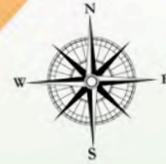


PA LAKE ERIE WATERSHED



Lake Erie

Walnut Creek

Elk Creek

Trout Run

- Water
- Litter
- Chemicals
- Fertilizer
- Waste
- Soil
- = Recommendations

Adapted with permission from Cleveland Metro Parks



Destination Erie:
A Regional Vision

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A Regional Vision

Graphics by Zoe Ras and Danny Pukalski



Erie State Park
requires all motorized
boat launches to have
a fuel system and
encourages non-power
boats.
Remove 2 pink

Western Pennsylvania
Conservancy acquired 93
acres of land along Elk Creek
and plans to install wetlands
and create an artificial wetland
to protect water quality and
animal habitats.
Remove 2 purple
and 1 orange

The Grand and Fairview
school districts install
solar panels, greatly reducing
burning fossil fuels.
Remove 1 purple

Elk Creek Sports Store
provides a fishing report
to fishermen, indicating
which areas of the creek
could be lower or unsafe
due to prevailing erosion.
Remove 1 purple

Fishermen pick up litter
while walking along
Elk Creek.
Remove 3 orange

Uncle John's Elk Creek
Campground provides
dumpy station hook-ups
so camper waste is kept
out of Elk Creek.
Remove 3 orange

EPI Recycling Solutions
wants waste recycled to
local facility so no waste
pollutes the creek.
Remove 1 yellow
and 1 pink

Paragon Packaging
Products Inc. recycles
corrugated cardboard
saving trees, water,
and energy.
Remove 1 yellow
and 1 pink

Reinforcements are
put up on the banks
of Elk Creek so that
erosion is decreased.
Remove 2 purple

Folly's End Campground
serves as a riparian zone
to the creek. Steep
erosion of the banks
and seeping floodwater.
Remove 2 purple

Golf course install
fencing that
prohibits golf balls
from falling into
Elk Creek.
Remove 1 pink
and 1 yellow

The Pennsylvania Lake Erie
International Coastal Cleanup
removes litter and other
pollutants from Elk Creek
at the 1-79 and McKean Exit.
Remove 3 yellow

The Fairview High
School Green Team
participates in the
International Coastal
Cleanup of Arroyo
South of the mouth of
Trout Run.
Remove 3 yellow

Township board cut down
on fossil fuels or use a
more environmentally
friendly option.
Remove 2 orange

PA-EDOT removed deer
crossings, deer roads
and right-of-way.
Remove 2 orange

Local farms and schools
can reduce the use
of pesticides.
Remove 2 purple

The area around the
Sturgeon House does
stream bank restoration.
Remove 2 purple

Fairview School District
provides recycling bins and
trash cans on campus. Annual
recycling and school fees
allow away costs.
Remove 1 yellow

A rain garden at Fairview
High School helps filter
storm from the parking lot.
Remove 1 pink
1 purple and
2 blue

Fairview High School
students recycle and
compost lunch items.
Remove 1 yellow
and 1 green

Local farms and schools
can reduce the use
of fertilizers.
Remove 2 purple

The Erie County
Conservation District
partnered with three
property owners to protect
and stabilize over 1,300
feet along Trout Run.
Remove 2 purple

A Groundwater System
Study and Study
Audrey Woods Nature
Center has reducing
acid rain and forest
fuel use.
Remove 2 pink

More trees could be
planted on the bank of
Elk Creek to
prevent erosion.
Remove 2 pink

The Walnut Creek
International Protection and
Restoration Plan addresses
the issues threatening
the east being of the watershed.
Remove 1 of every color

Pennsylvania Lake Erie
REDCO (Regional Remediation
and Conservation) Program
was created to improve water
quality in the Western Lake
Erie drainage basin.
Remove 1 green
and 1 orange

Lincoln Metal collect and
recycles. She takes
the creek by reducing
the amount of trash
going into the creek.
Remove 1 yellow
and 1 pink

Neighbors near the
creek can diligently
pick up after their
dogs.
Remove 1 yellow

Albany Woods has
planted riparian along
Walnut Creek to raise
awareness of the
issue of nonpoint
source pollution.
Remove 2 yellow

The amount of road salt
could be reduced near
Walnut Creek.
Remove 2 orange,
1 purple,
1 pink

The Lake Erie Watershed
Protection Agency addresses
regional water quality concerns
and is doing so projects and
enhances our Lake Erie
resources.
Remove 2 yellow

Saint Stephen's
Episcopal Church had
a creek on the site at
Walnut Creek on
March 8, 2014.
Remove 2 yellow



WATERSHED MAP GAME

Directions



The main focus of the game is to explore the positive and negative human impacts of runoff, water use and misuse, sedimentation; natural and human water treatment, energy usage, etc. on water systems.

The game and pieces:

- The Really Big Watershed Game Mat: This 12' X 14' vinyl mat depicts three streams that empty into the same body of water - one closest to their school and one east and one west of the school grounds.
- Three Buckets: contain 12-15 water molecules (ping pong balls) of different colors
- A large die
- Three players that act as game pieces that move on the mat

Play: Each player has a bucket with 12-15 water molecules (ping pong balls). On their turn, they roll the large die and move that many water drops (spaces) up his/her creek on the game mat. Depending upon the water drop on which they land the players are directed to remove different colored balls related to the environmental impact described on the water drop. The colors symbolize different types of pollution such as chemical, soil, waste, etc.



Pollution Categories Water - blue; Litter - yellow; Chemicals - pink; Fertilizer - green; Waste - orange; Soil- purple

Green drops on the game mat include “recommendations” to encourage stakeholders and community members to take action to improve the condition of their watershed. Recommendation drops do not remove pollutants because there is not a specific action occurring but they are extremely important.

Game ends when all students reach the end of the streams. The composition of the “water” left in their bucket is analyzed. The bluer the water, the cleaner it is. The more colors present, the more polluted it is.

Additional Information

Litter – In general, this pollutant is removed when the amount of trash is reduced. Examples include: recycling, stream clean-ups, adding trash containers, reducing the use of plastic bottles, etc.

Chemicals – This pollutant is removed when plants naturally absorb nutrients from runoff; examples are green spaces, gardens and addition of plants. Also, if the burning of fossil fuels is reduced by public transportation, riding bicycles, walking, using renewable energy sources, conserving energy, park-and-rides, no idling; local produce, etc. this reduces the amount of air pollution that can fall to the ground and into the water; drug take-back program; green cleaning products; selective cutting; community gardens; porous parking lots.

Fertilizer – This is removed when composting occurs and can be used as an organic fertilizer and reduces the amount of inorganic fertilizers placed into the watershed; cleaning up dog waste; animal manure used for natural fertilizer

Waste - This refers to warm-blooded animal waste or animal bodies. This is reduced by sewage treatment plants, any method that reduces human waste traveling into streams, animal body clean-ups.

Soil – Any action that reduces the erosion of soil removes this pollutant. Examples would be planting trees, green spaces, gardens, riparian buffers, stream bank restoration, no-mow zones; rain barrels to collect water; selective cutting; community gardens

Add water – These actions help water to travel within the natural hydrologic cycle. Examples: rain gardens





How to Design a Watershed Map Game

- Use the map template and sample map games that are provided for reference.
 - Identify 3 local streams closest to your school/organization.
 - Identify the body of water they travel into.
 - Research best management practices in your community that impact the watershed in a positive way. In other words, they prevent pollutants from entering the local streams.
 - Consider the following pollutants of the watershed: Waste (animal and human); Soil (areas of erosion); chemicals (industrial, commercial, residential); litter

- (paper, wrappers, etc.); fertilizer (agricultural, residential, commercial)
 - Compose the text for each raindrop in relation to each of the streams you have identified.
 - Determine what pollutants have been prevented from entering the stream and indicate that on the raindrop.
 - For each stream, identify at least one recommendation that would improve the water quality. These drops are a different color (green).
 - Provide the following game pieces: colored balls, 3 buckets and construct a large die.