

**Table S1:** Sensitivity analysis of parameters.

Parameter Code	Description	t-Stat	p-Value	Rank
r_CN2.mgt	Initial SCS runoff curve number for moisture condition II	-7.0936	0.0000	3
v_ALPHA_BF.gw	Baseflow alpha-factor	2.5997	0.0098	6
v_SLSUBBSN.hru	Average slope length	7.2986	0.0000	2
r_SOL_BD().sol	Moist bulk density	2.1517	0.0323	7
v_HRU_SLP.hru	Average slope steepness	-4.2847	0.0000	4
r_SOL_K().sol	Saturated hydraulic conductivity	-1.1215	0.2631	16
r_SOL_AWC().sol	Available water capacity of the soil layer	8.8539	0.0000	1
v_SMFMX.bsn	Maximum melt rate for snow during year	-0.7307	0.4656	20
v_ESCO.hru	Soil evaporation compensation factor	1.0426	0.2981	18
v_SFTMP.bsn	Snowfall temperature	-1.2761	0.2030	12
v_TIMP.bsn	Snow pack temperature lag factor	-0.5227	0.6016	22
v_GW_REVAP.gw	Groundwater “revap” coefficient	1.0683	0.2863	17
v_SURLAG.bsn	Surface runoff lag time	-1.4430	0.1502	10
v_SMTMP.bsn	Snowmelt base temperature	0.2304	0.8180	24
r_SOL_ALB().sol	Moist soil albedo	0.0245	0.9805	28
v_CH_K2.rte	Effective hydraulic conductivity in main channel alluvium	-0.8329	0.4056	19
v_REVAPMN.gw	Threshold depth of water in the shallow aquifer for “revap” to occur	-1.6061	0.1094	8
v_SMFMN.bsn	Minimum melt rate for snow during year	-0.6275	0.5308	21
v_CH_N2.rte	Manning’s “n” value for the main channel	-0.0949	0.9245	27
v_EPCO.hru	Plant uptake compensation factor	1.2330	0.2186	13
v_CANMX.hru	Maximum canopy storage	1.4665	0.1437	9
v_GWQMN.gw	Threshold depth of water in the shallow aquifer required for return flow to occur	0.1889	0.8503	26
v_GW_DELAY.gw	Groundwater delay	-0.2043	0.8383	25
v_TLAPS.sub	Temperature lapse rate	-1.3893	0.1659	11
r_SOL_Z().sol	Depth from soil surface to bottom of layer	1.1707	0.2427	15
v_RCHRG_DP.gw	Deep aquifer percolation fraction	-3.4829	0.0006	5
r_BIOMIX.mgt	Biological mixing efficiency	-1.1797	0.2392	14
v_OV_N.hru	Manning’s “n” value for overland flow	-0.2843	0.7764	23

Notes: v\_ and r\_ represent the substitution of the given value for the current parameter value and the multiplication of the current parameter value by (1 + a given value), respectively.