.

Flood Control

Although New Athens was apparently the only population center that experienced major flood problems, high flows and floods posed a problem to farmers and others who resided close to the river. In order to protect their farmlands, a number of farmers organized drainage districts in the middle and lower reaches of the Kaskaskia Valley during the early part of this century. A total of 129 such districts accounted for 431,620 a. in the valley. However, most districts only constructed ditches and large tile drains to serve as outlets for the tile drains of individual owners. Only eight of these districts, all located in Clinton and Fayette counties, actually built levees. A total of 36.5 mi. of levees were constructed, but they provided inadequate protection for 23,090 a. of bottomland.[5]

Residents of New Athens felt the damages of Kaskaskia flood waters when the town was severely damaged by the floods of 1943 and 1946.[6] In 1947,

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[3]K. P. Singh, A. P. Visocky, and C. G. Lonnquist, *Plans for Meeting Water Requirements in the Kaskaskia River Basin* (Urbana, IL: Illinois State Water Survey Report of Investigation 70 [1972]), p. 14.

[4]Normal G. Bitterman, *Industrial Possibilities*, Booklet No. 3 (Carbondale, IL: Southern Illinois University [1948]), p. 15.

[5]U. S. Army Corps of Engineers, *Survey Report of Kaskaskia River, Illinois for Flood Control, Main Report* (St. Louis, MO: St. Louis District [1954]), p. 15.

[6]Kaskaskia Industrial Development Corporation, *Dedication, Kaskaskia Navigation Project* (New Athens, IL: [1974]).

the New Athens Commercial Club contacted the Corps of Engineers concerning the construction of a flood wall to protect the village.[7]

Thus we find downstream interest in managing Kaskaskia water resources to provide for navigation, water supply, and flood control. This interest was to grow in intensity, become organized, and eventually lead to a comprehensive program of water-resources management undertaken by the Corps of Engineers. Lake Shelbyville was an important part of that program. The comprehensive program was preceded by a number of efforts aimed at specific problems.

EARLY EFFORTS TO MANAGE KASKASKIA WATER RESOURCES

The Corps of Engineers, which was to play a major role in the management of Kaskaskia water resources, first became involved with Kaskaskia problems in the 1880s. At that time the Corps made a survey of the lower portion of the river. Subsequently, in 1892 Congress appropriated funds for navigational improvements that included removal of snags and obstructions from the river and excavation of a channel through the shoals.[8] These activities greatly enhanced commerce on the river.

In 1933, the Corps made a preliminary examination of the potential for navigation on the entire Kaskaskia River. They considered construction of six locks and dams between Vandalia and the mouth of the river, a storage reservoir at Shelbyville, channel clearing and straightening, and dredging and construction of levees. Such a project would have provided for commercial navigation farther upstream than the present navigation project. However, Congress took no action on the report.[9] Note, however, that this initial

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[7] Ibid.

[8] U. S., Congress, House, *Report of the Secretary of War,* Ex. Doc. 1, Part 2, 53D Cong., 3d. sess., 1894, pp. 260-261.

[9] U. S. Army Corps of Engineers, *Survey of Kaskaskia River, Main Report* (St. Louis, MO: St. Louis District [1954]), p. 2.

consideration of a storage reservoir at Shelbyville, some twenty-five years before the present reservoir was authorized, was for navigation. Other purposes were to emerge in subsequent years.

In 1934, residents of the middle and lower regions of the Kaskaskia began to take action to secure a flood-control program for the river. Emil Burgard was an early supporter who contacted Mr. Norcross, a Carlyle newspaper publisher, and H. I. Hanna of Mattoon to aid in the effort. The three stimulated interest in flood control among the residents of towns along the Kaskaskia.[10] The Kaskaskia River Association was formed and organized into two parts: the Lower Kaskaskia River Association (H. C. Norcross, Chairman) and the Upper Kaskaskia River Association (H. I. Hanna, Chairman).[11] The association conducted a number of meetings with the Corps of Engineers during the period 1935-1942 and was largely responsible for authorization of the construction of Carlyle Lake and the associated downstream levees in the Flood Control Act of 1938.[12]

In 1938, the Corps of Engineers held a public hearing at Carlyle. Those attending included representatives of government agencies, drainage and levee districts, and farm and business interests. The general consensus was that the Corps of Engineers should develop a coordinated water-resources-management program for the entire Kaskaskia Basin. There was no opposition to the previously authorized (1938) dam at Carlyle and the levees between Carlyle and New Athens. Representatives of the northern part of the Kaskaskia valley expressed the desire for a study to consider the feasibility of flood protection for the farmlands between Shelbyville and Vandalia, an area representing essentially one-half of the area between the present Lake Shelbyville and Carlyle Lake. Representatives of the southern part of the Kaskaskia Basin

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[10] "Kaskia's Personality Parade," *Kaskia*, July 1964, p. 7.

[11] "Kaskia's Personality Parade," *Kaskia*, August 1964, p. 7

[12] Ibid

were interested in the development of lakes and game preserves and the expansion of hunting and fishing opportunities in the area.[13] In 1940, the Corps of Engineers recommended that a survey for flood control on the Kaskaskia be undertaken;[14] however, World War II soon interrupted Corps involvement in the planning of Kaskaskia water resources.

Kaskaskia water problems continued unabated. In 1943, the highest flood of record did millions of dollars of damage in the New Athens-Carlyle area. The river went on another rampage in 1946. As mentioned earlier, the devastation of these two floods prompted the New Athens Commercial Club to contact the Corps of Engineers in 1947 about construction of a flood wall for New Athens. However, the Corps of Engineers explained that the federal government would consider only a comprehensive plan of flood control for the entire Kaskaskia River Basin.[15] In 1950 the Corps once again held a public hearing at Carlyle to see if there was sufficient local interest in flood control.[16] The handful of people in attendance gave their support. One of those in the audience was Eldon E. Hazlet, who was to play a key role in bringing about a comprehensive program for management of Kaskaskia water resources.

The post-World-War-II era stimulated local interest in the economic development of the Kaskaskia Basin. It was a time of economic expansion across the nation. The center of the steel industry was shifting from Pittsburgh toward Chicago. St. Louis was the site of several new steel mills. New power plants were being established, and they created a market for coal. The

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[13] U. S. Army Corps of Engineers, *Survey of Kaskaskia River, Main Report* (St. Louis, MO: St. Louis District [1954]), p. 16.

[14] Ibid.

[15] Kaskaskia Industrial Development Corporation, *Kaskaskia Navigation Project* (New Athens, IL: [1974]).

[16] "World War II Delayed Building of Reservoir," *Carlyle Lake* (a special edition published only for this occasion), 1973, p. 2.

Mississippi, Ohio, and Illinois Rivers plus the Illinois Barge Canal all provided low-cost water transportation to distant points. The lower Kaskaskia offered a potential link to these waterways as it passed through significant deposits of recoverable coal that could be shipped by water. Alternatively, iron ore and other materials could be moved in (perhaps from nearby Missouri) for manufacture. Manufactured products could then be shipped out along similar routes.[17]

An important catalyst for development of Kaskaskia water resources came in 1952 when Olin Industries became interested in the New Athens area as a site for an aluminum smelter. The plan was subsequently abandoned when a suitable agreement for electric power was not reached with Illinois Power Company. Olin had considered the site desirable because it offered a combination of low-cost coal from which to generate electric power, low-cost barge transportation for ore, and a location near the market center.[18]

With Olin's decision to locate elsewhere, coal companies were left with options on more than two billion tons of coal within a 25-mi. radius of New Athens. Local real-estate interests convinced them to retain their options and work to obtain improved navigation on the Kaskaskia in order to move the coal to market or to bring new industry in.[19] The Kaskaskia could serve as a vital transportation link for coal, raw materials, or finished products.

Thus the coal companies holding leases in the downstream area acquired a strong interest in the success of efforts to improve navigation on the lower Kaskaskia. Their concerns were linked to those of farmers in the floodplain and residents of New Athens because multipurpose upstream reservoir storage was seen as enhancing all of their interests.

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[17] "Kaskaskia River Navigation Improvement Project," *Kaskia,* October 1964, p. 13.

[18] Henry H. Hunter, Vice President of Olin, to Paul Opryszek, March 29, 1976.

[19] Kaskaskia Industrial Development Corporation, *Kaskaskia Navigation Project* (New Athens, IL: [1974]).

LOCAL SUPPORT BECOMES ORGANIZED

The meeting with Corps of Engineers personnel in 1950 awakened Eldon Hazlet's interest in the water-resources-management projects, and he spearheaded a Carlyle Lake committee that pushed for a dam and reservoir at Carlyle.[20] He made his first trip to Washington on behalf of the lake in 1952 and was successful in retrieving the project from the file "to be abandoned because of lack of local interest" and placed in the active file.[21] Hazlet was not the only mover for management of Kaskaskia water resources, but he was particularly successful in bringing several groups together to form a strong base of support.

Emil Burgard was a key supporter of water-resources-management to enhance downstream interests. He resumed his promotion of Kaskaskia water-resource development after World War II and immediately organized the St. Clair County Kaskaskia Valley Project Inc. to promote flood control for the downstream area.[22] Meanwhile, remnants of the prewar Kaskaskia River Association remained, promoting flood control in the middle- and upper-basin regions. When Hazlet pushed for a dam at Carlyle, a similar committee was organized by residents of Sullivan and Shelbyville for a companion lake at Shelbyville. Farther downstream, the residents of New Athens and Fayetteville were pushing for navigation on the lower channel.[23]

Hazlet formally united the various factions into one group, the Kaskaskia Valley Association (KVA). The KVA was formed in 1953 and incorporated in 1955 with Eldon Hazlet as president, a position he held until his death in 1966.[24]

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[20] Ibid.

[21] "Carlyle Most Frequently Visited State Park," *Mt. Vernon* (Illinois) *Register-News*, August 12, 1971

[22] "Personality Parade," *Kaskia*, July 1964, p. 7

[23] "World War II Delayed."

[24] "Kaskia's Personality on Parade," *Kaskia*, June 1964, p. 25.

Eldon Hazlet was also involved in a number of local promotional efforts and served as the secretary of the Chamber of Commerce of Carlyle, Keysport, and Bartelso. He was secretary of the Clinton County Fair Association and president of the Southern Egyptian Fair Association. In addition he headed tourism in the Carlyle region and served on the board of directors of the Mississippi Valley Association.[25]

Hazlet brought the leaders of the earlier organization into the KVA. H. I. Hanna, chairman of the former executive committee for the Kaskaskia River Association, served as director for the KVA. Emil Burgard, president of the old St. Clair County Kaskaskia Valley Project, Inc., served as KVA vice-president.[26] Hazlet also preserved some aspects of regional interests in the KVA by conducting its affairs through three regional divisions that essentially correspond to the lower, middle, and upper portions of the Kaskaskia Basin. The counties were assigned as follows:[27]

Regional Division 1	Regional Division 2	Regional Division 3
Shelby	Clinton	St. Clair
Champaign	Jasper	Perry
Piatt	Effingham	Randolph
Macon	Fayette	Washington
Douglas	Montgomery	Monroe
Moultrie	Marion	
Christian	Bond	
Coles	Madison	
Cumberland		

[25]Illinois, Lake Shelbyville Dedication, Shelbyville, Illinois, September 12, 1970; "Carlyle State Park," *Mt. Vernon* (Illinois) *Register-News*, August 12, 1971.

[26]"Personality Parade," *Kaskia*, August 1964, p. 7.

[27]Illinois, Kaskaskia Valley Association, Incorporation, *Constitution and Bylaws*, December 9, 1968.

The purposes of the KVA, as stated in its Charter of Incorporation, were as follows:

a. cooperative action in the consideration of solution of problems and determination of policy affecting the progress of civil engineering projects on the Kaskaskia River and Valley which are for the general enhancement and improvement of that river and valley

b. to promote harmonious and friendly cooperation among communities and public and quasi-public organizations in the Kaskaskia Valley Basin and to disseminate information for their benefit

c. to encourage and promote general economic and social improvement through the Kaskaskia Valley Basin[28]

The KVA, with Eldon Hazlet spearheading the effort, became the focus of local support for management of Kaskaskia water resources. Two years later the downstream industrial-navigation interests founded a companion organization to look after their interests in the development of the Kaskaskia. The Kaskaskia Industrial Development Corporation (KIDC) was incorporated in 1957 with Emil Burgard as president. It had been formed out of the Committee for Navigation on the Kaskaskia, which was organized in 1955 with the same president.[29]

The purpose of the new KIDC was stated in its Charter of Incorporation as:

to aid, assist and sponsor the industrial development of the Kaskaskia River Valley in the State of Illinois

to aid, assist and sponsor the development of navigation of the Kaskaskia River

to aid, assist, sponsor and develop conservation, flood control, recreation and protection of wildlife in the Kaskaskia River Valley of Illinois[30]

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[28] State of Illinois, Kaskaskia Valley Association, *Charter of Incorporation*, January 12, 1955.

[29] Kaskaskia Industrial Development Corporation, *Dedication*.

[30] State of Illinois, Kaskaskia Industrial Development Corporation, *Charter of Incorporation*, March 12, 1957.

There was a close association between the KVA and KIDC, as evidenced by the significant number of individuals who served on the boards of both organizations either simultaneously or at different times.[31]

THE COMPREHENSIVE PLAN FOR THE KASKASKIA

The initial authorization for management of Kaskaskia water resources came when the Flood Control Act of June 28, 1938, authorized a major reservoir at Carlyle (860,000 a. ft. of storage) and downstream levees. That same legislation authorized a study for an integrated plan of development for the Kaskaskia Basin. These projects were not built and the study not completed because construction and planning programs were interrupted by World War II.[32] However, the projects subsequently became a part of a comprehensive plan that was completed in 1957.

In the Flood Control Act of 1938, Lake Carlyle and the downstream levees were part of a plan for a comprehensive system of reservoirs on tributaries of the Mississippi, Missouri, and Ohio Rivers. That system was presented by the Corps of Engineers to Congress in response to the unprecedented flood of 1937 on the Ohio River, which caused a major flood on the lower Mississippi River.[33]

With the resurgence of local interest after World War II, the Corps of Engineers made a preliminary examination and survey of the Kaskaskia. A general plan was developed that included the previously authorized (1938) projects and additional developments. In developing the general plan, three alternative plans were investigated: levees, reservoirs, and levees in combination with reservoirs. The Corps of Engineers settled on a general

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[31] This point is clear in the annual reports prepared by both organizations as a requirement of the Not-for-Profit-Corporation Charter.

[32] U. S. Army Corps of Engineers, *Survey of Kaskaskia River, Main Report* (St. Louis, MO: St. Louis District [1954]), p. 15.

[33] Alphonse F. Tiefenbrun, "Authorized Plan of Basin Development, Kaskaskia River, Illinois." Presentation to the Kaskaskia Valley Association Planning Conference, Carlyle, September 4, 1958.

comprehensive plan where levees would be built in combination with reservoirs. The plan that emerged in 1954 called for storage reservoirs at Carlyle and Shelbyville, levees downstream from each reservoir, and a flood wall for the village of New Athens.

Under the original plan (1938), 200,000 a. ft. of reservoir storage at Carlyle were designated for flood control. Under the comprehensive plan, this storage was converted to the joint uses of navigation, water supply, recreation, and the conservation of fish and wildlife.[34] This transfer was made possible because Lake Shelbyville would provide sufficient flood-control storage to enable this transfer of flood storage to take place.

Under the original plan (1938), the reallocated navigation storage from Carlyle Lake to Lake Shelbyville was to supplement low flows on the Mississippi.[35] However, after the Kaskaskia Navigation Channel was authorized in 1962, this reallocation was designated to supplement low flows on the Kaskaskia River. Under the comprehensive plan, the storage in Shelbyville and Carlyle would be as follows:[36]

	Lake Shelbyville	Lake Carlyle
	----------acre feet----------	
Flood control	474,000	700,000
Joint use*	180,000	233,000
Inactive	30,000	50,000
Total	684,000	983,000

*Joint use includes water supply, pollution abatement, fish and wildlife conservation, recreation, and navigation.

[34]Ibid., p. 54.

[35]U. S. Army Corps of Engineers, *Water Resource Development in Illinois*, (Chicago, IL: Army Engineer Division North Central [January 1961]), p. 40.

[36]Ibid.

Construction of a total of 60.3 mi. of levees was authorized between Lake Shelbyville and Carlyle Lake. The levees would be located between Cowden and Vandalia and be served by three pumping plants and 27 drainage structures. A total of 27,500 a. of land would be protected against a project-design flood having an estimated frequency of occurrence of about once in 50 years. Between Carlyle Lake and New Athens, some 69.6 mi. of levees were authorized and would be served by five pumping stations and 28 drainage structures. A total of 43,190 a. of land in this area would receive protection against a project-design flood having an estimated frequency of about once in 50 years.[37]

Authorized flood protection for the village of New Athens included the construction of 6,430 ft. of earth levee, shifting of the main channel of the Kaskaskia, and the construction of facilities for interior drainage of protected areas.[38]

The comprehensive plan for the Kaskaskia authorized by the Flood Control Act of 1958 did not include a navigation project for the lower Kaskaskia; however, local supporters were still hard at work to secure such a project.

THE KASKASKIA NAVIGATION PROJECT

The Committee for Navigation on the Kaskaskia (incorporated as the KIDC in 1957) had been successful in getting the Corps of Engineers to make a feasibility study for a navigation project in 1954 which resulted in funds being allocated for a Corps of Engineers survey study on navigation.

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[37] Ibid.

[38] Ibid.

In November 1955 a public hearing was held at New Athens, Illinois. Among the many attending the hearing were farmers and other residents from throughout the Kaskaskia Basin. From the meeting came a strongly endorsed proposal for a navigation channel in the lower 50 mi. of the Kaskaskia River. It was indicated that local cooperation would be forthcoming. Paramount among the local sponsors were the KVA and KIDC.[39] The navigation project was subsequently authorized under the Rivers and Harbors Act of 1962.[40]

The navigation project includes the creation and maintenance of a 9 by 255 ft. channel 36.2 mi. in length. Project works include construction of a dam and a single 84 ft. by 600 ft. lock at the mouth of the river, channel realignment and enlargements, overbank cutoffs, and bridge alterations.[41]

SUMMARY

Thus by 1962 a comprehensive water-resources-management program had been authorized for the Kaskaskia. Lake Shelbyville was an important component of this plan. We now turn our attention to some of the specific expectations that local residents held concerning the impact of Lake Shelbyville. It is important to remember that downstream interests saw Lake Shelbyville as storage for flood control, water supply, and navigational purposes. Residents of the upstream area saw it more in terms of recreational and industrial developments.

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[39] Eldon Hazlet (KVA) to Colonel Alfred J. D'Arezzo, November 14, 1960; Emil Burgard (KICD) to Colonel Alfred J. D'Arezzo, October 18, 1960.

[40] Kaskaskia Industrial Development Corporation, *Kaskaskia Navigation Project,* 1974.

[41] U. S. Army Corps of Engineers, *Final Environmental Statement, Kaskaskia Navigation Project (Operation and Maintenance) Illinois* (St. Louis, MO: St. Louis District [1975]).

4 LOCAL EXPECTATIONS

This chapter discusses local expectations with respect to the socio-economic impact of Lake Shelbyville. It provides background for subsequent analysis of the actual impacts on the local area. The construction of Lake Shelbyville (and likewise Carlyle Lake) was seen by some local residents as inducing a significant socio-economic impact on the area. Their expectations included industrial development, general growth in population, protection against floods, and expansion of recreation-related businesses. They also saw increased recreational opportunities being made available to them. These expectations were responsible for much of the local support for constructing the reservoir.

LOCAL SUPPORT

The proposal for building reservoirs at Carlyle and Shelbyville gained the attention of nearby residents who saw that such projects could have an influence on their interests and what they perceived as community interests. Many businessmen hoped to benefit from the increased trade and general prosperity that they believed the reservoirs would bring to the area. Businessmen formed a large part of the upstream division of KVA.[1]

The cities of Shelbyville and Sullivan, located near the site of Lake Shelbyville, hoped to benefit from the lake-related business. The city of Shelbyville contributed an average of $300 per year to the KVA.[2] A smaller

[1] An examination of files for the upstream division of KVA by Paul Opryszek during the summer of 1976 indicated that the membership included individuals who operated funeral parlors, furniture stores, boat clubs, automobile dealerships, construction firms, banks, clothing stores, etc. One list of financial contributors of the KVA upstream chapter showed 160 members who contributed $10 or more during the period 1959-1965. The city of Shelbyville accounted for 54 businesses and 29 individuals among these contributors. Other cities that were represented included Windsor, Assumption, Pana, Beecher, Cowden, Strasburg, Sullivan, Findley, Springfield, and Mattoon.

[2] Based on an examination of city council records by Paul Opryszek and Roger Guthrie during the summer of 1975.

amount was subsequently appropriated for the Lake Shelbyville Boosters, a group organized for "civic development." This group focused on recreation since the KVA did not actively promote private-recreation development in the local area. The city of Sullivan was also involved with the KVA. A resident of Sullivan was on the KVA Board of Directors from 1957 through 1975.[3] Sullivan also maintained close contact with the Lake Shelbyville Boosters.

EXPECTED INDUSTRIAL DEVELOPMENT

Supporters of the water resources management projects on the Kaskaskia predicted that the projects would induce unprecendented economic growth in towns along the river. The KVA saw a strong need for industrial development in the Kaskaskia Valley.[4]

Industrial development was seen as the solution to the problems concerning the area's socio-economic development. In the 1950s, local agriculture did not offer promising prospects for employment. Markets for farm products were seen as having little promise for growth. It was a time of large agricultural surpluses and low crop prices. Technological advances were increasing the mechanization of farm production and reducing the manpower requirements on farms. If new employment opportunities could not be found, further losses in population would be experienced. Industrial expansion was not developing at a rate that was sufficient to provide jobs for those newly entering the labor market or leaving farming. Most local industry catered to providing agricultural supplies and community services. The region has few natural resources other than its farmland and the Kaskaskia River. The Kaskaskia was viewed as an untapped resource, one of the few large rivers in the United States which was neither heavily industrialized nor in the process of becoming so in the post-World-War-II industrial boom. Management of the river was seen as providing water that would lead to industrial development. It was particularly hoped that growth-type industries which

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[3]Based on annual reports of the Kaskaskia Valley Association.

[4]Kaskaskia Valley Association, *The Road to Progress: The Kaskaskia Valley Project: Shelbyville and Carlyle Dams and Reservoirs* (Carlyle, IL: [1956]).

fit into the "modern techonological era" could be attracted. Kaskaskia water resources were to attract water-resources-based industry. Some examples of such industry that were mentioned by the KVA included:[5]

> Soya Plants - Decatur, Illinois
> Chemstrand - Synthetic Fibers - Tennessee
> Chemargo - Agricultural Chemistry - Kansas City, Missouri
> Kaiser - Aluminum Reduction - Baton Rouge
> Ethyl - Sodium and tetraethly lead - Baton Rouge
> Brewers - Peoria, Minneapolis

Other resources to help attract industry included the region's skilled labor force and the highly desirable living environment created by the recreational opportunities associated with Lake Shelbyville and Carlyle Lake.[6]

The KIDC indicated that the potential for industrialization of the Kaskaskia River Valley could be compared to the Ruhr Valley in Europe.[7] This belief was echoed by many, particularly by members of the KVA. The Mississippi Valley Association (MVA), a larger organization of which the KVA was a part, also indicated that there would be a great deal of prosperity throughout the basin. Everett T. Winter, executive vice-president of the MVA, indicated that with completion of the Kaskaskia water-resources-management projects:

> The biggest change will be from an economy almost entirely dependent on agriculture to one almost entirely dependent on industry.[8]

Some of the loudest claims for the local economic benefits of water-resources development in the middle and upper regions of the Kaskaskia River centered around the local impact of Carlyle Lake and Lake Shelbyville.

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[5] Ibid.

[6] Ibid.

[7] Kaskaskia Industrial Development Corporation, *Kaskaskia Navigation Project* (1974).

[8] "The Kaskaskia Decade," *Kaskia*, July 1964, p. 5.

Congressman William Springer indicated in 1970 that "This Lake [Shelbyville] will be a reliable source of water for the residents and industries of more than a dozen towns and cities in the area."[9] Governor Otto Kerner expanded on the industrial potential of the area and indicated that "Several industries have expressed interest in the Shelbyville area and experts agree that the area will experience a heavy growth in manufacturing."[10]

Similar predictions were made for the Carlyle area. Eldon Hazlet, city attorney for Carlyle and president of the KVA, reported that "The lake [Carlyle] will completely rewrite the economy of the area."[11]

Aloys P. Kaufman, president of the Chamber of Commerce of Metropolitan St. Louis, in his April 24, 1962, address to the KVA, was highly optimistic with respect to industrial development in the Kaskaskia Valley.

> I believe the entire Kaskaskia Valley offers promising potential for future industrial development...they [Lake Shelbyville and Carlyle Lake] will mean new jobs, expanded markets and new purchasing power.[12]

Kaufman cited the transportation and water-supply advantages of locating close to rivers. He indicated that investments were already planned for the lower reaches of the Kaskaskia and that the upper reaches will "likewise become more attractive to industry."

James F. Cannon, Superintendent, Illinois Division of Industrial Planning and Development Conference, indicated that the availability of water from Kaskaskia projects would have a significant impact on industrial development.

> Availability of water governs, to a large degree, the expanding economy of practically all people.

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[9] "Springer Lauds Lake Shelbyville," *Champaign-Urbana* (Illinois) *Courier*, September 13, 1970.

[10] "Kerner Looks at Kaskaskia," *Kaskia*, October 1964, p. 18.

[11] "Carlyle Reservoir to be Tourist Attraction," *Champaign-Urbana* (Illinois) *Courier*, May 24, 1963.

[12] "Kaufman Predicts Industrial Expansion," *Moultrie County* (Illinois) *News* May 3, 1962

> An ample supply of water and means for disposal of wastes are primary requisites of almost all industries. Industrial development in any area is closely related to the fulfillment of these two requirements.
>
> This development, about which we are speaking today [Carlyle Lake and Lake Shelbyville], could easily become the greatest single factor in the effort to boost the the economy of southern Illinois.[13]

Everett Winter indicated that there would be a significant amount of project-induced industrial growth.

> The history of this Kaskaskia Valley indicates that a rapid industrial development has not been possible because of the inadequate supply of controlled water. Now is the time to adopt sound policies for the industrial development of this area, and this requires consideration of the natural advantages that already exist and also a recognition of the potential advantages that can now be created.
>
> It seems to this layman that you are in a very strategic position to invite the petro-chemical and chemical industries into this area. It seems to me that mining of coal and processing of coke and coal chemicals will become economically feasible with well-planned development.[14]

Everett Winter also indicated that significant transportation benefits would accrue to farmers from development of the Kaskaskia.

> When this project is completed, your area will be directly connected by water with some 29,000 miles of inland waterways and with practically every major city in the United States. Your farmers will have an all-water route via your new channel to the Mississippi River and from there to New Orleans and the markets of the world or from there to Chicago, Great Lakes, and the markets of the world through the St. Lawrence Seaway.15

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[13]James F. Cannon, Superintendent, Illinois Division of Industrial Planning and Development, "Industrial Potential of the Kaskaskia Valley," paper presented at the Kaskaskia Valley Association Planning Conference, Carlyle, IL., September 4, 1958.

[14]Everett Winter, "News from the Mississippi Valley Association," presentation to the Kaskaskia Valley Association Planning Conference, Carlyle, IL., September 4, 1958.

[15]Ibid.

EXPECTED POPULATION GROWTH

Growth in business and industry was expected to have a significant impact on local communities. Roy Williams, former mayor of Shelbyville, saw growth of his city in a decade from the then (1964) population of 5,000 to 12,000.[16] Ivan Woods, former mayor of Sullivan, expected a population increase in his city from the then (1964) 4,000 to 6,000 by 1970.[17] Congressman William Springer indicated in 1970 that the city of Sullivan should show a 50% gain in population over the next 10 years, and if "full advantage is taken of the opportunities afforded by Lake Shelbyville," the town's population could top 10,000 within 15 years.[18]

Carlyle was also the subject of claims concerning significant increases in population. In 1963 a professional planning consultant warned that Carlyle (population then 2,900) could expect a population of 10,000 by 1980.[19] In addition, the U. S. Army Corps of Engineers predicted significant population growth anywhere there was a suitable road leading to the water's edge.[20]

Everett Winter, indicated that there would be a significant amount of project-induced population growth.

> It is obvious that you are going to have new homes, much new paving, and an enlarged sewage system, more school facilities and a new greatly enlarged system of water works.

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[16]"Kaskaskia Decade," *Kaskia*, July 1964, p. 5.

[17]Ibid., p. 6.

[18]"Springer Lauds Shelbyville," *Champaign-Urbana* (Illinois) *Courier*, September 13, 1970.

[19]"Carlyle Reservoir to Be Tourist Attraction," *Champaign-Urbana* (Illinois) *Courier* , May 24, 1963.

[20]Ibid.

> Based on the experience of other communities in somewhat similar circumstances, it is reasonable to assume that from the time that Carlyle Reservoir is closed (starts filling) you will have a population increase of about 10% per annum for the next 10-15 years. You will have a minimum of 5% per year thereafter. 21

EXPECTED RECREATION INDUCED ECONOMIC DEVELOPMENT

A major part of the local growth and development which was expected to be associated with Lake Shelbyville and Carlyle Lake was to result from an inflow of recreationists attracted by the reservoirs. The Corps of Engineers predicted an average expenditure of $3.40 per person with an annual visitation of 4.69 million people, thus generating an annual expenditure of $15 million.[22] The Corps indicated that the $3.40 expenditure per person was a conservative one.

The *Report of the Comprehensive Sewer and Water Plan, Shelby County, Illinois* indicated that once the reservoir was established the Corps estimate of a $3.40 expenditure per visitor per day should increase as "additional public and private recreational activities increase."[23]

The Illinois Technical Advisory Committee on Water Resources made reference to the Corps estimates of $15 million annually in tourist expenditures. The committee also indicated that the Illinois Department of Conservation felt that the estimated number of visitors (4.69 million) could be easily doubled by 1980, "with a corresponding increase in regional business."[24]

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[21] Everett Winter, "News from the Mississippi Valley Association."

[22] U. S. Army Corps of Engineers, *Shelbyville Reservoir, The Master Plan: Design Memorandum No. 7B* (St. Louis, MO: St. Louis District [1964]), p. 39.

[23] Schellie Associates, *Report of the Comprehensive Sewer and Water Plan, Shelby County, Illinois* (Indianapolis, IN: [1964]), p. 48

[24] Technical Advisory Committee on Water Resources, Illinois, *Water for Illinois, A Plan for Action,* (Springfield, IL: [1967]), p. 40

Aloys P. Kaufman was highly optimistic with respect to expected recreational use of Carlyle Lake and Lake Shelbyville.

> ...the lakes being created in the Kaskaskia Valley, including the one at Shelbyville, should find a ready market of pleasure seekers among the two million people comprising metropolitan St. Louis, plus the other millions within convenient driving distance of your [the lake] area.25

The KVA was particularly optimistic with respect to the economic impact of recreationists.

> Carlyle Reservoir will be about 4 times as large as Crab Orchard Lake and can be expected to attract some 1,500,000 visitors per year, who will spend an average of $30 each over and above transportation costs.26

In 1961 Karl G. Johanboeke, a recreation planner for the Corps of Engineers, indicated that there would be a strong demand for local services generated by recreationists. These were to take the form of lodging, guide services, bait and tackle sales, boat rentals, housekeeping cabins, restaurants, laundry and cleaning facilities, movies, gasoline, automobile services, beach equipment, food, etc.[27]

Everett Winter predicted substantial recreation-induced growth in the areas adjacent to Lake Shelbyville and Carlyle Lake. He cited the following statistics for the lake at Carlyle and indicated that they would similarly be applicable in the Sullivan-Shelbyville area.[28]

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[25]"Kaufman Predicts Industrial Expansion."

[26]Kaskaskia Valley Association, *The Kaskaskia Valley Project*, report furnished to KVA members (Carlyle, IL), p. 14.

[27]Remarks by Mr. Karl G. Johanboeke, Recreation Planner, U. S. Army Engineer District, St. Louis Missouri, to a meeting of the Illinois Municipal League at Carlyle, Illinois, October 7, 1961. Obtained from KVA files.

[28]"Recreation Value of Lake $8,700,000," *Moultrie County* (Illinois) *News* 11 September 1958.

Food	$2,400,000
Gas and Oil	2,400,000
Lodging	1,300,000
Renting boat motors	500,000
Beverages	500,000
Fishing and tackle and related equipment	400,000
Baits	165,000
Duck hunting	60,000
Boat rentals	43,000
Miscellaneous	$200,000

Mr. Roy Dickerson, director of the Illinois Department of Business and Economic Development, indicated that with respect to the Shelbyville area, the members of an average family spend between $25-$50 a day while on vacation.[29] Mr. William Richardson, president of KVA, summed up the impact of recreationists on the city of Shelbyville in the following way.

> The lake will mean to Shelbyville in economic terms what a 5,000 employee industry would mean. The reservoir will have the economic effect of a boost in population from 5,000 to 26,000. But Shelbyville will not have to provide the housing, schools, and other facilities 21,000 additional permanent residents would require.30

James F. Cannon indicated that lake-related recreation would make a positive contribution to local economic development and, like Mr. Richardson of the KVA, indicated that tourists would make lower demands on services than is the case with local residents.

> When the dollars are left in your area, the tourist does not remain to cause additional expense. They spend their money, and after their vacations, they go home.31

There were also expectations for a substantial development of seasonal and year-round homes in the vicinity of the lake.[32] The *Future*

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[29]"Crowds Flock to Lake Shelbyville," *Champaign-Urbana* (Illinois) *News Gazette*, June 4, 1972.

[30]"Former Foe, Kaskaskia Now a Friend," *Evansville* (Illinois) *Courier*, May 21, 1971.

[31]James F. Cannon.

[32]Schellie Associates, p. 34.

Land Use Plan for Moultrie County Illinois indicated that there would be substantial development in the vicinity of the lake.

> By 1970 farmlands adjacent to the reservoir gradually will be converted to homes, summer cottages, resort and service, commercial, parks, and semi-public uses. The county's cities, especially Sullivan, will feel the impact of increased business and service industries activiated by the reservoir.[33]

The *Future Land Use Plan for Moultrie County Illinois* indicated prospects for substantial recreation development in the vicinity of the lake.

> Considerable commercial development in the vicinity of Shelbyville Reservoir is projected beginning in 1970. Types of development new to the Moultrie County Area can be expected. A resort complex similar to those found at the larger state parks is an example. It would include a lodge, restaurant, cabins, motel, boat dock, swimming pool, court games, riding stable and par 3 golf course. Such a development would require at least 100 acres. A service center (store-motel) on the highway would include a gas station, small restaurant, and a store for vacation, boat, and fishing supplies.[34]

Comprehensive plans for Shelby and Moultrie counties, prepared during the early 1960s, indicated that substantial areas adjacent to Lake Shelbyville would be developed into residential areas.[35]

LOCAL CONCERNS

While there was much optimism about the prospects for reservoir-induced economic development (particularly among members of the KVA, KIDC, and other local supporters), there were also local concerns about the impacts

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[33]Scruggs and Hammond, *Future Land Use Plan for Moultrie County Illinois* (Peoria, IL: [February 1964]).

[34]Ibid.

[35]U. S. Army Corps of Engineers, *Environmental Impact Statement of Operation and Maintenance, Lake Shelbyville, Illinois* (St. Louis, MO: St. Louis District [1975]), Plate II-18.

of the reservoir. Construction of the reservoir would require that farms be purchased and families relocated. This impact is particularly significant in a predominately agricultural community where many farms have been in a particular family for several generations. In addition, there was concern over the splitting of farms and reduction of farms to the point where they were no longer profitable to operate.

The reservoir would also disrupt local transportation patterns. The number of bridges over the Kaskaskia would be reduced, presenting problems to local farmers in moving equipment from one field to another and in transporting grain to market. The reduced number of bridges would also hamper the efforts of fire trucks, ambulances, and other emergency vehicles. There would also be increased congestion because traffic would be confined to a smaller number of roads and bridges.[36]

There was also concern over the loss of local real-estate taxes since land acquired for the reservoir and related developments would be tax exempt.[37] Some residents were concerned about the impacts of industrialization such as smog, slums, and traffic problems.[38] It appears that there were several points of view among local residents concerning the desirability of lake-related development. One informed observer of the local community reports that some residents were interested in sufficient development to offset losses in agriculture and local manufacturing (i.e., maintain the status quo) while others looked for substantial expansion of the local economy. This latter group was heavily represented by the KVA.[39]

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[36]These concerns were the focus of attention in efforts to get additional bridges over Lake Shelbyville and the Kaskaskia River. These arguments are detailed in the following correspondence: Letter from M. J. Wimmer, Chairman of the Moultrie County Board of Supervisors to Mr. Raymond Baker, U. S. Army Engineer District, St. Louis, June 23, 1966; Letter from Paul Stone, State Representative, to the Honorable Paul J. Douglas, United States Senator, October 24, 1966.

[37]This point is made clear in a letter from Congressman William L. Springer to Maj. Gen. W. K. Wilson, Jr., Chief of Engineers, December 6, 1963.

[38]Kaskaskia Valley Association, *The Road to Progress.*

[39]This interpretation is based on discussions with Mr. David L. McLaughlin, a graduate student in the Institute for Government and Public Affairs, University of Illinois at Urbana-Champaign, June 1976.

Arguments against construction of the lake were summarized by Fred D. Chappelear of Vandalia, president of the Central Illinois Watersheds Association. That group advocated, as an alternative to the construction of Lake Shelbyville and Carlyle Lake, a system of smaller reservoirs on tributaries of the Kaskaskia. The arguments presented by Mr. Chappelear can be summarized in the following points:[40]

1. The cost of flood protection is too high and some areas will not be protected.
2. What communities will receive water supply benefits? What is the extent of these benefits?
3. What studies have been made of the irrigation potential with various alternative reservoir plans?
4. What is the extent of the pollution problem, and are large impoundments necessary to reduce pollution?
5. What will be the extent of recreation benefits in view of significant fluctuations in pool level at the reservoirs?
6. The construction of Lake Shelbyville and Carlyle Lake will remove 49,500 acres of land from agricultural production and periodically flood another 33,500 acres (flowage easement). Thus 83,000 acres can be flooded to protect 75,000 acres.
7. No provision has been made to control siltation in the reservoir pools.
8. Watershed programs and smaller reservoirs would better serve the critical water-supply problems of local communities.
9. The following costs associated with large reservoirs have not been given adequate consideration:
   (a) loss of tax revenue
   (b) removal or dislocation of schools
   (c) dislocation of highways, bridges, railroads, pipelines, and other utilities
   (d) destruction of existing levee and drainage works
   (e) termination of other community services
10. The proposed program will not solve the basic problem--that of inducing the kind of land and water use necessary to hold both soil and water.

Concern over the impact of Lake Shelbyville on local government revenues prompted a study of the short-term effects of Lake Shelbyville on

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[40]"Central Illinois Watersheds Association Proposes Small Lakes for Kaskaskia Project," *Moultrie County* (Illinois) *News*, December 9, 1955.

local government finance in Moultrie county. The study was commissioned by the Illinois Board of Economic Development.[41]

The exact nature of local impacts of the reservoir is determined, in part, by the actions of local government and local residents. This point was emphasized by Mr. R. H. Baker of the Corps of Engineers in a meeting of the Illinois Municipal League at Carlyle, Illinois, on October 7, 1961.

> In less than four years there will be a reservoir in operation in this valley--allowing only the very minimum of time in which to prepare for its development...
>
> The extent to which it is successful depends not so much on the physical elements of the project itself, as upon the extent to which people develop or neglect these opportunities...
>
> I feel that the best way to assure the realization of the maximum benefits is to keep your share of the job abreast or ahead of the project's growth--to see that your community and enterprises are ready to take advantage of project opportunities as they are made available. I recommend that now is the time to plan for the exploitation of these potentials.42

At that same meeting of the Illinois Municipal League at Carlyle, Illinois, Mr. Karl G. Johanboeke outlined needs for local planning. He recognized the large number of local government units involved and suggested the "need for either a voluntary or authoritative planning commission with representation from each of these units." He suggested that such an organization deal with land-use regulations, a traffic flow and control plan, improvements in the road network, health controls, etc. He argued that this overall planning commission could develop a plan for the entire area, which would be implemented by each unit of local government.[43]

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[41]Glenn W. Fisher, *Short Term Effects of the Shelbyville Reservoir Upon Local Government Finance in Moultrie County* prepared for the Board of Economic Development, State of Illinois, Springfield, Division of State and Local Planning, Board of Economic Development, 1965.

[42]Remarks by R. H. Baker, Corps of Engineers, at the Illinois Municipal League Meeting at Carlyle, Illinois, on October 7, 1971. Obtained from KVA files.

[43]Mr. Karl G. Johanboeke.

The need for local planning, including county zoning, was advocated by a panel at the Kaskaskia Valley Association Planning Conference, Carlyle, Illinois, September 4, 1958.[44] The panel agreed that there must be careful planning to handle the population growth that will show a need for additional school rooms and police and fire protection, as well as the basic utilities. Professor Frank Kirk of Southern Illinois University called for county-wide planning and awareness of a spectacular increase in traffic which will involve relocation of roads, new paving, and widening of old streets and highways. Professor Victor A. Hyde of the University of Illinois indicated that a committee, such as the local school-advisory committee, should be set up by the county board of supervisors to plan for expansion in the lake area. Aelred J. Gray, chief community planner of the Tennessee Valley Authority, stated that the need for planning would increase through the years rather than diminish once the lakes were in operation.

Comprehensive plans for Shelby and Moultrie counties, prepared during the early 1960s in anticipation of lake-related development, also stressed the importance of local efforts in influencing lake-related development.[45] [46]

SUMMARY

Local expectations for economic prosperity ran high. Many saw Lake Shelbyville and Carlyle Lake as bringing industrial development, expanding populations, and substantial recreation-related business development. There were also concerns about the effectiveness of and need for the reservoirs, the expected displacement of families and farms, reductions in the tax base, the disruption of local services, and the problems that accompany industrialization.

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[44] "County Zoning Urged at Lake Conference," *Moultrie County* (Illinois) *News* September 11, 1958.

[45] Scruggs and Hammond.

[46] Schellie Associates, *Comprehensive Plan Report, Shelby County, Illinois* (Indianapolis, IN: [July 1964]).

5 ACTUAL LOCAL IMPACTS

Initial work on the construction of Lake Shelbyville was started in 1963, and the lake began filling in 1969. Thus, the lake has been in existence for seven years, a sufficient time to review its initial impact. In the period after the reservoir was constructed, many of the benefits sought by supporters of Lake Shelbyville have been realized. At the same time, there have been disappointments--i.e., the failure of some anticipated benefits to materialize and the emergence of unanticipated problems. In examining the developments since the lake was completed, our purpose is to analyze what has happened, compare what has happened with what was expected, and identify and explain divergences between expectations and actual events. This analysis will explore the various physical, biological, and social conditions that influence expectations as well as the actual flow of benefits and costs. An understanding of such conditions will lead to a more realistic perception of the expected benefits and problems involved with water-resources-management projects and the methods necessary for predicting and planning for impacts.

The focus of the discussion is on Lake Shelbyville. Particular emphasis is placed on the benefits and costs that accrue to residents of nearby areas (Shelby and Moultrie counties). Many of the significant benefits and costs experienced to date will be documented.

INDUSTRIAL DEVELOPMENT

Expected industrial development has not materialized around Lake Shelbyville, Carlyle Lake, or other upstream areas of the Kaskaskia. There are presently no withdrawals of water from Lake Shelbyville for municipal or industrial purposes. In fact, even public campgrounds on the lake are supplied by local systems that make use of underground aquifers. Local officials are unable to point out any new industry or industrial expansion clearly attracted by the lake's water resources. However, the lake may have contributed to some recent industrial development. For example, it was indicated by the *Moultrie County News* that the lake may have contributed

to the decision to locate an electronics firm (Switchcraft) in the town of Sullivan. It was reported that Switchcraft's general manager is a camper and had become acquainted with Sullivan while driving through en route to a nearby access area.[1]

An examination of trends in manufacturing employment in Moultrie and Shelby counties provides no clear indication of lake-induced industrial development. Both counties appear to have experienced a decline in manufacturing employment during the period 1970-1972 but a recovery in 1973 and 1974 (Table 1).

Those anticipating significant industrial development in the area around Lake Shelbyville assumed that the increased water supply provided by the lake would be sufficient to induce industrial expansion. However, there is some question as to the necessity of water withdrawals from the reservoir for industrial development since the area has an abundance of inexpensive groundwater resources. Furthermore, there is reason to question the assumption that the availability of water resources will, by itself, induce industrial development. Water may be necessary for many types of industrial development, but it is not sufficient to bring that development about. There are other conditions which must be present in addition to the water resource, including the availability of transportation,markets, and raw materials.

The downstream areas adjacent to the Kaskaskia Navigation Project do possess many of the attributes necessary for industrial development. The area offers a water transportation connection to the Mississippi and beyond, thus providing ready access to a number of markets. Coal resources also enhance the prospects for industrial development. In addition, industrial growth in the area is actively promoted by the Kaskaskia Industrial Development Corporation and the Kaskaskia Regional Port Authority.[2] An example of the

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[1] "BB's," *Moultrie County* (Illinois) *News*, November 18, 1976, p. 10.

[2] Illinois Revised Statutes, 19 501 et. seq. (1975).

area for industrial development is the proposal for a coal gasification plant at New Athens. Plans for the plant have been delayed, however, because of technical problems with the gasification process.[3] The proposed development does, nevertheless, attest to the region's potential for industrial development. When it was proposed, the KIDC viewed plans for the Coalcon facility as the catalyst for industrialization of the valley.[4]

POPULATION

Prior to the construction of Lake Shelbyville, there were expectations that it would attract new residents to the area and reduce out-migration. Information is not available on the number of individuals attracted by the lake or who chose not to out-migrate because of the lake and related developments. In the absence of this information, it is necessary to infer the lake's influence on local population from an examination of population trends. The initial discussion will focus on trends in the populations of Shelby and Moultrie counties in which Lake Shelbyville is located.

Trends in County Populations

An examination of trends in the population of Shelby or Moultrie counties in the period after the reservoir was constructed reveals no clear upward trend. The population of Moultrie County increased between 1970 and 1971 (Figure 2). It remained stable during the period 1971-1972, but has declined since that time. The population of Shelby County decreased between 1971 and 1972, but has remained stable since that time. However, both counties (Shelby in particular) have experienced a general population decline in the post-World-War-II era, raising a question of whether or not the lake may have helped to stabilize the declining population. An examination of trends in the population of two adjacent counties, Douglas and Cumberland, however, indicates that they have also had stable or increasing populations in the 1970s, casting some doubt on the lake's influence in stablilizing the population of Shelby or Moultrie counties.

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[3]Coalcon, *Environmental Analysis Report For Clean Boiler Fuel Demonstration Project New Athens, Illinois,* July 15, 1976.

[4]"Coalcon to Spark Industry for Kaskaskia Valley," *New Athens Journal Press,* November 27, 1975.

Table 1. Manufacturing Employment in Shelby and Moultrie Counties 1946-1974

	Moultrie	Shelby
1946	0	1112
1947	593	789
1948	556	198
1949	542	646
1950	490	754
1951	648	820
1953	690	782
1956	749	866
1959	671	614
1962	943	668
1964	976	1035
1965	916	861
1966	1293	913
1967	860	984
1968	803	1091
1969	707	713
1970	829	679
1971	728	228
1972	667	241
1973	958	349
1974	1437	345

Source: U. S. Bureau of the Census, *County Business Patterns*.

Changes in population have been examined over two periods: 1960-1966, representing the prereservoir era, and 1970-1974, representing the postreservoir era. Particular attention was given to the net migration component (in-migration minus out-migration) of population changes, since it is likely to be influenced by the reservoir while the other component of population change, excess of births over deaths, is not.

The net migration component shows that in the prereservoir period all four counties (Shelby, Moultrie, Cumberland, and Douglas) were experiencing net out-migration. Shelby and Cumberland counties have both had in-migration in the postreservoir period. Douglas and Moultrie counties, while still experiencing net out-migration, have experienced smaller annual losses in the postreservoir period (Table 2).

Extending the analysis to additional adjacent counties is difficult because of the presence of universities, transportation facilities, and other developments that are likely to have a significant influence on population trends. Christian County experienced heavy out-migration in the earlier period and zero net migration in the later period, while Piatt County had in-migration in the earlier time span and a small out-migration in the later period.

In sum, it cannot be stated that Lake Shelbyville has brought population increases to Shelby or Moultrie counties. It cannot be concluded that the lake has halted the earlier declining population trends because some of the nonreservoir counties have experienced similar stabilizing trends.

However, county totals may mask some important changes in townships and municipalities located near the lake. It is to trends in the population of these municipalities and townships that we now turn.

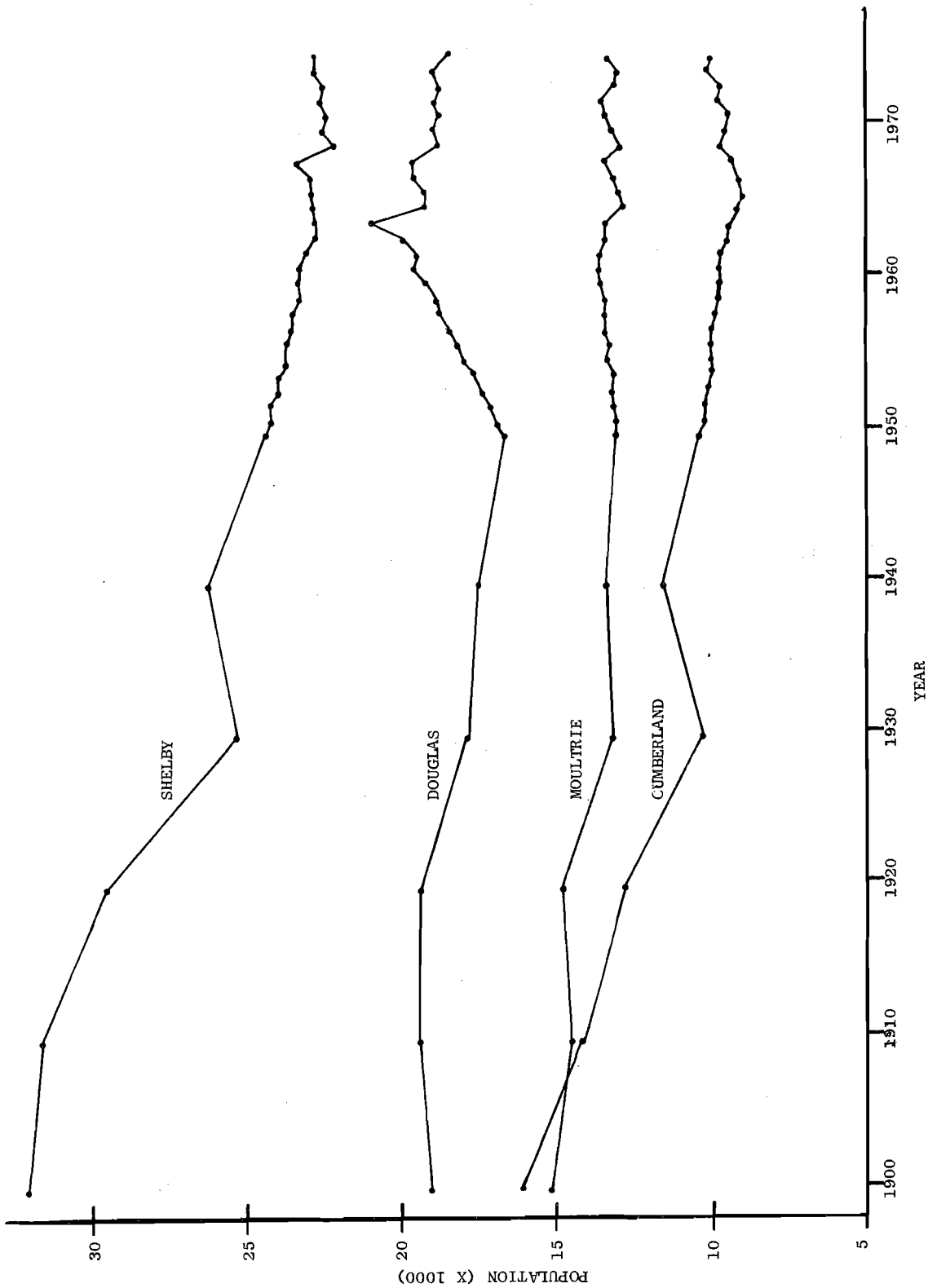

Figure 2. Trends in Population

Table 2. Population Changes Due to Net Migration

County	Average Net Migration Per Year	
	1960-1966	1970-1974
Shelby	- 33	+ 50
Moultrie	-183	-100
Cumberland	- 16	+ 75
Douglas	-300	- 75
Christian	-367	0
Piatt	+200	- 25

Source: U. S. Bureau of the Census.

Trends in Township and Municipal Populations

An examination of the trends in township and municipal populations in Moultrie and Shelby counties during the periods 1960-1970 and 1970-1973 indicates no clear lake-related influence on population.

Moultrie County experienced a net decline in population during the periods 1960-1970 and 1970-1973. The population of Shelby County decreased during the period 1960-1970, but increased between 1970-1973. It should be emphasized that these changes in population have not been large (see Figure 2).

If Lake Shelbyville has brought people to the area or induced some individuals to stay in the area, we would expect areas near the lake to grow at a faster rate or decline at a slower rate than other areas of the county, which does not appear to be the case. An examination of trends in township and municipal populations in Moultrie and Shelby Counties during the periods 1960-1970 and 1970-1973 indicates no clear lake-related influence on population.

Tables 3 and 4 summarize population changes for townships and municipalities in Moultrie and Shelby counties. The townships in which the lake is located (lake townships) and municipalities located in these townships (lake municipalities) do not appear to show patterns of population change that are markedly different from other parts of the county, suggesting that the lake has not been a major force in population trends.

Tables 5 and 6 summarize population trends in lake and nonlake townships for Moultrie and Shelby counties. In Shelby County we find lake townships experiencing trends that are similar to other townships in the county. There are slight differences in that the lake townships declined at a slightly greater rate during the period 1960-1970, which is likely due to the displacement of families by the reservoir. Since 1970, however, rural areas of both lake and other townships have increased slightly in population. Much of the recent increase in population in Moultrie County has been in

Table 3. Population Changes Moultrie County
1960-1970, 1970-1973

Townships	1960	Average Annual Percent Change 1960-1970	1970	Average Annual Percent Change 1970-1973	1973
*Marrowbone	1647	(+ .1)	1668	(-1.0)	1618
*Sullivan	5187	(+ .5)	5059	(+0.3)	5105
*East Nelson	1067	(-3.9)	1049	(+0.2)	1055
*Whitley	889	(-1.7)	739	(+0.2)	744
Dora	905	(- .5)	855	(+0.2)	859
Jonathan	601	(- .2)	592	(+0.1)	594
Lovington	1777	(+ .2)	1818	(-0.6)	1783
Lowe	1563	(- .5)	1483	(-0.6)	1456
Municipalities					
**Bethany	1118	(+1.0)	1235	(-1.3)	1185
**Sullivan	3946	(+ .4)	4112	(+ .3)	4158
**Allenville	191	(- .3)	185	(+ .4)	187
**Gays	263	(+ .2)	269	(+ .2)	271
Arthur	772	(-1.1)	685	(-1.4)	655
Dalton City	386	(-1.1)	427	(+ .2)	429
Lovington	1200	(+ .9)	1303	(- .9)	1267

*Township in which Lake Shelbyville is located.
**Municipality located in a township where Lake Shelbyville is located.
( ) Average annual percentage change in population.
Developed from: U. S. Bureau of the Census. *Census of Population 1970.* General Population Characteristics, Final Report PC(1)-B15 Illinois. U. S. Bureau of the Census. Series P-25 No. 558. *Current Population Reports*, Population Estimates and Projections. June 1975.

Table 4. Population Changes Shelby County
1960-1970, 1970-1973

Townships	1960	Average Annual Percent Change 1960-1970	1970	Average Annual Percent Change 1970-1973	1973
*Todd's Point	566	(+ .3)	585	(+ .3)	590
*Windsor	1485	(- .2)	1461	(+2.2)	1560
*Shelbyville	5019	(+ .1)	5075	(- .4)	5010
*Okaw	884	(-1.8)	723	(+ .3)	729
Ash Grove	634	(-1.2)	558	(+ .2)	56
Big Spring	584	(+2.1)	706	(+ .4)	714
Clarksburg	399	(- .3)	387	(+ .2)	389
Cold Spring	404	(+ .5)	426	(+ .3)	430
Dry Point	1051	(- .7)	974	(+ .3)	983
Flat Branch	500	(-1.0)	449	(+ .3)	453
Herrick	633	(+1.6)	732	(+ .3)	739
Holland	467	(-1.2)	412	(+ .2)	415
Lakewood	555	(-1.2)	489	(+ .2)	493
Moweaqua	1877	(+ .3)	1931	(+ .4)	1956
Oconee	886	(- .9)	805	(+ .2)	810
Penn	275	(-2.8)	198	(+ .5)	201
Pickaway	3008	(-3.1)	263	(+ .5)	267
Prairie	1421	(- .7)	1329	(+ .3)	1339
Richland	958	(-1.0)	863	(+ .2)	870
Ridge	746	(-2.0)	597	(+ .3)	602
Rose	1208	(+1.3)	1365	(+ .1)	1370
Rural	478	(-2.0)	384	(+ .2)	387
Sigel	5019	(+ .1)	5075	(- .4)	5010
Tower Hill	1223	(- .7)	1140	(+ .3)	1150
Municipalities					
**Findlay	759	(+ .1)	808	(+ .3)	815
**Shelbyville	4821	(+ .1)	4887	(- .1)	4811
**Windsor	1021	(+1.0)	1126	(+2.8)	1222
Cowden	575	(- .7)	537	(+ .2)	541
Herrick	440	(+2.2)	537	(+ .2)	541
Moweaqua	1614	(+ .1)	1687	(+ .4)	1710
Oconee	257	(-1.5)	218	(0)	218
Sigel	387	(-1.3)	337	(+ .3)	340
Stewardson	656	(+1.1)	729	(+ .2)	734
Strasburg	467	(- .2)	456	(+ .3)	460
Tower Hill	200	(- .2)	683	(+ .3)	689

*Township in which Lake Shelbyville is located.

**Municipality located in a township where Lake Shelbyville is located

( ) Average Annual percentage change in population.

Developed From: U. S. Bureau of the Census. *Census of Population 1970*, General Population Characteristics, Final Report PC(1)-B15 Illinois. U. S. Bureau of the Census. Series P-25 No. 558. *Current Population Reports*, Population Estimates and Projections. June 1975.

Table 5. Selected Population Changes Moultrie County 1960-1970, 1970-1973

	Lake Townships[1]				
	1960		1970		1973
Township Populations[2]	8790	(-0.3)	8515	+[a]	8522
Municipal Populations[3]	5518	(+0.5)	5801	(0)	5801
Rural Populations[4]	3272	(-1.7)	2714	+[a]	2721
	Other Townships[5]				
	1960		1970		1973
Township Populations	4845	(-0.2)	4748	(-0.3)	4692
Municipal Populations	2358	(+.24)	2415	(-0.8)	2351
Rural Populations[4]	2487	(-0.6)	2333	(+0.1)	2341

a = Change less than .005 percent.

( ) = Average annual percentage change in population over the interval.

[1]Townships where Lake Shelbyville is located.

[2]Includes Marrowbone, Sullivan, East Nelson, and Whitley Townships.

[3]Includes the towns of Bethany, Sullivan, Allenville, and Gays.

[4]Derived by subtracting town populations from township populations.

[5]Includes all townships where the lake was not located.

Table 6. Selected Population Changes Shelby County 1960-1970, 1970-1973

	Lake Townships[1]				
	1960		1970		1973
Township Populations[2]	7952	(-0.1)	7844	(+0.2)	7889
Town Populations[3]	6601	(-0.3)	6822	(+0.1)	6848
Rural Populations[4]	1351	(-2.4)	1022	(+0.6)	1041
	Other Townships[5]				
	1960		1970		1973
Township Populations	15,452	(-0.5)	14,745	(+0.3)	14,875
Town Populations	5096	(+0.2)	5184	(+0.3)	5233
Rural Populations[4]	10,356	(-0.8)	9561	(+0.3)	9642

( ) = Average annual change in population over the interval.

[1]Townships where Lake Shelbyville is located.

[2]Includes Todd's Point, Windsor, Shelbyville, and Okaw Townships.

[3]Includes the towns of Findlay, Shelbyville, and Windsor.

[4]Derived by subtracting town populations from township populations.

[5]Includes all townships not impacted by the lake.

the city of Sullivan and in Sullivan township. It is not clear whether this development is lake related or just a trend of population toward the county's largest urban center.

It is clear that some of the previously cited expectations for population growth in the municipalities of Sullivan and Shelbyville have not materialized. Roy Williams, former mayor of Shelbyville, predicted a population of 12,000 for that city by 1974. However, that prediction seems highly unlikely in that the population of Shelbyville was only 4,811 in 1973, which is a decline from the 1970 figure. Ivan Woods, former mayor of Sullivan, predicted a population of 6,000 for that city by 1970.[5] Instead, the population of Sullivan reached only 4,112 by 1970.

In sum, it is clear that Lake Shelbyville has not had a major impact on trends in the local population. This result is to be expected in light of the previous analysis, which indicated no significant lake-related industrial growth, and subsequent discussion that will show only limited recreation-related developments. The previously cited expectations for substantial population growth in Shelbyville and Sullivan have not materialized since both municipalities have experienced very little population growth.

PER CAPITA INCOME

Trends in the per capita income of residents of Moultrie and Shelby counties are examined in conjunction with six other predominately agricultural counties located in the same area which have not been strongly influenced by urbanization. The trends were very similar in all counties. Moultrie County's percentage increase in per capita income ranked fourth among the eight counties during both the prereservoir (1966-70) and postreservoir (1970-1974) periods. Shelby County ranked third during the prereservoir period but dropped to sixth during the postreservoir period (Table 7).

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[5]"Kaskaskia Decade," *Kaskia*, July 1974, pp. 5-6.

Table 7
Trends in Per Capita Income for Selected Counties
1966-1970, 1970-1974

	Percent Change	
	1966-1970	1970-1974
Moultrie	34.9	61.6
Shelby	28.5	50.4
Christian	28.8	61.7
Clark	20.1	44.5
Cumberland	23.9	62.5
Douglas	24.6	64.3
Piatt	34.9	47.3
Edgar	22.9	52.5

Source: U. S. Bureau of the Census.

In predominately agricultural counties, the amount of personal income in a given year is heavily influenced by farm production. Since the annual farm income of a particular county cannot be readily influenced by injection of capital or more intensive use of labor relative to other adjacent counties, increases in per capita income are ordinarily induced by: (1) new sources of income or (2) net out-migration of population. New sources of income such as industry or recreation will raise per capita income, provided that immigration does not occur in proportion to the increase in income. Per capita income may be raised without new income sources if net out-migration of population occurs and sources of income do not decline. Various combinations of new industry and net migration would create a variety of trends in per capita income.

Changes in the trend in per capita income in the eight counties can, in most cases, be explained by population trends. Increases in per capita income relative to the other counties can, in most cases, be explained by a decrease in population. At the same time, decreases in per capita

income relative to other counties can, in most cases, be explained by an increase in population. For example, between 1972 and 1974, per capita income in Moultrie County increased at a faster rate than in most other counties. At the same time, population decreased from 13,600 to 13,000. Between 1973 and 1974, the rate of increase in per capita income in Shelby County dropped off. The population was stable at 22,900 during that period, whereas it had been dropping during the previous years. In most of the other changes in the trend of per capita income in the eight counties, there is an accompanying population change in the opposite direction.

An analysis of the foregoing trends in per capita income (see Figure 3) indicates that Shelby and Moultrie counties have not experienced significant new sources of income that have induced a greater increase in per capita income than has taken place in adjacent counties. This analysis tends to cast doubt on the creation of any substantial lake-induced sources of income.

RECREATION

Expectations concerning a lot of recreation activity at Lake Shelbyville have been largely fulfilled. The character of recreation development and its local impact have, however, been quite different from what was expected. This section looks at the recreation development that has taken place at Lake Shelbyville and its local impact.

Use of Public Facilities

Lake Shelbyville has become a major attraction. In 1976 some 3 million visitor days[6] of recreation were reported at public facilities on the lake. Visitation is quite seasonal, and the highest monthly visitation (526,193) was in July and the lowest (41,468) in December. The four summer months (May, June, July, and August) accounted for 65% of the visitation.

[6]A visitor day consists of a visit by one individual during any reasonable portion or all of a 24-hour period.

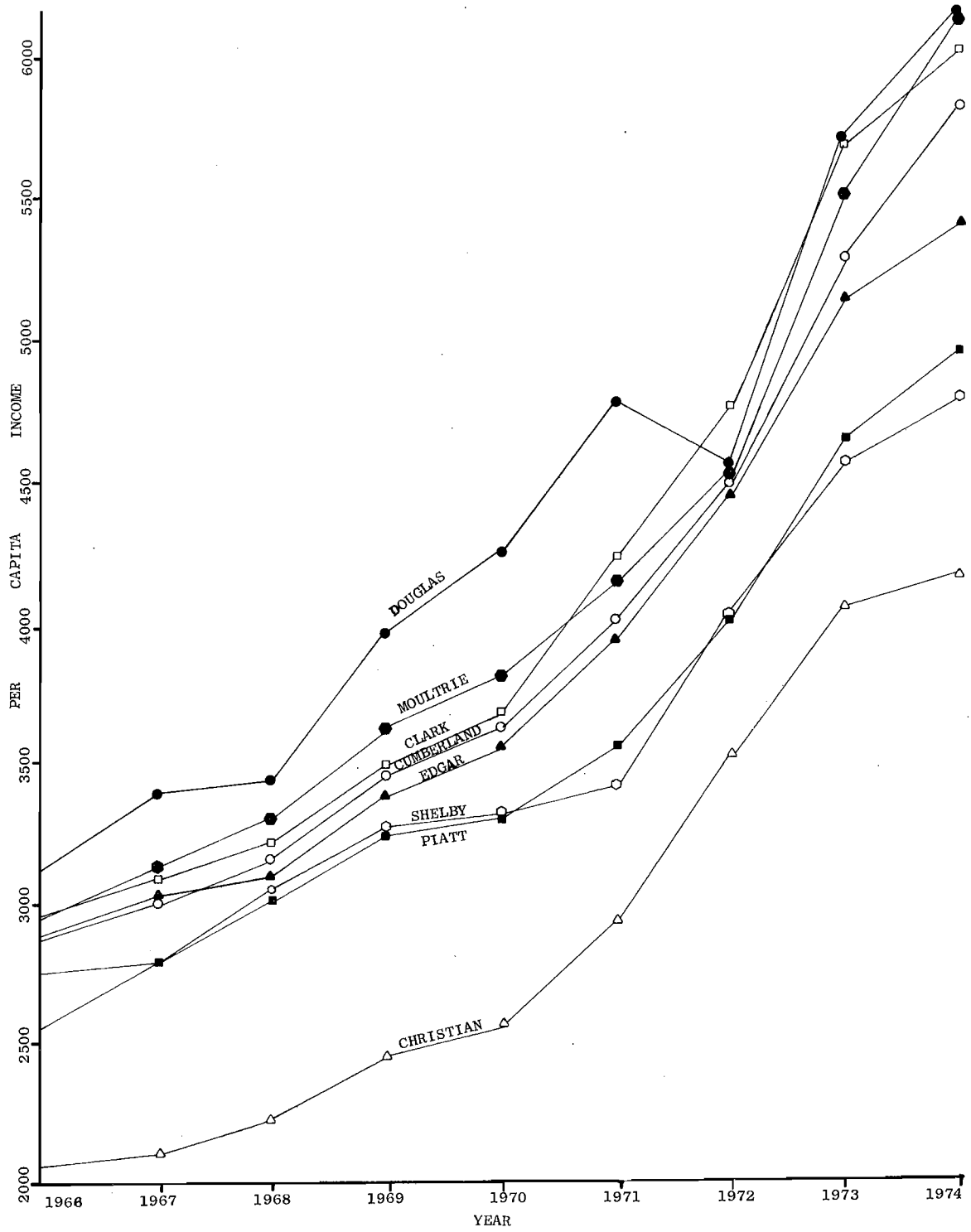


Figure 3. Trends In Per Capita Income

Visitation at public facilities on Lake Shelbyville was 3 million visitor days per year during 1975 and 1976. This is higher than 1973 or 1974, but not as high as the peak year of 1972, for which 3.9 million visitor days were reported (see Table 8). The decline in visitation immediately after 1972 is attributed to high water for an extended period of time during the summer months. Another factor that most likely contributed to the decline in visitation between 1972 and 1973 was a reduction in the "curiosity factor." Part of the early visitation was attributed to trips to "see the new lake." That type of visitation may well have declined after 1972. Visitation in 1974 may have been restricted, in part, by the "gasoline crisis." Visitation in 1976 was restricted, in part, by low water conditions and a lot of construction on access roads. Visitation has also been limited by the availability of facilities. The development of state facilities in particular lagged behind initial expectations.[7] Table 9 indicates the growth of public camping facilities available at Lake Shelbyville.

Table 8. Visitation at Lake Shelbyville, 1970-1976

Year	Visitor Days
1970	1,192,726
1971	2,627,697
1972	3,900,834
1973	2,803,458
1974	2,827,970
1975	3,076,594
1976	2,997,238

Source: U. S. Army Corps of Engineers.

[7] U. S. Army Corps of Engineers, *The Master Plan Lake Shelbyville Illinois (Revised 1974)*, (St. Louis, MO: St. Louis District), p. 68.

Use of the facilities is heaviest on weekends. Estimates of the distribution of visitation by day of the week indicate that 68% of use occurs over the Friday-Saturday-Sunday period (see Table 10). The preponderance of weekend use is supported by Corps of Engineers estimates that campers stay an average of 3.2 days per visit.[8]

Table 9. Public Camping Facilities at Lake Shelbyville by Year, 1971-1976.

Corps of Engineers

Year	Campsites Developed	Overflow Campsites
1971	260	0
1972	526	0
1973	558	180
1974	583	180
1975	596	180
1976	718	180

State of Illinois

Year	Family Campsites	Youth Campsites	Equestrian Campsites
1972	61		
1973	61		
1974	459	50	25
1975	459	50	25
1975	476	50	25

Source: U. S. Army Corps of Engineers and State of Illinois.

[8]Based on U. S. Army Corps of Engineers, St. Louis District, *Lake Projects--Summation of Visitor Use--Calendar Year 1975.*

Table 10. Estimated Distribution of Lake Shelbyville Visitors by Day of the Week

Day	Percent of Visitors
Sunday	30
Monday	15
Tuesday	9
Wednesday	9
Thursday	9
Friday	13
Saturday	25

Source: *Environmental Impact Statement of Operation and Maintenance, Lake Shelbyville, Illinois, 1975.* U. S. Army Engineer District, St. Louis, p. H-13.

The lake is located in relatively close proximity to several large population centers. Six cities totaling 285,000 in population are less than a one-hour drive from the project, seven cities totaling 998,000 in population are within a one- or two-hour drive, and five cities with a total population of 4,525,000 are between a two-hour and a three-and-a-half-hour drive of the project (the latter including Chicago and St. Louis).

Approximate one-way travel distances from nearby cities are as follows:

Chicago, Illinois	208 miles
St. Louis, Missouri	113 miles
Terre Haute, Indiana	87 miles
Centralia, Illinois	80 miles
Bloomington, Illinois	80 miles
Champaign, Illinois	67 miles
Springfield, Illinois	56 miles
Decatur, Illinois	31 miles

While the lake attracts visitors from distant areas such as Chicago, St. Louis, and Terre Haute, more than one-third of the visitation comes from within 25 miles of the lake and more than half from within 50 miles (Table 11).

Table 11. One-Way Distance Traveled by Visitors to Lake Shelbyville, 1975

Miles Traveled	Percent of Visitors
0-25	34
26-50	25
51-75	11
76-100	7
beyond 100	24

Source: U. S. Army Corps of Engineers, St. Louis District. *Lake Projects--Summation of Visitor Use--Calendar Year 1975.*

Visitors at public facilities on Lake Shelbyville engage in a number of activities, with sightseeing, fishing, and camping being particularly popular (Table 12). Recreation facilities at Lake Shelbyville include 17 public-use areas--10 operated by the Corps of Engineers, 4 by the State of Illinois, and 3 by concessionaires. A total of 15 boat-launching ramps and 9 camping areas are available. The state operates two state parks and two wildlife-management areas. Three marinas are run by concessionaires. There are no private holdings on the lake and no private access to the lake.

Camping is a popular activity at Lake Shelbyville, and campers at the lake often bring camping vehicles, including trailers. For example, in June of 1973 more than three-quarters of the campers at Lake Shelbyville had camping vehicles--the remainder used tents. This relationship also prevailed over the Memorial Day and Labor Day weekends in 1973.[9]

[9]U. S. Army Corps of Engineers, *The Master Plan.*

Table 12. Activities Engaged in by Visitors to Lake Shelbyville, 1975

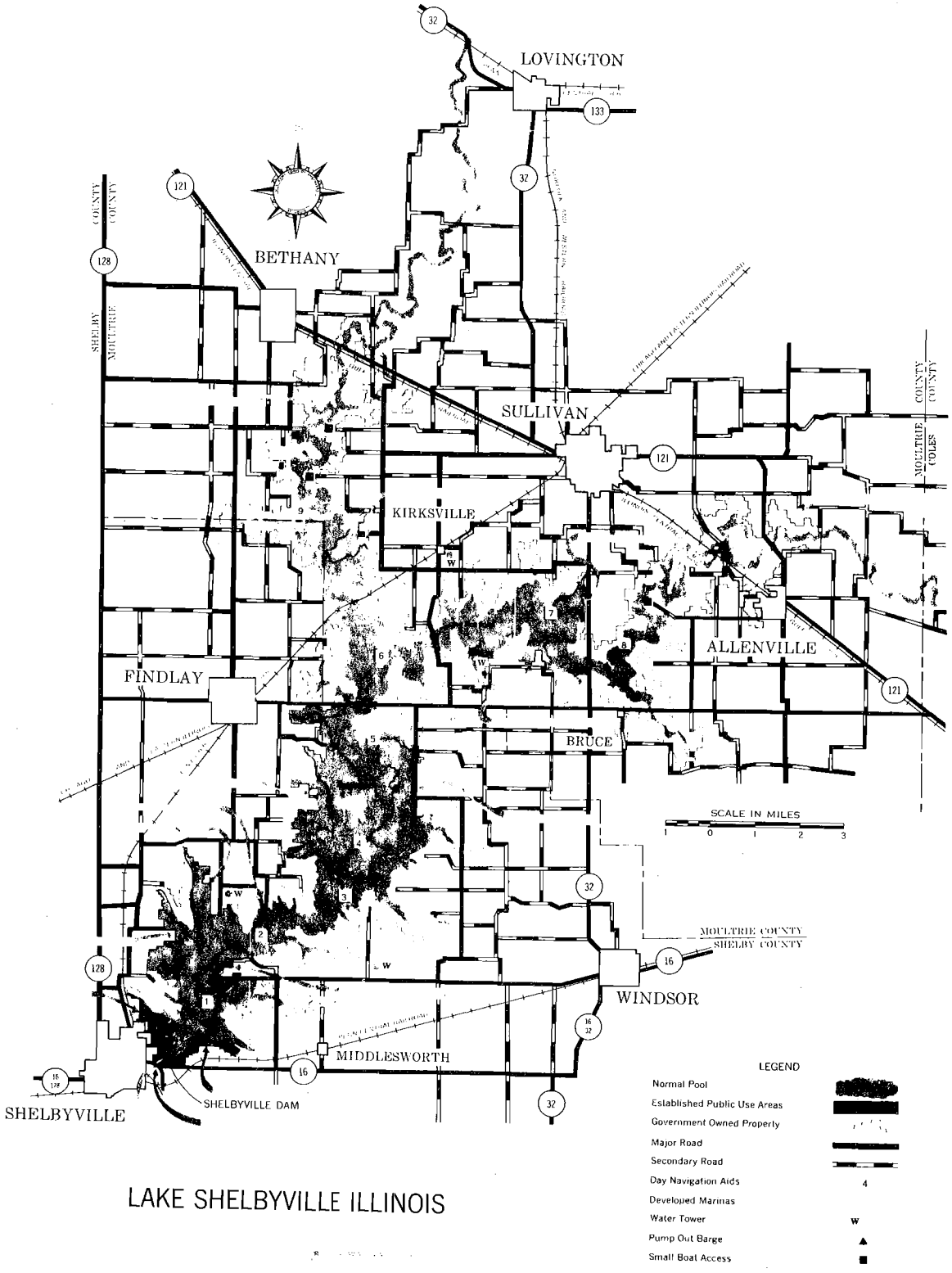
Activity	Percent of Visitors[1]
Sightseeing	52
Fishing	27
Camping	24
Hunting	18
Swimming	16
Boating	13
Picnicking	7
Skiing	5
Other	4

[1]Total adds up to more than 100% because many visitors engage in more than one activity.

Source: U. S. Army Corps of Engineers, St. Louis District, *Lake Project--Summation of Visitor Use--Calendar Year 1975.*

There are few other public outdoor recreation developments in the immediate vicinity of the lake. Existing public recreation facilities within Moultrie and Shelby counties are limited primarily to school playgrounds, small municipal parks, and a number of private campgrounds. The only major exception is Wyman Park (45 a.) in the nearby town of Sullivan, which contains a 6-a. swimming and fishing lake. Both Sullivan and Shelbyville have municipal swimming pools.

Thus Lake Shelbyville draws large numbers of visitors from a fairly widespread area, but most of the visitation comes from nearby areas. Use is concentrated in the summer and on weekends. Most visitors make one-day trips or stay overnight in public or private campgrounds. Users engage in a wide number of activities at the lake.



LAKE SHELBYVILLE ILLINOIS

Development of Private Facilities

An inventory by the Soil Conservation Service in 1974 showed the following private recreational facilities:[10]

	Shelby County	Moultrie County
Private Campgrounds	15	4
Private hunting clubs	7	2
Nine-hole golf courses	2	1
Fishing clubs	11	2
Swimming pools	2	2

At present there are no overnight accomodations available directly on the lake.[11] Some 20 commercial recreational establishments were started during the period 1971-1974.[12] Bait shops and other facilities catering to fishermen and campers have predominated among these establishments.

Second and Vacation Homes

Local expectations included the development of a large number of homes in the vicinity of the lake. This possibility has not been the case. By 1974 there were fourteen platted subdivisions in the vicinity of the lake, including a total of 451 lots. However, during the period 1971-1974, only 19 residential units were built on these subdivisions. During that same time period, 41 other residential units were constructed outside of the subdivisions.[13] Clearly, there has not been a boom in housing construction.

One explanation for the wide divergence between expected and actual residential development near the lake is the land-acquisition policy followed by the U. S. Army Corps of Engineers. Many of those who predicted

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[10] U. S. Army Corps of Engineers, *Environmental Impact Statement*, p. II-58.

[11] U. S. Army Corps of Engineers, *The Master Plan*, p. 52.

[12] U. S. Army Corps of Engineers, *Environmental Impact Statement on Operation and Maintenance, Lake Shelbyville, Illinois* (St. Louis, MO: St. Louis District 1975), p. II-61.

[13] Ibid.

substantial residential development in the vicinity of the lake based that prediction on the expected development of private holdings adjacent to the lake. In 1958, Everett Winter, executive vice-president of the Mississippi Valley Association, indicated that there would not be a protective strip of federal land around Lake Shelbyville.

> Around reservoirs built since 1953 there is no such protective strip of land. There will be none around Carlyle or other reservoirs in this valley. My guess, however, is that the State of Illinois has an adequate zoning law that can be invoked for the protection of those people who want water front sites for industry, for subdivisions for homes, for summer cottages, and you may even have a place for the man with a speed boat concession, the man who sells night crawlers for bait or rents boats to out-of-towners. Someone may want to build a nice resort hotel. 14

It appears that there was some uncertainty with respect to the extent of public acquisition. In 1960, the Moultrie County Board of Supervisors engaged a planning firm to plan for the proposed Lake Shelbyville area and also prepare a report on zoning for the entire county. At that time recommendations were made to zone the majority of the land in the vicinity of the lake in the Agricultural 2 District, in which construction of residences, commerce, or industry would not be permitted. The "take line," or future extent of federal ownership, had not been determined at that time. Therefore, it was desirable to hold back premature and undesirable development.[15]

The uncertainty, or possible misunderstanding, with respect to private development along the shores of Lake Shelbyville is reflected in

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[14]Everett Winter, "News from the Mississippi Valley Association," presentation to the Kaskaskia Valley Association Planning Conference, Carlyle, Illinois, September 4, 1958.

[15]Scruggs and Hammond, *Moultrie County Illinois, A Comprehensive Plan* (Peoria, IL: [May 1964]).

a May 3, 1962, article on the front page of the *Moultrie County News* titled "Federal Government to Control Shoreline of New Lake, Says Corps of Engineers."

> Privately owned cabin sites on the shore of the proposed federal lake at Shelbyville will be out, a spokesman for the St. Louis District of the Corps of Engineers announced last Thursday at the annual meeting of Region I of the Kaskaskia Valley Association. 16

R. H. Baker of the Corps of Engineers had indicated at that time that under a new plan that went into effect "about a month ago" the federal government would buy "in fee" all land within 300 f. of the lake at its highest flood level, a more extensive land-ownership program than had been the case at Carlyle and other reservoirs where only easements were acquired for some of the land that would be underwater at flood stage. Baker indicated that part of the land directly above flood stage would be leased for commercial development. He indicated that it is usually the case that these leases are on a concession basis with the facilities designed by the state or federal government.

James A. Lumpp is his anecdotal biography *Bo Wood*[17] tells of the shock created by the announcement of the "greenbelt" rule. The announcement was a "real blockbuster" that "burst a lot of balloons." A number of prominent citizens had taken options on land that they hoped to turn into lake lots. The greenbelt eliminated the possibility of lakeside cottages and docks right on the lake.

The greenbelt rule provided the federal government with a high level of control over recreational development in the area around the lake. It also reduced the problems associated with flood damage to private property induced by regulation of the lake.

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16. *Moultrie County* (Illinois) *News*, May 3, 1962.

17 James A. Lumpp, *Bo Wood, An Anecdotal Biography,* (Sullivan, IL: Moultrie County News, Inc., 1974), p. 27.

Local Impact of Recreation Developments

Recreation developments at Lake Shelbyville have influenced local residents in a number of ways. Many new recreational opportunities have become available, and the local population has made use of them. In addition, recreationists from other areas have been attracted, in many cases bringing money into the region. Increased recreation activity has required expansion of local services.

Local Recreation Activity

More than one-third of the visitation at Lake Shelbyville is from individuals that live within 25 m. of the lake. Increasing recreation activity by local residents is reflected, in part, in boat registrations and sales of hunting and fishing licenses. Boat registrations are recorded according to the residence of the owner, while hunting and fishing licenses are recorded according to the place where purchased. The place where a hunting or fishing license is purchased, however, will vary with the purchaser. It may be near his residence, any number of places where he fishes, or along the route to fishing destinations.

Boating Licenses. During the prereservoir period (1962-1969), boat registrations in Moultrie and Shelby counties remained relatively constant. However, completion of Lake Shelbyville brought sharp increases in boat registrations in this area. However, registrations in the state of Illinois as a whole also increased. To calculate the reservoir-induced increase in boat registrations, it was necessary to estimate how many licenses would have been issued without the reservoir. The annual percentage increase in per capita registrations for that portion of the state not impacted by reservoirs was calculated and applied to Shelby and Moultrie counties, in which Lake Shelbyville is located, and to their neighboring counties. The nonimpacted region of the state excluded counties in which Lake Shelbyville, Carlyle Lake, and Rend Lake were located plus the adjacent counties and the Chicago metropolitan area. This region provided an estimate of what registrations would have been without the lake, which, when compared with actual registrations, would indicate lake-induced changes in registrations. The results of the analysis are summarized in Table 13.

Table 13. Estimated Reservoir-Induced Increases in Boat Registrations by County and Year, 1969-1975

	Year						
County	1969	1970	1971	1972	1973	1974	1975
Shelby	49	135	389	596	655	679	658
Moultrie	32	84	237	438	516	532	538
Macon	157	291	543	1086	1356	1474	1444
Champaign	-149	7	282	598	646	693	659
Douglas	26	73	125	209	275	366	417
Piatt	7	-2	55	150	199	259	284
Christian	83	120	144	230	262	289	255
Coles	-53	-59	-19	128	306	278	191
Fayette	127	202	172	172	159	183	176
Montgomery	93	88	146	130	107	133	78
Cumberland	-2	-3	14	16	104	77	71
Effingham	7	27	84	110	98	62	11

Calculated from data provided by the Illinois Department of Conservation.

Note the significant increases in boat registrations in Shelby and Moultrie counties as well as in counties to the north and west of the lake, particularly in Macon County, where the city of Decatur is located. A subsequent analysis of retail sales will suggest that a large portion of the local expenditures by users of Lake Shelbyville are made by individuals traveling from north and west of the lake. An examination of the residences of individuals who rent spaces at marinas on Lake Shelbyville also indicates a strong influence of individuals residing to the north and west of the lake (see Figure 4). Note also the influence of residents from the Chicago area.

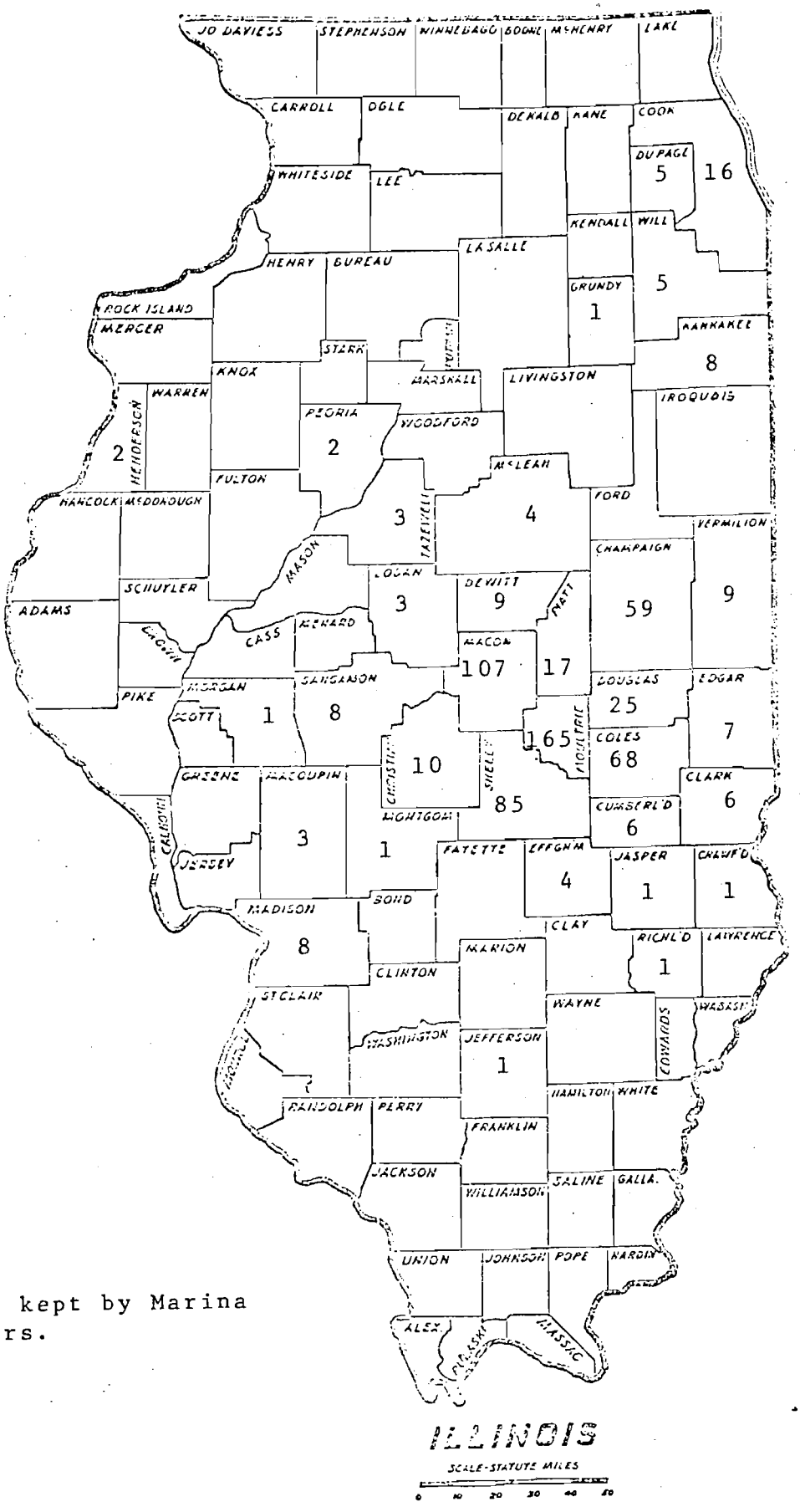
Fishing Licenses. Sales of fishing licenses in Moultrie and Shelby counties exhibited a trend similar to boat licenses. Fishing-licenses sales, since they are recorded by place of sale, reflect a combination of increased purchase of licenses by local residents and purchases by others who come to the area to fish. The share of downstate fishing licenses sold in Shelby County increased rapidly when the lake was opened but has recently leveled off. Yet the share of licenses sold in Moultrie County continues to increase. Thus, it is not clear if the initial influence of the lake on fishing licenses has subsided. There appear to be no increase in the share of fishing licenses in adjoining counties, which may be due to two factors. First, fishermen from these counties may be purchasing their licenses near Lake Shelbyville. Second, residents of the neighboring counties may not be as likely to take up fishing as an activity as are those in the counties where the lake is located.

Reservoir-induced increases in sales of resident fishing licenses in Moultrie and Shelby counties were calculated for Table 14 using the same techniques used for boat registrations (Table 13).

Table 14. Estimated Reservoir-Induced Increases in Sales of Resident Fishing Licenses, Moultrie and Shelby Counties, 1969-1975

Year	Moultrie County	Shelby County
1969	+ 283	+ 322
1970	+3067	+ 1205
1971	+ 700	+ 2225
1972	+3535	+ 8282
1973	+4365	+ 7282
1974	+6028	+10035
1975	+6311	+ 9909

Figure 4. Residences of Individuals Who Rented Spaces at Marinas on Lake Shelbyville, Spring 1977



SOURCE: Records kept by Marina Operators.

Hunting Licenses. The sale of hunting licenses in Shelby and Moultrie counties and the share of downstate licenses sold in each county have not shown a clear indication of impact by the lake, which is to be expected since the lake has not had as strong an influence on hunting opportunities as has been the case with fishing and boating.

Reservoir-induced changes in sales of resident hunting licenses in Moultrie and Shelby counties were caluculated for Table 15 using the same techniques used for boat registrations (Table 13) and fishing licenses (Table 14).

Table 15. Estimated Reservoir-Induced Changes in Sales of Resident Hunting Licenses, Moultrie and Shelby Counties, 1969-1975

Year	Moultrie County	Shelby County
1969	+138	+ 42
1970	+163	+222
1971	+106	+120
1972	+206	+245
1973	+137	-270
1974	- 32	-378
1975	+107	-138

Recreationists Attracted from Other Areas. The lake also brought large numbers of recreationists from distant areas. In fact, the campgrounds on Lake Shelbyville will, on a sunny summer weekend, have a population that exceeds any of the nearby communities. The visitors often make purchases from local businesses but also create demands for local services. Road traffic has increased, requiring additional road maintenance and traffic control. Thus there is a burden on the local transportation system and law-enforcement personnel. Thefts, disputes, accidents, and related matters

also contribute to the burden placed on local law-enforcement agencies. Local government agencies must, in essence, provide services for a large transient population. Providing these services may be difficult in light of the (at least temporary) reduction in the local tax base that results from the purchase of private lands for the reservoir and related lands.

The influx of "outsiders" into the area to use the facilities at Lake Shelbyville has had some social impacts on local residents. Local residents frequently complain about the damage and destruction done by lake users from other areas and the fact that these individuals do not pay local taxes. The following exerpts from editorials in the *Findlay Enterprise* provide an indication of local attitudes toward some of the undesirable impacts of recreationists.

> Ninety percent of the tourists who visit Lake Shelbyville may be number one citizens. The gross one percent left over must be mighty busy. The things some of them do are unbelievable. I actually hate to believe a human could be so gross. Most of them couldn't. I guess some of them have sick, sick minds or maybe they're possessed. They need the services of an exhorcist[*sic*].[18]

> Someone should teach the blankety blank campers who don't know what to do with their garbage to either use the provided containers at their campsites or take it home with them. I'm sorry to say there are a few around our community who haven't learned what to do with cans and bottles. I can understand why they don't take some of those cans and bottles home, but there are some trash containers around down town begging to be used. 19

> If the tourists who enjoy the parks and campground appreciate them surely they wouldn't be so filthy and destructive. Any tourist who sees another abusing the facilities should report them to the park police. That way we just might be able to eliminate the few who choose to be filthy and destructive. 20

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[18]"Methinks," August 6, 1976.

[19]"Methinks," August 20, 1976.

[20]"Methinks," August 6, 1976.

> Someone called one of the Department of Conservation police a couple of weeks ago to report that there were two naked women riding on the front of a boat in the Ninth St. Beach area. He said he didn't do anything about it because his book didn't include like situations. I suggested that next time he might contact the Shelby County Sheriff's office. Maybe their book covers the situation. I'm sure they weren't too much more exposed than some others who run around in bikinis that fail to really cover anything. Those bikinis remind me of a skimpy diaper. 21

The attitude of local residents towards "outsiders" drawn to the area was reflected in local criticism of an expenditure of $100,000 by the Illinois Department of Conservation to build levees and ponds to enhance duck hunting. Part of the criticism was due to the lack of local information about the project and the lack of development of state-access areas on the lake. However, the duck ponds were also branded as being for "Chicago shooters."[22]

THE ECONOMIC IMPACT OF RECREATIONISTS

Prominent among the local benefits expected from Lake Shelbyville was recreation-induced economic development from expenditures made by recreationists attracted to the lake. A large portion of these impacts was expected to occur in the retail-sales sector.

In the absence of information about the actual local expenditures by recreationists, it is necessary to infer these expenditures and their local impact from retail-sales-tax information. Trends in retail sales in the pre- and postreservoir periods were examined to determine what changes are attributable to the influence of recreationists using Lake Shelbyville.

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[21] Ibid.

[22] "Conservation Has No Plans For Area," *Moultrie County* (Illinois) *News*, June 3, 1976.

Two approaches were used, involving different levels of aggregation of retail-sales-tax information. The first approach presented is an attempt to use quarterly retail-sales-tax data by sector to draw conclusions about changes in the sectors that might be impacted by recreationists. The results would indicate failure to reject the null hypothesis (i.e., no recreation-induced impact) or a probability of no obviously discernible impact from out-of-region lake users. The second approach uses total monthly retail sales by town (sector breakdowns are unavailable for monthly data). This analysis indicates that there is a possible recreation-induced impact in a few towns. A second level of this approach develops a possible daily expenditure figure for nonlocal users. While the two approaches reached somewhat different concludions with regard to a recreation-induced impact, the negative conclusions derived from the first method should be recognized as a factor by which the results of the second method should be limited. In other words, the figure for estimates of expenditures developed by the second method should be considered an upper limit. The two methods together indicate that a realistic estimate of expenditures is far less than most predictions by supporters of Lake Shelbyville.

Analysis of Quarterly Retail-Sales Data

The initial analysis was based on quarterly tax revenue from 22 municipalities in Douglas, Moultrie, and Shelby counties (see Figure 5) during the period 1966-1975, which includes the time series leading from the prereservoir to the postreservoir period. The quarterly data provid tax information on ten retail sectors.[23] Retail-sales data was generated from the tax information by dividing each of the quarterly figures by the respective tax rate (which changed three times during the period of analysis).

Two fractions, reflecting (1) each sector's share of the local economy and (2) each sector's share of the downstate (excluding the Chicago

[23]These sectors are: general merchandise; food; drinking and eating places; apparel; furniture, household, and radio; lumber, building, and hardware; automotive and gasoline service stations; miscellaneous retail and wholesale stores; miscellaneous; and manufacturers.

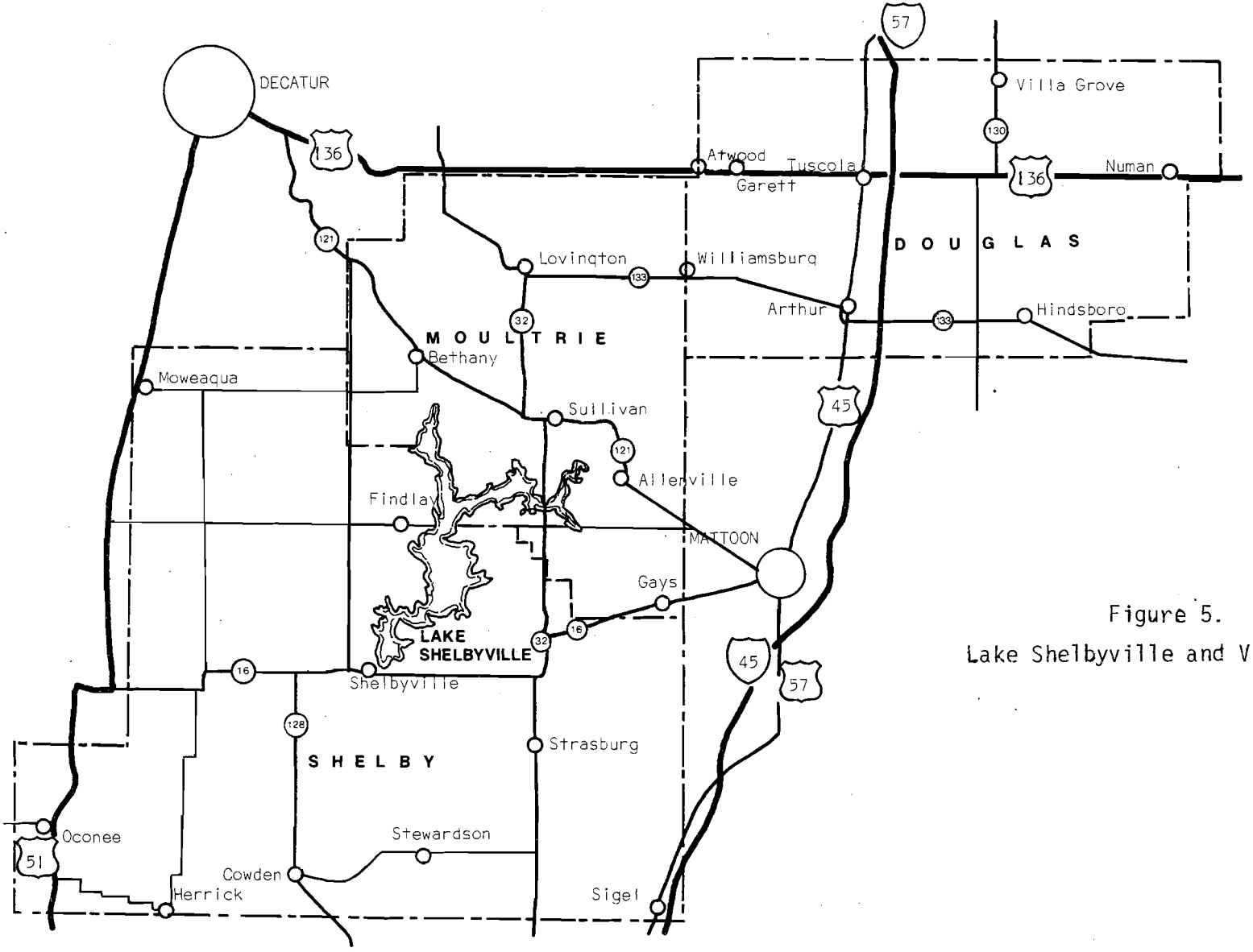

Figure 5.
Lake Shelbyville and Vicinity

metropolitan area) sector totals were calculated for each of the 22 municipalities in the 42 quarters in the period of analysis.

Some of the municipalities analyzed are close to the reservoir, some are on major roads linking population centers to the lake, and others have neither characteristic. This variation is helpful in examining reservoir-induced sales. Each sector's local share divided by that sector's share at the state level produces a location quotient, providing three indicators that may be examined and compared.[24]

A location quotient of greater than 1 indicates specialization in sector i in town j. An increasing location quotient in a recreation-related sector would indicate increasing recreation activity or decreasing activity in other sectors. The location quotient in a recreation-related sector will not increase if the rest of the local economy also expands. Consequently, all three statistics must be compared so that if a possible trend is not evaluated in one of the shares of the location quotient it might be evaluated in another indicator.

The use of shares as indicators cancels out the effects of inflation since it can be assumed that the components of the share are similarly affected by inflation throughout the state, and thus cancel out.

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[24]

(a) Sector i's share of the total retail sales in town j: $\frac{R_{ij}}{\sum_i R_{ij}}$

(b) Sector i in town j's share of the downstate total in sector i: $\frac{R_{ij}}{R_{iDs}}$

(c) Location quotient: $\frac{\frac{R_{ij}}{\sum_i R_{ij}}}{\frac{R_{iDs}}{\sum_i R_{iDs}}}$

Where i = a retail sales sector
j = a town
R = retail sales
Ds = downstate reference region

This use of shares is particularly important to the analysis because it is expected that the ten sectors have experienced a particulary high rate of inflation in recent years. Examination of shares by quarter also cancels out the influence of seasonal trends such as the Christmas sales boom, first-quarter sales decline, and increases in driving during the summer.

The retail trade sectors where one would expect the most significant impact from recreationists are (1) gasoline sales[25] and (2) sales at eating-and-drinking establishments. It is likely that the retail sales sector of a municipality's economy is becoming more recreation-oriented if two trends are observed:

1. Municipal sales in both the gasoline-sales and eating-and-drinking-establishment-sales sectors are increasing at a faster rate than the downstate area, as indicated by generally increasing share of the total downstate sales in these sectors.

2. Municipal sales in both the gasoline-sales and eating-and-drinking-establishment-sales sectors are growing faster than other local retail-sales sectors are growing, as indicated by a generally increasing share of the municipal sales in these sectors.

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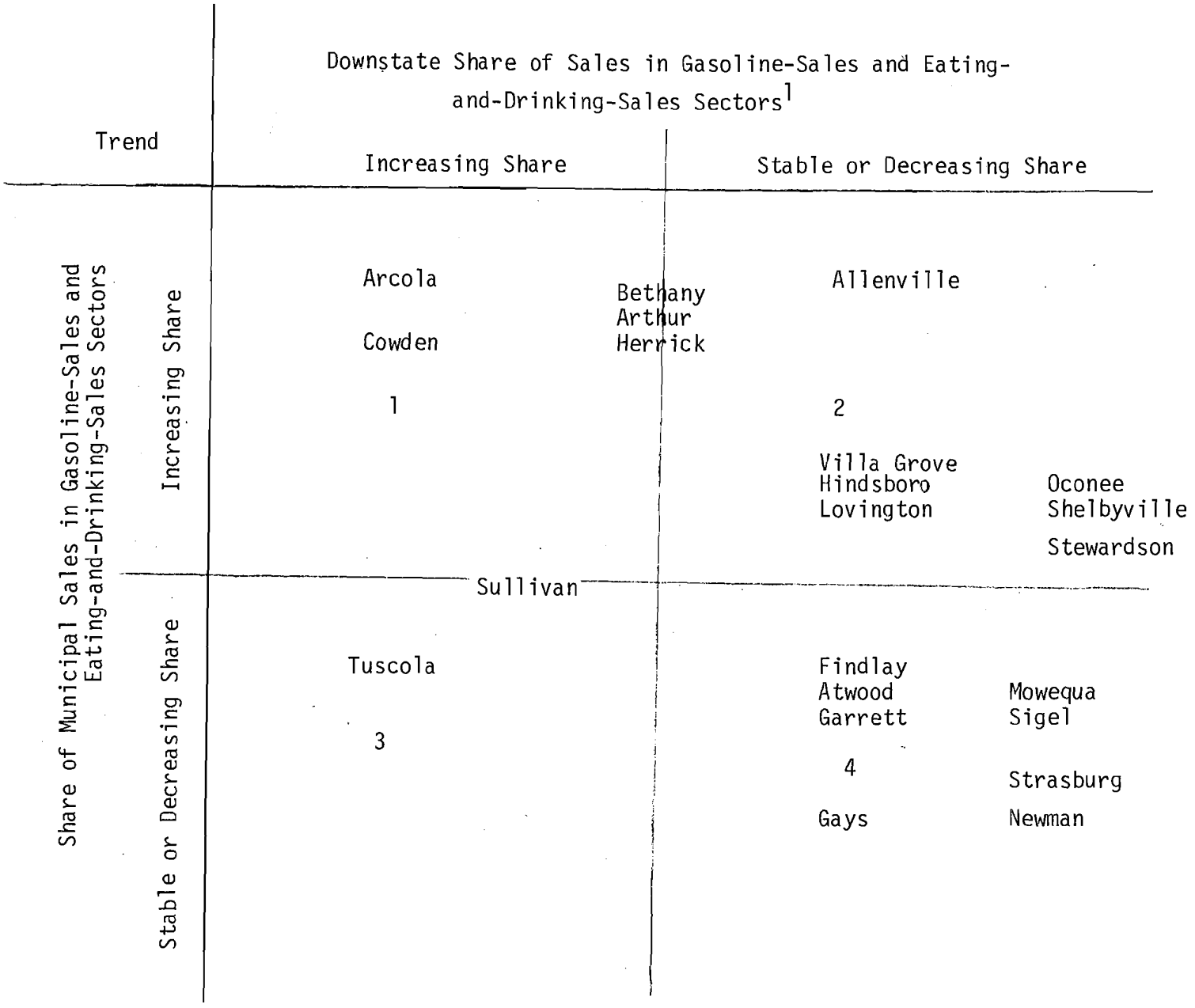
[25]The retailers occupation tax summaries combine gasoline sales with automotive sales, limiting the accuracy of the sector as an indicator of recreation-related business. Since population in the study region is not increasing as fast as in the downstate area as a whole, the sales of the automotive and gasoline sector should not be expected to increase because automotive shares in the other counties would increase with population. A stable share in gasoline sales and an increase in eating-and-drinking establishment sales would be indicative of a recreation orientation.

A matrix (see Figure 6) was derived to analyze these trends in the 22 municipalities under study.

Figure 6. Recreation Impact Matrix: Quarterly Data



[1] If the definition is altered to stable or increasing versus decreasing, some of the towns might move to the left. However, this would still show some of the nonlake oriented towns as being more stable or more recreation oriented than some of the lake-oriented towns.

Indicators of a Recreation Orientation

Quadrants 1 and 2 on Figure 6 indicate the development of a recreation-oriented retail-sales sector.

Only two municipalities could be placed in the first quadrant, indicating development of a recreation-oriented economy without accompanying expansion in other sectors. Both Arcola and Cowden are on highways leading to Lake Shelbyville, but Cowden is not on a direct route linking the lake to a population center. Arcola is also near an interchange on Interstate 57 which is often used as an exit for lake users traveling south from Champaign and Chicago.

Only one municipality in the three counties, Tuscola, could be clearly placed in the third quadrant, which signifies increasing downstate shares in almost all sectors, including the recreation-related ones. However, this increase is most likely due to Tuscola's location on Interstate 57 rather than to strong links to the reservoir. Tuscola is not likely to be a major exit for Lake Shelbyville users traveling Interstate 57.

Sullivan was placed between quadrants one and three because it showed a recreation orientation according to the two statistics. However, its share of gasoline sales has generally been larger in the winter quarters rather than in the summer, thus raising a question with respect to recreation orientation.

Allenville and Bethany, located on major roads leading to Lake Shelbyville, showed a recreation orientation. Recreation-related sectors increased their share of the local economy, while more sectors including the recreation sectors declined in their downstate share of sales.

In Bethany, Arthur, and Herrick, the recreation orientation seemed to be developing; nevertheless, the towns were placed on the matrix midway between the first and second quadrants because one of the two recreation sectors may have been increasing its downstate share while the other sector was declining.

The majority of the towns were placed in the fourth quadrant because they received little impact from recreation. Seven towns were placed midway between the second and fourth quadrants, indicating a slight recreation orientation. Several of these towns are remote from the lake, but others are on the lake or on major roads leading to it. Findlay, located on the reservoir, experienced a declining share of downstate sales for eating-and-drinking establishments but maintained a fairly constant share of gasoline sales. Shelbyville's share of downstate gasoline sales declined, as did gasoline sales' share of the total retail sales. Shelbyville's share of sales by eating-and-drinking establishments increased, but the increase was highest in the winter quarters.

The development of a more recreation-oriented economy seemed to have little correlation with proximity to Lake Shelbyville or routes leading to it. Much the same trends were observed in the remote (from the reservoir) towns as in the reservoir-area towns. An interstate interchange appears to have a greater impact on retail sales (by sector) than a reservoir location. It would seem that local expenditures by recreationists are made en route to the lake or on a return trip home. The small impact on towns located near the reservoir may indicate that recreationists are not making special trips to these towns for eating and drinking purposes or to purchase gasoline. The fact that most use is concentrated on the weekends and most visits are of a short duration may tend to reduce purchases from local businesses.

Sullivan and Shelbyville

Since many of the expectations for recreation-induced economic development focused on the municipalities of Shelbyville and Sullivan, particular attention was given to trends in recreation-related sectors in these towns. A trend toward an increasing share in the "summer quarters," April-June and July-September, was interpreted as recreation-induced.

Tables 16 and 17 indicate trends by quarter in the downstate share of sales by eating-and-drinking places for Shelbyville and Sullivan. Shelbyville indicates an increasing trend in all quarters since the lake was completed. Summer quarters fared no better than winter quarters. Sullivan indicates a decline in the July-September quarter but an increase in the share in the other quarters. This trend casts some doubt that there was a strong recreation influence. It is interesting that during the postreservoir period in both municipalities sales in the July-September quarter appear least impressive in terms of their share of the state total. Since there is a considerable amount of recreation activity during this quarter, it seems to indicate a low impact of recreationists on the sales of eating-and-drinking places in the two municipalities.

Table 16. Sales by Eating-and-Drinking Places in Shelbyville as a Share of the Downstate Total in that Sector by Quarter 1965-1974

	January-March	April-June	July-September	October-December
1965	.00082	.00077	.00085	.00072
1966	.00076	.00078	.00096	.00081
1967	.00072	.00089	.00088	.00070
1968	.00079	.00080	.00075	.00085
1969	.00077	.00074	.00068	.00074
1970	.00058	.00062	.00082	.00065
1971	.00061	.00072	.00079	.00076
1972	.00067	.00091	.00094	.00086
1973	.00107	.00092	.00080	.00084
1974	.00114	.00133	.00101	.00127

Table 17. Sales by Eating-and-Drinking Places in Sullivan as a Share of the Downstate Total in that Sector by Quarter, 1965-1974

	January-March	April-June	July-September	October-December
1965	.0010	.00089	.00111	.00095
1966	.00104	.00089	.00107	.00097
1967	.00078	.00086	.00112	.00076
1968	.00072	.00096	.00115	.00114
1969	.00092	.00101	.00120	.00107
1970	.00101	.00125	.00130	.00107
1971	.00105	.00103	.00116	.00091
1972	.00095	.00141	.00100	.00092
1973	.00132	.00129	.00088	.00103
1974	.00142	.00129	.00093	.00113

Tables 18 and 19 indicate trends in the downstate share of automotive and gasoline service stations for Shelbyville and Sullivan. In Shelbyville here has been a decline in the downstate share of the sector during the summer quarters and stability or a slight decline in the winter quarters. This trend does not appear to indicate a recreation orientation. Sullivan also indicates a decline in the downstate share during the summer quarters but an increasing share in the winter quarters. Thus, with either municipality there appears to be a low impact of recreationists on the sales of automotive and gasoline service stations.

Analysis of Monthly Retail Sales Data

The foregoing analysis of quarterly retail sales by sectors has two limitations. First, the data is available only quarterly, and the quarters do not correspond adequately to the seasons of peak recreation activity at the lake. Second, the definition of the ten sectors reported in the quarterly data limits its usefulness. For example, sales of gasoline

Table 18. Sales of Automotive and Gasoline Service Stations in Shelbyville as a Share of the Downstate Total in That Sector by Quarter, 1965-1974

	January-March	April-June	July-September	October-December
1965	.00194	.00197	.00176	.00189
1966	.00200	.00188	.00178	.00178
1967	.00191	.00167	.00180	.00195
1968	.00182	.00177	.00197	.00187
1969	.00178	.00176	.00175	.00171
1970	.00186	.00178	.00175	.00171
1971	.00196	.00164	.00179	.00188
1972	.00182	.00141	.00200	.00174
1973	.00178	.00146	.00167	.00182
1974	.00183	.00162	.00133	.00170

Table 19. Sales of Automotive and Gasoline Service Stations in Sullivan as a Share of the Downstate Total in That Sector by Quarter, 1965-1974

	January-March	April-June	July-September	October-December
1965	.00119	.00121	.00134	.00118
1966	.00113	.00106	.00101	.00108
1967	.00115	.00107	.00104	.00114
1968	.00113	.00092	.00108	.00115
1969	.00107	.00106	.00105	.00110
1970	.00112	.00115	.00106	.00121
1971	.00116	.00115	.00105	.00114
1972	.00120	.00094	.00094	.00111
1973	.00125	.00091	.00096	.00110
1974	.00138	.00101	.00088	.00134

service stations might be a very useful indicator of seasonal recreational activity. However, sales of gasoline service stations are lumped with automotive sales establishments. This aggregation may mask seasonal trends in gasoline sales, especially in an area with significant agricultural-related sales of automotive and farm-implement dealers.

Monthly retail-sales-tax collections are also summarized by the Illinois Department of Revenue. The monthly tabulation, however, lists only total collections by towns and the unincorporated county areas. No sector breakdowns are available for the monthly data. In the monthly totals, the sales for a town might be dominated by expenditures of residents in nonrecreation sectors so that seasonal fluctuations caused by tourist expenditures might be difficult to detect. Nevertheless, monthly total sales by town can be interpreted using a cross-sectional analysis of towns suspected to be impacted by recreation and of towns which would not be affected.

Twenty-six towns in Douglas, Moultrie, and Shelby counties plus the unincorporated portions of Moultrie and Shelby counties, were evaluated in a two-level analysis. The towns and unincorporated areas in Douglas County were brought into the analysis to increase the population being examined and to ensure that an adequate number of nonlake-related areas would be involved to perform statistical tests. First, stepwise multiple regression equations were estimated for each of the twenty-eight political jurisdictions. Deflated (by the Consumer Price Index) monthly retail sales were expressed as a function of the number of visitor days per month at Lake Shelbyville and a time variable to account for the increase in disposable income not eliminated by deflation. Each jurisdiction's monthly share of the total sales of all towns and unincorporated areas of the three-county area was also estimated using the same two variables. In the second level of analysis, the lake-related jurisdictions for which this analysis produced a significant, positive coefficient for visitation were aggregated into a lake-impacted retail sales area. An attempt was made to estimate visitor expenditures in the impacted region by running a multiple regression equation for this aggregate as the dependent variable.

Initially the monthly retail sales of each jurisdiction were regressed against visitation for a period of 54 months from January 1971 to June 1975. Plots of the residuals indicated that visitation at Lake Shelbyville alone was underestimating sales in almost all the early months and predicting high for most of the months in the second half of the time series. This estimation problem was likely due to an increase in disposable income in the region over time that was not explained by seasonal fluctuations or inflation. To account for this general increase in income, the number of the month was included as an explanatory variable to improve the predictive power of the model. Figure 7 shows the seasonal fluctuation and the general time trend in deflated retail sales that were being treated with the model.

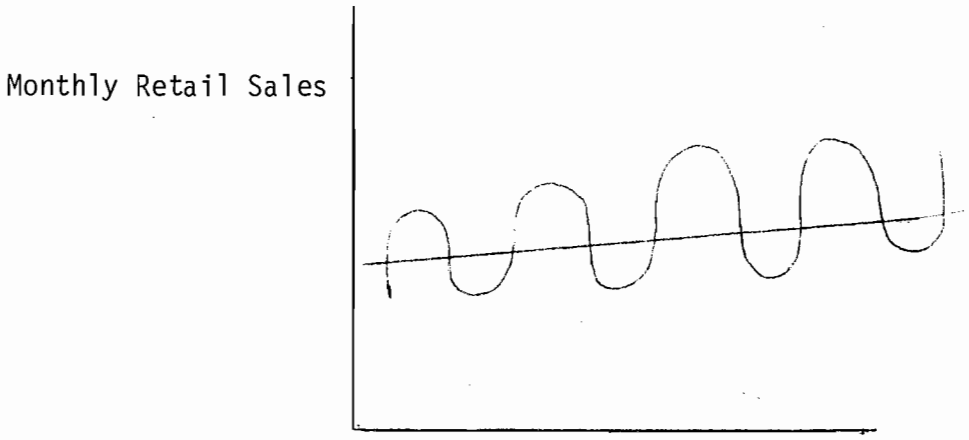


Figure 7. Hypothetical Trend in Monthly Retail Sales Tax

The slope of the straight time-trend line would indicate another deflation index that could be applied to the sales data before regression, reducing the width of the confidence interval around the coefficient for visitation. However, deflating the sales-tax data twice by different indices would complicate the explanation of the coefficient for visitation. Thus the two variables were used together so that their joint explanatory power would reduce the standard error around the prediction generated by

the model. It can then be assumed that the resulting confidence interval around the visitation coefficient is an overestimate or a conservative inclusive range.

Results of the First Level of Analysis

For each town and set of county unincorporated areas, two equations were run:

(1) $TR = a_1 + B_1V + B_2M$

(2) $TS = a_2 + B_3V + B_4M$

TR = the town's total retail sales per month

TS = The town's share of three county total retail sales per month

V = the number of visitor days at Lake Shelbyville per month

M = the number of the month (M = 1,....54)

For a few of the towns, B_1 (the coefficient of visitor days) was positive but marginally significant in the first equations. In these cases, B_3 in the second model might be negative, or insignificant, indicating that the towns' share of sales does not increase with visitations. A positive B_1 in the first model would indicate that retail sales increase with visitation. For several of the towns and unincorporated areas, both B_1 and B_3 were positive and significant. To test whether a positive B_1 was a probable result of a lake-impacted location, a two-by-two table was set up. In Figure 8, a town is placed in one of the two cells on the upper row if it is on the lake or is a "gateway" town on a main highway between the lake and a major city. If its location is unrelated to the lake, it is placed in one of the bottom two cells. Its column position depends on whether its coefficient for visitation (B_1 in Equation 2) is positive and significant or negative or insignificant. Figure 8 shows the distribution of the 28 jurisdictions.

Figure 8a. Recreation Impact Matrix

	Positive and Significant B_1			Negative or Insignificant B_1		
	Douglas	Moultrie	Shelby	Douglas	Moultrie	Shelby
Access to Lake		Bethany Dalton City Sullivan Moultrie, Uninc.	Findlay Shelbyville Shelby, Uninc.		Allenville Gays	Tower Hill Windsor
ɔ ccess	Arcola Villa Grove		Herrick Strasburg	Atwood Camargo Garrett Hindsboro Newman Tuscola	Arthur Lovington	Cowden Mowequa Oconee Sigel Stewardson

Figure 8b. Chi Square Test

	(B_1) Visitation Positive and Significant	(B_1) Visitation Negative or Insignificant
Access to Lake	7	4
No Access	4	13

Gamma = .70

$\chi^2 = 4.50$

$\alpha \approx .05$

Figure 8a is a very liberal interpretation of the B_1 coefficient for visitation. Some of the positive values may have been marginal in light of their t values, or questionable after examining a negative or insignificant B_3 coefficient in Equation 2 for some towns. In addition, for some of the towns the accessibility to the lake could be questionable. Thus Figure 8a is the strongest case that can be made for relating sales receipts to visitation. Gamma equals .70, indicating that the main diagonal elements dominate and there is a moderately strong correlation between a lake-related location and visitation-impacted sales. A Chi Squared value of 4.50 indicates that the probability is less than .05 that this relationship could have happened by chance.

However, if adjustments are made for the marginal and questionable cases, the resulting allocation is shown in Figure 9a:

Figure 9a. Revised Recreation Impact Matrix: Monthly Data

	Positive and Significant B_3			Negative or Insignificant B_3		
	Douglas	Moultrie	Shelby	Douglas	Moultrie	Shelby
Access to Lake		Bethany Sullivan Moultrie, Uninc.	Findlay		Allenville Gays	Tower Hill Windsor Shelbyville Shelby, Uninc.
No Access	Arcola		Herrick Strasburg	Atwood Camargo Garrett Hindsboro Newman Tuscola Villa Grove	Arthur Lovington	Cowden Mowequa Oconee Sigel Stewardson

Figure 9b. Chi Squared Test

	Visitation (B_3) Positive and Significant	Visitation (B_3) Negative or Insignificant
Access to Lake	4	6
No Access	4	14

Gamma = .40

χ^2 = .99

The correlation is quite weak and the low value of Chi Squared indicates that this relationship could very likely happen by chance. In this arrangement, towns are moved to the right if the B_3 coefficient is negative or insignificant in the second equation. Towns are moved up or down if their access to the lake might be questionable in the first table.

Figure 8a is formed strictly from the results of Equation 1 with respect to the column placement. Column placement in Figure 9a is based on the results of Equation 2. Since the row placement in either table is a matter of judgment and the interpretation of the B_3 coefficient might be questioned, the jurisdictions might be rearranged in a number of different ways than is shown in Figure 9a. However, based on the B_1 coefficients and the very low R^2 for many of the towns, Figure 9a is probably closer to the true relationship than Figures 6 or 8a. Based on any other interpretation of these three factors, relative access, the B_3 coefficient, and R^2, any other realistic cell assignment would give a low gamma and an insignificant relationship.

The assignment in Figure 9a leads to a new hypothesis. The relationship shows that the upper left-hand cell includes only jurisdictions to the north and west of the lake, towards Decatur. The upper right-hand cell includes only jurisdictions from the south and east. It appears that there is a significant relationship between visitation-impacted sales and a lake access point oriented toward the north and west.

Results of the Second Level of Analysis

The second level of analysis takes six of the jurisdictions from the top left cell of Figure 8a and aggregates them into the lake-impacted community. Shelbyville is included, although its B_1 coefficient was marginally significant and the B_3 coefficient was so insignificant that visitation explained less than 1% of the variance of its sales share. The other jurisdictions included in the analysis are Bethany, Findlay, Sullivan, and the unincorporated portions of Shelby and Moultrie counties. The results of the regression of Equation 1 for each of the six jurisdictions are as shown in Table 20.

Table 20. Estimated Expenditures per Visitor Day

	B_1 coefficient
Sullivan	$.30
Shelbyville	.28
Moultrie Co.*	.22
Shelby Co.*	.11
Bethany	.07
Findlay	.05

*Includes only unincorporated portions of the County.

Although the coefficient for Shelbyville ($.28) is relatively large, visitation explains much less of the change in sales than in the other five areas. The B_3 coefficient for Shelbyville indicates that increased visitation does not increase Shelbyville's share of the three-county total sales, partly because Shelbyville is larger than the other areas so that nonresident recreation expenditures do not cause significant fluctuations in its share. The other towns on the south and east towards Mattoon have not experienced any seasonal trends in comparison to the north and northwest towns.

The impact on the northwest side of Lake Shelbyville might be more apparent if visitation data disaggregated by access site to the lake could be compared with sales in the nearest town. However, these data would be subject to considerable error if visitors to more remote access points made any necessary recreation purchases in northern or northwestern "gateway" towns. The comparison of aggregate visitation with the six impacted communities aggregated is most likely the more accurate method.

The coefficient for visitation (B_1) can be interpreted as the expenditure per visitor day. When the six areas were aggregated and Equation 1 was estimated, the coefficient for visitation was 1.05, which might be interpreted to mean that for every visitor day the sales in this impacted area increased by $1.05. All of the towns in the two counties were then added to this impacted community, and the same equation was run. For the entire two-county region, the coefficient was $1.15, indicating that almost all the lake-related expenditures were in the six immediately adjacent areas.

In addition to the aggregation problem in the dependent variable, sales receipts, the visitation figure is probably biased in a way that can be partially detected. The total visitation figure used includes visitors who can be classified in three categories. First, most of the visitors are from the adjacent towns. Their recreation expenditures would have

been made locally whether they had a barbecue at home or at the lakeside. It is possible, however, that in the absence of Lake Shelbyville these people could have gone elsewhere and spent their recreation money outside the local economy. The second group includes the visitors from Shelby and Moultrie County towns not adjacent to the lake. Their expenditures are transferred from their towns to the local economies of the impacted towns, which may or may not be seen as a benefit depending on the scope of the analysis. The third group is the visitors from outside the local region. It is the expenditures of this third group which should be analyzed in planning for the development of a recreation economy.

Estimating the Expenditures by Recreationists Brought into the Region

The B_1 coefficient provides a biased estimate of expenditures by recreationists from outside the local region. This bias can be demonstrated by a simple example. If it is estimated that 40% of the visitation is by out-of-the-region-tourists, the $1.05 estimate might be divided by 0.4, showing that the local economy receives $2.60 per visitor day by attracting more nonlocal recreationists. However, the slope, or B_1, is biased upwards by an inconsistency in the independent variable, visitation. It is likely that in the winter months a smaller percentage, perhaps 25% of the visitors, are from out of the region. The lake is a major *summer attraction* and attracts visitors from greater distances during the summer months, when perhaps 50% or more are nonlocal.

Figure 10a shows the slope of the line implying visitor expenditures per day. A seasonally high visitation of 796,000 visitor days and a seasonally low visitation of 36,200 visitor days are displayed on the horizontal axis. The two points plotted here give a slope of $1.08, similar to the coefficient generated by the regression equation for the impacted areas.[26] If it is

[26]The formula for the slope is: $b = \frac{y_2 - y_1}{x_2 - x_1}$.

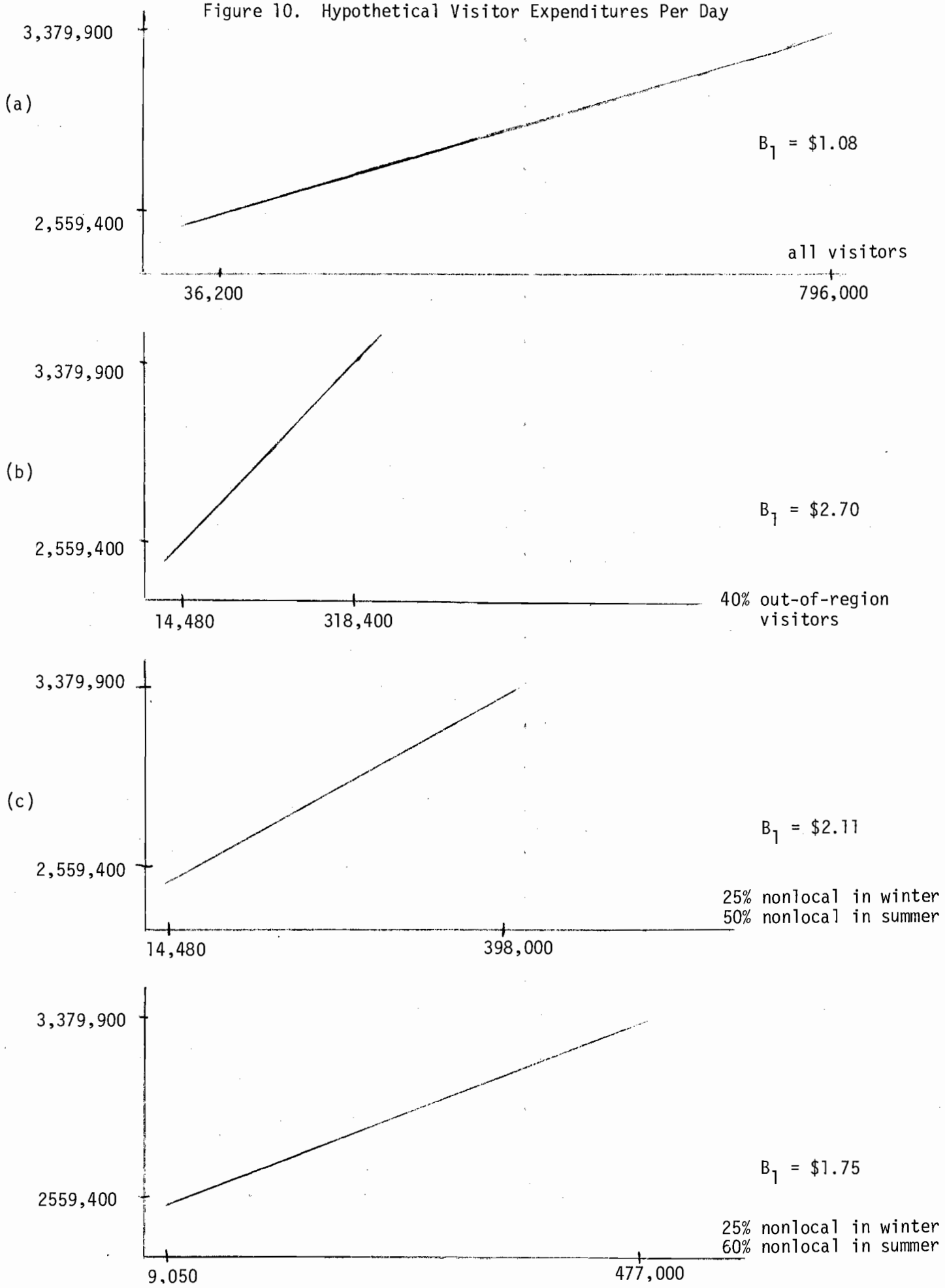
assumed that 40% of the visitors were from out of the region, the seasonally low visitation is 14,480, and the seasonally high is 318,400. In Figure 10b, these values of x_1 and x_2 are plotted with the original values for y_1 and y_2. The formula for the slope now indicates that the out of region tourist spends $2.70 per day. Figure 10c assumes that in the winter only 25%, or 9,050 visitors, were from distant areas, while in the summer 50%, or 398,000, were nonlocal. The slope is reduced to $2.11 if the visitation is biased in this manner. Figure 10d assumes that 60% were nonlocal in the summer, and 25% in the winter. The expenditure coefficient is reduced to $1.75.

The exercise indicates that $1.05 is not the true expenditure per visitor day for recreationists coming from outside the region. However, it cannot be simply adjusted by the average number of out-of-region visitors to generate the expenditure that can be expected by the nonlocal tourist. Figure 10d is probably an exaggeration of the monthly proportions; however, it indicates the possible severity of a biased visitation count. The 95% confidence interval around P_1 = $1.05 ranges from $.68 to $1.40, or a deviation of about 35%. If visitation is adjusted as in Figure 10b, a similar confidence interval would range from about $1.76 to $3.65. However, since there is a possible upward bias in the slope, $2.70 should be considered the highest estimate of expenditures by recreationists from outside of the region. A more likely expenditure by recreationists from outside the region would be somewhat less than $2.70 per visitor day.

The Corps of Engineers has estimated an expenditure of $3.40 per visitor day.[27] Consideration of both methods, the quarterly analysis by sectors and the monthly totals, should indicate that a more conservative recreation-expenditure figure than the $3.40 per visitor day estimated by the Corps of Engineers is reasonable. Another point has also emerged from both approaches. Arcola appears in the positively impacted column

[27]U. S. Army Corps of Engineers, *Shelbyville Reservoir, The Master Plan*, p. 39.

Figure 10. Hypothetical Visitor Expenditures Per Day



of all three matrices in both methods, which is a possible coincidence of its location on the interstate. The influence of summer driving could cause its retail sales to follow trends much the same as seasonal visitation at the lake. It is also possible that Arcola is benefiting from recreation expenditures made enroute to the lake. Its B_1 coefficient in Equation 1 is $ .23. Whether the lake is a causal factor or the similar trends are a coincidence, it appears that an interchange location can benefit a town as much as the recreation development around Lake Shelbyville has benefited those impacted towns.

Furthermore, it is clear that the predictions of expenditures to be made by recreationists in the area around Lake Shelbyville were far in excess of what has actually taken place. The most conservative estimate of expenditures was a $15 million-per-year prediction made by the Corps of Engineers. Our best estimate of annual expenditures is between $2 million and $4.2 million.[28]

THE IMPACT OF RECREATIONISTS ON LOCAL GOVERNMENT FINANCE

The impact of recreationists on local government finance was not given a significant amount of attention in predictions of lake-induced impacts. It was apparently assumed that local government would benefit from the lake-induced economic development, that is to say, lake-induced benefits would outweigh lake-induced costs. However, in the absence of substantial economic development to generate revenues, local governments have been hard pressed to provide services to recreationists. Subsequent discussion will examine local government revenues and costs associated with Lake Shelbyville.

Local Government Revenues

In terms of reservoir-induced impacts on local government finance, it is important to look at changes in property assessments, motor-fuel-tax revenues, income-tax receipts, and payments in lieu of taxes.

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[28]This prediction is based on 3 million visitor days of visitation and an average expenditure per visitor day of between $0.68 and $1.40.

The transfer of land purchased for Lake Shelbyville and related developments from private to public ownership removed it from the local tax rolls. The land acquired for the reservoir included 17,552 acres in Moultrie County and 16,856 acres in Shelby County. If these lands had been on the tax rolls in 1975, government jurisdictions in Moultrie County would have received $78,667 in tax revenues from land owners, while government jurisdictions in Shelby County would have received $69,424 in taxes (Table 21).

It is not clear that these losses were offset by increased valuation of nearby holdings. The growth in assessed valuation of lands and lots in lake townships during the period 1965-1975 was not consistently greater than that for other townships in Moultrie and Shelby counties (Table 22).

Local residents expressed considerable concern over the loss in local tax base due to acquisitions for the lake and the related greenbelt and recreation areas. Prominent in this concern was the foregone tax revenues that would have been obtained from farming or lake-related residential developments on these areas.

Concern for the lake's impact on the local tax base and local agriculture was evident in an effort by Moultrie County to have the Corps of Engineers and State of Illinois lease lands acquired for the project to local farmers.[29] A resolution passed by the Moultrie County Board of Supervisors indicated that some acquired lands were neither flooded nor developed and were "left idle." These lands were said to be growing noxious weeds that were spreading to neighboring fields. The lands were also thought to pose a very serious threat of fire to the community. It was recommended that the lands be leased to local farmers for pasturing livestock. These farmers would then pay an "appropriate tax" to the county.

[29] Moultrie County Board of Supervisors, minutes for July 9, 1974.

Table 21. Private to Public Transfer of Land
Moultrie and Shelby Counties

	Acres Lost	Assessed Value	Assessed Value 1975 Dollars	Tax Rate 1975 (per $100)	Estimated Tax Revenue Lost 1975
Moultrie County	17,552	$1,442,365	1,967,386	.5375	$10,575
Sullivan Tsp.	10,014	780,215	1,064,213	.6903	7,346
Whitley Tsp.	639	46,690	63,685	.7977	508
Marrowbone Tsp.	3,014	272,720	371,990	.8895	3,309
East Nelson Tsp.	3,885	342,740	467,497	1.3201	6,171
Sullivan FPD.	13,804	1,076,712	1,468,635	.3408	5,005
Windsor FPD.	639	46,690	63,685	.1072	68
Bethany FPD.	3,014	272,720	371,990	.1250	465
School Dist. 301	3,837	349,167	467,264	2.4000	11,430
School Dist. 300	12,202	951,756	1,298,195	2.1584	28,020
School Dist. 1	90	6,570	8,961	2.5191	226
School Dist. 2	1,423	110,994	151,396	2.2044	3,337
Jr. Coll. Dist. 517	12,292	1,007,944	1,374,836	.1605	2,207
Shelby County	16,856	842,800	1,750,158	.6546	$11,457
Shelbyville Tsp.	3,322	166,100	344,923	.8284	2,857
Windsor Tsp.	3,815	190,750	396,111	.8752	3,467
Todd's Point Tsp.	881	44,050	91,474	.7147	654
Okaw Tsp.	8,838	441,900	917,650	.5738	5,265
Windsor FPD.	3,815	190,750	396,111	.1072	425
Shelbyville FPD.	6,979	348,950	724,630	.1577	1,143
School Dist. 1	3,435	171,750	356,656	2.5191	8,985
School Dist. 2	6,137	306,850	637,205	2.2044	14,047
School Dist. 4	7,284	364,200	756,298	2.4217	18,315
Jr. Coll. Dist. 517	16,856	842,800	1,750,158	.1605	2,809
				Moultrie Total	$ 78,667
				Shelby Total	69,424
				Grand Total	$148,091

This table was compiled by David L. McLaughlin, Institute of Government and Public Affairs, University of Illinois at Urbana-Champaign.

Table 22. Growth in Assessed Value
Moultrie and Shelby Counties by Township, 1965-1975

Impacted			Nonimpacted		
Township	County	Percent Change Lands & Lots	Township	County	Percent Change Lands & Lots
Sullivan	Moultrie	+ 12.0 %	Oconee	Shelby	+ 11.6 %
Marrowbone	Moultrie	+ 6.0	Sigel	Shelby	+ 9.3
Windsor	Shelby	+ 5.3	Dora	Moultrie	+ 7.0
Okaw	Shelby	+ 5.2	Lowe	Moultrie	+ 6.8
Shelbyville	Shelby	+ 4.4	Mowequa	Shelby	+ 6.1
Todd's Point	Shelby	+ 2.9	Jonathan Creek	Moultrie	+ 5.9
East Nelson	Moultrie	+ 2.2	Lovington	Moultrie	+ 4.6
Whitley	Moultrie	+ 1.2	Tower Hill	Shelby	+ 3.7

Moultrie County + 6.9%

Shelby County + 4.9%

Compiled by David L. McLaughlin, Institute of Government and Public Affairs, University of Illinois at Urbana-Champaign.

A December 6, 1973, letter from Congressman William Springer to the Chief Of Engineers highlighted the local problems created by a loss of tax base. Congressman Springer discussed the possibility of a local committee developing a plan for "acquisition and operation of certain land" in order to make certain that a sufficient amount of land "which might otherwise lie idle will be available for residential development to meet the needs of the local municipalities." The local concern that prompted Congressman Springer's inquiry was primarily with the availability of land for residential development.[30]

The property-tax loss associated with land acquisition for Lake Shelbyville continues to be a major concern in the local area. During the summer of 1976, a proposed change in the distribution of federal payments in lieu of taxes was discussed on the front page of the *Moultrie County News*. The article pointed out that county governments "are stuck with the bill" for emergency medical aid, law enforcement, and road repairs in and around federal lands. It further indicated that much of the lake-induced tax income does not return to the local area.[31]

The proposed revision in payments in lieu of taxes would have amounted to a $13,000-per-year payment to Moultrie County. However, one local newspaper writer observed that this amount was not large and indicated that "I doubt that the county can train, pay, and maintain one deputy sheriff on patrol in the lake area for a year for that money."[32]

To help ease the tax losses experienced by townships in which land was purchased by the Corps of Engineers, the Moultrie County Board decided to pay the lease monies returned by the Corps of Engineers to the townships that experienced the loss.[33]

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[30]Congressman William L. Springer to Maj. Gen. W. K. Wilson, Jr., December 6, 1963.

[31]"Feds May Reimburse For Lost Tax," *Moultrie County* (Illinois)*News*, August 19, 1976.

[32]"BB's", *Moultrie County* (Illinois) *News*, August 19, 1976.

[33]Moultrie County Board of Supervisors, minutes for May 10, 1966.

The loss in local revenue associated with the acquisition of lands for Lake Shelbyville and the associated natural and recreational areas was particularly significant in light of the small amount of recreation-induced revenues that local governments received and the increase in service requirements brought about by recreationists.

Motor-fuel tax revenues generated in the area are likely to increase as a result of increased recreation activity, but the formulae for allocating motor-fuel tax revenues to the local area are unlikely to return the increase to local government. Motor-fuel tax allocations to county governments (with a popualtion of less than one million) are based on motor-vehicle license fees received during the previous calendar year. Distribution of funds for a township or road district is based on township or district road mileage. Distribution of funds to municipalities is based on population. It is not likely that the influx of recreationists into this area will have a significant impact on local motor vehicle license fees, township road mileage, or municipal populations. Consequently, the additional motor-fuel tax revenues generated will not be returned to the local area, but distributed over the state.

Allocations of state-income-tax receipts to counties and municipalities are based on population. Thus, since recreation opportunities at the lake have not increased local populations, we would not expect an increase in local funds from the state income tax as a result of the influx of recreationists.

There is likely to be a recreation-induced impact on local revenues derived from the sales tax. Counties and municipalities may each levy a 1% sales tax within their respective boundaries for their own use. The tax is collected by the state and returned to the municipality or county where collected. Thus, for every dollar spent by recreationists in the local area, slightly less than $.01 (administrative costs are deducted) is returned to the municipality or county where that dollar was spent. Thus,

with the estimate of a $1.05 expenditure per visitor day, the municipality or county where it was spent would receive $ .0105 in sales-tax revenue returned from the state.

The Corps of Engineers distributes 75% of the revenues that it receives from leases to state government. These revenues are then allocated to the county where they were generated. With Lake Shelbyville the revenues from leases occur primarily from marina concessionaires. Funds are returned to Shelby and Moultrie counties from this source. The funds received by Moultrie County from this source were $10,286.71 in 1974 and $5,393.62 in 1975, and were expected to be $5,000 in 1976.[34] The revenues were higher in the earlier years because while the reservoir was being completed revenues were also returned from leases to farmers of recently-purchased areas (Table 23).

Local Service Requirements

While recreationists contribute to local businesses and sales-tax revenues, they also require local services. For recreationists drawn to the lake from other areas, the service requirements are only temporary and are in general not as great as for permanent residents. However, recreationists who live elsewhere do not pay local property taxes, and their contribution to local government revenues available for providing the services may be very small.

It is clear from the discussion earlier in this chapter that Lake Shelbyville has not brought an economic boom to the area. The resulting recreation-related development has not brought large increases in revenue to local governments. At the same time there was at least a temporary loss in the assessed valuation resulting from the transfer of land to federal ownership, where it is not assessed or taxed. It has,

[34]"Feds May Reimburse."

Table 23. Corps Payments of Lease Rent Rebate to Moultrie and Shelby Counties, 1965-1974

Moultrie County		Shelby County	
Year	Amount	Year	Amount
1965	n.a.	1965	$ 6,224.34
1966	n.a.	1966	14,585.36
1967	n.a.	1967	13,810.33
1968	n.a.	1968	2,823,85
1969	n.a.	1969	2,371.65
1970	n.a.	1970	1,205.98
1971	$ 1,916.82	1971	600.00
1972	10,639.37	1972	4,000.00*
1973	10,268.71	1973	4,402.55
1974	5,411.62	1974	7,049.79
TOTAL	$28,265.52	TOTAL	$57,073.85

* This figure is approximated from Shelby County's record of disbursements. The exact figure for 1972 was not in the Shelby County Board minutes.
n.a. indicates data not available.
Sources: Moultrie County Clerk
Shelby County Board, *Record of Proceedings*

Compiled by David L. McLaughlin, Institute of Government and Public Affairs, University of Illinois at Urbana-Champaign.

however, been necessary for local government to provide services for recreationists. Increased needs for road maintenance and improvement, police protection, and search and rescue have presented problems to local governments. These problems have been particularly difficult because of the limited amount of recreation-related revenue that has been received by local governments and the need for a substantial amount of intergovernmental cooperation.

Roads

Local roads and bridges have been the focus of a significant lake-related issue. The local road system was disrupted by lake construction. The roads and bridges affected provided critical access to urban centers, fields, and markets. The number of bridges to be constructed across the lake became an important issue. The original plan for Lake Shelbyville called for the loss of eight township bridges that formerly crossed the river.

Actions by the Moultrie County Board of Supervisors underscore the local importance of bridges. On March 8, 1966, the Moultrie County Board of Supervisors passed a resolution asking the Corps of Engineers to consider incorporation of the Stricklin and Coleshaft Bridges into the Shelbyville Project.[35] The County Board also wrote a letter to Mr. Raymond Baker of the U. S. Army Corps of Engineers in support of the two bridges. The letter documented a number of needs for the bridges, including connecting the city of Sullivan to the areas which it traditionally served with business and community services such as schools, churches, and fire and emergency vehicles, as well as the ordinary transportation needs for farming and safety.[36] Congressman Paul Stone also wrote a strong letter to Senator Paul H. Douglas in support of the bridges.[37]

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[35]Moultrie County Board of Supervisors, minutes for March 8, 1966.

[36]Moultrie County Board, M. J. Wimmer Chairman, to Mr. Raymond Baker, U. S. Army Engineer District, St. Louis, June 23, 1966.

[37]Congressman Paul Stone to Senator Paul H. Douglas, October 24, 1966.

The Corps of Engineers argued that the requested bridges were not cost effective. That is, the expected costs were seen as outweighing the expected benefits.[38]

However, the Coleshaft Bridge was subsequently included in the project and constructed. Local interests continued to fight for construction of the Stricklin Bridge, but were unsuccessful. The strong local support for the bridge is indicated by a resolution of the Moultrie County Board, which appropriated $100,000 from the County Bridge Fund "to accomplish the construction of the Stricklin Bridge in cooperation with the Corps of Engineers and State of Illinois."[39]

After construction of the lake, heavy recreation traffic posed a problem to local government. Local roads leading to recreation areas were subjected to heavy traffic, increasing the maintenance costs. The maintenance for many of these roads was the responsibility of townships. To ease the burden that this placed on townships, Moultrie County designated some township roads leading to recreation areas as county highways and assumed the maintenance efforts on these roads.[40] The county board resolution authorizing the action indicated that it was necessary because "certain commercial, recreational, and government developments in and near the Shelbyville Reservoir area are of vital importance to the economic stability and future growth of Moultrie County...."[41]

After considerable concern among recreationists and local residents over the condition of the roads leading to recreation areas, a cooperative effort to upgrade the roads was undertaken, involving the Corps of Engineers, State of Illinois, and county and township governments. The Corps of Engineers agreed to make funds available for the construction (widening and

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[38]Colonel Edwin R. Decker to Mr. Renna C. Taylor, October 21, 1966.

[39]Moultrie County Board, Resolution Book 115A, p. 40, December 10, 1969.

[40]Moultrie County Board of Supervisors, minutes for May 10, 1966.

[41]Moultrie County Supervisors, Moultrie County Supervisors Supplementary Book 115, p. 64.

relocating) of improved access roads, provided that local governments would purchase the needed right-of-way. Moultrie County subsequently acquired the right-of-way, but Shelby County did not, indicating that the funds were not available. The delay in acquiring right-of-way in Shelby County prompted a letter from the District Engineer to the chairman of the Shelby County Board of Supervisors concerning the county's plans.[42]

Shelby County officials subsequently brought the matter to the attention of their representatives in the state legislature, who sought state funds. The request was for $100,000 to purchase right-of-way to permit the widening of roads leading to lake-access areas. The impetus for the request from Shelby County was that $500,000 in Corps of Engineers funds for actual construction of improvement access roads was contingent on purchase of the right-of-way and local government did not have the funds available for that purchase. Since Moultrie County had previously spent $72,393.94 to purchase right-of-way, reimbursement for that amount was subsequently requested. The 1976 funding bill for the Illinois Department of Transportation provided for the $100,000 for Shelby County and $72,393.94 for Moultrie County.[43]

When the appropriation was approved, *The Findlay Enterprise*, a local newspaper, ran a picture of a road leading to the Coon Creek access area and indicated that "it is hoped that wash board roads like this one on the way to Coon Creek will soon be a thing of the past."[44]

A subsequent editorial in *The Findlay Enterprise* praised the state action and indicated that state and federal government should "be responsible for roads leading to their projects when they are built in remote areas." It further indicated that the "federal government, through the Corps of Engineers, has been more responsive to this argument than has the State of Illinois."[45]

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[42]Colonel Thorwald R. Peterson to Mr. Harvey Matheny, March 11, 1976.

[43]"State Funding Roadway Costs," *Moultrie County* (Illinois) *News*, July 15, 1976.

[44]"Road to Coon Creek," July 15, 1975.

[45]"[illegible]

The need for funds to improve access roads was an important topic of discussion with the Moultrie County Board of Supervisors. An interesting perspective on the issue was brought up in the county board meeting of April 14, 1976. One member made two suggestions for resolving the problem: (1) tax the people who use the roads for recreational purposes and (2) check into the "set back" line (greenbelt) that has been established by the Corps to see if it could be changed so homes could be built on the shoreline. This change was expected to bring in "a lot of additional revenue to the townships that they need for roads."[46] These suggestions underscore the fact that local government was being asked to provide services without receiving revenues to cover the cost of these services.

Police and Search and Rescue

Recreationists also brought increased requirements for police and search-and-rescue services. The influx of visitors at Lake Shelbyville prompted a "task force" approach to law enforcement, the Shelbyville Lake-Land Patrol. The patrol was a combination of the sheriffs' departments of Shelby and Moultrie counties.[47] It provided additional equipment and personnel and was funded, in part, by a grant from the Illinois Law Enforcement Commission.

The request that obtained the grant was made in January 1972. The request was prompted by the high rate of visitation in 1971 when only one-half of the lake facilities were open (the facilities in Shelby County). More than twice as much recreation activity was expected for 1972.[48] An application for a similar grant had been turned down by the Illinois Law Enforcement Commission one year earlier.

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[46]Shelby County Board of Supervisors, minutes for April 14, 1976.

[47]The city of Shelbyville rescinded its resolution to participate in the Shelbyville Lake-Land Patrol Application, January 3, 1972. It had participated in an earlier attempt at obtaining funds to support police and search-and-rescue efforts.

[48]Shelbyville Lake-Land Patrol, A grant application submitted to the Illinois Law Enforcement Commission January 15, 1972.

The grant was approved, and in 1972 the Shelbyville Lake-Land Patrol operated under a budget of $82,022.52, of which $62,274.69 (75%) was provided by the Illinois Law Enforcement Commission.[49]

The responsibility for police protection in the area around the lake had fallen squarely on the two counties. State police, the Corps of Engineers, and the Illinois Department of Conservation also had responsibilities in the area, but were unable to meet the need.

The Law Enforcement Division of the Department of Conservation is the paramount authority concerned with the enforcement of the Illinois Boat Registration and Safety Act. In carrying out that charge, the Department of Conservation conducted a 16-hour patrol of the water and solicited the assistance of the Moultrie County authorities in the patrol effort. The patrol is concerned primarily with enforcement of the state statutes applicable to the registration, equipment, and operation of motorboats.[50] Officials of the Department of Conservation also have enforcement responsibility for fish and game laws applicable to the lake as outlined by state statutes.[51] The Department of Conservation and Corps of Engineers have formulated a memorandum of understanding resulting in an administrative order which broadens the jurisdiction of the Department of Conservation officials to allow the enforcement of regulations that are mutually beneficial.[52]

While the Corps of Engineers employs several rangers at Lake Shelbyville, they are not law-enforcement officers. The rangers have citation authority that extends to swimming, camping, and pollution violations, and also for boating and hunting violations in those areas not currently

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[49] Illinois Law Enforcement Commission, Audit Report, 1972 Federal Action 2-02-15-0406-01, Shelbyville Lake-Land Patrol.

[50] Wm. D. Miller, Chief, Law Enforcement Division of the Department of Conservation, to Arthur S. Bilek, Chairman Illinois Law Enforcement Commission, July 14, 1971.

[51] U. S. Army Corps of Engineers, *The Master Plan*, p. 27.

[52] Ibid.

enforced by the Illinois Department of Conservation. The Corps looks to the county sheriff departments for assistance in all phases of law enforcement, including vandalism, drownings, civil disturbances, and petty crimes.[53] The County Sheriff's Office provides patrols of all project lands and responds when summoned by Corps personnel. This office also assumes the primary responsibility for enforcement of state and local laws on project lands lying within its respective county.

The state police were unable to allocate additional men to Lake Shelbyville. In fact, it was necessary to "pull men from Moultrie and Shelby County area to augment our forces on the interstate system and around large city outskirts."[54] State police officers have the authority for enforcement of state laws on all project lands by patrol or rendering assistance when requested by the County Sheriff's Office.

The Shelbyville Lake-Land Patrol was originally funded by the Illinois Law Enforcement Commission for one year, starting on March 24, 1972, but it was extended until August 1, 1973.[55] In August 1973 the Illinois Law Enforcement Commission awarded $18,545 for continued funding of the Shelbyville Lake-Land Patrol (until July 31, 1974). The extension was, however, subject to a number of stipulations with respect to: continuing employment of deputies hired under the grant for a period of one year beyond the funded period, training requirements,and the implementation of a county-wide merit system.[56] Shelby and Moultrie counties subsequently decided not to accept the grant.

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[53]Colonel Carroll N. LeTellier, District Engineer, U. S. Army Corps of Engineers, to Mr. Arthur S. Bilek, Chiarman, Illinois Law Enforcement Commission, May 24, 1971.

[54]Captain William V. Mosher, Commander, District 10 Illinois State Police, to Arthur S. Bilek, Chairman, Illinois Law Enforcement Commission, October 1, 1971.

[55]Nick J. Dragash, Supervisor of Grants Monitoring, Illinois Law Enforcement Commission, to Emory Simpson, Chairman, Shelbyville County Board of Supervisors, March 20, 1973.

[56]David Fogel, Executive Director, Illinois Law Enforcement Commission, to Mr. Phillip Best, Chairman, Moultrie County Board, August 2, 1973.

It is interesting to note that the grant application indicated that the need for financial assistance was only temporary. "At present, the taxable land acreage removed by the lake and surrounding areas amounts to 34,560 acres...This totals to be a 4.5% loss in taxable land. Within a matter of years, however, the revenue derived from sales taxes and real estate will enable the two counties to entirely support a program such as this."[57]

As part of the task-force approach to law enforcement, a meeting was held February 2, 1971, at the Sullivan Country Club to gather all possible resources for safety and law enforcement. Representatives from the following organizations were present: Civil Defense, Moultrie and Shelby County Sheriffs' Departments, marina owners, Moultrie and Shelby County Board, FBI, Corps of Engineers, Department of Conservation, and fire and rescue units from both counties.

A committee was formed by the two counties, the Corps of Engineers, and the Department of Conservation to maintain an open dialogue for discussion of problems, including those of law enforcement.

Considering the limited emergency resources of Shelby and Moultrie counties, the city of Shelbyville established, in cooperation with its local fire department, a rescue force composed of sixteen volunteer members. These members are ready and available for emergency rescue operations concerning accident or swimming victims. A van was acquired by the squad and equipped as needed, involving the use of an 18 ft. rescue boat and an air compressor. The men on the rescue force are able and qualified to perform emergency actions upon notice. Five of the members are certified divers, and two are qualified medical personnel who have completed specialized

[57]Shelbyville Lake-Land Patrol.

medical training in the armed forces. An agreement has been made between this force and the Moultrie County rescue squad for mutual aid in time of need.

The Moultrie County Fire and Rescue Department purchased a fully equipped $15,000.00 rescue vehicle custom designed by the fire chief, to be used in accident and rescue situations. This van has been used to remove victims from vehicles. The emergency vehicle has the capacity to carry five patients while major first-aid care is administered.

The twenty-nine-man volunteer force who assists in emergencies and accidents also composes the volunteer fire department. All of these men have participated in advanced first-aid courses, and seven are certified scubadivers. They have all had experience with drowning victims. A special alarm system has been devised for these volunteers in that each of their home phones ring simultaneously with the alarm and phone system in the fire department.

The Moultrie County and Shelbyville rescue and fire departments have contributed and shared training programs in the field of fire fighting and rescue work. This training has taken place in the form of lectures, films, demonstrations, and drills.

Moultrie County also has the services of a local civil defense unit who can supply assistance such as generators, radios, and manpower. The department makes use of a twenty-five-man auxillary force which engages in a workshop training program once each month and uses the instructive resources of state police and training films.

The sheriff of Moultrie County has access to a 40-member horseriding club who have offered their services as a search party. Two searches have been conducted by the sheriff and the club, and the lost victims were found within a matter of hours.

Initially local search-and-rescue personnel recovered lost articles from Lake Shelbyville. The items recovered ranged from automobiles that rolled off boat-launching ramps to false teeth dropped into the lake. However, with the approval of the fire district trustees and the Moultrie County Board, the volunteer firemen from Sullivan Fire District stopped recovering these items during the summer of 1976. Such efforts are now handled by commercial divers, of whom there are several in the area.[58]

Thus far local residents have experienced the following recreation-related impacts: the influx of large numbers of individuals from other areas, some additional expenditures, and some increase in service requirements. They have recently received aid from the Corps of Engineers and State of Illinois in upgrading roads leading to recreation areas. The State of Illinois also provided some assistance in law enforcement.

It appears that roads and law enforcement are two major problems that local governments face. The aid that local governments received in both areas appears to have come rather late and under less-than-ideal circumstances. Both problems are inevitable under the institutional structure of Illinois government.

It would seem appropriate to make such aid an integral part of project planning. The failure to do so caused a considerable amount of local resentment, and lake users were subjected to traveling on extremely poor roads. These problems involve some very complex intergovernmental interractions involving several levels of government and a number of government agencies.

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[58]"BB's," August 26, 1976.

There appears to be a clear case for state and federal assistance here because local governments are providing services to nonresidents and are not receiving sufficient revenues to pay for these services. Such payments would relieve local burdens and improve the services available to lake users. This case is particularly strong in situations like Lake Shelbyville, where large numbers of recreationists are attracted to a rural area and there are few recreation-related increases in the financial resources available to local governments.

SUMMARY

Since the completion of Lake Shelbyville, many of the benefits sought by its supporters have materialized. At the same time, there have been disappointments--i.e., the failure of some anticipated benefits to materialize and the emergence of unanticipated problems.

Expected industrial development has not materialized. At present, there are no industrial or municipal withdrawals of water from the lake.

The expected increase in local populations has not materialized, and it is clear that Lake Shelbyville has not had a major impact on trends in the local population. Similarly, it appears that the lake has not had an impact on per capita income in Shelby and Moultrie counties.

Use of public facilities at Lake Shelbyville for recreation has come close to expectations. However, private developments, including second and vacation homes, resorts, etc., have lagged far behind expectations, as have expenditures by recreationists in the local area. The presence of recreationists from other areas has created a number of conflicts with local residents.

In the absence of substantial economic development to generate revenues, local governments have been hard pressed to provide services to recreationists. Road and law enforcement have been two major problems

faced by local governments. They have received financial aid from the Corps of Engineers in upgrading roads leading to lake access areas. The State of Illinois has provided funds for purchasing right-of-way for roads and for providing law enforcement and search-and-rescue services.

The financial aid has come rather late and under less-than-ideal circumstances. It would seem appropriate to make such aid an integral part of project planning and implementation.

6 SELECTED LOCAL ISSUES

The construction and operation of Lake Shelbyville has presented new opportunities, problems, and challenges for local residents. It was indicated earlier that the multipurpose nature of Lake Shelbyville contributed to widespread support for its construction. However, now that the lake and related facilities are in operation, it has become apparent that satisfying local expectations concerning the lake's many purposes is indeed a challenge. Meeting that challenge requires the coordinated efforts of a number of public and private groups, including many public agencies and units of government. These groups must now deal with two difficult issues of significance to local residents. Both issues focus, at least in part, on use of the lake by recreationists.

The first issue deals with regulation of the lake level, one of the major decisions that can be made (now that the lake is in place) to influence the magnitude of distribution of the lake's benefits. This issue centers around the tradeoffs between recreation and flood control benefits. The second issue concerns the extent of future recreation development. At issue is the extent of public and private development, its local impact, and the appropriate local policies toward future developments and impacts. The issue has significant implications for local government planning.

WATER LEVEL REGULATION

The regulating policy for Lake Shelbyville has a significant impact on the benefits generated by the lake and downstream portions of the river. Consequently, the issue has created a great deal of conflict among downstream farmers, the Corps of Engineers, the State of Illinois, marina operators, local government, recreationists, and others. Opening of the Kaskaskia Navigation Project in 1978 promises to bring downstream transportation-industrial interests into the debate.

Regulation of Lake Shelbyville has proven to be a very difficult task. Major complicating factors have included engineering problems, high levels of expectation by local residents, and unusual rainfall. From the engineering standpoint, it has become apparent that the downstream channel capacity below Lake Shelbyville is 1800 cfs rather than the expected 4,500 cfs.[1] This restricted capacity seriously hampers the regulation policy since less water can be released at one time than was previously planned, with important implications for the lake level. To further complicate regulating procedures, 1974 was a time of unusually heavy precipitation, which, coupled with the lower-than-expected channel capacity, resulted in flooding upstream and downstream from the reservoir. In response to this problem, the lake was held low for a prolonged period in the spring of 1976. Unusually low rainfall in the spring and summer of 1976 resulted in the lake's staying at a low level during both seasons. The result was exposed mudflats, shallow water, and, in a least one case (Fox Harbor), hampered operation of a marina.

The evolution of the regulation issue began with downstream farmers responding to unacceptable flood damage in their fields along the Kaskaskia below Lake Shelbyville. In August of 1974, farmers in the Vandalia area below (downstream from) Lake Shelbyville and above (upstream from) Carlyle Lake began to react against the operating procedure of Lake Shelbyville, which they felt was not providing adequate flood protection for their land. Contacts were made with their local congressman, Melvin Price, who in turn approached the U. S. Army Corps of Engineers. The subsequent engineering changes brought about by this complaint are indicated in the following excerpt from Colonel Thorwald Peterson's response to Congressman Price's inquiry:

> The regulation procedures used during the dormant seasons of the past are being changed to eliminate long periods of high releases as have existed during the past two winters. This will result in near natural conditions for small scale floods but still provide protection against

[1] K. D. Singh, John B. Stall, and Carl Lonnquist, *Analysis of the Operation of Lake Shelbyville and Carlyle Lake to Maximize Agricultural and Recreation Benefits* (Urbana, IL: Contract Report, Illinois State Water Survey, [1975]).

> the larger floods. This should eliminate complaints of bankwash, and as the farming community has agreed not to plant the bottoms in the fall, winter wheat loss should be eliminated.
>
> To provide additional protection during the growing season, the time at which the full summer pool is regained from winter drawdown has been delayed from 1 April to 1 May.[2]

Thus one local group (in this instance led by the William Scribner family from Vandalia) achieved part of its objective. Note, however, that they agreed not to plant winter wheat on bottomlands in the fall. However, the alteration in regulatory policy affected refilling of the reservoir pool and thus created more potential for conflict with other uses and user groups. More downstream conflict was to come. By September of the same year, the Scribners were again upset with the flood protection that they were receiving and once again contacted Congressman Price:

> In my opinion, Colonel Peterson could be awarded a blue ribbon for the snowball job he made an attempt at, in his letter to you. [3]

Mrs. Scribner was writing because by the 28th of August heavy rains had fallen and again the downstream farming community failed to receive expected flood protection. As Mrs. Scribner went on:

> We would have handled the rain God sent us, with no damage, but we could not handle the extra water the Corps sent us without damage to many farmers. [4]

Congressman Price again contacted the Corps of Engineers, and the Corps' response in altering their engineering procedure was detailed by Colonel Peterson:

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[2]Colonel Thorwald R. Peterson to Honorable Melvin Price, August 21, 1974.

[3]Beatrice Scribner to Honorable Melvin Price, September 4, 1974.

[4]Ibid.

> The new regulating procedures, described in my letter of 21 August 1974, will include cutting back Lake Shelbyville releases during periods of heavy precipitation if conditions allow. While these cutbacks cannot be made on the basis of rain forecasts only, (as the Scribners requested) they will begin as early as information becomes available on significant widespread precipitation in the basin. 5

But the downstream farmers had learned a lesson about protecting their economic interests, and on September 19, 1974, they institutionalized their efforts by forming a not-for-profit corporation, the "Mid-Kaskaskia Basin Coalition, Inc.," which, according to the original articles of incorporation, had as its purposes:

> To control, maintain, improve and promote better flood control and water management in the Mid Kaskaskia River Basin; to promote and improve soil management and to prevent erosion of soil; to promote the development, establishment and expansion of the environment; to promote and develop mutual understanding among concerned groups; and to establish and provide civic and social improvements. 6

By the time the organization published its first newsletter on March 15, 1975, the 200th member had joined the organization.[7] The second newsletter in April 23, 1975, indicates that contacts had been made with other groups interested in water-resource and energy-development projects and that the Army Corps had installed staff guages on the Scribner farm,

> ...for the purpose of getting more accurate reading of rivers use. When there is a flood possibility, I [William Scribner] will read and relay the gauge readings to the Corps in St. Louis.8 [the district office]

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[5]Colonel Thorwald R. Peterson to Honorable Melvin Price, October 4, 1974.

[6]Illinois, Mid-Kaskaskia River Basin Coalition, *Charter of Incorporation*, March 16, 1974.

[7]Mid-Kaskaskia River Basin Coalition, Inc., *Newsletter No. 1* (Vandalia, Illinois: March 15, 1975).

[8]Idem, *Newsletter No. 2*, April 23, 1975.

On July 30, 1975, the organization was able to report the following major accomplishments:

> The most outward effect is being seen daily in the Kaskaskia River Basin: green healthy crops are growing in fields once rendered unproductive farmland due to constant flooding. This is the first year the U. S. Army Corps of Engineers has administered Shelbyville Dam in such a way to allow the water table of farmlands (to) remain at a low level as Mother Nature intended. Due to this low water table, some tiling systems, drainage ditches and streams are draining the fields. Tiling systems with heavy silt deposits remain not functioning. 9

By December 1975 the downstream group seemed to have come to terms with the project--after some five years of operation. The farmers had negotiated with those making physical engineering decisions and had agreed to give up the planting of winter wheat in exchange for a modified regulatory policy. In the interim, heavy damages had occurred to adjacent farmlands and tile drainage systems. Local farmers were convinced that the Corps of Engineers was responsible for this damage. With the change in regulatory policy, recreationists upstream (who were not organized) had to wait another month each year before the pool could be safely filled without risking unacceptable damage to downstream farmlands. Yet the physical and social forces had finally reached some sort of uneasy compromise. The Mid-Kaskaskia River Basin Coalition's newletter reports:

> At this meeting (September 15, 1975) Col. Peterson agreed to withhold the discharge from Shelbyville Dam when possible to give farmers every opportunity to harvest crops. Almost everyone had a successful harvest with the exception of some farmers with low lying lands which did not yield as well as hoped. This was due to water logging and an acidity condition from continuous flooding during the past several years. To correct this condition some farmers are subsoiling these low lying farms. 10

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[9] Idem, *Newsletter No. 3,* July 30, 1975.

[10] Idem, *Newsletter No. 4,* December 15, 1975.

The Coalition was further able to report a positive response by the Corps of Engineers to the flooding problems experienced by one member in the Shobonier area:

> Larry Meier, Manager of Shelbyville Dam, has since maintained close contact with me. When a storm front is forecast, the Shelbyville discharge gates are closed to a near minimum as quickly as possible.[11]

The Coalition still had some doubt about the adequacy of flood protection in that members were encouraged to contact their representatives and senators in an attempt to obtain a low-cost flood insurance in the future. By the end of 1975 the president was able to report to his 310 members:

> In my opinion, this coalition has been highly successful and effective in its first year. Col. Peterson has cooperated to the best of his ability to enhance farmers' chances of harvesting a good crop in 1975. Mr. Butery [head of the Corps reservoir regulation section] has informed me it is the plan of the Corps of Engineers to make every effort that the same be achieved in 1976 if possible. 12

On January 14, 1976, representatives of the Coalition met in Springfield, Illinois, with representatives of the Illinois State Water Survey, U. S. Army Corps of Engineers, and Illinois Department of Transportation. The result of that meeting was the mutually agreeable decision to operate the lakes in 1976 as they were operated in 1975. That method of operation proved to be very beneficial for farmers in the lowlands. As a part of the agreement, farmers are not to expect flood protection for wheat and other crops between the end of the harvest season and May 1 in order to allow the Corps to release great amounts of water as necessary to attain the desired low lake level by May 1.[13]

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[11] Ibid.

[12] Ibid.

[13] Idem, *Newsletter No. 5*, August 2, 1976.

The close cooperation between the Mid-Kaskaskia River Basin Coalition and the Corps of Engineers is reflected by the fact that on February 6, 1976, Mr. William M. Scribner, president of the Mid-Kaskaskia River Basin Coalition, Inc., was awarded a certificate of appreciation by the U. S. Army Corps of Engineers for assistance in the operation of Corps water-resources-management facilities.[14]

It is interesting to note that a group of farmers downstream from Lake Carlyle who were faced with similar problems with respect to flood protection also organized as a not-for-profit corporation. The Okaw River Basin Coalition [15] was formed on April 10, 1974, approximately one month after the Mid-Kaskaskia River Basin Coalition was incorporated. The purpose of the Okaw River Basin Coalition, as stated in its charter of incorporation, is very similar to that of the Mid-Kaskaskia River Basin Coalition:

> To control, maintain, improve, and promote better flood control and water management in the Okaw River Basin; to promote and improve soil management and to prevent erosion of soil; to promote the development, establishment, and expansion of the environment; to promote and develop mutual understanding among concerned groups; to establish and provide civic, political, and social improvement. 16

The successful efforts of the downstream farmers to maintain a particular pattern of flow on the Kaskaskia below Lake Shelbyville had an important impact on the lake level, bringing upstream interests into play. Whereas the heavy rainfall during 1974 initiated downstream involvement, the dry spring and summer of 1976 brought upstream interests into the

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[14] Ibid.

[15] Okaw is an old Indian name for the Kaskaskia.

[16] Illinois, Okaw River Basin Coalition, *Charter of Incorporation*, April 10, 1974.

debate over reservoir regulation. The flooding during 1974 had posed a problem to users of Lake Shelbyville and nearby residents but did not generate the concern voiced in response to the summer of 1976.

The downstream interests, particularly the Mid-Kaskaskia River Basin Coalition, were successful in getting the reservoir pool held at a low elevation for a longer period in the spring, providing additional storage capacity for spring runoff and consequently providing additional flood protection for downstream areas. This policy tends to delay the filling of the reservoir to the "normal pool" which is optimal for recreation. With the low rainfall in the spring and summer of 1976, the lake was six or seven feet below normal pool level for the entire summer season.

Recreational facilities on Lake Shelbyville are designed to operate under a variety of water levels. Campgrounds are located high enough on the banks to avoid damage by all but the highest lake levels. Boat-launching ramps are long, and boats can be launched over a wide range of water levels. Marina docks float and can adjust to a range of water conditions.

However, there is a limit to the extent that variations in water conditions can be accomodated. In this case, low water levels have seriously hampered operation of the Fox Harbor Marina, which is located on the shallow eastern arm of the lake. The marina operator has expressed concern that the Corps of Engineers had misled him with respect to reservoir operating policy. According to the invitation for proposals for the marina concession, the reservoir would be operated as follows:

> The pool level will be maintained at about elevation 600.0 during the summer and fall months as in the interim plan, but the winter draindown beginning about 1 December will lower the pool to about elevation 596.0. The pool will be raised dependent upon spring run-off beginning about

> 15 March to about elevation 600.0. The pool level will fluctuate depending on the inflow with levels below 590.0 expected during extended severe drought and levels above 600.0 during periods of heavy run-off. 17

Shallow water during 1976 seriously hampered marina operation. The boat-launching ramp was rendered useless by the low water.[18] Segments of floating docks (built on the assurance they would have enough water to float) broke when half became stranded high on shore with the other half floating in the water. A seawall built to accomodate as many as 30 boats semi-permanently not only has not had water deep enough for a boat to be tied to it but has remained several feet or more away from the water line. High water, even the extraordinary 1974 flood of 21 feet above normal pool, could be dealt with. Boats could be moored to trees and temporary walkways built out to docks, and shuttle boats could reach the larger craft. Even if the launch facility were totally submerged, the roadway leading down to the facility slopes to the water, and boats could be launched from the roadway.

During the spring of 1976, the Fox Harbor Marina faced sales off considerably from the previous year (not an especially good year, though certainly no disaster). In May of 1975 this facility did $14,746 of business, while in May 1976 it saw only $2,700 in sales. Fifty-nine boat owners refused to pay boat slip rentals after having already made deposits. Twenty-six boat owners refused to renew their spaces altogether. Although a channel had been marked from the facility to deeper water, boaters were unable to navigate it successfully, ending up in mud banks with the danger of drawing mud into engine intakes and causing damage. The owners of the facility considered a lawsuit against the Corps of Engineers for their regulation of the water level (i.e., for maintaining

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[17] "Invitation for Proposals for Lease of Real Property of the United States for Commercial Concession Purpose: Shelbyville Reservoir Project, Illinois," Invitation No. CIVENG-23-065-70-1, U. S. Army Engineer District, St. Louis, 906 Olive Street, St. Louis, Missouri 63101, September 10, 1969.

[18] Subsequent discussion of the impact of the low water level on operation of the Fox Harbor Marina is based on interviews with the marina operator conducted by Paul Opryszek during the summer of 1976.

it at a low level for so long). Their attitude was summed up by the statement, "We've been misled. Why did they let us go to this expense?"

Certainly the owners and users of the marina had gone to considerable expense. Yet there seemed to be little recourse for their grievances when the downstream coalition had so recently fought for and won the policy that was contributing to this damage. Still an attempt was made to change the policy through an influential member of the Kaskaskia Valley Association. The subsequent response from the Corps of Engineers to this attempt to mobilize the group's resources indicates that the group was far less successful than the downstream farmers had been in getting satisfaction:

> I am not sure at this time what we can or cannot do, however, rest assured we will do everything possible to assure the marina operators not experience too much problem with boats entering or leaving the marina. 19

The low water level also brought local businessmen and recreationists into the debate over reservoir regulation. The following exerpt from the *Moultrie County News* indicates concern over the regulating policy and recognition of the role that downstream farmers played in developing the current regulatory plan.

> There have been various reports on how much rain fell last weekend, but it probably was less than an inch. That was enough to make some miserable camping around the lake, but it was also enough to make some corn and bean fields look a lot better in a hurry. But in no way was it enough to raise the level of Lake Shelbyville. If it rains enough in June to raise the level of the lake 9 feet considering the dryness of the soil, we are all going to have web feet by the time Independence Day rolls

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[19]Col. Thorwald Peterson, District Engineer, to Mr. F. W. (Bo) Wood, April 29, 1975

> around. If you have a few thousand dollars invested in a boat, and you think that you are not getting benefits from your investment because you cannot operate the boat on Lake Shelbyville with ease and safety, we suggest that you drive down to Southern Shelby County and look at the cornfields in the bottom ground around Cowden and Herrick. As you admire the corn crop, consider that is why you don't have any water to boat upon. 20

A subsequent comment in the *Moultrie County News* indicates the belief that construction of downstream levees would enhance the management of Lake Shelbyville and increase the recreational benefits that it provides, while at the same time providing flood protection for downstream farmlands.

> The State of Illinois, thanks to Governor Walker's profligate spending tendencies, does not have an extra $5½ million to spend. And if it did, it would be better spent building levees on the Kaskaskia in the Cowden-Herrick area as promised in 1959 to allow management of Lake Shelbyville as it was designed to be managed. This would add greatly to the recreational benefits of Lake Shelbyville and would allow the hundreds of acres of fertile bottomlands in that area to be farmed to maximum productivity annually. 21

The *Moultrie County News* subsequently followed up on the need for downstream levees.

> In 1959 there was a firm commitment from the state to build levees and do other stream improvements downstream from the dam at Shelbyville so that Lake Shelbyville might be managed according to plan that had been worked out.

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[20] "BB's," June 3, 1976.

[21] "Our Legislature Deserves Thanks for Stopping Middlefork Raid," July 8, 1976.

> Here we are in the middle of July with the lake six feet low, one marina practically inoperative, hundreds of boats not being used because owners are fearful of tearing up the drive or bottom, and beaches so far above the water line that you need a taxi to get from the sand to the moisture.
>
> All this because the management plan had to be changed because the state did not keep a commitment. [22]

It is not presently clear what impact the levees would have on channel capacity and reservoir operation. It is, however, doubtful that they would have as large an impact as is implied in the above statement.

During the summer of 1976, the Corps of Engineers proposed a revised regulation plan where the lake would be kept at a higher level during the winter months. Under the plan, each year the Corps would begin lowering the lake to an elevation of 595.0 (previously 590.0) on October 1, begin raising the level to elevation 596.0 on February 1, and begin raising the elevation to 599.7 on May 1.[23] Thus the lake will be maintained at the minimum level that it reached in the summer of 1976.

In sum, the issue of regulating the lake level has been the focus of a significant amount of conflict. That conflict has focused on the tradeoffs between recreation and flood-control benefits and has pitted downstream farmers against recreation interests. The opening of the Kaskaskia Navigation Project promises to bring navigation interests into the debate. The issue was triggered by three major factors: 1) an overestimation of downstream channel capacity, 2) unusual rainfall, and

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[22]"BB's," July 15, 1976.

[23]"Lake Shelbyville to Stay at 595 Foot Level in Winter," *Moultrie County* (Illinois) *News*, July 22, 1976.

3) high expectations by local residents concerning flood control and recreation benefits stemming from reservoir operation. The issue has been dealt with by a number of changes in regulatory policy, but the lower-than-expected downstream channel capacity promises to be a continuing problem in regulatory policy. The issue is likely to emerge in unusually wet or dry years and may be intensified with the opening of the Kaskaskia Navigation Project. The navigation interests, like the downstream farmers, are well organized and likely to be a powerful political force. Subsequent debate may lead to organization of the recreation interests.

FUTURE RECREATION DEVELOPMENT

Local residents also face an important issue concerning recreation development that will be associated with Lake Shelbyville in the years ahead. At issue is the extent of public and private development, its local impact, and the appropriate local policies towards future developments and impacts. The issue has significant implications for local government planning.

Lake Shelbyville and the associated recreation facilities and natural areas provide the nucleus for a significant recreation attraction. The lake is the largest body of water in central Illinois, and the adjacent wooded slopes and recreation areas provide a highly desirable environment for a number of outdoor recreation activities. The lake is readily accessible to a number of large population centers. Thus there is significant potential for a large recreation development.

However, at the same time there are some characteristics of the local environment that have limited development. The lake is a fairly unique attraction in a region with limited recreation opportunities. Thus, while large numbers of visitors are drawn to the lake, they find a rather narrow range of opportunities, primarily public campsites. This limitation diminishes the desirability of Lake Shelbyville and the surrounding areas

as a destination for a long vacation. Areas that are recognized as "recreation regions" and are often destinations for vacations such as the Lake of the Ozarks in Missouri, the Door County Peninsula of Wisconsin or Copper County on the upper Peninsula of Michigan provide a larger set of recreation activities than currently exists in the Lake Shelbyville area.

Since there are few natural or scenic attractions located nearby, additional attractions would most likely have to be man-made and involve heavy capital investments. These untertakings are not likely to be highly attractive to investors because of the short season during which the lake is a major attraction. Winter sports are not common, and use of the lake and related resources is not heavy in the spring and fall. If resorts were built that catered to hunters and fishermen during the spring and fall, the season could be extended somewhat, but it could be very difficult and perhaps impossible to transform the area into a year-around complex.

The greenbelt around the lake is likely to have a significant impact on future recreation developments. All sites on the lake and essentially all areas adjacent to the lake or with a good view of the lake are in federal ownership. Developments on these areas are limited to concessions administered by the State of Illinois (with Corps approval), or the Corps of Engineers. Areas adjacent to the greenbelt are, for the most part, not highly desirable sites for recreation areas, and the land is highly priced because of its value for farm crops.

The scarcity of private recreation developments and supporting businesses (particularly resorts and overnight lodging) limits recreational use of the area and also tends to reduce the length of stay of visitors as well as the expenditures that they make in the local area. There have

been few private recreation developments completed in the area, attesting, in part, to some of the above problems, but also reflecting a general "downturn" in the economy. Thus, perhaps more development may be undertaken in the years ahead.

The challenge of having substantial recreation development at Lake Shelbyville is to convince Illinois residents to come to Shelbyville rather than go elsewhere, and also to attract tourists traveling through the state. If the above is to be accomplished, there must be a concerted effort to plan, package, and sell a quality experience to the traveling public. Such a program should appeal to the entire family with elements related to recreational, historical, and aesthetic interests. The area must be perceived as a "recreation region."

In order to develop a regional connotation, there must be a purpose. There are some areas that tourists recognize as a tourism-recreation region. In these areas the topography, scenic attractions, tourism services, and promotion have combined to make them identifiable regions.[24]

Clare Gunn indicates that the following are desirable criteria for a tourist-recreation region:[25]

1. It is a destination or travel-through objective of tourism-recreation users.
2. It is primarily a vacation and weekend objective and therefore located beyond the hourly or evening reach of most users.
3. It contains enough geographical unity to make it a definable entity.
4. It is accessible from one or more population concentrations.

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[24]Some previously-cited examples of recreation regions are: the Door County Peninsula in Wisconsin, Lake of the Ozarks in Missouri, or Copper County of the upper peninsula of Michigan.

[25]Clare A. Gunn, *Vacationscape: Developing Tourist Regions*, (Austin: University of Texas, Bureau of Business Research, 1972).

5. It is capable of supporting a regional organization with the purpose of development, promotion, and regulation.
6. It is broad enough to include more than a single community or major-attractions grouping.

It is clear that at present Lake Shelbyville and related developments do not meet a number of these criteria. The lake and surrounding areas are not a major destination for vacation travel. The lake is accessible to a number of population centers and there is considerable weekend and day use, but most visitors come from nearby areas and do not stay for long periods. The region is not a well-defined geographic entity. The lake is surrounded by a fairly narrow band of wooded slopes that adjoin extensive areas of cropland that is used primarily for row crops. Thus, the only really definable entity is limited to the lake and greenbelt. The area also lacks breadth of attraction, and the lake is essentially a single attraction.

There are some prospects for enlarging and broadening the recreational complex. The area's recreational attributes could be enhanced somewhat by emphasizing its historical heritage. It is close to "Lincoln Land," providing an important historical attraction that is yet to be capitalized on by promotional efforts aimed at Lake Shelbyville. The Amish and agricultural heritage of the area could also become attractions. Another approach to broadening the area's appeal would be to focus on a broader region, perhaps encompassing the three Corps of Engineers reservoirs in central Illinois, thus providing more reservoir-oriented opportunities but not significantly broadening the range of opportunities available because each reservoir has a similar set of recreation developments that emphasize camping and day-use activities. Unfortunately, such a regional focus would provide, to a considerable extent, "more of the same."

There is a substantial question of whether or not the region is capable of supporting a regional organization with the purposes of development, promotion, and regulation. The lake is located in two counties, one of which

(Shelby) is very large. Both counties are predominately agricultural. There has not been a strong cooperative effort between the two counties in the past, and few signs of change are evident. It is unlikely that a major regional organization will develop. The Kaskaskia Valley Association is no longer a major force in the area's development. The Lake Shelbyville Boosters are, in part, an effort to promote regional tourism, but that group has not had a major influence and is not highly active. In 1964 a regional magazine, *Kaskia*, was started with a focus on the Kaskaskia Basin, but lasted less than a year.

Local attitudes toward the desirability of recreation development at Lake Shelbyville will also have a significant impact on the potential for recreational development of the area. While it is difficult to identify local goals with respect to lake-related development, it is clear that there is not a strong local promotional effort under way. The Sullivan Chamber of Commerce is not highly visible from the standpoint of promoting recreation or tourism. The Shelbyville Chamber of Commerce operates an information center near Shelbyville Dam. During the summer of 1976 and 1977, the cities of Shelbyville and Sullivan were the focus of separate promotional advertisements on regional television (Channel 17 in Decatur, Illinois). However, a strong promotional effort is not being put forth to "package and sell" the Lake Shelbyville region.

This behavior is due, in part, to the predominately agricultural orientation of the area. Agriculture is the region's established industry; it is both a cultural heritage and a lucrative business. Increased tourism would be socially disruptive to the rural way of life and would compete with agriculture for local resources. Local leaders tend to discourage such competition. This attitude is most likely a reflection of perceptions that the benefits of such efforts may not outweigh the costs.

Local residents are aware of a number of problems that have been caused by recreationists attracted by the lake, including an increased need for road maintenance, search and rescue, and police protection. There has been little revenue generated to help pay for these services and only a limited amount of help from state and federal sources. At the same time, there has been some conflict between recreationists and local residents in that local residents have objected to the behavior of some recreationists.

Local residents and local government have exercised a certain amount of control over recreational development and its local socio-economic impact. Individuals have reacted to the availability of facilities and the business opportunities provided. Local government has also influenced lake-related development in a number of ways, including:

1. approval or disapproval of subdivisions, zoning changes, liquor licenses, etc. (Most of this control has been at the county and township level.)
2. the maintenance of roads leading to recreation access areas on the lake (Here again we find county and township governments at work with state and federal funds.)
3. the development of local recreation facilities
4. promotion of the lake and related facilities (Municipal chambers of commerce have been key forces here.)

In sum, while Lake Shelbyville is a significant recreation attraction, the following factors have tended to restrict recreation development: (1) management of the lake and related resources, (2) the local physical, biological and social environment, and (3) actions by local residents, government, and other groups.

Future recreational use of Lake Shelbyville and the surrounding area will depend on a number of variables, including:

1. the development of recreation facilities on the lake by the Corps of Engineers, State of Illinois, or concessionaires

2. the development of private recreation areas and facilities in nearby areas to serve recreationists
3. the character of the lake and related environment (Significant factors may include water quality, fishing success, and the character of the land-water interface.)
4. development of transportation routes to the lake
5. the population in the area served, including growth in numbers and changes in tastes and preferences
6. the quantity and quality of substitute areas and sites that become available to that population
7. promotion of the lake and related recreation developments and facilities

These factors are under the control of a number of organizations and levels of government. The extent of the total recreation complex at Lake Shelbyville will be determined by the development of facilities by the Corps of Engineers, State of Illinois, local (county and municipality) government, and the private sector. The mix of facilities provided will determine the character of the recreational attraction.

At present, Lake Shelbyville attracts primarily campers and day users. There are few overnight hotel and motel accomodations available locally. Private developments have included campgrounds, bait shops, boat dealerships, etc. There appears to be no major ongoing effort to develop additional private facilities.

The revised master plan for Lake Shelbyville (1974)[26] includes conceptual plans for three resort-type concession facilities featuring overnight accommodations, a convention center, golf, tennis, equestrian trails, stables, and theme villages. The time schedule of these developments or the probability of their construction is unknown, introducing a significant amount of uncertainty with respect to local recreation development.

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[26]U. S. Army Corps of Engineers, *The Master Plan Lake Shelbyville Illinois (Revised 1974)*, (St. Louis, MO: St. Louis District).

The private sector is likely to play a key role in future recreational developments, either with concessions on federal lands or the development of adjacent private holdings. Local government can have significant control over private developments through zoning and licenses (particularly liquor licenses) and permits (particularly building permits and subdivision approvals). There is also indirect local control over the use of public and private recreational facilities through promotional campaigns and the services made available to recreationists.

In sum, while public recreation facilities at Lake Shelbyville have attracted large numbers of recreationists, private development or development of recreation-related businesses has been less than was expected. The extent of private developments has been restricted by management of the lake and related resources; the local physical, biological, and social environment; and actions by local residents, local government, and other local groups. If substantial recreation is to take place, it appears necessary to develop and promote the area as a recreation region, that is, to emphasize a set of attractions that extend beyond the lake. The likelihood of such an approach's being undertaken is questionable in light of the large task it involves and the prospects for a significant debate over the benefits and costs of such an effort. If prospects for appreciable private recreation development materialize they will pose a major issue for local government officials.

SUMMARY

In the postconstruction period, regulation of the lake level and future recreation developments are important issues of local significance. Regulation of the lake level has important implications for local recreation and flood-control benefits, as well as navigation in the downstream areas. A final solution to the issue is yet to be found, and considerable debate can be expected in the years ahead. That debate will involve the Corps of Engineers, the State of Illinois, and local interest groups concerned with recreation, flood control, and navigation benefits.

There is a considerable amount of uncertainty concerning future public and private recreation developments at Lake Shelbyville. To date there has been only limited development in the private sector. Future development in the private sector and appropriate policies for guiding that development are questions of significance to local residents and local government.

7 SUMMARY

Lake Shelbyville is an important component of a comprehensive plan for managing the Kaskaskia River. The lake was constructed to provide flood control, domestic and industrial water supplies, navigation, fish and wildlife conservation, and recreation. The lake has yet to be used for domestic or industrial water supply, and the navigation benefits accrue to the Kaskaskia Navigation Project in the lower reaches of the river. Consequently, from the standpoint of residents of the areas adjacent to the lake (Shelby and Moultrie counties), the major benefits have been in the form of recreation (including fish and wildlife conservation) associated with the reservoir, and flood control for farmlands downstream from the reservoir.

Flood control in the area downstream from Lake Shelbyville was not as effective as local residents expected. Consequently, a lobbying group was organized which was successful in securing a revised regulatory scheme for Lake Shelbyville. The issue of regulating the lake level has also brought recreational interests into the debate as to whether or not the regulatory plan that is best for protection of downstream areas from flooding is necessarily best for recreation. Opening of the Kaskaskia Navigation Project in 1978 promises to bring navigation interests into the debate. The debate over regulatory policy has been due in part to an overestimation of downstream channel capacity, high local expectations for flood control, and unusual rainfall. The issue has yet to be resolved, and future debate may result in more effective organization of the recreation interests as a lobbying force.

The number of visitor days of recreation activity at public facilities has been somewhat less than was expected; however, the difference can be explained to a large extent by adverse lake levels and delays in completing facilities.

The development of private recreation facilities and recreation-related businesses has not been as significant as was expected. Lake Shelbyville is the center of a large amount of recreation activity, but there has not been a major recreation-induced change in the local economy and users have not spent a lot of money in the local area. There are three reasons for this. First, many of the recreationists are from the local areas and consequently do not bring money "into the area." Second, most visits are of a relatively short duration and made by individuals from nearby areas, making it easy for users to bring necessary food items and other supplies with them rather than purchase them from local establishments. Third, there are limited opportunities for an individual to spend money in the local area because there are few overnight accommodations and establishments catering directly to recreationists.

Early predictions of substantial recreation-related development did not anticipate the greenbelt rule, which precluded the development of cabins, private homes, and recreation establishments on the lake. It was also assumed that recreationists would have a larger economic impact on the local area than has been the case. It is important to recognize that the economic impact of recreation associated with a large multipurpose reservoir is a function of three major sets of factors: (1) construction and operation of the lake, (2) the local physical, biological, and social environment, and (3) the actions of local residents and local groups. The following list outlines the specific factors under these groups that have limited recreation development in the vicinity of Lake Shelbyville.

1. operation of the lake and related facilities
    a. the size of the lake and the operation of the lake level
    b. the extent of public facilities and private concessions developed around the lake
    c. public land acquisition policy
2. the local physical, biological, and social environment
    a. the scarcity of other complementary vacation resources in the immediate vicinity
    b. the scarcity of private recreation developments and

supporting businesses, particularly resorts and overnight lodging

c. the relatively short season for lake-related recreation activities
d. the lack of a widespread reputation for the area as a "recreation region"
e. a general lack of local interest in recreation development among local residents and local government

3. actions of local residents and local groups
   a. the lack of a well-organized promotion program
   b. the lack of private development of recreation facilities and support businesses
   c. local control of development, primarily by means of allocating liquor licenses and building permits

Subsequent attempts to predict recreation-related development associated with a water resource project should reflect the factors listed above.

The future socio-economic impact of recreation on the local area is uncertain. The key factor in the years ahead will be private development. If Lake Shelbyville is to generate a significant economic impact, there must be a significant increase in the amount of overnight lodging and resort-type developments.

Significant recreation development and a large economic impact will come only if the Lake Shelbyville area is recognized as a recreation region with a number of attractions. To achieve such recognition it would be necessary to establish a regional focus and a regional organization for development, promotion, and regulation. The focus of such a region would necessarily extend beyond Lake Shelbyville. Possible scopes include the other two large multipurpose reservoirs in central Illinois, Carlyle

Lake and Rend Lake, or perhaps the region's cultural and agricultural heritage. Lincoln Land and the Amish settlement at Arthur could be part of that cultural heritage. At present, the likelihood of such a development is not high because of (1) the lack of a supporting regional organization with the purposes of development, promotion, and regulation, (2) the large amount of effort needed to develop and promote the region, and (3) the absence of a significant amount of local interest in such a development.

Local support for the construction of Lake Shelbyville was based to a large extent on the expectation of significant improvements of economic conditions in the Kaskaskia Basin. There were expectations that the area adjacent to Lake Shelbyville would experience significant expansions of manufacturing, businesses catering to recreationists, and local populations. Many of these expectations have not materialized. There has been essentially no development of lake-oriented manufacturing, and few residents have settled in the immediate vicinity of the lake. It appears that a number of factors other than the availability of water are limiting industrial development in the area.

There has not been a significant amount of population growth in areas near the lake, the result of the lack of industrial growth or expansion of recreation-related businesses, as well as federal ownership of the greenbelt or area surrounding the lake, which places strong limits on the development of second or vacation homes and resorts in the vicinity of the lake.

The large quantity of recreation activity as opposed to the small amount of lake-induced local government revenues has also posed problems for local governments. It has been necessary to provide increased road, police-protection, and search-and-rescue services to recreationists, but there has not been a sufficient increase in local revenues available for these purposes. It has been necessary for the State of Illinois to allocate

funds to assist local law enforcement efforts and for purchase of right-of-way for upgrading and relocating roads leading to recreation areas. The Corps of Engineers has provided funds for rebuilding and relocating access roads. This assistance has been primarily of a stop-gap nature, and no long-term solution has been arrived at. Current procedures for allocating tax revenues from income tax and motor-fuel tax to local governments do not take into account the needs of recreationists attracted to a region.

It is apparent that the local socio-economic impact of Lake Shelbyville could have been enhanced by better predictions of expected impacts, better planning, and improved intergovernmental cooperation. Actual impacts were in many cases quite different from local expectations. For the most part, the benefits expected to be associated with the lake were overestimated, while some of the local costs were underestimated. Examples of over-optimistic expectations included industrial development, growth in population, private recreation developments, flood control, and increases in per capita income. The optimism of the predictions can be attributed in part to the enthusiasm of the lake's supporters and the general optimism toward development in the post-World-War-II era. At the same time, many of the costs of providing services to recreationists were underestimated.

Local planning for Lake Shelbyville has also been hampered by the uncertainty associated with future plans by the Corps of Engineers. The extent of federal acquisition for the greenbelt was subject to speculation during the prereservoir period. More recently, the Corps' revised master plan for Lake Shelbyville[1] includes conceptual plans for three resort-type concession facilities featuring overnight accommodations, a convention center, golf, tennis, equestrian trails, a stable, and theme villages. The time schedule of these developments or the probability of their construction is unknown, introducing a significant amount of uncertainty with respect to local recreation development.

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[1] U. S. Army Corps of Engineers, *The Master Plan Lake Shelbyville, Illinois (Revised 1974)*, (St. Louis, MO: St. Louis District).

The Corps of Engineers made it clear that local governments would need to plan for the recreation associated with Lake Shelbyville, but much of the concern shown by the Corps, local government officials, and planning consultants was with the large number of lake-induced businesses and homes. These situations have not materialized, but the service needs of recreationists have. It also appears that local governments were more concerned with the reservoir-induced losses to local agriculture and local transportation systems than with planning for recreationists.

Thus, state and federal assistance in providing services to recreationists should have been part of the initial planning for the lake. A cooperative effort for providing services would have eased the burden on local officials and residents, while improving the quality of the recreation experience at Lake Shelbyville. The cooperative effort should clearly define the unit of government responsible for providing the services and the source of funding for its efforts.

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