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Option reservoir operation during floods

Furstenburg, Leon

2015-01-26
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					-2.3691	-658	44	3280	9	2631	
8	101.42	21.442	2221.8300								2571

TIME hr	%FSC %	GAUGEPL. READING m	CAPACITY 10^6 m3	DELTA CAPACITY 10^6 m3	NET INFLOW m3/s	GATES no.	GATES m3/s	SPILL m3/s	GROSS 1-HR m3/s	MEAN INFLOW 6-HR m3/s
8	101.42	21.442	2221.8300							2571
				-2.0757	-577	44	3266	8	2698	
9	101.33	21.435	2219.7600							2596
				-1.7795	-494	44	3255	7	2767	
10	101.25	21.429	2217.9800							2664
				-2.6606	-739	44	3241	6	2508	
11	101.13	21.420	2215.3200							2582
				-2.3682	-658	44	3226	6	2573	
12	101.02	21.412	2212.9500							2539
				-1.4812	-411	44	3214	5	2808	
13	100.95	21.407	2211.4700							2552
				-3.8379	****	44	3198	4	2136	
14	100.78	21.394	2207.6300							2634
				-2.6609	-739	44	3178	3	2442	
15	100.65	21.385	2204.9700							2621
				-1.1782	-327	44	3167	3	2842	
16	100.60	21.381	2203.7900							2636
				-.5898	-164	44	3162	2	3000	
17	100.57	21.379	2203.200							2639
				.3555	-654	44	3153	2	2500	
18	100.47	21.371	2200.8[illegible]							2559
				.8894	-247	44	3143	2	2898	
19	100.43	21.368	2199.9500							2587
				3.5349	-982	44	3130	1	2149	
20	100.26	21.356	2196.4200							2534
				-4.1182	****	44	3107	0	1964	
21	100.08	21.342	2192.3000							2576
				-.2937	-82	44	3091	0	3013	
22	100.06	21.341	2192.0100							2496

TIME hr	%FSC %	GAUGEPL. READING m	CAPACITY 10^6 m3	DELTA CAPACITY 10^6 m3	NET INFLOW m3/s	GATES no.	GATES m3/s	SPILL m3/s	GROSS 1-HR m3/s	MEAN INFLOW 6-HR m3/s
22	100.06	21.341	2192.0100							2496
				-1.4722	-409	44	3089	0	2680	
23	100.00	21.336	2190.5400							2580
				-1.1738	-326	44	3081	0	2755	
24	99.94	21.332	2189.3600							2652
22 / 2 / 75				-2.3486	-652	44	3071	0	2418	
1	99.83	21.324	2187.0100							2547
				-1.4700	-408	44	3059	0	2651	
2	99.77	21.319	2185.5400							2495
				-2.3511	-653	44	3048	0	2395	
3	99.66	21.311	2183.1900							2483
				-2.3464	-652	44	3034	0	2383	
4	99.55	21.303	2180.8500							2431
				-2.3477	-652	44	3021	0	2368	
5	99.45	21.295	2178.5000							2473
				-1.1716	-325	44	3010	0	2685	
6	99.39	21.291	2177.3300							2462

				-3.2207	-895	44	2997	0	2103	
7	99.25	21.280	2174.1100							2492
				-.2905	-81	44	2987	0	2907	
8	99.23	21.279	2173.8200							2496
				-2.3418	-650	44	2980	0	2329	
9	99.13	21.271	2171.4700							2417
				-1.4597	-405	44	2969	0	2563	
10	99.06	21.266	2170.0100							2434
				-2.0481	-569	44	2958	0	2389	
11	98.96	21.259	2167.9700							2327
				-2.6335	-732	44	2945	0	2213	
12	98.84	21.250	2165.3300							2315

TIME hr	%FSC %	GAUGE RDG m	CAPACITY 10^6 m3	DELTA CAPACITY 10^6 m3	NET INFLOW m3/s	GATES no.	GATES m3/s	SPILL m3/s	GROSS 1-HR m3/s	MEAN INFLOW 6-HR m3/s
12	98.84	21.250	2165.3300							2315
				-2.6252	-729	44	2930	0	2200	
13	98.72	21.241	2162.7100							2302
				-2.3330	-648	44	2915	0	2267	
14	98.62	21.233	2160.3700							2317
				-2.3328	-648	44	2902	0	2254	
15	98.51	21.225	2158.0400							2319
				-1.4551	-404	44	2891	0	2487	
16	98.45	21.220	2156.5900							2307
				-1.4561	-404	44	2883	0	2478	
17	98.38	21.215	2155.1300							2377
				-2.3296	-647	44	2872	0	2225	
18	98.27	21.207	2152.8000							2394
				-2.6230	-729	44	2858	0	2129	
19	98.15	21.198	2150.1800							2317
				-.5796	-161	44	2849	0	2688	
20	98.13	21.196	2149.6000							2238
				-1.7429	-484	44	2842	0	2358	
21	98.05	21.190	2147.8500							2212
				-2.9080	-808	44	2829	0	2021	
22	97.91	21.180	2144.9500							2200
				-2.9009	-806	44	2813	0	2007	
23	97.78	21.170	2142.0500							2052
				-2.6152	-726	44	2797	0	2070	
24	97.66	21.161	2139.4300							1997
23 / 2 / 75				-2.6060	-724	44	2782	0	2058	
1	97.54	21.152	2136.8200							1982
				-3.4761	-966	44	2765	0	1800	
2	97.38	21.140	2133.3500							1980

TIME hr	%FSC %	GAUGE RDG m	CAPACITY 10^6 m3	DELTA CAPACITY 10^6 m3	NET INFLOW m3/s	GATES no.	GATES m3/s	SPILL m3/s	GROSS 1-HR m3/s	MEAN INFLOW 6-HR m3/s
2	97.38	21.140	2133.3500							1980
				-2.6094	-725	44	2748	0	2023	
3	97.27	21.131	2130.7400							1965
				-2.8850	-801	44	2733	0	1931	
4	97.13	21.121	2127.8500							1990
				-2.6016	-723	44	2717	0	1995	
5	97.02	21.112	2125.2500							1936

					-2.6028	-723	44	2703	0	1980
6	96.90	21.103	2122.6500							2001
					-1.7305	-481	44	2691	0	2210
7	96.82	21.097	2120.9200							2069
					-4.3230	****	44	2674	0	1473
8	96.62	21.082	2116.6000							2057
					-.8699	-242	44	2660	0	2418
9	96.58	21.079	2115.7300							2085
					-1.1487	-319	44	2654	0	2335
10	96.53	21.075	2114.5800							1954
					-2.5947	-721	44	2644	0	1923
11	96.41	21.066	2111.9800							2075
					-1.7273	-480	44	2632	0	2152
12	96.33	21.060	2110.2600							2064
					-4.3093	****	44	2616	0	1419
13	96.13	21.045	2105.9500							1986
					-1.4390	-400	44	2600	0	2200
14	96.07	21.040	2104.5100							1928
					-.8618	-239	44	2594	0	2354
15	96.03	21.037	2103.6500							1869
					-2.5801	-717	44	2584	0	1868
16	95.91	21.028	2101.0700							2025

TIME hr	%FSC %	GAUGE RDG m	PL. CAPACITY 10^6 m3	DELTA CAPACITY 10^6 m3	NET INFLOW m3/s	GATES no.	m3/s	SPILL m3/s	MEAN GROSS 1-HR m3/s	INFLOW 6-HR m3/s
16	95.91	21.028	2101.0700							2025
				-3.1548	-876	42	2452	0	1576	
17	95.77	21.017	2097.9100							1956
				-2.2964	-638	42	2438	0	1800	
18	95.66	21.009	2095.6100							1860
				-.2903	-81	42	2431	0	2350	
19	95.65	21.008	2095.3200							1883
				-2.2861	-635	42	2424	0	1789	
20	95.54	21.000	2093.0400							1940
				-2.2886	-636	42	2413	0	1777	
21	95.44	20.992	2090.7500							2012
				-1.4333	-398	42	2403	0	2005	
22	95.37	20.987	2089.3200							1884
				-1.7158	-477	42	2395	0	1918	
23	95.30	20.981	2087.6000							1888
				-.5691	-158	42	2389	0	2231	
24	95.27	20.979	2087.0300							1866
24 / 2 / 75										
				-2.8589	-794	42	2380	0	1586	
1	95.14	20.969	2084.1700							1763
				-1.9971	-555	42	2368	0	1813	
2	95.05	20.962	2082.1800							1806
				-2.5684	-713	42	2356	0	1643	
3	94.93	20.953	2079.6100							1702
				-3.4248	-951	42	2341	0	1390	
4	94.78	20.941	2076.1800							1678
				-.5703	-158	42	2331	0	2172	
5	94.75	20.939	2075.6100							1693
				-2.5662	-713	42	2323	0	1610	
6	94.63	20.930	2073.0500							1695

TIME hr	%FSC %	GAUGEPL. READING m	CAPACITY 10^6 m3	DELTA CAPACITY 10^6 m3	NET INFLOW m3/s	GATES no.	GATES m3/s	SPILL m3/s	MEAN GROSS 1-HR m3/s	MEAN INFLOW 6-HR m3/s
6	94.63	20.930	2073.0500							1695
				-3.1289	-969	42	2308	0	1439	
7	94.49	20.919	2069.9200							1750
				-1.4219	-395	42	2297	0	1902	
8	94.42	20.914	2068.4900							1648
				-2.2715	-631	42	2287	0	1657	
9	94.32	20.906	2066.2200							1637
				-1.9934	-554	42	2277	0	1723	
10	94.23	20.899	2064.2300							1692
				-2.5527	-709	42	2265	0	1556	
11	94.11	20.890	2061.6800							1685
				-2.5537	-709	42	2252	0	1543	
12	94.00	20.881	2059.1200							1711
				-1.6997	-472	42	2242	0	1770	
13	93.92	20.875	2057.4200							1730
				-.5715	-159	38	2023	0	1864	
14	93.89	20.873	2056.8500							1763
				.0000	00	34	1809	0	1809	
15	93.89	20.873	2056.8500							1773
				.8562	238	30	1598	0	1836	
16	93.93	20.876	2057.7100							1732
				.5647	157	30	1600	0	1757	
17	93.96	20.878	2058.2700							1635
				.0000	00	30	1601	0	1601	
18	93.96	20.878	2058.2700							1414
				-.2847	-79	30	1601	0	1522	
19	93.94	20.877	2057.9900							1491
				-1.1362	-316	30	1598	0	1283	
20	93.89	20.873	2056.8500							1477

TIME hr	%FSC %	GAUGEPL. READING m	CAPACITY 10^6 m3	DELTA CAPACITY 10^6 m3	NET INFLOW m3/s	GATES no.	GATES m3/s	SPILL m3/s	MEAN GROSS 1-HR m3/s	MEAN INFLOW 6-HR m3/s
20	93.89	20.873	2056.8500							1477
				-3.9644	****	30	1589	0	488	
21	93.71	20.859	2052.8900							*****
				2.5469	707	30	1587	0	2294	
22	93.83	20.868	2055.4300							*****
				.2881	80	30	1592	0	1672	
23	93.84	20.869	2055.7200							*****

Vaaldam Case Study Analysis using RESIMO with optimization option

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VAALDAM DEMONSTRATION RUN. PROGRAM CONTROLLED GATES.
1975 FLOOD SIMULATION.

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ELEVATION	STORAGE
17	1.16795E+09
18	1.36292E+09
19	1.58055E+09
20	1.82235E+09
21	2.0922E+09
22	2.39028E+09
23	2.71225E+09
23.9	3.02165E+09

MANUALLY CONTROLLED OVERFLOW WEIR

NO	INVERT	FREE COEF	SPILL COEF	WIDTH	HEIGHT	TRAVEL
1	18.3	1.8	2.1	7.78	3	3.2
2	18.3	1.8	2.1	7.78	3	3.2
3	18.3	1.8	2.1	7.78	3	3.2
4	18.3	1.8	2.1	7.78	3	3.2
5	18.3	1.8	2.1	7.78	3	3.2
6	18.3	1.8	2.1	7.78	3	3.2
7	18.3	1.8	2.1	7.78	3	3.2
8	18.3	1.8	2.1	7.78	3	3.2
9	18.3	1.8	2.1	7.78	3	3.2
10	18.3	1.8	2.1	7.78	3	3.2
11	18.3	1.8	2.1	7.78	3	3.2
12	18.3	1.8	2.1	7.78	3	3.2
13	18.3	1.8	2.1	7.78	3	3.2
14	18.3	1.8	2.1	7.78	3	3.2
15	18.3	1.8	2.1	7.78	3	3.2
16	18.3	1.8	2.1	7.78	3	3.2
17	18.3	1.8	2.1	7.78	3	3.2
18	18.3	1.8	2.1	7.78	3	3.2
19	18.3	1.8	2.1	7.78	3	3.2
20	18.3	1.8	2.1	7.78	3	3.2
21	18.3	1.8	2.1	7.78	3	3.2
22	18.3	1.8	2.1	7.78	3	3.2
23	18.3	1.8	2.1	7.78	3	3.2
24	18.3	1.8	2.1	7.78	3	3.2
25	18.3	1.8	2.1	7.78	3	3.2
26	18.3	1.8	2.1	7.78	3	3.2
27	18.3	1.8	2.1	7.78	3	3.2
28	18.3	1.8	2.1	7.78	3	3.2
29	18.3	1.8	2.1	7.78	3	3.2
30	18.3	1.8	2.1	7.78	3	3.2
31	18.3	1.8	2.1	7.78	3	3.2
32	18.3	1.8	2.1	7.78	3	3.2
33	18.3	1.8	2.1	7.78	3	3.2
34	18.3	1.8	2.1	7.78	3	3.2
35	18.3	1.8	2.1	7.78	3	3.2
36	18.3	1.8	2.1	7.78	3	3.2
37	18.3	1.8	2.1	7.78	3	3.2
38	18.3	1.8	2.1	7.78	3	3.2
39	18.3	1.8	2.1	7.78	3	3.2
40	18.3	1.8	2.1	7.78	3	3.2

41	18.3	1.8	2.1	7.78	3	3.2
42	18.3	1.8	2.1	7.78	3	3.2
43	18.3	1.8	2.1	7.78	3	3.2
44	18.3	1.8	2.1	7.78	3	3.2
45	18.3	1.8	2.1	7.78	3	3.2
46	18.3	1.8	2.1	7.78	3	3.2
47	18.3	1.8	2.1	7.78	3	3.2
48	18.3	1.8	2.1	7.78	3	3.2
49	18.3	1.8	2.1	7.78	3	3.2
50	18.3	1.8	2.1	7.78	3	3.2
51	18.3	1.8	2.1	7.78	3	3.2
52	18.3	1.8	2.1	7.78	3	3.2
53	18.3	1.8	2.1	7.78	3	3.2
54	18.3	1.8	2.1	7.78	3	3.2
55	18.3	1.8	2.1	7.78	3	3.2
56	18.3	1.8	2.1	7.78	3	3.2
57	18.3	1.8	2.1	7.78	3	3.2
58	18.3	1.8	2.1	7.78	3	3.2
59	18.3	1.8	2.1	7.78	3	3.2
60	18.3	1.8	2.1	7.78	3	3.2

START TIME	NO OF GATES/OP	MAX FLOW	FLOW ESC
0	2	2000	1000

VAALDAM DEMONSTRATION RUN. PROGRAM CONTROLLED GATES.
1975 FLOOD SIMULATION.

TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
8.00	907.00	21.209	0.00	0.215E+10	0	0	0
9.00	919.88	21.2[illegible]	139.29	0.216E+10	139.2866	2	0
10.00	932.75	21.222	279.86	0.216E+10	279.8585	4	0
11.00	945.63	21.230	421.51	0.216E+10	421.5108	6	0
12.00	958.50	21.238	564.32	0.216E+10	564.315	8	0
13.00	971.38	21.243	706.97	0.216E+10	706.9748	10	0
14.00	984.25	21.247	850.27	0.217E+10	850.2691	12	0
15.00	997.13	21.248	992.60	0.217E+10	992.5985	14	0
16.00	1010.00	21.247	1133.28	0.217E+10	1133.278	16	0
17.00	915.63	21.245	1274.14	0.217E+10	1274.141	18	0
18.00	821.25	21.241	1412.54	0.216E+10	1412.544	20	0
19.00	726.88	21.232	1546.71	0.216E+10	1546.705	22	0
20.00	632.50	21.222	1678.76	0.216E+10	1678.76	24	0
21.00	538.13	21.209	1806.05	0.215E+10	1806.048	26	0
22.00	443.75	21.193	1931.43	0.215E+10	1931.425	28	0
23.00	349.38	21.175	2048.13	0.214E+10	2048.131	30	0
24.00	255.00	21.155	2162.08	0.214E+10	2162.081	32	0
25.00	303.00	21.132	2268.96	0.213E+10	2268.96	34	0
26.00	351.00	21.106	2370.07	0.212E+10	2370.073	36	0
27.00	399.00	21.083	2340.42	0.212E+10	2340.42	36	0
28.00	447.00	21.059	2375.08	0.211E+10	2375.083	37	0
29.00	495.00	21.036	2344.86	0.210E+10	2344.863	37	0
30.00	543.00	21.013	2377.33	0.210E+10	2377.334	38	0
31.00	591.00	20.987	2343.91	0.209E+10	2343.912	38	0
32.00	639.00	20.962	2371.46	0.208E+10	2371.455	39	0
33.00	657.50	20.942	2344.97	0.208E+10	2344.971	39	0
34.00	676.00	20.918	2373.13	0.207E+10	2373.133	40	0
35.00	694.50	20.895	2341.31	0.206E+10	2341.314	40	0
36.00	713.00	20.875	2372.36	0.206E+10	2372.355	41	0
37.00	731.50	20.855	2344.97	0.205E+10	2344.968	41	0
38.00	750.00	20.832	2369.16	0.205E+10	2369.156	42	0
39.00	768.50	20.812	2341.34	0.204E+10	2341.342	42	0
40.00	787.00	20.792	2368.72	0.204E+10	2368.721	43	0
41.00	853.88	20.768	2335.35	0.203E+10	2335.351	43	0
42.00	920.75	20.749	2360.89	0.202E+10	2360.889	44	0
43.00	987.63	20.729	2332.23	0.202E+10	2332.231	44	0
44.00	1054.50	20.712	2360.69	0.201E+10	2360.693	45	0
45.00	1121.38	20.695	2336.24	0.201E+10	2336.235	45	0
46.00	1188.25	20.682	2367.96	0.201E+10	2367.955	46	0
47.00	1255.13	20.665	2343.11	0.200E+10	2343.11	46	0
48.00	1322.00	20.652	2373.55	0.200E+10	2373.545	47	0
49.00	1330.75	20.635	2348.32	0.199E+10	2348.322	47	0
50.00	1339.50	20.621	2327.95	0.199E+10	2327.951	47	0
51.00	1348.25	20.608	2356.74	0.199E+10	2356.737	48	0
52.00	1357.00	20.594	2336.05	0.198E+10	2336.053	48	0
53.00	1365.75	20.581	2363.67	0.198E+10	2363.668	49	0
54.00	1374.50	20.571	2348.26	0.198E+10	2348.264	49	0

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VAALDAM DEMONSTRATION RUN. PROGRAM CONTROLLED GATES.
1975 FLOOD SIMULATION.

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TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
55.00	1383.25	20.557	2327.32	0.197E+10	2327.323	49	0
56.00	1392.00	20.544	2353.51	0.197E+10	2353.511	50	0
57.00	1381.88	20.534	2337.92	0.197E+10	2337.922	50	0
58.00	1371.75	20.520	2363.06	0.196E+10	2363.062	51	0
59.00	1361.63	20.507	2341.51	0.196E+10	2341.507	51	0
60.00	1351.50	20.497	2371.34	0.196E+10	2371.34	52	0
61.00	1341.38	20.483	2349.48	0.195E+10	2349.482	52	0
62.00	1331.25	20.470	2372.45	0.195E+10	2372.452	53	0
63.00	1321.13	20.453	2345.14	0.194E+10	2345.135	53	0
64.00	1311.00	20.440	2366.91	0.194E+10	2366.908	54	0
65.00	1382.25	20.426	2344.51	0.194E+10	2344.506	54	0
66.00	1453.50	20.413	2365.18	0.193E+10	2365.177	55	0
67.00	1524.75	20.404	2350.15	0.193E+10	2350.149	55	0
68.00	1596.00	20.390	2369.85	0.193E+10	2369.846	56	0
69.00	1667.25	20.381	2354.63	0.193E+10	2354.627	56	0
70.00	1738.50	20.372	2339.44	0.192E+10	2339.443	56	0
71.00	1809.75	20.364	2367.45	0.192E+10	2367.45	57	0
72.00	1881.00	20.360	2359.90	0.192E+10	2359.898	57	0
73.00	1984.88	20.355	2352.35	0.192E+10	2352.35	57	0
74.00	2088.75	20.351	2344.81	0.192E+10	2344.81	57	0
75.00	2192.63	20.347	2337.28	0.192E+10	2337.279	57	0
76.00	2296.50	20.345	2335.18	0.192E+10	2335.175	57	0
77.00	2400.38	20.347	2338.49	0.192E+10	2338.494	57	0
78.00	2504.25	20.349	2340.59	0.192E+10	2340.593	57	0
79.00	2608.13	20.350	2342.69	0.192E+10	2342.691	57	0
80.00	2712.00	20.354	2350.22	0.192E+10	2350.222	57	0
81.00	2841.38	20.359	2357.76	0.192E+10	2357.761	57	0
82.00	2970.75	20.367	2371.51	0.192E+10	2371.507	57	0
83.00	3100.13	20.376	2345.06	0.192E+10	2345.058	56	0
84.00	3229.50	20.389	2368.00	0.193E+10	2368.004	56	0
85.00	3358.88	20.403	2348.33	0.193E+10	2348.33	55	0
86.00	3488.25	20.416	2371.02	0.193E+10	2371.015	55	0
87.00	3617.63	20.433	2355.49	0.194E+10	2355.493	54	0
88.00	3747.00	20.450	2339.06	0.194E+10	2339.055	53	0
89.00	3694.00	20.469	2371.53	0.195E+10	2371.534	53	0
90.00	3641.00	20.486	2353.68	0.195E+10	2353.683	52	0
91.00	3588.00	20.503	2334.90	0.196E+10	2334.899	51	0
92.00	3535.00	20.519	2361.48	0.196E+10	2361.479	51	0
93.00	3482.00	20.536	2341.33	0.197E+10	2341.333	50	0
94.00	3429.00	20.553	2367.59	0.197E+10	2367.588	50	0
95.00	3376.00	20.566	2341.15	0.198E+10	2341.153	49	0
96.00	3323.00	20.580	2362.13	0.198E+10	2362.132	49	0
97.00	3460.25	20.597	2339.38	0.198E+10	2339.375	48	0
98.00	3597.50	20.613	2364.92	0.199E+10	2364.917	48	0
99.00	3734.75	20.633	2345.52	0.199E+10	2345.52	47	0
100.00	3872.00	20.650	2370.73	0.200E+10	2370.726	47	0

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VAALDAM DEMONSTRATION RUN. PROGRAM CONTROLLED GATES.
1975 FLOOD SIMULATION.

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TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
101.00	4009.25	20.670	2349.75	0.200E+10	2349.752	46	0
102.00	4146.50	20.693	2332.88	0.201E+10	2332.883	45	0
103.00	4283.75	20.719	2370.24	0.202E+10	2370.239	45	0
104.00	4421.00	20.744	2354.29	0.202E+10	2354.286	44	0
105.00	4273.00	20.769	2336.85	0.203E+10	2336.851	43	0
106.00	4125.00	20.795	2373.11	0.204E+10	2373.109	43	0
107.00	3977.00	20.818	2350.68	0.204E+10	2350.679	42	0
108.00	3829.00	20.838	2321.89	0.205E+10	2321.894	41	0
109.00	3681.00	20.858	2349.19	0.205E+10	2349.187	41	0
110.00	3533.00	20.875	2372.21	0.206E+10	2372.208	41	0
111.00	3385.00	20.888	2332.60	0.206E+10	2332.601	40	0
112.00	3237.00	20.898	2346.02	0.206E+10	2346.018	40	0
113.00	3243.38	20.912	2364.35	0.207E+10	2364.35	40	0
114.00	3249.75	20.925	2323.16	0.207E+10	2323.163	39	0
115.00	3256.13	20.935	2336.34	0.207E+10	2336.339	39	0
116.00	3262.50	20.949	2354.34	0.208E+10	2354.339	39	0
117.00	3268.88	20.962	2372.39	0.208E+10	2372.386	39	0
118.00	3275.25	20.972	2324.48	0.208E+10	2324.483	38	0
119.00	3281.63	20.986	2342.14	0.209E+10	2342.143	38	0
120.00	3288.00	20.999	2359.85	0.209E+10	2359.851	38	0
121.00	3268.75	21.008	2371.60	0.209E+10	2371.604	38	0
122.00	3249.50	21.018	2321.89	0.210E+10	2321.886	37	0
123.00	3230.25	21.030	2337.56	0.210E+10	2337.562	37	0
124.00	3211.00	21.039	2349.07	0.210E+10	2349.072	37	0
125.00	3191.75	21.048	2360.60	0.211E+10	2360.598	37	0
126.00	3172.50	21.058	2373.38	0.211E+10	2373.384	37	0
127.00	3153.25	21.067	2320.49	0.211E+10	2320.491	36	0
128.00	3134.00	21.076	2331.76	0.211E+10	2331.763	36	0
129.00	3089.00	21.086	2344.27	0.212E+10	2344.266	36	0
130.00	3044.00	21.095	2355.58	0.212E+10	2355.576	36	0
131.00	2999.00	21.104	2366.90	0.212E+10	2366.903	36	0
132.00	2954.00	21.110	2374.11	0.212E+10	2374.107	36	0
133.00	2909.00	21.118	2251.79	0.213E+10	2251.788	34	0
134.00	2864.00	21.126	2261.38	0.213E+10	2261.376	34	0
135.00	2819.00	21.130	2199.98	0.213E+10	2199.981	33	0
136.00	2774.00	21.134	2205.10	0.213E+10	2205.103	33	0
137.00	2755.38	21.143	2215.56	0.213E+10	2215.562	33	0
138.00	2736.75	21.148	2220.69	0.214E+10	2220.693	33	0
139.00	2718.13	21.157	2231.18	0.214E+10	2231.177	33	0
140.00	2699.50	21.161	2236.32	0.214E+10	2236.321	33	0
141.00	2680.88	21.165	2241.47	0.214E+10	2241.471	33	0
142.00	2662.25	21.173	2250.86	0.214E+10	2250.858	33	0
143.00	2643.63	21.178	2256.02	0.215E+10	2256.017	33	0
144.00	2625.00	21.182	2261.18	0.215E+10	2261.182	33	0
145.00	2777.38	21.188	2199.16	0.215E+10	2199.155	32	0
146.00	2929.75	21.197	2209.39	0.215E+10	2209.392	32	0

VAALDAM DEMONSTRATION RUN. PROGRAM CONTROLLED GATES.
1975 FLOOD SIMULATION.

TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
147.00	3082.13	21.206	2219.64	0.215E+10	2219.643	32	0
148.00	3234.50	21.215	2229.91	0.216E+10	2229.909	32	0
149.00	3386.88	21.228	2245.44	0.216E+10	2245.44	32	0
150.00	3539.25	21.242	2261.01	0.216E+10	2261.008	32	0
151.00	3691.63	21.258	2209.01	0.217E+10	2209.014	31	0
152.00	3844.00	21.275	2227.73	0.217E+10	2227.728	31	0
153.00	3665.38	21.292	2246.50	0.218E+10	2246.496	31	0
154.00	3486.75	21.308	2192.62	0.218E+10	2192.622	30	.3809471
155.00	3308.13	21.322	2208.63	0.219E+10	2208.631	30	1.596408
156.00	3129.50	21.332	2220.70	0.219E+10	2220.698	30	2.791135
157.00	2950.88	21.342	2232.98	0.219E+10	2232.984	30	4.189256
158.00	2772.25	21.351	2244.25	0.220E+10	2244.247	30	5.604762
159.00	2593.63	21.355	2249.82	0.220E+10	2249.821	30	6.347204
160.00	2415.00	21.360	2255.43	0.220E+10	2255.432	30	7.120154
161.00	2512.00	21.364	2261.08	0.220E+10	2261.076	30	7.922158
162.00	2609.00	21.365	2262.66	0.220E+10	2262.656	30	8.150871
163.00	2706.00	21.370	2193.33	0.220E+10	2193.328	29	9.288181
164.00	2803.00	21.379	2204.74	0.221E+10	2204.743	29	11.13883
165.00	2900.00	21.387	2216.28	0.221E+10	2216.278	29	13.09786
166.00	2997.00	21.396	2227.93	0.221E+10	2227.93	29	15.13993
167.00	3094.00	21.405	2239.69	0.221E+10	2239.694	29	17.32012
168.00	3191.00	21.415	2252.85	0.222E+10	2252.847	29	19.8216
169.00	3121.00	21.425	2189.48	0.222E+10	2189.482	28	23.15674
170.00	3051.00	21.439	2207.40	0.222E+10	2207.403	28	27.0069
171.00	2981.00	21.448	2219.40	0.223E+10	2219.398	28	29.66414
172.00	2911.00	21.457	2231.49	0.223E+10	2231.485	28	32.40261
173.00	2841.00	21.465	2242.35	0.223E+10	2242.354	28	34.91424
174.00	2771.00	21.469	2248.35	0.223E+10	2248.353	28	36.3199
175.00	2701.00	21.473	2254.38	0.223E+10	2254.377	28	37.74455
176.00	2631.00	21.478	2260.42	0.223E+10	2260.422	28	39.18735
177.00	2657.38	21.482	2188.26	0.224E+10	2188.263	27	41.91833
178.00	2683.75	21.487	2194.23	0.224E+10	2194.232	27	43.44298
179.00	2710.13	21.491	2200.22	0.224E+10	2200.221	27	44.98567
180.00	2736.50	21.499	2211.18	0.224E+10	2211.179	27	47.83995
181.00	2762.88	21.503	2217.23	0.224E+10	2217.225	27	49.43176
182.00	2789.25	21.512	2229.62	0.224E+10	2229.623	27	52.7331
183.00	2815.63	21.517	2235.73	0.225E+10	2235.729	27	54.37684
184.00	2842.00	21.526	2248.25	0.225E+10	2248.25	27	57.78253
185.00	2831.13	21.535	2260.85	0.225E+10	2260.85	27	61.25573
186.00	2820.25	21.539	2267.06	0.225E+10	2267.055	27	62.98282
187.00	2809.38	21.543	2193.45	0.225E+10	2193.445	26	66.68803
188.00	2798.50	21.552	2205.97	0.226E+10	2205.974	26	70.40262
189.00	2787.63	21.557	2212.14	0.226E+10	2212.143	26	72.24748
190.00	2776.75	21.566	2224.79	0.226E+10	2224.788	26	76.06078
191.00	2765.88	21.570	2231.01	0.226E+10	2231.014	26	77.9534
192.00	2755.00	21.579	2243.77	0.226E+10	2243.774	26	81.86287

VAALDAM DEMONSTRATION RUN. PROGRAM CONTROLLED GATES.
1975 FLOOD SIMULATION.

TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
193.00	2774.00	21.583	2250.06	0.227E+10	2250.055	26	83.80203
194.00	2793.00	21.592	2262.93	0.227E+10	2262.927	26	87.80544
195.00	2812.00	21.597	2188.08	0.227E+10	2188.077	25	92.43097
196.00	2831.00	21.606	2200.84	0.227E+10	2200.837	25	96.64654
197.00	2850.00	21.611	2208.98	0.227E+10	2208.977	25	99.35548
198.00	2869.00	21.619	2220.47	0.228E+10	2220.471	25	103.206
199.00	2888.00	21.628	2233.41	0.228E+10	2233.413	25	107.5761
200.00	2907.00	21.636	2245.03	0.228E+10	2245.026	25	111.5277
201.00	2854.50	21.645	2258.10	0.228E+10	2258.103	25	116.0108
202.00	2802.00	21.651	2266.44	0.229E+10	2266.444	25	118.8882
203.00	2749.50	21.659	2195.52	0.229E+10	2195.522	24	126.4867
204.00	2697.00	21.667	2207.16	0.229E+10	2207.158	24	130.7344
205.00	2644.50	21.671	2213.57	0.229E+10	2213.372	24	133.0869
206.00	2592.00	21.676	2220.01	0.229E+10	2220.005	24	135.4544
207.00	2539.50	21.680	2226.45	0.229E+10	2226.454	24	137.8357
208.00	2487.00	21.681	2228.26	0.230E+10	2228.255	24	138.5023
209.00	2434.88	21.686	2234.73	0.230E+10	2234.727	24	140.9013
210.00	2382.75	21.687	2236.53	0.230E+10	2236.534	24	141.5728
211.00	2330.63	21.688	2238.34	0.230E+10	2238.343	24	142.2453
212.00	2278.50	21.689	2240.15	0.230E+10	2240.153	24	142.9189
213.00	2226.38	21.687	2237.28	0.230E+10	2237.283	24	141.8513
214.00	2174.25	21.689	2240.15	0.230E+10	2240.147	24	142.9168
215.00	2122.13	21.687	2237.28	0.230E+10	2237.278	24	141.8492
216.00	2070.00	21.686	2235.46	0.230E+10	2235.464	24	141.1751
217.00	1995.38	21.685	2233.65	0.230E+10	2233.652	24	140.5022
218.00	1920.75	21.681	2227.18	0.230E+10	2227.178	24	138.1034
219.00	1846.13	21.676	2220.72	0.229E+10	2220.721	24	135.7185
220.00	1771.50	21.672	2214.28	0.229E+10	2214.281	24	133.3474
221.00	1696.88	21.664	2202.60	0.229E+10	2202.602	24	129.0682
222.00	1622.25	21.659	2196.21	0.229E+10	2196.212	24	126.7378
223.00	1547.63	21.651	2184.62	0.229E+10	2184.619	24	122.5313
224.00	1473.00	21.642	2254.01	0.228E+10	2254.005	25	114.6024
225.00	1522.38	21.634	2240.95	0.228E+10	2240.945	25	110.136
226.00	1571.75	21.625	2227.96	0.228E+10	2227.957	25	105.7291
227.00	1621.13	21.619	2219.74	0.228E+10	2219.743	25	102.961
228.00	1670.50	21.611	2208.25	0.227E+10	2208.247	25	99.11182
229.00	1719.88	21.606	2201.96	0.227E+10	2201.958	25	97.01853
230.00	1769.25	21.602	2195.68	0.227E+10	2195.683	25	94.93929
231.00	1818.63	21.598	2189.43	0.227E+10	2189.427	25	92.87513
232.00	1868.00	21.593	2264.29	0.227E+10	2264.288	26	88.23115
233.00	1913.38	21.589	2176.97	0.227E+10	2176.968	25	88.79246
234.00	1958.75	21.585	2251.65	0.227E+10	2251.646	26	84.29493
235.00	2004.13	21.580	2164.58	0.227E+10	2164.582	25	84.77144
236.00	2049.50	21.579	2162.86	0.226E+10	2162.857	25	84.21443
237.00	2094.88	21.578	2080.43	0.226E+10	2080.425	24	86.04889
238.00	2140.25	21.580	2083.10	0.226E+10	2083.096	24	86.95136

VAALDAM DEMONSTRATION RUN. PROGRAM CONTROLLED GATES.
1975 FLOOD SIMULATION.

TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
239.00	2185.63	21.581	2004.00	0.227E+10	2003.998	23	89.95444
240.00	2231.00	21.585	2009.96	0.227E+10	2009.959	23	92.07241
241.00	2189.88	21.586	1930.70	0.227E+10	1930.697	22	95.1705
242.00	2148.75	21.588	1932.33	0.227E+10	1932.334	22	95.78146
243.00	2107.63	21.592	1857.15	0.227E+10	1857.147	21	100.5613
244.00	2066.50	21.596	1862.94	0.227E+10	1862.939	21	102.8377
245.00	2025.38	21.598	1783.35	0.227E+10	1783.35	20	106.1288
246.00	1984.25	21.599	1784.94	0.227E+10	1784.94	20	106.7843
247.00	1943.13	21.600	1705.26	0.227E+10	1705.263	19	110.1273
248.00	1902.00	21.605	1710.87	0.227E+10	1710.872	19	112.5529
249.00	1664.25	21.606	1631.03	0.227E+10	1631.034	18	115.9943
250.00	1426.50	21.607	1632.57	0.227E+10	1632.573	18	116.6919
251.00	1188.75	21.601	1544.32	0.227E+10	1544.315	17	116.2478
252.00	951.00	21.597	1538.93	0.227E+10	1538.933	17	113.7157
253.00	713.25	21.588	1447.05	0.227E+10	1447.053	16	111.1355
254.00	475.50	21.578	1435.32	0.226E+10	1435.323	16	105.4452
255.00	237.75	21.565	1419.51	0.226E+10	1419.508	16	97.85019
256.00	0.00	21.548	1400.28	0.226E+10	1400.276	16	88.74041
257.00	0.00	21.531	1381.37	0.225E+10	1381.372	16	79.93236
258.00	0.00	21.515	1362.81	0.225E+10	1362.807	16	71.43666
259.00	0.00	21.498	1265.95	0.224E+10	1265.947	15	64.7032
260.00	0.00	21.481	1248.54	0.224E+10	1248.544	15	56.69158
261.00	0.00	21.464	1153.78	0.223E+10	1153.784	14	50.13078
262.00	0.00	21.451	1140.66	0.223E+10	1140.663	14	44.07704
263.00	0.00	21.437	1050.83	0.222E+10	1050.831	13	39.1211
264.00	0.00	21.424	1038.67	0.222E+10	1038.667	13	33.49122
265.00	0.00	21.410	950.60	0.221E+10	950.5964	12	28.75995
266.00	0.00	21.400	866.47	0.221E+10	866.4691	11	25.49163
267.00	0.00	21.391	783.12	0.221E+10	783.1159	10	22.25649
268.00	0.00	21.382	625.84	0.221E+10	625.8418	8	19.7985
269.00	0.00	21.373	469.82	0.220E+10	469.8212	6	17.26896
270.00	0.00	21.368	317.36	0.220E+10	317.3635	4	16.30871
271.00	0.00	21.364	165.49	0.220E+10	165.4901	2	15.28602
272.00	0.00	21.363	15.36	0.220E+10	15.35897	0	15.35897
273.00	0.00	21.365	16.08	0.220E+10	16.07747	0	16.07747
274.00	0.00	21.363	15.36	0.220E+10	15.35756	0	15.35756
275.00	0.00	21.365	16.08	0.220E+10	16.07605	0	16.07605
276.00	0.00	21.363	15.36	0.220E+10	15.35616	0	15.35616
277.00	0.00	21.365	16.07	0.220E+10	16.07462	0	16.07462
278.00	0.00	21.363	15.35	0.220E+10	15.35475	0	15.35475
279.00	0.00	21.365	16.07	0.220E+10	16.0732	0	16.0732
280.00	0.00	21.363	15.35	0.220E+10	15.35335	0	15.35335
281.00	0.00	21.365	16.07	0.220E+10	16.07177	0	16.07177
282.00	0.00	21.363	15.35	0.220E+10	15.35194	0	15.35194
283.00	0.00	21.365	16.07	0.220E+10	16.07034	0	16.07034
284.00	0.00	21.363	15.35	0.220E+10	15.35054	0	15.35054

VAALDAM DEMONSTRATION RUN. PROGRAM CONTROLLED GATES.
1975 FLOOD SIMULATION.

TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
285.00	0.00	21.365	16.07	0.220E+10	16.06892	0	16.06892
286.00	0.00	21.363	15.35	0.220E+10	15.34914	0	15.34914
287.00	0.00	21.365	16.07	0.220E+10	16.0675	0	16.0675
288.00	0.00	21.363	15.35	0.220E+10	15.34774	0	15.34774
289.00	0.00	21.365	16.07	0.220E+10	16.06607	0	16.06607
290.00	0.00	21.363	15.35	0.220E+10	15.34634	0	15.34634
291.00	0.00	21.365	16.06	0.220E+10	16.06464	0	16.06464
292.00	0.00	21.363	15.34	0.220E+10	15.34493	0	15.34493
293.00	0.00	21.365	16.06	0.220E+10	16.06322	0	16.06322
294.00	0.00	21.363	15.34	0.220E+10	15.34353	0	15.34353
295.00	0.00	21.365	16.06	0.220E+10	16.0618	0	16.0618
296.00	0.00	21.363	15.34	0.220E+10	15.34212	0	15.34212
297.00	0.00	21.365	16.06	0.220E+10	16.06038	0	16.06038
298.00	0.00	21.363	15.34	0.220E+10	15.34072	0	15.34072
299.00	0.00	21.365	16.06	0.220E+10	16.05895	0	16.05895
300.00	0.00	21.363	15.34	0.220E+10	15.33931	0	15.33931
301.00	0.00	21.365	16.06	0.220E+10	16.05752	0	16.05752
302.00	0.00	21.363	15.34	0.220E+10	15.33791	0	15.33791
303.00	0.00	21.365	16.06	0.220E+10	16.0561	0	16.0561
304.00	0.00	21.363	15.34	0.220E+10	15.33651	0	15.33651
305.00	0.00	21.364	16.05	0.220E+10	16.05468	0	16.05468
306.00	0.00	21.363	15.34	0.220E+10	15.3351	0	15.3351
307.00	0.00	21.364	16.05	0.220E+10	16.05326	0	16.05326
308.00	0.00	21.363	15.33	0.220E+10	15.33371	0	15.33371

PEAK INFLOW RATE= 4421.00m3/s
PEAK OUTFLOW RATE= 2377.33m3/s
LAG TIME= -74.00hours
PERCENTAGE ATTENUATION= 46.23%

Vaaldam Case Study, Analysis
using RESIMO with user operated
manual gate option

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VAALDAM DEMONSTRATION RUN. USER CONTROLLED GATES.
1975 FLOOD SIMULATION.

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ELEVATION	STORAGE
17	1.16795E+09
18	1.36292E+09
19	1.58055E+09
20	1.82235E+09
21	2.0922E+09
22	2.39028E+09
23	2.71225E+09
23.9	3.02165E+09

MANUALLY CONTROLLED OVERFLOW WEIR

NO	INVERT	FREE COEF	SPILL COEF		WIDTH	HEIGHT	TRAVEL
1	18.3	1.78	2.05		7.78	3	3.2
2	18.3	1.78	2.05		7.78	3	3.2
3	18.3	1.78	2.05		7.78	3	3.2
4	18.3	1.78	2.05		7.78	3	3.2
5	18.3	1.78	2.05		7.78	3	3.2
6	18.3	1.78	2.05		7.78	3	3.2
7	18.3	1.78	2.05		7.78	3	3.2
8	18.3	1.78	2.05		7.78	3	3.2
9	18.3	1.78	2.05		7.78	3	3.2
10	18.3	1.78	2.05		7.78	3	3.2
11	18.3	1.78	2.05		7.78	3	3.2
12	18.3	1.78	2.05		7.78	3	3.2
13	18.3	1.78	2.05		7.78	3	3.2
14	18.3	1.78	2.05		7.78	3	3.2
15	18.3	1.78	2.05		7.78	3	3.2
16	18.3	1.78	2.05		7.78	3	3.2
17	18.3	1.78	2.05		7.78	3	3.2
18	18.3	1.78	2.05		7.78	3	3.2
19	18.3	1.78	2.05		7.78	3	3.2
20	18.3	1.78	2.05		7.78	3	3.2
21	18.3	1.78	2.05		7.78	3	3.2
22	18.3	1.78	2.05		7.78	3	3.2
23	18.3	1.78	2.05		7.78	3	3.2
24	18.3	1.78	2.05		7.78	3	3.2
25	18.3	1.78	2.05		7.78	3	3.2
26	18.3	1.78	2.05		7.78	3	3.2
27	18.3	1.78	2.05		7.78	3	3.2
28	18.3	1.78	2.05		7.78	3	3.2
29	18.3	1.78	2.05		7.78	3	3.2
30	18.3	1.78	2.05		7.78	3	3.2
31	18.3	1.78	2.05		7.78	3	3.2
32	18.3	1.78	2.05		7.78	3	3.2
33	18.3	1.78	2.05		7.78	3	3.2
34	18.3	1.78	2.05		7.78	3	3.2
35	18.3	1.78	2.05		7.78	3	3.2
36	18.3	1.78	2.05		7.78	3	3.2
37	18.3	1.78	2.05		7.78	3	3.2
38	18.3	1.78	2.05		7.78	3	3.2
39	18.3	1.78	2.05		7.78	3	3.2
40	18.3	1.78	2.05	F-52	7.78	3	3.2

41	18.3	1.78	2.05	7.78	3	3.2
42	18.3	1.78	2.05	7.78	3	3.2
43	18.3	1.78	2.05	7.78	3	3.2
44	18.3	1.78	2.05	7.78	3	3.2
45	18.3	1.78	2.05	7.78	3	3.2
46	18.3	1.78	2.05	7.78	3	3.2
47	18.3	1.78	2.05	7.78	3	3.2
48	18.3	1.78	2.05	7.78	3	3.2
49	18.3	1.78	2.05	7.78	3	3.2
50	18.3	1.78	2.05	7.78	3	3.2
51	18.3	1.78	2.05	7.78	3	3.2
52	18.3	1.78	2.05	7.78	3	3.2
53	18.3	1.78	2.05	7.78	3	3.2
54	18.3	1.78	2.05	7.78	3	3.2
55	18.3	1.78	2.05	7.78	3	3.2
56	18.3	1.78	2.05	7.78	3	3.2
57	18.3	1.78	2.05	7.78	3	3.2
58	18.3	1.78	2.05	7.78	3	3.2
59	18.3	1.78	2.05	7.78	3	3.2
60	18.3	1.78	2.05	7.78	3	3.2

41	18.3	1.78	2.05	7.78	3	3.2
42	18.3	1.78	2.05	7.78	3	3.2
43	18.3	1.78	2.05	7.78	3	3.2
44	18.3	1.78	2.05	7.78	3	3.2
45	18.3	1.78	2.05	7.78	3	3.2
46	18.3	1.78	2.05	7.78	3	3.2
47	18.3	1.78	2.05	7.78	3	3.2
48	18.3	1.78	2.05	7.78	3	3.2
49	18.3	1.78	2.05	7.78	3	3.2
50	18.3	1.78	2.05	7.78	3	3.2
51	18.3	1.78	2.05	7.78	3	3.2
52	18.3	1.78	2.05	7.78	3	3.2
53	18.3	1.78	2.05	7.78	3	3.2
54	18.3	1.78	2.05	7.78	3	3.2
55	18.3	1.78	2.05	7.78	3	3.2
56	18.3	1.78	2.05	7.78	3	3.2
57	18.3	1.78	2.05	7.78	3	3.2
58	18.3	1.78	2.05	7.78	3	3.2
59	18.3	1.78	2.05	7.78	3	3.2
60	18.3	1.78	2.05	7.78	3	3.2

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VAALDAM DEMONSTRATION RUN. USER CONTROLLED GATES.
1975 FLOOD SIMULATION.

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TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
8.00	907.00	21.200	273.56	0.215E+10	273.5628	4	0
9.00	919.88	21.209	274.83	0.215E+10	274.8309	4	0
10.00	932.75	21.217	275.96	0.216E+10	275.9641	4	0
11.00	945.63	21.226	277.24	0.216E+10	277.2357	4	0
12.00	958.50	21.234	278.37	0.216E+10	278.3723	4	0
13.00	971.38	21.243	349.56	0.216E+10	349.5593	5	0
14.00	984.25	21.252	421.39	0.217E+10	421.3869	6	0
15.00	997.13	21.256	492.72	0.217E+10	492.715	7	0
16.00	1010.00	21.264	565.39	0.217E+10	565.3885	8	0
17.00	915.63	21.269	708.31	0.217E+10	708.3056	10	0
18.00	821.25	21.270	708.74	0.217E+10	708.744	10	0
19.00	726.88	21.271	709.18	0.217E+10	709.1823	10	0
20.00	632.50	21.272	709.62	0.217E+10	709.6208	10	0
21.00	538.13	21.270	708.93	0.217E+10	708.9256	10	0
22.00	443.75	21.266	848.82	0.217E+10	848.8235	12	0
23.00	349.38	21.257	985.81	0.217E+10	985.8104	14	0
24.00	255.00	21.248	981.33	0.217E+10	981.3345	14	0
25.00	303.00	21.240	977.35	0.216E+10	977.345	14	0
26.00	351.00	21.231	972.88	0.216E+10	972.8819	14	0
27.00	399.00	21.223	968.90	0.216E+10	968.904	14	0
28.00	447.00	21.219	966.72	0.216E+10	966.7206	14	0
29.00	495.00	21.214	964.54	0.216E+10	964.5381	14	0
30.00	543.00	21.206	960.57	0.215E+10	960.5704	14	0
31.00	591.00	21.202	958.39	0.215E+10	958.3932	14	0
32.00	639.00	21.197	956.22	0.215E+10	956.2172	14	0
33.00	657.50	21.193	954.04	0.215E+10	954.0428	14	0
34.00	676.00	21.192	953.44	0.215E+10	953.435	14	0
35.00	694.50	21.187	1087.16	0.215E+10	1087.157	16	0
36.00	713.00	21.183	1220.26	0.215E+10	1220.261	18	0
37.00	731.50	21.175	1350.21	0.214E+10	1350.208	20	0
38.00	750.00	21.167	1479.04	0.214E+10	1479.037	22	0
39.00	768.50	21.158	1472.11	0.214E+10	1472.112	22	0
40.00	787.00	21.150	1465.94	0.214E+10	1465.939	22	0
41.00	853.88	21.141	1459.03	0.213E+10	1459.034	22	0
42.00	920.75	21.133	1452.88	0.213E+10	1452.879	22	0
43.00	987.63	21.129	1449.50	0.213E+10	1449.501	22	0
44.00	1054.50	21.124	1446.13	0.213E+10	1446.125	22	0
45.00	1121.38	21.120	1442.75	0.213E+10	1442.751	22	0
46.00	1188.25	21.119	1441.81	0.213E+10	1441.808	22	0
47.00	1255.13	21.114	1438.44	0.213E+10	1438.438	22	0
48.00	1322.00	21.110	1435.07	0.212E+10	1435.071	22	0
49.00	1330.75	21.109	1434.13	0.212E+10	1434.13	22	0
50.00	1339.50	21.108	1433.19	0.212E+10	1433.189	22	0
51.00	1348.25	21.106	1432.25	0.212E+10	1432.248	22	0
52.00	1357.00	21.105	1431.31	0.212E+10	1431.308	22	0
53.00	1365.75	21.104	1430.37	0.212E+10	1430.368	22	0
54.00	1374.50	21.106	1431.85	0.212E+10	1431.851	22	0

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VAALDAM DEMONSTRATION RUN. USER CONTROLLED GATES.
1975 FLOOD SIMULATION.

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TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
55.00	1383.25	21.104	1430.37	0.212E+10	1430.365	22	0
56.00	1392.00	21.106	1431.85	0.212E+10	1431.848	22	0
57.00	1381.88	21.104	1430.36	0.212E+10	1430.362	22	0
58.00	1371.75	21.106	1431.85	0.212E+10	1431.846	22	0
59.00	1361.63	21.104	1430.36	0.212E+10	1430.359	22	0
60.00	1351.50	21.106	1431.84	0.212E+10	1431.843	22	0
61.00	1341.38	21.104	1430.36	0.212E+10	1430.357	22	0
62.00	1331.25	21.103	1429.42	0.212E+10	1429.416	22	0
63.00	1321.13	21.101	1428.48	0.212E+10	1428.477	22	0
64.00	1311.00	21.100	1427.54	0.212E+10	1427.538	22	0
65.00	1382.25	21.096	1553.65	0.212E+10	1553.649	24	0
66.00	1453.50	21.091	1679.15	0.212E+10	1679.153	26	0
67.00	1524.75	21.087	1804.05	0.212E+10	1804.05	28	0
68.00	1596.00	21.083	1799.78	0.212E+10	1799.784	28	0
69.00	1667.25	21.081	1798.59	0.212E+10	1798.593	28	0
70.00	1738.50	21.080	1797.40	0.212E+10	1797.402	28	0
71.00	1809.75	21.079	1796.21	0.212E+10	1796.211	28	0
72.00	1881.00	21.081	1798.09	0.212E+10	1798.09	28	0
73.00	1984.88	21.082	1799.28	0.212E+10	1799.277	28	0
74.00	2088.75	21.083	1800.47	0.212E+10	1800.466	28	0
75.00	2192.63	21.088	1804.73	0.212E+10	1804.728	28	0
76.00	2296.50	21.092	1808.99	0.212E+10	1808.993	28	0
77.00	2400.38	21.101	1817.70	0.212E+10	1817.703	28	0
78.00	2504.25	21.110	1826.43	0.212E+10	1826.425	28	0
79.00	2608.13	21.119	1835.16	0.213E+10	1835.161	28	0
80.00	2712.00	21.129	1844.85	0.213E+10	1844.852	28	0
81.00	2841.38	21.139	1854.56	0.213E+10	1854.359	28	0
82.00	2970.75	21.152	1867.82	0.214E+10	1867.821	28	0
83.00	3100.13	21.166	1881.12	0.214E+10	1881.117	28	0
84.00	3229.50	21.182	1897.57	0.215E+10	1897.57	28	0
85.00	3358.88	21.199	1914.07	0.215E+10	1914.07	28	0
86.00	3488.25	21.216	2068.52	0.216E+10	2068.519	30	0
87.00	3617.63	21.233	2225.39	0.216E+10	2225.387	32	0
88.00	3747.00	21.249	2244.41	0.217E+10	2244.407	32	0
89.00	3694.00	21.266	2263.48	0.217E+10	2263.481	32	0
90.00	3641.00	21.283	2282.61	0.218E+10	2282.609	32	0
91.00	3588.00	21.299	2301.79	0.218E+10	2301.79	32	0
92.00	3535.00	21.316	2321.92	0.219E+10	2321.923	32	.8972439
93.00	3482.00	21.333	2342.94	0.219E+10	2342.943	32	2.629532
94.00	3429.00	21.346	2360.40	0.220E+10	2360.404	32	4.42414
95.00	3376.00	21.360	2378.19	0.220E+10	2378.187	32	6.505342
96.00	3323.00	21.372	2394.51	0.220E+10	2394.511	32	8.604052
97.00	3460.25	21.385	2412.82	0.221E+10	2412.818	32	11.14264
98.00	3597.50	21.399	2431.37	0.221E+10	2431.369	32	13.89106
99.00	3734.75	21.416	2454.58	0.222E+10	2454.579	32	17.55047
100.00	3872.00	21.432	2478.12	0.222E+10	2478.116	32	21.48449

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VAALDAM DEMONSTRATION RUN. USER CONTROLLED GATES.
1975 FLOOD SIMULATION.

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TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
101.00	4009.25	21.452	2506.52	0.223E+10	2506.522	32	26.49807
102.00	4146.50	21.469	2530.72	0.223E+10	2530.716	32	30.97494
103.00	4283.75	21.489	2559.87	0.224E+10	2559.865	32	36.59625
104.00	4421.00	21.509	2589.39	0.224E+10	2589.39	32	42.52164
105.00	4273.00	21.528	2619.28	0.225E+10	2619.279	32	48.73624
106.00	4125.00	21.545	2802.71	0.225E+10	2802.706	34	50.30432
107.00	3977.00	21.559	2982.87	0.226E+10	2982.869	36	50.32984
108.00	3829.00	21.568	3156.78	0.226E+10	3156.779	38	48.553
109.00	3681.00	21.572	3164.24	0.226E+10	3164.244	38	49.75263
110.00	3533.00	21.576	3171.72	0.226E+10	3171.724	38	50.96253
111.00	3385.00	21.581	3179.22	0.227E+10	3179.22	38	52.18208
112.00	3237.00	21.582	3181.31	0.227E+10	3181.312	38	52.52389
113.00	3243.38	21.583	3183.41	0.227E+10	3183.406	38	52.86647
114.00	3249.75	21.584	3185.50	0.227E+10	3185.501	38	53.20978
115.00	3256.13	21.586	3187.60	0.227E+10	3187.597	38	53.55385
116.00	3262.50	21.587	3189.69	0.227E+10	3189.694	38	53.89863
117.00	3268.88	21.588	3191.79	0.227E+10	3191.792	38	54.24415
118.00	3275.25	21.589	3193.89	0.227E+10	3193.891	38	54.59042
119.00	3281.63	21.591	3195.99	0.227E+10	3195.991	38	54.93742
120.00	3288.00	21.592	3198.09	0.227E+10	3198.092	38	55.28515
121.00	3268.75	21.593	3200.19	0.227E+10	3200.194	38	55.63361
122.00	3249.50	21.594	3202.30	0.227E+10	3202.298	38	55.98278
123.00	3230.25	21.592	3198.96	0.227E+10	3198.964	38	55.42943
124.00	3211.00	21.594	3202.29	0.227E+10	3202.292	38	55.98171
125.00	3191.75	21.592	3198.96	0.227E+10	3198.957	38	55.42934
126.00	3172.50	21.594	3202.29	0.227E+10	3202.285	38	55.98061
127.00	3153.25	21.592	3198.95	0.227E+10	3198.951	38	55.42726
128.00	3134.00	21.594	3202.28	0.227E+10	3202.278	38	55.97953
129.00	3089.00	21.592	3198.94	0.227E+10	3198.944	38	55.42617
130.00	3044.00	21.591	3196.84	0.227E+10	3196.836	38	55.07708
131.00	2999.00	21.590	3194.73	0.227E+10	3194.728	38	54.72871
132.00	2954.00	21.585	3187.20	0.227E+10	3187.199	38	53.4884
133.00	2909.00	21.584	3185.10	0.227E+10	3185.096	38	53.14342
134.00	2864.00	21.580	3177.58	0.227E+10	3177.584	38	51.91531
135.00	2819.00	21.575	3170.09	0.226E+10	3170.085	38	50.69681
136.00	2774.00	21.571	3162.60	0.226E+10	3162.601	38	49.48798
137.00	2755.38	21.567	3155.13	0.226E+10	3155.13	38	48.28894
138.00	2736.75	21.559	3141.57	0.226E+10	3141.571	38	46.13212
139.00	2718.13	21.554	3134.14	0.226E+10	3134.143	38	44.96154
140.00	2699.50	21.550	3126.73	0.226E+10	3126.727	38	43.80054
141.00	2680.88	21.544	3117.14	0.225E+10	3117.142	38	42.31199
142.00	2662.25	21.536	3103.72	0.225E+10	3103.717	38	40.24956
143.00	2643.63	21.532	3096.36	0.225E+10	3096.364	38	39.13147
144.00	2625.00	21.527	3089.02	0.225E+10	3089.021	38	38.02346
145.00	2777.38	21.523	3081.69	0.225E+10	3081.694	38	36.9261
146.00	2929.75	21.522	3079.65	0.225E+10	3079.649	38	36.6213

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