

CONSERVATION SITE DESIGN*

INTRODUCTION

When designing a new development, preferred management practices can simultaneously reduce pollutant loads and conserve natural areas while increasing the property value and saving the developer money. The goals of “better site design” are:

- to reduce the amount of impervious surface;
- to increase natural areas set aside for conservation; and,
- to use pervious areas for more effective stormwater management.

Research shows that as impervious coverage in a watershed increases, water quality decreases, so there is a need to reduce these surfaces. Leaving natural areas may also lead to improved water quality. Additionally, when stormwater structures use pervious areas to treat runoff, nutrients can be absorbed and not enter surface waters.

MANAGEMENT TECHNIQUES

Many times the practices that would achieve these goals cannot be implemented because codes, zoning ordinances and parking standards prevent these innovations. The following are techniques to achieve the three stated goals. Their actual application would be determined after surveying the site and considering the local conditions. They are organized into three areas:

- Residential Streets and Parking Lots
- Lot Development
- Conservation of Natural Area.

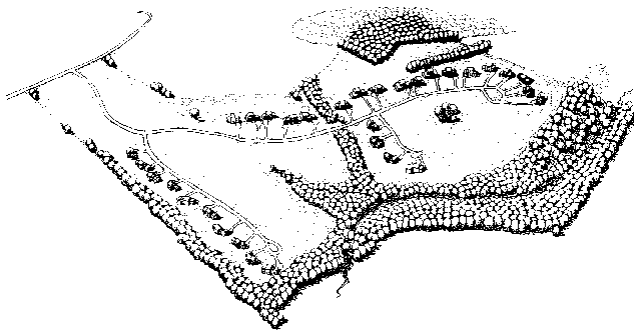


Figure 1: Conservation Subdivision Aerial Sketch

Residential Streets and Parking Lots

As much as 65% of total impervious cover in the landscape can be considered “car habitat.” Techniques to improve the situation include:

- Design residential streets for the minimum required pavement width needed to support travel lanes, on-street parking and emergency vehicles
- Reduce the street lengths by examining alternative layouts
- Residential right-of-way widths should reflect the minimum required to accommodate the

travel-way, the sidewalk, and vegetated open channels

- Minimize the number of residential street cul-de-sacs and their size
- Where topography permits, vegetated open channels should be used in the street right-of-way to convey and treat stormwater runoff
- Design parking to accommodate only the number of cars expected
- Optimize parking space size and use pervious cover for spillover parking
- Provide economic incentives to encourage shared parking

Lot Development

Many opportunities to reduce imperviousness occur when developing a subdivision. The use of open space or cluster subdivisions may offer the best opportunity. Techniques include:

- Use open space design subdivisions that incorporate smaller lot size to minimize total impervious area, reduce total construction costs, conserve natural areas, provide community space, and promote watershed conservation
- Relax setback to decrease driveway size and reduce imperviousness
- Reduce overall lot imperviousness by promoting alternative driveway substances and shared driveways.
- Specify how community open space will be managed and designate a sustainable legal entity responsible for managing the conservation and recreational space
- Direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas

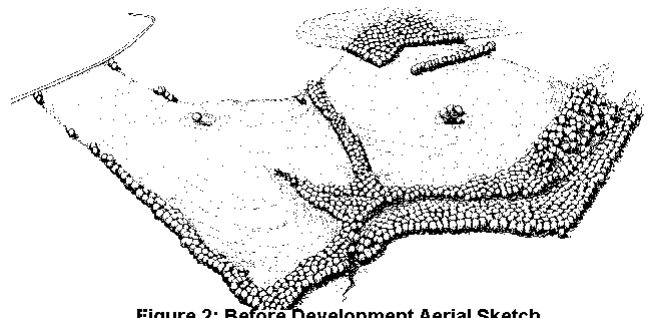


Figure 2: Before Development Aerial Sketch

Conservation of Natural Areas

The following ideas would be integral to achieving a better site design. The State already allows conservation easements, however, they are not frequently used. Techniques for conservation include:

- Create a naturally vegetated buffer system along all perennial streams that also encompass critical environmental features

such as the 100-yr floodplain, steep slopes and freshwater wetlands

- Buffers should be preserved or restored with native vegetation
- Limit clearing and grading of forests
- Conserve trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and conserving native vegetation
- Incentives and flexibility should be encouraged, including off-site mitigation where appropriate
- New stormwater outfalls should not discharge unmanaged stormwater into jurisdictional wetlands, sole source aquifers, or sensitive areas

NUTRIENT REDUCTIONS & COSTS

Nutrient reductions from the above practices may be difficult to estimate. Some nutrient remove rates will be presented in other fact sheets that are related to these principles of better site design.

In terms of costs, construction savings for open space development designs are estimated to range from 43-64% for some areas.

* This information comes primarily from "The Practice of Watershed Protection" by Shueler & Holland, 2000. Photograph from www.lowimpactdevelopment.org.

APPOQUINIMINK WATERSHED

This fact sheet was prepared by the Delaware Department of Natural Resources and Environmental Control's Whole Basin Team for citizens and stakeholders interested in one of Delaware's most environmentally and economically attractive areas—the Appoquinimink River and its surrounding lands, surface and ground waters.

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