

**Nezafati, H. 1982. Salt Release from Suspended Sediments as a Source of Colorado River Salinity. Ph.D. dissertation. Utah State University. Logan, Utah. 256 pp.**

Alluvial sediment has been reported to be a potential diffuse source of salinity in the Price River Basin, which is a major contributor of salinity within the Upper Colorado River Basin. This study is a combination of experimental and computer simulation work for identifying the major factors controlling salt release from suspended sediments as a natural diffuse source of salinity in a river basin, and for providing a basis for an overall assessment of the importance of the salt contribution of suspended sediments in the Price River Basin, and consequently, in the Colorado River Basin. Salt release from suspended sediments was studied using sediment material obtained from various locations in the study area. The sediment materials were mixed with water and the change in electrical conductivity of the solutions was monitored while varying the following factors: dilution factor, particle size, mixing velocity and initial electrical conductivity (EC) using solutions containing sodium salts in place of deionized water for mixture. The Buckingham pi-theorem was employed to develop mathematical equations for predicting the electrical conductivity of sediment-water solutions as a function of factors controlling salt release from suspended sediments as listed above. The salt release equations were verified with additional laboratory data. A salt release submodel was formulated using the developed mathematical equations as a salinity source term, and was incorporated into a watershed erosion and sediment transport (WEST) model. The overall model, referred to as the salt-sediment model, was made applicable to a watershed for the purpose of assessing the importance of salinity resulting from sediments originating from erosion processes occurring on the uplands of the watershed, both in the land and in the channel phases.

An attempt was made to apply the salt-sediment model to the Price River Basin, but due to the lack of data on a basinwide scale a subwatershed in the Coal Creek watershed within the study area was selected for the purpose of demonstrating the performance of the model, and of estimating the overall salt loading from eroded material. The result of the model application was extrapolated to the entire Price River Basin based on the estimated relative exposure of the basin to the Mancos shale formations. . . . (Author's abstract exceeds stipulated maximum length. Discontinued here with permission of author.)