INCREASING LAND VALUES ON A METROPOLITAN FRINGE IN RELATION TO AGRICULTURAL INTENSIFICATION: CASE STUDIES IN THE TUALATIN VALLEY

by

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INCREASING LAND VALUES ON A METROPOLITAN FRINGE IN RELATION TO AGRICULTURAL INTENSIFICATION: CASE STUDIES IN THE TUALATIN VALLEY

ABSTRACT. Seven one-square-mile areas were selected to test the notion that there is a general intensification of agriculture as farm land becomes more valuable. The Tualatin Valley adjacent to a large expanding population center was selected because the land values in this valley are increasing faster than are those of average farmland. The possible correlation between historical agricultural land-use data and historical land-value changes was examined. Data was compiled mainly through field research, county assessor records, and interviews with landowners and public agencies.

Each area studied, from the most suburbanized to the most rural, shows a wide range of land values/acre. There is an uneven growth rate of land values and tax rates between different parts of the Tualatin, not necessarily explained by proximity to the most rapidly urbanizing areas. Farmers testify that the increase in suburbanization has forced very few of them to intensify agricultural practices. Historically there is no record or evidence to indicate that intensification of agricultural land-uses preceeded urbanization.

As land values increase due to mounting pressures of suburbanization from the metropolitan center, farming practices tend to change very little. Analysis of each of the seven case studies reveals that no general agricultural intensification has occurred.

The purpose of the research presented in this paper is to test the notions presented in the following paragraphs:

As a city expands, services reach out, circulation is improved in the fringe agreas, and land values and taxes increase. Markets become closer and transportation serving the city provides better accessibility to fringe farming areas, making the cost for delivering perishable,

more valuable farm products smaller. These two factors together, it is generally believed, give impetus to intensification of the farm product mix, or to the expansion of agricultural units for a better economic scale of efficiency, in order to maintain farm viability.

Geographic and economic theorists have long suggested that land value increases are related to increased farm outputs. Von Thünen's "Concentric ring" theory is now considered general enough to be applied mostly on a continental scale, but nonetheless has as one of its three basic variables "land rent", or "the return on the investment of the value of the land". The groundwork of his theory is based upon the rent factor being calculated upon proximity to high rent or urban centers.[1]

William Warntz's interpretation of David Ricardo's theory of economic rent suggests that "rents are price-determined and that a growth in population occasions the use of poorer grades of land, thus giving rise to enhanced rents on superior land",[2] or, the more valuable the land the more valuable the crop must be to maintain farm viability.

William Warntz's own theory is that "gross economic population potential (income potential) representing aggregate demand and that the value of this potential at any point be considered as an index of the land's position in the macroeconomic sense" so, "that land values tend to vary directly with the income potential."[3]

Edgar M. Hoover in his chapter on "Land-Use Competition" in The Location of Economic Activity, also suggests that "rent and land uses"

are definitely intertwined, and he goes further to suggest in graph form that the higher the value of agricultural land the greater the probability of agricultural intensification.[4]

An urban fringe area was chosen to test the notion that as an area has a general increase in land value there will be a corresponding general intensification of the agricultural product mix. The primary collection of data to test this notion must reflect two changing situations: 1) accurate land value changes; and 2) historical crop changes; both in relation to a growing urban center.

CHOICE OF AREA AND METHOD OF STUDY

The choice of the Portland Metropolitan area as a test case was made for three reasons: it is a large expanding center with an undisputed agricultural hinterland; a large percentage of its growth is suburban; and it is closeby and offers easy access to research data.

The Tualatin Valley was selected as the test area because it is large in area, smooth in surface, has a farming history, and is experiencing some rapid urbanization. It has the additional advantage of a nearly synonymous political boundary with the valley boundary, which further centralizes data.

Figure 1 is an agricultural summary chart of Washington County compiled from U.S.D.A. data, 1954 through 1964. The chart reveals that the value of farmland per acre is increasing more rapidly than either the value of the average farm or the value of products per acre. Furthermore, the acreages given to intensive products such as strawberries and vegetables and the number of milk cows are decreasing, or experiencing a leveling-off trend; also there is a general net transfer of cropland from barley to red clover though the total acreage of the two is decreasing. From these data it can be assumed that land in agricultural Washington County is increasing in value, but not intensifying. Only a close analysis of specific areas can determine whether this is a county-wide development, or more particularly, if it is true of the urban fringe area.

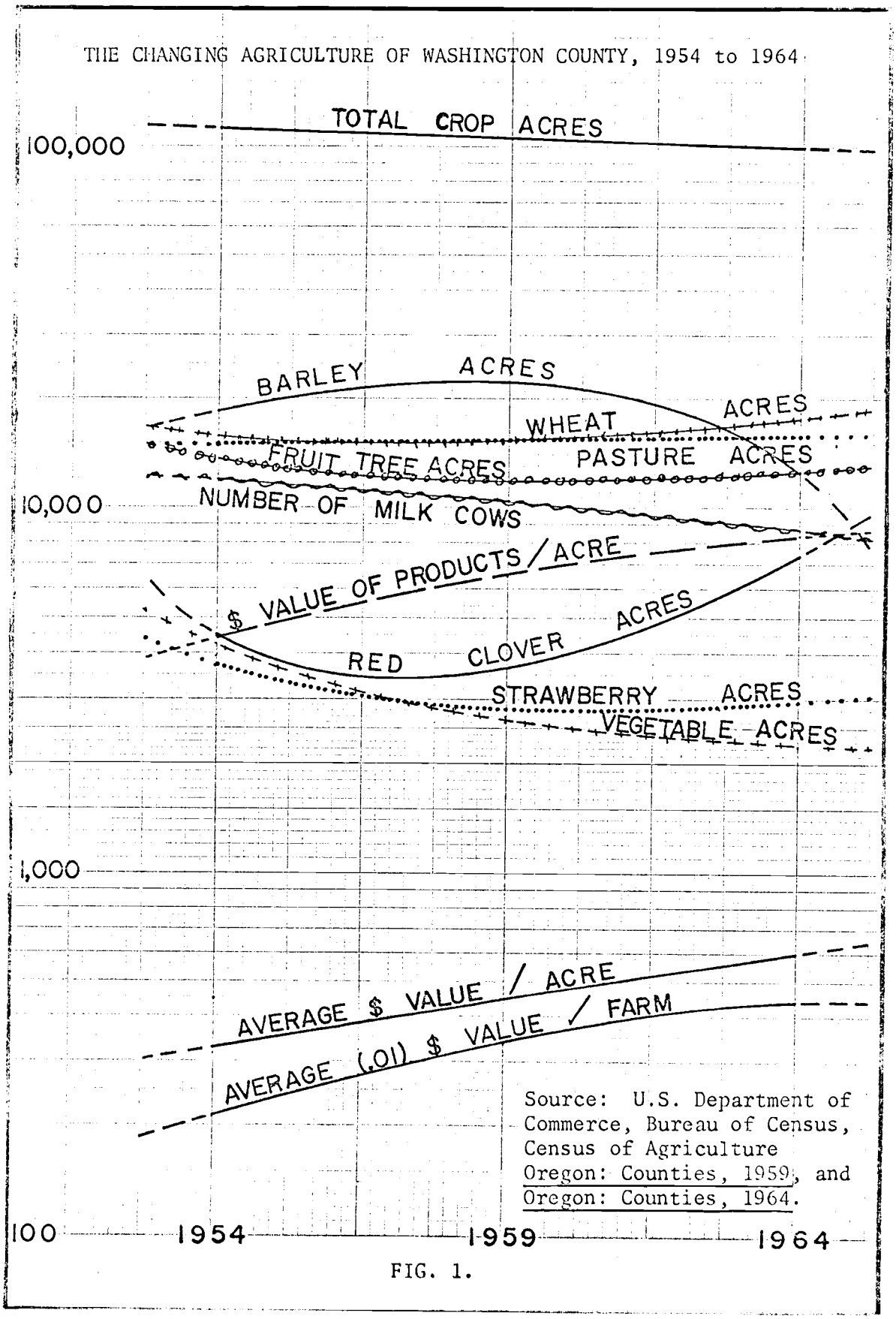

THE CHANGING AGRICULTURE OF WASHINGTON COUNTY, 1954 to 1964
TOTAL CROP ACRES
100,000
BARLEY ACRES
WHEAT ACRES
FRUIT TREE ACRES
PASTURE ACRES
10,000
NUMBER OF MILK COWS
$ VALUE OF PRODUCTS / ACRE
RED CLOVER ACRES
STRAWBERRY ACRES
VEGETABLE ACRES
1,000
AVERAGE $ VALUE / ACRE
AVERAGE (.01) $ VALUE / FARM
Source: U.S. Department of Commerce, Bureau of Census, Census of Agriculture Oregon: Counties, 1959, and Oregon: Counties, 1964.
100
1954
1959
1964

FIG. 1.

Reconnaissance of the valley, both bibliographical (using maps, articles, and government statistics) and field, was made to distinguish the rural from the rapidly-growing urban sections. Based upon this reconnaissance, three square-mile segments were chosen along the northerly portion of the valley from west to east, and three additional square-mile segments were chosen along the southerly portion. These six areas are at first glance still rural, or at best, ruburban. A seventh square-mile area, Aloha, was chosen because it is predominantly suburbanized. It is located between two of the fastest growing suburbs in Washington County, Beaverton and Hillsboro, and appears to offer an example of the historical trends for an area which is now strongly suburban. Figure 2 shows the location of the seven square-mile segments chosen, and the names which will be used hereafter for each of them.

Data was collected from five sources: 1) the assessor records at Hillsboro; 2) newspaper Real Estate advertising; 3) mailed questionaires and personal interviews; 4) bibliographical materials; and 5) maps. The following is an appraisal of the data collected, with some preliminary general conclusions drawn from each source.

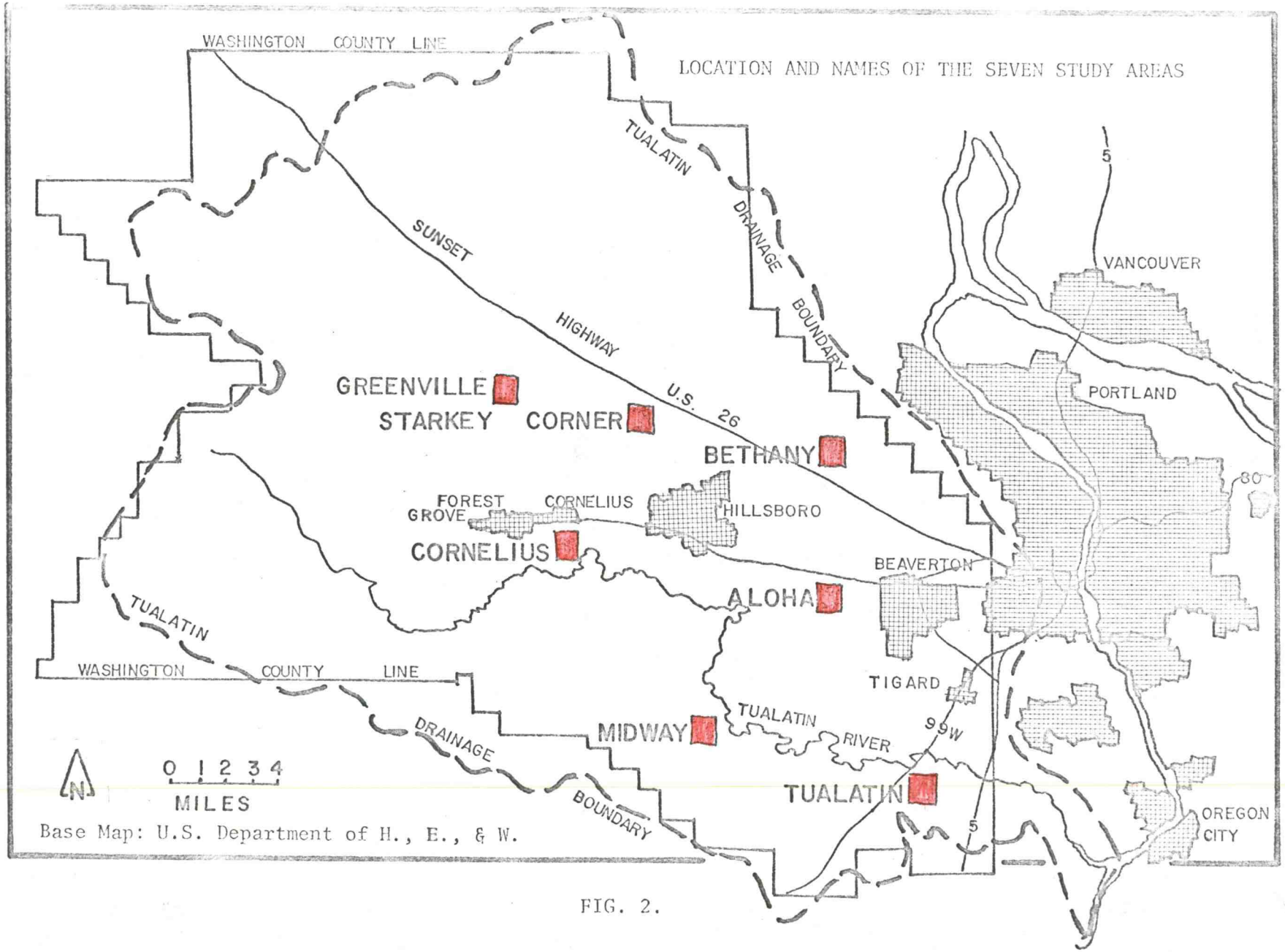

LOCATION AND NAMES OF THE SEVEN STUDY AREAS
WASHINGTON COUNTY LINE
TUALATIN DRAINAGE BOUNDARY
SUNSET HIGHWAY U.S. 26
GREENVILLE
STARKEY
CORNER
BETHANY
FOREST GROVE
CORNELIUS
HILLSBORO
CORNELIUS
ALOHA
BEAVERTON
TUALATIN
WASHINGTON COUNTY LINE
TIGARD
TUALATIN RIVER
99W
MIDWAY
DRAINAGE BOUNDARY
TUALATIN
VANCOUVER
PORTLAND
OREGON CITY
5
5
80
N
0 1 2 3 4
MILES
Base Map: U.S. Department of H., E., & W.

FIG. 2.

SUMMARY OF DATA COLLECTED

WASHINGTON COUNTY ASSESSOR/TAX DATA

Samplings from the seven areas were made to extract as much assessment/tax information as possible: 1) the average size of all parcels; 2) the map location, number and acreage size of recent subdivision; 3) the average and extreme assessment/acre of each area; 4) the address of the property owner if not the same as that of the sample parcel; and 5) the change in the tax assessment and taxes during the previous decade.

In 1960 the Washington County Assessor's Office changed its book-keeping methods. As a result the pre-1960 figures are not interchangeable with those of the latter period, and it was necessary to reduce a proposed ten-year comparison period (1958-1968) to the eight years between 1960 and 1968.

Washington County re-appraises every five years (Oregon State law says re-appraisals must be made at least every six years). Therefore, at least two re-appraisals were made on each sample parcel, and most have had three re-appraisals during the comparison period because of the change to 100%-market-value tax-assessment base for the year 1968.[5] Re-appraisals are often made more frequently than every five years in areas that are experiencing rapid development, such as the Bethany and Aloha areas; or re-appraisals can be brought about through individual initiative, such as has occurred with the farm-defferral law in 1967 and especially in 1968, in Tualatin, Starkey Corner, and Greenville.[6] Another contributing

factor for re-appraisal, especially likely in the future for Washington County as a whole, will be zoning. Zoning appears to have had a substantial effect thus far only in Bethany, Tualatin, and Aloha.[7]

1) Sample coverage of the areas ranged from a high of 92% of the acreage in Starkey Corner, to a low of 10% in Aloha (Table 1).

TABLE 1.—ACREAGE AND PERCENTAGE OF SQUARE-MILE COVERED BY ASSESSOR/TAX DATA SAMPLED FOR EACH PARCEL

Area	Total acres covered	% of Segment covered
Starkey Corner	558.84	92.00
Greenville	502.16	78.46
Midway	457.53	71.49
Tualatin	431.53	67.48
Bethany	382.29	59.73
Cornelius	297.94	46.55
Aloha	65.29	10.20

Source: County of Washington, Oregon. Assessor's Office. Assessment and tax Records of selected parcels, 1961-1968.

From these samples, projections or averages were made of the entire seven areas. The chart on the next page provides a general summary of the parcel sizes of the seven areas. From Table 2 it can be seen that while the average size of parcels tends to be similar in area (20 to 33 acres with the notable exception of Starkey Corner and Aloha), the largest parcels and the middle ranges vary considerably. This suggests wide variations in

parcel size from area to area and within any of the seven areas.

TABLE 2.—SUMMARIZATION OF THE SIZES OF PARCELS TAKEN FROM ASSESSOR DATA (IN ACRES)

Area	Largest Parcel	Smallest Parcel	Approximate Average Size[a]	Middle Range[b]
Starkey Corner	154.62	lot(.64)	70	25-100
Greenville	155	lot(.40)	20	1-10, 20-50
Midway	58	lot(1.0)	33	8-50
Tualatin	139.39	lot(1.5)	20	1-20, 60-70
Bethany	49.13	lot(.15)	25	2-50
Cornelius	83.6	lot(.24)	20	5-50
Aloha	26.67	lot(.15)	.4	.15-10

[a]U.S.D.A. lists 81.2 acres as the average parcel size in the county in 1964, and 85 acres is estimated for 1968.
[b]90% of the parcels fall between these size ranges.
[c]Compiled from data from the Office of the Assessor, Washington County, Oregon, and from the U.S. Census of Agriculture, 1964.

2.) The location, amount and size of recent subdivision varied considerably among the areas with Aloha and Bethany naturally having most of the subdivision activity due to their rapid suburbanization. In general subdivision activity agreed with evidence from the map data as shown later (page 22). The size of all subdivisions were nearly always below two acres. With the exception of Aloha and Bethany, all subdivisions were located on existing frontage roads, and only in Aloha and Bethany were additional roads dedicated for subdivision. In summary, most of the subdivision is of one-to-two acre parcels, taken from medium to small farms along existing county roads and is occurring somewhat throughout the valley, but is most common in the urbanizing areas.

3.) The average and extremes of assessment per acre are shown below.

TABLE 3.—AVERAGE AND EXTREMES OF ASSESSMENT PER ACRE IN 1968

Area	Acerage $/Acre	Highest $/Acre	Lowest $/Acre	Range Between Extremes
Starkey Corner	594	3,723	580	3,143
Greenville	380	3,250	335	2,851
Midway	310	1,900	100	1,800
Tualatin	776	2,935	335	2,600
Bethany	873	30,000	210	29,790
Cornelius	411	760	135	625
Aloha	2,141	19,333	1,205	18,128
Overall Average	1,831	18,573	1,105	17,503

aCompiled from the Assessment and Tax records, Assessor's Office, Washington County, Oregon.

As can be noted in Table 3, the greatest activity of land-value changes is in the areas that have had the most non-agricultural land uses come into the speculative sphere of influence—Aloha, which is suburbanizing, and Bethany, which also has had large non-agricultural investments in the vicinity. The most rural areas, however, are experiencing a wide range of land-values per acre, as evidenced by Starkey Corner which has no major land-use other than agriculture.

4.) There are surprisingly few absentee land-owners, even though questionaire data suggests substantial renting of cropland is occurring. Portland is the home of most of the absentee owners.

5) The change in taxes/assessment provided the most valuable information for two reasons: a) it appears to be the most accurate and

consistent for the area in general when compared with other land value data; and b) it gives parcel information that allows a close examination inside each area (which is further examined in a later section of this paper).

From the appraisal/tax data a list of preliminary conclusions, a summary chart (Table 4), and a summary graph (Figure 3) were compiled.

Preliminary Conclusions:

1.) There is an uneven growth rate of land values and tax rates among different parts of the Tualatin, not necessarily explained by proximity to the most rapidly-urbanizing areas.

2.) Even within the square-mile segments there is an uneven land-value growth rate.

3.) Zoning appears to have a marked affect upon the appraised land values in certain areas.

4.) The greatest increase of land values appears to be the result of the change from rural to urban land uses.

5.) While the most suburbanized area has the highest increase in tax rates, the most rural do not have the lowest.

NEWSPAPER FINDINGS

The 1958 and 1968 May editions of the Sunday Oregonian, "Real Estate Section", under the headings "rural acreage" and "farms for sale", were used in this research. The "South Western Portland" column heading was used as a supplement to help determine the value of improvements upon the land, so that true land values could be calculated.

TABLE 4.—ASSESSOR SUMMARY OF 1961-1968 ASSESSMENT/ACRE OF THE SEVEN AREAS

Area	Size in Acres	1968 Real Value/Acre in $	1961 Real Value/Acre in $	Value in $	Increase in %
Starkey Corner	588.84	594	285	309	52.1
Greenville	502.16	380	278	102	26.6
Midway	457.53	310	291	19	6.1
Tualatin	431.53	776	530	346	44.6
Bethany	382.29	873	443	430	49.5
Cornelius	297.94	411	350	61	14.8
Aloha	65.29	2,141	1,266	875	40.9

[a]Compiled from Assessment and Tax Records, 1961-1968, Washington County, Oregon.

TAX RATE CHANGES FROM 1961 TO 1968

(IN MILLS/25% OF TRUE MARKET VALUE)

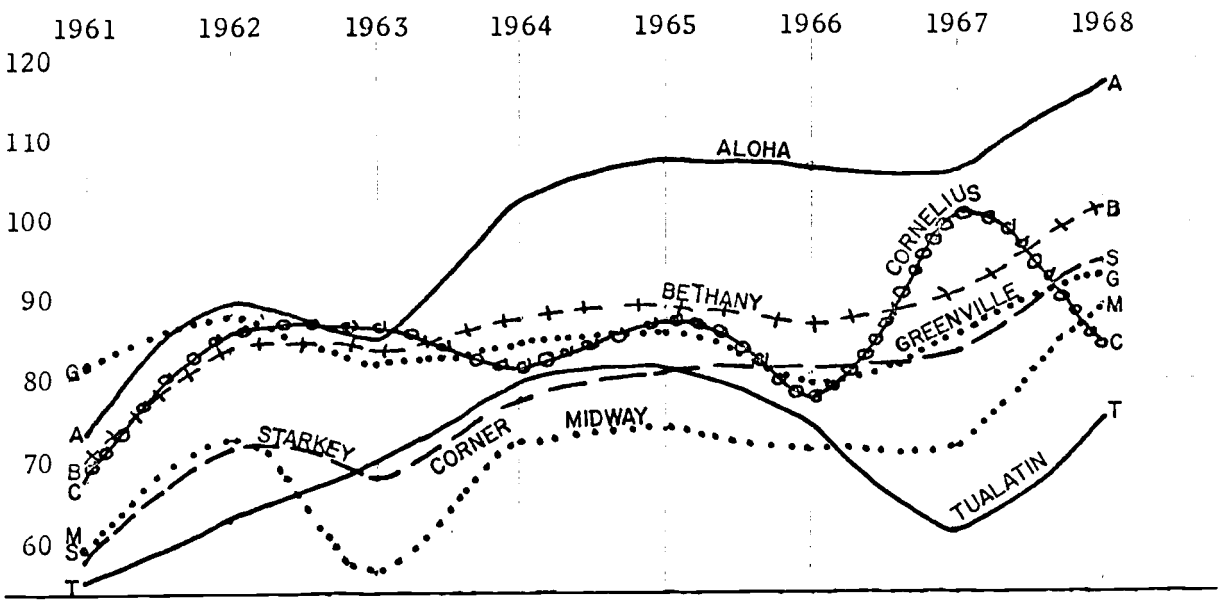


FIG. 3.

To be a useful sample an ad must give enough data to locate the parcel near the vicinity of one of the seven selected square-mile segments. Further there must be enough information to make it possible to compute the per-acre value. Below is an ad of the type typically found to be usable.

REAL ESTATE NEWSPAPER ADVERTISEMENT:

BETHANY

---

8 - Plus Acres

Cleared rolling land. Less than one mile from Sunset Hiway & 10 miles from Portland. Over 1200-feet of road frontage. In the West Union Area. No buildings. Near grade school. $2000 per acre. Will sell all or less.

FIG. 4. Source: "Real Estate Section" Sunday Oregonian May 12, 1968, p.50

In the 1968 editions were found 30 very good examples of usable ads, while approximately 30 more were usable to some degree, giving all seven areas adequate coverage. In 1958, however, the bulk of the advertisements failed to give all three pieces of necessary information. Hence only 20 sample ads could be used, many of which depended upon a rough guess as to the value of the improvements to calculate the value/acre of the raw land.

A severe disadvantage of the newspaper advertising for land-value determination is the impossibility of exact locational pin-pointing of the

parcels; still it was useful for general areas, especially when compared to other land-value data. Table 5 is a summary chart of the newspaper findings showing the 1958 and 1968 dollar-value/acre, the change in the interim period, the percentage increase, and the percent of increase change as compared to the Washington County Tax Assessment information.

TABLE 5.—1958 AND 1968 LAND VALUE COMPARISONS AS TAKEN FROM THE SUNDAY OREGONIAN AND ASSESSOR/TAX RECORDS

Area	1958 $/Acre	1968 $/Acre	1958-68 Increase	% Increase	Tax Record Increase
Starkey Corner	484	960	476	49.6	52.1 (G)
Greenville	219	783	564	72.0 (G)[a]	26.1
Midway	487	940	443	47.1 (L)[b]	6.1 (L)
Tualatin	385	1,037	652	62.9	44.6
Bethany	156	2,850	2,694	94.5 (G)	49.5 (G)
Cornelius	300	450	150	33.3 (L)	14.8 (L)
Aloha	750	2,577	1,827	70.9	40.9
Average				61.8	33.4

[a]Areas of greatest increase.
[b]Areas of least increase.
[c]Compiled from "Real Estate Section" Sunday Oregonian, May Editions, 1958 and 1968, and, Assessment and Tax Records, Office of the Assessor, 1961-1968, Washington County, Oregon.

From the chart it can be noted that there is a general agreement as to the areas of greatest and least value increases. But this is about as far as the agreement between the appraiser and the real estate advertising goes. With the exception of Starkey Corner, there is little agreement as to the rates of value increase in the last eight to ten years; even the

average value/acre of each of the areas is in complete dispute. In part the disagreement may be explained by the lack of data, especially from the 1958 newspaper editions, but by and large, most of the discrepancy appears to stem from the momentary speculation occurring at the time of the advertising. This inherently brings error when comparing the short-term data of the real estate advertisements which reflects daily and weekly activity, with the longer-term data of the tax appraiser, whose concern is with the yearly to five-year trend of land values. The wide range of increase in Midway, varying from 6.1% for the appraiser to 47.1% for the real estate ads could be partially explained by results from the third data source, the questionaire. This latter source suggests a late 1950's influx of retired couples into the Midway area who purchased small acreages, or large lots. This tended to increase subdivision and real estate activity but this ended, or slowed around 1963, when the area was zoned and the real estate activity moved to other areas.[8] In the interim the activity was never enough to cause the appraiser to re-appraise.

QUESTIONAIRE AND INTERVIEWS

Questionaire. Field research obtained from seven to twenty names of people in each square-mile segment who appeared to be in the agricultural business. Appendix II is an example of one of the 107 questionaires that were mailed to the apparent farmers in the seven square-mile segments. Of these, 36 were returned, yielding a 34% response. The amount of area covered by the questionaire returns varied considerably, from a high of virtually 100% of the square-mile segment of Cornelius and 72% for Midway, to a low

of .8% in Aloha. The questions were kept simple and direct to encourage returns. Names were to be kept anonymous.

For land values Table 6 was constructed from questionaire returns. This table will be compared to the tables compiled from the other two primary data sources in Table 7.

TABLE 6.—VALUE PER ACRE AS ESTIMATED FROM QUESTIONAIRE RESULTS

Area	Average (low)	Average (high)	Average of low and high	# of Acres Used
Starkey Corner	500.00	1,000.00	750.00	20
Greenville	837.78	1,440.14	1,138.96	348.3
Midway	904.39	1,738.81	1,321.60	460.2
Tualatin	1,750.00	1,900.00	1,825.00	251
Bethany	1,761.03	3,522.06	2,641.55	136
Cornelius	592.51	1,186.08	889.26	661
Aloha	2,000.00	4,000.00	3,000.00	5

Source: Personal replies of 37 apparent Washington County Agriculturalists, June-September, 1968.

Preliminary Observations of Questionaire Returns:

1.) Only about 1/3 (11 out of 35) are farmer-owners.

2.) Those who claim to be renters are generally also farmers.

3.) Most owners feel that their cropland is appreciating faster now than it was 10 years ago (24 out of 35).

4.) Owners other than the farmers are the ones who feel that suburbanization has brought about major changes in farming practices.

5.) About half of the land of those who claim to be farmers is rented by

those farmers.

6.) There were no major crop changes made during any one year or group of years.

7.) There were very few (only 3 to 5) major changes in cropping.

8.) Most (10 of 11) farmer-owners do not feel that the increase of suburbanization has affected them enough to bring about a major change in farming practices.

9.) There is a general suspicion on the part of those questioned that there is a change of land uses going on about them, without any exact knowledge of what is causing the changes.[9]

Interviews. These were mainly centered upon the Planning and Tax Assessor Offices of Washington county. From these departments came much of the information that explained developments that affected large-scale land value changes, such as zoning information, recent public-works investments, and assessor/tax methods.

General Overall Conclusions Drawn From Primary Data Collected.

Table 7 is a comparison of 1968 land values/acre using all three primary methods of research: the tax records; the newspaper advertisements; and the questionaires.

The value/acre is an elusive figure at best, because the market value can only be determined when land is actually sold. But Table 7 does suggest that the areas that have a rapid growth, many small parcels, and large public investments which tend to stabilize values, are the areas with the most easily determined land values. One example is Aloha, where

TABLE 7.—COMPARISON OF VALUE/ACRE AS COMPILED FROM THREE DATA SOURCES

ALL 1968 FIGURES IN $

Area	Assessor $ Value	Questionaire $ Value	Newspaper $ Value	Average Of All 3 Values
Starkey Corner	594	750	960	768
Greenville	380	1,139	783	767
Midway	310	1,322	940	857
Tualatin	776	1,825	1,000	1,200
Bethany	873	2,642	2,850	2,121
Cornelius	411	889	450	583
Aloha	2,141	3,000	2,577	2,576
Average	592	832	1,297	907

Sources: Tax and Assessment Records, Office of the Washington County Tax Assessor, Oregon, and Questionaire replies from 37 apparent Washington County Agriculturalists, June-September, 1968, and "Real Estate Section" Sunday Oregonian, May 1958 and May 1968.

there is a general agreement on land values, considering the questionaire as a poor sample (.8% response in this case). Areas that have fewer stabilizing factors, such as Midway, show a wider percentage difference in value/acre. There are fewer improvements, either public or private, and the questionaire and newspaper averages are probably the values most in error, because the area has slowed in growth in the last few years. On the other hand, areas that have had large investments for improvements have increased the market value of surrounding agricultural land (as has been the case in Bethany with the Somerset West subdivision which has had an affect possibly as far away as Starkey Corner.) Often the effects are so great that the appraised value has not kept up with the actual selling price.

Bethany, however, has introduced a stabilizing effect with its zoning. On the following page is a map (Figure 5) showing the Bethany square-mile segment with its zoning and the percentage of increase or decrease of land values there between 1961 and 1968. The Bethany area had been experiencing rapidly increasing land values due to the development of the Somerset West subdivision, with its large expenditures of capital for residential improvements. Then in 1963 exclusive farm zoning (F-1) was introduced in much of the area, and land prices were immediately stabilized, often back to their pre-1961 values. This map dramatically suggests one effect of zoning upon land values.

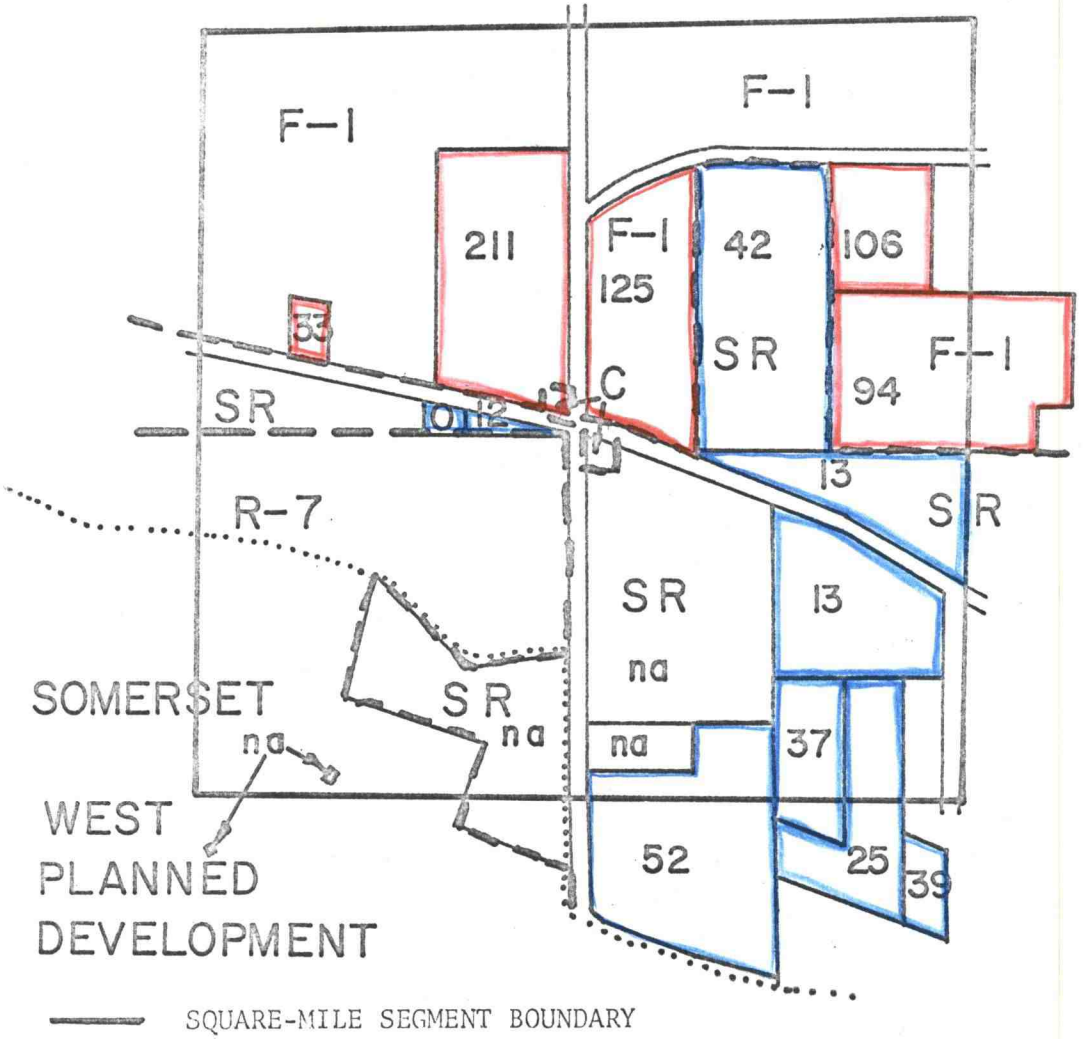
In light of the fact that large amounts of capital are being invested in the Aloha area, it is understandable that unstabilized land prices extend as far as Midway.

BIBLIOGRAPHICAL DATA

Since no data could be found concerning any one of the seven square-mile segments alone, region-wide sources were used where appropriate. For example, the Report of the Secretary of the Interior on the Tualatin Project, Oregon, was useful background for the agricultural situation of the valley in general. Similarly the 1954, 1959, and 1964 U.S. Department of Agriculture Statistics of Oregon, especially the Washington County section, were useful.

The Resource Analysis of Washington County, compiled by the Cooperative Extension Service, Oregon State University, was also useful for leads to other sources and general background concerning the county.

BETHANY LAND VALUE CHANGES, 1961 - 1968, AND ZONING



SQUARE-MILE SEGMENT BOUNDARY

ZONING BOUNDARIES

Red Indicates % Decrease in Appraised Value, 1961-1968, in samples.

Blue Indicates % Increase in Appraised Value, 1961-1968, in samples.

F-1 is exclusive farm zoning.

S-R is a rural-suburban zone which allows single-family development.

R-7 is a residential zone allowing multiple and single-family development.

C is a commercial zone.

Sources: Compiled from the Washington County Tax Office Records and Washington County Planning Department. Metzker Map Base.

FIG. 5

A series of up-to-date urban studies of Beaverton, Hillsboro, and Forest Grove, published by the Bureau of Government Research, as well as a series of articles published in the Oregonian in April and May of 1965, were also useful in determining historical patterns of the suburban fringe areas.

Basic geographic sources such as Hoover's Location of Economic Activity, Preston E. James' New Viewpoints in Geography, and a host of others were of course, useful in acquiring a basis for research.

MAP DATA

Base map data for sample parcels of the seven areas were compiled from a combination of Metsker Maps for all property lines, and the maps of the county assessor for the selection of sample parcels and ownerships. Subdivision activity, for example, was based upon Metsker, and summed up in the chart below. While the assessor records show many exchanges of

TABLE 8.—SUBDIVISION ACTIVITY FOR THE SEVEN SQUARE-MILE AREAS, 1937 & 1964

Area	Total # of parcels in 1937	Total # of parcels in 1964
Starkey Corner	12	13
Greenville	18	18
Midway	24	26
Tualatin	61	70
Bethany	26	20 (excluding Somerset West)
Cornelius	24	26
Aloha	206	545

Source: Metsker Maps. Metsker's Map of Washington County, 1937, and Metsker's Map of Washington County, 1964.

ownership between 1937 and 1964, it can be noted from the table that there was little subdividing of the land, except in Aloha, and the part of Bethany

that is in Somerset West. This subdivision activity becomes important when determining the fringe status of the seven square-mile segments.

Other important maps especially useful for determining fringe status of the seven areas include present and projected population distribution maps by the Portland Metropolitan Planning Commission, such as How Should Our Community Grow, with it's "Land Use Maps", 1964. Published oil company maps for 1958 and 1968 are also useful since they show which streets are actually construced, instead of the "paper streets" shown on maps of the Washington County Planning Department and the Washinton County Assessor.

U.S.G.S. maps made between 1956 and 1961 of the Washington County area, which give insight into the amount of development of areas beyond incorporated cities and heavily built-up zones are useful in determining the historical fringe status of the seven square-mile segments. Other published maps include The Tualatin Basin Water and Sewerage Master Plan, various Oregon State Highway maps published between 1920 and 1968, and geologic maps, indicating slope, flood plain, and soil cover—all of which are useful in determining background, trends, and the significance of other data.

ANALYSIS OF DATA

IDENTIFICATION OF THE SEVEN AREAS AS TO THE CHARACTER OF THEIR FRINGE STATUS

It was necessary to categorize each area into its fringe status to evaluate the amount of expected intensification of agriculture. In order to increase objectivity three approaches were used for categorization, as possible checks against each other.

The areas were categorized into "rural", "ruburban", "suburban", and "urban", classifications, by the: character of land use; land values; and the proximity to rural and urban areas. A category between rural and suburban, the "ruburban", was chosen because this is the fringe area where one would expect to find the most intensification of agriculture.

The classifications in the four categories of fringe status were based upon the following criteria. Rural: almost all residences should be for farm uses; there should be no non-agricultural uses except those to serve the farm community itself or non-accessible uses that serve other areas (e.g., high voltage power lines, freeways, micro-wave relay stations, etc.); there should be no new local activity, especially circulation, except to serve the local farming community (a country road that has been widened to serve more than the farm market traffic, or a local radio transmitter tower, or a new golf course would be inconsistent with this classification); and most importantly, it must be agricultural in use with at least a minimum degree of farm viability. Ruburban: should have some new non-farm housing, if local scattered, and few in number; may have some accessible non-agricultural uses serving areas outside the farming community, if isolated (e.g., a stable for horses or local cross-roads

market); some new activity if isolated; and still most important is that viable agriculture must be the most important function. Suburban: must have some non-agricultural uses such as new schools, churches, etc.; should have new services and increasing non-farm activities; and farming must be on the decline in its area-wide importance. Urban: the non-farm uses must include other activities besides residential, such as governmental, commercial, and industrial.

Thus, in determining the character of the fringe status of each area, the degree of the following kinds of land uses becomes essential: 1) new, non-farm housing; 2) accessible non-agricultural community uses other than housing; 3) new activity or circulation; and 4) the amount of viable agriculture. The chart below estimates the category of each of the seven areas based upon these criteria.

TABLE 9.—IDENTIFICATION OF THE "CHARACTER" OF FRINGE STATUS BY AREA

1 — new non-farm housing
2 — non-agricultural community uses other than housing
3 — new activity or circulation
4 — amount of viable agriculture

Area	1	2	3	4	Estimated Character
Starkey Corner	little	none	none	much	late rural
Greenville	some	none	none	much	early ruburban
Midway	some	some	none	much	ruburban
Tualatin	some	much	some	much	early suburban
Bethany	some	some	much	much	early suburban
Cornelius	little	none	little	much	late ruburban
Aloha	much	much	much	none	late suburban

Compiled through field observation.

The second classification of fringe status was based upon land values obtained from the average of the three primary data sources: the appraiser; the questionaires; and the newspaper advertising. Using the U.S.D.A. figures for 1954, 1959, and 1964, the average agricultural land value for the county as a whole in 1968 can be estimated at $623 per acre, if the trend for the previous ten years holds true.[10] Therefore it was assumed that anything up to $623 per acre can be called "rural". The "ruburban" classification was assigned to land with values up to twice those in the rural areas, or $624 per acre to $1246 per acre. "Suburban" identifies any area whose land values average over $1246 per acre.

TABLE 10.—IDENTIFICATION OF THE FRINGE STATUS OF AREAS BY LAND VALUES

Area	$/Acre Average of 3 Data Sources	Category[a]
Starkey Corner	768	Ruburban
Greenville	767	Ruburban
Midway	857	Ruburban
Tualatin	1,200	Late Ruburban
Bethany	2,121	Suburban
Cornelius	583	Late Rural
Aloha	2,576	Late Suburban

U.S.D.A. Average Estimate for County, 1968, $623.

[a]Rural — Average value to $623 per acre.
Ruburban — Average value $623 to $1246 per acre.
Suburban — Average value $1247 per acre up.
[b]Sources: County of Washington, Oregon Assessor Records, 1961-1968, and "Real Estate Section" Sunday Oregonian, May 1958 andMay 1968, and, U.S.D.A. Census of Agriculture, 1964.

The third identification of fringe status is based upon the proximity to built-up areas as found in map sources. Distance from built-up areas, dwelling and street density, and dwelling situation (i.e. proximity to

heavy traffic arteries or dwelling/street layout—whether it be along a road or in a small community) were determining factors. The U.S.G.S. did a field study from 1956 to 1961 which gives reasonable accuracy for that time;[11] field work, updated road maps, and land-use maps were supplemented for the 1968-1969 information. Table 11 shows the results.

TABLE 11.—IDENTIFICATION OF AREAS BY PROXIMITY TO BUILT-UP AREAS

Area	1956-1961	1968-1969
Starkey Corner	rural	rural
Greenville	rural	rural
Midway	rural	ruburban
Tualatin	ruburban	early suburban
Bethany	ruburban	suburban
Cornelius	late ruburban	early suburban
Aloha	suburban	late suburban

Sources: Field observation by the author;
Shell Street Map of Portland. Chicago: H.S. Gousha, 1957.
Shell Street Map of Portland. Chicago: H.S. Gousha, 1968.
U.S. Geological Survey, Quads, Forest Grove, 1956, Beaverton, 1961, Hillsboro, 1961, Linton, Oregon, 1961, Scholls, 1961; and.,
City of Portland, Oregon, Metropolitan Planning Commission, How Should Our Comminity Grow. 1966.

Table 12 on page 28 is the comparison of the classifications of all areas by character of land-use, land values, and proximity to built-up areas. From this it could be expected that the greatest agricultural intensification should be in areas most rapidly increasing in value, where competition for non-agricultural uses is not yet too severe. Hence the rural and ruburban areas should show the greatest intensification of agriculture.

TABLE 12.—COMPARISON OF FRINGE STATUS BY CHARACTER OF LAND USES, LAND VALUES, AND PROXIMITY TO BUILT-UP AREAS, 1968.

Area	Character	Land Value	Proximity to Built-Up Areas	Combination
Starkey Corner	late rural	ruburban	rural	late rural
Greenville	early ruburban	ruburban	rural	early ruburban
Midway	ruburban	ruburban	ruburban	ruburban
Tualatin	early suburban	late ruburban	early suburban	early suburban
Bethany	early suburban	suburban	suburban	early suburban
Cornelius	late suburban	late rural	early suburban	late ruburban
Aloha	late suburban	late suburban	late suburban	late suburban

Compiled from results shown on Tables 9, 10, and 11.

ASSESSMENT OF THE AGRICULTURAL STATUS OF EACH AREA AS TO INTENSIFICATION

An accurate appraisal of the agricultural intensification of each of the seven areas is necessary before a comparison can be made with land values. Since there is no known written history of agriculture for the areas concerned, data was collected in two ways: 1) the questionaire of actual farmers concerned, and 2) field research. The third question of the questionaire asks for major crop listings, and the fourth question asks for major crop changes made, or in effect, intensification. Field study was conducted on the assumption that any major intensification or change of farming pattern would not be reversed; that is, that a grain-growing area, once converted to a dairy probably would not revert back to grain—

the investment in dairy-oriented facilities would prohibit a move to a product that yields less per acre than dairy products. However, other clues of intensification were noted, such as: silos for feed storage; the size of equipment storage sheds; row cropping relics such as poles from beans and hops; outhouses and migrant camps; ages of trees; recentness of cleared land; ages of buildings; type of visible machinery, stock, fencing, etc.

The following is the result of both the questionaires and the field study, by area, as to the agricultural intensification and agricultural use.

Starkey Corner. There were only two questionaire returns, one of which did not answer all of the questions because the head of the house was deceased. Field study of this unit revealed that the entire 154 acre parcel, however, is in grain. The other questionaire return indicated that dairying is and "always has been" the only major product, and field study did indicate that there was one 25 acre dairy farm. Field reconnaissance revealed that the entire square-mile segment of Starkey Corner is in grains, with the exception of the dairy farm and a five-acre parcel of a row crop. Hence, by far the major portion of the land is dedicated to a low-income/acre product. Figure 6 is an illustration of the general appearance of the Starkey Corner area, and Figure 7 shows the small acreage devoted to row crops (near the outhouses).

Greenville. Of the six questionaires returned, all were from grain and seed growers, but two also grew dairy silage. Field reconnaissance revealed the two dairy farms, and that all of the other lands are in pasture or grains/grass. The two dairy farmers indicated that they both had

FIG. 6. General rural appearance of the Starkey Corner area.

FIG. 7. The small acreage devoted to row crops in Starkey Corner.

expanded their operations around 1960, but none of the six had made any major product change. Field reconnaissance also testified to the fact that literally 100% of the area has at one time been farmed, but that not only has there been little intensification, there is approximately 10% of the area presently either vacant or in non-agricultural uses. Figure 8 on page 32 illustrates one of the newer non-agricultural uses occurring throughout Washington County. Figure 9 is an example of a large farm starting the process of suburbanization by subdividing a single lot for the construction of a suburban house.

Midway. None of the ten questionaire returns indicated any major product change. All grow fodder and two grow wheat in addition. Field reconnaissance revealed that while there probably has never been a major product change in Midway, there was a reversal of intensification from a market standpoint. This was shown by the fact that while up to 40% is in pasture, much is for horses. The questionaire reveals that most of the occupants are not farmers but retired people or part-time farmers. Hence, what was once probably a grain-growing area that had shown signs of changing to orchards, has become pasturage for horses. While surrounding areas do show signs of new orchard growth a few miles away, the Midway area not only lacks new orchards, but the small amount present appears to be somewhat neglected. Other than the small numbers of sheep and milk cows, there is one small row-crop area, and there are large grain farms, all of which show signs of increasing yields with the new storage facilities. Figure 10 on page 33 is an example of a ranch now devoted to horse pasturage. Figure 11 shows a suburban "toehold" in a predominately agricultural area

FIG. 8. This mobile home in agricultural Greenville illustrates one of the newer non-agricultural uses occurring throughout Washington County.

FIG. 9. This large farm has subdivied one lot for a suburban residence.

FIG. 10. From a market standpoint this ranch has deintensified, by making the change from grains to horse pasturage.

FIG. 11. This suburban home sits alone in predominantely agricultural - Midway.

next to Midway.

Tualatin. There were four questionaire returns from Tualatin, two of which were from farmers who grow grains and always have, and the other two from retired couples who grow nothing. Field research indicated a large percentage (about 25%) of vacant, or uncleared land. Also, many non-agricultural uses are appearing (mostly light industrial) which also have large storage areas or vacant areas supposedly for expansion. Most farms still appear to be and always have been in small pasture or grain, especially in the lower, wetter areas. There was one notable exception, a land holding of 217 acres (approximately 1/3 of the area) which had a sizable orchard (some new), and a row crop area. Most of this parcel was still in grain. Of the few other orchards, most appeared to be declining. No dairy farms were located and many 10-to-40 acre parcels have abandoned farm houses on them indicating that except for the one large parcel, the Tualatin square-mile segment is rapidly declining agriculturally. Figure 12 illustrates the type of light industrial uses entering Tualatin, with relic orchards in the background. Figure 13 is an example of the vacant land caused by large industrial ownerships reserving land for future expansion.

Bethany. Four returns from Bethany reported that grains and pasture are their major farm products. One reported that he is a retired dairyman, and one that he has some beef cattle. Field research indicates that of the operating farms, most are growing grains as the major product. As in Midway, however, there appeared to be a recent change to pasture, and again, horses were in evidence. There was no evidence of extensive row cropping, orchards, or dairying in the area, though some of the older

FIG. 12. Relic orchards form the background for this light industry, new to the Tualatin area.

FIG. 13. Many industries in the Tualatin segment, like this one, have reserved tracts of surrounding land for future expansion.

farms seem to have exceptionally large but badly decaying barns and outbuildings. Nor was there any evidence of wide-scale farm reinvestment. Figure 14 illustrates the general appearance of the Bethany area, with Somerset West in the background. Figure 15 is a close-up of Somerset West.

Cornelius. There were six returns from Cornelius. Only one indicated that grains/hay is the most important product (for his dairy herd), and he has made a major crop change from fruit trees (which froze in 1950)—thus he did the improbable. Of the six, two claimed to have dairy products as their major product mix; three claimed fruit and/or vegetables; and one was retired and had sold off all but his home. Field reconnaissance did reveal a large dairy and two large orchards, one of which is expanding. Most of the rest of the area, however, is in grains/grasses, with the exception of two large strawberry/bean parcels. The smaller parcels (5-10 acres) appear to be either vacant or in pasture. Evidence of silo construction indicates substantial recent dairy increases. Therefore, as a whole the Cornelius area appears to be the only substantially intensifying square-mile segment, with pockets of vacancy and non-farm uses appearing. Figure 16 on page 38 shows a "pocket" of non-farm use, in a small subdivision next to the Cornelius segment. Figure 17 is an example of one of the more affluent dairy operations expected in one of the higher land-value areas.

Aloha. Only two of the four Aloha returns indicated what is or was the major product. None claim to be farmers, though the two do indicate that they have hay or grain growing while they both work in the building trades. One indicated that he made a major product change in

FIG. 14. Bethany area: general appearance. Note Somerset West development in the background.

FIG. 15. Close-up of the Somerset West subdivision in the Bethany segment. Heavy capital investment here temporarily inflated prices of surrounding farm lands before imposition of F-1 zoning.

FIG. 16. This small subdivision near the Cornelius segment is a typical pocket of non-agricultural use.

FIG. 17. Affluent dairy operations like this one in Cornelius are one of the uses generally expected in the areas of higher land values.

1967 from grains to vacant (presumably for speculation). Field research revealed several scattered orchard areas in and around the Aloha square-mile segment, but most appeared to be connected with the private, non-agricultural residences that now dominate the area. There are approximately twenty relics of farm houses, but none with barns. Hence orchards are the only evidence of any intensification from the grains/grasses that do still appear in the few open spaces. Aloha is well along the process of suburbanization, and as such agriculture has long ceased to be an important factor in the area. It appears that there never was an area-wide intensification of agriculture as evidenced by the open space left, the open areas surrounding Aloha, and the few sparsely scattered orchard areas that were found. Figure 18 shows one of the larger relic orchard areas with the new Aloha High School in the background. Figure 19 illustrates an example of "late suburban" with an urban "commercial strip development".

Table 13 sums up the above descriptions as to the intensification of agriculture within each of the seven square-mile segments.

TABLE 13.—INTENSIFICATION OF AGRICULTURE BY AREA

Area	Intensification Status of Products and Crop Land
Starkey Corner	None beyond grains; no vacancy.
Greenville	Very little beyond grains; some vacancy.
Midway	Some beyond grains; some vacancy.
Tualatin	Very little beyond grains; much vacancy.
Bethany	None beyond grains; some vacancy.
Cornelius	Much beyond grains; little vacancy.
Aloha	Very little beyond grains; much vacancy.

Compiled from field research and questionaire results.

FIG. 18. Large relic orchard in Aloha area with the new Aloha High School in the background.

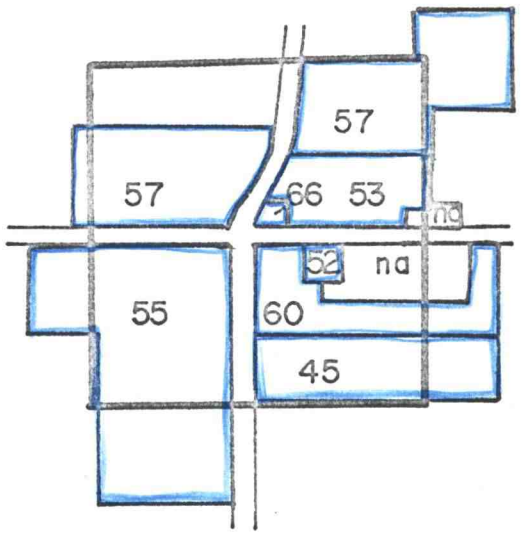
FIG. 19. Commercial strip development in Aloha serves as an example of typical late suburban growth.

IDENTIFICATION OF EACH AREA AS TO CHANGE IN LAND VALUE

A factual evaluation of the changing land-value situation for the seven areas must be made before a comparison can be concluded. Of the three types of data collected, that from the tax assessor's office and the real estate advertising will be discussed, along with maps displaying the historical data of the appraiser. The real estate advertising and the appraiser do generally agree on the general areas of Washington County which are experiencing the greatest value/acre changes. Both agree generally also, that the fringe areas closest to Metropolitan Portland have had the greatest value/acre changes, and that those further away, even though they may be close to an incorporated city, have not experienced the same rapid value change (see Table 5).

The following are summary evaluations of each of the seven square-mile segments.

Starkey Corner. The map on the following page, Figure 20, displays the parcels sampled from the Washington County Appraiser's Office, with the 1961 to 1968 percentage of change of appraised values numbered in each parcel sampled ($\frac{\text{1968 appraised value - 1961 appraised value}}{\text{1968 appraised value}}$). As can be noted, because all numbers are in blue, all parcels appreciated, ranging from a low of 45% increase in eight years to a high of a 66% increase. This suggests that the entire area appreciated 52.1% ($\frac{\text{total appraised value}}{\text{total acreage}}$) according to the tax appraiser (the greatest of all seven areas). This is close to the estimated 49.6% increase compiled from real estate advertising (for tabular form see Table 5).



STARKEY CORNER: % CHANGE IN APPRAISED VALUE, 1961 TO 1968

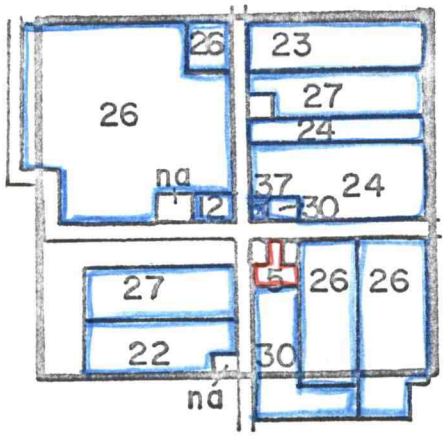
Blue - Increase

Red - Decrease

Sources: See Note A, page 62, following FOOTNOTES.

Square-mile Segment Boundary

FIG. 20. Starkey Corner: % Change in Land-Value/Acre, 1961 - 1968.



GREENVILLE: % CHANGE IN LAND VALUE/ACRE, 1961 TO 1968

Blue - Increase

Red - Decrease

Square-mile Segment Boundary

FIG. 21. Greenville: % Change in Land-Value/Acre, 1961 - 1968.

Greenville. Between 1961 and 1968 one parcel depreciated 5%, which was the lowest appraised land-value change. As can be seen, however, most of the parcels in the sample area had a 20% to 30% increase, giving a suggested area-wide appreciation of 26.1% according to the records of the appraiser. The area-wide increase suggested by the real estate advertising however, was much greater at 72%, which was the second highest increase for the seven areas.

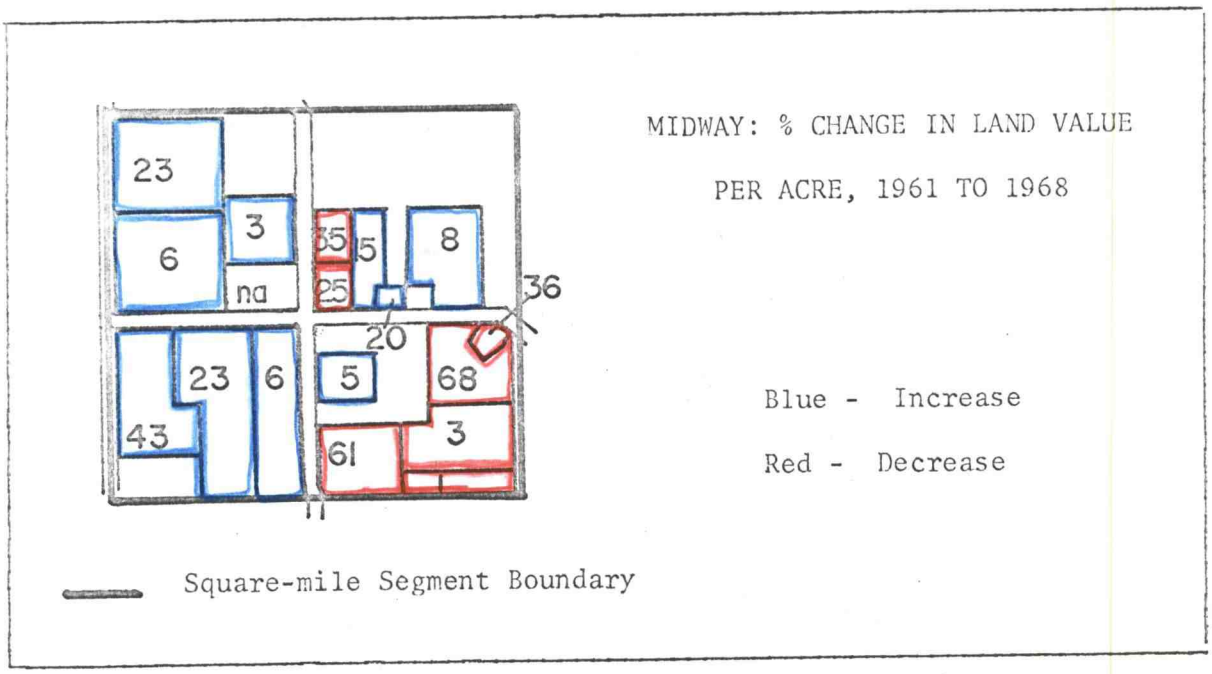


FIG. 22. Midway: % Change in Land-Value/Acre, 1961 to 1968.

Midway. From 1961 to 1968, seven of the eighteen samples depreciated, with the greatest being a 68% decrease in appraised value. The greatest appreciation was a 43% increase, giving an area-wide suggested appreciation of only 6.1% according to the figures of the county appraiser. The real estate advertising suggests a much greater appreciation of

land values with a 47% increase, although this is the second lowest increase of the seven areas according to the real estate advertising. It is the lowest rate of increase compiled from data of the office of the county assessor.

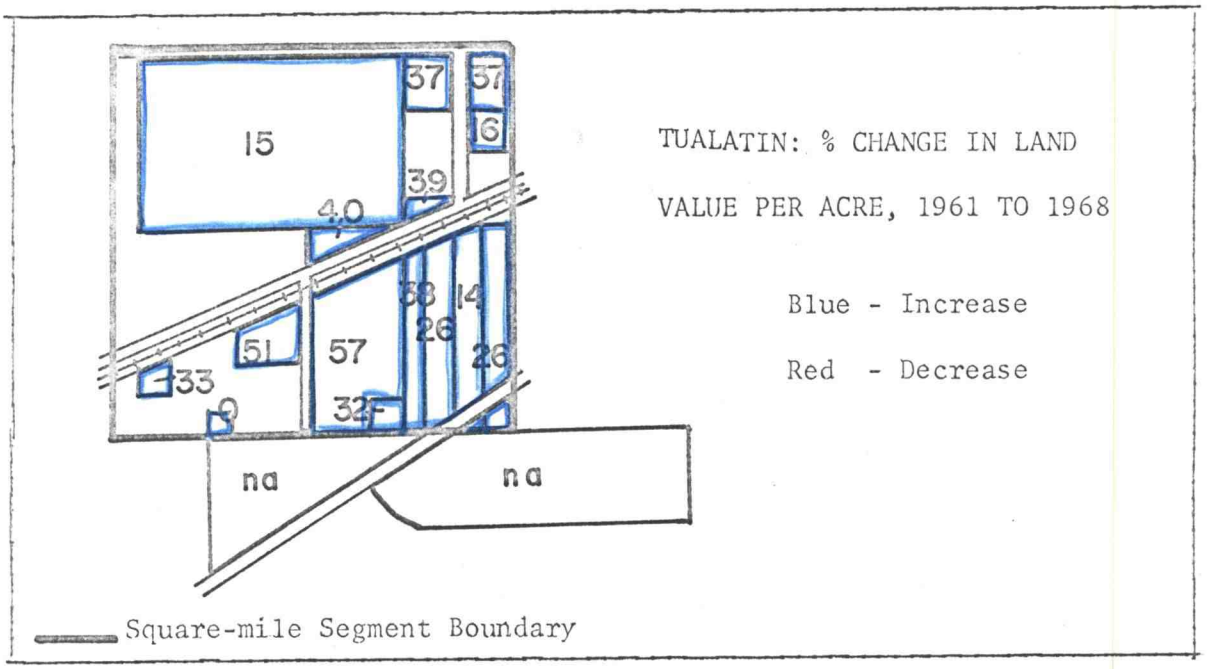


FIG. 23. Tualatin: % Change in Land-Value/Acre, 1961 to 1968.

Tualatin. No sampled parcels in the Tualatin area depreciated according to the county assessor, though one small parcel remained unchanged. Excepting that parcel, the lowest appreciation was 14% and the greatest appreciation was 57%, which suggests an area-wide appreciation of 44.6% according to the county assessor. The real estate data suggests that the area increased 62.9% which, when considering that this is for ten years instead of eight, shows a close correlation to the figures of the assessor (44.6%).

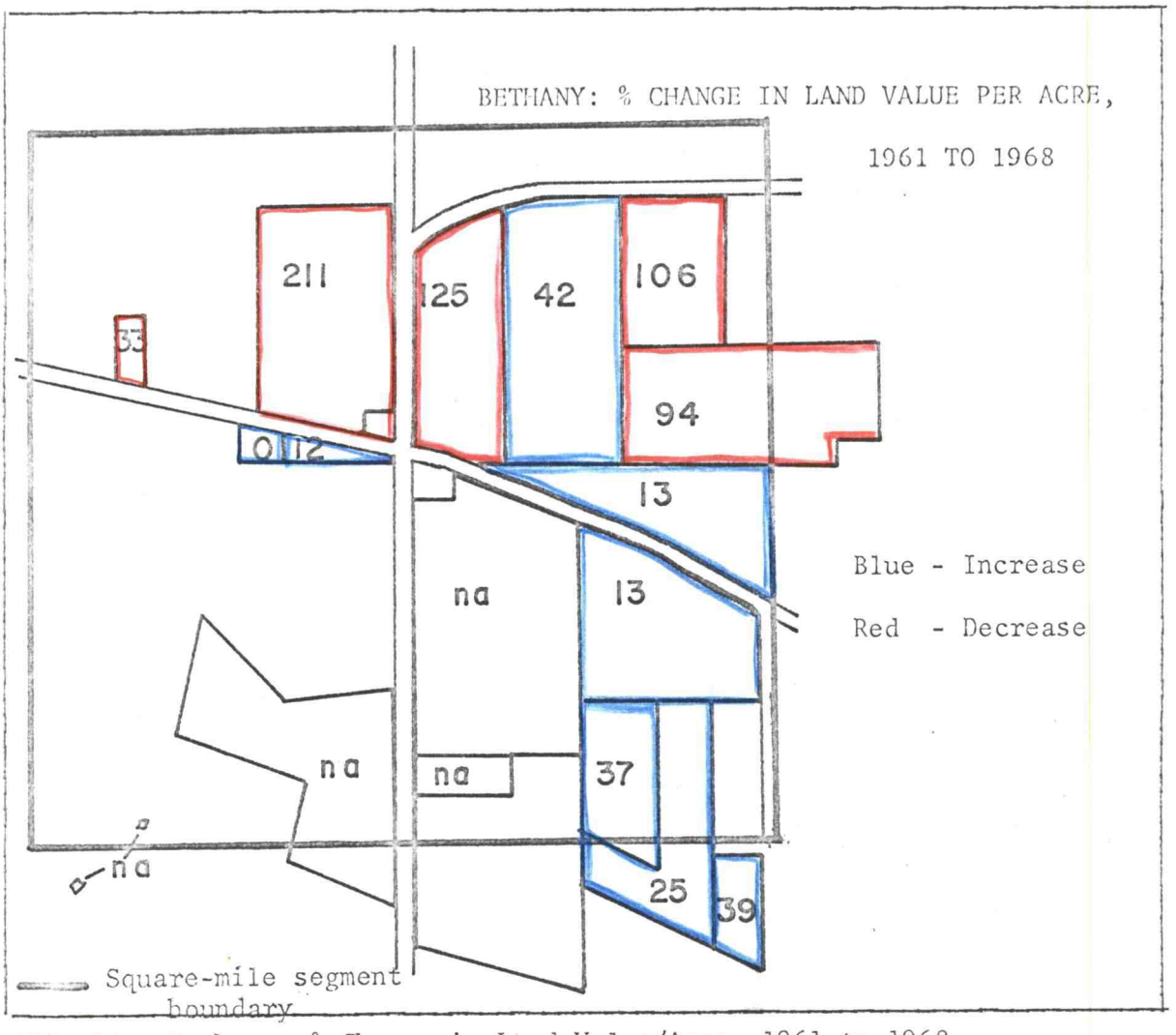


FIG. 24. Bethany: % Change in Land-Value/Acre, 1961 to 1968.

Bethany. The map scale is halved to allow more detailed description of the small parcels, and as can be seen there were five parcels that show considerable depreciation, with the greatest depreciation being 211%. The greatest appreciation was 52%, and the total suggest appreciation for the area is 49.5%, or the second highest increase of the seven areas, according to the assessor's data. This high value is partially due to the inclusion of two small parcels in the Somerset West Planned Development which came

to play an active role in Bethany in 1967 and 1968, and accordingly raised the 1969 total sample assessment. On the other hand, the five parcels that show the correspondingly high decrease in appraised value were lowered because of the exclusive farm zoning (F-1)[12] which automatically lowers the appraised value to farm assessment rates, and shows up in the 1968 figure. Perhaps the real estate figure for a 94.5% area-wide appreciation is more reflective of the actual situation. At any rate, the Bethany area is in the top two for both the real estate data and the assessor data for the greatest increase in land value.

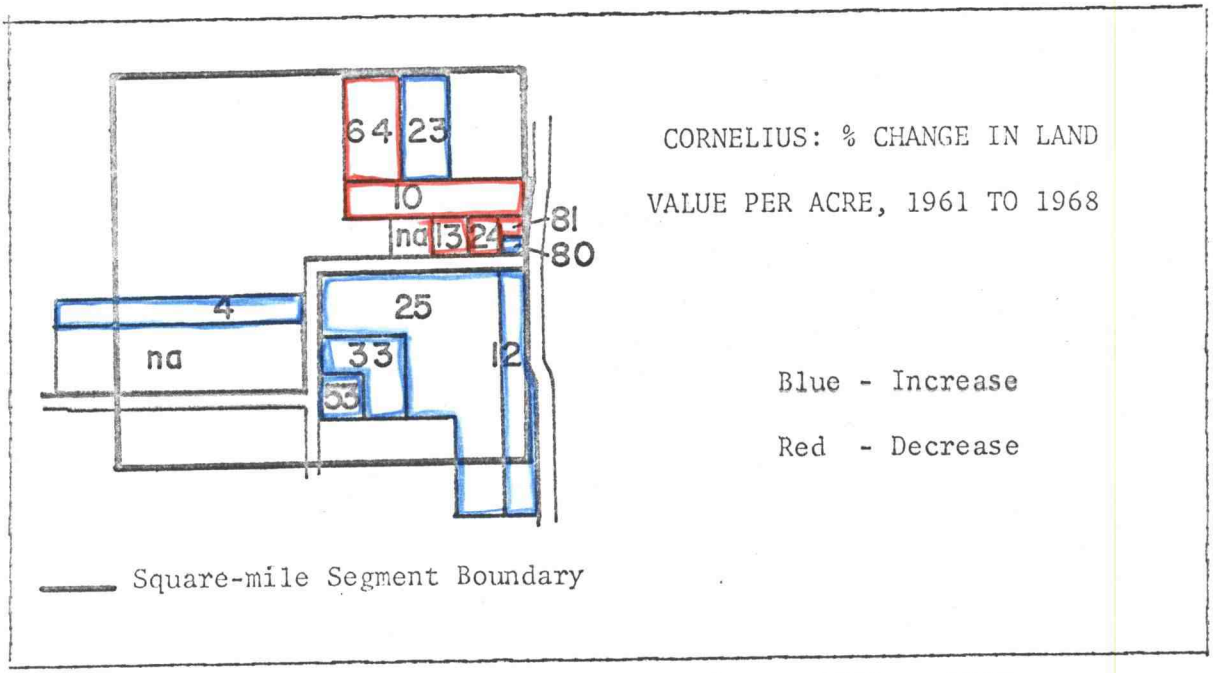


FIG. 25. Cornelius: % Change in Land-Value/Acre, 1961 to 1968.

Cornelius. Between 1961 and 1968 five of the fifteen sampled parcels depreciated in land value with the greatest depreciation being 81% on a small, four-acre parcel. It should be noted again, however, that all five parcels have at least part of their acreage in an exclusive farm zone

which was created in 1968, though some parcels that appreciated also have acreage in the F-1 zone. The greatest appreciation of the appraised value was 25% suggesting an area-wide appreciation of only 14.8%, which, although lower than the appreciation suggested by the real estate data (33.3%), was one of the two lowest increases for both data sources.

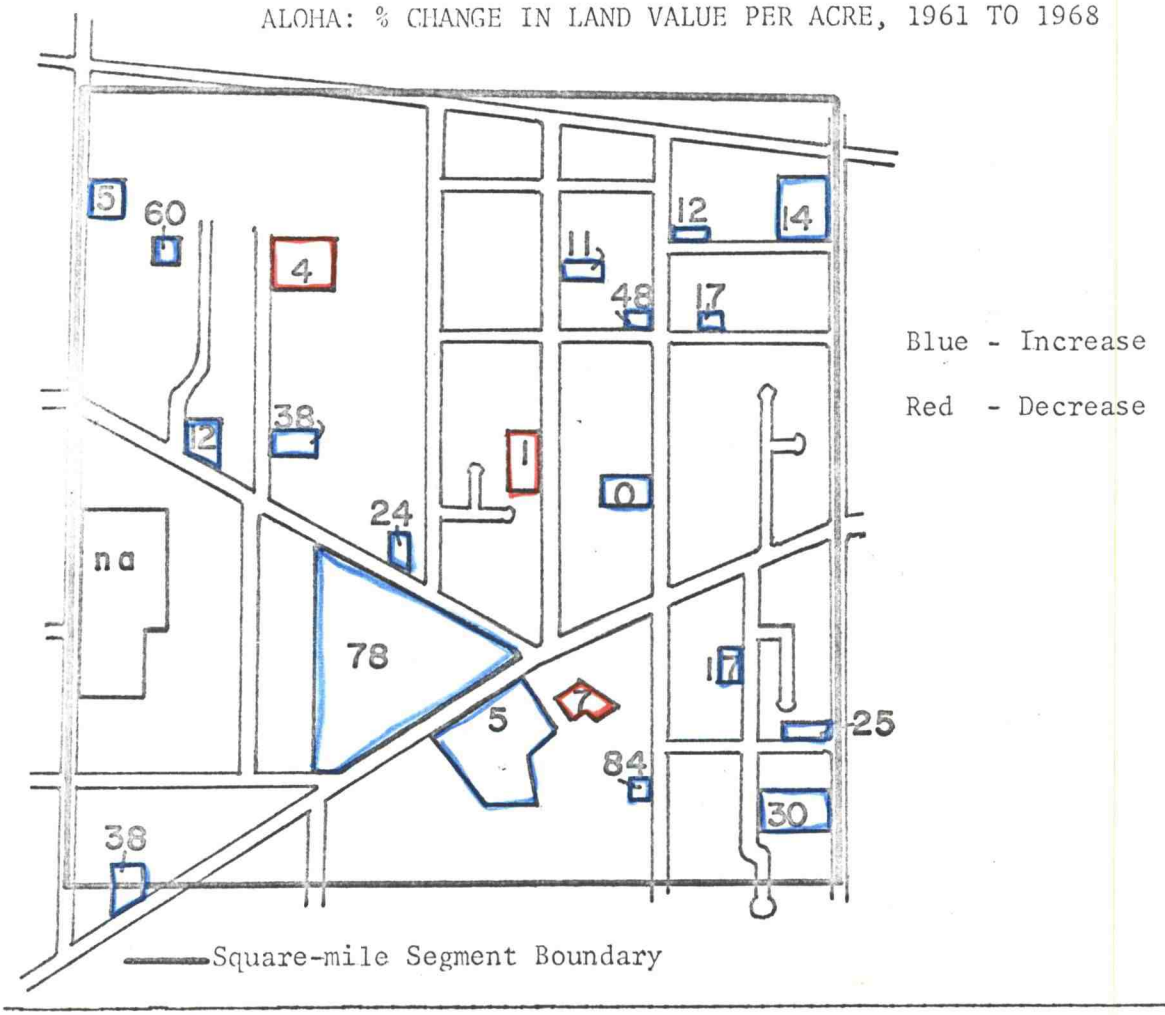


FIG. 26. Aloha: % Change in Land-Value/Acre, 1961 to 1968.

Aloha. For Figure 26 the scale was again expanded to allow the

presentation of more detail. Only three sample parcels show a depreciation, most of which can be explained by the subjectivity of the human element of the appraiser and the appraising system. The important fact is the wide variation of changes with no apparent pattern. At best it can be suggested that the area, according to the assessor sample data, appreciated on the average about 41%. The real estate data suggests a much higher appreciation at 70.9%, though much of the advertising data was on new housing, which tends to inflate the percentage figure. An accurate appraisal of the improvements would be necessary to calculate land values, which further distorts the real estate percentage figure. At best Aloha appreciated at a high medium rate for both data sources when compared to the other six areas.

THE COMPARISON OF AGRICULTURAL INTENSIFICATION TO LAND VALUE CHANGES

The comparison of the agricultural intensification to land value changes is demonstrated below using two techniques for each area. On the map are the parcel samples as taken from above, with blue parcels indicating appreciation and red parcels indicating depreciation. The numbers indicate the level of intensification ranging thus:

0 — new home, mobile home, etc. not connected with farming;
1 — dairy;
2 — orchard;
3 — row crop;
4 — pasture;
5 — grain and/or grasses;
6 — vacant agricultural land not in fallow.

Also in chart form is a summary of findings relating to each parcel including: its size, 1968; appraised value/acre in 1961 and 1968; the percentage change in value/acre between 1961 and 1968;[13] and the estimated most

intensive historical agricultural use.[14]

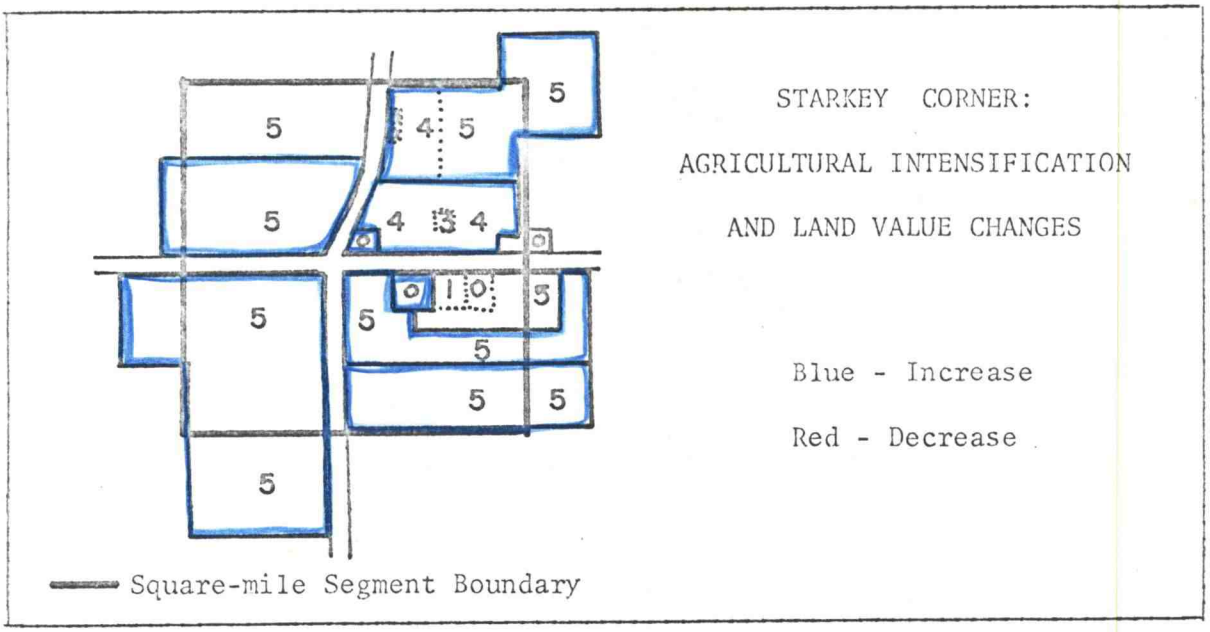


FIG. 27. Starkey Corner: Agricultural Intensification and Land-Value Changes.

TABLE 14.—STARKEY CORNER PARCEL SUMMARY

#	Acreage	1968 $/A	1961 $/A	% Change	Most Intensive Historical Agricultural Use
1	97.17	666	286	57.06	grain
2	.94	3,723	1,277	56.70	vacant
3	84.00	619	292	52.82	grain, some row crop
4	65.53	580	247	57.41	grain
5	154.62	588	262	55.44	grain
6	.64	3,906	1,875	52.00	grain
7	25.46	652	N.A.[a]	N.A.	dairy
8	63.13	673	272	59.58	grain
9	97.35	631	346	45.17	grain

[a]These parcels came into existence after 1961, therefore no figures are available for that date.

[b]Compiled from Tax Records, Washington County Assessor's Office, and Author's Field Research.

Starkey Corner. Figure 27 and Table 14 suggest that of the nine parcels sampled, only two are intensifying, and the rest are still cropping with products that yield a low return per acre. Starkey Corner, furthermore, has consistently shown one of the highest increases in value per acre with a minimum of non-agricultural uses in the last decade.

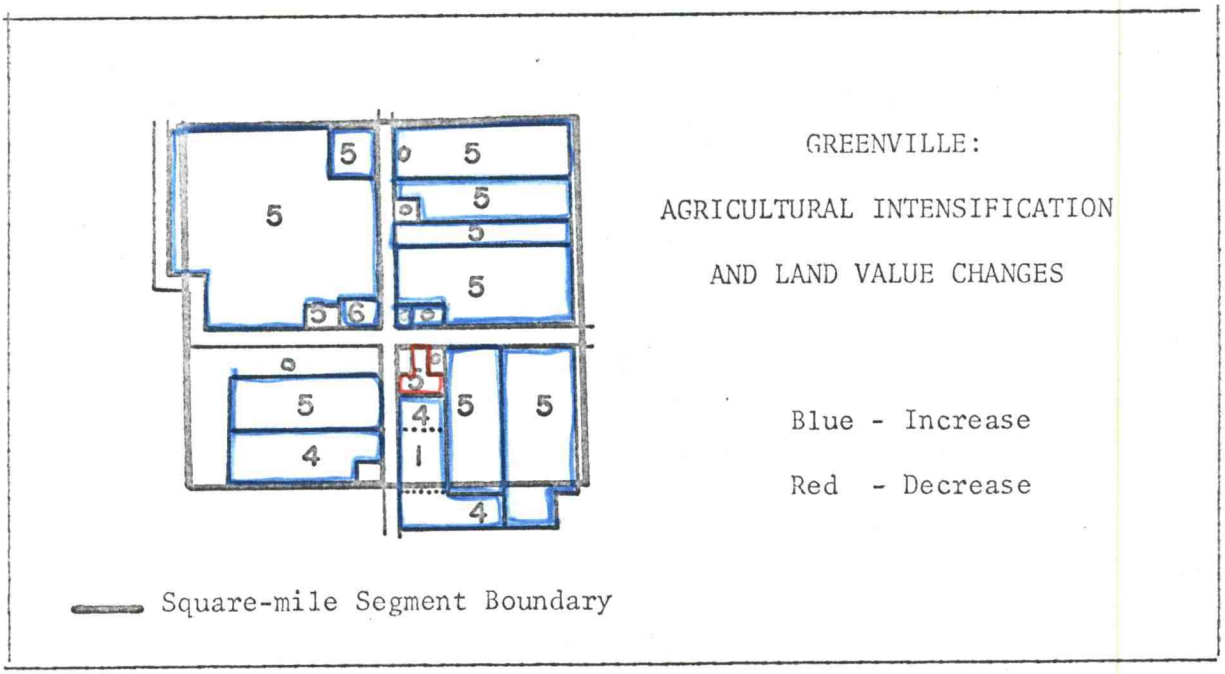


FIG. 28. Greenville: Agricultural Intensification and Land-Value Changes.

Greenville. Almost more extreme than Starkey Corner, Greenville has only one sample parcel that has a use more intensive than grains or grasses. In the Greenville case, however, there have been substantial increases of non-agricultural uses along with the increase in land values. Greenville's parcel summary chart (Table 15) is found on page 51.

TABLE 15.—GREENVILLE PARCEL SUMMARY

#	Acreage	1968 $/A	1961 $/A	% Change	Most Intensive Historical Agricultural Use
1	1.60	1,000	N.A.[a]	N.A.	grain
2	1.42	775	N.A.	N.A.	grain
3	6.24	401	423	-5.49	grain
4	38.37	388	271	30.15	dairy and grass
5	39.34	363	267	26.45	grain
6	25.00	380	280	26.32	grain
7	52.90	397	300	24.43	grain
8	19.50	379	279	26.39	grain
9	38.44	375	273	27.20	grain
10	.40	3,250	2,500	23.08	grain
11	1.16	1,207	862	36.87	vacant
12	2.75	727	509	29.99	grain
13	9.50	442	328	25.79	grain
14	155.98	335	246	26.57	grain
15	11.04	471	413	12.31	vacant
16	2.81	356	N.A.	N.A.	grain
17	44.17	362	265	26.80	pasture
18	50.20	388	302	22.16	grain
19	1.25	1,200	N.A.	N.A.	grain

[a]No 1961 figures available, not applicable.
[b]Sources: Tax Assessor, Washington County, and Field Research.

Midway. With one of the weaker land-value increases, in fact with many decreases in land values, there is more agricultural intensification in Midway than that found in either Starkey Corner or in Greenville. Even at that, the sample parcels with the greatest increases are generally those with the least agricultural intensification; and conversely, the sample parcels with the least increase, or even with decreases, have the higher uses, though in reality much of the pasture area in Midway, as mentioned above, is out of the market with its local horse grazing.

MIDWAY: AGRICULTURAL INTENSIFICATION AND LAND VALUE CHANGES

Blue - Increase

Red - Decrease

Square-mile Segment Boundary

FIG. 29. Midway: Agricultural Intensification and Land-Value Changes.

TABLE 16.—MIDWAY PARCEL SUMMARY

#	Acreage	1968 $/A	1961 $/A	% Change	Most Intensive Historical Agricultural Use
1	48.22	452	347	23.23	grain, row crop
2	48.62	298	279	6.38	grain
3	48.63	175	100	42.86	grain
4	49.50	333	260	21.92	grain
5	58.00	276	259	6.16	vacant=orchard=pasture
6	N.A.	N.A.	N.A.	N.A.	pasture=orchard
7	18.66	289	281	3.11	pasture
8	9.50	453	611	-34.88	pasture
9	8.00	475	595	-25.26	orchard
10	13.40	313	265	15.34	pasture
11	20.33	364	344	5.49	pasture
12	30.82	311	501	-61.09	pasture
13	33.25	295	272	7.80	pasture
14	9.70	443	602	-35.89	pasture
15	20.90	282	473	-67.73	pasture
16	24.00	275	282	- 2.55	pasture
17	15.00	100	101	- 1.00	pasture
18	1.00	1,900	1,520	20.00	pasture

Sources: Washington County Tax Records and Author's Research.

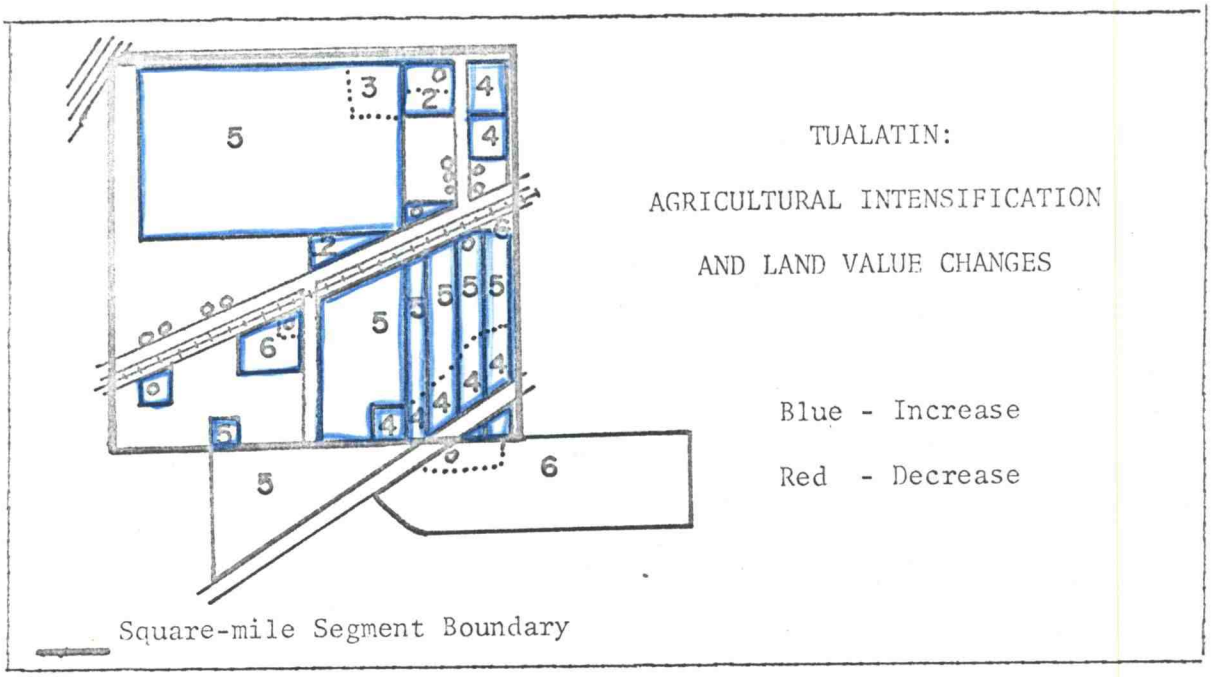


FIG. 30. Tualatin: Agricultural Intensification and Land-Value Changes.

Tualatin. With an almost universal land-value increase, there was very little agricultural intensification in this segment. The area was zoned mostly industrial in 1962, and has several new industries to testify that the zoning is effective. The area is just experiencing rapid non-agricultural growth, especially near the northwest corner of the square-mile segment, where King City, a planned residential development of about 3,000 residents came into being about 1964. Except for the one large sample parcel of about 200 acres, there is little evidence of agricultural intensification within the last ten years. There is evidence of some small dairy operations nearby and a few relic orchards which suggest that there was an area-wide tendency that might have developed had not suburbanization come. The fact is, however, that there is little agricultural intensification and the area is entering a strong suburban stage of development.

TABLE 17.—TUALATIN PARCEL SUMMARY

#	Acreage	1968 $/A	1961 $/A	% Change	Most Intensive Historical Agricultural Use
1	216.22	762	650	14.70	some row crop; orchard, mostly grains
2	8.96	1,451	915	36.94	grain=orchard
3	8.97	1,449	914	36.92	pasture
4	9.66	921	770	16.40	pasture
5	2.56	1,641	906	38.70	grain
6	4.77	2,935	1,971	32.84	grain
7	16.20	1,117	551	50.67	grain
8	4.84	909	909	0.00	grain
9	65.20	514	221	57.00	grain
10	11.01	445	302	32.13	pasture
11	20.74	463	287	38.01	pasture
12	21.66	392	292	25.51	grain
13	10.62	433	373	13.86	grain
14	28.05	335	248	25.97	grain
15	1.50	2,000	1,200	40.00	orchard

Sources: Washington County Assessor's Records and Author's Field Research

Bethany. As was previously suggested, Bethany entered the suburban stage of its development "by force", with the addition of the large planned residential development of "Somerset West". Because of zoning, much of the agricultural area in Bethany has stabilized in value around the agriculturally appraised farm land (though much of the exclusive-farm zoned areas is still appraised at $700-plus per acre with a tax rate of $26 per $1000 assessed valuation ($16.20 in 1968). Still Bethany was the only area that had no agricultural land use of an order higher than grain or grasses.

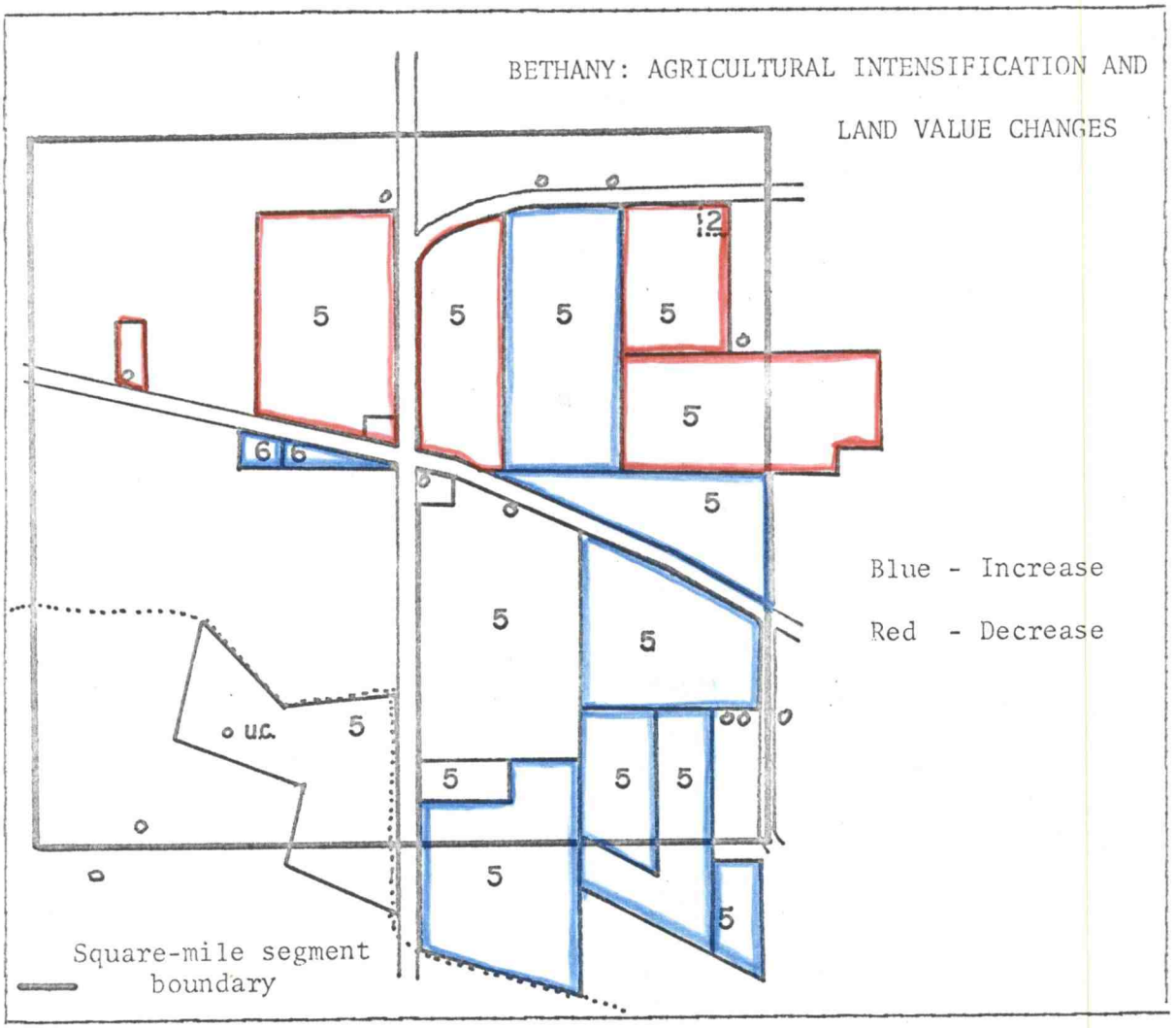


FIG. 31. Bethany: Agricultural Intensification and Land-Value Changes.

Table 18, the Bethany Parcel Summary, is found on the top of page 56.

Cornelius. As an agricultural area close to a stable, though not a rapidly growing community, Cornelius is one of the most intensive agricultural areas of the seven square-mile segments. Only four of the fifteen sample parcels have intensified. Outside of the sample parcels there is

TABLE 18—BETHANY PARCEL SUMMARY

#	Acreage	1968 $/A	1961 $/A	% Change	Most Intensive Historical Agricultural Use
1	31.47	321	722	-124.92	grain
2	38.35	1,158	676	41.62	grain
3	15.89	340	700	-105.88	mostly grain, some orchard
4	40.55	293	568	- 93.86	grain
5	45.59	834	722	13.43	grain
6	49.13	1,280	N.A.[a]	N.A.	grain
7	.45	6,667	N.A.	N.A.	grain
8	45.43	1,499	715	52.30	grain
9	12.00	1,117	703	37.06	grain
10	22.15	889	668	24.86	grain
11	7.36	1,495	910	39.13	grain
12	32.19	210	654	-211.43	grain
13	2.06	1,214	1,612	- 32.78	grain
14	33.58	699	N.A.	N.A.	pasture
15	.15	30,000	N.A.	N.A.	grain
16	.05	N.A.	N.A.	N.A.	grain
17	4.08	1,078	946	12.24	grain
18	2.00	1,000	1,000	0.00	grain

[a]Figures not available.

[b]Compiled from Washington County tax records and author's field research.

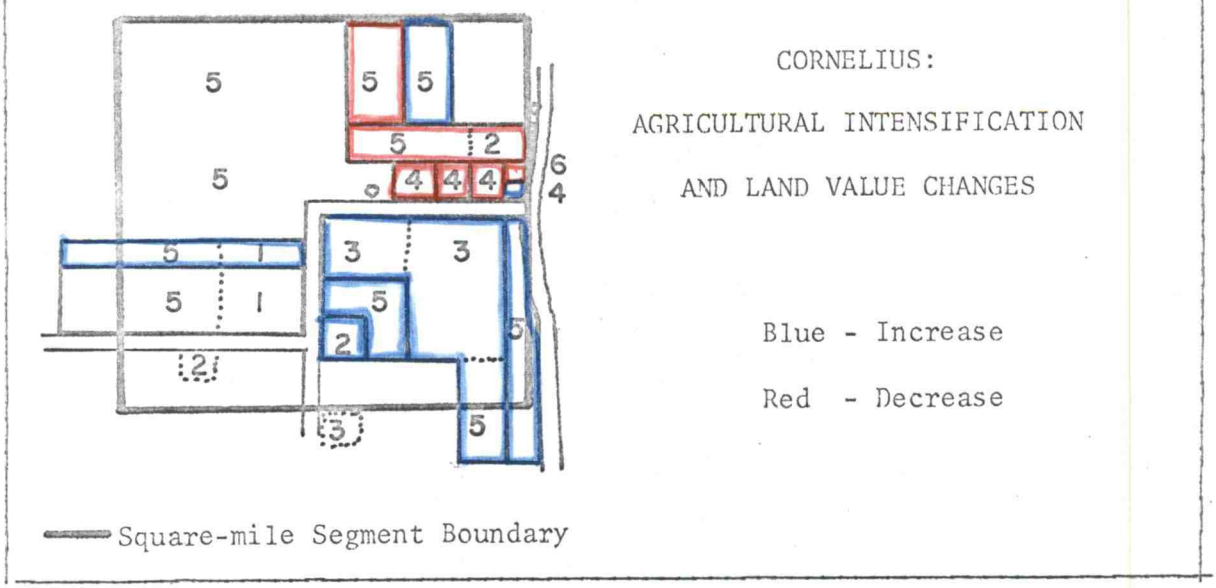


FIG. 32. Cornelius: Agricultural Intensification and Land-Value Changes.

TABLE 19.—CORNELIUS PARCEL SUMMARY

#	Acreage	1968 $/A	1961 $/A	% Change	Most Intensive Historical Agricultural Use
1	28.62	276	266	3.62	pasture
2	N.A.[a]	N.A.	N.A.	N.A.	dairy
3	83.60	453	340	24.94	row crop
4	48.38	329	281	12.46	grain
5	3.32	1,235	578	53.20	orchard
6	30.77	429	286	33.33	row crop=grain
7	20.00	365	600	-64.38	grain
8	24.65	421	325	22.80	grain
9	29.60	284	311	- 9.51	pasture=orchard
10	6.01	532	N.A.	N.A.	orchard
11	3.83	393	443	-13.01	pasture
12	9.84	356	443	-24.44	pasture
13	4.08	760	1,373	-80.66	pasture
14	5.00	N.A.	N.A.	N.A.	pasture
15	.24	2,917	574	80.32	pasture

[a]Figures not available.
[b]Compiled from Washington County Tax Records and Author's Field Research.

one other orchard parcel, and one row-crop area. All of the rest of the area is either in grains, grasses, or one-to-five acre vacant plots. Furthermore, most of the intensification appears to be recent in origin (within the past decade). At the same time it should be remembered that Cornelius has a lower land value increase than any of the other six sample parcels.

Aloha. Aloha has by far the greatest percentage of well-developed non-agricultural land uses. There are very few evidences that it has ever been a more intensive agricultural area than, say, Cornelius is now.

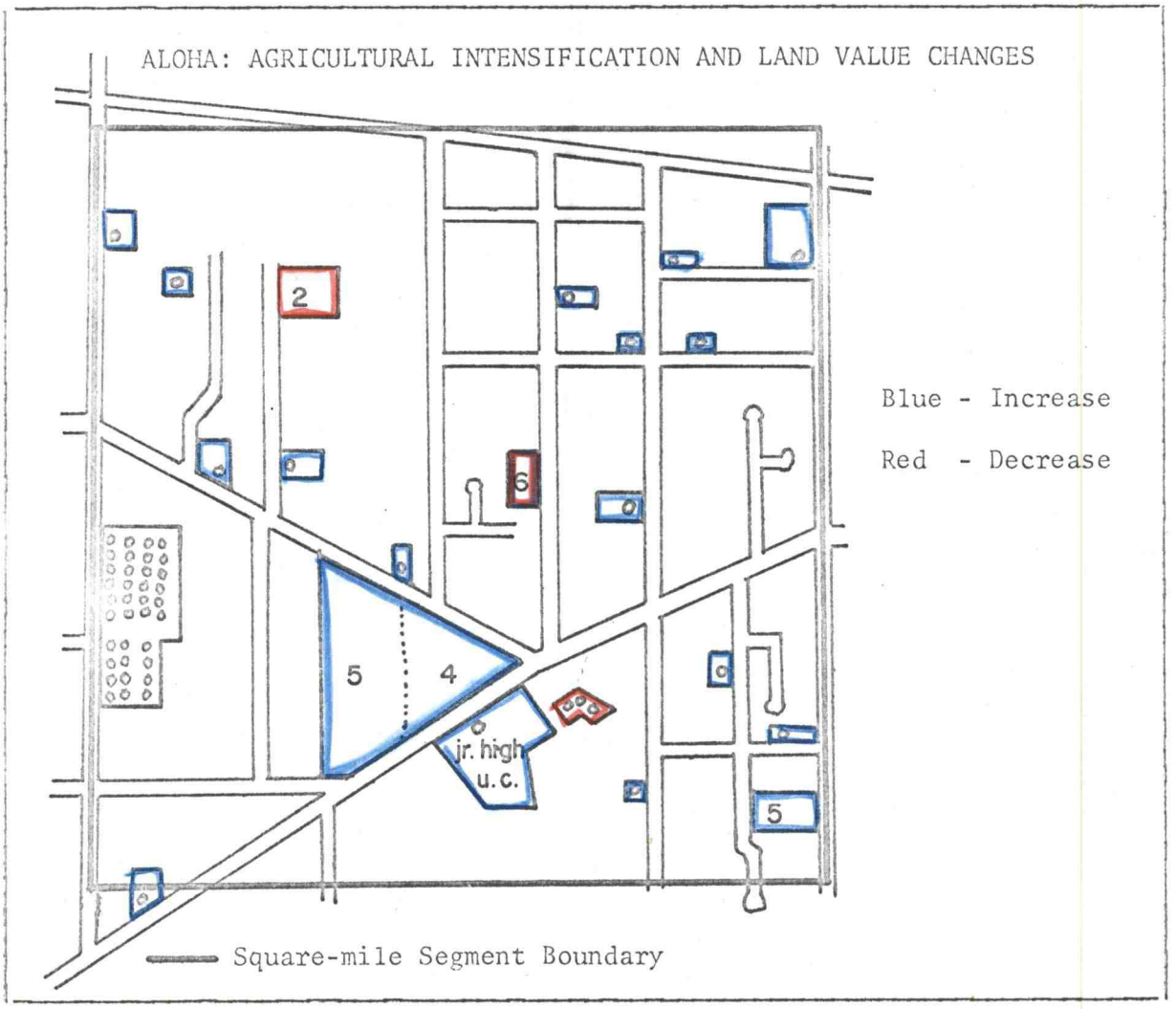


FIG. 33. Aloha: Agricultural Intensification and Land-Value Changes.

The Aloha Parcel Summary (Table 20) is found at the top of page 59.

In conclusion of the comparison of land values to agricultural intensification, it appears that the whole Tualatin is intensifying at nearly the same rate. However, there is little evidence that suggests that any one square-mile segment universally intensifies in a direct response to pressures that are being applied universally to the whole area.

TABLE 20.—ALOHA PARCEL SUMMARY

#	Acreage	1968 $/A	1961 $/A	% Change	Most Intensive Historical Agricultural Use
1	2.85	2,544	2,189	13.95	pasture
2	.57	5,088	4,491	11.73	pasture
3	.83	1,205	627	47.97	pasture
4	1.72	2,849	2,535	11.02	pasture
5	1.87	1,818	1,181	0.00	pasture
6	3.43	2,420	2,449	-1.20	pasture
7	.58	5,000	4,138	17.24	pasture
8	4.82	1,498	1,560	-4.14	orchard
9	.15	17,333	14,667	15.38	pasture
10	.15	16,667	6,667	60.00	pasture
11	1.08	2,685	2,370	11.73	pasture
12	1.06	3,679	2,264	38.46	pasture
13	1.02	3,333	2,549	23.52	pasture
14	26.67	1,556	337	78.34	grain
15	.15	6,667	N.A.[a]	N.A.	grain
16	1.83	2,678	1,661	37.98	grain
17	.15	19,333	16,000	17.24	grain
18	.15	10,000	10,667	-6.67	grain
19	11.16	1,541	1,470	4.61	orchard
20	.15	16.667	2,667	84.00	grain
21	4.75	2,632	1,835	30.24	grain
22	.15	17,333	13,067	24.61	grain

[a]Figures not available.
[b]Compiled from Washington County Tax Records and Author's Field Research

FINAL CONCLUSIONS

Theorists such as Von Thünen, Ricardo, and Hoover have suggested that the higher the land values of an agricultural area, the more intense will be the farming practices. In Washington County this is somewhat true in the broad valley-wide pattern, i.e., generally more farms have higher yielding products per acre closer to the city of Portland than do those farms farther away. However, this is where the pattern stops. When examining a particular area or areas there is little evidence that demonstrates that intensification of agricultural products directly correlates with land-value increases.

In fact, as Edgar Hoover suggests, the closer a parcel is in distance to higher value developments, the less likelihood of agricultural intensification due to the "expected future rate".[15] In sample areas around the parts of Washington County now entering the suburban stage of development there is little evidence to suggest that increasing land values have ever generated an area-wide intensification of the agricultural product mix.

FOOTNOTES

[1]Richard J. Chorley, and Peter Haggett, Socio-Economic Models in Geography (London: University Paperbacks, 1967), p. 443.

[2]Preston E. James, New Viewpoints in Geography (Baltimore: Universal Lithographers, 1959), p. 70.

[3]James, P.E.

[4]Edgar M. Hoover, The Location of Economic Activity (New York: McGraw-Hill Book Co., 1963), pp. 96-97.

[5]Rena Herb, Personal Interview, Deputy Tax Assessor, Washington County, Oregon. March 12, 1969.

[6]Washington County, Oregon. Assessor's Office. Assessment and Tax Records, 1961 to 1968 (for selected parcels).

[7]Washington County, Oregon, Assessor's Office, and,
Washington County, Oregon, Planning Department, Zoning Ordinance and Zoning Map

[8]Questionaires. Personal replies from 37 apparent Washington County Agriculturalists, June-September, 1968, and
Personal Interviews with the Assistant Director of Planning and selected staff of the Washington County Planning Department, Washington County, Oregon, March 12, 1969.

[9]Herb, op.cit., footnote 5.

[10]U.S. Department of Commerce, Bureau of the Census, U.S. Census of Agriculture: 1959. Final Report, Vol. I, Part 47, Counties. various pages,
U.S. Department of Commerce, Bureau of the Census, U.S. Census of Agriculture: 1964. Final Report, Vol. I, Part 47, Counties.

[11]U.S. Geological Survey (Quandrangles, 1:62,500). Beaverton 1961, N4515--W12245, Forest Grove1956, N4530--W12300/15, and Hillsboro 1961, N4530--W12245/15, and,
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[12]Washington County Zoning Ordinance and Map. op. cit. footnote 7.

[13]Washington County Assessor's Office. Tax Records. op.cit. footnote 6.

[14].Author's Field Study.

[15]Hoover, op.cit. footnote 4, p. 101.

Note A. Figure 20 - Figure 26, Map Sources: Metsker's Map of Washington County (Seattle: privately published, August 1964) served as base map. Data compiled from County of Washington, Oregon, Assessor's Office, Tax and Assessment Records, 1961 to 1968 for selected parcels.

Figure 27 - Figure 33, Map Sources: Metsker's Map of Washington County(Seattle: privately printed, August 1964) served as base map; Data Compiled from County of Washington, Oregon, Assessor's Office, Tax and Assessment Records, 1961 to 1968 for selected parcels, and Field Research by the Author.

APPENDIX I: REFERENCES

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APPENDIX II: SAMPLE QUESTIONAIRE

(Cover Letter)

634 E. Thornton Lake Drive
Albany, Oregon 97321
August 19, 1968

Dear

I am a graduate student at Oregon State University in Geography/ Land Resources, and would appreciate your assistance. As part of my preparation on a research topic concerning the conversion of agricultural land to non-agricultural uses, I have prepared the enclosed questionaire.

I made a field survey of your immediate area to obtain the names and addresses of the local farming units. This questionaire is still important if farming has ceased to be your major occupation. Please do not sign the questionaire since this information will become part of a paper available to the public at the Oregon State University Library. Your anonymous reply will be very valuable and very much appreciated.

If you have any questions, please use the enclosed self-addressed envelope, and I will send you another envelope for your questionaire with the explanations.

Thank you,

Paul W. Chilcote

QUESTIONAIRE

1. Does farming now account for the majority of your income and/or time? If not, what would you say is your occupation?

2. How many acres of cropland do you own?

   rent?

   rent out?

3. What are your major crops?

4. Have you made a major change in crops (for example, from grains to fruits or dairying?) If so, when?

5. If a change in crops has occurred, what were the major reasons involved in the decision to change?

6. Do you feel that your cropland is appreciating in value faster now than ten years ago?

7. Do you feel that your cropland is appreciating in value as fast as your taxes are increasing?

8. In which price category would you value your cropland per acre?

   $250-$500 ; $500-$1000 ; $1000-$2000 ; $2000-$4000 ; over $4000 ;

9. Has the increase of suburbanization in your area brought about any major change in your farming practices?