

Story Spring Creek Stream Restoration & Fish Habitat Enhancement



Location: Belgrade, Montana

Client: Private Landowner

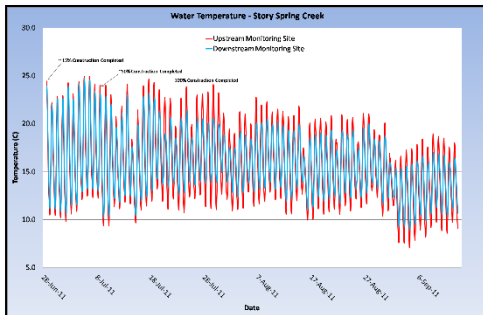
Key Project Elements:

- ❖ Initial Site Inspection & Feasibility Analysis
- ❖ Geomorphic and Habitat Assessment
- ❖ Hydraulic Analysis & Hydrologic Assessment
- ❖ Process Based Stream & Habitat Restoration Design
- ❖ Construction Implementation
- ❖ Riparian Revegetation Design & Implementation

Project Description:

Story Spring Creek flows through agricultural valley bottom lands to its confluence with the East Gallatin River. A legacy of agricultural activities resulted in a physically manipulated stream corridor with poor overall channel function and severely degraded aquatic habitat. The channel was shallow and over-widened and lacked adequate riparian shrubs, resulting in nearly lethal water temperatures for trout. Limited sediment transport capability caused fine sediment to accumulate 1 to 3 feet thick, smothering stream bed gravels and filling in pools. Trout habitat was limited by the loss of pools, and the lack of clean gravels resulted in very restricted spawning habitat and limited aquatic invertebrate productivity.

RE, LLC's principals developed a design to restore over 9,800 feet of the degraded channel. A process based design approach was used to develop and execute a plan that restored channel function and aquatic habitat, and re-established willows and riparian vegetation throughout the reach. To attain the appropriate channel geometry, a 'bank



translation' technique was used to narrow the channel cross section, separating the active channel from adjacent shallow emergent wetlands. New channel banks were constructed with wetland sod harvested from the existing stream corridor.

The restoration project resulted in a naturally functioning channel that is significantly narrower and deeper, has an improved thermal regime, and the quantity and quality of aquatic habitat has substantially increased. Enhanced hydraulic efficiency has scoured pools and washed fines from the stream bed; gravels have been mobilized and sorted, and trout have been observed spawning in the project reach. The restored willow community and riparian vegetation have stabilized stream banks, provided overhead trout cover, and combined with the narrower channel geometry, has greatly reduced solar input and atmospheric warming, thus reducing overall water temperatures and diurnal extremes, providing ideal conditions for trout growth and survival.