

Notes on IWFM Version 3.1 Beta

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This version of IWFM includes a new soil moisture routing and demand calculation scheme as well as an option for a new matrix solver (PGMRES). Maximum pumping and diversion rates can now be specified in this version.

1. **(1/9/2008)** The root zone moisture routing and demand computation is modified drastically. The irrigation efficiency input is abandoned, instead user enters irrigation period (0 or 1), return flow fraction as a factor of applied water and re-use as a factor of applied water. The meaning of minimum soil moisture requirement is modified. This is now the level that the moisture is allowed to deplete after which demand is computed to bring the moisture to field capacity. There are other fundamental changes in how moisture is routed.
2. **(1/9/2008)** The net deep percolation is now added to the uppermost aquifer layer as source rather than to the layer where the groundwater table exists.
3. **(2/3/2010)** The unsaturated zone below the root zone is now modeled using van Genuchten approach. This required the addition of pore size distribution index as a new parameter for the unsaturated zone.
4. **(2/3/2010)** A new data type is created to store pointers for each element to well and element pumping information. According to the analysis of Matthew Dixon from UC Davis, using these pointers in NFLOW routine to compute flow terms for Z-Budget saved considerable amount of CPU time.
5. **(3/3/2010)** Matthew Dixon's PGMRES solver is included as an additional solver option.
6. **(3/3/2010)** Maximum pumping and diversions are now implemented.

7. **(3/3/2010)** Options to print out hydrographs and TecPlot outputs for subsidence are added.
8. **(9/7/2010)** All the source code and the input template files are linked to a version control system. Now, the initial opening screen displays the revision number of the executables. Also, if the user runs any of the IWFEM executables with the “-about” flag (e.g. Simulation3_1.exe -about), version numbers of IWFEM executable and its dependant components are printed to the screen.
9. **(9/16/2010)** Work space for the LU factorization function in PGMRES solver is doubled to be able to accommodate large applications. Also, proper error messages are added in case LU factorization function returns an error code.