Stormwater Causing A Storm

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Teaser: The landscape element most correlated with the level of pollution in a waterbody is the percentage of impervious surfaces in the landscape.

Pull out: The contaminants found in stormwater include metals like lead, cadmium and mercury; pesticides, fertilizers and animal waste from farms and lawns plus carcinogens and petrochemicals from autos and industrial sources.

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What's the big problem with Stormwater? It doesn't seem like it should be such a problem, isn't it just the excess rainwater that falls in our area? The answer to that question is a resounding No! It is rainwater, but rainwater that has picked up all kinds of contaminants from our streets, buildings, lawns and fields; sediments from soil erosion, farm fields and construction sites; and even airborne contaminants that are washed out of the air in the rain. EPA in studying relationships between landscapes and pollution found that the landscape element most correlated with the level of pollution in a waterbody is the percentage of impervious surfaces in the landscape. Those impervious surfaces create stormwater.

The contaminants found in stormwater include metals like lead, cadmium and mercury; pesticides, fertilizers and animal waste from farms and lawns plus carcinogens and petrochemicals from autos and industrial sources. Many of these contaminants are deposited on impervious surfaces as dry deposits such as fly ash from coal fired power plants, hydrocarbons and particulate emissions from motors, wear and tear of tires and vehicles on roads. These dry deposits build up until the next rain when the runoff carries them into ditches and street drains and then into our streams. The more impervious surfaces there are, the more runoff we have and the faster it flows into our streams, rivers and bays.

In addition to contaminants, there are sediments from soil erosion at construction sites and farmlands and stream bank erosion caused by the excessive runoff and faster stream flow. These sediments are not as harmless as you might think. When washed into our bays, these sediments smother sessile benthic organisms like clams and oysters, increase turbidity in the water which reduces light penetration and kills seagrass beds (an important habitat for many organisms like shrimp, crabs and fish), sediments fill in channels and requires dredging to maintain our waterways.

Pensacola, FL has been actively working on reducing the effects of stormwater runoff since 2001. The program is paid for by a stormwater fee that is assessed based on the amount of impervious surface on your property and cost the average homeowner $68.43/yr, for a total of $2.4 million in 2011. The stormwater program employs a variety of methods designed to keep these unwanted materials out of our bays and bayous.

Pensacola put a fleet of street-sweepers to work keeping sediment, trash and debris from even getting into the storm drains. The city also installed a series of baffle boxes to trap sediment and debris before it gets to our waterways. And finally, they built a series of 54 stormwater retention, detention ponds and 70 subsurface treatment units to clean to water or prevent the water from entering the bay. In fact, one to their stormwater treatment ponds is a beautiful part of Veterans Park in downtown Pensacola. The project, with it's series of water fountains for aerating the water and planted with wetland plants, was awarded a design excellence award in 2012 by Florida Stormwater Association.

Mobile and Baldwin county cities are just beginning to deal with their stormwater problem; in some cases they are being forced to deal with the problem by citizens and ADEM (Alabama Department of Environmental Management). The city of Mobile has avoided dealing with the problem to the point that they are probably going to be fined by ADEM for failure to implement a program to deal with the problem.

Here are some of the facts I got from Al Garza in the City of Pensacola Public Works Department. The street sweepers collect an average of over 3,100 tons of sediment and 350 tons of vegetation/yr, the baffle boxes remove an average of 725 tons and the ponds remove about 690 tons of sediment/yr. Ponds remove the most nutrients, 4.3 Tons of Phosphorus and 23.9 Tons of Nitrogen/yr, preventing them from entering our waterways. Pensacola recently did a self-assessment and they found that the street sweepers are their most cost effective tool overall.

What can you do to help reduce the effects of stormwater? Use rain barrels or cisterns to collect rainwater off roofs, and then use that water for watering lawns and gardens. Use or build bioswales to trap at least part of the runoff and allow it to infiltrate the ground. Build or maintain stream or shoreline vegetation buffers to help reduce erosion.

Cities can do many things to reduce the effects of stormwater, but the thing that residents appreciate the most is to turn stormwater ponds into places to sit or walk and enjoy nature around a beautiful wetland. These constructed wetlands do a great job of removing pollutants from the water, trapping them in the organic matrix these wetlands create and allowing natural process to decompose pollutants or lock away metals in insoluble forms.