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Creating Open Space Networks

By Randall Arendt

Every year, in innumerable towns and counties across the country, thousands of residential subdivisions needlessly consume excessive amounts of farmland and woodland, converting them to standardized, unimaginative checkerboards of house lots and streets. However, each time a subdivision is proposed, an opportunity exists to enlarge substantially the acreage of open space in one's community, and with it to provide a variety of amenities for passive and active recreation enhancing residents' quality of life through increased opportunities for informal social interaction among neighbors. That such opportunities are so infrequently recognized and acted upon is a regrettable situation which—fortunately—can be readily reversed.

This issue of *Environment & Development* describes practical ways that planners, landscape architects, and related professionals can help communities shape their new development patterns more effectively, so that features that are noteworthy or significant at the local or neighborhood level (but which are rarely protected under current codes) will become the central organizing elements around which each development is designed. With far-sighted planning (trendily referred to as "visioning"), local officials can help to ensure that most of the open space thus protected will ultimately form an interconnected network of conservation lands running throughout their communities.

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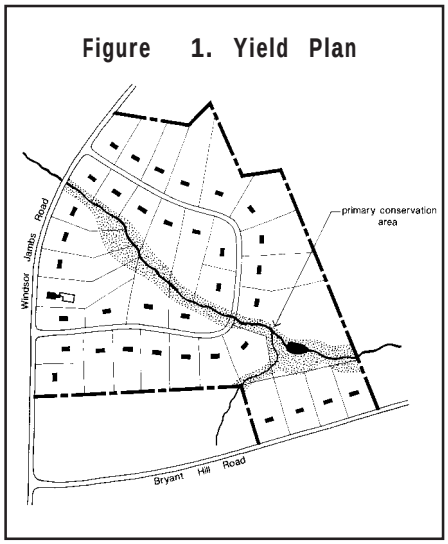
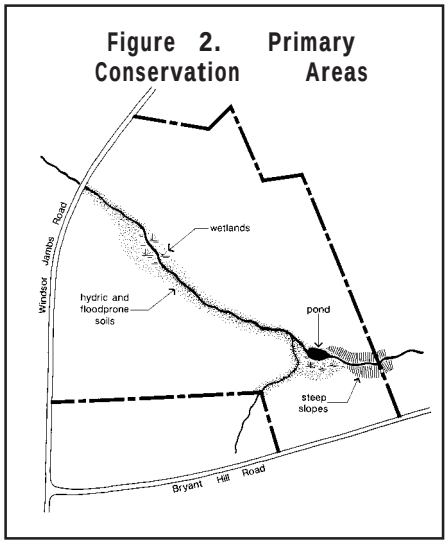
Figure 1. Yield Plan



Holly M. Harper, Natural Lands Trust

Figure 2. Primary Conservation Areas



From my work in New England and the Mid-Atlantic states over the past 20 years, I have concluded that most local comprehensive plans need to be augmented with more detailed resource inventories and with practical policies describing new land conservation techniques that are both innovative and effective. To help implement such policies, zoning and subdivision ordinances must be revised to set higher standards governing the quantity, quality, and configuration of the open space that developers are required to conserve as a basic condition of approval.

The overall approach taken by our planning staff at the Natural Lands Trust has been to establish a framework directly linking municipal comprehensive plans with new provisions for local zoning and subdivision ordinances that emphasize the conservation of natural lands and cultural features. Broadly stated, the ultimate goal is the creation of an interconnected network of protected open space weaving through each community.

The heart of this integrated approach is described and illustrated in a new book being published this spring by Island Press and the American Planning Association. *Conservation Design for Subdivisions* has been written in a nontechnical manner to be useful to a wide spectrum of participants in the subdivision design and approval process (such as policy planners, zoning administrators, local elected officials, landowners, developers, realtors, engineers, and surveyors), none of whom typically have any background or training in land conservation or creative site design. As more people come to understand the practicability of this approach and the potential benefits it holds for their communities, the greater is the likelihood that the demand for what I call "conservation planning" will increase.

The Need for Comprehensive Open Space Planning

Although most local governments in developing areas along the metropolitan fringe have not yet created an overall land-use planning framework into which "conservation zoning" would fit, some are beginning to do so, and all should follow their leads. It is exceedingly unfortunate that Holly Whyte's 30-year-old dream of linking open spaces in new

subdivisions into an interconnected network of conservation lands, as expressed in his seminal volume, *Cluster Development*, remains largely unfulfilled. The potential for creating such a network of open space still exists in many municipalities, however, and this concept lies at the core of the Community Land Stewardship program of the Natural Lands Trust.

In our work with communities in the Delaware Valley, we emphasize the need for an integrated series of land-use plans and ordinances, from conservation elements of comprehensive plans, through conservation zoning provisions, to conservation development design standards in local subdivision ordinances. We view our work as adapting and extending that of Ian McHarg and Frederick Steiner, based on the ecological principles articulated in *Design with Nature* and *The Living Landscape*, respectively.

The conservation lands that the trust helps communities to protect encompass a wide variety of resources, including wildlife travel corridors and breeding/feeding grounds, mature woodlands, stream valleys, and prime farmland. We are particularly interested in working to help create a conservation fabric in our stewardship communities that will allow farmers, hikers, bird watchers, and wildlife to coexist while landowners are permitted to develop their land at limited, moderate, or full densities in a manner that respects both resource values and property values.

Three interrelated tools that we have devised to help implement these goals in southeastern Pennsylvania are outlined below:

Areawide map of conservation and development: Either advisory or regulatory in nature, this map in the municipal comprehensive plan would identify all natural and cultural features worthy of preservation, plus all lands without any such features (where development could best be accommodated). Landowners wishing to develop their properties would either be encouraged or required, under local zoning, to use flexible conservation design techniques to keep house lots away from those special areas, locating new homes, lawns, and streets within those parts of their properties not shaded on this map.

This approach allows habitats that are currently fragmented into multiple ownerships to remain more intact after development, and for blocks of farmland or special woodlands to remain more whole. It is also a powerful tool for greenway planning, enabling continuous ribbons of open space to be created along streams, for example, as each riparian parcel is subdivided. To be effective, such maps should be referenced in zoning regulations and treated as a rebuttable presumption that developers must address seriously (which includes an opportunity for them to suggest adjustments to the conservation areas pre-identified on this map, respecting the spirit of the community's open space network goals).

Multitiered zoning. This approach includes several variations on the theme of conservation zoning to provide landowners with a choice of "by-right" options ranging from limited-density development for upscale homes on mini-estates to full-density subdivisions following conservation designs and neotraditional village layouts. In rural-suburban areas, the limited-development option is typically set at a maximum density of one dwelling per 10 acres, with two additional dwellings permissible as accessory units subject to certain vernacular architectural standards.

A second option, permitting the full density allowed in the zoning district, is achievable only through conservation design in which half the buildable land is designated as permanent, undivided open space. In addition, a third option, offering a bonus density, is available for those landowners or developers who wish to set aside *more* than half of their land as open space (in addition to the inherently unbuildable wetlands, floodplains, and steep slopes).

Deliberately absent from this menu of options is the conventional "cookie-cutter" subdivision with no designated open space, at the normal base density. If that approach is allowed at all, it should be strongly discouraged through a disincentive involving a significant (33 percent or more) density reduction in lot yield for those developers who opt to discount community open space objectives and create large-lot "land hog" subdivisions consisting entirely of house lots and streets. (If local officials discover that developers are not being sufficiently

Figure 3. Secondary Conservation Areas

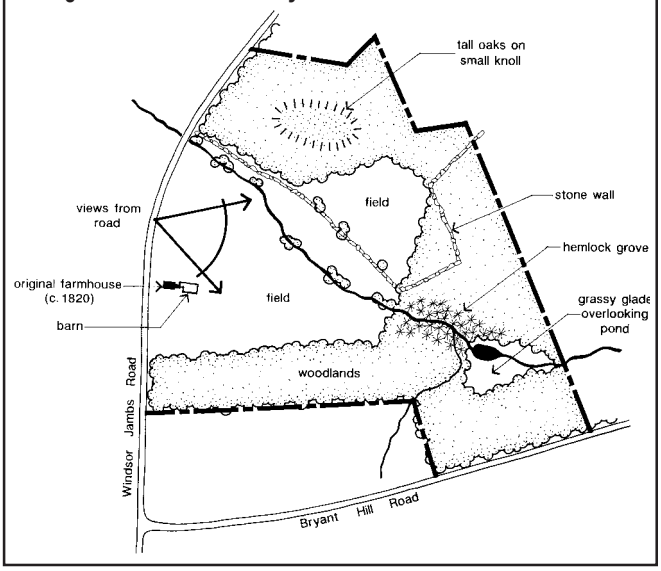
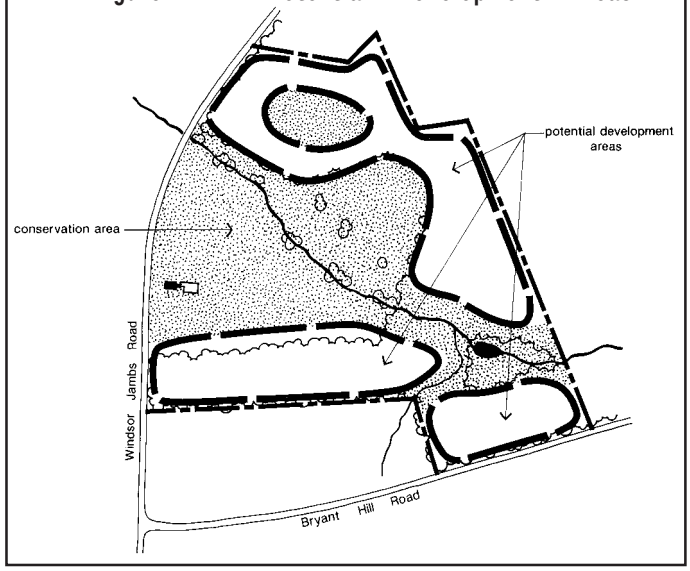


Figure 4. Potential Development Areas



discouraged from this land-consumptive option, they should consider further reducing the permitted density or eliminating that option altogether.)

A four-step design process for open space subdivisions. The trust has recently devised a simple methodology for designing subdivisions whose central organizing principle is that of resource land conservation. Simply stated, the four steps consist of:

- identifying potential conservation lands, both primary (unbuildable) and secondary (unconstrained land, such as prime agricultural soils, mature woodlands, historic/cultural features, etc.); then
- locating house sites at a respectful distance from resource lands; then
- aligning streets and footpaths; then
- setting the lot lines . . . *in that order*.

Until now, the zoning regulations in most communities have established a "one size fits all" approach to regulating lot sizes in each of their various districts, essentially creating a single standard size for new house lots, which frequently results in checkerboard layouts of nearly identical lots covering the entire parcel. A typical result is illustrated in Figure 1 (on the front page), which for the purposes of the following example serves one useful purpose—as a "yield plan" demonstrating the legal development potential of the site. (In this case, 36 lots could be created.)

Among the basic procedures required to be followed in the design of any sensitive subdivision is the preparation of a comprehensive existing features and site analysis plan. (See Figure 2, front page, and Figure 3, opposite page.) This critical element identifies all the special characteristics of the subject property, from unbuildable areas such as wetlands, floodplains, and steep slopes to other kinds of land that are developable but contain features that merit the small amount of additional effort needed for their conservation. Such features might include mature or healthy and diverse woodlands, wildlife habitats critical for breeding or feeding, hedgerows and prime farmland, scenic views into and out of the site, and historic buildings in their rural context.

Production of the existing features and site analysis plan sets the stage for beginning the four-step design process.

Step One: Identifying Conservation Areas. The first step, which involves the identification of open space worthy of preservation, is divided into two parts: *primary conservation areas* (Figure 2) limited to regulatory wetlands, floodplains, and steep slopes, and *secondary conservation areas* (Figure 3) including those unprotected elements of the natural and cultural landscapes that deserve to be spared from cleaning, grading, and development. On this site, those features include the original farmhouse set in its context of surrounding fields, the scenic viewshed from the public road, the stream valley, the tall oaks situated on a small knoll, the towering hemlocks forming a cathedral-like grove, the grassy glade down near the pond, and the network of stone walls criss-crossing the fields and woodlands.

The act of delineating conservation areas also defines *potential development areas*, which occupy the balance of the site (Figure 4 on the opposite page). This completes the first step and virtually ensures that the site's fundamental integrity will be protected, regardless of the actual configuration of house lots and streets that will follow. In other words, once the "big picture" of conservation has been brought into focus, the rest of the design process essentially involves only lesser details. Those details, which are of critical importance to developers, realtors, and future residents, are addressed during the last three steps.

Step Two: Locating House Sites. The second step involves locating the approximate sites of individual houses, which for marketing and quality-of-life reasons should be placed at a respectful proximity to the conservation areas, with homes backing up to woodlands for privacy or enjoying long views across open fields or a wildflower meadow (Figure 5, top right). In a full-density conservation plan, the number of house sites would be the same as that shown on the "yield plan" (36 in this example), but the integrity of the site would not be lost and people's views would not be of other people's picture windows staring right back at them.

Step Three: Aligning Streets and Trails. The third step consists of tracing a logical alignment for local streets to access the 36 homes and for informal footpaths to connect various parts of the neighborhood, making it easier for residents to enjoy walking through the open space, observing seasonal changes in the landscape and possibly meeting other folks who live at the other end of the subdivision (Figure 6, above). The opportunity for a streamside greenway as

Figure 5. Locating House Sites

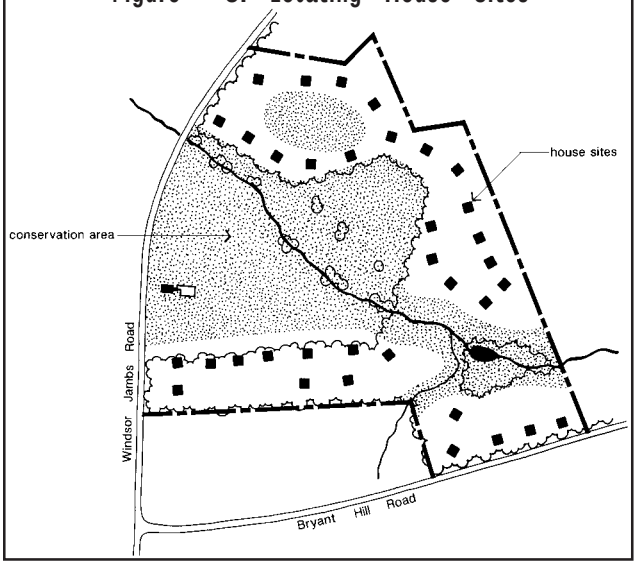
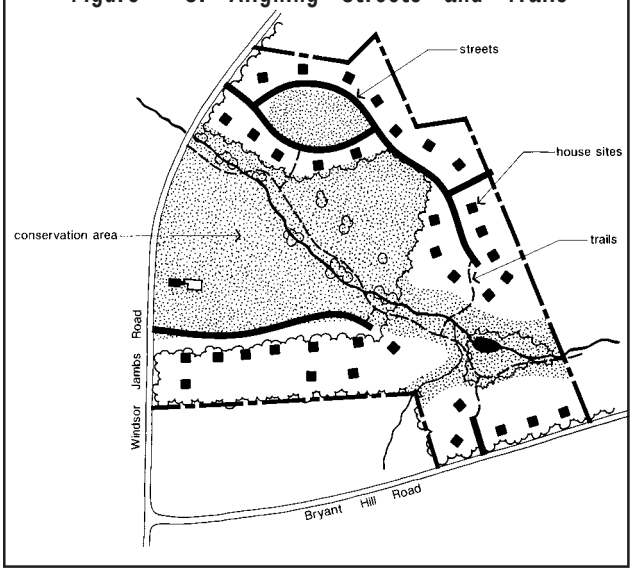


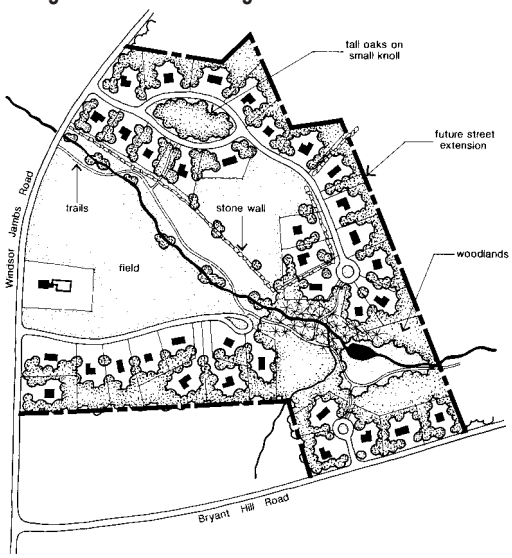
Figure 6. Aligning Streets and Trails



part of a larger townshipwide network of open space is also obvious.

Step Four: Drawing in the lot lines. The final step is simply a matter of drawing in the lot lines, perhaps the least important part of the process. Successful developers of conservation subdivisions know that most buyers prefer homes in attractive park-like settings and that views of protected open space enable them to sell lots or houses faster and at premium prices (Figure 7, above). Such homes also tend to appreciate more in value, compared with those on lots in standard "cookie-cutter" developments offering no views or nearby open space.

Figure 7. Drawing in the Lot Lines



All three approaches should be tied together, so that the location of the open space laid out pursuant to the conservation subdivision regulations (Figure 3) is controlled by overall standards contained in the conservation zoning provisions (Figure 2), which in turn should relate to the *areawide map of conservation and development* (Figure 1, front page) in the comprehensive plan. In this way, municipalities can initiate a true planning process that ultimately will result in the creation of an interconnected network of open space. Some communities and park agencies are also discovering the value of this technique as a way of requiring developers to buffer their subdivisions from adjoining parkland.

One other modification of critical importance is the introduction of a *two-stage* preliminary plan in jurisdictions where sketch plans cannot be mandated for legal or political reasons. Because so-called preliminary plans are required to contain so much engineering (which makes them very costly to produce), applicants are understandably unwilling to alter them in any substantial manner. To avoid situations where poor layouts become locked in by the time plans are first submitted to localities for review, ordinances should be changed to split the (typical) 90-day review period for preliminary plans into a 30-day period for *conceptual* preliminary plans that are essentially unengineered and not expensive to generate and a 60-day period for *detailed* preliminary plans that contain the usual degree of engineering. The importance of this approach cannot be overstated.

In situations where the municipality's goal may include conserving an entire parcel of privately owned land, three other options exist. The first is to inquire whether the owner could benefit from a reduction in federal income or estate taxes by gifting the land or selling it at a bargain price to the township or a land trust. Failing that, the concept of a "landowner compact" should be explored, in which the owner would join with his or her abuttors to create a unified plan for their combined properties. Under this approach, the development rights from the subject parcel would be shifted to and exercised on a neighboring parcel, with the net proceeds of the total development being shared proportionately among all cooperating landowners according to the amount of value each contributed to the whole. The third option would be to purchase the property at fair market value with state, county, or local bond funds.

Making It All Work

Because of its low costs and inherent adaptability, the basic building block for creating open space networks, as envisioned in a community's comprehensive plan and enabled in its zoning ordinance, is the *conservation subdivision*. When local officials and residents are sensitized to the future of "wall-to-wall" development that their existing conventional land-use codes ultimately will produce, they often become much more amenable to revising those codes to *require* that basic conservation principles be followed in the design of new subdivisions, and that the open space thus protected be laid out so as to create an interconnected network of conservation lands. All this can be achieved without involving any "taking" because the undivided conservation land typically remains under private ownership (usually by a homeowner association or a local land trust). When the municipality desires all or part of the land for public purposes, and the developer is agreeable, conservation land may be donated or sold at a negotiated price to the community. Another alternative is for municipalities to offer density bonuses in exchange for public dedication of the conservation acreage or for greenway trail easements through it.

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