A Theoretical Investigation of an Arrested Salt Water

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Abstract: *The arrested salt wedge is a particular case of two-layer flow. The equations of motion for this case contain interfacial, bed and wall shear terms. The shape and length of the intrusion of the arrested salt wedge can be determined theoretically from the governing equations if the laws of interfacial, bed and wall shear terms are known. No proper friction laws are available to evaluate these shear terms. In this paper, shear terms are evaluated by assuming the flow in the upper layer to be smooth turbulent and in the salt wedge to be laminar. A first order differential equation is obtained for defining the profile of the salt wedge. The validity of the assumptions is established by comparing the solution of the equation with available laboratory and field data.*

Keywords: *Arrested salt wedge, equations of motion, friction laws, differential equation*