

Reducing Surface Water Pollution



Essential Standard 2.4

Evaluate how humans use water.

Learning Objective 2.4.2

Evaluate human influences on water quality in North Carolina's river basins, wetlands, and tidal environments.

I Can Statements

At the end of this lesson, you should be able to say, with confidence:

- I can list several ways to reduce surface runoff
- I can list several ways to reduce excess sediment pollution
- I can list several ways to reduce nitrate and phosphate pollution
- I can list several ways to reduce pesticide pollution

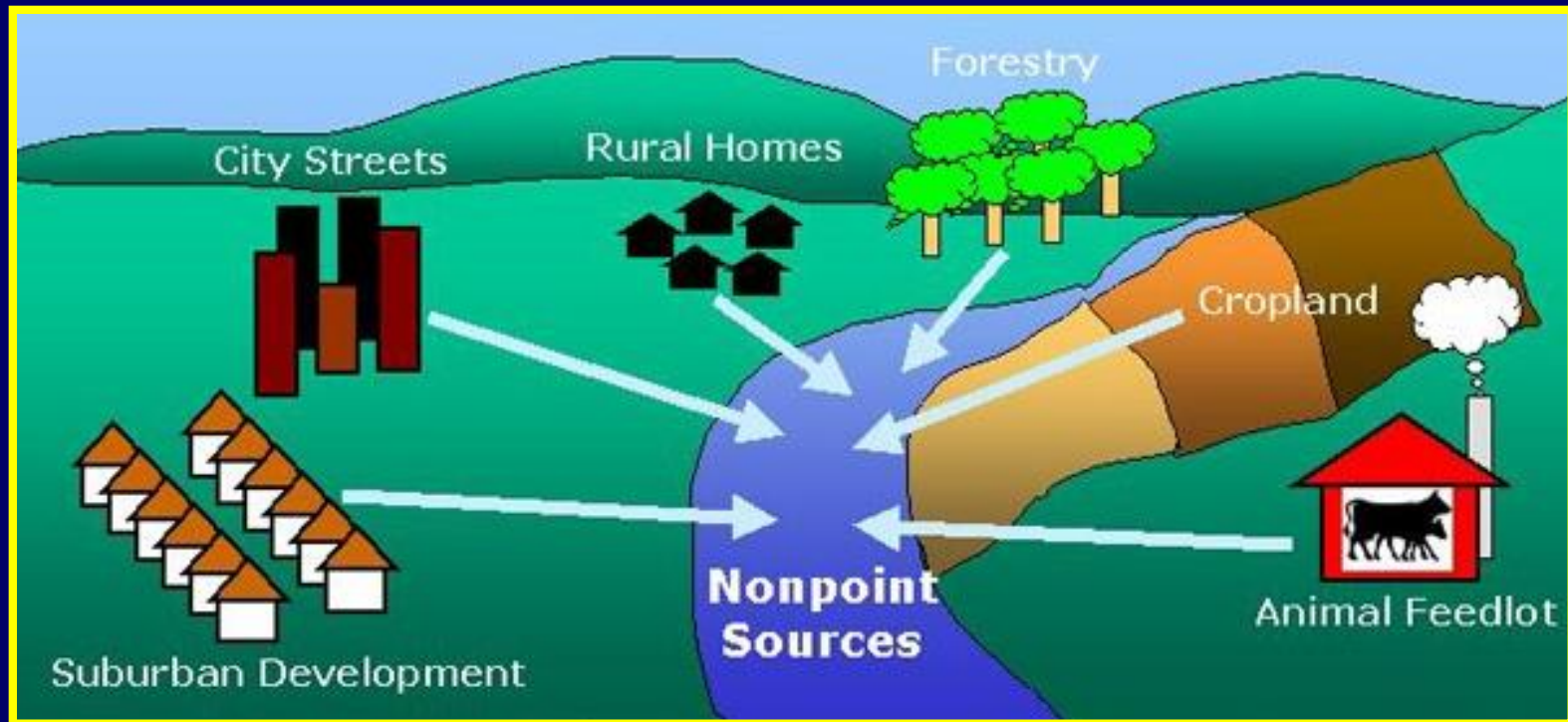
Point Source Pollution

Since the source of point source pollution is known and the entry into surface water is through a pipe, point source pollution can be easily monitored and reduced.



Nonpoint Source Pollution

Nonpoint source pollution, however, is not so easily monitored or reduced, since it has comes from many sources and has an accumulative effect often far downstream from the original source.



Reducing Impervious Surfaces

Since most nonpoint source pollution enters surface water through surface runoff, reducing the amount of impervious surfaces can reduce the amount of surface runoff.



Permeable concrete allows water to still infiltrate into the ground.

Reducing Impervious Surfaces

Breaking up pavement with strips of vegetated land allows for water to be diverted and allowed to infiltrate into the ground.



Diverting Surface Runoff

Surface runoff can also be diverted into rain gardens or onto vegetated land, where it can then infiltrate the ground.



Rain Barrels

Runoff from the roofs of houses and other buildings can be collected in rain barrels and later used to water the lawn and gardens.



Reducing Sediment Runoff

The same best management practices used to reduce erosion also will reduce sediments in surface runoff and in surface water.



Silt Fences



Gravel at Entrances



Vegetation



No Till Farming



Contour Farming



Cow Ponds

Reducing Sediment Runoff

Most cities require the creation of sediment ponds with all new development.



Rainwater is diverted into the sediment pond where it is allowed to settle, never reaching a flowing stream or lake.

Sediment ponds can also be a very attractive and appealing addition to a neighborhood or business.

Reducing Nitrates & Phosphates

One way to reduce nitrates and phosphates in surface water is to reduce the need for fertilizers.



Native plants grow in natural areas without any additional fertilizers.

Created several gardens that contain native plants and reducing lawn size reduces the need for additional fertilizers.

Reducing Nitrates & Phosphates

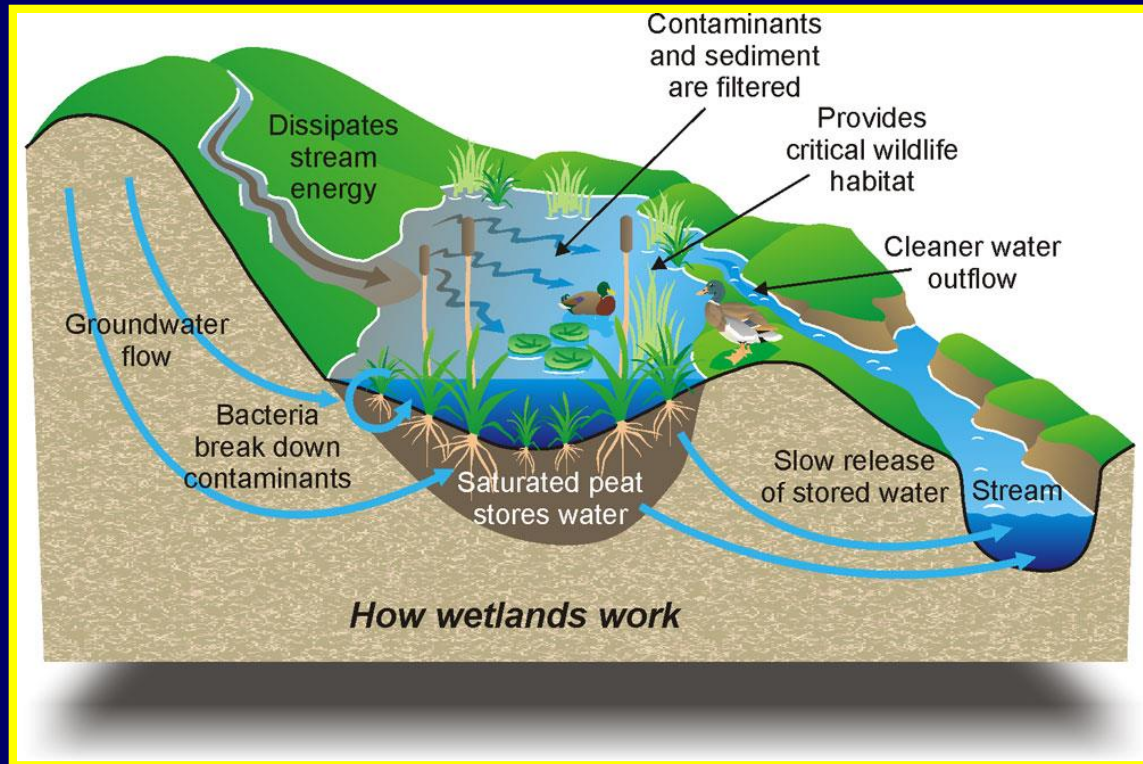
Planting the same crop year after year depletes the soil of nutrients since the plants continue to require and remove the same nutrients from the soil each year.



Rotating crops, especially with legume plants, can actually enrich the soil with nutrients and reduce the need for fertilizer.

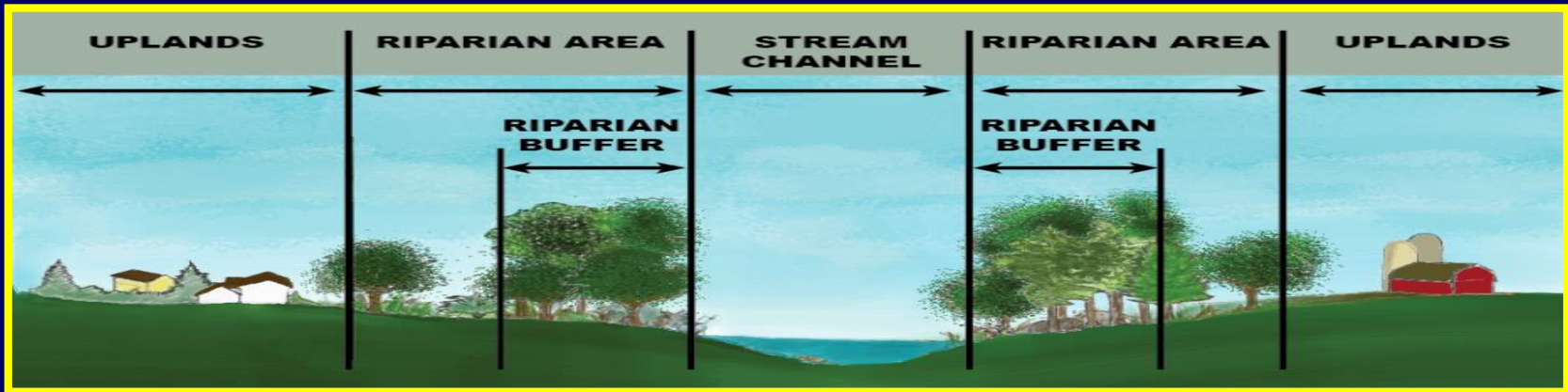
Reducing Nitrates & Phosphates

Diverting runoff and waste treatment water into wetlands, where the nitrates and phosphates can be filtered out by the wetland plants, can also reduce nitrates and phosphates in surface water.



Maintaining Riparian Buffers

Riparian buffers are areas of vegetated land that runs along streams.



Riparian buffers should always be a mixtures of tall grasses, shrubs, and trees.

Maintaining Riparian Buffers

The grasses slow the water down and allow it to infiltrate the ground, instead of flowing into streams.



The trees and shrubs, having deeper roots, can remove the nitrates and phosphate from the groundwater.

Riparian buffers also provide a wide variety of habitats and can help keep surface water cooler.

Reducing Pesticides

Native plants have more natural defenses against native pests and reduce the need for pesticides.

There are also there are some insects, called beneficial insects, that prey upon pests that eat crops and flowers.

Encouraging beneficial insects, such as ladybugs, to makes homes in gardens and near crops help reduce the need for pesticides.



Reducing Pesticides

Since pests often prefer dining on the same species of plants, alternating rows of crops with different plants can slow down the spread of pests and reduce the need for pesticides.



Reduce Crop Dusting

While reducing pesticide use is good, some pesticide use will still be necessary especially for commercial crops.



Crop dusting allows pesticides to be carried with the wind onto more just the targeted crops.

Pesticides in surface runoff can be reduced with better, more directed application methods.



Reducing Litter

When people see litter already alongside a road, they are more apt to also litter.



By not being someone willing to litter and by participating in voluntary litter clean ups, you can help reduce litter in surface water.

Studies show that people who have participated in at least one voluntary litter pick up event are more likely to never litter.

The End

