

Streambank and Shoreline Bioengineered Stabilization

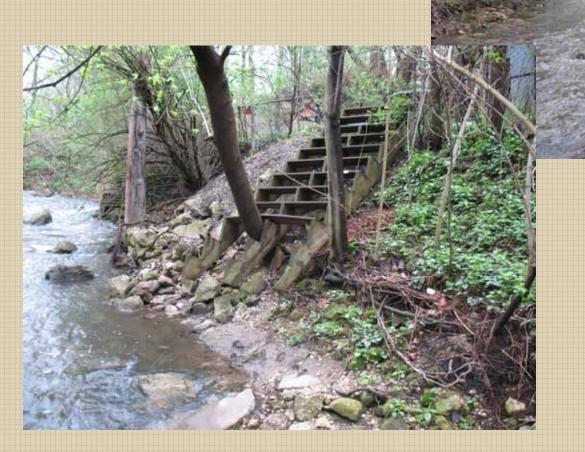
"Lessons Learned"

Derrick Martin, PE, CFM, CPESC Water Resources Group Manager

V3 Companies

Typical Examples of Erosion

Loss of Property and/or Impacts to Utilities



Health & Safety Concerns



Typical Examples of Erosion

Limited Habitat



Water Quality Degradation



Typical Examples of Erosion

Undesirable Aesthetics



Decreased Functionality



General Project Approach

Determine the Contributing Factors

- **≻**Erosive Velocities
 - Function of Flow and/or Geometry
- ➤ Wave Action / Wind Fetch
- ➤ Lack of Vegetation and/or Hard Armoring
- **≻**Soil Conditions
- ➤ Natural or Manmade Obstructions / Diversions
- ➤ Wildlife and Human Impact



General Project Approach

Initial Design Considerations

- > Project Budget
- > Timeframe
- Permitting Considerations
- Existing Hydrologic & Hydraulic Conditions
- Sustainability
- Aesthetics
- Constructability
- > Easements
- Utilities
- Maintenance Considerations
- Balance of Risk versus Benefits
 - Hard Armoring vs. Bioengineering



Lot 16 Bank Stabilization







Existing Conditions







Rock Vein & Riffle Construction







Soil Lift and Fiber Roll Installation







Soil Lift Installation

Fiber Roll Installation

Plant and Seed Installation



Plant Plug Installation

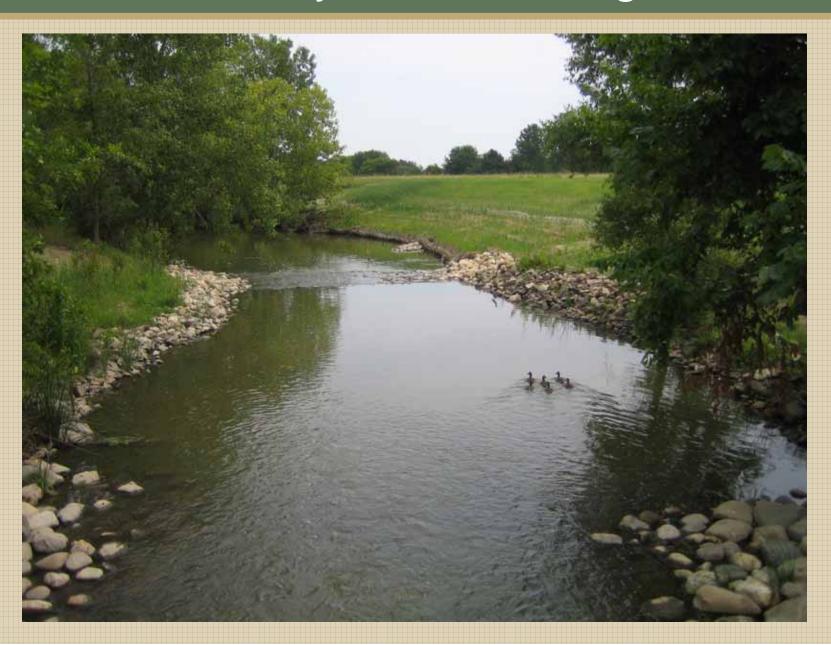
Seed, Live Stakes & Shrub Installation



Shortly After Planting

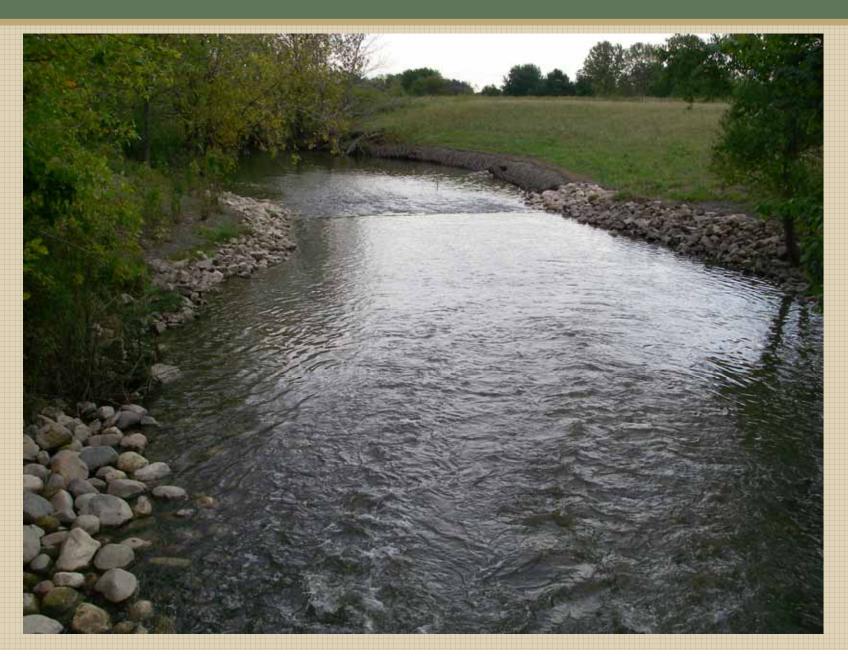
A CONTRACTOR CONTRACTO





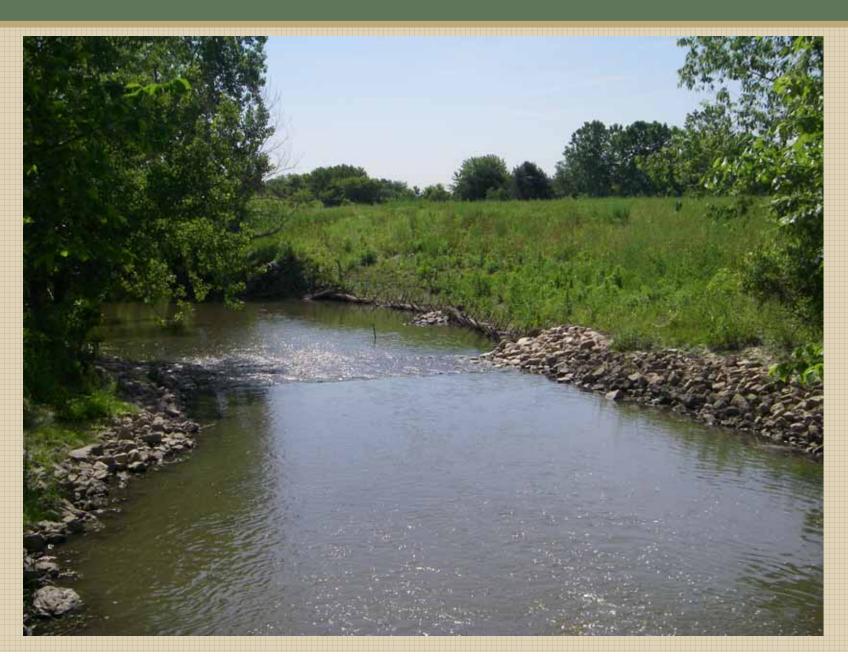


1-Year After Stabilization



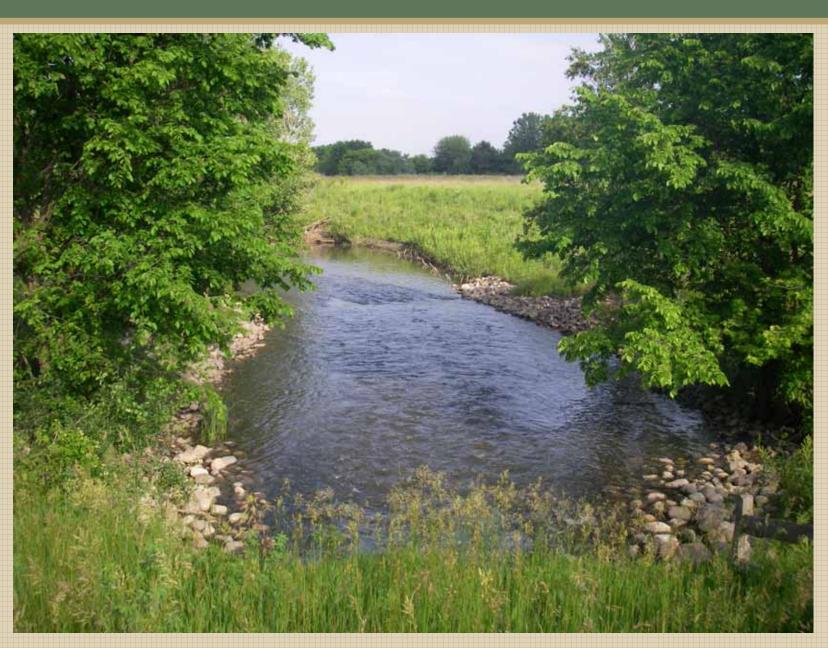


2-Years After Stabilization



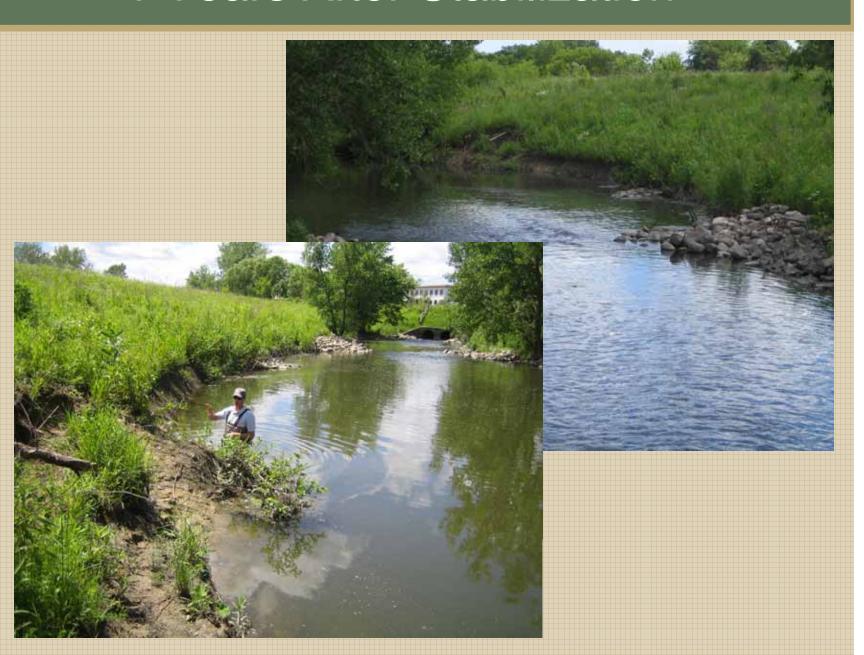


3-Years After Stabilization





4-Years After Stabilization



Lessons Learned

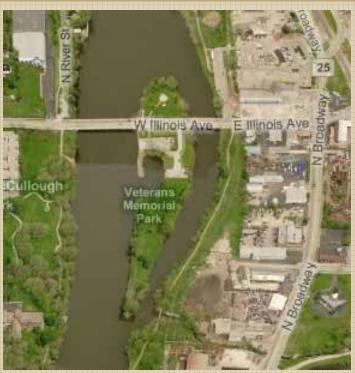
- >Potential Improvements
 - ❖ ACOE / SWCD Permitting
 - Hard Armoring of Toe
 - Live Stake Installation Timing
 - Increase Height of Rock Vane
 - Better Use of Wetland Plugs
- >What Worked Well
 - IDNR-OWR Permitting
 - Modified Soil Lifts
 - Riffle & Rock Vane (for most part)
 - Prairie Vegetation
 - Educational / Volunteer Opportunities
 - Met Grant Funding Requirements



Veterans Island – Fox River

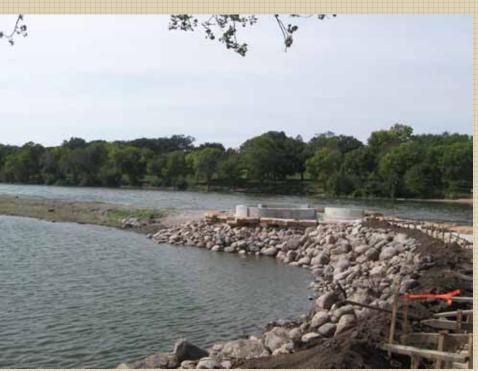






Aesthetic & Recreational Improvements

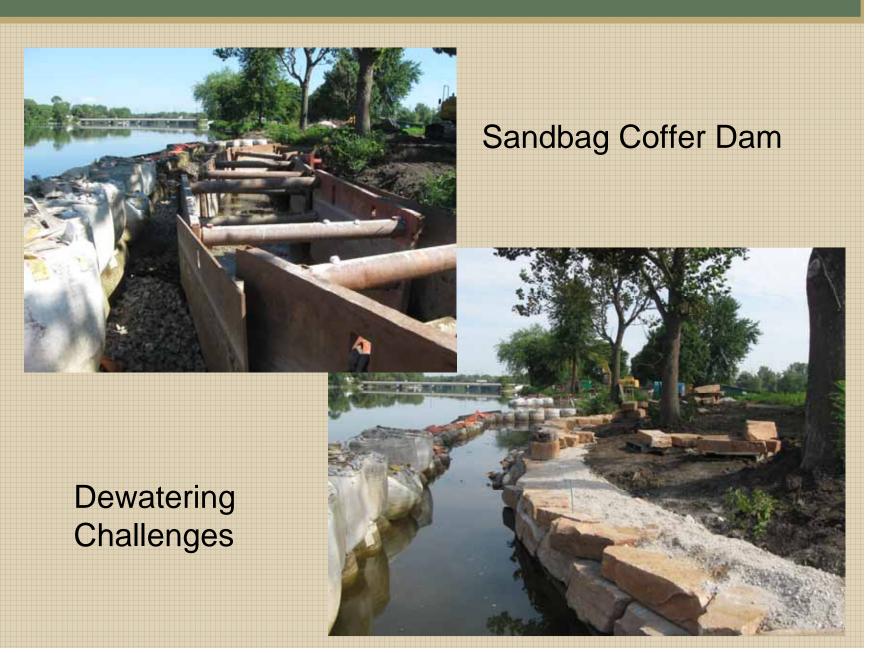
Shoreline Protection





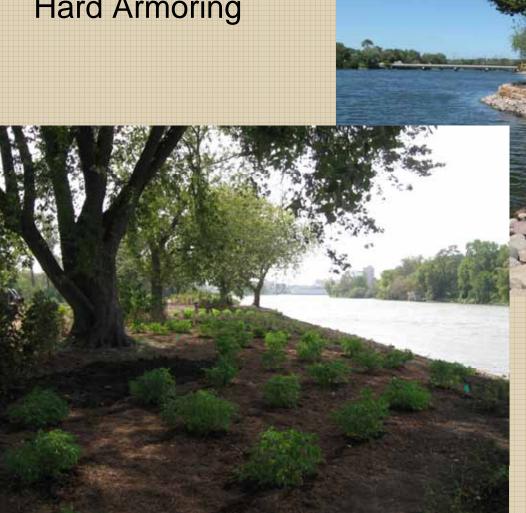
Veterans Island – Fox River





Veterans Island – Fox River

Hard Armoring



Plantings



Lessons Learned

- ➤ Challenges
 - Dramatically Fluctuating Water Levels
 - Unexpected Subgrade Conditions
 - Staging in Floodplain
- **≻**Solutions
 - Adjust Project Schedule
 - Utilize Trench Boxes
 - Manage Deliveries for Same Day Install



Joint Plantings & Lunker Structures













Root Wads







Block Mattress & Vegetated Gabions





A-Jacks & Native Vegetation







Wetland Shrubs & Live Willow Stakes













Questions















