


LAWN TO LAKE IN OUR URBAN LANDSCAPE





DETENTION BASIN/POND

- Dry , sometimes wet
- Intercepts run-off
- Holds water temporarily
- Allows for gradual release (24 hours),
evaporation or seepage

- + Reduces peak flow rate and energy of stormwater discharges
- + Protection for downstream
- + Can be used for recreational purposes

- Does not improve water quality
- If not maintained can create odors, weed growth and collect trash





RETENTION BASIN/POND

- Holds a specific volume of water permanently
- Restricted overflow - exits slowly over time, or next storm event
- Able to control stormwater quantity and quality
- Emulates a pond's natural physical, biological and chemical processes

SWALES

- A linear open channel
- Controls the flow of stormwater run-off
- Acts as a filter to remove some pollutants





Aquatic resources in an urban setting ...

- Stormwater Control/Detention
- Increase Property Values
- Habitat/Natural areas
- Recreation
- Aesthetics



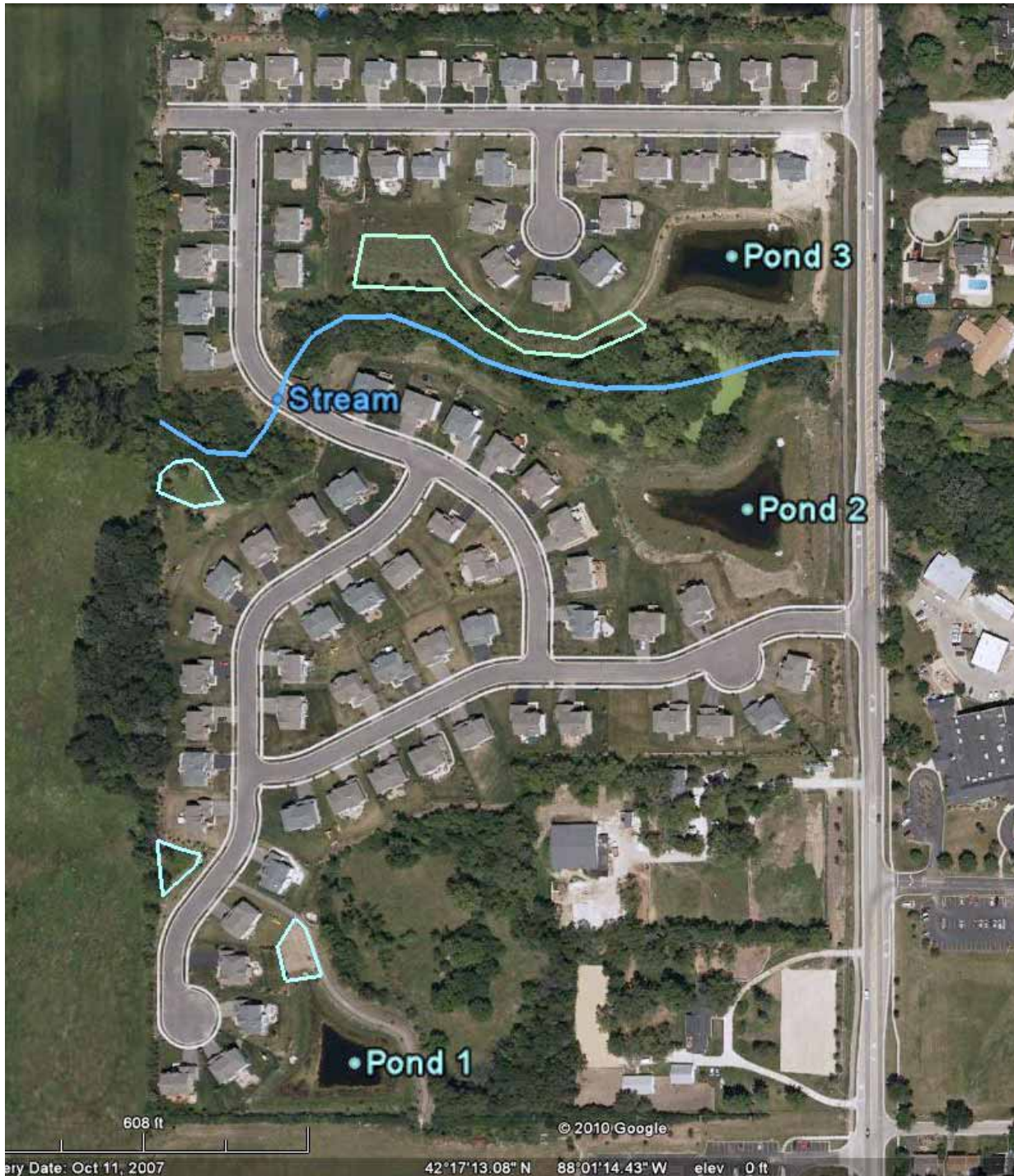
Some of the issues:

- Man-made ponds,
urban environment
- Poorly designed
- Elevated water
temperatures
- Steep slopes
- Disturbed soil/clay
- Shallow rooted vegetation
(turf grass)
- Phosphorous/nitrogen
(lawn fertilizers)
- Salt and other contaminants
- Homes built too close

Human related challenges:

- Lack of education, understanding
- Lack of connectivity to nature
- Unrealistic expectations
- Dumping of waste materials

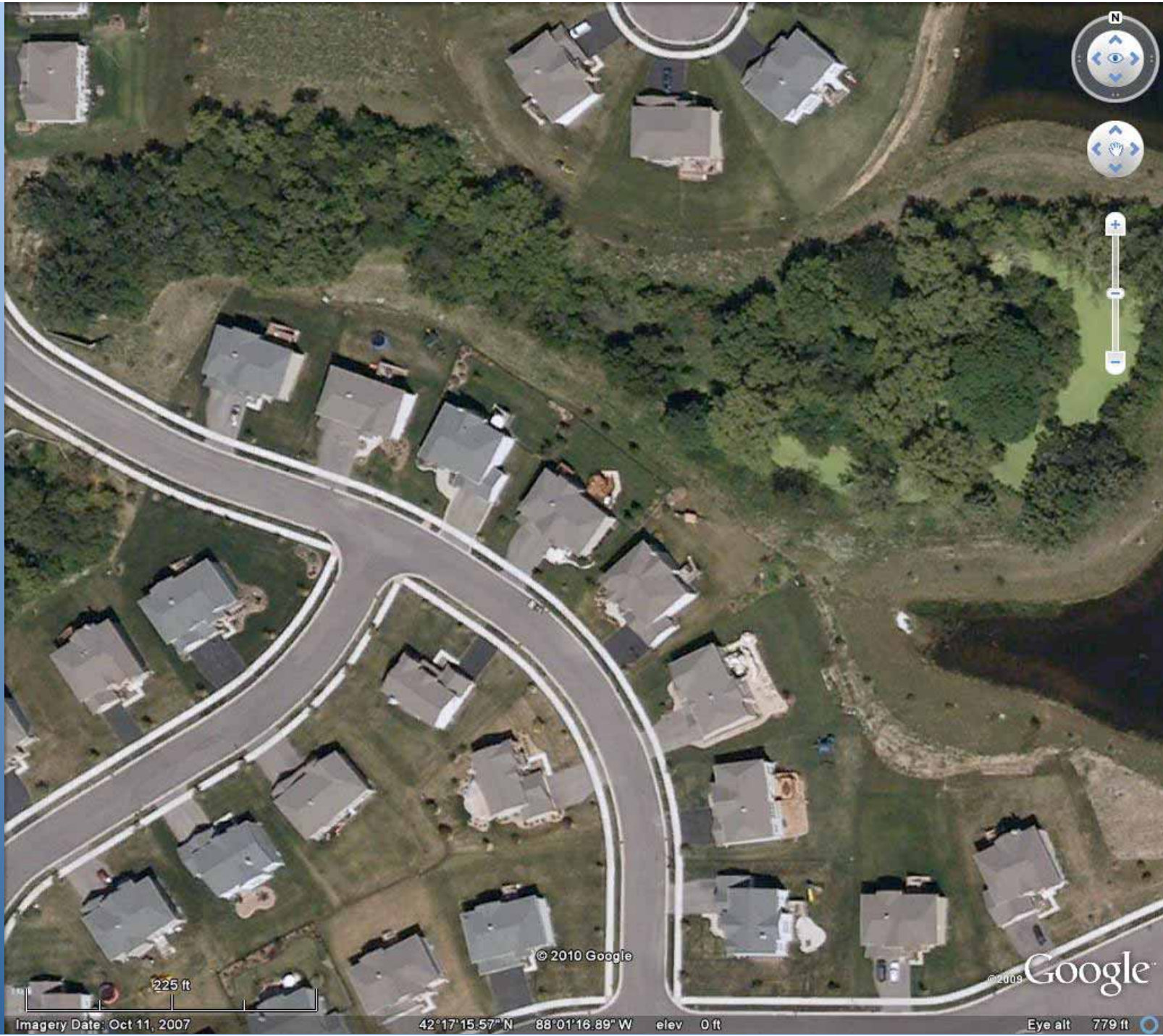




‘Typical
subdivision’

QUESTION:

Who is using
lawn
fertilizer?



Imagery Date: Oct 11, 2007

© 2010 Google

42°17'15.57" N 88°01'16.89" W elev 0 ft

© 2009 Google

Eye alt 779 ft

Necessary for Plant & Algae:

- Water
- Nutrients
- Light



The Challenge?

Encourage balanced
biological systems



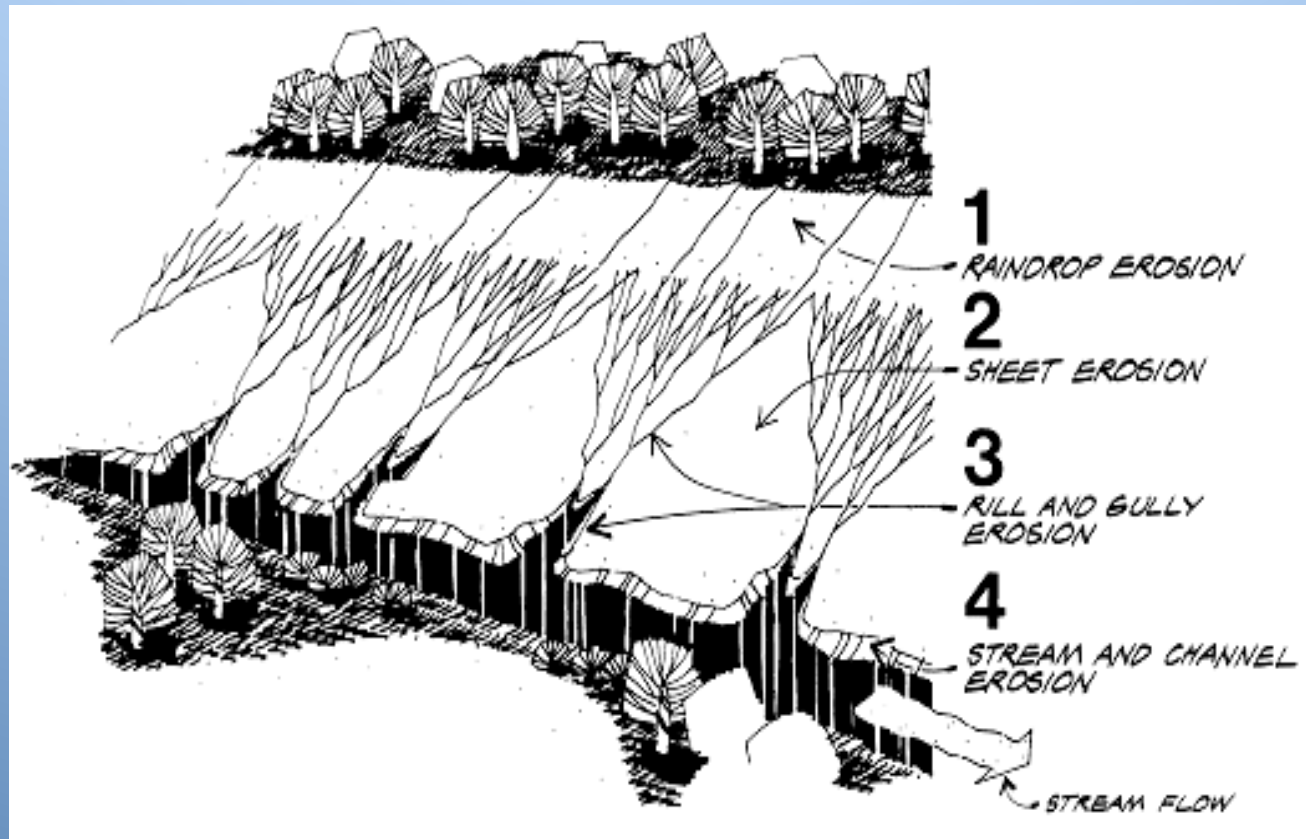
Turf grass to shoreline

- expensive to maintain
- requires weekly mowing and a lot of water during the growing months
- very susceptible to erosion
- favored by geese
- lifespan < 5 years



Lack of appropriate vegetation



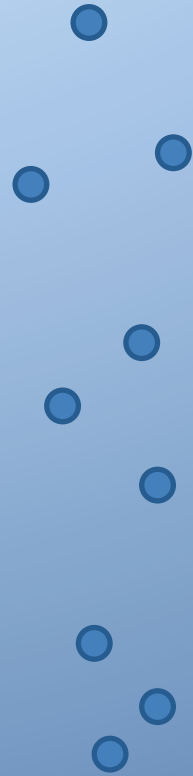


The Four Types of Soil Erosion on an Exposed Slope

- USDA Natural Resources Conservation Services

In addition:

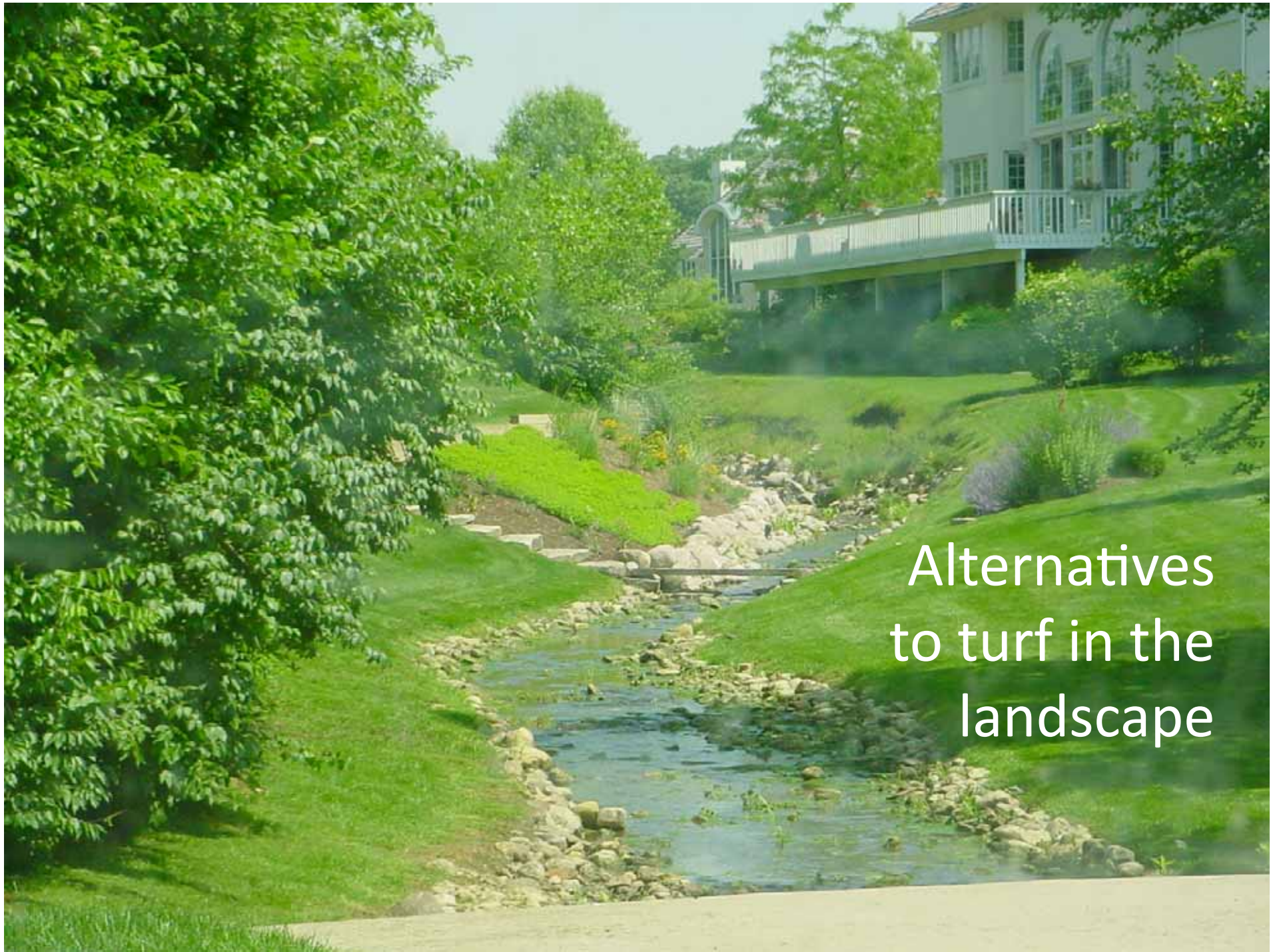
– wind and wave action(fetch across a pond or lake), animal burrowing e.g. muskrats, winter’s freeze/thaw action, ice shear





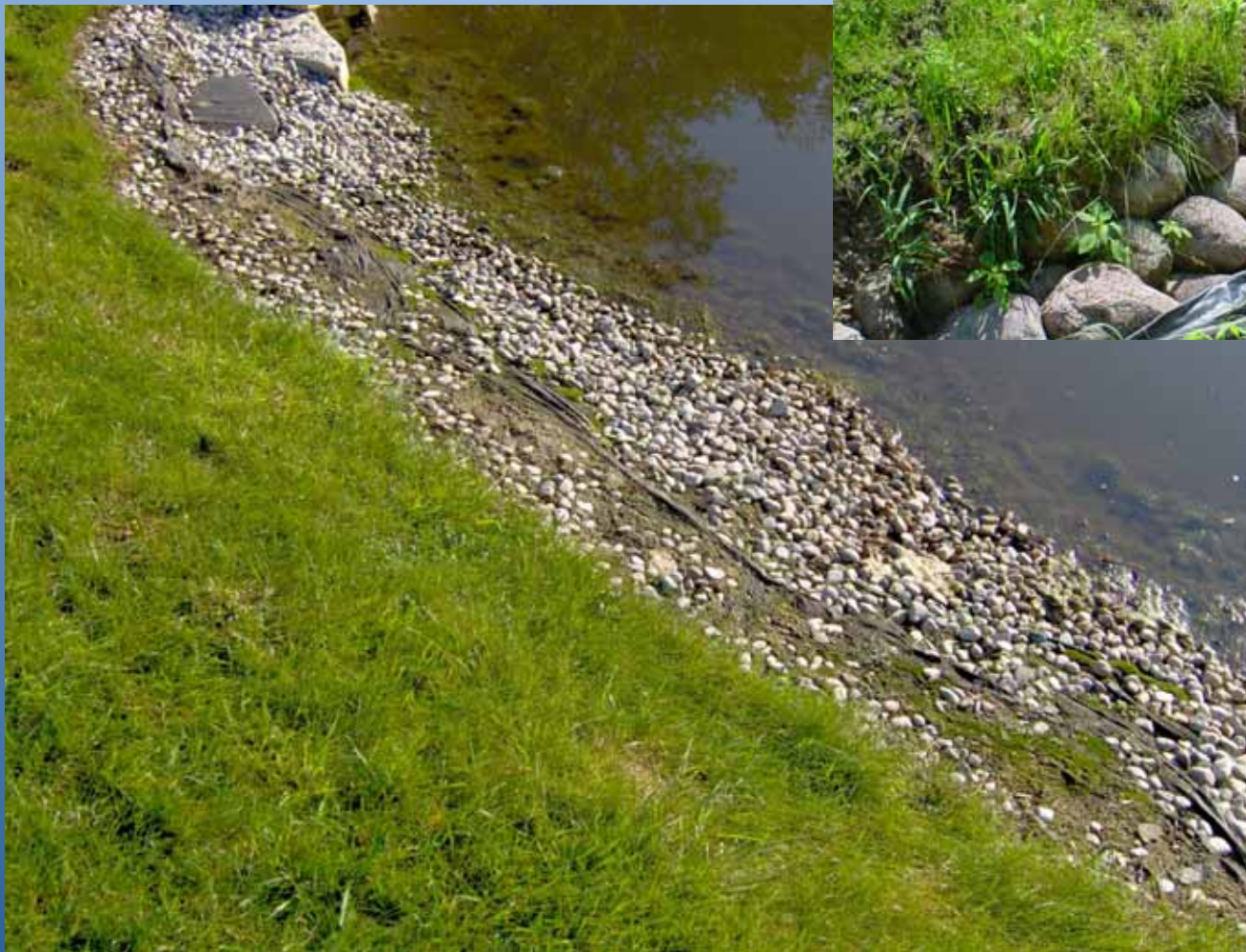
Problems associated with erosion include:

- Bank undercutting, slumping
- Loss of property
- Sediment accumulation
- Loss of water depth and/or pond capacity
- Turbidity
- Increase of nutrients in the water
- Unsightly and unsafe



Alternatives
to turf in the
landscape

Rip rap



Hardscapes:

- stone, metal, treated lumber, rock/concrete, gabions, sand beaches

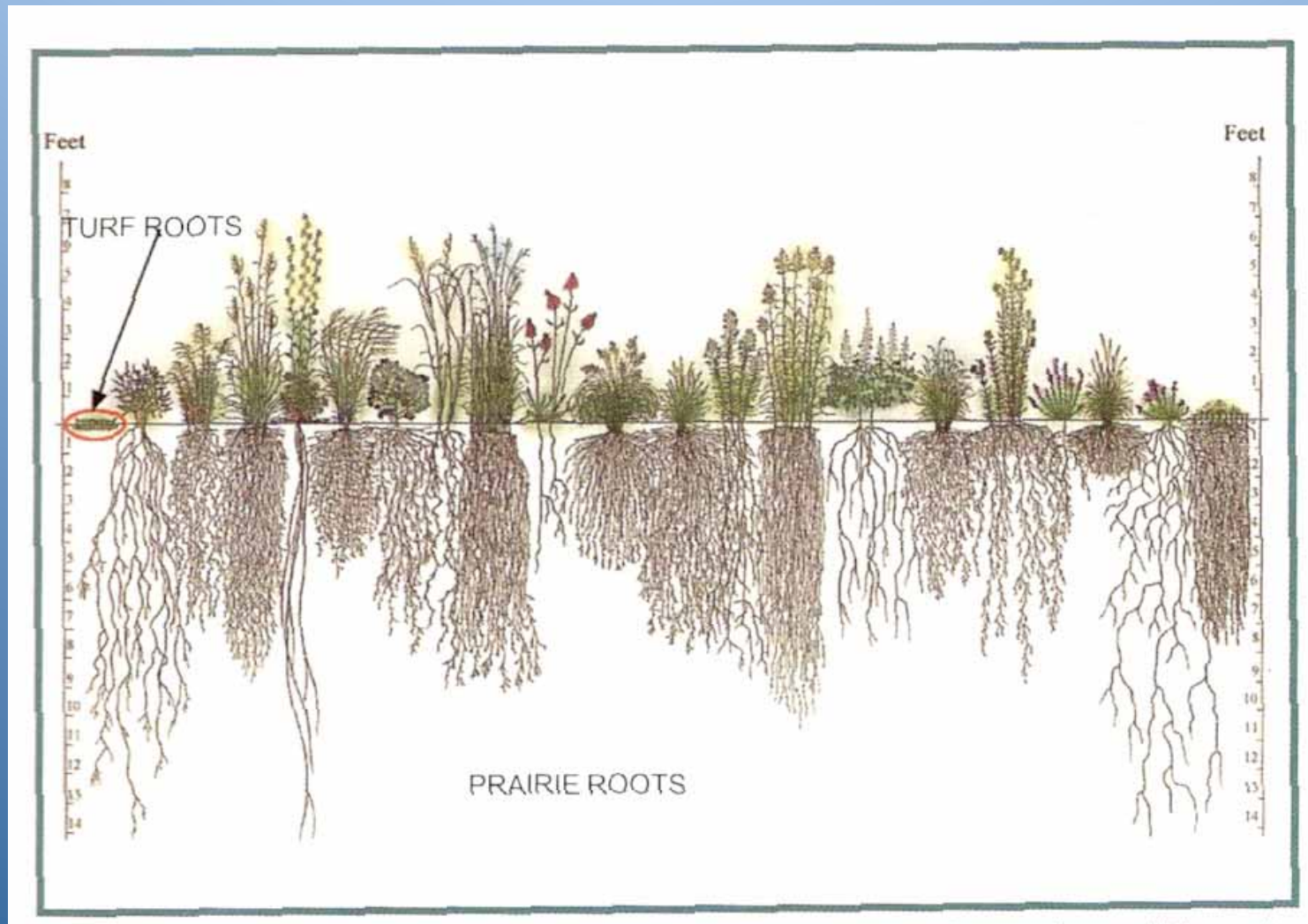
No treatment at all



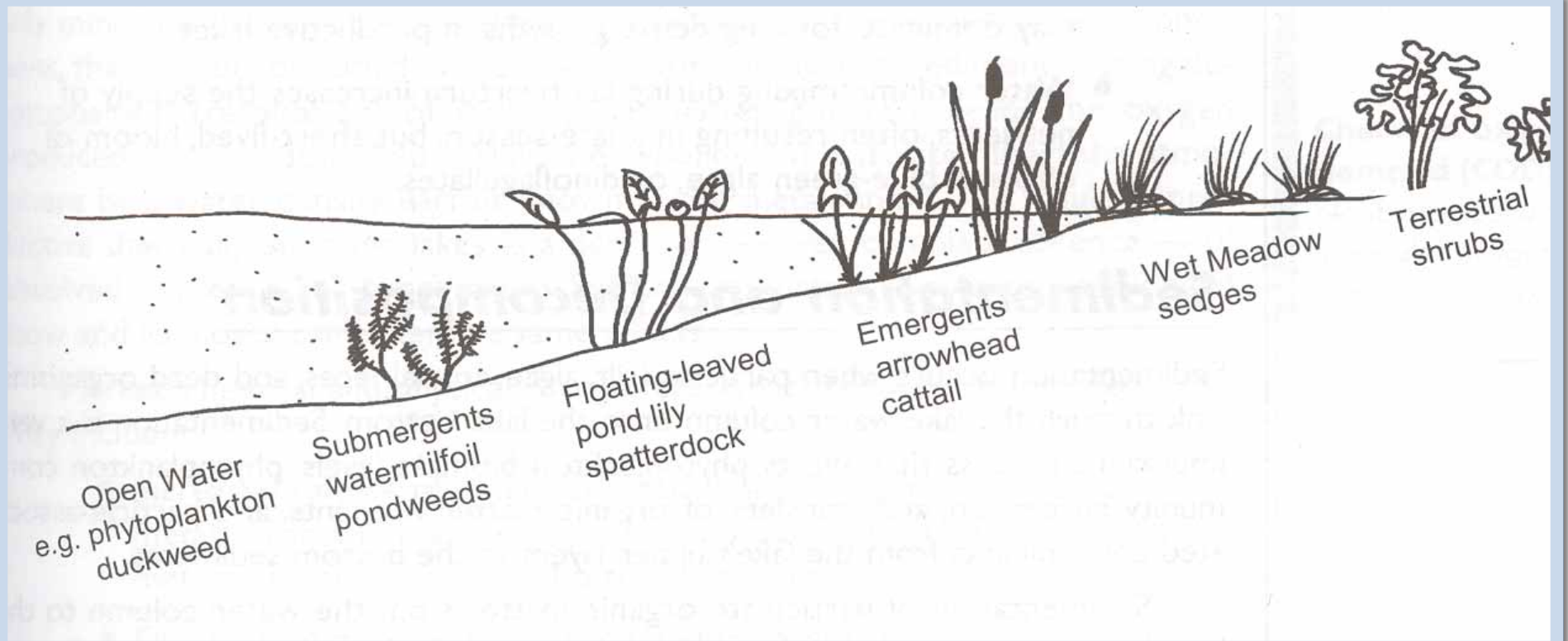


Vegetative buffers

sketch by Heidi Natura, Living Habitats



Aquatic to shoreline progression





Multiple benefits:

- Evolved to suit local geology, hydrology and climate
- Provide habitat for native wildlife e.g. butterflies, songbirds
- Slows flow of run-off
- Deep roots help stabilize banks; filter and absorb stormwater pollutants
- Reduce the need for fertilizers, pesticides and watering (Maintenance)
- Ecologically self-sustaining
 - Taller plants deter geese

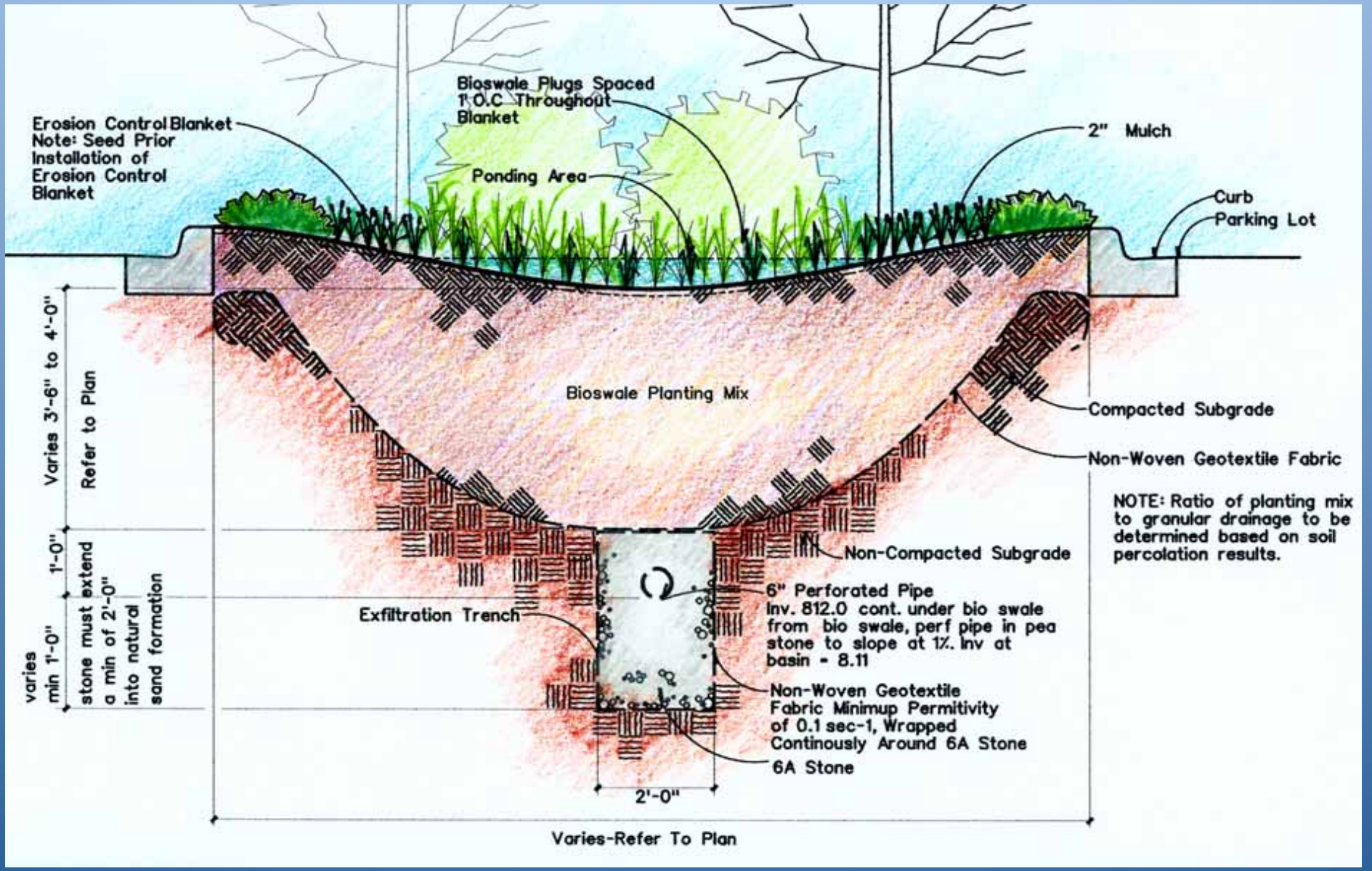




BIOSWALE

Image courtesy of: The Ann Arbor District Library (AADL) system

aagallery aadl.org

















**Integrated Lakes
Management, Inc.**

Lake and Pond Management
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