

# Wetland work in Pennsylvania

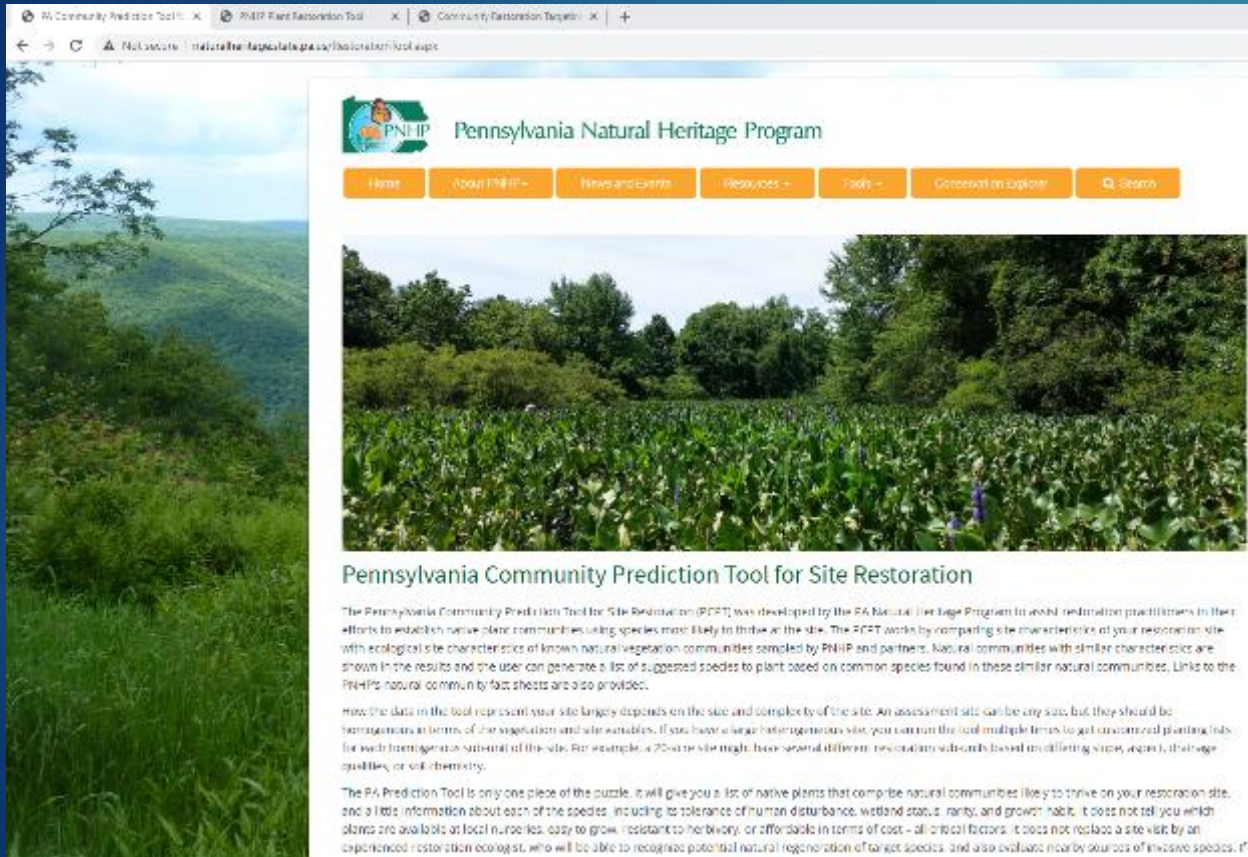
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# PA Plant Community Predictor Tool for Site Restoration



- ▶ Funded by EPA Wetland Program Development Grant to develop a plant community predictor tool to aid restoration practitioners in selecting appropriate target communities and species based on ecological variables at a particular site and their similarity to classified plot data in the PA NHP plots database.

- ▶ Tool completed in 2022
- ▶ Updated background data and model testing
- ▶ Developing training for this tool (PA DEP Clean Water Academy)

<https://www.naturalheritage.state.pa.us/RestorationTool.aspx>

# Process Based Restoration/Large Wood Materials Restoration of Little Arnot Run, Warren County, PA

- ▶ Collaborative effort between Allegheny National Forest and DEP along with several university and non-profit partners to restore the stream channel and floodplain processes of a small tributary to Tionesta Creek in the Allegheny National Forest
  - ▶ PA Dept. of Env. Protection (DEP)
  - ▶ Allegheny National Forest (ANF)
  - ▶ Bucknell University (BU)
  - ▶ Western Pennsylvania Conservancy (WPC)
  - ▶ Gannon University (GU)
  - ▶ Lockhaven University (LU)
  - ▶ PA Dept. of Cons. and Nat. Res. (DCNR)



# Process Based Restoration/Large Wood Materials Restoration of Little Arnot Run, Warren County, PA

- ▶ Portions of the Little Arnot Run stream channel and floodplain had been greatly modified by logging and gas and oil development in the early 1900s.
  - ▶ Stream channelization
  - ▶ Construction of levees restricting flow
  - ▶ Abandonment of natural floodplain channels
- ▶ DEP and ANF worked with WPC and contractors on small earth-moving activities and additions of large wood materials (LWM) to reconnect the channel and floodplain wetlands



# Process Based Restoration/Large Wood Materials Restoration of Little Arnot Run, Warren County, PA

- ▶ PA DCNR received an EPA Wetland Program Development Grant to fund academic partners and WPC to establish a multi-faceted sampling design to study the ecological response over time following the restoration activities in LAR.
  - ▶ Biological communities (fish community, macro invertebrates, floodplain wetland plants, overstory character, invasive plants, amphibians, reptiles, brook trout reproduction)
  - ▶ Hydrology
  - ▶ Water quality
  - ▶ Carbon and nutrient cycling
  - ▶ Wetland delineation
- ▶ Established a control site in Cherry Run



# Wetland Plan and Assessment Tools for State Lands in Pennsylvania

- ▶ Development of a strategic wetland plan for the PA Department of Conservation and Natural Resources (DCNR).
  - ▶ DCNR is responsible for almost 173, 000 acres of wetlands but does not address this resource in management plans for State Forests and State Parks. Identified the need for a wetland plan.
  - ▶ Worked with stakeholders to identify current and future wetland needs.
  - ▶ The draft plan contains elements that complement the PA State Wetland Plan but also includes objectives and tasks specific to the needs of public land managers.
- ▶ Assessment of wetlands on state lands.
  - ▶ Met with stakeholders to learn more about their approaches to wetland management and needs
  - ▶ Continued development of an updated wetland map for PA.
  - ▶ Work on the QAPP. Will be completed and submitted to EPA in early 2024.

# Wetland Plan and Assessment Tools for State Lands in Pennsylvania

- ▶ Outreach/educational opportunities
  - ▶ Working with DEP to identify and produce content for wetland practitioners through DEP Clean Water Academy.
    - ▶ Wetland plant identification courses
  - ▶ Converting some elements of findings from previous EPA funded projects into story maps and webinars.
    - ▶ Peatlands story map
    - ▶ Vernal pool webinars
    - ▶ Training webinar for the predictive plant tool
  - ▶ Producing social media content



# Seeps and Floodplains Project

- ▶ Continuation of work to characterize under-surveyed aquatic resources in Pennsylvania.
  - ▶ Floodplains associated with the upper Potomac tributaries, the upper Genesee River, Lehigh River, and Schuylkill River.
  - ▶ Forested seeps
- ▶ Used standard Heritage methodology to characterize the plant communities.
- ▶ Condition was assessed using a variety of methods including floristic quality assessments (FQAs) and ecological integrity assessments (EIAs for wetlands).
- ▶ Current status – final report writing





# Other Wetlands Work

- ▶ Vernal pools
  - ▶ Creation and restoration
- ▶ Monitoring
  - ▶ Identification of regional wetland monitoring metrics
  - ▶ More extensive hydrological monitoring of peatlands
  - ▶ Rare species and community monitoring
- ▶ Riparian buffers
  - ▶ Plantings
  - ▶ Restoration (i.e. Robinson Fork and Ryerson Station)
- ▶ Aquatic organism passage projects on PGC lands







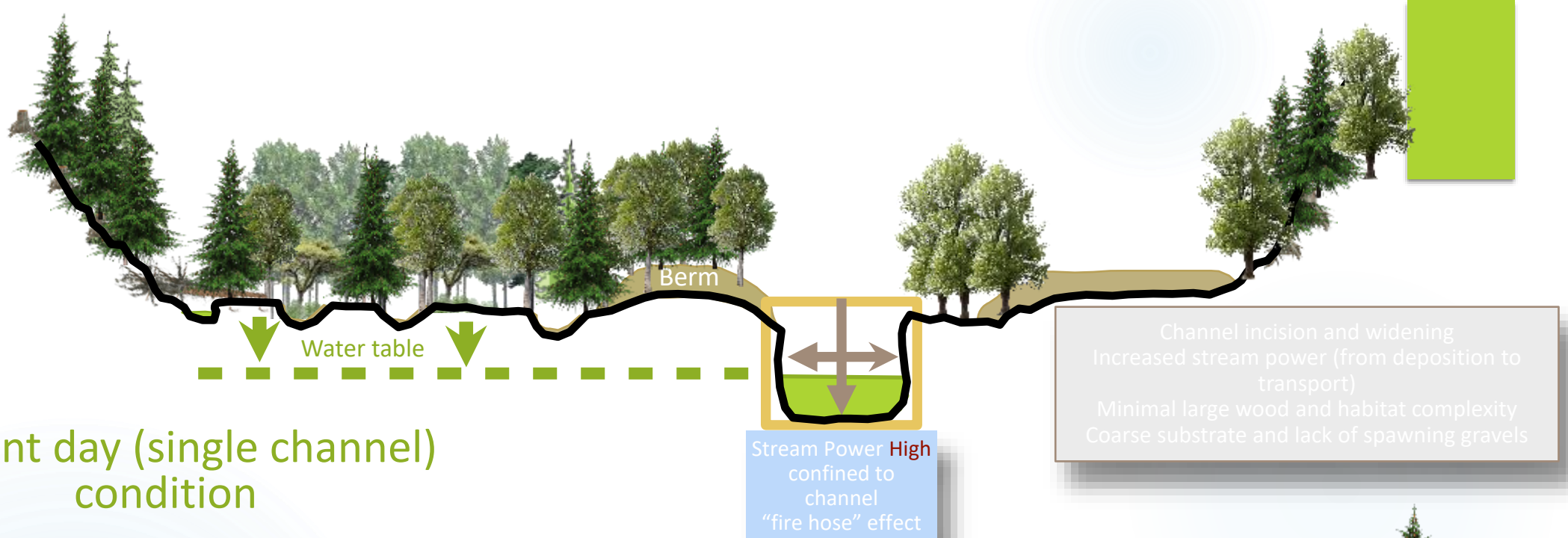
LAR 2021  
7/26/2021  
Transect 4  
Plot center  
from 225° pin



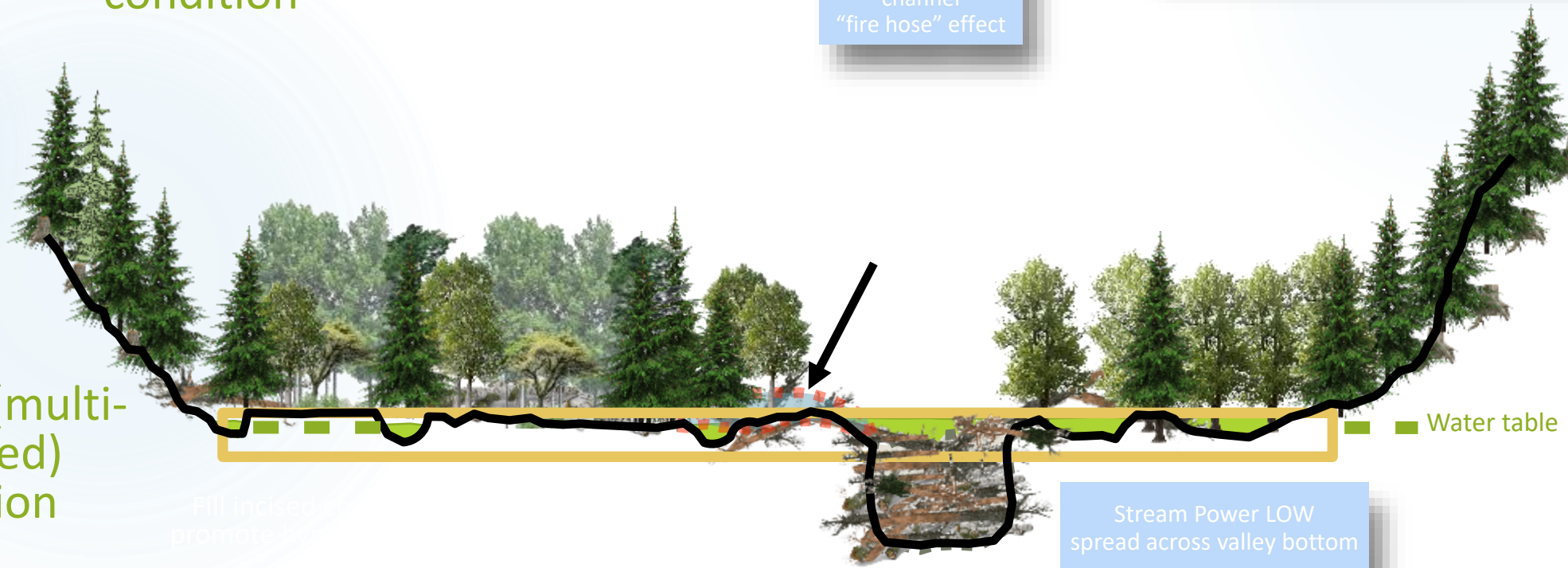
Before restoration

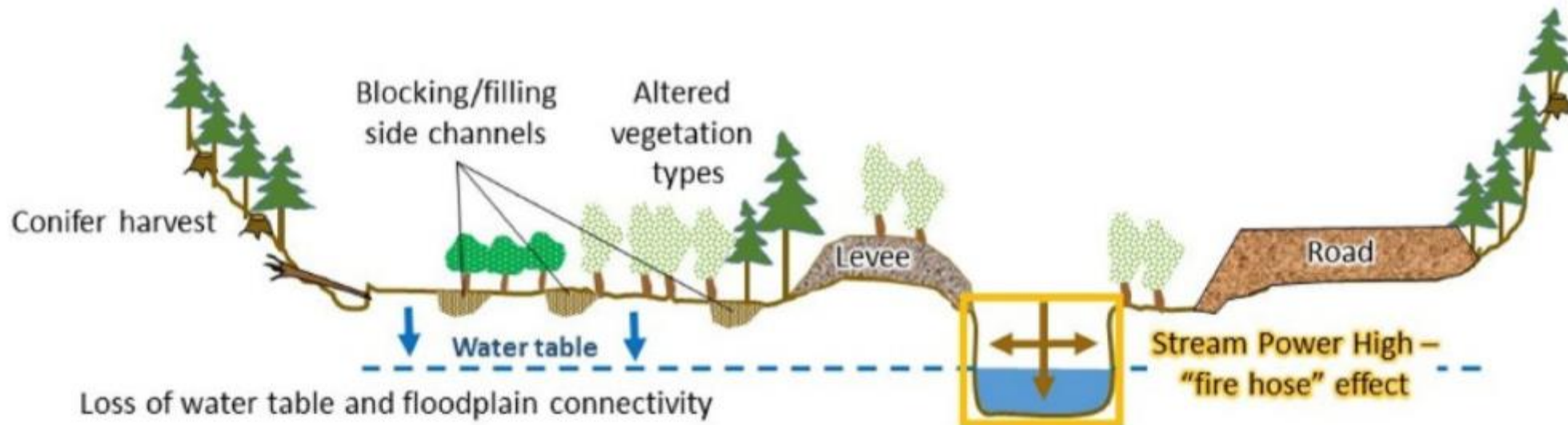
able to flow

## Present day (single channel) condition



## Restored (multi-threaded) condition





Channel incision and widening  
 Increased stream power (from deposition to transport)  
 Minimal large wood and habitat complexity  
 Coarse substrate

