

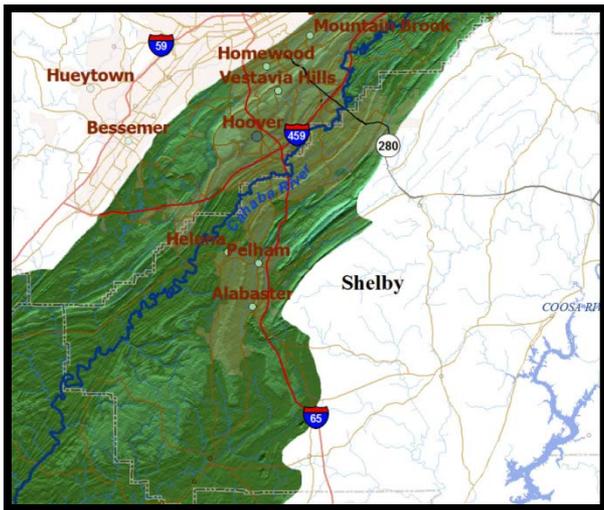
Storm Water, Rain Barrels and the Residential Landscape

August 17, 2019

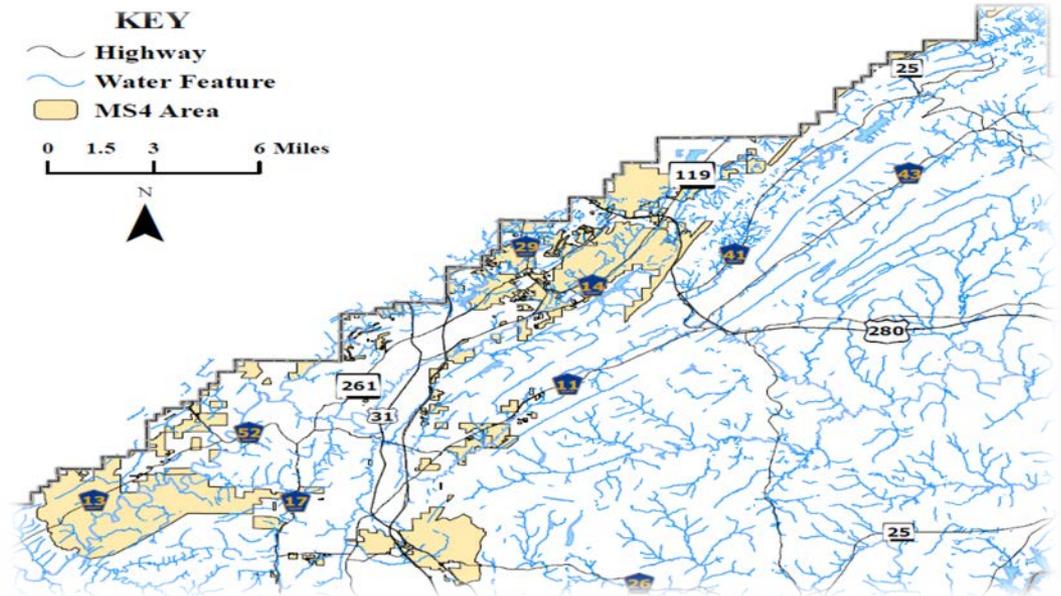
What is a MS4 and how does it relate to Storm Water

- * The Municipal Separate Storm Sewer System (MS4) general permit is mandated by the federal regulations under the Clean Water Act and administered by the Alabama Department of Environmental Management (ADEM)
- * Basically, it is all the storm water run off conveyance into the larger creeks and Cahaba River

Shelby County MS4

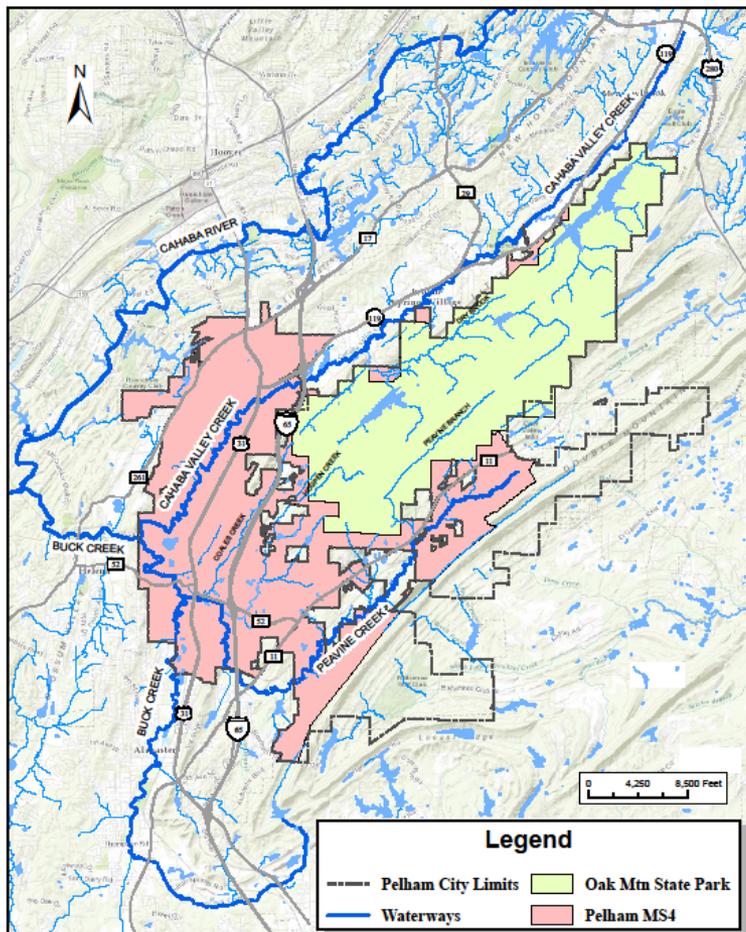


- * Municipal Separate Storm Sewer System (MS4)
- * Cahaba River Basin



City of Pelham MS4

Figure 1: Overall MS4 Boundary



- * Municipal Separate Storm Sewer System (MS4)
- * Cahaba River Basin
- * Buck Creek and Cahaba Valley Creek (Bishop Creek)

Total Maximum Daily Load?

- * What is the TMDL?
 - * A total amount of pollutants a stream system can handle in a day.... A limit.
 - * Calculates tolerable amount of pollution a water body can receive and maintain water quality.
 - * Includes loads from point sources and nonpoint sources in the watershed.
 - * The County's MS4 program is responsible for its portion
 - * Implemented through Best Management Practices, sampling and education.

Residential Storm Water

- * The MS4 regulation requires that storm water runoff be addressed on site.
- * Detention/retention must accommodate a 1.1 inch rainfall over a 24 hour period preceded by a 72 hour antecedent dry period.
- * Storm water should be absorbed on site whenever possible.

Yard Maintenance

- * Debris
 - * Sediment/Erosion
 - * Leaves
 - * Tree limbs
- * Nutrients
 - * Animal waste
- * Chemicals
 - * Pesticides
 - * Herbicides
 - * Fertilizers

Debris-

- * The drains are just for RAIN
- * Bag it or mow it, don't blow it.
- * **DO NOT** blow into the storm drains or ditches
- * **DO NOT** blow into the roadway



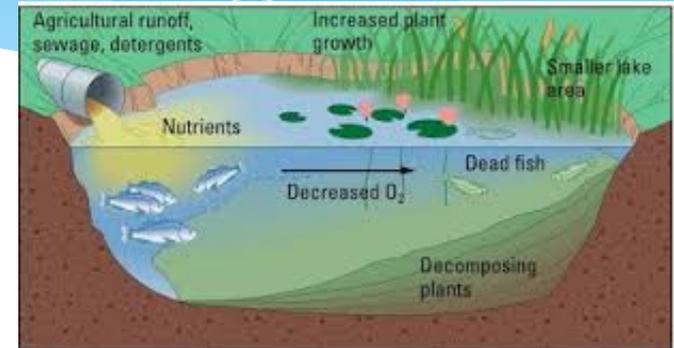
What to do with yard clipping, leaves and other landscape materials

- * Leaves, limbs and Pine straw can be mulched or repurposed to replenish planting beds and grass.
- * Add leaves to compost
- * Barriers along planting beds can reduce sediment from washing away



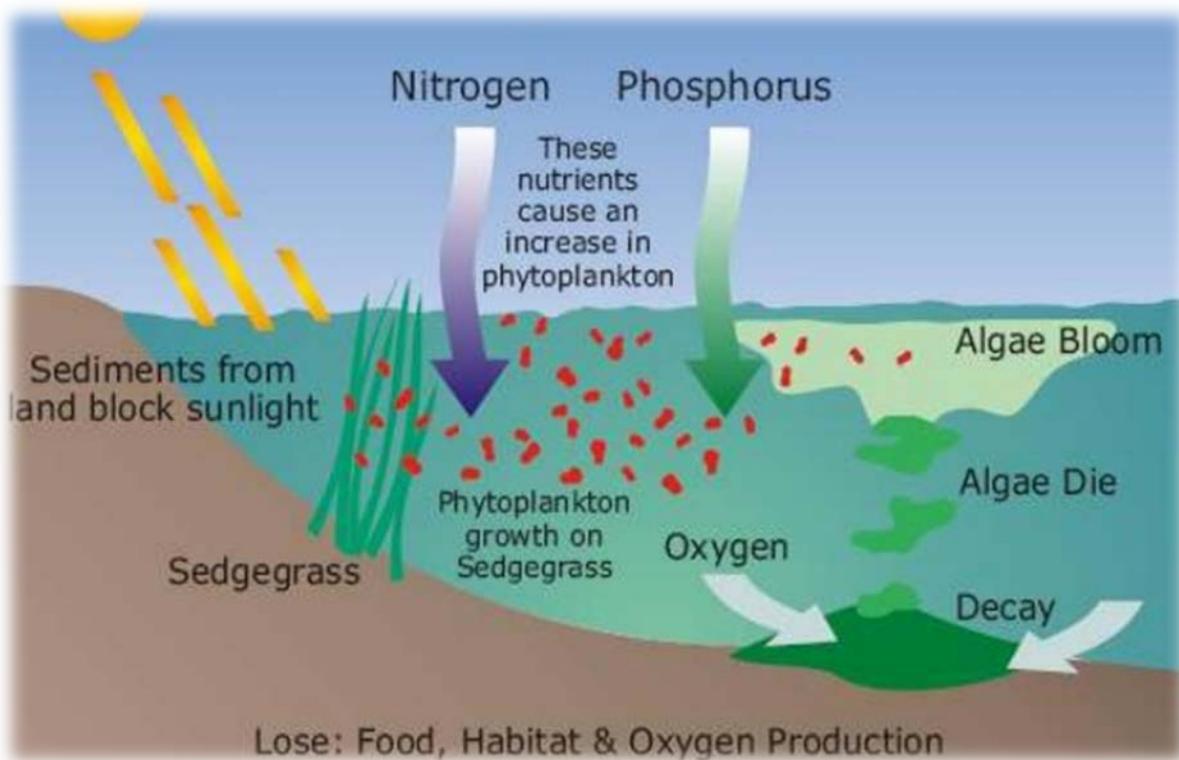
Nutrients

- * Elevated nutrients may cause
 - * Polluted Drinking Water
 - * Excessive aquatic flora growth
 - * Bacteria break down the plant life....Lowers dissolved oxygen levels
 - * Decreased health or death of water fauna...Leads to summer fish kills
 - * Nutrient pollution is the process where too many nutrients, mainly nitrogen and phosphorus, are introduced to bodies of water and can act as a fertilizer, causing excessive growth of algae leading to other water related issues.





Eutrophication



Use the Rain before it drains

- * Downspouts focus water runoff and increase both volume and velocity at the output.
- * Capture and disperse the flow with barrels, rocks, and design features.
- * Don't direct drainage onto the street.



Designing to reduce waste

- * Reducing water run-off
 - * Slow the flow
 - * Increase absorption-native plants
 - * Creating barriers



Detain, Retain and Reuse

- * Ponds
- * BioSwales
- * Rain Gardens
- * Rain Barrels
- * Cisterns
- * Downspouts to Spigots



Reduce maintenance and capture the rain

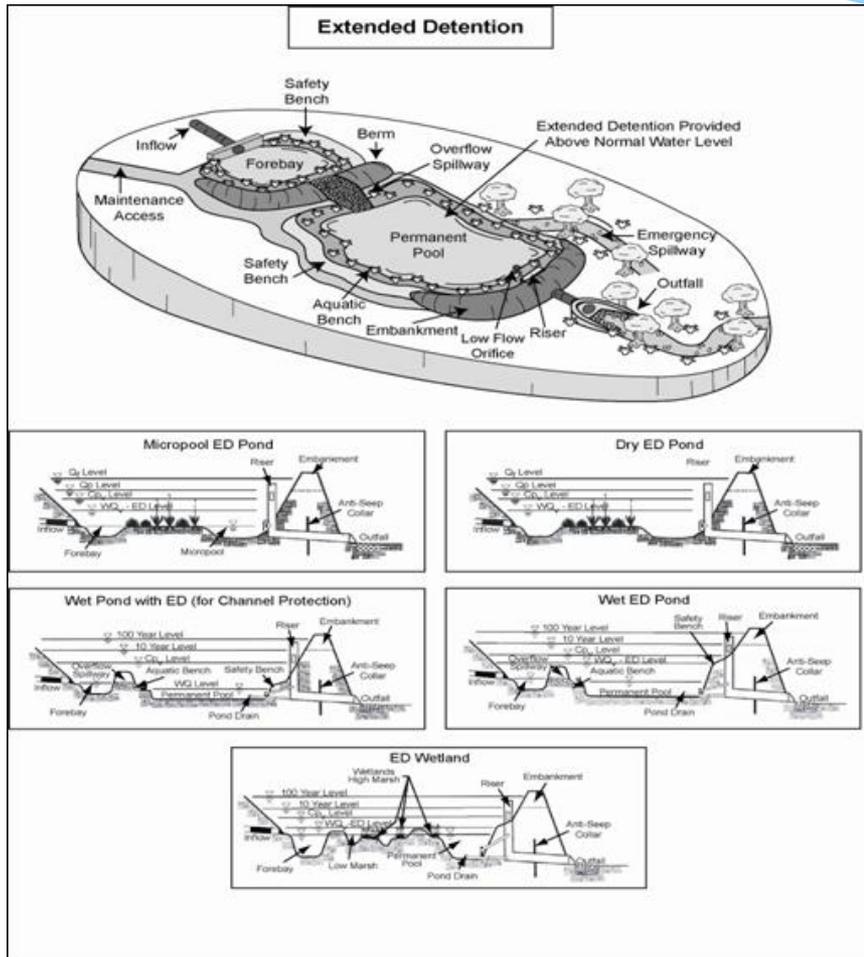


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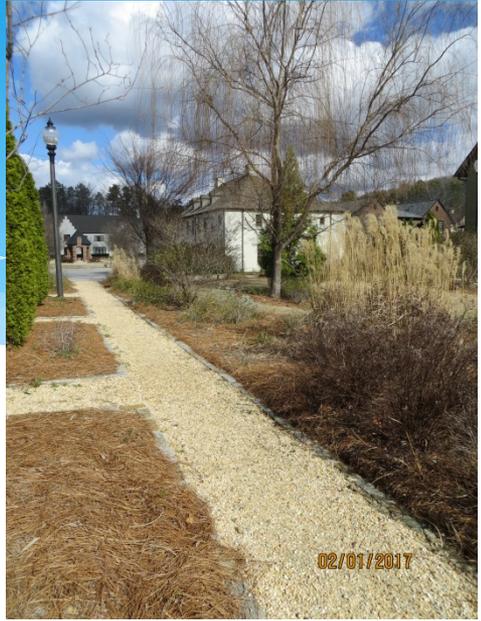


- * Use Native plants.
- * Drought tolerant plants.
- * Breaks in impervious surfaces to allow for better infiltration.
- * Barrier stops with stone or edging- prevent flush of applied chemicals and allow settling of water.

Ponds: Retain or Detain- Large and Commercial Developments



Edenton- Rain Gardens



Rain Barrels and Cisterns

Downspouts to Spigots



Bioswales and Rain Gardens



residential rain garden

(keep 10 feet away from most structures)



St. Vincents 119

Bio Swales



North Shelby Library Bio Swale

- * North Shelby Library had a swale that settled and just didn't move the water
- * A Low Impact Development (LID) technique was used to solve the problem
- * Bio Swale



Know your plants

- * Native plants
 - * already adapted to our environment so they are capable of flourishing without much pampering.
 - * provide food and shelter for birds, insects and wildlife in our ecosystems.
 - * So many to choose among—trees, shrubs, ferns, vines, herbaceous perennials, grasses and bulbs—so there is a native plant to match any spot in the landscape.
- * Down the Drain and Up in your cup or on your plate





Native plants



- * Smaller plants that are big on looks? There are lots of potential matches on the native shrub list. If you love those flowers, try native azaleas and hydrangeas as well as buttonbushes, sweetshrubs, buckeyes and viburnums.
- * Want a fruitful relationship? Native holly, beautyberry and winterberry shrubs produce gorgeous berries that are lovely to behold and loved by birds and other critters
- * Stick around for a long time but still add lots of color to your life, explore the many choices of flowering native herbaceous perennials such as aster, hibiscus, phlox, coneflower, coreopsis, yarrow and many, many others.
- * Tall and handsome—a tree for instance? Silverbells and native dogwoods and magnolias, all of which are good-looking **and** flower.
- * But there are also plenty of other appealing options—both blooming and non-blooming, deciduous and evergreen—to consider, such as hickories, oaks, maples, cedars, plums and pines, to name a few.



Plant Health



- * Overwatering-plants sip, they don't guzzle
- * Over treating with chemicals- too much can burn, run off wastes \$\$
- * Native plants are used to our crazy weather and have better durability
- * Clipping clean up-compost, chip, toss

Composting



- * Three Basic Ingredients to Composting
 - * Browns- dead leaves, branches and twigs, cardboards, papers
 - * Provides carbon
 - * Greens- grass clippings, vegetable waste, fruit scraps and coffee grounds
 - * Provides nitrogen
 - * Water- the right balance of water, greens and browns is important to develop functional compost.
 - * Provides moisture to breakdown organics
- * The compost pile should contain equal parts browns and greens with alternating layers of organic materials of different sized particles.

What to Compost

- * Fruits and Vegetables
- * Eggshells
- * Coffee Grounds and Filters
- * Tea Bags
- * Nut Shells
- * Shredded Newspaper
- * Cardboard
- * Paper
- * Yard trimmings
- * Grass Clippings
- * House Plants
- * Hay and Straw
- * Leaves
- * Sawdust
- * Wood Chips
- * Cotton Wool and Rags
- * Dryer and Vacuum Cleaner lint
- * Hair and fur
- * Fireplace Ashes

What NOT to Compost

- * Black Walnut tree leaves or twigs-releases substances harmful to plants
- * Coal or charcoal ash
- * Dairy Products- Odor problems and attract pests
- * Diseased or insect ridden plants-might retransfer
- * Fats, Grease, Lard or Oils- Odor and pests
- * Pet Waste-bacteria and other pathogens
- * Chemically treated yard trimmings- damage to compost.

Rain Barrels

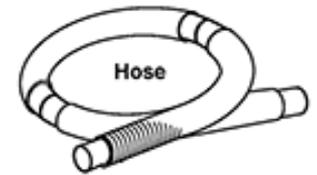
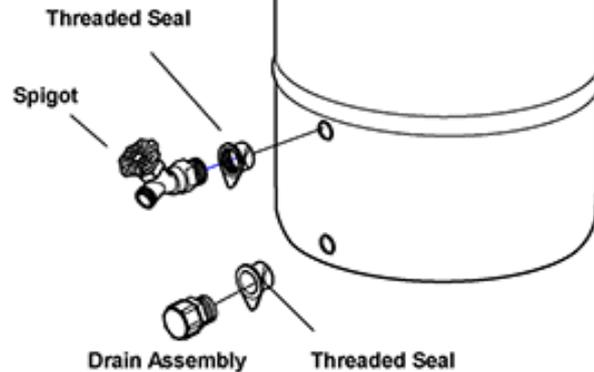
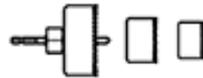


- * A Rain Barrel is used to temporarily store and reuse rainwater.
- * Benefits
 - * Rainwater is natural and good for plants w/o additives.
 - * Conservation of water- less waste of drinking water
 - * more than 40 % of residential water is used for irrigation in spring/summer
 - * a free water source for irrigation and ease reliance on the municipal water supply
 - * Reduction of storm water runoff
 - * runoff picks up soil, fertilizer, oil, pesticides and other contaminants from hard surfaces and landscapes.
 - * Storm runoff is not treated and flows directly into streams, lakes and other bodies of water nearby

Rain Barrel Pieces and Parts



3 pc. Hole Saw Set



FlexiFit Diverter



Screws

Hose seal



Winter Cover



Rain Barrel

You can build it

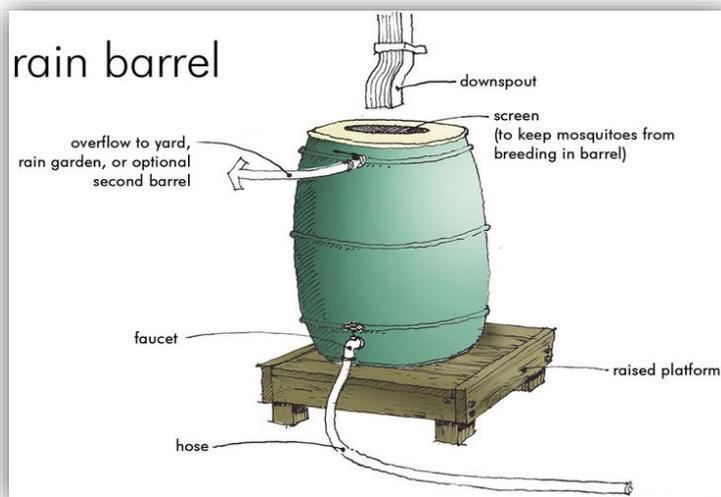
* Tools

- * 7/8" Spade Drill Bit
- * Electric Jigsaw
- * Electric Drill
- * Utility Knife
- * Marker



* Supplies

- * 55 gal. plastic barrel
- * 2 3/4" Plastic faucets
- * 1 3/4" female coupling
- * Skimmer basket-like pool/pond
- * Roll of teflon tape
- * All purpose caulk or plumbers sealant
- * Section of garden hose
- * Hose couplers
- * 12" x 12" piece of fiberglass window screen



Pick your style



Assembly

- * Purchase a Food-Grade Container
- * Building a Lid for a Closed-Top Rain Barrel
 - * Using the spade bit, drill a hole 2-3 inches in from the edge of the lid. Shave away some plastic in the hole until the adapter can be screwed in straight. Remember, a smooth shave counts! Adjust the size of the hole by shaving a tiny bit of plastic from the hole with the utility knife.
- * Building the Linking/Overflow Drain Port
 - * Typically about 2 inches down from the top of the barrel
- * Building the Outlet/Spigot
 - * The spigot will be installed on the front of the barrel. There is usually a rim around the barrel a few inches up from the bottom. Below the rim the barrel will be slightly curved, but above the rim the barrel's side will be flat.
- * Selecting a Diverter
 - * A downspout diverter is a special attachment for your gutter downspout that is used to create a seamless flow of water from the downspout into the rain barrel. Using a downspout diverter saves you from having to remove the bottom half of the gutter downspout because it keeps the downspout intact.

Questions

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