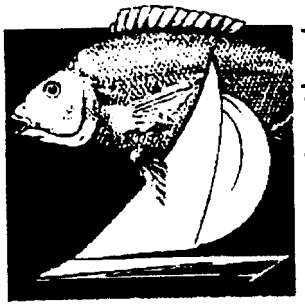


LONG ISLAND SOUND STUDY

Water Use and Marine Pollution

Clean water is a resource that is taken for granted. Pure water is necessary for growing food, manufacturing goods, disposing of wastes, and for our own consumption. Water conservation is most frequently thought of as a measure to protect against water shortages. While protecting water supplies is an excellent reason to practice conservation, there is another important benefit of water conservation — improved water quality in the marine environment.

The link between water use and marine pollution may not be immediately apparent, yet water use is a considerable source of pollution to our coastal waters. When water is used for household, industrial, agricultural, or other purposes, it is degraded and polluted in the process. Called **wastewater,** this byproduct of human activities may carry **nutrients, biological** and **chemical contaminants, floating wastes,** or other pollutants. Upon discharge, wastewater ultimately finds its way into groundwater or surface waters, contributing to their pollution.

How **Wastewater Reaches Groundwater and Surface Waters**

The Long Island Sound watershed is home to tens of millions of people who use and dispose of billions of gallons of water daily. This wastewater reaches groundwater and surface waters in a number of different ways.

♦ *Sewage Treatment Plants (STPs)* — *The* largest contributors of wastewater to the Sound are sewage treatment plants. Over 1.2 billion gallons of wastewater from homes and businesses are discharged daily by the 44 STPs adjacent to the Sound. While this wastewater is treated before discharge, it still contains pollutants that impact the Sound. Long Island Sound Study (LISS) researchers have found that STPs contribute toxic contaminants and bacteria, and are one of the largest sources of nutrients to the Sound.

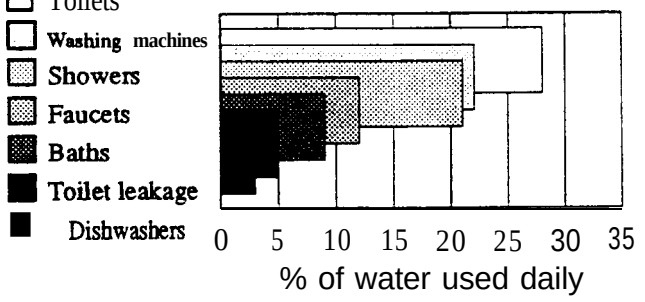
Conserving water can reduce the volume of wastewater flowing to treatment plants, enabling the plants to more efficiently treat incoming waste. Conservation can also defer expansion costs at STPs that are nearing capacity, lengthen the working lifetime of plants, and help reduce operating and maintenance costs.

Water Conservation and Marine Water Qua1ity

♦ *Combined Sewer Overflows (CSOs)* — *In* older urban areas, the storm and sanitary sewers are combined in underground pipelines. When it rains, street runoff mixes with sewage in the pipes and overwhelms the capacity of the sewer system. To avoid street and home flooding, the extra volume is released into coastal waters without being treated. Combined sewers discharge floatable wastes, bacteria, nutrients, and other contaminants from the sewer system and roadways directly into local waterways.

Water conservation can reduce wastewater volume at a plant, in effect providing additional capacity for a portion of the runoff-sewage mixture to be contained for treatment.

♦ *Septic Systems* -In areas not served by STPs, most wastewater is disposed into on-site septic systems. Even a properly operating system will discharge nutrients and some bacteria or viruses to the groundwater. Excessive water usage encourages flushing of these pollutants to the groundwater, and shortens the lifetime of the system as well. The connection between ground and surface water pollution is close in the Long Island Sound area since the flow of streams draining to the Sound comes primarily from groundwater contributions. Reducing the amount of water discharged to septic systems can protect surface water quality and drinking water supplies.



Most people use between 50 and 80 gallons of water per day in the home. Since about 3/4 of this use is in the bathroom, it is the logical place to concentrate water conservation efforts.

♦ *Outdoor Water Usage* — Excessive water use outdoors can also lead to pollution of surface and ground waters. Overwatering lawns or gardens causes runoff that can carry dangerous pesticides and fertilizers with it. Leaving the water running while washing the car or hosing down the driveway can

transport toxic automotive products and detergents into storm drains. Excessive water use near septic system components accelerates the flushing of contaminants from the system. All of these activities can contribute to pollution of valuable water resources.

The Problem

The various pollutants carried by water contribute to water quality problems in Long Island Sound. Excess nutrients can lead to hypoxia, or low dissolved oxygen levels in marine waters. Toxic materials can contaminate bottom sediments and build up in the food chain. Pathogens, or disease-causing organisms associated with the release of raw sewage and runoff containing human or animal wastes, can cause the closing of beaches and shellfishing areas. Floatable debris litters our beaches and threatens marine life. Together, these pollutants impair the overall health of the Sound, its marine life, and our ability to use and enjoy this coastal resource.

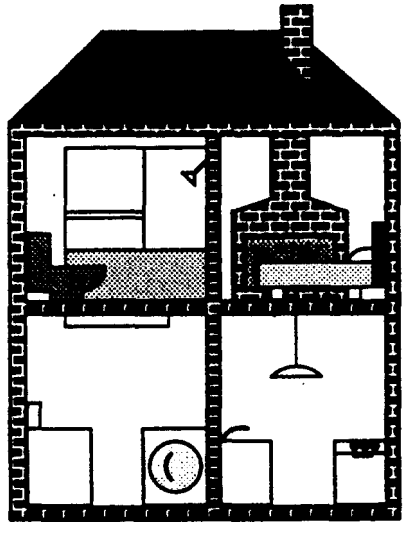
Water Conservation

Because water use is the link between homes and businesses and coastal water quality, conserving water whenever and wherever possible will help protect coastal waters, and also save the consumer money on water use bills, water heating, sewer bills, and maintenance costs for heavily used septic systems.

The average person uses 50–80 gallons of water per day in the home, arid the equivalent amount outdoors, depending on the season. Since a large percentage of water use takes place in the bathroom, that is where water conservation efforts should begin.

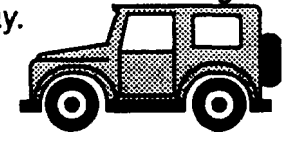
Conserve water in the bathroom:

- retrofit with low flow showerheads, faucet aerators, and toilet dams that are simple and inexpensive to install.
- check for and repair leaks in toilets and faucets.
- adopt simple changes in water use habits; turn the water off during shaving and tooth brushing, and take short showers instead of baths.



Conserve water outdoors:

- water lawns and gardens only when necessary, preferably during early morning hours to reduce evaporation.
- attach a pistol-type sprayer to the end of the garden hose, so that the water only runs when actually in use.
- wash the car on the lawn, so that the water used seeps into the ground rather than running down the driveway.



Practice other indoor conservation measures:

- wash only full loads of laundry or dishes.
- wash dishes in a full sink or dishpan instead of under running water.

Other ways to conserve outdoors:

- improve soil content with organics and mulching tilled areas to increase the soil's capacity to hold water, reducing the need for frequent watering.
- learn more about xeriscaping — landscaping with plants that require little or no supplemental watering.

The Long Island Sound Study

The Long Island Sound Study (LISS) is a multi-year research and management project that began in 1985 as part of the National Estuary Program, a recent addition to the federal Clean Water Act created to protect estuaries of national importance. The LISS is a cooperative effort involving research institutions, regulatory agencies, marine user groups, and other concerned organizations and individuals. The purpose of the Study is to produce a management plan for the Sound that will be administered by the three major LISS partners, the U.S. Environmental Protection Agency, and the states of Connecticut and New York. To learn more about or become involved with the Study, contact the New York Sea Grant Extension Program, 125 Nassau Hall, SUNY at Stony Brook, Stony Brook, NY 11794–5002, (516) 632–8730; or the Connecticut Sea Grant Marine Advisory Program, 43 Marne St., Hamden, CT 06514, (203) 789–7865.

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