



# Understanding Watershed Behavior

*In short, twenty centuries of progress have brought the average citizen a vote, a national anthem, a Ford, a bank account, and a high opinion of himself, but not the capacity to live in high density without befouling and denuding his environment...Nor a conviction that such capacity, rather than such density, is the true test of whether he is civilized. Aldo Leopold (1933), Game Management*

Since Leopold wrote these words in 1933, over 50 million new households have formed in America. By conservative estimates, we have added 45 million yards, 125 million cars and trucks, 15 million septic systems, and 25 million dogs during the last half century. In his time, Aldo Leopold imagined that the foremost practitioner of the land ethic would be the farmer, the game warden or perhaps the woodlot owner. He simply could not have envisioned that the most important practitioner would ultimately become the suburban and rural landowner, who individually lords over a few hundred square feet, but cumulatively dominates the watershed.

It is a maxim of watershed science that each of us is personally responsible for contributing some of the pollutants that run off our lawns, streets and parking lots. Runoff pollution is the major cause of water quality problems in most urban watersheds. While runoff pollution is not usually sudden or dramatic, it leads to the gradual degradation of urban waters — degraded streams, eutrophic lakes, closed beaches and shellfish beds, and polluted drinking water supplies.

It is a curious tendency of our species, however, that when we study urban watersheds, we rarely study ourselves, despite the fact that these watersheds are our primary habitat. We seldom take the trouble to measure the cumulative impact of our individual behaviors on the watershed. In this article, we summarize our sketchy understanding of human behaviors in suburban and rural watersheds, based on an analysis of over twenty recent surveys of watershed residents. These surveys asked residents about their basic behaviors in six broad areas: lawn fertilization, pesticide application, dog walking, septic cleaning, car washing, and fluid changing. Prior research indicates that each of these behaviors are common in most watersheds and can have a strong impact on water quality.

Our early experience in trying to restore urban watersheds suggests that we can never meet our water quality goals for streams, lakes and estuaries until we can convince urban, suburban and rural landowners to change their behaviors and practice a better watershed ethic. Such a watershed ethic is critical if we are to protect or improve the quality of our urban watersheds. The article concludes by outlining some of the possible elements of a watershed ethic that might guide the actions of suburban and rural landowners.

The six watershed behaviors profiled in this article are not the only ones that can have a strong influence on watershed quality, but they are the ones we happen to know the most about. Other individual behaviors that can influence water quality are listed in Table 1.

The frequency of any individual behavior can differ from watershed to watershed, based on population density and the level of income, education, and awareness of its residents. What is particularly troubling, however, is that many of the most potentially polluting behaviors are practiced by affluent, well-educated and environmentally aware members of our society. These behaviors are rooted in our collective desire for a clean, well-manicured and tidy suburban environment — a nice green lawn, a shiny car, a pest-free yard or a clean driveway. Indeed, many watershed behaviors have become worse in recent years, driven by the rapid growth in the tools and products to improve and beautify the suburban landscape.

## Lawn Fertilization

It has been estimated that there are 25 to 30 million acres of turf and lawn in the United States (Robert and

**Table 1: Other Key Individual and Household Behaviors that Potentially Influence Watersheds**

- Leaf Disposal/Composting
- Disposal of Household Hazard Wastes
- Hosing and Power-washing
- Landscaping Practices
- Car Emissions Testing
- De-icing
- Watering/Irrigation
- Sidewalk/Driveway Sweeping
- Maintenance of Common Stormwater Facilities and Conservation Areas