

Researchers Work To Better Determine Contributors Of Nutrients

(Continued from Page A1)

essential element for all life, too much causes excessive growth of lower life forms, such as bacteria, fungus and algae. These life forms constitute the foundation of a food chain, but when their populations become too great their demands on the oxygen in the water, along with many other effects, creates a situation intolerable to higher life forms, such as more complex aquatic plants and fish.

Also, a high nitrogen concentration in water has been reported as being linked to some human health problems.

To deal with the non-point sources, the state's Nutrient Management Act requires owners of high-density livestock operations to develop and follow nutrient management plans with the goal of preventing excessive nutrient flow (from manure) into the state's waters.

Educated guesswork has been used to estimate the proportion of nutrients in a stream that is attributed to agricultural practices in the watershed.

Using such data as nutrient average-values for the manure of livestock species, the number of livestock, soil type, slope, and crop uptake, some researchers have derived estimates that suggest agriculture could be possible for certain percentages of nutrients in a stream.

But since reality can't be predicted through such simple assumptions, the need for a better and more scientifically sound method of determining the source of nutrients was realized by those who framed the Act.

The lack of a strong handle on non-point sources of nutrients was known when creating the Nutrient Management Act. However, there were several things considered by those in agriculture which lead to the industry taking the lead in managing its own nutrient use.

Due to improved livestock housing and production technology and the resulting denser populations being required by farmers to stay in business (given the federal government's cheap food policy and the resultant low on-farm commodity prices), public attention and opinion (right or wrong) has been directed toward agriculture as a major contributor of nutrient pollution to the state's waters.

Further, because of activities ongoing with the Chesapeake Bay Program, and the fact that Pennsylvania has been bound to uphold former Gov. Robert Casey's promise that the state would reduce

nutrient levels in the Susquehanna River going to the Bay by 40 percent by 2000, it was considered that those Bay-protecting practices included in a farm-specific nutrient management plan could be expanded statewide to other farms, and help prevent any group or individual from accusing the state's agricultural industry of not doing its share.

Also, given the fact that local governments were beginning to create ordinances regulating nutrient use on farms, it was generally considered by the agricultural community that it should be proactive and gain protection from local ordinances.

The Nutrient Management Act was created through years of work, and (though tested at times) eventually in a bipartisan manner with the input and agreement of the agricultural and environmental

protection organizations concerned.

Together, the many authors of the Nutrient Management Act included the requirement that the state Department of Environmental Protection conduct research into five potential non-point sources of excessive nutrients, determine the level of priority concern and develop recommendations for legislative and financial actions which could possibly correct a problem.

These five potential sources of nutrient pollution are malfunctioning on-lot septic systems, urban storm water runoff, atmospheric deposition, improper water-well

construction, and the use of chemical fertilizers and other plant nutrients for non-agricultural use.

The vision of nutrient management is to have such an accurate picture of nutrient flow that, within a watershed basin, it can be known to a reasonable degree of accuracy who or what is contributing nutrients into the waters and at about what percentage.

In order to assess the reality of nutrient flow, the DEP assigned the job of carrying out the research to its Bureau of Land and Water Nutrient Management Section.

Limited in ability to carry out such detailed research, the Nutrient Management Section con-

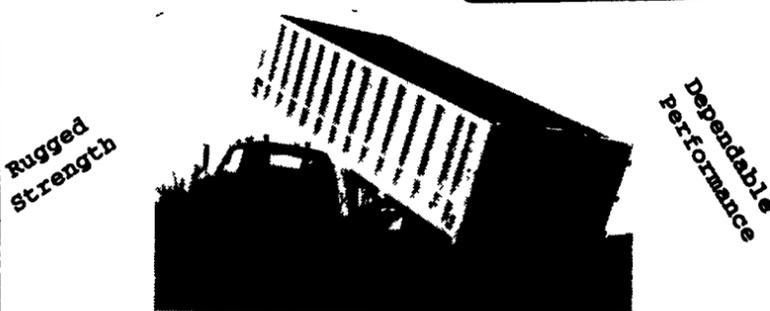
tracted with the Penn State University Environmental Resources Research Institute (ERRI) to carry out the research.

Donald Fiesta, a hydrogeologist with the DEP Nutrient Management Section, is the project leader for the research. He said that while the actual data collection and compilation is to be done by ERRI, the interpretation and recommendations are still to be made by DEP.

Fiesta said the research requested of ERRI will be unique in that, for the first time, Pennsylvania will have a statewide map of nutrient flows.

(Turn to Page A34)

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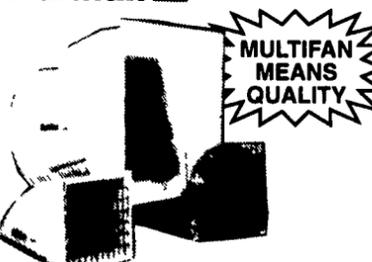
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