

“The traditional town design is a win-win situation, providing needed development while protecting water quality.”

– James Hackett,
Charleston Harbor Project

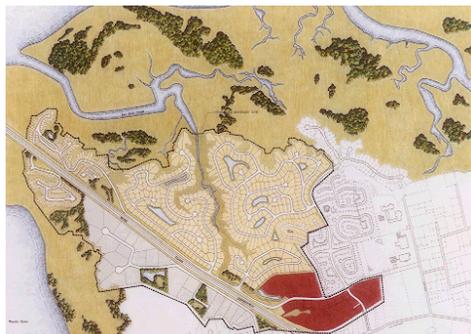
The Belle Hall Study

Sprawl vs. Traditional Town: Environmental Implications

PROJECT DETAILS

Project Area: 600 acres
 Client: Charleston Harbor Project
 NOAA
 SC Coastal Conservation League
 SC Department of Health & Environmental Control
 Town of Mount Pleasant
 Year Designed: 1996
 Website: scdhec.net

For more information, visit doverkohl.com.



Sprawl Scenario



Town Scenario

The Project

The Belle Hall study examined the water-quality impacts of two development alternatives for a hypothetical site in Mount Pleasant, South Carolina. In the "Sprawl Scenario", the property is shown as if developed along a conventional suburban pattern. The "Town Scenario" suggests what Belle Hall might be like if using traditional neighborhood patterns instead. In each scenario, the overall density and intensity (the number of residential units, amount of commercial and so forth) has been held constant, although the building types and lot sizes vary.

The Process

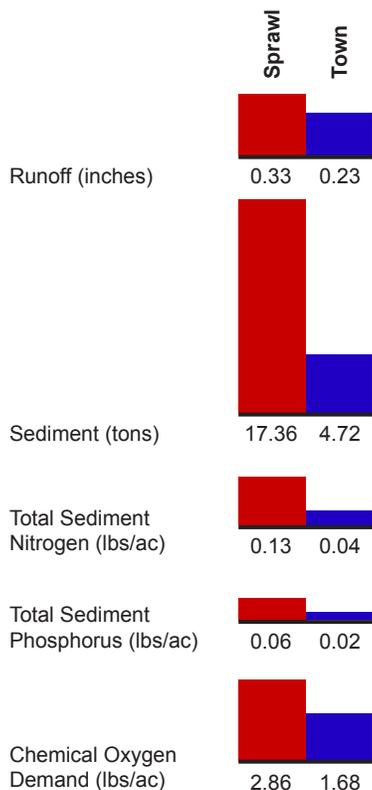
Both scenarios were tested by the Jones Ecological Research Center with assistance from Clemson University. Using advanced water-quality modeling software (based on a modification of the Universal Soil Loss Equation and local hydrology), the research team predicted a number of runoff variables for each development option and analyzed their implications on the Charleston Harbor watershed ecosystem. Variables included the volume of water leaving the site during a storm; the amount of sediment in the runoff, which can alter the ecological balance of a receiving water body; levels of phosphorus and nitrogen, important nutrients that in large amounts can alter the biological balance; and chemical oxygen demand, an indicator of the additional stress runoff can place on surface waters' supply of oxygen.

Findings

The Town Scenario performed better than the Sprawl Scenario across the board. The volume of runoff from the Sprawl Scenario was 43 percent higher than the Town Scenario, while sediment loads were three times higher under the Sprawl Scenario. Other findings, such as nitrogen and phosphorus loadings as well as chemical oxygen demand, were all higher.

Status

The water quality model showed that compact development is best for the watershed. The results have been widely publicized by the EPA and others. Funding for this project was provided by the DHEC/CHP and the National Oceanic and Atmospheric Administration (NOAA)/Office of Coastal Resource Management (OCRM), NOAA Grant-in-Aid Award: NA27-OZ0105.



Sprawl vs. Town

The **Sprawl Scenario** is based on the low-density "pods" and strip shopping centers that have become common to the Lowcountry; it was drawn by a team including engineers, surveyors, and planners who routinely work on similar projects in the area. Typical solutions, environmental constraints, and aerial photos of recent projects were studied to establish conventions. The sprawl scenario complies with current regulations and so-called "best management practices." Particular site conditions are outlined at right. The negative consequences beyond degraded water quality are listed below.

- Loss of wildlife habitat, views, & rural setting;
- Dependence on car trips on the regional road network, resulting in frustrating traffic, but zero viability of transit alternatives;
- Anonymity among neighbors;
- Isolated civic institutions, local business, and deteriorated community pride;
- Far-flung infrastructure, in which delivery of municipal services will be expensive; and
- The prospect that each new phase will make the whole less desirable as the natural scene disappears and problems of growth worsen.

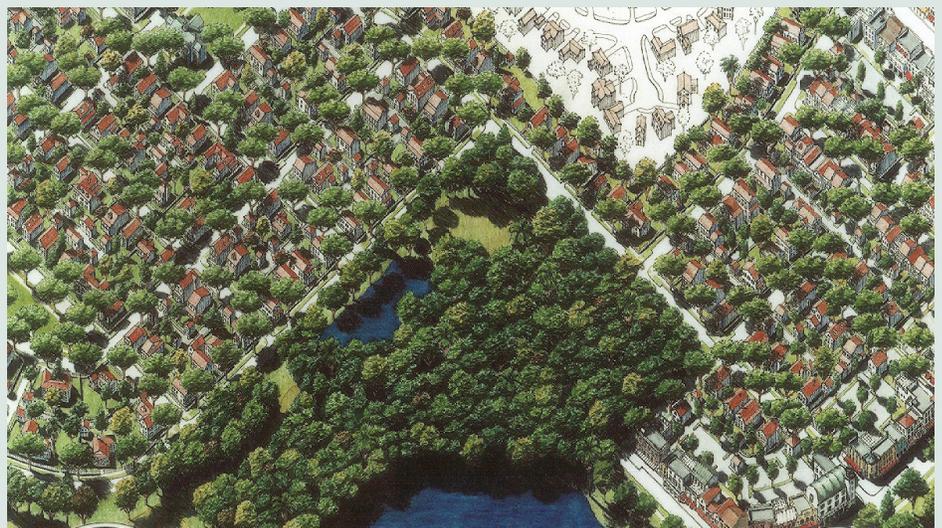


Sprawl Scenario conditions include:

- A dispersed form with no distinct edge, disturbing all but token amounts of land;
- Single-use pods, containing one kind of lot and building type in each;
- One way in and out of each pod;
- Garage doors/ pickup facing the street;
- Large blocks with irregular shapes and culs-de-sac;
- Open space in the leftover land between pods and around regulated wetlands; and
- Strip shopping centers with big box retail and large parking lots, plus outparcels.

The **Town Scenario** is based on design conventions common in North America from the 1600's until the 1940's and are still evident in the Lowcountry, historic Charleston and the Old Village in Mount Pleasant, among other valued settlements. The design was formed by adding new traditional neighborhoods to an adjacent sprawl-type subdivision. The layout maintains the continuity of natural systems, with specific site conditions listed at right. Potential benefits beyond better water quality are detailed below.

- Preservation of wildlife habitat, views, & rural setting;
- Reduction in number /length of car trips on the regional road network, and improved viability of transit;
- Contact with neighbors made easier;
- Reinforced civic institutions, local business, and community pride;
- More sustainable infrastructure, where municipal services are possible at lower cost; and
- The ability to be financed and built gradually, with each phase making the whole picture more complete and desirable.



Town Scenario conditions include:

- A compact form and distinct edge, yielding large, contiguous preserved areas;
- Mixed-use neighborhoods proportioned generally according to 5 minutes' walking distance;
- Interconnected network of narrow and tree-lined streets and small, walkable blocks;
- Alleys and rear garbage pick-up;
- Lots with clear fronts and backs;
- Organized parks, squares, & public spaces, faced by the fronts of buildings;
- Special sites reserved for civic buildings, symbols of community pride and permanence; and
- A Main Street in the town center, with apartments and offices above shopfronts.