REPLACEMENT PROBLEMS INCLUDING LAND PRICES AFFECTING LAND OWNERS DISPLACED BY RESERVOIRS

by

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I. INTRODUCTION

Farmers who are totally displaced as a result of land being acquired for the purpose of reservoirs, military reservations, and highway development (although the latter seldom causes total displacement) are faced with many problems. The present report will be confined to problems of relocation faced by those who are displaced by reservoirs. In order to continue their farm-business, the displaced farmers must look for new land. Finding suitable land to continue the desired farm operation is difficult. Interrupting a "going business" causes loss in income and time. The landowner is distressed by the possibility of leaving a familiar land and community. A sense of social injustice persists which is stated in such comments as, "Why did they have to choose this spot?" Opinions also differ on the fairness of appraisal on the land which must be given up.

Examples of total displacement may be found in many areas of Kansas. Two examples in northeastern Kansas would be displacement caused by Tuttle Creek Reservoir and the expansion of Fort Riley. With more emphasis being placed on flood control in Kansas, more and more people are affected by displacement. Six reservoirs and eleven local protection works have been completed in Kansas since 1953. Under construction at the present time are ten more reservoirs and three local protection projects. The trend of federal expenditures for water resources development in Kansas has been upward since 1947 even though some years, such as 1952, showed a slight decrease. (See Fig. 1.) A total federal investment in Kansas

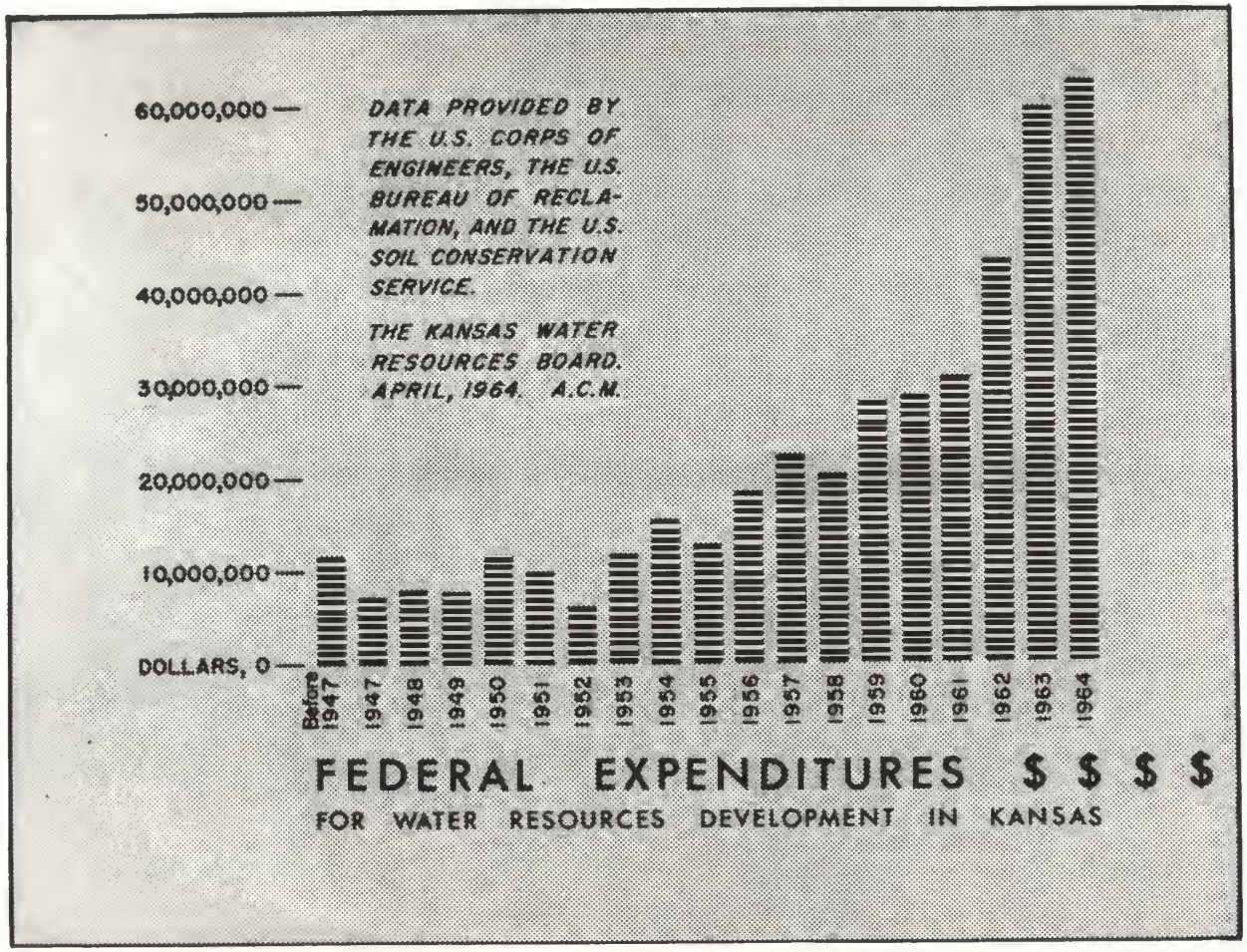

Figure 1. Federal Expenditures for Water Resources Development in Kansas.

water development of almost 900 million dollars is conceivable in the remainder of this century.[1]

Data received from the Corps of Engineers office in Kansas City, and pertinent in examining the scope of replacement problems will show that the number of acres acquired in this one U. S. Army Engineer district in the last ten years is as follows:[2]

Tuttle Creek Reservoir

Acquired in fee	33,792 acres
Acquired in easement	27,932 acres
Displaced owners, tenants, etc.	792
Acquisition substantially completed.	

Milford Reservoir

Acquired in fee	44,266 acres
Acquired in easement	4,284 acres
Acquisition substantially completed.	

Perry Reservoir

Acquired in fee, as of 30 September 1965	26,536 acres
Acquired in easement	303 acres
Acquisition approximately 60 per cent completed.	

Pomona Reservoir

Acquired in fee	10,502 acres
Acquired in easement	1,810 acres
Acquisition completed.	

Wilson Reservoir

Acquired in fee	21,841 acres
Acquired in easement	12,526 acres
Acquisition completed.	

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[1]Kansas Water Resources Board, Planning for Plenty (Topeka: State of Kansas, 1964), pp. 16-17.

[2]Personal letter from George R. Ensch, Chief, Management and Disposal Branch, Real Estate Division, U. S. Army Engineers.

This district takes in only a portion of the state of Kansas. Other reservoirs in the state are under the jurisdiction of the Corps of Engineers Office in Tulsa, Oklahoma, and the Bureau of Reclamation, Denver, Colorado.[1]

Data received from the Department of the Army indicating the number of acres acquired for military purposes in the State of Kansas during the last ten years will show additional impact on the supply of land available for agricultural purposes.

> The Department of the Army acquired fee title to 7,559 acres of land in the State of Kansas for military purposes between 1 July 1955 and 30 June 1965. This is broken down as follows:[2]

	Acres Fee Title
For the Department of the Army	5,864
For the Department of the Air Force	1,695
Grand Total	7,559

During the seven year period from July 1, 1958 through June 30, 1965 the State Highway Commission acquired 33,207 acres. Much of this land was acquired for the Interstate highway system.[3]

Public acceptance of reservoirs, in spite of displacement of farmers, has probably been encouraged by the experiencing of floods throughout Kansas History. Stories of floods in Kansas have been told since the Indian days but the earliest recorded account dates

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[1] Ibid.

[2] Personal letter from E. P. Finger, Chief, Programs Control Division, Real Estate, Department of the Army.

[3] Personal letter from Robert P. Slease, Director, Public Information Department, State Highway Commission of Kansas.

from 1844.[1] It was learned from a report by John C. Freemont that the townsite of Manhattan was inundated in 1844.[2]

Wide variations in precipitation may also have been a factor influencing the attitude of the general public, since irrigation might appeal as a possibility to many. Those who advocate the use of reservoirs for irrigation emphasize that the fifteen years from 1949 through 1963 contained both the driest year and the wettest year in Kansas since the records began in 1887.[3]

By 1964, completed lakes in Kansas had a total normal surface area of nearly 170,000 acres, which is approximately twice the size of Wyandotte County.[4] Displacement, therefore, is a problem affecting a large number of people.

Tuttle Creek Reservoir was the largest of these completed lakes.[5] The first reservoirs were constructed primarily as flood control measures, while storage for low flow supplementation and for agricultural and industrial uses is a function of the newer reservoirs.[6]

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[1] A History of Kansas (Topeka, Kansas: State of Kansas, 1916). p. 123.

[2] Carolyn Jones, "The First One Hundred Years," (Manhattan, Kansas: The Manhattan, Kansas, Centennial, Inc., 1955), p. 76.

[3] Kansas Water Resources Board, Planning for Plenty. (State of Kansas, Topeka, 1964). p. 2.

[4] Ibid., p. 4.

[5] Ibid., p. 4.

[6] Ibid., p. 11.

> A flood control reservoir is developed on a flood plain which occupies a stream bed or valley. In many agricultural areas (particularly in drainage systems of the Missouri and Mississippi rivers) the most fertile land resources are in these flood plains. Not only do reservoirs require agricultural land, they often require land of above average quality.[1]

Acquiring land for the construction of reservoirs has a total effect on some farmers, while other farmers are affected only in a partial way. Because the effect is total for those farms lying wholly within the dam site, the landowners must seek other land if they are going to continue the farm business. For those who had to sell only part of their farm, a somewhat different choice exists. They may choose to alter their farm programs and continue on the remaining land; they may choose to rent or buy additional land in close proximity; or they may attempt to sell the remaining acres and buy a whole unit somewhere else. Although they have some choice, they, too, will be faced with a decision, for now they have fewer acres; and since the best land of the farm usually would be inundated, the land resources now available to the farm operators would be of lower average quality than those prior to reservoir development.[2]

Further impact on displacement occurred in 1962 when the Departments of the Interior and Army announced a new joint land acquisition policy. The new policy to insure full utilization of federal reservoirs for wildlife, fish, and recreational programs, greatly increased the amount of land purchased by the federal government for reservoir projects.

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[1]Paul Weston Barkley, "The Economic Effects of Reservoir Development on Individual Farms Lying Partially Within the Site." (Unpublished Ph.D. dissertation, Department of Economics and Sociology, Kansas State University, 1963), p. 1.

[2]Ibid., p. 3.

Under the policy of the Departments prior to 1962 only lands most frequently covered by storage of water in a reservoir were purchased outright, while the right to flood lands at a higher elevation was obtained by means of a flowage easement and private ownership was retained.[1]

By 1956, the Federal government had obtained roughly four million acres in connection with programs to control floods.[2] The acres for flood control, power, areas of reclamation, and water supply, totaled sixteen million acres.[3]

A map of the Kansas watershed district program of the Department of Agriculture (Fig. 2) clarifies the scope of Federal water projects and resulting effect on displacement. Administrative decision (which reflects public opinion in a Democratic system of government) is based upon the conviction that water problems over the major portion of Kansas originate from the variation in runoff. Construction of reservoirs to store water during high flows for use later, thereby reducing the fluctuation in runoff is seen as a key solution to the problem. Storage structures in Kansas vary in size, but the trend is toward multi-purpose reservoirs in an attempt to make more efficient use of water.[4]

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[1] Kansas Water Resources Board, Kansas Water News (Topeka: State of Kansas, 1964), p. 7.

[2] Land, The Yearbook of Agriculture, 1958 (Washington, D. C.: United States Department of Agriculture), p. 47.

[3] Ibid., p. 49.

[4] Kansas Water Resources Board, Planning for Plenty (Topeka: State of Kansas, 1964), p. 13.

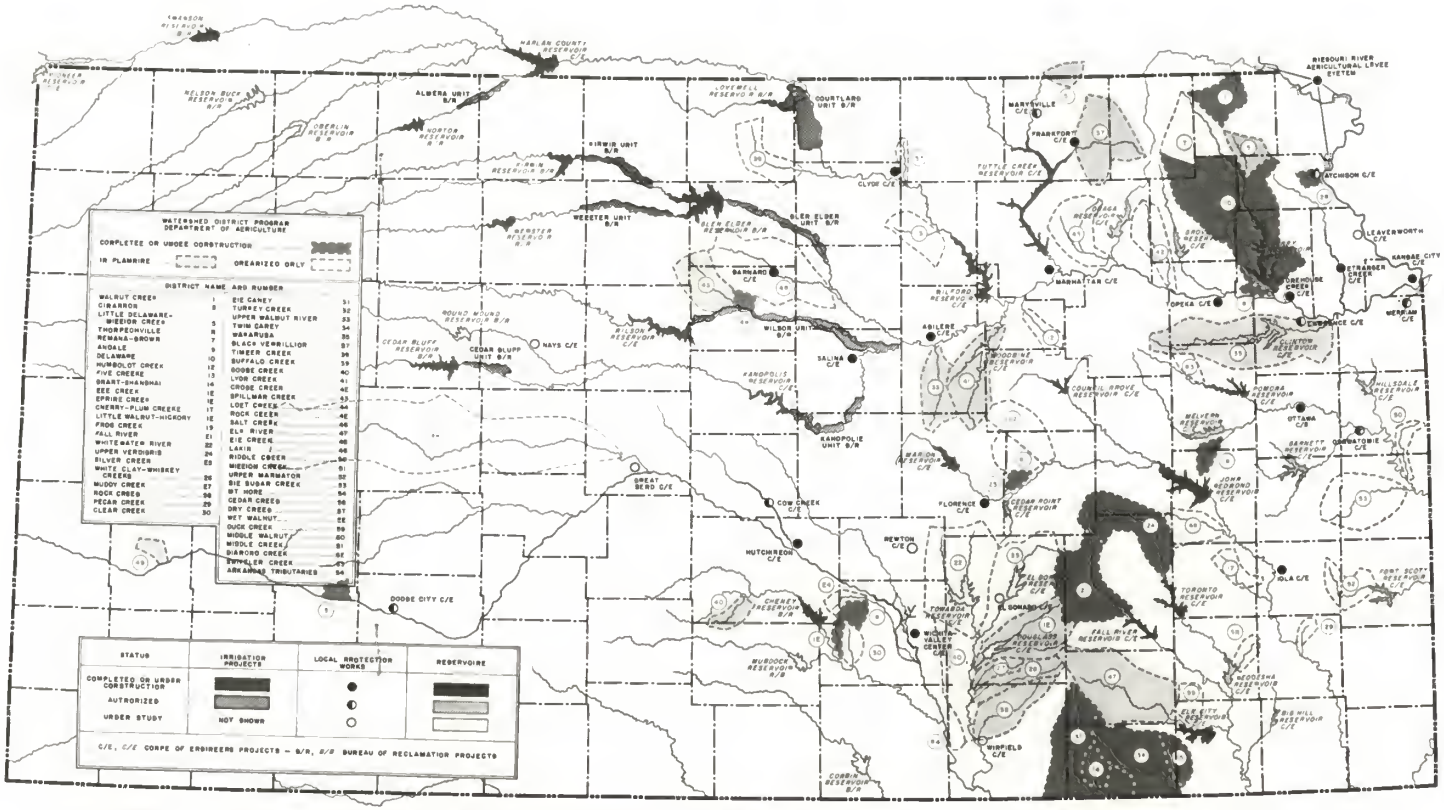

Figure 2. Status of Federal Water Projects in Kansas, June, 1964, Kansas Water Resources Board.

This trend is evidenced in watershed projects (Fig. 2) which include the construction programs of the Corps of Engineers, Bureau of Reclamation, and the watershed districts under the supervision of the Soil Conservation Service. Reservoirs are constructed by the U. S. Army Corps of Engineers. The Bureau of Reclamation in the U. S. Department of the Interior also constructs reservoirs and irrigation facilities, while the Soil Conservation Service of the U. S. Department of Agriculture, in cooperation with local watershed districts, is responsible for the construction of watershed projects which include land treatment measures.[1]

Objectives

The major objective of this report is to examine and describe some of the relocation problems faced by farmers displaced by reservoirs, with particular attention to prices paid for land purchased by them. More specifically the objectives are to:

1. Examine the effect on the price of agricultural land by reservoirs taking some acreage out of production.
2. Examine the demand for agricultural land in the area where the displaced farmers purchased land and the effect their coming into the area has on the price of land.
3. Examine other factors causing variations in the price paid for land purchased by displaced farmers.
   (a) Age of the displaced farmer.
   (b) The price received for the land the displaced farmer sold because of the reservoir.

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[1] Ibid., p. 10.

(c) The value placed on the location of the land purchased by the displaced farmer.

4. Provide a generalized statement of some common problems faced by displaced farmers.
5. Evaluate the merits and inadequacies in this study in examining these problems of displaced farmers.

Scope and Limitations

This is a descriptive study, not a statistical analysis, of the problems faced by displaced farmers with special attention to the price paid for land purchased by them. Although the present report contains some observations of a limited number of displaced farmers, the farmers observed could not be considered typical of all other displaced farmers. Cases cited are given only as examples and are not necessarily held to be representative of other cases. The examples in this report are used only to clarify and to explain certain problems which might confront displaced farmers.

The Method

Twenty land owners who were displaced by Tuttle Creek Reservoir and who purchased land within a forty mile radius of Manhattan were chosen at the convenience of the author and no attempt is made to prove any hypothesis from these limited observations. The names of these displaced farmers were obtained from a former banker and long time resident of Randolph, Kansas, who was well acquainted in the area which was displaced by Tuttle Creek Reservoir. Personal interviews were made

with each of the twenty farmers using the same questionnaire for all interviews.

Plan of the Report

The remainder of this report is divided into four parts and a list of literature cited. Part II is a review of literature regarding factors affecting the supply and demand for agricultural land. Part III is a review of literature relevant to the effect of displacement on the supply and demand for agricultural land in the area surrounding the reservoir. Part IV describes the study area and evaluates the responses to each question on the questionnaire with a notation of implications indicating possible trends in the answers received. Part V will summarize the findings of the study with some recommendations which might be augmented to or deleted from further study of the problems faced by farmers displaced because of reservoir construction.

II. FACTORS AFFECTING SUPPLY AND DEMAND FOR AGRICULTURAL LAND

Natural physical factors, such as climate, soil, elevation, and water supply, preceded human occupation of the land. Because of modern technology these properties inherent in the land are now less restrictive, but still set limits which influence the broad patterns of agriculture.[1] Supply, as defined by Barlowe, indicates the quantity of goods or resources available for use.[2] The physical existence of land resources will be denoted as the physical supply of land. The physical supply of areas with certain selected soil types, forests, and mineral fuels exemplify this concept of supply.

The portion of the physical supply which man uses is known as the economic supply. When man shows a demand for land resources and places a value on these physical resources, they acquire economic significance. The physical supply of land is fixed and is limited by the surface of the earth.

> The economic supply of land resources is responsive to price and demand factors, and it reflects the scarcity or abundance of physical land resources, their relative accessibility, and their general use capacity. This supply can be expanded or contracted; and in an ultimate sense, it is limited only by the total physical supply of land.[3]

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[1] Land, Yearbook of Agriculture, 1958, The United States Department of Agriculture, Washington, D. C., p. 109.

[2] Raleigh Barlowe, Land Resource Economics (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1958), p. 18.

[3] Ibid., p. 18.

The concept of supply and the concept of demand are similar. Physical demand might be conceived as the desire or need for certain commodities; a concept of resource requirements (such as the need for better diets, better highways, or more parking space) may have an important role in public social policy and program planning. Economic demand is effective demand or the willingness to buy of people who have the ability to pay for their desires.[1]

Most demand for agricultural land is a derived type of demand in that the demand for land depends on the consumer demand for agricultural products. Most people want land because it provides a means to an end rather than an end in itself. The demand for land is derived from the consumer's demand for products of the land. Derived demand depends on expectations of profit. Through the interaction of supply and demand, under free market conditions, prices are established.[2]

Barlowe lists four major types of factors which have significant influence in determining the economic supplies of land available for different uses: (1) the natural physical characteristics of land, (2) the economic setting, (3) the institutional setting, (4) and the technological setting in which land-resource use takes place.

Problems in dealing with the natural supply of land stem from the uneven distribution of land resources available for particular uses, the unfavorable location, unsatisfactory topography, and climate not suitable for the purpose desired.[3]

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[1] Ibid., p. 19.

[2] Ibid., p. 19.

[3] Ibid., pp. 22-23.

Economic factors affecting supply of land resources are important, since without man land has no value, and their importance begins when there is an economic demand for these resources. Land resource supply is also affected by competition between individuals and between different land uses. Normally the bidding and counterbidding of different buyers and users of agricultural land provide the basis for land values. Problems in land use arise as soon as conflicting uses begin to compete for the same land areas.

> At this point, the more highly valued and economically more productive uses usually take precedence, thus crowding the lower priority uses into outlying or lower quality areas.[1]

Added to the effect of physical and economic factors on the supply of agricultural land is the reduction of land supplies caused by institutional factors.[2] Construction of reservoirs not only affects the use of flooded land, but also changes the use of adjacent land. Land formerly used for farming becomes recreational and wildlife area.

In addition to physical, economic, and institutional factors is the impact of technical factors which cause a direct relationship between the value given to land resources according to man's ability to use them.[3] The interaction of demand and supply for agricultural land is influenced by technological developments which often bring new demands and intensify the search for new land-resource supplies.[4]

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[1] Ibid., p. 29.

[2] Ibid., p. 29.

[3] Ibid., p. 30.

[4] Ibid., p. 30.

Location and accessibility are important determining factors of land use and have a direct impact upon the available supply of land for economic use. Man will pay an increased price because he prefers one piece of land to another and because one area of land is more profitable because of location than another.

It is assumed in the concept of economic location that some areas are preferred and have an advantage over other areas. This advantage is often measured in transportation costs and time, and it results partly from the fact that the law of diminishing returns makes it both physically impossible and economically non-profitable for all goods to be produced and marketed at points adjacent to a central market.[1] The fertile soil of the flood plain is considered a location advantage by those who are displaced by reservoirs since higher productivity and lower production costs are associated with the flat fertile land.

The aggregate demand for land resources arises from the many needs and aspirations of all society. Population numbers, nutritional and other standards, and land productivity are the three principal factors affecting the demand for agricultural land.[2] Population growth also results in an increase in the demand for non-agricultural land. In recent years an increasingly large number of acres have been taken for residential and recreation areas resulting in direct competition with land desired for production purposes. Much of the land used by the sprawling outgrowth of cities has come from areas once used for agriculture. The land used

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[1] Ibid., p. 32.

[2] Ibid., p. 73.

for increased urbanization (combined with land used for oil wells, reservoirs, recreational uses, highway and airport developments) causes many farms of high potential productivity to shift to non-farm uses each year.[1]

Demand elements which are also related to the productivity of the land in agricultural use may be classified in two general groups:

1. Demand forces within the farm, but not based upon the capitalized net earnings of the land.

2. Demand forces outside the farm which reflect estimates of present or future land values for non-agricultural uses.

The strongest single factor in the first group is the demand for farm enlargement. Farm enlargement accounted for 46 per cent of all transfers in the nation during the six months preceding March 1, 1962.[2] Farmers seek larger acreages to utilize more efficiently modern agricultural technology and skills of management. In some cases of farm enlargement, the location of the land and the way it complements the present farm operation is of more importance in determining the price than is the productive value of the land alone.

A second demand element within the farm but not closely related to productivity, is the subjective preference for farming over other employments. Farm families may choose to farm even though alternative employment might be more profitable.

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[1] Ibid., p. 80.

[2] Economic Research Service, Farm Real Estate Market Developments, United States Department of Agriculture, Dec. 1962, p. 8.

Demand forces for agricultural land outside the farm include the use of rural land for such purposes as water reservoirs, highway expansion and improvements, golf courses, factories and suburbanization. A strong upward pressure is being imposed on agricultural land prices by the aggregate demand for farm land for non-farm uses.[1]

Land is in limited supply. Lester R. Brown, international agricultural economist, considers land as the most important ingredient in the combination of factors used in agricultural production, primarily, land, labor, and capital. Less than three billion acres of the thirty-three billion acres comprising the earth's land surface, actually produce crops in a given year.[2]

Despite the fact that a large store of scientific knowledge exists at the present time, no practical substitute has been found for land in the production of food. At the present time little additional land, which by nature is well suited for cultivation, is available.

Substitutional additions of land to the currently cultivated area can only come about with increased investment of capital and human effort, in drainage, irrigation, or other land improvements.[3] Hydroponics, or plant culture without soil, although it has been technically

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[1] George Robert Butell, "An Examination of the Normal Value Concept as Applied to Federal Land Bank Appraisals" (Unpublished Master's Report, Department of Economics, Kansas State University, 1964), pp. 26-30.

[2] Lester R. Brown, Man, Land and Food. Foreign Agricultural Economic Rep. No. 11, U. S. Department of Agriculture, Economic Research Service, Regional Analysis Division, November 1963, p. v.

[3] Ibid., pp. 16-17.

possible for a long time, has not been economically practical on a large scale due to high cost.[1]

Reflections on the supply of land now available are meaningful when we consider the three historical stages in the population-land relationship. As the population grows, the relationship between population and agricultural land within a given country can easily be separated into three successive stages. (1) In the first stage agricultural land is plentiful--farmers can expand the aggregate cultivated area by means of individual effort. (2) In the second stage, large scale government or cooperative projects of irrigation or drainage may bring additional land under cultivation. (3) The third stage may be considered reality when it is no longer economically feasible to expand the cultivated area and the acreage under cultivation begins to decline. The construction of reservoirs, highways, expansion of military bases, etc., begins to encroach upon farmland.[2]

The agricultural land area (total crop land area) in the United States has declined from a peak in 1930 of approximately 420 million acres to an approximate 398 million acres in 1960.[3]

Agricultural land resources are taken for reservoir development. To those families whose farms will be inundated, the loss of land resources is critical even though national society may not be highly

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[1] Ibid., p. 16.

[2] Ibid., p. 23.

[3] Ibid., p. 25.

affected because of the present farm surpluses.[1]

A significant move toward a national conservation policy was manifested in the Reclamation Act of 1902. The act established a reclamation fund and since its passage until 1954 the Reclamation Service (now Bureau of Reclamation) had developed seventy-seven reservoirs.[2] In 1954 approximately seven million acres were occupied by artifical reservoirs. The acreage of land in reservoirs combined with that used in urban areas, airports, and highways from 1945 to 1954 had an average annual increase of approximately 831 thousand acres.[3] Reservoir areas accounted for 360 thousand acres of this average annual increase; the increase in urban areas accounted for 395 thousand acres; highway expansion, for 78 thousand acres; and airports accounted for 5 thousand acres. In addition to the purposes mentioned, the areas occupied by military sites, parks and wildlife areas have increased.[4] A distinction should be noted that while the amount of land taken out of production due to reservoir construction was second only to highway expansion, the land inundated by reservoirs would be mostly fertile bottomland.[5] A 1960 acreage estimate of land inundated by the construction of large

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[1] R. D. McKinney and Paul W. Barkley, Some Economic Impacts of Water Reservoir Development, (Manhattan, Kansas: Kansas State University, Agricultural Economics Report No. 106, June, 1965), p. 3.

[2] Land, op. cit., p. 35.

[3] Ibid., p. 61.

[4] Ibid., p. 62.

[5] E. T. Peterson, Big Dam Foolishness (New York: The Devin-Adair Company, 1954), p. 61.

reservoirs states that about 1,300 of the larger reservoirs occupy an estimated land area of 11 million acres, or an average of 8,500 acres for each.[1]

It is estimated that by the year 2000 an additional ten million acres may be added for reservoir and flood control works.[2]

The land market, compared with the market for all farm commodities and other inputs, is unique in that land is fixed in location. According to Vincent, it is unique in at least three respects: (1) the market place moves to the land rather than the land being moved to the market place; (2) land as a product is not homogeneous, since there are wide variations in soil types, topography, climate and vegetation (both natural and cultivated); (3) land is a high-valued, fixed asset. The typical farm is a fixed asset involving a large sum of money. Combined with its buildings and improvements, Vincent stated that land is a fixed asset which makes up 60 per cent of all the assets in farming. Normally, a person buying land obligates himself to pay a large sum of money for the asset. In Vincent's opinion, the process of buying land is experienced, as a general rule, only a few times during a lifetime and the buyer usually engages the services of others to record the transaction legally and to protect his interest. Finally, the physical amount of land is relatively fixed. These three characteristics--fixed location, heterogeneous product, and relatively fixed physical supply--result in different

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[1] Marion Clawson, R. Burnell Held, and Charles H. Stoddard, Land for the Future (Baltimore, Maryland: The John Hopkins Press, 1960), p. 422.

[2] Ibid., p. 424.

processes for determining land prices in contrast with the pricing of other kinds of inputs.

Due to the relatively fixed aggregate supply of land for the country as a whole, the land prices can be visualized as being determined by the intersection of an almost perfectly inelastic supply curve and a more elastic demand curve.[1]

> A supply or demand is said to be elastic when a given change in price results in a more-than-proportionate change in the quantity of product supplied or purchased. When a given price change results in a less than proportionate change in quantity, the supply or demand is inelastic.[2]

Because of the inelastic supply curve and the more elastic demand curve, price changes for land would be the result of shifts in the demand curve along a stable, inelastic supply curve. Prices of real estate have fluctuated up and down with the variations in farm prices until after World War II when commodity prices sagged and farm real estate prices continued to rise. This condition has persisted since that time.[3] According to Vincent, the land market is governed almost wholly by demand forces. Reasons for price changes, as well as the widening gap between land prices and other prices, can largely be found in the factors associated with the demand for land. In an examination of these factors, it should first be noted that the price or value of a fixed asset (in this case land) should bear some relationship to future as well as present earnings. One method or procedure used for relating price or value to

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[1]Warren H. Vincent, Economics and Management in Agriculture (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1962), pp. 245-246.

[2]Barlowe, op. cit., p. 20.

[3]Vincent, op. cit., p. 246.

earnings and rate of return is expressed algebraically by what is known as the capitalization formula. In its most simple form, the capitalization formula is written as $V = \frac{a}{r}$ where V equals the value of the land, a equals the annual earnings which can be attributed to land, and r equals the rate of return annually.[1]

Production economists, in using the capitalization formula method for determining value, usually make the following assumptions: (1) knowledge of the future approaches perfection; (2) capital is unlimited; and (3) the sole motive of the firm is profit maximization. A market interest rate can be used in the capitalization process under these assumptions.[2] Using this formula, farm land which is expected to produce an annual net income of $100 is worth $2,000 when this income is capitalized at 5 per cent (100 ÷ .05 = 2000). The formula indicates that the value of the land varies directly with its earning power and inversely with the rate of interest. In the illustration given, farm agricultural land with a perpetual annual income of $100 has equivalent value to a cash fund of $2,000 which might be loaned at 5 per cent interest compounded annually.

Vincent noted that one restriction of the capitalization formula is its assumption that earnings of the fixed asset, land, are the same year after year. In comparison with other input items, earnings of land as well as general business and employment have an impact on the earnings

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[1] Ibid., pp. 248-249.

[2] Earl O. Heady, Economics of Agricultural Production and Resource Use (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1952), p. 394.

of any input through time. Weakened overall demand for farm products reduces prices and causes a decrease in returns to inputs. A viewpoint of wide acceptance by analysts is that the disparity between land prices and farm product prices since World War II has been largely due to an increased demand for land by operators who wanted to expand the size of unit in an attempt to increase the returns to labor. Land prices are also affected by the relatively high degree of permanency of real estate which attracts those investors who fear inflation, and by persons who want to own a farm for prestige or because of their love of the outdoors. People's desire for a rural residence and for advantages which they believe owning a farm may give them under present income tax laws are also motivating forces which are felt in the land market. Earning power of the input, land, is of great importance, but outside forces, such as those mentioned, may be of extreme importance in land price determination.[1] Existing market conditions under which the price for agricultural land is determined could be neither considered pure competition nor pure monopoly, but lie somewhere between these two extremes.

Because of reservoir construction which takes some land out of agricultural production, there may be a decrease in the existing supply, causing an upward trend and a shifting of the supply curve to the left. A reduction of supply of land shifts some of the existing demand to remaining land.

The factors of supply and demand usually operate in close conjunction with each other, and it is the interaction of these factors

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[1]Vincent, op. cit., pp. 248-249.

which gives rise to a market system. Prices are established through the interaction of supply and demand under a free market condition.[1]

Since the supply of land is physically fixed by nature, addition to the economic supply for particular uses can come about only by irrigation, drainage, and other methods such as clearing brush. A maximum limit on the quantity of land which can be added to economic supply is established by the fixed land area of the world. However, the rising costs of bringing additional land into the economic supply discourages further additions long before this absolute maximum is reached.[2] The amount of land supplied in a given area will therefore depend to a degree on the marginal cost of producing this land. Land without man has no value.

Because of the marginal cost of producing land, the supply curve slopes upward and to the right. The market supply curve for a resource, shows the different quantities per unit of time which its owners will place on the market at different possible prices.[3]

The basis of the demand for land is utility or marginal physical product. The farmer will view different quantities of the resouce, land, with regard to the effects on his total receipts and his total costs. If a larger amount of land will add more to his total receipts

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[1] Barlowe, op. cit., p. 19.

[2] Ibid., p. 22.

[3] Richard H. Leftwich, The Price System and Resource Allocation (New York: Holt, Rinehart, and Winston, 1963), revised edition, p. 290.

than to his total costs, those quantities of land will increase profits (or decrease losses).[1]

The contribution of one added unit of the resource should equal the cost of acquiring it if the farmer intends to maximize profits.[2]

The demand curve for land is the demand schedule or the value of the marginal product schedule.[3] Additional quantities of land up to a certain point add more to the total receipts than to the total costs and therefore increase profits. Beyond this point additional quantities of land add more to the firm's total cost than to its total receipts and cause profits to decrease. The profit maximizing level for the farmer is that level at which the value of the marginal product of an additional acre of land is equal to the cost of acquiring that acre.

Many possible effects to both the supply and demand could be caused by the construction of the reservoir and the searching for land by those farmers who have been displaced and are trying to relocate.

Normally, it may be expected that if these displaced farmers were willing to pay more than the existing price, the quantity of land offered for sale would increase. However, the anticipation of a further rise in prices may in reality cause the suppliers of agricultural land to withhold and thereby actually decrease the quantity of land offered for sale.

Competition between individuals who bid and counterbid may result in added competition which may expand the quantity of land offered. The

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[1] Ibid., p. 283.

[2] Ibid., p. 283.

[3] Ibid., p. 285.

lack of this competition would result in a lower quantity of land offered for sale.[1]

Speculation resulting in increased price fluctuation may cause prices to be higher than they would be without speculation.[2]

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[1] Barlowe, op. cit., p. 19.

[2] Edward Hastings Chamberlin, The Theory of Monopolistic Competition (Cambridge, Massachusetts: Harvard University Press, 1962), p. 29.

III. UNUSUAL EFFECTS ON DEMAND FROM DISPLACEMENT

Unique additional effects on the already existing demand for agricultural land in the relocation area may occur because of relocation by farmers due to reservoir construction. These effects on demand may be (1) stimulation of price resulting from the fact that generally the number of farms listed for sale in the new community will be less than the number of displaced owners looking for relocation property; (2) release of many buyers in the area due to reservoir displacement so that the price which prevailed when there were few farms for sale and few prospective buyers may change rapidly because the buyers may be willing to pay a premium for what they consider property comparable to their former farms; (3) the fact that price has been rising in recent years puts the owner at a disadvantage because of the lag in time between appraisal and payment for his land or between his receipt of payment and the time he finds another farm; (4) the haste of the displaced buyer and his willingness to pay more than the average price for land in the new area because of the treatment of capital gains when land is taken by the government; (5) the fact that combinations of land for the present farm program may not be readily available; (6) the willingness to risk investment with uncertain returns to locate in a particular community; and (7) the price increase which results because the publicity of displacement often alerts the predatory seller who raises prices for buyers with ready cash.

As a general rule, there are more displaced owners looking for replacement property in a community than there are farms listed for sale. When it becomes necessary for 200 to 300 farmers to locate other farms, there is considerable turbulence in the land market which increases the difficulty in finding a suitable farm more than if an individual farmer looks for another place.[1] The availability of fewer farms than there are buyers in a particular area stimulates price.[2]

Another unique effect on demand for agricultural land caused by displacement is the willingness of the sometimes anxious buyer to pay a premium for a particular piece of desirable ground since he knows the competition is keen and it may not be his choice to do effective bargaining. Excessively numerous buyers would tend to stimulate the price in this way.[3]

Rising land prices in recent years have been another factor influencing the attitude of the buyer toward buying a new farm. The 1959 value of land and buildings per acre in Kansas was 333% of the value in 1939.[4] The displaced farmer may feel he has a limited time to find a new

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[1] Local Effects of the Wapapello Reservoir (Wayne County, Missouri: Missouri Division of Resources and Development, February, 1950), p. 18.

[2] John Muehlbeier, "Reducing Adverse Effects of Reservoirs." Paper read before the Kansas State Mobilization Committee and the Manhattan Chamber of Commerce, Manhattan, Kansas, July 18, 1952, p. 5.

[3] Interview with Dr. Nate Harwood.

[4] H. H. Ramsbacher, Wilfred H. Pine, M. L. Otto, and J. E. Pallesen, "Trends in Land Values in Kansas," Kansas State Agricultural Experiment Station Bulletin 442, May, 1960, p. 18.

farm in order to minimize this loss due to rising land prices. A South Dakota study emphasized that a six months to a year time lag between appraisal and the time it takes for an owner to find a new farm could be important. From July 1950 to July 1951 land prices in South Dakota, as well as the average land prices in the United States, increased approximately 17 per cent. About half of this 17 per cent increase took place during the four month period between November 1950 and March 1951.[1]

Farmers who are displaced by reservoirs may not wish to continue farming. Age, desired change in their investment, or other such reasons may cause them to prefer not purchasing property similar to what they previously held. Should the displaced farmer not reinvest in another farm, the gain, which is generally considered the increase of the sale price over the purchase price, is subject to taxation. Fifty per cent of the gain is considered taxable income if the property has been held for more than six months.

The taxpayer is charged with gain for all the money received in the condemnation award which is not used in the purchase of replacement property.[2]

Since the owner who has been displaced has a limited time to reinvest in similar property, coupled with possibility of experiencing difficulty in locating similar property, the owner may be willing to pay a

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[1] "Some Local Impacts of Reservoirs in South Dakota," Agricultural Economics Pamphlet 46, Agricultural Economics Dept., Agricultural Experiment Station, South Dakota State College, College Station, June, 1953, p. 8.

[2] Ibid., p. 21.

premium over the existing price for land in the new area and thereby have an effect on the existing demand for agricultural land in the new area. The impact would be less if the displaced owners were allowed four or five years to find replacement property.[1]

> Gain from sale of property under threat of condemnation is not taxed if money received is used "forthwith" to acquire "similar" property according to Section 112 (E) of the Internal Revenue Code relating to involuntary conversion. What constitutes "forthwith" is subject to varying interpretation.[2]

In the Tuttle Creek Reservoir conversion of property, one year was ordinarily considered as the period of time allowable; however in some cases extensions were granted.[3]

The willingness to risk investment with uncertain returns to locate in a particular community would be an added element of aggressiveness which would also have a unique effect on the demand for agricultural land in a particular area. One farmer from the Tuttle Creek area decided to move 150 miles away, willing to work with unfamiliar soil and rainfall conditions, because some of his relatives lived in the area. Local demand would not ordinarily include this willingness to take added risk which would stimulate the existing demand in the absence of the displaced farmers searching for farms.[4] "Often high prices paid to farmers displaced by nonfarm forces enable them to pay prices for other farm land above its

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[1]Great Plains Council, "Reducing Adverse Effects of Reservoirs," Kansas State Agricultural Experiment Station Circular 293, October, 1952, p. 16.

[2]"Some Local Impacts of Reservoirs in South Dakota," op. cit., p. 19.

[3]Interview with Fred C. Germann, November 9, 1965.

[4]Ibid.

agricultural potential."[1] Their ability to pay premium prices may have a bearing on their willingness to do so. Sellers with no emotional attachment by taking advantage of this opportunity for extra gain again influence the price others would have to pay to get the land.

The impact of displaced farmers due to reservoir construction on the demand for land in new areas is only one of the nonfarm-oriented forces affecting land values in Kansas; but with an increasing number of reservoirs being constructed, the impact of this force has probably become more important in relation to other nonfarm-oriented factors. Other nonfarm-oriented factors influencing land values are expanding urban areas, suburban living, expansion of highways, enlarged military bases, and other nonfarm uses which reduce the available acreage for farm land in the United States by approximately one million acres each year. The general vigor and economic growth of nonfarm businesses have also influenced the nonfarm demands for land.

According to a study made in 1960, these farm oriented factors affected Kansas land values: (1) the desire of farmers to enlarge their farms in order to use labor and equipment more efficiently, (2) the reduction of the amount of land for sale prior to 1959 as a result of assured income from the Soil Bank program, which encouraged the purchase of land to put in the soil bank or to replace land put in the Soil Bank (in 1959 the Soil Bank program was modified to restrict this practice), (3) enhancement of land values by government price support programs for farm products, (4) the willingness of nonfarm investors to buy land for long-term investments

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[1] H. H. Ramsbacher, W. H. Pine, M. L. Otto, and J. E. Pallesen, op. cit., pp. 7, 8.

at a premium because they see land as a more desirable investment than other investments which may yield a higher short-run return, (5) the reluctance of investors other than farmers as well as farmer-owners to sell land because of the capital gains tax, (6) increased agricultural productivity during the last twenty years may have been capitalized into higher land values, even though improved management and more capital investment for innovations have been responsible for much of the increased productivity of the land.

According to the 1960 study, these non-farm oriented factors affected land values: (1) heightened nonfarm demands for land and for the products from the land due to economic growth in nonfarm business, and (2) the ability of farmers who have been displaced by reservoirs, highway expansion, and urban or suburban expansion, to pay more for other farm land than its value based on agricultural productivity because of the high prices they were paid by nonfarm forces for their land.[1]

The type of road, distance to a paved road, size of tract, land type, and location of the land are also factors influencing the demand for particular farms by displaced farmers. The degree of influence by the type of road on land price may vary in importance depending on type of farming and climate. A 1964 study made by Kansas State University revealed that the quality of the road adjacent to the land did influence land prices. For three areas of Kansas (north-central, southwestern, and northwestern) during the period 1956 to 1958, a gravel road added an estimated value of three to five dollars per acre more than the value

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[1] H. H. Ramsbacher, W. H. Pine, M. L. Otto, and J. E. Pallesen, op. cit., pp. 6-7.

with a dirt road adjacent to the land. The estimated increase in value caused by having gravel instead of dirt roads for the same area for 1961 and 1962 was ten dollars per acre.[1]

Areas of higher annual precipitation in Kansas showed a greater influence of road improvements on land prices than did areas of lower annual precipitation.[2]

The study also revealed that during the period 1956 to 1958 in four areas of Kansas (eastern, north-central, southwest, and northwest), land prices were reduced as the distance to town increased. The reduction in price varied from a few cents to more than one dollar per acre for each added mile of distance to a town of one thousand or more population.[3]

In a 1965 study made by Oklahoma State University the average price in McIntosh County for land on paved roads was $21.00 per acre more than land on gravel roads, $10.00 more per acre for land on gravel than on dirt roads, and $12.50 more per acre for land with access to a dirt road over land without access to a dirt road or which was only on a primitive road.[4]

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[1] Jack D. Edwards, Wilfred H. Pine, and Arlin M. Feyerherm, "Effects of Roads and Other Factors on Farm Real Estate Values in Kansas," Kansas Agricultural Experiment Station Bulletin 469, Manhattan, Kansas, October 1964, p. 3.

[2] Ibid., p. 9.

[3] Ibid., pp. 3-6.

[4] "Oklahoma Current Farm Economics," Department of Agricultural Economics and Extension Economics, Oklahoma State University, Vol. 38, No. 3, Sept., 1965, p. 39.

The study also showed the influence on the price of land as a result of the distance which must be traveled on a lower quality road to reach pavement. The average price for land one-half mile or less from a paved road was ten dollars less per acre than land adjacent to the pavement, while land one-half to one mile distant was twenty-eight dollars and twenty-five cents less per acre.

A continuous decline was shown in land prices as the distance from the paved road increased, until land from ten to fifteen miles distant sold for less than half as much as the land adjacent to the pavement.[1]

The Oklahoma State University study also showed that the size of tract, or the number of acres being transferred may influence the price of land, with price per acre ordinarily varying inversely with the size of tract. Demand for smaller tracts for rural residence, in combination with more people's being able to finance a lower total outlay was given as partial explanation for this inverse relationship which held true for McIntosh County up to the 160 acre group of tracts.[2]

Land type was shown to influence land price in McIntosh County with prairie land selling for approximately twice as much per acre as wooded land.

The study also showed that the distance to the county seat and the distance to the nearest town influenced the price paid for land. Land within five miles of the county seat sold for twenty to thirty-five

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[1] Ibid., p. 40.

[2] Ibid., p. 41.

dollars per acre more than for land which was farther away.[1]

The average decrease in value for each mile of increase in distance could be of value to an appraiser in adjusting market values of comparable sales when using the comparison approach to land value.[2]

The percentage of farmers interviewed who were dissatisfied with appraisal methods of land acquisition for the construction of the Tuttle Creek Reservoir will be noted later in the present report.

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[1] Ibid., pp. 42 and 45.

[2] Ibid., p. 43.

IV. DESCRIPTION OF THE STUDY AREA AND EVALUATION OF RESPONSES TO THE QUESTIONNAIRE

The twenty relocated, displaced landowners interviewed lived within a forty-mile radius of Manhattan, Kansas. Ten of the respondents now live in Riley County, seven in Pottawatomie County, two in Clay County, one in Geary County, and one in Wabaunsee County. Fifteen of the twenty interviewed indicated the type of community was a very important factor in their choice of a place to live. Not only had they sought comparable land, but also a community comparable to that which they had left in the Blue Valley. Difficulty was experienced in attempting to duplicate both land and community; and while a few agreed that they were now farming land which was just as good as that which they had left, none gave this opinion about the community. A brief look at the community from which they had been displaced may account for their strong preferences, and for the opinion that they have now settled for "second best."

A thorough description of the Blue River Valley and the history of the people who lived there is given by Dr. Vera Ellithorpe in her doctoral dissertation written in 1963.[1]

The area from which the farmers who were interviewed were displaced lies in the northeastern part of Kansas, along the Big Blue River and some of its tributaries which include the Little Blue River, Vermillion

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[1]Vera May Ellithorpe, "The Process of Relocation: Factors Affecting Housing Choice." (Unpublished Ph. D. dissertation, School of Home Economics, Ohio State University, 1963), p. 17.

River, Carnahan Creek, Fancy Creek, and Tuttle Creek.

Prior to the construction of Tuttle Creek Reservoir, the area was characterized by fertile bottom land in the valleys with pastures on the adjacent hills. The combination of fertile bottom land for cultivation and the nearby pasture land for grazing provided an ideal location for a livestock farming enterprise.[1]

A survey showed that many farms in the Blue Valley had been owned by the same family for more than half a century. Unusual community pride and solidarity developed from generations of living and working together. The Mariadahl community in the Blue Valley was the oldest Swedish settlement in Kansas. Earliest residents of this community date back to 1863.[2] Pioneers from Germany and Sweden settled the Blue Valley. In 1955 there were farms under control of the fifth generation in the same family. Even though the area of the valley extends over a distance of fifty miles, people of the valley worked as a unit in opposing Tuttle Creek Dam.[3] The Blue Valley Study Association, formed in 1947, became a remarkably active lay organization, members of which testified at congressional hearings, had personal visits with two Presidents of the United States, and conducted educational and public relations programs which were given

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[1] Ibid., p. 17.

[2] Letter from Leona Velen, formerly of Cleburne, Kansas, written to the Missouri Basins Survey Commission, June 5, 1952.

[3] Letter from Glenn D. Stockwell, Sr., former president of the Blue Valley Study Association, Randolph, Kansas, written to Leslie Templin, Baldwin, Kansas, November 1, 1955.

both state and national coverage.[1]

The high degree of cooperation among those who lived in the valley in the years of unified opposition, along with a history of neighbors' working together to a greater degree than inter-farm cooperation normally exists in the midwest, may have been factors influencing the desire to find new communities and neighborhoods with similar characteristics.[2]

Information from displaced farmers regarding relocation was secured by personal interviews and recorded by the interviewer with marginal notes of explanation on the questionnaire.

Fourteen of the twenty interviewed used the money they received for their land in the Tuttle Creek Reservoir area to reinvest in other land; three reinvested in income property; and three reinvested in other investments, such as stocks and bonds.

Age was given as the deciding factor by four farmers of the six who did not reinvest in land; one cited both age and ill health, and one cited ill health.

The average age of the six at the time of displacement was 65.5 years.

Thirteen farm owners stated that they did not receive the price they anticipated for the land sold for the reservoir, while seven thought they received fair settlement. Five of the seven stating they had received fair settlement were ready to retire either because of age or ill

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[1]Leona Velen and Doris Velen, Collection of material concerning Tuttle Creek Dam, Blue Valley Study Association, Blue Valley Watershed Association, and legislative, congressional and local governmental action. Thirty-seven volumes, June 29, 1951 to July 31, 1957.

[2]Interview with Fred C. Germann.

health. Repeated comments by those who felt they received less than a fair price were that comparable land could not be found. They reasoned that only for the farmers who wanted to discontinue farming at the time, it was a good time to sell.

Eleven of the fourteen who reinvested in land stated that they paid a higher price for their land than the average estimated land values in the relocated area. Two main reasons given for this opinion were: (1) they were seeking comparable ground and people who owned this ground were unwilling sellers who could only be enticed to sell at a higher price; (2) they were seeking land which had improvements comparable to those they had left. If they left land with good improvements and bought equally good land without improvements, the expense of building improvements must be considered.

Of the fourteen who did reinvest in land, thirteen felt that they did not come out "whole" on the transfer, but did sustain financial loss. Reasons cited were not generally the difference in the price received and the price paid for land but more specifically that: (1) no hog fences were found on the relocated farm, while many ideal fences had been left on the farm sold for the reservoir (this reason was given by a large hog producer); (2) at least three years were required to adjust their crop programs to the new fields; (3) time was required to learn how to farm land having gravel and gumbo spots which had not been a problem on the land sold; (4) cost was incurred in changing the type of farm operation to suit the new land which might vary in the total size and ratio of pasture acreage to cultivated land; (5) losses due to the change in location include the greater distance from school, from market, and

from church; (6) compensation for moving was inadequate since farmers were not paid for much of the work done by themselves; (7) and living a greater distance from their friends made impractical the work exchange which they had practiced in their former location.

From the standpoint of productivity, thirteen of fourteen felt they now had land of lower productivity, while one felt there was little or no difference between the productivity of his present farm and his former one.

Eight of fourteen now have a larger number of acres than formerly; two have approximately the same acreage as formerly, and four now have fewer acres. The opinion that they would not have been able to increase their acreage if they had remained in the Blue River Valley area, since no land was for sale around them (and the possibility of it being for sale was remote) was generally expressed.

As to the number of farms given serious consideration before purchasing the present one, twelve of fourteen seriously considered buying more than five farms, while two had genuine interest in fewer than five. All fourteen had each considered many more than five farms on a casual basis.

In response to being asked how many days were spent in search of a new farm, ten would make no precise estimate (giving such answers as "many" or almost a year) while four gave estimates ranging from a low of fifteen to a high of eighty days.

Only seven out of fourteen would make estimates of total legal cost, including lawyers' fees and registration of the deed. These seven estimates ranged from a low of six-hundred dollars to a high of five

thousand dollars. The five thousand dollar estimate included costs for settling boundary disputes which amounted to eleven-hundred dollars. One of the seven farmers who made no estimate expressed dissatisfaction in the fact that he had to bear the legal costs for his new land.

All fourteen who reinvested in land thought the reservoir caused the land values to be higher in the relocated area. Among the reasons given were: (1) the sellers in the area knew the displaced farmers were looking for land and were aware of a favorable bargaining position; (2) the knowledge that people are looking for land stimulates the land market; (3) nonfarm investors in their desire for agricultural land and with awareness of the increased competition, will often be willing to pay a high price, causing the general price level for land in the area to rise; (4) many displaced farmers were eager to end their long search for land; and (5) those who had land for sale knew the displaced farmer had the money to buy.

Thirteen of the fourteen land owners who bought land in a relocated area were of the opinion that they had paid a premium for their land.

Payments for their previous farm had been made within less than six months after final agreement on price to all fourteen who reinvested in land; however, twelve of the fourteen had gone through condemnation proceedings.

Ten of these fourteen said taxation was not a determining factor in their decision to purchase replacement land. Four said they would not have bought land if a sizable portion of the payment they received for their previous farms had not been subject to taxation as capital gains.

Nine farms, out of the fourteen purchased by land owners who reinvested in land, are now located at a greater distance from market than the former farms were; four are nearer to market; and one is about the same distance as before relocation. More of the present farms are located along oiled roads, while of the previous farms before relocation, more were located along gravel roads.

Seven are now located a greater distance from school; two are approximately the same distance as before relocation; and five now have less distance to school. Bus routes were formerly accessible to all fourteen and continue to be; however, one of the fourteen was not on a bus route until 1964.

In considering the ratio of pasture to cropland, eight of fourteen now have fewer acres of pasture in relation to acres of cultivated land than before relocation; four have approximately the same ratio of pasture to cropland; and two now have more acres of pasture in relation to acres of cultivated land than they had formerly.

Of the fourteen who reinvested in land, six now have less wasteland on their present farm than they had on their previous farm before relocation; three had about the same amount as on their former farm; and five now have more wasteland than formerly.

The same type of farming as was practiced on the previous farm is being continued by ten of the fourteen; four had made changes in that three who formerly had livestock do not now and one who formerly used irrigation does not irrigate on the present farm. The one who formerly farmed with irrigation, and whose father had the first permit in Kansas for water use of the Blue River, is now making plans to do some irrigation

on his present farm.

Fertility of the soil; location in regard to church, school, and market; a familiar community and people; a similar view from the house as on the previous farm, topography, the price of the land, and possibilities for irrigation were all factors given as the reasons for choosing the present farm over others which had been seriously considered. All fourteen stated that the price of the land, fertility of the soil, and the location were of prime concern. Almost all stated that they were looking for a farm which would require a minimum adjustment in inventories of livestock and machinery, and that they tried to find land with types of soil which they were accustomed to farming. Time was also cited as a vital factor in decisions not to continue the search for a more ideal or more comparable farm.

Of common knowledge, and cited by many of those interviewed in an attempt to point out the importance of the community, was the experience of one family which found comparable land in an unfamiliar community approximately one hundred miles away. The community was composed of a different ethnic group than the incoming family and the family never was accepted as part of the new community, even though they had been ideal neighbors when they lived in the Blue Valley. Finally, after several years of attempted adjustment, the family has moved back to a more familiar community at great loss of land quality and are reportedly pleased to be back with familiar people and community. The point being stressed by these farmers is that in some cases the type of community is considered of greater importance than the productivity of the land.

Three of the fourteen relocated land owners stated that with all things considered, they are now better off than in their previous location in the Tuttle Creek Reservoir area. Reasons given for this improved condition were: (1) there was no land for further expansion of their unit at their previous location and prospects were remote that families who had controlled the land for many years would offer it for sale; (2) the new location allowed initial expansion of enterprise with greater prospects for future opportunities to purchase land than in the previous area; (3) the family had the good fortune to find a community as desirable as the one which had been left; (4) the new terrain lent itself to more regularly shaped fields which facilitated cultivation and harvesting; and (5) the new farm was located nearer to market.

Eleven of fourteen stated that they were now "worse off" than before relocation. Among the reasons for stating this opinion were: (1) finding comparable land was impossible; (2) the inability to find enough acreage in one unit to carry on the previous farm program necessitated the present operation of a split unit; (3) the location of the present farm at a greater distance from market than the previous farm caused added expense; (4) opportunity was lacking for work exchange in the manner to which they had been accustomed due to more individualistic neighbor relationships in the new community; (5) retaining their activities in the church which they had formerly attended necessitated traveling a much greater distance; (6) inefficiency resulted from the lack of experience in farming the type of soil at the new location; and (7) they regretted leaving nearby relatives and a community in which they had lifelong relationships.

Through the cooperation of the U. S. Corps of Engineers Office in Kansas City and the Register of Deeds in the counties of Riley, Pottawatomie, Wabaunsee, Geary, and Clay, an examination was made of eleven relocated land owners considering (1) the average price per acre received for land in the Tuttle Creek area; (2) the average price paid for land in the relocation area; (3) a comparison of these averages with the average value per acre in the relocated area according to the U. S. census report of 1959 and 1954, and the average price per acre in area 5 (the Flint Hills area) as given by the Federal State Statistician's Office in Topeka, Kansas, for the same counties with the exception of Clay county, for which data was unavailable. The price paid for the land was ascertained from the revenue stamps on the deed.

Implications from this limited examination, and from the results of the questionnaire used in the interviews are that in general relocation land purchased is of a lower quality than that which was sold and that the present farms have a greater proportion of pasture in relation to crop land than did the land sold to the government for the construction of Tuttle Creek Reservoir.

To give an effective comparison of these values received and values paid, a much more detailed classification of land types would need to be made. Even though land is a heterogeneous product, at least land with similar characteristics classified in meaningful categories would need to be compared to give significant results from which valid conclusions could be drawn.

LANDOWNERS	TUTTLE CREEK AREA			RELOCATED AREA			COUNTY	CENSUS AVG. PRICE PER ACRE		FEDERAL STATE STATISTICIAN AVERAGE PRICE PER ACRE				
										LAND AND IMPROVEMENTS			PASTURE LAND	
	ACRES	AMOUNT	AVERAGE	ACRES	AMOUNT	AVERAGE		1954	1959	1956 - 1957	1958	1959	1956 - 1957	1959
1	347.15	$ 75,989.00	$ 216.89	240	$ 36,000.00	$ 150.00	POTTAWATOMIE	$ 76.85	$ 101.00	$ 123.08	$ 113.33	$ 121.00	$ 63.65	$ 66.11
2	518.77	$ 172,506.64	$ 333.82	240	$ 81,500.00	$ 256.25	POTTAWATOMIE	$ 78.85	$ 101.00	$ 123.06	$ 113.33	$ 121.00	$ 83.65	$ 68.11
3	289.03	$ 117,175.00	$ 435.55	35	$ 14,000.00	$ 400.00	POTTAWATOMIE	$ 78.85	$ 101.00	$ 123.06	$ 113.33	$ 121.00	$ 63.65	$ 66.11
4	187.95	$ 68,464.00	$ 395.74	516	$ 64,000.00	$ 124.03	POTTAWATOMIE	$ 78.85	$ 101.00	$ 123.08	$ 113.33	$ 121.00	$ 63.65	$ 66.11
5	80.00	$ 16,787.00	$ 209.64	228	$ 19,000.00	$ 83.33	WABAUNSEE	$ 70.27	$ 82.61	$ 121.79	$ 100.71	$ 115.25	$ 63.22	$ 72.73
6	172.77	$ 91,792.80	$ 531.30	300	$ 44,000.00	$ 146.87	RILEY	$ 81.02	$ 121.68	$ 157.31	$ 147.92	$ 176.89	$ 63.33	$ 72.50
7	516.31	$ 209,489.35	$ 405.70	40	$ 9,000.00	$ 225.00	RILEY	$ 61.02	$ 121.68	$ 157.31	$ 147.92	$ 178.69	$ 63.33	$ 72.50
8	391.18	$ 184,404.88	$ 471.41	320	$ 49,000.00	$ 153.13	RILEY	$ 81.02	$ 121.68	$ 157.31	$ 147.92	$ 178.89	$ 63.33	$ 72.50
9	202.00	$ 71,275.00	$ 352.65	124.40	$ 37,250.00	$ 299.44	RILEY	$ 81.02	$ 121.68	$ 157.31	$ 147.92	$ 178.89	$ 63.33	$ 72.50
10	31.88	$ 16,200.00	$ 508.16	180	$ 21,750.00	$ 135.94	CLAY	$ 89.83	$ 107.76	NOT AVAILABLE				
11	408.91	$ 117,350.00	$ 286.98	487.60	$ 58,040.00	$ 118.98	GEARY	$ 84.81	$ 113.56	$ 122.27	$ 127.00	$ 143.18	$ 70.00	$ 71.00
	TOTAL	TOTAL	WEIGHTED AVERAGE	TOTAL	TOTAL	WEIGHTED AVERAGE								
	3073.95	$ 1,139,413.87	$ 370.87	2891.20	$ 413,540.00	$ 153.68								

TABLE I. COMPARISON OF ACREAGE AND AVERAGE PRICE PER ACRE BEFORE AND AFTER RELOCATION.

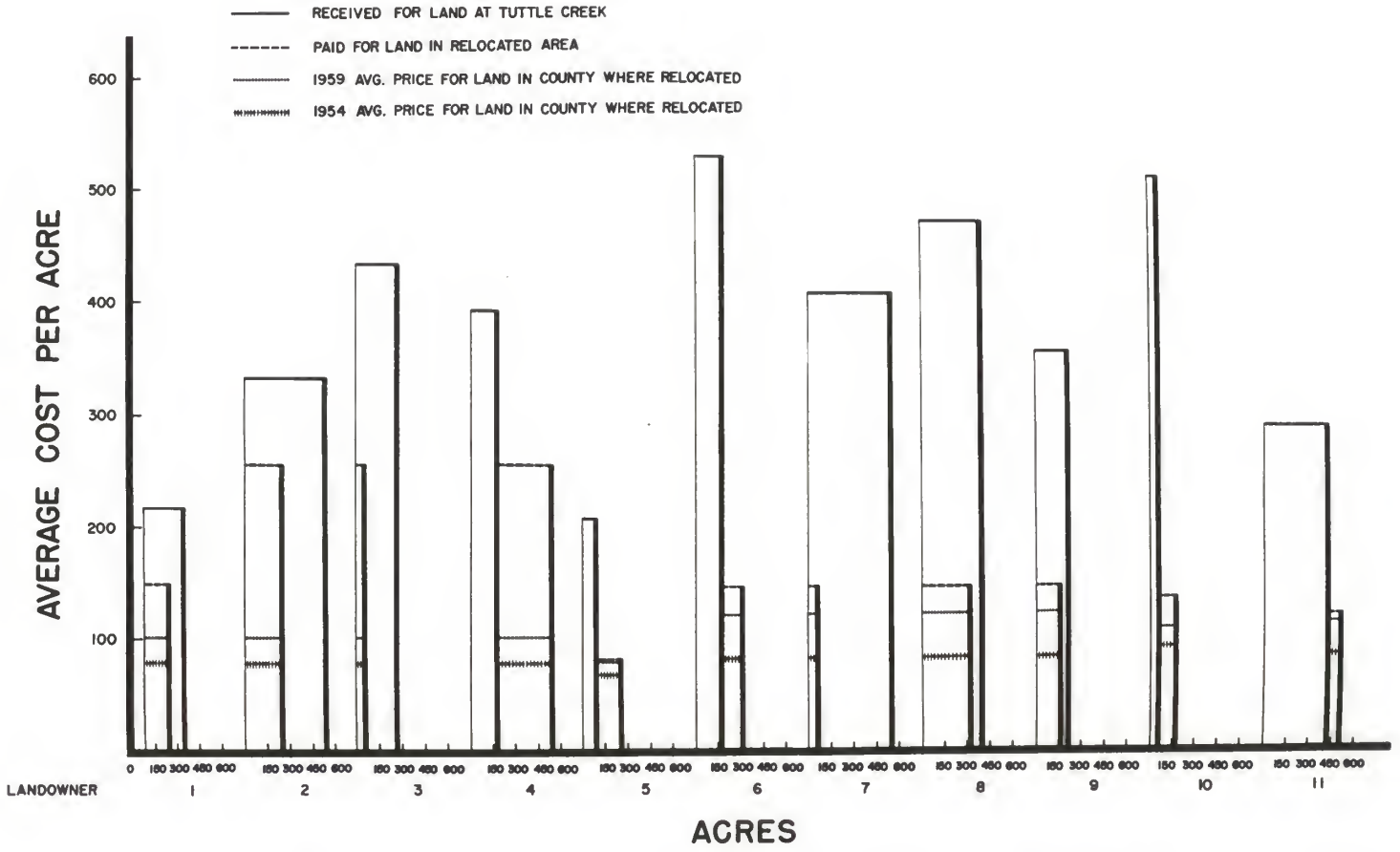

FIGURE 3. COMPARISON OF PRICE RECEIVED, PRICE PAID, AVERAGE PRICE AND ACREAGE.

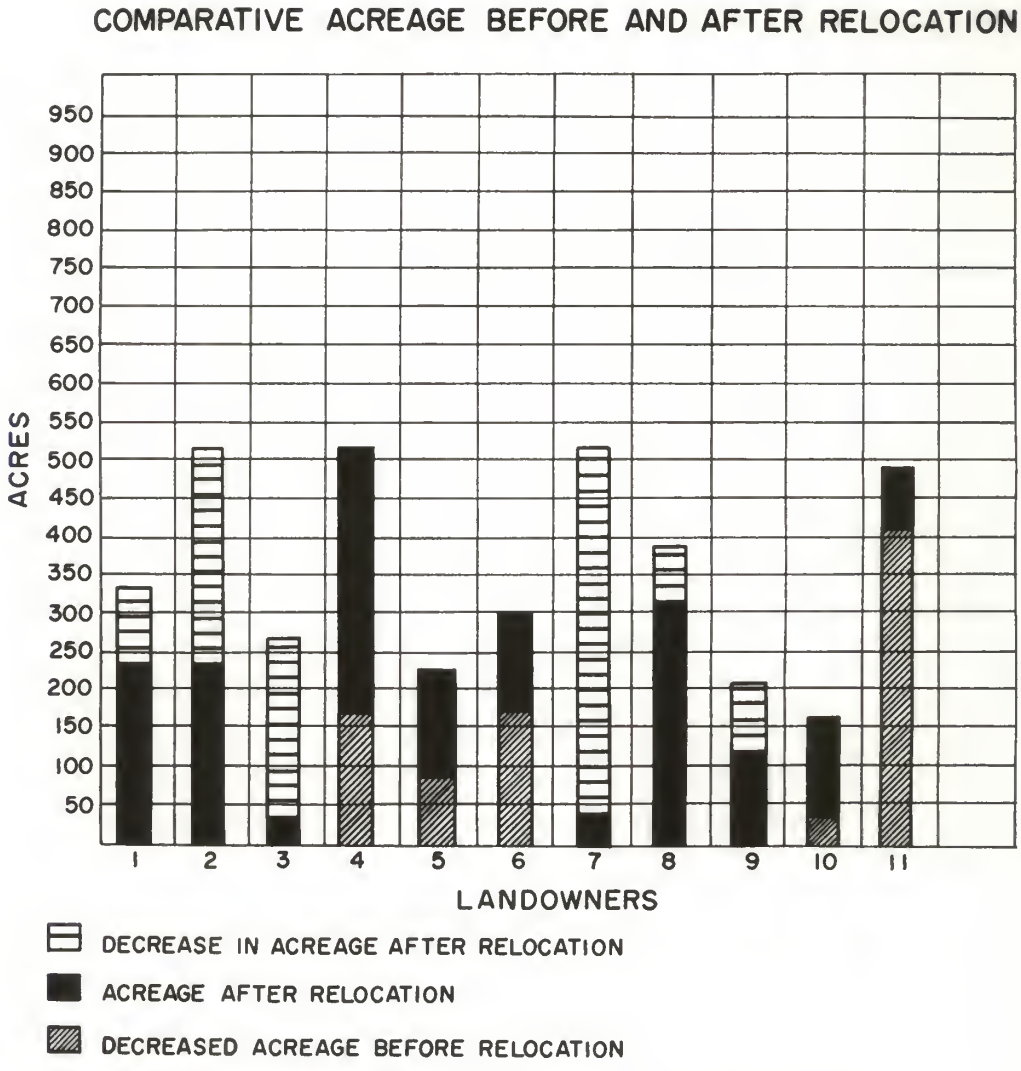

Figure 4. Comparison of acreage before and after relocation.

V. SUMMARY AND CONCLUSIONS

Relocation problems are facing an increasing number of farmers in Kansas due to the acquisition of progressively larger areas of land for the construction of reservoirs. Seven hundred and ninety-two displaced owners, tenants, and others were affected by Tuttle Creek Reservoir alone. The present report has been concerned with relocation problems of landowners only.

The general trend of federal expenditures for water resources development in Kansas has been upward since 1947, and conceivably a total federal investment in Kansas water development will approach 900 million dollars in the remainder of this century.

An area of Kansas, twice the size of Wyandotte County (or a total normal surface area of 170,000 acres which comprised the normal surface area of completed lakes in Kansas) was submerged by 1964. As early as 1956, the Federal government had obtained roughly four million acres in the United States in connection with programs to control floods.

Despite displacement of farmers, reservoirs are now accepted by the public; therefore, relocation problems will need to be continually considered, and efforts must be made to lessen the adverse effects of relocation in the future.

An examination and description of relocation problems faced by farmers displaced by reservoirs, and especially the problem of attempting

to find comparable land for relocation, has been the objective of this report.

Information for the purpose of attempting to point out certain problems which might confront displaced farmers was obtained through twenty personal interviews of land owners who were displaced by Tuttle Creek Reservoir. The names of the displaced owners who were interviewed and who now live within a forty mile radius of Manhattan, Kansas, were obtained from a former banker and long time resident of Randolph, Kansas, who was highly familiar with the area displaced by Tuttle Crrek Reservoir. The area within the forty mile radius included the counties of Riley, Pottawatomie, Wabaunsee, Geary, and Clay.

To examine the problem faced by the displaced owner in finding agricultural land for relocation, some of the factors affecting the supply and demand for agricultural land were considered. The relatively fixed physical supply of agricultural land and the impact of acres taken out of production due to reservoir construction are recognized. Other factors influencing the supply of agricultural land (in addition to the natural physical characteristics of the land) are the economic, institutional, and the technological setting in which the use of the land resource occurs. Substitutional additions to the area of agricultural land which is currently being cultivated can only come about through removal of brush or trees, drainage, irrigation, and an increase in investment of capital and human effort. Plant culture without soil, or hydroponics, has been technically possible for a long time; however, due to high cost it has not been economically practical on a large scale. The encroachment of reservoirs, highways, and military bases on the area

of land available for agricultural use, combined with other non-agricultural uses of land have substantially reduced the total crop land area in the United States.

Because of all non-agricultural uses of land, the total crop land area in the United States has declined from approximately 420 million acres in 1930 to an approximate 398 million acres in 1960.

Larger reservoirs occupy an estimated land area of eleven million acres or an average of 8,500 acres for each. It is estimated ten million more acres in the United States may be added for reservoir and flood control works by the year 2000.

Fixed location, a heterogeneous product, and a relatively fixed physical supply are characteristics which influence the price for agricultural land to be largely determined by demand forces. Productivity of the land is of great importance, but outside forces such as the desire of investors to invest in land and people's desire for rural residence may also be of extreme importance in land price determination. Because of reservoir construction some land will be taken out of production and some displaced land owners will be additional buyers on the land market. If it were not for displacement, these buyers might be content to continue with the original land held.

Additional effects on the already existing demand for agricultural land in the relocation area may result from (1) the listing of fewer farms for sale than the number of displaced land owners seeking relocation property; (2) the release of many displaced buyers within a relatively short period of time; (3) the disadvantage of displaced owners in finding a new location quickly to minimize the time of disrupting farm business

and to avoid paying capital gains tax; (4) the resultant loss incurred in increased time during which land prices may rise; and (5) the willingness of buyers who, because of high payments received, are able to pay more for preferred land. Added aggressiveness of displaced buyers may also result from their desire to locate in a particular area or community.

Because of the demands for agricultural land by other nonfarm oriented forces (such as expanding urban areas, suburban living, expansion of highways and enlarged military bases) the impact of reservoirs and resultant displacement may be heightened.

Some farm oriented factors affecting land values in Kansas are: (1) the desire of farmers to enlarge their farms in order to use labor and equipment more efficiently: (2) the assured income from the Soil Bank program, which reduced the amount of land for sale; (3) the government price support programs; (4) nonfarm investors' investing in land; (5) the capital gains tax, and (6) the increased agricultural productivity during the last twenty years.

Factors influencing the demand for particular farms by displaced farmers are: (1) the type of road, (2) the distance to a paved road, (3) the size of the tract, and (4) the location of the land.

The following two generalizations emerged, which might be inferred from the answers to the questionnaire used in interviewing the twenty land owners; first, that it was extremely difficult to find land for sale comparable to that which had been left in the Blue Valley; and second, that more than half of the displaced owners tended to increase their acreage in their purchase of land for relocation, but that almost

all now own land of lower productivity. In general, there was regret over having to leave the communities they felt were so highly desirable in which a high degree of work exchange had been practiced.

Inconsistency by land acquisition officials in negotiations with various farmers and non-payment for hard to measure costs incurred in the transfer were two chief complaints. All displaced land owners interviewed who reinvested in land thought the reservoir caused the land values to be higher in the relocation area.

From the limited number of contacts made with land owners displaced by Tuttle Creek Reservoir, the following observations may be useful:

1. Whenever possible, the use of secondary information may be of more benefit in studying the financial effects on displaced farmers due to reservoir construction. The extreme reluctance of the respondents to discuss specific factors regarding financial effects was encountered during the interviews. Only vague generalizations were offered in this area.
2. Specific questions, regarding comparison crop and livestock programs on land sold in acquisition for reservoirs with those on land purchased in relocation areas, may yield more useful results if they were placed at the beginning of the questionnaire before the discussion of financial results and costs involved in the relocation process. Often at the end of the interview the respondent seemed impatient with

details and preferred to discuss the question of the overall effect of relocation which had been raised.

3. A section of the questionnaire, which for meaningful answers would require the land owner to consult his records, might be left with him to be filled out at his leisure and returned by mail later. Only one of the persons interviewed offered to make all of his personal records available to the interviewer. Initial personal contact probably would be helpful in explaining the study involved and receiving the cooperation of the respondent in filling out the questionnaire.

A future study in depth would be required to evaluate the adverse effects on those landowners displaced by construction of reservoirs, especially in the area of costs which at the present lack acceptable means of measurement.

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APPENDIX

QUESTIONNAIRE USED IN THE INTERVIEWS

THE RESULTS OF RELOCATION

1. Did you get the price which you anticipated for the land you sold for the reservoir?

   (A) _____Fair settlement
   (B) _____Less than fair settlement
   (C) _____More than fair settlement

2. Was the price which you paid for the farm in the relocated area in line with the average estimated land values in the area at the time?

   (A) Paid higher price by _____approximately
   (B) Paid lower price by _____approximately
   (C) Paid about the same as land in the area was worth _____

3. Do you feel that you came out "whole" on the transfer? i.e., Did you experience the change

   (A) _____with financial loss?
   (B) _____with financial gain?
   (C) _____with neither financial loss nor gain?

4. If financial loss has been sustained, has the loss resulted from

   (A) Increased cost due to
      (1) _____a split unit?
      (2) _____greater distance from market?
   (B) Required additional or different equipment due to the different quality of present land?
      (1) _____additional equipment?
      (2) _____different equipment?

   (C) Increased cost due to increased size of farm? _____

5. From the standpoint of productivity, is your present farm of the same quality of land as the farm you sold?

   (A) _____Higher quality?
   (B) _____Lower quality?
   (C) _____About the same?

6. Is the acreage of your present farm

   (A) _____More than the former unit?
   (B) _____Less than the former unit?
   (C) _____About the same?

COSTS INCURRED IN THE RELOCATION PROCESS

1. How many farms did you seriously consider buying before you purchased the present one?

   (A) _____ 1 to 5?
   (B) _____ More than 5?

2. How many days did you spend in search of a new farm? _____ days

3. What was the total expenditure for legal costs?

   (A) _____ Lawyers' fees?
   (B) _____ Registration cost as determined by the length of deed?

4. What do you estimate as your total cost in finding a new farm?_____

5. Did the reservoir cause land values in the relocation area to change?

   (A) _____ To be higher?
   (B) _____ To be lower?
   (C) _____ To have no effect?

6. Do you feel that you had to pay a premium for your relocated farm because of the reservoir? _____

7. Did you receive payments for your previous farm within less than six months after the final agreement on price? _____

8. If a sizable portion of the payment which you received had not been subject to taxation as capital gains, would you have reinvested in another farm?

   (A) _____ Taxation was a determining factor?
   (B) _____ Taxation was not a determining factor?

COMPARISON OF PREVIOUS FARM WITH RELOCATED FARM

1. Is the distance to market

   (A) _____ greater?
   (B) _____ less?
   (C) _____ about the same?

2. Comparison of road surfaces enroute to market

(A) From former farm
(1) _____miles of oiled road
(2) _____miles of graveled or rock road
(3) _____miles of unimproved road

(B) From present farm
(1) _____miles of oiled road
(2) _____miles of graveled or rock road
(3) _____miles of unimproved road

3. Comparison of distance from school

(A) _____distance from former farm
(B) _____distance from present farm

4. Comparison of transportation convenience to school

(A) Former farm
(1) _____located on a bus route?
(2) _____not on a bus route?
(B) Present farm
(1) _____located on a bus route?
(2) _____not on a bus route?

5. Comparison of proportion (in acres) of pasture land to cultivated land

(A) Former farm
(1) _____acres of pasture land
(2) _____acres of cultivated land
(B) Present farm
(1) _____acres of pasture land
(2) _____acres of cultivated land

6. Comparison of waste land acreage

(A) _____former farm
(B) _____present farm

7. What determined your choice of the present farm over others which you considered? _____

8. Are you continuing with the same type of farming as you did before relocation?

(A) Former farm, number and kind of livestock
(1) _____beef cattle
(2) _____dairy cattle
(3) _____hogs
(4) _____sheep

(B) Present farm, number and kind of livestock
(1) _____beef cattle
(2) _____dairy cattle
(3) _____hogs
(4) _____sheep

(C) Distribution of crop acreage on the former farm
(1) _____wheat
(2) _____corn
(3) _____alfalfa
(4) _____grain sorghums

(D) Distribution of crop acreage on the present farm
(1) _____wheat
(2) _____corn
(3) _____alfalfa
(4) _____grain sorghums

9. The effect of the farmer's age on the decision to continue farming.

(A) _____years of age at the time of relocation
(B) _____age determined decision to continue farming
(C) _____age determined decision to discontinue farming
(D) _____lack of training for another vocation determined decision to continue farming

ATTITUDES TOWARD MOVING

1. Now that time has elapsed since the relocation, how do you evaluate the results of your moving?

(A) _____worse off than before?
(B) _____better off than before?
(C) _____about the same?
(D) _____uncertain?

REPLACEMENT PROBLEMS INCLUDING LAND PRICES AFFECTING LAND OWNERS DISPLACED BY RESERVOIRS

by

VERNON V. GEISSLER

B. S., Kansas State University, 1942

AN ABSTRACT OF A MASTER'S REPORT

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requirements for the degree

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Department of Economics

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The increasing importance of replacement problems resulting from reservoir construction is evident in these facts: 792 farms were affected by Tuttle Creek Reservoir alone; 170,000 acres of normal surface area had been submerged in completed lakes in Kansas by 1964; the estimated federal investment for Kansas water development will total 900 million dollars within this century; the total crop land area in the United States declined from approximately 420 million acres in 1930 to an approximate 398 million acres in 1960. Larger reservoirs occupy an average of 8,500 acres each; as early as 1956, the federal government had obtained roughly four million acres in connection with flood control; and ten million more acres may be added for reservoir and flood control efforts by the year 2000. Public acceptance of reservoirs despite the resultant displacement of farmers indicates the need to consider continually the means of reducing adverse effects of relocation in the future.

The objective of the present report has been the examination of relocation problems faced by farmers displaced by reservoirs, and especially the effect on land prices by the attempt to find comparable land for relocation. Twenty personal interviews were made with land owners displaced by Tuttle Creek Reservoir and living within a forty mile radius of Manhattan, Kansas. The interview area included the counties of Riley, Pottawatomie, Wabaunsee, Geary, and Clay.

These factors affecting the supply and demand for agricultural land were considered: the relatively fixed supply of agricultural land; the impact of acres removed from production by reservoir construction; and the economic, institutional, and technical setting for the use of the land resource. Substitutional additions of agricultural land to the

currently cultivated area can only come about through clearing, drainage, irrigation, and increased investment in capital and human effort.

Fixed location, a heterogeneous product, and a relatively fixed physical supply of land are characteristics which influence the price for agricultural land to be determined largely by demand forces. In addition to productivity, such forces as non-farming investors and people's desire for rural residence may affect land price significantly. Additional effects on the already existing demand for agricultural land in the relocation area may result from the listing of fewer farms for sale than the number of displaced land owners seeking relocation property, from the release of many displaced buyers within a relatively short period of time, from the haste of displaced owners in finding a new location quickly to minimize the interval of disrupting farm business and to avoid paying capital gains tax, from the resultant loss incurred in increased time during which land prices may rise, and from the willingness of buyers following the receipt of high payments to pay more for preferred land. Added aggressiveness of displaced buyers may also result from their desire to locate in a particular area or community.

Expanding urban areas, preference for suburban living, expansion of highways, and enlargement of military bases may heighten the impact of reservoirs on demands for agricultural land.

Farm oriented factors affecting land values in Kansas are as follows: farmers' desire to enlarge farms for more efficient use of labor and equipment; assured income from the Soil Bank program, which reduced the amount of land for sale; government price support programs; non-farm investors' investing in land; the capital gains tax; and increased agricultural

productivity during the last twenty years.

Factors in the demand for particular farms by displaced farmers are the type of road, the distance to a paved road, the size of the tract, and the location of the land.

In general, the interviews revealed extreme difficulty in finding land for sale comparable to that previously owned and revealed that more than half of the displaced owners increased their acreage in new locations, but that almost all land now owned has lower productivity. Regret in leaving highly desirable communities and the loss of the high degree of work exchange which had been practiced were additional, but non-measurable forms of loss.

Inconsistency in negotiations by land acquisition officials, non-payment for difficult to measure costs incurred in the transfer, and raising of land values by the reservoir in the relocation area were cited complaints by landowners.

A future study in depth would be required to evaluate the adverse effects on those land owners displaced by the construction of reservoirs, especially in the area of costs which now lack acceptable means of measurement.