



CHESAPEAKE ENVIRONMENTAL PROTECTION ASSOCIATION, INC.
P.O. Box 117, Galesville, Maryland 20765

NEWSLETTER

Spring 2011

PRESIDENT'S MESSAGE

By Al Tucker, President, 2011



TMDLs represent the last hope for saving the Bay. The concept is extremely simple; just limit the amount of nutrients and sediment flowing into the Bay each day to the amount that the Bay can consume naturally and the Bay will recover to a more natural habitat for all, aquatic life, fish, and people. Unfortunately that is the

limit of its simplicity. Various nutrients are not distributed uniformly throughout the watershed, nor are they generated uniformly by similar activities of people within the region. The plan for the Bay relies on the basis of the Clean Water Act, namely to identify point sources and limit their discharge into the waterways. The distinction between point sources and non-point sources of nutrients and sediment further compounds the difficulty of identifying and restricting harmful activities. Quite literally, every tributary will have to be examined for point and non-point sources; it will require paid staff and tributary volunteers to collect data and ancillary information. Recommendations and actions will have to be taken. In fact, many jurisdictions have begun to develop rules and detailed plans. To ordinary citizens these plans will appear complex and people will not feel connected or committed to the process. Those whose livelihoods will be impacted the most, namely farmers and developers, will resist the necessity to change. Within each tributary watershed there will be people who will be more significantly impacted than others and will feel that they were assigned a disproportionate share of the restrictions. Perceptions will control the debate on cleaning up the Bay. The American Farm Bureau has filed suit against the EPA, based on a technicality; yet, their motivation is the perception of an unfair economic burden being placed on farmers.

The undoing of a shared responsibility happens when stakeholders perceive an unfair distribution of economic burden. When one examines it from different perspectives, it is easy to see how these different opinions emerge.

Let's examine agricultural activity. It constitutes about 40% of the nutrient problem. Farmers constitute about 1/2% of the watershed's 17 million people with 82% of those having family farms. Farms occupy about 25% of the land in the Bay's 44 million acre watershed. Of the 11 million acres of

crop and pastureland, there are 8 million working acres of which only 4 million acres have the highest potential for leaching and runoff. From an economic viewpoint, agriculture in Maryland constitutes about 3% of our income, averaging only about \$14,000 per farm in 2010. (I think it is fair to say that the majority of farmers in Maryland must rely on second/off-farm incomes.) These data imply that corporate and large farms control most of the agricultural economy in Maryland. The conclusion one draws is that a disproportionately small number of individuals control the agricultural economy. However, the majority of farmers are not in that group, and they perceive that economic burdens will be placed on them.

Let's take a look at the urban/suburban view. In these areas, about 99.5% of the population lives on 12% of the land. Within these areas of the watershed the population continues to grow at the rate of 130,000 per year. The average resident earns about \$40,000. All told, urbanites and suburbanites contribute 60% of the nutrient problem. Nitrogen emissions from cars and power plants deposit 30% of the nitrogen load to the bay. In many watersheds, it is not agriculture but development that dominates; there the primary sources of nutrients and sediment are sewerage and stormwater runoff. Yes, many sewer treatment plants are being upgraded; however, the present economic conditions continue to delay these maintenance and upgrade issues. Even in the good economic times most counties could not afford to fix all their stormwater problems. In general, the average urban/suburban resident is not tied directly to the costs of mitigating nutrient and sediment pollution. With all the activity of state and local governments in developing regulations, the average resident may feel that their leaders are taking care of them. The reality is that there exists a vacuum of political willpower and leadership to tell their constituents this truth; it will cost significant amounts of time and money not to restore the Bay, but just to save it!

If 99.5% of the people are complacent, then a small minority of individuals will exploit this perception of unfairness to their advantage. We must create an atmosphere where we understand that we all must cooperate and share responsibility. Those who have the economic advantage should bear their proportionate share

CEPA's Annual Forum
TMDLs: What a Concerned Citizen Should Know
Will be rescheduled for early Fall 2011

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WAS YOUR MEMBERSHIP APPLICATION “RETURNED TO SENDER?”

A few of our letters, including membership applications were “returned to sender” by the Galesville Post Office. It was a lapse on our part, and we apologize for any inconvenience. We urge those who got their mail returned to re-send it.

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WEST/RHODE RIVERKEEPER’S REPORT

By Chris Trumbauer
www.westrhoderiverkeeper.org

A Missed Opportunity

Co-authored with Erik Michelsen, Executive Director, South River Federation



At the beginning of the 2011 Maryland General Assembly session, many of us in the environmental community believed we were poised to make significant progress in the epic struggle to clean up the Chesapeake Bay. After last year’s legislative session, in which we were frequently told to “wait until after the elections,” we watched as candidates from both major parties fought over who could position themselves to be more “green” in the 2010 elections. So, despite the difficult economy, we felt this year’s legislative session presented a perfect opportunity to show Maryland’s commitment to getting serious about the recovery of the Chesapeake Bay.

Several other factors contributed to the feeling that now was the time for change. In December 2010, the Maryland Department of the Environment submitted a Watershed Implementation Plan (WIP) to the US Environmental Protection Agency (EPA) laying out an ambitious plan for how Maryland would achieve Chesapeake Bay clean-up within Governor O’Malley’s accelerated 2020 timeframe. Following this, in early 2011, the EPA handed down its new “pollution diet”, a series of Total Maximum Daily Loads (TMDLs) for pollution into our waterways, establishing enforceable limits for sediment, nitrogen, and phosphorus.. These two initiatives represent the roadmap that will allow the Bay to recover.

Surely, given their professed support for the Chesapeake and its waterways, the fact that the elections were over and

the increasing costs of delaying clean-up, our legislators would take tangible steps to clean up the Bay in 2011, right?

Wrong. Nearly every major environmental policy initiative that was put forward in the 2011 legislative session died. Like a school of menhaden trapped in a dead zone, these initiatives were caught gasping for air in committee and ultimately did not survive. Attempts to keep wastewater treatment plant upgrades on schedule and solvent, as well as requiring local governments to begin getting serious about their multi-billion dollar stormwater backlogs were shelved before they even saw the light of day. And, even though it had the vigorous support of Governor O’Malley, a plan to require new major subdivisions to use the best available technology to treat its wastewater faltered mid-session, the victim of a concerted push by the development industry.

Even an effort to place a 5-cent per bag fee on single-use bags, a proven model which has been successful in Washington, D.C., was killed in committee in both the House and Senate, thanks in part to a late push by lobbyists for the American Chemistry Council. In D.C., this policy has resulted in an 80% reduction in bags purchased by retailers and 66% fewer bags found in clean-ups of the Anacostia and Potomac Rivers. The Maryland bill, in addition to reducing trash in our waterways, would have reduced expenses for retailers and consumers by unclocking a hidden cost we all pay. After all, “free” bags aren’t actually free.

Protections against the impacts of drilling for natural gas in Marcellus Shale, reducing arsenic in chicken feed, and several renewable energy initiatives also went down in flames. And, as if adding insult to injury, a bill that significantly weakens the State’s Renewable Energy Portfolio standard by adding in garbage incineration, passed. The only significant legislation to pass with potential to improve water quality was a bill which reduces pollutants in lawn fertilizer.

The environmental community doesn’t live in a vacuum. We are aware of the incredible economic hardship facing our state. Legislators, rightly so, were consumed with a budget in which there just wasn’t enough money to go around, but thankfully, attempts at permanent cuts to Program Open Space and the Chesapeake Bay Trust Fund were defeated.

In 2011, the legislators may have found a way to once again balance the budget, but they also once again put off taking action to give Marylanders what they consistently demand: A clean and healthy Chesapeake Bay. Inaction never pays. The longer we wait, the harder it will be to restore the Bay, and the more it will cost. Well, there’s always next year...

HEAVY SPRING SHOWERS BRING FLOODS AND SEDIMENT TO THE BAY



Conowingo Dam

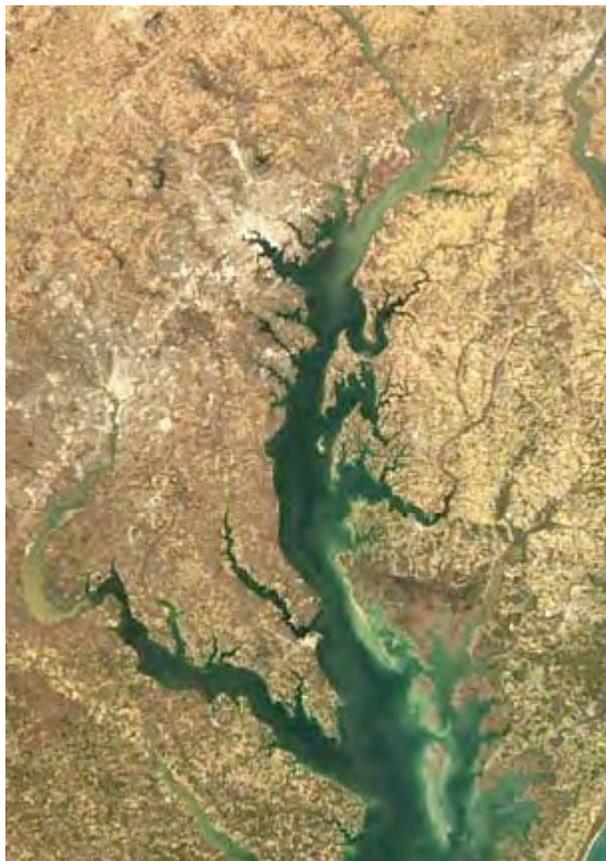
In the last newsletter, we discussed the dangers associated with the sediment behind the dams in the Susquehanna River, particularly the Conowingo Dam. This Spring we have seen just a sample of what can happen in

severe storms. The information below is taken from <http://mddnr.chesapeakebay.net/eyesonthebay/documents/HavySpringShowersBringFloodsToChesapeakeBay.pdf>

Over the past two years, early March runoff into the Susquehanna River watershed from heavy rains and snowmelt has brought a flood of nutrients and sediment-laden freshwater flowing into Chesapeake Bay. This heavy Spring runoff has resulted in record low water clarity for the month of March in many areas of Maryland's portion of the Chesapeake Bay. This results in less underwater grasses and an increase in algal blooms.

On March 12, 2011, two days after a very heavy rain event (2+ inches) across the region, US Geological Survey (USGS) recorded a peak "flow" of 485,000 cubic feet/second ('cfs') from the Susquehanna River at Conowingo Dam. Average monthly flows at that site in March are about 75,000 cfs. To put this into another perspective, this discharge would fill the Baltimore Raven's NFL stadium every 68 seconds). This is the highest average daily flow rate observed at the dam since floodwaters from Tropical Storm Ivan passed in September 2004 (545,000 cfs).

Satellite images of the upper Chesapeake Bay in March 2011 show the dramatic impact of heavy rains. The first image (March 1, 2011) shows typical Chesapeake Bay conditions in early spring after several light rain events (about one-half inch) across the region. Low turbidity (good water clarity) is observed with naturally higher turbidity levels in the upper Bay and Potomac River. Aquatic grasses in Susquehanna Flats are visible as a dark patch.



The second image (March 17th) shows an extensive plume of turbid, nutrient-rich waters extending down Bay tributaries and down Chesapeake Bay after the heavy, regional rains exceeding 2 inches.

The magnitude of these turbid plumes of suspended sediment have been documented by the State of Maryland water quality monitoring efforts in terms of water clarity, which is measured as the depth that a black and white disk (Secchi disk) lowered into the water disappears. A review of 26 years of water clarity data shows depths in the Bay and many tributaries in March 2011 are below historic measures or set new historic lows.

On the surface, there is a change in color – observers will have seen the light brown water, obviously a change from the usual dark or olive color. But below the surface, impacts on water quality and the plant and animal community can be significant and long-lasting. This late winter/early spring season is a critical period for many aquatic species such as underwater grasses, which are beginning to grow, and many types of fish which are beginning to spawn. Heavier suspended sediments in this storm runoff begin to settle to the bottom in the Bay. This layer of new sediment may smother some bottom-dwelling animals and cover valuable spawning sites and habitat. Lighter sediments will remain suspended longer and reduce the amount of light necessary for growth of underwater grasses.

This storm runoff also contains nutrients (nitrogen and phosphorus) carried from lawns, fields, forests, parking lots and roads, as well as from overflowing sewers and flooded septic systems, into streams and rivers. Some nutrients will settle to the bottom of the Bay, while others may remain suspended in the water, providing fuel for growing algae that

may include species harmful to fish, wildlife, pets, or even people. Early season algal blooms may lead to early onset of dead-zones in the Bay's deeper waters - areas with low or no dissolved oxygen from late spring to early fall. In these areas, animals that can move (e.g. fish, crabs) can leave the areas while those that cannot move (e.g., oysters, clams) die.

Through its comprehensive Chesapeake Bay monitoring programs to determine how the impact of our Bay restoration are changing water quality and aquatic resources in the Bay, Maryland DNR will also be assessing the short- and long-term impacts of this storm on the health of the Bay's water, habitat and its living resources.

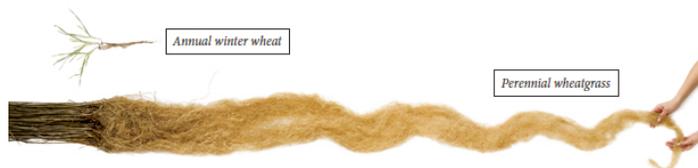
The State of Maryland has also agreed, in May 2009, to aggressive 2-year milestones for assuring accountability in limiting nutrients and sediments entering the Bay. The major actions include:

- Plant cover crops (to reduce polluted runoff from farms)
- Reduce polluted runoff from urban areas
- Restore natural filters (to reduce polluted runoff)
- Conserve high priority lands

So, what will the heavy rains of March bring to the Bay this year? In the short-term, the Bay waters will be more turbid than usual. As far as long-term impacts to the Bay's waters and its inhabitants, only time will tell.

ENVIRONMENTAL BENEFITS OF PERENNIAL GRAINS

Most of the following article is taken from the April 2011 issue of National Geographic. It discusses several important environmental benefits of growing perennial wheat, rice, corn, etc. These are the same benefits that could, in a few years, greatly reduce the amount of pollution entering the Bay from the Susquehanna River, especially during storms as described in the previous article.



Virtually all of the grains grown worldwide today are annual grains. But perennial grains have vastly larger root systems, as shown in the photo, and are much more efficient with respect to irrigation and fertilizer, and they reduce soil erosion to a fraction of that with annuals.

The reason we grow annual crops is that ten thousand years ago, we humans chose to use annuals when we started cultivating food crops. Each year the plants sprout from seeds, produce new seeds, and die. While annuals were not necessarily better at that time, it was easier to improve annual crops if you could choose the seeds from the best plants each year. Perennials couldn't compete.

But according to www.issues.org/26.2/glover.html (written by Jerry Glover and John Reganold), advances in plant breeding techniques, with names such as marker-assisted selection, genomic in situ hybridization, transgenic technologies, embryo rescue, and cheap DNA sequencing are allowing plant breeders to work much faster than they could before. These, coupled with traditional breeding

techniques, make the development of competitive perennial grain crops possible in the next 10 to 20 years. Part of this development involves "wide hybridization," in which breeders cross an annual grain with one of its wild perennial relatives. Ten of the 13 most widely grown grain and oilseed crops are capable of hybridization with perennial relatives.

Wes Jackson, co-founder and president of the Land Institute in Salina, Kansas, has promoted the development of perennial grains for decades. Research in this area has never had much money behind it, but some work has been done in the U.S., China, Australia, and Sweden, most of it in the last 10 years. In the U.S., the funding has come from USDA and NSF. Plant breeders in Salina and elsewhere are now crossing modern grains with wild perennial relatives and also trying to domesticate the wild plants directly. Either way the goal is the same -- crops that tap the main advantage of perennials—deep, dense root systems that fuel the plants' rebirth each spring and make them much more resilient and resource efficient without sacrificing too much of the grain yield that has been bred into annuals.

Jerry Glover of the Land Institute says we pay a steep price for our reliance on the high yields and shallow roots we now get from annuals. Because they mostly tap into only the top foot or so of soil, that layer gets depleted, forcing farmers to rely on large amounts of fertilizers to maintain high yields. Often less than half the fertilizer in the Midwest gets taken up by crops; much of it washes into the Gulf of Mexico, where it fertilizes algae blooms that cause a vast dead zone around the mouth of the Mississippi. Annuals also promote heavy use of pesticides and tillage because they leave the ground bare much of the year, and that allows weeds to invade.

Most damaging, leaving the ground bare after harvest and plowing it in planting season erodes the soil. No-till farming and other conservation practices have reduced the rate of soil loss in the U.S. by more than 40 percent since the 1980s, but it's still around 1.7 billion tons a year. Worldwide, one estimate put the rate of soil erosion from plowed fields at ten to a hundred times the rate of soil production. "Unless this disease is checked, the human race will wilt like any other crop," Jackson wrote 30 years ago. As growing populations force farmers in poor countries onto steeper, erodible slopes, the "disease" worsens.

Perennial grains would help with all these problems. They would keep the ground covered, reducing erosion and the need for pesticides, and their deep roots would stabilize the soil and make the grains more suitable for marginal lands. "Perennials capture water and nutrients 10 or 12 feet down in the soil, 11 months of the year," Glover says. The deep roots and ground cover would also hold on to fertilizer, reducing the cost to the farmer as well as to the environment. Perennials have longer growing seasons, are friendlier to wildlife, and require less work (saves fuel).

One disadvantage is that it would give farmers less flexibility in changing their crops as the market or conditions dictate.

The perennial wheat-wheatgrass hybrid now growing at the Land Institute can already be made into flour. Yields are too low to compete with annual wheat in Kansas—but maybe not in Nepal, which has steeper slopes and a harsher climate, and where a researcher is now testing perennial hybrids.

Much of the success of modern intensive agricultural production relies on cheap energy, a relatively stable climate, and the public's willingness to tolerate widespread environmental damage. As energy prices increase and the costs of environmental degradation are increasingly appreciated, the value of perennial grains will become more obvious.

Glover and Reganold advocate a research program that would cost about one thousandth of the present farm bill. It would also be a small fraction of what is being spent on biofuel development, and may potentially be even more beneficial.

PROFILE OF A TRUSTEE

Richard Dunn



CEPA is pleased to announce that Richard Dunn has recently been elected to the Board of Trustees.

Rick got his B.A. cum laude from University of New Hampshire in 1966 (Distinguished Military Graduate), his J.D. from University of Maryland in 1969, and his LL.M. with Highest Honors from George Washington University in 1976.

From 1970 to 1979 he served as a Judge Advocate in the United States Air Force in the United States and in Turkey. His awards include the Air Force Meritorious Service Medal. He was active in the Air Force Reserve and Air National Guard until 1991.

From 1979 to 1980 he was in private practice with the Washington law firm of Sullivan and Beauregard. From 1980 to 1987 he served in several positions at NASA including Counsel to the Space Commercialization Task Force and Deputy Associate General Counsel.

In 1987 he was appointed as the first General Counsel of DARPA. He organized the office and provided a full range of legal services for the nation's foremost national security research and development agency. Mr. Dunn pioneered innovative techniques to support science and technology projects by championing the enactment of legislation that

authorized DARPA to enter into cooperative relationships with commercial companies or "partnerships" of companies and other organizations. Other pioneering efforts involved obtaining authority to conduct prototype projects outside the normal contracting statutes and special authority to recruit and pay scientists and engineers without regard to Civil Service laws. Awards include the Presidential Rank of Meritorious Executive and the Secretary of Defense Medal for Meritorious Civilian Service.

From 2000 to 2007 he was Visiting Scholar/Senior Fellow at the University of Maryland. This appointment was in the Department of Logistics, Business and Public Policy, R.H. Smith School of Business. Scholarly research was the primary emphasis of this position as well as teaching and related activities. Research included an eclectic mix of implementation of technology and historical national security studies.

Currently, as an independent consultant, Mr. Dunn provides advice and engages in research and analysis related to the deployment and implementation of technology in the military and civil sectors through partnering and other innovative means; he conducts research in national security operations, technology and their interactions; and, analyzes laws, policies and practices that impact the effective implementation of technology. Pro bono work includes appointment to several study groups of the National Academy of Science and Defense Science Board.

He has taught graduate and continuing education courses at the University of Maryland. He has provided formal testimony before the House Science Committee of Congress. He has been an invited speaker at conferences of the National Academy of Sciences, National War College and American Bar Association, among other organizations

Rick has lived near the South River for nearly 30 years and spent many summers of his youth and early adult years on the Eastern Shore's Choptank River. In law school he wrote an influential research paper on water resources conflicts in Dorchester County.

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