**C:\data|modular\_60\_5\_6\revision\_notes\Rev\_60\_5\_6docs.docx**

* **REVISION 60.5.6**

1. NEW\_INPUT\_FILES

Contains a list of new input files that are being tested.

1. NEW\_OUTPUT\_FILES

Contains a list of new output files being review.

1. Existing output files

List of changes in output files

1. Existing input files

List of changes in input files

1. Other
2. **NEW INPUT FILES**
3. **NEW OUTPUT\_FILES**

**WATER\_ALLO\_*timestep*.txt output files**

* added for all timesteps; (see updated\_files)

1. **EXISTING OUTPUT FILES**

**Changed headers in all AQUIFER output files:**

* Column MINP changed from “kg” to “kg/ha\_P”
* The following columns changed labels:

OLD:

character(len=15) :: rchrgn = " rchrgn" ! (kg/ha N)

character(len=15) :: nloss = " nloss" ! (kg/ha N)

character(len=15) :: no3gw = " no3gw" ! (kg N/ha)

character(len=15) :: seep\_no3 = " seepno3" ! (kg)

NEW:  
character(len=15) :: no3\_rchg = " no3\_rchg" ! (kg/ha N) character(len=15) :: no3\_loss = " no3\_loss" ! (kg/ha N) character(len=15) :: no3\_lat = " no3\_lat" ! (kg N/ha) character(len=15) :: no3\_seep = " no3\_seep" ! (kg N/ha)

**Changed headers in all LS output files:**

* Column “SEDMIN” changed to “SEDMINP” (description didn’t change)

**Changed headers in all RES output files:**

* UNITS for PRECIP/EVAP/SEEP changed from “ha-m” to “m^3”
* UNITS for FLO\_STOR changed from “m^3/s” to “m^3”

**Changed headers in all SD\_CHA output files:**

* UNITS for PRECIP/EVAP/SEEP changed from “ha-m” to “m^3”
* UNITS for FLO\_STOR changed from “m^3/s” to “m^3”

**Changed headers in all WETLAND output files:**

* UNITS for PRECIP/EVAP/SEEP changed from “ha-m” to “m^3”
* UNITS for FLO\_STOR changed from “m^3/s” to “m^3”

**Added output variable named ‘WET\_OUT mm’ in the last column of all WB files**

**Added ‘CAL\_ADJ’ variable to BASIN WB average annual output ONLY**;

This file/timestep prints the parameter that is being adjusted in a soft calibration simulation;

1. **EXISTING INPUT FILES**

**FILE.CIO – default name changes in WATER\_RIGHTS:**

* TRANSFER.WRO 🡪 WATER\_ALLOCATION.WRO( see updated\_files fwith ALL default names included)

**WEIR.RES:**

* Removed NUM\_STEPS in this file;
* Added new definitions for remaining variables:

real :: c = 1.84 !none |weir discharge linear coefficient

real :: k = 2.6 !none |weir discharge exponential coefficient

real :: w = 2.5 !m |width

real :: h = 0.0 !m |height of bottom of weir above bottom of  
 impoundment

**CODES.BSN changes:**

* RTU\_WQ changed to “SWIFT\_OUT”

== 0 do not write SWIFT output files (default)

== 1 write SWIFT output files

* CN – not currently being used
* GAMPT – new definition

1. = curve number (default); 1 = Green and Ampt;

* I\_FPWET - new definition

0 = daily routing (default)

1. = subdaily routing – no flood plain interaction
2. = subdaily routing – flood plain interaction

**PESTICIDES.PES**

* This file has been updated; The descriptions were not correct in the previous file.

**PARAMETERS.BSN**

* PETCO\_PMPT – this parameter is currently not being used; see PET\_CO input in the hydrology.hyd file;

**PRINT.PRT**

* The code for the file named SNUTC (soil\_nutcarb\_out.txt) was replaced with CROP\_YLD

where:

‘a’ == annual output (default);

‘y’ == for yearly output

‘b’ == print both annual and yearly output;

* Removed the ‘REGION\_CHA’ print option
* Added ‘WATER\_ALLO’ after the ‘REGION\_PSC’ option

**CAL\_PARMS.CAL file added following aquifer parameters:**

* flo\_init\_mm - flow from aquifer in current time step (mm)
* dep\_bot – depth-mid-slope surface to bottom of aquifer (m)
* dep\_wt\_init – depth-mid-slope surface to water table (m)
* no3\_init – nitrate-N concentration in aquifer (ppm NO3-N)
* minp\_init – mineral phosphorus in aquifer (kg)
* cbn\_init – organic carbon in aquifer (percent)
* flo\_dist – average flow distance to stream or object (m)
* hlife\_n – half-life of nitrogen in groundwater (days)

SOFT CALIBRATION:

* **CODES.SFT** - HYD\_YN added options where:

“n” == no (default)

“a” == calibrate all hydrologic balance proc for HRU and by land use in each region;

“b” == calibrate baseflow and total runoff for HRU and by land use in each region;

“y” == defaults to “b” for existing NAM simulations;

NOTE: only HYD\_HRU and PLNT are currently being used in the model at this time;

**WATER\_BALANCE.SFT**

“a” = calibrate each water balance processes independently (surface runoff, lateral soil flow, percolation, ET, PET, and tile flow)

“b” or “y” = calibrate total baseflow and surface runoff (lateral soil flow, tile flow and percolation)

water\_balance.sft

1

NAME NLUM

basin 1

|------------------------------- “a”-----------------------------------| |--“b” or “y”--|

NAME  SURQ\_RT LATQ\_RTO PERC\_RTO ET\_RTO TILEQ\_RT0 PET NULL WYR BFR NULL

basin 0.142 0.022 0.201 0.634 0.000 1650.00 0.00 0.366 0.612 0.00

**HARV.OPS file:**

* added cotton\_picker and cotton\_strip; and put them in

alphabetical order

**AQUIFER.AQU file:**

* MINP (solp) units changed from ‘kg’ to ‘ppm P’
* HLIFE\_N (hl\_no3n) default changed (default changed to 30.0)

**PLANTS.PLT file:**

* Replaced “WIND\_STD” with “RSD\_PCTCOV”

Description: Residue factor for percent cover equation

* Replaced “WIND\_FLAT” with “RSD\_COVFAC”

Description: Residue factor for surface cover (C-Factor) equation

* Added following plant:

BARN (stands for ‘barren’ – Description: sparsely vegetated)

* Deleted following plants (per Jeff because they were unknown)

bocu

cont

deil

saaz

scsc

soct

sont

sonu

sosa

trab

Decision Table new conditions/actions:

(swatplus\_decision\_table\_rules\_60\_5\_5\_jaclyn.xlsx)

CONDITIONS ADDED:

p\_pet

p\_lab\_150

sol\_temp2

wet\_depth

weirh

ACTIONS ADDED:

manure\_demand

fert\_future

impound\_off

impound\_on

weir\_height

puddle

pehno\_reset

ACTIONS DELETED:

allocate\_wro

fcfs\_if\_demand

LUM.DTL file added the following tables:

* graze\_summer (from NAM)
* graze\_winter (from NAM)
* pl\_hv\_corn (Katrin B.)

The following NAME variables have been extended to 40 characters:

(on request of Mike/Christoph)

PLANT.INI file:

* PCOM\_NAME

LANDUSE\_LUM file:

* ALL columns incl: NAME/CAL\_GROUP/PLNT\_COM/MGT/CN2/CONS\_PRAC/URBAN/URB\_RO/OV\_MANN/TILE/SEP/VFS/GRWW/BMP

MANAGEMENT.SCH file:

* NAME column
* AUTO\_NAME
* AUTO\_CROP

HYD-SED-LTE.CHA file:

* Variable “WD\_RTO” changed to “SINU”

Sinuousity – ratio of channel length and straight line length (range=1-3 ratio; default = 1.05)

HYDROLOGY.HYD file:

* Variable “HARG\_PET” input renamed to “PET\_CO”

Coefficient related to radiation used in Hargreaves equation (default = 1.0 – works for any method)

This is coded to adjust for any PET equations;

For example: 0.8 – 20% reduction

1.2 – 20% increase

WATER\_ALLOCATION.WRO

* See updated\_files;
* includes three example files for (channel/reservoir/NAM);
* ‘water\_allocation\_inputs.docx’
* ‘notes\_on\_setting\_up\_wro.docx’

**NOTES for JACLYN**:

1. Perhaps you have already looked at this problem, I am not sure. I have had many users with tables in the weather-wgn.cli file with -99.00 as inputs;

(file in \modular\_new\_60\_5\_5\updated\_files\_60\_5\_5\_jaclyn\users)

1. For pesticides in reservoirs and channels, you must have the pesticides set up in the ‘constituents.cs’ file, and include the ‘pest\_hru.ini' and ‘pest\_water.ini’ files in the simulation;

For aquifers, initial amounts would be entered in the ‘aquifer.aqu’ file and the ‘pest\_hru.ini’ file should be included.

1. PLAPS and TLAPS must have LAPSE == 1 in the ‘codes.bsn’ file to activate these variables.
2. All PW output files – humidity and wind are now printing values in these files (previously all were zero)
3. Per Christoph/Katrin:

In the parametrization of perco, cn3 and latq\_co with the Editor. I just made a quick screenshot where I pointed to the issues and I put my code next to it for reference. Hope that this is useful.

Graphical user interface, text

Description automatically generated

1. Setting up a water\_allocation file is very specific to the watershed. We will certainly schedule a zoom with you for any guidance or questions you might have.

**DELETED Subroutines:**

**ch\_biofilm.f90**

**ch\_hhnoqual.f90**

**ch\_hhwatqual.f90**

**ch\_noqual.f90**

**ch\_rchuse.f90**

**ch\_rtout.f90**

**ch\_rtsed.f90**

**ch\_rtsed\_bagnold.f90**

**ch\_rtsed\_kodatie.f90**

**ch\_rtsed\_Molinas.f90**

**ch\_rtsed\_yangsand.f90**

**ch\_watqual.f90**

**ch\_watqual2.f90**

**ch\_watqual3.f90**

**water\_rights\_read.f90**

**ADDED Subroutines:**

**mgt\_read\_puddle.f90 (Jaehak)**

**scen\_read\_filterstrip.f90**

**structure\_init.f90**

**swift\_output.f90**

**treat\_read\_om.f90**

**wallo\_transfer.f90**

**wallo\_treatment.f90**

**wet\_all\_initial.f90**

**erosion\_module.f90**

**erosion\_output.f90**

**manure\_source\_output.f90**

**manure\_allocation\_module.f90**

**manure\_alocation\_read.f90**

**manure\_demand\_output.f90**

**mallo\_control.f90  
pl\_fert\_wet.f90**

**mgt\_newtillmix\_wet.f90**

**co2\_read.f90**

**res\_weir\_release.f90 (not called)**