

Drain Template File

This memo discusses the format of the drain template files. MODFLOW uses the drain file to obtain the location of the, the conductance and the elevation of the drain. PEST uses the drain template file to identify where it should insert the conductance values it wants used in the next model run.

Definitions

Template files tell PEST how to supply the model with the parameter values PEST wants the model to use for the current model run.

Drain conductance is a lumped parameter that, in our situation, accounts for the hydraulic conductivity of the drain material and convergent flow toward the drain.

Discussion

The first line of a pilot point template file consists of the letters "ptf" followed by a parameter delimiter. The parameter delimiter is chosen by the user but it cannot be an alpha (a-z, A-Z) or numeric (0-9), and it must not be used in any other capacity within the file. MODFLOW ignores lines beginning with a pound sign (#). These lines frequently are used to annotate the file. The lines following the pound sign contain the information MODFLOW requires in a drain file. 105 is MXACTD which is short for maximum number of drain cells active during any stress period. 50 is IDRNCB which is both a flag and a unit number, if IDRNCB is greater than zero, then cell-by-cell flow terms will be written to this unit number. The NOPRINT option request that the drain file not be reproduced in the list file. The next line contains the number of active drain cells during this stress period (105 = ITMP) and the number of MODFLOW parameters used this stress period¹ (0 = NP). The next line begins a listing of the 105 active drain cells, one per row. Each line contains layer (LAY), row (ROW), column (COL), elevation of the drain (ELEV), and the parameter space identified by the two parameter delimiters. The parameter space consists of the space between and including a pair of parameter delimiters. The parameter name lies between the pair of parameter delimiters. The adjustable parameters in this template file are all drain conductance parameters; PEST will replace the parameter delimiters and the parameter name with a new drain

¹ The joint USGS and IDWR Wood Drain Model is using PEST as its parameter estimation software, not the parameter estimation capabilities associated with MODFLOW.

conductance value every time it runs the model. Table 1 is the key to the parameter names, and Figures 1 through 3 are maps showing the locations of the reaches identified in Table 1 for Layers 1 through 3.

Table 1. Drain reaches and parameter names.

Reach	Parameter Name
Stanton Crossing	Drn_StCr_L1
Silver Creek Layer 1	Drn_SiCr_L1
Silver Creek Layer 2	Drn_SiCr_L2
Silver creek Layer 3	Drn_SiCr_L3

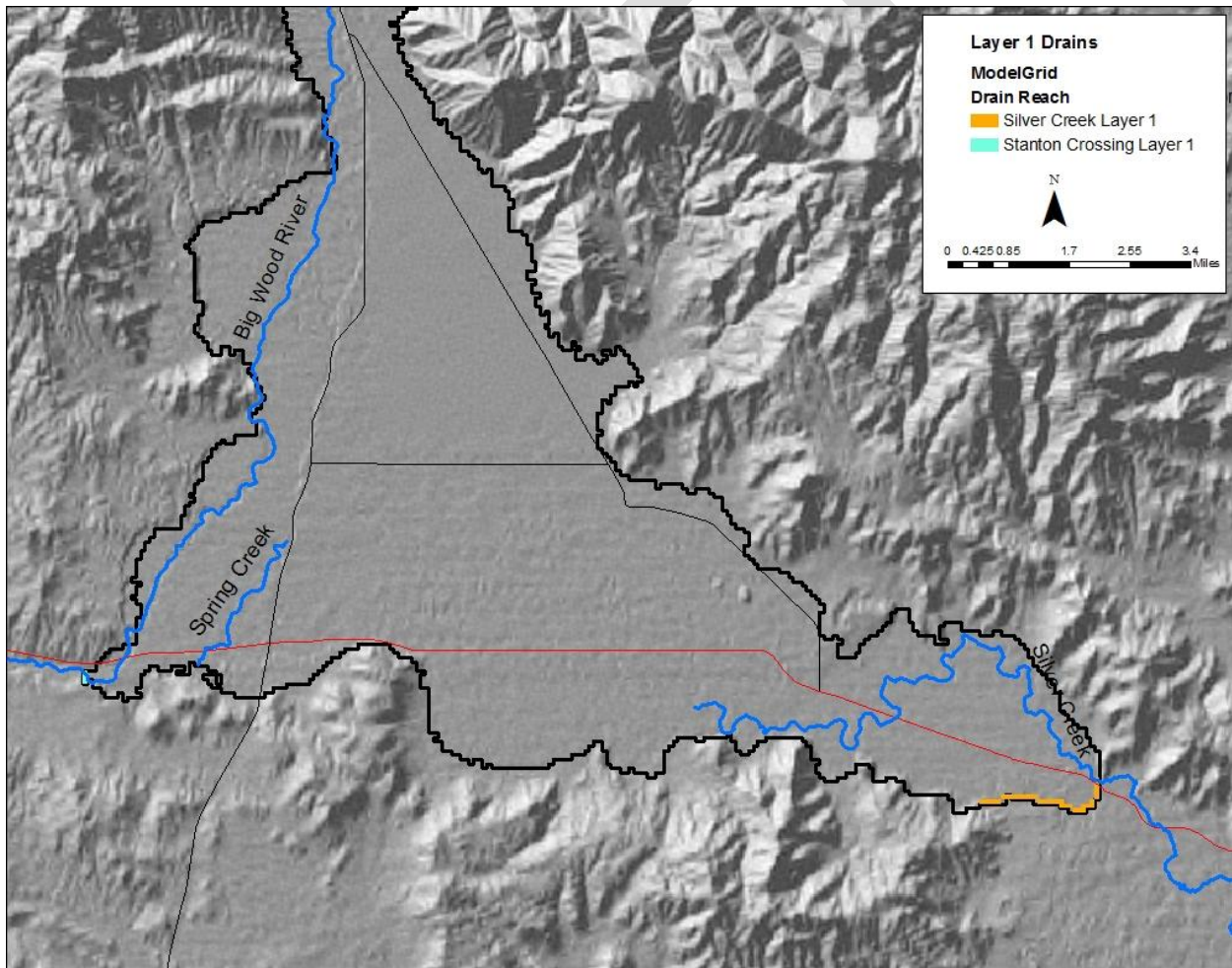


Figure 1. Map showing the location of the drains in layer 1.

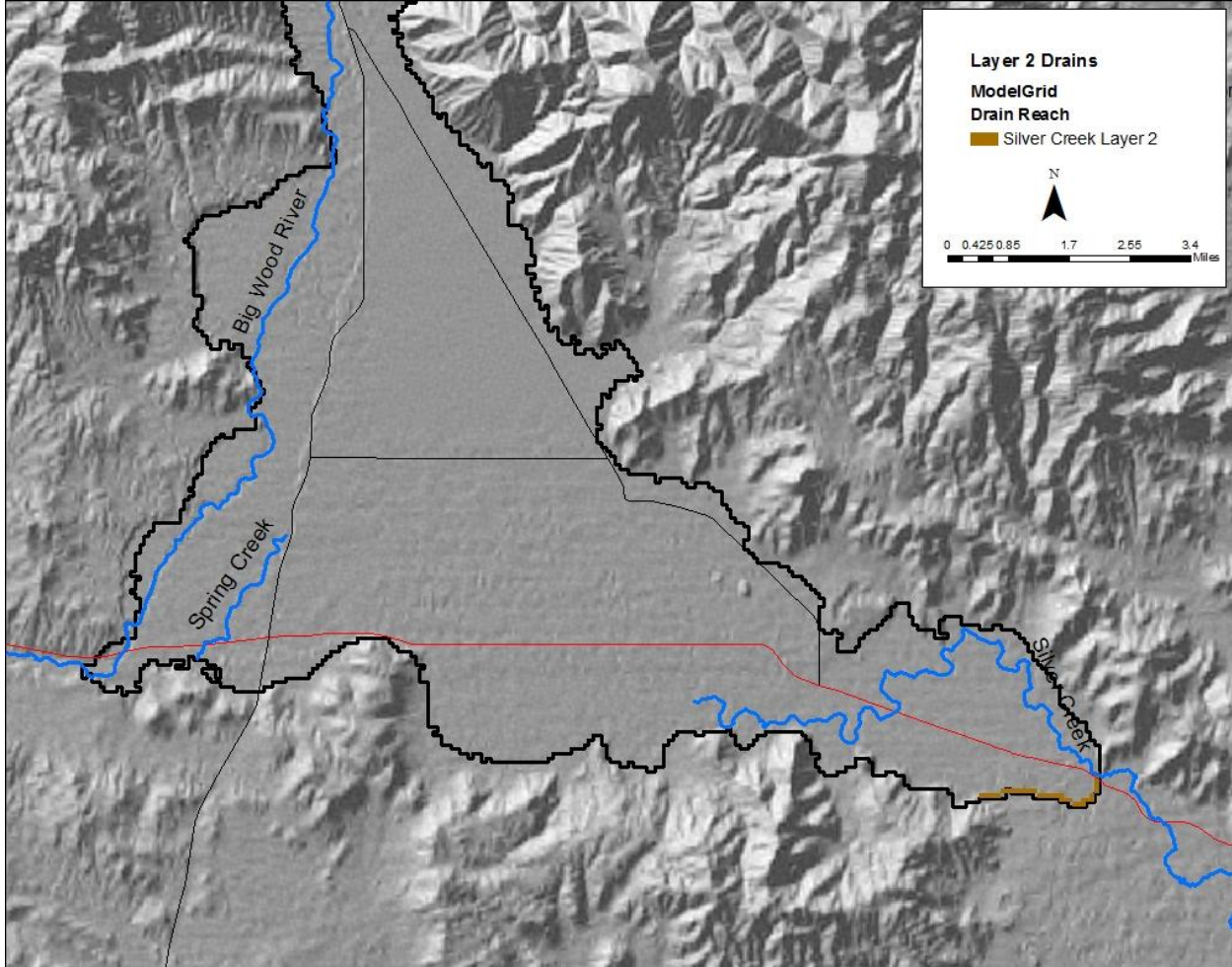


Figure 2. Map showing the location of the drains in Layer 2.

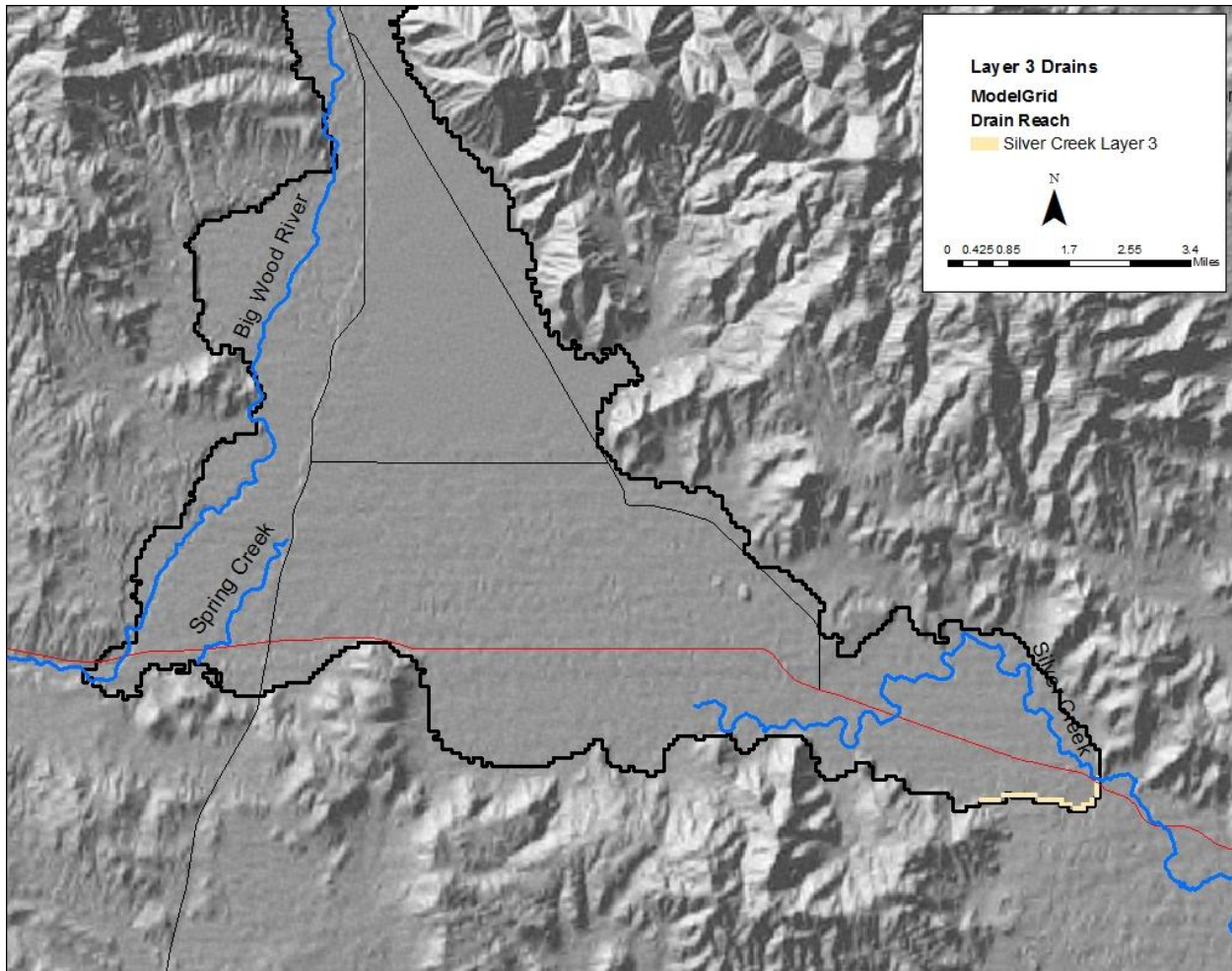


Figure 3. Map showing the location of the drains in Layer 3.

ptf \$

#WRV----STEADY STATE

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105 50 NOPRINT MXACTD,IDRNCB

105 0 ITMP,NP

1 511 71 1470 \$ Drn_StCr_L1 \$ LAY,ROW,COL,ELEV,COND

1 512 71 1470 \$ Drn_StCr_L1 \$

1 513 71 1470 \$ Drn_StCr_L1 \$

1 535 299 1432 \$ Drn_SiCr_L1 \$

1 536 299 1432 \$ Drn_SiCr_L1 \$

1 537 299 1432 \$ Drn_SiCr_L1 \$

1 538 299 1432 \$ Drn_SiCr_L1 \$

1 539 278 1432 \$ Drn_SiCr_L1 \$

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