AGSM 335
Soil and Water Management

- Announcements
  - Assignment: HW#1
  - No lab this week!

- Today’s Topics
  - Syllabus
  - Introduction to Soil and Water Management
  - Example problem
Soil and Water Management

- Human activities
  - alter land forms
    - development / agriculture / mining / etc.
  - alter natural watercourses
    - Everglades
  - build in floodplains
    - floods in Houston area
- Role of Hydrologist
  - reduce environmental impacts
    - design flow systems
    - design sediment control systems
Soil and Water Management

- Environmental concerns
  - Impact of land use changes
  - Control runoff, erosion, chemical transport
    - Pre-development levels
  - Assumes measurement methods are available
- Incorporate conservation measures in plans for development projects
  - Pre-plan water / sediment control strategy
    - Perimeter controls ==> entering/leaving site
  - Rate and extent of vegetation removal
Soil and Water Management

- Control water and sediment in place
  - erosion prevention is the key
- Water control ==> channels, culverts, etc
  - proper design => good maintenance required
  - energy dissipation at outfall
  - Reduce excessive velocities
Example Problem (Figure 1.1)

- 20 ac / 10% slope / silt loam soil / 2 yrs of data
  - forested condition ==> 0 sediment yield
  - disturbed condition ==> 1300 ton sediment (no conservation measures)
  - disturbed condition ==> 350 tons sediment (mulched w/ sediment detention pond)
Example (cont.)

- 20 ac / 10% slope / silt loam soil / 2 yrs of data
  - forested condition ==> 3 cfs peak runoff
  - disturbed condition ==> 9 cfs peak runoff (no conservation measures)
  - disturbed condition ==> 8 cfs peak runoff (mulched w/ sediment detention pond)
  - mulch retains moisture/promotes infiltration
Example Problem

*Figure 1.1*  Land use impacts on runoff and erosion.
Class Wrap Up

- Assignment: HW#1
- No lab this week!
- See you on Wednesday!