# Growing from the STEM Up: A New Approach to MS4 Public Education

Jessica Loughman, CMS4S, GISP
Environmental Specialist
Innovar Environmental, Inc.

# MS4 Goals

- Based on NPDES Permit:
  - Phase I
    - Urbanized areas (UAs) with populations of 100,000 or larger
    - Individual Permit
  - Phase II
    - UAs with populations less than 100,000 or on a case-by-case basis for small MS4s located outside of UAs
    - General Permit

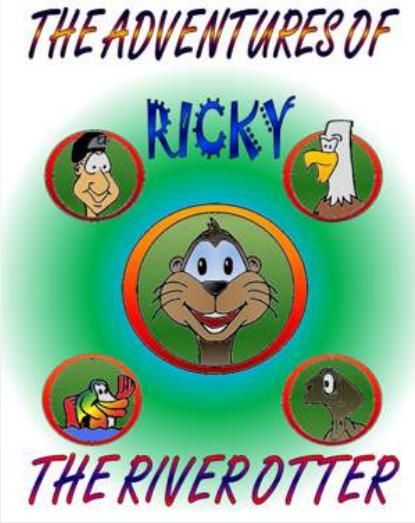
# MS4 Phase II Program Elements

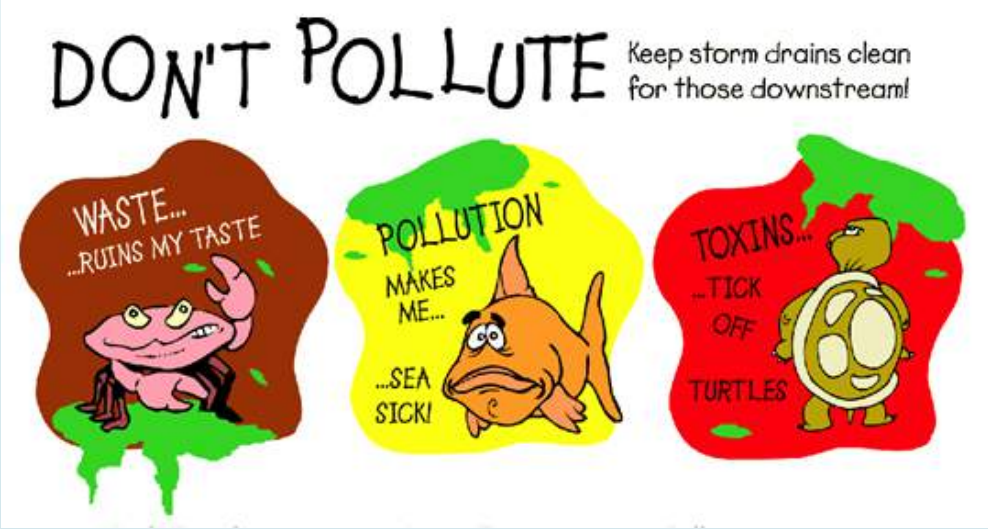
1. Public Education
2. Public Involvement
3. Illicit Discharge Detection & Elimination
4. Construction Stormwater Runoff Control
5. Post-construction Stormwater Management
6. Pollution Prevention/Good Housekeeping

# Fort Benning's Public Education Program

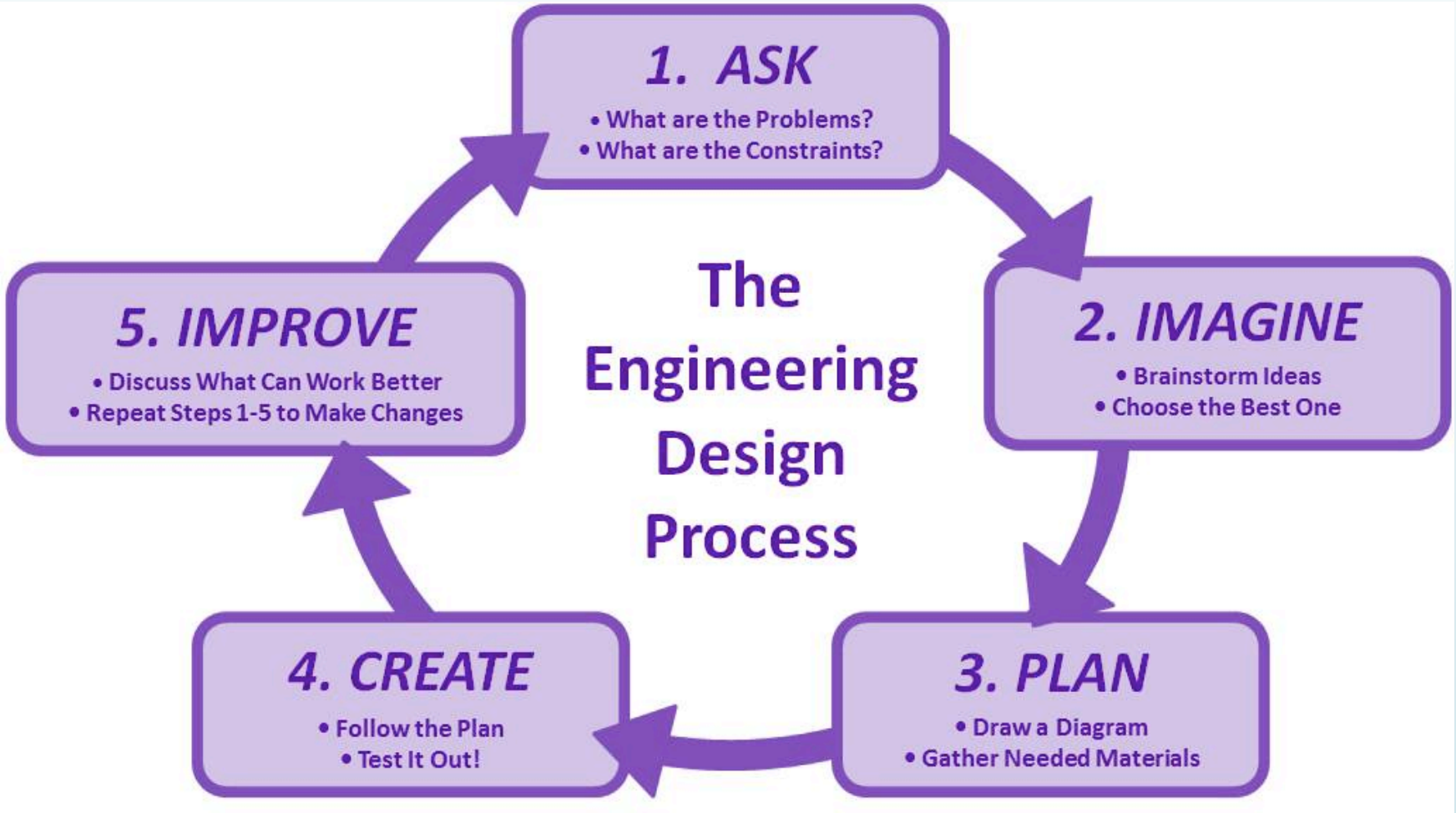
1. Educational Stormwater Printed Materials
2. Educational Stormwater Displays
3. Classroom Education on Stormwater
4. Education for On Post Housing
5. SharePoint Website
6. Environmental Quality Control Committee

# Creating Visual Displays





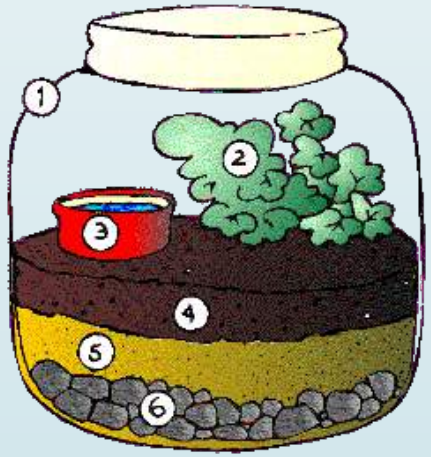
# MS4 Program Development Mirrors Engineering Design



# Selecting an Audience

- Classroom Education on Stormwater
  - Elementary – Middle School Students
  - Pair your educational message with classroom standards
  - Example – US Department of Defense Education Activity (DODEA)
    - 4Sd.1: Summarize the processes of the water cycle (including evaporation, condensation, precipitation, and runoff).

    Source: http://www.dodea.edu/curriculum/




1. Atmosphere
2. Plants
3. Surface Water
4. Top Soil
5. Sandy Substrate
6. Bedrock

# Growing from the STEM Up

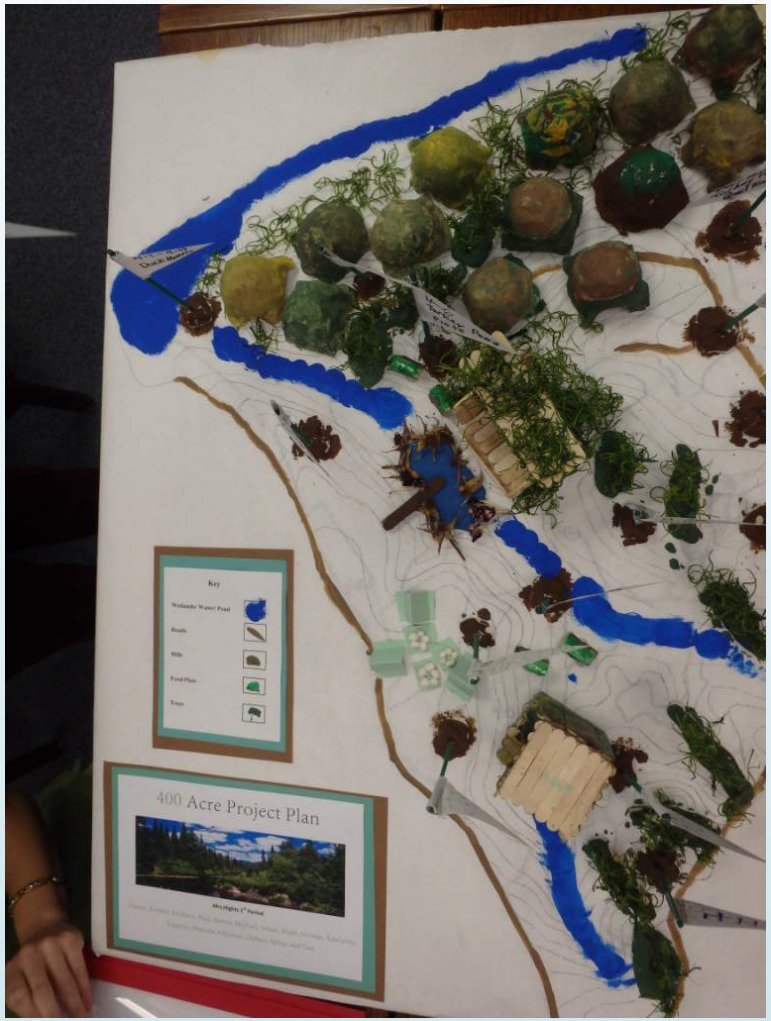
S – Science

T – Technology

E – Engineering

M – Mathematics

- Illustrating real world applications
- Developed by DOD
- Formed a partnership with Fort Benning DODEA



# 4th Grade Earth Week Nature Walks

Dear Land Management Consultant:

My name is H. David Thoreau and I own 400 acres of land in Walden, GA.

I am seeking a stewardship plan that will enable me to meet several objectives. My first objective is to establish a hunting preserve so I can sell hunting trips to people looking for good hunting and willing to pay for it. I need to make sure I have enough income to keep the preserve nice, staffed with at least one employee who can handle bird dogs, food plots, a lodge and anything else needed to make the preserve run and make money. I want to be able to accommodate 10 hunters on the site pretty much year round for hunting trophy deer, turkey, quail, doves, duck, and fishing, which brings me to the next goal. I want a pond we can stock with fish. I will need a kennel for at least 10 hunting dogs and a range for hunters to sight their firearms. Since the caretaker will be expected to live on the site, I will need to have a place for him/her to live. Also, I would like some type of barn to keep all the equipment out of the weather.

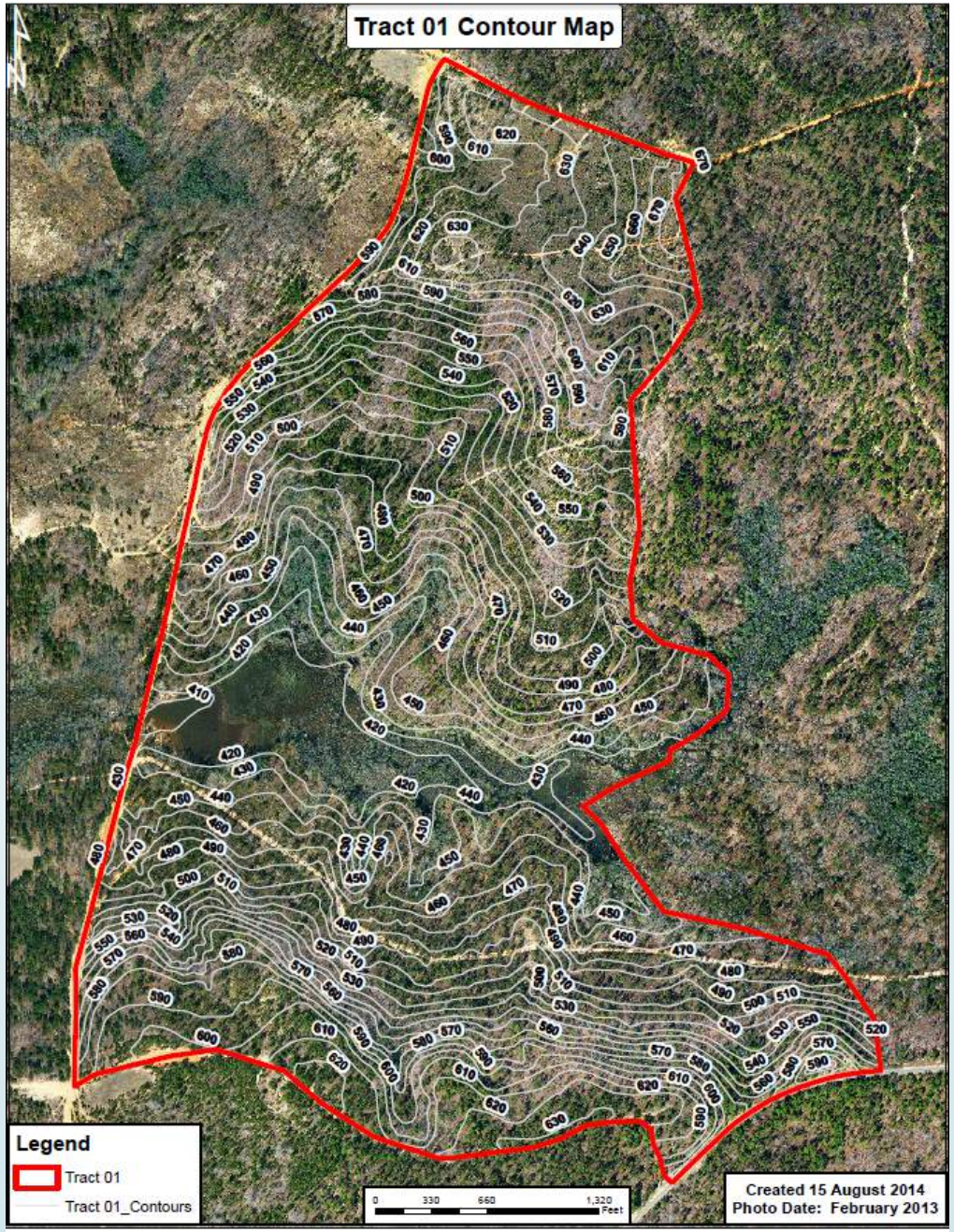
Since people are going to be spending some time on my preserve, it should have trails for hiking and getting around to the different hunting areas. Birdwatching and a few primitive campsites would be nice also. It needs to be pretty- a nice place to visit, sit, and watch. Finally, I know I'm going to need income from timber, so make sure the management plan ensures periodic income from timber sales.

I have a starting budget of about $200,000 so if start up costs are more than that, you'll need to generate some income to get things going.

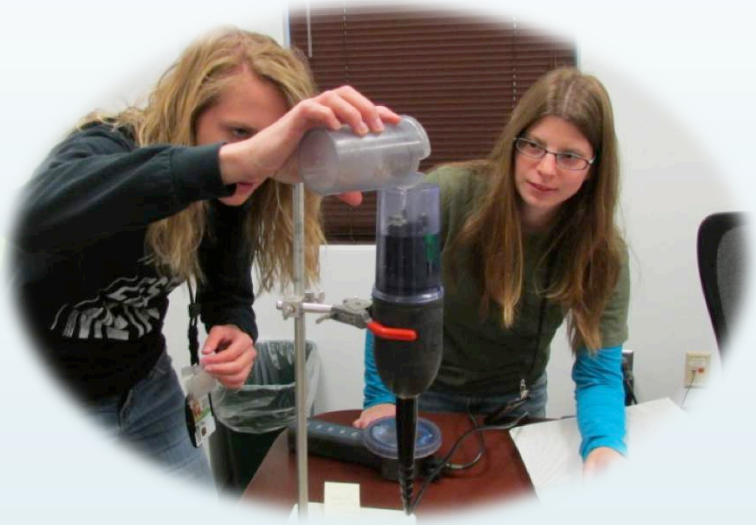
Send me your plan and I will decide on the best one to meet my goals. I look forward to your ideas.

Sincerely,

H.D. Thoreau



# Watershed Management with 7th Graders



# Faith Middle School STEMposium

- 6th Grade- Dynamic Water
- 7th Grade – Amazing Aquifer
- 8th Grade- Tracking groundwater pollution

# Sources for creating STEM Activities

PROJECT WET®
Water Education for Teachers

Project Learning Tree®

Project WILD®

# QUESTIONS