STREAMLINES

A Newsletter for North Carolina Water Supply Watershed Administrators

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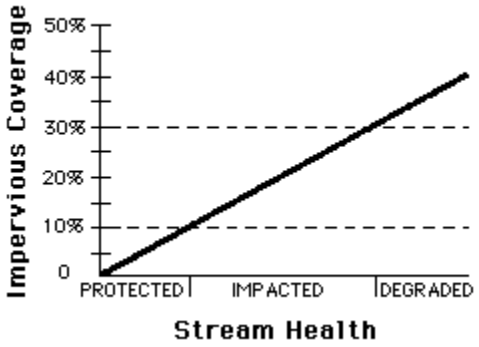
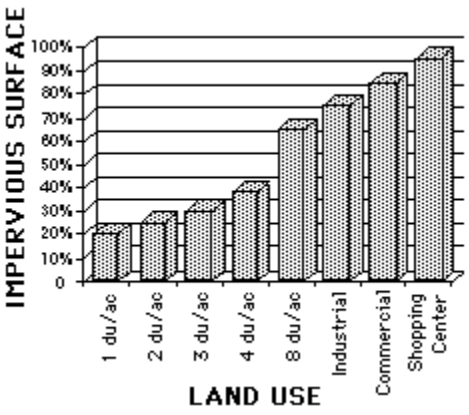
Limiting Impervious Surfaces Protects Water Quality

Nonpoint source water pollution -- resulting from contaminants washed off the surface of the land by stormwater and entering the water system -- is the number one water quality problem in the United States and in North Carolina. Unfortunately, local governments wanting to protect their drinking water supplies may find it difficult to address the site-specific and diffuse nature of nonpoint source pollutant runoff. Limiting impervious surface or built-upon area may be the most feasible method for local governments to address water pollution. Using built-upon area instead of more technical practices to control water quality impacts has three compelling advantages:



1. imperviousness is easily measurable
2. imperviousness can reasonably estimate cumulative water resource impacts (see Figure 1, above)
3. imperviousness can be controlled through land use regulation.

What is impervious surface? An impervious surface is any material that prevents infiltration of water into the soil. Nature manifests impervious surface in compacted soils or bedrock outcroppings. But the most common -- and fastest growing -- types of impervious surface are man-made, built-upon areas such as paved roads, rooftops, sidewalks, driveways, patios, and the like. As increased development alters the natural landscape, the percentage of land covered by impervious surface likewise increases. It is important to understand that the type of land use is often closely related to the amount of impervious surface present. Figure 2, right, illustrates the relationship between land use and impervious coverage.



How to calculate built-upon area? Built-upon area is a measure of the impervious cover for a site and is easy to calculate. For each parcel of land, divide the amount (area) of impervious surface (i.e.: structures, roads, parking lots) located on-site by the total land area under consideration. Multiply the resulting fraction by 100 to get the percent built-upon area.

Why worry about impervious surface? With increased population growth and the increased use of the automobile, roads, highways, and suburban development have sprung up

at an accelerating rate. As the natural landscape is disturbed, there is a corresponding decrease in soil infiltration, which leads to an increase in the volume and the velocity of surface runoff. In urban areas, curb and gutter systems, storm drain pipes, and artificially straightened or stabilized stream channels may aggravate the problem by speeding up the flow and eliminating percolation into the ground. Although impervious surface does not create pollution, it is a major component of the intensive land uses that do generate pollution; it prevents natural pollutant processing by limiting infiltration; and it serves as an efficient conveyance system to transport pollutants quickly and directly into streams, rivers, and lakes.

Conclusions. Planners and local government officials are coming to the realization that land use and impervious coverage have a defining impact upon water quality. The NC water supply watershed protection rules address this issue by requiring local governments to limit the amount of built-upon area near important water supply areas. The local watershed protection ordinance and/or subdivision and zoning ordinances provide local officials with the tools necessary to help protect water quality. An initial assessment of the watershed from a water quality standpoint may be especially crucial to plan for effective siting of built-upon area and is highly recommended. In addition, proper education of landowners and enforcement of these regulations is key to effective management of the watershed.

(Figure 1 from Arnold, C.L., et al. "Impervious Surface Coverage," *APA Journal*, Spring 1996. Figure 2 from Soil Conservation Service, *Urban Hydrology for Small Watersheds*, USDA SCS, 1975)

Obtaining Vested Rights

In North Carolina, a landowner may make an investment in his development, and if the law should change prior to that development being completed, he may not have to comply with the new regulations. The method of exempting the landowner from the new law is called the establishment of a vested right. Under North Carolina law, a vested right may be obtained three ways. The first requires the landowner to make substantial expenditures in good faith reliance on a specific, individual approval of a project. This type of vested right is termed a common law vested right. There are also two statutory methods of obtaining a vested right. These include having a valid building permit and securing approval of a site specific development plan as defined under General Statutes 153A-344.1 for counties and 160A-385.1 for municipalities. The Water Supply Watershed Protection Rules exempt landowners from regulation for the period of time in which they have a legitimate vested right as defined under North Carolina zoning law (between 2 and 5 years depending on the type of development). The following briefly describes the criteria necessary to establish a vested right.

The requirement for a substantial expenditure of resources, which can include the expenditure of money, time and/or labor is necessary to establish that the landowner would suffer undue losses if required to comply with the new regulation. Substantial expenditures are often construed as a "substantial beginning of construction." A generalized plan or sketch, idea or concept to develop the property is not adequate to establish a common law vested right. There must be substantial action taken to carry out the plan. A second element in the establishment of a common law vested right is the requirement that the expenditure be made in "good faith" -- in other words, that the landowner does not deliberately act with undue haste in an attempt to avoid compliance with the new regulation. The substantial expenditure must be made in reliance on an actual legitimate approval of an individual project in order to qualify

for a common law vested right. Such approvals include building permits, special or conditional use permits, certificates of zoning compliance and preliminary plat approvals. The expenditures would then be made in reliance on the existing zoning. Expenditures made on a mistakenly issued permit do not establish a common law vested right. The requirement of reliance also means that expenditures made prior to the approval or as part of the approval process may not be considered to establish a vested right, as they could not have been made in reliance on the permit. A final consideration in the common law vested rights analysis is a requirement that conformance with the new requirements be a detriment to the landowner. If the landowner can comply with the changed regulation without harm, there is no reason to treat that landowner differently from other citizens. Where phased developments are concerned, the common law vested right only applies to that part of the previously approved project actually under way at the time of the ordinance change unless the expenditures can not be divided or allocated by phases.

The first statutory vested right was enacted in 1985. It amended both the county and municipal zoning enabling acts (NCGS 153A-344.1 and 160A-385.1, respectively). The statute provides that any zoning ordinance change, including amendments, modifications, supplements, repeal or other changes, do not apply if the property owner possesses a valid building permit. The building permit is not a generic approval for building, but is a permit tied to requirements under the state building code. State law provides that the building permit expires in six months if work is not commenced or if the work is started, but then discontinued for a twelve month period. If the building permit expires, the vested right expires. Also, if the building permit is revoked, then the vested right expires. Building permits may be revoked for any substantial departure from the approved plans, failure to comply with any applicable state or local law (not just the building code and zoning ordinance) and any misrepresentations made in securing the permit.

In 1990, the legislature expanded the statutory vested right to provide for a vested right based on site specific development plans and phased development plans approved by local governments. The law creates detailed criteria under NCGS 153A-344.1 and 160A-385.1 to define this right. The criteria establish a vested right for a period of two years. The county or municipality may extend this right for up to five years if the extension is specifically allowed under their zoning ordinance - it is not automatic. The site specific development plan must be approved by the local government following a hearing. Each local government must define by ordinance what constitutes a site specific development plan in their jurisdiction. For instance, some counties and municipalities define a preliminary subdivision plat or conditional use permit as a site specific development plan.

(Special thanks to Dave Owens at the Institute of Government for the information in this article.)

Changes at DEM

The Division of Environmental Management has undergone some changes. Effective July 1, 1996, the Division of Environmental Management became the Division of Water Quality (DWQ). The Water Quality, Groundwater, and Construction Grants Sections of the Division comprise the new DWQ. Staff of DWQ may be reached at their same extensions. The phone numbers for each of the DWQ Sections are as follows:

- Water Quality: (919) 733-5083

- Groundwater: (919) 733-3221
- Construction Grants: (919) 733-6900

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