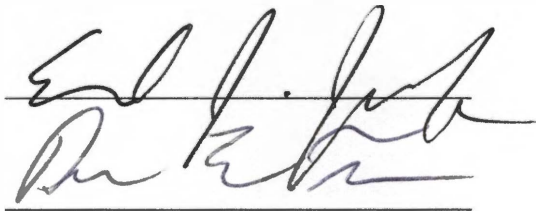


To the Graduate Council:

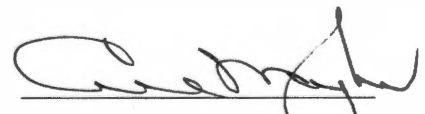
I am submitting herewith a thesis written by Patricia Kay Southerland entitled, "A Strategy for Land Conservancies to Promote Sustainable Development Practices." I have examined the final paper copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science in Planning, with a major in Planning.

  
John Peine, Major Professor

We have read this thesis and  
recommend its acceptance:



Acceptance for the Council:

  
Vice Provost and Dean of  
Graduate Studies

**A STRATEGY  
FOR LAND CONSERVANCIES TO PROMOTE  
SUSTAINABLE DEVELOPMENT PRACTICES**

**A Thesis Submitted for the  
Master of Science in Planning Degree  
The University of Tennessee, Knoxville**

**Patricia Kay Southerland  
May 2003**

Thesis  
2003  
. S688

## **DEDICATION**

This thesis is dedicated to my husband and best friend, Duane Southerland, for his unbounded love, dedication, and support in helping me attain my goals, and to my parents and children for their encouragement and understanding throughout the process.

## **ACKNOWLEDGMENTS**

I wish to express my sincere appreciation to the faculty and staff of the Urban and Regional Planning department who made it possible for me to complete the Masters of Science degree in Planning. I thank Dr. Bruce Tonn for his dedication and for his valuable guidance, inspiration, and assistance, no matter how full his schedule was, and for serving in my committee. I thank Dr. Ed Jepson for serving in my committee and bringing fresh ideas to my thesis subject matter. I thank Dr. John Peine for serving as my committee advisor, for his understanding and awareness of my professional interests, and for believing in my potential.

I thank my husband and family who believed in me. But most of all, I thank God who walked with me every step of the way.

## **ABSTRACT**

The purpose of this study was to explore the possibilities of land conservancies expanding their roles to promote sustainable development practices. Information was collected from national land conservancies through appropriate research methods. Interviews were conducted of the three land conservancies in the United States that are successfully promoting sustainable practices into conservation-based developments. Common elements were identified and a case study was conducted of the Foothills Land Conservancy of East Tennessee. The director and selected board members were interviewed as to their expertise, skills and interest in expanding the FLC's role to promote sustainable development practices.

Research revealed that land conservancies are an appropriate agency to engage in promoting sustainable development practices due to the wide range of expertise among the members and staff. However, there are several key elements, which are essential to managing a program of this magnitude. They consist of a knowledgeable staff in various disciplines that correlate with conservation based development practices and an experienced administrator to oversee staff, funding and outreach programs. Another key element is an aggressive fund-raising strategy and an aggressive outreach program.

## TABLE OF CONTENTS

| <b><u>CHAPTER</u></b>                                     | <b><u>PAGE</u></b> |
|-----------------------------------------------------------|--------------------|
| <b>I. INTRODUCTION</b>                                    | <b>1</b>           |
| Statement of Issue                                        | 1                  |
| Study Objective                                           | 2                  |
| Scope and Limitations                                     | 2                  |
| Study Methodology                                         | 3                  |
| <br><b>II. LITERATURE REVIEW</b>                          | <br><b>7</b>       |
| Principles and Assessments of Land Use Paradigms          |                    |
| In Land Development Projects                              | 7                  |
| Sustainable Development                                   | 8                  |
| New Urbanism/Traditional Neighborhood Development (TNDs)  | 9                  |
| Conservation Based Subdivision Development                | 11                 |
| Public Policies Supporting Sustainable                    | 13                 |
| New Urbanism/Traditional Neighborhood Development (TNDs)  | 13                 |
| Open Space Development/Clustering                         | 14                 |
| Phase Development                                         | 14                 |
| Government Programs and Incentives                        | 15                 |
| Principles of Subdivision Conservation Design and         |                    |
| Environmentally Responsible Building Techniques           | 16                 |
| Subdivision Layout                                        | 17                 |
| Density Standards                                         | 18                 |
| Structure Orientation /Placement and Landscaping          | 18                 |
| Street Layout, Design and Alignment                       | 19                 |
| Structure Design and Materials Selection                  | 20                 |
| Energy Efficiency and Conservation                        | 24                 |
| Habitat Conservation Planning                             | 26                 |
| Balsam Mountain Preserve                                  | 29                 |
| <br><b>III. POTENTIAL ROLE OF LAND CONSERVANCIES</b>      | <br><b>31</b>      |
| Missions and Roles                                        | 31                 |
| Changing Trends                                           | 32                 |
| Key Elements of A Successful Land Conservancy Sustainable |                    |
| Development Program                                       | 39                 |
| Staff                                                     | 41                 |
| Outreach Process                                          | 42                 |
| Funding                                                   | 43                 |

**TABLE OF CONTENTS**  
(Page 2)

| <b><u>CHAPTER</u></b>                                                | <b><u>PAGE</u></b> |
|----------------------------------------------------------------------|--------------------|
| <b>IV. CASE STUDY (FOOTHILLS LAND CONSERVANCY OF EAST TENNESSEE)</b> | <b>45</b>          |
| Mission and Goals                                                    | 45                 |
| History                                                              | 45                 |
| Property Conserved                                                   | 45                 |
| Grannybelle Woods Conservation Easement                              | 46                 |
| Smith Bend/Yuchi Refuge                                              | 46                 |
| The Burkhardt Farm 1,000-Acre Easement                               | 47                 |
| Hurricane Mountain Conservation Easement                             | 47                 |
| Roles                                                                | 47                 |
| <b>V. CONCLUSIONS</b>                                                | <b>51</b>          |
| Conclusions from the Foothills Land Conservancy Case Study           | 51                 |
| <b>VI. QUESTIONS FOR FURTHER STUDY</b>                               | <b>53</b>          |
| Question #1                                                          | 53                 |
| Question #2                                                          | 54                 |
| Question #3                                                          | 54                 |
| Question #4                                                          | 54                 |
| <b>VII. BIBLIOGRAPHY/REFERENCES</b>                                  | <b>55</b>          |
| <b>VIII. APPENDICES</b>                                              | <b>61</b>          |
| Appendix A                                                           | 62                 |
| Tables 1-6                                                           |                    |
| Appendix B                                                           | 68                 |
| Available Sources                                                    |                    |
| <b>VITA</b>                                                          | <b>74</b>          |

## LIST OF TABLES

| <b><u>TABLE</u></b>                                                                                         | <b><u>PAGE</u></b> |
|-------------------------------------------------------------------------------------------------------------|--------------------|
| Table 1. Outreach Methods Used by Conservancies/Land Trusts That Promote Conservation Development Practices | 63                 |
| Table 2. Target Audiences of Conservancies/Land Trusts that Promote Conservation Development                | 64                 |
| Table 3. Resources Needed by Conservancies/Land Trusts that Promote Conservation Development                | 65                 |
| Table 4. Major Constraints of Conservancies/Land Trusts Promoting Conservation Design                       | 66                 |
| Table 5. Conservancies/Land Trusts Sources of Support                                                       | 66                 |
| Table 6. Effectiveness of Conservancies/Land Trusts Promoting Conservation Development Practices            | 67                 |

## **CHAPTER 1.**

### **INTRODUCTION**

The first section of this paper states the issues of uncontrolled land development in the United States and how it is impacting the rural American landscape. It brings to the forefront the negativity of development that is faced by developers and the responsibilities of key decision makers. The purpose of the paper is discussed in the study objective, a subsection of this chapter. The scope and limitations of the subject matter is conveyed while briefly mentioning the development of design principles and an example of a successful conservation development project. It further discusses the roles and traditional missions of land conservancies and their involvement in sustainable development practices. The study methodology of this section informs the reader how the writer researched the data, how it is compiled, the analysis of the data and the case study that it was applied to.

#### **Statement of Issue**

Uncontrolled growth and insensitive, inappropriate development practices are resulting in sprawl, congestion, water and air pollution, loss of green space, and habitat displacement that is adversely affecting the rural landscape of America. These factors contribute to environmental problems, a loss of sense of community and directly in the reduction in the quality of life for society. Growth is inevitable, but there is national concern on how to manage this growth.

There is anxious contemplation among the public, engineers and developers, environmentalists and conservationists, policymakers and political leaders as to the incalculable extent of the detrimental effects of uncontrolled growth on the quality of human life and the environment. Disillusionment by society, with longer commutes to work, traffic congestion, and fragmented neighborhoods, results in a loss of sense of community. Environmentalists are concerned with water and air pollution, preserving historic farmland, as well as other historic sites, and protecting ecosystems. As this

country continues to expand through population growth and the built environment, policymakers and political leaders move rather cautiously while striving to keep up with the demands of the various factions who command manageable growth measures that are concurrent with livable communities.

Both governmental and non-governmental agencies are striving to address this range of growth issues. Many states are implementing policies that promote smart growth, and localities are modifying zoning ordinances to accommodate new urbanist projects and sustainable development strategies. Grass roots organizations such as land conservancies, spearheaded by concerned individuals, are becoming abundant throughout the United States.

### **Study Objective**

The objective of this study is to devise a strategy for land conservancies to explore their potential to effectively engage in promoting the principles of sustainable development through consultation, education, and political influence. Specifically, the study examined the missions and roles of land conservancies and how they are expanding former traditional roles. The principles of sustainable development and how land conservancies are utilizing their knowledge to promote conservation-based development in rural areas is explored. Based on case studies the paper focuses on land conservancy board member resource attributes and exemplary organizational systems that are relevant for land conservancies to encompass outreach methods of support for sustainable development.

### **Scope and Limitations**

Sustainable development encompasses issues of social equity and economic prosperity within the community. Sustainable development can encompass land use paradigms that include brownfield redevelopments, urban infill development, storm water and wastewater management as well as wetland protection. This paper did not address these issues even though they are extremely important to the overall dimension of sustainable development practices. The sustainable development practices that are addressed include

subdivision layout, density standards, and structure orientation/placement on the lot as well as landscaping techniques that support energy efficiency. Structure design and the selection of materials that are renewable, recyclable and reusable is discussed. Energy efficiency techniques for the overall design and alternative energy sources are included, as are the impacts that development have on habitat and sustainable measures are addressed. Finally, an example of a conservation designed development that utilizes sustainable development practices is discussed and documented.

- **Development of Design Principles**

Land conservancies strive to protect land from development, to preserve natural resources, and to protect ecosystems. Rural developments typically work against these goals and are causing fragmentation of land use. Through a literature review of the principles of the different land use paradigms, a set of conservation based design principles was developed to provide support to land conservancies in consultation with developers. The paper's core focuses on the physical layout and design of environmentally-sensitive neighborhoods in primarily rural areas while addressing the importance of landscaping, the use of native vegetation, and habitat protection.

- **Examination of a Successful Conservation Development**

Studying urban planning and becoming conscious of man's abuse of the environment has substantially increased the awareness of the ecological importance that builders and developers play in their construction projects. The use of renewable materials and resources as well as setting aside of certain amounts of green space and consciousness of the environmental impacts of the layout of the project are key concerns. As consultants, the abilities and expertise of land conservancy board members are essential in an advisory capacity in relaying conservation based (green) development concepts.

## **Study Methodology**

A literature review of relevant readings provided information on the principles, practices, and applications of sustainable development. A successful property development that has

applied the principles of sustainable development was examined and the achievements documented in the section of Principles of Subdivision Conservation Design and Environmentally Responsible Building Techniques.

Next, there was field research in the form of descriptive case studies of land conservancies, which were the units of analysis for this study. A broad search, via the Internet, was conducted of national, regional land conservancies/trusts that are in direct contact with individual, and regional agencies that protect America's national and cultural resources. This search resulted in a random selection of ten land conservancies: Natural Lands Trust, the office of Randall Arendt (author of several land conservancy books), The Land Trust Alliance, The Conservation Fund, The Trust for Public Land, The Nature Conservancy, The Ecosystem Management Assessment Program, The North American Land Trust, Heritage Conservancy, Brandywine Conservancy and Minnesota Land Trust. Contact was either by telephone or by email to obtain information on which land conservancies were participating in sustainable development practices of residential conservation developments. The three land conservancies/trusts that were interviewed in detail include Brandywine Conservancy, Heritage Conservancy and Minnesota Land Trust. These three were chosen because of the conservancies contacted, these were the only three known for the success of their programs in promoting sustainable development practices. Their contact information is documented.

The director of each was contacted via either telephone or via email, and a personal interview conducted or email questionnaire submitted that focused on the goals and atypical functions of the conservancies and their roles in providing consultation on sustainable development practices that goes beyond traditional roles. The interviews also focused on outreach methods and the means used to obtain the support needed to accomplish their goals. The interview consisted of the following questions:

1. What is the focus of your outreach?
2. Which outreach methods do you apply?

3. Who is your target audience?
4. How did you decide this audience had the greatest need for assistance?
5. How did you decide this particular audience had the greatest impact on carrying out sustainable development practices?
6. What motivated you to become involved in this program?
7. Describe your program.
8. What resources are required to carry out your program?
9. What are the constraints of the program?
10. How is your organization compensated or supported?
11. How effective have your efforts been?

The qualitative analysis is in the form of cross-case analysis where the data gathered was systematically organized, compiled and compared in search of common themes or patterns indicative of conservancies whose roles include the above mentioned atypical functions. The reduced, categorized, and evaluated information is conveyed in table format to clarify commonalities. See Tables 1-6 in Appendix A.

After comparing and contrasting established significant paradigms among land conservancies that are currently engaging in promoting the principles of sustainable development, and final refinement accomplished, the assessment was applied to the Foothills Land Conservancy (FLC). Its mission statement, its background, and its goals are documented through content analysis of agency documents. A current history of the projects and property protected under its auspices are acknowledged.

After data were gathered from the selected land conservancies, information was obtained from members of the Foothills Land Conservancy (FLC) of East Tennessee. This land conservancy is in close proximity to the University of Tennessee. Dr. John Peine, an ecologist with the Department of Urban and Regional Planning, and other members of the board of directors are concerned with negative developmental impacts. Developers who are interested in sustainable development practices have contacted the FLC for

information and guidance on conservation designed subdivisions. Therefore, the FLC is used for a case study after determining the key elements that are essential in engaging in sustainable development practices.

Personal interviews were conducted from a selected number of board members of the FLC. Of the twenty-six member Board of Directors of 2001-2002, nine were selected according to their expertise in communication, environmental and administrative abilities to promote sustainable development through possible outreach methods. Of the nine contacted, seven responded, and personal structured interviews were conducted that determined their interest, time availability, and potentiality of providing consultative services. The questions asked of each FLC board member was aimed towards his particular expertise. The gathered and assembled data obtained from the interviews were used to create a feasible strategy that a land conservancy can use to encourage sustainable development practices as they relate to subdivision development.

The Balsam Mountain Preserve in Waynesville, North Carolina, a successful conservation designed development was examined and documented as a model of applied theories to environmentally and ecological land developments.

The study analysis includes conclusions based on the evaluation of the case study and contains recommendations for further study.

## **CHAPTER II.**

### **LITERATURE REVIEW**

In order to develop a strategy for land conservancies to engage in responsible land development practices, research of the three major land use paradigms was conducted through an extensive literature review of data, as well as through interviews. This chapter examines the known principles of two of the models of land development and presents the principles of conservation based development that emerged from an assessment of all three paradigms. Public policies and government programs that support different segments of sustainability, including open space development, phase development, and traditional development are included within this chapter, as well as the principles of subdivision design and environmentally responsible building techniques.

#### **Principles and Assessments of Land Use Paradigms in Land Development Projects**

Since the early 1900s, land use planning has been dictated by governments through zoning. Zoning laws establish structure heights, building and street setbacks, drainage and erosion control systems and street widths. In the last few decades, land-use planners and developers have drifted from the traditional conventional methods of looking at only zoning codes and are utilizing broader concepts. Concerns over the environmental impacts of development on the quality of life have brought to the forefront different methods of land development. Therefore, the following lists of principles and assessments of land use paradigms in development projects do not include conventional subdivision design/development. Conventional design, including the above-mentioned outdated zoning techniques, is the type of development that has been occurring in the last few decades where residential land is divided into individual lots with an accommodating street plan. There is generally no allowance for green spaces, walking trails, or preserves. The layout of this type of design is not favorable for socialization, but for the use of the automobile. The most successful emerging land-use development practices are discussed in the following sections.

### ***Sustainable Development***

Historically, single-use zoning, flight from inner city living, and highway construction are the key drivers that have contributed to sprawl in the following manner:

- (1) Standard Euclidian zoning currently used by most planning agencies divides land uses into separate, distinct categories, which does not traditionally allow mixed-use development.
- (2) Powered by the Federal Government's housing and highway programs of the 1950's, residents moved from the urban center to the suburbs. Dependence on the automobile has encouraged sprawl and vice versa.
- (3) Interstate highway engineering practices consistently add more lanes and more routes as the old ones become crowded rather than implementing a rail or alternative system. This approach contributes to current outdated development methods, a practice that leaves most neighborhoods less than pedestrian friendly.

Collectively these forces have contributed heavily to sprawl creating negative environmental impacts and quality of life issues. Sustainable development practices cover issues from the erosion of the ecosystem to social equity, from greenways to economic development, and from habitat protection to transportation problems of communities both large and small, both urban and rural. Planners, architects, environmentalists, and political leaders when referring to topics that include livable communities and traditional neighborhood developments sometimes use the terms sustainability and smart growth concurrently.

A definition of sustainability was first proposed in 1986 at the annual conference of the International Union for the Conservation of Nature in Ottawa, Canada, which consisted of 50 participating countries. The Smart Growth Network (SGN), a consortium of the U.S. Environmental Protection Agency and non-profit and governmental agencies that promote smart growth strategies, adopted the definition as the basic principles and they

are as follows:

*“Sustainable development seeks ...to respond to five broad requirements:*

- (1) Integration of conservation and development,*
- (2) Satisfaction of basic human needs,*
- (3) Achievement of equity and social justice,*
- (4) Provision of social self-determination and cultural diversity, and*
- (5) Maintenance of ecological integrity” (State of Florida, 2002).*

Sustainable development is in itself an interesting combination of words and if defined separately they are almost contradictory. The word “sustainable” suggests everlasting, an arrangement of constantly replenishing in order to continue and survive. “Development” through change and growth leads to the disruption of this arrangement. Therefore, sustainable development involves change but in a manner that the disruption allows replenishment and continuation of the original arrangement. In reference to the built environment, the original arrangement includes ecosystems and natural resources. In 1987 the Brundtland Commission formed by the United Nations, issued a report that defined sustainable development as *“development which meets the needs of the present without compromising the ability of future generations to meet their own needs”* (Porter, 2000).

The principles of sustainability add in-depth social and economic aspects to the principles of smart growth, which are primarily directed at the built environment with the intent of addressing sprawl.

### ***New Urbanism/Traditional Neighborhood Development***

Traditional Neighborhood Developments (TNDs) have been making a global impact on land use since the early 1980s when the first new urbanist village, Seaside, Florida was designed by the architectural firm of Andres Duany and Elizabeth Plater-Zyberk. Due to the commitment to the restoration of urban centers, rebuilding neighborhoods, and preserving the historical and natural heritage of communities, the Congress for New Urbanism, a nonprofit membership organization was founded in 1993.

Within the Congress, the principles of New Urbanism were created for urban planners, designers, architects, and developers as a guide to creating traditional neighborhood developments, infills, or villages, and they state that TNDs should contain most if not all of these principles:

- (1) The neighborhood has a discernible center.*
- (2) Most of the dwellings are within a five-minute walk of the center, an average of 2,000 feet.*
- (3) There is a variety of dwelling types.*
- (4) There are shops and offices at the edge of the neighborhood, of sufficiently varied types to supply the weekly needs of a household.*
- (5) A small ancillary building is permitted within the backyard of each house. It may be used as a rental unit or a place to work.*
- (6) An elementary school is close enough so that most children can walk from their home.*
- (7) There are small playgrounds near every dwelling – not more than a tenth of a mile away.*
- (8) Streets within the neighborhood are a connected network, which disperses traffic by providing a variety of pedestrian and vehicular routes to any destination.*
- (9) The streets are relatively narrow and shaded by rows of trees. This slows traffic, creating an environment suitable for pedestrians and bicycles.*
- (10) Buildings in the neighborhood center are placed close to the street, creating a well-defined outdoor room.*
- (11) Parking lots and garage doors rarely front the street. Parking is related to the rear of buildings, usually accessed by alleys.*
- (12) Certain prominent sites at the termination of street vistas or in the neighborhood center are reserved for civic buildings. These provide sites for community meetings, education, religion or cultural activities.*
- (13) The neighborhood is organized to be self-governing. A formal association*

*debates and decides matters of maintenance, security and physical change.*

*(14) Taxation is the responsibility of the larger community” (CNU.org., 2002).*

In Home from Nowhere, James Howard Kuntsler discusses the discontent and unhappiness of the inhabitants of America, the wealthiest country on earth. He blames it on the distressed environment, cartoon architecture, lack of civic spaces, and sprawling, uninteresting neighborhoods that make up American communities. He believes that successful urban design is a solution because *“certain physical relationships work well because they are consistent with human psychological needs that are probably universal and haven’t changed over time”* (Kuntsler, 1996). His conviction is that in order to institute a better quality of life and create a sense of place in our neighborhoods and communities, zoning ordinances and master plans should be replaced with traditional town-planning ordinances that are supplemented with architectural codes. Only then will neighborhoods become places of vitality, exhibit qualities of beauty and interest, and once again become *“places worth caring about”* (Kuntsler, 1996).

### ***Conservation Based Subdivision Development***

This land use technique contributes to conservation and preservation of our nation’s resources, adheres to some of the principles of smart growth, partially abides by the guidelines of sustainability and follows certain principles of new urbanism. Conservation development also encompasses designing movement corridors and preserves for habitat, use of native vegetation in landscaping methods, and proper structure orientation on the building site for energy purposes. It can also encompass the requirements of green building in that it involves the materials used in constructing the structure itself, utilizes alternative energy sources and energy efficiency measures, drainage techniques and storm water management.

Conservation designed subdivisions incorporate natural resources and historic landmarks into the master plan. These elements are inventoried in the initial analysis to be incorporated into the overall design. The outcome of sustainable development and

conservation development is more advantageous if the methodology adhered to is “whole-system thinking”. Whole-system thinking takes all the concepts of the design, economic aspects and governing policies into consideration at the onset of the project. It is crucial that the developer is familiar with sustainable development practices and can incorporate them into the master plan as well as present them to decision makers in a justifiable method. Sometimes other professionals are involved in this stage of pre-design and more costly materials are needed to obtain the necessary outcome, but initial investment costs will be offset by returns (Porter, 2000).

It is inevitable that development will continue to proceed to keep up with consumers’ demands and with projected population growth. A strong foundation for community design is to combine the concepts of sustainable growth, new urbanism, and conservation based subdivision design for a balance to take place that is beneficial to humans and that leaves ecosystems intact for future generations (Arendt, 1996).

- *Principles of Conservation Based Subdivision Development*

Through the research of the three major land use paradigms, a set of principles was developed, which can be integrated into a master development plan. They are as follows:

*(1) Conduct a natural and cultural resource analysis before any site planning takes place (Arendt, 1996).*

*(2) The unbuildable areas (wetlands, floodplains, steep slopes, etc.) are set aside from the rest of the buildable property (Arendt, 1996).*

*(3) One half or more of the buildable land area is designated as undivided, permanent open space (Arendt, 1996).*

*(4) Maintenance of ecological integrity to include design and implementation of a habitat conservation plan (State of Florida, 2002).*

*(5) As many houses as possible should have a view of a minor or major green area (Arendt, 1996).*

*(6) Layout designates that interconnected walking trails allow quick access to*

*an open/green or woodland area (Arendt, 1996).*

*(7) Orientation of structures, landscaping, and building materials are chosen for their resource renewable factors (Arendt, 1996), or substituted with alternative materials that are environmentally friendly.*

*(8) The neighborhood has a discernible center and discernible edges (Duany, 2000).*

*(9) There is a variety of housing styles (Duany, 2000).*

*(10) Street widths designed to accommodate traffic and pedestrians safely without being excessively wide (Congress for New Urbanism, 2002, modified).*

### **Public Policies Supporting Sustainability**

#### ***New Urbanism /Traditional Neighborhood Developments (TNDs)***

Conventional comprehensive plans do not customarily contain a TND ordinance, which is also known as a system of smart codes or as New Urbanist codes. The process for adopting a TND ordinance includes holding charrettes to involve citizens of the community. The desires and goals of the community are taken into consideration as well as the structural fabric of the area, existing infrastructure, and the natural resources. The outcome is a system of codes appropriate to that particular area. The New Urbanism land use analysis tools can be utilized in infill development, used for sustainable development ordinances for environmental quality issues, or as smart codes that emphasize greenfields. They can provide provisions for subdivisions, street design guidelines or set up the ordinance for a self-sufficient village/town such as Seaside and Celebration, Florida and Kentlands, Maryland.

There has been state enabling legislation in Pennsylvania, Connecticut, Wisconsin, and Virginia. State building codes have been modified and/or adopted to include New Urbanist principles in both New Jersey and Maryland (CNU, 2002).

### ***Open Space Development/Clustering***

Cluster development is often confused with open space development. "Clustering" refers to the type of development that is higher density on smaller lots than conventional development. Initially in the 1960s, it was introduced to offset the costs of site preparation and infrastructure expenses. In this type of development, even though small amounts of green space are set aside in one or more land remnants, the foremost and leading land use goal is not to set aside green space but rather to minimize infrastructure costs. Cluster developments and open space design developments are two very different types of development with very dissimilar standards. Open space developments provide much more open space and a better quality of open space than does clustering.

Public policy that incorporates open space development must first educate those players involved with the development process. Landowners need to know the difference between cluster development and open space development and the benefits and pitfalls of each. While this is no easy task, there is also the problem with ambiguous regulations and requirements that either slow down or repress the approval process. Public policy should be written so that the requirements are clear and the approval process is unimpeded and fair. Close attention should also be placed on the design criteria. Often regulations are so rigid that they inhibit creative design layout and affect the aesthetic quality of the development (Arendt, 1994).

### ***Phase Development***

This type of development is one in which the proposed master plan is completed in phases. Even though the residential areas may be developed in phases, it is also important in the initial planning process that space for commercial and other nonresidential facilities is calculated so that they can be constructed when the initial phase becomes built-out or when the market demands. There are figures produced by different nonprofit organizations that provide thresholds for determining when a development's population can support commercial and other facilities such as shopping centers, movie theaters, tennis courts, and public swimming pools, etc. (Ewing, 1996).

Public policy on phase development varies from state to state. Some ordinances may require a rezoning for the entire master plan or it may require the developer to petition to rezone the area for each phase of the development.

### ***Government Programs and Incentives***

Existing financial incentives sometimes fall short of the objective of preserving open space. For instance, the use-value assessment is used in evaluating property taxes in rural areas. Farmland is taxed according to its value as if it were in agriculture rather than if it is developable land. This provides a lower tax for the farmer, and preserves open space, but is not a permanent solution.

*Purchase of Development Rights (PDRs) or Conservation Easements* is a program which serves to protect farmland from being developed and is launched at the state level of government but some are operated at the county level or by private land trusts. Through public funds, landowners are compensated for the easements that prohibit development of private farmland (Heimlich, 2002).

*Transfer Development Rights (TDRs)* work through local governments or through a countywide effort. In this program landowners whose property falls within a preservation district are issued development credits which they can then sell to developers. The sellers are then prohibited to develop the property. The builders then use the credits to build in areas that allow high density development (Smart Growth, 2002).

*Regional Development Strategies* are financial incentives provided to local governments that take into consideration adjacent communities needs and also that concentrate on growth where existing infrastructure is available. Both Wisconsin and Maryland have implemented programs of this nature (Smart Growth, 2002).

*Financial tools such as real estate transfer taxes, impact fees, bonds, and local sales taxes* are tools that are used to finance acquisition of open-space areas such as parks and greenways. Both Maryland and Colorado have utilized the state real estate transfer tax and sales tax, respectively, to acquire open space properties. Some of the incentives in Austin, Texas offers developers who participate in their Smart Zone, Smart Matrix programs, include waivers of city fees among other incentives. The program can be viewed online at [www.ci.austin.tx.us/smartgrowth/incentives.htm](http://www.ci.austin.tx.us/smartgrowth/incentives.htm). (Smart Growth, 2002).

*An Introductory Course* to green infrastructure is offered through the USDA Forest Service and the U.S. Fish & Wildlife Service/National Conservation Training Center. Information can be obtained through the following website: <http://www.conservationfund.org/?article=2487&back=true> (Conservation Fund, 2002).

The *Northeastern Illinois Planning Commission (NIPC)* has published a guide that is beneficial to restoring natural lands within existing and newly developing areas. The publication is available through NIPC's website: <http://www.nipc.cog.il.us/new-pubs.htm#Nature> (NIPC, 2002).

The *National Park Service* is initiating an “*adjacent lands strategy*” which will serve to protect land from being developed that is adjacent to national landmarks or significant properties (Arendt, 1994).

### **Principles of Subdivision Conservation Design and Environmentally Responsible Building Techniques**

There are several steps to designing a conservation residential development. Prior to the first design step, it is imperative that a resource analysis is prepared. Maps should be assembled or created and reports compiled that outline the existence of wetlands, floodplains, wildlife habitats, native vegetation, soil types and slopes, as well as natural and historic resources (Arendt, 1996).

### ***Subdivision Layout***

After a resource analysis has been compiled and studied, the first step of the design process is that open space be designated as the fundamental arrangement around which the buildable area is planned. Obviously, the unbuildable areas such as wetlands, steep terrain, and floodplains are set aside first. The developer may also look at other criteria such as attractive scenery, habitat migration patterns, and any cultural or historical landmarks that are a part of the area's traditions and/or history. As many houses as possible should have a view of either a minor or major green. If this is not possible, then the inclusion of interconnected trails will allow quick access to an open/green or woodland area.

The next step is to create a street system that connects the residences. Whenever the layout allows the use of curves rather than long, straight streets, the curvature provides an aesthetically pleasing journey, and provides a safety/speed calming measure. With the avoidance of dead-end streets such as cul-de-sacs, travel among the residences is minimized.

Interconnected street systems also provide more direct access for emergency vehicles, sanitation trucks, school buses, etc., and thus allow the more rapid dispersion of vehicles throughout the development.

The final step is the sketching in of the lot lines. Prior to this stage, the density of the neighborhood has already been determined through zoning regulations or is being dictated by the type of neighborhood being developed. Lot sizes will vary depending on the market the developer is trying to attract. Retirees, young couples, and small families generally do not want a lot of yard maintenance. Dictation of lot size should also take advantage of green space which will allow for smaller back yards of many parcels (Arendt, 1996).

### ***Density Standards***

The constraint that dictates whether a residential development is a conservation subdivision, states that “half or more of the buildable land area is designated as undivided, permanent open space ... typically achieved in a density-neutral manner” (Arendt, 1996). There are two ways that density standards can be determined in a conservation designed subdivision. One is by calculating through mathematical procedures set forth in the local ordinance and the other way is by using the “yield plans” which visually show the build-out capacity of the development.

Buildable land is calculated by first deducting the primary and secondary conservation areas from the total acreage. The primary conservation areas that were first set aside upon the completion of the analysis is the first component of undevelopable land. These are made up of wetlands, ponds, lakes, or other bodies of water, steep slopes and floodplains. The second component, the secondary areas, are made up of any historically, archaeologically or culturally consequential areas, farms, environmental or ecological tracts, or those areas involving wildlife habitat corridors or feeding grounds. The developable land that is left then follows the density standards in the existing ordinance. This usually allows for up to twice the normal density (Arendt, 1996).

### ***Structure Orientation/Placement and Landscaping***

Orientation refers to the placement of the structure on the lot. Conservation based development takes advantage of energy saving techniques; therefore, it is important that the structure is oriented concerning window and garage/driveway placement, porches, overhangs, as well as landscaping techniques. If the lot allows, the house usually should be built on the east-west axis to allow the long walls to have a north or south exposure. If this is not possible, then the shape of the house should be square rather than rectangle to lessen the exposed surface area. The climate, summer and winter sun-angles, the direction of prevailing winds, and regional vegetation are important factors in orienting a house for conservation development. Some of the environmental benefits include protection of water supplies, erosion control, food provision for habitat, and purification

of the air from the carbon dioxide from trees and other plants.

Deciduous and evergreen trees, shrubs, vines, and groundcover provide cooling conditions for the structure, patio, and driveway from summer heat. Research shows that tree-lined streets in neighborhoods dramatically decrease hot summer temperatures. Trees that provide shade from solar heat are instrumental in reducing energy costs and lessen the absorption of heat through the roof and windows of the structure. They also provide noise protection as well as providing a windbreak in the winter (Office of Energy Efficiency, 2002).

Placement of houses within the development is an important factor in conservation design. After open spaces have been set aside, this is the next step in developing the master plan. The houses should sit within the plan to take advantage of views, nature trails, and interconnected greenways.

When conservation designed development procedures pursue density standards that allow affordable housing, the results will be smaller width lots. Therefore, special attention is given to windows walls<sup>1</sup>, the view, and the building's relationship with the street. Houses that are sitting in close proximity to each other should alternate facing walls with windows. This allows each structure to have a windowed wall and provides privacy (Arendt, 1996).

The placement of structures within the development has social implications in that the structures and their place within the development collaboratively form the neighborhood and a sense of community (Ewing, 1996).

### ***Street Layout, Design and Alignment***

Since conservation subdivisions are normally rural properties, the width, length, and design of the streets should reflect the traffic flow and vehicle usage, while providing

---

<sup>1</sup> Not all houses constructed today contain walls with windows. Sometimes the entire side(s) of a house is without windows.

safety features for pedestrians and motorists alike. Much like zoning laws, road design techniques are outdated and reflect past standards. A large portion of the conservation subdivision is low density; therefore, the vehicle trips generated per day will be low in number. When this is the situation, 16 foot streets are quite adequate, and on higher density streets 18 foot pavement widths will suffice. This concept is important to sustainable development in that it cuts down on pavement runoffs, which cause soil contamination and water pollution. The region of the country where the subdivision is located determines the material components of the street shoulders. This is because in cold climates, for example, there has to be consideration for snow build up. Shoulder widths are also determined by existence of sidewalks, pedestrian or bike trails, treescapes, utilities, etc. (Arendt, 1994).

In rural subdivisions, the streets that connect the residences should be gently curving with intersections, either 90-degree or Y-shaped. Curved streets tend to keep traffic at a reasonable speed for safety purposes and provide the advantage of views of the meadows, parks, and other open space features. Avoidance of long street straight streets is an excepted ideal except where the street has houses bordering only one side. The utilization of interconnected streets is the preferred alignment in that they make navigation of school buses, mail trucks, and emergency vehicles much easier. If cul-de-sacs are unavoidable due to rocky or rough topography, it is imperative that the houses are connected by neighborhood trails. Interconnected streets and neighborhoods encourage walking, thus the automobile is utilized less, which reduces air pollution (Arendt, 1996).

### ***Structure Design and Materials Selection***

Developers of conservation based neighborhoods or communities who want to create a sense of place while following sustainable development practices must pay special attention to the design of the structures whether they are residential, commercial, civic, or institutional. This is where architectural codes in conjunction with urban codes come into play. The urban codes consist of the height of buildings, setbacks, and street alignments as well as the layout of plazas, squares, parks or open spaces. On the other hand, the

architectural codes emphasize the roof pitch, exterior materials, window placement, and the placement of porches and their dimensions.

Exceptionally small lots are better suited to accommodate attached row houses that are unified with front exterior appendages, details, and height. Consistent building setbacks also serve to create a street wall that is pleasing in appearance and radiates harmony. This prototype is an appropriate substitute for high density free-standing structures with windowless walls. Examples of this are found in Philadelphia, Cambridge, Savannah and Colonial Williamsburg.

Vertical windows are more appropriate for traditional buildings than horizontal ones. Vertical windows are in alignment with existing vertical elements such as erect humans, trees, and other environmental physical features, in addition to the natural state of gravity producing theory of groundedness. Horizontal windows interrupt these psychological concepts of design patterns that humans draw a parallel to metaphysically (Kuntsler, 1996).

The materials used in constructing the structure are of equal importance in conservation design. Recycled, reusable, or environmentally friendly products range from foundation products to structural products, and the lumber used in the construction to recycled paint, wallpaper and alternative insulation in interior products.

Concrete blocks or concrete-based products are foundation materials used in construction. In the making of cement, the environmental impacts are global in that pollutants are released into the air creating *"8% of all carbon dioxide emissions ... worldwide"*. In addition the process itself is energy demanding. On the market are energy efficient and environmentally friendly substitutes (Center, 2002).

Another environmentally friendly building product is certified lumber. This lumber comes from forests that have been managed resourcefully by taking into consideration the

ecosystem of the forest area in totality. It has passed the regulations of the Certified Forest Products Council that strives to protect forests that are known to be endangered as well as supporting the use of alternative products. A company that sells certified lumber is given a certificate by CWPC (Certified Wood Products Council, 2002).

Engineered lumber is utilized in the framing system as a substitute for solid wood. Small pieces of wood from non-threatened species are processed with adhesives under extreme heat to produce a durable, sturdy, quality substitute. I-joists and finger-jointed lumber are two examples of engineered lumber products used in the construction business (CRBT, 2002).

Many companies have perfected the alternative materials used for decking. Instead of wood, a composite of recycled plastic sometimes combined with recycled wood fibers creates a maintenance free product that is resistant to insects, mold, mildew and avoids the use of landfill space. Using alternative wood products for these applications also cancels out the use of treated lumber whose chemicals contaminate the soil (Red Dawn, 2002).

Another application where recycled plastic is currently being utilized in environmentally friendly building is roofing materials. A substance formed from rubber and plastic is made into products that resemble slate tiles or terra cotta tile, and is extremely durable and storm resistant. Coating materials being used on the products are less harmful than traditional coating materials of metal roofing (Environmental Design Magazine, 2002).

Insulation material commonly used is fiberglass. Insulation is important in attaining an energy efficient structure. Alternative environmentally friendly products include mineral wool insulation, cellulose insulation, and foam insulation.

Finally, there are salvaged products that are reusable and resource efficient. Reusing building materials and products cut down on landfill use. Reuse is more energy efficient

than recycling. In addition, recycled products may contain historical value or cultural meaning of an area. Older buildings are frequently inundated with architectural details and quality materials exhibiting craftsmanship that is no longer available or financially feasible. Salvaging older wood products utilizing wood from old-growth or rare tree species is both environmentally and economically resourceful (Center, 2002).

Choices of interior finish materials are equally important to environmentally friendly building practices. Flooring is one of the dominant components of interior materials. Lately, much attention has been on carpet, the toxic chemical makeup, and the fact that it produces mold and dust. Therefore, alternative products are being utilized and healthier carpet manufacturing practices investigated and developed.

Another popular choice in flooring for homeowners is hardwood. Hardwood flooring is available that is certified by the Forest Stewardship Council, which guarantees it has been responsibly harvested. There is also the choice of “reclaimed” hardwood flooring.

Cork, primarily harvested from Portugal, makes a durable natural substitute to carpet or hardwood. Harvesting cork does not damage the tree and allows it to live and continue to grow.

Popular several decades ago and making a comeback is linoleum, which is surprisingly a material that is safe, nontoxic, natural, and not even remotely related to vinyl. It is made of linseed oil, wood flour and limestone resins and consists of a jute fiber backing. It is long-lasting and extremely durable as exposure to air causes it to harden (NRDC, 2002).

Equally important to the utilization of resource-friendly, renewable products is the disposal of waste products and construction debris that are byproducts of construction. One exploited waste product is drywall, which farmers are utilizing for soil amendment purposes. This environmentally friendly product is more cost effective than purchasing gypsum fertilizer. Since conservation subdivisions are rural, farms in close proximity to

the building sites will not require excessive hauling expense to the builder. This is also advantageous for conserving landfill space (WasteCap Wisconsin, 2002).

### ***Energy Efficiency and Conservation***

Nonrenewable sources of energy are currently used nationally by the United States for energy purposes. These nonrenewable sources include coal, oil, and natural gas. At some point, these products will become too costly to produce, become depleted, or will become detrimental to the environment in the recovery process. Therefore, scientists and environmentalists are researching renewable sources for the most efficient utilization for public value and use. Continuous extensive research is comprehensive and available on alternative energy sources such as wind power, solar power, fuel cells, and geothermal. The developments of alternative sources that dramatically decrease dependence on imported oil, reduce the planet's air pollution, and preserve natural resources is of utmost importance.

There are some measures that developers and builders can take when constructing subdivisions that incorporate renewable energy sources or produce energy efficient buildings. It was previously discussed how proper landscaping can impact a building's energy consumption. There are also measures taken within the building that can increase energy efficiency.

Programmable thermostats that allow the homeowner to control the temperature of the home at different periods of the day, when it is unoccupied, and when it is occupied is an important part of the HVAC system. Careful programming can produce energy efficient savings.

Consumer appliances such as clothes washers, refrigerators, and dishwashers are all available with energy efficient features. Other energy efficient home products include heating and cooling systems, furnaces, and boilers. Windows, lighting, and ceiling fans are also included in these products. The EPA's national symbol and label used for energy

efficiency in appliances and products is ENERGY STAR™ (Energy Star, and EPA, 2002). Builders who utilize these systems are participating in resource efficient methods of sustainable development practices.

With the rising cost of fuel, unstable relationships with oil-producing countries, the polluting impacts of fossil fuel power plants, and the unease over nuclear waste, environmentalists are searching for alternative energy sources. Renewable sources go beyond what will be discussed in this paper due to the technical aspects, cost effectiveness, and availability. The systems that exhibit advantageous characteristics for conservation based subdivisions include wind power, solar power, and geothermal heat pumps. Not researched in-depth are other existing sources such as fuel cells, bioenergy, hydropower and ocean energy.

Widely used in Europe and gaining popularity world wide is *wind power*. Wind power has gained acceptance and become more price effective in the last few years. Better turbines and effective technology in wind resources has increased interest among buyers and users. Yet, less than 1% of electricity produced in the U.S. is through wind power while it is 30% worldwide (Magill, 2002). With the appropriate wind speeds, wind power could be very advantageous in providing energy to the residents of a conservation based subdivision. The rural location and abundance of space provide an ideal site for a small wind farm.

*Solar power* is another renewable energy resource. Passive solar heating, cooling and lighting is perhaps the most advantageous for home use. The builder must first orient the structure to gain the advantage of the sunlight, taking into consideration that the south side receives the most. In the 1970's the *Solar Site Selector* was introduced. The improved version of this product is available on today's market, and is instrumental in assisting builders in selecting the appropriate site, orientation, and landscaping techniques. It is also valuable for determining tax credit information (EDC, 2002). Floor and wall materials that integrate sunlight through large window walls and that are

collectors and retention conduits for heat are excellent choices for south facing window walls. This characteristic is known as *direct gain* and is advantageous in the winter months or in cold climates. In the summer months, overhangs would provide shade and prevent too much sun from entering the structure.

A comparable correlation to this concept is a room of a greenhouse effect, also known as a sunspace, which is located on the south side of the house. Heat gathered in this space is circulated throughout the house. This space is closed off during the hot summer months.

*Daylighting* is making use of daytime light and is achieved through utilization of skylights or clerestory windows in the upper levels of a building or through strategically placed windows. There is no method of storing light, therefore, it is better utilized during the daytime and resorting to artificial lighting at night. A developer can integrate passive solar design into the structure's lighting plan so that it offers aesthetic qualities as well as provides economical and energy efficient benefits to the homeowner.

*Geothermal heat pumps* operate on the heat from the earth. This is a very clean, dependable, low-cost source of energy that does not rely on resources from any other countries. Geothermal systems for residential use are based on underground pipes, which transfer heat into and out of the structure. This type of energy efficient system is conducive for heating, cooling, and hot water heating (National Renewable Energy Laboratory, 2002).

### ***Habitat Conservation Planning***

Habitat conservation planning involves the protection of wildlife, threatened species and existing ecosystems. The decisions that land use planners, county commissioners, town boards or councils make in allowing construction and development greatly influences the continuation of these delicate systems. Other stakeholders involved in the process of habitat conservation include property owners, ecologists, land trust members, planners,

and attorneys. Habitat protection is, therefore, a political process that involves many.

Development that disrupts the natural balance of the ecosystem occurs in urban areas, suburban areas, and in rural areas. The tools for dealing with these situations differ in relation to the human effects in each type of environment. Conservation-based development is primarily rural but produces wide-ranging environmental impacts. This category of development is on a broad scale in relation to the appropriate measures necessary to protect wildlife. The terminology in this section will refer only to this scale.

In the broad scale, wildlife is displaced due to residential development. Roads, utilities, fences, and removal of native vegetation have immense impacts on the value of the wildlife habitat. When designing a conservation subdivision, the size and impact of the “zone of disturbance” triggered by the development requires special attention. The definition of a disturbance zone is “the area surrounding a house, road, or a subdivision in which the value of habitat for wildlife is meaningfully reduced by human activity and/or structures” (Duerkson, 1997). For example, the disturbance zone surrounding a house can range from 150 feet to 1500 feet. The natural movement of animals or natural wildlife corridors determines the distance. Prior designation of these areas placed them on the inventory analysis, which was prepared in the pre-design stage of development.

Conservation planning can utilize different methods to protect wildlife habitat. These methods include regulatory measures, the type of development created, and incentives. Regulatory measures include modifying zoning regulations of the ordinance or implementing modernized maps. One way of accomplishing this is by creating an overlay zone to an existing zoning map and amending the text. This does not alter other relevant elements of the ordinance such as densities, but does require a competent staff to implement the process. Overlay zones are extremely useful in conservation-based developments due to the widespread area the development involves, and low densities are excellent measures towards habitat protection. Conservation subdivisions are generally large lots with ample undeveloped green space easily incorporated into a wildlife

protection area that reduce human-animal contact. Other tools judiciously utilized for protection include buffers, fence controls, and public access restriction.

Development standards conducive to habitat protection include phase developments, which require that the first stage of building is the furthest point from the habitat area. At this location, higher density properties are more appropriate. The closer to the habitat areas, lower densities are more satisfactory for the least impact and interference.

Construction control measures are an extremely important part of development. When a lot of disturbance has occurred, wildlife will customarily leave the area temporarily and return after development is completed. Chaos between homeowners and animals is a byproduct that this situation creates. The developer can assure that this does not happen by limiting certain actions and implementing specific measures. They include cutting only the trees and vegetation that is necessary. In wildlife areas, limiting excavation and grade changes, limiting use of fires for clearing purposes, and limiting length of construction during time of construction. Consideration can also be given to number of personnel on property at one time, number of personnel vehicles, and transportation routes used.

Even though our country has seen significant population growth in many areas, loss of habitat is contributing to poor land use decisions. This is causing conflict between environmentalists and those in the land use decision making process. Landowners and developers have an economic interest in the development of the property, while environmentalists' interests are more in biological terms. The different perspectives of these stakeholders will all be a part of the implementation of the habitat conservation planning process (Beatley, 1994).

### ***Balsam Mountain Preserve: An Example of Applying Principals of Sustainable Development***

Balsam Mountain Preserve, located in North Carolina, is an excellent example of conservation-based development that incorporates sustainable development practices. This company is dedicated to preserving the environment while providing a healthy lifestyle where the balance of humans and habitat is remarkable. It is truly a prototype of what to strive for in the built environment.

“The mission of the Balsam Mountain Preserve is to create a human settlement within a park whose members share traditional values, a strong sense of place, and an ethos of human stewardship of the natural systems that support all life. We seek a legacy of happy, enriching daily life, sustainable harmony within our surroundings, and regional environmental leadership. Moreover, we seek to protect and preserve this rugged and beautiful place, so that it might comfort living creatures for generations to come” Online: <http://www.balsammountainpreserve.com>. [11 February 2003]).

Carefully planned, environmentally sensitive home sites are available on a portion of the 4,400 acres of the preserve. A land management plan maintains and protects the 1,500+ acres set aside in preserves under the auspices of the non-profit Balsam Mountain Trust.

“The mission of the Trust will have three major functions: (1) to manage the Nature Preserve’s open spaces, (2) to provide educational programs for members and guests plus outreach programs extending to the surrounding communities at large, and (3) to consult with the developer ... helping implement sound developmental plans, land management, and landscaping practices.” (Online: <http://www.balsammountainpreserve.com>. 11 February 2003).

The Balsam Mountain Trust’s educational outreach program for members and guests includes a nature center, habitat workshops, and visiting artists. Monthly programs of various subjects that inform the members and guests of the Preserve’s ecosystem and the area’s cultural history are also a part of the program.

The Balsam Mountain Club will offer amenities to members that include an 18-hole golf course, fitness facilities and equestrian center. Organized activities will center on the natural amenities of fishing, hiking, and skiing in the winter. Seasonal and holiday traditions will take place in the rustic clubhouse facilities.

As homes are built on the Preserve, a community association will be formed as a non-profit organization. Members will participate not only in administrative duties but also in preservation and maintenance of the common areas and eventually in administering the habitat review process (Online: <http://www.balsammountainpreserve.com>.2003).

### **CHAPTER III.**

#### **POTENTIAL ROLE OF LAND CONSERVANCIES**

After an extensive study of the principles of land use paradigms, policies and government programs that support sustainability, and the principles involved in creating conservation based subdivisions, the next step was to investigate land conservancies, their missions and roles and how the trend is changing to include site design assistance to developers. Research narrowed down three land conservancies promoting sustainable development practices. The results of their interviews are discussed in this chapter and the data are compiled into tables which are located in Appendix A. A checklist of necessary key elements emerged from this information that is imperative for a land conservancy to possess in order to engage in sustainable development practices, and is discussed in the subheading “Key Elements of Successful Land Conservancy Sustainable Development Program.”

#### **Missions and Roles**

Through extensive research of land conservancies within the United States, it is evident that they share a common mission. These nonprofit organizations work with elected officials, other public land agencies, private landowners, and community experts to protect America’s land that includes scenic areas, wetlands, farmland, wildlife habitats, and our nation’s historic and cultural heritage. These organizations are created with differing language in their titles. The titles may be composed of “land trust,” “open-land association,” “land foundation,” or “land conservancy.” The organizations researched and interviewed go by either land trust or land conservancy.

Land conservancies have several methods by which they protect our nation’s resources. They can purchase, monitor and maintain land either on a permanent basis or on a temporary basis. They protect land and provide private land owners with tax advantages through conservation easements, and property is often acquired by the land conservancy to be managed as open space.

## **Changing Trends**

As the rapid expansion of land development threatens our natural environment, land conservancies are extending their roles past the traditional role of protection and conservation. They are providing assistance to developers and municipalities to develop land in a more sustainable manner.

Of the ten land conservancies contacted, three responded, agreeing to be interviewed and having their responses documented. Representatives from the three land conservancies/trust were interviewed in detail by telephone or email as to the organization's mission, its traditional roles, and its expanding roles.

The organizations interviewed and their contact information consist of the following:

**Brandywine Conservancy**

P.O. Box 141

Chadds Ford, PA 19317

Telephone (610) 388-2700

Website: <http://www.brandywineconservancy.org>

The contact person for this agency was John Snook, Senior Advisor,  
Environmental Management Center

**Heritage Conservancy**

85 Old Dublin Pike

Doylestown, PA 18901

Telephone (215) 345-7020

Website: <http://www.heritageconservancy.org>

The contact person for this agency was Clifford C. David, Jr., President

**The Minnesota Land Trust**

394 Lake Ave. S., Suite 405

Duluth, MN 55802

Telephone: (218) 786-9377

Website: <http://www.mnland.org>

The contact person for this agency was Kris Larson, Conservation Director

“The mission of the Brandywine Conservancy’s Environmental Management Center is to conserve the natural and cultural resources of the Brandywine River watershed and other selected areas with a primary emphasis on conservation of water quantity and quality. The mission is founded on a belief that a healthy and secure natural environment is essential to meet the needs and aspirations of present and future generations” (Online: <http://www.brandywine.org>. 2002).

“Heritage Conservancy is a nonprofit organization dedicated to preserving our natural and historic heritage. Founded in 1958, it was concern for the rapid loss of open space in Bucks County which led to the formation of the Buck County Park Foundation, known today as Heritage Conservancy” (Online: <http://www.heritageconservancy.org>. 2002).

“The Minnesota Land Trust permanently protects the lands and waters that define our communities and enrich our quality of life” (Online: <http://www.mnland.org>. 2002).

**Table 1<sup>2</sup>** demonstrates the outreach methods used by the three land conservancies that promote conservation development. The methods used include direct contact, producing a newsletter, giving presentations/holding workshops, providing information through a Website and with articles/publications and “other” methods. Other methods gathered from the interview data include radio/television programs and non-targeted referrals. The methods utilized by all three land conservancies include direct contact and outreach through articles/publications. Some of this information is downloadable to the public from Heritage Conservancy’s Website and other publications are available for a fee from the Brandywine Conservancy.

---

<sup>2</sup> Tables 1-6 are located in Appendix A.

Brandywine Conservancy's staff in Chadds Ford, Pennsylvania assists developers and municipalities in protecting its community's resources through consultative services in site planning and design. The focus of their outreach is land stewardship, municipal planning and conservation design. Their conservation design program began in the early 1980s to assist developers (Telephone interview, John Snook, 2002).

Brandywine Conservancy's staff and consultants are in the process of writing two books. The subject matter of one is transfer development rights and one is on landscaping with native plants. They currently offer a two-volume Environmental Management Handbook to subscribers to their Municipal Assistance Program. They also conduct three programs a year to provide municipal assistance geared toward planning. Invited to these programs (through invitation) are planning officials, developers and lawyers who work for developers.

They produce two separate newsletters. One is "Stewardship Prospective" geared mainly to landowners who own property under land conservation easements, and members of their municipal assistance list receive "Environmental Currents". (Telephone interview, John Snook, 2002).

Heritage Conservancy located in Doylestown, Pennsylvania, works with both municipalities and/or private landowners in issues of land conservation in a region that is developing rapidly. They work with municipalities in developing and implementing open space plans to meet open space goals that also support the mission of Heritage Conservancy. They are very proactive in direct contact with municipalities, landowners, and developers. They maintain an active Website and provide articles/publications as outreach methods (Web Interview, Daniel, 2002).

The primary focus of the Minnesota Land Trust's outreach program is to educate all parties with an interest in land development. The education process includes strategies for conserving land and water resources through better open space planning, ordinance drafting and subdivision design. The outreach methods they utilize include direct contact,

presentations, their Website, charrettes, publications, and radio and television media. According to Kris Larsen, “the most tangible method is direct discussions with stakeholders one-on-one using relevant examples” (Web Interview, Larsen, 2002).

**Table 2** illustrates the target audiences of the three land conservancies. They include private landowners, municipalities, developers, attorneys and “others.” The Brandywine Conservancy does not have a program specifically targeted to developers. There was a realization that planning expertise was lacking in municipalities which led to the creation of a municipal assistance program. Through this program, developers are assisted in ways to conserve natural resources. Through the interview it was determined that land owners have the largest impact on carrying out sustainable development practices because some want to develop, not just conserve.

Heritage Conservancy’s target audience includes *real estate* developers as well as county and federal agencies and decision makers. According to Cliff Daniel, “landowners have the greatest impact on carrying out sustainable development practices because of their influence on the future use of land; therefore, a sustainable development strategy is incorporated as a solution” (Web Interview, Daniel, 2002).

Minnesota Land Trust’s target audience includes consultants, local government planning staff, local government officials and other non-governmental organizations. Education of all parties involved in the land development/conservation process is crucial. For example, municipalities play a large part through their zoning process that allows developers to change their practices. Most issues relating to land use are dealt with at the local level where ordinances and codes are often out-dated. Members of the Minnesota Land Trust are aware of the importance of attending regularly scheduled meetings of their local units of government in order to stay informed and involved (Web Interview, Kris Larsen, 2002).

In summary, target audiences of all three conservancies' include all decision makers and stakeholders involved in the development or conservation of open space. Municipalities and private landowners; however, were mentioned recurrently.

The next question in the interview consisted of the organization's motivation to become involved in this program (assisting in sustainable development practices). Municipalities initially contacted the Brandywine Conservancy to look at a development plan and draw up an alternative. This has led to working directly with developers on occasion, but they still primarily assist municipalities. They found that municipalities need as much education as developers and that part of the education process for developers is realizing that they can make a profit and conserve land concurrently. Originally, municipalities forced developers to become involved with the conservancy, but they often return on their own after one successful project. Another component of their program is working with municipalities in modifying codes or ordinances that allow greater flexibility to incorporate mixed use or clustering. They also encourage municipalities to provide incentives to developers (Telephone interview, John Snook, 2002).

The high cost of open space motivated the Heritage Conservancy to consider alternative methods to protect resources. The continuing rise of the cost of land per acre made it difficult to acquire land on a fee simple basis or to purchase development rights *and* have a significant impact on open space preservation. With definite strategies in place, a competent staff (including an in-house attorney), and a strong working knowledge of municipal and state regulations, the Heritage Conservancy is well equipped in promoting sustainable development practices (Web Interview, Daniel, 2002).

The Minnesota Land Trust's motivation to become involved in sustainable development came when they were asked to hold conservation easements in open space subdivisions. When they became involved in this process, they realized how badly designed most subdivisions were. This prompted them to become more directly involved in the design and planning projects. Their program concentrates on education of all stakeholders and

decision makers, direct design and planning consulting work, and securing easements in conservation subdivisions to promote sustainable development practices (Web Interview, Kris Larsen, 2002).

**Table 3** supplies information on resources that are cited as being needed by land conservancies to operate their programs to promote sustainable development practices. The resources listed include staff expertise, funding, knowledge of community aspects, knowledge of political arena. Also included are design knowledge, full-time staff, part-time staff, available consultants, and a full-time director. It illustrates the commonalities among the land conservancies interviewed.

According to Brandywine Conservancy, a full-time staff is an extremely important resource. They must be readily available to talk to a developer or to attend municipal meetings. This is not possible with a part-time or volunteer staff. Stated was the importance that staff are knowledgeable with a design related background. A full-time director is essential to oversee the staff and the projects, and funding must be in place to provide for a full-time director and full-time staff (Telephone interview, John Snook, 2002).

Heritage Conservancy indicated that their most important resource is a full-time staff whose expertise includes knowledge of the political arena and of community aspects. Funding in place to purchase development rights or parcels of land until the planning process is completed is vital (Web Interview, Cliff Daniel, 2002).

The Minnesota Land Trust began as a pilot program; therefore, funding was extremely important to launch the program. A two-year grant and a foundation grant provided the salary for a full-time director, a part-time staff and consultants (Web Interview, Kris Larsen, 2002).

**Table 4** demonstrates the major constraints of the three interviewed land conservancies involved in promoting a conservation program. The constraints include time, political will, financial resources and none.

The Brandywine Conservancy revealed that time is a constraint even with a full-time staff of twenty professionals. As they become more involved in projects, time is more of an issue. They also expressed that the political will of the community or region is the nucleus needed to successfully carry forth the strategy of promoting sustainable development practices (Telephone interview, John Snook, 2002).

Heritage Conservancy noted that time is a major constraint due to the rapid growth of the region. "Time is of the essence in preserving open space" (Interview, Daniel, 2002). They also cited political will of the politicians and community leaders as essential. If their support is not there, it becomes a major constraint in promoting sustainable development practices. Available funding to acquire land and hold it in perpetuity is another constraint emphasized by Daniel. (Cliff Daniel. Web interview. 2002).

The Minnesota Land Trust documented no constraints (Web Interview, Kris Larsen, 2002).

**Table 5** lists the sources of support that the three land conservancies rely upon for their programs that promote sustainable development practices.

The Brandywine Conservancy's compensation comes through grants, endowments, and by charging fees for their services. The conservancy applies for grants for specific project purposes. The income from endowments provides a safety net for services provided, but not billed. Fees based on an hourly rate for time utilized are paid directly to the conservancy by the municipality or developer.

The Heritage Conservancy is supported through endowments/foundations or through fees charged for services to local and state governments and to individuals or businesses who benefit financially from their projects (Web Interview, Daniel, 2002).

The Minnesota Land Trust is compensated through grants and endowment/foundation funds. Initially their work was supported by grants from the Minnesota Legislature and a major foundation (Web Interview, Kris Larsen, 2002).

**Table 6** pertains to the effectiveness of the individual organization's program to promote sustainable development practices. All three stated that their programs are very effective in conserving open space. Brandywine Conservancy stated that in minimizing negative impact development, their efforts were spotty in some areas and very successful in others (Telephone interview, John Snook, 2002). The Heritage Conservancy's philosophy is that it has a long way to go in successfully minimizing negative impact development. The recent publication of the Homebuilders Association's internal document on the open space issue is of concern. According to Cliff Daniel, they have transitioned "from a publicly cooperative approach to an aggressive anti-open space conservation approach to the development and building in the region" (Cliff Daniel. Web interview. 2002).

The Minnesota Land Trust efforts are somewhat successful in minimizing negative impact development. Improvement of conservation developments was accomplished by engaging in the early stage of the design process. The land trust is confident that it is "successful in getting the word out that there are other forms of development that are more compatible with a sense of place and open space resources"(Web Interview, Kris Larsen, 2002).

### **Key Elements of A Successful Land Conservancy Sustainable Development Program**

With development rapidly occurring throughout America's landscape, land conservancies strive to protect land through traditional methods. However, in spite of their heroic

efforts, conservancies cannot protect all land from development. There are methods and strategies that provide sustainable alternatives to traditional land use development practices applied today. Evidence gathered in the literature review and interviews of the directors of the three land conservancies that are actively promoting sustainable development practices, substantiates that successful strategies and outcomes are possible.

A land conservancy is a prime organization to either take the initiative or partner with other non-governmental organizations in assisting those who develop land because of several factors. One is the likelihood of a vast amount of knowledge concerning ecological and environmental issues among their members. The expertise of the staff and members are valuable tools in promoting sustainable development practices through consultation. A land conservancies' strength is in their large memberships nationwide. Another asset is that the people who belong to them are concerned about the environment and are members who have a stake in the quality of life in their communities.

Three land conservancies were interviewed in detail and research conducted through their Websites to gain information on how they promote sustainable development practices and what attributes contribute to the success of their programs. All three exhibited some similar characteristics and operational styles and are discussed below.

In the interview process a majority of those asked if a land conservancy was the agency to participate in promoting sustainable development practices, answered yes. Members of the land conservancies recognize that the most ecological and environmental expertise is within these organizations. The logic that land will continue to be developed is an incentive for land conservancies to expand their missions to promote sustainable development principles and practices.

A successful strategy for land conservancies to promote sustainable design principles into conservation based subdivisions consist of three major components:

- Development of a skilled staff

- Establishment of an outreach program/education process
- An aggressive fundraising strategy to cover salaries of staff and costs of operating program

### *Staff*

The main ingredients of a successful program are a full-time staff and an administrator to direct the program. The expertise of the staff is not through random selection, but through calculated consideration of the necessary credentials needed to carry forth the program and provide solutions for a wide range of land management and land development problems. Staff expertise should consist of land use planning, site design, knowledge of municipal planning and government regulations as well as knowledge of land conservation tools and programs. A skilled staff would include cultural and historic preservationists. To operate a progressive program of this nature would need a staff of 10-20. The administrator should have a proven performance record and background in developing a staff that can achieve the anticipated results.

Another crucial staff member would be a director of development who would work under the administrator. The director of development oversees communications and public relations activities that include producing publications, newsletters, maintaining a Website, conducting workshops, charrettes and public awareness campaigns. The duties of the director of development also include development and implementation of comprehensive fundraising strategies.

Tools used by staff to provide solutions for complicated land use challenges include preparation of municipal comprehensive plans, zoning ordinances and land development ordinances for local, county and state governments. A knowledgeable staff would participate in the site development plan and in identifying the environmental impacts, and the cultural and historical characteristics. Further assistance would include devising an alternative design approach to alleviate impacts to these resources. In addition to the traditional land protection tools, i.e. easements, the staff would integrate land development with conservation and sustainable principles. An excellent site design

guide available for downloading is the Minnesota Sustainable Design Guide (Online: <http://www.sustainabledesignguide.umn.edu/MSDG/strategies.html>).

### ***Outreach Process***

An outreach and education process that includes the public, governmental officials and developers would be necessary. These three entities are the decision makers. Public awareness of the environmental impact of insensitive construction practices, and solutions to alleviate the problem is essential and achievable. Charrettes, workshops and training seminars conducted by staff and geared to planning commissions, chambers, zoning boards, and design review boards are tools for educating local and county officials on the environmental impacts of insensitive development practices. A full-time staff is essential to attend zoning case hearings conducted during the daytime or to meet with officials to assist in site design planning.

A proactive approach is for the administrator to supervise a plan that involves contacting developers in the region who are practicing sustainable development practices, and strive to build a relationship with them. When land becomes available for development, the conservancy would then contact the developers supportive of the program to purchase the available property for development of a conservation-based subdivision. The staff would also attend Builders Conferences and participate by speaking or facilitating an awareness seminar.

In addition to building a relationship with developers, an updated, sophisticated Website that utilizes a web-based system to reach out to the community would be advantageous. A partnership with various university departments with links to resources and assistance would be beneficial. A student knowledgeable in computers would intern with the conservancy to keep the system updated and functioning properly.

An aggressive awareness campaign through magazine and newspaper ads would be constructive. Ads that reach out to historic preservationists, and to the nostalgic,

sentimental, individuals who long for the simpler days with less stressful lifestyles and traffic congestion; ads that reach out to fisherman, hunters, bird watchers, and nature lovers will serve to raise public awareness of the adverse impacts of inappropriate development practices.

### ***Funding***

The variety of funding that is most beneficial to operate an organization with a full time staff would be a major issue for consideration. Most of the conservancies interviewed charge a fee for their assistance and services, and received endowments and grants which covers the costs of salaries for staff. The operating budget of the awareness campaign is funded through grants or donations.

## **CHAPTER IV.**

### **CASE STUDY (FOOTHILLS LAND CONSERVANCY OF EAST TENNESSEE)**

In this chapter, the information gathered and analyzed is applied to a case study. Board members and the executive director of the Foothills Land Conservancy in East Tennessee granted their permission to be interviewed and documented. A series of questions that pertained to each member's expertise was submitted during each interview, and discussed consistently were constraints, resources, and consensus. The FLC's mission, goals, brief history and list of property conserved is herewith acknowledged.

#### **Mission and Goals**

A condensed mission statement of the Foothills Land Conservancy of East Tennessee states, "...the Conservancy strives to preserve the unique ecological, agricultural, and scenic resources of East Tennessee" (Online: <http://www.foothillsland.org>. 2003). According to Randy Brown, Executive Director, the primary focus of the Foothills Land Conservancy is "to conserve land through purchase and land conservations" (Randy Brown. Personal interview, 5 November 2002).

#### **History**

Fifteen hundred members and a volunteer Board of Directors support the Foothills Land Conservancy (FLC), a private, non-profit organization founded in 1985. It opened offices in Maryville, Tennessee in 1992. The current address is 614 Sevierville Road, Maryville, Tennessee. Randy Brown currently serves as the Executive Director (Online: <http://www.foothillsland.org>. 2003).

#### **Property Conserved**

The Foothills Land Conservancy uses different methods to protect resources. "Protection tools used include conservation easements, donations, fee simple purchases, bequests, revocable trusts, and green developments" (Online: <http://www.foothillsland.org>. 2003).

The Foothills Land Conservancy's first buffer zone project in 1995 protected 4,700 acres from commercial development. The National Park Service maintains 400 acres. The remaining 4,300 acres donated to the Tennessee Wildlife Resources Agency was instrumental in establishing the Foothills Wildlife Management Area. "To date, the Foothills Conservancy has protected more than 14,300 acres. These acres have been protected in 11 different projects." (Online: <http://www.foothillsland.org>. 22 February 2003).

### ***Grannybelle Woods Conservation Easement***

This project was the first one for the Foothills Land Conservancy that involved development as well as protection. They became engaged in the project in 1991 when the owner approached the conservancy to assist in the lay out of the individual lots. Completion of an easement that protects a substantial amount of the acreage occurred in 1993. The FLC's involvement with the development was an example of expanding roles that land conservancies can play within a region. Grannybelle Woods set the stage for other comparable developments in the area where the FLC lends its expertise in conservation methods (Gustanski, 2002).

### ***Smith Bend/Yuchi Refuge***

The Smith Bend/Yuchi Refuge of 2,500 acres is comprised of wetlands and upland forest. It is a prime development site set aside for a waterfowl refuge and consists of a wide range of native wildlife. The Foothills Land Conservancy collaborated with the Conservation Fund and the Tennessee Wildlife Resources Agency to acquire the property for protection. The Foothills Land Conservancy was instrumental in raising funds by private donations. Currently the Tennessee Wildlife Resources Agency manages the refuge (Online: <http://www.foothillsland.org>. 2003).

### ***The Burkhardt Farm 1,000-Acre Easement***

The largest donation in a conservation easement to the Foothills Land Conservancy consists of 1,000 acres located in Blount County. The Burkhardt farm is a working farm of beef and milk cattle, and the easement protects the historical, cultural and scenic value of the property. Made up of pastures and woodlands, it is located near the legendary Sam Houston home site and family property (Online: <http://www.foothillsland.org>. 2003).

### ***Hurricane Mountain Conservation Easement***

Recently, a group of private individuals donated 769 acres in a conservation easement to the Foothills Land Conservancy. It is recognized as one of the largest private donations to the conservancy. The easement provides a buffer zone to the park that is important for habitat and protects the scenic views of the Smoky Mountains (Online: <http://www.foothillsland.org>. 2003).

### **Roles**

A full-time Executive Director and a volunteer board and staff operate the Foothills Land Conservancy; therefore, the roles they are able to undertake are limited. According to Randy Brown, their target audience includes private landowners and the public, primarily those who donate money. Their outreach methods include direct contact, a Website, a newsletter and articles/publications.

The director and members of the board assist developers when contacted, but do not actively pursue them. They prepare conservation easements and identify community designers when an opinion of aesthetics is involved. According to Randy Brown, a major constraint in providing sustainable development practices to developers is in changing developers' attitudes toward green development. Even though they are a volunteer staff and board, they never turn anyone away who asks for assistance. If the expertise is not among the members, recognized consultants are available in the area (Randy Brown. Personal interview, 5 November 2002).

On their Website is an icon *green/limited development*. If contacted they offer assistance with preparation of conservation easements and provide consultation in sustainable practices that incorporate landscape planning, site development and wildlife management (Online: <http://www.foothillslsland.org>. *green/limited development*. 2003).

Of the Board members interviewed, there is a consensus among them that the environment is important. However, there is some separation of agreement on whether the outreach program of the FLC could be expanded to meet the needs of developers in incorporating sustainable development practices into conservation based subdivisions. One of the main constraints is the availability of the staff. All of those interviewed have full time jobs and expressed difficulty in being able to devote the necessary time to a fully active program. Because of the time constraint, most of the members interviewed expressed the need of the FLC to collaborate with other non-profit organizations.

According to Burke Pinnell of Hickory Construction and board member of the FLC, the Chamber of Commerce in Blount County is a good starting point. The Chamber is getting comments from the public about the beautiful scenic environment of the region. If the Chamber worked towards a political consensus, it could endorse the concept of protecting what is there and partner with the FLC in an outreach program. As far as developers' attitudes in the region, Mr. Pinnell articulated that they are becoming more aware and once "green" is profitable, they will be more willing to adapt. As a builder, Mr. Pinnell is furthermore aware of the issue of community acceptance. "The economy drives development and the community wants whatever is built" (Burke Pinnell. Personal interview. 15 November 2002).

Mike McKinney, a paleobiologist and board member of FLC, is willing to consult with developers but finds it difficult to get them to accept alternative techniques. He is confident that the FLC has a vast amount of expertise among its members, but a partnership with other agencies in the area would result in more impact. Involving students of the University of Tennessee in research and consultation of land development

projects was a suggestion of how developers could utilize existing agencies (Mike McKinney. Personal interview. 15 November 2002).

Information gathered from a personal interview with Mr. Billy Minser, President of FLC with expertise in wildlife management, produced another perspective on partnerships. He feels that a land conservancy is the right agency for promoting sustainable development practices if it partners with other non-profit organizations. Mr. Minser expressed that an untapped resource is the corporate community. From his experiences, there is much corporate support for this type of development because of reduction of their tax burden through donations (Billy Minser. Personal interview. 14 November 2002).

Dr. John Peine, ecologist and member of FLC, expressed concern over the impacts that developers generate that upsets the ecological framework of an area. Whether or not they realize it, damage to cultural and natural areas (sensitivity zones) of the environment including the riparian zone of streams, is a result of the grading process. According to Dr. Peine, it is imperative that a thorough cultural and natural resource analysis is conducted before any clearing or grading. Slope limitations, soil types, identification of herbaceous plants, and rocks is extremely important. There are certain rocks that when exposed, release harmful pollutants. These pollutants are then released into the newly excavated soil. Specifically, Dr. Peine's viewpoint is "to think of the landscape as the most important value, instead builders traditionally build houses that damage the ecosystem." Dr. Peine stated that the phase after development is also critical. Some important measures to lessen ecological impacts include buffers that further protect native wildlife and aquatic life. Easements that are specifically detailed towards the findings of the preliminary analysis will serve to protect vegetative, aquatic and wildlife habitat. Structures displaying natural forms that take advantage of the views without obstruction and incorporate renewable resources should be the prototype (Dr. John Peine. Personal interview. 15 November 2002).

Of the three members interviewed with environmental expertise, there was a consensus among all three that construction excavation and grading is the primary cause of pollution of rivers or wetlands. Impacts of grading further destroy natural drainage, native vegetation and habitat. As Mr. Minser pointed out, “local laws force or encourage developers to seed or sod a property after construction which aids in the obliteration of natural habitat” (Billy Minser, Personal interview. 14 November 2002).

## **CHAPTER V.**

### **CONCLUSIONS**

This chapter is a result of the research of literature conducted and compilation and analysis of that data, including interviews. In this chapter application of principles and key elements are applied to the FLC. Conclusions as to the feasibility of their expanding their program to engage in sustainable development practices and the constraints are discussed as well as an inventory of resources that are needed to expand their program.

#### **Conclusions from the Foothills Land Conservancy Case Study**

Of the first three key factors mentioned above (staff, administrator, funding) that are important for a land conservancy to successfully promote sustainable development practices, the Foothills Land Conservancy's limited personnel and limited funding are not sufficient to establish a full-time program. Board members currently provide consultative assistance to developers when needed and if their time allows. Their major constraints are time, funding, and consensus to expand their roles. If the Executive Director and the board members want to actively pursue a more aggressive outreach approach, it is achievable.

The Foothills Land Conservancy consists of a part-time staff of board members and an executive director. The executive director is involved in providing consultative services, pursuing land acquisition and assisting landowners with conservation easements. The board members occasionally provide consultative services but all work full time. To actively advance the FLC's program, it is recommended that they seek and secure funding through endowments or grants to hire a full time administrator that is capable of taking the program and expanding it. The FLC is not actively engaged in an outreach program to governmental officials, agencies, or developers. This is an aggressive approach to assure that sustainable land development is achieved.

To be involved on a part time basis, the executive director and available board members could attend builders' and trade association meetings. They could provide a workshop for educational and awareness purposes. Contact with builders/developers would contribute to building a relationship with those interested in sustainable development practices. The FLC could set up a database of names of the developers involved or those that want to participate in sustainable development practices. When land becomes available to be developed, contact by the FLC to the interested developers would initiate a purchase for ecologically/environmentally sensitive development. A more sophisticated approach would be a Web-based system with a database that links to the university and other NGOs in partnership to provide consultative services and links to resources. The executive director and an intern or volunteer to create and update the database could carry out this strategy.

The fourth key element, an extensive far-reaching, educational and awareness outreach program is difficult, if not impossible without additional staff. Workshops, seminars and charrettes are not probable due to time constraints. A working relationship with local and county officials to work to encourage code and regulation redevelopment would be challenging. The expertise for these services reverts to the requirement of a knowledgeable staff in various fields.

The executive director and board members of the Foothills Land Conservancy of East Tennessee must reach a consensus as to the goals that they want to accomplish. If they decide to expand their mission, then a decision is made to the degree of expansion. The next step is the management strategy, and then the communicative, educational process can begin.

## CHAPTER VI.

### QUESTIONS FOR FURTHER STUDY

This final chapter is partly a result of narrowing my thesis subject so that it was manageable, of questions which emerged from the information gathered from the interviews conducted from the land conservancies, and from a research of lack policies and government-supported programs available to developers and municipalities that willingly want to participate in programs of sustainable practices.

Interviewed were three land conservancies to determine their outreach methods, target audiences, and program efficiency. Studied were their constraints, sources of support, and necessary resources needed to promote sustainable development practices. From this research, a common characteristic emerged. All three of the organizations had a working relationship with the municipalities in their area, more so than with the developers which emerged through contact with the political arena.

#### **Question #1**

*How do land conservancies begin a relationship with the political arena in their regional area, and the steps involved?*

Further research to reveal the initiation of this relationship would be valuable to land conservancies that wish to expand their roles. Documentation of the process movement from initiation to providing assistance to changing policy and regulations that allows promotion of sustainable development practices by conservancies would be advantageous. Interviews conducted of area political officials and planning/zoning departments and a study of the existing policy would reveal what and where the constraints are. This documentation would provide the information needed to draft model codes and regulations.

**Question #2**

*What roles can university departments play in providing consultation through faculty, and research through interns to land conservancies?*

A comprehensive study of university departments that are engaged in educational and consultation activities that relate to the environment, land use planning, architecture, landscape design, wildlife management, grants writing, communication, public relations, archaeology, historical and cultural preservation, cultural anthropology, etc. would provide information on how internship possibilities and faculty consultation services are utilized by land conservancies promoting sustainable development practices.

**Question #3:**

*Why are not more land conservancies promoting sustainable development practices?*

Research reveals that the knowledge, skills, and other resources are available. What is stopping land conservancies from engaging in this type of program?

**Question #4:**

*Why is not government more involved in the environmental aspects and impacts of development?* The federal government is leaving it up to state governments to strive to protect the environmental, cultural and historical aspects of their area. The impacts of negative development are widespread and overlap state lines, affecting the nation as a whole.

## BIBLIOGRAPHY/REFERENCES

## BIBLIOGRAPHY/REFERENCES

- American Planning Association. 1997. *Habitat Protection Planning: Where the Wild Things Are*. Planning Advisory Service Report 470/471.
- Arendt, Randall G. 1994. *Rural by Design*. Chicago: Planners Press.
- \_\_\_\_\_.1996. *Conservation Design for Subdivisions*. Washington, D.C.: Island Press.
- \_\_\_\_\_.1999. *Growing Greener: putting conservation into local plans and ordinances*. Washington, D.C.: New Island Press.
- Balsam Mountain Preserve. 2003. <<http://www.balammountainpreserve.com>>.
- Beatley, Timothy. 1994. *Habitat Conservation Planning: Endangered Species and Urban Growth*. Austin: University of Texas Press.
- Benfield, F. Kaid, Jutka Terris, Nancy Vorsanger. *Solving Sprawl: Models of Smart Growth in Communities Across America*. 2001. New York: Natural Resource Defense Council.
- Brown, Randy . Personal interview. 05 November 2002.
- Center of Sustainable Development (CSD). 2002. "Rural Issues Introduction." . <<http://www.Sustainable.doe.gov/>>
- Center for Resourceful Building Technology (CRBT). 2002. "e-Guide." <<http://www.crbt.org/>>
- Certified Wood Products Council (CWPC). 2002. <<http://www.certifiedwood.org/>>
- Congress for New Urbanism (CNU). 8 April 2002. <<http://www.cnu.org/>>
- Conservation Fund. [Cited 11 August 2002]. "Green Infrastructure: A Strategic Approach to Green Space Planning and Conservation." <<http://www.conservationfund.org/?article=2487&back=true/>>
- Corbett, Judy and Michael Corbett. 2000. *Designing Sustainable Communities*. Washington, D.C.: Island Press.
- Daniel, Clifford. Web interview. 27 October 2002.

- Duany, Andres, Elizabeth Plater-Zyberk, Jeff Speck. 2000. *Suburban Nation*. New York: New Point Press.
- Duerkson, Donald L. Elliott, N. Thompson Hobbs, Erin Johnson, James R. Miller. 1997. *Habitat Protection Planning: Where the Wild Things Are*. American Planning Association: PAS Report 470/471.
- Environmental Design and Construction Online Magazine. 04 September 2002. <  
<http://www.edcmag.com>>
- Environmental Protection Agency. "What is Smart Growth?"  
<<http://www.epa.gov/smartgrowth/lem.htm>>
- "EPA chief backs smart growth." New Urban News. Volume 7, no 2 (March 2002): 1-4.
- Ewing, Reid. 1996. *Best Development Practices*. Chicago: American Planning Association.
- Foothills Land Conservancy. 21 February 2003. <<http://www.foothills.org/>>
- Green Space Design. "How is Green Space Different from Open Space?"  
<<http://www.greenspacedesign.org/home.htm>>
- Gustanski, Julie Ann and Roderick H. Squires, Protecting the land: conservation easements past, present, and future. 2000. Washington DC: Island Press).
- Hagel, U.S. Senator Chuck. 2000. "Energy: The Great Connector." <  
<http://www.econstrat.org/hagl2.htm>>
- Hiss, Tony. 1991. *The Experience of Place*. New York: Vintage Books (Division of Random House).
- Heimlich, Ralph E. and William D. Anderson. 2002. "Development at the Urban Fringe and Beyond." Publication: AER-803. < <http://www.ers.usda.gov/>>
- "How is Green Space Different From Open Space?"  
<<http://www.greenspacedesign.org/home.htm>>
- Jacobs, Jane. 1992. *The Death and Life of Great American Cities*. New York: First Vintage Books (Division of Random House).

- Kuntsler, James Howard. 1996. *Home From Nowhere*. New York: Touchstone.
- Larsen, Kris. Web interview. 25 October 2002.
- Magill, Jim. 2002. *Energy Insight Today*. "Wind power gaining in popularity." 07 January 2002. <<http://www.plats.com/>>
- McKinney, Mike. Personal interview. 15 November 2002.
- Minser, Billy. Personal interview. 14 November 2002.
- National Renewable Energy Laboratory. 2002. *Introduction to passive solar heating and daylighting*. 20 September 2002. <[http://www.nrel.gov/Clean\\_energy/passivesolar.htm/](http://www.nrel.gov/Clean_energy/passivesolar.htm/)>
- Natural Resources Defense. "Living Green." *OnEarth*. Winter 2002. <<http://www.nrdc.org/onearth/02win/livgreen.asp/>>
- Northeastern Illinois Planning Commission. "New Products and Publications available from NIPC." 11 August 2002. <<http://www.nipc.cog.il.us/Nature/>>
- Office of Energy Efficiency and Renewable Energy. "Landscaping for Energy Efficiency." 11 August 2002. <<http://www.eren.doe.gov/>>
- Peine, John. Personal interview. 15 November 2002.
- Pinnell, Burkw. Personal interview. 15 November 2002.
- Porter, Douglas A. 2000. *The Practice of Sustainable Development*. (Washington, D.C.: Urban Land Institute), quoting World Commission on Environment and Development, *Our Common Future* (Oxford, UK: Oxford University Press, 1987), p. 43.
- Red Dawn. "Recycled Decking Materials." 04 September 2002. <<http://www.reddawn.com/>>
- Ryan, Dave. 2001. "Environmental News: Major Public Awareness Campaign Encourages Change to Energy Efficiency Through Energy Star™." Headquarters Press Release: Washington, D.C. <<http://Yosemite.epa.gov/opa/>>

Smart Growth Network. "100 Policies for Implementation." Getting to Smart Growth. 26 March 2002. <<http://www.smartgrowth.org/>>

Snook, John. Telephone interview. 27 October 2002.

Staley, Samuel R. "The Sprawling of America: In Defense of the Dynamic City." 2002. Reason Public Policy Institute. <<http://www.urbanfutures.org/>>

State of Florida. "Elements of a Sustainable Management Strategy." 3 June 2002. <<http://www.state.fl.us/>>

University of Minnesota, Twin Cities Campus, College of Architecture and Landscape Architecture. 21 February 2003. "Minnesota Sustainable Design Guide." <<http://www.sustainabledesignguide.umn.edu/MSDG/strategies.html>>.

U.S. Department of Agriculture. *Development on the Urban Fringe and Beyond*. "Trends in Land Use: Two Kinds of Growth." <<http://www.Ers.usda.gov/Publication/aer803/>>

"Vermont Forum on Sprawl." 2002. <<http://www.vtsprawl.org/>>

WasteCap Wisconsin. "Recovery Options for Drywall Construction Debris." 11 September 2002. <<http://www.wastecapwi.org/>>

"What is Smart Growth?" 2002. <<http://www.epa.gov/smartgrowth/lem.htm/>>

## APPENDICES

## **APPENDIX A**

### **Tables 1-6**

**Table 1: Outreach Methods Used by Conservancies/Land Trusts that Promote  
Conservation Development Practices**

| <b>Conservancies/<br/>Land Trusts</b> | <b>Methods of Outreach</b> |                   |                                     |                |                                   |                               |
|---------------------------------------|----------------------------|-------------------|-------------------------------------|----------------|-----------------------------------|-------------------------------|
|                                       | <b>Direct<br/>Contact</b>  | <b>Newsletter</b> | <b>Presentations/<br/>Workshops</b> | <b>Website</b> | <b>Articles/<br/>Publications</b> | <b>Other</b>                  |
| <b>Brandywine<br/>Conservancy</b>     | X                          | X                 | X                                   |                | *X                                | Non-<br>targeted<br>referrals |
| <b>Heritage<br/>Conservancy</b>       | X                          |                   |                                     | X              | **X                               |                               |
| <b>Minnesota<br/>Land Trust</b>       | X                          |                   | X                                   | X              | X                                 | Radio/TV<br>Charettes         |

\*Available for a fee

\*\*Downloadable from website

**Table 2: Target Audiences of Conservancies/Land Trusts that Promote Conservation Development**

| <b>Conservancies/<br/>Land Trusts</b> | <b>Target Audience</b> |                       |                   |                  |                                                            |
|---------------------------------------|------------------------|-----------------------|-------------------|------------------|------------------------------------------------------------|
|                                       | <b>Landowners</b>      | <b>Municipalities</b> | <b>Developers</b> | <b>Attorneys</b> | <b>Others</b>                                              |
| <b>Brandywine<br/>Conservancy</b>     | X                      | X                     | X                 | X                |                                                            |
| <b>Heritage<br/>Conservancy</b>       | X                      | X                     | X                 |                  | County Agencies<br>Federal Agencies                        |
| <b>Minnesota<br/>Land Trust</b>       | X                      | X                     | X                 |                  | Consultants<br>Local government<br>Local officials<br>NGOs |

**Table 3: Resources Needed by Conservancies/Land Trusts that Promote Conservation Development**

| Conservancies/<br>Land Trusts     | Resources Needed   |         |                                         |                                       |                     |                        |                        |                          |                           |
|-----------------------------------|--------------------|---------|-----------------------------------------|---------------------------------------|---------------------|------------------------|------------------------|--------------------------|---------------------------|
|                                   | Staff<br>Expertise | Funding | Knowledge<br>of<br>Community<br>Aspects | Knowledge<br>of<br>Political<br>Arena | Design<br>Knowledge | Full-<br>time<br>Staff | Part-<br>time<br>Staff | Available<br>Consultants | Full-<br>time<br>Director |
| <b>Brandywine<br/>Conservancy</b> | X                  | X       |                                         |                                       | X                   | X                      |                        |                          | X                         |
| <b>Heritage<br/>Conservancy</b>   | X                  | X       | X                                       | X                                     |                     | X                      |                        |                          |                           |
| <b>Minnesota<br/>Land Trust</b>   |                    | X       |                                         |                                       |                     |                        | X                      | X                        | X                         |

**Table 4: Major Constraints of Conservancies/Land Trusts  
Promoting Conservation Design**

| <b>Conservancies/<br/>Land Trusts</b> | <b>Major Constraints</b> |             |                           |                                |
|---------------------------------------|--------------------------|-------------|---------------------------|--------------------------------|
|                                       | <b>None<br/>Reported</b> | <b>Time</b> | <b>Political<br/>Will</b> | <b>Financial<br/>Resources</b> |
| <b>Brandywine<br/>Conservancy</b>     |                          | X           | X                         |                                |
| <b>Heritage<br/>Conservancy</b>       |                          | X           | X                         | X                              |
| <b>Minnesota<br/>Land Trust</b>       | X                        |             |                           |                                |

**Table 5: Conservancies/Land Trusts Sources of Support**

| <b>Conservancies/<br/>Land Trusts</b> | <b>Compensation Sources</b> |               |                                   |
|---------------------------------------|-----------------------------|---------------|-----------------------------------|
|                                       | <b>Fee Charge</b>           | <b>Grants</b> | <b>Endowment/<br/>Foundations</b> |
| <b>Brandywine<br/>Conservancy</b>     | X                           | X             | X                                 |
| <b>Heritage<br/>Conservancy</b>       | X                           |               | X                                 |
| <b>Minnesota<br/>Land Trust</b>       |                             | X             | X                                 |

**Table 6: Effectiveness of Conservancies/Land Trusts Promoting  
Conservation Development Practices**

| <b>Conservancies/<br/>Land Trusts</b> | <b>Program Effectiveness</b>     |                                                                     |
|---------------------------------------|----------------------------------|---------------------------------------------------------------------|
|                                       | <b>Conserving Open<br/>Space</b> | <b>Successful in<br/>Minimizing Negative<br/>Impact Development</b> |
| <b>Brandywine<br/>Conservancy</b>     | Very                             | Spotty in areas<br><br>Very successful in some<br>areas             |
| <b>Heritage<br/>Conservancy</b>       | Very                             | Still long way to go                                                |
| <b>Minnesota<br/>Land Trust</b>       | Very                             | Somewhat successful                                                 |

## Available Sources

68

**Building Resources:**

A list of building research reports are available at: <http://www.cce.ufl.edu/>

Building Services Research & Information Association (BSRIA) <http://www.bsria.co.uk/>

Center for Construction and Environment at the University of Florida. Website:  
<http://www.bcn.ufl.edu/sustainable>

Center for Resourceful Building Technology (CRBT). Website:  
<http://montana.com/crbt/mis.html>.

Environmental Building News. Website: <http://www.buildinggreen.com/>

Green Builder. Website: <http://www.greenbuilder.com>

National Park Service Sustainable Design Guide. Website  
<http://www.nps.gov/dsc/dsgncnstr/gpsd/toc.html>

OIKOS | Green Building Source. Website: <http://www.oikos.com/>

RMIT Global Construction Waste. Website: <http://onsite.rmit.edu.au/>

UC Center for the Built Environment [http://www/archfp.ced.berkeley.edu/cbe2000/](http://www.archfp.ced.berkeley.edu/cbe2000/)

U.S. Green Building Council. Website: <http://www.usgbc.org/>

**Energy Resources:**

Alliance to Save Energy. Website: <http://www.ase.org/>.

Alliance to Save Energy. Home Energy Checkup. Website:  
<http://www.ase.org/checkup/home>.

American Council for an Energy-Efficient Economy (ACEEE). Website: <http://aceee.org>.

American Solar Energy Society (ASES). Website: <http://www.ases.org>.

Center for Neighborhood Technology. Website: <http://www.cnt.org>.

Center for Renewable Energy and Sustainable Technology. Website: <http://solstice.crest.org>.

Center of Excellence for Sustainable Development, US Department of Energy (DOE)  
Website: : <http://www.sustainable.doe.gov/>

City of Portland Green Building Initiative. Website: <http://www.sustainableportland.org>.

Energy Efficient Building Association (EEBA). Website: <http://www.eeba.org>.

ENERGY STAR Program, Tel: 888.782.7937 (hot line), Website: <http://www.energystar.gov>.

Federal Energy Management Program, U.S. Department of Energy. Greening of the White House. Website: <http://www.eren.doe.gov/femp>.

Friends of the Earth, Taxpayers for Common Sense. Website: <http://www.foe.org>.

Greenlights Program, Website: <http://www.epa.gov/greenlights.html>.

Home Energy Saver, Lawrence Berkeley National Laboratory. Website: <http://hes.lbl.gov>.

Million Solar Roofs Initiative, United States Department of Energy, Website: <http://www.eren.doe.gov/millionroofs/>.

Minnesota Project. Website: <http://www.mnproject.org>

Municipal Energy Database, Center of Excellence for Sustainable Development, U.S. Department of Energy. Website: <http://www.sustainable.doe.gov/business/buintro.shtml>.

Natural Resources Defense Council (NRDC). Website: <http://www.nrdc.org>.

Office of Building Technology, State and Community Programs (BTS), Department of Energy. Website: <http://www.eren.doe.gov/buildings>.

Solar Buildings, United States Department of Energy, Website: <http://www.eren.doe.gov/solarbuildings/>.

US Cities for Climate Protection, ICLEI. Website: <http://www.iclei.org/co2/co2.htm>.

World Resources Institute (WRI). Website: <http://www.wri.org/wri>.

#### **Sustainability Resources:**

Biourbanism. Website: <http://www.biourbanism.com>

Congress for New Urbanism. Website: <http://www.cnu.org/index.html>

Center for Environment and Development. Website: [www.smu.ntnu.no/PROG/STIE/Links/](http://www.smu.ntnu.no/PROG/STIE/Links/)

Ecobookstore. Website: <http://home.earthlink.net/~jluke313/ecobookstore.html>

IISA Homepage. Website: <http://www.iiasa.ac.at/>

President's Council on Sustainable Development. Website: <http://www.whitehouse.gov/PCSD>

Redefining Progress. Website: <http://www.rprogress.org>.

Real World Resource Guide. Website: <http://www.gn.apc.org/eco/resguide>

Resource Renewal Institute. Website: <http://www.rri.org>

Sustainable Business. Website: <http://www.sustainablebusiness.com>

Sustainable Community Development (University of Florida). Website:  
<http://www.hammock.ifas.ufl.edu/sustain/>

Sustainable Development. Website: <http://www.sustainabledevelopment.org/>

Sustainable Facilities & Infrastructure Program. Website:  
<http://www.maven.gtri.gatech.edu/sfi/>

The Genuine Progress Indicator. Website:  
[http://www.rprogress.org/progsum/nip/gpi/gpi\\_main.html](http://www.rprogress.org/progsum/nip/gpi/gpi_main.html)

The International Institute for Sustainable Development. Website: <http://iisd.ca/>

The Sustainable Development Institute (SDI). Website:  
<http://www.ibiic.com/sdi/sdi01.htm>

The UN Commission on Sustainable Development. Website:  
<http://www.un.org/esa/susdev/csd.htm>

The World Bank. Website: <http://www.esd.worldbank.org>

United Nations Development Program, Human Development Report. Website:  
<http://www.undp.org/hdro/>

## **Related Reading**

Brower, Michael. *Cool Energy: Renewable Solutions to Environmental Problems*. (Cambridge, MA: The MIT Press, 1992). To obtain this resource contact Union of Concerned Scientists, 2 Brattle Square, Cambridge, MA 02238; Tel: 617.547.5552

Cole, Nancy and P. J. Skerrett. *Renewables Are Ready - People Creating Renewable Energy Solutions*. (White River Junction, VT: Chelsea Green Publishing Company, 1995). This Real Goods Independent Living Book is a guide to the renewable energy technologies being put to use in diverse communities across the country. It identifies five key strategies which help overcome typical economic and political barriers to adoption of renewables and eight steps citizens can use in campaigns.. To obtain this resource contact Chelsea Green Publishing Company at: PO Box 428, White River Junction, VT 05001.

Schaefer, John, ed. *Alternative Energy Sourcebook*. (Ukiah, CA: Real Goods Trading Co., 1995). To obtain this resource contact Real Goods Trading company at: 966 Mazzoni Street, Ukiah, CA; or Tel at: 800.762.7324.

Solar Energy Research and Education Foundation. *State Guides on Renewable Energy and Energy Efficiency*. 1998. This collection of State Guides provides tips and key contacts, specific to each state, that will assist in efforts to use less energy. Website: <http://soltice.crest.org/efficiency/state-guides>.

Wilson, Alex. *Consumer Guide to Home Energy Savings*. (Washington, DC: American Council for an Energy-Efficient Economy (ACEEE)). This is an annual survey of the most efficient products available, including cooking appliances, refrigerators, and dishwashers. It also gives tips for saving energy (and money) in your kitchen. To obtain this resource contact ACEEE at: 1001 Connecticut Avenue, Suite 800, Washington DC 20036; Tel: 202.429.0063.

## VITA

Patricia Kay Southerland was born in Mississippi on April 9, 1952. She was reared in Houston, Mississippi where she attended grade school and graduated high school with honors in 1970. In 1983, she entered Mississippi State University where she graduated in 1987, Cum Laude with a Bachelor of Science degree in Home Economics with a specialty in Interior Design. After working as an interior designer in Mississippi, Georgia, and Florida, she entered the University of Tennessee's graduate program of Planning in 1996.

She currently works for the City of Chattanooga as a Design Review Specialist.

