



Middle School Envirothon

Resource Packet 2024

*Written tests will include approximately 15 questions in a multiple choice, fill-in, or short answer format, including hands-on identification. They will be completed as a team.

Wildlife

1. Animals (see table)
 - a. Identification – mounts, skins, tracks and bird calls
 - b. Habitats
2. Ecology
 - a. Food requirements (omnivore, herbivore, carnivore)
 - b. Basic food chains and webs
 - c. Predator /prey relationships
3. Concerns
 - a. Human impact and biodiversity
 - b. Wildlife diseases
 - i. Avian Influenza -
<https://www.pgc.pa.gov/Wildlife/WildlifeHealth/Pages/AvianInfluenza.aspx>
 - ii. Mange in black bears – Check PGC website
4. Role of PA Game Commission
 - a. Using non-toxic shot while waterfowl hunting
 - b. State Game land regulations

Aquatics

1. Identification (see table) -
<https://www.paherps.com/herps/frogs-toads/>
 - a. Fish
 - b. Macroinvertebrates
 - c. Amphibians and reptiles (including life cycles)

2. Watersheds

- a. Definition of a watershed and Watersheds in Erie County: Names and ID on a map – Conneaut Creek, Elk Creek, Walnut Creek, Cascade Creek, Mill Creek, 6 Mile Creek, 16 Mile Creek, 20 Mile Creek
- b. Diagram of a stream and label the parts
- c. How does the water flow through the 5 Great Lakes, from the starting lake to the last lake?
- d. The water cycle

3. Concerns

- a. Invasive species
- b. Rules for obtaining a fishing license - <https://www.fishandboat.com/FAQs/Pages/Fishing-Licenses-Regulations.aspx>
- c. Releasing reptiles/amphibians in the wild - <https://www.fishandboat.com/Conservation/Reptiles-Amphibians/Pages/Regulations.aspx>

Soils and Land Use

1. Basic Soils knowledge

- a. Soil horizons
- b. Soil texture triangle
- c. Sand, silt, and clay properties

2. Lake Erie Watershed

- a. History – glacial lake
- b. Erosion – definition, possible solutions
- c. Identifying physical features on a topographic map – including contour lines

(http://education.nationalgeographic.com/mapping/interactive-map/?ar_a=1)

3. Soil Chemistry

- a. How is soil formed and what role does climate play in soil formation?
- b. What are clues to recognizing a wetland (plants and soil types)
<https://education.nationalgeographic.org/resource/wetland/>

<https://untamedscience.com/biology/biomes/wetlands-biome/>

Forestry

1. Plant and tree identification (see table) using bark, leaves, and IDing using a botanical key – “Key to Some Common Trees of PA”
 - a. Basic tree terms
 - i. Bark
 - ii. Heartwood
 - iii. Sapwood
 - iv. Roots
 - v. Leaves
 - b. Invasive Plants
 - i. Current Threats and characteristics (be able to list and identify 3 in PA)
 - ii. https://www.envirothonpa.org/wp-content/uploads/2015/10/3-6-0_What-is-an-Invasive-Plant.pdf
2. Biology
 - a. Plant cycle – seed, seedling, plant/tree, flower, fruit
 - b. Transpiration
 - c. Photosynthesis
 - d. Forest Structure – canopy, understory, ground layers
3. Community
 - a. Climate Resiliency -
<https://elibrary.dcnr.pa.gov/GetDocument?docId=4681539&DocName=Managing%20for%20Forest%20Resilience%20Western%20Allegheny.pdf>
 - b. Role of fire in forest ecosystems -
<https://www.canr.msu.edu/news/the-role-of-fire-in-forest-ecosystems>
 - c. Measuring tree volume with a Biltmore stick -
<https://forestry.usu.edu/rural-forests/forest-management/measuring-stick>

Basic list of Wildlife: (Note: bird call ID highlighted in yellow)

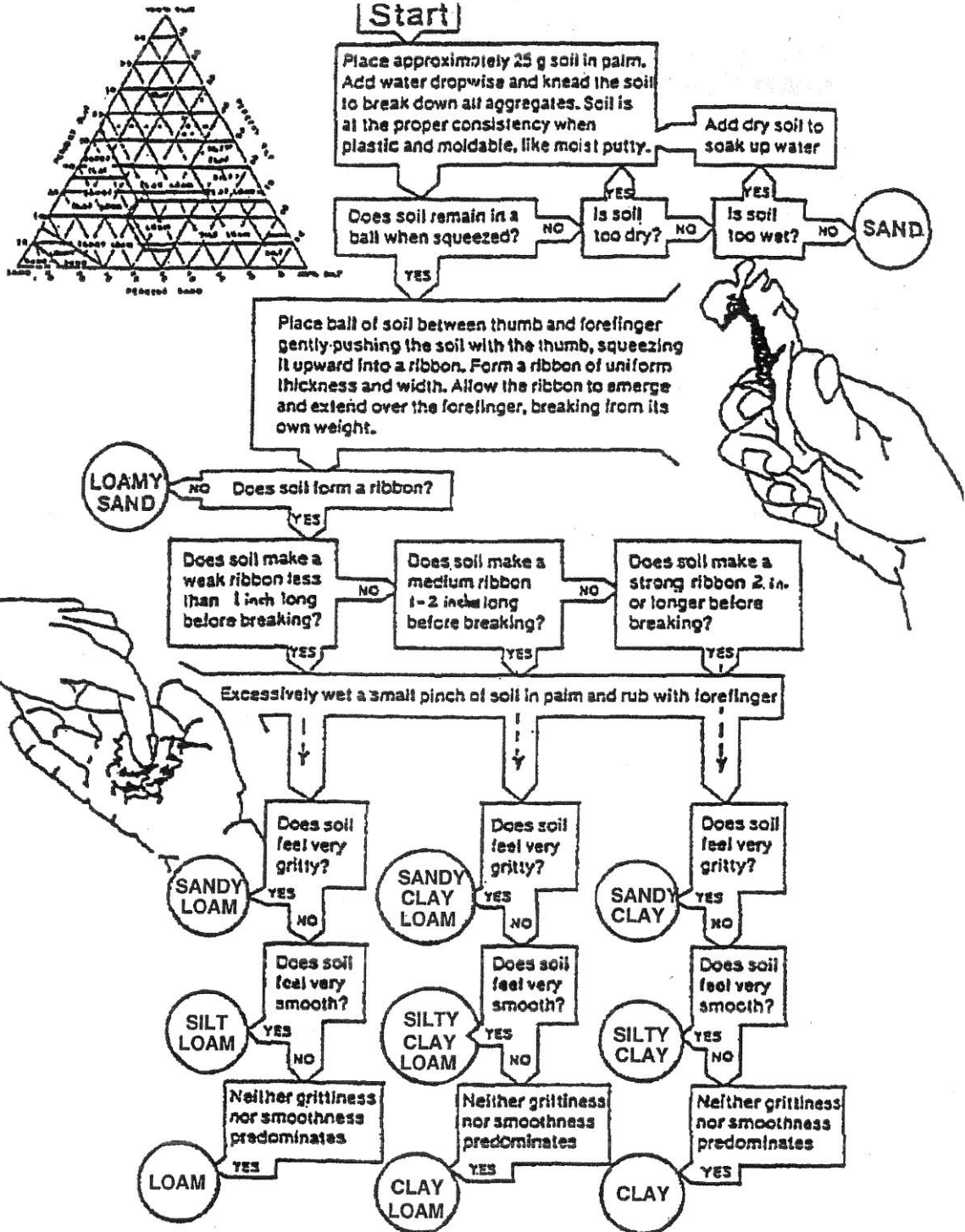
Gray Squirrel	White-tailed Deer	Eastern Bluebird
Black bear	Ruby-Throated Hummingbird	Pileated Woodpecker
Pheasant	Belted Kingfisher	Scarlet Tanager
Black capped chickadee	Eastern Towhee	Eastern Phoebe
Starling	Opossum	Beaver
Cooper's hawk	Elk	Striped skunk
Ruffed Grouse	Mallard Duck	Coyote

Basic list of Aquatic species: (Note: Frog and Toad call ID in yellow)

Muskellunge	Blacknose dace	Smallmouth bass
Rainbow trout	Creek Chub	Pumpkinseed
Dobsonfly larvae	Water Strider	Freshwater snail
Backswimmer	Stonefly larvae	Dragonfly larvae
Eastern American Toad	Spring Peeper	Wood Frog
Pickrel Frog	Gray Tree Frog	Northern Leopard Frog
Eastern hellbender	Eastern Box Turtle	Yellow spotted salamander
Eastern Milk snake	Red-eared slider	Red Eft
E. Massasauga Rattlesnake	Ribbon snake	Round Goby
DIDYMO	Rusty crayfish	Clubshell mussel

Basic list of Trees/plants:

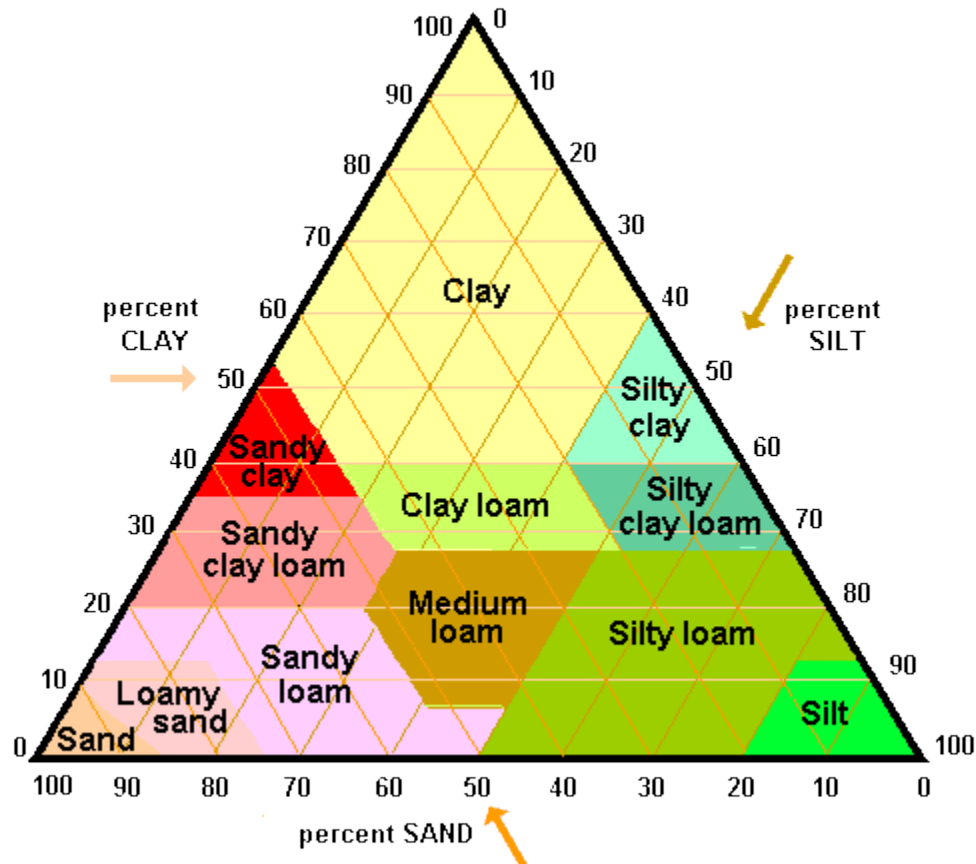
Staghorn Sumac	Red Maple	White Ash
White Pine	Eastern Hemlock	Ironwood/Hophornbeam
Yellow Birch	Black Cherry	Witch hazel
Sassafrass	Tuliptree	Elm
Sugar Maple	Basswood	Quaking Aspen
Hawthorn	Black Willow	Garlic Mustard
Autumn Olive	Tree of Heaven	Phragmites
Spotted Lanternfly	Hemlock Woolly Adelgid	Spongy Moth



The Textural Triangle

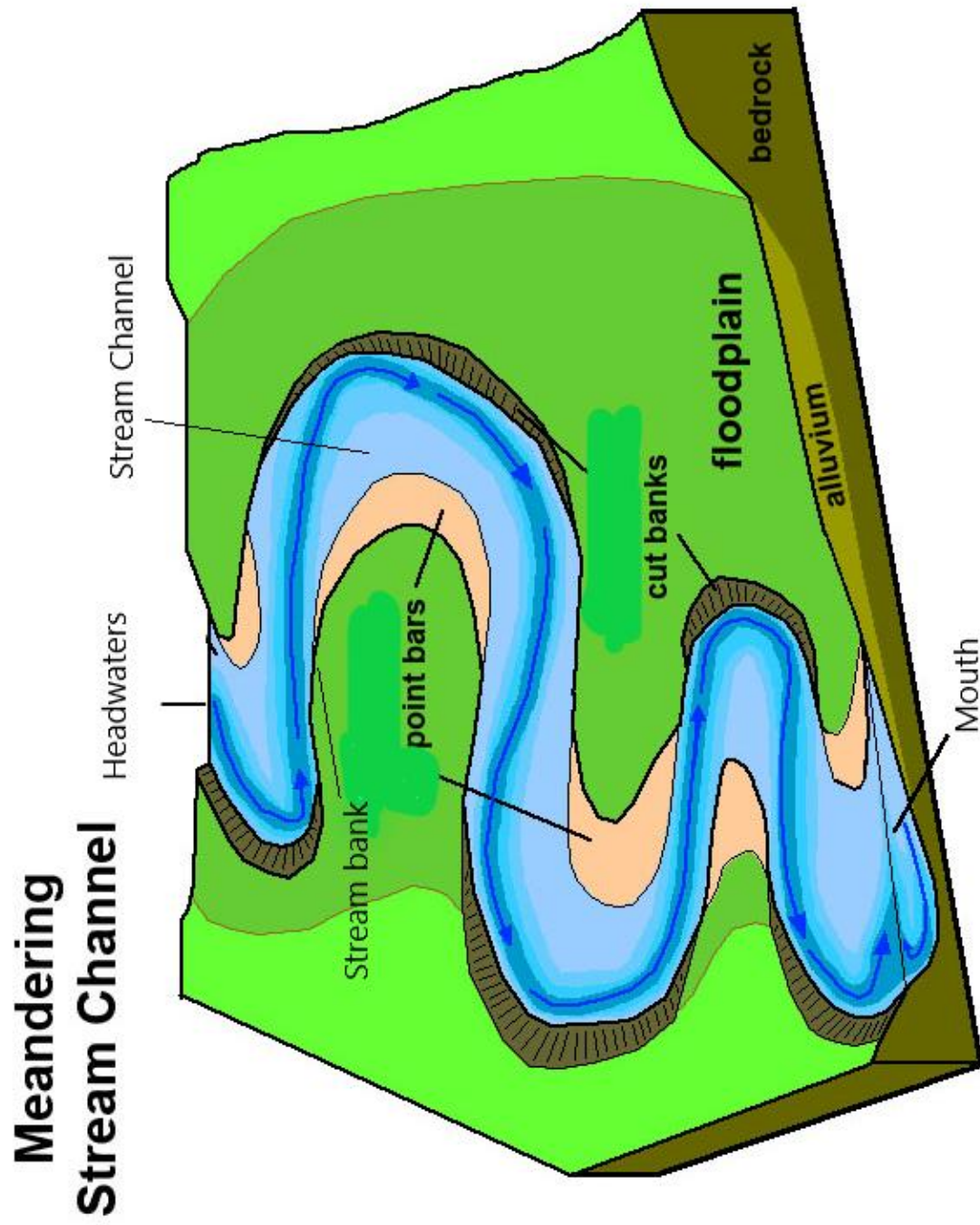
Soil classification is typically made based on the relative proportions of silt, sand and clay. Follow any two component percentages to find the nominal name for the soil type. For example, 30% sand, 30% clay and 40% silt:

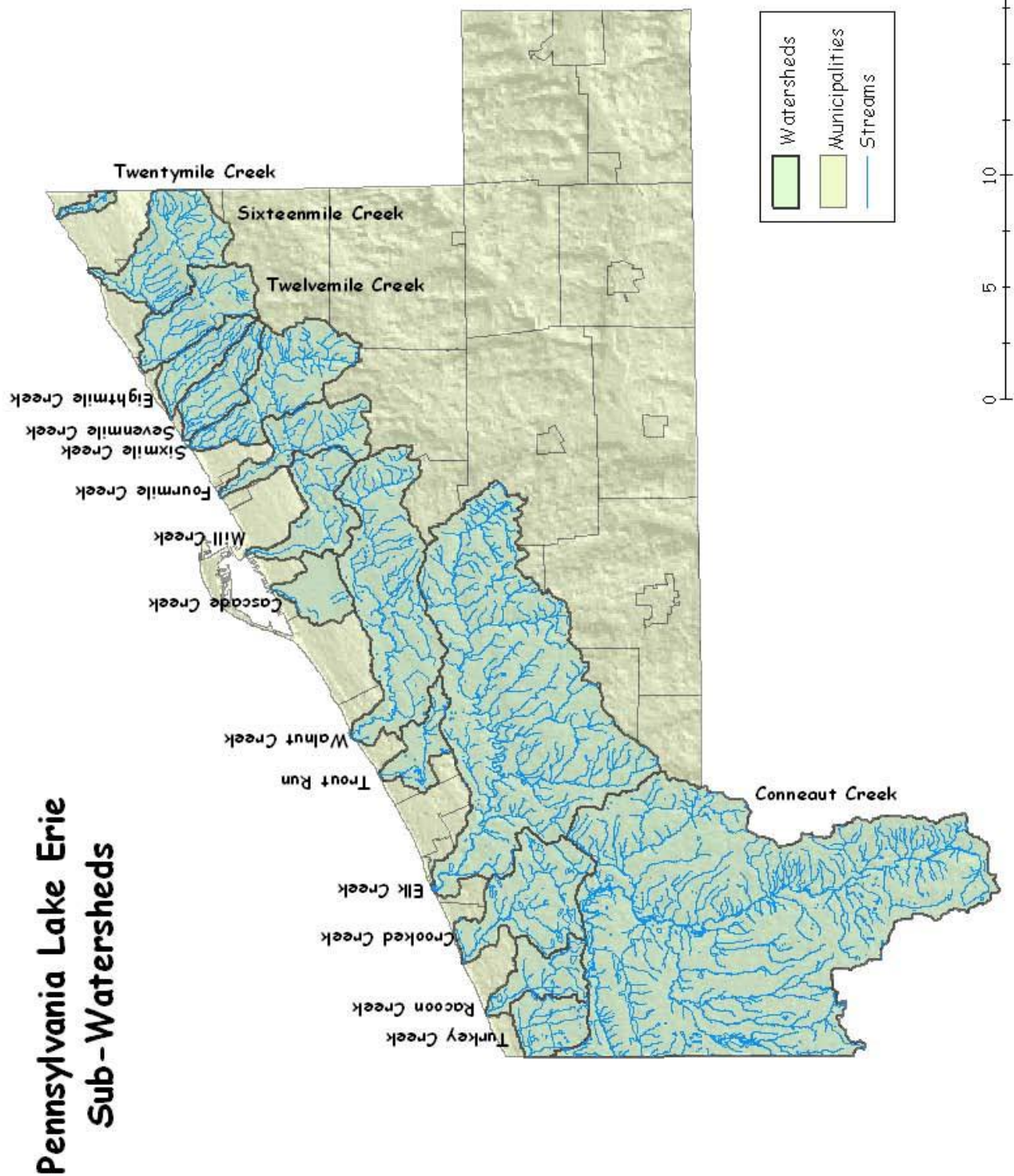
Find 30% along the bottom (sand) line, and follow the slanted line up and to the left. Stop at the horizontal line for 30% clay, and find the soil type: **clay loam**.



Soil Triangle is from the Idaho Association of Soil Conservation Districts, copyright 2010.

****ALSO KNOW THE DEFINITION OF "MEANDER" ****





Adapted from the PA Envirothon High School resources