

## WetBud

Lee Daniels,, and Rich Whittecar,  
Tess Thompson, Zach Agioutintas

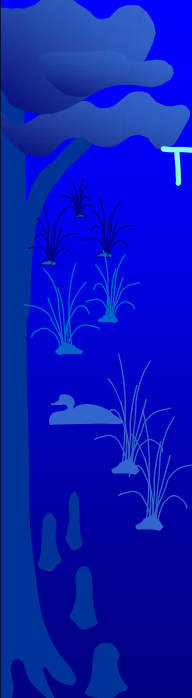


<http://www.cses.vt.edu/revegetation/wetlandrest.html>

Peterson Family Foundation



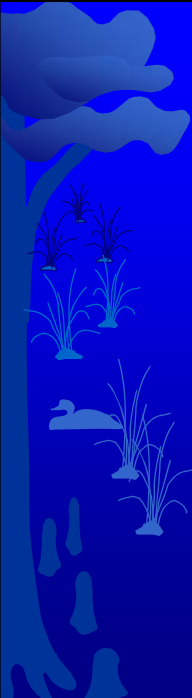


A stylized illustration of a wetland scene on the left side of the slide. It features a large tree trunk on the far left, several clumps of reeds or grasses of varying heights, a small white duck or bird, and a body of water at the bottom with some rocks or logs.

**"Hydro" Conclusions**

To understand site hydrology,  
you must understand  
landscape position and  
stratigraphy of setting

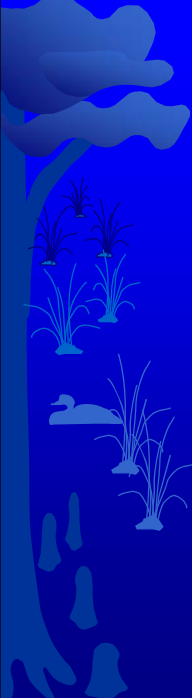
Upward/downward flow  
generally predictable and  
affects water budget

A stylized illustration of a wetland scene on the left side of the slide, identical to the one in the first slide. It features a large tree trunk on the far left, several clumps of reeds or grasses of varying heights, a small white duck or bird, and a body of water at the bottom with some rocks or logs.

**"Hydro" Conclusions**

Wetlands formed in  
different landscape  
settings can be  
substantially different

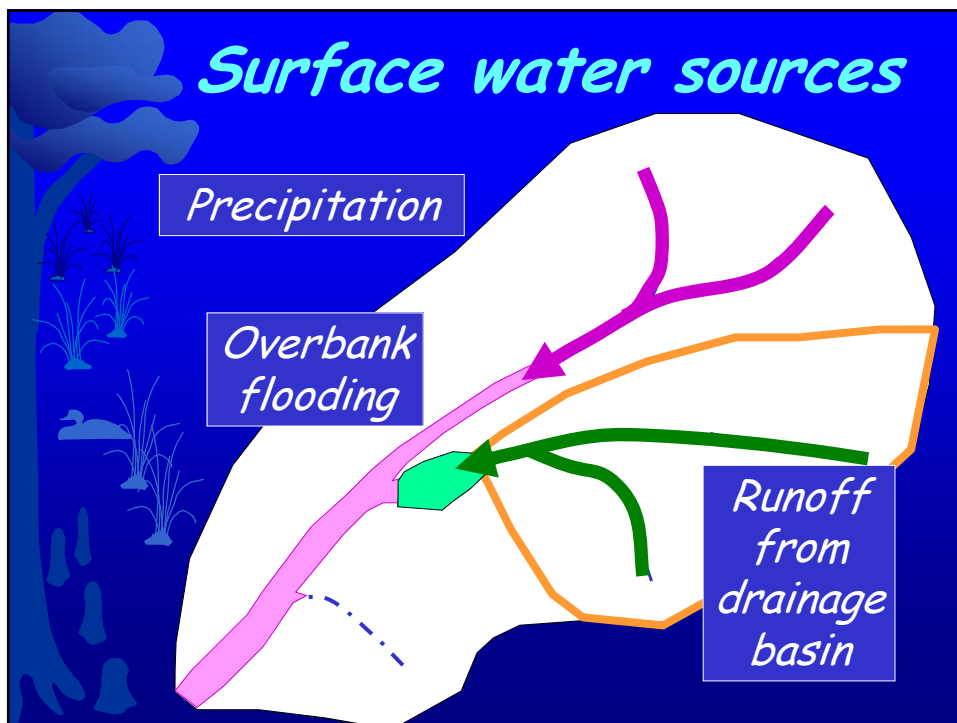
Wetlands formed in  
"identical" landscape  
settings can be  
substantially different



**"Hydro" Conclusions**

The history of construction practices in mitigation wetlands can alter the permeability of surface soils and subsurface strata by **compaction**, **dessication**, and **deposition**.

The illustration on the left shows a stylized wetland scene with a tree, reeds, and a duck.



**Monthly Water Budgets:**

*Should this site meet wetland hydrology during example years?*

1997: Typical Wet Year

1986: Typical Normal Year

2006: Typical Dry Year

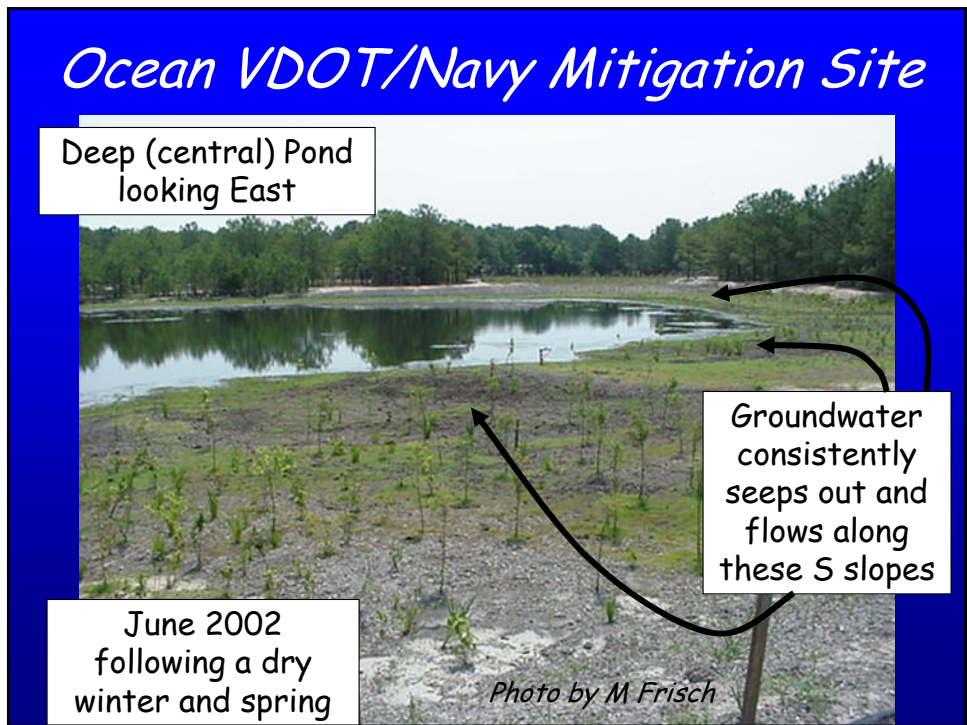
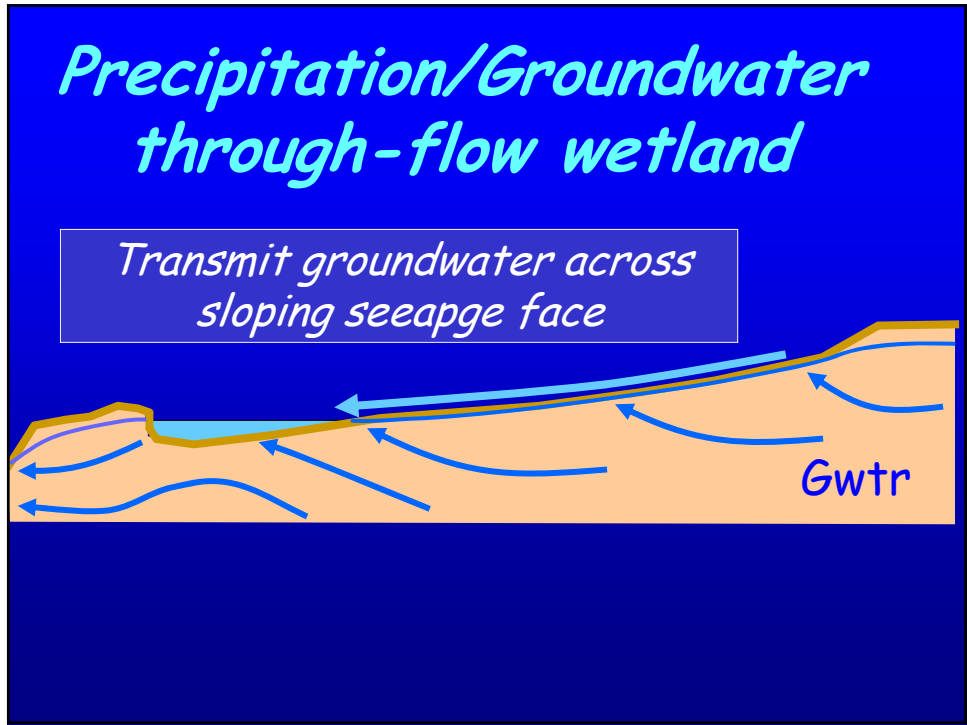
### "Basin-with-a-lip" designs

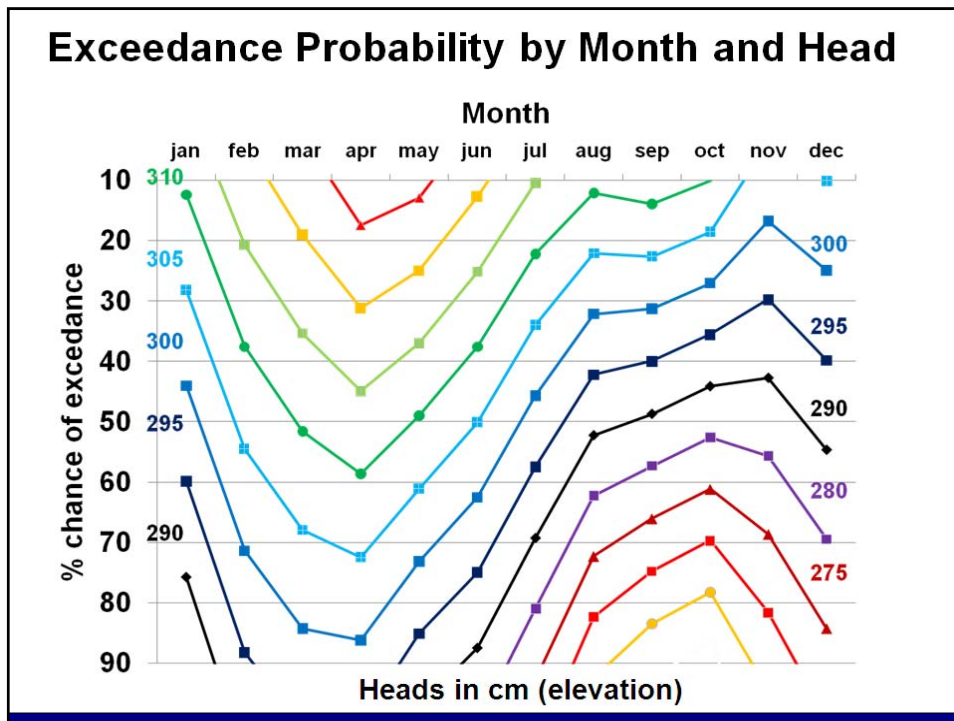
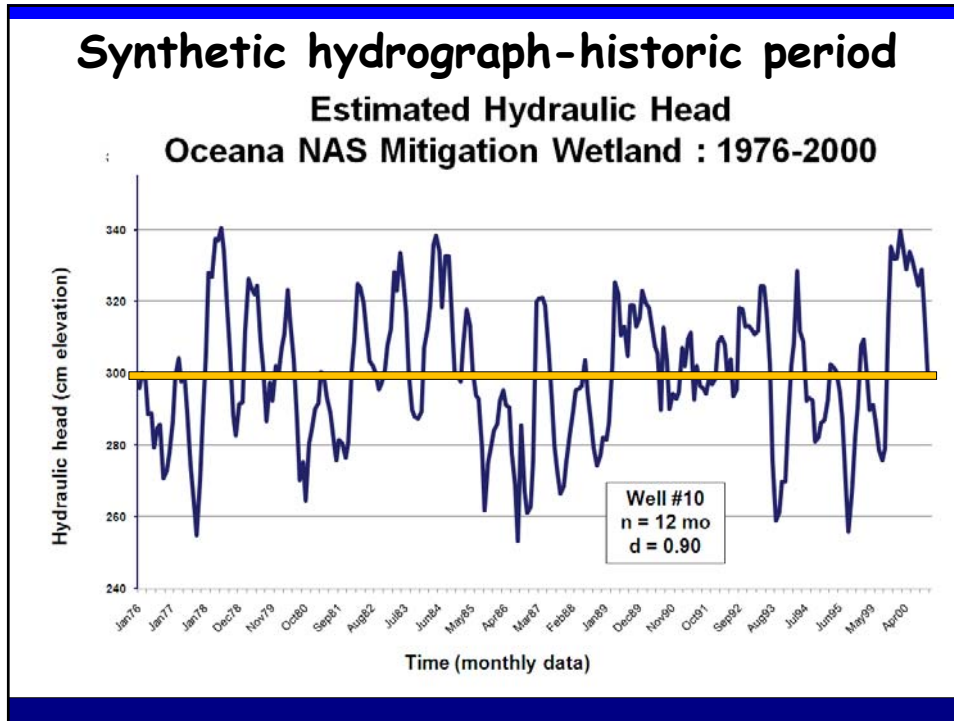
*Produces wetlands with stable water levels (often not conducive to trees)*

*No downward seepage*

*Vegetation retards surface flow so often "too wet"*

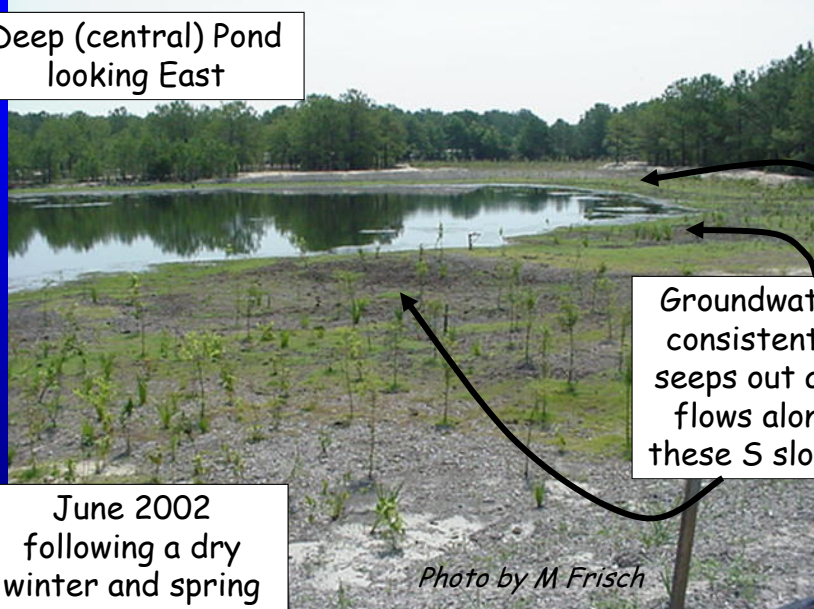
*Gwtr?*  
*"Extra"*





## Ocean VDOT/Navy Mitigation Site

Deep (central) Pond  
looking East

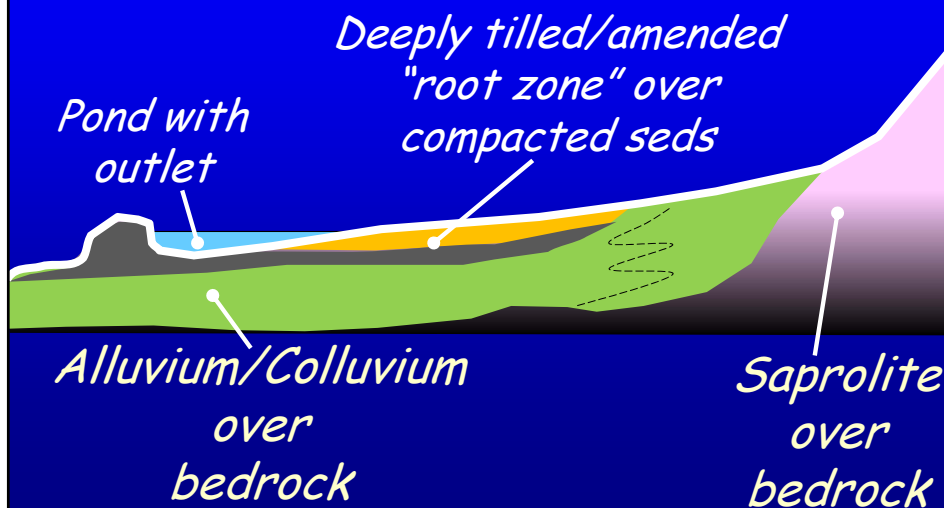


Groundwater  
consistently  
seeps out and  
flows along  
these S slopes

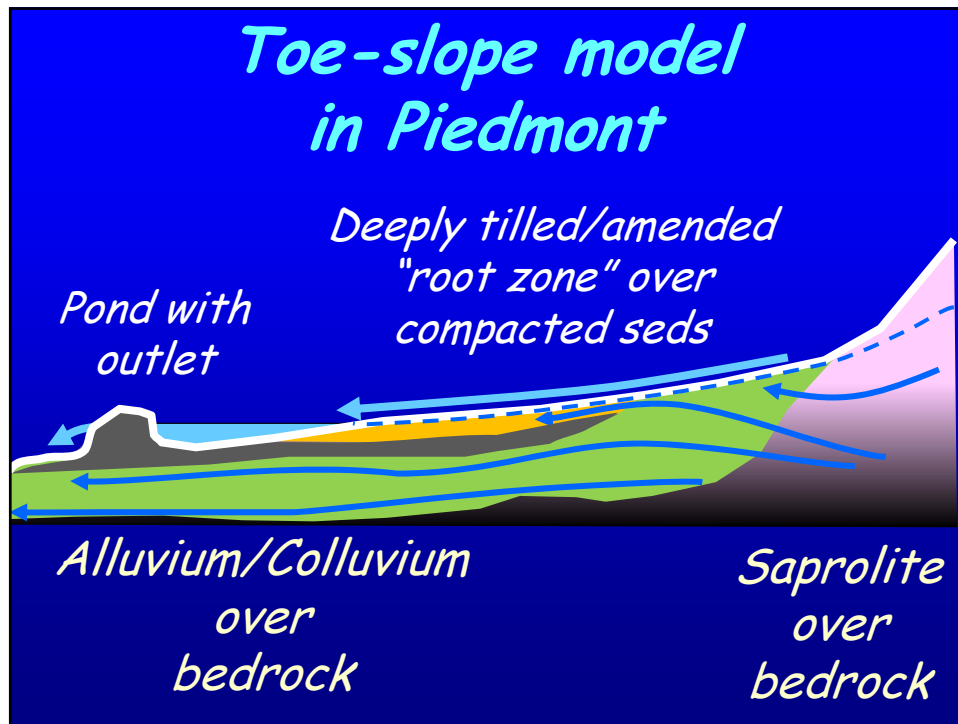
June 2002  
following a dry  
winter and spring

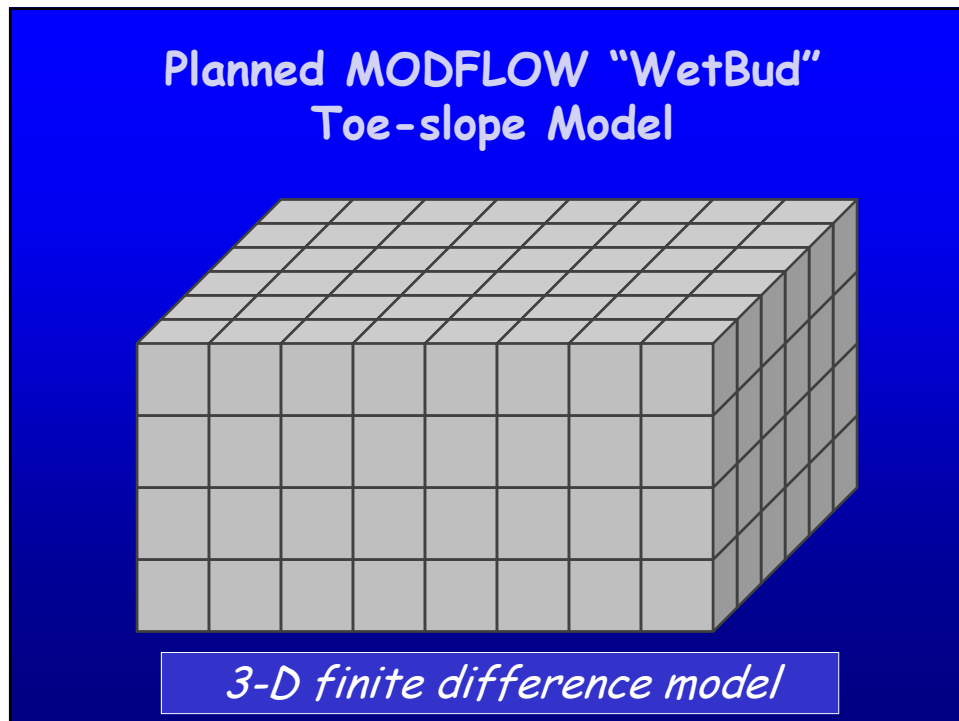
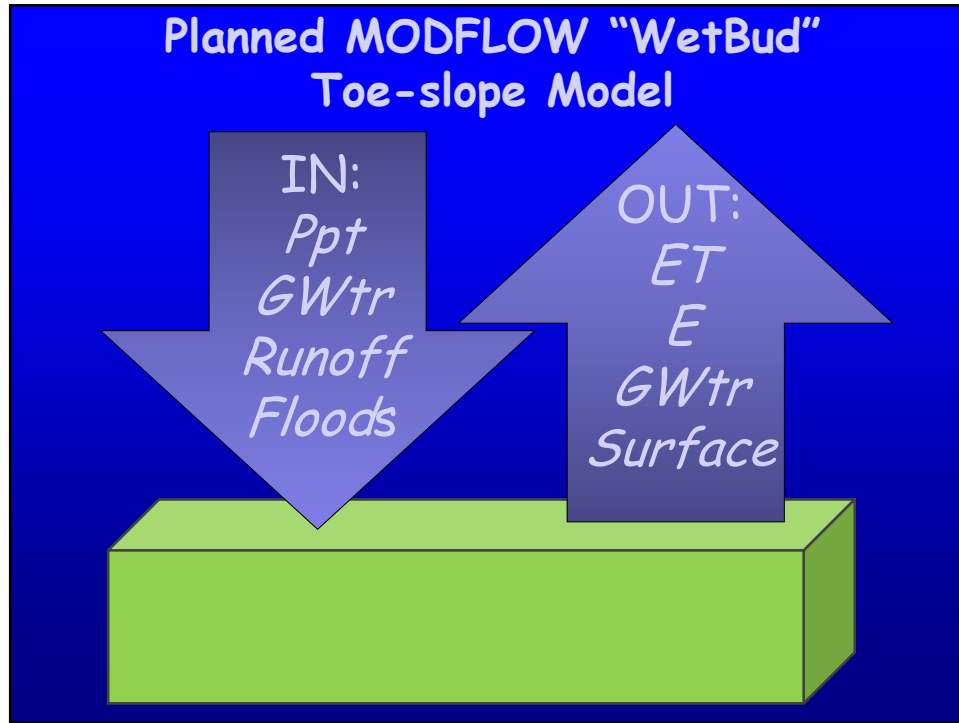
*Photo by M Frisch*

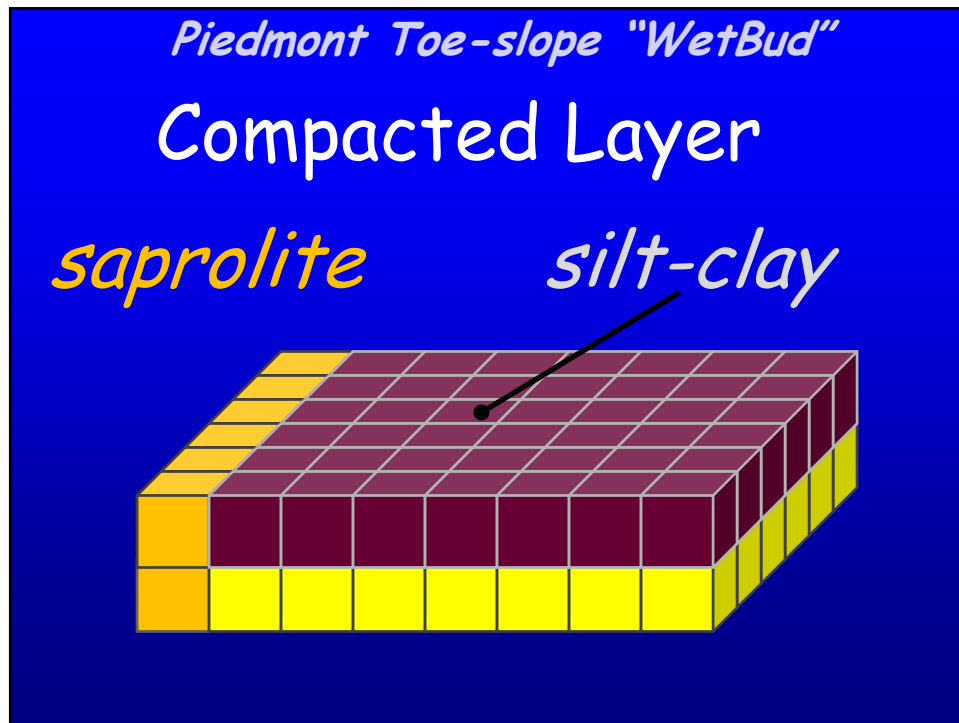
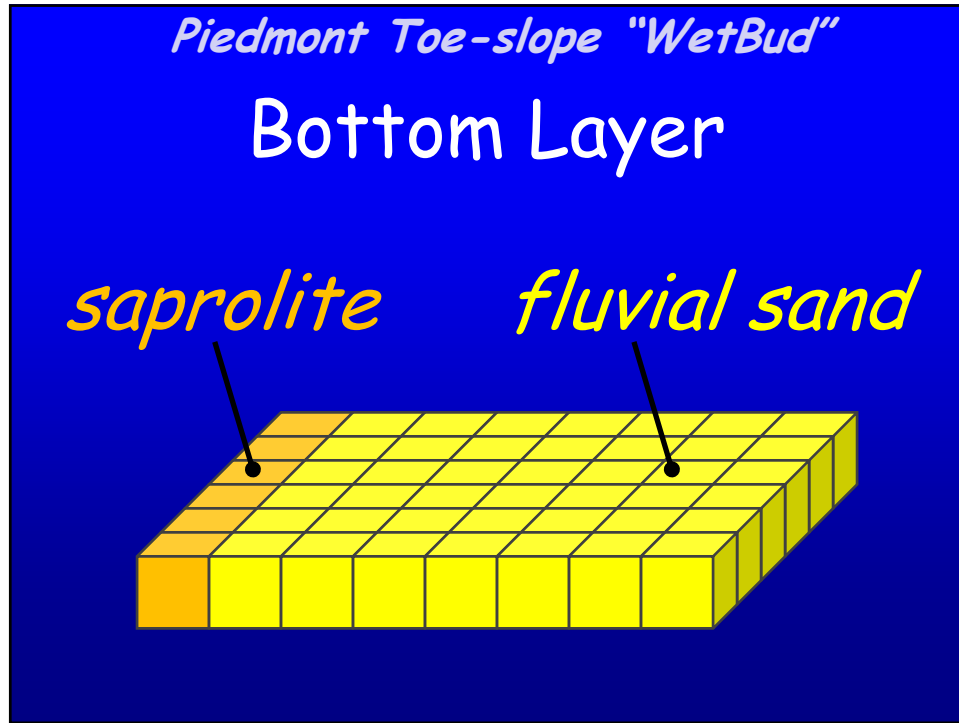
## Toe-slope model in Piedmont

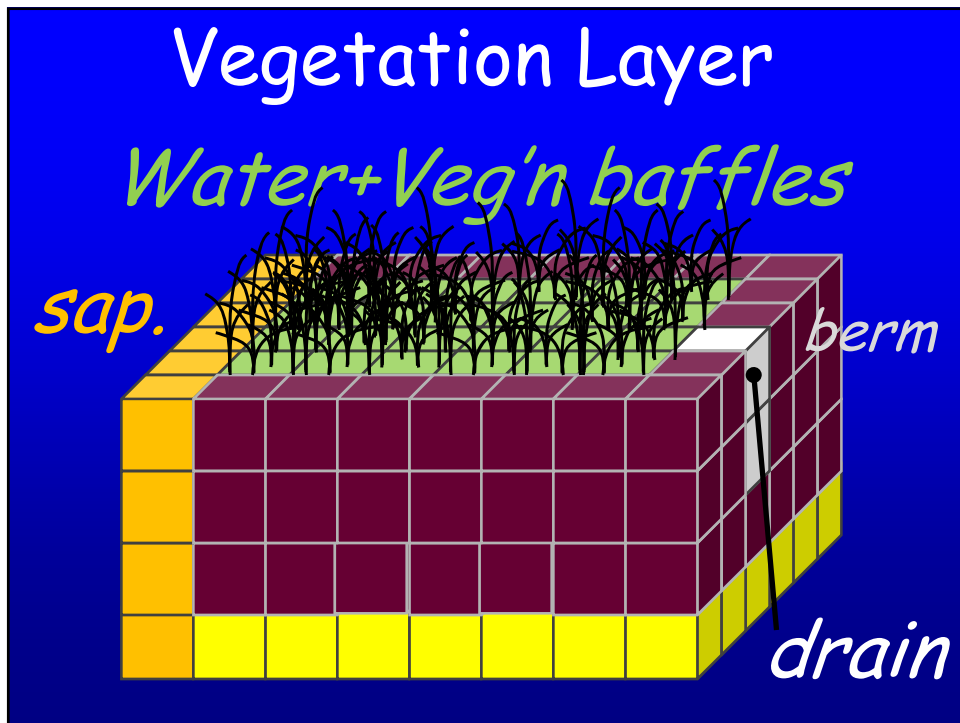
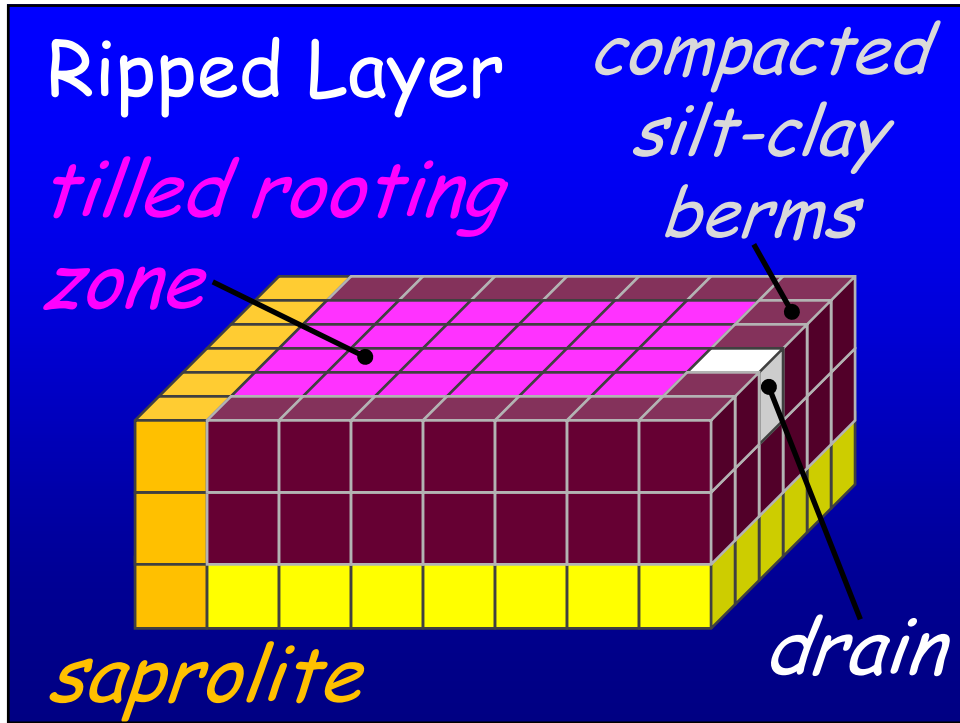


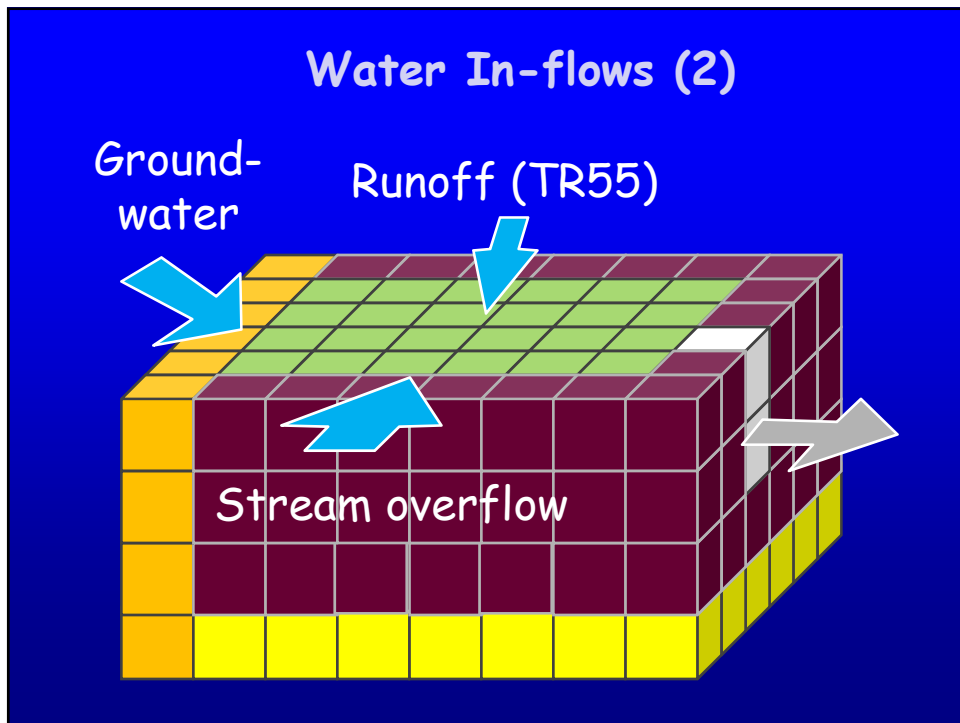
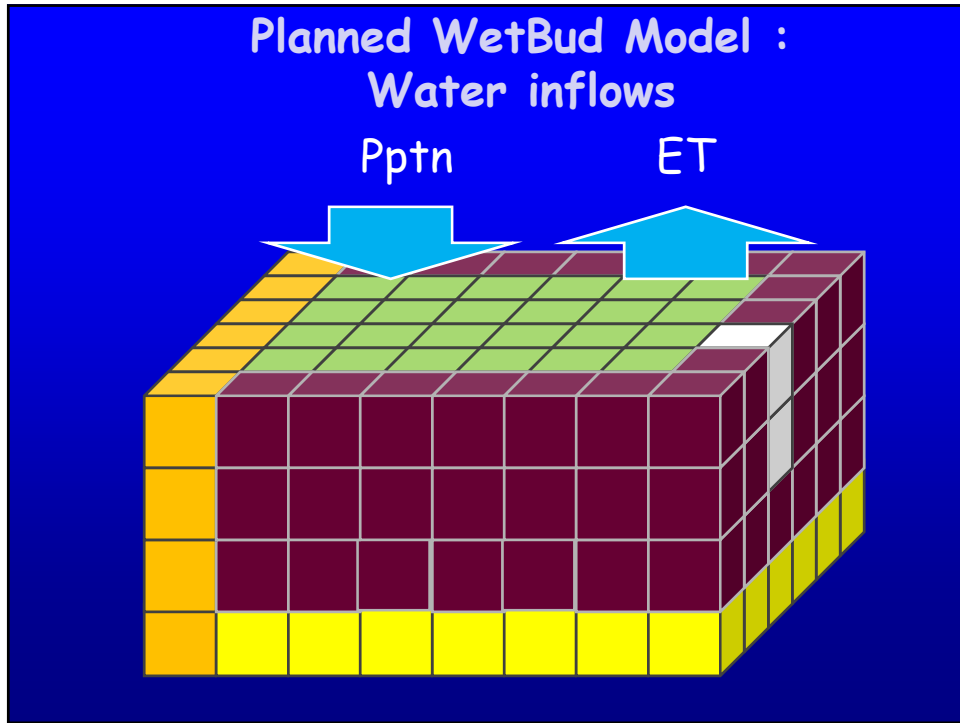


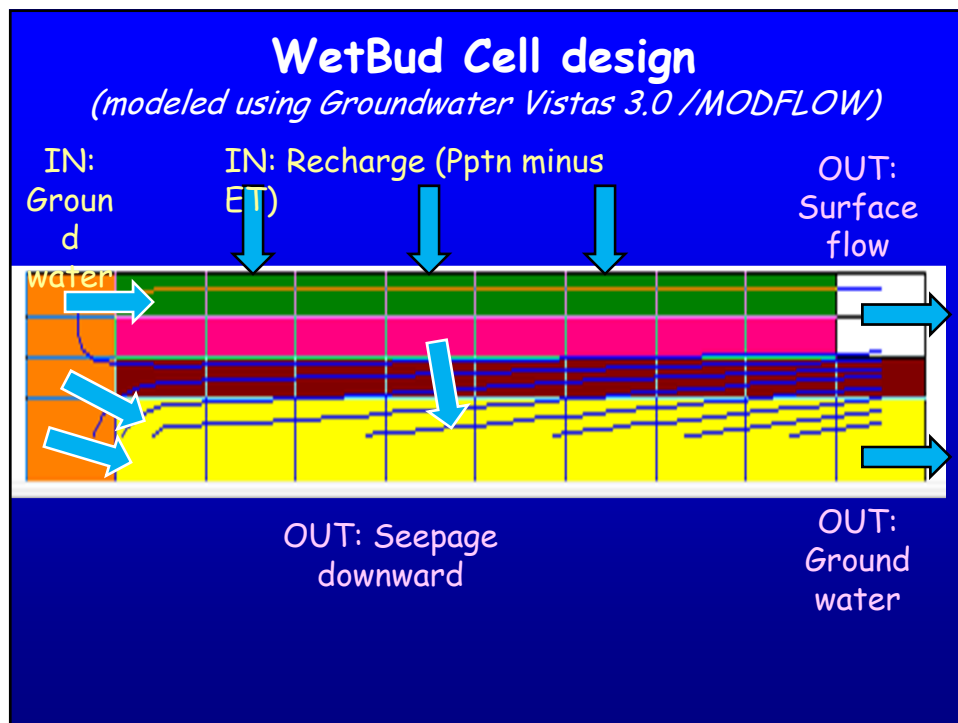
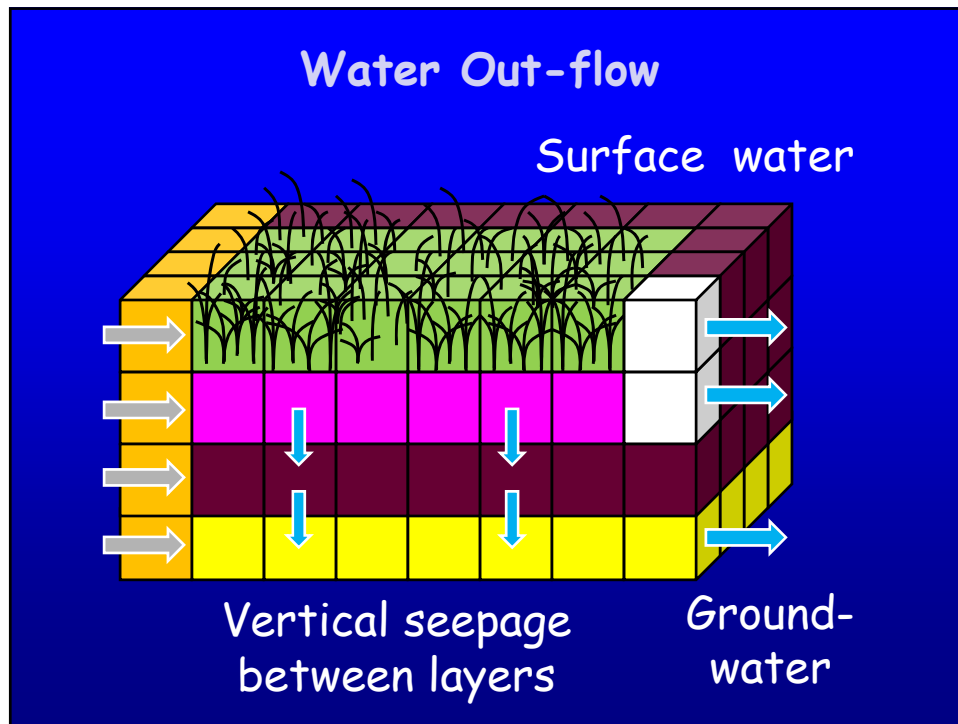


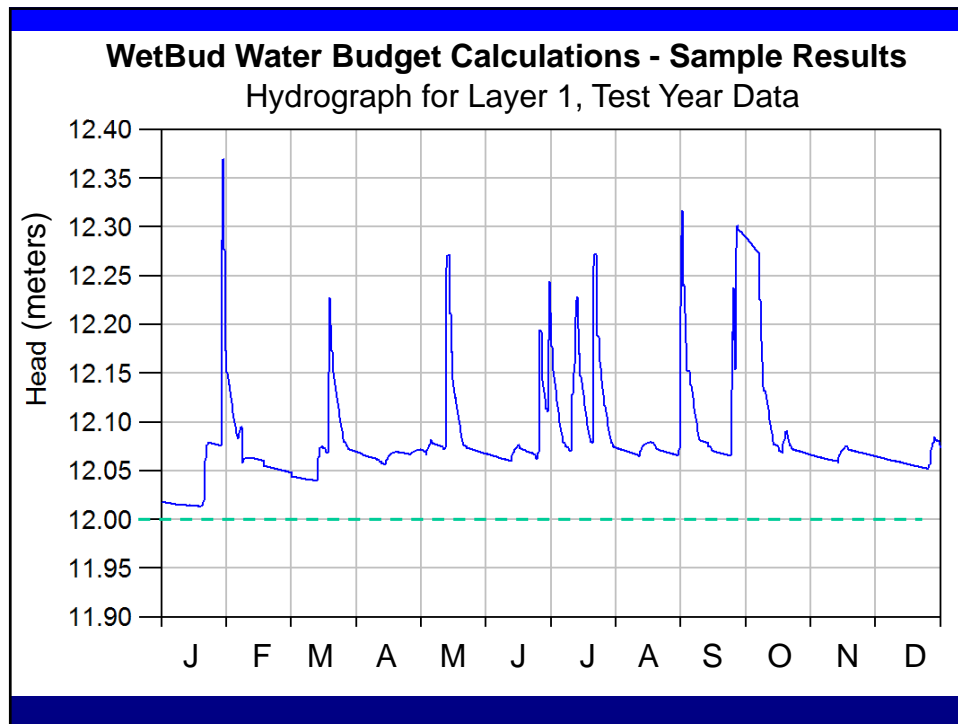












### Planned WetBud output:

**3 Wetland Water Budgets for typical Wet, Normal, and Dry Years**

**Based on weather and ET data calculated for several regional airports and supplied to user in program files**

User will select one of several designs and provide local values for bed thicknesses,  $K_{SAT}$ , hydraulic heads, drainage basin info, and weather data for calibration period