Tom FitzHugh, BOR, 6/21/2010

-Here I added code for CVP allocation logic, CVP NOD and SOD deliveries, and COA into the CalLite model received from Nazrul on June 21 2010. That model included all code up to Delta and weirs (already reviewed by Nancy and Eric) and also SWP allocation logic and deliveries (not reviewed yet). It also includes the CS2CL code for generating timeseries for CalLite SV DSS.

Reviewers, please see comments in individual files for specific questions that I still have about some of this code.

Notes on code added to CS2CL model:

* Added a second cycle to mainCS2CL.wresl, to copy timeseries that couldn’t be copied in the first cycle (see notes in that file for explanation).
* Added two INCLUDE statements to Cycle 1 (demands\_TS.wresl, CVP\_Del\_Logic\_TS.wresl) and one INCLUDE statement to Cycle 2 (Cycle2copies\_TS.wresl).
* Added an INCLUDE statement to my file demands\_TS.wresl to include demands\_69\_defs.wresl, which has timeseries needed for SWP. Removed a different file that previously had this include statement, to simplify things.
* Files added for Cycle 1:

'\common\hydrology\DEMANDS\demands\_TS.wresl'

'\common\hydrology\DEMANDS\Red\_Bluff\_TS.wresl'

'\common\hydrology\DEMANDS\Wilkins\_Slough\_TS.wresl'

'\common\hydrology\DEMANDS\demands\_65\_TS.wresl'

'\common\hydrology\DEMANDS\demands\_70\_TS.wresl'

\CVP\_dellogic\CVP\_Del\_Logic\_TS.wresl'

'\CVP\_Delivery\_Logic\sum\_cvp\_demands\_system\_TS.wresl'

'\CVP\_Delivery\_Logic\sum\_cvp\_div\_rqmts\_system\_TS.wresl'

'\CVP\_Delivery\_Logic\cvp\_demands\_south\_TS.wresl'

'\CVP\_Delivery\_Logic\cvp\_delivery\_rule\_curve\_TS.wresl'

* Files added for Cycle 2

‘\common\hydrology\DEMANDS\Cycle2copies\_TS.wresl'

* I compared all the timeseries generated by the code that I added to the CS2CL model to corresponding variables in the Calsim Run BST\_2020D09E\_NoAction, and confirmed that they are all identical, except for a few differences in the 4th decimal place or beyond, which I assume is just rounding error. The spreadsheet showing those checks is in the same directory with these notes.
* There were a bunch of .wresl files (mostly in the demands directory) that were not being used for this model, so I deleted these and also commented out the relevant include statements. Since the CS2CL model without those files is generating all the timeseries needed by the CalLite model, I know that these files are not needed.
* I fixed a number of errors in the file: Inflow-table\_TS.wresl. I\_Trnty was being set to I100 instead of I1, I\_Lewiston was being set to I3 instead of I100 etc. Also checked the equations in the other system files in this model, and found no other errors.

Notes on code added to CalLite model:

* Files added for Cycle 1:

-Added directory cvp\_dellogic and all the files in there.

-Added San\_Luis\_Levels.wresl and cvp\_delivery\_rule\_curve.wresl to Rulecurve directory.

-Added all files into hydrology/demands directory, except demands\_69.wresl and demands\_69\_defs. wresl, which were already in there for SWP. I added include statements for those files into my demand\_defs.wresl.

-Added COA directory and coa.wresl file in that directory

* New include statements added to main.wresl:

INCLUDE 'hydrology\demands\demands\_defs.wresl'

INCLUDE 'hydrology\demands\demands.wresl'

INCLUDE 'cvp\_dellogic\CVP\_delivery\_Logic\_system.wresl'

INCLUDE 'cvp\_dellogic\CVP\_delivery\_Logic\_south.wresl'

INCLUDE 'Rulecurve\cvp\_delivery\_rule\_curve.wresl'

INCLUDE 'Rulecurve\San\_Luis\_Levels.wresl'

INCLUDE 'COA\coa.wresl'

* Since Nazrul had added a refuges.wresl file, and I had one also, I renamed his to refuge\_defs.wesl. At first I combined them into one file, but this didn’t work since the lines in his file needed to be define way before mine in the main file.
* Added the following tables to the lookup directory:

wsi\_di\_cvp\_sys.table

dltidx\_expidx\_cvp\_s.table

delcar\_cvp\_sys.table

nodcvpcontract.table

CVPrule\_deltar.table

CVPrule\_cap\_Shasta.table

CVPrule\_sha.table

AMERICAN\_PRJ\_WR.table

* Removed the following lines from Reservoir-table.wresl, since they are now in San\_Luis\_Levels.wresl:

define S\_SLCVPlevel3 {value 45.}

goal S\_SLCVPZone3 {S\_SLCVP\_3 < S\_SLCVPlevel3-S\_SLCVPlevel2}

goal S\_SLCVPZone4 {S\_SLCVP\_4 < S\_SLCVPlevel4-S\_SLCVPlevel3}

goal S\_SLCVPZone5 {S\_SLCVP\_5 < S\_SLCVPlevel5-S\_SLCVPlevel4}

* Removed the following lines from the delivery-table:

goal zero\_D\_RedBlfP {D\_RedBlf\_P = 0.}

goal zero\_D\_WilknsP {D\_Wilkns\_P = 0.}

goal zero\_D\_SacAmeP {D\_SacAme\_P = 0.}

goal zero\_D\_FolsmP {D\_Folsm\_P = 0.}

goal zero\_D\_NimbusP {D\_Nimbus\_P = 0.}

There are three other goals setting other deliveries = 0 here too (for Napa, Solano, FVB). These aren’t deliveries I am coding, but I assume they should be removed too, so I commented them out.

* Added and changed the following weights:

Added these weights:

[D\_RedBlf\_P,5000], matches weights for D104\_PRJ, D171, D172, D174, D178 in Calsim, which compose this delivery.

[D\_Wilkns\_P,5000], matches weights for D128, D129A, D122A, D122B, D143A, D143B, D145A, D145B, D182B in Calsim, which compose this delivery.

[D\_SacAme\_P,5000], matches weights for D162\_prj, D163, D165, D167 in Calsim, which compose this delivery

[D\_Folsm\_P,5000], matches weight for D8\_prj in Calsim

[D\_Nimbus\_P,5000], matches weight for D9\_prj in Calsim

Changes to weights table:

[D\_RedBlf\_NP,5100], changed weight from 5000 to 5100, which matches weight of D104\_NP

[D\_Wilkns\_NP,99999], changed weight from 5000 to 99999 to match weights for D11301 and D113B

[D\_SacAme\_NP,5100], changed weight from 5000 to 5100, which matches weight of D8\_np and D9\_np

[D\_Folsm\_NP,5100], changed weight from 5000 to 5100, which matches weight of D8\_NP

[D\_Nimbus\_NP,5100], changed weight from 5000 to 5100, which matches weight of D9\_NP

[D\_HSt\_NP,5100], changed weight from 5000 to 5100, which matches weight of D302\_NP

Added weights below for SOD deliveries below. Weights for some SOD deliveries were already in the file, so I left those after checking that they matched Calsim. In some cases I weighted the CalLite delivery, if all the Calsim deliveries had the same weight. In other cases I retained the Calsim weights, if the Calsim weights differed.

[D701,1265] for D\_UpDMC\_P, which also includes D700 but Calsim doesn't have a weight for this.

[D702,1285]

deleted [D\_UpDMC,0],

[D708,1265] for D\_CVPJU\_LDMC\_P, which also includes D706 and D707, but Calsim doesn't have weights for these

deleted [D\_CVPJU\_LDMC,0],

[D834,1285] for D\_DosAmigosCVP\_P, which also includes D833, D835, but Calsim doesn't have weights for these

[D836,1265]

[D837,1265]

[D838,1285]

[D839,1265]

[D840,1285]

[D841,1265]

[D842,1285]

[D843,1265]

[D844,1265]

[D845,1285]

deleted [D\_DosAmigosCVP,0],

NOTE: Didn't add any weights relevant to D\_MendotaPl, since there are no weights in Calsim for corresponding deliveries 607ABCD and 608BC. I assume this is OK, since C\_MPool has a large negative weight, and there is nowhere else for the water to go.

* I happened to notice while I was reviewing code that the D\_ClearTu weights were different that Calsim, so I added the following weights to match Calsim (these match weights for D100), and deleted the weight [D\_ClearTu,0].

[D\_ClearTu\_import,40],

[D\_ClearTu\_exc,-3],

* In the COA code, Cody had a variable for CCWD, which in Calsim was D\_408\_DS. I commented this out, since I think we don’t need this now in CalLite (at least I couldn’t find that it was used anywhere). Please check!
* Please check my implementation of D\_CVPRFG\_854. This consists of D854, which is an SWP loss, and D856, which is a CVP refuge delivery, so it was implemented separately in swp\_arcsplit\_CSCL.wresl and cvp\_bound\_del\_south.wresl. I implemented it by combing D854 and D856 in cvp\_bound\_del\_south.wresl and commented out the line in swp\_arcsplit\_CSCL.wresl.
* In the file: 'swp\_dellogic\conveyance\_limits\_CSCL.wresl', I activated the line:

goal max\_da\_cvp {C\_DsAmgC +D839\_PRJ+D840\_PRJ+D841\_PRJ+D842\_PRJ+D843\_PRJ+D844\_PRJ+D845\_PRJ < 0.458\*max\_da}

Nazrul had told me that I should activate this. D843\_PRJ, D844\_PRJ, and D845\_PRJ were listed as D443\_PRJ, D444\_PRJ, and D445\_PRJ (which don’t exist) in this statement, so I fixed those.

I had to move the include statement for this file to the main file (from SWPDeliveryLogic.wresl) in order to get the model to run.