Bank Remediation and Restoration for a Time Critical Removal Action with Water Control Structure Removal

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woodplc.com
Agenda

- Background
- Goals/Objectives
- Pre-Design
- Design Considerations
- Implementation
- Results/Lessons Learned
Background

- Time Critical Removal Action with dam removal from a EPA Region 5 river Superfund Site
- Bank stabilization and sediment removal along 1.7 miles
- Design criteria based on hydraulic and sediment transport model results
In 2016 State installed a temporary water control structure (WCS) immediately upstream of the existing dam and stabilized the original spillway to pass flood flows.
Goals

• Provide a stable river condition with dam removed
• Address potentially erodible sediment/banks containing PCBs
Pre-design work
Design considerations and approaches

• Designed in phases by bank removal and stabilization areas (9 total)
• Contractor collaboration
• Protect endangered species
• Long-term protection against erosion of steep banks
• Utilize functional bank treatments
  o coir face
  o root wads
  o joint planting
  o install J-hooks to redirect flow
• Protection of existing structures
  o bridge
    – coordinate with DOT
  o water control structures
New channel design
Design – pilot channel
Pilot channel – sediment reuse

Elevation (feet, NGVD 29)

- < 658
- 668 - 688
- 690 - 693
- 695 - 703
- 706 - 710
- 713 - 717
- > 722

Contour (0 inch interval)
Index Contour (5 ft interval)

Note:
WCS = Water control structure
NGVD 29 = National Geodetic Vertical Datum of 1929

Main Channel
Old Spillway
Plunge Pool
Implementation – bank/sediment removal and restoration

- Clearing/access roads
- Staging areas/water treatment
- Coffer dam systems
- Bank/sediment removal
- Restoration
Implementation – J-hooks

- Boulders sized to withstand 100+ year flow
- J-hooks situated according to modeled locations; boulder placement guided by GPS survey equipment
- Height of J-hook in-field adjustment
Implementation – pilot channel and beneficial sediment re-use
Implementation – dredging and turbidity controls
Implementation – monitoring dredging progress
Implementation – water control structure removal

Image from drone – looking downstream at partially removed WCS
Project completion

Image from drone - looking upstream at completion of construction
Results

- Completed successfully, within schedule and budget
- A high flow event occurred during construction without significant damage or delay
- The river stabilization structures remain stable and functioning as intended

Before

After
Results - restoration

- 8,900 LF joint planting
- 5,700 LF of root wads
- 2,200 LF coir fabric
## Sustainability/Community Relations

<table>
<thead>
<tr>
<th>Local Vendors Used</th>
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<tbody>
<tr>
<td>Aggregates</td>
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<tr>
<td>Sand &amp; Gravel</td>
</tr>
<tr>
<td>Trucking</td>
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<tr>
<td>Sheet Pile Coffer Dam</td>
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<tr>
<td>General Supplies</td>
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<td>Accommodations</td>
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<table>
<thead>
<tr>
<th>Materials Recycled</th>
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<tbody>
<tr>
<td>Cardboard</td>
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<tr>
<td>Plastic</td>
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<tr>
<td>Metals</td>
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<tr>
<td>Total</td>
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<tr>
<td>1,590 lbs.</td>
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<td>845 lbs.</td>
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<td>44,276 lbs.</td>
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<td>46,711 lbs.</td>
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Questions?

Thank you!
For more information:

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