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THE FARMCOLONY AS A METHOD OF AGRICULTURAL PRESERVATION IN URBAN AREAS

A Thesis

Presented for the

Master of Science in Planning

Degree

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Gary L. Farlow

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DEDICATION

This thesis is dedicated to my wife, Sandy,
for her help, encouragement, patience,
and loving understanding
during my long pursuit of this degree.

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ABSTRACT

The purpose of this study was to refine a method of agricultural land preservation known as the farmcolony. The farmcolony is a method of land development that combines residential and agricultural land uses in a planned environment. The basic concept of this type of project is to keep as much of the property's farmland as possible in permanent agricultural use and to develop the remaining portions of the site in residential and related uses. A further intent of the study was to show how the farmcolony method can be incorporated into other existing farmland preservation policies and programs and to propose new policies and programs that would facilitate the use of this technique.

Three general areas of study were used in the refinement process. First, a study to determine the nature of farm/residential conflicts was carried out to assist in the development of compatibility criteria for the integration of the two land uses. This involved a review of legal literature on farm/residential conflicts, a review of general literature on agricultural preservation, and a survey of farmers and residents in urban areas. The second study involved an investigation of feasibility analysis literature to help develop a procedure for determining farmcolony feasibility. The third study consisted of a review of a project in which the author

was involved which attempted to develop a farmcolony in Sevier County, Tennessee.

To meet the second objective of integrating the farmcolony technique with existing preservation programs, a literature review of these techniques was carried out.

The result of the refinement process was the development of a model process for developing a farmcolony project. The model process serves as a step by step guide consisting of several components including: project location criteria, preliminary site analysis, land use map formulation, preliminary design program, feasibility study, final design, and project management.

The study also includes a discussion of how the farmcolony can be integrated into existing farmland preservation policies and programs and proposals for new policies and programs.

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CHAPTER I

INTRODUCTION

In recent years, agricultural experts, planners, environmentalists, government officials and others have recognized the need to preserve prime agricultural land. Especially critical in the area of agricultural land preservation is the need to preserve prime and important farmland that is under pressure of conversion to urban uses.

There are four basic types of farmland that will be dealt with in this chapter: prime agricultural land; unique farmland; farmland of statewide importance; and farmland of local importance.

The Soil Conservation Service (SCS) of the United States Department of Agriculture (USDA) defines prime agricultural land in terms of soil characteristics and capabilities. SCS has seven criteria that the soil must meet before it is classified as "prime":

1. the soil must have an adequate and dependable moisture supply (this supply can come from natural sources or from irrigation);
2. the soil must be warm enough and have a long enough growing season to grow crops suited to the area;
3. the soil must not be too wet nor should it be subject to frequent flooding;
4. the soil must not be too acid or too alkaline;
5. the soil must exhibit good permeability to water and air;

6. the soil should not be too stony for machine cultivation;
7. the soil must not be highly erosive.[1]

Unique farmland is another type of land that should concern those who deal with the issue of agricultural preservation. Unique farmland is land that is not classified as prime but is especially well suited to certain specialty crops. Some examples of these specialty crops are olives, citrus crops, cranberries, and avocados.[2]

Farmlands of state-wide importance are those that are not classified as prime but are important to states for reasons such as locational characteristics or farmland that is important for economic reasons such as the maintenance of the agribusiness sector of the economy.[3]

Farmlands of local importance are those that need to be preserved for environmental, economic or aesthetic purposes.[4]

The same things that make prime agricultural land "prime" make that land prime for development. The land is generally flat to gently rolling, well drained, cleared, and easily worked for both cultivation and site development for residential subdivisions, shopping centers and industrial sites.

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[1] Raymond I. Dederiksen and R. Neil Sampson; "Important Farmlands: A National View"; Journal of Soil and Water Conservation; Sept.-Oct. 1976; p. 196.

[2] Ibid., p. 196.

[3] Ibid.

[4] Ibid.

The encroachment of urban land uses into agricultural areas is causing land values to rise, and is leading to conflicts between farmers and urban land users. The conflicts put increasing pressure on farmers to sell their land thus taking it out of use as farmland.

Farmland: A National Perspective

When looking at the issue of the need for agricultural preservation at the national level, there is still disagreement over the magnitude of the problem. According to Miner, "Land in urban use increased from 27.2 million acres in 1960 to 34.2 million acres in 1970 . . . Approximately half of this acreage came out of agricultural land."[5] Miner also states that while "between 1945 and 1964 an average of more than 2.5 million acres of farmland had been converted to other uses . . ., an average of one new acre of cropland was created for each two acres converted to another use."[6] He further states that the problem is becoming quite critical in the Northeast where "from 1960 to 1970, both farms and total agricultural production declined; this trend is accelerating."[7]

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[5]Dallas D. Miner, "Agricultural Lands Preservation: A Growing Trend in Open Space Planning"; Management and Control of Growth Vol. III; The Urban Institute; 1975; pp. 52-60 (p. 53).

[6]Ibid.

[7]Ibid.

Kolesar and Scholl on the other hand feel that "if all the farmland in the 11 northeastern states were to be developed for urban uses, there would be a loss of less than three percent of the nation's farmland and less than six percent of its farm production. The nation could bear such losses."[8]

From a national perspective the United States probably can bear such losses. We are bringing more land into production and we are increasing output thanks to improved agricultural techniques and fertilizers.[9] Peterson and Yampolsky point out however, that "the worldwide crop shortage of 1972-1974 which severely depleted domestic grain reserves, resulted in far higher final product prices for the American consumer and focused attention on the thin margin that protects large parts of the world from famine."[10]

There is also concern that increases in output of food production are beginning to level off and that higher prices for fuel and fertilizer derived from fossil fuels will require more emphasis on quality soils in the future. "Even

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[8]John Kolesar and Jaye Scholl, Saving Farmland; Center for Analysis of Public Issues, Inc., Princeton, NJ 1975, p. 2.

[9]Raymond D. Vlasin, "Food Production and Its Implications for Land Resource Conservation"; Journal of Soil and Water Conservation; Jan.-Feb. 1975; Vol. 30/No. 1; p. 2.

[10]George E. Peterson and Harvey Yampolski; Urban Development and the Protection of Metropolitan Farmland; The Urban Institute; Washington, D.C., 1975, p. 2.

at the lower prices that prevailed for fertilizer in the past, this diminished productivity makes continued massive substitution of fertilizer for land impracticable."[11]

According to the National Academy of Sciences, the almost 200 million acres of reserve agricultural capacity could "quickly be exhausted over the next several decades if both sustained population growth and a failure of other farm inputs should occur."[12] "One study found that land diverted in 1966 from production to reserve status was between 80 and 90 percent as productive as land retained in crop use."[13]

Another concern voiced by some people associated with the issue of farmland preservation at the national level deals with the issue of maintaining a diversified, dispersed agricultural system. This issue of the spatial distribution of agricultural production was raised by the Council on Environmental Quality "in its first annual report in 1970, citing the effect of monoculture and the disappearance of farmland around cities as major land use problems."[14] Monoculture refers to the concept of regional specialization in certain crops increasing the risk of endangering national food

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[11] Ibid., p. 4.

[12] Ibid., p. 7.

[13] Ibid.

[14] William D. Anderson, Gregory C. Gustafson and Robert F. Bosley; "Perspectives on Agricultural Land Policy"; Journal of Soil and Water Conservation; Vol. 30/No. 1; Jan.-Feb. 1975, p. 38.

supplies in the event of a natural disaster or other unforeseen problems. Maintaining a diversified regional agricultural system reduces the chances of such a disaster.

While the debate over the need for agricultural land preservation continues, at least eleven federal agencies have decided that the issue is important enough to warrant a national study. According to former Secretary of Agriculture, Bob Bergland, "The U.S. is losing one million acres of the world's best and flattest agricultural land each year to urban sprawl. In my lifetime, we've paved over the equivalent of all the cropland in Ohio. Before this century is out, we will pave over an area the size of Indiana. Continued destruction of cropland is wanton squandering of an irreplaceable resource that invites future tragedy not only nationally, but on a global scale."[15]

The result of this concern was the National Agricultural Lands Study begun June 14, 1979, by the Secretary of Agriculture and the Chairman of the Council on Environmental Quality. Eleven Federal agencies, a number of state and local governments, individual landowners, public interest groups, soil conservationists, economists, sociologists and land-use planners were involved in the project.

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[15]Shirley Foster Fields; Where Have the Farm Lands Gone?; United States Department of Agriculture, Washington, D.C., Sept. 1979, p. 4.

The following are some of the questions the study asked:[16]

1. What is being done throughout America to retain farm lands for agricultural use?
2. What state and local programs have been successful, and what programs have failed in slowing or preventing the conversion of agricultural lands to urban use?
3. What factors have contributed to the failure or success of the various state and local efforts to protect agricultural land?
4. What impact do Federal programs and policies have upon the conversion of agricultural land to nonagricultural use?
5. What are the economic social and aesthetic gains or losses that result when farm land is shifted to nonfarm use?
6. If beef production is to meet our needs what steps must be taken to retain our prime rangelands?
7. What must be done to protect our prime forest lands from encroachment?
8. Our wealth derives from the land--food, fiber, and wood, water, minerals and energy; space for houses, business, industry and recreation. If agricultural land losses continue at the present rate, how will this affect our future ability to meet the domestic and global demands that will fall upon the overburdened acres that remain?
9. Of paramount importance: How long will we be able to produce sufficient food to meet domestic and foreign needs?

The National Agricultural Lands Study was completed in January of 1981. The researchers found that:

> as a resource problem, the conversion of agricultural land does not constitute a present-day "crisis," and hence it lacks the equivalent of, say, a gasoline line for concentrating national attention. Nonetheless, it does pose some very serious long-

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[16] Ibid., p. 5.

> term risks for the United States. In a sense, the issue of protecting agricultural land today is analogous to the energy conservation issue 10 years ago. Looking ahead, we can see a resource problem developing but the immediate incentives for conserving the resource are weak. NALS recommends that the federal government make the protection of good agricultural land a national policy.[17]

Farmland: A State Perspective

While discussions of the need for agricultural land preservation at the national level were being carried on, many states had already recognized the need to preserve their important farmlands. Many states have seen their best farmland lost to urbanization.

The statistics on states experiencing substantial losses of prime, important, and unique farmlands are becoming more and more worrisome for government officials, farmers and the general public.

In the Northeast, 50 percent of the land that was urbanized from 1950-1960 was farmland. Eighty percent of that land was prime agricultural land.[18] He further states that "So much farmland is being lost in the Northeast, so rapidly, that the industry is in jeopardy of collapse."[19]

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[17]United States Department of Agriculture and the President's Council on Environmental Quality; National Agricultural Lands Study, Executive Summary of Final Report; U.S. Government Printing Office: 1981.

[18]Peterson and Yampolsky, op. cit., p. 8.

[19]Miner, op. cit., p. 56.

Due to development pressure in New York, an important apple growing state, the apple trees lost between 1939 and 1966 numbered 2,927,131.[20] There is concern that even though production increased during that same period, that "greater use of fertilizer and pesticides, aside from its possible harmful effects on the environment, is unlikely to produce similar improvements in tree yields in the future."[21]

New York's agribusiness sector is very important to its state's economy. "New York's agricultural industry represents about $3 billion annually in production and processing expenditures and consumer sales."[22] New York's agriculture also employs the equivalent of 200,000 full time jobs.[23]

New Jersey's agribusiness sector contributes nearly $1.5 billion per year to the state's economy.[24] Since 1950 New Jersey has seen 800,000 acres of farmland converted to urban

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[20]Peterson and Yampolsky, op. cit., p. 9.

[21]Ibid.

[22]Miner, op. cit., p. 55.

[23]Ibid.

[24]Ibid., p. 58.

uses. This once important market gardening state, now has only 22 percent of its area left in farmland.[25]

In Connecticut "one half of the farms in active production in 1959 were out of business in 1972."[26] In 20 years Connecticut has seen its available farmland shrink from 1.6 million acres to approximately 500,000 acres.[27]

Maryland, in response to an average annual loss of 62,000 acres of agricultural land between 1949 and 1969, has developed two programs designed to reduce the conversion of farmland to urban uses. The Maryland Farmland Use Value Assessment Program is designed to slow down premature conversion of farmland to other uses by giving farmers a tax break on their land. The other program, the Maryland Agricultural Land Preservation Foundation is set up to allow farmers to establish agricultural districts where subdivision and development of the land is prohibited.[28]

Pennsylvania, an important producer of eggs, barley, grapes, milk, mushrooms, and maple syrup, has seen 420,000 acres of rural farmland converted to urban related uses.[29]

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[25]Kolesar and Scholl, op. cit., p. 2.

[26]Miner, op. cit., p. 54. [27]Ibid.

[28]David G. Pitt and R. Claire Ackroyd; Land Uses: A Program for Preservation of Agricultural Land; Information sheet No. 12; Maryland Department of Natural Resources, Annapolis, Maryland, Jan. 1979.

[29]Peterson and Yampolsky, op. cit., p. 9.

In the West, California has been particularly hard hit in terms of the loss of important farmland. "Between 1950 and 1970 Orange County alone lost 41,000 acres (or almost 80 percent) of its Valencia orange groves."[30]

It is possible to transfer production from one geographic region to another. However, at the state and local level there is cause for concern. Farm products such as fruits, eggs, milk, and vegetables are best marketed on a local or regional level. There is also concern over the decline of the agricultural sector of the economy. The preservation of agricultural production is important to the maintenance of a diversified state and local economy.[31] "Several recent studies have shown that if present trends persist, eastern states and SMSAs will grow increasingly dependent upon out-of-state imports of food. There is nothing inherently in the nature of food production that singles out this activity as one requiring state independence, however; . . . to many state agricultural leaders such reliance on outside production is repugnant in principle."[32] It has also been argued that higher food prices will result from the loss of local food production, due to the increased cost of shipping food from distant producing regions.[33]

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[30] Ibid.

[31] Ibid., p. 10.

[32] Ibid.

[33] Ibid.

As mentioned earlier, the maintenance of a diversified national agricultural system by encouraging the dispersion of farm production will protect the national food supply from unforeseen events or natural disasters.

Farmland: A Local Perspective

Since the major cause of the loss of agricultural land is the conversion of farmland to urban uses, the local level, i.e., the city and county and SMSA level, is perhaps the most critical when examining the loss of agricultural land. Rather than recite the volumes of statistics on the loss of farmland at the local level, it may be more productive to examine some of the causes of local farmland conversion.

As mentioned before, the nature of prime farmland makes the land desirable for urban development. "It has been estimated that even moderately unfavorable site characteristics may increase total development costs by over 100 percent."[34] The flat to gently rolling nature of farmland combined with the fact that it is usually cleared and well drained can significantly reduce the cost to developers for site preparation.

As developers compete for this valuable farmland, the value of land rises. When the land is assessed at its potential for development, farmers find themselves being

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[34]Ibid., p. 11.

taxed at residential, commercial or industrial rates whether they intend to sell or not.[35] This practice has forced many farmers to sell their land prematurely, thus adding unnecessarily to the amount of good farmland lost every year. Many states have changed their tax laws and now allow use-value assessments but this practice has had little real effect in urban areas.[36] This and other government programs designed to preserve farmland will be discussed in a later chapter.

As subdivisions begin to spring up farther and farther out into the countryside, problems begin to develop that make farming less attractive. "Farmers discovered children trampling through fields, and they found children's dogs chasing prized livestock. New homeowners often felt that farms were communal property and did not hesitate to collect a bushel of sweet corn here or a couple of crates of oranges there."[37] Homeowners also began to complain about noise, dust, and odors from farm operations.[38] Eventually farmers found themselves

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[35]William Toner; Saving Farms and Farmlands: A Community Guide; Planning Advisory Service Report No. 333; American Society of Planning Officials; Chicago, July 1978, p. 1.

[36]David E. Hansen and S. I. Swartz; "Landowner Behavior at the Rural Urban Fringe in Response to Preferential Property Taxation"; Land Economics; Vol. 51 No. 4; Nov. 1975, p. 346.

[37]Toner, loc. cit. [38]Ibid.

being named as defendants in law suits claiming that "farming, once the dominant use was now a nuisance."[39]

A number of other problems have forced farmers to consider moving farther from urban areas or getting out of the business entirely. The list of problems includes:[40]

1. Air pollution from urban areas causing damage to sensitive crops such as orchids, oranges and soybeans,
2. the decline of the number of farms contributes to the closing of businesses dependent on an active agricultural sector which in turn makes it more difficult for farmers to secure equipment, supplies and service,
3. farmers are being thwarted in their attempts to expand by high land costs or adjacent development,
4. farmers are being forced to pay frontage foot costs of sewer lines they don't need or want, and
5. competition for labor with the local construction industry makes it difficult for farmers to harvest crops that demand hand labor.

Planners and government officials must also shoulder some of the blame for the attitude that agricultural land's "highest and best use" is residential, commercial or industrial. Many local zoning maps label prime agricultural land as "vacant" or "suitable for development."[41] How many reviews for zoning change include the agricultural potential of the land in their analysis?

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[39] Ibid.

[40] Peterson and Yampolsky, op. cit., p. 14.

[41] Toner, loc. cit.

The zoning of urban fringe land at lower densities also contributes to the accelerated loss of agricultural land. "A USDA study of ninety-six counties in twelve northeastern states found that of the approximately 120,000 acres of rural land which were shifted to urban uses during the 1950s, 80 percent went into residential use that was predominantly 'open' (averaging above 0.5 acres per dwelling unit). On this evidence, doubling the net density of new housing development would reduce the loss of farmland to urban uses by more than 40 percent.[42]

There are a number of reasons for preserving farmland that go beyond merely preserving good quality soil. One reason for preserving agricultural land is the maintenance of the local farm and agribusiness sector as a basis for rural development. By preserving farm land a diversified employment base can be maintained with occupations that depend not only on urban employment but also those that depend on agriculture for their livelihood (e.g., seed and feed suppliers, fertilizer manufacturers, farm implement sales, chemical sales, farm machinery service workers, etc.).[43]

Preserving agricultural land enhances the natural environment by improving air quality, acting as ground water recharge areas and serving as sites for recycling of sewage wastes.

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[42]Peterson and Yampolsky, op. cit., p. 12.

[43]Vlasin, op. cit., pp. 2, 3.

areas and serving as sites for recycling of sewage wastes.

When used in conjunction with an urban growth management plan, agricultural preservation plans can help to encourage the infilling of vacant urban land thus allowing more efficient use of city services.

One need only look at the pastoral beauty of a dairy farm to know the aesthetic value of preserving farmland. Farms also serve as a living demonstration to city dwellers of another way of life worth saving.

Russel E. Train, former director of the Environmental Protection Agency summed up the feelings of many state and local officials concerned about the loss of important agricultural lands:

> Over one million acres--many of them prime crop areas--are being diverted irrevocably to nonfarm uses each year. It would be extremely shortsighted to continue this practice in a time of rising pressure on our agricultural community--private corporate--to resist the trend toward urbanization of productive farm land and to support the formulation of responsible land use controls by their states and localities. We must reexamine that inverted set of values that says a plot of rich farmland is automatically going to be worth 10 times more in the hands of a speculator or developer that it is in the hands of a genuine farmer. More and more, that attitude is becoming less and less true.[44]

"Back to Nature" and Land Use

In the post World War II rural to urban migration, people were fleeing the problems of rural areas in search of the

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[44]Russel E. Train, "EPA and Agriculture: Establishing a Partnership," Journal of Soil and Water Conservation, Vol. 30/ No. 1, Jan.-Feb. 1975, p. 35.

promised "good life" that they perceived in city living. More jobs, better pay, quality housing and better schools for their children were the incentives for the mass exodus from rural areas. These things coupled with the mechanization of agriculture prior to World War II, hastened migration to the cities of the United States.

With the environmental movement of the late 1960s and early 1970s and the disenchantment of city dwellers with urban problems, the flow of population from rural to urban areas began to slow and even reverse.[45] Many people began to question the quality of life in urban areas and began to seek out the quiet, slower pace of rural lifestyles. Many, feeling the Jeffersonian desires of our forebears for the agrarian life, purchased small farms in the country.

One of the results of this so called "back to nature movement" is the proliferation of second home subdivisions and "mini-farm" developments across the United States. By 1973, ten million second home lots had been subdivided in the United States. Of that ten million, three and a half million had homes built on them leaving thousands of acres of land subdivided but vacant. This fragmentation of land makes

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[45]Jack Hayes ed.; Living on a Few Acres: The Yearbook of Agriculture 1978, USDA, p. XXXiii.

future reassembly for other purposes difficult and expensive.[46]

It is somewhat ironic that the very things that attract people to build in rural areas are the first things to deteriorate when development occurs. Getting away from urban problems and finding the rural atmosphere are prime reasons for purchasing a second home.[47] Some residents feel that the crowding and increased traffic brought on by the influx of new people will adversely affect the rural atmosphere of a community.[48] A typical situation is a "gang plank" mentality of new residents. That is, "Now that we're here, let's stop all future development." This can be detrimental to the local population who could use more jobs and business.

Another more positive aspect of the "back to nature movement" has been the attempt on the part of many people toward a simpler more self-sufficient lifestyle. In Iron River, Michigan, a town of 5,000 people is trying to grow most of its own produce by developing a communal farm of 25 acres and

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[46]American Society of Planning Officials, Subdividing Rural America: Impacts of Recreational Lot and Second Home Development; Prepared for the Council on Environmental Quality; Washington, D.C. 1976; p. 6.

[47]Richard L. Ragatz Assoc. Inc.; Recreational Properties: An Analysis of the Markets for Privately Owned Recreational Lots and Leisure Homes; Washington, D.C.; Council on Environmental Quality, 1974, p. 16.

[48]ASPO; Subdividing Rural America, p. 20.

a large solar greenhouse. "Along with the garden produce that will help feed the town's elderly at community center lunchrooms, the town's plan includes construction of a cannery that will provide employment as well as a place for residents to preserve and freeze their own produce."[49]

Other people seek more traditional styles of country living and purchase individual small farms. The reasons these people buy small farms are varied. Their objectives might be to:

1. Use the acreage solely as a residence
2. Pursue hobbies or recreational activities
3. Reduce the family's food costs by gardening
4. Provide an "alternative" lifestyle for meeting food and energy needs
5. Provide an extra (part-time) source of income by selling produce from the acreage, or engaging in some other sideline.[50]

The types of people who purchase these small farms are also varied. Some are merely "rural residents" whose "primary interest is the pastoral setting for their home."[51] "Hobby" farmers on the other hand, work the land primarily for recreational or hobby interest and gain their income from

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[49]Patricia Wells, "Some Towns are Finding Ways of Recycling Themselves"; New York Times; July 25, 1978, p. B1.

[50]A. Gene Nelson and Tom Gentle; "Living in the Country--A Diversity of People"; Living on a Few Acres: The Yearbook of Agriculture 1978; USDA; p. 2.

[51]Ibid., pp. 2, 3.

full time jobs off the farm. Other small farm owners are "gardeners" trying to cut costs on the family food budget. "Alternative" farmers are those who chose to grow "natural" food without the use of chemical pesticides and fertilizers. Finally, there are the "part-time" farmers who are trying to earn a significant part of their income from the sale of their own farm products.[52]

Many of these small scale farmers are successful in terms of creating for themselves a country lifestyle where "peace and quiet and having a good place to raise young children are the measures of success."[53] Some are even successful in monetary terms. Some, unfortunately, are not quite so successful. "A primary difficulty stems from romantic and uninformed notions of rural life. Many people know nothing about or ignore animal and plant disease, insect pests, and other production and marketing problems they may encounter."[54]

In one instance "fifteen acres of prime farmland stand idle because the owner, an attorney, finds part-time farming takes more of his time than he is willing to give."[55] In another instance, "a California couple discover walnuts and peaches won't survive Oregon's cold winters, but not before

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

[53]Ibid., p. 7.

[54]Ibid., p. 8.

[55]Ibid.

they had invested their life savings in 40 acres of unsuitable land."[56]

Farmcolony

During the "back to nature movement," one type of development emerged that attempts to deal with some of the risks encountered by people seeking country life while at the same time attempting to prevent the loss of agricultural land. This type of development gives people the option of participation in farming activities or just living in a farm environment. It also gives farmers the opportunity of selling part of their unproductive land for residential development and farming the remaining productive land, thus giving them enough money for an adequate income or retirement. It also has the advantage of preserving farmland without large amounts of public funds.

Definition

A "farmcolony" is a type of residential development designed for the purpose of preserving agricultural land in urban areas and for providing an alternative residential living environment. The basic concept of the farmcolony is to keep as much of the development's agricultural land as possible in agricultural uses and to develop the remaining

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[56]Ibid.

portions of the site in residential and related uses. The preferable type of housing for the residential portion of the site is cluster or higher density housing such as apartments or condominiums. However, some single family detached housing may be desirable to provide a range of choices to the residents. Related uses such as recreational, commercial, and other types of uses such as workshops and food processing operations would serve the needs of the residents of the development. The management of the farmcolony may be controlled by a homeowners association through a board of directors. A farm operator working in cooperation with the board of directors would be responsible for the day to day operation of the working farm.

One of the most successful developments integrating residential and agricultural land uses and the one from which this thesis derives its title is the Farmcolony. The original Farmcolony was developed in Green County, Virginia, with forty-eight homesites. One hundred fifty of the two hundred eighty-five acre site was left in farm use. The remaining acreage was left for homesites and forest land. Most of the homes were built on the sloping land on relatively large lots (1.4 to 3.5 acres). The developers were required to obtain zoning variances in order to develop the smaller lots as the

zoning for the area required lots to be a minimum of two acres in size.[57]

Gilbert P. Edwards, Chairman of the Board of the Farm Development Corporation, a Florida firm, was the creator of the Farmcolony concept. The criteria he used to determine the suitability of a farm for the Farmcolony included such things as; its having a dead end approach road, good location with respect to nearby cities, adequate size, scenic vistas, low purchase and development costs, and adequate non-farmland for residential development. The developers were more concerned with a low labor intensive type of farm operation than with growing crops for local consumption. In effect, they were looking for a "break even" type of farm operation.[58]

The Farmcolony developed in Virginia has several weaknesses with respect to the utility of this example in urban areas. First, this farmcolony was located in a rural area (5 miles from Standardsville and 22 miles from Charlottesville). Second, the farm operation (pasture for cattle) was more of an amenity as a scenic vista than a farm operation serving the residents of the area. Third, densities in the

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[57]Joseph H. Nash, Jr., "Farmcolony: A Development Alternative to Loss of Agricultural Land," Urban Land, Feb. 1976, p. 14.

[58]Ibid., p. 13.

Farmcolony were very low, land costs in a more urban setting would require higher densities.

While the Virginia Farmcolony was considered a marketing success and while the criteria for site selection are of value from a transferability standpoint, refinement of the concept is needed if it is to be successful in a more urban setting.

Purpose

The intent of this thesis is to refine the farmcolony technique of development so that it can be used as an alternative measure in the preservation of agricultural land in urban areas where rural/urban conflicts are most evident and where farmland is under the greatest pressure of conversion to other uses. A further intent is to show how the farmcolony technique can be incorporated into existing farmland preservation policies and programs and to propose new policies and programs that would facilitate the use of this technique.

The end result of the refinement process will be the development of a model process for developing a farmcolony. The development of the model will require a number of studies.

One study will involve the development of a better understanding of farm/residential conflicts so that farm/

residential compatibility criteria can be established. This will be accomplished in three ways: (1) a review of legal literature on farm/residential conflicts; (2) a review of general literature on agricultural preservation; (3) a survey of farmers and residents in urban areas.

A second study will involve an investigation of feasibility analysis literature. This will enable the author to develop a procedure for determining the feasibility of a project as part of the model process.

The final study will consist of a review of the Yarberry Farm project. This was a project the author was involved in which attempted to establish a farmcolony on a farm in a rural area of Sevier County, Tennessee. Many of the studies carried out as part of this project will be used in the development model.

To meet the second objective of the thesis to show how the farmcolony technique can be integrated into existing preservation techniques, a discussion of these techniques will be included in the literature review section. A discussion of how the farmcolony technique can be integrated with these other techniques as well as proposals for new policies and programs will be included in Chapter VI.

Summary of the Thesis

Chapter I of the thesis consists of background information documenting some of the issues associated with

farmland loss at the national, state, and local levels. It also includs a discussion of the "back to nature movement." The purpose of this discussion is to provide background on the effect of the movement on rural areas and to demonstrate the desirability of providing a form of land tenure that satisfies the desire for a more rural lifestyle while at the same time preserving important farmland. Chapter I ends with a description of the farmcolony and a discussion of the purpose of the thesis.

Chapter II of the thesis includes literature reviews on various topics associated with agricultural preservation, past attempts to develop projects similar to the farmcolony concept, and feasibility analysis. The purpose of this chapter is to provide information that will serve as the basis for the development of the model development process. This chapter also enables the author to develop a survey questionnaire designed to gain a better understanding of farm residential conflicts so that compatibility criteria for the farmcolony can be developed.

Chapter III consists of a description of the methodology used to design the questionnaire mentioned above, and to carry out the survey.

Chapter IV involves a discussion of the Yarberry Farm Project. The Yarberry Farm Project was a study in which the

author was involved along with a number of other individuals including planners, architects, landscape architects, agricultural experts, real estate experts, financial experts, and attorneyss. The project involved the development of a concept plan for developing a project integrating residential and agricultural land uses on a single property.

Chapter V discusses the findings from interviews with agricultural experts, farmers, and residents. This chapter and Chapters II and IV serve as the basis for the development of a Farmcolony model.

Chapter VI includes a description of the Farmcolony model and discusses methods of integrating the concept into an overall agricultural preservation program.

The final chapter (Chapter VII) deals with conclusions and recommendations for further research.

CHAPTER II

LITERATURE REVIEW

In order to better understand the problem of agricultural preservation and the attempts to deal with the problem, three sources of literature were studied. The first area of study covered literature dealing with various techniques of agricultural preservation. The second type of literature reviewed dealt with legal cases involving conflicts between residential land users and farm operators. Past attempts at preserving farm land using the Farmcolony concept and other similar concepts is the third area of literature review.

An important aspect of the development of a Farmcolony involves the carrying out of a feasibility study. The fourth section of this chapter will cover some basic literature on feasibility analysis.

The final section of the chapter will include a summary of the literature reviewed and a discussion of the need for the study.

Techniques of Agricultural Preservation

Maryland was the first state to take steps toward an agricultural preservation policy when it enacted legislation in 1956 to give tax relief to farmers. By 1979 forty-six states had enacted similar legislation. Most of the programs

provided some relief to farmers; "however, there has been little change in the spread of urban and suburban uses to farmland."[1]

Easley identifies twelve types of agricultural preservation policy: direct purchase of development rights, transfer of development rights, purchase and resale with restrictions, purchase and lease with restrictions, preemption, exclusive farm zoning, exclusive agricultural districts, permit system, differential tax assessment, differential valuation for federal and state inheritance taxes, capital gains tax, farm-colony.[2]

Direct Purchase of Development Rights involves the payment to the farmer of the difference between the market value of the property and the use value of the land. Once the owner sells the development rights to the property he gives up the right to develop the land for anything other than the designated use.[3]

The transfer of development rights is very similar to purchase of development rights with respect to the idea of

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[1]Gail Easley, "An Assessment of Needs and Strategies for the Preservation of Agricultural Lands" (Master's thesis, University of Tennessee, 1979), p. 45.

[2]Ibid., pp. 47-49.

[3]Leslie Small and Donn A. Derr, "Controlling Development Rights: The Alternatives," Journal of Soil and Water Conservation; Sept.-Oct. 1976, p. 190.

transferring a "package of property rights." The primary difference between purchase of development rights and the transfer of development rights is the sector in which the transfer takes place. Purchase of development rights generally occurs in the governmental sector (i.e., a government agency usually purchases the development rights). Transfer of development rights on the other hand usually takes place in the private market sector with government involvement only in the allocation of development rights to property owners. Once the development rights have been distributed, the market system determines where the transfers will take place.[4]

The purchase and resale with restrictions method involves the purchase of the land by a government agency or other entity and then resale with deed restrictions attached requiring that the land be used only for agriculture.[5]

The purchase and lease method is the same as the purchase and resale except that the land is leased to farmers rather than resold.[6]

Preemption is another method of direct purchase in which the owner is required to notify the government of his intent

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[4]Jerome G. Rose, ed., Transfer of Development Rights; Center for Policy Research, The State University of New Jersey, 1975, p. 12. See also John Dawson and others, Farmland Preservation Methods, Report of the Committee on Farmland Preservation to the Maine Food and Farmland Study Commission (unpaged, no date).

[5]Easley, p. 47. [6]Ibid.

to sell his land. The government has the "right of first refusal" and can then buy and resell or lease the land.[7]

Another method of preservation involves the use of exclusive agricultural zoning districts where uses that are incompatible with farming are excluded. Some variations of this method include large lot zoning, density zoning, performance zoning, the quarter/quarter system, and sliding scale zoning.[8]

Some states allow the creation of exclusive agricultural districts where the powers of local government to regulate farming practices and the power of utilities to impose assessments and the power of local and state governments to locate urban infrastructure are limited. California, Maryland, Michigan, New Jersey and New York have some type of law allowing the formation of agricultural districts in order to receive a use value assessment.[9]

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[7]Ibid., p. 54; Robert E. Coughlin and others, Saving the Garden: The Preservation of Farmland and Other Environmentally Valuable Land (Philadelphia: Regional Science Research Institute, 1977), p. 120.

[8]Easley, pp. 54-58; William Toner, Saving Farms and Farmlands: A Community Guide, Planning Advisory Service Report No. 333 (Chicago: American Society of Planning Officials, 1978), pp. 12-15.

[9]William Anderson, Gregory Gustafsen and Robert F. Boxley, "Perspectives on Agricultural Land Policy," Journal of Soil and Water Conservation, Jan.-Feb. 1975, p. 39.

The permit system is another type of agricultural land preservation program that can be implemented at the state, regional, and local level. This system works by setting up districts within which certain uses must have a permit in order to develop. This allows the governing body to examine the appropriateness and compatibility of the permitted use with the agricultural uses in the district.[10]

Differential tax assessment allows local and state governments to assess farmland at its use value rather than its market value thus easing premature conversion to other uses. There are forty-six states in the U.S. that allow differential tax assessment; however, "it is generally accepted that these tax programs are not effective as methods of land use control."[11]

One often cited reason for the loss of agricultural land is that farmers' heirs are unable to pay inheritance taxes and so must sell the land to pay the taxes. One program designed to alleviate this problem uses differential valuation of farmland for inheritance tax purposes. The Federal government passed the Tax Reform Act of 1976 allowing differential valuation of farmland.

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[10] Easley, p. 58; Richard Collins, "Agricultural Land Preservation in a Land Use Planning Perspective," Journal of Soil and Water Conservation, Sept.-Oct. 1976, p. 189.

[11] Easley, p. 65; John C. Keene and others, Untaxing Open Space (Washington, D.C.: Regional Science Research Institute for the Council on Environmental Quality, 1976), p. 104.

Another tax policy regarding farmland is the use of the capital gains tax to discourage land speculation. Vermont presently assesses a very high capital gains tax on short term land holders.[12]

In a study on use valuation of farmland in Tennessee, Goodrow concluded that this type of preservation program is not an effective method of farmland preservation. He discovered that since "the difference in taxes prior to use-valuation and after was slight . . . farmers will not receive enough downward tax adjustment to entice them to accept very stringent restrictions on the length of time they must hold their land in open use."[13]

In developing a strategy of agricultural land preservation, no one of the techniques discussed is totally effective. Each of the techniques has its advantages and disadvantages. Some of the techniques are inexpensive to implement but rely on voluntary participation which is not always forthcoming in the areas that need preservation the most. Other techniques can be quite effective in solving the problem where farmland is under the greatest pressure of

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[12]Easley, p. 68; Coughlin, pp. 132, 247.

[13]Fred D. Goodrow, "Use Valuation of Farmland: A Simulation Analysis of Its Economic Effects as a Growth Control Tool in the Urban-Rural Fringe of Tennessee (Master's Thesis, The University of Tennessee, 1976), p. iv.

conversion but are often prohibitively expensive. The list of techniques described in this thesis is by no means an exhaustive one. Other techniques can be used and new techniques need to be investigated. Some of these techniques will be discussed further in a later chapter when the integration of the farmcolony concept with other agricultural preservation policies and programs is discussed.

Residential--Farm Conflicts, Legal Issues

When reviewing the literature on agricultural land preservation it was discovered that one of the contributing factors in the premature conversion of farmland to other uses is the occurrence of conflicts between farmers and their new neighbors from the city. Many authors point out that farmers are often faced with problems such as theft and vandalism of farm equipment and crops, pets harassing livestock, and complaints from nonfarm residents concerning dust, noise and odors from farm operations.[14] Some of these complaints have

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[14]Toner, "Saving Farms and Farmland,"; Peter J. Ognibene, "Vanishing Farmlands: Selling Out the Soil," Saturday Review, May 1980; Shirley Foster Fields, Where Have All the Farmlands Gone; Peterson and Yampolsky, Urban Development and the Protection of Metropolitan Farmland; Howard E. Conklin and Richard Dymsza, Maintaining Viable Agriculture in Areas of Urban Expansion, Office of Planning Services, State of New York, 1972; Edward Higbee, Farms and Farmers in an Urban Age, The Twentieth Century Fund, New York, 1963.

led to law suits claiming that certain farm operations constitute a nuisance.

One of the problems encountered in the literature review dealing with nuisance problems was that while many authors mention law suits between residents and farmers, virtually no one cites specific cases dealing with this problem. In an effort to document some of these cases an investigation of legal literature was conducted. The types of legal literature investigated included U.S. Supreme Court reporters, Federal District Court reporters, State Court reporters, Environmental Law reporters, the Land Use Law and Zoning Digest, numerous university law reviews, and law textbooks.

An investigation of court cases involving farm nuisance suits showed that by far the dominant problem between farmers and nonfarm residents involved feedlot operations. As a matter of fact, nuisance cases involving feedlots were the only cases found when looking at conflicts between farm and nonfarm land users.

Harl defines a feedlot as "a concentrated, confined animal feeding operation for the raising, fattening and holding of beef cattle, hogs, sheep and poultry and for the holding and feeding of dairy cattle."[15]

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[15]Neil E. Harl, Agricultural Law, Mathew Bender and Co., Inc., New York, 1980.

One of the earliest cases involving such operations occurred in 1908 when the Nebraska Supreme Court ruled in the case of Francisco v. Furry that odors from a feedlot can constitute a nuisance.[16]

The court also held that even though a feedlot was in place before urban development took place, the feedlot could still constitute a nuisance, and required that the use be stopped. "Were 'Grandfather rights' to be recognized under such circumstances, the orderly growth of all municipal corporations would be jeopardized."[17]

In another case, Botsch v. Leigh Land Company, Leigh Land Company was operating a rather large feedlot containing between 408 and 3,746 head of cattle. The defendants in the case (Leigh Land Co.) maintained four sewage lagoons on their property to catch and hold runoff and manure drainage from their feedlot. Plaintiffs in the case (Botsch) "complained of offensive odors, dust, and insects originating on the defendants premises and sought an injunction, arguing that

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[16]Dennis P. Burke, "Common Scents: An Analysis of the Law of Feed Lot Odor Control," Creighton Law Review, 10: June 1977, School of Law, Creighton University, Omaha, Nebraska, p. 542.

[17]Ibid., p. 551.

defendants' cattle feeding operation constituted a nuisance."[18]

The court ruled in favor of the plaintiff and granted an injunction. The court ruled that while "rural residents must expect to bear with farm and livestock conditions normally found in the area where they reside . . . a feedlot can be improperly located even in a rural area such that feeding cattle can give rise to an actionable nuisance."[19]

In doing this literature review it was found that while there are many cases involving nuisance from feedlots, no cases were found that involved nuisance cases dealing with some of the other problems mentioned by authors writing on the subject of urban/rural conflicts.[20] This does not mean that these problems do not exist, only that apparently very few of these cases get to court. One agricultural expert said that most of these cases are settled out of court or are never resolved.[21]

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[18]"Private Nuisance: An Application to Feedlots in a Rural Area," Nebraska Law Review, Vol. 55, No. 4 (1976), Botsch v. Leigh Land Co. 195 Neb. 509, 239 N.W. 2d 481, p. 684.

[19]Ibid., p. 693.

[20]Other cases involving feedlots include: Baldwin v. McLendon, 288 So. 2d 761, Alabama 1974; Paty v. Farmegg Products Inc., 196 N.W. 2d 577, Iowa 1972; Meat Producers Inc. v. McFarland, 476 S.W. 2d 406, Texas 1972.

[21]Interview: William Park, The University of Tennessee College of Agriculture, May 27, 1980.

The issue of residential/farm conflicts will be discussed further in Chapters III and IV.

Attempts at Integrating Agricultural and Residential Uses

Plum Run

Plum Run is a very large development located approximately twenty-five miles from Louisville, Kentucky. This development consists of 949 acres of rolling pasture land with 388 acres of that total being reserved for permanent food crops. Residential development plans for Plum Run include 1,949 condominium units and 49 three acre "Homestead tracts." The farm portion of the development is to be legally reserved and to be owned by a nonprofit corporation with monthly dues paid by lot owners.[22]

In the original plan for Plum Run, the development was planned around a golf course. After the Arab oil embargo of 1973 the developers decided to change the concept and develop the farm aspect instead. The development was marketed toward the "back-to-the-earth people with money."[23]

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[22]"The Roving Eye: Farming Subdivisions: A New Challenge to Landscape Designers," Landscape Architecture, Oct. 1974, p. 350.

[23]Ibid.

Hickory Hill

Hickory Hill is another Kentucky development. This 487 acre development is located in Lexington-Fayette County. The residential portion of the development consists of thirty ten acre lots with the remaining 187 acres left for cattle and tobacco farming. Once the project is fully developed the farm will be offered to the residents as a cooperative.[24]

Wye Island

Unfortunately this well planned project never materialized; primarily due to resistance from residents in this predominantly rural county on Maryland's Eastern Shore. The Rouse Company of Columbia, Maryland, with planning by the Philadelphia firm of Wallace, McHarg, Roberts and Todd proposed to develop this 2,600 acre island.[25]

The proposal involved the development of a village of 706 dwellings with an inn and conference center nearby. Rouse also planned to develop 184 estates five to twenty acres in size and to reserve 500 acres for permanent forest and 800 acres as permanent agricultural land.[26]

Rouse was unable to see the project bear fruit when he "got caught between political opposition from Eastern Shore landowners and rising interest rates, and gave up [his] right

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[24]Ibid.

[25]Ibid.

[26]Ibid.

to buy the island for $8,850,000.[27] In 1974 the island was being divided into fifteen acre parcels selling for $90,000 each.[28]

Garden Way Home Community

Another ill-fated farming subdivision was the Garden Way Home Community attempted by Garden Way Associates of Charlotte, Vermont. One of the major problems with this project was New England's poor soil and short growing season. "One aborted plan was based on a 200 acre farm with fifty milk cows, the minimum needed for one family's income."[29] In order for the farm to be divided into enough parcels to make the venture successful the farm would have to be converted to a feedlot and silo operation. The developer decided to end the project since no one would want to live next to a feedlot.[30]

Seabrook Agri-City

Like Wye Island, this was an ambitious project that never materialized. Seabrook Agri-City was planned to occupy a 6,000 acre tract of land located forty miles south of Philadelphia. The C. F. Seabrook Company proposed to integrate commercial, industrial, residential and agricultural land uses into a small planned city. The developers planned

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[27] Ibid.

[28] Ibid.

[29] Ibid., p. 352.

[30] Ibid.

to have five industrial parks comprise two-thirds of the 900 acres set aside for commercial activity with agricultural land serving as a buffer between the industrial parks and residential areas. Farmland was to make up 25 percent of the 6,000 acres.[31]

The developers ran into financial difficulties during the recession of the early seventies and never completed the project.[32]

Feasibility Analysis

An important component of the Farmcolony development process is the feasibility analysis. A good feasibility analysis tells the developer whether or not the project will have a reasonable chance of financial success. The bulk of information gathered for this section was found in an excellent book by James A. Graaskamp titled A Guide to Feasibility Analysis.

Graaskamp gives the following definition of feasibility: "A real estate project is 'feasible' when the real estate analyst determines that there is a reasonable likelihood of satisfying explicit objectives when a selected course of

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[31]Unpublished brochure from the C. F. Seabrook Company.

[32]Harry R. Dare III, Administrator/Planner, Upper Deerfield Township, Seabrook, New Jersey, Letter, Jan. 30, 1979.

action is tested for fit to a context of specific constraints and limited resources."[33]

One of the primary objectives of the feasibility analyst in evaluating a project is to "seek a correct statement of the problem in order to evaluate the fit of the proposed solution to that problem."[34] When attempting to "satisfy explicit objectives" the analyst must be looking at the "intangible requirements of social planning and real estate 'amenities' and . . . the more tangible decision points of financial ratios and dollar profits."[35] The "context of special restraints" refers to the limiting factors affecting the proposed project. These limiting factors may include such things as zoning restrictions, soils, topography, structural layout, adjacent development, transportation, and consumer preferences.[36] "Limited resources is a broadly defined concept which relates to all of the financial, talent, good will, and time tools which may be tapped by the decision-maker while providing acceptable alternative courses of action."[37]

Graaskamp identifies seven reports that serve as the basic components of the feasibility study.[38]

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[33]James A. Graaskamp, A Guide to Feasibility Analysis, Society of Real Estate Appraisers, Chicago, 1970, p. 4.

[34]Ibid.

[35]Ibid.

[36]Ibid.

[37]Ibid., p. 5.

[38]Ibid., p. 7.

1. Strategy study: selection of objectives, tactics, and decision criteria.
2. Market analysis: economic base studies or other related aggregate data review.
3. Merchandising studies: consumer surveys, competitive property analysis, marketability evaluation, etc.
4. Legal studies: opinion on legal constraints, model contracts or forms of organization, and political briefs.
5. Compatibility studies of project to community planning, conservation standards, or other public policies.
6. Engineering, land planning, and architectural studies.
7. Financial studies: economic modeling, capital budgets, present value and discounted cash-flow forecasts, rate of return analysis, financial packages.

The first component of the feasibility report, the strategy study, consists of two parts: (1) the identification of client objectives and priorities, (2) the enumeration of acceptable tactical alternatives.

The identification of client objectives involves the interrogation of the client to get at his perceived needs, goals, and objectives. The client's objectives may be "loosely structured hopes or expectations," or "tightly programmed goals."[39] The idea is to narrowly define the objectives and priorities of the client so that the analyst and the client can begin to explore some tactical alternatives.

The enumeration of tactical alternatives is the outcome of a brainstorming session or sessions to identify possible

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[39]Ibid., p. 22.

strategies for solving the problem or filling a need. "The analyst should not be overly critical of the first list of alternatives but rather should encourage development of a list of alternatives as long as possible."[40]

Once the strategy study is complete, the analyst or other experts can begin the studies needed to find out which if any of the alternatives identified will be the one most likely to satisfy the client's objectives.

The market analysis is one such study that must be carried out in order to determine which alternative is most likely to sell. According to Hanford "the market analysis is the guide to construction phasing, tenant selection, absorption or rent-up rate, probable tenant turnover, improvement costs details, and operating expense details and trends--all of which are directly related to economic feasibility."[41] Graaskamp says that:

> Market data have applications to the determination of:
> 1. Growth factors present in the general community or region.
> 2. Geographic direction and momentum of real estate activity in a given locale.
> 3. Favorable timing for development.
> 4. Appropriate scale of development.
> 5. General supply and demand for space units of a given type.

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[40] Ibid., p. 33.

[41] Lloyd D. Hanford, Sr., Feasibility Study Guidelines, Institute of Real Estate Management, Chicago, 1972, p. 15.

6. Sensitivity of submarket assumptions for community growth.
7. Sensitivity of submarket sought to economic base.[42]

The market analysis involves forecasting the future success of the proposed project. One tool used in forecasting involves the use of comparables. The use of comparables involves the identification of an existing development that resembles the proposed project's characteristics as closely as possible. It may be necessary to take a composite of several projects in order to find comparables for each feature of the proposed development. Hanford gives a cautionary note on the use of comparables. "A viable relationship between the subject and the comparables must exist regarding location, age, tenancy types, space uses, design and unit mix."[43]

Once this analysis is completed it becomes necessary to determine the merchandising strategy most likely to be successful. This strategy involves identifying the unique attributes of the development, identifying the revenue unit and prospective space user and doing a profile on the potential space user.[44]

The importance of identifying the unique attributes of the development lies in the necessity to find a submarket

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[42]Graaskamp, p. 34. [43]Hanford, p. 18.

[44]Graaskamp, pp. 44-59.

for a particular product. Graaskamp states that "the ultimate strategic objective of the firm within a free enterprise system is to create a monopoly to some degree either in fact or in the mind of the consumer."[45] This monopoly is created by narrowing down the target population for the merchandising strategy. This requires "the careful delineation of many small submarkets, learning much about a few users with particular economic, behavior, and preference patterns."[46] Once these things are identified, the developer can choose the area in which his particular product will have the best chance of success.

The success of that product will depend to a large degree on the identification of his revenue unit and the prospective customer. In this case the revenue unit is the housing unit, hence the customer is the home buyer or renter. "The degree of precision and identification depends on the number of units to be merchandised."[47] The larger the number of units the more precision is needed in the identification process. For example, if there will be a large number of units of a specialized nature, it will be necessary to identify a large population of potential customers with very specialized characteristics.

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[45] Ibid., p. 44.

[46] Ibid.

[47] Ibid., p. 49.

The identification of these specialized customers will require the development of a user profile. Graaskamp identifies a number of publications dealing with consumer profiles.[48] These sources are probably useful in understanding certain types of consumers such as potential apartment, condominium or single family dwelling purchasers. However, in the case of the very specialized Farmcolony product it would be necessary to rely on a special consumer survey. Graaskamp gives a cautionary note on such consumer surveys: "While it is important to structure such studies to some extent, too much importance and mystery have been generated for textbook statistics."[49] He goes on to explain that surveyors should pay especially close attention to side comments and remarks in response to open ended questions.

Once the feasibility analyst has identified the market for his product he can proceed with some assurance that he will be able to sell the product. The next study that must be completed is the study of the legal and political constraints on the project.

Even in as free a society as we have in the United States, there are still numerous legal constraints on our activities. According to Graaskamp, the ownership of land and its disposition "is more highly regulated than any other

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[48] Ibid., p. 53. [49] Ibid.

form of private enterprise including public utilities."[50] The regulation of real estate by both the public and the private sector plays a "pivotal" role in the feasibility of the project.[51] "What is feasible is therefore what is permissible within administration of the law or obtainable within the realm of politics."[52] Graaskamp identifies a number of public and private legal constraints on real estate that must be considered in any good feasibility study:

1. Public constraints on land use to be reviewed
   a. The official map for the area, if any;
   b. Master Plans for the community, the county, and the regional planning commission;
   c. The prevailing attitudes and biases of those responsible for administering the above master plan;
   d. The five-year capital budget for metropolitan improvements;
   e. Zoning classification and its options;
   f. Building codes, procedures, and files on existing improvements, if any, including outstanding liens for violations;
   g. Subdivision ordinance, if applicable with schedule of platting procedures and agencies having jurisdiction;
   h. Highway department access controls;
   i. State Industrial Commission codes as applicable;
   j. State and Federal easements for navigation, scenic easements, shoreline control and bulkhead lines, and restrictive covenents under urban renewal, surplus property, or foreclosure deeds.

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[50] Ibid., p. 60.

[51] Ibid.

[52] Ibid.

2. Private constraints on land use require review of:
   a. Private covenants and time features running with the land;
   b. Control provisions administered by home owners associations, merchants associations, or tenant committees;
   c. Outstanding licenses and easements or implied easements;
   d. Existing leases and life estates;
   e. Mortgage lien and board liens with restrictions on use or reuse;
   f. Requirements of certain real estate tax procedures and exemptions.[53]

After discussing the importance of all of the above mentioned factors, Graaskamp points out that a good feasibility analyst does not merely assess "what is" but also tries to determine "what might be."[54] In other words, the feasibility of a project depends as much on the ability of the developer to modify existing legal and political constraints to fit the project as it does on his ability to make the project fit the constraints.[55] This does not mean that the developer should try to circumvent the law, only that he should examine the possibility of ethically changing or working within these constraints. This is what Graaskamp defines as the "Compatibility Study."

The sixth component of Graaskamp's feasibility study is that which deals with engineering, land planning, and architectural studies. He discusses these studies in his

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[53]Ibid., pp. 60-61. [54]Ibid., p. 66.

[55]Ibid., pp. 65, 66.

chapter on the "Physical-Technical Context of Real Estate Feasibility." The discussion centers on the relationships between a property's "static physical attributes, dynamic site attributes and the product to be merchandised."[56] The property's static physical attributes are primarily geologic, topographic, and infrastructure in nature. "Dynamic property attributes are those which arise out of the interaction of people and place . . ."[57] "The product is the sum of attributes consciously selected for merchandising or for neutralizing through design of improvements."[58]

The final component of the feasibility study is the investigation of the financial aspects of the project. This part of the study requires a great deal of expertise. Graaskamp suggests that the analyst consult with experts in the fields of accounting, architecture, and engineering.[59] CPA firms can aid in capital budget scheduling and architects and engineers can provide more accurate estimates of project costs. These experts as well as the analyst himself should provide the decision maker with a detailed array of empirical information to enable him to determine whether or not the project will be financially successful.

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[56] Ibid., p. 67.

[57] Ibid., p. 69.

[58] Ibid., p. 67.

[59] Ibid., pp. 85-89.

Literature Summary and Need for Research

Almost every state in the United States has some type of program to deal with the problem of agricultural preservation. These programs range from tax incentives, to various zoning or district regulations, to programs dealing with development rights as well as many other techniques. With all of these government programs, the problem of farmland loss continues.

The private sector has also attempted to identify methods of saving farmland. Most of these methods deal with residential developments that have attempted to integrate agricultural and residential land uses into one site. Some such attempts have met with moderate success. Others have failed miserably.

In several articles on the subject of agricultural land preservation, authors have cited conflicts between agricultural and residential land users as a contributing factor in the loss of farmland. None of the authors studies cited specific legal cases involving such cases nor did they give any other evidence to support their contention.

In this literature investigation, several instances of court cases involving conflicts between residential land users and feedlot owners were found. However, no cases were found that involved suits over noise, dust, or pesticide and herbicide application.

Having investigated the literature mentioned above, it was felt that there is a need to further study the problem of farmland loss. Perhaps there are other ways to approach the problem that include methods of integrating government policy and private initiative.

The literature review also points out the need to further document the problem of residential/farm conflicts. If these conflicts can be better documented, it may be possible to find ways to mitigate the problems and develop a more successful agricultural preservation strategy.

CHAPTER III

METHODOLOGY

The methodology used for determining compatibility criteria for the development of the Farmcolony was done in four parts.

The first part of the study consisted of an examination of legal literature dealing with farm/residential nuisance cases to get an idea of the nature of the conflicts between residential and farmland users. This aspect of the study was discussed in Chapter II.

The second part of the study consisted of interviews with Dr. Franklin Bell and Dr. David Lietzke of The University of Tennessee College of Agriculture, Mr. Glen Harrison of the Tennessee Soil Conservation Service, and correspondence with Mr. Richard S. Weber, Soil Scientist with Loudoun County, Virginia, and Mr. Dwight L. Kaster, Soil Scientist with Prince William County, Virginia. In addition to providing information on the nature of farm/residential conflicts, some of the persons interviewed were asked to identify specific locations of residential developments adjacent to operating farms in Knoxville and Knox County.

This was accomplished by getting the names of farm operators thought to be located near suburban residential

areas. The names were then cross checked with property maps in the Knox County Tax Assessors Office to determine which operators were located in close proximity to residential subdivisions. A list of farm operators and their telephone numbers was then compiled.

The third part of the study involved the identification of residential land users living near operating farms. This was accomplished by taking the list of farm property mentioned above and compiling a list of residents living near the farm properties from property tax records. Telephone lists were compiled by listing those residents who had the same telephone directory address as the tax record address.

The final part of the study involved conducting telephone interviews with the farmers and residents identified above to determine what sort of conflicts if any exist between the two land users.

Questionnaire Design

The questionnaire design for this project was done in two parts. One questionnaire was designed for interviews with farm operators and one was designed for residents.

The questionnaire for farm operators was designed to determine the following: (1) location of farm with respect to residential developments, (2) type of farm operation, (3) nature of conflicts, if any, (4) steps taken by farm

operator to resolve conflict, (5) complaints received from nearby residents, if any, and (6) steps taken to resolve complaints.

The questionnaire for residents was similar in design to the questionnaire for farmers but with additional emphasis on the location decision of the residents. Residents were asked how much influence, if any, the presence of a farm located nearby had on their decision to purchase their home. The residents were also asked, "If you had it to do over again would you purchase/rent a home in the same proximity to a farm?" The purpose of these two questions was to determine resident attitudes toward living near farms.

Selection of Subjects

The compilation of names and telephone numbers for interviews resulted in a list of twenty-four (24) farmers and one hundred forty-two (142) residents. Each name on each list was assigned a number identifier then an interview list for each group was selected by using a random numbers table. There were fifteen farm operators and thirty-five residents selected for interviews.

Pilot Study

A pilot study was conducted to determine any problems in the questionnaire or selection of subjects. The study

consisted of telephone interviews with five farmers and ten residents selected from the respective lists of names. No problems were encountered in the pilot study.

Field Procedure

The field procedure for this study was a very simple one consisting of telephone interviews with each subject selected from the two lists. It was decided that the author would conduct the interviews personally and that ten attempts at contact would be made for each subject. Contact attempts were made at various times during day and early evening hours. All residential subjects were successfully contacted. One resident subject declined comment. Fourteen of the fifteen farmers identified were successfully contacted.

Each interview began with the interviewer introducing himself by name and identifying himself as a University of Tennessee graduate student doing research for a thesis on agricultural preservation. Each person contacted was then asked if they had a few minutes to answer some questions. The interviewer then proceeded with the questions.

Data Collection and Recording

Data collecting and recording for the study was done by recording the responses of each subject on separate questionnaire sheets.

Data Processing and Analysis

When all of the interviews were completed the author tabulated the responses to each question. Questions that centered on farmer/resident conflicts were cross tabulated with responses to follow up questions.

Since it was not the intent of the author to draw statistically valid inferences from the questionnaire responses but rather to gain a "feel" for the nature of conflicts between the two subject groups, a simple analysis of the data was performed. This analysis basically consisted of observations of the response tabulations and cross tabulations to determine whether any conflicts between the two groups were apparent, and to see if a relationship emerged between type of farm operation and number of conflicts. Observations were also made of the responses dealing with conflict resolution to determine if there was a common method of resolving conflicts between the two groups.

Methodological Assumptions

The development of the methodology for this thesis required making a number of assumptions regarding the method used, the questionnaire design, and the subjects interviewed.

In choosing the method of data gathering, several approaches were considered including door to door surveys, mailed questionnaires, and telephone interviews. Door to door surveys were ruled out due to cost and time factors. It was also determined that telephone interviews could accomplish almost as much as personal interviews. Mailed questionnaires were ruled out due to the usually low response obtained from this type of survey. Telephone interviews were used based on the assumptions that they would accomplish similar results as a direct personal interview done door to door and that the response rate would be better than that obtained from mailed questionnaires.

In order to determine the nature of conflicts between residents and farmers it was assumed that questions should be designed with response choices geared toward identifying problems identified by authors in the literature review and by experts interviewed by the author.

Another assumption made in designing the questionnaire was that residents and farmers located within one mile or less of each other were most likely to have experienced some kind of conflict.

In order to determine the desirability of living near a farm, two questions were asked. One question dealt with the influence, if any, their home being located near a farm had on their purchase decision. The other question dealt with

the likelihood of their making the same location decision if they had it to do again. One assumption made regarding these questions was that by cross tabulating positive responses to these questions with the type of farm operation located nearby, a determination could be made regarding the most desirable Farmcolony farm operation to use. It was also assumed that a negative response to the second question might indicate a farm practice to avoid in the Farmcolony.

The primary assumption made in the selection of subjects for the study was that both groups were typical of such groups in other areas of East Tennessee and in other areas with similar geography.

Weaknesses

Two weaknesses were identified in the methodology used in this research, one dealing with assumptions made regarding a question and one with assumptions made regarding subject selection.

The weakness identified with respect to a question involves the assumption that a positive response to the question dealing with residents location choice indicates a desirable farm operation for the Farmcolony. It is recognized that many factors are involved in the decision to purchase a home. It is also recognized that while some subjects indicated that the proximity of a farm was a strong

influence on their decision to purchase, they did not indicate how much influence the type of farm operation used had on their decision. However, it may not be unreasonable to assume that if the proximity of a farm was a strong influence on the purchase decision, the subject would probably not locate near a farm operation he found repugnant. Therefore there is some validity in the assumption, but more in-depth follow up questions would be desirable. This could be included in a market study to determine the most desirable farm operation to use in the Farmcolony.

The second weakness identified from the research is found in selection of subjects. It was assumed that farm operations in Knox County would be typical of other areas in East Tennessee and other areas with similar geography. While it may be true that farm operations in Knox County are typical of the region, Knox County does not have much diversity of farm operations. Farming in this area is typified by cattle operations. Most of the cattle are raised on pasture farms with some farmers raising tobacco and feed crops. Compensation for this weakness is found in the literature review and in the interviews and correspondence with agricultural experts. This compensation consists of discussions in the literature and interviews that enabled the author to gain some knowledge of the types of conflicts found in other parts of the country.

CHAPTER IV

YARBERRY FARM PROJECT

Introduction

This chapter will describe a small case study of a project in which the author was involved along with a number of other individuals including planners, architects, landscape architects, agricultural experts, real estate experts, financial experts and attorneys.

The project involved the development of a concept plan designed to carry out an actual farmcolony project on a farm in East Tennessee. It was hoped that the project would serve as a demonstration of a model farmcolony development and that it would lead to replication in other areas of the country experiencing the problem of farmland conversion.

History of the Project

Yarberry Farm is an 800 acre rural estate owned by Dr. and Mrs. Horace Yarberry. The farm is located near the juncture of State Routes 66 and 139 in the Kodak community of Sevier County, Tennessee.

The inspiration for the project came from Hubert Beb, an architect with Community Tectonics in Gatlinburg, Tennessee. While working for Dr. Yarberry on the remodeling of the

house at Yarberry Farm, Mr. Beb was asked what should be done with the farm. At the time, the farm was being operated for Dr. Yarberry by a University of Tennessee graduate in agriculture. The family farm was realizing only marginal profits that barely covered the property taxes. Dr. Yarberry was also concerned about the future of the farm. He was concerned that his heirs might not be able to keep the farm if inheritance taxes were too high, forcing them to sell out to speculators. Even though his heirs expressed no desire to return to the farm, they shared Dr. Yarberry's desire to maintain family ownership.[1]

The size of the farm, its location and topographic features were intensely appealing to Mr. Beb. He saw it as a challenge worth pursuing so he asked Dr. Yarberry for permission to study the problem. Dr. Yarberry gave his consent.[2]

In order to effectively answer the question of what to do with the farm, Mr. Beb decided to enlist the support and counsel of other competent urban and agricultural planners. A number of individuals were contacted representing the fields of urban and regional planning, farm management, real

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[1]Unpublished manuscript by Hubert Beb, Architect, Community Tectonics, Gatlinburg, Tennessee, Spring 1979.

[2]Ibid.

estate, architecture, landscape architecture, and finance. The input of these experts lead to the initiation of two major studies, one carried out by an Urban and Site Design class at The University of Tennessee Graduate School of Planning; and one carried out by regional planning staff of the Tennessee Valley Authority. "All of this work was aimed in the direction of preserving the best land on Horace Yarberry's farm for the continued production of food and fiber while setting aside the remaining land for forest and housing."[3]

To address the inheritance tax problems facing Dr. Yarberry's heirs, a third study was initiated. The purpose of this study was to find a mechanism that would enable the family to maintain ownership of the farm.

Graduate School of Planning Project

The Graduate School of Planning project was initiated by Melton Kersey, a landscape architect and associate of Herbert Beb. The project was part of an Urban and Site Design class taught by Mr. Kersey.

The purpose of the project was to identify specific land use areas for the farm based on the physical characteristics of the site. The students were given the task of identifying

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[3]Ibid.

areas suitable for the following activities: (1) row crops, (2) pasture, (3) orchards, (4) forest land, (5) housing. To accomplish this task the students prepared a series of base maps showing the various characteristics of the site. The following is a list of base maps prepared by the students:

1. Property map showing legal boundaries, utility and other easements, roads, paths, and structures
2. Topography
3. Soils
4. Geology
5. Vegetation
6. Scenic vistas

Using the base maps, the students were able to develop a land use map showing specific locations for each of the activities mentioned previously. This was accomplished by using a system of overlay maps showing various information.

Using the topographic and soil maps the students developed a map showing areas suitable for certain types of crops. This was done in two ways. First the soil map was used to identify which soils were most suitable for row crops, pasture, or orchards. Each soil type was color coded according to the type of crop it could support. Second, the topographic map was used to do a slope analysis. The slope analysis was used to indicate relatively flat areas (0-5 percent) for row crop production and when analyzed along with

solar access and relative elevation, to indicate orchard locations. Orchards should be located in areas getting as much year round sun as possible and above valley bottoms to avoid early frost.

Using the slope analysis map and geology maps showing subsurface conditions such as shallow bedrock, outcroppings, and sinkholes, the students developed a map showing areas unsuitable for buildings. Areas with steep slopes or other geologic conditions that make construction difficult were given a dark shade on the overlay map. Using this map in combination with a map indicating areas with scenic vistas, another overlay was created showing areas suitable for housing.

The vegetation overlay map showed forested areas of the farm in a dark shade. These areas would be preserved where possible as wildlife habitats. The vegetation overlay also indicated existing pasture land. The map indicating areas suited for row crops and orchards was then combined with this map to show potential pasture land.

When all of the overlay maps were placed on the property map a composite map emerged indicating possible locations for each of the various land uses. The students then developed a final land use map indicating logical locations for each use. This final map could then be used by the project developer to create a detailed site plan.

Tennessee Valley Authority Project

The Tennessee Valley Authority (TVA) began their involvement in the Yarberry Farm project in September 1978.[4] Hubert Beb and Don Gilson presented a preliminary proposal to TVA staff people outlining the concept of creating a farm-residential complex on the Yarberry Farm. After a preliminary discussion of the proposal with Beb and Gilson, the TVA staff concluded "that a farm-residential complex as described in the Yarberry proposal contained many of the elements of a potentially significant land use demonstration project."[5] Later, TVA Chairman S. David Freeman directed his staff to work with Beb's group through the concept planning stage of the project. At the end of this stage, TVA would determine its future involvement in the project.[6]

Over the next nine months Beb, Gilson, TVA staff, and other experts conducted studies leading to the creation of a concept plan. The concept plan included: (1) a problem statement describing primary and secondary client groups, current issues facing public agencies in growing urban areas, and key concerns relating to the possible development of the Yarberry Farm; (2) a discussion of past farm-residential

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[4]Tennessee Valley Authority, "Yarberry Farm Project Phase I Report," unpublished working paper, p. 1.

[5]Ibid., p. 1. [6]Ibid.

developments (these and others were discussed in the chapter on literature reviews); (3) a description of the overall development concept.

Problem Statement

TVA staff identified two primary client groups interested in the development of the farm, the Yarberry Family, and the prospective development group represented by Beb and Gilson. The Yarberry family saw the project as "a means of making the farm generate sufficient revenue so that future generations of the family can afford to retain some form of ownership."[7] The development group saw the project as a development model for a "high-quality residential development within a farm setting which will attract buyers who desire a rural lifestyle."[8]

In addition to the two primary client groups, TVA identified three secondary clients or "audiences": (1) local and regional public agencies, (2) area realtors, (3) owners of family farming operations in the TVA region.

TVA felt that public agencies might view the successful development of Yarberry Farm as a new method for satisfying the need for developable land "while maintaining sufficient prime agricultural land for the future."[9]

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[7] Ibid., p. 2. [8] Ibid. [9] Ibid., p. 3.

The second client group or audience, local realtors, was seen as being interested in the market and financial success of the project. "The degree to which the potential developers of Yarberry Farm are able to identify and hit their market will no doubt be of great instructional value to others contemplating development or financing of similar ventures."[10]

The third and perhaps most important client group identified by TVA was the 100,000 farm operators in the Tennessee Valley. Most of these farms are family owned and are experiencing declining incomes.

> In 1970, 80 percent of them had a gross sales income of $10,000 or less, certainly not enough to pay expenses and provide adequate disposable income for the average rural family. Consequently, the number of family farms being worked as a primary source of income continue to decline rapidly. Many of the farms are being sold to subdivision developers while others are simply lying fallow with the owners working only small plots and depending on other employment for their primary incomes. Ironically, the number of small farms of two acres or less is increasing rapidly, as family farms are being cut up into "baby farms" and sold to urbanites who desire a primary or secondary home in the country. It is envisioned that the Yarberry Farm project will demonstrate how some of the remaining family farms may generate increased incomes, thus enabling the owners to continue their agricultural operations rather than selling all of their land.[11]

After discussing the interests, problems and opportunities concerning the above client groups, TVA

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[10] Ibid.

[11] Ibid.

identified six key concerns relating to the possible development of Yarberry Farm:

1. Maintaining quality suburban/rural living attractive to middle and upper middle income groups locating along the State Route 66 approach to the Smoky Mountains
2. Preserving prime farmland for agricultural use and enhanced suburban/rural living
3. Residential development practices which diminish the visual, noise, physical, and other features incompatible with the human living environment yet integrate this environment into an active agricultural setting
4. Developing an economically viable, permanent farming system as an integral part of the development
5. Positive overall concept marketability
6. Identifying the legal and administrative arrangements needed for perpetually maintaining both economic viability and quality living under the proposed development.[12]

Overall Development Concept

The overall development concept was developed with the input of a number of project participants including the farm owners and their architects; private sector planning and development specialists; and public sector design, planning and agricultural development advisors. The concept that evolved out of the work of the project participants was basically a planned, mixed use development with nonagricultural activities on the unfarmable portions of the site.[13]

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[12] Ibid., p. 4.

[13] Ibid., p. 7.

The development concept consisted of five parts:

1. Management would be structured so that a body would be in charge of the entire project, with various activities having managers or being leased out for management. [It was felt that this would reduce the risks and stresses of the development process for Dr. and Mrs. Yarberry.]
2. The project would be initiated by preparation of a general development plan that would set forth the objectives of the project, create a generalized scheme for distribution of housing throughout the site, design a management organization, and identify a first project.
3. The agricultural enterprise would be planned to be economically successful and to provide an attractive environment for the residents. Included would be keeping of livestock, fowl, bees; production of truck crops; production of nursery stock, including greenhouses, keeping of domestic animals for residents, such as stables and kennels; vineyards; orchards; fishing; and other similar activities. A retail store on or near the site for sale of produce would be established.

   Yarberry Farm would be a place for craft making in the home, including preparation of food for sale, pottery, woodworking, and similar handicrafts.
4. Housing would be clustered to provide economic feasibility for streets and sewer and water service. Various types of housing would be provided. The siting of housing would be such that residents will see and feel a part of the agricultural enterprise and the countryside.
5. Development of the residential areas would be paid for by sale of sites for housing units. Buyers would acquire rights to use the homesites but would not receive fee simple title. A monthly fee would be paid to maintain community facilities. The residents would also pay a fee to be used in support of the farm enterprise.[14]

The final aspect of the development concept involved outlining a management system for the residential aspect of

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[14]Ibid., p. 8.

the project. This four step process is an expansion of item number five above:

1. The land is owned by Dr. Yarberry and leased to Countryside Properties. Countryside Properties provides management services and develops the land. The housing associations and other independent operations sublease from Countryside Properties.
2. Houses are sold to individuals. The owners buy a share in Countryside Properties and a share in the organization that subleases the property immediately around the housing units.
3. With each sale, Countryside gets paid for a share of its company, and a fee is collected from each owner monthly for management and for use of the land.
4. Countryside Properties then establishes services for the residents for which it charges a fair market price. As the development progresses further, Countryside expands to other properties and broadens the production, processing, and retailing divisions.[15]

Inheritance Tax Problem Solution

One of the key issues recognized by those working on the Yarberry Farm project was that of finding a mechanism for maintaining family ownership of the farm. They recognized that the key to the solution of the Yarberry Farm problem was solving the financial (tax) obligations Dr. Yarberry and his heirs face. It was further recognized that this problem was not unique to the Yarberry project but was one facing any farmer contemplating such a project.

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[15] Ibid., p. 10.

Two suggestions for the solution of the tax problems were made to Dr. Yarberry in a meeting held on May 8, 1979.[16]

The first suggestion involved a way to pay the heirs' inheritance taxes. It was suggested that Dr. Yarberry take a portion of his lease revenue and purchase a life insurance policy in an amount approximately equal to the inheritance taxes his sons would have to pay upon his death.

The second suggestion involved setting up a trust. Under this plan, the land would be taken out of the estate by means of gifts to a land trust which would hold title to the land. The trust would then lease the land to a limited partnership or corporation who would then develop the land according to a plan. The lease would be for a specified term of years at the end of which the land would revert to Dr. Yarberry's heirs.

The latter formula was deemed to be the most desirable. It was decided that the specifics of this formula would be developed in the second phase of the Yarberry Farm project.

Project Termination

Upon completion of the first phase of the Yarberry Farm project a decision point was reached. All of the study material was presented to Dr. and Mrs. Yarberry for their

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[16]Minutes of Yarberry Farm Project meeting held on May 8, 1979.

consideration. Dr. Yarberry decided not to proceed with the project at that time. He stated that his reasons for not proceeding were personal and had nothing to do with the quality of the work or the concept presented. Having discussed the project with his family, he decided that while the concept was valid and would have a good chance of success, he preferred to leave the farm as it was.

CHAPTER V

FINDINGS

Discussions in this chapter will center on the author's research findings. The findings will be discussed in four general areas: (1) findings from interviews with agricultural experts; (2) findings from interviews with homeowners; (3) findings from interviews with farmers; (4) findings from literature review on feasibility studies. The chapter will conclude with a summary of the findings.

Findings from Interviews with Agricultural Experts

The purpose of interviewing agricultural experts was two-fold. First, the author wanted to develop a clearer understanding of the nature of conflicts between farm operators and residential land users. Second, the local agricultural experts were asked to identify specific farms in Knox County, Tennessee, that are located near residential subdivisions for the purpose of conducting a survey. Local experts interviewed included Dr. Franklin Bell, Dr. David Lietzke, Dr. Thomas Klindt, and William Park of The University of Tennessee College of Agriculture, and Mr. Glen Harrison of the Knox County Unit of the Tennessee Soil Conservation Service. On the advice of Dr. Lietzke two soil scientists

in Northern Virginia were contacted to try to identify farm residential conflicts in other urbanizing areas.

In interviews with the local experts all said that they knew conflicts existed between residents and farmers but none knew of any cases that involved court action. The general consensus was that most cases were either resolved by the farmer talking to the offending party and reaching some sort of informal agreement, resolved by local law enforcement officials, or were problems that could not be resolved effectively. Problems that were resolved informally were said to be primarily minor ones usually involving children and residents pilfering produce, or pet problems. If the problems were more severe involving such things as theft and vandalism or pets injuring livestock, the farmers usually called local police or humane officers. Problems mentioned that were not easily or effectively resolved usually involved ongoing problems such as litter being thrown into fields or vandalism where no culprits were found. The only specific instance of a problem mentioned by one expert was that of a farmer having $900.00 of damage to some machinery as a result of litter caught in a harvesting machine.[1]

In corresponding with the two experts in Northern Virginia one seemed to feel that the loss of farmland there

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[1]Interview: William Park, The University of Tennessee College of Agriculture, May 27, 1980.

was more a matter of economics than resident/farm conflicts. Dwight Kaster mentioned that "Very little farming is being done due to high taxes and extremely high land values in areas suited for septic fields. The land adjacent to subdivisions is mostly idle as owners have invested in this land and are holding it waiting for their price."[2]

Another soil scientist in Loudon County, Virginia, stated that "Generally, it is known that there is noncompatibility between the one to ten acre lot homeowner and intensive agricultural use; however, confirmed, written or tabulated complaints are minimal." He did mention that "In checking around, the primary problems revolve around grain dryers during the harvesting season that run 24 hours a day and the application of paraquat and 2,4-D connected with corn planting. There are isolated cases of hog lots and more particularly the land application of agricultural lagoon wastes. But most of the animal waste problems appear to have been resolved by better management, such as adding bacteria cultures to reduce odors and promote decomposition."[3]

The responses from the various agricultural experts confirms the fact that little documentation exists regarding

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[2]Letter from Dwight L. Kaster, Soil Scientist, Prince William County, Virginia, June 16, 1980.

[3]Letter from Richard S. Weber, Soil Scientist, Loudon County, Virginia, July 2, 1980.

residential/farm conflicts. Nevertheless, it is relatively well known that problems do exist. The responses indicate that there are definitely some farm practices to avoid if conflicts are to be minimized and that conflicts can be reduced through the implementation of better farm management practices.

Findings from Interviews with Residents

The second part of the research for this thesis involved interviews with residential land users whose homes were located in relatively close proximity to operating farms. Thirty-five residents were contacted for the interviews. Of the thirty-five contacted, one resident refused to be interviewed and two said that they did not live within one mile of a farm. The remaining thirty-two residents contacted agreed to respond to the questionnaire (Table 1, Appendix).

The first three questions asked the residents dealt with determining if they lived near a farm and if so how close and the length of time they had lived in their homes. As mentioned above, thirty-two residents said they lived within one mile of an operating farm. When asked how long they had lived there, 50 percent said from one to five years, 16 percent said six to ten years, 3 percent said eleven to fifteen years, and 31 percent had lived there more than fifteen years. Responses to the question dealing with proximity to a farm indicated that the majority of the residents (63 percent)

lived within a quarter of a mile of a farm. The breakdown of the residents proximity to a farm is as follows: within fifty yards, 31 percent; within one hundred yards, 13 percent; within one quarter of a mile, 19 percent; within one half a mile, 22 percent; between one half and one mile, 16 percent.

When asked what type of activity was carried out on the farm the overwhelming majority said pasture for cattle. Some of the residents responded that in addition to raising cattle some of the farmers also planted some row crops such as tobacco and corn or that the farmer had a small garden plot.

Question number five on the questionnaire dealt with the effect if any the proximity of a farm had on the residents location decision. The respondents were given a choice of very much, some, very little or none. The responses were as follows: very much, 13 percent; some, 25 percent; very little, 28 percent; none, 34 percent.

When asked if they had ever experienced a problem with the farmer or his practices, only five residents or 16 percent responded in the affirmative. The remaining twenty-seven or 84 percent said no. Three of the five who responded yes said that the problem was with odor from manure spreading. The other two residents said that loose cattle wandering onto their property was their only problem.

The five residents who mentioned problems with the farmers practices were asked two follow up questions dealing with action taken as a result of the problem and whether the problem was resolved. Only two of the residents experiencing problems took action. One complained to the health department about odors. Her problem was not resolved. The other resident complained to the farmer about odors but said that there was little he could do to eliminate them. This resident said that the problem is not an ongoing problem and that it is less severe now.

Another question dealing with problems with farm practices was asked to determine if there were minor problems experienced that did not warrant a complaint. Interestingly, 47 percent of the residents responded in the affirmative. Roughly half mentioned odors with the other half mentioning loose livestock. The general attitude of these residents seemed to be that these problems really weren't severe enough to be considered problems and that the problems experienced were to be expected when one lives so near a farm.

The final question asked of the residents was "If you had it to do over again, would you purchase/rent a home in the same proximity to a farm?" Only two of the thirty-two respondents answered no. Of these two, only one mentioned having experienced a problem with the farm located nearby.

In addition to the analysis discussed above, the author cross tabulated the responses to the question dealing with the impact of farm proximity on location decision with questions dealing with type of farm operation and with the question dealing with problems. Since all but one of the residents said that the type of farm operation located near them was pasture for cattle, it is not surprising that all of the residents who said that a nearby farm was a positive influence on their purchase decision also stated that the farm operation involved pasture for cattle. Of these twelve residents only two experienced problems and neither complained. One experienced an odor problem, the other experienced a problem with a wayward cow.

One general finding from the interviews with residents living near a farm relates to the findings from interviews with agricultural experts. That is, while it is true that problems exist between residents and farmers it is rare that the problems result in court action. It appears that when problems do exist they are either resolved informally, the residents are content to live with the problem, or the problem is not resolved.

Findings from Interviews with Farmers

The third aspect of the research for the thesis involved conducting interviews with farmers whose farms were located

near residential subdivisions. The questionnaire for farmers was oriented toward determining the nature of problems with residents and the methods of conflict resolution. Of the fifteen farmers selected for interviews fourteen were successfully contacted. All fourteen of those contacted had farms located within one mile of a residential subdivision. Twelve of the fourteen were located within one quarter mile of a subdivision (Table 2, Appendix).

Virtually all of the farmers contacted were engaged in pasture farming for cattle. The dominant farm practices were beef and dairy cattle raising. Three of the fourteen farmers also raised row crops, primarily tobacco, corn or family garden plots.

An interesting difference between the interviews with residents and the interviews with the farmers was the finding that the majority of the farmers (71 percent) had problems with residential land users. The dominant problem experienced by farmers (50 percent) involved neighboring pets harassing livestock. One farmer even had a calf killed by a resident's dog. Two other problems were mentioned with equal frequency. They were theft and vandalism. Each was mentioned by three farmers. Other complaints included trespassing, littering, and children shooting guns across pastures. The problems of vandalism included such things as children damaging fields with motor bikes, damage to farm equipment, and cutting and knocking down fences. Several

farmers mentioned break-ins to their homes or outbuildings taking place.

When the ten farmers who had experienced problems with nearby residents were asked if the problem was severe enough to complain to authorities, six said yes. Of these six, two complained to neighboring pet owners, two called the police about thefts, and two called the parents of children vandalizing their farms.

A resolution to the problems experienced was found by three of the farmers who complained to residents or the authorities. The farmer whose calf was killed said that someone else killed the dog before he could. Another farmer who had a problem with residents pilfering vegetables said that he had to move his garden to a new location away from the subdivision.

When asked if they had received any complaints from nearby residents, only one farmer said yes. He received a complaint about one of his cows getting loose. After he repaired his fence, he had no further complaints.

In general it appears that farmers were more likely to experience problems with nearby residents than residents were with farmers. It also appears that the problems experienced by farmers were more severe than those problems experienced by residents. The primary problem seemed to be a lack of concern on the part of residents for the private property rights of farmers.

Findings from Literature Review on Feasibility Studies

The literature reviewed as part of the research on feasibility analysis involved detailed discussions of the various aspects of the feasibility study. While the discussions centered on a more generic description of the process rather than focusing on specific types of real estate developments, the information provided did give the author sufficient information to develop a model process for the very specialized Farmcolony development.

The process identified by Graaskamp involves seven steps that include the following:[4]

1. Strategy study: selection of objectives, tactics and decision, criteria
2. Market Analysis: economic base studies or other related aggregate data review
3. Merchandizing studies: consumer surveys, competitive property analysis, marketability evaluation, etc.
4. Legal Studies: opinion on legal constraints, model contracts or forms of organization, and political briefs
5. Compatibility studies of project to community planning, conservation standards, or other public policies.
6. Engineering, land planning, and architectural studies
7. Financial studies: economic modeling, capital budgets, present value, and discounted cash-flow forecasts, rate of return analysis, financial packages.

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[4] James A. Graaskamp, A Guide to Feasibility Analysis, Society of Real Estate Appraisers, Chicago, 1970, p. 7.

In the final chapter of the thesis, each of the steps in the feasibility study process will be discussed in detail as they relate to the specific Farmcolony development concept.

Chapter Summary

In carrying out the research for this thesis it was intended that the nature of farm/residential conflicts would become more apparent and would be more clearly documented than in the literature reviewed by the author. After completing the research it became apparent that the lack of documentation of the problem is understandable. The research confirms that while problems do exist between farm and residential land users, the problems are often more likely to be resolved informally or not at all than they are to be resolved in court.

Interviews with the three groups surveyed indicated that there are some farm practices to avoid when identifying potential farm activities for use in the Farmcolony. These practices are primarily related to cattle and hog operations and the application of pesticides and herbicides. It was indicated that some of the problems associated with these practices can be avoided with better management.

The literature review on feasibility analysis pointed out the need for a detailed process of determining project feasibility. The process involves the input of many experts

and requires a careful and objective review of all the facts before proceeding with project development. From the literature review, information was gathered that will enable the author to develop a model feasibiity process for the Farmcolony.

CHAPTER VI

DEVELOPMENT MODEL, INTEGRATION OF FARMCOLONY WITH EXISTING METHODS, AND NEW METHODS

The previous chapters have provided background information on agricultural preservation, literature reviews on various topics relating to the development of a farmcolony model, a case study of a farmcolony development attempt, and a survey of farmers and residents. In this chapter the information gathered is distilled into a model process for the development of a farmcolony in an urban setting.

The model process serves as a step by step guide that consists of several components including: project location criteria, preliminary site analysis, land use map formulation, preliminary design program, feasibility study process, final design, and project management.

The second major part of this chapter consists of discussions on how the farmcolony development can be integrated into existing techniques for preserving farmland as well as proposals for new methods using the farmcolony model.

Farmcolony Development Model

Project Location Criteria

Specific criteria for selecting a location for the Farmcolony project will vary depending on the magnitude of the project and the goals of the development entity carrying out the project. Some developers may prefer a large scale project in a suburban setting with a target market of middle or upper income families. Others may prefer a relatively small close in city location with a target market of elderly retirees. However, there are a number of general categories of criteria that will apply to almost all types of projects regardless of project size, location, or market.

The general criteria discussed below can be easily modified, added to, or deleted depending on the developers' intent and level of detail required. In any case the developer will want to select a number of potential locations and then rank them according to how well they meet the following criteria:

1. Access roads and transportation links
2. Size of property
3. Topography
4. Existing farmstead
5. Scenic vistas
6. Natural features
7. Proximity to schools

8. Purchase price
9. Services
10. Adequate nonfarm land
11. Quality of farmland
12. Zoning

When analyzing each site with respect to access roads and transportation links the developer should look for sites adjacent to arterial streets or highways. Transportation links should be analyzed with respect to access to shopping facilities, schools, medical facilities, police and fire stations, recreational facilities, and other public facilities. Some of the facilities mentioned above will have more importance than others depending on the intended tenant mix of the project.

The size of the property for the project will again depend on the goals of the development entity. When evaluating this criteria the developer will have an optimum size in mind. He or she should establish a range of acceptable sizes then rank each site according to how close it comes to the optimum.

Topography of the site is another important criterion. The topography should be varied if possible but the site should have enough flat to gently rolling land to allow cultivation of crops.

An existing well kept farmstead is another important attribute of the Farmcolony that can serve many functions. A well kept farmhouse could be used as a farm operator's residence (perhaps the current owner), as an office for the management entity, as a recreational facility, as a social gathering place for the residents, or as a combination of the above. Outbuildings can be used for maintenance equipment storage, community canning kitchens, craft making workshops, storage for resident's boats or recreational vehicles, kennels, or stables. An interesting farmstead might also suggest a design theme for the project.

As with any residential development, scenic vistas play an important role in the design scheme. Housing units should be carefully located to take advantage of views of distant mountains, water bodies, cityscapes or other outstanding scenes. Each potential site will be ranked according to the quality and variety of scenic vistas visible from the property.

The preservation of natural features is also an important aspect in the design of the project. Features such as water bodies, streams, wooded areas, rock structures, and other interesting land forms should be incorporated into the design to provide interest. Natural features such as wildlife habitats should also be carefully considered when analyzing the property. Even in urban settings, the preservation of

wildlife areas on the site can enhance the rural atmosphere of the development as well as provide a pleasant diversion for residents.

If the developer intends to build a project oriented to a family market, the proximity to schools will be an important factor in site selection. Sites closest to quality local schools will have the highest ranking in this category.

Purchase price of the property will be perhaps the most important criterion considered by the developer in his or her site selection. This factor will be a major consideration in the feasibility of the project, especially in locations in urbanized areas. However, while purchase price is a very important factor, it should not overshadow other attributes of the site. A property with high rankings in other categories may realize a higher return than a cheaper property with fewer positive characteristics.

The next selection criterion, services, is one of the factors that may offset higher purchase cost. If the infrastructure serving the site includes adequate water and sewer, good access roads, gas and electric utilities, phone service, cable television service and others, this will reduce the cost to the developer who would otherwise have to provide them himself or pay to have them extended to the site. Other public services such as police and fire protection will reduce residents costs in the form of lower insurance

premiums and the elimination of payments for subscription fire service and security contracts.

Another important aspect of a good Farmcolony site is the existence of adequate nonfarm land. This is important since a goal of the farmcolony concept is to concentrate development as much as possible on the unfarmable parts of the site thus preserving as much quality farmland as possible.

The existence of adequate quality farmland on the site goes hand in hand with the existence of adequate nonfarm land as an important consideration. A site should have sufficient quantities of good farmable land to allow the agricultural enterprise to produce much of the food consumed by the inhabitants of the development. A highly desirable site would be one in which the agricultural enterprise produces a surplus of crops for sale so that other costs associated with the project could be reduced.

The last consideration in site selection but certainly not the least important is the zoning of the property. Sites that are already zoned to allow the development of this type of project should be given a good rating. Sites that are zoned for Planned Unit Developments (PUDs) would be good candidates. Some land use control mechanisms that can be easily modified to allow this type of project as well as some suggested new methods will be discussed later in this chapter.

The criteria listed above should be listed on a decision matrix with the attributes of each location given a rating of good, fair, or poor. A point system should be established with a "good" rating receiving 2 points, a "fair" rating receiving 1 point, and a "poor" rating receiving no points. The points for each criteria will be totaled giving each location a total score. The scores for each location can then be compared to see which site is most desirable. Figure 1 illustrates the decision matrix.

Preliminary Site Analysis

Once the site is selected the developer proceeds to the next step in the process, the preliminary site analysis. This critical stage in the process is where the developer gathers as much information as possible regarding the physical characteristics of the site and the legal constraints affecting the property. To accomplish this task the developer will collect or have prepared a series of base maps showing the various characteristics of the property. It may be necessary to redraw the maps to a common scale for greater utility later on. The following is a list of maps that will be collected or prepared by the developer:

1. Property map
2. Topographic map
3. Soils map

LOCATION SELECTION MATRIX

Site Attributes	Good	Fair	Poor	
Access Roads				
Size of Property				
Existing Farmstead				
Scenic Vistas				
Natural Features				
Proximity to Schools				
Services				
Water				
Sewer				
Fire				
Garbage Collection				
Adequate Nonfarm Land				
Quality Farmland*			x	
Zoning				Total
Totals				

*A site with poor farmland should be eliminated from consideration.

Figure 1. Location selection matrix.

4. Geology map

5. Vegetation map

6. Scenic vistas map

The property map should show the legal boundaries of the site, site dimensions, utility lines and easements, other easements, right-of-way lines, and existing roads, paths, and structures including buildings, fences, dams, bridges, etc.

A topographic map should be prepared with contour intervals no greater than five feet. This map should also show any lakes, ponds, or other water courses.

A soil map should be acquired that shows specific soil types. Along with the soil map, the developer should compile a list of soil types with descriptions of the specific characteristics of each type. The developer should then consult with an agricultural soil specialist to compile a list of crops appropriate for growing in each type of soil.

The geology map will show subsurface conditions such as shallow bedrock, outcroppings, sinkholes, fault lines and the structural characteristics of the major soil types. This map and the soil map can then be taken to a construction engineer for identification of locations within the site most suitable for the construction of buildings, roads, and underground utilities.

The vegetation map can be prepared by the developer's landscape architect. This map should show the location of

existing vegetation including shrubs and trees, forested areas, pastures, and existing crops if the property is currently in use as an active farm.

The final map, scenic vistas, can be prepared by indicating on a topographic map, areas from which a person can view interesting distant landscapes. The map should be drawn with arrows pointing in the direction of the various points of interest such as mountains, water bodies, city-scapes, or other interesting scenes.

Each of the above maps should be prepared on transparent paper for easy reproduction.

Land Use Map Formulation

Once the above information is compiled, the developer can begin the next phase of the process, the land use map formulation. The product of this part of the study process will be a generalized land use map showing various zones of activities. There will be three basic zones on the map; crop zones, building zones, and wildlife and nature area preservation zones. This will be accomplished by developing a series of transparent overlay maps.

The crop location transparency will be developed by using three of the above maps; the topographic map, the soils map, and the vegetation map. The first step in the process involves using the topographic map to do a slope analysis.

This will require the designation on the map of various areas with a given slope range. The ranges that should be shown are: 0-5 percent, 6-10 percent, 11-15 percent, and 16 percent or greater. When the slope analysis is completed an agricultural consultant can take this map, the soils map, and the vegetation map, and show which areas of the site are best suited for specific crops, or farm activities. The result of this process will be a transparency with shaded areas for each farm activity.

The second transparency will be one showing potential building locations. The development of this map will require the use of the property map, the slope analysis map, the soils map, the geology map, and the scenic vista map. The slope analysis map, the geology map, and the soil map will be used to indicate areas unsuitable for buildings from a construction standpoint. These areas would be ones in which construction would be difficult due to steep slopes, poor building soils, or other geologic conditions that would prohibit construction such as outcroppings, sinkholes, or fault lines. Using the same maps, another map shade would be used to show areas with good building soils, slopes, and other conditions conducive to building construction. The property map would be used to produce another shaded area showing areas with legal constraints to building such as easements, and right of ways.

Using the above map in combination with the map showing scenic vistas, a final overlay will be drawn showing zones most suited for buildings.

The third transparency is the wildlife and nature preservation map. Using the topographic map, geology map and the vegetation map, the developer will identify wildlife habitats, important natural areas and interesting topographic or geologic features that would be desirable to preserve.

The final step in the land use map formulation process involves the creation of a composite map using the three overlay maps. By examining the patterns that emerge from overlaying the three maps on the property map, the developer and his planning, engineering, architectural and agricultural consultants will be able to develop a final land use plan indicating logical locations for each of the project's proposed uses.

Preliminary Design Program

When the generalized land use map is completed the developer can proceed with the development of the preliminary design program. The preliminary design program will consist of four parts, a land use plan, a circulation plan, a utility plan, and a schematic housing design. This part of the project will be carried out by the developer's planning, engineering, and architectural staff.

The land use plan will be based on the land use map described previously but with much more detail. This plan will include such things as: specific areas for housing based on the developer's density requirements; crop locations with specific crops in mind such as row crops, orchards, vineyards, pastures, and the like; other building sites such as management offices, barns, kennels, equipment storage buildings, canneries, workshops, and recreation sites; and wildlife protection and nature preserve areas.

The circulation plan will show the location and size of all streets, roads, and paths. This plan should take into consideration the separation of pedestrian and vehicular traffic as well as the separation of residential and farm equipment traffic. The circulation plan should be of sufficient detail to allow the project engineer to do a preliminary cost estimate.

Like the circulation plan, the utility plan should be drawn up in sufficient detail to allow the project engineer to estimate cost. The utility plan should include provisions for storm and sanitary sewers, water service, gas and electric service, telephone service, and cable television service if available.

The final aspect of the preliminary design program is the schematic housing design. This plan should show the location and placement of buildings, parking layouts, and

property lines. The program should also provide a narrative describing the size of units, number of rooms, proposed interior and exterior finishes, structural type, and amenity packages. Again, this design should be of sufficient detail to allow preliminary cost estimates to be compiled. Cost estimates should also be prepared for all other buildings and structures. This part of the plan should be done in conjunction with the merchandising study described later.

Feasibility Study

With the completion of the studies discussed above the developer is now ready to carry out the feasibility study to determine if the project has a reasonable chance of financial success. This does not mean that a strict chronological order of studies is necessary. In fact many of the following studies should be carried out in a preliminary way simultaneously with the site selection and programming studies. The feasibility study will consist of seven studies: (1) strategy study, (2) market study, (3) merchandising study, (4) legal study, (5) compatibility study, (6) engineering, land planning and architectural study, and (7) financial study.[1] All of these studies have been discussed earlier in the thesis, however, some aspects of the studies require additional

[1] James A. Graaskamp, A Guide to Feasibility Analysis, Society of Real Estate Appraisers, Chicago, 1970, p. 7.

the enumeration of acceptable tactical alternatives.[2] The three primary goals of the Farmcolony concept are: (1) to preserve prime farmland for agricultural use and enhanced urban/rural living, (2) to promote residential development practices which diminish the visual, noise, physical, and other features incompatible with the human living environment yet integrate this environment into an active agricultural setting, and (3) to develop an economically viable, permanent farming system as an integral part of the development.[3]

The enumeration of tactical alternatives within the Farmcolony concept may involve a number of aspects of the project. The developer may wish to examine different approaches to the ownership of the property including lease arrangements, sale lease backs, joint ownership by the farm owner and the developer, or others. Alternatives to the operation of the agricultural enterprise may take the form of the existing farm owner operating the farm and selling produce to residents at reduced cost, resident operation of the farm, or contracting with an outside operator. The developer may want to explore various ownership schemes for the residential units such as leasing, cooperative ownership, condominium ownership, or fee simple title. Another set of

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[2]Ibid., p. 22.

[3]Tennessee Valley Authority, "Yarberry Farm Project Phase I Report," unpublished working paper, p. 4.

the farm, or contracting with an outside operator. The developer may want to explore various ownership schemes for the residential units such as leasing, cooperative ownership, condominium ownership, or fee simple title. Another set of alternatives to consider is with respect to the type of housing to provide including single or multifamily, low rise or high rise, detached or zero lot line, etc.

Once the strategy study is completed, the developer's experts can begin the market analysis to determine which approach is most likely to sell in the local marketplace.

According to Hanford "the market analysis is the guide to construction phasing, tenant selection, absorption or rent-up rate, probable tenant turnover, improvement cost details, and operating expense details and trends."[4] Graaskamp identifies a number of factors that should be considered in the market analysis:

1. Growth factors present in the general community or region
2. Geographic direction and momentum of real estate activity
3. Favorable timing of development
4. Appropriate scale of development
5. General supply and demand for space units of a given type
6. Sensitivity of submarket assumptions for community growth
7. Sensitivity of submarket sought to economic base[5]

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[4]Lloyd D. Hanford, Sr., Feasibility Study Guidelines, Institute of Real Estate Management, Chicago, 1972, p. 15.

[5]Graaskamp, p. 34.

All of the above factors are relevant to the Farmcolony concept. Two of the factors, growth factors in the general community or region, and the geographic direction and momentum of real estate activity in a given locale, are especially relevant from a planning perspective. If the growth and direction of real estate activity in an area is moving into agricultural areas, planners may want to take a stronger role in encouraging farmcolony projects. From the developers perspective, these factors may give him an edge in the market by taking advantage of the agricultural assets of property in an area experiencing healthy sales. These factors are also directly related to the merchandising strategy which will be discussed later.

The market analysis also involves forecasting the future success of the proposed project. One tool used in forecasting involves the use of comparables. This entails the identification of an existing development that resembles the proposed project's characteristics as closely as possible. Since the farmcolony is a somewhat unique type of development it is unlikely that direct comparables will be available. It may be necessary to take a composite of several projects such as Planned Unit Developments and so called "Baby Farm" projects to find comparables for each feature of the proposed development.

The next study, the merchandising study, involves identifying the unique attributes of the development, identifying the revenue unit and prospective space user and doing a profile on the potential space user.[6] One of the unique attributes of the farmcolony as mentioned earlier, is that it can take advantage of the agricultural assets of a site. This enables the developer to provide a unique residential living environment by offering all of the advantages of urban and suburban developments while at the same time offering a rural lifestyle. This accomplishes what Graaskamp calls "the ultimate strategic objective . . . [which] is to create a monopoly to some degree whether in fact or in the mind of the consumer."[7]

In the identification of the revenue unit, in this case housing units of a specialized nature, it will be necessary to identify a large population of potential customers with very specialized characteristics. This study will serve as the basis for the schematic housing design mentioned earlier. It will provide information for the developer as to the proper size of units, number of rooms, proposed interior and exterior finishes, structural type, and amenity packages expected by the development's prospective customers. In the case of the farmcolony it will be necessary to carry out a

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[6]Ibid., pp. 44-59.

[7]Ibid., p. 44.

for common characteristics of both groups in his development of a user profile.

Once the feasibility analyst has identified the market for his product he can move on to the legal study. In addition to the detailed list of public and private legal constraints found in Chapter II that must be considered in the feasibility study, there are several other legal issues unique to the farmcolony. Many of the land uses in the farmcolony may not be found in the lists of allowable uses of a particular zoning classification. Many of the farmcolony's activities such as the production of crops, food processing operations, craft workshops, and possible slaughtering operations may not be allowed within existing zoning ordinances. It may be necessary to obtain a use on review for the project or perhaps even to develop an entirely new zoning classification. These issues will be discussed in more detail later in this chapter in the sections on integrating the farmcolony with existing methods and on proposed new methods.

The issues mentioned above lead us to the compatibility study. Graaskamp points out that a good feasibility analyst does not merely assess "what is" but also tries to determine "what might be."[8] The feasibility of the project depends as

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[8]Ibid., p. 66.

"what might be."[8] The feasibility of the project depends as much on the ability of the developer to modify existing legal and political constraints to fit the project as it does on his ability to make the project fit the constraints.[9] The compatibility study in this case involves identifying those characteristics of the farmcolony that are compatible with existing land use controls and then attempting to convince decision makers to allow those uses which seem on the surface to be incompatible.

This leads to the second aspect of the compatibility study, the development of performance standards for the agricultural operation within the project. The literature review and surveys discussed earlier in the thesis suggest several issues that should be addressed in the performance standards for the project including control of dust during cultivation, application of herbicides and pesticides, noise control, the keeping of livestock, and odor control. The following is a list of suggested performance standards for the project:

1. Projects with large areas of row crops should use "no-till" farming methods whenever possible.

2. In row crop operations where "no-till" methods are not possible, plowing should be done when the soil is moist

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[8]Ibid., p. 66.

[9]Ibid., pp. 65, 66.

or should be followed by periodic water sprinkling to minimize dust.

3. Projects with smaller areas of row crops should mulch between rows to minimize dust problems.

4. Application of pesticides and herbicides should be applied by hand or by surface vehicles as opposed to airborne methods to avoid wind carry.

5. Before applying pesticides or herbicides, residents of the project and adjacent developments should be notified and informed of safety precautions.

6. Operation of farm machinery should be permitted only between the hours of 6:00 a.m. to 8:00 p.m. to reduce noise objections.

7. Feedlot operations for cattle should be prohibited.

8. Fencing for livestock should be adequately designed and maintained to contain them within designated areas at all times.

9. All agricultural operations should be separated from adjacent properties with natural or man-made buffers approved by the local planning and zoning commission.

The engineering, land planning, and architectural studies have been described in the studies leading up to and including the preliminary design program. The preliminary cost estimates will serve as the basis for the financial study.

As mentioned previously, the financial analysis should be carried out by competent experts in the fields of accounting, architecture, and engineering. For the most part, the financial analysis will be carried out in the same manner as a "normal" residential project analysis. However, there are several other factors that must be considered along with the other considerations associated with a standard residential analysis. These factors should include the following:

1. Purchase of machinery and equipment for the farm operation.

2. Depreciation of the above machinery and equipment.

3. Compensation for the farm operator if applicable.

4. Initial purchase of feed, seed, fertilizer, pesticides, and herbicides.

5. Cost of acquiring special plants such as orchard trees, grape vines, and fruit bearing shrubs and other goods such as bee hives and related equipment.

6. Projected revenue from farm operations.

7. Reduced taxes for agricultural land if available.

8. Purchase costs for livestock and expenses related to care of livestock such as veterinary care.

In addition to the above factors, the developer may want to consider the timing and phasing of the farm operation. The developer should consider coordinating the phasing in of

various components of the agricultural enterprise with the phasing of residential construction and sales. Initially, the farm operation may consist of only garden plots for early tenants. As the project is filled in, the other aspects of the farm operation can be implemented.

If the development of the farm operation is to be phased along with phasing of residential development, it may be necessary as part of the review and approval process to require that a mechanism be established to ensure that later phases are in fact completed. This may involve such things as requiring the developer to produce a performance bond or to establish an escrow account for costs associated with completing the project.

When the financial analysis is completed a decision point is reached. The decision is whether or not to implement the project. If it appears that the project will have a reasonable chance of financial success, the developer can proceed with final design and can establish the mechanisms necessary for project management.

Project Management

The establishment of the mechanisms will consist of two parts, establishment of the management organization and the set up of the resident organization.

The forms of management organizations are as varied as the projects they manage. They may be small organizations

individuals with specialized skills. The organization may only be concerned with the marketing and financial aspects of the project with a tenant organization handling other aspects of the project or it may be a larger organization that wishes to control all aspects of the project.

Regardless of the size or purpose of the organization, there are essentially three steps in the process of establishing the organization: (1) creating the legal entity, (2) organizing the company, and (3) capitalizing the company. The legal entity could be an individual entrepreneur, a privately held company, a publicly held company, an institution, a public agency, a joint venture, or a general or limited partnership. The organization of the company is basically the establishment of an organizational structure with a chain of command and functional area responsibilities. Capitalization of the organization may involve an individual raising his own equity, a corporation selling shares, a limited partnership selling interests, an institution or public agency raising funds, selling bonds, or applying for grants, or a combination of the above if a joint venture is involved.

The establishment of the resident association will involve the creation of one of three types of organizations, a home owners' association (HOA) a unit owners association for condominiums or cooperatives, or a tenant association for

for condominiums or cooperatives, or a tenant association for rental projects. Each of the organizations are nonprofit and are usually organized by the developer of the project at the outset as a mechanism for democratic management of the development.[10] The process of establishing a homeowners, condominium or cooperative association requires the development and filing of five legal documents: (1) dedication of common properties; (2) declaration of the covenants, conditions and restrictions; (3) articles of incorporation; (4) by-laws; and (5) deed clause on common areas.[11]

The dedication of common areas will be shown on the face of the recorded plat.[12]

The declaration of covenants, conditions and restrictions will include: a description of the development property; membership and voting rights; property rights in the common areas; covenants for maintenance assessments; an architectural control committee; exterior maintenance, common scheme restrictions; and general provisions--duration, amendments, notices, easements, enforcement and severability.[13]

The articles of incorporation will include: a statement of purpose; membership; board of directors; authority to

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[10]David Garfinkel et al., "Cluster: An Old Formula Solves New Problems," Builder, August 7, 1978, p. 35.

[11]Ibid.

[12]Ibid.

[13]Ibid.

dedicate; mergers and consolidation; authority to mortgage; dissolution; and amendments.[14]

The Bylaws will include such items as: location, purpose and powers; membership, voting and shares; board of directors; officers; meetings; committees; notices; operation; insurance; and amendments.[15]

The final legal document will cover deed clauses on common areas reserving title to common areas against implied infringements.[16]

In the case of the development where housing units are leased to tenants, a tenant organization should be established. It is unlikely that a developer will allow tenants to control any of the financial aspects of the project, however he may want to have the tenant organization operate most of the nonfinancial aspects of the farm. If a tenant organization is formed, it should establish an official organization with articles of incorporation and bylaws.

Integration of Farmcolony with Existing Methods

The farmcolony method of agricultural preservation is but one method of farmland preservation. It is not a panacea, but it can be another tool in the box of the

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[14] Ibid.

[15] Ibid.

[16] Ibid.

agricultural preservationist. The model can be applied in urban or suburban settings and in large or small scale projects. There are also a number of existing methods of farmland preservation with which the Farmcolony method can be integrated. The methods that will be discussed in this section include: purchase and resale with restrictions; performance zoning; density zoning; permit system; and differential tax assessment.

Purchase and Resale with Restrictions

The purchase and resale with restrictions method involves the purchase of the land by a government agency or other entity and then resale with deed restrictions attached requiring that the land be used only for agriculture.[17] One of the positive aspects of this method is that it allows the creation of a revolving fund for the purchase of farmland that has been lying fallow waiting for development and quality farmland under imminent threat of conversion to nonagricultural uses. It can also be used in areas experiencing rapid development.

The Farmcolony model has particular applicability to this method of preservation. Using the Farmcolony location selection matrix along with the selection criteria for this

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[17]Gail Easley, "An Assessment of Needs and Strategies for Preservation of Agricultural Lands" (Master's Thesis, The University of Tennessee, 1979), p. 47.

method, the implementing entity can select sites for purchase and resale.

The implementing entity can then develop a "request for proposal" (RFP) for marketing the site. In the development of the RFP, the implementing entity would use the model process to develop a suggested land use plan and establish deed restrictions. The RFP is then advertised for competitive development proposals.

One advantage in this approach is that the developer is spared the cost of carrying out all of the studies he would normally have to do himself. It also gives the developer a clearer idea of what will be expected in the review and permit process.

Another approach within this method that will enhance the marketability of the project is in the area of land financing. If the implementing entity is able to finance the land cost with a mortgage, the chances of successful marketing are even greater since the developer would reduce his "up front" cost. This would also enhance the feasibility of the project by increasing the developer's leverage in obtaining private financing.

After reviewing the proposals, the implementing entity selects the developer and negotiates the final agreement.

Variations of this method include the purchase and lease method, and preemption. The purchase and lease method would

use the same process as that described above except that the land would be leased with restrictions written into the lease. This method might be preferable to the purchase and resale method since it allows the implementing entity to exert more control over the property.

Preemption is another method of direct purchase in which the owner is required to notify the government of his intent to sell his land. The government has the "right of first refusal" and can they buy and resell or lease the land.[18] This method may be less costly than the other direct purchase methods since only those properties that are immediately threatened are purchased.

Performance Zoning

The performance zoning method would involve the establishment within existing agricultural zones of performance standards based on those discussed in the model process. The planning and zoning commission would provide developers the model process for use in developing their design. The developer would then submit his plan to a committee made up of planners, designers, and agricultural experts for review and approval.

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[18] Ibid., p. 54.

Density Zoning

Density zoning involves the establishment of an overall density for a given number of acres in the property. The developer is allowed to cluster the housing at a higher density as long as the overall density is not exceeded. This results in a greater amount of open space being set aside than in conventional zoned land where minimum lot sizes based on a given density are required.[19]

The Farmcolony method can be used with this method by awarding density bonuses to developers willing to use the open space for agricultural purposes. Planners could use the model to provide technical assistance to the developer in designing the project.

Permit System

The permit system is another method that can easily incorporate the farmcolony method. This system works by setting up districts within which certain uses must have a permit in order to develop. This allows the governing body to examine the appropriateness and compatibility of the permitted use with the agricultural uses in the district.[20]

Using the Farmcolony location selection matrix, the government would identify those areas with Farmcolony potential. The government would then establish criteria

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[19]Ibid., pp. 54-58.

[20]Ibid., p. 58.

that must be met in order to obtain a permit to develop. The criteria would be based on the model process. That is, the developer would have to plan the project along the lines suggested in the model. Technical assistance would be provided to the developer to assist in the design of the project. After review and approval the government would issue a permit to the developer allowing construction according to the approved plan.

Differential Tax Assessment

Differential tax assessment allows local and state governments to assess farmland at its use value rather than its market value.[21] This could be used as an additional financial incentive to encourage developers to set aside a certain portion of the development for agricultural purposes. Since property tax assessors may view a Farmcolony project as a purely residential project, it may be necessary to require the developer to set aside a portion of the property for permanent agricultural use with deed restrictions to that effect. It may also be desirable as a financial incentive to allow the tax assessor to assess the entire property at agricultural tax rates if a large percentage of the property is set aside for permanent agricultural use. The density zoning approach might be one way to accomplish this.

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[21] Ibid., p. 65.

New Methods

The preceding discussions have centered on integrating the Farmcolony concept with existing methods of agricultural preservation. The remainder of this chapter will be devoted to new methods of farmland preservation using the Farmcolony approach. Two new methods will be proposed: (1) a Planned Agricultural District Zone, and (2) a Public Farmcolony Project.

Planned Agricultural District Zone

The Planned Agricultural District Zone (PAD) would be very similar to a Planned Unit Development (PUD) zone. The primary difference between the two is that the PAD would require that a portion of the land be set aside for agricultural use rather than as open space.

The PAD ordinance would be developed along the same lines as a PUD ordinance but would use the Farmcolony model as the basis for allowable uses and plans review. Allowable uses would include: single and multifamily residential; commercial uses that support the residents of the project and/or are used for selling projects of the farm operation; food processing operations; facilities for arts and crafts production by residents of the project; structures for housing farm equipment and machinery; greenhouses; and agricultural uses including but not limited to the production

of crops, nursery stock, keeping of livestock, fowl and bees, stables, kennels, vineyards, and orchards.

Housing density would be based on the size of the property and densities of surrounding land uses. Nonresidential uses would have to meet performance standards established by the planning and zoning commission based on the model process.

Plans for the project would be reviewed and approved by a committee made up of planners, designers, and agricultural experts.

PAD zones would be selected based on the model's location selection matrix and would be located in areas experiencing the conversion of agricultural land to nonagricultural uses.

Public Farmcolony Project

Federal, state and local governments have provided numerous social welfare programs for low and moderate income groups and the elderly for many years. These programs have included housing subsidies, food stamps, medical care, day care for children and many others. The development of a Farmcolony by the public sector may offer a novel approach to some of the problems of the poor and the elderly.

An approach using the Farmcolony method might be to combine funds from several social service agencies to develop

a demonstration project. The project would involve the establishment of a consortium of agencies to carry out the project. Using the Farmcolony model, the consortium would develop a small scale project or perhaps two projects, one for low income families and one for elderly tenants.

Each project would include rent subsidies for the tenants and a consortium paid farm operator to assist with the more difficult aspects of the farm operation. It might also be possible for an agricultural extension agent to be assigned to assist in this area. Tenants would assist with planting, harvesting, and processing the food for consumption by the project's residents. Food processing facilities would be developed as part of the project in the form of community kitchens. A retail outlet for sale of surplus produce would also be operated by the tenants with revenue from sales used to reduce operational and housing costs.

In the project for low income families, such facilities as a day care center, a kindergarten school, a health clinic and a recreation center could be provided.

The elderly project might have a cafeteria where residents who are unable to cook for themselves or who chose not to, can enjoy some of the fruits (and vegetables) of their labor. This project might also include workshops for craft making such as quilting, sewing, knitting, woodworking, toy making and any other hobby crafts enjoyed by the elderly

tenants. The consortium may wish to employ a home extension agent to develop programs to assist tenants in the above activities. To give the residents a feeling of purpose and accomplishment, the project's retail store could include an area for sale of the craft products made by the residents. Residents should also be employed where possible in the operation of the project.

The goal of each type of project is self sufficiency in the area of food production. However, even if self-sufficiency is not possible, it will be possible to provide wholesome, low cost food to the residents along with intangible rewards such as a sense of accomplishment and community not often found in the standard public housing project.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The continuing problem of farmland loss has been recognized at the national, state, and local level. Each level of government views the problem in its own special way. At the federal level, agricultural experts are concerned about how long we can continue to produce food and fiber for consumption here and for export to the rest of the world. There is concern that increases in food production are beginning to level off and that higher prices for fuel and fertilizer derived from fossil fuels will require more emphasis on quality soils in the future.

Agricultural experts and government officials at the state level are concerned over the loss of some of their best farmland to urban uses. The preservation of agricultural production is important to the maintenance of a diversified state and local economy.

At the local level, the reasons for preserving farmland include: maintenance of the local agribusiness sector as a basis for rural economic development; maintaining a diversified employment base; enhancement of the natural environment; to provide wholesome, fresh produce for local

consumption; and to maintain the aesthetic value of the countryside.

The causes of farmland loss are many. One of the factors in farmland loss relates to the nature of the land itself. The flat to gently rolling nature of farmland combined with the fact that it is usually cleared and well drained makes the land attractive to developers seeking lower development costs. Other factors that influence the loss of farmland to other uses include: local tax policy, conflicts with urban land users, air pollution causing damage to crops; decline of agricultural support services in urbanizing areas; high land costs due to competition with urban land uses; lack of support from government officials; and competition for labor from local industry.

To combat the problem of farmland loss government officials at all levels have developed numerous strategies to preserve and protect farmland. The strategies for preserving agricultural land range from tax incentives and disincentives, to regulatory policies, to purchase and transfer methods. No one strategy of agricultural preservation is totally effective by itself. Each technique has its advantages and disadvantages. The best approach to preserving farmland may be a combination of approaches that utilize both incentives and regulations.

The Farmcolony method of agricultural preservation described in this thesis is not a panacea but it does

provide another weapon in the arsenal of the agricultural preservationist. The model process described here can be used by planners and developers alike. Planners can use the model to identify potential Farmcolony sites, to assist developers in designing a farmcolony project, to modify existing regulatory mechanisms, or to develop new ones. Planners can also use the model to assist government development agencies to carry out public Farmcolony projects. The Farmcolony model has particular utility for private developers who are interested in providing a unique new living environment that is sensitive to the need for farmland preservation.

Recommendations

Throughout the course of researching and writing this thesis the author has become more and more aware of a nagging problem regarding the issue of agricultural preservation. The problem is one of attitude toward farmland. Planners are as guilty of this attitude as anyone. There seems to be a general attitude that farmland only has value as a development commodity. It is very common to see farmland referred to on land use maps as "vacant" rather than as "prime farmland," or "agricultural" or some other adjective that implies that this land is important in its current use.

It is also a common occurrence to see industrial development studies carried out with the prime sites under consideration being large tracts of quality farmland. This is understandable in part because farmland is often found under one ownership and farmland is often cleared making development cheaper. Planners and industrial development authorities should look first to land that is less than quality farmland and last to prime farmland when identifying potential industrial sites.

Planners and agricultural preservationists also need to educate and inform government officials, elected representatives, and the public on the value of good farmland and the need for preservation. A strong step in the right direction would be to have elected and appointed officials develop an official policy on farmland and its development.

Once a policy is developed it is recommended that an analysis of farmland be carried out to determine agricultural preservation areas. It may be advisable to change the zoning ordinance to reflect the quality and importance of farmland by developing different classifications based on the type of farmland, the quality of the soil, or some other local criteria.

A recommendation for further study would be to develop a method for identifying important farmland that could be used by planners to establish farmland preservation areas

under the comprehensive plan. Perhaps criteria could be established for regulating development in areas designated for agricultural preservation.

Another recommendation that may help in the areas of attitude change is to include agricultural experts on the planning commission.

Since municipal capital improvements are major priming elements in the development process, it is recommended that an impact analysis be carried out regarding the effect of the capital improvements programs on sensitive agricultural areas. This would allow planners to redirect the extension of public utilities and facilities away from important farming areas and relieve some of the pressure of conversion. In the case where there is no alternative but to extend utilities or other public facilities into a sensitive area, planners can use the Farmcolony model to develop regulatory devices like the Planned Agricultural District to mitigate some of the negative impacts of such priming actions.

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APPENDIX

Table 1

Agricultural Area Residential Characteristics and Views

		Number	Percent
I.	Length of Tenure in Residence (Years)		
	1-5	16	50
	6-10	5	16
	11-15	1	3
	16 or more	10	31
II.	Proximity to Farm (Distance)		
	Within 50 yards	10	31
	Within 100 yards	4	13
	Within .25 miles	6	19
	Within .5 miles	7	22
	Between .5 and 1 mile	5	16
III.	Type of Nearby Farm Activity		
	Row crops	3	3
	Pasture	31	97
	Feedlot	0	0
	Orchard	0	0
	Other	0	0
IV.	Effect of Nearby Farms on Location Decision		
	Very much	4	13
	Some	8	25
	Very Little	9	28
	None	11	34
V.	Frequency and Type of Farm Practice Problems		
	Yes: 5-16% No: 27-84%		
	If Yes, what kind?		
	Dust	0	
	Noise	0	
	Odor	3	
	Pesticides	0	
	Herbicides	0	
	Other (loose cows)	2	

Table 1 (continued)

		Number	Percent
VI.	Frequency of Minor Problems		
	Yes	15	47
	No	17	53
VII.	Residents' Future Location Choice Affected by Farms		
	Yes	30	94
	No	2	6

Table 2

Farms Near Residential Areas: Characteristics and Views

		Number	Percent
I.	Proximity of Farms to Subdivisions		
	Within 50 yards	8	57
	Within 100 yards	1	7
	Within .25 miles	3	22
	Within .5 miles	1	7
	Between .5 and 1 mile	1	7
II.	Type of Farm Activity		
	Row crops	3	22
	Pasture	14	100
	Feedlot	0	0
	Orchard	0	0
	Other	0	0
III.	Frequency and Type of Problems with Residents		
	Yes	10	71
	No	4	29
	A. If Yes, what kind?		
	Theft	3	
	Vandalism	3	
	Pets	7	
	Trampling Crops	0	
	Other: Trespassing	1	
	Children	1	
	Litter	1	
	B. Farmer complaining to Residents or authorities		
	Yes: 6 No: 4		
IV.	Farmer Received Complaints from Residents		
	Yes: 1 (loose cow) No: 13		

VITA

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