Landscapes & Wetlands

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"The goal is to restore healthy natural processes, then live with what you get". Denise Reed

Objectives

1. Recognize that wetland formation, functions, and type all depend upon location within the landscape.
2. Consider the location of the wetland in its watershed & the implications for values, functions, and restoration.
3. Recognize that hydric soil morphology develops in landscape positions where wetlands develop.
4. Recognize the value of different map types.

The study of landscapes helps explain where and why wetlands occur, and is essential to wetland restoration.

- **Landform type**
  - What kind of surface?
  - Flats, Depressions, Basins, Interfluves
  - Glacier related
    - Drumlins
    - Lake plain or glacial lake plains
    - Till plain
    - Outwash plains
    - Moraines, ground moraines
  - Hillside , slope
  - Floodplains, Backswamps
  - Uplands

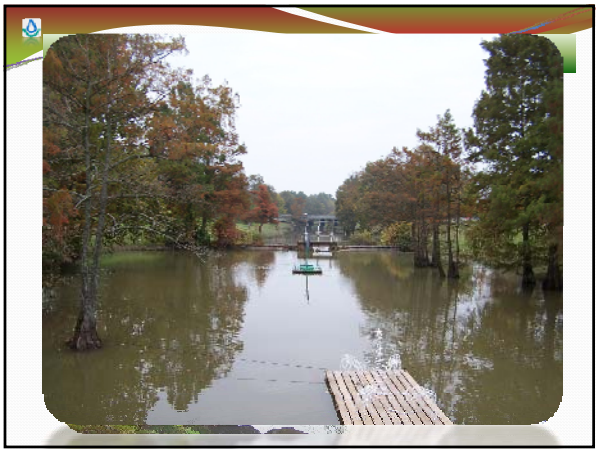
Topographic Position

Where are we on the landform?

Uplands, ex. Hills: Summit, shoulder, backslope, footslope, toe slope
Depressions
Near a river or stream, flowing water (lotic), riverine
Near a lake, still water (lentic), lacustrine
Where on a floodplain?

Water Source

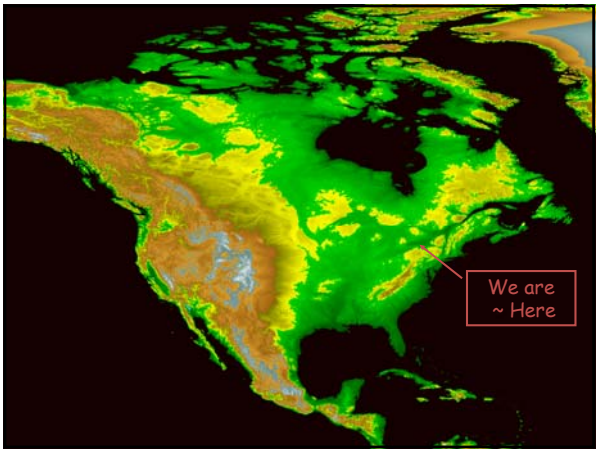
- **Where does the water originate?**
  - Precipitation
  - Groundwater
  - Surface flow
- **How does the water move?**
  - Throughflow- perennial river or stream (inlet & outlet)
  - Throughflow-intermittent intermittent stream
  - Outflow (outlet)
  - Outflow-intermittent
  - Inflow (inlet)
  - Bidirectional flow lentic, fluctuating lake or groundwater levels
  - Isolated (precipitation, groundwater)



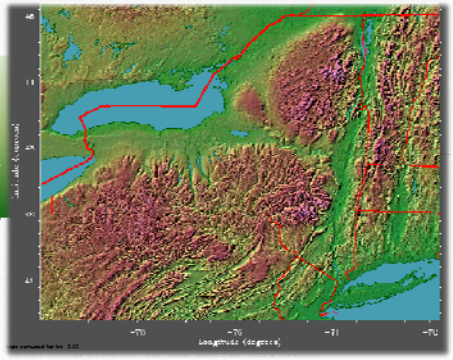
Wetland Water Chemistry

- Wetland water chemistry is primarily a result of
  - geologic setting (landscape)
  - water balance (relative proportions of inflow, outflow, and storage)
  - quality of inflowing water
  - type of soils and vegetation
  - human activity within or near the wetland

- Wetlands dominated by surface-water inflow and outflow reflect the chemistry of the associated rivers or lakes.
- Those wetlands that receive surface-water or ground-water inflow, have limited outflow, and lose water primarily to ET have a high concentration of chemicals and contain brackish or saline (salty) water.
- Wetlands that receive water primarily from precipitation and lose water to surface-water outflows and (or) seepage to ground water tend to have lower concentrations of chemicals.
- Wetlands influenced strongly by groundwater discharge have water chemistries similar to groundwater.
- In most cases, wetlands receive water from more than one source, so the resultant water chemistry is a composite chemistry of the various sources.



USGS Shaded Relief

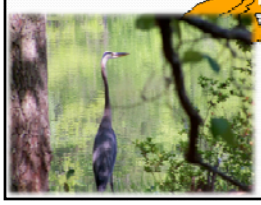


Topographic Map

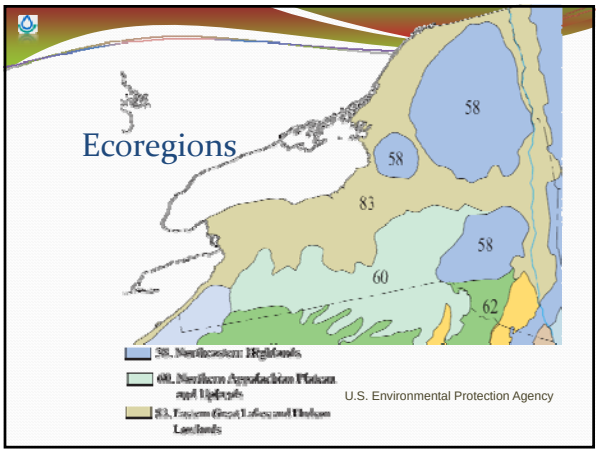
- What is on a topo map?
  - Location
  - Elevations
  - Sections
  - Roads
  - Streams
  - Special features
  - Homes, churches, schools, hospitals
  - Forest
  - Wet areas

Watersheds

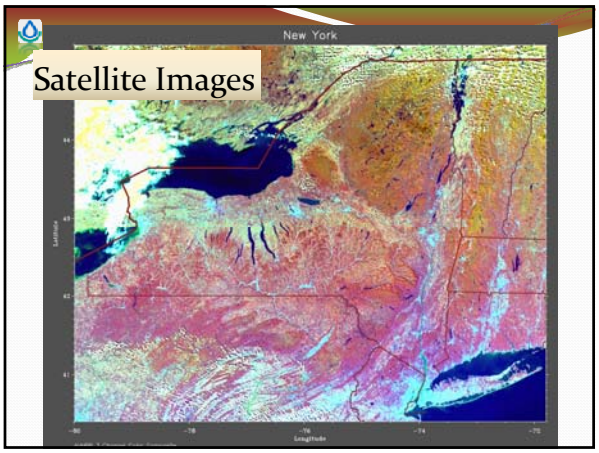
- Quality of land = Quality of water & Quality of the wetland

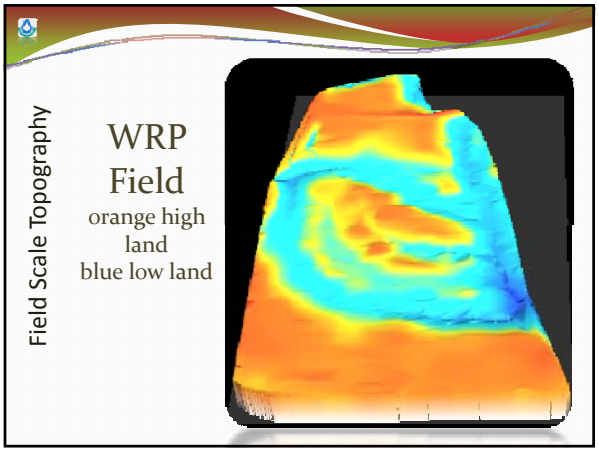


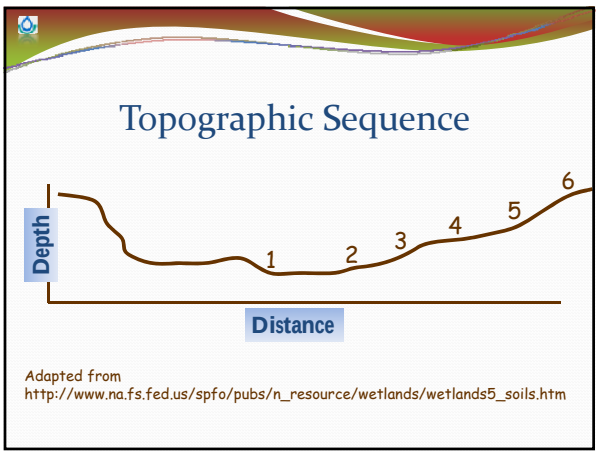

New York Wetland

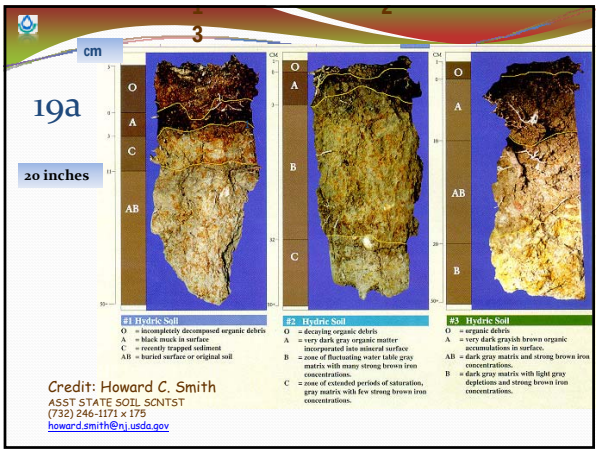

Ecoregions
58
58
83
58
60
62
U.S. Environmental Protection Agency


Strange Wetland Features


New York
Satellite Images


Field Scale Topography
WRP Field
orange high land
blue low land


Topographic Sequence
Depth
1
2
3
4
5
6
Distance
Adapted from
http://www.na.fs.fed.us/spfo/pubs/n_resource/wetlands/wetlands5_soils.htm


19a
20 inches
cm
#1 Hydric Soil
#2 Hydric Soil
#3 Hydric Soil
Credit: Howard C. Smith
ASST STATE SOIL SCNTST
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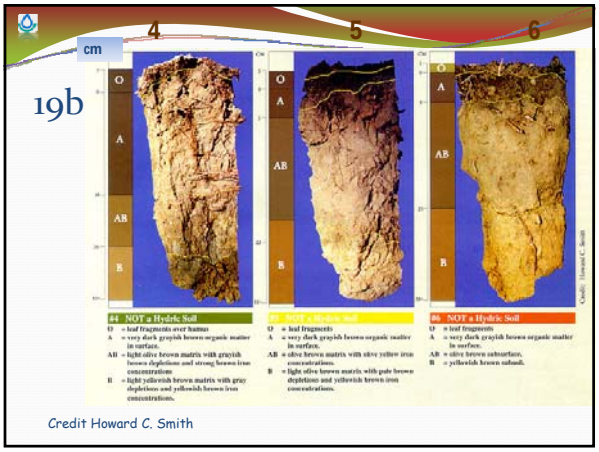
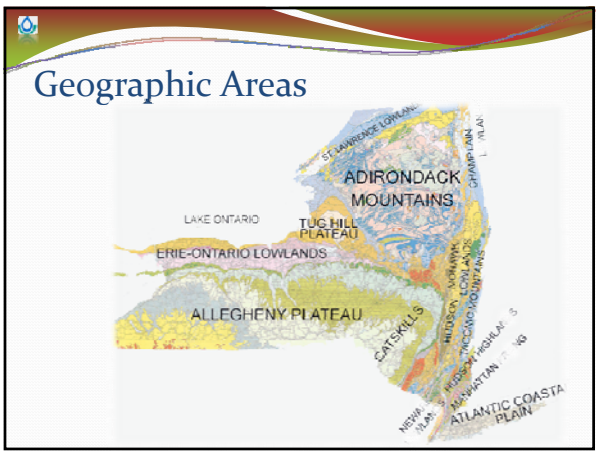
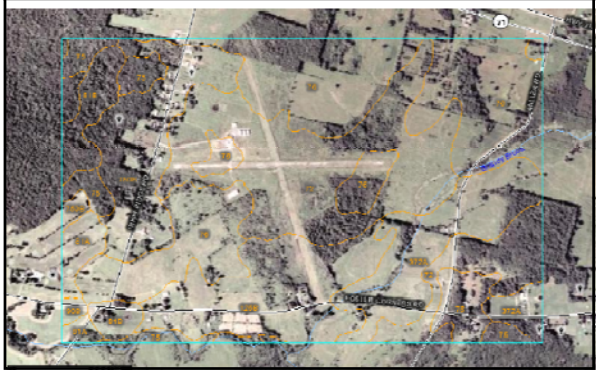

19b
cm
Credit Howard C. Smith


Geographic Areas
ADIRONDACK MOUNTAINS
LAKE ONTARIO
TUG HILL PLATEAU
ERIE-ONTARIO LOWLANDS
ALLEGHENY PLATEAU
CATSKILLS
ATLANTIC COASTAL PLAIN

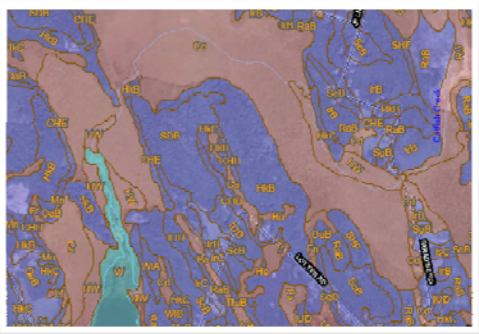
Web Soil Survey Soil Map



Map Unit Legend

Oneida County, New York (NY065)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
72	Canandaigua silt loam	179.6	24.2%
75	Lamson fine sandy loam	30.5	4.1%
76	Niagara silt loam	226.7	30.6%
81A	Covert loamy sand, 0 to 3 percent slopes	18.7	2.5%
81B	Covert loamy sand, 3 to 8 percent slopes	29.3	3.9%
90B	Windsor loamy fine sand, 3 to 8 percent slopes	2.8	0.4%
126B	Lima gravelly silt loam, 3 to 8 percent slopes	88.4	11.9%
372A	Appleton silt loam, 0 to 3 percent slopes	81.7	11.0%
750B	Minoa fine sandy loam, 0 to 6 percent slopes	83.7	11.3%
Totals for Area of Interest (AOI)		741.3	100.0%

Hydric Soil Map: Web Soil Survey



24a

Hydric Rating by Map Unit— Summary by Map Unit — Oswego County, New York

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AgB	Alton gravelly fine sandy loam, 3 to 8 percent slopes	Not Hydric	0.6	0.0%
Cd	Canandaigua silt loam	All Hydric	120.5	4.2%
Ce	Carlisle muck	All Hydric	748.1	25.8%
CHD	Colton-Hinckley complex, moderately steep	Not Hydric	27.9	1.0%
CHE	Colton-Hinckley complex, steep	Not Hydric	51.5	1.8%
Fn	Fonda mucky silt loam	All Hydric	7.1	0.2%
Fr	Fredon gravelly fine sandy loam	All Hydric	6.1	0.2%
Ha	Halsey gravelly loam	All Hydric	18.9	0.7%
HkB	Hinckley gravelly loamy sand, 3 to 8 percent slopes	Not Hydric	352.8	12.2%

Summary

- **Landscape position is arguably the most important soil forming factor when considering hydric soils because it modifies the other factors**
  - **If you are in a position where water can stand or that stays wet due to a water table, look for hydric soils**
  - **Remember, hydric soils often occur as inclusions (components) within another soil series**
    - **look for them in the field**