

## Ecological Pavement System Solutions and Smart Growth

“Paving Our Way to Water Shortages” is a topic addressed by Smart Growth USA, American Rivers, and NRDC (Natural Resources Defense Council) that resulted in a summary from investigations they conducted to better supply an answer to, “Where has all the water gone?” The perception that water shortages (drought) are caused mainly by erratic weather patterns and population growth (sprawl) are not looking at the bigger picture—the encroachment of suburbia, paving, rooftops and other impervious surfaces that gobble up wetlands, forests and other pervious areas that promote groundwater recharge. This reduction in pervious surfaces is a major reason that we are depleting our water resources.

In addition, these hard areas of pavement increase pollutant runoff to our streams, lakes and waterways where they degrade the quality of life issues for marine animal life and aquatic plants. The toxic fumes, released by this increase in traffic using these pavements, pollute the air we and other surface creatures need to breathe in order to survive. There also is a reduction in our ability to supply and regenerate quality water by the sprawl of man with this hard covering of America.

The loss of farmland, forests, and other natural features diminish our ability to capture and treat stormwater runoff which will promote groundwater recharge, a practice by Nature to replenish aquifers and other water source areas where we draw our drinking water. Wetlands are an example where stormwater is absorbed, pollutants removed and water slowly seeps back into the ground where the final filtration and cleansing occurs. Our current rate of population forecasted by National Geographic will increase by 63 million people by 2025. Our current rate of sprawl is claiming over 2,000 million acres a year and by 2025 will have chewed up over 30,000 million acres of cropland, forests and wetlands further reducing our water supply sources.

The study by these groups identified 20 metro areas from Atlanta to Washington D.C. and computed 1982 rainfall amounts, soils and impervious areas to arrive at the amount of rain water that would runoff the lands and compared these amounts to similar conditions for 1997. These increases were well over 130% amounting to billions and billions of gallons lost and were

not available for infiltration. In Atlanta alone, the lost water for 1997 was enough to supply the daily household needs of 1.5 million to 3.6 million people per year. You may refer to [www.smartgrowthusa.com](http://www.smartgrowthusa.com) for additional information.

There are means to reduce this loss and better protect our natural resources and we join these and other groups to help promote a more ecological solution to urban sprawl. Urbanization will be better served by promoting and investing in our core development of cities and existing suburbs and protecting our farmlands and forests with “LID” methods. Improving community’s assets, encouraging growth where people already live and work, minimizing impervious pavements or structures that increase infrastructure that increase runoff as well as, utilizing stormwater post-structural BMP’s that promote the features of a site to minimize runoff from that site are but a few strategies to achieve a more plentiful source of quality water. Utilizing permeable pavement systems as an integral piece of a treatment train will provide a viable solution to a more natural method for stormwater management. This process may also be used to improve air quality by using photocatalytic cements to reduce nitrous oxides (smog). We also will find that as a 50 year pavement design, will reduce maintenance and replacement costs for municipalities and as a result will reduce the energy costs associated with pavement construction and provide a superior life-cycle cost for the community.

We would encourage policymakers, planners and other community groups to adopt smart-growth methods that will help address water shortage issues for their region. We believe that the quality of life issues are vital to the development of a prosperous community. We also believe that water will be the next oil and with that thought, we would encourage you to get involved and help make our world a better place to live, work and play.