South Fork Coeur d’Alene River
Pilot Restoration Project

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Coeur d’Alene River Basin
(Idaho/Basin map)
Basin History

- 100 years of heavy metals mining, milling, and smelting.
- Industry used river system for waste conveyance
- Highly impacted eco- and hydrologic systems

Coeur d’Alene Basin Cleanup

- River and stream rehabilitation
- Utilize Pilot Projects
- Achieve TMDL and water quality standards
- Restore fisheries
Pilot Project Goals

- Restore natural river function to reach
- Incorporate residual pool volume
- Link large-scale removals with river reconstruction
- Consider revegetation/habitat schemes and issues
- Incorporate funding and schedule impacts

Post-Removal Problems

- Highly disturbed reach
- Contaminated sediment/tailings excavations removed 250,000 cy from project reach
- Limited vegetation
- Incised and unbalanced
Project Strategy

- Hydrology
- Hydraulics
- Sediment Transport
- Geomorphology
- Balanced river/floodplain topography
- Historic and Reference Reaches
- Experience

Some of Our Problems

- Initial high velocities entering site
- Difficult revegetation
- Slope disparity
- No fines in floodplain media
- Ever-changing sediment transport
Hydrology

- USGS gage data
- Log Pearson Type III Statistical Analysis
- Historical evidence of 100 year flow elevations
- Historical evidence of 1.5-2 year flow elevations
- Coordination with local agencies

Hydraulic Analysis

- GPS river cross-sections/floodplain topography
- Sediment sampling
- HEC-RAS model of various return interval flows
- Calculate dominant-flow/bankfull flow channel sections and profile
- Model channel/floodplain interaction within overall flow regime
**Geomorphologic Considerations**

- Controlling features at all perimeter points
- Several miles of confined channel upstream
- Incised channel with potential braiding.
- Various geomorphic relationships disrupted
- Three stable nodes within project reach

**Key Components to Approach**

- Historic alignments
- Stable nodes
- Reference reach - compare hydrologic and model results for optimum section/profile
- Floodplain material balance with model results
- Geomorphic parameters and relationships
- Hydraulic factors
Main Design Elements

- Planform
- River profile and sections
- River bank treatments
- Floodplain configuration and features
- Risks to perimeter
- Fisheries and wildlife habitat
- Wetlands and revegetation
River bank/wetlands
Construction Issues

• Water quality during construction a project priority
• River diversions
• Material balance and management
• Construction sequencing
• Construction material supply
• Volunteer opportunities

River diversion during construction
Volunteers

What’s Left to Do?
Technical Advisory Group

- Project Officer - Idaho Department of Environment Quality
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife
- Bureau of Land Management