# Channel-Morphology Data Collection and Analysis Activities of the U.S. Geological Survey in Montana and Colorado

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Stream channels throughout the United States are changing in response to stream renaturalization projects and watershed land-use modifications. To understand and document these stream-channel changes and to aid in renaturalization design, the U.S. Geological Survey (USGS) has collected and analyzed channel-morphology data at several sites in Montana and Colorado. This work has been performed using consistent techniques, and results are available through published reports.

In western Montana, the USGS determined channel-morphology characteristics at 41 sites that were relatively undisturbed by structures or diversions. Regression equations relating channel-morphology characteristics to bankfull discharge were developed, as well as regional curves relating channel-morphology characteristics to drainage area and bankfull discharge to drainage area. These regional curves can be used on a reconnaissance level to estimate channel-morphology characteristics and bankfull discharge for ungaged sites in western Montana.

In eastern Montana, the USGS determined channel-morphology characteristics for the Tongue River and several tributaries. These data represent channel characteristics prior to extensive coal-bed methane development in the Tongue River watershed that might discharge large volumes of produced water to streams, which might result in channel changes.

In Colorado, the USGS monitors and assesses stream reaches that have undergone restoration as part of the Reconfigured-Channel Monitoring and Assessment Program (RCMAP). Long-term channel monitoring can be used to determine the effectiveness of a particular reconfiguration design. Data and photographs from RCMAP are accessible at the USGS Web site *http://co.water.usgs.gov/projects/rcmap/rcmap.html*. Data collection and monitoring programs similar to RCMAP could be beneficial for stream renaturalization projects throughout Montana.