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JAKCHAI CHUMJIT : APPLICATION OF GEOGRAPHIC INFORMATION SYSTEMS AND UNIVERSAL SOIL LOSS EQUATION FOR WATERSHED CLASSIFICATION OF NAM CHUEN BASIN. THESIS ADVISORS : SURA PHATTANAKIAT, M.Sc. CHARLIE NAVAUNGRAHA, Ph.D. NIPON TANGTHAM, Ph.D. 168 p. ISBN 974 - 622 - 944 - 1

The main objective of this research is to apply useful tools, included Geographic Information Systems and Universal soil loss Equation, for the watershed classification process. It is also to compare the study result with an existing watershed classification. The study results are used to identify trends and propose suitable measures for land utilization within the next watershed classification operation. The GIS is utilized. Arc/Info and Arcview programs are used for spatial analysis and USLE is used for soil loss quantitative identifications.

The watershed is presently divided into 5 soil loss classes. The soil loss values of class 1, 2, 3, 4 and 5 are > 100, 20.01 - 100, 5.01 - 20, 2.01 - 5 and < 2 ton/rai/year respectively.

According to the final analysis, the Nam Chuen Basin can be divided into 4 soil loss classes as 1, 2, 3 and 4, because no past of the area has <2 ton/rai/year soil loss. The areas of these 4 classes are 143,499 rai (28.96 % of total area), 129,844 rai (26.20 %), 218,504 rai (44.08 %) and 3,742 rai (0.76 %) respectively.

The average amount of rainfall within each class is 1,300 - 1,750, 1,300 - 1,400, 1,200 - 1,300, and 1,300 - 1,400 mm./yr. respectively. The slope gradients are >16, 8 - 13, 3 - 8 and 0 - 3 %. Comparing between this analysis and existing watershed classes, it is found that the areas of classes 1, 2, 3 and 4 which were unchanged were 197,544, 16,392, 13,403 and 1,529 rai respectively. The fifth class was not observed in this study.

Land utilization measures for the area having soil loss value of over 2 ton/rai/year were proposed. It is suggested that an upland crop (corn) should be raised in this area and 3 levels of soil and water conservation measures which included alternate contouring & strip cropping, terracing & crop or soil management, and terracing including protective ditch crop and soil management, should be adopted.