Integrated Remediation & Restoration

- EPA Record of Decision
- Settlement Agreement
- Bypass channel
- 2007-2009: Sediment removal 2.2M cubic yards
- Repositories & reclamation
- March 2008: dam removal

Timeline:
- 2005: Restoration Plan
- 2006: Peer review
- 2007-2009: Sediment removal 2.2M cubic yards
- 2009:
- 2010: 2008-2012 Implementation
- 2011: Data collection and feasibility analysis
Grading Plan

Restoration Plan for the Clark Fork River and Blackfoot River near Milltown Dam

Features
- Main Channel
- Secondary Channel
- Point Bar
- Wetland
- Bankfull Floodplain (bankfull elevation to 2 ft. above bankfull)
- Low Terrace (2 to 3 ft. above bankfull)
- High Terrace (greater than 3 ft. above bankfull*)
- Existing Floodplain Surface (to remain undisturbed)
- Deer Creek Tributary (pending final design)
- Existing Spring
- Existing Secondary Channel

*Final elevation to be determined based on final cut/fill quantities.
Design for Deformability

- Select hydraulic criteria from flood events less than 100-yr
- Design bank toe protection at depths less than scour
- Use biodegradable fabrics, plant material and wood
- Use round v. angular rock
- Allow bed mobility
- Integrate side channels
- Maintain floodplain connectivity at less than Q₂
Design for Floodplain Diversity

- Vary geomorphic surfaces
- Vary substrates to mimic floodplain stratigraphy
- Maximize floodplain surface roughness
- Construct large and small depression features
- Maintain floodplain connectivity at less than Q2
Plant community succession in large alluvial river systems in the semi arid Rocky Mountain Region is initiated by cottonwoods colonizing bare, moist substrates.
2011 Peak Flow
13,000 cfs
Estimated Q32
Out of banks for >60 days

Photo: Gary Matson
Peak flow 2011

CHANNEL AVULSION PATH THROUGH SIDE CHANNEL

Last stockpile of growth media

Photo: Gary Matson
Year 5 MONITORING - 2015

• Channel Monitoring to Determine if:
  • Maintained dynamic equilibrium (+/-20% of design dimensions)
  • Maintained floodplain connection
  • Maintained sediment transport continuity

• Vegetation Monitoring to Determine:
  • Percent Cover of Vegetation
  • Species Composition
  • Development of Floodplain Vegetation Communities
  • Wetland Development
Vegetation Monitoring – Yr 1 v. Yr 5
Herbaceous Vegetation

A.

B.
Vegetation Monitoring – Yr 1 v. Yr 5 woody Vegetation
Adaptive Management... Public Access
Adaptive Management... Weeds
MILLTOWN VOLUNTEER PLANTING
SATURDAY, APRIL 22
2:00-5:00 pm
Questions/Comments?

Thank you!

https://doj.mt.gov/lands/specific-site-information