Resources for Stream Channel Design on Small Urban Streams
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Brookes, A., 1985. River channelization: traditional engineering methods, physical consequences and alternative practices. Progress in Physical Geography, 9: 44-73. A good review of traditional methods of channelization, why they were used, and their negative effects. Provides alternatives to traditional channelization including biotechnical engineering.


Leopold, L.B. and T. Maddock, 1953. The hydraulic geometry of stream channels and some physiographic implications, United States Government Printing Office, Washington, DC. The foundational work in hydraulic geometry. Hydraulic geometry is defined and relationships among hydraulic variables are explored. Channel width, depth and mean velocity are stated to vary as simple power functions.


Morris, S., 1996. Evaluation of urban stream corridor restoration design alternatives using HEC-2. Water Resources Bulletin, 32(5): 891-899. Good example of how to use computer modeling programs, specifically HEC-2, in the channel design process. HEC-2 can help determine if the channel and/or floodplain will hold floods of a given frequency.


Reviews design and construction for the Paradise Creek restoration project in Moscow, Idaho. Design relies primarily on hydraulic geometry.

Provides a reaction to traditional channelization methods and the disequilibrium these methods cause. Offers guidelines for designing a stable channel.

Provides understanding of how peak-discharge frequency regional regression equations can be developed from a region for use on ungaged streams. (Developing the equations would not be part of a small stream restoration project; however, if available, regional regression equations could be used.)

Provides procedures for urban stream restoration projects in laymen terms. Also a good reference for academic sources.

Evaluates use of Rosgen's classification method and Leopold and Wolman's equations for restoring meanders. Finds that these methods are only applicable to streams similar to those used to develop the methods.

This work is essential to review if doing stream restoration, as Rosgen's stream classification is referred to frequently in stream restoration literature. Places each natural stream into a category based on single vs. multiple channel, entrenchment, width/depth ratio, sinuosity, slope, and channel material.

Provides "region of influence" alternative to traditional methods of defining regions for regional regression equations. The region of influence method is slightly more complicated than other methods, but authors found it to be more accurate.

Good review of USGS' National Flood Frequency Program (computer program). Details rural regional regression equations. Provides one set of urban regression equations for the country which could be used to help verify flood-frequency estimates.

This report established log-Pearson Type-III as the standard method for government institutions to fit data to frequency curves. Provides basics of the log-Pearson Type-III method.