Modifications and Required Changes from Previous AdH Input Formats and Expected Simulation Differences (Version 3.0)

- AdH will now use a version number system to help designate small bug fixes from significant code changes. Since this is our third release, this is now Version 3.0. We intend to update the release version every 2-3 months.

- The screen output has been modified, so take some time to get acquainted with it. The standard output for AdH is in a tab delimited format so that it can be manipulated by the user in many different ways. The order of the data in this tabular form from left to right is time, time step size, percent completion progress, nonlinear iteration number, linear iteration count, maximum residual norm, node number giving the maximum residual, x, y, and z-coordinates of this worst node, maximum increment norm, node number giving this maximum increment, x, y, and z-coordinates of this worst node, node count after adaption, failure flag. The maximum residual norm is used to determine convergence against the **NTL** value. The maximum increment norm is used to determine convergence against the **ITL** value, if included in the boundary conditions file. If no adaption is taking place, the node count after adaption will not change throughout the run. The failure flag is the # symbol and indicates that convergence did not occur and the time step will be cut to ¼ the previous value. This column is left empty in all other instances.

- The standard screen output for sediment is limited to the sediment time. This will be improved in future versions of the code.

- To revert to the previous standard screen output format, add a PC OLD card to your boundary condition file.

- Using a Manning's value of zero actually applies Manning's roughness value of 0.0018. You really should never use a Manning's value of 0.

- When selecting elements to compute volume in SMS 10.1, you now must add the elevation to the data value to get the correct volume.

- The Eddy Viscosity computations have changed. The estimated eddy viscosity computation is now anisotropic such that there is a different spreading along the flow direction compared to the transverse direction. The default value is now 1.0 (instead of 0.5) and this may change your results slightly.

- The wetting/drying algorithm has been modified. This will change some of the run behavior at the wet/dry interface.

- A small set of hydraulic structures has been added to the boundary condition options. These include weirs, flap gates, and spillways.

- An automatic timestep finder has been added as a time control option. This method reads an initial timestep from the bc file and a time series for later maximum timesteps. AdH then chooses the timestep size up to the maximum based on the residual computed for each iteration. This option can greatly reduce run time.

- The required TC NDP card has been removed and is no longer used.

- The final three zero placeholders have been removed from the generic constituent, salinity, and temperature boundary condition cards.

- The sediment bed layer protocols have been modified somewhat and may result in some changes to the sediment solutions from previous versions.

- The concentration data files contain three columns. The first value is the depth=averaged suspended concentration. The second and third columns are only relevant to sediment transport calculations. A Rouse-type sediment profile term is stored in the second column, followed by the bedload mass per unit area. Multiplying the Rouse-type term and the depth-averaged suspended sediment concentration will give the near bed suspended sediment concentration.

- The TC SDI card has been modified to give the maximum sediment timestep allowed. Previously this value was the number of sediment timesteps per hydro timestep. Now an actual timestep is set and Adh may modify it to ensure synchronization with the hydro time.

- A new interactive user site is being developed for AdH. This site will initially only be available to USACE employees. The site will house the user manual and quick reference as well as video instructions and other documentation. This site will allow users to share knowledge and ask questions. This site will eventually replace the current AdH website for 2D shallow water and will become the primary means of communication with our development team.

For more information on these cards and up-to-date information, see the ADH 2-Dimensional Shallow Water Manual and the ADH Quick Reference at https://adh.usace.army.mil. (until the new site gets up and running)