

Today's Agenda

- Floodplain Reconnection Values
- Raising the Channel Invert
- Excavating the Floodplain
- The Middle Ground
- Conflicting Goals
- Finding Consensus
- Case Studies
- Questions/Discussion





Value of Floodplain Reconnection

- Reduced forces on stream channel = less erosion
- Increase flood travel times storage
- Improve floodplain wetlands
- Increased baseflow and local water table
- Provide root protection of stream banks
- Improve vegetation (and other) species diversity
- Increased sediment deposition and processing in the floodplain area
- Improved riparian and instream habitat













1st STEP - FIND THE BEST DESIGN OPTION

Floodplain reconnection by raising the channel

- Pros
 - Significant floodplain reconnection and function
 - Significant Reduction in channel erosive forces
 - Significant floodplain ecological uplift
 - Typically in-channel work only minor vegetation impact
 - Lower cost than floodplain excavation

Cons

- Significant floodplain elevation/extent increases
- Temporary disruption of existing channel substrate and biota

Deal Killers

- No raise in flood elevation allowed
- Homes or infrastructure in adjacent floodplains
- Bridge/culvert crossings throughout the restoration reach





1st STEP - FIND THE BEST DESIGN OPTION

Floodplain Excavation

- Pros
 - Moderate floodplain reconnection and function
 - Significant reduction in channel erosive forces
 - Significant floodplain and channel ecological uplift
 - Flood elevation no increase or reduction
- Cons
 - Significant excavation and veg impacts
 - Longer timeframe for mature floodplain vegetation post-restoration
 - Typically Increased cost for excavation, tree removal, riparian vegetation restoration
 - Impacts to existing wetlands or T&E species habitat
- Deal Killers
 - No removal of adjacent riparian vegetation (trees) allowed
 - Utilities in floodplain that would be impacted by excavation
 - Burdensome mitigation requirements for wetland or T&E species habitat







1st STEP - FIND THE BEST DESIGN OPTION

Middle Ground - Some Raising/Some Excavation

- Pros
 - Minor or no flood elevation/extent increases
 - Lesser vegetation impacts compared floodplain excavation only
- Cons
 - Lesser floodplain reconnection compared to other 2 alternatives
 - Lesser impact on channel erosive forces
 - May require some armoring protection to protect bank toe



Conflicting Goals

- Existing Stream Conditions
 - Typically Degraded down-cut channel, over-widened, disconnected from historic floodplain
 - Degraded channels are very efficient at carrying flood flows and causing erosion
 - All floodplain comparisons are degraded existing conditions versus restored proposed
 - Challenging to restore a degraded channel without floodplain impacts
 - Existing riparian vegetation is important but may not be feasible to restore impaired channel morphology and floodplain reconnection without some impact



Conflicting Goals

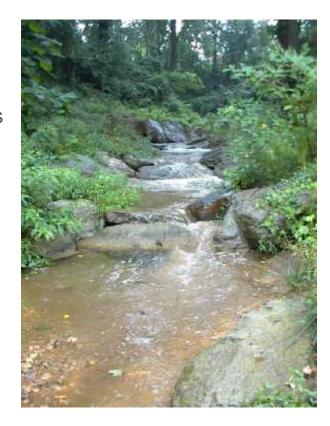
- Regulatory hurdles
 - Silo approach to regulatory reviews
 - Floodplain regulations for example, regs may require no rise but stakeholders want floodplain reconnection by raising channel to minimize vegetation impacts
 - Easement or Forest Conservation Regulations that were written for Land Development are enforced on restoration projects, limiting the ability to implement floodplain excavation
- Property/Easement Acquisitions
 - Project owner may request that all grading or floodplains are limited to property under their control
 - Floodplains don't follow property boundaries



Finding Consensus

Avoid Tunnel Vision or Silos

- Allow for floodplain increases where it makes sense –
 e.g. floodplains in open space/conservation land and
 there is not significant impact to structures or private
 lots
- Incorporate the CLOMR/LOMR process into projects from the planning phase – allocate the time and dollars
- Develop realistic project schedules and budgets that don't force a certain restoration approach
- Incorporate waivers or exemptions to local regulations (e.g. easements or forest conservation) for restoration projects that seek to improve the floodplain and/or forest and avoid burdensome requirements to property owners or project stakeholders
- Inform the public of the project and gain support if easements and/or acquisitions are needed



Case Study - UMBC

- Existing channel severely incised and disconnected from adjacent floodplain
- Floodplain reconnection by raising the existing channel invert was selected as the restoration approach
- Channel raise accomplished using riffle grade control structures and excavated material from existing vertical streambanks
- Increases in flood elevations were allowed as no regulatory floodplain was present and existing riparian vegetation was poor condition
- Post restoration benefits
 - Erosion reduction
 - Hydration of floodplain and wetland
 - Improved riparian vegetation condition



Case Study - UMBC







Case Study – River Valley Ranch

- Existing channel severely incised and disconnected from adjacent floodplain
- Floodplain reconnection by excavating floodplain benches
- No increases in flood elevations were allowed as FEMA regulatory floodplain was present and structures were located within floodplain
- Floodplain excavation completed on mostly agricultural meadow areas
- Post restoration benefits
 - Erosion reduction
 - Hydration of floodplain and wetland
 - Minimal disruption to existing channel materials and biota





Case Study – River Valley Ranch



