

FLOODPLAIN LAKES HYDROLOGIC FUNCTIONS



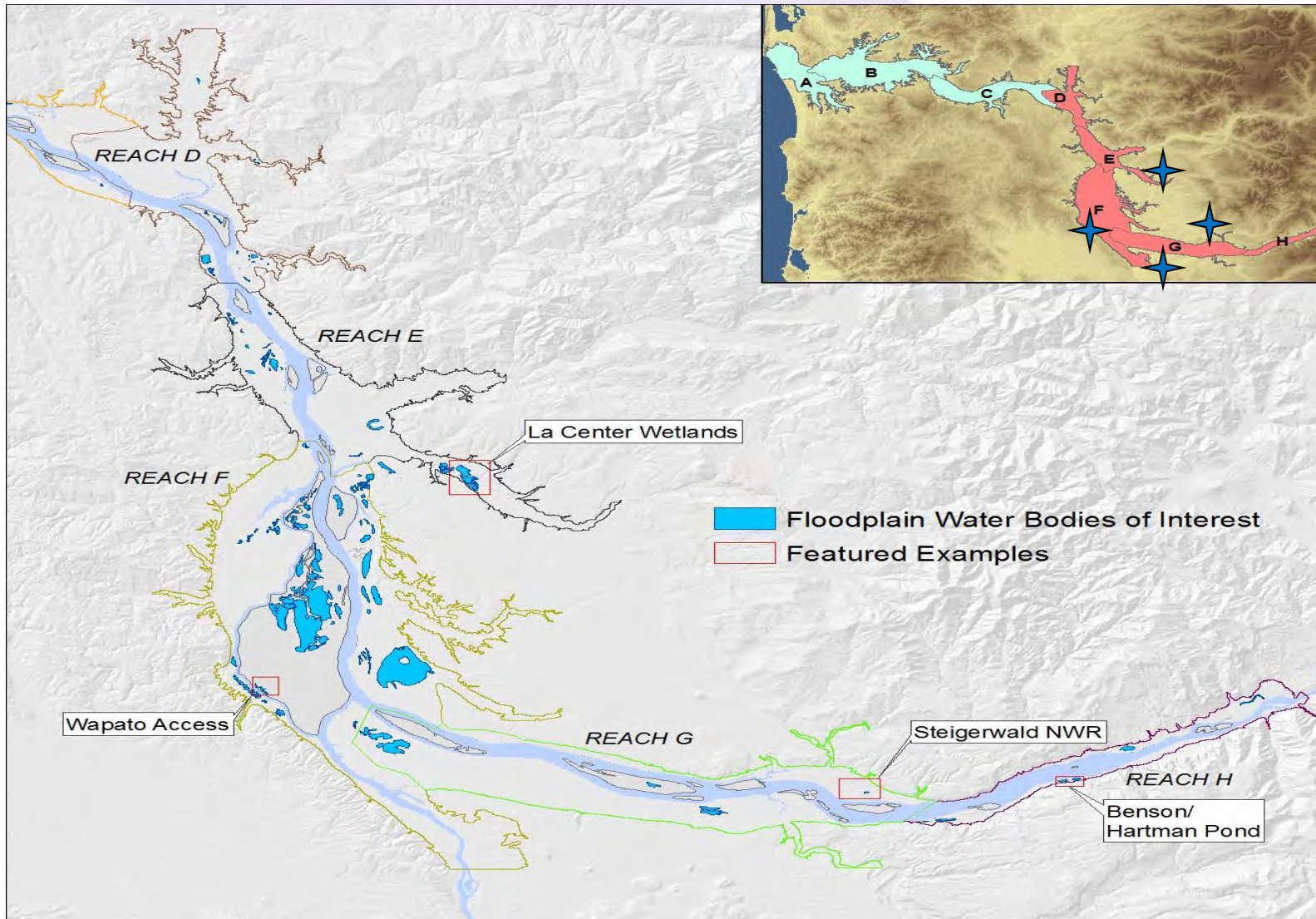
Floodplain Lakes Workshop
June 18, 2013

KEY THEMES

- Hydrologic behavior refers to **water level** elevations, **hydropattern** (variability over time and space of water level), including duration, variability and timing and **residence time**.
- Hydrologic behavior, hydrogeomorphic setting & anthropogenic factors influence FPL functions, including ecological processes.
- FPL have different hydropatterns and are functionally different. Some FPL hydropatterns/water levels have been altered due to flow regulation.

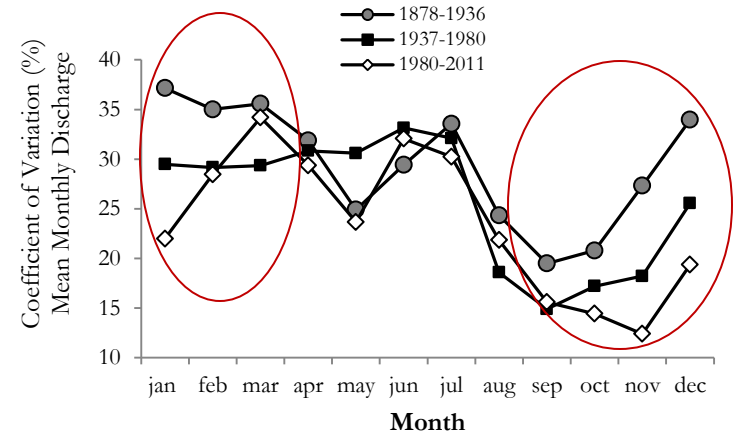
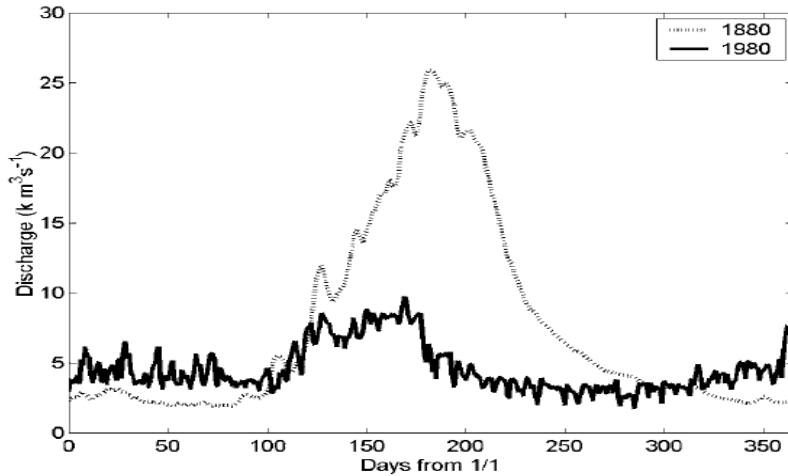
Flood Plain Lakes

Hydrogeomorphic Reach F-H

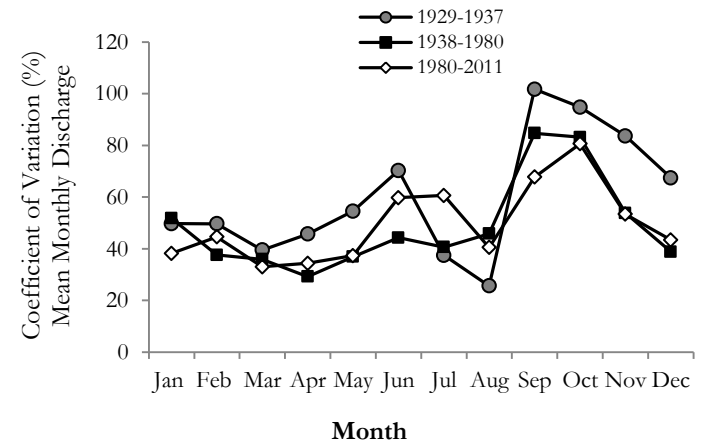
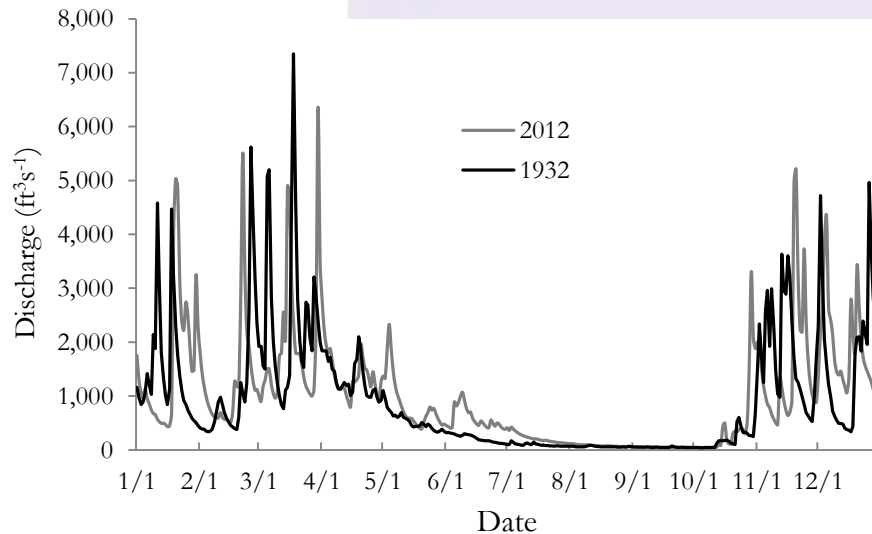


Columbia River & East Fork Lewis Hydrology- Historical Hydropatterns

Columbia R.



East Fork Lewis R.



East Fork Lewis & La Center Wetlands

Connected to East Fork- October-June



La Center Wetlands

Hydropattern- daily/weekly variable and over 10-100 acres

Drivers- surface water & rainfall

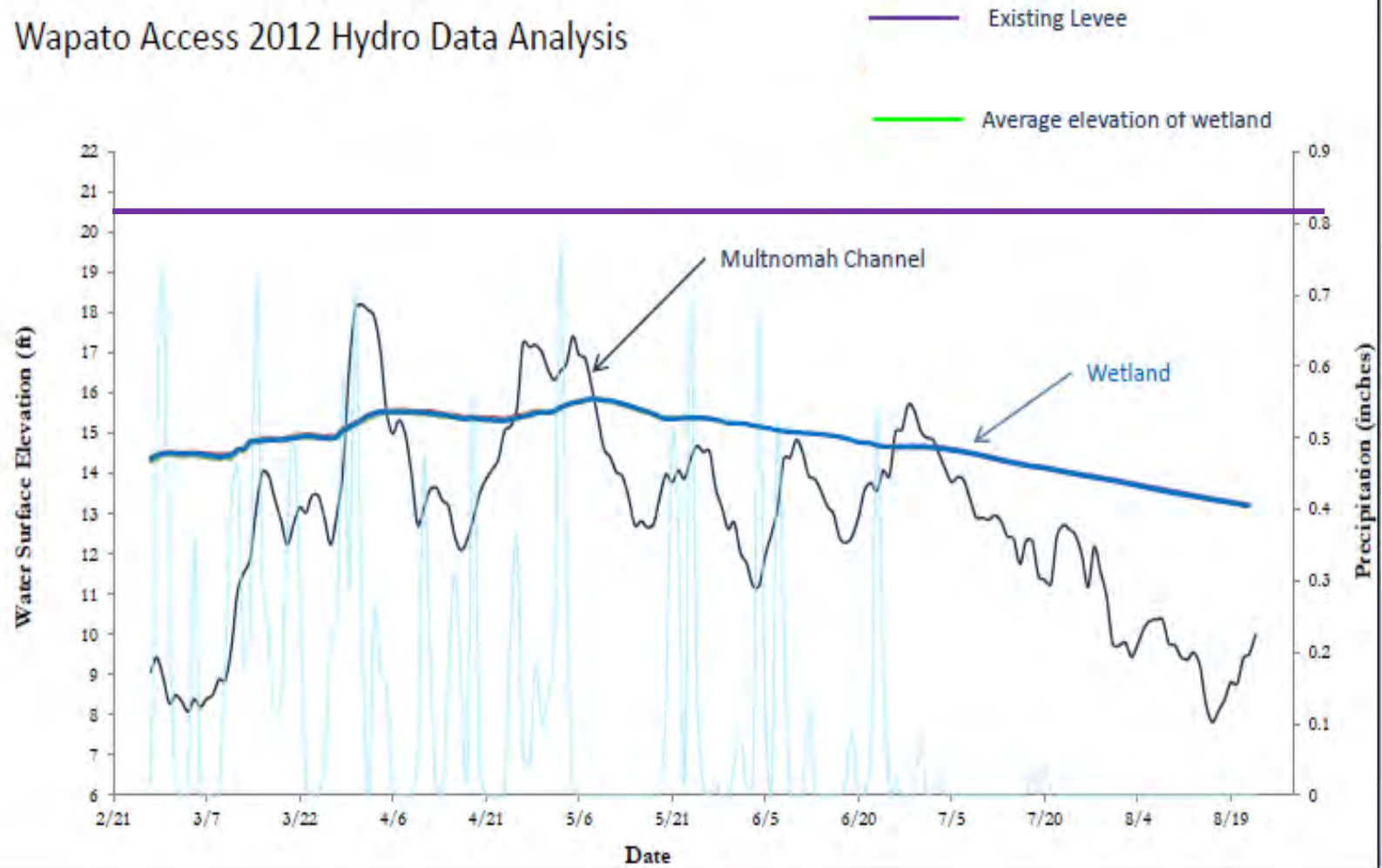
Ecological significance- fish recruitment & export of detrius



Wapato Access Greenway State Park

Connection to Columbia R. during 1-2 yr. flood

Wapato Access 2012 Hydro Data Analysis

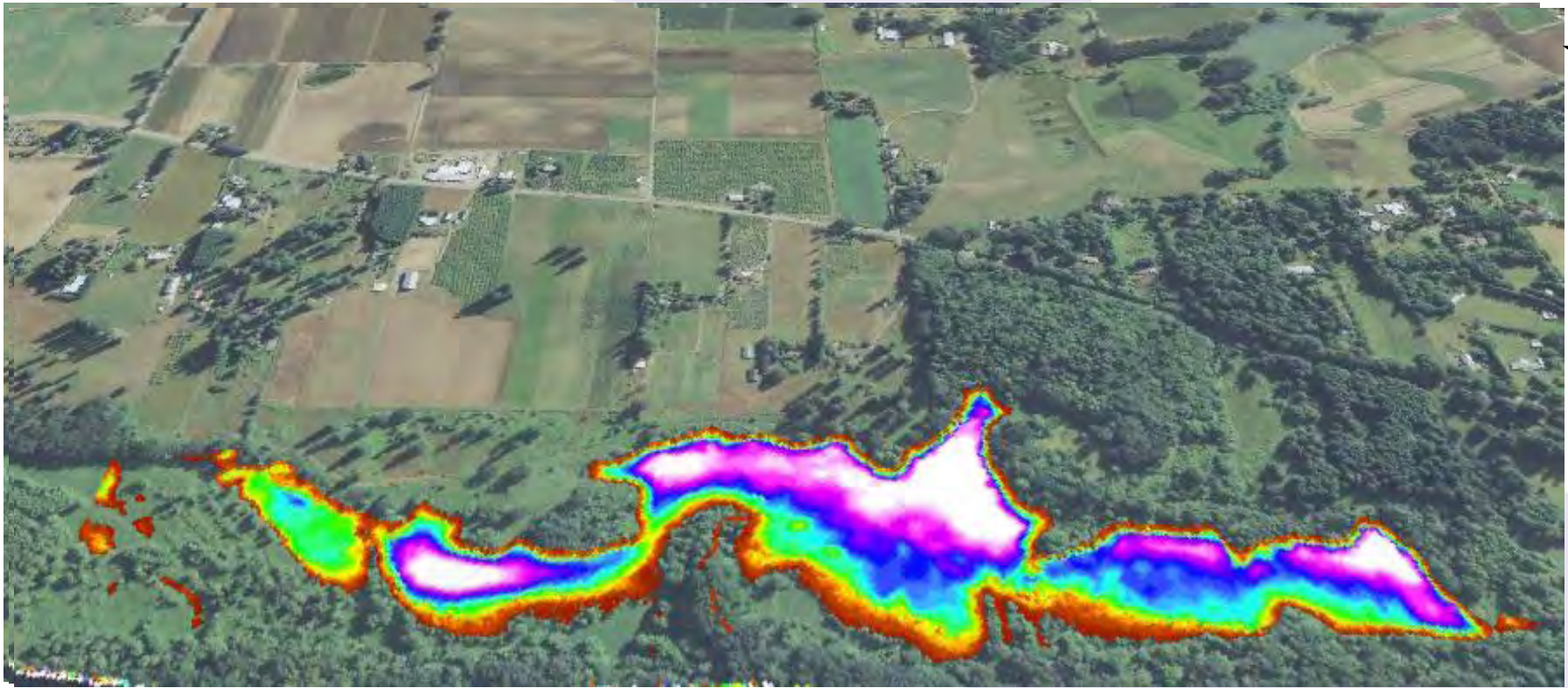


Wapato Access

Hydropattern- seasonally variable and over 20-50 acres

Drivers- evapotranspiration, rainfall, 2 yr. flood & GW

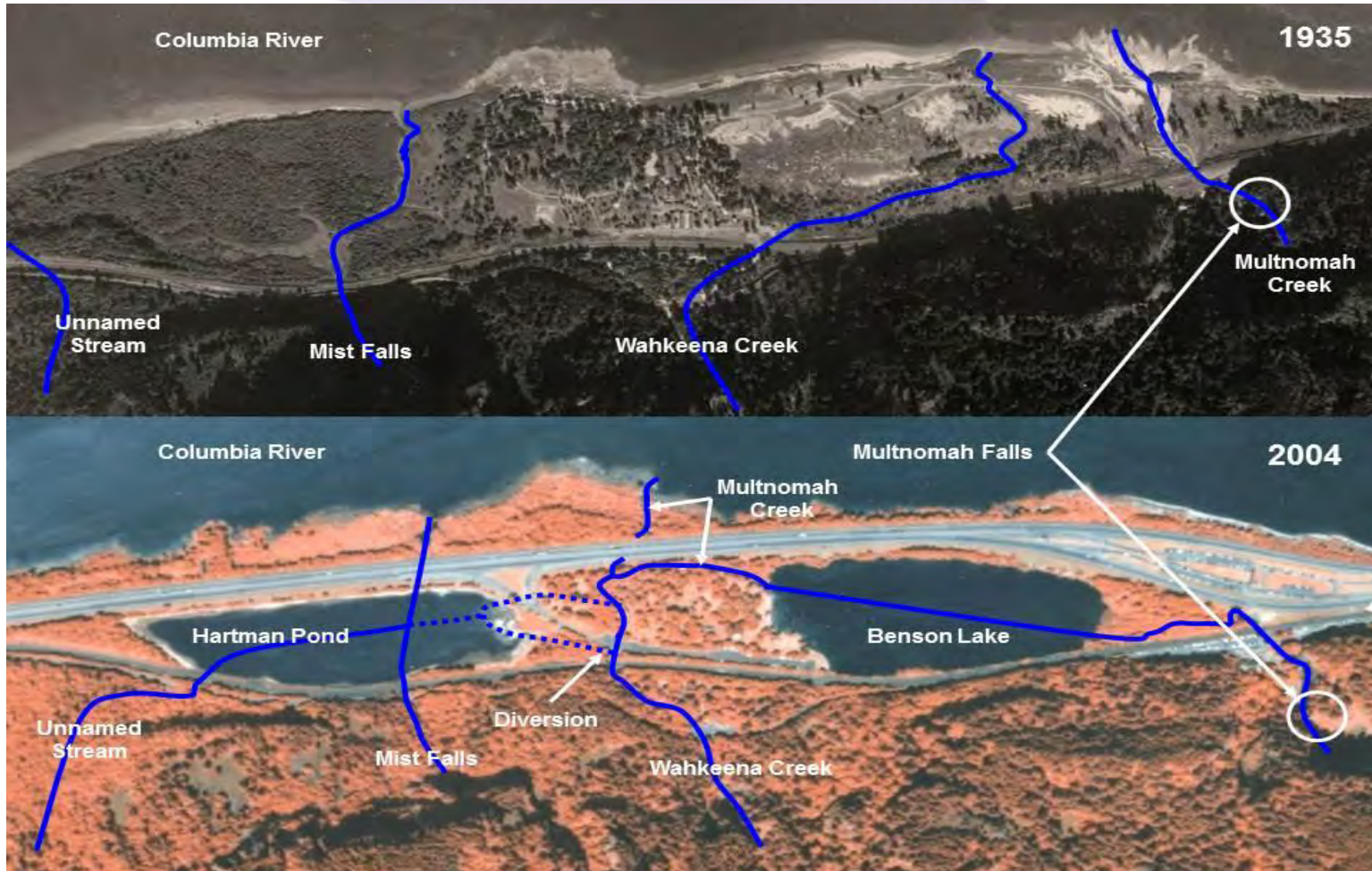
Ecological significance- probable export of detrius/eutrophic



Water Budget Approach $I_g - O_g = \Delta V - P + E + I_s + O_s$

Hartman Pond

Connected to Columbia River- extreme events

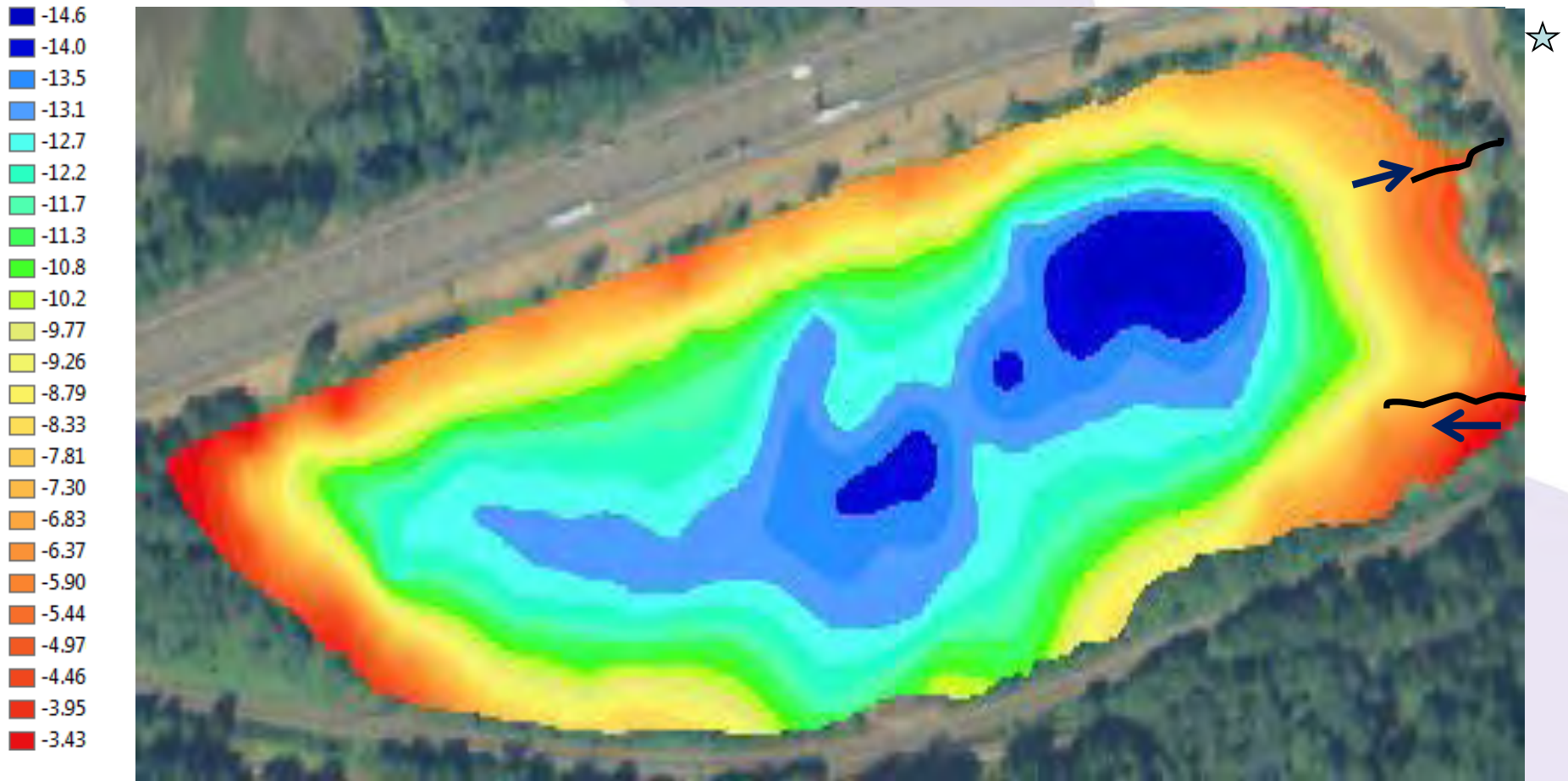


Hartman Pond

Hydropattern- seasonally variable and change is over 1 acre

Drivers-surface water, rainfall, evapotranspiration & GW

Ecological significance- organic matter accumulation



Water Budget Approach $I_g - O_g = \Delta V - P + E + I_s + O_s$

Steigerwald National Wildlife Refuge

Historic Conditions

Connection to Columbia R. & Creeks- Daily



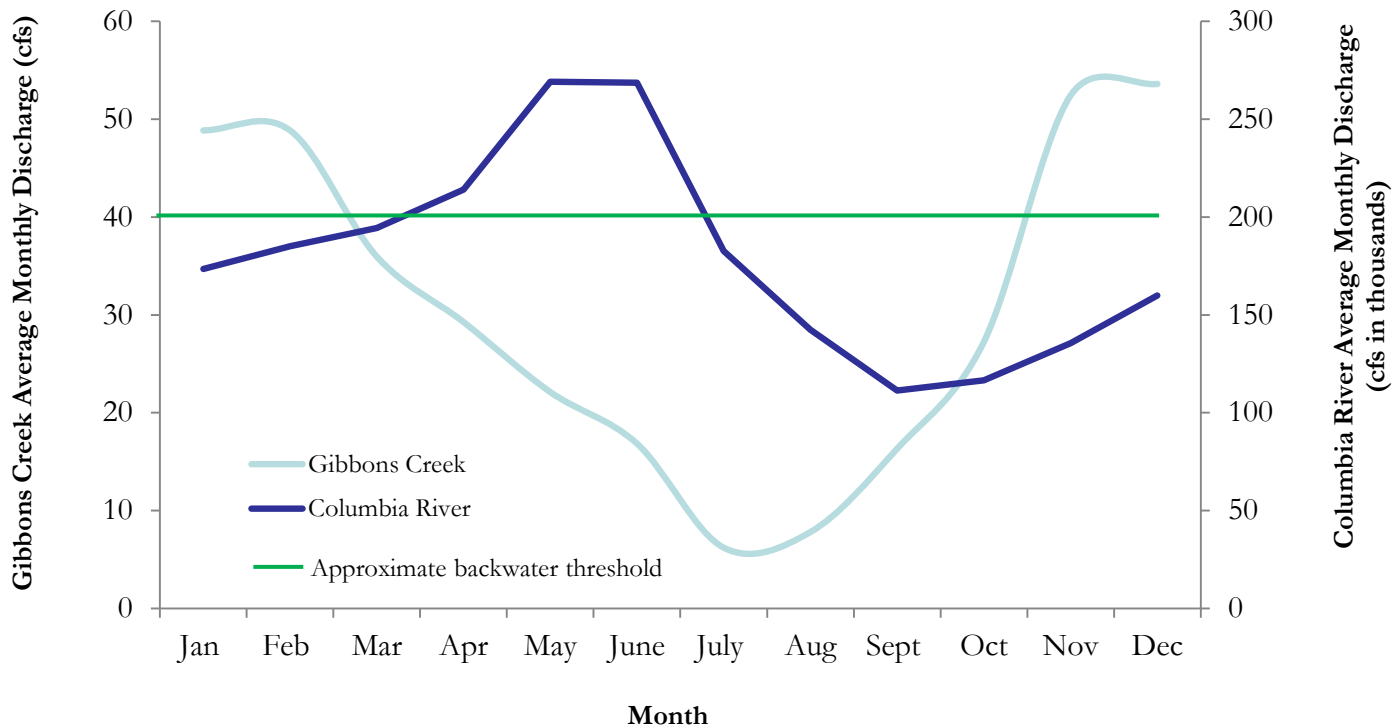
Steigerwald National Wildlife Refuge

Hydropattern- daily variable and change is > 300 acres

Drivers-surface flows, rainfall, evapotranspiration & GW

Ecological significance- fish recruitment & export of detrius

Gibbons Creek and Columbia River Hydrology



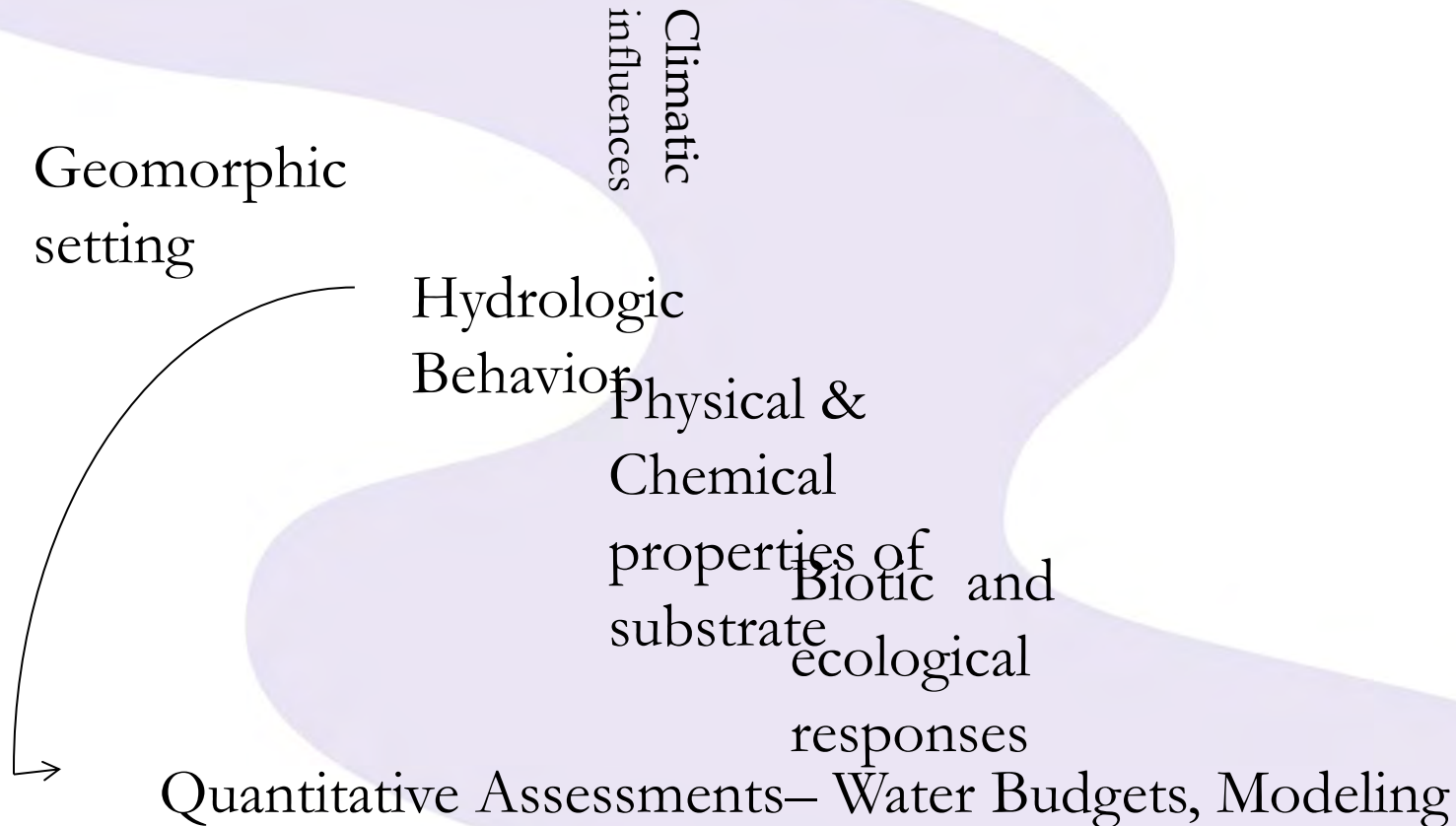


THE END.....

Hydrology, Functionality & Ecological Significance

East Fork Lewis					
Wapato					
Hartman Pond					
Steigerwald					

Form & Function & Assessments



Water Budget-

Climatic

-Evap.

-Ppt.

Modeling- surface flow

-Columbia R.

- Tributary Flows