

Applied Hydrology Homework-5 (Reservoir storage routing using HEC-HMS)

- (1) Use the reservoir inflow of Homework-4.
- (2) Reservoir elevation ~ storage relationship is shown in the following table.
- (3) The reservoir has two circular pipe culvert outlets and one broad-crest spillway. Parameters specification of the culverts are as follows. The broad-crest spillway is 25 m above the reservoir bottom. Length of the crest is 20 m, with a coefficient of 2.6.
- (4) Calculate the peak outflow from the reservoir and the peak elevation in the reservoir due to a 24-hr, 100-yr design storm.

Reservoir		Outlet 1		Options	
Direction:	Main				
Number Barrels:					
Solution Method:	Automatic				
Shape:	Circular				
Chart:	1: Concrete Pipe Culvert				
Scale:	1: Square edge entrance with headwall				
*Length (M)	15				
*Diameter (M)	3				
*Inlet Elevation (M)	0				
*Entrance Coefficient:	0.8				
*Outlet Elevation (M)	0				
*Exit Coefficient:	1.0				
*Mannings n:	0.014				

Elev (m)	Cumulative storage (1000 m ³)	Elev (m)	Cumulative storage (1000 m ³)
0	0	22	23846.747
1	614.9390153	23	25646.747
2	1259.880868	24	27446.747
3	1934.825306	25	29246.747
4	2639.772108	26	31046.747
5	3374.721082	27	32846.747
6	4139.672058	28	34646.747
7	4934.624884	29	36446.747
8	5759.579426	30	38246.747
9	6614.535563	31	40046.747
10	7499.493187	32	41846.747
11	8429.331854	33	43646.747
12	9419.180304	34	45446.747
13	10469.03742	35	47246.747
14	11578.90226	36	49046.747
15	12748.77403	37	50846.747
16	14008.29757	38	52646.747

17	15387.86258	39	54446.747
18	16887.46242	40	56246.747
19	18507.09193		
20	20246.747		
21	22046.747		