

Understanding and Protecting Our Water Resources

By RICK GARRITY

As we glance at our nearby rivers, lakes and Tampa Bay we might wonder just what the prevalent types of surface waters in this area are. Perhaps the most amazing fact is that the water you see is only a tiny fraction of the water that exists in nature. About 2% of worldwide water is fresh water and less than 1% of that exists as our fresh surface waters. These waters support vibrant natural communities of plants and animals and can be a primary source of potable water. However, they can also be affected by everything around them including development patterns, fire, rainfall, drainage patterns and water flow, temperature, soils, and pollutants. A pollutant can throw a disruptive wrench in an otherwise carefully balanced natural ecosystem.

Local surface water ecosystems include open waters such as ponds, lakes, streams, and springs; wetlands such as fresh water marshes, bogs, and forested wetlands; and estuaries including open waters, salt marshes, mangrove forests, oyster beds, and sea grass meadows. All are sensitive to the unnatural influences of pollutants.

Wetlands, areas that are periodically inundated by fresh or salt water, are the largest type of surface water in Florida in terms of acreage. Wetlands provide many positive functions including water storage and flood control, pollutant uptake, and wildlife habitat and also provide a moisture source to the atmosphere through evaporation. In the last 100 years, Florida and Hillsborough County each have lost about half their wetland acres. Wetlands in fact once covered about ½ of the state. Beginning in the late 1800's wetlands started to be drained statewide for flood control, mosquito control and to create more farmable land. Those types of impacts continued in more modern times along with channelization, mining, increased amounts of paved surfaces and rooftops, and the general effects of urbanization until statewide and locally wetland protection policies were enacted. Many of these past impacts increased the magnitude of the peak water flow after storms and decreased the flow lag time needed for pollutants to be naturally absorbed. The result was increased flooding and increased potential for pollution.

Lakes are very vulnerable to the effects of pollution because there is no swift turnover of water to flush pollutants. So, whatever pollutants are discharged into lakes such as nutrients from fertilizer runoff; sediments, bacteria, and metals from street runoff; or point source discharges such as sewage remain in the lake for some time and can cause lasting impacts. The most productive portion of lakes is usually along the shoreline and is known as the littoral zone. This shallow interface between land and water has a large concentration of plant and animal life and is very important to the total health of the lake. That is why it is more beneficial to have a natural lake shoreline as opposed to a seawall where the shoreline community is eliminated.

Studying the hydrology of rivers, that is, the long term seasonal flow patterns, helps us predict

the effects of floods and droughts. Rivers locally can range from black-water streams heavy in tannins from swamp drainage to spring runs where the water is crystal clear. Throughout the state, significant riverine habitat has been impacted in the past due to river channelization and impoundments for water supply projects. Just as with wetlands, channelization can cause big problems by eliminating habitat, and increasing the concentration and impact of pollutants downstream. Much has been learned from the costly mistakes made in constructing and then restoring rivers such as the Kissimmee River which cost \$32 million to channelize and about \$600 million to restore.

Estuaries are found along the state's coast and are some of the most productive waters found anywhere. An estuary is a sheltered area where fresh water rivers flow into saltier coastal waters. The result is an area of brackish waters, a mix of fresh and salt. This area is inhabited by many juvenile stages of salt water fish and crustaceans and so is important ecologically and economically.

Tampa Bay is a large 40 mile long estuary with its own coastal marshes, mangrove fringe, and seagrass beds. The bay can be impacted by changes in fresh water input, point sources of pollution, storm water discharges, and pollution from atmospheric deposition. Impacts from pollutant sources external to Tampa Bay such as an oil spill could also have devastating consequences.

Fortunately, due to the hard work of multiple local governments and private sector businesses working cooperatively under the auspices of the Tampa Bay Estuary Program to reduce nutrient pollution loading to the bay, the loading target levels for nutrients are now being met. However, it is a costly process that requires annual reductions in pollutant loading and also other pollutants such as mercury continue to be problematic.

Although most of the practices of the past that have led to large scale impacts to our surface waters such as uncontrolled ditching, draining, deforestation, channelization, damming, and dredging have now been halted, threats still remain as we have seen from the Gulf of Mexico oil spill. It is important to understand the tremendous value in preserving and restoring our natural resources and to remain vigilant to factors that endanger them. Only by understanding the value of these resources can we hope to garner the grassroots support to take the actions necessary for their protection.