

RIGHT OF WAY EFFECTS OF CONTROLLED ACCESS TYPE  
HIGHWAY ON A FARMING AREA IN COLORADO  
AND FAYETTE COUNTIES, TEXAS

By

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Remaining Rural Farms and Ranches

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TABLE OF CONTENTS

	Page
ACKNOWLEDGMENT . . . . .	iv
LIST OF TABLES . . . . .	v
LIST OF FIGURES. . . . .	viii
ABSTRACT . . . . .	ix
SUMMARY & CONCLUSIONS. . . . .	xi
IMPLEMENTATION STATEMENT . . . . .	xviii
INTRODUCTION . . . . .	1
Statement of Problem. . . . .	1
Objectives. . . . .	2
Methodology . . . . .	2
Personal Interviews . . . . .	4
COLORADO-FAYETTE COUNTY AREA . . . . .	5
STUDY AND CONTROL AREA . . . . .	14
Description of Study and Control Area . . . . .	14
Degree of Operator Participation in the Study . . . . .	15
Characteristics of Operators. . . . .	19
RIGHT OF WAY TAKINGS . . . . .	21
Payments Received for Land and Improvements . . . . .	21
Disposition of Money Received for Right of Way. . . . .	23
Size of Takings . . . . .	26
FARM OPERATIONS. . . . .	28
Changes in Number, Size and Tenure of Operations. . . . .	28
Right of Way Tracts . . . . .	28
All Tracts in Operations. . . . .	33
Changes in Kind and Intensity of Land Use . . . . .	37
Right of Way Tracts of Study and Control Operators. . . . .	37
All Tracts of 18 Study and 19 Control Area Operators. . . . .	40
Intensity of Land Use . . . . .	43
Changes in Crop and Livestock Production. . . . .	47
Right of Way Tracts . . . . .	47
All Tracts in Operations. . . . .	50

	Page
CHANGES IN EXPENSES AND INCOME . . . . .	63
Operating Expenses. . . . .	64
Livestock Purchases . . . . .	69
Sales of Livestock and Livestock Products and Other Farm Products . . . . .	71
Changes in Income . . . . .	77
CHANGES IN TRAVEL REQUIREMENTS . . . . .	88
Travel to the Nearest Shopping Center . . . . .	88
Travel Connected with Operations. . . . .	93
Study Area Travel . . . . .	93
Control Area Travel . . . . .	98
LAND SALES IN THE AREA . . . . .	100
APPENDIX - SUPPLEMENTARY TABLES. . . . .	102

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## LIST OF TABLES

Table		Page
1	Number and Characteristics of Farms in Colorado County in 1954, 1959 and 1964 Based on Census of Agriculture. . . . .	8
2	Major Crops Grown and Harvested in Colorado County in 1954, 1959 and 1964 Based on Census of Agriculture. . . . .	10
3	Number of Livestock and Value of Livestock Products Sold in Colorado County in 1954, 1959 and 1964 Based on Census of Agriculture. . . . .	12
4	Characteristics of Farm Operators in Colorado County in 1954, 1959 and 1964 Based on Census of Agriculture. . . . .	13
5	Number of Study Area Operators and the Degree of their Participation in the Study in 1964, 1966 and 1969 . . . . .	16
6	Number of Control Area Operators and the Degree of Their Participation in the Study in 1964, 1966 and 1969 . . . . .	18
7	Off-Farm Work and Sources of Income for 18 Study Area and 19 Control Area Operators That Cooperated All Three Years . .	20
8	Kinds and Amounts of Payments Received by 22 Landowners for Right of Way for IH10 Through Colorado and Fayette Counties. . . . .	22
9	Ways in which 22 Landowners Used Money Received for IH10 Right of Way. . . . .	24
10	Size of Right of Way Takings Related to Individual Tracts and Total Operations of 21 Operators. . . . .	27
11	Changes in Number and Size of Right of Way Tracts and Remainder According to Tenure and Type of Acquisition . . . .	29
12	Size Distribution of Right of Way Tracts Operated by 21 Study Area and 19 Control Area Operators by Years . . . . .	32
13	Tracts and Acreages Owned and Rented in Total Farm Operations of Operators of Study Area Right of Way Tracts in 1964, 1966 and 1969. . . . .	34
14	Tracts and Acreages Owned and Rented in Total Farm Operations of Control Area Operators of Control Area Right of Way Tracts in 1964, 1966 and 1969. . . . .	35
15	Changes in Land Use of Right of Way Study and Control Tracts of 21 Study Area and 19 Control Area Operations . . . . .	38

16	Major Uses of All Agricultural Land Operated by 18 Study Area Operators in 1964, 1966 and 1969 . . . . .	41
17	Major Uses of All Agricultural Land Operated by 19 Control Area Operators in 1964, 1966 and 1969 . . . . .	42
18	Use of Commercial Fertilizer on the Right of Way Tracts of the 18 Study and 19 Control Area Operators . . . . .	44
19	Use of Commercial Fertilizer by the 18 Study and 19 Control Area Operators in Their Total Operations. . . . .	46
20	Acreage and Value of Crops Produced on Right of Way Tracts by 18 Study Area and 19 Control Area Operators in 1964, 1966 and 1969 . . . . .	48
21	Acreage and Value of Crops Produced on Total Operations by 18 Study Area Operators and 19 Control Area Operators from 1964 to 1969 . . . . .	51
22	A Comparison of Acreage and Value of Crops Harvested from Right of Way Tracts and From Total Operations of 18 Study and 19 Control Operators in 1964 and 1969 . . . . .	54
23	Number and Value of Cattle on Hand December of 1964, 1966 and 1969 by 18 Study and 19 Control Area Operators. . . . .	58
24	Changes in the Number of Head of Beef and Dairy Foundation Herds of from 1964 to 1966 and 1964 to 1969 . . . . .	61
25	Changes in Operating Expenditures of 18 Study Area Operators from 1964 to 1966 and 1969. . . . .	65
26	Changes in Operating Expenditures of 19 Control Operators from 1964 to 1966 and 1969. . . . .	66
27	Cattle Purchases by the 18 Study and 19 Control Area Operators in 1964, 1966 and 1969. . . . .	70
28	Cattle Sales and Consumption by the 18 Study and 19 Control Area Operators in 1964, 1966 and 1969 . . . . .	73
29	Sales of Other Farm Products by 18 Study and 19 Control Area Operators in 1964, 1966 and 1969 . . . . .	76
30	Agricultural Income and Expenses of the 18 Study and 19 Control Area Operators in 1964, 1966 and 1969 . . . . .	78
31	Percent Changes in Income and Operating Expense of the 18 Study and 19 Control Area Operators for Years 1964, 1966 and 1969. . . . .	80

32	Frequency Distribution of 18 Study and 19 Control Area Operators Based on the Net Cash Operating Income Per Operator for 1964, 1966 and 1969. . . . .	82
33	Frequency Distribution of the 18 Study and 19 Control Area Operators Based on the Changes in the Net Operating Income from Agriculture in 1964, 1966 and 1969. . . . .	84
34	Income from all Sources for 18 Study and 19 Control Area Operators for 1964, 1966 and 1969 . . . . .	87
35	Mileage Changes in One-Way Distances to Nearest Shopping Center by Type of Road for Those Farmers Who Had Their Travel Routes to Weimar or Their Nearest Shopping Center Affected by the Construction of Interstate. . . . .	92
36	One-Way Mileage by Type of Road from Headquarters of 21 Study Area Operators and 19 Control Area Operators to all Tracts Operated Before and After the Highway. . . . .	94
37	Extra Travel (One-Way Miles) Required Annually for Seven Study Area Operators of Severed Tracts in the After Period. . . . .	96
38	Travel Distances of 16 Control Area Operators That had Multiple Tract Operations in 1964 and 1969. . . . .	99
39	Size, Land Use and Arrangement of 22 Right of Way Tracts Operated by 21 Operators Before and After the Location of Highway. . . . .	103
40	Distribution of 22 Right of Way Takings as a Percentage of Acres in Right of Way Tracts and Total Operations. . . . .	104
41	General Land Use and Tenure on 22 Right of Way Tracts and Takings . . . . .	105
42	Characteristics Relating to Size, Tenure and Type of Land in the 20 Control Area Right of Way Tracts of 19 Control Area Operators. . . . .	106
43	Changes in Land Use of Right of Way Tracts of the 18 Study Area and 19 Control Area Operators, 1964-69 . . . . .	107

**LIST OF FIGURES**

<b>Figure</b>		<b>Page</b>
1	General Location of Fayette and Colorado Counties. . . . .	6
2	Study and Control Areas in Colorado and Fayette Counties .	7
3	Location of the Headquarters of Study Area Operators in Colorado County. . . . .	89
4	Location of the Headquarters of Control Area Operators in Colorado County . . . . .	90



## ABSTRACT

This study is concerned with how operators in a diversified farming area were affected by and how they adjusted to right of way acquisitions for Interstate 10 by the Texas Highway Department. Information was gathered by personal interview from operators in the study area along the new highway and also from operators located in an area nearby but outside of direct highway influence. These latter operators served as a control group. Information was obtained from both groups of operators covering their 1964, 1966, 1969 total farm operations. These years represent the periods "before", "during" and one year after the completion of the new facility.

The objectives of the study were to determine the effects of right of way acquisition on the changes in kind and intensity of land use, changes in number of farm units, tenure and scope of operations. Other objectives dealt with the cost of adjustments to new farm operating conditions and changes in farm income caused by decreasing farm acreage and division of units into separate tracts.

The portion of the study dealing with right of way takings, changes in land tenure, land use and travel patterns is based on information from 21 study area and 19 control area operators. The analysis of agricultural production, expenses and net income of the two groups of operators is based on 18 study area and 19 control area operators who provided full cooperation throughout the study.

Information was gathered from each operator concerning his overall farming and livestock operations. Information included on all operating expenses and receipts, including the sale of crops, beef cattle, swine,

dairy and poultry products covering the three periods of study.

It was found that the taking of right of way for Interstate 10 had a short term effect on farm operations, but after a few years to allow for adjustments, the operators as a whole made noticeable gains in the amount of income from agriculture. No major changes in land use or tenure could be attributed to the highway. Also, travel patterns of the local operators were changed very little by the limited access type highway.

## SUMMARY AND CONCLUSIONS

### General Summary

This report summarizes the effects of Interstate 10 on 21 selected farm operations in Colorado and Fayette Counties. In this area about 12 percent of the right of way tract acreage was acquired for the highway. Even though right of way acquisition had some minor effects on size and land use of right of way tracts such effects tend to be obscured by the fact that most study area operators farmed large acreages of other land. However, small operators with only a right of way tract and some small renter-operators experienced more difficulty in adjusting their operations. Farm income of the study area operators was adversely affected in the period immediately following right of way acquisition, but with additional time to make adjustments, they were able to show substantial increases in net income. Generally, it appears that the benefits derived from the new highway such as enhancement of land values and improved travel conditions in the area more than offset the loss of land or inconvenience caused by the new highway.

### Detail Summary

A summary of the findings relative to changes in land use, land tenure and travel patterns of the operators affected by Interstate 10 is presented below:

1. The study is based on data gathered from 21 study area operators, with 22 tracts containing 3,090 acres affected by right of way acquisition, and 19 control area operators. Right of way tracts ranged from 41 to 480 acres in size and averaged 140 acres. Right of way takings totaled 375 acres and created 35 remainders averaging 78 acres and with a range in size from 1 to 304 acres. Following the combinations

of three remainders, sale of two remainders into non-agricultural use and two remainders being idle, the number of right of way tracts in agricultural operations had been reduced to 28 tracts averaging 96 acres in 1969. Through these adjustments 31 acres were removed from agricultural use.

2. Nine of the right of way takings took land from only one side of tracts and reduced the average size of the tracts from 129 acres to 118 acres which remained unchanged in number and size through 1969. Thirteen takings divided or severed right of way tracts resulting in 26 remainder parcels with average size of 64 acres. By 1969, they had been reduced in number to 19 averaging 85 acres in size. Thus the combination of tracts occurred wholly among the severed tracts as did the net decrease in agricultural land. Several small remainders from severed tracts became suitable for rural resident sites.
3. The Texas Highway Department acquired 375 acres from the 22 tracts, or an average of 17 acres. The 13 owner-operators received \$57,392 for 181 acres and the nine landlords received \$85,279 for 194 acres. The payments included money for land, improvements, easements and damages to the remaining property. The owner-operators received an average of \$4,415 each, while the landlords received an average of \$9,475 for right of way. The owner-operators deposited about 41 percent of the money in savings accounts. The next largest expenditure, 19.2 percent by three operators was used to pay on mortgages. Another 10.3 percent of the money was used in making adjustments, including the constructing of fencing on right of way tracts, such things as constructing corrals and ponds for water supply on the severed tracts. Landlords used 9 percent

- of their payments for fencing and provision for water, the use of the other 91 percent of their right of way money was not determined.
4. These operations, being somewhat smaller than those in the Madison or Ellis County studies, had a larger percentage of their land acquired for right of way. Acreage acquired represented 7.4 percent of the acreage in total operations and 12.1 percent of acreage in the right of way tracts. Right of way tracts constituted the total acreage of eight operators. Operators of these tracts lost an average of 9.7 percent of their land to right of way with the range of takings being from 1.6 percent to 26.5 percent. The 13 operators of multiple tracts lost from a low of 3.6 percent to a high of 13.7 of their total acreage to right of way takings. The largest taking from one operator was 65 acres from two right of way tracts. This taking was equal to only 11.6 percent of the two right of way tracts involved and only 8.6 percent of the operator's total acreage. Two operators lost over 40 percent of their right of way tracts but both of these operated large acreages in other tracts.
  5. The 21 study area operators farmed 22 right of way tracts and 28 non-right of way tracts in 1964. The 19 control area operators farmed 20 hypothetical right of way tracts and 30 non-right of way tracts. In 1964, the study area operations averaged 242 acres in size and operations in the control area averaged 334 acres. The average sizes of the 50 tracts which each group operated were 102 acres for the study operators and 127 acres for the control operators. Between 1964 and 1966 the study area operators decreased their acreage by 286 acres with an increase of

12 tracts. However, the control group decreased its acreage by 1,183 acres and tracts by five. Right of way remainders accounted for 10 of the 12 added tracts in the study area in 1966. Between 1966 and 1969, the study area operators reduced their total acreage operated by 60 acres, while the control operators had a small increase in acreage operated. During this period the study area operators reduced the number of tracts by seven. Four of the decreases in tracts resulted from the sales or combinations of remainder tracts.

6. Based on the combined land use patterns on right of way tracts there was little difference between farm operations in the study and control area. However, four study operators with tracts divided by the highway made changes in land use on remainder tracts that were directly related to the effects of the highway. These changes usually consisted of small acreages being shifted from one agricultural use to another. Throughout the study period, owner-operators in both areas were devoting more of their cropland to livestock operations and clearing and improving a greater percentage of their pastureland. There did not appear to be any significant changes made by the study area operators that might be related to the effects of the highway.
7. As was the case with the right of way tracts from 1964 to 1969, land use patterns of the study and control area total operations remained rather stable, but the operators in both areas had fewer cropland acres harvested. Since the highway acquired about 70 acres of cropland from the 18 study area operators some of this loss in acres harvested could be related to the effects of the highway. Even though right of way acquisition had

some minor effects on the land use of right of way tracts, such effects tend to be obscured by the fact that study area operators farmed large acreages of other land.

8. Eleven of the 18 study area operators cooperating in the study all three years reported that they reduced their cattle inventory from one to ten head immediately after right of way acquisition. By 1966, however, eight of these operators had made adjustments or improvements on the remaining tracts which allowed them to add extra cattle to their operations. Operators in both areas increased their breeding herds in both 1966 and 1969. The increases were more pronounced for the control operators, who had a 23.3 percent increase from 1964 to 1969, as compared to 5.5 percent increase for the study area operators. However, between 1964 and 1966, the increases were more similar as the study area operators experienced a 8.1 percent increase in their foundation herds compared to a 9.4 percent increase for the control operators. However, based on changes in cattle numbers by individual operators it appears that for most study area operators the highway had little effect on the foundation herds. The operators most affected by the highway were the small ones with only a right of way tract in their operations and from whom takings represented over 15 percent of their acreage.
9. Based on total agricultural operations, it appeared that the income of the study area operators was not noticeably affected by the loss of land to right of way. Operators in the study area had a greater increase in net cash farm operating income between 1966-1969 and between 1964-1969 than did operators in the control group. The

lesser increase in net cash operating income for the study area operators between 1964 and 1966 was characteristic of the "during period" income patterns found in the Ellis and Madison County studies. As mentioned in the two previous study reports, this difference indicates that generally the study area operators did experience a setback in the period immediately following right of way acquisition. But with additional time to make adjustments and improvements, particularly to pastures, they were able to show substantial increases in net income by 1969.

10. It was not expected that the highway would have a noticeable effect on non-farm income of the study area operators. However, by comparing the income from non-farm sources with income from agriculture, one can determine the relative importance of agriculture to the operators and in turn gain additional perspective regarding right of way takings. Throughout the study period about 75 percent of each group of operators had income from outside sources. In 1964, income from agriculture represented only 25 percent of the study areas operators' total income as compared to 39 percent of the total income of the control group. Between 1964 and 1969, study area operators experienced a greater percentage increase in agricultural income than did the control group, but the ratio of agricultural income to other income increased at about the same percentage for both groups of operators.
11. The new highway facility provided a better route to the nearest shopping center for nine of the operators. Their one-way distances to town were increased by about 0.2 of a mile each, but the improved facility more



than offset the small amount of extra travel. Seven of the 13 operators with severed tracts were still operating such tracts in 1969. These seven operators had to travel from 0.1 to 1.8 extra miles to reach their severed tracts. Annually they made an average of 111 trips or approximately 120 extra miles, in operating the severed tracts.

12. There was limited evidence of increased land values along the route, as a few isolated remainder tracts sold for a value somewhat greater than the appraised value of the original tracts.

## IMPLEMENTATION STATEMENT

Since the Texas Highway Department is responsible for appraising and acquiring right of way, it is in the best interest of the Department to understand better the probable effects of right of way acquisition on farm and ranch operations. Increased knowledge of values, potential damages and economic consequences should permit more thorough appraisals for right of way purposes and should also be of assistance in right of way negotiations and highway location.

The study should be of particular interest to negotiators, as it provides information regarding agricultural operations on remaining right of way tracts and the adjustments that operators make after highways cut through their land. This information should enable the negotiators to act with more assurance when acquiring agricultural land for right of way.

An effort has been made to analyze and organize the findings in a manner to facilitate application in right of way acquisition problems.

## INTRODUCTION

A study was begun in 1963 on the effects of right of way acquisition on the remaining portions of rural farms and ranches in three different areas of Texas.

The first area selected for study is located along Interstate 45 in Madison County and represents an area of small ranches. The study has been completed and results were published in 1968. The second area selected for study is located along Interstate 35E in Ellis County and represents an intensive farming area. The study also has been completed and results were published in 1969. The third area is along a 10-mile section of Interstate 10 in Colorado and Fayette Counties, located about equidistant from Houston and San Antonio and was selected to represent a diversified farming area.

This report presents findings developed from information obtained through personal interviews with the study and control area operators in Colorado and Fayette Counties. The study is concerned with farm operations along a section of Interstate 10 of which about nine miles are located in the western part of Colorado County and one mile in the eastern part of Fayette County.

### Statement of the Problem

The taking of land for right of way purposes may affect farm operations in a number of ways. Naturally, it reduces the size of the individual tract affected. The tract might represent an entire operation or it might represent only a small part of multi-tract operation. Also,

a right of way taking may divide the original property in such a manner that the effective operating size of a unit is reduced by an amount greater than the portion taken. It may be necessary for some operators to exchange rented property or to sell or buy other tracts in order to reconstitute units suitable for their operations.

The extra capital from the sale of land for right of way may stimulate an operator to increase production through a more efficient operation. A new highway in some areas may also cause a change in the highest and best use of the land, thus changing its overall value. In some cases the value of the land may be greatly enhanced by the new highway, without the land moving up the scale of land use classifications.

### Objectives

The major objectives emphasized in this report are to determine the effects of right of way acquisition upon:

1. Changes in kind and intensity of rural land use;
2. Changes in the number of farm and ranch units, tenure and intensity of operations;
3. Cost of adjustments to new farm operating conditions; and
4. Changes in farm income caused by decreased farm acreage and division of units into separate tracts.

### Methodology

The study made use of the "before" and "after" approach along with the comparative control method in developing the desired information. Farm management information was gathered from operators covering a full year's operation in 1964, before the highway affected their operations in

any way. Similar information was gathered from operators covering their 1966 operations to reflect the period under construction. Following a full year of operation under the influence of the completed highway, data were collected on their 1969 operations to represent conditions of after construction of the facility.

In order to account for an external or general influences not attributable to the highway during the study periods, similar farm management data also were collected from operators in a control area that was similar to the study area in the before period.

An attempt was made to interview each study and control area operator three times, in order to obtain detailed information regarding each year's farm operation, along with additional data from study area operators pertaining to changes and adjustments in their operations caused by the highway. Data sought pertained to an operator's entire operation, and also to each individual tract in his operation, and were primarily of a farm management nature.

#### Selection of Study Areas

Study areas were sought along highways having a design equivalent to Interstate standards and with sizeable segments constructed on new right of way or newly aligned highways of similar widths. Also, agriculture along these study segments had to be fairly uniform as to type, size, and quality of farms; and segments should be long enough to permit observations of a fairly large number of farms.

The three areas in Texas were selected with the counsel of staff members of the Right of Way Division of the Texas Highway Department. A number of sites were selected for consideration as potential study areas.

These sites were inspected and additional information obtained from the Highway Department District offices. When suitable areas were found and approved by Highway Department personnel, maps were obtained from the Highway Department to determine number of parcels, size of area, size of takings, and other facts pertaining to the right of way acquisition.

Information was then obtained from local Agricultural Stabilization and Conservation County offices relative to operatorship, type of agriculture and production practices. With assistance from the ASC officials a comparable area in the general vicinity of the study area was selected in each case to serve as the control area.

The ASC records also were used in determining the nature of a given farmer's operation. The records contain information on each farmer regarding the number of tracts owned or rented, the amount of cropland and pastureland in each tract and acres planted in crops under various government programs. For farmers operating several tracts, the records provide the location and some information regarding land use on each tract. With this background information on each tract and operator, personal contacts with operators were begun.

#### Personal Interviews

The interviewing normally followed the procedure of contacting each operator and completing a questionnaire at his convenience. In most cases, it was found that operators were glad to discuss the highway and its effects on their operations; however, when questioned regarding purchases or sales, they were more reluctant to respond. After the

operators were assured that the information given would be held in confidence, complete cooperation was usually achieved.

#### COLORADO-FAYETTE COUNTY AREA

The study area selected to represent a diversified farming area is located in the western part of Colorado County and the eastern part of the adjoining Fayette County. The area is located in South Central Texas, between Houston and San Antonio. Interstate 10 passes through the counties parallel to U. S. Highway 90, as shown in Figures 1 and 2. The area consists of rolling coastal plains with grass covered prairies and has an average annual rainfall of 40 inches which provides suitable moisture for either crop or livestock production. According to the Census of Agriculture, numbers of farmers in Colorado County, which contains most of the study area, have been decreasing (Table 1). With a 10.5 percent decrease in operators from 1954 to 1964, the average farm size increased from 357 acres in 1954 to 403 acres in 1964. This increase in farm size often resulted from the remaining farmers adding extra tracts of land to their operations. Such additional tracts are not always contiguous with the original tract but are usually located in the same general area.

Land values in the county more than doubled during the 1954 to 1964 period. Such a rise in land values has been characteristic throughout the general area of the state. There has been a great demand for land by urban residents. This is more evident now that the larger portion of IH10 has been completed from Houston to San Antonio, providing better

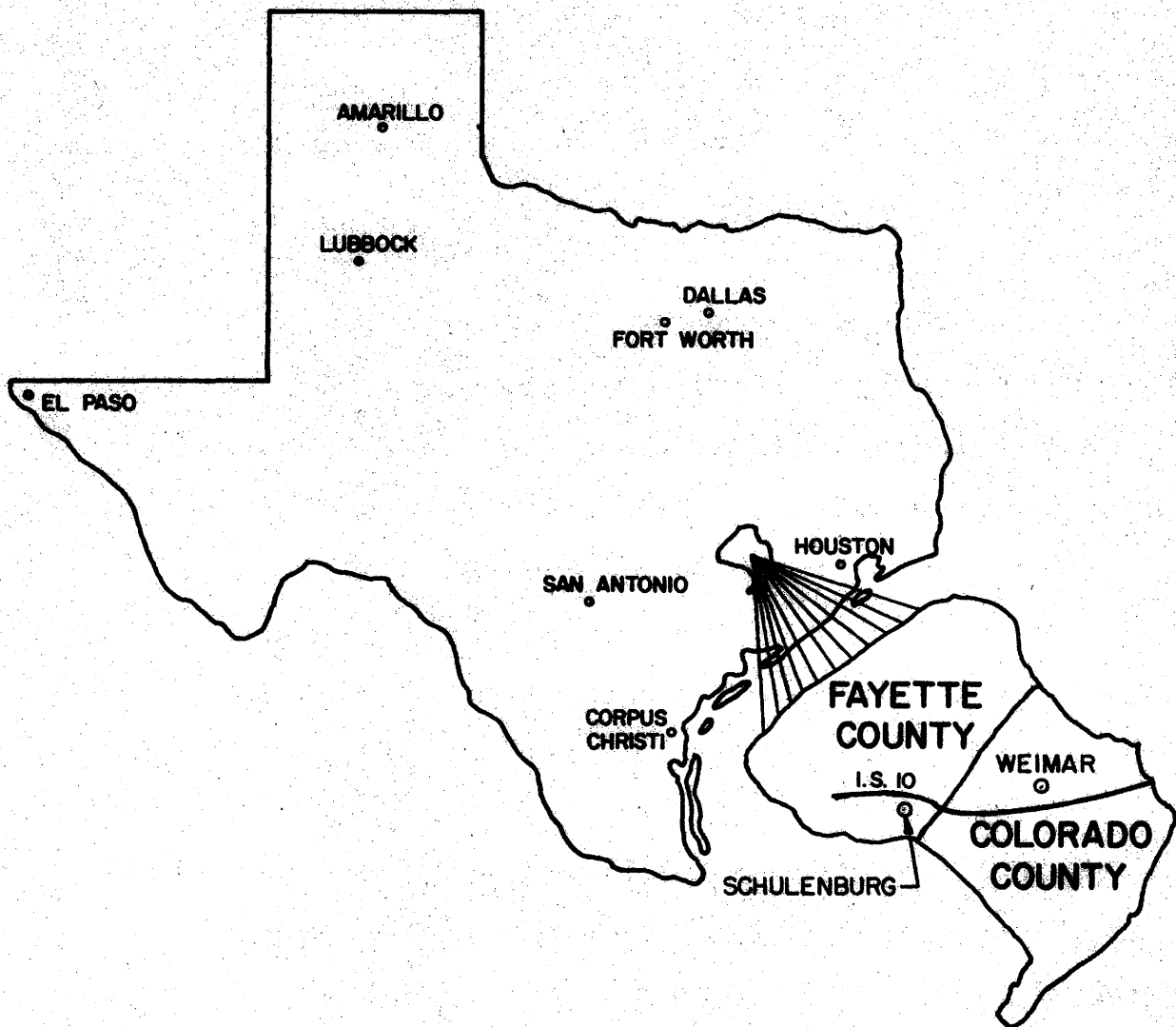
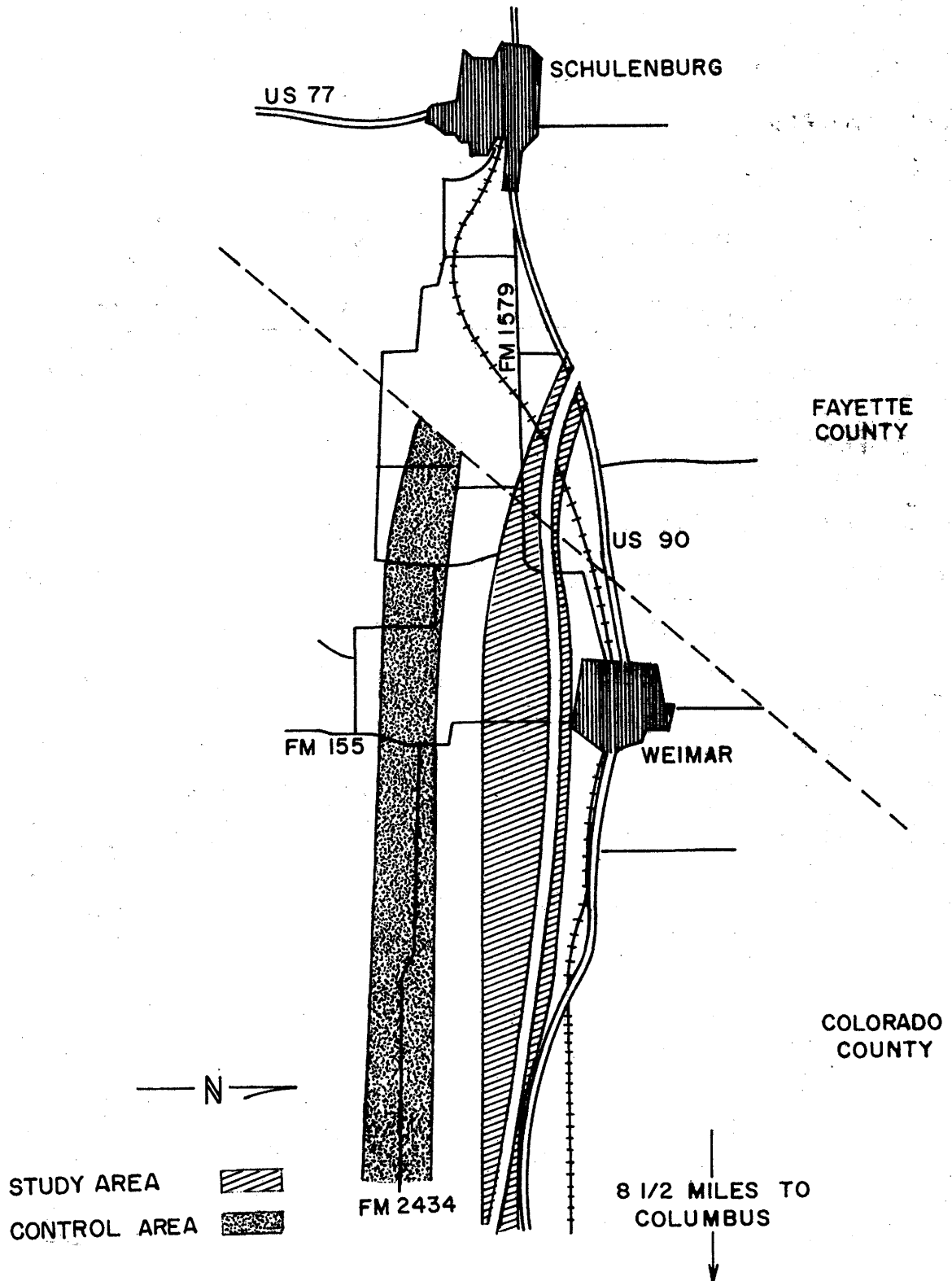


FIGURE 1





GENERAL LOCATION OF STUDY AND CONTROL AREAS  
IN COLORADO AND FAYETTE COUNTIES

FIGURE 2

Table 1

Number and Characteristics of Farms in Colorado County  
in 1954, 1959 and 1964 Based on Census of Agriculture

Item	1954	1959	1964
Farms Reporting (Number)	1,662	1,596	1,487
Land in Farms (Acres)	593,480	609,762	599,439
Average Size Farms (Acres)	357	382	403
Average Value of Land Per Acre (Dollars)	79	144	182
Average Value of Land & Buildings (Dollars)	26,386	47,032	73,753
Cropland Harvested (Acres)	106,958	92,746	89,918
Cropland Not Harvested or Pastured (Acres)	3,217	16,403	8,962
Cropland Pastured (Acres)	78,442	87,121	108,624
Pastureland (Acres)	396,266	404,876	378,581
Woodland (Acres)	132,797	128,348	156,961
Cleared Unimproved (Acres)	246,462	243,325	182,298
Improved (Acres)	17,007	33,203	39,322

access from the urban centers. The abundance of deer is an important factor in the market for wooded land for recreational purposes.

As shown in Table 1, there has been a sizeable decrease in the amount of cropland harvested. This is a result of more cropland being pastured and fewer acres being planted in cash crops. Many operators have cut-back on certain practices due to labor problems. Operators are devoting more of their land to cattle operations which require less hired labor than some of the cash cropping practices. There also has been an increase in part-time farming which seems to encourage livestock enterprises.

From 1954 to 1959, there was a decrease of woodland acreage in Colorado County. This was expected since the clearing of woodland to increase grazing capability of the land is common in the area. However, the increase in woodland acres shown in 1964 does not appear to be logical. This also pertains to the large decrease in the amount of acres of cleared unimproved land in 1964. It is possible that a new classification of land was used in gathering the 1964 census data. However, the increase in improved pasture acreage in 1959 and 1964 confirms the observed practices of farmers improving and intensifying the use of pastureland.

As shown in Table 2, crop production in Colorado County has been gradually decreasing. Three of the four crops showed a decline in the number of operators producing them, as well as in the acreage harvested. Hay was the only crop showing an increase in both acreage and amount produced. There was an increase in the production per acre of both cotton and corn. This is due primarily to the increased use of fertilizer and insecticides by the more aggressive operators.

Table 2

Major Crops Grown and Harvested in Colorado County in  
1954, 1959 and 1964 Based on Census of Agriculture

Crop Production	1954	1959	1964
<u>Corn</u>			
Operators Producing	893	775	553
Acres	17,207	16,768	10,658
Bushels	426,132	546,241	482,043
<u>Cotton</u>			
Operators Producing	629	426	250
Acres	9,725	9,226	8,508
Bales	4,950	5,693	7,029
<u>Hay</u>			
Operators Producing	-----Not Available-----		
Acres	14,555	14,997	19,651
Tons	12,345	24,461	36,123
<u>Sorghum for Grain</u>			
Operators Producing	NA	139	44
Acres	1,708	3,446	767
Tons	1,643	3,668	1,008

Most of the farmers in the county are involved in some form of livestock production. Table 3 points out the importance of beef, dairy, swine and poultry production in Colorado County in 1954, 1959 and 1964. Over the 10-year period there has been an increase of 12,565 head of beef cattle on the farms. Almost 10,000 head of this increase was accounted for by the increase in the number of mother cows. In beef cattle operations the cow-calf enterprise prevails in this part of the state. The increased numbers of calves sold in 1959 and 1964 indicate rapidly increasing beef production. The decrease in the value per head of cattle and calves sold in 1964 is due to lower cattle prices that year.

There was a sizeable decrease in the number of operators reporting dairy, swine or poultry operations in both 1959 and 1964. However, the few remaining operators who had these enterprises in 1964 produced more milk, swine and eggs than did the much larger number of such operators in 1954.

According to farm operators in the area, the trends that developed between 1954 and 1964 in crop and livestock production for the county have continued through 1969.

Some tenure and off-farm work characteristics of farm operators in Colorado County are shown in Table 4. There was an increase in the number of full-owner and part-owner operators and a decrease in the number of tenants from 1954 to 1964. Full-owners own all the land they operate, whereas a tenant rents or leases his total acreage. A part-owner owns a part of the land he operates and also rents land.

Table 3

Number of Livestock and Value of Livestock Products Sold in  
Colorado County in 1954, 1959 and 1964 Based on Census of Agriculture <sup>1/</sup>

Item	1954	1959	1964
Farms with Cattle & Livestock (Number)	1,473(88.6)	1,442(90.3)	1,390(93.5)
Cattle & Calves (Number)	74,076	75,805	86,641
Cows (Number)	41,574	46,973	51,402
<u>Sales</u>			
Cattle & Calves Sold (Number)	30,369	39,476	48,282
Cattle Sold (Number)	9,347	12,235	9,024
Value of Cattle Sold (Dollars)	847,397	1,917,046	1,041,223
Average Value Per Head (Dollars)	91	156	115
Calves Sold (Number)	21,022	27,241	39,258
Value of Calves Sold (Dollars)	1,693,864	2,776,594	3,474,016
Average Value Per Head (Dollars)	81	102	88
<u>Dairy Cattle</u>			
Farms Reporting (Number)	144( 8.7)	111( 7.0)	46( 3.1)
Milk Sold (1,000 Pounds)	6,678	10,480	8,209
<u>Swine</u>			
Farms Reporting (Number)	381(22.9)	376(23.5)	160(10.7)
Hogs Sold (Number)	4,937	12,798	6,221
Value of Sales (Dollars)	158,655	383,940	148,003
<u>Poultry</u>			
Farms Reporting Egg Sales (Number)	954(57.3)	775(48.6)	475(31.9)
Chickens on Farms (Number)	158,408	243,456	235,906
Eggs Sold (1,000 Dozen)	1,004,322	2,279,701	2,911,564

<sup>1/</sup>Figures in parentheses represent the percent of total farm operators with specified farm enterprises.

Table 4

Characteristics of Farm Operators in Colorado County  
in 1954, 1959 and 1964 Based on Census of Agriculture

Item	1954		1959		1964	
	Operators		Operators		Operators	
	Number	Percent	Number	Percent	Number	Percent
Total Reporting	1,662	100.0	1,596	100.0	1,487	100.0
<u>Tenure</u>						
Full Owners	803	48.3	801	50.2	761	51.2
Part	437	26.3	499	31.3	484	32.5
Tenants	410	24.7	291	18.2	230	15.5
Managers	12	0.7	5	0.3	12	0.8
<u>Off the Farm Employment</u>						
Total Working Off Farm	742	44.6	678	42.5	726	48.8
100 Days or More	468	28.2	501	31.4	559	37.6

More farm operators became engaged in outside employment from 1954 to 1964. Almost 50 percent of the operators in 1964 reported having off-the-farm employment with 37.6 percent of the operators working more than 100 days a year on off-the-farm jobs.

## STUDY AND CONTROL AREAS

### Description of Study and Control Area

The study and control areas are each approximately 10 miles in length, extending east and west through Colorado and Fayette Counties. The general location of the two areas is shown in Figure 2. The town of Weimar, population about 2,500, is located near the center of the study area. Interstate 10 by-passes Weimar on the south near its city limits. The new highway is located about one mile south of and parallel to U. S. Highway 90. Local residents are provided access to the new highway at three locations, these being at U. S. 90 west of Weimar, at FM155 just south of Weimar and at FM2434 about six miles east of Weimar.

Land in the study and control areas varies from dark soil to sandy loam, both suitable for cash crops or pasture. There are scattered woodlands but operators are gradually clearing the land and establishing improved pastures. There is a definite trend away from cash crops, such as cotton, to hay and grain for the operators' own use in various livestock enterprises. Most of the study and control areas are occupied by family type farmers. There are a few larger type operators, but generally farm operations are small in both areas. Since the majority of the operators still have varied agricultural enterprises, the areas may be classified as diversified farming areas.



Landowners in the areas are primarily of German and Czech extraction, and land has been passed down from one generation to another. Therefore, in many cases, people in this area are quite attached to their land.

The control area, located about one mile south of the study area, appeared to be very similar to the study area in the "before" period. It consisted of a band of farmers located along a hypothetical line drawn through the area parallel to Interstate 10. From the first interviews with operators, it was found that operations in the two areas were comparable in most respects. The only noticeable difference was the larger amounts of woodland acreage in the control area.

The two areas vary in width depending on the size and shape of the tracts of land. Some operators in both areas have multiple tract operations and operate additional tracts of land outside the delineated study areas. These additional tracts, classified as non-right of way tracts, are included in the study to show the relative importance of right of way tracts to total operations.

#### Degree of Operator Participation in the Study

Right of way was acquired from 31 landowners along the 10-mile section of Interstate 10. Six of the ownerships were small non-agricultural tracts of land. Two of the landowners could not be contacted and one was not cooperative. Operators of the 22 other tracts furnished information about their 1964 operations (Table 5). However, three operators furnished limited information on tenure and land use only.

Table 5

Number of Study Area Operators and the Degree of  
Their Participation in the Study in 1964, 1966 and 1969

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	<u>Number</u>
Total Operators with Land Affected by ROW Acquisition	25
Operators Not Cooperating in 1964 <sup>1/</sup>	3
Operators Furnishing Partial Information in 1964	3
Operators Furnishing Information on Total Farm Operation in 1964	19
Total Operators Contacted in 1966 <sup>2/</sup>	23
Operators Not Cooperative	1
Operators Furnishing Partial Information	1
Operators Furnishing Information on Total Farm Operation in 1966	21
Total Operators Contacted in 1969 <sup>3/</sup>	23
Operators Furnishing Partial Information	2
Operators Furnishing Information on Total Farm Operation in 1969	21
Operators Furnishing Information on Total Operations for All Three Years (1964, 1966 and 1969)	18

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<sup>1/</sup>Includes two absentee owners and one non-cooperative operator.

<sup>2/</sup>Includes a new owner-operator that purchased a ROW tract in 1965.

<sup>3/</sup>Includes a new renter-operator of a ROW tract which was released by original operator in 1968.

In gathering 1966 data, 23 study area operators were contacted, with 21 furnishing information on total farm operations. One was a new operator that purchased a right of way tract in 1965. One operator supplying partial information in 1964 refused to cooperate in 1966.

During the last interviews, 23 operators were again contacted. One was a new operator that had rented a right of way tract in 1968. One operator who supplied complete data in 1964 and 1966 died in late 1969; limited information was obtained on his 1969 farm operations.

Eighteen study area operators furnished complete information on all of their farm operations for all three years. Three additional operators furnished only land tenure and land use information on their total operations for all three years. Information pertaining to land tenure and land use changes on right of way tracts only was obtained from two new operators.

There were 28 tracts touching the hypothetical "right of way" line in the control area. Two of these were not agricultural tracts. In the first round of interviews, 22 of the 26 operators furnished complete operational data (Table 6). Two tract owners were absentee operators and could not be contacted. One operator preferred not to participate any further in the study.

Two operators shown in Table 6 as non-cooperative in 1966 were not available for interview. One operator furnished 1966 and 1969 information on land tenure and land use changes only. Complete operational data were obtained from 19 control area operators for all three years.

Table 6

Number of Control Area Operators and the Degree of  
Their Participation in the Study in 1964, 1966 and 1969

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	<u>Number</u>
<b>Total Operators with Land Touched by the Hypothetical Highway in the Control Area - 1964</b>	26
Operators Not Contacted in 1964	2
Operators Contacted in 1964	24
Operators Non-cooperative	2
Operators Furnishing Information on Total Farm Operation in 1964	22
<b>Total Operators Contacted in 1966</b>	22
Operators Non-cooperative in 1966	2
Operators Furnishing Partial Information	1
Operators Furnishing Information on Total Farm Operation in 1966	19
<b>Total Operators Contacted in 1969</b>	20
Operators Furnishing Partial Information	1
Operators Furnishing Information on Total Farm Operation in 1969	19
<b>Operators Furnishing Information on Total Operations for All Three Years 1964, 1966 and 1969</b>	19

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In sections of the report dealing primarily with land tenure and land use changes, the analyses include data from the 21 study and 19 control area operators. In sections dealing with the effects of right of way takings on production and net operating income, analyses are based on the operations of the 18 study and 19 control area operators that cooperated fully all three years.

#### Characteristics of Operators

Information was gathered from operators pertaining to their age, outside employment and income from sources other than farming. In 1964, the ages of the 18 study area operators ranged from 33 to 80 years, while those of the 19 control operators ranged from 26 to 71 years. The average age for both groups was 53 years, and the distributions by age classes were similar.

Table 7 presents off-farm work and proportions of income from agriculture of the operators in 1964 and 1969. In 1964, eight study and eleven control area operators had no off-farm employment. Of these operators, three study and five control operators received retirement income in 1964. One study area operator with part-time, off-farm employment in 1964 was devoting full-time to his dairy operation in 1969. One control operator with no off-farm work in 1964 was working full-time for about six months a year in a seasonal off-farm job in 1969. There was an increase in the number of operators in both areas reporting full-time, outside employment in 1969.

In 1964, study area operators had an average of 63 percent of their income from agriculture, as compared to an average of 67 percent for the control group, according to their estimates. Between 1964 and 1969

Table 7

Off-Farm Work and Sources of Income for 18 Study Area and  
19 Control Area Operators That Cooperated All Three Years

Item	Study Area		Control Area	
	1964	1969	1964	1969
<u>Off-Farm Work</u>				
Operators with No Off-Farm Work (Number)	8	9	11	10
Operators with Part-time Jobs (Number)	4	1	4	4
Operators with Full-time Jobs (Number)	6	8	4	5
Operators with Wives that Work (Number)	1	2	3	3
<u>Income from Agriculture</u>				
Average Proportion for All Operators (Percent)	63	66	67	69
Operators with 75% or More from Agriculture (Number)	8	9	9	8
Operators with 50-74% from Agriculture (Number)	4	4	8	9
Operators with Less than 50% from Agriculture (Number)	6	5	2	2
<u>Retirement Income</u> - Operators Receiving (Number)	3	4	5	5

there was a slight increase in the average income from agriculture for both groups of operators. A few wives of operators in both areas contributed extra income from off-the-farm work. None of the shifts in off-farm work were attributable to the new highway.

#### RIGHT OF WAY TAKINGS

##### Payments Received for Land and Improvements

Records of the Texas Highway Department were used to determine payments to landowners in the study area for property acquired for right of way. Table 8 lists the 22 right of way tracts, the acreages acquired and amounts received for land, improvements, drainage easements, damages to remaining property and, in one case, payment for a lease-hold interest.

Information regarding payments for right of way takings was not obtained on one of the 22 tracts, so the total represents payments received by 21 landowners. They received a total of \$142,671 in payments. The amount of land in the 21 takings was 356 acres. The approved values of the takings varied from \$787 for three acres from one side of a 186 acre tract to \$25,608 for 26 acres acquired from a 98 acre tract. The highway severed the latter tract into two remainders of 30 and 42 acres each. Takings ranged in size from three to 58 acres with the average taking being about 17 acres.

The average appraised value of the whole property for the 19 tracts for which approved values were available was \$45,534, or about \$321 per acre. The owners received an average of \$6,794 each for land, improvements, damages and easements. Payments for land purchased accounted for

Table 8

Kinds and Amounts of Payments Received by 22 Landowners for  
Right of Way for IH10 Through Colorado and Fayette Counties<sup>1/</sup>

Tract Number	Acres in Tract Before Taking	Acres Acquired for ROW	Value of Property at Time of Taking	Approved Values of Right of Way				Amount of Award
				Land	Damages	Improvements	Easements	
1	103	15	25,500	2,594	750	723		4,067
2	122	13	40,000	4,480	780	640	70	5,970
3	480	58	105,000	12,126	6,830	150		19,106
4	163	5	NA <sup>2/</sup>	1,130	175			1,305
5	144	14	40,500	3,222	680	43		3,945
6	41	17	12,350	4,245	1,225	205		5,675
7	136	25	63,000	7,575	2,625	237		10,437
8	195	7	67,000	1,723	1,257	76		3,056
9	116	8	39,100	2,564	400	327		3,291
10	53	6	14,750	1,730	1,158	328		3,216
11	101	19	46,050	6,943	3,500			10,443
12	98	26	78,250	21,650	1,695	2,263		25,608
14	42	19	NA	NA	NA	NA		NA
15	170	17	50,500	4,716	332	370		5,418
17	100	26	29,800	6,565	810	125		7,500
19	160	14	60,000	3,945	2,500	185		6,630
20	79	7	22,400	1,935	570	95		2,600
23	186	3	NA	567	180	40		787
25	133	10	45,000	2,055	300	200		2,555
22-24	175	27	40,340	5,650	1,442	978		8,070
26	145	18	40,000	3,975	1,290	70		5,335
27	148	21	45,600	6,324	1,333		500 <sup>3/</sup>	7,657
Totals	3,090	375	865,140	105,714	29,832	7,055	70	142,671

<sup>1/</sup>The 21 operators includes the 18 operators that furnished complete operational data for all three years plus three operators that supplied partial information on four tracts (3, 6, 11, 20).

<sup>2/</sup>Information not available.

<sup>3/</sup>Additional money received by an operator for his lease-hold interest is not included in the totals.



74 percent of the total or about \$5,034 per owner. Payments for damages to remaining property averaged \$1,356 to each owner or approximately 21 percent of the total award. Most of the five percent balance was for improvements acquired, as only two owners had land affected by drainage easements. In most cases, payments for improvements were rather small, as no major improvements were acquired. The payments covered such items as fences, roads, water-lines, stock ponds and small buildings.

#### Disposition of Money Received for Right of Way

A few operators had difficulty tracing the flow of money received for right of way, but generally a detailed allocation of the funds was given. Table 9 shows the reported disposition of the payments received by the 13 owner-operators and the 9 landlords. The two groups of owners are shown separately since limited information was obtained regarding the landlords.

The 13 owner-operators received a total of \$57,392 for right of way takings. Eight of these operators placed money in savings, which accounted for 41 percent of total money they received. In 1969, the operators reported that very little of this money had been withdrawn. The next largest sum of \$11,000 was used by three owners as payments on mortgages against their property.

Owner-operators reported spending \$4,001 or 6.9 percent of their total payments on fences along the right of way. The average expenditure per operation for fencing was about \$300. However, this average was influenced to a large degree by one operator spending \$1,400 for an

Table 9

## Ways in which 22 Landowners Used Money Received for IH10 Right of Way

Item	Number of Landowners	Percent of Landowners	Amount of Money Used	Percent of Money Received for ROW
<u>Thirteen Owner-Operators of ROW Tracts</u>				
Improve Land	5	42	5,025	8.8
Construct Corrals on Severed Tracts	2	17	500	0.8
Fencing ROW	13	100	4,001	6.9
Purchase Equipment	2	17	1,250	2.2
Improve or Construct Home	3	25	5,587	9.7
Water Supply (Severed Tracts)	4	33	1,500	2.6
Paid on Land Note	3	25	11,000	19.2
Improve Cash Position	8	75	23,660	41.2
Purchase Consumer Goods	4	33	1,843	3.2
Miscellaneous	2	17	3,026	5.3
Total	13		57,392	100.0
<u>Nine Landlords of Eight Renter- Operators of ROW Tracts</u>				
Fencing ROW Tract	9	100	4,838	6.0
Water Supply (Severed Tract)	4	44	2,090	3.0
Money Not Used on ROW Tracts <sup>1/</sup>	9	100	78,351	91.0
Total	9		85,279	100.0

<sup>1/</sup>According to reports of renters.

above-the-average fence along his severed tracts. Most operators reported fencing costs of less than \$200.

Three owner-operators reported that they used \$5,587 for improvements to their homes, almost equal amounts being spent by each in this manner. Five operators spent \$5,025 or 8.8 percent of the total on the improvement of agricultural land. Three operators cleared woodland and planted and fertilized improved varieties of grasses. The other two operators planted and fertilized improved grasses on cleared, but unimproved, pastureland.

Five owner-operators reported expenditures directly related to the effects of the highway on their remaining right of way tracts. Corrals were constructed on several tracts by two operators and four operators spent \$1,500 for the construction of reservoirs for stock water on several tracts severed by the highway. In contrast to the Madison County and Ellis County studies, no operators in this area used any of the money they received to purchase additional land.

The eight renter-operators of the nine right of way tracts could give estimates for only about nine percent of the \$85,279 of payments received by landlords. The largest expenditure by the nine landlords was for the construction of fencing along the highway route. All used some of their payments for fencing with the amounts spent ranging from \$75 to \$750. It was reported that four landlords spent money for water supplies on severed tracts. Two landowners improved existing water wells and two had earthen reservoirs built in order that severed tracts could be used for livestock operations.

Of the \$142,671 received by all owners, approximately nine percent was spent on items necessary to continue the use of the right of way tracts.

#### Size of Takings

Table 10 lists the 21 study area operators and compares the size of takings to the acreages in right of way tracts and total farm operations prior to right of way acquisition. The 21 operations varied in size from 98 acres in one tract to 757 acres in five tracts. The 22 right of way tracts represented 41.5 percent of all tracts operated but contained 60.7 percent of the total acreage operated. This suggests that the right of way tracts were most often "main" tracts and indeed about two-thirds of the right of way tracts were headquarters tracts of the 21 operators.

The takings from all right of way tracts averaged 17 acres and 375 acres, equal to 12.1 percent of the acreage in right of way tracts and 7.4 percent of the total acreage operated. Right of way tracts constituted the total acreage in eight operations. Operators of these tracts lost an average of 9.7 percent of their land to right of way, with the range of takings being from 1.6 percent to 26.5 percent. The 13 operators of multiple tracts lost from a low of 3.6 percent to a high of 13.7 of their total acreage to right of way takings.

The largest right of way taking from any one operator was 65 acres from two right of way tracts. This taking was equal to only 11.6 percent of the two right of way tracts involved and only 8.6 percent of the operator's total acreage. Two operators lost over 40 percent of their

Table 10

Size of Right of Way Takings Related to Individual Tracts  
and Total Operations of 21 Operators<sup>1/</sup>

Operator	Total Operation		Right of Way Tracts				Right of Way Takings		
	At Time of Taking		Tracts		Acres		Acres Acquired	Percent of ROW Acres	Percent of Total Acres
	Number of Tracts	Number of Acres	Number	Percent of Total	Number	Percent of Total			
1	1	122	1	100	122	100.0	13	10.7	10.7
2	1	163	1	100	163	100.0	5	3.1	3.1
3	3	183	1	33	136	74.3	25	18.4	13.7
4	2	176	1	50	116	65.9	8	6.8	4.5
5	2	98	1	50	53	54.0	6	11.3	6.1
6	5	432	1	20	101	23.4	19	18.8	4.4
7	3	259	1	33	42	16.2	19	45.2	7.3
8	2	215	1	50	170	79.1	17	10.0	7.9
9	1	100	1	100	100	100.0	26	26.0	26.0
10	3	252	1	33	160	63.5	14	8.8	5.6
11	3	456	1	33	175	38.4	27	15.4	5.9
13	4	377	1	25	144	38.3	14	9.7	3.7
14	1	195	1	100	195	100.0	7	3.6	3.6
15	1	186	1	100	186	100.0	3	1.6	1.6
16	1	133	1	100	133	100.0	10	7.5	7.5
17	2	258	1	50	145	56.2	18	12.4	7.0
18	1	148	1	100	148	100.0	21	14.2	14.2
19	3	259	1	33	103	39.8	15	14.6	5.8
20	5	757	2	40	559	73.8	65	11.6	8.6
21	1	98	1	100	98	100.0	26	26.5	26.5
22	3	220	1	33	41	18.6	17	41.5	7.7
Total	50	5,087	22	41.5	3,090	60.7	375	12.1	7.4

<sup>1/</sup>Includes the tracts of the 18 operators that furnished complete operational data for all three years plus three operators (No. 6, 20, 22) supplying partial information.

right of way tracts but both of these operated large acreages in other tracts.

Additional perspective as to the size of right of way takings is given in the discussion of farm operations in the next section.

### FARM OPERATIONS

Total farm operations as well as right of way tracts were studied in order to determine the overall importance of right of way takings to study area farm operators. Efforts were directed toward detecting various changes in the study area operations not present in those in the control area. The changes are discussed first with respect to right of way tracts and then with respect to total operations.

#### Changes in Number, Size and Tenure of Operations

##### Right of Way Tracts

At the time of right of way acquisition, the 21 study area farm operators farmed 22 right of way tracts containing 3,090 acres. These tracts ranged from 41 to 480 acres in size and averaged 140 acres (Table 11). Right of way takings totalled 375 acres and created 35 remainders averaging 78 acres and with a range in size from 1 to 304 acres. Following combinations of remainders and sales into non-agricultural use, the number of right of way tracts in agricultural operations had been reduced to 28 in 1969. An additional 31 acres were removed from commercial agricultural use through these adjustments.

Renter-operated tracts lost proportionately more area to right of way than did owner-operated tracts. Prior to the highway, the 9 rented tracts averaged 151 acres in size. The 16 remainders from right of way takings averaged only 73 acres. Owner-operated tracts were increased from

Table 11

Changes in Number and Size of Right of Way Tracts and  
Remainder According to Tenure and Type of Acquisition<sup>1/</sup>

Item	Before Highway			After ROW Taking <sup>2/</sup>			1969 Operations <sup>3/</sup>		
	Tracts	Acres	Average Size Acres	Tracts	Acres	Average Size Acres	Tracts	Acres	Average Size Acres
All Tracts	22	3,090	140	35	2,715	78	28	2,684	96
Owner-Operated	13	1,727	133	19	1,546	81	17	1,582	93
Renter-Operated	9	1,363	151	16	1,169	73	11	1,102	100
Tracts Not Divided	9	1,160	129	9	1,063	118	9	1,063	118
Owner-Operated	7	1,028	147	7	945	135	8 <sup>3/</sup>	991	124
Renter-Operated	2	132	66	2	118	59	1	72	72
Tracts Divided	13	1,930	148	26	1,652	64	19	1,621	85
Owner-Operated	6	699	116	12	601	50	9	591	66
Renter-Operated	7	1,231	176	14	1,051	75	10	1,030	103

<sup>1/</sup>Based on tracts of 21 operators.

<sup>2/</sup>Refers to tracts as they existed immediately after right of way taking.

<sup>3/</sup>One tract previously operated by renter.

13 to 19 in number and their average size decreased from 133 to 81 acres. By 1969, renter-operated tracts had decreased to 11 with an average size of 100 acres. Owner-operated tracts had decreased to 17 in number with an average size of 93 acres. One of the latter 17 owner-operated tracts had been a rented tract until 1965. This accounts for the net gain in 1969 in owner-operated acreage and, similarly, for a part of the net loss in the acreage of rented tracts.

Nine of the right of way takings took land from only one side of tracts and, on balance, these remained unchanged through 1969 in number, total acreage and average size. Thirteen takings divided or severed right of way tracts resulting in 26 remainder parcels with an average size of 64 acres. By 1969, these had been reduced in number to 19 averaging 85 acres in size.

Thus the combination of tracts occurred wholly among severed tracts as did the net decrease in agricultural land. Several small remainders from severed tracts became suitable for rural residential sites.

The major adjustments relating to severed tracts involved four renter operators making arrangements with their landlords to "trade" operatorships. These arrangements reduced separately operated tracts by four. One owner-operator of a severed tract deeded the isolated remainder to his son-in-law who combined it with adjacent operations. Two small severed remainders were sold for non-agricultural use and a portion of one severed remainder was leased to an oil company for a service station site.



In the control area between 1964 and 1969, there were only two minor changes in land tenure on control right of way tracts and these were among control area operators. Thus total acreage and tract size remained the same during the study period. The 19 control area operators farmed 20 control right of way tracts containing 2,188 acres, or an average of 115 acres per tract.

Table 12 presents a frequency distribution of study and control area right of way tracts by size as they existed in the various time periods. In 1964, 95 percent of the study area and 90 percent of the original right of way tracts were between 41 and 320 acres in size. However, the tracts of the control area were more evenly distributed, between the three major categories, while 12, or 55 percent of the study area tracts were concentrated in the 81-160 acre category.

In 1965, which represents the period immediately after taking but before any adjustments were made, there is a noticeable difference in the distribution of study area tracts by size. The study area had no tracts of less than 40 acres in the before period, but in 1965 there were 13 tracts with 40 acres or less. However, the operators were mainly concerned about the 9 remainders with less than 20 acres each. In tracts of this size, adjustments are usually necessary as it is not always economical to continue operating such small parcels. This is especially true in cases where the tract is cut off from the normal water supply. Also, none of the small remainders were used as cropland so their use was limited to grazing. Therefore, operators began selling off remainders, making trades of rented land or adjusting their operations on the smaller tracts.

Table 12

Size Distribution of Right of Way Tracts Operated by 21 Study Area and  
19 Control Area Operators by Years<sup>1/</sup>

Size of Tracts	1964		1965 <sup>2/</sup>		1966		1969	
	Number of Tracts		Number of Tracts		Number of Tracts		Number of Tracts	
	Study	Control	Study	Control	Study	Control	Study	Control
0 - 5	0	0	3	0	0	0	0	0
6 - 10	0	0	3	0	2	0	1	0
11 - 20	0	0	3	0	3	0	3	0
21 - 40	0	2	4	2	4	2	2	2
41 - 80	4	7	7	7	5	7	6	7
81 - 160	12	7	13	7	14	7	14	6
161 - 320	5	4	2	4	2	4	2	5
321 - Over	1	0	0	0	0	0	0	0
Total Tracts	22	20	35	20	30	20	28	20
Number of Operators	21	19	21	19	21	19	21	19

<sup>1/</sup>Includes the 18 study and 19 control area operators furnishing complete operational data all three years plus three study area operators furnishing partial information.

<sup>2/</sup>Refers to tracts as they existed after the taking and before any subsequent adjustments were made.

By 1966, the number of tracts with 20 acres or less had been reduced to five as the two tracts in the 0-5 acre group had been sold, and one had been combined with a larger tract of an operator renting adjoining land. The other tract in the 6-10 acre group was also combined by another renter operating adjoining land.

Further adjustments of the small remainders were made between 1966 and 1969 to reduce the total in farm operations to 28 tracts.

#### All Tracts in Operations

Right of way takings in relation to right of way tracts and total farm tracts of 21 operators have been shown in Table 10. These operators farmed 22 right of way tracts and 28 non-right of way tracts in 1964. Right of way takings represented 12.1 percent of right of way tract acreage and 7.4 percent of the acreage in all 50 tracts operated.

Tables 13 and 14 compare the total operations of farmers of study area and control area right of way tracts from the standpoint of numbers of tracts, total acreage and acres owned and rented in 1964, 1966 and 1969. Two study area operators were added, one in 1966 and one in 1969, as right of way tracts came under their operations. The two previous operators of these tracts continued as farmers in the general area and are included in Table 13. In the control area, there was no change in hypothetical right of way tracts except that one operator purchased such a tract he had previously rented and combined it with another tract.

Table 13

Tracts and Acreages Owned and Rented in Total Farm Operations  
of Operators of Study Area Right of Way Tracts in 1964, 1966 and 1969

Item	1964			1966			1969		
	<u>Operators</u> Number	<u>Tracts</u> Number	<u>Acres</u> Number	<u>Operators</u> Number	<u>Tracts</u> Number	<u>Acres</u> Number	<u>Operators</u> Number	<u>Tracts</u> Number	<u>Acres</u> Number
<u>Total Land</u>	21	50	5,087	22	62	4,801	23	55	4,741
Land Owned	18	26	2,738	19	33	2,787	19	34	2,851
Land Rented	13	24	2,349	12	29	2,014	10	21	1,890
<u>Increased Acres</u>				6	6	301	3	3	126
Land Purchased				2	1	96 <sup>1/</sup>	2	2	108
Land Rented				3	3	105 <sup>2/</sup>	1	1	18
Land Inherited				1	2	100	0	0	0
<u>Reduced Acreage</u>				21	22	659 <sup>1/</sup>	5	8	369
Land Sold				4	4	104 <sup>1/</sup>	1	1	44
Release of Rented Land				5	5	180 <sup>2/</sup>	5	7	325
Right of Way Acquisition				21	22	375	-	-	-
New Operators of ROW Tracts <sup>3/</sup>				1	1	76	1	2	183
Net Change Between Years 1964-1966				1	12	-286	-	-	-
Net Change Between Years 1964-1969				-	-	-	2	5	-346

<sup>1/</sup>Includes a 52-acre severed tract given to member of family with property adjoining the tract.

<sup>2/</sup>Includes two operators of rented tracts that traded severed parcels of one and ten acres.

<sup>3/</sup>One new operator purchased a remainder tract in 1965, and the other rented a ROW tract in 1968.

Table 14

Tracts and Acreages Owned and Rented in Total Farm Operations of  
Control Area Operators of Control Area Right of Way Tracts in 1964, 1966 and 1969

Item	1964			1966			1969		
	Operators Number	Tracts Number	Acre Number	Operators Number	Tracts Number	Acre Number	Operators Number	Tracts Number	Acre Number
<u>Total Land</u>	19	50	6,359	19	45	5,176	19	43	5,205
Land Owned	18	35	5,113	17	33	4,065	17	30	3,991
Land Rented	11	15	1,246	10	12	1,111	8	13	1,214
<u>Increased Acreage</u>				6	6	272	4	6	495
Land Rented				3	3	74	3	5	472
Land Purchased				3	3	198			
Land Inherited				0	0	0	1	1	23
<u>Reduced Acreage</u>				8	8	1,455	5	7	466
Land Sold				4	4	1,332	1	1	65
Release of Rented Land				4	4	123	3	3	154
Release of Estate Land				0	0	0	2	3	247
Net Change Between Years 1964-1966				0	- 5	-1,183			
Net Change Between Years 1964-1969							0	-7	1,154

In 1964, study area operations averaged 242 acres in size and operations in the control area averaged 334 acres. Two rather large control area operations (989 and 1,450 acres) are largely responsible for the difference in average sizes. The average sizes of the 50 tracts which each group operated were 102 acres for the study operators and 127 acres for the control operators.

In 1964, study area operators owned about 55 percent of the land that they operated as compared to the 81 percent that control area operators owned of their total acreage. Much of this difference arose from the fact that two of the largest study area operators rented most of their land they farmed while the two largest control area operators owned a major proportion of their farmland. By 1969, owner-operated acreage represented 60 percent of the study area operators' farmland compared to 76 percent of the control area operations. Thus in relation to total operations, right of way acquisition seemed to have no adverse effects on owner-operatorship of agricultural land.

In 1966, operators in the study area group had 286 fewer acres in total operations than in 1964. The average size of operations decreased to 218 acres. However, the control group decreased its acreage by a net of 1,183 acres. This demonstrates the degree of fluctuation in agricultural holdings and also the magnitude of adjustments not related to right of way takings.

By 1969, the total acreage operated by the study area group decreased by an additional 60 acres even though another operatorship was added. The control group at the same time had experienced a small increase in total acreage. The number of tracts operated by the study area operators

decreased with continued adjustments of right of way remainders were the main cause. The control group decreased slightly the number of tracts from 45 to 43.

Right of way remainders accounted for 10 of the 12 added tracts of the study group from 1964 to 1966. Four of the decreases in tracts from 1966 to 1969 resulted from sales or combinations of remainder tracts.

#### Changes in Kind and Intensity of Land Use

One of the primary concerns of the study was the effect the highway had on land use of the right of way tracts. Land use information is presented first on right of way tracts and then on total operations.

#### Right of Way Tracts of Study and Control Operators

Table 15 presents the major land uses on the right of way tracts in the study and control areas. In 1964, land use patterns on the right of way tracts of the study and control areas were generally about the same except that the study area operators classified a somewhat smaller percentage of their land as cropland. From 1964 to 1969 the percent of acreage in cropland and pastureland remained constant for the study area operators while the control group reported a small increase in cropland acreage and the same decline in pastureland. A portion of the increase in cropland acreage by the control group was a result of one operator consolidating two adjoining tracts that he purchased, with a large percentage of the new acres in cropland, into one unit which made the right of way tract in 1969 larger than the original tract and the new unit contained a higher percent of cropland acreage.

Table 15

Changes in Land Use of Right of Way Study and Control Tracts of  
21 Study Area and 19 Control Area Operations<sup>1/</sup>

Type of Land	1964		1966		1969	
	Percent of Acres		Percent of Acres		Percent of Acres	
	Study	Control	Study	Control	Study	Control
<u>Cropland</u>	26.0(18)	38.2(19)	26.0(18)	39.7(19)	26.9(19)	40.6(19)
Harvested	11.0(13)	20.3(18)	7.6(12)	14.5(14)	5.9(10)	12.6(15)
Harvested and Grazed	3.8( 6)	2.3( 4)	4.0( 6)	2.5( 6)	4.2( 5)	8.3( 6)
Grazed	7.7( 8)	14.3(13)	10.0(13)	20.7(16)	12.0(13)	19.1(14)
Government Program	3.5( 5)	1.3( 3)	4.4( 6)	2.0( 3)	4.8( 5)	0.6( 2)
<u>Pastureland</u>	73.0(21)	60.4(19)	72.9(21)	58.6(19)	72.0(21)	57.8(19)
Improved	3.2( 6)	16.5( 6)	8.6(10)	16.8( 7)	16.2(16)	29.9(14)
Cleared	50.7(21)	28.3(15)	45.4(19)	27.8(16)	38.2(20)	16.9(12)
Woodland	19.1(14)	15.6(12)	18.9(18)	14.0(10)	17.6(15)	11.0(10)
<u>Other Land</u>	1.0(19)	1.4(17)	1.1(16)	1.7(17)	1.1(16)	1.6(17)
<u>Total Acreage</u>	3,090(21)	2,188 (19)	2,697(21)	2,188 (19)	2,684(21)	2,402 (19)

<sup>1/</sup> Includes the 18 study and 19 control area operators cooperating all three years plus the three study area operators furnishing partial information. Figures in parentheses are numbers of operators.



Both groups of operators harvested successively smaller percentages of their land for cash crops only in 1966 and 1969. They diverted land from cash crops to crops that would be grazed and also harvested, such as small grains or some of the improved grasses that would be cut for hay and then grazed by livestock. These kinds of combination crops fit very well into cattle operations. The amount of cropland used for grazing of livestock also was increased in 1966 and 1969 by both groups of operators. Land in government grain programs represents a small portion of the cropland, but it has advantages for cattle operators. The operators cannot harvest any crops from the land, but can graze it during winter months.

Pastureland was classified into improved pasture, cleared but unimproved pasture, and woodlands. In 1964, six study area operators had only 3.2 percent of the right of way tract acreage in improved pastures, while six control operators had 16.5 percent of control area acreage in improved pastures. About 50 percent of the acreage in the study area tracts was cleared unimproved pastureland as compared to about 28.0 percent for the control group. Study area operators had a slightly larger percentage of their right of way land in woodland than did control operators.

Both groups of operators were striving for increased grazing production from their pastureland. Both areas showed increases in the acreage in improved pastures and in the number of operators having such acreages in 1966 and 1969. Land in woodlands and cleared unimproved pastures decreased in amount as it was being converted to improved pastureland.

Based on the combined land use patterns on the right of way tracts there appears to be little difference between farm operations in the study and control areas. However, four study operators with tracts divided by the highway made changes in land use on the remainder tracts that were directly related to the effects of the highway. These changes usually consisted of small acreages being shifted from one agricultural use to another.

#### All Tracts of 18 Study and 19 Control Area Operators

Tables 16 and 17 present land use patterns on the total operations of the 18 study and 19 control operators who supplied complete operational data for all three years. (Information on land use in total operations was incomplete for three study area operators who were represented in previous tables.) In 1964, land use patterns on the total operations of the study and control area operators generally followed those on the right of way tracts of the study and control area operators presented in Table 15. However, the control area operators had a higher percentage of pastureland acreage in their total operations than on the control area right of way tracts. But by 1966 the ratio of cropland acreage to pastureland acreage was almost identical for the study and control area operators. This was caused by three control area operators disposing of tracts containing primarily pastureland.

As was the case for the right of way tracts from 1964 to 1969, cropland acreage of the study and control area total operations remained rather stable, but the operators in both areas had fewer acres harvested. There were also three fewer operators in each area harvesting crops in

Table 16

Major Uses of All Agricultural Land Operated  
by 18 Study Area Operators in 1964, 1966 and 1969

Type of Land	1964			1966			1969		
	<u>Operators</u>	<u>Land</u>		<u>Operators</u>	<u>Land</u>		<u>Operators</u>	<u>Land</u>	
	Number	Acres	Percent	Number	Acres	Percent	Number	Acres	Percent
<u>Cropland</u>	17	979	26.6	17	887	26.0	17	853	26.8
Harvested	13	368	10.0	10	207	6.1	10	192	6.0
Harvested & Grazed	8	166	4.5	10	184	5.4	8	172	5.4
Pastured	8	349	9.5	12	392	11.5	13	383	12.1
Government Program	4	96	2.6	7	104	3.0	7	106	3.3
<u>Pastureland</u>	18	2,667	72.5	18	2,488	73.0	18	2,292	72.1
Improved	9	257	7.0	12	390	11.4	15	602	18.9
Unimproved	18	1,731	47.1	18	1,420	41.7	18	1,140	35.9
Woodland	15	679	18.4	16	663	19.5	16	543	17.1
Idle Pastureland	0	0	0	2	15	0.4	1	7	0.2
<u>Other Land</u>	18	32	0.9	17	33	1.0	17	34	1.1
<u>Total Land</u>	18	3,678	100.0	18	3,408	100.0	18	3,179	100.0

Table 17

Major Uses of All Agricultural Land Operated by  
19 Control Area Operators in 1964, 1966 and 1969

Type of Land	1964			1966			1969		
	Operators	Land		Operators	Land		Operators	Land	
	Number	Acres	Percent	Number	Acres	Percent	Number	Acres	Percent
<u>Cropland</u>	19	1,316	20.7	19	1,330	25.7	19	1,329	25.5
Harvested	19	616	9.7	17	505	9.7	16	448	8.6
Harvested & Grazed	7	187	2.9	7	144	2.8	6	168	3.2
Pastured	14	458	7.2	16	625	12.1	15	685	13.2
Government Program	5	55	0.9	5	56	1.1	3	28	0.5
<u>Pastureland</u>	19	4,958	78.0	19	3,753	72.5	19	3,784	72.7
Improved	10	713	11.2	11	556	10.7	16	1,169	22.5
Unimproved	15	1,165	18.3	15	1,051	20.3	16	627	12.0
Woodland	14	3,080	48.5	12	2,146	41.5	13	1,988	38.2
<u>Other Land</u>	19	85	1.3	19	93	1.8	19	92	1.8
<u>Total Land</u>	19	6,359	100.0	19	5,176	100.0	19	5,205	100.0

1969. The decrease in acreage harvested was about the same for the two areas, as the study area had 179 less acres harvested as compared to 168 fewer acres harvested by the control operators. However, when comparing the cropland acreages harvested as a percent of total acreage, the study area operators had a greater decrease between 1964 and 1969, than did the control area operators. Since the highway acquired about 70 acres of cropland from the 18 study area operators some of this loss in cropland acreage harvested could be related to the effects of the highway. There were no noticeable differences between the study and control area operators during the study period on the land use practices of the other three categories of cropland uses.

Thus while right of way acquisition had some minor effects on the land use of right of way tracts, such effects tend to be obscured by the fact that study area operators farmed large acreages of other land.

#### Intensity of Land Use

In order to maximize returns from cropland or pastureland, most operators in the area have found it necessary to use some form of commercial fertilizer. Fertilizing cropland, particularly cash crops, has been a common practice for some time, but the use of commercial fertilizer on pastureland is a relatively new practice that is becoming widespread among the more aggressive operators.

Tables 18 and 19 show the use of fertilizer on the right of way tracts and then on the total operations of the 18 study area and 19 control area operators. Table 18 presents the percentage of the right of way tract acreage, owned and rented, that was fertilized during each

Table 18

Use of Commercial Fertilizer on the Right of Way Tracts of the  
18 Study and 19 Control Area Operators<sup>1/</sup>

Type of Land Fertilized	1964 Acres <sup>2/</sup>			1966 Acres <sup>2/</sup>			1969 Acres <sup>2/</sup>		
	Owned	Rented	Total	Owned	Rented	Total	Owned	Rented	Total
<u>S T U D Y   A R E A</u>									
Cropland Percent	8.2( 7)	12.7( 5)	9.6(12)	9.7( 8)	16.0( 5)	11.4(13)	18.9( 9)	17.9( 4)	18.6(13)
Pastureland Percent	3.3( 5)	5.1( 2)	3.9( 7)	11.1( 6)	4.1( 3)	9.1( 9)	16.0(10)	19.8( 5)	17.1(15)
Total Fertilized Percent	11.5(12)	17.8( 6)	13.5(18)	20.8(13)	20.1( 5)	20.5(18)	34.9(13)	37.7( 5)	35.7(18)
Total Acreage <sup>3/</sup>	1,626	763	2,389	1,501	587	2,088	1,500	575	2,075
<u>C O N T R O L   A R E A</u>									
Cropland Percent	26.6(12)	18.1( 3)	24.6(15)	19.3(11)	18.1( 2)	19.0(13)	35.5(15)	30.1( 4)	34.4(18)
Pastureland Percent	4.8( 2)	4.0( 1)	4.6( 3)	7.1( 5)	4.0( 1)	6.4( 6)	8.7( 6)	29.7( 3)	13.0( 9)
Total Fertilized Percent	31.4(12)	22.1( 3)	29.2(15)	26.4(13)	22.1( 2)	25.4(14)	44.2(15)	59.8( 4)	47.4(18)
Total Acreage <sup>3/</sup>	1,690	498	2,188	1,690	498	2,188	1,904	498	2,402

<sup>1/</sup> Figures in parentheses represent the number of operators.<sup>2/</sup> Refers to only the percent of the total acreage that was fertilized.<sup>3/</sup> Refers to the total acreage in the right of way tracts.

of the three years. As shown in Table 18 the control operators fertilized a larger percentage of their right of way tract acreage in 1964 than did the study area operators. Control area operators did not increase the use of fertilizer on right of way tracts until after 1966, but had an increase of 22 percentage points from 1966 to 1969. Study area operators had a seven percentage point increase between 1964 and 1966, and a 15 percentage point increase from 1966 to 1969.

A larger percentage of cropland was being fertilized in the control area in 1964, but both areas experienced increases in cropland acreage fertilized from 1964 to 1969. The study area operators used fertilizer on a larger percentage of their right of way tract pastureland than did the control group. Some of the increase in the number of pastureland acres fertilized on the right of way tracts by study area operators, from 3.9 percent in 1964 to 17.1 percent in 1969, is attributable to the highway, as three of the operators reported applying additional fertilizer to remainder tracts in an effort to help offset the loss of land.

The acreage in total operations of the 18 study and 19 control operators and the percentages of the cropland and pastureland fertilized are given in Table 19. The percentage of acreage in total operations which was fertilized generally followed the same pattern as that for right of way tracts.

Study area operators showed percentage increases in acreage fertilized in 1966 and 1969, while control operators had a decrease in 1966 but a large increase from 1966 to 1969. From 1964 to 1966, study area operators

Table 19

Use of Commercial Fertilizer by the 18 Study and 19 Control  
Area Operators in Their Total Operations<sup>1/</sup>

Item	1964 Acreage		1966 Acreage		1969 Acreage	
	Number	Percent	Number	Percent	Number	Percent
<u>S T U D Y   A R E A</u>						
Cropland Fertilized	467(15)	12.7	363(13)	10.6	629(15)	19.8
Pastureland Fertilized	242( 9)	6.6	370(10)	10.9	567(18)	17.8
Total Fertilized	709(16)	19.3	733(15)	21.5	1,196(18)	37.6
Acres Not Fertilized	2,969( 2)	80.7	2,675( 3)	78.5	1,983( 0)	62.4
Total Acreage	3,678(18)	100	3,408(18)	100	3,179(18)	100
<u>C O N T R O L   A R E A</u>						
Cropland Fertilized	836(16)	13.1	524(14)	10.1	1,113(19)	21.4
Pastureland Fertilized	169( 7)	2.7	203( 8)	3.9	942(15)	18.1
Total Fertilized	1,005(17)	15.8	727(16)	14.0	2,055(19)	39.5
Acres Not Fertilized	5,354( 2)	84.2	4,449( 3)	86.0	3,150( 0)	60.5
Total Acreage	6,359(19)	100	5,176(19)	100	5,205(19)	100

<sup>1/</sup>Figures in parentheses represent the number of operators.



had a 2.2 percent increase compared to a 1.8 percent decrease for the control group. From 1964 to 1969 the study area operators had a 68.7 percent increase in total acreage fertilized as compared to 104.5 percent increase for the control operators. Nevertheless, it appears that the highway had some influence on the use of fertilizer by study area operators between 1965 and 1966. Comparing 1966 and 1969, there is no indication that the highway had any effects on their use of fertilizers. However, it should be noted that operators can apply fertilizer from one to four times a year on the same acreage in crops or pastureland. This will be discussed later in the section of the report dealing with the various operating expenses for each of the three years.

#### Changes in Crop and Livestock Production

The amount of crops and livestock produced each year were converted to dollars in an effort to determine the effect, if any, of the taking of right of way on farm operations. The production of crops on right of way tracts will be discussed followed by a discussion of crop production pertaining to the total operations. Livestock production is evaluated from the standpoint of total operations only due to the difficulty of developing such information on a tract basis. Values of crops and livestock are based on market values in the year of production or upon actual sales prices when these were obtained.

#### Right of Way Tracts

Table 20 presents the changes in crop production on the right of way tracts of the areas for 1964, 1966 and 1969. The trend in this

Table 20

Acreage and Value of Crops Produced on Right of Way Tracts  
by 18 Study Area and 19 Control Area Operators in 1964, 1966 and 1969<sup>1/</sup>

Crops	1964			1966			1969		
	Acres	Production <sup>2/</sup>	Value	Acres	Production	Value	Acres	Production	Value
	<u>S T U D Y     A R E A</u>								
Hay	233 (14)	14,335	\$ 9,719	184 (13)	14,909	\$10,280	194 (11)	15,890	\$11,015
Corn	132 ( 7)	6,750	7,868	92 ( 6)	3,880	3,400	57 ( 6)	1,440	2,095
Cotton	20 ( 2)	13	2,108	13 ( 2)	4	565	7 ( 1)	2	350
Grain Sorghum	2 ( 1)	3	110	5 ( 1)	2.5	90	-	-	-
Total	387 (14)	-	19,695	294 (13)	-	14,335	258 (11)	-	13,460
87 Value of Crops Sold	- ( 4)	-	3,703	- ( 4)	-	2,150	- ( 5)	-	2,865
	<u>C O N T R O L     A R E A</u>								
Hay	237 (15)	16,140	\$ 9,375	181 (14)	10,595	\$ 7,169	232 (14)	21,780 <sup>3/</sup>	\$16,495
Corn	229 (11)	11,725	13,634	161 ( 8)	6,280	9,052	172 ( 9)	2,360	3,267
Cotton	6 ( 1)	3	510	7 ( 1)	0	0	0	0	0
Grain Sorghum	6 ( 1)	8.4	202	12 ( 2)	14.0	504	0	0	0
Oats & Rye Seed	12 ( 1)	- <sup>4/</sup>	210	0	- <sup>3/</sup>	0	17 ( 1)	- <sup>4/</sup>	600
Total	490 (18)	-	23,931	361 (15)	-	16,725	421 (16)	-	20,362
Value of Crops Sold	- ( 8)	-	1,745	- ( 3)	-	1,350	- ( 2)	-	1,075

<sup>1/</sup> Figures in parentheses represent number of operators

<sup>2/</sup> Production of crops are as follows: hay in bales, corn in bushels, cotton in bales and grain sorghum in tons.

<sup>3/</sup> Includes one operator that increased hay production from 300 bales in 1966 to 10,500 in 1969.

<sup>4/</sup> No units available.

area was toward less acreage being planted in cash crops. Cotton and corn had been the two major cash crops of the general area for years, but Table 20 shows that only two study and one control operator planted cotton in 1964 and only one study area operator had cotton in 1969. Corn was more widely grown by both groups of operators but there was a decrease in acreage and operators by 1969. Unfavorable weather conditions were responsible for the reduction in corn yields per acre in 1966 and 1969.

Practically all of the operators harvested hay for winter forage for the cattle. Hay production by the study area operators, on a smaller acreage of land, remained rather stable over the three years, but there were three fewer operators in 1969 producing hay on the right of way tracts. Control operators also harvested fewer acres but, with one operator producing over 10,000 bales in 1969, showed a sizeable increase over 1966 yields.

The small amount of crops that were sold each year indicates that forage and grain crops were being raised primarily for feed in livestock operations. Operators reported that crop sales would have been somewhat larger in 1966 and 1969 but due to poor crops they had no excess grain to sell. However, one control area operator, (a dairyman) with a large increase in hay production in 1969 had a large impact on total crop production in 1969.

In summarizing crop farming operations on the right of way tracts of the two groups of operators it was found that the study area operators reduced their acreage from 1964 to 1969 by 33 percent and production (value of crops) by 32 percent. The control group reduced their acreage by 14 percent and production by 15 percent. However, between 1964 and 1966 the two groups of operators reduced their acreage harvested and production by about the same amount on the right of way tracts. Acres harvested was reduced by 24 percent in the study area and 26 percent by the control operators. Value of crops produced decreased in proportion to decrease in acreage, 27 percent in study area and 30 percent in the control area. Based on these comparisons, it appears that the highway had no effects on the changes in crop production between 1964 and 1966 as both groups of operators performed similarly. Also, the 1964-1969 differences in operations would have been more alike between the areas if the one control area operator had not added the extra hay production in 1969. Thus there is no indication that the loss of land to highway right affected crop production on remainder tracts.

#### All Tracts in Operations

Table 21 shows the extent of total crop production on all tracts in the operations and the value of crops raised and sold by the 18 study and 19 control area farmers. Data pertaining to crop production were obtained by tract from each operator and for each of the three years. Nearly all of the operators harvested some kind of crops during the three years. In 1964 and 1969 only two study and one control area operator harvested no crops, while in 1966 only one study and one control area reported no crop production.

Table 21

Acres and Value of Crops Produced on Total Operations by  
18 Study Area Operators and 19 Control Area Operators from 1964 to 1969

Crops	1964			1966			1969		
	Acres <sup>1/</sup>	Production <sup>2/</sup>	Value	Acres	Production	Value	Acres	Production	Value
<u>S T U D Y   A R E A</u>									
Hay	311 (16)	18,105	\$12,390	250 (17)	19,834	\$13,390	285 (16)	22,105	\$15,845
Corn	151 ( 8)	7,370	8,590	110 ( 9)	3,180	4,272	72 ( 7)	1,665	2,455
Cotton	43 ( 3)	21	3,368	23 ( 2)	4	565	7 ( 1)	2	350
Grain Sorghum	2 ( 1)	3	110	5 ( 1)	2.5	90	0	0	0
Total	507 (16)	-	24,458	368 (17)	-	18,317	364 (16)	-	18,650
Value of Crops Sold	- ( 5)	-	4,833	- ( 4)	-	2,272	- ( 5)	-	3,025
<u>C O N T R O L   A R E A</u>									
Hay	493 (19)	28,994	\$19,763	401 (17)	30,050	\$19,667	371 (18)	27,325	\$20,987
Corn	267 (13)	13,017	15,121	213 ( 9)	7,703	11,186	217 (10)	2,685	3,754
Cotton	6 ( 1)	3	510	7 ( 1)	0	0	0	0	0
Grain Sorghum	6 ( 1)	8.4	202	12 ( 2)	14	504	0	0	0
Oats & Rye Seed	23 ( 1)	- <sup>3/</sup>	710	20 ( 1)	- <sup>3/</sup>	400	37 ( 1)	- <sup>3/</sup>	950
Total	795 (18)	--	36,306	653 (18)	-	31,757	625 (18)	-	25,691
Value of Crops Sold	- ( 8)	-	2,555	- ( 5)	-	2,150	- ( 3)	-	2,335

<sup>1/</sup> Figures in parentheses represent number of operators.

<sup>2/</sup> Crop units are as follows: hay & cotton bales, corn in bushels and grain sorghum in tons.

<sup>3/</sup> No units available.

The control area operators harvested about 36 percent more acres in 1964 than those in the study area. However, the ratio of acres harvested to total acreage is about the same between the two areas in 1964 and changed very little in 1966 and 1969. In 1969 operators in the study and control area harvested a smaller percentage of their acreage, but this was expected as operators in both areas were reducing their crop farming and depending more on their livestock enterprises.

These decreases in acres harvested, particularly acres in cash crops, follow the general trend of farmers on a county-wide basis which is shown in Tables 1 and 2 of this report. Cotton, a very important cash crop to the farmers of this area years ago, was of little importance to operators by 1966 and 1969. However, in 1964 the amount of cotton sold by the three study area operators represented almost 70 percent of the value of crops sold that year. A few operators planted small acreages in grain sorghum in 1964 and 1966, but none in 1969.

Hay and corn were the two most important crops for the operators of both areas, however, both groups of operators decreased the acreage in these crops from 1964 to 1969. In 1966, both groups of operators harvested approximately 19 percent fewer acres of hay than in 1964, while, the study area operators increased their hay production by 9.5 percent compared to a 3.6 percent increase for the control group. The study area harvested 22 percent more hay in 1969 on 8 percent fewer acres while the control operators produced 5.7 percent less hay on 25 percent fewer acres.

Corn production declined in both 1966 and 1969. The largest reduction in corn occurred between 1964 and 1966 and was due primarily to poor crops in both areas in 1966. During this period acres harvested decreased 27 percent in the study area and 20 percent in the control area while production decreased by 57 percent in study and 41 percent in the control area. The somewhat greater decrease experienced by the study area operators should not be attributed to the highway as only four study area operators reported losing cropland to the highway that was suitable for raising corn. Two of the study area operators reported in 1966 that due to their reaching retirement age they had decided to reduce their farming and placed some of their corn acreages in the government grain program in 1966 and 1969. The two other study area operators losing corn land reported planting the same total acreage in corn in 1966 and 1969 but had poor crops.

Hay production was not affected as much as corn by the dry conditions in 1966 and 1969. However, the operators reported that hay production in 1966 and 1969 would have been considerably greater had weather conditions been comparable to 1964 as the improved varieties of hay crops, such as coastal Bermuda, yield much more hay per acre.

Table 22 shows a before and after comparison of the value of crop production on the right of way tracts as compared to value of crops raised on the total operations of the 18 study and 19 control area operators. In 1964, the study area right of way tracts represented about 65 percent of the acreage in the total operations of the study area operators, as compared to only 34 percent for the control group. Between 1964

Table 22

A Comparison of Acreage and Value of Crops Harvested From  
Right of Way Tracts and From Total Operations of 18  
Study and 19 Control Operators in 1964 and 1969<sup>1/</sup>

	Study Area		Control Area	
	Right of Way Tracts <sup>2/</sup>	Total Operations	Right of Way Tracts	Total Operations
<u>Total Acres</u>				
1964	2,389 (18)	3,678 (18)	2,188 (19)	6,359 (19)
1969	2,075 (18)	3,179 (18)	2,402 (19)	5,205 (19)
Percent Change Between Years	-13.1	-13.5	+9.8	-18.1
<u>Acres Harvested</u>				
1964	387 (14)	507 (16)	490 (18)	795 (19)
1969	258 (11)	364 (16)	421 (16)	625 (18)
Percent Change Between Years	-33.3	-28.2	-14.0	-21.4
<u>Value of Crops Produced</u>				
1964	\$19,695 (14)	\$24,458 (16)	\$23,931 (18)	\$36,306 (19)
1969	13,460 (11)	18,650 (16)	20,362 (16)	25,691 (18)
Percent Change Between Years	-31.7	-23.7	-14.9	-29.2
<u>Value of Crops Harvested Per Acre</u>				
1964	\$50.89	\$48.24	\$48.83	\$45.67
1969	52.17	51.24	48.37	41.10
Percent Change Between Years	+2.5	+6.2	-0.9	-10.0

<sup>1/</sup> Value of crops includes all crops raised and harvested by the number of operators harvesting crops which are in parentheses.

<sup>2/</sup> Includes right of way tracts of two new operators in 1969 in order to obtain a comparison of all right of way tracts still in agricultural production. The numbers of such tracts were 18 in 1964 and 20 in 1969.



and 1969 the study area operators had approximately a 13 percent decrease in acreage in right of way tracts and total operation while the control group had a 9.8 percent increase in right of way acreage and a 18.1 percent decrease in overall acreage. The increase in right of way tract acreage result from one control operator combining adjoining land with his original right of way tract. In their overall operations in 1964 the two groups of operators harvested a similar percentage of their total acres. The study area operators harvested 13.7 percent of total acreages compared to 12.5 percent for control operators. In 1964, the study area operators harvested 16.1 percent of their right of way tract acreage compared to 22.4 percent for the control group. Both groups harvested fewer acres in 1969, but the study area operators had a larger percentage decrease. A large portion of the 33.3 percent or 129 acre decrease in acreage harvested on study area right of way tracts resulted from the loss of about 70 acres of cropland, which was acquired for the highway right of way. This loss of cropland representing about 25 percent of the acreage harvested in 1964.

As shown in Table 22 the total value of crops produced from the study and control area right of way tracts decreased in the same proportion as the decrease in acreage. Between 1964 and 1969 the study area operators experienced a 33.3 percent decrease in acreage harvested and 31.7 percent decrease in value of crops from right of way tracts as compared to decreases of 14 percent in acres and 14.9 percent in the value of crops harvested by the control operators.

In the total operations, the study area operators also had a larger decrease in acres harvested than the control operators, but the difference was not as large as in the right of way tracts. The control area operators, on the other hand, experienced a greater reduction in the value of crops produced than did the study area operators. On both the right of way tracts and the total operations the study area operators had a smaller decrease between 1964 and 1969 in the value of crops harvested. This is also pointed out in value of crops harvested per acre between the two groups of operators. Between 1964 and 1969 the study area operators showed an increase in value of crops per acre on both the right of way tracts and the total operators, while the control operators had a decrease in each case. Some of this difference in crop yields between areas resulted from the poor corn yields in 1969 by some of the larger control operators.

In summarizing Table 22, the study area operators experienced a greater decrease in acres and value of crops harvested on the right of way tracts than did the control group. However, on total operations the two groups of operators performed more similarly in respect to reduction in acreage, and study area operators had a smaller decrease in crop values. In comparing the value of crops on the per acre basis, the study area operators performed much better than did the control area operators, indicating that the study area operators increased production by intensifying the use of their remaining cropland.

Various livestock enterprises provided the study and control area operators with a major source of income. Beef cattle production was the most important livestock enterprise, with most operators having cow-calf

operations. Four study area and two control area operators had dairy operations in 1964. As a general rule, hogs and poultry were of less importance, but some such operations were cyclical as an operator would have sizeable sales one year and none the next. For example, a control area operator raised turkeys one year on a commission basis, but switched to hogs the next year with more than \$20,000 in sales.

Since the highway displaced some pastureland, one would expect the operators to reduce their foundation herds. To check this possibility, a comparison was made of the number and value of beef and dairy cattle study and control operators had on hand at the end of 1964, 1966, and 1969 (Table 23). In 1964, 16 of the 18 study area operators and 18 of the 19 control area operators had beef cattle. In 1964 there were four dairymen in the study area and two in the control area. Two of the dairymen in the study area and one in the control area also had beef cattle in 1964. One control area dairyman, with only dairy cattle in 1964, had some beef cattle in 1966, but had sold them before 1969. One study area dairyman with no beef cattle in 1964 and 1966, disposed of his dairy herd in 1968 and had only beef cattle in 1969. Such changes did not appear to be related to right of way acquisition.

Most of the beef cattle operations were classified as cow-calf enterprises which involved a foundation herd of cows to produce calves. Therefore, it is generally more meaningful to compare changes in the inventories of foundation herds than total cattle numbers. Foundation herds include cows, bulls and replacement heifers. The calf population can vary from year to year depending upon breeding practices, range conditions,

TABLE 23

Number and Value of Cattle on Hand December of 1964,  
1966 and 1969 by 18 Study and 19 Control Area Operators

Cattle	1964			1966			1969		
	<u>Operators</u>	<u>Cattle</u>	<u>Value</u>	<u>Operators</u>	<u>Cattle</u>	<u>Value</u>	<u>Operators</u>	<u>Cattle</u>	<u>Value</u>
	Number	Number	Dollars	Number	Number	Dollars	Number	Number	Dollars
<u>S T U D Y    A R E A</u>									
<u>Breeding Beef Cattle</u>									
Cows	15	123	14,855	15	271	39,975	16	242	46,195
Cows with Calves	16	267	42,170	16	167	30,800	15	185	42,725
Heifers	10	61	6,300	13	47	5,205	14	61	8,545
Bulls	15	26	5,160	17	21	5,130	15	26	7,430
Totals	16	477	68,485	16	506	81,110	17	514	104,895
<u>Dairy Cattle</u>	4	149	33,925	4	162	42,100	3	138	45,250
<u>Calves</u>	3	16	1,100	1	8	600			
<u>Total Cattle</u>	18	642	103,510	18	676	123,810	17	652	150,145
<u>C O N T R O L    A R E A</u>									
<u>Breeding Beef Cattle</u>									
Cows	14	356	41,535	19	363	44,790	18	351	60,890
Cows with Calves	12	206	29,985	18	211	36,470	17	249	52,620
Heifers	13	47	4,655	12	94	9,540	13	111	17,640
Bulls	17	25	5,465	18	27	7,630	18	31	10,595
Total	18	634	81,640	19	695	98,430	18	742	141,745
<u>Dairy Cattle</u>	2	120	33,000	2	157	50,700	2	125	62,500
<u>Calves</u>	2	4	705	4	118	10,410			
<u>Total Cattle</u>	19	758	115,345	19	970	159,540	19	867	204,245

level of income, and market prices. Calves are usually sold at six to eight months of age, but operators sometimes will deviate from this practice depending on various conditions.

In 1964 the study area operators had an average of 29 head of breeding beef cattle each as compared to 57 head for the control group. The study area dairymen had an average of 30 cows each compared to 50 head for the control group. Both areas increased their herds in 1966 and 1969. The increases were more pronounced in the control area, which had a 23.3 percent increase from 1964 to 1969, as compared to 5.5 percent increase for the study area operators. However, between 1964 and 1966, the increases were more similar as the study area operators experienced a 8.1 percent increase in cattle (excluding calves) compared to a 9.4 percent increase for the control operators. Based on these differences it appears that the study area operators did not reduce their breeding herds in 1966 below the 1964 levels, but the increases experienced by the study area operators were less than those in the control area.

Due to the increases in price of cattle, the value of cattle inventories increased substantially in 1966 and 1969. Between 1964 and 1969 the value of beef cattle had increased by about 60 percent in the study and control areas while the value of dairy cows increased by only 30 percent in the study area and more than doubled for the two control dairymen. The value of livestock on hand at the end of each year was estimated by each operator. In 1964, the study area operators estimated the value of their beef breeding stock to be about \$10 per head higher than the control operators while their dairy cows of the study area operators were valued at about \$70 per head less than those of the control operators.

Table 24 presents a frequency distribution based on the number of operators increasing or decreasing their cattle herds and the degree of change. Six study area and nine control area operators had fewer cattle in 1966 than they had in 1964, while 11 study and seven control operators increased their herds during this period. One study and three control area operators had no changes in their herds between 1964 and 1966.

It should be considered that the study area operators had two full years (1965 and 1966) to adjust their operations to the new conditions. When the 1966 operational data were gathered, the operators were asked if they had to reduce their herds after right of way taking. Of the 18 study area operators, 11 reported that they reduced their herds by one to ten head after the right of way was acquired. In some cases, these cut backs were for a very short period of time. For example, operators sold off part of their herd while fencing right of way tracts or until surface water could be made available on tracts cut off from the original water supply. By 1966, eight of the 11 operators that reported decreasing their herds had made adjustments or improvements to remaining tracts that allowed them to add extra cattle to their operations. Two of the eight operators added additional land to their operation enabling them to increase their herds. Of the six operators with fewer cattle in 1966, three lost a rather large percentage of their right of way tract acreage and in 1969 were still operating below their 1964 level. The other three operators reported that they had culled their herds and had not replaced the culled animals. The large number of control operators with fewer

Table 24

Changes in the Number of Head of Beef and Dairy  
Foundation Herds of from 1964 to 1966 and 1964 to 1969

Change in Number of Cattle	1964-1966		1964-1969	
	Number of Operators Study	Control	Number of Operators Study	Control
<b>Increases:</b>				
21 - 40	0	0	0	2
11 - 20	2	0	2	5
6 - 10	1	1	2	1
1 - 5	8	6	6	8
No Change	1	3	2	0
<b>Decreases:</b>				
1 - 5	6	3	3	2
6 - 10	0	1	1	0
11 - 20	0	4	1	1
21 - 40	0	1	1	0

cattle in 1966 included three operators who sold acreages in 1965 and some operators who had culled their herds back temporarily.

Most of the herd changes of the two group operators between 1964 and 1969 were relatively small, usually of 10 head or less, but a few operators in each area had increases and decreases in the 21 to 40 head category. Changes often were a result of management adjusting to the amount of acreage in their operations at a given time. For example, one operator in each area reduced his herd after losing a lease on rented land. Two control operators increased their herds as they acquired additional acreage. By increased use of fertilizer and herbicides, four control area and two study area operators increased their herds from 11 to 20 head each on the same amount of acreage. The two study area operators reported that the money received for right of way acreage provided the extra capital for this more intensive use of their remaining acreage.

The large fluctuations in the cattle inventories of the larger operators tend to overshadow the smaller inventory increases and decreases of the smaller operators. However, based on changes in cattle numbers by individual operators it appears that for most study area operators the highway had little affect on the foundation herds. In most cases they had made the necessary adjustments in their operations by 1966 to offset the loss of the right of way acreage. The operators most affected by the highway were the small ones with only the right of way tract in their operations, from which takings represented over 15 percent of acreage.



A few study and control area operators had other types of livestock operations, but due to the small inventories of foundation stock they will be discussed only briefly. Study area operators reported that right of way takings had no effects on their poultry or swine operations.

Only one study area operator had breeding hogs at any of the specified dates. However, during the study period from 1964 to 1969, five study area operators raised or purchased hogs which were sold later. Two control area operators had sizeable hog operations in 1964 and 1966. An additional control operator depended heavily on swine production for income in 1969.

Six study and four control operators had chickens in 1964. There were two fewer operators with chickens in each area by 1969. The operators with chickens in 1969 reported they were reluctant to quit poultry production although they were not making any money from egg sales. Two control area operators raised turkeys for two years, but they were purchased and sold in the same year.

#### CHANGES IN EXPENSES AND INCOME

One of the major objectives of the study was to determine the effects, if any, of right of way acquisition upon the net income from agricultural operations. To pursue this objective, cash expenses and cash receipts are compared for the two groups of operators between the years 1964, 1966 and 1969, which represent the before, during and after periods of the study. The data required for these analyses could not be developed on a tract basis.

## Operating Expenses

Tables 25 and 26 present the operating expenses of the 18 study and 19 control area operators. The list of expenses includes actual outlays required to carry on operations, but not major capital expenditures such as purchases of major farm equipment. Depreciation and other implicit costs also are not included.

Feed purchased represented the largest expense item for both groups of operators throughout the study. In 1964, feed purchased accounted for 42 percent of study area expenditures and about 35 percent of control area expenses. Other expense items usually represented less than 10 percent of the total expenditures. Some expenses of major significance to the operators were fertilizers, hired labor, machine hire, repairs and rent expense. Miscellaneous expenditures includes all other expenses not listed. Most operators had small miscellaneous expenditures, which included the purchase of sundry supplies and tools, utilities, freight and dues to milk marketing associations by the dairyman. Such expenses incurred by dairymen account for a large portion of total miscellaneous expenses.

Between 1964 and 1969 the control area operators increased their expenses approximately 18 percent more than the study area operators, but between 1964 and 1966 the study area operators had a 12.5 percent increase in expenditures as compared to a 6.1 percent increase for the control group. These differences in expense patterns between 1964 and 1966 suggest that the study area operators might have spent more money in 1966 in order to offset the loss of land, but based on the statistical Students-t test these differences were not significantly

Table 25

Changes in Operating Expenditures of 18 Study Area Operators  
from 1964 to 1966 and 1969<sup>1/</sup>

Type of Expenditure	Amount of Expenditures			Changes in Expenditures			
	1964	1966	1969	1964-1966		1964-1969	
	Dollars	Dollars	Dollars	Dollars	Percent	Dollars	Percent
Feed	26,757(18)	30,166(18)	27,986(17)	3,409	12.7	1,229	4.6
Veterinary	404(15)	332(11)	780(17)	- 72	- 17.8	376	93.1
Fertilizer: Pasture	1,691(10)	2,715(11)	2,951(15)	1,024	60.6	1,260	74.5
Cropland	2,020(14)	2,643(14)	3,837(15)	623	30.8	1,817	90.0
Herbicides & etc. <sup>2/</sup>	109( 2)	276( 3)	620(11)	167	153.2	511	468.8
Seed	1,916(14)	1,315(13)	1,923(12)	- 601	- 31.4	7	0.4
Gas & Oil	3,283(18)	3,550(18)	3,903(18)	267	8.1	620	18.9
Repairs	2,645(16)	4,049(14)	5,524(17)	1,404	53.1	2,879	108.8
Machine Hire	4,741(13)	3,813(16)	5,792(17)	- 928	- 19.6	1,051	22.2
Hired Labor	2,267(11)	5,151(15)	4,897(17)	2,884	127.2	2,630	116.0
Fence Repair	558( 8)	435( 7)	730( 5)	- 123	- 22.0	172	30.8
Interest	3,806( 6)	2,639( 7)	3,478( 7)	-1,167	- 30.7	- 328	- 8.6
Insurance & Taxes	2,946(17)	3,598(17)	4,376(17)	652	22.1	1,430	48.5
Rent: Cash	4,334( 9)	4,431( 9)	3,711( 7)	97	2.2	- 623	- 14.4
Crop	958( 2)	0	0	- 958	-100.0	- 958	-100.0
Miscellaneous	5,271(12)	6,531(12)	5,591(14)	1,260	23.9	320	6.1
Total	63,706(18)	71,644(18)	76,099(18)	7,938	12.5	12,393	19.5

<sup>1/</sup>Numbers in parentheses are the number of operators reporting the particular expense.

<sup>2/</sup>Also includes insecticides expense.

Table 26

Changes in Operating Expenditures of 19 Control Operators  
from 1964 to 1966 and 1969<sup>1/</sup>

Type of Expenditure	Amount of Expenditures			Changes in Expenditures			
	1964	1966	1969	1964-1966		1964-1969	
	Dollars	Dollars	Dollars	Dollars	Percent	Dollars	Percent
Feed	30,027(19)	31,279(19)	52,124(19)	1,252	- 4.2	22,097	73.6
Veterinary	1,393(18)	784(15)	1,005(15)	- 609	-43.7	- 388	- 27.9
Fertilizer: Pasture	1,805( 8)	3,483( 8)	4,875(15)	1,678	93.0	3,070	170.1
Cropland	6,221(17)	4,729(14)	7,254(19)	-1,492	-24.0	1,033	16.6
Herbicides & etc. <sup>2/</sup>	270( 8)	474( 7)	1,215(13)	204	75.6	945	350.0
Seed	3,018(17)	3,838(17)	2,155(13)	820	27.2	- 863	- 28.6
Gas & Oil	4,539(18)	6,646(19)	6,720(19)	2,107	46.4	2,181	48.1
Repairs	5,931(18)	4,622(18)	5,666(18)	-1,309	-22.1	- 265	- 4.5
Machine Hire	5,609(19)	6,429(17)	6,595(18)	820	14.6	986	17.6
Hired Labor	7,381(18)	10,351(18)	11,071(18)	2,970	40.2	3,690	50.0
Fence Repair	1,416(12)	2,135(14)	860( 9)	719	50.8	- 556	- 39.3
Interest	2,055( 6)	890( 7)	1,521( 6)	-1,165	-56.7	- 534	- 26.0
Insurance & Taxes	5,004(17)	5,420(17)	5,058(18)	416	8.3	54	1.1
Rent: Cash	2,725( 8)	2,650( 9)	3,900( 8)	- 75	- 2.7	1,175	43.1
Crop	1,631( 4)	783( 3)	250( 2)	- 848	-52.0	- 1,381	- 84.7
Miscellaneous	6,387(16)	6,134(14)	7,316(17)	- 253	- 4.0	929	14.5
Total	85,412(19)	90,647(19)	117,585(19)	5,235	6.1	32,173	37.7

<sup>1/</sup>Numbers in parentheses are the number of operators reporting the particular expense.

<sup>2/</sup>Also includes insecticides expense.

different at the 95 percent level. No detailed information was gathered concerning 1965 operations but operators reported that they spent approximately \$8,000 in 1965 directly related to right of way taking. These expenditures consisted primarily of fencing expenses, money spent on land improvements to increase grazing capacity and costs of providing water on the remainder tracts. As was discussed in a previous section, all or almost all of these funds were from right of way payments.

A major portion of the 37.7 percent increase in expenditures for the control group from 1964 to 1969 resulted from the large amount of feed purchased by one operator who began a hog operation in 1968 and purchased over \$10,000 of feed in 1969. Operators in both areas had significant increases in herbicides and fertilizers expenditures indicating a more intense use of their land. Repair expenses increased noticeably for the study area, but declined in the control area. This difference in repair expense should not be related to highway effects as it arose primarily because two control operators had rather large repair expenses on farm equipment in 1964 and very little in 1969. Also, two study area dairymen had repair expenses on dairy equipment in 1966 that were considerably greater than their 1964 expenses. Operators in both areas had significant decreases in rent paid in the form of crops as very little cropland was being rented on a crop-share basis in 1969. The trend is to rent all land on a cash basis.

Between 1964 and 1966, about two-thirds of both study and control operators increased their operating expenses, with the other one-third of each group reducing such expenses. Between 1964 and 1966, 56 percent

of the study area operators increased their expenses while 58 percent of the control operators had larger expenditures. The balance of operators reduced their expenses. The taking of right of way naturally affected the study area operators, but the expenses of individual operators in 1964 and then two years later (1966) were not expected to be much different than those of the control group. It was expected that some operators would show increases and some decreases simply because of changes in farm practices. Ten of the 18 study area operators increased expenses from \$45 to \$2,800 from 1964 to 1966 with the average increase being about \$900. During this period 12 of the 19 control operators had increases in expenditures, that ranged from \$300 to \$2,600 or an average increase of \$875. The other eight study and control area operators decreased their expenses by an average of \$295 and \$490 each respectively.

With three additional years to allow for changes in operations, greater variations among operators are evident when 1964 and 1969 expenses are compared. By 1969, 11 study area operators had increased their expenses by an average of \$1,760 each, compared to an average increase of \$2,824 for 13 control operators. The increases ranged from \$340 to \$8,100 in the study area and from \$385 to \$13,000 in the control area. As was the case between 1964 and 1966, those control operators who reduced their expenses, had an average decrease much smaller than that of study area operators. The average decrease for the six control operators was about \$600. The average decrease in expenses for those seven study area operators was \$1,762.

From the data available, it appears that the fluctuations of operating expenses does not indicate any significant difference between the two groups of operators, that could be attributable to highway effects. Most of the changes in expenses resulted from operators in both areas shifting their operations from a more diversified type of farming to livestock production.

#### Livestock Purchases

Table 27 presents purchases by the study and control area operators of various kinds of cattle. It is evident that operators in both areas purchased very few livestock during the years used in this study. However, it should be mentioned that between 1964 and 1969 many operators reported purchases in the three years (1965, 1967 and 1968) not covered in this report.

Most cattle purchased were for breeding purposes or, in the case of dairy operators, were replacement cows for their milking herds. However, most operators reported that they preferred to raise their own replacement heifers. This was particularly true for beef cattle operators.

In 1964 the operators in both areas purchased about the same number of cattle while in 1966 and 1969 the control group purchased considerably more than did the study area operators. In 1964, only four operators in each group purchased cattle. The four study area operators purchased 26 head of breeding stock, 20 of which were heifers purchased to stock a tract of land obtained in 1964 and later affected by the right of way.

Table 27

Cattle Purchases by the 18 Study and 19 Control Area  
Operators in 1964, 1966 and 1969<sup>1/</sup>

Type of Cattle	1964			1966			1969		
	Operators Number	Cattle Number	Value Dollars	Operators Number	Cattle Number	Value Dollars	Operators Number	Cattle Number	Value Dollars
<u>S T U D Y   A R E A</u>									
Cows	1	2	300	1	2	400	0	0	0
Cows and Calves	0	0	0	1	5	1,000	0	0	0
Calves	1	4	80	1	2	150	2	25	1,500
Heifers	1	20	2,200	0	0	0	0	0	0
Bulls	1	2	260	1	2	550	3	4	1,200
Total	4	28	2,840	4	11	2,100	4	29	2,700
<u>C O N T R O L   A R E A</u>									
Cows	2	14	1,300	4	26	5,650	4	30	8,600
Cows and Calves	1	1	170	2	10	1,650	2	23	4,480
Calves	0	0	0	2	135	9,710	1	5	500
Heifers	0	0	0	0	0	0	2	32	3,640
Bulls	2	2	285	2	2	895	5	6	1,847
Total	4	17	1,755	10	173	17,905	12	96	19,067

<sup>1/</sup> Additional purchases not shown in table include a \$110 purchase of baby chicks in 1964 by a study area operator, and purchase of 1000 turkeys in 1964, 500 in 1966 and 575 in 1969 at a cost of \$500, \$350, \$200 for each group of turkeys by a control operator.



Only 17 head of cattle were purchased in 1964 by the four control operators. When comparing the purchases by the two groups of operators in 1964, it should be mentioned that study area operators at that time had anticipated the highway taking part of their land so they were probably hesitant to make purchases.

In 1966, four study area operators purchased only 11 head of cattle as compared to 173 head purchased by 10 control area operators. Nine head in the study area and 38 head in the control area were bought for breeding stock, the remainder being stocker calves that would be resold in a few months.

In 1969 the control area operators, again purchased more livestock than did the study area operators. Only four head of breeding stock were purchased by three study area operators compared to 91 head purchased by 11 control operators.

In summary, fewer study area operators purchased cattle in 1966 and 1969 than did control area operators. Study operators also purchased a smaller number of cattle in the two years. Some of this difference might be attributable to highway effects, but the evidence is inconclusive. Cattle purchases obviously fluctuated widely from year to year. Also operators may have made livestock purchases in 1965, 1967 or 1968 that could differ a great deal from the pattern in Table 27.

#### Sales of Livestock, Livestock Products and Other Farm Products

In analysing the sales of livestock and other farm products by the two groups of operators, this study was primarily concerned with whether or not the taking of land for right of way had any noticeable

effect on the reduction of sales in years following the taking. Table 28 shows beef cattle sales of the 18 study area and 19 control area operators. Since all the operators with beef cattle in 1964 had primarily cow-calf operations, most of the cattle sold were calves that ranged from six to nine months of age.

In 1964, cattle sales by the control group were almost double those of the study area. Some of this difference in the 1964 sales is attributable to highway, as five of the 18 study area operators receiving payment for right of way in 1964 reported that they held some of their 1964 calf crop and sold them in 1965 to reduce income tax payments. They estimated that a total of about 30 head of the 1964 calf crop was sold in 1965.

Sixteen of the 18 study area operators and 18 of the 19 control operators had beef cattle sales in 1964. Three dairymen, two in the study area and one in the control area reported no sales of beef cattle in 1964. In each area a few operators slaughtered a few calves for their own use. The 16 study area operators sold 19 percent more cattle in 1966 than in 1964 for a 51 percent increase in value, while the control group sold only six percent more cattle with a 37.5 percent increase in value. However, if the 1964 totals of the study area operators were adjusted to include the 30 head of calves sold by the study area operators in 1965, the differences between 1964 and 1966 would show the study area operators having 6.8 percent increase in head sold for an increase in value of 44 percent. Taking the factor into

Table 28

Cattle Sales and Consumption by the 18 Study and 19 Control  
Area Operators in 1964, 1966 and 1969

Cattle	1964			1966			1969		
	Operators Number	Cattle Number	Value Dollars	Operators Number	Cattle Number	Value Dollars	Operators Number	Cattle Number	Value Dollars
<u>S T U D Y   A R E A</u>									
Cows	8	20	2,288	11	27	4,365	13	41	6,187
Calves	16	257	19,315	16	312	30,751	17	372	44,466
Heifers	1	5	625	0	0	0	0	0	0
Bulls	2	2	380	0	0	0	5	6	1,989
Subtotal	16	284	22,608	16	339	35,116	17	419	52,642
Calves Consumed at Home	4	9	1,050	5	6	700	5	6	800
Total	16	293	23,658	16	345	35,816	17	425	53,442
<u>C O N T R O L   A R E A</u>									
Cows	13	34	2,870	10	43	5,090	14	63	9,555
Cows and Calves	0	0	0	2	4	990	0	0	0
Calves	18	446	37,577	19	463	50,300	18	451	56,085
Heifers	0	0	0	0	0	0	1	4	600
Bulls	0	0	0	0	0	0	4	8	1,875
Subtotal	18	480	40,447	19	510	56,380	19	526	68,115
Calves Consumed at Home	9	14	1,200	6	8	885	5	7	705
Total	18	494	41,647	19	518	57,265	18	533	68,820

account, it appears that the expected decrease in sales of livestock by the study area operators did not occur after the highway reduced their acreage.

Based on beef cattle sales in 1969 the study area operators continued to show increases in both numbers of cattle sold and value received. It should be noted, however, that the price of beef cattle increased considerably from 1964 to 1969. In 1964 the operators reported that calves sold for an average of about \$75 each, compared to approximately \$120 per head in 1969.

Between 1964 and 1969, the study area operator had a 48 percent increase in the number of cattle sold compared to 4.6 percent increase for the control operators. The value of cattle sold more than doubled in the study area, while the control group had only a 68 percent increase. Therefore, based on these differences the study area operators with beef cattle operations performed much better in the after periods than did the control area indicating that the highway had no adverse effects on beef cattle sales on a longer run basis.

Other livestock and poultry operations contribute a great deal to the agricultural income of both the study and control area operators. However, due to the character of these operations only the dairymen could expect any noticeable effect from the loss of land to the highway. The other types of operations require only limited acreage for operations, and the highway had no effects on those operations. However, the receipts from these operators are included in order to obtain the total income earned from all agricultural enterprises.

Table 29 presents sales of the other forms of livestock, livestock products, poultry and pecans, the latter being a rather incidental crop and actually a pasture product. Income from dairying contributes about 70 percent of the total sales received by these operators in 1964. The study area had four dairymen in 1964, who sold an average of \$9,400 of milk each, as compared to two dairymen in the control area with sales averaging nearly \$22,000 each. The dairymen, also sold their dairy calves and a few cows each year.

Based on the egg sales by the operators it is evident that the operators in both areas reduced their egg laying operations significantly in 1966 and 1969. They blamed low egg prices for the cut backs. Hog operations were of little importance to the study area operators throughout the study, but for two control operators hog sales represented the greater part of their agricultural income. This was particularly true in 1969, as these latter operators had increased their 1969 operations significantly over 1966.

Between 1964 and 1966, the four study area dairymen had a 38.1 percent increase in milk sales while the two control operators had a 74 percent increase in milk sales. A small amount of this difference may be attributable to the highway, but the greater portion of the difference is explained by operator characteristics. The two control operators were young and aggressive and were rapidly expanding their operations, while the study area operators had fewer resources and for the most part were less aggressive. Only two of the study area operators had their dairy operations located on right of way tracts. However,

Table 29

Sales of Other Farm Products by 18 Study and 19 Control  
Area Operators in 1964, 1966 and 1969

Item	1964		1966		1969	
	<u>Operators</u> Number	<u>Value</u> Dollars	<u>Operators</u> Number	<u>Value</u> Dollars	<u>Operators</u> Number	<u>Value</u> Dollars
<u>S T U D Y   A R E A (10 Operators)</u>						
Dairy						
Milk	4	37,759	4	44,363	3	56,310
Cows	2	279	2	632	2	1,224
Calves	4	2,959	3	2,177	2	3,500
Hogs	3	1,140	5	2,020	2	1,390
Poultry						
Eggs	6	7,223	5	2,869	4	790
Hens	2	225	1	30	0	0
Pecans	1	1,500	2	1,390	2	650
Total	10	51,085	10	53,481	9	63,864
<u>C O N T R O L   A R E A (10 Operators)</u>						
Dairy						
Milk	2	43,258	2	59,735	2	75,441
Cows	2	2,630	2	4,000	2	4,650
Calves	2	1,800	2	4,000	2	4,900
Hogs	2	4,980	3	9,400	3	27,980
Poultry						
Turkeys	1	3,500	2	3,400	1	2,520
Eggs	4	3,960	4	3,240	3	600
Pecans	1	70	1	290	1	150
Total	9	60,198	9	84,065	8	116,241

in one case, the highway severed the dairy operation and, by doing so, reduced the available acreage by 37 percent, as the operator could not effectively use the 52 acre severed parcel in his dairy operation. Therefore, he reduced his milking herd by five cows which in turn reduced his 1966 milk sales. The other two study area dairymen had beef cattle on the right of way tracts so the taking of right of way from these tracts had no direct effects on their dairy operations.

In 1969, the study area had only three dairymen as the one reducing his operation in 1966, sold his dairy herd and switched to beef cattle. This operator reported that he made this change primarily because of his age as he decided to go into semi-retirement, and raising beef cattle required less work than operating a dairy. In 1969, the three remaining study area dairymen more than doubled their 1964 sales, while the two control area dairymen had a 73 percent increase in milk sales.

#### Changes in Income

One objective of this study was to determine the effects, if any, of decreased acreage on the income of operators who lost land to the highway right of way. To pursue this objective, cash receipts and cash expenses of the two groups of operators are compared during each of the years (Table 30). The year 1964 represents the before period, in which expenses and receipts were not influenced by the new highway. In 1966, which represents the period of construction, study area operators had had one year in which to make adjustments. The year 1969, following the completion of the facility, represents the after period.

Agricultural Income and Expenses of the 18 Study and 19 Control  
Area Operators in 1964, 1966 and 1969<sup>1/</sup>

Item	Study Area			Control Area		
	1964 Dollars	1966 Dollars	1969 Dollars	1964 Dollars	1966 Dollars	1969 Dollars
<b>Gross Income</b>						
Crops	4,833( 5)	2,272( 4)	3,025( 5)	2,555( 8)	2,150( 5)	2,335( 3)
Cattle	23,658(16)	35,816(16)	53,442(17)	41,647(18)	57,265(19)	68,820(18)
Other Sales <sup>2/</sup>	51,085(10)	53,481(10)	63,864( 9)	60,198( 9)	84,065( 9)	116,241( 8)
Government Program <sup>3/</sup>	2,110( 6)	2,772( 7)	2,791( 8)	2,245( 7)	1,306( 8)	960( 4)
Other Farm Income <sup>4/</sup>	248( 3)	1,406( 2)	1,750( 3)	400( 2)	300( 2)	300( 2)
Custom Work	0	0	0	7,000( 2)	8,000( 2)	10,000( 2)
<b>Totals</b>	<b>81,934(18)</b>	<b>95,747(18)</b>	<b>124,872(18)</b>	<b>114,045(19)</b>	<b>153,086(19)</b>	<b>198,656(19)</b>
<b>Average Per Operator</b>	<b>4,552</b>	<b>5,319</b>	<b>6,937</b>	<b>6,002</b>	<b>8,057</b>	<b>10,456</b>
<b>Cash Expenses</b>						
Operating Expenses	63,706(18)	71,644(18)	76,099(18)	85,412(19)	90,647(19)	117,585(19)
Cattle Purchases	2,540( 3)	1,700( 3)	2,700( 4)	1,755( 4)	15,955( 8)	12,767(10)
Other Livestock Purchases <sup>5/</sup>	410( 2)	0	400( 2)	500( 1)	2,300( 3)	6,500( 3)
<b>Total Expenses</b>	<b>66,656(18)</b>	<b>73,344(18)</b>	<b>79,199(18)</b>	<b>87,667(19)</b>	<b>108,902(19)</b>	<b>136,852(19)</b>
<b>Average Per Operator</b>	<b>3,703</b>	<b>4,075</b>	<b>4,400</b>	<b>4,614</b>	<b>5,732</b>	<b>7,203</b>
<b>Net Cash Operating Income</b>						
<b>Total</b>	<b>15,278</b>	<b>22,403</b>	<b>45,673</b>	<b>26,378</b>	<b>44,184</b>	<b>61,804</b>
<b>Average Per Operator</b>	<b>849</b>	<b>1,245</b>	<b>2,537</b>	<b>1,388</b>	<b>2,325</b>	<b>3,253</b>

<sup>1/</sup>Figures in parentheses represent number of operators.

<sup>2/</sup>Includes sale of dairy cattle, milk, hogs, chickens, turkeys, eggs and pecans.

<sup>3/</sup>Includes payments for land in grain and cotton programs and money received for conservation practices.

<sup>4/</sup>Includes income from rent, hunting leases and other miscellaneous items.

<sup>5/</sup>Includes purchase of dairy cows, turkeys and chickens.



Table 30 shows the various sources of income from agriculture and the cash operating expenses for the study and control areas, while Table 31 shows the percent changes between years. In each of the three years the study area operators' gross incomes from agriculture were smaller than those of the control operators. In 1964, the 18 study area operators had an average of \$4,552 income each from agriculture compared to \$6,002 average for the 19 control operators. In 1966, and 1969 the average per operator had increased to \$5,319 and \$6,937 for the study area operators as compared to \$8,057 and \$10,456 for the control group.

As shown in Table 31, the control operators had a 34.2 percent increase in gross income in 1966 compared to 16.9 percent for the study group. Between 1966 and 1969 the two groups of operators performed similarly, but between 1964 and 1969 the control group experienced a greater increase.

In 1964 the combined cash operating expenses averaged \$3,703 for the study area operators and \$4,614 for the control group. Total cash expenses increased in both 1966 and 1969 for both groups of operators, but the expenses of the control operators increased more sharply than those of the study area. Between 1964 and 1966, expenses of the study area group increased about 10 percent, as compared to a 24.2 percent increase in the control area. The differences were even greater between 1964 and 1969, with the study area expenses increasing 18.8 percent, while expenses of the control operators increased 56.1 percent.

Table 31

Percent Changes in Income and Operating Expense of the 18 Study and 19 Control Area Operators for Years 1964, 1966 and 1969

Receipts	Study Area			Control Area		
	Changes Between Years			Changes Between Years		
	1964-1966 Percent	1966-1969 Percent	1964-1969 Percent	1964-1966 Percent	1966-1969 Percent	1964-1969 Percent
<u>Gross Income</u>						
Crops	- 53.0	33.1	- 62.6	- 15.9	8.6	- 8.6
Cattle Sales	51.4	49.2	125.9	37.5	20.2	65.2
Other Sales	4.7	19.4	25.0	39.6	38.3	93.1
Government Payments	31.4	6.8	32.2	- 41.8	- 26.5	- 57.2
Other Farm Income	466.9	24.5	605.6	- 25.0	0.0	- 25.0
Custom Work	0	0	0	14.3	25.0	42.8
Total Farm Income	16.9	30.4	52.4	34.2	29.8	74.2
<u>Expenses</u>						
Operating Expenses	12.5	6.2	20.0	6.1	29.7	37.7
Cattle Purchases	- 33.0	58.8	6.3	809.0	20.0	627.5
Other Livestock	NA	NA	- 2.5	460.0	182.6	1200.0
Total Expenses	10.0	8.0	18.8	24.2	25.7	56.1
Net Cash Operating Income	46.6	103.9	198.9	67.5	39.9	134.3

The "net cash operating income" derived in Table 30 does not take into account all the expenses that are incurred in farm operations. Such expenses as depreciation on equipment and buildings or changes in equipment and livestock inventories could not be developed to a reliable degree.

After all expenses were subtracted from the gross income, it was found that study area operators had smaller yearly net cash operating incomes in each of the three years than did control area operators. However, study area operators had a greater increase in net cash operating income between 1966-1969 and between 1964-1969 than those in the control group. The lesser increase in net cash operating income for the study area operators between 1964 and 1966 was characteristic of the "during period" income patterns found in the Ellis and Madison County studies. As mentioned in the two previous study reports, this difference indicates that generally the study area did experience a setback in the period immediately following right of way acquisition. As shown in Table 30, net cash operating income of the study area operators increased 46.6 percent between 1964 and 1966 compared to a 67.5 percent increase for the control group. However, between 1964 and 1969, the net income of the study area operators increased 198.9 percent, while those in the control area had a 134.3 percent increase. These rather large increases in both areas were directly related to the increases in milk sales, and the higher prices received for cattle in 1966 and 1969. Cash operating expenses also increased during this period but to a lesser degree.

To give a better understanding of the income patterns of the study and control area operators, Table 32 presents a frequency distribution

Table 32

Frequency Distribution of 18 Study and 19 Control Area Operators Based on the Net Cash Operating Income Per Operator for 1964, 1966 and 1969

Dollars	Study Area Operators						Control Area Operators					
	1964		1966		1969		1964		1966		1969	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Over 8,000	0	0	0	0	3	16.7	1	5.2	3	15.8	2	10.5
+4,001-8,000	2	11.1	1	5.6	0	0	1	5.2	1	5.2	2	10.5
+2,001-4,000	1	5.6	2	11.1	4	22.2	4	21.2	2	10.5	2	10.5
+1,001-2,000	5	27.8	8	44.4	5	27.8	2	10.5	2	10.5	5	26.5
+ 501-1,000	1	5.6	1	5.6	4	22.2	3	5.2	2	10.5	4	21.1
+ 1- 500	1	5.6	6	33.3	1	5.6	3	15.8	4	21.1	3	15.8
- 1- 500	6	33.3	0	0	0	0	2	10.5	3	15.8	1	5.2
- 501-1,000	1	5.6	0	0	0	0	4	21.1	1	5.2	0	0
-1,001-2,000	1	5.6	0	0	1	5.5	0	0	1	5.2	0	0
-2,001-4,000	0	0	0	0	0	0	1	5.2	0	0	0	0
Total <sup>1/</sup>	18	100.2	18	100	18	100.1	19	99.9	19	99.8	19	100.1

<sup>1/</sup>Due to rounding of percentages, totals do not necessarily equal 100.

of the two groups of operators based, on the net cash operating income per operator over the three years. In 1964, eight study and seven control area operators reported losses in their farming operations. On the other hand, no study area operator showed a loss in 1966 and only one operator had a loss in 1969, while five control operators had losses in 1966 and one in 1969. Of the operators with losses in 1964, six of the eight study area and two of the seven control area operators had off-the-farm employment during the year. The other operators were full-time farmers, but three of the control and one of the study area operators were semi-retired and had retirement income.

In 1966, study area operators were concentrated in the two income categories, \$500 to \$1,000 and \$1,001 to \$2,000. Control area operators were widely dispersed among the categories, but five control operators reported losses in farming operations in 1966.

Several operators moved up the scale to higher income brackets in 1969. Seven or 38.9 percent of the study area operators had incomes of over \$2,000 in 1969, compared to only 16.7 percent in 1964 and 1966. The control group had the same number of operators with incomes over \$2,000 in each of the three years but in 1966 and 1969 fewer control operators had losses.

Table 33 shows that ten or 56 percent of the study area group and eight or 42 percent of the control area group experienced gains in their incomes in both 1966 and 1969. Between 1964 and 1966, 13 study and 14 control area operators experienced income gains. Between 1964 and 1969, a similar ratio existed, with 14 study and 15 control operators

Table 33

Frequency Distribution of the 18 Study and 19 Control Area  
Operators Based on the Changes in the Net Operating  
Income from Agriculture in 1964, 1966 and 1969

Item	Number of Operators	
	Study Area	Control Area
Operators Who Experienced Increases in Net Operating Cash Income from Agriculture in Both 1966 and 1969	10	8
Operators Who Experienced Decreases in both 1966 and 1969	1	1
Operators Who Experienced an Increase in 1966 Over 1964, a Decrease in 1969 from 1966 but an increase from 1964	3	2
Operators Who Experienced a Decrease in 1966, an Increase in 1967 over 1966 but Less Than 1964.	3	1
Operators Who Experienced a Decrease in 1966, but an increase in 1969 over 1964 or 1966	1	3
Operators Who Experienced an Increase in 1966 but Who Decreased in 1969 below 1964 levels	0	4

having greater incomes in 1969. However, between 1966 and 1969 the ratio changed somewhat as 14 operators of the study area group and 12 control operators had increased their incomes.

Statistical tests were used to evaluate the differences between average incomes of operators in the study and control areas. By computing Student's t-values and comparing them with the theoretical values at the 95 percent confidence level, it was revealed that there was no statistically significant difference between the means of the net cash operating incomes of the study and control group in 1964, 1966 or 1969. However, with the large variations in incomes among operators the differences between the averages of the groups would have to be much more pronounced to have statistical significance.

Because of the variations and size of operations in relation to the amount of land affected by right of way acquisition, it was difficult to isolate or determine the effects that the highway had on the annual income from agricultural operations of the study area operators. However, based on the comparisons of the study and control area activities it appeared that the study area operators as a whole did not fare as well in 1966 as did the control group, indicating the possibility that they had not fully recovered in the short period since the loss of acreage in 1964. But with additional time to make adjustments and improvements, particularly to pastures, they were able to show substantial increases in net income by 1969.

As mentioned previously, a large number of operators in both areas had income from off-farm employment and other sources. It was not expected that the highway would have noticeable effects on the non-farm income of the study area operators. However, by comparing the income from non-farm sources with income from agriculture, one can determine the relative importance of agriculture to the operators and, in turn, gain additional perspective regarding right of way takings. The incomes of operators from all sources are given in Table 34 for the years 1964, 1966 and 1969.

In 1964, 13 of the 18 study operators and 14 of the 19 control operators had income from outside sources and these proportions were almost unchanged during the overall study period. The 1964 income from agriculture represented only 25 percent of the study areas operators' total income as compared to 39 percent for the control group. However, in both 1966 and 1969 income from agriculture showed substantial gains in relation to the gains in non-farm income. By 1969, income from agriculture represented 45 percent of the total income for the study area operators, as compared to 57 percent for the control group.

Between 1964 and 1969, the study area operators experienced a greater percentage increase in agricultural income than did the control group, but the ratio of agricultural income to other income increased at about the same percentage for both group of operators. However, the increases in income from 1964 to 1969 were influenced greatly by the substantial gains in agricultural income from increased sales of milk and livestock by operators who had most of their income from agriculture.



Table 34

## Income from All Sources for 18 Study and 19 Control Area Operators for 1964, 1966 and 1969

Income	<u>1964</u> Dollars	<u>1966</u> Dollars	<u>1969</u> Dollars	<u>1964-1966</u> Percent Change	<u>1966-1969</u> Percent Change	<u>1964-1969</u> Percent Change
<u>S T U D Y   A R E A</u>						
Net Income from Agriculture	15,278(18)	22,403(18)	45,673(18)	46.6	103.9	198.9
<u>Other Income</u>						
Off-Farm	43,700(10)	44,582(10)	52,900( 9)	2.0	18.7	21.1
Retirement	2,600( 3)	3,500( 4)	3,665( 4)	34.6	4.7	41.0
Total Non-Farm Average Per Operator	46,300(13) 2,572	48,082(14) 2,671	56,565(13) 3,143	3.8	17.6	22.2
Total All Income Average Per Operator	61,578(18) 3,421	70,485(18) 3,916	102,238(18) 5,680	14.5	45.0	66.0
<u>C O N T R O L   A R E A</u>						
Net Income from Agriculture	26,378(19)	44,184(19)	61,804(19)	67.5	40.0	134.3
<u>Other Income</u>						
Off-Farm	32,950( 9)	34,900( 9)	38,800( 9)	5.9	11.2	17.8
Retirement	7,550( 5)	7,850( 5)	8,255( 5)	4.0	5.2	9.3
Total Non-Farm Average Per Operator	40,500(14) 2,132	42,750(14) 2,250	47,055(14) 2,477	5.6	10.1	16.2
Total All Income Average Per Operator	66,878(19) 3,520	86,934(19) 4,575	108,859(19) 5,729	30.0	25.2	62.8

## CHANGES IN TRAVEL REQUIREMENTS

One of the main concerns of an operator regarding right of way acquisition for a limited access type highway is the extent that his travel in the local area will be affected. Of particular interest to operators was the travel required to reach shopping facilities and to service his severed tracts. The study developed information on these types of travel before and after the construction of the new highway.

### Travel to the Nearest Shopping Center

Distances were calculated from each operator's home to the nearest shopping center he most frequently visited on the before and after routes. Each operator was asked what route he used on trips to town, before and after the highway was completed.

The town of Weimar is centrally located with respect to the study area operators. Of the 21 study area operators, six lived less than two miles from Weimar. Eight other operators lived from two to four miles from the town. The remaining seven operators lived more than four but less than seven miles from Weimar. However, one of these operators reported that Schulenberg which was 11.6 miles from his headquarters, was his preferred shopping location.

An analysis of each operator's distance and route to Weimar revealed that nine study area operators experienced some changes in their travel patterns. The other operators were not affected, as they either lived in town or on tracts from which the best routes to town were not changed by the highway. Five operators reported that they preferred to use old U.S. 90 on trips to Weimar as it had very little traffic after the opening of Interstate 10. The general locations of the study and control area operators are shown in Figures 3 and 4.

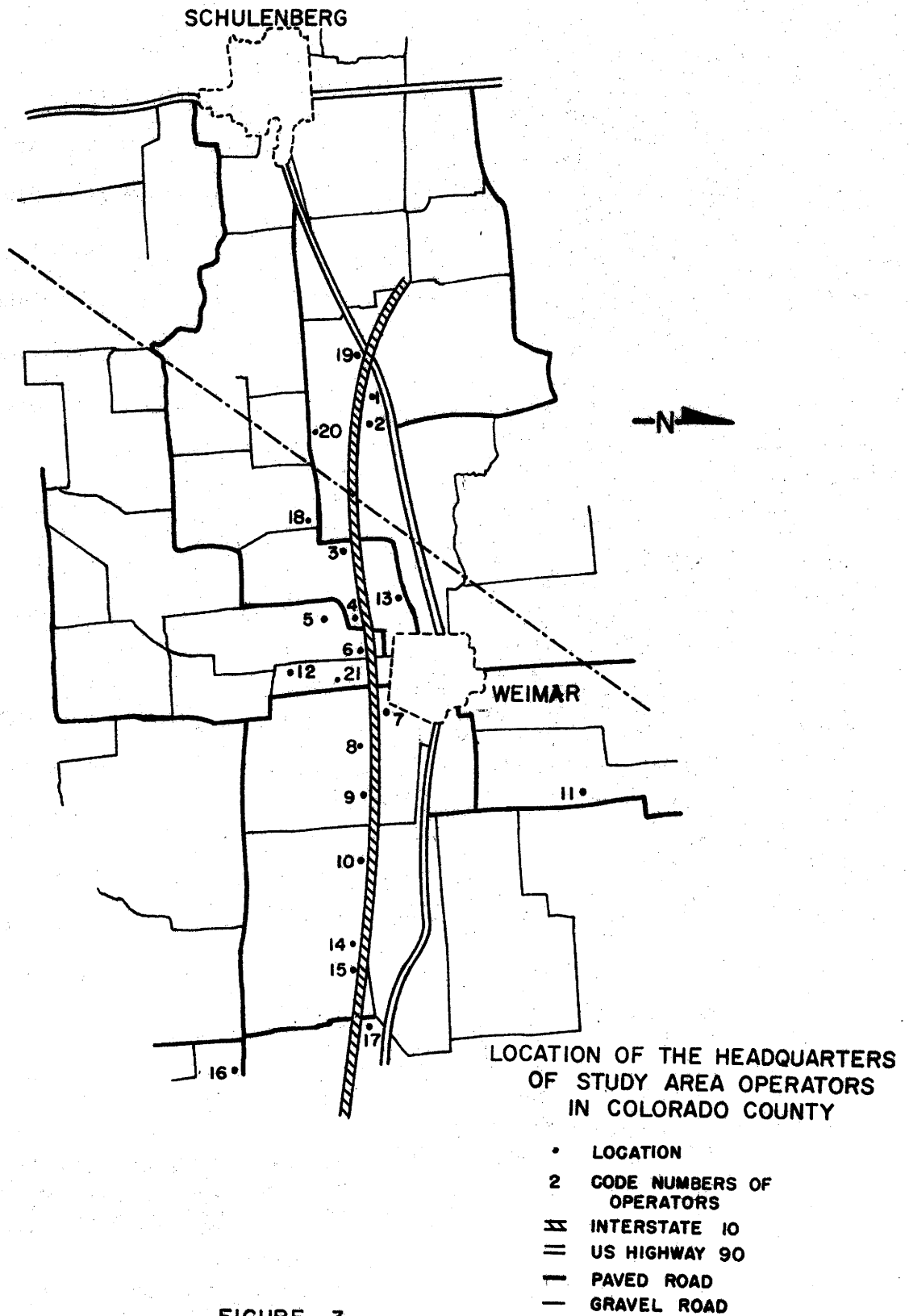
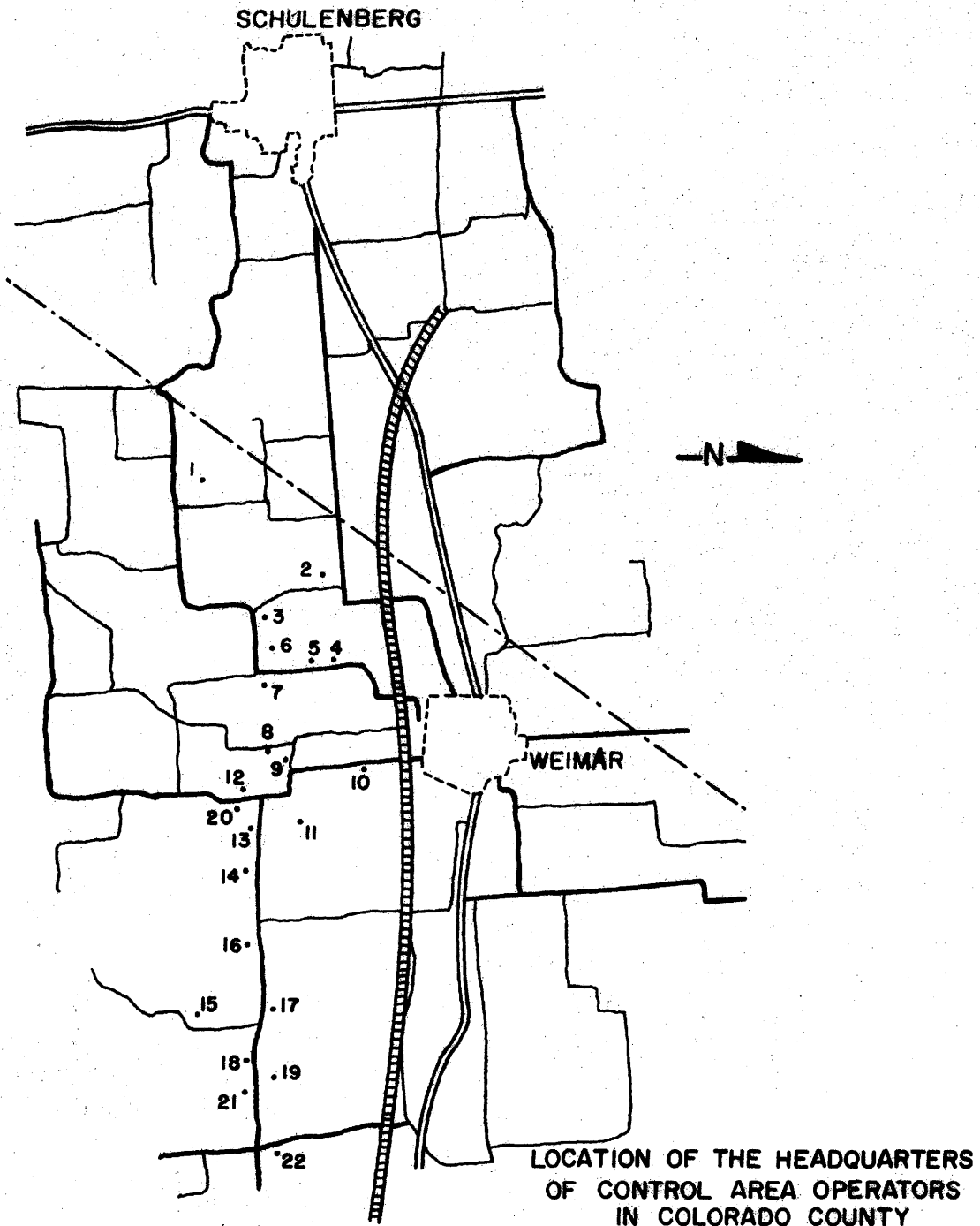


FIGURE 3



LOCATION OF THE HEADQUARTERS  
OF CONTROL AREA OPERATORS  
IN COLORADO COUNTY

- LOCATION
- 2 CODE NUMBERS OF OPERATORS
- III INTERSTATE 10
- == US HIGHWAY
- PAVED ROAD
- - - GRAVEL ROAD

FIGURE 4

Table 35 shows the nine operators that experienced some changes in their routes and distances to town. In each case the distance to the nearest shopping was increased, but according to the operators the improved driving conditions more than off-set the extra distance required to reach Weimar. In the after period, the nine operators were able to utilize from 1.1 to 9.7 miles of IHIO frontage roads on trips to town, which was a big improvement over the old narrow and very rough road which was the route used by six of the operators living east of Weimar in the before period. The general consensus of the 21 operators was that the new highway had improved driving conditions considerably in the local area. Their only criticism regarding the new facility was the difficulty involved in entering the main lanes of the highway for traveling west to Schulenburg and east to Columbus. The only access points to the main lanes of the highway in the study area were at Weimar and about four miles west of Weimar, at the intersection of IHIO and U.S. 90. For those operators living some distance from these points, extra travel was required in order to gain entrance to the main highway.

Seven operators reported that during the construction of the highway they had some difficulty during wet weather driving on routes paralleling or crossing the new facility. However, these operators praised the highway department and the contractor for their efforts in keeping the roads open to traffic during bad weather.

The new highway did not affect the travel routes to Weimar of the 19 control operators. No roads used by the control operators had closings or route changes, so they continued using their regular routes

Table 35

Mileage Changes in One-Way Distances to Nearest Shopping Center by Type of Road for Those Farmers Who Had Their Travel Routes to Weimar or Their Nearest Shopping Center Affected by the Construction of Interstate 10<sup>1</sup>

Operator	Private Road		Paved Farm Market		U.S. Highway		IH10 After	Total		Changes in Distance Miles
	Before	After	Before	After	Before	After		Before	After	
	Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles
4	0	0	1.7	.7	0	0	1.1	1.7	1.8	+0.1
5	0.2	0.2	2.2	1.2	0	0	1.1	2.4	2.5	+0.1
8	0.3	0.3	2.3	0	8.0	1.0	9.7	10.6	11.0	+0.4
9	0	0	2.4	.5	0	0	2.1	2.4	2.6	+0.2
10	0	0	3.1	.5	0	0	2.8	3.1	3.3	+0.2
14	0.2	0.2	4.2	.3	0	0	4.0	4.4	4.5	+0.1
15	0.2	0.2	4.5	.2	0	0	4.4	4.7	4.8	+0.1
16	0	0	2.3	2.1	4.6	0	4.9	6.9	7.0	+0.1
19					4.3	4.3	0.2	4.3	4.5	+0.2
Totals	0.9	0.9	22.7	5.5	16.9	5.3	30.3	40.5	42.0	+1.5
Averages	0.1	0.1	2.5	0.6	1.9	0.6	3.4	4.5	4.7	.17

<sup>1</sup>/The mileage are based on routes operators reported that they used on trips to town before and after the highway was completed.

to town. Generally, the control area operators lived a little farther from Weimar than the study area group but most control operators had access to paved highways for trips to town.

#### Travel Connected with Operations

Since most operators travel frequently to the various tracts in their operations, it was considered desirable to establish whether travel between tracts was affected by Interstate 10. Table 36 presents one-way trip distances travelled to the various tracts in the total operations of study and control operators, both before and after construction of the highway. Distances were computed from each operator's home or headquarters tract to all other tracts in his operation.

Study Area Travel. As shown in Table 36 there were 13 study and 15 control area operators in 1964 who had extra travel to the multiple tracts in their operations. Eight study and four control operators had only one tract in 1964. The 13 study area operators traveled 129.9 one-way miles to reach their various tracts from their headquarters, as compared to the 83.1 miles traveled by the 15 control operators to reach their extra tracts. The changes in total distances between the before and after were very small. The study area operators experienced an overall increase of 5.5 miles compared to a decrease of 4.4 miles for the control group. Three control operators with multiple tracts in 1964 had only one each in 1969, which accounted for a decrease of 21.4 miles. However, four other operators added tracts which increased the total distance by 17 miles.

Table 36

One-Way Mileage by Type of Road From Headquarters of  
 21 Study Area Operators and 19 Control Area  
 Operators to All Tracts Operated Before and After the Highway

	<u>Study Area Operators<sup>1/</sup></u>		<u>Control Area Operators<sup>2/</sup></u>	
	Before	After	Before	After
HI0	0	6.2 ( 8)	0	0
U.S. Highways	11.5 ( 2)	5.0 ( 1)	0	0
aved	69.6 (12)	74.2 (11)	60.5 (14)	56.9 (12)
ther	48.8 (11)	50.0 (12)	22.6 (11)	21.8 (10)
otal Mileage	129.9 (13)	135.4 (13)	83.1 (15)	78.7 (13)
hange Between Period		+5.5		-4.4

/ No mileage recorded for eight study area operators in the before period as they had extra miles in the after period. The number of operators is in parentheses.

/ No mileage was recorded for four control operators in the before period and six in the after period who had only one tract.



The small increase in miles experienced by the study area operators between periods was mainly due to small increases of two miles or less by eight operators. Four operators experienced no change in travel. One study area operator with two tracts in 1964 had only one in the after period.

Since the limited access type highway was to some degree a barrier, some operators also altered their use of other roads. The changes in travel distances were so small, however, that it appears that the new highway had very little effect on travel patterns.

In seven cases, operators of severed tracts reported that extra travel was required in order to continue operations on the severed portions of original right of way tracts. Table 37 presents trip frequencies and total miles driven annually in connection with crop and livestock operations on these severed tracts. The distances represent the increase in miles required to reach the severed tracts after the highway was completed.

Of the 13 operators with tracts severed, only seven were operating the severed portion of their tract in 1969. The other six operators had either sold the remainders or in one case, two operators of rented tracts traded tracts on opposite sides of the highway, thereby eliminating the extra travel. All seven operators had trips connected with their livestock operations, but only four had trips related to crop production. These latter four operators were all operating rented tracts in 1964 and 1969. Since there were limited amounts of crops produced on the severed tracts, all trips of farm machinery and other trips in pickups or cars were combined for purposes of this report.

Table 37

Extra Travel (One-Way Miles) Required Annually for Seven Study  
Area Operators of Severed Tracts in the After Period<sup>1/</sup>

Operators	Mileage Factor <sup>2/</sup>	Crop Production <sup>3/</sup>		Livestock Production <sup>4/</sup>		Totals	
		Number of Trips	Number of Miles	Number of Trips	Number of Miles	Number of Trips	Number of Miles
3	0.1	0	0	125	13	125	13
6	0.3	0	0	130	39	130	39
7	0.2	0	0	50	10	50	10
17	0.2	10	2	40	8	50	10
18	0.3	85	26	150	45	235	71
20	1.8	15	27	130	234	145	261
21	0.3	12	8	30	9	42	17
Totals		122	63	655	358	777	421
Averages		17	9	93	51	111	60

<sup>1/</sup>Does not include those operators that with severed tracts that traded severed tracts with other operators and by consolidating tracts avoided the extra travel. All mileage are one-way miles.

<sup>2/</sup>Amount extra mileage required based on the "before" and "after" distances to tracts.

<sup>3/</sup>Includes all trips connected with crop production both of machinery and other.

<sup>4/</sup>Includes all trips connected with livestock production. About two percent of the trips involved farm machinery used in pasture improvements.

For most operators, crop production on the severed tracts was limited to hay crops, which require a limited amount of machinery trips. However, one operator, having the major part of his operation on the severed tract, reported 85 trips a year connected with crop production, most of the trips being with farm machinery. This was originally a single tract operation. The original tract of 148 acres was severed by the highway leaving the headquarters and 19 acres on one side and 107 acres across IH10. However, the tract was located adjacent to a cross-over providing good access to the large remainder, as the distance to the severed tract in the after period increased by only 0.3 of a mile. In fact, the tracts operated by six of the seven operators shown in Table 37 were located adjacent to a cross-over road. The other operator's tract was located about two miles from the headquarters tract. The distance was one mile to cross-over and another mile down a frontage road to the tract.

For the livestock operators, major portions of the trips to the severed tracts were for the purpose of feeding and inspecting cattle. However, operators reported that from five to ten trips a year were made by farm machinery which was used in fertilizing, mowing and spraying pastures.

The seven operators made a total of 655 trips or 358 one-way miles, in managing their cattle operations in the severed tracts. The combined totals were 421 one-way, or 842 round trip, miles driven by the seven operators in maintaining operations on the severed tracts. This is an average of approximately 120 miles of extra travel per year required

by the operators. However, about one-half of the total mileage was accounted for by an operator who had to drive 1.8 extra one-way miles to reach the severed portion of his tract.

Control Area Travel. Travel patterns of the 16 control area operators having multiple tract operations are shown in Table 38. All but one of the operators lived on headquarters tracts. Operator 17 lived in Weimar and the mileage was recorded from his home to his headquarters tract and then to his extra tract.

Changes in travel distances were caused mainly by operators releasing or adding tracts to their operations. Three operators with more than one tract in 1964 had only one tract in 1969. Another operator combined tracts adjoining his headquarters into one unit. In 1969, the remaining 13 operators, including one that had no travel in 1964, had distances ranging from 0.1 mile involving one tract to 25.9 miles required for an operation with two extra tracts.

Control operators reported that they made from 5 to 30 trips a year with farm machinery to a tract, depending on the degree of crop production and pasture improvements on the tract. Generally, livestock operations generate more trips, especially during the winter months when trips are required to feed the cattle.

Based on the before and after travel patterns of the study and control area operators, it appears that on trips to the nearest shopping centers the highway had no adverse effects on study area operators. In fact, most operators reported they were pleased with the new highway.

Table 38

Travel Distances of 16 Control Area Operators  
That Had Multiple Tract Operations in 1964 and 1969

Operator Number	Before Highway		After Highway		Changes in Mileages Miles
	Tracts Travel is Required to Reach Number	Distances Traveled Miles	Tracts Travel is Required to Reach Number	Distances Traveled Miles	
1	1	15.0	0	0	-15.0
2	1	0.3	1	0.3	0
4	3	3.0	4	3.1	+ 0.1
5	1	1.1	2	1.3	+ 0.2
6	1	0.1	1	0.1	0
9	0	0	2	11.5	+11.5
10	1	6.0	1	6.0	0
11	3	1.0	0	0	- 1.0
12	3	21.8	2	25.9	+ 4.1
13	2	9.3	2	9.3	0
14	4	5.1	3	5.1	0
15 <sup>1/</sup>	2	5.1	2	5.1	0
16	5	7.8	5	7.8	0
17	1	4.2	0	0	- 4.2
18	3	0.5	2	0.4	- 0.1
19	2	2.8	2.8	2.8	0
Totals	33	83.1	27	78.7	- 4.4

<sup>1/</sup>Operator lives in town and five miles of his travel is from home to headquarters tract.

Travel connected with agricultural operations was obviously changed some by the new highway. However, only seven of the 21 study area operators were required to travel extra distances, in operating their severed tracts, and only one of those had any appreciable increase in mileage. At the same time, travel distances of control operators were subject to changes in the number and location of tracts in their operations.

#### LAND SALES IN THE AREA

Land sales in the study area were scarce as were the facts about the sales. In this area, unlike the Madison and Ellis County Study Areas, no operators received benefits from the sales of fill dirt or grass sod for use in construction of the highway.

There were three sales of right of way remainder tracts between 1964 and 1969. Two of the sales were tracts of about four acres each and both were remainders that had been severed from larger parcels. The other tract which sold was a 46 acre unimproved tract which was being rented in 1964 but was owner-operated in 1966 and 1969. Access to the tract is from a farm road, as there is no frontage road at its location. The tract sold in 1965 for \$400 per acre. The approved, appraised value of the whole property at the time of taking was about \$278 per acre. A six-acre strip of land was acquired from the south side of the original tract. However, the part taken had a permanent water supply from springs which were destroyed by the highway.

The two small tracts, selling in 1965 and 1966, were located at the intersection of IHIO and U.S. Highway 90. A nationally known, traffic

serving restaurant with gasoline and sundries purchased one site located directly at the intersection and having access to both facilities. Details of the transaction were not available. The other four acre tract that sold was located one property from the intersection of U.S. 90 and IH10. The tract sold for about \$450 per acre in 1965, about \$123 more per acre than the \$327 per acre approved value of the whole property in 1964. The property had been purchased as a rural residential site but had been improved by the end of 1969.

In the control area, one 150 acre right of way tract sold in 1967 for \$450 per acre. About one-half of the acreage was in improved grasses making it more desirable for livestock operation and adding to its value. The operator had purchased the tract in 1957 for \$220 per acre. During the 10 years of ownership the operator had cleared about 50 acres of woodland. During the first three years of the study, other tracts in the control area sold. These tracts ranged in size from 100 to 500 acres and sold for an average of \$175 to \$250 per acre.

Although it is believed that the new highway enhanced some locations in the study area, the small number of land sales in the study and control areas and their lack of comparability do not allow inferences as to overall land value effects.





**APPENDIX**  
**Supplementary Tables**

Table 39

Size, Land Use and Arrangement of 22 Right of Way Tracts Operated by  
21 Operators Before and After the Location of Highway<sup>1/</sup>

Operator Number	Acres in ROW Tract Before Taking <sup>2/</sup>			Acres Acquired for ROW			Acres in Remaining Tracts			
	Total	Cropland	Pastureland	Total	Cropland	Pastureland	North of IH		South of IH	
							Cropland	Pastureland	Cropland	Pastureland
1	122	32	98	13	6	7	23	81	3	1
2	163	62	99	5	0	5	62	94	0	0
3 <sup>3/</sup>	136	17	118	25	7	18	10	45	0	108
4	116	45	66	8	0	8	0	0	45	58
5	53	17	35	6	0	6	17	29	0	0
6	101	0	100	19	0	19	0	28	0	53
7	42	0	41	19	0	19	0	9	0	12
8	170	41	127	17	0	17	0	0	41	110
9	100	27	71	26	12	14	0	0	15	57
10	160	49	109	14	5	9	0	0	44	100
11	175	40	135	27	0	27	40	100	0	8
13	144	60	84	14	3	11	57	61	0	10
14	195	70	122	7	0	7	70	63	0	0
15	186	58	127	3	0	3	0	0	58	124
16	133	15	117	10	0	10	0	0	40	82
17	145	20	124	18	3	15	0	10	14	102
18	148	46	100	21	17	4	5	13	24	83
19	103	16	87	15	0	15	0	4	16	67
20A	79	45	34	7	7	0	0	0	38	34
20B	480	110	367	58	20	38	17	98	73	231
21	98	32	65	26	19	7	3	27	10	32
22	41	0	41	17	0	17	0	1	0	22
Totals	3,090	802	2,258	375	99	276	304	663	421	1,294

<sup>1/</sup>Includes 18 operators furnishing complete operational data all three years plus three operators (Nos. 6, 20 and 22) that furnished partial information.

<sup>2/</sup>The small discrepancy in total is caused by land in buildings, roads, etc.

<sup>3/</sup>Operator was deeded an additional 52 acres on south side of highway by Operator 14.

Table 40

Distribution of 22 Right of Way Takings as a Percentage of Acres in Right of Way Tracts and Total Operations

Size of ROW Takings in Percentage	ROW Takings in Relation to Right of Way Tracts Number of Takings	ROW Takings in Relation to Total Operations Number of Takings
0 - 2.5	1	1
2.5 - 5.0	2	7
5.1 - 10.0	6	9
10.1 - 15.0	6	3
15.1 - 20.0	3	0
20.1 - 25.0	0	0
25.1 - 30.0	2	2
Over 30	2	0

Table 41

## General Land Use and Tenure on 22 Right of Way Tracts and Takings

Item	Tracts of Owner-Operators		Tracts of Renter-Operators		Totals	
	ROW Tracts	ROW Taking	ROW Tracts	ROW Taking	ROW Tracts	ROW Taking
Number of Operators	13	13	8	8	21	21
Number of Tracts Affected	13	13	9	9	22	22
Number of Acres of Land	1,727	181	1,363	194	3,090	375
Average Acres Per Operator	132	14	170	22	147	18
Average Acres Per Tract	132	14	151	24	140	17
<u>Cropland</u>						
Operators with Cropland	11	4	7	5	18	9
Tracts with Cropland	11	4	8	6	19	10
Acres of Cropland	432	33	370	69	802	102
Average Acres Per Operator	39	8	53	14	45	11
Average Acres Per Tract	39	8	46	11	42	10
<u>Pastureland</u>						
Operators with Pastureland	13	13	8	8	21	21
Tracts with Pastureland	13	13	9	8	22	21
Acres of Pastureland	1,272	148	984	125	2,256	273
Average Acres Per Operator	98	11	123	16	107	13
Average Acres Per Tract	98	11	109	16	102	13
<u>Other Land Acres</u>	23	0	9	2	32	2

Table 42

Characteristics Relating to Size, Tenure and Type of  
Land in the 20 Control Area Right of Way  
Tracts of 19 Control Area Operators<sup>1/</sup>

Item	Tracts Operated by		Totals
	Owner-Operator	Renter-Operator	
Number of Operators	16	4	19
Number of Acres	1,690	498	2,188
Average Acres Per Operator	106	125	115
<u>Cropland</u>			
Operators with Cropland	15	4	19
Acres in Cropland	646	190	836
Average Acres Per Operator	43	48	44
<u>Pastureland</u>			
Operator with Pastureland	16	4	19
Acres of Pastureland	1,023	298	1,321
Average Acres Per Operator	64	75	70
<u>Other Land Acres</u>	21	10	31

<sup>1/</sup> One operator had two ROW tracts, one rented tract and one owned tract.

Table 43

Changes in Land Use of Right of Way Tracts of the  
18 Study Area and 19 Control Area Operators, 1964-69<sup>1/</sup>

Type of Land	Study Area			Control Area		
	Acreage		Percent Change	Acreage		Percent Change
	1964	1969		1964	1969	
<u>Cropland</u>	647(18)	594(18)	- 8.2	836(19)	975(19)	+ 16.6
Harvested	269(12)	159(10)	- 40.9	444(18)	303(15)	- 31.8
Harvested and Grazed	118( 6)	112( 5)	- 5.1	51( 4)	200( 6)	+282.0
Grazed	206( 6)	259(12)	+ 25.7	313(13)	457(14)	+ 46.0
Government Program	54( 3)	64( 4)	+ 18.5	28( 3)	15( 2)	- 46.0
<u>Pastureland</u>	1,715(18)	1,456(18)	- 15.1	1,321(19)	1,389(19)	+ 5.1
Improved	98( 6)	436(15)	+345.0	360( 6)	717(14)	+ 99.2
Cleared	1,255(18)	750(17)	- 40.2	619(15)	407(12)	- 34.2
Woodland	362(14)	270(12)	- 25.4	342(12)	265(10)	- 22.5
<u>Other Land</u>	27(16)	25(16)	- 7.4	31(17)	38(17)	+ 22.6
<b>Total</b>	<b>2,389(18)</b>	<b>2,075(18)</b>	<b>- 13.1</b>	<b>2,188(19)</b>	<b>2,402(19)</b>	<b>+ 9.8</b>

<sup>1/</sup> Number of operators in parentheses.