Kiefer Creek Channel Restoration Initiative

For the OMW-Lower Meramec Meeting
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Meramec River

Castlewood State Park
Wooded hiking & mountain biking trails

The Nature Conservancy
Protecting nature. Preserving life.
Project Area

Kiefer Creek
Listed as “Impaired” for:
1. Chloride
2. Bacteria

Also has sedimentation issues:
- Streambank erosion
- Filling up channel
- Loss of aquatic habitat
- Degrades Meramec
- Degrades park resources
What is a Stream Restoration Plan?

Comprehensive assessment to develop conceptual restoration designs for streams in an impaired watershed

1. Assess stream/watershed conditions
2. Develop restoration approach
3. Design restoration actions across area
4. Tailor information for best success
Why Kiefer Creek?

- Linked to several existing conservation plans
- Public ownership (lower 1.25 miles)
- Stakeholder interest/organization
- Focus of recent planning (DNR & MCE 319)
- Outreach & education
- Good restoration potential
- Demonstrate bioengineering approaches
Traditional Approaches Provide Minimal Ecological Benefit.
More Benefits with Function-Based Approaches

Traditional

Natural/Functional
Reconnecting Rivers: Natural Channel Design in Dam Removal and Fish Passage

Minnesota Department of Natural Resources
First Edition
Bioengineering Structures

- Branch Packing
- Brush Layering
- Brush Mattress
- Coconut Fiber Log
- Erosion Control Fabric
- Hay Bale Breakwater
- Joint Planting
- Live Crib Wall
- Live Fascine
- Live Siltation
- Log Breakwater
- Plant Mat
- Toe Wood (Root Wad)
- Rooted Stock
- Terraced Crib
- Engineered Log Jam
- Tree/Log Revetment
- MORE!
Toe-Wood (aka Root Wad)

Structure

Cross section
Not to scale

Figure 16-32

Rock Rip-Rap

Existing vegetation, plantings or soil bioengineering systems

Erosion control fabric

Top of riprap minimum thickness = maximum rock size

Gravel bedding, geotextile fabric, as needed

Stream-forming flow

Baseflow

Streambed

Bottom of riprap minimum thickness = 2 x maximum
Toe-Wood Structure

Sill Logs are Buried Flush with Top of Bankfull Bench
Placed at the Beginning and End of Toe Wood Structure, Perpendicular to Flow
Toe-Wood Structure

Trail Creek, CO
Toe-Wood Structure

White River, AR
Toe-Wood Structure

White River, AR
Next Steps

• Hire contractor (March)
• Assessments (March –April)
• Prelim. designs (May –June)
• Final plan (Fall 2016)
• Model for Meramec, elsewhere in MO
• Post-flooding rebuilding