HGF File Specification

Hydrological File

MOUSE

1. INTRODUCTION

The HGF in-data file for MOUSE contains data for catchments as well as the parameters sets for Runoff Model A, B, C and RDII. Furthermore, it contains data for Automatic Calibration. The extension HGF denotes *H*ydrolo*G*ical *F*ile.

The format of the file is the DHI pfs-file format. This type of syntax is also used for the other in-data files for MOUSE, i.e. UND, DWF, MPR, RPF, RSF, ERS. The pfs-file format is a text format.

Generally, the best way to work with the in-data is using the MOUSE editor, which subsequently saves the in-data in the UND file. Advanced user may wish to edit the file directly. This can be done by using either a standard text editor like Notepad or by using a spreadsheet program like Excel. If using Excel the file must be opened as an comma delimited file and after editing the file saved as such again. Excel will often add trailing commas after some of the lines. This entails problems only at lines with target and section headers, i.e. all lines ending with a right bracket ‘]’. Commas in such lines will have to be removed before using the file in MOUSE.

A third option of how to edit in-data files outside the MOUSE editor is to establish an ODBC link between your database and MOUSE. Please refer to the MOUSE User Guide for information about this subject.

The rest of this document describes the content of the HGF-file, facilitating editing of the file manually.

2. STRING SENSITIVITY AND LENGTH

All strings in the HGF file are encompassed by ' , e.g. 'MyNodeName'. MOUSE is ***case sensitive***, which is a change compared to older versions of MOUSE. The case sensitivity is needed in order to be able to support language versions (that do not use Arabic letters) in a better way. If case sensitivity presents problems it is recommended to switch on the Caps Lock on the keyboard when entering data in MOUSE.

*MOUSE will operate **with** ('NODENAME' <> 'NodeName' <> 'nodename'). **Blank spaces** in all string identifiers are allowed.*

Strings written by the MOUSE editor has a maximum length of 25 characters.

3. MOUSE TARGETS

The HGF file contains a number of targets that describe the type of data within that section of the file.

MOUSE targets:

```
[MOUSE_Catchments]

[MOUSE_RDII]

[Model_A]

[Model_B]

[Model_C]

[CALIBRATION_SPECIFICATION]
```

4. [MOUSE_Catchments]

Definition:

```
SYNTAX_VERSION = 3.0
UNIT_TYPE = 1    // 1 = SI, 2 = US
Line  =  'LOCATION',  'CATCHMENTID',  'TYPENO',  'INHAB',  'CAREA',
'AFLOW',  'X',  'Y',  'EVAPOR',  'RDII',  'RDII_SET',  'RDII_AREA',
'RDII_SNOW', 'A_SET', 'A_IAREA', 'A_LOCAL', 'A_CTIME', 'A_RFACTOR',
'A_ILOSS', 'A_TAC', 'B_SET', 'B_LENGTH', 'B_SLOPE', 'B_A_ISTEEP',
'B_A_IFLAT', 'B_A_PSMALL', 'B_A_PMEDIUM', 'B_A_PLARGE', 'B_LOCAL',
'B_M_ISTEEP',      'B_M_IFLAT',      'B_M_PSMALL',      'B_M_PMEDIUM',
'B_M_PLARGE',    'C_SET',    'C_LOCAL',    'C_LENGTH',    'C_SLOPE',
'C_RFACTOR',   'C_ILOSS',   'C_LAGTIME',   'C_CTIME',   'C1_EAREA',
'C2_IAREA', 'A_USE_TACOEF', 'A_TACOEF', 'U_AREA_ADJUSTMENT_FACTOR',
'U_HYDROGRAPH_METHODNO',       'U_DATABASEID',       'U_TIMESERIESID',
'U_LOSS_MODELNO',         'U_INITIAL_LOSS',         'U_CONSTANT_LOSS',
'U_RUNOFFCOEFFICIENT',         'U_CURVENO_LOSS_MODEL',         'U_AMC',
'U_LAG_TIME_METHODNO', 'U_LAGTIME', 'U_HYDRAULIC_LENGTH', 'U_SLOPE',
'U_CURVENO_LAG_TIME',     'U_INITIAL_ABSTRACTION_DEPTH',     U_SUHCP,
U_SUHL, U_SUHLC, U_SUHCT, U_SUHSLOPE, U_SUHBASFAC, U_SUHSTREAMSLOPE
```

Description:

Target: [MOUSE_Catchment]
Section: -
Keyword: Line
Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	Location	-	-	Node idenitifier, max. 25 characters
2	String	Catcmentid	-	-	Catchment identifier, max. 25 characters

3	Integer	Typeno	-	-	Should always be set to 1, has no impact on simulation
4	Integer	Inhab	-	-	Number of inhabitants connected to the catchment
5	Double	Carea	ha	acre	Area of the catchment
6	Double	Aflow	m^3/s	cfs	Additional inflow to the catchment
7	Double	X	m	ft	x co-ordinate of the catchment location
8	Double	Y	m	ft	y co-ordinate of the catchment location
9	Boolean	Evapor	-	-	= true, evaporation included = false, evaporation excluded (option only possible if RDII module is present).
10	Boolean	RDII	-	-	= true, RDII included = false, RDII excluded (option only possible if RDII module is present).
11	String	RDII_set	-	-	RDII parameter set for catchment, max. 25 characters
12	Double	RDII_area	%	%	The RDII area in %
13	-	RDII_snow	-	-	Not used in this version of MOUSE
14	String	A_set	-	-	Model A parameter set for catchment, max. 25 characters
15	Double	A_iarea	%	%	Impervious area for model A in %
16	Boolean	A_local	-	-	Use of individual data for Model A. True = individual data used, false = individual data not used
17	Double	A_ctime	min	min	Concentration time for Model A
18	Double	A_rfactor	-	-	Hydrological reduction factor for Model A
19	Double	A_iloss	m	in	Initial loss for Model A
20	Integer	A_tac	-	-	Time-Area curve number
21	String	B_set	-	-	Model B parameter set for catchment, max. 25 characters
22	Double	B_length	m	ft	Catchment length, Model B
23	Double	B_slope	‰	‰	Catchment slope, Model B
24	Double	B_a_isteep	%	%	Steep impervious area, Model B
25	Double	B_a_iflat	%	%	Flat impervious area, Model B
26	Double	B_a_psmall	%	%	Pervious area with small infiltration
27	Double	B_a_pmedium	%	%	Pervious area with medium infiltration
28	Double	B_a_plarge	%	%	Pervious area with large infiltration
29	Boolean	B_local	-	-	Use of individual data for Model B. True = individual data used, false = individual data not used
30	Double	B_m_isteep	$m^{1/3}/s$	$m^{1/3}/s$	Manning number for steep impervious area
31	Double	B_m_iflat	$m^{1/3}/s$	$m^{1/3}/s$	Manning number for flat impervious area
32	Double	B_m_psmall	$m^{1/3}/s$	$m^{1/3}/s$	Mannning number for pervious

					area with small infiltration
33	Double	B_m_pmedium	$m^{1/3}/s$	$m^{1/3}/s$	Mannning number for pervious area with medium infiltration
34	Double	B_m_plarge	$m^{1/3}/s$	$m^{1/3}/s$	Mannning number for pervious area with large infiltration
35	String	C_set	-	-	Model C parameter set for catchment, max. 25 characters
36	Boolean	C_local	-	-	Use of individual data for Model C. True = individual data used, false = individual data not used
37	Double	C_length	m	ft	Length, Model C2
38	Double	C_slope	‰	‰	Slope, Model C2
39	Double	C_rfactor	-	-	Reduction factor, Model C2
40	Double	C_iloss	m	in	Initial loss, Model C2
41	Double	C_lagtime	min	min	Lag time, Model C2
42	Double	C_ctime	1/min	1/min	Time constant, Model C1
43	Double	C1_earea	%	%	Effective area, Model C1
44	Double	C2_iarea	%	%	Impervious area, Model C2
45	Boolean	A_use_tacoef	-	-	Use of time area coefficient specification, Model A
46	Double	A_tacoef	-	-	Time area coefficient, Model A
47	Double	U_area_adjustment_factor'	-	-	Area adjustment factor, UHM
48	Integer	U_hydrograph_methodno	-	-	= 1, SCS triangular hydrograph = 2, SCS dimensionless hydrograph = 3, SUH Standard = 4, SUH Alameda
49	String	U_databaseid	-	-	Not supported in MOUSE 2002
50	String	U_timeseriesid	-	-	Not supported in MOUSE 2002
51	Integer	U_loss_modelno	-	-	= 1, Constant loss = 2, Proportional loss = 3, SCS method = 4, SCS generalised
52	Double	U_initial_loss	mm	in	Initial loss, used when the constant loss model is applied
53	Double	U_constant_loss	mm/hr	in/hr	Constant loss, used when the constant loss model is applied
54	Double	U_runoffcoefficient	-	-	Runoff coefficient, used when the proportional loss model is applied
55	Integer	U_curveno_loss_model	-	-	Curve number, used when the SCS loss model is applied
56	Integer	U_amc	-	-	Initial AMC, used when the SCS loss model is applied
57	Integer	U_lag_time_methodno	-	-	= 1, User specified = 2, SCS formula = 3, SUH Standard = 4, SUH Alameda
58	Double	U_lagtime	hr	hr	Lag time, used when the lag time is user specified
59	Double	U_hydraulic_length	m	ft	Hydraulic length, UHM
60	Double	U_slope	%	%	Slope of catchment, UHM
61	Double	U_curveno_lag_time	-	-	Curve number, UHM
62	Double	U_initial_abstraction_depth	mm	in	Initial abstraction depth
63	Double	U_suhcp	-	-	Peaking factor
64	Double	U_suhl	km	miles	Length of the main stream from the outlet to the divide

65	Double	U_suhlc	km	miles	Length of the main stream to a point nearest to the watershed centroid
66	Double	U_suhct	-	-	Basin coefficient
67	Double	U_suhslope	%	%	Slope
68	Double	U_suhbasfac	-	-	Basin factor
69		U_suhstreamslope			Stream slope

5. [MOUSE_RDII]

Definition:

```
SYNTAX_VERSION = 1.0
UNIT_TYPE = 1                // 1 = SI, 2 = US
Line = 'SETNAME', 'EVAP', 'SNOWMELT', 'SNOWMELT_C', 'UMAX', 'LMAX',
'CQOF', 'CK', 'CKIF', 'CKBF', 'TOF', 'TIF', 'TG', 'I_U', 'I_L',
'I_GWL', 'I_OF', 'I_IF', 'GW_CAREA', 'GW_SY', 'GW_LMIN', 'GW_LBF0',
'GW_LFL1'
```

Description:

Target: [MOUSE_RDII]
Keyword: Line
Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	Setname	-	-	RDII parameter set, max. 25 characters
2	Boolean	Evap	-	-	True = evaporation included, False = evaporation not included
3	Boolean	Snowmelt	-	-	True = snowmelt included, False = snowmelt not included
4	Double	Snowmelt_c	mm/C/day	in/F/day	Snowmelt coefficient
5	Double	Umax	mm	in	Surface storage
6	Double	Lmax	mm	in	Root storage
7	Double	Cqof	-	-	Overland coefficient
8	Double	Ck	hr	hr	Time Constant
8	Double	Ckif	hr	hr	TC Interflow
9	Double	Ckbf	hr	hr	TC Baseflow
10	Double	Tof	%	%	Overland threshold parameter
11	Double	Tif	%	%	Interflow threshold parameter
12	Double	Tg	%	%	Groundwater threshold parameter
13	Double	I_u	mm	in	Initial conditions, surface storage
14	Double	I_l	mm	in	Initial condition, lower zone moisture
15	Double	I_gwl	m	ft	Initial condition, groundwater depth
16	Double	I_of	mm/hr	in/hr	Initial condition , overland flow
17	Double	I_if	mm/hr	in/hr	Initial condition, interflow
18	Double	Gw_carea	-	-	Groundwater coefficient
19	Double	Gw_sy	-	-	Specific yield
20	Double	Gw_lmin	%	%	Min. groundwater depth
21	Double	Gw_lbfo	m	ft	Max groundwater depth casuing baseflow
22	Double	Gw_lfl1	m	ft	Groundwater depth for unit

					capillary flux

6. [Model_A]

Definition:

```
SYNTAX_VERSION = 2.0
UNIT_TYPE = 1    // 1 = SI, 2 = US
Line =  'SETNAME', 'RED', 'ILOSS', 'TAC', 'CONCENTR', 'USE_TACOEF',
'TACOEF'
```

Description:

Target: [Model_A]
Keyword: Line
Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	Setname	-	-	Model A parameter set, max. 25 characters
2	Double	Red	-	-	Reduction factor
3	Double	Iloss	m	in	Initial loss
4	Integer	Tac	-	-	Time Area Curve Number
5	Integer	Concentr	min	min	Concentration
6	Integer	Use_tacoef	-	-	= 0, Time Area Curve Number is applied = 1, Time Area Coefficient is applied
7	Double	Tacoef	-	-	Time Area Coefficient

7. [Model_B]

Definition:

```
SYNTAX_VERSION = 1.0
UNIT_TYPE = 1    // 1 = SI, 2 = US
Line = 'SETNAME', 'WET_ROOF', 'WET_FLAT', 'WET_SMALL', 'WET_MEDIUM',
'WET_LARGE', 'STOR_FLAT', 'STOR_SMALL', 'STOR_MEDIUM', 'STOR_LARGE',
'ISTART_SMALL', 'ISTART_MEDIUM', 'ISTART_LARGE', 'IEND_SMALL',
'IEND_MEDIUM', 'IEND_LARGE', 'IEXP_SMALL', 'IEXP_MEDIUM',
'IEXP_LARGE', 'IHE_SMALL', 'IHE_MEDIUM', 'IHE_LARGE', 'MAN_ROOF',
'MAN_FLAT', 'MAN_SMALL', 'MAN_MEDIUM', 'MAN_LARGE'
```

Description:

Target: [Model_B]
Keyword: Line
Parameters

Number	Type	Short name	Unit,	Unit,	Comments / Range / etc.

			metric	US	
1	String	Setname	-	-	Model B parameter set, max. 25 characters
2	Double	Wet_roof	m	ft	Wetting loss on impervious, roof areas
3	Double	Wet_flat	m	ft	Wetting loss on impervious, flat areas
4	Double	Wet_small	m	ft	Wetting loss on pervious areas with small infiltration
5	Double	Wet_medium	m	ft	Wetting loss on pervious areas with medium infiltration
6	Double	Wet_large	m	ft	Wetting loss on pervious areas with large infiltration
7	Double	Stor_flat	m	ft	Storage loss on impervious, flat areas
8	Double	Stor_small	m	ft	Storage loss on pervious areas with small infiltration
9	Double	Stor_medium	m	ft	Storage loss on pervious areas with medium infiltration
10	Double	Stor_large	m	ft	Storage loss on pervious areas with large infiltration
11	Double	Istart_small	m/s	ft/s	Maximum rate of infiltration for pervious areas with small infiltration
12	Double	Istart_medium	m/s	ft/s	Maximum rate of infiltration for pervious areas with medium infiltration
13	Double	Istart_large	m/s	ft/s	Maximum rate of infiltration for pervious areas with large infiltration
14	Double	Iend_small	m/s	ft/s	Minimum rate of infiltration for pervious areas with small infiltration
15	Double	Iend_medium	m/s	ft/s	Minimum rate of infiltration for pervious areas with medium infiltration
16	Double	Iend_large	m/s	ft/s	Minimum rate of infiltration for pervious areas with large infiltration
17	Double	Iexp_small	s^{-1}	s^{-1}	Hortons exponent for pervious areas with small infiltration
18	Double	Iexp_medium	s^{-1}	s^{-1}	Hortons exponent for pervious areas with medium infiltration
19	Double	Iexp_large	s^{-1}	s^{-1}	Hortons exponent for pervious areas with large infiltration
20	Double	Ihe_small	s^{-1}	s^{-1}	Inverse Hortons exponent for pervious areas with small infiltration
21	Double	Ihe_medium	s^{-1}	s^{-1}	Inverse Hortons exponent for pervious areas with medium infiltration
22	Double	Ihe_large	s^{-1}	s^{-1}	Inverse Hortons exponent for pervious areas with large infiltration
23	Double	Man_roof	$m^{1/3}/s$	$m^{1/3}/s$	Manning number for steep impervious areas
24	Double	Man_flat	$m^{1/3}/s$	$m^{1/3}/s$	Manning number for impervious flat areas
25	Double	Man_small	$m^{1/3}/s$	$m^{1/3}/s$	Manning number for pervious areas with small infiltration
26	Double	Man_medium	$m^{1/3}/s$	$m^{1/3}/s$	Manning number for pervious areas with medium infiltration
27	Double	Man_large	$m^{1/3}/s$	$m^{1/3}/s$	Manning number for pervious areas with large infiltration

8. [Model_C]

Definition:

```
SYNTAX_VERSION = 1.0
UNIT_TYPE = 1              // 1 = SI, 2 = US
ORIFICE   =   'SETNAME',   'RFACTOR',   'ILOSS',   'LAGTIME',   'CTIME',
'INFILTR', 'MAX_CAP', 'MIN_CAP', 'WET_COND', 'DRY_COND'
```

Description:

Target: [Model_C]
Keyword: Line
Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	Setname	-	-	Model C parameter set, max. 25 characters
2	Double	Rfactor	-	-	Reduction factor for Model C2
3	Double	Iloss	m	in	Initial loss for Model C1 and C2
4	Integer	Lagtime	min	min	Lag time for Model C2
5	Double	Ctime	1/min	1/min	Time constant for Model C1
6	Boolean	Infiltr	-	-	true = inifiltration is included false = infiltration is not included
7	Double	Max_cap	mm/hr	in/hr	Maximum rate of infiltration
8	Double	Min_cap	mm/hr	in/hr	Minimum rate of infiltration
9	Double	Wet_cond	1/hr	1/hr	Hortons exponent
10	Double	Dry_cond	1/hr	1/hr	Inverse Hortons exponent

9. [CALIBRATION_SPECIFICATION]

Definition:

```
[CALIBRATION_SPECIFICATION]
   [GLOBAL_PARAMETERS]
      SYNTAX_VERSION = 1
      UNIT_TYPE = 1
      CALIBRATION_METHOD = 1
      WRITECONVERGENCEFILE = true
      MAXNOMODELEVALUATIONS = 5000
      NOCOMPLEXES = 6
      NOPOINTSCOMPLEX = 0
      NOPOINTSSUBCOMPLEX = 0
      NOEVOLUTIONSTEPS = 0
```

```
   STOPNOLOOPS = 20
   MINCHANGE = 0.001
   DELTA = 1e-020
   PEPS = 1e-005
   NORMALIZEOBJ = true
   EVALWATERBALANCE = true
   EVALRMSE = true
   EVALPEAK = false
   EVALPEAK_VALUE = 0
   EVALLOW = false
   EVALLOW_VALUE = 0
   EVALPEAK_WB = false
   EVALPEAK_WB_VALUE = 0
EndSect  // GLOBAL_PARAMETERS

[MODEL_A]
   SYNTAX_VERSION = 1
   UNIT_TYPE = 1
   LineHeader = 'MPARAMETER', 'FIT', 'INITIAL_VALUE',
   'LOWER_BOUND', 'UPPER_BOUND'
   Line = 'ReductionFactor', true, 0.5, 0.1, 1
   Line = 'InitialLoss', true, 0.006, 0, 0.06
   Line = 'ConcentrationTime', true, 10, 1, 160
   Line = 'TimeArea_curve', false, 1, 1, 3
   Line = 'TimeArea_formula', true, 1, 0.2, 2.2
EndSect  // MODEL_A

[MODEL_B]
   SYNTAX_VERSION = 1
   UNIT_TYPE = 1
   LineHeader = 'MPARAMETER', 'FIT', 'INITIAL_VALUE',
   'LOWER_BOUND', 'UPPER_BOUND'
   Line = 'AreaFactor', false, 1, 0.1, 2
   Line = 'Slope', false, 20, 10, 300
   Line = 'Length', false, 100, 1, 10000
   Line = 'Wetting', false, 5e-005, 0, 1
   Line = 'Storage_IF', false, 0.001, 0, 1
   Line = 'Storage_PS', false, 0.001, 0, 1
   Line = 'Storage_PM', false, 0.001, 0, 1
   Line = 'Storage_PL', false, 0.001, 0, 1
   Line = 'Start_infil', false, 8e-007, 0, 0.0001
   Line = 'End_infil', false, 8e-007, 0, 0.0001
   Line = 'DecayWet', false, 0.0015, 0, 1
   Line = 'DecayDry', false, 3e-005, 0, 1
   Line = 'Manning_IS', false, 50, 1, 150
   Line = 'Manning_IF', false, 50, 1, 150
   Line = 'Manning_PS', false, 50, 1, 150
   Line = 'Manning_PM', false, 50, 1, 150
   Line = 'Manning_PL', false, 50, 1, 150
EndSect  // MODEL_B

[MODEL_C1_C2]
   SYNTAX_VERSION = 1
   UNIT_TYPE = 1
   LineHeader = 'MPARAMETER', 'FIT', 'INITIAL_VALUE',
   'LOWER_BOUND', 'UPPER_BOUND'
```

```
      Line = 'EffectiveArea', false, 90, 0.01, 100
      Line = 'InitialLoss', false, 0.0005, 0, 0.001
      Line = 'TimeConstant', false, 0.2, 0.05, 0.9
      Line = 'MaxInfilCap', false, 2, 0, 10
      Line = 'MinInfilCap', false, 0.5, 0, 2
      Line = 'DecayCoeWet', false, 3, 0.5, 5
      Line = 'DecayCoeDry', false, 0.1, 0, 2
      Line = 'ReductionFactor', false, 0.5, 0.0001, 1
      Line = 'LagTime', false, 5, 1, 450
   EndSect  // MODEL_C1_C2

   [MEASUREMENTS]
      SYNTAX_VERSION = 1
      UNIT_TYPE = 1
      LineHeader = 'BOUNDCONNECTION', 'INLOCATION_TYPENO',
      'INLOCATION', 'FLOW_X', 'FLOW_Y', 'EXLOCATION_TYPENO',
      'EXLOCATION', 'PROCESS_METHODNO', 'MINRAINDIST',
      'SAVEMETHODNO', 'DWFELIMMETHODNO', 'MAXDWFLEVEL',
      'MAXDWFPERIOD', 'DELAYMETHODNO', 'DELAY_VELOCITY'
      Line = 'BC2', 1, '', 500, 0, 1, '', 1, 120, false, 1, 120,
             120, 1, 0.5
   EndSect  // MEASUREMENTS

   [DELAY_LIST]
      SYNTAX_VERSION = 1
      UNIT_TYPE = 1
      DelayHeader = 'CATCHMENTID', 'DELAY'
      Delay = '1', 12
    EndSect  // DELAY_LIST


EndSect  // CALIBRATION_SPECIFICATION
```

Section: [GLOBAL_PARAMETERS]

Keyword	Type	Unit, metric	Unit, US	Comments / Range / etc.
SYNTAX_VERSION	Integer	-	-	Equals 1 for MOUSE 2002
UNIT_TYPE	Integer	-	-	1 = SI, 2 = US
CALIBRATION_METHOD	Integer	-	-	0 = Normal 1 = SCE algorithm
WRITECONVERGENCEFILE	Boolean	-	-	Writes *.ORF file
MAXNOMODELEVALUATIONS	Integer	-	-	Maximum model runs
NOCOMPLEXES	Integer	-	-	Algorithm set-up
NOPOINTSCOMPLEX	Integer	-	-	Algorithm set-up
NOPOINTSSUBCOMPLEX	Integer	-	-	Algorithm set-up
NOEVOLUTIONSTEPS	Integer	-	-	Algorithm set-up
STOPNOLOOPS	Integer	-	-	Stopping criterion 1
MINCHANGE	Double	%	%	Stopping criterion 1
DELTA	Double	-	-	Stopping criterion 2
PEPS	Double	-	-	Stopping criterion 2
NORMALIZEOBJ	Boolean	-	-	Algorithm set-up
EVALWATERBALANCE	Boolean	-	-	Objective function: water balance
EVALRMSE	Boolean	-	-	Objective function: Root Mean Square Error

EVALPEAK	Boolean	-	-	Objective function: Root Mean Square Error in peaks
EVALPEAK_VALUE	Double	m^3/s	cfs	Threshold for peaks
EVALLOW	Boolean	-	-	Objective function: Root Mean Square Error below threshold
EVALLOW_VALUE	Double	m^3/s	cfs	Threshold for low flow
EVALPEAK_WB	Boolean	-	-	Objective function: water balance in peaks
EVALPEAK_WB_VALUE	Double	m^3/s	cfs	Threshold for peaks

Section: [MODEL_A]

Keyword: Line Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	MPARAMETER	-	-	'ReductionFactor' = Reduction factor
			m	in	'InitialLoss' = Initial loss
			min	min	'ConcentrationTime' = Concentration time
			-	-	'TimeArea_curve' = Time area curve number
			-	-	'TimeArea_formula' = Time area curve coefficient
2	Boolean	FIT	-	-	True = Fit parameter
3	Double	INITIAL_VALUE	*	*	Initial guess used if FIT = true
4	Double	LOWER_BOUND	*	*	Lower bound of parameter
5	Double	UPPER_BOUND	*	*	Upper bound of parameter

* = Depends on MPARAMETER

Section: [MODEL_B]

Keyword: Line Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	MPARAMETER	-	-	'AreaFactor' = Area reduction factor (not a standard model B parameter)
			o/oo	o/oo	'Slope' = Slope
			m	ft	'Length' = Catchment length
			m	ft	'Wetting' = Wetting
			m	ft	'Storage_IF' = Storage Impervious Flat catchment surface
			m	ft	'Storage_PS' = Storage Pervious Small catchment surface
			m	ft	'Storage_PM' = Storage Pervious Medium catchment surface
			m	ft	'Storage_PL' = Storage Pervious Large catchment surface
			m/s	ft/s	'Start_infil' = Start Infiltration capacity – Lumped parameter for all surface types
			m/s	ft/s	'End_infil' = End Infiltration capacity – Lumped parameter for all surface types
			s^{-1}	s^{-1}	'DecayWet' = Hortons Exponent – Lumped parameter for all surface types
			s^{-1}	s^{-1}	'DecayDry' = Inverse Hortons Exponent – Lumped parameter for all surface types
			$m^{1/3}/s$	$m^{1/3}/s$	'Manning_IS' = Manning number Impervious Steep catchment surface
			$m^{1/3}/s$	$m^{1/3}/s$	'Manning_IF' = Manning number Impervious Flat catchment surface
			$m^{1/3}/s$	$m^{1/3}/s$	'Manning_PS' = Manning number Pervious Small catchment surface
			$m^{1/3}/s$	$m^{1/3}/s$	'Manning_PM' = Manning number Pervious Medium catchment surface
			$m^{1/3}/s$	$m^{1/3}/s$	'Manning_PL' = Manning number Pervious Large catchment surface
2	Boolean	FIT	-	-	True = Fit parameter
3	Double	INITIAL_VALUE	*	*	Initial guess used if FIT = true
4	Double	LOWER_BOUND	*	*	Lower bound of parameter
5	Double	UPPER_BOUND	*	*	Upper bound of parameter

* = Depends on MPARAMETER

Section: [MODEL_C1_C2]

Keyword: Line Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	MPARAMETER	%	%	'EffectiveArea' = Effective area
			m	in	'InitialLoss' = Initial loss
			1/min	1/min	'TimeConstant' = Time constant
			mm/hr	in/hr	'MaxInfilCap' = Maximum infiltration capacity
			mm/hr	in/hr	'MinInfilCap' = Minimum infiltration capacity
			1/hr	1/hr	'DecayCoeWet' = Decay coefficient wet weather (Hortons equation)
			1/hr	1/hr	'DecayCoeDry' = Regeneration coefficient dry weather (Hortons equation)
			-	-	'ReductionFactor' = Reduction factor
			min	min	'LagTime' = Lag time
2	Boolean	FIT	-	-	True = Fit parameter
3	Double	INITIAL_VALUE	*	*	Initial guess used if FIT = true
4	Double	LOWER_BOUND	*	*	Lower bound of parameter
5	Double	UPPER_BOUND	*	*	Upper bound of parameter

* = Depends on MPARAMETER

Section: [Measurements]

Keyword: Line Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	BOUNDCONNECTION	-	-	Boundary connection ID
2	Integer	INLOCATION_TYPENO	-	-	1 = General, 2 = List, 3 = Individual
3	String	INLOCATION	-	-	filename (*.cse) or Catchment ID
4	Double	FLOW_X	m	ft	Location of Flow meter
5	Double	FLOW_Y	m	ft	Location of Flow meter
6	Integer	EXLOCATION_TYPENO	-	-	1 = General, 2 = List, 3 = Individual
7	String	EXLOCATION	-	-	filename (*.cse) or Catchment ID
8	Integer	PROCESS_METHODNO	-	-	1=None, 2=Volume based, 3=Time of Concentration based, 4=Volume based adaptive, 5=Time of concentration based adaptive, 6=Rainfall equal to runoff
9	Double	MINRAINDIST	min	min	Minimum time distance between two rain events
10	Integer	SAVEMETHODNO	-	-	1=None 2=Save text files
11	Integer	DWFELIMMETHODNO	-	-	1=None 2=Subtract constant level

12	Double	MAXDWFLEVEL	m^3/s	cfs	Maximum allowable flow rate to enter the DWF calculation
13	Double	MAXDWFPERIOD	min	min	Maximum DWF period from which the calculation is carried out
14	Integer	DELAYMETHODNO	-	-	1=none 2=Dalay by constant velocity 3=user specified list
15	Double	DELAY_VELOCITY	m/s	ft/s	Delay velocity

Section: [DELAY_LIST]

Keyword: Line
Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	CATCHMENTID	-	-	Catchment ID
2	Double	DELAY	min	min	Delay of flow