THE CONSERVATION SUBDIVISION DESIGN PROCESS

Conservation subdivisions, sometimes called cluster developments, maintain a significant portion of a development site in common open space by minimizing individual lot sizes, while maintaining the overall density of development specified by a local master plan or zoning ordinance. Conservation subdivisions should be designed around the area proposed to be preserved in open space; that is, the areas for open space preservation should be set aside before the streets and lots are laid out. The design process for conservation subdivisions should follow three basic steps while taking into consideration applicable local regulations, such as zoning, official mapping, and land division control provisions; and pertinent adopted planning recommendations, such as recommended streets, parks, greenways, and recreational trails. The recommended three-step process is:

1. Identification and analysis of existing conditions, or site analysis;

2. Delineation of preservation areas; and

3. Layout of dwelling locations and street and lot pattern.

STEP ONE: SITE ANALYSIS

The design of a conservation subdivision around the area to be preserved first requires a proper site analysis. The analysis should identify existing features that determine the landscape character of a site and analyze those features to determine the desirability of preserving them. A site analysis should also identify features that present obstacles that must be considered and overcome in the design.

The inventory of existing conditions should include all natural and human-made features of a site. Some of these will be natural areas protected by law, such as floodplains, wetlands, shoreland areas, and water bodies. Other areas that are developable, but contain certain features that may lend character to the rural landscape (see Figures 1 and 2), should also be identified. Such areas could include hedgerows along an abutting road or dividing two fields; a healthy stand of trees atop a rise in terrain; diverse woodlands; wildflower meadows; fallow farm fields; wildlife habitats; areas that afford good views; historic buildings or ruins; fencerows; and even lone specimen trees. Other site features that must be accommodated in the design may include power line rights-of-way, transmission towers, utility easements, and drainage ways.

It should be noted that a site analysis completed for the sketch-plan layout of a conservation subdivision is not usually as technically comprehensive as those required for engineered preliminary plats. Although the engineering constraints on a site should be generally considered, the site analysis for the purposes of designing a sketch plan for conservation subdivision layout is intended primarily to identify landscape character, preservation areas, and building areas. While some of the elements required for sketch plans and typical preliminary plats will be the same (topography, for instance), the level of detail and accuracy required for documenting conditions for engineering purposes is not needed at the sketch plan level. The elements of a site analysis for the purposes of conservation subdivision design would supplement and precede the site information normally required for conventional subdivision design. When the approval process moves on to the preliminary plat stage, complete documentation and analysis oriented toward proper engineering practices would then be needed. The conservation subdivision layout would then be adjusted, if necessary, to accommodate engineering considerations.

Figure 1

Woodlands, hedgerows, and large single trees are important landscape elements to identify in a site analysis and to preserve in a final design.

Figure 2

Ruins, such as this old stone silo, are strong rural landscape elements which may be worthy of preservation.

Source: SEWRPC.

A good site analysis done for the purpose of conservation subdivision sketch-plan layout will include field investigations and should, at a minimum, consist of a map, or set of maps, showing the following:

1. A topographic analysis identifying slopes over 12 percent and under 2 percent. The topographic map should have a scale of one inch equals 100 feet or more, with a vertical contour interval of two feet or less. Hilltops and ridge lines should be highlighted.

2. An analysis of drainage patterns. The management of stormwater runoff from a site depends largely upon the existing drainage patterns which, for greatest economy and site preservation, generally should not be altered. Onsite drainage patterns are part of a larger drainage network and connect to the drainage patterns of adjacent sites. The role a particular site plays in the overall watershed should be recognized.

3. A vegetation analysis, identifying woodlands, hedgerows, specimen trees, meadows, prairie remnants, pastures, and active or fallow farm fields. Vegetation should be identified as evergreen or deciduous. The health and condition of each vegetative type should be identified. Predominant species in hedgerows and woodlands should be identified. Specimen trees should be identified by species, size, and health. Unique or endangered plant species should be noted.

4. A delineation of soil types and identification of selected soil characteristics, as provided by the information in the regional soil survey completed for the Regional Planning Commission by the U. S. Natural Resources Conservation Service. Such characteristics would include, for example, suitability of soils for crops, pasture, woodland, wildlife habitat, and recreation, as well as for building foundations, roadways, and onsite sewage-disposal systems. Prime agricultural soils and alluvial floodplain soils should be noted.

5. Shoreland protection areas, including any required building setbacks from the ordinary high-water mark of navigable waters, the 100-year recurrence interval floodplain boundaries, and lakes, ponds, streams, and wetlands. Significant groundwater recharge or well-head protection areas, if such information is available, should also be noted.

6. Boundaries and characteristics of primary and secondary environmental corridors, and isolated natural resource areas, as identified in adopted regional plans or local comprehensive plans.

7. Wildlife habitat, whether in fields, wetlands, or woodlands. Predominant species of birds, mammals, amphibians, reptiles, and fish should be identified when possible. The presence of rare or endangered species should be noted, along with the boundaries of natural areas and critical species habitat sites.

8. Historic or cultural features, including ruins and stone fencerows.

9. Other existing buildings and structures. All buildings in a farm complex should be located and identified as to their use, as well as the locations of existing wells and onsite sewage-disposal systems.

10. Scenic vistas, both into the site from adjacent roads, trails, and hilltops and outward from the site.

11. Classifications of existing streets and highways adjacent to the development parcel as well as desirable or undesirable points of entry into the parcel. Street connections required by the local official map should be noted.

12. Existing physical conditions surrounding the development parcel within 200 feet. These might include such notes as "adjacent residential homes," "connection to county trail," or "view to historic barn." The size and extent of existing adjacent open space areas should be noted, as well as any further open space connections these spaces may have.

13. Future areawide plans that may affect the physical layout of the site should also be taken into account. These could include, among others, plans for future parks; open space, trail, and bikeway systems; agricultural preservation areas; arterial and other street networks; stormwater management facilities and other utilities; and general land use plans.

Figure 3 is an example of a typical site analysis. This is often accompanied by a written narrative that further explains the existing conditions on the site.

STEP TWO: DELINEATION OF PRESERVATION AREAS

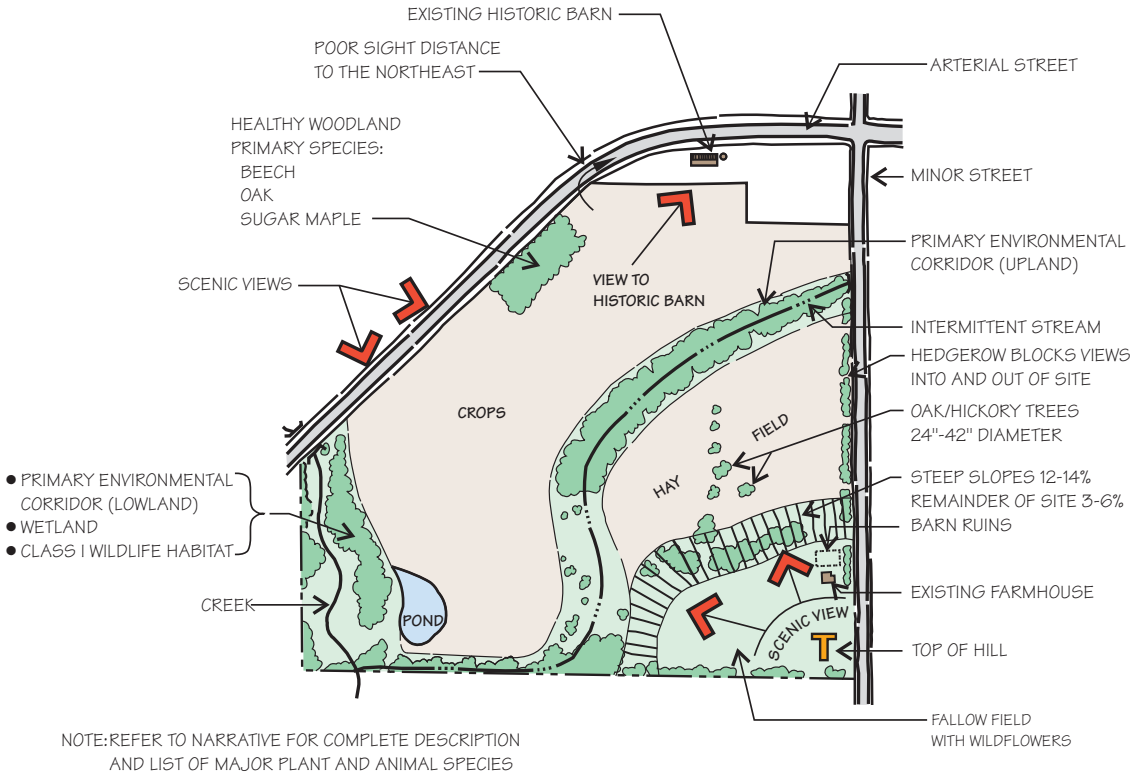
After determining the existing conditions on a site, the next step is to determine which areas should be preserved, as shown in Figure 4. Areas of first and second priority for preservation should be identified.

Areas of first priority will include two types of areas: those protected through State and Federal regulations, such as floodplains, wetlands, and shorelands, and those connecting to larger municipal, county, or regional park and greenway systems, such as primary environmental corridors. The more open space areas are connected, the more valuable they become. The concept of connectedness is very important when trying to preserve meaningful open space. Fragmented open space areas lead to disrupted wildlife migration paths, nonfunctional wildlife corridors,

Figure 3

CONSERVATION SUBDIVISION DESIGN: STEP 1

INVENTORY AND ANALYSIS OF LANDSCAPE CHARACTER



A site analysis for the purpose of conservation subdivision design would supplement and precede the engineering information normally required for a conventional subdivision. When the approval process moves to the preliminary plat stage, the conservation subdivision layout would then be adjusted to accommodate engineering considerations.

Source: SEWRPC.

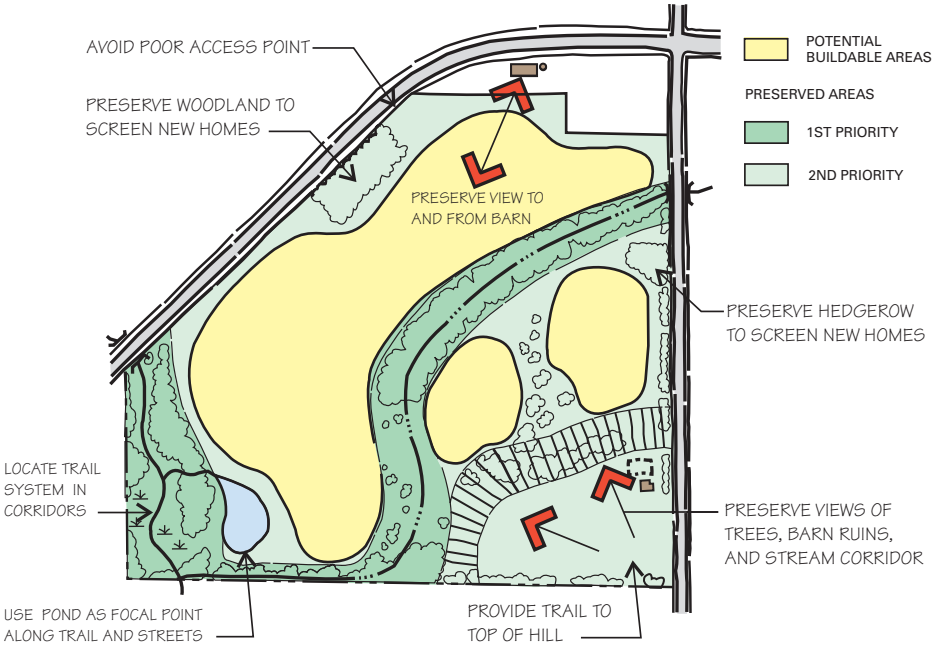
inefficient farming operations, and piecemeal trail systems. Areas of disconnected open space preserved on a variety of development parcels, while valuable to some degree, cannot have the same impact on preservation of landscape character as continuous open space does. When areas of open space in conservation subdivision developments on adjacent parcels abut each other, the impact on landscape character is greater than if they are separated by visible development.

The goal of connectedness in open space should always be kept in mind, not only in terms of the importance of connecting onsite open space with offsite open space, but also in terms of connecting all onsite open space as much as possible. While the opportunity to connect areas of onsite open space with adjacent offsite areas is not always available, areas of open space within the site can and should be connected. In this way, it may even be

Figure 4

CONSERVATION SUBDIVISION DESIGN: STEP 2

PRESERVED AREAS PLAN



Areas of first and second priority for preservation should be identified and preservation areas should be connected.

Source: SEWRPC.

possible to restore key gaps between presettlement vegetation relicts, which were separated by agricultural operations. Zoning ordinance regulations should require that acceptable open space parcels be of a specified minimum size and that areas of open space be connected as much as is practicable.

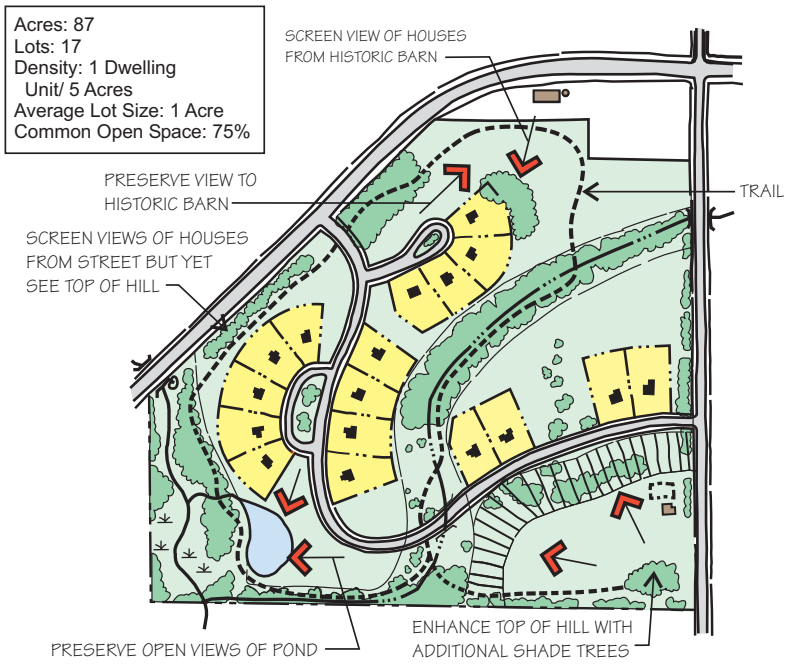
After designating first priority areas for preservation, regulated environmentally constrained areas and areas that provide connections to offsite open space, areas of second priority are added. These would include other developable areas with natural features that have been identified as contributing to the particular rural landscape character of the site, as seen from adjacent roads and other public ways, as well as from within the site. Some judgments may have to be made at this stage as to the desirability of preserving certain areas of marginal value. For example, a hedgerow with weak-wooded or diseased trees may not be desirable for preservation, while retaining open areas to eventually be landscaped to screen new homes is desirable.

Not all the open space will be environmentally constrained land, nor should it be. On parcels that have a great deal of environmentally constrained land, not all of it may be accepted as meeting the open space requirement of the zoning ordinance. In part, this is because development may be precluded anyway, such as in floodways; and, in part, the fact that such open space may not be considered publicly usable, such as with certain wetlands. On parcels with few constraints, much of the open space will be in well-drained upland areas that would be

Figure 5

CONSERVATION SUBDIVISION DESIGN: STEP 3

STREET AND LOT LAYOUT



After areas for preservation are identified, specific locations for building lots and streets are determined.

Source: SEWRPC.

considered buildable. Decisions would have to be made as to which portions of these areas should be used for lots and which should be saved for open space. These decisions should be based on the overriding objective of preserving rural landscape character.

In the process of determining the preservation areas, the areas available for buildings, streets and lots are, by default, also identified. These are the "left over" areas. This process is the opposite of that often used in the design of a conventional subdivision, where the leftover areas are the areas considered unsuitable for building. Often the areas with the most attractive natural amenities in a conventional subdivision are set aside first to be included in a few prime lots that can be sold at a premium price. By contrast, all of the lots within a conservation subdivision may become more valuable, leveraged upward by the presence of open space amenities.

STEP THREE: CONCEPTUAL DELINEATION OF STREET AND LOT LAYOUT (SKETCH PLAN)

When preservation areas are set aside, their outlines give shape to the building areas. On many development parcels, the areas available for building will be larger than the area needed to accommodate the permitted number of lots. Thus, the third step in the conservation subdivision design process is to determine more specifically the preferred locations of building lots and how best to provide access to them with streets (see Figure 5).

The street and lot layout at this stage in the design process is conceptual only. Because of the large variety of street layouts that are possible through the flexibility permitted by conservation subdivision regulations, agreement on the general acceptability of a plan should be reached before the plan is more precisely detailed. While general municipal engineering principles should be followed, no detailed site engineering is done at this stage, although all zoning and subdivision regulations should be consulted to determine achievability of the proposed development concepts. It is beneficial for both the developer and the municipality to reach a consensus on a conceptual sketch plan before the developer incurs the costs of preliminary engineering. During review of the sketch plan, design changes can be made at little cost to the developer, lesser review time to the municipality, and with frustrations minimized. Thus, before the preparation of a preliminary plat is initiated, both the developer and the municipality should have agreed upon a conceptual layout.

The result of this process will be that streets and houses blend into the landscape in a natural way that protects the character of the site as seen within the site and from adjacent streets. This is again the opposite of houses being forced onto the landscape in a form determined by rigid lot sizes and the configuration of parcel boundaries, as is often the case in conventional subdivision design and development.

EXAMPLES OF CONSERVATION SUBDIVISION DESIGNS

Hypothetical examples of conservation subdivision designs, contrasted with conventional designs for the same site, are presented in Figures 6, 7, and 8. Additional examples of conservation subdivision designs, along with means for implementing the conservation subdivision design concept, are presented in SEWRPC Planning Guide No. 7, *Rural Cluster Development*, December 1996 (see www.sewrpc.org/ca/conservationsubdivisions/ for more information).

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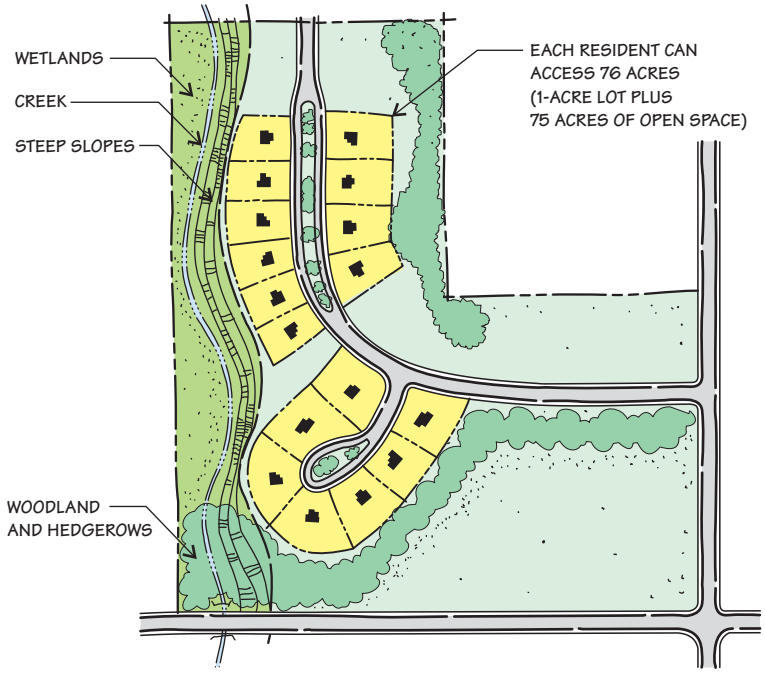
Figure 6

CONVENTIONAL SUBDIVISION DESIGN

Acres: 104
Lots: 17
Density: 1 Dwelling Unit / 6 Acres
Average Lot Size: 5 Acres
Common Open Space: 0%

CONSERVATION SUBDIVISION DESIGN

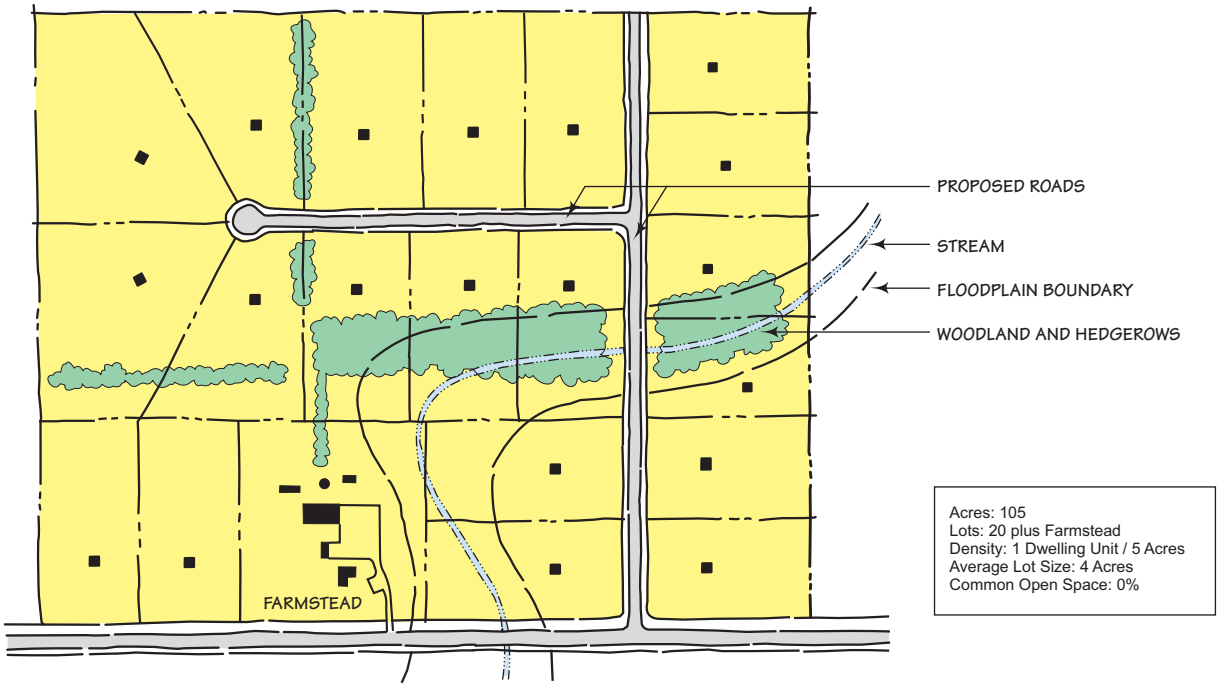


Acres: 104
Lots: 17
Density: 1 Dwelling Unit / 6 Acres
Average Lot Size: 1 Acre
Common Open Space: 75%

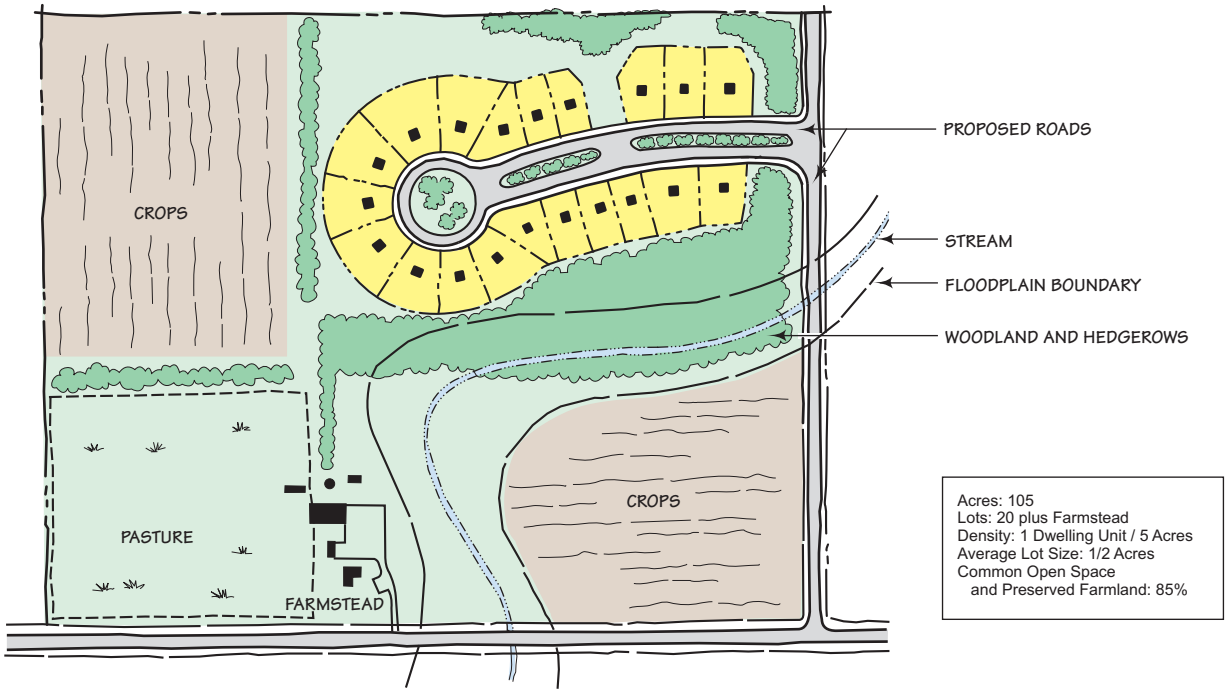
Through a reduction in lot size, open space can be created without losing density.

Figure 7

CONVENTIONAL SUBDIVISION DESIGN



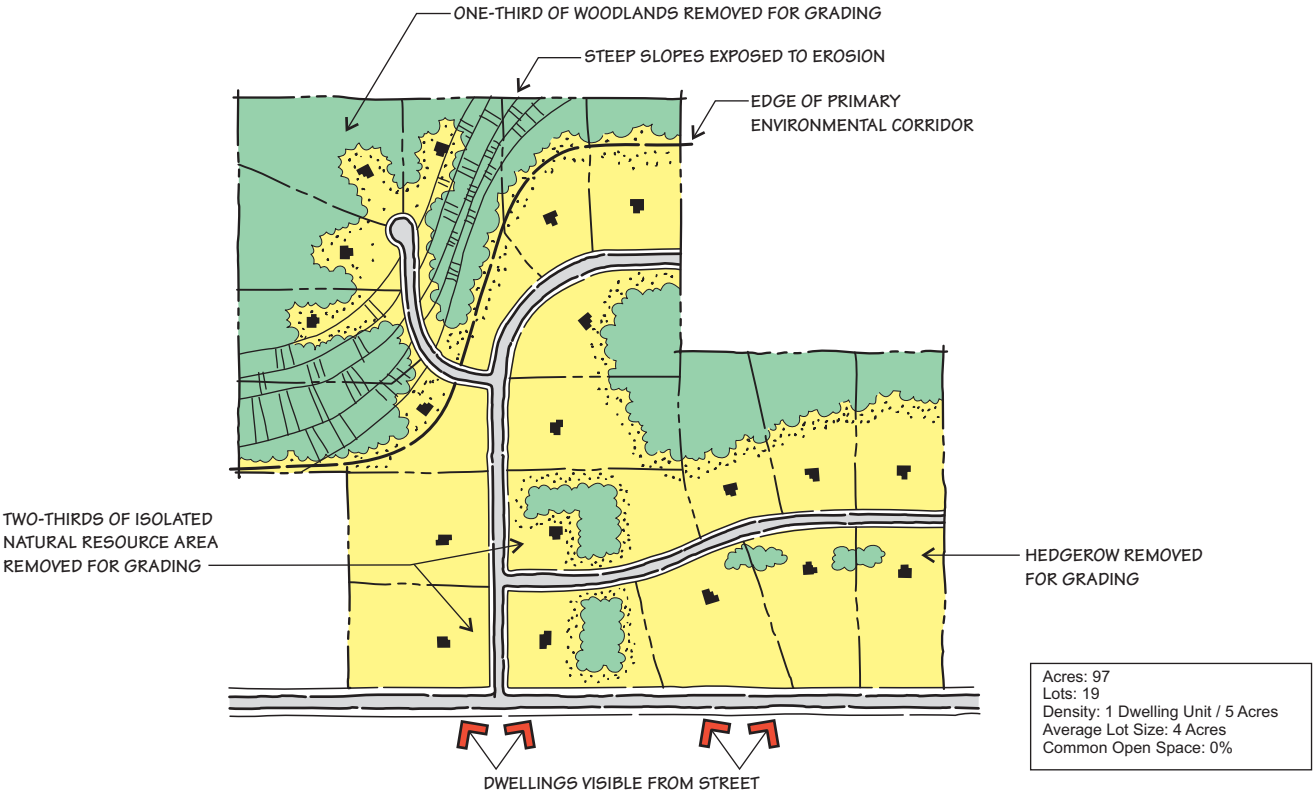
CONSERVATION SUBDIVISION DESIGN



Conservation subdivision development can help preserve farming activities.

Figure 8

CONVENTIONAL SUBDIVISION DESIGN



CONSERVATION SUBDIVISION DESIGN

Conservation subdivisions can preserve environmental features and views.

Source: SEWRPC.