

Composting and Rain Barrels

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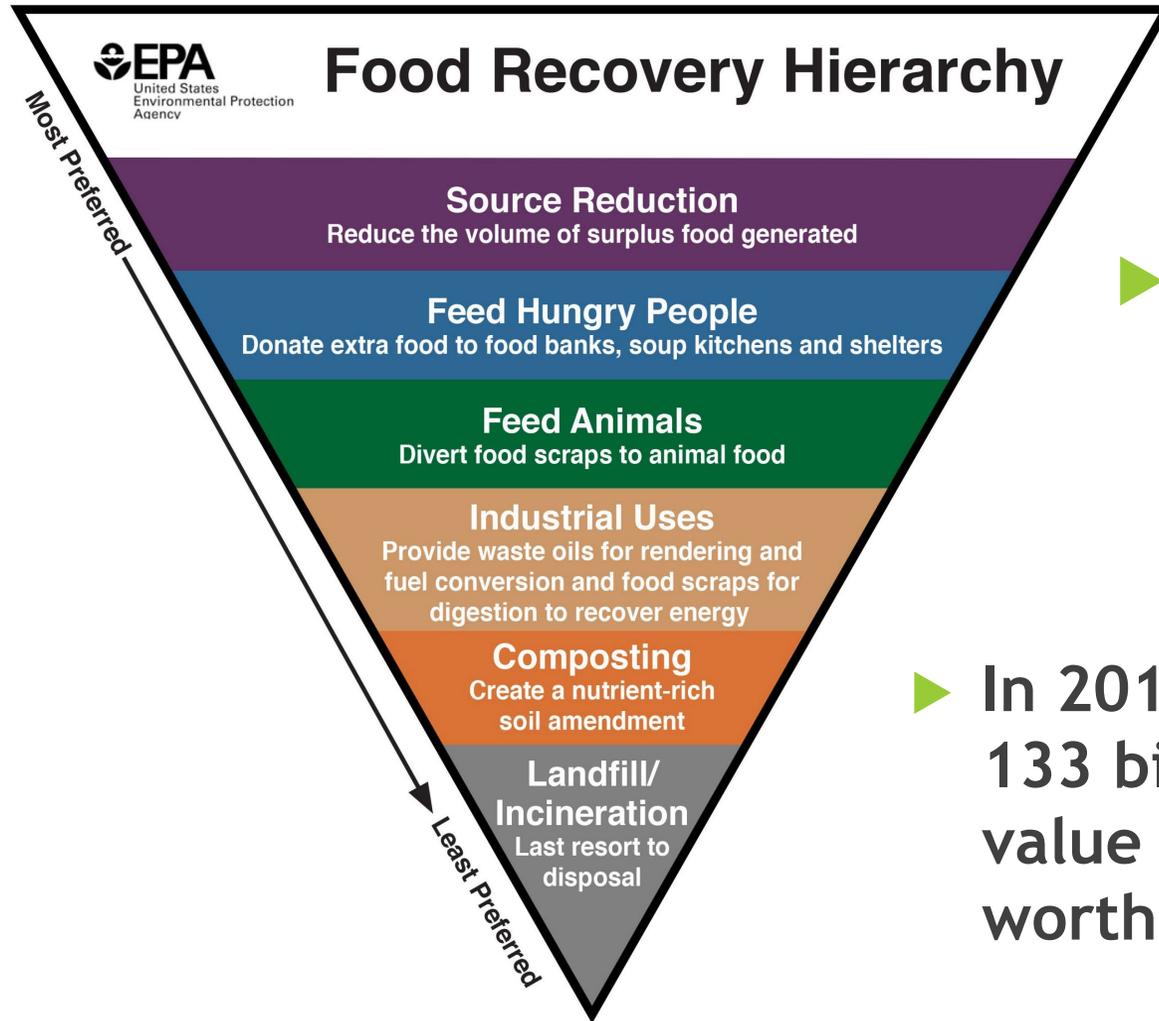


2021 District of the Year

COMPOSTING 101

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a modern, layered effect. The text 'COMPOSTING 101' is centered horizontally and rendered in a bold, dark green, sans-serif font.

Food Waste



► It is estimated that 30-40% of the food supply is wasted in the United States

► In 2010 - Approximately 133 billion pounds at a value of \$161 billion worth of food

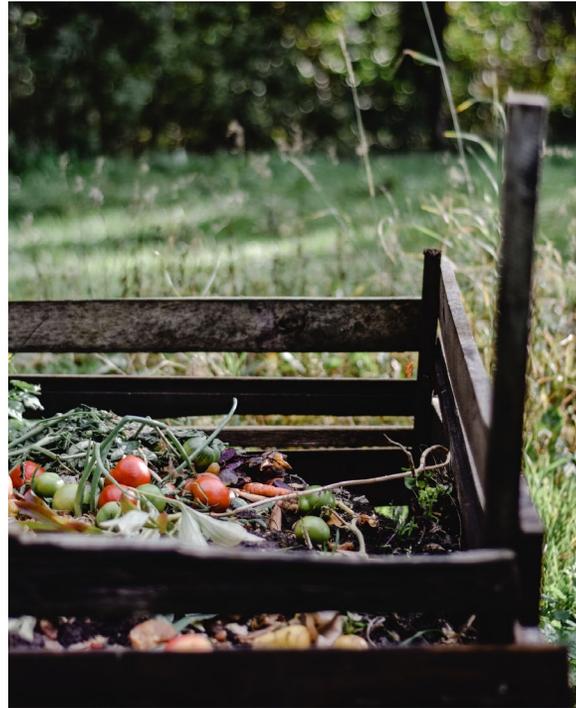
Yard Waste

- ▶ Yard waste: grass, leaves, and tree and brush trimmings from residential, institutional and commercial source
- ▶ In 2018, landfills received about 10.5 million tons of yard trimmings, which comprised 7.2 percent of all municipal solid waste landfilled.



What is Compost?

- ▶ A form of recycling!
- ▶ Organic materials are decomposed to provide a nutrient rich medium that can be used as a soil amendment for growing plants



Benefits of Composting

- ▶ Diverts food and yard waste from landfills
- ▶ Naturally provides nutrients to your yard, garden, or potted plants
- ▶ Reduces and may even eliminate the need for chemical fertilizers while promoting higher yields
- ▶ Enhances water retention in soils
- ▶ Saves you money!
- ▶ Promotes sustainability of the environment and our natural resources



What motivates you?

Steps to Begin Composting

- ▶ Decide on a Strategy and Location that fits your needs
- ▶ Build or Buy Your Pile/Bin
- ▶ Provide Organic Materials - Ratio of Yard Waste and Food Scraps
- ▶ Maintenance: Provide Water and Air

Location, Location, Location!

- ▶ Decide your level of commitment for maintaining your compost pile
- ▶ Select an area with:
 - ▶ **Good Drainage and Level Ground**
 - ▶ **Easy Access**
 - ▶ **Some Shade During the Day**
 - ▶ **A Nearby Water Source**
- ▶ If you don't have a good location, look into composting opportunities nearby

Types of Composters



Ingredients

Brown Materials:

Rich in Carbon

- Dead leaves
- Shredded paper
- Straw/hay
- Branches, Twigs, Woodchips
- Sawdust
- Corn stalks
- Coffee filters
- Dryer lint
- Fire Ashes

Green Materials:

Rich in Nitrogen

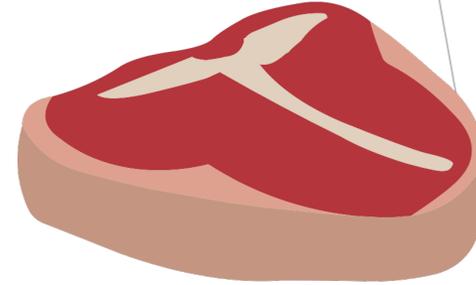
- Grass clippings
- Fruit and vegetable scraps
- Tea leaves/bags
- Green leaves
- Coffee grounds
- Crushed egg shells
- Nut shells
- Pet hair
- Vacuum dirt



Ideal Ratio - 2 Browns : 1 Greens

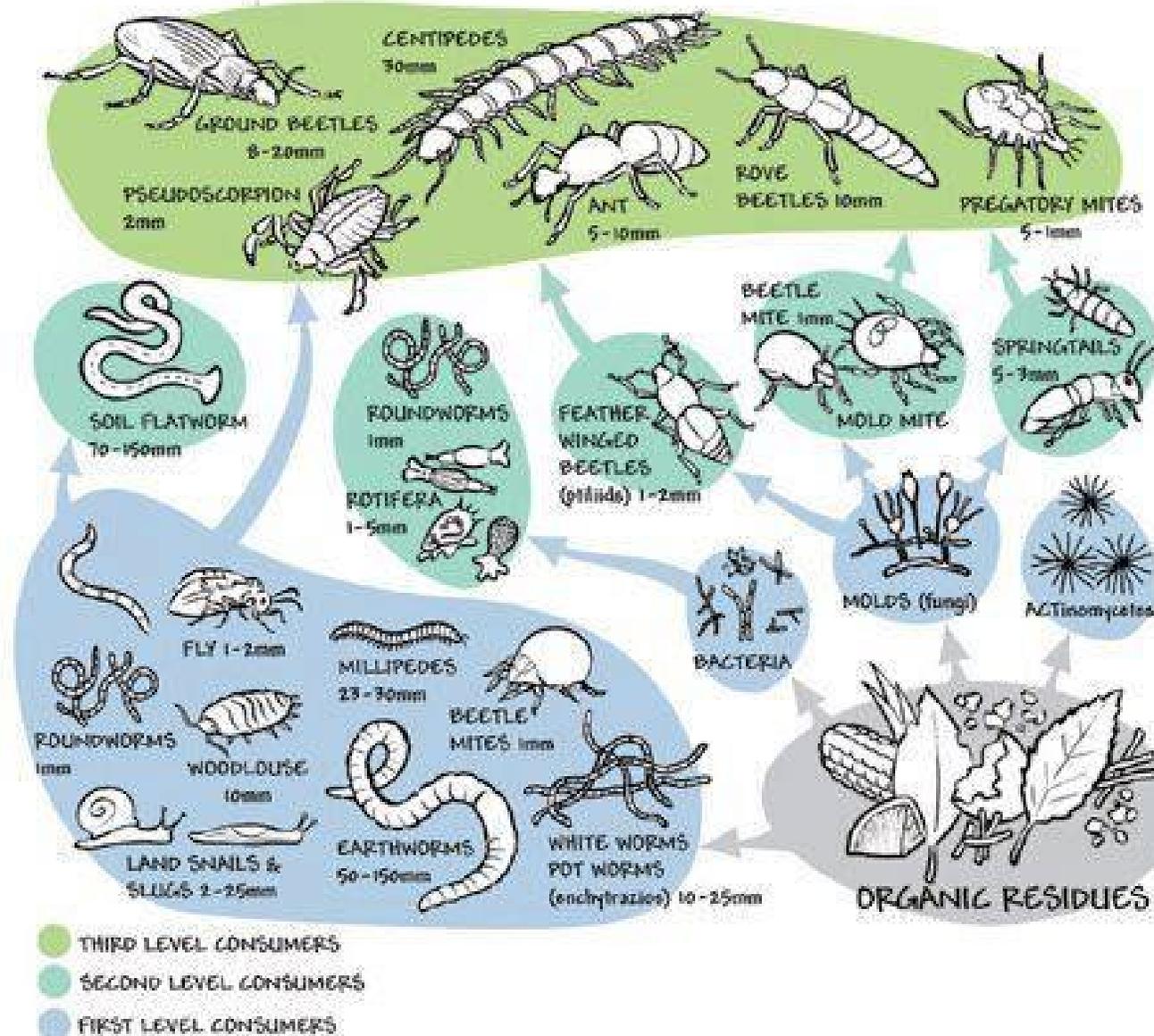
What Not to Add

- ▶ Meat Scraps
- ▶ Bones
- ▶ Fats, grease, lard, or oil
- ▶ Pet Waste - Feces or Cat Litter
- ▶ Dairy Products
- ▶ Black Walnut Tree Leaves or Twigs
- ▶ Coal or Charcoal Ash
- ▶ Diseased or insect-ridden plants
- ▶ Yard Trimmings Treated with Chemical Pesticides



FOOD WEB OF THE COMPOST PILE

ENERGY FLOWS IN THE DIRECTION OF THE ARROWS



Vermicomposting

- ▶ Composting with worms
 - ▶ Red Wigglers are a commonly used species
- ▶ Worms excrete dark casts (worm poop) that are nutrient dense that can be used to grow plants
- ▶ Low maintenance once established - no turning needed!
- ▶ Indoor composting option with a small footprint



Maintaining Your Pile

- ▶ Add water so that compost is damp - like a wrung out sponge
- ▶ An Aerobic process - requires oxygen for decomposition
 - ▶ Mix or turn to incorporate new materials and supply a continuous source of oxygen - on average 4-5 weeks
 - ▶ More frequent turning (every 2-4 weeks) will provide faster results
- ▶ Decomposition occurs most rapidly between 110-160° F
 - ▶ Higher temperatures sustained for 3-5 days will kill pathogens and weed seeds
- ▶ Chop materials into smaller pieces to increase surface area

How Do you Know When It's Ready?

- ▶ Earthy Smell
- ▶ Crumbly Texture
- ▶ Stable - Doesn't heat up when you turn it
- ▶ Visually - No more big pieces
 - ▶ Can use a mesh screen to filter out bigger pieces when pile is nearing completion



Troubleshooting

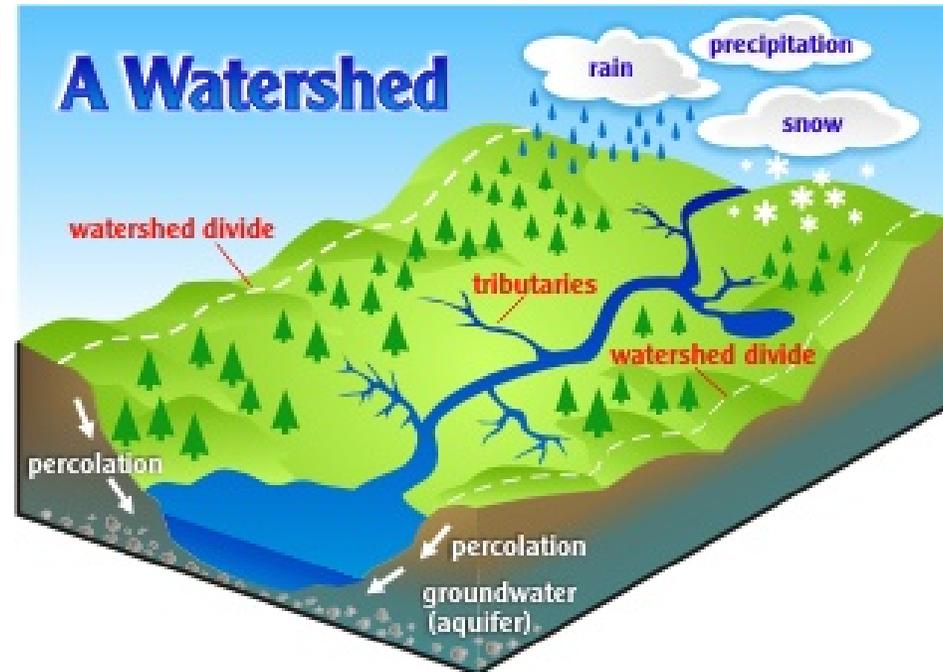
Symptoms	Problem	Solutions
<p>Compost has rotten odor.</p> <p>Compost smells like ammonia.</p>	<p>Not enough air due to overwatering or compaction.</p> <p>If odor of ammonia, too much nitrogen.</p>	<p>Add dry materials such as cornstalks, leaves, or wood chips to soak up excess water.</p> <p>Turn the pile to aerate. Cover pile if rains continue. Turn the pile to aerate. Add carbon materials and turn the pile to aerate.</p>
<p>Pile not heating up.</p>	<p>Pile is too small. Insufficient moisture. Not enough air. Lack of nitrogen. Compost may be finished.</p>	<p>Make pile bigger. Add water while turning, or by sticking a garden hose into the center in several locations. Poke holes into the pile and add water using a watering can. Turn the pile to aerate. Mix in nitrogen materials. Add 10-10-10. Use it and start over!!!!</p>
<p>Compost is damp and warm only in the center.</p> <p>Pile temperature exceeds 160°F.</p>	<p>Pile is too small.</p> <p>Not enough air. Lack of carbon.</p>	<p>Add more material.</p> <p>Turn the pile to aerate. Mix in carbon materials.</p>
<p>Large, undecomposed items are still in the mix.</p>	<p>Low surface area.</p>	<p>Remove items. Chop or shred before adding.</p>
<p>Rodents.</p>	<p>Presence of meat scraps.</p>	<p>Only add items recommended for your pile and remove offensive material. Animal-proof bin.</p>
<p>Compost pile has flies, earwigs, slugs and/or other insects. I find white material throughout my pile.</p>	<p>Good! Pile is composting correctly. Insects are a sign of a productive compost pile. The white cobweb material are actinomycete, part of the microbial community.</p>	<p>If there is an abundance of flies, bury your food scraps as you turn the pile.</p>

Questions?

Rain Barrels 101

Where Does Water Go?

- ▶ Storm Water: Surface flow of water resulting from rainwater or snowmelt
- ▶ Watershed



- ▶ Stark County has 5 main watersheds

Mahoning River

Sandy Creek

Sugar Creek

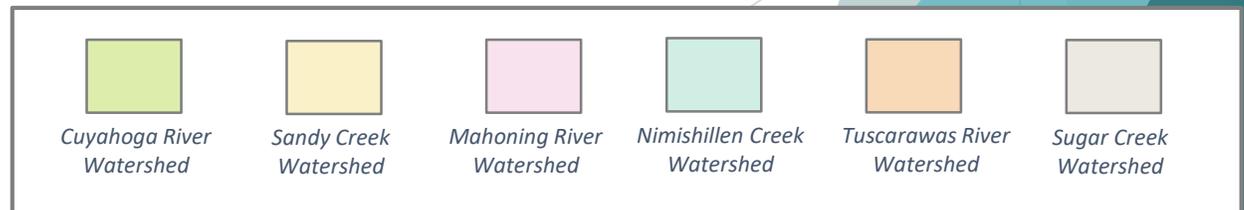
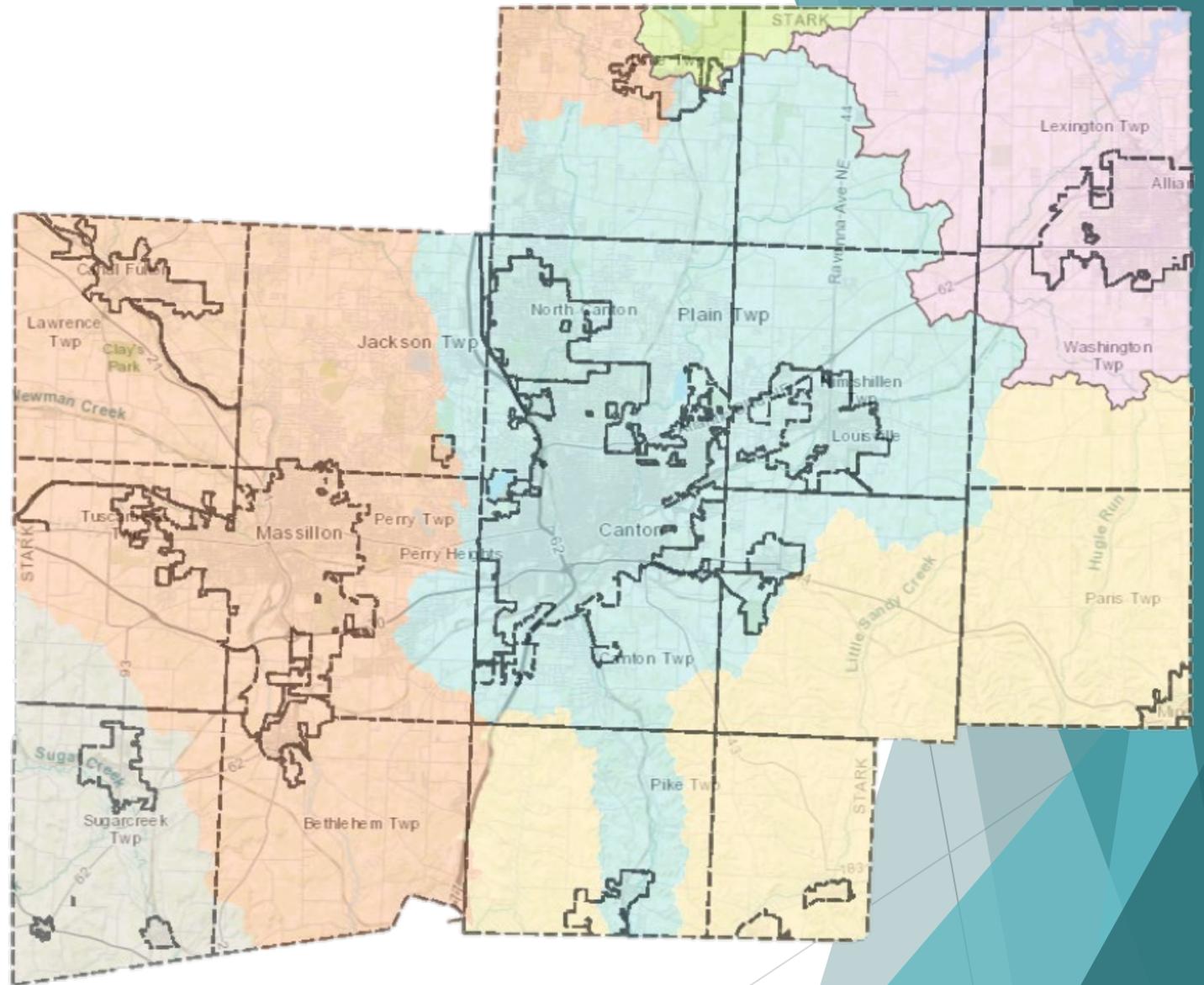
Tuscarawas River

Nimishillen Creek

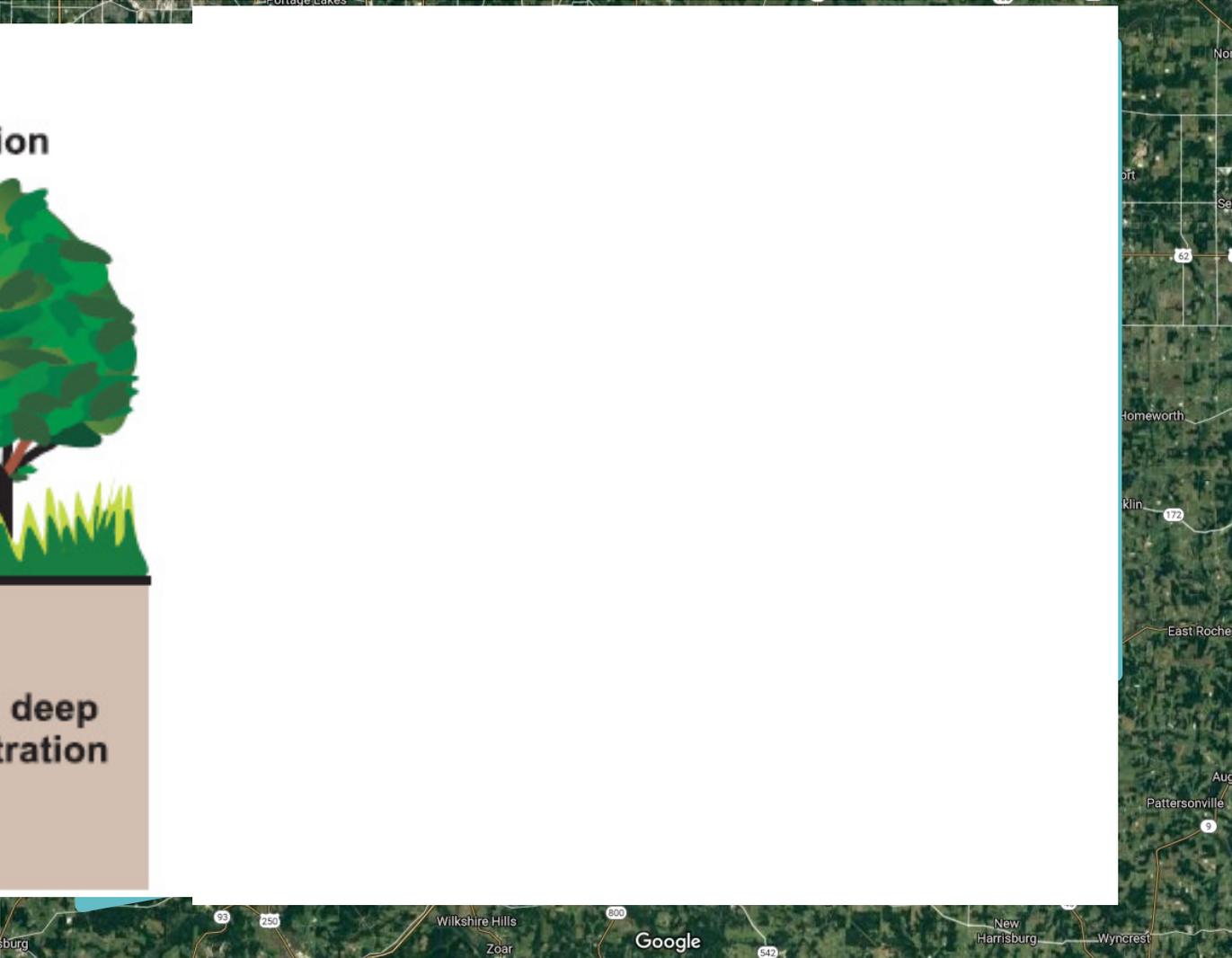
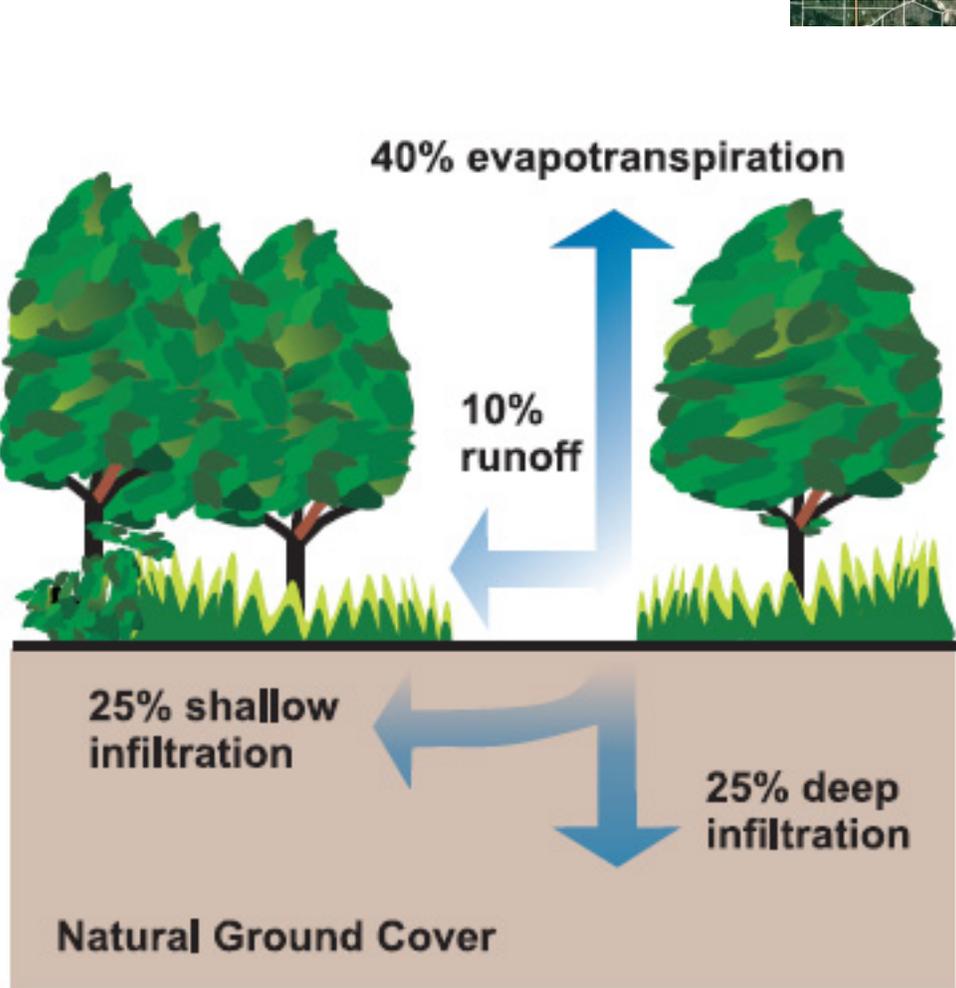
- ▶ Most Stark County water drains south to the Gulf of Mexico

- ▶ Tiny portion drains north to the Atlantic Ocean

- ▶ Stark County has groundwater that is used for drinking water



Impervious Surfaces



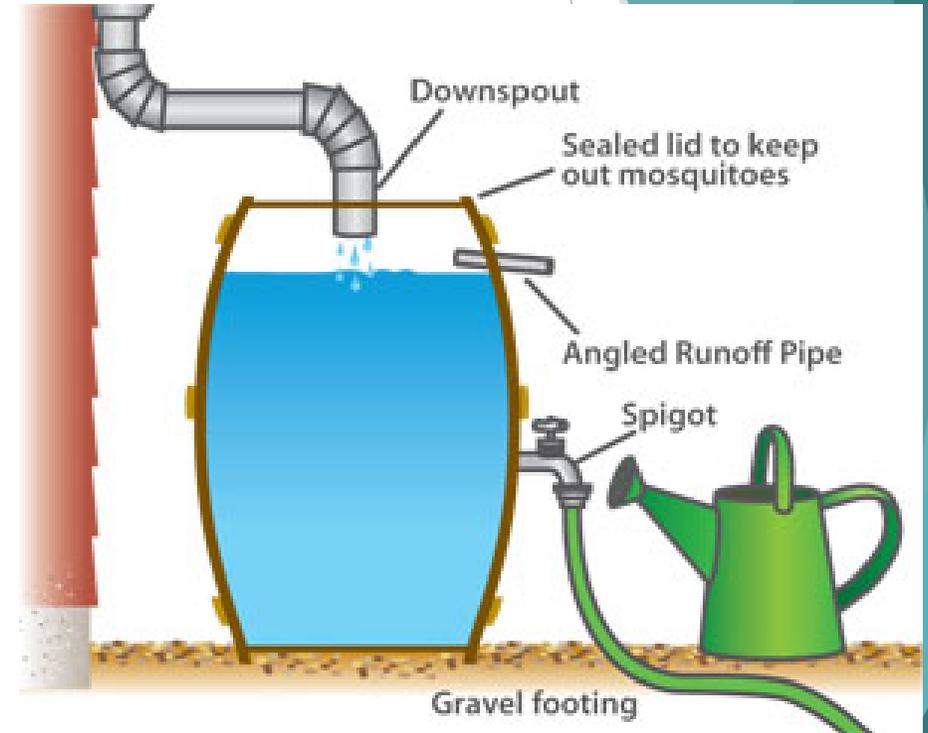
Storm Water

- ▶ Problem: Can carry pollutants and sediment to waterways
 - ▶ Storm water travels to nearest body of water and is NOT “treated”
- ▶ Management: Reduce or slow down the run off
 - ▶ Only rain should travel down the storm water drain



Rain Barrels

- ▶ Containers that collect rain water from roof runoff
 - ▶ Typical Size: 55 gallons
 - ▶ Food grade barrels
- ▶ Connected to the down spout of a home or building
 - ▶ Spigot attached for ease of use
 - ▶ Sealed for safety and to keep out pests



Source: City of Dublin, Ohio

Water Uses

- ▶ Primarily Garden Irrigation
- ▶ Small Scale Grass Irrigation
 - ▶ “Typical” lawn uses 3,000 or more gallons of water per month
- ▶ Do NOT use as a drinking water source
 - ▶ Water is exposed to contaminants on your roof, gutters, and downspouts
 - ▶ If used for emergency drinking water, it needs to be disinfected with a treatment unit found at local outdoor supply stores



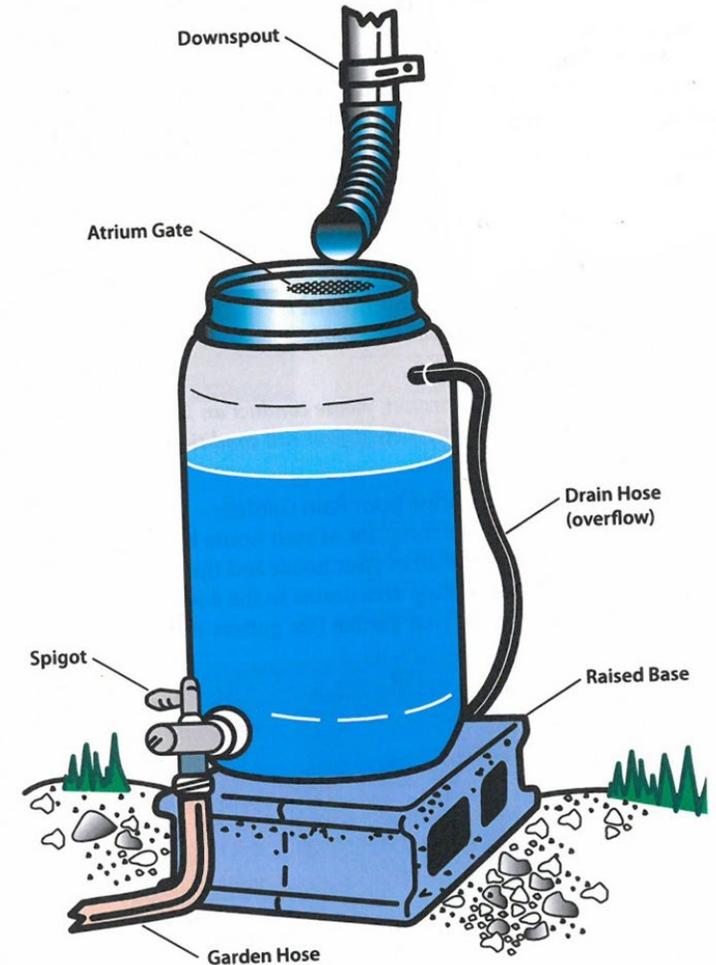
Benefits of Rain Barrels

- ▶ Reduction in natural resource consumption
 - ▶ Reuse plastic barrels
- ▶ Save money
 - ▶ Reduce utility bill
 - ▶ Reduce water usage
- ▶ Reduce flooding, pollution, and erosion
 - ▶ Rivers, lakes, and oceans are affected by storm water runoff (Urban pollution)
- ▶ Emergency water storage
 - ▶ Flushing toilets, cooking, drinking (after filtered and treated)
- ▶ Divert water away from foundation
 - ▶ Prevents yards, basements, and crawl spaces from flooding



Steps to Set Up Your Rain Barrel

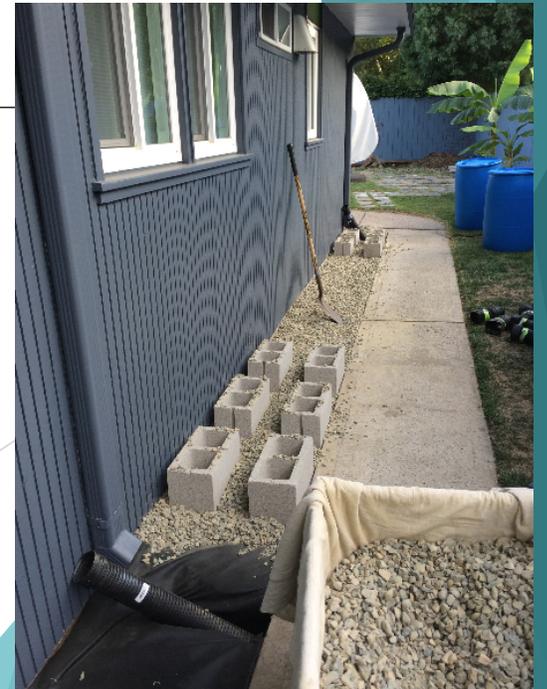
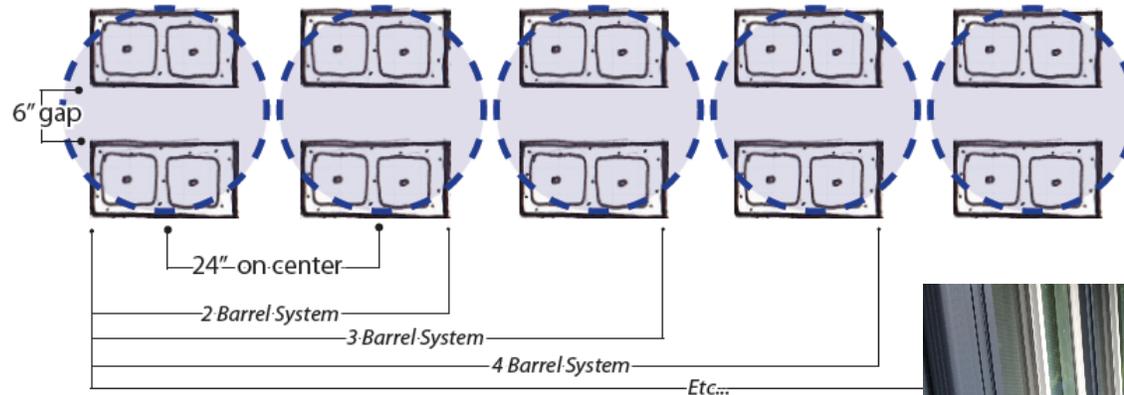
- ▶ Decide on a Location
- ▶ Buy and Customize your Rain Barrel
- ▶ Attach to downspout
 - ▶ Can use a diverter kit for ease of set-up
- ▶ Wait for rain
- ▶ Use your water!
- ▶ Clean and Maintain as needed



Location, Location, Location!

- ▶ Accessible Area
- ▶ Near a Downspout
- ▶ Level Area
 - ▶ If needed, use compactable base rock to level the ground
- ▶ Use cinder blocks to increase water pressure

Bird's Eye View:



Elevate the Barrel



Cinder Block riser to increase water flow



Types of Rain Barrels



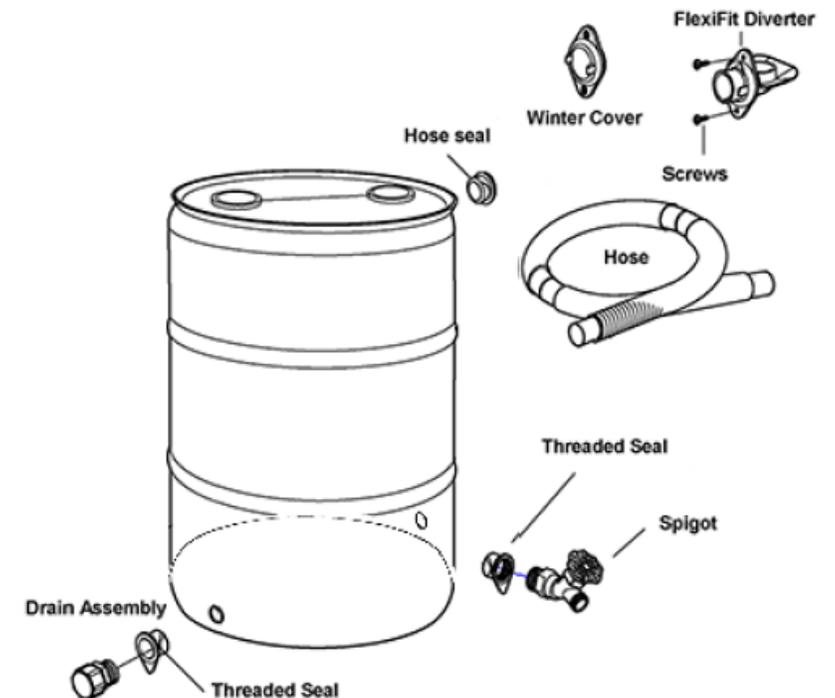
Construction/Assembly

► Materials Needed

- 55 gallon plastic rain barrel (food grade, not chemical grade)
- Filter basket or Mesh Screening
- Drain “Spigot” fitting
- Overflow “Coupling” fitting
- Drip Irrigation Hose / Vinyl Garden Hose
- Teflon plumbers tape
- Drill
- Saw
- Diverter

► Drilling of Entrance and Exit Access

- Drill Exit (Drain Hole) Access, $\frac{3}{4}$ ” size
- Drill Exit (Overflow Hole) Access, 1-5/8” size
- Drill and Cut Entrance (Downspout Connection) Access, sized according to Filter Basket



Possible Concerns

- ▶ Possible roof contaminants:
 - ▶ Lead (Pb)- atmospheric deposition (industrial processes, manufacturing, waste incinerators, airborne soil dust)
 - ▶ Zinc (Zn) - tire dust and industrial processes
 - ▶ Total Coliform - bacteria found in soil, surface water flows, and in animal waste
 - ▶ E. Coli - subset of fecal coliforms bacteria found in warm-blooded animals (birds and squirrels)
- ▶ Based on Federal Irrigation Standards
 - ▶ “NORMAL” circumstances, the levels of Pb, Zn, Coliform, and E. Coli are SAFE
 - ▶ Presence of animal feces would be a concern to get water tested by local Health Department
- ▶ Mosquitos
 - ▶ Standing water can be breeding ground for mosquitos
 - ▶ Seal off any opening as best as possible; drain and clean frequently
 - ▶ Utilize mosquito dunks or other deterrent

Maintenance

- ▶ Blue barrels
 - ▶ Reduce algal growth, by limiting light
- ▶ Screens
 - ▶ Prevent sediment and debris from entering water
 - ▶ Prevents mosquitoes
- ▶ Chemical Cleaning
 - ▶ Add 1oz. of unscented, 5-6% chlorinated, household bleach to 55 gallons of water monthly
 - ▶ Wait 24 hours to use water in order for chlorine to dissipate from the water
- ▶ Green Cleaning
 - ▶ Vinegar (approximately 1 cup)
- ▶ Winter Storage
 - ▶ Disconnect, drain, clean, and store for the winter

Available for Purchase from Stark SWCD



**Compost Bin
\$55.00**



**Rain Barrel
\$30.00**



**Rain Barrel +
Diverter Kit
\$60.00**

Questions?

The background features a white space with abstract teal and grey geometric shapes on the right side, including overlapping triangles and polygons.