HSPF for Water Balance Inputs to MODFLOW Updates for NFSEG 1.1

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• HSPF

- Recharge
- Maximum saturated ET for Evaporation Package





MODFLOW Inputs

- Recharge is the sum of Active Groundwater Inflow (AGWI) and Inactive Groundwater Inflow (IGWI)
- PET is input as demand
- Maximum Saturated ET is PET minus all unsaturated ET values

MSATET = PET-CEPE-UZET-LZET

Recharge = AGWI + IGWI

But...





Mass Balance

Mass balance with control volume (dashed blue box)

In = Out + (Change in storage) Take that (Change in storage) = 0

In = Out

$\label{eq:precipitation} \begin{array}{l} \mathsf{Precipitation} - \mathsf{CEPE} = \mathsf{SURO} + \mathsf{IFWO} + \mathsf{LZET} + \mathsf{UZET} + \\ & \mathsf{AGWI} + \mathsf{IGWI} + \mathsf{SURET} \end{array}$



MODFLOW Recharge Equation

Recharge = precipitation – CEPE – SURO – IFWO – LZET – UZET



Combine

precipitation - CEPE = SURO + IFWO + LZET + UZET + AGWI + IGWI + SURET precipitation - CEPE - SURO - IFWO - LZET - UZET = AGWI + IGWI + SURET

Recharge = precipitation - CEPE - SURO - IFWO -LZET - UZET

Recharge = AGWI + IGWI + SURET



Surface ET (SURET)

- Zero except for water and wetlands
- For water and wetlands can be close to potential



Springs Plus Diffuse Groundwater Discharge to a Reach (Aggregate Discharge)

- Inactive Groundwater Storage Approach
 - Expanded to include
 - $\circ \textbf{Wakulla Springs}$
 - \circ St. Marks Rise
 - $\circ \textbf{Wacissa Springs}$
 - \circ Rainbow Springs
 - \circ Silver Springs





2010 Potentiometric Surface and Springsheds



Contributing Springsheds and Surface Subwatersheds



Wakulla Springs





St. Marks Rise





Wacissa River





Rainbow Springs





Silver Springs





Additional Calibration Points

- USGS 02319500 SUWANNEE RIVER AT ELLAVILLE, FLA
- USGS 02320500 SUWANNEE RIVER AT BRANFORD, FLA.



02319500 Monthly





02319500 Monthly FDC





02320500 Monthly





02320500 Monthly FDC



