# Enhanced Template Files

Enhanced template files would be similar to PEST template files but instead of simply replacing parameter names with parameter values they would allow for formulas of arbitrary complexity and length to be evaluated based on parameter values. When the formula is evaluated, its value would be substituted in the appropriate position in the input file.

Here is how it would work.

Suppose we have a drain file similar to the following.

BEGIN OPTIONS

AUXILIARY IFACE

BOUNDNAMES

PRINT\_INPUT

SAVE\_FLOWS

END OPTIONS

BEGIN DIMENSIONS

MAXBOUND 2

END DIMENSIONS

BEGIN PERIOD 1

1 1 1 0.00 1.500 0 'Object0'

1 10 10 -2.00 3.000 0 'Object1'

END PERIOD

The conductances are 1.5 and 3.0 but we want them to be controlled by the same parameter. In an enhanced template file, instead of just replacing the parameter value, a formula would be substituted for the parameter value. A program would evaluate the formula and substitute the result of the formula into the file to generate the input file for the model. Here is an example of an enhanced template file for the example above. The parameter value that will be substituted will be name DrnPar1 and it will have a value of 2.

ptf @

etf #

BEGIN OPTIONS

AUXILIARY IFACE

BOUNDNAMES

PRINT\_INPUT

SAVE\_FLOWS

END OPTIONS

BEGIN DIMENSIONS

MAXBOUND 2

END DIMENSIONS

BEGIN PERIOD 1

1 1 1 0.00 # @DrnPar1 @\*0.75# 0 'Object0'

1 10 10 -2.00 # @DrnPar1 @\*1.5# 0 'Object1'

END PERIOD

PEST (or UCODE) would first treat the file as an ordinary template file. The text below shows what the portion of the file for stress period 1 would look like after PEST did that

BEGIN PERIOD 1

1 1 1 0.00 # 2.00000000000000000\*0.75# 0 'Object0'

1 10 10 -2.00 # 2.00000000000000000\*1.5# 0 'Object1'

END PERIOD

Pest would also remove the first line of the template. The new first line of the resulting file would be

etf #

This line functions in a way similar to a initial line in a PEST template file. In this example, “#” would be a character used to delineate formulas to be evaluated. The proposed program would evaluate the formula and substitute the value where the input was needed. The width of the value that would be printed would be determined by the number of spaces between the initial “#” and the beginning of the formula. In this case there are 11 spaces before the beginning of the formula so the final file would have the following for stress period 1.

BEGIN PERIOD 1

1 1 1 0.00 1.500000000 0 'Object0'

1 10 10 -2.00 3.000000000 0 'Object1'

END PERIOD

Formulas could be of arbitrary length and there would be no limit on the length of lines in the file imposed by the proposed program. However, PEST has a limit of 2000 characters per line. Therefore, the proposed program will need to be able to do the parameter substitutions itself if any line exceeds 2000 characters.