Growing Greener

PUTTING CONSERVATION INTO LOCAL CODES

Communities across Pennsylvania are realizing that they can conserve their special open spaces and natural resources at the same time they achieve their development objectives. The tools! Conservation zoning and conservation subdivision design, an approach we’re calling Growing Greener.

These Growing Greener tools are illustrated in the above subdivision, where the developer builds the maximum number of homes permitted under the municipality’s zoning, while at the same time permanently protecting over half of the property. The open space is then zoned to an interconnected network of community greenspaces.

If you want your community to take control of its destiny and ensure that new development creates more livable communities in the process, the Growing Greener approach might be right for you.
Introduction

This booklet summarizes how municipalities can use the development process to their advantage to protect interconnected networks of open space: natural areas, greenways, trails and recreational land. Communities can take control of their destinies so that their conservation goals are achieved in a manner fair to all parties concerned. All that is needed are some relatively straightforward amendments to municipal comprehensive plans, zoning ordinances, and subdivision ordinances. These steps are described in the sections that follow.

Growing Greener is a collaborative effort of the Pennsylvania Department of Conservation and Natural Resources, Natural Lands Trust, Pennsylvania State University Cooperative Extension and an advisory committee comprised of officials from the Department of Community and Economic Development, Center for Rural Pennsylvania, Wyoming County Planning Commission, Pennsylvania Environmental Council, Pennsylvania Planning Association and Department of Environmental Protection.

During 1997, Natural Lands Trust conducted three Growing Greener pilot workshops hosted by the Centre County Planning Commission, Centre Region Planning Agency, Tri-County Regional Planning Commission and the Union County Planning Commission. Our focus during 1996 will be helping county planning agencies and other planning organizations build their capacity to help the communities they work with realize their conservation goals. In order to assist them, Natural Lands Trust has developed multi-media educational materials available for use by community planners across the state. We invite county planning agencies and interested planning consultants and conservancies to join us as Growing Greener partners.

How do I learn more?

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The Conservation Design Concept

Each time a property is developed into a residential subdivision, an opportunity exists for adding land to a community-wide network of open space. Although such opportunities are seldom taken in many municipalities, this situation could be reversed fairly easily by making several small but significant changes to three basic local land-use documents—the comprehensive plan, the zoning ordinance and the subdivision and land development ordinance. Simply stated, Conservation Design rearranges the development: on each parcel as it is being planned so that half (or more) of the buildable land is set aside as open space. Without controversial "down zoning," the same number of homes can be built in a less land-consumptive manner, allowing the balance of the property to be permanently protected and added to an interconnected network of community green spaces. This "density-neutral" approach provides a fair and equitable way to balance conservation and development objectives.

Four Keys to Conservation

Communities protect open space because it protects streams and water quality, provides habitat for plants and animals, preserves rural “atmosphere,” provides recreational areas, protects home values and reduces costs of municipal services. In short, land conservation makes your community a better place to live. Four basic actions underlie the Growing Greener process:

1. Envision the Future: Performing "Community Audits." Successful communities have a realistic understanding of their natural and cultural resources. They establish reasonable goals for conservation and development—goals that reflect their special resources, existing land use patterns and anticipated growth. Their comprehensive plans document these resources, goals and policies. The plan contains language about the kinds of ordinance updating and conservation programs necessary for those goals to be realized. A key part of the Comprehensive Plan is a Map of Potential Conservation Lands that is intended to guide the location of open space in each new subdivision as it is being laid out.

2. Protect Open Space Networks Through Conservation Planning. Successful communities have a good understanding of their natural and cultural resources. They establish reasonable goals for conservation and development—goals that reflect their special resources, existing land use patterns and anticipated growth. Their comprehensive plans document these resources, goals and policies. The plan contains language about the kinds of ordinance updating and conservation programs necessary for those goals to be realized. A key part of the Comprehensive Plan is a Map of Potential Conservation Lands that is intended to guide the location of open space in each new subdivision as it is being laid out.

3. Conservation Zoning: A "Menu of Choices." Successful communities have legally defensible, well-written zoning regulations that meet their "fair share" of future growth and provide for a logical balance between community goals and private landowner interests. They incorporate resource suitability, flexibility, and incentives to require the inclusion of permanent conservation lands into new subdivisions. The five zoning options summarized in this publication and described in detail in the Growing Greener manual respect the private property rights of developers without unduly impacting the remaining natural areas that make our communities such special places in which to live, work, recreate and invest in.

4. Conservation Subdivision Design: A Four-Step Process. Successful communities recognize that both design standards and the design process play an important part in conserving community resources. Such communities adopt subdivision codes which require detailed site surveys.
Envisioning the Future
Performing "Community Audits"

The "community audit" visioning process helps local officials and residents see the ultimate result of continuing to implement current land-use policies.

The process helps start discussions about how current trends can be modified so that a greener future is ensured.

Sad but true, the future that faces most communities with standard zoning and subdivision codes is to witness the systematic conversion of every unprotected acre of buildable land into developed uses.

Most local ordinances allow or encourage standardized layouts of "wall-to-wall house lots." Over a period of decades this process produces a broader pattern of "wall-to-wall subdivisions" (see Figure 1). No community actively plans to become a bland suburb without open space. However, most zoning codes program exactly this outcome.

Numerical Analysis of Development Trends.
The first step involves a numerical analysis of growth projections, both in terms of the number of dwelling units and the number of acres that will probably be converted into house lots and streets under present codes.

Regulatory Evaluation.
The second step consists of an evaluation of the land-use regulations that are currently on the books, identifying their strengths and weaknesses and offering constructive recommendations about how they can incorporate the conservation techniques described in this booklet. It should also include a realistic appraisal of the extent to which private conservation efforts are likely to succeed in protecting lands from development through various nonregulatory approaches such as purchases or donations of easements or fee simple interests.

"Build-Out" Maps.
The third step entails mapping future development patterns on a map of the entire municipality (see Figure 2). Alternately, the "build-out" map could focus only on selected areas in the municipality where development is of the greatest immediate concern, perhaps due to the presence of special features identified in the comprehensive plan or vulnerability due to development pressures.

The following parts of this booklet describe practical ways in which communities can take control of their destinies so that conservation goals will be achieved simultaneously with development objectives, in a manner that is just to all parties concerned. Three interrelated documents—the Comprehensive Plan, Zoning Code and Subdivision and Land Development Code, stand together like a three-legged stool providing a balanced footing for achieving a municipality's conservation goals.
Protecting Open Space Networks Through Conservation Planning

Although many communities have adopted either Comprehensive Plans or Open Space Plans containing detailed inventories of their natural and historic resources, very few have taken the next logical step of pulling together all that information and creating a Map of Potential Conservation Lands. Such a map is vitally important to any community interested in conserving an interconnected network of open space. The map serves as the tool for guiding decisions regarding which land to protect in order for the network to eventually take form and have substance.

A Map of Potential Conservation Lands starts with information contained in the community's existing planning documents. The next task is to identify two kinds of resource areas:

- Primary Conservation Areas: These are open spaces such as wetlands, floodplains, and slopes exceeding 25%, which are already protected (such as parks, land trust preserves, and properties under conservation easement).
- Secondary Conservation Areas: These are adjacent to the primary conservation areas and include natural and cultural landscape features such as mature woodlands, wildlife habitats, and scenic viewsheds.

This overlay process will reveal certain situations where two or more conservation features appear together (such as woodlands, wildlife habitats, or farmland and scenic viewsheds). It will also reveal gaps where no features appear.

Although this exercise is not an exact science, it frequently helps local officials and residents visualize how various kinds of resource areas are connected to one another, and enables them to tentatively identify both broad swaths and narrow corridors of resource land that could be protected in a variety of ways.

Figure 3 shows a portion of a map prepared for one Chester County township which has followed this approach.

The planning techniques which can best implement the community-wide Map of Potential Conservation Lands are Conservation Zoning and Conservation Subdivision Design. These techniques which work hand in hand are described in detail below. Briefly stated, conservation zoning expands the range of development choices available to landowners and developers. Just as importantly, it also eliminates the option of creating full-density "checkerboard" layouts that convert all land within new subdivisions into homeslots and streets.

The second technique, "conservation subdivision design," devotes half or...
Figure 4 shows how the open space in these adjoining subdivisions has been designed to connect, and illustrates the way in which the Map of Potential Conservation Lands can become a reality. Figure 5 provides a bird's-eye view of a landscape where an interconnected network of conservation lands has been gradually protected through the steady application of conservation zoning techniques and conservation subdivision design standards.

3 Conservation Zoning
A "Menu" of Choices

The main reason subdivisions typically consist of nothing more than house lots and streets is that most local land-use ordinances ask little, if anything, with respect to conserving open space or providing neighborhood amenities (see Figure 6). Communities wishing to break the cycle of "wall-to-wall housing" need to consider modifying their zoning to actively and legally encourage subdivisions that set aside at least 50 percent of the land as permanently protected open space and to incorporate substantial density disincentives for developers who do not conserve any significant percentage of land.

Following this approach, a municipality would first calculate a site's yield using traditional zoning. A developer would then be permitted full density only if at least 50 percent of the buildable land is maintained as undivided open space (illustrated in Figure 7: "Option 1"). Another full-density option could include a 25 percent density bonus for preserving 60 percent of the unconsctructed land (Figure 8: "Option 2"). Municipalities might also consider offering as much as a 100 percent density bonus for protecting 70 percent of that land (Figure 11: "Option 5"). It is noteworthy that the 36 village-like lots in Option 5 occupy less land than the 18 lots in Option 1 and that Option 5 therefore constitutes more significantly to the goal of creating community-wide networks of open space. The village-scale lots in Option 5 are particularly popular with empty-nesters, single-parent households, and couples with young children. Its traditional layout is based on that of historic hamlets and villages in the region, and new developments in this category could be controlled as Conditional
Figure 6: YIELD PLAN
The kind of subdivision most frequently approved in Pennsylvania is the one which blankets the development parcel with households and which pays little if any attention to designing around the special features of the property. In this example, the house placement avoids the primary conservation areas, but disregards the secondary conservation features. However, such a sketch can provide a useful estimate of a site's capacity to accommodate new houses at the same density allowed under zoning—and is therefore known as "Yield Plan."

Figure 7: OPTION 1
Density-neutral with pre-existing zoning
18 lots
Lot Size Range: 20,000 to 40,000 sq. ft.
35% undivided open space

Figure 8: OPTION 2
Estimated Conservation and Density
24 lots
Lot Size Range: 13,000 to 24,000 sq. ft.
60% undivided open space

Figure 9: OPTION 3
50% Density Reduction
9 lots
Typical Lot Size: 160,000 sq. ft. (4 acres)
Estate Lots

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Uses subject to a set of extensively illustrated design standards.

Developer wishing to serve the "estate lot" market have two additional options. One involves lots containing at least four acres of unconstrained land (Figure 9: "Option 3"). The other is comprised of "country properties" of at least 10 acres, which may be accessed by gravel drives built to new township standards for very low-volume rural lanes (Figure 10: "Option 4"). An additional incentive to encourage developers to choose this fourth option would typically be permission to build up to two accessory dwellings on these properties. These units would normally be limited in size, subject to architectural design standards to resemble traditional estate buildings, and restricted from further lot division.

Two or more of these options could be combined on a single large property. One logical approach would combine Options 4 and 5, with the Option 4 "country property" comprising part of the required greenbelt open space around an Option 5 village (see Figure 12).

Conspicuously absent from this range of choices is the conventional full-density subdivision providing no unfragmented open space (Figure 6). Because that kind of development causes the largest loss of resource land and poses the greatest obstacle to conservation efforts, it is not included as an option under this approach.

For illustrative purposes, this booklet uses a one dwelling unit per two acre density. However, conservation strategy is equally applicable to higher density zoning districts of three or four units per acre. Such densities typically occur in villages, boroughs, urban growth boundary areas and TDR receiving areas where open space setbacks are critical to the residents' quality of life.
Conservation Subdivision Design
A Four-Step Process

Designing subdivisions around the central organizing principle of land conservation is not difficult. However, it is essential that ordinances contain clear standards to guide the conservation design process. The four-step approach described below has been proven to be effective in laying out new full-density developments where all the significant natural and cultural features have been preserved.

**Step One** consists of identifying the land that should be permanently protected. The developer incorporates areas previously identified on the community-wide Map of Potential Conservation Lands and then performs a detailed site analysis in order to precisely locate features to be conserved. The developer first identifies all the constrained lands (wet, flood-prone, and steep), called Primary Conservation Areas (Figure 13). He then identifies Secondary Conservation Areas (Figure 14) which comprise noteworthy features of the property that are typically unprotected under current codes—mature woodlands, greenways and trails, river and stream corridors, prime farmland, hedgerows and individual free-standing trees or tree groups, wildlife habitats and travel corridors, historic sites and structures, scenic viewsheds, etc. After “greenlining” these conservation elements, the remaining part of the property becomes the Potential Development Area (Figure 13).

**Step Two** involves locating sites of individual houses within the Potential Development Area so that their views of the open space are maximized (Figure 16). The number of houses is a function of the density permitted within the zoning district as shown on a Yield Plan (Figure 6). (In unanswered areas officials should require a 10 percent sample of the most questionable lots—which they would select—to be tested for septic suitability. Any lots that fail would be deducted and the applicant would have to perform a second 10 percent sample, etc.)

**Step Three** simply involves "connecting the dots" with streets and informal trails (Figure 17), while **Step Four** consists of laying out conventional subdivisions, where the

Figure 13  STEP ONE, Part One
Identifying Primary Conservation Areas

Figure 14  STEP ONE, Part Two
Identifying Secondary Conservation Areas

Typically unprotected under local codes, these special features constitute a significant asset to the property value and neighborhood character. Secondary conservation areas are the most vulnerable to change, but can easily be retained by following this simple four-step process.
Figure 15 STEP ONE, Part Three Potential Development Areas for Options 1, 2, and 3

Figure 16 STEP TWO Locating House Sites

Figure 17 STEP THREE Aligning Streets and Trails

Figure 18 STEP FOUR Drawing in the Lot Lines
Frequently Asked Questions About Conservation Subdivision Design

Does this conservation-based approach involve a "taking"? No. People who do not fully understand this conservation-based approach to subdivision design may mistakenly believe that it constitutes "a taking of land without compensation." This misunderstanding may stem from the fact that conservation subdivisions, as described in this booklet, involve either large percentages of undivided open space or lower overall building densities. There are two reasons why this approach does not constitute a "taking.

First, no density is taken away. Conservation zoning is fundamentally fair because it allows landown- ers and developers to achieve full density under the municipality’s current zoning—and even to increase that density significantly—through several different "as-of-right" options. Of the five options permitted under conservation zoning, three provide for either full or enhanced densities. The other two options offer the developer the choice to lower densities and increase lot sizes. Although conservation zoning precludes full-density layouts that do not conserve open space, this is legal because there is no constitutional "right to sprawl."

Second, no land is taken for public use. None of the land which is required to be designated for conservation purposes becomes public (or even publicly accessible) unless the landowner or developer wants it to be. In the vast majority of situations, municipalities themselves have no desire to own and manage such conservation land, which they generally feel should be a neighborhood responsibility. It is cases where local officials wish to provide township recreational facilities (such as ballfields or trails) within conservation subdivisions, the municipality must negotiate with the developer for the purchase of that land on a "willing seller/willing buyer" basis. To facilitate such negotiations, conservation zoning ordinances can be written to include density incentives to encourage developers to designate specific parcels of their conservation land for public ownership or for public access and use.

A legal analysis of the Growing Greener workbook by Harrisburg land use attorney Charles B. Zaleski, Esq., is reprinted on the last page of this booklet.

How can a community ensure permanent protection for conservation lands? The most effective way to ensure that conservation land in a new subdivision will remain undeveloped forever is to place a permanent conservation easement on it. Such easements run with the chain of title, in perpetuity, and specify the various conservation uses that may occur on the property. These restrictions are separate from zoning ordinances and continue in force even if legal densities rise in future years. Easements are typically held by land trusts and units of government. Since political leadership can change over time, land trusts are the most reliable holders of easements, as their mission never varies. Deed restrictions and covenants are, by comparison, not as effective as easements, and are not recommended for this purpose. Easements can be modified only within the spirit of the original agreement, and only if the co-holders agree. In practice, while a proposal to erect another house at a country club building on the open space would typically be denied, permission to create a small ballfield or a single tennis court in a comer of a large conservation meadow or former field might well be granted.

What are the ownership, maintenance, tax and liability issues? Among the most commonly expressed concerns about subdivisions which conserve open space are questions about who will...
and maintain the conservation land, and who will be responsible for the potential liability and payment of property taxes. The short answer is that whoever owns the conservation land is responsible, or all of the above. But who owns this land?

Ownership Choices.

There are basically four options, which may be combined within the same subdivision where that makes the most sense.

- Individual Landowner

At its simplest level, the original landowner (a farmer, for example) can retain ownership to as much as 90 percent of the conservation land to keep in the family. (At least 20 percent of the open space should be reserved for common neighborhood use by subdivision residents.) That landowner can also pass this property on to his or her children or sell it to other individual landowners, with permanent conservation easements running with the land and protecting it from development under future ownership. The open space should not, however, be divided among all of the individual subdivision lots as land management and access difficulties are likely to arise.

- Homeowners’ Associations

On the conservation land within new subdivisions is owned and managed by homeowners’ associations (HOAs). A few basic ground rules encourage a good performance record. First, membership must be automatic, a precondition of property purchase in the development. Second, bylaws give such associations the legal right to place liens on properties of members who fail to pay their dues. Third, facilities should be minimal (ball fields and trails rather than clubhouses and swimming pools) to keep annual dues low. And fourth, detailed maintenance plans for conservation areas should be required by the municipality as a condition of approval. The municipality has enforcement rights and may place a lien on the property should the HOA fail to perform their obligations to maintain the conservation land.

- Land Trusts

Although homeowners’ associations are generally the most logical recipients of conservation land within subdivisions, occasionally situations arise where such ownership most appropriately resides with a land trust (such as when a particularly rare or significant natural area is involved). Land trusts are private, charitable groups whose principal purpose is to protect land under its stewardship from inappropriate change. Their most common role is to hold easements or fee simple title on conservation lands within new developments and elsewhere in the community, to ensure that all retreat areas are protected. To cover their costs in maintaining land they own or in monitoring land that they hold easements on, land trusts typically require some endowment funding. When conservation sitting offers a density bonus, developers can donate the proceeds from the additional "endowment lots" to such trusts for maintenance or monitoring.

- Municipality or Other Public Agency

In special situations a local government might desire to own part of the conservation land within a new subdivision, such as when that land has been identified in a municipal open space plan as a good location for an neighborhood park or for a link in a community trail network. Developers can be encouraged to offer and donate certain acreage to municipalities through additional density incentive, although the final decision would remain with the developer.

- Combinations of the Above

As illustrated in Figure 19, the conservation land within new subdivisions could involve multiple ownerships, including (1) "non-common" open space such as easements retained by the original farmer, (2) common open space such as ballfields owned by an HOA, and (3) a trail corridor owned by either a land trust or by the municipality.

Maintenance Issues.

Local officials should require conservation area management plans to be submitted and approved prior to granting final subdivision approval. In Lower Merion Township, Montgomery County, the community’s “model” management plan is typically adopted by reference by each subdivision applicant. That document identifies a dozen different kinds of conservation areas (from woodlands and pastures to ballfields and abandoned farmlands that are reforesting) and describes recommended management practices for each one. Farmland is typically leased by HOAs and land trusts to local farmers, who often agree to modify some of their agricultural practices.
minimise impacts on nearby residents. Although ballfields and village greens require weekly mowing, conservation meadows typically need only annual mowing. Woodlands generally require the least maintenance: trimming bushes along walking trails, and removing invasive vines around the outer edges where greater sunlight penetration favors their growth.

**Tax Concerns.** Property tax assessments on conservation subdivisions should not differ, in total, from those on conventional developments. This is because the same number of houses and acres of land are involved in both cases (except when part of the open space is owned by a public entity, which is uncommon). Although the open space in conservation subdivisions is taxed low because easements prevent it from being developed, the rate is similar to that applied to land in conventional subdivisions where the larger house lots are not big enough to be further subdivided. (For example, the undeveloped back half of a one-acre lot in a one-acre zoning district is subject to minimal taxation because it has no further development value.)

**Liability Questions.** The Pennsylvania Recreation Use of Land and Water Act protects owners of undeveloped land from liability for negligence if the landowner does not charge a fee to recreational users. A tree root or rock outcropping along a trail that trips a hiker will not constitute landowner negligence. To be sued successfully in Pennsylvania, landowners must be found to have "willfully or maliciously failed to guard against a dangerous condition." This is a much more difficult case for plaintiffs to make. Even so, to cover themselves against such situations, owners of conservation lands routinely purchase liability insurance policies similar to those that most homeowners maintain.

**How can on-site sewage disposal work with conservation subdivisions?**

The conventional view is that the smaller lots in conservation subdivisions make them more difficult to develop in areas without sewers. However, the reverse is true. The flexibility inherent in the design of conservation subdivisions makes them superior to conventional layouts in their ability to provide for adequate sewage disposal. Here are two examples:

**Utilizing the best soils.** Conservation design requires the most suitable soils on the property to be identified at the outset, enabling house lots to be arranged to take the best advantage of them. If one end of a property has deeper, better drained soils, it makes more sense to site the homes in that part of the property rather than to spread them in, with some lots located entirely on medioicre soils that barely manage to meet minimal standards for septic approval.

**Locating individual systems within the open space.** Conventional wisdom also holds that when lots become smaller, central water or sewage disposal is required. That view overlooks the practical alternative of locating individual wells and/or individual septic systems within the permanent open space adjacent to the more compact lots typical of conservation subdivisions, as shown in Figure 20. There is no engineering reason to require that septic filter beds must be located within each house lot. However, it is essential that the final approved subdivision plan clearly indicate which parts of the undivided open space are designated for septic disposal, with each lot's disposal area graphically indicated through dotted lines extending out into the conservation land. These filter beds can be located under playing fields, or conservation meadows in the same way they typically occupy positions under suburban lawns. (If mound systems are required due to marginal soil conditions, they are best located in passive use areas such as conservation meadows where the grass is cut only once a year. Such mounds should also be required to be contoured with gently sloping sides to blend into the surrounding landscape wherever possible.)

Although maintenance and repair of these septic systems remains the responsibility of individual lot owners, it is recommended that HOAs be authorized to pump individual septic tanks on a

![Figure 20](image-url)

A practical alternative to central water or sewage disposal facilities are individually-owned wells and/or septic systems located within conservation areas, in places specifically designated for them on the final plan.
How does the conservation approach differ from "clustering"?

The Growing Greener conservation approach described here differs dramatically from the kind of "clustering" that has occurred in many communities over the past several decades. The principal points of difference are as follows:

**Higher Percentage and Quality of Open Space.** In contrast with typical cluster codes, conservation zoning establishes higher standards for both the quantity and quality of open space that is to be preserved. Under conservation zoning, 50 to 70 percent of the unconstrained land is permanently set aside. This compares with cluster provisions that frequently require only 25 to 30 percent of the gross land area be conserved. That minimal open space often includes all of the most unusable land as well, and sometimes even includes undesirable, left-over areas such as stormwater management facilities and land under high-tension power lines.

**Open Space Provisions.** Although clustering has at best typically produced a few small "green islands" here and there in any municipality, conservation zoning can protect blocks and corridors of permanent open space. These areas can be pre-identified on a comprehensive plan map of potential conservation lands so that each new development will add to—rather than subtract from—the community's open space acreage.

**Eliminates the Standard Practice of Full-Density with No Open Space.** Under this new system, full density is achievable for layouts in which 50 percent or more of the unconstrained land is conserved as permanent, undivided open space. By contrast, cluster zoning provisions are typically only optimal alternatives within ordinances that permit full density, by right for "standard"cookie-cutter" designs with no open space. Simply put, the differencesbetween clustering and conservation zoning are like the differences between a Model T and a Taurus.

How do residential values in conservation subdivisions compare to conventional subdivisions?

Another concern of many people is that homes in conservation subdivisions will differ in value from those in the rest of the community. Some believe that because so much land is set aside as open space, the homes in a conservation subdivision will be prohibitively priced and the municipality will become a series of elitist enclaves. Other people take the opposite view, fearing that these homes will be smaller and less expensive than their own because of the more compact lot sizes offered in conservation subdivisions. Both concerns are understandable but they miss the mark.

Developers will build what the market is seeking at any given time, and they often base their decision about selling price on the character of surrounding neighborhoods and the amount they must pay for the land. In conservation subdivisions with substantial open space, there is little or no correlation between lot size and price. These developments have sometimes been described as "goofy."
course communities without the golf course," underscores the idea that a house on a small lot with a great view is frequently worth as much or more than the same house on a larger lot which is boxed in on all sides by other houses.

It is a well-established fact of real estate that people pay more for park-like settings, which offer their tendency to pay less for smaller lots. Successful developers know how to market homes in conservation subdivisions by emphasizing the open space. Rather than describing a house on a half-acre lot as such, the product is described as a house with 20 and one-half acres, the larger figure reflecting the area of conservation land that has been protected in the development. When that conservation area abuts other similar land, as in the township-wide open space network, a further marketing advantage exists.

Involving density shifts among contiguous parcels, other techniques can be effective, but their potential for influencing the "big picture" is limited. The Growing Greener approach offers the greatest potential because it:

- does not require public expenditure,
- does not depend upon landowner charity,
- does not involve complicated regulations for shifting rights to other parcels, and
- does not depend upon the cooperation of two or more adjoining landowners to make it work.

Of course, municipalities should continue their efforts to preserve special properties in their entirety whenever possible, such as by working with landowners interested in donating easements or fee title to a local conservation group. Increasing development rights or fee title with country, state or federal grant money, and transferring development rights to certain "receiving areas" with increased density. However, until such time as more public money becomes available to help with such purchases, and the Transfer of Development Rights mechanism becomes more operational at the municipal level, most parcels of land in any given community will probably eventually be developed. In that situation, coupling the conservation subdivision design approach with multi-optioned conservation zoning offers communities the most practical, double way of protecting large acres of land in a theoretical and coordinated manner.
Appendix
Selected Examples of Conservation Subdivisions in Pennsylvania

The two examples shown here demonstrate how conservation design principles can be used to protect different kinds of resources. In Garnet Oaks, a woodland wildlife preserve was set aside by the developer, who also constructed extensive walking trails. A well-equipped tot lot and an informal picnic grove provide additional amenities to the residents. At Farmview, 137 acres of productive farmland were permanently protected, in addition to most of the woodlands. This subdivision prompted the township to revise its conventional zoning so that the developer’s creative design could be approved. Since that time over 500 acres of prime farmland has been preserved in this community through conservation subdivision design representing a $3.5 million conservation achievement (at an average land value of $7,000) and these figures continue to grow as further subdivisions are designed. The potential for replicating this and achieving similar results throughout the Commonwealth is enormous.

Garnet Oaks
Fourik Road, Bethel Township, Delaware County
Developer: Keogan Homes, Ambler
Development Period: 1993-94

Just over half of this 58-acre site has been conserved as permanent privately-owned open space through the simple expedient of reducing lot sizes to the 10,000-12,000 sq. ft. range (approximately 1/4 acre). The developer reports that these lot sizes did not hinder sales because about two-thirds of the lots directly abut the densely wooded open space, which gives them the feel and privacy of larger lots. In fact, the evidence indicates that the open space definitely enhanced sales in two ways: increased absorption rates and higher

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homebuyers are considerably more discerning than they were 10 and 20 years ago, and now look for extra amenities not only in the house but also in the neighborhood setting. This knowledge led Realen to take special measures to protect trees on individual house lots and within the street right-of-way. Their approach included collaborating with the Morris Arboretum in preparing a training manual for subcontractors and conducting training sessions in tree conservation practices, attendance at which was required of all subcontractors. The centerpiece of Garnet Oaks' open space is the near mile-long woodland trail which winds its way through the 24-acre conservation area, connecting a well-equipped playground and a quiet picnic grove to the street system in three locations. Where the trail traverses areas of wet soils it is elevated on a low wooden boardwalk. This trail, which was cleared with assistance from a local Boy Scout Troop, features numerous small signs identifying the common and botanical names of the various plants and trees along the trail. Realen's staff also designed and produced an attractive eight-page trail brochure that illustrates and describes the flora, fauna, environmental areas, and historic features along the trail. The guide also explains the developer's creative use of low-lying woods as a temporary detention area for stormwater runoff, a naturalistic design that helped avoid a more conventional approach in which many trees within the preserve would have been removed to provide for a conventionally engineered basin. Realen's sales staff reported that prospective buyers who picked up a copy of the trail brochure and ventured out onto the trail typically decided to make their home purchase in Garnet Oaks.

Located on a 415-acre site, Farmview is a 222-lot "density-neutral" subdivision whose layout was designed to conserve 213 acres of land (51 percent of the property), including 145 acres of cropland and 68 acres of mature woods. While 59 percent of the original farmland was needed for development, 41 percent categorized as prime agricultural and farmland of statewide importance was able to be preserved in addition to nearly all of the wooded areas. The 145 acres of farmland that have been saved were donated by the developer to the Lower Makefield Farmland Preservation Corporation, a local conservation organization whose members include local farmers, township residents and an elected official liaison. This cropland is leased to farmers in the community through multi-year agreements that encourage adoption of traditional farming practices to minimize impacts on the residents, whose yards are separated from their operations by a 75-foot deep hedgerow area thickly planted with native species of trees and shrubs. Realen Homes also donated the 68 acres of woodland to the township to support local conservation efforts in creating an extended network of forest habitat and wildlife travel corridors. These areas also offer potential for an informal neighborhood trail system in future years. (The developer's offer to construct such trails was declined by the supervisors, citing liability concerns, despite the fact that other townships in the region actively encourage such trails in new subdivisions and also on township conservation lands.)

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percent of a property would be conserved. These regulations target the most productive soils as those which should be "designed around."

Although other developers were at first skeptical of Staatsen's proposal to build large homes (2,600-3,700 sq. ft.) on lots which were typically less than a half an acre in a marketplace consisting primarily of one acre zoning, the high absorption rate helped convince them that this approach was sound. Contributing to the project's benefits is both the developer and the township were reduced infrastructure costs (for streets, water, and sewer lines). Premiums added to "view lots" abutting the protected fields or woods also contributed to the project's profitability.