

## Disclaimer Note:

The following Excel spreadsheet consists of scour equations and documentation from the Federal Highway Administration publication FHWA NHI 01-001 Evaluating Scour at Bridges, 4<sup>th</sup> Edition, (HEC - 18), dated May 2001. This publication provides the FHWA's approved methodology for calculating stream scour for bridges over water.

The spreadsheet is a tool for engineers qualified in hydraulic analysis, to assist in calculating stream scour parameters given in HEC - 18. Use this spreadsheet in addition to, and not instead of, the technical guidance provided in Chapters 5, 6, and 7 of HEC - 18.

Note that the HEC - 18 methodology is a one dimensional application. Complex bridge sites may warrant a two - dimensional analysis using alternative procedures.

The New York State Department of Transportation makes no warranties or representations regarding the accuracy or completeness of this spreadsheet and assumes none of the risk related thereto. The use of this spreadsheet is not a substitute for engineering judgement and correct application of the guidance given in HEC - 18. The user must review all work to ensure that data is input correctly, scour conditions are addressed and the results are consistent with actual site conditions. All calculations should be independently reviewed and checked.

## General Notes :

All calculations have to be done using the same form of units, if you start in English then you have to carry all the way through in English units, and the same is true for Metric units.

Please make sure that all the numbers that you are using are for the problem you are working on.  
It may be advisable to do a save as before doing any new problem. Make sure that any variable that you aren't using is a zero.

Materials herein are referenced from HEC-18, Evaluating Scour at Bridges. It is recommended that anyone using this spread sheet should have a copy of HEC-18, and read it thoroughly particularly chapters 5, 6 and 7. Also in evaluating  $K_d$ , the correction factor for armoring, we referenced the following research paper, Evaluation of Recent Field and Laboratory Research On Scour at Bridge Piers in Coarse Bed Materials, by David S. Muller, and J. Sterling Jones.

When doing the analysis for abutment scour if you wish to look at both the Froehlich and HIRE methods on the summary sheet, you may do so. However, be aware that on the summary sheet the total scour will pick the deepest scour hole (most conservative answer) unless you chose one or the other method.

It would be appreciated that if you discover any errors in the program that you contact the Hydraulic Unit of the New York State Department of Transportation via email : [bsarnold@dot.state.ny.us](mailto:bsarnold@dot.state.ny.us).