7-12-2005

Impacts of Channelization Along the Northern Connecticut River, Vermont and New Hampshire

John Field
Field Geology Services

Abstracts of presentations given on Tuesday, 12 July 2005, in session 2 of the UCOWR conference.

Impacts of Channelization Along the Northern Connecticut River, Vermont and New Hampshire

John Field
Field Geology Services
PO Box 985
Farmington ME 04294
Ph: (207) 491-9541
Fax: (207) 645-9773
jfield@field-geology.com

Over 30 percent of the northern Connecticut River was straightened and channelized in the 19th Century for log drives. The practice of channelization continued until at least the 1960's for flood control purposes along some tributaries. Erosion and sedimentation problems persist on the Connecticut River to this day as the river continues to respond to these past management practices. Channel enlargement along the straightened reaches is largely complete accept for where rock revetments were constructed in an attempt to arrest this widening. In these areas, scour can be observed around the revetments as the river channel continues to approach an equilibrium condition within the straightened reaches. Sharp bends in the channel created where straightened reaches reconnect with more naturally meandering portions of the channel are currently the sites of active erosion. Erosion pressures will remain until a more natural smoother bend develops so attempts to armor the bends in their current configuration will not likely meet with longer term success. Recognition of where these erosion pressures exist will help identify high priority areas for riparian buffer restoration.

Channelization at the downstream ends of some tributaries has increased sediment delivery to the mainstem as access to the tributary alluvial fans has been cut off. The excess sediment entering the mainstem has led to the deposition of large unvegetated gravel bars downstream of the tributary confluences. The diversion of flow around the bars has, in turn, led to severe bank erosion that threatens farmland, buildings, and other infrastructure.

Recognizing the ultimate source of erosion and deposition problems will lead to more successful restoration of channel stability and aquatic habitat. By reestablishing tributary access to alluvial fans, flow will be able to spread out and decrease sediment delivery to the mainstem. Reoccupying abandoned channels on the alluvial fan surfaces will also restore and expand critical side channel habitat lost during channelization. Successful restoration of stream channels across the nation will depend on thorough watershed assessments that identify the root causes of channel instabilities. Since these instabilities may have been created by human activities that occurred decades or even centuries ago, a study of current land use practices in a watershed is often insufficient to identify appropriate restoration strategies.