



Restoring Aquatic Habitat: Freshwater Mussels

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Conservation Challenges in Agriculture

- Sediment Pollution
- Riparian Buffer Loss
- Floodplain Access Loss
- Point Source Pollution
 - Cattle Access
 - Waste Management





Sediment Pollution





Problem: Sediment Pollution



- Streambank Erosion
- Sheet, rill, and gully erosion





Problem: Sediment Pollution

- Effects on mussels
 - Destabilized streambed
 - Suspended sediment “clogging up the filters”
 - Decreased food availability
 - Disrupting the mussel-host relationship





Solutions: Sediment Pollution



- Living roots in the ground year-round
 - Cover Crops
 - No/reduced till
 - Grassed Waterways
- Field Borders
 - Filter Strips
 - Riparian Forest Buffers



Problem: Riparian Buffer Loss

- Algal blooms
 - Reduced oxygen availability
 - Increased pH
- Water Temperature
 - Increased ammonia concentrations





Solutions: Riparian Buffer Loss

- Simple!
 - Plant riparian forest buffers
 - The wider the better
 - General rule of thumb – riparian forest should be at least 1.5 times bankfull width on both sides
 - Anything is better than nothing





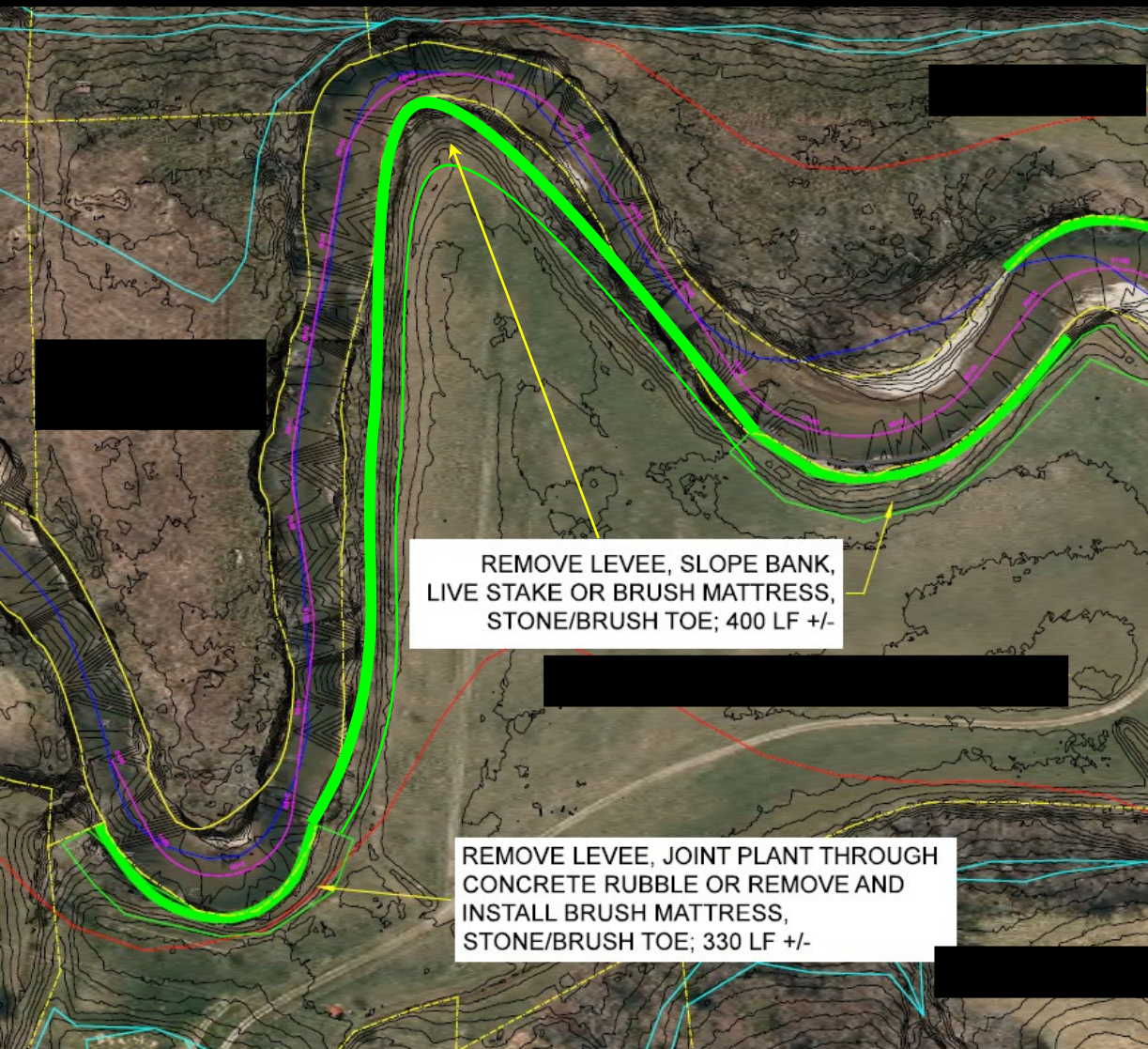
Problem: Floodplain Access Loss



- Stream power
 - Destabilized stream bed
- Sedimentation
 - Reduced area of “slack water” during floods for sediment to deposit



Solutions: Floodplain Access Loss



- Berm removal
 - Allow floodplain access
- Wetland Restoration
 - Sediment retention
- Bankfull benches
 - Ok, if full access not possible
- Riparian Forest
 - Increase “roughness” to reduce impact of flood flows



Problem: Point Source Pollution

- Cattle Access
 - Sedimentation
 - Increased Nutrients
 - Potential pathogen inputs
- Waste Management
 - CAFOs
- Fertilizers
 - Manure spreading
 - Traditional fertilizers





Problem: Point Source Pollution

- Nutrient effects on Mussels
 - More algal blooms leading to lower dissolved oxygen
 - Increased ammonia concentrations





Solutions: Point Source Pollution

- Cattle Access
 - Fencing
 - Riparian Forest Buffer
- Waste Management
 - Comprehensive Nutrient Management Plans
- Fertilizers
 - Nutrient Management
 - Riparian Forest Buffers, Filter Strips, Constructed Wetlands





NRCS for Tribes



- Technical Assistance
- Financial Assistance
 - Tribal member eligible for 90% cost-share (historically underserved)
- Regional Conservation Partnership Program (RCPP)?



Questions



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