3. Regional Growth and Development

The first step in protecting water quality resources and achieving more sustainable development is to put development where it best meets the county's economic, social, and environmental and water quality goals. The county should consider where growth makes sense, and where it wants to protect farms, open space, and other land from being developed. The basic steps are:

- Deciding where not to grow;
- Deciding where to grow; and
- Deciding how to grow.

3.1 Deciding Where Not to Grow

Preserving open space is critical to maintaining water quality at the regional level. A green infrastructure network of large, continuous areas of open space will reduce and slow runoff, absorb sediments, filter out debris and pollutants, serve as flood control, and help maintain aquatic communities. Some types of land, such as wetlands, buffer zones, riparian corridors, and floodplains, are better than others at protecting water quality. Wetlands naturally filter runoff by slowing water flow and allowing sediments to settle and the water to clarify. Strips of vegetation along streams and around reservoirs are important buffers, with wooded buffers offering the best protection. Tree and shrub roots hold stream banks in place, reducing erosion and the resulting sedimentation and turbidity. Organic matter and grasses slow the flow of runoff, giving the sediment time to settle and water time to percolate, filter through the soil, and recharge underlying groundwater. Research has shown that wetlands and buffer zones, by slowing and holding water, increase groundwater recharge, which reduces the potential for flooding.[10] By identifying and preserving these critical ecological areas, communities can protect and enhance their water quality.

3.2 Deciding Where to Grow

If growth and development are not planned and the pattern of development is determined by the defaults of current zoning, Sussex County will get a concentration of development along the coast, a few inland towns, and a veneer of low-density development (one to four units per acre) that will quickly eat up the rest of the county. This pattern will not preserve agricultural lands or open space. But, if the county and its residents decide that they want to preserve open space and keep the agricultural economy strong, directing development to existing towns will accommodate growth while protecting the rural landscape and lifestyle.

New development near existing towns and on key transportation corridors will require less new infrastructure and will be better connected to the economy of the region. Development that is compact and has a mix of uses is more resilient to economic hardship. If gas prices rise, people in compact, walkable communities have the option of walking or biking to the store and other destinations instead of driving.

In addition, directing development to already developed land, such as infill and brownfield or greyfield sites, uses land efficiently, makes the most of previous public investments by reusing existing infrastructure, and is good for stormwater management because it does not add

[10] Schueler, Tom. "The Importance of Imperviousness." *Watershed Protection Techniques*. 1994.

impervious surface. In fact, it can even reduce the amount of impervious surface, depending on how it is redeveloped. Putting new development near existing towns or building in already developed areas also supports a comprehensive stormwater management approach by allowing an interconnected network of open spaces and natural areas. One study found redeveloping one acre of brownfields preserves 4.5 acres of open space.[11] These natural lands not only improve water quality, they also protect wildlife habitat and enhance quality of life.

3.3 Deciding How to Grow

When the county decides where to grow, it also needs to determine things like what densities to allow, what type of design to encourage, and other considerations that will determine how the development looks, functions, and feels. Denser development will use land more efficiently, create less impervious area, protect more open space, and make it easier for people to get around without a car if they choose.

Public officials sometimes worry that proposing denser development will spark public opposition. And it's true that poorly designed dense development that offers no benefits to the community will not be well received. However, good design and new amenities can make denser development appealing to the community. Ten units per acre can be a small-town setting of houses with small yards, interspersed with stores and parks.[12] The way the new homes look, how they are arranged on the street, how well they fit in with their surroundings, and the amenities that come with them will all determine how the community reacts to the development proposal.

Density is essential for supporting public transit and a mix of uses, but it is also important in protecting water resources. Low-density development has a considerable effect on watersheds. Studies have found that covering just 10 percent of the watershed's land area with impervious surface can impair hydrological function and water quality. Research by EPA,[13] the Center for Watershed Protection,[14] and other environmental agencies and organizations shows that higher density projects may protect water quality better than low-density development. Two key findings from the research are:

- Higher density does not necessarily mean more impervious surface overall. In fact, compactly arranged units may reduce the building footprint and result in less impervious coverage per unit or per capita than dispersed stand-alone units. (See Figure 10 for an illustration.) In addition, more compact development requires fewer miles of roads and parking lots than low-density development, further reducing total impervious cover.
- Not all pervious surfaces are equal—many disturbed surfaces that appear pervious, such as lawns, golf courses, or other maintained lands, may be compacted, which greatly reduces their ability to infiltrate runoff. Therefore, developing less total land, including for lawns or other developed "green space," and maintaining more land in its natural, undisturbed condition is better for water quality.

[11] Deason, Jonathan et al. "Public Policies and Private Decisions Affecting the Redevelopment of Brownfields: An Analysis of Critical Factors, Relative Weights and Area Differentials." Prepared for EPA Office of Solid Waste and Emergency Response. The George Washington University, Washington, DC. September 2001. Available at *www.gwu.edu/~eem/Brownfields/project_report/report.htm*.

[12] A good resource for comparing well-designed density with poorly designed density is the Lincoln Land Institute's "Visualizing Density" web site: *www.lincolninst.edu/subcenters/VD*.

[13] EPA. *Protecting Water Resources with Higher-Density Development*. 2006. EPA 231-R-06-001. Available at *www.epa.gov/smartgrowth/water_density.htm*.

[14] Cappiella, Karen and Kenneth Brown. "Impervious Cover and Land Use in the Chesapeake Bay Watershed." Center for Watershed Protection. January 2001. Available at *www.cwp.org/Downloads/elc_imperv.pdf*.

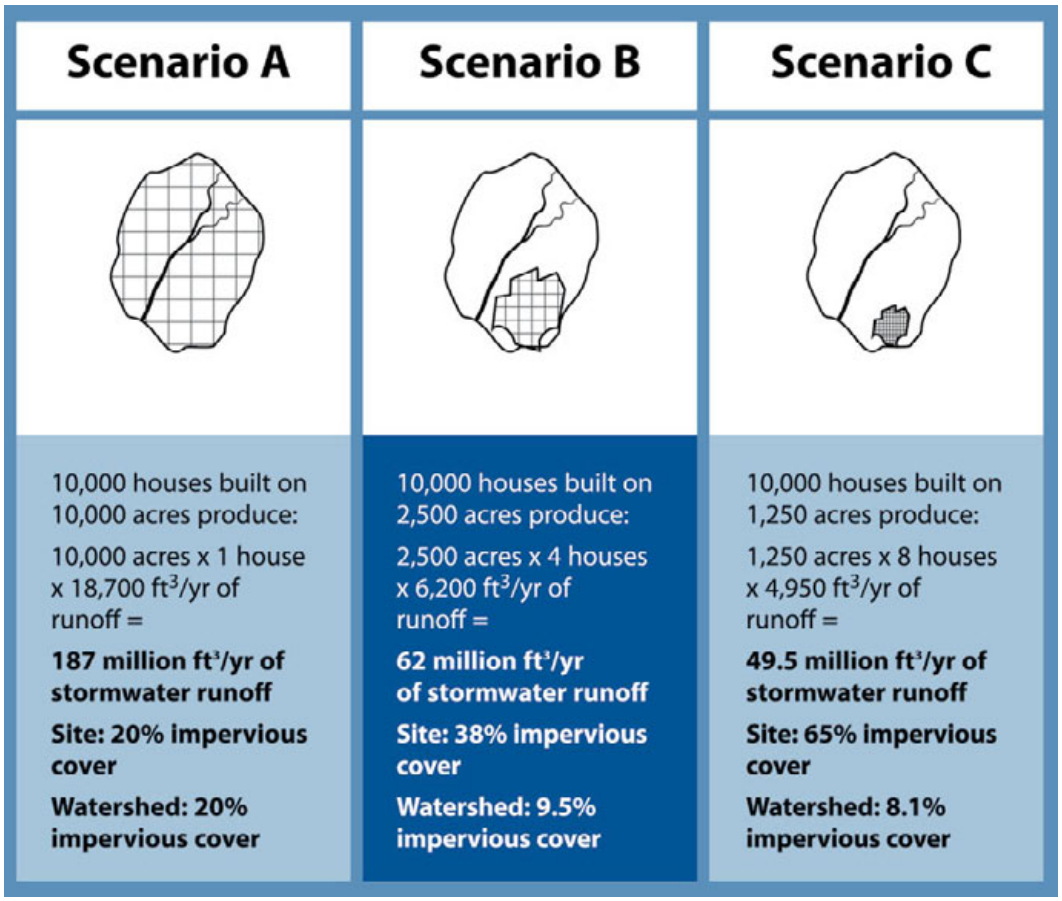

Figure 10. Building at higher densities uses less land, protects more ecologically important land, and creates less stormwater runoff. (Source: EPA. *Protecting Water Resources With Higher-Density Development*.)

In addition to density, a mix of uses is important to creating neighborhoods that have the small-town atmosphere people enjoy. A neighborhood can have sidewalks, but if there are no shops, parks, schools, or other destinations to walk to, residents will still have to drive for every errand. In addition, research has shown that mixing land uses decreases impervious cover by approximately 25 percent compared to conventional retail patterns because fewer parking spaces are required.

Over the last half-century, development patterns—both in Sussex County and across the country—have changed from the walkable neighborhoods found in small towns to individual subdivisions. When development was contiguous to towns and villages, roads were extended, blocks developed, and the new residents had easy access to all the amenities and businesses, plus multiple ways to get around. When development shifted to individually approved and developed subdivisions, residents usually had no connections to surrounding neighborhoods and often just one entrance onto the main road.

State and local agencies often have established standards to actually require this new pattern. State transportation officials thought that limiting connections to existing roads protected the capacity and safety of those roads; local officials thought that limiting connections to neighboring subdivisions protected those residents from extra traffic. This was a valid concern because, at the same time, roads were becoming much

wider to make driving easier—which also increased speeding. Builders started to set houses farther back from the road, creating longer driveways. The extra pavement significantly increased stormwater runoff.

What planners didn't foresee is that eliminating connections between neighborhoods forces all traffic onto the main roads for even the short trips, requiring greater public investment to widen those roads and intersections—and making it far less likely people will walk or bike.

Because local land use and state transportation decisions are inextricably linked, creating more efficient, sustainable development patterns will require close cooperation among the county, local governments, developers, builders, and other parties. The county could work with these stakeholders to review policies, guidelines, and legislation and help determine any changes to allow and encourage new development to be more compact and connected—with less water quality impact and safer, more convenient transportation choices. Although state standards are not under the county's control, the Delaware Department of Transportation (DelDOT) and other state agencies could be invited to participate in the discussions. In addition to interagency coordination, one goal could be to identify potential improvements to state standards (such as street and access management standards and drainage standards) to make it easier for developers and builders to deliver more sustainable and environmentally sensitive communities and also help the county and state meet their water quality goals.

The county and this group of stakeholders could also review redevelopment standards and regulations to identify obstacles, determine possible incentives, and encourage redevelopment of properties along existing roadways. This corridor-based redevelopment approach is an effective way to add new housing, shopping, and community facilities near existing neighborhoods, provide new road and trail connections through adjacent parking lots, and start making connections for local travel without major neighborhood impacts. This approach could allow Sussex County communities to enjoy the benefits and opportunities associated with growth while minimizing water quality impacts.