Open-Channel Hydraulics
H.W.#7. Step Methods for GVF

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1. A trapezoidal channel has a bed slope of 0.0009 and n = 0.025. The side slope of the channel cross section is 1 on 1 and the bottom width is 10 ft. A backwater is created by a dam at stage 720 ft. The elevation of the channel bed immediately upstream of the dam is 700 ft.

Compute the backwater curve up to 4% greater than the normal depth for a constant discharge of 100 cfs discharge using

(a) standard step method

(b) direct step method

~~(c) Grimm's method~~

~~(d) Chow's method with the help of Fig.4-2 and 6-2 for values of *M* and *N*~~

Assume α = 1.10.

Note that methods in (a) and (c) are usually for nonprismatic channels, and rating curves are known for (c). Since we now apply the methods to prismatic channel, you can use the steady uniform formula to establish the rating curves.