

Fluvial Geomorphic and Habitat Assessment of the South River Watershed Project & the Sediment Best Management Practices Implementation Project



Roads, bridges, farm land and homes have been damaged or are threatened by the major bank erosion occurring in the watershed. Considerable amounts of local, state and federal money have already been spent to repair damaged infrastructure and these repairs are not always successful, as shown in the pictures of the retaining walls on the South River.

The Massachusetts Department of Environmental Protection (MA DEP) awarded the Franklin Regional Council of Governments (FRCOG) a \$74,900 604b grant to conduct a Fluvial Geomorphic and Habitat Assessment of the South River Watershed. This project, completed in 2013, documented the causes of erosion, channel instability and habitat degradation and identified 10 priority restoration sites in the watershed.

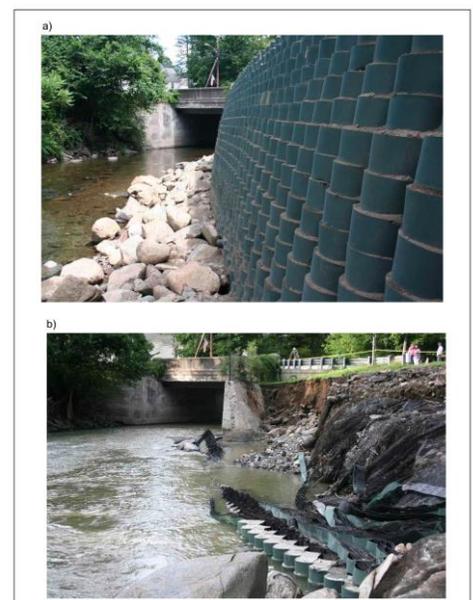


FRCOG and the town applied for and were awarded a \$212,500 s.319 grant from MA DEP to fund construction of the highest ranked priority restoration site. The site includes a portion of town-owned land located downstream of the Route 116 Bridge in Conway Center (see map on other side).

The site was ranked number 1 out of 10 high priority restoration sites, reflecting both the potential for infrastructure damage at this location and the need for improved aquatic habitat. The assessment identified bank erosion, a lack of pools, particle size segregation, and flow complexity in this artificially straightened reach of the river.

Bank stabilization will occur in the form of boulder deflectors and V-shaped boulder weirs where residential properties are at risk of erosion. The deflectors and weirs will also improve flow complexity that will lead to pool formation and better particle size segregation. Anchored logs will be placed at the base of the banks between the boulder structures to promote sediment deposition along the now actively eroding banks.

In addition to the bank stabilization, the project includes lowering a section of abandoned floodplain on the Town field property. Reclamation of the once active floodplain will improve sediment storage, especially of problematic fine sediments.¹ Reactivating a portion of the floodplain will also improve the river's geomorphic and habitat function, and lead to a reduction of flood flow velocities and, therefore, downstream sediment transport.

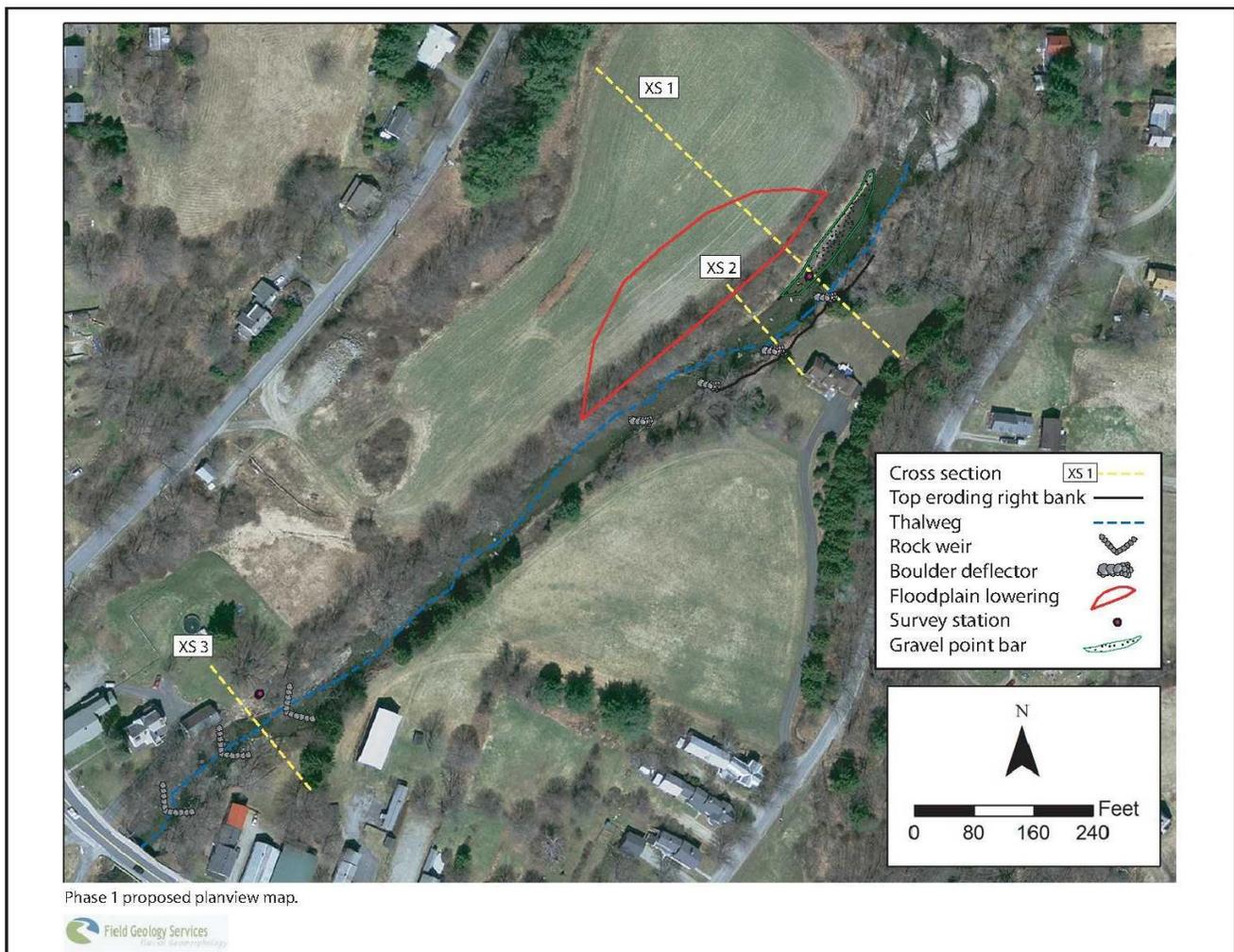


¹ Pollutants such as pathogens, heavy metals, fertilizers and pesticides can bind to soil particles. Excessive sediment in the water also compromises fisheries and macroinvertebrate habitat.

This sediment storage is only one benefit of floodplain lowering, which also includes improved river function - less stream power in the stream channel means less energy is available to erode banks and produce more sediment. Flood stages will be reduced at the project site as well as upstream and downstream of the site. The other benefits include improved riparian habitat and improved aquatic habitat. Improving access to floodplains is an increasingly important component of river management efforts around the world as a means of reducing flood damages and restoring ecological complexity along rivers heavily impacted by past human land use.²

The FRCOG has issued a Request for Proposals to hire a consultant to provide final designs, environmental permitting assistance and construction oversight for the project. Once the designs and permits are in hand, a bid for construction will be issued. Construction of the project will be undertaken in 2015, with the schedule to be determined based on requirements in the permits that dictate the time of year that work can be done in the river.

Conceptual restoration plan for the South River downstream of Route 116 Bridge in Conway, MA.
Prepared by Field Geology Services



² Ollero, A., 2010, Channel changes and floodplain management in the meandering middle Ebro River, Spain: *Geomorphology*, v. 117, p. 247-260.