

**Table S1.** The characteristics of the spring hydrograph in scenario A.

Parameter Scenario A	$Q_P$ ( $m^3/s$ )	$q_0^b$ ( $m^3/s$ )	$t_P$ (hr)	$t_b$ (hr)	$\alpha_f$ (1/hr)	$\alpha_i$ (1/hr)	$\alpha_b$ (1/hr)	$V_f/V_T$ (%)	$V_i/V_T$ (%)	$V_b/V_T$ (%)
A1: Curvilinear branchwork pattern	1.46	0.26	2	62	0.077	0.05	0.033	24.02	36.47	39.51
A2: Rectilinear branchwork pattern	1.15	0.36	2	69	0.057	0.044	0.034	22.64	25.98	51.38
A3: Network maze pattern	0.94	0.38	2	77	0.046	0.042	0.033	13.36	30.69	55.95

**Table S2.** The characteristics of the spring hydrograph in scenario B.

Parameter Scenario B		$Q_P$ ( $m^3/s$ )	$q_0^b$ ( $m^3/s$ )	$t_P$ (hr)	$t_b$ (hr)	$\alpha_f$ (1/hr)	$\alpha_i$ (1/hr)	$\alpha_b$ (1/hr)	$V_f/V_T$ (%)	$V_i/V_T$ (%)	$V_b/V_T$ (%)
Curvilinear branchwork pattern	B1: base model	1.46	0.26	2	62	0.077	0.05	0.033	24.02	36.47	39.51
	B2: 25% reduction of the length of base model	1.24	0.4	2	57	0.064	0.04	0.03	18.1	20.1	61.8
	B3: 50% reduction of the length of base model	0.9	0.17	2	51	0.062	0.032	0.015	16.88	25.45	57.67
	B4: 75% reduction of the length of base model	0.46	0.15	2	47	0.053	0.021	0.01	7.77	10.09	82.14
Rectilinear branchwork pattern	B1: base model	1.15	0.36	2	69	0.057	0.044	0.034	22.64	25.98	51.38
	B2: 25% reduction of the length of base model	0.99	0.38	2	66	0.048	0.038	0.03	17.82	22.56	59.62
	B3: 50% reduction of the length of base model	0.79	0.2	2	49	0.052	0.032	0.015	14.32	20.49	65.19
	B4: 75% reduction of the length of base model	0.39	0.15	2	42	0.046	0.019	0.009	6.46	5.89	87.65
Network maze pattern	B1: base model	0.94	0.38	2	77	0.046	0.042	0.033	13.36	30.69	55.95
	B2: 25% reduction of the length of base model	0.84	0.31	2	57	0.045	0.033	0.022	11.55	23.01	65.44
	B3: 50% reduction of the length of base model	0.68	0.14	2	45	0.063	0.034	0.012	10.09	23.94	65.97
	B4: 75% reduction of the length of base model	0.43	0.11	2	44	0.066	0.027	0.01	8.5	12.55	78.95

**Table S3.** The characteristics of the spring hydrograph in scenario C.

Scenario C		Parameter	$Q_P$ ( $m^3/s$ )	$q_0^b$ ( $m^3/s$ )	$t_P$ (hr)	$t_b$ (hr)	$\alpha_f$ (1/hr)	$\alpha_i$ (1/hr)	$\alpha_b$ (1/hr)	$V_f/V_T$ (%)	$V_i/V_T$ (%)	$V_b/V_T$ (%)
Curvilinear branchwork pattern	C1: 100% diffuse recharge		1.46	0.26	2	62	0.077	0.05	0.033	24.02	36.47	39.51
	C2: 75% diffuse recharge and 25% point recharge		1.8	0.16	1	49	0.137	0.059	0.035	34.22	36.03	29.75
	C3: 50% diffuse recharge and 50% point recharge		2	0.06	1	44	0.42	0.064	0.037	52.31	20.22	27.47
Rectilinear branchwork pattern	C1: 100% diffuse recharge		1.15	0.36	2	69	0.057	0.044	0.034	22.64	25.98	51.38
	C2: 75% diffuse recharge and 25% point recharge		1.2	0.22	1	53	0.073	0.054	0.036	27.5	33.58	38.92
	C3: 50% diffuse recharge and 50% point recharge		1.36	0.082	< 1	49	0.219	0.068	0.036	33.77	38.05	28.18
Network maze pattern	C1: 100% diffuse recharge		0.94	0.38	2	77	0.046	0.042	0.033	13.36	30.69	55.95
	C2: 75% diffuse recharge and 25% point recharge		1.01	0.2	1	68	0.059	0.051	0.033	22.37	40.32	37.31
	C3: 50% diffuse recharge and 50% point recharge		1.14	0.05	< 1	59	0.118	0.085	0.041	26.71	60.94	12.35