

## Major changes in managing growth, agriculture needed to save Bay

Forum / By Gerald W Winegrad

As reported in the May *Bay Journal*, recent authoritative reports tell a sad tale of the Bay's health and likely failure to meet agreed upon water quality goals by 2010: "However one looked at the reports," the article stated, "the bottom line remained the same: the Chesapeake is in dismal shape." (See "*No matter how one looks at it, the Bay's health fails to make the grade.*")

These reports continue to paint a dismal picture despite 23 years of efforts under the Chesapeake Bay Program partnership. Progress in reducing the flows of key Bay pollutants-nitrogen, phosphorus and sediments-has been made but is far short of meeting water quality and restoration goals agreed upon in the Chesapeake 2000 agreement. According to one knowledgeable Bay Program veteran, "With current funding and existing infrastructure, the Bay watershed jurisdictions are decades away from achieving their tributary strategies, reaching their cap load goals and restoring their rivers and the Bay."

As I was writing this, the *Washington Post* editorialized, "the states that contribute most to bay pollution are far from reaching their pollution reduction targets, and bay ecosystems continue to verge on collapse. The nonprofit Chesapeake Bay Foundation calculated that even if the bay states carry out cleanup initiatives already on the books, they will reduce annual pollution by only 40 percent of their goal for 2010."

The Bay Program's 2006 Health and Restoration Assessment shows little evidence of a long-term trend in nitrogen and phosphorus levels in the Bay or toward meeting key water quality measurements necessary to remove the Bay from the Clean Water Act's list of impaired waters.

Further, the report shows that contaminant levels in 53 percent of monitored Bay rivers still cause fish consumption advisories and mercury-contaminated rockfish exist throughout the Chesapeake. Bay grasses, essential to restoration and for crabs and fish, declined 25 percent in 2006, and reached only 59,090 acres of the 185,000 acre goal. Oyster populations remain at about 1 percent of 1880s levels and have reached only 9 percent of the tenfold increase agreed upon.

A separate report by a team of scientists rated the Bay's health at 37 out of 100, a grade of D+. No matter how one scores it, the Bay is still in trouble.

To restore the Bay and its living resources and meet water quality goals, two things must occur:

1. Population growth and related sprawl development will have to be much better controlled and a goal of no net loss of forest land needs to be established and implemented; and

2. Mandatory nutrient management and other nutrient and sediment pollution controls will need to be implemented on the vast majority of Bay watershed farmland.

While these are very difficult tasks and require a change in the way we do business, anything short of these changes spells disaster for the Chesapeake and its living resources.

### **Managing Population Growth and Sprawl Development**

Substantial population growth and sprawl development in the Bay watershed has impeded recovery. Population has grown by nearly 4 million since the Bay Program was established in 1983 to the present 16.9 million. (It was 8.1 million in 1950.) More than 170,000 people a year were added from 2000-2005 and 3 million more people are projected by 2030.

This population is sprawling, consuming more land per capita. As the average household size decreased during the last 30 years, the average home size has increased by 50 percent and lot size increased by 60 percent.

From 1990 to 2000, the population grew by 8 percent but impervious surfaces grew by 41 percent (611,017 to 860,004 acres). At this rate, an additional 250,000 acres will become impervious by 2010-more than twice the area of Shenandoah National Park.

Several counties in Virginia and Maryland are among the fastest growing in the nation while many municipalities lose population even as state populations grow. In 1950, Baltimore was home to 41 percent of Maryland's population with 949,708 people; it now has 635,815 or 11 percent of the state's population. State and local policies are bleeding our cities and draining our coffers. In addition, the recommendations from the military's Base Realignment and Closure Commission will bring 60,000 new jobs and 28,000 new households to Maryland.

Smart Growth is not working well, even in Maryland: 75 percent of the land on which new homes were built from 1998-2005 was outside the Priority Funding Areas designated for growth. The average amount of land used by each home built inside growth zones has crept upward. The Eastern Shore will add 160,000 new residents and lose an additional 215,000 acres of farm and forest by 2030 if trends continue.

Especially problematic is the loss of forests. In 1607, watershed land was 95 percent forested, covered with trees that were more diverse, taller and thicker than today, providing immense water quality benefits. The Bay watershed is now about 58 percent forested, but today's forests are under increasing development threats and are fragmented, parcelized and subject to overbrowsing by overabundant deer.

The *State of Chesapeake Forests* report (2006) documents an alarming loss of Bay forests, as development eats away at this crucial natural pollution filter. The report found

that 750,000 acres of forest were converted to development in the watershed from 1982-1997, 140 acres a day. The report notes: "If current trends continue, 9.5 million acres of Chesapeake forests will likely be converted to residential development by 2030." This is more than a third of the Bay region's forest.

Forests are the most beneficial land use for absorbing nutrients and holding sediment, absorbing nearly 90 percent of the nitrogen falling from air pollution. Reducing forest area in a watershed by 10 percent leads to as much as a 40 percent increase in nitrogen loads to the Bay.

We cannot meet Bay goals with current population and development levels while losing forest lands. We must change development patterns through land use legislation and separately establish a no net loss goal for remaining forest lands. And we must fulfill the commitment to plant 10,000 miles of riparian forest buffers by 2010. Only 53 percent of this goal has been met.

The *Chesapeake Forests* report goes further. It says only 60 percent of the Bay's streams and rivers have riparian forest buffers and that at least 30,000 more miles of forest buffers are needed for the Bay's restoration.

Current efforts and funding are concentrated on preserving farm land, forcing too much development onto forest land with severe consequences for Bay water quality. As 80 percent of Bay forests are in private ownership, and 40 percent of forests are on farms, we need to focus efforts on preserving and enhancing forest lands, especially riparian forests.

The *State of Chesapeake Forests* notes that 213,000 acres of forest lands in the Bay watershed were converted to agriculture from 1982 to 1997, while 889,000 reverted out of agricultural production to forest. The assumption in preserving agricultural land has been that once agricultural land goes out of production, the land is developed. While agricultural land conversion to developed uses is rampant, the net reversion of 676,000 acres of agricultural lands to forest has very important Bay water quality benefits.

The states and local governments must focus on adopting comprehensive growth management laws and revising land use laws to protect forests, limit impervious surfaces, and retrofit stormwater management systems for better pollution control through stormwater utilities. State tributary strategies call for 32 percent of phosphorus reductions and 18 percent of nitrogen reductions from urban/suburban runoff improvements. This runoff is the only pollution source still increasing-retrofitting such areas is expensive and is impossible without a significant amount of new funding.

An impervious surface fee on existing and newly developed lands is the most logical funding source. Assuring new development does no harm to the Bay with stringent stormwater management requirements and impervious surface limits is also essential.

Without these measures to control development and protect forests, the Bay will worsen, not improve.

### **Managing Agriculture**

The most cost-effective method for reducing pollution to the Bay is controlling agricultural runoff by implementing practices such as enhanced nutrient management, cover crops, soil conservation, buffer strips, manure management and changes in feed. Agriculture, primarily through animal manure and commercial fertilizer, contributes more Bay nutrients and sediment than any other source-including 42 percent of the nitrogen, 45 percent of the phosphorus and 62 percent of the sediment. Cropland, on average, delivers more nitrogen and phosphorus to the Bay than developed land. Despite the expenditure of hundreds of millions of dollars in mostly voluntary programs, the agricultural sector has achieved only 45 percent of its nitrogen, 49 percent of its phosphorus and 43 percent of its sediment reduction goals. These reductions are probably overstated.

Wastewater treatment plants, in comparison, have met 72 percent of their nitrogen and 87 percent of their phosphorus reduction goals despite population growth and increased hookups. Further significant reductions will come from enhanced nutrient reduction at all 66 large plants in Maryland funded by its "flush tax," by major funding provided in Virginia and by efforts in other states.

The EPA suggests that only 30-40 percent of Bay farmland is operating under sound nutrient management and other best management practices. To achieve the agreed upon nutrient and sediment reductions, the farm acreage under proper pollution management would have to exceed 90 percent. Achieving this cannot be accomplished under the current, largely voluntary, efforts. There are 87,000 farms in the Bay region covering 22 percent of the land mass or 8.6 million acres.

Yes, we want to continue to keep agriculture vibrant and to prevent farm fields under proper nutrient management from being developed.

But farms, like other sources of pollutants, must implement cost-effective BMPs to substantially reduce pollutants if we are to restore the Bay. All grants to agriculture for BMPs and to preserve agriculture land should come with requirements for full implementation of stringent and cost-effective nutrient management measures. Some agricultural land preservation funding should be redirected to preserving farm forests as these provide incredibly efficient natural controls of nutrients and sediments.

There is no disagreement on the need to subsidize farmers to implement conservation practices. Since 1983, federal agencies and the states have provided Bay farmers with hundreds of millions of dollars. A legislative subcommittee I chaired in 1981 developed the Maryland Agricultural Water Quality Cost Share Program that has now provided more than \$109 million to farmers to implement BMPs on 21,000 projects. Farm BMPs are also a good investment. Bay Program data clearly indicate that most of the agreed

upon pollution reductions under the Chesapeake 2000 agreement can come from agriculture at much less cost than from any other source: 64 percent of the nitrogen reductions called for in state tributary strategies would come from agricultural lands at 13 percent of the costs of attaining the nitrogen reduction goal.

A 2004 analysis by the Chesapeake Bay Commission concluded that five of the six most cost-effective measures to restore the Bay involved agriculture. The sixth was nutrient removal at sewage treatment plants. Implementation of all these recommendations Baywide would achieve 78 percent of the nitrogen reduction, 75 percent of the phosphorus, and 100 percent of the sediment at a fraction of previously projected costs for Bay restoration. But, these practices would have to be implemented on nearly all applicable farm land, an impossible task without mandatory requirements.

With only carrots and no sticks, agricultural nutrients and sediment reductions will lag far behind the goals set for the Bay's restoration. The states and federal agencies should increase funding for nutrient and sediment reductions from agricultural lands-but this must be accompanied by effective legislation requiring farm plans that require proper nutrient management actions.

Unfortunately, some laws on the books are not adequately enforced.

In 1998, after what was believed to be an outbreak of pfiesteria thought to be linked to farm nutrients and chicken manure, Maryland enacted requirements for the adoption of nutrient management plans on 5,000 farms. According to a master's thesis by a Massachusetts Institute of Technology graduate student, this law has been all but eviscerated and: "Today, fully seven years after Maryland first adopted mandatory nutrient management regulations, the state has largely failed to implement the Water Quality Improvement Act. In effect, Maryland continues to operate under a system of voluntary compliance with the regulations."

Voluntary efforts have not worked for global warming, at wastewater treatment plants, for phosphates in detergents or for other pollution reductions. It should be clear by now that the Bay's water quality cannot improve substantially without mandatory requirements for BMPs on agricultural land. Human health also is at stake as the U.S. Geological Survey data show that one-third of Delmarva's shallow wells had nitrate levels exceeding EPA drinking water standards.

## **Conclusion**

At this critical juncture in the Bay's restoration, I hope we can be bold enough to fully address the problems outlined above. We have done almost all of the easy things, and now the toughest jobs remain. Maryland's flush tax was a bold stroke and will do much to reduce nitrogen and phosphorus from sewerage treatment plants. We need bold counterparts for dealing with land abuse and sprawl, for protecting remaining forest lands, and for mandatory agricultural land pollution reductions with funding support.

Unless we are prepared to accept a continuously declining Chesapeake Bay and the loss of our natural heritage, these difficult measures must be adopted- and soon.

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