NATURAL LANDS TRUST

Design Studies Portfolio

A Series of Conservation Subdivision Sketch Plans Illustrating the *Growing Greener: Conservation By Design* Principles

Prepared with the generous assistance of The William Penn Foundation, April 2002

Foreword

This collection of design studies demonstrates the potential for conserving significant features of the natural and cultural landscape accomplished as part of residential development at full-density (i.e. maximum yield). These sketches also demonstrate the potential of the conservation design approach for reducing costs and enhancing marketability.

How These Sketch Plans Evolved

These conservation subdivision studies illustrate the design principles behind Pennsylvania's statewide planning program *Growing Greener: Conservation By Design*. This program, created to help improve local development patterns, is a partnership between the Pennsylvania Department of Conservation and Natural Resources; the Governor's Center for Local Government Services; Natural Lands Trust, a regional land conservancy located in Media, Pennsylvania; and an advisory committee comprised of officials from state and local agencies including the Pennsylvania Environmental Council; The Pennsylvania State University Cooperative Extension, and other non-profits and the private sector. Since it's inception in 1996, Natural Lands Trust staff and program partners have worked with communities to show them how to incorporate parks and conservation lands into the design of residential developments through a new generation of municipal open space plans, zoning standards and subdivision requirements.

Most of these designs were requested by municipal officials hopeful of persuading applicants to modify their original conventional, "cookie-cutter" plans to reduce site disturbance and thereby preserve more of their properties' character. The principal goal of those community

officials was to encourage developers to select more flexible, conservation-minded options in their ordinances. It should be noted that those regulations were nearly always of the outdated, self-defeating kind which also allowed applicants to achieve the same full density through standard layouts with no open space at all(!).

Conversely, other designs were prepared at the request of developers whose goals were to convince local officials to broaden the options available under existing, inflexible codes so they could create something more memorable, livable, marketable, ***and profitable*** than a bland assemblage of houselots and streets.

In the main, these design demonstrations were not immediately successful, but they often served a more important longer-term goal of promoting the conservation design concept in the community in which they were offered. Happily, a few of the tendered designs were actually embraced by the recipient parties and represent real success stories, but these were (almost predictably) the exception rather than the rule.

Part of the usefulness of this portfolio, lies in the lessons it teaches us about the relative futility of trying to convince developers to propose more creative subdivisions when existing ordinances unintentionally undercut those efforts by enabling them to achieve full density by ignoring such hopeful requests, and by turning a blind eye

toward those beckoning opportunities. Until local land-use regulations are consciously structured to discourage (or even to prohibit) chunking up the ground into large lots, the "meat-cleaver approach" to subdivision design will continue to be the predominant form. Sad but true, education and polite requests go only so far.

The *Growing Greener: Conservation By Design* program strives to convince officials administering outdated ordinances—those which do not yet permit such enlightened approaches to subdivision

design—that the benefits produced by greater flexibility (coupled with detailed standards governing the quantity, quality, and configuration of the resulting open space) flow not only to the applicant, but also to the subdivision residents and to the wider community as well.

Difficulties Encountered by Officials Attempting to Persuade Developers to Modify Their Plans

Local officials generally fail to convince developers to modify their original "cookie-cutter" plans. This lack of success is typically due to developers not wishing to throw away tens of thousands of dollars worth of engineering fees they have already paid to prepare costly, highly-detailed (and so-called) "Preliminary Plans." This obstacle can, to a considerable degree, be overcome when local officials and developers both agree to meet early in the design process, before the developer's engineering consultants have spent large sums laying out conventional lots, streets, and utilities. Thus can be seen the critical importance of the "Sketch Plan" (or "Concept Plan") stage of the review process—a stage regrettably missing from many ordinances, and a stage typically not well-structured in the few ordinances that do contain some such procedure.[1]

However, even before those expensive documents have been prepared, a developer usually has a specific idea of the lot size, floor plan, and house width he envisions. Sometimes, particularly when the property is zoned for densities of two or more dwellings per acre, the critical factor is the minimum achievable lot width, which is frequently pre-determined by the developer's choice of house building plans. This obstacle can usually be overcome only on a longer-term basis, by showing developers examples of land-conserving house plans which enable neighborhood greens to be created and parkland to be protected by utilizing architectural designs with narrower facades. Because developers typically spend years perfecting their house plans (as do most manufacturers with their respective products), it understandably can take just that long to convince local builders it is not risky but wise to trim their house widths a bit to fit comfortably on somewhat slimmer lots in order to create greener neighborhoods with greater livability and therefore increased sales appeal.[2]

Difficulties Encountered by Developers Attempting to Persuade Officials to Modify their Codes

A smaller number of the designs presented herein were originally prepared at the request of progressive developers who wished to create something more satisfying (and more saleable) than the standard layout consisting of nothing more than houselots, streets, and drains. For extremely valid reasons, the notion of proposing a layout not in accordance with the current set of rules rarely enters the mind of the vast majority of developers, largely because they have been thoroughly conditioned by rigid land-use regulations not to think "outside the box." However, should such a thought occur to a developer, he/she would weigh carefully the dollar cost of preparing an alternative plan for which there is not a current path of approval, and the time-cost of waiting a year or more while the community deliberates the issues, drafts potential new ordinance language, and brings it to a vote, the outcome of which is very far from certain at the beginning of this laborious process. To cover those additional costs, the developer will often try to make the case for an increased number of lots or houses, which is in itself a risky gambit, for most communities will not

seriously consider adding to the number of children to be schooled or vehicle trips taken on area roads and highways. In communities where design flexibility exists, but is tied to a Conditional Use process, developers typically reject that option and follow the "by-right" route with conventional layouts instead, for some of the same reasons (longer time, higher legal costs, and very uncertain outcomes).

Such proposals must generally overcome typical public-sector skepticism that anything a developer wishes to do beyond the scope of the present regulations—or requiring greater flexibility—will benefit only the applicant and not the community as well.

The Value of This Portfolio

For all the reasons given above, this portfolio does not contain a recipe collection for "quick fixes," which occur only occasionally. Although your community might be lucky enough to turn around a current development proposal through a redesign, the value of this document is more likely to be longer-term.

One of the goals of this portfolio is to illustrate the opportunities that will continue to be lost, time and again, in your community as long as its ordinances continue to allow developers to achieve full-density results for conventional, "cookie-cutter" subdivisions consisting of nothing more than houselots and streets. As readers ponder those lost opportunities, many of them will hopefully be energized to bring this situation to the attention of other residents and officials so that the disadvantages of retaining outdated regulations—and the advantages of improving those dysfunctional ordinance provisions—will be openly and fully discussed.

Officials and residents examining this collection of conservation designs, with the accompanying text—describing in many cases why the suggested re-designs were not implemented—may realize that their community's regulations must specify the natural and cultural features around which developers are required to design, if applicants and site designers are going to shift their mental gears and begin following this greener approach.

It is hoped that after reviewing this portfolio, local decision-makers will conclude that they should waste no further time pursuing a "hit-or-miss" course in which they essentially beg developers to select a conservation design option without the underlying ordinance standards to support conservation design.

A basic premise of this publication is that, in order to achieve consistent, high-quality design results protecting an interconnected network of open space stretching across any community, officials must update their land-use ordinances so that conservation design becomes the only means through which subdivision applicants would be able to achieve full-density results. Such code revisions would end years of past disappointments during which those officials and their constituents have watched helplessly as developer after developer has declined to vary from his pre-conceived, conventional approach and to experiment with more creative responses to the site's special features and unique characteristics.

This portfolio can also help the enlightened developer who wishes to produce a neighborhood built around a central open space system—which he realizes can improve his "bottom line" return on investment by reducing his costs while also adding economic value (expressed in lot premiums and faster sales). Because such layouts typically fail to conform with the "cookie-cutter" regulations previously adopted by the community, developers frequently face uphill struggles in convincing local officials and residents that the proposed design represents a "win-win" situation for everyone and not merely a one-sided benefit accruing to the developer himself. This booklet's usefulness to developers therefore lies in its ability to show those "doubting Thomases" at the municipal level that the greater design flexibility desired by the applicant would also produce significant, tangible benefits to the community as a whole.

— Randall Arendt, *Senior Conservation Advisor*
Natural Lands Trust
April 2002

All plans were drawn by Diane C. Rosencrance, Cartographer, Natural Lands Trust

[1] For model ordinance language to correct such deficiencies in your existing codes, see Arendt, Randall. *Growing Greener: Putting Conservation into Local Plans and Ordinances*, Washington DC: Island Press, 1999.

[2] For examples of house plans that fit well onto narrower lots, see Arendt, Randall. *Conservation Design for Subdivisions: A Practical Guide for Creating Open Space Networks*, Washington DC: Island Press, 1996.

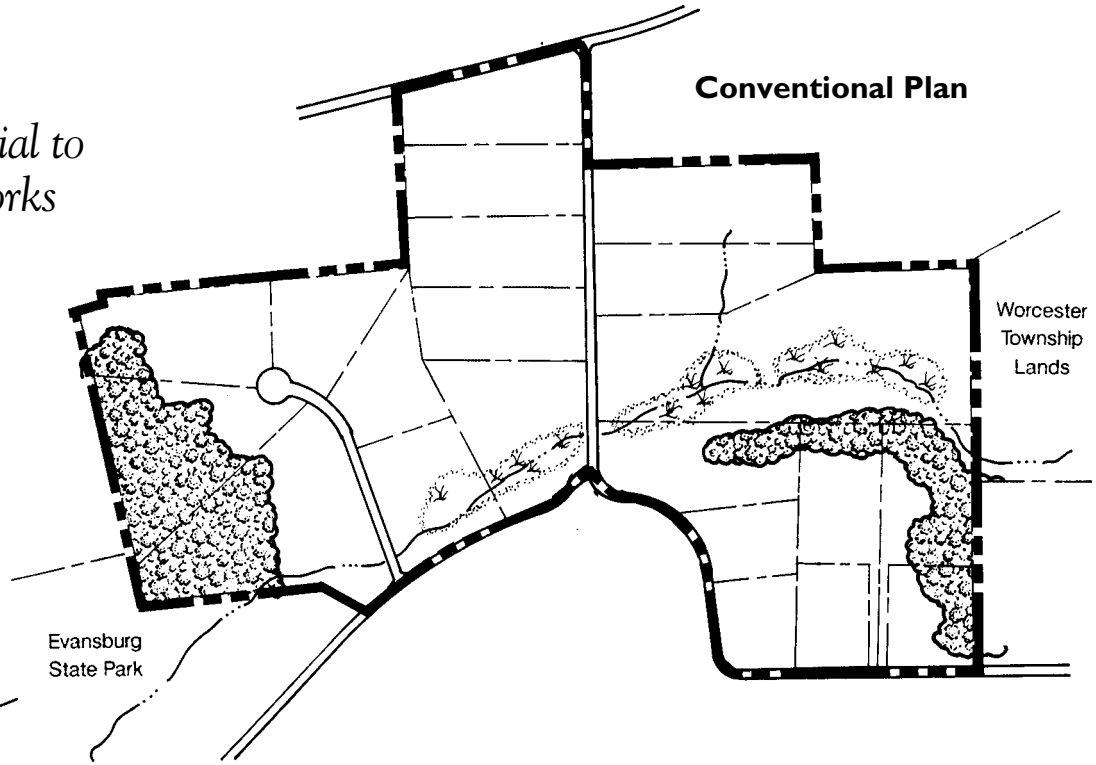
Evansburg Area

Conservation Design Illustrates the Potential to Create Interconnected Open Space Networks

Worcester Township, Montgomery County

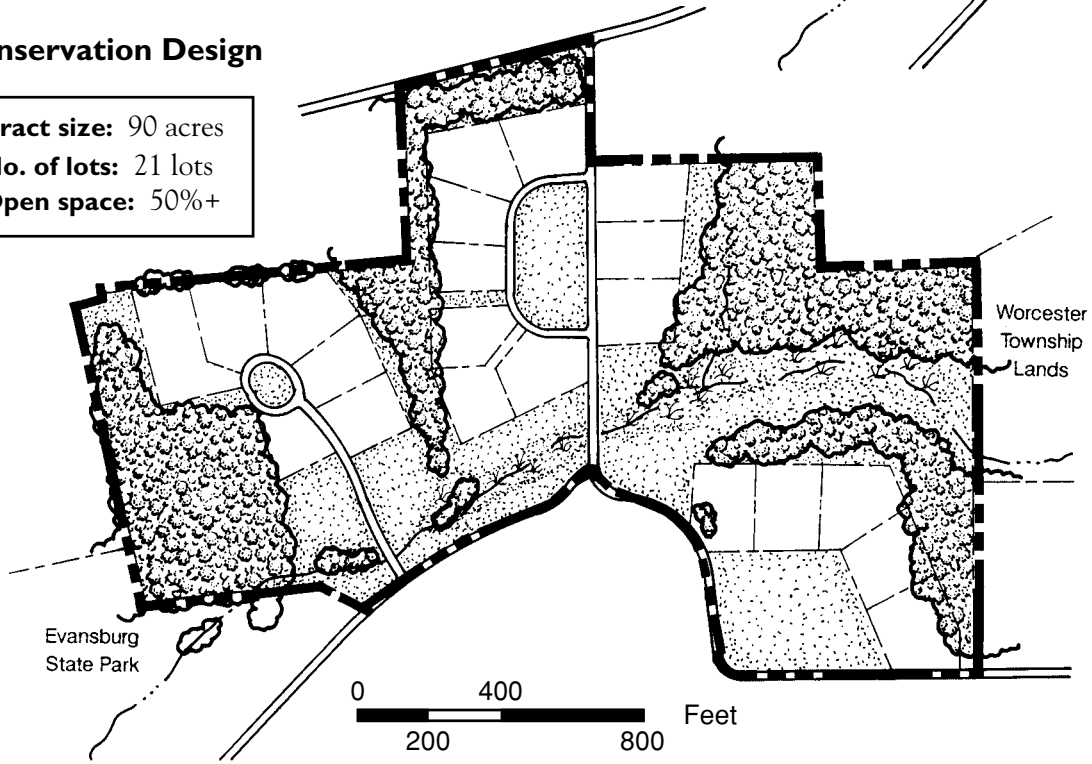
After seeing an early version of the *Growing Greener* slide presentation at Temple University, several supervisors from Worcester Township asked Natural Lands Trust staff to visit a property proposed for complete coverage by three-acre lots and recommend an alternative layout that would conserve significant open space. Their concern had been heightened by the fact that this property adjoined not only a parcel of township land intended for future park development, but also abutted the Evansburg State Forest. Moreover, a limestone stream noted for its trout fishery flowed through the property and essentially connected the township land with the state forest. After visiting the property and evaluating the importance of the woodland habitat (which was closely associated with the stream valley tributaries), the design solution practically suggested itself. All of the forested areas were "designed around", in addition to reserving a "foreground meadow" in a highly visible farm field — which was an important element in conserving the community's rural character. The possibility of a trail linking the two public landholdings remains a distinct possibility. No further action on the property has yet been taken by the owner who is considering several conservation options.

Conventional Plan



Conservation Design

Tract size: 90 acres
No. of lots: 21 lots
Open space: 50%+



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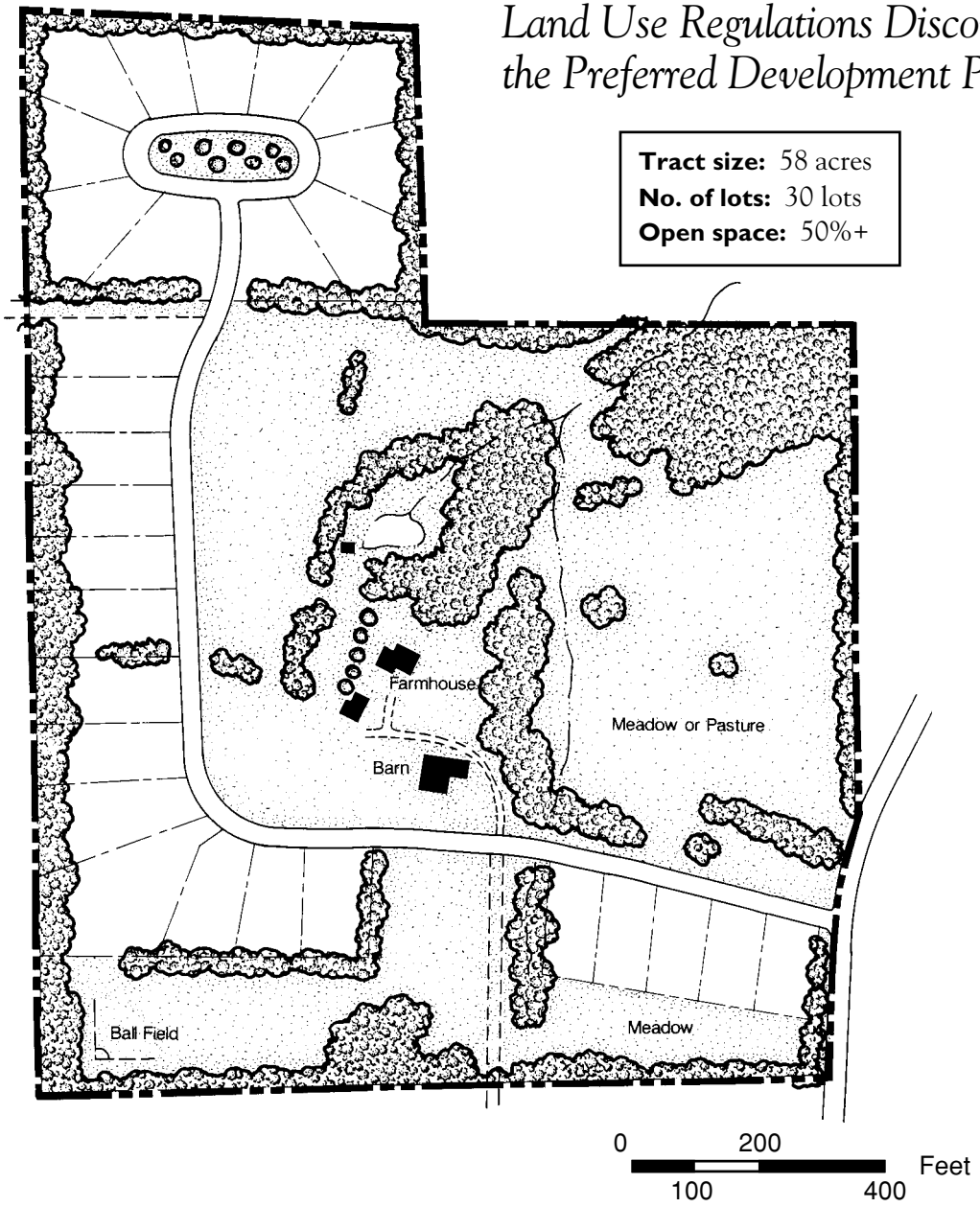
Blosinski Property

A Community Discovers That Its Land Use Regulations Discourage the Preferred Development Plan



Edgmont Township, Delaware County

This redesign was requested by the township manager, who was deeply interested in introducing the *Growing Greener* principles to her community. Although the landowner consented to this demonstration exercise, he expressed no particular preference for a layout that would protect the essential features of his property, stating at one point that he did not care what happened to the place after he sold it. The design took advantage of the several hedgerows on the property, using them to separate distinctive neighborhoods, and to separate yards from adjacent open space. However, by far the most salient aspect of the design involved its retention of the original stone farmhouse and barn (both in good structural condition), surrounded by meadows, pastures, and locust groves. The intention was to create a very high-value "conservancy lot" to be purchased by a gentleman farmer who might enclose his property with a white board fence and bring horses back onto the land. The principal (southern) view from the farmhouse, past the barn, was also to have been protected, as noted on the accompanying plan. Except for a dozen homes centered around a neighborhood green, all of the lots were situated to face onto very attractive major open space (and nine of them were also to enjoy backyard open space views as well). Unfortunately, the developer simply wanted to divide the land into large suburban lots, and was not interested in discussing alternative layouts. In the absence of any strong municipal regulations actively discouraging such land-consumptive practices (as through the *Growing Greener* density disincentives applied to conventional plans), communities remain impotent in issues involving the pattern of future development and its impact upon their diminishing open space and rural character.

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Weatherstone[SM]

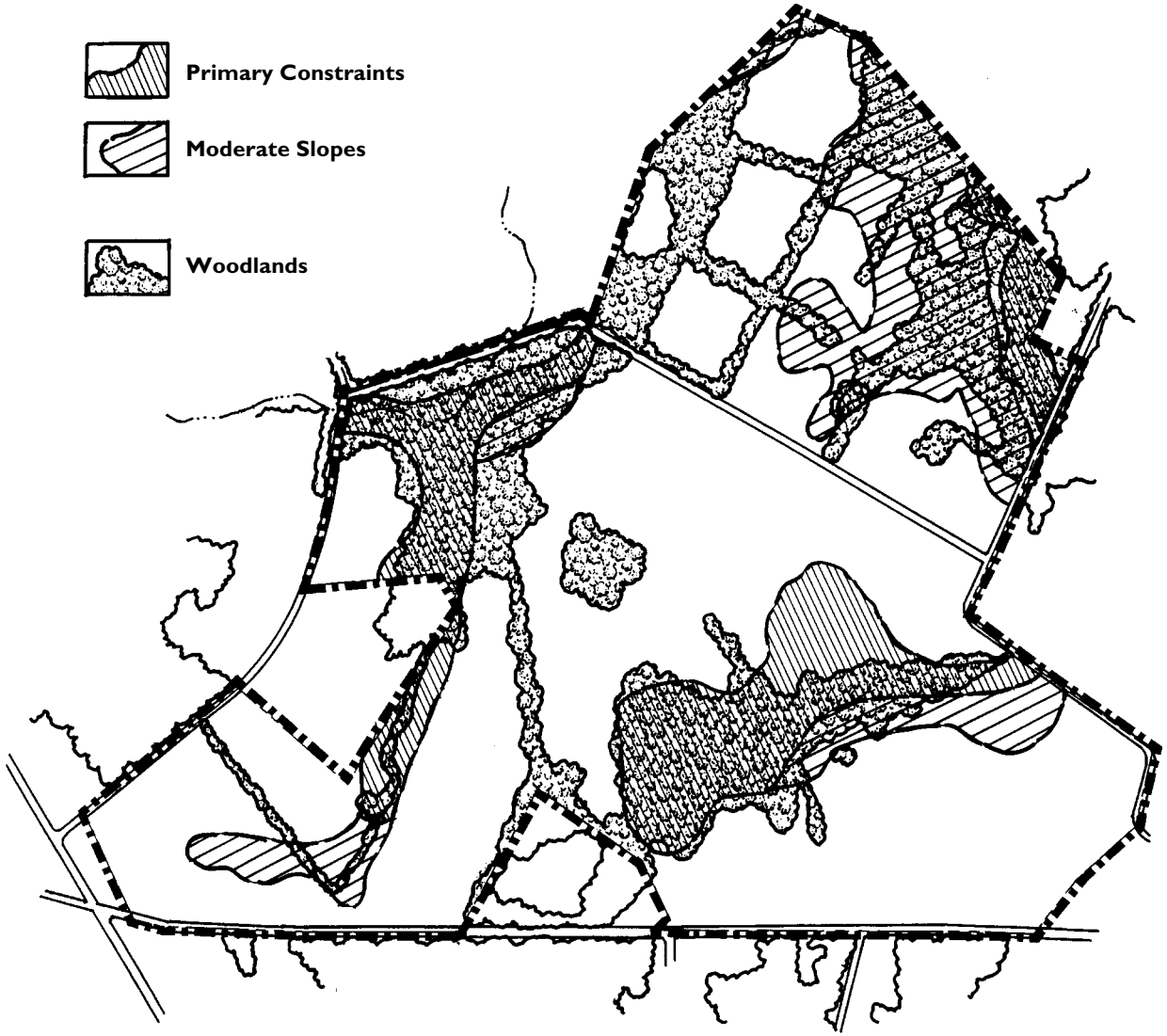
Village Design Respects a Township's Conservation Lands Map

West Vincent Township, Chester County

This large 300-acre parcel is located at Ludwig's Corner, a major intersection of two state highways (Routes 100 and 401) in West Vincent Township, Chester County.

This development by the Hankin Group of Exton, Pennsylvania, is important for several reasons. First, the extensive conservation lands (totaling 195 acres, or more than 65% of the total tract area) were laid out with reference to the Township's *Map of Potential Conservation Lands*. This map, which is a key element of the *Growing Greener* conservation planning process, identifies both Primary Conservation Areas (unbuildable wetlands, floodplains, and steep slopes) plus conservation opportunities on significant portions of the remaining developable acreage.

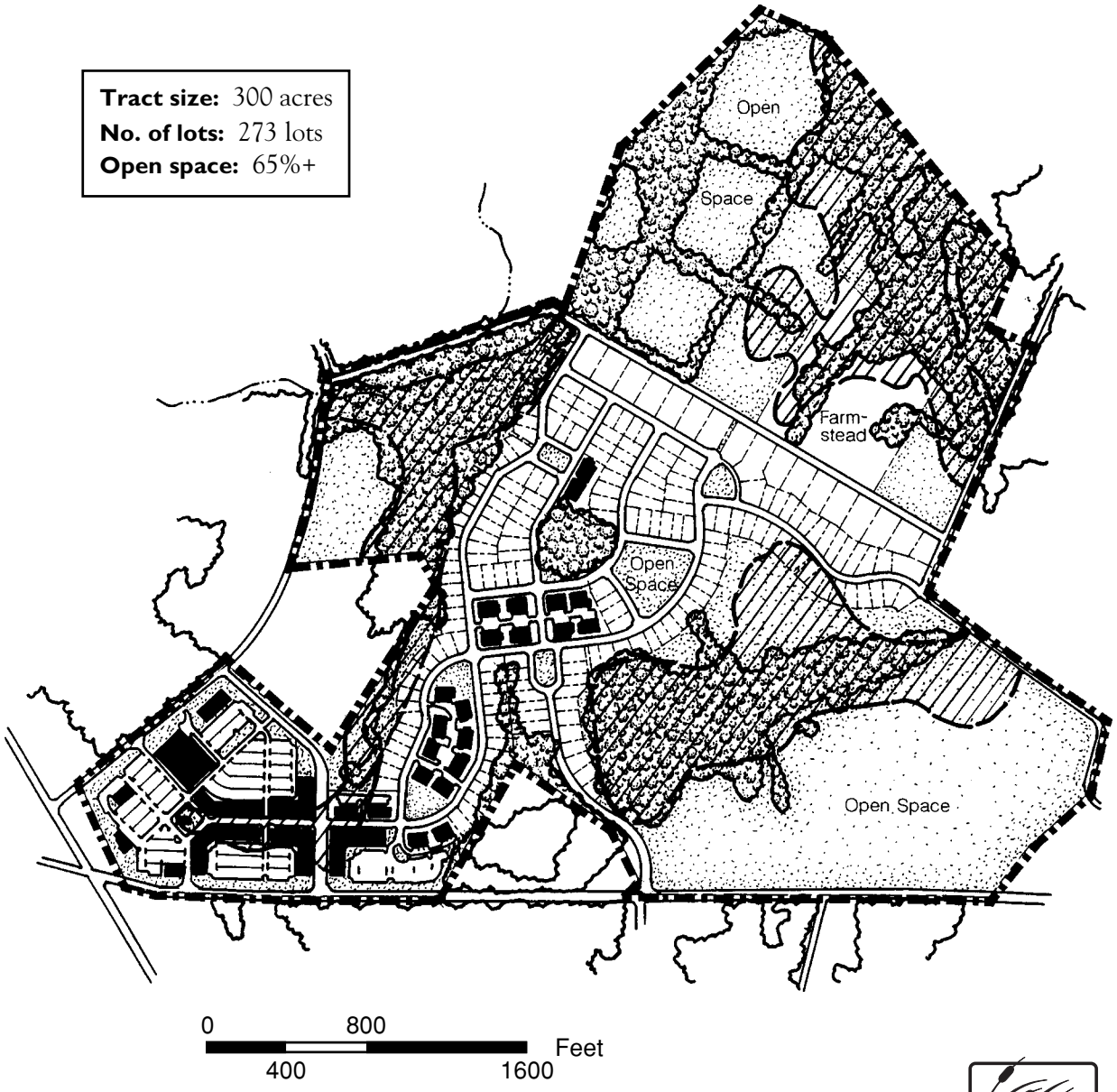
The Township map was originally created by Natural Lands Trust and Castle Valley Associates, Doylestown, PA to demonstrate the four-step conservation design process. Weatherstone assists the municipality in achieving its comprehensive, long-range conservation goal of securing protection of a township-wide network of open space. This open space is being used for a variety of approved purposes, including agricultural production, grazing, forest habitat, and both active and passive recreation (including acreage dedicated to the municipality). Equally important, ***all*** of Weatherstone's development areas are located in those parts of the property that were indicated on the community's maps as appropriate for such uses.



Another notable aspect of this landmark development is its recharge of groundwater supplies through the use of spray irrigation (fully-treated wastewater applied to conservation lands) and stormwater management techniques featuring infiltration measures rather than employing the more conventional "catch-and-release" approach that does little or nothing to replenish the underlying aquifer. The project's advanced stormwater management design also filters discharges to the sensitive headwaters streams emanating on the property.

The plan reflects the Hankin Group's assemblage of a team of talented designers to carry out the initial village concept. From a development perspective, Weatherstone is noteworthy for blending different but compatible land uses, including a mixture of 273 single-family and attached residential units, 240,000 sq. ft. of retail and office space, and a new branch of the county library system.

This property carried a long history of controversy and several development scenarios were put forth over the years. Credit goes to the Township Supervisors who, faced with inevitable development, approved a plan that upholds high standards for conservation and development in their community.



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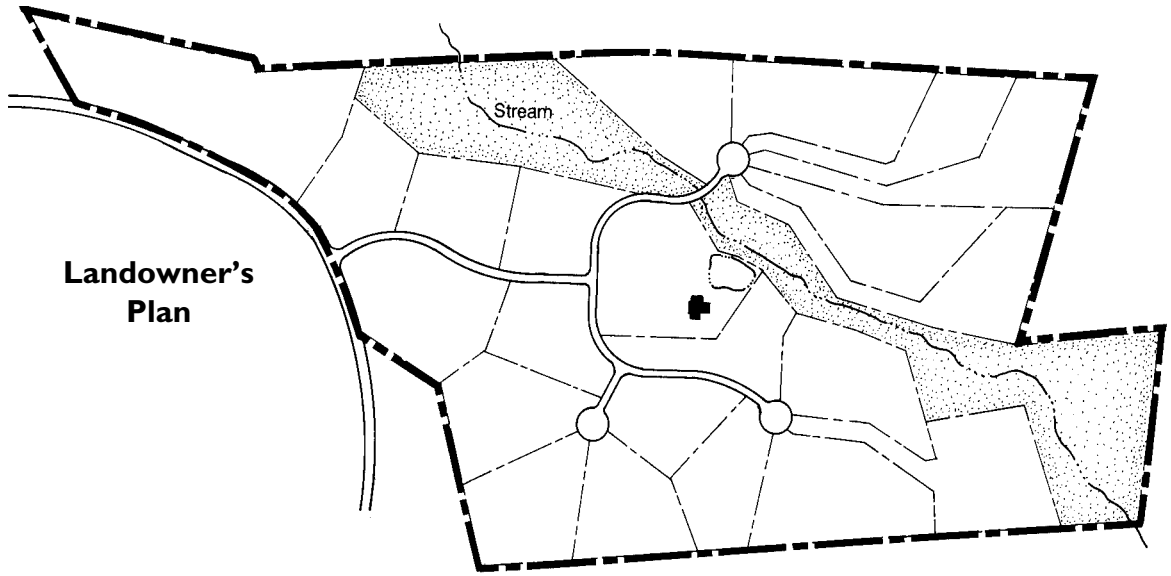
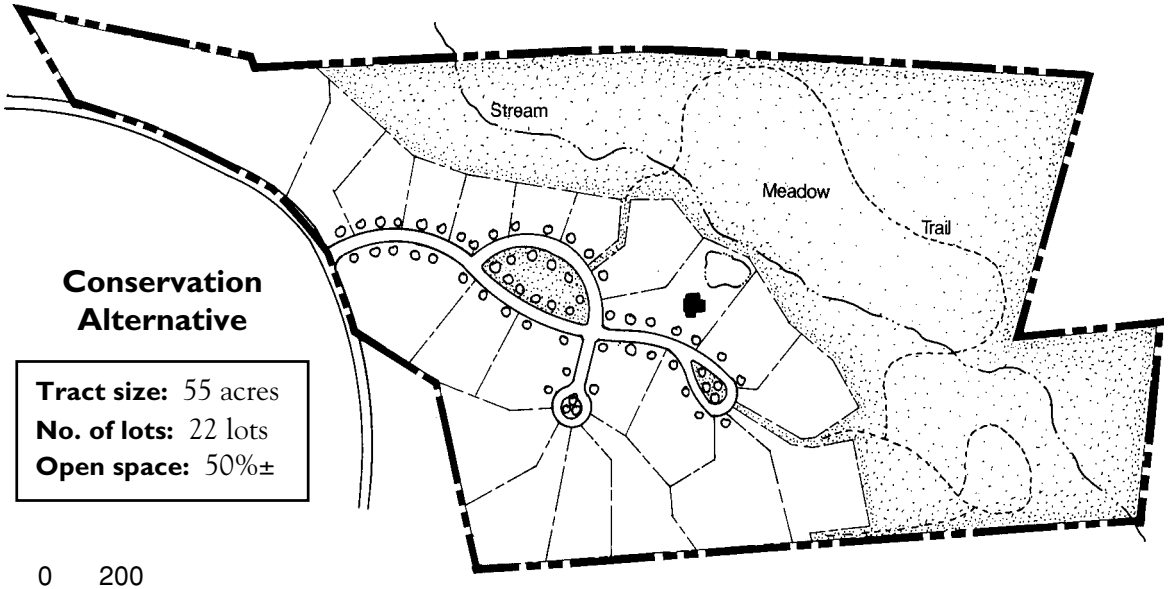
Schultz Property

A Redesign Emphasizes the Importance of Ordinance Standards for Open Space



Landowner's Plan



Conservation Alternative

Tract size: 55 acres
No. of lots: 22 lots
Open space: 50%±

0 200
100 400
Feet

London Britain Township, Chester County

This design was tendered to a speculative landowner who complained to Natural Lands Trust about the difficulties he was experiencing with a Planning Commission he said was not impressed with his submission, which he described as containing substantial open space. The drawing he subsequently sent to the Trust for its informal review, however, missed significant opportunities to site homes with lesser impact upon the landscape and natural resources. In fact, its extensive street system, long driveways, and needless stream crossing deeply fragmented the resource areas and scattered the house sites across almost the entire property. The alternative layout was prepared by the Trust to show the landowner how the same number of homes could be more sensitively arranged to both enjoy highly marketable views of protected open space and to better protect the property's special features. However, by this point in his interactions with local officials, he was unwilling to consider changes to his initial plan. Township officials were pleased with the alternative layout but were unable to influence the applicant to submit a conservation design with less sprawling lots, because their existing ordinances did allow large-lot layouts, albeit with certain dimensional requirements not met on the landowner's plan. Precisely because the original proposal did not fully comply with those existing ordinances, that plan was not approved. The landowner neither challenged the Township's position nor submitted a revised plan. This unsettling and unsuccessful experience convinced officials they needed to restructure their codes so they would be able in the future to actively discourage proposals with inadequate or highly fragmented open space, and more effectively persuade applicants to follow the conservation design approach. They accomplished this restructuring over the subsequent fifteen months.

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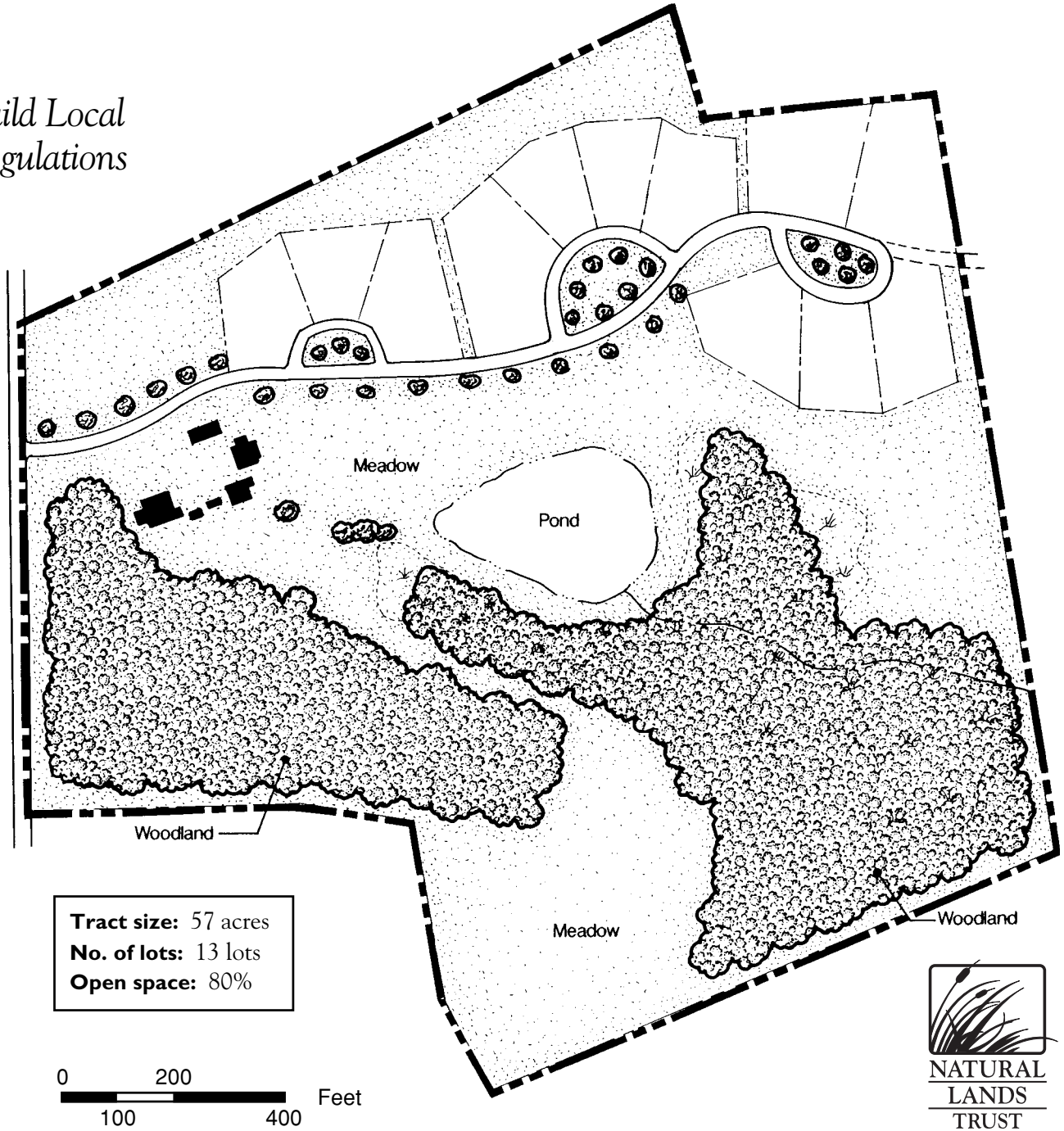
Frankel Property

A Conservation Design Helps Build Local Support for Flexible Land Use Regulations

Honey Brook Township, Chester County

The veterinarian who lived on this property requested design assistance from Natural Lands Trust while its staff was helping Township officials draft improved language for their new zoning ordinance. This landowner welcomed the opportunity to create a dozen houselots on his land in a way that would minimize visual and environmental impacts, as well as keeping development costs down. The layout was accomplished in an elegant "single-loaded" fashion (with homes on one side of the street only) to preserve open space views both front and back from most of the houses. Additional variety was provided by two crescents where road widths could be minimized by designating them as private common driveways. This landowner and others like him voiced their support for the proposed zoning and subdivision ordinance changes, which are currently undergoing adoption.



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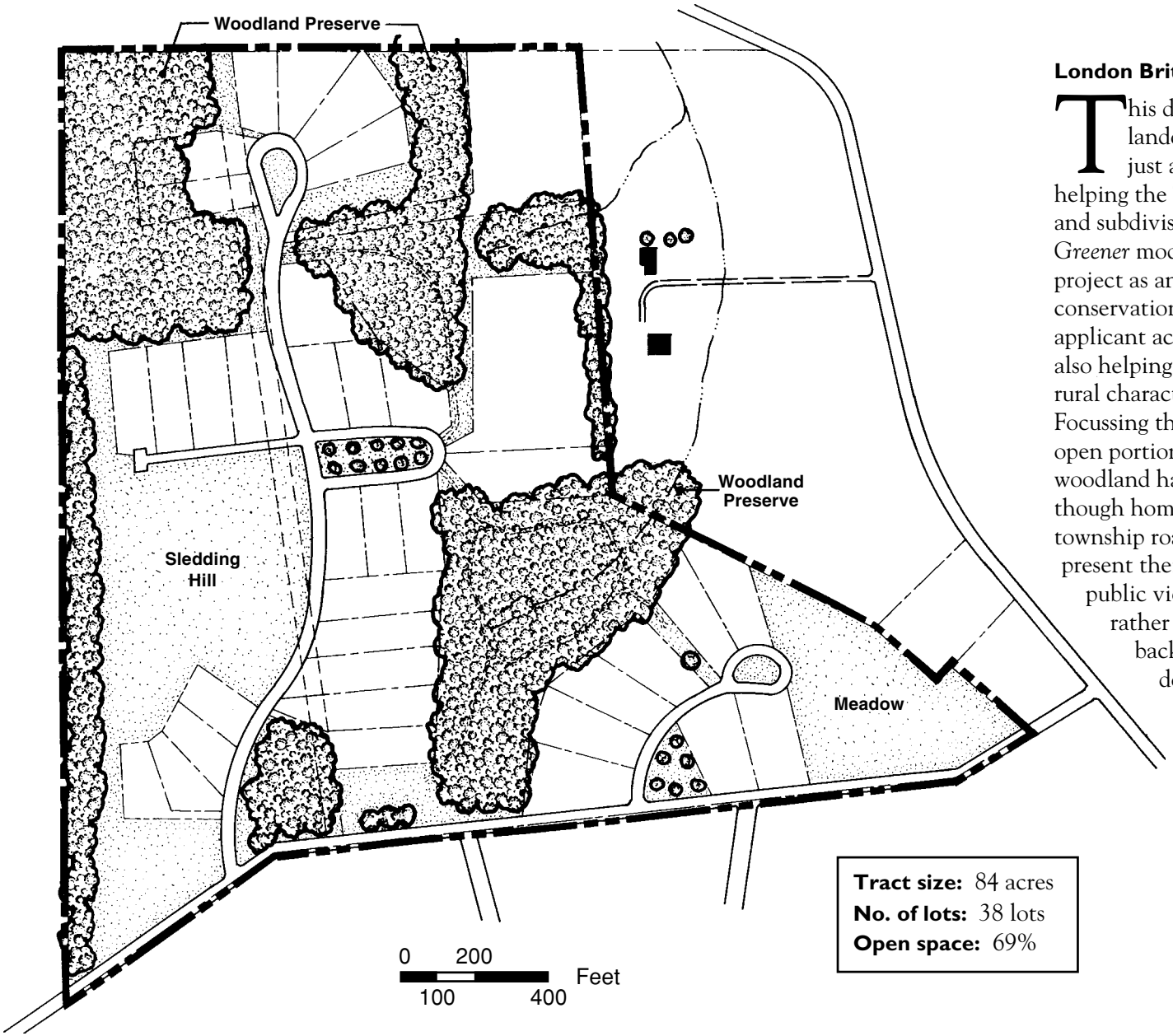
Lang Property

A Community's New Growing Greener *Ordinances Permit a Landowner to Preserve the Woods and Neighborhood Sledding Hill*



London Britain Township, Chester County

This design was commissioned by the landowner, who grew up on the property, just at the time Natural Lands Trust was helping the Township officials update their zoning and subdivision ordinances to include the *Growing Greener* model language. Both parties viewed the project as an opportunity to demonstrate how the conservation design approach could help the applicant achieve his financial objectives while also helping the community to accomplish its rural character and resource preservation goals. Focussing the vast majority of the houselots on the open portions of the site has enabled most of the woodland habitat to remain undisturbed. Although homes will be visible from the existing township roads, they are carefully oriented to present their most attractive faces toward the public viewshed, across "foreground meadows", rather than displaying their less attractive backsides (with decks and sliding glass doors). Two other noteworthy design features are the preservation of the neighborhood sledding hill and the substitution of a "loop lane" with a central landscaped green instead of a standard cul-de-sac.

Tract size: 84 acres
No. of lots: 38 lots
Open space: 69%

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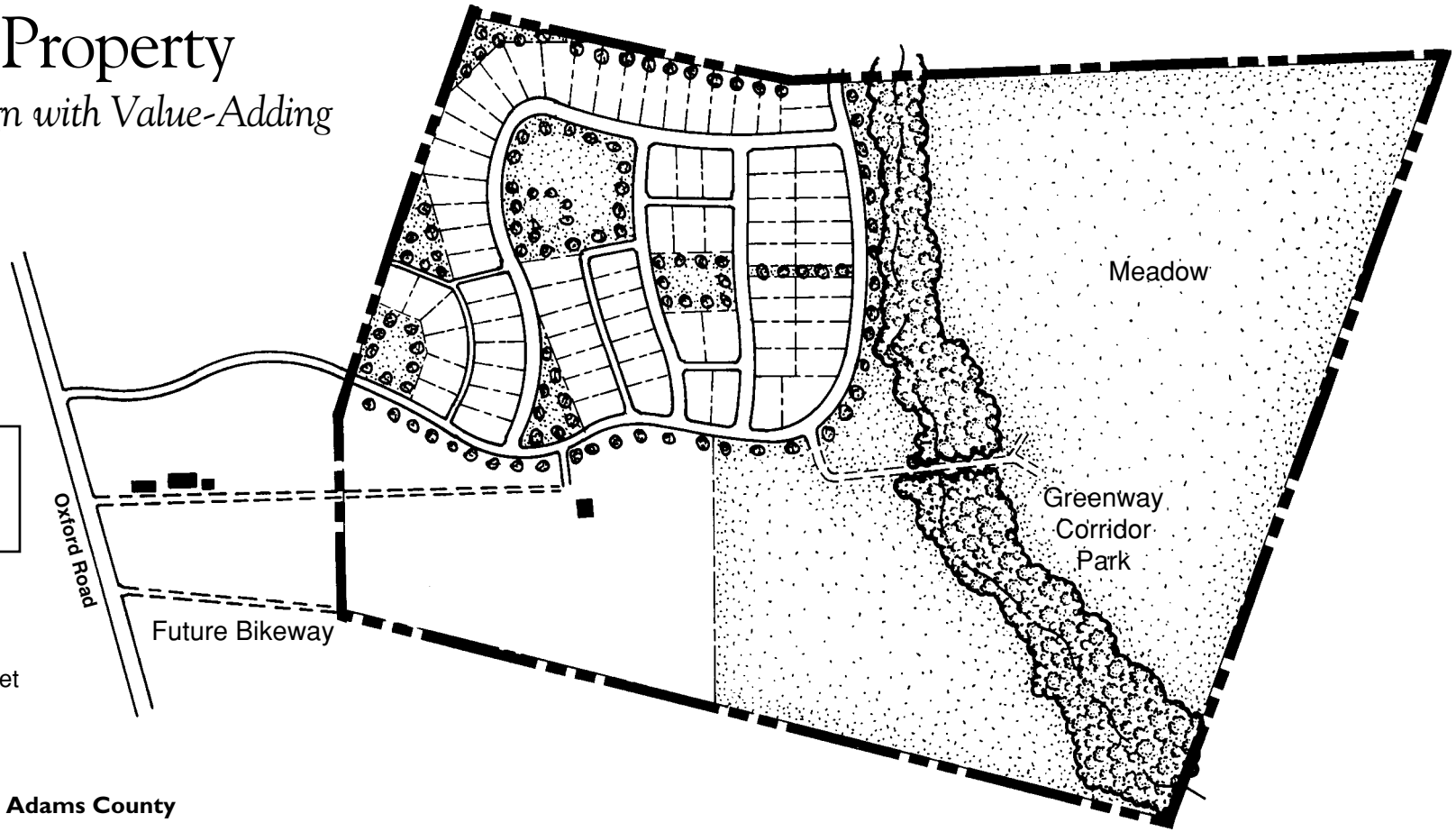
Sheaffer Property

A Village Design with Value-Adding Open Space



Tract size: 93 acres
No. of lots: 78 lots
Open space: 65%

Conewago Township, Adams County

This design was commissioned by a realtor/developer who recognized he needed assistance in devising a plan that would achieve his goal of creating a distinctive neighborhood which would corner the local market for homes built in a neighborhood with a special sense of community. With water and sewer availability, lot sizes could easily be reduced to the village scale, enabling the development "footprint" to be about one-quarter of what it would otherwise have been. In addition to conserving value-adding open space that will increase marketability and boost sales, this approach cuts street construction and site grading costs by more than half. (In another similarly-sized development of village lots, the author and site designer slashed grading costs by more than 80% simply by designing with the terrain and scraping only half of the land area.) The major loop road serving this development is largely "single-loaded" (homes on one side only) to maintain the open feel of the property, which is critical during the sales phase. The original brick farmhouse is sited to form "terminal vistas" from three different directions, and the strategic use of back lanes (alleys) enables 16 homes to front directly onto neighborhood greens with no street frontage per se. Very progressive ordinances permit such design innovations, with officials recognizing that fire access is easily achieved by pulling hoses across the modest open space from the street, or through rear access drives (which most developments fail to provide at all).

For further information about this design approach, see Arendt, Randall. *Crossroads, Hamlet, Village, Town: Design Characteristics of Traditional Neighborhoods, Old and New*. Chicago: American Planning Association, Planning Advisory Service Report No. 487/488, 1999.

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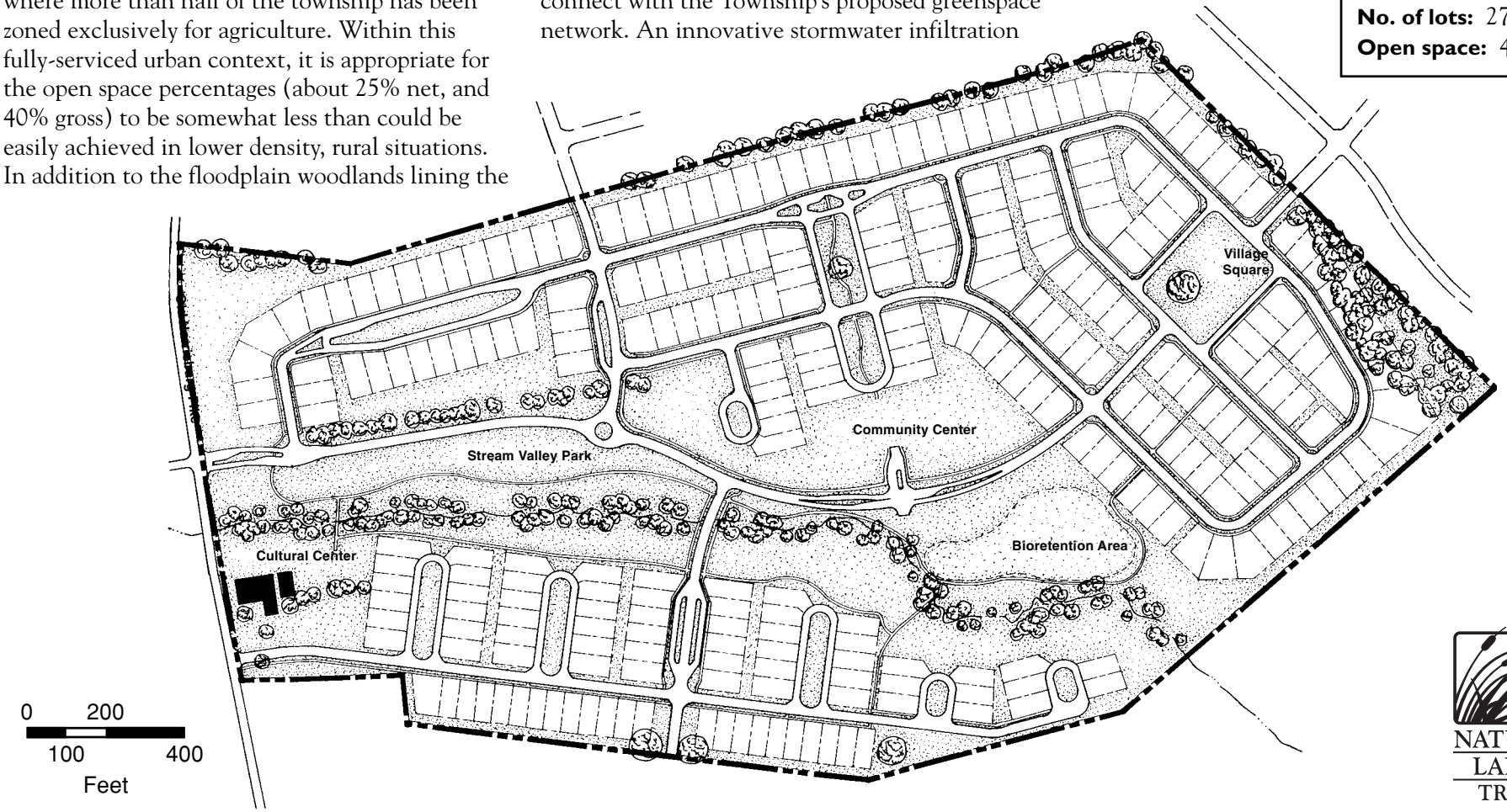
Getz Property *Conservation Design within an Urban Growth Boundary*

East Hempfield Township, Lancaster County

The non-profit Community Building Partnership designed this age-restricted community to demonstrate conservation principles within an Urban Growth Boundary. Much credit goes out to the local officials who set the tone by adopting creative ordinances that welcomed higher building densities on land designated for more intensive use in a community where more than half of the township has been zoned exclusively for agriculture. Within this fully-serviced urban context, it is appropriate for the open space percentages (about 25% net, and 40% gross) to be somewhat less than could be easily achieved in lower density, rural situations. In addition to the floodplain woodlands lining the stream valley which bisects this property, this layout retains nearly all of the existing trees, including a significant hedgerow alongside the entrance road, and two large specimen trees around which neighborhood greens were drawn. Altogether, seven neighborhood commons serve as focal points for the surrounding homes, and internal greenway paths link homes to the 18-acre stream valley park, which itself will ultimately connect with the Township's proposed greenspace network. An innovative stormwater infiltration system designed by the Center for Watershed Protection, Ellicott City, MD, recharges water into the aquifer in a series of "green alleys" and in a bioretention area adjacent to the floodplain. Although final engineering resulted in a few variations to this plan, the concept remains intact and construction will commence in 2002.

Tract size: 90 acres
No. of lots: 274 lots
Open space: 42%



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Natural Lands Trust is a nonprofit conservancy protecting land in communities throughout the greater Philadelphia region. Since our founding we have helped protect more than 105,000 acres of open space. Today, we continue to build on that legacy by permanently protecting many more acres every year. We currently own and manage 45 nature preserves — over 13,000 acres of special places that are set aside for all time.

If you appreciate the value of open and natural lands and are concerned about the future of your community, please consider joining Natural Lands Trust as a member. We depend on support from people just like you to continue our important conservation mission. For more information about Natural Lands Trust or to make a contribution, visit our web site at www.natlands.org, call Brenda Engstrand at 610-353-5587, or send her an email at members@natlands.org. Thank you.

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