EXURBAN POLICY AND DEVELOPMENT

IN STILLWATER, OKLAHOMA

By

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PREFACE

The main thrust of this study is two-fold. One is to test a model which is designed to indicate by areal unit the relative fitness and attractiveness of the policy environment for subdivision-type developments on the rural-urban fringe--'exurbia'. The Policy Environment Index is the name given the value arrived at by the workings of the model. It is conceivable that each areal unit in the study area could have been given a different Policy Environment Index value. Since the overall policy environment varies over space, the second major thrust of the study is to try and establish if linear relationships exist between any of the development-types and the Policy Environment Index.

The motivating factor in developing this model was my conviction that the use of such an index is a needed innovation in policy-oriented studies. The traditional descriptive, lengthy discussions which characterize policy studies need to be integrated into a more streamlined, scientific and systematic approach. Use of an index such as used in this study aids in depicting and conceptualizing the spatial variations in the cumulative effects of many policies. This goal would be difficult to achieve in any real sense by the use of "mountains" of maps and text to explain what has been easily and efficiently depicted by the use of the Policy Environment Index.

This study could not have been done without the responses and observations enthusiastically related to me by all persons and

and organizations listed in the Appendix. Their cooperation was crucial. However, regularly more information was volunteered than I had space or time to discuss in the body of the study. I am grateful and indebted to those listed in the Appendix, for without them and their cooperation this study could not have been possible.

Although Brandt's article in the Professional Geographer provided the needed catalyst for the formulation of the PEI model, discussions with two persons in particular were the major crystallizing factor. I am privileged to have been exposed to the inquiring, helpful thoughts of Marcia Salkin and R. Jerry Williams.

Of course, the critical, inquiring eyes and mind of Dr. Kieth D. Harries guided me safely through to the end. My thanks to him for his invaluable opinions and observations, not to mention his guidance.

My interactions with Dr. Richard D. Hecock and Dr. John S. Barclay provided additional and valuable insights during the preparation of the manuscript. I am indebted to them for their wise counsel.

Last, but certainly not least, I would like to mention a most fantastic person. She is Linda Baker. Very few people in the known world can transform my handwriting into a type-written masterpiece as she can. Not only do I thank her, I am deeply indebted to her and am frankly amazed at her ability to read my writing accurately.

Customarily, the author thanks his wife for enduring the tiring process of providing comfort, companionship, and motivation during the preparation of the manuscript. Although I am not married, I would, however, like to thank a very near and dear friend for putting up with me through the various stages of this study. My heartfelt thanks to Burrell Montz.

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INTRODUCTION

The Problem and Justification

In recent years there has been a growing number of people who are willing to live outside the metropolitan area, yet are urban in life-style and dependent upon the city for their employment. This urban-to-rural migration has been of sufficient magnitude that there is some question as to the present existence of an urban-rural dichotomy (Clawson, 1972/73). The non-farm, non-metropolitan population increased by 19.2 percent from 1960-1970 (Brinkman, 1974). An example of what effect this shift in population has had on urban land area is the case of the Chicago Metropolitan Area ring (suburban). The Chicago Metropolitan Area ring (suburban) increased in land area from 977 square miles in 1940 to 4,434 square miles in 1970. Within the same time span, the density in the same area dropped from 1, 128 per square mile to 957 per square mile (Population, Distribution, and Policy, 1972). Another such example is the case of Little Rock, Arkansas. From 1950-1970 the population increased by 30 percent, whereas the land area doubled (Remmel, 1972)!

Accompanying the shift in population, there is a change in land-use. The largest and most readily observable shift in land-use on the rural-urban fringe is in residential use - its expansion onto previously

rural lands (Clawson, 1960). Such development is not uniform over the surface of the land. In the townships just beyond today's suburbia, the development is being left almost entirely in the hands of the speculator. In his wake is left a hit-or-miss pattern of development (Whyte, 1958). This hit-or-miss pattern has been called "urban splatter" and is characterized by fragmented urbanization in small subdivisions in a scattered pattern (Population, Distribution, and Policy, 1972). This scattered, fragmented pattern of subdivisions is a characteristic of what can be called 'exurbia'. Abrams (1971) defines exurbia as that area beyond the more heavily settled suburbs. Spectorsky (1955) brought the term into usage with the writing of his book The Exurbanites. Still, the term is not commonly used in the literature. Although exurbia is a rather nebulous term, it is closely associated with the rural-urban fringe since that is where the characteristic pattern of scattered subdivisions occurs (Population, Distribution, and Policy, 1972; Spectorsky, 1955; Taylor, 1968). Thus, the rural-urban fringe is the area of exurban development. Within this area there is generally little effective land-use planning authority (Population, Distribution, and Policy, 1972; Taylor, 1968; Whyte, 1958). This absence of effective planning authority suggests that the policies of relevant organizations, public and private, may be the controllers of development and/or speculation.

Not only has the gross inefficiency of this land-use been emphasized, but it has also been shown to be destructive of agricultural land and natural environment areas (Clawson, 1960); and evidence indicates that the present patterns are resulting in conditions which border on chaos in some areas. Traffic congestion, heavy public service

costs, polluted water supplies, and many other "urban" problems are resulting from this pattern of development (Population, Distribution, and Policy, 1972). The problems do not disappear when a city enlarges its boundaries to include former exurban developments. In fact, the city may find itself saddled with increased costs of providing services such as police and fire protection, sewage lines, and garbage disposal (Remmel, 1972). In discussing intra-development density and lot size in relation to service costs, Thompson (1972) points out that the typical single-family is, overall, the most expensive to service.

Thus, the importance of a study of the exurban policy environment in relationship to the location of exurban residential developments should be evident. In addition, the "splotchy" pattern of development and the policy environment in which it resides causes problems such as increased service costs coupled with less than an adequate increase in revenue whenever an urban area expands its boundaries (Remmel, 1972; Clawson, 1960; Thompson, 1972). Stillwater, Oklahoma, and its peripheral area will be the focus of this study of the relationship of the exurban policy environment to exurban residential development and resulting metropolitan planning problems.

Exurban Residential Developments

An exurban residential development is, in form, indistinguishable from a suburban residential development. The suburban development is usually more closely tied to the parent urban area, whereas an exurban development is usually tied only tenuously to the parent city. The literature is very unclear as to the criteria which discriminate

between suburban and exurban. In this work, 'exurban' refers to that area outside any incorporated urban area.

Such developments tend to be rather homogeneous in physical appearance and population characteristics (Gans, 1967; Kramer, 1972; Spectorsky, 1955). In a case study of such a development within the study area, the above statement held true (Zapata, 1974). Clawson (1972/73) speaks of such people residing in rural areas as urban in lifestyle and employment. Thus, an exurban development can be said to be basically an urban neighborhood or community in a rural setting. Yet, why do people become exurbanites?

Economic reasons such as low rents or competitively produced houses offered at lower than suburban zone or city prices and the high profitability to the developer of such ventures if he can purchase the land at "rural" land prices have been cited as possible incentives for the formation and habitation of exurban developments (Population, Distribution, and Policy, 1972; Taylor, 1968).

The exurbanite does not generally perceive of his urban-to-rural migration as economically induced. Martin (1953) has suggested that life satisfaction of exurbanites is greatest among those with rural backgrounds and those owning sufficient space for gardening. Fringe-dwellers have cited the suitability of the exurban environment for child-raising, open-country hobbies, and healthful retirement as reasons for moving to 'exurbia' (Taylor, 1968). Low rent is rarely mentioned. Within the study area a case study of one of the larger exurban developments (42 constructed units) revealed that 30 of 40 interviewed households cited "escape from crowded urban areas" as the reason for their locating in Meadow Park Estates--an exurban development (Zapata, 1974).

Thus, an anti-urban philosophy appears to exist among at least one group of exurbanites. However, it has been discussed as a widely distributed phenomenon within American society.

Hadden, et al. (1972) discussed the possible cultural underpinnings of such anti-urban philosophy. Their review of Ellul's (1970) book, The Meaning of the City, stressed the consistent anti-urban references found in the Bible as brought out by Ellul's argument that cities are places where men go to hide from God. Hence, they are considered evil places. In addition, American philosophies or images were shown to contain anti-urban sentiments. "Jeffersonian agrarianism" considered the farmer (the rural dweller) safe from the gross vices of the city dweller (Jefferson, 1955). Though the Jacksonian lived in the midst of the Industrial Revolution, their "real people" were the farmers and planters. They were considered the "bone and sinew" of the country (Meyers, 1957). Creveceour's image of the self-reliant, rural American did nothing to help urbanize American thinking (Creveceour, 1912). The argument of Hadden, et al. (1972) that the discontents of urban civilization are a function of man's deep-seated and fundamental rejection of the city as an idea was well taken and documented. This appears to be one of the motivating factors behind the movement of people to exurbia - to escape the "evil" city.

Although "rural" may be "better", the evidence shows that exurbanites do not want to leave such things as quality water, education, fire protection, etc. This demand of exurbanites for urban type services causes much friction between them and the previous rural residents. Services are added, improved, or so badly needed that the developed area becomes an urban entity as Levittown did, or it is incorporated

into an expanding urban center. In short, the amenities sought, such as a predominantly rural setting, are ephemeral (Folse, 1961; Taylor, 1968).

The Exurban Policy Environment

The rural-urban fringe is the area in which exurban developments are most often found. In summarizing the descriptions of the rural-urban fringe, one could say that it is an area of transition existing between rural and urban areas. Juxtaposed land-use patterns, jurisdiction overlap and a concentration of non-village and non-farm people within the same geographical area are characteristics of the rural-urban fringe (Blizzard, et al., 1957; Myles, 1947; Whitney, 1948). This study will be concerned with some of the jurisdiction overlap as it relates to exurban residential developments and the problems which result when an urban area extends it boundaries. An example of jurisdiction overlap is the supplying of water by a rural water district to residents within the boundaries of a city which has its own water supply system.

Those policies which are relevant to exurban development are those which affect, in some way, a developer's decision to first buy a tract of land and then to subdivide and develop it for residential use (Clawson, 1971). Four basic factors influence a developer's decision-making process. They are: (1) location (accessibility), (2) finances (availability of, for developer and/or consumer), (3) utilities, and (4) topography (including amenity-oriented topography) (Kenney, 1972). Those are the four major factors comprising the developer's decision-making environment.

There are other policy-originated factors which enter into the developer's decision-making process which affect his preference for the location of exurban developments. Some developers prefer to develop where they are protected by zoning regulations (Kaiser, et al., 1968). Whereas, is the case in the study area, developers consider city or metropolitan planning area subdivision regulations too stringent, they prefer to develop away from "bothersome" city ordinances (Zapata, 1974; Aufleger, Appendix). Kaiser, et al. (1968) have pointed out that one of the developer's major considerations is the marketability of his product. In other words, the more attractive it is to the consumer, the more marketable it is. If possible, exurbanites prefer to have fire protection, police protection, and/or quality education for their children (Folse, 1961; Taylor, 1968). Therefore, the availability of fire and/or police protection, or quality education can affect the overall attractiveness or marketability of a development.

In order to provide such services as water, sewage disposal, fire protection, education, and the like, special districts have been formed. From 1952 to 1962 the number of special districts in the U. S. increased by 6,000 or 48.5 percent (Taylor, 1968). There are many types of special districts for they are usually instituted for specialized functions such as providing solely for fire protection (Table I). This not only produces "fragmentation", it can cause one area to be more attractive than another due to the policies of a special district(s). An example is the case of Houston, Texas. Special water districts surround the metropolitan area. Thus, water supply is no problem. This is seen as a major contributor to the classic "splotchy" pattern of exurban developments which surrounds Houston (Wachter, 1973).

Kaiser, et al. (1968) noticed that in their study, school district lines tended to reflect differential urban service standards and zoning protection.

However, major policies have been based upon the concept of the "rural" is "good" fantasy. Paradoxically, as a result of the 1973 Rural Development Act, the U. S. Department of Agriculture is now committed to attracting people from urban areas to rural areas (Farmer's Home Administration, 1973). To facilitate this there are attractive home loan programs, and Farmer's Home Administration loans were instrumental in establishing the 318 rural water districts in the State of Oklahoma, thus ranking Oklahoma third in the nation in number of water districts (Sloggett, et al., 1974). The FHA also loans such districts money to improve their system in order to handle growth which may put a strain on the water system. Such a strong role in promoting exurban development is paradoxical in that the U. S. D. A. is now engaged in promoting a land-use which is destructive of agricultural land, not to mention its outright inefficiency (Clawson, 1960, 1971). This is an example of a major policy predicted upon "building a sound, prosperous, fully acceptable standard of life in the great open spaces of America" (Sloggett, et al., 1974). In other words, it is a policy which is anti-urban in its philosophy (The President's Task Force, 1970).

Although policy is conceded to have an effect upon exurban residential development, there are few specific examples in the literature of an attempt to use the overall policy environment as a determinant of the location of exurban developments. The reason is that the policy environment varies over space. This could be part of the reason behind

TABLE I

TYPES OF SPECIAL DISTRICTS*

Fire Protection
Soil Conservation
Drainage
Urban Water Supply
Cemeteries
Housing
Sewage Disposal
School Buildings
Irrigation, Water Conservation
Highways
Flood Control
Parks and Recreation
Hospitals
Multiple Functions
Others

*Note: These types of special districts may sometimes be found in urban areas.

Source: Taylor, 1968

Clawson's suggestion that the future focus on the process of sub-urbanization (or exurbanization) be on local situations (Clawson, 1971).

Objectives

This study takes Clawson's suggestion to heart and concentrates on a local situation - Stillwater, Oklahoma, and peripheral area. In determining the relationship of the exurban policy environment, the location of exurban residential developments and metropolitan planning problems, the following objectives must be achieved:

1. Assessment of the exurban residential development situation.
2. Assessment of the exurban policy environment.
3. An analysis of the above assessments in order to determine apparent relationships between the policy environment and the location of exurban developments.
4. Assessment of the problems encountered by a metropolitan area when it expands its boundaries to include previously exurban residential developments attributable to the policy environment or components thereof.

CHAPTER II

METHODOLOGY

Specifications of the Problem

The study area is generally that area lying within 5.5 miles of the city limits of the City of Stillwater. On the northwest side of the study area it is not the full 5.5 miles due to the fact that it was considered an unnecessary complicator of the problem to include a sizeable portion of another county. An abundance of Oklahoma State University land in the southwestern area of study necessitated the addition of 20 square miles of land to the study area southwest of the Oklahoma State University land. Although the study area limits were set somewhat arbitrarily, they were based on the locations of the subdivisions platted as "additions" to the City of Stillwater. The 5.5 miles limit includes those platted as an addition to Stillwater, one platted as an addition to no city, and a development in Noble County built by a Stillwater developer and populated by a majority of Stillwater-employed (Zapata, 1974) (Figure 1).

A plat is a legal document which is the accepted and common method of legally subdividing land. A certified surveyor must prepare it since it depicts the location of the subdivision and its lot layout. Other information usually included is the (1) subdivision name, (2) block, lot, and street designations, and (3) proposed easements,

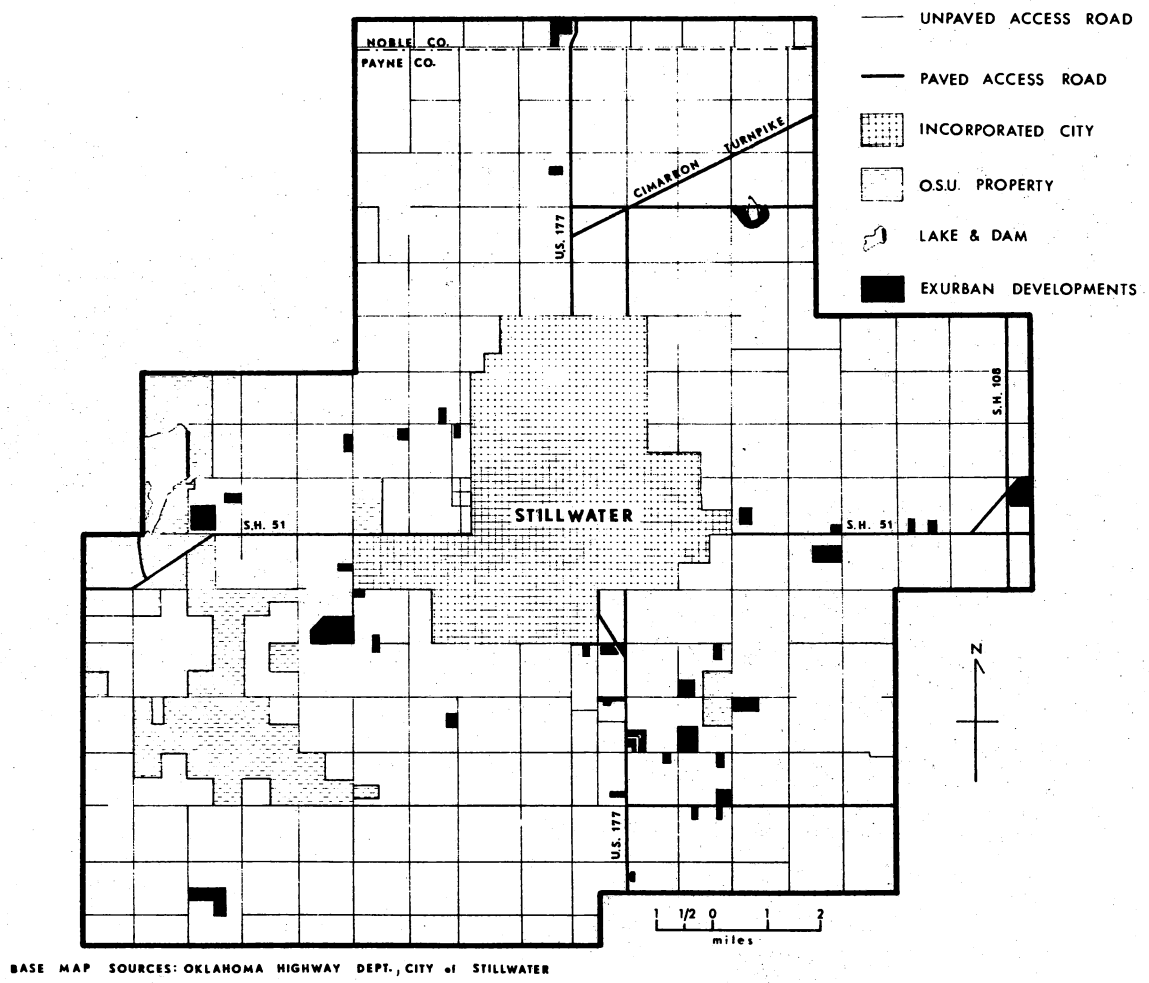


Figure 1. The Study Area

rights-of-way, and land dedicated to public use. "Protective covenants" or deed restrictions "that govern land use and subject to which the land is sold prospective users" (Ring, et al., 1967) may also be found on the plat (Kravotil, 1968; Ring, et al., 1967). However, it is not required by law to file plats on land being subdivided outside the City of Stillwater. Thus, small developers (those dealing in developments of ten or less units) tend to file "miscellaneous boundaries" rather than go to the expense of platting. Conversely, large developments are usually platted (Aufleger, Mecklenburg, Appendix).

Exurban developments consisted of those which were platted and filed at the Payne County Clerk's Office, and those unplatted developments identified by field inspection. Unplatted developments were identified by their resemblance, in form, to platted developments. Commonly, the existence of a collector street(s) (not a driveway) and the existence of at least one dwelling were the primary characteristics utilized in identifying the unplatted developments in the field. Isolated homes were not included, nor were clusters or strips of homes unless there was conclusive evidence that they were part of a "planned" development. Potential exurban developments were those which were platted and did not contain a built housing unit.

The exurban policy environment consisted of the policies of those organizations involved in regulating or providing, on a local level, utilities, services, or finances. Accessibility and amenities are included since these are important decision-making factors to a developer (Kenney, 1972; Brandt, 1974; Kaiser, 1968).

Stillwater recently annexed certain areas formerly contiguous to its borders. This area of annexation will be the case study area for

the description and determination of metropolitan problems resulting from the exurban development-policy environment relationships. The focus will be on the southern areas of Stillwater recently annexed.

Data Collection and Analysis

In order to assess the present status of exurban residential developments, two sources of data were utilized. Plats provided the number of units platted and location of those developments platted. Field inspection provided the number of units built in platted and unplatted developments, and the location of unplanned developments.

In order to collect the information on the organization policies required to construct the policy environment, representatives of the appropriate organizations were interviewed (Appendix). These interviews were unsystematic in that certain information was requested, yet not in the same manner from each of the interviewees, and the particular policy as it exists in reality was obtained through this conversational approach, which also provided an insight into the institutional postures toward not only exurban developments but also other organizations which are important exurban development policy makers. This interorganizational posture can affect policies. Examples of organizational interactions affecting policy can be seen in the chapter on the Exurban Policy Environment.

Since the rate of turnover of land is an indicator of interest (American Institute of Real Estate Appraisers, 1967) and it has been shown that prior to the platting of developments there is a high rate of turnover of land due to speculative buying (Wolfe, 1967). The number of property transfers per section per year (only one year was sampled,

November, 1973-November, 1974) was collected and used as a measure of land attractiveness. Such data were used to construct a scenario of areas of possible future development.

To analyze the relationship of the policy environment to the location of exurban developments, a measurement of overall policy environment which would serve as an indicator of the cumulative effect of the policies of the individual organizations as they relate to the establishment of exurban residential developments was needed. Therefore, a technique was devised which would produce such a measurement--a Policy Environment Index (PEI). The technique used to derive the Policy Environment Index (PEI) is a modification of the technique used by Brandt (1974) to derive a capacity index for the allocation of future developments on the fringe of Erie, Pennsylvania. The policy input in his weighting technique was minimal. However, the extensive utilization of the results of the interviews of the organization representatives maximizes the policy input in this study. According to results of the interviews, each factor is subjectively assigned a weight which reflects the important policy of the controlling organization as it relates to exurban developments (Table II).

The equation used in this study for the calculation of the PEI is composed of two basic parts. One is made up of those factors essential for development to take place (EF). The other is composed of those factors which are not necessarily essential factors for development to occur (NEF), yet can either make an area more attractive

TABLE II

THE WEIGHTING CRITERIA AND COMPOSITION OF THE POLICY ENVIRONMENT INDEX FACTORS

Factor	Weights	Weighting Criteria
L (Land Availability)	0	Unavailable due to zoning or policy of controlling organization
	1	Available land
W (Water Availability)	0	Unavailable due to the policies of the organization or the physical limitations of the system
	1	Available supply is severely restricted due to either policies or physical limitations
	2	Available, section is 2 miles or more from a main supply line
	5	Available, section is 1 mile from a main water supply line
	10	Available, section contains or is adjacent to a main water supply line
U (Utility Availability)	0	Unavailable
	2.5	Available if developers pay for utility line installation and the section is not adjacent to an existing line
	5	Available if developer pays for utility line installation and the section is adjacent to an existing utility line
	10	Available with the utility company installing the lines with no charge to the developer
PM (Private Financing)	0	Under 20 percent of potential home buyers cannot afford a conventional bank home loan
	1	Over 20 percent and under 50 percent of potential home buyers can afford a conventional bank home loan
	3	Over 50 percent of potential home buyers can afford a conventional bank home loan

TABLE II (Continued)

GMH (Government Housing Finance Availability)	0	Unavailable
	1	Availability restricted by income group
	3	Availability not restricted by income group
GMD (Government Special District Finance Availability)	0	Unavailable
	1	Availability has been reduced due to the attitude and policies of the agency or local agent
	2	Availability is not being restricted or reduced by the attitude or policies of the agency or local agent
Ac (Access Availability)	0	No access roads contained or contiguous to section
	5	All access roads contained or contiguous to the section are unpaved
	10	At least one access road contained or contiguous to the section is paved
X	1	Amenity constant
Wd (Availability of Wooded Areas)	0	Section which is not 50 percent or more wooded or contiguous to a section which is 50 percent or more wooded
	1	Section is contiguous to a section which is 50 percent or more wooded
	2	Section is 50 percent or more wooded
Lk (Availability of Lake)	0	Section which is not lake-containing or contiguous to a section which is lake-containing
	1	Section is contiguous to a section which contains a lake
	2	Section contains a lake

TABLE II (Continued)

S (Sewage Disposal Regulation)	0	Lagoon sewage disposal system is favored by regulating agency (50 percent or more developments are on a lagoon system
	1	50 percent or more of the developments are on septic tanks
	2	Availability of a rural or extended metropolitan sewer lines is present
MR (Metropolitan Subdivision Regulation)	0	Definitely regulation present
	1	Jurisdiction control is ambiguous
	2	No regulations present
CR (County Subdivision Regulation)	0	County subdivision regulations present
	1	Jurisdictional control is ambiguous
	2	County subdivision regulations absent
FP (Availability of Fire Protection)	0	Fire protection is not available
	1	Fire protection is available
PP (Availability of Police Protection)	0	Police patrolling is unavailable
	1	Police patrolling is available
E (Availability of Education for Children)	0	Schooling is not available
	1	Schooling is available

or less attractive for developments to occur. Thus, the basic PEI equation is:

$$PEI = (EF) \cdot (NEF)$$

PEI = Policy Environment Index
EF = Essential Factors
NEF = Non-Essential Factors

The formulation of the PEI was based upon the factors affecting the developer decision-making process. However, if developer and consumer decision-making factors appear to coincide, it is because developers must take into account the consumer's decision-making process in order to produce a marketable development.

The factors which recur throughout the literature as weighing heavily on the developer's decision-making process were used as the factors which composed the EF package. These factors can be critical determinants of development. The factors were the availability of drinking water (W), utilities (U), land (L), financing (F), and access (Ac) (Brandt, 1974; Chapin, 1972; Kaiser, et al., 1968; Kenney, 1972; Watcher, 1973). Although amenity (Am) was said to be an important part of the developer's decision-making process, it was not considered a critical factor. This is supported by Kaiser, et al. (1968) and the fact that there is an amenity value for exurbanites in just being out of the city (Hadden, et al., 1973; Spectorsky, 1955; Zapata, 1974). Financing (F) was a sub-package consisting of factors of the availability of private financing (PM), government financing for individual home buyers or builders (GMH), and government financing for special districts such as rural water districts which can be conducive to the establishment of exurban developments (GMD).

The EF package is multiplicative due to the critical nature of the factors composing it. The availability of the factors would greatly enhance any additional attractive factors contained within the NEF package. Conversely, the non-availability of even one of the factors within the EF package would severely restrict development occurrence. Thus, the expanded equation is:

$$\underline{PEI} = \overline{/L} \cdot W \cdot U \cdot (PM + GMH + GMD) \cdot \overline{Ac/} \cdot (NEF)$$

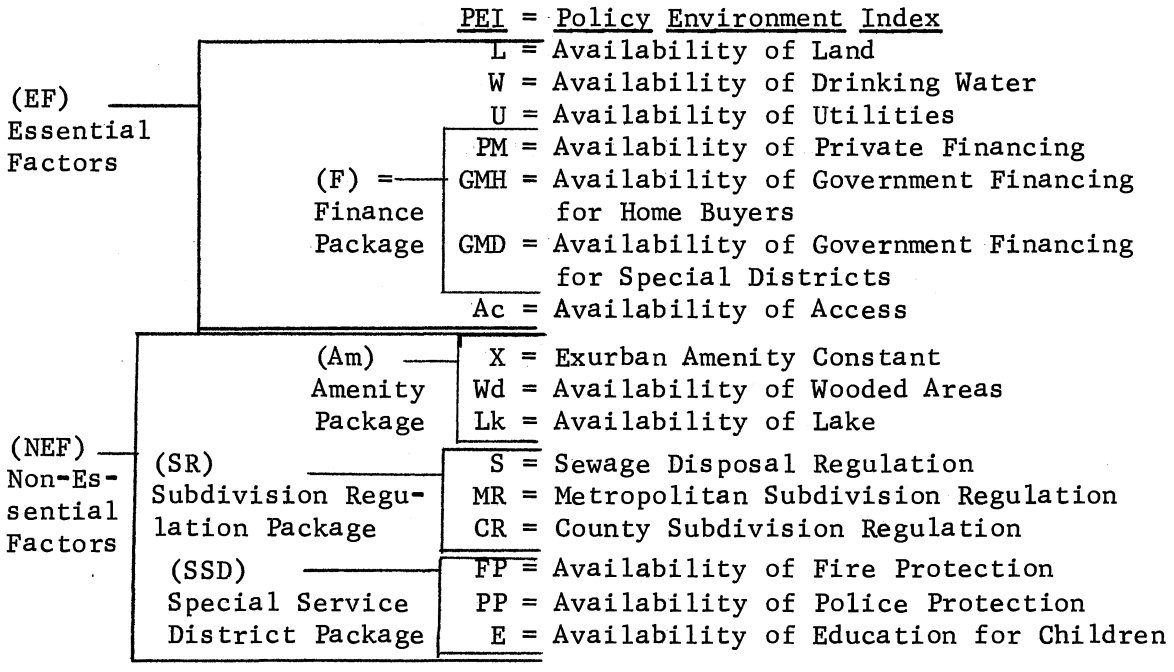
$\underline{PEI}$ = $\underline{Policy\ Environment\ Index}$
NEF = Non-Essential Factors
L = Availability of Land
W = Availability of Drinking Water
U = Availability of Utilities
Financing Package:
PM = Availability of Private Financing
GMH = Availability of Government Financing for Home Buyers
GMD = Availability of Government Financing for Special Districts
Ac = Availability of Access

The non-essential factors (NEF) package is composed of those factors which can add or detract from the desirability of an area for the location of a development. Generally, development can occur in the absence of any or all of the factors in the NEF package. The amenity (Am) factor weight is actually a control on the equation since there is no unavailability of amenity noted. As previously discussed, the fact that they are residing out of the city is an amenity in itself to exurbanites (Hadden, et al., 1972; Zapata, 1974). This control prevents the NEF package from equalling zero, thus causing the $\underline{PEI}$ to equal 0. This would indicate a policy environment extremely unfavorable to developments when in fact it would not necessarily be.

The NEF package is composed of three sub-packages. First among the sub-packages is the amenity (Am) sub-package which consists of

three factors. The control or "rural fantasy" factor which has a constant weight of 1, the availability of wooded areas (Wd), and the availability of a lake (Lk) are the factors which constitute the amenity (Am) package. The subdivision regulation (SR) package is composed of those agencies or organizations which exert regulatory power over the specification of the design, engineering, sewage disposal system, etc. in the building of a subdivision. Special service districts can have an attracting influence upon individuals seeking exurban residences. Therefore, they have an attracting influence on developers since they need to make their developments as marketable as possible (Kaiser, et al., 1968). Thus, the third sub-package in the NEF package is a special service district (SSD) composed of the availability of fire protection (FP), police protection (PP), and education for the residents' children (E). The fully expanded equation is:

$$PEI = \overline{/L} \cdot W \cdot U \cdot (PM + GMH + GMD) \cdot \overline{Ac/} \cdot \overline{/(X + Wd + Lk) + (S + MR + MDR) + (FP + PP + E)/} \div 100$$



For the majority of the factors, the weighting criteria were expressed in terms of relative availability (Table II, factors W, U, PM, GMH, GMD, Wd, Lk, S, MR, CR). This approach was chosen for those factors because not only does simple availability or non-availability of these factors play a role in the decision process, but the relative cost or effect on development marketability must also be taken into consideration. For example, if a developer must invest in utility lines within his development and to the point of entry onto the main supply line, distance from such lines becomes related to cost. Therefore, if the developer is two miles from a main supply line, his resulting cost will be at least twice as great as if he were one mile from the line. Considering the largely unsystematic, intuitive approach which characterizes the development industry (Kaiser, et al., 1968), it seems reasonable to assume that land evaluations are expressed in such relative terms.

The weighting system for the SR package, particularly that concerning the presence of metropolitan and county subdivision regulations, reflects the undesirability of location in areas of definite subdivision control (Aufleger, Appendix; Zapata, 1974). However, in areas where the basis for control is ambiguous, there is some confusion as to what and how to regulate. Therefore, developers may develop and not conform to regulations by taking advantage of the ambiguous situation (based on Aufleger, Bradley, Harwood, Owen, Appendix). The weighting criteria are constructed so as to reflect this gradation in desirability of locating in areas where regulatory powers are present.

Although the PEI is basically a measure of relative attractiveness of the policy environment for development, it has been systematically

approached and structured (Figure 2). The inputs are not intuitive since the information has been obtained through interviews. The interviews provided the input for the translation of the policies into the assigned weights (Table II). The weights were then assigned areally.

The areal unit used in this analysis was the square mile section based on the United States Land Survey System (Payne County Abstract, 1974). The following factors prompted the use of the section as the areal unit: 1) the transportation network generally followed section line boundaries (Figure 1); 2) utility lines followed roads, hence, section lines (Central Rural Electric Co-operative, 1974); 3) many of the special districts service area boundaries were based on section lines (most notable were the water districts; and 4) the predominance of sections containing only one exurban development (approximately 74 percent of those sections containing developments contained only one constructed or partially constructed development). Each section was evaluated on the basis of the weighting criteria (Table II). Then the Policy Environment Index (PEI) was calculated for each section.

The PEI was mapped using four categories. The categories reflect four basic types of PEI groupings:

1. Category I was composed of those PEI values considered to reflect exceptionally low values. The criterion was their distance from the mean ($\overline{X}$). Therefore, the values in this category were below or equal to -1 standard deviation (S.D.) from the mean ($\overline{X}$).
2. Category II was composed of those PEI values which fell between -1 standard deviation and the $\overline{X}$.

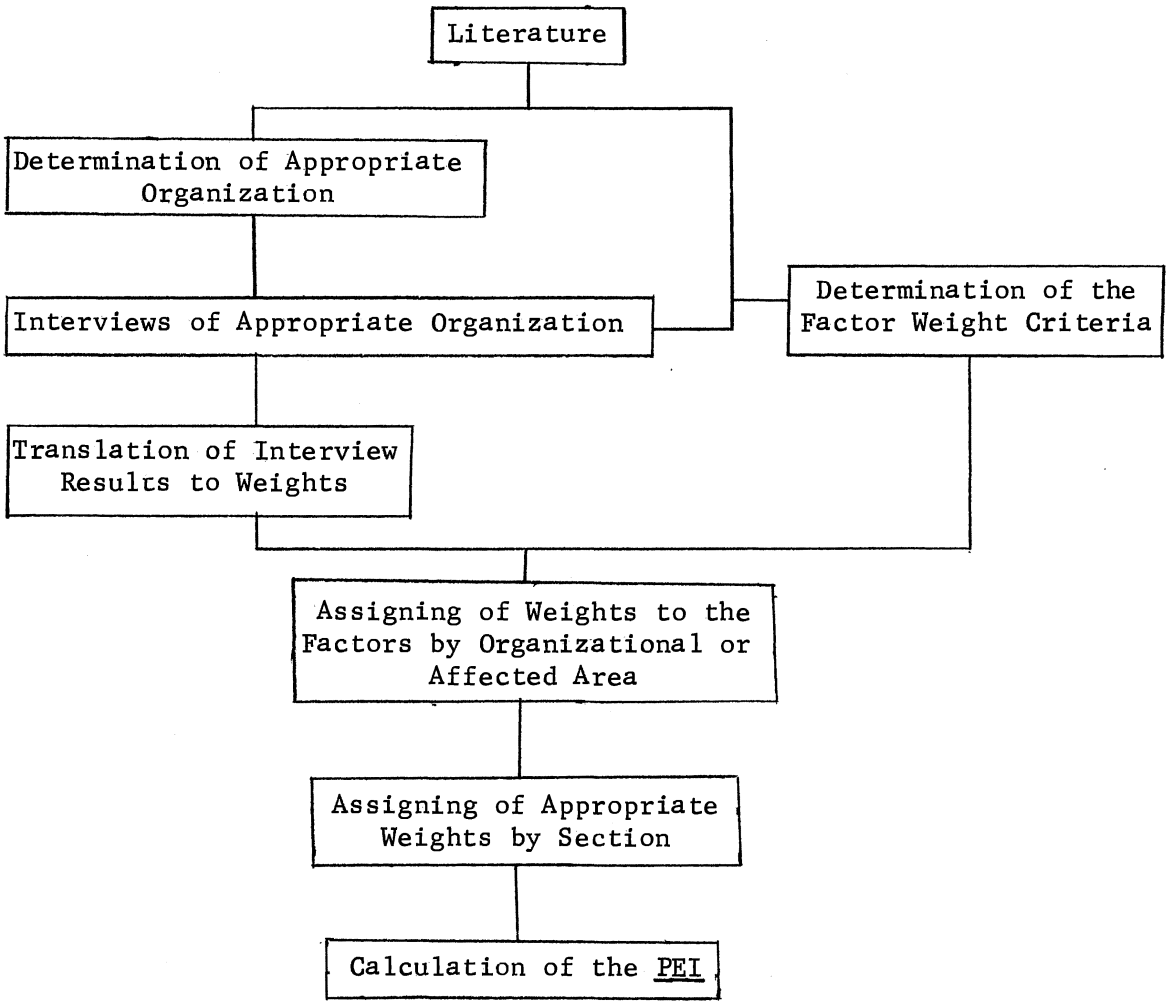


Figure 2. Conceptualization of the System for Determination of the Policy Environment Index (PEI)

3. Category III was composed of those PEI values which were greater than $\bar{X}$ and less than +1 S.D.
4. Category IV was composed of those PEI values considered exceptionally high and were equal to or greater than +1 S.D.

Though the mapping procedure and the descriptive assessment of the policy environment (Chapter IV) utilize the above categories, the detailed analysis of relationships stresses the use of the PEI values, not the categories. The categories were used in the noted instances due to their descriptive utility. Use of the PEI values in the detailed analysis allows the use of techniques associated with ordinal or interval data. Thus, somewhat more exact or sensitive techniques were utilized than would be possible if nominal data (i.e., categories) were used (Abler, et al., 1971; Blalock, 1972).

The detailed analysis attempts to determine what relationships exist between the policy environment and the location of: 1) present developments, 2) potential developments, and 3) possible future developments.

Intensity of development (density of development within a particular policy environment, i.e., PEI value) is used as the indicator of development locational bias. Use of the raw frequency of development occurrence within a PEI value area was discounted as the major measure on the basis of the likelihood of it not measuring the locational bias according to the total area of a PEI value available for development (PEI value-area), thus producing erroneous results. Consequently, the major measures used in the analysis of policy environment-development location relationships were: 1) the policy environment index (PEI) values and 2) density of development occurrence.

Following the above analysis, the problems experienced by the City of Stillwater after its annexation of a portion of 'exurbia' were descriptively analyzed and summarized. This section is an appropriate conclusion since the source of the problems experienced by the "diffuse" city is the policy environment which encourages such developments. Therefore, the problems experienced by a city which has annexed such an area are the result of a process which has been able to operate within the exurban policy environment.

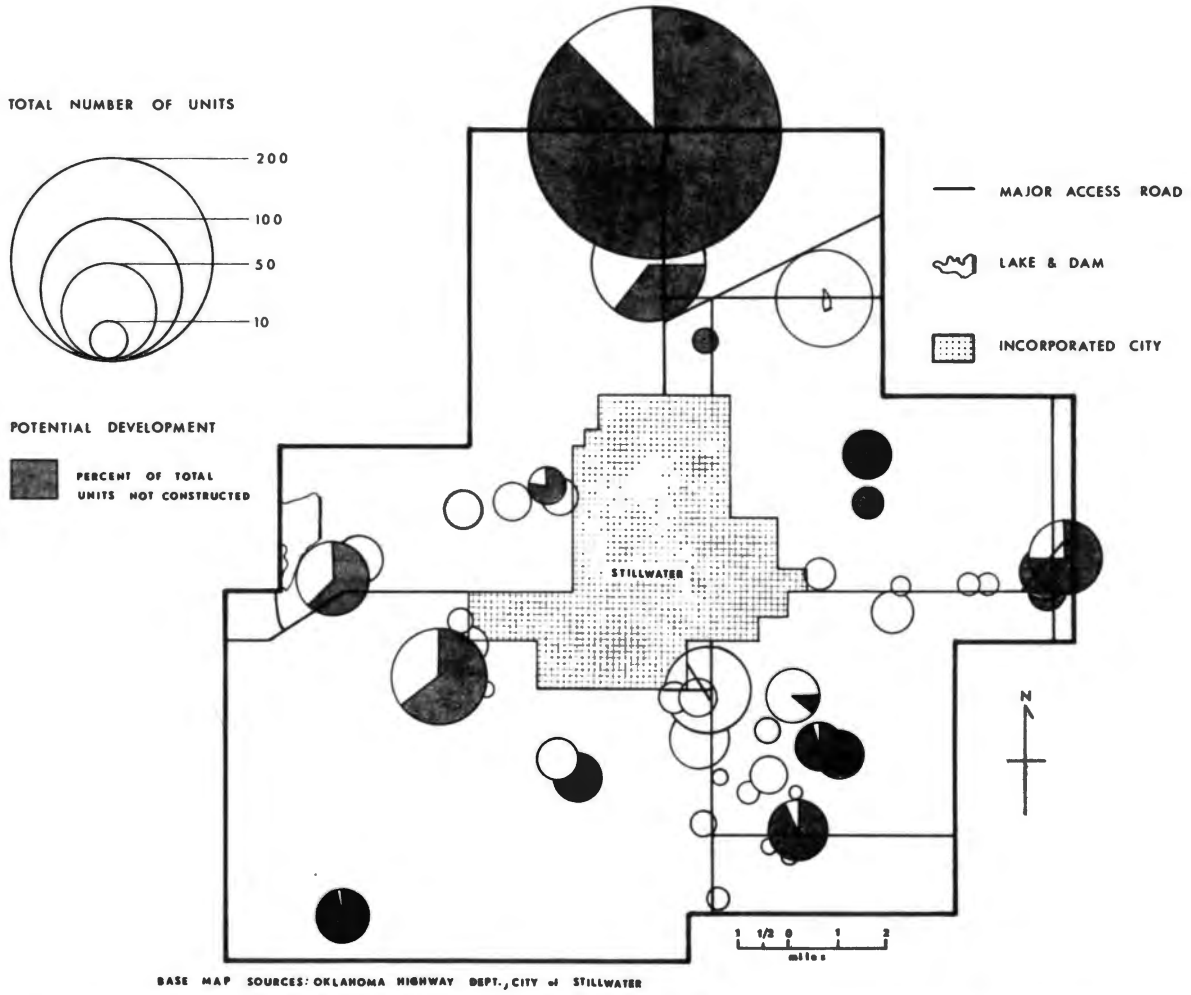
CHAPTER III

THE EXURBAN DEVELOPMENT SITUATION

Present Status

Of the approximately 200 sections, 30 contained existing (constructed or partially constructed) exurban developments. There were 36 exurban developments identified which had at least one housing unit constructed. These were considered as present exurban developments. Of the 36 present developments, 15 were platted and the plats were on record at the Payne County Clerk's Office. The remaining 21 developments did not have plats recorded at the County Clerk's Office. This could be due to a backlog of developments to be surveyed. The County Surveyor indicated that the backlog was considerable (Mecklenburg, Appendix).

All developments observed contained single-family dwelling units and/or mobile homes. No multiple-family dwellings were observed. Four hundred and forty-two such housing units were observed to have been built within present exurban developments. Ninety-two units were concentrated within two developments. Both are due north of Stillwater (Figure 3). These two developments contain a considerable number of the constructed housing units within the study area. They are two of the five developments containing more than 20 constructed housing units. One is a mobile home park containing 50 units and the other is a housing



Sources: Field observation; plats on file at Payne County Clerk's Office; Aerial Photographs, O. S. U. Library, 1968.

Figure 3. Distribution of Exurban Housing Units

development where the lots are small and the value of housing does not exceed $25,000 (Zapata, 1974). The remaining 350 housing units are contained within 34 developments, of which three contain over 20 constructed units. Thus, it is not a small wonder that the number of constructed housing units per development was 12.28.

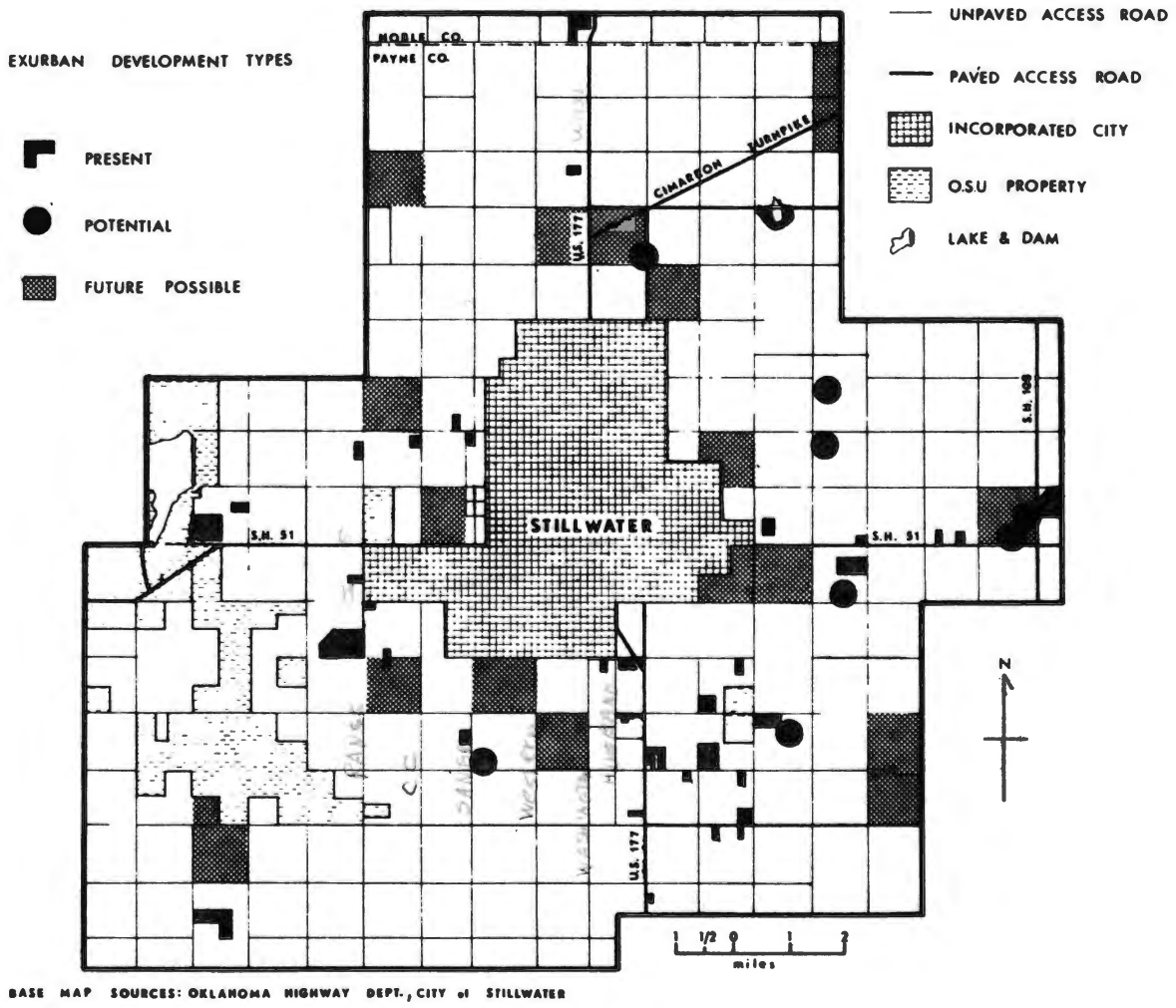
The distribution of developments surrounding Stillwater is characterized by two areas of differing development patterns. North of the City the pattern is one of few and widely scattered developments (total = 3) which contain rather large numbers of housing units (average number of units per development = 47). The remaining area(s) is characterized by a pattern of smaller, scattered developments (average number of units = 10.6) (Figure 3).

Overall the distribution of development does not differ from the expected "splotchy" or scattered pattern characteristic of exurban development (Clawson, 1971; Population, Distribution, and Policy, 1972; Figure 4).

Exurban development in the study area is characterized by dispersion. The average number of developments per section containing developments is 1.21. There are slightly over one exurban development per "developed" square mile with 12.28 being the average number of housing units per development. The density of exurban development for the entire study area is on the order of 2.21 exurban development housing units per square mile.

Potential Status

Only 55 percent of the platted housing units in developed exurban developments have been constructed. Of the 371 units platted within



Sources: Payne County Clerk's Office; Field observations; Author's calculations.

Figure 4. Distribution of Exurban Development Types

those developments, only 206 housing units have actually been constructed. Those constructed units in unplatted developments have been excluded from the discussion of potential units due to the unavailability of data by which the number of potential units could be determined.

In addition to the 165 potential housing units contained within the platted, developed exurban developments, there are 118 potential housing units, or lots, indicated on the plats of eight undeveloped, potential exurban developments. When speaking only of platted exurban developments, there are more potential housing units (283) than actual, constructed housing units (206). This seems to indicate that the study area may very well be "over-platted". The developers in the area might have been overzealous about development. Although there exists a rather large potential, development appears to be in a rather static stage. This observation was reinforced by similar observations by representatives of financial institutions and by the President of the Oklahoma Home-Builders Association (Appendix).

The majority of the potential units and developments are located either due east or southeast of Stillwater (Figure 4). Approximately 63 percent of the potential developments are located in sections which either contain or are adjacent to sections which contain previously developed developments, thus reinforcing previous observations that development tends to attract future developments (Brandt, 1974). Excepting the two potential developments east of Stillwater that are not in close proximity to a previous development, the pattern of potential developments is simply more of the same in the same general areas. The two potential developments excepted from the previous

statement are unusual by virtue of their location. They are located relatively near each other and in an area previously undeveloped. The development in the far southwestern area of the study area has a potential 19 of its 20 platted units. Also, this development could very well be presaging the future "leapfrogging" of the Oklahoma State University land by future developments.

Only 25 percent of the potential developments are located in sections containing present developments. Therefore, 75 percent of the potential developments are located in "virgin" territory. Thus, the outlook is for continued "scatteration".

Possible Future Development

Wolfe (1968) has shown that there is a high rate of land turnover due to speculative interest prior to the platting of land for subdivisions. Thus, the areas experiencing an exceptional rate of property turnover were considered as areas of possible future exurban development.

Those sections experiencing an exceptional rate of property turnover and containing an exurban development(s) were expected to experience such property turnover since that is the purpose of their establishment--the selling of property (house lots). Those sections experiencing an exceptional rate of property turnover and not containing any previous development(s) are the ones which were considered as those likely to experience the establishment of an exurban development(s) in the future. However, this measure is used only as a gross indicator since commercial-manufacturing land speculation also influences this measure of the rate of land turnover. Inspection of the records of the Payne County Clerk's

Office reveals that most of the land speculation in relation to gas and oil (the predominant minerals of the area) exploration is done through gas and oil leases. These leases were not utilized in the determination of the location of FPD's. Therefore, the influences of mineral exploration activity were minimized.

Of the 17 sections which were considered as possible future locations for exurban developments, eight were not contiguous to either the City of Stillwater or a section containing a developed exurban development(s) (Figure 4). Five sections of the eight are on the pheriphery of the study area and could be the result of factors outside of the study area. In considering the remaining three, two are contiguous and are located at the junction of U. S. 177 and the Cimarron Turnpike north of Stillwater. The lone remainder is a southwest quarter section which is adjacent to O. S. U. land and a section which is both contiguous to a "developed" section and experiencing an exceptional amount of property turnover (see southwest area of study area, Figure 4). Only one section of these eight is not contiguous to a section experiencing an exceptional rate of property turnover. The remaining nine sections of probable future exurban development are either contiguous to the City of Stillwater or a section containing previous development. Thus, indicating that the majority of the development in the future may well be an extension of present areas of development.

In general, there is some interest north of Stillwater concentrated near the junction of S. H. 177 and the Cimarron Turnpike. However, the remaining areas or sections of interest are generally in or near areas of previous development. In agreement with Hill, et al. (1974), development is seen to be most probable in any quantity, south, southeast of

the City and along S. H. 51 east of Stillwater. There are also indications that development may "jump" the O. S. U. land to the southwest of Stillwater. As brought out in Brandt's (1974) article, previous development tends to attract development. The majority of probable future development locations follows this tendency. The remaining possible future development locations indicate a continuation of the scattered, diffuse pattern now in existence.

CHAPTER IV

ASSESSMENT OF THE POLICY ENVIRONMENT

In assessing the overall policy environment as measured by the PEI, there were two primary areas of consideration: The types of PEI categories and the distribution of the PEI categories (Table III).

Types of Policy Environment

The categorization of the PEI values was based primarily upon the distance of the values from the mean ($\bar{X}$) (Table III). The distribution of PEI values was non-normal. It was positively skewed. This skewness was due to the occurrence of many low PEI values which occurred at relatively close value intervals, whereas the higher values (+100) were not as abundant and the value intervals were larger (see Table III). Even though the distribution was non-normal, the use of the distance from the mean ($\bar{X}$) as a basis for categorization produced functional categories. However, as a result of the translation of the interviews into weights, there were many instances of one factor-weight being assigned to the entire study area (Table IV). Therefore, such factors could not be considered as the source for the variance in the PEI values. Those which did vary spatially were considered the sources of variation in PEI values. Examination of the distribution of occurrence of such factor-weights by PEI category provided the basis for the descriptive characterization of each category (Table VI).

TABLE III

DISTRIBUTION OF PEI VALUES BY CATEGORY

Policy Environment Categories	PEI Values	No. of Sections (Frequency of PEI Occurrence)	Percent of Total Number of Sections Within the Study Area
Category I (PEI $\leq$ -1 S.D.)	0	2	11.5%
	12	2	
	13.5	1	
	24	8	
	27	10	
	30	2	
		Sub-total 25	
Category II ($\bar{X}$ > PEI > -1 S.D.)	48	5	53%
	52.5	3	
	54	4	
	60	18	
	67.5	18	
	75	10	
	105	9	
	120	46	
		Sub-total 113	
Category III ($\bar{X}$ < PEI < +1 S.D.)	135	18	10.8%
	150	5	
		Sub-total 23	
Category IV (PEI $\geq$ +1 S.D.)	210	8	24.4%
	240	30	
	270	13	
	300	1	
		Sub-total 52	
		(N) Total = 213	99.7%*

*Does not equal 100% due to rounding.

Note: $\bar{X}$ = 124

Source: Author's calculations

TABLE IV

SUMMARY OF THE RELATIONSHIP OF THE INTERVIEW RESPONSE RESULTS AND ASSIGNED WEIGHTS

Factor	Weights	Weighting Criteria	Summary of Response Results	Description of Controlling Organization or Affected Area
L	0	Unavailable due to zoning or policy of controlling organization	O.S.U. is not planning to sell or lease any of its properties for exurban development purposes	O.S.U.
	10	Available land	(Assumption: remaining sections contained available land)	Total Study Area
W	0	Unavailable due to the policies of the organization or the physical limitations of the system		Areas not within the service area of a rural or municipal water distribution system
	1	Available supply is severely restricted due to either policies or physical limitations	System is at 75-100% capacity, there are no plans for immediate upgrading of the system due to discontents with the City of Stillwater which is the source of the system's water supply	RWD #1
	2	Available, section is 2 miles from a main supply line	1) Developers must invest in connecting and intra-development lines 2) Additional development can be handled, therefore water is available	RWD #3 RWC #3 51 East RWC Main Water System Urban Service Area
	5	Available, section is adjacent to a main water supply line	Same	Same

TABLE IV (Continued)

W (Cont.)	10	Available, section contains or is adjacent to a main water supply line	Same	Same
U	0	Unavailable	None	None
	2.5	Available if developers pay for utility line installation and the section is not adjacent to an existing line	1) Gas (piped or bottled) is available throughout the study area a) piped gas is restricted to the areas south of the city and a small spur north of the city b) where piped gas is unavailable bottled gas is, provided there is an access road 2) Electricity is available for those willing to pay for it	ONG Texgas Inc. Central Propane REA
	5	Available if developer pays for utility line installation and the section is adjacent to an existing utility line		
	10	Available with the utility company installing the lines with no charge to the developer	(Note: Until recently this was the case within the study area in relationship to electricity)	
PM	0	Under 20% of potential home buyers cannot afford a conventional bank home loan	(Projected as conceivable if interest rates on 80% home loans went to 11-11.5%, see Table V)	

TABLE IV (Continued)

PM (Cont.)	1	Over 20% and under 50% of potential home buyers cannot afford a conventional bank home loan	Based upon the statement of Oklahoma Home Builders Association and collaboration from local banks. The percent of potential home-buyers who can or cannot afford a conventional bank home loan appears to be related to the interest rate (Table V)	Total Study Area
	3	Over 50% of potential home-buyers can afford a conventional bank home loan	This was a situation common to a time period in which 80% home loan interest rates were approximately 7 3/4-8% (Table V)	
	0	Unavailable	Non-existent situation	
GMH	1	Availability restricted by income group	1) The government agency with a major policy of attracting urban people to rural areas is the Farmer's Home Administration 2) Farmer's Home Administration home loans are restricted to those who have an adjusted yearly income of $10,300 or below 3) Interest rates are adjustable to 1% depending upon the percent of monthly income the payments will equal (the percent is not to exceed 20%)	Total Study Area
	3	Availability not restricted by income group	Non-existent	

TABLE IV (Continued)

	0	Unavailable	Non-existent	
	1	Availability has been reduced due to the attitude and policies of the agency or local agent	There was no evidence to support such a claim	N/A
GMD	2	Availability is not being restricted or reduced by the attitude or policies of the agency or local agent	1) Funds available are not limited 2) Over $800,000 in loans were made within the study area to special districts in the past year (Table VI) 3) Attitude and policy of local agent appears to facilitate the obtaining of loans for special districts	Farmer's Home Administration Total Study Area
Ac	0	No access roads contained or contiguous to section	(Interviews unnecessary due to self-explanatory criteria)[1]	Total Study Area
	5	All access roads contained or contiguous to the section are paved		
	10	At least one access road contained or contiguous to the section is paved		
X	1	Amenity constant	(This is the amenity constant described as the amenity of being out of the city, removed from the "evil" "crowded" city)	Total Study Area

TABLE IV (Continued)

Wd	0	Section which is not 50% or more wooded or contiguous to a section which is 50% or more wooded	(Criteria are self-explanatory)[2]	Total Study Area
	1	Section is contiguous to a section which is 50% or more wooded		
	2	Section is 50% or more wooded		
Lk	0	Section which is not lake-containing or contiguous to a section which is lake-containing	(Criteria are self-explanatory)[1]	Total Study Area
	1	Section is contiguous to a section which contains a lake		
	2	Section contains a lake		
S	0	Lagoon sewage disposal system is favored by regulating agency (50% or more developments are on a lagoon system	No responses supported such assignment of weight	N/A
	1	50% or more of the developments are on septic tanks	1) Only two developments are on lagoon system 2) There have been no developments refused certification due to the sewage disposal system	Total Study Area except those areas noted as assigned a weight of 2

TABLE IV (Continued)

S (Cont.)	2	Availability of a rural or extended metropolitan sewer line is present	1) There is a Payne Co. Rural Sewage District operating south of the city. It is to be tied to the sewer treatment lines of the City of Stillwater 2) There are two sections south and southeast of the city which contain city sewer lines	RSD #1 and the area containing city sewer lines
MR	0	Definitely regulation present		
	1	Jurisdiction control is ambiguous	1) There were conflicting responses concerning the enforcement of the regulations. The most conservative response states that unless the development was directly tied to city water lines they could not exercise control. Other responses tended to indicate the presence of minimized control throughout the affected area 2) The number of platted developments on file tended to support the more conservative statement (Table V)	Areas contained within three miles of the city limits excluding areas under the jurisdiction of rural water districts
	2	No regulations present	There were no metropolitan regulations concerning subdivisions affecting other parts of the study area	Remainder of Study Area

TABLE IV (Continued)

CR	0	County subdivision regulations present	Responses indicated neither situation existed	N/A
	1	Jurisdictional control is ambiguous		
	2	County subdivision regulations absent	There are no county subdivision regulations	Total Study Area
FP	0	Fire protection is not available	No relevant responses	Total Study Area
	1	Fire protection is available	1) City of Stillwater does make "rural" fire runs for $100 per run 2) There are no rural fire districts in the study area	
PP	0	Police patrolling to prevent the occurrence of crime is unavailable	1) The Police Dept. of the City of Stillwater does not patrol outside the city limits 2) The Payne Co. Sheriff's Dept. does not patrol	Total Study Area
	1	Police patrolling to prevent the occurrence of crime is available	1) Oklahoma Highway Patrol does patrol. However, this agency's primary purpose is traffic, not crime prevention. Therefore, it was not considered as a source of police patrolling	
E	0	Schooling is not available	No relevant responses	Total Study Area
	1	Schooling is available	The entire study area is serviced by seven school districts	

Sources: The list of sources can be found in the Appendix.

[1]Oklahoma Dept. of Highways. General Highway Map of Payne County, Oklahoma, 1973 (all data except culture).

[2]Oklahoma State University, Zoology Dept. Vegetation - Types of Payne County (a map).

TABLE V

EFFECTS OF HOME LOAN INTEREST RATES ON MARKET SIZE (PERCENT HOME BUYERS ABLE TO AFFORD A CONVENTIONAL BANK LOAN) AND THE NUMBER OF ACTIVE DEVELOPERS

Time	Percent of Potential Home Buyers Able to Afford Conventional Bank Loans	Prime Interest Rates at That Time on 80% Loans	Number of Developers Dealing with Stillwater Savings and Loan (Approximately)
Sept. 1974	40-30%	9 3/4-10.5%	6
1 yr. Earlier	75-80%	Approximately 7 3/4%	12

Source: Aufleger, Murphy, Smith, in the Appendix

TABLE VI

LOANS AND GRANTS MADE THROUGH THE FARMERS' HOME ADMINISTRATION OFFICE IN STILLWATER FOR FISCAL YEAR 1973-1974 IN PAYNE COUNTY

Receiving Organization	Total Loan Amount (Dollars)	Grant Amounts	Total Dollars
Brush Creek RWC	410,400	90,000	450,400
51 E. RWC*	438,400	25,000	463,400
Perkins Public Works	154,000		154,000
RWD #1*	40,000		40,000
RWC #3*	217,000		217,000
RWD #3*	160,200		160,200
Yale RWC	150,000		150,000
Total			1,635,000
		Study Area Total	880,600

*Special Districts within the Study Area

Source: Pittman, in the Appendix

TABLE VII

DISTRIBUTION OF THE SPATIALLY VARYING FACTOR-WEIGHTS WITHIN THE PEI CATEGORIES: PERCENT OF THE TOTAL NUMBER OF SECTIONS WITHIN EACH PEI CATEGORY BY FACTOR-WEIGHT

	Amenity Package (Am) Weights					Water Availability (WA) Weights						Access Availability (Ac) Weights				Metropolitan Subdivision Reg. (MR) Weights			
PEI Categories	1	2	3	4	Total %	0	1	2	5	10	Total %	0	5	10	Total %	0	1	2	Total %
I	38.5	30.7	27	3.8	100	11.5	38.5	50	0	0	100	0	73.1	26.9	100	0	19.2	80.8	100
II	51.3	32.7	15	.9	99.9*	0	0	8	45.1	46.9	100	0	90.3	9.7	100	0	39.8	60.2	100
III	0	36.4	63.6	0	100	0	0	0	4.5	95.5	100	0	95.5	4.5	100	0	41	59	100
IV	65.4	23	11.5	0	99.9*	0	0	0	0	100	100	0	0	100	100	0	36.5	63.5	100

*Does not equal 100 due to rounding.

Source: Author's calculations

PEI Category I - Unfavorable

This category is characterized by a predominance of unpaved road access, low amenity values, restricted water availability, and location outside of areas of ambiguous metropolitan subdivision regulation control (Table VII). Category I can be described as a harsh or unfavorable policy environment.

PEI Category II - Marginal

Unpaved access and low amenity values (+50 percent of areas received amenity package weights of 1) are the dominant features of this category (Table VII). Less dominant features are the presence of metropolitan subdivision regulation and water availability. Although less than half of the area within this category lies within the area of possible or ambiguous metropolitan subdivision control, over half the sections (33 of 45) within the area affected by such control are in this category. Therefore, location within the area of possible metropolitan subdivision control is an important characteristic of this category. Over half (53 percent) the sections in this category are at least one mile from a main water supply line. Thus, distance from a main water supply line is a characteristic of the area(s) within this category of policy environment (Table VII). This category is somewhat more favorable than Category I, yet less favorable than Category III. It can be considered as the marginal policy environment.

PEI Category III - Amenity

This category could be called the "amenity" category since there is a general availability of the wooded and/or lake amenities (note:

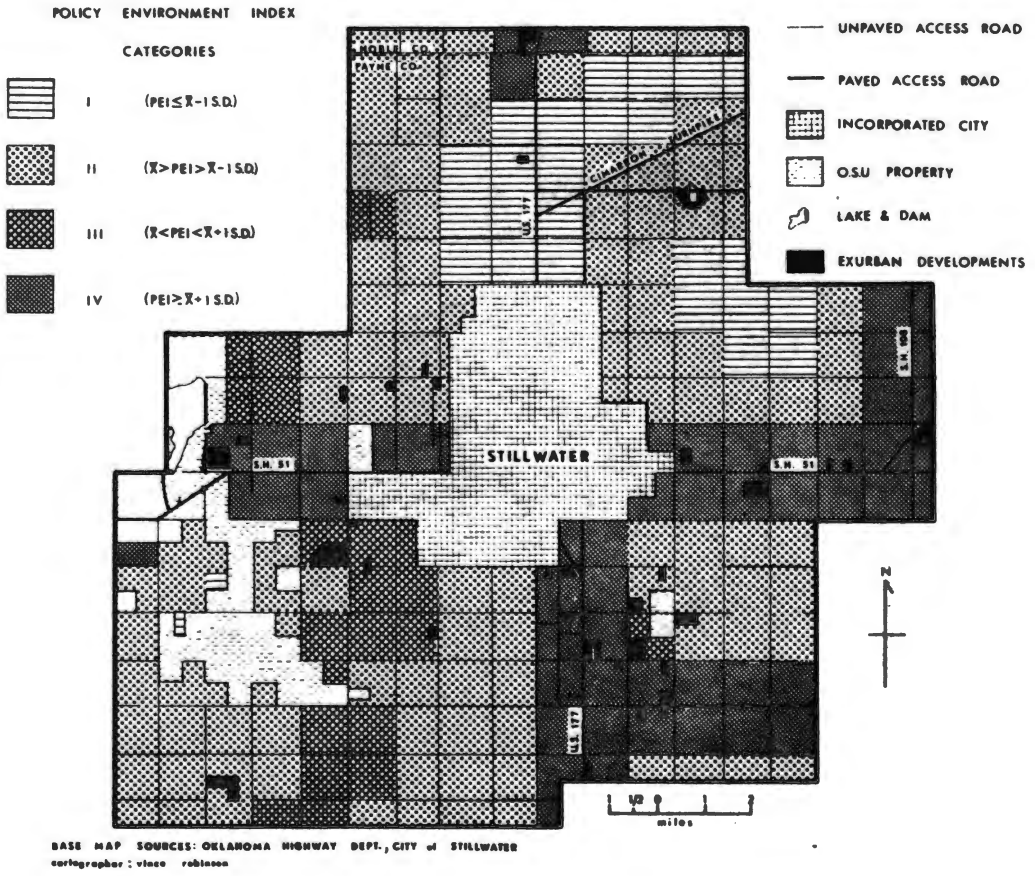
the presence of these amenities causes the value of the Am package in all sections to equal or exceed 2 within this category. Another dominant characteristic of this category is a high availability of water, higher than Categories I or II, as evidenced by the presence of the WA factor-weight of 10 in 95 percent of the sections within this category. However, access is still characterized by unpaved roads. The absence or possible presence of metropolitan subdivision regulations did not appear as a significant feature of this category (Table VII).

PEI Category IV - Access

This category is composed of the highest PEI values, hence designating the most desirable areas for developments. However, it ranks as the lowest in the occurrence of amenities (see Table VII). On the other hand, this category has the "best" of everything, high water availability, 100 percent of the sections have paved access routes available, and 63 percent of the sections are not subject to the presence or possible presence of metropolitan subdivision regulation control (Table VII). Thus, as Category III could be called the "amenity" category, Category IV can be characterized as the "access" category.

Distribution of the Policy Environment

As a result of the PEI determination system (Figure 1), the variation of the PEI categories over space could be depicted and examined (Figure 5).



Source: Author's calculations.

Figure 5. Distribution of the Policy Environment Index (PEI) Categories

PEI Category I - Unfavorable

This category is concentrated in the area north of Stillwater and is primarily a reflection of the policies of RWD #1. Thirty-five percent of the area within this category is within RWD #1's service area. Therefore, the policies of RWD #1 have had considerable impact upon the distribution of this very unfavorable policy environment. This organization was mentioned in particular since the restricted availability of water within its service area is directly related to policy, not distance from main water supply lines (Table IV).

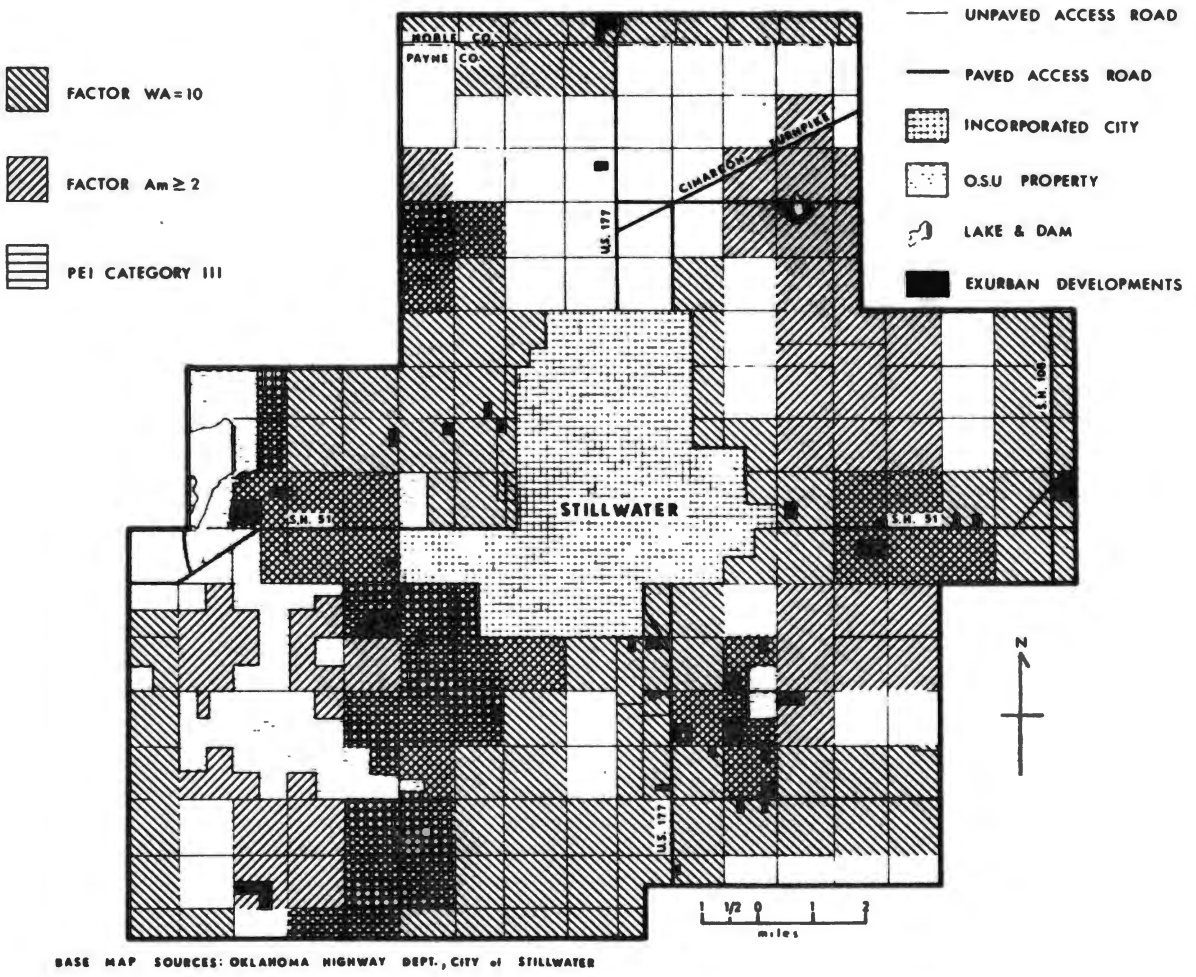
The lack of a well-developed distribution system within the service area of 51 E. RWC was the primary cause for the concentration of PEI Category I to the east of Stillwater. Distance to main supply lines and lack of paved access roads were seen as the primary causes for those areas to be regarded as Category I. Unavailable land owned by Oklahoma State University was responsible for the isolated Category I area to the southwest of Stillwater (Table IV, Figure 5).

PEI Category II - Marginal

This was the most widely distributed PEI category with the major concentration appearing in the southwest study area and enclosing a Category I area (Table III, Figure 5).

PEI Category III - Amenity

As previously described, this is the "amenity" category. Only three sections are adjacent to paved access routes. The remainder of the sections do not possess paved access routes, yet their distribution is closely related to location of amenities and water lines (Figure 6).



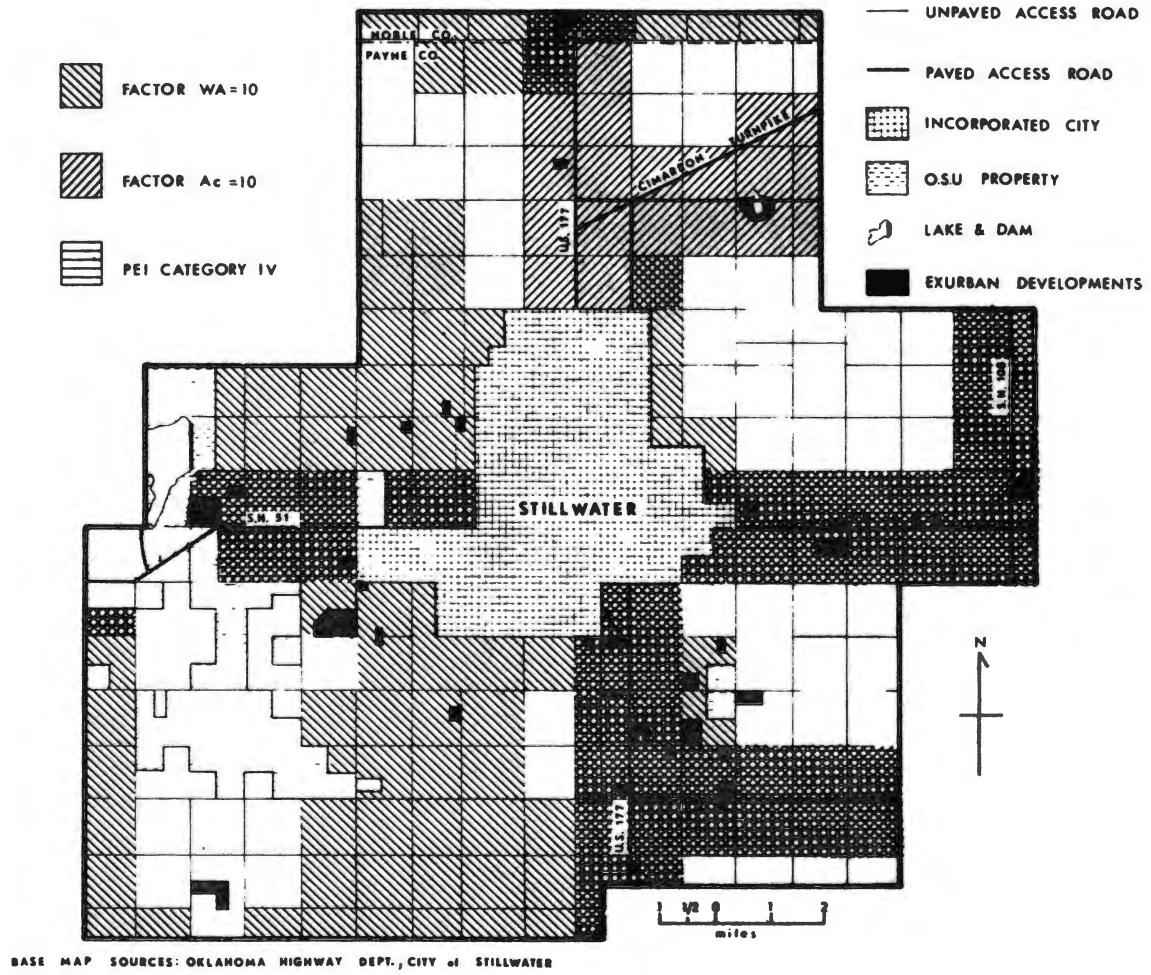
Source: Author's calculations

Figure 6. The Areal Correlation of the Distribution of Water Availability (WA), Amenities (Am), and PEI Category III

PEI Category IV - Access

As Category III's distribution was closely correlated to amenities and water availability, Category IV's distribution is closely correlated to access and water availability without exception (Table VII). Therefore, Category IV is distributed primarily along the paved roads east, west, and south of Stillwater. The relative unavailability of water to the north is the cause for the near complete lack of Category IV to the north of Stillwater (Figure 7).

The majority (63.4 percent) of Category IV sections are located outside of the area of ambiguous metropolitan subdivision control (Table VII). Therefore, the majority of this very attractive policy environment is located outside any areas which might possibly be subject to some present form of subdivision control.



Sources: Author's calculations.

Figure 7. The Areal Correlation of the Distribution of Water Availability (WA), Paved Access (Ac = 10), and PEI Category IV

CHAPTER V

EXURBAN DEVELOPMENTS AND THE POLICY ENVIRONMENT

Before proceeding with the discussion of the analysis, note should be made of the fact that not only can the policy environment vary over space, it can also vary temporally. The upgrading of an access route or a change in the availability of water can affect the overall policy environment considerably (see weights, Table II). This study uses the present policy environment as measured by the Policy Environment Index (PEI) (i.e., as of November, 1974). The policy environment of no other point in time is utilized.

Considering the temporal variation possible in the policy environment, it would be useful not only to know the form and degree of the relationships but also if they are predictable. Thus, if a relationship proved to be a useful predictive instrument, the density of exurban development to be expected within an area of increased policy environment attractiveness could be predicted.

Therefore, the technique chosen for the analysis of the relationship was one which could provide as outputs:

1) the statistical significance of the relationship
2) the amount of variation explained by the relationship
3) the form of the relationship

4) the ability to make a statement on the predictive properties of the relationship.

A simple linear regression model was used to obtain the above relationship information (Abler, et al., 1971; Blalock, 1972; Service, 1972). The use of the linear regression model necessitates the assumption that if there is a relationship, it will manifest itself as a linear relationship. This is recognized as a limitation of the analysis.

Three linear regression models were utilized, all of them using the PEI values as the independent variable. The density of development of each development type, present, potential, and possible future were the respective dependent variables.

Present Exurban Developments and the Policy Environment

It is hypothesized that a significant relationship exists between the present policy environment as measured by the PEI and the locational tendency of present developments as measured by the density of development. There are two underlying assumptions. One is that in general the policy environment reflects the environment in which the development took place. The second assumption is that present developments represent manifestations of successful developer decisions: in other words, a capital flow has been realized (Wilburn, et al., 1972).

The hypothesis appears to be substantiated by the resulting characteristics of the relationship. The relationship between the policy environment and the location of exurban developments is a statistically significant relationship and approximately 52 percent of the variation

in the density of development was explained by the variation in the policy environment index. Thus, the relationship is significant and strong (Table VIII).

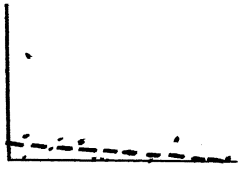
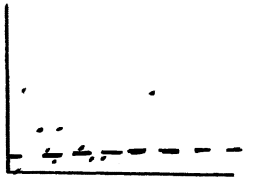
Since the relationship proved to be significant and strong, the regression equation was calculated. Utilizing the equation, the regression line can be calculated and graphically depicted (Figure 8). The equation indicates that with an increase of 100 in the policy environment index an increase of approximately 35 developments per areal unit can be expected in the median density of development (interpreted according to Blalock, 1972). At first glance this may not seem great; however, an increase in availability of any factor(s) in the essential factors package (EF) can increase the PEI possibly ten fold or more due to the multiplicative construction of the essential factors package. The change in the policy environment and the resulting density can be somewhat more dramatic than the linear equation appears to indicate.

The results of the linear regression model suggest that as the policy environment index increases, the density (i.e., intensity of development) of development increases (Table IX, Figure 8). However, caution should be exercised in interpreting the relationship since 48 percent of the variation in density of development is not explained by the PEI. Also, the PEI does not include variables which may affect the overall demand for exurban developments such as the rate of population growth of the "parent" city.

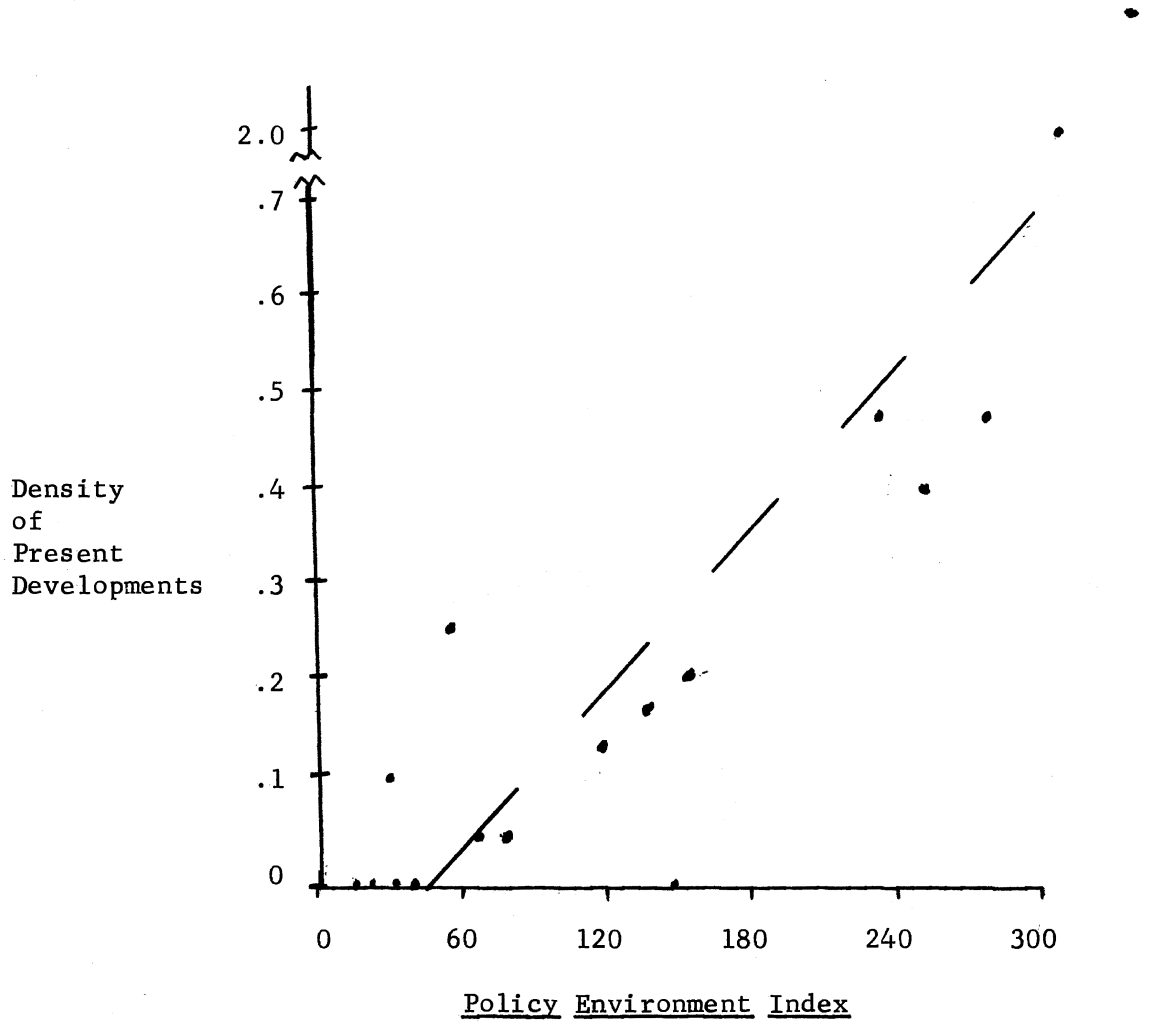
In relating the results of the linear regression to the distribution of the PEI categories, the density of development gradates with the attractiveness of the policy environment types or categories (Figure 9).

TABLE VIII

SUMMARY OF THE CHARACTERISTICS OF THE EXURBAN DEVELOPMENT-POLICY ENVIRONMENT RELATIONSHIPS

Variables		Statistical Significance (PROB > F)	Explained Variation (r^2)	Strength of Relationship (Correlation Coefficient, r)	Form of Relationship	Linear Equation (Yp=a + bx)
Dependent	Independent					
Density of Present Development	PEI Values	.0003	.520	+.721		Yp=-.1462+ .003549(X)
Density of Potential Developments	PEI Values	.4675	.029	-.172		Yp=.0713+ (-.000218)X
Density of Future Possible Developments	PEI Values	.8599	.00178	+.042		Yp=.0775+ .000055(X)

Source: Author's calculations



Source: Author's calculations.

Figure 8. The Relationship of the Policy Environment Index and the Density of Present Developments

TABLE IX

DENSITY OF DEVELOPMENT TYPES (NUMBER OF DEVELOPMENTS/AREAL UNITS) PEI VALUE AREA AND CATEGORY

PEI Categories	PEI Values	Present Developments	Potential Developments	Future Possible Developments
I	0	0	0	0
	12	0	0	0
	13.5	0	0	0
	24	0	.12	.38
	27	.1	0	0
	30	0	.5	0
II	48	0	0	.2
	52.5	0	0	0
	54	.25	0	0
	60	.06	.06	.11
	67.5	.06	0	.06
	75	0	.10	.2
	105	0	.11	.11
	120	.13	0	.07
III	135	.18	0	.06
	150	.20	0	0
IV	210	.50	0	.37
	240	.37	.1	.07
	270	.50	0	0
	300	.2	0	0

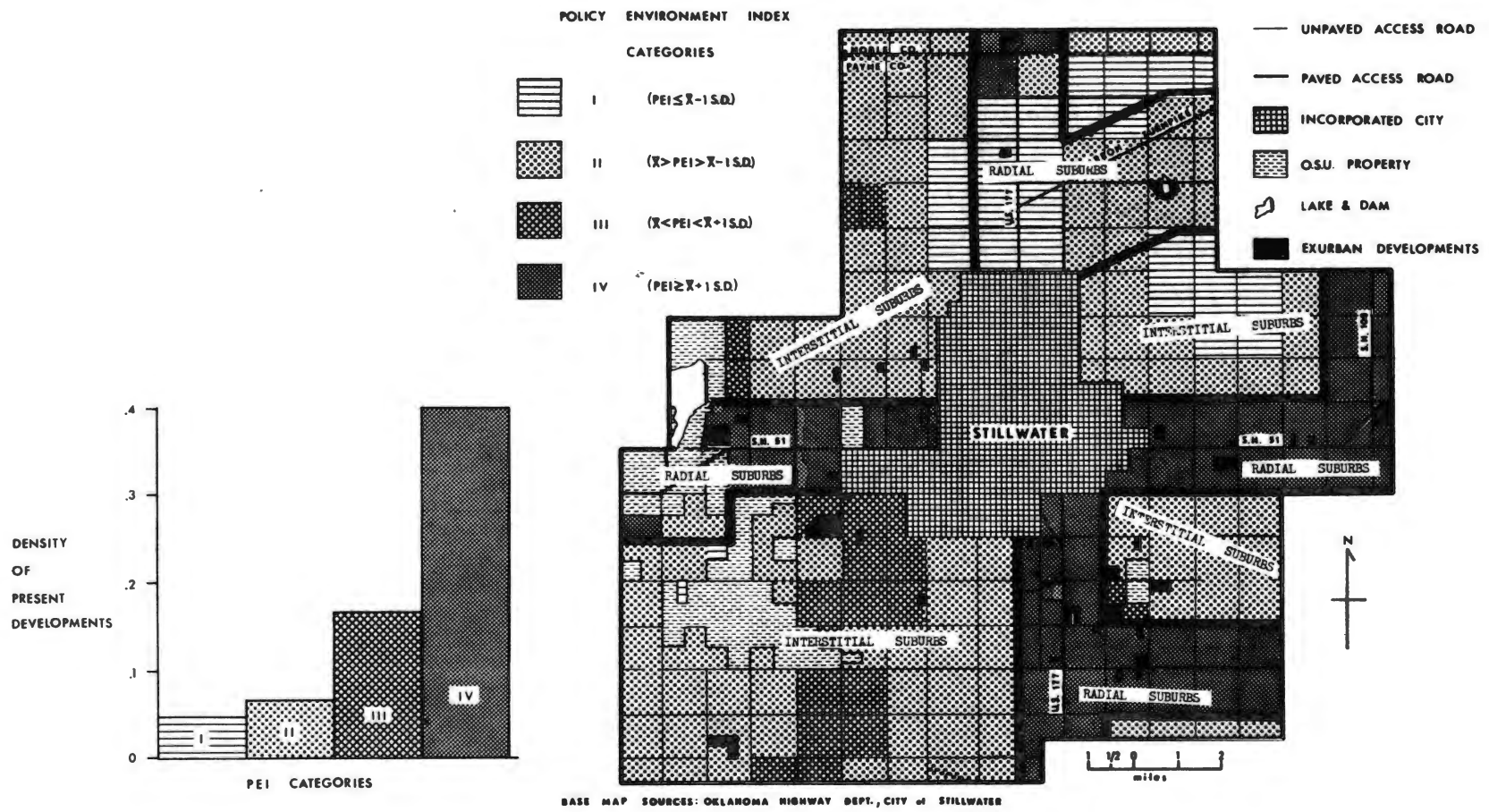
Source: Author's calculations; Tables III and X

Thus, there is a gradation of development density according to PEI category (Figure 9).

The distribution pattern of the PEI categories can be said to be generally indicative of the development density distribution also. This allusion can be made since the developments within the study area do not tend to cluster within one areal unit (see discussion of development distribution in Chapter III). Therefore, the mapping of the PEI categories is roughly analagous to mapping the present zones of development density. The assumption that the policy environment generally reflects the policy environment in which the developments were established appears to be substantiated by the preponderance of high development density within favorable PEI value-areas (Figure 9). If the assumption were incorrect, the opposite would be observable.

The resulting pattern is very close to that depicted by Yeates, et al. (1971) in their discussion of radial and interstitial suburbs. The present patterns of PEI categories and development density follow that model very closely (Figure 9) with the greatest density of development within the "access" PEI category (PEI Category IV) and the remaining areas experiencing less dense occurrence of development. However, the realism of the PEI categories seems to be able to explain the lack of development to the north of Stillwater better than the model adapted from Yeates, et al. (1971) (Figure 9).

The results of this analysis indicate that as the policy environment becomes more attractive (i.e., PEI value becomes higher) the density of development becomes greater. As indicated by the linear regression model, if all other factors remain equal, the more the policy



Sources: Adapted from Yeates, et al. (1971); Figure 5; Table IX.

Figure 9. Yeates, et al.'s (1971) Model in Relation to the Density of Development by PEI Category

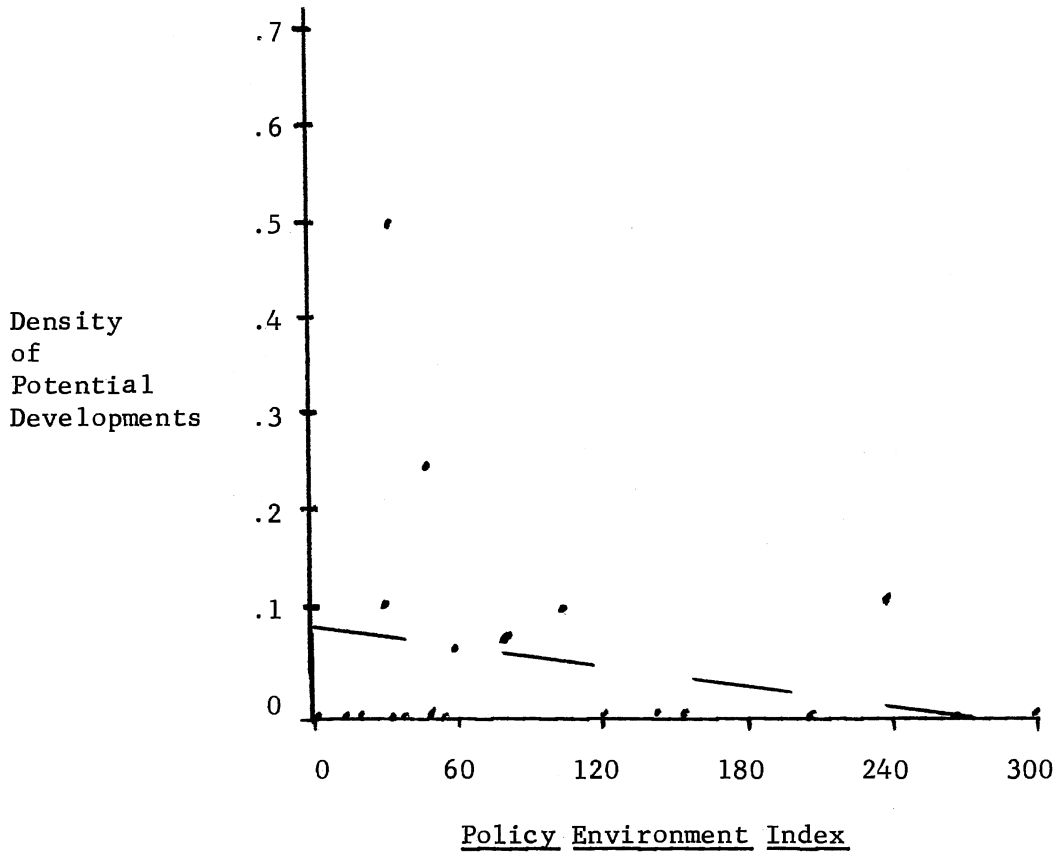
environment's attractiveness improves (i.e., resulting in an increase in the PEI) the more dense the resulting occurrence of development will be.

Potential Exurban Developments and the Policy Environment

The results of the linear regression indicate a lack of any significant or strong relationships (Table VIII). Indeed, the slope of the regression line is very near that which characterizes a complete lack of relationship (Figure 10) (Abler, et al., 1971).

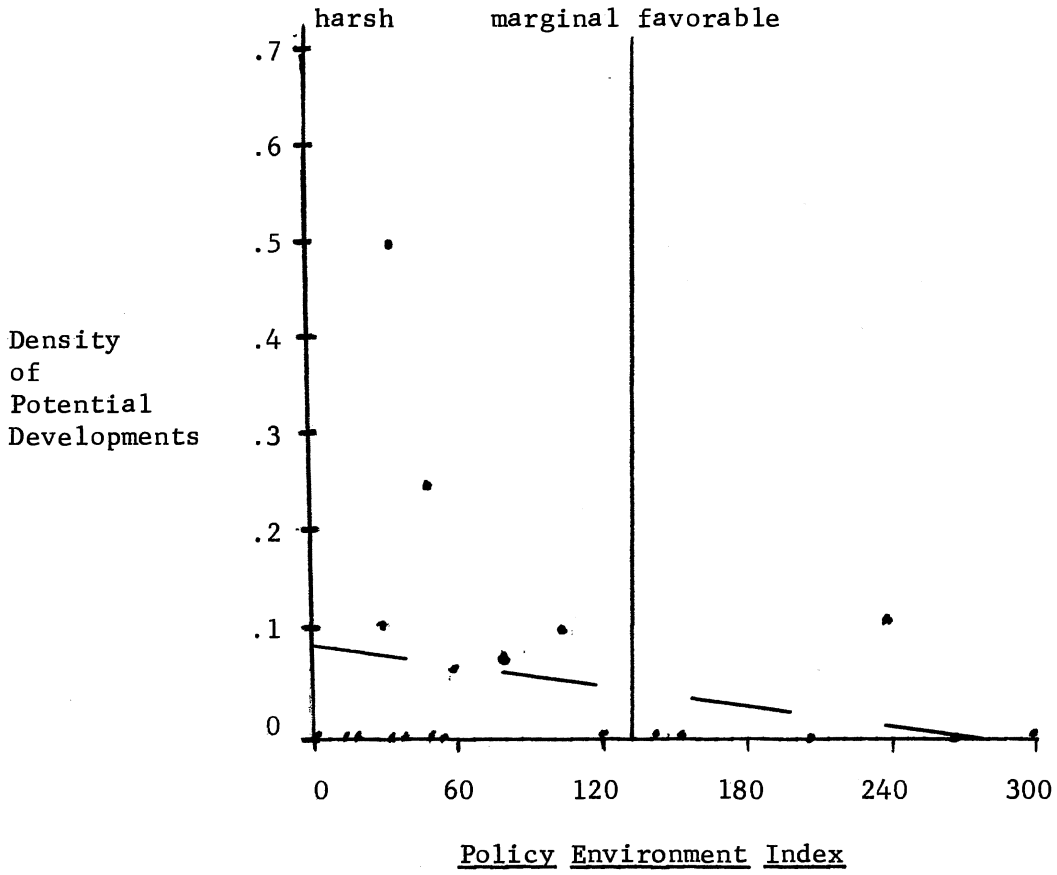
Since there is a lack of relationship (only 2.9 percent of the variation is explained) the next logical question to be asked is, why?

A look at a scattergram of the variable plots (PEI values against density of potential developments) reveals two factors which are of interest in the analysis of the relationship. One is the preponderance of zero values, indication of a general lack of potential development occurrence and the grouping of the potential development densities within the PEI values which are indicative of a harsh to marginal policy environment (Figure 11). These factors also appear to be the cause of the lack of slope in the regression line (Abler, et al., 1971). This is illustrated by the grouping of density values occurring in the PEI value range under 124. The shape of this grouping is suggestive of an inverse relationship (Figure 12). Even though there is no statistical relationship, there is a relationship which appears when the potential developments, as plotted on the scattergram, are divided into the two groups which appear on the scattergram (Figure 12).



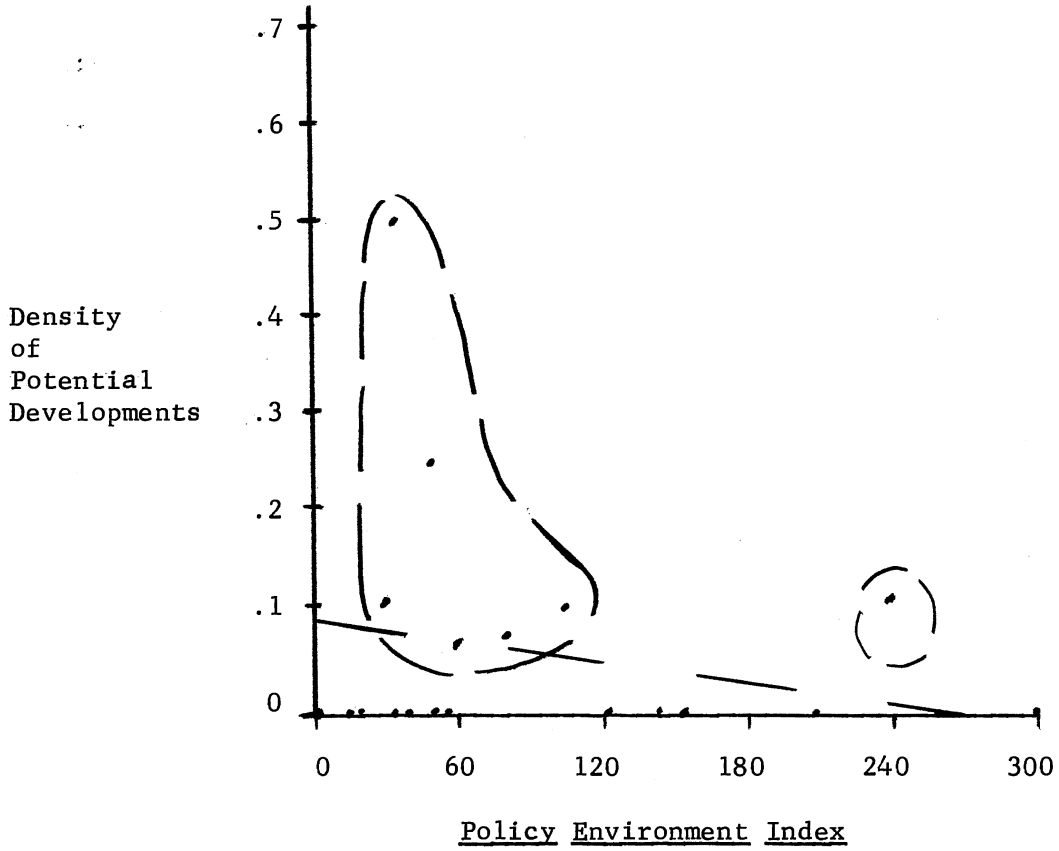
Sources: Author's calculations; Table IX.

Figure 10. The Relationship of the Policy Environment Index and the Density of Potential Developments



Sources: Author's calculations; Table IX.

Figure 11. The Relationship of the Policy Environment Index and the Density of Potential Developments



Sources: Author's calculations; Table IX.

Figure 12. The Relationship of the Policy Environment Index and the Density of Potential Developments

TABLE X

FREQUENCIES OF DEVELOPMENT TYPES WITHIN EACH PEI VALUE AREA AND CATEGORY

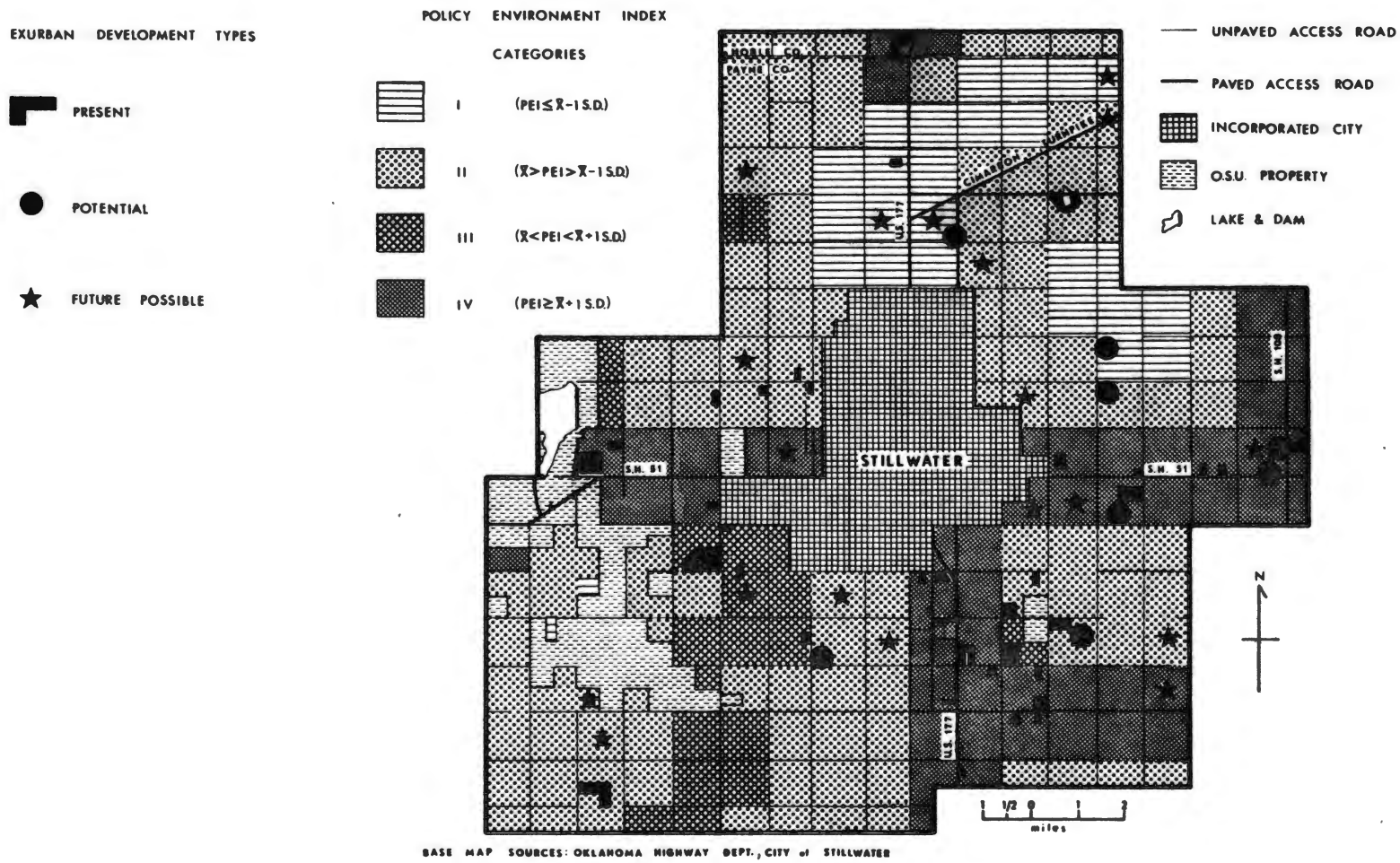
PEI Categories	PEI Values	Number of Present Developments	Number of Potential Developments	Possible Future Development Locations
I	0	0	0	0
	12	0	0	0
	13.5	0	0	0
	24	0	1	3
	27	1	0	0
	30	0	1	0
Total		1	2	3
II	48	0	0	1
	52.5	0	0	0
	54	1	0	0
	60	1	1	2
	67.5	1	0	1
	75	0	1	2
	105	0	1	1
	120	6	0	3
Total		9	3	10
III	135	3	0	1
	150	1	0	0
Total		4	0	1
IV	210	4	0	3
	240	11	3	2
	270	4	0	0
	300	2	0	0
Total		21	3	6

Source: Field observations; Author's calculations

Only three of eight potential developments are located within a range of PEI values above the mean ($\bar{X}$) (Table X). Thus, approximately 64 percent of the potential developments are located within PEI Categories I and II, harsh and marginal policy environments.

The potential developments located in such unfavorable policy environments may possibly be the result of the intuitive, unsystematic developer decision-making process as described by Kaiser, et al. (1968). In other words, they are manifestations of poor developer locational decisions. Such poor decisions can be attributed to incomplete knowledge or defective intuition regarding population growth demands, consumer behavior, financial conditions, and needed service improvements (i.e., installation of water lines, sewage disposal, and street improvement). Also, a very important reason for such poor decision occurrences is the failure of the developer to perceive the real consumer demand parameters. However, the remaining 36 percent (3 of 8) of the potential developments are east of Stillwater within a policy environment which is very favorable for development (Figure 13; PEI Category IV).

Therefore, the potential developments can be divided into two groups. One is composed of those potential developments located within PEI Categories I and II. They can be said to be potential in the sense that as the policy environment becomes more favorable, the probability that they will develop becomes greater. The other group is made up of those three developments which appear to be located in quite favorable policy environments. Their potential may be realized quite soon. However, they may remain as potential developments as long as the financial factors remain low (less than 50 percent of the potential home buyers can presently afford a conventional bank loan, see Table IV, Factor PM).



Sources: Figures 4 and 5.

Figure 13. Distribution of Exurban Development Types in Relation to the Distribution of the PEI Categories

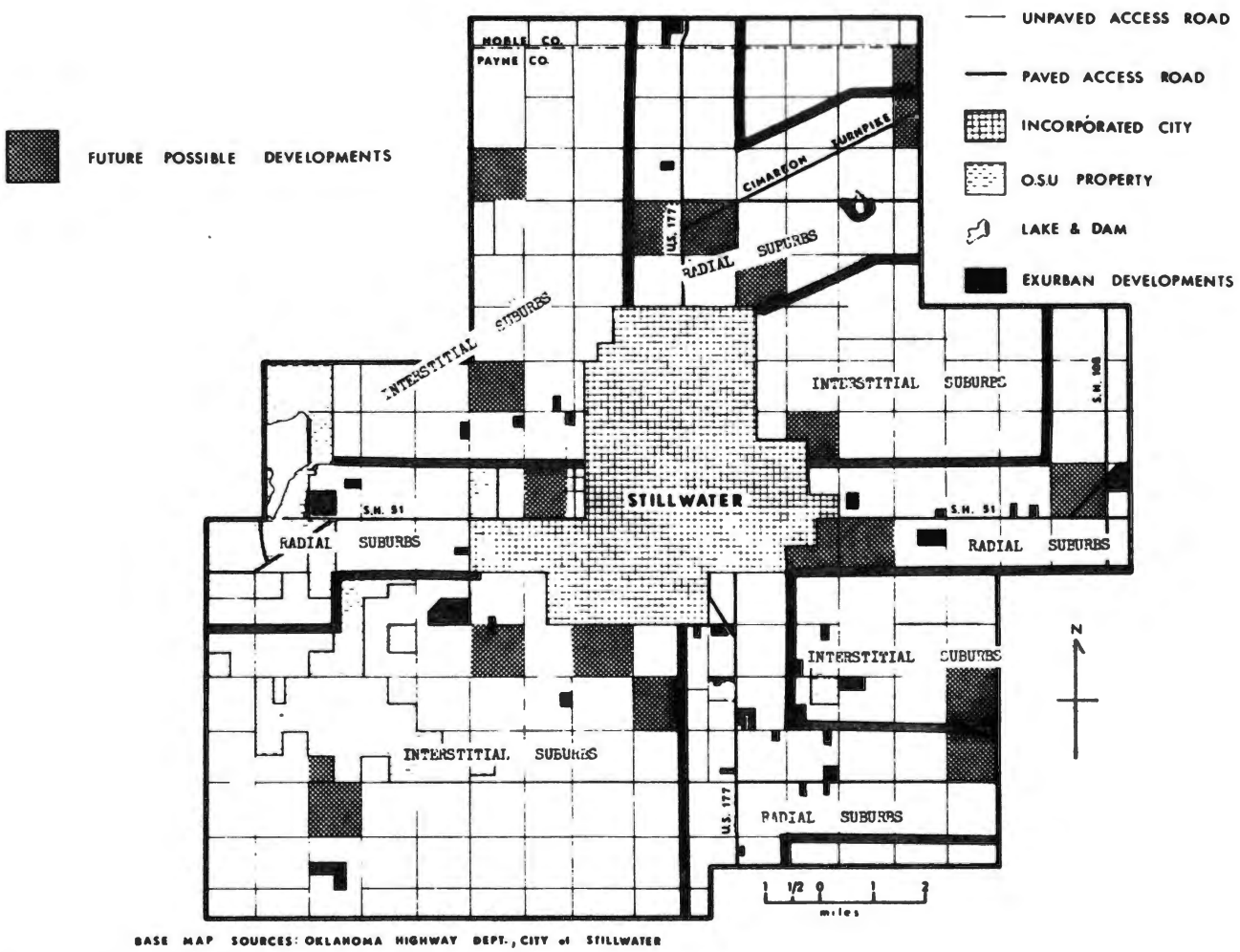
If or when the policy environment becomes favorable enough for all the potential developments to develop, the pattern will be: 1) an extension of present areas of development and 2) continued "scatteration" (Chapter IV, Figure 4).

The Policy Environment and the Location of Future Possible Developments (FPD's)

The Policy Environment Index did not prove to have a significant or strong predictive relationship with the density of future possible developments (FPD) (Table VIII). Moreover, half of the FPD's were located in PEI Category II, the marginal policy environment category. It should also be kept in mind that the method utilized in determining FPD locations is subject to the influences of other types of land speculation, most notably commercial-manufacturing types.

Ten of the 19 FPDs are located in what Yeates, et al. (1971) would call the area of interstitial suburbs (not adjacent to major access routes, Figure 14) where speculative land buying is common. However, all the FPDs within the interstitial area are adjacent to sections which either have higher PEI category designators or contain a previous development (Figure 13). Thus, previous development and favorable policy environments appear to attract development interest.

Slightly less than half (9 of 19) of the FPDs are located along major access routes (i.e., paved roads in this study). Accessibility appears to be a strong factor in the location of FPDs. In fact, the location of some appear to have used that factor as their sole consideration. An example of such is the group of FPDs at the junction of U. S. 177 and the Cimarron Turnpike. A very unfavorable policy



Sources: Figure 4; Adapted from Yeates, et al. (1971).

Figure 14. Distribution of Future Possible Development in Relation to Yeates, et al.'s (1971) Model

environment exists in that area yet locating at the access point to the Cimarron Turnpike appears to be the overriding desire. Although that particular situation may appear to be an irrational decision based upon the consideration of one factor, it is not such a decision. They are also located in an area slated for annexation into the City of Stillwater within the near future. Therefore, the policy environment appears to be able to improve drastically. Then the decision would appear to be an excellent one (Figure 15). Thus, the dynamic characteristic of the policy environment is shown to have influenced developer location decisions.

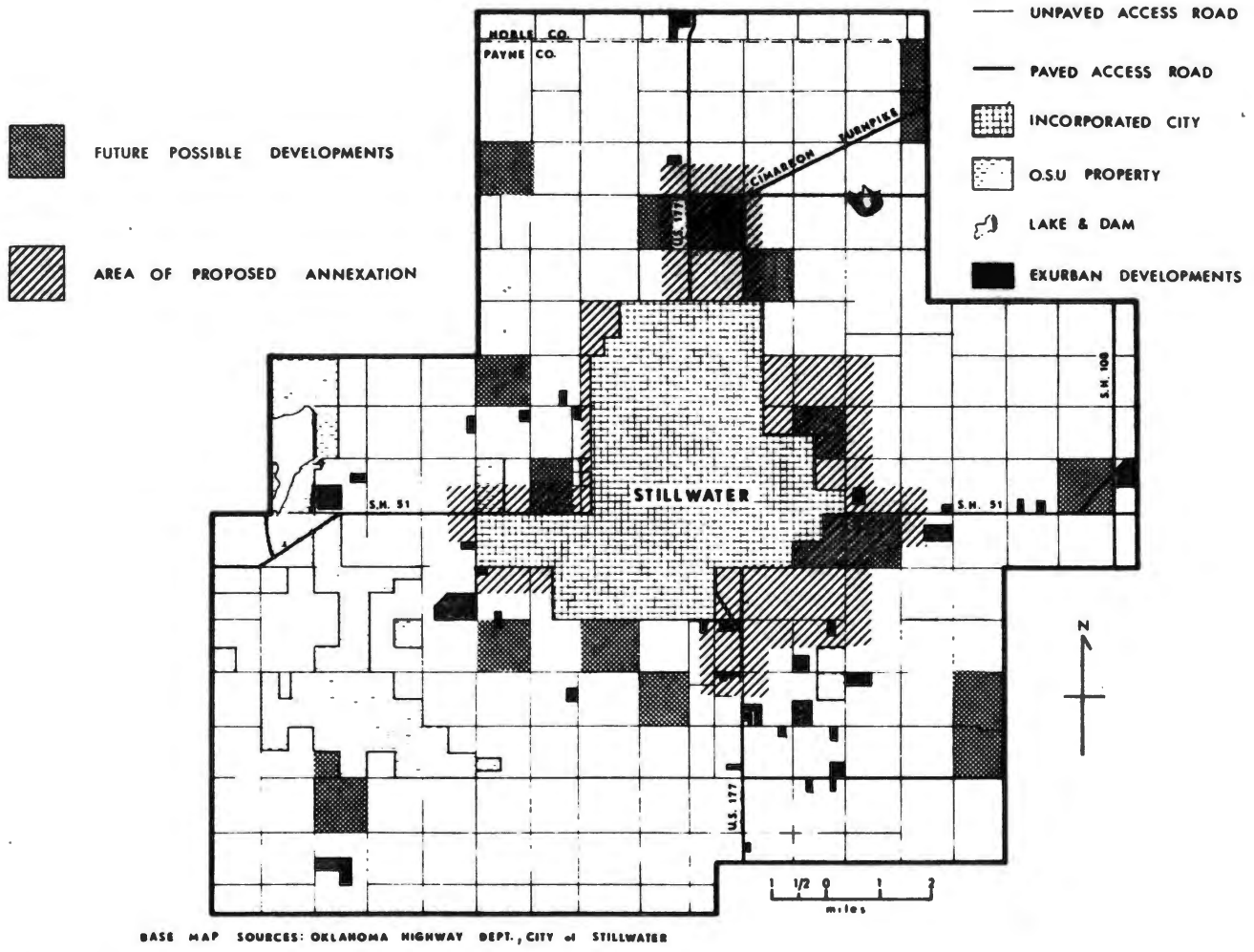
Therefore, future possible development locations appear to be strongly influenced by:

1) probable future policy environments,

2) accessibility,

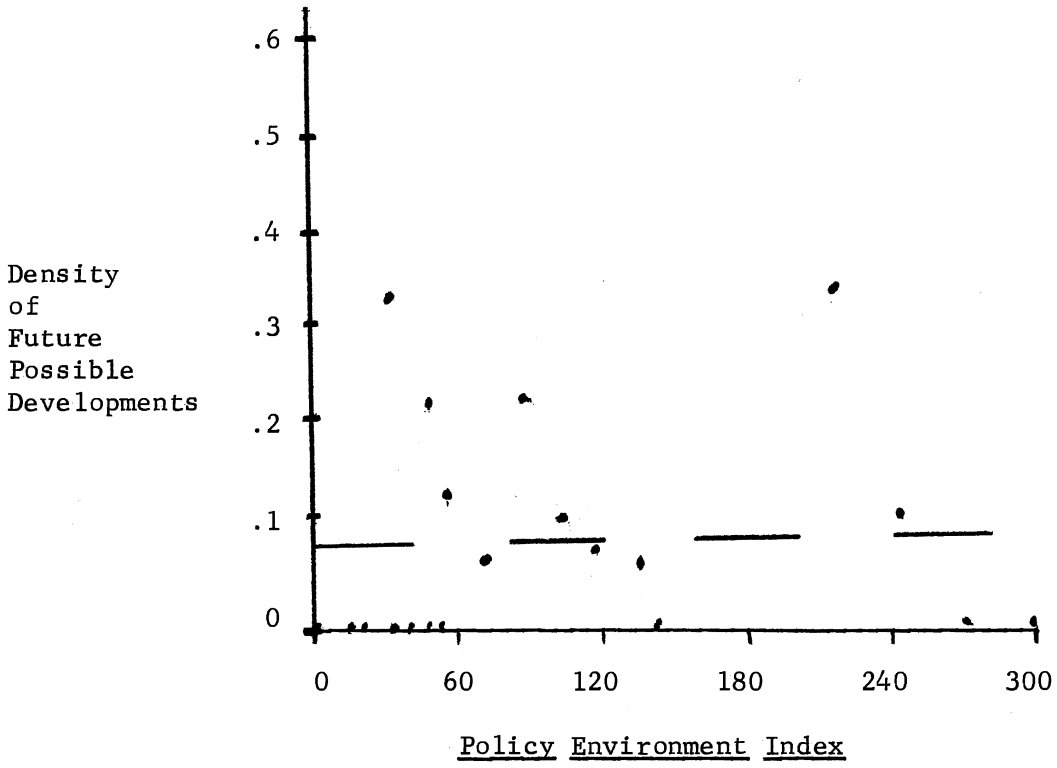
3) location of previous "successful" developments (Figure 11).

Although future possible developments are not related to the present policy environment, they may be indicators of developer-perceived future favorable policy environment. Thus, future possible developments may be located within favorable future policy environments since it is certain there is no strong relationship between the present policy environment and the location of future possible developments (Table IV, Figure 16).



Sources: Figure 4; Maps supplied by Harwood and Owens, in the Appendix.

Figure 15. Relationship of Future Possible Development and Areas Proposed to be Annexed



Sources: Author's calculations, Table IX.

Figure 16. The Relationship of the Policy Environment Index and the Density of Future Possible Developments

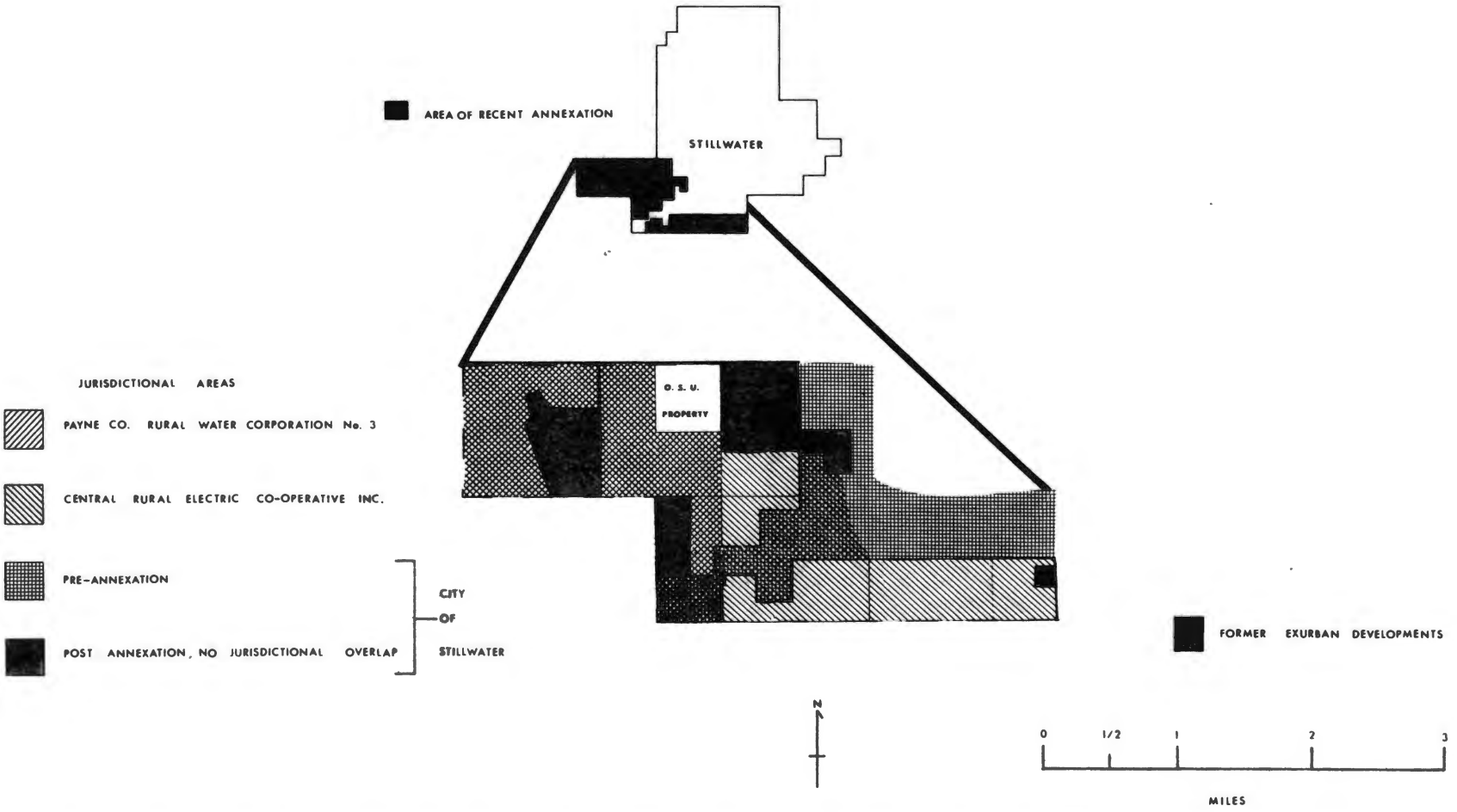
CHAPTER VI

METROPOLITAN PROBLEMS OF EXURBAN POLICY ENVIRONMENT ORIGIN

Observations made in previous studies indicate that many diverse problems are experienced by a metropolitan area when it incorporates a portion of 'exurbia' (Remmel, 1972; Population, Distribution, and Policy, 1972; Thompson, 1972). In fact, many specific problems such as costs of providing police and/or fire protection correspond closely to many of the factors composing the Policy Environment Index (PEI) constructed for this study.

Generally, the problems within the area of this chapter's focus (i.e., recently annexed south and southwest of Stillwater, Figure 17) fit into two categories: increased cost of services and jurisdictional overlap.

Jurisdictional overlap is related to the financial burden experienced by the annexing city. The area annexed is served primarily by Payne County Rural Water Corporation No. 3 (RWC #3) and Central Rural Electric Co-operative (REA). These are the two organizations with operations within the recently annexed areas of the city (Figure 17). Eventually the City of Stillwater is to acquire and replace the water lines of RWC #3 with lines able to withstand the pressure needed to make fire hydrants functionable. In addition, the city is not collecting revenue from those persons tied to RWC #3 water lines. Although the city



Sources: Farmer's Home Administration (1972); Central Rural Electric Co-Operative (1974; Harwood, Owens, Salmon, in the Appendix.

Figure 17. Jurisdictional Overlap in a Recently Annexed Portion of Exurbia

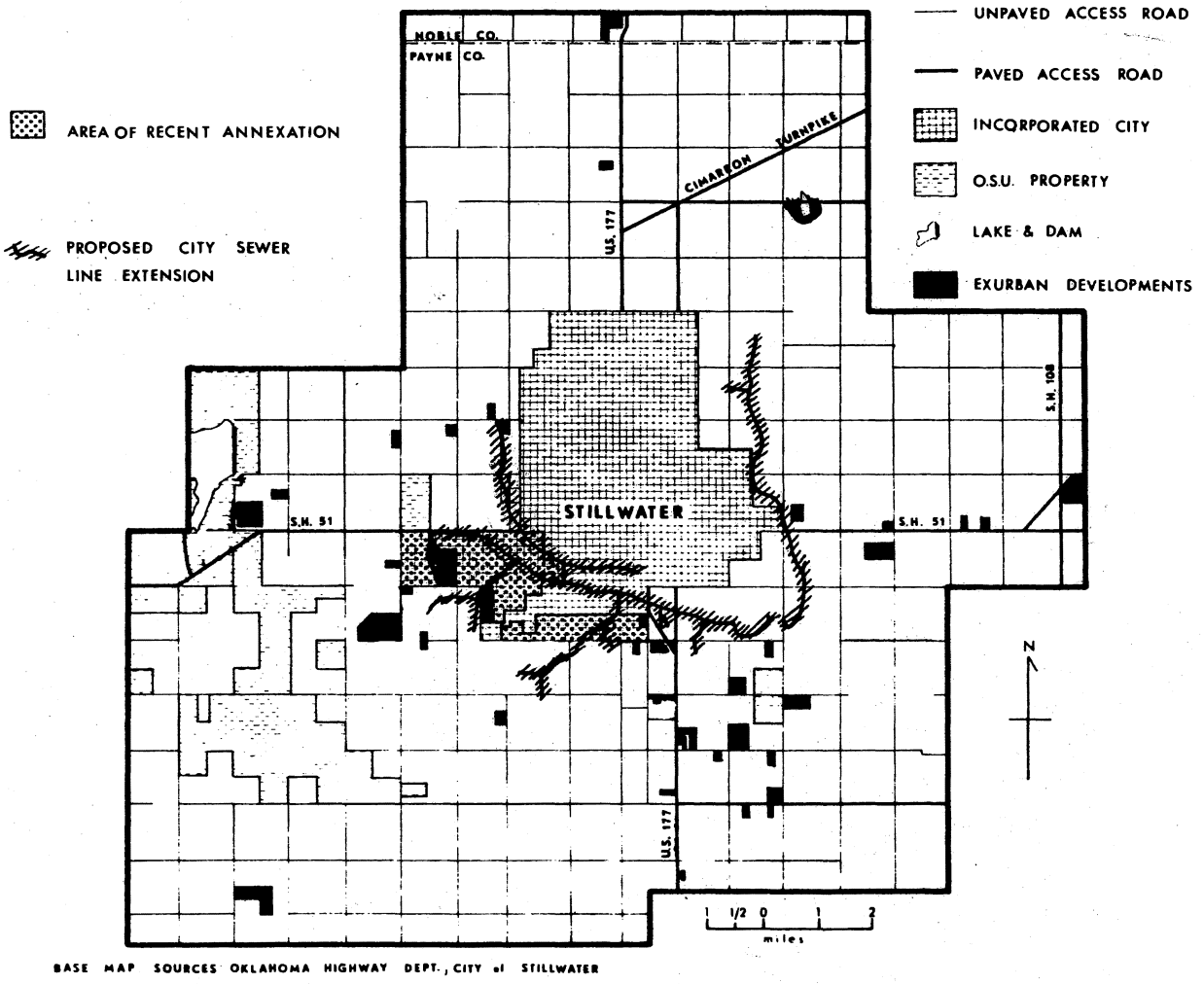
is eventually going to acquire and replace the RWC #3 lines and customers, there is no indication that the City of Stillwater will obtain the lines or customers from REA. This is a major problem. Approximately 33 percent of the city's revenue is obtained through the sale of electrical power. Thus, a major source of revenue has been eliminated at the same time a major source-area of expense has been added (Blair, Durham, Harwood, Owens, Appendix).

In annexing the area under discussion, the city "inherited" unpaved county roads. Public pressure exists for their improvement to meet city standards. Thus, there is an added cost which property owners do not expect to pay. Such a precedent was set when after annexing an unpaved portion of McElroy Street, the city paved it to meet city standards at city expense. The maintenance of present paved roads is also a responsibility of the city. However, in private subdivisions the responsibility is left to the property owners. The property owners do not seem to care for such a responsibility and would rather the city maintain the roads. However, the city will not maintain private subdivision streets (Owens, Harwood, Appendix).

In the area of sewage disposal, the city plans on eventually tying those lagoon-serviced developments onto a proposed extension of the city sewer system. In the interim the lagoons are the responsibility of the City of Stillwater. The service charge for the city to keep up only the lagoon sewer system lines is 50 percent of the regular service charge (minimum = $1.00/month) whereas the service charge for maintenance of the lagoon and the system lines is 200 percent of the regular city sewer service. In the future, individuals on septic tanks will have the option of tying onto the city sewer system or remaining on

septic tanks (Harwood, Owens, Appendix). There are sewer lines planned for the newly annexed and some outlying areas. However, there is a noticeable lack of present developments within the areas of future sewer line installation (Figure 18). This illustrates the willingness of the city to serve a dispersed population (Figure 17; Owens, Harwood, Appendix) despite the increased costs of doing so (Thompson, 1972).

Obviously, metropolitan subdivision regulations are now in effect within the recently annexed area. However, those subdivisions not meeting city standards prior to annexation do not have to meet them now that they are part of the city. It is also a fact that in those private subdivisions in which the city cannot maintain the streets, the streets need not meet city standards. The annexing of the area was considered desirable by the city in order to be able to "control" future growth in that area (Harwood, Owens, Appendix). Although this seems to be good reasoning, there are complications. As long as developers can sell housing, or lots, outside the jurisdictional area of present subdivision control, they will. They prefer to avoid the encumberance of city subdivision regulations (Aufleger, Appendix; Zapata, 1974). Thus, the annexation of an area could possibly drive "exurbia" farther out or, if the policy environment could handle it, change the direction of exurban development growth. Either of the results only increases the dispersion and area of exurbia. The lack of county subdivision regulations only compounds the problems faced by the city in attempting to control the growth on its fringes. In the past, a Metropolitan Area Planning Commission (MAPC) existed. The jurisdictional area of this planning commission included Stillwater and those areas within three miles of its city limits. The MAPC had a reputation of being generally



Sources: Harwood, and maps of City sewer lines supplied by Salmon, Appendix.

Figure 18. The Location of the Proposed Main Sewer Line Extensions

ineffectual in enforcing the subdivision regulations it was empowered to enforce. Therefore, it voted itself out of existence and became the City of Stillwater's planning commission. There does not appear to be any reason to believe that the MAPC will reappear in the near future (Aufleger, Bradley, Harwood, Owens, Salmon, Appendix).

Now that the recently annexed area is within the city limits, it must be provided fire and police protection. To adequately serve the city as a whole, additional personnel are needed to relieve the strain produced by this new area of responsibility (Owens, Appendix). The recently annexed area does not contain a water system capable of producing enough pressure for fire hydrant use due to dependency on RWC #3 for water supply and distribution. Therefore, a fire "run" by the city fire department would be basically the same as a rural fire "run". The rural fire "run" costs $100 for the rural resident. However, within the city it is part of the expected services and no service charge is associated with an "urban run". There is also public pressure calling for the establishment of a fire station in or near the recently annexed area. The added area of police patrol responsibility is creating a strain on the city police department. More personnel, hence salaries, are needed (Owens, Appendix).

In summary, the city has annexed an area on its fringe which is not fully developed in order to control the future land use in the area (Harwood, Owens, Appendix) and in so doing it has experienced the problems of trying to urbanize a portion of 'exurbia'. Even though Thompson (1972) points out the economic disadvantages of urbanizing such areas, the City of Stillwater chose to do so in order to gain some

kind of control over the future land use types and distribution on its fringe.

The cost of urbanizing the area is an economic burden (Harwood, Owens, Appendix). This financial strain on the city is intensified by the loss of revenue from power sales--a major source of revenue (Harwood, Owens, Appendix). Even though the city has chosen to bear the economic burden in order to be able to exercise control over the area, the effectiveness of such control is questionable since the city's presence is not attractive to developers or exurbanites (Aufleger, Appendix; Zapata, 1974). Thus, there exists the real possibility that developments will locate outside the city, yet due to the annexation they will be farther from the central business district. If growth is desired to be orderly and according to some intelligent plan for the future, an effective city-county planning organization is clearly needed.

The policy environment on the fringe of the city has been shown to be related to the location of present developments. In order to influence the pattern and/or magnitude of developments in the fringe area, alterations in the policy environment would be necessary. Kaiser, et al. (1968) emphasize that policies which affect developer revenues are the most effective. If a developer cannot produce a marketable development, his chances of realizing any revenue are slight. Thus, the manipulation of the factors comprising the policy environment could be an effective means of controlling the pattern of future development.

CHAPTER VII

CONCLUSION AND SUMMARY

The Policy Environment Index (PEI) appears to be useful in indicating the favorableness of the contemporary policy environment for exurban development purposes. That statement is further substantiated by the concentration of potential development densities in areas of low PEI values and the concentration of present development densities in areas of high (favorable) PEI values (Table IX, Figures 8 and 11).

Analysis of the PEI development density relationship yielded differing results according to development types. The PEI and present development densities displayed a significant and strong linear relationship (Table VIII, Figure 8). This relationship is one in which a linear regression model could be used to formulate approximate predictions of development densities if the Policy Environment Index is known. There was a near total lack of any indication of a relationship between the PEI and future possible development densities. However, the location of future possible developments appeared to be affected by factors other than the contemporary policy environment. Such developments may possibly be indicators of developer-perceived future policy environment improvements.

Thus, the results of the analysis of the PEI development type densities concluded that: 1) there exists a significant and somewhat predictable relationship between the PEI values and present development

densities; 2) that although there is no significant relationship between the PEI and potential development densities, it appears that potential developments are results of developer mistakes since they are concentrated in areas of low PEI values; and 3) there is no relationship between the density of future possible developments and the contemporary PEI.

The problems experienced by a metropolitan government when it annexes a portion of 'exurbia' were shown to have their source in nearly every factor composing the policy environment (Table 11). Therefore, the problems of "urbanizing" exurbia have their source in the policy environment surrounding the expanding metropolitan. The presence of certain exurban servicing organizations in the annexed area has caused the intensification of the financial burden of "urbanization". The intensification of the financial burden is due to the loss of the source of nearly a third (33 percent) of their revenue. The loss of this revenue is attributable to jurisdictional overlap and the policies of those overlapping organizations (REA and the City of Stillwater).

Possible Further Research

Since the PEI appears to be useful as an instrument in comparing the favorableness of the policy environment in which a developer of exurban developments operates, further research is needed on refining the composition and measurement of the factors composing the PEI. The influence of additional factors such as population growth could possibly result in a more meaningful predictor.

The use or testing of the PEI by planners is anticipated, for it could be helpful in conjunction with a land use survey in exurban areas.

TABLE XI

SOURCES OF EXPANDING METROPOLITAN AREA'S PROBLEMS FOUND IN THE POLICY ENVIRONMENT INDEX (PEI)

Factor		Source of Problem	Not Problem Source
L	Land		X
W	Water	X	
U	Utilities	X	
F	Finances	X*	
Ac	Access	X	
Am	Amenities		X
S	Sewage Disposal	X	
MR	Metropolitan Subdivision Regulations	X	
CR	County Subdivision Regulations	X	
FP	Fire Protection	X	
PP	Police Protection	X	
E	Education Availability		X

*The financial package is considered a problem source since developments could not have been established without some financial encouragement.

Sources: Chapter VI; Appendix

Testing of the PEI would result in its refinement. The PEI will be incorporated into the planning curriculum of an urban planning class at Southwest Missouri State University. The results of this exposure may indicate the utility of the index, or result in its refinement.

Another important aspect of further research is in respect to how developers' perceptions of the policy environment differ from the policy environment indicated by the PEI. As indicated by the results of the PEI future possible development relationship analysis, speculative developers may be preoccupied with future policy environments. Therefore, some insight may be gained as to how and what to measure in formulating a method of predicting or projecting policy environments.

Since this study has made some statements as to predicted policy environment-development density relationships, the monitoring over time and/or a follow-up study in subsequent years would yield confirmation or refinement of the predictive statements contained herein.

Many questions concerning the policy-development relationship and processes could be attempted to be answered by a detailed geographic study of the policy environment and development location relationships over time. This would, of necessity, be a painstakingly detailed study. However, the results might offer some answers to how and where the policy environment can or should be manipulated in order to control or plan future growth on the fringes of today's urban areas.

BIBLIOGRAPHY

Abler, Ronald, John S. Adams, and Peter Gould.

1971 Spatial Organization: A Geographer's View of the World. Englewood Cliffs: Prentice Hall, Inc.

Abrams, Charles.

1971 The Language of Cities: A Glossary of Terms. New York: Viking Press.

American Institute of Real Estate Appraisers.

1967 Real Estate Appraisal. Chicago: Lakeside Press.

Blalock, Hubert M., Jr.

1972 Social Statistics. New York: McGraw-Hill.

Blizzard, Samuel W., and William F. Anderson.

1952 Problems in Rural-Urban Fringe Research: Conceptualization and Delineation. Pennsylvania: Agricultural Experiment Station Progress Report 89.

Brandt, Donald P.

1974 "Normative Potential for Residential Development." The Professional Geographer, Vol. XXVI, No. 3 (August), 303-309.

Brinkman, George, ed.

1974 The Development of Rural America. Lawrence: University Press of Kansas.

Central Rural Electric Co-Operative, Inc.

1974 A map of Central Rural Electric's transmission lines prepared for the Federal Power Commission. Ray Stower, System Engineer: Stillwater, Oklahoma

Chapin, F. Stuart, Jr.

1972 Urban Land Use Planning. Urbana: University of Illinois Press.

Clawson, Marion.

1960 Land for the Future. Baltimore: Johns Hopkins Press.

1971 Suburban Land Conversion in the United States. Baltimore: Johns Hopkins Press.

1972-73 "The Future of Non-Metropolitan America." American Scholar, Vol. 42 (Winter), 102-109.

Crevecoeur, J. H.

1912 Letters From an American Farmer. London: J. M. Dent.

Ellul, J.

1970 The Meaning of the City. Grand Rapids: Eerdmans.

Farmer's Home Administration.

1972 Comprehensive Rural Water and Sewer Plan for Payne County. Tulsa: Breisch Engineering Co., Inc.

1973 A Rural Credit Program - Home Ownership. Program Aid No. 977. Washington, D. C.: U. S. Government Printing Office.

Folse, C. L.

1961 "Illinois Farmers are Getting New Neighbors." Illinois Agricultural Economics, Vol. I, No. 1, 19-24.

Gans, Hubert J.

1967 The Levittowners. New York: Pantheon.

Hadden, Jeffery K., and Josef J. Barton.

1973 "An Image that Will Not Die: Thoughts On the History of Anti-Urban Ideology." The Urbanization of the Suburbs. Eds. Louis H. Masotti and Jeffery K. Hadden. Urban Affairs Annual Reviews, Vol. VII, 79-119.

Hill, Lloyd, Brenne Kerr, Burrell Montz, John Morris, Vince Robinson, Dwight Rychel, Marcia Salkin, and C. M. Bacon.

1974 Stillwater Population Growth and Land Use Planning to 1990. Final Report, Environmental Science 5103. Stillwater: Oklahoma State University. Unpublished.

Jefferson, T.

1955 Notes on the State of Virginia. Chapel Hill: University of North Carolina Press.

Kaiser, Edward J., and Shirly F. Weiss.

1968 "Local Public Policy and the Residential Development Process." Housing. Eds. Robinson, O. Everett, and John D. Johnston, Jr. Dobbs Ferry, New York: Oceana Publications, Inc., 46-63.

Kenney, Kenneth B.

1972 The Residential Land Developer and His Land Purchases Decision. (Ph. D. dissertation, University of North Carolina at Chapel Hill.)

Kramer, John, ed.

1972 North American Suburbs. Berkley: Glendessary Press.

Kratovil, Robert.

1969 Real Estate Law. Englewood Cliffs: Prentice Hall, Inc.

Meyers, M.

1957 The Jacksonian Persuasion: Politics and Belief. Stanford: Stanford University Press.

Myles, W. Rodehaver.

1947 "Fringe Settlement as a Two Directional Movement." Rural Sociology, Vol. 12 No. 1, 49-57.

Payne County Abstract Company.

1974 A map of Payne County sections and townships with an explanation of the U. S. Land Survey System. Stillwater, Oklahoma.

Population, Distribution, and Policy.

1972 U. S. Commission on Population Growth and the American Future. Vol. V of Commission Publications. Washington, D. C.: U. S. Government Printing Office.

President's Task Force on Rural Development.

1970 "A New Life for the Country." The Report of the President's Task Force on Rural Development. Washington, D. C.: U. S. Government Printing Office.

Remmel, Pratt, Jr.

1972 Statements at Public Hearings of the Commission on Population Growth and the American Future. U. S. Commission on Population Growth and the American Future, Vol. VII of Commission Publications. Washington, D. C.: U. S. Government Printing Office, 141-143.

Ring, Alfred A., and Nelson L. North

1967 Real Estate Principles and Practices. Englewood Cliffs: Prentice Hall, Inc.

Service, Jolayne.

1972 A User's Guide to the Statistical Analysis System. Raleigh: North Carolina State University Student Supply Stores.

Sloggett, Gordon R., and Daniel D. Badger.

1974 Economics and Growth of Rural Water Systems in Oklahoma. Bulletin B-716, Agricultural Experiment Station. Stillwater: Oklahoma State University.

Spectorsky, Auguate C.

1955 The Exurbanites. Philadelphia: Lippincott.

Thompson, Wilburn R.

1972 "A Preface to Suburban Economics." The Urbanization of the Suburbs. Eds. Masotti, Louis H., and Jeffery K. Hadden. Urban Affairs Annual Reviews, Vol. VII, 409-430.

Taylor, Lee.

1968 Rural-Urban Problems. Belmont, California: Dickinson Publishing Co., Inc.

Watcher, P. Z., Baratz and Beeland.

1973 Suburban America, Population Dynamics as Related to Water Resources Planning. Final Report OWRR Contract No. 14-31-001-3740. Washington, D. C.: Wapora, Inc.

Wilburn, Michael D., and Robert M. Gladstone.

1972 Optimizing Profits in Large Scale Real Estate Projects. Technical Bulletin 67, The Urban Land Institute. Washington, D. C.: Urban Land Institute.

Whitney, Vincent H.

1948 "Rural-Urban People." American Journal of Sociology, Vol. 54, No. 1, 48-54.

Whyte, William H., Jr.

1958 "Urban Sprawl." Fortune, Vol. 57 (January), 102-109.

Wolfe, M. R.

1967 "A Chronology of Land Tenure. Influences on Suburban Development Patterns." Town Planning Review, Vol. 37, No. 4, 271-290.

Yeates, Maurice H., and Barry J. Garner.

1971 The North American City. New York: Harper and Row Publishers.

Zapata, Alfonso.

1974 Meadow Park Estates--A Case Study. (Unpublished report. Oklahoma State University.)

APPENDIX

INDIVIDUALS AND/OR ORGANIZATIONS INTERVIEWED

TABLE XII

A LISTING OF PERSONS AND/OR ORGANIZATION REPRESENTATIVES INTERVIEWED IN ORDER TO BE ABLE TO ASSIGN THE APPROPRIATE POLICY ENVIRONMENT INDEX FACTOR WEIGHTS*

Aufleger, William.	President of the Oklahoma Home Builders Association; Associated with Stillwater Development Company.
Blair, Bill.	Power Use Advisor - Central Rural Electric Co-Operative, Inc.; Secretary-Treasurer of Payne County Rural Water District No. 3.
Bradley, Chuck.	Vice-President of Payne County Rural Water District No. 1; Developer of "Ranch Acres" mobile home park (an exurban development).
Durham, Norman.	President of Payne County Rural Water Corporation No. 3.
	Fire Department of the City of Stillwater.
Folger, Dale.	Farmer's Home Administration, state office.
Girod, Raymond.	President of Payne County Rural Water District No. 1.
Grimes, Lt.	Oklahoma State Highway Patrol, District Seven. Pawnee, Oklahoma.
Harwood, Charles.	Planner, City of Stillwater.
Jones, Carl.	Payne County-City Health Unit.
Langley, Sgt.	City of Stillwater Police Department.
Mecklenburg, Darrell.	Payne County Surveyor.
Morrow, Mrs.	Secretary-Treasurer of Payne County 51 East Rural Water Corporation.
Murphy, Donna.	Stillwater Savings and Loan Association.
Owens, Mr.	Assistant City Manager of the City of Stillwater.
Pittman, Richard.	Farmer's Home Administration, Payne County Office.
Reed, Mr.	Oklahoma Natural Gas Company, Inc.

TABLE XII (Continued)

Satterfield, Gene.	Oklahoma State University, Business Manager's Office.
Salmon, Christine.	Member of the City of Stillwater Planning Commission.
Smith, Darrell.	Ponca City Savings and Loan Association.
Stites, Ruth.	Dispatcher and Secretary in the office of the Sheriff of Payne County.
	Superintendent of Education, Payne County.
Wagoner, W. L.	Oklahoma Natural Gas Company, Inc.
	Water and Sewage Disposal Department, City of Stillwater.

*Note: All interviews were conducted from July, 1974 through November, 1974, and unless otherwise noted, all interviews occurred within the study area.

VITA

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