2026 Current Issue

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Non-Point Source Pollution: It begins at home!

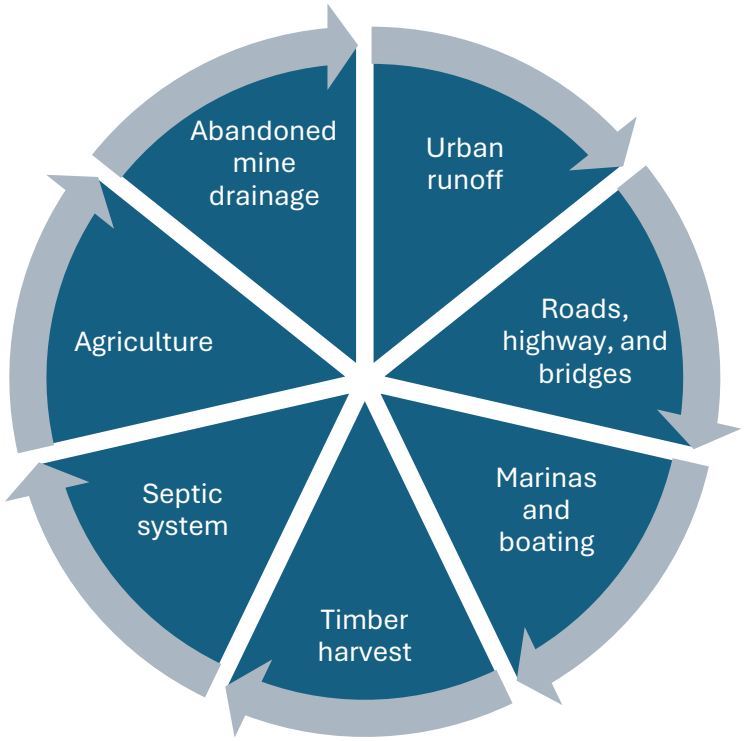
What is non-point source pollution?

Non-point source pollution is the contamination of water or air that can not be tied back to a definitive, single source

It is any water pollution that can not be classified as “point source pollution”

Non-Point Pollution Vs. Point Pollution

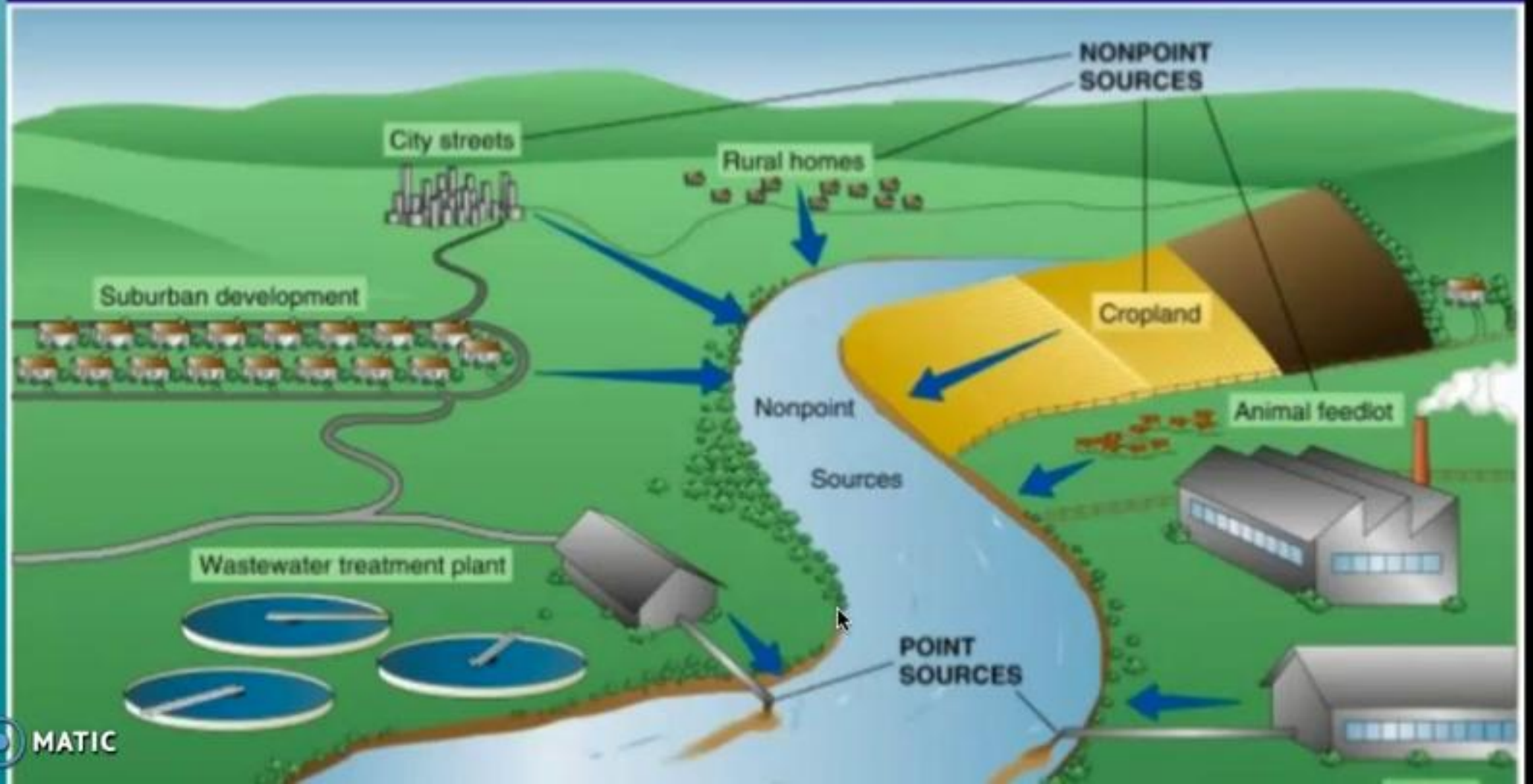
Non-Point Source



Point Source

- The term "point source" means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, container, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture.
  - Factory
  - Waste water treatment plant
  - Stormwater discharge

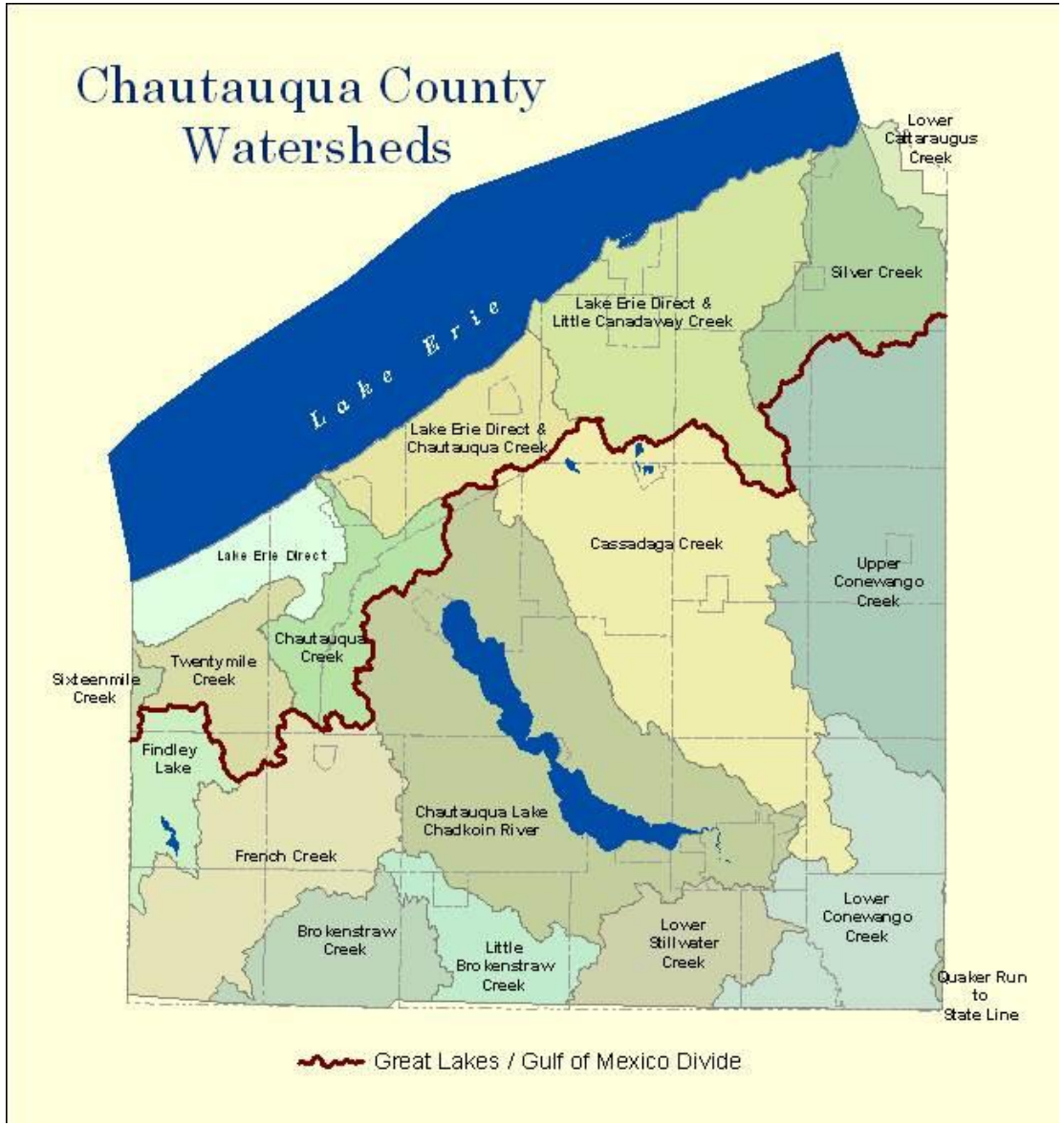
Point Source and Non Point Source Pollutants



Impacts of NonPoint Source Pollution On Watersheds

What is a watershed?

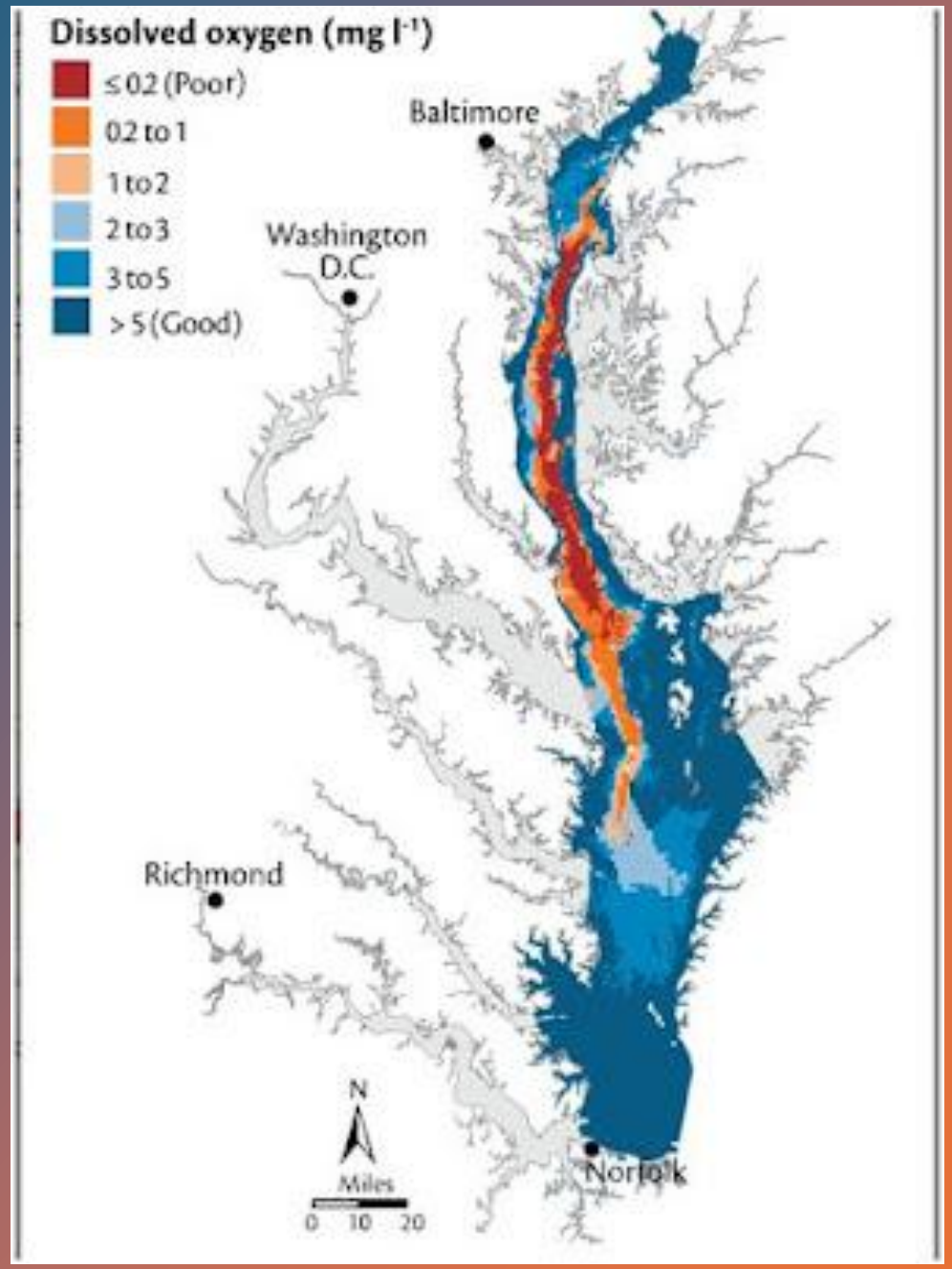
- The land area that drains to one river, stream, or lake
- Ex.- Chautauqua Lake Watershed, French Creek Watershed, Lake Erie Watershed



NPS Pollution Impacts

- Nitrogen pollution has been expedited by humans primarily through burning of fossil fuels and using artificial fertilizers
- Phosphorous pollution has increased greatly due to agricultural runoff and release of sewage into water
  - Nutrient overload = algae growth = lack of oxygen
  - **Eutrophication**- occurs when excess phosphorus and nitrogen from fertilizer runoff or sewage causes excessive growth of algae
  - Excess algae blocks light, kills aquatic vegetation, and their death depletes dissolved oxygen, leading to the death of fish/shellfish = dead zones

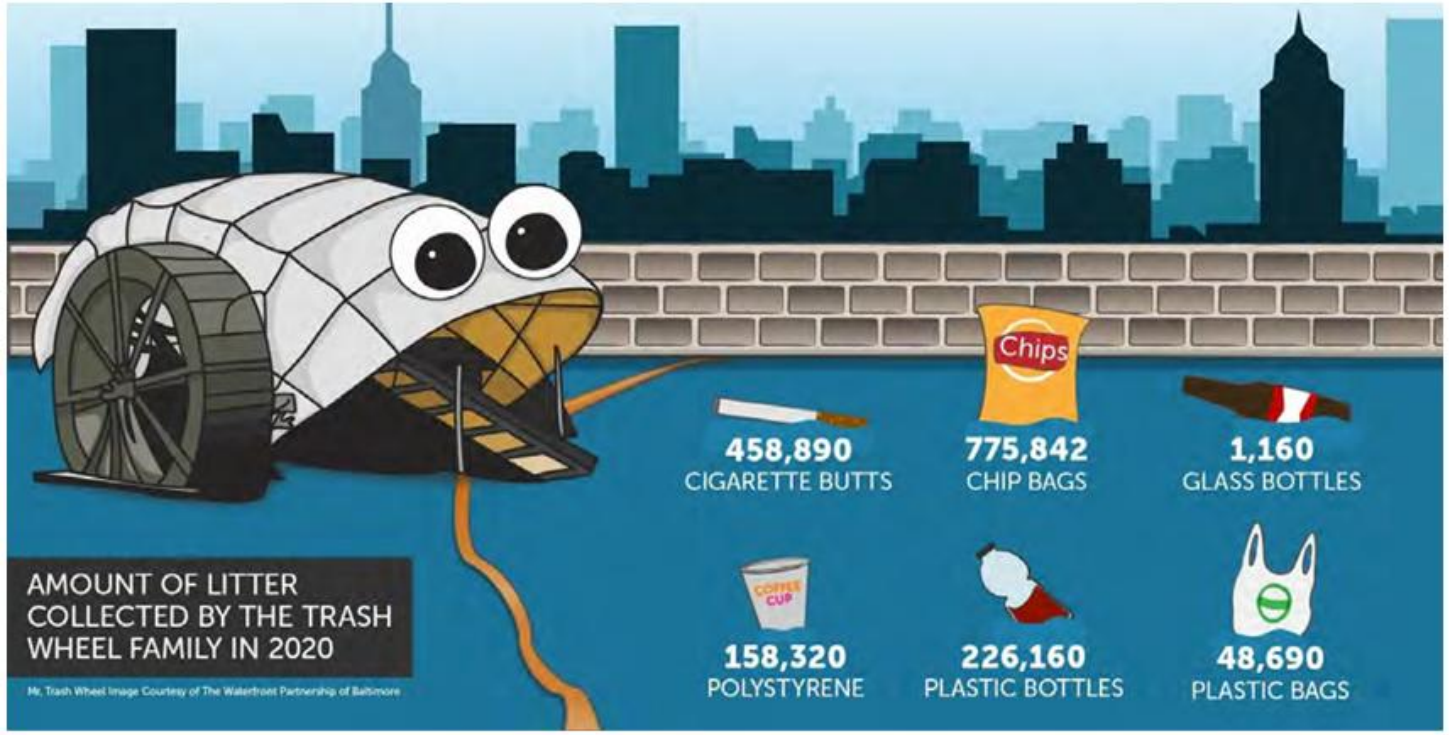
Harmful Algal Bloom on Chautauqua Lake (Eutrophication)



Dead Zones

- Defined as large areas in lakes and oceans near the mouths of rivers that are periodically depleted of their normal flora and fauna, and for massive fish kills, which often occur during the summer months
- There are over 500 dead zones around the world
- The largest dead zone of 8,776 square miles falls in the Gulf of Mexico at the mouth of the Mississippi
- There is also a large dead zone in Chesapeake Bay with efforts to restore it varying in success
    - The main hinderance being that inter-state cooperation has not been successful and pollution continues

Baltimore’s Inner Harbor(the upper portion of Chesapeake Bay) has implemented four trash collecting water wheels by the year 2021 to reduce pollution.



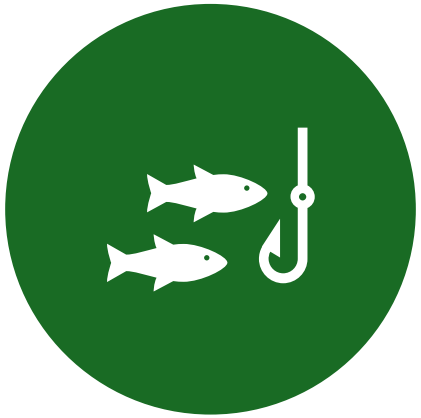
Healthy Watershed Parameters

Broadly, a healthy watershed is one in which natural land cover supports:

- dynamic hydrologic and land processes within their natural range of variation
- habitat of sufficient size and connectivity to support native aquatic and riparian species
- physical and chemical water quality conditions able to support healthy biological communities.

Importance of Healthy Watersheds

ACCESSIBLE DRINKING WATER



HIGH QUALITY OUTDOOR RECREATION DUE TO HEALTHY HABITAT, LIKE FISHING

HIGHER PROPERTY VALUES

Watershed Protection

55% percent of the nations flowing waters are in poor biological condition

EPA has created the Clean Water Act (regulatory) and the Healthy Watersheds Program (non-regulatory) to address:

Emerging water quality problems	Loss and fragmentation of aquatic habitat	Altered water flow and availability	Invasive species (plant and animal)	Climate change

Clean Water Act

- The goal is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 U.S.C §1251(a))
- States are required to develop:
  - Lists of impaired waters
  - Rankings for waters on the list
  - **Total Maximum Daily Loads (TMDL)**:includes a calculation of the maximum amount of a pollutant that can be present in a waterbody and still meet water quality standards
  - **TMDL's** are developed by states and sent to the EPA for approval. If disproved by the EPA, states must create a replacement TMDL.

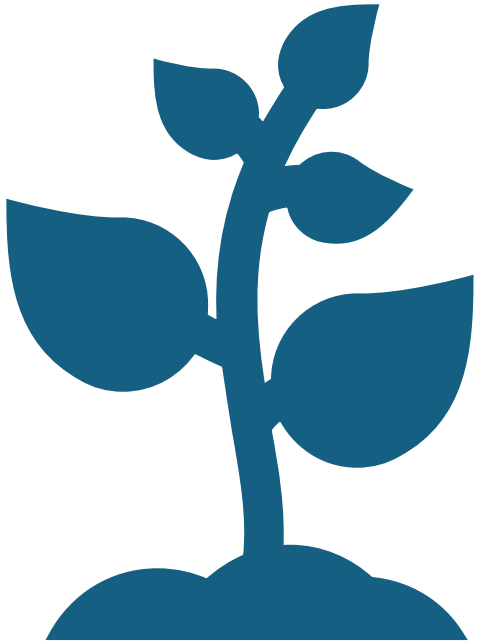
Preventing Non-Point Source Pollution - Urban

- Keep litter, pet wastes, leaves and debris out of street gutters and storm drains—these outlets drain directly to lake, streams, rivers and wetlands.
- Apply lawn and garden chemicals sparingly and according to directions.
- Dispose of used oil, antifreeze, paints and other household chemicals properly—not in storm sewers or drains. If your community does not already have a program for collecting household hazardous wastes, ask your local government to establish one.
- Clean up spilled brake fluid, oil, grease and antifreeze. Do not hose them into the street where they can eventually reach local streams and lakes.
- Control soil erosion on your property by planting ground cover and stabilizing erosion-prone areas.
- Encourage local government officials to develop construction erosion and sediment control ordinances in your community.
- Have your septic system inspected and pumped, at a minimum every three to five years, so that it operates properly. Purchase household detergents and cleaners that are low in phosphorous to reduce the amount of nutrients discharged into our lakes, streams and coastal waters.

- Did you know that because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size?

Forestry

- Use proper logging and erosion control practices on your forest lands by ensuring proper construction, maintenance, and closure of logging roads and skid trails.
- Report questionable logging practices to state and federal forestry and state water quality agencies.



Agriculture

- Manage animal manures to minimize losses to surface water and ground water.
- Reduce soil erosion and nutrient loss by using appropriate conservation practice systems and other applicable best management practices (BMP).
- Use planned grazing systems on pasture and rangeland.
- Dispose of pesticides, containers, and tank rinsate in an approved manner.
- Work with conservation partners locally including Soil and Water Conservation Districts to understand local strategies.

Best Management Practices

- Best Management Practices – strategies that can be implemented to reduce/control pollution

Did you know that because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size?

Urban BMP's

- Low Impact Development (LID)- techniques utilized in developed and soon to be developed areas to:
  - Improve water quality
  - Reduce flooding events
  - Restore aquatic habitat
  - Improve groundwater recharge
  - Enhance neighborhood beauty

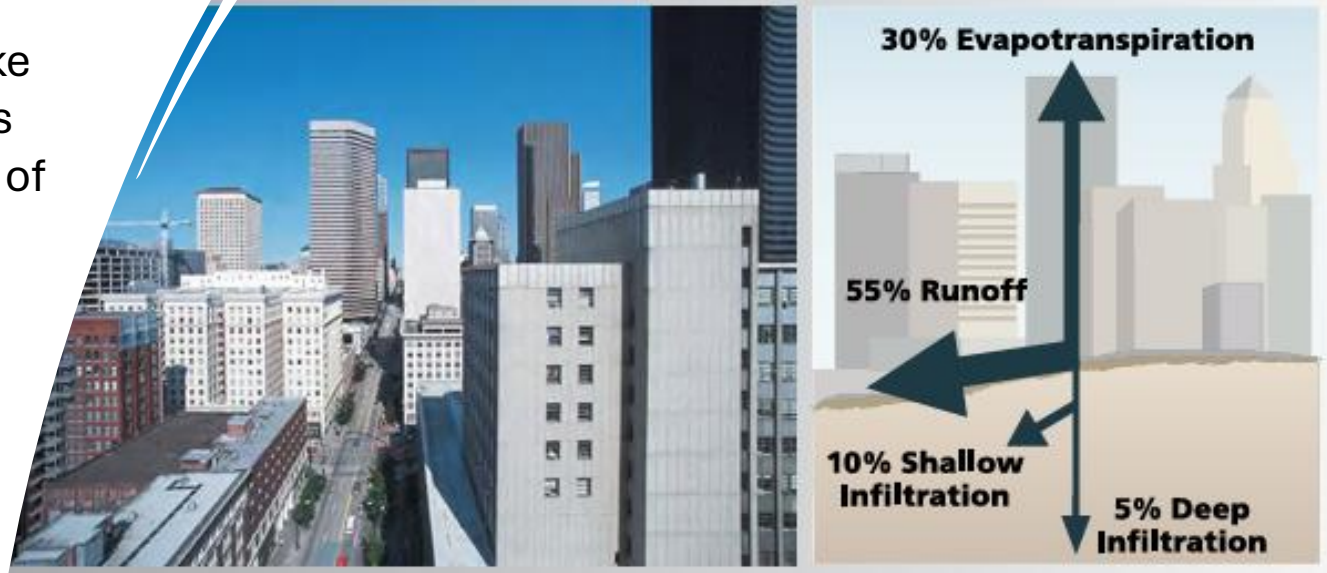
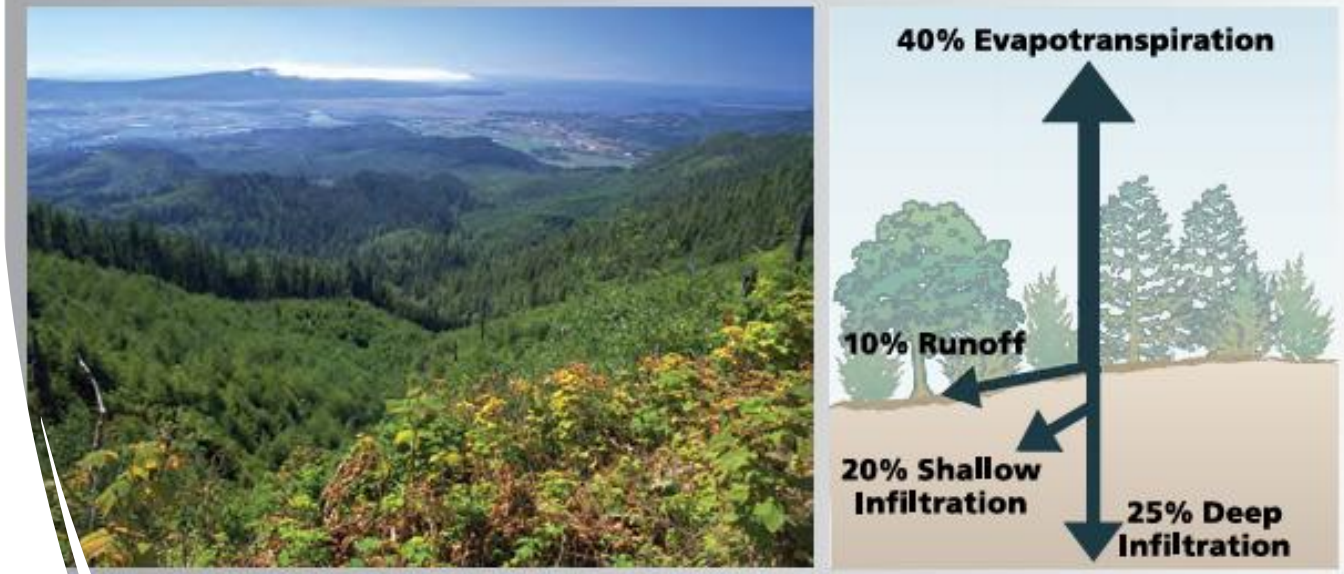


Figure 1. When roads, rooftops and parking lots cover much of the land, more than half of the rainfall runs off and flows directly into surface waters. In highly developed areas, such as in Seattle, Washington (above left), only 15 percent of rain water has the opportunity to soak into the ground.



2. When vegetation and natural areas cover most of the land, such as in Oregon's Upper Tillamook tershed (above left), very little water (only 10 percent) runs off into surface waters. Nearly half of fall soaks into the soil. The remaining water evaporates or is released into the air by vegetation.

Infiltration Practices

- These practices capture and temporarily store runoff before allowing it to infiltrate into the soil over several days
- Infiltration trenches/basins, pervious pavements

Vegetated Open Channel

- Vegetated open channels are explicitly designed to capture and treat runoff through infiltration, filtration, or temporary storage
- Pictured is a dry swale

Filtering Practices

- Filtering practices capture and temporarily store runoff and pass it through a filter bed of sand, organic matter, soil, or other media
- Examples: filtrations basins and sand filters, media filtration units, bioretention systems (rain gardens/pollinator gardens)

Retention Ponds (Wet Pond)

- A **Permanent**, man-made pond used to hold stormwater and release it slowly.

Detention Pond (Dry Pond)

- A man-made basin that holds water **temporarily** during heavy storms.

Wetlands

- Constructed wetlands are engineered systems designed to treat runoff
- They are typically designed to provide some of the functions of natural wetlands, e.g., wildlife habitat, in addition to controlling runoff volumes and pollutant loadings

Agricultural BMP’s

PRACTICE (BMP) SYSTEMS CAN BE FUNDED?

Many BMP systems can be funded through the Agricultural Nonpoint Source Program, including:

- Waste storage & transfer
- Cover crops/ soil health
- Process wash water management
- Agrichemical handling/ storage facilities
- Rotational grazing
- Streambank and shoreline protection
- Petroleum product storage & spill prevention facilities
- Riparian buffer systems
- Integrated pest management
- Silage leachate control
- Irrigation water management
- Livestock heavy use area runoff management
- Pathogen management

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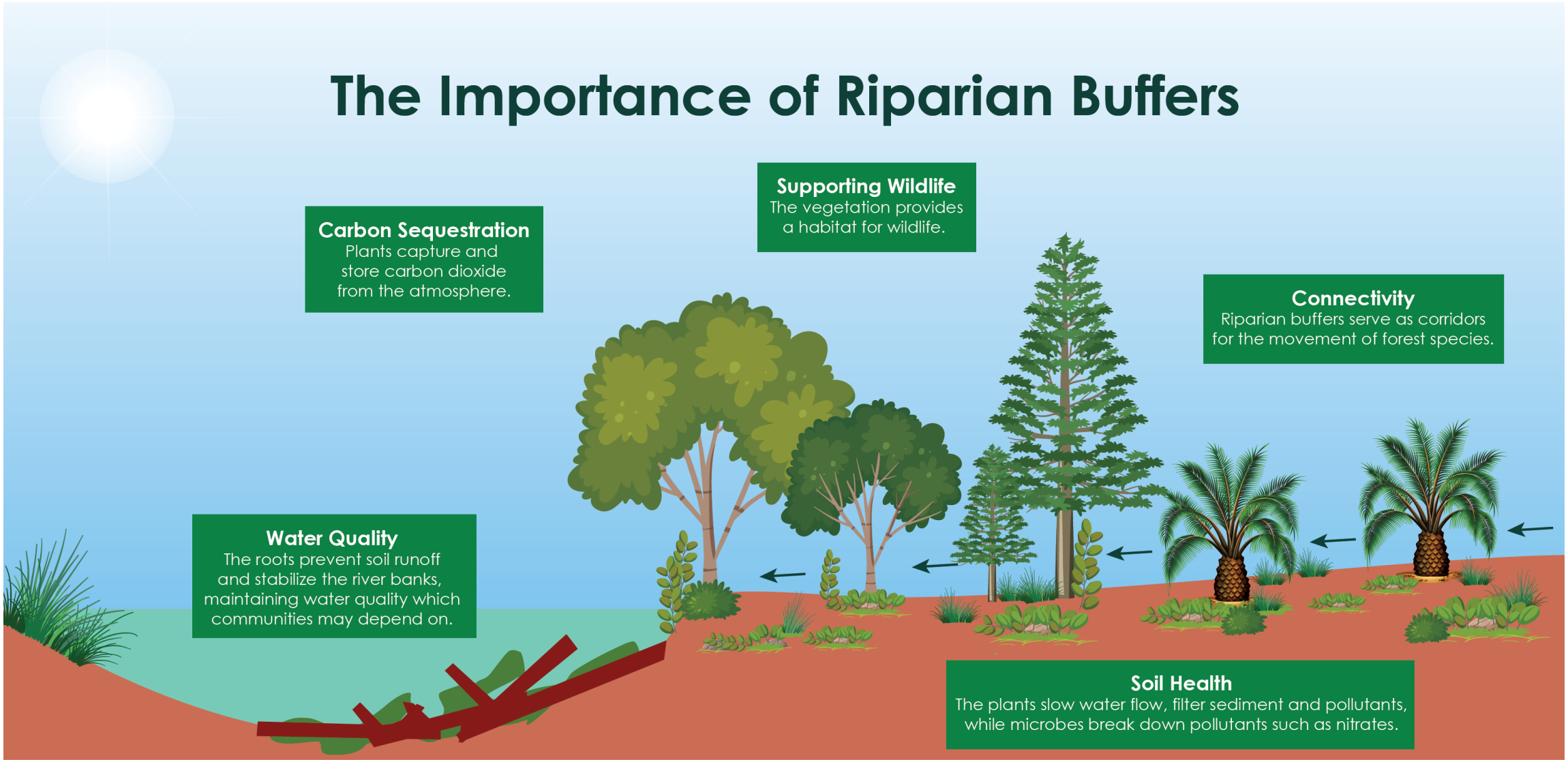
Visit agriculture.ny.gov/soil-and-water/soil-water-conservation-committee

AGRICULTURAL NONPOINT SOURCE ABATEMENT AND CONTROL GRANT PROGRAM

The Importance of Riparian Buffers

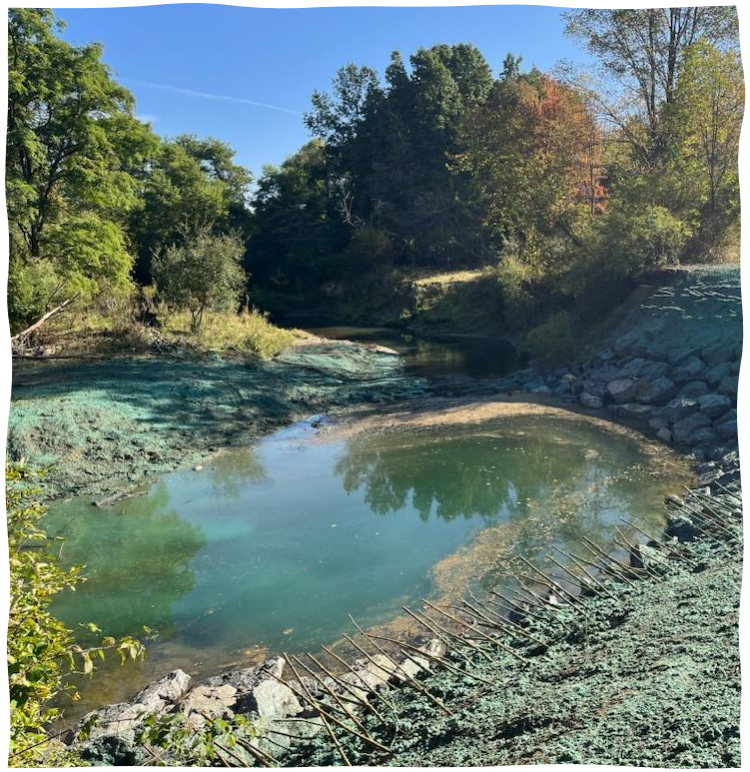


Vegetated Treatment Area

Heavy Rock Rip Rap Stream Crossing

Grazing Project

Cover Crops



Stream Erosion Protection

How to Help: Community and Individually

- Properly dispose of waste: Recycle, compost, and dispose of trash and chemicals properly.
- Use lawn and garden chemicals responsibly: Apply them sparingly and only when necessary, following label instructions.
- Maintain vehicles properly: Fix leaks promptly and dispose of used fluids properly.
- Control erosion: Plant vegetation, use mulch, and manage construction activities to minimize soil erosion.
- Ensure septic systems are functioning correctly: Have them inspected and pumped regularly.
- Participate in community cleanups: Help remove litter and debris from local waterways.
- Promote awareness: Educate others about the impact of NPS pollution and encourage responsible practices.

Resources

https://nysenvirothon.org/new-york-state-envirothon-current-issue-guide/

https://websoilsurvey.nrcs.usda.gov/app/

https://gisservices.dec.ny.gov/gis/erm/?_gl=1*gbx3gs*_gcl_au*MTA2MjcwMDg2NC4xNzY3ODExNzUx*_ga*NTE1NjY1MjAuMTc0NTg1NDY0NA..*_ga_QEDRGF4PYB*czE3Njc4MTk4MzEkbzUkZzEkdDE3Njc4MTk5NTYkajU5JGwwJGgw