CHESAPEAKE ENVIRONMENTAL PROTECTION ASSOCIATION, INC.
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NEWSLETTER

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PRESIDENT'S MESSAGE

By Al Tucker, President, 2011

As a theme for our annual forum this year we have chosen TMDLs: What a concerned citizen should know.

On Dec 29, 2010, the EPA announced another "historic moment" in the cleanup of the Bay. Having made similar pronouncements in 1987 and 2000, water quality continued to degrade in each ensuing decade. Is there hope that this new plan has a better chance to succeed? What is reality?

TMDLs form the basis of the EPA's plan to stabilize and restore the health of the Bay. They form the basis of the so-called "pollution diet" for the Bay. The plan includes steps, such as measuring reductions, assessing effectiveness, and enforcing actions, if goals are not met. The establishment of TMDLs raises expectations for many of us that this effort will succeed this time.

The acronym, TMDL, stands for Total Maximum Daily Load. It is the maximum amount of a pollutant or anything else that can exist and still allow the water quality to be "fishable or swimmable". The most common "pollutants" affecting Bay-wide water quality are nitrogen, phosphorus and sediment. Nitrogen and phosphorus are actually nutrients, necessary building blocks for life. However, when these "pollutants" appear in excess, they re-balance life in the Bay's ecosystem and result in a degraded state.

In short, TMDLs limit the total amount of pollutants that enter the Bay from all sources in the Bay's watershed. And that's the key point: all nutrient and sediment restriction take place at the local level. The plan's goal requires a 25% reduction of nitrogen and phosphorus and 20% reduction of sediment entering the Bay during the next 15 years, i.e., by 2025. The plan's Phase I and Phase II contain intermediate milestones to measure progress and they require specific action to initiate the process in 2012 and 2013. These actions must achieve 60% of the total reduction by 2017. Phase III occurs after 2017 and will assess the impact of growth on water quality.

Watch for more information on CEPA's Annual Forum

TMDLs: What a Concerned Citizen Should Know

Tentatively scheduled for ***Friday, April 29, 2011***

While the EPA has set overall goals, it is up to the states to figure out how to meet them. Hence, each state has its own implementation plan. Phase I of the process was completed last year with each state submitting its overall plan to the EPA for approval. In Phase II overall state allocations are suballocated to the main tributary watersheds and further reallocated to the individual watersheds within them. One of the primary questions is, "Were the plan dates and allocations chosen based on the urgency to restore the Bay or are they based on an estimate of the time to marshal resources to attack the problem?

The success of the plan depends on the following considerations:

1. The bases for allocating the reductions among the states.
2. The plan's reductions being measurable and effective
3. The perception that the shared responsibility is fairly apportioned among all affected constituencies and communities

Perhaps the least disputed aspect of the Bay's decline is the evidence of nutrients and sediment as the cause. The scientific foundation was established decades ago. This is not new knowledge. What remains uncertain, however, is the question of whether the reductions imposed by the EPA are sufficient. Should the reductions be greater? (I am sure no one is going to advocate for lesser.) The primary scientific question is whether these reductions are enough to prevent a tipping point beyond which the health of Bay is not recoverable.

Specific practices and their timely initiation will be determined at local levels. That is actually Phase II of the plan that each state will develop. Types of pollution and their amounts are not spread evenly across geographic areas; obviously, some sources will be more prominent in some areas relative to others.

As a result, implementation and verification remain thorny issues. Many techniques and practices may not show an

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immediate response to restrictions set in the local watershed implementation plans. Will these local improvements foretell Bay-wide improvement? How will we know if the plan is working?

Ultimately, we will also have to face the question of fairness. Some constituencies will feel they have been singled out to carry too much of the financial consequences of the plan. Local governments will feel that they cannot afford the costs, because they do not have political support. In order for the plan to succeed, we will all have to adjust to life-style inconveniences as well as shouldering the financial burden required.

In summary, the concept of TMDLs condenses a very complex, set of interrelated environmental processes into a single idea. It runs the risk of implying it will solve the Bay's problem in a relatively short time. The process contains many unknowns and perhaps the single biggest unknown may be the adequacy of funding to achieve its goals. Without timely funding, not implementing the plan rapidly enough may lead to inconclusive progress, jeopardizing future efforts..

Our hope is that the forum will shed light on these questions and others that you as concerned citizens have. Please plan to come so that you can gain further insight as we embark on this important effort to restore a key component of our local ecosystem, the Bay.

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WEST/RHODE RIVERKEEPER'S REPORT

By Chris Trumbauer
www.westrhoderiverkeeper.org).

TMDL. WIP. EPA. MDE. Alphabet soup? These days, environmental groups in Maryland are abuzz with these acronyms. What do they mean and why should we care? On November 29, the six states that include portions of the Chesapeake Bay watershed, along with Washington, D.C., were required to submit detailed plans to the federal government outlining how they will drastically reduce pollution to the Bay and its tributaries. This process stems from President Obama's Chesapeake Bay Protection and Restoration Executive Order and the effort from the federal Environmental Protection Agency (EPA) to set up a "pollution diet" for the Bay. The pollution diet is in the form of a TMDL – which stands for Total Maximum Daily Load. TMDLs are required for any impaired waterways under the Clean Water Act. In essence, the TMDL sets a limit on the amount of nitrogen, phosphorus, and sediment pollution a healthy waterway can sustain, and gives each of the Bay states a pollution limit to meet by 2025. To achieve these limits on pollution, each state was asked to submit a Watershed Implementation Plan, or WIP.

Here's where it gets interesting. In its WIP, each state is directed to outline its strategy for meeting the goals. This should include specific ideas on how to reduce pollution from common sources, such as agriculture, sewage plants, septic systems, and stormwater runoff. Most observers agree that of all the states that submitted WIPs, Maryland's was the strongest. However, even Maryland's WIP lacked some important details. One of our greatest concerns is that Maryland's WIP lacks programmatic or funding commitments or deadlines for implementation. A bold plan is laudable, but without the details of how that plan will be realized, the expected pollution reductions are in question.

We believe that the TMDL/WIP process presents the best opportunity in a generation to bring about significant positive change in the health of the Chesapeake Bay and its tributaries. However, this is true only if state and local governments will be held accountable for meeting their pollution reduction goals. Over the last three decades, there have been numerous Chesapeake Bay cleanup agreements, goals, plans, and initiatives. As 2010 comes to end, one thing is clear: our Bay is still polluted. What makes this newest initiative any different from the others that did not achieve success?

The answer will come down to accountability. We must insist that our government enforce these new pollution limits in a way that it has not done before. Our members will recall that just last year we submitted a petition to EPA calling for it to revoke the authority of the Maryland Department of the Environment (MDE) to administer and enforce Clean Water Act permits, due to its inability to do so effectively. EPA appears to recognize the need to look over the states' shoulders, releasing federal "backstops" that would kick in if states cannot implement the pollution reductions as required. The question remains, though, whether we will continue on a path of voluntary measures and self-enforcement, or if this is truly a turning point in the fight to improve our Bay.

Like so many other things in life, much of the potential success depends on money. In most cases, reducing pollution from its sources will not be free. Upgrading sewer treatment plants is expensive. Stream restoration projects have a cost, and there is not yet a dedicated funding source. Hiring more inspectors to enforce the regulations will be tough during a time where government seems to be shrinking. Without identifying specific funding sources (or a commitment to seek funding before the legislature) at the state and/or local level for these actions, the new solutions may be set up for failure.

So, is this our moment for real change? Will the next generation point to this moment as the time we got serious about cleaning up the Bay? Or will we add the TMDL/WIP to the growing list of actions that failed to achieve the improvements we all want so much? We think this moment represents a real chance, a chance for us to change direction

and start down the path towards a health Bay. Join us in calling for our state and local governments to take this opportunity to implement an accountability framework to ensure that this opportunity is not missed.

You can find West/Rhode Riverkeeper's submitted comments on Maryland's WIP on our website blog: http://www.westrhoderiverkeeper.org/index.php/news/blog.html

SEDIMENTS AND THE CONOWINGO DAM: The Biggest Single Threat to the Chesapeake Bay

By Gary Antonides

The Lower Susquehanna Riverkeeper, Michael Helfrich (photo) spoke to the CEPA Board of Trustees at the December Board meeting. He has been working to address the threat to the Bay of the sediment that has been accumulating behind Conowingo Dam for many years. The *Chesapeake 2000* agreement, signed by the States of Maryland, Pennsylvania, Virginia, and the District of Columbia, the U.S. Environmental Protection Agency and the Chesapeake Bay Commission, recognized the threat. All parties agreed to; "By 2003, work with the Susquehanna River Basin Commission and others to adopt and begin implementing strategies that prevent the loss of the sediment retention capabilities of the lower Susquehanna River dams." Of the four lower Susquehanna River dams, all but Conowingo, the furthest south, have reached "steady-state" and are no longer trapping sediment. Sediment behind Conowingo Dam and the loss of its sediment retaining capacity represent two imminent and substantial threats to the Chesapeake that could undermine all the efforts taken so far to restore it.

Threat 1: 30 Million Tons of Mud Gets Washed into the Bay and Smothers Everything. During four days in 1972, the flood waters of Tropical Storm Agnes washed four years worth of sediment and pollutants down the Susquehanna River from New York and Pennsylvania. When the flood waters reached Maryland and the Conowingo Dam, the waters scoured out another 10 years worth of pollutant-bearing sediment that had been trapped in the reservoir behind the dam. This "catastrophic pulse" of 14 years worth, or 30 million tons, of sediments combined with 3 trillion gallons of freshwater inflicted the biggest single damaging event ever recorded in the Chesapeake Bay. Over the past 39 years, sediment has accumulated behind the dam to a level even greater than 1972 levels. Scientists agree that the question is not if another catastrophic pulse will occur, but when.

Threat 2: Conowingo Reservoir Fills In and Sediment and Nutrient Loads Multiply. The second threat occurs as the Conowingo Reservoir reaches sediment storage capacity and we see a massive increase of sediment and phosphorus entering the Chesapeake Bay. Sediments smother life in the Bay and nutrients cause giant dead zones. The paradox of the Conowingo Dam is that while holding the biggest threat, it also provides a huge benefit by collecting and retaining 60-70% of the annual load of sediment being sent down the Susquehanna to the Bay. But the pollution-control value of the dam is reaching its end as the sediment fills in behind the dam. Once the sediment trapping capacity is used up, or a "steady state" condition is reached, the sediment will increase by 2 million tons per year. Along with this sediment, we will see an additional 3 million pounds of phosphorus. Research done by scientists working with the Chesapeake Bay Program have described the effects. Fish, crabs, oysters, and other animals and plants will have a harder time living and breeding in the Bay. Sediment will fill in the Chesapeake channels and more money will have to be spent on dredging. The Bay could even have its salt water "line" pushed further south, wiping out areas that used to supply us with our crabs and oysters.

Research has already been conducted to determine the effects of the increases in sediment and phosphorus loading, and this was summarized in the Chesapeake Bay Program's Science and Technology Advisory Committee (STAC) report entitled "*The Impact of Susquehanna Sediments on the Chesapeake Bay.*" However that is where the scientific research stopped in 2000, leaving us short of any action or solution.

Conowingo Dam

However, in 2001 a Sediment Task Force organized by the Susquehanna River Basin Commission (SRBC) published their recommendations for additional studies. It was agreed that, "First, a feasibility study is recommended to determine if dredging the reservoirs is a viable option. Other alternatives, including sediment bypassing, sediment fixing, and modified dam operations, were considered, but dismissed. Some interested parties feel that reductions in upstream sediment coming from agriculture and development would be sufficient, and no action to address the existing sediments or the upcoming "steady state" condition is required. But water quality monitoring suggests that addressing only the upstream sources of sediment would not halt the filling of the Conowingo Reservoir.

Therefore, steps need to be taken immediately to get us back on track to addressing the sediments and fulfilling the *Chesapeake 2000* agreement. We need funding for USGS studies of the current amount and locations of the sediments, and for the sediment transport curves that tell us where the sediment is coming from. These two studies are expected to cost less than $250,000 (67% non-federal match) and could begin immediately.

Then, given proper funding, the U.S. Army Corps of Engineers, the U.S. Geological Survey and other partners can conduct studies to determine the feasibility of various removal strategies. To do this we need committed federal funding and a non-federal match. In 2001, the match would have been 1.2 million dollars, or $600,000 each for Maryland and Pennsylvania.

Several options have been suggested if sediment is removed from behind the dam. One option is to use it to fill old mines; another is to use it to make a lightweight aggregate that can be used in building blocks, roads, etc. At this point, it looks

like none of the reuse options would pay for the cost of dredging, so some subsidies would be necessary. Helfrich would like to see more effort in developing building materials from the sediment.

Another complication is jurisdiction. The Bay and the dam are in Maryland. The dam is regulated by the federal government. The Conowingo is owned by Exelon. Most of the sediment comes from Pennsylvania.

Conowingo Dam will be up for re-licensing in 2014, and Helfrich feels that this approval should be used to get Exelon to help solve the problem. So far they have denied any responsibility for the problem for fear that admitting any responsibility will cost them lots of money.

The needed studies, then, would likely cost a few million dollars and take two to three years, and it would also require a non-federal "sponsor"-such as a state agency, river basin commission or nonprofit organization-to share the cost. The solution, perhaps dredging sediment from the reservoir, could cost tens of millions of dollars. But the cost of doing nothing could be huge, says Helfrick. He insists studies should assess the consequences for the Bay in the event of another catastrophic storm such as Agnes. "Until we have a document that tells us how much we have to lose, it is going to be hard to get anybody to pay to not lose it." Tens of millions may not be unreasonable compared to the cost of another Agnes. For more information on this, see www.lowersusquehannariverkeeper.org.

GROUND WATER RECHARGE:

Another side of the storm water story.

By Ron Tate

A part of the stormwater issue that has not received as much attention as the pollution of surface waters is the diminishing recharge rates of our aquifers.

With the proliferation of roads, parking lots, houses, stores, etc., there is less opportunity for rainwater to soak into the ground. In these areas with impervious surface or low permeability surfaces, the water quickly flows to storm drains or into our streams, rivers, and lakes. Instead of moving rainwater out of our developed areas and directly into our surface waters, slowing the flow has several very important functions.

The rain water helps carry nutrients to plants to keep them healthy. Too little moisture and the soil will blow away with the wind, too much moisture and larger plants are uprooted. With proper moisture levels the water and plant roots work together to break up the soil and carry the water deeper into the soil, allowing it to soak in. The larger the plant, the deeper the roots and the more quickly the water penetrates the ground. Grasses generally have shallow roots and only slightly slow the lateral spread of water. The longer it takes for water to move from where it falls to nearby surface waters, the longer the natural processes (plants and organisms) have to remove contaminants and break down toxins, and the cleaner the water will be as it reaches surface and sub-surface waters.

When the land was heavily forested, much of the rain water was captured where it fell and absorbed into the ground, building up large groundwater supplies stored in various porous strata (aquifers). The water that eventually returned to our surface waters were, in large part, filtered by natural processes. In this part of Maryland, these ground waters have provided virtually all of our potable water for domestic and agricultural uses. Water that moves quickly to storm water drainage systems or surface waters, or water collecting in low lying regions where it overwhelms the soil's ability to absorb the water, result in soils that are either too dry or too wet and leads to erosion problems.

The natural process of evaporation from the oceans and condensation from the air as rain, sleet and snow is itself a purifying process. That process too has been corrupted by human development. The gasses from industrial processes, automobiles and other human activity are absorbed in the moisture as it condenses from the air and falls to earth. This makes the rain more acidic and toxic by the time it reaches the ground.

As a result of moving storm water quickly away from developed areas and into our surface waters, there has been a significant loss of recharge of our ground waters, causing ground water levels to drop. As populations have grown, we have been drawing down our ground waters at an accelerating rate, as a result of both increased withdrawal and decreased recharge. This is an unsustainable practice and is contributing to a world wide water shortage.

There are other consequences of decreased recharge and increased withdrawal. One is the development of sink holes. While most sinkholes are a result of rocks and soil eroding or dissolving, water withdrawal can also cause sinkholes, as well as land subsidence over larger areas. Sinkholes vary considerably in size depending on the nature of the local geology. They can swallow cars and houses and they sometimes involve much larger areas. Sink holes can result in permanent loss of ground water capacity and can provide points of intrusion of contaminants into our aquifers.

As water levels drop, and as withdrawals increase, wells begin to loose capacity and can dry up altogether. In addition, reduced recharge and increased withdrawal can draw saltier waters into the aquifers.

Both the quantity and the quality of our water supplies are becoming more of an issue as we continue to develop and exploit the remaining land. We must adopt sustainable practices and work to correct past practices if we hope to pass on a reasonable quality of life to future generations.

Presently, much of Maryland's water shed remains undeveloped at the higher elevations, and that area could supply some water to others. But do we have the right to expect those who own the undeveloped land, hundreds of miles away, to curtail their own development for the benefit of our water supply? Would that involve some sort of compensation or incentives? Questions such as these are leading to complex property rights vs. water rights issues which will be fought out in courtrooms in the future.

We must be aware of other new threats to our groundwater as they arise. In some areas, the ground water is threatened where natural gas is being extracted by hydraulic fracturing, or from radioactive leakage from nuclear power plants. Gas deposits, trapped in very deep shale beds, are estimated to be a very large potential source of energy. It has recently become feasible to extract these gases by fracturing the rock formations that contain them with hydraulic pressure. But the rock formations also hold water supplies and they have been contaminated by the process. Can we find a way to safely and economically extract these gases without doing irreparable damage to our water supply?

The other problem mentioned has been ongoing for many years -- the growing levels of radioactive contamination in our ground water caused by our nuclear power plants. Almost all nuclear power plants are showing signs of some leakage of small quantities of radio nuclides. Many nuclear power plants have more recently been experiencing significant release events at much higher levels, in addition to the more widely known catastrophic nuclear accidents. This radiation is slowly spreading into our ground waters and surface waters. More common than radioactive contamination are the increasing problems with leakage from various storage tanks and land fills. All of these must be addressed.

MDE is tasked with protecting Maryland's water supply. There have been a great number of new programs developed in response to the work done by the governor's advisory committee on the management and protection of the state's water resources. CEPA is examining MDE efforts in this area, and how they are coordinated with other Maryland agencies, especially with regard to new development.

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