



Introduction to Conservation Design

An Online Continuing Education Course for Engineers

Course Number: C-8012

Credit: 8 Hours / 8 PDH / 8 CPD

INTRODUCTION

Conservation design is a density neutral design system that takes into account the natural landscape and ecology of a development site and facilitates development while maintaining the most valuable natural features and functions of the site.

The intent of this document is to provide practical alternatives to conventional zoning, subdivision, weed-control, and other development-related ordinances. In many cases, conventional ordinances conflict with the goals of conservation design. With thoughtful revision, most existing ordinances can be modified and updated to not only allow, but encourage residential, commercial, and mixed-use development that is sensitive to both the natural ecology of the development site and economic needs of the community, land owner, and developer.

Several practices outlined here apply most directly to residential subdivision design. However, conservation design is by no means limited to residential subdivisions. The principles apply to the design and construction of any type of development, and should be applied as widely as possible.

WHAT IS CONSERVATION DESIGN?

Conservation design is a design system that takes into account the natural landscape and ecology of a development site and facilitates development while maintaining the most valuable natural features and functions of the site. Conservation design includes a collection of site design principles and practices that can be combined to create environmentally sound development. The main principles for conservation design are:

1. flexibility in site design and lot size,
2. thoughtful protection and management of natural areas,
3. reduction of impervious surface areas, and
4. sustainable stormwater management.

A similar term, **conservation development**, is used to describe a development that is designed and constructed using the principles of conservation design. Conservation design is one of many tools available to communities committed to implementing sustainable development practices. **Sustainable development** is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

In the context of this ordinance, conservation design is **density neutral**, meaning that designers plan development such that there is no overall loss of buildable units despite the conservation goals achieved on the site. Existing community standards for density and land use are not challenged here; rather, the practices given here offer alternative design strategies that are more environmentally friendly while maintaining existing densities and land uses.

In a residential conservation subdivision, for example, house lot size is substantially decreased, so that large areas of contiguous natural areas can be conserved with no net loss of housing units. In contrast, conventional development techniques often involve carving the development site into parcels such that the lots and road rights-of-way consume nearly all developable land without regard for the natural conditions on the site. Developments constructed this way often have wide roads, minimal pedestrian access, and may be similar in character and design to many other neighborhoods. While development pressures are heavy in urban and urbanizing areas, increasing attention has been given to the necessity of preserving rural, agricultural, and important environmental lands even as development continues.

The two graphics below (Conservation Design Forum, 2003) show the difference between conventional and conservation design. Figure 1 shows a conventional subdivision layout, where the entire site is converted to roads and building lots. Figure 2 shows the same site

with the same number of building lots laid out using conservation design practices. Note that natural areas and features of the site are preserved in the conservation design model, where this preservation is not possible using conventional design.



Figure 1 Conventional Subdivision Layout (Conservation Design Forum, 2003)



Figure 2 Conservation Subdivision Layout (Conservation Design Forum, 2003)

WHAT ARE THE BENEFITS OF CONSERVATION DESIGN?

Through conservation design techniques, development and a healthy natural environment need not be mutually exclusive. The benefits of conservation design are substantial. Communities, developers, and homeowners all can benefit from well planned and implemented conservation design. The environment is another major beneficiary; while it may be difficult to quantify the value of an expanse of habitat, an undisturbed streambank, or a panoramic view protected from careless development, there is little disagreement that conserving these resources is an important aim.

The benefits of conservation design fall roughly into three categories, quality of life benefits, environmental and biodiversity benefits, and economic benefits. Section 2 of this course, “Economic Benefits of Conservation Design,” lists in detail many economic benefits of the conservation design practices.

Quality of Life Benefits

Conservation design addresses concerns about community interaction and access to the natural environment. In addition to potentially conserving large areas of valuable natural resources, conservation design may create a variety of formal and informal public spaces within developments. These spaces create opportunities for neighbors and residents to meet and to build community together. Conservation design offers a variety of recreational prospects which may include

organized group activities such as picnics or soccer games, biking or walking in natural areas, or observing the plants and wildlife that thrive in preserved habitats. For residents of conservation developments, these amenities can make a noticeable difference in the quality of daily life.

Increasingly, notice is being given to the importance of community and social interaction in residential neighborhoods. Large homes, private backyards, and automobiles work together to make it possible for residents of conventional suburbs to spend all their time in private space without interacting with neighbors. While this type of privacy was once considered an advantage, many people now seek alternatives to the conventional subdivision lifestyle. Conservation design offers just such an alternative, and experience has shown that homes in these developments will be increasingly valuable as homebuyers increasingly demand access to nature and community along with the residences they purchase.

Environmental and Biodiversity Benefits

Thoughtfully implemented conservation design practices are beneficial to the natural environment in a number of ways.

- Protected water quality
- Reduced flooding
- Protected habitat and biodiversity
- Protected and recharged aquifers

THE BENEFITS OF CONSERVATION DESIGN ARE SUBSTANTIAL. COMMUNITIES, DEVELOPERS, AND HOMEOWNERS ALL CAN BENEFIT FROM WELL PLANNED AND IMPLEMENTED CONSERVATION DESIGN.



WHILE THERE ARE MANY WAYS TO APPROACH CONSERVATION DESIGN, THE MOST EFFECTIVE WAY IS TO UPDATE LOCAL COMPREHENSIVE PLANS, CODES, AND ORDINANCES TO REFLECT THE COMMUNITY'S COMMITMENT TO CONSERVATION.

In short, while conventional development practices have historically led to flooding, degraded water quality, and habitat destruction, conservation design practices work together to counteract these negative consequences of development. Through the practice of conservation design, communities can protect valuable natural resources even while growing and expanding.

WHY UPDATE LOCAL ORDINANCES?

The community, environmental, and economic benefits of conservation design are clear, and for most communities, the use of conservation design makes sense for at least some types of development. While there are many ways to approach conservation design, the most effective way is to update local comprehensive plans, codes, and ordinances to reflect the community's commitment to conservation. Most importantly, conservation design should be allowed *by right* and should be the preferred option for many development projects.

Presently, conservation design projects in most communities are approved through the Planned Unit Development (PUD) process. While the PUD process has the advantage of allowing the Plan Commission to maintain close oversight of unconventional development projects, the process is burdensome for both developers and planning staff. A major benefit of updating local ordinances to allow conservation design by right is that it reduces the approval time for projects. This saves time and aggravation for all parties involved in the development process, and as a result also saves money.

Economic Benefits

There are various economic benefits of conservation design. Communities, homeowners, and developers all can benefit economically from the use of the conservation design practices presented here. For a detailed discussion of these economic benefits, see Section 2 of this course, "Economic Benefits of Conservation Design."

Conservation Design and Sprawl

An occasional critique of conservation design is that while it is presented as an environmentally responsible development form, it encourages development of previously undisturbed (Greenfield) sites on the urban fringe and ultimately leads to sprawl, albeit more responsible sprawl. Several responses can be made to this critique.

First, development on the urban fringe is inevitable. Conservation design recognizes this inevitability and defines methods by which development can be sensitive to the natural areas and systems of the development site.

Second, conservation design does not position itself as a comprehensive solution to the challenges of urban and suburban development. The more inclusive umbrella of "sustainable development" seeks to address these challenges more fully, while conservation design addresses specific situations. In keeping with this limitation, please keep in mind that this course is not a comprehensive treatment of sustainable development practices. A comprehensive document would include

WHILE ALL PRACTICES MAY NOT BE RELEVANT TO ALL DEVELOPMENT PROJECTS, CERTAINLY THE ENVIRONMENTAL IMPACT OF NEARLY ANY DEVELOPMENT CAN BE REDUCED THROUGH THE EMPLOYMENT OF CONSERVATION DESIGN PRACTICES.

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Communities desiring to implement conservation design in place of the Planned Unit Development process should consider incorporating all or nearly all of the practices into the zoning and subdivision ordinances. This large scale adoption is most helpful in creating a predictable development approval process, which will encourage developers to

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integrating
Design Principles into Local
Plans and Ordinances," addresses the basics of enabling conservation subdivision design in your local comprehensive plan and development ordinances. Section 4, "Site Design Practices for Conservation Design," gives detailed information about the principles and practices suggested for conservation design, including ordinance language to enable each practice. Section 4 also lists several additional references for the