Shoreline Erosion Control Techniques 101 Part 1

2012 Wisconsin Lake Convention

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Talking Points

Terminology

Erosion Concepts

- Shoreland Zones
- Erosion Factors – Active / Passive

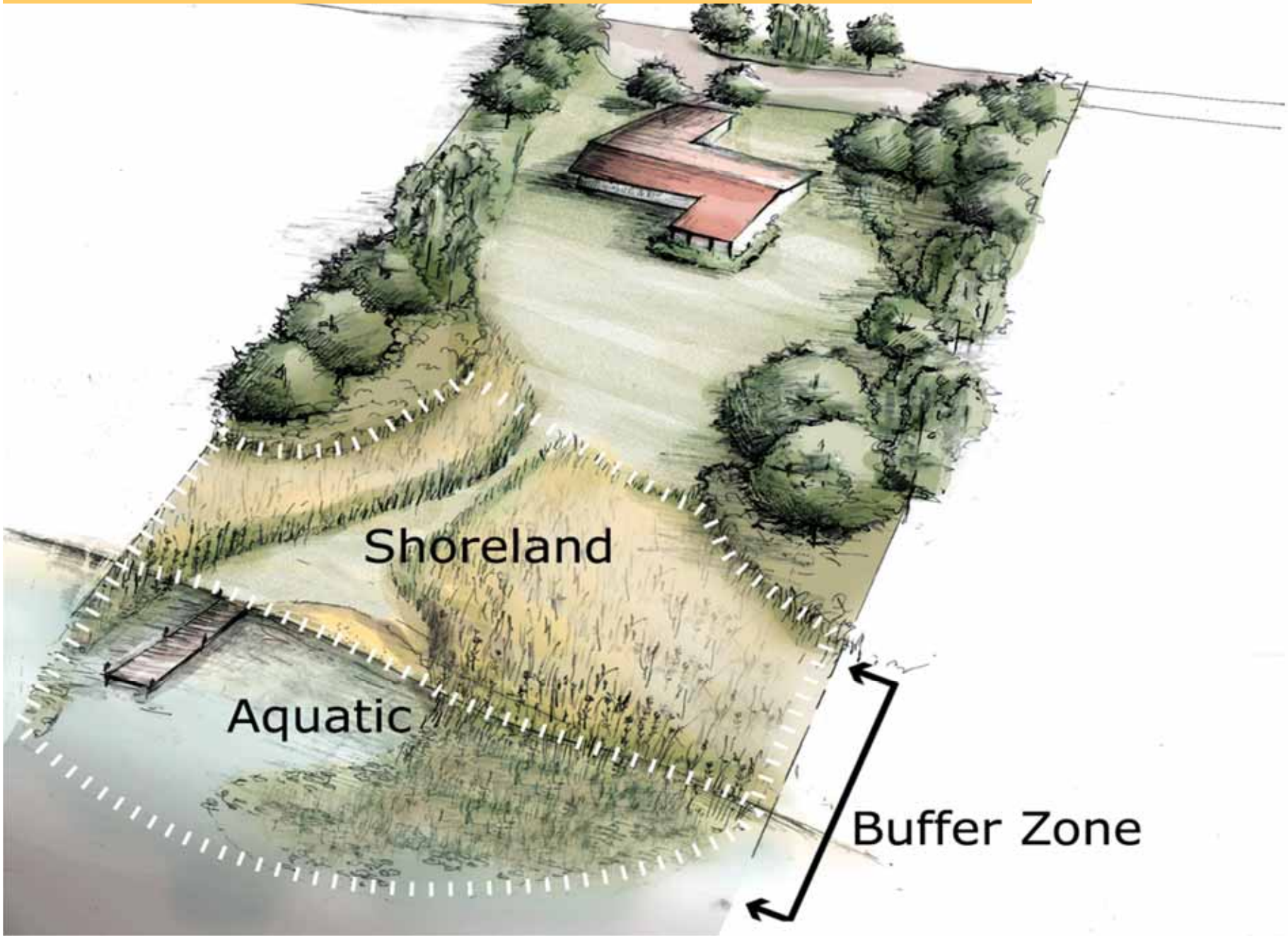
Planning Concepts

- Site Evaluation
- WDNR Links – Permits Assistance

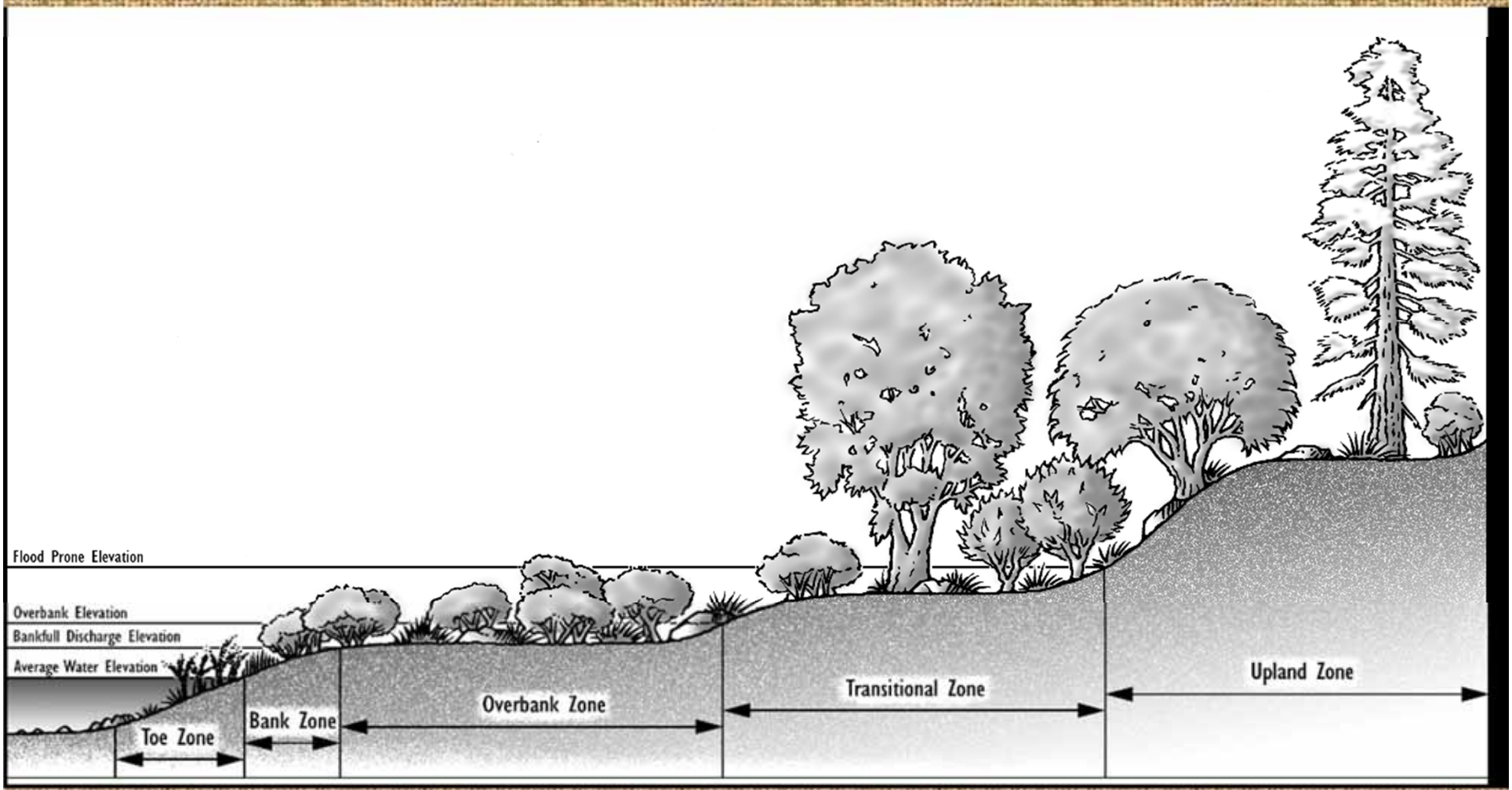
Terminology

ASNRI Waters
Bank Height
Biological Method
DATCP
Energy Category
Erosion
Erosion Intensity
Fetch Calculation
Geotextile
Impervious
LWCD
NRCS
OHWM
PNW
Public Rights Feature
Riprap
Runoff
Seeps
Slope
Storm Wave Height
Structural Method
Toe Erosion
Topographic Survey
WDNR
Wind / Wave

Erosion Concepts – Shoreland Zones



Erosion Concepts – Shoreland Zones



Erosion Factors – Active / Passive

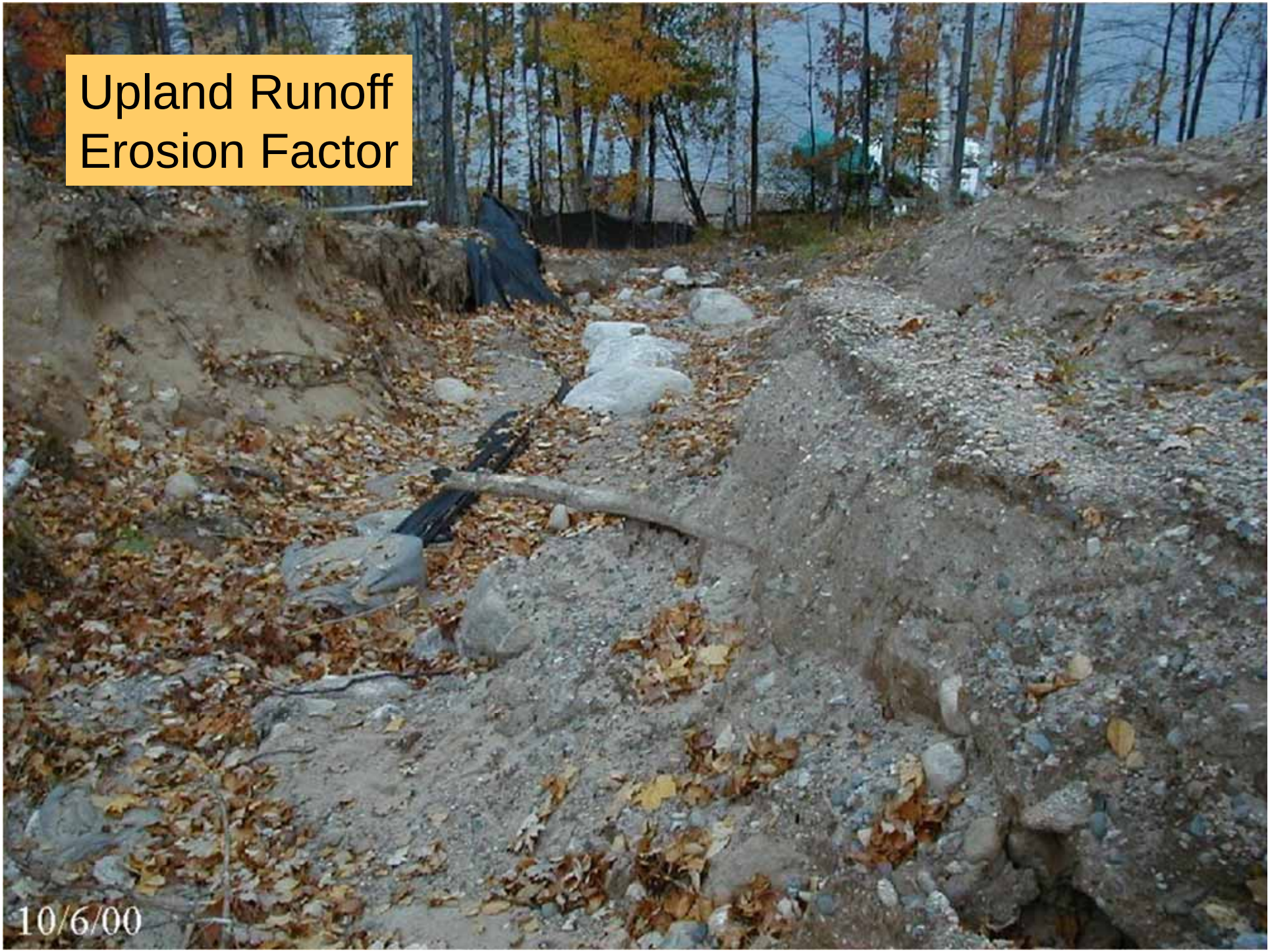
ACTIVE

- Rain splash & runoff
- Waves – wind / boat driven
- Currents
- Groundwater (seeps)
- Frost thaw / ice impact
- Livestock or human disturbance (ie removal of vegetation)

Erosion Factors – Active / Passive

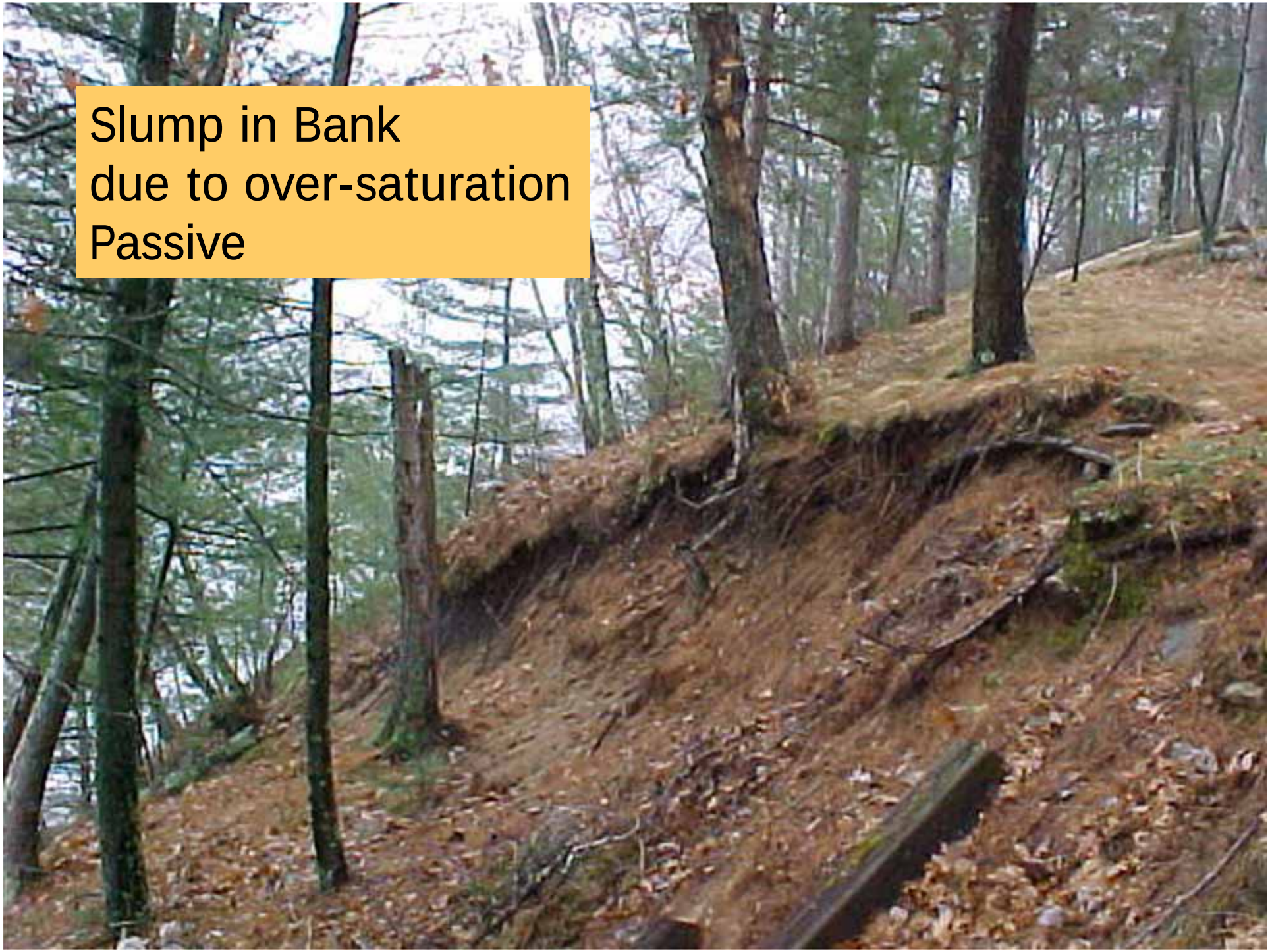
PASSIVE

- Bank or Shoreline Characteristics
  - engineering properties
  - geology
  - geometry
  - vegetative cover
- Adjacent Features/Character
  - land use/development
  - watershed patterns
  - long shore currents
  - tributary areas / flowing water


Upland Runoff
Erosion Factor
10/6/00


Livestock trampling
of streambank
Active

Ice Action
Active


Slump in Bank
due to over-saturation
Passive

Human Factor

Unstable Soils
on a steep bank

Seepage
Active


Water Level Fluctuations;
Seawall Overtopping; &
Splash Impacts

Planning Concepts – Site Evaluation

Define the cause(s) of erosion:

- Upland runoff? Impervious areas? Velocities?
- Wave energies? Boat or wind generated?
- Ice action? Prevailing wind direction?
- Water level fluctuations? Floods or Droughts?
- Groundwater seeps?
- Up gradient slope and bank height?
- Stability of native soils? Fill soils?

Planning Concepts – Site Evaluation

Vegetative Treatment Potential:

- Minimal fetch distance (<0.5 - 1 mile)
- Protected cove or bay (not point or island)
- Shoreline is facing such that prevailing winds do not reach it frequently (i.e. faces east and rarely gets a westerly wind)
- When boat traffic waves are not common or constant (i.e. no motorized traffic allowed, no public landing, SLOW NO WAKE zone = increase the wave intensity)
- When water level fluctuations do not harm vegetation survival rates and/or success

Planning Concepts – Site Evaluation

Other Considerations:

- Soil type - conducive to slope stability at given angle without toe protection?
- Parcel development is limiting a stable slope (i.e. home too close to slope break or existing vertical walls)
- Lake channel (narrow areas) or controlled wake areas create constant waves so vegetation can not establish
- Extreme ice action continuously removes or stresses soil/plants
- Erosion intensities are too high for existing vegetation

Technical Planning Assistance

County Land & Water Conservation Departments

Natural Resource Conservation Service

Wisconsin Department of Natural Resources

Department of Ag, Trade, & Consumer Protection

Private Consultants & Businesses

Planning Concepts – WDNR Web Links

http://dnr.wi.gov/waterways/factsheets/Erosion_Intensity_Worksheet.pdf

http://dnr.wi.gov/waterways/shoreline_habitat/erosioncalculator.html

http://dnrmaps.wisconsin.gov/imf/imf.jsp?site=SurfaceWaterViewer