Use of the RIVERMorph Software for Assessing and Designing Natural Channels

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Abstract: The restoration of streams using natural channel design methods is a complex process relying heavily on the use of field measurements. In order to properly design a stream, the designer must understand and measure geomorphic parameters within the project reach, have a thorough understanding of the watershed, and must verify that the designed stream will transport sediment without significant aggredation or downcutting of the existing channel bed.

A popular method for designing natural stream channels consists of measuring geomorphic parameters from a reference reach and then "sizing" the reference reach parameters to match the design reach through the use of dimensionless ratios. A reference reach is a stable stream channel that is neither aggrading nor degrading exhibits a stable planform and does not exhibit excessive erosion. To properly use a reference reach, extensive geomorphic data must be collected and analyzed during the design process. This data collection and analysis is time consuming and usually requires several iterations to ultimately identify a design with adequate ability to transport sediment.

Stream assessment, monitoring and design can be completed much more quickly and thoroughly through the use of computer software programs. The RIVERMorph stream restoration software was developed specifically to analyze, store and retrieve geomorphic data through the use of a comprehensive database and a state-of-the art graphical user interface (GUI). The program has the ability to process all types of geomorphic data typically collected on stream restoration projects, including biological and channel stability assessments. The software also features a GIS interface to measure plan form geomorphic parameters from aerial photographs and GIS coverages.

In this presentation, an overview of the RIVERMorph software program will be provided and the use of the program to design a stream restoration project will be discussed.