# ENVIRONMENTAL IMPACTS OF ALTERNATIVE SYSTEMS OF RESIDENTAL AND COMMERCIAL DEVELOPMENT

A Technical Workshop Sponsored by the Scientific and Technical Advisory Committee (STAC) of the Chesapeake Bay Program

Proposal by L. Joseph Bachman, U.S. Geological Survey, Federal Representative to the STAC

The Chesapeake Bay restoration effort is likely to be shifting its focus from basic pollution control and agricultural best-management practices to facilitation of changes in residential and commercial development patterns. These efforts come not only from the grass roots (see, for example, the Alliance for the Chesapeake Bay's "Listening to the People" survey, *http://www.chesapeakebay.net/C2K/listen.htm*) but also from political leaders. For example, Governor Parris Glendening of Maryland has asserted that

"…sprawl is creating a hidden debt of unfunded infrastructure and services, social dysfunction, urban decay and ***environmental degradation***"

-*http://www.op.state.md.us/smartgrowth/index.html*

Numerous other political interest groups ranging from those interested in architecture and planning to environmental groups have made control of "sprawl" a high priority in their agendas. "Sprawl" can be defined as the phenomenon whereby the amount of land area consumed for human activity has grown faster than the human population, and, presumably, economic activity. This phenomenon has been well documented (*http://www.epa.gov/region03/sdwork/trends.htm*, *http://edcdgs9.cr.usgs.gov/retro/tmap.html*), and long term trends since the end of World War II have revealed a steady decrease of forest land and agricultural land with a concomitant increase of the area of land developed for urban uses. Although the opponents of sprawl focus on the negative economic, aesthetic, and social impacts, as Governor Glendening's comments reveal, the environmental impact of sprawl is also a concern.

Although it makes intuitive sense that as the area of developed land increases, its environmental effects will also be more significant, scientific work documenting those impacts is still in the early stages and has not yet been collected and synthesized. Negative environmental impacts of sprawl can be hypothesized:

- Decreased air quality due to disproportionate increase in motor vehicle use
- Higher flood peaks due to disproportionate increase in impervious area
- Degraded water quality due to increases in non-point source runoff

In particular from the point of view of the Chesapeake Bay restoration effort, if these hypotheses are true, as the developed area increases, more of the Bay's watershed is affected, a greater percentage of the Bay's watershed is degraded, and the living resources of the Bay ecosystem are further jeopardized.

We propose a STAC-sponsored workshop to present and synthesize the current scientific understanding of the relations between environmental quality and the patterns of residential and commercial development. The participants of this workshop, many of whom will be scientists studying this issue will provide the most up-to-date answer to the question, ***"Sprawl? Does it have negative environmental effects? What kind of negative environmental effects?"***

**Suggested participants:**

Scientists who are or have conducted research on the relation between development patterns and environmental quality,
Scientists who might be interested in doing such work and would like to get ideas and network with like-mined colleagues, and
Technically-oriented environmental program managers who would like to learn the current scientific understanding of this issue.

**Suggested format**

A two-day workshop. After a short plenary session with a keynote speaker to provide perspective on the issues to be discussed, short presentations will be made by invited researchers. Additional contributed research can be presented at a poster session made available to participants at breaks, or a post-session "happy hour."

For the second day, workshop participants will discuss the major research finds, synthesize the results with particular attention to their relevance to environmental management and policy, and discuss desirable future directions of research.

If the number of participants is too large to have this discussion as one group, then break-out sessions should be considered, but it would be desirable to have these groups be interdisciplinary and cover the same topics.

**Product**

The product would be a Web-based report on the STAC website. STAC content would consist of a report of the workshop, and recommendations presented by the participants with hypertext links to the work of the invited and contributed research presentations. (The content of the research presentations would thus be the responsibility of the researchers.) The workshop organizers will also present the finding to the relevant committees and technical subcommittees of the Chesapeake Bay Program.