

Conservation Subdivisions



Guide | Model Regulations

Lehigh Valley Planning Commission

November 2010

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INFORMATION ABOUT THE SUBDIVISIONS PHOTOGRAPHED FOR THIS REPORT

Summerfield is located in Elverson Borough, Chester County. It is a subdivision of 184 single-family and attached residential units. Twenty-five (25) acres of the 81 acre site are preserved as pasture and a horse farm. The subdivision was constructed during the mid 1990s.

Weatherstone is located in West Vincent Township, Chester County. It is a subdivision containing 273 single family and attached residential units, a branch of the Chester County Public Library and a future development of 240,000 square feet of retail and office space. One hundred ninety-five (195) acres of the 300 acre site are preserved as open space. The subdivision was constructed in the mid 2000s.

Windsor Ridge is located in Upper Uwchlan Township, Chester County. It is a subdivision containing 442 single-family and attached residential units. One hundred fifty-seven (157) acres of the 280 acre site are preserved as open space. The subdivision was constructed in the early-mid 2000s.

BACKGROUND

Conservation subdivisions are residential developments in which a significant portion of overall acreage is set aside as undivided, permanently protected open space, while houses are clustered on the remainder of the property. Similar in many respects to golf course communities, they feature environmental features such as forests, meadow or farmland instead of the manicured golf course. They differ from the “conventional” subdivision, which follows prescribed requirements in the zoning ordinance and generally features wide streets, large lawn areas, and extensive impervious cover. Subdivisions built in the Lehigh Valley over the last forty years function and look the way they do because of very prescriptive elements found in the zoning ordinance. Traditional zoning ordinances are designed to promote standard, predictable forms of development. However, in developing sites with environmental features, flexibility in design is crucial in preserving those features.

The distinguishing feature of a conservation subdivision is a requirement that some percentage of a parcel to be developed be preserved as open space. Exact percentages and methods for calculating open space will vary. Most ordinances also regulate density, lot size, street width and utilities to allow a developer to cluster lots on a smaller portion of the site.

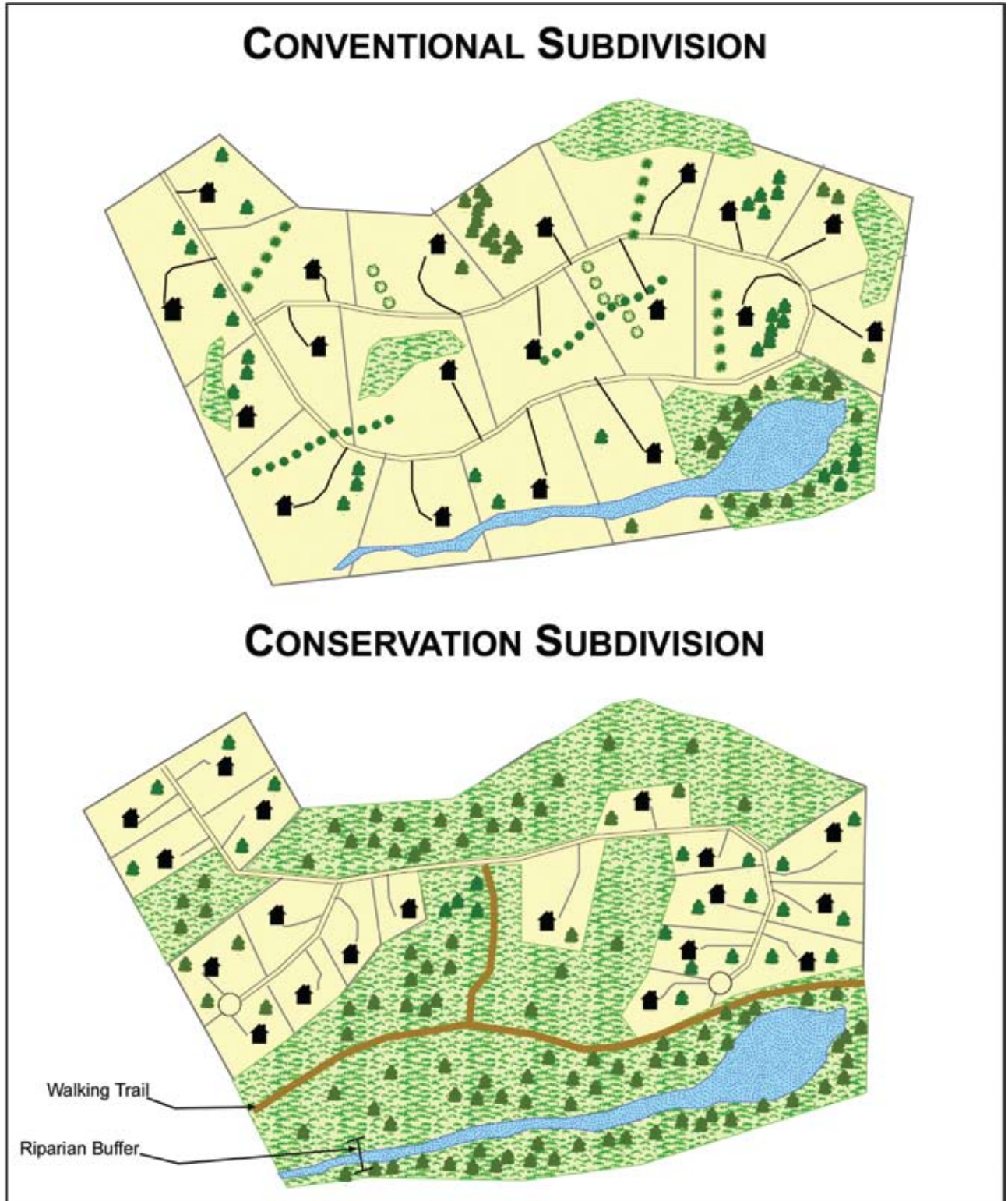
Figure 1 provides an illustration of the differences between a conventional and conservation subdivision design. The conventional subdivision utilizes the majority of the site for house lots, leaving fragmented pockets of open space and environmental features and most of the land transformed into lawn and yard areas. The fragmentation of the space provides no recreational opportunities for residents, and the habitat for plants and animals is severely compromised. A large amount of trees are removed, and the stream is provided no buffer area to filter pollutants.

The conservation subdivision clusters the house lots and retains a large contiguous area of open space. The amount of impervious coverage is reduced, the open space area is now contiguous, and the stream is now protected by a riparian buffer. The open space could be used to preserve natural habitat and/or be used for passive recreation. Passive recreation is generally less intensive outdoor activities, such as walking or hiking, that are compatible with preserving natural resources. In Figure 1, the conservation subdivision graphic shows a trail through the open space area. Ideally, the open space area and trail would be connected with adjacent open space, trails or preserved land to form an open space network for both people and wildlife.

COMPARISON OF CONSERVATION SUBDIVISIONS TO PLANNED RESIDENTIAL DEVELOPMENTS

While similar to planned residential development (PRD), conservation subdivisions differ in several ways. In contrast to the PRD, where the emphasis in the open space is placed on providing active recreational areas such as soccer fields, the open space in conservation subdivisions emphasizes protecting farmland and important environmental features such as woodlands, wetlands and steep slopes. The amount of required open space in a conservation subdivision is usually substantially larger than what is required in a PRD, and the layout of open space in a conservation subdivision is not only site-specific, but often tied to broader networks of open space detailed in municipal open space or comprehensive plans. PRDs often include a mix of residential, commercial, industrial, or other uses, whereas the conservation subdivision normally only includes single family housing. The density of PRDs is often at higher densities than permitted in conventional subdivisions. Conservation subdivisions are either “density neutral” or only allow a developer the same number of lots they could build in a conventional subdivision.

FIGURE 1
Comparison of the Conventional and Conservation Subdivision



HISTORY

Clustering housing lots is not a new idea, being introduced in the United States in 1928 with the Radburn development in New Jersey. The concept regained interest among planners in the 1960s. The 1968 publication *Design with Nature* written by landscape architect Ian McHarg and funded by The Conservation Foundation in Washington DC, introduced one of the first approaches to the conservation of open space in suburban residential developments. McHarg advocated mandatory cluster zoning and recommended the creation of a conservation trust to receive and manage open space. McHarg suggested that conservation and development needed to go beyond prescriptive zoning standards and consider topography, floodplains, soils, surface and groundwater, wildlife habitat, forests, woodlands, and historic buildings. William Whyte published *The Last Landscape* later that year, which strongly promoted conservation easements and cluster subdivision design as a way of combating rapid urbanization during the post World War II period.

Environmentalist Charles E. Little, serving as Executive Director of the Open Space Action Institute (OSAI), a non-profit devoted to the preservation of open space in and around urban areas, published two reports specifically oriented towards municipal officials and civic leaders titled *Stewardship and Challenge of the Land* in 1968 that promoted cluster development. The latter publication was unique in that it included model cluster development ordinances that created open space areas.

The 1996 publication *Conservation Design for Subdivisions: A Practical Guide To Creating Open Space Networks* and the 1999 publication *Growing Greener: Putting Conservation Into Local Plans And Ordinances* by Randall Arendt built upon and furthered the work of McHarg and Whyte. Arendt's books were later used extensively to create Pennsylvania's *Growing Greener: Conservation by Design* program.

LOCAL EXPERIENCE

In 1997, the Natural Lands Trust (NLT), in collaboration with the Department of Conservation and Natural Resources (DCNR) and Penn State University, launched the *Growing Greener: Conservation by Design*, a planning program to provide technical assistance and education to municipal officials in conservation design techniques. The program shares the same name with the unrelated 1999 Growing Greener program, administered by the Department of Environmental Protection (DEP), which provided funding for watershed restoration, preserving open space, investing in parks and recreation, reclaiming abandoned mines and wells, and upgrading sewer and drinking water systems.

Using Arendt's work as a foundation, the NLT created model ordinance provisions that would provide municipalities the specific details to update their comprehensive plan and land use ordinances to encourage and allow conservation subdivision developments. The NLT conducts numerous workshops, presents the concept at state and regional conferences and forums, meets with individual municipalities (over 150 according to NLT), conducts community audits, and provides ordinance writing and subdivision design assistance.

The NLT ordinances were used in creating the conservation subdivision regulations in Upper Mount Bethel and Williams townships, Northampton County. To date, no conservation subdivisions have been built in the Lehigh Valley. The closest examples are in Bucks, Chester and Montgomery counties, where they have been constructed since the late 1970s.

Why should Lehigh Valley municipalities include conservation subdivisions as an option in their ordinances? The proliferation of housing being constructed on large lots led to an increasing amount of land being consumed for development. In the decades prior to the 1990s, land was converted at a rate of three square miles per year. This increased to three and a half square miles per year during the 1990s

and four square miles per year after 2000. As the flat, easily accessible land, served by public sewer and water utilities has been purchased and developed over the decades, the farmland and environmentally sensitive land has become attractive for development.

The building “booms” of the 1980s and 2000s have resulted in an expensive to maintain, fragmented, highly consumptive land use pattern of low density rural sprawl. Environmental protection and protecting the quality of life for residents are often cited as the top land use goals municipalities cite in comprehensive plans, open space plans, surveys and ordinances. Residents put a value on natural resources and farmland as key components of establishing a high quality of life in the municipality. Ironically, the current pattern of sprawl directly compromises those goals.

For municipal governments, large lot subdivisions are expensive to maintain with considerable long-term costs associated with utility (mowing and maintaining detention basins, for example) and road maintenance responsibilities (plowing, patching). Over the long term, the income generated by taxing the expensive houses built on the lots offset the maintenance costs to maintain these subdivisions. The municipality spends a considerable amount of taxpayer dollars maintaining road and utilities that serve a small amount of residents.

The *Comprehensive Plan Lehigh Valley ... 2030* recommends conservation subdivisions in rural townships in the Lehigh Valley. Map 1 on page 5 shows where conservation subdivisions would help reduce sprawl and retain the rural character of these areas. However, conservation subdivisions could be built on any piece of land, both in rural and suburban townships, where important environmental features or open space could be preserved.

BENEFITS AND DRAWBACKS

BENEFITS OF CONSERVATION DESIGN	
Developers	Municipalities
Reduce land clearing and grading costs	Acquire open space at no cost to municipality
Potentially reduce infrastructure and stormwater costs (streets, curbs, gutters, sidewalks)	Protect environmental, historic and scenic resources
Potentially reduce recreation fees and increase lot yield through the use of density bonuses	Balance growth pressure with environmental protection and land preservation
Increase lot and subdivision marketability	Reduces municipal infrastructure and utility maintenance costs (streets, sidewalks, storm sewer system)

By building a conservation subdivision, developers can provide taxpayers with the benefits of valuable open space at no public cost, especially if the open space provided is identified by the municipal comprehensive plan as land that should be preserved.

Developers realize economic benefits from a reduced need for infrastructure and sale premiums that houses in conservation subdivisions often receive. Due to density-neutral provisions of most conservation subdivision ordinances, which permit the same number of units as in a conventional subdivision, developers do not lose the ability to build houses they otherwise could in a conventional subdivision.

Despite its advantages, and the existence of clustering provisions in zoning ordinances since the 1970s, conservation subdivisions have not replaced conventional subdivision layout as the main form of resi-

dential development. Local municipalities either have no regulations for conservation subdivisions in the zoning ordinance or, paradoxically, have adopted administratively complex review and approval procedures that have discouraged its use. In addition, there is a perception on behalf of elected officials and the public that conservation subdivisions will create higher densities and overcrowding of houses on a site.

To encourage the construction of conservation subdivisions, municipalities need to provide flexibility relative to bulk and area requirements such as lot size and setbacks and timeliness of processing applications that is similar to the process undertaken for the conventional subdivision plan. Providing incentives such as density bonuses for providing additional open space or different types of housing is an additional tool a municipality can use to promote conservation design.

Before adopting conservation subdivision regulations, municipalities should update their comprehensive plans to include goals related to the preservation of natural features and open space, and encourage flexible subdivision design to protect those features. Municipalities should consider adopting official maps and/or open space plans that identify natural features or open space that are most important to the municipality. When a subdivision is proposed, both the municipality and the developer would know early on in the process which portion of the site is to be preserved for open space, and which portion of the land can be developed.

There is also a need for continued education for municipal staff and members of the planning commission on conservation subdivisions. Since the key to creating an effective conservation subdivision is providing flexibility for the developer to layout the houses and infrastructure on the site, planning staff and commission members must be willing to become active participants in the design of the subdivision, and understand the goals and objectives of conservation subdivisions in the deliberation of a plan.

In combination with updated comprehensive and open space plans, conservation subdivisions are a part of a comprehensive approach to protecting open space and natural resources in a municipality. The conservation subdivision concept is just one of many environmental protection tools, and it will not be appropriate for all locations and all types of residential development. It should be thought of as an option that should be made available to developers. Municipalities may find conservation subdivisions to be effective in balancing growth with the preservation of environmental resources. The Lehigh Valley Planning Commission does not promote conservation subdivisions as the sole answer to sprawl, nor do we consider that conservation subdivisions can fully address the issues of land fragmentation, loss of farmland and environmental resources. We do believe, however, that conservation subdivisions can be a valuable tool in preserving natural features and reducing the impact of development on the environment.

ADDITIONAL RESOURCES

For more comprehensive information on conservation subdivisions, the following resources provide excellent background, analysis and detail on the topic.

Arendt, Randall, G., *Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks* (1996).

Arendt, Randall, G., *Growing Greener: Putting Conservation into Local Plans and Ordinances* (1999).

Chester County Planning Commission., *Cluster Subdivision Design Guide: A Practical Guide to Effective Cluster Subdivision Design* (2003).

Chester County Planning Commission., *Linking Landscapes: A Plan for the Protected Open Space Network in Chester County, PA* (2002).

McHarg, Ian L. *Design with Nature* (1991, original 1969).
Peed, Rebecca. *Case Study: Conservation Subdivisions in Gwinnett County, Georgia*. Practicing Planner, American Planning Association, (Volume 6, No. 2, 2008).
Pivo, Gary, Robert Small, and Charles R. Wolfe. *Rural Cluster Zoning: Survey and Guidelines*. Land Use Law & Zoning Digest, September 1990.
Rayman, Mohamed. *The Economics of Conservation Subdivisions Price Premiums, Improvement Costs, and Absorption Rates*. Urban Affairs Review 41, no. 3 (January 2006): 376–399.
Reichert, Alan K. and Hsin-Yu, Liang. *An Economic Analysis of Real Estate Conservation Subdivision Developments*. The Appraisal Journal, Summer 2007, Vol. LXXV, No.3, p.236-245.
Whyte, William. *The Last Landscape* (2002, original 1968).

More details on the Growing Greener conservation subdivision design approach can be found at the Natural Lands Trust web site: www.natlands.org.

ABOUT THE MODEL

The model regulations are designed as a section in a zoning ordinance. By including them in the zoning ordinance, a municipality can regulate where conservation subdivisions would be appropriate and in conformance with the development and open space goals and objectives of the municipal comprehensive plan.

The model regulations provide for a “density neutral” conservation subdivision where a developer would build the same number of lots he or she could under conventional zoning requirements, with a minimum 50% of the tract preserved for open space. Lot size, setback and street requirements are reduced. A plan for a conservation subdivision would follow the “regular” process that would be used in reviewing a conventional subdivision plan. The provision of sewer and water utilities would be guided by the municipal Act 537 plan and water utility plans. The model regulation includes two examples of density bonuses. The bonuses create incentives for developers to provide additional open space or incorporating cottage housing into the development.

The model regulations are for the purpose of providing guidance to Lehigh Valley municipalities interested in encouraging conservation subdivisions in their communities. The regulations outline a basic approach to conserving natural resources and open space on a site proposed for development that may be an attractive alternative for rural townships that may have an interest in conservation design, but do not have the resources to administer a complex, lengthy ordinance. A basic approach may be attractive to developers as well by providing flexibility in the design of a subdivision, but keeping the familiar standard review process. If conservation subdivisions become popular in a municipality, the regulation could be further enhanced as both the municipality and developer become more familiar with the concept.

The model regulations are provided here only for review, reference and example purposes. This is not a legal document or the provision of legal advice. For the model regulations to be valid and legally enforceable, they may need to be modified and reviewed by the municipality.

A commentary bar is provided to the side of the ordinance text. The commentary is intended to make the document easier to read and understand while providing basic or summary information about a particular subsection of the regulation.

The worksheets that follow the ordinance provide a basic illustration of how the model regulation would be applied in laying out a subdivision.

**FOCUS ON CONSERVATION SUBDIVISIONS:
OPEN SPACE**



*Open space in a conservation subdivision can serve a variety of uses. In **Summerfield**, houses were built around the developer's working horse farm and pasture.*

*Houses in the **Windsor Ridge** subdivision were built around 157 acres of preserved natural features that included woodlands, streams and ponds.*



*Developers of the **Weatherstone** subdivision constructed a series of parks throughout the subdivision and preserved 195 acres of open space.*



**FOCUS ON CONSERVATION SUBDIVISIONS:
HOUSING TYPES AND DENSITY**

For a conservation subdivision to be effective in preserving open space or natural features, clustering of the houses on the site is necessary. These examples demonstrate how houses on smaller lots can be very attractive.

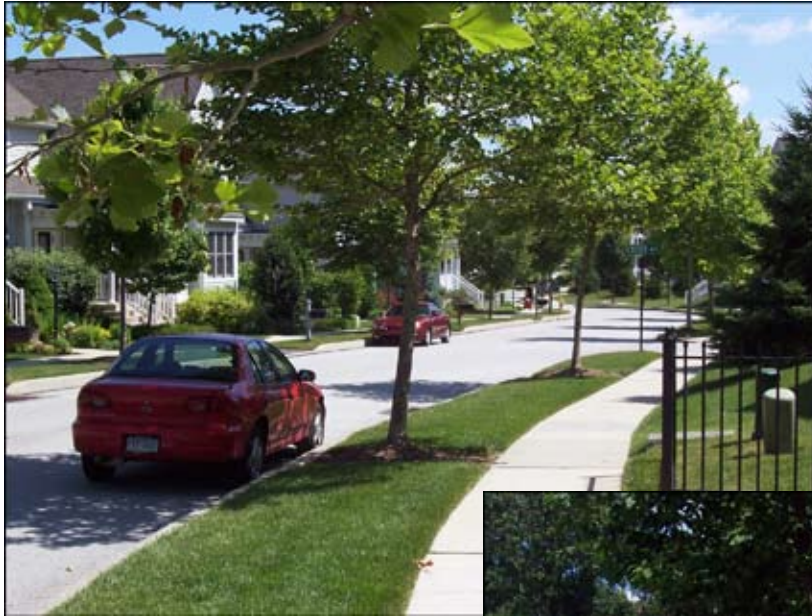


Note the small lots and close proximity of the houses to one another.

A common theme of these conservation subdivisions was that garages were placed to the rear of the lot or to the side of the house, never on the street-facing facade. This allowed for the width of each individual lot to be reduced, and access to the garages to be provided by either an alley or shared driveway.



FOCUS ON CONSERVATION SUBDIVISIONS: STREETS AND IMPERVIOUS COVERAGE



Conservation subdivisions usually have reduced street widths. The width of this street is twenty-eight (28) feet with parking permitted on both sides of the street. Reduced street widths will slow down traffic, reduce the amount of stormwater runoff, and reduce development and maintenance costs.

Vegetated islands in cul-de-sacs reduce overall impervious surface and can be designed to receive stormwater runoff from the surrounding pavement.



Shared driveways can reduce site development costs as well as impervious surface coverage.

NOTES

¹ Conservation subdivisions are most commonly permitted in rural and agricultural zoning districts, or in zoning districts that contain large areas of natural features such as woodlands, steep slopes and watercourses. Municipalities should also consider their comprehensive and open space plans in zoning districts to allow conservation subdivisions.

² This regulation provides conservation subdivisions as a by-right use in specified zoning districts on a voluntary basis. It offers developers incentives such as density bonuses of more housing units in order to entice them to do conservation subdivisions. An alternative approach is to make conservation subdivisions mandatory, which would create some predictability in the design of subdivisions in an area, with open spaces connected to one another, which can create a network of open space.

³ Tract size will be dictated by the lot size of the underlying zoning district, an analysis of the size of available land in the zoning districts, and the goals of conservation subdivision. Municipalities also have the option of not setting a minimum tract size. The minimum tract should not be too large, which would minimize the use of the concept to a few select pieces of land. Conservation subdivisions on smaller tracts may be useful when the tract is located adjacent to another development with preserved open space and a network of open space or greenway is one of the municipal goals of conservation subdivisions.

⁴ There is no defined answer about how much open space needs to be protected. From an environmental feature protection perspective, a high minimum requirement is desired. As long as the regulation itself does not reduce the number of lots a developer could build with a conventional design, there should be no reason for a developer not to preserve the minimum amount of open space.

**MODEL REGULATIONS
CONSERVATION SUBDIVISIONS**

SECTION 100. PURPOSES

The use of Conservation Subdivision Design permits flexibility in subdivision design to conserve open space, including those areas containing unique and sensitive natural features such as woodlands, steep slopes, streams, floodplains and wetlands, by setting them aside from development; to protect areas of (Municipality) with prime agricultural soils for continued or future agricultural use by conserving blocks of land large enough to allow for efficient farm operations; to implement adopted land use, environmental protection, historic preservation and open space policies as identified in the (*Municipal Comprehensive Plan*); to provide for the conservation and maintenance of open space within (Municipality) to achieve the above-mentioned goals; and for passive recreational use by residents.

SECTION 200. GENERAL REGULATIONS

- A. The purpose of the Conservation Subdivision regulations is to permit land to be developed using the provisions as contained herein. Subdivisions developed in accordance with the provisions herein shall be a permitted use in the _____ Zoning Districts.¹
- B. The election to develop property as a Conservation Subdivision is voluntary and provided to developers and property owners as an alternative to development of property as a conventional subdivision pursuant to the provisions of the underlying zoning district.²
- C. A Conservation Subdivision may be developed on property consisting of a minimum twenty (20) acres of contiguous land.³
- D. A minimum of fifty percent (50%)⁴ of the tract must be set aside for permanent open space. All open space land shall be permanently restricted from future development or subdivision by a conservation easement or other method of protection and preservation acceptable to (Municipality). The permanent open space area must contain all of the non-buildable area on the site.
- E. Except as otherwise provided, all provisions of the underlying zoning district of any land within the Overlay Zone designation shall apply.
- F. The subdivision shall be designed in full consideration of and to reasonably maximize the preservation of important natural features, including mature woodlands, tree rows, ri-

parian buffer areas, steep slopes, floodplains and wetlands. The subdivision plan shall minimize all development within such sensitive natural areas by clustering the development in more suitable areas of the tract.⁵

SECTION 300. REVIEW PROCEDURES

- A. (Municipality) shall review and approve a Conservation Subdivision and any amendments thereto as a land development project in the manner provided for in the Pennsylvania Municipalities Planning Code, together with the (Municipality) Zoning Ordinance and Subdivision and Land Development Ordinance.⁶
- B. When a Conservation Subdivision is proposed on a portion of the tract, (Municipality) may require a site inventory and a non-binding conceptual plan be submitted for the entirety of the tract to promote the coordinated development of the overall tract.

SECTION 400. LOT CALCULATION

- A. The applicant shall choose one of the following methods for calculating the base number of dwelling units that may be constructed on the site.

1. Formula Approach

Number of Dwelling Units = (Net Tract Acreage x .85)⁷ / Minimum Lot Size of the Underlying Zoning District

- Net Tract Acreage is the amount of land left after deducting areas of the site that are not available for development in the underlying zoning district. For example, the majority of zoning ordinances do not allow any development in the 100 year floodplain or wetlands.
- The factor of .85 approximates the buildable area of the development site minus roads, sidewalks and right-of-ways.
 - a. The result shall be rounded to a whole number. Round down fractional units of 0.5 or less and round up fractional units greater than 0.5.
 - b. If the applicant believes that the development site can reasonably accommodate a greater number of lots than the number derived from the above formula, the applicant may prepare a yield plan in accordance with the provisions below.

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⁵ The definition of “suitable area” is a matter of policy and ultimately defined by the priorities of the municipality as set in the comprehensive plan. A conservation subdivision could be proposed on a site which contains both farmland and sensitive natural features. In municipalities where farmland preservation is an important goal, the subdivision design may remove more trees for development to protect farmland. In municipalities where environmental protection is a priority, houses may be developed on the farmland with the trees preserved.

⁶ The benefit to using the standard plan review and approval regulations as specified by the Municipalities Planning Code is that conservation subdivisions are treated equally with conventional subdivisions. The approach is familiar to both the developer and the municipality, and the developer does not have to spend additional time drawing up various plans and attending special meetings that he or she otherwise would not attend if proposing a conventional subdivision.

⁷ This factor is assuming 15% of the land will be used for roads, sidewalks and right-of-ways. It can be modified by examining previously approved subdivisions in the zoning district.

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⁸ The yield plan provides a conceptual sketch of a conventional subdivision based on all standard criteria (setbacks, width, lot size, etc.). The result is the maximum number of units allowed on the site. While the yield plan may be more accurate than a formula in calculating number of lots, it requires the developer to create two separate site designs, with municipal staff to review both plans.

⁹ Conservation subdivisions can support a diversity of housing and can incorporate a variety of housing types. In rural areas, the predominant housing type is the single-family detached dwelling. In 2008, the Lehigh Valley Planning Commission published *Cottage Housing* which discusses the small, detached single-family homes which can serve as an attractive alternative to the conventional four bedroom, 2,000 square foot house. The diversification of housing types in rural areas is important as municipalities can balance out changing demographics and weather the fluctuations in the housing market and local economy. The average house breaking ground in the first quarter of 2009 was 2,335 square feet, down from 2,629 square feet in the second quarter of 2008, according to the National Association of Home Builders. Since 2007, median sizes for new single-family homes have fallen nearly 10 percent. For more information, please read the guide on *Cottage Housing*.



Calculation of lots - Example

A 100 acre parcel in a zoning district is proposed for development. The minimum lot size in the base zoning district is one acre, and there are twenty-five (25) acres of floodplain on the tract. The formula approach permits sixty-four (64) dwelling units. Here's how:

Step #1. Figure out the net tract acreage. Subtract out the floodplain, since it is constrained land.

$$[100-25]= 75 \text{ acres}$$

Step #2. Multiply the acreage that is remaining by .85.

$$[75 * .85]= 63.75 \text{ acres.}$$

Step #3. Divide the acreage by the minimum lot size.

$$[63.75/1] \text{ rounding up to 64 lots.}$$

2. Yield Plan Approach

If selected, yield plans shall be prepared as conceptual layout plans in accordance with the standards of (Municipality) Zoning and Subdivision and Land Development Ordinances. Although it must be drawn to scale, it need not be based on a field survey.⁸

- B. If the subdivision involves only a part of the tract, the number of units shall be calculated based on the acreage for the part of the tract proposed for a Conservation Subdivision. If the tract is located in more than one zoning district, the number of dwelling units will be determined for each portion of the tract separately, based on the applicable zoning district, added together and then rounded to a whole number, as specified in Section 400(A)(1)(a).

SECTION 500. DENSITY BONUSES

- A. Conservation Subdivisions are eligible for a five percent (5%) density bonus for each additional ten percent (10%) of the site, more than the minimum open space requirement in Section 200(D), that is permanently protected by conservation easement.

- B. Conservation Subdivisions are eligible for a five percent (5%) density bonus when at least 15% of the development's total dwelling units are cottages.⁹ The density bonus may be applied towards any permitted residential use in the underlying zoning district or additional cottages.
- C. In the calculation of bonuses, a fraction shall be rounded to the next highest whole number. The density bonuses of this Section may be combined.
- D. The provisions of this Section shall not be interpreted as guarantees of achievable density. Developments using bonus provisions shall be subject to all other applicable regulations of this Ordinance and the (Municipality) Zoning Ordinance. These regulations or site-specific conditions may prevent maximum bonus density levels from being achieved due to the character of the land or surrounding uses.¹⁰

SECTION 600. DIMENSIONS AND STANDARDS

- A. The minimum lot area in a Conservation Subdivision may be less than that allowed in the underlying zoning district, but shall not be less than _____ square feet.¹¹
- B. The minimum setback and yard requirements in the underlying zoning district may be modified in a Conservation Subdivision to provide flexibility in the location of dwelling units relative to the characteristics and limitations of the site. Zero lot lines are prohibited.¹²
- C. Maximum Building Height shall be as established by the underlying zoning district.
- D. Maximum impervious coverage on a lot shall be 30%.
- E. Residential structures shall be oriented to maximize solar heat gain in the winter months.¹³
- F. Lots may be irregular in size and shape if required to conform to the natural topography and features of the parcel (e.g. lot lines follow an existing stone wall, stream, stand of mature trees or other natural dividing feature).
- G. If agricultural uses are being maintained, lots shall be configured in a manner that maximizes the useable area remaining for the agricultural uses with appropriate buffers between agricultural uses and residential structures.¹⁴

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¹⁰ For more information on density bonuses, please read the Lehigh Valley Planning Commission guide on density bonuses, published in 2009. A Transfer of Development Rights (TDR) program would be a considerable asset if this particular situation arises. The developer could use the unrealized lots as a "transfer-out" to a zoning district where the lots could be developed.



¹¹ Many cluster regulations provide for only a marginal reduction in lot size. This restricts the amount of common open space, as much of the land is still proposed for individual private building lots. The general rule is that the smaller the lot, the more open space there is. Studies have shown that developers will build the largest lot permitted, while still meeting the open space minimum standard.

¹² Hypothetically, a conservation subdivision could use the "zero lot line" approach, whether either A) a house is constructed on a property line or B) no lot lines are proposed, as all land is treated as common open space similar to a condominium design. While this approach encourages flexibility in the design, it has some considerable disadvantages inclusive of fire safety, maintenance access and zoning issues should a property owner want to expand the house.

¹³ Streets in a subdivision should run east-west as much as possible so that the majority of the building lots can have either a north or south facing front and rear wall. The buildings should be oriented with the long axis running east-west. In this configuration, east and west walls receive less direct sun in summer, so the unwanted heat is reduced. This same configuration works well for buildings in the winter where passive solar heat gain on the south side during the winter is desired. Driveways and parking lots work better on the south and west sides of build-

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ings to melt the snow.

¹⁴ Conservation subdivisions may not be the best means of protecting large blocks of agricultural land or protecting farming as a viable business or lifestyle. If that is the goal, large tracts of contiguous land need to be protected. Noise, dust, chemicals, and odor are associated with many types of agricultural production and may not be acceptable to residents of the housing development. However, conservation subdivisions can protect small blocks of land and promote areas where agricultural and residential uses can coexist. Examples include Pick Your Own farming operations, organic farms, hay and straw farms, and other specialty products and farm activities that are of relatively low intensity. The buffer requirement is included to reduce the potential for conflict between agricultural and non-farm residential uses. A municipality can set a fixed width buffer or evaluate a buffer on a case by case basis. The term “agricultural uses” can be specifically defined if the municipality wants to control the intensity and types of use due to the adjacent houses.

¹⁵ Many of the problems associated with malfunctioning on-lot systems are the result of improper operation and failure to perform maintenance. Homeowner associations often lack the expertise and adequate funding to maintain sewage systems. The best approach for management of community on-lot systems is for the municipality to own, operate and maintain the treatment system and collection and conveyance lines.

¹⁶ The specific recommendations

SECTION 700. UTILITIES

A. Sewer Utilities

1. Except as provided in Subsection A(4) below, any tract proposed for a Conservation Subdivision shall be served by a central sewage system or community on-lot disposal system. Such system shall be consistent with the preferred treatment and disposal methods stipulated in the (Municipality) Act 537 Sewage Facilities Plan, and shall comply with all applicable requirements of both the Municipal Subdivision and Land Development Ordinance and the Pennsylvania Department of Environmental Protection (PADEP).
2. For systems proposed with a subsurface discharge or for spray irrigation systems, the allowable maximum number of dwelling units as provided in Section 400 shall be subject to reduction based upon the ability of the site to support the proposed system and proposed number of dwellings as per PADEP requirements. Soil test results and supporting information shall be provided to (Municipality) in sufficient detail to make a determination of the site’s ability to adequately service the sewage needs of the proposed development.
3. All central sewage systems or community on-lot disposal systems shall be owned, operated and maintained by the municipality or an authority.¹⁵
4. Where the tract proposed for a Conservation Subdivision is located within a public sewage system service area established by the (Municipality) Act 537 Plan, the proposed dwellings shall be served by the public sewage system, except as provided below. No on-site soil testing shall be required. However, the applicant shall provide a letter from the _____ Municipality/Authority confirming the ability to provide service. Should public sewers not be available to the tract due to either inadequate conveyance capacity or treatment plant allocation/capacity, the requirements of Subsections A(1), A(2) and A(3) shall apply. Once conveyance capacity or treatment plant allocation/capacity become available, the proposed dwellings shall connect to the public sewage system.

B. Water Supply

1. Dwellings within a Conservation Subdivision may be served by individual water supply wells located on each proposed lot to be owned and maintained by the indi-

vidual property owners, subject to approval by (Municipality).

2. Alternatively, the tract may be served by a central water system to be owned, operated and maintained by the municipality or an authority, subject to all applicable requirements of both the Municipal Subdivision and Land Development Ordinance and PADEP *Public Water Supply Manual*.
3. Where the tract proposed for a Conservation Subdivision is located within a community water service area established by the (Municipality) Comprehensive Plan or in an existing PA Public Utility Commission (PUC) Certificated Water Service Territory, the proposed dwellings may be served by the community water system if determined to be more cost effective by the developer. The applicant shall provide a letter from the _____ Municipality/Authority/PUC Water Service Provider confirming ability to provide service.

SECTION 800. STREETS

- A. The street network in a Conservation Subdivision shall implement the municipal Official Map, when applicable, and be designed to:
 1. Minimize alteration of natural or historic features;
 2. Minimize crossings of open space areas;
 3. Minimize acreage of the site designated for streets;
 4. Calm traffic speeds; and
 5. Promote pedestrian movement.
- B. Collector streets must have a minimum right-of-way of fifty (50) feet and a cartway width of thirty-six (36) feet. Collector streets shall be designed for all types of vehicles and through traffic. Length is unlimited, and the maximum grade is eight (8) percent, with other technical requirements conforming to the design standards of the (Municipality) Subdivision and Land Development Ordinance.¹⁶
- C. Residential streets must have a minimum right-of-way of fifty (50) feet and a cartway width of twenty-four (24) feet. Residential streets may not exceed a maximum ten (10) percent grade.
- D. All streets must conform with the technical requirements of (Municipality) relative to paving specifications, cartway design, horizontal and vertical alignment, sight distances, drainage, clear sight triangles, etc., except when waived by (Municipality).

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were obtained from the Pennsylvania Housing Research Center (PHRC) publication "Pennsylvania Standards for Residential Site Development." Streets should be scaled to traffic volume. Narrower streets reduce the amount of necessary infrastructure and impervious coverage and the associated stormwater runoff.

¹⁷ In rural locations, where conservation subdivisions would most likely be developed, sidewalks may not be necessary due to lack of nearby development or destinations.

¹⁸ The ranking of features in the list

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will be largely dependant on the environmental protection goals and policies of the municipal comprehensive or open space plan. This list, and their prioritization of importance for protection, should be consistent with those plans. An applicant would continue going down the list, or move on to Section 900(A)(2) and (3) until they met the 50% requirement for open space.

¹⁹ The Pennsylvania Farmland and Forest Land Assessment Act of 1974 (Act 319) also known as the "Clean and Green Program" allows owners of agricultural, agricultural reserve or forest reserve land to apply for preferential assessment of their land. If the application is approved, the land receives an assessment based upon its use value, rather than its market value. To be eligible for enrollment in the Clean and Green program, land must be devoted to one of the following three qualifying uses: agricultural use, agricultural reserve use, or forest reserve use, all of which require a minimum of 10 contiguous acres. The number of contiguous acres is important if open space is granted to a homeowners association (HOA) (which is possible under Section 900 (H)). The HOA can apply for the program and receive a real estate tax benefit for keeping the land in active farming. (This information was verified with the Northampton County Assessment Office.)

- E. Cul-de-sac streets shall be provided with a paved turning circle of sufficient width to facilitate snow removal and to permit easy access for fire fighting equipment and general truck delivery. The minimum paving radius shall be 40 feet to the outside curb. Cul-de-sac streets must have a minimum right-of-way of forty (40) feet, a minimum twenty-four (24) foot cartway width, and a maximum length of 750 feet.
- F. A five (5) foot sidewalk must be provided on at least one side of a residential street except where it can be demonstrated that such a sidewalk is not desirable.¹⁷
- G. Street trees shall be planted on each side of every new street that is part of a conservation subdivision, in accordance with the requirements of the (Municipality)Subdivision and Land Development Ordinance.

SECTION 900. PERMANENT OPEN SPACE

- A. The areas to be preserved shall be identified on a case-by-case basis in an effort to conserve and provide the best opportunities to preserve the best quality natural features of each particular site.
 - 1. The following environmental features are considered first priority areas for inclusion within the open space, unless the applicant demonstrates that this provision would constitute an unusual hardship and be counter to the purposes of this article. The environmental features are ranked in the order of municipal preference for 100% preservation of the feature should they be identified on the site.¹⁸
 - a. Conservation areas as identified in the (Municipality) Comprehensive Plan;
 - b. Environmentally Sensitive Woodlands;
 - c. The regulatory 100-year floodplain;
 - d. Buffer zones of at least seventy-five (75) feet width along all perennial and intermittent streams;
 - e. Wetlands that meet the definition used by the Army Corps of Engineers pursuant to the Clean Water Act;
 - f. Buffer zones of at least seventy-five (75) feet width along all the outer edge of all wetlands;
 - g. Slopes of 25 percent and greater of at least 5,000 square feet contiguous area;
 - i. Existing trails that connect the tract to neighboring areas.
 - 2. If the applicant has not met the 50% required open space requirement in Section 900(A) (1), the second priority, to

the maximum extent feasible, for inclusion in the open space area will be given to:

- a. Historic places specified in the (Municipality) Comprehensive Plan;
 - b. Existing woodlands of at least one acre contiguous area;
 - c. Prime agricultural lands of at least ten acres contiguous area.¹⁹
3. If the applicant has not met the 50% required open space requirement in Section 900(A)(1) and (2), the third priority for inclusion in the open space will be given to areas providing no environmental, farmland or historic structure protection value, but providing land for passive recreation.
 4. The (Municipality) Engineer shall decide whether or not the open space has been shown with sufficient accuracy on the applicant's plans. Based on the Municipal Engineer's advice, (Municipality) may require applicants to revise the boundaries shown on the plans. The burden of proving the correct boundary shall be on the applicant, supported by engineering and/or surveying data or mapping or other acceptable evidence.

B. Permanent open space may be used for:

1. Conservation of land in its natural state;
2. Agriculture, horticulture, silviculture or pasture uses, provided that all applicable best management practices are used to minimize environmental impacts;
3. Landscaped stormwater management facilities and wastewater disposal systems located on soils particularly suited to such uses. Such facilities shall be located outside of the areas specified in Section 900 (A) (1). A maximum of twenty-five (25%) percent of the required open space for a Conservation Subdivision may be used for approved methods of sewage disposal or water facilities for the development.
4. Passive recreation;
5. Trail or path corridor, the use of which shall be limited to pedestrian, equestrian, non-motorized vehicles, and maintenance equipment;
6. Easements for drainage, access, sewer or water lines, or other public purposes.

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²⁰ This regulation does not add homeowner associations (HOA) to the entities that can own and manage the open space. HOAs follow Covenants, Conditions & Restrictions that serve property owners within a specific development. In theory, a municipality could have lots of open space, owned by multiple HOAs, all with different guidelines and objectives. If a municipality wanted to link open space or other parkland that was developed through conservation subdivisions for the common good of the municipality, the HOAs may reject the concept. While a municipality could still allow HOAs to own the open space, it is not recommended for the reasons outlined above.

²¹ The model regulations do not encourage “double dipping” by requiring both open space and a recreation fee. By requiring both, it severely limits the attractiveness of the conservation subdivision design approach to developers and landowners.

²² The municipal planning commission will play an important role in the design of a conservation subdivision, more so than they traditionally do in evaluating a conventional subdivision plan. Given the flexibility for lot sizes, street widths, etc. provided in the regulation, planning commission members must be active participants in the design of the subdivision, collaborate with the landowner or developer, and fully understand how the goals, objectives and outcomes of conservation subdivision design and the municipal comprehensive and open space plans relate to the piece of land being developed. Before a municipality implements a conservation subdivision design ordinance, they should consider providing continuing education to new and existing planning commissioners, elected officials, staff and consulting engineers on the subject.

- C. If the open space is woodlands at the time of said dedication for open space, it shall remain in woodlands and shall only be cleared with the approval of (Municipality).
- D. In determining appropriate dimensions and site design factors, (Municipality) shall place particular emphasis on the goals and objectives of the (Municipality) Comprehensive Plan, (Municipality) Official Map (if applicable) and (Municipality) Open Space Plan.
- E. Open space land within a Conservation Subdivision shall be contiguous to provide for large and integrated open space areas. Non-contiguous parcels of open space may be approved by (Municipality) if necessary and/or desirable based upon consideration of the size of the project, the size of the open space parcels or the types of features included within the open space.
- F. The open space shall not include areas within any building lot, road, street or right-of-way.
- G. Further subdivision or use for other than non-commercial outdoor recreation, conservation, agriculture or forestry shall be prohibited.
- H. Unless otherwise approved by (Municipality), the ownership of the open space shall remain in single ownership and may be owned and maintained by one of the following entities: land trust, conservation organization or government.²⁰
- I. Open space required in a Conservation Subdivision shall be counted toward any recreation land dedication or recreation fee requirements that may be required under another section of this Ordinance or the (Municipality) Subdivision and Land Development Ordinance.²¹

SECTION 1000. APPROVAL CRITERIA FOR CONSERVATION SUBDIVISIONS

- A. In recommending approval or conditional approval of a Site Plan for a Conservation Subdivision, the (Municipality) Planning Commission shall transmit to (Municipality) (Governing Body) written findings of fact that the plan meets all of the criteria below and the conditions of the Commission. The (Municipality) (Governing Body) shall, in granting approval or conditional approval, also find that all of the following criteria are met or will be met when the conditions to which the approval is made subject are complied with:
 1. The Conservation Subdivision represents a more creative approach to the unified planning of development

- and incorporates a higher standard of design than could be achieved under the underlying zoning district and subdivision regulations.²²
2. The Conservation Subdivision meets the requirements set forth in this Ordinance.
 3. The Conservation Subdivision is consistent with the objectives of the *(Municipality) Comprehensive Plan*.
 4. The Conservation Subdivision will not be detrimental to the public health, safety, or general welfare.
 5. The design of the Conservation Subdivision allows the preservation of natural features on the site such as floodplains, wooded areas, steep slopes, natural drainage ways, or other areas of sensitive or valuable environmental character.
 6. Streets and sidewalks are appropriate for the scale of development. They are adequate in location, size, capacity, and design to ensure safe and efficient circulation.
 7. The quality and quantity of open space is consistent with the higher standards of design of a Conservation Subdivision.

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SECTION 1100. DEFINITIONS

Central sewage system. A publicly-owned system of piping, tanks, pumping facilities and treatment works which provides for collection, conveyance and treatment of sewage designed primarily to serve a single subdivision or land development involving two or more lots.

Central water system. A publicly-owned system of piping, tanks, pumping facilities and treatment works for the treatment and distribution of drinking water designed primarily to serve a single subdivision or land development involving two or more lots.

Community on-lot disposal system. A system of piping, tanks or other facilities serving two or more lots collecting, treating and disposing of sewage into a subsurface soil absorption area.

Community water system. A system of piping, tanks, pumping facilities and treatment works which provides for treatment and distribution of drinking water serving a generalized service area and designed independently of specific land developments or subdivisions.

Conservation easement. A nonpossessory interest in land that restricts the manner in which the land may be developed in an effort to conserve open space and environmentally sensitive areas.

Conservation subdivision. A form of residential development where lot sizes are reduced below those required in the underlying zoning district in which the development is located in return for the provision of permanent open space and the conservation of environmentally sensitive areas.

Cottage. A detached, single-family dwelling unit containing 1,200 square feet or less of gross floor area.

Density bonus. The granting of the allowance of additional density in a development in exchange for the provision or preservation of an amenity on the same site.

Environmentally sensitive areas. Any land area located in any or a combination of steep slopes, floodplains, watercourse corridors, sinkholes, wetlands, woodlands.

Environmentally sensitive woodlands. Areas of woodlands that are located in any or a combination of floodplains, wetlands, riparian and wetland buffers and slopes of 25 percent or greater.

Land trust. A private, non-profit conservation organization formed to protect natural resources.

Open space. An area of land or water, or a combination of land and water on a parcel of land that is free of improvement and impervious surfaces.

Overlay zone. A zone established to prescribe special regulations to be applied to a site in combination with the underlying district.

Passive recreation. Recreational activities that do not require any of the following (1) the use of a playing field or playground; (2) the installation of buildings or other structures; or (3) the substantial modification or grading of a tract of land. The installation of a building or structure in connection with a particular recreational activity shall not, in and of itself, cause the activity to be classified as "active" if the building or structure was not necessary to allow the activity to occur. For example, the installation of posts, signs, or water fountains along a hiking trail will not cause hiking to be deemed an active recreational use.

Prime agricultural land. Land used for agricultural purposes that contains soils of the first, second or third class as defined by the United States Department of Agriculture Natural Resources Conservation Service County soil survey.

Prime agricultural soils. Soils of the first, second or third class as defined by the United States Department of Agriculture Natural Resources Conservation Service County soil survey.

Public sewage system. A system of publicly-owned piping, tanks, pumping facilities and treatment works which provides for collection, conveyance and treatment of sewage and process wastewater serving a generalized service area and designed independently of specific land developments or subdivisions.

Site inventory. A plan that identifies the presence and location of natural resources on a site. These features include, but are not limited to floodplains, watercourses, wetlands, steep slopes, tree stands, and geological hazards such as closed depressions and sinkholes.

Solar heat gain. The amount of energy that a building absorbs due to solar energy striking its exterior and passing through windows and being absorbed by materials in the building.

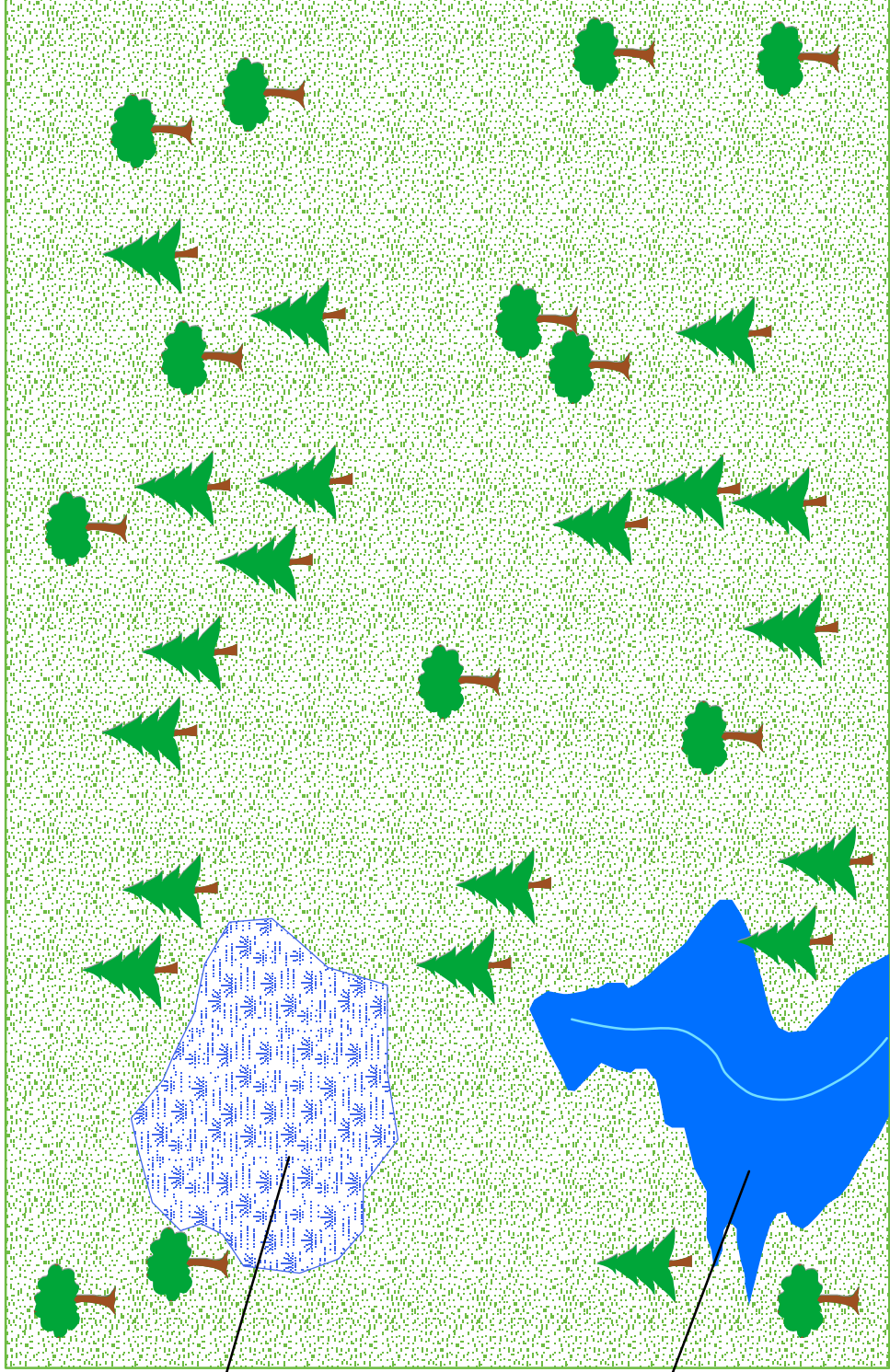
Woodland. A tree mass covering an area of 10,000 square feet or more, in which tree species are dominant and the branches of the trees form a complete, or nearly complete aerial canopy. The extent of any woodland or any part thereof shall be measured from the outermost drip line of all the trees in such woodland.

Yield plan. A conceptual subdivision plan depicting conventional subdivision lots that is used to determine the lot yield for conservation subdivision. A yield plan is not intended to involve significant engineering costs; however, it must be realistic and must not show potential house sites or streets in areas that would not be permitted under the (Municipality) Zoning and Subdivision and Land Development ordinances.

Zero lot line development. The location of a residential structure on a lot in such a manner that one or more of the structure's sides is located on a lot line.

WORKSHEETS

OUR SITE

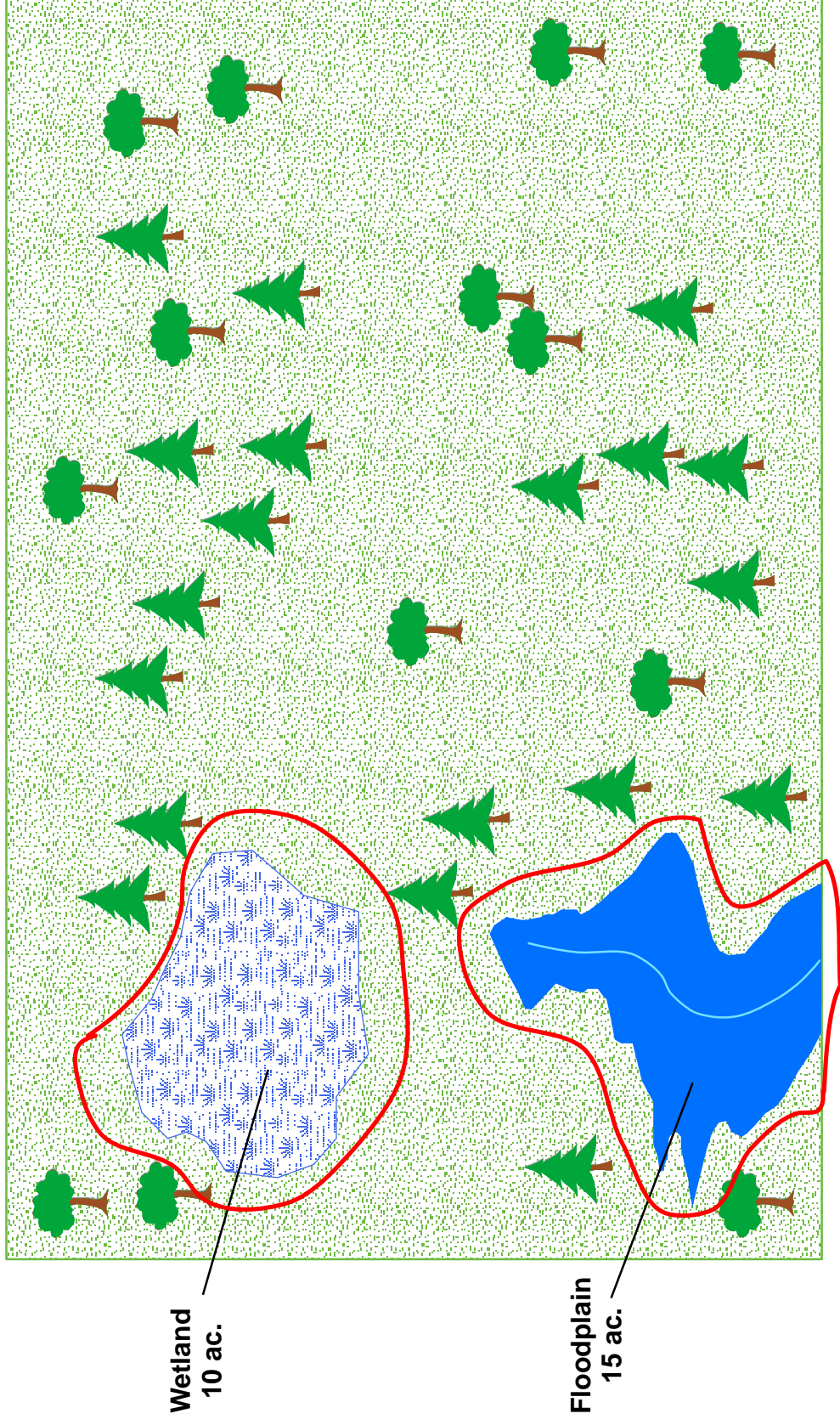


Wetland
10 ac.

Floodplain
15 ac.

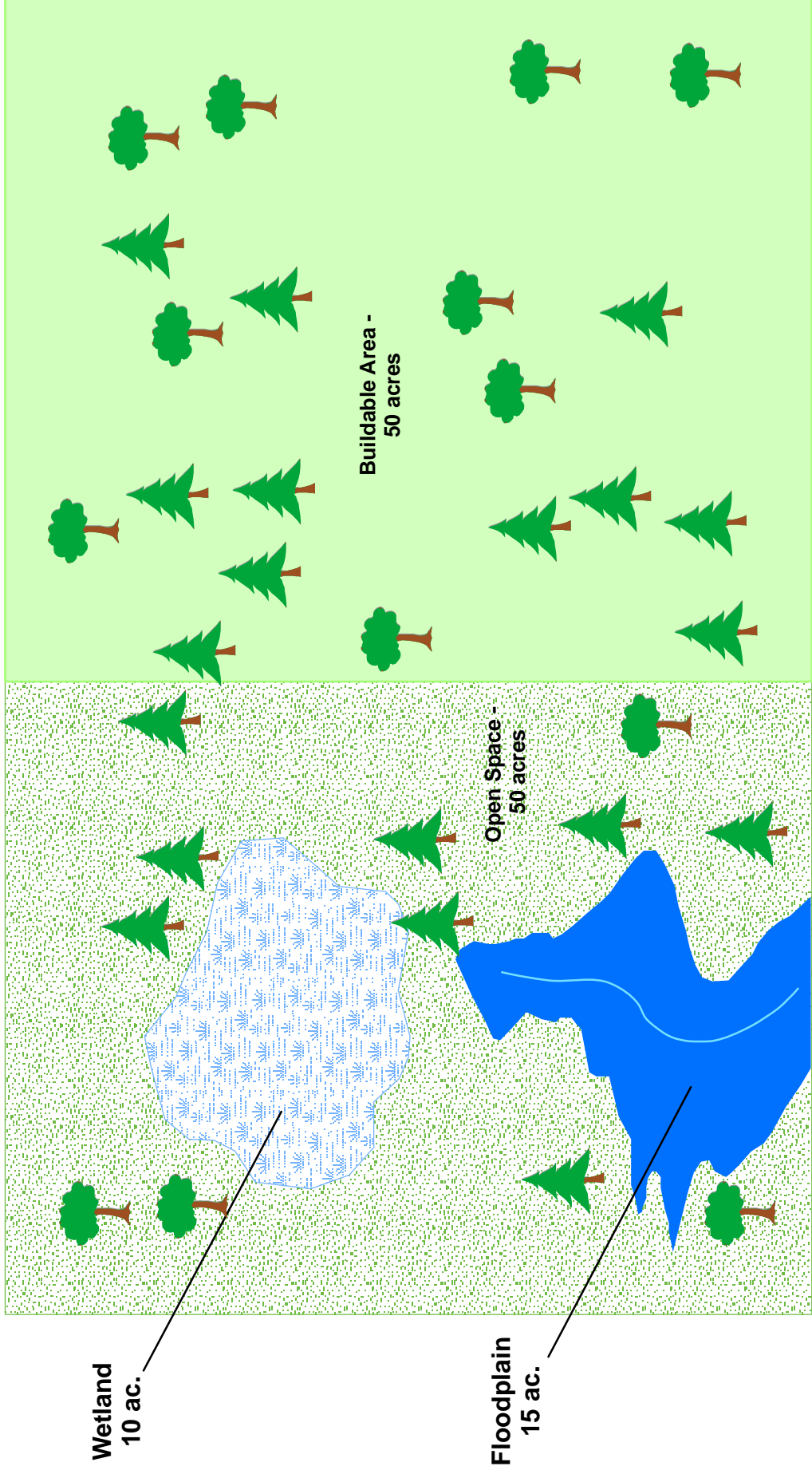
We have a 100 acre site. There are two significant natural features on the site.

STEP #1. IDENTIFY NATURAL FEATURES



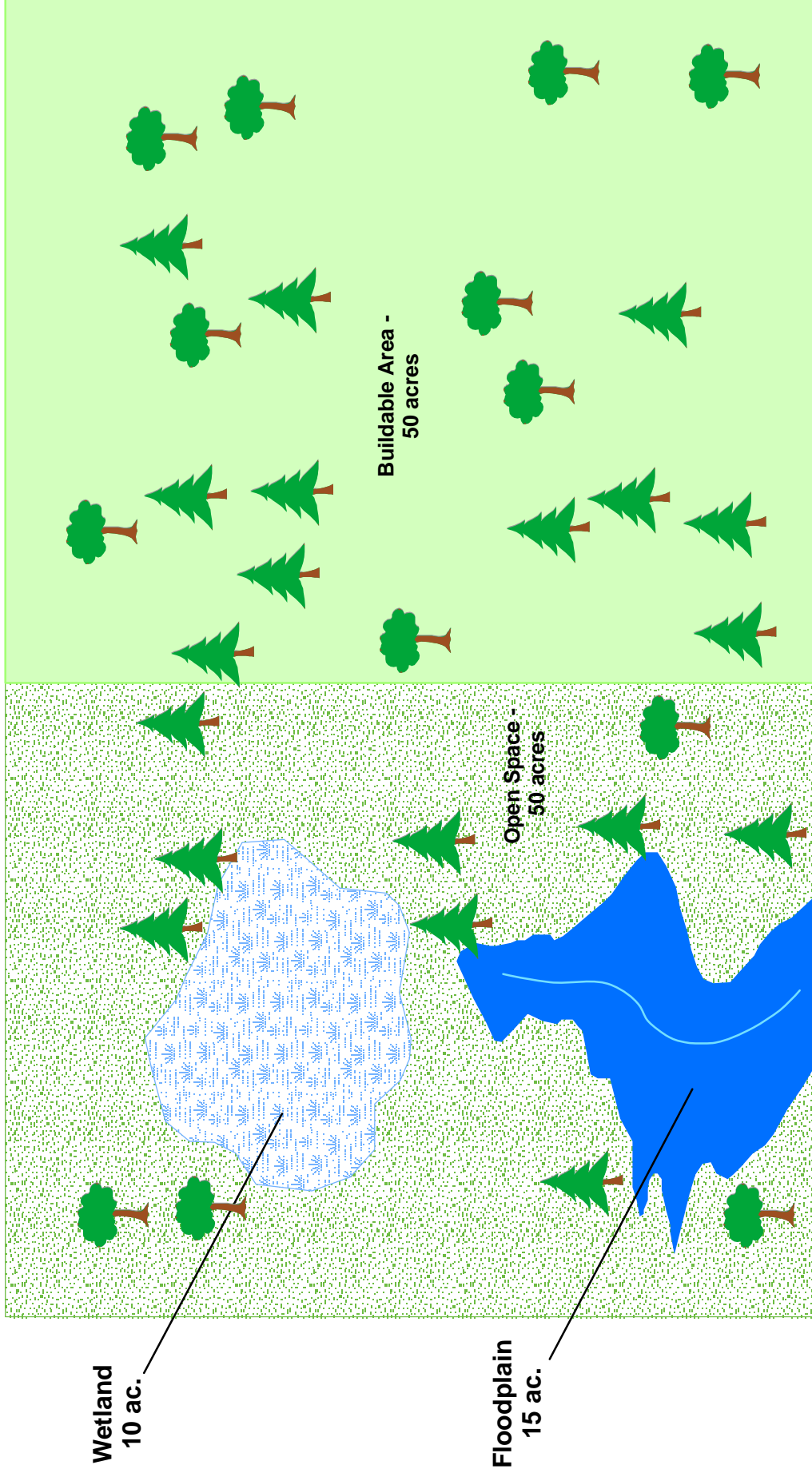
The first thing we do is subtract the natural features regulated by underlying zoning from the land we can build houses on. The total acreage in natural features is 25 acres. The remaining 75 acres represents the Net Tract Acreage.

STEP #2. MEET THE OPEN SPACE REQUIREMENT



The second thing we do is see how much more land we have to put aside to meet the open space requirement. The regulations call for 50% of the land to be in open space. We already have 25 acres set aside for the natural features. We need to set aside an additional 25 acres (50% of 100 acres is 50 acres).

STEP #3. FIGURE OUT WHAT YOU CAN BUILD



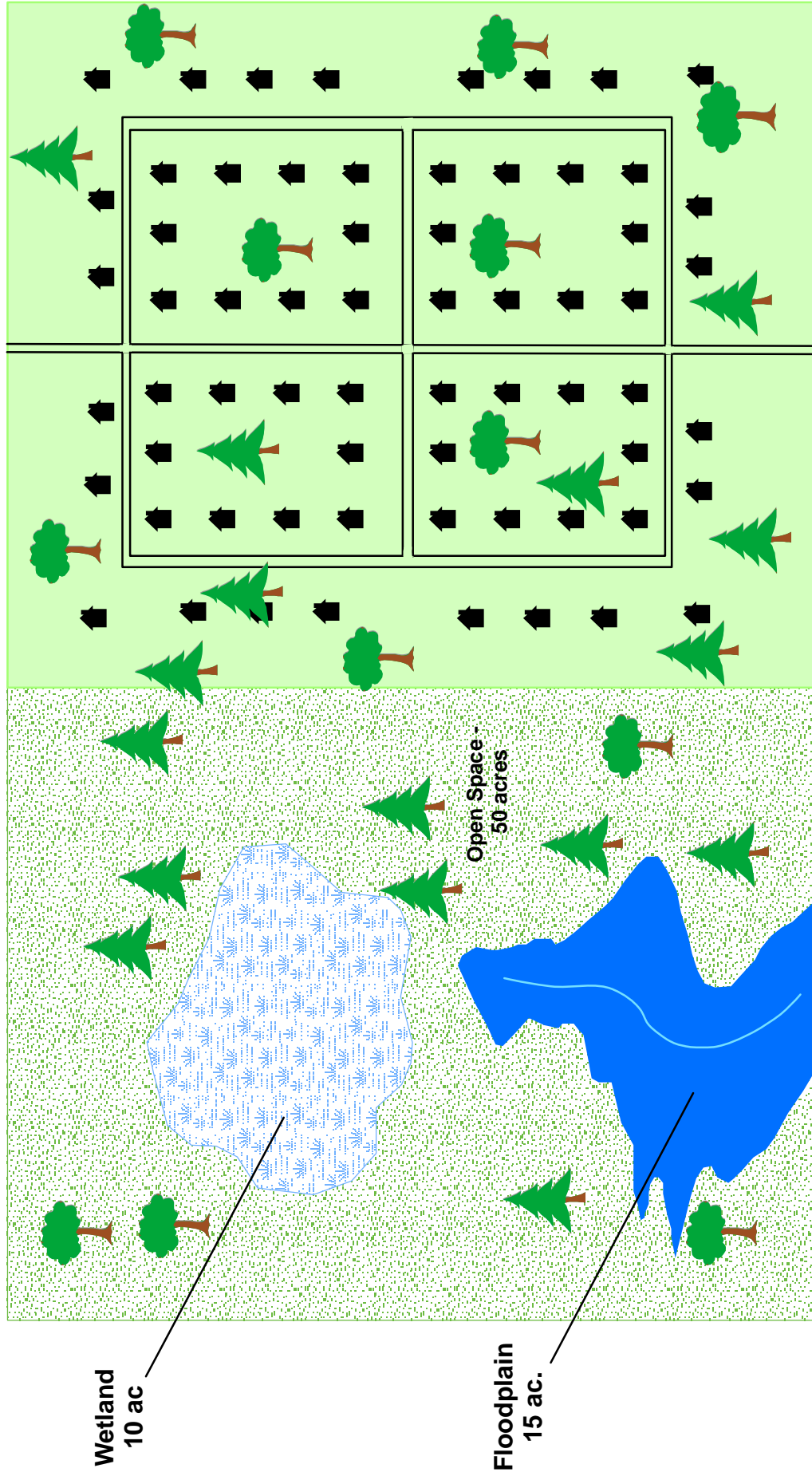
The green area indicates our buildable area. We need to figure out how many houses we can build on this land. We use the following formula:

(Net Tract Acreage x .85) divided by Minimum Lot Size of the Underlying Zoning District

The net tract acreage is 75 acres since we had to separate 25 acres out for the floodplain and wetland. The .85 takes into consideration 15% of the available land will be used for roads. $(75 \text{ acres} \times .85) = 63.75 \text{ acres}$

The minimum lot size in the underlying zoning district is 1 acre. $63.75 \text{ acres} / 1 \text{ acre per lot} = 64 \text{ lots}$. (We round to the nearest whole number).

STEP #4. LAY OUT THE DEVELOPMENT



With the aid of reduced dimensional requirements, the developer can now cluster those 64 units on the buildable area.

How the lot bonuses work:

There are two lot bonuses provided for in the regulation.

Bonus for additional open space

You get a 5% bonus in houses for each additional 10% of open space, above the required 50%, that is provided.

In our example, you can build 64 houses.

If you provide 60% open space, you get an additional 4 houses to build.
($64 \times .05 = 3.2$ or 4 units, rounded to the next highest whole number)

Bonus for cottage housing

You get a 5% bonus in houses when 15% of the development's total houses are cottages.

In our example, you can build 64 houses. The bonus provides 4 additional houses.

To qualify for the bonus, 10 of the houses in the development must be cottages.