

ELYM2 Rainfall Gauge - George Howard Building  
Data from NWS

Reading		Received		Value		Unit
date	time	date	time	precip		
7/31/2016	1:29:32	7/31/2016	1:29:37	0.04	in	
7/31/2016	4:29:32	7/31/2016	4:29:37	0	in	
7/31/2016	7:29:32	7/31/2016	7:29:37	0	in	
7/31/2016	10:29:32	7/31/2016	10:29:37	0	in	
7/31/2016	13:29:32	7/31/2016	13:29:37	0	in	
7/31/2016	16:29:32	7/31/2016	16:29:37	0	in	
7/31/2016	19:29:32	7/31/2016	19:29:39	0	in	
7/31/2016	22:29:32	7/31/2016	22:29:37	0	in	
7/30/2016	1:29:32	7/30/2016	1:29:37	0	in	
7/30/2016	4:29:32	7/30/2016	4:29:37	0	in	
7/30/2016	7:29:32	7/30/2016	7:29:37	0	in	
7/30/2016	10:29:32	7/30/2016	10:29:37	0	in	
7/30/2016	13:29:32	7/30/2016	13:29:37	0	in	
7/30/2016	16:29:32	7/30/2016	16:29:37	0	in	
7/30/2016	18:10:36	7/30/2016	18:11:37	0.04	in	
7/30/2016	18:17:03	7/30/2016	18:17:37	0.04	in	
7/30/2016	18:18:48	7/30/2016	18:19:37	0.04	in	
7/30/2016	18:20:37	7/30/2016	18:21:37	0.04	in	
7/30/2016	18:21:53	7/30/2016	18:23:37	0.04	in	
7/30/2016	18:23:03	7/30/2016	18:23:37	0.04	in	
7/30/2016	18:26:16	7/30/2016	18:27:37	0.04	in	
7/30/2016	18:35:44	7/30/2016	18:37:37	0.04	in	
7/30/2016	18:37:18	7/30/2016	18:37:37	0.04	in	
7/30/2016	18:38:45	7/30/2016	18:39:37	0.04	in	
7/30/2016	18:39:39	7/30/2016	18:41:37	0.04	in	
7/30/2016	18:42:41	7/30/2016	18:43:37	0.04	in	
7/30/2016	18:56:05	7/30/2016	18:57:37	0.04	in	
7/30/2016	18:58:08	7/30/2016	18:59:37	0.04	in	
7/30/2016	19:00:22	7/30/2016	19:01:37	0.04	in	
7/30/2016	19:02:02	7/30/2016	19:03:37	0.04	in	
7/30/2016	19:03:43	7/30/2016	19:03:37	0.04	in	
7/30/2016	19:03:26	7/30/2016	19:03:37	0.04	in	
7/30/2016	19:04:58	7/30/2016	19:05:37	0.04	in	
7/30/2016	19:05:49	7/30/2016	19:07:37	0.04	in	
7/30/2016	19:06:44	7/30/2016	19:07:37	0.04	in	
7/30/2016	19:07:52	7/30/2016	19:09:37	0.04	in	
7/30/2016	19:09:56	7/30/2016	19:11:37	0.04	in	
7/30/2016	19:10:38	7/30/2016	19:11:37	0.04	in	
7/30/2016	19:11:16	7/30/2016	19:11:37	0.04	in	
7/30/2016	19:11:54	7/30/2016	19:13:37	0.04	in	
7/30/2016	19:12:32	7/30/2016	19:13:37	0.04	in	
7/30/2016	19:13:09	7/30/2016	19:13:37	0.04	in	
7/30/2016	19:13:44	7/30/2016	19:15:37	0.04	in	
7/30/2016	19:14:35	7/30/2016	19:15:37	0.04	in	
7/30/2016	19:16:01	7/30/2016	19:17:37	0.04	in	
7/30/2016	19:18:41	7/30/2016	19:19:37	0.04	in	
7/30/2016	19:20:07	7/30/2016	19:21:37	0.04	in	
7/30/2016	19:21:42	7/30/2016	19:23:37	0.04	in	
7/30/2016	19:22:29	7/30/2016	19:23:37	0.04	in	
7/30/2016	19:23:31	7/30/2016	19:23:37	0.04	in	
7/30/2016	19:25:49	7/30/2016	19:27:37	0.04	in	
7/30/2016	19:29:32	7/30/2016	19:29:37	0.04	in	
7/30/2016	19:31:02	7/30/2016	19:31:37	0.04	in	
7/30/2016	19:32:13	7/30/2016	19:33:37	0.04	in	
7/30/2016	19:33:30	7/30/2016	19:33:37	0.04	in	
7/30/2016	19:35:00	7/30/2016	19:35:37	0.04	in	
7/30/2016	19:36:00	7/30/2016	19:37:37	0.04	in	
7/30/2016	19:36:41	7/30/2016	19:37:37	0.04	in	
7/30/2016	19:37:16	7/30/2016	19:37:37	0.04	in	
7/30/2016	19:38:17	7/30/2016	19:39:37	0.04	in	
7/30/2016	19:38:47	7/30/2016	19:39:37	0.04	in	
7/30/2016	19:39:19	7/30/2016	19:39:37	0.04	in	
7/30/2016	19:39:48	7/30/2016	19:41:37	0.04	in	

Storm Time		Duration	Cumulative Precip
6:10:36 PM	0	0.04	0.04
6:17:03 PM	0:06:27	0.08	0.08
6:18:48 PM	0:08:12	0.12	0.12
6:20:37 PM	0:10:01	0.16	0.16
6:21:53 PM	0:11:17	0.2	0.2
6:23:03 PM	0:12:27	0.24	0.24
6:26:16 PM	0:15:40	0.28	0.28
6:35:44 PM	0:25:08	0.32	0.32
6:37:18 PM	0:26:42	0.36	0.36
6:38:45 PM	0:28:09	0.4	0.4
6:39:39 PM	0:29:03	0.44	0.44
6:42:41 PM	0:32:05	0.48	0.48
6:56:05 PM	0:45:29	0.52	0.52
6:58:08 PM	0:47:32	0.56	0.56
7:00:22 PM	0:49:46	0.6	0.6
7:02:02 PM	0:51:26	0.64	0.64
7:03:26 PM	0:52:07	0.68	0.68
7:04:58 PM	0:54:22	0.72	0.72
7:05:49 PM	0:55:13	0.76	0.76
7:06:44 PM	0:56:08	0.8	0.8
7:07:52 PM	0:57:16	0.84	0.84
7:09:56 PM	0:59:20	0.88	0.88
7:10:38 PM	1:00:02	0.92	0.92
7:11:16 PM	1:00:40	0.96	0.96
7:11:54 PM	1:01:18	1	1
7:12:32 PM	1:01:56	1.04	1.04
7:13:09 PM	1:02:33	1.08	1.08
7:13:44 PM	1:03:08	1.12	1.12
7:14:35 PM	1:03:59	1.16	1.16
7:16:01 PM	1:05:25	1.2	1.2
7:18:41 PM	1:08:05	1.24	1.24
7:20:07 PM	1:09:31	1.28	1.28
7:21:42 PM	1:11:06	1.32	1.32
7:22:29 PM	1:11:53	1.36	1.36
7:23:31 PM	1:12:55	1.4	1.4
7:25:49 PM	1:15:13	1.44	1.44
7:29:32 PM	1:18:56	1.48	1.48
7:31:02 PM	1:20:26	1.52	1.52
7:31:37 PM	1:21:37	1.56	1.56
7:33:37 PM	1:22:54	1.6	1.6
7:33:37 PM	1:22:54	1.64	1.64
7:35:37 PM	1:24:24	1.68	1.68
7:36:00 PM	1:25:24	1.72	1.72
7:36:41 PM	1:26:05	1.76	1.76
7:37:16 PM	1:27:16	1.8	1.8
7:37:52 PM	1:27:41	1.84	1.84
7:38:17 PM	1:28:11	1.88	1.88
7:38:47 PM	1:28:43	1.92	1.92
7:39:19 PM	1:29:12	1.96	1.96
7:39:48 PM	1:29:12	2	2

Duration	Cumulative Precip
0.00	0.04
0.00	0.08
17.05	0.12
18.80	0.16
20.62	0.20
21.88	0.24
23.05	0.28
26.27	0.32
35.73	0.36
37.30	0.40
38.75	0.44
39.65	0.48
42.68	0.52
56.08	0.56
58.13	0.60
60.37	0.64
62.03	0.68
62.72	0.72
63.43	0.76
64.97	0.80
66.73	0.84
67.87	0.88
69.93	0.92
70.63	0.96
71.27	1.00
71.90	1.04
72.53	1.08
73.15	1.12
73.73	1.16
74.58	1.20
76.02	1.24
78.68	1.28
80.12	1.32
81.70	1.36
82.48	1.40
83.52	1.44
85.82	1.48
89.53	1.52
91.03	1.56
92.22	1.60
93.50	1.64
95.00	1.68
96.00	1.72
96.68	1.76
97.27	1.80
97.87	1.84
98.28	1.88
98.78	1.92
99.32	1.96
99.80	2.00

Adjusted so that:  
time (0) = 6 PM

Dimensionless		Duration	Cumulative Precip
% of total	% of total		
0.0000	0.0061	0.0000	0.0000
0.0802	0.0121	0.0802	0.0802
0.0884	0.0182	0.0884	0.1686
0.0970	0.0242	0.0970	0.2656
0.1029	0.0303	0.1029	0.3685
0.1084	0.0364	0.1084	0.4769
0.1235	0.0424	0.1235	0.5904
0.1680	0.0485	0.1680	0.7584
0.1754	0.0545	0.1754	0.9338
0.1822	0.0606	0.1822	1.1160
0.1865	0.0667	0.1865	1.3025
0.2007	0.0727	0.2007	1.4932
0.2637	0.0788	0.2637	1.7569
0.2734	0.0848	0.2734	2.0303
0.2839	0.0909	0.2839	2.3142
0.2917	0.0970	0.2917	2.6082
0.2949	0.1030	0.2949	2.9122
0.2983	0.1091	0.2983	3.2263
0.3055	0.1152	0.3055	3.5505
0.3095	0.1212	0.3095	3.8850
0.3138	0.1273	0.3138	4.2298
0.3191	0.1333	0.3191	4.5849
0.3289	0.1394	0.3289	4.9503
0.3322	0.1455	0.3322	5.3260
0.3351	0.1515	0.3351	5.7121
0.3381	0.1576	0.3381	6.1087
0.3411	0.1636	0.3411	6.5158
0.3440	0.1697	0.3440	6.9334
0.3467	0.1758	0.3467	7.3615
0.3507	0.1818	0.3507	7.8002
0.3575	0.1879	0.3575	8.2495
0.3700	0.1939	0.3700	8.7095
0.3768	0.2000	0.3768	9.1802
0.3842	0.2061	0.3842	9.6616
0.3879	0.2121	0.3879	10.1537
0.3927	0.2182	0.3927	10.6564
0.4036	0.2242	0.4036	11.1708
0.4210	0.2303	0.4210	11.6969
0.4281	0.2364	0.4281	12.2350
0.4337	0.2424	0.4337	12.7852
0.4397	0.2485	0.4397	13.3475
0.4467	0.2545	0.4467	13.9220
0.4514	0.2606	0.4514	14.5087
0.4547	0.2667	0.4547	15.1076
0.4574	0.2727	0.4574	15.7187
0.4602	0.2788	0.4602	16.3420
0.4622	0.2848	0.4622	16.9775
0.4645	0.2909	0.4645	17.6252
0.4670	0.2970	0.4670	18.2852
0.4693	0.3030	0.4693	18.9575

3 min Increments		Duration	Cumulative Precip	Dimensionless Rainfall
min	in		% of total	% of total
0	0.04	0.0000	0	0.0000
3	0.04	0.0141	0.0000	0.0000
6	0.04	0.0282	0.0000	0.0000
9	0.04	0.0423	0.0000	0.0000
12	0.04	0.0563	0.0061	0.0061
15	0.04	0.0704	0.0061	0.0061
18	0.08	0.0845	0.0121	0.0121
21	0.16	0.0986	0.0242	0.0242
24	0.24	0.1127	0.0364	0.0364
27	0.28	0.1268	0.0424	0.0424
30	0.28	0.1408	0.0424	0.0424
33	0.28	0.1549	0.0424	0.0424
36	0.32	0.1690	0.0485	0.0485
39	0.4	0.1831	0.0606	0.0606
42	0.44	0.1972	0.0667	0.0667
45	0			

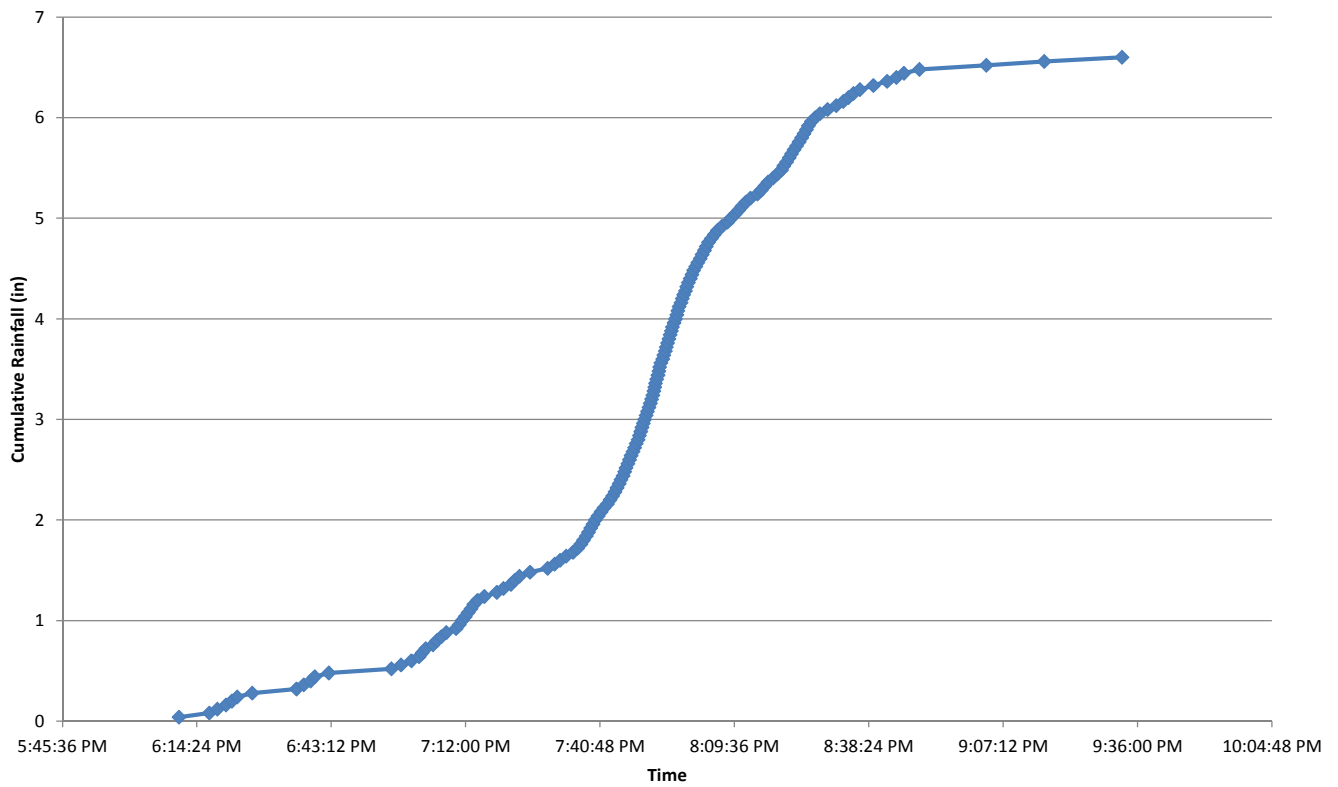
7/30/2016	19:40:24	7/30/2016	19:41:37	0.04	in	7:40:24 PM	1:29:48	2.04	2.04	100.40	2.04	0.4721	0.3091	150	6.08	0.7042	0.9212
7/30/2016	19:41:03	7/30/2016	19:41:37	0.04	in	7:41:03 PM	1:30:27	2.08	2.08	101.05	2.08	0.4752	0.3152	150	6.16	0.7183	0.9333
7/30/2016	19:41:38	7/30/2016	19:43:37	0.04	in	7:41:38 PM	1:31:02	2.12	2.12	101.63	2.12	0.4779	0.3212	156	6.24	0.7324	0.9455
7/30/2016	19:42:23	7/30/2016	19:43:37	0.04	in	7:42:23 PM	1:31:47	2.16	2.16	102.38	2.16	0.4815	0.3273	159	6.28	0.7465	0.9515
7/30/2016	19:42:56	7/30/2016	19:43:37	0.04	in	7:42:56 PM	1:32:20	2.2	2.2	102.93	2.20	0.4841	0.3333	162	6.32	0.7606	0.9576
7/30/2016	19:43:29	7/30/2016	19:43:37	0.04	in	7:43:29 PM	1:32:53	2.24	2.24	103.48	2.24	0.4866	0.3394	165	6.4	0.7746	0.9697
7/30/2016	19:43:59	7/30/2016	19:45:37	0.04	in	7:43:59 PM	1:33:23	2.28	2.28	103.98	2.28	0.4890	0.3455	168	6.44	0.7887	0.9758
7/30/2016	19:44:26	7/30/2016	19:45:37	0.04	in	7:44:26 PM	1:33:50	2.32	2.32	104.43	2.32	0.4911	0.3515	171	6.48	0.8028	0.9818
7/30/2016	19:44:52	7/30/2016	19:45:37	0.04	in	7:44:52 PM	1:34:16	2.36	2.36	104.87	2.36	0.4931	0.3576	174	6.48	0.8169	0.9818
7/30/2016	19:45:18	7/30/2016	19:45:37	0.04	in	7:45:18 PM	1:34:42	2.4	2.4	105.30	2.40	0.4952	0.3636	177	6.48	0.8310	0.9818
7/30/2016	19:45:43	7/30/2016	19:47:37	0.04	in	7:45:43 PM	1:35:07	2.44	2.44	105.72	2.44	0.4971	0.3697	180	6.48	0.8451	0.9818
7/30/2016	19:46:03	7/30/2016	19:47:37	0.04	in	7:46:03 PM	1:35:27	2.48	2.48	106.05	2.48	0.4987	0.3758	183	6.48	0.8592	0.9818
7/30/2016	19:46:22	7/30/2016	19:47:37	0.04	in	7:46:22 PM	1:35:46	2.52	2.52	106.37	2.52	0.5002	0.3818	186	6.52	0.8732	0.9879
7/30/2016	19:46:47	7/30/2016	19:47:37	0.04	in	7:46:47 PM	1:36:11	2.56	2.56	106.78	2.56	0.5022	0.3879	189	6.52	0.8873	0.9879
7/30/2016	19:47:06	7/30/2016	19:47:37	0.04	in	7:47:06 PM	1:36:30	2.6	2.6	107.10	2.60	0.5036	0.3939	192	6.52	0.9014	0.9879
7/30/2016	19:47:27	7/30/2016	19:47:37	0.04	in	7:47:27 PM	1:36:51	2.64	2.64	107.45	2.64	0.5053	0.4000	195	6.52	0.9155	0.9879
7/30/2016	19:47:50	7/30/2016	19:49:37	0.04	in	7:47:50 PM	1:37:14	2.68	2.68	107.83	2.68	0.5071	0.4061	198	6.56	0.9296	0.9939
7/30/2016	19:48:11	7/30/2016	19:49:37	0.04	in	7:48:11 PM	1:37:35	2.72	2.72	108.18	2.72	0.5087	0.4121	201	6.56	0.9437	0.9939
7/30/2016	19:48:33	7/30/2016	19:49:37	0.04	in	7:48:33 PM	1:37:57	2.76	2.76	108.55	2.76	0.5105	0.4182	204	6.56	0.9577	0.9939
7/30/2016	19:48:55	7/30/2016	19:49:37	0.04	in	7:48:55 PM	1:38:19	2.8	2.8	108.92	2.80	0.5122	0.4242	207	6.56	0.9718	0.9939
7/30/2016	19:49:13	7/30/2016	19:49:37	0.04	in	7:49:13 PM	1:38:37	2.84	2.84	109.22	2.84	0.5136	0.4303	210	6.56	0.9718	0.9939
7/30/2016	19:49:33	7/30/2016	19:49:37	0.04	in	7:49:33 PM	1:38:57	2.88	2.88	109.55	2.88	0.5152	0.4364	210	6.56	0.9859	0.9939
7/30/2016	19:49:48	7/30/2016	19:51:37	0.04	in	7:49:48 PM	1:39:12	2.92	2.92	109.80	2.92	0.5163	0.4424	213	6.6	1	1.0000
7/30/2016	19:50:06	7/30/2016	19:51:37	0.04	in	7:50:06 PM	1:39:30	2.96	2.96	110.10	2.96	0.5178	0.4485				
7/30/2016	19:50:20	7/30/2016	19:51:37	0.04	in	7:50:20 PM	1:39:44	3	3	110.33	3.00	0.5188	0.4545				
7/30/2016	19:50:39	7/30/2016	19:51:37	0.04	in	7:50:39 PM	1:40:03	3.04	3.04	110.65	3.04	0.5203	0.4606				
7/30/2016	19:50:57	7/30/2016	19:51:37	0.04	in	7:50:57 PM	1:40:21	3.08	3.08	110.95	3.08	0.5217	0.4667				
7/30/2016	19:51:15	7/30/2016	19:51:37	0.04	in	7:51:15 PM	1:40:39	3.12	3.12	111.25	3.12	0.5232	0.4727				
7/30/2016	19:51:34	7/30/2016	19:51:37	0.04	in	7:51:34 PM	1:40:58	3.16	3.16	111.57	3.16	0.5246	0.4788				
7/30/2016	19:51:52	7/30/2016	19:53:37	0.04	in	7:51:52 PM	1:41:16	3.2	3.2	111.87	3.20	0.5261	0.4848				
7/30/2016	19:52:07	7/30/2016	19:53:37	0.04	in	7:52:07 PM	1:41:31	3.24	3.24	112.12	3.24	0.5272	0.4909				
7/30/2016	19:52:20	7/30/2016	19:53:37	0.04	in	7:52:20 PM	1:41:44	3.28	3.28	112.33	3.28	0.5283	0.4970				
7/30/2016	19:52:31	7/30/2016	19:53:37	0.04	in	7:52:31 PM	1:41:55	3.32	3.32	112.52	3.32	0.5291	0.5030				
7/30/2016	19:52:43	7/30/2016	19:53:37	0.04	in	7:52:43 PM	1:42:07	3.36	3.36	112.72	3.36	0.5301	0.5091				
7/30/2016	19:52:57	7/30/2016	19:53:37	0.04	in	7:52:57 PM	1:42:21	3.4	3.4	112.95	3.40	0.5312	0.5152				
7/30/2016	19:53:11	7/30/2016	19:53:37	0.04	in	7:53:11 PM	1:42:35	3.44	3.44	113.18	3.44	0.5323	0.5212				
7/30/2016	19:53:22	7/30/2016	19:53:37	0.04	in	7:53:22 PM	1:42:46	3.48	3.48	113.37	3.48	0.5331	0.5273				
7/30/2016	19:53:36	7/30/2016	19:53:37	0.04	in	7:53:36 PM	1:43:00	3.52	3.52	113.60	3.52	0.5342	0.5333				
7/30/2016	19:53:51	7/30/2016	19:55:37	0.04	in	7:53:51 PM	1:43:15	3.56	3.56	113.85	3.56	0.5354	0.5394				
7/30/2016	19:54:15	7/30/2016	19:55:37	0.04	in	7:54:15 PM	1:43:39	3.6	3.6	114.25	3.60	0.5373	0.5455				
7/30/2016	19:54:29	7/30/2016	19:55:37	0.04	in	7:54:29 PM	1:43:53	3.64	3.64	114.48	3.64	0.5384	0.5515				
7/30/2016	19:54:46	7/30/2016	19:55:37	0.04	in	7:54:46 PM	1:44:10	3.68	3.68	114.77	3.68	0.5397	0.5576				
7/30/2016	19:54:59	7/30/2016	19:55:37	0.04	in	7:54:59 PM	1:44:23	3.72	3.72	114.98	3.72	0.5407	0.5636				
7/30/2016	19:55:16	7/30/2016	19:55:37	0.04	in	7:55:16 PM	1:44:40	3.76	3.76	115.27	3.76	0.5420	0.5697				
7/30/2016	19:55:34	7/30/2016	19:55:37	0.04	in	7:55:34 PM	1:44:58	3.8	3.8	115.57	3.80	0.5435	0.5758				
7/30/2016	19:55:49	7/30/2016	19:57:37	0.04	in	7:55:49 PM	1:45:13	3.84	3.84	115.82	3.84	0.5446	0.5818				
7/30/2016	19:56:03	7/30/2016	19:57:37	0.04	in	7:56:03 PM	1:45:27	3.88	3.88	116.05	3.88	0.5457	0.5879				
7/30/2016	19:56:20	7/30/2016	19:57:37	0.04	in	7:56:20 PM	1:45:44	3.92	3.92	116.33	3.92	0.5471	0.5939				
7/30/2016	19:56:39	7/30/2016	19:57:37	0.04	in	7:56:39 PM	1:46:03	3.96	3.96	116.65	3.96	0.5486	0.6000				
7/30/2016	19:56:57	7/30/2016	19:57:37	0.04	in	7:56:57 PM	1:46:21	4	4	116.95	4.00	0.5500	0.6061				
7/30/2016	19:57:14	7/30/2016	19:57:37	0.04	in	7:57:14 PM	1:46:38	4.04	4.04	117.23	4.04	0.5513	0.6121				
7/30/2016	19:57:31	7/30/2016	19:57:37	0.04	in	7:57:31 PM	1:46:55	4.08	4.08	117.52	4.08	0.5526	0.6182				
7/30/2016	19:57:46	7/30/2016	19:59:37	0.04	in	7:57:46 PM	1:47:10	4.12	4.12	117.77	4.12	0.5538	0.6242				
7/30/2016	19:58:07	7/30/2016	19:59:37	0.04	in	7:58:07 PM	1:47:31	4.16	4.16	118.12	4.16	0.5555	0.6303				
7/30/2016	19:58:26	7/30/2016	19:59:37	0.04	in	7:58:26 PM	1:47:50	4.2	4.2	118.43	4.20	0.5569	0.6364				
7/30/2016	19:58:45	7/30/2016	19:59:37	0.04	in	7:58:45 PM	1:48:09	4.24	4.24	118.75	4.24	0.5584	0.6424				
7/30/2016	19:59:04	7/30/2016	19:59:37	0.04	in	7:59:04 PM	1:48:28	4.28	4.28	119.07	4.28	0.5599	0.6485				
7/30/2016	19:59:22	7/30/2016	19:59:37	0.04	in	7:59:22 PM	1:48:46	4.32	4.32	119.37	4.32	0.5613	0.6545				
7/30/2016	19:59:43	7/30/2016	20:01:37	0.04	in	7:59:43 PM	1:49:07	4.36	4.36	119.72	4.36	0.5630	0.6606				
7/30/2016	20:00:07	7/30/2016	20:01:37	0.04	in	8:00:07 PM	1:49:31	4.4	4.4	120.12	4.40	0.5649	0.6667				
7/30/2016	20:00:31	7/30/2016	20:01:37	0.04	in	8:00:31 PM	1:49:55	4.44	4.44	120.52	4.44	0.5667	0.6727				
7/30/2016	20:00:52	7/30/2016	20:01:37	0.04	in	8:00:52 PM	1:50:16	4.48	4.48	120.87	4.48	0.5684	0.6788				
7/30/2016	20:01:19	7/30/2016	20:01:37	0.04	in	8:01:19 PM	1:50:43	4.52	4.52	121.32	4.52	0.5705	0.6848				
7/30/2016	20:01:46	7/30/2016	20:03:37	0.04	in	8:01:46 PM	1:51:10	4.56	4.56	121.77	4.56	0.5726	0.6909				
7/30/2016	20:02:17	7/30/2016	20:03:37	0.04	in	8:02:17 PM	1:51:41	4.6	4.6	122.28	4.60	0.5750	0.6970				
7/30/2016	20:02:42	7/30/2016	20:03:37	0.04	in	8:02:42 PM	1:52:06	4.64	4.64	122.70	4.64	0.5770	0.7030				
7/30/2016	20:03:10	7/30/2016	20:03:37	0.04	in	8:03:10 PM	1:52:34	4.68	4.68	123.17	4.68	0.5792	0.7091				
7/30/2016	20:03:34	7/30/2016	20:03:37	0.04	in	8:03:34 PM	1:52:58	4.72	4.72	123.57	4.72						

7/30/2016	20:04:41	7/30/2016	20:05:37	0.04	in	8:04:41 PM	1:54:05	4.8	124.68	4.80	0.5863	0.7273
7/30/2016	20:05:18	7/30/2016	20:05:37	0.04	in	8:05:18 PM	1:54:42	4.84	125.30	4.84	0.5892	0.7333
7/30/2016	20:05:58	7/30/2016	20:07:39	0.04	in	8:05:58 PM	1:55:22	4.88	125.97	4.88	0.5924	0.7394
7/30/2016	20:06:57	7/30/2016	20:07:39	0.04	in	8:06:57 PM	1:56:21	4.92	126.95	4.92	0.5970	0.7455
7/30/2016	20:08:04	7/30/2016	20:09:37	0.04	in	8:08:04 PM	1:57:28	4.96	128.07	4.96	0.6022	0.7515
7/30/2016	20:08:51	7/30/2016	20:09:37	0.04	in	8:08:51 PM	1:58:15	5.00	128.85	5.00	0.6059	0.7576
7/30/2016	20:09:47	7/30/2016	20:11:39	0.04	in	8:09:47 PM	1:59:11	5.04	129.78	5.04	0.6103	0.7636
7/30/2016	20:10:29	7/30/2016	20:11:39	0.04	in	8:10:29 PM	1:59:53	5.08	130.48	5.08	0.6136	0.7697
7/30/2016	20:11:11	7/30/2016	20:11:39	0.04	in	8:11:11 PM	2:00:35	5.12	131.18	5.12	0.6169	0.7758
7/30/2016	20:12:01	7/30/2016	20:13:37	0.04	in	8:12:01 PM	2:01:25	5.16	132.02	5.16	0.6208	0.7818
7/30/2016	20:13:02	7/30/2016	20:13:37	0.04	in	8:13:02 PM	2:02:26	5.2	133.03	5.20	0.6256	0.7879
7/30/2016	20:14:32	7/30/2016	20:15:37	0.04	in	8:14:32 PM	2:03:56	5.24	134.53	5.24	0.6327	0.7939
7/30/2016	20:15:22	7/30/2016	20:15:37	0.04	in	8:15:22 PM	2:04:46	5.28	135.37	5.28	0.6366	0.8000
7/30/2016	20:16:06	7/30/2016	20:17:37	0.04	in	8:16:06 PM	2:05:30	5.32	136.10	5.32	0.6400	0.8061
7/30/2016	20:16:48	7/30/2016	20:17:37	0.04	in	8:16:48 PM	2:06:12	5.36	136.80	5.36	0.6433	0.8121
7/30/2016	20:17:54	7/30/2016	20:19:40	0.04	in	8:17:54 PM	2:07:18	5.4	137.90	5.40	0.6485	0.8182
7/30/2016	20:18:48	7/30/2016	20:19:37	0.04	in	8:18:48 PM	2:08:12	5.44	138.80	5.44	0.6527	0.8242
7/30/2016	20:19:38	7/30/2016	20:21:37	0.04	in	8:19:38 PM	2:09:02	5.48	139.63	5.48	0.6566	0.8303
7/30/2016	20:20:12	7/30/2016	20:21:37	0.04	in	8:20:12 PM	2:09:36	5.52	140.20	5.52	0.6593	0.8364
7/30/2016	20:20:48	7/30/2016	20:21:37	0.04	in	8:20:48 PM	2:10:12	5.56	140.80	5.56	0.6621	0.8424
7/30/2016	20:21:20	7/30/2016	20:21:37	0.04	in	8:21:20 PM	2:10:44	5.6	141.33	5.60	0.6646	0.8485
7/30/2016	20:21:49	7/30/2016	20:23:37	0.04	in	8:21:49 PM	2:11:13	5.64	141.82	5.64	0.6669	0.8545
7/30/2016	20:22:23	7/30/2016	20:23:37	0.04	in	8:22:23 PM	2:11:47	5.68	142.38	5.68	0.6696	0.8606
7/30/2016	20:22:56	7/30/2016	20:23:37	0.04	in	8:22:56 PM	2:12:20	5.72	142.93	5.72	0.6722	0.8667
7/30/2016	20:23:28	7/30/2016	20:23:37	0.04	in	8:23:28 PM	2:12:52	5.76	143.47	5.76	0.6747	0.8727
7/30/2016	20:23:59	7/30/2016	20:25:37	0.04	in	8:23:59 PM	2:13:23	5.8	143.98	5.80	0.6771	0.8788
7/30/2016	20:24:31	7/30/2016	20:25:37	0.04	in	8:24:31 PM	2:13:55	5.84	144.52	5.84	0.6796	0.8848
7/30/2016	20:25:01	7/30/2016	20:25:37	0.04	in	8:25:01 PM	2:14:25	5.88	145.02	5.88	0.6819	0.8909
7/30/2016	20:25:27	7/30/2016	20:25:37	0.04	in	8:25:27 PM	2:14:51	5.92	145.45	5.92	0.6840	0.8970
7/30/2016	20:26:05	7/30/2016	20:27:37	0.04	in	8:26:05 PM	2:15:29	5.96	146.08	5.96	0.6870	0.9030
7/30/2016	20:26:52	7/30/2016	20:27:37	0.04	in	8:26:52 PM	2:16:16	6	146.87	6.00	0.6906	0.9091
7/30/2016	20:27:55	7/30/2016	20:29:37	0.04	in	8:27:55 PM	2:17:19	6.04	147.92	6.04	0.6956	0.9152
7/30/2016	20:29:33	7/30/2016	20:29:37	0.04	in	8:29:33 PM	2:18:57	6.08	149.55	6.08	0.7033	0.9212
7/30/2016	20:31:24	7/30/2016	20:31:37	0.04	in	8:31:24 PM	2:20:48	6.12	151.40	6.12	0.7120	0.9273
7/30/2016	20:32:53	7/30/2016	20:33:37	0.04	in	8:32:53 PM	2:22:17	6.16	152.88	6.16	0.7189	0.9333
7/30/2016	20:33:59	7/30/2016	20:35:37	0.04	in	8:33:59 PM	2:23:23	6.2	153.98	6.20	0.7241	0.9394
7/30/2016	20:35:05	7/30/2016	20:35:37	0.04	in	8:35:05 PM	2:24:29	6.24	155.08	6.24	0.7293	0.9455
7/30/2016	20:36:27	7/30/2016	20:37:37	0.04	in	8:36:27 PM	2:25:51	6.28	156.45	6.28	0.7357	0.9515
7/30/2016	20:39:20	7/30/2016	20:39:37	0.04	in	8:39:20 PM	2:28:44	6.32	159.33	6.32	0.7493	0.9576
7/30/2016	20:42:17	7/30/2016	20:43:37	0.04	in	8:42:17 PM	2:31:41	6.36	162.28	6.36	0.7631	0.9636
7/30/2016	20:44:17	7/30/2016	20:45:37	0.04	in	8:44:17 PM	2:33:41	6.4	164.28	6.40	0.7726	0.9697
7/30/2016	20:45:55	7/30/2016	20:47:40	0.04	in	8:45:55 PM	2:35:19	6.44	165.92	6.44	0.7802	0.9758
7/30/2016	20:49:12	7/30/2016	20:49:37	0.04	in	8:49:12 PM	2:38:36	6.48	169.20	6.48	0.7957	0.9818
7/30/2016	21:03:34	7/30/2016	21:03:37	0.04	in	9:03:34 PM	2:52:58	6.52	183.57	6.52	0.8632	0.9879
7/30/2016	21:15:58	7/30/2016	21:17:37	0.04	in	9:15:58 PM	3:05:22	6.56	195.97	6.56	0.9215	0.9939
7/30/2016	21:32:39	7/30/2016	21:33:37	0.04	in	9:32:39 PM	3:22:03	6.6	212.65	6.60	1.0000	1.0000
7/29/2016	0:28:16	7/29/2016	0:29:37	0.04	in							
7/29/2016	1:29:32	7/29/2016	1:29:37	0	in							
7/29/2016	3:09:47	7/29/2016	3:11:37	0.04	in							
7/29/2016	3:34:36	7/29/2016	3:35:37	0.04	in							
7/29/2016	3:46:47	7/29/2016	3:47:37	0.04	in							
7/29/2016	3:54:31	7/29/2016	3:55:37	0.04	in							
7/29/2016	3:57:58	7/29/2016	3:59:37	0.04	in							
7/29/2016	4:00:54	7/29/2016	4:01:37	0.04	in							
7/29/2016	4:02:27	7/29/2016	4:04:17	0.04	in							
7/29/2016	4:03:18	7/29/2016	4:04:17	0.04	in							
7/29/2016	4:04:09	7/29/2016	4:05:37	0.04	in							
7/29/2016	4:05:04	7/29/2016	4:05:37	0.04	in							
7/29/2016	4:06:36	7/29/2016	4:07:37	0.04	in							
7/29/2016	4:07:54	7/29/2016	4:09:37	0.04	in							
7/29/2016	4:10:09	7/29/2016	4:11:37	0.04	in							
7/29/2016	4:11:06	7/29/2016	4:13:37	0.04	in							
7/29/2016	4:11:57	7/29/2016	4:13:37	0.04	in							
7/29/2016	4:12:42	7/29/2016	4:13:37	0.04	in							
7/29/2016	4:13:29	7/29/2016	4:13:37	0.04	in							
7/29/2016	4:14:10	7/29/2016	4:15:37	0.04	in							
7/29/2016	4:15:01	7/29/2016	4:15:37	0.04	in							

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7/29/2016	4:15:59	7/29/2016	4:17:37	0.04	in
7/29/2016	4:16:52	7/29/2016	4:17:37	0.04	in
7/29/2016	4:17:36	7/29/2016	4:19:37	0.04	in
7/29/2016	4:18:23	7/29/2016	4:19:37	0.04	in
7/29/2016	4:19:30	7/29/2016	4:19:37	0.04	in
7/29/2016	4:21:02	7/29/2016	4:21:37	0.04	in
7/29/2016	4:22:47	7/29/2016	4:23:37	0.04	in
7/29/2016	4:27:11	7/29/2016	4:27:37	0.04	in
7/29/2016	4:29:32	7/29/2016	4:29:37	0	in
7/29/2016	4:46:07	7/29/2016	4:47:37	0.04	in
7/29/2016	7:29:32	7/29/2016	7:29:37	0	in
7/29/2016	10:29:32	7/29/2016	10:29:37	0	in
7/29/2016	13:29:32	7/29/2016	13:29:37	0	in
7/29/2016	16:29:32	7/29/2016	16:29:37	0	in
7/29/2016	19:29:32	7/29/2016	19:29:39	0	in
7/29/2016	22:29:32	7/29/2016	22:29:37	0	in

**ELYM2 Cumulative Rainfall during 7/30/16 Storm Event**



## Existing Stormwater Management Facilities

## Hudson Branch Watershed

BMP Type	FileNo	BMPID	Subdivision Name	Street Address	Map Name	MT-Area (ac)	Design-Area	As-Built?	TR20 CN reduce	TR20 Structure?	SUBAREA	Notes	Dry Storage (ac-ft)	Wet Storage (ac-ft)
WP	SDP-96-001	POND	WALMART STORES, INC/ #2412 ELLICOTT CITY	3200 NORTH RIDGE RD	SWMF-13- N RIDGE RD 2	47.0	48.11	Y	N	Y	2	Dam elevations for 2,10,100yr WSEL/hydrology/stage-storage. 2,10,100 yr TR-20 and existing conditions.	11.29	0.57
DP	SDP-85-143	POND	BETHEL PRESBYTERIAN CHURCH, PARCEL 1168	3165 ST JOHNS LN	SWMF-10- ST JOHNS LN 2	37.3	37.90	Y	N	Y	1	Dam elevations for 2,10,100yr WSEL/hydrology/stage-storage. Some 100yr hydrology.Receives DA from SHA (MD-29), which is not included in as-built DA	1.4	0.52
UGS	F-85-018	POND	BEDFORD SQUARE	3695 MEADOWVALE RD	SWMF-3- MEADOWVALE RD	32.3	33.50	Y	N	Y	3	Dam elevations for 2,10,100yr WSEL/hydrology/stage-storage. Some 100yr hydrology.	1.5	0.07
EDSD	F-85-113	POND 1	RIVER MILLS	3605 QUAKER MILL CT	SWMF-18- QUAKER MILL CT	29.1	20.48	Y	N	Y	6	Dam elevations for 2,10,100yr WSEL/stage-storage Q100- as-built DA does not include area of pond	4	
DP	SDP-83-100	POND	ELLICOTT CITY SELF STORAGE, PARCEL A	3470 ELLICOTT CENTER DR	SWMF-8- ELLICOTT CENTER DR 1	17.6	19.93	Y	N	Y	3	Dam elevation- 2,10,100yr WSEL	2.82	0.92
EDSD	F-84-054	POND	BRAEBROOKE	3707 BONNY BRIDGE PLACE	SWMF-2- BONNYBRIDGE PL	7.6	7.30	Y	N	Y	6	Dam elevations for 2, 10, 100yr WSEL / hydrology/stage-storage. Some hydrology. No TR-20.	0.98	
EDSD	F-85-113	POND 2	RIVER MILLS	3456 ORANGE GROVE CT	SWMF-19- ORANGE GROVE CT	7.1	6.40	Y	N	Y	6	Dam elevations for 2,10,100yr WSEL/stage-storage Q100- as-built DA does not include area of pond	0.97	
EDSW	SDP-86-263	POND	ELLICOTT RIDGE PROFESSIONAL PARK, PARCEL A-2	3449 ELLICOTT CENTER DR	SWMF-11- ELLICOTT CENTER DR 2	5.9	4.96	Y	N	Y	3	Dam elevation- 2,10,100yr WSEL/Weir and riser dimensions	1.83	0.54
EDSW	F-88-226	POND	ELLICOTT'S CHOICE	8758 RUPPERT COURT	SWMF-4- RUPPERT CT	5.7	6.90	Y	Y	N	6	Dam elevations for 2,10,100yr WSEL	1.03	
DP	F-96-088	UGS 1-P	PAPILLON, PARCEL 121	8735 PAPILLON DR	SWMF-21- PAPILLON DR 1	5.3	4.78	Y	Y	N	5	2,10,100 Q- no ELEV	0.35	
WP	F-96-088	UGS 2-P	PAPILLON, PARCEL 121	8858 PAPILLON DR	SWMF-23-PAPILLON DR 2	5.3	8.63	Y	Y	N	5	2,10,100 Q- no ELEV	0.35	
DP	F-80-086	POND	ROGERS AVENUE, SECTION 1	3606 RUSTY RIM RD	SWMF-1- RUSTY RIM RD	4.5	4.70	Y	Y	N	6	Dam elevations for 2,10yr WSEL	0.24	
DP	SDP-98-136	POND	MILLER CHEVROLET USED CARS, PARCEL 717	3520 SOUTH CHEVROLET DR	SWMF-14- S CHEVROLET DR 1	4.3	3.69	Y	Y	N	3	Dam elevations for 2,10,100yr WSEL and Q- as-built DA does not include area of pond	1.18	
UGS	F-89-226	POND	WESTGATE WOODS, LOTS 1-21	3517 WESTGATE DRIVE	SWMF-5-WESTGATE RD	3.7	4.48	Y	Y	N	3	Dam elevations for 2,10,100yr WSEL/q100	0.44	0.12
UGS	SDP-05-119	POND	9050 ROUTE 40 RETAIL CTR, PARCEL A	9050 BALTIMORE NATIONAL PIKE (RT 40)	SWMF-6- RT 40	3.5	3.42	Y	Y	N	2	Dam elevations for 2,10,100yr WSEL / Some major flood reduction	1.48	1.08
UGS	SDP-01-134	UGS-P	ST JOHN'S EPISCOPAL CHURCH, PARCEL 535	9120 FREDERICK RD	SWMF-24- FREDRICK RD	3.4	3.44	Y	Y	N	3	Q10	0.47	
DP	SDP-79-058	POND	CHAPELGATE PRESBYTERIAN CHURCH	3291 ST JOHNS LN	SWMF-7- ST JOHNS LN 1	3.4	3.50	Y	Y	N	2	Dam elevation- 2yr WSEL	1.03	
UGS	SDP-99-060	POND	ST. PETER'S EPISCOPAL CHURCH, PARCEL 939	3695 ROGERS AVE	SWMF-16- ROGERS AVE	2.8	2.58	Y	Y	N	6	Dam elevations for 2,10,100yr WSEL and Q- as-built DA does not include area of pond	0.28	
UGS	F-84-152	POND 1	TOLL HOUSE	8806 MANAHAN DR	SWMF-17- MANAHAN DR	2.5	2.30	Y	Y	N	4	Dam elevations for 2,10,100yr WSEL/stage-storage Q100- OLD Comps	0.14	
DP	SDP-87-120	UGS-P	FREDERICK CROSSING, PARCEL 111	3570 ST JOHNS LN	SWMF-26- ST JOHNS LN 3	2.3	2.24	Y	Y	N	3	Q10?	N/A	
DP	SDP-98-145	POND	KMS PROFESSIONAL BUILDING, PARCEL B-6	9011 CHEVROLET DR	SWMF-15- CHEVROLET DR 2	1.8	1.62	Y	Y	N	3	Dam elevations for 2,10,100yr WSEL and Q- as-built DA does not include area of pond	0.43	
DP	SDP-85-235	UGS-P	THULMAN EASTERN CORPORATION, PARCEL C-1	3487 SOUTH CHEVROLET DR	SWMF-25- S CHEVROLET DR 2	1.5?		Y	Y	N	3	2,10yr WSEL	0.03	
DP	SDP-85-072	POND	S.S.V. PROFESSIONAL BUILDING FOR MILLER LAND CO	9005 CHEVROLET DR	SWMF-9- CHEVROLET DR 1	1.5?		Y	Y	N	3	Dam elevation- 2,10,100yr WSEL	0.33	
DP	SDP-87-210	POND	OAKVIEW TREATMENT CTR, PARCEL C-2	3100 NORTH RIDGE RD	SWMF-12- N RIDGE RD 1	1.0	0.80	Y	Y	N	1	Dam elevations for 2,10,100yr WSEL/hydrology/stage-storage. Some 100yr hydrology.	0.33	
UGS	SDP-81-080	UGS 2-GC	GARVEY OFFICE BUILDING, PARCEL 121	3535 ELLICOTT MILLS DR	SWMF-22- ELLICOTT MILLS 2	0.0		N	Y	N	1		N/A	
UGS	SDP-81-080	UGS 1-GC	GARVEY OFFICE BUILDING, PARCEL 121	3535 ELLICOTT MILLS DR	SWMF-20- ELLICOTT MILLS 1	0.0		N	Y	N	7		N/A	
<b>Hudson Total</b>													<b>32.9</b>	<b>3.82</b>

Tiber and New Cut Branch Watersheds

24

8

BMP Type	FileNo	BMPID	Subdivision Name	Street Address	Map Name	MT-Area (ac)	Design-Area	As-Built?	TR20 CN reduce	TR20 Structure?	SUBAREA	Notes	Dry Storage (ac-ft)	Wet Storage (ac-ft)
WP	F-90-155	POND	CAPLAN'S PROPERTY	8516 ELLICOTT VIEW RD	SWMF-29- ELLICOTT VIEW ROAD	15.57	15.28	Y	N	Y	10		4.67	0.32
WP	F-88-141	POND	AUTUMN MANOR	8308 FALL CHILL CT	SWMF-32- FALL CHILL CT	51.83		Y	N	Y	12	drainage area, designed as wet pond but doesn't appear to be holding water	3.15	2.79
DP	F-85-134	POND1	AUTUMN MANOR (SECTION 1, AREA 1)	8550 AUTUMN RUST RD	SWMF-33- AUTUMN RUST RD	15.57	14.46	Y	N	Y	11		0.59	
EDSD	SDP-99-109	POND3	NEW CUT LANDFILL IMPROVEMENTS	4361 NEW CUT RD	SWMF-58-NEW CUT RD	18.68		Y	N	Y	14		1.74	
DP	F-06-201	POND1	THE WOODS OF TIBER BRANCH II	4077 TIBER FALLS DR	SWMF-43- TIBER FALLS 1	23.21	23.21	Y	N	Y	8	2,10,100yr WSEL	1.49	0.52
WP	SDP-89-237	POND	THE BLUFFS AT ELLICOTT MILLS	8631 ANDREW ELLICOTT CT	SWMF-40 - ANDREW ELLICOTT CT	15.89	15.65	N	N	Y	8	*No information for facility, but development plans indicate that the SWM informati	1.68	0.41
DP	F-84-220	POND	ANGELA VALLEY (SECTION 1)	8460 ROBERTS RD	SWMF-47- ROBERTS RD 2	12.07	12.02	Y	N	Y	12		0.54	
EDSW	F-01-060	POND1	WORTHINGTON FIELDS (PHASE1, LOT 1)	4304 RIVIERA SUN DR	SWMF-51 - RIVIERA SUN DR	33.21	25.9	Y	N	Y	15	Dam elevation- 2,10,100yr WSEL	3.1	1.3
WP	F-07-02	POND	WORTHINGTON FIELDS (PHASE 6)	4529 VINTER WAY	SWMF-52-VINTER WAY	9.88		Y	N	Y	15	Dam elevation- 2,10,100yr WSEL	2.28	0.81
WP	F-85-134	POND2	AUTUMN MANOR (SECTION 1, AREA 1)	8501 ATUMN RUST RD	SWMF-34- AUTUMN RUST RD	29.7		Y	Y	N	12		8.2	0.47
DP	SDP-84-069	POND1	KEYWAYDIN	4044 OLD COLUMBIA PIKE	SWMF-27- OLD COLUMBIA PIKE	7.26		N	Y	N		*No information for facility	0.43	
EDSD	F-00-014	POND	SEARS HOUSE COURT	4138 SEARS HOUSE CT	SWMF-28- SEARS HOUSE CT	3.91		Y	Y	N			0.84	0.24
WP	F-06-109	POND	HOGG PROPERTY	8228 MAPLE CLIFF WAY	SWMF-30- MAPLE CLIFF WAY	5.96	6.44	Y	Y	N			0.46	0.1
DP	SDP-06-040	POND	NORTHEASTERN ELEMENTARY SCHOOL	4355 LONG GATE PKWY	SWMF-31- LONG GATE PKWY	11.89		Y	Y	N			3.46	0.59
WP	SDP-90-054	POND	TOWNHOMES OF TIMBERLAND	8507 TIMBER HILL CT	SWMF-35- TIMBER HILL CT	9.36	8.72	Y	Y	N			2.32	0.25
EDSD	SDP-88-063	POND	TAYLOR MANOR HOSPITAL	4080 COLLEGE AVE	SWMF-36- COLLEGE AVE	6.11	6.11	Y	Y	N		Dam elevation- 2,10,100yr WSEL	0.33	
DP	SDP-83-98	POND	TAYLOR MANOR HOSPITAL PARKING LOT	4168 COLLEGE AVE	SWMF-37- COLLEGE AVE	--		Y	Y	N		Dam elevation- 2,10,100yr WSEL -CAPTURED WITHIN SWMF-36	N/A	
DP	SDP-84-069	POND2	KEYWAYDIN	4095 CHOCTAW DR	SWMF-38- CHOCTAW DR	8.13		N	Y	N		*No information for facility	0.63	
WP	PB15-037	POND	ST. JOHNS MANOR	3917 FOXHILL DR	SWMF-39 - FOXHILL DR	3.95		N	Y	N		*No information for facility, no grate inlets observed from street view	0.28	0.2
WP	F-03-119	POND1	THE WOODS OF TIBER BRANCH, LOTS 1-36	3909 EDITH CT	SWMF-41- EDITH CT	5.54		Y	Y	N		Dam elevation- 2,10,100yr WSEL, 1yr Q	6.15	0.17
WP	F-03-119	POND2	THE WOODS OF TIBER BRANCH, LOTS 1-36	3936 NELSON HOUSE RD	SWMF-42- NELSON HOUSE RD	5.42		Y	Y	N		Dam elevation- 2,10,100yr WSEL, 1yr Q	0.83	0.49
DP	F-06-201	POND2	THE WOODS OF TIBER BRANCH II	4116 TIBER FALLS DR	SWMF-44- TIBER FALLS 2	1.88		Y	Y	N		2,10,100yr WSEL	0.09	0.05
WP	F-06-201	POND3	THE WOODS OF TIBER BRANCH II	4146 TIBER FALLS DR	SWMF-45- TIBER FALLS 3	1.95		Y	Y	N		2,10,100yr WSEL	0.39	0.06
WP	F-02-06	POND1	STONE MANOR	8416 ROBERTS RD	SWMF-46- ROBERTS RD 1	8.36	8.35	Y	Y	N		2,10,100yr WSEL, Drainage area data	0.42	0.26
WP	F-00-54	POND	STONE MANOR (SECTION 1)	4605 POPLAR CREEK CT	SWMF-48- POPLAR CREEK CT	9.31	9.75	Y	Y	N		2,10,100yr WSEL, Drainage area data	0.72	0.57
EDSD	SDP-99-109	POND1	NEW CUT LANDFILL IMPROVEMENTS	8170 HILLSBOROUGH RD	SWMF-49- HILLSBOROUGH RD	4.35	4.3	Y	Y	N			1.2	
EDSD	SD-99-109	POND2	NEW CUT LANDFILL IMPROVEMENTS	4361 NEW CUT RD	SWMF-50-NEW CUT RD	5.96		Y	Y	N		see C-0237 for more info	1.86	
EDSD	F-87-140	POND	STONEBROOKE TWO	4515 ASHLEY CT	SWMF-53- ASHLEY CT	6.6	6.6	Y	Y	N		Dam elevation- 2,10,100yr WSEL	0.67	
EDSW	SDP-04-042	POND	GLEN MAR UNITED METHODIST CHURCH	4701 NEW CUT RD	SWMF-54- NEW CUT RD	9.82	10.41	Y	Y	N		Dam elevation- 2,10,100yr WSEL	1.44	0.44
EDSD	F-01-060	POND2	WORTHINGTON FIELDS (PHASE1, LOT 1)	4310 ENGLISH MORNING LN	SWMF-55 -ENGLISH MORNING LN	7.43	7.73	Y	Y	N			0.27	0.17
UGS	SDP-10-052	UGS	VILLAGE CREST (PARCEL C-1)	8117 CALLA LILLY DR	SWMF-56- CALLA LILLY DR	2.36		Y	Y	N			0.56	
UGS	SDP-06-005	UGS	THE GATHERINGS AT JEFFERSON PLACE	4307 ERICSON RD	SWMF-57- ERICSON RD	5.69		Y	Y	N			0.43	
EDSW	F-07-083	POND1	AMBER MEADOW		SWMF-59- AMBER MEADOW	4.63		Y	Y	N			0.33	0.24
EDSD	F-06-182	POND1	TIBER RIDGE CT	TIBER RIDGE CT	SWMF-60 - TIBER RIDGE CT	1.25			Y	N			0.13	0.05
EDSD	F-06-066	POND1	JUNEAU HILLS	VICTORIA FALLS DR	SWMF-61-JUNEAU HILLS	2.88			Y	N			0.24	0.18
DP	F-84-152	POND1	TOLL HOUSE	TOLL HOUSE DRIVE	SWMF-62-TOLL HOUSE	4.71			Y	N			1.21	
WP		POND1	HUNT AVE	OLD COLUMBIA PIKE	SWMF-63- HUNT AVE	1.29			Y	N			0.16	0.11
WP			VETERANS OF FOREIGN WARS MEMORIAL	OLD COLUMBIA PIKE	SWMF-64- VFW	31.9			Y	N	11	APPEARS TO HAVE A PERMANENT POOL - MINIMAL STORM RETENTION	1.08	0.84

<b>Tiber/New Cut Total</b>	<b>53.29</b>	<b>11.63</b>
<b>Watershed Total</b>	<b>86.03</b>	<b>15.45</b>

## Principal Spillway Computations - Existing Conditions

### SWMF-08 (Structure-33)

Pond Elevation	Pond Volume
344.20 ft	
346.00 ft	0.093 ac-ft
348.00 ft	0.348 ac-ft
350.00 ft	0.709 ac-ft
352.00 ft	1.196 ac-ft
356.00 ft	2.598 ac-ft

Barrel Q	Barrel HW
	350.00 ft
20.00 ft <sup>3</sup> /s	352.57 ft
40.00 ft <sup>3</sup> /s	353.78 ft
60.00 ft <sup>3</sup> /s	357.46 ft
80.00 ft <sup>3</sup> /s	358.08 ft
100.00 ft <sup>3</sup> /s	358.14 ft
120.00 ft <sup>3</sup> /s	358.19 ft
140.00 ft <sup>3</sup> /s	358.23 ft
160.00 ft <sup>3</sup> /s	358.27 ft
180.00 ft <sup>3</sup> /s	358.31 ft
200.00 ft <sup>3</sup> /s	

Release Point	Crest Width	Orifice Height	Orifice Area	C <sub>o</sub>	C <sub>w</sub>
Notch Weir	2.00 ft	2.50 ft	5.00 ft <sup>2</sup>	0.6	3.1

Total Flow	Pond WSEL	Pond Storage	Notch Weir		Barrel
1.00 ft <sup>3</sup> /s	354.30 ft	1.926 ac-ft	weir	h=0.30 ft Q=1.00 ft <sup>3</sup> /s	Q=1.00 ft <sup>3</sup> /s
2.00 ft <sup>3</sup> /s	354.47 ft	1.989 ac-ft	weir	h=0.47 ft Q=2.00 ft <sup>3</sup> /s	Q=2.00 ft <sup>3</sup> /s
5.00 ft <sup>3</sup> /s	354.87 ft	2.139 ac-ft	weir	h=0.87 ft Q=5.00 ft <sup>3</sup> /s	Q=5.00 ft <sup>3</sup> /s
10.00 ft <sup>3</sup> /s	355.38 ft	2.339 ac-ft	weir	h=1.38 ft Q=10.00 ft <sup>3</sup> /s	Q=10.00 ft <sup>3</sup> /s
20.00 ft <sup>3</sup> /s	356.18 ft	2.678 ac-ft	weir	h=2.18 ft Q=20.00 ft <sup>3</sup> /s	Q=20.00 ft <sup>3</sup> /s
40.00 ft <sup>3</sup> /s	356.88 ft	2.991 ac-ft	orifice	h=1.63 ft Q=30.76 ft <sup>3</sup> /s	Q=40.00 ft <sup>3</sup> /s
60.00 ft <sup>3</sup> /s	357.27 ft	3.172 ac-ft	orifice	h=1.95 ft Q=33.62 ft <sup>3</sup> /s	Q=60.00 ft <sup>3</sup> /s
80.00 ft <sup>3</sup> /s	357.46 ft	3.262 ac-ft	barrel	n/a n/a	Q=80.00 ft <sup>3</sup> /s
100.00 ft <sup>3</sup> /s	358.08 ft	3.568 ac-ft	barrel	n/a n/a	Q=100.00 ft <sup>3</sup> /s
120.00 ft <sup>3</sup> /s	358.14 ft	3.598 ac-ft	barrel	n/a n/a	Q=120.00 ft <sup>3</sup> /s
140.00 ft <sup>3</sup> /s	358.19 ft	3.623 ac-ft	barrel	n/a n/a	Q=140.00 ft <sup>3</sup> /s
171.00 ft <sup>3</sup> /s	358.25 ft	3.655 ac-ft	barrel	n/a n/a	Q=171.00 ft <sup>3</sup> /s
180.00 ft <sup>3</sup> /s	358.27 ft	3.664 ac-ft	barrel	n/a n/a	Q=180.00 ft <sup>3</sup> /s
184.00 ft <sup>3</sup> /s	358.28 ft	3.668 ac-ft	barrel	n/a n/a	Q=184.00 ft <sup>3</sup> /s
185.00 ft <sup>3</sup> /s	358.28 ft	3.669 ac-ft	barrel	n/a n/a	Q=185.00 ft <sup>3</sup> /s

Storage not including the permanent pool (0.842 ac-ft)

Pond WSEL	Storage used for TR-20
354.30 ft	1.08 ac-ft
354.47 ft	1.15 ac-ft
354.87 ft	1.30 ac-ft
355.38 ft	1.50 ac-ft
356.18 ft	1.84 ac-ft
356.88 ft	2.15 ac-ft
357.27 ft	2.33 ac-ft
357.46 ft	2.42 ac-ft
358.08 ft	2.73 ac-ft
358.14 ft	2.76 ac-ft
358.19 ft	2.78 ac-ft
358.25 ft	2.81 ac-ft
358.27 ft	2.82 ac-ft
358.28 ft	2.83 ac-ft
358.28 ft	2.83 ac-ft

**orifice:**  $Q_o = C_d A_o (2gH_o)^{1/2}$

$Q_o$  = the orifice flow rate

$C_d$  = orifice discharge coefficient (0.40 - 0.60)

$A_o$  = area of orifice

$H_o$  = effective head on the orifice measured from the centre of the opening

$g$  = acceleration due to gravity

**sharp-crested weir:**  $Q_w = C_w L H_w^{1.5}$

$Q_w$  = weir discharge

$L$  = weir base width

$H_w$  = head above weir crest excluding velocity head

**submerged sharp-crested weir:**  $Q_s = Q_u [1 - (H_2/H_1)^{1.5}]^{0.385}$

$Q_s$  = submerged weir discharge

$Q_u$  = unsubmerged weir discharge

$H_1$  = upstream head above weir crest

$H_2$  = downstream head above weir crest



## Principal Spillway Computations - Existing Conditions

### SWMF-11 (Structure 32)

Pond Elevation	Pond Volume
375.40 ft	
375.50 ft	0.008 ac-ft
376.00 ft	0.087 ac-ft
378.00 ft	0.447 ac-ft
380.00 ft	0.899 ac-ft
382.00 ft	1.460 ac-ft
383.00 ft	1.845 ac-ft

Barrel Q	Barrel HW
	375.40 ft
20.00 ft <sup>3</sup> /s	378.22 ft
44.00 ft <sup>3</sup> /s	381.78 ft
66.00 ft <sup>3</sup> /s	382.79 ft
88.00 ft <sup>3</sup> /s	382.89 ft
110.00 ft <sup>3</sup> /s	382.97 ft
132.00 ft <sup>3</sup> /s	383.04 ft
154.00 ft <sup>3</sup> /s	383.11 ft
176.00 ft <sup>3</sup> /s	383.18 ft
198.00 ft <sup>3</sup> /s	383.18 ft
220.00 ft <sup>3</sup> /s	
	#REF!

Release Point	Crest Width	Orifice Height	Orifice Area	Co	Cw
Notch Weir	1.50 ft	1.00 ft	1.50 ft <sup>2</sup>	0.6	3.1

Total Flow	Pond WSEL	Pond Storage	Notch Weir			Barrel
1.00 ft <sup>3</sup> /s	379.36 ft	0.743 ac-ft	weir	h=0.36 ft	Q=1.00 ft <sup>3</sup> /s	Q=1.00 ft <sup>3</sup> /s
5.00 ft <sup>3</sup> /s	380.00 ft	0.899 ac-ft	weir	h=1.00 ft	Q=4.65 ft <sup>3</sup> /s	Q=5.00 ft <sup>3</sup> /s
10.00 ft <sup>3</sup> /s	380.20 ft	0.951 ac-ft	orifice	h=0.70 ft	Q=6.05 ft <sup>3</sup> /s	Q=10.00 ft <sup>3</sup> /s
15.00 ft <sup>3</sup> /s	380.33 ft	0.985 ac-ft	orifice	h=0.83 ft	Q=6.60 ft <sup>3</sup> /s	Q=15.00 ft <sup>3</sup> /s
20.00 ft <sup>3</sup> /s	380.45 ft	1.015 ac-ft	orifice	h=0.95 ft	Q=7.03 ft <sup>3</sup> /s	Q=20.00 ft <sup>3</sup> /s
25.00 ft <sup>3</sup> /s	380.55 ft	1.042 ac-ft	orifice	h=1.05 ft	Q=7.39 ft <sup>3</sup> /s	Q=25.00 ft <sup>3</sup> /s
30.00 ft <sup>3</sup> /s	380.65 ft	1.070 ac-ft	orifice	h=0.95 ft	Q=7.04 ft <sup>3</sup> /s	Q=30.00 ft <sup>3</sup> /s
35.00 ft <sup>3</sup> /s	380.45 ft	1.014 ac-ft	barrel	n/a	n/a	Q=35.00 ft <sup>3</sup> /s
40.00 ft <sup>3</sup> /s	381.19 ft	1.218 ac-ft	barrel	n/a	n/a	Q=40.00 ft <sup>3</sup> /s
44.00 ft <sup>3</sup> /s	381.78 ft	1.393 ac-ft	barrel	n/a	n/a	Q=44.00 ft <sup>3</sup> /s
66.00 ft <sup>3</sup> /s	382.59 ft	1.669 ac-ft	barrel	n/a	n/a	Q=66.00 ft <sup>3</sup> /s
88.00 ft <sup>3</sup> /s	382.79 ft	1.752 ac-ft	barrel	n/a	n/a	Q=88.00 ft <sup>3</sup> /s
110.00 ft <sup>3</sup> /s	382.89 ft	1.795 ac-ft	barrel	n/a	n/a	Q=110.00 ft <sup>3</sup> /s
132.00 ft <sup>3</sup> /s	382.97 ft	1.832 ac-ft	barrel	n/a	n/a	Q=132.00 ft <sup>3</sup> /s

Storage w/o Permanent Pool (0.585 ac-ft)

- 0.16
- 0.31
- 0.37
- 0.40
- 0.43
- 0.46
- 0.49
- 0.43
- 0.63
- 0.81
- 1.08
- 1.17
- 1.21
- 1.25

**orifice:**  $Q_o = C_d A_o (2gH_o)^{1/2}$

*Q<sub>o</sub>* = the orifice flow rate

*C<sub>d</sub>* = orifice discharge coefficient (0.40 - 0.60)

*A<sub>o</sub>* = area of orifice

*H<sub>o</sub>* = effective head on the orifice measured from the centre of the opening

*g* = acceleration due to gravity

**sharp-crested weir:**  $Q_w = C_w L H_w^{1.5}$

*Q<sub>w</sub>* = weir discharge

*L* = weir base width

*H<sub>w</sub>* = head above weir crest excluding velocity head

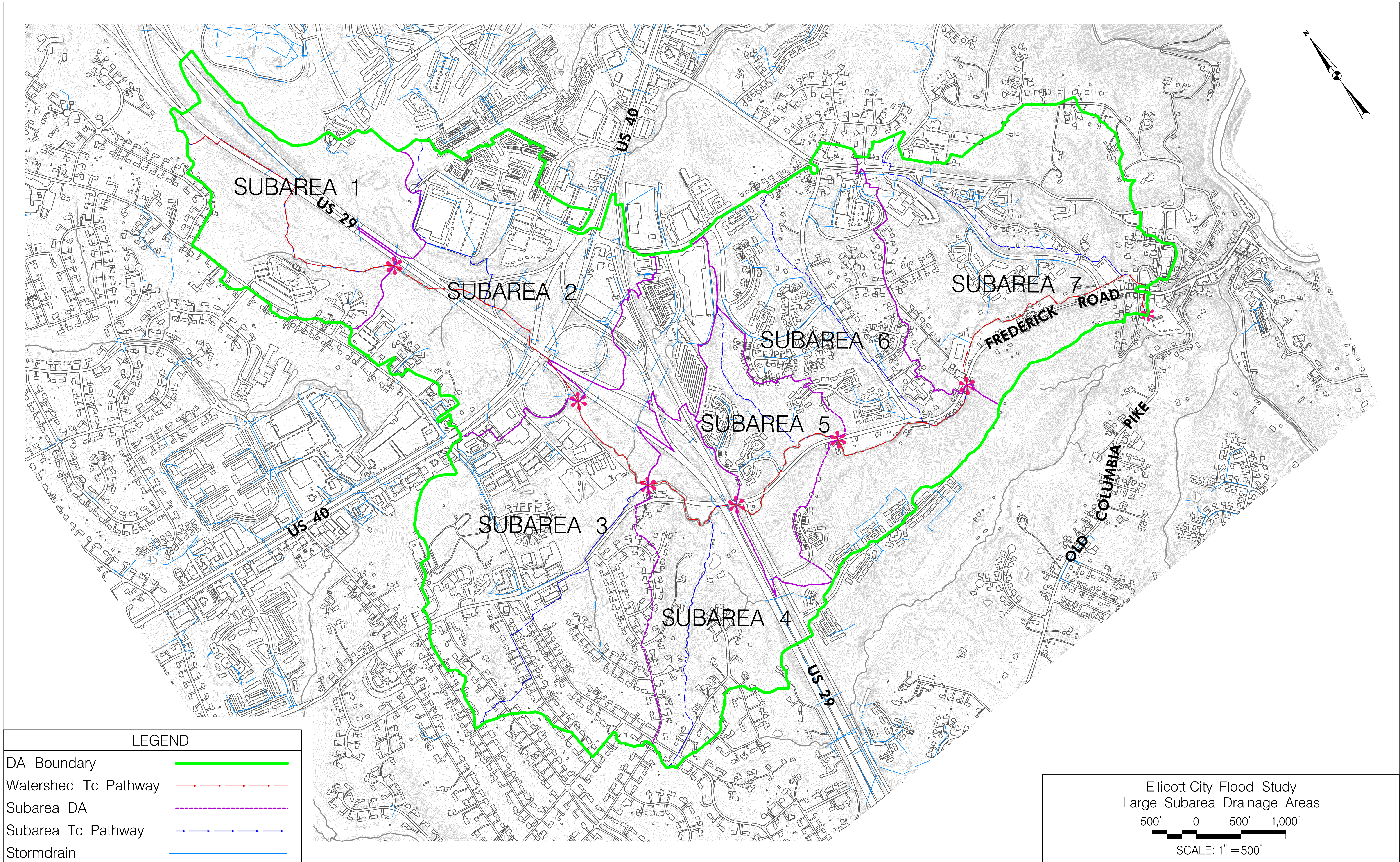
**submerged sharp-crested weir:**  $Q_s = Q_u [1 - (H_2/H_1)^{1.5}]^{0.385}$

*Q<sub>s</sub>* = submerged weir discharge






*Q<sub>u</sub>* = unsubmerged weir discharge

*H<sub>1</sub>* = upstream head above weir crest

*H<sub>2</sub>* = downstream head above weir crest

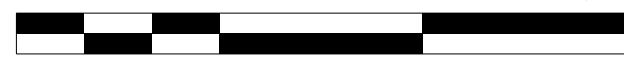


LEGEND

DA Boundary	
Watershed Tc Pathway	
Subarea DA	
Subarea Tc Pathway	
Stormdrain	

Ellicott City Flood Study  
 Large Subarea Drainage Areas

500' 0 500' 1,000'



SCALE: 1" = 500'

# Principal Spillway Computations - Existing Conditions

## SWMF 29

Pond Elevation	Pond Area	Pond Volume
266.60 ft	7345.02 ft <sup>2</sup>	0.000 ac-ft
267.00 ft	8444.94 ft <sup>2</sup>	0.072 ac-ft
268.00 ft	10923.42 ft <sup>2</sup>	0.295 ac-ft
269.00 ft	12394.65 ft <sup>2</sup>	0.562 ac-ft
270.00 ft	16065.43 ft <sup>2</sup>	0.889 ac-ft
271.00 ft	18292.09 ft <sup>2</sup>	1.284 ac-ft
272.00 ft	21800.32 ft <sup>2</sup>	1.744 ac-ft
273.00 ft	24399.36 ft <sup>2</sup>	2.274 ac-ft
274.00 ft	27863.15 ft <sup>2</sup>	2.874 ac-ft
275.00 ft	30028.64 ft <sup>2</sup>	3.538 ac-ft
276.00 ft	33759.90 ft <sup>2</sup>	4.271 ac-ft

Barrel Q	Barrel HW
0.00 ft <sup>3</sup> /s	259.40 ft
15.00 ft <sup>3</sup> /s	260.94 ft
30.00 ft <sup>3</sup> /s	261.77 ft
45.00 ft <sup>3</sup> /s	262.48 ft
55.00 ft <sup>3</sup> /s	262.95 ft
75.00 ft <sup>3</sup> /s	264.04 ft
90.00 ft <sup>3</sup> /s	265.08 ft
105.00 ft <sup>3</sup> /s	266.33 ft
120.00 ft <sup>3</sup> /s	267.79 ft
135.00 ft <sup>3</sup> /s	269.45 ft
150.00 ft <sup>3</sup> /s	271.37 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft

Release Point	Crest Elevation	Crest Width	Orifice Height	Orifice Area	Co	Cw
Low Flow	266.60 ft	0.26 ft	0.33 ft	0.09 ft <sup>2</sup>	0.6	3.1
Weir	273.00 ft	12.50 ft	0.00 ft	9.63 ft <sup>2</sup>	0.6	3.1

Total Flow	Riser WSEL	Pond WSEL	Pond Storage	Low Flow		Weir			Emergency Spillway	
0.00 ft <sup>3</sup> /s	259.40 ft <sup>3</sup> /s			h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	h=0.00 ft	h=0.00 ft	h=0.00 ft	h=0.00 ft	
10.00 ft <sup>3</sup> /s	260.43 ft <sup>3</sup> /s	273.38 ft	2.490 ac-ft	orifice	6.61 ft <sup>3</sup> /s	1.08 ft <sup>3</sup> /s	weir	0.38 ft <sup>3</sup> /s	8.93 ft <sup>3</sup> /s	
20.00 ft <sup>3</sup> /s	261.22 ft <sup>3</sup> /s	273.62 ft	2.636 ac-ft	orifice	h=6.85 ft	Q=1.10 ft <sup>3</sup> /s	weir	h=0.62 ft	Q=18.90 ft <sup>3</sup> /s	
35.00 ft <sup>3</sup> /s	262.01 ft <sup>3</sup> /s	273.91 ft	2.819 ac-ft	orifice	h=7.15 ft	Q=1.12 ft <sup>3</sup> /s	weir	h=0.91 ft	Q=33.88 ft <sup>3</sup> /s	
46.00 ft <sup>3</sup> /s	262.53 ft <sup>3</sup> /s	274.10 ft	2.940 ac-ft	orifice	h=7.34 ft	Q=1.14 ft <sup>3</sup> /s	weir	h=1.10 ft	Q=44.86 ft <sup>3</sup> /s	
55.00 ft <sup>3</sup> /s	262.95 ft <sup>3</sup> /s	274.35 ft	3.102 ac-ft	orifice	h=7.58 ft	Q=1.15 ft <sup>3</sup> /s	orifice	h=1.35 ft	Q=53.85 ft <sup>3</sup> /s	
60.00 ft <sup>3</sup> /s	263.22 ft <sup>3</sup> /s	274.61 ft	3.275 ac-ft	orifice	h=7.85 ft	Q=1.17 ft <sup>3</sup> /s	orifice	h=1.61 ft	Q=58.82 ft <sup>3</sup> /s	
98.51 ft <sup>3</sup> /s	263.77 ft <sup>3</sup> /s	275.21 ft	3.682 ac-ft	orifice	h=8.44 ft	Q=1.22 ft <sup>3</sup> /s	orifice	h=2.21 ft	Q=68.79 ft <sup>3</sup> /s	Q=28.51 ft <sup>3</sup> /s
139.16 ft <sup>3</sup> /s	264.04 ft <sup>3</sup> /s	275.54 ft	3.920 ac-ft	orifice	h=8.77 ft	Q=1.24 ft <sup>3</sup> /s	orifice	h=2.54 ft	Q=73.76 ft <sup>3</sup> /s	Q=64.16 ft <sup>3</sup> /s
189.97 ft <sup>3</sup> /s	264.39 ft <sup>3</sup> /s	275.89 ft	4.185 ac-ft	orifice	h=9.12 ft	Q=1.27 ft <sup>3</sup> /s	orifice	h=2.89 ft	Q=78.73 ft <sup>3</sup> /s	Q=109.97 ft <sup>3</sup> /s
253.87 ft <sup>3</sup> /s	264.73 ft <sup>3</sup> /s	276.27 ft	4.478 ac-ft	orifice	h=9.50 ft	Q=1.29 ft <sup>3</sup> /s	orifice	h=3.27 ft	Q=83.71 ft <sup>3</sup> /s	Q=168.87 ft <sup>3</sup> /s
299.40 ft <sup>3</sup> /s	264.94 ft <sup>3</sup> /s	276.50 ft	4.667 ac-ft	orifice	h=9.74 ft	Q=1.31 ft <sup>3</sup> /s	orifice	h=3.50 ft	Q=86.69 ft <sup>3</sup> /s	Q=211.40 ft <sup>3</sup> /s

**orifice:**  $Q_o = C_d A_o (2gH_o)^{1/2}$

$Q_o$  = the orifice flow rate

$C_d$  = orifice discharge coefficient (0.40 - 0.60)

$A_o$  = area of orifice

$H_o$  = effective head on the orifice measured from the centre of the opening

$g$  = acceleration due to gravity

**sharp-crested weir:**  $Q_w = C_w L H_w^{1.5}$

$Q_w$  = weir discharge

$L$  = weir base width

$H_w$  = head above weir crest excluding velocity head

**submerged sharp-crested weir:**  $Q_s = Q_u [1 - (H_2/H_1)^{1.5}]^{0.95}$

$Q_s$  = submerged weir discharge

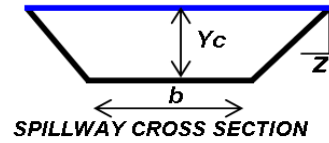
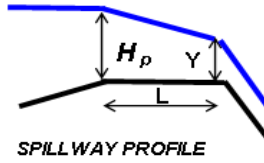
$Q_u$  = unsubmerged weir discharge

$H_1$  = upstream head above weir crest

$H_2$  = downstream head above weir crest

# Low Point of Pond in Cut - Spillway Computations

<b>SELECTED BOTTOM WIDTH (b):</b>	25.00 ft
<b>SIDE SLOPE:</b>	2.0:1
<b>LEVEL SECTION LENGTH (L):</b>	48.00 ft
<b>ROUGHNESS COEFFICIENT (n):</b>	0.020
<b>SPILLWAY INVERT ELEVATION:</b>	274.60



Yc	T	Ac	Qc	Vc	Hec	a	Hp	R	Sc	Elev		
0.00			0.00							274.60		
0.34	26.36 ft	8.73 ft <sup>2</sup>	28.51 ft <sup>3</sup> /s	3.27 ft/s	0.51 ft	0.00428	0.61 ft	0.33 ft	0.85%	275.21	275.21 ft	
0.58	27.32 ft	15.17 ft <sup>2</sup>	64.16 ft <sup>3</sup> /s	4.23 ft/s	0.86 ft	0.00212	0.94 ft	0.55 ft	0.72%	275.54	275.54 ft	
0.83	28.30 ft	21.99 ft <sup>2</sup>	109.97 ft <sup>3</sup> /s	5.00 ft/s	1.21 ft	0.00133	1.29 ft	0.77 ft	0.65%	275.89	275.89 ft	
1.09	29.36 ft	29.63 ft <sup>2</sup>	168.87 ft <sup>3</sup> /s	5.70 ft/s	1.59 ft	0.00093	1.67 ft	0.99 ft	0.59%	276.27	276.27 ft	
1.26	30.04 ft	34.68 ft <sup>2</sup>	211.40 ft <sup>3</sup> /s	6.10 ft/s	1.84 ft	0.00077	1.90 ft	1.13 ft	0.57%	276.50	276.50 ft	

$$T = b + 2ZY_c$$

$$V_c = \text{SQRT}(gA/T)$$

$$H_p = H_{ec}(1 + aL)$$

$$A_c = (b + ZY_c)Y_c$$

$$H_{ec} = Y_c + V_c^2/2g$$

$$R = (b + ZY_c)Y_c / (b + 2ZY_c \text{SQRT}(1 + Z^2))$$

$$Q_c = \text{SQRT}(gA^3/T)$$

$$a = (4.32n^2)/H_{ec}^{1.33}$$

$$S_c = 14.56n^2A / (R^{1.33})T$$

## Principal Spillway Computations - Existing Conditions

Pond Elevation	Pond Volume
356.38 ft	
357.26 ft	0.02
357.50 ft	0.03
358.00 ft	0.05
358.50 ft	0.08
359.00 ft	0.1
360.00 ft	0.16
361.00 ft	0.25
362.00 ft	0.36
363.50 ft	0.6
364.00 ft	0.72

### SWMF-03 (Structure-31)

Barrel Q	Barrel HW
40.00 ft <sup>3</sup> /s	358.63 ft
50.00 ft <sup>3</sup> /s	359.84 ft
120.00 ft <sup>3</sup> /s	366.60 ft
160.00 ft <sup>3</sup> /s	366.68 ft
200.00 ft <sup>3</sup> /s	366.76 ft
240.00 ft <sup>3</sup> /s	366.83 ft
280.00 ft <sup>3</sup> /s	366.89 ft
320.00 ft <sup>3</sup> /s	366.95 ft
360.00 ft <sup>3</sup> /s	367.01 ft
400.00 ft <sup>3</sup> /s	

Release Point	Crest Width	Orifice Height	Orifice Area	Co	Cw
ORIFICE	1.75 ft	1.37 ft	2.41 ft <sup>2</sup>	0.6	3.1

Total Flow	Pond WSEL	Pond Storage	ORIFICE			Barrel
5.00 ft <sup>3</sup> /s	357.33 ft		weir	h=0.95 ft	Q=5.00 ft <sup>3</sup> /s	Q=5.00 ft <sup>3</sup> /s
10.00 ft <sup>3</sup> /s	357.81 ft		orifice	h=0.74 ft	Q=10.00 ft <sup>3</sup> /s	Q=10.00 ft <sup>3</sup> /s
20.00 ft <sup>3</sup> /s	360.04 ft		orifice	h=2.97 ft	Q=20.00 ft <sup>3</sup> /s	Q=20.00 ft <sup>3</sup> /s
40.00 ft <sup>3</sup> /s	363.25 ft		orifice	h=4.62 ft	Q=24.93 ft <sup>3</sup> /s	Q=40.00 ft <sup>3</sup> /s
60.00 ft <sup>3</sup> /s	363.70 ft		orifice	h=2.91 ft	Q=19.79 ft <sup>3</sup> /s	Q=60.00 ft <sup>3</sup> /s
80.00 ft <sup>3</sup> /s	364.08 ft		orifice	h=1.38 ft	Q=13.65 ft <sup>3</sup> /s	Q=80.00 ft <sup>3</sup> /s
100.00 ft <sup>3</sup> /s	364.60 ft		barrel	n/a	n/a	Q=100.00 ft <sup>3</sup> /s
140.00 ft <sup>3</sup> /s	366.55 ft		barrel	n/a	n/a	Q=140.00 ft <sup>3</sup> /s
180.00 ft <sup>3</sup> /s	366.64 ft		barrel	n/a	n/a	Q=180.00 ft <sup>3</sup> /s
220.00 ft <sup>3</sup> /s	366.72 ft		barrel	n/a	n/a	Q=220.00 ft <sup>3</sup> /s
260.00 ft <sup>3</sup> /s	366.80 ft		barrel	n/a	n/a	Q=260.00 ft <sup>3</sup> /s
300.00 ft <sup>3</sup> /s	366.86 ft		barrel	n/a	n/a	Q=300.00 ft <sup>3</sup> /s
340.00 ft <sup>3</sup> /s	366.92 ft		barrel	n/a	n/a	Q=340.00 ft <sup>3</sup> /s
380.00 ft <sup>3</sup> /s	366.98 ft		barrel	n/a	n/a	Q=380.00 ft <sup>3</sup> /s

**orifice:  $Q_o = C_d A_o (2gH_o)^{1/2}$**

$Q_o$  = the orifice flow rate

$C_d$  = orifice discharge coefficient (0.40 - 0.60)

$A_o$  = area of orifice

$H_o$  = effective head on the orifice measured from the centre of the opening

$g$  = acceleration due to gravity

**sharp-crested weir:  $Q_w = C_w L H_w^{1.5}$**

$Q_w$  = weir discharge

$L$  = weir base width

$H_w$  = head above weir crest excluding velocity head

**submerged sharp-crested weir:  $Q_s = Q_u [1 - (H_2/H_1)]^{1.5-0.385}$**

$Q_s$  = submerged weir discharge

$Q_u$  = unsubmerged weir discharge

$H_1$  = upstream head above weir crest

$H_2$  = downstream head above weir crest

# Principal Spillway Computations - Existing Conditions

## SWMF 32

Pond Elevation	Pond Area	Pond Volume
367.00 ft	33773.16 ft <sup>2</sup>	0.000 ac-ft
368.00 ft	36864.65 ft <sup>2</sup>	0.811 ac-ft
369.00 ft	39023.31 ft <sup>2</sup>	1.682 ac-ft
370.00 ft	41607.93 ft <sup>2</sup>	2.607 ac-ft
370.70 ft	43844.88 ft <sup>2</sup>	3.294 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft

Barrel Q	Barrel HW
0.00 ft <sup>3</sup> /s	362.90 ft
30.00 ft <sup>3</sup> /s	365.73 ft
60.00 ft <sup>3</sup> /s	367.29 ft
79.78 ft <sup>3</sup> /s	368.80 ft
83.27 ft <sup>3</sup> /s	369.13 ft
85.78 ft <sup>3</sup> /s	369.37 ft
87.84 ft <sup>3</sup> /s	369.57 ft
88.52 ft <sup>3</sup> /s	369.64 ft
91.22 ft <sup>3</sup> /s	369.92 ft
92.67 ft <sup>3</sup> /s	370.08 ft
94.00 ft <sup>3</sup> /s	370.22 ft
96.39 ft <sup>3</sup> /s	370.49 ft
97.85 ft <sup>3</sup> /s	370.65 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft

Release Point	Crest Elevation	Crest Width	Orifice Height	Orifice Area	Co	Cw
Weir	367.00 ft	14.14 ft	0.00 ft	15.90 ft <sup>2</sup>	0.6	3.1
0	0.00 ft	0.00 ft	0.00 ft	0.00 ft <sup>2</sup>	0	0

Total Flow	Riser WSEL	Pond WSEL	Pond Storage	Weir			Weir			Emergency Spillway	
0.00 ft <sup>3</sup> /s	362.90 ft <sup>3</sup> /s			h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	h=0.00 ft	h=0.00 ft	h=0.00 ft	h=0.00 ft		
10.00 ft <sup>3</sup> /s	363.84 ft <sup>3</sup> /s	367.37 ft	0.294 ac-ft	weir	0.37 ft <sup>3</sup> /s	10.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s		
20.00 ft <sup>3</sup> /s	364.79 ft <sup>3</sup> /s	367.59 ft	0.472 ac-ft	weir	h=0.59 ft	Q=20.00 ft <sup>3</sup> /s	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s		
30.00 ft <sup>3</sup> /s	365.73 ft <sup>3</sup> /s	367.78 ft	0.624 ac-ft	weir	h=0.78 ft	Q=30.00 ft <sup>3</sup> /s	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s		
40.00 ft <sup>3</sup> /s	366.25 ft <sup>3</sup> /s	367.94 ft	0.761 ac-ft	weir	h=0.94 ft	Q=40.00 ft <sup>3</sup> /s	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s		
50.00 ft <sup>3</sup> /s	366.77 ft <sup>3</sup> /s	368.09 ft	0.889 ac-ft	weir	h=1.09 ft	Q=50.00 ft <sup>3</sup> /s	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s		
75.00 ft <sup>3</sup> /s	368.44 ft <sup>3</sup> /s	368.44 ft	1.184 ac-ft	barrel	n/a	n/a	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s		
88.96 ft <sup>3</sup> /s	368.82 ft <sup>3</sup> /s	368.82 ft	1.522 ac-ft	barrel	n/a	n/a	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	Q=8.96 ft <sup>3</sup> /s	h=0.27 ft
142.54 ft <sup>3</sup> /s	369.30 ft <sup>3</sup> /s	369.30 ft	1.949 ac-ft	barrel	n/a	n/a	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	Q=57.54 ft <sup>3</sup> /s	h=0.75 ft
219.99 ft <sup>3</sup> /s	369.79 ft <sup>3</sup> /s	369.79 ft	2.411 ac-ft	barrel	n/a	n/a	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	Q=129.99 ft <sup>3</sup> /s	h=1.24 ft
280.10 ft <sup>3</sup> /s	370.11 ft <sup>3</sup> /s	370.11 ft	2.717 ac-ft	barrel	n/a	n/a	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	Q=187.10 ft <sup>3</sup> /s	h=1.56 ft
326.70 ft <sup>3</sup> /s	370.33 ft <sup>3</sup> /s	370.33 ft	2.930 ac-ft	barrel	n/a	n/a	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	Q=231.70 ft <sup>3</sup> /s	h=1.78 ft
378.34 ft <sup>3</sup> /s	370.56 ft <sup>3</sup> /s	370.56 ft	3.151 ac-ft	barrel	n/a	n/a	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	Q=281.34 ft <sup>3</sup> /s	h=2.01 ft

**orifice:**  $Q_o = C_d A_o (2gH_o)^{1/2}$

$Q_o$  = the orifice flow rate

$C_d$  = orifice discharge coefficient (0.40 - 0.60)

$A_o$  = area of orifice

$H_o$  = effective head on the orifice measured from the centre of the opening

$g$  = acceleration due to gravity

**sharp-crested weir:**  $Q_w = C_w L H_w^{3/2}$

$Q_w$  = weir discharge

$L$  = weir base width

$H_w$  = head above weir crest excluding velocity head

**submerged sharp-crested weir:**  $Q_s = Q_u [1 - (H_2/H_1)^{1.5}]^{0.5}$

$Q_s$  = submerged weir discharge

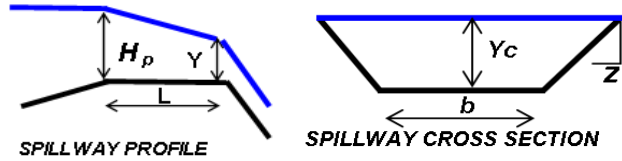
$Q_u$  = unsubmerged weir discharge

$H_1$  = upstream head above weir crest

$H_2$  = downstream head above weir crest

# Low Point of Pond in Cut - Spillway Computations

<b>SELECTED BOTTOM WIDTH (b):</b>	30.00 ft
<b>SIDE SLOPE:</b>	2.0:1
<b>LEVEL SECTION LENGTH (L):</b>	20.00 ft
<b>ROUGHNESS COEFFICIENT (n):</b>	0.020
<b>SPILLWAY INVERT ELEVATION:</b>	368.55



Yc	T	Ac	Qc	Vc	Hec	a	Hp	R	Sc	Elev
0.00			0.00							368.55
0.14	30.56 ft	4.24 ft <sup>2</sup>	8.96 ft <sup>3</sup> /s	2.11 ft/s	0.21 ft	0.01388	0.27 ft	0.14 ft	1.13%	368.82
0.48	31.92 ft	14.86 ft <sup>2</sup>	57.54 ft <sup>3</sup> /s	3.87 ft/s	0.71 ft	0.00271	0.75 ft	0.46 ft	0.76%	369.30
0.82	33.28 ft	25.94 ft <sup>2</sup>	129.99 ft <sup>3</sup> /s	5.01 ft/s	1.21 ft	0.00134	1.24 ft	0.77 ft	0.64%	369.79
1.04	34.16 ft	33.36 ft <sup>2</sup>	187.10 ft <sup>3</sup> /s	5.61 ft/s	1.53 ft	0.00098	1.56 ft	0.96 ft	0.60%	370.11
1.20	34.78 ft	38.71 ft <sup>2</sup>	231.70 ft <sup>3</sup> /s	5.99 ft/s	1.75 ft	0.00082	1.78 ft	1.10 ft	0.57%	370.33
1.36	35.42 ft	44.32 ft <sup>2</sup>	281.34 ft <sup>3</sup> /s	6.35 ft/s	1.98 ft	0.00069	2.01 ft	1.23 ft	0.55%	370.56

368.82  
369.30  
369.79  
370.11  
370.33  
370.56

$$T = b + 2ZY_c$$

$$Ac = (b + ZY_c)Y_c$$

$$Qc = \text{SQRT}(gA^3/T)$$

$$Vc = \text{SQRT}(gA/T)$$

$$Hec = Yc + Vc^2/2g$$

$$a = (4.32n^2)/Hec^{1.33}$$

$$Hp = Hec(1 + aL)$$

$$R = (b + ZY_c)Y_c / (b + 2Yc\text{SQRT}(1 + Z^2))$$

$$Sc = 14.56n^2A / (R^{1.33})T$$

# Principal Spillway Computations - Existing Conditions

## SWMF 33

Pond Elevation	Pond Area	Pond Volume
323.00 ft	2378.87 ft <sup>2</sup>	0.000 ac-ft
324.00 ft	2803.57 ft <sup>2</sup>	0.059 ac-ft
325.00 ft	3587.63 ft <sup>2</sup>	0.133 ac-ft
326.00 ft	4088.04 ft <sup>2</sup>	0.221 ac-ft
327.00 ft	4614.43 ft <sup>2</sup>	0.321 ac-ft
328.00 ft	5373.33 ft <sup>2</sup>	0.435 ac-ft
329.00 ft	5966.01 ft <sup>2</sup>	0.566 ac-ft
330.00 ft	6643.19 ft <sup>2</sup>	0.710 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft

Barrel Q	Barrel HW
0.00 ft <sup>3</sup> /s	321.71 ft
12.00 ft <sup>3</sup> /s	323.57 ft
24.00 ft <sup>3</sup> /s	325.06 ft
36.00 ft <sup>3</sup> /s	327.51 ft
38.88 ft <sup>3</sup> /s	328.45 ft
39.41 ft <sup>3</sup> /s	328.63 ft
39.99 ft <sup>3</sup> /s	328.84 ft
40.40 ft <sup>3</sup> /s	328.99 ft
40.77 ft <sup>3</sup> /s	329.12 ft
41.10 ft <sup>3</sup> /s	329.25 ft
41.42 ft <sup>3</sup> /s	329.36 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft

Release Point	Crest Elevation	Crest Width	Orifice Height	Orifice Area	Co	Cw
Low Flow	322.00 ft	1.37 ft	1.75 ft	2.41 ft <sup>2</sup>	0.6	3.1
Weir	326.95 ft	9.42 ft	0.00 ft	7.07 ft <sup>2</sup>	0.6	3.1

Total Flow	Riser WSEL	Pond WSEL	Pond Storage	Low Flow			Weir			Emergency Spillway
0.00 ft <sup>3</sup> /s	321.71 ft <sup>3</sup> /s			h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	h=0.00 ft	h=0.00 ft	h=0.00 ft	h=0.00 ft	
5.00 ft <sup>3</sup> /s	322.49 ft <sup>3</sup> /s	323.20 ft	0.011 ac-ft	submerged-weir	0.40 ft <sup>3</sup> /s	5.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	
10.00 ft <sup>3</sup> /s	323.26 ft <sup>3</sup> /s	324.01 ft	0.060 ac-ft	orifice	h=0.75 ft	Q=10.00 ft <sup>3</sup> /s	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	
15.00 ft <sup>3</sup> /s	323.94 ft <sup>3</sup> /s	325.62 ft	0.186 ac-ft	orifice	h=1.68 ft	Q=15.00 ft <sup>3</sup> /s	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	
18.00 ft <sup>3</sup> /s	324.32 ft <sup>3</sup> /s	326.73 ft	0.293 ac-ft	orifice	h=2.42 ft	Q=18.00 ft <sup>3</sup> /s	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	
20.00 ft <sup>3</sup> /s	324.56 ft <sup>3</sup> /s	327.09 ft	0.331 ac-ft	orifice	h=2.53 ft	Q=18.41 ft <sup>3</sup> /s	weir	h=0.14 ft	Q=1.59 ft <sup>3</sup> /s	
30.00 ft <sup>3</sup> /s	326.29 ft <sup>3</sup> /s	327.63 ft	0.392 ac-ft	orifice	h=1.35 ft	Q=13.45 ft <sup>3</sup> /s	weir	h=0.68 ft	Q=16.55 ft <sup>3</sup> /s	
38.10 ft <sup>3</sup> /s	328.16 ft <sup>3</sup> /s	328.16 ft	0.456 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
73.25 ft <sup>3</sup> /s	328.84 ft <sup>3</sup> /s	328.84 ft	0.544 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
106.03 ft <sup>3</sup> /s	329.21 ft <sup>3</sup> /s	329.21 ft	0.595 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	

**orifice:**  $Q_o = C_d A_o (2gH_o)^{1/2}$

$Q_o$  = the orifice flow rate

$C_d$  = orifice discharge coefficient (0.40 - 0.60)

$A_o$  = area of orifice

$H_o$  = effective head on the orifice measured from the centre of the opening

$g$  = acceleration due to gravity

**sharp-crested weir:**  $Q_w = C_w L H_w^{3/2}$

$Q_w$  = weir discharge

$L$  = weir base width

$H_w$  = head above weir crest excluding velocity head

**submerged sharp-crested weir:**  $Q_s = Q_u [1 - (H_2/H_1)^{1.5}]^{0.5}$

$Q_s$  = submerged weir discharge

$Q_u$  = unsubmerged weir discharge

$H_1$  = upstream head above weir crest

$H_2$  = downstream head above weir crest



# Principal Spillway Computations - Existing Conditions

## SWMF 34

Pond Elevation	Pond Area	Pond Volume
329.00 ft	5542.28 ft <sup>2</sup>	0.000 ac-ft
330.00 ft	6554.81 ft <sup>2</sup>	0.139 ac-ft
331.00 ft	9212.59 ft <sup>2</sup>	0.320 ac-ft
332.00 ft	10814.25 ft <sup>2</sup>	0.550 ac-ft
333.00 ft	14622.71 ft <sup>2</sup>	0.842 ac-ft
334.00 ft	16809.64 ft <sup>2</sup>	1.202 ac-ft
335.00 ft	16809.64 ft <sup>2</sup>	1.588 ac-ft
336.00 ft	22288.24 ft <sup>2</sup>	2.037 ac-ft
337.00 ft	26149.31 ft <sup>2</sup>	2.593 ac-ft
338.00 ft	28239.37 ft <sup>2</sup>	3.217 ac-ft
339.00 ft	31812.00 ft <sup>2</sup>	3.907 ac-ft
340.00 ft	34145.78 ft <sup>2</sup>	4.664 ac-ft

Barrel Q	Barrel HW
0.00 ft <sup>3</sup> /s	326.46 ft
18.00 ft <sup>3</sup> /s	328.02 ft
36.00 ft <sup>3</sup> /s	328.72 ft
54.00 ft <sup>3</sup> /s	329.33 ft
72.00 ft <sup>3</sup> /s	329.92 ft
90.00 ft <sup>3</sup> /s	330.49 ft
108.00 ft <sup>3</sup> /s	331.08 ft
109.00 ft <sup>3</sup> /s	331.11 ft
144.00 ft <sup>3</sup> /s	332.36 ft
162.00 ft <sup>3</sup> /s	333.10 ft
180.00 ft <sup>3</sup> /s	333.93 ft
250.00 ft <sup>3</sup> /s	338.09 ft
315.00 ft <sup>3</sup> /s	343.42 ft
319.00 ft <sup>3</sup> /s	343.92 ft
0.00 ft <sup>3</sup> /s	0.00 ft

Release Point	Crest Elevation	Crest Width	Orifice Height	Orifice Area	Co	Cw
Low Flow	329.04 ft	1.77 ft	2.25 ft	3.98 ft <sup>2</sup>	0.6	3.1
Weir	337.66 ft	40.00 ft	2.10 ft	84.00 ft <sup>2</sup>	0.6	3.1

Total Flow	Riser WSEL	Pond WSEL	Pond Storage	Low Flow			Weir			Embankment Overtopping	
0.00 ft <sup>3</sup> /s	326.46 ft <sup>3</sup> /s			h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	h=0.00 ft	h=0.00 ft	h=0.00 ft	h=0.00 ft		
30.00 ft <sup>3</sup> /s	328.49 ft <sup>3</sup> /s	332.62 ft	0.721 ac-ft	orifice	2.46 ft <sup>3</sup> /s	30.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s		
50.00 ft <sup>3</sup> /s	329.19 ft <sup>3</sup> /s	336.99 ft	2.589 ac-ft	orifice	h=6.83 ft	Q=50.00 ft <sup>3</sup> /s	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s		
70.00 ft <sup>3</sup> /s	329.85 ft <sup>3</sup> /s	337.92 ft	3.168 ac-ft	orifice	h=7.76 ft	Q=53.30 ft <sup>3</sup> /s	weir	h=0.26 ft	Q=16.71 ft <sup>3</sup> /s		
90.00 ft <sup>3</sup> /s	330.49 ft <sup>3</sup> /s	338.11 ft	3.288 ac-ft	orifice	h=7.62 ft	Q=52.81 ft <sup>3</sup> /s	weir	h=0.45 ft	Q=37.19 ft <sup>3</sup> /s		
100.00 ft <sup>3</sup> /s	330.82 ft <sup>3</sup> /s	338.19 ft	3.343 ac-ft	orifice	h=7.37 ft	Q=51.96 ft <sup>3</sup> /s	weir	h=0.53 ft	Q=48.04 ft <sup>3</sup> /s		
109.00 ft <sup>3</sup> /s	331.11 ft <sup>3</sup> /s	338.26 ft	3.390 ac-ft	orifice	h=7.15 ft	Q=51.17 ft <sup>3</sup> /s	weir	h=0.60 ft	Q=57.83 ft <sup>3</sup> /s		
150.00 ft <sup>3</sup> /s	332.61 ft <sup>3</sup> /s	338.55 ft	3.583 ac-ft	orifice	h=5.94 ft	Q=46.63 ft <sup>3</sup> /s	weir	h=0.89 ft	Q=103.37 ft <sup>3</sup> /s		
160.00 ft <sup>3</sup> /s	333.02 ft <sup>3</sup> /s	338.61 ft	3.628 ac-ft	orifice	h=5.59 ft	Q=45.25 ft <sup>3</sup> /s	weir	h=0.95 ft	Q=114.75 ft <sup>3</sup> /s		
165.00 ft <sup>3</sup> /s	333.24 ft <sup>3</sup> /s	338.64 ft	3.650 ac-ft	orifice	h=5.40 ft	Q=44.48 ft <sup>3</sup> /s	weir	h=0.98 ft	Q=120.52 ft <sup>3</sup> /s		
175.00 ft <sup>3</sup> /s	333.70 ft <sup>3</sup> /s	338.70 ft	3.694 ac-ft	orifice	h=5.00 ft	Q=42.81 ft <sup>3</sup> /s	weir	h=1.04 ft	Q=132.20 ft <sup>3</sup> /s		
179.50 ft <sup>3</sup> /s	333.91 ft <sup>3</sup> /s	338.73 ft	3.713 ac-ft	orifice	h=4.82 ft	Q=42.03 ft <sup>3</sup> /s	weir	h=1.07 ft	Q=137.47 ft <sup>3</sup> /s		
200.00 ft <sup>3</sup> /s	335.12 ft <sup>3</sup> /s	338.86 ft	3.805 ac-ft	orifice	h=3.74 ft	Q=37.01 ft <sup>3</sup> /s	weir	h=1.20 ft	Q=162.99 ft <sup>3</sup> /s		
310.00 ft <sup>3</sup> /s	343.01 ft <sup>3</sup> /s	343.01 ft	7.337 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a		
680.58 ft <sup>3</sup> /s	343.91 ft <sup>3</sup> /s	343.91 ft	8.205 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	361.68 ft <sup>3</sup> /s	h=0.91 ft

**orifice:**  $Q_o = C_d A_o (2gH_o)^{1/2}$

$Q_o$  = the orifice flow rate

$C_d$  = orifice discharge coefficient (0.40 - 0.60)

$A_o$  = area of orifice

$H_o$  = effective head on the orifice measured from the centre of the opening

$g$  = acceleration due to gravity

**sharp-crested weir:**  $Q_w = C_w L H_w^{3/2}$

$Q_w$  = weir discharge

$L$  = weir base width

$H_w$  = head above weir crest excluding velocity head

**submerged sharp-crested weir:**  $Q_s = Q_u [1 - (H_2/H_1)^{1.5}]^{0.003}$

$Q_s$  = submerged weir discharge

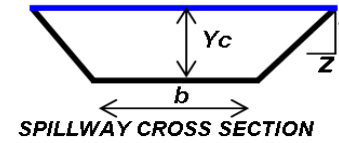
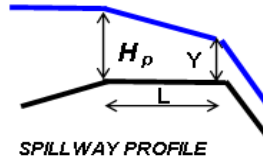
$Q_u$  = unsubmerged weir discharge

$H_1$  = upstream head above weir crest

$H_2$  = downstream head above weir crest

## Low Point of Pond in Cut - Spillway Computations

<b>SELECTED BOTTOM WIDTH (b):</b>	105.00 ft
<b>SIDE SLOPE:</b>	100.0:1
<b>LEVEL SECTION LENGTH (L):</b>	57.00 ft
<b>ROUGHNESS COEFFICIENT (n):</b>	0.020
<b>SPILLWAY INVERT ELEVATION:</b>	343.00



Y <sub>c</sub>	T	Ac	Q <sub>c</sub>	V <sub>c</sub>	H <sub>ec</sub>	a	H <sub>p</sub>	R	Sc	Elev
0.00			0.00							343.00
0.59	223.00 ft	96.76 ft <sup>2</sup>	361.68 ft <sup>3</sup> /s	3.74 ft/s	0.81 ft	0.00230	0.91 ft	0.43 ft	0.77%	343.91

343.91

$$T = b + 2ZY_c$$

$$Ac = (b + ZY_c)Y_c$$

$$Q_c = \text{SQRT}(gA^3/T)$$

$$V_c = \text{SQRT}(gA/T)$$

$$H_{ec} = Y_c + V_c^2/2g$$

$$a = (4.32n^2)/H_{ec}^{1.33}$$

$$H_p = H_{ec}(1 + aL)$$

$$R = (b + ZY_c)Y_c / (b + 2ZY_c \text{SQRT}(1 + Z^2))$$

$$Sc = 14.56n^2A / (R^{1.33})T$$

# Principal Spillway Computations - Existing Conditions

## SWMF 47

Pond Elevation	Pond Area	Pond Volume
410.00 ft	637.55 ft <sup>2</sup>	0.000 ac-ft
411.00 ft	2152.58 ft <sup>2</sup>	0.032 ac-ft
412.00 ft	2825.80 ft <sup>2</sup>	0.089 ac-ft
413.00 ft	3563.86 ft <sup>2</sup>	0.163 ac-ft
414.00 ft	4814.10 ft <sup>2</sup>	0.259 ac-ft
415.00 ft	5811.87 ft <sup>2</sup>	0.381 ac-ft
416.00 ft	6866.92 ft <sup>2</sup>	0.526 ac-ft
417.00 ft	7979.74 ft <sup>2</sup>	0.697 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft

Barrel Q	Barrel HW
0.00 ft <sup>3</sup> /s	409.49 ft
10.00 ft <sup>3</sup> /s	411.43 ft
20.00 ft <sup>3</sup> /s	412.81 ft
29.72 ft <sup>3</sup> /s	414.93 ft
30.98 ft <sup>3</sup> /s	415.26 ft
31.34 ft <sup>3</sup> /s	415.35 ft
32.40 ft <sup>3</sup> /s	415.63 ft
32.94 ft <sup>3</sup> /s	415.77 ft
33.41 ft <sup>3</sup> /s	415.90 ft
33.82 ft <sup>3</sup> /s	416.02 ft
34.24 ft <sup>3</sup> /s	416.13 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft

Release Point	Crest Elevation	Crest Width	Orifice Height	Orifice Area	Co	Cw
Low Flow	410.00 ft	1.18 ft	1.50 ft	1.77 ft <sup>2</sup>	0.6	3.1
Weir	413.64 ft	12.57 ft	0.00 ft	12.57 ft <sup>2</sup>	0.6	3.1

Total Flow	Riser WSEL	Pond WSEL	Pond Storage	Low Flow			Weir			Emergency Spillway
0.00 ft <sup>3</sup> /s	409.49 ft <sup>3</sup> /s			h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	h=0.00 ft	h=0.00 ft	h=0.00 ft	h=0.00 ft	
5.00 ft <sup>3</sup> /s	410.46 ft <sup>3</sup> /s	411.31 ft	0.048 ac-ft	submerged-weir	0.35 ft <sup>3</sup> /s	5.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	
10.00 ft <sup>3</sup> /s	411.43 ft <sup>3</sup> /s	412.81 ft	0.148 ac-ft	orifice	h=1.38 ft	Q=10.00 ft <sup>3</sup> /s	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	
15.00 ft <sup>3</sup> /s	412.12 ft <sup>3</sup> /s	413.85 ft	0.243 ac-ft	orifice	h=1.73 ft	Q=11.19 ft <sup>3</sup> /s	weir	h=0.21 ft	Q=3.81 ft <sup>3</sup> /s	
20.00 ft <sup>3</sup> /s	412.81 ft <sup>3</sup> /s	414.06 ft	0.265 ac-ft	orifice	h=1.25 ft	Q=9.49 ft <sup>3</sup> /s	weir	h=0.42 ft	Q=10.51 ft <sup>3</sup> /s	
30.68 ft <sup>3</sup> /s	415.00 ft <sup>3</sup> /s	415.00 ft	0.381 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
39.01 ft <sup>3</sup> /s	415.27 ft <sup>3</sup> /s	415.27 ft	0.417 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
52.87 ft <sup>3</sup> /s	415.52 ft <sup>3</sup> /s	415.52 ft	0.454 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
71.61 ft <sup>3</sup> /s	415.79 ft <sup>3</sup> /s	415.79 ft	0.493 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
95.27 ft <sup>3</sup> /s	416.07 ft <sup>3</sup> /s	416.07 ft	0.537 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	

**orifice:**  $Q_o = C_d A_o (2gH_o)^{1/2}$

$Q_o$  = the orifice flow rate

$C_d$  = orifice discharge coefficient (0.40 - 0.60)

$A_o$  = area of orifice

$H_o$  = effective head on the orifice measured from the centre of the opening

$g$  = acceleration due to gravity

**sharp-crested weir:**  $Q_w = C_w L H_w^{3/2}$

$Q_w$  = weir discharge

$L$  = weir base width

$H_w$  = head above weir crest excluding velocity head

**submerged sharp-crested weir:**  $Q_s = Q_u [1 - (H_2/H_1)^{1.5}]^{0.001}$

$Q_s$  = submerged weir discharge

$Q_u$  = unsubmerged weir discharge

$H_1$  = upstream head above weir crest

$H_2$  = downstream head above weir crest

# Principal Spillway Computations - Existing Conditions

## SWMF 52

Pond Elevation	Pond Area	Pond Volume
452.00 ft	20576.21 ft <sup>2</sup>	0.000 ac-ft
453.00 ft	22428.38 ft <sup>2</sup>	0.494 ac-ft
454.00 ft	26711.18 ft <sup>2</sup>	1.058 ac-ft
455.00 ft	28654.37 ft <sup>2</sup>	1.693 ac-ft
456.00 ft	32576.61 ft <sup>2</sup>	2.396 ac-ft
457.00 ft	35562.84 ft <sup>2</sup>	3.167 ac-ft
457.60 ft	37382.37 ft <sup>2</sup>	4.017 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft
0.00 ft	0.00 ft <sup>2</sup>	0.000 ac-ft

Barrel Q	Barrel HW
0.00 ft <sup>3</sup> /s	448.00 ft
10.00 ft <sup>3</sup> /s	449.32 ft
20.00 ft <sup>3</sup> /s	450.02 ft
30.00 ft <sup>3</sup> /s	450.62 ft
40.00 ft <sup>3</sup> /s	451.22 ft
50.00 ft <sup>3</sup> /s	451.92 ft
54.00 ft <sup>3</sup> /s	452.24 ft
70.00 ft <sup>3</sup> /s	453.80 ft
80.00 ft <sup>3</sup> /s	455.00 ft
86.00 ft <sup>3</sup> /s	455.81 ft
87.56 ft <sup>3</sup> /s	456.02 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft

Release Point	Crest Elevation	Crest Width	Orifice Height	Orifice Area	C <sub>o</sub>	C <sub>w</sub>
Weir	454.30 ft	4*3	0.00 ft	0.00 ft <sup>2</sup>	0.6	3.1
Low Flow	451.90 ft	0.20 ft	0.25 ft	0.05 ft <sup>2</sup>	0.6	3.1

Total Flow	Riser WSEL	Pond WSEL	Pond Storage	Low Flow			Weir			Emergency Spillway
0.00 ft <sup>3</sup> /s	452.00 ft <sup>3</sup> /s			h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	h=0.00 ft	h=0.00 ft	h=0.00 ft	h=0.00 ft	
10.00 ft <sup>3</sup> /s	453.32 ft <sup>3</sup> /s	453.32 ft	0.663 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
20.00 ft <sup>3</sup> /s	454.02 ft <sup>3</sup> /s	454.02 ft	1.070 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
30.00 ft <sup>3</sup> /s	454.62 ft <sup>3</sup> /s	454.62 ft	1.446 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
40.00 ft <sup>3</sup> /s	455.22 ft <sup>3</sup> /s	455.22 ft	1.840 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
44.00 ft <sup>3</sup> /s	455.42 ft <sup>3</sup> /s	455.42 ft	1.975 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
50.00 ft <sup>3</sup> /s	455.71 ft <sup>3</sup> /s	455.71 ft	2.183 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
54.00 ft <sup>3</sup> /s	455.77 ft <sup>3</sup> /s	455.77 ft	2.226 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
60.00 ft <sup>3</sup> /s	455.84 ft <sup>3</sup> /s	455.84 ft	2.278 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	
70.00 ft <sup>3</sup> /s	455.96 ft <sup>3</sup> /s	455.96 ft	2.366 ac-ft	barrel	n/a	n/a	barrel	n/a	n/a	

**orifice:**  $Q_o = C_d A_o (2gH_o)^{1/2}$

$Q_o$  = the orifice flow rate

$C_d$  = orifice discharge coefficient (0.40 - 0.60)

$A_o$  = area of orifice

$H_o$  = effective head on the orifice measured from the centre of the opening

$g$  = acceleration due to gravity

**sharp-crested weir:**  $Q_w = C_w L H_w^{3/2}$

$Q_w$  = weir discharge

$L$  = weir base width

$H_w$  = head above weir crest excluding velocity head

**submerged sharp-crested weir:**  $Q_s = Q_u [1 - (H_2/H_1)^{1/2}]^{1/2}$

$Q_s$  = submerged weir discharge

$Q_u$  = unsubmerged weir discharge

$H_1$  = upstream head above weir crest

$H_2$  = downstream head above weir crest

# Principal Spillway Computations - Existing Conditions

## SWMF 58

Pond Elevation	Pond Area	Pond Volume
424.00 ft	1344.05 ft <sup>2</sup>	0.000 ac-ft
425.00 ft	3759.13 ft <sup>2</sup>	0.059 ac-ft
426.00 ft	5049.82 ft <sup>2</sup>	0.160 ac-ft
427.00 ft	7096.82 ft <sup>2</sup>	0.299 ac-ft
428.00 ft	8633.36 ft <sup>2</sup>	0.480 ac-ft
429.00 ft	10465.12 ft <sup>2</sup>	0.699 ac-ft
430.00 ft	12165.13 ft <sup>2</sup>	0.959 ac-ft
431.00 ft	13923.72 ft <sup>2</sup>	1.258 ac-ft
432.00 ft	15872.04 ft <sup>2</sup>	1.600 ac-ft
433.00 ft	17614.07 ft <sup>2</sup>	1.984 ac-ft
434.00 ft	20147.34 ft <sup>2</sup>	2.418 ac-ft

Barrel Q	Barrel HW
0.00 ft <sup>3</sup> /s	422.50 ft
15.00 ft <sup>3</sup> /s	429.41 ft
17.41 ft <sup>3</sup> /s	431.59 ft
17.63 ft <sup>3</sup> /s	431.81 ft
17.71 ft <sup>3</sup> /s	431.89 ft
17.93 ft <sup>3</sup> /s	432.10 ft
18.04 ft <sup>3</sup> /s	432.22 ft
18.15 ft <sup>3</sup> /s	432.32 ft
18.24 ft <sup>3</sup> /s	432.42 ft
18.32 ft <sup>3</sup> /s	432.50 ft
18.40 ft <sup>3</sup> /s	432.59 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft
0.00 ft <sup>3</sup> /s	0.00 ft

Release Point	Crest Elevation	Crest Width	Orifice Height	Orifice Area	Co	Cw
Weir Low	428.25 ft	0.83 ft	3.83 ft	3.19 ft <sup>2</sup>	0.6	3.1
Weir	430.00 ft	3.17 ft	2.08 ft	6.60 ft <sup>2</sup>	0.6	3.1

Total Flow	Riser WSEL	Pond WSEL	Pond Storage	Weir Low		Weir			Emergency Spillway
0.00 ft <sup>3</sup> /s	422.50 ft <sup>3</sup> /s			h=0.00 ft	Q=0.00 ft <sup>3</sup> /s	h=0.00 ft	h=0.00 ft	h=0.00 ft	
2.00 ft <sup>3</sup> /s	423.42 ft <sup>3</sup> /s	429.09 ft	0.721 ac-ft	weir	0.84 ft <sup>3</sup> /s	2.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s	0.00 ft <sup>3</sup> /s
4.00 ft <sup>3</sup> /s	424.34 ft <sup>3</sup> /s	429.59 ft	0.847 ac-ft	weir	h=1.34 ft	Q=4.00 ft <sup>3</sup> /s	0.000 ac-ft	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s
6.00 ft <sup>3</sup> /s	425.26 ft <sup>3</sup> /s	430.00 ft	0.960 ac-ft	weir	h=1.75 ft	Q=6.00 ft <sup>3</sup> /s	weir	h=0.00 ft	Q=0.00 ft <sup>3</sup> /s
8.00 ft <sup>3</sup> /s	426.19 ft <sup>3</sup> /s	430.21 ft	1.017 ac-ft	weir	h=1.96 ft	Q=7.07 ft <sup>3</sup> /s	weir	h=0.21 ft	Q=0.93 ft <sup>3</sup> /s
10.00 ft <sup>3</sup> /s	427.11 ft <sup>3</sup> /s	430.36 ft	1.061 ac-ft	weir	h=2.11 ft	Q=7.90 ft <sup>3</sup> /s	weir	h=0.36 ft	Q=2.10 ft <sup>3</sup> /s
12.00 ft <sup>3</sup> /s	428.03 ft <sup>3</sup> /s	430.49 ft	1.100 ac-ft	weir	h=2.24 ft	Q=8.65 ft <sup>3</sup> /s	weir	h=0.49 ft	Q=3.35 ft <sup>3</sup> /s
14.00 ft <sup>3</sup> /s	428.95 ft <sup>3</sup> /s	430.64 ft	1.146 ac-ft	submerged-weir	h=0.29 ft	Q=8.95 ft <sup>3</sup> /s	weir	h=0.64 ft	Q=5.05 ft <sup>3</sup> /s
15.00 ft <sup>3</sup> /s	429.41 ft <sup>3</sup> /s	430.74 ft	1.176 ac-ft	submerged-weir	h=0.47 ft	Q=8.76 ft <sup>3</sup> /s	weir	h=0.74 ft	Q=6.24 ft <sup>3</sup> /s
17.09 ft <sup>3</sup> /s	431.22 ft <sup>3</sup> /s	431.22 ft	1.33 ft <sup>3</sup> /s	barrel	n/a	n/a	barrel	n/a	n/a
33.53 ft <sup>3</sup> /s	431.68 ft <sup>3</sup> /s	431.68 ft	1.49 ft <sup>3</sup> /s	barrel	n/a	n/a	barrel	n/a	n/a
80.87 ft <sup>3</sup> /s	432.18 ft <sup>3</sup> /s	432.18 ft	1.67 ft <sup>3</sup> /s	barrel	n/a	n/a	barrel	n/a	n/a
108.22 ft <sup>3</sup> /s	432.38 ft <sup>3</sup> /s	432.38 ft	1.74 ft <sup>3</sup> /s	barrel	n/a	n/a	barrel	n/a	n/a

**orifice:**  $Q_o = C_d A_o (2gH_o)^{1/2}$

$Q_o$  = the orifice flow rate

$C_d$  = orifice discharge coefficient (0.40 - 0.60)

$A_o$  = area of orifice

$H_o$  = effective head on the orifice measured from the centre of the opening

$g$  = acceleration due to gravity

**sharp-crested weir:**  $Q_w = C_w L H_w^{3/2}$

$Q_w$  = weir discharge

$L$  = weir base width

$H_w$  = head above weir crest excluding velocity head

**submerged sharp-crested weir:**  $Q_s = Q_u [1 - (H_2/H_1)^{1.5}]^{0.95}$

$Q_s$  = submerged weir discharge

$Q_u$  = unsubmerged weir discharge

$H_1$  = upstream head above weir crest

$H_2$  = downstream head above weir crest

# HY-8 Culvert Analysis Report

## Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 54 cfs

Maximum Flow: 100 cfs

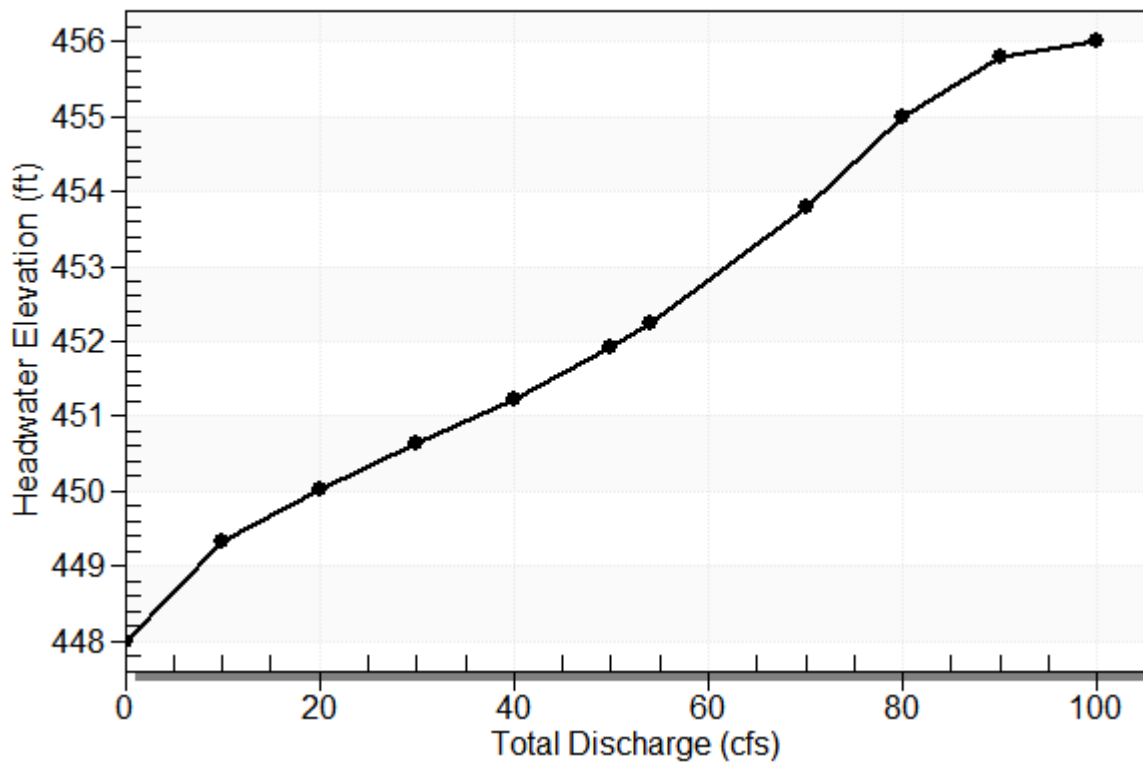
**Table 1 - Summary of Culvert Flows at Crossing: SWMF 52**

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 2 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
448.00	0.00	0.00	0.00	1
449.32	10.00	10.00	0.00	1
450.02	20.00	20.00	0.00	1
450.62	30.00	30.00	0.00	1
451.22	40.00	40.00	0.00	1
451.92	50.00	50.00	0.00	1
452.24	54.00	54.00	0.00	1
453.80	70.00	70.00	0.00	1
455.00	80.00	80.00	0.00	1
455.81	90.00	86.00	3.98	6
456.02	100.00	87.56	12.39	6
455.60	84.50	84.50	0.00	Overtopping

# Rating Curve Plot for Crossing: SWMF 52

## Total Rating Curve

Crossing: SWMF 52





**Table 2 - Culvert Summary Table: Culvert 2**

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	448.00	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
10.00	10.00	449.32	1.323	0.0*	1-S2n	0.486	0.997	0.486	0.307	13.002	5.423
20.00	20.00	450.02	2.024	0.0*	1-S2n	0.686	1.436	0.727	0.475	14.618	7.016
30.00	30.00	450.62	2.623	0.0*	1-S2n	0.842	1.769	0.842	0.616	17.783	8.122
40.00	40.00	451.22	3.224	0.0*	5-S2n	0.978	2.057	1.026	0.742	18.082	8.988
50.00	50.00	451.92	3.923	0.0*	5-S2n	1.101	2.298	1.159	0.859	19.166	9.706
54.00	54.00	452.24	4.243	0.0*	5-S2n	1.149	2.384	1.217	0.903	19.390	9.965
70.00	70.00	453.80	5.801	0.0*	5-S2n	1.327	2.657	1.410	1.074	20.739	10.867
80.00	80.00	455.00	7.003	0.0*	5-S2n	1.433	2.769	1.534	1.175	21.301	11.350
90.00	86.00	455.81	7.805	0.0*	5-S2n	1.495	2.816	1.606	1.272	21.626	11.789
100.00	87.56	456.02	8.022	0.0*	5-S2n	1.511	2.834	1.624	1.367	21.715	12.189

\* Full Flow Headwater elevation is below inlet invert.

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Straight Culvert

Inlet Elevation (invert): 448.00 ft, Outlet Elevation (invert): 436.50 ft

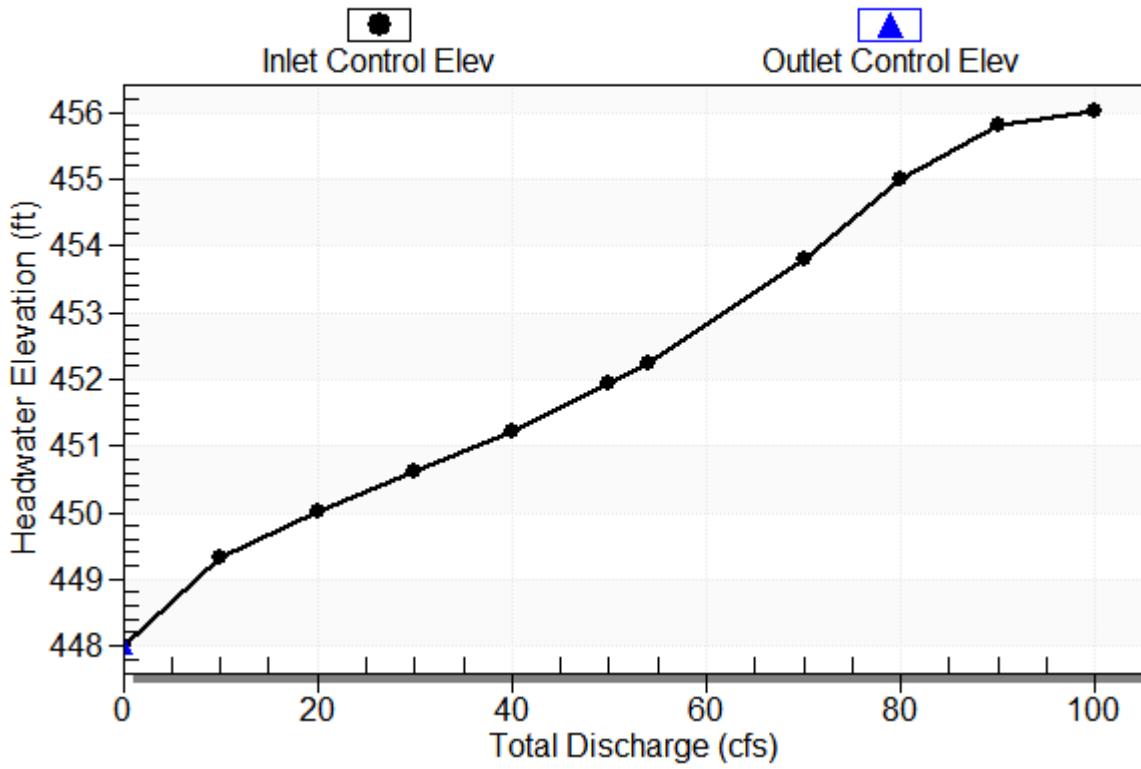
Culvert Length: 220.30 ft, Culvert Slope: 0.0523

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### Culvert Performance Curve Plot: Culvert 2

## Performance Curve

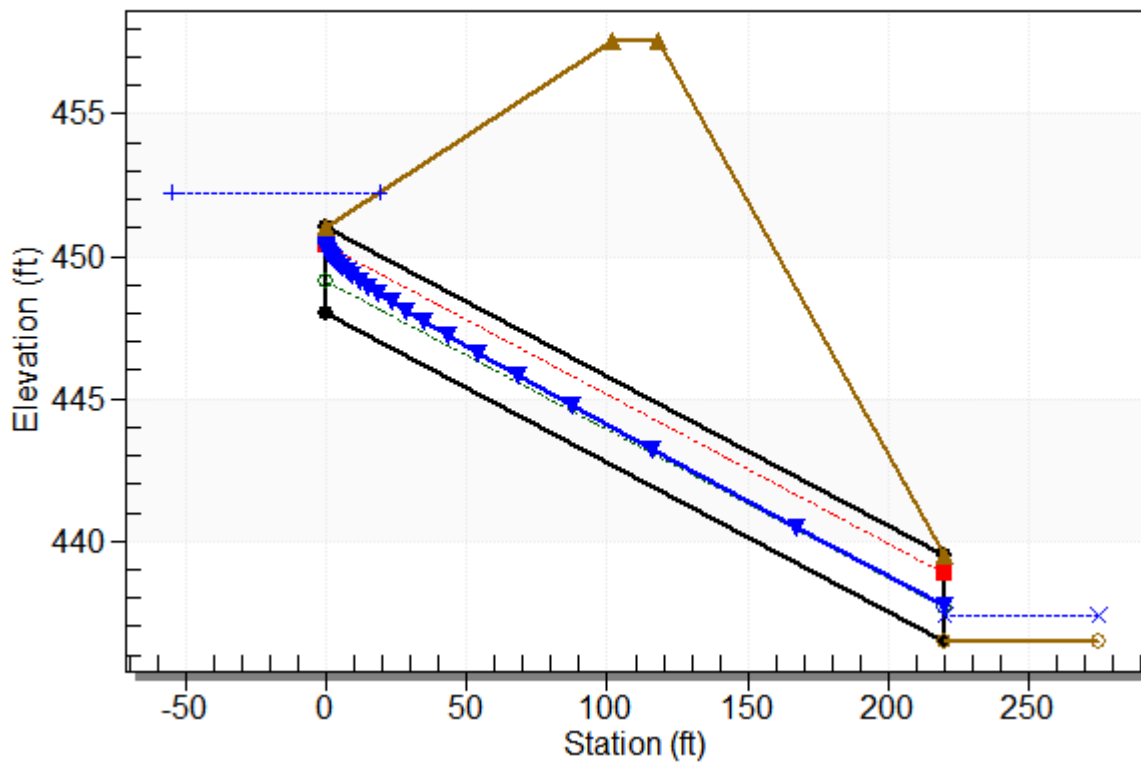
Culvert: Culvert 2



## Water Surface Profile Plot for Culvert: Culvert 2

Crossing - SWMF 52, Design Discharge - 54.0 cfs

Culvert - Culvert 2, Culvert Discharge - 54.0 cfs



### Site Data - Culvert 2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 448.00 ft

Outlet Station: 220.00 ft

Outlet Elevation: 436.50 ft

Number of Barrels: 1

### Culvert Data Summary - Culvert 2

Barrel Shape: Circular

Barrel Diameter: 3.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

**Table 3 - Downstream Channel Rating Curve (Crossing: SWMF 52)**

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	436.50	0.00	0.00	0.00	0.00
10.00	436.81	0.31	5.42	1.72	1.72
20.00	436.98	0.48	7.02	2.66	1.79
30.00	437.12	0.62	8.12	3.44	1.82
40.00	437.24	0.74	8.99	4.15	1.84
50.00	437.36	0.86	9.71	4.80	1.85
54.00	437.40	0.90	9.96	5.05	1.85
70.00	437.57	1.07	10.87	6.00	1.85
80.00	437.67	1.17	11.35	6.57	1.85
90.00	437.77	1.27	11.79	7.11	1.84
100.00	437.87	1.37	12.19	7.65	1.84

**Tailwater Channel Data - SWMF 52**

Tailwater Channel Option: Rectangular Channel

Bottom Width: 6.00 ft

Channel Slope: 0.0896

Channel Manning's n: 0.0350

Channel Invert Elevation: 436.50 ft

**Roadway Data for Crossing: SWMF 52**

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Roadway Surface: Gravel

Roadway Top Width: 16.00 ft

## **Crossing Discharge Data**

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 52 cfs

Maximum Flow: 150 cfs



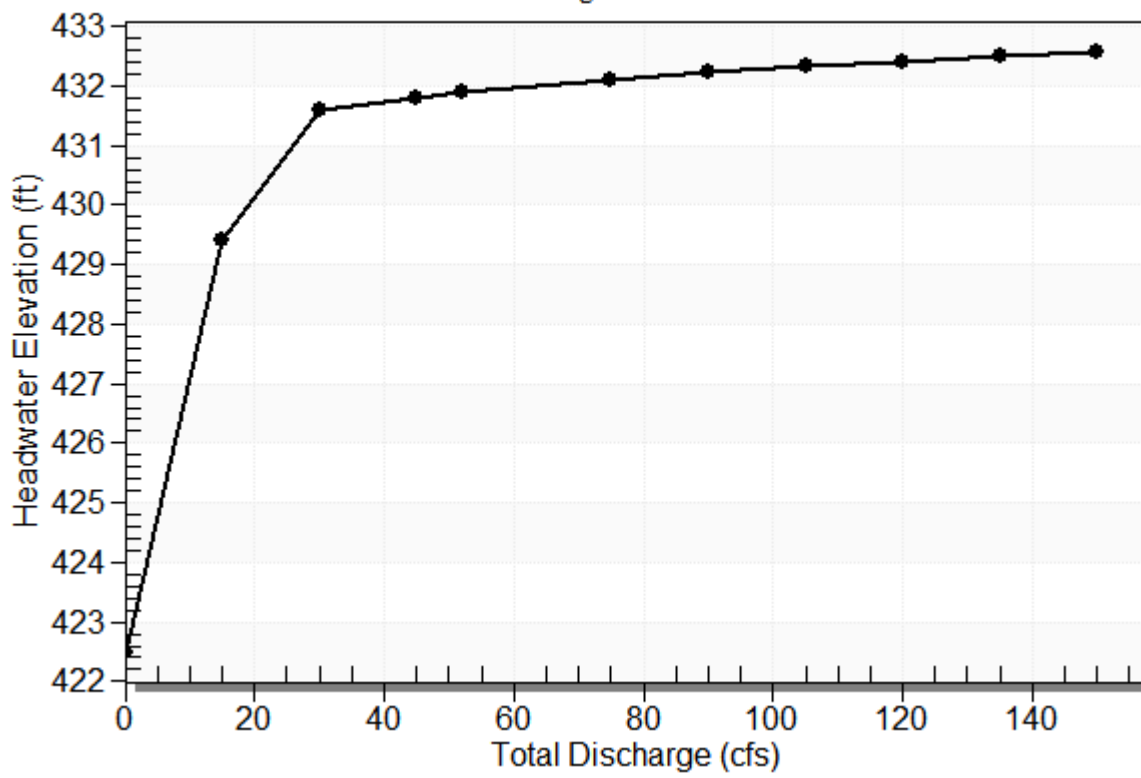
**Table 4 - Summary of Culvert Flows at Crossing: SWMF 58**

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 2 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
422.50	0.00	0.00	0.00	1
429.41	15.00	15.00	0.00	1
431.59	30.00	17.41	12.52	10
431.81	45.00	17.63	27.30	7
431.89	52.00	17.71	34.23	6
432.10	75.00	17.93	56.96	5
432.22	90.00	18.04	71.82	4
432.32	105.00	18.15	86.79	4
432.42	120.00	18.24	101.74	4
432.50	135.00	18.32	116.59	3
432.59	150.00	18.40	131.57	3
431.20	17.00	17.00	0.00	Overtopping

# Rating Curve Plot for Crossing: SWMF 58

## Total Rating Curve

Crossing: SWMF 58



**Table 5 - Culvert Summary Table: Culvert 2**

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	422.50	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
15.00	15.00	429.41	6.909	3.392	5-S2n	0.867	1.250	0.932	0.112	14.860	4.307
30.00	17.41	431.59	9.088	5.868	5-S2n	0.991	1.250	1.061	0.169	15.305	5.601
45.00	17.63	431.81	9.304	6.114	6-FFc	1.250	1.250	423.750	0.215	14.365	6.516
52.00	17.71	431.89	9.385	6.205	6-FFc	1.250	1.250	423.750	0.234	14.431	6.875
75.00	17.93	432.10	9.600	6.450	6-FFc	1.250	1.250	423.750	0.290	14.607	7.858
90.00	18.04	432.22	9.717	6.582	6-FFc	1.250	1.250	423.750	0.323	14.702	8.393
105.00	18.15	432.32	9.822	6.702	6-FFc	1.250	1.250	423.750	0.353	14.787	8.867
120.00	18.24	432.42	9.917	6.810	6-FFc	1.250	1.250	423.750	0.382	14.863	9.296
135.00	18.32	432.50	10.004	6.909	6-FFc	1.250	1.250	423.750	0.409	14.932	9.689
150.00	18.40	432.59	10.085	7.001	6-FFc	1.250	1.250	423.750	0.435	14.997	10.050

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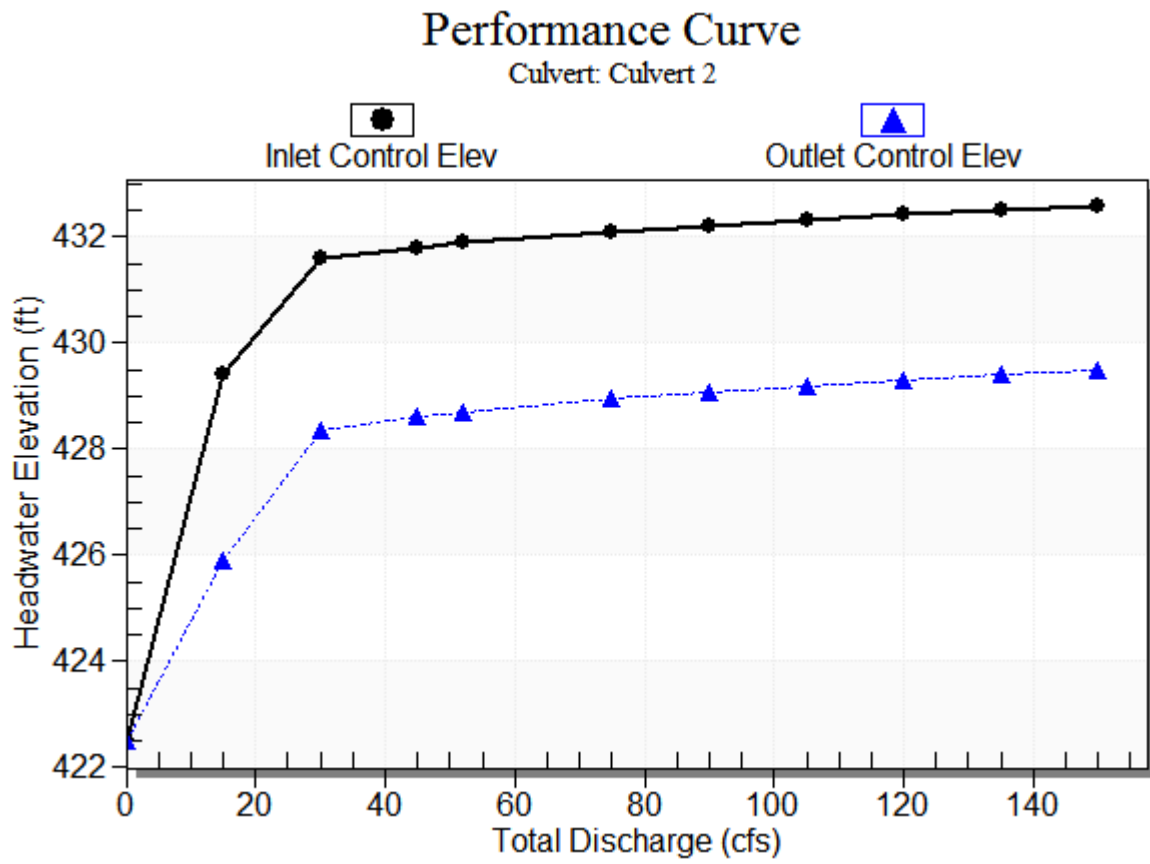
Straight Culvert

Inlet Elevation (invert): 422.50 ft, Outlet Elevation (invert): 417.50 ft

Culvert Length: 80.16 ft, Culvert Slope: 0.0625

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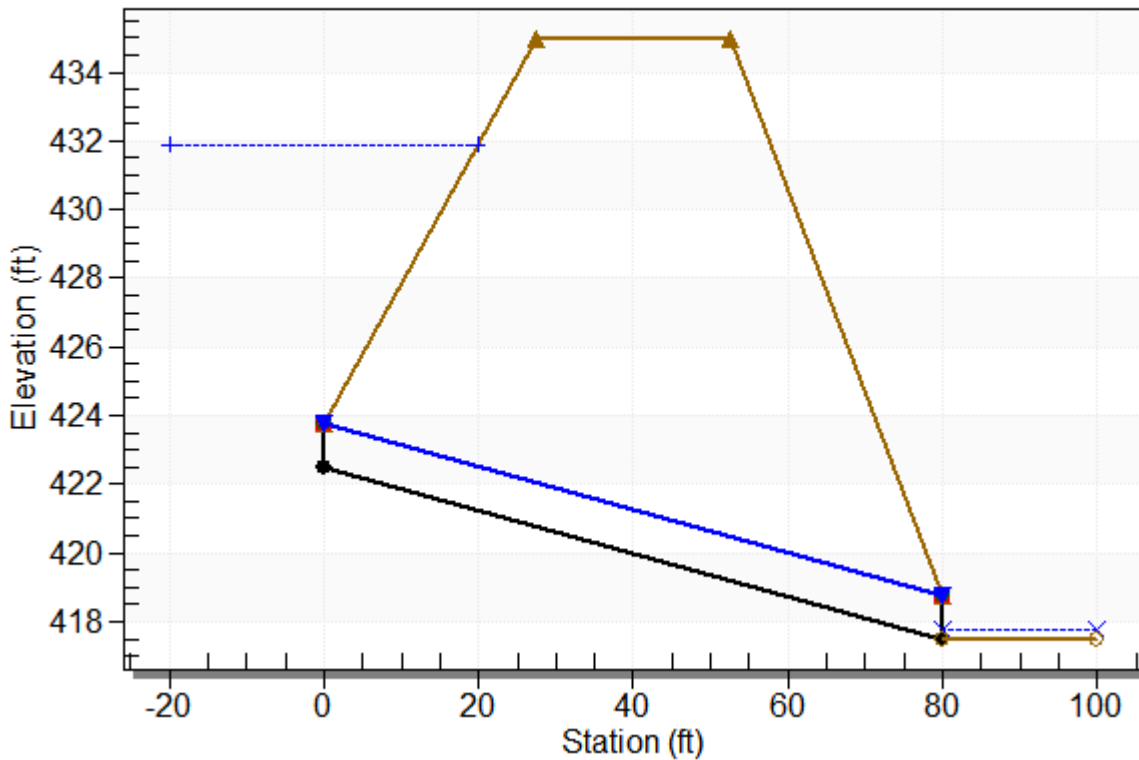
### Culvert Performance Curve Plot: Culvert 2



## Water Surface Profile Plot for Culvert: Culvert 2

Crossing - SWMF 58, Design Discharge - 52.0 cfs

Culvert - Culvert 2, Culvert Discharge - 17.7 cfs



### Site Data - Culvert 2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 422.50 ft

Outlet Station: 80.00 ft

Outlet Elevation: 417.50 ft

Number of Barrels: 1

### Culvert Data Summary - Culvert 2

Barrel Shape: Circular

Barrel Diameter: 1.25 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

**Table 6 - Downstream Channel Rating Curve (Crossing: SWMF 58)**

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	417.50	0.00	0.00	0.00	0.00
15.00	417.61	0.11	4.31	1.40	2.31
30.00	417.67	0.17	5.60	2.11	2.46
45.00	417.71	0.21	6.52	2.68	2.56
52.00	417.73	0.23	6.88	2.92	2.59
75.00	417.79	0.29	7.86	3.62	2.68
90.00	417.82	0.32	8.39	4.03	2.73
105.00	417.85	0.35	8.87	4.41	2.76
120.00	417.88	0.38	9.30	4.76	2.80
135.00	417.91	0.41	9.69	5.10	2.83
150.00	417.93	0.43	10.05	5.42	2.85

### **Tailwater Channel Data - SWMF 58**

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 30.00 ft

Side Slope (H:V): 10.00 (1:1)

Channel Slope: 0.1999

Channel Manning's n: 0.0350

Channel Invert Elevation: 417.50 ft

### **Roadway Data for Crossing: SWMF 58**

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Roadway Surface: Gravel

Roadway Top Width: 25.00 ft



## **Crossing Discharge Data**

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 44 cfs

Maximum Flow: 100 cfs

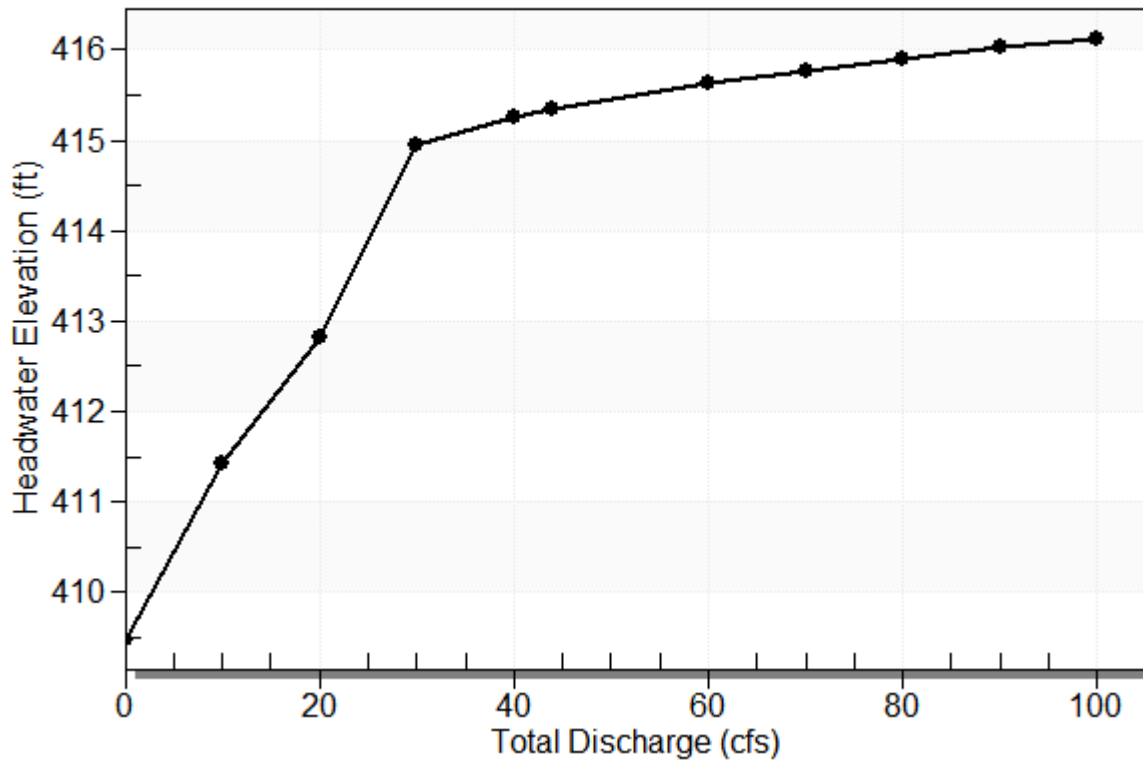
**Table 7 - Summary of Culvert Flows at Crossing: SWMF 47**

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 2 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
409.49	0.00	0.00	0.00	1
411.43	10.00	10.00	0.00	1
412.81	20.00	20.00	0.00	1
414.94	30.00	29.72	0.25	17
415.26	40.00	31.00	8.97	7
415.35	44.00	31.35	12.64	6
415.63	60.00	32.41	27.55	5
415.77	70.00	32.93	36.99	4
415.90	80.00	33.39	46.55	4
416.02	90.00	33.82	56.15	4
416.13	100.00	34.24	65.69	3
414.90	29.58	29.58	0.00	Overtopping

# Rating Curve Plot for Crossing: SWMF 47

## Total Rating Curve

Crossing: SWMF 47



**Table 8 - Culvert Summary Table: Culvert 2**

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	409.49	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
10.00	10.00	411.43	1.696	1.935	2-M2c	2.250	1.091	1.091	0.319	5.229	4.399
20.00	20.00	412.81	2.830	3.322	7-M2c	2.250	1.560	1.560	0.478	6.797	5.606
30.00	29.72	414.94	4.424	5.445	7-M2c	2.250	1.888	1.888	0.605	8.343	6.427
40.00	31.00	415.26	4.688	5.769	7-M2c	2.250	1.922	1.922	0.714	8.572	7.065
44.00	31.35	415.35	4.761	5.859	7-M2c	2.250	1.930	1.930	0.754	8.634	7.286
60.00	32.41	415.63	4.993	6.138	7-M2c	2.250	1.956	1.956	0.899	8.830	8.040
70.00	32.93	415.77	5.112	6.280	7-M2c	2.250	1.968	1.968	0.981	8.930	8.436
80.00	33.39	415.90	5.217	6.410	7-M2c	2.250	1.978	1.978	1.057	9.017	8.791
90.00	33.82	416.02	5.319	6.529	7-M2c	2.250	1.987	1.987	1.128	9.101	9.112
100.00	34.24	416.13	5.418	6.639	7-M2c	2.250	1.996	1.996	1.196	9.182	9.406

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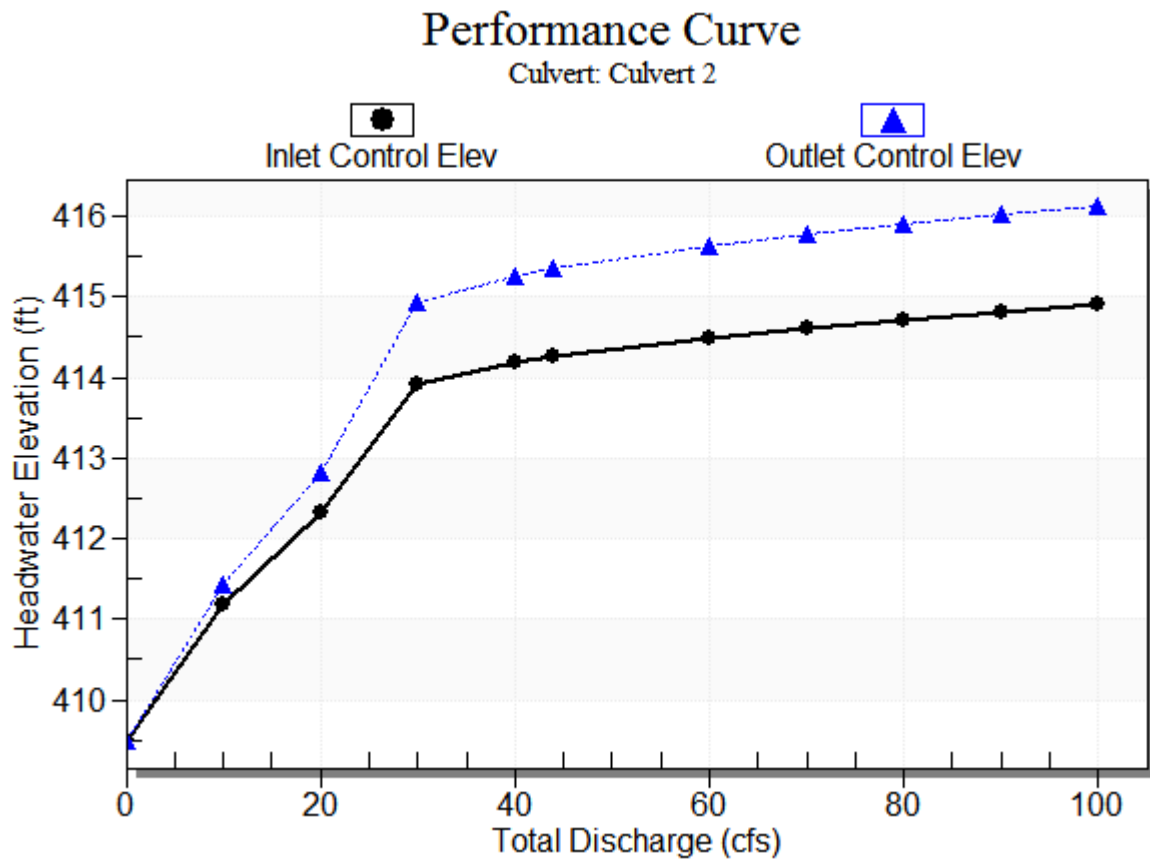
Straight Culvert

Inlet Elevation (invert): 409.49 ft, Outlet Elevation (invert): 409.38 ft

Culvert Length: 35.00 ft, Culvert Slope: 0.0031

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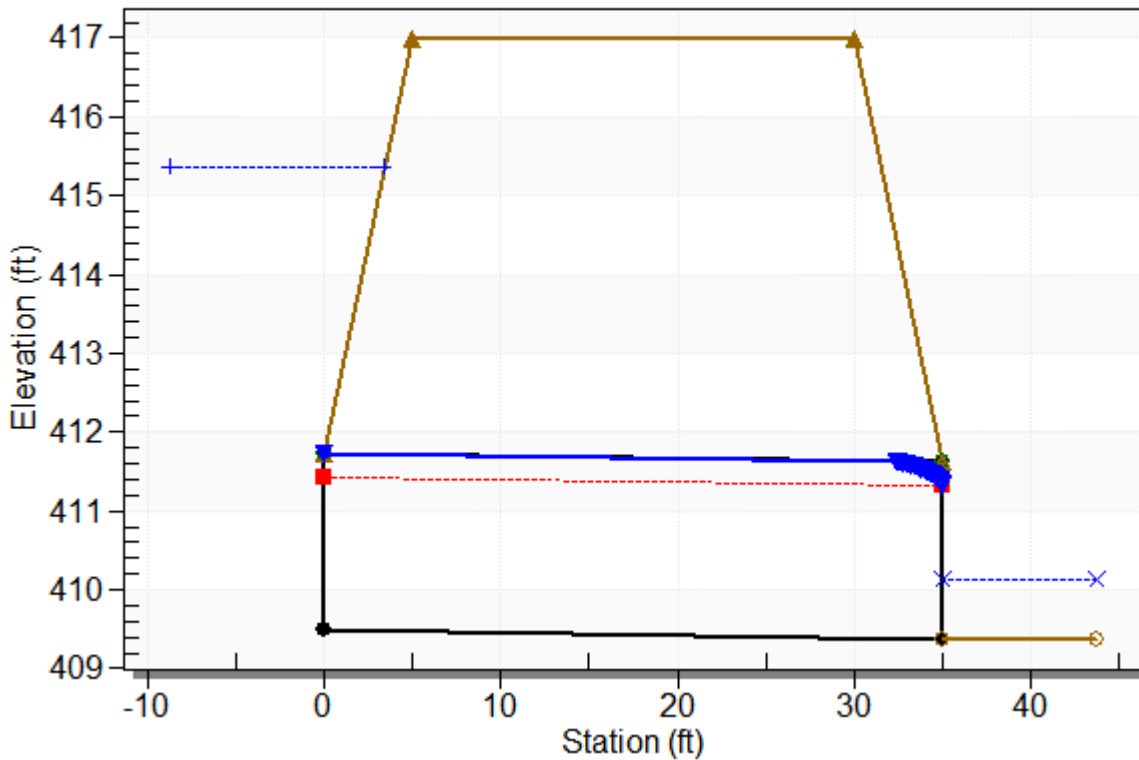
### Culvert Performance Curve Plot: Culvert 2



## Water Surface Profile Plot for Culvert: Culvert 2

Crossing - SWMF 47, Design Discharge - 44.0 cfs

Culvert - Culvert 2, Culvert Discharge - 31.3 cfs



### Site Data - Culvert 2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 409.49 ft

Outlet Station: 35.00 ft

Outlet Elevation: 409.38 ft

Number of Barrels: 1

### Culvert Data Summary - Culvert 2

Barrel Shape: Circular

Barrel Diameter: 2.25 ft

Barrel Material: Corrugated Aluminum

Embedment: 0.00 in

Barrel Manning's n: 0.0310

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: None

**Table 9 - Downstream Channel Rating Curve (Crossing: SWMF 47)**

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	409.38	0.00	0.00	0.00	0.00
10.00	409.70	0.32	4.40	1.13	1.43
20.00	409.86	0.48	5.61	1.69	1.52
30.00	409.99	0.61	6.43	2.14	1.57
40.00	410.09	0.71	7.06	2.53	1.60
44.00	410.13	0.75	7.29	2.67	1.61
60.00	410.28	0.90	8.04	3.18	1.65
70.00	410.36	0.98	8.44	3.47	1.67
80.00	410.44	1.06	8.79	3.74	1.68
90.00	410.51	1.13	9.11	3.99	1.70
100.00	410.58	1.20	9.41	4.23	1.71



### **Tailwater Channel Data - SWMF 47**

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 6.50 ft

Side Slope (H:V): 2.00 (2:1)

Channel Slope: 0.0567

Channel Manning's n: 0.0350

Channel Invert Elevation: 409.38 ft

### **Roadway Data for Crossing: SWMF 47**

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Roadway Surface: Gravel

Roadway Top Width: 25.00 ft

## **Crossing Discharge Data**

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 94 cfs

Maximum Flow: 400 cfs

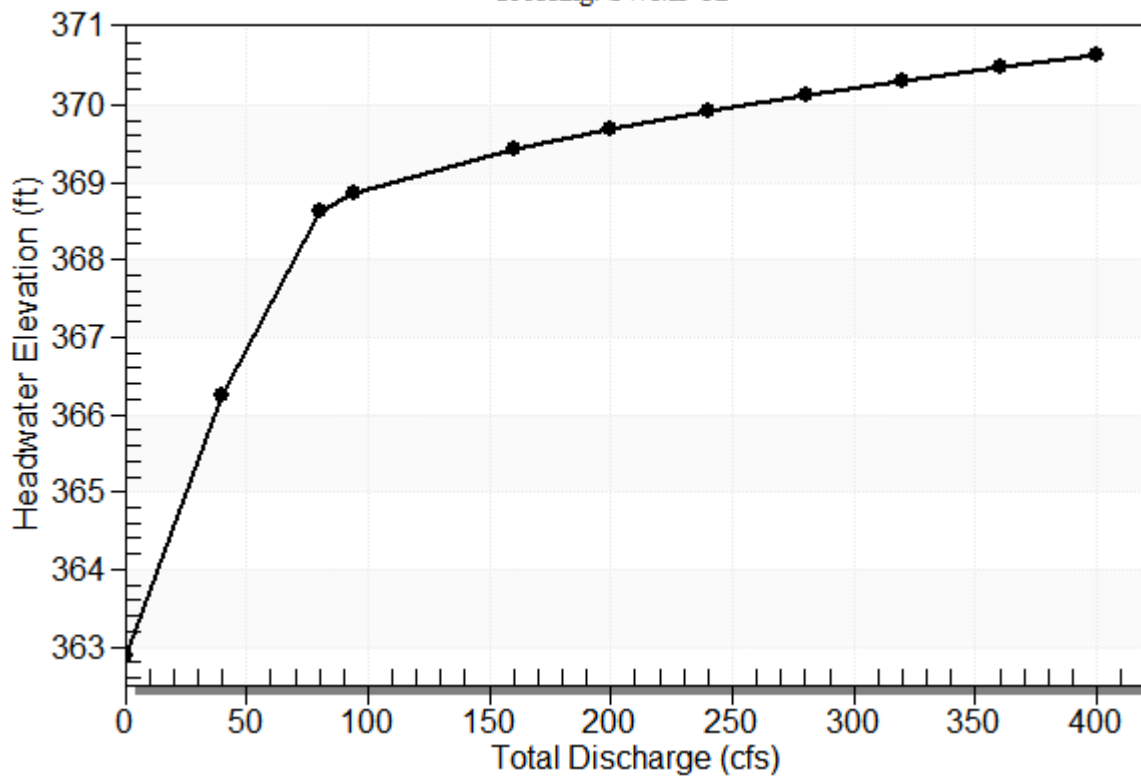
**Table 10 - Summary of Culvert Flows at Crossing: SWMF 32**

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 2 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
362.90	0.00	0.00	0.00	1
366.25	40.00	40.00	0.00	1
368.64	80.00	77.92	2.00	13
368.86	94.00	80.35	13.53	6
369.44	160.00	86.51	73.48	5
369.70	200.00	89.07	110.90	5
369.92	240.00	91.22	148.64	4
370.13	280.00	93.13	186.80	5
370.31	320.00	94.84	225.10	5
370.49	360.00	96.39	263.33	4
370.65	400.00	97.85	302.05	5
368.55	76.90	76.90	0.00	Overtopping

# Rating Curve Plot for Crossing: SWMF 32

## Total Rating Curve

Crossing: SWMF 32



**Table 11 - Culvert Summary Table: Culvert 2**

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	362.90	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
40.00	40.00	366.25	3.155	3.351	2-M2c	2.303	1.964	1.964	0.378	7.198	10.138
80.00	77.92	368.64	5.738	5.670	7-M2c	3.500	2.757	2.757	0.569	9.585	12.997
94.00	80.35	368.86	5.955	5.895	7-M2c	3.500	2.797	2.797	0.626	9.749	13.748
160.00	86.51	369.44	6.539	6.478	7-M2c	3.500	2.892	2.892	0.853	10.176	16.481
200.00	89.07	369.70	6.797	6.739	7-M2c	3.500	2.928	2.928	0.971	10.359	17.748
240.00	91.22	369.92	7.021	6.931	7-M2c	3.500	2.958	2.958	1.078	10.516	18.835
280.00	93.13	370.13	7.226	7.137	7-M2c	3.500	2.984	2.984	1.176	10.658	19.795
320.00	94.84	370.31	7.413	7.296	7-M2c	3.500	3.006	3.006	1.269	10.786	20.653
360.00	96.39	370.49	7.587	7.477	7-M2c	3.500	3.025	3.025	1.356	10.905	21.433
400.00	97.85	370.65	7.754	7.613	7-M2c	3.500	3.043	3.043	1.439	11.017	22.147

\*\*\*\*\*

Straight Culvert

Inlet Elevation (invert): 362.90 ft, Outlet Elevation (invert): 362.45 ft

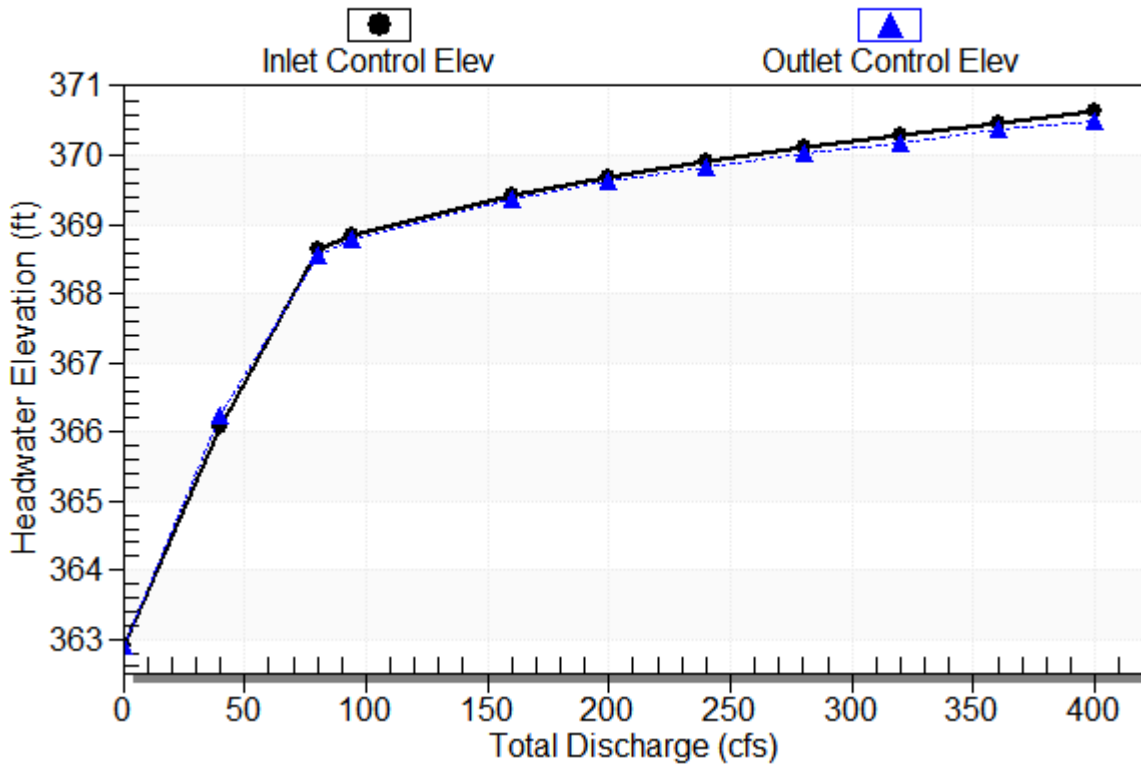
Culvert Length: 32.00 ft, Culvert Slope: 0.0141

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### Culvert Performance Curve Plot: Culvert 2

## Performance Curve

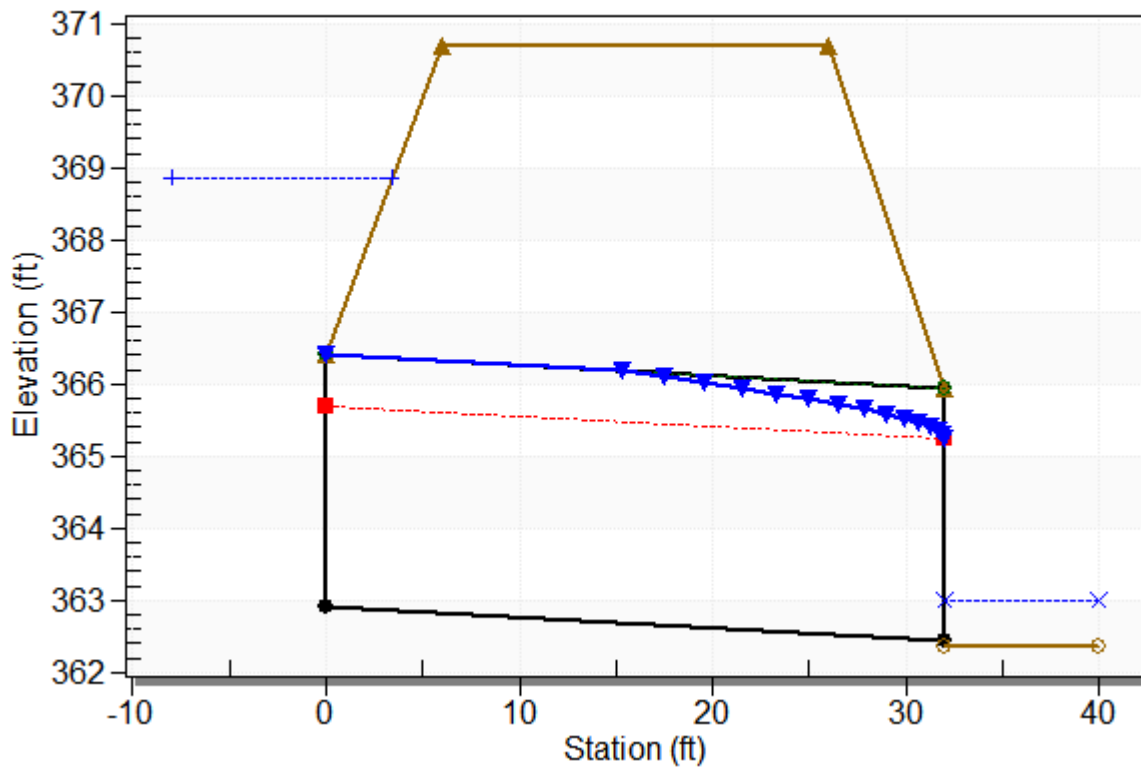
Culvert: Culvert 2



## Water Surface Profile Plot for Culvert: Culvert 2

Crossing - SWMF 32, Design Discharge - 94.0 cfs

Culvert - Culvert 2, Culvert Discharge - 80.4 cfs



### Site Data - Culvert 2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 362.90 ft

Outlet Station: 32.00 ft

Outlet Elevation: 362.45 ft

Number of Barrels: 1

### Culvert Data Summary - Culvert 2

Barrel Shape: Circular

Barrel Diameter: 3.50 ft

Barrel Material: Corrugated Aluminum

Embedment: 0.00 in

Barrel Manning's n: 0.0310

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: None



**Table 12 - Downstream Channel Rating Curve (Crossing: SWMF 32)**

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	362.37	0.00	0.00	0.00	0.00
40.00	362.75	0.38	10.14	5.52	3.01
80.00	362.94	0.57	13.00	8.30	3.19
94.00	363.00	0.63	13.75	9.13	3.23
160.00	363.22	0.85	16.48	12.44	3.37
200.00	363.34	0.97	17.75	14.15	3.43
240.00	363.45	1.08	18.84	15.71	3.48
280.00	363.55	1.18	19.79	17.15	3.52
320.00	363.64	1.27	20.65	18.50	3.55
360.00	363.73	1.36	21.43	19.77	3.58
400.00	363.81	1.44	22.15	20.98	3.61

### **Tailwater Channel Data - SWMF 32**

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 9.67 ft

Side Slope (H:V): 2.00 (1:1)

Channel Slope: 0.2336

Channel Manning's n: 0.0350

Channel Invert Elevation: 362.37 ft

### **Roadway Data for Crossing: SWMF 32**

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Roadway Surface: Gravel

Roadway Top Width: 20.00 ft

## **Crossing Discharge Data**

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 58 cfs

Maximum Flow: 120 cfs

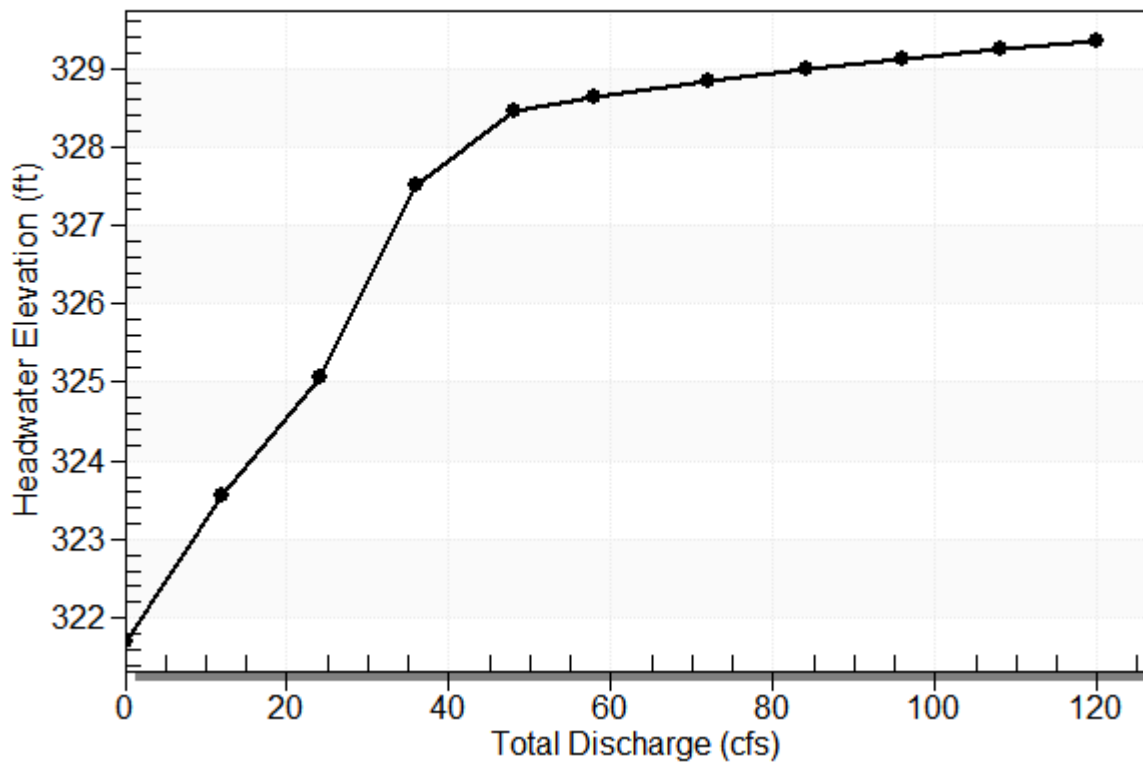
**Table 13 - Summary of Culvert Flows at Crossing: SWMF 33**

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 2 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
321.71	0.00	0.00	0.00	1
323.57	12.00	12.00	0.00	1
325.06	24.00	24.00	0.00	1
327.51	36.00	36.00	0.00	1
328.45	48.00	38.88	9.10	4
328.63	58.00	39.41	18.56	6
328.84	72.00	39.99	31.94	5
328.99	84.00	40.40	43.58	5
329.12	96.00	40.76	55.17	4
329.25	108.00	41.10	66.87	4
329.36	120.00	41.42	78.48	3
328.12	37.93	37.93	0.00	Overtopping

# Rating Curve Plot for Crossing: SWMF 33

## Total Rating Curve

Crossing: SWMF 33



**Table 14 - Culvert Summary Table: Culvert 2**

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	321.71	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
12.00	12.00	323.57	1.856	0.0*	1-S2n	0.989	1.198	0.989	0.269	6.895	6.558
24.00	24.00	325.06	3.353	2.428	5-S2n	1.534	1.712	1.576	0.401	7.840	8.304
36.00	36.00	327.51	5.801	5.756	7-M2c	2.250	2.030	2.030	0.505	9.534	9.482
48.00	38.88	328.45	6.570	6.737	7-M2c	2.250	2.076	2.076	0.594	10.140	10.390
58.00	39.41	328.63	6.720	6.921	7-M2c	2.250	2.082	2.082	0.660	10.257	11.020
72.00	39.99	328.84	6.886	7.128	7-M2c	2.250	2.089	2.089	0.743	10.387	11.776
84.00	40.40	328.99	7.007	7.278	7-M2c	2.250	2.098	2.098	0.808	10.466	12.335
96.00	40.76	329.12	7.112	7.412	7-M2c	2.250	2.103	2.103	0.869	10.544	12.837
108.00	41.10	329.25	7.212	7.536	7-M2c	2.250	2.108	2.108	0.926	10.617	13.292
120.00	41.42	329.36	7.306	7.650	7-M2c	2.250	2.108	2.108	0.979	10.699	13.709

\* Full Flow Headwater elevation is below inlet invert.

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Straight Culvert

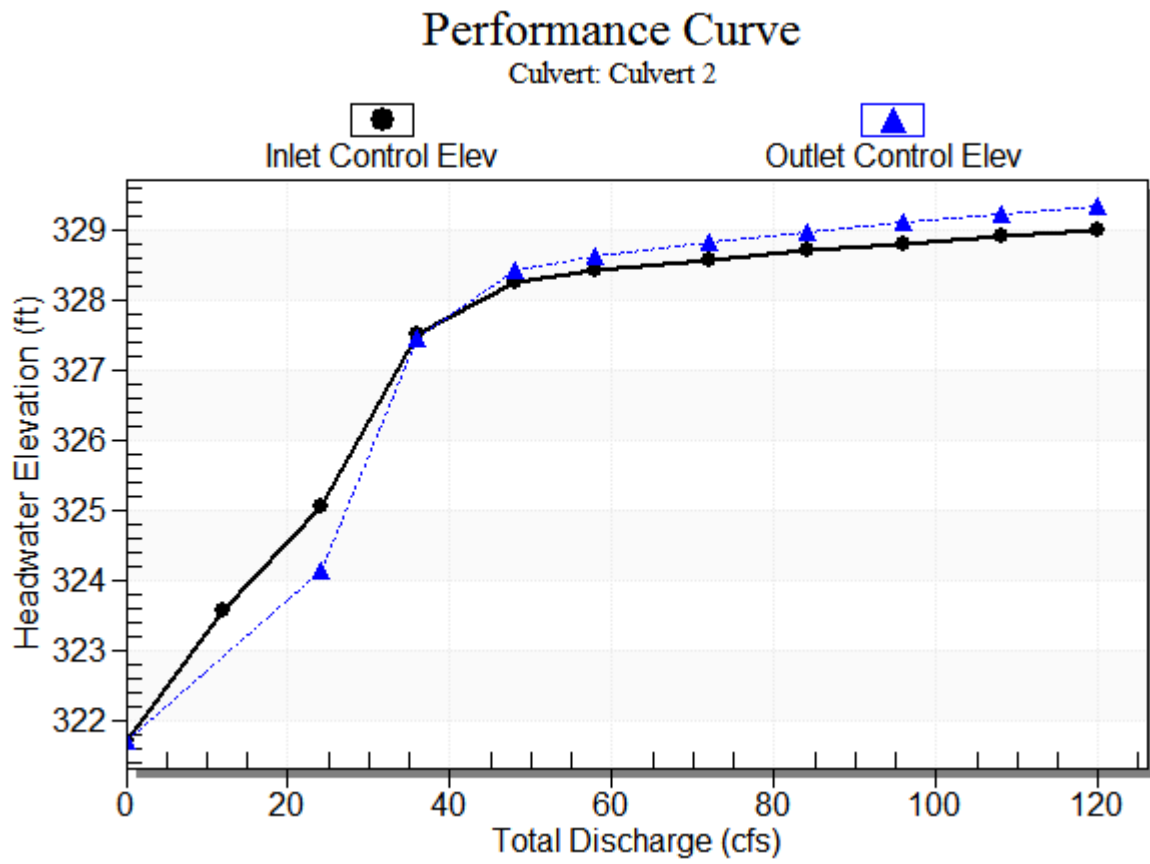
Inlet Elevation (invert): 321.71 ft, Outlet Elevation (invert): 319.62 ft

Culvert Length: 43.05 ft, Culvert Slope: 0.0486

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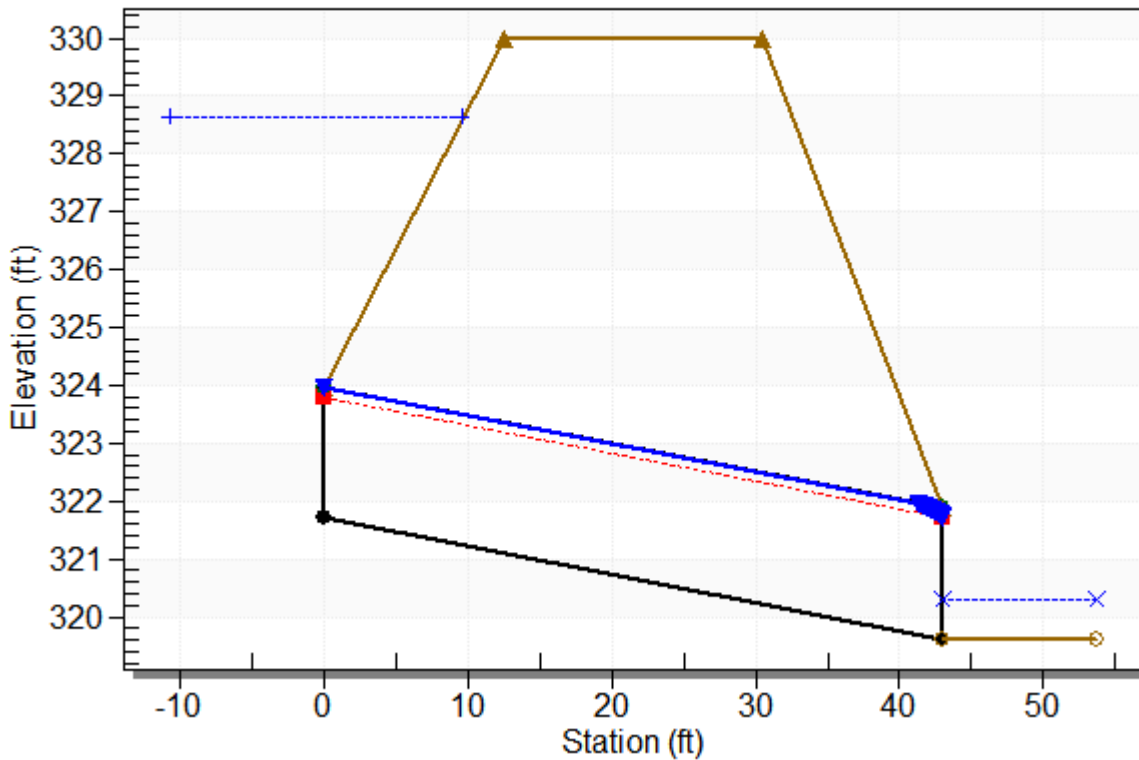
### Culvert Performance Curve Plot: Culvert 2



## Water Surface Profile Plot for Culvert: Culvert 2

Crossing - SWMF 33, Design Discharge - 58.0 cfs

Culvert - Culvert 2, Culvert Discharge - 39.4 cfs



### Site Data - Culvert 2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 321.71 ft

Outlet Station: 43.00 ft

Outlet Elevation: 319.62 ft

Number of Barrels: 1

### Culvert Data Summary - Culvert 2

Barrel Shape: Circular

Barrel Diameter: 2.25 ft

Barrel Material: Corrugated Aluminum

Embedment: 0.00 in

Barrel Manning's n: 0.0310

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: None

**Table 15 - Downstream Channel Rating Curve (Crossing: SWMF 33)**

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	319.62	0.00	0.00	0.00	0.00
12.00	319.89	0.27	6.56	2.72	2.36
24.00	320.02	0.40	8.30	4.06	2.50
36.00	320.13	0.51	9.48	5.11	2.58
48.00	320.21	0.59	10.39	6.01	2.63
58.00	320.28	0.66	11.02	6.68	2.67
72.00	320.36	0.74	11.78	7.52	2.71
84.00	320.43	0.81	12.33	8.18	2.74
96.00	320.49	0.87	12.84	8.79	2.77
108.00	320.55	0.93	13.29	9.37	2.79
120.00	320.60	0.98	13.71	9.91	2.81

### **Tailwater Channel Data - SWMF 33**

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 6.00 ft

Side Slope (H:V): 3.00 (1:1)

Channel Slope: 0.1622

Channel Manning's n: 0.0350

Channel Invert Elevation: 319.62 ft

### **Roadway Data for Crossing: SWMF 33**

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Roadway Surface: Gravel

Roadway Top Width: 18.00 ft

## **Crossing Discharge Data**

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 109 cfs

Maximum Flow: 600 cfs

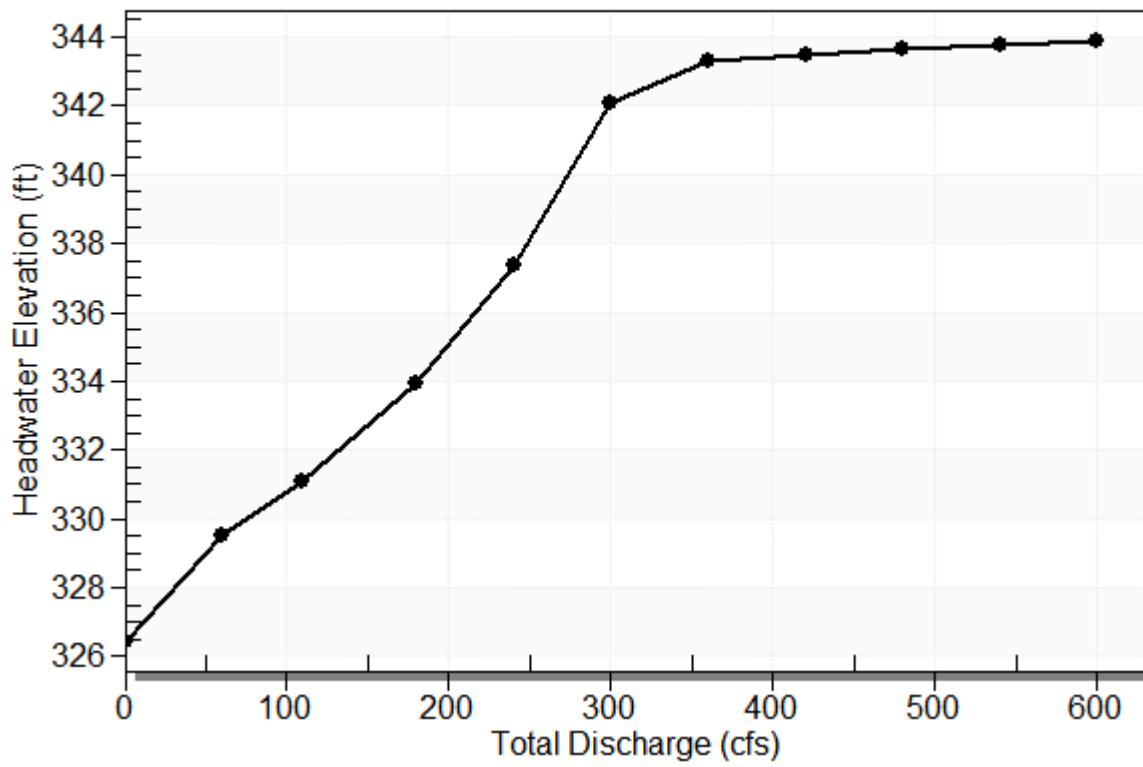
**Table 16 - Summary of Culvert Flows at Crossing: SWMF 34**

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 2 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
326.46	0.00	0.00	0.00	1
329.53	60.00	60.00	0.00	1
331.11	109.00	109.00	0.00	1
333.93	180.00	180.00	0.00	1
337.40	240.00	240.00	0.00	1
342.11	300.00	300.00	0.00	1
343.28	360.00	313.10	46.60	7
343.48	420.00	315.23	104.46	5
343.64	480.00	317.00	162.86	5
343.78	540.00	318.56	221.11	4
343.92	600.00	319.99	279.87	4
343.00	310.01	310.01	0.00	Overtopping

# Rating Curve Plot for Crossing: SWMF 34

## Total Rating Curve

Crossing: SWMF 34



**Table 17 - Culvert Summary Table: Culvert 2**

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	326.46	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
60.00	60.00	329.53	3.070	0.0*	1-S2n	1.351	2.177	1.351	0.609	13.509	8.782
109.00	109.00	331.11	4.652	0.0*	1-S2n	1.848	2.974	1.848	0.863	15.960	10.775
180.00	180.00	333.93	7.467	0.0*	5-S2n	2.450	3.838	2.450	1.151	18.203	12.708
240.00	240.00	337.40	10.936	0.0*	5-S2n	2.927	4.356	2.927	1.356	19.482	13.928
300.00	300.00	342.11	15.647	6.073	5-S2n	3.424	4.668	3.424	1.537	20.349	14.931
360.00	313.10	343.28	16.820	7.948	5-S2n	3.542	4.712	3.542	1.701	20.481	15.791
420.00	315.23	343.48	17.016	8.264	5-S2n	3.561	4.724	3.663	1.852	19.907	16.543
480.00	317.00	343.64	17.180	8.525	5-S2n	3.577	4.730	3.697	1.994	19.829	17.214
540.00	318.56	343.78	17.324	8.753	5-S2n	3.591	4.728	3.704	2.126	19.891	17.824
600.00	319.99	343.92	17.458	8.965	5-S2n	3.605	4.732	3.731	2.251	19.830	18.384



\* Full Flow Headwater elevation is below inlet invert.

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Straight Culvert

Inlet Elevation (invert): 326.46 ft, Outlet Elevation (invert): 306.93 ft

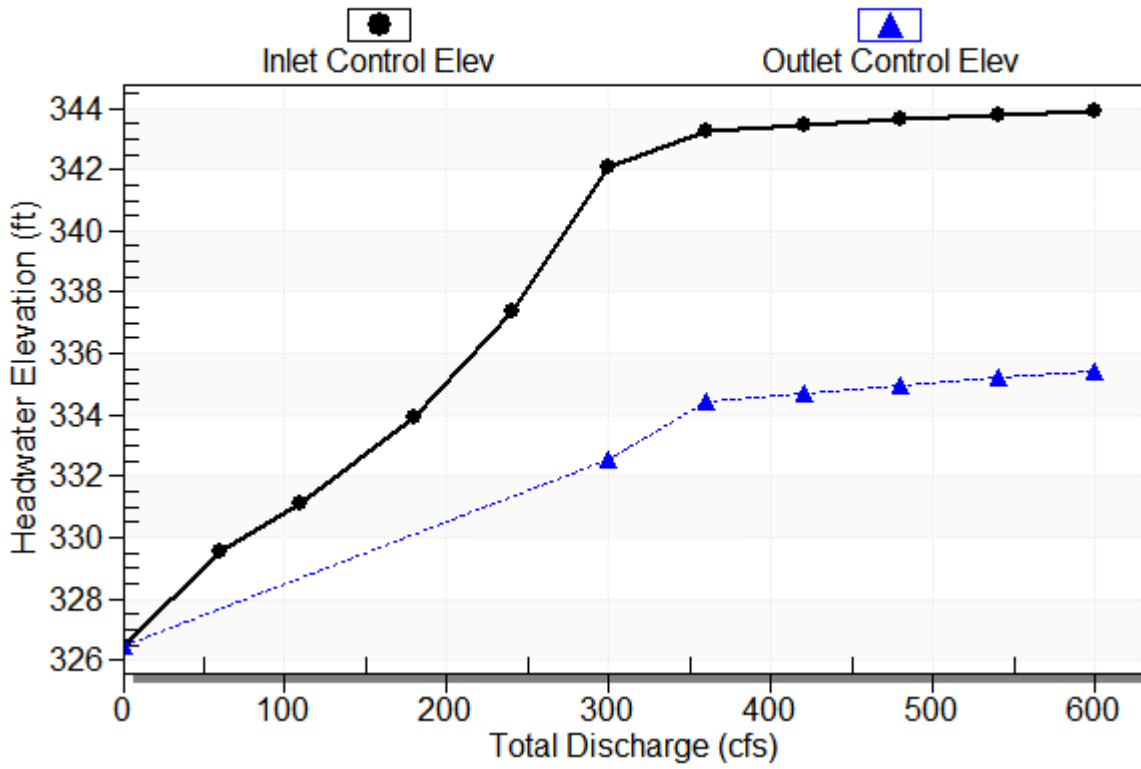
Culvert Length: 185.03 ft, Culvert Slope: 0.1061

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### Culvert Performance Curve Plot: Culvert 2

## Performance Curve

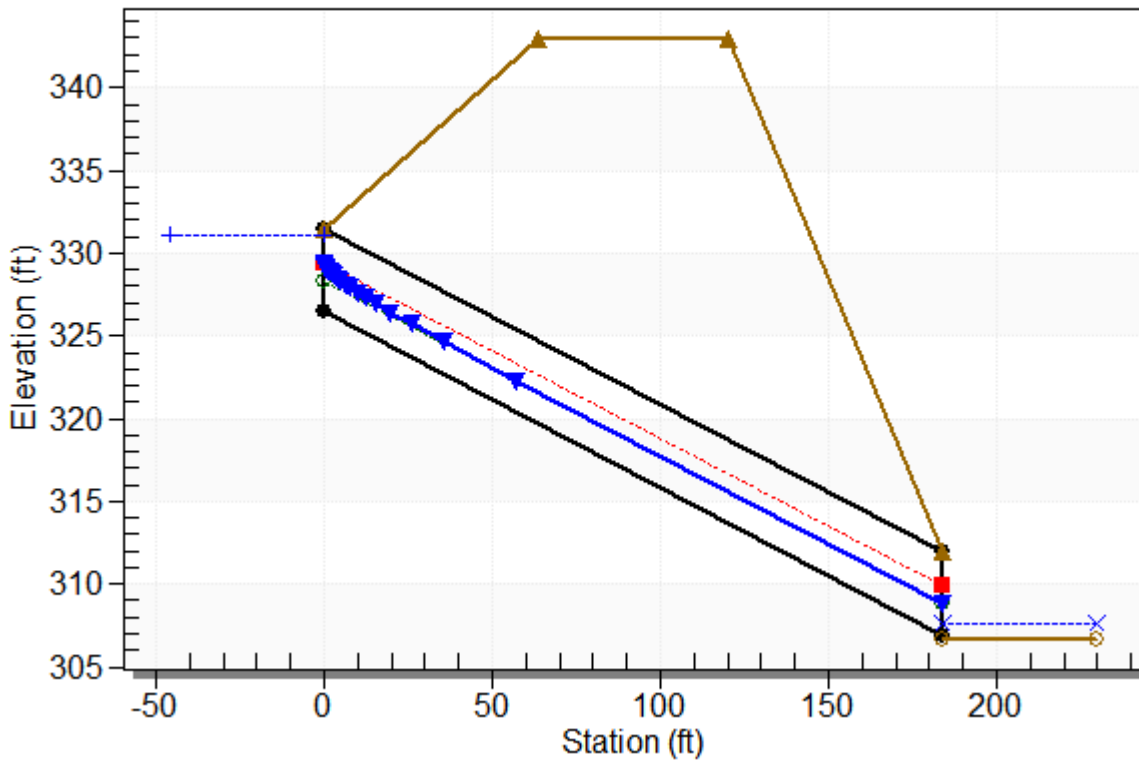
Culvert: Culvert 2



## Water Surface Profile Plot for Culvert: Culvert 2

Crossing - SWMF 34, Design Discharge - 109.0 cfs

Culvert - Culvert 2, Culvert Discharge - 109.0 cfs



### Site Data - Culvert 2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 326.46 ft

Outlet Station: 184.00 ft

Outlet Elevation: 306.93 ft

Number of Barrels: 1

### Culvert Data Summary - Culvert 2

Barrel Shape: Circular

Barrel Diameter: 5.00 ft

Barrel Material: Corrugated Aluminum

Embedment: 0.00 in

Barrel Manning's n: 0.0310

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: None

**Table 18 - Downstream Channel Rating Curve (Crossing: SWMF 34)**

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	306.70	0.00	0.00	0.00	0.00
60.00	307.31	0.61	8.78	3.72	2.09
109.00	307.56	0.86	10.77	5.28	2.19
180.00	307.85	1.15	12.71	7.04	2.27
240.00	308.06	1.36	13.93	8.29	2.32
300.00	308.24	1.54	14.93	9.40	2.36
360.00	308.40	1.70	15.79	10.40	2.39
420.00	308.55	1.85	16.54	11.33	2.41
480.00	308.69	1.99	17.21	12.19	2.44
540.00	308.83	2.13	17.82	13.00	2.45
600.00	308.95	2.25	18.38	13.76	2.47

### **Tailwater Channel Data - SWMF 34**

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 10.00 ft

Side Slope (H:V): 2.00 (2:1)

Channel Slope: 0.0980

Channel Manning's n: 0.0350

Channel Invert Elevation: 306.70 ft

### **Roadway Data for Crossing: SWMF 34**

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 105.00 ft

Crest Elevation: 343.00 ft

Roadway Surface: Paved

Roadway Top Width: 57.00 ft

## **Crossing Discharge Data**

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 55 cfs

Maximum Flow: 150 cfs

**Table 19 - Summary of Culvert Flows at Crossing: SWMF 29**

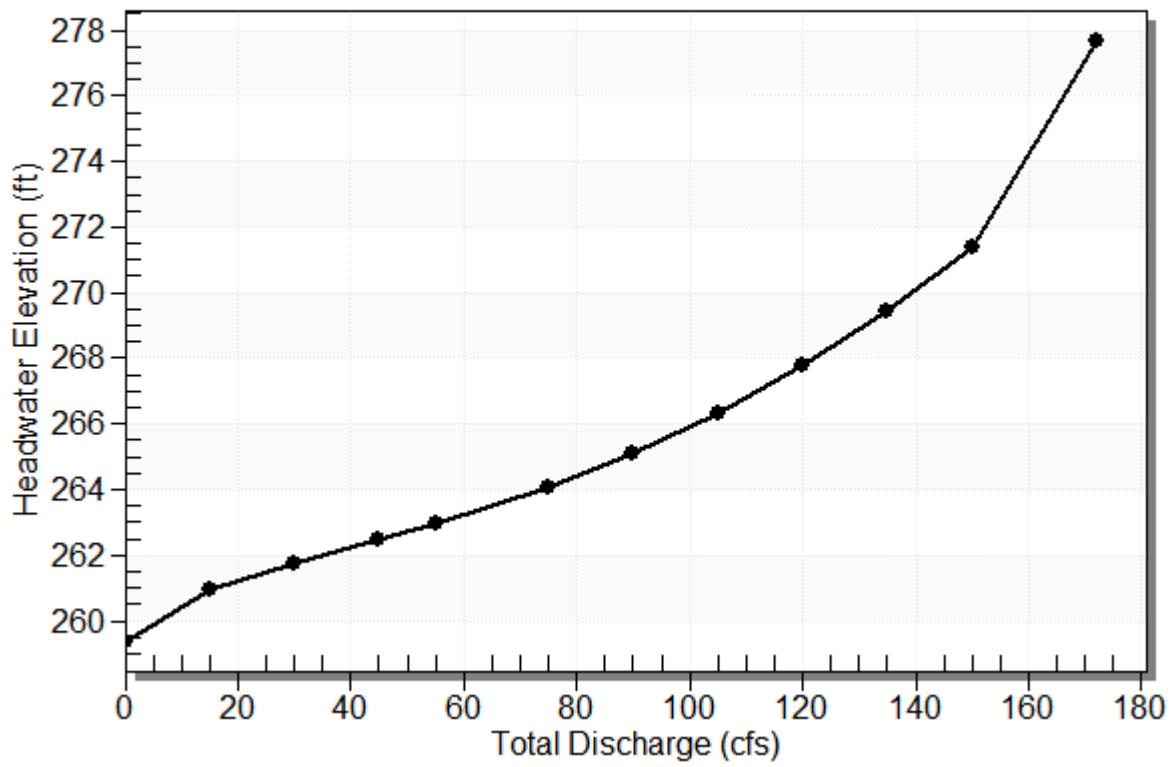
Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 2 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
259.40	0.00	0.00	0.00	1
260.94	15.00	15.00	0.00	1
261.77	30.00	30.00	0.00	1
262.48	45.00	45.00	0.00	1
262.95	55.00	55.00	0.00	1
264.04	75.00	75.00	0.00	1
265.08	90.00	90.00	0.00	1
266.33	105.00	105.00	0.00	1
267.79	120.00	120.00	0.00	1
269.45	135.00	135.00	0.00	1
271.37	150.00	150.00	0.00	1
274.60	172.12	172.12	0.00	Overtopping



# Rating Curve Plot for Crossing: SWMF 29

## Total Rating Curve

Crossing: SWMF 29



**Table 20 - Culvert Summary Table: Culvert 2**

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	259.40	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
15.00	15.00	260.94	1.544	0.0*	1-S2n	0.534	1.176	0.534	0.265	15.567	5.003
30.00	30.00	261.77	2.367	0.0*	1-S2n	0.750	1.692	0.846	0.395	16.148	6.346
45.00	45.00	262.48	3.076	0.0*	1-S2n	0.920	2.089	1.077	0.497	17.266	7.251
55.00	55.00	262.95	3.547	0.0*	5-S2n	1.020	2.316	1.214	0.556	17.922	7.733
75.00	75.00	264.04	4.643	0.0*	5-S2n	1.200	2.707	1.471	0.661	18.877	8.528
90.00	90.00	265.08	5.679	0.769	5-S2n	1.324	2.942	1.649	0.731	19.531	9.023
105.00	105.00	266.33	6.929	1.779	5-S2n	1.441	3.122	1.816	0.795	20.152	9.456
120.00	120.00	267.79	8.391	2.904	5-S2n	1.553	3.250	1.975	0.854	20.773	9.845
135.00	135.00	269.45	10.051	4.147	5-S2n	1.662	3.328	2.123	0.910	21.438	10.196
150.00	150.00	271.37	11.965	5.534	5-S2n	1.769	3.413	2.346	0.963	21.252	10.519

\* Full Flow Headwater elevation is below inlet invert.

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Straight Culvert

Inlet Elevation (invert): 259.40 ft, Outlet Elevation (invert): 254.40 ft

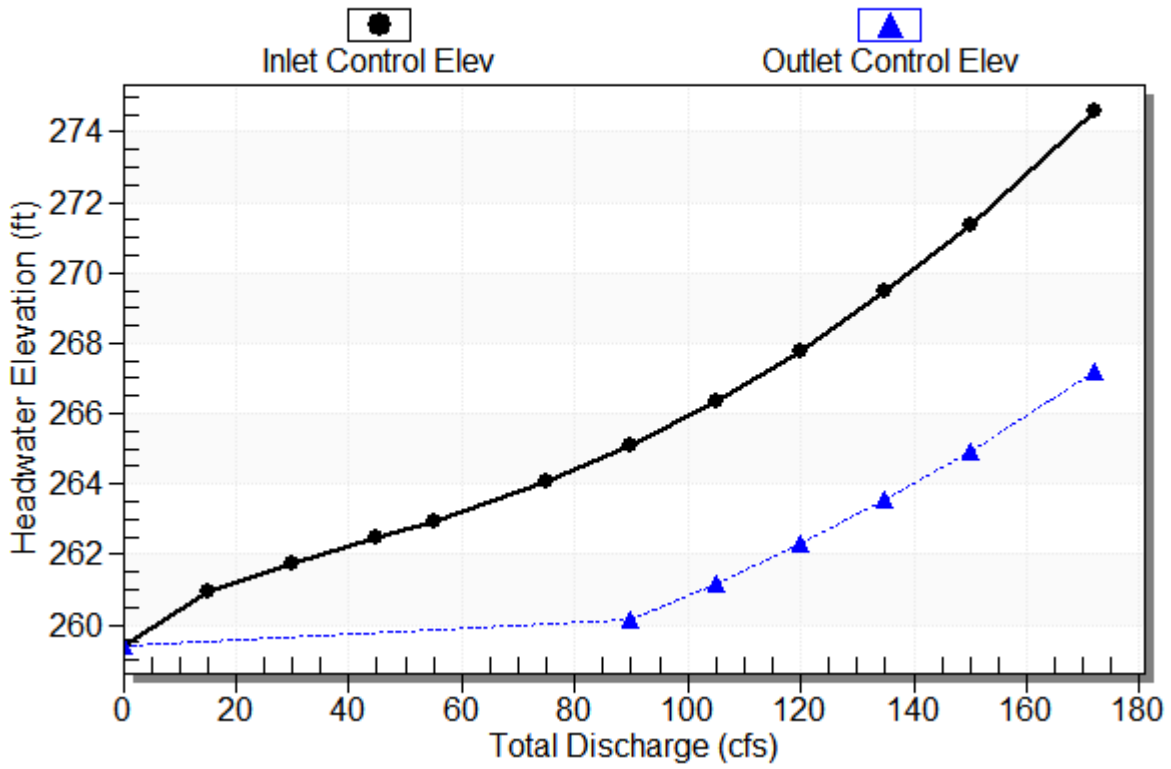
Culvert Length: 75.17 ft, Culvert Slope: 0.0667

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### Culvert Performance Curve Plot: Culvert 2

## Performance Curve

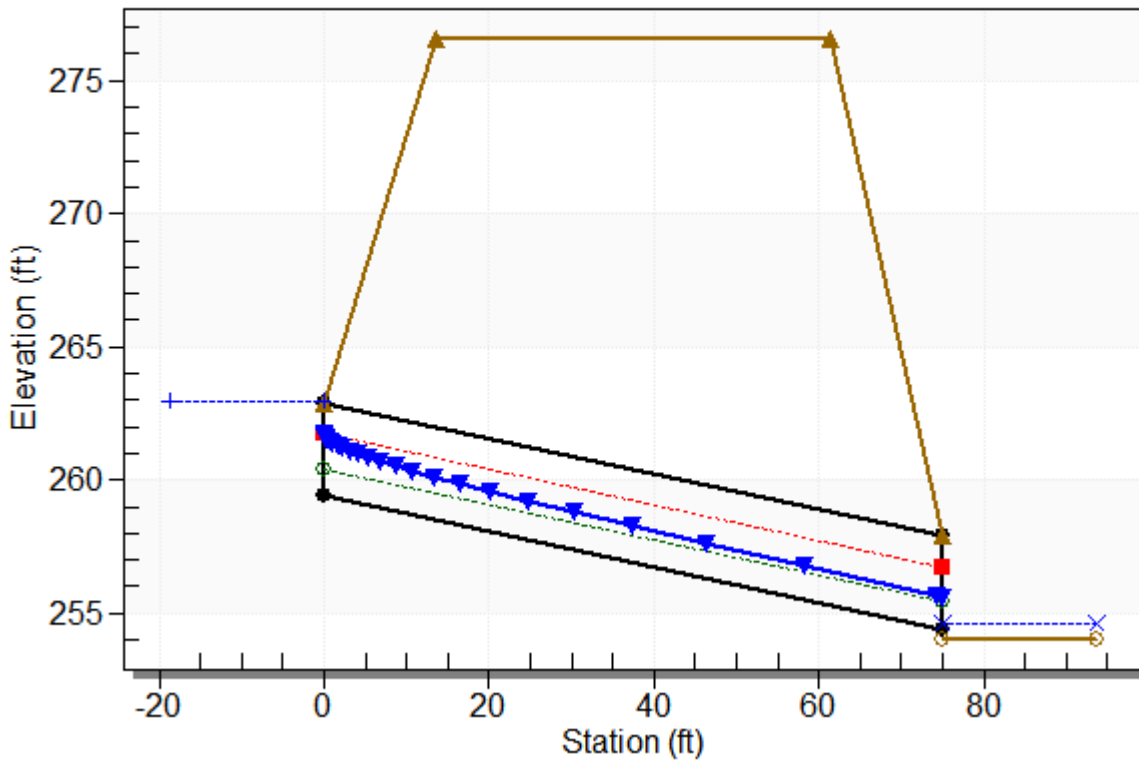
Culvert: Culvert 2



## Water Surface Profile Plot for Culvert: Culvert 2

Crossing - SWMF 29, Design Discharge - 55.0 cfs

Culvert - Culvert 2, Culvert Discharge - 55.0 cfs



### Site Data - Culvert 2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 259.40 ft

Outlet Station: 75.00 ft

Outlet Elevation: 254.40 ft

Number of Barrels: 1

### Culvert Data Summary - Culvert 2

Barrel Shape: Circular

Barrel Diameter: 3.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

**Table 21 - Downstream Channel Rating Curve (Crossing: SWMF 29)**

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	254.04	0.00	0.00	0.00	0.00
15.00	254.30	0.26	5.00	1.57	1.81
30.00	254.43	0.39	6.35	2.35	1.92
45.00	254.54	0.50	7.25	2.95	1.98
55.00	254.60	0.56	7.73	3.31	2.02
75.00	254.70	0.66	8.53	3.93	2.07
90.00	254.77	0.73	9.02	4.34	2.09
105.00	254.83	0.79	9.46	4.72	2.12
120.00	254.89	0.85	9.84	5.07	2.14
135.00	254.95	0.91	10.20	5.41	2.16
150.00	255.00	0.96	10.52	5.72	2.17

### **Tailwater Channel Data - SWMF 29**

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 10.00 ft

Side Slope (H:V): 5.00 (1:1)

Channel Slope: 0.0952

Channel Manning's n: 0.0350

Channel Invert Elevation: 254.04 ft

### **Roadway Data for Crossing: SWMF 29**

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Roadway Surface: Gravel

Roadway Top Width: 48.00 ft



Subarea 1-1 - Existing Conditions

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (S	Sum of DA*CN
Brush - (good)	B	48	60883	2922384
	B Total		60883	2922384
	C	65	18478	1201070
	C Total		18478	1201070
	D	73	95926	7002598
	D Total		95926	7002598
Brush - (good) Total			175287	11126052
Impervious - rds paved curb/pipe (incl ROW)	D	98	267816	26245968
	D Total		267816	26245968
Impervious - rds paved curb/pipe (incl ROW) Total			267816	26245968
Open Space (good) - grass >75%	D	80	318320	25465600
	D Total		318320	25465600
Open Space (good) - grass >75% Total			318320	25465600
Residential - 1/4 acre	B	75	4146	310950
	B Total		4146	310950
Residential - 1/4 acre Total			4146	310950
Residential - 1/8 acre or less	C	90	12116	1090440
	C Total		12116	1090440
Residential - 1/8 acre or less Total			12116	1090440
Small grain - SR - (good)	B	75	37528	2814600
	B Total		37528	2814600
Small grain - SR - (good) Total			37528	2814600
Woods - (good)	B	55	9309	511995
	B Total		9309	511995
	C	70	47631	3334170
	C Total		47631	3334170
	D	77	65721	5060517
	D Total		65721	5060517
Woods - (good) Total			122661	8906682
Grand Total			937874	75960292

CN 80.992

SUBAREA 1-2 - Existing Conditions

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	B	48	32795	1574160
	B Total		32795	1574160
	C	65	10224	664560
	C Total		10224	664560
	D	73	1658	121034
D Total		1658	121034	
Brush - (good) Total			44677	2359754
Residential - 1/4 acre	B	75	216271	16220325
	B Total		216271	16220325
Residential - 1/4 acre Total			216271	16220325
Small grain - SR - (good)	B	75	585226	43891950
	B Total		585226	43891950
	C	83	386033	32040739
C Total		386033	32040739	
Small grain - SR - (good) Total			971259	75932689
Urban district - industrial	B	88	333108	29313504
	B Total		333108	29313504
	C	91	51899	4722809
C Total		51899	4722809	
Urban district - industrial Total			385007	34036313
Grand Total			1617214	128549081
			CN	79.488

SUBAREA 1-3 - EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	B	48	61162	2935776
	B Total		61162	2935776
	C	65	38706	2515890
	C Total		38706	2515890
	D	73	60386	4408178
	D Total		60386	4408178
Brush - (good) Total			160254	9859844
Impervious - rds paved curb/pipe (incl ROW)	D	98	218596	21422408
	D Total		218596	21422408
Impervious - rds paved curb/pipe (incl ROW) Total			218596	21422408
Pasture / grassland / range (grazing) - (good)	B	61	57703	3519883
	B Total		57703	3519883
	C	74	161658	11962692
	C Total		161658	11962692
Pasture / grassland / range (grazing) - (good) Total			219361	15482575
Residential - 1/4 acre	B	75	255770	19182750
	B Total		255770	19182750
Residential - 1/4 acre Total			255770	19182750
Residential - 1/8 acre or less	B	85	2869	243865
	B Total		2869	243865
	C	90	33721	3034890
	C Total		33721	3034890
Residential - 1/8 acre or less Total			36590	3278755
Small grain - SR - (good)	B	75	295738	22180350
	B Total		295738	22180350
	C	83	106709	8856847
	C Total		106709	8856847
Small grain - SR - (good) Total			402447	31037197
Urban district - commercial/business	B	92	275743	25368356
	B Total		275743	25368356
	C	94	43776	4114944
	C Total		43776	4114944
Urban district - commercial/business Total			319519	29483300
Urban district - industrial	B	88	138831	12217128
	B Total		138831	12217128
	C	91	21514	1957774
	C Total		21514	1957774
Urban district - industrial Total			160345	14174902
Woods - (good)	B	55	213222	11727210
	B Total		213222	11727210
	C	70	200906	14063420
	C Total		200906	14063420
	D	77	38163	2938551
	D Total		38163	2938551
Woods - (good) Total			452291	28729181
Grand Total			2225173	172650912

SA 1-3 -EXISTING CONDITIONS WITH MGMT

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	B	48	61162	2935776
	B Total		61162	2935776
	C	65	38706	2515890
	C Total		38706	2515890
	D	73	60386	4408178
	D Total		60386	4408178
Brush - (good) Total			160254	9859844
Impervious - rds paved curb/pipe (incl ROW)	D	98	218596	21422408
	D Total		218596	21422408
Impervious - rds paved curb/pipe (incl ROW) Total			218596	21422408
Pasture / grassland / range (grazing) - (good)	B	61	57703	3519883
	B Total		57703	3519883
	C	74	161658	11962692
	C Total		161658	11962692
Pasture / grassland / range (grazing) - (good) Total			219361	15482575
Residential - 1/4 acre	B	75	255770	19182750
	B Total		255770	19182750
Residential - 1/4 acre Total			255770	19182750
Residential - 1/8 acre or less	B	85	2301	195585
	B Total		2301	195585
	C	90	26260	2363400
	C Total		26260	2363400
Residential - 1/8 acre or less Total			28561	2558985
Small grain - SR - (good)	B	75	295738	22180350
	B Total		295738	22180350
	C	83	106709	8856847
	C Total		106709	8856847
Small grain - SR - (good) Total			402447	31037197
Urban district - commercial/business	B	92	275743	25368356
	B Total		275743	25368356
	C	94	43776	4114944
	C Total		43776	4114944
Urban district - commercial/business Total			319519	29483300
Urban district - industrial	B	88	136686	12028368
	B Total		136686	12028368
	C	91	409	37219
	C Total		409	37219
Urban district - industrial Total			137095	12065587
Woods - (good)	B	55	215934	11876370
	B Total		215934	11876370
	C	70	229473	16063110
	C Total		229473	16063110
	D	77	38163	2938551
	D Total		38163	2938551
Woods - (good) Total			483570	30878031
Grand Total			2225173	171970677

**SUBAREA 1- ULTIMATE CONDITIONS**

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>2550842</b>	<b>197382680</b>
<b>B</b>	<b>1201761</b>	<b>84123270</b>
70	1201761	84123270
<b>C</b>	<b>282495</b>	<b>22599600</b>
80	282495	22599600
<b>D</b>	<b>1066586</b>	<b>90659810</b>
85	1066586	90659810
<b>Residential - 1/8 acre or less</b>	<b>132896</b>	<b>11833375</b>
<b>B</b>	<b>25453</b>	<b>2163505</b>
85	25453	2163505
<b>C</b>	<b>107443</b>	<b>9669870</b>
90	107443	9669870
<b>Urban district - commercial/business</b>	<b>36417</b>	<b>3353746</b>
<b>B</b>	<b>34726</b>	<b>3194792</b>
92	34726	3194792
<b>C</b>	<b>1691</b>	<b>158954</b>
94	1691	158954
<b>Urban district - industrial</b>	<b>2060056</b>	<b>183510154</b>
<b>B</b>	<b>1318314</b>	<b>116011632</b>
88	1318314	116011632
<b>C</b>	<b>741742</b>	<b>67498522</b>
91	741742	67498522
<b>Grand Total</b>	<b>4780211</b>	<b>396079955</b>
	CN	82.858

**SUBAREA 1 - WOODS IN GOOD CONDITION**

<b>Row Labels</b>	<b>Sum of Area (SQ FT)</b>	<b>Sum of Area*CN</b>
<b>Woods - (good)</b>	<b>4780211</b>	<b>303377077</b>
B	2580253	141913915
C	1133372	79336040
D	1066586	82127122
<b>Grand Total</b>	<b>4780211</b>	<b>303377077</b>

CN 63.465

**SUBAREA 2-1 - EXISTING CONDITIONS**

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (Σ	Sum of DA*CN
Brush - (good)	B	48	7648	367104
	B Total		7648	367104
	D	73	6431	469463
	D Total		6431	469463
Brush - (good) Total			14079	836567
Impervious - rds paved curb/pipe (incl ROW)	D	98	1100	107800
	D Total		1100	107800
Impervious - rds paved curb/pipe (incl ROW) Total			1100	107800
Pasture / grassland / range (grazing) - (good)	C	74	70564	5221736
	C Total		70564	5221736
Pasture / grassland / range (grazing) - (good) Total			70564	5221736
Residential - 1/8 acre or less	B	85	89372	7596620
	B Total		89372	7596620
	C	90	653206	58788540
	C Total		653206	58788540
Residential - 1/8 acre or less Total			742578	66385160
Urban district - commercial/business	B	92	584151	53741892
	B Total		584151	53741892
	C	94	442751	41618594
	C Total		442751	41618594
	D	95	191538	18196110
	D Total		191538	18196110
Urban district - commercial/business Total			1218440	113556596
Grand Total			2046761	186107859

CN 90.928

**SUBAREA 2-2 EXISTING CONDITIONS**

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ F	Sum of DA*CN
Brush - (good)	B	48	79962	3838176
	B Total		79962	3838176
	C	65	50939	3311035
	C Total		50939	3311035
	D	73	7699	562027
	D Total		7699	562027
Brush - (good) Total			138600	7711238
Impervious - rds paved curb/pipe (incl ROW)	B	98	1513	148274
	B Total		1513	148274
	C	98	770	75460
	C Total		770	75460
	D	98	200857	19683986
	D Total		200857	19683986
Impervious - rds paved curb/pipe (incl ROW) Total			203140	19907720
Open Space (good) - grass >75%	D	80	90603	7248240
	D Total		90603	7248240
Open Space (good) - grass >75% Total			90603	7248240
Residential - 1/4 acre	B	75	320505	24037875
	B Total		320505	24037875
	C	83	1383	114789
	C Total		1383	114789
Residential - 1/4 acre Total			321888	24152664
Small grain - SR - (good)	B	75	224739	16855425
	B Total		224739	16855425
	C	83	56551	4693733
	C Total		56551	4693733
Small grain - SR - (good) Total			281290	21549158
Urban district - commercial/business	B	92	1818	167256
	B Total		1818	167256
Urban district - commercial/business Total			1818	167256
Urban district - industrial	B	88	246056	21652928
	B Total		246056	21652928
	C	91	10622	966602
	C Total		10622	966602
Urban district - industrial Total			256678	22619530
Woods - (good)	B	55	174153	9578415
	B Total		174153	9578415
	C	70	49150	3440500
	C Total		49150	3440500
Woods - (good) Total			223303	13018915
Grand Total			1517320	116374721

**CN**

**76.70**



**SUBAREA 2-2 W/ MGMT - EXISTING CONDITIONS**

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ F	Sum of DA*CN
Brush - (good)	B	48	79962	3838176
	B Total		79962	3838176
	C	65	50939	3311035
	C Total		50939	3311035
	D	73	7699	562027
	D Total		7699	562027
Brush - (good) Total			138600	7711238
Impervious - rds paved curb/pipe (incl	B	98	1513	148274
	B Total		1513	148274
	C	98	770	75460
	C Total		770	75460
	D	98	200857	19683986
	D Total		200857	19683986
Impervious - rds paved curb/pipe (incl ROW) Total			203140	19907720
Open Space (good) - grass >75%	D	80	90603	7248240
	D Total		90603	7248240
Open Space (good) - grass >75% Total			90603	7248240
Residential - 1/4 acre	B	75	313027	23477025
	B Total		313027	23477025
	C	83	1383	114789
	C Total		1383	114789
Residential - 1/4 acre Total			314410	23591814
Small grain - SR - (good)	B	75	224739	16855425
	B Total		224739	16855425
	C	83	56551	4693733
	C Total		56551	4693733
Small grain - SR - (good) Total			281290	21549158
Urban district - commercial/business	B	92	1818	167256
	B Total		1818	167256
Urban district - commercial/business Total			1818	167256
Urban district - industrial	B	88	93358	8215504
	B Total		93358	8215504
	C	91	10622	966602
	C Total		10622	966602
Urban district - industrial Total			103980	9182106
Woods - (good)	B	55	334330	18388150
	B Total		334330	18388150
	C	70	49150	3440500
	C Total		49150	3440500
Woods - (good) Total			383480	21828650
Grand Total			1517321	111186182

**SUBAREA 2-3 - EXISTING CONDITIONS**

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SC Sum of DA*CN)	
Brush - (good)	B	48	34856	1673088
	B Total		34856	1673088
	D	73	25169	1837337
	D Total		25169	1837337
Brush - (good) Total			60025	3510425
Impervious - rds paved curb/pipe (incl	B	98	1130	110740
	B Total		1130	110740
	D	98	125412	12290376
	D Total		125412	12290376
Impervious - rds paved curb/pipe (incl ROW) Total			126542	12401116
Open Space (good) - grass >75%	D	80	196146	15691680
	D Total		196146	15691680
Open Space (good) - grass >75% Total			196146	15691680
Small grain - SR - (good)	B	75	44862	3364650
	B Total		44862	3364650
Small grain - SR - (good) Total			44862	3364650
Urban district - commercial/business	B	92	365	33580
	B Total		365	33580
	D	95	37328	3546160
	D Total		37328	3546160
Urban district - commercial/business Total			37693	3579740
Woods - (good)	B	55	73258	4029190
	B Total		73258	4029190
Woods - (good) Total			73258	4029190
Grand Total			538526	42576801

**CN 79.062**

**SUBAREA 2-4- EXISTING CONDITIONS**

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (S	Sum of DA*CN
Impervious - rds paved curb/pipe (incl RO	D	98	166566	16323468
	D Total		166566	16323468
Impervious - rds paved curb/pipe (incl ROW) Total			166566	16323468
Open Space (good) - grass >75%	D	80	312113	24969040
	D Total		312113	24969040
Open Space (good) - grass >75% Total			312113	24969040
Urban district - commercial/business	D	95	110334	10481730
	D Total		110334	10481730
Urban district - commercial/business Total			110334	10481730
Grand Total			589013	51774238

**CN 87.900**

SUBAREA 2-5 - EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ F	Sum of DA*CN
Impervious - rds paved curb/pipe (incl ROW)	D	98	142051	13920998
	D Total		142051	13920998
Impervious - rds paved curb/pipe (incl ROW) Total			142051	13920998
Open Space (good) - grass >75%	D	80	209636	16770880
	D Total		209636	16770880
Open Space (good) - grass >75% Total			209636	16770880
Urban district - commercial/business	D	95	519535	49355825
	D Total		519535	49355825
Urban district - commercial/business Total			519535	49355825
Grand Total			871222	80047703

**CN**

**91.880**

**SUBAREA 2-6**

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ F)	Sum of DA*CN
Brush - (good)	B	48	1808	86784
	B Total		1808	86784
	C	65	5601	364065
	C Total		5601	364065
	D	73	15587	1137851
	D Total		15587	1137851
Brush - (good) Total			22996	1588700
Impervious - rds paved curb/pipe (incl ROW)	B	98	1790	175420
	B Total		1790	175420
	D	98	427176	41863248
	D Total		427176	41863248
Impervious - rds paved curb/pipe (incl ROW) Total			428966	42038668
Open Space (good) - grass >75%	D	80	277801	22224080
	D Total		277801	22224080
Open Space (good) - grass >75% Total			277801	22224080
Small grain - SR - (good)	B	75	3255	244125
	B Total		3255	244125
Small grain - SR - (good) Total			3255	244125
Urban district - commercial/business	B	92	97914	9008088
	B Total		97914	9008088
	D	95	161004	15295380
	D Total		161004	15295380
Urban district - commercial/business Total			258918	24303468
Woods - (good)	B	55	133368	7335240
	B Total		133368	7335240
	D	77	1464	112728
	D Total		1464	112728
Woods - (good) Total			134832	7447968
Grand Total			1126768	97847009

**CN**

**86.839**

**SUBAREA 2-6 W/MGMT**

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	B	48	1808	86784
	B Total		1808	86784
	C	65	5601	364065
	C Total		5601	364065
	D	73	15587	1137851
	D Total		15587	1137851
Brush - (good) Total			22996	1588700
Impervious - rds paved curb/pipe (incl ROW)	B	98	1790	175420
	B Total		1790	175420
	D	98	427176	41863248
	D Total		427176	41863248
Impervious - rds paved curb/pipe (incl ROW) Total			428966	42038668
Open Space (good) - grass >75%	D	80	277801	22224080
	D Total		277801	22224080
Open Space (good) - grass >75% Total			277801	22224080
Small grain - SR - (good)	B	75	3255	244125
	B Total		3255	244125
Small grain - SR - (good) Total			3255	244125
Urban district - commercial/business	B	92	25708	2365136
	B Total		25708	2365136
	D	95	161004	15295380
	D Total		161004	15295380
Urban district - commercial/business Total			186712	17660516
Woods - (good)	B	55	205579	11306845
	B Total		205579	11306845
	D	77	1464	112728
	D Total		1464	112728
Woods - (good) Total			207043	11419573
Grand Total			1126773	95175662

**CN                      84.467**

**SUBAREA 2-7 -EXISTING CONDITIONS**

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ	Sum of DA*CN
Brush - (good)	B	48	103188	4953024
	B Total		103188	4953024
	C	65	38857	2525705
	C Total		38857	2525705
	D	73	8853	646269
	D Total		8853	646269
Brush - (good) Total			150898	8124998
Impervious - rds paved curb/pipe (incl ROW)	C	98	1485	145530
	C Total		1485	145530
	D	98	54398	5331004
	D Total		54398	5331004
Impervious - rds paved curb/pipe (incl ROW) Total			55883	5476534
Urban district - commercial/business	B	92	46272	4257024
	B Total		46272	4257024
	C	94	16503	1551282
	C Total		16503	1551282
Urban district - commercial/business Total			62775	5808306
Grand Total			269556	19409838

**CN**

**72.007**

**SUBAREA 2 - ULTIMATE CONDITIONS**

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>3535030</b>	<b>283545390</b>
<b>B</b>	<b>1069589</b>	<b>74871230</b>
70	1069589	74871230
<b>C</b>	<b>177665</b>	<b>14213200</b>
80	177665	14213200
<b>D</b>	<b>2287776</b>	<b>194460960</b>
85	2287776	194460960
<b>Residential - 1/3 acre</b>	<b>86417</b>	<b>6338961</b>
<b>B</b>	<b>73424</b>	<b>5286528</b>
72	73424	5286528
<b>C</b>	<b>12993</b>	<b>1052433</b>
81	12993	1052433
<b>Residential - 1/8 acre or less</b>	<b>1020521</b>	<b>91197475</b>
<b>B</b>	<b>129883</b>	<b>11040055</b>
85	129883	11040055
<b>C</b>	<b>890638</b>	<b>80157420</b>
90	890638	80157420
<b>Urban district - commercial/business</b>	<b>1719390</b>	<b>161102158</b>
<b>B</b>	<b>683487</b>	<b>62880804</b>
92	683487	62880804
<b>C</b>	<b>189431</b>	<b>17806514</b>
94	189431	17806514
<b>D</b>	<b>846472</b>	<b>80414840</b>
95	846472	80414840
<b>Urban district - industrial</b>	<b>598658</b>	<b>53841369</b>
<b>B</b>	<b>315599</b>	<b>27772712</b>
88	315599	27772712
<b>C</b>	<b>127915</b>	<b>11640265</b>
91	127915	11640265
<b>D</b>	<b>155144</b>	<b>14428392</b>
93	155144	14428392
<b>Grand Total</b>	<b>6960016</b>	<b>596025353</b>

**CN**

**85.636**



**SUBAREA 2 - WOODS IN GOOD CONDITION**

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area* CN
<b>Woods - (good)</b>	<b>6960015</b>	<b>476147101</b>
<b>B</b>	<b>2271980</b>	<b>124958900</b>
55	2271980	124958900
<b>C</b>	<b>1398642</b>	<b>97904940</b>
70	1398642	97904940
<b>D</b>	<b>3289393</b>	<b>253283261</b>
77	3289393	253283261
<b>Grand Total</b>	<b>6960015</b>	<b>476147101</b>

CN	68.412
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SUBAREA 3-1 - EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	C	79	177728	14040512
	C Total		177728	14040512
Residential - 1 acre Total			177728	14040512
Residential - 1/4 acre	C	83	1212293	100620319
	C Total		1212293	100620319
Residential - 1/4 acre Total			1212293	100620319
Woods - (good)	C	70	17553	1228710
	C Total		17553	1228710
Woods - (good) Total			17553	1228710
Grand Total			1407574	115889541

**CN**

**82.333**

SUBAREA 3-2 - EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	C	79	309700	24466300
	C Total		309700	24466300
Residential - 1 acre Total			309700	24466300
Residential - 1/4 acre	C	83	1310684	108786772
	C Total		1310684	108786772
Residential - 1/4 acre Total			1310684	108786772
Urban district - commercial/business	C	94	187412	17616728
	C Total		187412	17616728
Urban district - commercial/business Total			187412	17616728
Urban district - industrial	C	91	1555	141505
	C Total		1555	141505
Urban district - industrial Total			1555	141505
Woods - (good)	C	70	276697	19368790
	C Total		276697	19368790
Woods - (good) Total			276697	19368790
Grand Total			2086048	170380095

CN 81.676

SUBAREA 3-3 - EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	C	65	60046	3902990
	C Total		60046	3902990
Brush - (good) Total			60046	3902990
Residential - 1 acre	C	79	221150	17470850
	C Total		221150	17470850
Residential - 1 acre Total			221150	17470850
Residential - 1/4 acre	C	83	308600	25613800
	C Total		308600	25613800
Residential - 1/4 acre Total			308600	25613800
Urban district - commercial/business	C	94	516422	48543668
	C Total		516422	48543668
	D	95	715	67925
	D Total		715	67925
Urban district - commercial/business Total			517137	48611593
Urban district - industrial	C	91	134114	12204374
	C Total		134114	12204374
Urban district - industrial Total			134114	12204374
Woods - (good)	C	70	428003	29960210
	C Total		428003	29960210
Woods - (good) Total			428003	29960210
Grand Total			1669050	137763817

CN 82.54

SUBAREA 3-3 - EXISTING CONDITIONS WITH MGMT

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	C	65	60046	3902990
	C Total		60046	3902990
Brush - (good) Total			60046	3902990
Residential - 1 acre	C	79	221150	17470850
	C Total		221150	17470850
Residential - 1 acre Total			221150	17470850
Residential - 1/4 acre	C	83	307660	25535780
	C Total		307660	25535780
Residential - 1/4 acre Total			307660	25535780
Urban district - commercial/business	C	94	250492	23546248
	C Total		250492	23546248
Urban district - commercial/business Total			250492	23546248
Urban district - industrial	C	91	119923	10912993
	C Total		119923	10912993
Urban district - industrial Total			119923	10912993
Woods - (good)	C	70	709003	49630210
	C Total		709003	49630210
	D	77	715	55055
	D Total		715	55055
Woods - (good) Total			709718	49685265
Grand Total			1668989	131054126

CN 78.523

SUBAREA 3-4 - EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1/4 acre	C	83	299170	24831110
	C Total		299170	24831110
Residential - 1/4 acre Total			299170	24831110
Urban district - commercial/business	C	94	110716	10407304
	C Total		110716	10407304
	D	95	370976	35242720
	D Total		370976	35242720
Urban district - commercial/business Total			481692	45650024
Urban district - industrial	C	91	1041901	94812991
	C Total		1041901	94812991
	D	93	15508	1442244
	D Total		15508	1442244
Urban district - industrial Total			1057409	96255235
Woods - (good)	C	70	89975	6298250
	C Total		89975	6298250
Woods - (good) Total			89975	6298250
Grand Total			1928246	173034619

CN	89.74
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SUBAREA 3-4 - EXISTING CONDITIONS WITH MGMT

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1/4 acre	C	83	148425	12319275
	C Total		148425	12319275
Residential - 1/4 acre Total			148425	12319275
Urban district - commercial/business	C	94	101586	9549084
	C Total		101586	9549084
	D	95	370976	35242720
	D Total		370976	35242720
Urban district - commercial/business Total			472562	44791804
Urban district - industrial	C	91	892235	81193385
	C Total		892235	81193385
	D	93	15508	1442244
	D Total		15508	1442244
Urban district - industrial Total			907743	82635629
Woods - (good)	C	70	399343	27954010
	C Total		399343	27954010
Woods - (good) Total			399343	27954010
Grand Total			1928073	167700718

CN	86.978
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SUBAREA 3-5 - EXISTING CONDITIONS

Drainage Area	Land Use	Soil Type	Area (SQ FT)	Curve Number
SA 3-5	Urban district - commercial/business	D	233,155	95

CN 95



SUBAREA 3-6 - EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1/8 acre or less	A	77	96	7392
	A Total		96	7392
	B	85	155	13175
	B Total		155	13175
	D	92	6871	632132
	D Total		6871	632132
Residential - 1/8 acre or less Total			7122	652699
Urban district - commercial/business	B	92	1876	172592
	B Total		1876	172592
	D	95	757161	71930295
	D Total		757161	71930295
Urban district - commercial/business Total			759037	72102887
Woods - (good)	D	77	53	4081
	D Total		53	4081
Woods - (good) Total			53	4081
Grand Total			766212	72759667

CN	94.960
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SUBAREA 3-7 - EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	B	48	69286	3325728
	B Total		69286	3325728
	C	65	33599	2183935
	C Total		33599	2183935
	D	73	7112	519176
	D Total		7112	519176
Brush - (good) Total			109997	6028839
Impervious - rds paved curb/pipe (incl ROW)	D	98	282973	27731354
	D Total		282973	27731354
Impervious - rds paved curb/pipe (incl ROW) Total			282973	27731354
Open Space (good) - grass >75%	D	80	318123	25449840
	D Total		318123	25449840
Open Space (good) - grass >75% Total			318123	25449840
Residential - 1/8 acre or less	A	77	50	3850
	A Total		50	3850
	D	92	532	48944
	D Total		532	48944
Residential - 1/8 acre or less Total			582	52794
Urban district - commercial/business	D	95	203251	19308845
	D Total		203251	19308845
Urban district - commercial/business Total			203251	19308845
Grand Total			914926	78571672

**CN 85.878**

SUBAREA 3-8 - EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	B	48	117019	5616912
	B Total		117019	5616912
	C	65	178464	11600160
	C Total		178464	11600160
	D	73	25245	1842885
	D Total		25245	1842885
Brush - (good) Total			320728	19059957
Impervious - rds paved curb/pipe (incl ROW)	D	98	66448	6511904
	D Total		66448	6511904
Impervious - rds paved curb/pipe (incl ROW) Total			66448	6511904
Open Space (good) - grass >75%	D	80	11992	959360
	D Total		11992	959360
Open Space (good) - grass >75% Total			11992	959360
Residential - 1 acre	B	68	915	62220
	B Total		915	62220
	C	79	37135	2933665
	C Total		37135	2933665
Residential - 1 acre Total			38050	2995885
Urban district - commercial/business	C	94	138041	12975854
	C Total		138041	12975854
	D	95	520988	49493860
	D Total		520988	49493860
Urban district - commercial/business Total			659029	62469714
Woods - (good)	C	70	579	40530
	C Total		579	40530
Woods - (good) Total			579	40530
Grand Total			1096826	92037350

CN 83.91

SUBAREA 3-8 - EXISTING CONDITIONS WITH MGMT

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	B	48	117019	5616912
	B Total		117019	5616912
	C	65	178464	11600160
	C Total		178464	11600160
	D	73	25245	1842885
	D Total		25245	1842885
Brush - (good) Total			320728	19059957
Impervious - rds paved curb/pipe (incl ROW)	D	98	66448	6511904
	D Total		66448	6511904
Impervious - rds paved curb/pipe (incl ROW) Total			66448	6511904
Open Space (good) - grass >75%	D	80	11992	959360
	D Total		11992	959360
Open Space (good) - grass >75% Total			11992	959360
Residential - 1 acre	B	68	915	62220
	B Total		915	62220
	C	79	37135	2933665
	C Total		37135	2933665
Residential - 1 acre Total			38050	2995885
Urban district - commercial/business	C	94	63275	5947850
	C Total		63275	5947850
	D	95	401295	38123025
	D Total		401295	38123025
Urban district - commercial/business Total			464570	44070875
Woods - (good)	C	70	75490	5284300
	C Total		75490	5284300
	D	77	119685	9215745
	D Total		119685	9215745
Woods - (good) Total			195175	14500045
Grand Total			1096963	88098026

CN

80.311

SA 3- WOODS IN GOOD CONDITION

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area * CN
<b>Woods - (good)</b>	<b>10106135</b>	<b>724332878</b>
<b>A</b>	<b>146</b>	<b>4380</b>
30	146	4380
<b>B</b>	<b>189254</b>	<b>10408970</b>
55	189254	10408970
<b>C</b>	<b>7095581</b>	<b>496690670</b>
70	7095581	496690670
<b>D</b>	<b>2821154</b>	<b>217228858</b>
77	2821154	217228858
<b>Grand Total</b>	<b>10106135</b>	<b>724332878</b>
	<b>CN</b>	<b>71.673</b>

SA 3 - ULTIMATE CONDITIONS

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>6404847</b>	<b>514134240</b>
<b>B</b>	<b>186731</b>	<b>13071170</b>
70	186731	13071170
<b>C</b>	<b>5495358</b>	<b>439628640</b>
80	5495358	439628640
<b>D</b>	<b>722758</b>	<b>61434430</b>
85	722758	61434430
<b>Residential - 1/4 acre</b>	<b>625098</b>	<b>51911762</b>
<b>C</b>	<b>617941</b>	<b>51289103</b>
83	617941	51289103
<b>D</b>	<b>7157</b>	<b>622659</b>
87	7157	622659
<b>Urban district - commercial/business</b>	<b>2147812</b>	<b>203062714</b>
<b>B</b>	<b>478</b>	<b>43976</b>
92	478	43976
<b>C</b>	<b>977992</b>	<b>91931248</b>
94	977992	91931248
<b>D</b>	<b>1169342</b>	<b>111087490</b>
95	1169342	111087490
<b>Urban district - industrial</b>	<b>928347</b>	<b>86315789</b>
<b>A</b>	<b>146</b>	<b>11826</b>
81	146	11826
<b>B</b>	<b>2034</b>	<b>178992</b>
88	2034	178992
<b>C</b>	<b>4280</b>	<b>389480</b>
91	4280	389480
<b>D</b>	<b>921887</b>	<b>85735491</b>
93	921887	85735491
<b>Grand Total</b>	<b>10106104</b>	<b>855424505</b>

CN 84.644

SA 4-1 EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Impervious - rds paved curb/pipe (incl ROW)	D	98	103097	10103506
	D Total		103097	10103506
Impervious - rds paved curb/pipe (incl ROW) Total			103097	10103506
Residential - 1 acre	C	79	972020	76789580
	C Total		972020	76789580
	D	84	40327	3387468
	D Total		40327	3387468
Residential - 1 acre Total			1012347	80177048
Residential - 1/8 acre or less	C	90	181804	16362360
	C Total		181804	16362360
	D	92	31804	2925968
	D Total		31804	2925968
Residential - 1/8 acre or less Total			213608	19288328
Grand Total			1329052	109568882

CN 82.441

SA 4-1 EXISTING CONDITIONS W/ MGMT

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Impervious - rds paved curb/pipe (incl ROW)	D	98	103097	10103506
	D Total		103097	10103506
Impervious - rds paved curb/pipe (incl ROW) Total			103097	10103506
Residential - 1 acre	C	79	972020	76789580
	C Total		972020	76789580
	D	84	40327	3387468
	D Total		40327	3387468
Residential - 1 acre Total			1012347	80177048
Residential - 1/8 acre or less	C	90	72614	6535260
	C Total		72614	6535260
	D	92	31804	2925968
	D Total		31804	2925968
Residential - 1/8 acre or less Total			104418	9461228
Woods - (good)	C	70	109190	7643300
	C Total		109190	7643300
Woods - (good) Total			109190	7643300
Grand Total			1329052	107385082

CN

80.798



SA 4-2 EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	C	79	1356234	107142486
	C Total		1356234	107142486
	D	84	115764	9724176
	D Total		115764	9724176
Residential - 1 acre Total			1471998	116866662
Residential - 1/4 acre	C	83	278790	23139570
	C Total		278790	23139570
Residential - 1/4 acre Total			278790	23139570
Grand Total			1750788	140006232

CN 79.968

SA 4-3 EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	B	48	135435	6500880
	B Total		135435	6500880
	C	65	54953	3571945
	C Total		54953	3571945
	D	73	24119	1760687
	D Total		24119	1760687
Brush - (good) Total			214507	11833512
Impervious - rds paved curb/pipe (incl ROW)	A	98	46	4508
	A Total		46	4508
	D	98	393309	38544282
	D Total		393309	38544282
Impervious - rds paved curb/pipe (incl ROW) Total			393355	38548790
Open Space (good) - grass >75%	D	80	113210	9056800
	D Total		113210	9056800
Open Space (good) - grass >75% Total			113210	9056800
Residential - 1 acre	B	68	331	22508
	B Total		331	22508
	C	79	502845	39724755
	C Total		502845	39724755
	D	84	8718	732312
	D Total		8718	732312
Residential - 1 acre Total			511894	40479575
Residential - 1/8 acre or less	A	77	16792	1292984
	A Total		16792	1292984
	B	85	8790	747150
	B Total		8790	747150
	D	92	242	22264
	D Total		242	22264
Residential - 1/8 acre or less Total			25824	2062398
Urban district - commercial/business	A	89	4380	389820
	A Total		4380	389820
	D	95	4410	418950
	D Total		4410	418950
Urban district - commercial/business Total			8790	808770
Woods - (good)	A	30	15874	476220
	A Total		15874	476220
	B	55	8270	454850
	B Total		8270	454850
	C	70	1334	93380
	C Total		1334	93380
	D	77	14122	1087394
	D Total		14122	1087394
Woods - (good) Total			39600	2111844
Grand Total			1307180	104901689

CN 80.250

SA4 - ULTIMATE CONDITIONS

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>4329549</b>	<b>349160686</b>
<b>A</b>	<b>2214</b>	<b>119556</b>
54	2214	119556
<b>B</b>	<b>136360</b>	<b>9545200</b>
70	136360	9545200
<b>C</b>	<b>3347389</b>	<b>267791120</b>
80	3347389	267791120
<b>D</b>	<b>843586</b>	<b>71704810</b>
85	843586	71704810
<b>Residential - 1/4 acre</b>	<b>31710</b>	<b>2188388</b>
<b>A</b>	<b>14247</b>	<b>869067</b>
61	14247	869067
<b>B</b>	<b>16467</b>	<b>1235025</b>
75	16467	1235025
<b>C</b>	<b>589</b>	<b>48887</b>
83	589	48887
<b>D</b>	<b>407</b>	<b>35409</b>
87	407	35409
<b>Residential - 1/8 acre or less</b>	<b>19165</b>	<b>1510910</b>
<b>A</b>	<b>16818</b>	<b>1294986</b>
77	16818	1294986
<b>D</b>	<b>2347</b>	<b>215924</b>
92	2347	215924
<b>Urban district - industrial</b>	<b>6594</b>	<b>567498</b>
<b>A</b>	<b>3812</b>	<b>308772</b>
81	3812	308772
<b>D</b>	<b>2782</b>	<b>258726</b>
93	2782	258726
<b>Grand Total</b>	<b>4387018</b>	<b>353427482</b>
	CN	80.562

SA 4 - WOODS IN GOOD CONDITION

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area*CN
<b>Woods - (good)</b>	<b>4387021</b>	<b>309259246</b>
<b>A</b>	<b>37092</b>	<b>1112760</b>
30	37092	1112760
<b>B</b>	<b>152827</b>	<b>8405485</b>
55	152827	8405485
<b>C</b>	<b>3347979</b>	<b>234358530</b>
70	3347979	234358530
<b>D</b>	<b>849123</b>	<b>65382471</b>
77	849123	65382471
<b>Grand Total</b>	<b>4387021</b>	<b>309259246</b>
	CN	70.49413395

SUBAREA 5-1- EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1/8 acre or less	A	77	136847	10537219
	A Total		136847	10537219
	B	85	71839	6106315
	B Total		71839	6106315
	C	90	14189	1277010
	C Total		14189	1277010
	D	92	1749	160908
	D Total		1749	160908
Residential - 1/8 acre or less Total			224624	18081452
Urban district - commercial/business	A	89	120	10680
	A Total		120	10680
Urban district - commercial/business Total			120	10680
Woods - (good)	A	30	3413	102390
	A Total		3413	102390
	B	55	14396	791780
	B Total		14396	791780
	D	77	494	38038
D Total		494	38038	
Woods - (good) Total			18303	932208
Grand Total			243047	19024340

CN 78.27

SUBAREA 5-1- EXISTING CONDITIONS W/MGMT

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Woods - (good)	A	30	140380	4211400
	A Total		140380	4211400
	B	55	86235	4742925
	B Total		86235	4742925
	C	70	14189	993230
	C Total		14189	993230
	D	77	2243	172711
	D Total		2243	172711
Woods - (good) Total			243047	10120266
Grand Total			243047	10120266

CN 41.639

SUBAREA 5-2- EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1/8 acre or less	A	77	169135	13023395
	A Total		169135	13023395
	B	85	19007	1615595
	B Total		19007	1615595
Residential - 1/8 acre or less Total			188142	14638990
Woods - (good)	A	30	2048	61440
	A Total		2048	61440
	B	55	11005	605275
	B Total		11005	605275
Woods - (good) Total			13053	666715
Grand Total			201195	15305705

CN	76.07
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SUBAREA 5-2- EXISTING CONDITIONS W/MGMT

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Woods - (good)	A	30	171183	5135490
	A Total		171183	5135490
	B	55	30012	1650660
	B Total		30012	1650660
Woods - (good) Total			201195	6786150
Grand Total			201195	6786150

CN

33.729



SUBAREA 5-3- EXISTING CONDITIONS

SUBAREA 5-3- EXISTING CONDITIONS			Data	
Soil Type	Land Use	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
A	Residential - 1/8 acre or less	77	12749	981673
	Residential - 1/8 acre or less Total		12749	981673
A Total			12749	981673
B	Residential - 1/8 acre or less	85	74614	6342190
	Residential - 1/8 acre or less Total		74614	6342190
	Woods - (good)	55	87987	4839285
	Woods - (good) Total		87987	4839285
B Total			162601	11181475
C	Residential - 1/8 acre or less	90	244669	22020210
	Residential - 1/8 acre or less Total		244669	22020210
	Woods - (good)	70	357986	25059020
	Woods - (good) Total		357986	25059020
C Total			602655	47079230
D	Impervious - rds paved curb/pipe (incl ROW)	98	39803	3900694
	Impervious - rds paved curb/pipe (incl ROW) Total		39803	3900694
	Residential - 1/8 acre or less	92	33598	3091016
	Residential - 1/8 acre or less Total		33598	3091016
	Woods - (good)	77	46773	3601521
	Woods - (good) Total		46773	3601521
D Total			120174	10593231
Grand Total			898179	69835609

CN 77.752

SUBAREA 5-4- EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1/4 acre	A	61	94196	5745956
	A Total		94196	5745956
	B	75	21284	1596300
	B Total		21284	1596300
	C	83	326	27058
	C Total		326	27058
	D	87	97	8439
	D Total		97	8439
Residential - 1/4 acre Total			115903	7377753
Residential - 1/8 acre or less	A	77	17795	1370215
	A Total		17795	1370215
	B	85	74395	6323575
	B Total		74395	6323575
	C	90	49921	4492890
	C Total		49921	4492890
	D	92	747	68724
	D Total		747	68724
Residential - 1/8 acre or less Total			142858	12255404
Urban district - commercial/business	B	92	40130	3691960
	B Total		40130	3691960
	C	94	17113	1608622
	C Total		17113	1608622
	D	95	23082	2192790
	D Total		23082	2192790
Urban district - commercial/business Total			80325	7493372
Woods - (good)	A	30	12616	378480
	A Total		12616	378480
	B	55	174908	9619940
	B Total		174908	9619940
	C	70	202247	14157290
	C Total		202247	14157290
	D	77	13223	1018171
	D Total		13223	1018171
Woods - (good) Total			402994	25173881
Grand Total			742080	52300410

CN

70.478

SUBAREA 5-5 - EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	A	51	521	26571
	A Total		521	26571
	B	68	34110	2319480
	B Total		34110	2319480
	C	79	9609	759111
	C Total		9609	759111
Residential - 1 acre Total			44240	3105162
Residential - 1/4 acre	A	61	50864	3102704
	A Total		50864	3102704
Residential - 1/4 acre Total			50864	3102704
Residential - 1/8 acre or less	A	77	113729	8757133
	A Total		113729	8757133
	B	85	59300	5040500
	B Total		59300	5040500
	C	90	16515	1486350
	C Total		16515	1486350
Residential - 1/8 acre or less Total			189544	15283983
Woods - (good)	A	30	9203	276090
	A Total		9203	276090
	B	55	88628	4874540
	B Total		88628	4874540
	C	70	99209	6944630
	C Total		99209	6944630
Woods - (good) Total			197040	12095260
Grand Total			481688	33587109

**CN                      69.728**

## SA 5 - ULTIMATE CONDITIONS

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of area * CN
<b>Residential - 1/2 acre</b>	<b>888446</b>	<b>70062815</b>
<b>B</b>	<b>161374</b>	<b>11296180</b>
70	161374	11296180
<b>C</b>	<b>606897</b>	<b>48551760</b>
80	606897	48551760
<b>D</b>	<b>120175</b>	<b>10214875</b>
85	120175	10214875
<b>Residential - 1/4 acre</b>	<b>854222</b>	<b>61156236</b>
<b>A</b>	<b>331651</b>	<b>20230711</b>
61	331651	20230711
<b>B</b>	<b>309445</b>	<b>23208375</b>
75	309445	23208375
<b>C</b>	<b>206203</b>	<b>17114849</b>
83	206203	17114849
<b>D</b>	<b>6923</b>	<b>602301</b>
87	6923	602301
<b>Residential - 1/8 acre or less</b>	<b>791975</b>	<b>66032684</b>
<b>A</b>	<b>290595</b>	<b>22375815</b>
77	290595	22375815
<b>B</b>	<b>296103</b>	<b>25168755</b>
85	296103	25168755
<b>C</b>	<b>198685</b>	<b>17881650</b>
90	198685	17881650
<b>D</b>	<b>6592</b>	<b>606464</b>
92	6592	606464
<b>Urban district - industrial</b>	<b>31543</b>	<b>2898231</b>
<b>A</b>	<b>989</b>	<b>80109</b>
81	989	80109
<b>B</b>	<b>4680</b>	<b>411840</b>
88	4680	411840
<b>D</b>	<b>25874</b>	<b>2406282</b>
93	25874	2406282
<b>Grand Total</b>	<b>2566186</b>	<b>200149966</b>
	CN	77.995

SA 5- WOODS IN GOOD CONDITIONS

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area * CN
<b>Woods - (good)</b>	<b>2566185</b>	<b>144246421</b>
<b>A</b>	<b>623236</b>	<b>18697080</b>
30	623236	18697080
<b>B</b>	<b>771602</b>	<b>42438110</b>
55	771602	42438110
<b>C</b>	<b>1011784</b>	<b>70824880</b>
70	1011784	70824880
<b>D</b>	<b>159563</b>	<b>12286351</b>
77	159563	12286351
<b>Grand Total</b>	<b>2566185</b>	<b>144246421</b>
	CN	56.210

SUBAREA 6-1 - EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1/8 acre or less	A	77	139011	10703847
	A Total		139011	10703847
	B	85	36832	3130720
	B Total		36832	3130720
	C	90	576	51840
	C Total		576	51840
	D	92	117650	10823800
	D Total		117650	10823800
Residential - 1/8 acre or less Total			294069	24710207
Urban district - commercial/business	D	95	13794	1310430
	D Total		13794	1310430
Urban district - commercial/business Total			13794	1310430
Grand Total			307863	26020637

CN	84.520
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SUBAREA 6-2 - EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1/4 acre	A	61	643455	39250755
	A Total		643455	39250755
	B	75	52778	3958350
	B Total		52778	3958350
	C	83	2652	220116
	C Total		2652	220116
	D	87	1	87
	D Total		1	87
Residential - 1/4 acre Total			698886	43429308
Residential - 1/8 acre or less	A	77	439987	33878999
	A Total		439987	33878999
	B	85	46500	3952500
	B Total		46500	3952500
	D	92	66971	6161332
	D Total		66971	6161332
Residential - 1/8 acre or less Total			553458	43992831
Urban district - commercial/business	D	95	17502	1662690
	D Total		17502	1662690
Urban district - commercial/business Total			17502	1662690
Woods - (good)	D	77	8203	631631
	D Total		8203	631631
Woods - (good) Total			8203	631631
Grand Total			1278049	89716460

CN 70.198

SUBAREA 6-3 - EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	A	51	42336	2159136
	A Total		42336	2159136
	B	68	281034	19110312
	B Total		281034	19110312
	C	79	90133	7120507
	C Total		90133	7120507
	D	84	6386	536424
	D Total		6386	536424
Residential - 1 acre Total			419889	28926379
Residential - 1/4 acre	A	61	450829	27500569
	A Total		450829	27500569
	B	75	183860	13789500
	B Total		183860	13789500
	C	83	126692	10515436
	C Total		126692	10515436
	D	87	11897	1035039
	D Total		11897	1035039
Residential - 1/4 acre Total			773278	52840544
Residential - 1/8 acre or less	A	77	7989	615153
	A Total		7989	615153
	B	85	173412	14740020
	B Total		173412	14740020
	C	90	130891	11780190
	C Total		130891	11780190
	D	92	11171	1027732
	D Total		11171	1027732
Residential - 1/8 acre or less Total			323463	28163095
Urban district - industrial	B	88	170760	15026880
	B Total		170760	15026880
	C	91	13549	1232959
	C Total		13549	1232959
	D	93	324758	30202494
	D Total		324758	30202494
Urban district - industrial Total			509067	46462333
Woods - (good)	A	30	1183	35490
	A Total		1183	35490
	B	55	78186	4300230
	B Total		78186	4300230
	C	70	60762	4253340
	C Total		60762	4253340
	D	77	2235	172095
D Total		2235	172095	
Woods - (good) Total			142366	8761155
Grand Total			2168063	165153506



SUBAREA 6-3 - EXISTING CONDITIONS W/MGMT - INCLUDES GEORGE HOWARD AND COURTHOUSE FACILITIES UNDER DESIGN

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of CN*DA
Residential - 1 acre	A	51	42336	2159136
	A Total		42336	2159136
	B	68	234040	15914720
	B Total		234040	15914720
	C	79	88302	6975858
	C Total		88302	6975858
	D	84	6386	536424
	D Total		6386	536424
Residential - 1 acre Total			371064	25586138
Residential - 1/4 acre	A	61	450829	27500569
	A Total		450829	27500569
	B	75	183860	13789500
	B Total		183860	13789500
	C	83	126692	10515436
	C Total		126692	10515436
	D	87	11897	1035039
	D Total		11897	1035039
Residential - 1/4 acre Total			773278	52840544
Residential - 1/8 acre or less	A	77	7989	615153
	A Total		7989	615153
	B	85	173412	14740020
	B Total		173412	14740020
	C	90	130891	11780190
	C Total		130891	11780190
	D	92	11171	1027732
	D Total		11171	1027732
Residential - 1/8 acre or less Total			323463	28163095
Urban district - industrial	B	88	99441	8750808
	B Total		99441	8750808
	C	91	9986	908726
	C Total		9986	908726
	D	93	107783	10023819
	D Total		107783	10023819
Urban district - industrial Total			217210	19683353
Woods - (good)	A	30	1183	35490
	A Total		1183	35490
	B	55	196498	10807390
	B Total		196498	10807390
	C	70	66156	4630920
	C Total		66156	4630920
	D	77	219208	16879016
D Total		219208	16879016	
Woods - (good) Total			483045	32352816
Grand Total			2168060	158625946

CN 73.165

George howard building underground mgmt reduced CN of DA from 76+ to 73+

SUBAREA 6-4 - EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	A	51	8	408
	A Total		8	408
	C	79	9645	761955
	C Total		9645	761955
Residential - 1 acre Total			9653	762363
Residential - 1/4 acre	A	61	1030	62830
	A Total		1030	62830
Residential - 1/4 acre Total			1030	62830
Residential - 1/8 acre or less	A	77	235644	18144588
	A Total		235644	18144588
	B	85	20609	1751765
	B Total		20609	1751765
	C	90	64512	5806080
C Total		64512	5806080	
Residential - 1/8 acre or less Total			320765	25702433
Grand Total			331448	26527626

CN 80.036

SUBAREA 6-5 - EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	A	30	8792	263760
	A Total		8792	263760
Brush - (good) Total			8792	263760
Residential - 1 acre	A	51	57054	2909754
	A Total		57054	2909754
	B	68	94357	6416276
	B Total		94357	6416276
	C	79	285346	22542334
C Total		285346	22542334	
Residential - 1 acre Total			436757	31868364
Residential - 1/4 acre	A	61	226590	13821990
	A Total		226590	13821990
	B	75	24817	1861275
	B Total		24817	1861275
	C	83	82613	6856879
C Total		82613	6856879	
Residential - 1/4 acre Total			334020	22540144
Residential - 1/8 acre or less	A	77	114129	8787933
	A Total		114129	8787933
	B	85	243627	20708295
	B Total		243627	20708295
	C	90	541444	48729960
C Total		541444	48729960	
Residential - 1/8 acre or less Total			899200	78226188
Urban district - commercial/business	A	89	87013	7744157
	A Total		87013	7744157
	B	92	38481	3540252
	B Total		38481	3540252
	C	94	26146	2457724
C Total		26146	2457724	
Urban district - commercial/business Total			151640	13742133
Woods - (good)	A	30	81514	2445420
	A Total		81514	2445420
	B	55	1017362	55954910
	B Total		1017362	55954910
	C	70	135827	9507890
C Total		135827	9507890	
Woods - (good) Total			1234703	67908220
Grand Total			3065112	214548809

CN 70.00

SUBAREA 6-5 - EXISTING CONDITIONS W/MGMT

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Brush - (good)	A	30	8792	263760
	A Total		8792	263760
Brush - (good) Total			8792	263760
Residential - 1 acre	A	51	48809	2489259
	A Total		48809	2489259
	B	68	93409	6351812
	B Total		93409	6351812
	C	79	279826	22106254
C Total		279826	22106254	
Residential - 1 acre Total			422044	30947325
Residential - 1/4 acre	A	61	59693	3641273
	A Total		59693	3641273
	B	75	19839	1487925
	B Total		19839	1487925
	C	83	63111	5238213
C Total		63111	5238213	
Residential - 1/4 acre Total			142643	10367411
Residential - 1/8 acre or less	A	77	114117	8787009
	A Total		114117	8787009
	B	85	194061	16495185
	B Total		194061	16495185
	C	90	395305	35577450
C Total		395305	35577450	
Residential - 1/8 acre or less Total			703483	60859644
Urban district - commercial/business	A	89	12760	1135640
	A Total		12760	1135640
	B	92	10580	973360
	B Total		10580	973360
	C	94	19884	1869096
C Total		19884	1869096	
Urban district - commercial/business Total			43224	3978096
Woods - (good)	A	30	330900	9927000
	A Total		330900	9927000
	B	55	1100754	60541470
	B Total		1100754	60541470
	C	70	313309	21931630
C Total		313309	21931630	
Woods - (good) Total			1744963	92400100
Grand Total			3065149	198816336

CN

64.86

SA 6- ULTIMATE CONDITIONS

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>3440933</b>	<b>244095228</b>
<b>A</b>	<b>522247</b>	<b>28201338</b>
54	522247	28201338
<b>B</b>	<b>1761452</b>	<b>123301640</b>
70	1761452	123301640
<b>C</b>	<b>1154528</b>	<b>92362240</b>
80	1154528	92362240
<b>D</b>	<b>2706</b>	<b>230010</b>
85	2706	230010
<b>Residential - 1/4 acre</b>	<b>3028280</b>	<b>204685542</b>
<b>A</b>	<b>2013687</b>	<b>122834907</b>
61	2013687	122834907
<b>B</b>	<b>400557</b>	<b>30041775</b>
75	400557	30041775
<b>C</b>	<b>403068</b>	<b>33454644</b>
83	403068	33454644
<b>D</b>	<b>210968</b>	<b>18354216</b>
87	210968	18354216
<b>Urban district - commercial/business</b>	<b>8118</b>	<b>758558</b>
<b>B</b>	<b>2267</b>	<b>208564</b>
92	2267	208564
<b>C</b>	<b>5851</b>	<b>549994</b>
94	5851	549994
<b>Urban district - industrial</b>	<b>675008</b>	<b>61255990</b>
<b>A</b>	<b>630</b>	<b>51030</b>
81	630	51030
<b>B</b>	<b>299066</b>	<b>26317808</b>
88	299066	26317808
<b>C</b>	<b>8432</b>	<b>767312</b>
91	8432	767312
<b>D</b>	<b>366880</b>	<b>34119840</b>
93	366880	34119840
<b>Grand Total</b>	<b>7152339</b>	<b>510795318</b>
	CN	71.417

SA 6 - WOODS IN GOOD CONDITION

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area * CN
<b>Woods - (good)</b>	<b>7152338</b>	<b>366314910</b>
<b>A</b>	<b>2536563</b>	<b>76096890</b>
30	2536563	76096890
<b>B</b>	<b>2463341</b>	<b>135483755</b>
55	2463341	135483755
<b>C</b>	<b>1571879</b>	<b>110031530</b>
70	1571879	110031530
<b>D</b>	<b>580555</b>	<b>44702735</b>
77	580555	44702735
<b>Grand Total</b>	<b>7152338</b>	<b>366314910</b>
	CN	51

SUBAREA 7-3 - EXISTING CONDITIONS WITH MGMT - ALSO INCLUDES MGMT FROM GEORGE HOWARD AND COURTHOUSE PARKING LOT IMPROVEMENTS CURRENTLY IN DESIGN

Drainage Area	Land Use	Soil Type	Curve Number	Data		
				Sum of Area (SQ FT)	Sum of cn*area	
Subarea 7-Mgmt	Residential - 1 acre	A	51	104891	5349441	
		A Total		104891	5349441	
		B	68	68110	4631480	
		B Total		68110	4631480	
		C	79	41983	3316657	
		C Total		41983	3316657	
		D	84	3020	253680	
	D Total		3020	253680		
	Residential - 1 acre Total				218004	13551258
	Residential - 1/4 acre	A	61	46014	2806854	
		A Total		46014	2806854	
		B	75	20493	1536975	
		B Total		20493	1536975	
		D	87	16874	1468038	
	D Total		16874	1468038		
	Residential - 1/4 acre Total				83381	5811867
	Residential - 1/8 acre or less	A	77	13083	1007391	
		A Total		13083	1007391	
		B	85	27121	2305285	
		B Total		27121	2305285	
	Residential - 1/8 acre or less Total				40204	3312676
	Urban district - commercial/business	A	89	12887	1146943	
		A Total		12887	1146943	
		C	94	36018	3385692	
		C Total		36018	3385692	
		D	95	2606	247570	
		D Total		2606	247570	
	Urban district - commercial/business Total				51511	4780205
	Urban district - industrial	A	81	418184	33872904	
		A Total		418184	33872904	
		B	88	70433	6198104	
		B Total		70433	6198104	
		D	93	82057	7631301	
D Total		82057	7631301			
Urban district - industrial Total				570674	47702309	
Woods - (good)	A	30	65213	1956390		
	A Total		65213	1956390		
	B	55	208623	11474265		
	B Total		208623	11474265		
	D	77	192040	14787080		
D Total		192040	14787080			
Woods - (good) Total				465876	28217735	
Subarea 7-Mgmt Total				1429650	103376050	
Grand Total				1429650	103376050	

SUBAREA 7-1 - EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	A	51	38970	1987470
	A Total		38970	1987470
	B	68	145876	9919568
	B Total		145876	9919568
	C	79	168878	13341362
	C Total		168878	13341362
Residential - 1 acre Total			353724	25248400
Residential - 1/4 acre	A	61	152493	9302073
	A Total		152493	9302073
	B	75	57689	4326675
	B Total		57689	4326675
	C	83	73324	6085892
	C Total		73324	6085892
	D	87	4705	409335
D Total		4705	409335	
Residential - 1/4 acre Total			288211	20123975
Residential - 1/8 acre or less	B	85	40417	3435445
	B Total		40417	3435445
	C	90	13086	1177740
	C Total		13086	1177740
Residential - 1/8 acre or less Total			53503	4613185
Urban district - commercial/business	A	89	10175	905575
	A Total		10175	905575
	B	92	35981	3310252
	B Total		35981	3310252
	C	94	215279	20236226
C Total		215279	20236226	
Urban district - commercial/business Total			261435	24452053
Urban district - industrial	A	81	67118	5436558
	A Total		67118	5436558
	B	88	2069	182072
	B Total		2069	182072
Urban district - industrial Total			69187	5618630
Woods - (good)	A	30	56420	1692600
	A Total		56420	1692600
	B	55	322325	17727875
	B Total		322325	17727875
	C	70	17709	1239630
C Total		17709	1239630	
Woods - (good) Total			396454	20660105
Grand Total			1422514	100716348

CN

70.802



SUBAREA 7-2 - EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	A	51	37664	1920864
	A Total		37664	1920864
	B	68	249620	16974160
	B Total		249620	16974160
	C	79	140233	11078407
	C Total		140233	11078407
Residential - 1 acre Total			427517	29973431
Residential - 1/8 acre or less	B	85	33146	2817410
	B Total		33146	2817410
	C	90	142068	12786120
	C Total		142068	12786120
Residential - 1/8 acre or less Total			175214	15603530
Urban district - commercial/business	B	92	331	30452
	B Total		331	30452
	C	94	3395	319130
	C Total		3395	319130
Urban district - commercial/business Total			3726	349582
Urban district - industrial	A	81	4672	378432
	A Total		4672	378432
Urban district - industrial Total			4672	378432
Woods - (good)	A	30	69753	2092590
	A Total		69753	2092590
	B	55	191213	10516715
	B Total		191213	10516715
Woods - (good) Total			260966	12609305
Grand Total			872095	58914280

CN

67.555

SUBAREA 7-3 - EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	A	51	104891	5349441
	A Total		104891	5349441
	B	68	68110	4631480
	B Total		68110	4631480
	C	79	41983	3316657
	C Total		41983	3316657
	D	84	3020	253680
	D Total		3020	253680
Residential - 1 acre Total			218004	13551258
Residential - 1/4 acre	A	61	46014	2806854
	A Total		46014	2806854
	B	75	20493	1536975
	B Total		20493	1536975
	D	87	16874	1468038
	D Total		16874	1468038
Residential - 1/4 acre Total			83381	5811867
Residential - 1/8 acre or less	A	77	13083	1007391
	A Total		13083	1007391
	B	85	27121	2305285
	B Total		27121	2305285
Residential - 1/8 acre or less Total			40204	3312676
Urban district - commercial/business	A	89	12887	1146943
	A Total		12887	1146943
	C	94	36018	3385692
	C Total		36018	3385692
	D	95	2606	247570
	D Total		2606	247570
Urban district - commercial/business Total			51511	4780205
Urban district - industrial	A	81	418184	33872904
	A Total		418184	33872904
	B	88	70455	6200040
	B Total		70455	6200040
	D	93	229423	21336339
	D Total		229423	21336339
Urban district - industrial Total			718062	61409283
Woods - (good)	A	30	65213	1956390
	A Total		65213	1956390
	B	55	208600	11473000
	B Total		208600	11473000
	D	77	44706	3442362
	D Total		44706	3442362
Woods - (good) Total			318519	16871752
Grand Total			1429681	105737041

CN

73.958

SUBAREA 7-4 - EXISTING CONDITIONS

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	A	51	414303	21129453
	A Total		414303	21129453
	B	68	462678	31462104
	B Total		462678	31462104
	C	79	110764	8750356
	C Total		110764	8750356
	D	84	15754	1323336
	D Total		15754	1323336
Residential - 1 acre Total			1003499	62665249
Residential - 1/4 acre	B	75	44362	3327150
	B Total		44362	3327150
	D	87	12007	1044609
	D Total		12007	1044609
Residential - 1/4 acre Total			56369	4371759
Residential - 1/8 acre or less	A	77	157359	12116643
	A Total		157359	12116643
	B	85	287977	24478045
	B Total		287977	24478045
	C	90	188115	16930350
	C Total		188115	16930350
Residential - 1/8 acre or less Total			633451	53525038
Urban district - commercial/business	A	89	86187	7670643
	A Total		86187	7670643
	B	92	53492	4921264
	B Total		53492	4921264
	C	94	15096	1419024
	C Total		15096	1419024
	D	95	177166	16830770
	D Total		177166	16830770
Urban district - commercial/business Total			331941	30841701
Urban district - industrial	A	81	8415	681615
	A Total		8415	681615
	B	88	27658	2433904
	B Total		27658	2433904
	C	91	25442	2315222
	C Total		25442	2315222
	D	93	183776	17091168
	D Total		183776	17091168
Urban district - industrial Total			245291	22521909
Woods - (good)	A	30	131180	3935400
	A Total		131180	3935400
	B	55	720603	39633165
	B Total		720603	39633165
	C	70	186238	13036660
	C Total		186238	13036660
	D	77	336	25872
	D Total		336	25872
Woods - (good) Total			1038357	56631097
Grand Total			3308908	230556753

SUBAREA 7-4 - EXISTING CONDITIONS WITH MGMT

Land Use	Soil Type	Curve Number	Data	
			Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	A	51	414303	21129453
	A Total		414303	21129453
	B	68	462678	31462104
	B Total		462678	31462104
	C	79	110764	8750356
	C Total		110764	8750356
	D	84	15754	1323336
	D Total		15754	1323336
Residential - 1 acre Total			1003499	62665249
Residential - 1/4 acre	B	75	44362	3327150
	B Total		44362	3327150
	D	87	12007	1044609
	D Total		12007	1044609
Residential - 1/4 acre Total			56369	4371759
Residential - 1/8 acre or less	A	77	157359	12116643
	A Total		157359	12116643
	B	85	287977	24478045
	B Total		287977	24478045
	C	90	188115	16930350
	C Total		188115	16930350
Residential - 1/8 acre or less Total			633451	53525038
Urban district - commercial/business	A	89	81479	7251631
	A Total		81479	7251631
	B	92	51948	4779216
	B Total		51948	4779216
	C	94	15096	1419024
	C Total		15096	1419024
	D	95	55414	5264330
	D Total		55414	5264330
Urban district - commercial/business Total			203937	18714201
Urban district - industrial	A	81	8415	681615
	A Total		8415	681615
	B	88	22449	1975512
	B Total		22449	1975512
	C	91	11751	1069341
	C Total		11751	1069341
	D	93	166410	15476130
	D Total		166410	15476130
Urban district - industrial Total			209025	19202598
Woods - (good)	A	30	135891	4076730
	A Total		135891	4076730
	B	55	726929	39981095
	B Total		726929	39981095
	C	70	199928	13994960
	C Total		199928	13994960
	D	77	139349	10729873
	D Total		139349	10729873
Woods - (good) Total			1202097	68782658
Grand Total			3308378	227261503

SUBAREA 7-4 - EXISTING CONDITIONS WITH MGMT - ALSO INCLUDES MGMT FROM GEORGE HOWARD AND COURTHOUSE PARKING LOT IMPROVEMENTS CURRENTLY IN DESIGN

Drainage Area	Land Use	Soil Type	Curve Number	Data		
				Sum of Area (SQ FT)	Sum of cn*Area	
SA 7-4-MGMT	Woods - (good)	A	30	4711	141330	
		A Total		4711	141330	
		B	55	6326	347930	
		B Total		6326	347930	
		C	70	14013	980910	
		C Total		14013	980910	
		D	77	139013	10704001	
		D Total		139013	10704001	
Woods - (good) Total				164063	12174171	
SA 7-4-MGMT Total				164063	12174171	
Subarea 7-Mgmt	Residential - 1 acre	A	51	408179	20817129	
		A Total		408179	20817129	
		B	68	456087	31013916	
		B Total		456087	31013916	
		C	79	110764	8750356	
		C Total		110764	8750356	
		D	84	15754	1323336	
		D Total		15754	1323336	
	Residential - 1 acre Total				990784	61904737
	Residential - 1/4 acre	B	75	44362	3327150	
		B Total		44362	3327150	
		D	87	12007	1044609	
		D Total		12007	1044609	
	Residential - 1/4 acre Total				56369	4371759
	Residential - 1/8 acre or less	A	77	157359	12116643	
		A Total		157359	12116643	
		B	85	287977	24478045	
		B Total		287977	24478045	
		C	90	188115	16930350	
		C Total		188115	16930350	
	Residential - 1/8 acre or less Total				633451	53525038
	Urban district - commercial/business	A	89	55731	4960059	
		A Total		55731	4960059	
		B	92	51945	4778940	
B Total			51945	4778940		
C		94	15096	1419024		
C Total			15096	1419024		
D		95	55414	5264330		
D Total			55414	5264330		
Urban district - commercial/business Total				178186	16422353	
Urban district - industrial	A	81	8415	681615		
	A Total		8415	681615		
	B	88	22449	1975512		
	B Total		22449	1975512		
	C	91	11751	1069341		
	C Total		11751	1069341		
	D	93	166410	15476130		
	D Total		166410	15476130		
Urban district - industrial Total				209025	19202598	
Woods - (good)	A	30	163047	4891410		
	A Total		163047	4891410		
	B	55	727193	39995615		
	B Total		727193	39995615		
	C	70	185915	13014050		
	C Total		185915	13014050		
	D	77	336	25872		
	D Total		336	25872		
Woods - (good) Total				1076491	57926947	
Subarea 7-Mgmt Total				3144306	213353432	
Grand Total				3308369	225527603	

H8-UG1 - SUBAREA 7-4A - PROPOSED CONDITIONS

Row Labels	Sum of Area (SQ FT)	Sum of CN*Area
<b>Residential - 1 acre</b>	<b>196138</b>	<b>11318159</b>
<b>A</b>	<b>141060</b>	<b>7194060</b>
51	141060	7194060
<b>B</b>	<b>27803</b>	<b>1890604</b>
68	27803	1890604
<b>C</b>	<b>11521</b>	<b>910159</b>
79	11521	910159
<b>D</b>	<b>15754</b>	<b>1323336</b>
84	15754	1323336
<b>Residential - 1/4 acre</b>	<b>56363</b>	<b>4371333</b>
<b>B</b>	<b>44354</b>	<b>3326550</b>
75	44354	3326550
<b>D</b>	<b>12009</b>	<b>1044783</b>
87	12009	1044783
<b>Residential - 1/8 acre or less</b>	<b>582313</b>	<b>49113678</b>
<b>A</b>	<b>157359</b>	<b>12116643</b>
77	157359	12116643
<b>B</b>	<b>249765</b>	<b>21230025</b>
85	249765	21230025
<b>C</b>	<b>175189</b>	<b>15767010</b>
90	175189	15767010
<b>Urban district - commercial/business</b>	<b>89293</b>	<b>8351516</b>
<b>A</b>	<b>9975</b>	<b>887775</b>
89	9975	887775
<b>B</b>	<b>23823</b>	<b>2191716</b>
92	23823	2191716
<b>D</b>	<b>55495</b>	<b>5272025</b>
95	55495	5272025
<b>Urban district - industrial</b>	<b>211719</b>	<b>19439950</b>
<b>A</b>	<b>8415</b>	<b>681615</b>
81	8415	681615
<b>B</b>	<b>25087</b>	<b>2207656</b>
88	25087	2207656
<b>C</b>	<b>11751</b>	<b>1069341</b>
91	11751	1069341
<b>D</b>	<b>166466</b>	<b>15481338</b>
93	166466	15481338
<b>Woods - (good)</b>	<b>884308</b>	<b>51621488</b>
<b>A</b>	<b>116158</b>	<b>3484740</b>
30	116158	3484740
<b>B</b>	<b>440613</b>	<b>24233715</b>
55	440613	24233715
<b>C</b>	<b>188188</b>	<b>13173160</b>
70	188188	13173160
<b>D</b>	<b>139349</b>	<b>10729873</b>
77	139349	10729873
<b>Grand Total</b>	<b>2020134</b>	<b>144216124</b>

H8-UG1 - SUBAREA 7-4B - PROPOSED CONDITIONS

Row Labels	Sum of Area (SQ FT)	Sum of CN*Area
<b>Residential - 1 acre</b>	<b>794690</b>	<b>50589678</b>
<b>A</b>	<b>267112</b>	<b>13622712</b>
51	267112	13622712
<b>B</b>	<b>428336</b>	<b>29126848</b>
68	428336	29126848
<b>C</b>	<b>99242</b>	<b>7840118</b>
79	99242	7840118
<b>Residential - 1/8 acre or less</b>	<b>51137</b>	<b>4411275</b>
<b>B</b>	<b>38211</b>	<b>3247935</b>
85	38211	3247935
<b>C</b>	<b>12926</b>	<b>1163340</b>
90	12926	1163340
<b>Urban district - commercial/business</b>	<b>89389</b>	<b>8116748</b>
<b>A</b>	<b>45744</b>	<b>4071216</b>
89	45744	4071216
<b>B</b>	<b>28549</b>	<b>2626508</b>
92	28549	2626508
<b>C</b>	<b>15096</b>	<b>1419024</b>
94	15096	1419024
<b>Woods - (good)</b>	<b>356229</b>	<b>18478890</b>
<b>A</b>	<b>51588</b>	<b>1547640</b>
30	51588	1547640
<b>B</b>	<b>292908</b>	<b>16109940</b>
55	292908	16109940
<b>C</b>	<b>11733</b>	<b>821310</b>
70	11733	821310
<b>Grand Total</b>	<b>1291445</b>	<b>81596591</b>

CN	63.182
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SUBAREA 7-5 - EXISTING CONDITIONS

			Data	
Land Use	Soil Type	Curve Number	Sum of Area (SQ FT)	Sum of DA*CN
Residential - 1 acre	B	68	65015	4421020
	B Total		65015	4421020
	C	79	25354	2002966
	C Total		25354	2002966
Residential - 1 acre Total			90369	6423986
Urban district - commercial/business	A	89	129852	11556828
	A Total		129852	11556828
	B	92	115243	10602356
	B Total		115243	10602356
	C	94	101817	9570798
C Total		101817	9570798	
Urban district - commercial/business Total			346912	31729982
Woods - (good)	A	30	69	2070
	A Total		69	2070
	B	55	6308	346940
	B Total		6308	346940
Woods - (good) Total			6377	349010
Grand Total			443658	38502978

CN 86.785



## SA 7- ULTIMATE CONDITIONS

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1 acre</b>	<b>514012</b>	<b>30327813</b>
<b>A</b>	<b>272059</b>	<b>13875009</b>
51	272059	13875009
<b>B</b>	<b>241953</b>	<b>16452804</b>
68	241953	16452804
<b>Residential - 1/2 acre</b>	<b>1637468</b>	<b>107154771</b>
<b>A</b>	<b>583544</b>	<b>31511376</b>
54	583544	31511376
<b>B</b>	<b>887769</b>	<b>62143830</b>
70	887769	62143830
<b>C</b>	<b>124722</b>	<b>9977760</b>
80	124722	9977760
<b>D</b>	<b>41433</b>	<b>3521805</b>
85	41433	3521805
<b>Residential - 1/4 acre</b>	<b>559624</b>	<b>41671772</b>
<b>A</b>	<b>105602</b>	<b>6441722</b>
61	105602	6441722
<b>B</b>	<b>306722</b>	<b>23004150</b>
75	306722	23004150
<b>C</b>	<b>147300</b>	<b>12225900</b>
83	147300	12225900
<b>Residential - 1/8 acre or less</b>	<b>2215221</b>	<b>184264822</b>
<b>A</b>	<b>822106</b>	<b>63302162</b>
77	822106	63302162
<b>B</b>	<b>883538</b>	<b>75100730</b>
85	883538	75100730
<b>C</b>	<b>509577</b>	<b>45861930</b>
90	509577	45861930
<b>Urban district - commercial/business</b>	<b>799756</b>	<b>74795119</b>
<b>A</b>	<b>875</b>	<b>77875</b>
89	875	77875
<b>B</b>	<b>188785</b>	<b>17368220</b>
92	188785	17368220
<b>C</b>	<b>610096</b>	<b>57349024</b>
94	610096	57349024
<b>Urban district - industrial</b>	<b>1750717</b>	<b>155962553</b>
<b>A</b>	<b>240647</b>	<b>19492407</b>
81	240647	19492407
<b>B</b>	<b>748034</b>	<b>65826992</b>
88	748034	65826992
<b>C</b>	<b>113097</b>	<b>10291827</b>
91	113097	10291827
<b>D</b>	<b>648939</b>	<b>60351327</b>
93	648939	60351327
<b>Grand Total</b>	<b>7476798</b>	<b>594176850</b>
	CN	79.469

SA 7 - WOODS IN GOOD CONDITION

Row Labels	Values	
	Sum of Area (SQ FT)	Sum of Area * CN
<b>Woods - (good)</b>	<b>7476858</b>	<b>398365089</b>
<b>A</b>	<b>2024889</b>	<b>60746670</b>
30	2024889	60746670
<b>B</b>	<b>3256801</b>	<b>179124055</b>
55	3256801	179124055
<b>C</b>	<b>1504796</b>	<b>105335720</b>
70	1504796	105335720
<b>D</b>	<b>690372</b>	<b>53158644</b>
77	690372	53158644
<b>Grand Total</b>	<b>7476858</b>	<b>398365089</b>
	CN	53.280

## SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION

JOB NAME: Ellicott City Flood Study 2  
Howard County  
SUBAREA 8-1 -EXISTING CONDITIONS

DATE: 02/27/17  
 JOB NO.: 5519-93

COMPUTED BY: EZS STUDY POINT: Overall Drainage Area CONDITION: \_\_\_\_\_ ULTIMATE  
 CHECKED BY: ADM X EXISTING

### RUNOFF CURVE NUMBER COMPUTATION

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft^2)	AREA (ac)	RCN x A
B	Impervious - Paved Parking Lots, Roofs, Drives	98	341,719	7.845	768.79
C	Residential - 1 acre	79	1,513,932	34.755	2745.65
D	Residential - 1 acre	61	370,114	8.497	518.30
B	Residential - 1/4 acre	75	26,602	0.611	45.80
C	Residential - 1/4 acre	83	1,666,651	38.261	3175.67
D	Residential - 1/4 acre	87	563,549	12.937	1125.55
C	Residential - 1/8 acre	90	426,021	9.780	880.21
D	Residential - 1/8 acre	92	6,268	0.144	13.24
B	Small grain - SR - (poor)	76	101,675	2.334	177.39
C	Small grain - SR - (poor)	84	143,305	3.290	276.35
B	Urban district - commercial/business	92	85,687	1.967	180.97
C	Urban district - commercial/business	94	277,240	6.365	598.27
D	Urban district - commercial/business	95	9,693	0.223	21.14
C	Urban district - industrial	91	4,969	0.114	10.38
D	Urban district - industrial	93	15,807	0.363	33.75
B	Woods - (good)	55	163,672	3.757	206.66
C	Woods - (good)	70	1,834,546	42.115	2948.08
D	Woods - (good)	77	314,550	7.221	556.02
<b>TOTAL</b>			<b>7,866,000</b>	<b>180.579</b>	<b>14282.20</b>
				<b>MI^2</b>	<b>0.2822</b>

$$\text{WEIGHTED RUNOFF CURVE NUMBER} = \frac{\text{TOT RCN x AC} = 14282.20}{\text{TOTAL ACRES} = 180.58} = 79.091$$

## SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION

JOB NAME: Ellicott City Flood Study 2  
Howard County  
SUBAREA 8-2 -EXISTING CONDITIONS

DATE: 02/27/17  
JOB NO.: 5519-93

COMPUTED BY: EZS STUDY POINT: Overall Drainage Area CONDITION: X ULTIMATE  
CHECKED BY: ADM EXISTING

### RUNOFF CURVE NUMBER COMPUTATION

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft^2)	AREA (ac)	RCN x A
C	Residential - 1/4 acre	83	125,685	2.885	239.48
C	Residential - 1/8 acre	90	131,748	3.025	272.21
C	Urban district - commercial/business	94	267,745	6.147	577.78
C	Woods - (good)	70	167,057	3.835	268.46
<b>TOTAL</b>			<b>692,235</b>	<b>15.892</b>	<b>1357.92</b>
				<b>MI^2</b>	<b>0.0248</b>

$$\text{WEIGHTED RUNOFF CURVE NUMBER} = \frac{\text{TOT RCN x AC}}{\text{TOTAL ACRES}} = \frac{1357.92}{15.89} = 85.450$$

## SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION

JOB NAME: Ellicott City Flood Study 2  
Howard County  
SUBAREA 8-3 -EXISTING CONDITIONS

DATE: 02/27/17  
 JOB NO.: 5519-93

COMPUTED BY: EZS STUDY POINT: Overall Drainage Area CONDITION: \_\_\_\_\_ ULTIMATE  
 CHECKED BY: ADM \_\_\_\_\_ X \_\_\_\_\_ EXISTING

### RUNOFF CURVE NUMBER COMPUTATION

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft <sup>2</sup> )	AREA (ac)	RCN x A
B	Pasture / grassland / range (grazing) - (good)	31	-	0.000	0.00
C	Residential - 1 acre	79	14,583	0.335	26.45
B	Residential - 1/4 acre	75	109,461	2.513	188.47
C	Residential - 1/4 acre	83	385,313	8.846	734.18
B	Small grain - SR - (poor)	76	4,965	0.114	8.66
C	Small grain - SR - (poor)	84	76,812	1.763	148.12
C	Woods - (good)	70	15,906	0.365	25.56
<b>TOTAL</b>			<b>607,040</b>	<b>13.936</b>	<b>1131.44</b>
				<b>MI<sup>2</sup></b>	<b>0.0218</b>

$$\text{WEIGHTED RUNOFF CURVE NUMBER} = \frac{\text{TOT RCN x AC}}{\text{TOTAL ACRES}} = \frac{1131.44}{13.94} = 81.190$$

## SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION

JOB NAME: Ellicott City Flood Study 2Howard CountySUBAREA 8-4 - EXISTING CONDITIONSDATE: 02/27/17JOB NO.: 5519-93COMPUTED BY: EZS  
CHECKED BY: ADMSTUDY POINT: Overall Drainage Area    CONDITION: X    ULTIMATE EXISTING

### RUNOFF CURVE NUMBER COMPUTATION

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft <sup>2</sup> )	AREA (ac)	RCN x A
A	Brush - (good)	30	198,760	4.563	136.89
B	Brush - (good)	48	423,504	9.722	466.67
C	Brush - (good)	65	115,447	2.650	172.27
C	Impervious - Paved Parking Lots, Roofs, Drives	98	13,762	0.316	30.96
A	Residential - 1 acre	51	585,313	13.437	685.28
B	Residential - 1 acre	68	602,272	13.826	940.19
C	Residential - 1 acre	79	445,199	10.220	807.41
A	Residential - 1/4 acre	61	237,044	5.442	331.95
B	Residential - 1/4 acre	75	463,373	10.638	797.82
C	Residential - 1/4 acre	83	310,540	7.129	591.71
A	Residential - 1/8 acre	77	57,612	1.323	101.84
B	Residential - 1/8 acre	85	17,969	0.413	35.06
C	Residential - 1/8 acre	90	206,804	4.748	427.28
A	Woods - (good)	30	319,441	7.333	220.00
B	Woods - (good)	55	911,949	20.935	1151.45
C	Woods - (good)	70	897,918	20.613	1442.94
		<b>TOTAL</b>	<b>5,806,907</b>	<b>133.308</b>	<b>8339.71</b>
				<b>MI<sup>2</sup></b>	<b>0.2083</b>

$$\text{WEIGHTED RUNOFF CURVE NUMBER} = \frac{\text{TOT RCN x AC} = \frac{8339.71}{133.31}}{\text{TOTAL ACRES}} = 62.560$$

## SA 8 -EXISTING CONDITIONS

Row Labels	Sum of Area (SQ FT)	Sum of DA*CN
<b>Brush - (good)</b>	<b>737710</b>	<b>33794982</b>
A	198760	5962800
B	423504	20328192
C	115446	7503990
<b>Impervious - rds paved curb/pipe (incl ROW)</b>	<b>355500</b>	<b>34839000</b>
C	13781	1350538
D	341719	33488462
<b>Pasture / grassland / range (grazing) - (good)</b>	<b>0</b>	<b>0</b>
B	0	0
<b>Residential - 1 acre</b>	<b>3531433</b>	<b>257820010</b>
A	585313	29850963
B	602273	40954564
C	1973733	155924907
D	370114	31089576
<b>Residential - 1/4 acre</b>	<b>3888306</b>	<b>314973152</b>
A	237043	14459623
B	599437	44957775
C	2488277	206526991
D	563549	49028763
<b>Residential - 1/8 acre or less</b>	<b>846422</b>	<b>75351715</b>
A	57612	4436124
B	17969	1527365
C	764573	68811570
D	6268	576656
<b>Small grain - SR - (poor)</b>	<b>326756</b>	<b>26594384</b>
B	106640	8104640
C	220116	18489744
<b>Urban district - commercial/business</b>	<b>640364</b>	<b>60032535</b>
B	85687	7883204
C	544984	51228496
D	9693	920835
<b>Urban district - industrial</b>	<b>20776</b>	<b>1922230</b>
C	4969	452179
D	15807	1470051
<b>Woods - (good)</b>	<b>4625036</b>	<b>297042405</b>
A	319442	9583260
B	1075619	59159045
C	2915425	204079750
D	314550	24220350
<b>Grand Total</b>	<b>14972303</b>	<b>1102370413</b>
	CN	73.63

SA 8 -ULTIMATE CONDITONS

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>14679141</b>	<b>1118948102</b>
A	1380313	74536902
B	2760355	193224850
C	8916771	713341680
D	1621702	137844670
<b>Residential - 1/8 acre or less</b>	<b>238149</b>	<b>20448118</b>
A	17859	1375143
B	150625	12803125
C	69665	6269850
<b>Urban district - commercial/business</b>	<b>55906</b>	<b>5254864</b>
B	150	13800
C	55756	5241064
<b>Grand Total</b>	<b>14973196</b>	<b>1144651084</b>
	CN	76.447



SA 8 - WOODS IN GOOD CONDITION

Row Labels	Sum of Area (SQ FT)	Sum of Area*CN
<b>Woods - (good)</b>	<b>14973193</b>	<b>959881609</b>
A	1398172	41945160
B	2911129	160112095
C	9042190	632953300
D	1621702	124871054
<b>Grand Total</b>	<b>14973193</b>	<b>959881609</b>
	CN	64.107



**SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION**

JOB NAME: Ellicott City Flood Study 2  
Howard County  
SUBAREA 9-2 -EXISTING CONDITIONS

DATE: 02/27/17  
 JOB NO.: 5519-93

COMPUTED BY: EZS  
 CHECKED BY: ADM

STUDY POINT: Overall Drainage Area

CONDITION:                      ULTIMATE  
                    X EXISTING

**RUNOFF CURVE NUMBER COMPUTATION**

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft^2)	AREA (ac)	RCN x A
B	Residential - 1 acre	68	46,884	1.076	73.19
C	Residential - 1 acre	79	97,516	2.239	176.85
A	Woods - (good)	30	15,537	0.357	10.70
B	Woods - (good)	55	153,900	3.533	194.32
C	Woods - (good)	70	149,186	3.425	239.74
<b>TOTAL</b>		<b>68</b>	<b>463,023</b>	<b>10.630</b>	<b>694.80</b>
			<b>MI^2</b>	<b>0.0166</b>	

WEIGHTED RUNOFF CURVE NUMBER = 
$$\frac{\text{TOT RCN} \times \text{AC}}{\text{TOTAL ACRES}} = \frac{694.80}{10.63} = 65.365$$

# SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION

JOB NAME: Ellicott City Flood Study 2  
Howard County  
SUBAREA 9-3 -EXISTING CONDITIONS

DATE: 02/27/17  
JOB NO.: 5519-93

COMPUTED BY: EZS STUDY POINT: Overall Drainage Area CONDITION: X ULTIMATE  
CHECKED BY: ADM EXISTING

## RUNOFF CURVE NUMBER COMPUTATION

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft <sup>2</sup> )	AREA (ac)	RCN x A
A	Residential - 1 acre	51	4,719	0.108	5.53
B	Residential - 1 acre	68	96,578	2.217	150.76
C	Residential - 1 acre	79	154,861	3.555	280.85
A	Residential - 1/4 acre	61	25,029	0.575	35.05
B	Residential - 1/4 acre	75	107,870	2.476	185.73
C	Residential - 1/4 acre	83	15,085	0.346	28.74
B	Urban district - commercial/business	92	194,692	4.470	411.20
C	Urban district - commercial/business	94	303,242	6.961	654.38
A	Woods - (good)	30	18,896	0.434	13.01
B	Woods - (good)	55	47,852	1.099	60.42
C	Woods - (good)	70	26,707	0.613	42.92
<b>TOTAL</b>			<b>995,531</b>	<b>22.854</b>	<b>1868.59</b>
				<b>MI<sup>2</sup></b>	<b>0.0357</b>

$$\text{WEIGHTED RUNOFF CURVE NUMBER} = \frac{\text{TOT RCN x AC} = 1868.59}{\text{TOTAL ACRES} = 22.85} = 81.761$$



**SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION**

JOB NAME: Ellicott City Flood Study 2

DATE: 02/27/17

Howard County

JOB NO.: 5519-93

SUBAREA 9-1 -EXISTING CONDITIONS - WITH PROPOSED GEORGE

HOWARD AND COURTHOUSE PARKING LOT IMPROVEMENTS

COMPUTED BY: EZS

STUDY POINT: Overall Drainage Area

CONDITION:

ULTIMATE

CHECKED BY: ADM

X EXISTING

**RUNOFF CURVE NUMBER COMPUTATION**

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft <sup>2</sup> )	AREA (ac)	RCN x A
A	Residential - 1 acre	51	1,354	0.031	1.59
B	Residential - 1 acre	68	19,195	0.441	29.96
A	Urban district - commercial/business	89	157,822	3.623	322.46
B	Urban district - commercial/business	92	145,033	3.329	306.31
C	Urban district - commercial/business	94	42,572	0.977	91.87
A	Woods - (good)	30	166,101	3.813	114.39
B	Woods - (good)	55	116,113	2.666	146.61
		<b>TOTAL</b>	<b>648,190</b>	<b>14.880</b>	<b>1013.19</b>
				<b>MI<sup>2</sup></b>	<b>0.0233</b>

WEIGHTED RUNOFF CURVE NUMBER =  $\frac{\text{TOT RCN} \times \text{AC}}{\text{TOTAL ACRES}} = \frac{1013.19}{14.88} = 68.089$

# SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION

JOB NAME: Ellicott City Flood Study 2  
Howard County  
SUBAREA 9-2 -EXISTING CONDITIONS

DATE: 02/27/17  
 JOB NO.: 5519-93

COMPUTED BY: EZS STUDY POINT: Overall Drainage Area CONDITION:            ULTIMATE  
 CHECKED BY: ADM            X            EXISTING

### RUNOFF CURVE NUMBER COMPUTATION

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft <sup>2</sup> )	AREA (ac)	RCN x A
B	Residential - 1 acre	68	46,884	1.076	73.19
C	Residential - 1 acre	79	97,516	2.239	176.85
A	Woods - (good)	30	15,537	0.357	10.70
B	Woods - (good)	55	153,900	3.533	194.32
C	Woods - (good)	70	149,186	3.425	239.74
<b>TOTAL</b>			<b>463,023</b>	<b>10.630</b>	<b>694.80</b>
				<b>MI<sup>2</sup></b>	<b>0.0166</b>

$$\text{WEIGHTED RUNOFF CURVE NUMBER} = \frac{\text{TOT RCN} \times \text{AC}}{\text{TOTAL ACRES}} = \frac{694.80}{10.63} = 65.365$$

# SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION

JOB NAME: Ellicott City Flood Study 2  
Howard County  
SUBAREA 9-3 -EXISTING CONDITIONS

DATE: 02/27/17  
JOB NO.: 5519-93

COMPUTED BY: EZS STUDY POINT: Overall Drainage Area CONDITION: ULTIMATE  
CHECKED BY: ADM X EXISTING

## RUNOFF CURVE NUMBER COMPUTATION

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft^2)	AREA (ac)	RCN x A
A	Residential - 1 acre	51	4,719	0.108	5.53
B	Residential - 1 acre	68	96,578	2.217	150.76
C	Residential - 1 acre	79	154,861	3.555	280.85
A	Residential - 1/4 acre	61	25,029	0.575	35.05
B	Residential - 1/4 acre	75	107,870	2.476	185.73
C	Residential - 1/4 acre	83	15,085	0.346	28.74
B	Urban district - commercial/business	92	194,692	4.470	411.20
C	Urban district - commercial/business	94	303,242	6.961	654.38
A	Woods - (good)	30	18,896	0.434	13.01
B	Woods - (good)	55	47,852	1.099	60.42
C	Woods - (good)	70	26,707	0.613	42.92
		<b>TOTAL</b>	<b>995,531</b>	<b>22.854</b>	<b>1868.59</b>
				<b>MI^2</b>	<b>0.0357</b>

$$\text{WEIGHTED RUNOFF CURVE NUMBER} = \frac{\text{TOT RCN} \times \text{AC}}{\text{TOTAL ACRES}} = \frac{1868.59}{22.85} = 81.761$$



SA 9 -ULTIMATE CONDITIONS

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>522580</b>	<b>36904854</b>
A	73176	3951504
B	299897	20992790
C	149507	11960560
<b>Residential - 1/8 acre or less</b>	<b>352260</b>	<b>29715001</b>
A	42598	3280046
B	286925	24388625
C	22737	2046330
<b>Urban district - commercial/business</b>	<b>608255</b>	<b>56900078</b>
B	137946	12691032
C	470309	44209046
<b>Urban district - industrial</b>	<b>623651</b>	<b>53405328</b>
A	273686	22168566
B	203351	17894888
C	146614	13341874
<b>Grand Total</b>	<b>2106746</b>	<b>176925261</b>
	CN	83.980

SA 9 - WOODS IN GOOD CONDITION

Row Labels	Sum of Area (SQ FT)	Sum of Area*CN
<b>Woods - (good)</b>	<b>2106745</b>	<b>117971995</b>
A	389460	11683800
B	928117	51046435
C	789168	55241760
<b>Grand Total</b>	<b>2106745</b>	<b>117971995</b>

	CN	55.997
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# SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION

JOB NAME: Ellicott City Flood Study 2  
Howard County  
SUBAREA 10-1 - EXISTING CONDITIONS

DATE: 02/27/17  
JOB NO.: 5519-93

COMPUTED BY: EZS STUDY POINT: Overall Drainage Area CONDITION: \_\_\_\_\_ ULTIMATE  
CHECKED BY: ADM \_\_\_\_\_ X \_\_\_\_\_ EXISTING

## RUNOFF CURVE NUMBER COMPUTATION

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft <sup>2</sup> )	AREA (ac)	RCN x A
A	Residential - 1/4 acre	75	81,876	1.880	140.97
B	Residential - 1/4 acre	83	521,537	11.973	993.75
A	Residential - 1/8 acre	90	54,823	1.259	113.27
<b>TOTAL</b>			<b>658,236</b>	<b>15.111</b>	<b>1247.99</b>
				<b>MI<sup>2</sup></b>	<b>0.0236</b>

$$\text{WEIGHTED RUNOFF CURVE NUMBER} = \frac{\text{TOT RCN} \times \text{AC}}{\text{TOTAL ACRES}} = \frac{1247.99}{15.11} = 82.588$$

## SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION

JOB NAME: Ellicott City Flood Study 2

DATE: 02/27/17

Howard County

JOB NO.: 5519-93

SUBAREA 10-2 - EXISTING CONDITIONS

COMPUTED BY: EZS

STUDY POINT: Overall Drainage Area

CONDITION:             

ULTIMATE

CHECKED BY: ADM

  X  

EXISTING

### RUNOFF CURVE NUMBER COMPUTATION

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft <sup>2</sup> )	AREA (ac)	RCN x A
A	Residential - 1 acre	51	662,157	15.201	775.25
B	Residential - 1 acre	68	200,412	4.601	312.86
C	Residential - 1 acre	79	22,972	0.527	41.66
A	Residential - 1/4 acre	61	222,570	5.110	311.68
B	Residential - 1/4 acre	75	156,089	3.583	268.75
C	Residential - 1/4 acre	83	404,729	9.291	771.18
B	Residential - 1/8 acre	85	3,131	0.072	6.11
C	Residential - 1/8 acre	90	16,598	0.381	34.29
A	Woods - (good)	30	144,521	3.318	99.53
B	Woods - (good)	55	685,441	15.736	865.46
C	Woods - (good)	70	856,851	19.671	1376.94
		<b>TOTAL</b>	<b>3,375,471</b>	<b>77.490</b>	<b>4863.71</b>
				<b>MI<sup>2</sup></b>	<b>0.1211</b>

**WEIGHTED RUNOFF CURVE NUMBER =**  $\frac{\text{TOT RCN x AC}}{\text{TOTAL ACRES}} = \frac{4863.71}{77.49} = 62.766$

## SA 10-EXISTING CONDITIONS

Row Labels	Sum of Area (SQ FT)	Sum of DA*CN
<b>Residential - 1 acre</b>	<b>885541</b>	<b>49212811</b>
<b>A</b>	<b>662157</b>	<b>33770007</b>
51	662157	33770007
<b>B</b>	<b>200412</b>	<b>13628016</b>
68	200412	13628016
<b>C</b>	<b>22972</b>	<b>1814788</b>
79	22972	1814788
<b>Residential - 1/4 acre</b>	<b>1386949</b>	<b>108316485</b>
<b>A</b>	<b>222571</b>	<b>13576831</b>
61	222571	13576831
<b>B</b>	<b>237965</b>	<b>17847375</b>
75	237965	17847375
<b>C</b>	<b>926413</b>	<b>76892279</b>
83	926413	76892279
<b>Residential - 1/8 acre or less</b>	<b>74632</b>	<b>6701225</b>
<b>B</b>	<b>3131</b>	<b>266135</b>
85	3131	266135
<b>C</b>	<b>71501</b>	<b>6435090</b>
90	71501	6435090
<b>Woods - (good)</b>	<b>1686812</b>	<b>102014430</b>
<b>A</b>	<b>144521</b>	<b>4335630</b>
30	144521	4335630
<b>B</b>	<b>685438</b>	<b>37699090</b>
55	685438	37699090
<b>C</b>	<b>856853</b>	<b>59979710</b>
70	856853	59979710
<b>Grand Total</b>	<b>4033934</b>	<b>266244951</b>
	CN	66.001

SA 10 -ULTIMATE CONDITIONS

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>4046092</b>	<b>286439114</b>
A	1000211	54011394
B	1124276	78699320
C	1921605	153728400
<b>Residential - 1/8 acre or less</b>	<b>31709</b>	<b>2462977</b>
A	29036	2235772
B	2673	227205
<b>Grand Total</b>	<b>4077801</b>	<b>288902091</b>
	CN	70.848

SA 10 - WOODS IN GOOD CONDITION

Row Labels	Sum of Area (SQ FT)	Sum of Area*CN
<b>Woods - (good)</b>	<b>4033935</b>	<b>224301295</b>
A	1029248	30877440
B	1126949	61982195
C	1877738	131441660
<b>Grand Total</b>	<b>4033935</b>	<b>224301295</b>
	CN	55.604

## SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION

 JOB NAME: Ellicott City Flood Study 2

 DATE: 02/27/17
Howard County

 JOB NO.: 5519-93
SUBAREA 11-1 - EXISTING CONDITIONS

 COMPUTED BY: EZS

STUDY POINT: Overall Drainage Area

CONDITION:

ULTIMATE

 CHECKED BY: ADM
X

EXISTING

**RUNOFF CURVE NUMBER COMPUTATION**

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft <sup>2</sup> )	AREA (ac)	RCN x A
C	Residential - 1 acre	79	528,839	12.140	959.10
C	Residential - 1/2 acre	80	52,758	1.211	96.89
C	Urban district - commercial/business	94	808,296	18.556	1744.26
<b>TOTAL</b>			<b>1,389,893</b>	<b>31.908</b>	<b>2800.25</b>
				<b>MI<sup>2</sup></b>	<b>0.0499</b>

$$\text{WEIGHTED RUNOFF CURVE NUMBER} = \frac{\text{TOT RCN} \times \text{AC}}{\text{TOTAL ACRES}} = \frac{2800.25}{31.91} = 87.761$$

















SUBAREA 11 - EXISTING CONDITIONS

Row Labels	Sum of Area (SQ FT)	Sum of DA*CN
<b>Impervious - rds paved curb/pipe (incl ROW)</b>	<b>4340</b>	<b>425320</b>
C	4340	425320
98	4340	425320
<b>Open Space (good) - grass &gt;75%</b>	<b>568</b>	<b>42032</b>
C	568	42032
74	568	42032
<b>Residential - 1 acre</b>	<b>901137</b>	<b>71189823</b>
C	901137	71189823
79	901137	71189823
<b>Residential - 1/2 acre</b>	<b>441288</b>	<b>35303040</b>
C	441288	35303040
80	441288	35303040
<b>Residential - 1/4 acre</b>	<b>5457781</b>	<b>454384379</b>
C	5110642	424183286
83	5110642	424183286
D	347139	30201093
87	347139	30201093
<b>Row crops - straight row (SR) - (good)</b>	<b>377113</b>	<b>32054605</b>
C	377113	32054605
85	377113	32054605
<b>Small grain - SR - (poor)</b>	<b>596120</b>	<b>50074080</b>
C	596120	50074080
84	596120	50074080
<b>Urban district - commercial/business</b>	<b>1777777</b>	<b>167111038</b>
C	1777777	167111038
94	1777777	167111038
<b>Woods - (good)</b>	<b>614437</b>	<b>43011129</b>
C	614360	43005200
70	614360	43005200
D	77	5929
77	77	5929
<b>Grand Total</b>	<b>10170561</b>	<b>853595446</b>
	CN	83.93



SA 11 -ULTIMATE CONDITONS

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>8823807</b>	<b>707640640</b>
C	8476591	678127280
D	347216	29513360
<b>Residential - 1/4 acre</b>	<b>333712</b>	<b>27698096</b>
C	333712	27698096
<b>Residential - 1/8 acre or less</b>	<b>653108</b>	<b>58779720</b>
C	653108	58779720
<b>Urban district - industrial</b>	<b>369397</b>	<b>33615127</b>
C	369397	33615127
<b>Grand Total</b>	<b>10180024</b>	<b>827733583</b>
	CN	81.310

SA 11 - WOODS IN GOOD CONDITION

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Woods - (good)</b>	<b>10170561</b>	<b>714369782</b>
C	9823345	687634150
D	347216	26735632
<b>Grand Total</b>	<b>10170561</b>	<b>714369782</b>

CN 70.239









SUBAREA 12 - EXISTING CONDITIONS

Row Labels	Sum of Area (SQ FT)	Sum of DA*CN
<b>Residential - 1/4 acre</b>	<b>4236578</b>	<b>351635974</b>
C	4236578	351635974
<b>Woods - (good)</b>	<b>191176</b>	<b>13382320</b>
C	191176	13382320
<b>Grand Total</b>	<b>4427754</b>	<b>365018294</b>

CN	82.44
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SA 12 -ULTIMATE CONDITONS

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>4427754</b>	<b>354220320</b>
C	4427754	354220320
<b>Grand Total</b>	<b>4427754</b>	<b>354220320</b>
	CN	80



SA 12 - WOODS IN GOOD CONDITION

Sum of Area (SQ FT)			
Land Use	Soil Type	Curve Number	Total
Woods - (good)	C	70	4427755
	C Total		4427755
Woods - (good) Total			4427755
Grand Total			4427755
		CN	70





SUBAREA 13- EXISTING CONDITONS

Row Labels	Sum of Area (SQ FT)	Sum of DA*CN
<b>Residential - 1 acre</b>	<b>1136887</b>	<b>86167837</b>
<b>B</b>	<b>331476</b>	<b>22540368</b>
68	331476	22540368
<b>C</b>	<b>805411</b>	<b>63627469</b>
79	805411	63627469
<b>Residential - 1/4 acre</b>	<b>1317379</b>	<b>108851857</b>
<b>B</b>	<b>61325</b>	<b>4599375</b>
75	61325	4599375
<b>C</b>	<b>1256054</b>	<b>104252482</b>
83	1256054	104252482
<b>Residential - 1/8 acre or less</b>	<b>58999</b>	<b>5085475</b>
<b>B</b>	<b>44887</b>	<b>3815395</b>
85	44887	3815395
<b>C</b>	<b>14112</b>	<b>1270080</b>
90	14112	1270080
<b>Urban district - commercial/business</b>	<b>652044</b>	<b>61292136</b>
<b>C</b>	<b>652044</b>	<b>61292136</b>
94	652044	61292136
<b>Woods - (good)</b>	<b>4364094</b>	<b>292617990</b>
<b>B</b>	<b>857906</b>	<b>47184830</b>
55	857906	47184830
<b>C</b>	<b>3506188</b>	<b>245433160</b>
70	3506188	245433160
<b>Grand Total</b>	<b>7529403</b>	<b>554015295</b>
	CN	73.580

SA 13 -ULTIMATE CONDITONS

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>5660514</b>	<b>439885160</b>
B	1295596	90691720
C	4364918	349193440
<b>Residential - 1/8 acre or less</b>	<b>726269</b>	<b>65364210</b>
C	726269	65364210
<b>Urban district - industrial</b>	<b>1142628</b>	<b>103979148</b>
C	1142628	103979148
<b>Grand Total</b>	<b>7529411</b>	<b>609228518</b>
	CN	80.913

SA 13 - WOODS IN GOOD CONDITION

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Woods - (good)</b>	<b>7529408</b>	<b>507624620</b>
B	1295596	71257780
C	6233812	436366840
<b>Grand Total</b>	<b>7529408</b>	<b>507624620</b>

CN	67.419
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SUBAREA 14 - EXISTING CONDITIONS

Row Labels	Sum of Area (SQ FT)	Sum of DA*CN
<b>Open Space (good) - grass &gt;75%</b>	<b>2257004</b>	<b>164807445</b>
A	9599	374361
B	144222	8797542
C	2103183	155635542
<b>Residential - 1 acre</b>	<b>606422</b>	<b>47788043</b>
B	10845	737460
C	595577	47050583
<b>Residential - 1/2 acre</b>	<b>1202996</b>	<b>92260008</b>
A	76367	4123818
B	199413	13958910
C	927216	74177280
<b>Residential - 1/4 acre</b>	<b>3006155</b>	<b>249510857</b>
B	1	75
C	3006154	249510782
<b>Row crops - straight row (SR) - (good)</b>	<b>344258</b>	<b>29261930</b>
C	344258	29261930
<b>Urban district - commercial/business</b>	<b>664828</b>	<b>62333618</b>
B	80107	7369844
C	584721	54963774
<b>Woods - (good)</b>	<b>2534277</b>	<b>171627240</b>
B	384810	21164550
C	2149467	150462690
<b>Grand Total</b>	<b>10615940</b>	<b>817589141</b>

CN 77.02

SA 14 -ULTIMATE CONDITIONS

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>10610299</b>	<b>838394824</b>
A	85966	4642164
B	819398	57357860
C	9704935	776394800
<b>Urban district - industrial</b>	<b>6355</b>	<b>578305</b>
C	6355	578305
<b>Grand Total</b>	<b>10616654</b>	<b>838973129</b>
	CN	79.024

SA 14- WOODS IN GOOD CONDITION

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Woods - (good)</b>	<b>10616654</b>	<b>727436170</b>
A	85966	2578980
B	819398	45066890
C	9711290	679790300
<b>Grand Total</b>	<b>10616654</b>	<b>727436170</b>
	CN	68.518









## SCS TR-55 RUNOFF CURVE NUMBER AND TIME OF CONCENTRATION

JOB NAME: Ellicott City Flood Study 2  
Howard County  
SUBAREA 15-4 - EXISTING CONDITIONS

DATE: 02/27/17  
JOB NO.: 5519-93

COMPUTED BY: EZS STUDY POINT: Overall Drainage Area CONDITION: \_\_\_\_\_ ULTIMATE  
CHECKED BY: ADM \_\_\_\_\_ X \_\_\_\_\_ EXISTING

### RUNOFF CURVE NUMBER COMPUTATION

HYDROLOGIC SOIL GROUP	LAND USE	RUNOFF CURVE NO.	Area (ft <sup>2</sup> )	AREA (ac)	RCN x A
C	Open Space (good) - grass >75%	74	55,910	1.284	94.98
C	Residential - 1/4 acre	83	461,353	10.591	879.07
C	Residential - 1/8 acre	90	460,913	10.581	952.30
C	Woods - (good)	70	1,293,452	29.694	2078.55
<b>TOTAL</b>			<b>2,271,628</b>	<b>52.149</b>	<b>4004.90</b>
				<b>MI<sup>2</sup></b>	<b>0.0815</b>

$$\text{WEIGHTED RUNOFF CURVE NUMBER} = \frac{\text{TOT RCN} \times \text{AC}}{\text{TOTAL ACRES}} = \frac{4004.90}{52.15} = 76.797$$



SUBAREA 15- EXISTING CONDITIONS

Row Labels	Sum of Area (SQ FT)	Sum of DA*CN
<b>Open Space (good) - grass &gt;75%</b>	<b>893788</b>	<b>65857965</b>
<b>B</b>	<b>21719</b>	<b>1324859</b>
61	21719	1324859
<b>C</b>	<b>872069</b>	<b>64533106</b>
74	872069	64533106
<b>Residential - 1/4 acre</b>	<b>2997942</b>	<b>244591566</b>
<b>A</b>	<b>20934</b>	<b>1276974</b>
61	20934	1276974
<b>B</b>	<b>472134</b>	<b>35410050</b>
75	472134	35410050
<b>C</b>	<b>2504874</b>	<b>207904542</b>
83	2504874	207904542
<b>Residential - 1/8 acre or less</b>	<b>645687</b>	<b>58111830</b>
<b>C</b>	<b>645687</b>	<b>58111830</b>
90	645687	58111830
<b>Urban district - commercial/business</b>	<b>87027</b>	<b>8169708</b>
<b>B</b>	<b>5415</b>	<b>498180</b>
92	5415	498180
<b>C</b>	<b>81612</b>	<b>7671528</b>
94	81612	7671528
<b>Woods - (good)</b>	<b>1315734</b>	<b>91767150</b>
<b>B</b>	<b>22282</b>	<b>1225510</b>
55	22282	1225510
<b>C</b>	<b>1293452</b>	<b>90541640</b>
70	1293452	90541640
<b>Grand Total</b>	<b>5940178</b>	<b>468498219</b>

CN 78.869

SA 15 -ULTIMATE CONDITONS

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Residential - 1/2 acre</b>	<b>4941795</b>	<b>389583826</b>
A	20934	1130436
B	521549	36508430
C	4399312	351944960
<b>Urban district - commercial/business</b>	<b>120475</b>	<b>11324650</b>
C	120475	11324650
<b>Urban district - industrial</b>	<b>877907</b>	<b>79889537</b>
C	877907	79889537
<b>Grand Total</b>	<b>5940177</b>	<b>480798013</b>
	CN	80.940

SA 15 - WOODS IN GOOD CONDITION

Row Labels	Sum of Area (SQ FT)	Sum of Area * CN
<b>Woods - (good)</b>	<b>5940178</b>	<b>407151865</b>
A	20934	628020
B	521549	28685195
C	5397695	377838650
<b>Grand Total</b>	<b>5940178</b>	<b>407151865</b>
	CN	68.542



TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, Hudson Overall DA**  
 Natural Tc

BY: **ADM**

OVERLAND FLOW

Flow Segment Name  
 Surface Description  
 Roughness Coefficient  
 Land Slope (ft/ft)  
 Flow Length (ft) [100' max]  
 Two-Year Rainfall (in.)

<b>AB</b>	woods, light	0.40	100	3.20
Flow Time (hr.)				
				<b>0.286</b>

SHALLOW CONCENTRATED FLOW

Flow Segment Name  
 Flow Length (ft)  
 Paved or Unpaved  
 Land Slope (ft/ft)  
 Flow Velocity (ft/sec.)

<b>BC</b>	<b>CD</b>	<b>DE</b>
80	127	150
unpaved	unpaved	unpaved
0.031	0.024	0.130
2.852	2.480	5.817
Flow Time (hr.)		
0.0078	0.0142	0.0072
		<b>0.029</b>

CHANNEL FLOW

Flow Segment Name  
 Flow Depth (ft)  
 Bottom Width (ft)  
 Side Slope (Z1)  
 Side Slope (Z2)  
 Manning's Coefficient  
 Flow Length (ft)  
 Channel Slope (ft/ft)  
 Flow Velocity (ft/sec.)

<b>EF</b>	<b>GH</b>	<b>HI</b>	<b>IJ</b>	<b>MN</b>	<b>OP</b>	<b>PQ</b>	<b>QR</b>	<b>ST</b>	<b>TU</b>	<b>UV</b>	<b>VW</b>	<b>WX</b>	<b>XY</b>	<b>ZAA</b>	<b>AABB</b>	<b>BBC</b>	<b>BBCC</b>	<b>DDDE</b>	<b>EEEE</b>	<b>FFGG</b>	
0.25	0.5	0.5	0.500	1	1	1	1.5	1.5	1.5	2	2	1	2	2	2.25	2.5	2.5	2.5	2.75	2.75	
0	2	2	3	4	6	6	6	6	7	7	7	15	7	7	8	8	8	8	7	8	
0	3	3	3	3	3	3	0	0	3	3	3	0	3	3	0	0	0	0	3	3	
4	3	3	3	3	3	3	0	0	3	3	3	0	3	3	0	0	0	0	3	0	
0.045	0.045	0.045	0.045	0.045	0.013	0.013	0.013	0.013	0.045	0.045	0.013	0.045	0.045	0.045	0.03	0.03	0.03	0.03	0.03	0.013	
168	805	215	793	220	399	149	239	987	452	1164	277	1216	578	1012	178	754	249	249	1285	1100	
0.012	0.026	0.019	0.018	0.034	0.017	0.023	0.008	0.008	0.009	0.008	0.007	0.016	0.009	0.013	0.017	0.025	0.076	0.076	0.029	0.023	
0.883	2.593	2.301	2.283	17.000	12.190	14.462	10.457	3.906	3.744	3.500	8.935	4.975	3.702	6.895	8.200	10.479	18.633	18.633	12.063	23.864	
Flow Time (hr.)																					
0.0529	0.0862	0.0260	0.0965	0.0036	0.0091	0.0029	0.0063	0.0702	0.0335	0.0924	0.0086	0.0679	0.0434	0.0408	0.0060	0.0200	0.0037	0.0037	0.0296	0.0128	
																				<b>0.7123</b>	

PIPE FLOW (Assuming full flow)

Flow Segment Name  
 Pipe Diameter (ft)  
 Manning's Coefficient  
 Pipe Slope (ft/ft)  
 Pipe Length (ft)  
 Flow Velocity (ft/sec.)

<b>FG</b>	<b>FG</b>	<b>FG</b>	<b>FG</b>	<b>FG</b>	<b>JK</b>	<b>KL</b>	<b>LM</b>	<b>NO</b>	<b>BITUMIN.</b>	<b>RS</b>	<b>STRUCT.</b>	<b>YZ</b>	<b>PIPE?</b>	<b>CODD</b>
2.00	1.50	1.50	3.00	3	5	5.5	6	6	6	6	8	8	8	
0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.035	0.035	0.035	0.035	
0.058	0.020	0.020	0.003	0.003	0.016	0.024	0.031	0.004	0.004	0.007	0.014	0.014	0.023	
69.00	653.00	323.00	64.00	175	472	369	95	181	537	537	36	36	603	
17.338	8.419	8.302	5.275	5.044	16.608	22.074	26.629	9.958	5.817	7.943	10.269	10.269		
Flow Time (hr.)														
0.0011	0.022	0.011	0.003	0.010	0.008	0.005	0.001	0.005	0.026	0.001	0.016	0.016	<b>0.108</b>	

TIME OF CONCENTRATION (hr.)/(min)

**Total time** 1.136 hr

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, Hudson Overall DA**  
Natural TC

BY: ADM

OVERLAND FLOW

Flow Segment Name	Surface Description	Roughness Coefficient	Land Slope (ft/ft)	Flow Length (ft) [100' max]	Two-Year Rainfall (in.)	Flow Time (hr.)
AB	Woods/dense	0.80	0.031	100	3.20	0.498
CD	Unpaved	0.031	0.024	150	2.952	0.498
EF	Unpaved	0.031	0.130	150	2.952	0.498

SHALLOW CONCENTRATED FLOW

Flow Segment Name	Flow Length (ft)	Paved or Unpaved	Land Slope (ft/ft)	Flow Velocity (ft/sec.)	Flow Time (hr.)
BC	80	Unpaved	0.024	5.817	0.0078
CD	127	Unpaved	0.130	5.817	0.0142
DE	150	Unpaved	0.130	5.817	0.0072

CHANNEL FLOW

Flow Segment Name	Flow Depth (ft)	Bottom Width (ft)	Side Slope (Z1)	Side Slope (Z2)	Manning's Coefficient	Flow Length (ft)	Channel Slope (ft/ft)	Flow Velocity (ft/sec.)	Flow Time (hr.)
GH	0.25	0.5	2	3	0.050	215	0.017	1.984	0.0492
HI	0.5	1	3	3	0.050	215	0.017	1.984	0.1187
IJ	0.5	1	3	3	0.050	215	0.017	1.984	0.0302
JK	0.5	1	3	3	0.050	215	0.017	1.984	0.1093
LM	0.5	1	3	3	0.050	215	0.017	1.984	0.0826

PIPE FLOW (Assuming full flow)

Flow Segment Name	Pipe Diameter (ft)	Manning's Coefficient	Pipe Slope (ft/ft)	Pipe Length (ft)	Flow Velocity (ft/sec.)	Flow Time (hr.)

TIME OF CONCENTRATION (hr.):(min)

Total time **1.725** hr

1.4977

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, Hudson Overall DA  
Natural Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name  
Surface Description  
Roughness Coefficient  
Land Slope (ft/ft)  
Flow Length (ft) [100' max]  
Two-Year Rainfall (in.)

AB	woods.light	0.40	0.035	100	3.20
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Flow Time (hr.):

0.286				0.286
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SHALLOW CONCENTRATED FLOW

Flow Segment Name  
Flow Length (ft)  
Paved or Unpaved  
Land Slope (ft/ft)  
Flow Velocity (ft/sec.)

BC	CD	DE
80	127	150
unpaved	unpaved	unpaved
0.031	0.024	0.130
2.852	2.480	5.817

Flow Time (hr.):

0.0078	0.0142	0.0072	0.029
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CHANNEL FLOW

Flow Segment Name  
Flow Depth (ft)  
Bottom Width (ft)  
Side Slope (Z1)  
Side Slope (Z2)  
Manning's Coefficient  
Flow Length (ft)  
Channel Slope (ft/ft)  
Flow Velocity (ft/sec.)

EF	GH	HI	IJ
0.25	0.5	0.5	0.500
0	2	3	4
4	3	3	3
4	3	3	3
0.045	0.045	0.045	0.045
168	805	215	793
0.012	0.026	0.019	0.018
0.883	2.593	2.301	2.283

Flow Time (hr.):

0.0529	0.0862	0.0260	0.0965	0.2616
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PIPE FLOW (Assuming full flow)

Flow Segment Name  
Pipe Diameter (ft)  
Manning's Coefficient  
Pipe Slope (ft/ft)  
Pipe Length (ft)  
Flow Velocity (ft/sec.)

FG	FG	FG	FG	FG
2.00	1.50	1.50	3.00	3
0.013	0.013	0.013	0.013	0.013
0.058	0.020	0.020	0.003	0.003
69.00	653.00	323.00	64.00	175
17.338	8.419	8.302	5.275	5.044

Flow Time (hr.):

0.0011	0.022	0.011	0.003	0.010	0.046
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.623	hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, Hudson Overall DA

Natural Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name  
Surface Description  
Roughness Coefficient  
Land Slope (ft/ft)  
Flow Length (ft) [100' max]  
Two-Year Rainfall (in.)

<b>2A2B</b>
<b>GRASS, DE</b>
0.24
0.040
100
3.20

Flow Time (hr.:

<b>0.180</b>		<b>0.180</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name  
Flow Length (ft)  
Paved or Unpaved  
Land Slope (ft/ft)  
Flow Velocity (ft/sec.)

<b>2B2C</b>	<b>2C2D</b>
430	156
unpaved	paved
0.058	0.038
3.890	3.987

Flow Time (hr.:

<b>0.0307</b>	<b>0.0109</b>	<b>0.042</b>
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CHANNEL FLOW

Flow Segment Name  
Flow Depth (ft)  
Bottom Width (ft)  
Side Slope (Z1)  
Side Slope (Z2)  
Manning's Coefficient  
Flow Length (ft)  
Channel Slope (ft/ft)  
Flow Velocity (ft/sec.)

<b>2G2H*</b>	<b>2I2J</b>	<b>2JN</b>	<b>OP</b>	<b>PQ</b>	<b>QR</b>	<b>S2K</b>
1	1	1	1	1	1	1.5
0	0	6	6	6	6	7
4	4	4	3	3	0	3
4	4	4	3	3	0	3
0.070	0.700	0.013	0.013	0.013	0.013	0.045
434	171	30	399	149	239	69
0.035	0.123	0.034	0.017	0.023	0.008	0.013
2.436	0.459	17.092	12.190	14.462	10.457	3.880

Flow Time (hr.:

<b>0.0495</b>	<b>0.1034</b>	<b>0.0005</b>	<b>0.0091</b>	<b>0.0029</b>	<b>0.0063</b>	<b>0.0049</b>	<b>0.1766</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name  
Pipe Diameter (ft)  
Manning's Coefficient  
Pipe Slope (ft/ft)  
Pipe Length (ft)  
Flow Velocity (ft/sec.)

<b>2D2E</b>	<b>2E2F</b>	<b>2F2G</b>	<b>2H2I</b>	<b>NO</b>	<b>RS, STRUCTURAL STEEL 18IN</b>
1.25	2.25	3.00	3.00	6	8
0.013	0.013	0.013	0.013	0.013	0.035
0.033	0.025	0.031	0.050	0.004	0.007
92.00	438.00	758.00	161.00	181	537
9.506	12.203	16.543	21.034	9.958	5.817

Flow Time (hr.:

<b>0.0027</b>	<b>0.010</b>	<b>0.013</b>	<b>0.002</b>	<b>0.005</b>	<b>0.026</b>	<b>0.058</b>
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TIME OF CONCENTRATION (hr.)/(min)

<b>Total time</b>	<b>0.457</b>	<b>hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, SA #3**  
Existing Tc

BY: **ADM**

OVERLAND FLOW

Flow Segment Name  
Surface Description  
Roughness Coefficient  
Land Slope (ft/ft)  
Flow Length (ft) [100' max]  
Two-Year Rainfall (in.)

<b>3A3B</b>
<b>GRASS, DE</b>
0.24
0.020
100
3.20

Flow Time (hr.):

0.238			<b>0.238</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name  
Flow Length (ft)  
Paved or Unpaved  
Land Slope (ft/ft)  
Flow Velocity (ft/sec.)

<b>3B3C</b>	<b>3C3D</b>	
705	120	
unpaved	paved	
0.078	0.071	
4.507	5.410	

Flow Time (hr.):

0.0435	0.0062		<b>0.050</b>
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CHANNEL FLOW

Flow Segment Name  
Flow Depth (ft)  
Bottom Width (ft)  
Side Slope (Z1)  
Side Slope (Z2)  
Manning's Coefficient  
Flow Length (ft)  
Channel Slope (ft/ft)  
Flow Velocity (ft/sec.)

<b>3F3G</b>	<b>3G3H</b>	
0.5	0.75	
1	1.5	
2	2	
2	2	
0.045	0.045	
298	1248	
0.037	0.026	
2.900	3.167	

Flow Time (hr.):

0.0285	0.1095		<b>0.1380</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name  
Pipe Diameter (ft)  
Manning's Coefficient  
Pipe Slope (ft/ft)  
Pipe Length (ft)  
Flow Velocity (ft/sec.)

<b>3D3E</b>	<b>3E3F</b>	
1.50	2.00	
0.013	0.013	
0.041	0.027	
532	1012	
12.088	11.762	

Flow Time (hr.):

0.0122	0.0239		<b>0.036</b>
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TIME OF CONCENTRATION (hr.)/(min)

<b>Total time</b>	<b>0.462</b>	hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, SA #4  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name  
Surface Description  
Roughness Coefficient  
Land Slope (ft/ft)  
Flow Length (ft) [100' max]  
Two-Year Rainfall (in.)

4A4B
GRASS, DE
0.24
0.020
100
3.20

Flow Time (hr.)

0.238				0.238
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SHALLOW CONCENTRATED FLOW

Flow Segment Name  
Flow Length (ft)  
Paved or Unpaved  
Land Slope (ft/ft)  
Flow Velocity (ft/sec.)

4B4C			
779			
unpaved			
0.046			
3.468			

Flow Time (hr.)

0.0624				0.062
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CHANNEL FLOW

Flow Segment Name  
Flow Depth (ft)  
Bottom Width (ft)  
Side Slope (Z1)  
Side Slope (Z2)  
Manning's Coefficient  
Flow Length (ft)  
Channel Slope (ft/ft)  
Flow Velocity (ft/sec.)

4C4D	4D4E	4EV	VW	
1	1	2		1
1	3	7		15
2	3	3		0
2	3	3		0
0.045	0.045	0.045		0.013
1506	744	113		277
0.041	0.030	0.008		0.007
4.452	4.232	3.560		8.935

Flow Time (hr.)

0.0940	0.0488	0.0088	0.0086	0.1602
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PIPE FLOW (Assuming full flow)

Flow Segment Name  
Pipe Diameter (ft)  
Manning's Coefficient  
Pipe Slope (ft/ft)  
Pipe Length (ft)  
Flow Velocity (ft/sec.)


Flow Time (hr.)

	0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.460 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, SA #5  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name  
Surface Description  
Roughness Coefficient  
Land Slope (ft/ft)  
Flow Length (ft) [100' max]  
Two-Year Rainfall (in.)

5A5B
GRASS, DE
0.24
0.050
100
3.20

Flow Time (hr.)

0.165				0.165
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SHALLOW CONCENTRATED FLOW

Flow Segment Name  
Flow Length (ft)  
Paved or Unpaved  
Land Slope (ft/ft)  
Flow Velocity (ft/sec.)

5B5C				
76				
unpaved				
0.171				
6.673				

Flow Time (hr.)

0.0032				0.003
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CHANNEL FLOW

Flow Segment Name  
Flow Depth (ft)  
Bottom Width (ft)  
Side Slope (Z1)  
Side Slope (Z2)  
Manning's Coefficient  
Flow Length (ft)  
Channel Slope (ft/ft)  
Flow Velocity (ft/sec.)

5C5D	5D5E	5EX	XY		
0.5	1	2		2	
1	3	7		7	
2	3	3		3	
2	3	3		3	
0.045	0.045	0.045		0.045	
381	1060	418		457	
0.115	0.044	0.038		0.011	
5.129	5.183	7.787		4.163	

Flow Time (hr.)

0.0206	0.0568	0.0149	0.0305		0.1229
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PIPE FLOW (Assuming full flow)

Flow Segment Name  
Pipe Diameter (ft)  
Manning's Coefficient  
Pipe Slope (ft/ft)  
Pipe Length (ft)  
Flow Velocity (ft/sec.)

YZ					
8					
0.035					
0.014					
36					
7.943					

Flow Time (hr.)

0.0013				0.001
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.292 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, SA #6  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name  
Surface Description  
Roughness Coefficient  
Land Slope (ft/ft)  
Flow Length (ft) [100' max]  
Two-Year Rainfall (in.)

6A6B
GRASS, DE
0.24
0.100
100
3.20

Flow Time (hr.):

0.125			0.125
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SHALLOW CONCENTRATED FLOW

Flow Segment Name  
Flow Length (ft)  
Paved or Unpaved  
Land Slope (ft/ft)  
Flow Velocity (ft/sec.)

6B6C			
145			
unpaved			
0.090			
4.831			

Flow Time (hr.):

0.0083			0.008
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CHANNEL FLOW

Flow Segment Name  
Flow Depth (ft)  
Bottom Width (ft)  
Side Slope (Z1)  
Side Slope (Z2)  
Manning's Coefficient  
Flow Length (ft)  
Channel Slope (ft/ft)  
Flow Velocity (ft/sec.)

6C6D	6D6E	6F6G	BBCC
0.5	1	1.5	2.5
1	3	3	8
2	3	3	0
2	3	3	0
0.045	0.045	0.045	0.03
507	760	735	754
0.095	0.047	0.020	0.025
4.644	5.357	4.401	10.479

Flow Time (hr.):

0.0303	0.0394	0.0464	0.0200	0.1361
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PIPE FLOW (Assuming full flow)

Flow Segment Name  
Pipe Diameter (ft)  
Manning's Coefficient  
Pipe Slope (ft/ft)  
Pipe Length (ft)  
Flow Velocity (ft/sec.)

6E6F	6G6H	6HBB	
1.5	2	2.5	
0.013	0.013	0.035	
0.022	0.012	0.029	
137	256	734	
8.796	7.795	5.250	

Flow Time (hr.):

0.0043	0.0091	0.0388		0.004
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.274	hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, SA #7  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name  
Surface Description  
Roughness Coefficient  
Land Slope (ft/ft)  
Flow Length (ft) [100' max]  
Two-Year Rainfall (in.)

<b>7A7B</b>
<b>GRASS, DE</b>
0.24
0.020
100
3.20

Flow Time (hr.):

0.238			<b>0.238</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name  
Flow Length (ft)  
Paved or Unpaved  
Land Slope (ft/ft)  
Flow Velocity (ft/sec.)

<b>7B7C</b>			
394			
unpaved			
0.025			
2.570			

Flow Time (hr.):

0.0426			<b>0.043</b>
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CHANNEL FLOW

Flow Segment Name  
Flow Depth (ft)  
Bottom Width (ft)  
Side Slope (Z1)  
Side Slope (Z2)  
Manning's Coefficient  
Flow Length (ft)  
Channel Slope (ft/ft)  
Flow Velocity (ft/sec.)

<b>7E7F</b>	<b>7G7H</b>	<b>HGG</b>	
0.5	0.5		2.75
3	3		8
2	2		0
2	2		0
0.045	0.045		0.013
914	300		659
0.096	0.047		0.023
5.394	24.007		24.007

Flow Time (hr.):

0.0471	0.0035	0.0076	<b>0.0582</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name  
Pipe Diameter (ft)  
Manning's Coefficient  
Pipe Slope (ft/ft)  
Pipe Length (ft)  
Flow Velocity (ft/sec.)

<b>7C7D</b>	<b>7D7E</b>	<b>7F7G</b>	
1.5	2		2.5
0.013	0.013		0.013
0.068	0.104		0.031
622	663		766
15.446	23.230		14.791

Flow Time (hr.):

0.0112	0.0079	0.0144	<b>0.011</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.350 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #1  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	woods,light
Roughness Coefficient	0.40
Land Slope (ft/ft)	0.035
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.286			0.286
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	DE
Flow Length (ft)	80	127	150
Paved or Unpaved	unpaved	unpaved	unpaved
Land Slope (ft/ft)	0.031	0.024	0.130
Flow Velocity (ft/sec.)	2.852	2.480	5.817

Flow Time (hr.)	0.0078	0.0142	0.0072	0.029
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CHANNEL FLOW

Flow Segment Name	EF	GH	HI	IJ
Flow Depth (ft)	0.25	0.5	0.5	0.500
Bottom Width (ft)	0	2	3	4
Side Slope (Z1)	4	3	3	3
Side Slope (Z2)	4	3	3	3
Manning's Coefficient	0.045	0.045	0.045	0.045
Flow Length (ft)	168	805	215	793
Channel Slope (ft/ft)	0.012	0.026	0.019	0.018
Flow Velocity (ft/sec.)	0.883	2.593	2.301	2.283

Flow Time (hr.)	0.0529	0.0862	0.0260	0.0965	0.2616
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PIPE FLOW (Assuming full flow)

Flow Segment Name	FG	FG	FG	FG	FG
Pipe Diameter (ft)	2.00	1.50	1.50	3.00	3
Manning's Coefficient	0.013	0.013	0.013	0.013	0.013
Pipe Slope (ft/ft)	0.058	0.020	0.020	0.003	0.003
Pipe Length (ft)	69.00	653.00	323.00	64.00	175
Flow Velocity (ft/sec.)	17.338	8.419	8.302	5.275	5.044

Flow Time (hr.)	0.0011	0.022	0.011	0.003	0.010	0.046
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.623 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, SA #2**  
 Existing Tc BY: ADM

OVERLAND FLOW

Flow Segment Name	2A2B		
Surface Description	GRASS, DE		
Roughness Coefficient	0.24		
Land Slope (ft/ft)	0.040		
Flow Length (ft) [100' max]	100		
Two-Year Rainfall (in.)	3.20		
Flow Time (hr.)	0.180		0.180

SHALLOW CONCENTRATED FLOW

Flow Segment Name	2B2C	2C2D	
Flow Length (ft)	430	156	
Paved or Unpaved	unpaved	paved	
Land Slope (ft/ft)	0.058	0.038	
Flow Velocity (ft/sec.)	3.890	3.987	
Flow Time (hr.)	0.0307	0.0109	0.042

CHANNEL FLOW

\*ASSUME RIPRAP CHANNEL

Flow Segment Name	2G2H*	2I2J	2JN	OP	PQ	QR	S2K	
Flow Depth (ft)	1	1	1	1	1	1.5	1.5	
Bottom Width (ft)	0	0	6	6	6	6	7	
Side Slope (Z1)	4	4	3	3	0	0	3	
Side Slope (Z2)	4	4	3	3	0	0	3	
Manning's Coefficient	0.070	0.700	0.013	0.013	0.013	0.013	0.045	
Flow Length (ft)	434	171	30	399	149	239	69	
Channel Slope (ft/ft)	0.035	0.123	0.034	0.017	0.023	0.008	0.013	
Flow Velocity (ft/sec.)	2.436	0.459	17.092	12.190	14.462	10.457	3.880	
Flow Time (hr.)	0.0495	0.1034	0.0005	0.0091	0.0029	0.0063	0.0049	0.1766

PIPE FLOW (Assuming full flow)

Flow Segment Name	2D2E	2E2F	2F2G	2H2I	NO	RS, STRUCTURAL STEEL 18IN	
Pipe Diameter (ft)	1.25	2.25	3.00	3.00	6	8	
Manning's Coefficient	0.013	0.013	0.013	0.013	0.013	0.035	
Pipe Slope (ft/ft)	0.033	0.025	0.031	0.050	0.004	0.007	
Pipe Length (ft)	92.00	438.00	758.00	161.00	181	537	
Flow Velocity (ft/sec.)	9.506	12.203	16.543	21.034	9.958	5.817	
Flow Time (hr.)	0.0027	0.010	0.013	0.002	0.005	0.026	0.058

TIME OF CONCENTRATION (hr.)/(min)

Total time	0.457 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, SA #3**  
Existing Tc BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>3A3B</b>
Surface Description	<b>GRASS, DE</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.020</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>
Flow Time (hr.)	<b>0.238</b>

SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>3B3C</b>	<b>3C3D</b>
Flow Length (ft)	<b>705</b>	<b>120</b>
Paved or Unpaved	<b>unpaved</b>	<b>paved</b>
Land Slope (ft/ft)	<b>0.078</b>	<b>0.071</b>
Flow Velocity (ft/sec.)	<b>4.507</b>	<b>5.410</b>
Flow Time (hr.)	<b>0.0435</b>	<b>0.0062</b>

CHANNEL FLOW

Flow Segment Name	<b>3F3G</b>	<b>3G3H</b>
Flow Depth (ft)	<b>0.5</b>	<b>0.75</b>
Bottom Width (ft)	<b>1</b>	<b>1.5</b>
Side Slope (Z1)	<b>2</b>	<b>2</b>
Side Slope (Z2)	<b>2</b>	<b>2</b>
Manning's Coefficient	<b>0.045</b>	<b>0.045</b>
Flow Length (ft)	<b>298</b>	<b>1248</b>
Channel Slope (ft/ft)	<b>0.037</b>	<b>0.026</b>
Flow Velocity (ft/sec.)	<b>2.900</b>	<b>3.167</b>
Flow Time (hr.)	<b>0.0285</b>	<b>0.1095</b>

PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>3D3E</b>	<b>3E3F</b>
Pipe Diameter (ft)	<b>1.50</b>	<b>2.00</b>
Manning's Coefficient	<b>0.013</b>	<b>0.013</b>
Pipe Slope (ft/ft)	<b>0.041</b>	<b>0.027</b>
Pipe Length (ft)	<b>532</b>	<b>1012</b>
Flow Velocity (ft/sec.)	<b>12.088</b>	<b>11.762</b>
Flow Time (hr.)	<b>0.0122</b>	<b>0.0239</b>

TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.462 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #4  
 Existing Tc BY: ADM

OVERLAND FLOW

Flow Segment Name	4A4B
Surface Description	GRASS, DE
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.020
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20
Flow Time (hr.)	0.238

SHALLOW CONCENTRATED FLOW

Flow Segment Name	4B4C
Flow Length (ft)	779
Paved or Unpaved	unpaved
Land Slope (ft/ft)	0.046
Flow Velocity (ft/sec.)	3.468
Flow Time (hr.)	0.0624

CHANNEL FLOW

Flow Segment Name	4C4D	4D4E	4EV	VW	
Flow Depth (ft)	1	1	2	1	
Bottom Width (ft)	1	3	7	15	
Side Slope (Z1)	2	3	3	0	
Side Slope (Z2)	2	3	3	0	
Manning's Coefficient	0.045	0.045	0.045	0.013	
Flow Length (ft)	1506	744	113	277	
Channel Slope (ft/ft)	0.041	0.030	0.008	0.007	
Flow Velocity (ft/sec.)	4.452	4.232	3.560	8.935	
Flow Time (hr.)	0.0940	0.0488	0.0088	0.0086	0.1602

PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	
Flow Time (hr.)	0.000

TIME OF CONCENTRATION (hr.)/(min)

Total time	0.460 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #5  
Existing Tc BY: ADM

OVERLAND FLOW

Flow Segment Name	5A5B
Surface Description	GRASS, DE
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.050
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20
Flow Time (hr.)	0.165

SHALLOW CONCENTRATED FLOW

Flow Segment Name	5B5C
Flow Length (ft)	76
Paved or Unpaved	unpaved
Land Slope (ft/ft)	0.171
Flow Velocity (ft/sec.)	6.673
Flow Time (hr.)	0.0032

CHANNEL FLOW

Flow Segment Name	5C5D	5D5E	5EX	XY
Flow Depth (ft)	0.5	1	2	2
Bottom Width (ft)	1	3	7	7
Side Slope (Z1)	2	3	3	3
Side Slope (Z2)	2	3	3	3
Manning's Coefficient	0.045	0.045	0.045	0.045
Flow Length (ft)	381	1060	418	457
Channel Slope (ft/ft)	0.115	0.044	0.038	0.011
Flow Velocity (ft/sec.)	5.129	5.183	7.787	4.163
Flow Time (hr.)	0.0206	0.0568	0.0149	0.0305

PIPE FLOW (Assuming full flow)

Flow Segment Name	YZ
Pipe Diameter (ft)	8
Manning's Coefficient	0.035
Pipe Slope (ft/ft)	0.014
Pipe Length (ft)	36
Flow Velocity (ft/sec.)	7.943
Flow Time (hr.)	0.0013

TIME OF CONCENTRATION (hr.)/(min)

Total time	0.292 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #6  
 Existing Tc BY: ADM

OVERLAND FLOW

Flow Segment Name	6A6B
Surface Description	GRASS, DE
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.100
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20
Flow Time (hr.)	0.125

SHALLOW CONCENTRATED FLOW

Flow Segment Name	6B6C
Flow Length (ft)	145
Paved or Unpaved	unpaved
Land Slope (ft/ft)	0.090
Flow Velocity (ft/sec.)	4.831
Flow Time (hr.)	0.0083

CHANNEL FLOW

Flow Segment Name	6C6D	6D6E	6F6G	BBCC
Flow Depth (ft)	0.5	1	1.5	2.5
Bottom Width (ft)	1	3	3	8
Side Slope (Z1)	2	3	3	0
Side Slope (Z2)	2	3	3	0
Manning's Coefficient	0.045	0.045	0.045	0.03
Flow Length (ft)	507	760	735	754
Channel Slope (ft/ft)	0.095	0.047	0.020	0.025
Flow Velocity (ft/sec.)	4.644	5.357	4.401	10.479
Flow Time (hr.)	0.0303	0.0394	0.0464	0.0200

PIPE FLOW (Assuming full flow)

	COR ALUM		
Flow Segment Name	6E6F	6G6H	6HBB
Pipe Diameter (ft)	1.5	2	2.5
Manning's Coefficient	0.013	0.013	0.035
Pipe Slope (ft/ft)	0.022	0.012	0.029
Pipe Length (ft)	137	256	734
Flow Velocity (ft/sec.)	8.796	7.795	5.250
Flow Time (hr.)	0.0043	0.0091	0.0388

TIME OF CONCENTRATION (hr.)/(min)

Total time	0.274 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #7  
Existing Tc BY: ADM

OVERLAND FLOW

Flow Segment Name	7A7B
Surface Description	GRASS, DE
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.020
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20
Flow Time (hr.)	0.238

SHALLOW CONCENTRATED FLOW

Flow Segment Name	7B7C
Flow Length (ft)	394
Paved or Unpaved	unpaved
Land Slope (ft/ft)	0.025
Flow Velocity (ft/sec.)	2.570
Flow Time (hr.)	0.0426

CHANNEL FLOW

Flow Segment Name	7E7F	7G7H	HGG
Flow Depth (ft)	0.5	0.5	2.75
Bottom Width (ft)	3	3	8
Side Slope (Z1)	2	2	0
Side Slope (Z2)	2	2	0
Manning's Coefficient	0.045	0.045	0.013
Flow Length (ft)	914	300	659
Channel Slope (ft/ft)	0.096	0.047	0.023
Flow Velocity (ft/sec.)	5.394	24.007	24.007
Flow Time (hr.)	0.0471	0.0035	0.0076

PIPE FLOW (Assuming full flow)

Flow Segment Name	7C7D	7D7E	7F7G
Pipe Diameter (ft)	1.5	2	2.5
Manning's Coefficient	0.013	0.013	0.013
Pipe Slope (ft/ft)	0.068	0.104	0.031
Pipe Length (ft)	622	663	766
Flow Velocity (ft/sec.)	15.446	23.230	14.791
Flow Time (hr.)	0.0112	0.0079	0.0144

TIME OF CONCENTRATION (hr.)/(min)

Total time	0.350 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA1-1**  
Existing Tc BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>woods,light</b>
Roughness Coefficient	<b>0.40</b>
Land Slope (ft/ft)	<b>0.035</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>
Flow Time (hr.)	<b>0.286</b>

SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	<b>DE</b>
Flow Length (ft)	<b>80</b>	<b>127</b>	<b>150</b>
Paved or Unpaved	<b>unpaved</b>	<b>unpaved</b>	<b>unpaved</b>
Land Slope (ft/ft)	<b>0.031</b>	<b>0.024</b>	<b>0.130</b>
Flow Velocity (ft/sec.)	<b>2.852</b>	<b>2.480</b>	<b>5.817</b>
Flow Time (hr.)	<b>0.0078</b>	<b>0.0142</b>	<b>0.0072</b>

CHANNEL FLOW

Flow Segment Name	<b>EF</b>
Flow Depth (ft)	<b>0.25</b>
Bottom Width (ft)	<b>0</b>
Side Slope (Z1)	<b>4</b>
Side Slope (Z2)	<b>4</b>
Manning's Coefficient	<b>0.045</b>
Flow Length (ft)	<b>168</b>
Channel Slope (ft/ft)	<b>0.012</b>
Flow Velocity (ft/sec.)	<b>0.883</b>
Flow Time (hr.)	<b>0.0529</b>

PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>FG</b>	<b>FG</b>	<b>FG</b>	<b>FG</b>
Pipe Diameter (ft)	<b>2.00</b>	<b>1.50</b>	<b>1.50</b>	<b>3.00</b>
Manning's Coefficient	<b>0.013</b>	<b>0.013</b>	<b>0.013</b>	<b>0.013</b>
Pipe Slope (ft/ft)	<b>0.058</b>	<b>0.020</b>	<b>0.020</b>	<b>0.003</b>
Pipe Length (ft)	<b>69.00</b>	<b>653.00</b>	<b>323.00</b>	<b>64.00</b>
Flow Velocity (ft/sec.)	<b>17.338</b>	<b>8.419</b>	<b>8.302</b>	<b>5.275</b>
Flow Time (hr.)	<b>0.0011</b>	<b>0.022</b>	<b>0.011</b>	<b>0.003</b>

TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.405 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA1-2**  
Existing Tc

BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>GRASS, DENSE</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.050</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.165</b>			<b>0.165</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>		
Flow Length (ft)	<b>530</b>		
Paved or Unpaved	<b>unpaved</b>		
Land Slope (ft/ft)	<b>0.077</b>		
Flow Velocity (ft/sec.)	<b>4.488</b>		

Flow Time (hr.)	<b>0.0328</b>			<b>0.033</b>
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CHANNEL FLOW

Flow Segment Name	<b>CD</b>	<b>DE</b>	<b>EF</b>
Flow Depth (ft)	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>
Bottom Width (ft)	<b>2</b>	<b>3</b>	<b>4</b>
Side Slope (Z1)	<b>4</b>	<b>4</b>	<b>3</b>
Side Slope (Z2)	<b>4</b>	<b>4</b>	<b>3</b>
Manning's Coefficient	<b>0.045</b>	<b>0.045</b>	<b>0.045</b>
Flow Length (ft)	<b>911</b>	<b>415</b>	<b>215</b>
Channel Slope (ft/ft)	<b>0.037</b>	<b>0.014</b>	<b>0.0093023</b>
Flow Velocity (ft/sec.)	<b>3.026</b>	<b>1.976</b>	<b>1.683</b>

Flow Time (hr.)	<b>0.0836</b>	<b>0.0583</b>	<b>0.0355</b>	<b>0.1775</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	<b>0.000</b>
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TIME OF CONCENTRATION (hr.)/(min)

<b>Total time</b>	<b>0.375 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, DA1-3  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	woods,light
Roughness Coefficient	0.40
Land Slope (ft/ft)	0.050
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.248			0.248
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC		
Flow Length (ft)	397		
Paved or Unpaved	unpaved		
Land Slope (ft/ft)	0.088		
Flow Velocity (ft/sec.)	4.791		

Flow Time (hr.)	0.0230			0.023
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CHANNEL FLOW

Flow Segment Name	EF	GH	HI
Flow Depth (ft)	0.5	0.5	0.5
Bottom Width (ft)	0	1	4
Side Slope (Z1)	4	3	3
Side Slope (Z2)	4	3	3
Manning's Coefficient	0.045	0.045	0.045
Flow Length (ft)	648	370	152
Channel Slope (ft/ft)	0.065	0.059	0.007
Flow Velocity (ft/sec.)	3.270	3.611	1.415

Flow Time (hr.)	0.0551	0.0285	0.0298	0.1134
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PIPE FLOW (Assuming full flow)

Flow Segment Name	FG		
Pipe Diameter (ft)	2.50		
Manning's Coefficient	0.013		
Pipe Slope (ft/ft)	0.015		
Pipe Length (ft)	270.00		
Flow Velocity (ft/sec.)	10.171		

Flow Time (hr.)	0.0074			0.007
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.392 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA2-1**  
Existing Tc BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>woods,light</b>
Roughness Coefficient	<b>0.40</b>
Land Slope (ft/ft)	<b>0.035</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>
Flow Time (hr.)	<b>0.286</b>

SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	<b>DE</b>
Flow Length (ft)	<b>330</b>	<b>56</b>	<b>245</b>
Paved or Unpaved	<b>unpaved</b>	<b>unpaved</b>	<b>PAVED</b>
Land Slope (ft/ft)	<b>0.036</b>	<b>0.232</b>	<b>0.024</b>
Flow Velocity (ft/sec.)	<b>3.077</b>	<b>7.774</b>	<b>3.181</b>
Flow Time (hr.)	<b>0.0298</b>	<b>0.0020</b>	<b>0.0214</b>

CHANNEL FLOW

Flow Segment Name	
Flow Depth (ft)	<b>0.25</b>
Bottom Width (ft)	<b>0</b>
Side Slope (Z1)	<b>4</b>
Side Slope (Z2)	<b>4</b>
Manning's Coefficient	<b>0.045</b>
Flow Length (ft)	<b>168</b>
Channel Slope (ft/ft)	<b>0.012</b>
Flow Velocity (ft/sec.)	<b>0.883</b>
Flow Time (hr.)	<b>0.0529</b>

PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>EF</b>	<b>FG</b>	<b>GH</b>
Pipe Diameter (ft)	<b>2.00</b>	<b>3.00</b>	<b>3.00</b>
Manning's Coefficient	<b>0.013</b>	<b>0.013</b>	<b>0.013</b>
Pipe Slope (ft/ft)	<b>0.026</b>	<b>0.030</b>	<b>0.040</b>
Pipe Length (ft)	<b>530.00</b>	<b>804.00</b>	<b>250.00</b>
Flow Velocity (ft/sec.)	<b>11.535</b>	<b>16.303</b>	<b>18.872</b>
Flow Time (hr.)	<b>0.0128</b>	<b>0.014</b>	<b>0.004</b>

TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.422 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, DA2-2  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	woods, light
Roughness Coefficient	0.40
Land Slope (ft/ft)	0.180
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.149			0.149
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	
Flow Length (ft)	250	171	
Paved or Unpaved	unpaved	unpaved	
Land Slope (ft/ft)	0.120	0.094	
Flow Velocity (ft/sec.)	5.589	4.935	

Flow Time (hr.)	0.0124	0.0096		0.022
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CHANNEL FLOW

Flow Segment Name	DE	FG
Flow Depth (ft)	0.75	0.5
Bottom Width (ft)	1	6
Side Slope (Z1)	4	3
Side Slope (Z2)	4	3
Manning's Coefficient	0.045	0.013
Flow Length (ft)	484	220
Channel Slope (ft/ft)	0.041	0.034
Flow Velocity (ft/sec.)	3.750	11.619

Flow Time (hr.)	0.0359	0.0053		0.0411
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PIPE FLOW (Assuming full flow)

Flow Segment Name	EF
Pipe Diameter (ft)	3.00
Manning's Coefficient	0.024
Pipe Slope (ft/ft)	0.034
Pipe Length (ft)	263.00
Flow Velocity (ft/sec.)	9.455

Flow Time (hr.)	0.0077	0.008
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.220 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA2-3**  
Existing Tc

BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>woods, light</b>
Roughness Coefficient	<b>0.40</b>
Land Slope (ft/ft)	<b>0.080</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.206</b>			<b>0.206</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>		
Flow Length (ft)	<b>534</b>		
Paved or Unpaved	<b>unpaved</b>		
Land Slope (ft/ft)	<b>0.099</b>		
Flow Velocity (ft/sec.)	<b>5.083</b>		

Flow Time (hr.)	<b>0.0292</b>			<b>0.029</b>
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CHANNEL FLOW

Flow Segment Name	<b>DE</b>	<b>EF</b>	
Flow Depth (ft)	<b>1</b>	<b>1</b>	
Bottom Width (ft)	<b>6</b>	<b>6</b>	
Side Slope (Z1)	<b>3</b>	<b>0</b>	
Side Slope (Z2)	<b>3</b>	<b>0</b>	
Manning's Coefficient	<b>0.013</b>	<b>0.013</b>	
Flow Length (ft)	<b>109</b>	<b>72</b>	
Channel Slope (ft/ft)	<b>0.017</b>	<b>0.049</b>	
Flow Velocity (ft/sec.)	<b>12.086</b>	<b>20.804</b>	

Flow Time (hr.)	<b>0.0025</b>	<b>0.0010</b>		<b>0.0035</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>CD</b>		
Pipe Diameter (ft)	<b>2.00</b>		
Manning's Coefficient	<b>0.024</b>		
Pipe Slope (ft/ft)	<b>0.054</b>		
Pipe Length (ft)	<b>316.00</b>		
Flow Velocity (ft/sec.)	<b>9.047</b>		

Flow Time (hr.)	<b>0.0097</b>			<b>0.010</b>
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TIME OF CONCENTRATION (hr.)/(min)

<b>Total time</b>	<b>0.248 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, DA2-4  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	GRASS, DENSE
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.120
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.116		0.116
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC		
Flow Length (ft)	360		
Paved or Unpaved	unpaved		
Land Slope (ft/ft)	0.067		
Flow Velocity (ft/sec.)	4.166		

Flow Time (hr.)	0.0240		0.024
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CHANNEL FLOW

Flow Segment Name	EF	FG	
Flow Depth (ft)	1	0.5	
Bottom Width (ft)	1	6	
Side Slope (Z1)	3	0	
Side Slope (Z2)	3	0	
Manning's Coefficient	0.045	0.013	
Flow Length (ft)	297	165	
Channel Slope (ft/ft)	0.074	0.030	
Flow Velocity (ft/sec.)	6.005	11.311	

Flow Time (hr.)	0.0137	0.0041	0.0178
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PIPE FLOW (Assuming full flow)

Flow Segment Name	CD	GH	
Pipe Diameter (ft)	3.00	4.00	
Manning's Coefficient	0.013	0.024	
Pipe Slope (ft/ft)	0.061	0.050	
Pipe Length (ft)	198.00	207.00	
Flow Velocity (ft/sec.)	23.230	13.878	

Flow Time (hr.)	0.0024	0.0041	0.007
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.164 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA2-5**  
Existing Tc BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>GRASS DENSE</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.170</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.101</b>			<b>0.101</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>		
Flow Length (ft)	<b>290</b>		
Paved or Unpaved	<b>unpaved</b>		
Land Slope (ft/ft)	<b>0.017</b>		
Flow Velocity (ft/sec.)	<b>2.119</b>		

Flow Time (hr.)	<b>0.0380</b>			<b>0.038</b>
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CHANNEL FLOW

Flow Segment Name	<b>DE</b>	<b>FG</b>	
Flow Depth (ft)	<b>0.5</b>	<b>0.5</b>	
Bottom Width (ft)	<b>0</b>	<b>1</b>	
Side Slope (Z1)	<b>3</b>	<b>4</b>	
Side Slope (Z2)	<b>3</b>	<b>4</b>	
Manning's Coefficient	<b>0.045</b>	<b>0.045</b>	
Flow Length (ft)	<b>411</b>	<b>160</b>	
Channel Slope (ft/ft)	<b>0.019</b>	<b>0.013</b>	
Flow Velocity (ft/sec.)	<b>1.765</b>	<b>1.628</b>	

Flow Time (hr.)	<b>0.0647</b>	<b>0.0273</b>		<b>0.0920</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>CD</b>	<b>EF</b>	<b>GH</b>	<b>HI</b>	
Pipe Diameter (ft)	<b>2.00</b>	<b>4.00</b>	<b>4.00</b>	<b>4.00</b>	
Manning's Coefficient	<b>0.013</b>	<b>0.013</b>	<b>0.024</b>	<b>0.013</b>	
Pipe Slope (ft/ft)	<b>0.005</b>	<b>0.040</b>	<b>0.047</b>	<b>0.040</b>	
Pipe Length (ft)	<b>190.00</b>	<b>757.00</b>	<b>106.00</b>	<b>159.00</b>	
Flow Velocity (ft/sec.)	<b>5.224</b>	<b>22.756</b>	<b>13.447</b>	<b>22.862</b>	

Flow Time (hr.)	<b>0.0101</b>	<b>0.0092</b>	<b>0.0022</b>	<b>0.0019</b>	<b>0.023</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.255 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA2-6**  
Existing Tc

BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>GRASS, DENSE</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.100</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.125</b>			<b>0.125</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	
Flow Length (ft)	<b>202</b>	<b>105</b>	
Paved or Unpaved	<b>unpaved</b>	<b>Unpaved</b>	
Land Slope (ft/ft)	<b>0.183</b>	<b>0.210</b>	
Flow Velocity (ft/sec.)	<b>6.905</b>	<b>7.385</b>	

Flow Time (hr.)	<b>0.0081</b>	<b>0.0039</b>		<b>0.012</b>
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CHANNEL FLOW

Flow Segment Name	<b>FG</b>	<b>HI</b>	
Flow Depth (ft)	<b>1</b>	<b>1</b>	
Bottom Width (ft)	<b>6</b>	<b>6</b>	
Side Slope (Z1)	<b>0</b>	<b>3</b>	
Side Slope (Z2)	<b>0</b>	<b>3</b>	
Manning's Coefficient	<b>0.013</b>	<b>0.045</b>	
Flow Length (ft)	<b>239</b>	<b>68</b>	
Channel Slope (ft/ft)	<b>0.008</b>	<b>0.015</b>	
Flow Velocity (ft/sec.)	<b>8.632</b>	<b>3.247</b>	

Flow Time (hr.)	<b>0.0077</b>	<b>0.0058</b>		<b>0.0135</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>DE</b>	<b>EF</b>	<b>GH</b>
Pipe Diameter (ft)	<b>2.00</b>	<b>2.50</b>	<b>8.00</b>
Manning's Coefficient	<b>0.013</b>	<b>0.013</b>	<b>0.013</b>
Pipe Slope (ft/ft)	<b>0.146</b>	<b>0.047</b>	<b>0.006</b>
Pipe Length (ft)	<b>82.00</b>	<b>344.00</b>	<b>537.00</b>
Flow Velocity (ft/sec.)	<b>27.547</b>	<b>18.021</b>	<b>13.562</b>

Flow Time (hr.)	<b>0.0008</b>	<b>0.0053</b>	<b>0.0110</b>	<b>0.017</b>
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TIME OF CONCENTRATION (hr.)/(min)

<b>Total time</b>	<b>0.168 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA2-7**  
Existing Tc

BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>GRASS, DENSE</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.230</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.090</b>			<b>0.090</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	
Flow Length (ft)	<b>311</b>	<b>222</b>	
Paved or Unpaved	<b>unpaved</b>	<b>Unpaved</b>	
Land Slope (ft/ft)	<b>0.084</b>	<b>0.036</b>	
Flow Velocity (ft/sec.)	<b>4.665</b>	<b>3.063</b>	

Flow Time (hr.)	<b>0.0185</b>	<b>0.0201</b>		<b>0.039</b>
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CHANNEL FLOW

Flow Segment Name			
Flow Depth (ft)			
Bottom Width (ft)			
Side Slope (Z1)			
Side Slope (Z2)			
Manning's Coefficient			
Flow Length (ft)			
Channel Slope (ft/ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)				<b>0.0000</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name			
Pipe Diameter (ft)			
Manning's Coefficient			
Pipe Slope (ft/ft)			
Pipe Length (ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)				<b>0.000</b>
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TIME OF CONCENTRATION (hr.)/(min)

<b>Total time</b>	<b>0.128 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, DA3-1  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	GRASS, DENSE
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.035
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.190			0.190
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	
Flow Length (ft)	575	40	
Paved or Unpaved	unpaved	paved	
Land Slope (ft/ft)	0.024	0.025	
Flow Velocity (ft/sec.)	2.518	3.214	

Flow Time (hr.)	0.0634	0.0035		0.067
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CHANNEL FLOW

Flow Segment Name	EF	GH
Flow Depth (ft)	0.5	0.5
Bottom Width (ft)	0	3
Side Slope (Z1)	3	3
Side Slope (Z2)	3	3
Manning's Coefficient	0.045	0.045
Flow Length (ft)	248	385
Channel Slope (ft/ft)	0.024	0.031
Flow Velocity (ft/sec.)	1.968	2.978

Flow Time (hr.)	0.0350	0.0359	0.0709
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PIPE FLOW (Assuming full flow)

Flow Segment Name	DE	FG	HI	
Pipe Diameter (ft)	2.00	2.50	3.00	3.00
Manning's Coefficient	0.013	0.013	0.013	0.013
Pipe Slope (ft/ft)	0.056	0.027	0.050	0.003
Pipe Length (ft)	215.00	225.00	53.00	64.00
Flow Velocity (ft/sec.)	17.012	13.645	21.099	5.275

Flow Time (hr.)	0.0035	0.005	0.001	0.003	0.012
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.340 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, DA3-2  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	GRASS, DENSE
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.020
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.238		0.238
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	
Flow Length (ft)	705	120	
Paved or Unpaved	unpaved	paved	
Land Slope (ft/ft)	0.078	0.071	
Flow Velocity (ft/sec.)	4.507	5.410	

Flow Time (hr.)	0.0435	0.0062	0.050
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CHANNEL FLOW

Flow Segment Name	FG	GH
Flow Depth (ft)	0.5	0.75
Bottom Width (ft)	1	1.5
Side Slope (Z1)	2	2
Side Slope (Z2)	2	2
Manning's Coefficient	0.045	0.045
Flow Length (ft)	298	65
Channel Slope (ft/ft)	0.037	0.026
Flow Velocity (ft/sec.)	2.900	3.189

Flow Time (hr.)	0.0285	0.0057	0.0342
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PIPE FLOW (Assuming full flow)

Flow Segment Name	DE	EF
Pipe Diameter (ft)	1.50	2.00
Manning's Coefficient	0.013	0.013
Pipe Slope (ft/ft)	0.041	0.027
Pipe Length (ft)	532	1012
Flow Velocity (ft/sec.)	12.088	11.762

Flow Time (hr.)	0.0122	0.0239	0.036
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.358 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA3-3**  
Existing Tc BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.035</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>
Flow Time (hr.)	<b>0.190</b>

SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>
Flow Length (ft)	<b>259</b>	<b>314</b>
Paved or Unpaved	<b>unpaved</b>	<b>paved</b>
Land Slope (ft/ft)	<b>0.069</b>	<b>0.032</b>
Flow Velocity (ft/sec.)	<b>4.253</b>	<b>3.628</b>
Flow Time (hr.)	<b>0.0169</b>	<b>0.0240</b>

CHANNEL FLOW

Flow Segment Name	<b>EF</b>
Flow Depth (ft)	<b>0.75</b>
Bottom Width (ft)	<b>1.5</b>
Side Slope (Z1)	<b>2</b>
Side Slope (Z2)	<b>2</b>
Manning's Coefficient	<b>0.045</b>
Flow Length (ft)	<b>1013</b>
Channel Slope (ft/ft)	<b>0.032</b>
Flow Velocity (ft/sec.)	<b>3.515</b>
Flow Time (hr.)	<b>0.0800</b>

PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>DE</b>
Pipe Diameter (ft)	<b>2.50</b>
Manning's Coefficient	<b>0.013</b>
Pipe Slope (ft/ft)	<b>0.051</b>
Pipe Length (ft)	<b>790.00</b>
Flow Velocity (ft/sec.)	<b>18.802</b>
Flow Time (hr.)	<b>0.0117</b>

TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.323 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA3-4**  
Existing Tc

BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>GRASS, LIGHT</b>
Roughness Coefficient	<b>0.15</b>
Land Slope (ft/ft)	<b>0.070</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.099</b>			<b>0.099</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>		
Flow Length (ft)	<b>770</b>		
Paved or Unpaved	<b>unpaved</b>		
Land Slope (ft/ft)	<b>0.087</b>		
Flow Velocity (ft/sec.)	<b>4.759</b>		

Flow Time (hr.)	<b>0.0449</b>			<b>0.045</b>
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CHANNEL FLOW

Flow Segment Name	<b>DE</b>	
Flow Depth (ft)	<b>0.5</b>	
Bottom Width (ft)	<b>2</b>	
Side Slope (Z1)	<b>4</b>	
Side Slope (Z2)	<b>4</b>	
Manning's Coefficient	<b>0.045</b>	
Flow Length (ft)	<b>681</b>	
Channel Slope (ft/ft)	<b>0.009</b>	
Flow Velocity (ft/sec.)	<b>1.470</b>	

Flow Time (hr.)	<b>0.1287</b>		<b>0.1287</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>CD</b>
Pipe Diameter (ft)	<b>2.00</b>
Manning's Coefficient	<b>0.013</b>
Pipe Slope (ft/ft)	<b>0.044</b>
Pipe Length (ft)	<b>183.00</b>
Flow Velocity (ft/sec.)	<b>15.056</b>

Flow Time (hr.)	<b>0.0034</b>	<b>0.003</b>
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TIME OF CONCENTRATION (hr.)/(min)

<b>Total time</b>	<b>0.276 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA3-5**  
Existing Tc BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>		
Surface Description	<b>grass, dense</b>		
Roughness Coefficient	<b>0.24</b>		
Land Slope (ft/ft)	<b>0.080</b>		
Flow Length (ft) [100' max]	<b>100</b>		
Two-Year Rainfall (in.)	<b>3.20</b>		
Flow Time (hr.)	<b>0.137</b>		<b>0.137</b>

SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>		
Flow Length (ft)	<b>187</b>		
Paved or Unpaved	<b>paved</b>		
Land Slope (ft/ft)	<b>0.021</b>		
Flow Velocity (ft/sec.)	<b>2.973</b>		
Flow Time (hr.)	<b>0.0175</b>		<b>0.017</b>

CHANNEL FLOW

Flow Segment Name			
Flow Depth (ft)			
Bottom Width (ft)			
Side Slope (Z1)			
Side Slope (Z2)			
Manning's Coefficient			
Flow Length (ft)			
Channel Slope (ft/ft)			
Flow Velocity (ft/sec.)			
Flow Time (hr.)			<b>0.0000</b>

PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>CD</b>	<b>DE</b>	
Pipe Diameter (ft)	<b>1.25</b>	<b>1.25</b>	
Manning's Coefficient	<b>0.024</b>	<b>0.024</b>	
Pipe Slope (ft/ft)	<b>0.031</b>	<b>0.031</b>	
Pipe Length (ft)	<b>590.00</b>	<b>97.00</b>	
Flow Velocity (ft/sec.)	<b>4.980</b>	<b>5.020</b>	
Flow Time (hr.)	<b>0.0329</b>	<b>0.0054</b>	<b>0.038</b>

TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.192 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, DA3-6  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	GRASS, DENSE
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.050
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.165		0.165
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	
Flow Length (ft)	40	755	
Paved or Unpaved	unpaved	PAVED	
Land Slope (ft/ft)	0.025	0.024	
Flow Velocity (ft/sec.)	2.551	3.139	

Flow Time (hr.)	0.0044	0.0668	0.071
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CHANNEL FLOW

Flow Segment Name			
Flow Depth (ft)			
Bottom Width (ft)			
Side Slope (Z1)			
Side Slope (Z2)			
Manning's Coefficient			
Flow Length (ft)			
Channel Slope (ft/ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)			0.0000
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PIPE FLOW (Assuming full flow)

Flow Segment Name	DE	EF	
Pipe Diameter (ft)	2.00	2.00	
Manning's Coefficient	0.024	0.024	
Pipe Slope (ft/ft)	0.078	0.139	
Pipe Length (ft)	320.00	180.00	
Flow Velocity (ft/sec.)	10.902	14.536	

Flow Time (hr.)	0.0082	0.0034	0.012
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.248 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA3-7**  
 Existing Tc BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>woods,light</b>
Roughness Coefficient	<b>0.40</b>
Land Slope (ft/ft)	<b>0.560</b>
Flow Length (ft) [100' max]	<b>52</b>
Two-Year Rainfall (in.)	<b>3.20</b>
Flow Time (hr.)	<b>0.056</b>

SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>
Flow Length (ft)	<b>300</b>
Paved or Unpaved	<b>unpaved</b>
Land Slope (ft/ft)	<b>0.020</b>
Flow Velocity (ft/sec.)	<b>2.282</b>
Flow Time (hr.)	<b>0.0365</b>

CHANNEL FLOW

Flow Segment Name	<b>CD</b>	<b>EF</b>	<b>HI</b>	<b>JK</b>	
Flow Depth (ft)	<b>0.75</b>	<b>1</b>	<b>1</b>	<b>1</b>	
Bottom Width (ft)	<b>0</b>	<b>2</b>	<b>2.5</b>	<b>3</b>	
Side Slope (Z1)	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	
Side Slope (Z2)	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	
Manning's Coefficient	<b>0.045</b>	<b>0.045</b>	<b>0.045</b>	<b>0.045</b>	
Flow Length (ft)	<b>400</b>	<b>310</b>	<b>102</b>	<b>326</b>	
Channel Slope (ft/ft)	<b>0.053</b>	<b>0.052</b>	<b>0.020</b>	<b>0.025</b>	
Flow Velocity (ft/sec.)	<b>3.856</b>	<b>5.341</b>	<b>3.374</b>	<b>3.856</b>	
Flow Time (hr.)	<b>0.0288</b>	<b>0.0161</b>	<b>0.0084</b>	<b>0.0235</b>	<b>0.0768</b>

PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>DE</b>	<b>FG</b>	<b>GH</b>	<b>IJ</b>	
Pipe Diameter (ft)	<b>1.50</b>	<b>3.50</b>	<b>3.50</b>	<b>3.50</b>	
Manning's Coefficient	<b>0.024</b>	<b>0.024</b>	<b>0.024</b>	<b>0.013</b>	
Pipe Slope (ft/ft)	<b>0.040</b>	<b>0.016</b>	<b>0.014</b>	<b>0.043</b>	
Pipe Length (ft)	<b>200.00</b>	<b>85.00</b>	<b>167.00</b>	<b>140.00</b>	
Flow Velocity (ft/sec.)	<b>6.440</b>	<b>7.269</b>	<b>6.790</b>	<b>21.648</b>	
Flow Time (hr.)	<b>0.0086</b>	<b>0.0032</b>	<b>0.0068</b>	<b>0.0018</b>	<b>0.021</b>

TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.190 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, DA3-8  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	GRASS DENSE
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.030
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.202		0.202
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	
Flow Length (ft)	593	200	
Paved or Unpaved	unpaved	unpaved	
Land Slope (ft/ft)	0.035	0.125	
Flow Velocity (ft/sec.)	3.036	5.704	

Flow Time (hr.)	0.0543	0.0097	0.064
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CHANNEL FLOW

Flow Segment Name	DE	EF	
Flow Depth (ft)	1.5	2	
Bottom Width (ft)	7	7	
Side Slope (Z1)	3	3	
Side Slope (Z2)	3	3	
Manning's Coefficient	0.045	0.045	
Flow Length (ft)	907	452	
Channel Slope (ft/ft)	0.013	0.009	
Flow Velocity (ft/sec.)	3.880	3.744	

Flow Time (hr.)	0.0649	0.0335	0.0985
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PIPE FLOW (Assuming full flow)

Flow Segment Name	CD		
Pipe Diameter (ft)	2.00		
Manning's Coefficient	0.013		
Pipe Slope (ft/ft)	0.013		
Pipe Length (ft)	75.00		
Flow Velocity (ft/sec.)	8.315		

Flow Time (hr.)	0.0025		0.003
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.367 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, DA4-1  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	GRASS, DENSE
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.015
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.267			0.267
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	
Flow Length (ft)	500	463	
Paved or Unpaved	unpaved	UNPAVED	
Land Slope (ft/ft)	0.081	0.078	
Flow Velocity (ft/sec.)	4.592	4.499	

Flow Time (hr.)	0.0302	0.0286		0.059
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CHANNEL FLOW

Flow Segment Name	EF
Flow Depth (ft)	0.5
Bottom Width (ft)	1
Side Slope (Z1)	3
Side Slope (Z2)	3
Manning's Coefficient	0.045
Flow Length (ft)	798
Channel Slope (ft/ft)	0.030
Flow Velocity (ft/sec.)	2.568

Flow Time (hr.)	0.0863		0.0863
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PIPE FLOW (Assuming full flow)

Flow Segment Name			
Pipe Diameter (ft)			
Manning's Coefficient			
Pipe Slope (ft/ft)			
Pipe Length (ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)				0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.412 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, DA4-2  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	GRASS, DENSE
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.020
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.238			0.238
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC		
Flow Length (ft)	779		
Paved or Unpaved	unpaved		
Land Slope (ft/ft)	0.046		
Flow Velocity (ft/sec.)	3.468		

Flow Time (hr.)	0.0624			0.062
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CHANNEL FLOW

Flow Segment Name	CD	DE
Flow Depth (ft)	1	1
Bottom Width (ft)	1	3
Side Slope (Z1)	2	3
Side Slope (Z2)	2	3
Manning's Coefficient	0.045	0.045
Flow Length (ft)	1506	708
Channel Slope (ft/ft)	0.041	0.031
Flow Velocity (ft/sec.)	4.452	4.339

Flow Time (hr.)	0.0940	0.0453	0.1393
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PIPE FLOW (Assuming full flow)

Flow Segment Name		
Pipe Diameter (ft)		
Manning's Coefficient		
Pipe Slope (ft/ft)		
Pipe Length (ft)		
Flow Velocity (ft/sec.)		

Flow Time (hr.)			0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.440 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA4-3**  
Existing Tc

BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>GRASS, DENSE</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.055</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.159</b>			<b>0.159</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	<b>DE</b>
Flow Length (ft)	<b>374</b>	<b>532</b>	<b>153</b>
Paved or Unpaved	<b>unpaved</b>	<b>paved</b>	<b>unpaved</b>
Land Slope (ft/ft)	<b>0.120</b>	<b>0.089</b>	<b>0.114</b>
Flow Velocity (ft/sec.)	<b>5.597</b>	<b>6.074</b>	<b>5.457</b>

Flow Time (hr.)	<b>0.0186</b>	<b>0.0243</b>	<b>0.0078</b>	<b>0.051</b>
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CHANNEL FLOW

Flow Segment Name	<b>EF</b>	<b>FG</b>
Flow Depth (ft)	<b>2</b>	<b>1</b>
Bottom Width (ft)	<b>7</b>	<b>15</b>
Side Slope (Z1)	<b>3</b>	<b>0</b>
Side Slope (Z2)	<b>3</b>	<b>0</b>
Manning's Coefficient	<b>0.045</b>	<b>0.013</b>
Flow Length (ft)	<b>566</b>	<b>277</b>
Channel Slope (ft/ft)	<b>0.016</b>	<b>0.007</b>
Flow Velocity (ft/sec.)	<b>5.019</b>	<b>8.935</b>

Flow Time (hr.)	<b>0.0313</b>	<b>0.0086</b>	<b>0.0399</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name		
Pipe Diameter (ft)		
Manning's Coefficient		
Pipe Slope (ft/ft)		
Pipe Length (ft)		
Flow Velocity (ft/sec.)		

Flow Time (hr.)			<b>0.000</b>
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TIME OF CONCENTRATION (hr.)/(min)

<b>Total time</b>	<b>0.249 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA5-1**  
Existing Tc BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.110</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>
Flow Time (hr.)	<b>0.120</b>

SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>
Flow Length (ft)	<b>168</b>	<b>115</b>
Paved or Unpaved	<b>unpaved</b>	<b>paved</b>
Land Slope (ft/ft)	<b>0.054</b>	<b>0.009</b>
Flow Velocity (ft/sec.)	<b>3.734</b>	<b>1.896</b>
Flow Time (hr.)	<b>0.0125</b>	<b>0.0169</b>

CHANNEL FLOW

Flow Segment Name	
Flow Depth (ft)	
Bottom Width (ft)	
Side Slope (Z1)	
Side Slope (Z2)	
Manning's Coefficient	
Flow Length (ft)	
Channel Slope (ft/ft)	
Flow Velocity (ft/sec.)	
Flow Time (hr.)	<b>0.0000</b>

PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>DE</b>	<b>EF</b>
Pipe Diameter (ft)	<b>1.50</b>	<b>2.00</b>
Manning's Coefficient	<b>0.013</b>	<b>0.013</b>
Pipe Slope (ft/ft)	<b>0.014</b>	<b>0.139</b>
Pipe Length (ft)	<b>296.00</b>	<b>151.00</b>
Flow Velocity (ft/sec.)	<b>6.910</b>	<b>26.854</b>
Flow Time (hr.)	<b>0.0119</b>	<b>0.002</b>

TIME OF CONCENTRATION (hr.)/(min)

<b>Total time</b>	<b>0.163 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, DA5-2  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.020
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.238		0.238
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	
Flow Length (ft)	132	121	
Paved or Unpaved	unpaved	paved	
Land Slope (ft/ft)	0.083	0.074	
Flow Velocity (ft/sec.)	4.658	5.544	

Flow Time (hr.)	0.0079	0.0061	0.014
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CHANNEL FLOW

Flow Segment Name		
Flow Depth (ft)		
Bottom Width (ft)		
Side Slope (Z1)		
Side Slope (Z2)		
Manning's Coefficient		
Flow Length (ft)		
Channel Slope (ft/ft)		
Flow Velocity (ft/sec.)		

Flow Time (hr.)		0.0000
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PIPE FLOW (Assuming full flow)

Flow Segment Name	DE	
Pipe Diameter (ft)	2.00	
Manning's Coefficient	0.013	
Pipe Slope (ft/ft)	0.024	
Pipe Length (ft)	168	
Flow Velocity (ft/sec.)	11.111	

Flow Time (hr.)	0.0042	0.004
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.256 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, DA5-3  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.090
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.130			0.130
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	DE
Flow Length (ft)	471	606	224
Paved or Unpaved	unpaved	paved	unpaved
Land Slope (ft/ft)	0.096	0.083	0.125
Flow Velocity (ft/sec.)	4.987	5.839	5.704

Flow Time (hr.)	0.0262	0.0288	0.0109	0.066
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CHANNEL FLOW

Flow Segment Name	EF		
Flow Depth (ft)	2		
Bottom Width (ft)	7		
Side Slope (Z1)	3		
Side Slope (Z2)	3		
Manning's Coefficient	0.045		
Flow Length (ft)	991		
Channel Slope (ft/ft)	0.017		
Flow Velocity (ft/sec.)	5.213		

Flow Time (hr.)	0.0528			0.0528
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PIPE FLOW (Assuming full flow)

Flow Segment Name			
Pipe Diameter (ft)			
Manning's Coefficient			
Pipe Slope (ft/ft)			
Pipe Length (ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)				0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.249 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA5-4**  
Existing Tc

BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.050</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.165</b>			<b>0.165</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>		
Flow Length (ft)	<b>76</b>		
Paved or Unpaved	<b>unpaved</b>		
Land Slope (ft/ft)	<b>0.171</b>		
Flow Velocity (ft/sec.)	<b>6.673</b>		

Flow Time (hr.)	<b>0.0032</b>			<b>0.003</b>
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CHANNEL FLOW

Flow Segment Name	<b>CD</b>	<b>DE</b>	<b>EF</b>
Flow Depth (ft)	<b>0.5</b>	<b>1</b>	<b>2</b>
Bottom Width (ft)	<b>1</b>	<b>3</b>	<b>7</b>
Side Slope (Z1)	<b>2</b>	<b>3</b>	<b>3</b>
Side Slope (Z2)	<b>2</b>	<b>3</b>	<b>3</b>
Manning's Coefficient	<b>0.045</b>	<b>0.045</b>	<b>0.045</b>
Flow Length (ft)	<b>383</b>	<b>1060</b>	<b>418</b>
Channel Slope (ft/ft)	<b>0.115</b>	<b>0.044</b>	<b>0.038</b>
Flow Velocity (ft/sec.)	<b>5.116</b>	<b>5.183</b>	<b>7.787</b>

Flow Time (hr.)	<b>0.0208</b>	<b>0.0568</b>	<b>0.0149</b>	<b>0.0925</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name			
Pipe Diameter (ft)			
Manning's Coefficient			
Pipe Slope (ft/ft)			
Pipe Length (ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)				<b>0.000</b>
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TIME OF CONCENTRATION (hr.)/(min)

<b>Total time</b>	<b>0.261 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA5-5**  
Existing Tc BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>woods, light</b>
Roughness Coefficient	<b>0.40</b>
Land Slope (ft/ft)	<b>0.070</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.217</b>		<b>0.217</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	<b>DE</b>
Flow Length (ft)	<b>421</b>	<b>94</b>	<b>262</b>
Paved or Unpaved	<b>unpaved</b>	<b>unpaved</b>	<b>unpaved</b>
Land Slope (ft/ft)	<b>0.069</b>	<b>0.106</b>	<b>0.134</b>
Flow Velocity (ft/sec.)	<b>4.235</b>	<b>5.262</b>	<b>5.897</b>

Flow Time (hr.)	<b>0.0276</b>	<b>0.0050</b>	<b>0.0123</b>	<b>0.045</b>
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CHANNEL FLOW

Flow Segment Name	<b>EF</b>		
Flow Depth (ft)	<b>2</b>		
Bottom Width (ft)	<b>7</b>		
Side Slope (Z1)	<b>3</b>		
Side Slope (Z2)	<b>3</b>		
Manning's Coefficient	<b>0.045</b>		
Flow Length (ft)	<b>357</b>		
Channel Slope (ft/ft)	<b>0.009</b>		
Flow Velocity (ft/sec.)	<b>3.776</b>		

Flow Time (hr.)	<b>0.0263</b>		<b>0.0263</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>FG</b>		
Pipe Diameter (ft)	<b>8</b>		
Manning's Coefficient	<b>0.035</b>		
Pipe Slope (ft/ft)	<b>0.014</b>		
Pipe Length (ft)	<b>36</b>		
Flow Velocity (ft/sec.)	<b>1.149</b>		

Flow Time (hr.)	<b>0.009</b>		<b>0.009</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.297 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SWMF-19, Orange Grove Ct, Subarea 6-1  
 Existing Tc BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.040
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.180	0.180
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC		
Flow Length (ft)	160		
Paved or Unpaved	unpaved		
Land Slope (ft/ft)	0.081		
Flow Velocity (ft/sec.)	4.599		

Flow Time (hr.)	0.0097		0.010
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CHANNEL FLOW

Flow Segment Name	DE	FG	
Flow Depth (ft)	0.5	0.5	
Bottom Width (ft)	0	1	
Side Slope (Z1)	5	3	
Side Slope (Z2)	5	3	
Manning's Coefficient	0.240	0.045	
Flow Length (ft)	331	175	
Channel Slope (ft/ft)	0.015	0.046	
Flow Velocity (ft/sec.)	0.298	3.166	

Flow Time (hr.)	0.3085	0.0154	0.3238
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PIPE FLOW (Assuming full flow)

BCCMP

Flow Segment Name	CD	EF	
Pipe Diameter (ft)	1.25	1.25	
Manning's Coefficient	0.013	0.013	
Pipe Slope (ft/ft)	0.048	0.175	
Pipe Length (ft)	200.00	229.00	
Flow Velocity (ft/sec.)	11.472	22.000	

Flow Time (hr.)	0.0048	0.003	0.008
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.521 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SWMF-18, QUAKER MILL CT, Subarea 6-2](#)  
 Existing Tc BY: [ADM](#)

OVERLAND FLOW

Flow Segment Name	<a href="#">AB</a>
Surface Description	<a href="#">Grass, dense</a>
Roughness Coefficient	<a href="#">0.24</a>
Land Slope (ft/ft)	<a href="#">0.070</a>
Flow Length (ft) [100' max]	<a href="#">100</a>
Two-Year Rainfall (in.)	<a href="#">3.20</a>

Flow Time (hr.)	<a href="#">0.144</a>		<a href="#">0.144</a>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<a href="#">BC</a>		
Flow Length (ft)	<a href="#">467</a>		
Paved or Unpaved	<a href="#">unpaved</a>		
Land Slope (ft/ft)	<a href="#">0.049</a>		
Flow Velocity (ft/sec.)	<a href="#">3.581</a>		

Flow Time (hr.)	<a href="#">0.0362</a>		<a href="#">0.036</a>
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CHANNEL FLOW

\*ASSUME RIPRAP CHANNEL

Flow Segment Name	<a href="#">CD*</a>	<a href="#">EF</a>	
Flow Depth (ft)	<a href="#">0.5</a>	<a href="#">1</a>	
Bottom Width (ft)	<a href="#">2</a>	<a href="#">2</a>	
Side Slope (Z1)	<a href="#">3</a>	<a href="#">3</a>	
Side Slope (Z2)	<a href="#">3</a>	<a href="#">3</a>	
Manning's Coefficient	<a href="#">0.070</a>	<a href="#">0.045</a>	
Flow Length (ft)	<a href="#">307</a>	<a href="#">381</a>	
Channel Slope (ft/ft)	<a href="#">0.059</a>	<a href="#">0.024</a>	
Flow Velocity (ft/sec.)	<a href="#">2.499</a>	<a href="#">3.613</a>	

Flow Time (hr.)	<a href="#">0.0341</a>		<a href="#">0.0341</a>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	<a href="#">DE</a>	
Pipe Diameter (ft)	<a href="#">2.00</a>	
Manning's Coefficient	<a href="#">0.024</a>	
Pipe Slope (ft/ft)	<a href="#">0.060</a>	
Pipe Length (ft)	<a href="#">834.00</a>	
Flow Velocity (ft/sec.)	<a href="#">9.550</a>	

Flow Time (hr.)	<a href="#">0.0243</a>	<a href="#">0.024</a>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<a href="#">0.239 hr</a>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, Subarea #6-3, Off-site Drainage  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.120
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.116			0.116
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	DE
Flow Length (ft)	150	30	50
Paved or Unpaved	unpaved	paved	unpaved
Land Slope (ft/ft)	0.140	0.100	0.200
Flow Velocity (ft/sec.)	6.037	6.428	7.216

Flow Time (hr.)	0.0069	0.0013	0.0019	0.010
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CHANNEL FLOW

Flow Segment Name	EF
Flow Depth (ft)	1
Bottom Width (ft)	2
Side Slope (Z1)	3
Side Slope (Z2)	3
Manning's Coefficient	0.045
Flow Length (ft)	1800
Channel Slope (ft/ft)	0.043
Flow Velocity (ft/sec.)	4.894

Flow Time (hr.)	0.1022		0.1022
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PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.228 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, DA #6-4, off-site drainage**  
 Existing Tc BY: **ADM**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>		
Surface Description	<b>Grass, dense</b>		
Roughness Coefficient	<b>0.24</b>		
Land Slope (ft/ft)	<b>0.050</b>		
Flow Length (ft) [100' max]	<b>40</b>		
Two-Year Rainfall (in.)	<b>3.20</b>		
Flow Time (hr.)	<b>0.079</b>		<b>0.079</b>

SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>		
Flow Length (ft)	<b>506</b>		
Paved or Unpaved	<b>paved</b>		
Land Slope (ft/ft)	<b>0.081</b>		
Flow Velocity (ft/sec.)	<b>5.786</b>		
Flow Time (hr.)	<b>0.0243</b>		<b>0.024</b>

CHANNEL FLOW

Flow Segment Name			
Flow Depth (ft)			
Bottom Width (ft)			
Side Slope (Z1)			
Side Slope (Z2)			
Manning's Coefficient			
Flow Length (ft)			
Channel Slope (ft/ft)			
Flow Velocity (ft/sec.)			
Flow Time (hr.)			<b>0.0000</b>

PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>DE</b>		
Pipe Diameter (ft)	<b>1.5</b>		
Manning's Coefficient	<b>0.024</b>		
Pipe Slope (ft/ft)	<b>0.062</b>		
Pipe Length (ft)	<b>545</b>		
Flow Velocity (ft/sec.)	<b>8.042</b>		
Flow Time (hr.)	<b>0.0188</b>		<b>0.019</b>

TIME OF CONCENTRATION (hr.)/(min)

<b>Total time</b>	<b>0.122 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, DA #6-5, off-site drainage  
Existing Tc BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.100
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.125		0.125
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC		
Flow Length (ft)	572		
Paved or Unpaved	unpaved		
Land Slope (ft/ft)	0.108		
Flow Velocity (ft/sec.)	5.312		

Flow Time (hr.)	0.0299		0.030
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CHANNEL FLOW

Flow Segment Name	CD	EF	
Flow Depth (ft)	1	1.75	
Bottom Width (ft)	2	6	
Side Slope (Z1)	3	1	
Side Slope (Z2)	3	1	
Manning's Coefficient	0.045	0.045	
Flow Length (ft)	119	773	
Channel Slope (ft/ft)	0.370	0.061	
Flow Velocity (ft/sec.)	14.294	9.391	

Flow Time (hr.)	0.0023	0.0229	0.0252
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PIPE FLOW (Assuming full flow)

Flow Segment Name	DE		
Pipe Diameter (ft)	2.5		
Manning's Coefficient	0.015		
Pipe Slope (ft/ft)	0.022		
Pipe Length (ft)	990		
Flow Velocity (ft/sec.)	10.795		

Flow Time (hr.)	0.0255		0.025
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.205 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, DA7-1  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.110
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.120			0.120
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	DE
Flow Length (ft)	677	127	150
Paved or Unpaved	unpaved	unpaved	unpaved
Land Slope (ft/ft)	0.139	0.024	0.130
Flow Velocity (ft/sec.)	6.012	2.480	5.817

Flow Time (hr.)	0.0313	0.0142	0.0072	0.053
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CHANNEL FLOW

Flow Segment Name	EF		
Flow Depth (ft)	0.5		
Bottom Width (ft)	0		
Side Slope (Z1)	4		
Side Slope (Z2)	4		
Manning's Coefficient	0.045		
Flow Length (ft)	349		
Channel Slope (ft/ft)	0.097		
Flow Velocity (ft/sec.)	4.009		

Flow Time (hr.)	0.0242			0.0242
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PIPE FLOW (Assuming full flow)

Flow Segment Name				
Pipe Diameter (ft)				
Manning's Coefficient				
Pipe Slope (ft/ft)				
Pipe Length (ft)				
Flow Velocity (ft/sec.)				

Flow Time (hr.)				0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.197 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, DA7-2  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.110
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.120		0.120
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	
Flow Length (ft)	732	38	
Paved or Unpaved	unpaved	paved	
Land Slope (ft/ft)	0.156	0.053	
Flow Velocity (ft/sec.)	6.367	4.664	

Flow Time (hr.)	0.0319	0.0023	0.034
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CHANNEL FLOW

Flow Segment Name		
Flow Depth (ft)		
Bottom Width (ft)		
Side Slope (Z1)		
Side Slope (Z2)		
Manning's Coefficient		
Flow Length (ft)		
Channel Slope (ft/ft)		
Flow Velocity (ft/sec.)		

Flow Time (hr.)		0.0000
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PIPE FLOW (Assuming full flow)

Flow Segment Name	DE	EF
Pipe Diameter (ft)	1.50	2.00
Manning's Coefficient	0.013	0.013
Pipe Slope (ft/ft)	0.050	0.060
Pipe Length (ft)	347	1553
Flow Velocity (ft/sec.)	13.349	17.669

Flow Time (hr.)	0.0072	0.0244	0.007
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.162 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, DA7-3  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	woods,light
Roughness Coefficient	0.40
Land Slope (ft/ft)	0.180
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.149			0.149
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	
Flow Length (ft)	340	123	
Paved or Unpaved	unpaved	paved	
Land Slope (ft/ft)	0.224	0.024	
Flow Velocity (ft/sec.)	7.628	3.175	

Flow Time (hr.)	0.0124	0.0108		0.023
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CHANNEL FLOW

Flow Segment Name	EF		
Flow Depth (ft)	2.75		
Bottom Width (ft)	7		
Side Slope (Z1)	3		
Side Slope (Z2)	3		
Manning's Coefficient	0.03		
Flow Length (ft)	364		
Channel Slope (ft/ft)	0.044		
Flow Velocity (ft/sec.)	14.904		

Flow Time (hr.)	0.0068			0.0068
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PIPE FLOW (Assuming full flow)

Flow Segment Name	DE		
Pipe Diameter (ft)	2.00		
Manning's Coefficient	0.013		
Pipe Slope (ft/ft)	0.051		
Pipe Length (ft)	413.00		
Flow Velocity (ft/sec.)	16.238		

Flow Time (hr.)	0.0071			0.007
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.186 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, DA7-4  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.060
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.153			0.153
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC		
Flow Length (ft)	147		
Paved or Unpaved	unpaved		
Land Slope (ft/ft)	0.034		
Flow Velocity (ft/sec.)	2.976		

Flow Time (hr.)	0.0137			0.014
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CHANNEL FLOW

Flow Segment Name	EF	GH	
Flow Depth (ft)	0.5	0.5	
Bottom Width (ft)	0	0.5	
Side Slope (Z1)	3	3	
Side Slope (Z2)	3	3	
Manning's Coefficient	0.045	0.045	
Flow Length (ft)	932	539	
Channel Slope (ft/ft)	0.079	0.041	
Flow Velocity (ft/sec.)	3.565	2.808	

Flow Time (hr.)	0.0726	0.0533		0.1259
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PIPE FLOW (Assuming full flow)

Flow Segment Name	CD	DE	FG
Pipe Diameter (ft)	1.50	2.00	2.00
Manning's Coefficient	0.013	0.013	0.013
Pipe Slope (ft/ft)	0.061	0.114	0.046
Pipe Length (ft)	639.00	682.00	478.00
Flow Velocity (ft/sec.)	14.685	24.353	15.448

Flow Time (hr.)	0.0121	0.0078	0.0086	0.028
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.321 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, DA7-5  
Existing Tc

BY: ADM

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.110
Flow Length (ft) [100' max]	83
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.104			0.104
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	DE
Flow Length (ft)	194	341	175
Paved or Unpaved	paved	unpaved	paved
Land Slope (ft/ft)	0.067	0.202	0.046
Flow Velocity (ft/sec.)	5.262	7.258	4.346

Flow Time (hr.)	0.0102	0.0131	0.0112	0.034
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CHANNEL FLOW

Flow Segment Name	EF		
Flow Depth (ft)	2.75		
Bottom Width (ft)	8		
Side Slope (Z1)	0		
Side Slope (Z2)	0		
Manning's Coefficient	0.013		
Flow Length (ft)	352		
Channel Slope (ft/ft)	0.023		
Flow Velocity (ft/sec.)	23.864		

Flow Time (hr.)	0.0041			0.0041
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PIPE FLOW (Assuming full flow)

Flow Segment Name			
Pipe Diameter (ft)			
Manning's Coefficient			
Pipe Slope (ft/ft)			
Pipe Length (ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)				0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.142 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, SA #8**  
Existing Tc

BY: **ACF**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.02</b>
Land Slope (ft/ft)	<b>0.060</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.021</b>	<b>0.021</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	
Flow Length (ft)	
Paved or Unpaved	
Land Slope (ft/ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)		
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CHANNEL FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	<b>EF</b>	<b>FG</b>	<b>GH</b>	<b>HI</b>
Flow Depth (ft)	<b>0.5</b>	<b>0.5</b>	<b>1</b>	<b>1.0</b>	<b>1.3</b>	<b>1.5</b>
Bottom Width (ft)	<b>4</b>	<b>5</b>	<b>5</b>	<b>8</b>	<b>8</b>	<b>8</b>
Side Slope (Z1)	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>
Side Slope (Z2)	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
Manning's Coefficient	<b>0.040</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>
Flow Length (ft)	<b>611</b>	<b>858</b>	<b>2608</b>	<b>1952</b>	<b>1320</b>	<b>991</b>
Channel Slope (ft/ft)	<b>0.057</b>	<b>0.022</b>	<b>0.015</b>	<b>0.016</b>	<b>0.056</b>	<b>0.022</b>
Flow Velocity (ft/sec.)	<b>4.698</b>	<b>3.341</b>	<b>3.961</b>	<b>4.441</b>	<b>9.400</b>	<b>6.535</b>

Flow Time (hr.)	<b>0.0361</b>	<b>0.0713</b>	<b>0.1829</b>	<b>0.1221</b>	<b>0.0390</b>	<b>0.0421</b>	<b>0.4936</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>DE</b>	<b>IJ</b>
Pipe Diameter (ft)	<b>4.00</b>	<b>6.00</b>
Manning's Coefficient	<b>0.013</b>	<b>0.013</b>
Pipe Slope (ft/ft)	<b>0.016</b>	<b>0.010</b>
Pipe Length (ft)	<b>853.00</b>	<b>118.00</b>
Flow Velocity (ft/sec.)	<b>14.639</b>	<b>14.979</b>

Flow Time (hr.)	<b>0.0162</b>	<b>0.002</b>	<b>0.018</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.533 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #9  
Existing Tc

BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.140
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.109	0.109
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC
Flow Length (ft)	216
Paved or Unpaved	unpaved
Land Slope (ft/ft)	0.319
Flow Velocity (ft/sec.)	9.119

Flow Time (hr.)	0.0066	0.007
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CHANNEL FLOW

Flow Segment Name	CD	DE
Flow Depth (ft)	1	1.75
Bottom Width (ft)	5	6
Side Slope (Z1)	3	0.5
Side Slope (Z2)	3	0.5
Manning's Coefficient	0.035	0.035
Flow Length (ft)	653	578
Channel Slope (ft/ft)	0.022	0.0138
Flow Velocity (ft/sec.)	5.020	5.683

Flow Time (hr.)	0.0361	0.0283	0.0644
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PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.180 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #10  
Existing Tc

BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.130
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.112	0.112
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD
Flow Length (ft)	66	25
Paved or Unpaved	unpaved	paved
Land Slope (ft/ft)	0.114	0.048
Flow Velocity (ft/sec.)	5.438	4.454

Flow Time (hr.)	0.0034	0.0016	0.005
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CHANNEL FLOW

Flow Segment Name	DE	EF
Flow Depth (ft)	0.5	0.75
Bottom Width (ft)	5	8
Side Slope (Z1)	4	3
Side Slope (Z2)	4	3
Manning's Coefficient	0.035	0.035
Flow Length (ft)	765	2618
Channel Slope (ft/ft)	0.136	0.040
Flow Velocity (ft/sec.)	8.277	6.041

Flow Time (hr.)	0.0257	0.1204	0.146
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PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.263 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #11](#)  
Existing Tc

BY: [ACF](#)

OVERLAND FLOW

Flow Segment Name	<a href="#">AB</a>
Surface Description	<a href="#">Grass, dense</a>
Roughness Coefficient	<a href="#">0.24</a>
Land Slope (ft/ft)	<a href="#">0.040</a>
Flow Length (ft) [100' max]	<a href="#">100</a>
Two-Year Rainfall (in.)	<a href="#">3.20</a>

Flow Time (hr.)	<a href="#">0.180</a>	<a href="#">0.180</a>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<a href="#">BC</a>
Flow Length (ft)	<a href="#">1210</a>
Paved or Unpaved	<a href="#">unpaved</a>
Land Slope (ft/ft)	<a href="#">0.030</a>
Flow Velocity (ft/sec.)	<a href="#">2.795</a>

Flow Time (hr.)	<a href="#">0.1203</a>	<a href="#">0.120</a>
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CHANNEL FLOW

Flow Segment Name	<a href="#">CD</a>	<a href="#">DE</a>	<a href="#">FG</a>
Flow Depth (ft)	<a href="#">0.5</a>	<a href="#">1</a>	<a href="#">1.75</a>
Bottom Width (ft)	<a href="#">4</a>	<a href="#">5</a>	<a href="#">8</a>
Side Slope (Z1)	<a href="#">5</a>	<a href="#">4</a>	<a href="#">3</a>
Side Slope (Z2)	<a href="#">10</a>	<a href="#">4</a>	<a href="#">3</a>
Manning's Coefficient	<a href="#">0.040</a>	<a href="#">0.035</a>	<a href="#">0.035</a>
Flow Length (ft)	<a href="#">1719</a>	<a href="#">871</a>	<a href="#">1938</a>
Channel Slope (ft/ft)	<a href="#">0.037</a>	<a href="#">0.014</a>	<a href="#">0.028</a>
Flow Velocity (ft/sec.)	<a href="#">3.456</a>	<a href="#">3.853</a>	<a href="#">8.077</a>

Flow Time (hr.)	<a href="#">0.1382</a>	<a href="#">0.0628</a>	<a href="#">0.0667</a>	<a href="#">0.2676</a>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	<a href="#">EF</a>
Pipe Diameter (ft)	<a href="#">6.00</a>
Manning's Coefficient	<a href="#">0.013</a>
Pipe Slope (ft/ft)	<a href="#">0.014</a>
Pipe Length (ft)	<a href="#">104.00</a>
Flow Velocity (ft/sec.)	<a href="#">17.723</a>

Flow Time (hr.)	<a href="#">0.0016</a>	<a href="#">0.002</a>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<a href="#">0.570 hr</a>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #12  
 Existing Tc BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Smooth
Roughness Coefficient	0.150
Land Slope (ft/ft)	0.050
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.113	0.113
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC
Flow Length (ft)	135
Paved or Unpaved	unpaved
Land Slope (ft/ft)	0.022
Flow Velocity (ft/sec.)	2.404

Flow Time (hr.)	0.0156	0.016
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CHANNEL FLOW

Flow Segment Name	CD	HI	NO	QR
Flow Depth (ft)	0.5	0.5	1.25	1.500
Bottom Width (ft)	2	2	5	6
Side Slope (Z1)	5	8	4	3
Side Slope (Z2)	10	8	4	3
Manning's Coefficient	0.035	0.035	0.035	0.035
Flow Length (ft)	189	417	971	616
Channel Slope (ft/ft)	0.042	0.053	0.037	0.052
Flow Velocity (ft/sec.)	3.917	4.352	7.131	9.786

Flow Time (hr.)	0.0134	0.0266	0.0378	0.0175	0.0953
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PIPE FLOW (Assuming full flow)

Flow Segment Name	DE	EF	FG	GH	IJ	JK	KL	LM	PQ
Pipe Diameter (ft)	1.50	1.75	2.25	2.25	2.75	3	3.5	2.75	5
Manning's Coefficient	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024
Pipe Slope (ft/ft)	0.028	0.026	0.100	0.105	0.047	0.010	0.007	0.148	0.130
Pipe Length (ft)	184.00	127.00	49.00	40.00	102.00	37	173	107	185
Flow Velocity (ft/sec.)	5.426	5.743	13.342	13.672	10.462	5.111	4.717	18.533	25.878

Flow Time (hr.)	0.009	0.006	0.001	0.001	0.003	0.002	0.010	0.002	0.002	0.036
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.260 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, SA #13  
Existing Tc

BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.060
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.153	0.153
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC
Flow Length (ft)	221
Paved or Unpaved	unpaved
Land Slope (ft/ft)	0.072
Flow Velocity (ft/sec.)	4.341

Flow Time (hr.)	0.0141	0.014
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CHANNEL FLOW

Flow Segment Name	CD	DE	EF	FG
Flow Depth (ft)	0.5	0.5	1.0	1.500
Bottom Width (ft)	4	5	6	5
Side Slope (Z1)	6	2	4	3
Side Slope (Z2)	8	4	3	3
Manning's Coefficient	0.035	0.035	0.035	0.035
Flow Length (ft)	1051	1490	861	1659
Channel Slope (ft/ft)	0.085	0.028	0.038	0.030
Flow Velocity (ft/sec.)	6.003	3.806	6.644	7.217

Flow Time (hr.)	0.0486	0.1087	0.0360	0.0639	0.2572
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PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.425 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #14  
Existing Tc

BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.070
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.144	0.144
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	
Flow Length (ft)	
Paved or Unpaved	
Land Slope (ft/ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	0.000
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CHANNEL FLOW

	BC	CD	DE
Flow Segment Name			
Flow Depth (ft)	0.75	1.25	1.75
Bottom Width (ft)	5	6	5
Side Slope (Z1)	4	4	3
Side Slope (Z2)	6	5	3
Manning's Coefficient	0.035	0.035	0.035
Flow Length (ft)	1757	2152	2080
Channel Slope (ft/ft)	0.051	0.028	0.033
Flow Velocity (ft/sec.)	6.203	6.256	8.261

Flow Time (hr.)	0.0787	0.0955	0.0699	0.244
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PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.388 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, SA #15  
Existing Tc

BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.030
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.202	0.202
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	DE	EF
Flow Length (ft)	33	118	81	153
Paved or Unpaved	paved	unpaved	paved	unpaved
Land Slope (ft/ft)	0.030	0.148	0.006	0.065
Flow Velocity (ft/sec.)	3.539	6.213	1.597	1.597

Flow Time (hr.)	0.0026	0.0053	0.0141	0.0266	0.049
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CHANNEL FLOW

Flow Segment Name	FG	GH	HI	IJ	JK
Flow Depth (ft)	0.5	0.5	1.3	1.5	1.5
Bottom Width (ft)	4	7	6	7	8
Side Slope (Z1)	4	3	4	5	3
Side Slope (Z2)	4	3	3	4	3
Manning's Coefficient	0.035	0.035	0.035	0.035	0.035
Flow Length (ft)	1149	1093	528	555	891
Channel Slope (ft/ft)	0.092	0.042	0.038	0.029	0.029
Flow Velocity (ft/sec.)	6.640	4.871	7.464	7.161	7.552

Flow Time (hr.)	0.0481	0.0623	0.0197	0.0215	0.0328	0.1844
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PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.435 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, SA #8-1**  
Existing Tc BY: **ACF**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.060</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.153</b>			<b>0.153</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name			
Flow Length (ft)			
Paved or Unpaved			
Land Slope (ft/ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)			<b>0.000</b>
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CHANNEL FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	<b>EF</b>		
Flow Depth (ft)	<b>0.5</b>	<b>0.5</b>	<b>1</b>		
Bottom Width (ft)	<b>4</b>	<b>5</b>	<b>5</b>		
Side Slope (Z1)	<b>3</b>	<b>4</b>	<b>4</b>		
Side Slope (Z2)	<b>3</b>	<b>4</b>	<b>4</b>		
Manning's Coefficient	<b>0.040</b>	<b>0.035</b>	<b>0.035</b>		
Flow Length (ft)	<b>611</b>	<b>858</b>	<b>2247</b>		
Channel Slope (ft/ft)	<b>0.057</b>	<b>0.022</b>	<b>0.015</b>		
Flow Velocity (ft/sec.)	<b>4.698</b>	<b>3.341</b>	<b>3.961</b>		

Flow Time (hr.)	<b>0.0361</b>	<b>0.0713</b>	<b>0.1576</b>		<b>0.2650</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>DE</b>			
Pipe Diameter (ft)	<b>4.00</b>			
Manning's Coefficient	<b>0.013</b>			
Pipe Slope (ft/ft)	<b>0.016</b>			
Pipe Length (ft)	<b>853.00</b>			
Flow Velocity (ft/sec.)	<b>14.639</b>			

Flow Time (hr.)	<b>0.0162</b>			<b>0.016</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.434 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #8-2](#)  
Existing Tc

BY: [ACF](#)

Tc = 0.19

Tc from SWMF Pond #40 from comps:

[..\..\..\..\Design\Originals\Comps\Comps\F-89-158.pdf](#)

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #8-3](#)  
Existing Tc

BY: [ACF](#)

Tc = 0.22

Tc from SWMF Pond #43 from comps:

[.....\Design\Originals\Comps\Comps\F-06-201.pdf](#)

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, SA #8-4  
Existing Tc

BY: ACF

OVERLAND FLOW

Flow Segment Name  
Surface Description  
Roughness Coefficient  
Land Slope (ft/ft)  
Flow Length (ft) [100' max]  
Two-Year Rainfall (in.)


Flow Time (hr.)

				0.000
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SHALLOW CONCENTRATED FLOW

Flow Segment Name  
Flow Length (ft)  
Paved or Unpaved  
Land Slope (ft/ft)  
Flow Velocity (ft/sec.)


Flow Time (hr.)

			0.000
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CHANNEL FLOW

Flow Segment Name  
Flow Depth (ft)  
Bottom Width (ft)  
Side Slope (Z1)  
Side Slope (Z2)  
Manning's Coefficient  
Flow Length (ft)  
Channel Slope (ft/ft)  
Flow Velocity (ft/sec.)

AB	BC	CD	DE
0.5	1.0	1.5	1.5
2	3	6	8
3	6	3	3
3	6	4	4
0.035	0.035	0.035	0.035
362	1952	1320	991
0.015	0.016	0.056	0.022
2.492	3.839	10.032	6.535

Flow Time (hr.)

0.0404	0.1413	0.0366	0.0421	0.2603
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PIPE FLOW (Assuming full flow)

Flow Segment Name  
Pipe Diameter (ft)  
Manning's Coefficient  
Pipe Slope (ft/ft)  
Pipe Length (ft)  
Flow Velocity (ft/sec.)

EF			
6.00			
0.013			
0.010			
118.00			
14.979			

Flow Time (hr.)

0.002				0.002
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.262 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #9-1  
Existing Tc BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.085
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.133			0.133
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	EF
Flow Length (ft)	225	492	162
Paved or Unpaved	unpaved	paved	paved
Land Slope (ft/ft)	0.371	0.053	0.111
Flow Velocity (ft/sec.)	9.829	4.673	6.776

Flow Time (hr.)	0.0064	0.0292	0.0066	0.042
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CHANNEL FLOW

Flow Segment Name	DE			
Flow Depth (ft)	0.5			
Bottom Width (ft)	10			
Side Slope (Z1)	2			
Side Slope (Z2)	2			
Manning's Coefficient	0.035			
Flow Length (ft)	61			
Channel Slope (ft/ft)	0.328			
Flow Velocity (ft/sec.)	14.264			

Flow Time (hr.)	0.0012			0.0012
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PIPE FLOW (Assuming full flow)

Flow Segment Name	FG			
Pipe Diameter (ft)	2.00			
Manning's Coefficient	0.013			
Pipe Slope (ft/ft)	0.080			
Pipe Length (ft)	641.00			
Flow Velocity (ft/sec.)	20.311			

Flow Time (hr.)	0.009				0.009
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.186 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, SA #9-2**  
 Existing Tc BY: **ACF**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.140</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.109</b>			<b>0.109</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>		
Flow Length (ft)	<b>216</b>		
Paved or Unpaved	<b>unpaved</b>		
Land Slope (ft/ft)	<b>0.319</b>		
Flow Velocity (ft/sec.)	<b>9.119</b>		

Flow Time (hr.)	<b>0.0066</b>			<b>0.007</b>
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CHANNEL FLOW

Flow Segment Name	<b>CD</b>			
Flow Depth (ft)	<b>1</b>			
Bottom Width (ft)	<b>5</b>			
Side Slope (Z1)	<b>3</b>			
Side Slope (Z2)	<b>3</b>			
Manning's Coefficient	<b>0.035</b>			
Flow Length (ft)	<b>323</b>			
Channel Slope (ft/ft)	<b>0.022</b>			
Flow Velocity (ft/sec.)	<b>5.020</b>			

Flow Time (hr.)	<b>0.0179</b>			<b>0.0179</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name				
Pipe Diameter (ft)				
Manning's Coefficient				
Pipe Slope (ft/ft)				
Pipe Length (ft)				
Flow Velocity (ft/sec.)				

Flow Time (hr.)				<b>0.000</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.134 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #9-3  
 Existing Tc BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.190
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.097			0.097
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC	CD	DE	EF
Flow Length (ft)	70.9414	68.7774	167	310
Paved or Unpaved	unpaved	paved	unpaved	paved
Land Slope (ft/ft)	0.226	0.087	0.263	0.068
Flow Velocity (ft/sec.)	7.662	6.004	8.274	8.274

Flow Time (hr.)	0.0026	0.0032	0.0056	0.0104	0.022
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CHANNEL FLOW

Flow Segment Name	FG	GH		
Flow Depth (ft)	3	3.5		
Bottom Width (ft)	15	30		
Side Slope (Z1)	2	0		
Side Slope (Z2)	1.5	0		
Manning's Coefficient	0.035	0.013		
Flow Length (ft)	853	586		
Channel Slope (ft/ft)	0.034	0.019		
Flow Velocity (ft/sec.)	13.404	31.391		

Flow Time (hr.)	0.0177	0.0052			0.0229
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PIPE FLOW (Assuming full flow)

Flow Segment Name				
Pipe Diameter (ft)				
Manning's Coefficient				
Pipe Slope (ft/ft)				
Pipe Length (ft)				
Flow Velocity (ft/sec.)				

Flow Time (hr.)					0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.141 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #10-1](#)  
Existing Tc

BY: [ACF](#)

Tc = 0.200

Tc from spreadsheet computations for SWMF Pond #29

[..\SWMF Comps\TC\TR\\_55 TcPathway\\_SWMFponds.xls](#)

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, SA #10-2**  
 Existing Tc BY: **ACF**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.130</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.112</b>			<b>0.112</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	
Flow Length (ft)	<b>66</b>	<b>25</b>	
Paved or Unpaved	<b>unpaved</b>	<b>paved</b>	
Land Slope (ft/ft)	<b>0.114</b>	<b>0.048</b>	
Flow Velocity (ft/sec.)	<b>5.438</b>	<b>4.454</b>	

Flow Time (hr.)	<b>0.0034</b>	<b>0.0016</b>		<b>0.005</b>
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CHANNEL FLOW

Flow Segment Name	<b>DE</b>	<b>EF</b>		
Flow Depth (ft)	<b>0.5</b>	<b>0.75</b>		
Bottom Width (ft)	<b>5</b>	<b>8</b>		
Side Slope (Z1)	<b>4</b>	<b>3</b>		
Side Slope (Z2)	<b>4</b>	<b>3</b>		
Manning's Coefficient	<b>0.035</b>	<b>0.035</b>		
Flow Length (ft)	<b>765</b>	<b>2618</b>		
Channel Slope (ft/ft)	<b>0.136</b>	<b>0.040</b>		
Flow Velocity (ft/sec.)	<b>8.277</b>	<b>6.041</b>		

Flow Time (hr.)	<b>0.0257</b>	<b>0.1204</b>		<b>0.1461</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name				
Pipe Diameter (ft)				
Manning's Coefficient				
Pipe Slope (ft/ft)				
Pipe Length (ft)				
Flow Velocity (ft/sec.)				

Flow Time (hr.)				<b>0.000</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.263 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #11-1](#)  
Existing Tc

BY: [ACF](#)

Tc = 0.10

Tc from spreadsheet comps for Pond # 64

[..\SWMF Comps\TC\TR 55 TcPathway SWMFPonds.xls](#)

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, SA #11-2**  
 Existing Tc BY: **ACF**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.040</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.180</b>			<b>0.180</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>		
Flow Length (ft)	<b>1210</b>		
Paved or Unpaved	<b>unpaved</b>		
Land Slope (ft/ft)	<b>0.030</b>		
Flow Velocity (ft/sec.)	<b>2.795</b>		

Flow Time (hr.)	<b>0.1203</b>			<b>0.120</b>
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CHANNEL FLOW

Flow Segment Name	<b>CD</b>	<b>DE</b>		
Flow Depth (ft)	<b>0.5</b>	<b>1</b>		
Bottom Width (ft)	<b>4</b>	<b>5</b>		
Side Slope (Z1)	<b>5</b>	<b>4</b>		
Side Slope (Z2)	<b>10</b>	<b>4</b>		
Manning's Coefficient	<b>0.035</b>	<b>0.035</b>		
Flow Length (ft)	<b>1719</b>	<b>386</b>		
Channel Slope (ft/ft)	<b>0.037</b>	<b>0.014</b>		
Flow Velocity (ft/sec.)	<b>3.950</b>	<b>3.853</b>		

Flow Time (hr.)	<b>0.1209</b>	<b>0.0278</b>			<b>0.1487</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name				
Pipe Diameter (ft)				
Manning's Coefficient				
Pipe Slope (ft/ft)				
Pipe Length (ft)				
Flow Velocity (ft/sec.)				

Flow Time (hr.)					<b>0.000</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.449 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, SA #11-3**  
Existing Tc BY: **ACF**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.040</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.180</b>			<b>0.180</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name			
Flow Length (ft)			
Paved or Unpaved			
Land Slope (ft/ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)			<b>0.000</b>
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CHANNEL FLOW

Flow Segment Name	<b>BC</b>	<b>DE</b>	<b>FG</b>	
Flow Depth (ft)	<b>0.5</b>	<b>0.5</b>	<b>0.75</b>	
Bottom Width (ft)	<b>4</b>	<b>6</b>	<b>6</b>	
Side Slope (Z1)	<b>8</b>	<b>4</b>	<b>3</b>	
Side Slope (Z2)	<b>8</b>	<b>4</b>	<b>3</b>	
Manning's Coefficient	<b>0.035</b>	<b>0.035</b>	<b>0.04</b>	
Flow Length (ft)	<b>377</b>	<b>676</b>	<b>207</b>	
Channel Slope (ft/ft)	<b>0.058</b>	<b>0.050</b>	<b>0.039</b>	
Flow Velocity (ft/sec.)	<b>4.914</b>	<b>5.127</b>	<b>5.052</b>	

Flow Time (hr.)	<b>0.0213</b>	<b>0.0366</b>	<b>0.0114</b>	<b>0.0693</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>CD</b>	<b>EF</b>		
Pipe Diameter (ft)	<b>2.50</b>	<b>4.50</b>		
Manning's Coefficient	<b>0.024</b>	<b>0.013</b>		
Pipe Slope (ft/ft)	<b>0.045</b>	<b>0.048</b>		
Pipe Length (ft)	<b>267.00</b>	<b>84.00</b>		
Flow Velocity (ft/sec.)	<b>9.595</b>	<b>26.982</b>		

Flow Time (hr.)	<b>0.0077</b>	<b>0.001</b>		<b>0.009</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.258 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #11-4](#)  
Existing Tc

BY: [ACF](#)

Tc = 0.370

Tc from spreadsheet comps for Pond # 33

[..\SWMF Comps\TC\TR 55 TcPathway SWMFPonds.xls](#)

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, SA #11-5**  
 Existing Tc BY: **ACF**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.229</b>
Flow Length (ft) [100' max]	<b>35</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.039</b>			<b>0.039</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name			
Flow Length (ft)			
Paved or Unpaved			
Land Slope (ft/ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)			<b>0.000</b>
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CHANNEL FLOW

Flow Segment Name	<b>CD</b>			
Flow Depth (ft)	<b>1</b>			
Bottom Width (ft)	<b>5</b>			
Side Slope (Z1)	<b>3</b>			
Side Slope (Z2)	<b>3</b>			
Manning's Coefficient	<b>0.035</b>			
Flow Length (ft)	<b>1938</b>			
Channel Slope (ft/ft)	<b>0.028</b>			
Flow Velocity (ft/sec.)	<b>5.623</b>			

Flow Time (hr.)	<b>0.0957</b>			<b>0.0957</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name	<b>BC</b>			
Pipe Diameter (ft)	<b>6.00</b>			
Manning's Coefficient	<b>0.013</b>			
Pipe Slope (ft/ft)	<b>0.014</b>			
Pipe Length (ft)	<b>104.00</b>			
Flow Velocity (ft/sec.)	<b>17.723</b>			

Flow Time (hr.)	<b>0.0016</b>				<b>0.002</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.136 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #12-1](#)  
Existing Tc

BY: [ACF](#)

Tc = 0.283

Tc from spreadsheet comps for SWMF pond #47

[..\SWMF Comps\TC\TR 55 TcPathway SWMFPonds.xls](#)

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #12-2](#)  
Existing Tc

BY: [ACF](#)

Tc = 0.245

Tc from spreadsheet comps for SWMF pond #32

[..\SWMF Comps\TC\TR\\_55 TcPathway SWMFPonds.xls](#)

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #12-3](#)  
Existing Tc

BY: [ACF](#)

Tc = 0.236

Tc from spreadsheet comps for SWMF pond #34

[..\SWMF Comps\TC\TR 55 TcPathway SWMFPonds.xls](#)

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, SA #12-4  
Existing Tc

BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, good
Roughness Coefficient	0.240
Land Slope (ft/ft)	0.280
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.083			0.083
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SHALLOW CONCENTRATED FLOW

Flow Segment Name			
Flow Length (ft)			
Paved or Unpaved			
Land Slope (ft/ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)				0.000
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CHANNEL FLOW

Flow Segment Name	BC		
Flow Depth (ft)	0.500		
Bottom Width (ft)	6		
Side Slope (Z1)	4		
Side Slope (Z2)	4		
Manning's Coefficient	0.035		
Flow Length (ft)	318		
Channel Slope (ft/ft)	0.052		
Flow Velocity (ft/sec.)	5.211		

Flow Time (hr.)	0.0170			0.0170
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PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.100 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, SA #13  
Existing Tc

BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.060
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.153			0.153
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC		
Flow Length (ft)	221		
Paved or Unpaved	unpaved		
Land Slope (ft/ft)	0.072		
Flow Velocity (ft/sec.)	4.341		

Flow Time (hr.)	0.0141			0.014
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CHANNEL FLOW

Flow Segment Name	CD	DE	EF	FG
Flow Depth (ft)	0.5	0.5	1.0	1.500
Bottom Width (ft)	4	5	6	5
Side Slope (Z1)	6	2	4	3
Side Slope (Z2)	8	4	3	3
Manning's Coefficient	0.035	0.035	0.035	0.035
Flow Length (ft)	1051	1490	861	1659
Channel Slope (ft/ft)	0.085	0.028	0.038	0.030
Flow Velocity (ft/sec.)	6.003	3.806	6.644	7.217

Flow Time (hr.)	0.0486	0.1087	0.0360	0.0639	0.2572
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PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.425 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA:

Ellicott City, SA #14-1  
Existing Tc

BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.070
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.144			0.144
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SHALLOW CONCENTRATED FLOW

Flow Segment Name			
Flow Length (ft)			
Paved or Unpaved			
Land Slope (ft/ft)			
Flow Velocity (ft/sec.)			

Flow Time (hr.)				0.000
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CHANNEL FLOW

Flow Segment Name	BC	CD		
Flow Depth (ft)	0.75	1.25		
Bottom Width (ft)	5	6		
Side Slope (Z1)	4	4		
Side Slope (Z2)	6	5		
Manning's Coefficient	0.035	0.035		
Flow Length (ft)	1757	2159		
Channel Slope (ft/ft)	0.051	0.028		
Flow Velocity (ft/sec.)	6.203	6.256		

Flow Time (hr.)	0.0787	0.0959		0.1745
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PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.319 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #14-2](#)  
Existing Tc

BY: [ACF](#)

Tc = 0.232

Tc from spreadsheet calculations for Pond # 58

[..\SWMF Comps\TC\TR 55 TcPathway SWMFPonds.xls](#)

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #14-3  
 Existing Tc BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Smooth
Roughness Coefficient	0.011
Land Slope (ft/ft)	0.020
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.020			0.020
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC		
Flow Length (ft)	348		
Paved or Unpaved	paved		
Land Slope (ft/ft)	0.026		
Flow Velocity (ft/sec.)	3.269		

Flow Time (hr.)	0.0296			0.030
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CHANNEL FLOW

Flow Segment Name	CD	EF		
Flow Depth (ft)	0.5	0.75		
Bottom Width (ft)	4	5		
Side Slope (Z1)	5	5		
Side Slope (Z2)	5	4		
Manning's Coefficient	0.040	0.040		
Flow Length (ft)	1240	530		
Channel Slope (ft/ft)	0.043	0.045		
Flow Velocity (ft/sec.)	3.865	5.158		

Flow Time (hr.)	0.0891	0.0285			0.1177
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PIPE FLOW (Assuming full flow)

Flow Segment Name	DE				
Pipe Diameter (ft)	1.25				
Manning's Coefficient	0.012				
Pipe Slope (ft/ft)	0.050				
Pipe Length (ft)	120.00				
Flow Velocity (ft/sec.)	12.751				

Flow Time (hr.)	0.0026					0.003
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.170 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #14-4  
Existing Tc

BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, Dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.050
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.165			0.165
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	BC		
Flow Length (ft)	448		
Paved or Unpaved	unpaved		
Land Slope (ft/ft)	0.107		
Flow Velocity (ft/sec.)	5.281		

Flow Time (hr.)	0.0236			0.024
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CHANNEL FLOW

Flow Segment Name	CD	DE	
Flow Depth (ft)	0.75	1.75	
Bottom Width (ft)	3	5	
Side Slope (Z1)	3	3	
Side Slope (Z2)	3	3	
Manning's Coefficient	0.035	0.035	
Flow Length (ft)	238	415	
Channel Slope (ft/ft)	0.033	0.033	
Flow Velocity (ft/sec.)	4.890	8.261	

Flow Time (hr.)	0.0135	0.0140		0.0275
-----------------	--------	--------	--	--------

PIPE FLOW (Assuming full flow)

Flow Segment Name	
Pipe Diameter (ft)	
Manning's Coefficient	
Pipe Slope (ft/ft)	
Pipe Length (ft)	
Flow Velocity (ft/sec.)	

Flow Time (hr.)	0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.216 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #15-1](#)  
Existing Tc

BY: [ACF](#)

Tc = 0.29

Tc from Comps in Originals folder for SWMF # 52

<..\..\..\Design\Originals\Comps\Comps\F-07-002.pdf>

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: [Ellicott City, SA #15-2](#)  
Existing Tc

BY: [ACF](#)

**Tc = 0.21**

Tc from Comps in Originals folder for SWMF # 51

[.....\Design\Originals\Comps\Comps\F-01-60.pdf](#)

TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: Ellicott City, SA #15-3  
 Existing Tc BY: ACF

OVERLAND FLOW

Flow Segment Name	AB
Surface Description	Grass, dense
Roughness Coefficient	0.24
Land Slope (ft/ft)	0.080
Flow Length (ft) [100' max]	100
Two-Year Rainfall (in.)	3.20

Flow Time (hr.)	0.137			0.137
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SHALLOW CONCENTRATED FLOW

Flow Segment Name				
Flow Length (ft)				
Paved or Unpaved				
Land Slope (ft/ft)				
Flow Velocity (ft/sec.)				

Flow Time (hr.)				0.000
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CHANNEL FLOW

Flow Segment Name	BC	CD			
Flow Depth (ft)	0.5	0.5			
Bottom Width (ft)	4	7			
Side Slope (Z1)	4	3			
Side Slope (Z2)	4	3			
Manning's Coefficient	0.035	0.035			
Flow Length (ft)	1158	605			
Channel Slope (ft/ft)	0.092	0.042			
Flow Velocity (ft/sec.)	6.640	4.871			

Flow Time (hr.)	0.0484	0.0345			0.0829
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PIPE FLOW (Assuming full flow)

Flow Segment Name					
Pipe Diameter (ft)					
Manning's Coefficient					
Pipe Slope (ft/ft)					
Pipe Length (ft)					
Flow Velocity (ft/sec.)					

Flow Time (hr.)					0.000
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TIME OF CONCENTRATION (hr.)/(min)

Total time	0.220 hr
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, SA #15-4**  
 Existing Tc BY: **ACF**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.120</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.116</b>			<b>0.116</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name				
Flow Length (ft)				
Paved or Unpaved				
Land Slope (ft/ft)				
Flow Velocity (ft/sec.)				

Flow Time (hr.)				<b>0.000</b>
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CHANNEL FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	<b>DE</b>	<b>EF</b>
Flow Depth (ft)	<b>0.5</b>	<b>1.0</b>	<b>1.5</b>	<b>1.5</b>
Bottom Width (ft)	<b>2</b>	<b>3</b>	<b>7</b>	<b>8</b>
Side Slope (Z1)	<b>3</b>	<b>3</b>	<b>5</b>	<b>3</b>
Side Slope (Z2)	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>
Manning's Coefficient	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>
Flow Length (ft)	<b>180</b>	<b>263</b>	<b>373</b>	<b>891</b>
Channel Slope (ft/ft)	<b>0.067</b>	<b>0.114</b>	<b>0.051</b>	<b>0.029</b>
Flow Velocity (ft/sec.)	<b>5.330</b>	<b>10.688</b>	<b>9.518</b>	<b>7.552</b>

Flow Time (hr.)	<b>0.0094</b>	<b>0.0068</b>	<b>0.0109</b>	<b>0.0328</b>	<b>0.060</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name				
Pipe Diameter (ft)				
Manning's Coefficient				
Pipe Slope (ft/ft)				
Pipe Length (ft)				
Flow Velocity (ft/sec.)				

Flow Time (hr.)					<b>0.000</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.176 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, Overall Tiber-NewCut DA**  
 Existing Tc BY: **ACF**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.030</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.202</b>			<b>0.202</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	<b>DE</b>	<b>EF</b>
Flow Length (ft)	<b>33</b>	<b>118</b>	<b>81</b>	<b>153</b>
Paved or Unpaved	<b>paved</b>	<b>unpaved</b>	<b>paved</b>	<b>unpaved</b>
Land Slope (ft/ft)	<b>0.030</b>	<b>0.148</b>	<b>0.006</b>	<b>0.065</b>
Flow Velocity (ft/sec.)	<b>3.539</b>	<b>6.213</b>	<b>1.597</b>	<b>1.597</b>

Flow Time (hr.)	<b>0.0026</b>	<b>0.0053</b>	<b>0.0141</b>	<b>0.0266</b>		<b>0.049</b>
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CHANNEL FLOW

Flow Segment Name	<b>FG</b>	<b>GH</b>	<b>HI</b>	<b>IJ</b>	<b>JK</b>	<b>KL</b>	<b>LM</b>	<b>MN</b>	<b>NO</b>	<b>OP</b>	<b>PQ</b>
Flow Depth (ft)	<b>0.5</b>	<b>0.8</b>	<b>1.0</b>	<b>1.3</b>	<b>1.5</b>	<b>1.8</b>	<b>1.8</b>	<b>2.0</b>	<b>2.4</b>	<b>3.0</b>	<b>5.0</b>
Bottom Width (ft)	<b>4</b>	<b>7</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>6</b>	<b>5</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>15</b>
Side Slope (Z1)	<b>4</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>3</b>	<b>2.5</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>0.5</b>
Side Slope (Z2)	<b>4</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>
Manning's Coefficient	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>
Flow Length (ft)	<b>1149</b>	<b>1093</b>	<b>528</b>	<b>555</b>	<b>925</b>	<b>410</b>	<b>1528</b>	<b>861</b>	<b>1659</b>	<b>982</b>	<b>578</b>
Channel Slope (ft/ft)	<b>0.092</b>	<b>0.042</b>	<b>0.038</b>	<b>0.029</b>	<b>0.029</b>	<b>0.015</b>	<b>0.028</b>	<b>0.038</b>	<b>0.030</b>	<b>0.022</b>	<b>0.014</b>
Flow Velocity (ft/sec.)	<b>6.640</b>	<b>6.357</b>	<b>6.608</b>	<b>6.619</b>	<b>7.552</b>	<b>5.767</b>	<b>7.745</b>	<b>9.713</b>	<b>9.315</b>	<b>9.197</b>	<b>11.149</b>

Flow Time (hr.)	<b>0.0481</b>	<b>0.0478</b>	<b>0.0222</b>	<b>0.0233</b>	<b>0.0340</b>	<b>0.0197</b>	<b>0.0548</b>	<b>0.0246</b>	<b>0.0495</b>	<b>0.0297</b>	<b>0.0144</b>	<b>0.3680</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name				
Pipe Diameter (ft)				
Manning's Coefficient				
Pipe Slope (ft/ft)				
Pipe Length (ft)				
Flow Velocity (ft/sec.)				

Flow Time (hr.)						<b>0.000</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.619 hr</b>
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TR-55 TIME OF CONCENTRATION WORKSHEET

DRAINAGE AREA: **Ellicott City, Overall Tiber-NewCut DA**  
 Existing Tc BY: **ACF**

OVERLAND FLOW

Flow Segment Name	<b>AB</b>
Surface Description	<b>Grass, dense</b>
Roughness Coefficient	<b>0.24</b>
Land Slope (ft/ft)	<b>0.030</b>
Flow Length (ft) [100' max]	<b>100</b>
Two-Year Rainfall (in.)	<b>3.20</b>

Flow Time (hr.)	<b>0.202</b>			<b>0.202</b>
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SHALLOW CONCENTRATED FLOW

Flow Segment Name	<b>BC</b>	<b>CD</b>	<b>DE</b>	<b>EF</b>
Flow Length (ft)	<b>33</b>	<b>118</b>	<b>81</b>	<b>153</b>
Paved or Unpaved	<b>paved</b>	<b>unpaved</b>	<b>paved</b>	<b>unpaved</b>
Land Slope (ft/ft)	<b>0.030</b>	<b>0.148</b>	<b>0.006</b>	<b>0.065</b>
Flow Velocity (ft/sec.)	<b>3.539</b>	<b>6.213</b>	<b>1.597</b>	<b>1.597</b>

Flow Time (hr.)	<b>0.0026</b>	<b>0.0053</b>	<b>0.0141</b>	<b>0.0266</b>		<b>0.049</b>
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CHANNEL FLOW

Flow Segment Name	<b>FG</b>	<b>GH</b>	<b>HI</b>	<b>IJ</b>	<b>JK</b>	<b>KL</b>	<b>LM</b>	<b>MN</b>	<b>NO</b>	<b>OP</b>	<b>PQ</b>
Flow Depth (ft)	<b>0.5</b>	<b>0.8</b>	<b>1.0</b>	<b>1.3</b>	<b>1.5</b>	<b>1.8</b>	<b>1.8</b>	<b>2.0</b>	<b>2.4</b>	<b>3.0</b>	<b>5.0</b>
Bottom Width (ft)	<b>4</b>	<b>7</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>6</b>	<b>5</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>15</b>
Side Slope (Z1)	<b>4</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>3</b>	<b>2.5</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>0.5</b>
Side Slope (Z2)	<b>4</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>
Manning's Coefficient	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>	<b>0.035</b>
Flow Length (ft)	<b>1149</b>	<b>1093</b>	<b>528</b>	<b>555</b>	<b>925</b>	<b>410</b>	<b>1528</b>	<b>861</b>	<b>1659</b>	<b>982</b>	<b>578</b>
Channel Slope (ft/ft)	<b>0.092</b>	<b>0.042</b>	<b>0.038</b>	<b>0.029</b>	<b>0.029</b>	<b>0.015</b>	<b>0.028</b>	<b>0.038</b>	<b>0.030</b>	<b>0.022</b>	<b>0.014</b>
Flow Velocity (ft/sec.)	<b>6.640</b>	<b>6.357</b>	<b>6.608</b>	<b>6.619</b>	<b>7.552</b>	<b>5.767</b>	<b>7.745</b>	<b>9.713</b>	<b>9.315</b>	<b>9.197</b>	<b>11.149</b>

Flow Time (hr.)	<b>0.0481</b>	<b>0.0478</b>	<b>0.0222</b>	<b>0.0233</b>	<b>0.0340</b>	<b>0.0197</b>	<b>0.0548</b>	<b>0.0246</b>	<b>0.0495</b>	<b>0.0297</b>	<b>0.0144</b>	<b>0.3680</b>
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PIPE FLOW (Assuming full flow)

Flow Segment Name				
Pipe Diameter (ft)				
Manning's Coefficient				
Pipe Slope (ft/ft)				
Pipe Length (ft)				
Flow Velocity (ft/sec.)				

Flow Time (hr.)					<b>0.000</b>
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TIME OF CONCENTRATION (hr.)/(min)

Total time	<b>0.619 hr</b>
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## TR-20 Run Summary - Existing Conditions Models

TR20 was run with various combinations of subareas, rainfall data, and curve numbers. The following summarizes the TR20 runs provided in the appendix for the north watershed model (Hudson Branch) and for the south watershed model (Tiber and New Cut Branches).

### 1 Large Subarea

TR model	Description	Rainfall	Event (s)
EXect2	Existing Condition, North Watershed	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
TOTALDA2	Existing Condition, South Watershed	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
Exnat2	all woods updated CN	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
Exwood2	all woods current Tc	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr

### Large Subareas (Level 2)

TR model	Description	Rainfall	Event (s)
ECSA2	Existing condition, North Watershed	NOAA depth; NOAA_C dist	5, 10, 25, 50, 100 yr
Tibrsub2	Existing condition, South Watershed	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
ECSA2WD	Woods condition, North Watershed	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
Tibr2wd	Woods condition, South Watershed	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
ECSA2UL	Ultimate (zoning) land use, North Watershed	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
TIBR2UL	Ultimate (zoning) land use, North Watershed	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr

### Sub-SubAreas (Level 3) (35 North model, 24 South Model)

TR model	Description	Rainfall	Event (s)
XTRA11	Existing condition, North Watershed	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
SUBDAS3	Existing condition, South Watershed	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
XTRA1	Existing condition, North Watershed, w/mgmt	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
SUBDAS5	Existing condition, South Watershed, w/mgmt	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
XTRA1WD	Woods condition, North Watershed, w/mgmt	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
SUBDAS5WD	Woods condition, South Watershed, w/mgmt	NOAA depth; NOAA_C dist	2, 5, 10, 25, 50, 100 yr
JULOBS	Existing condition, North Watershed, w/mgmt	Dimensionless Distribution - ELYM2	7/30/2016
SUBDAS	Existing condition, South Watershed, w/mgmt	Dimensionless Distribution - ELYM2	7/30/2016

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\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
 HYDROLOGY\*\*\*\*\*

JOB	TR-20	NOPLOTS				
TITLE	Ellicott City Flood					
TITLE	2, 10,50, 100 yr (24-hr); NOAA Std. Dis.					
5 RAINFL	9	.1				
8	0.0000	0.0013	0.0023	0.0034	0.0044	
8	0.0055	0.0065	0.0076	0.0087	0.0098	
8	0.0109	0.0121	0.0132	0.0143	0.0155	
8	0.0167	0.0178	0.0190	0.0202	0.0214	
8	0.0226	0.0238	0.0251	0.0263	0.0276	
8	0.0288	0.0301	0.0314	0.0327	0.0340	
8	0.0353	0.0366	0.0379	0.0393	0.0406	
8	0.0420	0.0434	0.0447	0.0461	0.0475	
8	0.0489	0.0504	0.0518	0.0532	0.0547	
8	0.0562	0.0576	0.0591	0.0606	0.0621	
8	0.0636	0.0651	0.0667	0.0682	0.0697	
8	0.0713	0.0729	0.0745	0.0760	0.0776	
8	0.0793	0.0809	0.0826	0.0843	0.0861	
8	0.0879	0.0898	0.0916	0.0936	0.0955	
8	0.0975	0.0996	0.1017	0.1038	0.1060	
8	0.1082	0.1104	0.1127	0.1150	0.1174	
8	0.1198	0.1223	0.1247	0.1273	0.1298	
8	0.1324	0.1351	0.1378	0.1405	0.1432	
8	0.1461	0.1490	0.1521	0.1554	0.1588	
8	0.1623	0.1660	0.1699	0.1739	0.1780	
8	0.1823	0.1868	0.1914	0.1961	0.2010	
8	0.2061	0.2117	0.2179	0.2247	0.2321	
8	0.2400	0.2490	0.2591	0.2702	0.2825	
8	0.2955	0.3157	0.3370	0.3662	0.4067	
8	0.4766	0.5933	0.6338	0.6630	0.6843	
8	0.7045	0.7176	0.7298	0.7409	0.7510	
8	0.7600	0.7679	0.7753	0.7821	0.7883	
8	0.7939	0.7990	0.8039	0.8086	0.8132	
8	0.8177	0.8220	0.8261	0.8301	0.8340	
8	0.8377	0.8412	0.8446	0.8479	0.8510	
8	0.8540	0.8568	0.8595	0.8622	0.8649	
8	0.8676	0.8702	0.8727	0.8753	0.8778	
8	0.8802	0.8826	0.8850	0.8873	0.8896	
8	0.8918	0.8940	0.8962	0.8983	0.9004	
8	0.9025	0.9045	0.9064	0.9084	0.9103	
8	0.9121	0.9139	0.9157	0.9174	0.9191	
8	0.9208	0.9224	0.9240	0.9256	0.9271	
8	0.9287	0.9303	0.9318	0.9334	0.9349	
8	0.9364	0.9379	0.9394	0.9409	0.9424	
8	0.9439	0.9453	0.9468	0.9482	0.9496	
8	0.9511	0.9525	0.9539	0.9553	0.9566	
8	0.9580	0.9594	0.9607	0.9621	0.9634	
8	0.9647	0.9660	0.9673	0.9686	0.9699	
8	0.9712	0.9724	0.9737	0.9749	0.9762	
8	0.9774	0.9786	0.9798	0.9810	0.9822	
8	0.9834	0.9845	0.9857	0.9868	0.9879	

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

```

8      0.9891      0.9902      0.9913      0.9924      0.9935
8      0.9945      0.9956      0.9967      0.9977      0.9987
8      1.0000      1.0000      1.0000      1.0000      1.0000
9  ENDTBL
6  RUNOFF 1   3       1       1.5577      79.103      1.136       1
  ENDATA
7  INCREM 6
7  COMPUT 7   3       3       0.0         3.19        1.09 2   1   2
  ENDCMP 1
7  COMPUT 7   3       3       0.0         4.10        1.09 2   1   5
  ENDCMP 1
7  COMPUT 7   3       3       0.0         4.91        1.09 2   1  10
  ENDCMP 1
7  COMPUT 7   3       3       0.0         6.14        1.09 2   1  25
  ENDCMP 1
7  COMPUT 7   3       3       0.0         7.23        1.09 2   1  50
  ENDCMP 1
7  COMPUT 7   3       3       0.0         8.47        1.09 2   1  99
  ENDCMP 1
  ENDJOB 2

```

\*\*\*\*\*END OF 80-80

LIST\*\*\*\*\*

1

TR20 ----- SCS

```

-
                                Ellicott City Flood
                                VERSION
06/05/**          2, 10,50, 100 yr (24-hr); NOAA Std. Dis.
2.04TEST
15:47:18          PASS  1  JOB NO.  1          PAGE
1

```

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .100 HOURS

```

EXECUTIVE CONTROL COMPUT FROM XSECTION 3 TO XSECTION 3
  STARTING TIME = .00 RAIN DEPTH = 3.19 RAIN DURATION = 1.00
  ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
  ALTERNATE NO. = 1 STORM NO. = 2 RAIN TABLE NO. = 9

```

```

OPERATION RUNOFF XSECTION 3

  PEAK TIME(HRS)          PEAK DISCHARGE(CFS)          PEAK
  ELEVATION(FEET)
    12.81                    577.7                      (RUNOFF)

  RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
    1.33 WATERSHED INCHES; 1341 CFS-HRS; 110.8 ACRE-
    FEET.

```

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

```

EXECUTIVE CONTROL COMPUT FROM XSECTION 3 TO XSECTION 3
  STARTING TIME = .00 RAIN DEPTH = 4.10 RAIN DURATION = 1.00
  ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
  ALTERNATE NO. = 1 STORM NO. = 5 RAIN TABLE NO. = 9

```

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 901.9 (RUNOFF)  
 12.79

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.05 WATERSHED INCHES; 2063 CFS-HRS; 170.5 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 3 TO XSECTION 3

STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =10 RAIN TABLE NO. = 9

1 TR20 ----- SCS  
 -

Ellicott City Flood  
 VERSION

06/05/\*\* 2, 10,50, 100 yr (24-hr); NOAA Std. Dis.  
 2.04TEST  
 15:47:18 PASS 3 JOB NO. 1 PAGE  
 2

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 1208.6 (RUNOFF)  
 12.77

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.73 WATERSHED INCHES; 2746 CFS-HRS; 226.9 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 3 TO XSECTION 3

STARTING TIME = .00 RAIN DEPTH = 6.14 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =25 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 1681.9 (RUNOFF)  
 12.77

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 3832 CFS-HRS; 316.7 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT FROM XSECTION 3 TO XSECTION 3  
 STARTING TIME = .00 RAIN DEPTH = 7.23 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =50 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.76	2121.4	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.81 WATERSHED INCHES; 4832 CFS-HRS; 399.4 ACRE-  
 FEET.

1  
 TR20 ----- SCS  
 -  
 Ellicott City Flood  
 VERSION  
 06/05/\*\* 2, 10,50, 100 yr (24-hr); NOAA Std. Dis.  
 2.04TEST  
 15:47:18 PASS 6 JOB NO. 1 PAGE  
 3

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

EXECUTIVE CONTROL COMPUT FROM XSECTION 3 TO XSECTION 3  
 STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.75	2618.8	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.95 WATERSHED INCHES; 5986 CFS-HRS; 494.7 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6  
 1  
 TR20 ----- SCS  
 -  
 Ellicott City Flood  
 VERSION  
 06/05/\*\* 2, 10,50, 100 yr (24-hr); NOAA Std. Dis.  
 2.04TEST  
 15:47:18 PASS 7 JOB NO. 1 PAGE  
 4

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = exect2.dat , GIVEN DATA FILE  
OUTPUT = exect2.OUT , DATED  
06/05/\*\*,15:47:18

FILES GENERATED - DATED 06/05/\*\*,15:47:18

NONE!

TOTAL NUMBER OF WARNINGS = 0, MESSAGES = 0

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
 HYDROLOGY\*\*\*\*\*

JOB	TR-20	NOPLOTS				
TITLE	Tiber and NewCut Combined Drainage Area					
TITLE	2,5,10,50,100-year Std NOAA_C Storm Events; No MGMT					
5 RAINFL	1	.1				
8	0.0000	0.0013	0.0023	0.0034	0.0044	
8	0.0055	0.0065	0.0076	0.0087	0.0098	
8	0.0109	0.0121	0.0132	0.0143	0.0155	
8	0.0167	0.0178	0.0190	0.0202	0.0214	
8	0.0226	0.0238	0.0251	0.0263	0.0276	
8	0.0288	0.0301	0.0314	0.0327	0.0340	
8	0.0353	0.0366	0.0379	0.0393	0.0406	
8	0.0420	0.0434	0.0447	0.0461	0.0475	
8	0.0489	0.0504	0.0518	0.0532	0.0547	
8	0.0562	0.0576	0.0591	0.0606	0.0621	
8	0.0636	0.0651	0.0667	0.0682	0.0697	
8	0.0713	0.0729	0.0745	0.0760	0.0776	
8	0.0793	0.0809	0.0826	0.0843	0.0861	
8	0.0879	0.0898	0.0916	0.0936	0.0955	
8	0.0975	0.0996	0.1017	0.1038	0.1060	
8	0.1082	0.1104	0.1127	0.1150	0.1174	
8	0.1198	0.1223	0.1247	0.1273	0.1298	
8	0.1324	0.1351	0.1378	0.1405	0.1432	
8	0.1461	0.1490	0.1521	0.1554	0.1588	
8	0.1623	0.1660	0.1699	0.1739	0.1780	
8	0.1823	0.1868	0.1914	0.1961	0.2010	
8	0.2061	0.2117	0.2179	0.2247	0.2321	
8	0.2400	0.2490	0.2591	0.2702	0.2825	
8	0.2955	0.3157	0.3370	0.3662	0.4067	
8	0.4766	0.5933	0.6338	0.6630	0.6843	
8	0.7045	0.7176	0.7298	0.7409	0.7510	
8	0.7600	0.7679	0.7753	0.7821	0.7883	
8	0.7939	0.7990	0.8039	0.8086	0.8132	
8	0.8177	0.8220	0.8261	0.8301	0.8340	
8	0.8377	0.8412	0.8446	0.8479	0.8510	
8	0.8540	0.8568	0.8595	0.8622	0.8649	
8	0.8676	0.8702	0.8727	0.8753	0.8778	
8	0.8802	0.8826	0.8850	0.8873	0.8896	
8	0.8918	0.8940	0.8962	0.8983	0.9004	
8	0.9025	0.9045	0.9064	0.9084	0.9103	
8	0.9121	0.9139	0.9157	0.9174	0.9191	
8	0.9208	0.9224	0.9240	0.9256	0.9271	
8	0.9287	0.9303	0.9318	0.9334	0.9349	
8	0.9364	0.9379	0.9394	0.9409	0.9424	
8	0.9439	0.9453	0.9468	0.9482	0.9496	
8	0.9511	0.9525	0.9539	0.9553	0.9566	
8	0.9580	0.9594	0.9607	0.9621	0.9634	
8	0.9647	0.9660	0.9673	0.9686	0.9699	
8	0.9712	0.9724	0.9737	0.9749	0.9762	
8	0.9774	0.9786	0.9798	0.9810	0.9822	
8	0.9834	0.9845	0.9857	0.9868	0.9879	

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*



8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	ENDTBL				
6	RUNOFF 1 002	1 2.1449	76.85	0.619	1 1
ENDATA					
7	INCREM 6	.10			
7	COMPUT 7 002 002	0.0	3.19	1.01 2 1	2
ENDCMP 1					
7	COMPUT 7 002 002	0.0	4.10	1.01 2 1	05
ENDCMP 1					
7	COMPUT 7 002 002	0.0	4.91	1.01 2 1	10
ENDCMP 1					
7	COMPUT 7 002 002	0.0	7.23	1.01 2 1	50
ENDCMP 1					
7	COMPUT 7 002 002	0.0	8.47	1.01 2 1	99
ENDCMP 1					
ENDJOB 2					

\*\*\*\*\*END OF 80-80

LIST\*\*\*\*\*

1

TR20 ----- SCS

-

Tiber and NewCut Combined Drainage Area  
VERSION

02/03/\*\* 2,5,10,50,100-year Std NOAA\_C Storm Events; No MGMT

2.04TEST

17:31:06

PASS 1 JOB NO. 1

PAGE

1

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .100 HOURS

EXECUTIVE CONTROL COMPUT	FROM XSECTION 2 TO XSECTION 2
STARTING TIME = .00	RAIN DEPTH = 3.19 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 1	STORM NO. = 2 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.47	975.8	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.19 WATERSHED INCHES; 1654 CFS-HRS; 136.7 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT	FROM XSECTION 2 TO XSECTION 2
STARTING TIME = .00	RAIN DEPTH = 4.10 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 1	STORM NO. = 5 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	1569.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.88 WATERSHED INCHES; 2600 CFS-HRS; 214.9 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 2 TO XSECTION 2  
 STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =10 RAIN TABLE NO. = 1

1

TR20 ----- SCS

Tiber and NewCut Combined Drainage Area  
 VERSION  
 02/03/\*\* 2,5,10,50,100-year Std NOAA\_C Storm Events; No MGMT  
 2.04TEST  
 17:31:06 PASS 3 JOB NO. 1 PAGE  
 2

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	2140.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.53 WATERSHED INCHES; 3507 CFS-HRS; 289.8 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 2 TO XSECTION 2  
 STARTING TIME = .00 RAIN DEPTH = 7.23 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =50 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	3846.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.55 WATERSHED INCHES; 6304 CFS-HRS; 521.0 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT FROM XSECTION 2 TO XSECTION 2  
 STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00

ANT. RUNOFF COND. = 2      MAIN TIME INCREMENT = .100 HOURS  
ALTERNATE NO. = 1      STORM NO. =99      RAIN TABLE NO. = 1

OPERATION RUNOFF    XSECTION    2

PEAK TIME (HRS)                      PEAK DISCHARGE (CFS)                      PEAK  
ELEVATION (FEET)                      4774.8                      (RUNOFF)  
12.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.68 WATERSHED INCHES;      7869 CFS-HRS;      650.3 ACRE-  
FEET.

1  
TR20 ----- SCS  
-

   Tiber and NewCut Combined Drainage Area  
   VERSION  
02/03/\*\*      2,5,10,50,100-year Std NOAA\_C Storm Events; No MGMT  
2.04TEST  
17:31:06                      PASS    6    JOB NO.    1                      PAGE  
3

EXECUTIVE CONTROL ENDCMP      COMPUTATIONS COMPLETED FOR PASS    5  
1  
TR20 ----- SCS  
-

   Tiber and NewCut Combined Drainage Area  
   VERSION  
02/03/\*\*      2,5,10,50,100-year Std NOAA\_C Storm Events; No MGMT  
2.04TEST  
17:31:06                      SUMMARY, JOB NO.    1                      PAGE  
4

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH    T-TRUNCATED HYDROGRAPH    R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 1,    ARC 2							
MAIN TIME INCREMENT .100 HOURS							
ALTERNATE    1    STORM    2							
XSECTION	2	RUNOFF	2.14	1.19	---	12.47	976    456.1
RAINFALL OF 4.10 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE    1    STORM    5							
XSECTION	2	RUNOFF	2.14	1.88	---	12.45	1570    733.6

RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 10

XSECTION 2 RUNOFF 2.14 2.53 --- 12.44 2140 1000.0

RAINFALL OF 7.23 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 50

XSECTION 2 RUNOFF 2.14 4.55 --- 12.43 3846 1797.2

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 99

XSECTION 2 RUNOFF 2.14 5.68 --- 12.43 4775 2231.3

1

TR20 ----- SCS

-

Tiber and NewCut Combined Drainage Area  
VERSION

02/03/\*\* 2,5,10,50,100-year Std NOAA\_C Storm Events; No MGMT

2.04TEST

17:31:06

SUMMARY, JOB NO. 1

PAGE

5

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	50	99

XSECTION 2 2.14

ALTERNATE 1 976 1570 2140 3846  
4775

1

TR20 ----- SCS

-

Tiber and NewCut Combined Drainage Area  
VERSION

02/03/\*\* 2,5,10,50,100-year Std NOAA\_C Storm Events; No MGMT

2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = totalda2.dat , GIVEN DATA FILE  
OUTPUT = totalda2.OUT , DATED  
02/03/\*\*,17:31:06

FILES GENERATED - DATED 02/03/\*\*,17:31:06

NONE!

TOTAL NUMBER OF WARNINGS = 0, MESSAGES = 0

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
HYDROLOGY\*\*\*\*\*

JOB TR-20		NOPLOTS				
TITLE	Ellicott City Flood; NOAA Std. Dis.					
TITLE	2, 10,50, 100 yr (24-hr)- All Woods Condition, Natural Tc					
5 RAINFL 9	.1					
8	0.0000	0.0013	0.0023	0.0034	0.0044	
8	0.0055	0.0065	0.0076	0.0087	0.0098	
8	0.0109	0.0121	0.0132	0.0143	0.0155	
8	0.0167	0.0178	0.0190	0.0202	0.0214	
8	0.0226	0.0238	0.0251	0.0263	0.0276	
8	0.0288	0.0301	0.0314	0.0327	0.0340	
8	0.0353	0.0366	0.0379	0.0393	0.0406	
8	0.0420	0.0434	0.0447	0.0461	0.0475	
8	0.0489	0.0504	0.0518	0.0532	0.0547	
8	0.0562	0.0576	0.0591	0.0606	0.0621	
8	0.0636	0.0651	0.0667	0.0682	0.0697	
8	0.0713	0.0729	0.0745	0.0760	0.0776	
8	0.0793	0.0809	0.0826	0.0843	0.0861	
8	0.0879	0.0898	0.0916	0.0936	0.0955	
8	0.0975	0.0996	0.1017	0.1038	0.1060	
8	0.1082	0.1104	0.1127	0.1150	0.1174	
8	0.1198	0.1223	0.1247	0.1273	0.1298	
8	0.1324	0.1351	0.1378	0.1405	0.1432	
8	0.1461	0.1490	0.1521	0.1554	0.1588	
8	0.1623	0.1660	0.1699	0.1739	0.1780	
8	0.1823	0.1868	0.1914	0.1961	0.2010	
8	0.2061	0.2117	0.2179	0.2247	0.2321	
8	0.2400	0.2490	0.2591	0.2702	0.2825	
8	0.2955	0.3157	0.3370	0.3662	0.4067	
8	0.4766	0.5933	0.6338	0.6630	0.6843	
8	0.7045	0.7176	0.7298	0.7409	0.7510	
8	0.7600	0.7679	0.7753	0.7821	0.7883	
8	0.7939	0.7990	0.8039	0.8086	0.8132	
8	0.8177	0.8220	0.8261	0.8301	0.8340	
8	0.8377	0.8412	0.8446	0.8479	0.8510	
8	0.8540	0.8568	0.8595	0.8622	0.8649	
8	0.8676	0.8702	0.8727	0.8753	0.8778	
8	0.8802	0.8826	0.8850	0.8873	0.8896	
8	0.8918	0.8940	0.8962	0.8983	0.9004	
8	0.9025	0.9045	0.9064	0.9084	0.9103	
8	0.9121	0.9139	0.9157	0.9174	0.9191	
8	0.9208	0.9224	0.9240	0.9256	0.9271	
8	0.9287	0.9303	0.9318	0.9334	0.9349	
8	0.9364	0.9379	0.9394	0.9409	0.9424	
8	0.9439	0.9453	0.9468	0.9482	0.9496	
8	0.9511	0.9525	0.9539	0.9553	0.9566	
8	0.9580	0.9594	0.9607	0.9621	0.9634	
8	0.9647	0.9660	0.9673	0.9686	0.9699	
8	0.9712	0.9724	0.9737	0.9749	0.9762	
8	0.9774	0.9786	0.9798	0.9810	0.9822	
8	0.9834	0.9845	0.9857	0.9868	0.9879	

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8	0.9891	0.9902	0.9913	0.9924	0.9935					
8	0.9945	0.9956	0.9967	0.9977	0.9987					
8	1.0000	1.0000	1.0000	1.0000	1.0000					
9	ENDTBL									
6	RUNOFF	1	3	1	1.5577	62.68	1.725	1		
	ENDATA									
7	INCREM	6						0.1		
7	COMPUT	7	3	3	0.0	3.19	1.09	2	1	2
	ENDCMP 1									
7	COMPUT	7	3	3	0.0	4.91	1.09	2	1	10
	ENDCMP 1									
7	COMPUT	7	3	3	0.0	7.23	1.09	2	1	50
	ENDCMP 1									
7	COMPUT	7	3	3	0.0	8.47	1.09	2	1	99
	ENDCMP 1									
	ENDJOB 2									

\*\*\*\*\*END OF 80-80

LIST\*\*\*\*\*

1

TR20 ----- SCS

-

Ellicott City Flood; NOAA Std. Dis.  
VERSION

03/31/\*\* 2, 10,50, 100 yr (24-hr)- All Woods Condition, Natural Tc

2.04TEST

13:18:36

PASS 1 JOB NO. 1

PAGE

1

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .100 HOURS

EXECUTIVE CONTROL COMPUT	FROM XSECTION	3	TO XSECTION	3
STARTING TIME = .00	RAIN DEPTH =	3.19	RAIN DURATION =	1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT =	.100 HOURS		
ALTERNATE NO. = 1	STORM NO. =	2	RAIN TABLE NO. =	9

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT	FROM XSECTION	3	TO XSECTION	3
STARTING TIME = .00	RAIN DEPTH =	4.91	RAIN DURATION =	1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT =	.100 HOURS		
ALTERNATE NO. = 1	STORM NO. =	10	RAIN TABLE NO. =	9

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT	FROM XSECTION	3	TO XSECTION	3
STARTING TIME = .00	RAIN DEPTH =	7.23	RAIN DURATION =	1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT =	.100 HOURS		
ALTERNATE NO. = 1	STORM NO. =	50	RAIN TABLE NO. =	9

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT	FROM XSECTION	3	TO XSECTION	3
STARTING TIME = .00	RAIN DEPTH =	8.47	RAIN DURATION =	1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT =	.100 HOURS		

ALTERNATE NO. = 1

STORM NO. =99

RAIN TABLE NO. = 9

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

1

TR20 ----- SCS

-

Ellicott City Flood; NOAA Std. Dis.  
VERSION

03/31/\*\* 2, 10,50, 100 yr (24-hr)- All Woods Condition, Natural Tc

2.04TEST

13:18:36

2

PASS 5 JOB NO. 1

PAGE

1

TR20 ----- SCS

-

Ellicott City Flood; NOAA Std. Dis.  
VERSION

03/31/\*\* 2, 10,50, 100 yr (24-hr)- All Woods Condition, Natural Tc

2.04TEST

13:18:36

3

SUMMARY, JOB NO. 1

PAGE

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
				AMOUNT	ELEVATION	TIME	RATE
ID	OPERATION	AREA (SQ MI)	(IN)	(FT)	(HR)	(CFS)	(CSM)
RAINFALL OF		3.19 inches AND	24.00 hr	DURATION, BEGINS AT		.0 hrs.	
RAINTABLE NUMBER		9, ARC 2					
MAIN TIME INCREMENT		.100 HOURS					
ALTERNATE		1	STORM	2			
XSECTION	3	RUNOFF	1.56	.50	---	13.45	130 83.3
RAINFALL OF		4.91 inches AND	24.00 hr	DURATION, BEGINS AT		.0 hrs.	
ALTERNATE		1	STORM	10			
XSECTION	3	RUNOFF	1.56	1.43	---	13.28	450 288.5
RAINFALL OF		7.23 inches AND	24.00 hr	DURATION, BEGINS AT		.0 hrs.	
ALTERNATE		1	STORM	50			
XSECTION	3	RUNOFF	1.56	3.04	---	13.21	1022 655.1
RAINFALL OF		8.47 inches AND	24.00 hr	DURATION, BEGINS AT		.0 hrs.	
ALTERNATE		1	STORM	99			
XSECTION	3	RUNOFF	1.56	4.00	---	13.19	1363 873.7

1



TR20 ----- SCS  
 -  
 Ellicott City Flood; NOAA Std. Dis.  
 VERSION  
 03/31/\*\* 2, 10,50, 100 yr (24-hr)- All Woods Condition, Natural Tc  
 2.04TEST  
 13:18:36 SUMMARY, JOB NO. 1 PAGE  
 4

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		2	10	50	99
XSECTION 3	1.56				
-----					
ALTERNATE 1		130	450	1022	1363

1

TR20 ----- SCS  
 -

Ellicott City Flood; NOAA Std. Dis.  
 VERSION  
 03/31/\*\* 2, 10,50, 100 yr (24-hr)- All Woods Condition, Natural Tc  
 2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = exnat2.dat , GIVEN DATA FILE  
 OUTPUT = exnat2.OUT , DATED  
 03/31/\*\*,13:18:36

FILES GENERATED - DATED 03/31/\*\*,13:18:36

NONE!

TOTAL NUMBER OF WARNINGS = 0, MESSAGES = 0

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
HYDROLOGY\*\*\*\*\*

JOB	TR-20	NOPLOTS				
TITLE	Ellicott City Flood					
TITLE	2, 10,50, 100 yr (24-hr)- All Woods Condition; NOAA Std.					
5 RAINFL	9	.1				
8	0.0000	0.0013	0.0023	0.0034	0.0044	
8	0.0055	0.0065	0.0076	0.0087	0.0098	
8	0.0109	0.0121	0.0132	0.0143	0.0155	
8	0.0167	0.0178	0.0190	0.0202	0.0214	
8	0.0226	0.0238	0.0251	0.0263	0.0276	
8	0.0288	0.0301	0.0314	0.0327	0.0340	
8	0.0353	0.0366	0.0379	0.0393	0.0406	
8	0.0420	0.0434	0.0447	0.0461	0.0475	
8	0.0489	0.0504	0.0518	0.0532	0.0547	
8	0.0562	0.0576	0.0591	0.0606	0.0621	
8	0.0636	0.0651	0.0667	0.0682	0.0697	
8	0.0713	0.0729	0.0745	0.0760	0.0776	
8	0.0793	0.0809	0.0826	0.0843	0.0861	
8	0.0879	0.0898	0.0916	0.0936	0.0955	
8	0.0975	0.0996	0.1017	0.1038	0.1060	
8	0.1082	0.1104	0.1127	0.1150	0.1174	
8	0.1198	0.1223	0.1247	0.1273	0.1298	
8	0.1324	0.1351	0.1378	0.1405	0.1432	
8	0.1461	0.1490	0.1521	0.1554	0.1588	
8	0.1623	0.1660	0.1699	0.1739	0.1780	
8	0.1823	0.1868	0.1914	0.1961	0.2010	
8	0.2061	0.2117	0.2179	0.2247	0.2321	
8	0.2400	0.2490	0.2591	0.2702	0.2825	
8	0.2955	0.3157	0.3370	0.3662	0.4067	
8	0.4766	0.5933	0.6338	0.6630	0.6843	
8	0.7045	0.7176	0.7298	0.7409	0.7510	
8	0.7600	0.7679	0.7753	0.7821	0.7883	
8	0.7939	0.7990	0.8039	0.8086	0.8132	
8	0.8177	0.8220	0.8261	0.8301	0.8340	
8	0.8377	0.8412	0.8446	0.8479	0.8510	
8	0.8540	0.8568	0.8595	0.8622	0.8649	
8	0.8676	0.8702	0.8727	0.8753	0.8778	
8	0.8802	0.8826	0.8850	0.8873	0.8896	
8	0.8918	0.8940	0.8962	0.8983	0.9004	
8	0.9025	0.9045	0.9064	0.9084	0.9103	
8	0.9121	0.9139	0.9157	0.9174	0.9191	
8	0.9208	0.9224	0.9240	0.9256	0.9271	
8	0.9287	0.9303	0.9318	0.9334	0.9349	
8	0.9364	0.9379	0.9394	0.9409	0.9424	
8	0.9439	0.9453	0.9468	0.9482	0.9496	
8	0.9511	0.9525	0.9539	0.9553	0.9566	
8	0.9580	0.9594	0.9607	0.9621	0.9634	
8	0.9647	0.9660	0.9673	0.9686	0.9699	
8	0.9712	0.9724	0.9737	0.9749	0.9762	
8	0.9774	0.9786	0.9798	0.9810	0.9822	
8	0.9834	0.9845	0.9857	0.9868	0.9879	

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8	0.9891	0.9902	0.9913	0.9924	0.9935					
8	0.9945	0.9956	0.9967	0.9977	0.9987					
8	1.0000	1.0000	1.0000	1.0000	1.0000					
9	ENDTBL									
6	RUNOFF	1	3	1	1.5577	62.68	1.136	1		
	ENDATA									
7	INCREM	6						0.1		
7	COMPUT	7	3	3	0.0	3.19	1.09	2	1	2
	ENDCMP 1									
7	COMPUT	7	3	3	0.0	4.91	1.09	2	1	10
	ENDCMP 1									
7	COMPUT	7	3	3	0.0	7.23	1.09	2	1	50
	ENDCMP 1									
7	COMPUT	7	3	3	0.0	8.47	1.09	2	1	99
	ENDCMP 1									
	ENDJOB 2									

\*\*\*\*\*END OF 80-80

LIST\*\*\*\*\*

1

TR20 ----- SCS

-

Ellicott City Flood  
VERSION

03/31/\*\* 2, 10,50, 100 yr (24-hr)- All Woods Condition; NOAA Std.

2.04TEST

13:18:50

PASS 1 JOB NO. 1

PAGE

1

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .100 HOURS

EXECUTIVE CONTROL COMPUT	FROM XSECTION	3	TO XSECTION	3
STARTING TIME = .00	RAIN DEPTH =	3.19	RAIN DURATION =	1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT =	.100 HOURS		
ALTERNATE NO. = 1	STORM NO. =	2	RAIN TABLE NO. =	9

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT	FROM XSECTION	3	TO XSECTION	3
STARTING TIME = .00	RAIN DEPTH =	4.91	RAIN DURATION =	1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT =	.100 HOURS		
ALTERNATE NO. = 1	STORM NO. =	10	RAIN TABLE NO. =	9

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT	FROM XSECTION	3	TO XSECTION	3
STARTING TIME = .00	RAIN DEPTH =	7.23	RAIN DURATION =	1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT =	.100 HOURS		
ALTERNATE NO. = 1	STORM NO. =	50	RAIN TABLE NO. =	9

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT	FROM XSECTION	3	TO XSECTION	3
STARTING TIME = .00	RAIN DEPTH =	8.47	RAIN DURATION =	1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT =	.100 HOURS		

ALTERNATE NO. = 1

STORM NO. =99

RAIN TABLE NO. = 9

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

1  
 TR20 ----- SCS  
 -  
 Ellicott City Flood  
 VERSION  
 03/31/\*\* 2, 10,50, 100 yr (24-hr)- All Woods Condition; NOAA Std.  
 2.04TEST  
 13:18:50 PASS 5 JOB NO. 1 PAGE  
 2

1  
 TR20 ----- SCS  
 -  
 Ellicott City Flood  
 VERSION  
 03/31/\*\* 2, 10,50, 100 yr (24-hr)- All Woods Condition; NOAA Std.  
 2.04TEST  
 13:18:50 SUMMARY, JOB NO. 1 PAGE  
 3

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
				AMOUNT	ELEVATION	TIME	RATE
ID	OPERATION	AREA (SQ MI)	(IN)	(FT)	(HR)	(CFS)	(CSM)
RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs. RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs. MAIN TIME INCREMENT .100 HOURS							
ALTERNATE 1 STORM 2							
XSECTION 3	RUNOFF	1.56	.50	---	12.98	163	104.5
RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 1 STORM 10							
XSECTION 3	RUNOFF	1.56	1.43	---	12.86	576	369.2
RAINFALL OF 7.23 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 1 STORM 50							
XSECTION 3	RUNOFF	1.56	3.04	---	12.81	1310	839.7
RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 1 STORM 99							
XSECTION 3	RUNOFF	1.56	4.00	---	12.80	1746	1119.2

1

TR20 ----- SCS

Ellicott City Flood  
 VERSION  
 03/31/\*\* 2, 10,50, 100 yr (24-hr)- All Woods Condition; NOAA Std.  
 2.04TEST  
 13:18:50 SUMMARY, JOB NO. 1 PAGE  
 4

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		2	10	50	99
XSECTION 3	1.56				
-----					
ALTERNATE 1		163	576	1310	1746

1  
TR20 ----- SCS

Ellicott City Flood  
 VERSION  
 03/31/\*\* 2, 10,50, 100 yr (24-hr)- All Woods Condition; NOAA Std.  
 2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = exwood2.dat , GIVEN DATA FILE  
 OUTPUT = exwood2.OUT , DATED  
 03/31/\*\*,13:18:50

FILES GENERATED - DATED 03/31/\*\*,13:18:50

NONE!

TOTAL NUMBER OF WARNINGS = 0, MESSAGES = 0

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
HYDROLOGY\*\*\*\*\*

JOB TR-20		NOPLOTS		
TITLE Ellicott City Flood Study- Subareas, Existing Conditions				
TITLE 2,10,50,100 yr (24hr) - Updated CNs; Std NOAA Dist.				
2	XSECTN 011	1.0	344.00	
8		340.00	0.00	0.00
8		340.25	7.08	1.69
8		340.50	23.63	3.75
8		340.75	48.96	6.19
8		341.00	83.42	9.00
8		341.25	127.58	12.19
8		341.50	182.06	15.75
8		341.75	247.50	19.69
8		342.00	324.56	24.00
8		342.25	413.88	28.69
8		342.50	516.08	33.75
8		342.75	631.80	39.19
8		343.00	761.64	45.00
9	ENDTBL			
2	XSECTN 021	1.0	314.40	
8		313.22	0.00	0.00
8		313.51	1.10	0.89
8		313.81	3.51	1.84
8		314.10	16.22	5.61
8		314.40	34.66	9.74
8		314.68	48.28	24.71
8		314.96	79.66	42.09
8		315.24	126.64	61.87
8		315.52	189.07	84.06
8		315.80	267.27	108.64
8		316.08	361.75	135.63
8		316.36	473.14	165.02
8		316.64	602.11	196.81
8		316.92	749.37	231.00
8		317.20	878.70	277.25
8		317.48	1103.89	329.14
8		317.76	1358.10	382.70
8		318.04	1640.58	437.94
8		318.32	1950.87	494.86
8		318.60	2288.69	553.45
9	ENDTBL			
2	XSECTN 031	1.0	288.90	
8		287.68	0.00	0.00
8		287.99	1.15	0.94
8		288.29	3.69	1.95
8		288.60	17.06	5.98
8		288.90	36.44	10.37
8		289.19	63.07	39.25
8		289.47	121.85	69.50
8		289.76	206.05	101.12
8		290.05	313.23	134.09

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			290.33	442.07	168.42
8			290.62	591.78	204.12
8			290.91	761.87	241.18
8			291.19	952.02	279.60
8			291.48	1162.04	319.38
8			291.77	1391.84	360.52
8			292.05	1641.40	403.02
8			292.34	1910.74	446.89
8			292.63	2199.92	492.11
8			292.91	2509.04	538.70
8			293.20	2838.22	586.65
9	ENDTBL				
2	XSECTN	041	1.0	282.40	
8			281.10	0.00	0.00
8			281.42	1.24	1.09
8			281.75	3.96	2.26
8			282.07	18.30	6.92
8			282.40	39.09	12.00
8			282.88	67.33	37.27
8			283.36	131.17	65.87
8			283.84	225.10	97.78
8			284.32	348.01	133.01
8			284.80	499.91	171.56
8			285.28	681.29	213.43
8			285.76	892.92	258.61
8			286.24	1135.70	307.11
8			286.72	1410.63	358.94
8			287.20	1718.74	414.08
8			287.68	2061.13	472.54
8			288.16	2438.87	534.31
8			288.64	2853.08	599.41
8			289.12	3301.76	667.84
8			289.60	3785.91	739.78
9	ENDTBL				
2	XSECTN	051	1.0	248.40	
8			247.07	0.00	0.00
8			247.41	1.85	1.14
8			247.74	5.93	2.35
8			248.07	27.43	7.18
8			248.40	58.61	12.46
8			248.67	89.70	40.04
8			248.95	158.39	68.99
8			249.22	256.90	99.30
8			249.49	382.40	130.99
8			249.77	533.43	164.04
8			250.04	709.09	198.46
8			250.31	908.86	234.24
8			250.59	1132.40	271.40
8			250.86	1379.55	309.92
8			251.13	1650.25	349.81

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			251.41	1944.49	391.07
8			251.68	2262.35	433.69
8			251.95	2603.94	477.69
8			252.23	2969.40	523.05
8			252.50	3358.93	569.78
9	ENDTBL				
2	XSECTN	061	1.0	212.00	

8		210.50	0.00	0.00
8		210.75	4.72	2.23
8		211.00	15.68	4.92
8		211.25	32.36	8.06
8		211.50	54.93	11.67
8		211.75	83.70	15.73
8		212.00	119.05	20.25
8		212.25	163.87	25.14
8		212.50	215.35	30.31
8		212.75	273.55	35.77
8		213.00	338.57	41.50
8		214.00	669.42	67.25
8		215.00	806.07	99.00
8		216.00	1088.03	138.25
8		217.00	1451.30	187.50
8		218.00	1978.93	249.25
8		219.00	2262.06	340.00
8		220.00	3115.20	476.25
8		221.00	4892.67	639.25

9 ENDTBL

5 RAINFL 9

.1

8	0.0000	0.0013	0.0023	0.0034	0.0044
8	0.0055	0.0065	0.0076	0.0087	0.0098
8	0.0109	0.0121	0.0132	0.0143	0.0155
8	0.0167	0.0178	0.0190	0.0202	0.0214
8	0.0226	0.0238	0.0251	0.0263	0.0276
8	0.0288	0.0301	0.0314	0.0327	0.0340
8	0.0353	0.0366	0.0379	0.0393	0.0406
8	0.0420	0.0434	0.0447	0.0461	0.0475
8	0.0489	0.0504	0.0518	0.0532	0.0547
8	0.0562	0.0576	0.0591	0.0606	0.0621
8	0.0636	0.0651	0.0667	0.0682	0.0697
8	0.0713	0.0729	0.0745	0.0760	0.0776
8	0.0793	0.0809	0.0826	0.0843	0.0861
8	0.0879	0.0898	0.0916	0.0936	0.0955
8	0.0975	0.0996	0.1017	0.1038	0.1060
8	0.1082	0.1104	0.1127	0.1150	0.1174
8	0.1198	0.1223	0.1247	0.1273	0.1298
8	0.1324	0.1351	0.1378	0.1405	0.1432
8	0.1461	0.1490	0.1521	0.1554	0.1588
8	0.1623	0.1660	0.1699	0.1739	0.1780
8	0.1823	0.1868	0.1914	0.1961	0.2010
8	0.2061	0.2117	0.2179	0.2247	0.2321

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8	0.2400	0.2490	0.2591	0.2702	0.2825
8	0.2955	0.3157	0.3370	0.3662	0.4067
8	0.4766	0.5933	0.6338	0.6630	0.6843
8	0.7045	0.7176	0.7298	0.7409	0.7510
8	0.7600	0.7679	0.7753	0.7821	0.7883
8	0.7939	0.7990	0.8039	0.8086	0.8132
8	0.8177	0.8220	0.8261	0.8301	0.8340
8	0.8377	0.8412	0.8446	0.8479	0.8510
8	0.8540	0.8568	0.8595	0.8622	0.8649
8	0.8676	0.8702	0.8727	0.8753	0.8778
8	0.8802	0.8826	0.8850	0.8873	0.8896
8	0.8918	0.8940	0.8962	0.8983	0.9004
8	0.9025	0.9045	0.9064	0.9084	0.9103
8	0.9121	0.9139	0.9157	0.9174	0.9191



8	0.9208	0.9224	0.9240	0.9256	0.9271
8	0.9287	0.9303	0.9318	0.9334	0.9349
8	0.9364	0.9379	0.9394	0.9409	0.9424
8	0.9439	0.9453	0.9468	0.9482	0.9496
8	0.9511	0.9525	0.9539	0.9553	0.9566
8	0.9580	0.9594	0.9607	0.9621	0.9634
8	0.9647	0.9660	0.9673	0.9686	0.9699
8	0.9712	0.9724	0.9737	0.9749	0.9762
8	0.9774	0.9786	0.9798	0.9810	0.9822
8	0.9834	0.9845	0.9857	0.9868	0.9879
8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000

9	ENDTBL								
6	RUNOFF	1	01	1	0.1715	78.900	0.623	1	SA1
6	REACH	3	11	1 2	3007.5				
6	RUNOFF	1	02	1	0.2497	85.375	0.457	1	SA2
6	ADDHYD	4	12	1 2 3				1	
6	REACH	3	21	3 1	1442.6				
6	RUNOFF	1	03	2	0.3624	85.386	0.462	1	SA3
6	ADDHYD	4	23	1 2 3				1	
6	REACH	3	31	3 1	1147.3				
6	RUNOFF	1	04	2	0.1574	80.801	0.460	1	SA4
6	ADDHYD	4	34	1 2 3				1	
6	REACH	3	41	3 1	1744.9				
6	RUNOFF	1	05	2	0.0921	74.060	0.292	1	SA5
6	ADDHYD	4	45	1 2 3				1	
6	REACH	3	51	3 1	1483.4				
6	RUNOFF	1	06	2	0.2566	72.999	0.274	1	SA6
6	ADDHYD	4	56	1 2 3				1	
6	REACH	3	61	3 1	3192.4				
6	RUNOFF	1	07	2	0.2682	71.478	0.350	1	SA7
6	ADDHYD	4	67	1 2 3			1	1	
	OUTLET								
	ENDATA								
7	INCREM	6			.06				
7	COMPUT	7	01	67	0.0	3.19	1.09	2 1 2	

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

ENDCMP	1								
7	COMPUT	7	01	67	0.0	4.10	1.09	2 1 5	
ENDCMP	1								
7	COMPUT	7	01	67	0.0	4.91	1.09	2 1 10	
ENDCMP	1								
7	COMPUT	7	01	67	0.0	6.14	1.09	2 1 25	
ENDCMP	1								
7	COMPUT	7	01	67	0.0	7.23	1.09	2 1 50	
ENDCMP	1								
7	COMPUT	7	01	67	0.0	8.47	1.09	2 1 99	
ENDCMP	1								
ENDJOB	2								

\*\*\*\*\*END OF 80-80  
 LIST\*\*\*\*\*

1

TR20 ----- SCS  
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Ellicott City Flood Study- Subareas, Existing Conditions  
 VERSION

06/05/\*\* 2,10,50,100 yr (24hr) - Updated CNs; Std NOAA Dist.  
2.04TEST  
15:33:37 PASS 1 JOB NO. 1  
1

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .060 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 67  
STARTING TIME = .00 RAIN DEPTH = 3.19 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
ALTERNATE NO. = 1 STORM NO. = 2 RAIN TABLE NO. = 9

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.82 620.5 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.37 WATERSHED INCHES; 1373 CFS-HRS; 113.5 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 67  
STARTING TIME = .00 RAIN DEPTH = 4.10 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
ALTERNATE NO. = 1 STORM NO. = 5 RAIN TABLE NO. = 9

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.78 968.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.08 WATERSHED INCHES; 2089 CFS-HRS; 172.7 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 67  
STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
ALTERNATE NO. = 1 STORM NO. =10 RAIN TABLE NO. = 9

1 TR20 ----- SCS  
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Ellicott City Flood Study- Subareas, Existing Conditions  
VERSION

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2.04TEST  
15:33:37 PASS 3 JOB NO. 1  
2

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.75	1295.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.75 WATERSHED INCHES; 2768 CFS-HRS; 228.8 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 67  
 STARTING TIME = .00 RAIN DEPTH = 6.14 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =25 RAIN TABLE NO. = 9

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.72	1814.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.83 WATERSHED INCHES; 3847 CFS-HRS; 317.9 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 67  
 STARTING TIME = .00 RAIN DEPTH = 7.23 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =50 RAIN TABLE NO. = 9

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.70	2259.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.81 WATERSHED INCHES; 4837 CFS-HRS; 399.7 ACRE-  
 FEET.

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 TR20 ----- SCS  
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Ellicott City Flood Study- Subareas, Existing Conditions  
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 2.04TEST  
 15:33:37 PASS 6 JOB NO. 1 PAGE  
 3

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 67  
 STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 9

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.70 2763.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.96 WATERSHED INCHES; 5988 CFS-HRS; 494.8 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6

1 TR20 ----- SCS  
 -  
 Ellicott City Flood Study- Subareas, Existing Conditions  
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 2.04TEST  
 15:33:37 SUMMARY, JOB NO. 1 PAGE  
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
				AMOUNT	ELEVATION	TIME	RATE
ID	OPERATION	AREA (SQ MI)	(IN)	(FT)	(HR)	(CFS)	(CSM)

RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.  
 RAIN TABLE NUMBER 9, ARC 2  
 MAIN TIME INCREMENT .060 HOURS

ALTERNATE	1	STORM	2					
XSECTION	1	RUNOFF	.17	1.32	---	12.45	89	523.5
XSECTION	2	RUNOFF	.25	1.78	---	12.33	204	816.0
XSECTION	12	ADDHYD	.42	1.59	---	12.38	272	647.6
XSECTION	3	RUNOFF	.36	1.78	---	12.33	294	816.7
XSECTION	23	ADDHYD	.78	1.68	---	12.42	507	650.0
XSECTION	4	RUNOFF	.16	1.45	---	12.34	104	650.0
XSECTION	34	ADDHYD	.94	1.64	---	12.50	573	609.6
XSECTION	5	RUNOFF	.09	1.03	---	12.24	52	577.8
XSECTION	45	ADDHYD	1.03	1.58	---	12.64	561	544.7
XSECTION	6	RUNOFF	.26	.98	---	12.23	138	530.8
XSECTION	56	ADDHYD	1.29	1.46	---	12.75	586	454.3
XSECTION	7	RUNOFF	.27	.90	---	12.29	115	425.9

XSECTION 67 ADDHYD 1.56 1.37 --- 12.82 620 397.4  
 RAINFALL OF 4.10 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 5

XSECTION	1	RUNOFF	.17	2.04	---	12.45	139	817.6
XSECTION	2	RUNOFF	.25	2.58	---	12.32	298	1192.0
XSECTION	12	ADDHYD	.42	2.36	---	12.38	408	971.4
XSECTION	3	RUNOFF	.36	2.58	---	12.33	431	1197.2
XSECTION	23	ADDHYD	.78	2.46	---	12.41	760	974.4
XSECTION	4	RUNOFF	.16	2.19	---	12.33	158	987.5
XSECTION	34	ADDHYD	.94	2.42	---	12.48	871	926.6
XSECTION	5	RUNOFF	.09	1.67	---	12.24	87	966.7
XSECTION	45	ADDHYD	1.03	2.35	---	12.60	865	839.8
XSECTION	6	RUNOFF	.26	1.60	---	12.23	236	907.7

1

TR20 ----- SCS

Ellicott City Flood Study- Subareas, Existing Conditions  
 VERSION

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2.04TEST

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SUMMARY, JOB NO. 1

PAGE

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RUNOFF AMOUNT	ELEVATION (FT)	PEAK DISCHARGE			
					TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE 1 STORM 5								
XSECTION	56	ADDHYD	1.29	2.20	---	12.69	919	712.4
XSECTION	7	RUNOFF	.27	1.49	---	12.28	204	755.6
XSECTION	67	ADDHYD	1.56	2.08	---	12.78	968	620.5

RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 10

XSECTION	1	RUNOFF	.17	2.71	---	12.44	186	1094.1
XSECTION	2	RUNOFF	.25	3.32	---	12.32	380	1520.0
XSECTION	12	ADDHYD	.42	3.07	---	12.37	530	1261.9
XSECTION	3	RUNOFF	.36	3.32	---	12.32	551	1530.6
XSECTION	23	ADDHYD	.78	3.19	---	12.40	989	1267.9
XSECTION	4	RUNOFF	.16	2.89	---	12.33	210	1312.5
XSECTION	34	ADDHYD	.94	3.14	---	12.47	1145	1218.1
XSECTION	5	RUNOFF	.09	2.30	---	12.23	120	1333.3
XSECTION	45	ADDHYD	1.03	3.06	---	12.58	1145	1111.7
XSECTION	6	RUNOFF	.26	2.21	---	12.22	330	1269.2

XSECTION	56	ADDHYD	1.29	2.89	---	12.66	1230	953.5
XSECTION	7	RUNOFF	.27	2.09	---	12.27	290	1074.1
XSECTION	67	ADDHYD	1.56	2.75	---	12.75	1296	830.8

RAINFALL OF 6.14 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 25

XSECTION	1	RUNOFF	.17	3.79	---	12.43	260	1529.4
XSECTION	2	RUNOFF	.25	4.47	---	12.32	505	2020.0
XSECTION	12	ADDHYD	.42	4.19	---	12.37	720	1714.3
XSECTION	3	RUNOFF	.36	4.47	---	12.32	732	2033.3
XSECTION	23	ADDHYD	.78	4.32	---	12.40	1337	1714.1

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TR20 ----- SCS

Ellicott City Flood Study- Subareas, Existing Conditions  
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 2.04TEST  
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RUNOFF AMOUNT	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE 1 STORM 25								
XSECTION	4	RUNOFF	.16	3.99	---	12.33	289	1806.3
XSECTION	34	ADDHYD	.94	4.27	---	12.46	1561	1660.6
XSECTION	5	RUNOFF	.09	3.31	---	12.23	174	1933.3
XSECTION	45	ADDHYD	1.03	4.18	---	12.56	1578	1532.0
XSECTION	6	RUNOFF	.26	3.20	---	12.22	481	1850.0
XSECTION	56	ADDHYD	1.29	3.99	---	12.63	1713	1327.9
XSECTION	7	RUNOFF	.27	3.06	---	12.26	430	1592.6
XSECTION	67	ADDHYD	1.56	3.83	---	12.72	1815	1163.5

RAINFALL OF 7.23 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 50

XSECTION	1	RUNOFF	.17	4.78	---	12.43	326	1917.6
XSECTION	2	RUNOFF	.25	5.51	---	12.32	616	2464.0
XSECTION	12	ADDHYD	.42	5.21	---	12.37	890	2119.0
XSECTION	3	RUNOFF	.36	5.52	---	12.32	898	2494.4
XSECTION	23	ADDHYD	.78	5.35	---	12.40	1640	2102.6
XSECTION	4	RUNOFF	.16	4.99	---	12.32	357	2231.3
XSECTION	34	ADDHYD	.94	5.29	---	12.45	1923	2045.7

XSECTION	5	RUNOFF	.09	4.25	---	12.23	223	2477.8
XSECTION	45	ADDHYD	1.03	5.20	---	12.55	1954	1897.1
XSECTION	6	RUNOFF	.26	4.13	---	12.22	621	2388.5
XSECTION	56	ADDHYD	1.29	4.99	---	12.61	2136	1655.8
XSECTION	7	RUNOFF	.27	3.97	---	12.26	558	2066.7
XSECTION	67	ADDHYD	1.56	4.81	---	12.70	2259	1448.1

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 99

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TR20 ----- SCS

Ellicott City Flood Study- Subareas, Existing Conditions  
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 2.04TEST  
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)
ALTERNATE 1 STORM 99								
XSECTION	1	RUNOFF	.17	5.93	---	12.43	403	2370.6
XSECTION	2	RUNOFF	.25	6.71	---	12.32	744	2976.0
XSECTION	12	ADDHYD	.42	6.39	---	12.37	1084	2581.0
XSECTION	3	RUNOFF	.36	6.71	---	12.32	1081	3002.8
XSECTION	23	ADDHYD	.78	6.54	---	12.39	1996	2559.0
XSECTION	4	RUNOFF	.16	6.16	---	12.32	438	2737.5
XSECTION	34	ADDHYD	.94	6.47	---	12.45	2353	2503.2
XSECTION	5	RUNOFF	.09	5.35	---	12.23	280	3111.1
XSECTION	45	ADDHYD	1.03	6.37	---	12.54	2400	2330.1
XSECTION	6	RUNOFF	.26	5.22	---	12.21	783	3011.5
XSECTION	56	ADDHYD	1.29	6.15	---	12.60	2638	2045.0
XSECTION	7	RUNOFF	.27	5.04	---	12.26	708	2622.2
XSECTION	67	ADDHYD	1.56	5.96	---	12.70	2764	1771.8

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TR20 ----- SCS

Ellicott City Flood Study- Subareas, Existing Conditions  
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 2.04TEST  
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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

XSEC ID	REACH LENGTH COEFF	FLOOD PLAIN LENGTH (FT)	HYDROGRAPH INFORMATION				ROUTING PARAMETERS				ATT- KIN (C)	
			INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR	PEAK RATIO Q/I		
	(FT)	(FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	(k*)	(Q*)		
BASEFLOW IS .0 CFS												
ALTERNATE 1 STORM 2												
11	3008		89	12.5	88	12.5	3.40	1.45	.014	.987		
.66												
21	1443		271	12.4	249	12.5	.86	1.22	.061	.917		
.37												
31	1147		507	12.4	489	12.5	.38	1.38	.025	.965		
.53												
41	1745		572	12.5	540	12.7	.53	1.33	.041	.944		
.40												
51	1483		560	12.7	545	12.8	.64	1.32	.028	.972		
.48												
61	3192		585	12.7	580	12.8	1.62	1.43	.012	.993		
.63												
ALTERNATE 1 STORM 5												
11	3008		139	12.4	138	12.5	3.52	1.43	.013	.991		
.71?												
21	1443		407	12.4	379	12.5	.71	1.27	.049	.931		
.41												
31	1147		759	12.4	738	12.5	.31	1.43	.019	.972		
.59												
41	1745		871	12.5	829	12.6	.46	1.36	.034	.951		
.45												
51	1483		865	12.6	846	12.7	.48	1.38	.020	.978		
.55												
61	3192		916	12.7	897	12.8	2.75	1.23	.029	.978		
.50												
ALTERNATE 1 STORM 10												
11	3008		186	12.4	184	12.5	3.61	1.42	.012	.989		
.74?												
21	1443		530	12.4	497	12.5	.65	1.29	.042	.939		
.44												
31	1147		987	12.4	968	12.5	.28	1.44	.016	.981		
.64												
41	1745		1144	12.5	1096	12.6	.44	1.37	.031	.958		
.48												



51	1483	1144	12.6	1123	12.7	.42	1.41	.017	.981
.60									
61	3192	1230	12.7	1196	12.8	3.70	1.15	.038	.972
.47									
ALTERNATE	1	STORM	25						
11	3008	259	12.4	256	12.5	3.71	1.41	.011	.988
.78?									
21	1443	719	12.4	684	12.5	.59	1.31	.036	.950
.48									
31	1147	1333	12.4	1317	12.5	.26	1.46	.013	.988
.69?									
41	1745	1557	12.5	1500	12.6	.43	1.38	.027	.964
.51									
51	1483	1573	12.5	1555	12.7	.38	1.43	.014	.988
.65									

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 TR20 ----- SCS  
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Ellicott City Flood Study- Subareas, Existing Conditions  
 VERSION

06/05/\*\* 2,10,50,100 yr (24hr) - Updated CNs; Std NOAA Dist.

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC	REACH	FLOOD	INFLOW		OUTFLOW		Q-A EQ.		LENGTH	PEAK	ATT-
		PLAIN	PEAK	TIME	PEAK	TIME	COEFF	POWER			
ID	LENGTH	LENGTH	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	(C)
COEFF	(FT)	(FT)									
ALTERNATE	1	STORM	25								
61	3192		1707	12.6	1658	12.7	4.30	1.11	.042	.971	
.46											
ALTERNATE	1	STORM	50								
11	3008		326	12.4	323	12.5	3.79	1.40	.010	.991	
.81?											
21	1443		889	12.4	840	12.5	.77	1.25	.042	.945	
.46											
31	1147		1635	12.4	1620	12.5	.26	1.46	.012	.991	
.72?											
41	1745		1915	12.5	1855	12.5	.43	1.38	.025	.968	
.53											
51	1483		1952	12.5	1928	12.7	.36	1.44	.012	.988	
.69?											

61	3192	2135	12.6	2060	12.7	4.91	1.07	.051	.965
.42									
ALTERNATE 1 STORM 99									
-----									
11	3008	403	12.4	400	12.5	3.86	1.39	.010	.993
.83?									
21	1443	1083	12.4	1030	12.5	.72	1.26	.038	.951
.48									
31	1147	1989	12.4	1976	12.5	.25	1.46	.010	.994
.75?									
41	1745	2341	12.4	2279	12.5	.43	1.38	.023	.973
.56									
51	1483	2399	12.5	2367	12.6	.36	1.44	.011	.986
.72?									
61	3192	2638	12.6	2515	12.7	6.07	1.01	.067	.953
.37									

1  
 TR20 ----- SCS  
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Ellicott City Flood Study- Subareas, Existing Conditions  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION 1	.17					
-----						
ALTERNATE 326	1	89	139	186	260	
XSECTION 2	.25					
-----						
ALTERNATE 616	1	204	298	380	505	
XSECTION 3	.36					
-----						
ALTERNATE 898	1	294	431	551	732	
XSECTION 4	.16					
-----						
ALTERNATE 357	1	104	158	210	289	
XSECTION 5	.09					
-----						
ALTERNATE 223	1	52	87	120	174	

XSECTION	6	.26				
ALTERNATE	1		138	236	330	481
621						
XSECTION	7	.27				
ALTERNATE	1		115	204	290	430
558						
XSECTION	12	.42				
ALTERNATE	1		272	408	530	720
890						
XSECTION	23	.78				
ALTERNATE	1		507	760	989	1337
1640						
XSECTION	34	.94				
ALTERNATE	1		573	871	1145	1561
1923						
XSECTION	45	1.03				
ALTERNATE	1		561	865	1145	1578
1954						
XSECTION	56	1.29				
ALTERNATE	1		586	919	1230	1713
2136						
XSECTION	67	1.56				
ALTERNATE	1		620	968	1296	1815
2259						

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
------------------------------	-----------------------------	--------------------------

XSECTION	1	.17
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1

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Ellicott City Flood Study- Subareas, Existing Conditions  
VERSION  
06/05/\*\* 2,10,50,100 yr (24hr) - Updated CNs; Std NOAA Dist.  
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SUMMARY TABLE 3

-----  
 STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION 1	.17	
-----		
ALTERNATE 1		403
XSECTION 2	.25	
-----		
ALTERNATE 1		744
XSECTION 3	.36	
-----		
ALTERNATE 1		1081
XSECTION 4	.16	
-----		
ALTERNATE 1		438
XSECTION 5	.09	
-----		
ALTERNATE 1		280
XSECTION 6	.26	
-----		
ALTERNATE 1		783
XSECTION 7	.27	
-----		
ALTERNATE 1		708
XSECTION 12	.42	
-----		
ALTERNATE 1		1084
XSECTION 23	.78	
-----		
ALTERNATE 1		1996
XSECTION 34	.94	
-----		
ALTERNATE 1		2353
XSECTION 45	1.03	
-----		
ALTERNATE 1		2400
XSECTION 56	1.29	
-----		
ALTERNATE 1		2638
XSECTION 67	1.56	
-----		
ALTERNATE 1		2764

1

TR20 ----- SCS

VERSION  
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2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = ecsa2.dat , GIVEN DATA FILE  
OUTPUT = ecsa2.OUT , DATED  
06/05/\*\*,15:33:37

FILES GENERATED - DATED 06/05/\*\*,15:33:37

NONE!

TOTAL NUMBER OF WARNINGS = 0, MESSAGES = 0

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
 HYDROLOGY\*\*\*\*\*

JOB	TR-20	NOPLOTS				
TITLE	Ellicott City Flood Study-Tiber/South Drainage Areas					
TITLE	8 Major Subareas - Std NOAA_C Storm Events; No MGMT					
5 RAINFL	1	.1				
8	0.0000	0.0013	0.0023	0.0034	0.0044	
8	0.0055	0.0065	0.0076	0.0087	0.0098	
8	0.0109	0.0121	0.0132	0.0143	0.0155	
8	0.0167	0.0178	0.0190	0.0202	0.0214	
8	0.0226	0.0238	0.0251	0.0263	0.0276	
8	0.0288	0.0301	0.0314	0.0327	0.0340	
8	0.0353	0.0366	0.0379	0.0393	0.0406	
8	0.0420	0.0434	0.0447	0.0461	0.0475	
8	0.0489	0.0504	0.0518	0.0532	0.0547	
8	0.0562	0.0576	0.0591	0.0606	0.0621	
8	0.0636	0.0651	0.0667	0.0682	0.0697	
8	0.0713	0.0729	0.0745	0.0760	0.0776	
8	0.0793	0.0809	0.0826	0.0843	0.0861	
8	0.0879	0.0898	0.0916	0.0936	0.0955	
8	0.0975	0.0996	0.1017	0.1038	0.1060	
8	0.1082	0.1104	0.1127	0.1150	0.1174	
8	0.1198	0.1223	0.1247	0.1273	0.1298	
8	0.1324	0.1351	0.1378	0.1405	0.1432	
8	0.1461	0.1490	0.1521	0.1554	0.1588	
8	0.1623	0.1660	0.1699	0.1739	0.1780	
8	0.1823	0.1868	0.1914	0.1961	0.2010	
8	0.2061	0.2117	0.2179	0.2247	0.2321	
8	0.2400	0.2490	0.2591	0.2702	0.2825	
8	0.2955	0.3157	0.3370	0.3662	0.4067	
8	0.4766	0.5933	0.6338	0.6630	0.6843	
8	0.7045	0.7176	0.7298	0.7409	0.7510	
8	0.7600	0.7679	0.7753	0.7821	0.7883	
8	0.7939	0.7990	0.8039	0.8086	0.8132	
8	0.8177	0.8220	0.8261	0.8301	0.8340	
8	0.8377	0.8412	0.8446	0.8479	0.8510	
8	0.8540	0.8568	0.8595	0.8622	0.8649	
8	0.8676	0.8702	0.8727	0.8753	0.8778	
8	0.8802	0.8826	0.8850	0.8873	0.8896	
8	0.8918	0.8940	0.8962	0.8983	0.9004	
8	0.9025	0.9045	0.9064	0.9084	0.9103	
8	0.9121	0.9139	0.9157	0.9174	0.9191	
8	0.9208	0.9224	0.9240	0.9256	0.9271	
8	0.9287	0.9303	0.9318	0.9334	0.9349	
8	0.9364	0.9379	0.9394	0.9409	0.9424	
8	0.9439	0.9453	0.9468	0.9482	0.9496	
8	0.9511	0.9525	0.9539	0.9553	0.9566	
8	0.9580	0.9594	0.9607	0.9621	0.9634	
8	0.9647	0.9660	0.9673	0.9686	0.9699	
8	0.9712	0.9724	0.9737	0.9749	0.9762	
8	0.9774	0.9786	0.9798	0.9810	0.9822	
8	0.9834	0.9845	0.9857	0.9868	0.9879	

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000

9	ENDTBL				
2	XSECTN	102	1.0	241.00	
8			240.00	0.00	0.00
8			240.25	16.96	3.03
8			240.50	55.93	6.63
8			240.75	114.89	10.78
8			241.00	194.09	15.50
8			242.00	733.59	40.00
8			243.00	1342.05	71.50
8			244.00	2134.92	108.00
8			245.00	2390.04	154.00

9	ENDTBL				
2	XSECTN	105	1.0	223.00	
8			222.00	0.00	0.00
8			222.25	2.28	0.83
8			222.50	8.62	2.16
8			222.75	19.85	3.97
8			223.00	36.86	6.28
8			224.00	179.35	20.41
8			225.00	338.28	41.30
8			226.00	584.84	67.85
8			227.00	830.09	103.44
8			228.00	1249.11	151.47
8			229.00	1307.14	232.37
8			230.00	2023.03	366.57

9	ENDTBL				
2	XSECTN	108	1.0	239.00	
8			238.00	0.00	0.00
8			238.25	7.90	2.78
8			238.50	26.24	6.13
8			238.75	54.15	10.03
8			239.00	91.89	14.50
8			240.00	352.41	38.00
8			241.00	637.23	68.75
8			242.00	1020.54	105.00
8			243.00	1521.80	145.25
8			244.00	2087.28	188.00
8			245.00	2747.41	233.00
8			246.00	3455.87	280.00

9	ENDTBL				
2	XSECTN	109	1.0	128.00	
8			129.00	0.00	0.00
8			129.25	1.13	0.50
8			129.50	5.18	1.55
8			129.75	13.39	3.16
8			130.00	26.84	5.32
8			131.00	191.72	26.64

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			132.00	508.02	58.78
8			133.00	945.51	95.90
8			134.00	1449.27	136.08
8			135.00	2016.68	178.64
8			138.00	4199.86	314.48

9	ENDTBL				
6	RUNOFF	1 014	1 0.3808	77.01	0.388
					1
					1 DA14

```

6 RUNOFF 1 015      2 0.2131      78.87      0.435      1      1 DA15
6 ADDHYD 4 101      1 2 3      1
DA14+15
6 REACH 3 102      3 4      4457.0      1
6 RUNOFF 1 013      3 0.2701      73.58      0.425      1 DA13
6 ADDHYD 4 103      3 4 5      1
DA13+102
6 RUNOFF 1 011      1 0.3648      83.93      0.570      1 DA11
6 RUNOFF 1 012      2 0.1588      82.44      0.260      1 DA12
6 ADDHYD 4 104      1 2 3      1
DA11+12
6 REACH 3 105      3 4      3130.9      1
6 RUNOFF 1 010      1 0.1447      66.00      0.263      1 DA10
6 ADDHYD 4 106      1 4 6      1
DA10+105
6 ADDHYD 4 107      5 6 7      1 DA9
103+106
6 REACH 3 108      7 1      1560.1      1
6 RUNOFF 1 008      2 0.5371      73.63      0.665      1 DA8
6 REACH 3 109      2 3      1653.5      1
6 ADDHYD 4 110      1 3 4      1
108+109
6 RUNOFF 1 009      1 0.0756      79.76      0.180      1 DA9
6 ADDHYD 4 111      1 4 5      1
110+DA9
ENDATA
7 INCREM 6      .1
7 COMPUT 7 014      111 0.0      3.19      1.01 2 1 2
ENDCMP 1
7 COMPUT 7 014      111 0.0      4.10      1.01 2 1 05
ENDCMP 1
7 COMPUT 7 014      111 0.0      4.91      1.01 2 1 10
ENDCMP 1
7 COMPUT 7 014      111 0.0      6.14      1.01 2 1 25
ENDCMP 1
7 COMPUT 7 014      111 0.0      7.23      1.01 2 1 50
ENDCMP 1
7 COMPUT 7 014      111 0.0      8.47      1.01 2 1 99
ENDCMP 1
ENDJOB 2

```

\*\*\*\*\*END OF 80-80

LIST\*\*\*\*\*

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Drainage Areas  
VERSION

06/05/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT

2.04TEST

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PASS 1 JOB NO. 1

PAGE

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EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .100 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111

```

STARTING TIME = .00 RAIN DEPTH = 3.19 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 1 STORM NO. = 2 RAIN TABLE NO. = 1

```



OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	222.3	(RUNOFF)
20.66	7.5	(RUNOFF)
23.76	6.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.20 WATERSHED INCHES; 296 CFS-HRS; 24.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	130.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.32 WATERSHED INCHES; 181 CFS-HRS; 15.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	352.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.24 WATERSHED INCHES; 477 CFS-HRS; 39.4 ACRE-FEET.

OPERATION REACH XSECTION 102

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.42	349.2	241.29

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.25 WATERSHED INCHES; 477 CFS-HRS; 39.5 ACRE-FEET.

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TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Drainage Areas  
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06/05/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT  
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OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	122.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.01 WATERSHED INCHES; 175 CFS-HRS; 14.5 ACRE-

FEET.

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	464.6	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.17 WATERSHED INCHES;	653 CFS-HRS;	53.9 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	250.5	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.67 WATERSHED INCHES;	392 CFS-HRS;	32.4 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	149.3	(RUNOFF)
18.86	4.0	(RUNOFF)
21.97	3.3	(RUNOFF)
23.10	3.0	(RUNOFF)
23.97	2.8	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.56 WATERSHED INCHES;	160 CFS-HRS;	13.2 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	354.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.63 WATERSHED INCHES;	552 CFS-HRS;	45.6 ACRE-
FEET.		

1  
TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Drainage Areas  
VERSION  
06/05/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT  
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OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)  
12.46 339.3 225.00

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.63 WATERSHED INCHES; 552 CFS-HRS; 45.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.24 45.5 (RUNOFF)  
20.11 2.1 (RUNOFF)  
23.97 1.6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.64 WATERSHED INCHES; 60 CFS-HRS; 4.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.44 370.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.42 WATERSHED INCHES; 612 CFS-HRS; 50.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.42 833.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.28 WATERSHED INCHES; 1264 CFS-HRS; 104.5 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
\*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.42 833.3 241.51

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

1.28 WATERSHED INCHES; 1264 CFS-HRS; 104.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.51	191.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.01 WATERSHED INCHES; 350 CFS-HRS; 28.9 ACRE-  
FEET.

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.61	191.6	131.00

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.01 WATERSHED INCHES; 350 CFS-HRS; 28.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	993.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.21 WATERSHED INCHES; 1614 CFS-HRS; 133.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	68.4	(RUNOFF)
15.85	2.9	(RUNOFF)
23.97	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.38 WATERSHED INCHES; 67 CFS-HRS; 5.6 ACRE-  
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 6.4%.  
\*\*\*

OPERATION ADDHYD XSECTION 111

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	1019.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.21 WATERSHED INCHES; 1682 CFS-HRS; 139.0 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111  
 STARTING TIME = .00 RAIN DEPTH = 4.10 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. = 5 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	357.6	(RUNOFF)
20.06	11.2	(RUNOFF)
23.76	8.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 464 CFS-HRS; 38.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	205.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.03 WATERSHED INCHES; 280 CFS-HRS; 23.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	561.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.94 WATERSHED INCHES; 744 CFS-HRS; 61.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 102

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	561.0	241.68
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.94 WATERSHED INCHES;	744 CFS-HRS;	61.5 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	208.5	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.64 WATERSHED INCHES;	286 CFS-HRS;	23.6 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	756.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.85 WATERSHED INCHES;	1030 CFS-HRS;	85.1 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	369.6	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.45 WATERSHED INCHES;	577 CFS-HRS;	47.7 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	221.5	(RUNOFF)
20.10	5.2	(RUNOFF)
23.10	4.2	(RUNOFF)
23.97	3.9	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.33 WATERSHED INCHES;	238 CFS-HRS;	19.7 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 104

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	526.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.41 WATERSHED INCHES; 815 CFS-HRS; 67.4 ACRE-FEET.

OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	507.5	225.69

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.41 WATERSHED INCHES; 815 CFS-HRS; 67.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	91.5	(RUNOFF)
20.85	3.1	(RUNOFF)
23.97	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.15 WATERSHED INCHES; 107 CFS-HRS; 8.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	562.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.14 WATERSHED INCHES; 922 CFS-HRS; 76.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	1317.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 1951 CFS-HRS; 161.3 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.

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OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	1317.1	242.59

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 1951 CFS-HRS; 161.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	324.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.64 WATERSHED INCHES; 569 CFS-HRS; 47.0 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
\*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	324.2	131.42

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.64 WATERSHED INCHES; 569 CFS-HRS; 47.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	1631.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.89 WATERSHED INCHES; 2520 CFS-HRS; 208.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION (FEET)		
12.17	105.0	(RUNOFF)
15.85	4.1	(RUNOFF)
21.96	2.1	(RUNOFF)
23.97	1.8	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.11 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 5.9%.  
 \*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.41	1674.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 2623 CFS-HRS; 216.8 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111  
 STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =10 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 14

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.30	484.3	(RUNOFF)
20.10	14.2	(RUNOFF)
23.08	11.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 626 CFS-HRS; 51.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.32	273.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.71 WATERSHED INCHES; 373 CFS-HRS; 30.8 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	756.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.61 WATERSHED INCHES; 999 CFS-HRS; 82.5 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 102.  
 \*\*\*

OPERATION REACH XSECTION 102

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	756.4	242.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.61 WATERSHED INCHES; 999 CFS-HRS; 82.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	290.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.26 WATERSHED INCHES; 393 CFS-HRS; 32.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	1045.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.50 WATERSHED INCHES; 1392 CFS-HRS; 115.0 ACRE-  
 FEET.

## OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	473.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.18 WATERSHED INCHES; 748 CFS-HRS; 61.8 ACRE-  
 FEET.

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## OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	288.4	(RUNOFF)
18.66	7.0	(RUNOFF)
20.85	6.1	(RUNOFF)
23.10	5.2	(RUNOFF)
23.97	4.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.04 WATERSHED INCHES; 311 CFS-HRS; 25.7 ACRE-  
 FEET.

## OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	680.9	(NULL)
23.95	16.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.14 WATERSHED INCHES; 1060 CFS-HRS; 87.6 ACRE-  
 FEET.

## OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	652.5	226.28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.14 WATERSHED INCHES; 1059 CFS-HRS; 87.6 ACRE-  
 FEET.

## OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	138.6	(RUNOFF)

20.85 4.1 (RUNOFF)  
 23.97 3.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.66 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.42 733.0 (NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.82 WATERSHED INCHES; 1215 CFS-HRS; 100.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.34 1749.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.64 WATERSHED INCHES; 2607 CFS-HRS; 215.5 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
 \*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.34 1749.8 243.40

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.64 WATERSHED INCHES; 2607 CFS-HRS; 215.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.49 452.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.26 WATERSHED INCHES; 783 CFS-HRS; 64.7 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
 \*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	452.9	131.83
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.26 WATERSHED INCHES;	783 CFS-HRS;	64.7 ACRE-
FEEET.		

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	2140.5	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.54 WATERSHED INCHES;	3390 CFS-HRS;	280.1 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	139.0	(RUNOFF)
19.45	3.1	(RUNOFF)
23.97	2.3	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.79 WATERSHED INCHES;	136 CFS-HRS;	11.3 ACRE-
FEEET.		

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 5.9%.  
 \*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	2226.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.55 WATERSHED INCHES;	3526 CFS-HRS;	291.4 ACRE-

FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111  
 STARTING TIME = .00 RAIN DEPTH = 6.14 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =25 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	680.9	(RUNOFF)
20.06	18.8	(RUNOFF)
23.05	15.0	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.60 WATERSHED INCHES; 884 CFS-HRS; 73.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	380.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.79 WATERSHED INCHES; 521 CFS-HRS; 43.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	1060.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 1405 CFS-HRS; 116.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 102

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	1059.6	242.54

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

3.67 WATERSHED INCHES; 1405 CFS-HRS; 116.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	421.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.26 WATERSHED INCHES; 568 CFS-HRS; 46.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	1454.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.54 WATERSHED INCHES; 1973 CFS-HRS; 163.1 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	639.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.32 WATERSHED INCHES; 1016 CFS-HRS; 84.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	394.6	(RUNOFF)
18.66	9.1	(RUNOFF)
20.10	8.4	(RUNOFF)
21.97	7.3	(RUNOFF)
23.97	6.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.17 WATERSHED INCHES; 427 CFS-HRS; 35.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	920.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.27 WATERSHED INCHES; 1443 CFS-HRS; 119.3 ACRE-FEET.

OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	875.8	227.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.27 WATERSHED INCHES; 1442 CFS-HRS; 119.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	218.0	(RUNOFF)
19.45	6.3	(RUNOFF)
20.10	6.1	(RUNOFF)
21.97	5.3	(RUNOFF)
23.97	4.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.54 WATERSHED INCHES; 237 CFS-HRS; 19.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	997.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.90 WATERSHED INCHES; 1680 CFS-HRS; 138.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	2449.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.69 WATERSHED INCHES; 3653 CFS-HRS; 301.9 ACRE-FEET.



FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
 \*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	2449.6	244.55
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.69 WATERSHED INCHES;	3653 CFS-HRS;	301.9 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	664.4	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.27 WATERSHED INCHES;	1132 CFS-HRS;	93.6 ACRE-
FEET.		

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\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
 \*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	664.4	132.36
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.27 WATERSHED INCHES;	1132 CFS-HRS;	93.6 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	3093.5	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.58 WATERSHED INCHES;	4786 CFS-HRS;	395.5 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	192.1	(RUNOFF)
19.45	4.0	(RUNOFF)
23.08	3.1	(RUNOFF)
23.97	3.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.88 WATERSHED INCHES; 189 CFS-HRS; 15.6 ACRE-  
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 6.0%.  
\*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.40	3171.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.59 WATERSHED INCHES; 4975 CFS-HRS; 411.2 ACRE-  
FEET.

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EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111  
STARTING TIME = .00 RAIN DEPTH = 7.23 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
ALTERNATE NO. = 1 STORM NO. =50 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	868.8	(RUNOFF)
23.75	17.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.57 WATERSHED INCHES; 1123 CFS-HRS; 92.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.31 477.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.78 WATERSHED INCHES; 657 CFS-HRS; 54.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.30 1344.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 1781 CFS-HRS; 147.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 102

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.40 1340.2 243.00

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.64 WATERSHED INCHES; 1779 CFS-HRS; 147.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.31 541.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.19 WATERSHED INCHES; 731 CFS-HRS; 60.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.38 1846.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.50 WATERSHED INCHES; 2510 CFS-HRS; 207.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	788.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.34 WATERSHED INCHES; 1258 CFS-HRS; 104.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	483.7	(RUNOFF)
18.85	10.8	(RUNOFF)
20.10	10.0	(RUNOFF)
20.85	9.4	(RUNOFF)
21.97	8.7	(RUNOFF)
23.97	7.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.18 WATERSHED INCHES; 531 CFS-HRS; 43.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	1137.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.29 WATERSHED INCHES; 1788 CFS-HRS; 147.8 ACRE-FEET.

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OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	1084.1	227.61

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.30 WATERSHED INCHES; 1789 CFS-HRS; 147.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	294.3	(RUNOFF)
18.85	8.1	(RUNOFF)

20.85	7.2	(RUNOFF)
23.10	6.1	(RUNOFF)
23.97	5.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.38 WATERSHED INCHES; 316 CFS-HRS; 26.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	1247.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.88 WATERSHED INCHES; 2105 CFS-HRS; 174.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	3091.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.67 WATERSHED INCHES; 4616 CFS-HRS; 381.5 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
 \*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	3091.1	245.49

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.67 WATERSHED INCHES; 4616 CFS-HRS; 381.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	855.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.20 WATERSHED INCHES; 1457 CFS-HRS; 120.4 ACRE-

FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
 \*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	855.2	132.79
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.20 WATERSHED INCHES;	1457 CFS-HRS;	120.4 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	3921.7	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.55 WATERSHED INCHES;	6073 CFS-HRS;	501.9 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	239.0	(RUNOFF)
18.86	5.0	(RUNOFF)
21.96	4.1	(RUNOFF)
23.97	3.6	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.88 WATERSHED INCHES;	238 CFS-HRS;	19.7 ACRE-
FEET.		

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 5.9%.  
 \*\*\*

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OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	4019.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.56 WATERSHED INCHES; 6311 CFS-HRS; 521.5 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111  
 STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	1068.7	(RUNOFF)
20.06	27.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.70 WATERSHED INCHES; 1401 CFS-HRS; 115.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	588.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.93 WATERSHED INCHES; 815 CFS-HRS; 67.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	1655.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.78 WATERSHED INCHES; 2217 CFS-HRS; 183.2 ACRE-  
 FEET.

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OPERATION REACH XSECTION 102

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	1650.8	243.39

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.78 WATERSHED INCHES; 2216 CFS-HRS; 183.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.31 683.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.29 WATERSHED INCHES; 923 CFS-HRS; 76.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.38 2286.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.63 WATERSHED INCHES; 3139 CFS-HRS; 259.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.39 950.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.53 WATERSHED INCHES; 1538 CFS-HRS; 127.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.21 587.3 (RUNOFF)  
18.86 12.9 (RUNOFF)  
20.66 11.4 (RUNOFF)  
21.97 10.4 (RUNOFF)  
23.10 9.5 (RUNOFF)  
23.97 8.8 (RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.36 WATERSHED INCHES; 652 CFS-HRS; 53.9 ACRE-  
FEET.



OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	1378.5	(NULL)
23.95	29.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.48 WATERSHED INCHES; 2189 CFS-HRS; 180.9 ACRE-FEET.

OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	1279.3	228.52

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.48 WATERSHED INCHES; 2189 CFS-HRS; 180.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	382.3	(RUNOFF)
18.86	10.1	(RUNOFF)
20.10	9.4	(RUNOFF)
21.97	8.2	(RUNOFF)
23.10	7.5	(RUNOFF)
23.76	7.1	(RUNOFF)
23.97	7.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.39 WATERSHED INCHES; 410 CFS-HRS; 33.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	1489.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.03 WATERSHED INCHES; 2599 CFS-HRS; 214.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 107

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)  
12.38                              3771.1                              (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.80 WATERSHED INCHES;      5739 CFS-HRS;      474.2 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
\*\*\*

\*\*\* WARNING - XSECTION 108, INFLOW EXCEEDS MAX TABLE DISCHARGE,  
EXTRAPOLATION USED.  
\*\*\*

OPERATION REACH      XSECTION 108

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK  
ELEVATION(FEET)  
12.38                              3771.1                              246.44

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.80 WATERSHED INCHES;      5739 CFS-HRS;      474.2 ACRE-  
FEET.

OPERATION RUNOFF      XSECTION      8

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK  
ELEVATION(FEET)  
12.47                              1075.0                              (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.30 WATERSHED INCHES;      1838 CFS-HRS;      151.9 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
\*\*\*

OPERATION REACH      XSECTION 109

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK  
ELEVATION(FEET)  
12.47                              1075.0                              133.26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.30 WATERSHED INCHES;      1838 CFS-HRS;      151.9 ACRE-  
FEET.

OPERATION ADDHYD      XSECTION 110

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK  
ELEVATION(FEET)  
12.40                              4817.6                              (NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.67 WATERSHED INCHES; 7576 CFS-HRS; 626.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.16	292.4	(RUNOFF)
18.61	6.1	(RUNOFF)
21.45	5.1	(RUNOFF)
23.71	4.2	(RUNOFF)
23.97	4.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.04 WATERSHED INCHES; 295 CFS-HRS; 24.3 ACRE-  
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 6.3%.  
\*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.39	4935.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.69 WATERSHED INCHES; 7870 CFS-HRS; 650.4 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6

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SUMMARY, JOB NO. 1

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RUNOFF AMOUNT	PEAK DISCHARGE ELEVATION	PEAK TIME	RATE	RATE
ID	OPERATION	AREA	AMOUNT	ELEVATION	TIME	RATE	RATE

(SQ MI) (IN) (FT) (HR) (CFS) (CSM)  
 RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.  
 RAINTABLE NUMBER 1, ARC 2  
 MAIN TIME INCREMENT .100 HOURS

ALTERNATE	1	STORM	2					
XSECTION	14	RUNOFF	.38	1.20	---	12.31	222	584.2
XSECTION	15	RUNOFF	.21	1.32	---	12.33	131	623.8
XSECTION	13	RUNOFF	.27	1.01	---	12.34	123	455.6
XSECTION	11	RUNOFF	.36	1.67	---	12.41	250	694.4
XSECTION	12	RUNOFF	.16	1.56	---	12.21	149	931.3
XSECTION	10	RUNOFF	.14	.64	---	12.24	45	321.4
XSECTION	107	ADDHYD	1.53	1.28	---	12.42	833	544.4
XSECTION	108	REACH	1.53	1.28	241.51	12.42	833	544.4
XSECTION	8	RUNOFF	.54	1.01	---	12.51	192	355.6
XSECTION	9	RUNOFF	.08	1.38	---	12.17	68	850.0
XSECTION	111	ADDHYD	2.14	1.21	---	12.44	1020	476.6

RAINFALL OF 4.10 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE	1	STORM	5					
XSECTION	14	RUNOFF	.38	1.89	---	12.30	358	942.1
XSECTION	15	RUNOFF	.21	2.03	---	12.33	205	976.2
XSECTION	13	RUNOFF	.27	1.64	---	12.33	209	774.1
XSECTION	11	RUNOFF	.36	2.45	---	12.40	370	1027.8
XSECTION	12	RUNOFF	.16	2.33	---	12.21	221	1381.3
XSECTION	10	RUNOFF	.14	1.15	---	12.23	92	657.1
XSECTION	107	ADDHYD	1.53	1.97	---	12.40	1317	860.8
XSECTION	108	REACH	1.53	1.97	242.59	12.40	1317	860.8
XSECTION	8	RUNOFF	.54	1.64	---	12.49	324	600.0
XSECTION	9	RUNOFF	.08	2.11	---	12.17	105	1312.5
XSECTION	111	ADDHYD	2.14	1.89	---	12.41	1674	782.2

1 TR20 ----- SCS  
 -

Ellicott City Flood Study-Tiber/South Drainage Areas  
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	10				
XSECTION	14	RUNOFF	.38	2.55	---	12.30	484	1273.7
XSECTION	15	RUNOFF	.21	2.71	---	12.32	273	1300.0
XSECTION	13	RUNOFF	.27	2.26	---	12.32	290	1074.1
XSECTION	11	RUNOFF	.36	3.18	---	12.40	474	1316.7
XSECTION	12	RUNOFF	.16	3.04	---	12.21	288	1800.0
XSECTION	10	RUNOFF	.14	1.66	---	12.22	139	992.9
XSECTION	107	ADDHYD	1.53	2.64	---	12.34	1750	1143.8
XSECTION	108	REACH	1.53	2.64	243.40	12.34	1750	1143.8
XSECTION	8	RUNOFF	.54	2.26	---	12.49	453	838.9
XSECTION	9	RUNOFF	.08	2.79	---	12.17	139	1737.5
XSECTION	111	ADDHYD	2.14	2.55	---	12.35	2227	1040.7

RAINFALL OF 6.14 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	25				
XSECTION	14	RUNOFF	.38	3.60	---	12.29	681	1792.1
XSECTION	15	RUNOFF	.21	3.79	---	12.32	381	1814.3
XSECTION	13	RUNOFF	.27	3.26	---	12.32	421	1559.3
XSECTION	11	RUNOFF	.36	4.32	---	12.40	639	1775.0
XSECTION	12	RUNOFF	.16	4.17	---	12.21	395	2468.8
XSECTION	10	RUNOFF	.14	2.54	---	12.22	218	1557.1
XSECTION	107	ADDHYD	1.53	3.69	---	12.39	2450	1601.3
XSECTION	108	REACH	1.53	3.69	244.55	12.39	2450	1601.3

1 TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Drainage Areas  
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD			PEAK DISCHARGE				
	CONTROL	DRAINAGE	RUNOFF	ELEVATION	TIME	RATE	RATE	
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	(FT)	(HR)	(CFS)	(CSM)	
ALTERNATE		1	STORM	25				
XSECTION	8	RUNOFF	.54	3.27	---	12.48	664	1229.6
XSECTION	9	RUNOFF	.08	3.88	---	12.17	192	2400.0
XSECTION	111	ADDHYD	2.14	3.59	---	12.40	3171	1481.8

RAINFALL OF 7.23 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	50				
XSECTION	14	RUNOFF	.38	4.57	---	12.29	869	2286.8
XSECTION	15	RUNOFF	.21	4.78	---	12.31	478	2276.2
XSECTION	13	RUNOFF	.27	4.19	---	12.31	542	2007.4
XSECTION	11	RUNOFF	.36	5.34	---	12.39	788	2188.9
XSECTION	12	RUNOFF	.16	5.18	---	12.21	484	3025.0
XSECTION	10	RUNOFF	.14	3.38	---	12.22	294	2100.0
XSECTION	107	ADDHYD	1.53	4.67	---	12.38	3091	2020.3
XSECTION	108	REACH	1.53	4.67	245.49	12.38	3091	2020.3
XSECTION	8	RUNOFF	.54	4.20	---	12.47	855	1583.3
XSECTION	9	RUNOFF	.08	4.88	---	12.16	239	2987.5
XSECTION	111	ADDHYD	2.14	4.56	---	12.39	4019	1878.0

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	99				
XSECTION	14	RUNOFF	.38	5.70	---	12.29	1069	2813.2
XSECTION	15	RUNOFF	.21	5.93	---	12.31	589	2804.8
XSECTION	13	RUNOFF	.27	5.29	---	12.31	684	2533.3
XSECTION	11	RUNOFF	.36	6.53	---	12.39	950	2638.9
XSECTION	12	RUNOFF	.16	6.36	---	12.21	587	3668.8
XSECTION	10	RUNOFF	.14	4.39	---	12.21	382	2728.6
XSECTION	107	ADDHYD	1.53	5.80	---	12.38	3771	2464.7

1 TR20 ----- SCS  
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SUMMARY TABLE 1

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AREA	AMOUNT	ELEVATION	TIME	RATE
ID	OPERATION	(SQ MI)	(IN)	(FT)	(HR)	(CFS)	(CSM)	
XSECTION	108	REACH	1.53	5.80	246.44	12.38	3771	2464.7
XSECTION	8	RUNOFF	.54	5.30	---	12.47	1075	1990.7
XSECTION	9	RUNOFF	.08	6.04	---	12.16	292	3650.0
XSECTION	111	ADDHYD	2.14	5.69	---	12.39	4936	2306.5

1 TR20 ----- SCS  
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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION				ROUTING PARAMETERS							
XSEC REACH ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW PEAK (CFS)	INFLOW TIME (HR)	OUTFLOW PEAK (CFS)	OUTFLOW TIME (HR)	Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN (C)
							COEFF (X)	POWER (M)			
BASEFLOW IS		.0 CFS									
ALTERNATE		1	STORM		2						
102	4457		351	12.3	347	12.4	3.54	1.45	.017	.988	
	.93?										
105	3131		355	12.3	337	12.5	4.93	1.14	.047	.951	
	.70?										
108	1560		831	12.4	831	12.4	3.83	1.20	.015	1.000	
	1.00?										
109	1654		192	12.5	192	12.6	3.31	1.24	.016	.999	
	.98?										
ALTERNATE		1	STORM		5						
102	4457		561	12.3	560	12.4	3.73	1.43	.016	.999	
	.99?										
105	3131		526	12.3	500	12.4	5.09	1.13	.047	.951	
	.71?										
108	1560		1317	12.4	1317	12.4	3.96	1.19	.014	1.000	
	1.00?										
109	1654		324	12.5	324	12.5	3.32	1.23	.015	1.000	
	1.00?										
ALTERNATE		1	STORM		10						
102	4457		756	12.3	756	12.3	3.95	1.41	.015	1.000	
	1.00?										
105	3131		681	12.3	643	12.4	5.76	1.08	.053	.945	
	.69?										
108	1560		1728	12.3	1728	12.3	3.82	1.20	.013	1.000	
	1.00?										
109	1654		453	12.5	453	12.5	3.34	1.23	.014	1.000	
	1.00?										
ALTERNATE		1	STORM		25						
102	4457		1060	12.3	1060	12.4	5.22	1.31	.020	.999	

.99?  
 105 3131 920 12.3 863 12.4 6.71 1.04 .062 .938  
 .65  
 108 1560 2447 12.4 2447 12.4 3.59 1.22 .011 1.000  
 1.00?  
 109 1654 663 12.5 663 12.5 3.27 1.24 .013 1.000  
 1.00?

ALTERNATE 1 STORM 50

-----  
 102 4457 1344 12.3 1340 12.4 6.48 1.25 .024 .997  
 .97?  
 105 3131 1137 12.3 1071 12.4 6.55 1.05 .060 .942  
 .66  
 108 1560 3085 12.4 3085 12.4 3.43 1.23 .010 1.000  
 1.00?  
 109 1654 852 12.5 852 12.5 3.19 1.25 .011 1.000  
 1.00?

ALTERNATE 1 STORM 99

-----  
 102 4457 1655 12.3 1651 12.4 6.95 1.23 .024 .997  
 .98?  
 105 3131 1378 12.3 1271 12.5 5.98 1.03 .072 .923  
 .59

1

TR20 ----- SCS

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Ellicott City Flood Study-Tiber/South Drainage Areas  
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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

-----  
 XSEC REACH FLOOD INFLOW OUTFLOW Q-A EQ. PEAK ATT-  
 ID LENGTH PLAIN ----- LENGTH RATIO KIN  
 COEFF (FT) (FT) (CFS) (HR) (CFS) (HR) COEFF POWER FACTOR Q/I (C)  
 (X) (M) (k\*) (Q\*)

ALTERNATE 1 STORM 99

-----  
 108 1560 3764 12.4 3764 12.4 3.36 1.23 .009 1.000  
 1.00?  
 109 1654 1070 12.5 1070 12.5 3.19 1.25 .011 1.000  
 1.00?

1

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Ellicott City Flood Study-Tiber/South Drainage Areas  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION 8	.54					
----- ALTERNATE 1 855		192	324	453	664	
XSECTION 9	.08					
----- ALTERNATE 1 239		68	105	139	192	
XSECTION 10	.14					
----- ALTERNATE 1 294		45	92	139	218	
XSECTION 11	.36					
----- ALTERNATE 1 788		250	370	474	639	
XSECTION 12	.16					
----- ALTERNATE 1 484		149	221	288	395	
XSECTION 13	.27					
----- ALTERNATE 1 542		123	209	290	421	
XSECTION 14	.38					
----- ALTERNATE 1 869		222	358	484	681	
XSECTION 15	.21					
----- ALTERNATE 1 478		131	205	273	381	
XSECTION 107	1.53					
----- ALTERNATE 1 3091		833	1317	1750	2450	
XSECTION 108	1.53					
----- ALTERNATE 1		833	1317	1750	2450	

3091

XSECTION 111 2.14

-----  
 ALTERNATE 1 1020 1674 2227 3171  
 4019

SUMMARY TABLE 3

-----  
 STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
------------------------------	-----------------------------	--------------------------

XSECTION 8 .54

-----  
 ALTERNATE 1 1075

XSECTION 9 .08

-----  
 ALTERNATE 1 292

XSECTION 10 .14

1

TR20 ----- SCS

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 Ellicott City Flood Study-Tiber/South Drainage Areas  
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SUMMARY TABLE 3

-----  
 STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
------------------------------	-----------------------------	--------------------------

XSECTION 10 .14

-----  
 ALTERNATE 1 382

XSECTION 11 .36

-----  
 ALTERNATE 1 950

XSECTION 12 .16

-----  
 ALTERNATE 1 587

XSECTION 13 .27

-----  
 ALTERNATE 1 684

XSECTION	14	.38	
-----			
ALTERNATE	1		1069
XSECTION	15	.21	
-----			
ALTERNATE	1		589
XSECTION	107	1.53	
-----			
ALTERNATE	1		3771
XSECTION	108	1.53	
-----			
ALTERNATE	1		3771
XSECTION	111	2.14	
-----			
ALTERNATE	1		4936

1

TR20 ----- SCS

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END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = TIBRSUB2.DAT , GIVEN DATA FILE  
OUTPUT = TIBRSUB2.OUT , DATED  
06/05/\*\*,16:01:29

FILES GENERATED - DATED 06/05/\*\*,16:01:29

NONE!

TOTAL NUMBER OF WARNINGS = 19, MESSAGES = 0

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
 HYDROLOGY\*\*\*\*\*

JOB TR-20		NOPLOTS		
TITLE Ellicott City Flood Study- Subareas, Existing Conditions				
TITLE 2,10,50,100 yr (24hr) - Updated CNs; NOAA Std Dist.				
2	XSECTN 011	1.0	344.00	
8		340.00	0.00	0.00
8		340.25	7.08	1.69
8		340.50	23.63	3.75
8		340.75	48.96	6.19
8		341.00	83.42	9.00
8		341.25	127.58	12.19
8		341.50	182.06	15.75
8		341.75	247.50	19.69
8		342.00	324.56	24.00
8		342.25	413.88	28.69
8		342.50	516.08	33.75
8		342.75	631.80	39.19
8		343.00	761.64	45.00
9	ENDTBL			
2	XSECTN 021	1.0	314.40	
8		313.22	0.00	0.00
8		313.51	1.10	0.89
8		313.81	3.51	1.84
8		314.10	16.22	5.61
8		314.40	34.66	9.74
8		314.68	48.28	24.71
8		314.96	79.66	42.09
8		315.24	126.64	61.87
8		315.52	189.07	84.06
8		315.80	267.27	108.64
8		316.08	361.75	135.63
8		316.36	473.14	165.02
8		316.64	602.11	196.81
8		316.92	749.37	231.00
8		317.20	878.70	277.25
8		317.48	1103.89	329.14
8		317.76	1358.10	382.70
8		318.04	1640.58	437.94
8		318.32	1950.87	494.86
8		318.60	2288.69	553.45
9	ENDTBL			
2	XSECTN 031	1.0	288.90	
8		287.68	0.00	0.00
8		287.99	1.15	0.94
8		288.29	3.69	1.95
8		288.60	17.06	5.98
8		288.90	36.44	10.37
8		289.19	63.07	39.25
8		289.47	121.85	69.50
8		289.76	206.05	101.12
8		290.05	313.23	134.09

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8		290.33	442.07	168.42
8		290.62	591.78	204.12
8		290.91	761.87	241.18
8		291.19	952.02	279.60
8		291.48	1162.04	319.38
8		291.77	1391.84	360.52
8		292.05	1641.40	403.02
8		292.34	1910.74	446.89
8		292.63	2199.92	492.11
8		292.91	2509.04	538.70
8		293.20	2838.22	586.65

9 ENDTBL

2 XSECTN 041

		1.0	282.40	
8		281.10	0.00	0.00
8		281.42	1.24	1.09
8		281.75	3.96	2.26
8		282.07	18.30	6.92
8		282.40	39.09	12.00
8		282.88	67.33	37.27
8		283.36	131.17	65.87
8		283.84	225.10	97.78
8		284.32	348.01	133.01
8		284.80	499.91	171.56
8		285.28	681.29	213.43
8		285.76	892.92	258.61
8		286.24	1135.70	307.11
8		286.72	1410.63	358.94
8		287.20	1718.74	414.08
8		287.68	2061.13	472.54
8		288.16	2438.87	534.31
8		288.64	2853.08	599.41
8		289.12	3301.76	667.84
8		289.60	3785.91	739.78

9 ENDTBL

5 RAINFL 9

		.1			
8	0.0000	0.0013	0.0023	0.0034	0.0044
8	0.0055	0.0065	0.0076	0.0087	0.0098
8	0.0109	0.0121	0.0132	0.0143	0.0155
8	0.0167	0.0178	0.0190	0.0202	0.0214
8	0.0226	0.0238	0.0251	0.0263	0.0276
8	0.0288	0.0301	0.0314	0.0327	0.0340
8	0.0353	0.0366	0.0379	0.0393	0.0406
8	0.0420	0.0434	0.0447	0.0461	0.0475
8	0.0489	0.0504	0.0518	0.0532	0.0547
8	0.0562	0.0576	0.0591	0.0606	0.0621
8	0.0636	0.0651	0.0667	0.0682	0.0697
8	0.0713	0.0729	0.0745	0.0760	0.0776
8	0.0793	0.0809	0.0826	0.0843	0.0861
8	0.0879	0.0898	0.0916	0.0936	0.0955
8	0.0975	0.0996	0.1017	0.1038	0.1060

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8	0.1082	0.1104	0.1127	0.1150	0.1174
8	0.1198	0.1223	0.1247	0.1273	0.1298
8	0.1324	0.1351	0.1378	0.1405	0.1432
8	0.1461	0.1490	0.1521	0.1554	0.1588
8	0.1623	0.1660	0.1699	0.1739	0.1780
8	0.1823	0.1868	0.1914	0.1961	0.2010
8	0.2061	0.2117	0.2179	0.2247	0.2321

8	0.2400	0.2490	0.2591	0.2702	0.2825
8	0.2955	0.3157	0.3370	0.3662	0.4067
8	0.4766	0.5933	0.6338	0.6630	0.6843
8	0.7045	0.7176	0.7298	0.7409	0.7510
8	0.7600	0.7679	0.7753	0.7821	0.7883
8	0.7939	0.7990	0.8039	0.8086	0.8132
8	0.8177	0.8220	0.8261	0.8301	0.8340
8	0.8377	0.8412	0.8446	0.8479	0.8510
8	0.8540	0.8568	0.8595	0.8622	0.8649
8	0.8676	0.8702	0.8727	0.8753	0.8778
8	0.8802	0.8826	0.8850	0.8873	0.8896
8	0.8918	0.8940	0.8962	0.8983	0.9004
8	0.9025	0.9045	0.9064	0.9084	0.9103
8	0.9121	0.9139	0.9157	0.9174	0.9191
8	0.9208	0.9224	0.9240	0.9256	0.9271
8	0.9287	0.9303	0.9318	0.9334	0.9349
8	0.9364	0.9379	0.9394	0.9409	0.9424
8	0.9439	0.9453	0.9468	0.9482	0.9496
8	0.9511	0.9525	0.9539	0.9553	0.9566
8	0.9580	0.9594	0.9607	0.9621	0.9634
8	0.9647	0.9660	0.9673	0.9686	0.9699
8	0.9712	0.9724	0.9737	0.9749	0.9762
8	0.9774	0.9786	0.9798	0.9810	0.9822
8	0.9834	0.9845	0.9857	0.9868	0.9879
8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000

9 ENDTBL

2	XSECTN	051	1.0	248.40	
8			247.07	0.00	0.00
8			247.41	1.85	1.14
8			247.74	5.93	2.35
8			248.07	27.43	7.18
8			248.40	58.61	12.46
8			248.67	89.70	40.04
8			248.95	158.39	68.99
8			249.22	256.90	99.30
8			249.49	382.40	130.99
8			249.77	533.43	164.04
8			250.04	709.09	198.46
8			250.31	908.86	234.24
8			250.59	1132.40	271.40
8			250.86	1379.55	309.92

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			251.13	1650.25	349.81
8			251.41	1944.49	391.07
8			251.68	2262.35	433.69
8			251.95	2603.94	477.69
8			252.23	2969.40	523.05
8			252.50	3358.93	569.78

9 ENDTBL

2	XSECTN	061	1.0	212.00	
8			210.50	0.00	0.00
8			210.75	4.72	2.23
8			211.00	15.68	4.92
8			211.25	32.36	8.06
8			211.50	54.93	11.67
8			211.75	83.70	15.73

8				212.00	119.05	20.25		
8				212.25	163.87	25.14		
8				212.50	215.35	30.31		
8				212.75	273.55	35.77		
8				213.00	338.57	41.50		
8				214.00	669.42	67.25		
8				215.00	806.07	99.00		
8				216.00	1088.03	138.25		
8				217.00	1451.30	187.50		
8				218.00	1978.93	249.25		
8				219.00	2262.06	340.00		
8				220.00	3115.20	476.25		
8				221.00	4892.67	639.25		
9	ENDTBL							
6	RUNOFF	1	01	1	0.1715	63.465	0.623	1 SA1
6	REACH	3	11	1 2	3007.5			
6	RUNOFF	1	02	1	0.2497	68.412	0.457	1 SA2
6	ADDHYD	4	12	1 2 3				1
6	REACH	3	21	3 1	1442.6			
6	RUNOFF	1	03	2	0.3624	71.673	0.462	1 SA3
6	ADDHYD	4	23	1 2 3				1
6	REACH	3	31	3 1	1147.3			
6	RUNOFF	1	04	2	0.1574	70.494	0.460	1 SA4
6	ADDHYD	4	34	1 2 3				1
6	REACH	3	41	3 1	1744.9			
6	RUNOFF	1	05	2	0.0921	56.210	0.292	1 SA5
6	ADDHYD	4	45	1 2 3				1
6	REACH	3	51	3 1	1483.4			
6	RUNOFF	1	06	2	0.2566	51.216	0.274	1 SA6
6	ADDHYD	4	56	1 2 3				1
6	REACH	3	61	3 1	3192.4			
6	RUNOFF	1	07	2	0.2682	53.280	0.350	1 SA7
6	ADDHYD	4	67	1 2 3			1	1
	OUTLET							
	ENDATA							
7	INCREM	6			.06			
7	COMPUT	7	01	67	0.0	3.19	1.09 2 1 2	

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

ENDCMP	1							
7	COMPUT	7	01	67	0.0	4.93	1.09 2 1 10	
ENDCMP	1							
7	COMPUT	7	01	67	0.0	7.23	1.09 2 1 50	
ENDCMP	1							
7	COMPUT	7	01	67	0.0	8.47	1.09 2 1 99	
ENDCMP	1							
ENDJOB	2							

\*\*\*\*\*END OF 80-80  
LIST\*\*\*\*\*

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PASS 1 JOB NO. 1

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EXECUTIVE CONTROL INCREM      MAIN TIME INCREMENT =    .060 HOURS

EXECUTIVE CONTROL COMPUT      FROM XSECTION    1   TO XSECTION    67  
STARTING TIME =    .00            RAIN DEPTH =    3.19            RAIN DURATION =    1.00  
ANT. RUNOFF COND. = 2            MAIN TIME INCREMENT =    .060 HOURS  
ALTERNATE NO. = 1                STORM NO. = 2            RAIN TABLE NO. = 9

OPERATION ADDHYD    XSECTION    67

PEAK TIME(HRS)                    PEAK DISCHARGE(CFS)                    PEAK  
ELEVATION(FEET)  
13.12                                    203.1                                    (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW =    .00 CFS)  
.55 WATERSHED INCHES;            554 CFS-HRS;            45.8 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP      COMPUTATIONS COMPLETED FOR PASS    1

EXECUTIVE CONTROL COMPUT      FROM XSECTION    1   TO XSECTION    67  
STARTING TIME =    .00            RAIN DEPTH =    4.93            RAIN DURATION =    1.00  
ANT. RUNOFF COND. = 2            MAIN TIME INCREMENT =    .060 HOURS  
ALTERNATE NO. = 1                STORM NO. =10            RAIN TABLE NO. = 9

OPERATION ADDHYD    XSECTION    67

PEAK TIME(HRS)                    PEAK DISCHARGE(CFS)                    PEAK  
ELEVATION(FEET)  
12.84                                    691.2                                    (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW =    .00 CFS)  
1.48 WATERSHED INCHES;            1493 CFS-HRS;            123.4 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP      COMPUTATIONS COMPLETED FOR PASS    2

EXECUTIVE CONTROL COMPUT      FROM XSECTION    1   TO XSECTION    67  
STARTING TIME =    .00            RAIN DEPTH =    7.23            RAIN DURATION =    1.00  
ANT. RUNOFF COND. = 2            MAIN TIME INCREMENT =    .060 HOURS  
ALTERNATE NO. = 1                STORM NO. =50            RAIN TABLE NO. = 9

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PASS    3    JOB NO.    1

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OPERATION ADDHYD    XSECTION    67



PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 1492.7 (NULL)  
 12.77

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.06 WATERSHED INCHES; 3078 CFS-HRS; 254.4 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 67  
 STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 9

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 1982.6 (NULL)  
 12.74

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.01 WATERSHED INCHES; 4032 CFS-HRS; 333.2 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 9, ARC 2							
MAIN TIME INCREMENT .060 HOURS							
ALTERNATE	1	STORM	2				
XSECTION	1	RUNOFF	.17	.53	---	12.55	27 158.8
XSECTION	2	RUNOFF	.25	.75	---	12.38	74 296.0
XSECTION	12	ADDHYD	.42	.66	---	12.44	91 216.7
XSECTION	3	RUNOFF	.36	.91	---	12.37	138 383.3

XSECTION	23	ADDHYD	.78	.77	---	12.44	193	247.4
XSECTION	4	RUNOFF	.16	.85	---	12.37	55	343.8
XSECTION	34	ADDHYD	.94	.79	---	12.57	219	233.0
XSECTION	5	RUNOFF	.09	.28	---	12.40	6	66.7
XSECTION	45	ADDHYD	1.03	.74	---	12.80	204	198.1
XSECTION	6	RUNOFF	.26	.15	---	12.64	6	23.1
XSECTION	56	ADDHYD	1.29	.62	---	13.00	199	154.3
XSECTION	7	RUNOFF	.27	.20	---	12.62	10	37.0
XSECTION	67	ADDHYD	1.56	.55	---	13.12	203	130.1

RAINFALL OF 4.93 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 10

XSECTION	1	RUNOFF	.17	1.50	---	12.48	95	558.8
XSECTION	2	RUNOFF	.25	1.86	---	12.35	208	832.0
XSECTION	12	ADDHYD	.42	1.71	---	12.40	281	669.0
XSECTION	3	RUNOFF	.36	2.12	---	12.34	348	966.7
XSECTION	23	ADDHYD	.78	1.90	---	12.42	560	717.9
XSECTION	4	RUNOFF	.16	2.02	---	12.35	144	900.0
XSECTION	34	ADDHYD	.94	1.92	---	12.50	658	700.0
XSECTION	5	RUNOFF	.09	1.02	---	12.26	44	488.9
XSECTION	45	ADDHYD	1.03	1.84	---	12.64	642	623.3
XSECTION	6	RUNOFF	.26	.73	---	12.27	75	288.5

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)
ALTERNATE 1 STORM 10								
XSECTION	56	ADDHYD	1.29	1.62	---	12.75	658	510.1
XSECTION	7	RUNOFF	.27	.84	---	12.32	89	329.6
XSECTION	67	ADDHYD	1.56	1.48	---	12.84	691	442.9

RAINFALL OF 7.23 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 50

XSECTION	1	RUNOFF	.17	3.12	---	12.45	210	1235.3
----------	---	--------	-----	------	-----	-------	-----	--------

XSECTION	2	RUNOFF	.25	3.64	---	12.34	416	1664.0
XSECTION	12	ADDHYD	.42	3.43	---	12.39	589	1402.4
XSECTION	3	RUNOFF	.36	3.99	---	12.33	664	1844.4
XSECTION	23	ADDHYD	.78	3.69	---	12.41	1147	1470.5
XSECTION	4	RUNOFF	.16	3.86	---	12.33	278	1737.5
XSECTION	34	ADDHYD	.94	3.71	---	12.47	1360	1446.8
XSECTION	5	RUNOFF	.09	2.39	---	12.24	120	1333.3
XSECTION	45	ADDHYD	1.03	3.60	---	12.59	1361	1321.4
XSECTION	6	RUNOFF	.26	1.91	---	12.24	260	1000.0
XSECTION	56	ADDHYD	1.29	3.26	---	12.66	1438	1114.7
XSECTION	7	RUNOFF	.27	2.10	---	12.29	274	1014.8
XSECTION	67	ADDHYD	1.56	3.06	---	12.77	1493	957.1

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 99

XSECTION	1	RUNOFF	.17	4.09	---	12.45	279	1641.2
XSECTION	2	RUNOFF	.25	4.68	---	12.33	537	2148.0
XSECTION	12	ADDHYD	.42	4.44	---	12.39	769	1831.0
XSECTION	3	RUNOFF	.36	5.07	---	12.33	845	2347.2
XSECTION	23	ADDHYD	.78	4.73	---	12.41	1485	1903.8

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	1	STORM	99					
XSECTION	4	RUNOFF	.16	4.92	---	12.33	355	2218.8
XSECTION	34	ADDHYD	.94	4.76	---	12.46	1765	1877.7
XSECTION	5	RUNOFF	.09	3.25	---	12.23	167	1855.6
XSECTION	45	ADDHYD	1.03	4.63	---	12.57	1779	1727.2
XSECTION	6	RUNOFF	.26	2.68	---	12.23	381	1465.4
XSECTION	56	ADDHYD	1.29	4.24	---	12.64	1897	1470.5
XSECTION	7	RUNOFF	.27	2.91	---	12.28	392	1451.9
XSECTION	67	ADDHYD	1.56	4.01	---	12.74	1983	1271.2

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

		HYDROGRAPH INFORMATION				ROUTING PARAMETERS					
XSEC REACH ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN (C)
		COEFF	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
BASEFLOW IS		.0 CFS									
ALTERNATE		1	STORM	2							
11	3008		27	12.5	26	12.7	3.21	1.51	.014	.968	
	.52										
21	1443		91	12.4	78	12.7	1.56	1.06	.093	.859	
	.27										
31	1147		193	12.4	177	12.7	.90	1.17	.051	.920	
	.36										
41	1745		218	12.6	200	12.8	.92	1.20	.061	.914	
	.29										
51	1483		204	12.8	194	13.0	1.58	1.10	.054	.949	
	.33										
61	3192		199	13.0	196	13.1	1.55	1.45	.013	.986	
	.51										
ALTERNATE		1	STORM	10							
11	3008		95	12.5	93	12.5	3.42	1.45	.013	.980	
	.67?										
21	1443		281	12.4	256	12.5	.85	1.23	.057	.914	
	.37										
31	1147		560	12.4	541	12.5	.36	1.39	.022	.967	
	.54										
41	1745		657	12.5	621	12.7	.50	1.35	.037	.946	
	.42										
51	1483		642	12.7	625	12.8	.58	1.34	.024	.974	
	.50										
61	3192		657	12.8	652	12.8	1.64	1.43	.011	.992	
	.65										
ALTERNATE		1	STORM	50							
11	3008		209	12.5	208	12.5	3.64	1.42	.011	.995	
	.76?										

21	1443	585	12.4	555	12.5	.63	1.30	.039	.948
.46									
31	1147	1146	12.4	1124	12.5	.27	1.45	.015	.980
.66									
41	1745	1360	12.5	1307	12.6	.44	1.37	.029	.961
.50									
51	1483	1359	12.6	1337	12.7	.40	1.42	.015	.983
.63									
61	3192	1438	12.7	1389	12.8	4.20	1.12	.044	.966
.45									

ALTERNATE 1 STORM 99

11	3008	278	12.4	276	12.5	3.73	1.41	.011	.995
.79?									
21	1443	766	12.4	727	12.5	.61	1.31	.036	.950
.48									
31	1147	1484	12.4	1463	12.5	.26	1.46	.013	.986
.70?									
41	1745	1762	12.5	1700	12.6	.43	1.38	.026	.965
.52									
51	1483	1772	12.5	1756	12.7	.37	1.43	.013	.991
.67?									

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC	REACH	FLOOD	INFLOW		OUTFLOW		Q-A EQ.		LENGTH	PEAK	ATT-
		PLAIN	PEAK	TIME	PEAK	TIME	COEFF	POWER			
ID	LENGTH	LENGTH	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	(C)
COEFF	(FT)	(FT)									

ALTERNATE 1 STORM 99

61	3192	1894	12.7	1833	12.8	4.34	1.11	.044	.968
.46									

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		2	10	50	99
XSECTION 1	.17				
ALTERNATE 1		27	95	210	279
XSECTION 2	.25				
ALTERNATE 1		74	208	416	537
XSECTION 3	.36				
ALTERNATE 1		138	348	664	845
XSECTION 4	.16				
ALTERNATE 1		55	144	278	355
XSECTION 5	.09				
ALTERNATE 1		6	44	120	167
XSECTION 6	.26				
ALTERNATE 1		6	75	260	381
XSECTION 7	.27				
ALTERNATE 1		10	89	274	392
XSECTION 12	.42				
ALTERNATE 1		91	281	589	769
XSECTION 23	.78				
ALTERNATE 1		193	560	1147	1485
XSECTION 34	.94				
ALTERNATE 1		219	658	1360	1765
XSECTION 45	1.03				
ALTERNATE 1		204	642	1361	1779
XSECTION 56	1.29				
ALTERNATE 1		199	658	1438	1897
XSECTION 67	1.56				
ALTERNATE 1		203	691	1493	1983

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TR20 ----- SCS

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Ellicott City Flood Study- Subareas, Existing Conditions  
VERSION

03/31/\*\* 2,10,50,100 yr (24hr) - Updated CNs; NOAA Std Dist.  
2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = ecsa2wd.dat , GIVEN DATA FILE  
OUTPUT = ecsa2wd.OUT , DATED  
03/31/\*\*,09:48:48

FILES GENERATED - DATED 03/31/\*\*,09:48:48

NONE!

TOTAL NUMBER OF WARNINGS = 0, MESSAGES = 0

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
HYDROLOGY\*\*\*\*\*

JOB	TR-20	NOPLOTS				
TITLE	Ellicott City Flood Study-Tiber/South Drainage Areas					
TITLE	8 Major Subareas - Std NOAA_C Storm Events; No MGMT					
5 RAINFL	1	.1				
8	0.0000	0.0013	0.0023	0.0034	0.0044	
8	0.0055	0.0065	0.0076	0.0087	0.0098	
8	0.0109	0.0121	0.0132	0.0143	0.0155	
8	0.0167	0.0178	0.0190	0.0202	0.0214	
8	0.0226	0.0238	0.0251	0.0263	0.0276	
8	0.0288	0.0301	0.0314	0.0327	0.0340	
8	0.0353	0.0366	0.0379	0.0393	0.0406	
8	0.0420	0.0434	0.0447	0.0461	0.0475	
8	0.0489	0.0504	0.0518	0.0532	0.0547	
8	0.0562	0.0576	0.0591	0.0606	0.0621	
8	0.0636	0.0651	0.0667	0.0682	0.0697	
8	0.0713	0.0729	0.0745	0.0760	0.0776	
8	0.0793	0.0809	0.0826	0.0843	0.0861	
8	0.0879	0.0898	0.0916	0.0936	0.0955	
8	0.0975	0.0996	0.1017	0.1038	0.1060	
8	0.1082	0.1104	0.1127	0.1150	0.1174	
8	0.1198	0.1223	0.1247	0.1273	0.1298	
8	0.1324	0.1351	0.1378	0.1405	0.1432	
8	0.1461	0.1490	0.1521	0.1554	0.1588	
8	0.1623	0.1660	0.1699	0.1739	0.1780	
8	0.1823	0.1868	0.1914	0.1961	0.2010	
8	0.2061	0.2117	0.2179	0.2247	0.2321	
8	0.2400	0.2490	0.2591	0.2702	0.2825	
8	0.2955	0.3157	0.3370	0.3662	0.4067	
8	0.4766	0.5933	0.6338	0.6630	0.6843	
8	0.7045	0.7176	0.7298	0.7409	0.7510	
8	0.7600	0.7679	0.7753	0.7821	0.7883	
8	0.7939	0.7990	0.8039	0.8086	0.8132	
8	0.8177	0.8220	0.8261	0.8301	0.8340	
8	0.8377	0.8412	0.8446	0.8479	0.8510	
8	0.8540	0.8568	0.8595	0.8622	0.8649	
8	0.8676	0.8702	0.8727	0.8753	0.8778	
8	0.8802	0.8826	0.8850	0.8873	0.8896	
8	0.8918	0.8940	0.8962	0.8983	0.9004	
8	0.9025	0.9045	0.9064	0.9084	0.9103	
8	0.9121	0.9139	0.9157	0.9174	0.9191	
8	0.9208	0.9224	0.9240	0.9256	0.9271	
8	0.9287	0.9303	0.9318	0.9334	0.9349	
8	0.9364	0.9379	0.9394	0.9409	0.9424	
8	0.9439	0.9453	0.9468	0.9482	0.9496	
8	0.9511	0.9525	0.9539	0.9553	0.9566	
8	0.9580	0.9594	0.9607	0.9621	0.9634	
8	0.9647	0.9660	0.9673	0.9686	0.9699	
8	0.9712	0.9724	0.9737	0.9749	0.9762	
8	0.9774	0.9786	0.9798	0.9810	0.9822	
8	0.9834	0.9845	0.9857	0.9868	0.9879	

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*



8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000

9	ENDTBL				
2	XSECTN	102	1.0	241.00	
8			240.00	0.00	0.00
8			240.25	16.96	3.03
8			240.50	55.93	6.63
8			240.75	114.89	10.78
8			241.00	194.09	15.50
8			242.00	733.59	40.00
8			243.00	1342.05	71.50
8			244.00	2134.92	108.00
8			245.00	2390.04	154.00

9	ENDTBL				
2	XSECTN	105	1.0	223.00	
8			222.00	0.00	0.00
8			222.25	2.28	0.83
8			222.50	8.62	2.16
8			222.75	19.85	3.97
8			223.00	36.86	6.28
8			224.00	179.35	20.41
8			225.00	338.28	41.30
8			226.00	584.84	67.85
8			227.00	830.09	103.44
8			228.00	1249.11	151.47
8			229.00	1307.14	232.37
8			230.00	2023.03	366.57

9	ENDTBL				
2	XSECTN	108	1.0	239.00	
8			238.00	0.00	0.00
8			238.25	7.90	2.78
8			238.50	26.24	6.13
8			238.75	54.15	10.03
8			239.00	91.89	14.50
8			240.00	352.41	38.00
8			241.00	637.23	68.75
8			242.00	1020.54	105.00
8			243.00	1521.80	145.25
8			244.00	2087.28	188.00
8			245.00	2747.41	233.00
8			246.00	3455.87	280.00

9	ENDTBL				
2	XSECTN	109	1.0	128.00	
8			129.00	0.00	0.00
8			129.25	1.13	0.50
8			129.50	5.18	1.55
8			129.75	13.39	3.16
8			130.00	26.84	5.32
8			131.00	191.72	26.64

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8			132.00	508.02	58.78
8			133.00	945.51	95.90
8			134.00	1449.27	136.08
8			135.00	2016.68	178.64
8			138.00	4199.86	314.48

9	ENDTBL				
6	RUNOFF	1 014	1 0.3808	68.52	0.388
					1
					1 DA14

```

6 RUNOFF 1 015      2 0.2131      68.54      0.435      1      1 DA15
6 ADDHYD 4 101      1 2 3      1
DA14+15
6 REACH 3 102      3 4      4457.0      1
6 RUNOFF 1 013      3 0.2701      67.42      0.425      1      1 DA13
6 ADDHYD 4 103      3 4 5      1
DA13+102
6 RUNOFF 1 011      1 0.3648      70.24      0.570      1      1 DA11
6 RUNOFF 1 012      2 0.1588      70.00      0.260      1      1 DA12
6 ADDHYD 4 104      1 2 3      1
DA11+12
6 REACH 3 105      3 4      3130.9      1
6 RUNOFF 1 010      1 0.1447      55.60      0.263      1      1 DA10
6 ADDHYD 4 106      1 4 6      1
DA10+105
6 ADDHYD 4 107      5 6 7      1      1
103+106
6 REACH 3 108      7 1      1560.1      1
6 RUNOFF 1 008      2 0.5371      64.12      0.665      1      1 DA8
6 REACH 3 109      2 3      1653.5      1
6 ADDHYD 4 110      1 3 4      1
108+109
6 RUNOFF 1 009      1 0.0756      56.00      0.180      1      1 DA9
6 ADDHYD 4 111      1 4 5      1      1
110+DA9
ENDATA
7 INCREM 6      .1
7 COMPUT 7 014      111 0.0      3.19      1.01 2 1 2
ENDCMP 1
7 COMPUT 7 014      111 0.0      4.10      1.01 2 1 05
ENDCMP 1
7 COMPUT 7 014      111 0.0      4.91      1.01 2 1 10
ENDCMP 1
7 COMPUT 7 014      111 0.0      6.14      1.01 2 1 25
ENDCMP 1
7 COMPUT 7 014      111 0.0      7.23      1.01 2 1 50
ENDCMP 1
7 COMPUT 7 014      111 0.0      8.47      1.01 2 1 99
ENDCMP 1
ENDJOB 2

```

\*\*\*\*\*END OF 80-80

LIST\*\*\*\*\*

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TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Drainage Areas  
VERSION

06/05/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT

2.04TEST

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PASS 1 JOB NO. 1

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EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .100 HOURS

```

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111
STARTING TIME = .00 RAIN DEPTH = 3.19 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 1 STORM NO. = 2 RAIN TABLE NO. = 1

```

OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	124.0	(RUNOFF)
20.67	5.7	(RUNOFF)
23.76	4.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.75 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	65.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.75 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	189.2	(NULL)
20.08	9.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.75 WATERSHED INCHES; 288 CFS-HRS; 23.8 ACRE-FEET.

OPERATION REACH XSECTION 102

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.46	182.5	240.96

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.75 WATERSHED INCHES; 288 CFS-HRS; 23.8 ACRE-FEET.

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TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Drainage Areas  
VERSION  
06/05/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT  
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OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	76.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

.70 WATERSHED INCHES; 122 CFS-HRS; 10.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	256.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.74 WATERSHED INCHES; 410 CFS-HRS; 33.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	111.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.83 WATERSHED INCHES; 196 CFS-HRS; 16.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	71.5	(RUNOFF)
23.76	2.0	(RUNOFF)
23.97	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.82 WATERSHED INCHES; 84 CFS-HRS; 7.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	157.9	(NULL)
20.06	8.8	(NULL)
23.05	7.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.83 WATERSHED INCHES; 280 CFS-HRS; 23.2 ACRE-  
FEET.

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Ellicott City Flood Study-Tiber/South Drainage Areas  
VERSION

06/05/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT

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OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.50	155.3	223.83

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .83 WATERSHED INCHES; 280 CFS-HRS; 23.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	8.8	(RUNOFF)
23.11	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .26 WATERSHED INCHES; 25 CFS-HRS; 2.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	163.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .71 WATERSHED INCHES; 305 CFS-HRS; 25.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	419.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .72 WATERSHED INCHES; 715 CFS-HRS; 59.1 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
 \*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	419.9	240.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .72 WATERSHED INCHES; 715 CFS-HRS; 59.1 ACRE-  
 FEET.

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 TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Drainage Areas  
 VERSION  
 06/05/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT  
 2.04TEST  
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OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.58	86.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.56 WATERSHED INCHES; 194 CFS-HRS; 16.0 ACRE-FEET.

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.69	86.4	130.36

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.56 WATERSHED INCHES; 194 CFS-HRS; 16.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	481.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.68 WATERSHED INCHES; 909 CFS-HRS; 75.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	5.4	(RUNOFF)
15.49	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.28 WATERSHED INCHES; 13 CFS-HRS; 1.1 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 6.8%.  
\*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	486.2	(NULL)

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Ellicott City Flood Study-Tiber/South Drainage Areas  
VERSION

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .67 WATERSHED INCHES; 922 CFS-HRS; 76.2 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111  
 STARTING TIME = .00 RAIN DEPTH = 4.10 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. = 5 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	235.0	(RUNOFF)
20.11	9.1	(RUNOFF)
23.75	7.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.30 WATERSHED INCHES; 320 CFS-HRS; 26.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	123.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.30 WATERSHED INCHES; 179 CFS-HRS; 14.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	357.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.30 WATERSHED INCHES; 499 CFS-HRS; 41.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 102

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.43	354.4	241.30

1 TR20 ----- SCS  
 -

VERSION  
 06/05/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.30 WATERSHED INCHES; 499 CFS-HRS; 41.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	148.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.23 WATERSHED INCHES; 215 CFS-HRS; 17.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	493.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.28 WATERSHED INCHES; 714 CFS-HRS; 59.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	203.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.41 WATERSHED INCHES; 332 CFS-HRS; 27.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	129.3	(RUNOFF)
19.45	4.1	(RUNOFF)
23.10	3.2	(RUNOFF)
23.76	3.1	(RUNOFF)
23.97	3.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 104

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Ellicott City Flood Study-Tiber/South Drainage Areas  
VERSION06/05/\*\*  
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8 Major Subareas - Std NOAA\_C Storm Events; No MGMT

PASS 2 JOB NO. 1

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	290.7	(NULL)
20.06	13.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.41 WATERSHED INCHES; 475 CFS-HRS; 39.3 ACRE-FEET.

## OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	279.9	224.63

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.41 WATERSHED INCHES; 475 CFS-HRS; 39.3 ACRE-FEET.

## OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	33.9	(RUNOFF)
21.46	2.0	(RUNOFF)
23.97	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.60 WATERSHED INCHES; 56 CFS-HRS; 4.6 ACRE-FEET.

## OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	304.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.23 WATERSHED INCHES; 531 CFS-HRS; 43.9 ACRE-FEET.

## OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	796.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.26 WATERSHED INCHES; 1244 CFS-HRS; 102.8 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,

CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
 \*\*\*

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Ellicott City Flood Study-Tiber/South Drainage Areas  
 VERSION

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OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	796.4	241.42

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.26 WATERSHED INCHES; 1244 CFS-HRS; 102.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.53	185.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.03 WATERSHED INCHES; 358 CFS-HRS; 29.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.64	185.0	130.96

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.03 WATERSHED INCHES; 358 CFS-HRS; 29.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	944.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.20 WATERSHED INCHES; 1603 CFS-HRS; 132.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	22.4	(RUNOFF)
22.45	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .62 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
 FEET.

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Ellicott City Flood Study-Tiber/South Drainage Areas  
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\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 3.1%.  
 \*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	956.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.18 WATERSHED INCHES; 1633 CFS-HRS; 135.0 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111  
 STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =10 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	342.2	(RUNOFF)
20.08	12.1	(RUNOFF)
20.66	11.6	(RUNOFF)
23.76	9.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.85 WATERSHED INCHES; 456 CFS-HRS; 37.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	182.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.86 WATERSHED INCHES; 255 CFS-HRS; 21.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 101

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	524.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.85 WATERSHED INCHES;	711 CFS-HRS;	58.7 ACRE-
FEET.		

OPERATION REACH XSECTION 102

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	522.8	241.61

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.85 WATERSHED INCHES;	711 CFS-HRS;	58.7 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	221.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.77 WATERSHED INCHES;	309 CFS-HRS;	25.5 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	731.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.83 WATERSHED INCHES;	1019 CFS-HRS;	84.2 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	291.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.99 WATERSHED INCHES;	468 CFS-HRS;	38.7 ACRE-

FEET.

OPERATION RUNOFF XSECTION 12

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	185.1	(RUNOFF)
20.10	5.2	(RUNOFF)
23.10	4.2	(RUNOFF)
23.97	3.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 202 CFS-HRS; 16.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	419.9	(NULL)
20.05	17.3	(NULL)
23.95	13.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.98 WATERSHED INCHES; 670 CFS-HRS; 55.3 ACRE-  
FEET.

OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	401.0	225.25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.98 WATERSHED INCHES; 670 CFS-HRS; 55.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	68.8	(RUNOFF)
20.11	3.2	(RUNOFF)
20.67	3.0	(RUNOFF)
23.97	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.97 WATERSHED INCHES; 91 CFS-HRS; 7.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	447.3	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.76 WATERSHED INCHES;	760 CFS-HRS;	62.8 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	1175.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.80 WATERSHED INCHES;	1779 CFS-HRS;	147.0 ACRE-
FEET.		

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
\*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	1175.0	242.31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.80 WATERSHED INCHES;	1779 CFS-HRS;	147.0 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.51	290.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.53 WATERSHED INCHES;	531 CFS-HRS;	43.9 ACRE-
FEET.		

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
\*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.51	290.2	131.31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.53 WATERSHED INCHES; 531 CFS-HRS; 43.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 110  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	1454.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.73 WATERSHED INCHES; 2310 CFS-HRS; 190.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	42.6	(RUNOFF)
17.35	2.2	(RUNOFF)
23.97	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .99 WATERSHED INCHES; 49 CFS-HRS; 4.0 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 2.6%.  
 \*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	1475.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.70 WATERSHED INCHES; 2359 CFS-HRS; 194.9 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3  
 EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111

STARTING TIME = .00                      RAIN DEPTH = 6.14                      RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2                      MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1                      STORM NO. =25                      RAIN TABLE NO. = 1

OPERATION RUNOFF    XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	526.0	(RUNOFF)
20.07	16.6	(RUNOFF)
23.75	12.6	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.78 WATERSHED INCHES;    682 CFS-HRS;    56.4 ACRE-FEET.

OPERATION RUNOFF    XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	278.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.78 WATERSHED INCHES;    382 CFS-HRS;    31.6 ACRE-FEET.

OPERATION ADDHYD    XSECTION 101

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	802.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.78 WATERSHED INCHES;    1064 CFS-HRS;    87.9 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 102.  
 \*\*\*

OPERATION REACH    XSECTION 102

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	802.9	242.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.78 WATERSHED INCHES;    1064 CFS-HRS;    87.9 ACRE-FEET.



## OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	343.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.67 WATERSHED INCHES; 466 CFS-HRS; 38.5 ACRE-  
 FEET.

## OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	1145.4	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.74 WATERSHED INCHES; 1530 CFS-HRS; 126.4 ACRE-  
 FEET.

## OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	437.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.94 WATERSHED INCHES; 692 CFS-HRS; 57.2 ACRE-  
 FEET.

## OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	280.1	(RUNOFF)
20.10	7.1	(RUNOFF)
21.97	6.3	(RUNOFF)
23.97	5.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 299 CFS-HRS; 24.7 ACRE-  
 FEET.

## OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	631.8	(NULL)
20.05	23.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.93 WATERSHED INCHES; 990 CFS-HRS; 81.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	603.6	226.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.93 WATERSHED INCHES; 990 CFS-HRS; 81.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	130.2	(RUNOFF)
18.86	5.0	(RUNOFF)
21.97	4.2	(RUNOFF)
23.97	3.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.65 WATERSHED INCHES; 154 CFS-HRS; 12.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	685.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.65 WATERSHED INCHES; 1144 CFS-HRS; 94.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	1798.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.70 WATERSHED INCHES; 2674 CFS-HRS; 221.0 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.

\*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	1798.2	243.49
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.70 WATERSHED INCHES;	2674 CFS-HRS;	221.0 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	466.6	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.37 WATERSHED INCHES;	822 CFS-HRS;	68.0 ACRE-
FEET.		

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\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
 \*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	466.6	131.87
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.37 WATERSHED INCHES;	822 CFS-HRS;	68.0 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	2194.1	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.62 WATERSHED INCHES;	3496 CFS-HRS;	288.9 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION(FEET)		
12.19	78.5	(RUNOFF)
15.86	4.2	(RUNOFF)
17.35	3.3	(RUNOFF)
22.76	2.1	(RUNOFF)
23.08	2.1	(RUNOFF)
23.97	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.68 WATERSHED INCHES; 82 CFS-HRS; 6.8 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 4.9%.  
 \*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	2237.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.58 WATERSHED INCHES; 3578 CFS-HRS; 295.7 ACRE-  
 FEET.

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EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111  
 STARTING TIME = .00 RAIN DEPTH = 7.23 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =50 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	690.9	(RUNOFF)
20.09	20.7	(RUNOFF)
23.08	16.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.65 WATERSHED INCHES; 897 CFS-HRS; 74.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION(FEET)  
 12.32 366.9 (RUNOFF)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.65 WATERSHED INCHES; 502 CFS-HRS; 41.5 ACRE-  
 FEET.

## OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.31 1056.1 (NULL)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.65 WATERSHED INCHES; 1399 CFS-HRS; 115.6 ACRE-  
 FEET.

## OPERATION REACH XSECTION 102

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.41 1055.4 242.53  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.65 WATERSHED INCHES; 1399 CFS-HRS; 115.6 ACRE-  
 FEET.

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## OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.32 458.0 (RUNOFF)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.53 WATERSHED INCHES; 616 CFS-HRS; 50.9 ACRE-  
 FEET.

## OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.39 1482.3 (NULL)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.61 WATERSHED INCHES; 2015 CFS-HRS; 166.5 ACRE-  
 FEET.

## OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	573.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.83 WATERSHED INCHES; 902 CFS-HRS; 74.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	366.3	(RUNOFF)
18.85	9.5	(RUNOFF)
20.86	8.3	(RUNOFF)
21.97	7.7	(RUNOFF)
23.10	7.1	(RUNOFF)
23.97	6.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 390 CFS-HRS; 32.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	830.6	(NULL)
20.05	29.3	(NULL)
23.95	21.9	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.83 WATERSHED INCHES; 1293 CFS-HRS; 106.8 ACRE-FEET.

OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	783.4	226.81

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.83 WATERSHED INCHES; 1293 CFS-HRS; 106.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	193.2	(RUNOFF)

20.11	6.2	(RUNOFF)
21.97	5.5	(RUNOFF)
23.10	5.0	(RUNOFF)
23.97	4.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.32 WATERSHED INCHES; 217 CFS-HRS; 17.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	896.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.50 WATERSHED INCHES; 1510 CFS-HRS; 124.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	2373.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.56 WATERSHED INCHES; 3525 CFS-HRS; 291.3 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
 \*\*\*

OPERATION REACH XSECTION 108

1 TR20 ----- SCS  
 -

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	2373.2	244.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.56 WATERSHED INCHES; 3525 CFS-HRS; 291.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	638.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

3.19 WATERSHED INCHES; 1106 CFS-HRS; 91.4 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
\*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	638.0	132.30
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.19 WATERSHED INCHES; 1106 CFS-HRS; 91.4 ACRE- FEET.		

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	2993.2	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.47 WATERSHED INCHES; 4631 CFS-HRS; 382.7 ACRE- FEET.		

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	114.3	(RUNOFF)
15.85	5.5	(RUNOFF)
17.35	4.3	(RUNOFF)
20.86	3.1	(RUNOFF)
23.97	2.6	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.37 WATERSHED INCHES; 115 CFS-HRS; 9.5 ACRE- FEET.		

1 TR20 ----- SCS  
-

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\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 5.6%.  
\*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		



12.41 3044.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.43 WATERSHED INCHES; 4746 CFS-HRS; 392.2 ACRE-
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111
STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.29 894.6 (RUNOFF)
23.75 19.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.69 WATERSHED INCHES; 1153 CFS-HRS; 95.2 ACRE-
FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.32 473.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.69 WATERSHED INCHES; 646 CFS-HRS; 53.3 ACRE-
FEET.

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.30 1365.3 (NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.69 WATERSHED INCHES; 1798 CFS-HRS; 148.6 ACRE-
FEET.

OPERATION REACH XSECTION 102

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)

12.40 1361.0 243.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.69 WATERSHED INCHES; 1798 CFS-HRS; 148.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	591.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.56 WATERSHED INCHES; 795 CFS-HRS; 65.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	1913.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 2593 CFS-HRS; 214.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	734.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.90 WATERSHED INCHES; 1152 CFS-HRS; 95.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 12

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	466.2	(RUNOFF)
18.85	11.6	(RUNOFF)
20.85	10.2	(RUNOFF)
21.97	9.4	(RUNOFF)
23.10	8.6	(RUNOFF)
23.75	8.1	(RUNOFF)
23.97	8.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 499 CFS-HRS; 41.2 ACRE-

FEET.

OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	1063.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.89 WATERSHED INCHES; 1651 CFS-HRS; 136.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	1006.2	227.42

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.89 WATERSHED INCHES; 1652 CFS-HRS; 136.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	270.6	(RUNOFF)
19.45	8.2	(RUNOFF)
21.45	7.2	(RUNOFF)
23.10	6.4	(RUNOFF)
23.76	6.0	(RUNOFF)
23.97	6.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.18 WATERSHED INCHES; 297 CFS-HRS; 24.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 106

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	1163.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.52 WATERSHED INCHES; 1948 CFS-HRS; 161.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	3072.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.59 WATERSHED INCHES; 4541 CFS-HRS; 375.3 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
 \*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	3072.1	245.46

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.59 WATERSHED INCHES; 4541 CFS-HRS; 375.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	841.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.17 WATERSHED INCHES; 1446 CFS-HRS; 119.5 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
 \*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	841.8	132.76

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.17 WATERSHED INCHES; 1446 CFS-HRS; 119.5 ACRE-FEET.

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OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.40 3891.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.48 WATERSHED INCHES; 5988 CFS-HRS; 494.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	158.5	(RUNOFF)
15.85	7.1	(RUNOFF)
20.08	4.2	(RUNOFF)
20.61	4.0	(RUNOFF)
23.97	3.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.22 WATERSHED INCHES; 157 CFS-HRS; 13.0 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 5.9%.  
 \*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.40	3962.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.44 WATERSHED INCHES; 6145 CFS-HRS; 507.8 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6

1 TR20 ----- SCS  
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

RAINTABLE NUMBER 1, ARC 2  
 MAIN TIME INCREMENT .100 HOURS

ALTERNATE		1	STORM	2				
XSECTION	14	RUNOFF	.38	.75	---	12.33	124	326.3
XSECTION	15	RUNOFF	.21	.75	---	12.36	65	309.5
XSECTION	13	RUNOFF	.27	.70	---	12.36	76	281.5
XSECTION	11	RUNOFF	.36	.83	---	12.46	111	308.3
XSECTION	12	RUNOFF	.16	.82	---	12.23	71	443.8
XSECTION	10	RUNOFF	.14	.26	---	12.42	9	64.3
XSECTION	107	ADDHYD	1.53	.72	---	12.45	420	274.5
XSECTION	8	RUNOFF	.54	.56	---	12.58	87	161.1
XSECTION	9	RUNOFF	.08	.28	---	12.31	5	62.5
XSECTION	111	ADDHYD	2.14	.67	---	12.49	486	227.1

RAINFALL OF 4.10 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	5				
XSECTION	14	RUNOFF	.38	1.30	---	12.31	235	618.4
XSECTION	15	RUNOFF	.21	1.30	---	12.34	123	585.7
XSECTION	13	RUNOFF	.27	1.23	---	12.34	148	548.1
XSECTION	11	RUNOFF	.36	1.41	---	12.43	203	563.9
XSECTION	12	RUNOFF	.16	1.40	---	12.22	129	806.3
XSECTION	10	RUNOFF	.14	.60	---	12.27	34	242.9
XSECTION	107	ADDHYD	1.53	1.26	---	12.42	796	520.3
XSECTION	8	RUNOFF	.54	1.03	---	12.53	185	342.6
XSECTION	9	RUNOFF	.08	.62	---	12.21	22	275.0
XSECTION	111	ADDHYD	2.14	1.18	---	12.45	957	447.2

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RUNOFF AMOUNT	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ID	OPERATION	(SQ MI)	(IN)					
RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.								
ALTERNATE		1	STORM	10				
XSECTION	14	RUNOFF	.38	1.85	---	12.31	342	900.0
XSECTION	15	RUNOFF	.21	1.86	---	12.33	183	871.4
XSECTION	13	RUNOFF	.27	1.77	---	12.33	222	822.2

XSECTION	11	RUNOFF	.36	1.99	---	12.43	291	808.3
XSECTION	12	RUNOFF	.16	1.97	---	12.22	185	1156.3
XSECTION	10	RUNOFF	.14	.97	---	12.24	69	492.9
XSECTION	107	ADDHYD	1.53	1.80	---	12.41	1175	768.0
XSECTION	8	RUNOFF	.54	1.53	---	12.51	290	537.0
XSECTION	9	RUNOFF	.08	.99	---	12.20	43	537.5
XSECTION	111	ADDHYD	2.14	1.70	---	12.42	1475	689.3

RAINFALL OF 6.14 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 25

XSECTION	14	RUNOFF	.38	2.78	---	12.30	526	1384.2
XSECTION	15	RUNOFF	.21	2.78	---	12.33	279	1328.6
XSECTION	13	RUNOFF	.27	2.67	---	12.32	343	1270.4
XSECTION	11	RUNOFF	.36	2.94	---	12.42	438	1216.7
XSECTION	12	RUNOFF	.16	2.92	---	12.21	280	1750.0
XSECTION	10	RUNOFF	.14	1.65	---	12.23	130	928.6
XSECTION	107	ADDHYD	1.53	2.70	---	12.34	1798	1175.2
XSECTION	8	RUNOFF	.54	2.37	---	12.49	467	864.8
XSECTION	9	RUNOFF	.08	1.68	---	12.19	78	975.0
XSECTION	111	ADDHYD	2.14	2.58	---	12.36	2237	1045.3

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF		PEAK DISCHARGE		
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF	7.23 inches AND	24.00 hr	DURATION,	BEGINS AT	.0 hrs.		
ALTERNATE 1 STORM 50							
XSECTION	14	RUNOFF	.38	3.65	---	12.30	691 1818.4
XSECTION	15	RUNOFF	.21	3.65	---	12.32	367 1747.6
XSECTION	13	RUNOFF	.27	3.53	---	12.32	458 1696.3
XSECTION	11	RUNOFF	.36	3.83	---	12.41	573 1591.7
XSECTION	12	RUNOFF	.16	3.81	---	12.21	366 2287.5
XSECTION	10	RUNOFF	.14	2.32	---	12.22	193 1378.6
XSECTION	107	ADDHYD	1.53	3.56	---	12.40	2373 1551.0
XSECTION	8	RUNOFF	.54	3.19	---	12.48	638 1181.5
XSECTION	9	RUNOFF	.08	2.37	---	12.18	114 1425.0
XSECTION	111	ADDHYD	2.14	3.43	---	12.41	3045 1422.9

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM		99				
XSECTION	14	RUNOFF	.38	4.69	---	12.29	895	2355.3	
XSECTION	15	RUNOFF	.21	4.69	---	12.32	473	2252.4	
XSECTION	13	RUNOFF	.27	4.56	---	12.32	591	2188.9	
XSECTION	11	RUNOFF	.36	4.90	---	12.41	734	2038.9	
XSECTION	12	RUNOFF	.16	4.87	---	12.21	466	2912.5	
XSECTION	10	RUNOFF	.14	3.18	---	12.22	271	1935.7	
XSECTION	107	ADDHYD	1.53	4.59	---	12.39	3072	2007.8	
XSECTION	8	RUNOFF	.54	4.17	---	12.48	842	1559.3	
XSECTION	9	RUNOFF	.08	3.22	---	12.18	158	1975.0	
XSECTION	111	ADDHYD	2.14	4.44	---	12.40	3962	1851.4	

1 TR20 ----- SCS

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;  
 LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION						ROUTING PARAMETERS					
XSEC	REACH	FLOOD	INFLOW		OUTFLOW		Q-A EQ.		LENGTH	PEAK	ATT-
		PLAIN	PEAK	TIME	PEAK	TIME	COEFF	POWER			
COEFF	LENGTH	LENGTH	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	(C)

BASEFLOW IS .0 CFS

ALTERNATE		1	STORM		2						
102	4457		186	12.3	180	12.5	3.36	1.48	.017	.971	
.85?											
105	3131		157	12.4	155	12.5	3.07	1.35	.021	.990	
.79?											
108	1560		412	12.4	412	12.4	2.34	1.36	.007	1.000	
1.00?											
109	1654		87	12.6	86	12.7	3.02	1.28	.013	.997	
.93?											

ALTERNATE		1	STORM		5						
102	4457		356	12.3	351	12.4	3.55	1.45	.017	.987	
.93?											
105	3131		289	12.3	280	12.5	4.31	1.19	.038	.968	
.72?											



108	1560	793	12.4	793	12.4	3.77	1.21	.014	1.000
1.00?									
109	1654	184	12.5	184	12.6	3.29	1.24	.015	.998
.98?									

ALTERNATE 1 STORM 10

102	4457	522	12.3	521	12.4	3.69	1.44	.015	.997
.98?									
105	3131	419	12.3	400	12.5	4.99	1.13	.045	.956
.70?									
108	1560	1174	12.4	1174	12.4	4.03	1.19	.015	1.000
1.00?									
109	1654	290	12.5	290	12.5	3.32	1.24	.014	1.000
1.00?									

ALTERNATE 1 STORM 25

102	4457	802	12.3	802	12.3	4.14	1.40	.016	1.000
1.00?									
105	3131	631	12.3	600	12.5	5.44	1.10	.049	.951
.70?									
108	1560	1771	12.3	1771	12.3	3.82	1.20	.013	1.000
1.00?									
109	1654	467	12.5	467	12.5	3.34	1.23	.014	1.000
1.00?									

ALTERNATE 1 STORM 50

102	4457	1056	12.3	1055	12.4	5.20	1.32	.020	.999
.99?									
105	3131	830	12.3	780	12.5	6.78	1.04	.063	.940
.65									
108	1560	2373	12.4	2373	12.4	3.62	1.22	.012	1.000
1.00?									
109	1654	637	12.5	637	12.5	3.28	1.24	.013	1.000
1.00?									

ALTERNATE 1 STORM 99

102	4457	1365	12.3	1361	12.4	6.52	1.25	.024	.997
.97?									
105	3131	1064	12.3	999	12.5	6.60	1.04	.061	.940
.66									

1 TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Drainage Areas  
 VERSION  
 06/05/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT  
 2.04TEST  
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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;  
 LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION ROUTING PARAMETERS

XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
	ALTERNATE	1	STORM	99							
108	1560		3070	12.4	3070	12.4	3.43	1.23	.010	1.000	
1.00?											
109	1654		840	12.5	840	12.5	3.19	1.25	.011	1.000	
1.00?											

1  
TR20 ----- SCS  
-

Ellicott City Flood Study-Tiber/South Drainage Areas  
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8 Major Subareas - Std NOAA\_C Storm Events; No MGMT

SUMMARY, JOB NO. 1 PAGE

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION 8	.54					
ALTERNATE 638	1	87	185	290	467	
XSECTION 9	.08					
ALTERNATE 114	1	5	22	43	78	
XSECTION 10	.14					
ALTERNATE 193	1	9	34	69	130	
XSECTION 11	.36					
ALTERNATE 573	1	111	203	291	438	
XSECTION 12	.16					
ALTERNATE 366	1	71	129	185	280	
XSECTION 13	.27					
ALTERNATE 458	1	76	148	222	343	

XSECTION	14		.38				
-----							
ALTERNATE	1			124	235	342	526
691							
XSECTION	15		.21				
-----							
ALTERNATE	1			65	123	183	279
367							
XSECTION	107		1.53				
-----							
ALTERNATE	1			420	796	1175	1798
2373							
XSECTION	111		2.14				
-----							
ALTERNATE	1			486	957	1475	2237
3045							

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION	8	.54
-----		
ALTERNATE	1	842
XSECTION	9	.08
-----		
ALTERNATE	1	158
XSECTION	10	.14
-----		
ALTERNATE	1	271
XSECTION	11	.36
-----		

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Drainage Areas  
 VERSION  
 06/05/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT  
 2.04TEST  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
------------------------------	-----------------------------	--------------------------

XSECTION	11	.36	
-----			
ALTERNATE	1		734
XSECTION	12	.16	
-----			
ALTERNATE	1		466
XSECTION	13	.27	
-----			
ALTERNATE	1		591
XSECTION	14	.38	
-----			
ALTERNATE	1		895
XSECTION	15	.21	
-----			
ALTERNATE	1		473
XSECTION	107	1.53	
-----			
ALTERNATE	1		3072
XSECTION	111	2.14	
-----			
ALTERNATE	1		3962

1

TR20 ----- SCS

-

Ellicott City Flood Study-Tiber/South Drainage Areas  
VERSION

06/05/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT  
2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = tibr2wd.dat , GIVEN DATA FILE  
OUTPUT = tibr2wd.OUT , DATED  
06/05/\*\*,15:55:11

FILES GENERATED - DATED 06/05/\*\*,15:55:11

NONE!

TOTAL NUMBER OF WARNINGS = 17, MESSAGES = 0

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
HYDROLOGY\*\*\*\*\*

JOB TR-20		NOPLOTS			
TITLE Ellicott City Flood Study- Subareas, Existing Conditions					
TITLE 2,10,50,100 yr (24hr) - Updated CNs; NOAA Sta Dist.					
2	XSECTN	011	1.0	344.00	
8			340.00	0.00	0.00
8			340.25	7.08	1.69
8			340.50	23.63	3.75
8			340.75	48.96	6.19
8			341.00	83.42	9.00
8			341.25	127.58	12.19
8			341.50	182.06	15.75
8			341.75	247.50	19.69
8			342.00	324.56	24.00
8			342.25	413.88	28.69
8			342.50	516.08	33.75
8			342.75	631.80	39.19
8			343.00	761.64	45.00
9	ENDTBL				
2	XSECTN	021	1.0	314.40	
8			313.22	0.00	0.00
8			313.51	1.10	0.89
8			313.81	3.51	1.84
8			314.10	16.22	5.61
8			314.40	34.66	9.74
8			314.68	48.28	24.71
8			314.96	79.66	42.09
8			315.24	126.64	61.87
8			315.52	189.07	84.06
8			315.80	267.27	108.64
8			316.08	361.75	135.63
8			316.36	473.14	165.02
8			316.64	602.11	196.81
8			316.92	749.37	231.00
8			317.20	878.70	277.25
8			317.48	1103.89	329.14
8			317.76	1358.10	382.70
8			318.04	1640.58	437.94
8			318.32	1950.87	494.86
8			318.60	2288.69	553.45
9	ENDTBL				
2	XSECTN	031	1.0	288.90	
8			287.68	0.00	0.00
8			287.99	1.15	0.94
8			288.29	3.69	1.95
8			288.60	17.06	5.98
8			288.90	36.44	10.37
8			289.19	63.07	39.25
8			289.47	121.85	69.50
8			289.76	206.05	101.12
8			290.05	313.23	134.09

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		290.33	442.07	168.42
8		290.62	591.78	204.12
8		290.91	761.87	241.18
8		291.19	952.02	279.60
8		291.48	1162.04	319.38
8		291.77	1391.84	360.52
8		292.05	1641.40	403.02
8		292.34	1910.74	446.89
8		292.63	2199.92	492.11
8		292.91	2509.04	538.70
8		293.20	2838.22	586.65
9	ENDTBL			
2	XSECTN 041	1.0	282.40	
8		281.10	0.00	0.00
8		281.42	1.24	1.09
8		281.75	3.96	2.26
8		282.07	18.30	6.92
8		282.40	39.09	12.00
8		282.88	67.33	37.27
8		283.36	131.17	65.87
8		283.84	225.10	97.78
8		284.32	348.01	133.01
8		284.80	499.91	171.56
8		285.28	681.29	213.43
8		285.76	892.92	258.61
8		286.24	1135.70	307.11
8		286.72	1410.63	358.94
8		287.20	1718.74	414.08
8		287.68	2061.13	472.54
8		288.16	2438.87	534.31
8		288.64	2853.08	599.41
8		289.12	3301.76	667.84
8		289.60	3785.91	739.78
9	ENDTBL			
2	XSECTN 051	1.0	248.40	
8		247.07	0.00	0.00
8		247.41	1.85	1.14
8		247.74	5.93	2.35
8		248.07	27.43	7.18
8		248.40	58.61	12.46
8		248.67	89.70	40.04
8		248.95	158.39	68.99
8		249.22	256.90	99.30
8		249.49	382.40	130.99
8		249.77	533.43	164.04
8		250.04	709.09	198.46
8		250.31	908.86	234.24
8		250.59	1132.40	271.40
8		250.86	1379.55	309.92
8		251.13	1650.25	349.81

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		251.41	1944.49	391.07
8		251.68	2262.35	433.69
8		251.95	2603.94	477.69
8		252.23	2969.40	523.05
8		252.50	3358.93	569.78
9	ENDTBL			
2	XSECTN 061	1.0	212.00	

8		210.50	0.00	0.00
8		210.75	4.72	2.23
8		211.00	15.68	4.92
8		211.25	32.36	8.06
8		211.50	54.93	11.67
8		211.75	83.70	15.73
8		212.00	119.05	20.25
8		212.25	163.87	25.14
8		212.50	215.35	30.31
8		212.75	273.55	35.77
8		213.00	338.57	41.50
8		214.00	669.42	67.25
8		215.00	806.07	99.00
8		216.00	1088.03	138.25
8		217.00	1451.30	187.50
8		218.00	1978.93	249.25
8		219.00	2262.06	340.00
8		220.00	3115.20	476.25
8		221.00	4892.67	639.25

9 ENDTBL

5 RAINFL 9

.1

8	0.0000	0.0013	0.0023	0.0034	0.0044
8	0.0055	0.0065	0.0076	0.0087	0.0098
8	0.0109	0.0121	0.0132	0.0143	0.0155
8	0.0167	0.0178	0.0190	0.0202	0.0214
8	0.0226	0.0238	0.0251	0.0263	0.0276
8	0.0288	0.0301	0.0314	0.0327	0.0340
8	0.0353	0.0366	0.0379	0.0393	0.0406
8	0.0420	0.0434	0.0447	0.0461	0.0475
8	0.0489	0.0504	0.0518	0.0532	0.0547
8	0.0562	0.0576	0.0591	0.0606	0.0621
8	0.0636	0.0651	0.0667	0.0682	0.0697
8	0.0713	0.0729	0.0745	0.0760	0.0776
8	0.0793	0.0809	0.0826	0.0843	0.0861
8	0.0879	0.0898	0.0916	0.0936	0.0955
8	0.0975	0.0996	0.1017	0.1038	0.1060
8	0.1082	0.1104	0.1127	0.1150	0.1174
8	0.1198	0.1223	0.1247	0.1273	0.1298
8	0.1324	0.1351	0.1378	0.1405	0.1432
8	0.1461	0.1490	0.1521	0.1554	0.1588
8	0.1623	0.1660	0.1699	0.1739	0.1780
8	0.1823	0.1868	0.1914	0.1961	0.2010
8	0.2061	0.2117	0.2179	0.2247	0.2321

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8	0.2400	0.2490	0.2591	0.2702	0.2825
8	0.2955	0.3157	0.3370	0.3662	0.4067
8	0.4766	0.5933	0.6338	0.6630	0.6843
8	0.7045	0.7176	0.7298	0.7409	0.7510
8	0.7600	0.7679	0.7753	0.7821	0.7883
8	0.7939	0.7990	0.8039	0.8086	0.8132
8	0.8177	0.8220	0.8261	0.8301	0.8340
8	0.8377	0.8412	0.8446	0.8479	0.8510
8	0.8540	0.8568	0.8595	0.8622	0.8649
8	0.8676	0.8702	0.8727	0.8753	0.8778
8	0.8802	0.8826	0.8850	0.8873	0.8896
8	0.8918	0.8940	0.8962	0.8983	0.9004
8	0.9025	0.9045	0.9064	0.9084	0.9103
8	0.9121	0.9139	0.9157	0.9174	0.9191



8	0.9208	0.9224	0.9240	0.9256	0.9271				
8	0.9287	0.9303	0.9318	0.9334	0.9349				
8	0.9364	0.9379	0.9394	0.9409	0.9424				
8	0.9439	0.9453	0.9468	0.9482	0.9496				
8	0.9511	0.9525	0.9539	0.9553	0.9566				
8	0.9580	0.9594	0.9607	0.9621	0.9634				
8	0.9647	0.9660	0.9673	0.9686	0.9699				
8	0.9712	0.9724	0.9737	0.9749	0.9762				
8	0.9774	0.9786	0.9798	0.9810	0.9822				
8	0.9834	0.9845	0.9857	0.9868	0.9879				
8	0.9891	0.9902	0.9913	0.9924	0.9935				
8	0.9945	0.9956	0.9967	0.9977	0.9987				
8	1.0000	1.0000	1.0000	1.0000	1.0000				
9	ENDTBL								
6	RUNOFF	1 01	1	0.1715	82.858	0.623	1	SA1	
6	REACH	3 11	1 2	3007.5					
6	RUNOFF	1 02	1	0.2497	85.636	0.457	1	SA2	
6	ADDHYD	4 12	1 2 3				1		
6	REACH	3 21	3 1	1442.6					
6	RUNOFF	1 03	2	0.3624	84.644	0.462	1	SA3	
6	ADDHYD	4 23	1 2 3				1		
6	REACH	3 31	3 1	1147.3					
6	RUNOFF	1 04	2	0.1574	80.562	0.460	1	SA4	
6	ADDHYD	4 34	1 2 3				1		
6	REACH	3 41	3 1	1744.9					
6	RUNOFF	1 05	2	0.0921	77.995	0.292	1	SA5	
6	ADDHYD	4 45	1 2 3				1		
6	REACH	3 51	3 1	1483.4					
6	RUNOFF	1 06	2	0.2566	71.417	0.274	1	SA6	
6	ADDHYD	4 56	1 2 3				1		
6	REACH	3 61	3 1	3192.4					
6	RUNOFF	1 07	2	0.2682	79.469	0.350	1	SA7	
6	ADDHYD	4 67	1 2 3			1	1		
	OUTLET								
	ENDATA								
7	INCREM	6		.06					
7	COMPUT	7 01	67	0.0	3.19	1.09	2 1 2		

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

ENDCMP	1								
7	COMPUT	7 01	67	0.0	4.91	1.09	2 1 10		
ENDCMP	1								
7	COMPUT	7 01	67	0.0	7.23	1.09	2 1 50		
ENDCMP	1								
7	COMPUT	7 01	67	0.0	8.47	1.09	2 1 99		
ENDCMP	1								
ENDJOB	2								

\*\*\*\*\*END OF 80-80  
LIST\*\*\*\*\*

1

TR20 ----- SCS

Ellicott City Flood Study- Subareas, Existing Conditions  
VERSION

03/31/\*\* 2,10,50,100 yr (24hr) - Updated CNs; NOAA Sta Dist.

2.04TEST  
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PASS 1 JOB NO. 1

PAGE

1

EXECUTIVE CONTROL INCREM      MAIN TIME INCREMENT =    .060 HOURS

EXECUTIVE CONTROL COMPUT      FROM XSECTION    1    TO XSECTION    67  
STARTING TIME =    .00      RAIN DEPTH =    3.19      RAIN DURATION =    1.00  
ANT. RUNOFF COND. = 2      MAIN TIME INCREMENT =    .060 HOURS  
ALTERNATE NO. = 1      STORM NO. = 2      RAIN TABLE NO. = 9

OPERATION ADDHYD    XSECTION    67

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK  
ELEVATION(FEET)  
12.81                                      647.9                                      (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW =    .00 CFS)  
1.46 WATERSHED INCHES;      1471 CFS-HRS;      121.6 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP      COMPUTATIONS COMPLETED FOR PASS    1

EXECUTIVE CONTROL COMPUT      FROM XSECTION    1    TO XSECTION    67  
STARTING TIME =    .00      RAIN DEPTH =    4.91      RAIN DURATION =    1.00  
ANT. RUNOFF COND. = 2      MAIN TIME INCREMENT =    .060 HOURS  
ALTERNATE NO. = 1      STORM NO. =10      RAIN TABLE NO. = 9

OPERATION ADDHYD    XSECTION    67

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK  
ELEVATION(FEET)  
12.75                                      1328.5                                      (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW =    .00 CFS)  
2.89 WATERSHED INCHES;      2909 CFS-HRS;      240.4 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP      COMPUTATIONS COMPLETED FOR PASS    2

EXECUTIVE CONTROL COMPUT      FROM XSECTION    1    TO XSECTION    67  
STARTING TIME =    .00      RAIN DEPTH =    7.23      RAIN DURATION =    1.00  
ANT. RUNOFF COND. = 2      MAIN TIME INCREMENT =    .060 HOURS  
ALTERNATE NO. = 1      STORM NO. =50      RAIN TABLE NO. = 9

1  
TR20 ----- SCS  
-

Ellicott City Flood Study- Subareas, Existing Conditions  
VERSION

03/31/\*\*      2,10,50,100 yr (24hr) - Updated CNs; NOAA Sta Dist.

2.04TEST

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PASS    3    JOB NO.    1

PAGE

2

OPERATION ADDHYD    XSECTION    67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.70	2298.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.99 WATERSHED INCHES; 5017 CFS-HRS; 414.6 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT	FROM XSECTION 1	TO XSECTION 67
STARTING TIME = .00	RAIN DEPTH = 8.47	RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT = .060 HOURS	
ALTERNATE NO. = 1	STORM NO. =99	RAIN TABLE NO. = 9

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.70	2806.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.15 WATERSHED INCHES; 6183 CFS-HRS; 511.0 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

1

TR20 ----- SCS  
 -

Ellicott City Flood Study- Subareas, Existing Conditions  
 VERSION

03/31/\*\* 2,10,50,100 yr (24hr) - Updated CNs; NOAA Sta Dist.

2.04TEST

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SUMMARY, JOB NO. 1

PAGE

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 9, ARC 2							
MAIN TIME INCREMENT .060 HOURS							
ALTERNATE 1		STORM 2					
XSECTION	1	RUNOFF	.17	1.59	---	12.44	109 641.2
XSECTION	2	RUNOFF	.25	1.80	---	12.33	208 832.0
XSECTION	12	ADDHYD	.42	1.71	---	12.39	295 702.4
XSECTION	3	RUNOFF	.36	1.72	---	12.34	285 791.7

XSECTION	23	ADDHYD	.78	1.72	---	12.42	519	665.4
XSECTION	4	RUNOFF	.16	1.43	---	12.34	103	643.8
XSECTION	34	ADDHYD	.94	1.67	---	12.51	583	620.2
XSECTION	5	RUNOFF	.09	1.26	---	12.23	65	722.2
XSECTION	45	ADDHYD	1.03	1.63	---	12.65	574	557.3
XSECTION	6	RUNOFF	.26	.89	---	12.24	124	476.9
XSECTION	56	ADDHYD	1.29	1.48	---	12.75	596	462.0
XSECTION	7	RUNOFF	.27	1.36	---	12.27	190	703.7
XSECTION	67	ADDHYD	1.56	1.46	---	12.81	648	415.4

RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 10

XSECTION	1	RUNOFF	.17	3.08	---	12.43	211	1241.2
XSECTION	2	RUNOFF	.25	3.34	---	12.32	383	1532.0
XSECTION	12	ADDHYD	.42	3.24	---	12.38	558	1328.6
XSECTION	3	RUNOFF	.36	3.25	---	12.33	536	1488.9
XSECTION	23	ADDHYD	.78	3.24	---	12.41	1001	1283.3
XSECTION	4	RUNOFF	.16	2.86	---	12.33	206	1287.5
XSECTION	34	ADDHYD	.94	3.18	---	12.48	1153	1226.6
XSECTION	5	RUNOFF	.09	2.63	---	12.23	138	1533.3
XSECTION	45	ADDHYD	1.03	3.13	---	12.59	1160	1126.2
XSECTION	6	RUNOFF	.26	2.08	---	12.22	310	1192.3

1

TR20 ----- SCS

Ellicott City Flood Study- Subareas, Existing Conditions  
 VERSION  
 03/31/\*\* 2,10,50,100 yr (24hr) - Updated CNs; NOAA Sta Dist.  
 2.04TEST  
 09:48:15 SUMMARY, JOB NO. 1 PAGE  
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)
ALTERNATE	1	STORM	10					
XSECTION	56	ADDHYD	1.29	2.92	---	12.66	1239	960.5
XSECTION	7	RUNOFF	.27	2.76	---	12.26	391	1448.1
XSECTION	67	ADDHYD	1.56	2.89	---	12.75	1328	851.3

RAINFALL OF 7.23 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 50

XSECTION	1	RUNOFF	.17	5.23	---	12.42	353	2076.5
----------	---	--------	-----	------	-----	-------	-----	--------

XSECTION	2	RUNOFF	.25	5.54	---	12.32	619	2476.0
XSECTION	12	ADDHYD	.42	5.41	---	12.37	919	2188.1
XSECTION	3	RUNOFF	.36	5.43	---	12.32	880	2444.4
XSECTION	23	ADDHYD	.78	5.42	---	12.40	1653	2119.2
XSECTION	4	RUNOFF	.16	4.97	---	12.33	355	2218.8
XSECTION	34	ADDHYD	.94	5.34	---	12.46	1934	2057.4
XSECTION	5	RUNOFF	.09	4.68	---	12.22	244	2711.1
XSECTION	45	ADDHYD	1.03	5.28	---	12.56	1972	1914.6
XSECTION	6	RUNOFF	.26	3.96	---	12.22	596	2292.3
XSECTION	56	ADDHYD	1.29	5.02	---	12.62	2147	1664.3
XSECTION	7	RUNOFF	.27	4.84	---	12.26	675	2500.0
XSECTION	67	ADDHYD	1.56	4.99	---	12.70	2299	1473.7

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 99

XSECTION	1	RUNOFF	.17	6.41	---	12.42	430	2529.4
XSECTION	2	RUNOFF	.25	6.74	---	12.32	746	2984.0
XSECTION	12	ADDHYD	.42	6.60	---	12.37	1114	2652.4
XSECTION	3	RUNOFF	.36	6.62	---	12.32	1067	2963.9
XSECTION	23	ADDHYD	.78	6.61	---	12.40	2013	2580.8

1

TR20 ----- SCS

Ellicott City Flood Study- Subareas, Existing Conditions  
VERSION

03/31/\*\* 2,10,50,100 yr (24hr) - Updated CNs; NOAA Sta Dist.

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SUMMARY, JOB NO. 1

PAGE

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF		PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	1	STORM	99					
XSECTION	4	RUNOFF	.16	6.13	---	12.32	438	2737.5
XSECTION	34	ADDHYD	.94	6.53	---	12.45	2363	2513.8
XSECTION	5	RUNOFF	.09	5.82	---	12.22	301	3344.4
XSECTION	45	ADDHYD	1.03	6.47	---	12.55	2419	2348.5
XSECTION	6	RUNOFF	.26	5.03	---	12.21	756	2907.7
XSECTION	56	ADDHYD	1.29	6.18	---	12.60	2650	2054.3
XSECTION	7	RUNOFF	.27	6.00	---	12.26	830	3074.1
XSECTION	67	ADDHYD	1.56	6.15	---	12.70	2806	1798.7

1

TR20 ----- SCS

Ellicott City Flood Study- Subareas, Existing Conditions  
VERSION

03/31/\*\* 2,10,50,100 yr (24hr) - Updated CNs; NOAA Sta Dist.

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SUMMARY, JOB NO. 1

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

		HYDROGRAPH INFORMATION				ROUTING PARAMETERS					
XSEC	REACH	FLOOD	INFLOW		OUTFLOW		Q-A EQ.		LENGTH	PEAK	ATT-
		PLAIN	PEAK	TIME	PEAK	TIME	COEFF	POWER			
COEFF	LENGTH	LENGTH	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	(C)
BASEFLOW IS		.0 CFS									
ALTERNATE		1	STORM	2							
11	3008		108	12.4	107	12.5	3.45	1.45	.014	.988	
.68?											
21	1443		294	12.4	271	12.5	.83	1.23	.059	.922	
.38											
31	1147		519	12.4	502	12.5	.38	1.38	.025	.967	
.53											
41	1745		581	12.5	550	12.7	.52	1.34	.041	.948	
.40											
51	1483		574	12.7	559	12.8	.63	1.32	.027	.973	
.49											
61	3192		595	12.8	591	12.8	1.62	1.43	.012	.993	
.64											
ALTERNATE		1	STORM	10							
11	3008		211	12.4	208	12.5	3.65	1.42	.012	.987	
.76?											
21	1443		557	12.4	524	12.5	.64	1.30	.041	.941	
.45											
31	1147		1000	12.4	979	12.5	.28	1.44	.016	.979	
.64											
41	1745		1153	12.5	1106	12.6	.44	1.37	.030	.959	
.48											
51	1483		1159	12.6	1137	12.7	.42	1.41	.016	.981	
.60											
61	3192		1239	12.7	1206	12.8	3.72	1.15	.038	.973	
.46											
ALTERNATE		1	STORM	50							
11	3008		353	12.4	350	12.5	3.81	1.40	.010	.992	
.82?											

21	1443	918	12.4	869	12.5	.77	1.25	.041	.946
.46									
31	1147	1650	12.4	1634	12.5	.25	1.46	.011	.990
.72?									
41	1745	1929	12.5	1865	12.5	.43	1.38	.024	.967
.53									
51	1483	1969	12.5	1947	12.7	.36	1.44	.012	.989
.69?									
61	3192	2145	12.6	2069	12.7	4.96	1.07	.051	.965
.42									

ALTERNATE 1 STORM 99

11	3008	430	12.4	428	12.5	3.88	1.39	.009	.994
.84?									
21	1443	1113	12.4	1060	12.5	.71	1.27	.037	.952
.48									
31	1147	2008	12.4	1993	12.5	.25	1.46	.010	.993
.75?									
41	1745	2352	12.5	2291	12.5	.43	1.38	.023	.974
.56									
51	1483	2418	12.5	2386	12.6	.35	1.44	.011	.986
.72?									

1

TR20 ----- SCS

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Ellicott City Flood Study- Subareas, Existing Conditions  
VERSION

03/31/\*\* 2,10,50,100 yr (24hr) - Updated CNs; NOAA Sta Dist.

2.04TEST

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SUMMARY, JOB NO. 1

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC	REACH	FLOOD	INFLOW		OUTFLOW		Q-A EQ.		LENGTH	PEAK	ATT-
		PLAIN	PEAK	TIME	PEAK	TIME	COEFF	POWER			
ID	LENGTH	LENGTH	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	(C)
COEFF	(FT)	(FT)									

ALTERNATE 1 STORM 99

61	3192	2650	12.6	2526	12.7	6.08	1.01	.067	.953
.37									

1

TR20 ----- SCS

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Ellicott City Flood Study- Subareas, Existing Conditions  
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SUMMARY, JOB NO. 1

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		2	10	50	99
XSECTION 1	.17				
ALTERNATE 1		109	211	353	430
XSECTION 2	.25				
ALTERNATE 1		208	383	619	746
XSECTION 3	.36				
ALTERNATE 1		285	536	880	1067
XSECTION 4	.16				
ALTERNATE 1		103	206	355	438
XSECTION 5	.09				
ALTERNATE 1		65	138	244	301
XSECTION 6	.26				
ALTERNATE 1		124	310	596	756
XSECTION 7	.27				
ALTERNATE 1		190	391	675	830
XSECTION 12	.42				
ALTERNATE 1		295	558	919	1114
XSECTION 23	.78				
ALTERNATE 1		519	1001	1653	2013
XSECTION 34	.94				
ALTERNATE 1		583	1153	1934	2363
XSECTION 45	1.03				
ALTERNATE 1		574	1160	1972	2419
XSECTION 56	1.29				
ALTERNATE 1		596	1239	2147	2650
XSECTION 67	1.56				
ALTERNATE 1		648	1328	2299	2806



1

TR20 ----- SCS

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Ellicott City Flood Study- Subareas, Existing Conditions  
VERSION

03/31/\*\* 2,10,50,100 yr (24hr) - Updated CNs; NOAA Sta Dist.  
2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = ecsa2ul.dat , GIVEN DATA FILE  
OUTPUT = ecsa2ul.OUT , DATED  
03/31/\*\*,09:48:15

FILES GENERATED - DATED 03/31/\*\*,09:48:15

NONE!

TOTAL NUMBER OF WARNINGS = 0, MESSAGES = 0

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
 HYDROLOGY\*\*\*\*\*

JOB TR-20					NOPLOTS
TITLE	Ellicott City Flood Study-Tiber/South Drainage Areas				
TITLE	8 Major Subareas - Std NOAA_C Storm Events; No MGMT				
5 RAINFL 1		.1			
8	0.0000	0.0013	0.0023	0.0034	0.0044
8	0.0055	0.0065	0.0076	0.0087	0.0098
8	0.0109	0.0121	0.0132	0.0143	0.0155
8	0.0167	0.0178	0.0190	0.0202	0.0214
8	0.0226	0.0238	0.0251	0.0263	0.0276
8	0.0288	0.0301	0.0314	0.0327	0.0340
8	0.0353	0.0366	0.0379	0.0393	0.0406
8	0.0420	0.0434	0.0447	0.0461	0.0475
8	0.0489	0.0504	0.0518	0.0532	0.0547
8	0.0562	0.0576	0.0591	0.0606	0.0621
8	0.0636	0.0651	0.0667	0.0682	0.0697
8	0.0713	0.0729	0.0745	0.0760	0.0776
8	0.0793	0.0809	0.0826	0.0843	0.0861
8	0.0879	0.0898	0.0916	0.0936	0.0955
8	0.0975	0.0996	0.1017	0.1038	0.1060
8	0.1082	0.1104	0.1127	0.1150	0.1174
8	0.1198	0.1223	0.1247	0.1273	0.1298
8	0.1324	0.1351	0.1378	0.1405	0.1432
8	0.1461	0.1490	0.1521	0.1554	0.1588
8	0.1623	0.1660	0.1699	0.1739	0.1780
8	0.1823	0.1868	0.1914	0.1961	0.2010
8	0.2061	0.2117	0.2179	0.2247	0.2321
8	0.2400	0.2490	0.2591	0.2702	0.2825
8	0.2955	0.3157	0.3370	0.3662	0.4067
8	0.4766	0.5933	0.6338	0.6630	0.6843
8	0.7045	0.7176	0.7298	0.7409	0.7510
8	0.7600	0.7679	0.7753	0.7821	0.7883
8	0.7939	0.7990	0.8039	0.8086	0.8132
8	0.8177	0.8220	0.8261	0.8301	0.8340
8	0.8377	0.8412	0.8446	0.8479	0.8510
8	0.8540	0.8568	0.8595	0.8622	0.8649
8	0.8676	0.8702	0.8727	0.8753	0.8778
8	0.8802	0.8826	0.8850	0.8873	0.8896
8	0.8918	0.8940	0.8962	0.8983	0.9004
8	0.9025	0.9045	0.9064	0.9084	0.9103
8	0.9121	0.9139	0.9157	0.9174	0.9191
8	0.9208	0.9224	0.9240	0.9256	0.9271
8	0.9287	0.9303	0.9318	0.9334	0.9349
8	0.9364	0.9379	0.9394	0.9409	0.9424
8	0.9439	0.9453	0.9468	0.9482	0.9496
8	0.9511	0.9525	0.9539	0.9553	0.9566
8	0.9580	0.9594	0.9607	0.9621	0.9634
8	0.9647	0.9660	0.9673	0.9686	0.9699
8	0.9712	0.9724	0.9737	0.9749	0.9762
8	0.9774	0.9786	0.9798	0.9810	0.9822
8	0.9834	0.9845	0.9857	0.9868	0.9879

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	ENDTBL				
2	XSECTN	102	1.0	241.00	
8			240.00	0.00	0.00
8			240.25	16.96	3.03
8			240.50	55.93	6.63
8			240.75	114.89	10.78
8			241.00	194.09	15.50
8			242.00	733.59	40.00
8			243.00	1342.05	71.50
8			244.00	2134.92	108.00
8			245.00	2390.04	154.00
9	ENDTBL				
2	XSECTN	105	1.0	223.00	
8			222.00	0.00	0.00
8			222.25	2.28	0.83
8			222.50	8.62	2.16
8			222.75	19.85	3.97
8			223.00	36.86	6.28
8			224.00	179.35	20.41
8			225.00	338.28	41.30
8			226.00	584.84	67.85
8			227.00	830.09	103.44
8			228.00	1249.11	151.47
8			229.00	1307.14	232.37
8			230.00	2023.03	366.57
9	ENDTBL				
2	XSECTN	108	1.0	239.00	
8			238.00	0.00	0.00
8			238.25	7.90	2.78
8			238.50	26.24	6.13
8			238.75	54.15	10.03
8			239.00	91.89	14.50
8			240.00	352.41	38.00
8			241.00	637.23	68.75
8			242.00	1020.54	105.00
8			243.00	1521.80	145.25
8			244.00	2087.28	188.00
8			245.00	2747.41	233.00
8			246.00	3455.87	280.00
9	ENDTBL				
2	XSECTN	109	1.0	128.00	
8			129.00	0.00	0.00
8			129.25	1.13	0.50
8			129.50	5.18	1.55
8			129.75	13.39	3.16
8			130.00	26.84	5.32
8			131.00	191.72	26.64

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			132.00	508.02	58.78
8			133.00	945.51	95.90
8			134.00	1449.27	136.08
8			135.00	2016.68	178.64
8			138.00	4199.86	314.48
9	ENDTBL				
6	RUNOFF	1 014	1 0.3808	79.02	0.388

1

1 DA14

```

6 RUNOFF 1 015      2 0.2131      80.94      0.435      1      1 DA15
6 ADDHYD 4 101      1 2 3      1
DA14+15
6 REACH 3 102      3 4      4457.0      1
6 RUNOFF 1 013      3 0.2701      80.91      0.425      1      1 DA13
6 ADDHYD 4 103      3 4 5      1
DA13+102
6 RUNOFF 1 011      1 0.3648      81.31      0.570      1      1 DA11
6 RUNOFF 1 012      2 0.1588      80.00      0.260      1      1 DA12
6 ADDHYD 4 104      1 2 3      1
DA11+12
6 REACH 3 105      3 4      3130.9      1
6 RUNOFF 1 010      1 0.1447      70.85      0.263      1      1 DA10
6 ADDHYD 4 106      1 4 6      1
DA10+105
6 ADDHYD 4 107      5 6 7      1      1
103+106
6 REACH 3 108      7 1      1560.1      1
6 RUNOFF 1 008      2 0.5371      76.45      0.665      1      1 DA8
6 REACH 3 109      2 3      1653.5      1
6 ADDHYD 4 110      1 3 4      1
108+109
6 RUNOFF 1 009      1 0.0756      83.98      0.180      1      1 DA9
6 ADDHYD 4 111      1 4 5      1      1
110+DA9
ENDATA
7 INCREM 6      .1
7 COMPUT 7 014      111 0.0      3.19      1.01 2 1 2
ENDCMP 1
7 COMPUT 7 014      111 0.0      4.91      1.01 2 1 10
ENDCMP 1
7 COMPUT 7 014      111 0.0      7.23      1.01 2 1 50
ENDCMP 1
7 COMPUT 7 014      111 0.0      8.47      1.01 2 1 99
ENDCMP 1
ENDJOB 2

```

\*\*\*\*\*END OF 80-80

LIST\*\*\*\*\*

1

TR20 ----- SCS  
-

Ellicott City Flood Study-Tiber/South Drainage Areas  
VERSION

04/10/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT

2.04TEST

12:45:26

PASS 1 JOB NO. 1

PAGE

1

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .100 HOURS

```

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111
STARTING TIME = .00 RAIN DEPTH = 3.19 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 1 STORM NO. = 2 RAIN TABLE NO. = 1

```

OPERATION RUNOFF XSECTION 14

```

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)

```

12.30	248.8	(RUNOFF)
20.10	8.3	(RUNOFF)
23.09	6.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.33 WATERSHED INCHES; 327 CFS-HRS; 27.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	146.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.46 WATERSHED INCHES; 200 CFS-HRS; 16.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	394.5	(NULL)
20.05	13.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.38 WATERSHED INCHES; 527 CFS-HRS; 43.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 102

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	391.7	241.37

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.37 WATERSHED INCHES; 527 CFS-HRS; 43.5 ACRE-  
 FEET.

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Drainage Areas  
 VERSION  
 04/10/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT  
 2.04TEST  
 12:45:26 PASS 1 JOB NO. 1 PAGE  
 2

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	187.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.45 WATERSHED INCHES; 253 CFS-HRS; 20.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	565.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.40 WATERSHED INCHES;	780 CFS-HRS;	64.5 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	221.1	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.48 WATERSHED INCHES;	349 CFS-HRS;	28.8 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	132.3	(RUNOFF)
21.97	3.1	(RUNOFF)
23.97	2.7	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.39 WATERSHED INCHES;	143 CFS-HRS;	11.8 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	313.0	(NULL)
20.05	12.0	(NULL)
23.95	9.0	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.45 WATERSHED INCHES;	491 CFS-HRS;	40.6 ACRE-
FEET.		

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OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	300.0	224.76

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.45 WATERSHED INCHES; 491 CFS-HRS; 40.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.23	68.5	(RUNOFF)
21.97	2.2	(RUNOFF)
23.10	2.0	(RUNOFF)
23.97	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .86 WATERSHED INCHES; 81 CFS-HRS; 6.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.43	341.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.33 WATERSHED INCHES; 572 CFS-HRS; 47.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.40	905.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.37 WATERSHED INCHES; 1352 CFS-HRS; 111.8 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
 \*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.40	905.9	241.70

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.37 WATERSHED INCHES; 1352 CFS-HRS; 111.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.50	229.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.17 WATERSHED INCHES; 406 CFS-HRS; 33.6 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
 \*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.50	229.8	131.12

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.17 WATERSHED INCHES; 406 CFS-HRS; 33.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	1126.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.32 WATERSHED INCHES; 1758 CFS-HRS; 145.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	83.6	(RUNOFF)
15.85	3.2	(RUNOFF)
18.61	2.0	(RUNOFF)
23.97	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.67 WATERSHED INCHES; 82 CFS-HRS; 6.7 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 5.2%.  
 \*\*\*

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OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	1159.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.33 WATERSHED INCHES; 1840 CFS-HRS; 152.1 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111  
 STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
 ALTERNATE NO. = 1 STORM NO. =10 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	518.5	(RUNOFF)
23.76	11.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.72 WATERSHED INCHES; 669 CFS-HRS; 55.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	293.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.90 WATERSHED INCHES; 399 CFS-HRS; 32.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	810.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.79 WATERSHED INCHES; 1068 CFS-HRS; 88.2 ACRE-  
 FEET.

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\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 102.  
 \*\*\*

## OPERATION REACH XSECTION 102

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	810.6	242.13
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.79 WATERSHED INCHES;		88.2 ACRE-
FEET.		

## OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	374.7	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.89 WATERSHED INCHES;		41.7 ACRE-
FEET.		

## OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	1184.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.82 WATERSHED INCHES;		129.9 ACRE-
FEET.		

## OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	439.3	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.93 WATERSHED INCHES;		57.1 ACRE-
FEET.		

## OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	268.5	(RUNOFF)
20.10	6.2	(RUNOFF)
21.97	5.5	(RUNOFF)
23.97	4.6	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.81 WATERSHED INCHES; 288 CFS-HRS; 23.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	629.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.90 WATERSHED INCHES; 978 CFS-HRS; 80.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	605.9	226.09

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.90 WATERSHED INCHES; 979 CFS-HRS; 80.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	174.5	(RUNOFF)
19.45	5.0	(RUNOFF)
21.97	4.3	(RUNOFF)
23.97	3.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.04 WATERSHED INCHES; 190 CFS-HRS; 15.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	704.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.71 WATERSHED INCHES; 1169 CFS-HRS; 96.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	1868.2	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.77 WATERSHED INCHES; 2741 CFS-HRS; 226.5 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
 \*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	1868.2	243.61

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.77 WATERSHED INCHES; 2741 CFS-HRS; 226.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	503.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.50 WATERSHED INCHES; 865 CFS-HRS; 71.5 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
 \*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	503.7	131.99

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.50 WATERSHED INCHES; 865 CFS-HRS; 71.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	2324.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

2.70 WATERSHED INCHES; 3606 CFS-HRS; 298.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 9

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	156.6	(RUNOFF)
20.08	3.1	(RUNOFF)
20.61	3.0	(RUNOFF)
23.97	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.19 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-  
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 5.9%.  
\*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	2402.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.72 WATERSHED INCHES; 3762 CFS-HRS; 310.9 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111  
STARTING TIME = .00 RAIN DEPTH = 7.23 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
ALTERNATE NO. = 1 STORM NO. =50 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	900.2	(RUNOFF)
20.65	22.3	(RUNOFF)
23.75	17.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.79 WATERSHED INCHES; 1178 CFS-HRS; 97.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 15

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	501.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.01 WATERSHED INCHES;	689 CFS-HRS;	56.9 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	1398.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.87 WATERSHED INCHES;	1866 CFS-HRS;	154.2 ACRE-
FEET.		

OPERATION REACH XSECTION 102

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	1394.7	243.07
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.87 WATERSHED INCHES;	1866 CFS-HRS;	154.2 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	642.9	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.01 WATERSHED INCHES;	873 CFS-HRS;	72.1 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	1988.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.91 WATERSHED INCHES;	2739 CFS-HRS;	226.4 ACRE-

FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	748.2	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.05 WATERSHED INCHES; 1189 CFS-HRS; 98.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	465.2	(RUNOFF)
18.85	10.6	(RUNOFF)
20.85	9.3	(RUNOFF)
21.97	8.6	(RUNOFF)
23.97	7.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.91 WATERSHED INCHES; 503 CFS-HRS; 41.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	1080.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.01 WATERSHED INCHES; 1692 CFS-HRS; 139.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	1029.3	227.48

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.01 WATERSHED INCHES; 1691 CFS-HRS; 139.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION(FEET)		
12.21	337.3	(RUNOFF)
20.10	8.1	(RUNOFF)
21.97	7.1	(RUNOFF)
23.76	6.2	(RUNOFF)
23.97	6.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.90 WATERSHED INCHES; 364 CFS-HRS; 30.1 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	1215.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.77 WATERSHED INCHES; 2056 CFS-HRS; 169.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	3203.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.85 WATERSHED INCHES; 4794 CFS-HRS; 396.2 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
 \*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	3203.3	245.64

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.85 WATERSHED INCHES; 4794 CFS-HRS; 396.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	914.7	(RUNOFF)



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.51 WATERSHED INCHES; 1563 CFS-HRS; 129.2 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
 \*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	914.7	132.93

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.51 WATERSHED INCHES; 1563 CFS-HRS; 129.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	4090.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.76 WATERSHED INCHES; 6358 CFS-HRS; 525.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	257.7	(RUNOFF)
19.37	5.0	(RUNOFF)
21.96	4.2	(RUNOFF)
23.97	3.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.35 WATERSHED INCHES; 261 CFS-HRS; 21.6 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 5.7%.  
 \*\*\*

OPERATION ADDHYD XSECTION 111

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION(FEET)  
12.39 4195.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.78 WATERSHED INCHES; 6619 CFS-HRS; 547.0 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 14 TO XSECTION 111  
STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS  
ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 1

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OPERATION RUNOFF XSECTION 14

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.29 1116.8 (RUNOFF)  
20.07 27.9 (RUNOFF)  
23.06 22.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.95 WATERSHED INCHES; 1462 CFS-HRS; 120.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.31 612.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.17 WATERSHED INCHES; 849 CFS-HRS; 70.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 101

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.29 1725.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.03 WATERSHED INCHES; 2310 CFS-HRS; 190.9 ACRE-  
FEET.

OPERATION REACH XSECTION 102

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	1721.2	243.48

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.03 WATERSHED INCHES; 2311 CFS-HRS; 191.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	781.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.17 WATERSHED INCHES; 1075 CFS-HRS; 88.8 ACRE-FEET.

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Ellicott City Flood Study-Tiber/South Drainage Areas  
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 2.04TEST  
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OPERATION ADDHYD XSECTION 103

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	2447.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.07 WATERSHED INCHES; 3386 CFS-HRS; 279.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	914.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.22 WATERSHED INCHES; 1464 CFS-HRS; 121.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	566.4	(RUNOFF)
18.85	12.6	(RUNOFF)
20.85	11.1	(RUNOFF)
21.97	10.2	(RUNOFF)
23.10	9.4	(RUNOFF)
23.97	8.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

6.07 WATERSHED INCHES; 622 CFS-HRS; 51.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 104

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	1323.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.17 WATERSHED INCHES; 2086 CFS-HRS; 172.4 ACRE-  
FEET.

OPERATION REACH XSECTION 105

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	1258.5	228.16

1

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.17 WATERSHED INCHES; 2085 CFS-HRS; 172.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	430.8	(RUNOFF)
18.66	10.8	(RUNOFF)
20.66	9.5	(RUNOFF)
21.97	8.7	(RUNOFF)
23.97	7.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.97 WATERSHED INCHES; 464 CFS-HRS; 38.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 106

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	1494.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.91 WATERSHED INCHES; 2550 CFS-HRS; 210.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 107

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	3941.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.00 WATERSHED INCHES; 5935 CFS-HRS; 490.5 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 108.  
 \*\*\*

\*\*\* WARNING - XSECTION 108, INFLOW EXCEEDS MAX TABLE DISCHARGE,  
 EXTRAPOLATION USED.  
 \*\*\*

OPERATION REACH XSECTION 108

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	3941.2	246.69

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.00 WATERSHED INCHES; 5935 CFS-HRS; 490.5 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	1139.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.64 WATERSHED INCHES; 1955 CFS-HRS; 161.6 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 109.  
 \*\*\*

OPERATION REACH XSECTION 109

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	1139.7	133.39

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.64 WATERSHED INCHES; 1955 CFS-HRS; 161.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 110

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	5047.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.91 WATERSHED INCHES; 7890 CFS-HRS; 652.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	311.9	(RUNOFF)
18.86	6.2	(RUNOFF)
20.86	5.4	(RUNOFF)
23.97	4.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.53 WATERSHED INCHES; 319 CFS-HRS; 26.3 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .100) IS GREATER THAN 50% OF THE TIME OF CONCENTRATION ( .18) FOR SUBWATERSHED XSECTION 9. THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 6.3%.  
 \*\*\*

OPERATION ADDHYD XSECTION 111

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	5174.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.93 WATERSHED INCHES; 8209 CFS-HRS; 678.4 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

1

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Ellicott City Flood Study-Tiber/South Drainage Areas  
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-----  
 SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.  
 RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.  
 RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.  
 RAINTABLE NUMBER 1, ARC 2  
 MAIN TIME INCREMENT .100 HOURS

ALTERNATE	1	STORM	2				
XSECTION 14	RUNOFF	.38	1.33	---	12.30	249	655.3
XSECTION 15	RUNOFF	.21	1.46	---	12.33	146	695.2
XSECTION 13	RUNOFF	.27	1.45	---	12.32	187	692.6
XSECTION 11	RUNOFF	.36	1.48	---	12.42	221	613.9
XSECTION 12	RUNOFF	.16	1.39	---	12.22	132	825.0
XSECTION 10	RUNOFF	.14	.86	---	12.23	68	485.7
XSECTION 107	ADDHYD	1.53	1.37	---	12.40	906	592.2
XSECTION 8	RUNOFF	.54	1.17	---	12.50	230	425.9
XSECTION 9	RUNOFF	.08	1.67	---	12.17	84	1050.0
XSECTION 111	ADDHYD	2.14	1.33	---	12.41	1160	542.1

ALTERNATE	1	STORM	10				
XSECTION 14	RUNOFF	.38	2.72	---	12.29	518	1363.2
XSECTION 15	RUNOFF	.21	2.90	---	12.32	294	1400.0
XSECTION 13	RUNOFF	.27	2.89	---	12.32	375	1388.9
XSECTION 11	RUNOFF	.36	2.93	---	12.41	439	1219.4
XSECTION 12	RUNOFF	.16	2.81	---	12.21	268	1675.0
XSECTION 10	RUNOFF	.14	2.04	---	12.22	175	1250.0
XSECTION 107	ADDHYD	1.53	2.77	---	12.33	1868	1220.9
XSECTION 8	RUNOFF	.54	2.50	---	12.47	504	933.3
XSECTION 9	RUNOFF	.08	3.19	---	12.17	157	1962.5
XSECTION 111	ADDHYD	2.14	2.72	---	12.34	2402	1122.4

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Ellicott City Flood Study-Tiber/South Drainage Areas  
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SUMMARY TABLE 1  
 -----

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/	STANDARD	PEAK DISCHARGE
-----------	----------	----------------

STRUCTURE	CONTROL	DRAINAGE	RUNOFF				
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 7.23 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 50

XSECTION 14	RUNOFF	.38	4.79	---	12.29	900	2368.4
XSECTION 15	RUNOFF	.21	5.01	---	12.31	501	2385.7
XSECTION 13	RUNOFF	.27	5.01	---	12.31	643	2381.5
XSECTION 11	RUNOFF	.36	5.05	---	12.40	748	2077.8
XSECTION 12	RUNOFF	.16	4.91	---	12.21	465	2906.3
XSECTION 10	RUNOFF	.14	3.90	---	12.21	337	2407.1
XSECTION 107	ADDHYD	1.53	4.85	---	12.38	3203	2093.5
XSECTION 8	RUNOFF	.54	4.51	---	12.47	915	1694.4
XSECTION 9	RUNOFF	.08	5.35	---	12.16	258	3225.0
XSECTION 111	ADDHYD	2.14	4.78	---	12.39	4195	1960.3

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 99

XSECTION 14	RUNOFF	.38	5.95	---	12.29	1117	2939.5
XSECTION 15	RUNOFF	.21	6.17	---	12.31	612	2914.3
XSECTION 13	RUNOFF	.27	6.17	---	12.31	782	2896.3
XSECTION 11	RUNOFF	.36	6.22	---	12.40	914	2538.9
XSECTION 12	RUNOFF	.16	6.07	---	12.21	566	3537.5
XSECTION 10	RUNOFF	.14	4.97	---	12.21	431	3078.6
XSECTION 107	ADDHYD	1.53	6.00	---	12.38	3941	2575.8
XSECTION 8	RUNOFF	.54	5.64	---	12.46	1140	2111.1
XSECTION 9	RUNOFF	.08	6.53	---	12.16	312	3900.0
XSECTION 111	ADDHYD	2.14	5.93	---	12.38	5174	2417.8

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Ellicott City Flood Study-Tiber/South Drainage Areas  
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04/10/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION						ROUTING PARAMETERS				
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		PEAK RATIO Q/I	ATT-KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)		



BASEFLOW IS .0 CFS

ALTERNATE		1	STORM		2					
102	4457		394	12.3	390	12.4	3.58	1.45	.017	.991
	.95?									
105	3131		312	12.3	299	12.5	4.59	1.16	.043	.957
	.71?									
108	1560		906	12.4	906	12.4	3.94	1.20	.015	1.000
	1.00?									
109	1654		230	12.5	230	12.5	3.31	1.24	.016	1.000
	1.00?									

ALTERNATE		1	STORM		10					
102	4457		811	12.3	811	12.3	4.17	1.39	.016	1.000
	1.00?									
105	3131		630	12.3	597	12.4	5.43	1.10	.050	.948
	.70?									
108	1560		1854	12.3	1854	12.3	3.80	1.20	.013	1.000
	1.00?									
109	1654		502	12.5	502	12.5	3.34	1.23	.014	1.000
	1.00?									

ALTERNATE		1	STORM		50					
102	4457		1399	12.3	1395	12.4	6.57	1.24	.024	.997
	.97?									
105	3131		1080	12.3	1015	12.4	6.59	1.04	.060	.940
	.66									
108	1560		3193	12.4	3193	12.4	3.41	1.23	.010	1.000
	1.00?									
109	1654		911	12.5	911	12.5	3.16	1.25	.011	1.000
	1.00?									

ALTERNATE		1	STORM		99					
102	4457		1725	12.3	1721	12.4	7.05	1.22	.024	.998
	.98?									
105	3131		1323	12.3	1242	12.4	6.38	1.05	.061	.939
	.65									
108	1560		3925	12.4	3925	12.4	3.34	1.23	.009	1.000
	1.00?									
109	1654		1133	12.5	1133	12.5	3.20	1.25	.011	1.000
	1.00?									

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Ellicott City Flood Study-Tiber/South Drainage Areas  
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8 Major Subareas - Std NOAA\_C Storm Events; No MGMT

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ DRAINAGE

STRUCTURE ID	AREA (SQ MI)	STORM NUMBERS.....			
		2	10	50	99
XSECTION 8	.54				
-----					
ALTERNATE 1		230	504	915	1140
XSECTION 9	.08				
-----					
ALTERNATE 1		84	157	258	312
XSECTION 10	.14				
-----					
ALTERNATE 1		68	175	337	431
XSECTION 11	.36				
-----					
ALTERNATE 1		221	439	748	914
XSECTION 12	.16				
-----					
ALTERNATE 1		132	268	465	566
XSECTION 13	.27				
-----					
ALTERNATE 1		187	375	643	782
XSECTION 14	.38				
-----					
ALTERNATE 1		249	518	900	1117
XSECTION 15	.21				
-----					
ALTERNATE 1		146	294	501	612
XSECTION 107	1.53				
-----					
ALTERNATE 1		906	1868	3203	3941
XSECTION 111	2.14				
-----					
ALTERNATE 1		1160	2402	4195	5174

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Ellicott City Flood Study-Tiber/South Drainage Areas  
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 04/10/\*\* 8 Major Subareas - Std NOAA\_C Storm Events; No MGMT  
 2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = tibr2ul.dat , GIVEN DATA FILE  
OUTPUT = tibr2ul.OUT , DATED  
04/10/\*\*,12:45:26

FILES GENERATED - DATED 04/10/\*\*,12:45:26

NONE!

TOTAL NUMBER OF WARNINGS = 14, MESSAGES = 0

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
 HYDROLOGY\*\*\*\*\*

JOB TR-20		NOPLOTS			
TITLE Ellicott City Flood Study- All Combined SAs- No lg MGMT					
TITLE CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA Dist.					
2	XSECTN	002	1.0	389.50	
8			389.00	0.00	0.00
8			389.25	1.65	1.06
8			389.50	6.25	2.75
8			389.75	14.40	5.06
8			390.00	26.75	8.00
8			390.25	45.54	14.33
8			390.50	68.67	15.00
8			390.75	96.11	18.88
8			391.00	127.89	23.00
8			391.25	164.08	27.38
8			391.50	204.77	32.00
8			391.75	250.06	36.88
9	ENDTBL				
2	XSECTN	005	1.0	367.00	
8			366.00	0.00	0.00
8			366.50	3.51	1.5
8			367.00	13.55	4.00
8			367.50	30.53	9.00
8			367.75	47.87	13.00
8			368.00	72.23	18.00
8			368.25	104.79	23.98
8			368.50	146.13	30.94
8			368.75	197.14	38.86
8			369.00	258.63	47.75
8			369.25	331.41	57.61
8			369.50	416.25	68.44
9	ENDTBL				
3	STRUCT	11			
9	ENDTBL				
2	XSECTN	008	1.0	330.00	
8			356.00	0.00	0.00
8			356.50	20.21	6.94
8			357.00	68.51	15.75
8			357.50	144.11	26.44
8			358.00	248.93	39.00
8			358.50	389.07	53.25
8			359.00	561.31	69.00
8			359.50	767.14	86.25
8			360.00	1008.16	105.00
8			361.00	1375.68	147.50
8			361.50	1604.19	171.38
9	ENDTBL				
2	XSECTN	016	1.0	333.08	
8			331.08	0.00	0.00
8			332.08	80.21	8.00
8			333.08	225.50	16.00

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8			333.58	310.09	20.00
8			334.08	399.94	24.00
8			334.58	493.86	28.00
8			335.08	590.97	32.00
8			335.58	690.67	36.00
8			336.08	792.47	40.00
8			336.58	896.02	44.00
9	ENDTBL				
2	XSECTN	023	1.0	314.40	
8			313.22	0.00	0.00
8			313.51	1.10	0.89
8			313.81	3.51	1.84
8			314.10	16.22	5.61
8			314.40	34.66	9.74
8			314.68	48.28	24.71
8			314.96	79.66	42.09
8			315.24	126.64	61.87
8			315.52	189.07	84.06
8			315.80	267.27	108.64
8			316.08	361.75	135.63
8			316.36	473.14	165.02
8			316.64	602.11	196.81
8			316.92	749.37	231.00
8			317.20	878.70	277.25
8			317.48	1103.89	329.14
8			317.76	1358.10	382.70
8			318.04	1640.58	437.94
8			318.32	1950.87	494.86
8			318.60	2288.69	553.45
9	ENDTBL				
3	STRUCT	21			
9	ENDTBL				
3	STRUCT	22			
9	ENDTBL				
3	STRUCT	23			
9	ENDTBL				
2	XSECTN	027	1.0	317.00	
8			316.00	0.00	0.00
8			316.50	2.68	2.59
8			317.00	10.37	6.88
8			317.50	24.26	12.84
8			318.00	45.55	20.50
8			318.50	70.64	34.75
8			319.00	137.01	60.50
8			319.25	200.57	76.25
8			319.50	273.06	92.00
8			319.75	353.76	107.75
8			320.00	442.13	123.50
8			320.50	640.03	155.00
8			321.00	863.72	186.50

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

9	ENDTBL				
2	XSECTN	032	1.0	313.00	
8			310.00	0.00	0.00
8			311.00	12.25	5.50
8			312.00	52.16	16.00
8			312.50	83.38	23.13
8			313.00	123.94	31.50

8			313.25	148.02	36.16
8			313.50	174.79	41.13
8			313.75	204.34	46.41
8			314.00	236.81	52.00
8			314.50	278.65	65.75
8			315.00	353.72	84.00
9	ENDTBL				
2	XSECTN	034	1.0	338.50	
8			338.00	0.00	0.00
8			338.10	4.87	2.46
8			338.25	22.73	6.38
8			338.50	73.99	13.53
8			338.75	149.34	21.45
8			339.00	247.95	30.13
8			339.50	515.65	49.78
9	ENDTBL				
2	XSECTN	037	1.0	331.00	
8			330.00	0.00	0.00
8			330.25	14.29	3.25
8			330.50	46.85	7.00
8			330.75	95.34	11.25
8			331.00	159.64	16.00
8			331.25	240.13	21.25
8			331.50	337.44	27.00
8			331.75	452.26	33.25
8			332.00	585.36	40.00
8			332.50	875.33	55.81
8			333.00	1272.05	75.25
9	ENDTBL				
2	XSECTN	044	1.0	288.90	
8			287.68	0.00	0.00
8			287.99	1.15	0.94
8			288.29	3.69	1.95
8			288.60	17.06	5.98
8			288.90	36.44	10.37
8			289.19	63.07	39.25
8			289.47	121.85	69.50
8			289.76	206.05	101.12
8			290.05	313.23	134.09
8			290.33	442.07	168.42
8			290.62	591.78	204.12
8			290.91	761.87	241.18
8			291.19	952.02	279.60

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8			291.48	1162.04	319.38
8			291.77	1391.84	360.52
8			292.05	1641.40	403.02
8			292.34	1910.74	446.89
8			292.63	2199.92	492.11
8			292.91	2509.04	538.70
8			293.20	2838.22	586.65
9	ENDTBL				
3	STRUCT	31			
9	ENDTBL				
3	STRUCT	32			
9	ENDTBL				
3	STRUCT	33			
9	ENDTBL				

3	STRUCT	34			
9	ENDTBL				
2	XSECTN	051	1.0	282.40	
8			281.10	0.00	0.00
8			281.42	1.24	1.09
8			281.75	3.96	2.26
8			282.07	18.30	6.92
8			282.40	39.09	12.00
8			282.88	67.33	37.27
8			283.36	131.17	65.87
8			283.84	225.10	97.78
8			284.32	348.01	133.01
8			284.80	499.91	171.56
8			285.28	681.29	213.43
8			285.76	892.92	258.61
8			286.24	1135.70	307.11
8			286.72	1410.63	358.94
8			287.20	1718.74	414.08
8			287.68	2061.13	472.54
8			288.16	2438.87	534.31
8			288.64	2853.08	599.41
8			289.12	3301.76	667.84
8			289.60	3785.91	739.78
9	ENDTBL				
2	XSECTN	053	1.0	289.00	
8			288.00	0.00	0.00
8			288.50	9.00	2.88
8			289.00	34.26	7.50
8			289.50	79.27	13.88
8			290.00	147.75	22.00
8			290.50	227.49	31.94
8			291.00	332.02	43.75
8			291.50	463.75	57.44
8			291.75	540.56	64.98
8			292.00	625.07	73.00
9	ENDTBL				

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

2	XSECTN	063	1.0	248.40	
8			247.07	0.00	0.00
8			247.41	1.85	1.14
8			247.74	5.93	2.35
8			248.07	27.43	7.18
8			248.40	58.61	12.46
8			248.67	89.70	40.04
8			248.95	158.39	68.99
8			249.22	256.90	99.30
8			249.49	382.40	130.99
8			249.77	533.43	164.04
8			250.04	709.09	198.46
8			250.31	908.86	234.24
8			250.59	1132.40	271.40
8			250.86	1379.55	309.92
8			251.13	1650.25	349.81
8			251.41	1944.49	391.07
8			251.68	2262.35	433.69
8			251.95	2603.94	477.69
8			252.23	2969.40	523.05
8			252.50	3358.93	569.78

9	ENDTBL				
3	STRUCT	61			
9	ENDTBL				
3	STRUCT	62			
9	ENDTBL				
3	STRUCT	63			
9	ENDTBL				
2	XSECTN	065	1.0	300.50	
8			300.00	0.00	0.00
8			300.10	0.29	0.23
8			300.25	1.47	0.69
8			300.40	3.55	1.28
8			300.50	5.48	1.75
8			300.60	7.88	2.28
8			300.75	12.45	3.19
8			300.90	18.28	4.23
8			301.00	22.91	5.00
8			301.10	28.18	5.83
8			301.25	37.36	7.19
8			301.40	48.14	8.68
8			301.50	56.26	9.75
9	ENDTBL				
2	XSECTN	070	1.0	248.40	
8			247.07	0.00	0.00
8			247.41	1.85	1.14
8			247.74	5.93	2.35
8			248.07	27.43	7.18
8			248.40	58.61	12.46
8			248.67	89.70	40.04

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8			248.95	158.39	68.99
8			249.22	256.90	99.30
8			249.49	382.40	130.99
8			249.77	533.43	164.04
8			250.04	709.09	198.46
8			250.31	908.86	234.24
8			250.59	1132.40	271.40
8			250.86	1379.55	309.92
8			251.13	1650.25	349.81
8			251.41	1944.49	391.07
8			251.68	2262.35	433.69
8			251.95	2603.94	477.69
8			252.23	2969.40	523.05
8			252.50	3358.93	569.78
9	ENDTBL				
2	XSECTN	072	1.0	248.40	
8			247.07	0.00	0.00
8			247.41	1.85	1.14
8			247.74	5.93	2.35
8			248.07	27.43	7.18
8			248.40	58.61	12.46
8			248.67	89.70	40.04
8			248.95	158.39	68.99
8			249.22	256.90	99.30
8			249.49	382.40	130.99
8			249.77	533.43	164.04
8			250.04	709.09	198.46
8			250.31	908.86	234.24



8			250.59	1132.40	271.40
8			250.86	1379.55	309.92
8			251.13	1650.25	349.81
8			251.41	1944.49	391.07
8			251.68	2262.35	433.69
8			251.95	2603.94	477.69
8			252.23	2969.40	523.05
8			252.50	3358.93	569.78
9	ENDTBL				
2	XSECTN	077	1.0	229.00	
8			226.00	0.00	0.00
8			226.50	11.73	5.31
8			227.00	42.97	13.25
8			227.50	96.50	23.81
8			228.00	175.93	37.00
8			228.50	258.13	54.25
8			229.00	385.22	77.00
8			229.50	561.82	105.25
8			230.00	793.74	139.00
8			230.50	1079.38	179.94
8			231.00	1462.49	229.75
8			231.50	1953.75	288.44

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8			232.00	2564.16	356.00	
8			232.50	3408.70	429.13	
8			233.00	4351.01	504.50	
9	ENDTBL					
2	XSECTN	080	1.0	212.00		
8			210.50	0.00	0.00	
8			210.75	4.72	2.23	
8			211.00	15.68	4.92	
8			211.25	32.36	8.06	
8			211.50	54.93	11.67	
8			211.75	83.70	15.73	
8			212.00	119.05	20.25	
8			212.25	163.87	25.14	
8			212.50	215.35	30.31	
8			212.75	273.55	35.77	
8			213.00	338.57	41.50	
8			214.00	669.42	67.25	
8			215.00	806.07	99.00	
8			216.00	1088.03	138.25	
8			217.00	1451.30	187.50	
8			218.00	1978.93	249.25	
8			219.00	2262.06	340.00	
8			220.00	3115.20	476.25	
8			221.00	4892.67	639.25	
9	ENDTBL					
5	RAINFL	9	.1			
8		0.0000	0.0013	0.0023	0.0034	0.0044
8		0.0055	0.0065	0.0076	0.0087	0.0098
8		0.0109	0.0121	0.0132	0.0143	0.0155
8		0.0167	0.0178	0.0190	0.0202	0.0214
8		0.0226	0.0238	0.0251	0.0263	0.0276
8		0.0288	0.0301	0.0314	0.0327	0.0340
8		0.0353	0.0366	0.0379	0.0393	0.0406
8		0.0420	0.0434	0.0447	0.0461	0.0475
8		0.0489	0.0504	0.0518	0.0532	0.0547

8	0.0562	0.0576	0.0591	0.0606	0.0621
8	0.0636	0.0651	0.0667	0.0682	0.0697
8	0.0713	0.0729	0.0745	0.0760	0.0776
8	0.0793	0.0809	0.0826	0.0843	0.0861
8	0.0879	0.0898	0.0916	0.0936	0.0955
8	0.0975	0.0996	0.1017	0.1038	0.1060
8	0.1082	0.1104	0.1127	0.1150	0.1174
8	0.1198	0.1223	0.1247	0.1273	0.1298
8	0.1324	0.1351	0.1378	0.1405	0.1432
8	0.1461	0.1490	0.1521	0.1554	0.1588
8	0.1623	0.1660	0.1699	0.1739	0.1780
8	0.1823	0.1868	0.1914	0.1961	0.2010
8	0.2061	0.2117	0.2179	0.2247	0.2321
8	0.2400	0.2490	0.2591	0.2702	0.2825
8	0.2955	0.3157	0.3370	0.3662	0.4067

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8	0.4766	0.5933	0.6338	0.6630	0.6843
8	0.7045	0.7176	0.7298	0.7409	0.7510
8	0.7600	0.7679	0.7753	0.7821	0.7883
8	0.7939	0.7990	0.8039	0.8086	0.8132
8	0.8177	0.8220	0.8261	0.8301	0.8340
8	0.8377	0.8412	0.8446	0.8479	0.8510
8	0.8540	0.8568	0.8595	0.8622	0.8649
8	0.8676	0.8702	0.8727	0.8753	0.8778
8	0.8802	0.8826	0.8850	0.8873	0.8896
8	0.8918	0.8940	0.8962	0.8983	0.9004
8	0.9025	0.9045	0.9064	0.9084	0.9103
8	0.9121	0.9139	0.9157	0.9174	0.9191
8	0.9208	0.9224	0.9240	0.9256	0.9271
8	0.9287	0.9303	0.9318	0.9334	0.9349
8	0.9364	0.9379	0.9394	0.9409	0.9424
8	0.9439	0.9453	0.9468	0.9482	0.9496
8	0.9511	0.9525	0.9539	0.9553	0.9566
8	0.9580	0.9594	0.9607	0.9621	0.9634
8	0.9647	0.9660	0.9673	0.9686	0.9699
8	0.9712	0.9724	0.9737	0.9749	0.9762
8	0.9774	0.9786	0.9798	0.9810	0.9822
8	0.9834	0.9845	0.9857	0.9868	0.9879
8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000

9	ENDTBL							
6	RUNOFF	1	001	1	0.0336	80.992	0.4051	DA1
6	REACH	3	002	1 2	1170.0		1	
6	RUNOFF	1	003	1	0.0580	79.488	0.3751	DA2
6	ADDHYD	4	004	1 2 3			1	DA1+2
6	RESVOR	2	11 3	1			1	1
SWMF10								
6	REACH	3	005	1 2	797.0		1	
6	RUNOFF	1	006	3	0.0798	77.284	0.3921	DA3
6	ADDHYD	4	007	2 3 4			1	
DA12+3								
6	REACH	3	008	4 7	1221.0		1	1 SA1-
SA2								
6	RUNOFF	1	009	1	0.0734	90.928	0.4221	DA1
6	RESVOR	2	21 1	2			1	1
SWMF13								
6	RUNOFF	1	010	3	0.0097	72.007	0.1281	DA7

6 RESVOR	2	22	2	3	4			1	1 HWY
STOR									
6 RUNOFF	1	011			2	0.0544	73.278	0.2201	DA2
6 ADDHYD	4	012	7	2	3			1	
SA1+DA2									
6 RUNOFF	1	013			5	0.0193	79.062	0.2481	DA3
6 ADDHYD	4	014	4	3	6			1	
DA17+2									
6 ADDHYD	4	015	6	5	3			1	1
DA172+3									
6 RESVOR	2	23	3		1			1	1
HWYSTOR2									
6 REACH	3	016	1		2	920.0		1	1
6 RUNOFF	1	017			3	0.0211	87.900	0.1641	DA4
6 RUNOFF	1	018			4	0.0313	91.880	0.2551	DA5
6 RUNOFF	1	019			5	0.0404	84.467	0.1681	DA6
6 ADDHYD	4	020	3	4	6			1	1 DA4+5

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

6 ADDHYD	4	021	6	5	1			1	
DA123+6									
6 ADDHYD	4	022	2	1	3			1	
DA45+6									
6 REACH	3	023	3		7	1379.0		1	1 SA2-
SA3									
6 RUNOFF	1	024			1	0.0505	82.333	0.3401	DA1
6 RESVOR	2	31	1		2			1	1 SWMF3
6 RUNOFF	1	025			3	0.0748	81.676	0.3581	DA2
6 ADDHYD	4	026	2	3	4			1	DA1+2
6 REACH	3	027	4		1	1021.0		1	
6 RUNOFF	1	028			2	0.0599	78.523	0.3231	DA3
6 ADDHYD	4	029	7	2	3			1	
SA2+DA3									
6 ADDHYD	4	030	1	3	5			1	1
DA12+3									
6 RUNOFF	1	031			1	0.0692	86.978	0.2761	DA4
6 REACH	3	032	1		6	1603.0		1	
6 RUNOFF	1	033			2	0.0084	95.000	0.1921	DA5
6 RESVOR	2	32	2		3			1	1
SWMF11									
6 REACH	3	034	3		7	583.0		1	
6 RUNOFF	1	035			1	0.0275	94.960	0.2481	DA6
6 RESVOR	2	33	1		2			1	1 SWMF8
6 ADDHYD	4	036	7	2	1			1	DA5+6
6 RESVOR	2	34	1		2			1	1
HWYSTOR3									
6 REACH	3	037	2		4	934.0		1	
6 RUNOFF	1	038			1	0.0328	85.878	0.1901	DA7
6 ADDHYD	4	039	4	1	3			1	1
DA56+7									
6 RUNOFF	1	040			2	0.0393	80.311	0.3671	DA8
6 ADDHYD	4	041	5	2	1			1	1 DA3+8
6 ADDHYD	4	042	6	1	2			1	DA4+8
6 ADDHYD	4	043	3	2	1			1	DA7+8
6 REACH	3	044	1		7	1428.0		1	1 SA3-
SA4									
6 RUNOFF	1	045			1	0.0477	80.798	0.4121	DA1
6 RUNOFF	1	046			2	0.0628	79.968	0.4401	DA2
6 ADDHYD	4	047	1	2	3			1	DA1+2

6	RUNOFF	1	048		1	0.0469	80.250	0.2491		DA3
6	ADDHYD	4	049	7	1	2		1		1
SA3+DA3										
6	ADDHYD	4	050	2	3	4		1	1	1
DA12+3										
6	REACH	3	051	4	7		1275.0		1	1 SA4-
SA5										
6	RUNOFF	1	052			1	0.0087	41.639	0.1631	DA1
6	REACH	3	053	1	5		652.0		1	
6	RUNOFF	1	054			1	0.0072	33.729	0.2561	DA2
6	RUNOFF	1	055			2	0.0322	77.752	0.2491	DA3
6	ADDHYD	4	056	7	2	4			1	1
SA4+DA3										
6	ADDHYD	4	057	5	1	3			1	1 DA1+2
6	ADDHYD	4	058	4	3	5			1	
DA12+3										
6	RUNOFF	1	059			1	0.0266	70.478	0.2611	1 DA4
6	ADDHYD	4	060	5	1	2			1	1
DA123+4										
6	RUNOFF	1	061			3	0.0173	69.728	0.2971	DA5
6	ADDHYD	4	062	2	3	6			1	1
DA1234+5										
6	REACH	3	063	6	7		1959.0		1	1 SA5-
SA6										
6	RUNOFF	1	064			1	0.0110	84.520	0.5211	DA1
6	RESVOR	2		61	1	2			1	1
SWMF19										
6	REACH	3	065	2	3		1283.0		1	

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

6	RUNOFF	1	066			1	0.0458	70.198	0.2391	DA2
6	RESVOR	2		62	1	2			1	1
SWMF18										
6	ADDHYD	4	067	3	2	4			1	DA1+2
6	RUNOFF	1	068			5	0.0778	76.176	0.2281	DA3
6	ADDHYD	4	069	4	5	1			1	
DA12+3										
6	REACH	3	070	1	2		2166.0		1	
6	RUNOFF	1	071			1	0.0119	80.036	0.1221	DA4
6	RESVOR	2		63	1	3			1	1 SWMF2
6	REACH	3	072	3	4		1081.0		1	
6	RUNOFF	1	073			5	0.1100	64.864	0.2051	1 DA5
6	ADDHYD	4	074	7	5	1			1	
SA5+DA5										
6	ADDHYD	4	075	2	4	6			1	1
DA123+4										
6	ADDHYD	4	076	1	6	2			1	1
DA12345										
6	REACH	3	077	2	7		884.0		1	1 SA6-
SA7										
6	RUNOFF	1	078			2	0.0510	70.802	0.1971	1 DA1
6	ADDHYD	4	079	7	2	1			1	
SA6+DA1										
6	REACH	3	080	1	2		1296.0		1	
6	RUNOFF	1	081			1	0.0313	67.555	0.1861	DA2
6	ADDHYD	4	082	1	2	3			1	DA1+2
6	RUNOFF	1	083			1	0.0513	73.958	0.1621	DA3
6	RUNOFF	1	084			4	0.1187	68.693	0.3211	DA4
6	ADDHYD	4	085	1	4	2			1	1 DA3+4

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6 ADDHYD 4 086 3 2 1 1
DA123+4
6 RUNOFF 1 087 4 0.0159 86.785 0.1421 DA5
6 ADDHYD 4 088 1 4 7 1 1
DA1234+5
ENDATA
7 INCREM 6 .06
7 COMPUT 7 001 088 0.0 3.19 1.09 2 1 2
ENDCMP 1
7 COMPUT 7 001 088 0.0 4.91 1.09 2 1 10
ENDCMP 1
7 COMPUT 7 001 088 0.0 6.14 1.09 2 1 25
ENDCMP 1
7 COMPUT 7 001 088 0.0 7.23 1.09 2 1 50
ENDCMP 1
7 COMPUT 7 001 088 0.0 8.47 1.09 2 1 99
ENDCMP 1
ENDJOB 2

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\*\*\*\*\*END OF 80-80

LIST\*\*\*\*\*

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
VERSION

06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
Dist.2.04TEST

16:44:19 PASS 1 JOB NO. 1 PAGE

1

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .060 HOURS

```

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88
STARTING TIME = .00 RAIN DEPTH = 3.19 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS
ALTERNATE NO. = 1 STORM NO. = 2 RAIN TABLE NO. = 9

```

OPERATION RUNOFF XSECTION 1

```

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.30 23.9 (RUNOFF)

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```

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.46 WATERSHED INCHES; 32 CFS-HRS; 2.6 ACRE-
FEET.

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OPERATION REACH XSECTION 2

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.41 22.7 389.92

```

```

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.46 WATERSHED INCHES; 32 CFS-HRS; 2.6 ACRE-
FEET.

```

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	39.9	(RUNOFF)
23.14	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.36 WATERSHED INCHES; 51 CFS-HRS; 4.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	60.4	(NULL)
23.10	1.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.40 WATERSHED INCHES; 83 CFS-HRS; 6.8 ACRE-  
FEET.

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OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	60.4	(NULL)
23.10	1.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.40 WATERSHED INCHES; 83 CFS-HRS; 6.8 ACRE-  
FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	59.3	367.87

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.40 WATERSHED INCHES; 83 CFS-HRS; 6.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	47.5	(RUNOFF)
23.75	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.22 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.36 103.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.31 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.44 102.3 357.22

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.31 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.30 77.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.24 WATERSHED INCHES; 106 CFS-HRS; 8.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.30 77.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.24 WATERSHED INCHES; 106 CFS-HRS; 8.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.13 6.6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .92 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	77.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.24 WATERSHED INCHES; 106 CFS-HRS; 8.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	33.2	(RUNOFF)
19.76	1.0	(RUNOFF)
20.09	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .99 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	118.9	(NULL)
24.00	3.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.24 WATERSHED INCHES; 180 CFS-HRS; 14.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	15.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.33 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14



PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	191.2	(NULL)
23.99	5.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.48 WATERSHED INCHES; 286 CFS-HRS; 23.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	201.7	(NULL)
23.99	5.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.47 WATERSHED INCHES; 303 CFS-HRS; 25.0 ACRE-FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	201.7	(NULL)
23.99	5.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.47 WATERSHED INCHES; 303 CFS-HRS; 25.0 ACRE-FEET.

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\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
\*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	201.7	332.92
23.99	5.4	331.15

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.47 WATERSHED INCHES; 303 CFS-HRS; 25.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION(FEET)  
12.15 29.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.98 WATERSHED INCHES; 27 CFS-HRS; 2.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.20 43.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.33 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.15 48.6 (RUNOFF)  
19.47 1.0 (RUNOFF)  
19.75 1.0 (RUNOFF)  
20.06 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.71 WATERSHED INCHES; 44 CFS-HRS; 3.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 20

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TR20 ----- SCS  
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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.17 71.1 (NULL)  
15.81 2.5 (NULL)  
24.01 1.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.19 WATERSHED INCHES; 74 CFS-HRS; 6.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.17 119.3 (NULL)  
15.83 4.3 (NULL)  
17.33 3.3 (NULL)  
21.95 2.1 (NULL)

24.01 1.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.98 WATERSHED INCHES; 118 CFS-HRS; 9.8 ACRE-
FEET.

OPERATION ADDHYD XSECTION 22

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.23, 18.83, 20.82, 21.94, 24.00 and discharge values like 284.2, 10.4, 9.1, 8.5, 7.2.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.59 WATERSHED INCHES; 421 CFS-HRS; 34.8 ACRE-
FEET.

OPERATION REACH XSECTION 23

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.41, 24.06 and discharge values like 256.9, 7.2.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.59 WATERSHED INCHES; 421 CFS-HRS; 34.8 ACRE-
FEET.

OPERATION RUNOFF XSECTION 24

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Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.26, 20.68 and discharge values like 41.6, 1.1.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.55 WATERSHED INCHES; 51 CFS-HRS; 4.2 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 31

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.26, 20.68 and discharge values like 41.6, 1.1.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

1.55 WATERSHED INCHES; 51 CFS-HRS; 4.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.27	58.7	(RUNOFF)
23.97	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.51 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.27	100.3	(NULL)
18.67	3.2	(NULL)
23.98	2.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.52 WATERSHED INCHES; 123 CFS-HRS; 10.2 ACRE-  
FEET.

OPERATION REACH XSECTION 27

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.40	88.8	318.64

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.52 WATERSHED INCHES; 123 CFS-HRS; 10.2 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 28

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.25	42.0	(RUNOFF)
23.12	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.30 WATERSHED INCHES; 50 CFS-HRS; 4.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	289.6	(NULL)
24.04	8.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.55 WATERSHED INCHES; 471 CFS-HRS; 39.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	378.4	(NULL)
24.04	10.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.54 WATERSHED INCHES; 595 CFS-HRS; 49.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	76.8	(RUNOFF)
24.03	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 85 CFS-HRS; 7.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	68.8	312.27
24.15	1.3	310.11

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 85 CFS-HRS; 7.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	14.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.63 WATERSHED INCHES; 14 CFS-HRS; 1.2 ACRE-

FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	14.0	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.63 WATERSHED INCHES;	14 CFS-HRS;	1.2 ACRE-
FEET.		

OPERATION REACH XSECTION 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	13.9	338.18
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.63 WATERSHED INCHES;	14 CFS-HRS;	1.2 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	41.8	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.63 WATERSHED INCHES;	47 CFS-HRS;	3.9 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	41.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.63 WATERSHED INCHES;	47 CFS-HRS;	3.9 ACRE-
FEET.		

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OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	55.2	(NULL)
20.11	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.63 WATERSHED INCHES; 61 CFS-HRS; 5.0 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.20	55.2	(NULL)
20.11	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.63 WATERSHED INCHES; 61 CFS-HRS; 5.0 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
 \*\*\*

OPERATION REACH XSECTION 37

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.20	55.2	330.54
20.11	1.0	330.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.63 WATERSHED INCHES; 61 CFS-HRS; 5.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.17	40.3	(RUNOFF)
17.34	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.81 WATERSHED INCHES; 38 CFS-HRS; 3.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

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PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.18	94.7	(NULL)
18.86	2.0	(NULL)
24.02	1.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

2.24 WATERSHED INCHES; 99 CFS-HRS; 8.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.28 28.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.41 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.38 403.5 (NULL)  
24.03 11.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.54 WATERSHED INCHES; 631 CFS-HRS; 52.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.38 472.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.57 WATERSHED INCHES; 716 CFS-HRS; 59.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.35 524.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.63 WATERSHED INCHES; 815 CFS-HRS; 67.3 ACRE-  
FEET.

OPERATION REACH XSECTION 44

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.48 494.4 290.43



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.63 WATERSHED INCHES; 815 CFS-HRS; 67.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	33.3	(RUNOFF)
20.10	1.1 *	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.45 WATERSHED INCHES; 45 CFS-HRS; 3.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	40.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES; 56 CFS-HRS; 4.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	74.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.42 WATERSHED INCHES; 101 CFS-HRS; 8.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	40.1	(RUNOFF)
20.10	1.1	(RUNOFF)
20.65	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.41 WATERSHED INCHES; 43 CFS-HRS; 3.5 ACRE-  
 FEET.

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 TR20 ----- SCS  
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OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.47 512.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.62 WATERSHED INCHES; 857 CFS-HRS; 70.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.45 574.6 (NULL)

HRS SQ.MI.	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2							
	MAIN	TIME INCREMENT = .060 hr,	DRAINAGE AREA = .93					
5.70 CFS	.49	.52	.54	.57	.59	.62	.64	
.68								
6.18 CFS	.71	.74	.77	.80	.83	.87	.91	
.95								
6.66 CFS	.99	1.03	1.07	1.11	1.16	1.21	1.25	
1.30								
7.14 CFS	1.35	1.40	1.46	1.53	1.59	1.66	1.73	
1.80								
7.62 CFS	1.88	1.96	2.04	2.12	2.21	2.29	2.38	
2.47								
8.10 CFS	2.57	2.67	2.78	2.88	2.98	3.09	3.20	
3.31								
8.58 CFS	3.42	3.53	3.65	3.77	3.90	4.02	4.14	
4.26								
9.06 CFS	4.39	4.53	4.68	4.84	5.03	5.24	5.49	
5.77								
9.54 CFS	6.08	6.41	6.76	7.14	7.56	8.00	8.47	
8.96								
10.02 CFS	9.47	10.01	10.58	11.18	11.81	12.47	13.15	
13.85								
10.50 CFS	14.58	15.34	16.16	17.07	18.11	19.30	20.67	
22.22								
10.98 CFS	23.96	25.89	28.01	30.38	33.05	36.07	39.47	
43.26								
11.46 CFS	47	52	57	64	72	82	95	
111								
11.94 CFS	132	161	203	265	344	428	500	
549								
12.42 CFS	572	572	554	524	486	444	402	
361								
12.90 CFS	323	289	259	234	211	192	176	
161								
13.38 CFS	149	138	129	121	113	107	100	
95								
13.86 CFS	90.12	85.83	82.08	78.82	76.01	73.56	71.39	
69.44								
14.34 CFS	67.65	66.01	64.49	63.07	61.70	60.36	59.04	
57.72								
14.82 CFS	56.43	55.16	53.91	52.68	51.45	50.23	49.00	
47.77								
15.30 CFS	46.57	45.42	44.38	43.46	42.66	41.99	41.39	
40.85								
15.78 CFS	40.35	39.89	39.48	39.10	38.74	38.37	38.00	
37.63								

16.26	CFS	37.27	36.93	36.59	36.24	35.90	35.54	35.18
34.81								
16.74	CFS	34.47	34.13	33.80	33.47	33.15	32.84	32.55
32.24								
17.22	CFS	31.92	31.57	31.21	30.87	30.54	30.21	29.86
29.49								
17.70	CFS	29.12	28.76	28.40	28.05	27.70	27.36	27.04
26.72								
18.18	CFS	26.41	26.10	25.79	25.49	25.20	24.92	24.65
24.44								
18.66	CFS	24.26	24.12	24.00	23.89	23.80	23.71	23.62
23.51								
19.14	CFS	23.40	23.29	23.18	23.09	23.01	22.94	22.88
22.83								
19.62	CFS	22.77	22.70	22.61	22.52	22.43	22.32	22.21
22.11								
20.10	CFS	22.05	21.99	21.94	21.88	21.80	21.71	21.59
21.46								
20.58	CFS	21.34	21.24	21.16	21.09	21.01	20.95	20.88
20.80								
21.06	CFS	20.71	20.60	20.49	20.38	20.29	20.20	20.12
20.06								

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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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21.54	CFS	20.01	19.95	19.88	19.79	19.70	19.61	19.52
19.45								
22.02	CFS	19.38	19.31	19.23	19.14	19.04	18.94	18.84
18.76								
22.50	CFS	18.68	18.61	18.54	18.44	18.34	18.24	18.14
18.02								
22.98	CFS	17.90	17.80	17.73	17.67	17.61	17.54	17.47
17.39								
23.46	CFS	17.30	17.21	17.09	16.97	16.87	16.79	16.72
16.64								
23.94	CFS	16.55	16.48	16.41	16.17	15.55	14.46	13.02
11.35								
24.42	CFS	9.61	7.93	6.41	5.07	3.94	3.02	2.28
1.70								
24.90	CFS	1.25	.91	.65	.46			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.59 WATERSHED INCHES; 958 CFS-HRS; 79.2 ACRE-  
FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.57 555.1 284.95

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.59 WATERSHED INCHES; 958 CFS-HRS; 79.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 52

\*\*\* MESSAGE - XSECTION 52, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.59 WATERSHED INCHES; 145 CFS-HRS; 79.2 ACRE-  
FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 53

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-  
FEET.

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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.21 24.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.25 WATERSHED INCHES; 26 CFS-HRS; 2.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.57 564.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.58 WATERSHED INCHES; 984 CFS-HRS; 81.3 ACRE-

FEET.

\*\*\* WARNING - XSECTION 57
NO HYDROGRAPH IN INPUT LOCATION 5 OR 1 FOR ADDHYD OPERATION.
\*\*\*

OPERATION ADDHYD XSECTION 57

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.58 WATERSHED INCHES; 145 CFS-HRS; 81.3 ACRE-
FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.57 564.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.56 WATERSHED INCHES; 984 CFS-HRS; 81.3 ACRE-
FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.23 12.3 (RUNOFF)

Table with 9 columns: HRS, SQ.MI., MAIN, HYDROGRAPH POINTS FOR, ALTERNATE = 1, STORM = 2, DRAINAGE AREA = .03. Rows include values like 11.64 CFS, 5.60, 12.12 CFS, etc.

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Ellicott City Flood Study- All Combined SAs- No lg MGMT
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Table with 9 columns: HRS, SQ.MI., MAIN, HYDROGRAPH POINTS FOR, ALTERNATE = 1, STORM = 2, DRAINAGE AREA = .03. Rows include values like 13.56 CFS, 1.29, 14.04 CFS, etc.

.75								
15.96 CFS	.74	.73	.72	.72	.71	.71	.70	
.70								
16.44 CFS	.69	.68	.67	.67	.66	.66	.65	
.65								
16.92 CFS	.64	.63	.63	.63	.62	.61	.60	
.59								
17.40 CFS	.59	.59	.57	.56	.56	.55	.55	
.54								
17.88 CFS	.53	.53	.52	.52	.51	.50	.50	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .85 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.57	570.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.54 WATERSHED INCHES; 999 CFS-HRS; 82.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	7.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .81 WATERSHED INCHES; 9 CFS-HRS; .7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.57	574.0	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.02 SQ.MI.

HRS								
5.82 CFS	.49	.52	.54	.57	.59	.62	.65	
.68								
6.30 CFS	.71	.74	.77	.80	.84	.87	.91	
.95								
6.78 CFS	.99	1.03	1.07	1.11	1.16	1.21	1.25	
1.30								
7.26 CFS	1.35	1.41	1.47	1.53	1.59	1.66	1.73	
1.81								
7.74 CFS	1.89	1.97	2.05	2.13	2.21	2.30	2.39	
2.48								
8.22 CFS	2.58	2.68	2.78	2.88	2.99	3.10	3.20	
3.31								
8.70 CFS	3.42	3.54	3.66	3.78	3.90	4.02	4.15	
4.27								
9.18 CFS	4.40	4.54	4.70	4.87	5.06	5.28	5.53	
5.81								
9.66 CFS	6.11	6.44	6.80	7.19	7.60	8.05	8.51	

9.01								
10.14	CFS	9.53	10.08	10.67	11.29	11.94	12.62	13.32
14.04								
10.62	CFS	14.80	15.61	16.50	17.48	18.60	19.87	21.32
22.95								

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11.10	CFS	24.78	26.80	29.06	31.59	34.46	37.68	41.33
45.40								
11.58	CFS	50	55	62	70	79	92	108
129								
12.06	CFS	160	204	261	326	395	461	517
555								
12.54	CFS	572	571	553	525	489	450	409
370								
13.02	CFS	333	299	269	243	220	201	184
169								
13.50	CFS	156	145	135	126	118	111	105
100								
13.98	CFS	94.66	90.29	86.46	83.11	80.17	77.58	75.28
73.22								
14.46	CFS	71.34	69.61	67.98	66.45	64.97	63.53	62.13
60.75								
14.94	CFS	59.39	58.04	56.72	55.40	54.09	52.79	51.51
50.26								
15.42	CFS	49.06	47.94	46.92	46.01	45.20	44.47	43.83
43.27								
15.90	CFS	42.75	42.28	41.83	41.41	41.01	40.62	40.24
39.85								
16.38	CFS	39.47	39.10	38.74	38.36	37.99	37.61	37.24
36.87								
16.86	CFS	36.50	36.14	35.80	35.46	35.13	34.79	34.45
34.10								
17.34	CFS	33.76	33.41	33.05	32.68	32.31	31.94	31.57
31.19								
17.82	CFS	30.81	30.43	30.05	29.68	29.33	28.97	28.62
28.28								
18.30	CFS	27.95	27.63	27.31	26.99	26.70	26.44	26.20
25.98								
18.78	CFS	25.79	25.64	25.52	25.40	25.29	25.18	25.07
24.96								
19.26	CFS	24.85	24.74	24.64	24.55	24.47	24.40	24.33
24.26								
19.74	CFS	24.19	24.11	24.01	23.91	23.80	23.71	23.62
23.53								
20.22	CFS	23.45	23.38	23.31	23.23	23.13	23.02	22.92
22.81								
20.70	CFS	22.70	22.59	22.50	22.42	22.34	22.26	22.17
22.08								
21.18	CFS	21.98	21.88	21.77	21.67	21.58	21.49	21.42
21.34								
21.66	CFS	21.27	21.19	21.12	21.03	20.94	20.85	20.77
20.68								
22.14	CFS	20.60	20.51	20.42	20.33	20.23	20.13	20.04
19.95								
22.62	CFS	19.86	19.77	19.68	19.59	19.48	19.36	19.25

19.15								
23.10	CFS	19.05	18.95	18.86	18.79	18.72	18.64	18.56
18.46								
23.58	CFS	18.36	18.26	18.16	18.06	17.95	17.85	17.76
17.69								
24.06	CFS	17.62	17.39	16.95	16.30	15.39	14.20	12.76
11.15								
24.54	CFS	9.51	7.92	6.46	5.18	4.07	3.16	2.41
1.82								
25.02	CFS	1.35	.99	.72	.51	.36		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.53 WATERSHED INCHES; 1008 CFS-HRS; 83.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.72	542.7	249.78

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.53 WATERSHED INCHES; 1008 CFS-HRS; 83.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	8.2	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.71 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	8.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.71 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	8.0	300.60



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.71 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	21.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .83 WATERSHED INCHES; 25 CFS-HRS; 2.0 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	21.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .83 WATERSHED INCHES; 25 CFS-HRS; 2.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	25.9	(NULL)
20.09	1.0	(NULL)
20.64	1.0	(NULL)

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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.00 WATERSHED INCHES; 37 CFS-HRS; 3.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	55.7	(RUNOFF)
24.03	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.15 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	81.4	(NULL)
23.09	2.1	(NULL)
23.74	2.0	(NULL)
24.03	2.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.09 WATERSHED INCHES; 95 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	66.5	248.47
23.17	2.1	247.43
24.09	2.0	247.42

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.09 WATERSHED INCHES; 95 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	13.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 63

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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	13.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-  
 FEET.

OPERATION REACH XSECTION 72

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	11.6	247.83

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.20	34.3	(RUNOFF)
15.86	2.4	(RUNOFF)
24.02	1.2	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2								
HRS	MAIN	TIME	INCREMENT =	.060	hr,	DRAINAGE	AREA =	.11
SQ.MI.								
11.82 CFS	.39	1.24	3.08	6.90	14.15	26.24	33.87	
32.06								
12.30 CFS	26.87	22.73	19.37	17.02	15.52	13.85	12.00	
10.64								
12.78 CFS	9.83	9.24	8.76	8.33	7.90	7.45	7.01	
6.64								
13.26 CFS	6.35	6.08	5.81	5.55	5.28	5.01	4.76	
4.55								
13.74 CFS	4.40	4.28	4.19	4.12	4.06	4.02	3.96	
3.88								
14.22 CFS	3.80	3.72	3.66	3.61	3.56	3.48	3.40	
3.31								
14.70 CFS	3.23	3.17	3.11	3.05	2.97	2.90	2.83	
2.75								
15.18 CFS	2.67	2.61	2.57	2.55	2.54	2.54	2.54	
2.53								
15.66 CFS	2.49	2.45	2.43	2.44	2.44	2.41	2.37	
2.34								
16.14 CFS	2.32	2.32	2.31	2.28	2.26	2.24	2.21	
2.18								
16.62 CFS	2.16	2.15	2.15	2.13	2.10	2.08	2.07	
2.07								
17.10 CFS	2.05	2.01	1.96	1.94	1.95	1.94	1.91	
1.87								
17.58 CFS	1.83	1.81	1.81	1.79	1.77	1.74	1.72	
1.71								
18.06 CFS	1.70	1.68	1.65	1.63	1.62	1.61	1.58	
1.57								
18.54 CFS	1.58	1.60	1.61	1.59	1.57	1.59	1.59	
1.57								
19.02 CFS	1.55	1.54	1.54	1.54	1.54	1.54	1.54	
1.54								
19.50 CFS	1.54	1.54	1.51	1.50	1.51	1.51	1.48	
1.47								
19.98 CFS	1.48	1.50	1.51	1.49	1.47	1.47	1.46	
1.44								
20.46 CFS	1.41	1.42	1.44	1.45	1.43	1.41	1.42	
1.43								
20.94 CFS	1.41	1.39	1.38	1.37	1.37	1.37	1.37	
1.37								
21.42 CFS	1.37	1.38	1.37	1.35	1.33	1.33	1.34	
1.32								
21.90 CFS	1.33	1.34	1.33	1.31	1.29	1.29	1.28	
1.28								
22.38 CFS	1.28	1.28	1.29	1.28	1.25	1.23	1.24	
1.24								
22.86 CFS	1.22	1.20	1.21	1.24	1.24	1.22	1.20	
1.20								

23.34 CFS 1.19 1.19 1.18 1.15 1.14 1.15 1.17  
1.17

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23.82 CFS 1.15 1.12 1.12 1.18 1.16 .84 .45

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.59 WATERSHED INCHES; 42 CFS-HRS; 3.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.72 553.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.44 WATERSHED INCHES; 1050 CFS-HRS; 86.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.32 74.7 (NULL)  
18.69 3.1 (NULL)  
24.07 2.2 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15  
SQ.MI.  
10.68 CFS .43 .50 .59 .69 .81 .94 1.08  
1.24  
11.16 CFS 1.44 1.66 1.91 2.20 2.53 2.91 3.34  
3.85  
11.64 CFS 4.63 5.71 7.01 8.61 10.76 13.79 18.17  
25.43  
12.12 CFS 37.19 54.67 68.79 74.39 72.82 67.65 61.26  
55.07  
12.60 CFS 49.58 44.35 39.36 34.89 31.13 28.05 25.53  
23.43  
13.08 CFS 21.62 20.02 18.58 17.32 16.22 15.27 14.41  
13.62  
13.56 CFS 12.87 12.18 11.52 10.92 10.41 9.97 9.60  
9.29  
14.04 CFS 9.04 8.83 8.63 8.44 8.25 8.07 7.90  
7.75  
14.52 CFS 7.60 7.45 7.29 7.12 6.95 6.80 6.65  
6.51  
15.00 CFS 6.35 6.20 6.05 5.89 5.73 5.58 5.46  
5.36  
15.48 CFS 5.29 5.23 5.19 5.15 5.10 5.03 4.98  
4.95  
15.96 CFS 4.92 4.89 4.83 4.78 4.73 4.69 4.66

4.62								
16.44 CFS	4.57	4.53	4.48	4.43	4.38	4.34	4.31	
4.27								
16.92 CFS	4.23	4.19	4.15	4.13	4.09	4.04	3.98	
3.93								
17.40 CFS	3.89	3.86	3.83	3.77	3.71	3.66	3.62	
3.58								
17.88 CFS	3.54	3.49	3.45	3.42	3.38	3.34	3.30	
3.26								
18.36 CFS	3.23	3.20	3.16	3.13	3.11	3.11	3.11	
3.10								
18.84 CFS	3.09	3.08	3.07	3.06	3.04	3.02	3.01	
2.99								
19.32 CFS	2.99	2.98	2.98	2.98	2.98	2.97	2.95	
2.93								
19.80 CFS	2.92	2.91	2.89	2.87	2.86	2.87	2.87	
2.87								
20.28 CFS	2.85	2.84	2.82	2.80	2.77	2.75	2.75	
2.76								
20.76 CFS	2.75	2.73	2.73	2.72	2.71	2.69	2.67	
2.66								
21.24 CFS	2.64	2.63	2.63	2.63	2.62	2.62	2.62	
2.60								
21.72 CFS	2.57	2.56	2.55	2.54	2.54	2.54	2.53	
2.51								
22.20 CFS	2.49	2.48	2.46	2.45	2.45	2.44	2.44	
2.43								
22.68 CFS	2.40	2.38	2.38	2.36	2.34	2.32	2.31	
2.32								
23.16 CFS	2.32	2.32	2.30	2.29	2.27	2.26	2.25	
2.22								

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23.64 CFS	2.20	2.19	2.20	2.20	2.19	2.16	2.14	
2.17								
24.12 CFS	2.16	1.93	1.58	1.20	.89	.64	.47	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.11 WATERSHED INCHES; 105 CFS-HRS; 8.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.69 594.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 1155 CFS-HRS; 95.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 77

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK

ELEVATION(FEET)  
 12.76 593.1 229.57

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 1155 CFS-HRS; 95.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	27.4	(RUNOFF)
17.35	1.1	(RUNOFF)

	HYDROGRAPH POINTS FOR		ALTERNATE = 1,	STORM = 2				
HRS	MAIN	TIME INCREMENT = .060 hr,	DRAINAGE AREA =		.05			
SQ.MI.								
11.52 CFS	.41	.66	1.01	1.43	1.94	2.73	3.90	
5.71								
12.00 CFS	9.08	14.77	23.27	27.41	23.98	19.09	15.59	
12.97								
12.48 CFS	11.21	10.12	8.90	7.63	6.74	6.21	5.83	
5.51								
12.96 CFS	5.22	4.93	4.64	4.35	4.11	3.93	3.75	
3.58								
13.44 CFS	3.41	3.23	3.07	2.91	2.78	2.69	2.61	
2.55								
13.92 CFS	2.51	2.47	2.44	2.40	2.35	2.30	2.25	
2.21								
14.40 CFS	2.18	2.15	2.10	2.05	1.99	1.94	1.91	
1.87								
14.88 CFS	1.83	1.78	1.74	1.69	1.64	1.59	1.56	
1.53								
15.36 CFS	1.52	1.52	1.52	1.52	1.51	1.48	1.46	
1.45								
15.84 CFS	1.45	1.45	1.43	1.41	1.39	1.38	1.38	
1.37								
16.32 CFS	1.35	1.34	1.33	1.31	1.29	1.28	1.27	
1.27								
16.80 CFS	1.26	1.24	1.23	1.22	1.22	1.21	1.18	
1.15								
17.28 CFS	1.14	1.15	1.14	1.12	1.10	1.08	1.07	
1.06								
17.76 CFS	1.05	1.04	1.02	1.01	1.01	1.00	.98	
.96								
18.24 CFS	.95	.95	.94	.93	.92	.93	.94	
.94								
18.72 CFS	.93	.92	.93	.93	.91	.90	.90	
.90								
19.20 CFS	.90	.90	.90	.90	.90	.90	.90	
.88								
19.68 CFS	.87	.88	.88	.86	.85	.86	.87	
.88								

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20.16 CFS	.86	.85	.85	.85	.83	.82	.82
.84							
20.64 CFS	.84	.83	.82	.82	.83	.82	.80
.80							
21.12 CFS	.80	.79	.79	.79	.79	.80	.80
.79							
21.60 CFS	.78	.77	.77	.77	.76	.77	.77
.77							
22.08 CFS	.75	.75	.74	.74	.74	.74	.74
.74							
22.56 CFS	.74	.72	.71	.72	.72	.70	.69
.70							
23.04 CFS	.71	.71	.70	.69	.69	.69	.68
.68							
23.52 CFS	.66	.65	.66	.67	.68	.66	.64
.64							
24.00 CFS	.68	.66	.46				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .86 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.76	599.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.38 WATERSHED INCHES; 1183 CFS-HRS; 97.8 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 80.  
 \*\*\*

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.76	599.4	213.79

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.38 WATERSHED INCHES; 1183 CFS-HRS; 97.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	13.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .71 WATERSHED INCHES; 14 CFS-HRS; 1.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.76 602.7 (NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.36 WATERSHED INCHES; 1198 CFS-HRS; 99.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.16	36.0	(RUNOFF)
19.47	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.03 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.28	43.1	(RUNOFF)
18.68	2.0	(RUNOFF)
24.02	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .76 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.20	72.5	(NULL)
18.84	3.0	(NULL)
24.00	2.2	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17 SQ.MI.

HRS	11.22 CFS	11.70 CFS	12.18 CFS	12.66 CFS	13.14 CFS	13.62 CFS	14.10 CFS	14.58 CFS	15.06 CFS	15.54 CFS	16.02 CFS
2.82	.49	.63	.79	.97	1.16	1.40	1.96	2.82	3.78	5.14	7.22
59.88	71.62	69.54	63.61	55.63	47.73	41.72	37.24	32.74	28.65	25.46	22.99
16.11	15.11	14.25	13.52	12.86	12.25	11.66	11.08	10.52	9.99	9.52	9.15
13.62 CFS	9.99	9.52	9.15	8.84	8.59	8.40	8.24				



8.11								
14.10	CFS	7.97	7.82	7.65	7.50	7.36	7.24	7.12
6.98								
14.58	CFS	6.82	6.65	6.49	6.36	6.23	6.10	5.95
5.81								
15.06	CFS	5.66	5.51	5.35	5.22	5.12	5.06	5.02
5.00								
15.54	CFS	4.98	4.95	4.89	4.82	4.78	4.77	4.75
4.71								
16.02	CFS	4.65	4.60	4.55	4.53	4.50	4.46	4.41
4.37								
16.50	CFS	4.32	4.27	4.23	4.20	4.18	4.14	4.09
4.05								
16.98	CFS	4.03	4.01	3.97	3.91	3.83	3.79	3.78
3.75								
17.46	CFS	3.71	3.64	3.58	3.54	3.50	3.47	3.43
3.38								
17.94	CFS	3.34	3.32	3.29	3.24	3.20	3.16	3.14
3.11								
18.42	CFS	3.06	3.04	3.05	3.06	3.07	3.04	3.03
3.04								

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18.90	CFS	3.03	3.00	2.98	2.96	2.95	2.95	2.94
2.94								
19.38	CFS	2.94	2.94	2.94	2.93	2.90	2.88	2.88
2.87								
19.86	CFS	2.84	2.82	2.82	2.85	2.85	2.83	2.82
2.80								
20.34	CFS	2.78	2.75	2.71	2.71	2.73	2.74	2.72
2.70								
20.82	CFS	2.71	2.70	2.68	2.66	2.64	2.62	2.61
2.61								
21.30	CFS	2.61	2.61	2.61	2.61	2.60	2.57	2.54
2.54								
21.78	CFS	2.53	2.51	2.52	2.53	2.51	2.49	2.47
2.45								
22.26	CFS	2.44	2.43	2.43	2.43	2.43	2.41	2.38
2.36								
22.74	CFS	2.36	2.34	2.31	2.29	2.30	2.32	2.32
2.30								
23.22	CFS	2.29	2.27	2.26	2.25	2.23	2.19	2.17
2.18								
23.70	CFS	2.20	2.20	2.17	2.14	2.12	2.20	2.14
1.71								
24.18	CFS	1.21	.80	.50	.31			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.84 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK  
ELEVATION (FEET)

12.75	626.9	(NULL)
23.97	24.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.30 WATERSHED INCHES; 1290 CFS-HRS; 106.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	22.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.75	630.3	(NULL)
23.98	24.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.31 WATERSHED INCHES; 1309 CFS-HRS; 108.2 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

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EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
 STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =10 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	48.0	(RUNOFF)
23.10	1.1 *	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.90 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	45.0	390.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.90 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	82.2	(RUNOFF)
20.68	2.2	(RUNOFF)
23.98	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.77 WATERSHED INCHES; 104 CFS-HRS; 8.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	122.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.82 WATERSHED INCHES; 166 CFS-HRS; 13.8 ACRE-  
 FEET.

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OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	122.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.82 WATERSHED INCHES; 166 CFS-HRS; 13.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	121.3	368.35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.82 WATERSHED INCHES; 166 CFS-HRS; 13.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	101.9	(RUNOFF)
23.73	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.57 WATERSHED INCHES; 132 CFS-HRS; 10.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	217.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.70 WATERSHED INCHES; 299 CFS-HRS; 24.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	215.9	357.84

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.70 WATERSHED INCHES; 299 CFS-HRS; 24.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	132.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.88 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	132.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

3.88 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.13 16.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.13 WATERSHED INCHES; 13 CFS-HRS; 1.1 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.30 132.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.88 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.19 77.9 (RUNOFF)  
15.82 3.3 (RUNOFF)  
18.86 2.0 (RUNOFF)  
24.02 1.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.23 WATERSHED INCHES; 78 CFS-HRS; 6.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 12

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.38 255.6 (NULL)  
24.00 6.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.59 WATERSHED INCHES; 377 CFS-HRS; 31.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	32.3	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.73 WATERSHED INCHES;	34 CFS-HRS;	2.8 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	382.0	(NULL)
23.99	8.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.91 WATERSHED INCHES;	561 CFS-HRS;	46.4 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	404.5	(NULL)
24.00	9.3	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.90 WATERSHED INCHES;	595 CFS-HRS;	49.2 ACRE-
FEEET.		

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	404.5	(NULL)
24.00	9.3	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.90 WATERSHED INCHES;	595 CFS-HRS;	49.2 ACRE-
FEEET.		

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
 \*\*\*

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 TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	404.5	334.10

24.00 9.3 331.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.90 WATERSHED INCHES; 595 CFS-HRS; 49.2 ACRE-
FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.15 52.0 (RUNOFF)
17.34 1.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.57 WATERSHED INCHES; 49 CFS-HRS; 4.0 ACRE-
FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.20 72.1 (RUNOFF)
23.75 1.0 (RUNOFF)
24.02 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.99 WATERSHED INCHES; 81 CFS-HRS; 6.7 ACRE-
FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.15 90.5 (RUNOFF)
17.34 2.3 (RUNOFF)
24.00 1.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.23 WATERSHED INCHES; 84 CFS-HRS; 7.0 ACRE-
FEET.

OPERATION ADDHYD XSECTION 20

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TR20 ----- SCS
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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.17 121.6 (NULL)
15.81 4.1 (NULL)
17.31 3.1 (NULL)
21.75 2.0 (NULL)
21.96 2.0 (NULL)

24.01 1.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.82 WATERSHED INCHES; 129 CFS-HRS; 10.7 ACRE-
FEET.

OPERATION ADDHYD XSECTION 21

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.16, 15.83, 17.33, 19.41, 19.74, 20.06, 23.06, 24.01.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.56 WATERSHED INCHES; 213 CFS-HRS; 17.6 ACRE-
FEET.

OPERATION ADDHYD XSECTION 22

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.22, 18.82, 20.05, 20.81, 21.94, 23.05, 24.00.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.05 WATERSHED INCHES; 809 CFS-HRS; 66.8 ACRE-
FEET.

OPERATION REACH XSECTION 23

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.38, 24.06.

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.05 WATERSHED INCHES; 809 CFS-HRS; 66.8 ACRE-
FEET.



OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	81.4	(RUNOFF)
20.13	2.0	(RUNOFF)
23.99	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.03 WATERSHED INCHES; 99 CFS-HRS; 8.2 ACRE-FEET.

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	81.4	(NULL)
20.13	2.0	(NULL)
23.99	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.03 WATERSHED INCHES; 99 CFS-HRS; 8.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	115.6	(RUNOFF)
18.66	3.3	(RUNOFF)
23.77	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.97 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	196.9	(NULL)
20.13	5.0	(NULL)
23.13	4.0	(NULL)
23.98	3.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES; 242 CFS-HRS; 20.0 ACRE-FEET.

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OPERATION REACH XSECTION 27

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.37	182.8	319.18
20.20	5.0	316.65
23.20	4.0	316.59

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES; 242 CFS-HRS; 20.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	87.6	(RUNOFF)
21.94	2.0	(RUNOFF)
24.01	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.68 WATERSHED INCHES; 104 CFS-HRS; 8.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	588.7	(NULL)
24.04	14.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.00 WATERSHED INCHES; 912 CFS-HRS; 75.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	770.9	(NULL)
24.04	17.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.00 WATERSHED INCHES; 1154 CFS-HRS; 95.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	137.5	(RUNOFF)

18.66	3.2	(RUNOFF)
24.02	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.48 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	125.9	313.02
18.72	3.2	310.26
24.09	2.2	310.18

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.48 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	22.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.33 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	22.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.33 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 34.  
 \*\*\*

OPERATION REACH XSECTION 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	22.3	338.25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.33 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
 FEET.

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 TR20 ----- SCS  
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OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	66.9	(RUNOFF)
21.97	1.1	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.32 WATERSHED INCHES;	77 CFS-HRS;	6.3 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	66.9	(NULL)
21.97	1.1	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.32 WATERSHED INCHES;	77 CFS-HRS;	6.3 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	88.8	(NULL)
24.02	1.2	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.32 WATERSHED INCHES;	100 CFS-HRS;	8.3 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	88.8	(NULL)
24.02	1.2	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.32 WATERSHED INCHES;	100 CFS-HRS;	8.3 ACRE-
FEET.		

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
 \*\*\*

OPERATION REACH XSECTION 37

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 TR20 ----- SCS  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	88.8	330.72
24.02	1.2	330.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.32 WATERSHED INCHES; 100 CFS-HRS; 8.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	73.5	(RUNOFF)
15.84	2.4	(RUNOFF)
23.73	1.0	(RUNOFF)
24.01	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.37 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	161.9	(NULL)
15.82	5.3	(NULL)
17.32	4.1	(NULL)
19.75	3.0	(NULL)
20.08	3.0	(NULL)
24.01	2.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.87 WATERSHED INCHES; 171 CFS-HRS; 14.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	57.7	(RUNOFF)
23.76	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.84 WATERSHED INCHES; 72 CFS-HRS; 6.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 41

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TR20 ----- SCS

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	823.8	(NULL)
24.04	18.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.99 WATERSHED INCHES; 1226 CFS-HRS; 101.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	947.6	(NULL)
24.04	21.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.04 WATERSHED INCHES; 1381 CFS-HRS; 114.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	1048.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.11 WATERSHED INCHES; 1553 CFS-HRS; 128.3 ACRE-FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	1004.5	291.26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.11 WATERSHED INCHES; 1553 CFS-HRS; 128.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	66.8	(RUNOFF)
23.09	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.88 WATERSHED INCHES; 89 CFS-HRS; 7.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 46

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	83.3	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.81 WATERSHED INCHES;	114 CFS-HRS;	9.4 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	150.0	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.84 WATERSHED INCHES;	203 CFS-HRS;	16.7 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	81.7	(RUNOFF)
18.65	2.0	(RUNOFF)
24.03	1.4	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.84 WATERSHED INCHES;	86 CFS-HRS;	7.1 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	1046.2	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.09 WATERSHED INCHES;	1639 CFS-HRS;	135.4 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	1182.9	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10								
HRS	MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .93			
SQ.MI.								
3.72 CFS	.49	.51	.54	.57	.61	.66	.70	
.75								
4.20 CFS	.80	.86	.91	.95	1.00	1.05	1.11	

1.16								
4.68	CFS	1.22	1.26	1.31	1.37	1.42	1.48	1.54
1.59								
5.16	CFS	1.65	1.72	1.79	1.86	1.94	2.01	2.08
2.16								
5.64	CFS	2.25	2.34	2.43	2.52	2.60	2.67	2.75
2.84								
6.12	CFS	2.95	3.05	3.15	3.26	3.37	3.49	3.62
3.75								
6.60	CFS	3.89	4.04	4.19	4.34	4.48	4.64	4.80
4.97								

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TR20 ----- SCS

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7.08	CFS	5.14	5.32	5.53	5.76	6.00	6.24	6.50
6.77								
7.56	CFS	7.05	7.34	7.63	7.92	8.23	8.56	8.91
9.27								
8.04	CFS	9.66	10.06	10.47	10.90	11.31	11.73	12.16
12.60								
8.52	CFS	13.05	13.49	13.96	14.46	14.98	15.51	16.02
16.53								
9.00	CFS	17.02	17.54	18.11	18.71	19.37	20.09	20.91
21.82								
9.48	CFS	22.81	23.85	24.93	26.06	27.25	28.52	29.85
31.22								
9.96	CFS	32.61	34.02	35.47	36.98	38.55	40.17	41.82
43.47								
10.44	CFS	45.15	46.87	48.68	50.62	52.82	55.36	58.33
61.77								
10.92	CFS	66	70	75	80	86	92	99
107								
11.40	CFS	116	126	136	148	163	181	205
233								
11.88	CFS	269	316	380	472	606	779	957
1096								
12.36	CFS	1171	1180	1137	1063	974	878	782
692								
12.84	CFS	610	538	477	425	382	345	314
288								
13.32	CFS	265	246	229	214	201	189	178
168								
13.80	CFS	159	151	145	139	133	129	125
122								
14.28	CFS	119	116	113	111	108	106	104
101								
14.76	CFS	99.07	96.78	94.56	92.38	90.22	88.07	85.92
83.76								
15.24	CFS	81.58	79.46	77.47	75.69	74.17	72.91	71.87
70.97								
15.72	CFS	70.14	69.33	68.56	67.88	67.27	66.68	66.05
65.39								
16.20	CFS	64.73	64.09	63.49	62.90	62.30	61.69	61.05
60.40								
16.68	CFS	59.75	59.13	58.55	57.98	57.41	56.85	56.31
55.80								
17.16	CFS	55.29	54.71	54.08	53.42	52.81	52.24	51.67



51.06								
17.64	CFS	50.40	49.73	49.09	48.48	47.87	47.26	46.67
46.12								
18.12	CFS	45.59	45.06	44.52	43.98	43.46	42.97	42.48
42.04								
18.60	CFS	41.68	41.42	41.23	41.06	40.90	40.75	40.62
40.46								
19.08	CFS	40.27	40.06	39.85	39.66	39.50	39.36	39.26
39.17								
19.56	CFS	39.10	39.00	38.86	38.69	38.52	38.35	38.15
37.94								
20.04	CFS	37.77	37.66	37.59	37.52	37.41	37.27	37.10
36.87								
20.52	CFS	36.61	36.38	36.21	36.09	35.98	35.87	35.75
35.64								
21.00	CFS	35.51	35.33	35.13	34.92	34.72	34.55	34.41
34.29								
21.48	CFS	34.20	34.12	34.03	33.91	33.74	33.56	33.39
33.23								
21.96	CFS	33.10	33.00	32.89	32.75	32.58	32.39	32.20
32.04								
22.44	CFS	31.89	31.77	31.67	31.54	31.37	31.18	30.99
30.80								
22.92	CFS	30.60	30.38	30.20	30.09	30.01	29.93	29.82
29.69								
23.40	CFS	29.54	29.40	29.22	29.01	28.78	28.59	28.46
28.37								
23.88	CFS	28.25	28.09	27.96	27.84	27.43	26.25	24.06
21.08								
24.36	CFS	17.72	14.40	11.39	8.81	6.67	4.97	3.64
2.63								
24.84	CFS	1.88	1.33	.93	.64	.44		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.06 WATERSHED INCHES; 1841 CFS-HRS; 152.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.50	1153.2	286.27

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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.06 WATERSHED INCHES; 1841 CFS-HRS; 152.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 52

\*\*\* MESSAGE - XSECTION 52, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.06 WATERSHED INCHES; 210 CFS-HRS; 152.2 ACRE-
FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,
UNLESS NEW RATING TABLE VALUES ARE INSERTED.
\*\*\*

OPERATION REACH XSECTION 53

\*\*\* MESSAGE - XSECTION 53, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.06 WATERSHED INCHES; 207 CFS-HRS; 152.2 ACRE-
FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - XSECTION 54, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.06 WATERSHED INCHES; 189 CFS-HRS; 152.2 ACRE-
FEET.

OPERATION RUNOFF XSECTION 55

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Values include 12.20, 21.97, 51.6, 1.1, (RUNOFF), (RUNOFF).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.61 WATERSHED INCHES; 54 CFS-HRS; 4.5 ACRE-
FEET.

OPERATION ADDHYD XSECTION 56

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Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Values include 12.50, 1174.5, (NULL).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.05 WATERSHED INCHES; 1895 CFS-HRS; 156.6 ACRE-
FEET.

OPERATION ADDHYD XSECTION 57

\*\*\* MESSAGE - XSECTION 57, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.05 WATERSHED INCHES; 214 CFS-HRS; 156.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.50	1174.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.00 WATERSHED INCHES; 1897 CFS-HRS; 156.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	31.6	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .03  
SQ.MI.

HRS								
10.80 CFS	.45	.52	.59	.67	.75	.85	.97	
1.10								
11.28 CFS	1.25	1.42	1.61	1.81	2.04	2.37	2.91	
3.54								
11.76 CFS	4.26	5.18	6.51	8.52	11.69	17.01	24.70	
30.82								
12.24 CFS	31.12	26.88	21.99	18.16	15.28	13.24	11.56	
10.00								
12.72 CFS	8.68	7.72	7.03	6.51	6.09	5.71	5.36	
5.02								
13.20 CFS	4.71	4.46	4.24	4.03	3.84	3.64	3.45	
3.27								
13.68 CFS	3.11	2.98	2.87	2.79	2.73	2.67	2.63	
2.59								
14.16 CFS	2.54	2.48	2.43	2.38	2.34	2.30	2.25	
2.20								
14.64 CFS	2.14	2.09	2.04	2.00	1.96	1.91	1.86	
1.81								
15.12 CFS	1.76	1.71	1.66	1.63	1.61	1.60	1.59	
1.58								
15.60 CFS	1.58	1.56	1.54	1.52	1.51	1.51	1.50	
1.48								
16.08 CFS	1.46	1.44	1.43	1.42	1.41	1.40	1.38	
1.37								
16.56 CFS	1.35	1.33	1.32	1.32	1.31	1.29	1.28	
1.27								
17.04 CFS	1.26	1.25	1.23	1.21	1.19	1.18	1.18	
1.17								
17.52 CFS	1.14	1.12	1.11	1.10	1.09	1.07	1.06	
1.04								
18.00 CFS	1.04	1.03	1.02	1.00	.99	.98	.97	
.96								
18.48 CFS	.95	.95	.95	.96	.95	.94	.94	
.94								

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18.96 CFS	.94	.93	.92	.92	.92	.91	.91
.91							
19.44 CFS	.91	.91	.91	.90	.89	.89	.89
.88							
19.92 CFS	.87	.87	.88	.88	.88	.87	.87
.86							
20.40 CFS	.85	.84	.84	.84	.85	.84	.84
.83							
20.88 CFS	.83	.83	.82	.81	.81	.80	.80
.80							
21.36 CFS	.80	.80	.80	.80	.79	.78	.78
.78							
21.84 CFS	.78	.77	.78	.77	.77	.76	.75
.75							
22.32 CFS	.75	.75	.75	.75	.74	.73	.72
.72							
22.80 CFS	.72	.71	.70	.70	.71	.71	.71
.70							
23.28 CFS	.69	.69	.69	.68	.67	.66	.66
.67							
23.76 CFS	.67	.67	.65	.65	.66	.66	.56
.39							

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.01 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.50 1189.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.98 WATERSHED INCHES; 1932 CFS-HRS; 159.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.24 18.7 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.95 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.49 1199.5 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.02

HRS SQ.MI.	3.84	4.32	4.80	5.28	5.76	6.24	6.72	7.20	7.68	8.16
CFS	.49	.82	1.23	1.67	2.28	2.98	3.94	5.21	7.15	9.83
.77	.52	.87	1.28	1.74	2.37	3.09	4.09	5.40	7.44	10.24
1.18	.55	.92	1.33	1.82	2.46	3.19	4.24	5.62	7.73	10.67
1.61	.59	.97	1.39	1.89	2.55	3.30	4.39	5.85	8.04	11.10
2.19	.63	1.02	1.44	1.96	2.62	3.41	4.54	6.09	8.35	11.53
2.88	.67	1.07	1.50	2.03	2.70	3.54	4.70	6.34	8.69	11.97
3.80	.72	1.13	1.56	2.11	2.78	3.67	4.86	6.60	9.05	12.42
5.03										
6.87										
9.43										
12.87										

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8.64 CFS	13.33	13.81	14.30	14.82	15.35	15.89	16.41
16.93							
9.12 CFS	17.46	18.02	18.63	19.28	20.00	20.79	21.67
22.63							
9.60 CFS	23.66	24.74	25.88	27.07	28.33	29.67	31.06
32.48							
10.08 CFS	33.95	35.46	37.01	38.63	40.30	42.01	43.75
45.52							
10.56 CFS	47.33	49.23	51.27	53.53	56.11	59.08	62.51
66.40							
11.04 CFS	71	76	81	87	93	101	109
118							
11.52 CFS	128	139	152	167	186	210	240
278							
12.00 CFS	329	401	503	633	781	934	1069
1161							
12.48 CFS	1198	1184	1131	1053	962	867	773
686							
12.96 CFS	608	539	480	430	387	351	321
295							
13.44 CFS	272	253	236	221	207	195	184
174							
13.92 CFS	166	158	151	145	140	136	132
128							
14.40 CFS	125	122	119	117	114	112	109
107							
14.88 CFS	104	102	100	97	95	93	90
88							
15.36 CFS	85.91	83.82	81.91	80.23	78.78	77.54	76.46
75.50							

15.84	CFS	74.63	73.82	73.06	72.34	71.66	70.99	70.31
69.63								
16.32	CFS	68.95	68.28	67.63	66.98	66.32	65.65	64.97
64.30								
16.80	CFS	63.64	63.00	62.37	61.77	61.18	60.60	60.02
59.42								
17.28	CFS	58.81	58.18	57.54	56.88	56.23	55.58	54.93
54.26								
17.76	CFS	53.58	52.89	52.21	51.56	50.92	50.30	49.69
49.09								
18.24	CFS	48.51	47.95	47.38	46.82	46.28	45.78	45.34
44.95								
18.72	CFS	44.62	44.35	44.16	43.98	43.81	43.63	43.46
43.27								
19.20	CFS	43.07	42.86	42.66	42.49	42.34	42.21	42.11
41.99								
19.68	CFS	41.87	41.75	41.59	41.41	41.21	41.01	40.84
40.67								
20.16	CFS	40.52	40.40	40.30	40.19	40.04	39.84	39.63
39.41								
20.64	CFS	39.20	39.00	38.82	38.69	38.57	38.44	38.30
38.15								
21.12	CFS	37.98	37.78	37.58	37.38	37.20	37.04	36.90
36.79								
21.60	CFS	36.68	36.56	36.43	36.28	36.11	35.94	35.78
35.64								
22.08	CFS	35.49	35.35	35.20	35.04	34.86	34.67	34.50
34.34								
22.56	CFS	34.20	34.05	33.90	33.74	33.56	33.36	33.14
32.93								
23.04	CFS	32.75	32.57	32.41	32.29	32.18	32.06	31.94
31.79								
23.52	CFS	31.61	31.42	31.22	31.03	30.84	30.67	30.51
30.37								
24.00	CFS	30.27	30.13	29.71	28.89	27.56	25.58	22.94
19.82								
24.48	CFS	16.56	13.44	10.64	8.24	6.25	4.67	3.43
2.49								
24.96	CFS	1.79	1.27	.89	.62	.42		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.96 WATERSHED INCHES; 1953 CFS-HRS; 161.4 ACRE-FEET.

OPERATION REACH XSECTION 63

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.61	1153.7	250.61

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.96 WATERSHED INCHES; 1953 CFS-HRS; 161.4 ACRE-FEET.

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OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	15.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.24 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	15.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.24 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	15.1	300.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.23 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	55.9	(RUNOFF)
24.02	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.98 WATERSHED INCHES; 59 CFS-HRS; 4.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	55.9	(NULL)
24.02	1.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.98 WATERSHED INCHES; 59 CFS-HRS; 4.8 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.21	64.6	(NULL)
18.84	2.1	(NULL)
24.02	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.23 WATERSHED INCHES; 82 CFS-HRS; 6.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	122.6	(RUNOFF)
18.87	3.1	(RUNOFF)
24.02	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.47 WATERSHED INCHES; 124 CFS-HRS; 10.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	186.8	(NULL)
18.86	5.2	(NULL)
21.97	4.3	(NULL)
24.02	3.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.37 WATERSHED INCHES; 206 CFS-HRS; 17.0 ACRE-FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.44	125.9	248.82
24.11	3.6	247.55

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.37 WATERSHED INCHES; 206 CFS-HRS; 17.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 71

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	26.5	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.81 WATERSHED INCHES;	22 CFS-HRS;	1.8 ACRE-
FEEET.		

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	26.5	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.81 WATERSHED INCHES;	22 CFS-HRS;	1.8 ACRE-
FEEET.		

OPERATION REACH XSECTION 72

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	24.1	248.02
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.82 WATERSHED INCHES;	22 CFS-HRS;	1.8 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	110.8	(RUNOFF)
15.85	5.4	(RUNOFF)
17.34	4.2	(RUNOFF)
20.86	3.0	(RUNOFF)
24.01	2.5	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11 SQ.MI.

HRS	10.98	11.46	11.94	12.42	12.90	13.38	13.86	14.34
CFS	2.88	19.46	63.21	22.44	14.26	9.85	8.46	
	.31	3.49	26.93	52.04	21.14	13.60	9.62	8.31
	.51	4.17	40.30	44.53	20.00	12.94	9.44	8.18
	.76	5.33	62.41	39.78	18.86	12.27	9.31	8.04
	1.07	7.10	94.61	34.95	17.73	11.63	9.18	7.87
	1.44	9.05	110.76	29.90	16.61	11.02	9.03	7.67
	1.85	11.28	98.35	26.21	15.68	10.52	8.85	7.46
	2.33	14.56	78.24	24.01	14.94	10.14	8.64	7.28

7.13								
14.82 CFS	7.00	6.85	6.67	6.49	6.33	6.15	5.96	
5.81								
15.30 CFS	5.72	5.68	5.66	5.66	5.65	5.61	5.53	
5.43								
15.78 CFS	5.39	5.40	5.39	5.33	5.24	5.17	5.13	
5.11								
16.26 CFS	5.08	5.03	4.97	4.92	4.86	4.79	4.75	
4.72								
16.74 CFS	4.71	4.66	4.60	4.55	4.53	4.51	4.47	
4.38								
17.22 CFS	4.28	4.23	4.24	4.23	4.16	4.07	3.99	
3.94								

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17.70 CFS	3.92	3.90	3.83	3.77	3.73	3.72	3.69
3.63							
18.18 CFS	3.56	3.53	3.51	3.48	3.43	3.39	3.42
3.46							
18.66 CFS	3.47	3.42	3.40	3.42	3.42	3.37	3.33
3.32							
19.14 CFS	3.31	3.31	3.31	3.31	3.31	3.31	3.31
3.30							
19.62 CFS	3.24	3.21	3.23	3.22	3.18	3.14	3.16
3.21							
20.10 CFS	3.22	3.18	3.15	3.13	3.11	3.06	3.01
3.03							
20.58 CFS	3.07	3.09	3.06	3.01	3.03	3.04	3.00
2.96							
21.06 CFS	2.93	2.92	2.92	2.92	2.92	2.92	2.92
2.92							
21.54 CFS	2.91	2.87	2.81	2.82	2.84	2.81	2.81
2.84							
22.02 CFS	2.81	2.77	2.74	2.72	2.72	2.72	2.71
2.71							
22.50 CFS	2.71	2.70	2.64	2.61	2.63	2.62	2.57
2.54							
22.98 CFS	2.55	2.60	2.61	2.57	2.53	2.52	2.51
2.51							
23.46 CFS	2.49	2.43	2.39	2.42	2.46	2.47	2.42
2.36							
23.94 CFS	2.35	2.46	2.42	1.76	.95	.46	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.58 WATERSHED INCHES; 112 CFS-HRS; 9.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET) 1187.8 (NULL)  
12.61

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.82 WATERSHED INCHES; 2066 CFS-HRS; 170.7 ACRE-

FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.42	135.1	(NULL)
24.04	4.0	(NULL)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10							
	MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .15			
HRS								
SQ.MI.								
9.06 CFS	.50	.54	.59	.64	.69	.75	.81	
.88								
9.54 CFS	.95	1.02	1.10	1.18	1.27	1.37	1.46	
1.56								
10.02 CFS	1.67	1.78	1.91	2.04	2.19	2.34	2.49	
2.66								
10.50 CFS	2.83	3.02	3.22	3.44	3.70	3.98	4.31	
4.67								
10.98 CFS	5.07	5.51	5.99	6.54	7.16	7.85	8.64	
9.51								
11.46 CFS	10.49	11.54	12.70	14.28	16.21	18.53	21.47	
25.16								
11.94 CFS	30	36	46	61	82	102	120	
132								
12.42 CFS	135	132	127	119	110	102	93	
85								
12.90 CFS	76.82	69.82	63.62	58.14	53.26	48.92	45.05	
41.61								
13.38 CFS	38.56	35.85	33.44	31.25	29.28	27.47	25.82	
24.33								
13.86 CFS	23.00	21.84	20.82	19.94	19.18	18.51	17.91	
17.37								
14.34 CFS	16.87	16.42	15.99	15.61	15.24	14.88	14.53	
14.18								
14.82 CFS	13.85	13.52	13.20	12.90	12.60	12.29	11.98	
11.68								
15.30 CFS	11.38	11.10	10.84	10.62	10.43	10.27	10.13	
10.00								
15.78 CFS	9.87	9.75	9.64	9.54	9.45	9.36	9.26	
9.16								

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16.26 CFS	9.07	8.98	8.90	8.82	8.73	8.64	8.55
8.46							
16.74 CFS	8.37	8.29	8.22	8.14	8.06	7.98	7.91
7.84							
17.22 CFS	7.76	7.67	7.59	7.50	7.42	7.34	7.26
7.17							
17.70 CFS	7.08	6.99	6.90	6.82	6.74	6.65	6.58
6.50							
18.18 CFS	6.43	6.35	6.27	6.20	6.13	6.06	6.00
5.94							
18.66 CFS	5.90	5.87	5.84	5.82	5.79	5.77	5.74

5.72								
19.14 CFS	5.68	5.65	5.63	5.60	5.58	5.57	5.55	
5.54								
19.62 CFS	5.53	5.51	5.49	5.46	5.44	5.41	5.38	
5.36								
20.10 CFS	5.35	5.33	5.32	5.31	5.29	5.27	5.24	
5.20								
20.58 CFS	5.17	5.15	5.13	5.11	5.10	5.09	5.07	
5.05								
21.06 CFS	5.03	5.00	4.97	4.94	4.92	4.90	4.88	
4.87								
21.54 CFS	4.86	4.85	4.82	4.80	4.78	4.76	4.73	
4.72								
22.02 CFS	4.70	4.68	4.67	4.64	4.62	4.59	4.57	
4.55								
22.50 CFS	4.53	4.52	4.50	4.48	4.45	4.43	4.40	
4.37								
22.98 CFS	4.34	4.32	4.30	4.29	4.28	4.26	4.24	
4.22								
23.46 CFS	4.20	4.18	4.15	4.12	4.09	4.07	4.06	
4.04								
23.94 CFS	4.02	4.00	4.00	3.96	3.80	3.55	3.17	
2.72								
24.42 CFS	2.28	1.88	1.54	1.25	1.01	.81	.65	
.52								
24.90 CFS	.41							

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.41 WATERSHED INCHES; 227 CFS-HRS; 18.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.60	1306.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.78 WATERSHED INCHES; 2293 CFS-HRS; 189.5 ACRE-FEET.

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.66	1305.7	230.80

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.78 WATERSHED INCHES; 2293 CFS-HRS; 189.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	69.0	(RUNOFF)
17.34	2.3	(RUNOFF)
24.01	1.3	(RUNOFF)

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HRS SQ.MI.	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10						
	MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05						
10.44 CFS	.48	.54	.61	.69	.79	.90	1.03
1.17							
10.92 CFS	1.32	1.48	1.66	1.88	2.14	2.44	2.77
3.12							
11.40 CFS	3.52	3.94	4.40	5.28	6.65	8.02	9.48
11.75							
11.88 CFS	15.02	19.88	28.51	42.20	61.40	68.99	58.81
45.47							
12.36 CFS	36.20	29.51	25.09	22.34	19.48	16.56	14.53
13.33							
12.84 CFS	12.45	11.72	11.07	10.42	9.77	9.14	8.62
8.22							
13.32 CFS	7.83	7.46	7.09	6.72	6.36	6.02	5.75
5.55							
13.80 CFS	5.39	5.26	5.16	5.08	5.01	4.93	4.82
4.71							
14.28 CFS	4.60	4.52	4.45	4.37	4.28	4.16	4.05
3.95							
14.76 CFS	3.87	3.79	3.71	3.61	3.51	3.42	3.32
3.22							
15.24 CFS	3.14	3.09	3.07	3.06	3.06	3.05	3.03
2.98							
15.72 CFS	2.93	2.91	2.92	2.91	2.87	2.82	2.78
2.76							
16.20 CFS	2.75	2.74	2.70	2.67	2.65	2.61	2.57
2.55							
16.68 CFS	2.54	2.53	2.50	2.47	2.44	2.43	2.42
2.39							
17.16 CFS	2.35	2.29	2.26	2.27	2.27	2.23	2.18
2.13							
17.64 CFS	2.11	2.10	2.08	2.05	2.01	2.00	1.99
1.97							
18.12 CFS	1.94	1.90	1.88	1.87	1.86	1.83	1.81
1.83							
18.60 CFS	1.85	1.85	1.83	1.81	1.83	1.82	1.80
1.78							
19.08 CFS	1.77	1.77	1.76	1.76	1.76	1.76	1.76
1.77							
19.56 CFS	1.76	1.72	1.71	1.72	1.72	1.69	1.67
1.68							
20.04 CFS	1.71	1.71	1.69	1.67	1.66	1.66	1.63
1.60							
20.52 CFS	1.61	1.63	1.64	1.62	1.60	1.61	1.61
1.59							
21.00 CFS	1.57	1.56	1.55	1.55	1.55	1.55	1.55
1.55							
21.48 CFS	1.55	1.54	1.52	1.49	1.50	1.50	1.49
1.49							
21.96 CFS	1.50	1.49	1.46	1.45	1.44	1.44	1.44
1.44							
22.44 CFS	1.44	1.44	1.43	1.39	1.38	1.39	1.39
1.36							
22.92 CFS	1.34	1.35	1.38	1.38	1.36	1.34	1.33

1.33							
23.40 CFS	1.32	1.31	1.28	1.26	1.28	1.30	1.30
1.27							
23.88 CFS	1.24	1.24	1.31	1.28	.90	.46	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.03 WATERSHED INCHES; 67 CFS-HRS; 5.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.66	1322.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.75 WATERSHED INCHES; 2360 CFS-HRS; 195.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.73	1317.8	216.63

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.75 WATERSHED INCHES; 2360 CFS-HRS; 195.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	37.3	(RUNOFF)
19.47	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.78 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.73	1325.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.73 WATERSHED INCHES; 2396 CFS-HRS; 198.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.15	83.3	(RUNOFF)
15.84	3.1	(RUNOFF)
17.34	2.4	(RUNOFF)
24.00	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.29 WATERSHED INCHES; 76 CFS-HRS; 6.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	118.2	(RUNOFF)
18.67	4.1	(RUNOFF)
23.12	3.1	(RUNOFF)
24.01	2.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.87 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 85

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	188.9	(NULL)
18.83	6.0	(NULL)
20.83	5.3	(NULL)
24.00	4.3	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
SQ.MI.

HRS	9.84 CFS	10.32 CFS	10.80 CFS	11.28 CFS	11.76 CFS	12.24 CFS	12.72 CFS
188	.46	.50	.55	.61	.67	.73	.81
65	1.00	1.13	1.29	1.46	1.67	1.91	2.20
7.04	2.90	3.30	3.75	4.23	4.76	5.41	6.17
22.71	7.99	9.04	10.24	11.50	12.89	15.34	18.96
188	27	33	42	55	78	113	162
65	179	159	137	115	98	86	75
188	56.89	50.80	46.24	42.65	39.68	37.02	34.53

32.25								
13.20	CFS	30.32	28.67	27.20	25.85	24.56	23.28	22.07
20.92								
13.68	CFS	19.91	19.10	18.42	17.87	17.44	17.09	16.80
16.49								
14.16	CFS	16.15	15.80	15.46	15.16	14.89	14.63	14.33
13.99								
14.64	CFS	13.64	13.30	13.01	12.74	12.46	12.15	11.85
11.55								
15.12	CFS	11.22	10.90	10.62	10.41	10.27	10.18	10.13
10.09								
15.60	CFS	10.02	9.90	9.76	9.67	9.65	9.60	9.51
9.39								
16.08	CFS	9.27	9.18	9.12	9.06	8.97	8.88	8.80
8.69								
16.56	CFS	8.58	8.49	8.43	8.38	8.30	8.20	8.12
8.07								
17.04	CFS	8.02	7.94	7.82	7.67	7.57	7.55	7.49
7.40								
17.52	CFS	7.27	7.15	7.05	6.99	6.92	6.82	6.73
6.65								
18.00	CFS	6.60	6.54	6.45	6.36	6.28	6.23	6.18
6.09								
18.48	CFS	6.04	6.05	6.07	6.08	6.03	6.01	6.02
6.00								
18.96	CFS	5.95	5.90	5.87	5.84	5.83	5.82	5.82
5.81								
19.44	CFS	5.81	5.81	5.79	5.72	5.68	5.69	5.66
5.60								
19.92	CFS	5.56	5.56	5.61	5.61	5.58	5.55	5.51
5.48								
20.40	CFS	5.41	5.34	5.34	5.37	5.38	5.35	5.31
5.32								
20.88	CFS	5.31	5.26	5.21	5.17	5.14	5.12	5.11
5.11								
21.36	CFS	5.11	5.10	5.10	5.09	5.03	4.97	4.97
4.96								
21.84	CFS	4.92	4.93	4.95	4.91	4.86	4.82	4.79
4.77								
22.32	CFS	4.75	4.75	4.74	4.74	4.71	4.64	4.60
4.61								
22.80	CFS	4.57	4.51	4.47	4.48	4.52	4.52	4.49
4.45								
23.28	CFS	4.42	4.40	4.38	4.35	4.27	4.23	4.24
4.27								
23.76	CFS	4.28	4.22	4.15	4.13	4.27	4.16	3.35
2.37								
24.24	CFS	1.58	.98	.61	.38			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.99 WATERSHED INCHES; 219 CFS-HRS; 18.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.72	1382.4	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.64 WATERSHED INCHES; 2615 CFS-HRS; 216.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	40.2	(RUNOFF)
15.84	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.45 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.71	1388.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.65 WATERSHED INCHES; 2650 CFS-HRS; 219.0 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
STARTING TIME = .00 RAIN DEPTH = 6.14 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
ALTERNATE NO. = 1 STORM NO. =25 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	65.5	(RUNOFF)
20.13	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.01 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-  
FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	65.1	390.46

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.01 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	114.1	(RUNOFF)
18.64	3.2	(RUNOFF)
23.97	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.85 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	175.6	(NULL)
20.13	4.7	(NULL)
23.11	3.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.91 WATERSHED INCHES; 231 CFS-HRS; 19.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	175.6	(NULL)
20.13	4.7	(NULL)
23.11	3.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.91 WATERSHED INCHES; 231 CFS-HRS; 19.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	174.9	368.64
20.20	4.7	366.56

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.91 WATERSHED INCHES; 231 CFS-HRS; 19.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	143.4	(RUNOFF)
23.13	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.63 WATERSHED INCHES; 187 CFS-HRS; 15.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	311.4	(NULL)
20.14	8.6	(NULL)
23.13	6.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.78 WATERSHED INCHES; 418 CFS-HRS; 34.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	310.4	358.22
20.20	8.6	356.21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.78 WATERSHED INCHES; 418 CFS-HRS; 34.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	169.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.08 WATERSHED INCHES; 241 CFS-HRS; 19.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	169.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

5.08 WATERSHED INCHES; 241 CFS-HRS; 19.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	23.5	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
	3.10 WATERSHED INCHES;	19 CFS-HRS; 1.6 ACRE-
	FEET.	

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	169.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
	5.08 WATERSHED INCHES;	241 CFS-HRS; 19.9 ACRE-
	FEET.	

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	113.8	(RUNOFF)
23.09	2.1	(RUNOFF)
24.02	1.9	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
	3.23 WATERSHED INCHES;	113 CFS-HRS; 9.4 ACRE-
	FEET.	

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	369.1	(NULL)
24.00	8.4	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
	3.65 WATERSHED INCHES;	531 CFS-HRS; 43.9 ACRE-
	FEET.	

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)			
12.20	44.8		(RUNOFF)
18.87	1.1		(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

1 TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
VERSION

06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	532.6	(NULL)
23.99	11.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.00 WATERSHED INCHES; 772 CFS-HRS; 63.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	563.6	(NULL)
23.99	12.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.99 WATERSHED INCHES; 819 CFS-HRS; 67.7 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	563.6	(NULL)
23.99	12.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.99 WATERSHED INCHES; 819 CFS-HRS; 67.7 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
 \*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	563.6	334.94

23.99

12.1

331.23

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.99 WATERSHED INCHES; 819 CFS-HRS; 67.7 ACRE-
FEET.

OPERATION RUNOFF XSECTION 17

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT
VERSION

06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA
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Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.15, 15.84, 21.45, 21.75, 21.95 and discharges like 68.1, 2.0, 1.0, 1.0, 1.0.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.75 WATERSHED INCHES; 65 CFS-HRS; 5.3 ACRE-
FEET.

OPERATION RUNOFF XSECTION 18

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.20, 24.03 and discharges like 91.8, 1.3.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.19 WATERSHED INCHES; 105 CFS-HRS; 8.7 ACRE-
FEET.

OPERATION RUNOFF XSECTION 19

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.15, 15.84, 20.85, 24.00 and discharges like 121.1, 3.8, 2.0, 1.7.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.37 WATERSHED INCHES; 114 CFS-HRS; 9.4 ACRE-
FEET.

OPERATION ADDHYD XSECTION 20

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.17, 15.81 and discharges like 156.6, 5.2.

18.84 3.1 (NULL)  
24.01 2.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.01 WATERSHED INCHES; 169 CFS-HRS; 14.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

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TR20 ----- SCS  
-

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
VERSION

06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.16	276.9	(NULL)
15.83	9.0	(NULL)
17.33	6.9	(NULL)
19.74	5.1	(NULL)
20.06	5.1	(NULL)
22.74	4.1	(NULL)
23.06	4.1	(NULL)
24.01	3.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.73 WATERSHED INCHES; 283 CFS-HRS; 23.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 22

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.22	760.8	(NULL)
18.83	23.2	(NULL)
20.05	21.4	(NULL)
20.82	20.3	(NULL)
21.94	18.7	(NULL)
23.05	17.1	(NULL)
23.69	16.1	(NULL)
24.00	16.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.15 WATERSHED INCHES; 1103 CFS-HRS; 91.1 ACRE-  
FEET.

OPERATION REACH XSECTION 23

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.37	715.7	316.86
24.06	15.9	314.09

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.15 WATERSHED INCHES; 1103 CFS-HRS; 91.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	110.9	(RUNOFF)
23.13	2.1	(RUNOFF)
23.99	1.9	(RUNOFF)

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.15 WATERSHED INCHES; 135 CFS-HRS; 11.2 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	110.9	(NULL)
23.13	2.1	(NULL)
23.99	1.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.15 WATERSHED INCHES; 135 CFS-HRS; 11.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	158.3	(RUNOFF)
18.66	4.2	(RUNOFF)
23.13	3.1	(RUNOFF)
23.97	2.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.08 WATERSHED INCHES; 197 CFS-HRS; 16.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	269.1	(NULL)
18.66	7.1	(NULL)
20.68	6.3	(NULL)
23.13	5.2	(NULL)
23.98	4.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.11 WATERSHED INCHES; 332 CFS-HRS; 27.4 ACRE-



FEET.

OPERATION REACH XSECTION 27

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	255.2	319.44
20.20	6.5	316.75
23.20	5.2	316.66
23.80	4.9	316.64

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.11 WATERSHED INCHES; 332 CFS-HRS; 27.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	122.5	(RUNOFF)
18.67	3.3	(RUNOFF)
20.13	3.0	(RUNOFF)
24.01	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.75 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	818.5	(NULL)
20.07	24.5	(NULL)
23.07	19.5	(NULL)
24.04	18.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.10 WATERSHED INCHES; 1248 CFS-HRS; 103.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	1073.0	(NULL)
24.04	22.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.10 WATERSHED INCHES; 1580 CFS-HRS; 130.6 ACRE-

FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	183.4	(RUNOFF)
18.66	4.1	(RUNOFF)
21.96	3.3	(RUNOFF)
23.11	3.0	(RUNOFF)
24.03	2.8	(RUNOFF)

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.64 WATERSHED INCHES; 207 CFS-HRS; 17.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	167.8	313.44
18.72	4.1	310.34
20.73	3.6	310.29
24.09	2.8	310.23

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 207 CFS-HRS; 17.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	28.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.55 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	28.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.55 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,

CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 34.  
 \*\*\*

OPERATION REACH XSECTION 34

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.16	28.4	338.28
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.55 WATERSHED INCHES;	30 CFS-HRS;	2.5 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 35

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.19	84.9	(RUNOFF)
24.02	1.1	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.54 WATERSHED INCHES;	98 CFS-HRS;	8.1 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 33

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.19	84.9	(NULL)
24.02	1.1	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.54 WATERSHED INCHES;	98 CFS-HRS;	8.1 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 36

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.18	112.7	(NULL)
20.09	2.0	(NULL)
24.02	1.5	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.54 WATERSHED INCHES;	128 CFS-HRS;	10.6 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	112.7	(NULL)
20.09	2.0	(NULL)
24.02	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.54 WATERSHED INCHES; 128 CFS-HRS; 10.6 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
 \*\*\*

OPERATION REACH XSECTION 37

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION

06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	112.7	330.82
20.09	2.0	330.04
24.02	1.5	330.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.54 WATERSHED INCHES; 128 CFS-HRS; 10.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	98.4	(RUNOFF)
15.84	3.1	(RUNOFF)
17.34	2.4	(RUNOFF)
24.01	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.53 WATERSHED INCHES; 96 CFS-HRS; 7.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	210.6	(NULL)
15.82	6.7	(NULL)
17.32	5.2	(NULL)
18.85	4.1	(NULL)
22.75	3.1	(NULL)
23.08	3.0	(NULL)
24.01	2.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.06 WATERSHED INCHES; 224 CFS-HRS; 18.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	78.9	(RUNOFF)
20.13	2.0	(RUNOFF)
23.76	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.94 WATERSHED INCHES; 100 CFS-HRS; 8.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 41

1  
 TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION

06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	1147.2	(NULL)
24.04	24.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.09 WATERSHED INCHES; 1680 CFS-HRS; 138.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	1317.2	(NULL)
24.04	27.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.15 WATERSHED INCHES; 1887 CFS-HRS; 156.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	1446.1	(NULL)
20.07	40.6	(NULL)
24.03	30.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.23 WATERSHED INCHES; 2111 CFS-HRS; 174.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	1395.7	291.77

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.23 WATERSHED INCHES; 2111 CFS-HRS; 174.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	91.8	(RUNOFF)
23.08	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.99 WATERSHED INCHES; 123 CFS-HRS; 10.1 ACRE-FEET.

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	114.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.90 WATERSHED INCHES; 158 CFS-HRS; 13.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	206.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.94 WATERSHED INCHES; 281 CFS-HRS; 23.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	112.4	(RUNOFF)
21.97	2.1	(RUNOFF)
24.03	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.93 WATERSHED INCHES; 119 CFS-HRS; 9.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.40 1455.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.21 WATERSHED INCHES; 2230 CFS-HRS; 184.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.39 1649.7 (NULL)

HRS	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25							
	MAIN	TIME	INCREMENT = .060 hr,	DRAINAGE AREA = .93				
2.94 CFS	.48	.52	.55	.59	.63	.68	.73	
.79								
3.42 CFS	.85	.92	.98	1.05	1.13	1.20	1.27	
1.33								
3.90 CFS	1.40	1.47	1.54	1.62	1.70	1.79	1.88	
1.96								
4.38 CFS	2.05	2.13	2.23	2.35	2.47	2.58	2.68	
2.79								

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION

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4.86 CFS	2.91	3.02	3.14	3.26	3.38	3.51	3.63	
3.77								
5.34 CFS	3.91	4.04	4.16	4.27	4.39	4.53	4.67	
4.82								
5.82 CFS	4.97	5.10	5.22	5.34	5.50	5.69	5.88	
6.08								
6.30 CFS	6.30	6.53	6.79	7.07	7.37	7.70	8.04	
8.40								
6.78 CFS	8.76	9.12	9.50	9.91	10.32	10.74	11.18	
11.66								
7.26 CFS	12.17	12.68	13.19	13.70	14.22	14.76	15.31	
15.85								
7.74 CFS	16.38	16.94	17.52	18.11	18.72	19.36	20.02	
20.68								
8.22 CFS	21.36	22.02	22.67	23.35	24.04	24.72	25.41	
26.13								
8.70 CFS	26.89	27.68	28.48	29.25	29.99	30.71	31.47	
32.31								
9.18 CFS	33.22	34.22	35.33	36.59	38.00	39.53	41.12	
42.77								
9.66 CFS	44.48	46.28	48.19	50.19	52.24	54.30	56.37	

58.49							
10.14 CFS	60.69	62.97	65.33	67.70	70.08	72.47	74.91
77.47							
10.62 CFS	80	83	87	91	97	102	109
116							
11.10 CFS	123	132	141	151	163	176	190
205							
11.58 CFS	221	242	269	303	344	395	461
551							
12.06 CFS	683	871	1112	1362	1551	1640	1635
1556							
12.54 CFS	1437	1301	1159	1022	895	782	686
605							
13.02 CFS	539	484	438	399	366	338	314
293							
13.50 CFS	274	258	243	229	216	205	195
186							
13.98 CFS	179	172	167	162	158	154	150
147							
14.46 CFS	144	141	138	135	132	129	126
123							
14.94 CFS	120	117	114	111	109	106	103
100							
15.42 CFS	97.98	96.03	94.44	93.15	92.04	91.01	89.98
89.00							
15.90 CFS	88.13	87.36	86.60	85.80	84.93	84.05	83.22
82.43							
16.38 CFS	81.66	80.88	80.07	79.24	78.38	77.52	76.70
75.95							
16.86 CFS	75.22	74.48	73.74	73.04	72.38	71.71	70.96
70.12							
17.34 CFS	69.25	68.44	67.70	66.96	66.16	65.29	64.41
63.56							
17.82 CFS	62.77	61.98	61.19	60.42	59.70	59.02	58.34
57.63							
18.30 CFS	56.93	56.26	55.62	55.00	54.41	53.95	53.63
53.41							
18.78 CFS	53.21	53.00	52.83	52.66	52.46	52.21	51.93
51.65							
19.26 CFS	51.40	51.19	51.02	50.88	50.78	50.69	50.56
50.38							
19.74 CFS	50.14	49.91	49.68	49.42	49.14	48.91	48.77
48.70							
20.22 CFS	48.61	48.47	48.29	48.05	47.75	47.41	47.09
46.87							
20.70 CFS	46.72	46.59	46.44	46.29	46.15	45.97	45.74
45.47							
21.18 CFS	45.19	44.93	44.70	44.52	44.37	44.26	44.16
44.05							
21.66 CFS	43.89	43.66	43.42	43.20	42.99	42.82	42.69
42.56							
22.14 CFS	42.37	42.14	41.89	41.64	41.42	41.24	41.08
40.95							
22.62 CFS	40.79	40.57	40.31	40.06	39.82	39.54	39.26
39.02							
23.10 CFS	38.88	38.80	38.70	38.56	38.38	38.19	37.99
37.77							
23.58 CFS	37.48	37.18	36.92	36.77	36.65	36.51	36.30
36.11							
24.06 CFS	35.98	35.47	33.91	30.88	26.75	22.17	17.71
13.75							
24.54 CFS	10.41	7.69	5.58	3.98	2.80	1.95	1.35
.92							
25.02 CFS	.62	.42					



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.18 WATERSHED INCHES; 2511 CFS-HRS; 207.5 ACRE-  
FEET.

OPERATION REACH XSECTION 51

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
VERSION  
06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.48 1611.5 287.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.18 WATERSHED INCHES; 2511 CFS-HRS; 207.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 52

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.20 1.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.64 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-  
FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 53

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.32 1.7 288.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.64 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - XSECTION 54, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.64 WATERSHED INCHES; 212 CFS-HRS; .3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	72.5	(RUNOFF)
24.03	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 76 CFS-HRS; 6.3 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	1642.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.16 WATERSHED INCHES; 2587 CFS-HRS; 213.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	1.8	(NULL)

	HYDROGRAPH POINTS FOR		ALTERNATE = 1,		STORM =25	
HRS	MAIN TIME INCREMENT = .060 hr,		DRAINAGE AREA =		.02	
SQ.MI.						
12.12 CFS	.26	.96	1.54	1.73	1.73	1.65 1.55
1.48						
12.60 CFS	1.43	1.32	1.20	1.11	1.05	1.01 .98
.94						
13.08 CFS	.91	.87	.83	.79	.77	.74 .71
.69						
13.56 CFS	.66	.63	.60	.58	.56	.55 .54
.53						
14.04 CFS	.53	.52	.52	.51	.50	.49

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .45 WATERSHED INCHES; 5 CFS-HRS; .4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	1643.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

4.10 WATERSHED INCHES; 2592 CFS-HRS; 214.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.21	47.1	(RUNOFF)
21.97	1.1	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 25  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .03  
 HRS SQ.MI.

10.08 CFS	.48	.52	.56	.60	.64	.69	.73
.78							
10.56 CFS	.84	.90	.98	1.08	1.18	1.30	1.43
1.57							
11.04 CFS	1.71	1.88	2.08	2.31	2.57	2.85	3.15
3.48							
11.52 CFS	3.83	4.38	5.24	6.26	7.38	8.82	10.85
13.87							
12.00 CFS	18.80	26.74	37.61	46.18	45.89	39.69	32.20
26.43							
12.48 CFS	22.12	19.01	16.54	14.23	12.30	10.89	9.91
9.16							
12.96 CFS	8.55	8.01	7.51	7.03	6.60	6.23	5.92
5.63							
13.44 CFS	5.35	5.08	4.81	4.55	4.32	4.14	3.99
3.88							

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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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13.92 CFS	3.78	3.71	3.65	3.59	3.52	3.44	3.36
3.29							
14.40 CFS	3.23	3.18	3.11	3.04	2.96	2.89	2.82
2.76							
14.88 CFS	2.70	2.63	2.57	2.50	2.43	2.36	2.29
2.24							
15.36 CFS	2.21	2.20	2.19	2.18	2.17	2.15	2.11
2.09							
15.84 CFS	2.08	2.08	2.06	2.03	2.00	1.98	1.97
1.96							
16.32 CFS	1.94	1.92	1.90	1.88	1.85	1.83	1.81
1.80							
16.80 CFS	1.79	1.77	1.75	1.74	1.73	1.71	1.69
1.65							
17.28 CFS	1.63	1.62	1.61	1.60	1.57	1.54	1.51
1.50							
17.76 CFS	1.49	1.47	1.45	1.43	1.42	1.41	1.39
1.37							
18.24 CFS	1.35	1.34	1.33	1.31	1.29	1.29	1.30
1.31							
18.72 CFS	1.30	1.29	1.29	1.29	1.28	1.27	1.26
1.25							
19.20 CFS	1.25	1.25	1.25	1.25	1.25	1.25	1.24
1.23							

19.68 CFS	1.22	1.21	1.21	1.20	1.19	1.19	1.20
1.20							
20.16 CFS	1.20	1.19	1.18	1.17	1.16	1.14	1.14
1.14							
20.64 CFS	1.15	1.15	1.14	1.13	1.14	1.13	1.12
1.10							
21.12 CFS	1.10	1.09	1.09	1.09	1.09	1.09	1.09
1.09							
21.60 CFS	1.08	1.06	1.06	1.06	1.05	1.05	1.05
1.05							
22.08 CFS	1.04	1.03	1.02	1.02	1.01	1.01	1.01
1.01							
22.56 CFS	1.01	.99	.98	.98	.98	.97	.95
.95							
23.04 CFS	.96	.97	.96	.95	.94	.94	.93
.93							
23.52 CFS	.91	.90	.90	.91	.91	.91	.89
.88							
24.00 CFS	.90	.89	.77	.53	.32		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.96 WATERSHED INCHES; 51 CFS-HRS; 4.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	1666.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.07 WATERSHED INCHES; 2643 CFS-HRS; 218.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	28.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.89 WATERSHED INCHES; 32 CFS-HRS; 2.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	1681.6	(NULL)

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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25

HRS SQ.MI.	MAIN	TIME	INCREMENT	=	.060	hr,	DRAINAGE	AREA	=	1.02
3.06 CFS	.50	.53	.57	.61	.65	.70	.76			
.82										
3.54 CFS	.88	.95	1.02	1.09	1.16	1.23	1.29			
1.36										
4.02 CFS	1.43	1.50	1.58	1.66	1.74	1.83	1.91			
2.00										
4.50 CFS	2.09	2.18	2.29	2.40	2.52	2.62	2.73			
2.84										
4.98 CFS	2.96	3.08	3.20	3.32	3.44	3.56	3.69			
3.83										
5.46 CFS	3.97	4.09	4.21	4.33	4.46	4.60	4.74			
4.89										
5.94 CFS	5.02	5.15	5.27	5.42	5.59	5.78	5.97			
6.18										
6.42 CFS	6.41	6.65	6.92	7.21	7.53	7.86	8.20			
8.56										
6.90 CFS	8.92	9.30	9.71	10.12	10.55	10.99	11.47			
11.97										
7.38 CFS	12.49	13.01	13.54	14.08	14.62	15.18	15.74			
16.29										
7.86 CFS	16.86	17.44	18.05	18.67	19.32	19.98	20.66			
21.34										
8.34 CFS	22.03	22.70	23.39	24.10	24.80	25.51	26.24			
27.01										
8.82 CFS	27.81	28.62	29.43	30.22	31.01	31.81	32.67			
33.61										
9.30 CFS	34.64	35.78	37.05	38.46	40.00	41.63	43.34			
45.13										
9.78 CFS	47.00	48.96	51.02	53.14	55.30	57.49	59.73			
62.03										
10.26 CFS	64.41	66.86	69.35	71.87	74.41	77.02	79.76			
82.72										
10.74 CFS	86	90	94	99	105	112	119			
127										
11.22 CFS	136	145	156	168	181	196	212			
231										
11.70 CFS	253	281	316	360	415	490	593			
740										
12.18 CFS	928	1140	1357	1540	1652	1681	1636			
1538										
12.66 CFS	1411	1271	1131	997	876	770	679			
603										
13.14 CFS	540	487	442	405	373	345	321			
300										
13.62 CFS	282	265	250	236	224	213	203			
195										
14.10 CFS	187	181	176	171	167	163	159			
155										
14.58 CFS	152	149	145	142	139	136	133			
129										
15.06 CFS	126	123	120	117	114	111	109			
106										
15.54 CFS	104	102	101	99	98	97	96			
95										
16.02 CFS	94.24	93.37	92.50	91.62	90.72	89.81	88.94			
88.09										
16.50 CFS	87.24	86.37	85.48	84.58	83.70	82.83	81.98			
81.16										
16.98 CFS	80.38	79.61	78.85	78.09	77.32	76.51	75.68			
74.81										
17.46 CFS	73.94	73.09	72.24	71.39	70.50	69.59	68.68			
67.80										

17.94	CFS	66.94	66.11	65.30	64.51	63.74	62.99	62.25
61.52								
18.42	CFS	60.78	60.08	59.44	58.86	58.37	57.96	57.65
57.42								
18.90	CFS	57.21	56.99	56.78	56.55	56.31	56.04	55.76
55.49								
19.38	CFS	55.27	55.07	54.92	54.78	54.64	54.49	54.32
54.10								
19.86	CFS	53.85	53.58	53.32	53.09	52.87	52.68	52.53
52.41								
20.34	CFS	52.26	52.06	51.80	51.51	51.21	50.92	50.66
50.43								
20.82	CFS	50.27	50.12	49.95	49.77	49.57	49.34	49.08
48.81								
21.30	CFS	48.54	48.30	48.09	47.92	47.79	47.65	47.49
47.32								
21.78	CFS	47.13	46.89	46.66	46.46	46.27	46.08	45.90
45.71								
22.26	CFS	45.48	45.24	44.99	44.76	44.56	44.38	44.19
43.99								
22.74	CFS	43.78	43.55	43.27	42.98	42.70	42.46	42.23
42.03								
23.22	CFS	41.88	41.75	41.61	41.44	41.24	41.00	40.74
40.48								
23.70	CFS	40.22	39.97	39.75	39.55	39.37	39.24	39.07
38.51								
24.18	CFS	37.39	35.55	32.75	28.99	24.64	20.20	16.05
12.41								
24.66	CFS	9.36	6.91	5.01	3.58	2.53	1.76	1.22
.83								
25.14	CFS	.56	.38					

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.05 WATERSHED INCHES; 2675 CFS-HRS; 221.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.58	1627.2	251.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.05 WATERSHED INCHES; 2675 CFS-HRS; 221.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	20.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.38 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	20.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.38 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	20.3	300.94

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.38 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	83.6	(RUNOFF)
20.10	2.1	(RUNOFF)
24.03	1.6	(RUNOFF)

1

TR20 ----- SCS

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.93 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	83.6	(NULL)
20.10	2.1	(NULL)
24.03	1.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.93 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	95.7	(NULL)
23.09	2.1	(NULL)
23.74	2.0	(NULL)
24.03	2.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.21 WATERSHED INCHES; 118 CFS-HRS; 9.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	174.2	(RUNOFF)
18.87	4.1	(RUNOFF)
22.76	3.1	(RUNOFF)
23.09	3.1	(RUNOFF)
24.02	2.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.52 WATERSHED INCHES; 176 CFS-HRS; 14.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	269.3	(NULL)
18.64	7.1	(NULL)
20.87	6.1	(NULL)
23.09	5.2	(NULL)
24.02	4.9	(NULL)

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06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.39 WATERSHED INCHES; 294 CFS-HRS; 24.3 ACRE-  
FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.43	188.0	249.03
24.14	4.8	247.65

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.39 WATERSHED INCHES; 294 CFS-HRS; 24.3 ACRE-  
FEET.



OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	36.6	(RUNOFF)
15.83	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.92 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	36.6	(NULL)
15.83	1.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.92 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 72

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	33.8	248.14
15.89	1.1	247.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.90 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 73

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 TR20 ----- SCS  
 -  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	176.2	(RUNOFF)
15.85	7.7	(RUNOFF)
17.34	6.0	(RUNOFF)
21.46	4.1	(RUNOFF)
24.01	3.4	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11  
 SQ.MI.

10.26 CFS	.46	.59	.72	.86	1.01	1.18	1.37
1.61							
10.74 CFS	1.87	2.18	2.52	2.89	3.28	3.72	4.25
4.89							

11.22 CFS	5.63	6.43	7.32	8.32	9.38	10.53	12.63
15.99							
11.70 CFS	19	23	29	37	49	70	105
153							
12.18 CFS	176	154	121	96	79	67	59
52							
12.66 CFS	44.19	38.62	35.27	32.88	30.92	29.20	27.50
25.81							
13.14 CFS	24.15	22.77	21.67	20.66	19.69	18.72	17.74
16.80							
13.62 CFS	15.90	15.17	14.62	14.19	13.85	13.59	13.38
13.20							
14.10 CFS	12.97	12.70	12.40	12.13	11.91	11.72	11.52
11.27							
14.58 CFS	10.98	10.67	10.41	10.19	10.00	9.78	9.52
9.27							
15.06 CFS	9.04	8.77	8.50	8.29	8.15	8.09	8.06
8.05							
15.54 CFS	8.04	7.98	7.87	7.73	7.66	7.68	7.66
7.58							
16.02 CFS	7.45	7.34	7.28	7.25	7.22	7.13	7.04
6.98							
16.50 CFS	6.90	6.79	6.73	6.69	6.67	6.60	6.51
6.44							
16.98 CFS	6.41	6.39	6.32	6.20	6.05	5.98	5.99
5.98							
17.46 CFS	5.89	5.75	5.63	5.57	5.54	5.50	5.41
5.32							
17.94 CFS	5.27	5.24	5.21	5.12	5.03	4.97	4.95
4.91							
18.42 CFS	4.83	4.78	4.82	4.88	4.88	4.82	4.78
4.82							
18.90 CFS	4.81	4.74	4.69	4.67	4.66	4.65	4.65
4.65							
19.38 CFS	4.66	4.66	4.66	4.64	4.56	4.51	4.54
4.53							
19.86 CFS	4.47	4.42	4.44	4.51	4.52	4.46	4.42
4.40							
20.34 CFS	4.37	4.30	4.23	4.25	4.31	4.33	4.29
4.22							
20.82 CFS	4.24	4.26	4.21	4.15	4.11	4.10	4.09
4.09							
21.30 CFS	4.09	4.09	4.09	4.09	4.08	4.01	3.94
3.96							
21.78 CFS	3.97	3.93	3.93	3.97	3.94	3.87	3.83
3.81							
22.26 CFS	3.80	3.80	3.80	3.80	3.80	3.77	3.69
3.64							
22.74 CFS	3.67	3.66	3.59	3.54	3.57	3.64	3.65
3.59							
23.22 CFS	3.54	3.52	3.51	3.50	3.47	3.39	3.34
3.38							
23.70 CFS	3.44	3.44	3.37	3.29	3.27	3.44	3.37
2.46							
24.18 CFS	1.33	.64	.31				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.44 WATERSHED INCHES; 173 CFS-HRS; 14.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK

ELEVATION(FEET)  
 12.58 1681.6 (NULL)  
 1  
 TR20 ----- SCS  
 -  
 Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
 Dist.2.04TEST  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.90 WATERSHED INCHES; 2848 CFS-HRS; 235.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.41	200.7	(NULL)
24.04	5.3	(NULL)

HRS	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25							
	MAIN	TIME	INCREMENT	= .060 hr,				DRAINAGE AREA = .15
7.86 CFS	.46	.50	.55	.60	.65	.70	.76	
.81								
8.34 CFS	.87	.93	.99	1.04	1.11	1.17	1.23	
1.30								
8.82 CFS	1.37	1.43	1.50	1.57	1.64	1.73	1.81	
1.91								
9.30 CFS	2.02	2.14	2.27	2.41	2.56	2.71	2.88	
3.05								
9.78 CFS	3.24	3.44	3.64	3.85	4.07	4.29	4.53	
4.78								
10.26 CFS	5.03	5.30	5.56	5.84	6.12	6.42	6.74	
7.09								
10.74 CFS	7.50	7.96	8.50	9.09	9.76	10.49	11.27	
12.17								
11.22 CFS	13.16	14.28	15.54	16.93	18.48	20.13	21.92	
24.37								
11.70 CFS	27.35	30.95	35.52	41.16	48.51	58.25	73.12	
94.88								
12.18 CFS	126	155	181	197	201	194	183	
170								
12.66 CFS	156	142	129	116	104	94	85	
77								
13.14 CFS	70.69	64.73	59.46	54.81	50.73	47.13	43.95	
41.08								
13.62 CFS	38.49	36.11	33.96	32.02	30.29	28.78	27.46	
26.33								
14.10 CFS	25.36	24.51	23.76	23.07	22.43	21.84	21.30	
20.79								
14.58 CFS	20.32	19.85	19.39	18.93	18.48	18.05	17.62	
17.22								
15.06 CFS	16.81	16.40	15.99	15.58	15.17	14.79	14.45	
14.15								
15.54 CFS	13.90	13.70	13.52	13.35	13.18	13.02	12.88	
12.75								
16.02 CFS	12.63	12.51	12.38	12.25	12.12	12.01	11.89	
11.78								

16.50 CFS	11.67	11.55	11.42	11.30	11.18	11.08	10.97
10.86							
16.98 CFS	10.76	10.66	10.56	10.46	10.36	10.24	10.12
10.00							
17.46 CFS	9.89	9.79	9.68	9.56	9.43	9.31	9.20
9.08							
17.94 CFS	8.97	8.86	8.75	8.65	8.55	8.45	8.35
8.25							
18.42 CFS	8.16	8.06	7.98	7.91	7.85	7.81	7.78
7.75							
18.90 CFS	7.72	7.68	7.65	7.62	7.57	7.53	7.49
7.46							
19.38 CFS	7.44	7.42	7.40	7.39	7.37	7.34	7.31
7.28							
19.86 CFS	7.24	7.21	7.17	7.14	7.12	7.10	7.09
7.07							
20.34 CFS	7.05	7.02	6.97	6.92	6.88	6.85	6.82
6.80							
20.82 CFS	6.79	6.77	6.74	6.71	6.69	6.65	6.61
6.57							
21.30 CFS	6.54	6.51	6.49	6.47	6.46	6.44	6.42
6.39							
21.78 CFS	6.36	6.32	6.29	6.27	6.25	6.23	6.20
6.17							
22.26 CFS	6.14	6.10	6.07	6.04	6.02	6.00	5.98
5.94							
22.74 CFS	5.91	5.88	5.84	5.80	5.76	5.73	5.70
5.69							
23.22 CFS	5.68	5.66	5.63	5.60	5.57	5.54	5.50
5.46							
23.70 CFS	5.42	5.40	5.38	5.36	5.33	5.30	5.30
5.24							
24.18 CFS	5.04	4.70	4.16	3.52	2.91	2.37	1.91
1.52							
24.66 CFS	1.21	.95	.75	.59	.46		

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
 Dist.2.04TEST  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.43 WATERSHED INCHES; 324 CFS-HRS; 26.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.56	1860.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.84 WATERSHED INCHES; 3173 CFS-HRS; 262.2 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 77.  
 \*\*\*

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.56	1860.1	231.40

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.84 WATERSHED INCHES; 3173 CFS-HRS; 262.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	103.0	(RUNOFF)
15.85	4.0	(RUNOFF)
17.34	3.1	(RUNOFF)
21.96	2.0	(RUNOFF)
24.01	1.8	(RUNOFF)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25						
HRS	MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05						
SQ.MI.							
9.54 CFS	.47	.52	.58	.64	.70	.77	.83
.89							
10.02 CFS	.96	1.04	1.13	1.21	1.29	1.37	1.45
1.55							
10.50 CFS	1.65	1.76	1.91	2.09	2.30	2.54	2.78
3.05							
10.98 CFS	3.33	3.62	3.99	4.43	4.94	5.49	6.07
6.71							
11.46 CFS	7.36	8.07	9.49	11.74	13.93	16.18	19.66
24.66							
11.94 CFS	31.93	44.76	64.75	92.26	102.86	86.40	66.13
52.24							
12.42 CFS	42.31	35.81	31.74	27.58	23.38	20.48	18.73
17.47							
12.90 CFS	16.43	15.50	14.58	13.66	12.77	12.03	11.45
10.91							
13.38 CFS	10.38	9.86	9.34	8.83	8.36	7.97	7.69
7.47							
13.86 CFS	7.28	7.15	7.04	6.94	6.82	6.67	6.51
6.36							
14.34 CFS	6.24	6.14	6.04	5.90	5.74	5.58	5.44
5.33							
14.82 CFS	5.23	5.11	4.97	4.84	4.71	4.57	4.43
4.32							
15.30 CFS	4.25	4.22	4.21	4.20	4.20	4.16	4.10
4.02							
15.78 CFS	3.99	4.00	3.99	3.94	3.87	3.82	3.79
3.77							

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
VERSION

06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
Dist.2.04TEST

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16.26 CFS	3.75	3.71	3.66	3.63	3.58	3.53	3.49
3.48							
16.74 CFS	3.46	3.43	3.37	3.34	3.33	3.31	3.27
3.21							
17.22 CFS	3.13	3.10	3.11	3.10	3.05	2.97	2.91
2.88							
17.70 CFS	2.87	2.85	2.80	2.75	2.72	2.71	2.69
2.64							
18.18 CFS	2.60	2.57	2.56	2.54	2.49	2.47	2.49
2.52							
18.66 CFS	2.52	2.49	2.47	2.49	2.48	2.45	2.42
2.41							
19.14 CFS	2.40	2.40	2.40	2.40	2.40	2.40	2.40
2.39							
19.62 CFS	2.35	2.32	2.34	2.34	2.30	2.27	2.29
2.33							
20.10 CFS	2.33	2.30	2.27	2.26	2.25	2.21	2.17
2.19							
20.58 CFS	2.22	2.23	2.21	2.17	2.19	2.19	2.16
2.13							
21.06 CFS	2.11	2.11	2.10	2.10	2.10	2.10	2.10
2.10							
21.54 CFS	2.10	2.06	2.02	2.03	2.04	2.02	2.02
2.04							
22.02 CFS	2.02	1.99	1.96	1.96	1.95	1.95	1.95
1.95							
22.50 CFS	1.95	1.94	1.89	1.87	1.89	1.88	1.84
1.82							
22.98 CFS	1.83	1.87	1.87	1.84	1.81	1.80	1.80
1.79							
23.46 CFS	1.78	1.73	1.71	1.74	1.77	1.77	1.73
1.68							
23.94 CFS	1.68	1.77	1.73	1.21	.62	.29	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES; 98 CFS-HRS; 8.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.56	1890.3	(NULL)
23.98	50.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 3271 CFS-HRS; 270.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.63	1881.5	217.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 3271 CFS-HRS; 270.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	57.5	(RUNOFF)
15.85	2.3	(RUNOFF)
23.07	1.1	(RUNOFF)
23.73	1.0	(RUNOFF)
24.01	1.0	(RUNOFF)

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
 Dist.2.04TEST  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.69 WATERSHED INCHES; 54 CFS-HRS; 4.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.63	1896.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.78 WATERSHED INCHES; 3325 CFS-HRS; 274.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	120.6	(RUNOFF)
15.84	4.2	(RUNOFF)
17.34	3.3	(RUNOFF)
22.47	2.1	(RUNOFF)
24.00	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.29 WATERSHED INCHES; 109 CFS-HRS; 9.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	179.9	(RUNOFF)
20.12	5.2	(RUNOFF)
23.12	4.2	(RUNOFF)
24.02	3.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.79 WATERSHED INCHES; 214 CFS-HRS; 17.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.19	280.9	(NULL)
18.83	8.2	(NULL)
20.82	7.2	(NULL)
23.07	6.1	(NULL)
24.00	5.8	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 HRS SQ.MI.  
 8.94 CFS .47 .51 .55 .59 .64 .71 .79  
 .90

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
 Dist.2.04TEST  
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9.42 CFS	1.01	1.14	1.27	1.43	1.60	1.78	1.97
2.16							
9.90 CFS	2.36	2.56	2.79	3.03	3.28	3.54	3.79
4.04							
10.38 CFS	4.32	4.61	4.92	5.28	5.72	6.25	6.85
7.53							
10.86 CFS	8.27	9.07	9.92	10.83	11.93	13.22	14.68
16.31							
11.34 CFS	18.06	19.98	21.99	24.17	28.21	34.04	39.91
46.82							
11.82 CFS	57	70	90	123	174	244	280
266							
12.30 CFS	237	202	168	143	125	108	93
81							
12.78 CFS	72.30	65.53	60.29	56.01	52.12	48.53	45.28
42.51							
13.26 CFS	40.17	38.07	36.14	34.31	32.52	30.80	29.17
27.75							
13.74 CFS	26.60	25.64	24.87	24.25	23.76	23.33	22.89
22.42							
14.22 CFS	21.92	21.44	21.02	20.64	20.26	19.84	19.36
18.87							
14.70 CFS	18.41	18.00	17.62	17.22	16.78	16.37	15.95
15.49							
15.18 CFS	15.05	14.65	14.36	14.17	14.04	13.97	13.91
13.80							
15.66 CFS	13.64	13.45	13.32	13.28	13.21	13.09	12.92
12.75							
16.14 CFS	12.63	12.54	12.46	12.33	12.20	12.09	11.94
11.78							
16.62 CFS	11.66	11.57	11.50	11.39	11.26	11.15	11.07
11.00							
17.10 CFS	10.89	10.72	10.52	10.39	10.34	10.27	10.14
9.96							
17.58 CFS	9.79	9.66	9.57	9.48	9.35	9.21	9.11
9.04							
18.06 CFS	8.96	8.83	8.70	8.60	8.53	8.45	8.32
8.26							
18.54 CFS	8.27	8.30	8.31	8.24	8.21	8.23	8.20
8.13							



19.02 CFS	8.06	8.01	7.98	7.96	7.95	7.94	7.94
7.94							
19.50 CFS	7.94	7.90	7.81	7.75	7.76	7.72	7.64
7.58							
19.98 CFS	7.59	7.65	7.66	7.61	7.56	7.52	7.47
7.37							
20.46 CFS	7.28	7.28	7.31	7.34	7.29	7.23	7.25
7.23							
20.94 CFS	7.17	7.10	7.04	7.00	6.98	6.96	6.95
6.95							
21.42 CFS	6.95	6.95	6.93	6.85	6.77	6.76	6.74
6.69							
21.90 CFS	6.70	6.73	6.68	6.61	6.56	6.51	6.48
6.46							
22.38 CFS	6.45	6.45	6.44	6.41	6.31	6.25	6.26
6.21							
22.86 CFS	6.14	6.08	6.08	6.14	6.14	6.10	6.05
6.00							
23.34 CFS	5.97	5.95	5.90	5.80	5.74	5.76	5.80
5.80							
23.82 CFS	5.73	5.64	5.60	5.78	5.63	4.53	3.23
2.17							
24.30 CFS	1.36	.83	.52	.32			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.94 WATERSHED INCHES; 323 CFS-HRS; 26.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK  
 ELEVATION (FEET)  
 12.62 1998.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.69 WATERSHED INCHES; 3648 CFS-HRS; 301.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION

06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
 Dist.2.04TEST

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PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK  
 ELEVATION (FEET)  
 12.13 53.1 (RUNOFF)  
 17.34 1.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.62 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.61	2007.5	(NULL)
23.98	57.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.70 WATERSHED INCHES; 3696 CFS-HRS; 305.4 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
 STARTING TIME = .00 RAIN DEPTH = 7.23 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =50 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	81.5	(RUNOFF)
20.13	2.1	(RUNOFF)
23.08	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.02 WATERSHED INCHES; 109 CFS-HRS; 9.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	81.3	390.61

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.02 WATERSHED INCHES; 109 CFS-HRS; 9.0 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	142.8	(RUNOFF)
20.68	3.4	(RUNOFF)
23.97	2.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.85 WATERSHED INCHES; 181 CFS-HRS; 15.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	220.1	(NULL)
20.13	5.7	(NULL)
23.12	4.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.91 WATERSHED INCHES; 290 CFS-HRS; 24.0 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	220.1	(NULL)
20.13	5.7	(NULL)
23.12	4.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.91 WATERSHED INCHES; 290 CFS-HRS; 24.0 ACRE-  
FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.37	219.5	368.84
20.19	5.7	366.61
23.19	4.5	366.55

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.91 WATERSHED INCHES; 290 CFS-HRS; 24.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 6

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	181.7	(RUNOFF)
20.14	4.8	(RUNOFF)
23.74	3.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.60 WATERSHED INCHES; 237 CFS-HRS; 19.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.33	393.2	(NULL)
20.14	10.5	(NULL)
23.13	8.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.76 WATERSHED INCHES; 527 CFS-HRS; 43.5 ACRE-FEET.

OPERATION REACH XSECTION 8

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.39	392.6	358.51
20.20	10.5	356.26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.76 WATERSHED INCHES; 527 CFS-HRS; 43.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.30	203.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.15 WATERSHED INCHES; 291 CFS-HRS; 24.1 ACRE-FEET.

OPERATION RESVOR STRUCTURE 21

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.30	203.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.15 WATERSHED INCHES; 291 CFS-HRS; 24.1 ACRE-FEET.

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OPERATION RUNOFF XSECTION 10

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.13	30.4	(RUNOFF)
15.46	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.03 WATERSHED INCHES; 25 CFS-HRS; 2.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	203.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.15 WATERSHED INCHES; 291 CFS-HRS; 24.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	146.1	(RUNOFF)
15.81	5.5	(RUNOFF)
20.09	3.2	(RUNOFF)
20.64	3.0	(RUNOFF)
24.02	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.16 WATERSHED INCHES; 146 CFS-HRS; 12.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	469.1	(NULL)
24.00	10.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.62 WATERSHED INCHES; 673 CFS-HRS; 55.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	56.4	(RUNOFF)
21.97	1.0	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.80 WATERSHED INCHES; 60 CFS-HRS; 4.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	666.3	(NULL)
23.99	13.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.99 WATERSHED INCHES; 964 CFS-HRS; 79.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	705.6	(NULL)
23.99	14.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.98 WATERSHED INCHES; 1024 CFS-HRS; 84.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	705.6	(NULL)
23.99	14.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.98 WATERSHED INCHES; 1024 CFS-HRS; 84.6 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
 \*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	705.6	335.65
23.99	14.6	331.26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.98 WATERSHED INCHES; 1024 CFS-HRS; 84.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 17

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.14	82.4	(RUNOFF)
15.84	2.4	(RUNOFF)
23.05	1.1	(RUNOFF)
23.71	1.0	(RUNOFF)
24.00	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.80 WATERSHED INCHES; 79 CFS-HRS; 6.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	109.9	(RUNOFF)
20.10	2.1	(RUNOFF)
24.03	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.26 WATERSHED INCHES; 126 CFS-HRS; 10.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.15	148.6	(RUNOFF)
15.84	4.6	(RUNOFF)
17.34	3.5	(RUNOFF)
22.75	2.1	(RUNOFF)
23.06	2.1	(RUNOFF)
24.00	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.41 WATERSHED INCHES; 141 CFS-HRS; 11.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	188.2	(NULL)
15.81	6.1	(NULL)
17.31	4.7	(NULL)
21.74	3.0	(NULL)
21.96	3.0	(NULL)
24.01	2.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.08 WATERSHED INCHES; 206 CFS-HRS; 17.0 ACRE-FEET.

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OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	335.1	(NULL)
15.83	10.7	(NULL)
17.33	8.2	(NULL)
19.74	6.1	(NULL)
20.06	6.1	(NULL)
21.95	5.3	(NULL)
24.01	4.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.79 WATERSHED INCHES; 347 CFS-HRS; 28.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 22

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	944.4	(NULL)
18.83	27.9	(NULL)
20.05	25.8	(NULL)
20.82	24.4	(NULL)
21.94	22.5	(NULL)
23.05	20.5	(NULL)
23.69	19.4	(NULL)
24.00	19.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.16 WATERSHED INCHES; 1371 CFS-HRS; 113.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 23

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.37	884.6	317.21
24.06	19.1	314.15

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.16 WATERSHED INCHES; 1370 CFS-HRS; 113.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	136.5	(RUNOFF)
20.68	3.0	(RUNOFF)
23.99	2.3	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.17 WATERSHED INCHES; 168 CFS-HRS; 13.9 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.25	136.5	(NULL)
20.68	3.0	(NULL)
23.99	2.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.17 WATERSHED INCHES; 168 CFS-HRS; 13.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.26	196.3	(RUNOFF)
18.66	5.1	(RUNOFF)
20.68	4.5	(RUNOFF)
23.98	3.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.09 WATERSHED INCHES; 246 CFS-HRS; 20.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.26	332.6	(NULL)
18.66	8.6	(NULL)
20.68	7.5	(NULL)
23.13	6.3	(NULL)
23.98	5.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.12 WATERSHED INCHES; 414 CFS-HRS; 34.2 ACRE-  
FEET.

OPERATION REACH XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.35	319.2	319.64
20.74	7.5	316.81
23.20	6.2	316.73
23.81	5.9	316.71

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.12 WATERSHED INCHES; 414 CFS-HRS; 34.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	154.0	(RUNOFF)
21.94	3.2	(RUNOFF)
24.01	2.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.74 WATERSHED INCHES; 183 CFS-HRS; 15.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	1012.3	(NULL)
24.04	21.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.11 WATERSHED INCHES; 1554 CFS-HRS; 128.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	1331.4	(NULL)
24.04	27.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.11 WATERSHED INCHES; 1968 CFS-HRS; 162.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	220.6	(RUNOFF)
20.86	4.2	(RUNOFF)
24.02	3.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.69 WATERSHED INCHES; 254 CFS-HRS; 21.0 ACRE-  
FEET.

OPERATION REACH XSECTION 32

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	204.5	313.75
20.73	4.3	310.35
24.09	3.3	310.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.69 WATERSHED INCHES; 254 CFS-HRS; 21.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	33.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.63 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	33.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.63 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 34.  
\*\*\*

OPERATION REACH XSECTION 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	33.8	338.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.63 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	100.5	(RUNOFF)

18.65	2.0	(RUNOFF)
24.02	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.63 WATERSHED INCHES; 118 CFS-HRS; 9.7 ACRE-  
 FEET.

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OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	100.5	(NULL)
18.65	2.0	(NULL)
24.02	1.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.63 WATERSHED INCHES; 118 CFS-HRS; 9.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	133.7	(NULL)
21.97	2.1	(NULL)
24.02	1.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.63 WATERSHED INCHES; 154 CFS-HRS; 12.7 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	133.7	(NULL)
21.97	2.1	(NULL)
24.02	1.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.63 WATERSHED INCHES; 154 CFS-HRS; 12.7 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
 \*\*\*

OPERATION REACH XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION(FEET)		
12.18	133.7	330.90
21.97	2.1	330.04
24.02	1.8	330.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.63 WATERSHED INCHES; 154 CFS-HRS; 12.7 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	118.6	(RUNOFF)
15.84	3.7	(RUNOFF)
20.07	2.1	(RUNOFF)
20.63	2.0	(RUNOFF)
24.01	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.57 WATERSHED INCHES; 118 CFS-HRS; 9.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	251.6	(NULL)
15.82	8.0	(NULL)
17.32	6.1	(NULL)
20.86	4.3	(NULL)
24.01	3.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.12 WATERSHED INCHES; 271 CFS-HRS; 22.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	99.5	(RUNOFF)
20.67	2.3	(RUNOFF)
23.97	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.94 WATERSHED INCHES; 125 CFS-HRS; 10.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	1424.0	(NULL)
24.04	29.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.10 WATERSHED INCHES; 2093 CFS-HRS; 173.0 ACRE-FEET.

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TR20 ----- SCS  
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OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	1631.2	(NULL)
24.04	32.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.16 WATERSHED INCHES; 2347 CFS-HRS; 194.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	1786.2	(NULL)
24.03	36.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.24 WATERSHED INCHES; 2619 CFS-HRS; 216.4 ACRE-FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	1731.5	292.15

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.24 WATERSHED INCHES; 2619 CFS-HRS; 216.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	114.7	(RUNOFF)
23.09	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

5.00 WATERSHED INCHES; 154 CFS-HRS; 12.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.31 143.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.90 WATERSHED INCHES; 199 CFS-HRS; 16.4 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.30 257.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.94 WATERSHED INCHES; 352 CFS-HRS; 29.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.20 140.0 (RUNOFF)  
18.86 3.1 (RUNOFF)  
24.03 2.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.93 WATERSHED INCHES; 149 CFS-HRS; 12.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.39 1806.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.23 WATERSHED INCHES; 2768 CFS-HRS; 228.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)

12.38 2050.8 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .93

HRS	SQ.MI.	2.46	2.94	3.42	3.90	4.38	4.86	5.34	5.82	6.30	6.78	7.26	7.74	8.22	8.70
CFS		.48	.90	1.58	2.39	3.56	4.83	6.25	8.26	10.89	14.89	19.85	25.65	32.37	38.54
		.52	.98	1.67	2.52	3.70	4.99	6.46	8.53	11.30	15.44	20.57	26.40	33.24	39.54
		.56	1.06	1.77	2.65	3.86	5.16	6.66	8.78	11.73	16.02	21.28	27.18	34.10	40.54
		.60	1.14	1.87	2.80	4.03	5.33	6.86	9.06	12.20	16.62	21.98	27.98	34.98	41.54
		.64	1.22	1.97	2.95	4.21	5.49	7.10	9.38	12.69	17.21	22.71	28.82	35.87	42.54
		.70	1.30	2.08	3.11	4.37	5.66	7.36	9.75	13.22	17.81	23.45	29.68	36.75	43.47
		.76	1.39	2.18	3.27	4.52	5.83	7.66	10.12	13.77	18.45	24.19	30.56	37.63	44.38

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8.70 CFS	39.52	40.54	41.56	42.54	43.47	44.38	45.34
46.41							
9.18 CFS	47.58	48.86	50.31	51.97	53.82	55.83	57.93
60.09							
9.66 CFS	62.33	64.69	67.19	69.79	72.45	75.13	77.81
80.53							
10.14 CFS	83	86	89	92	95	98	101
105							
10.62 CFS	108	112	117	123	129	137	145
154							
11.10 CFS	164	174	186	199	214	231	248
267							
11.58 CFS	288	314	348	391	443	508	591
704							
12.06 CFS	868	1103	1402	1711	1940	2043	2026
1919							
12.54 CFS	1763	1588	1411	1240	1083	945	827
730							
13.02 CFS	649	583	528	481	441	407	378
353							
13.50 CFS	331	311	292	276	261	247	235
224							
13.98 CFS	215	208	201	195	190	186	181



177							
14.46 CFS	173	169	166	162	159	155	151
148							
14.94 CFS	144	141	137	134	131	127	124
121							
15.42 CFS	118	116	114	112	111	110	108
107							
15.90 CFS	106	105	104	103	102	101	100
99							
16.38 CFS	98.28	97.33	96.36	95.36	94.31	93.27	92.29
91.37							
16.86 CFS	90.49	89.60	88.71	87.86	87.06	86.25	85.35
84.32							
17.34 CFS	83.26	82.29	81.40	80.52	79.55	78.50	77.43
76.40							
17.82 CFS	75.44	74.50	73.55	72.63	71.76	70.94	70.12
69.27							
18.30 CFS	68.42	67.61	66.84	66.09	65.39	64.83	64.45
64.19							
18.78 CFS	63.96	63.72	63.51	63.31	63.06	62.75	62.41
62.07							
19.26 CFS	61.77	61.51	61.31	61.15	61.02	60.92	60.77
60.54							
19.74 CFS	60.25	59.96	59.69	59.37	59.04	58.76	58.60
58.51							
20.22 CFS	58.40	58.23	58.01	57.72	57.36	56.94	56.55
56.28							
20.70 CFS	56.11	55.95	55.77	55.59	55.42	55.21	54.93
54.61							
21.18 CFS	54.26	53.94	53.67	53.45	53.27	53.14	53.03
52.90							
21.66 CFS	52.70	52.42	52.12	51.86	51.60	51.40	51.25
51.09							
22.14 CFS	50.87	50.59	50.28	49.98	49.71	49.49	49.31
49.15							
22.62 CFS	48.96	48.70	48.38	48.08	47.78	47.45	47.10
46.82							
23.10 CFS	46.65	46.55	46.45	46.28	46.06	45.83	45.59
45.31							
23.58 CFS	44.97	44.59	44.29	44.10	43.97	43.80	43.54
43.32							
24.06 CFS	43.16	42.55	40.64	36.94	31.89	26.29	20.89
16.14							
24.54 CFS	12.16	8.96	6.48	4.61	3.24	2.26	1.56
1.07							
25.02 CFS	.72	.48					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.19 WATERSHED INCHES; 3120 CFS-HRS; 257.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.47	2007.9	287.61

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.19 WATERSHED INCHES; 3120 CFS-HRS; 257.9 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	4.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.06 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	4.3	288.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.06 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
 AT XSECTION 54  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .47 WATERSHED INCHES; 2 CFS-HRS; .2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	91.3	(RUNOFF)
18.86	2.1	(RUNOFF)
24.03	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 97 CFS-HRS; 8.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 56

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	2047.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.17 WATERSHED INCHES; 3217 CFS-HRS; 265.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	4.7	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02  
 SQ.MI.

HRS								
12.00 CFS	.11	.52	1.54	3.43	4.57	4.49	4.05	
3.62								
12.48 CFS	3.24	2.98	2.80	2.52	2.23	2.04	1.91	
1.82								
12.96 CFS	1.75	1.67	1.59	1.51	1.43	1.37	1.31	
1.26								
13.44 CFS	1.21	1.16	1.10	1.05	1.00	.96	.94	
.91								
13.92 CFS	.90	.89	.88	.87	.86	.84	.82	
.81								
14.40 CFS	.80	.79	.78	.76	.74	.73	.71	
.70								
14.88 CFS	.69	.67	.66	.64	.62	.61	.59	
.58								
15.36 CFS	.57	.57	.57	.57	.57	.56	.56	
.55								
15.84 CFS	.55	.55	.55	.54	.53	.53	.53	
.52								
16.32 CFS	.52	.52	.51	.51	.50	.50		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .79 WATERSHED INCHES; 8 CFS-HRS; .7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	2050.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.10 WATERSHED INCHES; 3225 CFS-HRS; 266.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	61.6	(RUNOFF)
24.02	1.1	(RUNOFF)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50						
	MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .03		
HRS							
SQ.MI.							
9.48 CFS	.50	.53	.57	.61	.66	.70	.75
.79							
9.96 CFS	.84	.89	.94	1.00	1.06	1.12	1.17
1.23							
10.44 CFS	1.29	1.36	1.44	1.53	1.65	1.79	1.94
2.11							
10.92 CFS	2.30	2.49	2.69	2.93	3.21	3.54	3.90
4.29							
11.40 CFS	4.70	5.14	5.62	6.36	7.55	8.94	10.44
12.37							
11.88 CFS	15.06	19.06	25.51	35.80	49.74	60.51	59.80
51.47							

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12.36 CFS	41.55	33.96	28.31	24.25	21.04	18.07	15.59
13.77							
12.84 CFS	12.52	11.55	10.77	10.09	9.45	8.84	8.29
7.83							
13.32 CFS	7.43	7.07	6.71	6.37	6.02	5.70	5.41
5.18							
13.80 CFS	5.00	4.85	4.73	4.64	4.56	4.49	4.40
4.30							
14.28 CFS	4.20	4.11	4.04	3.97	3.89	3.79	3.69
3.60							
14.76 CFS	3.51	3.44	3.37	3.28	3.20	3.11	3.03
2.94							
15.24 CFS	2.86	2.80	2.76	2.74	2.72	2.72	2.70
2.67							
15.72 CFS	2.63	2.60	2.59	2.58	2.56	2.53	2.49
2.46							
16.20 CFS	2.45	2.43	2.41	2.38	2.36	2.33	2.30
2.27							
16.68 CFS	2.25	2.24	2.22	2.20	2.17	2.15	2.14
2.13							
17.16 CFS	2.09	2.05	2.02	2.01	2.00	1.98	1.94
1.91							
17.64 CFS	1.88	1.86	1.84	1.82	1.79	1.77	1.76
1.74							
18.12 CFS	1.72	1.69	1.67	1.66	1.64	1.62	1.60
1.60							
18.60 CFS	1.61	1.62	1.61	1.60	1.60	1.60	1.59
1.57							
19.08 CFS	1.56	1.55	1.55	1.54	1.54	1.54	1.54
1.54							

19.56 CFS	1.54	1.52	1.51	1.50	1.50	1.49	1.47
1.47							
20.04 CFS	1.48	1.49	1.48	1.47	1.46	1.45	1.44
1.41							
20.52 CFS	1.41	1.42	1.43	1.42	1.41	1.40	1.40
1.40							
21.00 CFS	1.38	1.37	1.36	1.35	1.35	1.35	1.35
1.35							
21.48 CFS	1.35	1.35	1.33	1.31	1.31	1.31	1.30
1.30							
21.96 CFS	1.30	1.30	1.29	1.27	1.26	1.26	1.25
1.25							
22.44 CFS	1.25	1.25	1.24	1.23	1.21	1.21	1.21
1.19							
22.92 CFS	1.18	1.17	1.19	1.19	1.19	1.17	1.16
1.16							
23.40 CFS	1.15	1.15	1.13	1.11	1.11	1.12	1.13
1.12							
23.88 CFS	1.09	1.08	1.11	1.10	.94	.65	.39

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.86 WATERSHED INCHES; 66 CFS-HRS; 5.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	2079.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.07 WATERSHED INCHES; 3291 CFS-HRS; 272.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	37.1	(RUNOFF)
18.66	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.78 WATERSHED INCHES; 42 CFS-HRS; 3.5 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	2100.5	(NULL)

		HYDROGRAPH POINTS FOR				ALTERNATE = 1,	STORM =50	
HRS	MAIN	TIME	INCREMENT =	.060	hr,	DRAINAGE	AREA =	1.02
SQ.MI.								
2.58 CFS	.50	.54	.58	.62	.68	.74	.80	
.87								
3.06 CFS	.94	1.02	1.10	1.18	1.26	1.35	1.44	
1.53								
3.54 CFS	1.63	1.72	1.82	1.92	2.03	2.13	2.23	
2.34								
4.02 CFS	2.46	2.59	2.73	2.87	3.03	3.19	3.35	
3.49								
4.50 CFS	3.63	3.79	3.95	4.13	4.29	4.44	4.59	
4.75								
4.98 CFS	4.91	5.08	5.25	5.41	5.58	5.75	5.94	
6.15								
5.46 CFS	6.36	6.56	6.76	6.99	7.24	7.52	7.82	
8.11								
5.94 CFS	8.39	8.66	8.93	9.23	9.58	9.96	10.35	
10.74								
6.42 CFS	11.16	11.59	12.05	12.55	13.08	13.63	14.20	
14.77								
6.90 CFS	15.34	15.93	16.54	17.15	17.77	18.41	19.10	
19.81								
7.38 CFS	20.55	21.28	22.01	22.75	23.50	24.26	25.02	
25.78								
7.86 CFS	26.54	27.34	28.15	29.01	29.90	30.81	31.74	
32.68								
8.34 CFS	33.62	34.54	35.46	36.40	37.34	38.28	39.25	
40.26								
8.82 CFS	41.32	42.38	43.42	44.44	45.44	46.47	47.58	
48.80								
9.30 CFS	50.14	51.64	53.33	55.20	57.25	59.42	61.69	
64.05								
9.78 CFS	66.51	69.10	71.80	74.58	77.40	80.25	83.15	
86.13								
10.26 CFS	89	92	96	99	102	105	109	
113								
10.74 CFS	117	122	128	134	142	151	160	
170								
11.22 CFS	182	194	208	223	240	259	279	
304								
11.70 CFS	332	368	413	469	540	635	768	
954								
12.18 CFS	1193	1460	1729	1950	2077	2097	2024	
1890								
12.66 CFS	1723	1543	1366	1201	1052	923	814	
723								
13.14 CFS	647	584	531	486	448	415	386	
361								
13.62 CFS	339	319	301	284	269	256	244	
234								
14.10 CFS	226	218	212	206	201	196	192	
187								
14.58 CFS	183	179	175	172	168	164	160	
156								
15.06 CFS	152	149	145	141	138	134	131	
128								
15.54 CFS	125	123	121	120	118	117	116	
115								
16.02 CFS	114	113	112	111	109	108	107	
106								
16.50 CFS	105	104	103	102	101	100	99	
98								
16.98 CFS	96.90	95.97	95.05	94.13	93.19	92.21	91.19	

90.14								
17.46	CFS	89.08	88.05	87.03	86.00	84.92	83.82	82.71
81.64								
17.94	CFS	80.61	79.61	78.64	77.68	76.75	75.85	74.96
74.07								
18.42	CFS	73.18	72.33	71.56	70.88	70.29	69.81	69.44
69.18								
18.90	CFS	68.93	68.67	68.42	68.14	67.84	67.50	67.16
66.84								
19.38	CFS	66.57	66.34	66.16	66.00	65.83	65.64	65.43
65.17								
19.86	CFS	64.85	64.53	64.21	63.92	63.66	63.43	63.26
63.12								
20.34	CFS	62.94	62.69	62.37	62.01	61.64	61.29	60.97
60.71								
20.82	CFS	60.52	60.35	60.14	59.91	59.67	59.39	59.07
58.74								
21.30	CFS	58.41	58.12	57.87	57.68	57.51	57.35	57.16
56.96								
21.78	CFS	56.71	56.42	56.13	55.89	55.66	55.45	55.23
55.00								
22.26	CFS	54.72	54.42	54.12	53.84	53.60	53.38	53.16
52.92								

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 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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22.74	CFS	52.67	52.38	52.04	51.69	51.35	51.05	50.78
50.55								
23.22	CFS	50.37	50.22	50.05	49.84	49.60	49.31	48.99
48.67								
23.70	CFS	48.35	48.05	47.79	47.55	47.34	47.19	46.98
46.29								
24.18	CFS	44.89	42.60	39.08	34.41	29.04	23.61	18.61
14.29								
24.66	CFS	10.71	7.86	5.68	4.04	2.84	1.98	1.37
.93								
25.14	CFS	.63	.42					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.05 WATERSHED INCHES; 3333 CFS-HRS; 275.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.57	2042.8	251.49

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.05 WATERSHED INCHES; 3333 CFS-HRS; 275.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)			
12.36	25.4		(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)			
5.41 WATERSHED INCHES;	38 CFS-HRS;		3.2 ACRE-
FEET.			

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	25.4	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.41 WATERSHED INCHES;	38 CFS-HRS;	3.2 ACRE-
FEET.		

OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	25.0	301.04
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.41 WATERSHED INCHES;	38 CFS-HRS;	3.2 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 66

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 TR20 ----- SCS  
 -

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
 Dist.2.04TEST

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	109.3	(RUNOFF)
23.10	2.1	(RUNOFF)
24.03	2.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.83 WATERSHED INCHES;	113 CFS-HRS;	9.4 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	109.3	(NULL)
23.10	2.1	(NULL)
24.03	2.0	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.83 WATERSHED INCHES;	113 CFS-HRS;	9.4 ACRE-
FEET.		



OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	124.3	(NULL)
20.86	3.1	(NULL)
24.03	2.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.13 WATERSHED INCHES; 152 CFS-HRS; 12.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	220.8	(RUNOFF)
18.64	5.1	(RUNOFF)
21.97	4.1	(RUNOFF)
24.03	3.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.48 WATERSHED INCHES; 225 CFS-HRS; 18.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 69

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TR20 ----- SCS  
-  
Ellicott City Flood Study- All Combined SAs- No lg MGMT  
VERSION  
06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	344.5	(NULL)
18.86	8.5	(NULL)
20.86	7.5	(NULL)
23.09	6.3	(NULL)
24.03	5.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.33 WATERSHED INCHES; 376 CFS-HRS; 31.1 ACRE-  
FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	253.6	249.21
20.14	7.9	247.77
23.14	6.3	247.75
24.09	5.9	247.74

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

4.33 WATERSHED INCHES; 376 CFS-HRS; 31.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.12	45.5	(RUNOFF)
15.83	1.3	(RUNOFF)
17.33	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.90 WATERSHED INCHES; 38 CFS-HRS; 3.1 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.12	45.5	(NULL)
15.83	1.3	(NULL)
17.33	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.90 WATERSHED INCHES; 38 CFS-HRS; 3.1 ACRE-  
FEET.

OPERATION REACH XSECTION 72

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	42.5	248.23
15.89	1.3	247.31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.91 WATERSHED INCHES; 38 CFS-HRS; 3.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	237.2	(RUNOFF)
15.84	9.7	(RUNOFF)
17.34	7.6	(RUNOFF)
18.86	6.1	(RUNOFF)
21.45	5.1	(RUNOFF)
24.01	4.3	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50

HRS SQ.MI.	MAIN	TIME	INCREMENT	=	.060	hr,	DRAINAGE	AREA	=	.11
9.60	CFS	.49	.61	.73	.86	1.00	1.13	1.27		
1.43										
10.08	CFS	1.60	1.78	1.96	2.13	2.32	2.51	2.72		
2.94										
10.56	CFS	3.20	3.51	3.89	4.33	4.82	5.35	5.93		
6.54										
11.04	CFS	7.19	8.00	8.96	10.08	11.28	12.57	14.01		
15.50										
11.52	CFS	17.15	20.19	25.09	30.06	35.22	43.00	54.20		
70.81										
12.00	CFS	99	145	208	237	207	161	128		
104										
12.48	CFS	87.51	77.29	67.40	57.39	50.08	45.64	42.48		
39.91										
12.96	CFS	37.67	35.43	33.20	31.06	29.25	27.85	26.52		
25.25										
13.44	CFS	24.00	22.74	21.53	20.36	19.41	18.71	18.15		
17.71										
13.92	CFS	17.37	17.10	16.86	16.56	16.22	15.83	15.47		
15.19										
14.40	CFS	14.94	14.69	14.36	13.99	13.60	13.25	12.98		
12.73										
14.88	CFS	12.44	12.11	11.79	11.50	11.15	10.81	10.53		
10.36										
15.36	CFS	10.28	10.24	10.23	10.21	10.13	9.99	9.81		
9.72										
15.84	CFS	9.74	9.72	9.61	9.45	9.31	9.23	9.19		
9.15										
16.32	CFS	9.04	8.93	8.85	8.74	8.60	8.52	8.48		
8.45										
16.80	CFS	8.36	8.24	8.15	8.12	8.08	7.99	7.84		
7.66										
17.28	CFS	7.56	7.58	7.56	7.44	7.27	7.12	7.04		
7.00										
17.76	CFS	6.95	6.84	6.72	6.66	6.62	6.58	6.47		
6.35										
18.24	CFS	6.28	6.25	6.20	6.09	6.04	6.09	6.16		
6.16										
18.72	CFS	6.08	6.03	6.08	6.07	5.99	5.92	5.89		
5.88										
19.20	CFS	5.87	5.87	5.87	5.87	5.87	5.87	5.84		
5.74										
19.68	CFS	5.68	5.72	5.71	5.63	5.56	5.59	5.68		
5.70										
20.16	CFS	5.63	5.56	5.54	5.51	5.42	5.33	5.35		
5.42										
20.64	CFS	5.46	5.40	5.32	5.34	5.37	5.29	5.22		
5.17										
21.12	CFS	5.16	5.15	5.14	5.14	5.14	5.14	5.15		
5.13										
21.60	CFS	5.05	4.96	4.98	5.00	4.94	4.94	4.99		
4.95										
22.08	CFS	4.87	4.81	4.79	4.78	4.77	4.77	4.77		
4.77										
22.56	CFS	4.74	4.64	4.58	4.62	4.60	4.52	4.45		
4.48										
23.04	CFS	4.57	4.58	4.51	4.45	4.42	4.40	4.40		
4.36										
23.52	CFS	4.26	4.19	4.25	4.32	4.33	4.24	4.13		
4.11										

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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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24.00 CFS 4.33 4.25 3.08 1.66 .80 .39  
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.26 WATERSHED INCHES; 232 CFS-HRS; 19.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.56 2116.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.88 WATERSHED INCHES; 3565 CFS-HRS; 294.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.32 277.1 (NULL)  
20.10 8.7 (NULL)  
24.06 6.5 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15  
SQ.MI.

HRS	7.02	7.50	7.98	8.46	8.94	9.42	9.90	10.38	10.86	11.34	11.82	12.30	12.78	13.26
CFS	.47	.92	1.46	2.16	3.07	4.35	6.44	9.18	13.60	24.44	56	276	140	63.89
	.52	.98	1.53	2.26	3.19	4.57	6.74	9.56	14.54	26.53	66	273	124	59.20
	.57	1.05	1.61	2.37	3.32	4.80	7.05	9.95	15.57	28.84	78	259	111	55.11
	.63	1.11	1.69	2.48	3.46	5.03	7.38	10.37	16.67	31.26	95	239	100	51.50
	.69	1.17	1.78	2.60	3.60	5.28	7.72	10.84	17.85	33.88	122	217	91	48.26
	.74	1.24	1.86	2.72	3.76	5.55	8.08	11.38	19.21	37.80	162	197	83	45.29
	.80	1.31	1.96	2.84	3.94	5.84	8.45	12.02	20.75	43.11	217	177	76	42.57
	.86													
	1.38													
	2.06													
	2.96													
	4.14													
	6.14													
	8.82													
	157													
	69													

40.06								
13.74	CFS	37.81	35.83	34.11	32.62	31.35	30.28	29.37
28.54								
14.22	CFS	27.78	27.05	26.37	25.75	25.18	24.64	24.10
23.55								
14.70	CFS	22.98	22.43	21.91	21.41	20.92	20.42	19.92
19.43								
15.18	CFS	18.92	18.41	17.92	17.49	17.14	16.85	16.62
16.43								
15.66	CFS	16.25	16.06	15.84	15.67	15.54	15.41	15.28
15.11								
16.14	CFS	14.94	14.78	14.65	14.52	14.38	14.24	14.10
13.94								
16.62	CFS	13.78	13.63	13.50	13.38	13.26	13.12	12.99
12.87								
17.10	CFS	12.77	12.65	12.50	12.32	12.17	12.05	11.94
11.81								
17.58	CFS	11.65	11.48	11.32	11.19	11.06	10.92	10.78
10.64								
18.06	CFS	10.53	10.42	10.29	10.16	10.03	9.92	9.82
9.69								
18.54	CFS	9.60	9.54	9.51	9.49	9.44	9.39	9.38
9.34								
19.02	CFS	9.29	9.24	9.18	9.13	9.10	9.07	9.04
9.02								
19.50	CFS	9.01	9.00	8.98	8.91	8.87	8.84	8.80
8.74								

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19.98	CFS	8.68	8.66	8.66	8.66	8.63	8.60	8.56
8.52								
20.46	CFS	8.44	8.37	8.32	8.31	8.31	8.27	8.23
8.22								
20.94	CFS	8.20	8.15	8.10	8.05	8.00	7.96	7.93
7.90								
21.42	CFS	7.88	7.86	7.85	7.84	7.78	7.72	7.69
7.66								
21.90	CFS	7.62	7.60	7.59	7.56	7.52	7.47	7.42
7.38								
22.38	CFS	7.35	7.32	7.30	7.28	7.25	7.19	7.14
7.11								
22.86	CFS	7.07	7.01	6.95	6.92	6.93	6.92	6.89
6.85								
23.34	CFS	6.81	6.78	6.75	6.70	6.63	6.57	6.55
6.55								
23.82	CFS	6.54	6.49	6.43	6.39	6.46	6.39	5.84
5.02								
24.30	CFS	4.12	3.30	2.60	2.03	1.57	1.21	.93
.70								
24.78	CFS	.53	.40					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.38 WATERSHED INCHES; 414 CFS-HRS; 34.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.55 2329.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.82 WATERSHED INCHES; 3979 CFS-HRS; 328.8 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 77.  
 \*\*\*

OPERATION REACH XSECTION 77

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.55 2329.3 231.81

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.82 WATERSHED INCHES; 3979 CFS-HRS; 328.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.17 133.1 (RUNOFF)  
 15.84 5.0 (RUNOFF)  
 18.86 3.1 (RUNOFF)  
 24.01 2.2 (RUNOFF)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50						
		MAIN TIME INCREMENT = .060 hr,			DRAINAGE AREA = .05			
HRS	SQ.MI.							
8.82 CFS	.79	.48	.51	.55	.59	.64	.69	.73
9.30 CFS	1.39	.86	.93	1.00	1.07	1.13	1.21	1.30
9.78 CFS	2.20	1.48	1.57	1.66	1.75	1.86	1.97	2.09
10.26 CFS	3.45	2.31	2.42	2.53	2.67	2.81	2.97	3.19

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06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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10.74 CFS 3.75 4.09 4.44 4.82 5.21 5.63 6.15  
 6.77  
 11.22 CFS 7.47 8.22 9.01 9.88 10.77 11.74 13.66  
 16.76  
 11.70 CFS 20 23 27 34 44 60 86  
 120  
 12.18 CFS 133 112 85 67 54 45 40  
 35

12.66	CFS	29.53	25.82	23.63	22.02	20.68	19.50	18.32
17.15								
13.14	CFS	16.02	15.09	14.36	13.67	13.01	12.36	11.69
11.06								
13.62	CFS	10.46	9.97	9.61	9.33	9.10	8.93	8.79
8.67								
14.10	CFS	8.51	8.32	8.12	7.94	7.79	7.66	7.53
7.36								
14.58	CFS	7.16	6.95	6.78	6.64	6.51	6.36	6.19
6.02								
15.06	CFS	5.87	5.69	5.51	5.37	5.29	5.25	5.23
5.23								
15.54	CFS	5.22	5.17	5.09	5.00	4.96	4.97	4.96
4.90								
16.02	CFS	4.81	4.74	4.70	4.68	4.66	4.60	4.54
4.50								
16.50	CFS	4.44	4.38	4.33	4.31	4.30	4.25	4.19
4.14								
16.98	CFS	4.13	4.11	4.06	3.98	3.88	3.84	3.85
3.84								
17.46	CFS	3.77	3.68	3.61	3.57	3.55	3.53	3.47
3.41								
17.94	CFS	3.37	3.36	3.33	3.27	3.21	3.18	3.17
3.14								
18.42	CFS	3.09	3.06	3.09	3.12	3.12	3.08	3.06
3.08								
18.90	CFS	3.07	3.03	3.00	2.98	2.97	2.97	2.97
2.97								
19.38	CFS	2.97	2.97	2.97	2.95	2.90	2.87	2.90
2.89								
19.86	CFS	2.84	2.81	2.83	2.88	2.88	2.84	2.81
2.80								
20.34	CFS	2.78	2.73	2.69	2.70	2.74	2.76	2.72
2.68								
20.82	CFS	2.70	2.71	2.67	2.63	2.61	2.60	2.60
2.60								
21.30	CFS	2.59	2.59	2.60	2.60	2.59	2.54	2.50
2.51								
21.78	CFS	2.52	2.49	2.49	2.52	2.49	2.45	2.42
2.41								
22.26	CFS	2.41	2.40	2.40	2.40	2.40	2.39	2.33
2.30								
22.74	CFS	2.33	2.32	2.27	2.24	2.26	2.31	2.31
2.27								
23.22	CFS	2.24	2.22	2.22	2.21	2.19	2.14	2.11
2.14								
23.70	CFS	2.18	2.18	2.13	2.07	2.07	2.18	2.13
1.50								
24.18	CFS	.78	.36					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.89 WATERSHED INCHES; 128 CFS-HRS; 10.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.54	2369.2	(NULL)
23.98	60.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.78 WATERSHED INCHES; 4107 CFS-HRS; 339.4 ACRE-

FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.62	2346.6	219.10

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.78 WATERSHED INCHES; 4107 CFS-HRS; 339.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	76.0	(RUNOFF)
17.34	2.3	(RUNOFF)
24.01	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.55 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.62	2365.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.75 WATERSHED INCHES; 4179 CFS-HRS; 345.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	154.4	(RUNOFF)
15.84	5.2	(RUNOFF)
17.34	4.0	(RUNOFF)
19.47	3.1	(RUNOFF)
19.74	3.0	(RUNOFF)
20.05	3.0	(RUNOFF)
24.00	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.24 WATERSHED INCHES; 140 CFS-HRS; 11.6 ACRE-  
 FEET.



OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	237.6	(RUNOFF)
18.67	7.0	(RUNOFF)
20.68	6.2	(RUNOFF)
23.12	5.2	(RUNOFF)
24.01	4.8	(RUNOFF)

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 281 CFS-HRS; 23.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	370.0	(NULL)
18.83	10.2	(NULL)
20.63	9.1	(NULL)
21.95	8.3	(NULL)
23.73	7.2	(NULL)
24.00	7.1	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 SQ.MI.

HRS	8.10	.81	8.58	1.68	9.06	3.13	9.54	5.28	10.02	8.16	10.50	14.56	10.98	29.76	11.46	96.80	11.94	261	12.42	83	12.90	47.87	13.38	32.12																																																																												
CFS	.49	.52	.55	.59	.63	.68	.73	.81	.90	1.01	1.12	1.22	1.33	1.43	1.54	1.68	1.83	1.96	2.12	2.30	2.50	2.71	2.92	3.13	3.35	3.59	3.85	4.14	4.42	4.71	4.99	5.28	5.60	5.95	6.31	6.68	7.03	7.38	7.76	8.16	8.60	9.10	9.73	10.48	11.35	12.35	13.42	14.56	15.76	17.04	18.60	20.41	22.45	24.69	27.11	29.76	32.49	35.42	40.76	48.82	56.89	66.17	79.17	96.80	11.94	123	166	233	322	369	348	307	261	12.42	217	183	159	137	118	103	92	83	12.90	76.28	70.73	65.78	61.18	57.05	53.51	50.52	47.87	13.38	45.42	43.10	40.82	38.65	36.60	34.80	33.35	32.12

13.86	CFS	31.14	30.37	29.74	29.20	28.64	28.04	27.41
26.81								
14.34	CFS	26.27	25.79	25.32	24.78	24.19	23.56	22.98
22.46								
14.82	CFS	21.99	21.49	20.94	20.42	19.90	19.32	18.76
18.27								
15.30	CFS	17.90	17.65	17.50	17.40	17.33	17.19	16.99
16.75								
15.78	CFS	16.59	16.54	16.45	16.29	16.08	15.87	15.72
15.61								
16.26	CFS	15.50	15.34	15.18	15.03	14.84	14.65	14.50
14.39								
16.74	CFS	14.30	14.15	13.99	13.85	13.75	13.67	13.53
13.32								
17.22	CFS	13.07	12.90	12.84	12.75	12.59	12.37	12.16
11.99								
17.70	CFS	11.88	11.77	11.60	11.43	11.30	11.21	11.11
10.95								
18.18	CFS	10.79	10.67	10.57	10.48	10.32	10.24	10.25
10.29								
18.66	CFS	10.30	10.22	10.18	10.20	10.16	10.07	9.99
9.93								
19.14	CFS	9.88	9.86	9.85	9.84	9.83	9.83	9.83
9.79								
19.62	CFS	9.67	9.60	9.61	9.56	9.46	9.39	9.40
9.47								
20.10	CFS	9.48	9.42	9.36	9.31	9.25	9.12	9.00
9.00								
20.58	CFS	9.05	9.08	9.02	8.95	8.96	8.95	8.87
8.79								
21.06	CFS	8.71	8.66	8.63	8.61	8.60	8.59	8.59
8.59								
21.54	CFS	8.57	8.47	8.36	8.36	8.33	8.27	8.28
8.31								
22.02	CFS	8.25	8.17	8.10	8.04	8.01	7.98	7.97
7.96								
22.50	CFS	7.96	7.91	7.79	7.72	7.73	7.67	7.58
7.50								
22.98	CFS	7.51	7.58	7.59	7.53	7.47	7.41	7.37
7.35								
23.46	CFS	7.29	7.16	7.09	7.11	7.16	7.16	7.08
6.96								
23.94	CFS	6.92	7.14	6.95	5.64	4.00	2.68	1.66
1.03								

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TR20 ----- SCS

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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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24.42 CFS .64 .40

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.84 WATERSHED INCHES; 421 CFS-HRS; 34.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK

ELEVATION(FEET)  
12.61 2497.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.65 WATERSHED INCHES; 4600 CFS-HRS; 380.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.13 64.3 (RUNOFF)  
20.04 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.67 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.61 2509.0 (NULL)  
23.97 69.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.66 WATERSHED INCHES; 4658 CFS-HRS; 384.9 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

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TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.29 99.6 (RUNOFF)  
20.13 2.5 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.18 WATERSHED INCHES; 134 CFS-HRS; 11.1 ACRE-  
FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	99.4	390.78
20.19	2.5	389.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.18 WATERSHED INCHES; 134 CFS-HRS; 11.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	175.5	(RUNOFF)
20.68	4.1	(RUNOFF)
23.97	3.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.00 WATERSHED INCHES; 225 CFS-HRS; 18.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	270.3	(NULL)
20.14	6.8	(NULL)
23.12	5.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.07 WATERSHED INCHES; 359 CFS-HRS; 29.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	270.3	(NULL)
20.14	6.8	(NULL)
23.12	5.4	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.07 WATERSHED INCHES; 359 CFS-HRS; 29.6 ACRE-FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.36	270.0	369.04
20.20	6.8	366.66
23.17	5.4	366.59

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.07 WATERSHED INCHES; 359 CFS-HRS; 29.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	226.3	(RUNOFF)
20.13	5.8	(RUNOFF)
23.74	4.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.74 WATERSHED INCHES; 295 CFS-HRS; 24.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	487.3	(NULL)
20.14	12.5	(NULL)
23.14	10.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.91 WATERSHED INCHES; 654 CFS-HRS; 54.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.39	487.2	358.78
20.20	12.5	356.31
23.20	10.0	356.25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.91 WATERSHED INCHES; 654 CFS-HRS; 54.1 ACRE-  
 FEET.

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TR20 ----- SCS

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OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	242.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.38 WATERSHED INCHES; 350 CFS-HRS; 28.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	242.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.38 WATERSHED INCHES; 350 CFS-HRS; 28.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	38.4	(RUNOFF)
15.83	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.11 WATERSHED INCHES; 32 CFS-HRS; 2.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	242.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.38 WATERSHED INCHES; 350 CFS-HRS; 28.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	184.3	(RUNOFF)
18.87	4.1	(RUNOFF)
22.76	3.1	(RUNOFF)
23.09	3.1	(RUNOFF)
24.03	2.9	(RUNOFF)

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.26 WATERSHED INCHES; 185 CFS-HRS; 15.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	584.1	(NULL)
24.00	12.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.76 WATERSHED INCHES; 839 CFS-HRS; 69.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	69.3	(RUNOFF)
24.02	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.95 WATERSHED INCHES; 74 CFS-HRS; 6.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	820.1	(NULL)
24.00	16.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.15 WATERSHED INCHES; 1188 CFS-HRS; 98.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	869.1	(NULL)
24.00	17.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.14 WATERSHED INCHES; 1262 CFS-HRS; 104.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 23

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	869.1	(NULL)
24.00	17.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.14 WATERSHED INCHES; 1262 CFS-HRS; 104.3 ACRE-
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.
\*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.32 869.1 336.45
24.00 17.4 331.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.14 WATERSHED INCHES; 1262 CFS-HRS; 104.3 ACRE-
FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.14 98.2 (RUNOFF)
17.34 2.2 (RUNOFF)
24.00 1.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.01 WATERSHED INCHES; 95 CFS-HRS; 7.9 ACRE-
FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.20 130.6 (RUNOFF)
21.97 2.1 (RUNOFF)
24.03 1.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.49 WATERSHED INCHES; 151 CFS-HRS; 12.5 ACRE-
FEET.

OPERATION RUNOFF XSECTION 19

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT
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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.15 179.0 (RUNOFF)
15.84 5.4 (RUNOFF)



17.34	4.2	(RUNOFF)
19.75	3.1	(RUNOFF)
20.05	3.1	(RUNOFF)
24.00	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.60 WATERSHED INCHES; 172 CFS-HRS; 14.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	224.0	(NULL)
15.81	7.2	(NULL)
17.31	5.5	(NULL)
20.07	4.1	(NULL)
23.07	3.2	(NULL)
23.73	3.1	(NULL)
24.01	3.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
7.29 WATERSHED INCHES; 247 CFS-HRS; 20.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	401.6	(NULL)
15.83	12.6	(NULL)
17.33	9.7	(NULL)
20.06	7.2	(NULL)
21.95	6.2	(NULL)
24.01	5.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.99 WATERSHED INCHES; 419 CFS-HRS; 34.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 22

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TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	1158.3	(NULL)
18.83	33.2	(NULL)
20.05	30.7	(NULL)
20.56	29.4	(NULL)
20.82	29.0	(NULL)
21.94	26.8	(NULL)
23.05	24.4	(NULL)

23.69 23.0 (NULL)  
 24.00 22.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.33 WATERSHED INCHES; 1681 CFS-HRS; 138.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 23

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.36	1090.7	317.46
24.07	22.7	314.21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.33 WATERSHED INCHES; 1681 CFS-HRS; 138.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.25	165.8	(RUNOFF)
18.66	4.1	(RUNOFF)
20.68	3.6	(RUNOFF)
23.12	3.0	(RUNOFF)
24.00	2.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.34 WATERSHED INCHES; 207 CFS-HRS; 17.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 31

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.25	165.8	(NULL)
18.66	4.1	(NULL)
20.68	3.6	(NULL)
23.12	3.0	(NULL)
24.00	2.8	(NULL)

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TR20 ----- SCS

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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.34 WATERSHED INCHES; 207 CFS-HRS; 17.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
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12.26	237.1	(RUNOFF)
18.65	6.1	(RUNOFF)
20.67	5.3	(RUNOFF)
23.98	4.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.26 WATERSHED INCHES; 302 CFS-HRS; 25.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	402.7	(NULL)
18.66	10.2	(NULL)
20.13	9.4	(NULL)
20.68	8.9	(NULL)
23.13	7.4	(NULL)
23.77	7.0	(NULL)
23.99	6.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.29 WATERSHED INCHES; 509 CFS-HRS; 42.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	390.2	319.85
20.20	9.4	316.93
20.73	8.9	316.91
23.20	7.4	316.81
23.83	7.0	316.78

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.29 WATERSHED INCHES; 509 CFS-HRS; 42.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 28

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 TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	190.4	(RUNOFF)
20.67	4.2	(RUNOFF)
24.01	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.89 WATERSHED INCHES; 228 CFS-HRS; 18.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	1254.7	(NULL)
20.08	35.1	(NULL)
23.07	27.9	(NULL)
24.05	25.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.28 WATERSHED INCHES; 1909 CFS-HRS; 157.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	1640.4	(NULL)
24.05	32.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.28 WATERSHED INCHES; 2418 CFS-HRS; 199.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	264.7	(RUNOFF)
20.66	5.1	(RUNOFF)
23.11	4.2	(RUNOFF)
24.02	3.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.90 WATERSHED INCHES; 308 CFS-HRS; 25.5 ACRE-  
FEET.

OPERATION REACH XSECTION 32

1  
TR20 ----- SCS  
-

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
VERSION

06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	244.6	314.09
20.73	5.1	310.41
23.19	4.2	310.34
24.09	3.9	310.32

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.90 WATERSHED INCHES; 308 CFS-HRS; 25.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	39.4	(RUNOFF)
15.84	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
7.86 WATERSHED INCHES; 43 CFS-HRS; 3.5 ACRE-FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	39.4	(NULL)
15.84	1.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
7.86 WATERSHED INCHES; 43 CFS-HRS; 3.5 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 34.  
\*\*\*

OPERATION REACH XSECTION 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	39.4	338.33
15.84	1.2	338.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
7.86 WATERSHED INCHES; 43 CFS-HRS; 3.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 35

1  
TR20 ----- SCS  
-

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
VERSION  
06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	118.2	(RUNOFF)
20.86	2.0	(RUNOFF)
24.02	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
7.86 WATERSHED INCHES; 139 CFS-HRS; 11.5 ACRE-FEET.

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	118.2	(NULL)
20.86	2.0	(NULL)
24.02	1.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.86 WATERSHED INCHES; 139 CFS-HRS; 11.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	156.9	(NULL)
18.85	3.0	(NULL)
24.02	2.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.86 WATERSHED INCHES; 182 CFS-HRS; 15.1 ACRE-FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	156.9	(NULL)
18.85	3.0	(NULL)
24.02	2.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.86 WATERSHED INCHES; 182 CFS-HRS; 15.1 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
 \*\*\*

OPERATION REACH XSECTION 37

1  
 TR20 ----- SCS  
 -  
 Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	156.9	330.99
18.85	3.0	330.05
24.02	2.1	330.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.86 WATERSHED INCHES; 182 CFS-HRS; 15.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	142.5	(RUNOFF)
15.84	4.4	(RUNOFF)
17.34	3.4	(RUNOFF)
21.96	2.2	(RUNOFF)
22.75	2.0	(RUNOFF)
23.07	2.0	(RUNOFF)
24.01	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.77 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	298.5	(NULL)
15.82	9.4	(NULL)
17.32	7.2	(NULL)
20.63	5.1	(NULL)
20.86	5.0	(NULL)
23.08	4.2	(NULL)
24.01	4.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.34 WATERSHED INCHES; 325 CFS-HRS; 26.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	121.2	(RUNOFF)
18.64	3.2	(RUNOFF)
23.76	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.10 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-  
 FEET.

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	1759.5	(NULL)

24.04 34.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.27 WATERSHED INCHES; 2572 CFS-HRS; 212.6 ACRE-
FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.32 2002.8 (NULL)
20.13 52.6 (NULL)
24.04 38.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.33 WATERSHED INCHES; 2880 CFS-HRS; 238.0 ACRE-
FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.30 2189.0 (NULL)
20.08 57.9 (NULL)
23.07 46.1 (NULL)
24.03 42.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.42 WATERSHED INCHES; 3206 CFS-HRS; 264.9 ACRE-
FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.40 2130.0 292.56

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.42 WATERSHED INCHES; 3206 CFS-HRS; 264.9 ACRE-
FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.29 140.0 (RUNOFF)
20.10 3.5 (RUNOFF)

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Ellicott City Flood Study- All Combined SAs- No lg MGMT
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.16 WATERSHED INCHES; 190 CFS-HRS; 15.7 ACRE-



FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	175.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.06 WATERSHED INCHES; 245 CFS-HRS; 20.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	315.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.10 WATERSHED INCHES; 435 CFS-HRS; 36.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	171.6	(RUNOFF)
21.97	3.0	(RUNOFF)
24.03	2.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.09 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	2228.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.40 WATERSHED INCHES; 3390 CFS-HRS; 280.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	2525.3	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .93  
 SQ.MI.  
 2.10 CFS .50 .54 .59 .65 .71 .78 .85  
 .93

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 TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- No lg MGMT

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2.58 CFS	1.02	1.10	1.21	1.32	1.43	1.55	1.66
1.78							
3.06 CFS	1.89	2.01	2.13	2.25	2.38	2.52	2.68
2.84							
3.54 CFS	3.01	3.19	3.39	3.58	3.76	3.93	4.11
4.30							
4.02 CFS	4.50	4.70	4.92	5.15	5.38	5.59	5.78
5.97							
4.50 CFS	6.18	6.42	6.67	6.91	7.13	7.39	7.67
7.98							
4.98 CFS	8.30	8.64	8.98	9.32	9.68	10.07	10.49
10.90							
5.46 CFS	11.28	11.66	12.07	12.52	13.00	13.49	13.96
14.38							
5.94 CFS	14.77	15.18	15.65	16.19	16.73	17.27	17.82
18.39							
6.42 CFS	18.99	19.64	20.33	21.05	21.81	22.58	23.33
24.08							
6.90 CFS	24.88	25.70	26.50	27.30	28.16	29.08	30.06
31.03							
7.38 CFS	31.98	32.92	33.88	34.85	35.81	36.75	37.68
38.64							
7.86 CFS	39.63	40.65	41.71	42.82	43.94	45.09	46.24
47.34							
8.34 CFS	48.41	49.51	50.63	51.73	52.82	53.96	55.19
56.47							
8.82 CFS	57.75	58.97	60.12	61.24	62.42	63.75	65.22
66.85							
9.30 CFS	68.70	70.82	73.21	75.80	78.51	81.28	84.16
87.17							
9.78 CFS	90	94	97	100	104	107	111
115							
10.26 CFS	118	122	126	130	133	137	142
147							
10.74 CFS	153	160	168	178	188	200	212
225							
11.22 CFS	240	257	276	296	318	342	368
400							
11.70 CFS	443	497	562	642	745	886	1090
1381							
12.18 CFS	1751	2130	2407	2520	2483	2337	2134
1911							
12.66 CFS	1688	1476	1284	1117	976	860	765
687							
13.14 CFS	622	568	521	482	448	418	392
368							
13.62 CFS	347	327	309	293	279	266	256
247							
14.10 CFS	239	232	226	221	216	211	206
202							
14.58 CFS	197	193	189	184	180	176	172
168							
15.06 CFS	164	159	155	151	147	144	140
137							
15.54 CFS	135	133	132	130	129	128	126
125							
16.02 CFS	124	123	122	120	119	118	117
116							

16.50 CFS	115	114	112	111	110	109	108
107							
16.98 CFS	106	105	104	103	102	100	99
98							
17.46 CFS	96.83	95.79	94.64	93.37	92.08	90.86	89.72
88.60							
17.94 CFS	87.46	86.36	85.32	84.35	83.37	82.36	81.35
80.39							
18.42 CFS	79.47	78.58	77.74	77.08	76.65	76.36	76.10
75.81							
18.90 CFS	75.56	75.33	75.04	74.67	74.25	73.84	73.47
73.17							
19.38 CFS	72.93	72.74	72.60	72.48	72.30	72.03	71.67
71.33							
19.86 CFS	70.99	70.61	70.21	69.88	69.69	69.60	69.48
69.28							
20.34 CFS	69.00	68.65	68.21	67.69	67.23	66.91	66.71
66.54							
20.82 CFS	66.32	66.10	65.90	65.65	65.32	64.92	64.50
64.12							
21.30 CFS	63.80	63.53	63.33	63.17	63.05	62.90	62.65
62.31							
21.78 CFS	61.96	61.64	61.34	61.10	60.92	60.73	60.46
60.13							
22.26 CFS	59.75	59.39	59.07	58.81	58.60	58.41	58.19
57.87							
22.74 CFS	57.48	57.12	56.77	56.37	55.96	55.62	55.42
55.32							
23.22 CFS	55.20	55.00	54.73	54.44	54.16	53.83	53.42
52.96							
23.70 CFS	52.59	52.37	52.23	52.03	51.73	51.46	51.27
50.60							
24.18 CFS	48.31	43.73	37.53	30.69	24.16	18.48	13.78
10.03							
24.66 CFS	7.17	5.05	3.51	2.42	1.66	1.13	.76

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.37 WATERSHED INCHES; 3825 CFS-HRS; 316.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.46 2477.2 288.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.37 WATERSHED INCHES; 3825 CFS-HRS; 316.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	8.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.63 WATERSHED INCHES; 9 CFS-HRS; .8 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	8.0	288.45

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.63 WATERSHED INCHES; 9 CFS-HRS; .8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .85 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 55

1 TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION

06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	112.9	(RUNOFF)
21.97	2.0	(RUNOFF)
24.03	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.79 WATERSHED INCHES; 120 CFS-HRS; 9.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	2526.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.35 WATERSHED INCHES; 3945 CFS-HRS; 326.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.25 9.7 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02  
 SQ.MI.

HRS	11.94	12.42	12.90	13.38	13.86	14.34	14.82	15.30	15.78	16.26	16.74	17.22	17.70	18.18	18.66	19.14	19.62	20.10
CFS	7.39	3.03	2.01	1.41	1.23	1.05	.87	.82	.77	.72	.68	.61	.56	.53	.52	.52	.50	.50
CFS	7.39	3.03	2.01	1.41	1.23	1.05	.87	.82	.77	.72	.68	.61	.56	.53	.52	.52	.50	.50

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.28 WATERSHED INCHES; 13 CFS-HRS; 1.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 58

1  
 TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	2532.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.26 WATERSHED INCHES; 3958 CFS-HRS; 327.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	78.5	(RUNOFF)
24.02	1.3	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .03 SQ.MI.

HRS								
8.76 CFS	.49	.52	.54	.56	.59	.62	.65	
.69								
9.24 CFS	.73	.77	.82	.87	.92	.97	1.02	
1.08								
9.72 CFS	1.15	1.21	1.28	1.34	1.40	1.47	1.54	
1.62								
10.20 CFS	1.70	1.78	1.85	1.93	2.02	2.11	2.21	
2.34								
10.68 CFS	2.50	2.69	2.91	3.14	3.39	3.65	3.93	
4.24								
11.16 CFS	4.63	5.07	5.55	6.07	6.62	7.19	7.81	
8.79								
11.64 CFS	10.36	12.19	14.15	16.65	20.13	25.27	33.50	
46.51								
12.12 CFS	64.00	77.27	76.01	65.16	52.39	42.68	35.46	
30.29								
12.60 CFS	26.22	22.48	19.36	17.08	15.51	14.30	13.32	
12.47								
13.08 CFS	11.67	10.91	10.23	9.66	9.16	8.71	8.27	
7.84								
13.56 CFS	7.42	7.02	6.66	6.37	6.15	5.96	5.82	
5.71								
14.04 CFS	5.61	5.51	5.40	5.28	5.16	5.05	4.96	
4.87								
14.52 CFS	4.77	4.66	4.53	4.41	4.31	4.22	4.13	
4.02								
15.00 CFS	3.92	3.82	3.71	3.60	3.50	3.42	3.38	
3.35								
15.48 CFS	3.34	3.32	3.31	3.27	3.22	3.18	3.17	
3.16								
15.96 CFS	3.14	3.09	3.05	3.01	2.99	2.97	2.95	
2.91								
16.44 CFS	2.88	2.85	2.81	2.78	2.75	2.74	2.72	
2.68								
16.92 CFS	2.65	2.63	2.62	2.60	2.56	2.51	2.47	
2.45								
17.40 CFS	2.44	2.42	2.37	2.33	2.29	2.27	2.25	
2.22								
17.88 CFS	2.19	2.16	2.14	2.13	2.10	2.07	2.04	
2.02								
18.36 CFS	2.00	1.98	1.96	1.95	1.97	1.97	1.96	

1.95								
18.84 CFS	1.95	1.95	1.93	1.91	1.90	1.89	1.89	
1.88								
19.32 CFS	1.88	1.88	1.88	1.88	1.88	1.85	1.83	
1.83								
19.80 CFS	1.83	1.81	1.80	1.79	1.80	1.82	1.81	
1.79								
20.28 CFS	1.78	1.77	1.75	1.72	1.71	1.72	1.74	
1.73								
20.76 CFS	1.71	1.71	1.71	1.70	1.68	1.66	1.65	
1.65								
21.24 CFS	1.64	1.64	1.64	1.64	1.64	1.64	1.62	
1.60								
21.72 CFS	1.59	1.59	1.58	1.58	1.58	1.58	1.56	
1.55								
22.20 CFS	1.53	1.53	1.52	1.52	1.52	1.52	1.51	
1.49								
22.68 CFS	1.47	1.47	1.47	1.45	1.43	1.43	1.44	
1.45								
23.16 CFS	1.44	1.43	1.41	1.40	1.40	1.39	1.37	
1.35								
23.64 CFS	1.35	1.36	1.37	1.36	1.33	1.32	1.34	
1.34								
24.12 CFS	1.15	.80	.47					

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.92 WATERSHED INCHES; 85 CFS-HRS; 7.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	2570.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.23 WATERSHED INCHES; 4043 CFS-HRS; 334.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	47.3	(RUNOFF)
21.96	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.83 WATERSHED INCHES; 54 CFS-HRS; 4.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)								PEAK
12.45	2597.4								(NULL)
HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.02									
HRS									
SQ.MI.									
2.16 CFS	.48	.52	.57	.62	.69	.75	.82		
.90									
2.64 CFS	.98	1.07	1.16	1.27	1.38	1.50	1.61		
1.73									
3.12 CFS	1.84	1.96	2.08	2.20	2.32	2.46	2.61		
2.77									
3.60 CFS	2.94	3.12	3.31	3.50	3.68	3.85	4.03		
4.22									
4.08 CFS	4.41	4.61	4.83	5.05	5.28	5.50	5.69		
5.89									
4.56 CFS	6.09	6.32	6.57	6.81	7.03	7.28	7.55		
7.85									
5.04 CFS	8.16	8.49	8.83	9.17	9.52	9.90	10.31		
10.73									
5.52 CFS	11.14	11.53	11.94	12.39	12.87	13.37	13.85		
14.31									
6.00 CFS	14.73	15.16	15.63	16.15	16.70	17.26	17.82		
18.40									
6.48 CFS	19.01	19.66	20.36	21.09	21.85	22.63	23.42		
24.19									
6.96 CFS	24.99	25.82	26.65	27.49	28.36	29.30	30.28		
31.29									
7.44 CFS	32.29	33.29	34.29	35.31	36.32	37.33	38.32		
39.34									
7.92 CFS	40.38	41.45	42.57	43.73	44.91	46.11	47.32		
48.50									
8.40 CFS	49.66	50.82	52.00	53.18	54.37	55.58	56.86		
58.19									
8.88 CFS	59.52	60.83	62.09	63.33	64.61	66.01	67.55		
69.27									
9.36 CFS	71.21	73.39	75.83	78.49	81.30	84.24	87.28		
90.46									
9.84 CFS	94	97	101	104	108	112	115		
119									
10.32 CFS	123	127	131	135	140	144	149		
154									
10.80 CFS	160	168	176	186	197	209	222		
237									
11.28 CFS	252	270	290	311	334	360	390		
426									

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11.76 CFS	471	528	599	690	809	976	1212	
1512								
12.24 CFS	1846	2177	2441	2582	2585	2474	2291	
2073								
12.72 CFS	1844	1623	1419	1239	1084	954	847	
759								



13.20 CFS	686	624	572	528	490	457	427
401							
13.68 CFS	378	356	337	319	304	290	278
268							
14.16 CFS	260	252	246	240	234	229	223
219							
14.64 CFS	214	209	204	200	195	191	186
182							
15.12 CFS	177	173	168	164	160	156	152
149							
15.60 CFS	147	145	143	141	140	138	137
136							
16.08 CFS	134	133	132	131	129	128	127
126							
16.56 CFS	124	123	122	120	119	118	117
116							
17.04 CFS	114	113	112	111	110	109	107
106							
17.52 CFS	105	104	102	101	100	99	97
96							
18.00 CFS	94.83	93.66	92.52	91.41	90.34	89.28	88.22
87.16							
18.48 CFS	86.15	85.24	84.42	83.73	83.18	82.77	82.47
82.19							
18.96 CFS	81.88	81.58	81.25	80.88	80.48	80.06	79.68
79.35							
19.44 CFS	79.09	78.88	78.70	78.50	78.27	78.01	77.69
77.31							
19.92 CFS	76.91	76.52	76.18	75.86	75.60	75.41	75.24
75.04							
20.40 CFS	74.73	74.33	73.89	73.44	73.01	72.63	72.33
72.11							
20.88 CFS	71.91	71.66	71.39	71.10	70.76	70.37	69.96
69.57							
21.36 CFS	69.22	68.94	68.70	68.52	68.33	68.10	67.86
67.56							
21.84 CFS	67.19	66.85	66.57	66.30	66.04	65.78	65.50
65.17							
22.32 CFS	64.81	64.44	64.11	63.82	63.57	63.30	63.01
62.71							
22.80 CFS	62.36	61.95	61.53	61.12	60.77	60.44	60.17
59.97							
23.28 CFS	59.80	59.60	59.34	59.05	58.69	58.31	57.92
57.53							
23.76 CFS	57.17	56.86	56.59	56.35	56.16	55.91	55.08
53.41							
24.24 CFS	50.60	46.20	40.37	33.74	27.12	21.13	16.02
11.85							
24.72 CFS	8.58	6.11	4.30	2.99	2.06	1.41	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.20 WATERSHED INCHES; 4097 CFS-HRS; 338.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.55	2534.3	251.89

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.20 WATERSHED INCHES; 4097 CFS-HRS; 338.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	30.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.61 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
 FEET.

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OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	30.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.61 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	30.3	301.13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.60 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	139.6	(RUNOFF)
20.10	3.1	(RUNOFF)
24.02	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.89 WATERSHED INCHES; 145 CFS-HRS; 11.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	139.6	(NULL)
20.10	3.1	(NULL)

24.02 2.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.89 WATERSHED INCHES; 145 CFS-HRS; 11.9 ACRE-
FEET.

OPERATION ADDHYD XSECTION 67

Table with 3 columns: PEAK TIME(HRS) ELEVATION(FEET), PEAK DISCHARGE(CFS), PEAK. Rows include values like 12.20, 158.0, (NULL).

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.22 WATERSHED INCHES; 191 CFS-HRS; 15.8 ACRE-
FEET.

OPERATION RUNOFF XSECTION 68

Table with 3 columns: PEAK TIME(HRS) ELEVATION(FEET), PEAK DISCHARGE(CFS), PEAK. Rows include values like 12.19, 273.8, (RUNOFF).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.60 WATERSHED INCHES; 281 CFS-HRS; 23.3 ACRE-
FEET.

OPERATION ADDHYD XSECTION 69

Table with 3 columns: PEAK TIME(HRS) ELEVATION(FEET), PEAK DISCHARGE(CFS), PEAK. Rows include values like 12.19, 431.1, (NULL).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.44 WATERSHED INCHES; 473 CFS-HRS; 39.1 ACRE-
FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	330.3	249.38
20.67	9.2	247.79
24.09	7.1	247.76

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.44 WATERSHED INCHES; 473 CFS-HRS; 39.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	54.7	(RUNOFF)
17.33	1.2	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.05 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	54.7	(NULL)
17.33	1.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.05 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 72

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	51.6	248.33
17.39	1.2	247.29

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.06 WATERSHED INCHES; 47 CFS-HRS; 3.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	312.6	(RUNOFF)
15.84	12.1	(RUNOFF)

17.34	9.4	(RUNOFF)
19.75	7.1	(RUNOFF)
20.08	7.0	(RUNOFF)
21.96	6.2	(RUNOFF)
24.01	5.3	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11  
 SQ.MI.

8.82 CFS	.43	.51	.59	.68	.78	.88	.98
1.10							
9.30 CFS	1.24	1.38	1.53	1.67	1.82	1.98	2.17
2.36							
9.78 CFS	2.56	2.76	2.95	3.16	3.39	3.63	3.89
4.15							
10.26 CFS	4.40	4.65	4.91	5.20	5.52	5.89	6.35
6.91							
10.74 CFS	7.57	8.30	9.08	9.92	10.78	11.71	12.86
14.23							
11.22 CFS	15.80	17.48	19.28	21.25	23.29	25.46	29.59
36.52							
11.70 CFS	43	50	61	75	98	135	195
276							
12.18 CFS	313	268	207	164	133	112	98
86							
12.66 CFS	72.72	63.35	57.67	53.61	50.33	47.44	44.61
41.80							
13.14 CFS	39.05	36.77	34.96	33.30	31.70	30.10	28.51
26.97							
13.62 CFS	25.51	24.32	23.42	22.72	22.16	21.73	21.39
21.08							
14.10 CFS	20.70	20.26	19.77	19.33	18.96	18.65	18.33
17.93							
14.58 CFS	17.45	16.96	16.53	16.19	15.87	15.52	15.09
14.69							

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15.06 CFS	14.32	13.89	13.46	13.12	12.90	12.80	12.75
12.73							
15.54 CFS	12.71	12.61	12.43	12.21	12.09	12.11	12.09
11.95							
16.02 CFS	11.74	11.57	11.47	11.42	11.37	11.23	11.09
10.99							
16.50 CFS	10.85	10.69	10.58	10.53	10.49	10.38	10.22
10.12							
16.98 CFS	10.07	10.03	9.92	9.73	9.50	9.38	9.40
9.37							
17.46 CFS	9.23	9.01	8.83	8.73	8.68	8.62	8.48
8.33							
17.94 CFS	8.25	8.21	8.15	8.01	7.87	7.78	7.74
7.68							
18.42 CFS	7.55	7.48	7.54	7.62	7.63	7.53	7.47
7.52							
18.90 CFS	7.51	7.41	7.33	7.29	7.27	7.26	7.26
7.26							
19.38 CFS	7.26	7.26	7.26	7.23	7.10	7.03	7.08

7.06							
19.86 CFS	6.96	6.88	6.91	7.03	7.04	6.95	6.88
6.84							
20.34 CFS	6.81	6.70	6.58	6.60	6.70	6.74	6.67
6.57							
20.82 CFS	6.60	6.62	6.54	6.44	6.39	6.37	6.36
6.35							
21.30 CFS	6.35	6.35	6.35	6.35	6.34	6.23	6.12
6.14							
21.78 CFS	6.16	6.10	6.10	6.16	6.11	6.01	5.94
5.91							
22.26 CFS	5.90	5.89	5.89	5.89	5.89	5.84	5.72
5.65							
22.74 CFS	5.69	5.68	5.57	5.49	5.52	5.63	5.65
5.56							
23.22 CFS	5.48	5.45	5.43	5.42	5.37	5.24	5.17
5.24							
23.70 CFS	5.32	5.33	5.22	5.09	5.06	5.32	5.21
3.80							
24.18 CFS	2.04	.99	.48				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.26 WATERSHED INCHES; 302 CFS-HRS; 25.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	2630.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.02 WATERSHED INCHES; 4399 CFS-HRS; 363.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	360.8	(NULL)
20.12	10.4	(NULL)
20.67	10.0	(NULL)
23.11	8.3	(NULL)
24.06	7.8	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15  
 SQ.MI.

6.24 CFS	.48	.53	.57	.63	.68	.74	.80
.86							
6.72 CFS	.92	.98	1.05	1.12	1.19	1.25	1.32
1.40							
7.20 CFS	1.48	1.57	1.65	1.73	1.82	1.92	2.03
2.13							
7.68 CFS	2.23	2.35	2.46	2.58	2.71	2.84	2.97
3.10							
8.16 CFS	3.24	3.38	3.51	3.65	3.80	3.93	4.07
4.21							
8.64 CFS	4.37	4.53	4.70	4.85	5.01	5.15	5.30
5.47							

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9.12 CFS	5.66	5.85	6.07	6.31	6.58	6.88	7.19
7.51							
9.60 CFS	7.83	8.18	8.55	8.94	9.35	9.76	10.17
10.58							
10.08 CFS	11.02	11.48	11.96	12.45	12.93	13.41	13.90
14.41							
10.56 CFS	14.96	15.56	16.28	17.15	18.15	19.30	20.58
21.98							
11.04 CFS	23.46	25.05	26.87	28.93	31.27	33.85	36.64
39.69							
11.52 CFS	43	46	51	59	67	76	88
105							
12.00 CFS	127	162	215	287	340	360	352
329							
12.48 CFS	299	268	240	213	187	165	146
130							
12.96 CFS	116	105	96	88	81	74	69
64							
13.44 CFS	60.30	56.61	53.22	50.10	47.21	44.60	42.32
40.34							
13.92 CFS	38.65	37.22	36.02	35.00	34.08	33.22	32.38
31.59							
14.40 CFS	30.87	30.21	29.58	28.94	28.28	27.60	26.93
26.30							
14.88 CFS	25.70	25.11	24.50	23.90	23.30	22.68	22.06
21.48							
15.36 CFS	20.97	20.54	20.21	19.95	19.75	19.54	19.32
19.07							
15.84 CFS	18.86	18.71	18.57	18.40	18.20	17.99	17.80
17.64							
16.32 CFS	17.49	17.32	17.15	16.98	16.79	16.59	16.41
16.25							
16.80 CFS	16.11	15.96	15.79	15.63	15.49	15.37	15.23
15.04							
17.28 CFS	14.82	14.63	14.49	14.36	14.20	14.00	13.80
13.60							
17.76 CFS	13.44	13.29	13.12	12.94	12.78	12.65	12.52
12.36							
18.24 CFS	12.20	12.05	11.92	11.80	11.65	11.53	11.46
11.44							
18.72 CFS	11.42	11.36	11.31	11.29	11.25	11.19	11.12
11.05							
19.20 CFS	10.99	10.95	10.91	10.89	10.87	10.85	10.84
10.81							
19.68 CFS	10.73	10.67	10.64	10.59	10.52	10.45	10.42
10.43							
20.16 CFS	10.43	10.40	10.35	10.30	10.25	10.16	10.06
10.01							
20.64 CFS	9.99	10.00	9.96	9.91	9.89	9.86	9.81
9.74							
21.12 CFS	9.67	9.61	9.57	9.53	9.50	9.48	9.46
9.45							
21.60 CFS	9.43	9.36	9.29	9.25	9.21	9.16	9.14
9.13							
22.08 CFS	9.10	9.04	8.97	8.92	8.87	8.83	8.80
8.77							

22.56 CFS	8.76	8.72	8.64	8.57	8.54	8.49	8.42
8.34							
23.04 CFS	8.31	8.32	8.31	8.28	8.23	8.19	8.14
8.11							
23.52 CFS	8.05	7.96	7.89	7.86	7.86	7.85	7.80
7.72							
24.00 CFS	7.67	7.75	7.65	6.96	5.90	4.75	3.72
2.86							
24.48 CFS	2.17	1.64	1.23	.91	.68	.50	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.49 WATERSHED INCHES; 519 CFS-HRS; 42.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.53	2900.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.96 WATERSHED INCHES; 4918 CFS-HRS; 406.4 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 77.  
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OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.53	2900.2	232.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.96 WATERSHED INCHES; 4918 CFS-HRS; 406.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	171.1	(RUNOFF)
15.84	6.1	(RUNOFF)
17.34	4.7	(RUNOFF)
21.96	3.1	(RUNOFF)
24.01	2.7	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05  
 SQ.MI.



7.98 CFS	.47	.51	.55	.59	.62	.66	.71
.76							
8.46 CFS	.79	.84	.89	.94	1.00	1.04	1.08
1.12							
8.94 CFS	1.17	1.23	1.30	1.36	1.43	1.52	1.62
1.72							
9.42 CFS	1.82	1.91	2.01	2.12	2.24	2.38	2.51
2.63							
9.90 CFS	2.75	2.87	3.01	3.17	3.33	3.49	3.63
3.77							
10.38 CFS	3.92	4.10	4.29	4.51	4.80	5.17	5.59
6.05							
10.86 CFS	6.54	7.05	7.58	8.12	8.82	9.66	10.62
11.62							
11.34 CFS	12.66	13.80	14.95	16.16	18.71	22.84	26.72
30.55							
11.82 CFS	37	45	57	78	111	154	171
141							
12.30 CFS	107	84	67	57	50	43	37
32							
12.78 CFS	29.22	27.20	25.54	24.07	22.61	21.15	19.76
18.60							
13.26 CFS	17.69	16.83	16.01	15.20	14.38	13.60	12.86
12.26							
13.74 CFS	11.82	11.46	11.18	10.96	10.79	10.64	10.44
10.21							
14.22 CFS	9.96	9.73	9.55	9.39	9.23	9.02	8.77
8.52							
14.70 CFS	8.31	8.13	7.97	7.79	7.57	7.37	7.18
6.96							
15.18 CFS	6.75	6.58	6.47	6.42	6.40	6.39	6.38
6.33							
15.66 CFS	6.23	6.11	6.06	6.08	6.06	5.99	5.88
5.79							
16.14 CFS	5.74	5.72	5.69	5.62	5.55	5.50	5.43
5.34							
16.62 CFS	5.29	5.27	5.25	5.19	5.11	5.06	5.04
5.02							
17.10 CFS	4.95	4.85	4.74	4.68	4.70	4.68	4.60
4.49							
17.58 CFS	4.40	4.35	4.33	4.30	4.23	4.15	4.11
4.09							
18.06 CFS	4.06	3.99	3.92	3.88	3.86	3.83	3.76
3.72							
18.54 CFS	3.76	3.80	3.81	3.75	3.72	3.75	3.74
3.69							
19.02 CFS	3.65	3.63	3.62	3.62	3.62	3.62	3.62
3.62							
19.50 CFS	3.62	3.60	3.53	3.50	3.53	3.51	3.46
3.42							
19.98 CFS	3.44	3.50	3.50	3.46	3.42	3.40	3.38
3.33							
20.46 CFS	3.27	3.29	3.34	3.35	3.31	3.26	3.28
3.29							
20.94 CFS	3.25	3.20	3.17	3.16	3.16	3.16	3.16
3.16							
21.42 CFS	3.16	3.16	3.15	3.09	3.03	3.05	3.06
3.02							

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21.90 CFS	3.03	3.06	3.03	2.98	2.95	2.93	2.93
2.92							
22.38 CFS	2.92	2.92	2.92	2.90	2.83	2.80	2.83
2.81							
22.86 CFS	2.76	2.72	2.74	2.80	2.80	2.75	2.72
2.70							
23.34 CFS	2.69	2.69	2.66	2.59	2.56	2.60	2.64
2.64							
23.82 CFS	2.58	2.51	2.51	2.66	2.60	1.82	.92
.43							

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.96 WATERSHED INCHES; 163 CFS-HRS; 13.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.53	2951.7	(NULL)
23.98	72.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.92 WATERSHED INCHES; 5082 CFS-HRS; 419.9 ACRE-  
FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.61	2921.7	219.77

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.92 WATERSHED INCHES; 5081 CFS-HRS; 419.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	97.7	(RUNOFF)
15.84	3.6	(RUNOFF)
20.07	2.1	(RUNOFF)
24.01	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.57 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.61	2945.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

5.89 WATERSHED INCHES; 5173 CFS-HRS; 427.5 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	194.0	(RUNOFF)
15.84	6.3	(RUNOFF)
17.34	4.9	(RUNOFF)
22.42	3.0	(RUNOFF)
24.00	2.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.34 WATERSHED INCHES; 177 CFS-HRS; 14.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.24	307.5	(RUNOFF)
18.67	8.6	(RUNOFF)
20.68	7.6	(RUNOFF)
23.12	6.3	(RUNOFF)
24.01	5.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.71 WATERSHED INCHES; 361 CFS-HRS; 29.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	470.2	(NULL)
18.83	12.4	(NULL)
20.07	11.6	(NULL)
20.63	11.1	(NULL)
21.95	10.1	(NULL)
23.07	9.2	(NULL)
24.00	8.7	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 SQ.MI.

7.32 CFS	.49	.53	.57	.61	.64	.69	.76
.84							
7.80 CFS	.93	1.03	1.15	1.27	1.39	1.53	1.66
1.77							
8.28 CFS	1.90	2.06	2.19	2.31	2.46	2.62	2.79

2.95								
8.76	CFS	3.10	3.24	3.38	3.52	3.71	3.92	4.11
4.34								
9.24	CFS	4.59	4.89	5.20	5.51	5.81	6.12	6.47
6.84								
9.72	CFS	7.25	7.65	8.05	8.43	8.84	9.28	9.76
10.25								
10.20	CFS	10.74	11.22	11.69	12.19	12.72	13.31	13.98
14.84								
10.68	CFS	15.88	17.07	18.44	19.91	21.49	23.12	24.83
26.93								
11.16	CFS	29.37	32.14	35.15	38.31	41.83	45.42	49.34
56.43								
11.64	CFS	67	77	90	106	129	162	218
302								

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12.12	CFS	414	469	445	390	330	273	231
200								
12.60	CFS	172	147	129	114	103	95	88
81								
13.08	CFS	75.70	70.51	66.14	62.39	59.07	56.04	53.16
50.34								
13.56	CFS	47.64	45.08	42.87	41.06	39.56	38.33	37.36
36.58								
14.04	CFS	35.91	35.21	34.47	33.69	32.94	32.28	31.68
31.09								
14.52	CFS	30.43	29.70	28.93	28.21	27.56	26.98	26.36
25.69								
15.00	CFS	25.04	24.39	23.69	23.00	22.40	21.94	21.63
21.44								
15.48	CFS	21.32	21.22	21.06	20.81	20.51	20.31	20.24
20.13								
15.96	CFS	19.95	19.68	19.43	19.23	19.10	18.96	18.76
18.57								
16.44	CFS	18.39	18.16	17.91	17.73	17.59	17.48	17.30
17.10								
16.92	CFS	16.93	16.81	16.71	16.53	16.28	15.97	15.76
15.69								
17.40	CFS	15.57	15.38	15.11	14.85	14.65	14.51	14.37
14.16								
17.88	CFS	13.96	13.80	13.69	13.57	13.37	13.17	13.02
12.91								
18.36	CFS	12.79	12.60	12.49	12.51	12.56	12.57	12.47
12.41								
18.84	CFS	12.44	12.39	12.28	12.19	12.11	12.06	12.02
12.01								
19.32	CFS	12.00	11.99	11.99	11.98	11.93	11.78	11.70
11.71								
19.80	CFS	11.65	11.54	11.45	11.45	11.54	11.55	11.48
11.41								
20.28	CFS	11.34	11.26	11.11	10.97	10.97	11.02	11.05
10.99								
20.76	CFS	10.90	10.92	10.90	10.80	10.70	10.61	10.55
10.51								
21.24	CFS	10.48	10.47	10.46	10.46	10.46	10.43	10.30

10.18							
21.72 CFS	10.18	10.15	10.06	10.08	10.12	10.04	9.95
9.86							
22.20 CFS	9.79	9.74	9.72	9.70	9.69	9.68	9.63
9.48							
22.68 CFS	9.39	9.40	9.33	9.22	9.13	9.13	9.22
9.22							
23.16 CFS	9.15	9.08	9.01	8.96	8.93	8.86	8.70
8.61							
23.64 CFS	8.65	8.70	8.71	8.60	8.46	8.42	8.69
8.47							
24.12 CFS	6.82	4.89	3.27	2.02	1.25	.78	.48

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.90 WATERSHED INCHES; 538 CFS-HRS; 44.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.59	3118.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.78 WATERSHED INCHES; 5711 CFS-HRS; 472.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	76.9	(RUNOFF)
15.84	2.2	(RUNOFF)
22.42	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.87 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.59	3132.8	(NULL)
23.97	83.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.79 WATERSHED INCHES; 5781 CFS-HRS; 477.8 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT				.0 hrs.			
RAINTABLE NUMBER 9, ARC 2							
MAIN TIME INCREMENT .060 HOURS							
ALTERNATE 1		STORM 2					
STRUCTURE 11	RESVOR	.09	1.40	---	12.32	60	666.7
XSECTION 8	REACH	.17	1.31	357.22	12.44	102	600.0
STRUCTURE 21	RESVOR	.07	2.24	---	12.30	78	1114.3
STRUCTURE 22	RESVOR	.07	2.24	---	12.30	78	1114.3
XSECTION 15	ADDHYD	.32	1.47	---	12.35	202	631.3
STRUCTURE 23	RESVOR	.32	1.47	---	12.35	202	631.3
XSECTION 16	REACH	.32	1.47	332.92	12.35	202	631.3
XSECTION 20	ADDHYD	.05	2.19	---	12.17	71	1420.0
XSECTION 23	REACH	.41	1.59	315.76	12.41	257	626.8
STRUCTURE 31	RESVOR	.05	1.55	---	12.26	42	840.0
XSECTION 30	ADDHYD	.60	1.54	---	12.38	378	630.0
STRUCTURE 32	RESVOR	.01	2.63	---	12.16	14	1400.0
STRUCTURE 33	RESVOR	.03	2.63	---	12.19	42	1400.0
STRUCTURE 34	RESVOR	.04	2.63	---	12.20	55	1375.0
XSECTION 39	ADDHYD	.07	2.24	---	12.18	95	1357.1
XSECTION 41	ADDHYD	.64	1.54	---	12.38	403	629.7
XSECTION 44	REACH	.77	1.63	290.43	12.48	494	641.6
XSECTION 49	ADDHYD	.82	1.62	---	12.47	513	625.6
XSECTION 50	ADDHYD	.93	1.59	---	12.45	575	618.3
XSECTION 51	REACH	.93	1.59	284.95	12.57	555	596.8
XSECTION 56	ADDHYD	.96	1.58	---	12.57	565	588.5
XSECTION 60	ADDHYD	1.01	1.54	---	12.57	570	564.4
XSECTION 62	ADDHYD	1.02	1.53	---	12.57	574	562.7
XSECTION 63	REACH	1.02	1.53	249.78	12.72	543	532.4
STRUCTURE 61	RESVOR	.01	1.71	---	12.37	8	800.0
STRUCTURE 62	RESVOR	.05	.83	---	12.21	22	440.0
STRUCTURE 63	RESVOR	.01	1.40	---	12.13	13	1300.0
XSECTION 76	ADDHYD	1.28	1.40	---	12.69	594	464.1

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SUMMARY TABLE 1

-----  
SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE		RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
		AREA (SQ MI)				TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE		1	STORM	2				
XSECTION	77	REACH	1.28	1.40	229.57	12.76	593	463.3
XSECTION	88	ADDHYD	1.55	1.31	---	12.75	630	406.5
RAINFALL OF		4.91 inches AND		24.00 hr	DURATION, BEGINS AT	.0 hrs.		
ALTERNATE		1	STORM	10				
STRUCTURE	11	RESVOR	.09	2.82	---	12.32	122	1355.6
XSECTION	8	REACH	.17	2.70	357.84	12.41	216	1270.6
STRUCTURE	21	RESVOR	.07	3.88	---	12.30	132	1885.7
STRUCTURE	22	RESVOR	.07	3.88	---	12.30	132	1885.7
XSECTION	15	ADDHYD	.32	2.90	---	12.33	405	1265.6
STRUCTURE	23	RESVOR	.32	2.90	---	12.33	405	1265.6
XSECTION	16	REACH	.32	2.90	334.10	12.33	405	1265.6
XSECTION	20	ADDHYD	.05	3.82	---	12.17	122	2440.0
XSECTION	23	REACH	.41	3.05	316.45	12.38	516	1258.5
STRUCTURE	31	RESVOR	.05	3.03	---	12.25	81	1620.0
XSECTION	30	ADDHYD	.60	3.00	---	12.35	771	1285.0
STRUCTURE	32	RESVOR	.01	4.33	---	12.16	22	2200.0
STRUCTURE	33	RESVOR	.03	4.32	---	12.19	67	2233.3
STRUCTURE	34	RESVOR	.04	4.32	---	12.18	89	2225.0
XSECTION	39	ADDHYD	.07	3.87	---	12.17	162	2314.3
XSECTION	41	ADDHYD	.64	2.99	---	12.35	824	1287.5
XSECTION	44	REACH	.77	3.11	291.26	12.43	1005	1305.2
XSECTION	49	ADDHYD	.82	3.09	---	12.42	1046	1275.6
XSECTION	50	ADDHYD	.93	3.06	---	12.40	1183	1272.0
XSECTION	51	REACH	.93	3.06	286.27	12.50	1153	1239.8
XSECTION	56	ADDHYD	.96	3.05	---	12.50	1174	1222.9
XSECTION	60	ADDHYD	1.01	2.98	---	12.50	1189	1177.2
XSECTION	62	ADDHYD	1.02	2.96	---	12.49	1200	1176.5
XSECTION	63	REACH	1.02	2.96	250.61	12.61	1154	1131.4

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 1		STORM	10				
STRUCTURE 61	RESVOR	.01	3.24	---	12.37	15	1500.0
STRUCTURE 62	RESVOR	.05	1.98	---	12.20	56	1120.0
STRUCTURE 63	RESVOR	.01	2.81	---	12.12	26	2600.0
XSECTION 76	ADDHYD	1.28	2.78	---	12.60	1307	1021.1
XSECTION 77	REACH	1.28	2.78	230.80	12.66	1306	1020.3
XSECTION 88	ADDHYD	1.55	2.65	---	12.71	1388	895.5
RAINFALL OF		6.14 inches AND	24.00 hr	DURATION, BEGINS AT		.0 hrs.	
ALTERNATE 1		STORM	25				
STRUCTURE 11	RESVOR	.09	3.91	---	12.31	176	1955.6
XSECTION 8	REACH	.17	3.78	358.22	12.40	310	1823.5
STRUCTURE 21	RESVOR	.07	5.08	---	12.30	170	2428.6
STRUCTURE 22	RESVOR	.07	5.08	---	12.30	170	2428.6
XSECTION 15	ADDHYD	.32	3.99	---	12.33	564	1762.5
STRUCTURE 23	RESVOR	.32	3.99	---	12.33	564	1762.5
XSECTION 16	REACH	.32	3.99	334.94	12.33	564	1762.5
XSECTION 20	ADDHYD	.05	5.01	---	12.17	157	3140.0
XSECTION 23	REACH	.41	4.15	316.86	12.37	716	1746.3
STRUCTURE 31	RESVOR	.05	4.15	---	12.25	111	2220.0
XSECTION 30	ADDHYD	.60	4.10	---	12.34	1073	1788.3
STRUCTURE 32	RESVOR	.01	5.55	---	12.16	28	2800.0
STRUCTURE 33	RESVOR	.03	5.54	---	12.19	85	2833.3
STRUCTURE 34	RESVOR	.04	5.54	---	12.18	113	2825.0
XSECTION 39	ADDHYD	.07	5.06	---	12.17	211	3014.3
XSECTION 41	ADDHYD	.64	4.09	---	12.33	1147	1792.2
XSECTION 44	REACH	.77	4.23	291.77	12.41	1396	1813.0
XSECTION 49	ADDHYD	.82	4.21	---	12.40	1455	1774.4
XSECTION 50	ADDHYD	.93	4.18	---	12.39	1650	1774.2
XSECTION 51	REACH	.93	4.18	287.03	12.48	1611	1732.3

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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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SUMMARY TABLE 1

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
				TIME	RATE	RATE	
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	(HR)	(CFS)	(CSM)
ALTERNATE 1		STORM	25				
XSECTION 56	ADDHYD	.96	4.16	---	12.48	1642	1710.4
XSECTION 60	ADDHYD	1.01	4.07	---	12.48	1666	1649.5
XSECTION 62	ADDHYD	1.02	4.05	---	12.47	1682	1649.0
XSECTION 63	REACH	1.02	4.05	251.11	12.58	1627	1595.1
STRUCTURE 61	RESVOR	.01	4.38	---	12.36	21	2100.0
STRUCTURE 62	RESVOR	.05	2.93	---	12.20	84	1680.0
STRUCTURE 63	RESVOR	.01	3.92	---	12.12	37	3700.0
XSECTION 76	ADDHYD	1.28	3.84	---	12.56	1860	1453.1
XSECTION 77	REACH	1.28	3.84	231.40	12.56	1860	1453.1
XSECTION 88	ADDHYD	1.55	3.70	---	12.61	2007	1294.8

RAINFALL OF 7.23 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1		STORM	50				
STRUCTURE 11	RESVOR	.09	4.91	---	12.30	220	2444.4
XSECTION 8	REACH	.17	4.76	358.51	12.39	393	2311.8
STRUCTURE 21	RESVOR	.07	6.15	---	12.30	203	2900.0
STRUCTURE 22	RESVOR	.07	6.15	---	12.30	203	2900.0
XSECTION 15	ADDHYD	.32	4.98	---	12.32	706	2206.3
STRUCTURE 23	RESVOR	.32	4.98	---	12.32	706	2206.3
XSECTION 16	REACH	.32	4.98	335.65	12.32	706	2206.3
XSECTION 20	ADDHYD	.05	6.08	---	12.17	188	3760.0
XSECTION 23	REACH	.41	5.16	317.21	12.37	885	2158.5
STRUCTURE 31	RESVOR	.05	5.17	---	12.25	136	2720.0
XSECTION 30	ADDHYD	.60	5.11	---	12.34	1331	2218.3
STRUCTURE 32	RESVOR	.01	6.63	---	12.16	34	3400.0
STRUCTURE 33	RESVOR	.03	6.63	---	12.19	101	3366.7
STRUCTURE 34	RESVOR	.04	6.63	---	12.18	134	3350.0
XSECTION 39	ADDHYD	.07	6.12	---	12.17	252	3600.0
XSECTION 41	ADDHYD	.64	5.10	---	12.33	1424	2225.0

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL		DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
	OPERATION					TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE		1	STORM	50				
XSECTION	44	REACH	.77	5.24	292.15	12.40	1732	2249.4
XSECTION	49	ADDHYD	.82	5.23	---	12.39	1807	2203.7
XSECTION	50	ADDHYD	.93	5.19	---	12.38	2051	2205.4
XSECTION	51	REACH	.93	5.19	287.61	12.47	2008	2159.1
XSECTION	56	ADDHYD	.96	5.17	---	12.47	2047	2132.3
XSECTION	60	ADDHYD	1.01	5.07	---	12.47	2080	2059.4
XSECTION	62	ADDHYD	1.02	5.05	---	12.46	2100	2058.8
XSECTION	63	REACH	1.02	5.05	251.49	12.57	2043	2002.9
STRUCTURE	61	RESVOR	.01	5.41	---	12.36	25	2500.0
STRUCTURE	62	RESVOR	.05	3.83	---	12.20	109	2180.0
STRUCTURE	63	RESVOR	.01	4.90	---	12.12	46	4600.0
XSECTION	76	ADDHYD	1.28	4.82	---	12.55	2329	1819.5
XSECTION	77	REACH	1.28	4.82	231.81	12.55	2329	1819.5
XSECTION	88	ADDHYD	1.55	4.66	---	12.61	2509	1618.7
RAINFALL OF		8.47 inches AND		24.00 hr DURATION,		BEGINS AT		.0 hrs.
ALTERNATE		1	STORM	99				
STRUCTURE	11	RESVOR	.09	6.07	---	12.30	270	3000.0
XSECTION	8	REACH	.17	5.91	358.78	12.39	487	2864.7
STRUCTURE	21	RESVOR	.07	7.38	---	12.29	243	3471.4
STRUCTURE	22	RESVOR	.07	7.38	---	12.29	243	3471.4
XSECTION	15	ADDHYD	.32	6.14	---	12.32	869	2715.6
STRUCTURE	23	RESVOR	.32	6.14	---	12.32	869	2715.6
XSECTION	16	REACH	.32	6.14	336.45	12.32	869	2715.6
XSECTION	20	ADDHYD	.05	7.29	---	12.17	224	4480.0
XSECTION	23	REACH	.41	6.33	317.46	12.36	1091	2661.0
STRUCTURE	31	RESVOR	.05	6.34	---	12.25	166	3320.0
XSECTION	30	ADDHYD	.60	6.28	---	12.33	1640	2733.3
STRUCTURE	32	RESVOR	.01	7.86	---	12.16	39	3900.0

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SUMMARY TABLE 1

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 SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD		DRAINAGE	RUNOFF	PEAK DISCHARGE			
	CONTROL	OPERATION			AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)
	ALTERNATE	1	STORM	99				
STRUCTURE 33	RESVOR		.03	7.86	---	12.19	118	3933.3
STRUCTURE 34	RESVOR		.04	7.86	---	12.18	157	3925.0
XSECTION 39	ADDHYD		.07	7.34	---	12.17	298	4257.1
XSECTION 41	ADDHYD		.64	6.27	---	12.33	1759	2748.4
XSECTION 44	REACH		.77	6.42	292.56	12.40	2130	2766.2
XSECTION 49	ADDHYD		.82	6.40	---	12.39	2228	2717.1
XSECTION 50	ADDHYD		.93	6.37	---	12.38	2525	2715.1
XSECTION 51	REACH		.93	6.37	288.20	12.46	2477	2663.4
XSECTION 56	ADDHYD		.96	6.35	---	12.46	2527	2632.3
XSECTION 60	ADDHYD		1.01	6.23	---	12.45	2570	2544.6
XSECTION 62	ADDHYD		1.02	6.20	---	12.45	2597	2546.1
XSECTION 63	REACH		1.02	6.20	251.89	12.55	2534	2484.3
STRUCTURE 61	RESVOR		.01	6.61	---	12.36	31	3100.0
STRUCTURE 62	RESVOR		.05	4.89	---	12.19	140	2800.0
STRUCTURE 63	RESVOR		.01	6.05	---	12.12	55	5500.0
XSECTION 76	ADDHYD		1.28	5.96	---	12.53	2900	2265.6
XSECTION 77	REACH		1.28	5.96	232.20	12.53	2900	2265.6
XSECTION 88	ADDHYD		1.55	5.79	---	12.59	3133	2021.3

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SUMMARY TABLE 2

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 MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC ID	REACH LENGTH COEFF	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT- KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			

BASEFLOW IS .0 CFS

ALTERNATE	1	STORM	2							
2	1170	24	12.3	23	12.4	1.55	1.37	.029	.952	
.58										
5	797	60	12.3	59	12.4	2.22	1.20	.022	.987	
.77?										
8	1221	104	12.4	102	12.4	1.16	1.47	.012	.984	
.78?										
16	920	202	12.4	202	12.4	3.61	1.49	.001	1.000	
1.00?										
23	1379	284	12.2	257	12.4	.85	1.23	.061	.905	
.39										
27	1021	99	12.2	88	12.4	1.09	1.18	.071	.891	
.42										
32	1603	76	12.2	68	12.4	1.28	1.33	.055	.899	
.48										
34	583	14	12.2	14	12.2	1.14	1.62	.009	.996	
.94?										
37	934	55	12.2	55	12.2	2.32	1.54	.005	1.000	
1.00?										
44	1428	524	12.4	494	12.5	.37	1.38	.037	.943	
.45										
51	1275	572	12.5	554	12.6	.53	1.33	.029	.967	
.51										
53	652	0	.0	0	.0	.000	.00	.000	.000	
.00										
63	1959	572	12.5	543	12.7	.63	1.32	.043	.948	
.39										
65	1283	8	12.4	8	12.5	2.46	1.41	.023	.968	
.59										
70	2166	80	12.2	66	12.4	1.63	1.28	.075	.826	
.39										
72	1081	13	12.1	11	12.2	1.51	1.51	.039	.858	
.64										
77	884	593	12.7	592	12.8	1.93	1.22	.010	1.000	
.89?										
80	1296	599	12.8	599	12.8	1.62	1.43	.003	1.000	
1.00?										

ALTERNATE	1	STORM	10							
2	1170	48	12.3	45	12.4	1.90	1.19	.047	.937	
.52										
5	797	122	12.3	120	12.4	2.00	1.25	.016	.989	
.87?										
8	1221	217	12.4	216	12.4	1.26	1.44	.010	.996	
.88?										
16	920	402	12.3	402	12.3	3.91	1.46	.001	1.000	
1.00?										

23	1379	553	12.2	515	12.4	.64	1.30	.043	.931
.47									
27	1021	196	12.2	183	12.4	.69	1.31	.042	.933
.53									
32	1603	136	12.2	125	12.3	1.35	1.31	.047	.925
.52									
34	583	22	12.2	22	12.2	1.14	1.62	.006	1.000
1.00?									

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
	ALTERNATE	1	STORM	10							
37	934		89	12.2	89	12.2	2.38	1.52	.004	1.000	
1.00?											
44	1428		1046	12.3	1004	12.4	.28	1.45	.024	.960	
.56											
51	1275		1180	12.4	1150	12.5	.44	1.37	.021	.974	
.61											
53	652		0	12.5	0	12.7	2.05	1.40	.010	.932	
.47											
63	1959		1198	12.5	1152	12.6	.41	1.41	.027	.962	
.50											
65	1283		15	12.4	15	12.5	2.48	1.39	.019	.973	
.65											
70	2166		186	12.2	125	12.4	1.81	1.06	.212	.676	
.22											
72	1081		26	12.1	24	12.2	1.65	1.43	.036	.897	
.70?											
77	884		1306	12.6	1306	12.7	1.92	1.22	.010	.999	
.96?											
80	1296		1322	12.7	1318	12.7	3.92	1.13	.016	.996	
.85?											
	ALTERNATE	1	STORM	25							
2	1170		65	12.3	65	12.4	.29	2.00	.003	.995	

.89?									
5	797	176	12.3	175	12.4	1.90	1.27	.014	.995
.92?									
8	1221	310	12.4	309	12.4	1.28	1.44	.009	.999
.93?									
16	920	561	12.3	561	12.3	4.20	1.43	.001	1.000
1.00?									
23	1379	759	12.2	716	12.4	.60	1.31	.038	.942
.50									
27	1021	268	12.2	255	12.4	.47	1.41	.027	.952
.61									
32	1603	180	12.2	168	12.3	1.37	1.30	.043	.930
.55									
34	583	28	12.2	28	12.2	1.14	1.61	.005	1.000
1.00?									
37	934	113	12.2	113	12.2	2.43	1.51	.004	1.000
1.00?									
44	1428	1445	12.3	1395	12.4	.26	1.46	.020	.965
.60									
51	1275	1640	12.4	1611	12.5	.43	1.38	.019	.982
.65									
53	652	2	12.2	2	12.3	2.05	1.40	.014	.917
.63									
63	1959	1681	12.5	1625	12.6	.37	1.43	.023	.967
.55									
65	1283	21	12.4	20	12.4	2.49	1.38	.017	.974
.68?									
70	2166	268	12.2	188	12.4	1.61	1.09	.192	.701
.24									

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;

ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
	ALTERNATE	1	STORM	25							
72	1081		37	12.1	33	12.2	1.68	1.41	.032	.914	
.74?											
77	884		1854	12.5	1854	12.5	1.80	1.23	.009	1.000	

1.00?									
80	1296	1886	12.5	1874	12.7	4.34	1.11	.018	.994
.84?									

ALTERNATE	1	STORM	50						
2	1170	81	12.3	81	12.4	.29	2.00	.003	.998
.94?									
5	797	220	12.3	219	12.4	1.85	1.28	.012	.997
.95?									
8	1221	390	12.4	390	12.4	1.29	1.44	.008	1.000
.96?									
16	920	703	12.3	703	12.3	4.45	1.41	.001	1.000
1.00?									
23	1379	943	12.2	884	12.4	.76	1.25	.043	.938
.48									
27	1021	331	12.2	318	12.4	.39	1.45	.021	.961
.66									
32	1603	216	12.2	204	12.3	1.38	1.30	.040	.944
.56									
34	583	33	12.2	33	12.2	1.15	1.61	.005	1.000
1.00?									
37	934	134	12.2	134	12.2	2.46	1.51	.004	1.000
1.00?									
44	1428	1785	12.3	1729	12.4	.25	1.46	.018	.968
.63									
51	1275	2043	12.4	2007	12.5	.43	1.38	.018	.982
.67?									
53	652	5	12.2	4	12.2	2.05	1.40	.017	.927
.75?									
63	1959	2097	12.5	2034	12.5	.36	1.44	.020	.970
.58									
65	1283	25	12.4	25	12.4	2.51	1.37	.016	.978
.70?									
70	2166	343	12.2	253	12.4	1.21	1.17	.154	.739
.27									
72	1081	46	12.1	42	12.2	1.70	1.41	.030	.926
.76?									
77	884	2329	12.5	2329	12.5	1.71	1.24	.008	1.000
1.00?									
80	1296	2369	12.5	2340	12.6	5.88	1.02	.029	.988
.72?									

ALTERNATE	1	STORM	99						
2	1170	99	12.3	99	12.4	.27	2.00	.002	.999
.97?									
5	797	270	12.3	270	12.4	1.80	1.28	.011	.999
.98?									

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 TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
 06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
 Dist.2.04TEST  
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MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

		HYDROGRAPH INFORMATION				ROUTING PARAMETERS					
XSEC ID	REACH LENGTH COEFF	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT- KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
	ALTERNATE	1	STORM	99							
8	1221		483	12.3	483	12.4	1.30	1.43	.007	.999	
	.99?										
16	920		867	12.3	867	12.3	4.72	1.39	.001	1.000	
	1.00?										
23	1379		1156	12.2	1091	12.4	.70	1.27	.039	.943	
	.51										
27	1021		401	12.2	388	12.4	.34	1.48	.017	.968	
	.70?										
32	1603		260	12.2	244	12.3	1.50	1.27	.043	.941	
	.55										
34	583		39	12.2	39	12.2	1.16	1.60	.004	1.000	
	1.00?										
37	934		157	12.2	157	12.2	2.50	1.50	.003	1.000	
	1.00?										
44	1428		2189	12.3	2122	12.4	.25	1.46	.017	.969	
	.66										
51	1275		2520	12.4	2472	12.5	.43	1.37	.017	.981	
	.70?										
53	652		8	12.2	8	12.2	2.05	1.40	.017	.971	
	.83?										
63	1959		2585	12.5	2532	12.5	.35	1.44	.019	.980	
	.60										
65	1283		31	12.4	30	12.4	2.52	1.37	.015	.982	
	.73?										
70	2166		430	12.2	328	12.4	.96	1.23	.127	.764	
	.31										
72	1081		55	12.1	51	12.2	1.71	1.40	.027	.938	
	.78?										
77	884		2899	12.5	2899	12.5	1.44	1.28	.006	1.000	
	1.00?										
80	1296		2949	12.5	2921	12.6	6.29	1.01	.031	.991	
	.71?										

1 TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
 VERSION  
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 Dist.2.04TEST  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	10	25	50	99
STRUCTURE 63	.01					
----- ALTERNATE 55	1	13	26	37	46	
STRUCTURE 62	.05					
----- ALTERNATE 140	1	22	56	84	109	
STRUCTURE 61	.01					
----- ALTERNATE 31	1	8	15	21	25	
STRUCTURE 34	.04					
----- ALTERNATE 157	1	55	89	113	134	
STRUCTURE 33	.03					
----- ALTERNATE 118	1	42	67	85	101	
STRUCTURE 32	.01					
----- ALTERNATE 39	1	14	22	28	34	
STRUCTURE 31	.05					
----- ALTERNATE 166	1	42	81	111	136	
STRUCTURE 23	.32					
----- ALTERNATE 869	1	202	405	564	706	
STRUCTURE 22	.07					
----- ALTERNATE 243	1	78	132	170	203	
STRUCTURE 21	.07					
----- ALTERNATE 243	1	78	132	170	203	
STRUCTURE 11	.09					
----- ALTERNATE 270	1	60	122	176	220	

XSECTION 8 .17  
-----

ALTERNATE 1 102 216 310 393  
487

XSECTION 15 .32  
-----

ALTERNATE 1 202 405 564 706  
869

XSECTION 16 .32  
-----

1

TR20 ----- SCS

-

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
VERSION

06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
Dist.2.04TEST

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SUMMARY, JOB NO. 1

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SUMMARY TABLE 3  
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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	10	25	50	99
XSECTION 16 .32 -----						
ALTERNATE 1 869		202	405	564	706	
XSECTION 20 .05 -----						
ALTERNATE 1 224		71	122	157	188	
XSECTION 23 .41 -----						
ALTERNATE 1 1091		257	516	716	885	
XSECTION 30 .60 -----						
ALTERNATE 1 1640		378	771	1073	1331	
XSECTION 39 .07 -----						
ALTERNATE 1 298		95	162	211	252	
XSECTION 41 .64 -----						
ALTERNATE 1 1759		403	824	1147	1424	

XSECTION	44	.77				
-----						
ALTERNATE	1		494	1005	1396	1732
2130						
XSECTION	49	.82				
-----						
ALTERNATE	1		513	1046	1455	1807
2228						
XSECTION	50	.93				
-----						
ALTERNATE	1		575	1183	1650	2051
2525						
XSECTION	51	.93				
-----						
ALTERNATE	1		555	1153	1611	2008
2477						
XSECTION	56	.96				
-----						
ALTERNATE	1		565	1174	1642	2047
2527						
XSECTION	60	1.01				
-----						
ALTERNATE	1		570	1189	1666	2080
2570						
XSECTION	62	1.02				
-----						
ALTERNATE	1		574	1200	1682	2100
2597						
XSECTION	63	1.02				
-----						
ALTERNATE	1		543	1154	1627	2043
2534						

1

TR20 ----- SCS  
-

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	10	25	50	99
XSECTION	76	1.28				
-----						
ALTERNATE	1		594	1307	1860	2329
2900						

XSECTION 77 1.28

-----  
ALTERNATE 1 593 1306 1860 2329  
2900

XSECTION 88 1.55

-----  
ALTERNATE 1 630 1388 2007 2509  
3133

1  
TR20 ----- SCS  
-

Ellicott City Flood Study- All Combined SAs- No lg MGMT  
VERSION  
06/05/\*\* CN MGMT- EXISTING COND.- 2,10,50,100 yr (24hr); Std NOAA  
Dist.2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = xtra11.dat , GIVEN DATA FILE  
OUTPUT = xtra11.OUT , DATED  
06/05/\*\*,16:44:19

FILES GENERATED - DATED 06/05/\*\*,16:44:19

NONE!

TOTAL NUMBER OF WARNINGS = 24, MESSAGES = 10

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
 HYDROLOGY\*\*\*\*\*

JOB	TR-20	NOPLOTS				
TITLE	Ellicott City Flood Study-Tiber/South Sub-Drainage Areas					
TITLE	27 Subareas No MGMT - sTD NOAA_C 2,5,10,50,100-NoLGMGMT					
5	RAINFL	1	.1			
8	0.0000	0.0013	0.0023	0.0034	0.0044	
8	0.0055	0.0065	0.0076	0.0087	0.0098	
8	0.0109	0.0121	0.0132	0.0143	0.0155	
8	0.0167	0.0178	0.0190	0.0202	0.0214	
8	0.0226	0.0238	0.0251	0.0263	0.0276	
8	0.0288	0.0301	0.0314	0.0327	0.0340	
8	0.0353	0.0366	0.0379	0.0393	0.0406	
8	0.0420	0.0434	0.0447	0.0461	0.0475	
8	0.0489	0.0504	0.0518	0.0532	0.0547	
8	0.0562	0.0576	0.0591	0.0606	0.0621	
8	0.0636	0.0651	0.0667	0.0682	0.0697	
8	0.0713	0.0729	0.0745	0.0760	0.0776	
8	0.0793	0.0809	0.0826	0.0843	0.0861	
8	0.0879	0.0898	0.0916	0.0936	0.0955	
8	0.0975	0.0996	0.1017	0.1038	0.1060	
8	0.1082	0.1104	0.1127	0.1150	0.1174	
8	0.1198	0.1223	0.1247	0.1273	0.1298	
8	0.1324	0.1351	0.1378	0.1405	0.1432	
8	0.1461	0.1490	0.1521	0.1554	0.1588	
8	0.1623	0.1660	0.1699	0.1739	0.1780	
8	0.1823	0.1868	0.1914	0.1961	0.2010	
8	0.2061	0.2117	0.2179	0.2247	0.2321	
8	0.2400	0.2490	0.2591	0.2702	0.2825	
8	0.2955	0.3157	0.3370	0.3662	0.4067	
8	0.4766	0.5933	0.6338	0.6630	0.6843	
8	0.7045	0.7176	0.7298	0.7409	0.7510	
8	0.7600	0.7679	0.7753	0.7821	0.7883	
8	0.7939	0.7990	0.8039	0.8086	0.8132	
8	0.8177	0.8220	0.8261	0.8301	0.8340	
8	0.8377	0.8412	0.8446	0.8479	0.8510	
8	0.8540	0.8568	0.8595	0.8622	0.8649	
8	0.8676	0.8702	0.8727	0.8753	0.8778	
8	0.8802	0.8826	0.8850	0.8873	0.8896	
8	0.8918	0.8940	0.8962	0.8983	0.9004	
8	0.9025	0.9045	0.9064	0.9084	0.9103	
8	0.9121	0.9139	0.9157	0.9174	0.9191	
8	0.9208	0.9224	0.9240	0.9256	0.9271	
8	0.9287	0.9303	0.9318	0.9334	0.9349	
8	0.9364	0.9379	0.9394	0.9409	0.9424	
8	0.9439	0.9453	0.9468	0.9482	0.9496	
8	0.9511	0.9525	0.9539	0.9553	0.9566	
8	0.9580	0.9594	0.9607	0.9621	0.9634	
8	0.9647	0.9660	0.9673	0.9686	0.9699	
8	0.9712	0.9724	0.9737	0.9749	0.9762	
8	0.9774	0.9786	0.9798	0.9810	0.9822	
8	0.9834	0.9845	0.9857	0.9868	0.9879	

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	ENDTBL				
3	STRUCT	58			
9	ENDTBL				
2	XSECTN	007	1.0	319.00	
8			318.00	0.00	0.00
8			318.25	10.19	3.39
8			318.50	32.80	7.08
8			318.75	65.48	11.07
8			319.00	107.54	15.35
8			320.00	367.34	35.47
8			321.00	663.16	60.18
8			322.00	1052.26	89.31
8			323.00	1529.69	131.30
9	ENDTBL				
3	STRUCT	52			
9	ENDTBL				
2	XSECTN	011	1.0	415.00	
8			414.00	0.00	0.00
8			414.25	7.22	1.98
8			414.50	23.69	4.29
8			414.75	48.28	6.93
8			415.00	81.00	9.89
8			416.00	299.51	25.08
8			417.00	488.53	45.33
8			418.00	779.05	70.44
8			419.00	809.36	107.84
9	ENDTBL				
3	STRUCT	51			
9	ENDTBL				
2	XSECTN	016	1.0	331.00	
8			330.00	0.00	0.00
8			330.25	5.94	1.92
8			330.50	21.34	4.68
8			330.75	47.19	8.28
8			331.00	85.01	12.73
8			332.00	385.16	38.91
8			333.00	704.29	76.97
8			334.00	1202.25	125.34
8			335.00	1592.91	187.47
9	ENDTBL				
2	XSECTN	020	1.0	235.00	
8			234.00	0.00	0.00
8			234.25	9.06	3.27
8			234.50	29.33	6.89
8			234.75	58.86	10.87
8			235.00	97.22	15.19
8			236.00	339.40	36.03

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		237.00	586.83	61.50
8		238.00	902.53	90.59
8		239.00	1290.91	123.25
8		240.00	1750.59	159.40
8		241.00	1985.66	201.02
8		242.00	2381.26	250.13
9	ENDTBL			

3	STRUCT	47			
9	ENDTBL				
3	STRUCT	32			
9	ENDTBL				
3	STRUCT	34			
9	ENDTBL				
3	STRUCT	64			
9	ENDTBL				
2	XSECTN	030	1.0	357.00	
8			356.00	0.00	0.00
8			356.25	11.94	4.48
8			356.50	38.65	9.42
8			356.75	77.59	14.83
8			357.00	128.16	20.70
8			358.00	446.97	48.84
8			359.00	544.48	91.80
8			360.00	941.05	156.94
8			361.00	1597.14	242.00
9	ENDTBL				
2	XSECTN	035	1.0	317.00	
8			316.00	0.00	0.00
8			316.25	12.78	5.64
8			316.50	44.21	13.12
8			316.75	94.71	22.44
8			317.00	166.16	33.59
8			318.00	703.03	96.58
8			319.00	1203.58	187.92
8			320.00	2039.69	306.56
8			321.00	3441.07	443.04
9	ENDTBL				
3	STRUCT	33			
9	ENDTBL				
3	STRUCT	29			
9	ENDTBL				
2	XSECTN	042	1.0	223.00	
8			222.00	0.00	0.00
8			222.25	2.73	0.83
8			222.50	10.35	2.16
8			222.75	23.82	3.97
8			223.00	44.24	6.28
8			224.00	215.28	20.42
8			225.00	406.10	41.61
8			226.00	702.08	67.86

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)

\*\*\*\*\*

8			227.00	890.97	103.46
9	ENDTBL				
2	XSECTN	045	1.0	223.00	
8			222.00	0.00	0.00
8			222.25	2.28	0.83
8			222.50	8.62	2.16
8			222.75	19.85	3.97
8			223.00	36.86	6.28
8			224.00	179.35	20.41
8			225.00	338.28	41.30
8			226.00	584.84	67.85
8			227.00	830.09	103.44
8			228.00	1249.11	151.47
8			229.00	1307.14	232.37

8			230.00	2023.03	366.57		
9	ENDTBL						
3	STRUCT	40					
9	ENDTBL						
2	XSECTN	049	1.0	317.00			
8			316.00	0.00	0.00		
8			316.25	3.06	1.70		
8			316.50	11.11	4.19		
8			316.75	24.79	7.47		
8			317.00	44.94	11.55		
8			318.00	206.80	35.78		
8			319.00	333.28	74.89		
8			320.00	609.60	131.05		
9	ENDTBL						
3	STRUCT	43					
9	ENDTBL						
2	XSECTN	052	1.0	279.00			
8			276.00	0.00	0.00		
8			276.25	15.37	5.56		
8			276.50	49.97	11.77		
8			276.75	100.75	18.63		
8			277.00	167.09	26.14		
8			278.00	591.48	62.65		
8			279.00	793.41	115.06		
8			280.00	1313.82	188.91		
8			281.00	2138.14	282.44		
9	ENDTBL						
2	XSECTN	059	1.0	128.00			
8			129.00	0.00	0.00		
8			129.25	1.13	0.50		
8			129.50	5.18	1.55		
8			129.75	13.39	3.16		
8			130.00	26.84	5.32		
8			131.00	191.72	26.64		
8			132.00	508.02	58.78		
8			133.00	945.51	95.90		

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			134.00	1449.27	136.08		
8			135.00	2016.68	178.64		
8			138.00	4199.86	314.48		
9	ENDTBL						
6	RUNOFF	1 001	1 0.2101	77.19	0.319	1	1 141
6	RUNOFF	1 002	2 0.0292	74.00	0.232	1	1 142
6	RESVOR	2 58 2 3				1	1
SWMF58							
6	ADDHYD	4 003	1 3 4			1	
1+2+58							
6	RUNOFF	1 004	1 0.0617	81.09	0.170	1	1 143
6	ADDHYD	4 005	4 1 2			1	1+2+3
6	RUNOFF	1 006	1 0.0799	74.51	0.216	1	1 144
6	REACH	3 007	2 3	2055.0		1	
6	ADDHYD	4 008	1 3 2			1	SA14
6	RUNOFF	1 009	1 0.0604	78.12	0.220	1	1 153
6	RUNOFF	1 010	3 0.0264	78.36	0.290	1	1 151
6	RESVOR	2 52 3 4				1	1
SWMF52							
6	REACH	3 011	4 5	1396.5		1	
6	ADDHYD	4 012	1 5 6			1	1



153+151										
6	RUNOFF	1	013		1	0.0447	83.97	0.210	1	1 152
6	RESVOR	2		51 1	3				1	1
SWMF51										
6	ADDHYD	4	014		6 3 1				1	
012+51										
6	RUNOFF	1	015		3	0.0815	76.80	0.176	1	1 154
6	REACH	3	016		1 4		2448.6		1	
6	ADDHYD	4	017		3 4 5				1	1 SA15
6	ADDHYD	4	018		2 5 1				1	1
SA14+15										
6	RUNOFF	1	019		2	0.2701	73.58	0.425	1	1 131
6	REACH	3	020		1 3		4470.1		1	1 SA13
6	ADDHYD	4	021		2 3 4				1	1
14+15+13										
6	RUNOFF	1	022		1	0.0185	83.00	0.283	1	1 121
6	RESVOR	2		47 1	2				1	1
SWMF47										
6	RUNOFF	1	023		3	0.0812	83.00	0.245	1	1 122
6	RESVOR	2		32 3	5				1	1
SWMF32										
6	ADDHYD	4	024		2 5 1				1	
121+122										
6	RUNOFF	1	025		2	0.0465	82.74	0.236	1	1 123
6	ADDHYD	4	026		1 2 5				1	
024+123										
6	RESVOR	2		34 5	3				1	1
SWMF34										
6	RUNOFF	1	027		2	0.0126	76.91	0.100	1	1 124
6	ADDHYD	4	028		3 2 5				1	1 SA12
6	RUNOFF	1	029		2	0.0499	87.76	0.100	1	1 111
6	RESVOR	2		64 2	3				1	1
SWMF64										
6	REACH	3	030		3 6		1561.1		1	
6	RUNOFF	1	031		7	0.1745	85.00	0.449	1	1 112
6	ADDHYD	4	032		6 7 3				1	
111+112										
6	RUNOFF	1	033		1	0.0477	83.06	0.258	1	1 113
6	ADDHYD	4	034		3 1 2				1	
032+113										
6	REACH	3	035		2 3		2077.3		1	
6	RUNOFF	1	036		6	0.0244	83.54	0.370	1	1 114
6	RESVOR	2		33 6	7				1	1
SWMF33										
6	ADDHYD	4	037		3 7 1				1	
111-114										
6	RUNOFF	1	038		2	0.0684	79.13	0.136	1	1 115

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

6	ADDHYD	4	039		1 2 3				1	1 SA11
6	ADDHYD	4	040		5 3 6				1	12+11
6	RUNOFF	1	041		1	0.0236	82.59	0.200	1	1 101
6	RESVOR	2		29 1	3				1	1
SWMF29										
6	REACH	3	042		3 5		2112.0		1	
6	RUNOFF	1	043		1	0.1211	62.77	0.263	1	1 102
6	ADDHYD	4	044		5 1 2				1	1 SA10
6	REACH	3	045		6 3		3147.6		1	
6	ADDHYD	4	046		2 3 1				1	1

```

10+12+11
6 RUNOFF 1 047      2 0.2822      80.17      0.434      1      1 81
6 RUNOFF 1 048      3 0.0248      85.45      0.190      1      1 82
6 RESVOR 2      40 3 5      1      1
SWMF40
6 REACH 3 049      5 6      1829.0      1
6 ADDHYD 4 050      2 6 7      1      81+82
6 RUNOFF 1 051      2 0.0218      81.19      0.220      1      1 83
6 RESVOR 2      43 2 3      1      1
SWMF43
6 ADDHYD 4 052      7 3 2      1      1
81+82+83
6 REACH 3 052      2 3      4744.2      1
6 RUNOFF 1 053      5 0.2083      62.56      0.262      1      1 84
6 ADDHYD 4 054      3 5 2      1      1 SA8
6 ADDHYD 4 055      4 1 3      1      1 13+10
6 RUNOFF 1 056      6 0.0166      65.36      0.134      1      1 92
6 ADDHYD 4 057      3 6 7      1      1
13+10+92
6 RUNOFF 1 058      1 0.0357      81.76      0.141      1      1 93
6 REACH 3 059      2 3      1670.5      1
6 ADDHYD 4 060      1 3 4      1
SA8+93
6 ADDHYD 4 061      7 4 1      1      92+93
6 RUNOFF 1 062      2 0.0233      86.98      0.186      1      1 91
6 ADDHYD 4 063      1 2 3      1      1
OUTFALL
ENDATA
7 INCREM 6      .06
7 COMPUT 7 001      063 0.0      3.19      1.01 2 1 2
  ENDCMP 1
7 COMPUT 7 001      063 0.0      4.10      1.01 2 1 05
  ENDCMP 1
7 COMPUT 7 001      063 0.0      4.91      1.01 2 1 10
  ENDCMP 1
7 COMPUT 7 001      063 0.0      6.14      1.01 2 1 25
  ENDCMP 1
7 COMPUT 7 001      063 0.0      7.23      1.01 2 1 50
  ENDCMP 1
7 COMPUT 7 001      063 0.0      8.47      1.01 2 1 99
  ENDCMP 1
  ENDCMP 1
  ENDJOB 2

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\*\*\*\*\*END OF 80-80

LIST\*\*\*\*\*

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EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .060 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 3.19 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS

ALTERNATE NO. = 1

STORM NO. = 2

RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	136.6	(RUNOFF)
20.68	4.2	(RUNOFF)
24.01	3.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.22 WATERSHED INCHES; 165 CFS-HRS; 13.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	18.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.03 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	18.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.03 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 3

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	153.4	(NULL)
18.67	5.3	(NULL)
21.95	4.3	(NULL)
24.02	3.7	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.19 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	63.3	(RUNOFF)
15.84	2.4	(RUNOFF)
24.00	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.47 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	206.7	(NULL)
20.64	6.1	(NULL)
23.09	5.1	(NULL)
24.01	4.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.25 WATERSHED INCHES; 243 CFS-HRS; 20.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	53.1	(RUNOFF)
17.33	2.0	(RUNOFF)
24.02	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.06 WATERSHED INCHES; 55 CFS-HRS; 4.5 ACRE-FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	200.5	319.36
20.70	6.1	318.15
23.16	5.1	318.13
24.07	4.8	318.12

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.25 WATERSHED INCHES; 243 CFS-HRS; 20.0 ACRE-FEET.

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OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	245.6	(NULL)
18.68	8.5	(NULL)
20.68	7.5	(NULL)
23.13	6.3	(NULL)
24.04	5.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.21 WATERSHED INCHES; 297 CFS-HRS; 24.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	49.0	(RUNOFF)
15.83	2.2	(RUNOFF)
23.09	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.27 WATERSHED INCHES; 50 CFS-HRS; 4.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	19.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.29 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-FEET.

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	19.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.29 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-FEET.

OPERATION REACH XSECTION 11

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	18.6	414.42

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.29 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.21	63.2	(NULL)
18.65	2.0	(NULL)
24.03	1.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.28 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	49.3	(RUNOFF)
20.86	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.67 WATERSHED INCHES; 48 CFS-HRS; 4.0 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	49.3	(NULL)
20.86	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.67 WATERSHED INCHES; 48 CFS-HRS; 4.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	111.8	(NULL)
19.47	3.1	(NULL)
24.02	2.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.41 WATERSHED INCHES; 120 CFS-HRS; 9.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	66.3	(RUNOFF)
17.35	2.2	(RUNOFF)
24.01	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.19 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-FEET.

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	102.5	331.06
18.71	3.2	330.13
24.09	2.2	330.09

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.41 WATERSHED INCHES; 120 CFS-HRS; 9.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	151.0	(NULL)
21.95	4.1	(NULL)
24.02	3.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.33 WATERSHED INCHES; 182 CFS-HRS; 15.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	395.5	(NULL)
18.66	13.5	(NULL)
20.12	12.5	(NULL)
20.66	11.9	(NULL)
21.97	11.0	(NULL)
23.12	10.1	(NULL)
24.03	9.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.25 WATERSHED INCHES; 480 CFS-HRS; 39.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 19

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	121.9	(RUNOFF)
20.13	5.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.01 WATERSHED INCHES; 175 CFS-HRS; 14.5 ACRE-FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	360.0	236.08
20.19	12.5	234.29
23.19	10.0	234.26
24.09	9.4	234.25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.25 WATERSHED INCHES; 479 CFS-HRS; 39.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	480.4	(NULL)
20.17	17.5	(NULL)
23.16	14.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.17 WATERSHED INCHES; 655 CFS-HRS; 54.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	17.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.60 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	17.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.60 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-FEET.

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OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	80.0	(RUNOFF)
19.47	2.0	(RUNOFF)
24.02	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.60 WATERSHED INCHES; 84 CFS-HRS; 6.9 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	80.0	(NULL)
19.47	2.0	(NULL)
24.02	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.60 WATERSHED INCHES; 84 CFS-HRS; 6.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	97.0	(NULL)
21.97	2.1	(NULL)
24.02	1.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.60 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	46.1	(RUNOFF)
21.45	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.58 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 26

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	143.0	(NULL)
21.97	3.1	(NULL)
24.02	2.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.59 WATERSHED INCHES; 150 CFS-HRS; 12.4 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	143.0	(NULL)
21.97	3.1	(NULL)
24.02	2.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.59 WATERSHED INCHES; 150 CFS-HRS; 12.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	12.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.19 WATERSHED INCHES; 10 CFS-HRS; .8 ACRE-  
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -3.3%.  
\*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	150.9	(NULL)
18.83	4.0	(NULL)
22.72	3.1	(NULL)
23.09	3.0	(NULL)
24.00	2.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.56 WATERSHED INCHES; 160 CFS-HRS; 13.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 29

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	80.5	(RUNOFF)
15.82	2.3	(RUNOFF)
23.02	1.1	(RUNOFF)
23.68	1.0	(RUNOFF)
23.99	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.96 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -.5%.  
\*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	80.5	(NULL)
15.82	2.3	(NULL)
23.02	1.1	(NULL)
23.68	1.0	(NULL)
23.99	1.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.96 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
FEET.

OPERATION REACH XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	74.0	356.73
15.89	2.3	356.05
23.09	1.1	356.02
23.75	1.0	356.02
24.05	1.1	356.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
-----------------------------------	---------------------	------

12.33 141.6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.75 WATERSHED INCHES; 197 CFS-HRS; 16.3 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	191.3	(NULL)
18.86	6.1	(NULL)
21.75	5.0	(NULL)
24.04	4.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.80 WATERSHED INCHES; 260 CFS-HRS; 21.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	46.0	(RUNOFF)
21.76	1.0	(RUNOFF)
21.97	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.60 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	236.3	(NULL)
18.86	7.4	(NULL)
21.75	6.0	(NULL)
24.04	5.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.76 WATERSHED INCHES; 310 CFS-HRS; 25.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	221.5	317.10
20.68	6.5	316.13

24.10 5.1 316.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.76 WATERSHED INCHES; 309 CFS-HRS; 25.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 36

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.27	20.5	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.64 WATERSHED INCHES; 26 CFS-HRS; 2.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(NULL)
12.27	20.5	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.64 WATERSHED INCHES; 26 CFS-HRS; 2.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(NULL)
12.33	241.0	(NULL)
20.68	7.1	(NULL)
24.09	5.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.75 WATERSHED INCHES; 335 CFS-HRS; 27.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.13	69.3	(RUNOFF)
15.84	2.6	(RUNOFF)
17.34	2.0	(RUNOFF)
24.00	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.33 WATERSHED INCHES; 59 CFS-HRS; 4.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	271.7	(NULL)
23.99	6.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.67 WATERSHED INCHES; 394 CFS-HRS; 32.6 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	402.1	(NULL)
20.61	12.2	(NULL)
23.05	10.2	(NULL)
23.99	9.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.64 WATERSHED INCHES; 554 CFS-HRS; 45.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	24.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.57 WATERSHED INCHES; 24 CFS-HRS; 2.0 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	24.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.57 WATERSHED INCHES; 24 CFS-HRS; 2.0 ACRE-  
FEET.

OPERATION REACH XSECTION 42

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
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12.26 22.5 222.73

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.57 WATERSHED INCHES; 24 CFS-HRS; 2.0 ACRE-
FEET.

OPERATION RUNOFF XSECTION 43

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.26 26.2 (RUNOFF)
24.03 1.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.51 WATERSHED INCHES; 40 CFS-HRS; 3.3 ACRE-
FEET.

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OPERATION ADDHYD XSECTION 44

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.26 48.7 (NULL)
20.12 2.1 (NULL)
24.03 1.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.68 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-
FEET.

OPERATION REACH XSECTION 45

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.37 374.1 225.15
24.05 9.5 222.52

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.64 WATERSHED INCHES; 554 CFS-HRS; 45.8 ACRE-
FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.36 414.2 (NULL)
20.08 14.7 (NULL)
23.08 11.9 (NULL)
24.04 11.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

1.43 WATERSHED INCHES; 618 CFS-HRS; 51.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	185.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.40 WATERSHED INCHES; 256 CFS-HRS; 21.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	29.9	(RUNOFF)
15.84	1.1	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.78 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	29.9	(NULL)
15.84	1.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.78 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-  
FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	25.1	316.75

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.78 WATERSHED INCHES; 28 CFS-HRS; 2.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		



12.33	210.1	(NULL)
20.14	6.9	(NULL)
23.14	5.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.43 WATERSHED INCHES; 284 CFS-HRS; 23.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	20.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.47 WATERSHED INCHES; 21 CFS-HRS; 1.7 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	20.7	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.47 WATERSHED INCHES; 21 CFS-HRS; 1.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	223.9	277.13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.44 WATERSHED INCHES; 305 CFS-HRS; 25.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	200.1	277.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.44 WATERSHED INCHES; 305 CFS-HRS; 25.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	43.9	(RUNOFF)
23.11	2.1	(RUNOFF)
23.76	2.0	(RUNOFF)
24.03	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .50 WATERSHED INCHES; 67 CFS-HRS; 5.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	231.8	(NULL)
24.00	7.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.07 WATERSHED INCHES; 372 CFS-HRS; 30.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 55

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	894.5	(NULL)
20.13	32.2	(NULL)
24.04	24.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.29 WATERSHED INCHES; 1273 CFS-HRS; 105.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	6.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .61 WATERSHED INCHES; 7 CFS-HRS; .5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	897.5	(NULL)

24.03 24.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.28 WATERSHED INCHES; 1279 CFS-HRS; 105.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	40.7	(RUNOFF)
17.34	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.51 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.52	229.1	131.12

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.07 WATERSHED INCHES; 372 CFS-HRS; 30.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.51	239.8	(NULL)
23.98	8.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.10 WATERSHED INCHES; 407 CFS-HRS; 33.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	1109.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.23 WATERSHED INCHES; 1686 CFS-HRS; 139.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	30.3	(RUNOFF)
15.85	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	1122.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.24 WATERSHED INCHES; 1714 CFS-HRS; 141.7 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 4.10 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. = 5 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	217.7	(RUNOFF)
20.12	6.2	(RUNOFF)
21.93	5.5	(RUNOFF)
24.02	4.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 258 CFS-HRS; 21.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	30.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.67 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-FEET.

OPERATION RESVOR     STRUCTURE 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	30.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.67 WATERSHED INCHES;     31 CFS-HRS;     2.6 ACRE-FEET.

OPERATION ADDHYD     XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	245.9	(NULL)
18.67	7.6	(NULL)
20.12	7.0	(NULL)
21.95	6.2	(NULL)
24.02	5.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.88 WATERSHED INCHES;     290 CFS-HRS;     23.9 ACRE-FEET.

OPERATION RUNOFF     XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	95.7	(RUNOFF)
15.84	3.4	(RUNOFF)
19.47	2.0	(RUNOFF)
24.00	1.5	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.21 WATERSHED INCHES;     88 CFS-HRS;     7.3 ACRE-FEET.

OPERATION ADDHYD     XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	328.2	(NULL)
18.83	9.7	(NULL)
20.09	9.0	(NULL)
20.64	8.6	(NULL)
23.09	7.2	(NULL)
24.01	6.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

1.94 WATERSHED INCHES; 378 CFS-HRS; 31.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.19	87.6	(RUNOFF)
15.83	3.8	(RUNOFF)
21.46	2.0	(RUNOFF)
24.02	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.70 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-  
FEET.

OPERATION REACH XSECTION 7

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.27	320.7	319.82
18.87	9.7	318.24
20.70	8.6	318.21
23.15	7.2	318.18
24.07	6.8	318.17

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.94 WATERSHED INCHES; 378 CFS-HRS; 31.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 8

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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.26	397.4	(NULL)
18.87	12.1	(NULL)
20.13	11.2	(NULL)
20.68	10.8	(NULL)
22.00	9.9	(NULL)
23.13	9.0	(NULL)
24.04	8.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.89 WATERSHED INCHES; 465 CFS-HRS; 38.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
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12.19	77.2	(RUNOFF)
15.82	3.1	(RUNOFF)
24.03	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.98 WATERSHED INCHES; 77 CFS-HRS; 6.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	30.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.99 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	30.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.99 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	29.5	414.56

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.99 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	100.4	(NULL)
23.09	2.1	(NULL)
24.03	2.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.98 WATERSHED INCHES; 111 CFS-HRS; 9.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	71.9	(RUNOFF)
17.33	2.0	(RUNOFF)
24.02	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.45 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	71.9	(NULL)
17.33	2.0	(NULL)
24.02	1.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.45 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	171.3	(NULL)
20.09	4.1	(NULL)
23.74	3.1	(NULL)
24.03	3.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.14 WATERSHED INCHES; 182 CFS-HRS; 15.0 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	106.0	(RUNOFF)
15.85	4.1	(RUNOFF)
17.34	3.2	(RUNOFF)
22.46	2.0	(RUNOFF)
24.01	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.87 WATERSHED INCHES; 99 CFS-HRS; 8.1 ACRE-  
FEET.



OPERATION REACH XSECTION 16

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	159.4	331.25
20.16	4.1	330.17
24.09	3.1	330.13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.14 WATERSHED INCHES; 182 CFS-HRS; 15.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	238.5	(NULL)
18.65	7.1	(NULL)
20.64	6.2	(NULL)
23.09	5.2	(NULL)
24.02	4.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.04 WATERSHED INCHES; 280 CFS-HRS; 23.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	634.1	(NULL)
18.66	19.2	(NULL)
20.12	17.7	(NULL)
20.67	17.0	(NULL)
21.97	15.6	(NULL)
23.12	14.2	(NULL)
24.04	13.4	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.95 WATERSHED INCHES; 746 CFS-HRS; 61.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	207.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

1.64 WATERSHED INCHES; 286 CFS-HRS; 23.6 ACRE-  
FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.37	566.5	236.92
20.19	17.7	234.36
23.18	14.2	234.31
24.09	13.3	234.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.95 WATERSHED INCHES; 746 CFS-HRS; 61.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	770.5	(NULL)
20.16	25.1	(NULL)
23.16	20.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.85 WATERSHED INCHES; 1031 CFS-HRS; 85.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	25.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.37 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 47

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	25.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.37 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	119.0	(RUNOFF)
23.10	2.1	(RUNOFF)
23.75	2.0	(RUNOFF)
24.02	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.37 WATERSHED INCHES; 124 CFS-HRS; 10.3 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	119.0	(NULL)
23.10	2.1	(NULL)
23.75	2.0	(NULL)
24.02	2.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.37 WATERSHED INCHES; 124 CFS-HRS; 10.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	144.0	(NULL)
20.86	3.1	(NULL)
24.02	2.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.37 WATERSHED INCHES; 153 CFS-HRS; 12.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	68.4	(RUNOFF)
24.03	1.1	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.35 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	212.3	(NULL)
18.87	5.2	(NULL)
21.97	4.2	(NULL)
24.03	3.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.36 WATERSHED INCHES; 223 CFS-HRS; 18.4 ACRE-FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	212.3	(NULL)
18.87	5.2	(NULL)
21.97	4.2	(NULL)
24.03	3.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.36 WATERSHED INCHES; 223 CFS-HRS; 18.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	20.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.88 WATERSHED INCHES; 15 CFS-HRS; 1.3 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27. THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .0%.  
 \*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	225.0	(NULL)
20.09	5.2	(NULL)
23.09	4.1	(NULL)
24.00	3.9	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.32 WATERSHED INCHES; 238 CFS-HRS; 19.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	113.0	(RUNOFF)
15.82	3.1	(RUNOFF)
17.32	2.4	(RUNOFF)
23.99	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.79 WATERSHED INCHES; 90 CFS-HRS; 7.4 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .0%.  
 \*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	113.0	(NULL)
15.82	3.1	(NULL)
17.32	2.4	(NULL)
23.99	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.79 WATERSHED INCHES; 90 CFS-HRS; 7.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	105.9	356.89
15.89	3.1	356.06
17.39	2.4	356.05
24.05	1.4	356.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.80 WATERSHED INCHES; 90 CFS-HRS; 7.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	206.7	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 287 CFS-HRS; 23.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.23	276.5	(NULL)
18.86	8.3	(NULL)
20.87	7.3	(NULL)
23.09	6.1	(NULL)
24.04	5.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.60 WATERSHED INCHES; 377 CFS-HRS; 31.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	68.1	(RUNOFF)
24.03	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.38 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.22	343.4	(NULL)
18.63	10.1	(NULL)
20.09	9.3	(NULL)
21.97	8.1	(NULL)
23.09	7.4	(NULL)
24.04	7.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.56 WATERSHED INCHES; 450 CFS-HRS; 37.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 35

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.33	326.6	317.30

20.16	9.3	316.18
22.00	8.1	316.16
23.15	7.4	316.14
24.10	6.9	316.14

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.56 WATERSHED INCHES; 450 CFS-HRS; 37.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	30.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.42 WATERSHED INCHES; 38 CFS-HRS; 3.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	30.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.42 WATERSHED INCHES; 38 CFS-HRS; 3.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	355.7	(NULL)
20.16	10.1	(NULL)
20.68	9.6	(NULL)
23.15	8.0	(NULL)
24.09	7.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 488 CFS-HRS; 40.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	107.3	(RUNOFF)
15.84	3.7	(RUNOFF)
20.04	2.1	(RUNOFF)

20.60	2.0	(RUNOFF)
20.83	2.0	(RUNOFF)
24.00	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.05 WATERSHED INCHES; 91 CFS-HRS; 7.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	401.9	(NULL)
23.99	9.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.46 WATERSHED INCHES; 578 CFS-HRS; 47.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	600.9	(NULL)
20.05	17.4	(NULL)
20.62	16.6	(NULL)
23.71	13.1	(NULL)
23.99	13.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.42 WATERSHED INCHES; 817 CFS-HRS; 67.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	36.9	(RUNOFF)
17.34	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.34 WATERSHED INCHES; 36 CFS-HRS; 2.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 29

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	36.9	(NULL)
17.34	1.0	(NULL)



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.34 WATERSHED INCHES; 36 CFS-HRS; 2.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	34.1	222.88

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.34 WATERSHED INCHES; 36 CFS-HRS; 2.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	60.9	(RUNOFF)
21.98	2.2	(RUNOFF)
24.03	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .96 WATERSHED INCHES; 75 CFS-HRS; 6.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	94.7	(NULL)
20.86	3.0	(NULL)
24.03	2.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.18 WATERSHED INCHES; 111 CFS-HRS; 9.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	558.6	225.89
24.05	12.9	222.60

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.42 WATERSHED INCHES; 817 CFS-HRS; 67.5 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	634.2	(NULL)
20.09	20.6	(NULL)
23.09	16.5	(NULL)
24.04	15.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.15 WATERSHED INCHES; 927 CFS-HRS; 76.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	285.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.14 WATERSHED INCHES; 389 CFS-HRS; 32.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	43.5	(RUNOFF)
17.34	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.59 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	43.5	(NULL)
17.34	1.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.59 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	37.3	316.91

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.58 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	322.5	(NULL)
20.14	9.7	(NULL)
23.14	7.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.17 WATERSHED INCHES; 430 CFS-HRS; 35.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	31.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.22 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	31.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.22 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	343.4	277.42

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.17 WATERSHED INCHES; 462 CFS-HRS; 38.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	312.9	277.34

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.17 WATERSHED INCHES; 461 CFS-HRS; 38.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	103.1	(RUNOFF)
20.11	4.2	(RUNOFF)
20.66	4.0	(RUNOFF)
24.02	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.95 WATERSHED INCHES; 127 CFS-HRS; 10.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	379.7	(NULL)
24.00	11.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.70 WATERSHED INCHES; 589 CFS-HRS; 48.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	1403.4	(NULL)
24.03	34.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.98 WATERSHED INCHES; 1959 CFS-HRS; 161.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.14	13.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.11 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 57

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	1409.0	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.97 WATERSHED INCHES;		162.9 ACRE-
FEET.		

## OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	60.8	(RUNOFF)
15.45	2.1	(RUNOFF)
15.84	2.0	(RUNOFF)
21.45	1.0	(RUNOFF)
21.73	1.0	(RUNOFF)
21.94	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.27 WATERSHED INCHES;		4.3 ACRE-
FEET.		

## OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	376.9	131.59
24.04	11.0	129.68
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.70 WATERSHED INCHES;		48.7 ACRE-
FEET.		

## OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	393.0	(NULL)
23.98	11.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.73 WATERSHED INCHES;		53.0 ACRE-
FEET.		

## OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	1773.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.91 WATERSHED INCHES;		215.8 ACRE-
FEET.		

FEET.

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OPERATION RUNOFF XSECTION 62

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.16	42.9	(RUNOFF)
17.34	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.72 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.37	1792.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.92 WATERSHED INCHES; 2653 CFS-HRS; 219.2 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =10 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.25	295.0	(RUNOFF)
18.67	8.6	(RUNOFF)
20.67	7.5	(RUNOFF)
23.12	6.3	(RUNOFF)
24.01	5.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.56 WATERSHED INCHES; 347 CFS-HRS; 28.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 2

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	42.1	(RUNOFF)
20.09	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.29 WATERSHED INCHES;	43 CFS-HRS;	3.6 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	42.1	(NULL)
20.09	1.0	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.29 WATERSHED INCHES;	43 CFS-HRS;	3.6 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	333.9	(NULL)
18.66	9.7	(NULL)
20.67	8.5	(NULL)
23.11	7.2	(NULL)
24.01	6.6	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.53 WATERSHED INCHES;	391 CFS-HRS;	32.3 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	125.5	(RUNOFF)
15.84	4.3	(RUNOFF)
17.34	3.3	(RUNOFF)
21.95	2.2	(RUNOFF)
24.00	1.9	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.91 WATERSHED INCHES;	116 CFS-HRS;	9.6 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 5

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	441.5	(NULL)
18.82	12.3	(NULL)
20.09	11.4	(NULL)
20.64	10.9	(NULL)
23.09	9.1	(NULL)
24.01	8.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.61 WATERSHED INCHES; 506 CFS-HRS; 41.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	121.4	(RUNOFF)
15.83	4.9	(RUNOFF)
18.87	3.1	(RUNOFF)
24.02	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.33 WATERSHED INCHES; 120 CFS-HRS; 9.9 ACRE-FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	432.3	320.22
18.88	12.3	318.27
20.15	11.4	318.26
20.70	10.9	318.26
23.15	9.1	318.22
24.07	8.5	318.21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.61 WATERSHED INCHES; 506 CFS-HRS; 41.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.25	537.5	(NULL)
18.87	15.3	(NULL)
20.13	14.3	(NULL)
20.85	13.5	(NULL)
22.00	12.5	(NULL)
23.13	11.4	(NULL)
24.04	10.7	(NULL)



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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 627 CFS-HRS; 51.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	103.4	(RUNOFF)
21.97	2.0	(RUNOFF)
24.02	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.64 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	40.4	(RUNOFF)
18.66	1.1	(RUNOFF)
20.12	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.67 WATERSHED INCHES; 45 CFS-HRS; 3.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	40.4	(NULL)
18.66	1.1	(NULL)
20.12	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.67 WATERSHED INCHES; 45 CFS-HRS; 3.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	39.9	414.66
20.19	1.0	414.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.66 WATERSHED INCHES; 45 CFS-HRS; 3.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 12  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	134.9	(NULL)
21.45	3.0	(NULL)
24.02	2.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.65 WATERSHED INCHES; 148 CFS-HRS; 12.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	92.4	(RUNOFF)
15.84	3.2	(RUNOFF)
17.32	2.5	(RUNOFF)
18.64	2.0	(RUNOFF)
24.01	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.18 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	92.4	(NULL)
15.84	3.2	(NULL)
17.32	2.5	(NULL)
18.64	2.0	(NULL)
24.01	1.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.18 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	226.3	(NULL)
20.09	5.2	(NULL)
23.09	4.1	(NULL)
24.02	3.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.83 WATERSHED INCHES; 240 CFS-HRS; 19.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	143.3	(RUNOFF)
15.84	5.3	(RUNOFF)
17.34	4.1	(RUNOFF)
19.75	3.1	(RUNOFF)
20.06	3.1	(RUNOFF)
24.01	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.53 WATERSHED INCHES; 133 CFS-HRS; 11.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	212.4	331.42
20.16	5.2	330.22
23.16	4.1	330.17
24.09	3.8	330.16

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.83 WATERSHED INCHES; 240 CFS-HRS; 19.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	321.3	(NULL)
20.10	8.2	(NULL)
21.96	7.2	(NULL)
23.75	6.2	(NULL)
24.02	6.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.71 WATERSHED INCHES; 373 CFS-HRS; 30.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.24	855.7	(NULL)
18.66	24.4	(NULL)
20.12	22.4	(NULL)
20.67	21.5	(NULL)
21.97	19.7	(NULL)
23.12	18.0	(NULL)
24.03	16.9	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.61 WATERSHED INCHES; 1000 CFS-HRS; 82.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	289.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.26 WATERSHED INCHES; 393 CFS-HRS; 32.5 ACRE-  
FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	762.2	237.56
20.19	22.4	234.41
23.18	17.9	234.36
24.09	16.7	234.34

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.61 WATERSHED INCHES; 1000 CFS-HRS; 82.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	1046.1	(NULL)
20.16	31.9	(NULL)
23.15	25.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.50 WATERSHED INCHES; 1393 CFS-HRS; 115.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION(FEET)  
 12.22                                      32.9                                      (RUNOFF)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.09 WATERSHED INCHES;                      37 CFS-HRS;                      3.0 ACRE-  
 FEET.

OPERATION RESVOR      STRUCTURE 47  
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PEAK TIME(HRS)                                      PEAK DISCHARGE(CFS)                                      PEAK  
 ELEVATION(FEET)  
 12.22                                      32.9                                      (NULL)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.09 WATERSHED INCHES;                      37 CFS-HRS;                      3.0 ACRE-  
 FEET.

OPERATION RUNOFF      XSECTION 23  
 PEAK TIME(HRS)                                      PEAK DISCHARGE(CFS)                                      PEAK  
 ELEVATION(FEET)  
 12.20                                      154.3                                      (RUNOFF)  
 20.87                                      3.1                                      (RUNOFF)  
 24.03                                      2.5                                      (RUNOFF)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.09 WATERSHED INCHES;                      162 CFS-HRS;                      13.4 ACRE-  
 FEET.

OPERATION RESVOR      STRUCTURE 32  
 PEAK TIME(HRS)                                      PEAK DISCHARGE(CFS)                                      PEAK  
 ELEVATION(FEET)  
 12.20                                      154.3                                      (NULL)  
 20.87                                      3.1                                      (NULL)  
 24.03                                      2.5                                      (NULL)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.09 WATERSHED INCHES;                      162 CFS-HRS;                      13.4 ACRE-  
 FEET.

OPERATION ADDHYD      XSECTION 24  
 PEAK TIME(HRS)                                      PEAK DISCHARGE(CFS)                                      PEAK  
 ELEVATION(FEET)  
 12.20                                      186.9                                      (NULL)  
 20.10                                      4.1                                      (NULL)  
 23.75                                      3.1                                      (NULL)  
 24.03                                      3.0                                      (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.09 WATERSHED INCHES; 199 CFS-HRS; 16.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	89.1	(RUNOFF)
18.87	2.0	(RUNOFF)
24.02	1.4	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.07 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	275.8	(NULL)
18.87	6.4	(NULL)
21.97	5.2	(NULL)
24.02	4.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.08 WATERSHED INCHES; 291 CFS-HRS; 24.0 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	275.8	(NULL)
18.87	6.4	(NULL)
21.97	5.2	(NULL)
24.02	4.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.08 WATERSHED INCHES; 291 CFS-HRS; 24.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	26.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.54 WATERSHED INCHES; 21 CFS-HRS; 1.7 ACRE-

FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -1.0%.  
 \*\*\*

OPERATION ADDHYD XSECTION 28

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TR20 ----- SCS

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	292.9	(NULL)
18.64	7.0	(NULL)
20.81	6.1	(NULL)
23.09	5.1	(NULL)
24.00	4.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.04 WATERSHED INCHES; 312 CFS-HRS; 25.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	141.9	(RUNOFF)
15.82	3.8	(RUNOFF)
20.02	2.2	(RUNOFF)
20.58	2.1	(RUNOFF)
20.82	2.1	(RUNOFF)
23.99	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.56 WATERSHED INCHES; 115 CFS-HRS; 9.5 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .3%.  
 \*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	141.9	(NULL)
15.82	3.8	(NULL)
20.02	2.2	(NULL)
20.58	2.1	(NULL)
20.82	2.1	(NULL)
23.99	1.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.56 WATERSHED INCHES; 115 CFS-HRS; 9.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 30

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	134.5	357.02
15.89	3.8	356.08
20.09	2.2	356.05
20.65	2.1	356.04
20.88	2.0	356.04
24.05	1.8	356.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.54 WATERSHED INCHES; 114 CFS-HRS; 9.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	264.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.28 WATERSHED INCHES; 370 CFS-HRS; 30.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	351.7	(NULL)
18.86	10.2	(NULL)
20.62	9.1	(NULL)
21.97	8.3	(NULL)
23.74	7.1	(NULL)
24.04	7.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.34 WATERSHED INCHES; 484 CFS-HRS; 40.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	88.5	(RUNOFF)



18.65 2.1 (RUNOFF)  
 24.02 1.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.10 WATERSHED INCHES; 95 CFS-HRS; 7.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 34

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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.21	439.0	(NULL)
18.86	12.3	(NULL)
20.09	11.4	(NULL)
21.75	10.1	(NULL)
23.09	9.1	(NULL)
24.04	8.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.30 WATERSHED INCHES; 579 CFS-HRS; 47.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 35

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.32	419.8	317.47
20.16	11.4	316.22
20.91	10.8	316.21
23.15	9.1	316.18
24.10	8.5	316.17

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.30 WATERSHED INCHES; 579 CFS-HRS; 47.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.27	38.8	(RUNOFF)
20.14	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.14 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 33

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
-----------------	----------------------	------

ELEVATION(FEET)  
 12.27 38.8 (NULL)  
 20.14 1.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.14 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 37

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	457.7	(NULL)
20.15	12.4	(NULL)
20.91	11.7	(NULL)
22.01	10.8	(NULL)
24.10	9.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.29 WATERSHED INCHES; 629 CFS-HRS; 52.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	142.5	(RUNOFF)
15.84	4.6	(RUNOFF)
17.34	3.6	(RUNOFF)
23.04	2.2	(RUNOFF)
23.70	2.0	(RUNOFF)
24.00	2.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.74 WATERSHED INCHES; 121 CFS-HRS; 10.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	520.3	(NULL)
23.99	11.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.18 WATERSHED INCHES; 750 CFS-HRS; 61.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.24	783.7	(NULL)
20.05	21.5	(NULL)
20.62	20.6	(NULL)
23.05	17.1	(NULL)
23.71	16.2	(NULL)
24.00	16.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.14 WATERSHED INCHES; 1061 CFS-HRS; 87.7 ACRE-FEET.

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	47.7	(RUNOFF)
18.86	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.05 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	47.7	(NULL)
18.86	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.05 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-FEET.

OPERATION REACH XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.25	44.6	223.00
18.91	1.0	222.09

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.05 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)

12.23	96.2	(RUNOFF)
21.46	3.0	(RUNOFF)
24.02	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.43 WATERSHED INCHES; 112 CFS-HRS; 9.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 44

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	140.3	(NULL)
20.87	4.1	(NULL)
24.03	3.3	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.70 WATERSHED INCHES; 159 CFS-HRS; 13.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 45

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	718.6	226.55
24.05	16.0	222.66

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.14 WATERSHED INCHES; 1061 CFS-HRS; 87.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	828.9	(NULL)
20.08	25.8	(NULL)
23.08	20.6	(NULL)
24.04	19.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.83 WATERSHED INCHES; 1219 CFS-HRS; 100.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	378.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.83 WATERSHED INCHES; 515 CFS-HRS; 42.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.17	55.0	(RUNOFF)
20.07	1.1	(RUNOFF)
20.63	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.32 WATERSHED INCHES; 53 CFS-HRS; 4.4 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 40

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.17	55.0	(NULL)
20.07	1.1	(NULL)
20.63	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.32 WATERSHED INCHES; 53 CFS-HRS; 4.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 49

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.32	47.9	317.02
20.21	1.0	316.09

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.32 WATERSHED INCHES; 53 CFS-HRS; 4.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.32	426.6	(NULL)
20.14	12.1	(NULL)
23.14	9.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.87 WATERSHED INCHES; 568 CFS-HRS; 47.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	40.9	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.92 WATERSHED INCHES;	41 CFS-HRS;	3.4 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	40.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.92 WATERSHED INCHES;	41 CFS-HRS;	3.4 ACRE-
FEET.		

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OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	454.2	277.68
23.97	9.7	276.16
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.87 WATERSHED INCHES;	609 CFS-HRS;	50.4 ACRE-
FEET.		

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	418.7	277.59
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.87 WATERSHED INCHES;	609 CFS-HRS;	50.4 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	163.6	(RUNOFF)
18.87	6.1	(RUNOFF)
21.98	5.0	(RUNOFF)

24.03 4.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.42 WATERSHED INCHES; 191 CFS-HRS; 15.8 ACRE-
FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.38 524.5 (NULL)
24.01 14.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.31 WATERSHED INCHES; 800 CFS-HRS; 66.1 ACRE-
FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.35 1873.1 (NULL)
24.03 43.0 (NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.64 WATERSHED INCHES; 2612 CFS-HRS; 215.9 ACRE-
FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.14 20.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.62 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-
FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.35 1881.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.63 WATERSHED INCHES; 2630 CFS-HRS; 217.3 ACRE-
FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	79.3	(RUNOFF)
15.84	2.5	(RUNOFF)
24.00	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.97 WATERSHED INCHES; 68 CFS-HRS; 5.7 ACRE-FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	521.4	132.03
24.07	14.0	129.76

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.31 WATERSHED INCHES; 800 CFS-HRS; 66.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	542.9	(NULL)
23.98	15.2	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.35 WATERSHED INCHES; 869 CFS-HRS; 71.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	2398.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 3499 CFS-HRS; 289.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	54.0	(RUNOFF)
19.43	1.0	(RUNOFF)
19.75	1.0	(RUNOFF)



20.07 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.48 WATERSHED INCHES; 52 CFS-HRS; 4.3 ACRE-
FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 2422.7 (NULL)
12.36

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.56 WATERSHED INCHES; 3551 CFS-HRS; 293.4 ACRE-
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63
STARTING TIME = .00 RAIN DEPTH = 6.14 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS
ALTERNATE NO. = 1 STORM NO. =25 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.24 415.5 (RUNOFF)
18.67 11.3 (RUNOFF)
20.12 10.4 (RUNOFF)
20.67 10.0 (RUNOFF)
23.12 8.3 (RUNOFF)
24.02 7.7 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.62 WATERSHED INCHES; 490 CFS-HRS; 40.5 ACRE-
FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.19 61.0 (RUNOFF)
24.03 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.30 WATERSHED INCHES; 62 CFS-HRS; 5.1 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	61.0	(NULL)
24.03	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.30 WATERSHED INCHES; 62 CFS-HRS; 5.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	472.1	(NULL)
18.66	12.9	(NULL)
20.66	11.3	(NULL)
21.95	10.3	(NULL)
23.11	9.4	(NULL)
24.02	8.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.58 WATERSHED INCHES; 553 CFS-HRS; 45.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 4

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	171.7	(RUNOFF)
15.84	5.6	(RUNOFF)
17.34	4.3	(RUNOFF)
20.06	3.2	(RUNOFF)
20.62	3.1	(RUNOFF)
20.85	3.0	(RUNOFF)
24.01	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.02 WATERSHED INCHES; 160 CFS-HRS; 13.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	622.3	(NULL)
18.82	16.2	(NULL)
20.09	15.0	(NULL)
20.64	14.4	(NULL)

21.95	13.1	(NULL)
23.09	12.0	(NULL)
23.74	11.3	(NULL)
24.01	11.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 713 CFS-HRS; 58.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	174.8	(RUNOFF)
15.83	6.7	(RUNOFF)
17.32	5.2	(RUNOFF)
18.86	4.1	(RUNOFF)
23.09	3.1	(RUNOFF)
24.02	2.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.35 WATERSHED INCHES; 173 CFS-HRS; 14.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 7

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	613.0	320.83
18.87	16.2	318.32
20.15	15.0	318.30
20.70	14.4	318.30
22.01	13.1	318.28
23.81	11.3	318.26
24.07	11.2	318.26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 713 CFS-HRS; 58.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	758.9	(NULL)
18.67	20.5	(NULL)
20.13	18.9	(NULL)
20.68	18.0	(NULL)
22.00	16.5	(NULL)
23.13	15.1	(NULL)
23.78	14.2	(NULL)

24.04 14.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.60 WATERSHED INCHES; 886 CFS-HRS; 73.2 ACRE-
FEET.

OPERATION RUNOFF XSECTION 9

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.18, 15.81, 19.76, 20.09, 24.02 and discharges like 144.1, 5.3, 3.1, 3.0, 2.3.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.71 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-
FEET.

OPERATION RUNOFF XSECTION 10

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.22, 23.11, 23.76 and discharges like 56.2, 1.1, 1.0.

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.74 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 52

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.22, 23.11, 23.76 and discharges like 56.2, 1.1, 1.0.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.74 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-
FEET.

OPERATION REACH XSECTION 11

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.29, 23.18 and discharges like 55.9, 1.1.

23.82 1.0 414.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.74 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-
FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.20 189.5 (NULL)
20.86 4.1 (NULL)
24.03 3.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.72 WATERSHED INCHES; 208 CFS-HRS; 17.2 ACRE-
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.18 125.0 (RUNOFF)
15.83 4.2 (RUNOFF)
17.33 3.2 (RUNOFF)
21.96 2.1 (RUNOFF)
24.02 1.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.32 WATERSHED INCHES; 125 CFS-HRS; 10.3 ACRE-
FEET.

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OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.18 125.0 (NULL)
15.83 4.2 (NULL)
17.33 3.2 (NULL)
21.96 2.1 (NULL)
24.02 1.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.32 WATERSHED INCHES; 125 CFS-HRS; 10.3 ACRE-
FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)

12.19	312.9	(NULL)
19.42	7.0	(NULL)
20.86	6.4	(NULL)
23.09	5.4	(NULL)
23.74	5.1	(NULL)
24.02	5.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.92 WATERSHED INCHES; 333 CFS-HRS; 27.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	202.1	(RUNOFF)
15.84	7.0	(RUNOFF)
17.34	5.4	(RUNOFF)
19.75	4.1	(RUNOFF)
20.06	4.1	(RUNOFF)
23.06	3.3	(RUNOFF)
23.72	3.1	(RUNOFF)
24.01	3.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.58 WATERSHED INCHES; 188 CFS-HRS; 15.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 16

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	298.4	331.71
18.71	7.3	330.27
20.92	6.4	330.26
23.81	5.1	330.21
24.09	5.1	330.21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.92 WATERSHED INCHES; 333 CFS-HRS; 27.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	452.0	(NULL)
18.81	11.6	(NULL)
20.65	10.3	(NULL)
21.96	9.4	(NULL)
23.75	8.1	(NULL)

24.02 8.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.79 WATERSHED INCHES; 521 CFS-HRS; 43.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	1205.5	(NULL)
18.66	32.2	(NULL)
20.12	29.6	(NULL)
20.67	28.3	(NULL)
21.97	25.9	(NULL)
23.12	23.6	(NULL)
23.76	22.3	(NULL)
24.03	22.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 1407 CFS-HRS; 116.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	420.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.26 WATERSHED INCHES; 568 CFS-HRS; 46.9 ACRE-  
 FEET.

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OPERATION REACH XSECTION 20

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	1078.7	238.45
20.19	29.6	234.50
23.18	23.6	234.43
23.81	22.3	234.41
24.09	22.0	234.41

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 1407 CFS-HRS; 116.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
12.35	1491.0	(NULL)
20.16	42.3	(NULL)
23.16	33.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.54 WATERSHED INCHES; 1974 CFS-HRS; 163.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	44.5	(RUNOFF)
18.66	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 50 CFS-HRS; 4.2 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	44.5	(NULL)
18.66	1.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 50 CFS-HRS; 4.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 23

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	208.0	(RUNOFF)
20.87	4.0	(RUNOFF)
24.02	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 221 CFS-HRS; 18.3 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	208.0	(NULL)
20.87	4.0	(NULL)
24.02	3.2	(NULL)



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 221 CFS-HRS; 18.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	252.4	(NULL)
20.10	5.3	(NULL)
20.65	5.0	(NULL)
23.10	4.2	(NULL)
24.02	3.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 271 CFS-HRS; 22.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	120.6	(RUNOFF)
21.97	2.1	(RUNOFF)
24.02	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.19 WATERSHED INCHES; 126 CFS-HRS; 10.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	372.9	(NULL)
18.87	8.3	(NULL)
20.86	7.3	(NULL)
23.10	6.2	(NULL)
24.02	5.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.21 WATERSHED INCHES; 397 CFS-HRS; 32.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	372.9	(NULL)

18.87	8.3	(NULL)
20.86	7.3	(NULL)
23.10	6.2	(NULL)
24.02	5.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.21 WATERSHED INCHES; 397 CFS-HRS; 32.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	37.3	(RUNOFF)
15.82	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.57 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .8%.  
 \*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	397.1	(NULL)
18.64	9.1	(NULL)
20.09	8.4	(NULL)
21.95	7.3	(NULL)
24.00	6.2	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.16 WATERSHED INCHES; 426 CFS-HRS; 35.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	184.7	(RUNOFF)
15.45	5.1	(RUNOFF)
15.82	4.8	(RUNOFF)
17.32	3.7	(RUNOFF)
18.58	3.0	(RUNOFF)
23.02	2.2	(RUNOFF)
23.68	2.1	(RUNOFF)
23.99	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.73 WATERSHED INCHES; 152 CFS-HRS; 12.6 ACRE-
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -.2%.
\*\*\*

OPERATION RESVOR STRUCTURE 64

Table with 3 columns: PEAK TIME(HRS), PEAK DISCHARGE(CFS), PEAK ELEVATION(FEET). Rows show data for various time intervals from 12.11 to 23.99 hours.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.73 WATERSHED INCHES; 152 CFS-HRS; 12.6 ACRE-
FEET.

OPERATION REACH XSECTION 30

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Table with 3 columns: PEAK TIME(HRS), PEAK DISCHARGE(CFS), PEAK ELEVATION(FEET). Rows show data for various time intervals from 12.18 to 24.05 hours.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.71 WATERSHED INCHES; 152 CFS-HRS; 12.5 ACRE-
FEET.

OPERATION RUNOFF XSECTION 31

Table with 3 columns: PEAK TIME(HRS), PEAK DISCHARGE(CFS), PEAK ELEVATION(FEET). Shows data for 12.31 hours.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.43 WATERSHED INCHES; 499 CFS-HRS; 41.2 ACRE-

FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	469.7	(NULL)
18.86	13.1	(NULL)
20.08	12.1	(NULL)
20.86	11.5	(NULL)
21.96	10.6	(NULL)
23.73	9.1	(NULL)
24.04	9.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.49 WATERSHED INCHES; 651 CFS-HRS; 53.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	119.6	(RUNOFF)
21.97	2.2	(RUNOFF)
23.10	2.0	(RUNOFF)
24.03	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.22 WATERSHED INCHES; 130 CFS-HRS; 10.7 ACRE-FEET.

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OPERATION ADDHYD XSECTION 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	596.7	(NULL)
18.62	16.0	(NULL)
18.86	15.8	(NULL)
20.09	14.7	(NULL)
20.63	14.0	(NULL)
20.86	13.9	(NULL)
21.97	12.8	(NULL)
23.09	11.7	(NULL)
23.74	11.0	(NULL)
24.04	11.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.45 WATERSHED INCHES; 781 CFS-HRS; 64.5 ACRE-FEET.

OPERATION REACH XSECTION 35

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.31	565.4	317.74
20.68	14.0	316.26
20.91	13.9	316.26
22.01	12.8	316.25
23.15	11.7	316.23
24.10	10.9	316.21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.45 WATERSHED INCHES; 781 CFS-HRS; 64.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.27	53.0	(RUNOFF)
23.13	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.27 WATERSHED INCHES; 67 CFS-HRS; 5.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 33

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.27	53.0	(NULL)
23.13	1.0	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.27 WATERSHED INCHES; 67 CFS-HRS; 5.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.31	617.2	(NULL)
20.68	15.3	(NULL)
22.00	13.9	(NULL)
23.15	12.7	(NULL)
24.09	11.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.43 WATERSHED INCHES; 848 CFS-HRS; 70.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.13	198.2	(RUNOFF)
15.84	6.1	(RUNOFF)
17.34	4.7	(RUNOFF)
21.45	3.1	(RUNOFF)
21.73	3.1	(RUNOFF)
21.94	3.1	(RUNOFF)
24.00	2.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.82 WATERSHED INCHES; 169 CFS-HRS; 13.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	705.6	(NULL)
23.99	14.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.32 WATERSHED INCHES; 1017 CFS-HRS; 84.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 40

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	1066.5	(NULL)
20.06	27.8	(NULL)
20.62	26.6	(NULL)
23.06	22.1	(NULL)
23.99	20.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.27 WATERSHED INCHES; 1443 CFS-HRS; 119.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	65.3	(RUNOFF)
15.84	2.2	(RUNOFF)
21.96	1.1	(RUNOFF)
22.75	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.18 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	65.3	(NULL)
15.84	2.2	(NULL)
21.96	1.1	(NULL)
22.75	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.18 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.25	61.7	223.10
22.03	1.1	222.10
22.80	1.0	222.09

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.17 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 43

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.22	157.8	(RUNOFF)
18.87	5.1	(RUNOFF)
21.98	4.2	(RUNOFF)
24.02	3.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.25 WATERSHED INCHES; 176 CFS-HRS; 14.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.23	218.5	(NULL)
19.47	6.2	(NULL)
21.99	5.3	(NULL)
24.03	4.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.57 WATERSHED INCHES; 240 CFS-HRS; 19.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.36	973.8	227.34
24.05	20.6	222.76

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.27 WATERSHED INCHES; 1443 CFS-HRS; 119.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.32	1147.6	(NULL)
20.08	33.8	(NULL)
23.08	27.0	(NULL)
24.04	25.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.90 WATERSHED INCHES; 1682 CFS-HRS; 139.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.31	523.3	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.92 WATERSHED INCHES; 715 CFS-HRS; 59.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	73.8	(RUNOFF)
15.84	2.4	(RUNOFF)
23.07	1.1	(RUNOFF)
23.73	1.0	(RUNOFF)
24.01	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)



4.48 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	73.8	(NULL)
15.84	2.4	(NULL)
23.07	1.1	(NULL)
23.73	1.0	(NULL)
24.01	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.48 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-  
FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	65.2	317.13
23.15	1.1	316.09
23.81	1.0	316.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.48 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	584.0	(NULL)
20.09	15.8	(NULL)
23.09	12.6	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.97 WATERSHED INCHES; 786 CFS-HRS; 65.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	56.3	(RUNOFF)
21.45	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.03 WATERSHED INCHES; 57 CFS-HRS; 4.7 ACRE-

FEET.

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	56.3	(NULL)
21.45	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.03 WATERSHED INCHES; 57 CFS-HRS; 4.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	623.7	278.16
20.09	17.0	276.26
23.09	13.5	276.22
23.98	12.5	276.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.97 WATERSHED INCHES; 843 CFS-HRS; 69.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	579.7	277.97

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.97 WATERSHED INCHES; 843 CFS-HRS; 69.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 53

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	268.4	(RUNOFF)
20.11	8.1	(RUNOFF)
21.98	7.1	(RUNOFF)
23.75	6.2	(RUNOFF)
24.03	6.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.23 WATERSHED INCHES; 300 CFS-HRS; 24.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.35	760.8	(NULL)
24.02	18.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.30 WATERSHED INCHES; 1143 CFS-HRS; 94.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.34	2631.4	(NULL)
24.03	56.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.70 WATERSHED INCHES; 3657 CFS-HRS; 302.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.13	31.3	(RUNOFF)
15.84	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.49 WATERSHED INCHES; 27 CFS-HRS; 2.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.34	2644.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.68 WATERSHED INCHES; 3683 CFS-HRS; 304.4 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 58

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.13	108.3	(RUNOFF)
15.84	3.3	(RUNOFF)

17.34	2.5	(RUNOFF)
18.60	2.1	(RUNOFF)
18.84	2.0	(RUNOFF)
24.00	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.09 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	757.7	132.57
24.07	18.7	129.85

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.30 WATERSHED INCHES; 1143 CFS-HRS; 94.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	788.9	(NULL)
23.98	20.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.35 WATERSHED INCHES; 1237 CFS-HRS; 102.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	3414.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.59 WATERSHED INCHES; 4921 CFS-HRS; 406.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 62

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas No MGMT - sTD NOAA\_C 2,5,10,50,100  
 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	71.2	(RUNOFF)
15.84	2.2	(RUNOFF)
22.75	1.0	(RUNOFF)
23.07	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	3447.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.61 WATERSHED INCHES; 4991 CFS-HRS; 412.4 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 7.23 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =50 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	526.5	(RUNOFF)
18.67	13.8	(RUNOFF)
20.68	12.1	(RUNOFF)
21.94	11.1	(RUNOFF)
23.13	10.1	(RUNOFF)
24.01	9.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.59 WATERSHED INCHES; 622 CFS-HRS; 51.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 2

1  
 TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION

06/05/\*\* 27 Subareas No MGMT - STD NOAA\_C 2,5,10,50,100  
 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	78.1	(RUNOFF)
24.02	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.24 WATERSHED INCHES; 80 CFS-HRS; 6.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	78.1	(NULL)
24.02	1.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.24 WATERSHED INCHES; 80 CFS-HRS; 6.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	599.3	(NULL)
18.66	15.7	(NULL)
20.11	14.4	(NULL)
20.67	13.7	(NULL)
21.95	12.6	(NULL)
23.12	11.5	(NULL)
24.01	10.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.55 WATERSHED INCHES; 702 CFS-HRS; 58.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	212.7	(RUNOFF)
15.84	6.8	(RUNOFF)
17.34	5.2	(RUNOFF)
19.44	4.0	(RUNOFF)
22.75	3.1	(RUNOFF)
23.06	3.1	(RUNOFF)
24.00	3.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.03 WATERSHED INCHES; 200 CFS-HRS; 16.5 ACRE-FEET.

1  
 TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas No MGMT - STD NOAA\_C 2,5,10,50,100  
 2.04TEST  
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OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	787.6	(NULL)
18.82	19.7	(NULL)
20.09	18.2	(NULL)
20.64	17.4	(NULL)
21.95	15.9	(NULL)

23.09 14.5 (NULL)  
 24.01 13.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 902 CFS-HRS; 74.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.18	223.3	(RUNOFF)
15.83	8.2	(RUNOFF)
17.32	6.3	(RUNOFF)
18.86	5.0	(RUNOFF)
21.97	4.1	(RUNOFF)
24.02	3.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.30 WATERSHED INCHES; 222 CFS-HRS; 18.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 7

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.27	775.8	321.29
18.70	19.9	318.36
20.15	18.2	318.34
20.70	17.4	318.33
22.01	15.9	318.31
23.15	14.5	318.30
24.07	13.6	318.29

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 902 CFS-HRS; 74.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 8

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 TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.25	962.1	(NULL)
18.67	25.0	(NULL)
20.13	22.9	(NULL)
20.68	21.9	(NULL)
22.00	20.0	(NULL)
23.13	18.3	(NULL)
23.78	17.2	(NULL)
24.04	17.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.57 WATERSHED INCHES; 1124 CFS-HRS; 92.9 ACRE-
FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.18 180.9 (RUNOFF)
18.64 4.0 (RUNOFF)
21.97 3.2 (RUNOFF)
24.02 2.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.69 WATERSHED INCHES; 183 CFS-HRS; 15.1 ACRE-
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.22 70.7 (RUNOFF)
24.02 1.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.72 WATERSHED INCHES; 80 CFS-HRS; 6.6 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.22 70.7 (NULL)
24.02 1.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.72 WATERSHED INCHES; 80 CFS-HRS; 6.6 ACRE-
FEET.

OPERATION REACH XSECTION 11

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas
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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.28 70.4 414.92
24.09 1.2 414.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.72 WATERSHED INCHES; 80 CFS-HRS; 6.6 ACRE-
FEET.



OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	238.8	(NULL)
20.64	5.1	(NULL)
23.10	4.2	(NULL)
24.02	3.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.70 WATERSHED INCHES; 263 CFS-HRS; 21.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	153.2	(RUNOFF)
15.83	5.0	(RUNOFF)
18.86	3.1	(RUNOFF)
24.02	2.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.35 WATERSHED INCHES; 154 CFS-HRS; 12.8 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	153.2	(NULL)
15.83	5.0	(NULL)
18.86	3.1	(NULL)
24.02	2.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.35 WATERSHED INCHES; 154 CFS-HRS; 12.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 14

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	390.1	(NULL)
20.09	8.2	(NULL)
21.96	7.1	(NULL)
23.74	6.1	(NULL)
24.02	6.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

4.92 WATERSHED INCHES; 418 CFS-HRS; 34.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.16	255.3	(RUNOFF)
15.84	8.6	(RUNOFF)
17.34	6.6	(RUNOFF)
19.47	5.1	(RUNOFF)
21.96	4.3	(RUNOFF)
24.01	3.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.55 WATERSHED INCHES; 239 CFS-HRS; 19.8 ACRE-  
FEET.

OPERATION REACH XSECTION 16

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.26	374.2	331.96
20.16	8.1	330.29
22.03	7.1	330.27
23.81	6.1	330.25
24.09	6.0	330.25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.92 WATERSHED INCHES; 418 CFS-HRS; 34.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.21	569.8	(NULL)
18.81	14.1	(NULL)
20.10	13.0	(NULL)
20.65	12.5	(NULL)
21.96	11.4	(NULL)
23.10	10.4	(NULL)
24.02	9.7	(NULL)

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TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.78 WATERSHED INCHES; 657 CFS-HRS; 54.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	1524.5	(NULL)
18.66	39.2	(NULL)
20.12	35.9	(NULL)
20.67	34.3	(NULL)
21.97	31.4	(NULL)
23.12	28.6	(NULL)
23.76	27.0	(NULL)
24.03	26.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 1781 CFS-HRS; 147.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	541.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.19 WATERSHED INCHES; 731 CFS-HRS; 60.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	1370.0	239.17
20.19	35.9	234.56
23.19	28.6	234.49
24.09	26.7	234.47

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 1781 CFS-HRS; 147.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	1901.3	(NULL)
20.16	51.5	(NULL)
23.16	41.1	(NULL)

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TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.50 WATERSHED INCHES; 2511 CFS-HRS; 207.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.22	54.7	(RUNOFF)
21.96	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.24 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.22	54.7	(NULL)
21.96	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.24 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.19	256.8	(RUNOFF)
20.10	5.2	(RUNOFF)
23.10	4.1	(RUNOFF)
24.03	3.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.24 WATERSHED INCHES; 275 CFS-HRS; 22.7 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.19	256.8	(NULL)
20.10	5.2	(NULL)
23.10	4.1	(NULL)
24.03	3.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.24 WATERSHED INCHES; 275 CFS-HRS; 22.7 ACRE-  
FEET.

1 TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	311.0	(NULL)
20.10	6.3	(NULL)
20.65	6.0	(NULL)
21.97	5.5	(NULL)
23.10	5.0	(NULL)
24.03	4.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.24 WATERSHED INCHES; 337 CFS-HRS; 27.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	148.7	(RUNOFF)
18.87	3.2	(RUNOFF)
24.02	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.21 WATERSHED INCHES; 156 CFS-HRS; 12.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	459.5	(NULL)
18.65	10.1	(NULL)
20.10	9.3	(NULL)
21.97	8.1	(NULL)
23.10	7.4	(NULL)
24.02	6.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.23 WATERSHED INCHES; 494 CFS-HRS; 40.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

1 TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas No MGMT - sTD NOAA\_C 2,5,10,50,100  
 2.04TEST  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	459.5	(NULL)
18.65	10.1	(NULL)
20.10	9.3	(NULL)
21.97	8.1	(NULL)
23.10	7.4	(NULL)
24.02	6.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.23 WATERSHED INCHES; 494 CFS-HRS; 40.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	47.2	(RUNOFF)
17.32	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.57 WATERSHED INCHES; 37 CFS-HRS; 3.1 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .9%.  
 \*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	489.9	(NULL)
19.71	10.1	(NULL)
20.08	10.0	(NULL)
20.81	9.4	(NULL)
22.71	8.1	(NULL)
24.00	7.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.18 WATERSHED INCHES; 531 CFS-HRS; 43.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 29

1  
 TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	220.3	(RUNOFF)
15.45	6.0	(RUNOFF)
15.82	5.8	(RUNOFF)
17.32	4.4	(RUNOFF)
20.02	3.3	(RUNOFF)
20.58	3.1	(RUNOFF)
20.82	3.1	(RUNOFF)
23.99	2.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.78 WATERSHED INCHES; 186 CFS-HRS; 15.4 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .1%.  
 \*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	220.3	(NULL)
15.45	6.0	(NULL)
15.82	5.8	(NULL)
17.32	4.4	(NULL)
20.02	3.3	(NULL)
20.58	3.1	(NULL)
20.82	3.1	(NULL)
23.99	2.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.78 WATERSHED INCHES; 186 CFS-HRS; 15.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	213.3	357.27
15.88	5.8	356.12
17.38	4.4	356.09
20.88	3.1	356.06
24.05	2.7	356.06

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.76 WATERSHED INCHES; 185 CFS-HRS; 15.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

1  
 TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	433.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.47 WATERSHED INCHES; 616 CFS-HRS; 50.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION (FEET)		
12.22	572.7	(NULL)
18.86	15.7	(NULL)
20.08	14.5	(NULL)
20.86	13.7	(NULL)
21.96	12.6	(NULL)
23.08	11.5	(NULL)
24.04	10.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.53 WATERSHED INCHES; 801 CFS-HRS; 66.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.20	148.2	(RUNOFF)
18.65	3.3	(RUNOFF)
20.10	3.0	(RUNOFF)
24.03	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.25 WATERSHED INCHES; 162 CFS-HRS; 13.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 34

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.21	729.7	(NULL)
18.61	19.2	(NULL)
18.85	18.9	(NULL)
20.09	17.5	(NULL)
20.86	16.6	(NULL)
21.97	15.3	(NULL)
23.74	13.1	(NULL)
24.04	13.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.48 WATERSHED INCHES; 963 CFS-HRS; 79.6 ACRE-  
 FEET.

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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OPERATION REACH XSECTION 35

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.31	694.0	317.98
20.15	17.5	316.29
20.92	16.6	316.28
22.01	15.3	316.27



23.80	13.1	316.25
24.10	13.0	316.25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.49 WATERSHED INCHES; 963 CFS-HRS; 79.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	65.4	(RUNOFF)
23.76	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.30 WATERSHED INCHES; 84 CFS-HRS; 6.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	65.4	(NULL)
23.76	1.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.30 WATERSHED INCHES; 84 CFS-HRS; 6.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	757.5	(NULL)
20.15	19.1	(NULL)
20.91	18.0	(NULL)
22.01	16.6	(NULL)
23.15	15.1	(NULL)
23.80	14.3	(NULL)
24.09	14.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.47 WATERSHED INCHES; 1047 CFS-HRS; 86.5 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	246.6	(RUNOFF)

15.84	7.4	(RUNOFF)
17.34	5.7	(RUNOFF)
20.04	4.3	(RUNOFF)
20.60	4.1	(RUNOFF)
23.70	3.2	(RUNOFF)
24.00	3.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.81 WATERSHED INCHES; 212 CFS-HRS; 17.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	869.7	(NULL)
23.99	17.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.35 WATERSHED INCHES; 1259 CFS-HRS; 104.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	1318.6	(NULL)
18.57	36.4	(NULL)
20.06	33.3	(NULL)
20.62	31.9	(NULL)
23.06	26.5	(NULL)
24.00	24.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.30 WATERSHED INCHES; 1790 CFS-HRS; 147.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	79.8	(RUNOFF)
17.34	2.0	(RUNOFF)
24.01	1.1	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.19 WATERSHED INCHES; 79 CFS-HRS; 6.5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	79.8	(NULL)
17.34	2.0	(NULL)
24.01	1.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.19 WATERSHED INCHES; 79 CFS-HRS; 6.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	76.0	223.19
24.08	1.1	222.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.19 WATERSHED INCHES; 79 CFS-HRS; 6.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	217.1	(RUNOFF)
19.47	6.2	(RUNOFF)
20.11	6.0	(RUNOFF)
21.98	5.3	(RUNOFF)
24.02	4.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.05 WATERSHED INCHES; 238 CFS-HRS; 19.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	291.8	(NULL)
18.88	8.0	(NULL)
20.86	7.1	(NULL)
22.00	6.6	(NULL)
23.11	6.0	(NULL)
24.03	5.7	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.40 WATERSHED INCHES; 317 CFS-HRS; 26.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 45

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	1199.9	227.88
24.05	24.6	222.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.29 WATERSHED INCHES; 1789 CFS-HRS; 147.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	1431.7	(NULL)
20.08	40.8	(NULL)
23.08	32.5	(NULL)
24.04	30.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.88 WATERSHED INCHES; 2107 CFS-HRS; 174.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	655.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.93 WATERSHED INCHES; 897 CFS-HRS; 74.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	89.2	(RUNOFF)
17.34	2.2	(RUNOFF)
24.01	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.52 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 40

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION(FEET)		
12.16	89.2	(NULL)
17.34	2.2	(NULL)
24.01	1.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.52 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	79.8	317.22
24.08	1.2	316.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.52 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	729.4	(NULL)
20.09	19.1	(NULL)
23.09	15.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.97 WATERSHED INCHES; 985 CFS-HRS; 81.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	69.7	(RUNOFF)
23.74	1.0	(RUNOFF)
24.02	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.04 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	69.7	(NULL)
23.74	1.0	(NULL)
24.02	1.0	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.04 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	778.6	278.93
20.09	20.4	276.29
23.09	16.3	276.26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.98 WATERSHED INCHES; 1056 CFS-HRS; 87.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.43	696.5	278.52

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.98 WATERSHED INCHES; 1056 CFS-HRS; 87.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	369.6	(RUNOFF)
18.87	11.0	(RUNOFF)
20.11	10.3	(RUNOFF)
21.97	9.1	(RUNOFF)
23.11	8.3	(RUNOFF)
24.03	7.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.03 WATERSHED INCHES; 407 CFS-HRS; 33.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	930.9	(NULL)
24.01	23.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 1463 CFS-HRS; 120.9 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 55

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.33	3323.8	(NULL)
24.03	68.4	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.67 WATERSHED INCHES;	4618 CFS-HRS;	381.6 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 56

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.13	42.2	(RUNOFF)
17.34	1.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.31 WATERSHED INCHES;	35 CFS-HRS;	2.9 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 57

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.33	3340.7	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.65 WATERSHED INCHES;	4653 CFS-HRS;	384.6 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 58

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.13	133.5	(RUNOFF)
17.34	3.0	(RUNOFF)
21.45	2.0	(RUNOFF)
24.00	1.8	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.09 WATERSHED INCHES;	117 CFS-HRS;	9.7 ACRE-
FEEET.		

OPERATION REACH XSECTION 59

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.42	928.5	132.96
24.07	23.0	129.93

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 1463 CFS-HRS; 120.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	967.0	(NULL)
23.98	24.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.28 WATERSHED INCHES; 1581 CFS-HRS; 130.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	4287.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.55 WATERSHED INCHES; 6234 CFS-HRS; 515.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	86.7	(RUNOFF)
17.34	2.1	(RUNOFF)
24.01	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.70 WATERSHED INCHES; 86 CFS-HRS; 7.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	4328.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.56 WATERSHED INCHES; 6320 CFS-HRS; 522.3 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5  
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EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	652.9	(RUNOFF)
18.67	16.6	(RUNOFF)
20.13	15.2	(RUNOFF)
20.67	14.5	(RUNOFF)
21.93	13.3	(RUNOFF)
23.12	12.1	(RUNOFF)
24.01	11.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.72 WATERSHED INCHES; 776 CFS-HRS; 64.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	97.8	(RUNOFF)
20.09	2.1	(RUNOFF)
24.02	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.34 WATERSHED INCHES; 101 CFS-HRS; 8.3 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	97.8	(NULL)
20.09	2.1	(NULL)
24.02	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.34 WATERSHED INCHES; 101 CFS-HRS; 8.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 3

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.23	743.7	(NULL)
18.66	18.8	(NULL)
20.12	17.3	(NULL)
20.66	16.5	(NULL)
21.95	15.1	(NULL)
23.11	13.7	(NULL)
24.01	12.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.68 WATERSHED INCHES; 877 CFS-HRS; 72.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.15	259.5	(RUNOFF)
15.84	8.1	(RUNOFF)
17.34	6.2	(RUNOFF)
18.62	5.0	(RUNOFF)
21.45	4.1	(RUNOFF)
21.75	4.0	(RUNOFF)
21.95	4.0	(RUNOFF)
24.00	3.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.19 WATERSHED INCHES; 247 CFS-HRS; 20.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.20	968.2	(NULL)
18.82	23.6	(NULL)
20.09	21.9	(NULL)
20.64	20.9	(NULL)
21.95	19.1	(NULL)
23.09	17.4	(NULL)
23.74	16.4	(NULL)
24.01	16.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.78 WATERSHED INCHES; 1123 CFS-HRS; 92.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	278.1	(RUNOFF)
15.82	9.9	(RUNOFF)
17.31	7.6	(RUNOFF)
18.86	6.1	(RUNOFF)
21.45	5.1	(RUNOFF)
24.02	4.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.40 WATERSHED INCHES; 279 CFS-HRS; 23.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	955.4	321.75
18.70	23.8	318.40
20.15	21.9	318.38
20.70	20.9	318.37
22.01	19.1	318.35
23.15	17.4	318.33
23.81	16.4	318.32
24.07	16.2	318.32

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.78 WATERSHED INCHES; 1123 CFS-HRS; 92.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	1187.4	(NULL)
18.67	30.0	(NULL)
20.13	27.5	(NULL)
20.68	26.3	(NULL)
22.00	24.0	(NULL)
23.13	21.9	(NULL)
24.04	20.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.70 WATERSHED INCHES; 1402 CFS-HRS; 115.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	223.2	(RUNOFF)
20.87	4.2	(RUNOFF)
24.02	3.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.84 WATERSHED INCHES; 227 CFS-HRS; 18.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	87.2	(RUNOFF)
18.66	2.1	(RUNOFF)
24.02	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.86 WATERSHED INCHES; 100 CFS-HRS; 8.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	87.2	(NULL)
18.66	2.1	(NULL)
24.02	1.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.86 WATERSHED INCHES; 100 CFS-HRS; 8.3 ACRE-FEET.

OPERATION REACH XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	87.1	415.03
18.72	2.1	414.07
24.08	1.4	414.05

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.87 WATERSHED INCHES; 100 CFS-HRS; 8.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 12

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION (FEET)		
12.20	295.5	(NULL)
20.10	6.3	(NULL)
20.64	6.1	(NULL)
21.97	5.5	(NULL)
23.10	5.0	(NULL)
24.02	4.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.84 WATERSHED INCHES; 327 CFS-HRS; 27.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.17	185.0	(RUNOFF)
15.83	6.0	(RUNOFF)
17.33	4.6	(RUNOFF)
20.86	3.2	(RUNOFF)
24.02	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.54 WATERSHED INCHES; 189 CFS-HRS; 15.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.17	185.0	(NULL)
15.83	6.0	(NULL)
17.33	4.6	(NULL)
20.86	3.2	(NULL)
24.02	2.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.54 WATERSHED INCHES; 189 CFS-HRS; 15.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.19	478.2	(NULL)
18.85	10.5	(NULL)
20.86	9.2	(NULL)
21.96	8.5	(NULL)
23.74	7.3	(NULL)
24.02	7.2	(NULL)

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.08 WATERSHED INCHES; 516 CFS-HRS; 42.6 ACRE-
FEET.

OPERATION RUNOFF XSECTION 15

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Rows show data for elevations 12.16, 15.84, 17.34, 19.44, 21.95, 24.01.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.68 WATERSHED INCHES; 299 CFS-HRS; 24.7 ACRE-
FEET.

OPERATION REACH XSECTION 16

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Rows show data for elevations 12.27, 18.71, 20.92, 22.03, 24.09.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.08 WATERSHED INCHES; 516 CFS-HRS; 42.6 ACRE-
FEET.

OPERATION ADDHYD XSECTION 17

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Rows show data for elevations 12.21, 18.65, 18.81, 20.10, 20.64, 21.95, 23.10, 24.02.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.93 WATERSHED INCHES; 815 CFS-HRS; 67.3 ACRE-
FEET.

OPERATION ADDHYD XSECTION 18

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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.24	1874.9	(NULL)
18.66	47.0	(NULL)
20.12	43.1	(NULL)
20.66	41.2	(NULL)
21.97	37.6	(NULL)
23.11	34.3	(NULL)
23.76	32.3	(NULL)
24.03	32.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.78 WATERSHED INCHES; 2217 CFS-HRS; 183.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.31	683.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.30 WATERSHED INCHES; 923 CFS-HRS; 76.3 ACRE-FEET.

OPERATION REACH XSECTION 20

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.35	1692.4	239.87
20.19	43.0	234.62
23.18	34.2	234.54
23.81	32.3	234.53
24.09	31.9	234.52

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.78 WATERSHED INCHES; 2217 CFS-HRS; 183.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.34	2363.3	(NULL)
20.16	62.0	(NULL)
23.16	49.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.63 WATERSHED INCHES; 3140 CFS-HRS; 259.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	66.5	(RUNOFF)
24.02	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.42 WATERSHED INCHES; 77 CFS-HRS; 6.3 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	66.5	(NULL)
24.02	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.42 WATERSHED INCHES; 77 CFS-HRS; 6.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	311.9	(RUNOFF)
20.10	6.1	(RUNOFF)
21.97	5.3	(RUNOFF)
24.03	4.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.42 WATERSHED INCHES; 336 CFS-HRS; 27.8 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	311.9	(NULL)
20.10	6.1	(NULL)
21.97	5.3	(NULL)
24.03	4.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.42 WATERSHED INCHES; 336 CFS-HRS; 27.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 24

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	377.8	(NULL)
18.87	8.1	(NULL)
20.86	7.1	(NULL)
21.97	6.5	(NULL)
24.03	5.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.42 WATERSHED INCHES; 413 CFS-HRS; 34.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	180.8	(RUNOFF)
21.97	3.0	(RUNOFF)
24.02	2.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.39 WATERSHED INCHES; 192 CFS-HRS; 15.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	558.4	(NULL)
18.65	12.0	(NULL)
18.87	11.9	(NULL)
20.10	11.0	(NULL)
20.86	10.4	(NULL)
21.97	9.6	(NULL)
23.75	8.3	(NULL)
24.02	8.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.41 WATERSHED INCHES; 605 CFS-HRS; 50.0 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	558.4	(NULL)
18.65	12.0	(NULL)
18.87	11.9	(NULL)

20.10	11.0	(NULL)
20.86	10.4	(NULL)
21.97	9.6	(NULL)
23.75	8.3	(NULL)
24.02	8.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.41 WATERSHED INCHES; 605 CFS-HRS; 50.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	58.8	(RUNOFF)
17.32	1.2	(RUNOFF)
18.58	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.67 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -.6%.  
 \*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	596.2	(NULL)
18.64	13.0	(NULL)
19.72	12.0	(NULL)
20.79	11.2	(NULL)
21.96	10.4	(NULL)
23.08	9.5	(NULL)
24.00	8.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.36 WATERSHED INCHES; 651 CFS-HRS; 53.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 29

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	261.8	(RUNOFF)
15.45	7.1	(RUNOFF)
15.82	6.8	(RUNOFF)
17.32	5.2	(RUNOFF)

18.82	4.2	(RUNOFF)
22.41	3.2	(RUNOFF)
22.72	3.1	(RUNOFF)
23.02	3.1	(RUNOFF)
23.99	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.96 WATERSHED INCHES; 224 CFS-HRS; 18.5 ACRE-  
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 1.1%.  
\*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	261.8	(NULL)
15.45	7.1	(NULL)
15.82	6.8	(NULL)
17.32	5.2	(NULL)
18.82	4.2	(NULL)
22.41	3.2	(NULL)
22.72	3.1	(NULL)
23.02	3.1	(NULL)
23.99	3.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.96 WATERSHED INCHES; 224 CFS-HRS; 18.5 ACRE-  
FEET.

OPERATION REACH XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	255.4	357.40
15.88	6.8	356.14
17.38	5.2	356.11
18.88	4.2	356.09
21.98	3.4	356.07
22.78	3.1	356.07
23.09	3.1	356.07
24.05	3.2	356.07

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.99 WATERSHED INCHES; 225 CFS-HRS; 18.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	521.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.66 WATERSHED INCHES; 750 CFS-HRS; 62.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	686.9	(NULL)
18.85	18.6	(NULL)
20.08	17.2	(NULL)
20.87	16.2	(NULL)
21.75	15.1	(NULL)
21.97	15.0	(NULL)
23.08	13.6	(NULL)
24.04	12.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.73 WATERSHED INCHES; 975 CFS-HRS; 80.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	178.4	(RUNOFF)
21.97	3.1	(RUNOFF)
24.03	2.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.43 WATERSHED INCHES; 198 CFS-HRS; 16.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 34

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	876.5	(NULL)
18.85	22.4	(NULL)
20.09	20.8	(NULL)
20.87	19.6	(NULL)
21.97	18.1	(NULL)
23.09	16.5	(NULL)
24.04	15.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

6.68 WATERSHED INCHES; 1173 CFS-HRS; 96.9 ACRE-  
FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	825.2	318.24
20.15	20.7	316.31
20.91	19.6	316.30
22.01	18.1	316.29
23.15	16.5	316.28
24.10	15.5	316.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.68 WATERSHED INCHES; 1173 CFS-HRS; 96.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	78.9	(RUNOFF)
18.64	2.0	(RUNOFF)
23.76	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.49 WATERSHED INCHES; 102 CFS-HRS; 8.4 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	78.9	(NULL)
18.64	2.0	(NULL)
23.76	1.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.49 WATERSHED INCHES; 102 CFS-HRS; 8.4 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	901.5	(NULL)
20.15	22.6	(NULL)
20.91	21.3	(NULL)
22.01	19.7	(NULL)

23.15	17.9	(NULL)
24.10	16.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.66 WATERSHED INCHES; 1275 CFS-HRS; 105.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.13	303.7	(RUNOFF)
15.45	9.3	(RUNOFF)
15.84	8.9	(RUNOFF)
17.34	6.8	(RUNOFF)
19.74	5.1	(RUNOFF)
20.04	5.1	(RUNOFF)
22.42	4.2	(RUNOFF)
22.74	4.1	(RUNOFF)
23.04	4.1	(RUNOFF)
24.00	4.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.96 WATERSHED INCHES; 263 CFS-HRS; 21.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	1035.4	(NULL)
23.99	20.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.53 WATERSHED INCHES; 1537 CFS-HRS; 127.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 40

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	1581.4	(NULL)
20.05	39.5	(NULL)
20.62	37.8	(NULL)
23.05	31.4	(NULL)
23.72	29.6	(NULL)
24.00	29.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.47 WATERSHED INCHES; 2188 CFS-HRS; 180.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	97.1	(RUNOFF)
15.84	3.1	(RUNOFF)
17.34	2.4	(RUNOFF)
24.02	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.37 WATERSHED INCHES; 97 CFS-HRS; 8.0 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	97.1	(NULL)
15.84	3.1	(NULL)
17.34	2.4	(NULL)
24.02	1.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.37 WATERSHED INCHES; 97 CFS-HRS; 8.0 ACRE-  
FEET.

OPERATION REACH XSECTION 42

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	92.9	223.28
24.08	1.3	222.12

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.37 WATERSHED INCHES; 97 CFS-HRS; 8.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 43

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	289.3	(RUNOFF)
18.87	8.0	(RUNOFF)
20.86	7.1	(RUNOFF)
21.97	6.6	(RUNOFF)
23.10	6.0	(RUNOFF)
24.03	5.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

4.01 WATERSHED INCHES; 313 CFS-HRS; 25.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 44

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.22	380.3	(NULL)
18.66	10.1	(NULL)
20.11	9.3	(NULL)
21.99	8.1	(NULL)
23.11	7.4	(NULL)
23.76	7.0	(NULL)
24.03	7.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.40 WATERSHED INCHES; 411 CFS-HRS; 33.9 ACRE-  
FEET.

OPERATION REACH XSECTION 45

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.45	1345.3	229.05
24.10	29.3	222.89

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.48 WATERSHED INCHES; 2189 CFS-HRS; 180.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.41	1554.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.03 WATERSHED INCHES; 2600 CFS-HRS; 214.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 47

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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.31	802.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.09 WATERSHED INCHES; 1108 CFS-HRS; 91.6 ACRE-  
FEET.



OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	107.1	(RUNOFF)
15.84	3.3	(RUNOFF)
18.85	2.0	(RUNOFF)
24.01	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.72 WATERSHED INCHES; 107 CFS-HRS; 8.9 ACRE-FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	107.1	(NULL)
15.84	3.3	(NULL)
18.85	2.0	(NULL)
24.01	1.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.72 WATERSHED INCHES; 107 CFS-HRS; 8.9 ACRE-FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	96.8	317.32
18.91	2.0	316.17
24.08	1.4	316.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.71 WATERSHED INCHES; 107 CFS-HRS; 8.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	892.9	(NULL)
20.09	22.7	(NULL)
23.08	18.1	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.14 WATERSHED INCHES; 1216 CFS-HRS; 100.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	84.8	(RUNOFF)
24.02	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.20 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	84.8	(NULL)
24.02	1.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.20 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	953.8	279.31
20.09	24.4	276.32
23.09	19.4	276.28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.14 WATERSHED INCHES; 1303 CFS-HRS; 107.7 ACRE-  
FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.51	819.7	279.05

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.14 WATERSHED INCHES; 1303 CFS-HRS; 107.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 53

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	494.4	(RUNOFF)

19.46	13.3	(RUNOFF)
20.86	12.1	(RUNOFF)
21.97	11.3	(RUNOFF)
23.10	10.3	(RUNOFF)
24.03	9.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.99 WATERSHED INCHES; 536 CFS-HRS; 44.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	1057.1	(NULL)
24.01	27.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.31 WATERSHED INCHES; 1839 CFS-HRS; 152.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	3891.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.80 WATERSHED INCHES; 5739 CFS-HRS; 474.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	55.0	(RUNOFF)
20.04	1.1	(RUNOFF)
20.60	1.0	(RUNOFF)
20.83	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.31 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	3910.7	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.79 WATERSHED INCHES; 5786 CFS-HRS; 478.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.13	162.6	(RUNOFF)
15.84	4.7	(RUNOFF)
17.34	3.6	(RUNOFF)
23.04	2.2	(RUNOFF)
23.70	2.0	(RUNOFF)
24.00	2.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.26 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 59

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.50	1055.2	133.22
24.07	27.9	130.01

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.30 WATERSHED INCHES; 1839 CFS-HRS; 152.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.49	1093.6	(NULL)
23.98	29.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.36 WATERSHED INCHES; 1983 CFS-HRS; 163.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.37	4957.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.67 WATERSHED INCHES; 7769 CFS-HRS; 642.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 62

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	103.9	(RUNOFF)
15.84	3.2	(RUNOFF)
17.34	2.4	(RUNOFF)
24.01	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.90 WATERSHED INCHES; 104 CFS-HRS; 8.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	5002.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.69 WATERSHED INCHES; 7873 CFS-HRS; 650.6 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 7

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AMOUNT	ELEVATION	TIME	RATE	RATE
ID	OPERATION	AREA (SQ MI)	(IN)	(FT)	(HR)	(CFS)	(CSM)	
RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.								
RAINTABLE NUMBER 1, ARC 2								
MAIN TIME INCREMENT .060 HOURS								
ALTERNATE 1		STORM 2						
XSECTION	1	RUNOFF	.21	1.22	---	12.26	137	652.4
XSECTION	2	RUNOFF	.03	1.03	---	12.20	18	600.0
STRUCTURE	58	RESVOR	.03	1.03	---	12.20	18	600.0

XSECTION	4	RUNOFF	.06	1.47	---	12.16	63	1050.0
XSECTION	6	RUNOFF	.08	1.06	---	12.19	53	662.5
XSECTION	9	RUNOFF	.06	1.27	---	12.19	49	816.7
XSECTION	10	RUNOFF	.03	1.29	---	12.23	19	633.3
STRUCTURE	52	RESVOR	.03	1.29	---	12.23	19	633.3
XSECTION	12	ADDHYD	.09	1.28	---	12.21	63	700.0
XSECTION	13	RUNOFF	.04	1.67	---	12.18	49	1225.0
STRUCTURE	51	RESVOR	.04	1.67	---	12.18	49	1225.0
XSECTION	15	RUNOFF	.08	1.19	---	12.16	66	825.0
XSECTION	17	ADDHYD	.21	1.33	---	12.24	151	719.0
XSECTION	18	ADDHYD	.59	1.25	---	12.26	396	671.2
XSECTION	19	RUNOFF	.27	1.01	---	12.33	122	451.9
XSECTION	20	REACH	.59	1.25	236.08	12.37	360	610.2
XSECTION	21	ADDHYD	.86	1.17	---	12.37	480	558.1
XSECTION	22	RUNOFF	.02	1.60	---	12.22	17	850.0
STRUCTURE	47	RESVOR	.02	1.60	---	12.22	17	850.0
XSECTION	23	RUNOFF	.08	1.60	---	12.20	80	1000.0
STRUCTURE	32	RESVOR	.08	1.60	---	12.20	80	1000.0
XSECTION	25	RUNOFF	.05	1.58	---	12.19	46	920.0
STRUCTURE	34	RESVOR	.15	1.59	---	12.20	143	953.3
XSECTION	27	RUNOFF	.01	1.19	---	12.12	13	1300.0
XSECTION	28	ADDHYD	.16	1.56	---	12.19	151	943.8
XSECTION	29	RUNOFF	.05	1.96	---	12.11	81	1620.0
STRUCTURE	64	RESVOR	.05	1.96	---	12.11	81	1620.0
XSECTION	31	RUNOFF	.17	1.75	---	12.33	142	835.3

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD		DRAINAGE	RUNOFF	PEAK DISCHARGE			
	CONTROL	OPERATION			ELEVATION	TIME	RATE	RATE
ID			AREA (SQ MI)	AMOUNT (IN)	(FT)	(HR)	(CFS)	(CSM)
	ALTERNATE	1	STORM	2				
XSECTION	33	RUNOFF	.05	1.60	---	12.21	46	920.0
XSECTION	36	RUNOFF	.02	1.64	---	12.27	21	1050.0
STRUCTURE	33	RESVOR	.02	1.64	---	12.27	21	1050.0
XSECTION	38	RUNOFF	.07	1.33	---	12.13	69	985.7
XSECTION	39	ADDHYD	.36	1.67	---	12.31	272	755.6

XSECTION	41	RUNOFF	.02	1.57	---	12.18	25	1250.0
STRUCTURE	29	RESVOR	.02	1.57	---	12.18	25	1250.0
XSECTION	43	RUNOFF	.12	.51	---	12.26	26	216.7
XSECTION	44	ADDHYD	.14	.68	---	12.26	49	350.0
XSECTION	46	ADDHYD	.67	1.43	---	12.36	414	617.9
XSECTION	47	RUNOFF	.28	1.40	---	12.32	185	660.7
XSECTION	48	RUNOFF	.02	1.78	---	12.17	30	1500.0
STRUCTURE	40	RESVOR	.02	1.78	---	12.17	30	1500.0
XSECTION	51	RUNOFF	.02	1.47	---	12.19	21	1050.0
STRUCTURE	43	RESVOR	.02	1.47	---	12.19	21	1050.0
XSECTION	52	ADDHYD	.33	1.44	277.13	12.31	224	678.8
XSECTION	53	RUNOFF	.21	.50	---	12.26	44	209.5
XSECTION	54	ADDHYD	.54	1.07	---	12.44	232	429.6
XSECTION	55	ADDHYD	1.53	1.29	---	12.36	895	585.0
XSECTION	56	RUNOFF	.02	.61	---	12.14	6	300.0
XSECTION	57	ADDHYD	1.55	1.28	---	12.36	897	578.7
XSECTION	58	RUNOFF	.04	1.51	---	12.14	41	1025.0
XSECTION	62	RUNOFF	.02	1.90	---	12.17	30	1500.0
XSECTION	63	ADDHYD	2.15	1.24	---	12.38	1123	522.3

RAINFALL OF 4.10 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 5

XSECTION	1	RUNOFF	.21	1.90	---	12.25	218	1038.1
XSECTION	2	RUNOFF	.03	1.67	---	12.20	30	1000.0

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A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RUNOFF AMOUNT	PEAK DISCHARGE ELEVATION	PEAK DISCHARGE			
					TIME (HR)	RATE (CFS)	RATE (CSM)	
ID	OPERATION	(SQ MI)	(IN)	(FT)				
ALTERNATE	1	STORM	5					
STRUCTURE	58	RESVOR	.03	1.67	---	12.20	30	1000.0
XSECTION	4	RUNOFF	.06	2.21	---	12.15	96	1600.0
XSECTION	6	RUNOFF	.08	1.70	---	12.19	88	1100.0
XSECTION	9	RUNOFF	.06	1.98	---	12.19	77	1283.3
XSECTION	10	RUNOFF	.03	1.99	---	12.23	30	1000.0
STRUCTURE	52	RESVOR	.03	1.99	---	12.23	30	1000.0

XSECTION	12	ADDHYD	.09	1.98	---	12.21	100	1111.1
XSECTION	13	RUNOFF	.04	2.45	---	12.18	72	1800.0
STRUCTURE	51	RESVOR	.04	2.45	---	12.18	72	1800.0
XSECTION	15	RUNOFF	.08	1.87	---	12.16	106	1325.0
XSECTION	17	ADDHYD	.21	2.04	---	12.23	239	1138.1
XSECTION	18	ADDHYD	.59	1.95	---	12.25	634	1074.6
XSECTION	19	RUNOFF	.27	1.64	---	12.32	208	770.4
XSECTION	20	REACH	.59	1.95	236.92	12.37	567	961.0
XSECTION	21	ADDHYD	.86	1.85	---	12.36	770	895.3
XSECTION	22	RUNOFF	.02	2.37	---	12.22	25	1250.0
STRUCTURE	47	RESVOR	.02	2.37	---	12.22	25	1250.0
XSECTION	23	RUNOFF	.08	2.37	---	12.20	119	1487.5
STRUCTURE	32	RESVOR	.08	2.37	---	12.20	119	1487.5
XSECTION	25	RUNOFF	.05	2.35	---	12.19	68	1360.0
STRUCTURE	34	RESVOR	.15	2.36	---	12.20	212	1413.3
XSECTION	27	RUNOFF	.01	1.88	---	12.12	20	2000.0
XSECTION	28	ADDHYD	.16	2.32	---	12.19	225	1406.3
XSECTION	29	RUNOFF	.05	2.79	---	12.11	113	2260.0
STRUCTURE	64	RESVOR	.05	2.79	---	12.11	113	2260.0
XSECTION	31	RUNOFF	.17	2.55	---	12.32	207	1217.6
XSECTION	33	RUNOFF	.05	2.38	---	12.20	68	1360.0
XSECTION	36	RUNOFF	.02	2.42	---	12.27	30	1500.0
STRUCTURE	33	RESVOR	.02	2.42	---	12.27	30	1500.0
XSECTION	38	RUNOFF	.07	2.05	---	12.13	107	1528.6

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F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
	ALTERNATE	1	STORM	5				
XSECTION	39	ADDHYD	.36	2.46	---	12.30	402	1116.7
XSECTION	41	RUNOFF	.02	2.34	---	12.17	37	1850.0
STRUCTURE	29	RESVOR	.02	2.34	---	12.17	37	1850.0
XSECTION	43	RUNOFF	.12	.96	---	12.23	61	508.3
XSECTION	44	ADDHYD	.14	1.18	---	12.24	95	678.6
XSECTION	46	ADDHYD	.67	2.15	---	12.34	634	946.3
XSECTION	47	RUNOFF	.28	2.14	---	12.32	285	1017.9



XSECTION	48	RUNOFF	.02	2.59	---	12.17	44	2200.0
STRUCTURE	40	RESVOR	.02	2.59	---	12.17	44	2200.0
XSECTION	51	RUNOFF	.02	2.22	---	12.18	31	1550.0
STRUCTURE	43	RESVOR	.02	2.22	---	12.18	31	1550.0
XSECTION	52	ADDHYD	.33	2.17	277.42	12.31	343	1039.4
XSECTION	53	RUNOFF	.21	.95	---	12.23	103	490.5
XSECTION	54	ADDHYD	.54	1.70	---	12.41	380	703.7
XSECTION	55	ADDHYD	1.53	1.98	---	12.35	1403	917.0
XSECTION	56	RUNOFF	.02	1.11	---	12.14	13	650.0
XSECTION	57	ADDHYD	1.55	1.97	---	12.35	1409	909.0
XSECTION	58	RUNOFF	.04	2.27	---	12.13	61	1525.0
XSECTION	62	RUNOFF	.02	2.72	---	12.16	43	2150.0
XSECTION	63	ADDHYD	2.15	1.92	---	12.37	1793	834.0

RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 10

XSECTION	1	RUNOFF	.21	2.56	---	12.25	295	1404.8
XSECTION	2	RUNOFF	.03	2.29	---	12.19	42	1400.0
STRUCTURE	58	RESVOR	.03	2.29	---	12.19	42	1400.0
XSECTION	4	RUNOFF	.06	2.91	---	12.15	125	2083.3
XSECTION	6	RUNOFF	.08	2.33	---	12.18	121	1512.5
XSECTION	9	RUNOFF	.06	2.64	---	12.18	103	1716.7

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 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)
ALTERNATE	1	STORM	10					
XSECTION	10	RUNOFF	.03	2.67	---	12.23	40	1333.3
STRUCTURE	52	RESVOR	.03	2.67	---	12.23	40	1333.3
XSECTION	12	ADDHYD	.09	2.65	---	12.20	135	1500.0
XSECTION	13	RUNOFF	.04	3.18	---	12.18	92	2300.0
STRUCTURE	51	RESVOR	.04	3.18	---	12.18	92	2300.0
XSECTION	15	RUNOFF	.08	2.53	---	12.16	143	1787.5
XSECTION	17	ADDHYD	.21	2.71	---	12.22	321	1528.6
XSECTION	18	ADDHYD	.59	2.61	---	12.24	856	1450.8

XSECTION	19	RUNOFF	.27	2.26	---	12.32	290	1074.1
XSECTION	20	REACH	.59	2.61	237.56	12.37	762	1291.5
XSECTION	21	ADDHYD	.86	2.50	---	12.35	1046	1216.3
XSECTION	22	RUNOFF	.02	3.09	---	12.22	33	1650.0
STRUCTURE	47	RESVOR	.02	3.09	---	12.22	33	1650.0
XSECTION	23	RUNOFF	.08	3.09	---	12.20	154	1925.0
STRUCTURE	32	RESVOR	.08	3.09	---	12.20	154	1925.0
XSECTION	25	RUNOFF	.05	3.07	---	12.19	89	1780.0
STRUCTURE	34	RESVOR	.15	3.08	---	12.20	276	1840.0
XSECTION	27	RUNOFF	.01	2.54	---	12.12	27	2700.0
XSECTION	28	ADDHYD	.16	3.04	---	12.19	293	1831.3
XSECTION	29	RUNOFF	.05	3.56	---	12.11	142	2840.0
STRUCTURE	64	RESVOR	.05	3.56	---	12.11	142	2840.0
XSECTION	31	RUNOFF	.17	3.28	---	12.32	264	1552.9
XSECTION	33	RUNOFF	.05	3.10	---	12.20	89	1780.0
XSECTION	36	RUNOFF	.02	3.14	---	12.27	39	1950.0
STRUCTURE	33	RESVOR	.02	3.14	---	12.27	39	1950.0
XSECTION	38	RUNOFF	.07	2.74	---	12.13	143	2042.9
XSECTION	39	ADDHYD	.36	3.18	---	12.29	520	1444.4
XSECTION	41	RUNOFF	.02	3.05	---	12.17	48	2400.0
STRUCTURE	29	RESVOR	.02	3.05	---	12.17	48	2400.0
XSECTION	43	RUNOFF	.12	1.43	---	12.23	96	800.0

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				ELEVATION	TIME	RATE	RATE	
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	(FT)	(HR)	(CFS)	(CSM)	
ALTERNATE	1	STORM	10					
XSECTION	44	ADDHYD	.14	1.70	---	12.24	140	1000.0
XSECTION	46	ADDHYD	.67	2.83	---	12.33	829	1237.3
XSECTION	47	RUNOFF	.28	2.83	---	12.32	379	1353.6
XSECTION	48	RUNOFF	.02	3.32	---	12.17	55	2750.0
STRUCTURE	40	RESVOR	.02	3.32	---	12.17	55	2750.0
XSECTION	51	RUNOFF	.02	2.92	---	12.18	41	2050.0
STRUCTURE	43	RESVOR	.02	2.92	---	12.18	41	2050.0
XSECTION	52	ADDHYD	.33	2.87	277.68	12.31	454	1375.8
XSECTION	53	RUNOFF	.21	1.42	---	12.22	164	781.0

XSECTION	54	ADDHYD	.54	2.31	---	12.38	525	972.2
XSECTION	55	ADDHYD	1.53	2.64	---	12.35	1873	1224.2
XSECTION	56	RUNOFF	.02	1.62	---	12.14	20	1000.0
XSECTION	57	ADDHYD	1.55	2.63	---	12.35	1881	1213.5
XSECTION	58	RUNOFF	.04	2.97	---	12.13	79	1975.0
XSECTION	62	RUNOFF	.02	3.48	---	12.16	54	2700.0
XSECTION	63	ADDHYD	2.15	2.56	---	12.36	2423	1127.0
RAINFALL OF 6.14 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.								
ALTERNATE 1 STORM 25								
XSECTION	1	RUNOFF	.21	3.62	---	12.24	416	1981.0
XSECTION	2	RUNOFF	.03	3.30	---	12.19	61	2033.3
STRUCTURE	58	RESVOR	.03	3.30	---	12.19	61	2033.3
XSECTION	4	RUNOFF	.06	4.02	---	12.15	172	2866.7
XSECTION	6	RUNOFF	.08	3.35	---	12.18	175	2187.5
XSECTION	9	RUNOFF	.06	3.71	---	12.18	144	2400.0
XSECTION	10	RUNOFF	.03	3.74	---	12.22	56	1866.7
STRUCTURE	52	RESVOR	.03	3.74	---	12.22	56	1866.7
XSECTION	12	ADDHYD	.09	3.72	---	12.20	190	2111.1
XSECTION	13	RUNOFF	.04	4.32	---	12.18	125	3125.0

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RUNOFF AMOUNT	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
-----								
ALTERNATE 1 STORM 25								
STRUCTURE	51	RESVOR	.04	4.32	---	12.18	125	3125.0
XSECTION	15	RUNOFF	.08	3.58	---	12.16	202	2525.0
XSECTION	17	ADDHYD	.21	3.79	---	12.22	452	2152.4
XSECTION	18	ADDHYD	.59	3.67	---	12.24	1206	2044.1
XSECTION	19	RUNOFF	.27	3.26	---	12.31	421	1559.3
XSECTION	20	REACH	.59	3.67	238.45	12.36	1079	1828.8
XSECTION	21	ADDHYD	.86	3.54	---	12.35	1491	1733.7
XSECTION	22	RUNOFF	.02	4.22	---	12.21	44	2200.0
STRUCTURE	47	RESVOR	.02	4.22	---	12.21	44	2200.0
XSECTION	23	RUNOFF	.08	4.22	---	12.19	208	2600.0

STRUCTURE	32	RESVOR	.08	4.22	---	12.19	208	2600.0
XSECTION	25	RUNOFF	.05	4.19	---	12.19	121	2420.0
STRUCTURE	34	RESVOR	.15	4.21	---	12.19	373	2486.7
XSECTION	27	RUNOFF	.01	3.57	---	12.11	37	3700.0
XSECTION	28	ADDHYD	.16	4.16	---	12.19	397	2481.3
XSECTION	29	RUNOFF	.05	4.73	---	12.11	185	3700.0
STRUCTURE	64	RESVOR	.05	4.73	---	12.11	185	3700.0
XSECTION	31	RUNOFF	.17	4.43	---	12.31	354	2082.4
XSECTION	33	RUNOFF	.05	4.22	---	12.20	120	2400.0
XSECTION	36	RUNOFF	.02	4.27	---	12.27	53	2650.0
STRUCTURE	33	RESVOR	.02	4.27	---	12.27	53	2650.0
XSECTION	38	RUNOFF	.07	3.82	---	12.13	198	2828.6
XSECTION	39	ADDHYD	.36	4.32	---	12.28	706	1961.1
XSECTION	41	RUNOFF	.02	4.18	---	12.17	65	3250.0
STRUCTURE	29	RESVOR	.02	4.18	---	12.17	65	3250.0
XSECTION	43	RUNOFF	.12	2.25	---	12.22	158	1316.7
XSECTION	44	ADDHYD	.14	2.57	---	12.23	219	1564.3
XSECTION	46	ADDHYD	.67	3.90	---	12.32	1148	1713.4
XSECTION	47	RUNOFF	.28	3.92	---	12.31	523	1867.9
XSECTION	48	RUNOFF	.02	4.48	---	12.16	74	3700.0

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
	ALTERNATE	1	STORM	25				
STRUCTURE	40	RESVOR	.02	4.48	---	12.16	74	3700.0
XSECTION	51	RUNOFF	.02	4.03	---	12.18	56	2800.0
STRUCTURE	43	RESVOR	.02	4.03	---	12.18	56	2800.0
XSECTION	52	ADDHYD	.33	3.97	278.16	12.29	624	1890.9
XSECTION	53	RUNOFF	.21	2.23	---	12.22	268	1276.2
XSECTION	54	ADDHYD	.54	3.30	---	12.35	761	1409.3
XSECTION	55	ADDHYD	1.53	3.70	---	12.34	2631	1719.6
XSECTION	56	RUNOFF	.02	2.49	---	12.13	31	1550.0
XSECTION	57	ADDHYD	1.55	3.68	---	12.34	2644	1705.8
XSECTION	58	RUNOFF	.04	4.09	---	12.13	108	2700.0

XSECTION 62 RUNOFF .02 4.65 --- 12.16 71 3550.0  
 XSECTION 63 ADDHYD 2.15 3.61 --- 12.35 3448 1603.7

RAINFALL OF 7.23 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 50

XSECTION 1 RUNOFF .21 4.59 --- 12.24 526 2504.8  
 XSECTION 2 RUNOFF .03 4.24 --- 12.19 78 2600.0  
 STRUCTURE 58 RESVOR .03 4.24 --- 12.19 78 2600.0  
 XSECTION 4 RUNOFF .06 5.03 --- 12.15 213 3550.0  
 XSECTION 6 RUNOFF .08 4.30 --- 12.18 223 2787.5  
  
 XSECTION 9 RUNOFF .06 4.69 --- 12.18 181 3016.7  
 XSECTION 10 RUNOFF .03 4.72 --- 12.22 71 2366.7  
 STRUCTURE 52 RESVOR .03 4.72 --- 12.22 71 2366.7  
 XSECTION 12 ADDHYD .09 4.70 --- 12.20 239 2655.6  
 XSECTION 13 RUNOFF .04 5.35 --- 12.17 153 3825.0  
  
 STRUCTURE 51 RESVOR .04 5.35 --- 12.17 153 3825.0  
 XSECTION 15 RUNOFF .08 4.55 --- 12.16 255 3187.5  
 XSECTION 17 ADDHYD .21 4.78 --- 12.21 570 2714.3  
 XSECTION 18 ADDHYD .59 4.65 --- 12.24 1525 2584.7

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 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RUNOFF AMOUNT	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ID	OPERATION	(SQ MI)	(IN)				
ALTERNATE 1 STORM 50							
XSECTION 19	RUNOFF	.27	4.19	---	12.31	541	2003.7
XSECTION 20	REACH	.59	4.65	239.17	12.35	1370	2322.0
XSECTION 21	ADDHYD	.86	4.50	---	12.34	1901	2210.5
XSECTION 22	RUNOFF	.02	5.24	---	12.22	55	2750.0
STRUCTURE 47	RESVOR	.02	5.24	---	12.22	55	2750.0
XSECTION 23	RUNOFF	.08	5.24	---	12.19	257	3212.5
STRUCTURE 32	RESVOR	.08	5.24	---	12.19	257	3212.5
XSECTION 25	RUNOFF	.05	5.21	---	12.19	149	2980.0
STRUCTURE 34	RESVOR	.15	5.23	---	12.19	460	3066.7
XSECTION 27	RUNOFF	.01	4.57	---	12.11	47	4700.0
XSECTION 28	ADDHYD	.16	5.18	---	12.19	490	3062.5

XSECTION	29	RUNOFF	.05	5.78	---	12.11	220	4400.0
STRUCTURE	64	RESVOR	.05	5.78	---	12.11	220	4400.0
XSECTION	31	RUNOFF	.17	5.47	---	12.31	433	2547.1
XSECTION	33	RUNOFF	.05	5.25	---	12.20	148	2960.0
XSECTION	36	RUNOFF	.02	5.30	---	12.26	65	3250.0
STRUCTURE	33	RESVOR	.02	5.30	---	12.26	65	3250.0
XSECTION	38	RUNOFF	.07	4.81	---	12.13	247	3528.6
XSECTION	39	ADDHYD	.36	5.35	---	12.27	870	2416.7
XSECTION	41	RUNOFF	.02	5.19	---	12.17	80	4000.0
STRUCTURE	29	RESVOR	.02	5.19	---	12.17	80	4000.0
XSECTION	43	RUNOFF	.12	3.05	---	12.22	217	1808.3
XSECTION	44	ADDHYD	.14	3.40	---	12.23	292	2085.7
XSECTION	46	ADDHYD	.67	4.88	---	12.32	1432	2137.3
XSECTION	47	RUNOFF	.28	4.93	---	12.31	655	2339.3
XSECTION	48	RUNOFF	.02	5.52	---	12.16	89	4450.0
STRUCTURE	40	RESVOR	.02	5.52	---	12.16	89	4450.0
XSECTION	51	RUNOFF	.02	5.04	---	12.18	70	3500.0
STRUCTURE	43	RESVOR	.02	5.04	---	12.18	70	3500.0
XSECTION	52	ADDHYD	.33	4.98	278.93	12.29	779	2360.6

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)
ALTERNATE	1	STORM	50					
XSECTION	53	RUNOFF	.21	3.03	---	12.21	370	1761.9
XSECTION	54	ADDHYD	.54	4.22	---	12.35	931	1724.1
XSECTION	55	ADDHYD	1.53	4.67	---	12.33	3324	2172.5
XSECTION	56	RUNOFF	.02	3.31	---	12.13	42	2100.0
XSECTION	57	ADDHYD	1.55	4.65	---	12.33	3341	2155.5
XSECTION	58	RUNOFF	.04	5.09	---	12.13	134	3350.0
XSECTION	62	RUNOFF	.02	5.70	---	12.16	87	4350.0
XSECTION	63	ADDHYD	2.15	4.56	---	12.34	4329	2013.5

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 99  
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XSECTION	1	RUNOFF	.21	5.72	---	12.24	653	3109.5
XSECTION	2	RUNOFF	.03	5.34	---	12.19	98	3266.7
STRUCTURE	58	RESVOR	.03	5.34	---	12.19	98	3266.7
XSECTION	4	RUNOFF	.06	6.19	---	12.15	259	4316.7
XSECTION	6	RUNOFF	.08	5.40	---	12.18	278	3475.0
XSECTION	9	RUNOFF	.06	5.84	---	12.18	223	3716.7
XSECTION	10	RUNOFF	.03	5.86	---	12.22	87	2900.0
STRUCTURE	52	RESVOR	.03	5.86	---	12.22	87	2900.0
XSECTION	12	ADDHYD	.09	5.84	---	12.20	295	3277.8
XSECTION	13	RUNOFF	.04	6.54	---	12.17	185	4625.0
STRUCTURE	51	RESVOR	.04	6.54	---	12.17	185	4625.0
XSECTION	15	RUNOFF	.08	5.68	---	12.16	317	3962.5
XSECTION	17	ADDHYD	.21	5.93	---	12.21	697	3319.0
XSECTION	18	ADDHYD	.59	5.78	---	12.24	1875	3178.0
XSECTION	19	RUNOFF	.27	5.30	---	12.31	684	2533.3
XSECTION	20	REACH	.59	5.78	239.87	12.35	1692	2867.8
XSECTION	21	ADDHYD	.86	5.63	---	12.34	2363	2747.7
XSECTION	22	RUNOFF	.02	6.42	---	12.22	67	3350.0

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A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE		1	STORM	99				
STRUCTURE	47	RESVOR	.02	6.42	---	12.22	67	3350.0
XSECTION	23	RUNOFF	.08	6.42	---	12.19	312	3900.0
STRUCTURE	32	RESVOR	.08	6.42	---	12.19	312	3900.0
XSECTION	25	RUNOFF	.05	6.39	---	12.19	181	3620.0
STRUCTURE	34	RESVOR	.15	6.41	---	12.19	558	3720.0
XSECTION	27	RUNOFF	.01	5.67	---	12.11	59	5900.0
XSECTION	28	ADDHYD	.16	6.36	---	12.18	596	3725.0
XSECTION	29	RUNOFF	.05	6.96	---	12.11	262	5240.0
STRUCTURE	64	RESVOR	.05	6.96	---	12.11	262	5240.0
XSECTION	31	RUNOFF	.17	6.66	---	12.31	522	3070.6
XSECTION	33	RUNOFF	.05	6.43	---	12.20	178	3560.0
XSECTION	36	RUNOFF	.02	6.49	---	12.26	79	3950.0
STRUCTURE	33	RESVOR	.02	6.49	---	12.26	79	3950.0

XSECTION	38	RUNOFF	.07	5.96	---	12.13	304	4342.9
XSECTION	39	ADDHYD	.36	6.53	---	12.27	1035	2875.0
XSECTION	41	RUNOFF	.02	6.37	---	12.17	97	4850.0
STRUCTURE	29	RESVOR	.02	6.37	---	12.17	97	4850.0
XSECTION	43	RUNOFF	.12	4.01	---	12.21	289	2408.3
XSECTION	44	ADDHYD	.14	4.40	---	12.22	380	2714.3
XSECTION	46	ADDHYD	.67	6.03	---	12.41	1555	2320.9
XSECTION	47	RUNOFF	.28	6.09	---	12.31	803	2867.9
XSECTION	48	RUNOFF	.02	6.72	---	12.16	107	5350.0
STRUCTURE	40	RESVOR	.02	6.72	---	12.16	107	5350.0
XSECTION	51	RUNOFF	.02	6.20	---	12.18	85	4250.0
STRUCTURE	43	RESVOR	.02	6.20	---	12.18	85	4250.0
XSECTION	52	ADDHYD	.33	6.14	279.31	12.28	954	2890.9
XSECTION	53	RUNOFF	.21	3.99	---	12.21	494	2352.4
XSECTION	54	ADDHYD	.54	5.31	---	12.44	1057	1957.4
XSECTION	55	ADDHYD	1.53	5.80	---	12.36	3891	2543.1
XSECTION	56	RUNOFF	.02	4.31	---	12.13	55	2750.0

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A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)
ALTERNATE	1	STORM	99					
XSECTION	57	ADDHYD	1.55	5.79	---	12.36	3911	2523.2
XSECTION	58	RUNOFF	.04	6.26	---	12.13	163	4075.0
XSECTION	62	RUNOFF	.02	6.90	---	12.16	104	5200.0
XSECTION	63	ADDHYD	2.15	5.69	---	12.36	5002	2326.5

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SUMMARY TABLE 2



MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

		HYDROGRAPH INFORMATION				ROUTING PARAMETERS					
XSEC ID	REACH LENGTH COEFF	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT- KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			

BASEFLOW IS .0 CFS

ALTERNATE		1	STORM		2						
7	2055		203	12.2	200	12.3	1.67	1.52	.012	.986	
	.81?										
11	1397		19	12.2	19	12.3	2.53	1.54	.015	.972	
	.76?										
16	2449		111	12.2	102	12.3	2.48	1.39	.034	.920	
	.61										
20	4470		394	12.2	359	12.4	1.90	1.44	.040	.912	
	.50										
30	1561		80	12.1	74	12.2	1.16	1.56	.030	.920	
	.73?										
35	2077		236	12.2	221	12.4	1.15	1.41	.029	.936	
	.57										
42	2112		25	12.2	22	12.2	3.56	1.38	.042	.897	
	.60										
45	3148		402	12.2	374	12.4	4.98	1.13	.054	.930	
	.49										
49	1829		30	12.2	25	12.3	1.48	1.40	.072	.826	
	.45										
52	4744		223	12.3	199	12.5	1.18	1.51	.050	.893	
	.39										
59	1671		231	12.4	229	12.5	3.31	1.24	.018	.988	
	.75?										
ALTERNATE		1	STORM		5						
7	2055		324	12.2	318	12.3	1.77	1.50	.011	.980	
	.88?										
11	1397		30	12.2	30	12.3	2.54	1.53	.013	.986	
	.83?										
16	2449		171	12.2	158	12.3	2.52	1.38	.031	.928	
	.65										
20	4470		633	12.2	566	12.4	2.96	1.28	.058	.894	
	.46										
30	1561		113	12.1	106	12.2	1.20	1.54	.025	.940	
	.77?										
35	2077		342	12.2	324	12.3	1.19	1.40	.026	.946	
	.61										
42	2112		37	12.2	34	12.2	3.58	1.37	.037	.919	
	.64										
45	3148		601	12.2	559	12.4	5.24	1.12	.056	.930	

.49	49	1829	43	12.2	37	12.3	1.50	1.39	.064	.851
.48	52	4744	343	12.3	312	12.4	1.25	1.49	.044	.909
.43	59	1671	379	12.4	377	12.5	3.33	1.23	.017	.994
.79?										

ALTERNATE 1 STORM 10

.89?	7	2055	436	12.2	427	12.3	2.05	1.44	.012	.980
.87?	11	1397	40	12.2	40	12.3	2.57	1.52	.011	.990

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;

ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC REACH ID COEFF	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
ALTERNATE	1	STORM	10								
.69?	16	2449	226	12.2	210	12.3	2.56	1.37	.028	.930	
.46	20	4470	855	12.2	762	12.4	3.55	1.23	.064	.891	
.81?	30	1561	141	12.1	135	12.2	1.23	1.53	.022	.952	
.63	35	2077	436	12.2	418	12.3	1.22	1.39	.024	.959	
.67?	42	2112	48	12.2	44	12.2	3.60	1.37	.034	.934	
.46	45	3148	783	12.2	719	12.4	6.22	1.06	.067	.917	
.50	49	1829	55	12.2	47	12.3	1.51	1.38	.058	.871	
.45	52	4744	454	12.3	418	12.4	1.30	1.48	.040	.921	
.82?	59	1671	523	12.4	520	12.5	3.33	1.23	.016	.995	

ALTERNATE	1	STORM	25						
7	2055	616	12.2	602	12.2	2.74	1.34	.016	.977
.87?									
11	1397	56	12.2	56	12.3	2.61	1.50	.010	.996
.92?									
16	2449	312	12.2	293	12.2	2.60	1.37	.025	.939
.72?									
20	4470	1206	12.2	1079	12.4	3.86	1.21	.064	.895
.46									
30	1561	184	12.1	177	12.2	1.26	1.52	.020	.963
.84?									
35	2077	583	12.2	564	12.3	1.26	1.38	.021	.968
.67?									
42	2112	65	12.2	62	12.2	3.61	1.36	.031	.945
.70?									
45	3148	1065	12.2	974	12.4	6.60	1.04	.071	.914
.45									
49	1829	73	12.2	65	12.2	1.53	1.38	.052	.885
.53									
52	4744	623	12.3	579	12.4	1.38	1.46	.037	.930
.48									
59	1671	760	12.4	758	12.4	3.22	1.24	.014	.997
.86?									

ALTERNATE	1	STORM	50						
7	2055	781	12.2	764	12.2	3.12	1.30	.017	.978
.87?									
11	1397	70	12.2	70	12.3	2.65	1.49	.009	.999
.95?									
16	2449	389	12.2	369	12.2	2.66	1.36	.024	.947
.74?									

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MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

		HYDROGRAPH INFORMATION				ROUTING PARAMETERS					
XSEC ID	REACH LENGTH	FLOOD PLAIN LENGTH	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR	PEAK RATIO Q/I	ATT- KIN
			PEAK	TIME	PEAK	TIME	COEFF	POWER			
COEFF	(FT)	(FT)	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	(C)

ALTERNATE	1	STORM	50						
20	4470	1524	12.2	1369	12.4	3.95	1.20	.062	.898
.48									
30	1561	219	12.1	213	12.2	1.29	1.51	.018	.971
.87?									
35	2077	713	12.2	693	12.3	1.32	1.37	.021	.972
.68?									
42	2112	80	12.2	76	12.2	3.62	1.36	.028	.955
.72?									
45	3148	1316	12.2	1200	12.4	6.41	1.04	.072	.911
.45									
49	1829	88	12.2	79	12.2	1.54	1.37	.048	.898
.55									
52	4744	778	12.3	696	12.4	1.90	1.31	.063	.895
.39									
59	1671	931	12.4	929	12.4	3.16	1.25	.013	.998
.89?									

ALTERNATE	1	STORM	99						
7	2055	960	12.2	940	12.2	3.41	1.28	.017	.980
.88?									
11	1397	87	12.2	86	12.3	2.69	1.48	.008	1.000
.98?									
16	2449	477	12.2	448	12.2	3.12	1.29	.029	.939
.71?									
20	4470	1875	12.2	1691	12.4	4.12	1.19	.062	.902
.48									
30	1561	261	12.1	255	12.2	1.32	1.50	.016	.978
.89?									
35	2077	859	12.2	823	12.3	1.76	1.29	.027	.958
.63									
42	2112	97	12.2	93	12.2	3.63	1.36	.026	.960
.75?									
45	3148	1577	12.2	1338	12.4	5.58	1.00	.113	.848
.32									
49	1829	106	12.2	96	12.2	1.55	1.37	.044	.909
.56									
52	4744	952	12.3	815	12.5	2.60	1.20	.092	.857
.32									
59	1671	1056	12.4	1053	12.5	3.18	1.25	.011	.997
.90?									

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/  
 STRUCTURE DRAINAGE  
 AREA STORM NUMBERS.....

ID	(SQ MI)	2	5	10	25	50
STRUCTURE 64	.05					
-----						
ALTERNATE 220	1	81	113	142	185	
STRUCTURE 58	.03					
-----						
ALTERNATE 78	1	18	30	42	61	
STRUCTURE 52	.03					
-----						
ALTERNATE 71	1	19	30	40	56	
STRUCTURE 51	.04					
-----						
ALTERNATE 153	1	49	72	92	125	
STRUCTURE 47	.02					
-----						
ALTERNATE 55	1	17	25	33	44	
STRUCTURE 43	.02					
-----						
ALTERNATE 70	1	21	31	41	56	
STRUCTURE 40	.02					
-----						
ALTERNATE 89	1	30	44	55	74	
STRUCTURE 34	.15					
-----						
ALTERNATE 460	1	143	212	276	373	
STRUCTURE 33	.02					
-----						
ALTERNATE 65	1	21	30	39	53	
STRUCTURE 32	.08					
-----						
ALTERNATE 257	1	80	119	154	208	
STRUCTURE 29	.02					
-----						
ALTERNATE 80	1	25	37	48	65	
XSECTION 1	.21					
-----						
ALTERNATE 526	1	137	218	295	416	
XSECTION 2	.03					

-----  
 ALTERNATE 1 18 30 42 61  
 78

XSECTION 4 .06  
 -----

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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION 4 .06 -----						
ALTERNATE 1 213		63	96	125	172	
XSECTION 6 .08 -----						
ALTERNATE 1 223		53	88	121	175	
XSECTION 9 .06 -----						
ALTERNATE 1 181		49	77	103	144	
XSECTION 10 .03 -----						
ALTERNATE 1 71		19	30	40	56	
XSECTION 12 .09 -----						
ALTERNATE 1 239		63	100	135	190	
XSECTION 13 .04 -----						
ALTERNATE 1 153		49	72	92	125	
XSECTION 15 .08 -----						
ALTERNATE 1 255		66	106	143	202	
XSECTION 17 .21 -----						

ALTERNATE 570	1	151	239	321	452
XSECTION	18	.59			
ALTERNATE 1525	1	396	634	856	1206
XSECTION	19	.27			
ALTERNATE 541	1	122	208	290	421
XSECTION	20	.59			
ALTERNATE 1370	1	360	567	762	1079
XSECTION	21	.86			
ALTERNATE 1901	1	480	770	1046	1491
XSECTION	22	.02			
ALTERNATE 55	1	17	25	33	44
XSECTION	23	.08			
ALTERNATE 257	1	80	119	154	208

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION	25	.05				
ALTERNATE 149	1	46	68	89	121	
XSECTION	27	.01				
ALTERNATE 47	1	13	20	27	37	
XSECTION	28	.16				

ALTERNATE 490	1		151	225	293	397
XSECTION	29	.05				
ALTERNATE 220	1		81	113	142	185
XSECTION	31	.17				
ALTERNATE 433	1		142	207	264	354
XSECTION	33	.05				
ALTERNATE 148	1		46	68	89	120
XSECTION	36	.02				
ALTERNATE 65	1		21	30	39	53
XSECTION	38	.07				
ALTERNATE 247	1		69	107	143	198
XSECTION	39	.36				
ALTERNATE 870	1		272	402	520	706
XSECTION	41	.02				
ALTERNATE 80	1		25	37	48	65
XSECTION	43	.12				
ALTERNATE 217	1		26	61	96	158
XSECTION	44	.14				
ALTERNATE 292	1		49	95	140	219
XSECTION	46	.67				
ALTERNATE 1432	1		414	634	829	1148

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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION 47	.28					
----- ALTERNATE 1 655		185	285	379	523	
XSECTION 48	.02					
----- ALTERNATE 1 89		30	44	55	74	
XSECTION 51	.02					
----- ALTERNATE 1 70		21	31	41	56	
XSECTION 52	.33					
----- ALTERNATE 1 779		224	343	454	624	
XSECTION 53	.21					
----- ALTERNATE 1 370		44	103	164	268	
XSECTION 54	.54					
----- ALTERNATE 1 931		232	380	525	761	
XSECTION 55	1.53					
----- ALTERNATE 1 3324		895	1403	1873	2631	
XSECTION 56	.02					
----- ALTERNATE 1 42		6	13	20	31	
XSECTION 57	1.55					
----- ALTERNATE 1 3341		897	1409	1881	2644	
XSECTION 58	.04					
----- ALTERNATE 1 134		41	61	79	108	
XSECTION 62	.02					
----- ALTERNATE 1 87		30	43	54	71	

XSECTION 63 2.15

-----  
 ALTERNATE 1 1123 1793 2423 3448  
 4329

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 STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
------------------------------	-----------------------------	--------------------------

STRUCTURE 64 .05

-----  
 ALTERNATE 1 262

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 STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
------------------------------	-----------------------------	--------------------------

STRUCTURE 58 .03

-----  
 ALTERNATE 1 98

STRUCTURE 52 .03

-----  
 ALTERNATE 1 87

STRUCTURE 51 .04

-----  
 ALTERNATE 1 185

STRUCTURE 47 .02

-----  
 ALTERNATE 1 67

STRUCTURE 43 .02

-----  
 ALTERNATE 1 85

STRUCTURE 40 .02

-----  
 ALTERNATE 1 107

STRUCTURE	34	.15	
ALTERNATE	1		558
STRUCTURE	33	.02	
ALTERNATE	1		79
STRUCTURE	32	.08	
ALTERNATE	1		312
STRUCTURE	29	.02	
ALTERNATE	1		97
XSECTION	1	.21	
ALTERNATE	1		653
XSECTION	2	.03	
ALTERNATE	1		98
XSECTION	4	.06	
ALTERNATE	1		259

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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION 6	.08	
ALTERNATE 1		278
XSECTION 9	.06	
ALTERNATE 1		223
XSECTION 10	.03	
ALTERNATE 1		87
XSECTION 12	.09	
ALTERNATE 1		295

XSECTION	13	.04	
ALTERNATE	1		185
XSECTION	15	.08	
ALTERNATE	1		317
XSECTION	17	.21	
ALTERNATE	1		697
XSECTION	18	.59	
ALTERNATE	1		1875
XSECTION	19	.27	
ALTERNATE	1		684
XSECTION	20	.59	
ALTERNATE	1		1692
XSECTION	21	.86	
ALTERNATE	1		2363
XSECTION	22	.02	
ALTERNATE	1		67
XSECTION	23	.08	
ALTERNATE	1		312

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION 25	.05	
ALTERNATE 1		181
XSECTION 27	.01	
ALTERNATE 1		59

XSECTION	28	.16	
ALTERNATE	1		596
XSECTION	29	.05	
ALTERNATE	1		262
XSECTION	31	.17	
ALTERNATE	1		522
XSECTION	33	.05	
ALTERNATE	1		178
XSECTION	36	.02	
ALTERNATE	1		79
XSECTION	38	.07	
ALTERNATE	1		304
XSECTION	39	.36	
ALTERNATE	1		1035
XSECTION	41	.02	
ALTERNATE	1		97
XSECTION	43	.12	
ALTERNATE	1		289
XSECTION	44	.14	
ALTERNATE	1		380
XSECTION	46	.67	
ALTERNATE	1		1555

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
------------------------------	-----------------------------	--------------------------

XSECTION	47	.28	
-----			
ALTERNATE	1		803
XSECTION	48	.02	
-----			
ALTERNATE	1		107
XSECTION	51	.02	
-----			
ALTERNATE	1		85
XSECTION	52	.33	
-----			
ALTERNATE	1		954
XSECTION	53	.21	
-----			
ALTERNATE	1		494
XSECTION	54	.54	
-----			
ALTERNATE	1		1057
XSECTION	55	1.53	
-----			
ALTERNATE	1		3891
XSECTION	56	.02	
-----			
ALTERNATE	1		55
XSECTION	57	1.55	
-----			
ALTERNATE	1		3911
XSECTION	58	.04	
-----			
ALTERNATE	1		163
XSECTION	62	.02	
-----			
ALTERNATE	1		104
XSECTION	63	2.15	
-----			
ALTERNATE	1		5002

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END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = subdas3.dat , GIVEN DATA FILE  
OUTPUT = subdas3.OUT , DATED  
06/05/\*\*,16:33:20

FILES GENERATED - DATED 06/05/\*\*,16:33:20

NONE!

TOTAL NUMBER OF WARNINGS = 12, MESSAGES = 0

\*\*\* TR-20 RUN COMPLETED \*\*\*

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\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
HYDROLOGY\*\*\*\*\*

JOB TR-20		NOPLOTS			
TITLE Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,					
TITLE CN MGMT- EXISTING COND.- 2, 5, 10, 25, 50, 100 yr (24hr); Std NOAA Dist.					
2	XSECTN	002	1.0	389.50	
8			389.00	0.00	0.00
8			389.25	1.65	1.06
8			389.50	6.25	2.75
8			389.75	14.40	5.06
8			390.00	26.75	8.00
8			390.25	45.54	14.33
8			390.50	68.67	15.00
8			390.75	96.11	18.88
8			391.00	127.89	23.00
8			391.25	164.08	27.38
8			391.50	204.77	32.00
8			391.75	250.06	36.88
9	ENDTBL				
2	XSECTN	005	1.0	367.00	
8			366.00	0.00	0.00
8			366.50	3.51	1.5
8			367.00	13.55	4.00
8			367.50	30.53	9.00
8			367.75	47.87	13.00
8			368.00	72.23	18.00
8			368.25	104.79	23.98
8			368.50	146.13	30.94
8			368.75	197.14	38.86
8			369.00	258.63	47.75
8			369.25	331.41	57.61
8			369.50	416.25	68.44
9	ENDTBL				
3	STRUCT	11			
8			380.00	0.00	0.00
8			381.00	2.70	0.53
8			382.20	53.00	1.16
8			383.80	186.80	1.40
9	ENDTBL				
2	XSECTN	008	1.0	330.00	
8			356.00	0.00	0.00
8			356.50	20.21	6.94
8			357.00	68.51	15.75
8			357.50	144.11	26.44
8			358.00	248.93	39.00
8			358.50	389.07	53.25
8			359.00	561.31	69.00
8			359.50	767.14	86.25
8			360.00	1008.16	105.00
8			361.00	1375.68	147.50
8			361.50	1604.19	171.38
9	ENDTBL				

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
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2	XSECTN	016	1.0	333.08		
8			331.08	0.00	0.00	
8			332.08	80.21	8.00	
8			333.08	225.50	16.00	
8			333.58	310.09	20.00	
8			334.08	399.94	24.00	
8			334.58	493.86	28.00	
8			335.08	590.97	32.00	
8			335.58	690.67	36.00	
8			336.08	792.47	40.00	
8			336.58	896.02	44.00	
9	ENDTBL					
2	XSECTN	023	1.0	314.40		
8			313.22	0.00	0.00	
8			313.51	1.10	0.89	
8			313.81	3.51	1.84	
8			314.10	16.22	5.61	
8			314.40	34.66	9.74	
8			314.68	48.28	24.71	
8			314.96	79.66	42.09	
8			315.24	126.64	61.87	
8			315.52	189.07	84.06	
8			315.80	267.27	108.64	
8			316.08	361.75	135.63	
8			316.36	473.14	165.02	
8			316.64	602.11	196.81	
8			316.92	749.37	231.00	
8			317.20	878.70	277.25	
8			317.48	1103.89	329.14	
8			317.76	1358.10	382.70	
8			318.04	1640.58	437.94	
8			318.32	1950.87	494.86	
8			318.60	2288.69	553.45	
9	ENDTBL					
3	STRUCT	21				
8			364.00	0.00	0.00	
8			366.00	0.30	0.55	
8			368.00	0.50	1.31	
8			369.00	3.20	1.80	
8			370.00	5.20	2.29	
8			372.00	7.80	3.48	
8			374.00	9.60	5.00	
8			375.00	10.40	5.86	
8			376.00	45.30	6.79	
8			376.50	74.10	7.31	
8			377.00	106.80	7.83	
8			378.00	149.80	8.90	
8			379.00	155.60	10.06	
8			380.00	162.00	11.29	
9	ENDTBL					

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

3	STRUCT	22				
8			352.50	0.00	0.00	
8			358.65	100.00	0.91	
8			361.76	140.00	3.28	
8			363.64	160.00	5.47	
8			366.18	180.00	9.58	
8			368.71	200.00	14.77	

8			370.61	250.00	19.31
9	ENDTBL				
3	STRUCT	23			
9	ENDTBL				
2	XSECTN	027	1.0	317.00	
8			316.00	0.00	0.00
8			316.50	2.68	2.59
8			317.00	10.37	6.88
8			317.50	24.26	12.84
8			318.00	45.55	20.50
8			318.50	70.64	34.75
8			319.00	137.01	60.50
8			319.25	200.57	76.25
8			319.50	273.06	92.00
8			319.75	353.76	107.75
8			320.00	442.13	123.50
8			320.50	640.03	155.00
8			321.00	863.72	186.50
9	ENDTBL				
2	XSECTN	032	1.0	313.00	
8			310.00	0.00	0.00
8			311.00	12.25	5.50
8			312.00	52.16	16.00
8			312.50	83.38	23.13
8			313.00	123.94	31.50
8			313.25	148.02	36.16
8			313.50	174.79	41.13
8			313.75	204.34	46.41
8			314.00	236.81	52.00
8			314.50	278.65	65.75
8			315.00	353.72	84.00
9	ENDTBL				
2	XSECTN	034	1.0	338.50	
8			338.00	0.00	0.00
8			338.10	4.87	2.46
8			338.25	22.73	6.38
8			338.50	73.99	13.53
8			338.75	149.34	21.45
8			339.00	247.95	30.13
8			339.50	515.65	49.78
9	ENDTBL				
2	XSECTN	037	1.0	331.00	
8			330.00	0.00	0.00

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			330.25	14.29	3.25
8			330.50	46.85	7.00
8			330.75	95.34	11.25
8			331.00	159.64	16.00
8			331.25	240.13	21.25
8			331.50	337.44	27.00
8			331.75	452.26	33.25
8			332.00	585.36	40.00
8			332.50	875.33	55.81
8			333.00	1272.05	75.25
9	ENDTBL				
2	XSECTN	044	1.0	288.90	
8			287.68	0.00	0.00
8			287.99	1.15	0.94

8		288.29	3.69	1.95
8		288.60	17.06	5.98
8		288.90	36.44	10.37
8		289.19	63.07	39.25
8		289.47	121.85	69.50
8		289.76	206.05	101.12
8		290.05	313.23	134.09
8		290.33	442.07	168.42
8		290.62	591.78	204.12
8		290.91	761.87	241.18
8		291.19	952.02	279.60
8		291.48	1162.04	319.38
8		291.77	1391.84	360.52
8		292.05	1641.40	403.02
8		292.34	1910.74	446.89
8		292.63	2199.92	492.11
8		292.91	2509.04	538.70
8		293.20	2838.22	586.65
9	ENDTBL			
3	STRUCT	31		
8		356.38	0.0	0.00
8		357.26	10.90	0.02
8		357.50	12.30	0.03
8		358.00	14.70	0.05
8		359.00	18.70	0.10
8		360.00	22.00	0.16
8		361.00	24.90	0.25
8		361.50	26.20	0.30
8		362.00	27.50	0.36
8		362.50	28.70	0.43
8		362.90	29.60	0.49
8		363.50	51.30	0.60
8		363.75	65.70	0.67
8		364.00	82.60	0.72
8		364.20	83.30	0.83
8		364.60	100.00	0.88

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		366.80	260.00	1.47
8		366.92	340.00	1.49
8		366.98	380.00	1.50
9	ENDTBL			
3	STRUCT	32		
8		375.40	0.00	0.00
8		379.36	1.00	0.74
8		380.00	5.00	0.89
8		380.20	10.00	0.94
8		380.33	15.00	0.98
8		380.45	20.00	1.01
8		380.55	25.00	1.04
8		380.65	30.00	1.06
8		381.19	40.00	1.21
8		381.78	44.00	1.39
8		382.59	66.00	1.66
8		382.79	88.00	1.75
8		382.89	110.00	1.79
8		382.97	132.00	1.83
9	ENDTBL			
3	STRUCT	33		

8			350.00	0.00	0.00
8			354.30	1.00	1.08
8			354.47	2.00	1.15
8			354.87	5.00	1.30
8			355.38	10.00	1.50
8			356.18	20.00	1.84
8			356.88	40.00	2.15
8			357.27	60.00	2.33
8			357.46	80.00	2.42
8			358.08	100.00	2.73
8			358.14	120.00	2.76
8			358.19	140.00	2.78
8			358.25	171.00	2.81
8			358.27	180.00	2.82
9	ENDTBL				
3	STRUCT	34			
9	ENDTBL				
2	XSECTN	051	1.0	282.40	
8			281.10	0.00	0.00
8			281.42	1.24	1.09
8			281.75	3.96	2.26
8			282.07	18.30	6.92
8			282.40	39.09	12.00
8			282.88	67.33	37.27
8			283.36	131.17	65.87
8			283.84	225.10	97.78
8			284.32	348.01	133.01
8			284.80	499.91	171.56
8			285.28	681.29	213.43

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			285.76	892.92	258.61
8			286.24	1135.70	307.11
8			286.72	1410.63	358.94
8			287.20	1718.74	414.08
8			287.68	2061.13	472.54
8			288.16	2438.87	534.31
8			288.64	2853.08	599.41
8			289.12	3301.76	667.84
8			289.60	3785.91	739.78
9	ENDTBL				
2	XSECTN	053	1.0	289.00	
8			288.00	0.00	0.00
8			288.50	9.00	2.88
8			289.00	34.26	7.50
8			289.50	79.27	13.88
8			290.00	147.75	22.00
8			290.50	227.49	31.94
8			291.00	332.02	43.75
8			291.50	463.75	57.44
8			291.75	540.56	64.98
8			292.00	625.07	73.00
9	ENDTBL				
2	XSECTN	063	1.0	248.40	
8			247.07	0.00	0.00
8			247.41	1.85	1.14
8			247.74	5.93	2.35
8			248.07	27.43	7.18
8			248.40	58.61	12.46

8		248.67	89.70	40.04
8		248.95	158.39	68.99
8		249.22	256.90	99.30
8		249.49	382.40	130.99
8		249.77	533.43	164.04
8		250.04	709.09	198.46
8		250.31	908.86	234.24
8		250.59	1132.40	271.40
8		250.86	1379.55	309.92
8		251.13	1650.25	349.81
8		251.41	1944.49	391.07
8		251.68	2262.35	433.69
8		251.95	2603.94	477.69
8		252.23	2969.40	523.05
8		252.50	3358.93	569.78
9	ENDTBL			
3	STRUCT	61		
8		329.75	0.00	0.00
8		330.00	1.56	0.01
8		332.00	4.37	0.13
8		334.00	5.96	0.39
8		334.10	6.01	0.40

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		334.50	10.20	0.47
8		335.00	16.10	0.56
8		336.00	28.91	0.75
8		337.00	40.10	0.97
9	ENDTBL			
3	STRUCT	62		
8		287.30	0.00	0.00
8		288.00	5.45	0.01
8		289.00	9.05	0.05
8		290.00	11.60	0.13
8		292.00	15.35	0.50
8		294.00	18.40	1.19
8		294.30	18.92	1.26
8		294.50	20.73	1.40
8		295.00	36.40	1.60
8		295.40	38.00	1.80
8		296.00	51.10	2.15
8		297.00	69.60	2.75
8		298.00	86.80	3.44
8		298.68	98.50	3.91
8		298.80	107.56	4.00
9	ENDTBL			
3	STRUCT	63		
8		259.43	0.00	0.00
8		260.00	1.30	0.026
8		260.50	1.70	0.050
8		261.00	2.10	0.075
8		261.50	2.40	0.095
8		262.00	2.70	0.119
8		262.50	2.90	0.160
8		263.00	3.20	0.205
8		263.50	3.40	0.245
8		264.00	3.60	0.285
8		264.50	3.80	0.360
8		265.00	3.90	0.415

8		265.50	4.10	0.480
8		266.00	11.00	0.537
8		266.50	15.40	0.620
8		267.00	16.00	0.709
8		267.50	30.30	0.798
8		268.00	56.00	0.887
8		268.50	145.68	0.976
9	ENDTBL			
2	XSECTN 065	1.0	300.50	
8		300.00	0.00	0.00
8		300.10	0.29	0.23
8		300.25	1.47	0.69
8		300.40	3.55	1.28
8		300.50	5.48	1.75
8		300.60	7.88	2.28

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		300.75	12.45	3.19
8		300.90	18.28	4.23
8		301.00	22.91	5.00
8		301.10	28.18	5.83
8		301.25	37.36	7.19
8		301.40	48.14	8.68
8		301.50	56.26	9.75
9	ENDTBL			
2	XSECTN 070	1.0	248.40	
8		247.07	0.00	0.00
8		247.41	1.85	1.14
8		247.74	5.93	2.35
8		248.07	27.43	7.18
8		248.40	58.61	12.46
8		248.67	89.70	40.04
8		248.95	158.39	68.99
8		249.22	256.90	99.30
8		249.49	382.40	130.99
8		249.77	533.43	164.04
8		250.04	709.09	198.46
8		250.31	908.86	234.24
8		250.59	1132.40	271.40
8		250.86	1379.55	309.92
8		251.13	1650.25	349.81
8		251.41	1944.49	391.07
8		251.68	2262.35	433.69
8		251.95	2603.94	477.69
8		252.23	2969.40	523.05
8		252.50	3358.93	569.78
9	ENDTBL			
2	XSECTN 072	1.0	248.40	
8		247.07	0.00	0.00
8		247.41	1.85	1.14
8		247.74	5.93	2.35
8		248.07	27.43	7.18
8		248.40	58.61	12.46
8		248.67	89.70	40.04
8		248.95	158.39	68.99
8		249.22	256.90	99.30
8		249.49	382.40	130.99
8		249.77	533.43	164.04
8		250.04	709.09	198.46

8		250.31	908.86	234.24
8		250.59	1132.40	271.40
8		250.86	1379.55	309.92
8		251.13	1650.25	349.81
8		251.41	1944.49	391.07
8		251.68	2262.35	433.69
8		251.95	2603.94	477.69
8		252.23	2969.40	523.05

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		252.50	3358.93	569.78	
9	ENDTBL				
2	XSECTN 077	1.0	229.00		
8		226.00	0.00	0.00	
8		226.50	11.73	5.31	
8		227.00	42.97	13.25	
8		227.50	96.50	23.81	
8		228.00	175.93	37.00	
8		228.50	258.13	54.25	
8		229.00	385.22	77.00	
8		229.50	561.82	105.25	
8		230.00	793.74	139.00	
8		230.50	1079.38	179.94	
8		231.00	1462.49	229.75	
8		231.50	1953.75	288.44	
8		232.00	2564.16	356.00	
8		232.50	3408.70	429.13	
8		233.00	4351.01	504.50	
9	ENDTBL				
2	XSECTN 080	1.0	212.00		
8		210.50	0.00	0.00	
8		210.75	4.72	2.23	
8		211.00	15.68	4.92	
8		211.25	32.36	8.06	
8		211.50	54.93	11.67	
8		211.75	83.70	15.73	
8		212.00	119.05	20.25	
8		212.25	163.87	25.14	
8		212.50	215.35	30.31	
8		212.75	273.55	35.77	
8		213.00	338.57	41.50	
8		214.00	669.42	67.25	
8		215.00	806.07	99.00	
8		216.00	1088.03	138.25	
8		217.00	1451.30	187.50	
8		218.00	1978.93	249.25	
8		219.00	2262.06	340.00	
8		220.00	3115.20	476.25	
8		221.00	4892.67	639.25	
9	ENDTBL				
5	RAINFL 9	.1			
8	0.0000	0.0013	0.0023	0.0034	0.0044
8	0.0055	0.0065	0.0076	0.0087	0.0098
8	0.0109	0.0121	0.0132	0.0143	0.0155
8	0.0167	0.0178	0.0190	0.0202	0.0214
8	0.0226	0.0238	0.0251	0.0263	0.0276
8	0.0288	0.0301	0.0314	0.0327	0.0340
8	0.0353	0.0366	0.0379	0.0393	0.0406
8	0.0420	0.0434	0.0447	0.0461	0.0475

8 0.0489 0.0504 0.0518 0.0532 0.0547  
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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8	0.0562	0.0576	0.0591	0.0606	0.0621
8	0.0636	0.0651	0.0667	0.0682	0.0697
8	0.0713	0.0729	0.0745	0.0760	0.0776
8	0.0793	0.0809	0.0826	0.0843	0.0861
8	0.0879	0.0898	0.0916	0.0936	0.0955
8	0.0975	0.0996	0.1017	0.1038	0.1060
8	0.1082	0.1104	0.1127	0.1150	0.1174
8	0.1198	0.1223	0.1247	0.1273	0.1298
8	0.1324	0.1351	0.1378	0.1405	0.1432
8	0.1461	0.1490	0.1521	0.1554	0.1588
8	0.1623	0.1660	0.1699	0.1739	0.1780
8	0.1823	0.1868	0.1914	0.1961	0.2010
8	0.2061	0.2117	0.2179	0.2247	0.2321
8	0.2400	0.2490	0.2591	0.2702	0.2825
8	0.2955	0.3157	0.3370	0.3662	0.4067
8	0.4766	0.5933	0.6338	0.6630	0.6843
8	0.7045	0.7176	0.7298	0.7409	0.7510
8	0.7600	0.7679	0.7753	0.7821	0.7883
8	0.7939	0.7990	0.8039	0.8086	0.8132
8	0.8177	0.8220	0.8261	0.8301	0.8340
8	0.8377	0.8412	0.8446	0.8479	0.8510
8	0.8540	0.8568	0.8595	0.8622	0.8649
8	0.8676	0.8702	0.8727	0.8753	0.8778
8	0.8802	0.8826	0.8850	0.8873	0.8896
8	0.8918	0.8940	0.8962	0.8983	0.9004
8	0.9025	0.9045	0.9064	0.9084	0.9103
8	0.9121	0.9139	0.9157	0.9174	0.9191
8	0.9208	0.9224	0.9240	0.9256	0.9271
8	0.9287	0.9303	0.9318	0.9334	0.9349
8	0.9364	0.9379	0.9394	0.9409	0.9424
8	0.9439	0.9453	0.9468	0.9482	0.9496
8	0.9511	0.9525	0.9539	0.9553	0.9566
8	0.9580	0.9594	0.9607	0.9621	0.9634
8	0.9647	0.9660	0.9673	0.9686	0.9699
8	0.9712	0.9724	0.9737	0.9749	0.9762
8	0.9774	0.9786	0.9798	0.9810	0.9822
8	0.9834	0.9845	0.9857	0.9868	0.9879
8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000

9 ENDTBL  
 6 RUNOFF 1 001 1 0.0336 80.992 0.4051 DA1  
 6 REACH 3 002 1 2 1170.0 1  
 6 RUNOFF 1 003 1 0.0580 79.488 0.3751 DA2  
 6 ADDHYD 4 004 1 2 3 1 DA1+2  
 6 RESVOR 2 11 3 1 1 1  
 SWMF10  
 6 REACH 3 005 1 2 797.0 1  
 6 RUNOFF 1 006 3 0.0798 77.284 0.3921 DA3  
 6 ADDHYD 4 007 2 3 4 1  
 DA12+3  
 6 REACH 3 008 4 7 1221.0 1 1 SA1-  
 SA2

1



\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

6	RUNOFF	1	009	1	0.0734	90.928	0.4221	DA1	
6	RESVOR	2	21	1 2			1	1	
SWMF13									
6	RUNOFF	1	010	3	0.0097	72.007	0.1281	DA7	
6	RESVOR	2	22	2 3 4			1	1 HWY	
STOR									
6	RUNOFF	1	011	2	0.0544	73.278	0.2201	DA2	
6	ADDHYD	4	012	7 2 3			1		
SA1+DA2									
6	RUNOFF	1	013	5	0.0193	79.062	0.2481	DA3	
6	ADDHYD	4	014	4 3 6			1		
DA17+2									
6	ADDHYD	4	015	6 5 3			1	1	
DA172+3									
6	RESVOR	2	23	3 1			1	1	
HWYSTOR2									
6	REACH	3	016	1 2	920.0		1	1	
6	RUNOFF	1	017	3	0.0211	87.900	0.1641	DA4	
6	RUNOFF	1	018	4	0.0313	91.880	0.2551	DA5	
6	RUNOFF	1	019	5	0.0404	84.467	0.1681	DA6	
6	ADDHYD	4	020	3 4 6			1	1 DA4+5	
6	ADDHYD	4	021	6 5 1			1		
DA123+6									
6	ADDHYD	4	022	2 1 3			1		
DA45+6									
6	REACH	3	023	3 7	1379.0		1	1 SA2-	
SA3									
6	RUNOFF	1	024	1	0.0505	82.333	0.3401	DA1	
6	RESVOR	2	31	1 2			1	1 SWMF3	
6	RUNOFF	1	025	3	0.0748	81.676	0.3581	DA2	
6	ADDHYD	4	026	2 3 4			1	DA1+2	
6	REACH	3	027	4 1	1021.0		1		
6	RUNOFF	1	028	2	0.0599	78.523	0.3231	DA3	
6	ADDHYD	4	029	7 2 3			1		
SA2+DA3									
6	ADDHYD	4	030	1 3 5			1	1	
DA12+3									
6	RUNOFF	1	031	1	0.0692	86.978	0.2761	DA4	
6	REACH	3	032	1 6	1603.0		1		
6	RUNOFF	1	033	2	0.0084	95.000	0.1921	DA5	
6	RESVOR	2	32	2 3			1	1	
SWMF11									
6	REACH	3	034	3 7	583.0		1		
6	RUNOFF	1	035	1	0.0275	94.960	0.2481	DA6	
6	RESVOR	2	33	1 2			1	1 SWMF8	
6	ADDHYD	4	036	7 2 1			1	DA5+6	
6	RESVOR	2	34	1 2			1	1	
HWYSTOR3									
6	REACH	3	037	2 4	934.0		1		
6	RUNOFF	1	038	1	0.0328	85.878	0.1901	DA7	
6	ADDHYD	4	039	4 1 3			1	1	
DA56+7									
6	RUNOFF	1	040	2	0.0393	80.311	0.3671	DA8	
6	ADDHYD	4	041	5 2 1			1	1 DA3+8	
6	ADDHYD	4	042	6 1 2			1	DA4+8	
6	ADDHYD	4	043	3 2 1			1	DA7+8	
6	REACH	3	044	1 7	1428.0		1	1 SA3-	
SA4									
6	RUNOFF	1	045	1	0.0477	80.798	0.4121	DA1	
6	RUNOFF	1	046	2	0.0628	79.968	0.4401	DA2	

6	ADDHYD	4	047	1	2	3				1	DA1+2
6	RUNOFF	1	048			1	0.0469	80.250	0.2491		DA3
6	ADDHYD	4	049	7	1	2				1	1
SA3+DA3											
6	ADDHYD	4	050	2	3	4				1	1
DA12+3											
6	REACH	3	051	4		7	1275.0			1	1 SA4-
SA5											

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

6	RUNOFF	1	052			1	0.0087	41.639	0.1631		DA1
6	REACH	3	053	1		5	652.0			1	
6	RUNOFF	1	054			1	0.0072	33.729	0.2561		DA2
6	RUNOFF	1	055			2	0.0322	77.752	0.2491		DA3
6	ADDHYD	4	056	7	2	4				1	1
SA4+DA3											
6	ADDHYD	4	057	5	1	3				1	1 DA1+2
6	ADDHYD	4	058	4	3	5				1	
DA12+3											
6	RUNOFF	1	059			1	0.0266	70.478	0.2611	1	DA4
6	ADDHYD	4	060	5	1	2				1	1
DA123+4											
6	RUNOFF	1	061			3	0.0173	69.728	0.2971		DA5
6	ADDHYD	4	062	2	3	6				1	1
DA1234+5											
6	REACH	3	063	6		7	1959.0			1	1 SA5-
SA6											
6	RUNOFF	1	064			1	0.0110	84.520	0.5211		DA1
6	RESVOR	2		61	1	2				1	1
SWMF19											
6	REACH	3	065	2		3	1283.0			1	
6	RUNOFF	1	066			1	0.0458	70.198	0.2391		DA2
6	RESVOR	2		62	1	2				1	1
SWMF18											
6	ADDHYD	4	067	3	2	4				1	DA1+2
6	RUNOFF	1	068			5	0.0778	76.176	0.2281		DA3
6	ADDHYD	4	069	4	5	1				1	
DA12+3											
6	REACH	3	070	1		2	2166.0			1	
6	RUNOFF	1	071			1	0.0119	80.036	0.1221		DA4
6	RESVOR	2		63	1	3				1	1 SWMF2
6	REACH	3	072	3		4	1081.0			1	
6	RUNOFF	1	073			5	0.1100	64.864	0.2051	1	DA5
6	ADDHYD	4	074	7	5	1				1	
SA5+DA5											
6	ADDHYD	4	075	2	4	6				1	1
DA123+4											
6	ADDHYD	4	076	1	6	2				1	1
DA12345											
6	REACH	3	077	2		7	884.0			1	1 SA6-
SA7											
6	RUNOFF	1	078			2	0.0510	70.802	0.1971	1	DA1
6	ADDHYD	4	079	7	2	1				1	
SA6+DA1											
6	REACH	3	080	1		2	1296.0			1	
6	RUNOFF	1	081			1	0.0313	67.555	0.1861		DA2
6	ADDHYD	4	082	1	2	3				1	DA1+2
6	RUNOFF	1	083			1	0.0513	73.958	0.1621		DA3
6	RUNOFF	1	084			4	0.1187	68.693	0.3211		DA4

```

6 ADDHYD 4 085 1 4 2 1 1 DA3+4
6 ADDHYD 4 086 3 2 1 1
DA123+4
6 RUNOFF 1 087 4 0.0159 86.785 0.1421 DA5
6 ADDHYD 4 088 1 4 7 1 1 1
DA1234+5
ENDATA
7 INCREM 6 .06
7 COMPUT 7 001 088 0.0 3.19 1.09 2 1 2
ENDCMP 1
7 COMPUT 7 001 088 0.0 4.10 1.09 2 1 5
ENDCMP 1
7 COMPUT 7 001 088 0.0 4.91 1.09 2 1 10
ENDCMP 1
7 COMPUT 7 001 088 0.0 6.14 1.09 2 1 25
ENDCMP 1

```

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

```

7 COMPUT 7 001 088 0.0 7.23 1.09 2 1 50
ENDCMP 1
7 COMPUT 7 001 088 0.0 8.47 1.09 2 1 99
ENDCMP 1
ENDJOB 2

```

\*\*\*\*\*END OF 80-80  
LIST\*\*\*\*\*

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EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .060 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
STARTING TIME = .00 RAIN DEPTH = 3.19 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
ALTERNATE NO. = 1 STORM NO. = 2 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.30	23.9	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.46 WATERSHED INCHES; 32 CFS-HRS; 2.6 ACRE-  
FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	22.7	389.92

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.46 WATERSHED INCHES; 32 CFS-HRS; 2.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	39.9	(RUNOFF)
23.14	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.36 WATERSHED INCHES; 51 CFS-HRS; 4.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	60.4	(NULL)
23.10	1.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 83 CFS-HRS; 6.8 ACRE-  
 FEET.

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OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	50.9	382.15

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES; 82 CFS-HRS; 6.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.56	50.4	367.78

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES; 82 CFS-HRS; 6.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	47.5	(RUNOFF)
23.75	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.22 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	85.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.31 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.52	84.4	357.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.31 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	77.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.24 WATERSHED INCHES; 106 CFS-HRS; 8.8 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.56	9.7 *	374.07
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.91 WATERSHED INCHES; 91 CFS-HRS; 7.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	6.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .92 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.68	9.6 *	353.09
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.91 WATERSHED INCHES; 90 CFS-HRS; 7.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	33.2	(RUNOFF)
19.76	1.0	(RUNOFF)
20.09	1.0	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .99 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	98.2	(NULL)
24.00	3.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.24 WATERSHED INCHES; 180 CFS-HRS; 14.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	15.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.33 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.50	105.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 270 CFS-HRS; 22.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	112.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES; 287 CFS-HRS; 23.7 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	112.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES; 287 CFS-HRS; 23.7 ACRE-  
 FEET.

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\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
 \*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	112.5	332.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES; 287 CFS-HRS; 23.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	29.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.98 WATERSHED INCHES; 27 CFS-HRS; 2.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	43.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.33 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	48.6	(RUNOFF)
19.47	1.0	(RUNOFF)
19.75	1.0	(RUNOFF)
20.06	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.71 WATERSHED INCHES; 44 CFS-HRS; 3.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 20

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	71.1	(NULL)
15.81	2.5	(NULL)
24.01	1.1	(NULL)



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.19 WATERSHED INCHES; 74 CFS-HRS; 6.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	119.3	(NULL)
15.83	4.3	(NULL)
17.33	3.3	(NULL)
21.95	2.1	(NULL)
24.01	1.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.98 WATERSHED INCHES; 118 CFS-HRS; 9.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 22

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	200.7	(NULL)
23.99	9.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.52 WATERSHED INCHES; 405 CFS-HRS; 33.4 ACRE-  
FEET.

OPERATION REACH XSECTION 23

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	166.9	315.42

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.52 WATERSHED INCHES; 404 CFS-HRS; 33.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	41.6	(RUNOFF)
20.68	1.1	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.55 WATERSHED INCHES; 51 CFS-HRS; 4.2 ACRE-  
FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .043 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	28.2	362.31
20.70	1.1	356.47

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.55 WATERSHED INCHES; 51 CFS-HRS; 4.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	58.7	(RUNOFF)
23.97	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.51 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	84.2	(NULL)
18.68	3.2	(NULL)
23.78	2.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.52 WATERSHED INCHES; 123 CFS-HRS; 10.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	76.6	318.55

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.52 WATERSHED INCHES; 123 CFS-HRS; 10.2 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	42.0	(RUNOFF)
23.12	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.30 WATERSHED INCHES; 50 CFS-HRS; 4.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	201.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.49 WATERSHED INCHES; 455 CFS-HRS; 37.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	275.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.50 WATERSHED INCHES; 578 CFS-HRS; 47.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	76.8	(RUNOFF)
24.03	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.90 WATERSHED INCHES; 85 CFS-HRS; 7.0 ACRE-  
FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	68.8	312.27
24.15	1.3	310.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.90 WATERSHED INCHES; 85 CFS-HRS; 7.0 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.16	14.0	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.63 WATERSHED INCHES; 14 CFS-HRS; 1.2 ACRE-  
 FEET.

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 32, TRUNCATED AT 400 POINTS  
 WITH .28 AC-FT ( .05 WATERSHED INCHES) FLOOD STORAGE  
 REMAINING IN RESERVOIR AT ELEV. 376.89.  
 \*\*\*

OPERATION RESVOR STRUCTURE 32

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
 AT STRUCTURE 32  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.56	1.0	379.28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.01 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 34, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 34

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
 AT XSECTION 34  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.68	1.0	338.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.00 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.19	41.8	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.63 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
 FEET.

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OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	17.5	355.98

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.08 WATERSHED INCHES; 37 CFS-HRS; 3.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	18.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.06 WATERSHED INCHES; 48 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	18.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.06 WATERSHED INCHES; 48 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	18.2	330.28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.06 WATERSHED INCHES; 48 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	40.3	(RUNOFF)

17.34 1.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.81 WATERSHED INCHES; 38 CFS-HRS; 3.2 ACRE-
FEET.

OPERATION ADDHYD XSECTION 39

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.19 43.8 (NULL)
24.01 2.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.94 WATERSHED INCHES; 86 CFS-HRS; 7.1 ACRE-
FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.28 28.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.41 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-
FEET.

OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.36 301.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.50 WATERSHED INCHES; 614 CFS-HRS; 50.7 ACRE-
FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.37 369.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.54 WATERSHED INCHES; 699 CFS-HRS; 57.7 ACRE-
FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	403.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.57 WATERSHED INCHES; 783 CFS-HRS; 64.7 ACRE-FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.52	375.3	290.18

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.57 WATERSHED INCHES; 782 CFS-HRS; 64.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	33.3	(RUNOFF)
20.10	1.1 *	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.45 WATERSHED INCHES; 45 CFS-HRS; 3.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	40.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES; 56 CFS-HRS; 4.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	74.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.42 WATERSHED INCHES; 101 CFS-HRS; 8.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	40.1	(RUNOFF)
20.10	1.1	(RUNOFF)
20.65	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.41 WATERSHED INCHES; 43 CFS-HRS; 3.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 49

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.51	392.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.56 WATERSHED INCHES; 825 CFS-HRS; 68.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.47	451.2	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .93  
 SQ.MI.

HRS	7.44	7.79	7.92	8.40	8.88	9.36	9.84	10.32	11.88	10.80	11.28	11.76
CFS	.49	.53	.57	.61	.65	.69	.74	.79	.83	.88	.93	.99
CFS	1.23	1.29	1.36	1.43	1.50	1.57	1.64	1.71	1.79	1.87	1.95	2.03
CFS	2.52	2.65	2.81	2.99	3.19	3.42	3.66	3.93	4.22	4.52	4.85	5.20
CFS	7.25	7.73	8.22	8.74	9.27	9.84	10.45	11.12	11.88	12.75	13.75	14.88
CFS	267	60	70	82	99	122	156	206	22.85	25.08	27.60	30.43
CFS												



12.24	CFS	329	384	423	446	451	443	426
404								
12.72	CFS	379	354	328	303	280	259	239
220								
13.20	CFS	203	187	172	160	148	139	130
122								
13.68	CFS	115	109	103	98	93	89	86
83								
14.16	CFS	80.48	78.15	76.05	74.13	72.37	70.75	69.24
67.81								
14.64	CFS	66.42	65.08	63.77	62.50	61.26	60.05	58.86
57.68								
15.12	CFS	56.52	55.36	54.20	53.08	52.00	51.01	50.11
49.33								
15.60	CFS	48.64	48.02	47.45	46.92	46.43	45.99	45.56
45.16								
16.08	CFS	44.76	44.36	43.98	43.60	43.23	42.88	42.52
42.17								
16.56	CFS	41.80	41.44	41.07	40.72	40.38	40.04	39.71
39.38								
17.04	CFS	39.07	38.76	38.45	38.11	37.76	37.42	37.08
36.75								
17.52	CFS	36.41	36.06	35.70	35.34	34.99	34.63	34.28
33.93								
18.00	CFS	33.60	33.28	32.96	32.65	32.34	32.03	31.73
31.43								
18.48	CFS	31.14	30.87	30.64	30.44	30.26	30.09	29.95
29.82								
18.96	CFS	29.69	29.54	29.40	29.25	29.10	28.95	28.82
28.69								
19.44	CFS	28.58	28.48	28.38	28.27	28.15	28.03	27.90
27.77								
19.92	CFS	27.62	27.48	27.35	27.25	27.15	27.05	26.94
26.83								
20.40	CFS	26.71	26.56	26.40	26.26	26.13	26.01	25.89
25.79								
20.88	CFS	25.69	25.59	25.47	25.35	25.22	25.08	24.95
24.82								
21.36	CFS	24.71	24.60	24.50	24.41	24.30	24.18	24.05
23.91								
21.84	CFS	23.77	23.63	23.50	23.39	23.26	23.13	22.99
22.84								
22.32	CFS	22.70	22.56	22.43	22.31	22.19	22.07	21.93
21.80								
22.80	CFS	21.66	21.51	21.36	21.21	21.09	20.97	20.87
20.77								
23.28	CFS	20.67	20.56	20.45	20.33	20.20	20.05	19.91
19.79								
23.76	CFS	19.68	19.57	19.46	19.34	19.25	19.14	18.86
18.25								
24.24	CFS	17.32	16.13	14.75	13.29	11.89	10.63	9.54
8.63								

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24.72	CFS	7.88	7.28	6.80	6.41	6.09	5.83	5.61
5.42								

25.20 CFS	5.27	5.13	5.00	4.88	4.77	4.67	4.57
4.47							
25.68 CFS	4.38	4.29	4.20	4.12	4.04	3.96	3.88
3.80							
26.16 CFS	3.73	3.65	3.58	3.52	3.45	3.38	3.32
3.26							
26.64 CFS	3.19	3.14					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.54 WATERSHED INCHES; 926 CFS-HRS; 76.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 51

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.61	435.2	284.60

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.54 WATERSHED INCHES; 925 CFS-HRS; 76.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 52

\*\*\* MESSAGE - XSECTION 52, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.54 WATERSHED INCHES; 145 CFS-HRS; 76.5 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 55

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.21 24.1 (RUNOFF)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.25 WATERSHED INCHES; 26 CFS-HRS; 2.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.60 443.7 (NULL)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.53 WATERSHED INCHES; 951 CFS-HRS; 78.6 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 57  
 NO HYDROGRAPH IN INPUT LOCATION 5 OR 1 FOR ADDHYD OPERATION.  
 \*\*\*

OPERATION ADDHYD XSECTION 57

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.53 WATERSHED INCHES; 145 CFS-HRS; 78.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.60 443.7 (NULL)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.51 WATERSHED INCHES; 951 CFS-HRS; 78.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.23 12.3 (RUNOFF)  
 HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .03  
 SQ.MI.  
 11.64 CFS .36 .53 .75 1.07 1.53 2.25 3.44  
 5.60  
 12.12 CFS 8.86 11.72 12.23 10.90 9.15 7.73 6.64

5.84								
12.60 CFS	5.17	4.51	3.95	3.54	3.25	3.02	2.84	
2.68								
13.08 CFS	2.52	2.37	2.23	2.11	2.01	1.92	1.83	
1.74								
13.56 CFS	1.65	1.57	1.49	1.43	1.38	1.35	1.32	
1.29								
14.04 CFS	1.27	1.25	1.23	1.21	1.18	1.16	1.14	
1.12								
14.52 CFS	1.10	1.08	1.05	1.02	1.00	.98	.96	
.94								

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15.00 CFS	.91	.89	.87	.84	.82	.80	.79	
.79								
15.48 CFS	.79	.78	.78	.77	.76	.75	.75	
.75								
15.96 CFS	.74	.73	.72	.72	.71	.71	.70	
.70								
16.44 CFS	.69	.68	.67	.67	.66	.66	.65	
.65								
16.92 CFS	.64	.63	.63	.63	.62	.61	.60	
.59								
17.40 CFS	.59	.59	.57	.56	.56	.55	.55	
.54								
17.88 CFS	.53	.53	.52	.52	.51	.50	.50	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .85 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.60 448.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.49 WATERSHED INCHES; 966 CFS-HRS; 79.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.25 7.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .81 WATERSHED INCHES; 9 CFS-HRS; .7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.60	452.3	(NULL)

	HYDROGRAPH POINTS FOR		ALTERNATE = 1,		STORM = 2			
HRS	MAIN	TIME	INCREMENT =	.060 hr,	DRAINAGE AREA =		1.02	
SQ.MI.								
7.56 CFS	.49	.53	.56	.60	.65	.69	.74	
.78								
8.04 CFS	.83	.88	.93	.98	1.04	1.10	1.16	
1.22								
8.52 CFS	1.29	1.35	1.42	1.49	1.56	1.63	1.71	
1.78								
9.00 CFS	1.86	1.94	2.02	2.10	2.19	2.29	2.40	
2.52								
9.48 CFS	2.66	2.81	2.99	3.19	3.42	3.66	3.93	
4.21								
9.96 CFS	4.52	4.84	5.19	5.57	5.96	6.39	6.84	
7.31								
10.44 CFS	7.80	8.32	8.85	9.42	10.02	10.68	11.41	
12.23								
10.92 CFS	13.16	14.22	15.41	16.74	18.24	19.91	21.79	
23.91								
11.40 CFS	26.31	29.03	32.09	35.62	39.81	44.81	50.88	
58.46								
11.88 CFS	68	81	98	124	161	207	256	
306								
12.36 CFS	355	397	429	448	452	446	431	
411								
12.84 CFS	388	364	339	315	292	270	249	
230								
13.32 CFS	212	196	181	168	156	146	137	
128								
13.80 CFS	121	114	108	103	99	94	91	
88								

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14.28 CFS	84.91	82.41	80.17	78.12	76.25	74.50	72.86	
71.30								
14.76 CFS	69.82	68.39	67.00	65.65	64.33	63.03	61.76	
60.50								
15.24 CFS	59.25	58.03	56.86	55.73	54.66	53.68	52.78	
51.96								
15.72 CFS	51.22	50.55	49.95	49.40	48.89	48.40	47.93	
47.49								
16.20 CFS	47.07	46.66	46.25	45.85	45.46	45.08	44.69	
44.31								
16.68 CFS	43.93	43.55	43.18	42.81	42.44	42.09	41.74	
41.41								
17.16 CFS	41.06	40.71	40.35	40.00	39.66	39.30	38.93	
38.56								
17.64 CFS	38.19	37.82	37.45	37.08	36.70	36.33	35.96	
35.61								
18.12 CFS	35.26	34.91	34.57	34.24	33.92	33.59	33.27	
32.97								
18.60 CFS	32.70	32.45	32.21	31.99	31.80	31.64	31.48	

31.32								
19.08	CFS	31.17	31.02	30.87	30.72	30.57	30.43	30.30
30.18								
19.56	CFS	30.06	29.94	29.82	29.70	29.58	29.45	29.30
29.16								
20.04	CFS	29.04	28.91	28.79	28.66	28.55	28.44	28.31
28.18								
20.52	CFS	28.04	27.90	27.77	27.63	27.49	27.36	27.25
27.14								
21.00	CFS	27.02	26.90	26.77	26.64	26.51	26.38	26.25
26.13								
21.48	CFS	26.01	25.90	25.79	25.67	25.55	25.43	25.30
25.16								
21.96	CFS	25.03	24.89	24.75	24.61	24.47	24.34	24.19
24.05								
22.44	CFS	23.91	23.77	23.64	23.50	23.36	23.23	23.10
22.95								
22.92	CFS	22.80	22.65	22.51	22.38	22.25	22.12	22.00
21.89								
23.40	CFS	21.78	21.67	21.54	21.40	21.26	21.14	21.01
20.88								
23.88	CFS	20.75	20.62	20.53	20.43	20.17	19.70	19.05
18.24								
24.36	CFS	17.24	16.06	14.74	13.38	12.06	10.85	9.79
8.88								
24.84	CFS	8.11	7.49	6.97	6.55	6.21	5.92	5.68
5.48								
25.32	CFS	5.31	5.16	5.03	4.91	4.79	4.68	4.58
4.49								
25.80	CFS	4.39	4.30	4.22	4.13	4.05	3.96	3.89
3.81								
26.28	CFS	3.74	3.66	3.59	3.52	3.46	3.39	3.33
3.26								

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.48 WATERSHED INCHES; 975 CFS-HRS; 80.6 ACRE-FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.77 426.8 249.57

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.48 WATERSHED INCHES; 974 CFS-HRS; 80.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.37 8.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.71 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-FEET.

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OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.74 4.7 332.36  
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.71 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-  
FEET.

OPERATION REACH XSECTION 65

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.86 4.6 300.46  
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.71 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.21 21.6 (RUNOFF)  
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.83 WATERSHED INCHES; 25 CFS-HRS; 2.0 ACRE-  
FEET.

\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
TIME INCREMENT OF .043 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.43 12.4 290.42  
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.83 WATERSHED INCHES; 25 CFS-HRS; 2.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 67

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.58	16.5	(NULL)
20.11	1.0	(NULL)
20.66	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.00 WATERSHED INCHES; 37 CFS-HRS; 3.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	55.7	(RUNOFF)
24.03	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.15 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	68.6	(NULL)
23.10	2.1	(NULL)
23.75	2.0	(NULL)
24.03	2.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.09 WATERSHED INCHES; 95 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	60.1	248.41
23.17	2.1	247.43
24.09	2.0	247.42

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.09 WATERSHED INCHES; 95 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	13.2	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	3.4	263.40

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-  
 FEET.

OPERATION REACH XSECTION 72

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.64	3.3	247.53

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	34.3	(RUNOFF)
15.86	2.4	(RUNOFF)
24.02	1.2	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11  
 SQ.MI.

HRS	11.82	12.30	12.78	13.26	13.74	14.22	14.70	15.18	15.66
CFS	32.06	10.64	6.64	4.55	3.88	3.31	2.75	2.53	
	.39	26.87	9.83	6.35	4.40	3.80	3.23	2.67	2.49
	1.24	22.73	9.24	6.08	4.28	3.72	3.17	2.61	2.45
	3.08	19.37	8.76	5.81	4.19	3.66	3.11	2.57	2.43
	6.90	17.02	8.33	5.55	4.12	3.61	3.05	2.55	2.44
	14.15	15.52	7.90	5.28	4.06	3.56	2.97	2.54	2.44
	26.24	13.85	7.45	5.01	4.02	3.48	2.90	2.54	2.41
	33.87	12.00	7.01	4.76	3.96	3.40	2.83	2.54	2.37

2.34								
16.14	CFS	2.32	2.32	2.31	2.28	2.26	2.24	2.21
2.18								
16.62	CFS	2.16	2.15	2.15	2.13	2.10	2.08	2.07
2.07								
17.10	CFS	2.05	2.01	1.96	1.94	1.95	1.94	1.91
1.87								
17.58	CFS	1.83	1.81	1.81	1.79	1.77	1.74	1.72
1.71								
18.06	CFS	1.70	1.68	1.65	1.63	1.62	1.61	1.58
1.57								
18.54	CFS	1.58	1.60	1.61	1.59	1.57	1.59	1.59
1.57								
19.02	CFS	1.55	1.54	1.54	1.54	1.54	1.54	1.54
1.54								
19.50	CFS	1.54	1.54	1.51	1.50	1.51	1.51	1.48
1.47								
19.98	CFS	1.48	1.50	1.51	1.49	1.47	1.47	1.46
1.44								
20.46	CFS	1.41	1.42	1.44	1.45	1.43	1.41	1.42
1.43								

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20.94	CFS	1.41	1.39	1.38	1.37	1.37	1.37	1.37
1.37								
21.42	CFS	1.37	1.38	1.37	1.35	1.33	1.33	1.34
1.32								
21.90	CFS	1.33	1.34	1.33	1.31	1.29	1.29	1.28
1.28								
22.38	CFS	1.28	1.28	1.29	1.28	1.25	1.23	1.24
1.24								
22.86	CFS	1.22	1.20	1.21	1.24	1.24	1.22	1.20
1.20								
23.34	CFS	1.19	1.19	1.18	1.15	1.14	1.15	1.17
1.17								
23.82	CFS	1.15	1.12	1.12	1.18	1.16	.84	.45

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .59 WATERSHED INCHES; 42 CFS-HRS; 3.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.76 436.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES; 1016 CFS-HRS; 84.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK

ELEVATION (FEET)  
 12.32 63.1 (NULL)  
 18.71 3.1 (NULL)  
 24.09 2.2 (NULL)

HRS SQ.MI.	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2								
	MAIN	TIME	INCREMENT = .060 hr,	DRAINAGE AREA = .15					
10.74 CFS	.46	.54	.64	.75	.88	1.01	1.17		
1.35									
11.22 CFS	1.56	1.81	2.09	2.40	2.77	3.19	3.68		
4.35									
11.70 CFS	5.34	6.62	8.15	10.08	12.69	16.46	22.46		
31.31									
12.18 CFS	44.47	56.82	62.70	61.76	57.70	52.92	48.54		
44.94									
12.66 CFS	41.84	38.92	36.31	33.93	31.86	30.06	28.23		
26.32									
13.14 CFS	24.55	22.78	20.99	19.76	18.75	17.87	17.05		
16.28									
13.62 CFS	15.53	14.77	14.04	13.37	12.77	12.25	11.78		
11.35									
14.10 CFS	10.98	10.63	10.31	10.00	9.68	9.32	8.96		
8.64									
14.58 CFS	8.35	8.06	7.73	7.43	7.15	6.92	6.71		
6.51									
15.06 CFS	6.33	6.15	5.97	5.80	5.64	5.50	5.39		
5.31									
15.54 CFS	5.25	5.21	5.17	5.12	5.06	5.00	4.96		
4.93									
16.02 CFS	4.90	4.85	4.79	4.74	4.70	4.66	4.62		
4.58									
16.50 CFS	4.54	4.49	4.44	4.39	4.35	4.32	4.28		
4.24									
16.98 CFS	4.20	4.16	4.13	4.10	4.05	3.99	3.93		
3.89									
17.46 CFS	3.87	3.84	3.78	3.72	3.67	3.63	3.59		
3.55									
17.94 CFS	3.50	3.46	3.42	3.39	3.35	3.31	3.27		
3.23									
18.42 CFS	3.20	3.17	3.13	3.11	3.11	3.11	3.11		
3.09									
18.90 CFS	3.08	3.08	3.06	3.04	3.02	3.01	2.99		
2.99									
19.38 CFS	2.98	2.98	2.98	2.98	2.97	2.95	2.93		
2.92									
19.86 CFS	2.91	2.89	2.87	2.86	2.86	2.87	2.87		
2.86									
20.34 CFS	2.84	2.83	2.80	2.77	2.75	2.75	2.76		
2.75									

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20.82 CFS	2.74	2.73	2.73	2.72	2.70	2.67	2.66		
2.64									
21.30 CFS	2.64	2.63	2.63	2.62	2.62	2.62	2.60		
2.58									

21.78 CFS	2.56	2.55	2.54	2.54	2.54	2.53	2.52
2.50							
22.26 CFS	2.48	2.46	2.45	2.45	2.44	2.44	2.43
2.41							
22.74 CFS	2.39	2.37	2.37	2.35	2.33	2.31	2.32
2.32							
23.22 CFS	2.32	2.30	2.29	2.28	2.27	2.25	2.23
2.20							
23.70 CFS	2.19	2.19	2.20	2.19	2.17	2.14	2.16
2.17							
24.18 CFS	2.01	1.66	1.26	.91	.66	.48	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.11 WATERSHED INCHES; 105 CFS-HRS; 8.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.74	474.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.36 WATERSHED INCHES; 1121 CFS-HRS; 92.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 77

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.81	473.6	229.25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.36 WATERSHED INCHES; 1121 CFS-HRS; 92.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	27.4	(RUNOFF)
17.35	1.1	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05 SQ.MI.

HRS	11.52	12.00	12.48	12.96	13.44	13.92	14.40	14.88
CFS	5.71	12.00	12.48	12.96	13.44	13.92	14.40	14.88
	.41	9.08	11.21	5.22	3.41	2.51	2.18	1.83
	.66	14.77	10.12	4.93	3.23	2.47	2.15	1.78
	1.01	23.27	8.90	4.64	3.07	2.44	2.10	1.74
	1.43	27.41	7.63	4.35	2.91	2.40	2.05	1.69
	1.94	23.98	6.74	4.11	2.78	2.35	1.99	1.64
	2.73	19.09	6.21	3.93	2.69	2.30	1.94	1.59
	3.90	15.59	5.83	3.75	2.61	2.25	1.91	1.56

1.53								
15.36 CFS	1.52	1.52	1.52	1.52	1.51	1.48	1.46	
1.45								
15.84 CFS	1.45	1.45	1.43	1.41	1.39	1.38	1.38	
1.37								
16.32 CFS	1.35	1.34	1.33	1.31	1.29	1.28	1.27	
1.27								
16.80 CFS	1.26	1.24	1.23	1.22	1.22	1.21	1.18	
1.15								

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17.28 CFS	1.14	1.15	1.14	1.12	1.10	1.08	1.07	
1.06								
17.76 CFS	1.05	1.04	1.02	1.01	1.01	1.00	.98	
.96								
18.24 CFS	.95	.95	.94	.93	.92	.93	.94	
.94								
18.72 CFS	.93	.92	.93	.93	.91	.90	.90	
.90								
19.20 CFS	.90	.90	.90	.90	.90	.90	.90	
.88								
19.68 CFS	.87	.88	.88	.86	.85	.86	.87	
.88								
20.16 CFS	.86	.85	.85	.85	.83	.82	.82	
.84								
20.64 CFS	.84	.83	.82	.82	.83	.82	.80	
.80								
21.12 CFS	.80	.79	.79	.79	.79	.80	.80	
.79								
21.60 CFS	.78	.77	.77	.77	.76	.77	.77	
.77								
22.08 CFS	.75	.75	.74	.74	.74	.74	.74	
.74								
22.56 CFS	.74	.72	.71	.72	.72	.70	.69	
.70								
23.04 CFS	.71	.71	.70	.69	.69	.69	.68	
.68								
23.52 CFS	.66	.65	.66	.67	.68	.66	.64	
.64								
24.00 CFS	.68	.66	.46					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.86 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK  
ELEVATION (FEET)  
12.81 479.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.34 WATERSHED INCHES; 1149 CFS-HRS; 95.0 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 80.  
 \*\*\*

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.81	479.7	213.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.34 WATERSHED INCHES; 1149 CFS-HRS; 95.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	13.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .71 WATERSHED INCHES; 14 CFS-HRS; 1.2 ACRE-  
 FEET.

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 2.04TEST  
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OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.81	482.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.32 WATERSHED INCHES; 1164 CFS-HRS; 96.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	36.0	(RUNOFF)
19.47	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.03 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.28	43.1	(RUNOFF)
18.68	2.0	(RUNOFF)
24.02	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .76 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	72.5	(NULL)
18.84	3.0	(NULL)
24.00	2.2	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 SQ.MI.

HRS	MAIN	TIME	INCREMENT	ALTERNATE	STORM	ALTERNATE	STORM	ALTERNATE	STORM
11.22 CFS	.49	.63	.79	.97	1.16	1.40	1.96		
2.82									
11.70 CFS	3.78	5.14	7.22	10.39	15.33	23.87	38.54		
59.88									
12.18 CFS	71.62	69.54	63.61	55.63	47.73	41.72	37.24		
32.74									
12.66 CFS	28.65	25.46	22.99	21.09	19.59	18.36	17.21		
16.11									
13.14 CFS	15.11	14.25	13.52	12.86	12.25	11.66	11.08		
10.52									
13.62 CFS	9.99	9.52	9.15	8.84	8.59	8.40	8.24		
8.11									
14.10 CFS	7.97	7.82	7.65	7.50	7.36	7.24	7.12		
6.98									
14.58 CFS	6.82	6.65	6.49	6.36	6.23	6.10	5.95		
5.81									
15.06 CFS	5.66	5.51	5.35	5.22	5.12	5.06	5.02		
5.00									
15.54 CFS	4.98	4.95	4.89	4.82	4.78	4.77	4.75		
4.71									

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16.02 CFS	4.65	4.60	4.55	4.53	4.50	4.46	4.41		
4.37									
16.50 CFS	4.32	4.27	4.23	4.20	4.18	4.14	4.09		
4.05									
16.98 CFS	4.03	4.01	3.97	3.91	3.83	3.79	3.78		
3.75									
17.46 CFS	3.71	3.64	3.58	3.54	3.50	3.47	3.43		
3.38									
17.94 CFS	3.34	3.32	3.29	3.24	3.20	3.16	3.14		
3.11									
18.42 CFS	3.06	3.04	3.05	3.06	3.07	3.04	3.03		
3.04									
18.90 CFS	3.03	3.00	2.98	2.96	2.95	2.95	2.94		
2.94									

19.38 CFS	2.94	2.94	2.94	2.93	2.90	2.88	2.88
2.87							
19.86 CFS	2.84	2.82	2.82	2.85	2.85	2.83	2.82
2.80							
20.34 CFS	2.78	2.75	2.71	2.71	2.73	2.74	2.72
2.70							
20.82 CFS	2.71	2.70	2.68	2.66	2.64	2.62	2.61
2.61							
21.30 CFS	2.61	2.61	2.61	2.61	2.60	2.57	2.54
2.54							
21.78 CFS	2.53	2.51	2.52	2.53	2.51	2.49	2.47
2.45							
22.26 CFS	2.44	2.43	2.43	2.43	2.43	2.41	2.38
2.36							
22.74 CFS	2.36	2.34	2.31	2.29	2.30	2.32	2.32
2.30							
23.22 CFS	2.29	2.27	2.26	2.25	2.23	2.19	2.17
2.18							
23.70 CFS	2.20	2.20	2.17	2.14	2.12	2.20	2.14
1.71							
24.18 CFS	1.21	.80	.50	.31			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .84 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.79	505.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.27 WATERSHED INCHES; 1256 CFS-HRS; 103.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	22.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.79	508.2	(NULL)
23.97	27.9	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55  
 SQ.MI.

HRS	.48	.51	.55	.59	.63	.68	.72
7.68 CFS							
.77							
8.16 CFS	.82	.87	.92	.98	1.04	1.09	1.16
1.22							



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8.64	CFS	1.29	1.36	1.43	1.50	1.58	1.66	1.74
1.83								
9.12	CFS	1.91	2.00	2.09	2.19	2.29	2.39	2.50
2.62								
9.60	CFS	2.75	2.90	3.07	3.25	3.45	3.68	3.94
4.21								
10.08	CFS	4.51	4.83	5.17	5.53	5.91	6.32	6.76
7.23								
10.56	CFS	7.73	8.28	8.86	9.49	10.17	10.91	11.74
12.67								
11.04	CFS	13.70	14.89	16.23	17.75	19.47	21.41	23.64
26.14								
11.52	CFS	29.00	32.91	37.74	43.12	49.95	59.19	71.71
89.34								
12.00	CFS	117	162	226	278	308	334	358
383								
12.48	CFS	410	441	468	489	502	508	506
496								
12.96	CFS	481	461	439	414	389	364	339
316								
13.44	CFS	294	273	254	236	220	205	192
180								
13.92	CFS	170	160	152	145	138	132	126
121								
14.40	CFS	117	113	110	106	103	101	98
96								
14.88	CFS	93.25	91.08	89.03	87.05	85.11	83.22	81.41
79.72								
15.36	CFS	78.14	76.67	75.29	73.99	72.71	71.45	70.22
69.12								
15.84	CFS	68.15	67.25	66.39	65.55	64.77	64.06	63.41
62.80								
16.32	CFS	62.19	61.61	61.05	60.47	59.90	59.36	58.85
58.37								
16.80	CFS	57.86	57.34	56.85	56.37	55.92	55.43	54.91
54.37								
17.28	CFS	53.87	53.43	52.99	52.50	51.98	51.45	50.95
50.47								
17.76	CFS	49.99	49.48	48.97	48.48	48.01	47.54	47.03
46.53								
18.24	CFS	46.05	45.60	45.16	44.68	44.26	43.91	43.59
43.27								
18.72	CFS	42.91	42.59	42.33	42.05	41.76	41.49	41.24
41.02								
19.20	CFS	40.82	40.64	40.47	40.31	40.15	40.00	39.83
39.62								
19.68	CFS	39.43	39.30	39.13	38.94	38.75	38.62	38.53
38.40								
20.16	CFS	38.23	38.06	37.89	37.72	37.51	37.29	37.15
37.03								
20.64	CFS	36.92	36.75	36.57	36.44	36.29	36.10	35.90
35.73								
21.12	CFS	35.56	35.40	35.25	35.11	34.97	34.84	34.71
34.57								
21.60	CFS	34.38	34.18	34.05	33.90	33.73	33.60	33.50

33.33								
22.08	CFS	33.14	32.96	32.77	32.60	32.43	32.27	32.12
31.98								
22.56	CFS	31.80	31.58	31.38	31.23	31.04	30.83	30.63
30.48								
23.04	CFS	30.38	30.23	30.05	29.87	29.69	29.52	29.36
29.19								
23.52	CFS	28.98	28.79	28.67	28.56	28.43	28.25	28.03
27.86								
24.00	CFS	27.87	27.64	26.62	25.29	24.00	22.77	21.62
20.54								
24.48	CFS	19.47	18.36	17.17	15.92	14.63	13.36	12.15
11.03								
24.96	CFS	10.04	9.17	8.42	7.78	7.24	6.78	6.40
6.08								
25.44	CFS	5.82	5.59	5.40	5.23	5.08	4.94	4.82
4.70								
25.92	CFS	4.60	4.50	4.40	4.31	4.22	4.13	4.05
3.97								
26.40	CFS	3.89	3.81	3.73	3.66	3.59	3.52	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.28 WATERSHED INCHES; 1275 CFS-HRS; 105.4 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

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EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
 STARTING TIME = .00 RAIN DEPTH = 4.10 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. = 5 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	36.2	(RUNOFF)
20.13	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.20 WATERSHED INCHES; 48 CFS-HRS; 3.9 ACRE-FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	34.3	390.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

2.20 WATERSHED INCHES; 48 CFS-HRS; 3.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.28 61.8 (RUNOFF)  
23.98 1.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.08 WATERSHED INCHES; 78 CFS-HRS; 6.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.32 92.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.13 WATERSHED INCHES; 126 CFS-HRS; 10.4 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 11

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.33 97.1 382.73

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.13 WATERSHED INCHES; 126 CFS-HRS; 10.4 ACRE-  
FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.42 90.5 368.14

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.12 WATERSHED INCHES; 125 CFS-HRS; 10.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.30 75.6 (RUNOFF)

20.13	2.4	(RUNOFF)
23.74	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.91 WATERSHED INCHES; 98 CFS-HRS; 8.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	161.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.02 WATERSHED INCHES; 224 CFS-HRS; 18.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	155.6	357.55

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.02 WATERSHED INCHES; 224 CFS-HRS; 18.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

1

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 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	106.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.10 WATERSHED INCHES; 147 CFS-HRS; 12.1 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.90	30.4	375.57

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

2.74 WATERSHED INCHES; 130 CFS-HRS; 10.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.13 11.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.53 WATERSHED INCHES; 10 CFS-HRS; .8 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
13.04 29.1 354.29

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.74 WATERSHED INCHES; 130 CFS-HRS; 10.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.19 56.1 (RUNOFF)  
15.83 2.5 (RUNOFF)  
24.02 1.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.62 WATERSHED INCHES; 57 CFS-HRS; 4.7 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.44 182.5 (NULL)  
24.01 5.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.93 WATERSHED INCHES; 281 CFS-HRS; 23.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK

ELEVATION(FEET)  
12.20 24.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.05 WATERSHED INCHES; 26 CFS-HRS; 2.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.44 191.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.12 WATERSHED INCHES; 409 CFS-HRS; 33.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.44 203.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.11 WATERSHED INCHES; 435 CFS-HRS; 35.9 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.44 203.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.11 WATERSHED INCHES; 435 CFS-HRS; 35.9 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
\*\*\*

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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OPERATION REACH XSECTION 16

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.44 203.3 332.93

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.11 WATERSHED INCHES; 435 CFS-HRS; 35.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.15	41.3	(RUNOFF)
15.84	1.3	(RUNOFF)
17.34	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.81 WATERSHED INCHES; 38 CFS-HRS; 3.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	58.6	(RUNOFF)
21.75	1.0	(RUNOFF)
21.97	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.20 WATERSHED INCHES; 65 CFS-HRS; 5.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.15	70.7	(RUNOFF)
15.84	2.4	(RUNOFF)
23.06	1.1	(RUNOFF)
23.71	1.0	(RUNOFF)
24.00	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.50 WATERSHED INCHES; 65 CFS-HRS; 5.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 20

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05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
2.04TEST  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	97.9	(NULL)
15.81	3.3	(NULL)
18.85	2.0	(NULL)
24.01	1.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.04 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-

FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.16	167.9	(NULL)
15.83	5.7	(NULL)
17.33	4.4	(NULL)
20.85	3.1	(NULL)
24.01	2.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.80 WATERSHED INCHES; 168 CFS-HRS; 13.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 22

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.20	322.6	(NULL)
12.39	270.9	(NULL)
20.03	18.5	(NULL)
23.03	14.3	(NULL)
24.00	13.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.27 WATERSHED INCHES; 602 CFS-HRS; 49.8 ACRE-FEET.

OPERATION REACH XSECTION 23

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.36	277.4	315.83

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.27 WATERSHED INCHES; 602 CFS-HRS; 49.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 24

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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.25	62.7	(RUNOFF)
23.99	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.31 WATERSHED INCHES; 75 CFS-HRS; 6.2 ACRE-FEET.



\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .043 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	54.8	363.56
23.79	1.2	356.48

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.31 WATERSHED INCHES; 75 CFS-HRS; 6.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	87.7	(RUNOFF)
20.68	2.3	(RUNOFF)
23.97	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.26 WATERSHED INCHES; 109 CFS-HRS; 9.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	138.3	(NULL)
20.14	4.0	(NULL)
23.78	3.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.28 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 27

1  
 TR20 ----- SCS  
 -  
 Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	123.7	318.90

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.28 WATERSHED INCHES; 185 CFS-HRS; 15.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	65.5	(RUNOFF)
24.01	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.01 WATERSHED INCHES; 78 CFS-HRS; 6.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	337.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.23 WATERSHED INCHES; 679 CFS-HRS; 56.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	447.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.24 WATERSHED INCHES; 864 CFS-HRS; 71.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	108.7	(RUNOFF)
21.97	2.1	(RUNOFF)
24.03	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.72 WATERSHED INCHES; 122 CFS-HRS; 10.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 32

1 TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION

05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA

2.04TEST

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	98.7	312.69
20.73	2.3	310.19
24.09	1.8	310.15

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.72 WATERSHED INCHES; 122 CFS-HRS; 10.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	18.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.53 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-FEET.

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 32, TRUNCATED AT 400 POINTS  
 WITH .34 AC-FT ( .06 WATERSHED INCHES) FLOOD STORAGE  
 REMAINING IN RESERVOIR AT ELEV. 377.21.  
 \*\*\*

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.63	3.9	379.83

\*\*\* WARNING - STRUCTURE 32, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS  
 RESVOR ( 12. % OF MAX. HYDROGRAPH COORDINATE)  
 MAIN TIME INCREMENT TOO SMALL.  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.77 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-FEET.

\*\*\* WARNING - XSECTION 34, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.72	3.9	338.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.76 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 35

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 TR20 ----- SCS  
 -

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 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	55.1	(RUNOFF)
20.10	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.52 WATERSHED INCHES;		5.2 ACRE-
FEET.		
63 CFS-HRS;		

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 33, TRUNCATED AT 400 POINTS  
 WITH .90 AC-FT ( .05 WATERSHED INCHES) FLOOD STORAGE  
 REMAINING IN RESERVOIR AT ELEV. 353.60.  
 \*\*\*

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	33.5	356.65
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.91 WATERSHED INCHES;		4.3 ACRE-
FEET.		
52 CFS-HRS;		

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	35.1	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.87 WATERSHED INCHES;		5.5 ACRE-
FEET.		
67 CFS-HRS;		

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	35.1	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.87 WATERSHED INCHES;		5.5 ACRE-
FEET.		
67 CFS-HRS;		

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
 \*\*\*

OPERATION REACH XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	35.1	330.41

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.87 WATERSHED INCHES; 67 CFS-HRS; 5.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	58.2	(RUNOFF)
21.45	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.62 WATERSHED INCHES; 56 CFS-HRS; 4.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	77.2	(NULL)
19.71	3.0	(NULL)
24.01	2.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.75 WATERSHED INCHES; 122 CFS-HRS; 10.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	43.4	(RUNOFF)
20.67	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.15 WATERSHED INCHES; 54 CFS-HRS; 4.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	486.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.24 WATERSHED INCHES; 918 CFS-HRS; 75.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	583.5	(NULL)

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 2.04TEST  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.29 WATERSHED INCHES; 1040 CFS-HRS; 85.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	647.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.32 WATERSHED INCHES; 1158 CFS-HRS; 95.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	613.3	290.66

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.32 WATERSHED INCHES; 1157 CFS-HRS; 95.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	50.8	(RUNOFF)
20.13	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.19 WATERSHED INCHES; 67 CFS-HRS; 5.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	62.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.12 WATERSHED INCHES; 86 CFS-HRS; 7.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.31 113.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.15 WATERSHED INCHES; 153 CFS-HRS; 12.7 ACRE-  
 FEET.

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 2.04TEST  
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OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.20 61.6 (RUNOFF)  
 24.03 1.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.14 WATERSHED INCHES; 65 CFS-HRS; 5.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.45 641.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.31 WATERSHED INCHES; 1222 CFS-HRS; 101.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.43 740.9 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .93 SQ.MI.

HRS	6.12 CFS	6.60 CFS	7.08 CFS	7.56 CFS	8.04 CFS	1.20	1.27	1.34	1.41	1.49	1.57	1.65	1.73
.47	.51	.54	.58	.62	.66	.70							
.75	.80	.85	.90	.96	1.01	1.07	1.13						
1.20	1.27	1.34	1.41	1.49	1.57	1.65	1.73						
1.82	1.90	1.99	2.07	2.16	2.25	2.35	2.45						
2.57	2.69	2.82	2.97	3.13	3.29	3.47	3.66						

3.85								
8.52	CFS	4.06	4.27	4.48	4.71	4.95	5.20	5.46
5.71								
9.00	CFS	5.97	6.24	6.53	6.84	7.17	7.53	7.94
8.38								
9.48	CFS	8.86	9.38	9.92	10.49	11.09	11.73	12.40
13.11								
9.96	CFS	13.83	14.57	15.34	16.13	16.97	17.84	18.75
19.67								
10.44	CFS	20.62	21.60	22.63	23.74	24.98	26.40	28.04
29.93								
10.92	CFS	32.07	34.46	37.09	39.96	43.13	46.69	50.69
55.17								
11.40	CFS	60	66	72	78	87	98	111
128								
11.88	CFS	150	178	218	277	361	467	576
666								
12.36	CFS	721	741	730	702	662	615	564
512								
12.84	CFS	464	422	385	355	328	305	284
265								
13.32	CFS	247	231	215	201	188	176	165
156								
13.80	CFS	147	139	132	126	121	116	112
108								
14.28	CFS	104	101	98	96	93	91	89
87								
14.76	CFS	84.97	83.12	81.36	79.67	78.02	76.40	74.80
73.18								
15.24	CFS	71.58	70.02	68.54	67.20	66.03	65.02	64.16
63.40								
15.72	CFS	62.68	62.00	61.35	60.76	60.22	59.70	59.18
58.65								
16.20	CFS	58.13	57.62	57.13	56.66	56.20	55.73	55.24
54.75								
16.68	CFS	54.26	53.79	53.34	52.90	52.46	52.03	51.60
51.19								

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17.16	CFS	50.78	50.33	49.85	49.36	48.89	48.44	47.99
47.52								
17.64	CFS	47.02	46.52	46.02	45.54	45.07	44.60	44.15
43.71								
18.12	CFS	43.28	42.85	42.42	42.00	41.59	41.18	40.79
40.43								
18.60	CFS	40.13	39.88	39.67	39.49	39.32	39.16	39.00
38.82								
19.08	CFS	38.64	38.45	38.26	38.08	37.92	37.78	37.66
37.56								
19.56	CFS	37.46	37.34	37.21	37.05	36.89	36.73	36.56
36.38								
20.04	CFS	36.24	36.12	36.02	35.92	35.81	35.66	35.49
35.28								
20.52	CFS	35.06	34.85	34.68	34.53	34.39	34.25	34.12
33.97								
21.00	CFS	33.82	33.64	33.45	33.25	33.06	32.89	32.73



32.60								
21.48	CFS	32.49	32.39	32.28	32.15	31.99	31.84	31.68
31.53								
21.96	CFS	31.40	31.29	31.17	31.03	30.88	30.72	30.55
30.40								
22.44	CFS	30.26	30.14	30.02	29.89	29.75	29.59	29.42
29.25								
22.92	CFS	29.07	28.89	28.74	28.62	28.53	28.43	28.32
28.20								
23.40	CFS	28.06	27.92	27.76	27.58	27.39	27.23	27.10
26.99								
23.88	CFS	26.86	26.71	26.58	26.44	26.06	25.21	23.76
21.82								
24.36	CFS	19.60	17.38	15.37	13.65	12.24	11.10	10.22
9.53								
24.84	CFS	8.99	8.57	8.23	7.95	7.71	7.51	7.33
7.17								
25.32	CFS	7.02	6.88	6.75	6.62	6.49	6.37	6.24
6.12								
25.80	CFS	5.99	5.87	5.74	5.62	5.51	5.39	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.29 WATERSHED INCHES; 1376 CFS-HRS; 113.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	718.2	285.36

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.29 WATERSHED INCHES; 1375 CFS-HRS; 113.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 52

\*\*\* MESSAGE - XSECTION 52, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.29 WATERSHED INCHES; 205 CFS-HRS; 113.6 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53

\*\*\* MESSAGE - XSECTION 53, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

1

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.29 WATERSHED INCHES; 203 CFS-HRS; 113.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - XSECTION 54, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.29 WATERSHED INCHES; 74 CFS-HRS; 113.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	38.2	(RUNOFF)
18.87	1.0	(RUNOFF)
19.44	1.0 *	(RUNOFF)

\* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.95 WATERSHED INCHES; 40 CFS-HRS; 3.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.54	732.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.28 WATERSHED INCHES; 1415 CFS-HRS; 117.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 57

\*\*\* MESSAGE - XSECTION 57, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.28 WATERSHED INCHES; 209 CFS-HRS; 117.0 ACRE-  
FEET.

1

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OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	732.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.24 WATERSHED INCHES;	1416 CFS-HRS;	117.0 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	22.0	(RUNOFF)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5						
	MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .03						
HRS							
SQ.MI.							
11.22 CFS	.44	.53	.63	.75	.88	1.03	1.24
1.58							
11.70 CFS	1.98	2.45	3.07	3.96	5.32	7.49	11.28
16.76							
12.18 CFS	21.35	21.74	19.02	15.70	13.05	11.07	9.63
8.45							
12.66 CFS	7.33	6.38	5.69	5.20	4.82	4.51	4.24
3.98							
13.14 CFS	3.73	3.51	3.32	3.16	3.01	2.87	2.72
2.58							
13.62 CFS	2.45	2.33	2.23	2.16	2.09	2.05	2.01
1.98							
14.10 CFS	1.94	1.91	1.87	1.83	1.79	1.76	1.73
1.70							
14.58 CFS	1.66	1.62	1.58	1.54	1.51	1.48	1.44
1.41							
15.06 CFS	1.37	1.33	1.29	1.26	1.23	1.22	1.21
1.20							
15.54 CFS	1.20	1.19	1.18	1.16	1.15	1.15	1.14
1.14							
16.02 CFS	1.12	1.11	1.09	1.09	1.08	1.07	1.06
1.05							
16.50 CFS	1.04	1.02	1.01	1.00	1.00	.99	.98
.97							
16.98 CFS	.96	.96	.95	.94	.92	.90	.90
.90							
17.46 CFS	.89	.87	.85	.84	.83	.83	.82
.81							
17.94 CFS	.80	.79	.78	.77	.76	.75	.75
.74							
18.42 CFS	.73	.72	.72	.73	.73	.73	.72
.72							
18.90 CFS	.72	.72	.71	.70	.70	.70	.70
.70							
19.38 CFS	.70	.70	.70	.70	.69	.68	.68
.68							
19.86 CFS	.68	.67	.67	.67	.68	.67	.67
.66							
20.34 CFS	.66	.65	.64	.64	.64	.65	.65
.64							
20.82 CFS	.64	.64	.64	.63	.62	.62	.62
.62							
21.30 CFS	.62	.61	.61	.62	.61	.61	.60
.60							
21.78 CFS	.60	.59	.59	.59	.59	.59	.58

.58								
22.26 CFS	.57	.57	.57	.57	.57	.57	.57	.56
.55								
22.74 CFS	.55	.55	.55	.54	.54	.54	.54	.55
.54								
23.22 CFS	.54	.53	.53	.53	.53	.52	.52	.51
.51								
23.70 CFS	.51	.52	.51	.50	.50	.51	.51	.51
.43								

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.43 WATERSHED INCHES; 24 CFS-HRS; 2.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	742.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.22 WATERSHED INCHES; 1440 CFS-HRS; 119.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	12.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.38 WATERSHED INCHES; 15 CFS-HRS; 1.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	749.0	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.02  
 SQ.MI.

HRS								
6.24 CFS	.48	.51	.55	.58	.62	.67	.71	
.76								
6.72 CFS	.81	.86	.91	.97	1.02	1.08	1.15	
1.21								
7.20 CFS	1.28	1.35	1.42	1.50	1.58	1.66	1.75	
1.83								
7.68 CFS	1.91	2.00	2.09	2.18	2.27	2.37	2.48	
2.59								

8.16	CFS	2.72	2.86	3.00	3.16	3.33	3.51	3.69
3.89								
8.64	CFS	4.09	4.30	4.52	4.76	5.00	5.25	5.51
5.78								
9.12	CFS	6.05	6.34	6.65	6.98	7.33	7.73	8.16
8.63								
9.60	CFS	9.13	9.67	10.24	10.84	11.47	12.14	12.84
13.57								
10.08	CFS	14.33	15.10	15.91	16.75	17.63	18.54	19.48
20.44								
10.56	CFS	21.44	22.50	23.64	24.89	26.32	27.94	29.80
31.92								
11.04	CFS	34.30	36.95	39.88	43.14	46.77	50.82	55.36
60.41								
11.52	CFS	66	72	80	89	100	114	131
154								
12.00	CFS	185	230	295	376	464	555	638
702								
12.48	CFS	740	749	736	707	667	619	569
520								
12.96	CFS	474	433	397	365	338	314	293
273								
13.44	CFS	255	238	222	207	194	182	171
162								
13.92	CFS	153	145	138	132	126	122	117
113								
14.40	CFS	110	106	103	101	98	96	94
91								
14.88	CFS	89.38	87.43	85.56	83.75	81.98	80.22	78.50
76.80								
15.36	CFS	75.17	73.61	72.17	70.87	69.72	68.69	67.78
66.95								
15.84	CFS	66.21	65.52	64.86	64.23	63.63	63.06	62.51
61.96								
16.32	CFS	61.42	60.88	60.36	59.85	59.34	58.82	58.31
57.80								
16.80	CFS	57.30	56.80	56.32	55.85	55.40	54.95	54.48
54.01								
17.28	CFS	53.53	53.05	52.57	52.07	51.56	51.05	50.55
50.04								
17.76	CFS	49.53	49.00	48.48	47.96	47.47	46.99	46.51
46.03								
18.24	CFS	45.57	45.12	44.68	44.23	43.79	43.39	43.03
42.70								
18.72	CFS	42.39	42.13	41.92	41.73	41.54	41.35	41.17
40.98								

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TR20 ----- SCS

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION

05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA

2.04TEST

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19.20	CFS	40.80	40.60	40.42	40.25	40.10	39.96	39.84
39.71								
19.68	CFS	39.58	39.44	39.30	39.13	38.95	38.78	38.63
38.49								
20.16	CFS	38.34	38.21	38.09	37.96	37.81	37.63	37.44
37.25								
20.64	CFS	37.05	36.86	36.67	36.51	36.37	36.22	36.06
35.89								

21.12 CFS	35.71	35.53	35.34	35.15	34.96	34.80	34.65
34.52							
21.60 CFS	34.39	34.25	34.12	33.98	33.82	33.66	33.51
33.37							
22.08 CFS	33.23	33.09	32.94	32.80	32.64	32.48	32.32
32.17							
22.56 CFS	32.03	31.88	31.74	31.59	31.44	31.26	31.07
30.90							
23.04 CFS	30.74	30.59	30.44	30.30	30.18	30.07	29.95
29.81							
23.52 CFS	29.65	29.48	29.31	29.15	28.99	28.83	28.67
28.52							
24.00 CFS	28.41	28.28	27.91	27.24	26.28	24.97	23.30
21.30							
24.48 CFS	19.18	17.11	15.23	13.59	12.23	11.14	10.26
9.57							
24.96 CFS	9.02	8.59	8.24	7.95	7.71	7.50	7.32
7.15							
25.44 CFS	7.00	6.86	6.73	6.60	6.47	6.35	6.22
6.10							
25.92 CFS	5.97	5.85	5.72	5.61			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.20 WATERSHED INCHES; 1456 CFS-HRS; 120.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.68	716.2	250.05

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.20 WATERSHED INCHES; 1455 CFS-HRS; 120.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	12.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.50 WATERSHED INCHES; 18 CFS-HRS; 1.5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.82	5.6	333.50

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.50 WATERSHED INCHES; 18 CFS-HRS; 1.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 65

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.94	5.5	300.50

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.50 WATERSHED INCHES; 18 CFS-HRS; 1.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	38.8	(RUNOFF)
21.97	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.41 WATERSHED INCHES; 42 CFS-HRS; 3.4 ACRE-  
 FEET.

\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .043 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	15.8	292.31
13.93	3.5	287.75
22.00	1.0	287.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.41 WATERSHED INCHES; 42 CFS-HRS; 3.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.71	21.0	(NULL)
13.90	8.0	(NULL)
24.03	1.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.62 WATERSHED INCHES; 59 CFS-HRS; 4.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 68

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	90.3	(RUNOFF)
21.45	2.1	(RUNOFF)
24.02	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.83 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	106.2	(NULL)
18.87	4.1	(NULL)
23.10	3.1	(NULL)
24.03	2.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.74 WATERSHED INCHES; 151 CFS-HRS; 12.5 ACRE-  
FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	78.9	248.58
23.14	3.1	247.51
24.09	2.9	247.49

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.74 WATERSHED INCHES; 151 CFS-HRS; 12.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	20.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.13 WATERSHED INCHES; 16 CFS-HRS; 1.4 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		



12.59 3.9 265.07

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.13 WATERSHED INCHES; 16 CFS-HRS; 1.3 ACRE-  
 FEET.

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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 2.04TEST  
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OPERATION REACH XSECTION 72

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.71 3.9 247.58

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.12 WATERSHED INCHES; 16 CFS-HRS; 1.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.19 72.3 (RUNOFF)  
 17.34 3.1 (RUNOFF)  
 22.47 2.0 (RUNOFF)  
 24.01 1.8 (RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11  
 SQ.MI.

HRS	11.46	11.94	12.42	12.90	13.38	13.86	14.34	14.82	15.30	15.78	16.26	16.74
CFS	9.67	42.97	15.94	10.25	7.13	6.14	5.20	4.25	3.98	3.75	3.48	3.23
	.45	14.42	35.80	15.05	9.78	6.96	6.04	5.10	4.18	3.95	3.74	3.46
	.81	23.06	30.87	14.26	9.32	6.84	5.95	5.00	4.15	3.96	3.69	3.43
	1.39	37.77	27.76	13.48	8.85	6.74	5.85	4.87	4.14	3.96	3.65	3.38
	2.30	59.83	24.51	12.68	8.39	6.66	5.73	4.74	4.14	3.91	3.62	3.35
	3.37	72.15	21.08	11.89	7.95	6.55	5.59	4.63	4.14	3.85	3.58	3.34
	4.71	65.02	18.56	11.24	7.60	6.42	5.44	4.49	4.11	3.79	3.52	3.32
	6.70	52.35	17.03	10.73	7.33	6.28	5.31	4.36	4.05	3.76	3.49	3.29

17.22 CFS	3.15	3.12	3.12	3.12	3.07	3.00	2.94
2.91							
17.70 CFS	2.89	2.88	2.83	2.78	2.76	2.74	2.73
2.68							
18.18 CFS	2.63	2.61	2.59	2.58	2.53	2.51	2.53
2.56							
18.66 CFS	2.56	2.53	2.51	2.53	2.53	2.49	2.47
2.46							
19.14 CFS	2.45	2.45	2.45	2.45	2.45	2.45	2.45
2.44							
19.62 CFS	2.40	2.38	2.40	2.39	2.36	2.33	2.34
2.38							
20.10 CFS	2.39	2.36	2.33	2.32	2.31	2.28	2.24
2.25							
20.58 CFS	2.28	2.29	2.27	2.24	2.25	2.26	2.23
2.20							
21.06 CFS	2.18	2.17	2.17	2.17	2.17	2.17	2.17
2.17							
21.54 CFS	2.17	2.13	2.10	2.10	2.11	2.09	2.09
2.11							
22.02 CFS	2.10	2.06	2.04	2.03	2.02	2.02	2.02
2.02							
22.50 CFS	2.02	2.01	1.97	1.94	1.96	1.95	1.92
1.89							
22.98 CFS	1.90	1.94	1.95	1.92	1.89	1.88	1.87
1.87							
23.46 CFS	1.86	1.81	1.79	1.81	1.84	1.84	1.81
1.76							
23.94 CFS	1.75	1.84	1.80	1.31	.71	.34	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.08 WATERSHED INCHES; 77 CFS-HRS; 6.3 ACRE-  
 FEET.

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION

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 2.04TEST

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OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.67	736.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.09 WATERSHED INCHES; 1532 CFS-HRS; 126.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	82.6	(NULL)
20.15	4.2	(NULL)
24.09	3.1	(NULL)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5						
		MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15						
HRS	SQ.MI.							
9.84	CFS	.49	.55	.62	.68	.76	.83	.92
1.00								
10.32	CFS	1.09	1.18	1.28	1.38	1.49	1.60	1.72
1.87								
10.80	CFS	2.04	2.24	2.48	2.74	3.04	3.37	3.75
4.18								
11.28	CFS	4.68	5.25	5.88	6.60	7.38	8.25	9.31
10.73								
11.76	CFS	12.51	14.64	17.28	20.66	25.14	31.78	41.50
55.63								
12.24	CFS	70.26	79.63	82.54	81.23	77.69	73.29	68.86
64.58								
12.72	CFS	60.39	56.47	53.01	50.07	47.53	45.31	43.35
41.56								
13.20	CFS	39.91	38.37	36.97	35.67	34.46	33.32	32.14
30.85								
13.68	CFS	29.52	27.96	26.32	24.70	22.96	21.65	20.56
19.65								
14.16	CFS	18.83	18.10	17.42	16.79	16.22	15.71	15.25
14.82								
14.64	CFS	14.40	13.97	13.52	13.08	12.66	12.26	11.84
11.38								
15.12	CFS	10.93	10.49	10.08	9.72	9.39	9.12	8.89
8.70								
15.60	CFS	8.55	8.40	8.20	7.98	7.78	7.62	7.50
7.39								
16.08	CFS	7.28	7.18	7.08	7.00	6.93	6.86	6.79
6.72								
16.56	CFS	6.65	6.58	6.50	6.44	6.38	6.33	6.26
6.20								
17.04	CFS	6.14	6.09	6.04	5.98	5.91	5.83	5.76
5.71								
17.52	CFS	5.66	5.59	5.51	5.44	5.37	5.31	5.25
5.18								
18.00	CFS	5.11	5.06	5.00	4.95	4.89	4.83	4.77
4.72								
18.48	CFS	4.67	4.62	4.58	4.56	4.55	4.53	4.51
4.49								
18.96	CFS	4.48	4.46	4.44	4.41	4.39	4.37	4.35
4.34								
19.44	CFS	4.33	4.32	4.32	4.31	4.29	4.27	4.25
4.23								
19.92	CFS	4.21	4.18	4.16	4.16	4.16	4.16	4.14
4.12								
20.40	CFS	4.11	4.08	4.04	4.01	4.00	4.00	3.99
3.98								
20.88	CFS	3.96	3.95	3.94	3.92	3.89	3.87	3.85
3.83								
21.36	CFS	3.82	3.81	3.80	3.79	3.78	3.77	3.74
3.72								
21.84	CFS	3.71	3.69	3.67	3.67	3.66	3.64	3.62
3.60								
22.32	CFS	3.58	3.56	3.55	3.54	3.53	3.52	3.49
3.47								
22.80	CFS	3.45	3.43	3.41	3.38	3.36	3.35	3.35
3.35								
23.28	CFS	3.33	3.31	3.29	3.28	3.26	3.23	3.20
3.18								
23.76	CFS	3.17	3.17	3.16	3.14	3.11	3.11	3.12
2.98								
24.24	CFS	2.65	2.23	1.81	1.44	1.14	.90	.70

.55

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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24.72 CFS .43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.77 WATERSHED INCHES; 167 CFS-HRS; 13.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.66	800.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.06 WATERSHED INCHES; 1699 CFS-HRS; 140.4 ACRE-  
FEET.

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.72	800.1	230.01

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.06 WATERSHED INCHES; 1699 CFS-HRS; 140.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	48.4	(RUNOFF)
15.85	2.2	(RUNOFF)
23.07	1.1	(RUNOFF)
23.73	1.0	(RUNOFF)
24.02	1.0	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05  
SQ.MI.

HRS	10.98 CFS	.48	.59	.72	.87	1.05	1.26	1.48
	1.74							
	11.46 CFS	2.01	2.32	2.87	3.73	4.63	5.62	7.12
	9.35							
	11.94 CFS	12.68	18.63	28.32	42.26	48.42	41.74	32.58
	26.16							
	12.42 CFS	21.43	18.33	16.41	14.35	12.20	10.74	9.87
	9.24							
	12.90 CFS	8.71	8.24	7.77	7.29	6.83	6.44	6.14
	5.86							
	13.38 CFS	5.59	5.32	5.04	4.77	4.52	4.31	4.17

4.05								
13.86	CFS	3.95	3.88	3.83	3.78	3.71	3.63	3.55
3.47								
14.34	CFS	3.41	3.36	3.30	3.23	3.15	3.06	2.98
2.92								
14.82	CFS	2.87	2.81	2.73	2.66	2.59	2.52	2.44
2.38								
15.30	CFS	2.34	2.33	2.32	2.32	2.32	2.30	2.26
2.22								
15.78	CFS	2.21	2.21	2.21	2.18	2.14	2.11	2.10
2.09								
16.26	CFS	2.08	2.06	2.03	2.01	1.99	1.96	1.94
1.93								
16.74	CFS	1.93	1.90	1.88	1.86	1.85	1.85	1.82
1.79								
17.22	CFS	1.75	1.73	1.73	1.73	1.70	1.66	1.63
1.61								
17.70	CFS	1.60	1.59	1.56	1.54	1.52	1.52	1.51
1.48								
18.18	CFS	1.45	1.44	1.43	1.42	1.40	1.38	1.40
1.41								

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18.66	CFS	1.41	1.39	1.38	1.40	1.39	1.37	1.36
1.35								
19.14	CFS	1.35	1.35	1.35	1.35	1.35	1.35	1.35
1.34								
19.62	CFS	1.32	1.31	1.32	1.31	1.29	1.28	1.29
1.31								
20.10	CFS	1.31	1.29	1.28	1.28	1.27	1.25	1.23
1.23								
20.58	CFS	1.25	1.26	1.24	1.23	1.23	1.24	1.22
1.20								
21.06	CFS	1.19	1.19	1.19	1.19	1.19	1.19	1.19
1.19								
21.54	CFS	1.19	1.17	1.14	1.15	1.15	1.14	1.14
1.16								
22.02	CFS	1.14	1.12	1.11	1.11	1.11	1.10	1.10
1.10								
22.50	CFS	1.10	1.10	1.07	1.06	1.07	1.07	1.04
1.03								
22.98	CFS	1.04	1.06	1.06	1.04	1.03	1.02	1.02
1.02								
23.46	CFS	1.01	.98	.97	.99	1.00	1.00	.98
.96								
23.94	CFS	.95	1.01	.99	.69	.36		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.45 WATERSHED INCHES; 48 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK  
 ELEVATION (FEET)

12.72 810.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.03 WATERSHED INCHES; 1746 CFS-HRS; 144.3 ACRE-
FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.78 810.0 215.01

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.03 WATERSHED INCHES; 1746 CFS-HRS; 144.3 ACRE-
FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.17 25.2 (RUNOFF)
15.85 1.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.24 WATERSHED INCHES; 25 CFS-HRS; 2.1 ACRE-
FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.78 815.3 (NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.01 WATERSHED INCHES; 1771 CFS-HRS; 146.3 ACRE-
FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.15 60.2 (RUNOFF)
15.84 2.4 (RUNOFF)
24.00 1.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.67 WATERSHED INCHES; 55 CFS-HRS; 4.6 ACRE-
FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.26	81.2	(RUNOFF)
18.67	3.1	(RUNOFF)
24.01	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.31 WATERSHED INCHES; 100 CFS-HRS; 8.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.20	130.7	(NULL)
20.83	4.1	(NULL)
24.00	3.3	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 SQ.MI.

HRS	10.56	11.04	11.52	12.00	12.48	12.96	13.44	13.92	14.40	14.88	15.36	15.84	16.32	16.80	17.28
CFS	.47	1.57	6.53	50.64	70.53	29.33	18.32	13.08	11.21	9.39	7.76	7.30	6.80	6.30	5.76
	.55	1.92	8.14	75.88	62.14	27.40	17.39	12.83	11.01	9.16	7.70	7.27	6.73	6.23	5.74
	.63	2.34	10.40	111.40	54.27	25.60	16.49	12.61	10.78	8.94	7.66	7.21	6.67	6.17	5.70
	.72	2.85	12.81	129.71	47.07	23.94	15.63	12.38	10.53	8.72	7.63	7.11	6.59	6.13	5.63
	.83	3.43	15.74	125.11	41.55	22.54	14.89	12.13	10.27	8.47	7.58	7.02	6.51	6.09	5.53
	.96	4.06	19.95	111.87	37.27	21.34	14.29	11.87	10.03	8.23	7.49	6.96	6.44	6.03	5.44
	1.12	4.81	25.99	96.62	33.95	20.26	13.80	11.62	9.81	8.02	7.39	6.92	6.40	5.94	5.36
	1.32	5.61	34.77	81.70	31.46	19.27	13.39	11.40	9.61	7.87	7.32	6.87	6.36	5.83	5.32

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17.76 CFS	5.27	5.19	5.12	5.07	5.03	4.98	4.91
4.84							
18.24 CFS	4.79	4.75	4.71	4.64	4.60	4.61	4.63
4.63							
18.72 CFS	4.60	4.58	4.59	4.57	4.54	4.50	4.48
4.46							
19.20 CFS	4.45	4.44	4.44	4.44	4.44	4.44	4.42
4.37							
19.68 CFS	4.34	4.34	4.32	4.28	4.25	4.25	4.29
4.29							
20.16 CFS	4.26	4.24	4.22	4.19	4.13	4.08	4.08
4.10							
20.64 CFS	4.12	4.09	4.06	4.07	4.07	4.03	3.99
3.96							
21.12 CFS	3.94	3.92	3.91	3.91	3.91	3.91	3.91
3.90							
21.60 CFS	3.85	3.81	3.81	3.80	3.77	3.78	3.79
3.76							
22.08 CFS	3.73	3.69	3.67	3.65	3.64	3.64	3.64
3.63							
22.56 CFS	3.61	3.56	3.53	3.53	3.51	3.46	3.43
3.43							
23.04 CFS	3.47	3.47	3.44	3.42	3.39	3.37	3.36
3.34							
23.52 CFS	3.28	3.24	3.26	3.28	3.28	3.24	3.19
3.18							
24.00 CFS	3.28	3.20	2.55	1.82	1.21	.75	.46

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.42 WATERSHED INCHES; 156 CFS-HRS; 12.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.77	852.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.95 WATERSHED INCHES; 1926 CFS-HRS; 159.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	31.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.71 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.77	857.3	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55 SQ.MI.



6.42 CFS	.48	.51	.55	.59	.62	.67	.71
.76							
6.90 CFS	.81	.87	.92	.98	1.04	1.11	1.17
1.23							
7.38 CFS	1.30	1.38	1.46	1.53	1.61	1.70	1.79
1.88							
7.86 CFS	1.97	2.07	2.17	2.27	2.37	2.48	2.58
2.70							
8.34 CFS	2.83	2.96	3.10	3.26	3.43	3.61	3.80
4.00							
8.82 CFS	4.20	4.42	4.64	4.88	5.13	5.39	5.66
5.95							
9.30 CFS	6.24	6.55	6.86	7.19	7.55	7.95	8.38
8.86							

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9.78 CFS	9.37	9.93	10.54	11.19	11.90	12.65	13.44
14.26							
10.26 CFS	15.11	16.00	16.92	17.89	18.90	19.96	21.11
22.33							
10.74 CFS	23.61	24.99	26.47	28.10	29.92	32.01	34.49
37.34							
11.22 CFS	40.61	44.27	48.35	52.99	58.11	63.93	71.66
81.20							
11.70 CFS	92	104	120	141	169	212	276
366							
12.18 CFS	441	492	534	573	616	671	731
786							
12.66 CFS	828	852	857	845	819	782	737
688							
13.14 CFS	638	589	544	503	467	434	405
378							
13.62 CFS	353	331	310	291	274	257	243
229							
14.10 CFS	217	206	196	187	179	172	166
160							
14.58 CFS	155	150	145	141	137	134	130
127							
15.06 CFS	124	121	118	115	112	110	107
105							
15.54 CFS	103	101	99	98	96	94	93
92							
16.02 CFS	90.53	89.40	88.38	87.45	86.59	85.74	84.94
84.15							
16.50 CFS	83.35	82.56	81.80	81.09	80.40	79.69	78.98
78.28							
16.98 CFS	77.61	76.96	76.28	75.58	74.83	74.14	73.52
72.88							
17.46 CFS	72.22	71.51	70.78	70.05	69.36	68.68	67.96
67.25							
17.94 CFS	66.55	65.87	65.19	64.47	63.77	63.09	62.44
61.80							
18.42 CFS	61.14	60.53	60.01	59.52	59.05	58.55	58.09
57.70							
18.90 CFS	57.29	56.91	56.55	56.23	55.94	55.68	55.45
55.23							

19.38	CFS	55.02	54.81	54.62	54.40	54.13	53.90	53.73
53.52								
19.86	CFS	53.30	53.08	52.91	52.78	52.62	52.42	52.21
51.99								
20.34	CFS	51.77	51.51	51.25	51.07	50.92	50.77	50.55
50.32								
20.82	CFS	50.12	49.90	49.64	49.38	49.13	48.90	48.68
48.47								
21.30	CFS	48.27	48.07	47.88	47.68	47.47	47.21	46.95
46.76								
21.78	CFS	46.55	46.34	46.20	46.05	45.85	45.64	45.41
45.19								
22.26	CFS	44.98	44.79	44.61	44.44	44.27	44.07	43.80
43.57								
22.74	CFS	43.39	43.16	42.93	42.70	42.50	42.37	42.18
41.97								
23.22	CFS	41.75	41.52	41.31	41.12	40.92	40.66	40.45
40.29								
23.70	CFS	40.14	39.99	39.76	39.50	39.28	39.25	38.94
37.79								
24.18	CFS	36.31	34.68	33.04	31.54	30.08	28.53	26.83
24.93								
24.66	CFS	22.87	20.74	18.66	16.72	14.98	13.48	12.21
11.16								
25.14	CFS	10.32	9.63	9.07	8.63	8.26	7.95	7.70
7.48								
25.62	CFS	7.28	7.11	6.95	6.81	6.67	6.54	6.41
6.28								
26.10	CFS	6.16						

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.96 WATERSHED INCHES; 1954 CFS-HRS; 161.5 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
 STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =10 RAIN TABLE NO. = 9

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Ellicott City FloodStudy- All Combined SAs- MGMT STRUCTURES,  
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OPERATION RUNOFF XSECTION 1

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.30	48.0	(RUNOFF)
23.10	1.1 *	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.90 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-

FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	45.0	390.24
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.90 WATERSHED INCHES;	63 CFS-HRS;	5.2 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	82.2	(RUNOFF)
20.68	2.2	(RUNOFF)
23.98	1.7	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.77 WATERSHED INCHES;	104 CFS-HRS;	8.6 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	122.1	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.82 WATERSHED INCHES;	166 CFS-HRS;	13.8 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	121.3	383.02

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.81 WATERSHED INCHES;	166 CFS-HRS;	13.7 ACRE-
FEET.		

OPERATION REACH XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	120.5	368.34

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.81 WATERSHED INCHES; 166 CFS-HRS; 13.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	101.9	(RUNOFF)
23.73	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.57 WATERSHED INCHES; 132 CFS-HRS; 10.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	213.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.70 WATERSHED INCHES; 298 CFS-HRS; 24.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	212.2	357.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.70 WATERSHED INCHES; 299 CFS-HRS; 24.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	132.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.88 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
 FEET.

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\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.

\*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.68	60.8	376.27
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.49 WATERSHED INCHES;	165 CFS-HRS;	13.7 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	16.1	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.13 WATERSHED INCHES;	13 CFS-HRS;	1.1 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.81	56.5	355.97
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.49 WATERSHED INCHES;	165 CFS-HRS;	13.7 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	77.9	(RUNOFF)
15.82	3.3	(RUNOFF)
18.86	2.0	(RUNOFF)
24.02	1.4	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.23 WATERSHED INCHES;	78 CFS-HRS;	6.5 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 12

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.40 249.3 (NULL)  
24.00 6.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.59 WATERSHED INCHES; 377 CFS-HRS; 31.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.20 32.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.73 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.44 262.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.80 WATERSHED INCHES; 540 CFS-HRS; 44.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.41 278.8 (NULL)  
23.98 12.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.79 WATERSHED INCHES; 574 CFS-HRS; 47.5 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.41 278.8 (NULL)  
23.98 12.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.79 WATERSHED INCHES; 574 CFS-HRS; 47.5 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
\*\*\*

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TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
VERSION  
05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
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OPERATION REACH XSECTION 16

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.41	278.8	333.39
23.98	12.6	331.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.79 WATERSHED INCHES; 574 CFS-HRS; 47.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.15	52.0	(RUNOFF)
17.34	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.57 WATERSHED INCHES; 49 CFS-HRS; 4.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.20	72.1	(RUNOFF)
23.75	1.0	(RUNOFF)
24.02	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.99 WATERSHED INCHES; 81 CFS-HRS; 6.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.15	90.5	(RUNOFF)
17.34	2.3	(RUNOFF)
24.00	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.23 WATERSHED INCHES; 84 CFS-HRS; 7.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 20

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 Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.17	121.6	(NULL)
15.81	4.1	(NULL)
17.31	3.1	(NULL)
21.75	2.0	(NULL)
21.96	2.0	(NULL)
24.01	1.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.82 WATERSHED INCHES; 129 CFS-HRS; 10.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.16	211.4	(NULL)
15.83	7.0	(NULL)
17.33	5.4	(NULL)
19.41	4.1	(NULL)
19.74	4.0	(NULL)
20.06	4.0	(NULL)
23.06	3.2	(NULL)
24.01	3.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.56 WATERSHED INCHES; 213 CFS-HRS; 17.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 22

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.19	426.8	(NULL)
20.04	21.6	(NULL)
20.56	20.8	(NULL)
23.03	16.9	(NULL)
24.00	15.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.96 WATERSHED INCHES; 787 CFS-HRS; 65.0 ACRE-FEET.

OPERATION REACH XSECTION 23

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.39	379.7	316.13
24.04	15.6	314.09

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.96 WATERSHED INCHES; 786 CFS-HRS; 65.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	81.4	(RUNOFF)
20.13	2.0	(RUNOFF)
23.99	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.03 WATERSHED INCHES; 99 CFS-HRS; 8.2 ACRE-  
 FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .043 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	78.5	363.94
20.15	2.0	356.54
23.79	1.5	356.50

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.02 WATERSHED INCHES; 99 CFS-HRS; 8.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	115.6	(RUNOFF)
18.66	3.3	(RUNOFF)
23.77	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.97 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	190.6	(NULL)
20.14	5.0	(NULL)
23.14	4.0	(NULL)
23.78	3.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES; 242 CFS-HRS; 20.0 ACRE-FEET.

OPERATION REACH XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	174.0	319.15
20.20	5.0	316.65
23.20	4.0	316.59

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES; 242 CFS-HRS; 20.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	87.6	(RUNOFF)
21.94	2.0	(RUNOFF)
24.01	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.68 WATERSHED INCHES; 104 CFS-HRS; 8.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	457.0	(NULL)
24.03	17.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.93 WATERSHED INCHES; 890 CFS-HRS; 73.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	621.6	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.94 WATERSHED INCHES; 1132 CFS-HRS; 93.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	137.5	(RUNOFF)
18.66	3.2	(RUNOFF)
24.02	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.48 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-  
FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	125.9	313.02
18.72	3.2	310.26
24.09	2.2	310.18

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.48 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	22.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.33 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
FEET.

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 32, TRUNCATED AT 400 POINTS  
WITH .38 AC-FT ( .07 WATERSHED INCHES) FLOOD STORAGE  
REMAINING IN RESERVOIR AT ELEV. 377.43.  
\*\*\*

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.40	9.1	380.16

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.48 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-  
FEET.

VERSION  
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 2.04TEST  
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OPERATION REACH XSECTION 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	9.0	338.13
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.47 WATERSHED INCHES;	19 CFS-HRS;	1.6 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	66.9	(RUNOFF)
21.97	1.1	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.32 WATERSHED INCHES;	77 CFS-HRS;	6.3 ACRE-
FEET.		

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 33, TRUNCATED AT 400 POINTS  
 WITH .95 AC-FT ( .05 WATERSHED INCHES) FLOOD STORAGE  
 REMAINING IN RESERVOIR AT ELEV. 353.79.  
 \*\*\*

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	48.7	357.05
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.67 WATERSHED INCHES;	65 CFS-HRS;	5.4 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	53.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.62 WATERSHED INCHES;	84 CFS-HRS;	6.9 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	53.8	(NULL)

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.62 WATERSHED INCHES; 84 CFS-HRS; 6.9 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
\*\*\*

OPERATION REACH XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	53.8	330.54

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.62 WATERSHED INCHES; 84 CFS-HRS; 6.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	73.5	(RUNOFF)
15.84	2.4	(RUNOFF)
23.73	1.0	(RUNOFF)
24.01	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.37 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	106.9	(NULL)
21.94	3.1	(NULL)
24.01	2.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.50 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	57.7	(RUNOFF)
23.76	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.84 WATERSHED INCHES; 72 CFS-HRS; 6.0 ACRE-  
 FEET.

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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 2.04TEST

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OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	673.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.93 WATERSHED INCHES; 1204 CFS-HRS; 99.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	796.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES; 1359 CFS-HRS; 112.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	887.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.02 WATERSHED INCHES; 1509 CFS-HRS; 124.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	848.7	291.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.02 WATERSHED INCHES; 1509 CFS-HRS; 124.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	66.8	(RUNOFF)

23.09 1.5 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.88 WATERSHED INCHES; 89 CFS-HRS; 7.3 ACRE-
FEET.

OPERATION RUNOFF XSECTION 46

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,
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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 83.3 (RUNOFF)
12.32

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.81 WATERSHED INCHES; 114 CFS-HRS; 9.4 ACRE-
FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 150.0 (NULL)
12.31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.84 WATERSHED INCHES; 203 CFS-HRS; 16.7 ACRE-
FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 81.7 (RUNOFF)
12.20 2.0 (RUNOFF)
18.65 1.4 (RUNOFF)
24.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.84 WATERSHED INCHES; 86 CFS-HRS; 7.1 ACRE-
FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 888.8 (NULL)
12.44

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.01 WATERSHED INCHES; 1594 CFS-HRS; 131.8 ACRE-
FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.42	1020.7	(NULL)

	HYDROGRAPH POINTS FOR		ALTERNATE = 1,	STORM = 10
HRS	MAIN	TIME INCREMENT =	.060 hr,	DRAINAGE AREA =
SQ. MI.				.93
5.22 CFS	.48	.51	.55	.59
.77				.63
5.70 CFS	.82	.88	.93	.99
1.20				1.04
6.18 CFS	1.27	1.33	1.40	1.47
1.79				1.54
6.66 CFS	1.88	1.97	2.06	2.15
2.58				2.25
7.14 CFS	2.70	2.84	2.99	3.16
3.94				3.34
7.62 CFS	4.16	4.39	4.62	4.85
5.93				5.10
8.10 CFS	6.23	6.54	6.86	7.19
8.52				7.51
				7.83
				8.17

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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8.58 CFS	8.87	9.23	9.62	10.02	10.44	10.85	11.26
11.66							
9.06 CFS	12.07	12.52	13.00	13.52	14.09	14.72	15.43
16.19							
9.54 CFS	17.00	17.84	18.72	19.64	20.62	21.65	22.71
23.79							
10.02 CFS	24.90	26.03	27.21	28.44	29.71	31.01	32.33
33.67							
10.50 CFS	35.04	36.48	38.04	39.79	41.82	44.18	46.92
50.02							
10.98 CFS	53.50	57.32	61.52	66.15	71.35	77.19	83.74
90.98							
11.46 CFS	99	107	117	130	146	167	193
224							
11.94 CFS	265	320	400	513	656	805	926
999							
12.42 CFS	1021	997	946	880	810	738	668
604							
12.90 CFS	547	498	455	419	387	360	334
312							
13.38 CFS	291	271	254	237	222	208	195
183							
13.86 CFS	173	164	157	150	144	139	134
130							
14.34 CFS	126	122	119	116	113	110	107
104							
14.82 CFS	102	99	97	95	93	91	89
87							
15.30 CFS	84.53	82.68	81.01	79.57	78.36	77.34	76.44
75.60							
15.78 CFS	74.78	73.99	73.28	72.62	72.00	71.38	70.73
70.07							



16.26	CFS	69.44	68.85	68.27	67.69	67.11	66.50	65.88
65.26								
16.74	CFS	64.67	64.11	63.57	63.03	62.50	61.98	61.48
60.98								
17.22	CFS	60.43	59.84	59.24	58.66	58.11	57.57	57.00
56.39								
17.70	CFS	55.77	55.16	54.57	54.00	53.43	52.87	52.33
51.81								
18.18	CFS	51.30	50.78	50.26	49.75	49.26	48.79	48.35
47.98								
18.66	CFS	47.69	47.46	47.26	47.07	46.88	46.70	46.50
46.28								
19.14	CFS	46.05	45.82	45.60	45.42	45.26	45.12	45.01
44.90								
19.62	CFS	44.77	44.60	44.42	44.22	44.02	43.81	43.60
43.42								
20.10	CFS	43.28	43.18	43.08	42.96	42.80	42.60	42.36
42.11								
20.58	CFS	41.87	41.68	41.54	41.41	41.28	41.15	41.01
40.85								
21.06	CFS	40.66	40.44	40.21	39.99	39.79	39.61	39.46
39.32								
21.54	CFS	39.20	39.06	38.90	38.70	38.49	38.28	38.09
37.92								
22.02	CFS	37.78	37.63	37.46	37.26	37.04	36.83	36.63
36.45								
22.50	CFS	36.30	36.16	36.00	35.80	35.59	35.38	35.16
34.93								
22.98	CFS	34.70	34.50	34.35	34.23	34.12	33.98	33.81
33.64								
23.46	CFS	33.45	33.25	33.02	32.79	32.58	32.43	32.30
32.16								
23.94	CFS	31.99	31.84	31.69	31.23	30.17	28.31	25.77
22.88								
24.42	CFS	20.03	17.51	15.43	13.77	12.49	11.53	10.80
10.24								
24.90	CFS	9.80	9.45	9.16	8.91	8.69	8.50	8.32
8.15								
25.38	CFS	7.99	7.84	7.69	7.55	7.41	7.27	7.14
7.01								

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES; 1797 CFS-HRS; 148.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 51

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.52	993.2	285.96

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES; 1796 CFS-HRS; 148.4 ACRE-  
 FEET.

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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OPERATION RUNOFF XSECTION 52

\*\*\* MESSAGE - XSECTION 52, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.99 WATERSHED INCHES; 210 CFS-HRS; 148.4 ACRE-  
FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 53

\*\*\* MESSAGE - XSECTION 53, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.99 WATERSHED INCHES; 207 CFS-HRS; 148.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - XSECTION 54, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.99 WATERSHED INCHES; 189 CFS-HRS; 148.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	51.6	(RUNOFF)
21.97	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.61 WATERSHED INCHES; 54 CFS-HRS; 4.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.52	1013.4	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.98 WATERSHED INCHES; 1851 CFS-HRS; 152.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

\*\*\* MESSAGE - XSECTION 57, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.98 WATERSHED INCHES; 214 CFS-HRS; 152.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.52	1013.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.93 WATERSHED INCHES; 1852 CFS-HRS; 153.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	31.6	(RUNOFF)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10							
	MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .03			
HRS								
SQ.MI.								
10.80 CFS	.45	.52	.59	.67	.75	.85	.97	
1.10								
11.28 CFS	1.25	1.42	1.61	1.81	2.04	2.37	2.91	
3.54								
11.76 CFS	4.26	5.18	6.51	8.52	11.69	17.01	24.70	
30.82								
12.24 CFS	31.12	26.88	21.99	18.16	15.28	13.24	11.56	
10.00								
12.72 CFS	8.68	7.72	7.03	6.51	6.09	5.71	5.36	
5.02								
13.20 CFS	4.71	4.46	4.24	4.03	3.84	3.64	3.45	
3.27								
13.68 CFS	3.11	2.98	2.87	2.79	2.73	2.67	2.63	
2.59								
14.16 CFS	2.54	2.48	2.43	2.38	2.34	2.30	2.25	
2.20								
14.64 CFS	2.14	2.09	2.04	2.00	1.96	1.91	1.86	
1.81								
15.12 CFS	1.76	1.71	1.66	1.63	1.61	1.60	1.59	
1.58								
15.60 CFS	1.58	1.56	1.54	1.52	1.51	1.51	1.50	
1.48								
16.08 CFS	1.46	1.44	1.43	1.42	1.41	1.40	1.38	
1.37								
16.56 CFS	1.35	1.33	1.32	1.32	1.31	1.29	1.28	
1.27								
17.04 CFS	1.26	1.25	1.23	1.21	1.19	1.18	1.18	

1.17								
17.52 CFS	1.14	1.12	1.11	1.10	1.09	1.07	1.06	
1.04								
18.00 CFS	1.04	1.03	1.02	1.00	.99	.98	.97	
.96								
18.48 CFS	.95	.95	.95	.96	.95	.94	.94	
.94								
18.96 CFS	.94	.93	.92	.92	.92	.91	.91	
.91								
19.44 CFS	.91	.91	.91	.90	.89	.89	.89	
.88								
19.92 CFS	.87	.87	.88	.88	.88	.87	.87	
.86								

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20.40 CFS	.85	.84	.84	.84	.85	.84	.84	
.83								
20.88 CFS	.83	.83	.82	.81	.81	.80	.80	
.80								
21.36 CFS	.80	.80	.80	.80	.79	.78	.78	
.78								
21.84 CFS	.78	.77	.78	.77	.77	.76	.75	
.75								
22.32 CFS	.75	.75	.75	.75	.74	.73	.72	
.72								
22.80 CFS	.72	.71	.70	.70	.71	.71	.71	
.70								
23.28 CFS	.69	.69	.69	.68	.67	.66	.66	
.67								
23.76 CFS	.67	.67	.65	.65	.66	.66	.56	
.39								

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.01 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.51 1027.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 1887 CFS-HRS; 155.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.24 18.7 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.95 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-

FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK  
 ELEVATION (FEET) 1037.4 (NULL)  
 12.51

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.02  
 SQ.MI.

HRS	MAIN	TIME	INCREMENT	=	.060	hr,	DRAINAGE	AREA	=	1.02
5.34 CFS	.49	.53	.56	.60	.65	.69	.74			
.79										
5.82 CFS	.84	.89	.95	1.00	1.05	1.10	1.16			
1.22										
6.30 CFS	1.29	1.36	1.42	1.50	1.57	1.65	1.73			
1.82										
6.78 CFS	1.90	2.00	2.09	2.18	2.28	2.39	2.50			
2.62										
7.26 CFS	2.74	2.89	3.05	3.22	3.40	3.59	3.80			
4.01										
7.74 CFS	4.23	4.46	4.69	4.93	5.18	5.45	5.74			
6.05										
8.22 CFS	6.36	6.69	7.02	7.35	7.69	8.03	8.39			
8.75										
8.70 CFS	9.12	9.51	9.92	10.34	10.76	11.19	11.61			
12.04										
9.18 CFS	12.49	12.97	13.49	14.06	14.68	15.37	16.12			
16.92										
9.66 CFS	17.77	18.65	19.58	20.56	21.60	22.69	23.81			
24.97										
10.14 CFS	26.16	27.40	28.67	30.00	31.37	32.76	34.19			
35.66										
10.62 CFS	37.20	38.86	40.70	42.79	45.19	47.95	51.09			
54.61										
11.10 CFS	59	63	68	73	79	86	93			
101										

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11.58 CFS	111	122	135	152	173	200	234
280							
12.06 CFS	344	434	546	669	793	906	989
1032							
12.54 CFS	1034	1001	947	881	810	739	671
609							
13.02 CFS	554	505	463	427	395	367	342
319							
13.50 CFS	297	278	260	243	228	214	201
190							
13.98 CFS	180	171	163	156	150	145	140
136							
14.46 CFS	132	128	125	122	118	115	113
110							
14.94 CFS	107	105	102	100	98	95	93
91							

15.42	CFS	89.04	87.25	85.66	84.27	83.05	81.98	81.01
80.13								
15.90	CFS	79.31	78.52	77.76	77.04	76.36	75.68	75.01
74.33								
16.38	CFS	73.67	73.03	72.40	71.76	71.11	70.47	69.83
69.20								
16.86	CFS	68.57	67.97	67.40	66.84	66.28	65.71	65.13
64.54								
17.34	CFS	63.95	63.35	62.73	62.11	61.49	60.88	60.26
59.62								
17.82	CFS	58.97	58.32	57.69	57.09	56.50	55.91	55.33
54.77								
18.30	CFS	54.22	53.68	53.13	52.59	52.10	51.67	51.27
50.92								
18.78	CFS	50.63	50.39	50.18	49.97	49.76	49.54	49.32
49.09								
19.26	CFS	48.86	48.63	48.43	48.26	48.11	47.97	47.82
47.66								
19.74	CFS	47.51	47.34	47.13	46.91	46.70	46.51	46.34
46.17								
20.22	CFS	46.02	45.89	45.75	45.58	45.37	45.14	44.92
44.70								
20.70	CFS	44.49	44.29	44.14	44.01	43.86	43.69	43.51
43.32								
21.18	CFS	43.12	42.89	42.67	42.46	42.27	42.10	41.95
41.79								
21.66	CFS	41.63	41.46	41.28	41.07	40.86	40.67	40.49
40.31								
22.14	CFS	40.13	39.94	39.75	39.54	39.32	39.12	38.93
38.75								
22.62	CFS	38.57	38.38	38.20	38.00	37.77	37.52	37.29
37.09								
23.10	CFS	36.89	36.71	36.54	36.39	36.25	36.09	35.91
35.70								
23.58	CFS	35.48	35.26	35.06	34.86	34.66	34.47	34.30
34.18								
24.06	CFS	34.04	33.58	32.73	31.47	29.73	27.48	24.81
22.02								
24.54	CFS	19.39	17.07	15.13	13.58	12.38	11.45	10.74
10.19								
25.02	CFS	9.76	9.40	9.12	8.87	8.65	8.45	8.27
8.11								
25.50	CFS	7.95	7.80	7.65	7.51	7.37	7.23	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.89 WATERSHED INCHES; 1908 CFS-HRS; 157.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.64	997.6	250.42

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.89 WATERSHED INCHES; 1907 CFS-HRS; 157.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.37 15.5 (RUNOFF)  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.24 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.74 8.4 334.33

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.24 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
FEET.

OPERATION REACH XSECTION 65

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.85 8.2 300.61

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.23 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.20 55.9 (RUNOFF)  
24.02 1.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.98 WATERSHED INCHES; 59 CFS-HRS; 4.8 ACRE-  
FEET.

\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
TIME INCREMENT OF .043 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.62 18.0 293.76

14.58	3.8	287.79
24.04	1.1	287.45

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.98 WATERSHED INCHES; 59 CFS-HRS; 4.8 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.82	25.9	(NULL)
18.87	2.1	(NULL)
24.04	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.23 WATERSHED INCHES; 82 CFS-HRS; 6.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	122.6	(RUNOFF)
18.87	3.1	(RUNOFF)
24.02	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.47 WATERSHED INCHES; 124 CFS-HRS; 10.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	141.4	(NULL)
18.87	5.2	(NULL)
21.97	4.3	(NULL)
24.03	3.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.37 WATERSHED INCHES; 206 CFS-HRS; 17.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.45	96.0	248.70



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.37 WATERSHED INCHES; 206 CFS-HRS; 17.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.12	26.5	

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.81 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	9.6	265.90

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.82 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 72

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	8.9	247.79

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.81 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.18	110.8	(RUNOFF)
15.85	5.4	(RUNOFF)
17.34	4.2	(RUNOFF)
20.86	3.0	(RUNOFF)
24.01	2.5	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11  
 SQ.MI.  
 10.98 CFS .31 .51 .76 1.07 1.44 1.85 2.33  
 2.88  
 11.46 CFS 3.49 4.17 5.33 7.10 9.05 11.28 14.56

19.46								
11.94	CFS	26.93	40.30	62.41	94.61	110.76	98.35	78.24
63.21								
12.42	CFS	52.04	44.53	39.78	34.95	29.90	26.21	24.01
22.44								
12.90	CFS	21.14	20.00	18.86	17.73	16.61	15.68	14.94
14.26								
13.38	CFS	13.60	12.94	12.27	11.63	11.02	10.52	10.14
9.85								
13.86	CFS	9.62	9.44	9.31	9.18	9.03	8.85	8.64
8.46								
14.34	CFS	8.31	8.18	8.04	7.87	7.67	7.46	7.28
7.13								
14.82	CFS	7.00	6.85	6.67	6.49	6.33	6.15	5.96
5.81								
15.30	CFS	5.72	5.68	5.66	5.66	5.65	5.61	5.53
5.43								
15.78	CFS	5.39	5.40	5.39	5.33	5.24	5.17	5.13
5.11								
16.26	CFS	5.08	5.03	4.97	4.92	4.86	4.79	4.75
4.72								
16.74	CFS	4.71	4.66	4.60	4.55	4.53	4.51	4.47
4.38								
17.22	CFS	4.28	4.23	4.24	4.23	4.16	4.07	3.99
3.94								
17.70	CFS	3.92	3.90	3.83	3.77	3.73	3.72	3.69
3.63								
18.18	CFS	3.56	3.53	3.51	3.48	3.43	3.39	3.42
3.46								
18.66	CFS	3.47	3.42	3.40	3.42	3.42	3.37	3.33
3.32								

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19.14	CFS	3.31	3.31	3.31	3.31	3.31	3.31	3.31
3.30								
19.62	CFS	3.24	3.21	3.23	3.22	3.18	3.14	3.16
3.21								
20.10	CFS	3.22	3.18	3.15	3.13	3.11	3.06	3.01
3.03								
20.58	CFS	3.07	3.09	3.06	3.01	3.03	3.04	3.00
2.96								
21.06	CFS	2.93	2.92	2.92	2.92	2.92	2.92	2.92
2.92								
21.54	CFS	2.91	2.87	2.81	2.82	2.84	2.81	2.81
2.84								
22.02	CFS	2.81	2.77	2.74	2.72	2.72	2.72	2.71
2.71								
22.50	CFS	2.71	2.70	2.64	2.61	2.63	2.62	2.57
2.54								
22.98	CFS	2.55	2.60	2.61	2.57	2.53	2.52	2.51
2.51								
23.46	CFS	2.49	2.43	2.39	2.42	2.46	2.47	2.42
2.36								
23.94	CFS	2.35	2.46	2.42	1.76	.95	.46	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

1.58 WATERSHED INCHES; 112 CFS-HRS; 9.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.63 1030.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.76 WATERSHED INCHES; 2020 CFS-HRS; 166.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.44 105.0 (NULL)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10						
		MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .15		
HRS	SQ.MI.							
9.06 CFS	.82	.46	.50	.55	.59	.64	.70	.76
9.54 CFS	1.48	.89	.96	1.03	1.11	1.20	1.29	1.38
10.02 CFS	2.54	1.58	1.69	1.81	1.93	2.07	2.22	2.38
10.50 CFS	4.39	2.71	2.88	3.07	3.27	3.50	3.76	4.06
10.98 CFS	8.83	4.77	5.19	5.64	6.14	6.70	7.34	8.06
11.46 CFS	20.86	9.67	10.59	11.59	12.70	14.06	15.92	18.25
11.94 CFS	99.11	24.04	28.05	33.36	40.96	52.02	67.57	85.46
12.42 CFS	74	104	104	100	95	90	84	79
12.90 CFS	50.22	69.62	65.97	62.75	59.86	57.21	54.72	52.38
13.38 CFS	38.40	48.26	46.50	44.91	43.45	42.09	40.82	39.60
13.86 CFS	30.64	37.25	36.15	35.11	34.13	33.22	32.36	31.53
14.34 CFS	20.76	29.65	28.63	27.36	26.02	24.64	23.15	21.89
14.82 CFS	15.12	19.76	18.86	18.09	17.40	16.77	16.19	15.65
15.30 CFS	11.54	14.57	14.04	13.55	13.09	12.65	12.24	11.87
15.78 CFS	9.89	11.24	10.97	10.73	10.53	10.36	10.20	10.05
16.26 CFS	8.61	9.74	9.57	9.37	9.19	9.02	8.88	8.74
16.74 CFS	7.90	8.50	8.40	8.31	8.22	8.13	8.05	7.97
17.22 CFS	7.24	7.83	7.74	7.65	7.55	7.47	7.40	7.32
17.70 CFS	6.55	7.14	7.05	6.96	6.88	6.80	6.71	6.63

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18.18 CFS	6.48	6.41	6.33	6.25	6.18	6.11	6.04
5.98							
18.66 CFS	5.93	5.89	5.87	5.84	5.81	5.78	5.76
5.74							
19.14 CFS	5.71	5.67	5.64	5.62	5.60	5.58	5.56
5.55							
19.62 CFS	5.54	5.53	5.51	5.48	5.45	5.43	5.41
5.37							
20.10 CFS	5.35	5.34	5.34	5.33	5.31	5.29	5.26
5.23							
20.58 CFS	5.19	5.16	5.14	5.13	5.12	5.10	5.08
5.06							
21.06 CFS	5.05	5.02	4.99	4.96	4.93	4.91	4.89
4.88							
21.54 CFS	4.86	4.86	4.84	4.82	4.80	4.77	4.75
4.73							
22.02 CFS	4.71	4.70	4.69	4.66	4.64	4.61	4.58
4.56							
22.50 CFS	4.54	4.53	4.51	4.50	4.47	4.44	4.41
4.39							
22.98 CFS	4.36	4.33	4.31	4.30	4.29	4.28	4.26
4.24							
23.46 CFS	4.21	4.19	4.17	4.14	4.10	4.08	4.07
4.06							
23.94 CFS	4.04	4.01	3.99	3.98	3.96	3.78	3.42
2.97							
24.42 CFS	2.50	2.08	1.72	1.41	1.16	.94	.77
.62							
24.90 CFS	.49						

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.40 WATERSHED INCHES; 227 CFS-HRS; 18.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.62	1123.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.72 WATERSHED INCHES; 2247 CFS-HRS; 185.7 ACRE-  
FEET.

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.68	1122.5	230.56

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.72 WATERSHED INCHES; 2247 CFS-HRS; 185.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK (RUNOFF)
12.18	69.0	(RUNOFF)
17.34	2.3	(RUNOFF)
24.01	1.3	(RUNOFF)

HRS SQ.MI.	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10						
	MAIN	TIME INCREMENT = .060 hr,	DRAINAGE AREA = .05				
10.44 CFS	.48	.54	.61	.69	.79	.90	1.03
1.17							
10.92 CFS	1.32	1.48	1.66	1.88	2.14	2.44	2.77
3.12							
11.40 CFS	3.52	3.94	4.40	5.28	6.65	8.02	9.48
11.75							
11.88 CFS	15.02	19.88	28.51	42.20	61.40	68.99	58.81
45.47							

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12.36 CFS	36.20	29.51	25.09	22.34	19.48	16.56	14.53
13.33							
12.84 CFS	12.45	11.72	11.07	10.42	9.77	9.14	8.62
8.22							
13.32 CFS	7.83	7.46	7.09	6.72	6.36	6.02	5.75
5.55							
13.80 CFS	5.39	5.26	5.16	5.08	5.01	4.93	4.82
4.71							
14.28 CFS	4.60	4.52	4.45	4.37	4.28	4.16	4.05
3.95							
14.76 CFS	3.87	3.79	3.71	3.61	3.51	3.42	3.32
3.22							
15.24 CFS	3.14	3.09	3.07	3.06	3.06	3.05	3.03
2.98							
15.72 CFS	2.93	2.91	2.92	2.91	2.87	2.82	2.78
2.76							
16.20 CFS	2.75	2.74	2.70	2.67	2.65	2.61	2.57
2.55							
16.68 CFS	2.54	2.53	2.50	2.47	2.44	2.43	2.42
2.39							
17.16 CFS	2.35	2.29	2.26	2.27	2.27	2.23	2.18
2.13							
17.64 CFS	2.11	2.10	2.08	2.05	2.01	2.00	1.99
1.97							
18.12 CFS	1.94	1.90	1.88	1.87	1.86	1.83	1.81
1.83							
18.60 CFS	1.85	1.85	1.83	1.81	1.83	1.82	1.80
1.78							
19.08 CFS	1.77	1.77	1.76	1.76	1.76	1.76	1.76
1.77							
19.56 CFS	1.76	1.72	1.71	1.72	1.72	1.69	1.67
1.68							
20.04 CFS	1.71	1.71	1.69	1.67	1.66	1.66	1.63
1.60							

20.52 CFS	1.61	1.63	1.64	1.62	1.60	1.61	1.61
1.59							
21.00 CFS	1.57	1.56	1.55	1.55	1.55	1.55	1.55
1.55							
21.48 CFS	1.55	1.54	1.52	1.49	1.50	1.50	1.49
1.49							
21.96 CFS	1.50	1.49	1.46	1.45	1.44	1.44	1.44
1.44							
22.44 CFS	1.44	1.44	1.43	1.39	1.38	1.39	1.39
1.36							
22.92 CFS	1.34	1.35	1.38	1.38	1.36	1.34	1.33
1.33							
23.40 CFS	1.32	1.31	1.28	1.26	1.28	1.30	1.30
1.27							
23.88 CFS	1.24	1.24	1.31	1.28	.90	.46	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.03 WATERSHED INCHES; 67 CFS-HRS; 5.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.68	1138.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.69 WATERSHED INCHES; 2314 CFS-HRS; 191.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.75	1135.1	216.13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.69 WATERSHED INCHES; 2313 CFS-HRS; 191.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 81

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	37.3	(RUNOFF)
19.47	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.78 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.75	1142.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.67 WATERSHED INCHES; 2349 CFS-HRS; 194.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	83.3	(RUNOFF)
15.84	3.1	(RUNOFF)
17.34	2.4	(RUNOFF)
24.00	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.29 WATERSHED INCHES; 76 CFS-HRS; 6.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	118.2	(RUNOFF)
18.67	4.1	(RUNOFF)
23.12	3.1	(RUNOFF)
24.01	2.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.87 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	188.9	(NULL)
18.83	6.0	(NULL)
20.83	5.3	(NULL)
24.00	4.3	(NULL)

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HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 SQ.MI.  
 9.84 CFS .46 .50 .55 .61 .67 .73 .81  
 .89

10.32	CFS	1.00	1.13	1.29	1.46	1.67	1.91	2.20
2.52								
10.80	CFS	2.90	3.30	3.75	4.23	4.76	5.41	6.17
7.04								
11.28	CFS	7.99	9.04	10.24	11.50	12.89	15.34	18.96
22.71								
11.76	CFS	27	33	42	55	78	113	162
188								
12.24	CFS	179	159	137	115	98	86	75
65								
12.72	CFS	56.89	50.80	46.24	42.65	39.68	37.02	34.53
32.25								
13.20	CFS	30.32	28.67	27.20	25.85	24.56	23.28	22.07
20.92								
13.68	CFS	19.91	19.10	18.42	17.87	17.44	17.09	16.80
16.49								
14.16	CFS	16.15	15.80	15.46	15.16	14.89	14.63	14.33
13.99								
14.64	CFS	13.64	13.30	13.01	12.74	12.46	12.15	11.85
11.55								
15.12	CFS	11.22	10.90	10.62	10.41	10.27	10.18	10.13
10.09								
15.60	CFS	10.02	9.90	9.76	9.67	9.65	9.60	9.51
9.39								
16.08	CFS	9.27	9.18	9.12	9.06	8.97	8.88	8.80
8.69								
16.56	CFS	8.58	8.49	8.43	8.38	8.30	8.20	8.12
8.07								
17.04	CFS	8.02	7.94	7.82	7.67	7.57	7.55	7.49
7.40								
17.52	CFS	7.27	7.15	7.05	6.99	6.92	6.82	6.73
6.65								
18.00	CFS	6.60	6.54	6.45	6.36	6.28	6.23	6.18
6.09								
18.48	CFS	6.04	6.05	6.07	6.08	6.03	6.01	6.02
6.00								
18.96	CFS	5.95	5.90	5.87	5.84	5.83	5.82	5.82
5.81								
19.44	CFS	5.81	5.81	5.79	5.72	5.68	5.69	5.66
5.60								
19.92	CFS	5.56	5.56	5.61	5.61	5.58	5.55	5.51
5.48								
20.40	CFS	5.41	5.34	5.34	5.37	5.38	5.35	5.31
5.32								
20.88	CFS	5.31	5.26	5.21	5.17	5.14	5.12	5.11
5.11								
21.36	CFS	5.11	5.10	5.10	5.09	5.03	4.97	4.97
4.96								
21.84	CFS	4.92	4.93	4.95	4.91	4.86	4.82	4.79
4.77								
22.32	CFS	4.75	4.75	4.74	4.74	4.71	4.64	4.60
4.61								
22.80	CFS	4.57	4.51	4.47	4.48	4.52	4.52	4.49
4.45								
23.28	CFS	4.42	4.40	4.38	4.35	4.27	4.23	4.24
4.27								
23.76	CFS	4.28	4.22	4.15	4.13	4.27	4.16	3.35
2.37								
24.24	CFS	1.58	.98	.61	.38			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.99 WATERSHED INCHES; 219 CFS-HRS; 18.1 ACRE-  
 FEET.



OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.74	1197.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.60 WATERSHED INCHES; 2568 CFS-HRS; 212.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	40.2	(RUNOFF)
15.84	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.45 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.74	1202.9	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55  
 SQ.MI.

HRS	5.52 CFS	.49	.53	.57	.61	.65	.69	.74
	.79							
	6.00 CFS	.85	.91	.96	1.02	1.08	1.13	1.19
	1.26							
	6.48 CFS	1.33	1.40	1.47	1.55	1.62	1.70	1.79
	1.88							
	6.96 CFS	1.97	2.06	2.16	2.27	2.38	2.49	2.60
	2.73							
	7.44 CFS	2.86	3.00	3.16	3.32	3.51	3.70	3.91
	4.13							
	7.92 CFS	4.36	4.59	4.83	5.09	5.35	5.61	5.91
	6.22							
	8.40 CFS	6.53	6.86	7.20	7.55	7.91	8.27	8.64
	9.02							
	8.88 CFS	9.41	9.83	10.28	10.74	11.22	11.72	12.23
	12.76							
	9.36 CFS	13.30	13.86	14.46	15.09	15.79	16.55	17.37
	18.25							
	9.84 CFS	19.20	20.20	21.27	22.41	23.62	24.88	26.21
	27.59							
	10.32 CFS	29.05	30.60	32.23	33.95	35.77	37.72	39.79

41.97								
10.80	CFS	44.31	46.80	49.52	52.52	55.92	59.93	64.53
69.78								
11.28	CFS	76	82	89	97	106	118	132
148								
11.76	CFS	167	190	219	260	322	413	538
642								
12.24	CFS	708	762	811	874	958	1047	1124
1178								
12.72	CFS	1202	1194	1161	1109	1044	972	899
826								
13.20	CFS	759	697	641	592	549	510	475
444								
13.68	CFS	416	390	367	346	326	309	292
277								
14.16	CFS	264	252	241	231	223	215	208
201								
14.64	CFS	194	188	182	176	171	166	161
157								
15.12	CFS	153	149	145	141	138	135	132
129								
15.60	CFS	127	124	122	119	117	116	114
113								
16.08	CFS	111	110	109	108	107	106	105
103								
16.56	CFS	102	101	100	100	99	98	97
96								
17.04	CFS	95.01	94.15	93.24	92.29	91.41	90.63	89.85
89.03								
17.52	CFS	88.12	87.18	86.26	85.40	84.55	83.66	82.76
81.87								
18.00	CFS	81.01	80.16	79.27	78.38	77.52	76.70	75.91
75.09								
18.48	CFS	74.34	73.68	73.08	72.50	71.87	71.29	70.80
70.30								
18.96	CFS	69.85	69.43	69.04	68.71	68.42	68.15	67.88
67.63								
19.44	CFS	67.37	67.13	66.86	66.53	66.25	66.04	65.80
65.55								
19.92	CFS	65.29	65.07	64.92	64.72	64.47	64.19	63.91
63.64								
20.40	CFS	63.32	63.02	62.81	62.63	62.47	62.22	61.92
61.67								
20.88	CFS	61.40	61.11	60.83	60.55	60.29	60.06	59.84
59.62								
21.36	CFS	59.40	59.17	58.93	58.69	58.37	58.05	57.82
57.59								
21.84	CFS	57.34	57.17	56.98	56.72	56.44	56.14	55.84
55.58								

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22.32	CFS	55.34	55.12	54.89	54.67	54.40	54.05	53.75
53.50								
22.80	CFS	53.22	52.93	52.63	52.38	52.20	51.97	51.69
51.39								
23.28	CFS	51.08	50.80	50.57	50.32	50.00	49.73	49.52

49.34								
23.76	CFS	49.14	48.85	48.50	48.19	48.16	47.79	46.33
44.43								
24.24	CFS	42.34	40.34	38.59	36.85	34.88	32.59	29.96
27.13								
24.72	CFS	24.25	21.51	19.03	16.88	15.09	13.64	12.48
11.57								
25.20	CFS	10.85	10.27	9.81	9.44	9.12	8.85	8.62
8.41								
25.68	CFS	8.22	8.04	7.88				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.61 WATERSHED INCHES; 2603 CFS-HRS; 215.1 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
 STARTING TIME = .00 RAIN DEPTH = 6.14 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =25 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	65.5	(RUNOFF)
20.13	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.01 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	65.1	390.46

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.01 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	114.1	(RUNOFF)
18.64	3.2	(RUNOFF)
23.97	2.2	(RUNOFF)

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 TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.85 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	175.6	(NULL)
20.13	4.7	(NULL)
23.11	3.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.91 WATERSHED INCHES; 231 CFS-HRS; 19.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	174.6	383.65

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.89 WATERSHED INCHES; 230 CFS-HRS; 19.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.39	173.4	368.63

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.90 WATERSHED INCHES; 231 CFS-HRS; 19.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	143.4	(RUNOFF)
23.13	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.63 WATERSHED INCHES; 187 CFS-HRS; 15.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	306.7	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.77 WATERSHED INCHES; 417 CFS-HRS; 34.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	305.8	358.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.77 WATERSHED INCHES; 417 CFS-HRS; 34.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	169.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.08 WATERSHED INCHES; 241 CFS-HRS; 19.9 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	108.8	377.05

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.61 WATERSHED INCHES; 218 CFS-HRS; 18.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	23.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.10 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
12.69	100.4	358.68

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.60 WATERSHED INCHES; 218 CFS-HRS; 18.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	113.8	(RUNOFF)
23.09	2.1	(RUNOFF)
24.02	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.23 WATERSHED INCHES; 113 CFS-HRS; 9.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	361.2	(NULL)
24.01	8.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.64 WATERSHED INCHES; 530 CFS-HRS; 43.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	44.8	(RUNOFF)
18.87	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.81 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	417.1	(NULL)
23.97	15.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.87 WATERSHED INCHES; 747 CFS-HRS; 61.7 ACRE-

FEET.

OPERATION ADDHYD XSECTION 15

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	438.7	(NULL)
23.99	15.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.86 WATERSHED INCHES; 794 CFS-HRS; 65.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	438.7	(NULL)
23.99	15.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.86 WATERSHED INCHES; 794 CFS-HRS; 65.6 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
\*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	438.7	334.29
23.99	15.7	331.28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.86 WATERSHED INCHES; 794 CFS-HRS; 65.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	68.1	(RUNOFF)
15.84	2.0	(RUNOFF)
21.45	1.0	(RUNOFF)
21.75	1.0	(RUNOFF)
21.95	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

4.75 WATERSHED INCHES; 65 CFS-HRS; 5.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 18

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	91.8	(RUNOFF)
24.03	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.19 WATERSHED INCHES; 105 CFS-HRS; 8.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	121.1	(RUNOFF)
15.84	3.8	(RUNOFF)
20.85	2.0	(RUNOFF)
24.00	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.37 WATERSHED INCHES; 114 CFS-HRS; 9.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	156.6	(NULL)
15.81	5.2	(NULL)
18.84	3.1	(NULL)
24.01	2.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.01 WATERSHED INCHES; 169 CFS-HRS; 14.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	276.9	(NULL)
15.83	9.0	(NULL)
17.33	6.9	(NULL)
19.74	5.1	(NULL)
20.06	5.1	(NULL)
22.74	4.1	(NULL)



23.06 4.1 (NULL)  
24.01 3.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.73 WATERSHED INCHES; 283 CFS-HRS; 23.4 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.22	597.9	(NULL)
20.04	26.2	(NULL)
20.57	25.2	(NULL)
23.03	21.1	(NULL)
24.00	19.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.05 WATERSHED INCHES; 1075 CFS-HRS; 88.9 ACRE-  
FEET.

OPERATION REACH XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.40	559.0	316.55
24.05	19.5	314.15

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.05 WATERSHED INCHES; 1075 CFS-HRS; 88.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.25	110.9	(RUNOFF)
23.13	2.1	(RUNOFF)
23.99	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.15 WATERSHED INCHES; 135 CFS-HRS; 11.2 ACRE-  
FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
TIME INCREMENT OF .043 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	106.9	364.70
23.15	2.1	356.55
23.79	2.0	356.54

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.16 WATERSHED INCHES; 135 CFS-HRS; 11.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	158.3	(RUNOFF)
18.66	4.2	(RUNOFF)
23.13	3.1	(RUNOFF)
23.97	2.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.08 WATERSHED INCHES; 197 CFS-HRS; 16.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	259.5	(NULL)
18.67	7.1	(NULL)
20.68	6.3	(NULL)
23.14	5.2	(NULL)
23.78	4.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.11 WATERSHED INCHES; 332 CFS-HRS; 27.5 ACRE-  
FEET.

OPERATION REACH XSECTION 27

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.39	246.0	319.41
20.21	6.5	316.75
23.20	5.2	316.66

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.10 WATERSHED INCHES; 332 CFS-HRS; 27.4 ACRE-

FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	122.5	(RUNOFF)
18.67	3.3	(RUNOFF)
20.13	3.0	(RUNOFF)
24.01	2.2	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.75 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	663.8	(NULL)
24.04	21.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.01 WATERSHED INCHES; 1220 CFS-HRS; 100.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	901.4	(NULL)
24.03	26.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.03 WATERSHED INCHES; 1552 CFS-HRS; 128.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	183.4	(RUNOFF)
18.66	4.1	(RUNOFF)
21.96	3.3	(RUNOFF)
23.11	3.0	(RUNOFF)
24.03	2.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.64 WATERSHED INCHES; 207 CFS-HRS; 17.1 ACRE-  
FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	167.8	313.44
18.72	4.1	310.34
20.73	3.6	310.29
24.09	2.8	310.23

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 207 CFS-HRS; 17.1 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	28.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.55 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
 FEET.

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 32, TRUNCATED AT 400 POINTS  
 WITH .44 AC-FT ( .08 WATERSHED INCHES) FLOOD STORAGE  
 REMAINING IN RESERVOIR AT ELEV. 377.74.  
 \*\*\*

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	20.6	380.46

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.57 WATERSHED INCHES; 25 CFS-HRS; 2.0 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 34.  
 \*\*\*

OPERATION REACH XSECTION 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	20.6	338.23

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

4.57 WATERSHED INCHES; 25 CFS-HRS; 2.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	84.9	(RUNOFF)
24.02	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.54 WATERSHED INCHES; 98 CFS-HRS; 8.1 ACRE-  
FEET.

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 33, TRUNCATED AT 400 POINTS  
WITH .99 AC-FT ( .06 WATERSHED INCHES) FLOOD STORAGE  
REMAINING IN RESERVOIR AT ELEV. 353.96.  
\*\*\*

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OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	71.4	357.38

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.86 WATERSHED INCHES; 86 CFS-HRS; 7.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	91.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.79 WATERSHED INCHES; 111 CFS-HRS; 9.2 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	91.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.79 WATERSHED INCHES; 111 CFS-HRS; 9.2 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,

CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
\*\*\*

OPERATION REACH XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	91.4	330.73

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.79 WATERSHED INCHES; 111 CFS-HRS; 9.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	98.4	(RUNOFF)
15.84	3.1	(RUNOFF)
17.34	2.4	(RUNOFF)
24.01	1.3	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.53 WATERSHED INCHES; 96 CFS-HRS; 7.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	167.7	(NULL)
20.81	4.0	(NULL)
24.01	3.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.67 WATERSHED INCHES; 207 CFS-HRS; 17.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	78.9	(RUNOFF)
20.13	2.0	(RUNOFF)
23.76	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.94 WATERSHED INCHES; 100 CFS-HRS; 8.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	973.1	(NULL)
24.03	28.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.03 WATERSHED INCHES; 1652 CFS-HRS; 136.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	1136.7	(NULL)
24.03	30.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.09 WATERSHED INCHES; 1859 CFS-HRS; 153.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 43

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	1277.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.13 WATERSHED INCHES; 2061 CFS-HRS; 170.3 ACRE-  
FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.43	1228.8	291.56

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.12 WATERSHED INCHES; 2060 CFS-HRS; 170.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	91.8	(RUNOFF)
23.08	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.99 WATERSHED INCHES; 123 CFS-HRS; 10.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	114.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.90 WATERSHED INCHES; 158 CFS-HRS; 13.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	206.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.94 WATERSHED INCHES; 281 CFS-HRS; 23.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

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TR20 ----- SCS

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	112.4	(RUNOFF)
21.97	2.1	(RUNOFF)
24.03	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.93 WATERSHED INCHES; 119 CFS-HRS; 9.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	1285.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.11 WATERSHED INCHES; 2179 CFS-HRS; 180.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------



ELEVATION (FEET)

12.40

1471.9

(NULL)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25						
		MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .93						
HRS	SQ.MI.							
4.26	CFS	.49	.53	.57	.61	.66	.72	.78
.85								
4.74	CFS	.92	.99	1.05	1.12	1.19	1.27	1.35
1.43								
5.22	CFS	1.51	1.59	1.68	1.77	1.86	1.94	2.02
2.11								
5.70	CFS	2.20	2.30	2.40	2.50	2.59	2.68	2.79
2.92								
6.18	CFS	3.06	3.22	3.38	3.56	3.76	3.97	4.20
4.44								
6.66	CFS	4.70	4.96	5.23	5.51	5.80	6.10	6.41
6.73								
7.14	CFS	7.06	7.42	7.80	8.19	8.58	8.97	9.38
9.79								
7.62	CFS	10.21	10.64	11.07	11.51	11.96	12.43	12.92
13.43								
8.10	CFS	13.95	14.48	15.02	15.55	16.08	16.62	17.17
17.73								
8.58	CFS	18.30	18.89	19.50	20.15	20.80	21.44	22.05
22.66								
9.06	CFS	23.29	23.97	24.71	25.54	26.45	27.47	28.60
29.83								
9.54	CFS	31.11	32.43	33.80	35.23	36.74	38.32	39.94
41.59								
10.02	CFS	43.26	44.97	46.78	48.69	50.69	52.74	54.82
56.92								
10.50	CFS	59.07	61.32	63.77	66.53	69.73	73.47	77.79
82.68								
10.98	CFS	88	95	102	110	119	129	139
151								
11.46	CFS	164	177	192	210	233	263	298
342								
11.94	CFS	399	476	589	750	955	1178	1363
1458								
12.42	CFS	1468	1413	1325	1225	1123	1016	913
818								
12.90	CFS	732	658	594	540	494	455	421
391								
13.38	CFS	365	341	320	300	282	264	249
234								
13.86	CFS	221	210	200	191	184	177	172
166								
14.34	CFS	161	157	153	149	145	142	138
135								
14.82	CFS	131	128	125	122	119	116	113
110								
15.30	CFS	107	105	102	100	99	97	96
95								
15.78	CFS	93.99	92.98	92.06	91.26	90.49	89.70	88.87
88.02								

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION

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16.26	CFS	87.21	86.45	85.72	84.98	84.23	83.45	82.64
81.84								
16.74	CFS	81.08	80.36	79.68	78.99	78.30	77.64	77.00
76.36								
17.22	CFS	75.66	74.88	74.08	73.32	72.62	71.93	71.20
70.41								
17.70	CFS	69.59	68.79	68.04	67.31	66.58	65.87	65.19
64.54								
18.18	CFS	63.89	63.22	62.56	61.92	61.30	60.71	60.16
59.71								
18.66	CFS	59.37	59.11	58.89	58.67	58.45	58.23	58.00
57.73								
19.14	CFS	57.43	57.14	56.87	56.65	56.46	56.31	56.18
56.05								
19.62	CFS	55.90	55.69	55.45	55.20	54.95	54.69	54.42
54.20								
20.10	CFS	54.03	53.93	53.82	53.67	53.47	53.21	52.91
52.57								
20.58	CFS	52.26	52.03	51.86	51.72	51.57	51.40	51.23
51.03								
21.06	CFS	50.80	50.53	50.24	49.98	49.75	49.55	49.39
49.26								
21.54	CFS	49.14	49.01	48.83	48.60	48.35	48.11	47.90
47.72								
22.02	CFS	47.57	47.42	47.23	47.00	46.74	46.49	46.25
46.05								
22.50	CFS	45.88	45.72	45.52	45.29	45.01	44.73	44.46
44.17								
22.98	CFS	43.88	43.63	43.45	43.32	43.19	43.02	42.81
42.58								
23.46	CFS	42.35	42.09	41.80	41.49	41.22	41.03	40.88
40.72								
23.94	CFS	40.50	40.30	40.10	39.54	38.14	35.53	31.93
27.87								
24.42	CFS	23.95	20.55	17.76	15.58	13.95	12.77	11.92
11.30								
24.90	CFS	10.84	10.49	10.21	9.98	9.79	9.62	9.47
9.33								
25.38	CFS	9.20	9.07					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.09 WATERSHED INCHES; 2459 CFS-HRS; 203.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.50	1439.3	286.76

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.09 WATERSHED INCHES; 2459 CFS-HRS; 203.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .64 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	1.7	288.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .64 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - XSECTION 54, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .64 WATERSHED INCHES; 212 CFS-HRS; .3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	72.5	(RUNOFF)
24.03	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 76 CFS-HRS; 6.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	1468.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.08 WATERSHED INCHES; 2535 CFS-HRS; 209.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.33 1.8 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02  
 SQ.MI.

12.12 CFS	.26	.96	1.54	1.73	1.73	1.65	1.55
1.48							
12.60 CFS	1.43	1.32	1.20	1.11	1.05	1.01	.98
.94							
13.08 CFS	.91	.87	.83	.79	.77	.74	.71
.69							
13.56 CFS	.66	.63	.60	.58	.56	.55	.54
.53							
14.04 CFS	.53	.52	.52	.51	.50	.49	

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .45 WATERSHED INCHES; 5 CFS-HRS; .4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.49 1470.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.02 WATERSHED INCHES; 2540 CFS-HRS; 209.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.21 47.1 (RUNOFF)  
 21.97 1.1 (RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .03  
 SQ.MI.

10.08 CFS	.48	.52	.56	.60	.64	.69	.73
.78							
10.56 CFS	.84	.90	.98	1.08	1.18	1.30	1.43
1.57							
11.04 CFS	1.71	1.88	2.08	2.31	2.57	2.85	3.15
3.48							
11.52 CFS	3.83	4.38	5.24	6.26	7.38	8.82	10.85
13.87							
12.00 CFS	18.80	26.74	37.61	46.18	45.89	39.69	32.20

26.43								
12.48	CFS	22.12	19.01	16.54	14.23	12.30	10.89	9.91
9.16								
12.96	CFS	8.55	8.01	7.51	7.03	6.60	6.23	5.92
5.63								
13.44	CFS	5.35	5.08	4.81	4.55	4.32	4.14	3.99
3.88								
13.92	CFS	3.78	3.71	3.65	3.59	3.52	3.44	3.36
3.29								
14.40	CFS	3.23	3.18	3.11	3.04	2.96	2.89	2.82
2.76								
14.88	CFS	2.70	2.63	2.57	2.50	2.43	2.36	2.29
2.24								
15.36	CFS	2.21	2.20	2.19	2.18	2.17	2.15	2.11
2.09								
15.84	CFS	2.08	2.08	2.06	2.03	2.00	1.98	1.97
1.96								
16.32	CFS	1.94	1.92	1.90	1.88	1.85	1.83	1.81
1.80								
16.80	CFS	1.79	1.77	1.75	1.74	1.73	1.71	1.69
1.65								
17.28	CFS	1.63	1.62	1.61	1.60	1.57	1.54	1.51
1.50								
17.76	CFS	1.49	1.47	1.45	1.43	1.42	1.41	1.39
1.37								
18.24	CFS	1.35	1.34	1.33	1.31	1.29	1.29	1.30
1.31								
18.72	CFS	1.30	1.29	1.29	1.29	1.28	1.27	1.26
1.25								
19.20	CFS	1.25	1.25	1.25	1.25	1.25	1.25	1.24
1.23								
19.68	CFS	1.22	1.21	1.21	1.20	1.19	1.19	1.20
1.20								
20.16	CFS	1.20	1.19	1.18	1.17	1.16	1.14	1.14
1.14								
20.64	CFS	1.15	1.15	1.14	1.13	1.14	1.13	1.12
1.10								
21.12	CFS	1.10	1.09	1.09	1.09	1.09	1.09	1.09
1.09								
21.60	CFS	1.08	1.06	1.06	1.06	1.05	1.05	1.05
1.05								
22.08	CFS	1.04	1.03	1.02	1.02	1.01	1.01	1.01
1.01								
22.56	CFS	1.01	.99	.98	.98	.98	.97	.95
.95								
23.04	CFS	.96	.97	.96	.95	.94	.94	.93
.93								
23.52	CFS	.91	.90	.90	.91	.91	.91	.89
.88								

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION

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24.00 CFS .90 .89 .77 .53 .32

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 2.96 WATERSHED INCHES; 51 CFS-HRS; 4.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	1491.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.99 WATERSHED INCHES; 2590 CFS-HRS; 214.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	28.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.89 WATERSHED INCHES; 32 CFS-HRS; 2.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	1506.6	(NULL)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25							
	MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.02							
HRS								
SQ.MI.								
4.32 CFS	.47	.51	.55	.59	.63	.69	.75	
.81								
4.80 CFS	.88	.95	1.01	1.08	1.15	1.23	1.30	
1.38								
5.28 CFS	1.46	1.54	1.63	1.72	1.81	1.89	1.97	
2.06								
5.76 CFS	2.15	2.24	2.34	2.44	2.53	2.63	2.73	
2.85								
6.24 CFS	2.98	3.13	3.29	3.46	3.65	3.85	4.07	
4.30								
6.72 CFS	4.55	4.81	5.08	5.35	5.64	5.94	6.26	
6.59								
7.20 CFS	6.92	7.28	7.66	8.06	8.46	8.87	9.28	
9.70								
7.68 CFS	10.14	10.58	11.02	11.47	11.94	12.42	12.92	
13.43								
8.16 CFS	13.97	14.51	15.06	15.61	16.16	16.72	17.29	
17.86								
8.64 CFS	18.45	19.05	19.68	20.33	21.01	21.68	22.34	
23.00								
9.12 CFS	23.68	24.39	25.17	26.02	26.97	28.02	29.17	
30.42								
9.60 CFS	31.75	33.14	34.58	36.09	37.67	39.31	41.02	
42.77								
10.08 CFS	44.55	46.38	48.28	50.27	52.36	54.51	56.72	
58.96								
10.56 CFS	61.27	63.71	66.34	69.29	72.64	76.51	80.96	
85.98								
11.04 CFS	92	98	106	114	123	134	145	
157								
11.52 CFS	170	185	202	222	246	277	316	

365								
12.00	CFS	431	523	652	816	995	1183	1353
1466								
12.48	CFS	1506	1482	1413	1320	1217	1110	1004
904								
12.96	CFS	812	730	658	597	545	500	462
428								
13.44	CFS	399	372	348	327	307	288	271
255								

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION

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13.92	CFS	241	229	218	208	200	192	186
180								
14.40	CFS	175	170	165	161	157	153	149
145								
14.88	CFS	142	138	135	132	128	125	122
119								
15.36	CFS	116	113	111	108	107	105	104
102								
15.84	CFS	101	100	99	98	97	96	96
95								
16.32	CFS	93.82	92.97	92.16	91.35	90.52	89.68	88.84
88.02								
16.80	CFS	87.20	86.39	85.62	84.89	84.17	83.45	82.72
81.97								
17.28	CFS	81.21	80.43	79.64	78.82	78.00	77.20	76.41
75.60								
17.76	CFS	74.76	73.91	73.07	72.27	71.50	70.74	69.99
69.25								
18.24	CFS	68.54	67.84	67.15	66.45	65.77	65.16	64.62
64.14								
18.72	CFS	63.72	63.38	63.12	62.89	62.64	62.38	62.12
61.84								
19.20	CFS	61.55	61.26	60.99	60.74	60.53	60.36	60.20
60.03								
19.68	CFS	59.84	59.65	59.43	59.16	58.87	58.61	58.37
58.16								
20.16	CFS	57.95	57.78	57.63	57.47	57.25	56.97	56.67
56.38								
20.64	CFS	56.10	55.83	55.59	55.42	55.27	55.08	54.87
54.65								
21.12	CFS	54.41	54.15	53.87	53.60	53.35	53.14	52.96
52.81								
21.60	CFS	52.65	52.46	52.28	52.07	51.83	51.58	51.37
51.18								
22.08	CFS	50.98	50.78	50.58	50.35	50.10	49.85	49.61
49.39								
22.56	CFS	49.19	48.97	48.75	48.52	48.26	47.96	47.64
47.35								
23.04	CFS	47.09	46.85	46.62	46.43	46.26	46.09	45.89
45.65								
23.52	CFS	45.38	45.09	44.81	44.55	44.29	44.04	43.81
43.60								
24.00	CFS	43.46	43.27	42.66	41.50	39.77	37.29	34.01
30.19								
24.48	CFS	26.27	22.67	19.58	17.05	15.08	13.62	12.54

11.76  
 24.96 CFS      11.18    10.74    10.41    10.14    9.92    9.73    9.56  
 9.41  
 25.44 CFS      9.28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.97 WATERSHED INCHES;      2623 CFS-HRS;      216.7 ACRE-  
 FEET.

OPERATION REACH      XSECTION    63

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK  
 ELEVATION(FEET)  
     12.60                                      1456.8                                      250.94

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.97 WATERSHED INCHES;      2621 CFS-HRS;      216.6 ACRE-  
 FEET.

OPERATION RUNOFF      XSECTION    64

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK  
 ELEVATION(FEET)  
     12.36                                      20.7                                      (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.38 WATERSHED INCHES;      31 CFS-HRS;      2.6 ACRE-  
 FEET.

OPERATION RESVOR      STRUCTURE   61

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK  
 ELEVATION(FEET)  
     12.62                                      14.5                                      334.86

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.38 WATERSHED INCHES;      31 CFS-HRS;      2.6 ACRE-  
 FEET.

OPERATION REACH      XSECTION    65

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK  
 ELEVATION(FEET)  
     12.72                                      14.1                                      300.79

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.38 WATERSHED INCHES;      31 CFS-HRS;      2.6 ACRE-  
 FEET.



OPERATION RUNOFF XSECTION 66

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.20	83.6	(RUNOFF)
20.10	2.1	(RUNOFF)
24.03	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.93 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-FEET.

\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE TIME INCREMENT OF .043 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

OPERATION RESVOR STRUCTURE 62

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.47	36.9	295.13
20.12	2.1	287.57
24.04	1.6	287.50

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.94 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 67

1  
TR20 ----- SCS  
-  
Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
VERSION  
05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
2.04TEST  
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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.60	49.3	(NULL)
23.11	2.1	(NULL)
23.76	2.0	(NULL)
24.04	2.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.21 WATERSHED INCHES; 118 CFS-HRS; 9.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.19	174.2	(RUNOFF)
18.87	4.1	(RUNOFF)

22.76	3.1	(RUNOFF)
23.09	3.1	(RUNOFF)
24.02	2.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.52 WATERSHED INCHES; 176 CFS-HRS; 14.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	195.9	(NULL)
18.65	7.1	(NULL)
20.87	6.1	(NULL)
23.10	5.2	(NULL)
24.03	4.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.39 WATERSHED INCHES; 294 CFS-HRS; 24.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	137.6	248.87

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.39 WATERSHED INCHES; 294 CFS-HRS; 24.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 71

1 TR20 ----- SCS  
 -

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.12	36.6	(RUNOFF)
15.83	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.92 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	15.7	266.77

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

3.90 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
FEET.

OPERATION REACH XSECTION 72

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.44	15.5	247.89
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.91 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE- FEET.		

OPERATION RUNOFF XSECTION 73

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.18	176.2	(RUNOFF)
15.85	7.7	(RUNOFF)
17.34	6.0	(RUNOFF)
21.46	4.1	(RUNOFF)
24.01	3.4	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11  
 SQ.MI.

HRS								
10.26 CFS	.46	.59	.72	.86	1.01	1.18	1.37	
1.61								
10.74 CFS	1.87	2.18	2.52	2.89	3.28	3.72	4.25	
4.89								
11.22 CFS	5.63	6.43	7.32	8.32	9.38	10.53	12.63	
15.99								
11.70 CFS	19	23	29	37	49	70	105	
153								
12.18 CFS	176	154	121	96	79	67	59	
52								
12.66 CFS	44.19	38.62	35.27	32.88	30.92	29.20	27.50	
25.81								
13.14 CFS	24.15	22.77	21.67	20.66	19.69	18.72	17.74	
16.80								
13.62 CFS	15.90	15.17	14.62	14.19	13.85	13.59	13.38	
13.20								
14.10 CFS	12.97	12.70	12.40	12.13	11.91	11.72	11.52	
11.27								
14.58 CFS	10.98	10.67	10.41	10.19	10.00	9.78	9.52	
9.27								
15.06 CFS	9.04	8.77	8.50	8.29	8.15	8.09	8.06	
8.05								
15.54 CFS	8.04	7.98	7.87	7.73	7.66	7.68	7.66	
7.58								
16.02 CFS	7.45	7.34	7.28	7.25	7.22	7.13	7.04	
6.98								

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
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16.50 CFS	6.90	6.79	6.73	6.69	6.67	6.60	6.51
6.44							
16.98 CFS	6.41	6.39	6.32	6.20	6.05	5.98	5.99
5.98							
17.46 CFS	5.89	5.75	5.63	5.57	5.54	5.50	5.41
5.32							
17.94 CFS	5.27	5.24	5.21	5.12	5.03	4.97	4.95
4.91							
18.42 CFS	4.83	4.78	4.82	4.88	4.88	4.82	4.78
4.82							
18.90 CFS	4.81	4.74	4.69	4.67	4.66	4.65	4.65
4.65							
19.38 CFS	4.66	4.66	4.66	4.64	4.56	4.51	4.54
4.53							
19.86 CFS	4.47	4.42	4.44	4.51	4.52	4.46	4.42
4.40							
20.34 CFS	4.37	4.30	4.23	4.25	4.31	4.33	4.29
4.22							
20.82 CFS	4.24	4.26	4.21	4.15	4.11	4.10	4.09
4.09							
21.30 CFS	4.09	4.09	4.09	4.09	4.08	4.01	3.94
3.96							
21.78 CFS	3.97	3.93	3.93	3.97	3.94	3.87	3.83
3.81							
22.26 CFS	3.80	3.80	3.80	3.80	3.80	3.77	3.69
3.64							
22.74 CFS	3.67	3.66	3.59	3.54	3.57	3.64	3.65
3.59							
23.22 CFS	3.54	3.52	3.51	3.50	3.47	3.39	3.34
3.38							
23.70 CFS	3.44	3.44	3.37	3.29	3.27	3.44	3.37
2.46							
24.18 CFS	1.33	.64	.31				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.44 WATERSHED INCHES; 173 CFS-HRS; 14.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.59 1508.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.82 WATERSHED INCHES; 2795 CFS-HRS; 231.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.41 153.1 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15  
 SQ.MI.  
 7.92 CFS .50 .54 .59 .64 .70 .75 .81  
 .86  
 8.40 CFS .92 .98 1.04 1.10 1.16 1.23 1.29  
 1.36  
 8.88 CFS 1.43 1.50 1.56 1.64 1.72 1.82 1.91

2.02								
9.36	CFS	2.14	2.27	2.41	2.56	2.72	2.88	3.05
3.24								
9.84	CFS	3.44	3.65	3.86	4.07	4.30	4.53	4.78
5.04								
10.32	CFS	5.31	5.57	5.85	6.13	6.43	6.74	7.10
7.51								
10.80	CFS	7.98	8.52	9.13	9.81	10.51	11.24	12.05
12.98								
11.28	CFS	14.03	15.19	16.48	17.89	19.38	20.96	22.87
25.45								
11.76	CFS	28.69	32.41	36.74	42.25	49.56	59.89	75.06
99.08								
12.24	CFS	127	144	151	153	150	144	138
131								
12.72	CFS	123	114	106	98	91	84	79
74								
13.20	CFS	69.51	65.59	62.07	58.93	56.13	53.66	51.46
49.47								
13.68	CFS	47.67	46.05	44.59	43.29	42.13	41.09	40.17
39.33								

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TR20 ----- SCS

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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14.16	CFS	38.56	37.84	37.09	36.33	35.56	34.81	34.08
33.34								
14.64	CFS	32.58	31.79	30.98	30.07	29.06	28.00	26.77
25.43								
15.12	CFS	24.10	22.71	21.38	20.25	19.30	18.50	17.84
17.29								
15.60	CFS	16.83	16.43	16.03	15.62	15.23	14.87	14.54
14.23								
16.08	CFS	13.92	13.61	13.33	13.08	12.87	12.68	12.50
12.33								
16.56	CFS	12.16	12.00	11.84	11.69	11.55	11.43	11.29
11.15								
17.04	CFS	10.97	10.80	10.65	10.49	10.32	10.17	10.03
9.93								
17.52	CFS	9.82	9.70	9.56	9.42	9.30	9.19	9.08
8.97								
18.00	CFS	8.85	8.75	8.65	8.56	8.45	8.34	8.25
8.16								
18.48	CFS	8.06	7.97	7.90	7.86	7.83	7.79	7.75
7.72								
18.96	CFS	7.69	7.66	7.62	7.57	7.53	7.49	7.46
7.44								
19.44	CFS	7.42	7.40	7.39	7.38	7.34	7.30	7.27
7.24								
19.92	CFS	7.21	7.16	7.13	7.11	7.11	7.10	7.07
7.04								
20.40	CFS	7.01	6.97	6.91	6.87	6.84	6.83	6.82
6.79								
20.88	CFS	6.76	6.74	6.72	6.68	6.64	6.60	6.56
6.53								
21.36	CFS	6.51	6.49	6.47	6.46	6.45	6.42	6.38
6.34								
21.84	CFS	6.32	6.29	6.26	6.25	6.23	6.20	6.17

6.13							
22.32 CFS	6.09	6.06	6.04	6.02	6.00	5.98	5.95
5.90							
22.80 CFS	5.87	5.84	5.80	5.75	5.72	5.70	5.70
5.68							
23.28 CFS	5.66	5.63	5.60	5.57	5.54	5.50	5.45
5.41							
23.76 CFS	5.40	5.39	5.37	5.33	5.29	5.29	5.28
5.08							
24.24 CFS	4.60	3.97	3.33	2.75	2.25	1.84	1.49
1.21							
24.72 CFS	.97	.78	.63	.49			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.43 WATERSHED INCHES; 324 CFS-HRS; 26.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.59	1647.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.78 WATERSHED INCHES; 3119 CFS-HRS; 257.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.65	1647.6	231.19

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.78 WATERSHED INCHES; 3118 CFS-HRS; 257.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 78

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 TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	103.0	(RUNOFF)
15.85	4.0	(RUNOFF)
17.34	3.1	(RUNOFF)
21.96	2.0	(RUNOFF)
24.01	1.8	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05  
 SQ.MI.  
 9.54 CFS .47 .52 .58 .64 .70 .77 .83

.89							
10.02 CFS	.96	1.04	1.13	1.21	1.29	1.37	1.45
1.55							
10.50 CFS	1.65	1.76	1.91	2.09	2.30	2.54	2.78
3.05							
10.98 CFS	3.33	3.62	3.99	4.43	4.94	5.49	6.07
6.71							
11.46 CFS	7.36	8.07	9.49	11.74	13.93	16.18	19.66
24.66							
11.94 CFS	31.93	44.76	64.75	92.26	102.86	86.40	66.13
52.24							
12.42 CFS	42.31	35.81	31.74	27.58	23.38	20.48	18.73
17.47							
12.90 CFS	16.43	15.50	14.58	13.66	12.77	12.03	11.45
10.91							
13.38 CFS	10.38	9.86	9.34	8.83	8.36	7.97	7.69
7.47							
13.86 CFS	7.28	7.15	7.04	6.94	6.82	6.67	6.51
6.36							
14.34 CFS	6.24	6.14	6.04	5.90	5.74	5.58	5.44
5.33							
14.82 CFS	5.23	5.11	4.97	4.84	4.71	4.57	4.43
4.32							
15.30 CFS	4.25	4.22	4.21	4.20	4.20	4.16	4.10
4.02							
15.78 CFS	3.99	4.00	3.99	3.94	3.87	3.82	3.79
3.77							
16.26 CFS	3.75	3.71	3.66	3.63	3.58	3.53	3.49
3.48							
16.74 CFS	3.46	3.43	3.37	3.34	3.33	3.31	3.27
3.21							
17.22 CFS	3.13	3.10	3.11	3.10	3.05	2.97	2.91
2.88							
17.70 CFS	2.87	2.85	2.80	2.75	2.72	2.71	2.69
2.64							
18.18 CFS	2.60	2.57	2.56	2.54	2.49	2.47	2.49
2.52							
18.66 CFS	2.52	2.49	2.47	2.49	2.48	2.45	2.42
2.41							
19.14 CFS	2.40	2.40	2.40	2.40	2.40	2.40	2.40
2.39							
19.62 CFS	2.35	2.32	2.34	2.34	2.30	2.27	2.29
2.33							
20.10 CFS	2.33	2.30	2.27	2.26	2.25	2.21	2.17
2.19							
20.58 CFS	2.22	2.23	2.21	2.17	2.19	2.19	2.16
2.13							
21.06 CFS	2.11	2.11	2.10	2.10	2.10	2.10	2.10
2.10							
21.54 CFS	2.10	2.06	2.02	2.03	2.04	2.02	2.02
2.04							
22.02 CFS	2.02	1.99	1.96	1.96	1.95	1.95	1.95
1.95							
22.50 CFS	1.95	1.94	1.89	1.87	1.89	1.88	1.84
1.82							
22.98 CFS	1.83	1.87	1.87	1.84	1.81	1.80	1.80
1.79							
23.46 CFS	1.78	1.73	1.71	1.74	1.77	1.77	1.73
1.68							
23.94 CFS	1.68	1.77	1.73	1.21	.62	.29	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES; 98 CFS-HRS; 8.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.64	1671.9	(NULL)

1

TR20 ----- SCS

-  
 Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.75 WATERSHED INCHES; 3217 CFS-HRS; 265.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.72	1665.9	217.41

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.75 WATERSHED INCHES; 3216 CFS-HRS; 265.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	57.5	(RUNOFF)
15.85	2.3	(RUNOFF)
23.07	1.1	(RUNOFF)
23.73	1.0	(RUNOFF)
24.01	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.69 WATERSHED INCHES; 54 CFS-HRS; 4.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.71	1677.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.72 WATERSHED INCHES; 3270 CFS-HRS; 270.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		



12.15	120.6	(RUNOFF)
15.84	4.2	(RUNOFF)
17.34	3.3	(RUNOFF)
22.47	2.1	(RUNOFF)
24.00	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.29 WATERSHED INCHES; 109 CFS-HRS; 9.0 ACRE-  
 FEET.

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION

05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA

2.04TEST

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OPERATION RUNOFF XSECTION 84

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.25	179.9	(RUNOFF)
20.12	5.2	(RUNOFF)
23.12	4.2	(RUNOFF)
24.02	3.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.79 WATERSHED INCHES; 214 CFS-HRS; 17.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.19	280.9	(NULL)
18.83	8.2	(NULL)
20.82	7.2	(NULL)
23.07	6.1	(NULL)
24.00	5.8	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 25  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 SQ. MI.

8.94 CFS	.47	.51	.55	.59	.64	.71	.79
.90							
9.42 CFS	1.01	1.14	1.27	1.43	1.60	1.78	1.97
2.16							
9.90 CFS	2.36	2.56	2.79	3.03	3.28	3.54	3.79
4.04							
10.38 CFS	4.32	4.61	4.92	5.28	5.72	6.25	6.85
7.53							
10.86 CFS	8.27	9.07	9.92	10.83	11.93	13.22	14.68
16.31							
11.34 CFS	18.06	19.98	21.99	24.17	28.21	34.04	39.91
46.82							
11.82 CFS	57	70	90	123	174	244	280
266							
12.30 CFS	237	202	168	143	125	108	93

81

12.78	CFS	72.30	65.53	60.29	56.01	52.12	48.53	45.28
42.51								
13.26	CFS	40.17	38.07	36.14	34.31	32.52	30.80	29.17
27.75								
13.74	CFS	26.60	25.64	24.87	24.25	23.76	23.33	22.89
22.42								
14.22	CFS	21.92	21.44	21.02	20.64	20.26	19.84	19.36
18.87								
14.70	CFS	18.41	18.00	17.62	17.22	16.78	16.37	15.95
15.49								
15.18	CFS	15.05	14.65	14.36	14.17	14.04	13.97	13.91
13.80								
15.66	CFS	13.64	13.45	13.32	13.28	13.21	13.09	12.92
12.75								
16.14	CFS	12.63	12.54	12.46	12.33	12.20	12.09	11.94
11.78								
16.62	CFS	11.66	11.57	11.50	11.39	11.26	11.15	11.07
11.00								
17.10	CFS	10.89	10.72	10.52	10.39	10.34	10.27	10.14
9.96								
17.58	CFS	9.79	9.66	9.57	9.48	9.35	9.21	9.11
9.04								
18.06	CFS	8.96	8.83	8.70	8.60	8.53	8.45	8.32
8.26								
18.54	CFS	8.27	8.30	8.31	8.24	8.21	8.23	8.20
8.13								
19.02	CFS	8.06	8.01	7.98	7.96	7.95	7.94	7.94
7.94								
19.50	CFS	7.94	7.90	7.81	7.75	7.76	7.72	7.64
7.58								
19.98	CFS	7.59	7.65	7.66	7.61	7.56	7.52	7.47
7.37								
20.46	CFS	7.28	7.28	7.31	7.34	7.29	7.23	7.25
7.23								
20.94	CFS	7.17	7.10	7.04	7.00	6.98	6.96	6.95
6.95								

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION

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21.42	CFS	6.95	6.95	6.93	6.85	6.77	6.76	6.74
6.69								
21.90	CFS	6.70	6.73	6.68	6.61	6.56	6.51	6.48
6.46								
22.38	CFS	6.45	6.45	6.44	6.41	6.31	6.25	6.26
6.21								
22.86	CFS	6.14	6.08	6.08	6.14	6.14	6.10	6.05
6.00								
23.34	CFS	5.97	5.95	5.90	5.80	5.74	5.76	5.80
5.80								
23.82	CFS	5.73	5.64	5.60	5.78	5.63	4.53	3.23
2.17								
24.30	CFS	1.36	.83	.52	.32			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.94 WATERSHED INCHES; 323 CFS-HRS; 26.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.70 1760.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.63 WATERSHED INCHES; 3593 CFS-HRS; 296.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.13 53.1 (RUNOFF)  
 17.34 1.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.62 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.70 1768.5 (NULL)

HRS	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25							
	MAIN	TIME	INCREMENT = .060 hr,	DRAINAGE AREA = 1.55				SQ.MI.
4.50 CFS	.47	.51	.55	.60	.65	.70	.76	.83
4.98 CFS	.89	.96	1.04	1.11	1.19	1.27	1.34	1.42
5.46 CFS	1.51	1.60	1.69	1.78	1.88	1.96	2.05	2.14
5.94 CFS	2.24	2.35	2.46	2.56	2.67	2.78	2.88	3.01
6.42 CFS	3.14	3.29	3.45	3.63	3.82	4.01	4.24	4.48
6.90 CFS	4.73	4.99	5.27	5.56	5.86	6.17	6.49	6.83
7.38 CFS	7.18	7.55	7.93	8.33	8.75	9.19	9.64	10.10
7.86 CFS	10.57	11.08	11.59	12.11	12.66	13.21	13.77	14.36
8.34 CFS	14.99	15.60	16.23	16.88	17.54	18.21	18.87	19.55
8.82 CFS	20.25	20.96	21.69	22.49	23.30	24.12	24.97	25.85
9.30 CFS	26.78	27.75	28.78	29.90	31.12	32.48	33.97	35.59
9.78 CFS	37.31	39.11	41.00	42.97	45.06	47.27	49.58	51.99
10.26 CFS	54.46	57.01	59.68	62.45	65.37	68.45	71.77	75.32

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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10.74	CFS	79	83	88	92	98	104	110
118								
11.22	CFS	127	137	148	160	174	189	208
232								
11.70	CFS	258	288	325	372	434	526	661
845								
12.18	CFS	999	1104	1191	1266	1352	1465	1592
1697								
12.66	CFS	1758	1766	1725	1650	1552	1442	1326
1211								
13.14	CFS	1101	999	908	827	756	695	641
595								
13.62	CFS	554	518	485	457	431	408	386
367								
14.10	CFS	349	333	318	305	294	284	275
266								
14.58	CFS	258	251	244	238	232	226	220
215								
15.06	CFS	209	203	197	192	186	181	177
172								
15.54	CFS	168	164	161	157	154	152	150
148								
16.02	CFS	146	144	142	141	139	138	136
135								
16.50	CFS	134	132	131	130	128	127	126
125								
16.98	CFS	124	123	121	120	119	118	117
115								
17.46	CFS	114	113	112	111	109	108	107
106								
17.94	CFS	105	104	102	101	100	99	98
97								
18.42	CFS	95.88	94.91	94.06	93.29	92.56	91.77	91.07
90.48								
18.90	CFS	89.87	89.32	88.83	88.38	87.98	87.62	87.28
86.96								
19.38	CFS	86.64	86.33	86.02	85.68	85.27	84.93	84.68
84.37								
19.86	CFS	84.04	83.71	83.44	83.23	82.96	82.64	82.30
81.95								
20.34	CFS	81.60	81.18	80.80	80.53	80.30	80.08	79.75
79.36								
20.82	CFS	79.05	78.69	78.31	77.96	77.61	77.29	76.98
76.70								
21.30	CFS	76.41	76.13	75.83	75.54	75.24	74.85	74.48
74.21								
21.78	CFS	73.93	73.63	73.44	73.23	72.92	72.58	72.22
71.86								
22.26	CFS	71.54	71.26	70.99	70.73	70.47	70.14	69.71
69.34								
22.74	CFS	69.04	68.69	68.32	67.94	67.62	67.38	67.07
66.72								
23.22	CFS	66.35	65.96	65.61	65.31	64.99	64.60	64.25
63.97								
23.70	CFS	63.72	63.46	63.08	62.64	62.24	62.18	61.69
59.77								
24.18	CFS	57.27	54.44	51.55	48.87	46.25	43.36	40.02
36.24								
24.66	CFS	32.20	28.20	24.50	21.26	18.54	16.36	14.67

13.39  
25.14 CFS      12.42    11.69    11.13    10.70    10.36    10.09

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.64 WATERSHED INCHES;    3641 CFS-HRS;    300.9 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP      COMPUTATIONS COMPLETED FOR PASS    4

EXECUTIVE CONTROL COMPUT      FROM XSECTION    1    TO XSECTION    88  
STARTING TIME = .00      RAIN DEPTH = 7.23      RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2      MAIN TIME INCREMENT = .060 HOURS  
ALTERNATE NO. = 1      STORM NO. =50      RAIN TABLE NO. = 9

OPERATION RUNOFF    XSECTION    1

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TR20 ----- SCS  
-

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	81.5	(RUNOFF)
20.13	2.1	(RUNOFF)
23.08	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.02 WATERSHED INCHES;    109 CFS-HRS;    9.0 ACRE-  
FEET.

OPERATION REACH    XSECTION    2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	81.3	390.61

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.02 WATERSHED INCHES;    109 CFS-HRS;    9.0 ACRE-  
FEET.

OPERATION RUNOFF    XSECTION    3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	142.8	(RUNOFF)
20.68	3.4	(RUNOFF)
23.97	2.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.85 WATERSHED INCHES;    181 CFS-HRS;    15.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.30	220.1	(NULL)
20.13	5.7	(NULL)
23.12	4.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.91 WATERSHED INCHES; 290 CFS-HRS; 24.0 ACRE-  
 FEET.

\*\*\* WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 11,  
 VALUE EXTRAPOLATED.  
 \*\*\*

OPERATION RESVOR STRUCTURE 11

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.32	218.8	384.18

1

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.89 WATERSHED INCHES; 289 CFS-HRS; 23.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 5

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.39	218.2	368.84

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.89 WATERSHED INCHES; 289 CFS-HRS; 23.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.29	181.7	(RUNOFF)
20.14	4.8	(RUNOFF)
23.74	3.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.60 WATERSHED INCHES; 237 CFS-HRS; 19.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	387.5	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.75 WATERSHED INCHES;	526 CFS-HRS;	43.5 ACRE-
FEEET.		

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	386.9	358.49
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.75 WATERSHED INCHES;	526 CFS-HRS;	43.5 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	203.5	(RUNOFF)

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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 2.04TEST  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
6.15 WATERSHED INCHES;	291 CFS-HRS;	24.1 ACRE-
FEEET.		

\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.51	139.6	377.76
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.58 WATERSHED INCHES;	264 CFS-HRS;	21.9 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	30.4	(RUNOFF)
15.46	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.03 WATERSHED INCHES; 25 CFS-HRS; 2.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.80	112.3	359.61

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.57 WATERSHED INCHES; 264 CFS-HRS; 21.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	146.1	(RUNOFF)
15.81	5.5	(RUNOFF)
20.09	3.2	(RUNOFF)
20.64	3.0	(RUNOFF)
24.02	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.16 WATERSHED INCHES; 146 CFS-HRS; 12.1 ACRE-  
 FEET.

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	458.9	(NULL)
24.00	10.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.61 WATERSHED INCHES; 672 CFS-HRS; 55.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	56.4	(RUNOFF)
21.97	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.80 WATERSHED INCHES; 60 CFS-HRS; 4.9 ACRE-  
 FEET.



OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	552.8	(NULL)
23.98	17.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.84 WATERSHED INCHES; 934 CFS-HRS; 77.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	582.5	(NULL)
23.99	18.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.83 WATERSHED INCHES; 994 CFS-HRS; 82.1 ACRE-FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	582.5	(NULL)
23.99	18.5	(NULL)

1

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.83 WATERSHED INCHES; 994 CFS-HRS; 82.1 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
 \*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	582.5	335.04
23.99	18.5	331.31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.83 WATERSHED INCHES; 994 CFS-HRS; 82.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.14	82.4	(RUNOFF)
15.84	2.4	(RUNOFF)
23.05	1.1	(RUNOFF)
23.71	1.0	(RUNOFF)
24.00	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.80 WATERSHED INCHES; 79 CFS-HRS; 6.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	109.9	(RUNOFF)
20.10	2.1	(RUNOFF)
24.03	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.26 WATERSHED INCHES; 126 CFS-HRS; 10.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 19

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.15	148.6	(RUNOFF)
15.84	4.6	(RUNOFF)
17.34	3.5	(RUNOFF)
22.75	2.1	(RUNOFF)
23.06	2.1	(RUNOFF)
24.00	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.41 WATERSHED INCHES; 141 CFS-HRS; 11.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	188.2	(NULL)
15.81	6.1	(NULL)
17.31	4.7	(NULL)
21.74	3.0	(NULL)
21.96	3.0	(NULL)
24.01	2.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.08 WATERSHED INCHES; 206 CFS-HRS; 17.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	335.1	(NULL)
15.83	10.7	(NULL)
17.33	8.2	(NULL)
19.74	6.1	(NULL)
20.06	6.1	(NULL)
21.95	5.3	(NULL)
24.01	4.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.79 WATERSHED INCHES; 347 CFS-HRS; 28.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 22

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 Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	780.5	(NULL)
20.04	30.2	(NULL)
20.58	29.1	(NULL)
21.93	26.8	(NULL)
23.04	24.7	(NULL)
23.68	23.4	(NULL)
24.00	23.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.04 WATERSHED INCHES; 1339 CFS-HRS; 110.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 23

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	731.5	316.89
24.06	23.0	314.21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.04 WATERSHED INCHES; 1338 CFS-HRS; 110.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	136.5	(RUNOFF)
20.68	3.0	(RUNOFF)
23.99	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.17 WATERSHED INCHES; 168 CFS-HRS; 13.9 ACRE-FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE TIME INCREMENT OF .043 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	131.8	365.04
20.69	3.0	356.63
23.79	2.4	356.57

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION

05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA

2.04TEST

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.15 WATERSHED INCHES; 168 CFS-HRS; 13.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	196.3	(RUNOFF)
18.66	5.1	(RUNOFF)
20.68	4.5	(RUNOFF)
23.98	3.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.09 WATERSHED INCHES; 246 CFS-HRS; 20.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	325.1	(NULL)
18.67	8.6	(NULL)
20.68	7.5	(NULL)
23.14	6.2	(NULL)

23.78 5.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.12 WATERSHED INCHES; 414 CFS-HRS; 34.2 ACRE-
FEET.

OPERATION REACH XSECTION 27

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows: 12.37, 20.73, 23.20.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.12 WATERSHED INCHES; 414 CFS-HRS; 34.2 ACRE-
FEET.

OPERATION RUNOFF XSECTION 28

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows: 12.24, 21.94, 24.01.

1

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.74 WATERSHED INCHES; 183 CFS-HRS; 15.1 ACRE-
FEET.

OPERATION ADDHYD XSECTION 29

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows: 12.33, 20.07, 24.04.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.00 WATERSHED INCHES; 1521 CFS-HRS; 125.7 ACRE-
FEET.

OPERATION ADDHYD XSECTION 30

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows: 12.36, 24.04.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

5.03 WATERSHED INCHES; 1935 CFS-HRS; 159.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.21	220.6	(RUNOFF)
20.86	4.2	(RUNOFF)
24.02	3.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.69 WATERSHED INCHES; 254 CFS-HRS; 21.0 ACRE-  
FEET.

OPERATION REACH XSECTION 32

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.31	204.5	313.75
20.73	4.3	310.35
24.09	3.3	310.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.69 WATERSHED INCHES; 254 CFS-HRS; 21.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 33

1

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05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
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PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.16	33.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.63 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
FEET.

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 32, TRUNCATED AT 400 POINTS  
WITH .48 AC-FT ( .09 WATERSHED INCHES) FLOOD STORAGE  
REMAINING IN RESERVOIR AT ELEV. 377.99.  
\*\*\*

OPERATION RESVOR STRUCTURE 32

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.24	29.2	380.63

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.55 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-

FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 34.  
 \*\*\*

OPERATION REACH XSECTION 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	29.2	338.28
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.55 WATERSHED INCHES;	30 CFS-HRS;	2.5 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	100.5	(RUNOFF)
18.65	2.0	(RUNOFF)
24.02	1.4	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
6.63 WATERSHED INCHES;	118 CFS-HRS;	9.7 ACRE-
FEET.		

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 33, TRUNCATED AT 400 POINTS  
 WITH 1.02 AC-FT ( .06 WATERSHED INCHES) FLOOD STORAGE  
 REMAINING IN RESERVOIR AT ELEV. 354.08.  
 \*\*\*

OPERATION RESVOR STRUCTURE 33

1

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 -  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	84.8	357.61
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.93 WATERSHED INCHES;	105 CFS-HRS;	8.7 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	113.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		

5.84 WATERSHED INCHES; 135 CFS-HRS; 11.2 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	113.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.84 WATERSHED INCHES; 135 CFS-HRS; 11.2 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
\*\*\*

OPERATION REACH XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	113.8	330.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.84 WATERSHED INCHES; 135 CFS-HRS; 11.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	118.6	(RUNOFF)
15.84	3.7	(RUNOFF)
20.07	2.1	(RUNOFF)
20.63	2.0	(RUNOFF)
24.01	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.57 WATERSHED INCHES; 118 CFS-HRS; 9.7 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	220.1	(NULL)
19.73	5.0	(NULL)
22.73	4.1	(NULL)
23.05	4.0	(NULL)
24.01	3.8	(NULL)



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.71 WATERSHED INCHES; 253 CFS-HRS; 20.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	99.5	(RUNOFF)
20.67	2.3	(RUNOFF)
23.97	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.94 WATERSHED INCHES; 125 CFS-HRS; 10.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	1255.2	(NULL)
24.03	33.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.02 WATERSHED INCHES; 2060 CFS-HRS; 170.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	1455.3	(NULL)
24.04	36.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.09 WATERSHED INCHES; 2314 CFS-HRS; 191.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 43

1 TR20 ----- SCS  
 -

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	1629.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.13 WATERSHED INCHES; 2561 CFS-HRS; 211.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	1577.6	291.98

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.13 WATERSHED INCHES; 2560 CFS-HRS; 211.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	114.7	(RUNOFF)
23.09	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.00 WATERSHED INCHES; 154 CFS-HRS; 12.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	143.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.90 WATERSHED INCHES; 199 CFS-HRS; 16.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	257.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.94 WATERSHED INCHES; 352 CFS-HRS; 29.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 48

1

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	140.0	(RUNOFF)
18.86	3.1	(RUNOFF)
24.03	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

4.93 WATERSHED INCHES; 149 CFS-HRS; 12.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.41 1649.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.12 WATERSHED INCHES; 2709 CFS-HRS; 223.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.39 1884.4 (NULL)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50						
		MAIN TIME INCREMENT = .060 hr,					DRAINAGE AREA = .93	
HRS	SQ.MI.							
3.66 CFS	.90	.50	.54	.58	.63	.68	.75	.82
4.14 CFS	1.64	.98	1.07	1.17	1.26	1.35	1.44	1.54
4.62 CFS	2.51	1.75	1.87	1.97	2.07	2.17	2.28	2.39
5.10 CFS	3.64	2.62	2.74	2.86	3.00	3.15	3.32	3.48
5.58 CFS	5.41	3.83	4.03	4.26	4.50	4.75	4.98	5.19
6.06 CFS	7.85	5.66	5.94	6.24	6.54	6.85	7.16	7.49
6.54 CFS	11.27	8.23	8.63	9.05	9.49	9.92	10.36	10.80
7.02 CFS	15.52	11.74	12.22	12.72	13.25	13.81	14.39	14.95
7.50 CFS	20.36	16.09	16.68	17.27	17.87	18.46	19.07	19.70
7.98 CFS	26.10	21.04	21.74	22.47	23.21	23.95	24.67	25.38
8.46 CFS	32.40	26.83	27.56	28.30	29.06	29.87	30.72	31.57
8.94 CFS	40.38	33.19	33.96	34.76	35.64	36.62	37.71	38.95
9.42 CFS	55.89	41.98	43.74	45.58	47.48	49.44	51.49	53.64
9.90 CFS	75.62	58.20	60.53	62.86	65.23	67.67	70.21	72.82
10.38 CFS	107	79	82	86	89	93	97	102
10.86 CFS	177	114	121	128	136	145	155	165
11.34 CFS	345	190	204	220	236	255	278	307
11.82 CFS	1535	390	446	518	616	760	966	1238
12.30 CFS	1233	1760	1872	1875	1789	1665	1521	1374
12.78 CFS	553	1097	974	869	781	707	647	596

13.26 CFS	516	481	447	415	387	361	338
317							
13.74 CFS	298	281	265	252	240	229	220
213							
14.22 CFS	206	199	193	188	183	178	174
170							
14.70 CFS	166	162	158	154	150	146	143
139							
15.18 CFS	136	132	129	125	122	120	118
116							

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION

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15.66 CFS	114	113	112	110	109	108	107
106							
16.14 CFS	105	104	103	102	101	100	99
98							
16.62 CFS	97.37	96.41	95.50	94.64	93.83	93.01	92.19
91.39							
17.10 CFS	90.63	89.87	89.03	88.10	87.12	86.20	85.37
84.56							
17.58 CFS	83.69	82.73	81.74	80.79	79.89	79.02	78.15
77.30							
18.06 CFS	76.49	75.71	74.94	74.15	73.36	72.59	71.86
71.15							
18.54 CFS	70.50	69.96	69.58	69.30	69.06	68.81	68.55
68.31							
19.02 CFS	68.04	67.72	67.37	67.03	66.72	66.46	66.25
66.08							
19.50 CFS	65.93	65.80	65.63	65.39	65.10	64.80	64.51
64.20							
19.98 CFS	63.89	63.62	63.44	63.33	63.21	63.04	62.80
62.50							
20.46 CFS	62.14	61.73	61.36	61.09	60.91	60.76	60.59
60.39							
20.94 CFS	60.19	59.96	59.68	59.36	59.02	58.70	58.43
58.21							
21.42 CFS	58.03	57.88	57.75	57.60	57.39	57.11	56.80
56.52							
21.90 CFS	56.27	56.07	55.91	55.74	55.52	55.24	54.93
54.62							
22.38 CFS	54.35	54.13	53.95	53.78	53.58	53.32	53.01
52.69							
22.86 CFS	52.39	52.07	51.75	51.47	51.28	51.17	51.05
50.88							
23.34 CFS	50.65	50.39	50.14	49.85	49.52	49.16	48.84
48.63							
23.82 CFS	48.47	48.28	48.02	47.78	47.54	46.90	45.19
41.93							
24.30 CFS	37.42	32.37	27.56	23.44	20.08	17.41	15.41
13.98							
24.78 CFS	12.98	12.27	11.75	11.37	11.06	10.82	10.61
10.43							

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.10 WATERSHED INCHES; 3062 CFS-HRS; 253.0 ACRE-  
FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	1847.2	287.38

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.09 WATERSHED INCHES; 3061 CFS-HRS; 252.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	4.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.06 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53

1  
 TR20 ----- SCS  
 -  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	4.3	288.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.06 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
 AT XSECTION 54  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .47 WATERSHED INCHES; 2 CFS-HRS; .2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	91.3	(RUNOFF)
18.86	2.1	(RUNOFF)
24.03	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 97 CFS-HRS; 8.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	1884.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.08 WATERSHED INCHES; 3157 CFS-HRS; 260.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	4.7	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02 SQ.MI.

HRS	CFS	.11	.52	1.54	3.43	4.57	4.49	4.05
12.00								
3.62								
12.48	CFS	3.24	2.98	2.80	2.52	2.23	2.04	1.91
1.82								
12.96	CFS	1.75	1.67	1.59	1.51	1.43	1.37	1.31
1.26								
13.44	CFS	1.21	1.16	1.10	1.05	1.00	.96	.94
.91								

1 TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION  
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13.92	CFS	.90	.89	.88	.87	.86	.84	.82
.81								
14.40	CFS	.80	.79	.78	.76	.74	.73	.71
.70								
14.88	CFS	.69	.67	.66	.64	.62	.61	.59
.58								
15.36	CFS	.57	.57	.57	.57	.57	.56	.56
.55								
15.84	CFS	.55	.55	.55	.54	.53	.53	.53
.52								
16.32	CFS	.52	.52	.51	.51	.50	.50	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .79 WATERSHED INCHES; 8 CFS-HRS; .7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK  
 ELEVATION (FEET)  
 12.48 1888.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.01 WATERSHED INCHES; 3166 CFS-HRS; 261.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK  
 ELEVATION (FEET)  
 12.21 61.6 (RUNOFF)  
 24.02 1.1 (RUNOFF)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 50						
		MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .03						
HRS	SQ.MI.							
9.48 CFS	.79	.50	.53	.57	.61	.66	.70	.75
9.96 CFS	1.23	.84	.89	.94	1.00	1.06	1.12	1.17
10.44 CFS	2.11	1.29	1.36	1.44	1.53	1.65	1.79	1.94
10.92 CFS	4.29	2.30	2.49	2.69	2.93	3.21	3.54	3.90
11.40 CFS	12.37	4.70	5.14	5.62	6.36	7.55	8.94	10.44
11.88 CFS	51.47	15.06	19.06	25.51	35.80	49.74	60.51	59.80
12.36 CFS	13.77	41.55	33.96	28.31	24.25	21.04	18.07	15.59
12.84 CFS	7.83	12.52	11.55	10.77	10.09	9.45	8.84	8.29
13.32 CFS	5.18	7.43	7.07	6.71	6.37	6.02	5.70	5.41
13.80 CFS	4.30	5.00	4.85	4.73	4.64	4.56	4.49	4.40
14.28 CFS	3.60	4.20	4.11	4.04	3.97	3.89	3.79	3.69
14.76 CFS	2.94	3.51	3.44	3.37	3.28	3.20	3.11	3.03
15.24 CFS	2.67	2.86	2.80	2.76	2.74	2.72	2.72	2.70
15.72 CFS	2.46	2.63	2.60	2.59	2.58	2.56	2.53	2.49
16.20 CFS	2.27	2.45	2.43	2.41	2.38	2.36	2.33	2.30
16.68 CFS	2.13	2.25	2.24	2.22	2.20	2.17	2.15	2.14
17.16 CFS	1.91	2.09	2.05	2.02	2.01	2.00	1.98	1.94
17.64 CFS	1.74	1.88	1.86	1.84	1.82	1.79	1.77	1.76
18.12 CFS	1.60	1.72	1.69	1.67	1.66	1.64	1.62	1.60

18.60 CFS	1.61	1.62	1.61	1.60	1.60	1.60	1.59
1.57							
19.08 CFS	1.56	1.55	1.55	1.54	1.54	1.54	1.54
1.54							
19.56 CFS	1.54	1.52	1.51	1.50	1.50	1.49	1.47
1.47							
20.04 CFS	1.48	1.49	1.48	1.47	1.46	1.45	1.44
1.41							

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION

05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA 2.04TEST

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20.52 CFS	1.41	1.42	1.43	1.42	1.41	1.40	1.40
1.40							
21.00 CFS	1.38	1.37	1.36	1.35	1.35	1.35	1.35
1.35							
21.48 CFS	1.35	1.35	1.33	1.31	1.31	1.31	1.30
1.30							
21.96 CFS	1.30	1.30	1.29	1.27	1.26	1.26	1.25
1.25							
22.44 CFS	1.25	1.25	1.24	1.23	1.21	1.21	1.21
1.19							
22.92 CFS	1.18	1.17	1.19	1.19	1.19	1.17	1.16
1.16							
23.40 CFS	1.15	1.15	1.13	1.11	1.11	1.12	1.13
1.12							
23.88 CFS	1.09	1.08	1.11	1.10	.94	.65	.39

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.86 WATERSHED INCHES; 66 CFS-HRS; 5.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.48 1916.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.98 WATERSHED INCHES; 3232 CFS-HRS; 267.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.23 37.1 (RUNOFF)  
18.66 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.78 WATERSHED INCHES; 42 CFS-HRS; 3.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 62



PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 12.48 1936.6 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.02  
 SQ.MI.

HRS	MAIN	TIME	INCREMENT	=	.060	hr,	ALTERNATE	=	1,	STORM	=	50
3.72	CFS	.48	.52	.56	.61	.66	.72	.78				
4.20	CFS	.94	1.03	1.12	1.21	1.30	1.39	1.49				
4.68	CFS	1.70	1.81	1.91	2.02	2.12	2.23	2.34				
5.16	CFS	2.57	2.68	2.80	2.93	3.08	3.23	3.40				
5.64	CFS	3.74	3.93	4.15	4.39	4.63	4.86	5.08				
6.12	CFS	5.54	5.81	6.11	6.42	6.73	7.05	7.39				
6.60	CFS	8.13	8.54	8.97	9.41	9.86	10.31	10.77				
7.08	CFS	11.73	12.22	12.74	13.27	13.84	14.42	15.01				
7.56	CFS	16.19	16.79	17.40	18.02	18.64	19.27	19.91				
8.04	CFS	21.29	22.02	22.77	23.54	24.32	25.10	25.87				
8.52	CFS	27.42	28.21	29.00	29.82	30.67	31.56	32.45				
9.00	CFS	34.21	35.07	35.94	36.88	37.91	39.06	40.36				

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9.48	CFS	43.45	45.24	47.16	49.16	51.24	53.40	55.66
58.02								
9.96	CFS	60.44	62.91	65.42	67.96	70.57	73.25	76.00
78.91								
10.44	CFS	82	86	89	93	97	102	107
112								
10.92	CFS	119	126	134	143	152	162	173
186								
11.40	CFS	200	215	231	249	271	297	328
368								
11.88	CFS	417	481	566	684	852	1065	1304
1555								
12.36	CFS	1767	1900	1936	1885	1780	1643	1495
1349								
12.84	CFS	1207	1076	961	862	779	709	651
602								
13.32	CFS	560	522	486	452	421	393	368
345								
13.80	CFS	324	305	288	274	261	249	239
231								
14.28	CFS	223	216	209	203	198	193	188
184								
14.76	CFS	179	175	170	166	162	158	154

150							
15.24	CFS	146	143	139	136	133	130
126							
15.72	CFS	124	122	121	119	118	117
114							
16.20	CFS	113	112	111	110	109	108
106							
16.68	CFS	105	104	103	102	101	100
99							
17.16	CFS	97.70	96.80	95.88	94.94	93.97	92.98
91.06							
17.64	CFS	90.11	89.13	88.12	87.08	86.08	85.12
83.30							
18.12	CFS	82.40	81.52	80.67	79.83	79.00	78.16
76.63							
18.60	CFS	75.99	75.42	74.94	74.56	74.29	74.03
73.44							
19.08	CFS	73.14	72.82	72.48	72.13	71.81	71.53
71.10							
19.56	CFS	70.93	70.73	70.52	70.29	70.03	69.70
69.05							
20.04	CFS	68.78	68.52	68.29	68.10	67.94	67.75
67.16							
20.52	CFS	66.80	66.45	66.10	65.79	65.52	65.32
64.95							
21.00	CFS	64.70	64.43	64.15	63.83	63.50	63.17
62.64							
21.48	CFS	62.44	62.27	62.09	61.88	61.66	61.41
60.81							
21.96	CFS	60.57	60.34	60.11	59.89	59.65	59.38
58.77							
22.44	CFS	58.49	58.25	58.03	57.79	57.55	57.30
56.66							
22.92	CFS	56.31	55.98	55.70	55.44	55.19	55.00
54.65							
23.40	CFS	54.43	54.18	53.87	53.54	53.22	52.91
52.33							
23.88	CFS	52.07	51.84	51.68	51.45	50.71	49.27
43.96							
24.36	CFS	39.78	34.96	30.11	25.72	21.99	18.97
14.86							
24.84	CFS	13.61	12.72	12.08	11.61	11.24	10.73

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.96 WATERSHED INCHES; 3274 CFS-HRS; 270.6 ACRE-FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.58	1878.7	251.35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.96 WATERSHED INCHES; 3273 CFS-HRS; 270.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 64

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	25.4	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.41 WATERSHED INCHES;		38 CFS-HRS;
FEET.		3.2 ACRE-

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.57	19.3	335.25
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.41 WATERSHED INCHES;		38 CFS-HRS;
FEET.		3.2 ACRE-

OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.67	19.0	300.92
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.41 WATERSHED INCHES;		38 CFS-HRS;
FEET.		3.2 ACRE-

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	109.3	(RUNOFF)
23.10	2.1	(RUNOFF)
24.03	2.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.83 WATERSHED INCHES;		113 CFS-HRS;
FEET.		9.4 ACRE-

\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .043 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	52.1	296.06

23.12	2.0	287.56
24.04	1.9	287.55

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.83 WATERSHED INCHES; 113 CFS-HRS; 9.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	67.2	(NULL)
20.86	3.1	(NULL)
24.04	2.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.13 WATERSHED INCHES; 151 CFS-HRS; 12.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	220.8	(RUNOFF)
18.64	5.1	(RUNOFF)
21.97	4.1	(RUNOFF)
24.03	3.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.48 WATERSHED INCHES; 225 CFS-HRS; 18.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	249.0	(NULL)
18.87	8.5	(NULL)
20.87	7.5	(NULL)
23.10	6.3	(NULL)
24.03	6.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.33 WATERSHED INCHES; 376 CFS-HRS; 31.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.39	183.4	249.02
24.09	5.9	247.74

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.33 WATERSHED INCHES; 376 CFS-HRS; 31.1 ACRE-  
 FEET.

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.12	45.5	(RUNOFF)
15.83	1.3	(RUNOFF)
17.33	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.90 WATERSHED INCHES; 38 CFS-HRS; 3.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	27.4	267.40

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.90 WATERSHED INCHES; 38 CFS-HRS; 3.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 72

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	25.6	248.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.91 WATERSHED INCHES; 38 CFS-HRS; 3.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	237.2	(RUNOFF)
15.84	9.7	(RUNOFF)
17.34	7.6	(RUNOFF)
18.86	6.1	(RUNOFF)
21.45	5.1	(RUNOFF)
24.01	4.3	(RUNOFF)

		HYDROGRAPH POINTS FOR				ALTERNATE = 1,	STORM =50	
HRS		MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .11		
SQ.MI.								
9.60	CFS	.49	.61	.73	.86	1.00	1.13	1.27
1.43								
10.08	CFS	1.60	1.78	1.96	2.13	2.32	2.51	2.72
2.94								
10.56	CFS	3.20	3.51	3.89	4.33	4.82	5.35	5.93
6.54								
11.04	CFS	7.19	8.00	8.96	10.08	11.28	12.57	14.01
15.50								
11.52	CFS	17.15	20.19	25.09	30.06	35.22	43.00	54.20
70.81								
12.00	CFS	99	145	208	237	207	161	128
104								
12.48	CFS	87.51	77.29	67.40	57.39	50.08	45.64	42.48
39.91								
12.96	CFS	37.67	35.43	33.20	31.06	29.25	27.85	26.52
25.25								

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13.44	CFS	24.00	22.74	21.53	20.36	19.41	18.71	18.15
17.71								
13.92	CFS	17.37	17.10	16.86	16.56	16.22	15.83	15.47
15.19								
14.40	CFS	14.94	14.69	14.36	13.99	13.60	13.25	12.98
12.73								
14.88	CFS	12.44	12.11	11.79	11.50	11.15	10.81	10.53
10.36								
15.36	CFS	10.28	10.24	10.23	10.21	10.13	9.99	9.81
9.72								
15.84	CFS	9.74	9.72	9.61	9.45	9.31	9.23	9.19
9.15								
16.32	CFS	9.04	8.93	8.85	8.74	8.60	8.52	8.48
8.45								
16.80	CFS	8.36	8.24	8.15	8.12	8.08	7.99	7.84
7.66								
17.28	CFS	7.56	7.58	7.56	7.44	7.27	7.12	7.04
7.00								
17.76	CFS	6.95	6.84	6.72	6.66	6.62	6.58	6.47
6.35								
18.24	CFS	6.28	6.25	6.20	6.09	6.04	6.09	6.16
6.16								
18.72	CFS	6.08	6.03	6.08	6.07	5.99	5.92	5.89
5.88								
19.20	CFS	5.87	5.87	5.87	5.87	5.87	5.87	5.84
5.74								
19.68	CFS	5.68	5.72	5.71	5.63	5.56	5.59	5.68
5.70								
20.16	CFS	5.63	5.56	5.54	5.51	5.42	5.33	5.35
5.42								
20.64	CFS	5.46	5.40	5.32	5.34	5.37	5.29	5.22
5.17								
21.12	CFS	5.16	5.15	5.14	5.14	5.14	5.14	5.15
5.13								
21.60	CFS	5.05	4.96	4.98	5.00	4.94	4.94	4.99

4.95								
22.08 CFS	4.87	4.81	4.79	4.78	4.77	4.77	4.77	
4.77								
22.56 CFS	4.74	4.64	4.58	4.62	4.60	4.52	4.45	
4.48								
23.04 CFS	4.57	4.58	4.51	4.45	4.42	4.40	4.40	
4.36								
23.52 CFS	4.26	4.19	4.25	4.32	4.33	4.24	4.13	
4.11								
24.00 CFS	4.33	4.25	3.08	1.66	.80	.39		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.26 WATERSHED INCHES; 232 CFS-HRS; 19.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.57	1949.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.79 WATERSHED INCHES; 3504 CFS-HRS; 289.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.37	207.0	(NULL)
20.13	8.7	(NULL)
24.09	6.5	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15  
 SQ.MI.

HRS	MAIN	TIME	INCREMENT	=	.060	hr,	DRAINAGE	AREA	=	.15
7.08 CFS	.47	.52	.57	.62	.68	.74	.79			
.85										
7.56 CFS	.91	.98	1.04	1.10	1.17	1.24	1.30			
1.38										
8.04 CFS	1.45	1.53	1.61	1.69	1.78	1.86	1.96			
2.06										
8.52 CFS	2.16	2.26	2.37	2.48	2.60	2.72	2.84			
2.95										
9.00 CFS	3.07	3.19	3.32	3.46	3.61	3.77	3.95			
4.15										

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9.48 CFS	4.36	4.58	4.80	5.04	5.29	5.56	5.85			
6.14										
9.96 CFS	6.44	6.74	7.05	7.38	7.73	8.09	8.45			
8.81										
10.44 CFS	9.18	9.56	9.96	10.39	10.88	11.40	12.01			
12.71										

10.92	CFS	13.50	14.37	15.31	16.31	17.42	18.68	20.05
21.56								
11.40	CFS	23.22	25.03	26.98	29.10	31.72	35.04	39.05
43.74								
11.88	CFS	49	56	66	79	101	136	172
199								
12.36	CFS	207	204	196	188	180	171	161
150								
12.84	CFS	139	128	119	111	103	95	88
81								
13.32	CFS	75.11	70.28	66.07	62.36	59.08	56.22	53.72
51.54								
13.80	CFS	49.65	48.01	46.59	45.35	44.28	43.33	42.49
41.70								
14.28	CFS	40.95	40.23	39.55	38.91	38.30	37.65	36.95
36.23								
14.76	CFS	35.49	34.75	33.99	33.20	32.38	31.55	30.72
29.77								
15.24	CFS	28.72	27.64	26.43	25.15	23.93	22.83	21.76
20.87								
15.72	CFS	20.14	19.51	18.97	18.53	18.17	17.85	17.53
17.18								
16.20	CFS	16.84	16.52	16.22	15.92	15.64	15.37	15.10
14.84								
16.68	CFS	14.59	14.36	14.16	13.99	13.82	13.65	13.49
13.35								
17.16	CFS	13.22	13.06	12.89	12.70	12.55	12.42	12.28
12.13								
17.64	CFS	11.90	11.68	11.48	11.31	11.14	10.98	10.82
10.68								
18.12	CFS	10.56	10.44	10.30	10.17	10.05	9.94	9.82
9.71								
18.60	CFS	9.62	9.58	9.55	9.50	9.45	9.41	9.39
9.35								
19.08	CFS	9.29	9.23	9.18	9.14	9.10	9.07	9.05
9.03								
19.56	CFS	9.02	9.00	8.96	8.91	8.87	8.84	8.79
8.73								
20.04	CFS	8.69	8.68	8.68	8.66	8.63	8.59	8.55
8.50								
20.52	CFS	8.43	8.37	8.34	8.33	8.31	8.27	8.24
8.22								
21.00	CFS	8.19	8.15	8.09	8.04	8.00	7.96	7.93
7.91								
21.48	CFS	7.89	7.87	7.86	7.83	7.77	7.72	7.69
7.66								
21.96	CFS	7.63	7.61	7.59	7.56	7.51	7.46	7.42
7.38								
22.44	CFS	7.35	7.33	7.31	7.28	7.24	7.18	7.14
7.11								
22.92	CFS	7.06	7.00	6.95	6.94	6.94	6.92	6.89
6.85								
23.40	CFS	6.81	6.78	6.74	6.69	6.62	6.58	6.56
6.56								
23.88	CFS	6.53	6.48	6.43	6.43	6.44	6.17	5.54
4.72								
24.36	CFS	3.91	3.18	2.57	2.06	1.65	1.31	1.04
.82								
24.84	CFS	.65	.51	.39				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.38 WATERSHED INCHES; 414 CFS-HRS; 34.2 ACRE-  
 FEET.



OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.57	2136.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.74 WATERSHED INCHES; 3918 CFS-HRS; 323.8 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 77.  
 \*\*\*

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
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OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.57	2136.0	231.65

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.74 WATERSHED INCHES; 3918 CFS-HRS; 323.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	133.1	(RUNOFF)
15.84	5.0	(RUNOFF)
18.86	3.1	(RUNOFF)
24.01	2.2	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05  
 SQ.MI.

HRS	8.82	9.30	9.78	10.26	10.74	11.22	11.70	12.18
CFS	8.82	9.30	9.78	10.26	10.74	11.22	11.70	12.18
	.48	.86	1.48	2.31	3.75	7.47	20	133
	.51	.93	1.57	2.42	4.09	8.22	23	112
	.55	1.00	1.66	2.53	4.44	9.01	27	85
	.59	1.07	1.75	2.67	4.82	9.88	34	67
	.64	1.13	1.86	2.81	5.21	10.77	44	54
	.69	1.21	1.97	2.97	5.63	11.74	60	45
	.73	1.30	2.09	3.19	6.15	13.66	86	40

35								
12.66	CFS	29.53	25.82	23.63	22.02	20.68	19.50	18.32
17.15								
13.14	CFS	16.02	15.09	14.36	13.67	13.01	12.36	11.69
11.06								
13.62	CFS	10.46	9.97	9.61	9.33	9.10	8.93	8.79
8.67								
14.10	CFS	8.51	8.32	8.12	7.94	7.79	7.66	7.53
7.36								
14.58	CFS	7.16	6.95	6.78	6.64	6.51	6.36	6.19
6.02								
15.06	CFS	5.87	5.69	5.51	5.37	5.29	5.25	5.23
5.23								
15.54	CFS	5.22	5.17	5.09	5.00	4.96	4.97	4.96
4.90								
16.02	CFS	4.81	4.74	4.70	4.68	4.66	4.60	4.54
4.50								
16.50	CFS	4.44	4.38	4.33	4.31	4.30	4.25	4.19
4.14								
16.98	CFS	4.13	4.11	4.06	3.98	3.88	3.84	3.85
3.84								
17.46	CFS	3.77	3.68	3.61	3.57	3.55	3.53	3.47
3.41								
17.94	CFS	3.37	3.36	3.33	3.27	3.21	3.18	3.17
3.14								
18.42	CFS	3.09	3.06	3.09	3.12	3.12	3.08	3.06
3.08								
18.90	CFS	3.07	3.03	3.00	2.98	2.97	2.97	2.97
2.97								
19.38	CFS	2.97	2.97	2.97	2.95	2.90	2.87	2.90
2.89								
19.86	CFS	2.84	2.81	2.83	2.88	2.88	2.84	2.81
2.80								
20.34	CFS	2.78	2.73	2.69	2.70	2.74	2.76	2.72
2.68								
20.82	CFS	2.70	2.71	2.67	2.63	2.61	2.60	2.60
2.60								
21.30	CFS	2.59	2.59	2.60	2.60	2.59	2.54	2.50
2.51								
21.78	CFS	2.52	2.49	2.49	2.52	2.49	2.45	2.42
2.41								
22.26	CFS	2.41	2.40	2.40	2.40	2.40	2.39	2.33
2.30								
22.74	CFS	2.33	2.32	2.27	2.24	2.26	2.31	2.31
2.27								

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION

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23.22	CFS	2.24	2.22	2.22	2.21	2.19	2.14	2.11
2.14								
23.70	CFS	2.18	2.18	2.13	2.07	2.07	2.18	2.13
1.50								
24.18	CFS	.78	.36					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.89 WATERSHED INCHES; 128 CFS-HRS; 10.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.56	2174.1	(NULL)
23.98	65.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.71 WATERSHED INCHES; 4047 CFS-HRS; 334.4 ACRE-FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.64	2156.9	218.63

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.71 WATERSHED INCHES; 4046 CFS-HRS; 334.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	76.0	(RUNOFF)
17.34	2.3	(RUNOFF)
24.01	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.55 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.64	2174.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.68 WATERSHED INCHES; 4117 CFS-HRS; 340.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 83

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	154.4	(RUNOFF)

15.84	5.2	(RUNOFF)
17.34	4.0	(RUNOFF)
19.47	3.1	(RUNOFF)
19.74	3.0	(RUNOFF)
20.05	3.0	(RUNOFF)
24.00	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.24 WATERSHED INCHES; 140 CFS-HRS; 11.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	237.6	(RUNOFF)
18.67	7.0	(RUNOFF)
20.68	6.2	(RUNOFF)
23.12	5.2	(RUNOFF)
24.01	4.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 281 CFS-HRS; 23.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	370.0	(NULL)
18.83	10.2	(NULL)
20.63	9.1	(NULL)
21.95	8.3	(NULL)
23.73	7.2	(NULL)
24.00	7.1	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 SQ.MI.

8.10 CFS	.49	.52	.55	.59	.63	.68	.73
.81							
8.58 CFS	.90	1.01	1.12	1.22	1.33	1.43	1.54
1.68							
9.06 CFS	1.83	1.96	2.12	2.30	2.50	2.71	2.92
3.13							
9.54 CFS	3.35	3.59	3.85	4.14	4.42	4.71	4.99
5.28							
10.02 CFS	5.60	5.95	6.31	6.68	7.03	7.38	7.76
8.16							
10.50 CFS	8.60	9.10	9.73	10.48	11.35	12.35	13.42
14.56							
10.98 CFS	15.76	17.04	18.60	20.41	22.45	24.69	27.11
29.76							
11.46 CFS	32.49	35.42	40.76	48.82	56.89	66.17	79.17
96.80							
11.94 CFS	123	166	233	322	369	348	307
261							
12.42 CFS	217	183	159	137	118	103	92
83							
12.90 CFS	76.28	70.73	65.78	61.18	57.05	53.51	50.52
47.87							
13.38 CFS	45.42	43.10	40.82	38.65	36.60	34.80	33.35

32.12

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13.86	CFS	31.14	30.37	29.74	29.20	28.64	28.04	27.41
26.81								
14.34	CFS	26.27	25.79	25.32	24.78	24.19	23.56	22.98
22.46								
14.82	CFS	21.99	21.49	20.94	20.42	19.90	19.32	18.76
18.27								
15.30	CFS	17.90	17.65	17.50	17.40	17.33	17.19	16.99
16.75								
15.78	CFS	16.59	16.54	16.45	16.29	16.08	15.87	15.72
15.61								
16.26	CFS	15.50	15.34	15.18	15.03	14.84	14.65	14.50
14.39								
16.74	CFS	14.30	14.15	13.99	13.85	13.75	13.67	13.53
13.32								
17.22	CFS	13.07	12.90	12.84	12.75	12.59	12.37	12.16
11.99								
17.70	CFS	11.88	11.77	11.60	11.43	11.30	11.21	11.11
10.95								
18.18	CFS	10.79	10.67	10.57	10.48	10.32	10.24	10.25
10.29								
18.66	CFS	10.30	10.22	10.18	10.20	10.16	10.07	9.99
9.93								
19.14	CFS	9.88	9.86	9.85	9.84	9.83	9.83	9.83
9.79								
19.62	CFS	9.67	9.60	9.61	9.56	9.46	9.39	9.40
9.47								
20.10	CFS	9.48	9.42	9.36	9.31	9.25	9.12	9.00
9.00								
20.58	CFS	9.05	9.08	9.02	8.95	8.96	8.95	8.87
8.79								
21.06	CFS	8.71	8.66	8.63	8.61	8.60	8.59	8.59
8.59								
21.54	CFS	8.57	8.47	8.36	8.36	8.33	8.27	8.28
8.31								
22.02	CFS	8.25	8.17	8.10	8.04	8.01	7.98	7.97
7.96								
22.50	CFS	7.96	7.91	7.79	7.72	7.73	7.67	7.58
7.50								
22.98	CFS	7.51	7.58	7.59	7.53	7.47	7.41	7.37
7.35								
23.46	CFS	7.29	7.16	7.09	7.11	7.16	7.16	7.08
6.96								
23.94	CFS	6.92	7.14	6.95	5.64	4.00	2.68	1.66
1.03								
24.42	CFS	.64	.40					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.84 WATERSHED INCHES; 421 CFS-HRS; 34.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.62	2302.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.59 WATERSHED INCHES; 4538 CFS-HRS; 375.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	64.3	(RUNOFF)
20.04	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.67 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 88

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.62	2313.4	(NULL)
23.97	74.4	(NULL)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50							
	MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55							
HRS								
SQ.MI.								
3.84 CFS	.47	.51	.56	.61	.67	.73	.79	
.87								
4.32 CFS	.95	1.04	1.13	1.23	1.33	1.42	1.53	
1.63								
4.80 CFS	1.74	1.86	1.97	2.08	2.20	2.31	2.43	
2.56								
5.28 CFS	2.68	2.80	2.93	3.07	3.22	3.38	3.55	
3.72								
5.76 CFS	3.89	4.08	4.30	4.54	4.79	5.04	5.28	
5.53								
6.24 CFS	5.78	6.05	6.34	6.66	6.99	7.32	7.68	
8.04								
6.72 CFS	8.42	8.84	9.29	9.75	10.23	10.73	11.25	
11.79								
7.20 CFS	12.34	12.91	13.50	14.11	14.76	15.42	16.09	
16.77								
7.68 CFS	17.47	18.18	18.89	19.61	20.36	21.11	21.88	
22.69								
8.16 CFS	23.51	24.35	25.25	26.19	27.13	28.09	29.09	
30.12								
8.64 CFS	31.17	32.23	33.30	34.39	35.50	36.65	37.87	
39.12								
9.12 CFS	40.34	41.60	42.92	44.33	45.84	47.47	49.25	

51.21								
9.60 CFS	53.39	55.78	58.37	61.10	63.93	66.88	69.95	
73.17								
10.08 CFS	77	80	84	87	91	95	98	
103								
10.56 CFS	107	112	117	123	130	137	144	
153								
11.04 CFS	162	173	184	198	212	228	245	
264								
11.52 CFS	285	311	344	381	423	475	543	
634								
12.00 CFS	768	963	1232	1477	1634	1744	1851	
1982								
12.48 CFS	2125	2246	2309	2298	2224	2104	1958	
1801								
12.96 CFS	1641	1486	1342	1211	1096	997	912	
840								
13.44 CFS	779	725	676	631	590	553	520	
490								
13.92 CFS	463	439	418	399	381	366	352	
340								
14.40 CFS	329	319	310	302	294	286	279	
272								
14.88 CFS	266	259	253	247	241	234	228	
223								
15.36 CFS	217	212	207	202	197	192	188	
185								
15.84 CFS	182	179	177	174	172	170	168	
166								
16.32 CFS	165	163	161	159	158	156	154	
153								
16.80 CFS	151	150	148	147	146	144	143	
141								
17.28 CFS	140	139	137	136	135	133	131	
130								
17.76 CFS	129	127	126	124	123	121	120	
119								
18.24 CFS	117	116	115	113	112	111	110	
110								
18.72 CFS	109	108	107	107	106	106	105	
105								
19.20 CFS	104	104	103	103	103	102	102	
102								
19.68 CFS	101	101	101	100	100	99	99	
99								
20.16 CFS	98.43	97.99	97.57	97.19	96.73	96.24	95.87	
95.61								
20.64 CFS	95.36	94.94	94.42	94.02	93.67	93.28	92.86	
92.43								
21.12 CFS	92.03	91.66	91.31	90.96	90.60	90.24	89.91	
89.58								
21.60 CFS	89.15	88.68	88.37	88.08	87.74	87.46	87.20	
86.84								
22.08 CFS	86.40	85.94	85.52	85.16	84.83	84.51	84.19	
83.86								
22.56 CFS	83.47	82.95	82.48	82.15	81.79	81.34	80.85	
80.44								
23.04 CFS	80.20	79.91	79.51	79.05	78.62	78.25	77.96	
77.64								
23.52 CFS	77.16	76.69	76.35	76.10	75.83	75.38	74.79	
74.30								
24.00 CFS	74.31	73.91	71.52	67.64	63.42	59.42	55.69	
51.80								
24.48 CFS	47.44	42.56	37.44	32.45	27.89	23.94	20.66	

18.05

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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24.96 CFS 16.04 14.53 13.42 12.61 12.00

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.60 WATERSHED INCHES; 4597 CFS-HRS; 379.9 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	99.6	(RUNOFF)
20.13	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.18 WATERSHED INCHES; 134 CFS-HRS; 11.1 ACRE-  
FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	99.4	390.78
20.19	2.5	389.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.18 WATERSHED INCHES; 134 CFS-HRS; 11.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	175.5	(RUNOFF)
20.68	4.1	(RUNOFF)
23.97	3.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.00 WATERSHED INCHES; 225 CFS-HRS; 18.6 ACRE-  
FEET.



OPERATION ADDHYD XSECTION 4

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.30	270.3	(NULL)
20.14	6.8	(NULL)
23.12	5.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.07 WATERSHED INCHES; 359 CFS-HRS; 29.6 ACRE-FEET.

\*\*\* WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 11,  
VALUE EXTRAPOLATED.  
\*\*\*

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.32	268.8	384.78

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.04 WATERSHED INCHES; 357 CFS-HRS; 29.5 ACRE-FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.38	268.4	369.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.05 WATERSHED INCHES; 357 CFS-HRS; 29.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.28	226.3	(RUNOFF)
20.13	5.8	(RUNOFF)
23.74	4.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.74 WATERSHED INCHES; 295 CFS-HRS; 24.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	479.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.90 WATERSHED INCHES; 653 CFS-HRS; 54.0 ACRE-  
 FEET.

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OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	479.0	358.76

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.90 WATERSHED INCHES; 653 CFS-HRS; 53.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	242.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.38 WATERSHED INCHES; 350 CFS-HRS; 28.9 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 21, TRUNCATED AT 400 POINTS  
 WITH 2.68 AC-FT ( .06 WATERSHED INCHES) FLOOD STORAGE  
 REMAINING IN RESERVOIR AT ELEV. 370.65.  
 \*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	153.9	378.71

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.69 WATERSHED INCHES; 317 CFS-HRS; 26.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.13	38.4	(RUNOFF)
15.83	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.11 WATERSHED INCHES; 32 CFS-HRS; 2.6 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 22  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.91	127.4	360.78

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.68 WATERSHED INCHES; 317 CFS-HRS; 26.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	184.3	(RUNOFF)
18.87	4.1	(RUNOFF)
22.76	3.1	(RUNOFF)
23.09	3.1	(RUNOFF)
24.03	2.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.26 WATERSHED INCHES; 185 CFS-HRS; 15.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.37	571.3	(NULL)
24.01	12.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.75 WATERSHED INCHES; 837 CFS-HRS; 69.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	69.3	(RUNOFF)

24.02 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.95 WATERSHED INCHES; 74 CFS-HRS; 6.1 ACRE-
FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.37 675.4 (NULL)
24.00 20.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.96 WATERSHED INCHES; 1151 CFS-HRS; 95.1 ACRE-
FEET.

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OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.36 717.1 (NULL)
24.00 21.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.96 WATERSHED INCHES; 1225 CFS-HRS; 101.3 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.36 717.1 (NULL)
24.00 21.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.96 WATERSHED INCHES; 1225 CFS-HRS; 101.3 ACRE-
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.
\*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.36 717.1 335.71
24.00 21.4 331.35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.96 WATERSHED INCHES; 1225 CFS-HRS; 101.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	98.2	(RUNOFF)
17.34	2.2	(RUNOFF)
24.00	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.01 WATERSHED INCHES; 95 CFS-HRS; 7.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 18

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	130.6	(RUNOFF)
21.97	2.1	(RUNOFF)
24.03	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.49 WATERSHED INCHES; 151 CFS-HRS; 12.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	179.0	(RUNOFF)
15.84	5.4	(RUNOFF)
17.34	4.2	(RUNOFF)
19.75	3.1	(RUNOFF)
20.05	3.1	(RUNOFF)
24.00	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.60 WATERSHED INCHES; 172 CFS-HRS; 14.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	224.0	(NULL)
15.81	7.2	(NULL)
17.31	5.5	(NULL)

20.07	4.1	(NULL)
23.07	3.2	(NULL)
23.73	3.1	(NULL)
24.01	3.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.29 WATERSHED INCHES; 247 CFS-HRS; 20.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	401.6	(NULL)
15.83	12.6	(NULL)
17.33	9.7	(NULL)
20.06	7.2	(NULL)
21.95	6.2	(NULL)
24.01	5.4	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.99 WATERSHED INCHES; 419 CFS-HRS; 34.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	978.4	(NULL)
18.81	37.0	(NULL)
19.71	35.2	(NULL)
20.05	34.7	(NULL)
20.58	33.4	(NULL)
21.93	30.8	(NULL)
23.04	28.4	(NULL)
23.69	27.1	(NULL)
24.00	26.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.19 WATERSHED INCHES; 1643 CFS-HRS; 135.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	922.4	317.25
24.06	26.7	314.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.19 WATERSHED INCHES; 1642 CFS-HRS; 135.7 ACRE-

FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	165.8	(RUNOFF)
18.66	4.1	(RUNOFF)
20.68	3.6	(RUNOFF)
23.12	3.0	(RUNOFF)
24.00	2.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.34 WATERSHED INCHES; 207 CFS-HRS; 17.1 ACRE-  
FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
TIME INCREMENT OF .043 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

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OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	160.7	365.43
18.69	4.1	356.71
20.69	3.6	356.67
23.15	3.0	356.62
24.03	2.8	356.61

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.35 WATERSHED INCHES; 207 CFS-HRS; 17.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	237.1	(RUNOFF)
18.65	6.1	(RUNOFF)
20.67	5.3	(RUNOFF)
23.98	4.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.26 WATERSHED INCHES; 302 CFS-HRS; 25.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	395.1	(NULL)
18.66	10.2	(NULL)
20.14	9.4	(NULL)
20.68	8.9	(NULL)
23.14	7.4	(NULL)
23.78	7.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.30 WATERSHED INCHES; 509 CFS-HRS; 42.1 ACRE-  
FEET.

OPERATION REACH XSECTION 27

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	384.2	319.84
20.20	9.4	316.93
20.74	8.9	316.91
23.20	7.4	316.81
23.83	7.0	316.78

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.29 WATERSHED INCHES; 509 CFS-HRS; 42.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	190.4	(RUNOFF)
20.67	4.2	(RUNOFF)
24.01	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.89 WATERSHED INCHES; 228 CFS-HRS; 18.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	1077.4	(NULL)
20.08	39.1	(NULL)
23.07	31.9	(NULL)
24.04	29.9	(NULL)



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.15 WATERSHED INCHES; 1869 CFS-HRS; 154.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.35	1459.8	(NULL)
24.04	36.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.18 WATERSHED INCHES; 2378 CFS-HRS; 196.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.21	264.7	(RUNOFF)
20.66	5.1	(RUNOFF)
23.11	4.2	(RUNOFF)
24.02	3.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.90 WATERSHED INCHES; 308 CFS-HRS; 25.5 ACRE-  
 FEET.

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OPERATION REACH XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.31	244.6	314.09
20.73	5.1	310.41
23.19	4.2	310.34
24.09	3.9	310.32

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.90 WATERSHED INCHES; 308 CFS-HRS; 25.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	39.4	(RUNOFF)
15.84	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.86 WATERSHED INCHES; 43 CFS-HRS; 3.5 ACRE-

FEET.

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 32, TRUNCATED AT 400 POINTS WITH .53 AC-FT ( .10 WATERSHED INCHES) FLOOD STORAGE REMAINING IN RESERVOIR AT ELEV. 378.24. \*\*\*

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET) 12.23 32.9 380.81 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 6.68 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0, CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 34. \*\*\*

OPERATION REACH XSECTION 34

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET) 12.23 32.9 338.30 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 6.68 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-FEET.

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OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET) 12.19 118.2 (RUNOFF) 20.86 2.0 (RUNOFF) 24.02 1.6 (RUNOFF) RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 7.86 WATERSHED INCHES; 139 CFS-HRS; 11.5 ACRE-FEET.

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 33, TRUNCATED AT 400 POINTS WITH 1.05 AC-FT ( .06 WATERSHED INCHES) FLOOD STORAGE REMAINING IN RESERVOIR AT ELEV. 354.18. \*\*\*

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	96.1	357.96

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.15 WATERSHED INCHES; 127 CFS-HRS; 10.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	128.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.04 WATERSHED INCHES; 163 CFS-HRS; 13.5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	128.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.04 WATERSHED INCHES; 163 CFS-HRS; 13.5 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
 \*\*\*

OPERATION REACH XSECTION 37

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	128.6	330.88

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 7.04 WATERSHED INCHES; 163 CFS-HRS; 13.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	142.5	(RUNOFF)
15.84	4.4	(RUNOFF)
17.34	3.4	(RUNOFF)
21.96	2.2	(RUNOFF)

22.75	2.0	(RUNOFF)
23.07	2.0	(RUNOFF)
24.01	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.77 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	260.3	(NULL)
18.82	6.2	(NULL)
21.95	5.0	(NULL)
24.01	4.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.91 WATERSHED INCHES; 306 CFS-HRS; 25.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	121.2	(RUNOFF)
18.64	3.2	(RUNOFF)
23.76	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.10 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 41

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	1571.2	(NULL)
24.04	38.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.17 WATERSHED INCHES; 2533 CFS-HRS; 209.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	1817.2	(NULL)
24.04	42.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.24 WATERSHED INCHES; 2841 CFS-HRS; 234.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	2017.4	(NULL)
24.03	47.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.29 WATERSHED INCHES; 3141 CFS-HRS; 259.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	1960.9	292.39

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.29 WATERSHED INCHES; 3140 CFS-HRS; 259.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	140.0	(RUNOFF)
20.10	3.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.16 WATERSHED INCHES; 190 CFS-HRS; 15.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 46

1 TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	175.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.06 WATERSHED INCHES; 245 CFS-HRS; 20.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.30 315.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.10 WATERSHED INCHES; 435 CFS-HRS; 36.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.20 171.6 (RUNOFF)  
 21.97 3.0 (RUNOFF)  
 24.03 2.6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.09 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.40 2049.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.28 WATERSHED INCHES; 3324 CFS-HRS; 274.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.39 2343.9 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .93  
 SQ.MI.

HRS	3.12	3.60	4.08	4.56	5.04	5.52	6.00	6.48	6.96
CFS	.92	1.81	2.71	3.60	4.50	5.40	6.30	7.20	8.10
	.48	1.02	1.56	2.10	2.64	3.18	3.72	4.26	4.80
	.52	1.12	1.64	2.16	2.70	3.24	3.78	4.32	4.86
	.56	1.24	1.76	2.28	2.82	3.36	3.90	4.44	4.98
	.61	1.35	1.86	2.37	2.94	3.48	4.02	4.56	5.10
	.67	1.46	1.96	2.46	3.06	3.60	4.14	4.68	5.22
	.74	1.57	2.08	2.52	3.12	3.66	4.20	4.74	5.28
	.82	1.68	2.16	2.64	3.18	3.72	4.26	4.80	5.34
	1.81	3.60	4.08	4.56	5.04	5.52	6.00	6.48	6.96
	2.91	5.40	5.76	6.12	6.48	6.84	7.20	7.56	7.92
	4.51	7.20	7.56	7.92	8.28	8.64	9.00	9.36	9.72
	5.04	7.20	7.56	7.92	8.28	8.64	9.00	9.36	9.72
	6.91	10.03	10.40	10.82	11.27	11.72	12.16	12.62	13.11

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TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
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6.48 CFS	13.62	14.17	14.75	15.35	15.96	16.57	17.18
17.80							
6.96 CFS	18.45	19.10	19.76	20.45	21.19	21.97	22.76
23.55							
7.44 CFS	24.31	25.08	25.87	26.66	27.43	28.20	28.99
29.81							
7.92 CFS	30.66	31.54	32.46	33.40	34.35	35.30	36.23
37.13							
8.40 CFS	38.04	38.98	39.94	40.94	42.00	43.14	44.34
45.56							
8.88 CFS	46.75	47.88	48.98	50.13	51.39	52.78	54.31
56.02							
9.36 CFS	57.94	60.07	62.35	64.72	67.14	69.94	73.03
76.34							
9.84 CFS	80	83	87	90	94	97	101
105							
10.32 CFS	109	112	116	120	123	127	132
138							
10.80 CFS	144	152	160	169	179	190	202
215							
11.28 CFS	229	245	263	283	303	326	355
391							
11.76 CFS	437	494	564	653	777	957	1225
1575							
12.24 CFS	1926	2199	2330	2322	2208	2034	1840
1647							
12.72 CFS	1464	1303	1153	1026	921	835	764
703							
13.20 CFS	652	608	571	538	509	483	458
429							
13.68 CFS	399	371	345	324	305	289	276
264							
14.16 CFS	255	246	238	231	224	218	213
208							
14.64 CFS	202	197	192	188	183	179	174
170							
15.12 CFS	166	161	157	153	149	146	143
140							
15.60 CFS	138	136	134	133	131	129	128
127							
16.08 CFS	125	124	123	121	120	119	118
117							
16.56 CFS	115	114	113	112	111	110	109
108							
17.04 CFS	107	106	105	104	103	102	101
100							
17.52 CFS	98.83	97.81	96.67	95.48	94.35	93.29	92.27
91.24							
18.00 CFS	90.23	89.26	88.35	87.44	86.51	85.57	84.66
83.79							
18.48 CFS	82.96	82.18	81.56	81.11	80.80	80.52	80.23
79.94							
18.96 CFS	79.66	79.34	78.97	78.55	78.15	77.79	77.49
77.25							
19.44 CFS	77.06	76.91	76.76	76.57	76.29	75.95	75.60
75.27							
19.92 CFS	74.91	74.55	74.24	74.03	73.92	73.80	73.60
73.32							
20.40 CFS	72.96	72.52	72.04	71.60	71.29	71.09	70.92
70.72							
20.88 CFS	70.49	70.26	69.99	69.66	69.28	68.88	68.51
68.19							

21.36	CFS	67.94	67.73	67.57	67.43	67.25	66.99	66.67
66.31								
21.84	CFS	65.99	65.70	65.47	65.28	65.09	64.83	64.51
64.14								
22.32	CFS	63.78	63.47	63.21	63.00	62.81	62.58	62.27
61.91								
22.80	CFS	61.54	61.18	60.81	60.43	60.11	59.89	59.77
59.64								
23.28	CFS	59.43	59.16	58.86	58.56	58.23	57.85	57.43
57.07								
23.76	CFS	56.84	56.68	56.49	56.21	55.95	55.70	54.99
52.96								
24.24	CFS	49.00	43.55	37.48	31.74	26.86	22.93	19.81
17.36								
24.72	CFS	15.56	14.32	13.47	12.86	12.42	12.08	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.26 WATERSHED INCHES; 3759 CFS-HRS; 310.7 ACRE-FEET.

OPERATION REACH XSECTION 51

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.48	2299.2	287.98

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA 2.04TEST  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.25 WATERSHED INCHES; 3758 CFS-HRS; 310.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 52

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.17	8.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.63 WATERSHED INCHES; 9 CFS-HRS; .8 ACRE-FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT, UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.24	8.0	288.45



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.63 WATERSHED INCHES; 9 CFS-HRS; .8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .85 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	112.9	(RUNOFF)
21.97	2.0	(RUNOFF)
24.03	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.79 WATERSHED INCHES; 120 CFS-HRS; 9.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 56

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TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	2346.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.24 WATERSHED INCHES; 3878 CFS-HRS; 320.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	9.7	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02  
 SQ.MI.  
 11.94 CFS .44 .95 2.13 4.50 8.11 9.66 8.70  
 7.39  
 12.42 CFS 6.35 5.52 4.98 4.60 4.09 3.57 3.24  
 3.03  
 12.90 CFS 2.87 2.74 2.61 2.47 2.33 2.20 2.10

2.01								
13.38	CFS	1.93	1.84	1.76	1.67	1.59	1.52	1.46
1.41								
13.86	CFS	1.38	1.35	1.33	1.32	1.30	1.28	1.26
1.23								
14.34	CFS	1.21	1.19	1.17	1.16	1.13	1.10	1.08
1.05								
14.82	CFS	1.03	1.01	.99	.97	.94	.92	.89
.87								
15.30	CFS	.85	.84	.84	.84	.84	.84	.83
.82								
15.78	CFS	.81	.80	.81	.80	.79	.78	.77
.77								
16.26	CFS	.77	.76	.75	.75	.74	.73	.72
.72								
16.74	CFS	.71	.71	.70	.69	.69	.69	.68
.68								
17.22	CFS	.66	.65	.64	.65	.64	.63	.62
.61								
17.70	CFS	.60	.60	.59	.58	.58	.57	.57
.56								
18.18	CFS	.55	.55	.54	.54	.54	.53	.52
.53								
18.66	CFS	.54	.53	.53	.53	.53	.53	.52
.52								
19.14	CFS	.51	.51	.51	.51	.51	.51	.52
.52								
19.62	CFS	.51	.50	.50	.50	.50	.49	.49
.50								
20.10	CFS	.50	.50	.50				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.28 WATERSHED INCHES; 13 CFS-HRS; 1.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	2352.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.16 WATERSHED INCHES; 3891 CFS-HRS; 321.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 59

1 TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	78.5	(RUNOFF)
24.02	1.3	(RUNOFF)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99						
		MAIN TIME INCREMENT = .060 hr,					DRAINAGE AREA = .03	
HRS	SQ.MI.							
8.76	CFS	.49	.52	.54	.56	.59	.62	.65
.69								
9.24	CFS	.73	.77	.82	.87	.92	.97	1.02
1.08								
9.72	CFS	1.15	1.21	1.28	1.34	1.40	1.47	1.54
1.62								
10.20	CFS	1.70	1.78	1.85	1.93	2.02	2.11	2.21
2.34								
10.68	CFS	2.50	2.69	2.91	3.14	3.39	3.65	3.93
4.24								
11.16	CFS	4.63	5.07	5.55	6.07	6.62	7.19	7.81
8.79								
11.64	CFS	10.36	12.19	14.15	16.65	20.13	25.27	33.50
46.51								
12.12	CFS	64.00	77.27	76.01	65.16	52.39	42.68	35.46
30.29								
12.60	CFS	26.22	22.48	19.36	17.08	15.51	14.30	13.32
12.47								
13.08	CFS	11.67	10.91	10.23	9.66	9.16	8.71	8.27
7.84								
13.56	CFS	7.42	7.02	6.66	6.37	6.15	5.96	5.82
5.71								
14.04	CFS	5.61	5.51	5.40	5.28	5.16	5.05	4.96
4.87								
14.52	CFS	4.77	4.66	4.53	4.41	4.31	4.22	4.13
4.02								
15.00	CFS	3.92	3.82	3.71	3.60	3.50	3.42	3.38
3.35								
15.48	CFS	3.34	3.32	3.31	3.27	3.22	3.18	3.17
3.16								
15.96	CFS	3.14	3.09	3.05	3.01	2.99	2.97	2.95
2.91								
16.44	CFS	2.88	2.85	2.81	2.78	2.75	2.74	2.72
2.68								
16.92	CFS	2.65	2.63	2.62	2.60	2.56	2.51	2.47
2.45								
17.40	CFS	2.44	2.42	2.37	2.33	2.29	2.27	2.25
2.22								
17.88	CFS	2.19	2.16	2.14	2.13	2.10	2.07	2.04
2.02								
18.36	CFS	2.00	1.98	1.96	1.95	1.97	1.97	1.96
1.95								
18.84	CFS	1.95	1.95	1.93	1.91	1.90	1.89	1.89
1.88								
19.32	CFS	1.88	1.88	1.88	1.88	1.88	1.85	1.83
1.83								
19.80	CFS	1.83	1.81	1.80	1.79	1.80	1.82	1.81
1.79								
20.28	CFS	1.78	1.77	1.75	1.72	1.71	1.72	1.74
1.73								
20.76	CFS	1.71	1.71	1.71	1.70	1.68	1.66	1.65
1.65								
21.24	CFS	1.64	1.64	1.64	1.64	1.64	1.64	1.62
1.60								
21.72	CFS	1.59	1.59	1.58	1.58	1.58	1.58	1.56
1.55								
22.20	CFS	1.53	1.53	1.52	1.52	1.52	1.52	1.51
1.49								
22.68	CFS	1.47	1.47	1.47	1.45	1.43	1.43	1.44
1.45								
23.16	CFS	1.44	1.43	1.41	1.40	1.40	1.39	1.37

1.35							
23.64 CFS	1.35	1.36	1.37	1.36	1.33	1.32	1.34
1.34							
24.12 CFS	1.15	.80	.47				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.92 WATERSHED INCHES; 85 CFS-HRS; 7.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	2388.6	(NULL)

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 TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.13 WATERSHED INCHES; 3976 CFS-HRS; 328.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	47.3	(RUNOFF)
21.96	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.83 WATERSHED INCHES; 54 CFS-HRS; 4.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	2414.5	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.02  
 SQ.MI.

HRS							
3.18 CFS	.46	.50	.54	.59	.64	.71	.79
.88							
3.66 CFS	.97	1.08	1.19	1.30	1.41	1.52	1.63
1.75							
4.14 CFS	1.88	2.02	2.16	2.31	2.45	2.59	2.72
2.85							
4.62 CFS	3.00	3.17	3.35	3.52	3.71	3.91	4.14
4.40							
5.10 CFS	4.66	4.93	5.21	5.50	5.80	6.12	6.45
6.78							
5.58 CFS	7.11	7.44	7.79	8.17	8.56	8.95	9.32
9.68							

6.06 CFS	10.03	10.41	10.82	11.27	11.73	12.20	12.68
13.17							
6.54 CFS	13.69	14.25	14.84	15.45	16.07	16.71	17.34
17.98							
7.02 CFS	18.64	19.31	20.00	20.71	21.46	22.26	23.08
23.91							
7.50 CFS	24.74	25.56	26.39	27.23	28.07	28.90	29.75
30.62							
7.98 CFS	31.52	32.46	33.43	34.43	35.44	36.45	37.45
38.44							
8.46 CFS	39.41	40.41	41.44	42.51	43.64	44.82	46.07
47.34							
8.94 CFS	48.60	49.84	51.06	52.31	53.64	55.11	56.74
58.55							
9.42 CFS	60.55	62.75	65.12	67.62	70.20	73.08	76.26
79.67							
9.90 CFS	83	87	91	95	98	102	106
110							
10.38 CFS	114	118	122	126	130	134	139
145							
10.86 CFS	152	160	169	179	189	201	214
227							
11.34 CFS	243	260	279	300	323	350	382
421							
11.82 CFS	471	534	614	721	872	1085	1362
1673							
12.30 CFS	1978	2233	2383	2411	2333	2180	1991
1793							
12.78 CFS	1602	1428	1269	1130	1013	915	834
766							
13.26 CFS	708	659	617	580	548	519	492
463							
13.74 CFS	433	403	376	353	332	315	300
287							
14.22 CFS	276	267	258	250	243	236	230
225							
14.70 CFS	219	213	208	203	198	193	188
184							
15.18 CFS	179	175	170	166	162	158	155
152							
15.66 CFS	150	147	146	144	142	140	139
137							
16.14 CFS	136	134	133	131	130	129	127
126							
16.62 CFS	125	124	122	121	120	119	118
117							

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION

05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA

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17.10 CFS	116	115	114	113	111	110	109
108							
17.58 CFS	107	106	104	103	102	101	100
99							
18.06 CFS	97.51	96.45	95.40	94.39	93.41	92.42	91.43
90.47							
18.54 CFS	89.61	88.86	88.20	87.65	87.22	86.91	86.62
86.28							

19.02	CFS	85.93	85.57	85.19	84.79	84.38	84.00	83.68
83.42								
19.50	CFS	83.20	83.01	82.79	82.54	82.29	81.97	81.59
81.19								
19.98	CFS	80.82	80.51	80.22	79.95	79.74	79.57	79.36
79.05								
20.46	CFS	78.64	78.21	77.79	77.38	77.02	76.71	76.50
76.31								
20.94	CFS	76.06	75.76	75.45	75.11	74.74	74.34	73.96
73.62								
21.42	CFS	73.34	73.11	72.92	72.72	72.47	72.21	71.92
71.56								
21.90	CFS	71.21	70.93	70.67	70.41	70.15	69.87	69.55
69.20								
22.38	CFS	68.84	68.51	68.23	67.97	67.70	67.41	67.12
66.78								
22.86	CFS	66.37	65.95	65.56	65.24	64.93	64.65	64.43
64.25								
23.34	CFS	64.04	63.78	63.47	63.11	62.72	62.35	61.99
61.65								
23.82	CFS	61.34	61.05	60.81	60.64	60.40	59.53	57.83
55.20								
24.30	CFS	51.31	46.19	40.31	34.47	29.27	24.93	21.42
18.62								
24.78	CFS	16.51	15.00	13.94	13.20	12.66		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.10 WATERSHED INCHES; 4030 CFS-HRS; 333.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.57	2354.7	251.75

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.10 WATERSHED INCHES; 4029 CFS-HRS; 332.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	30.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.61 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	24.7	335.67

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.61 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
 FEET.

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OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.63	24.4	301.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.61 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	139.6	(RUNOFF)
20.10	3.1	(RUNOFF)
24.02	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.89 WATERSHED INCHES; 145 CFS-HRS; 11.9 ACRE-FEET.

\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE TIME INCREMENT OF .043 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	70.1	297.03
20.12	3.1	287.70
24.04	2.3	287.60

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.89 WATERSHED INCHES; 145 CFS-HRS; 11.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.51	90.2	(NULL)
18.87	4.3	(NULL)
23.11	3.2	(NULL)
24.04	3.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.22 WATERSHED INCHES; 191 CFS-HRS; 15.8 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	273.8	(RUNOFF)
18.64	6.1	(RUNOFF)
18.87	6.0	(RUNOFF)
20.87	5.3	(RUNOFF)
24.02	4.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.60 WATERSHED INCHES; 281 CFS-HRS; 23.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	323.9	(NULL)
18.87	10.3	(NULL)
20.64	9.2	(NULL)
20.86	9.0	(NULL)
21.97	8.3	(NULL)
23.75	7.2	(NULL)
24.03	7.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.44 WATERSHED INCHES; 473 CFS-HRS; 39.1 ACRE-  
FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	243.9	249.18
20.14	9.6	247.80
24.09	7.1	247.76

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.44 WATERSHED INCHES; 473 CFS-HRS; 39.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
-----------------------------------	---------------------	------



12.12 54.7 (RUNOFF)  
 17.33 1.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.05 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-  
 FEET.

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OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.19 44.5 267.78

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.07 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 72

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.27 40.6 248.21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.05 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.18 312.6 (RUNOFF)  
 15.84 12.1 (RUNOFF)  
 17.34 9.4 (RUNOFF)  
 19.75 7.1 (RUNOFF)  
 20.08 7.0 (RUNOFF)  
 21.96 6.2 (RUNOFF)  
 24.01 5.3 (RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11  
 SQ.MI.

8.82 CFS	.43	.51	.59	.68	.78	.88	.98
1.10							
9.30 CFS	1.24	1.38	1.53	1.67	1.82	1.98	2.17
2.36							
9.78 CFS	2.56	2.76	2.95	3.16	3.39	3.63	3.89
4.15							
10.26 CFS	4.40	4.65	4.91	5.20	5.52	5.89	6.35
6.91							
10.74 CFS	7.57	8.30	9.08	9.92	10.78	11.71	12.86

14.23								
11.22	CFS	15.80	17.48	19.28	21.25	23.29	25.46	29.59
36.52								
11.70	CFS	43	50	61	75	98	135	195
276								
12.18	CFS	313	268	207	164	133	112	98
86								
12.66	CFS	72.72	63.35	57.67	53.61	50.33	47.44	44.61
41.80								
13.14	CFS	39.05	36.77	34.96	33.30	31.70	30.10	28.51
26.97								
13.62	CFS	25.51	24.32	23.42	22.72	22.16	21.73	21.39
21.08								
14.10	CFS	20.70	20.26	19.77	19.33	18.96	18.65	18.33
17.93								
14.58	CFS	17.45	16.96	16.53	16.19	15.87	15.52	15.09
14.69								
15.06	CFS	14.32	13.89	13.46	13.12	12.90	12.80	12.75
12.73								
15.54	CFS	12.71	12.61	12.43	12.21	12.09	12.11	12.09
11.95								
16.02	CFS	11.74	11.57	11.47	11.42	11.37	11.23	11.09
10.99								
16.50	CFS	10.85	10.69	10.58	10.53	10.49	10.38	10.22
10.12								
16.98	CFS	10.07	10.03	9.92	9.73	9.50	9.38	9.40
9.37								

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17.46	CFS	9.23	9.01	8.83	8.73	8.68	8.62	8.48
8.33								
17.94	CFS	8.25	8.21	8.15	8.01	7.87	7.78	7.74
7.68								
18.42	CFS	7.55	7.48	7.54	7.62	7.63	7.53	7.47
7.52								
18.90	CFS	7.51	7.41	7.33	7.29	7.27	7.26	7.26
7.26								
19.38	CFS	7.26	7.26	7.26	7.23	7.10	7.03	7.08
7.06								
19.86	CFS	6.96	6.88	6.91	7.03	7.04	6.95	6.88
6.84								
20.34	CFS	6.81	6.70	6.58	6.60	6.70	6.74	6.67
6.57								
20.82	CFS	6.60	6.62	6.54	6.44	6.39	6.37	6.36
6.35								
21.30	CFS	6.35	6.35	6.35	6.35	6.34	6.23	6.12
6.14								
21.78	CFS	6.16	6.10	6.10	6.16	6.11	6.01	5.94
5.91								
22.26	CFS	5.90	5.89	5.89	5.89	5.89	5.84	5.72
5.65								
22.74	CFS	5.69	5.68	5.57	5.49	5.52	5.63	5.65
5.56								
23.22	CFS	5.48	5.45	5.43	5.42	5.37	5.24	5.17
5.24								
23.70	CFS	5.32	5.33	5.22	5.09	5.06	5.32	5.21

3.80  
24.18 CFS            2.04            .99            .48

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.26 WATERSHED INCHES;            302 CFS-HRS;            25.0 ACRE-FEET.

OPERATION ADDHYD    XSECTION    74

PEAK TIME(HRS)                            PEAK DISCHARGE(CFS)                    PEAK  
ELEVATION(FEET)  
12.56    2448.2    (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.92 WATERSHED INCHES;            4331 CFS-HRS;            357.9 ACRE-FEET.

OPERATION ADDHYD    XSECTION    75

PEAK TIME(HRS)                            PEAK DISCHARGE(CFS)                    PEAK  
ELEVATION(FEET)  
12.35    274.2    (NULL)  
20.14    10.4    (NULL)  
23.14    8.3    (NULL)  
24.09    7.8    (NULL)

HYDROGRAPH POINTS FOR    ALTERNATE = 1,    STORM =99  
MAIN TIME INCREMENT = .060 hr,            DRAINAGE AREA = .15

HRS	SQ.MI.	.48	.53	.58	.63	.68	.74	.80
6.30 CFS	.86							
6.78 CFS	1.40							
7.26 CFS	2.14							
7.74 CFS	3.12							
8.22 CFS	4.23							
8.70 CFS	5.49							
9.18 CFS	7.55							
9.66 CFS	10.62							
10.14 CFS	14.27							
10.62 CFS	21.27							
11.10 CFS	36.47							
11.58 CFS	85.84							

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12.06 CFS	107	139	186	243	271	274	267
254							
12.54 CFS	240	227	215	201	187	173	160
147							
13.02 CFS	135	124	115	108	100	92	85
78							
13.50 CFS	72.43	67.81	63.82	60.31	57.32	54.81	52.72
50.99							
13.98 CFS	49.54	48.32	47.28	46.36	45.52	44.72	43.97
43.26							
14.46 CFS	42.60	41.97	41.35	40.72	40.08	39.44	38.81
38.18							
14.94 CFS	37.50	36.79	36.06	35.28	34.46	33.60	32.73
31.88							
15.42 CFS	31.08	30.35	29.54	28.70	27.84	26.92	25.86
24.81							
15.90 CFS	23.86	23.05	22.33	21.70	21.15	20.62	20.19
19.83							
16.38 CFS	19.51	19.22	18.95	18.66	18.34	18.04	17.76
17.51							
16.86 CFS	17.25	16.99	16.73	16.48	16.26	16.05	15.82
15.57							
17.34 CFS	15.31	15.11	14.95	14.78	14.59	14.37	14.16
13.97							
17.82 CFS	13.80	13.62	13.44	13.26	13.10	12.95	12.80
12.63							
18.30 CFS	12.42	12.22	12.04	11.87	11.71	11.60	11.53
11.50							
18.78 CFS	11.44	11.38	11.33	11.30	11.25	11.18	11.11
11.05							
19.26 CFS	11.00	10.95	10.92	10.90	10.88	10.86	10.84
10.79							
19.74 CFS	10.72	10.67	10.63	10.58	10.51	10.45	10.44
10.44							
20.22 CFS	10.43	10.39	10.34	10.29	10.22	10.13	10.05
10.02							
20.70 CFS	10.01	9.99	9.95	9.91	9.89	9.85	9.80
9.73							
21.18 CFS	9.66	9.61	9.57	9.53	9.51	9.49	9.47
9.45							
21.66 CFS	9.41	9.34	9.29	9.25	9.20	9.16	9.15
9.13							
22.14 CFS	9.09	9.02	8.96	8.91	8.87	8.83	8.80
8.78							
22.62 CFS	8.75	8.70	8.62	8.57	8.53	8.47	8.40
8.34							
23.10 CFS	8.33	8.33	8.32	8.27	8.22	8.18	8.14
8.10							
23.58 CFS	8.03	7.95	7.89	7.88	7.87	7.85	7.78
7.71							
24.06 CFS	7.72	7.72	7.37	6.54	5.47	4.44	3.53
2.78							
24.54 CFS	2.18	1.70	1.32	1.02	.79	.61	.47

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.49 WATERSHED INCHES; 519 CFS-HRS; 42.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)

12.55 2684.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.87 WATERSHED INCHES; 4850 CFS-HRS; 400.8 ACRE-
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 77.
\*\*\*

OPERATION REACH XSECTION 77

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.55 2684.8 232.07

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.87 WATERSHED INCHES; 4850 CFS-HRS; 400.8 ACRE-
FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.17 171.1 (RUNOFF)
15.84 6.1 (RUNOFF)
17.34 4.7 (RUNOFF)
21.96 3.1 (RUNOFF)
24.01 2.7 (RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05
SQ.MI.
7.98 CFS .47 .51 .55 .59 .62 .66 .71
.76
8.46 CFS .79 .84 .89 .94 1.00 1.04 1.08
1.12
8.94 CFS 1.17 1.23 1.30 1.36 1.43 1.52 1.62
1.72
9.42 CFS 1.82 1.91 2.01 2.12 2.24 2.38 2.51
2.63
9.90 CFS 2.75 2.87 3.01 3.17 3.33 3.49 3.63
3.77
10.38 CFS 3.92 4.10 4.29 4.51 4.80 5.17 5.59
6.05
10.86 CFS 6.54 7.05 7.58 8.12 8.82 9.66 10.62
11.62
11.34 CFS 12.66 13.80 14.95 16.16 18.71 22.84 26.72
30.55
11.82 CFS 37 45 57 78 111 154 171
141
12.30 CFS 107 84 67 57 50 43 37

32								
12.78	CFS	29.22	27.20	25.54	24.07	22.61	21.15	19.76
18.60								
13.26	CFS	17.69	16.83	16.01	15.20	14.38	13.60	12.86
12.26								
13.74	CFS	11.82	11.46	11.18	10.96	10.79	10.64	10.44
10.21								
14.22	CFS	9.96	9.73	9.55	9.39	9.23	9.02	8.77
8.52								
14.70	CFS	8.31	8.13	7.97	7.79	7.57	7.37	7.18
6.96								
15.18	CFS	6.75	6.58	6.47	6.42	6.40	6.39	6.38
6.33								
15.66	CFS	6.23	6.11	6.06	6.08	6.06	5.99	5.88
5.79								
16.14	CFS	5.74	5.72	5.69	5.62	5.55	5.50	5.43
5.34								
16.62	CFS	5.29	5.27	5.25	5.19	5.11	5.06	5.04
5.02								
17.10	CFS	4.95	4.85	4.74	4.68	4.70	4.68	4.60
4.49								
17.58	CFS	4.40	4.35	4.33	4.30	4.23	4.15	4.11
4.09								
18.06	CFS	4.06	3.99	3.92	3.88	3.86	3.83	3.76
3.72								
18.54	CFS	3.76	3.80	3.81	3.75	3.72	3.75	3.74
3.69								
19.02	CFS	3.65	3.63	3.62	3.62	3.62	3.62	3.62
3.62								
19.50	CFS	3.62	3.60	3.53	3.50	3.53	3.51	3.46
3.42								
19.98	CFS	3.44	3.50	3.50	3.46	3.42	3.40	3.38
3.33								
20.46	CFS	3.27	3.29	3.34	3.35	3.31	3.26	3.28
3.29								
20.94	CFS	3.25	3.20	3.17	3.16	3.16	3.16	3.16
3.16								
21.42	CFS	3.16	3.16	3.15	3.09	3.03	3.05	3.06
3.02								
21.90	CFS	3.03	3.06	3.03	2.98	2.95	2.93	2.93
2.92								
22.38	CFS	2.92	2.92	2.92	2.90	2.83	2.80	2.83
2.81								
22.86	CFS	2.76	2.72	2.74	2.80	2.80	2.75	2.72
2.70								
23.34	CFS	2.69	2.69	2.66	2.59	2.56	2.60	2.64
2.64								
23.82	CFS	2.58	2.51	2.51	2.66	2.60	1.82	.92
.43								

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.96 WATERSHED INCHES; 163 CFS-HRS; 13.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	2733.9	(NULL)
23.98	76.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.84 WATERSHED INCHES; 5013 CFS-HRS; 414.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.63	2706.7	219.52

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.84 WATERSHED INCHES; 5012 CFS-HRS; 414.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	97.7	(RUNOFF)
15.84	3.6	(RUNOFF)
20.07	2.1	(RUNOFF)
24.01	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.57 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.63	2729.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.81 WATERSHED INCHES; 5105 CFS-HRS; 421.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 83

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	194.0	(RUNOFF)

15.84	6.3	(RUNOFF)
17.34	4.9	(RUNOFF)
22.42	3.0	(RUNOFF)
24.00	2.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.34 WATERSHED INCHES; 177 CFS-HRS; 14.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.24	307.5	(RUNOFF)
18.67	8.6	(RUNOFF)
20.68	7.6	(RUNOFF)
23.12	6.3	(RUNOFF)
24.01	5.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.71 WATERSHED INCHES; 361 CFS-HRS; 29.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.19	470.2	(NULL)
18.83	12.4	(NULL)
20.07	11.6	(NULL)
20.63	11.1	(NULL)
21.95	10.1	(NULL)
23.07	9.2	(NULL)
24.00	8.7	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 SQ.MI.

7.32 CFS	.49	.53	.57	.61	.64	.69	.76
.84							
7.80 CFS	.93	1.03	1.15	1.27	1.39	1.53	1.66
1.77							
8.28 CFS	1.90	2.06	2.19	2.31	2.46	2.62	2.79
2.95							
8.76 CFS	3.10	3.24	3.38	3.52	3.71	3.92	4.11
4.34							
9.24 CFS	4.59	4.89	5.20	5.51	5.81	6.12	6.47
6.84							
9.72 CFS	7.25	7.65	8.05	8.43	8.84	9.28	9.76
10.25							
10.20 CFS	10.74	11.22	11.69	12.19	12.72	13.31	13.98
14.84							
10.68 CFS	15.88	17.07	18.44	19.91	21.49	23.12	24.83
26.93							
11.16 CFS	29.37	32.14	35.15	38.31	41.83	45.42	49.34
56.43							
11.64 CFS	67	77	90	106	129	162	218
302							
12.12 CFS	414	469	445	390	330	273	231
200							
12.60 CFS	172	147	129	114	103	95	88
81							



13.08	CFS	75.70	70.51	66.14	62.39	59.07	56.04	53.16
50.34								

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13.56	CFS	47.64	45.08	42.87	41.06	39.56	38.33	37.36
36.58								
14.04	CFS	35.91	35.21	34.47	33.69	32.94	32.28	31.68
31.09								
14.52	CFS	30.43	29.70	28.93	28.21	27.56	26.98	26.36
25.69								
15.00	CFS	25.04	24.39	23.69	23.00	22.40	21.94	21.63
21.44								
15.48	CFS	21.32	21.22	21.06	20.81	20.51	20.31	20.24
20.13								
15.96	CFS	19.95	19.68	19.43	19.23	19.10	18.96	18.76
18.57								
16.44	CFS	18.39	18.16	17.91	17.73	17.59	17.48	17.30
17.10								
16.92	CFS	16.93	16.81	16.71	16.53	16.28	15.97	15.76
15.69								
17.40	CFS	15.57	15.38	15.11	14.85	14.65	14.51	14.37
14.16								
17.88	CFS	13.96	13.80	13.69	13.57	13.37	13.17	13.02
12.91								
18.36	CFS	12.79	12.60	12.49	12.51	12.56	12.57	12.47
12.41								
18.84	CFS	12.44	12.39	12.28	12.19	12.11	12.06	12.02
12.01								
19.32	CFS	12.00	11.99	11.99	11.98	11.93	11.78	11.70
11.71								
19.80	CFS	11.65	11.54	11.45	11.45	11.54	11.55	11.48
11.41								
20.28	CFS	11.34	11.26	11.11	10.97	10.97	11.02	11.05
10.99								
20.76	CFS	10.90	10.92	10.90	10.80	10.70	10.61	10.55
10.51								
21.24	CFS	10.48	10.47	10.46	10.46	10.46	10.43	10.30
10.18								
21.72	CFS	10.18	10.15	10.06	10.08	10.12	10.04	9.95
9.86								
22.20	CFS	9.79	9.74	9.72	9.70	9.69	9.68	9.63
9.48								
22.68	CFS	9.39	9.40	9.33	9.22	9.13	9.13	9.22
9.22								
23.16	CFS	9.15	9.08	9.01	8.96	8.93	8.86	8.70
8.61								
23.64	CFS	8.65	8.70	8.71	8.60	8.46	8.42	8.69
8.47								
24.12	CFS	6.82	4.89	3.27	2.02	1.25	.78	.48

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.90 WATERSHED INCHES; 538 CFS-HRS; 44.4 ACRE-  
FEET.

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 2893.1 (NULL)  
 12.61  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.71 WATERSHED INCHES; 5642 CFS-HRS; 466.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 76.9 (RUNOFF)  
 12.13 2.2 (RUNOFF)  
 15.84 1.0 (RUNOFF)  
 22.42  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.87 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 88

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 2906.8 (NULL)  
 12.61 88.1 (NULL)  
 23.97

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55  
 SQ.MI.

HRS	3.36	3.84	4.32	4.80	5.28	5.76	6.24	6.72	7.20	7.68	8.16
CFS	.49	.54	.59	.65	.72	.80	.88	1.08	1.20	1.31	1.43
	1.93	2.07	2.21	2.37	2.53	2.68	2.83	2.98	3.14	3.29	3.44
	3.14	3.31	3.49	3.68	3.87	4.07	4.30	4.55	4.83	5.11	5.39
	5.28	5.76	6.24	6.72	7.20	7.68	8.16	8.64	9.12	9.60	10.08
	10.49	10.92	11.36	11.85	12.37	12.91	13.47	14.05	14.65	15.26	15.93
	16.59	17.18	17.77	18.37	18.97	19.57	20.17	20.77	21.37	21.96	22.56
	23.51	24.10	24.69	25.28	25.87	26.46	27.05	27.64	28.23	28.82	29.41
	31.53	32.12	32.71	33.30	33.89	34.48	35.07	35.66	36.25	36.84	37.43
	39.45	40.04	40.63	41.22	41.81	42.40	43.00	43.59	44.18	44.77	45.36

47.29							
8.64 CFS	48.75	50.23	51.74	53.28	54.86	56.51	58.29
60.12							
9.12 CFS	61.93	63.81	65.76	67.86	70.09	72.47	75.02
77.77							
9.60 CFS	81	84	88	91	95	99	104
108							
10.08 CFS	113	118	124	129	134	139	145
150							
10.56 CFS	156	162	169	176	184	192	202
212							
11.04 CFS	224	237	252	269	288	308	330
354							
11.52 CFS	380	414	455	503	557	624	709
823							
12.00 CFS	994	1240	1579	1887	2094	2243	2382
2539							
12.48 CFS	2708	2845	2906	2874	2762	2592	2392
2181							
12.96 CFS	1975	1779	1599	1440	1302	1185	1085
999							
13.44 CFS	925	861	805	756	713	675	639
604							
13.92 CFS	570	538	509	483	460	439	421
406							
14.40 CFS	392	380	369	359	349	340	332
324							
14.88 CFS	316	309	301	294	287	280	273
266							
15.36 CFS	260	254	248	243	238	233	229
224							
15.84 CFS	221	217	214	211	207	205	202
200							
16.32 CFS	197	195	193	191	189	186	185
183							
16.80 CFS	181	179	177	175	174	172	170
168							
17.28 CFS	166	165	163	162	160	158	156
154							
17.76 CFS	153	151	149	147	146	144	142
141							
18.24 CFS	139	138	136	134	133	132	131
130							
18.72 CFS	129	128	127	126	126	125	124
124							
19.20 CFS	123	123	123	122	122	121	121
120							
19.68 CFS	120	119	119	119	118	118	117
117							
20.16 CFS	117	116	116	115	115	114	114
113							
20.64 CFS	113	112	112	111	111	110	110
109							
21.12 CFS	109	109	108	108	107	107	106
106							
21.60 CFS	106	105	105	104	104	104	103
103							
22.08 CFS	102	102	101	101	100	100	100
99							
22.56 CFS	98.83	98.22	97.66	97.27	96.84	96.31	95.72
95.23							
23.04 CFS	94.94	94.59	94.12	93.59	93.08	92.66	92.31
91.93							
23.52 CFS	91.36	90.80	90.39	90.09	89.77	89.23	88.56

87.99  
 24.00 CFS      88.03    87.55    84.66    80.13    75.06    70.18    65.58  
 60.76

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24.48 CFS      55.35    49.37    43.13    37.13    31.71    27.07    23.21  
 20.13  
 24.96 CFS      17.75    15.97

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.72 WATERSHED INCHES;      5713 CFS-HRS;      472.1 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP      COMPUTATIONS COMPLETED FOR PASS    6

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH    T-TRUNCATED HYDROGRAPH    R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RUNOFF AMOUNT	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.  
 RAINABLE NUMBER 9,      ARC 2  
 MAIN TIME INCREMENT .060 HOURS

ALTERNATE	1	STORM	2					
STRUCTURE 11	RESVOR	.09	1.39	382.15	12.47	51	566.7	
XSECTION 8	REACH	.17	1.31	357.10	12.52	84	494.1	
STRUCTURE 21	RESVOR	.07	1.91	374.07	13.56F	10F	142.9	
STRUCTURE 22	RESVOR	.07	1.91	353.09	13.68F	10F	142.9	
XSECTION 15	ADDHYD	.32	1.39	---	12.47	112	350.0	
STRUCTURE 23	RESVOR	.32	1.39	---	12.47	112	350.0	
XSECTION 16	REACH	.32	1.39	332.30	12.47	112	350.0	
XSECTION 20	ADDHYD	.05	2.19	---	12.17	71	1420.0	
XSECTION 23	REACH	.41	1.52	315.42	12.41	167	407.3	
STRUCTURE 31	RESVOR	.05	1.55	362.31	12.46	28	560.0	

XSECTION	30	ADDHYD	.60	1.50	---	12.38	276	460.0
STRUCTURE	32	RESVOR	.01	2.01	379.28	13.56R	1R	100.0
STRUCTURE	33	RESVOR	.03	2.08	355.98	12.47	18	600.0
STRUCTURE	34	RESVOR	.04	2.06	---	12.48	18	450.0
XSECTION	39	ADDHYD	.07	1.94	---	12.19	44	628.6
XSECTION	41	ADDHYD	.64	1.50	---	12.36	301	470.3
XSECTION	44	REACH	.77	1.57	290.18	12.52	375	487.0
XSECTION	49	ADDHYD	.82	1.56	---	12.51	393	479.3
XSECTION	50	ADDHYD	.93	1.54	---	12.47	451	484.9
XSECTION	51	REACH	.93	1.54	284.60	12.61	435	467.7
XSECTION	56	ADDHYD	.96	1.53	---	12.60	444	462.5
XSECTION	60	ADDHYD	1.01	1.49	---	12.60	449	444.6
XSECTION	62	ADDHYD	1.02	1.48	---	12.60	452	443.1
XSECTION	63	REACH	1.02	1.48	249.57	12.77	427	418.6
STRUCTURE	61	RESVOR	.01	1.71	332.36	12.74	5	500.0
STRUCTURE	62	RESVOR	.05	.83	290.42	12.43	12	240.0
STRUCTURE	63	RESVOR	.01	1.40	263.40	12.49	3	300.0
XSECTION	76	ADDHYD	1.28	1.36	---	12.74	474	370.3

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE		RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
		AREA (SQ MI)				TIME (HR)	RATE (CFS)	RATE (CSM)
	ALTERNATE	1	STORM	2				
XSECTION	77	REACH	1.28	1.36	229.25	12.81	474	370.3
XSECTION	88	ADDHYD	1.55	1.28	---	12.79	508	327.7
RAINFALL OF		4.10 inches AND		24.00 hr	DURATION, BEGINS AT		.0 hrs.	
	ALTERNATE	1	STORM	5				
STRUCTURE	11	RESVOR	.09	2.13	382.73	12.33	97	1077.8
XSECTION	8	REACH	.17	2.02	357.55	12.45	156	917.6
STRUCTURE	21	RESVOR	.07	2.74	375.57	12.90	30	428.6
STRUCTURE	22	RESVOR	.07	2.74	354.29	13.04	29	414.3
XSECTION	15	ADDHYD	.32	2.11	---	12.44	203	634.4
STRUCTURE	23	RESVOR	.32	2.11	---	12.44	203	634.4

XSECTION	16	REACH	.32	2.11	332.93	12.44	203	634.4
XSECTION	20	ADDHYD	.05	3.04	---	12.17	98	1960.0
XSECTION	23	REACH	.41	2.27	315.83	12.36	277	675.6
STRUCTURE	31	RESVOR	.05	2.31	363.56	12.36	55	1100.0
XSECTION	30	ADDHYD	.60	2.24	---	12.38	448	746.7
STRUCTURE	32	RESVOR	.01	2.77	379.83	12.63T	4T	400.0
STRUCTURE	33	RESVOR	.03	2.91	356.65	12.37	33	1100.0
STRUCTURE	34	RESVOR	.04	2.87	---	12.39	35	875.0
XSECTION	39	ADDHYD	.07	2.75	---	12.20	77	1100.0
XSECTION	41	ADDHYD	.64	2.24	---	12.36	487	760.9
XSECTION	44	REACH	.77	2.32	290.66	12.47	613	796.1
XSECTION	49	ADDHYD	.82	2.31	---	12.45	642	782.9
XSECTION	50	ADDHYD	.93	2.29	---	12.43	741	796.8
XSECTION	51	REACH	.93	2.29	285.36	12.55	718	772.0
XSECTION	56	ADDHYD	.96	2.28	---	12.54	733	763.5
XSECTION	60	ADDHYD	1.01	2.22	---	12.54	742	734.7
XSECTION	62	ADDHYD	1.02	2.20	---	12.54	749	734.3
XSECTION	63	REACH	1.02	2.20	250.05	12.68	716	702.0

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SUMMARY TABLE 1

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
				AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)
ALTERNATE 1 STORM 5		-----					
STRUCTURE 61	RESVOR	.01	2.50	333.50	12.82	6	600.0
STRUCTURE 62	RESVOR	.05	1.41	292.31	12.54	16	320.0
STRUCTURE 63	RESVOR	.01	2.13	265.07	12.59	4	400.0
XSECTION 76	ADDHYD	1.28	2.06	---	12.66	801	625.8
XSECTION 77	REACH	1.28	2.06	230.01	12.72	800	625.0
XSECTION 88	ADDHYD	1.55	1.96	---	12.77	857	552.9
RAINFALL OF	4.91 inches AND	24.00 hr DURATION,	BEGINS AT	.0 hrs.			
ALTERNATE 1 STORM 10		-----					
STRUCTURE 11	RESVOR	.09	2.81	383.02	12.34	121	1344.4
XSECTION 8	REACH	.17	2.70	357.82	12.43	212	1247.1
STRUCTURE 21	RESVOR	.07	3.49	376.27	12.68	61	871.4

STRUCTURE	22	RESVOR	.07	3.49	355.97	12.81	57	814.3
XSECTION	15	ADDHYD	.32	2.79	---	12.41	279	871.9
STRUCTURE	23	RESVOR	.32	2.79	---	12.41	279	871.9
XSECTION	16	REACH	.32	2.79	333.39	12.41	279	871.9
XSECTION	20	ADDHYD	.05	3.82	---	12.17	122	2440.0
XSECTION	23	REACH	.41	2.96	316.13	12.39	380	926.8
STRUCTURE	31	RESVOR	.05	3.02	363.94	12.32	78	1560.0
XSECTION	30	ADDHYD	.60	2.94	---	12.37	622	1036.7
STRUCTURE	32	RESVOR	.01	3.48	380.16	12.40	9	900.0
STRUCTURE	33	RESVOR	.03	3.67	357.05	12.32	49	1633.3
STRUCTURE	34	RESVOR	.04	3.62	---	12.35	54	1350.0
XSECTION	39	ADDHYD	.07	3.50	---	12.20	107	1528.6
XSECTION	41	ADDHYD	.64	2.93	---	12.36	673	1051.6
XSECTION	44	REACH	.77	3.02	291.04	12.45	849	1102.6
XSECTION	49	ADDHYD	.82	3.01	---	12.44	889	1084.1
XSECTION	50	ADDHYD	.93	2.99	---	12.42	1021	1097.8
XSECTION	51	REACH	.93	2.99	285.96	12.52	993	1067.7

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA

2.04TEST

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	1	STORM	10					
XSECTION	56	ADDHYD	.96	2.98	---	12.52	1013	1055.2
XSECTION	60	ADDHYD	1.01	2.91	---	12.51	1028	1017.8
XSECTION	62	ADDHYD	1.02	2.89	---	12.51	1037	1016.7
XSECTION	63	REACH	1.02	2.89	250.42	12.64	998	978.4
STRUCTURE	61	RESVOR	.01	3.24	334.33	12.74	8	800.0
STRUCTURE	62	RESVOR	.05	1.98	293.76	12.62	18	360.0
STRUCTURE	63	RESVOR	.01	2.82	265.90	12.33	10	1000.0
XSECTION	76	ADDHYD	1.28	2.72	---	12.62	1123	877.3
XSECTION	77	REACH	1.28	2.72	230.56	12.68	1122	876.6
XSECTION	88	ADDHYD	1.55	2.61	---	12.74	1203	776.1

RAINFALL OF 6.14 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 25

STRUCTURE	11	RESVOR	.09	3.89	383.65	12.33	175	1944.4
XSECTION	8	REACH	.17	3.77	358.20	12.42	306	1800.0
STRUCTURE	21	RESVOR	.07	4.61	377.05	12.54	109	1557.1
STRUCTURE	22	RESVOR	.07	4.60	358.68	12.69	100	1428.6
XSECTION	15	ADDHYD	.32	3.86	---	12.43	439	1371.9
STRUCTURE	23	RESVOR	.32	3.86	---	12.43	439	1371.9
XSECTION	16	REACH	.32	3.86	334.29	12.43	439	1371.9
XSECTION	20	ADDHYD	.05	5.01	---	12.17	157	3140.0
XSECTION	23	REACH	.41	4.05	316.55	12.40	559	1363.4
STRUCTURE	31	RESVOR	.05	4.16	364.70	12.32	107	2140.0
XSECTION	30	ADDHYD	.60	4.03	---	12.36	901	1501.7
STRUCTURE	32	RESVOR	.01	4.57	380.46	12.27	21	2100.0
STRUCTURE	33	RESVOR	.03	4.86	357.38	12.28	71	2366.7
STRUCTURE	34	RESVOR	.04	4.79	---	12.28	91	2275.0
XSECTION	39	ADDHYD	.07	4.67	---	12.22	168	2400.0
XSECTION	41	ADDHYD	.64	4.03	---	12.35	973	1520.3

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A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)
ALTERNATE	1	STORM	25					
XSECTION	44	REACH	.77	4.12	291.56	12.43	1229	1596.1
XSECTION	49	ADDHYD	.82	4.11	---	12.42	1285	1567.1
XSECTION	50	ADDHYD	.93	4.09	---	12.40	1472	1582.8
XSECTION	51	REACH	.93	4.09	286.76	12.50	1439	1547.3
XSECTION	56	ADDHYD	.96	4.08	---	12.49	1469	1530.2
XSECTION	60	ADDHYD	1.01	3.99	---	12.49	1492	1477.2
XSECTION	62	ADDHYD	1.02	3.97	---	12.49	1507	1477.5
XSECTION	63	REACH	1.02	3.97	250.94	12.60	1457	1428.4
STRUCTURE	61	RESVOR	.01	4.38	334.86	12.62	14	1400.0
STRUCTURE	62	RESVOR	.05	2.94	295.13	12.47	37	740.0
STRUCTURE	63	RESVOR	.01	3.90	266.77	12.29	16	1600.0
XSECTION	76	ADDHYD	1.28	3.78	---	12.59	1648	1287.5
XSECTION	77	REACH	1.28	3.78	231.19	12.65	1648	1287.5
XSECTION	88	ADDHYD	1.55	3.64	---	12.70	1768	1140.6



RAINFALL OF 7.23 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	50				
STRUCTURE	11	RESVOR	.09	4.89	384.18	12.32	219	2433.3
XSECTION	8	REACH	.17	4.75	358.49	12.41	387	2276.5
STRUCTURE	21	RESVOR	.07	5.58	377.76	12.51	140	2000.0
STRUCTURE	22	RESVOR	.07	5.57	359.61	12.80	112	1600.0
XSECTION	15	ADDHYD	.32	4.83	---	12.40	583	1821.9
STRUCTURE	23	RESVOR	.32	4.83	---	12.40	583	1821.9
XSECTION	16	REACH	.32	4.83	335.04	12.40	583	1821.9
XSECTION	20	ADDHYD	.05	6.08	---	12.17	188	3760.0
XSECTION	23	REACH	.41	5.04	316.89	12.41	731	1782.9
STRUCTURE	31	RESVOR	.05	5.15	365.04	12.30	132	2640.0
XSECTION	30	ADDHYD	.60	5.03	---	12.36	1165	1941.7
STRUCTURE	32	RESVOR	.01	5.55	380.63	12.24	29	2900.0

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE		STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE		1	STORM	50				
STRUCTURE	33	RESVOR	.03	5.93	357.61	12.27	85	2833.3
STRUCTURE	34	RESVOR	.04	5.84	---	12.26	114	2850.0
XSECTION	39	ADDHYD	.07	5.71	---	12.20	220	3142.9
XSECTION	41	ADDHYD	.64	5.02	---	12.34	1255	1960.9
XSECTION	44	REACH	.77	5.13	291.98	12.42	1578	2049.4
XSECTION	49	ADDHYD	.82	5.12	---	12.41	1649	2011.0
XSECTION	50	ADDHYD	.93	5.10	---	12.39	1884	2025.8
XSECTION	51	REACH	.93	5.09	287.38	12.49	1847	1986.0
XSECTION	56	ADDHYD	.96	5.08	---	12.48	1885	1963.5
XSECTION	60	ADDHYD	1.01	4.98	---	12.48	1917	1898.0
XSECTION	62	ADDHYD	1.02	4.96	---	12.48	1937	1899.0
XSECTION	63	REACH	1.02	4.96	251.35	12.58	1879	1842.2
STRUCTURE	61	RESVOR	.01	5.41	335.25	12.57	19	1900.0
STRUCTURE	62	RESVOR	.05	3.83	296.06	12.44	52	1040.0
STRUCTURE	63	RESVOR	.01	4.90	267.40	12.24	27	2700.0

XSECTION	76	ADDHYD	1.28	4.74	---	12.57	2136	1668.8
XSECTION	77	REACH	1.28	4.74	231.65	12.57	2136	1668.8
XSECTION	88	ADDHYD	1.55	4.60	---	12.62	2313	1492.3

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 99

STRUCTURE	11	RESVOR	.09	6.04	384.78	12.32	269	2988.9
XSECTION	8	REACH	.17	5.90	358.76	12.40	479	2817.6
STRUCTURE	21	RESVOR	.07	6.69	378.71	12.54	154	2200.0
STRUCTURE	22	RESVOR	.07	6.68	360.78	12.91	127	1814.3
XSECTION	15	ADDHYD	.32	5.96	---	12.36	717	2240.6
STRUCTURE	23	RESVOR	.32	5.96	---	12.36	717	2240.6
XSECTION	16	REACH	.32	5.96	335.71	12.36	717	2240.6
XSECTION	20	ADDHYD	.05	7.29	---	12.17	224	4480.0

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED. A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES: F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RUNOFF AMOUNT	PEAK DISCHARGE ELEVATION	PEAK DISCHARGE			
					TIME	RATE	RATE	
ID	OPERATION	(SQ MI)	(IN)	(FT)	(HR)	(CFS)	(CSM)	
ALTERNATE	1	STORM	99					
XSECTION	23	REACH	.41	6.19	317.25	12.38	922	2248.8
STRUCTURE	31	RESVOR	.05	6.35	365.43	12.30	161	3220.0
XSECTION	30	ADDHYD	.60	6.18	---	12.35	1460	2433.3
STRUCTURE	32	RESVOR	.01	6.68	380.81	12.23	33	3300.0
STRUCTURE	33	RESVOR	.03	7.15	357.96	12.29	96	3200.0
STRUCTURE	34	RESVOR	.04	7.04	---	12.27	129	3225.0
XSECTION	39	ADDHYD	.07	6.91	---	12.19	260	3714.3
XSECTION	41	ADDHYD	.64	6.17	---	12.34	1571	2454.7
XSECTION	44	REACH	.77	6.29	292.39	12.41	1961	2546.8
XSECTION	49	ADDHYD	.82	6.28	---	12.40	2050	2500.0
XSECTION	50	ADDHYD	.93	6.26	---	12.39	2344	2520.4
XSECTION	51	REACH	.93	6.25	287.98	12.48	2299	2472.0
XSECTION	56	ADDHYD	.96	6.24	---	12.47	2346	2443.8
XSECTION	60	ADDHYD	1.01	6.13	---	12.47	2389	2365.3
XSECTION	62	ADDHYD	1.02	6.10	---	12.47	2414	2366.7
XSECTION	63	REACH	1.02	6.10	251.75	12.57	2355	2308.8

STRUCTURE	61	RESVOR	.01	6.61	335.67	12.55	25	2500.0
STRUCTURE	62	RESVOR	.05	4.89	297.03	12.42	70	1400.0
STRUCTURE	63	RESVOR	.01	6.07	267.78	12.19	44	4400.0
XSECTION	76	ADDHYD	1.28	5.87	---	12.55	2685	2097.7
XSECTION	77	REACH	1.28	5.87	232.07	12.55	2685	2097.7
XSECTION	88	ADDHYD	1.55	5.72	---	12.61	2907	1875.5

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

		HYDROGRAPH INFORMATION				ROUTING PARAMETERS					
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			

BASEFLOW IS .0 CFS

ALTERNATE		1	STORM		2						
2	1170		24	12.3	23	12.4	1.55	1.37	.029	.952	
	.58										
5	797		51	12.5	50	12.5	2.26	1.19	.019	.989	
	.75?										
8	1221		85	12.4	84	12.5	1.15	1.48	.009	.990	
	.76?										
16	920		112	12.5	112	12.5	3.61	1.49	.001	1.000	
	1.00?										
23	1379		200	12.2	167	12.4	1.09	1.16	.056	.836	
	.34										
27	1021		84	12.3	77	12.4	1.10	1.18	.061	.910	
	.41										
32	1603		76	12.2	68	12.4	1.28	1.33	.055	.899	
	.48										
34	583		1	13.6	1	13.7	1.14	1.62	.001	.998	
	.49										
37	934		18	12.5	18	12.5	2.31	1.55	.002	.999	
	.92?										
44	1428		404	12.4	375	12.5	.45	1.34	.034	.928	
	.41										
51	1275		451	12.5	435	12.6	.58	1.31	.026	.965	
	.48										

53	652	0	.0	0	.0	.000	.00	.000	.000
.00									
63	1959	452	12.6	427	12.8	.77	1.28	.041	.943
.36									
65	1283	5	12.7	5	12.8	2.47	1.43	.012	.996
.53									
70	2166	68	12.2	60	12.3	1.68	1.37	.040	.883
.47									
72	1081	3	12.5	3	12.7	1.50	1.61	.007	.994
.49									
77	884	474	12.7	473	12.8	1.92	1.22	.008	.998
.87?									
80	1296	479	12.8	479	12.8	1.59	1.44	.003	1.000
1.00?									

ALTERNATE 1 STORM 5

2	1170	36	12.3	34	12.4	1.72	1.27	.038	.945
.55									
5	797	94	12.3	90	12.4	2.08	1.23	.018	.965
.83?									
8	1221	159	12.4	155	12.5	1.22	1.46	.010	.971
.84?									
16	920	202	12.4	202	12.4	3.61	1.49	.001	1.000
1.00?									
23	1379	321	12.2	277	12.4	.80	1.24	.043	.864
.40									
27	1021	137	12.3	123	12.4	1.07	1.18	.060	.901
.44									
32	1603	107	12.2	98	12.3	1.33	1.32	.050	.915
.51									
34	583	4	12.6	4	12.7	1.14	1.62	.002	.994
.71?									

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC ID	REACH LENGTH	FLOOD PLAIN LENGTH	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR	PEAK RATIO Q/I	ATT-KIN
			PEAK	TIME	PEAK	TIME	COEFF	POWER			
COEFF	(FT)	(FT)	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	(C)

ALTERNATE 1 STORM 5

37	934	35	12.4	35	12.4	2.31	1.55	.003	1.000
1.00?									
44	1428	645	12.4	613	12.5	.33	1.41	.026	.950
.48									
51	1275	741	12.4	718	12.5	.48	1.35	.021	.970
.55									
53	652	0	13.3	0	13.4	2.05	1.40	.007	.956
.32									
63	1959	749	12.5	715	12.7	.52	1.36	.030	.955
.43									
65	1283	6	12.8	6	13.0	2.47	1.43	.009	.997
.55									
70	2166	105	12.2	79	12.4	1.74	1.13	.119	.747
.27									
72	1081	4	12.6	4	12.7	1.50	1.61	.004	.998
.52									
77	884	801	12.7	800	12.7	1.89	1.22	.008	.999
.92?									
80	1296	811	12.7	810	12.8	2.39	1.27	.007	.999
.92?									

ALTERNATE 1 STORM 10

2	1170	48	12.3	45	12.4	1.90	1.19	.047	.937
.52									
5	797	121	12.4	120	12.4	2.00	1.25	.016	.996
.87?									
8	1221	213	12.4	212	12.4	1.26	1.44	.009	.993
.88?									
16	920	279	12.4	279	12.4	3.70	1.48	.001	1.000
1.00?									
23	1379	425	12.2	379	12.4	.70	1.27	.036	.892
.44									
27	1021	191	12.3	174	12.4	.73	1.29	.043	.911
.52									
32	1603	136	12.2	125	12.3	1.35	1.31	.047	.925
.52									
34	583	9	12.4	9	12.5	1.14	1.62	.004	.994
.86?									
37	934	54	12.4	54	12.4	2.32	1.54	.003	1.000
1.00?									
44	1428	883	12.4	845	12.5	.29	1.44	.022	.957
.53									
51	1275	1021	12.4	992	12.5	.45	1.37	.019	.972
.59									
53	652	0	12.5	0	12.7	2.05	1.40	.010	.932
.47									
63	1959	1034	12.5	996	12.7	.44	1.40	.026	.963
.48									
65	1283	8	12.7	8	12.8	2.46	1.41	.010	.978
.59									
70	2166	141	12.2	96	12.4	1.92	1.04	.168	.679
.21									

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QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION											ROUTING PARAMETERS	
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN (C)	
		COEFF	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)				
ALTERNATE		1	STORM	10								
72	1081		9	12.4	9	12.4	1.48	1.55	.008	.934		
.61												
77	884		1122	12.6	1120	12.7	1.95	1.22	.009	.998		
.95?												
80	1296		1136	12.7	1131	12.7	3.48	1.16	.012	.995		
.86?												
ALTERNATE		1	STORM	25								
2	1170		65	12.3	65	12.4	.29	2.00	.003	.995		
.89?												
5	797		173	12.3	172	12.4	1.91	1.27	.014	.995		
.92?												
8	1221		306	12.4	306	12.4	1.28	1.44	.009	.997		
.93?												
16	920		438	12.4	438	12.4	3.98	1.45	.001	1.000		
1.00?												
23	1379		597	12.2	559	12.4	.62	1.30	.031	.936		
.47												
27	1021		260	12.3	244	12.4	.48	1.40	.027	.939		
.60												
32	1603		180	12.2	168	12.3	1.37	1.30	.043	.930		
.55												
34	583		20	12.2	20	12.2	1.14	1.62	.005	1.000		
1.00?												
37	934		91	12.3	91	12.3	2.39	1.52	.004	1.000		
1.00?												
44	1428		1273	12.3	1228	12.4	.26	1.46	.019	.965		
.58												
51	1275		1468	12.4	1436	12.5	.43	1.37	.018	.979		
.63												
53	652		2	12.2	2	12.3	2.05	1.40	.014	.917		
.63												
63	1959		1506	12.5	1457	12.6	.38	1.43	.022	.967		
.53												
65	1283		14	12.6	14	12.7	2.48	1.39	.012	.979		
.64												
70	2166		195	12.2	138	12.4	1.85	1.05	.155	.704		
.22												

72	1081	16	12.3	15	12.4	1.53	1.49	.011	.986
.66									
77	884	1647	12.6	1646	12.7	1.85	1.23	.008	1.000
.99?									
80	1296	1670	12.7	1666	12.7	4.29	1.11	.016	.998
.84?									

ALTERNATE 1 STORM 50

2	1170	81	12.3	81	12.4	.29	2.00	.003	.998
.94?									
5	797	217	12.3	216	12.4	1.85	1.28	.012	.995
.95?									

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
 19:32:20 SUMMARY, JOB NO. 1 PAGE  
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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

XSEC REACH ID COEFF	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
	ALTERNATE	1	STORM	50							
8	1221		387	12.4	386	12.4	1.29	1.44	.008	.999	
.96?											
16	920		580	12.4	580	12.4	4.23	1.43	.001	1.000	
1.00?											
23	1379		768	12.2	731	12.4	.61	1.30	.030	.952	
.50											
27	1021		323	12.3	312	12.4	.40	1.45	.021	.967	
.65											
32	1603		216	12.2	204	12.3	1.38	1.30	.040	.944	
.56											
34	583		29	12.2	29	12.2	1.14	1.61	.006	1.000	
1.00?											
37	934		113	12.2	113	12.2	2.43	1.51	.004	1.000	
1.00?											
44	1428		1625	12.3	1578	12.4	.26	1.46	.017	.971	
.62											
51	1275		1875	12.4	1847	12.5	.43	1.38	.017	.985	
.66											
53	652		5	12.2	4	12.2	2.05	1.40	.017	.927	

.75?									
63	1959	1936	12.5	1875	12.6	.36	1.44	.020	.969
.56									
65	1283	19	12.6	19	12.7	2.49	1.38	.012	.986
.67?									
70	2166	245	12.2	183	12.4	1.61	1.09	.134	.745
.24									
72	1081	27	12.2	25	12.3	1.66	1.42	.017	.927
.70?									
77	884	2128	12.5	2128	12.5	1.75	1.24	.007	1.000
1.00?									
80	1296	2168	12.5	2154	12.7	5.29	1.05	.023	.993
.76?									

ALTERNATE 1 STORM 99

2	1170	99	12.3	99	12.4	.27	2.00	.002	.999
.97?									
5	797	267	12.3	267	12.4	1.81	1.28	.011	.998
.97?									
8	1221	478	12.4	478	12.4	1.30	1.43	.007	1.000
.99?									
16	920	717	12.4	717	12.4	4.47	1.41	.001	1.000
1.00?									
23	1379	976	12.2	921	12.4	.75	1.26	.035	.943
.49									
27	1021	392	12.3	384	12.4	.35	1.48	.017	.980
.70?									
32	1603	260	12.2	244	12.3	1.50	1.27	.043	.941
.55									
34	583	33	12.2	33	12.2	1.15	1.61	.005	1.000
1.00?									

1 TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
 19:32:20 SUMMARY, JOB NO. 1 PAGE  
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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

		HYDROGRAPH INFORMATION				ROUTING PARAMETERS					
XSEC ID	REACH LENGTH	FLOOD PLAIN	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR	PEAK RATIO Q/I	ATT- KIN
		LENGTH	PEAK	TIME	PEAK	TIME	COEFF	POWER			
COEFF	(FT)	(FT)	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	(C)
ALTERNATE	1	STORM	99								



37	934	127	12.3	127	12.3	2.45	1.51	.003	1.000
44	1428	2012	12.3	1960	12.4	.25	1.46	.016	.974
51	1275	2330	12.4	2299	12.5	.43	1.38	.016	.987
53	652	8	12.2	8	12.2	2.05	1.40	.017	.971
63	1959	2411	12.5	2345	12.5	.35	1.44	.018	.972
65	1283	25	12.5	24	12.7	2.51	1.37	.012	.982
70	2166	320	12.2	243	12.4	1.26	1.16	.113	.761
72	1081	44	12.2	39	12.2	1.69	1.41	.021	.888
77	884	2683	12.5	2683	12.5	1.58	1.26	.007	1.000
80	1296	2733	12.5	2695	12.6	6.14	1.01	.029	.986

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
 19:32:20 SUMMARY, JOB NO. 1 PAGE  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
STRUCTURE 63	.01					
ALTERNATE 27	1	3	4	10	16	
STRUCTURE 62	.05					
ALTERNATE 52	1	12	16	18	37	
STRUCTURE 61	.01					
ALTERNATE 19	1	5	6	8	14	
STRUCTURE 34	.04					
ALTERNATE 114	1	18	35	54	91	
STRUCTURE 33	.03					

ALTERNATE 85	1	18	33	49	71
STRUCTURE	32	.01			
ALTERNATE 29	1	1?	4	9	21
STRUCTURE	31	.05			
ALTERNATE 132	1	28	55	78	107
STRUCTURE	23	.32			
ALTERNATE 583	1	112	203	279	439
STRUCTURE	22	.07			
ALTERNATE 112	1	10	29	57	100
STRUCTURE	21	.07			
ALTERNATE 140	1	10	30	61	109
STRUCTURE	11	.09			
ALTERNATE 219	1	51	97	121	175
XSECTION	8	.17			
ALTERNATE 387	1	84	156	212	306
XSECTION	15	.32			
ALTERNATE 583	1	112	203	279	439
XSECTION	16	.32			

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
 19:32:20 SUMMARY, JOB NO. 1 PAGE  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/  
 STRUCTURE DRAINAGE  
 AREA STORM NUMBERS.....

ID	(SQ MI)	2	5	10	25	50
XSECTION 16	.32					
----- ALTERNATE 583	1	112	203	279	439	
XSECTION 20	.05					
----- ALTERNATE 188	1	71	98	122	157	
XSECTION 23	.41					
----- ALTERNATE 731	1	167	277	380	559	
XSECTION 30	.60					
----- ALTERNATE 1165	1	276	448	622	901	
XSECTION 39	.07					
----- ALTERNATE 220	1	44	77	107	168	
XSECTION 41	.64					
----- ALTERNATE 1255	1	301	487	673	973	
XSECTION 44	.77					
----- ALTERNATE 1578	1	375	613	849	1229	
XSECTION 49	.82					
----- ALTERNATE 1649	1	393	642	889	1285	
XSECTION 50	.93					
----- ALTERNATE 1884	1	451	741	1021	1472	
XSECTION 51	.93					
----- ALTERNATE 1847	1	435	718	993	1439	
XSECTION 56	.96					
----- ALTERNATE 1885	1	444	733	1013	1469	
XSECTION 60	1.01					
----- ALTERNATE 1917	1	449	742	1028	1492	
XSECTION 62	1.02					

-----  
 ALTERNATE 1 452 749 1037 1507  
 1937

XSECTION 63 1.02  
 -----

ALTERNATE 1 427 716 998 1457  
 1879

1

TR20 ----- SCS  
 -

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION

05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST

19:32:20 SUMMARY, JOB NO. 1 PAGE

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SUMMARY TABLE 3  
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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50

XSECTION 76 1.28  
 -----

ALTERNATE 1 474 801 1123 1648  
 2136

XSECTION 77 1.28  
 -----

ALTERNATE 1 474 800 1122 1648  
 2136

XSECTION 88 1.55  
 -----

ALTERNATE 1 508 857 1203 1768  
 2313

SUMMARY TABLE 3  
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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....
		99

STRUCTURE 63 .01  
 -----

ALTERNATE 1 44

STRUCTURE 62 .05  
 -----

ALTERNATE 1 70

STRUCTURE 61 .01  
 -----

ALTERNATE	1		25
STRUCTURE	34	.04	
ALTERNATE	1		129
STRUCTURE	33	.03	
ALTERNATE	1		96
STRUCTURE	32	.01	
ALTERNATE	1		33
STRUCTURE	31	.05	
ALTERNATE	1		161
STRUCTURE	23	.32	
ALTERNATE	1		717
STRUCTURE	22	.07	
ALTERNATE	1		127
STRUCTURE	21	.07	
ALTERNATE	1		154

1 TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
 19:32:20 SUMMARY, JOB NO. 1 PAGE  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
STRUCTURE 11	.09	
ALTERNATE 1		269
XSECTION 8	.17	
ALTERNATE 1		479
XSECTION 15	.32	
ALTERNATE 1		717
XSECTION 16	.32	

ALTERNATE	1		717
XSECTION	20	.05	
ALTERNATE	1		224
XSECTION	23	.41	
ALTERNATE	1		922
XSECTION	30	.60	
ALTERNATE	1		1460
XSECTION	39	.07	
ALTERNATE	1		260
XSECTION	41	.64	
ALTERNATE	1		1571
XSECTION	44	.77	
ALTERNATE	1		1961
XSECTION	49	.82	
ALTERNATE	1		2050
XSECTION	50	.93	
ALTERNATE	1		2344
XSECTION	51	.93	
ALTERNATE	1		2299

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
 2.04TEST  
 19:32:20 SUMMARY, JOB NO. 1 PAGE  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION	56	.96
ALTERNATE	1	2346
XSECTION	60	1.01

ALTERNATE	1	2389
XSECTION	62	1.02
-----		
ALTERNATE	1	2414
XSECTION	63	1.02
-----		
ALTERNATE	1	2355
XSECTION	76	1.28
-----		
ALTERNATE	1	2685
XSECTION	77	1.28
-----		
ALTERNATE	1	2685
XSECTION	88	1.55
-----		
ALTERNATE	1	2907

1  
TR20 ----- SCS  
-

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
VERSION  
05/04/\*\* CN MGMT- EXISTING COND.- 2,5,10,25,50,100 yr (24hr); Std NOAA  
2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = xtra1.dat , GIVEN DATA FILE  
OUTPUT = xtra1.OUT , DATED  
05/04/\*\*,19:32:20

FILES GENERATED - DATED 05/04/\*\*,19:32:20

NONE!

TOTAL NUMBER OF WARNINGS = 53, MESSAGES = 34

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
 HYDROLOGY\*\*\*\*\*

JOB	TR-20	NOPLOTS				
TITLE	Ellicott City Flood Study-Tiber/South Sub-Drainage Areas					
TITLE	27 Subareas MGMT-STD NOAA_C 2,5,10,25,50,100WITHMGMT					
5	RAINFL	1	.1			
8	0.0000	0.0013	0.0023	0.0034	0.0044	
8	0.0055	0.0065	0.0076	0.0087	0.0098	
8	0.0109	0.0121	0.0132	0.0143	0.0155	
8	0.0167	0.0178	0.0190	0.0202	0.0214	
8	0.0226	0.0238	0.0251	0.0263	0.0276	
8	0.0288	0.0301	0.0314	0.0327	0.0340	
8	0.0353	0.0366	0.0379	0.0393	0.0406	
8	0.0420	0.0434	0.0447	0.0461	0.0475	
8	0.0489	0.0504	0.0518	0.0532	0.0547	
8	0.0562	0.0576	0.0591	0.0606	0.0621	
8	0.0636	0.0651	0.0667	0.0682	0.0697	
8	0.0713	0.0729	0.0745	0.0760	0.0776	
8	0.0793	0.0809	0.0826	0.0843	0.0861	
8	0.0879	0.0898	0.0916	0.0936	0.0955	
8	0.0975	0.0996	0.1017	0.1038	0.1060	
8	0.1082	0.1104	0.1127	0.1150	0.1174	
8	0.1198	0.1223	0.1247	0.1273	0.1298	
8	0.1324	0.1351	0.1378	0.1405	0.1432	
8	0.1461	0.1490	0.1521	0.1554	0.1588	
8	0.1623	0.1660	0.1699	0.1739	0.1780	
8	0.1823	0.1868	0.1914	0.1961	0.2010	
8	0.2061	0.2117	0.2179	0.2247	0.2321	
8	0.2400	0.2490	0.2591	0.2702	0.2825	
8	0.2955	0.3157	0.3370	0.3662	0.4067	
8	0.4766	0.5933	0.6338	0.6630	0.6843	
8	0.7045	0.7176	0.7298	0.7409	0.7510	
8	0.7600	0.7679	0.7753	0.7821	0.7883	
8	0.7939	0.7990	0.8039	0.8086	0.8132	
8	0.8177	0.8220	0.8261	0.8301	0.8340	
8	0.8377	0.8412	0.8446	0.8479	0.8510	
8	0.8540	0.8568	0.8595	0.8622	0.8649	
8	0.8676	0.8702	0.8727	0.8753	0.8778	
8	0.8802	0.8826	0.8850	0.8873	0.8896	
8	0.8918	0.8940	0.8962	0.8983	0.9004	
8	0.9025	0.9045	0.9064	0.9084	0.9103	
8	0.9121	0.9139	0.9157	0.9174	0.9191	
8	0.9208	0.9224	0.9240	0.9256	0.9271	
8	0.9287	0.9303	0.9318	0.9334	0.9349	
8	0.9364	0.9379	0.9394	0.9409	0.9424	
8	0.9439	0.9453	0.9468	0.9482	0.9496	
8	0.9511	0.9525	0.9539	0.9553	0.9566	
8	0.9580	0.9594	0.9607	0.9621	0.9634	
8	0.9647	0.9660	0.9673	0.9686	0.9699	
8	0.9712	0.9724	0.9737	0.9749	0.9762	
8	0.9774	0.9786	0.9798	0.9810	0.9822	
8	0.9834	0.9845	0.9857	0.9868	0.9879	

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*



8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000

9 ENDTBL

3 STRUCT 58

8		424.00	0.00	0.00
8		429.09	2.00	0.72
8		429.59	4.00	0.85
8		430.00	6.00	0.96
8		430.21	8.00	1.02
8		430.36	10.00	1.06
8		430.49	12.00	1.10
8		430.64	14.00	1.15
8		430.74	15.00	1.18
8		431.22	17.09	1.33
8		431.68	33.53	1.49
8		432.18	80.87	1.67
8		432.37	108.22	1.74

9 ENDTBL

2 XSECTN 007

8		1.0	319.00	
8		318.00	0.00	0.00
8		318.25	10.19	3.39
8		318.50	32.80	7.08
8		318.75	65.48	11.07
8		319.00	107.54	15.35
8		320.00	367.34	35.47
8		321.00	663.16	60.18
8		322.00	1052.26	89.31
8		323.00	1529.69	131.30

9 ENDTBL

3 STRUCT 52

8		451.90	0.00	0.00
8		454.05	0.34	0.73
8		454.30	0.36	0.85
8		455.60	18.83	1.65
8		456.10	41.43	2.00
8		456.50	72.96	2.28

9 ENDTBL

2 XSECTN 011

8		1.0	415.00	
8		414.00	0.00	0.00
8		414.25	7.22	1.98
8		414.50	23.69	4.29
8		414.75	48.28	6.93
8		415.00	81.00	9.89
8		416.00	299.51	25.08
8		417.00	488.53	45.33
8		418.00	779.05	70.44
8		419.00	809.36	107.84

9 ENDTBL

3 STRUCT 51

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		396.00	0.00	0.00
8		396.50	4.38	0.27
8		397.00	12.40	0.65
8		397.50	22.78	1.07
8		398.00	35.07	1.54
8		398.50	49.45	2.05
8		399.00	64.75	2.59

8			399.45	86.12	3.10
9	ENDTBL				
2	XSECTN	016	1.0	331.00	
8			330.00	0.00	0.00
8			330.25	5.94	1.92
8			330.50	21.34	4.68
8			330.75	47.19	8.28
8			331.00	85.01	12.73
8			332.00	385.16	38.91
8			333.00	704.29	76.97
8			334.00	1202.25	125.34
8			335.00	1592.91	187.47
9	ENDTBL				
2	XSECTN	020	1.0	235.00	
8			234.00	0.00	0.00
8			234.25	9.06	3.27
8			234.50	29.33	6.89
8			234.75	58.86	10.87
8			235.00	97.22	15.19
8			236.00	339.40	36.03
8			237.00	586.83	61.50
8			238.00	902.53	90.59
8			239.00	1290.91	123.25
8			240.00	1750.59	159.40
8			241.00	1985.66	201.02
8			242.00	2381.26	250.13
9	ENDTBL				
3	STRUCT	47			
8			410.00	0.00	0.00
8			413.89	5.00	0.05
8			414.04	10.00	0.15
8			414.17	15.00	0.24
8			414.28	20.00	0.27
8			415.00	30.68	0.38
8			415.27	39.01	0.42
8			415.52	52.87	0.45
8			415.79	71.61	0.49
8			416.07	95.27	0.54
9	ENDTBL				
3	STRUCT	32			
8			367.00	0.00	0.00
8			367.37	10.00	0.29
8			367.59	20.00	0.47

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			367.78	30.00	0.62
8			367.94	40.00	0.76
8			368.09	50.00	0.89
8			368.44	75.00	1.18
8			368.82	88.96	1.52
8			369.30	142.54	1.95
8			369.79	219.99	2.41
8			370.11	280.10	2.72
8			370.33	326.70	2.93
8			370.56	378.34	3.15
9	ENDTBL				
3	STRUCT	34			
8			329.00	0.00	0.00
8			332.62	30.00	0.72

8			336.99	50.00	2.59
8			337.92	70.00	3.17
8			338.11	90.00	3.29
8			338.19	100.00	3.34
8			338.26	109.00	3.39
8			338.55	150.00	3.58
8			338.61	160.00	3.63
8			338.64	165.00	3.65
8			338.70	175.00	3.69
8			338.73	179.50	3.71
8			343.01	310.00	7.34
8			343.91	680.58	8.20
9	ENDTBL				
3	STRUCT	64			
9	ENDTBL				
2	XSECTN	030	1.0	357.00	
8			356.00	0.00	0.00
8			356.25	11.94	4.48
8			356.50	38.65	9.42
8			356.75	77.59	14.83
8			357.00	128.16	20.70
8			358.00	446.97	48.84
8			359.00	544.48	91.80
8			360.00	941.05	156.94
8			361.00	1597.14	242.00
9	ENDTBL				
2	XSECTN	035	1.0	317.00	
8			316.00	0.00	0.00
8			316.25	12.78	5.64
8			316.50	44.21	13.12
8			316.75	94.71	22.44
8			317.00	166.16	33.59
8			318.00	703.03	96.58
8			319.00	1203.58	187.92
8			320.00	2039.69	306.56
8			321.00	3441.07	443.04

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

9	ENDTBL				
3	STRUCT	33			
8			323.00	0.00	0.00
8			323.20	5.00	0.01
8			324.01	10.00	0.06
8			325.62	15.00	0.19
8			326.73	18.00	0.29
8			327.09	20.00	0.33
8			327.38	25.00	0.36
8			327.54	28.00	0.38
8			327.63	30.00	0.39
8			328.16	38.10	0.46
8			328.84	73.25	0.54
8			329.21	106.03	0.59
9	ENDTBL				
3	STRUCT	29			
8			266.00	0.00	0.00
8			273.38	10.00	2.49
8			273.62	20.00	2.64
8			273.91	35.00	2.82
8			274.10	46.00	2.94

8			274.35	55.00	3.10
8			274.51	58.00	3.20
8			274.61	60.00	3.28
8			274.90	65.00	3.47
8			275.21	98.51	3.68
8			275.54	139.16	3.92
8			275.89	189.97	4.18
8			276.27	253.87	4.48
8			276.50	299.40	4.67
9	ENDTBL				
2	XSECTN	042	1.0	223.00	
8			222.00	0.00	0.00
8			222.25	2.73	0.83
8			222.50	10.35	2.16
8			222.75	23.82	3.97
8			223.00	44.24	6.28
8			224.00	215.28	20.42
8			225.00	406.10	41.61
8			226.00	702.08	67.86
8			227.00	890.97	103.46
9	ENDTBL				
2	XSECTN	045	1.0	223.00	
8			222.00	0.00	0.00
8			222.25	2.28	0.83
8			222.50	8.62	2.16
8			222.75	19.85	3.97
8			223.00	36.86	6.28
8			224.00	179.35	20.41
8			225.00	338.28	41.30

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)

\*\*\*\*\*

8			226.00	584.84	67.85
8			227.00	830.09	103.44
8			228.00	1249.11	151.47
8			229.00	1307.14	232.37
8			230.00	2023.03	366.57
9	ENDTBL				
3	STRUCT	40			
8			333.00	000.00	0.00
8			334.00	15.15	0.40
8			334.25	16.92	0.47
8			334.50	18.53	0.55
8			334.75	20.02	0.63
8			335.00	21.40	0.68
8			335.50	23.92	0.77
8			335.86	25.59	0.80
8			336.00	27.61	0.82
8			336.25	33.80	0.84
8			336.50	42.02	0.93
8			336.75	51.79	1.01
8			336.86	56.51	1.05
8			337.00	57.30	1.08
8			337.50	58.38	1.31
8			338.00	59.45	1.68
9	ENDTBL				
2	XSECTN	049	1.0	317.00	
8			316.00	0.00	0.00
8			316.25	3.06	1.70
8			316.50	11.11	4.19

8			316.75	24.79	7.47
8			317.00	44.94	11.55
8			318.00	206.80	35.78
8			319.00	333.28	74.89
8			320.00	609.60	131.05
9	ENDTBL				
3	STRUCT	43			
8			317.30	0.00	0.00
8			318.00	0.19	0.08
8			319.00	0.24	0.27
8			320.75	0.30	0.79
8			321.00	3.22	0.85
8			321.75	23.58	1.09
8			322.00	32.83	1.17
8			322.20	40.94	1.20
8			322.40	49.63	1.27
8			322.80	68.56	1.45
8			322.90	73.60	1.49
9	ENDTBL				
2	XSECTN	052	1.0	279.00	
8			276.00	0.00	0.00
8			276.25	15.37	5.56

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			276.50	49.97	11.77		
8			276.75	100.75	18.63		
8			277.00	167.09	26.14		
8			278.00	591.48	62.65		
8			279.00	793.41	115.06		
8			280.00	1313.82	188.91		
8			281.00	2138.14	282.44		
9	ENDTBL						
2	XSECTN	059	1.0	128.00			
8			129.00	0.00	0.00		
8			129.25	1.13	0.50		
8			129.50	5.18	1.55		
8			129.75	13.39	3.16		
8			130.00	26.84	5.32		
8			131.00	191.72	26.64		
8			132.00	508.02	58.78		
8			133.00	945.51	95.90		
8			134.00	1449.27	136.08		
8			135.00	2016.68	178.64		
8			138.00	4199.86	314.48		
9	ENDTBL						
6	RUNOFF	1 001	1 0.2101	77.19	0.319	1	1 141
6	RUNOFF	1 002	2 0.0292	74.00	0.232	1	1 142
6	RESVOR	2 58 2 3				1	1
SWMF58							
6	ADDHYD	4 003	1 3 4			1	1
1+2+58							
6	RUNOFF	1 004	1 0.0617	81.09	0.170	1	1 143
6	ADDHYD	4 005	4 1 2			1	1+2+3
6	RUNOFF	1 006	1 0.0799	74.51	0.216	1	1 144
6	REACH	3 007	2 3	2055.0		1	
6	ADDHYD	4 008	1 3 2			1	SA14
6	RUNOFF	1 009	1 0.0604	78.12	0.220	1	1 153
6	RUNOFF	1 010	3 0.0264	78.36	0.290	1	1 151
6	RESVOR	2 52 3 4				1	1

SWMF52									
6	REACH	3	011	4	5	1396.5			1
6	ADDHYD	4	012	1	5	6			1
153+151									
6	RUNOFF	1	013		1	0.0447	83.97	0.210	1
6	RESVOR	2	51	1	3				1
SWMF51									
6	ADDHYD	4	014	6	3	1			1
012+51									
6	RUNOFF	1	015		3	0.0815	76.80	0.176	1
6	REACH	3	016	1	4	2448.6			1
6	ADDHYD	4	017	3	4	5			1
6	ADDHYD	4	018	2	5	1			1
SA14+15									
6	RUNOFF	1	019		2	0.2701	73.58	0.425	1
6	REACH	3	020	1	3	4470.1			1
6	ADDHYD	4	021	2	3	4			1
14+15+13									
6	RUNOFF	1	022		1	0.0185	83.00	0.283	1
6	RESVOR	2	47	1	2				1
SWMF47									
6	RUNOFF	1	023		3	0.0812	83.00	0.245	1
6	RESVOR	2	32	3	5				1
SWMF32									
6	ADDHYD	4	024	2	5	1			1
121+122									

1

## \*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)

\*\*\*\*\*

6	RUNOFF	1	025		2	0.0465	82.74	0.236	1
6	ADDHYD	4	026	1	2	5			1
024+123									
6	RESVOR	2	34	5	3				1
SWMF34									
6	RUNOFF	1	027		2	0.0126	76.91	0.100	1
6	ADDHYD	4	028	3	2	5			1
6	RUNOFF	1	029		2	0.0499	87.76	0.100	1
6	RESVOR	2	64	2	3				1
SWMF64									
6	REACH	3	030	3	6	1561.1			1
6	RUNOFF	1	031		7	0.1745	85.00	0.449	1
6	ADDHYD	4	032	6	7	3			1
111+112									
6	RUNOFF	1	033		1	0.0477	83.06	0.258	1
6	ADDHYD	4	034	3	1	2			1
032+113									
6	REACH	3	035	2	3	2077.3			1
6	RUNOFF	1	036		6	0.0244	83.54	0.370	1
6	RESVOR	2	33	6	7				1
SWMF33									
6	ADDHYD	4	037	3	7	1			1
111-114									
6	RUNOFF	1	038		2	0.0684	79.13	0.136	1
6	ADDHYD	4	039	1	2	3			1
6	ADDHYD	4	040	5	3	6			1
6	RUNOFF	1	041		1	0.0236	82.59	0.200	1
6	RESVOR	2	29	1	3				1
SWMF29									
6	REACH	3	042	3	5	2112.0			1
6	RUNOFF	1	043		1	0.1211	62.77	0.263	1

```

6 ADDHYD 4 044 5 1 2 1 1 SA10
6 REACH 3 045 6 3 3147.6 1
6 ADDHYD 4 046 2 3 1 1 1
10+12+11
6 RUNOFF 1 047 2 0.2822 80.17 0.434 1 1 81
6 RUNOFF 1 048 3 0.0248 85.45 0.190 1 1 82
6 RESVOR 2 40 3 5 1 1
SWMF40
6 REACH 3 049 5 6 1829.0 1
6 ADDHYD 4 050 2 6 7 1 81+82
6 RUNOFF 1 051 2 0.0218 81.19 0.220 1 1 83
6 RESVOR 2 43 2 3 1 1
SWMF43
6 ADDHYD 4 052 7 3 2 1 1
81+82+83
6 REACH 3 052 2 3 4744.2 1
6 RUNOFF 1 053 5 0.2083 62.56 0.262 1 1 84
6 ADDHYD 4 054 3 5 2 1 1 SA8
6 ADDHYD 4 055 4 1 3 1 1 13+10
6 RUNOFF 1 056 6 0.0166 65.36 0.134 1 1 92
6 ADDHYD 4 057 3 6 7 1 1 1
13+10+92
6 RUNOFF 1 058 1 0.0357 81.76 0.141 1 1 93
6 REACH 3 059 2 3 1670.5 1
6 ADDHYD 4 060 1 3 4 1
SA8+93
6 ADDHYD 4 061 7 4 1 1 92+93
6 RUNOFF 1 062 2 0.0233 86.98 0.186 1 1 1 91
6 ADDHYD 4 063 1 2 3 1 1
OUTFALL
ENDATA
7 INCREM 6 .06
7 COMPUT 7 001 063 0.0 3.19 1.01 2 1 2
ENDCMP 1

```

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)

\*\*\*\*\*

```

7 COMPUT 7 001 063 0.0 4.10 1.01 2 1 05
ENDCMP 1
7 COMPUT 7 001 063 0.0 4.91 1.01 2 1 10
ENDCMP 1
7 COMPUT 7 001 063 0.0 6.14 1.01 2 1 25
ENDCMP 1
7 COMPUT 7 001 063 0.0 7.23 1.01 2 1 50
ENDCMP 1
7 COMPUT 7 001 063 0.0 8.47 1.01 2 1 99
ENDCMP 1
ENDCMP 1
ENDJOB 2

```

\*\*\*\*\*END OF 80-80

LIST\*\*\*\*\*

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
VERSION

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2.04TEST

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PASS 1 JOB NO. 1

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EXECUTIVE CONTROL INCREM      MAIN TIME INCREMENT =    .060 HOURS

EXECUTIVE CONTROL COMPUT      FROM XSECTION    1    TO XSECTION    63  
 STARTING TIME =    .00      RAIN DEPTH =    3.19      RAIN DURATION =    1.00  
 ANT. RUNOFF COND. = 2      MAIN TIME INCREMENT =    .060 HOURS  
 ALTERNATE NO. = 1      STORM NO. = 2      RAIN TABLE NO. = 1

OPERATION RUNOFF    XSECTION    1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	136.6	(RUNOFF)
20.68	4.2	(RUNOFF)
24.01	3.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW =    .00 CFS)  
 1.22 WATERSHED INCHES;      165 CFS-HRS;      13.6 ACRE-FEET.

OPERATION RUNOFF    XSECTION    2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	18.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW =    .00 CFS)  
 1.03 WATERSHED INCHES;      19 CFS-HRS;      1.6 ACRE-FEET.

OPERATION RESVOR    STRUCTURE 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.47	2.2	429.15

RUNOFF ABOVE BASEFLOW (BASEFLOW =    .00 CFS)  
 1.02 WATERSHED INCHES;      19 CFS-HRS;      1.6 ACRE-FEET.

OPERATION ADDHYD    XSECTION    3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	137.7	(NULL)
20.65	5.2	(NULL)
23.76	4.0	(NULL)
24.00	4.0	(NULL)

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.19 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	63.3	(RUNOFF)
15.84	2.4	(RUNOFF)
24.00	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.47 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	189.4	(NULL)
18.63	7.5	(NULL)
20.63	6.5	(NULL)
23.74	5.1	(NULL)
24.00	5.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.25 WATERSHED INCHES; 242 CFS-HRS; 20.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	53.1	(RUNOFF)
17.33	2.0	(RUNOFF)
24.02	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.06 WATERSHED INCHES; 55 CFS-HRS; 4.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	183.8	319.29
18.69	7.5	318.18
20.69	6.5	318.16
23.80	5.1	318.13
24.07	5.1	318.12

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TR20 ----- SCS

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.25 WATERSHED INCHES; 242 CFS-HRS; 20.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	228.3	(NULL)
18.65	9.2	(NULL)
20.12	8.4	(NULL)
21.96	7.3	(NULL)
24.04	6.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.21 WATERSHED INCHES; 297 CFS-HRS; 24.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	49.0	(RUNOFF)
15.83	2.2	(RUNOFF)
23.09	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.27 WATERSHED INCHES; 50 CFS-HRS; 4.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	19.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.29 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
FEET.

\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE  
TABLE

STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
\*\*\*

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
13.33	2.8	454.47

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.86 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-  
FEET.

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\*\*\* WARNING - XSECTION 11, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 11

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
13.47	2.7	414.09
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.86 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE- FEET.		

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	49.1	(NULL)
18.82	2.0	(NULL)
24.02	1.4	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.15 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE- FEET.		

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	49.3	(RUNOFF)
20.86	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.67 WATERSHED INCHES; 48 CFS-HRS; 4.0 ACRE- FEET.		

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.42	22.2	397.47
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.67 WATERSHED INCHES; 48 CFS-HRS; 4.0 ACRE- FEET.		

OPERATION ADDHYD XSECTION 14

1  
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 -

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	65.4	(NULL)
20.06	3.0	(NULL)
24.02	2.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.32 WATERSHED INCHES; 112 CFS-HRS; 9.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	66.3	(RUNOFF)
17.35	2.2	(RUNOFF)
24.01	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.19 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 16

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	59.8	330.83
24.09	2.3	330.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.32 WATERSHED INCHES; 112 CFS-HRS; 9.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	109.9	(NULL)
21.94	4.1	(NULL)
24.01	3.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.27 WATERSHED INCHES; 175 CFS-HRS; 14.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 18

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 TR20 ----- SCS

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	333.7	(NULL)
20.09	13.1	(NULL)
20.63	12.5	(NULL)
21.94	11.4	(NULL)
23.09	10.5	(NULL)
24.03	9.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.23 WATERSHED INCHES; 471 CFS-HRS; 38.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	121.9	(RUNOFF)
20.13	5.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.01 WATERSHED INCHES; 175 CFS-HRS; 14.5 ACRE-  
FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	305.7	235.86
23.13	10.5	234.27
24.09	9.8	234.26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.23 WATERSHED INCHES; 471 CFS-HRS; 38.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	426.1	(NULL)
23.13	14.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.16 WATERSHED INCHES; 646 CFS-HRS; 53.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
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12.22 17.1 (RUNOFF)

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.60 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	12.3	414.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.60 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	80.0	(RUNOFF)
19.47	2.0	(RUNOFF)
24.02	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.60 WATERSHED INCHES; 84 CFS-HRS; 6.9 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	61.0	368.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.60 WATERSHED INCHES; 84 CFS-HRS; 6.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	73.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.60 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	46.1	(RUNOFF)
21.45	1.0	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.58 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	110.3	(NULL)
20.62	3.4	(NULL)
24.01	2.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.59 WATERSHED INCHES; 150 CFS-HRS; 12.4 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.68	54.3	337.19

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.59 WATERSHED INCHES; 150 CFS-HRS; 12.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	12.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.19 WATERSHED INCHES; 10 CFS-HRS; .8 ACRE-  
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -3.3%.  
\*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
12.15	44.1	(NULL)
12.67	56.2	(NULL)
23.98	2.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.56 WATERSHED INCHES; 160 CFS-HRS; 13.2 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	80.5	(RUNOFF)
15.82	2.3	(RUNOFF)
23.02	1.1	(RUNOFF)
23.68	1.0	(RUNOFF)
23.99	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.96 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -.5%.  
 \*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	80.5	(NULL)
15.82	2.3	(NULL)
23.02	1.1	(NULL)
23.68	1.0	(NULL)
23.99	1.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.96 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	74.0	356.73
15.89	2.3	356.05
23.09	1.1	356.02
23.75	1.0	356.02
24.05	1.1	356.02



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	141.6	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.75 WATERSHED INCHES; 197 CFS-HRS; 16.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	191.3	(NULL)
18.86	6.1	(NULL)
21.75	5.0	(NULL)
24.04	4.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.80 WATERSHED INCHES; 260 CFS-HRS; 21.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	46.0	(RUNOFF)
21.76	1.0	(RUNOFF)
21.97	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.60 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	236.3	(NULL)
18.86	7.4	(NULL)
21.75	6.0	(NULL)
24.04	5.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

1.76 WATERSHED INCHES; 310 CFS-HRS; 25.6 ACRE-  
FEET.

OPERATION REACH XSECTION 35

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.34	221.5	317.10
20.68	6.5	316.13
24.10	5.1	316.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.76 WATERSHED INCHES; 309 CFS-HRS; 25.6 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 36

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.27	20.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.64 WATERSHED INCHES; 26 CFS-HRS; 2.1 ACRE-  
FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
TIME INCREMENT OF .047 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

OPERATION RESVOR STRUCTURE 33

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.45	15.2	325.68

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.64 WATERSHED INCHES; 26 CFS-HRS; 2.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.34	235.8	(NULL)
20.68	7.1	(NULL)
24.10	5.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.75 WATERSHED INCHES; 335 CFS-HRS; 27.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	69.3	(RUNOFF)
15.84	2.6	(RUNOFF)
17.34	2.0	(RUNOFF)
24.00	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.33 WATERSHED INCHES; 59 CFS-HRS; 4.9 ACRE-  
 FEET.

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 TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	265.4	(NULL)
23.99	6.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.67 WATERSHED INCHES; 394 CFS-HRS; 32.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	312.0	(NULL)
23.99	9.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.64 WATERSHED INCHES; 554 CFS-HRS; 45.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	24.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.57 WATERSHED INCHES; 24 CFS-HRS; 2.0 ACRE-  
 FEET.

OPERATION RESVOR      STRUCTURE 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.00	3.6	268.66
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.56 WATERSHED INCHES;	24 CFS-HRS;	2.0 ACRE-
FEET.		

OPERATION REACH      XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.17	3.6	222.28
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.56 WATERSHED INCHES;	24 CFS-HRS;	2.0 ACRE-
FEET.		

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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OPERATION RUNOFF      XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	26.2	(RUNOFF)
24.03	1.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.51 WATERSHED INCHES;	40 CFS-HRS;	3.3 ACRE-
FEET.		

OPERATION ADDHYD      XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	27.9	(NULL)
20.62	2.4	(NULL)
24.02	1.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.68 WATERSHED INCHES;	63 CFS-HRS;	5.2 ACRE-
FEET.		

OPERATION REACH      XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	298.1	224.75
24.04	9.6	222.52

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.64 WATERSHED INCHES; 554 CFS-HRS; 45.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	319.9	(NULL)
24.03	11.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.43 WATERSHED INCHES; 617 CFS-HRS; 51.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	185.0	(RUNOFF)

1

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 256 CFS-HRS; 21.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	29.9	(RUNOFF)
15.84	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.78 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	16.5	334.19

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.78 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.51	15.5	316.58
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.78 WATERSHED INCHES;	28 CFS-HRS;	2.4 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	197.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.43 WATERSHED INCHES;	284 CFS-HRS;	23.5 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	20.7	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.47 WATERSHED INCHES;	21 CFS-HRS;	1.7 ACRE-
FEET.		

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\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.86	3.8	321.02
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.97 WATERSHED INCHES;	14 CFS-HRS;	1.1 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	198.1	277.07

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 297 CFS-HRS; 24.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	177.7	277.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 297 CFS-HRS; 24.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	43.9	(RUNOFF)
23.11	2.1	(RUNOFF)
23.76	2.0	(RUNOFF)
24.03	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .50 WATERSHED INCHES; 67 CFS-HRS; 5.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 54

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	207.7	(NULL)
24.00	7.6	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .54  
 SQ.MI.

9.84 CFS	.45	.55	.66	.79	.93	1.08	1.24
1.41							
10.32 CFS	1.59	1.78	1.98	2.19	2.40	2.63	2.88
3.15							
10.80 CFS	3.45	3.80	4.18	4.62	5.11	5.65	6.25
6.92							
11.28 CFS	7.68	8.54	9.52	10.61	11.84	13.20	14.79
16.74							
11.76 CFS	19	22	26	32	42	59	87
121							
12.24 CFS	152	178	196	206	207	201	189
175							
12.72 CFS	160	146	133	120	109	100	91
84							

13.20	CFS	77.02	71.31	66.29	61.83	57.82	54.20	50.92
47.94								
13.68	CFS	45.24	42.81	40.64	38.69	36.98	35.49	34.19
33.07								
14.16	CFS	32.06	31.16	30.33	29.58	28.90	28.25	27.63
27.02								
14.64	CFS	26.42	25.83	25.26	24.70	24.15	23.60	23.05
22.52								
15.12	CFS	21.98	21.43	20.90	20.39	19.93	19.53	19.17
18.87								
15.60	CFS	18.61	18.36	18.13	17.92	17.74	17.59	17.43
17.26								
16.08	CFS	17.08	16.92	16.77	16.63	16.47	16.32	16.17
16.02								
16.56	CFS	15.85	15.69	15.54	15.40	15.26	15.11	14.97
14.84								
17.04	CFS	14.72	14.59	14.44	14.28	14.11	13.98	13.85
13.70								
17.52	CFS	13.53	13.36	13.20	13.05	12.90	12.74	12.58
12.42								
18.00	CFS	12.29	12.15	12.01	11.87	11.73	11.60	11.48
11.34								
18.48	CFS	11.22	11.12	11.06	11.00	10.93	10.88	10.84
10.81								
18.96	CFS	10.77	10.72	10.66	10.62	10.57	10.53	10.49
10.46								
19.44	CFS	10.44	10.42	10.40	10.36	10.32	10.29	10.25
10.20								
19.92	CFS	10.14	10.10	10.08	10.07	10.04	10.00	9.97
9.94								
20.40	CFS	9.89	9.82	9.77	9.74	9.71	9.67	9.63
9.60								
20.88	CFS	9.58	9.55	9.50	9.45	9.40	9.36	9.31
9.28								
21.36	CFS	9.24	9.22	9.20	9.18	9.14	9.09	9.05
9.02								
21.84	CFS	8.98	8.95	8.92	8.90	8.85	8.80	8.76
8.72								
22.32	CFS	8.68	8.64	8.61	8.58	8.55	8.50	8.45
8.41								
22.80	CFS	8.38	8.32	8.25	8.20	8.19	8.17	8.14
8.09								
23.28	CFS	8.06	8.03	8.00	7.96	7.90	7.83	7.79
7.77								
23.76	CFS	7.75	7.70	7.65	7.60	7.61	7.60	7.26
6.66								
24.24	CFS	5.95	5.23	4.52	3.80	3.12	2.53	2.04
1.65								
24.72	CFS	1.34	1.09	.90	.76	.65	.57	.50
.45								

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.05 WATERSHED INCHES; 364 CFS-HRS; 30.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	739.3	(NULL)
24.03	24.9	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.28 WATERSHED INCHES; 1263 CFS-HRS; 104.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	6.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.61 WATERSHED INCHES; 7 CFS-HRS; .5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	742.1	(NULL)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2								
HRS	MAIN	TIME	INCREMENT = .060 hr,						DRAINAGE AREA = 1.55
SQ.MI.									
8.34 CFS	.45	.50	.56	.62	.68	.75	.83		
.92									
8.82 CFS	1.01	1.12	1.22	1.33	1.44	1.56	1.69		
1.83									
9.30 CFS	1.98	2.15	2.34	2.54	2.77	3.01	3.26		
3.53									
9.78 CFS	3.83	4.15	4.50	4.86	5.24	5.64	6.05		
6.50									
10.26 CFS	6.97	7.49	8.04	8.64	9.28	9.98	10.74		
11.57									
10.74 CFS	12.51	13.58	14.82	16.27	17.95	19.87	22.03		
24.51									
11.22 CFS	27.35	30.63	34.41	38.68	43.52	48.88	54.89		
62.49									
11.70 CFS	72	85	101	121	149	190	255		
353									
12.18 CFS	486	610	698	738	735	701	652		
598									
12.66 CFS	545	493	445	403	366	335	309		
287									
13.14 CFS	267	250	235	222	210	200	190		
181									
13.62 CFS	173	165	158	151	145	140	135		
131									
14.10 CFS	127	122	117	113	109	105	102		
99									
14.58 CFS	96.02	93.37	90.83	88.41	86.13	83.99	81.93		
79.93									
15.06 CFS	77.97	76.04	74.10	72.20	70.38	68.73	67.29		
66.07									

15.54	CFS	65.07	64.23	63.45	62.68	61.91	61.20	60.58
60.00								
16.02	CFS	59.42	58.80	58.17	57.55	56.97	56.43	55.88
55.34								
16.50	CFS	54.79	54.21	53.62	53.05	52.53	52.04	51.54
51.04								
16.98	CFS	50.56	50.10	49.67	49.20	48.67	48.08	47.52
47.03								
17.46	CFS	46.55	46.06	45.51	44.93	44.36	43.83	43.32
42.80								
17.94	CFS	42.28	41.79	41.33	40.88	40.41	39.94	39.48
39.04								
18.42	CFS	38.61	38.19	37.82	37.55	37.36	37.19	37.02
36.86								
18.90	CFS	36.73	36.57	36.38	36.17	35.96	35.76	35.59
35.44								
19.38	CFS	35.32	35.23	35.15	35.07	34.95	34.78	34.61
34.46								
19.86	CFS	34.29	34.09	33.91	33.78	33.72	33.66	33.57
33.46								
20.34	CFS	33.31	33.13	32.90	32.66	32.48	32.37	32.29
32.18								
20.82	CFS	32.07	31.98	31.87	31.72	31.55	31.36	31.18
31.01								
21.30	CFS	30.87	30.76	30.67	30.60	30.53	30.44	30.29
30.12								
21.78	CFS	29.97	29.82	29.68	29.59	29.52	29.41	29.26
29.10								
22.26	CFS	28.93	28.76	28.63	28.52	28.42	28.33	28.21
28.03								

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22.74	CFS	27.86	27.71	27.54	27.34	27.15	27.03	26.97
26.91								
23.22	CFS	26.83	26.71	26.58	26.45	26.31	26.14	25.92
25.73								
23.70	CFS	25.60	25.53	25.45	25.32	25.16	25.06	25.04
24.52								
24.18	CFS	22.99	20.63	17.81	14.92	12.27	10.05	8.25
6.84								
24.66	CFS	5.74	4.90	4.25	3.74	3.34	3.02	2.76
2.55								
25.14	CFS	2.37	2.22	2.09	1.98	1.89	1.80	1.73
1.67								
25.62	CFS	1.61	1.56	1.51	1.47	1.42	1.39	1.36
1.30								
26.10	CFS	1.27	1.24	1.21	1.19	1.17	1.16	1.14
1.12								
26.58	CFS	1.11	1.09	1.08	1.06	1.05	1.03	1.02
1.01								
27.06	CFS	1.00	.98	.97	.96	.95	.94	.93
.91								
27.54	CFS	.90	.90	.88	.87	.86	.85	.84
.83								
28.02	CFS	.82	.82	.81	.80	.79	.79	.78
.77								

28.50 CFS	.76	.76	.75	.74	.74	.73	.72
.72							
28.98 CFS	.71	.70	.69	.69	.68	.68	.67
.66							
29.46 CFS	.66	.65	.65	.64	.63	.63	.62
.62							
29.94 CFS	.61	.61	.60	.60	.59	.59	.58

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.27 WATERSHED INCHES; 1270 CFS-HRS; 104.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	40.7	(RUNOFF)
17.34	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.51 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	205.7	131.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.05 WATERSHED INCHES; 364 CFS-HRS; 30.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.53	216.0	(NULL)
23.98	8.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.08 WATERSHED INCHES; 399 CFS-HRS; 33.0 ACRE-FEET.

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OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	936.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.22 WATERSHED INCHES; 1668 CFS-HRS; 137.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 62

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.17	30.3	(RUNOFF)
15.85	1.1	(RUNOFF)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2						
	MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02						
HRS							
SQ.MI.							
9.84 CFS	.49	.51	.53	.56	.58	.61	.64
.67							
10.32 CFS	.69	.72	.75	.78	.82	.88	.94
1.02							
10.80 CFS	1.10	1.19	1.28	1.38	1.47	1.60	1.75
1.92							
11.28 CFS	2.10	2.29	2.49	2.69	2.91	3.40	4.15
4.83							
11.76 CFS	5.51	6.60	8.15	10.41	14.32	20.21	28.00
30.06							
12.24 CFS	24.17	18.07	14.13	11.35	9.57	8.52	7.35
6.19							
12.72 CFS	5.45	5.00	4.68	4.40	4.15	3.89	3.64
3.40							
13.20 CFS	3.20	3.05	2.90	2.76	2.62	2.48	2.34
2.21							
13.68 CFS	2.11	2.04	1.98	1.93	1.90	1.87	1.84
1.81							
14.16 CFS	1.77	1.72	1.68	1.65	1.63	1.60	1.56
1.52							
14.64 CFS	1.47	1.44	1.41	1.38	1.35	1.31	1.28
1.24							
15.12 CFS	1.20	1.17	1.14	1.12	1.11	1.11	1.11
1.11							
15.60 CFS	1.10	1.08	1.06	1.05	1.06	1.05	1.04
1.02							
16.08 CFS	1.00	1.00	.99	.99	.97	.96	.95
.94							
16.56 CFS	.93	.92	.91	.91	.90	.88	.88
.87							
17.04 CFS	.87	.86	.84	.82	.81	.82	.81
.80							
17.52 CFS	.78	.76	.75	.75	.75	.73	.72
.71							
18.00 CFS	.71	.70	.69	.68	.67	.67	.66
.65							
18.48 CFS	.64	.65	.66	.66	.65	.64	.65
.65							
18.96 CFS	.64	.63	.63	.63	.63	.63	.63
.63							
19.44 CFS	.63	.63	.62	.61	.61	.61	.61
.60							
19.92 CFS	.59	.60	.61	.61	.60	.59	.59
.59							
20.40 CFS	.58	.57	.57	.58	.58	.57	.56
.57							
20.88 CFS	.57	.56	.55	.55	.55	.55	.55
.55							
21.36 CFS	.55	.55	.55	.55	.53	.52	.53

.53							
21.84 CFS	.52	.53	.53	.52	.51	.51	.51
.51							
22.32 CFS	.51	.51	.51	.51	.50	.49	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	948.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.23 WATERSHED INCHES; 1697 CFS-HRS; 140.2 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 4.10 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. = 5 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	217.7	(RUNOFF)
20.12	6.2	(RUNOFF)
21.93	5.5	(RUNOFF)
24.02	4.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 258 CFS-HRS; 21.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	30.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.67 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.68	8.3	430.23

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.64 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	219.8	(NULL)
18.65	8.3	(NULL)
20.66	7.2	(NULL)
23.11	6.0	(NULL)
24.01	5.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.87 WATERSHED INCHES; 289 CFS-HRS; 23.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	95.7	(RUNOFF)
15.84	3.4	(RUNOFF)
19.47	2.0	(RUNOFF)
24.00	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.21 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	299.6	(NULL)
18.63	10.4	(NULL)
20.63	9.1	(NULL)
21.95	8.3	(NULL)
23.74	7.2	(NULL)
24.01	7.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.94 WATERSHED INCHES; 377 CFS-HRS; 31.1 ACRE-  
FEET.

FEET.

OPERATION RUNOFF XSECTION 6

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	87.6	(RUNOFF)
15.83	3.8	(RUNOFF)
21.46	2.0	(RUNOFF)
24.02	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.70 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	292.4	319.71
18.70	10.4	318.25
20.69	9.1	318.22
22.00	8.3	318.20
23.80	7.2	318.18
24.07	7.1	318.17

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.94 WATERSHED INCHES; 377 CFS-HRS; 31.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	368.5	(NULL)
18.66	12.8	(NULL)
20.67	11.3	(NULL)
21.99	10.3	(NULL)
23.12	9.4	(NULL)
24.04	8.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 465 CFS-HRS; 38.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	77.2	(RUNOFF)

15.82	3.1	(RUNOFF)
24.03	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.98 WATERSHED INCHES; 77 CFS-HRS; 6.4 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	30.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.99 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.72	8.9	454.90

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.54 WATERSHED INCHES; 26 CFS-HRS; 2.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.82	8.8	414.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.54 WATERSHED INCHES; 26 CFS-HRS; 2.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	77.4	(NULL)
23.08	2.1	(NULL)
23.73	2.0	(NULL)



24.03 2.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.84 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	71.9	(RUNOFF)
17.33	2.0	(RUNOFF)
24.02	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.45 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.39	34.2	397.96

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.45 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	103.2	(NULL)
20.62	4.1	(NULL)
24.02	3.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.04 WATERSHED INCHES; 173 CFS-HRS; 14.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	106.0	(RUNOFF)
15.85	4.1	(RUNOFF)
17.34	3.2	(RUNOFF)
22.46	2.0	(RUNOFF)
24.01	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.87 WATERSHED INCHES; 99 CFS-HRS; 8.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.31	95.7	331.04
20.67	4.0	330.17
24.09	3.2	330.13

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.04 WATERSHED INCHES; 173 CFS-HRS; 14.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	178.2	(NULL)
20.80	6.3	(NULL)
23.72	5.0	(NULL)
24.01	5.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.98 WATERSHED INCHES; 272 CFS-HRS; 22.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.24	539.2	(NULL)
20.10	18.4	(NULL)
20.64	17.6	(NULL)
21.95	16.1	(NULL)
23.10	14.7	(NULL)
24.03	13.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.92 WATERSHED INCHES; 737 CFS-HRS; 60.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.32	207.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.64 WATERSHED INCHES; 286 CFS-HRS; 23.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.37	486.7	236.60
23.13	14.7	234.32
24.09	13.7	234.31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.92 WATERSHED INCHES; 736 CFS-HRS; 60.9 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.36	690.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.83 WATERSHED INCHES; 1022 CFS-HRS; 84.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.22	25.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.37 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.33	21.0	414.35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.37 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK

ELEVATION(FEET)		
12.20	119.0	(RUNOFF)
23.10	2.1	(RUNOFF)
23.75	2.0	(RUNOFF)
24.02	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.37 WATERSHED INCHES; 124 CFS-HRS; 10.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	86.1	368.74

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.37 WATERSHED INCHES; 124 CFS-HRS; 10.3 ACRE-FEET.

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OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	107.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.37 WATERSHED INCHES; 153 CFS-HRS; 12.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	68.4	(RUNOFF)
24.03	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.35 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	162.5	(NULL)
20.62	4.6	(NULL)
24.02	3.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

2.36 WATERSHED INCHES; 223 CFS-HRS; 18.4 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	127.1	338.39

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.36 WATERSHED INCHES; 223 CFS-HRS; 18.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	20.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.88 WATERSHED INCHES; 15 CFS-HRS; 1.3 ACRE-  
FEET.

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\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .0%.  
\*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	131.8	(NULL)
23.98	4.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.33 WATERSHED INCHES; 238 CFS-HRS; 19.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	113.0	(RUNOFF)
15.82	3.1	(RUNOFF)
17.32	2.4	(RUNOFF)
23.99	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.79 WATERSHED INCHES; 90 CFS-HRS; 7.4 ACRE-

FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .0%.  
 \*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	113.0	(NULL)
15.82	3.1	(NULL)
17.32	2.4	(NULL)
23.99	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.79 WATERSHED INCHES; 90 CFS-HRS; 7.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 30

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	105.9	356.89
15.89	3.1	356.06
17.39	2.4	356.05
24.05	1.4	356.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.80 WATERSHED INCHES; 90 CFS-HRS; 7.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	206.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 287 CFS-HRS; 23.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	276.5	(NULL)
18.86	8.3	(NULL)
20.87	7.3	(NULL)

23.09	6.1	(NULL)
24.04	5.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.60 WATERSHED INCHES; 377 CFS-HRS; 31.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	68.1	(RUNOFF)
24.03	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.38 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 34

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	343.4	(NULL)
18.63	10.1	(NULL)
20.09	9.3	(NULL)
21.97	8.1	(NULL)
23.09	7.4	(NULL)
24.04	7.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.56 WATERSHED INCHES; 450 CFS-HRS; 37.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	326.6	317.30
20.16	9.3	316.18
22.00	8.1	316.16
23.15	7.4	316.14
24.10	6.9	316.14

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.56 WATERSHED INCHES; 450 CFS-HRS; 37.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION(FEET)  
12.27 30.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.42 WATERSHED INCHES; 38 CFS-HRS; 3.1 ACRE-  
FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
TIME INCREMENT OF .047 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.44 23.6 327.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.42 WATERSHED INCHES; 38 CFS-HRS; 3.1 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.33 343.7 (NULL)  
20.16 10.1 (NULL)  
20.68 9.6 (NULL)  
23.15 8.0 (NULL)  
24.10 7.5 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.55 WATERSHED INCHES; 488 CFS-HRS; 40.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.13 107.3 (RUNOFF)  
15.84 3.7 (RUNOFF)  
20.04 2.1 (RUNOFF)  
20.60 2.0 (RUNOFF)  
20.83 2.0 (RUNOFF)  
24.00 1.7 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)



2.05 WATERSHED INCHES; 91 CFS-HRS; 7.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.31	390.1	(NULL)
23.99	9.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.46 WATERSHED INCHES; 578 CFS-HRS; 47.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.40	489.7	(NULL)
23.99	13.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.42 WATERSHED INCHES; 817 CFS-HRS; 67.5 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 41

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.17	36.9	(RUNOFF)
17.34	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.34 WATERSHED INCHES; 36 CFS-HRS; 2.9 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.93	5.5	270.05

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.32 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-  
FEET.

OPERATION REACH XSECTION 42

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
-----------------	----------------------	------



FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	285.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.14 WATERSHED INCHES;	389 CFS-HRS;	32.1 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	43.5	(RUNOFF)
17.34	1.1	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.59 WATERSHED INCHES;	41 CFS-HRS;	3.4 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	21.9	335.09

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.59 WATERSHED INCHES;	41 CFS-HRS;	3.4 ACRE-
FEET.		

OPERATION REACH XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.50	20.8	316.68
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.58 WATERSHED INCHES;	41 CFS-HRS;	3.4 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	303.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.17 WATERSHED INCHES; 430 CFS-HRS; 35.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.18	31.3	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.22 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	14.9	321.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.69 WATERSHED INCHES; 24 CFS-HRS; 2.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	315.4	277.35

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.14 WATERSHED INCHES; 454 CFS-HRS; 37.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	287.9	277.28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.14 WATERSHED INCHES; 454 CFS-HRS; 37.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	103.1	(RUNOFF)
20.11	4.2	(RUNOFF)
20.66	4.0	(RUNOFF)
24.02	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.95 WATERSHED INCHES; 127 CFS-HRS; 10.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.43	350.5	(NULL)
23.99	11.0	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .54 SQ.MI.

HRS	8.64	9.12	9.60	10.08	10.56	11.04	11.52	12.00	12.48	12.96	13.44	13.92	14.40	14.88	15.36	15.84	16.32
CFS	.49	1.33	2.57	4.53	7.24	12.15	24.04	93	346	165	84.87	54.04	42.47	35.42	29.13	26.01	24.12
	.57	1.45	2.77	4.82	7.64	13.15	26.54	126	330	149	79.41	51.91	41.53	34.59	28.54	25.79	23.89
	.67	1.58	2.98	5.13	8.07	14.23	29.74	178	306	136	74.48	50.08	40.61	33.78	28.04	25.55	23.66
	.77	1.71	3.21	5.46	8.55	15.43	33.99	236	278	124	70.04	48.48	39.71	32.97	27.62	25.29	23.44
	.87	1.86	3.45	5.79	9.09	16.79	39.69	283	251	114	66.05	47.05	38.80	32.17	27.24	25.03	23.19
	.98	2.02	3.70	6.14	9.72	18.31	47.25	317	225	105	62.48	45.75	37.92	31.35	26.90	24.79	22.95
	1.09	2.19	3.97	6.50	10.44	20.02	57.40	340	203	98	59.32	44.56	37.06	30.55	26.56	24.57	22.72
	1.21	2.37	4.24	6.86	11.25	21.92	71.66	350	182	91	56.50	43.47	36.23	29.80	26.25	24.35	22.52

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16.80	CFS	22.31	22.08	21.87	21.67	21.49	21.30	21.08
20.83								
17.28	CFS	20.58	20.38	20.19	19.97	19.72	19.46	19.22
19.00								
17.76	CFS	18.78	18.55	18.30	18.08	17.88	17.69	17.48
17.26								
18.24	CFS	17.05	16.87	16.69	16.49	16.31	16.17	16.09
16.01								
18.72	CFS	15.92	15.83	15.78	15.75	15.68	15.60	15.52
15.45								
19.20	CFS	15.38	15.32	15.27	15.23	15.19	15.17	15.13
15.07								
19.68	CFS	15.00	14.95	14.90	14.83	14.73	14.67	14.65
14.63								
20.16	CFS	14.59	14.53	14.48	14.44	14.36	14.25	14.16
14.12								
20.64	CFS	14.09	14.03	13.96	13.92	13.90	13.85	13.78
13.70								
21.12	CFS	13.63	13.56	13.50	13.44	13.39	13.36	13.33
13.30								
21.60	CFS	13.25	13.17	13.11	13.07	13.00	12.95	12.92
12.88								
22.08	CFS	12.82	12.74	12.68	12.62	12.56	12.50	12.45
12.41								
22.56	CFS	12.37	12.29	12.21	12.16	12.10	12.02	11.92
11.85								
23.04	CFS	11.83	11.81	11.76	11.70	11.65	11.60	11.56
11.50								
23.52	CFS	11.40	11.30	11.24	11.21	11.19	11.12	11.03
10.96								
24.00	CFS	10.99	10.95	10.45	9.47	8.35	7.23	6.13
5.05								
24.48	CFS	4.07	3.22	2.55	2.01	1.59	1.27	1.03
.85								
24.96	CFS	.72	.62	.54	.48			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.68 WATERSHED INCHES; 581 CFS-HRS; 48.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.40 1132.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 1948 CFS-HRS; 161.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.14 13.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

1.11 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK  
ELEVATION (FEET) 1136.8 (NULL)  
12.39

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55  
SQ.MI.  
7.20 CFS .48 .54 .60 .67 .75 .83 .92  
1.02  
7.68 CFS 1.13 1.24 1.36 1.48 1.61 1.75 1.90  
2.06  
8.16 CFS 2.24 2.42 2.60 2.81 3.01 3.20 3.41  
3.63

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8.64 CFS 3.86 4.09 4.33 4.59 4.85 5.12 5.40  
5.67  
9.12 CFS 5.95 6.26 6.59 6.97 7.39 7.88 8.41  
9.00  
9.60 CFS 9.63 10.29 11.00 11.75 12.55 13.41 14.33  
15.30  
10.08 CFS 16.33 17.43 18.61 19.86 21.18 22.55 23.97  
25.44  
10.56 CFS 26.96 28.59 30.35 32.33 34.59 37.18 40.15  
43.48  
11.04 CFS 47.18 51.24 55.71 60.79 66.54 73.06 80.38  
88.47  
11.52 CFS 97 108 120 137 158 184 218  
262  
12.00 CFS 326 422 566 749 941 1072 1131  
1134  
12.48 CFS 1101 1051 981 899 811 726 650  
583  
12.96 CFS 528 482 444 410 381 355 331  
311  
13.44 CFS 293 278 263 250 238 227 217  
208  
13.92 CFS 200 193 186 181 176 171 167  
163  
14.40 CFS 159 155 151 147 142 137 133  
128  
14.88 CFS 125 121 118 114 111 108 105  
102  
15.36 CFS 99.52 97.23 95.29 93.66 92.27 91.02 89.82  
88.66  
15.84 CFS 87.56 86.61 85.76 84.89 84.00 83.07 82.17  
81.33  
16.32 CFS 80.54 79.75 78.95 78.15 77.33 76.48 75.66  
74.89  
16.80 CFS 74.18 73.47 72.74 72.03 71.37 70.73 70.06

69.31								
17.28	CFS	68.50	67.68	66.95	66.28	65.56	64.79	63.96
63.15								
17.76	CFS	62.38	61.64	60.90	60.16	59.45	58.78	58.13
57.47								
18.24	CFS	56.78	56.12	55.49	54.88	54.28	53.72	53.31
53.01								
18.72	CFS	52.75	52.50	52.25	52.05	51.84	51.57	51.27
50.97								
19.20	CFS	50.69	50.43	50.22	50.04	49.89	49.77	49.64
49.48								
19.68	CFS	49.26	49.00	48.78	48.55	48.28	48.02	47.82
47.71								
20.16	CFS	47.63	47.49	47.33	47.13	46.88	46.57	46.23
45.96								
20.64	CFS	45.80	45.66	45.52	45.36	45.20	45.06	44.86
44.61								
21.12	CFS	44.35	44.09	43.85	43.65	43.48	43.34	43.23
43.13								
21.60	CFS	43.00	42.81	42.57	42.34	42.16	41.96	41.79
41.68								
22.08	CFS	41.54	41.33	41.10	40.86	40.63	40.43	40.27
40.13								
22.56	CFS	39.99	39.82	39.60	39.33	39.11	38.88	38.61
38.35								
23.04	CFS	38.16	38.05	37.98	37.85	37.69	37.50	37.31
37.11								
23.52	CFS	36.89	36.61	36.31	36.12	36.00	35.88	35.71
35.50								
24.00	CFS	35.34	35.17	34.57	32.79	29.63	25.86	21.93
18.23								
24.48	CFS	15.07	12.47	10.35	8.66	7.32	6.27	5.46
4.82								
24.96	CFS	4.30	3.89	3.55	3.27	3.04	2.84	2.67
2.53								
25.44	CFS	2.41	2.29	2.19	2.11	2.03	1.96	1.90
1.84								
25.92	CFS	1.79	1.74	1.69	1.65	1.61	1.56	1.52
1.48								
26.40	CFS	1.45	1.43	1.40	1.38	1.36	1.34	1.32
1.30								
26.88	CFS	1.29	1.27	1.25	1.23	1.22	1.20	1.18
1.17								
27.36	CFS	1.15	1.14	1.13	1.11	1.10	1.08	1.07
1.06								
27.84	CFS	1.04	1.03	1.02	1.00	.99	.98	.97
.96								
28.32	CFS	.95	.94	.93	.92	.91	.90	.89
.88								
28.80	CFS	.87	.86	.86	.85	.84	.83	.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.96 WATERSHED INCHES; 1960 CFS-HRS; 162.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 58

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.13	60.8	(RUNOFF)
15.45	2.1	(RUNOFF)
15.84	2.0	(RUNOFF)
21.45	1.0	(RUNOFF)
21.73	1.0	(RUNOFF)
21.94	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.27 WATERSHED INCHES; 52 CFS-HRS; 4.3 ACRE-  
FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.51	348.0	131.49
24.04	11.0	129.68

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.68 WATERSHED INCHES; 581 CFS-HRS; 48.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.50	363.4	(NULL)
23.98	11.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.71 WATERSHED INCHES; 633 CFS-HRS; 52.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.42	1484.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.89 WATERSHED INCHES; 2593 CFS-HRS; 214.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 62

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	42.9	(RUNOFF)
17.34	1.1	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02  
SQ.MI.  
9.00 CFS .50 .52 .54 .56 .58 .62 .65

1 .68

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9.48	CFS	.70	.73	.76	.80	.84	.87	.91
.94								
9.96	CFS	.97	1.01	1.06	1.10	1.14	1.18	1.21
1.26								
10.44	CFS	1.30	1.35	1.41	1.50	1.60	1.72	1.85
1.99								
10.92	CFS	2.13	2.27	2.42	2.61	2.84	3.10	3.37
3.64								
11.40	CFS	3.94	4.24	4.55	5.26	6.40	7.39	8.36
9.92								
11.88	CFS	12.16	15.33	20.86	29.18	40.16	42.49	33.98
25.22								
12.36	CFS	19.65	15.69	13.24	11.74	10.10	8.49	7.47
6.86								
12.84	CFS	6.40	6.01	5.66	5.32	4.97	4.64	4.37
4.15								
13.32	CFS	3.95	3.76	3.57	3.37	3.18	3.01	2.87
2.77								
13.80	CFS	2.69	2.63	2.58	2.54	2.50	2.45	2.40
2.34								
14.28	CFS	2.28	2.24	2.20	2.16	2.11	2.05	1.99
1.94								
14.76	CFS	1.90	1.87	1.82	1.77	1.72	1.68	1.63
1.58								
15.24	CFS	1.54	1.51	1.50	1.50	1.50	1.50	1.48
1.46								
15.72	CFS	1.43	1.42	1.42	1.42	1.40	1.37	1.35
1.34								
16.20	CFS	1.34	1.33	1.31	1.30	1.29	1.27	1.25
1.24								
16.68	CFS	1.23	1.23	1.21	1.19	1.18	1.18	1.17
1.16								
17.16	CFS	1.13	1.10	1.09	1.10	1.09	1.07	1.05
1.03								
17.64	CFS	1.02	1.01	1.00	.98	.97	.96	.95
.95								
18.12	CFS	.93	.91	.90	.90	.89	.87	.87
.88								
18.60	CFS	.89	.89	.87	.87	.88	.87	.86
.85								
19.08	CFS	.85	.84	.84	.84	.84	.84	.84
.84								
19.56	CFS	.84	.82	.81	.82	.82	.80	.80
.80								
20.04	CFS	.82	.82	.80	.79	.79	.79	.77
.76								
20.52	CFS	.77	.78	.78	.77	.76	.76	.77
.75								
21.00	CFS	.74	.74	.74	.73	.73	.73	.73
.73								
21.48	CFS	.73	.73	.72	.70	.71	.71	.70
.70								
21.96	CFS	.71	.70	.69	.68	.68	.68	.68

.68							
22.44 CFS	.68	.68	.67	.66	.65	.66	.65
.64							
22.92 CFS	.63	.64	.65	.65	.64	.63	.63
.62							
23.40 CFS	.62	.62	.60	.59	.60	.61	.61
.60							
23.88 CFS	.58	.58	.62	.60	.40		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.72 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	1500.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 2634 CFS-HRS; 217.7 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

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EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =10 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	295.0	(RUNOFF)
18.67	8.6	(RUNOFF)
20.67	7.5	(RUNOFF)
23.12	6.3	(RUNOFF)
24.01	5.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.56 WATERSHED INCHES; 347 CFS-HRS; 28.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	42.1	(RUNOFF)

20.09 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.29 WATERSHED INCHES; 43 CFS-HRS; 3.6 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.52 16.1 430.98

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.25 WATERSHED INCHES; 42 CFS-HRS; 3.5 ACRE-
FEET.

OPERATION ADDHYD XSECTION 3

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.26 303.4 (NULL)
18.66 10.3 (NULL)
20.66 9.0 (NULL)
23.76 7.1 (NULL)
24.01 7.0 (NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.52 WATERSHED INCHES; 390 CFS-HRS; 32.2 ACRE-
FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.15 125.5 (RUNOFF)
15.84 4.3 (RUNOFF)
17.34 3.3 (RUNOFF)
21.95 2.2 (RUNOFF)
24.00 1.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.91 WATERSHED INCHES; 116 CFS-HRS; 9.6 ACRE-
FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.21 404.6 (NULL)
18.64 13.0 (NULL)

20.63	11.4	(NULL)
21.95	10.4	(NULL)
23.08	9.5	(NULL)
24.00	8.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.60 WATERSHED INCHES; 505 CFS-HRS; 41.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	121.4	(RUNOFF)
15.83	4.9	(RUNOFF)
18.87	3.1	(RUNOFF)
24.02	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.33 WATERSHED INCHES; 120 CFS-HRS; 9.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 7

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	397.0	320.10
18.70	13.0	318.28
20.69	11.4	318.26
22.00	10.4	318.25
23.15	9.5	318.23
24.07	8.9	318.22

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.60 WATERSHED INCHES; 505 CFS-HRS; 41.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	500.5	(NULL)
18.66	16.1	(NULL)
20.67	14.1	(NULL)
21.99	12.9	(NULL)
23.77	11.2	(NULL)
24.04	11.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 626 CFS-HRS; 51.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	103.4	(RUNOFF)
21.97	2.0	(RUNOFF)
24.02	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.64 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	40.4	(RUNOFF)
18.66	1.1	(RUNOFF)
20.12	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.67 WATERSHED INCHES; 45 CFS-HRS; 3.8 ACRE-  
FEET.

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\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE  
TABLE  
STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
\*\*\*

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.60	15.5	455.36

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.20 WATERSHED INCHES; 37 CFS-HRS; 3.1 ACRE-  
FEET.

OPERATION REACH XSECTION 11

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.69	15.4	414.37

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.20 WATERSHED INCHES; 37 CFS-HRS; 3.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	103.7	(NULL)
20.86	3.2	(NULL)
24.01	2.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.51 WATERSHED INCHES; 140 CFS-HRS; 11.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	92.4	(RUNOFF)
15.84	3.2	(RUNOFF)
17.32	2.5	(RUNOFF)
18.64	2.0	(RUNOFF)
24.01	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.18 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 51

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	45.7	398.37

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.18 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	138.8	(NULL)
20.62	5.1	(NULL)
23.07	4.2	(NULL)
23.71	4.0	(NULL)
24.01	3.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.73 WATERSHED INCHES; 232 CFS-HRS; 19.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	143.3	(RUNOFF)
15.84	5.3	(RUNOFF)
17.34	4.1	(RUNOFF)
19.75	3.1	(RUNOFF)
20.06	3.1	(RUNOFF)
24.01	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.53 WATERSHED INCHES; 133 CFS-HRS; 11.0 ACRE-FEET.

OPERATION REACH XSECTION 16

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	130.3	331.15
20.68	5.1	330.21
23.77	4.0	330.17
24.08	3.9	330.17

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.73 WATERSHED INCHES; 232 CFS-HRS; 19.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 17

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	243.4	(NULL)
20.06	8.4	(NULL)
20.62	8.0	(NULL)
21.94	7.3	(NULL)
24.01	6.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.65 WATERSHED INCHES; 365 CFS-HRS; 30.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	732.9	(NULL)
18.63	25.4	(NULL)
20.10	23.1	(NULL)



20.64	22.1	(NULL)
21.95	20.2	(NULL)
23.10	18.5	(NULL)
24.03	17.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.58 WATERSHED INCHES; 990 CFS-HRS; 81.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	289.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.26 WATERSHED INCHES; 393 CFS-HRS; 32.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	658.4	237.23
23.13	18.5	234.37
24.09	17.3	234.35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.58 WATERSHED INCHES; 990 CFS-HRS; 81.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	941.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.48 WATERSHED INCHES; 1383 CFS-HRS; 114.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	32.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.09 WATERSHED INCHES; 37 CFS-HRS; 3.0 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	27.2	414.77
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.09 WATERSHED INCHES;	37 CFS-HRS;	3.0 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	154.3	(RUNOFF)
20.87	3.1	(RUNOFF)
24.03	2.5	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.09 WATERSHED INCHES;	162 CFS-HRS;	13.4 ACRE-
FEEET.		

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	122.8	369.12
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.09 WATERSHED INCHES;	162 CFS-HRS;	13.4 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 24

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	149.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.09 WATERSHED INCHES;	199 CFS-HRS;	16.4 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	89.1	(RUNOFF)
18.87	2.0	(RUNOFF)

24.02 1.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.07 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-
FEET.

OPERATION ADDHYD XSECTION 26

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Rows show values for 12.26, 20.08, 20.61, and 24.01 hours, with discharge values of 223.0, 6.0, 5.8, and 4.5 CFS respectively. All peak elevations are NULL.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.08 WATERSHED INCHES; 291 CFS-HRS; 24.0 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 34

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Row shows values for 12.39 hours, 184.8 CFS discharge, and 338.90 feet elevation.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.08 WATERSHED INCHES; 291 CFS-HRS; 24.0 ACRE-
FEET.

OPERATION RUNOFF XSECTION 27

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Row shows values for 12.12 hours, 26.6 CFS discharge, and (RUNOFF) elevation.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.54 WATERSHED INCHES; 21 CFS-HRS; 1.7 ACRE-
FEET.

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\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -1.0%.
\*\*\*

OPERATION ADDHYD XSECTION 28

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Rows show values for 12.37 and 23.98 hours, with discharge values of 192.2 and 4.9 CFS respectively. All peak elevations are NULL.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.04 WATERSHED INCHES; 311 CFS-HRS; 25.7 ACRE-
FEET.

OPERATION RUNOFF XSECTION 29

Table with 3 columns: PEAK TIME(HRS) ELEVATION(FEET), PEAK DISCHARGE(CFS), PEAK. Rows include values like 12.11, 141.9, (RUNOFF).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.56 WATERSHED INCHES; 115 CFS-HRS; 9.5 ACRE-
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .3%.
\*\*\*

OPERATION RESVOR STRUCTURE 64

Table with 3 columns: PEAK TIME(HRS) ELEVATION(FEET), PEAK DISCHARGE(CFS), PEAK. Rows include values like 12.11, 141.9, (NULL).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.56 WATERSHED INCHES; 115 CFS-HRS; 9.5 ACRE-
FEET.

OPERATION REACH XSECTION 30

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Table with 3 columns: PEAK TIME(HRS) ELEVATION(FEET), PEAK DISCHARGE(CFS), PEAK. Rows include values like 12.18, 134.5, 357.02.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.54 WATERSHED INCHES; 114 CFS-HRS; 9.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	264.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.28 WATERSHED INCHES; 370 CFS-HRS; 30.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	351.7	(NULL)
18.86	10.2	(NULL)
20.62	9.1	(NULL)
21.97	8.3	(NULL)
23.74	7.1	(NULL)
24.04	7.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.34 WATERSHED INCHES; 484 CFS-HRS; 40.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	88.5	(RUNOFF)
18.65	2.1	(RUNOFF)
24.02	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.10 WATERSHED INCHES; 95 CFS-HRS; 7.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 34

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	439.0	(NULL)
18.86	12.3	(NULL)
20.09	11.4	(NULL)
21.75	10.1	(NULL)
23.09	9.1	(NULL)

24.04 8.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.30 WATERSHED INCHES; 579 CFS-HRS; 47.9 ACRE-
FEET.

OPERATION REACH XSECTION 35

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.32, 20.16, 20.91, 23.15, 24.10 and corresponding discharge and peak values.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.30 WATERSHED INCHES; 579 CFS-HRS; 47.9 ACRE-
FEET.

OPERATION RUNOFF XSECTION 36

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.27, 20.14 and corresponding discharge and peak values, with (RUNOFF) noted.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.14 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-
FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE
TIME INCREMENT OF .047 HOURS.
\*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES
FIRST NEGATIVE VALUE IS 0 CFS.
\*\*\*

OPERATION RESVOR STRUCTURE 33

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.39, 20.15 and corresponding discharge and peak values.

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.14 WATERSHED INCHES; 50 CFS-HRS; 4.1 ACRE-
FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	452.2	(NULL)
20.16	12.4	(NULL)
20.91	11.7	(NULL)
22.01	10.8	(NULL)
24.10	9.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.29 WATERSHED INCHES; 629 CFS-HRS; 52.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.13	142.5	(RUNOFF)
15.84	4.6	(RUNOFF)
17.34	3.6	(RUNOFF)
23.04	2.2	(RUNOFF)
23.70	2.0	(RUNOFF)
24.00	2.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.74 WATERSHED INCHES; 121 CFS-HRS; 10.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	511.7	(NULL)
23.99	11.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.18 WATERSHED INCHES; 750 CFS-HRS; 61.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	708.9	(NULL)
23.99	16.2	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.14 WATERSHED INCHES; 1061 CFS-HRS; 87.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	47.7	(RUNOFF)
18.86	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.05 WATERSHED INCHES;		46 CFS-HRS; 3.8 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.89	7.2	271.34
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.02 WATERSHED INCHES;		46 CFS-HRS; 3.8 ACRE-
FEET.		

OPERATION REACH XSECTION 42

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
13.04	7.2	222.40
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.02 WATERSHED INCHES;		46 CFS-HRS; 3.8 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 43

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	96.2	(RUNOFF)
21.46	3.0	(RUNOFF)
24.02	2.5	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.43 WATERSHED INCHES;		112 CFS-HRS; 9.3 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 44

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	99.7	(NULL)
20.07	5.3	(NULL)



20.62	5.0	(NULL)
24.02	3.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.69 WATERSHED INCHES; 158 CFS-HRS; 13.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	648.3	226.26
24.04	16.2	222.67

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.14 WATERSHED INCHES; 1061 CFS-HRS; 87.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	711.6	(NULL)
24.03	19.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.82 WATERSHED INCHES; 1219 CFS-HRS; 100.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	378.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.83 WATERSHED INCHES; 515 CFS-HRS; 42.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	55.0	(RUNOFF)
20.07	1.1	(RUNOFF)
20.63	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.32 WATERSHED INCHES; 53 CFS-HRS; 4.4 ACRE-  
 FEET.

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## OPERATION RESVOR      STRUCTURE 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	35.5	336.30
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.32 WATERSHED INCHES; FEET.	53 CFS-HRS;	4.4 ACRE-

## OPERATION REACH      XSECTION 49

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	30.8	316.83
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.32 WATERSHED INCHES; FEET.	53 CFS-HRS;	4.4 ACRE-

## OPERATION ADDHYD      XSECTION 50

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	404.6	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.87 WATERSHED INCHES; FEET.	568 CFS-HRS;	47.0 ACRE-

## OPERATION RUNOFF      XSECTION 51

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	40.9	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.92 WATERSHED INCHES; FEET.	41 CFS-HRS;	3.4 ACRE-

\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE

STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.  
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
\*\*\*

## OPERATION RESVOR      STRUCTURE 43

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	27.6	321.86
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.37 WATERSHED INCHES; FEET.	33 CFS-HRS;	2.8 ACRE-

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OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	432.2	277.62

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.83 WATERSHED INCHES; 601 CFS-HRS; 49.7 ACRE-FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	397.7	277.54

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.83 WATERSHED INCHES; 601 CFS-HRS; 49.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	163.6	(RUNOFF)
18.87	6.1	(RUNOFF)
21.98	5.0	(RUNOFF)
24.03	4.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.42 WATERSHED INCHES; 191 CFS-HRS; 15.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	497.3	(NULL)
24.01	14.1	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .54 SQ.MI.

HRS								
7.74 CFS	.49	.58	.68	.79	.90	1.01	1.14	
1.26								
8.22 CFS	1.39	1.53	1.66	1.80	1.94	2.08	2.23	
2.38								
8.70 CFS	2.53	2.68	2.84	3.01	3.17	3.33	3.50	
3.67								
9.18 CFS	3.84	4.03	4.24	4.46	4.70	4.97	5.25	
5.55								
9.66 CFS	5.86	6.19	6.54	6.90	7.28	7.68	8.09	

8.51								
10.14	CFS	8.95	9.40	9.87	10.35	10.85	11.36	11.88
12.40								
10.62	CFS	12.95	13.56	14.23	15.01	15.91	16.94	18.11
19.42								
11.10	CFS	20.88	22.53	24.47	26.78	29.51	32.65	36.19
40.13								
11.58	CFS	45	51	58	67	79	95	116
149								
12.06	CFS	199	273	354	421	465	490	497
483								
12.54	CFS	452	413	370	330	293	262	234
211								

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13.02	CFS	191	174	159	146	135	125	117
109								
13.50	CFS	102	96	90	85	80	76	73
69								
13.98	CFS	66.72	64.42	62.42	60.63	58.99	57.49	56.11
54.83								
14.46	CFS	53.63	52.45	51.28	50.11	48.96	47.84	46.77
45.70								
14.94	CFS	44.62	43.56	42.52	41.46	40.40	39.35	38.38
37.52								
15.42	CFS	36.77	36.14	35.61	35.14	34.70	34.27	33.88
33.56								
15.90	CFS	33.28	32.98	32.64	32.30	31.98	31.69	31.41
31.11								
16.38	CFS	30.80	30.51	30.21	29.89	29.57	29.28	29.02
28.74								
16.86	CFS	28.45	28.17	27.91	27.68	27.44	27.15	26.81
26.49								
17.34	CFS	26.23	25.98	25.70	25.37	25.03	24.71	24.43
24.14								
17.82	CFS	23.84	23.52	23.23	22.97	22.72	22.45	22.17
21.90								
18.30	CFS	21.67	21.44	21.18	20.94	20.77	20.67	20.58
20.46								
18.78	CFS	20.35	20.30	20.25	20.16	20.05	19.95	19.85
19.77								
19.26	CFS	19.69	19.62	19.57	19.52	19.49	19.45	19.36
19.27								
19.74	CFS	19.21	19.14	19.04	18.91	18.83	18.81	18.79
18.74								
20.22	CFS	18.66	18.60	18.53	18.43	18.28	18.17	18.11
18.08								
20.70	CFS	18.00	17.91	17.86	17.83	17.77	17.67	17.56
17.47								
21.18	CFS	17.39	17.31	17.23	17.17	17.13	17.09	17.05
16.98								
21.66	CFS	16.88	16.81	16.75	16.66	16.59	16.55	16.50
16.42								
22.14	CFS	16.32	16.24	16.16	16.08	16.01	15.95	15.90
15.84								
22.62	CFS	15.74	15.63	15.57	15.50	15.38	15.25	15.16

15.14								
23.10 CFS	15.11	15.05	14.97	14.91	14.85	14.79	14.71	
14.59								
23.58 CFS	14.45	14.37	14.34	14.31	14.23	14.11	14.02	
14.07								
24.06 CFS	14.04	13.34	12.06	10.53	9.05	7.58	6.15	
4.86								
24.54 CFS	3.79	2.94	2.29	1.79	1.41	1.13	.93	
.77								
25.02 CFS	.65	.56	.50					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.29 WATERSHED INCHES; 792 CFS-HRS; 65.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS)		PEAK DISCHARGE(CFS)		PEAK
ELEVATION(FEET)				
12.39		1633.0		(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.63 WATERSHED INCHES; 2601 CFS-HRS; 214.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS)		PEAK DISCHARGE(CFS)		PEAK
ELEVATION(FEET)				
12.14		20.0		(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.62 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)		PEAK DISCHARGE(CFS)		PEAK
ELEVATION(FEET)				
12.38		1640.2		(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55  
 SQ.MI.

6.24 CFS	.46	.51	.57	.63	.70	.77	.86	
.96								
6.72 CFS	1.06	1.18	1.30	1.42	1.55	1.69	1.84	
1.99								
7.20 CFS	2.15	2.34	2.53	2.74	2.94	3.16	3.38	
3.61								
7.68 CFS	3.85	4.09	4.34	4.61	4.88	5.16	5.45	

5.76							
8.16 CFS	6.08	6.40	6.75	7.11	7.49	7.90	8.34
8.79							
8.64 CFS	9.25	9.74	10.25	10.78	11.31	11.84	12.37
12.92							
9.12 CFS	13.50	14.14	14.84	15.61	16.47	17.43	18.49
19.62							
9.60 CFS	20.80	22.05	23.37	24.78	26.27	27.82	29.42
31.06							
10.08 CFS	32.75	34.53	36.38	38.32	40.30	42.31	44.37
46.48							
10.56 CFS	48.70	51.08	53.73	56.78	60.31	64.41	69.06
74.25							
11.04 CFS	80	86	93	101	110	120	131
144							
11.52 CFS	157	173	193	218	251	291	342
408							
12.00 CFS	501	644	855	1120	1359	1533	1631
1622							
12.48 CFS	1540	1424	1288	1152	1023	908	808
723							
12.96 CFS	652	594	547	505	469	438	409
384							
13.44 CFS	361	341	323	307	292	278	265
254							
13.92 CFS	244	236	229	222	217	211	206
201							
14.40 CFS	196	192	187	183	179	175	170
165							
14.88 CFS	160	155	150	146	141	137	133
129							
15.36 CFS	126	123	121	119	117	115	114
112							
15.84 CFS	111	110	109	107	106	105	104
103							
16.32 CFS	102	101	100	99	97	96	95
94							
16.80 CFS	93.50	92.59	91.68	90.79	89.96	89.16	88.30
87.33							
17.28 CFS	86.25	85.23	84.32	83.46	82.55	81.54	80.48
79.45							
17.76 CFS	78.48	77.55	76.60	75.67	74.78	73.95	73.13
72.28							
18.24 CFS	71.42	70.58	69.80	69.02	68.25	67.59	67.10
66.77							
18.72 CFS	66.47	66.16	65.88	65.63	65.34	65.00	64.62
64.23							
19.20 CFS	63.87	63.55	63.29	63.08	62.91	62.76	62.62
62.39							
19.68 CFS	62.08	61.77	61.49	61.17	60.82	60.48	60.26
60.15							
20.16 CFS	60.04	59.88	59.66	59.40	59.06	58.62	58.20
57.88							
20.64 CFS	57.68	57.53	57.34	57.14	56.97	56.77	56.50
56.18							
21.12 CFS	55.83	55.50	55.20	54.95	54.75	54.59	54.46
54.34							
21.60 CFS	54.17	53.89	53.58	53.31	53.04	52.79	52.62
52.48							
22.08 CFS	52.29	52.02	51.72	51.41	51.12	50.87	50.67
50.51							
22.56 CFS	50.34	50.11	49.79	49.48	49.20	48.89	48.54
48.20							
23.04 CFS	47.99	47.88	47.78	47.62	47.41	47.17	46.92

46.68								
23.52	CFS	46.37	45.98	45.63	45.40	45.27	45.13	44.89
44.60								
24.00	CFS	44.43	44.32	43.30	40.53	36.27	31.13	25.94
21.24								
24.48	CFS	17.33	14.19	11.70	9.78	8.28	7.12	6.20
5.49								
24.96	CFS	4.91	4.46	4.08	3.77	3.52	3.30	3.11
2.95								
25.44	CFS	2.81	2.68	2.57	2.47	2.38	2.30	2.23
2.16								
25.92	CFS	2.10	2.04	1.99	1.94	1.89	1.83	1.78
1.74								

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26.40	CFS	1.70	1.67	1.65	1.62	1.60	1.57	1.55
1.52								
26.88	CFS	1.50	1.48	1.46	1.44	1.41	1.39	1.38
1.36								
27.36	CFS	1.34	1.32	1.30	1.28	1.27	1.25	1.24
1.22								
27.84	CFS	1.20	1.19	1.18	1.16	1.14	1.13	1.11
1.10								
28.32	CFS	1.09	1.07	1.06				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.62 WATERSHED INCHES; 2618 CFS-HRS; 216.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	79.3	(RUNOFF)
15.84	2.5	(RUNOFF)
24.00	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.97 WATERSHED INCHES; 68 CFS-HRS; 5.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	494.5	131.96
24.06	14.1	129.76

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.29 WATERSHED INCHES; 792 CFS-HRS; 65.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	515.0	(NULL)
23.98	15.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.33 WATERSHED INCHES; 861 CFS-HRS; 71.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	2133.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.54 WATERSHED INCHES; 3478 CFS-HRS; 287.5 ACRE-FEET.

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OPERATION RUNOFF XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	54.0	(RUNOFF)
19.43	1.0	(RUNOFF)
19.75	1.0	(RUNOFF)
20.07	1.0	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02

HRS								
SQ.MI.								
7.98 CFS	.49	.51	.52	.54	.55	.56	.58	
.60								
8.46 CFS	.61	.63	.65	.67	.69	.70	.71	
.73								
8.94 CFS	.74	.77	.80	.82	.85	.88	.93	
.97								
9.42 CFS	1.01	1.05	1.08	1.13	1.18	1.23	1.28	
1.32								
9.90 CFS	1.36	1.41	1.46	1.52	1.58	1.63	1.68	
1.73								
10.38 CFS	1.78	1.84	1.91	1.99	2.10	2.24	2.40	
2.57								
10.86 CFS	2.75	2.94	3.12	3.31	3.57	3.87	4.21	
4.56								
11.34 CFS	4.91	5.30	5.68	6.07	7.01	8.49	9.76	
11.01								
11.82 CFS	12.99	15.84	19.85	26.90	37.31	50.68	53.36	
42.76								
12.30 CFS	31.73	24.58	19.63	16.50	14.59	12.55	10.54	
9.27								



12.78 CFS	8.50	7.92	7.44	7.01	6.58	6.14	5.73
5.40							
13.26 CFS	5.13	4.88	4.64	4.40	4.16	3.93	3.71
3.54							
13.74 CFS	3.42	3.32	3.24	3.18	3.13	3.08	3.02
2.95							
14.22 CFS	2.88	2.81	2.76	2.71	2.67	2.60	2.53
2.46							
14.70 CFS	2.39	2.34	2.30	2.24	2.18	2.12	2.07
2.00							
15.18 CFS	1.94	1.89	1.86	1.85	1.84	1.84	1.84
1.82							
15.66 CFS	1.79	1.76	1.74	1.75	1.74	1.72	1.69
1.66							
16.14 CFS	1.65	1.64	1.64	1.61	1.59	1.58	1.56
1.53							
16.62 CFS	1.52	1.51	1.51	1.49	1.46	1.45	1.44
1.44							
17.10 CFS	1.42	1.39	1.35	1.34	1.35	1.34	1.32
1.28							
17.58 CFS	1.26	1.25	1.24	1.23	1.21	1.19	1.18
1.17							
18.06 CFS	1.16	1.14	1.12	1.11	1.10	1.09	1.07
1.06							
18.54 CFS	1.08	1.09	1.09	1.07	1.06	1.07	1.07
1.05							
19.02 CFS	1.04	1.04	1.03	1.03	1.03	1.03	1.03
1.03							
19.50 CFS	1.03	1.03	1.01	1.00	1.01	1.00	.98
.98							
19.98 CFS	.98	1.00	1.00	.98	.97	.97	.96
.95							
20.46 CFS	.93	.94	.95	.96	.94	.93	.94
.94							
20.94 CFS	.92	.91	.90	.90	.90	.90	.90
.90							
21.42 CFS	.90	.90	.90	.88	.86	.87	.87
.86							
21.90 CFS	.86	.87	.86	.85	.84	.83	.83
.83							
22.38 CFS	.83	.83	.83	.82	.80	.79	.80
.80							
22.86 CFS	.78	.77	.78	.80	.80	.78	.77
.77							
23.34 CFS	.76	.76	.76	.73	.73	.74	.75
.75							
23.82 CFS	.73	.71	.71	.76	.73	.49	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.48 WATERSHED INCHES; 52 CFS-HRS; 4.3 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	2154.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 3531 CFS-HRS; 291.8 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 6.14 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =25 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	415.5	(RUNOFF)
18.67	11.3	(RUNOFF)
20.12	10.4	(RUNOFF)
20.67	10.0	(RUNOFF)
23.12	8.3	(RUNOFF)
24.02	7.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.62 WATERSHED INCHES; 490 CFS-HRS; 40.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	61.0	(RUNOFF)
24.03	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.30 WATERSHED INCHES; 62 CFS-HRS; 5.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 58

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	42.7	431.78

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

3.24 WATERSHED INCHES; 61 CFS-HRS; 5.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 3

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	446.1	(NULL)
18.66	13.3	(NULL)
20.12	12.2	(NULL)
20.67	11.7	(NULL)
24.01	9.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.57 WATERSHED INCHES; 551 CFS-HRS; 45.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.15	171.7	(RUNOFF)
15.84	5.6	(RUNOFF)
17.34	4.3	(RUNOFF)
20.06	3.2	(RUNOFF)
20.62	3.1	(RUNOFF)
20.85	3.0	(RUNOFF)
24.01	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.02 WATERSHED INCHES; 160 CFS-HRS; 13.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	582.0	(NULL)
18.81	16.6	(NULL)
20.08	15.4	(NULL)
20.63	14.8	(NULL)
21.95	13.5	(NULL)
23.08	12.4	(NULL)
24.01	11.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.66 WATERSHED INCHES; 711 CFS-HRS; 58.7 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	174.8	(RUNOFF)
15.83	6.7	(RUNOFF)
17.32	5.2	(RUNOFF)
18.86	4.1	(RUNOFF)
23.09	3.1	(RUNOFF)
24.02	2.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.35 WATERSHED INCHES; 173 CFS-HRS; 14.3 ACRE-FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	570.7	320.69
18.70	16.8	318.32
20.15	15.4	318.31
20.70	14.8	318.30
22.01	13.5	318.29
23.15	12.4	318.27
24.07	11.6	318.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.66 WATERSHED INCHES; 711 CFS-HRS; 58.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	716.5	(NULL)
18.66	20.9	(NULL)
20.12	19.3	(NULL)
20.67	18.4	(NULL)
21.99	16.9	(NULL)
23.12	15.5	(NULL)
24.04	14.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.60 WATERSHED INCHES; 884 CFS-HRS; 73.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	144.1	(RUNOFF)

15.81	5.3	(RUNOFF)
19.76	3.1	(RUNOFF)
20.09	3.0	(RUNOFF)
24.02	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.71 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	56.2	(RUNOFF)
23.11	1.1	(RUNOFF)
23.76	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.74 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	32.3	455.90

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.25 WATERSHED INCHES; 55 CFS-HRS; 4.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.52	31.9	414.58

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.25 WATERSHED INCHES; 55 CFS-HRS; 4.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 12

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
12.19	151.6	(NULL)
20.86	4.2	(NULL)
24.02	3.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.57 WATERSHED INCHES; 200 CFS-HRS; 16.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	125.0	(RUNOFF)
15.83	4.2	(RUNOFF)
17.33	3.2	(RUNOFF)
21.96	2.1	(RUNOFF)
24.02	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.32 WATERSHED INCHES; 125 CFS-HRS; 10.3 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	63.1	398.95

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.32 WATERSHED INCHES; 125 CFS-HRS; 10.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	202.3	(NULL)
21.94	6.0	(NULL)
24.01	5.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.82 WATERSHED INCHES; 324 CFS-HRS; 26.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	202.1	(RUNOFF)

15.84	7.0	(RUNOFF)
17.34	5.4	(RUNOFF)
19.75	4.1	(RUNOFF)
20.06	4.1	(RUNOFF)
23.06	3.3	(RUNOFF)
23.72	3.1	(RUNOFF)
24.01	3.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.58 WATERSHED INCHES; 188 CFS-HRS; 15.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	192.2	331.36
20.67	6.6	330.26
24.08	5.1	330.22

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.82 WATERSHED INCHES; 324 CFS-HRS; 26.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	349.1	(NULL)
20.62	10.5	(NULL)
21.94	9.6	(NULL)
24.01	8.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.73 WATERSHED INCHES; 512 CFS-HRS; 42.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	1050.3	(NULL)
18.63	33.2	(NULL)
20.10	30.2	(NULL)
20.64	28.9	(NULL)
21.95	26.5	(NULL)
23.10	24.2	(NULL)
24.03	22.7	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.64 WATERSHED INCHES; 1396 CFS-HRS; 115.3 ACRE-

FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	420.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.26 WATERSHED INCHES; 568 CFS-HRS; 46.9 ACRE-FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	948.7	238.12
20.13	30.2	234.51
23.14	24.2	234.44
24.09	22.6	234.42

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.64 WATERSHED INCHES; 1395 CFS-HRS; 115.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	1358.2	(NULL)
23.13	34.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.52 WATERSHED INCHES; 1963 CFS-HRS; 162.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	44.5	(RUNOFF)
18.66	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 50 CFS-HRS; 4.2 ACRE-FEET.

OPERATION RESVOR STRUCTURE 47

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	40.8	415.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 50 CFS-HRS; 4.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	208.0	(RUNOFF)
20.87	4.0	(RUNOFF)
24.02	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 221 CFS-HRS; 18.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	179.3	369.53

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 221 CFS-HRS; 18.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	219.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 271 CFS-HRS; 22.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	120.6	(RUNOFF)
21.97	2.1	(RUNOFF)
24.02	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.19 WATERSHED INCHES; 126 CFS-HRS; 10.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 26

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	325.6	(NULL)
20.61	7.5	(NULL)
23.08	6.2	(NULL)
24.01	5.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.21 WATERSHED INCHES; 397 CFS-HRS; 32.8 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	233.6	340.51

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.22 WATERSHED INCHES; 398 CFS-HRS; 32.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	37.3	(RUNOFF)
15.82	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.57 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-  
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .8%.  
\*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.39	243.0	(NULL)
23.98	6.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.17 WATERSHED INCHES; 427 CFS-HRS; 35.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 29

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	184.7	(RUNOFF)
15.45	5.1	(RUNOFF)
15.82	4.8	(RUNOFF)
17.32	3.7	(RUNOFF)
18.58	3.0	(RUNOFF)
23.02	2.2	(RUNOFF)
23.68	2.1	(RUNOFF)
23.99	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.73 WATERSHED INCHES; 152 CFS-HRS; 12.6 ACRE-  
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -.2%.  
\*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	184.7	(NULL)
15.45	5.1	(NULL)
15.82	4.8	(NULL)
17.32	3.7	(NULL)
18.58	3.0	(NULL)
23.02	2.2	(NULL)
23.68	2.1	(NULL)
23.99	2.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.73 WATERSHED INCHES; 152 CFS-HRS; 12.6 ACRE-  
FEET.

OPERATION REACH XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	177.3	357.15
15.88	4.8	356.10
17.38	3.7	356.08
18.65	3.0	356.06
23.09	2.2	356.05
23.75	2.1	356.04
24.05	2.3	356.05

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.71 WATERSHED INCHES; 152 CFS-HRS; 12.5 ACRE-  
FEET.

1 TR20 ----- SCS  
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OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	354.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.43 WATERSHED INCHES; 499 CFS-HRS; 41.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	469.7	(NULL)
18.86	13.1	(NULL)
20.08	12.1	(NULL)
20.86	11.5	(NULL)
21.96	10.6	(NULL)
23.73	9.1	(NULL)
24.04	9.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.49 WATERSHED INCHES; 651 CFS-HRS; 53.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	119.6	(RUNOFF)
21.97	2.2	(RUNOFF)
23.10	2.0	(RUNOFF)
24.03	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 130 CFS-HRS; 10.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 34

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	596.7	(NULL)

18.62	16.0	(NULL)
18.86	15.8	(NULL)
20.09	14.7	(NULL)
20.63	14.0	(NULL)
20.86	13.9	(NULL)
21.97	12.8	(NULL)
23.09	11.7	(NULL)
23.74	11.0	(NULL)
24.04	11.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.45 WATERSHED INCHES; 781 CFS-HRS; 64.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	565.4	317.74
20.68	14.0	316.26
20.91	13.9	316.26
22.01	12.8	316.25
23.15	11.7	316.23
24.10	10.9	316.21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.45 WATERSHED INCHES; 781 CFS-HRS; 64.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	53.0	(RUNOFF)
23.13	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.27 WATERSHED INCHES; 67 CFS-HRS; 5.6 ACRE-  
 FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .047 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 33

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION(FEET)		
12.32	53.4	328.46
23.15	1.0	323.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.27 WATERSHED INCHES; 67 CFS-HRS; 5.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	618.7	(NULL)
20.68	15.3	(NULL)
22.00	13.9	(NULL)
23.15	12.7	(NULL)
24.10	11.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.43 WATERSHED INCHES; 848 CFS-HRS; 70.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	198.2	(RUNOFF)
15.84	6.1	(RUNOFF)
17.34	4.7	(RUNOFF)
21.45	3.1	(RUNOFF)
21.73	3.1	(RUNOFF)
21.94	3.1	(RUNOFF)
24.00	2.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.82 WATERSHED INCHES; 169 CFS-HRS; 13.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	703.2	(NULL)
23.99	14.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.32 WATERSHED INCHES; 1017 CFS-HRS; 84.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 40

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	936.6	(NULL)
23.99	20.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.27 WATERSHED INCHES; 1442 CFS-HRS; 119.2 ACRE-FEET.

## OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	65.3	(RUNOFF)
15.84	2.2	(RUNOFF)
21.96	1.1	(RUNOFF)
22.75	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.18 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-FEET.

## OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.84	10.0	273.38

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.12 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-FEET.

## OPERATION REACH XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.98	10.0	222.49

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.12 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-FEET.

## OPERATION RUNOFF XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	157.8	(RUNOFF)
18.87	5.1	(RUNOFF)
21.98	4.2	(RUNOFF)
24.02	3.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.25 WATERSHED INCHES; 176 CFS-HRS; 14.5 ACRE-FEET.

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OPERATION ADDHYD XSECTION 44

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	163.0	(NULL)
20.07	7.4	(NULL)
20.62	6.9	(NULL)
23.74	5.1	(NULL)
24.02	5.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.56 WATERSHED INCHES; 239 CFS-HRS; 19.7 ACRE-  
FEET.

OPERATION REACH XSECTION 45

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.44	872.1	227.10
24.04	20.8	222.76

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.27 WATERSHED INCHES; 1443 CFS-HRS; 119.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	972.8	(NULL)
24.03	25.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.90 WATERSHED INCHES; 1681 CFS-HRS; 138.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	523.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.92 WATERSHED INCHES; 715 CFS-HRS; 59.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 48

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	73.8	(RUNOFF)
15.84	2.4	(RUNOFF)
23.07	1.1	(RUNOFF)
23.73	1.0	(RUNOFF)
24.01	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.48 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	55.2	336.83

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.48 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-  
FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	48.6	317.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.48 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	568.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.97 WATERSHED INCHES; 786 CFS-HRS; 65.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	56.3	(RUNOFF)
21.45	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.03 WATERSHED INCHES; 57 CFS-HRS; 4.7 ACRE-  
FEET.

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\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE  
STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.  
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
\*\*\*

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	47.3	322.35
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.46 WATERSHED INCHES;	49 CFS-HRS;	4.0 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	613.3	278.11
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.93 WATERSHED INCHES;	834 CFS-HRS;	69.0 ACRE-
FEET.		

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	568.6	277.95
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.93 WATERSHED INCHES;	834 CFS-HRS;	69.0 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	268.4	(RUNOFF)
20.11	8.1	(RUNOFF)
21.98	7.1	(RUNOFF)
23.75	6.2	(RUNOFF)
24.03	6.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.23 WATERSHED INCHES;	300 CFS-HRS;	24.8 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 54

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PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.38	734.1	(NULL)
24.01	18.8	(NULL)

HRS	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25							
	MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .54							
SQ.MI.								
6.66 CFS	.50	.59	.70	.81	.92	1.04	1.17	
1.30								
7.14 CFS	1.43	1.58	1.72	1.87	2.03	2.19	2.35	
2.51								
7.62 CFS	2.68	2.85	3.02	3.19	3.37	3.55	3.74	
3.93								
8.10 CFS	4.13	4.34	4.55	4.76	4.97	5.17	5.39	
5.61								
8.58 CFS	5.82	6.05	6.27	6.51	6.76	7.00	7.24	
7.48								
9.06 CFS	7.72	7.97	8.23	8.52	8.84	9.18	9.56	
9.98								
9.54 CFS	10.44	10.91	11.40	11.91	12.44	13.01	13.60	
14.21								
10.02 CFS	14.83	15.46	16.10	16.77	17.47	18.19	18.95	
19.76								
10.50 CFS	20.64	21.59	22.63	23.80	25.15	26.71	28.53	
30.62								
10.98 CFS	32.97	35.59	38.49	41.73	45.36	49.43	54.00	
59.10								
11.46 CFS	65	71	78	88	100	114	133	
158								
11.94 CFS	192	242	322	439	562	654	709	
732								
12.42 CFS	728	694	640	577	511	450	397	
351								
12.90 CFS	313	280	253	230	211	194	180	
167								
13.38 CFS	156	146	137	128	121	114	108	
102								
13.86 CFS	97.49	93.32	89.74	86.69	84.04	81.65	79.46	
77.45								
14.34 CFS	75.59	73.88	72.26	70.68	69.11	67.52	65.97	
64.47								
14.82 CFS	63.01	61.58	60.12	58.68	57.26	55.83	54.38	
52.96								
15.30 CFS	51.65	50.50	49.50	48.66	47.97	47.35	46.77	
46.18								
15.78 CFS	45.66	45.24	44.86	44.45	43.98	43.51	43.08	
42.69								
16.26 CFS	42.31	41.90	41.48	41.08	40.67	40.23	39.79	
39.40								
16.74 CFS	39.04	38.67	38.27	37.88	37.54	37.23	36.89	
36.50								
17.22 CFS	36.04	35.60	35.24	34.90	34.52	34.07	33.61	

33.18								
17.70	CFS	32.79	32.40	31.99	31.56	31.16	30.82	30.49
30.13								
18.18	CFS	29.74	29.38	29.06	28.75	28.41	28.08	27.85
27.72								
18.66	CFS	27.61	27.45	27.31	27.24	27.18	27.06	26.90
26.76								
19.14	CFS	26.63	26.51	26.41	26.32	26.24	26.19	26.15
26.09								
19.62	CFS	25.97	25.83	25.75	25.66	25.52	25.35	25.23
25.21								
20.10	CFS	25.19	25.12	25.01	24.92	24.83	24.68	24.48
24.32								
20.58	CFS	24.25	24.21	24.11	23.98	23.91	23.88	23.79
23.65								
21.06	CFS	23.51	23.38	23.27	23.16	23.06	22.98	22.92
22.87								
21.54	CFS	22.82	22.72	22.58	22.48	22.40	22.28	22.18
22.14								
22.02	CFS	22.07	21.96	21.82	21.71	21.60	21.49	21.40
21.32								
22.50	CFS	21.25	21.18	21.04	20.89	20.79	20.70	20.54
20.36								
22.98	CFS	20.24	20.22	20.19	20.11	20.00	19.91	19.83
19.75								
23.46	CFS	19.64	19.47	19.29	19.18	19.14	19.10	18.99
18.83								
23.94	CFS	18.71	18.78	18.75	17.78	15.95	13.82	11.78
9.79								
24.42	CFS	7.87	6.14	4.71	3.61	2.77	2.14	1.67
1.32								
24.90	CFS	1.06	.87	.72	.62	.54	.48	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.27 WATERSHED INCHES; 1135 CFS-HRS; 93.8 ACRE-FEET.

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OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	2319.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.68 WATERSHED INCHES; 3643 CFS-HRS; 301.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	31.3	(RUNOFF)

15.84 1.2 (RUNOFF)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.49 WATERSHED INCHES; 27 CFS-HRS; 2.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.37 2330.5 (NULL)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25						
		DRAINAGE AREA = 1.55						
HRS	MAIN	TIME	INCREMENT	=	.060	hr,		
SQ.MI.								
5.22 CFS		.49	.56	.63	.71	.79	.88	.98
1.08								
5.70 CFS	1.20	1.33	1.46	1.60	1.74	1.87	2.01	
2.17								
6.18 CFS	2.36	2.54	2.72	2.92	3.13	3.34	3.57	
3.81								
6.66 CFS	4.07	4.34	4.63	4.91	5.20	5.50	5.83	
6.15								
7.14 CFS	6.48	6.84	7.25	7.69	8.15	8.64	9.14	
9.66								
7.62 CFS	10.21	10.76	11.31	11.87	12.45	13.06	13.70	
14.38								
8.10 CFS	15.09	15.84	16.62	17.41	18.23	19.06	19.91	
20.79								
8.58 CFS	21.66	22.56	23.50	24.48	25.48	26.47	27.43	
28.38								
9.06 CFS	29.37	30.42	31.55	32.77	34.09	35.56	37.18	
38.94								
9.54 CFS	40.79	42.70	44.70	46.81	49.05	51.42	53.86	
56.36								
10.02 CFS	58.89	61.50	64.23	67.07	70.02	73.03	76.08	
79.20								
10.50 CFS	82	86	90	94	99	104	111	
118								
10.98 CFS	127	135	145	156	168	182	198	
215								
11.46 CFS	233	254	277	306	344	390	447	
519								
11.94 CFS	615	749	955	1253	1625	2002	2242	
2329								
12.42 CFS	2286	2152	1977	1795	1614	1443	1287	
1139								
12.90 CFS	1005	895	805	732	671	621	578	
540								
13.38 CFS	507	477	450	425	402	380	361	
344								
13.86 CFS	330	317	306	296	288	280	273	
267								
14.34 CFS	260	254	249	243	238	233	227	
222								
14.82 CFS	217	212	207	202	197	193	187	
181								
15.30 CFS	175	170	166	162	159	156	154	
152								
15.78 CFS	150	148	146	144	143	141	139	
138								

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16.26	CFS	136	135	133	132	131	129	128
126								
16.74	CFS	125	124	122	121	120	119	118
117								
17.22	CFS	115	114	112	111	110	109	108
106								
17.70	CFS	105	103	102	101	100	98	97
96								
18.18	CFS	95.12	93.98	92.87	91.83	90.80	89.78	88.92
88.28								
18.66	CFS	87.85	87.46	87.05	86.68	86.35	85.96	85.51
85.00								
19.14	CFS	84.49	84.01	83.59	83.25	82.97	82.74	82.55
82.36								
19.62	CFS	82.05	81.64	81.23	80.86	80.44	79.97	79.53
79.24								
20.10	CFS	79.08	78.94	78.73	78.44	78.09	77.64	77.07
76.51								
20.58	CFS	76.09	75.83	75.63	75.37	75.11	74.88	74.61
74.26								
21.06	CFS	73.83	73.37	72.93	72.53	72.21	71.94	71.73
71.56								
21.54	CFS	71.40	71.17	70.80	70.40	70.04	69.68	69.35
69.13								
22.02	CFS	68.95	68.68	68.33	67.93	67.52	67.13	66.81
66.55								
22.50	CFS	66.33	66.12	65.81	65.38	64.97	64.60	64.19
63.73								
22.98	CFS	63.29	63.01	62.87	62.73	62.53	62.25	61.93
61.60								
23.46	CFS	61.27	60.85	60.35	59.89	59.59	59.42	59.24
58.93								
23.94	CFS	58.54	58.33	58.19	56.86	53.14	47.41	40.60
33.79								
24.42	CFS	27.64	22.54	18.46	15.24	12.73	10.78	9.25
8.05								
24.90	CFS	7.10	6.33	5.70	5.20	4.78	4.44	4.15
3.90								
25.38	CFS	3.69	3.50	3.33	3.19	3.06	2.94	2.84
2.75								
25.86	CFS	2.66	2.58	2.51	2.44	2.38	2.32	2.26
2.21								
26.34	CFS	2.14	2.09	2.04	2.00	1.97	1.93	1.90
1.87								
26.82	CFS	1.84	1.81	1.78	1.75	1.73	1.70	1.68
1.65								
27.30	CFS	1.63	1.61	1.58	1.56	1.54	1.52	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.67 WATERSHED INCHES; 3670 CFS-HRS; 303.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK

ELEVATION (FEET)		
12.13	108.3	(RUNOFF)
15.84	3.3	(RUNOFF)
17.34	2.5	(RUNOFF)
18.60	2.1	(RUNOFF)
18.84	2.0	(RUNOFF)
24.00	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.09 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 59

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.45	731.4	132.51
24.07	18.8	129.85

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.27 WATERSHED INCHES; 1135 CFS-HRS; 93.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.44	760.1	(NULL)
23.98	20.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.32 WATERSHED INCHES; 1229 CFS-HRS; 101.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.38	3076.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.58 WATERSHED INCHES; 4899 CFS-HRS; 404.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 62

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.16	71.2	(RUNOFF)
15.84	2.2	(RUNOFF)

22.75	1.0	(RUNOFF)
23.07	1.0	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02

HRS	SQ.MI.	6.84	7.32	7.80	8.28	8.76	9.24	9.72	10.20	10.68	11.16	11.64	12.12	12.60	13.08	13.56	14.04	14.52
CFS		.49	.62	.77	.94	1.13	1.38	1.87	2.43	3.26	5.50	11.72	66.76	16.24	7.91	5.05	3.96	3.34
		.50	.64	.79	.97	1.15	1.45	1.94	2.49	3.48	5.96	13.42	70.43	13.63	7.38	4.77	3.88	3.24
		.51	.66	.82	.99	1.16	1.51	2.00	2.55	3.72	6.43	15.08	56.10	11.97	6.95	4.55	3.79	3.15
		.53	.68	.84	1.00	1.18	1.57	2.06	2.62	3.97	6.91	17.73	41.44	10.96	6.61	4.39	3.70	3.07
		.55	.70	.86	1.02	1.21	1.62	2.12	2.71	4.23	7.43	21.49	32.02	10.23	6.29	4.26	3.61	3.01
		.58	.71	.89	1.05	1.26	1.67	2.19	2.80	4.48	7.94	26.84	25.53	9.60	5.97	4.16	3.54	2.95
		.60	.73	.91	1.09	1.29	1.73	2.27	2.91	4.74	8.47	36.05	21.37	9.04	5.66	4.08	3.48	2.88
		.61	.75	.92	1.11	1.33	1.80	2.35	3.06	5.09	9.73	49.50	18.90	8.47	5.35	4.02	3.42	2.79

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15.00 CFS	2.72	2.65	2.56	2.48	2.42	2.39	2.37
2.36							
15.48 CFS	2.36	2.36	2.33	2.29	2.25	2.23	2.24
2.23							
15.96 CFS	2.20	2.16	2.13	2.11	2.11	2.09	2.06
2.04							
16.44 CFS	2.02	1.99	1.96	1.94	1.93	1.93	1.90
1.87							
16.92 CFS	1.85	1.85	1.84	1.82	1.78	1.73	1.71
1.72							
17.40 CFS	1.72	1.68	1.64	1.61	1.59	1.59	1.57
1.54							
17.88 CFS	1.52	1.50	1.50	1.49	1.46	1.43	1.42
1.41							



18.36 CFS	1.40	1.37	1.36	1.38	1.39	1.39	1.37
1.36							
18.84 CFS	1.37	1.37	1.34	1.33	1.32	1.32	1.32
1.32							
19.32 CFS	1.32	1.32	1.32	1.32	1.31	1.28	1.27
1.29							
19.80 CFS	1.28	1.26	1.24	1.26	1.28	1.28	1.26
1.24							
20.28 CFS	1.24	1.23	1.21	1.19	1.20	1.22	1.22
1.20							
20.76 CFS	1.19	1.20	1.20	1.18	1.16	1.15	1.15
1.15							
21.24 CFS	1.15	1.15	1.15	1.15	1.15	1.14	1.12
1.10							
21.72 CFS	1.11	1.11	1.10	1.10	1.11	1.10	1.08
1.07							
22.20 CFS	1.06	1.06	1.06	1.06	1.06	1.06	1.05
1.02							
22.68 CFS	1.01	1.03	1.02	1.00	.98	.99	1.02
1.02							
23.16 CFS	1.00	.98	.98	.97	.97	.96	.94
.93							
23.64 CFS	.94	.96	.96	.93	.91	.91	.97
.94							
24.12 CFS	.62	.30					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	3105.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.59 WATERSHED INCHES; 4969 CFS-HRS; 410.6 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT	FROM XSECTION 1 TO XSECTION 63
STARTING TIME = .00	RAIN DEPTH = 7.23 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT = .060 HOURS
ALTERNATE NO. = 1	STORM NO. =50 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION (FEET)		
12.24	526.5	(RUNOFF)
18.67	13.8	(RUNOFF)
20.68	12.1	(RUNOFF)
21.94	11.1	(RUNOFF)
23.13	10.1	(RUNOFF)
24.01	9.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.59 WATERSHED INCHES; 622 CFS-HRS; 51.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.19	78.1	(RUNOFF)
24.02	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.24 WATERSHED INCHES; 80 CFS-HRS; 6.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.26	70.8	432.07

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.15 WATERSHED INCHES; 78 CFS-HRS; 6.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 3

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.25	595.9	(NULL)
18.65	15.9	(NULL)
20.12	14.6	(NULL)
20.67	14.0	(NULL)
23.76	11.2	(NULL)
24.00	11.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.53 WATERSHED INCHES; 700 CFS-HRS; 57.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 4

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.15	212.7	(RUNOFF)
15.84	6.8	(RUNOFF)
17.34	5.2	(RUNOFF)
19.44	4.0	(RUNOFF)
22.75	3.1	(RUNOFF)
23.06	3.1	(RUNOFF)
24.00	3.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.03 WATERSHED INCHES; 200 CFS-HRS; 16.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	761.2	(NULL)
18.63	20.1	(NULL)
20.09	18.5	(NULL)
20.64	17.7	(NULL)
21.95	16.3	(NULL)
23.09	14.9	(NULL)
23.74	14.1	(NULL)
24.00	14.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.63 WATERSHED INCHES; 900 CFS-HRS; 74.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	223.3	(RUNOFF)
15.83	8.2	(RUNOFF)
17.32	6.3	(RUNOFF)
18.86	5.0	(RUNOFF)
21.97	4.1	(RUNOFF)
24.02	3.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.30 WATERSHED INCHES; 222 CFS-HRS; 18.3 ACRE-FEET.

OPERATION REACH XSECTION 7

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	752.6	321.23

18.69	20.1	318.36
20.15	18.5	318.34
20.70	17.7	318.33
22.01	16.3	318.32
23.80	14.1	318.29
24.07	13.9	318.29

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.63 WATERSHED INCHES; 900 CFS-HRS; 74.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.26	933.8	(NULL)
18.65	25.2	(NULL)
20.12	23.2	(NULL)
20.68	22.2	(NULL)
21.99	20.4	(NULL)
23.12	18.6	(NULL)
24.04	17.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.56 WATERSHED INCHES; 1122 CFS-HRS; 92.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.18	180.9	(RUNOFF)
18.64	4.0	(RUNOFF)
21.97	3.2	(RUNOFF)
24.02	2.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.69 WATERSHED INCHES; 183 CFS-HRS; 15.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.22	70.7	(RUNOFF)
24.02	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.72 WATERSHED INCHES; 80 CFS-HRS; 6.6 ACRE-  
 FEET.

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\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE  
 STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	50.8	456.22
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.21 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-FEET.		

OPERATION REACH XSECTION 11

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.44	50.4	414.77
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.21 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-FEET.		

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	195.9	(NULL)
20.86	5.0	(NULL)
23.08	4.3	(NULL)
23.73	4.0	(NULL)
24.01	4.0	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.55 WATERSHED INCHES; 255 CFS-HRS; 21.0 ACRE-FEET.		

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	153.2	(RUNOFF)
15.83	5.0	(RUNOFF)
18.86	3.1	(RUNOFF)
24.02	2.1	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.35 WATERSHED INCHES; 154 CFS-HRS; 12.8 ACRE-FEET.		

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OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	83.1	399.39

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.35 WATERSHED INCHES; 154 CFS-HRS; 12.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	258.0	(NULL)
20.06	8.3	(NULL)
21.94	7.3	(NULL)
24.01	6.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.81 WATERSHED INCHES; 409 CFS-HRS; 33.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	255.3	(RUNOFF)
15.84	8.6	(RUNOFF)
17.34	6.6	(RUNOFF)
19.47	5.1	(RUNOFF)
21.96	4.3	(RUNOFF)
24.01	3.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.55 WATERSHED INCHES; 239 CFS-HRS; 19.8 ACRE-FEET.

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	251.1	331.55
20.13	8.3	330.29
20.68	8.0	330.28
24.07	6.2	330.25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.81 WATERSHED INCHES; 409 CFS-HRS; 33.8 ACRE-FEET.

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OPERATION ADDHYD XSECTION 17

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.20	449.9	(NULL)
20.06	13.3	(NULL)
20.62	12.7	(NULL)
21.94	11.6	(NULL)
23.06	10.6	(NULL)
24.01	9.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.71 WATERSHED INCHES; 648 CFS-HRS; 53.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.25	1360.9	(NULL)
20.10	36.4	(NULL)
20.64	34.9	(NULL)
21.95	31.9	(NULL)
23.10	29.2	(NULL)
23.75	27.6	(NULL)
24.03	27.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.61 WATERSHED INCHES; 1768 CFS-HRS; 146.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.31	541.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.19 WATERSHED INCHES; 731 CFS-HRS; 60.4 ACRE-  
FEET.

OPERATION REACH XSECTION 20

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.37	1235.0	238.86
20.14	36.4	234.56
23.14	29.2	234.50
24.09	27.3	234.47

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.61 WATERSHED INCHES; 1769 CFS-HRS; 146.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	1761.3	(NULL)
20.13	52.1	(NULL)
23.13	41.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.48 WATERSHED INCHES; 2499 CFS-HRS; 206.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	54.7	(RUNOFF)
21.96	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.24 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	55.3	415.55
20.15	1.2	410.91

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.24 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	256.8	(RUNOFF)
20.10	5.2	(RUNOFF)
23.10	4.1	(RUNOFF)
24.03	3.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.24 WATERSHED INCHES; 275 CFS-HRS; 22.7 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 32

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	229.1	369.84
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.24 WATERSHED INCHES; 275 CFS-HRS; 22.7 ACRE-		
FEET.		

OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	284.3	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.24 WATERSHED INCHES; 337 CFS-HRS; 27.9 ACRE-		
FEET.		

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	148.7	(RUNOFF)
18.87	3.2	(RUNOFF)
24.02	2.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.21 WATERSHED INCHES; 156 CFS-HRS; 12.9 ACRE-		
FEET.		

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	418.0	(NULL)
20.08	9.3	(NULL)
20.61	8.9	(NULL)
23.71	7.0	(NULL)
24.01	6.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.23 WATERSHED INCHES; 494 CFS-HRS; 40.8 ACRE-		
FEET.		

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	283.6	342.14
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.24 WATERSHED INCHES; 494 CFS-HRS; 40.8 ACRE-		

FEET.

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OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	47.2	(RUNOFF)
17.32	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.57 WATERSHED INCHES; 37 CFS-HRS; 3.1 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .9%.  
 \*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	295.1	(NULL)
23.98	7.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.18 WATERSHED INCHES; 531 CFS-HRS; 43.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	220.3	(RUNOFF)
15.45	6.0	(RUNOFF)
15.82	5.8	(RUNOFF)
17.32	4.4	(RUNOFF)
20.02	3.3	(RUNOFF)
20.58	3.1	(RUNOFF)
20.82	3.1	(RUNOFF)
23.99	2.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.78 WATERSHED INCHES; 186 CFS-HRS; 15.4 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .1%.  
 \*\*\*

OPERATION RESVOR STRUCTURE 64

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.11	220.3	(NULL)
15.45	6.0	(NULL)
15.82	5.8	(NULL)
17.32	4.4	(NULL)
20.02	3.3	(NULL)
20.58	3.1	(NULL)
20.82	3.1	(NULL)
23.99	2.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.78 WATERSHED INCHES; 186 CFS-HRS; 15.4 ACRE-FEET.

OPERATION REACH XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	213.3	357.27
15.88	5.8	356.12
17.38	4.4	356.09
20.88	3.1	356.06
24.05	2.7	356.06

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.76 WATERSHED INCHES; 185 CFS-HRS; 15.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.31	433.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.47 WATERSHED INCHES; 616 CFS-HRS; 50.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.22	572.7	(NULL)
18.86	15.7	(NULL)
20.08	14.5	(NULL)
20.86	13.7	(NULL)
21.96	12.6	(NULL)

23.08 11.5 (NULL)  
24.04 10.9 (NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.53 WATERSHED INCHES; 801 CFS-HRS; 66.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	148.2	(RUNOFF)
18.65	3.3	(RUNOFF)
20.10	3.0	(RUNOFF)
24.03	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.25 WATERSHED INCHES; 162 CFS-HRS; 13.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	729.7	(NULL)
18.61	19.2	(NULL)
18.85	18.9	(NULL)
20.09	17.5	(NULL)
20.86	16.6	(NULL)
21.97	15.3	(NULL)
23.74	13.1	(NULL)
24.04	13.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.48 WATERSHED INCHES; 963 CFS-HRS; 79.6 ACRE-  
FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	694.0	317.98
20.15	17.5	316.29
20.92	16.6	316.28
22.01	15.3	316.27
23.80	13.1	316.25
24.10	13.0	316.25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.49 WATERSHED INCHES; 963 CFS-HRS; 79.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 36

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	65.4	(RUNOFF)
23.76	1.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.30 WATERSHED INCHES;		84 CFS-HRS;
FEET.		6.9 ACRE-

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .047 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	64.5	328.67
23.78	1.2	323.05
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.31 WATERSHED INCHES;		84 CFS-HRS;
FEET.		6.9 ACRE-

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	758.3	(NULL)
20.15	19.1	(NULL)
20.91	18.0	(NULL)
22.01	16.6	(NULL)
23.15	15.1	(NULL)
23.80	14.3	(NULL)
24.10	14.2	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.47 WATERSHED INCHES;		1047 CFS-HRS;
FEET.		86.5 ACRE-

OPERATION RUNOFF XSECTION 38

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.13	246.6	(RUNOFF)
15.84	7.4	(RUNOFF)
17.34	5.7	(RUNOFF)
20.04	4.3	(RUNOFF)
20.60	4.1	(RUNOFF)
23.70	3.2	(RUNOFF)
24.00	3.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.81 WATERSHED INCHES; 212 CFS-HRS; 17.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	869.0	(NULL)
23.99	17.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.35 WATERSHED INCHES; 1259 CFS-HRS; 104.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	1147.4	(NULL)
23.99	25.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.30 WATERSHED INCHES; 1791 CFS-HRS; 148.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	79.8	(RUNOFF)
17.34	2.0	(RUNOFF)
24.01	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.19 WATERSHED INCHES; 79 CFS-HRS; 6.5 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)  
 12.45    28.4    273.78  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.12 WATERSHED INCHES;                      78 CFS-HRS;                      6.4 ACRE-  
 FEET.

OPERATION REACH                      XSECTION    42

PEAK TIME(HRS)                                      PEAK DISCHARGE(CFS)                                      PEAK  
 ELEVATION(FEET)  
 12.57    27.2    222.79

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.11 WATERSHED INCHES;                      78 CFS-HRS;                      6.4 ACRE-  
 FEET.

OPERATION RUNOFF                      XSECTION    43

PEAK TIME(HRS)                                      PEAK DISCHARGE(CFS)                                      PEAK  
 ELEVATION(FEET)  
 12.22    217.1    (RUNOFF)  
 19.47    6.2    (RUNOFF)  
 20.11    6.0    (RUNOFF)  
 21.98    5.3    (RUNOFF)  
 24.02    4.5    (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.05 WATERSHED INCHES;                      238 CFS-HRS;                      19.7 ACRE-  
 FEET.

OPERATION ADDHYD                      XSECTION    44

PEAK TIME(HRS)                                      PEAK DISCHARGE(CFS)                                      PEAK  
 ELEVATION(FEET)  
 12.22    224.0    (NULL)  
 20.63    8.5    (NULL)  
 24.02    6.2    (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.38 WATERSHED INCHES;                      316 CFS-HRS;                      26.1 ACRE-  
 FEET.

OPERATION REACH                      XSECTION    45

PEAK TIME(HRS)                                      PEAK DISCHARGE(CFS)                                      PEAK  
 ELEVATION(FEET)  
 12.43    1075.9    227.59  
 24.04    24.9    222.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.29 WATERSHED INCHES; 1789 CFS-HRS; 147.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 46

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	1223.5	(NULL)
24.03	31.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.88 WATERSHED INCHES; 2104 CFS-HRS; 173.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	655.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.93 WATERSHED INCHES; 897 CFS-HRS; 74.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	89.2	(RUNOFF)
17.34	2.2	(RUNOFF)
24.01	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.52 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	58.1	337.36
24.03	1.2	333.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.52 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 49



PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	57.3	317.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.52 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	707.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.97 WATERSHED INCHES; 985 CFS-HRS; 81.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	69.7	(RUNOFF)
23.74	1.0	(RUNOFF)
24.02	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.04 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE

STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.

\*\*\*

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	58.5	322.59
24.03	1.0	320.81

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.45 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	763.5	278.85

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.94 WATERSHED INCHES; 1048 CFS-HRS; 86.6 ACRE-FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	686.4	278.47

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.94 WATERSHED INCHES; 1048 CFS-HRS; 86.6 ACRE-FEET.

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OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	369.6	(RUNOFF)
18.87	11.0	(RUNOFF)
20.11	10.3	(RUNOFF)
21.97	9.1	(RUNOFF)
23.11	8.3	(RUNOFF)
24.03	7.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.03 WATERSHED INCHES; 407 CFS-HRS; 33.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	904.7	(NULL)
24.01	23.0	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .54  
 SQ.MI.

5.88 CFS	.50	.59	.69	.79	.91	1.03	1.15
1.28							
6.36 CFS	1.41	1.54	1.68	1.83	1.98	2.14	2.30
2.47							
6.84 CFS	2.64	2.81	2.98	3.17	3.35	3.54	3.73
3.94							
7.32 CFS	4.15	4.37	4.59	4.81	5.03	5.26	5.49
5.72							

7.80 CFS	5.95	6.19	6.43	6.68	6.94	7.20	7.48
7.75							
8.28 CFS	8.03	8.31	8.59	8.86	9.15	9.43	9.72
10.02							
8.76 CFS	10.32	10.63	10.95	11.26	11.56	11.86	12.17
12.50							
9.24 CFS	12.86	13.26	13.70	14.19	14.72	15.31	15.92
16.58							
9.72 CFS	17.29	18.07	18.95	19.89	20.89	21.93	23.00
24.11							
10.20 CFS	25.26	26.45	27.67	28.92	30.20	31.52	32.88
34.35							
10.68 CFS	35.99	37.87	40.02	42.50	45.33	48.49	51.98
55.87							
11.16 CFS	60	65	71	77	83	91	99
109							
11.64 CFS	122	137	156	181	215	262	330
432							
12.12 CFS	577	726	828	884	904	898	863
807							
12.60 CFS	737	660	585	518	459	408	365
328							
13.08 CFS	297	271	249	229	213	198	185
173							
13.56 CFS	162	153	144	136	129	123	117
113							
14.04 CFS	109	105	102	99	97	94	92
90							
14.52 CFS	87.87	85.85	83.83	81.86	79.96	78.14	76.34
74.51							
15.00 CFS	72.71	70.95	69.18	67.39	65.65	64.04	62.62
61.39							
15.48 CFS	60.34	59.45	58.65	57.88	57.11	56.43	55.90
55.42							
15.96 CFS	54.90	54.31	53.71	53.16	52.68	52.22	51.71
51.18							
16.44 CFS	50.68	50.16	49.62	49.08	48.60	48.16	47.70
47.19							
16.92 CFS	46.71	46.28	45.90	45.48	44.98	44.40	43.86
43.43							
17.40 CFS	43.03	42.56	41.99	41.41	40.88	40.40	39.94
39.43							
17.88 CFS	38.90	38.41	37.98	37.57	37.12	36.64	36.19
35.79							
18.36 CFS	35.41	34.99	34.58	34.30	34.14	33.99	33.78
33.59							

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18.84 CFS	33.49	33.41	33.25	33.05	32.87	32.72	32.58
32.45							
19.32 CFS	32.34	32.24	32.17	32.11	32.04	31.88	31.71
31.61							
19.80 CFS	31.51	31.33	31.12	30.98	30.96	30.94	30.84
30.70							
20.28 CFS	30.58	30.47	30.28	30.03	29.86	29.77	29.72
29.60							

20.76 CFS	29.44	29.34	29.29	29.19	29.01	28.84	28.68
28.55							
21.24 CFS	28.41	28.30	28.20	28.12	28.06	27.99	27.86
27.68							
21.72 CFS	27.56	27.47	27.33	27.20	27.15	27.07	26.92
26.75							
22.20 CFS	26.61	26.48	26.35	26.24	26.14	26.06	25.96
25.78							
22.68 CFS	25.59	25.48	25.37	25.18	24.96	24.82	24.79
24.76							
23.16 CFS	24.66	24.51	24.39	24.29	24.20	24.07	23.86
23.63							
23.64 CFS	23.51	23.47	23.42	23.28	23.07	22.92	23.01
22.97							
24.12 CFS	21.72	19.46	16.88	14.55	12.29	10.11	8.09
6.36							
24.60 CFS	4.95	3.84	2.98	2.32	1.82	1.44	1.16
.95							
25.08 CFS	.79	.67	.57	.51	.45		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.20 WATERSHED INCHES; 1454 CFS-HRS; 120.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	2973.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 4602 CFS-HRS; 380.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	42.2	(RUNOFF)
17.34	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.31 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	2988.2	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55  
 SQ.MI.

HRS	.45	.52	.60	.69	.78	.87	.99
4.50 CFS							
1.11							
4.98 CFS	1.25	1.40	1.56	1.72	1.88	2.06	2.25
2.46							
5.46 CFS	2.68	2.89	3.10	3.33	3.56	3.81	4.07
4.34							
5.94 CFS	4.59	4.83	5.09	5.36	5.67	5.98	6.28

6.60								
6.42 CFS	6.95	7.33	7.75	8.21	8.71	9.23	9.78	
10.32								
6.90 CFS	10.88	11.47	12.07	12.68	13.32	14.00	14.74	
15.52								

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7.38 CFS	16.32	17.15	18.00	18.89	19.80	20.71	21.64	
22.58								
7.86 CFS	23.55	24.55	25.59	26.66	27.75	28.88	30.02	
31.14								
8.34 CFS	32.25	33.38	34.54	35.70	36.85	38.05	39.31	
40.62								
8.82 CFS	41.94	43.24	44.49	45.71	47.00	48.38	49.90	
51.54								
9.30 CFS	53.34	55.37	57.62	60.06	62.61	65.22	67.98	
70.89								
9.78 CFS	74.02	77.33	80.75	84.22	87.73	91.34	95.10	
99.04								
10.26 CFS	103	107	111	116	120	124	129	
135								
10.74 CFS	141	149	158	168	179	191	204	
219								
11.22 CFS	235	254	274	296	321	346	375	
412								
11.70 CFS	461	521	595	688	813	989	1256	
1655								
12.18 CFS	2170	2611	2898	2988	2915	2729	2494	
2249								
12.66 CFS	2010	1787	1587	1413	1264	1133	1008	
906								
13.14 CFS	822	752	694	647	606	571	539	
510								
13.62 CFS	482	457	433	411	393	377	363	
352								
14.10 CFS	342	333	325	317	310	303	296	
290								
14.58 CFS	284	278	271	265	259	253	247	
242								
15.06 CFS	236	230	225	219	214	209	204	
200								
15.54 CFS	197	193	190	186	183	180	178	
176								
16.02 CFS	174	171	169	167	165	163	162	
160								
16.50 CFS	158	156	155	153	151	150	148	
147								
16.98 CFS	145	144	143	141	140	138	136	
135								
17.46 CFS	133	132	130	128	127	125	124	
122								
17.94 CFS	121	119	118	116	115	114	112	
111								
18.42 CFS	110	108	107	107	106	106	105	
105								
18.90 CFS	104	104	103	103	102	101	101	

100							
19.38 CFS	100	100	100	99	99	99	98
98							
19.86 CFS	97.13	96.56	96.03	95.69	95.52	95.35	95.10
94.75							
20.34 CFS	94.32	93.78	93.08	92.40	91.89	91.59	91.36
91.06							
20.82 CFS	90.74	90.46	90.14	89.71	89.19	88.64	88.10
87.62							
21.30 CFS	87.24	86.92	86.67	86.48	86.29	86.01	85.56
85.07							
21.78 CFS	84.62	84.19	83.80	83.54	83.32	83.00	82.57
82.08							
22.26 CFS	81.58	81.12	80.73	80.42	80.17	79.91	79.53
79.01							
22.74 CFS	78.51	78.06	77.57	77.00	76.47	76.14	75.97
75.82							
23.22 CFS	75.57	75.23	74.84	74.45	74.05	73.54	72.92
72.37							
23.70 CFS	72.00	71.81	71.60	71.22	70.74	70.52	70.37
68.68							
24.18 CFS	64.06	56.96	48.61	40.29	32.84	26.70	21.81
17.97							
24.66 CFS	14.98	12.67	10.87	9.46	8.33	7.43	6.68
6.06							
25.14 CFS	5.56	5.14	4.79	4.49	4.25	4.03	3.83
3.66							
25.62 CFS	3.51	3.37	3.25	3.14	3.03	2.94	2.86
2.78							
26.10 CFS	2.70	2.63	2.57	2.51	2.45	2.38	2.32
2.27							
26.58 CFS	2.22	2.18	2.15	2.11	2.08	2.04	2.01
1.98							
27.06 CFS	1.95	1.92					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.64 WATERSHED INCHES; 4638 CFS-HRS; 383.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 58

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	133.5	(RUNOFF)
17.34	3.0	(RUNOFF)
21.45	2.0	(RUNOFF)
24.00	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.09 WATERSHED INCHES; 117 CFS-HRS; 9.7 ACRE-FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	902.8	132.90
24.07	23.0	129.93

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.20 WATERSHED INCHES; 1454 CFS-HRS; 120.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	938.6	(NULL)
23.98	24.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.25 WATERSHED INCHES; 1572 CFS-HRS; 129.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	3914.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.53 WATERSHED INCHES; 6210 CFS-HRS; 513.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	86.7	(RUNOFF)
17.34	2.1	(RUNOFF)
24.01	1.2	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02  
 SQ.MI.

6.06 CFS	.50	.50	.51	.53	.55	.57	.59
.61							
6.54 CFS	.63	.65	.67	.68	.70	.73	.75
.76							

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7.02 CFS	.78	.81	.84	.87	.89	.91	.93
.96							
7.50 CFS	.98	1.00	1.02	1.04	1.07	1.10	1.12
1.15							

7.98 CFS	1.18	1.21	1.24	1.26	1.28	1.30	1.34
1.36							
8.46 CFS	1.38	1.40	1.44	1.48	1.52	1.54	1.56
1.57							
8.94 CFS	1.59	1.64	1.70	1.74	1.78	1.85	1.94
2.02							
9.42 CFS	2.09	2.15	2.21	2.29	2.38	2.48	2.56
2.64							
9.90 CFS	2.71	2.78	2.87	2.97	3.07	3.17	3.24
3.32							
10.38 CFS	3.40	3.50	3.61	3.75	3.95	4.19	4.47
4.77							
10.86 CFS	5.08	5.40	5.71	6.03	6.47	6.98	7.55
8.13							
11.34 CFS	8.71	9.35	9.97	10.62	12.15	14.62	16.70
18.71							
11.82 CFS	21.94	26.50	33.02	44.10	60.39	81.21	85.70
67.81							
12.30 CFS	49.90	38.58	30.68	25.67	22.70	19.48	16.34
14.34							
12.78 CFS	13.14	12.25	11.49	10.82	10.14	9.47	8.83
8.31							
13.26 CFS	7.90	7.52	7.14	6.77	6.40	6.04	5.71
5.44							
13.74 CFS	5.25	5.10	4.97	4.88	4.80	4.73	4.64
4.53							
14.22 CFS	4.41	4.31	4.23	4.16	4.08	3.99	3.87
3.76							
14.70 CFS	3.67	3.59	3.52	3.43	3.34	3.25	3.16
3.06							
15.18 CFS	2.96	2.89	2.85	2.83	2.82	2.82	2.81
2.78							
15.66 CFS	2.74	2.68	2.66	2.68	2.67	2.63	2.58
2.54							
16.14 CFS	2.52	2.51	2.50	2.46	2.43	2.41	2.38
2.34							
16.62 CFS	2.32	2.31	2.30	2.27	2.23	2.21	2.20
2.19							
17.10 CFS	2.16	2.12	2.07	2.04	2.05	2.04	2.01
1.96							
17.58 CFS	1.92	1.90	1.89	1.88	1.84	1.81	1.79
1.78							
18.06 CFS	1.77	1.74	1.70	1.69	1.68	1.67	1.63
1.62							
18.54 CFS	1.64	1.66	1.66	1.63	1.62	1.64	1.63
1.60							
19.02 CFS	1.58	1.58	1.57	1.57	1.57	1.57	1.57
1.57							
19.50 CFS	1.57	1.56	1.53	1.52	1.53	1.52	1.50
1.48							
19.98 CFS	1.50	1.52	1.52	1.50	1.48	1.47	1.47
1.44							
20.46 CFS	1.41	1.43	1.45	1.45	1.43	1.41	1.42
1.43							
20.94 CFS	1.40	1.38	1.37	1.37	1.37	1.37	1.37
1.36							
21.42 CFS	1.36	1.37	1.36	1.33	1.31	1.32	1.32
1.30							
21.90 CFS	1.31	1.32	1.31	1.28	1.27	1.27	1.26
1.26							
22.38 CFS	1.26	1.26	1.26	1.25	1.22	1.21	1.22
1.21							
22.86 CFS	1.19	1.17	1.18	1.21	1.21	1.18	1.17
1.16							



23.34 CFS	1.16	1.16	1.15	1.11	1.10	1.12	1.14
1.14							
23.82 CFS	1.11	1.08	1.08	1.15	1.12	.74	.35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.70 WATERSHED INCHES; 86 CFS-HRS; 7.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	3951.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.55 WATERSHED INCHES; 6295 CFS-HRS; 520.2 ACRE-  
 FEET.

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EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	652.9	(RUNOFF)
18.67	16.6	(RUNOFF)
20.13	15.2	(RUNOFF)
20.67	14.5	(RUNOFF)
21.93	13.3	(RUNOFF)
23.12	12.1	(RUNOFF)
24.01	11.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.72 WATERSHED INCHES; 776 CFS-HRS; 64.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	97.8	(RUNOFF)
20.09	2.1	(RUNOFF)
24.02	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.34 WATERSHED INCHES; 101 CFS-HRS; 8.3 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	93.7	432.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.24 WATERSHED INCHES; 99 CFS-HRS; 8.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 3

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	746.6	(NULL)
18.65	19.1	(NULL)
20.12	17.4	(NULL)
20.67	16.6	(NULL)
23.12	14.0	(NULL)
23.77	13.3	(NULL)
24.01	13.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.66 WATERSHED INCHES; 874 CFS-HRS; 72.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	259.5	(RUNOFF)
15.84	8.1	(RUNOFF)
17.34	6.2	(RUNOFF)
18.62	5.0	(RUNOFF)
21.45	4.1	(RUNOFF)
21.75	4.0	(RUNOFF)
21.95	4.0	(RUNOFF)
24.00	3.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.19 WATERSHED INCHES; 247 CFS-HRS; 20.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION (FEET)		
12.21	961.0	(NULL)
18.63	24.2	(NULL)
20.08	22.0	(NULL)
20.63	21.0	(NULL)
21.95	19.3	(NULL)
23.09	17.7	(NULL)
24.00	16.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.77 WATERSHED INCHES; 1120 CFS-HRS; 92.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 6  
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PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.18	278.1	(RUNOFF)
15.82	9.9	(RUNOFF)
17.31	7.6	(RUNOFF)
18.86	6.1	(RUNOFF)
21.45	5.1	(RUNOFF)
24.02	4.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.40 WATERSHED INCHES; 279 CFS-HRS; 23.0 ACRE-FEET.

OPERATION REACH XSECTION 7

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.28	943.1	321.72
18.69	24.1	318.40
20.15	22.0	318.38
20.70	21.0	318.37
22.01	19.3	318.35
23.15	17.7	318.33
24.07	16.5	318.32

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.77 WATERSHED INCHES; 1120 CFS-HRS; 92.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.25	1174.5	(NULL)
18.65	30.3	(NULL)
20.12	27.6	(NULL)

20.67	26.4	(NULL)
21.99	24.2	(NULL)
23.12	22.2	(NULL)
24.04	20.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.69 WATERSHED INCHES; 1399 CFS-HRS; 115.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	223.2	(RUNOFF)
20.87	4.2	(RUNOFF)
24.02	3.3	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.84 WATERSHED INCHES; 227 CFS-HRS; 18.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	87.2	(RUNOFF)
18.66	2.1	(RUNOFF)
24.02	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.86 WATERSHED INCHES; 100 CFS-HRS; 8.3 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	70.3	456.47

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.35 WATERSHED INCHES; 91 CFS-HRS; 7.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	70.0	414.92

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.34 WATERSHED INCHES; 91 CFS-HRS; 7.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	250.4	(NULL)
18.61	7.1	(NULL)
20.86	6.0	(NULL)
23.08	5.1	(NULL)
24.01	4.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.69 WATERSHED INCHES; 318 CFS-HRS; 26.3 ACRE-FEET.

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OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	185.0	(RUNOFF)
15.83	6.0	(RUNOFF)
17.33	4.6	(RUNOFF)
20.86	3.2	(RUNOFF)
24.02	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.54 WATERSHED INCHES; 189 CFS-HRS; 15.6 ACRE-FEET.

\*\*\* WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 51,  
 VALUE EXTRAPOLATED.  
 \*\*\*

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	105.1	399.85

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.54 WATERSHED INCHES; 189 CFS-HRS; 15.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	335.1	(NULL)
20.62	9.5	(NULL)
21.94	8.7	(NULL)
24.01	7.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.97 WATERSHED INCHES; 507 CFS-HRS; 41.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	316.5	(RUNOFF)
15.84	10.3	(RUNOFF)
17.34	8.0	(RUNOFF)
19.44	6.1	(RUNOFF)
21.95	5.2	(RUNOFF)
24.01	4.5	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.68 WATERSHED INCHES; 299 CFS-HRS; 24.7 ACRE-  
FEET.

OPERATION REACH XSECTION 16

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	328.0	331.81
20.68	9.5	330.31
24.08	7.4	330.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.97 WATERSHED INCHES; 507 CFS-HRS; 41.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	565.4	(NULL)
18.58	17.7	(NULL)
20.62	15.2	(NULL)
21.94	13.8	(NULL)
23.07	12.7	(NULL)
24.01	11.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.86 WATERSHED INCHES; 805 CFS-HRS; 66.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.24	1717.2	(NULL)
18.63	48.0	(NULL)
20.10	43.5	(NULL)
20.64	41.6	(NULL)
21.95	38.0	(NULL)
23.10	34.8	(NULL)
24.03	32.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.75 WATERSHED INCHES; 2204 CFS-HRS; 182.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.31	683.5	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.30 WATERSHED INCHES; 923 CFS-HRS; 76.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.36	1564.9	239.60
20.14	43.5	234.62
23.15	34.8	234.55
24.09	32.5	234.53

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.75 WATERSHED INCHES; 2203 CFS-HRS; 182.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.35	2231.6	(NULL)
20.13	62.4	(NULL)

23.14 49.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.61 WATERSHED INCHES; 3127 CFS-HRS; 258.4 ACRE-
FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.22 66.5 (RUNOFF)
24.02 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.42 WATERSHED INCHES; 77 CFS-HRS; 6.3 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.24 65.7 415.70
23.14 1.1 410.86

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.42 WATERSHED INCHES; 77 CFS-HRS; 6.3 ACRE-
FEET.

OPERATION RUNOFF XSECTION 23

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.19 311.9 (RUNOFF)
20.10 6.1 (RUNOFF)
21.97 5.3 (RUNOFF)
24.03 4.5 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.42 WATERSHED INCHES; 336 CFS-HRS; 27.8 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.26 284.3 370.13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.42 WATERSHED INCHES; 336 CFS-HRS; 27.8 ACRE-
FEET.



OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	349.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
6.42 WATERSHED INCHES;	413 CFS-HRS;	34.1 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	180.8	(RUNOFF)
21.97	3.0	(RUNOFF)
24.02	2.6	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
6.39 WATERSHED INCHES;	192 CFS-HRS;	15.9 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	515.5	(NULL)
20.08	11.1	(NULL)
20.61	10.6	(NULL)
24.01	8.2	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
6.41 WATERSHED INCHES;	605 CFS-HRS;	50.0 ACRE-
FEEET.		

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	429.8	343.30
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
6.42 WATERSHED INCHES;	605 CFS-HRS;	50.0 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
12.11	58.8	(RUNOFF)
17.32	1.2	(RUNOFF)
18.58	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.67 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27. THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -.6%.  
 \*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	446.1	(NULL)
23.98	9.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.36 WATERSHED INCHES; 652 CFS-HRS; 53.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 29

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	261.8	(RUNOFF)
15.45	7.1	(RUNOFF)
15.82	6.8	(RUNOFF)
17.32	5.2	(RUNOFF)
18.82	4.2	(RUNOFF)
22.41	3.2	(RUNOFF)
22.72	3.1	(RUNOFF)
23.02	3.1	(RUNOFF)
23.99	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.96 WATERSHED INCHES; 224 CFS-HRS; 18.5 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29. THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 1.1%.  
 \*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION (FEET)		
12.11	261.8	(NULL)
15.45	7.1	(NULL)
15.82	6.8	(NULL)
17.32	5.2	(NULL)
18.82	4.2	(NULL)
22.41	3.2	(NULL)
22.72	3.1	(NULL)
23.02	3.1	(NULL)
23.99	3.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.96 WATERSHED INCHES; 224 CFS-HRS; 18.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 30

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.18	255.4	357.40
15.88	6.8	356.14
17.38	5.2	356.11
18.88	4.2	356.09
21.98	3.4	356.07
22.78	3.1	356.07
23.09	3.1	356.07
24.05	3.2	356.07

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.99 WATERSHED INCHES; 225 CFS-HRS; 18.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.31	521.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.66 WATERSHED INCHES; 750 CFS-HRS; 62.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.21	686.9	(NULL)
18.85	18.6	(NULL)
20.08	17.2	(NULL)
20.87	16.2	(NULL)
21.75	15.1	(NULL)

21.97	15.0	(NULL)
23.08	13.6	(NULL)
24.04	12.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.73 WATERSHED INCHES; 975 CFS-HRS; 80.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	178.4	(RUNOFF)
21.97	3.1	(RUNOFF)
24.03	2.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.43 WATERSHED INCHES; 198 CFS-HRS; 16.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 34

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	876.5	(NULL)
18.85	22.4	(NULL)
20.09	20.8	(NULL)
20.87	19.6	(NULL)
21.97	18.1	(NULL)
23.09	16.5	(NULL)
24.04	15.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.68 WATERSHED INCHES; 1173 CFS-HRS; 96.9 ACRE-  
FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	825.2	318.24
20.15	20.7	316.31
20.91	19.6	316.30
22.01	18.1	316.29
23.15	16.5	316.28
24.10	15.5	316.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.68 WATERSHED INCHES; 1173 CFS-HRS; 96.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	78.9	(RUNOFF)
18.64	2.0	(RUNOFF)
23.76	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.49 WATERSHED INCHES; 102 CFS-HRS; 8.4 ACRE-  
FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
TIME INCREMENT OF .047 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

OPERATION RESVOR STRUCTURE 33

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	78.4	328.90
23.77	1.4	323.05

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.47 WATERSHED INCHES; 102 CFS-HRS; 8.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	903.1	(NULL)
20.15	22.6	(NULL)
20.91	21.3	(NULL)
22.01	19.7	(NULL)
23.15	17.9	(NULL)
24.10	16.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.66 WATERSHED INCHES; 1275 CFS-HRS; 105.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
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12.13	303.7	(RUNOFF)
15.45	9.3	(RUNOFF)
15.84	8.9	(RUNOFF)
17.34	6.8	(RUNOFF)
19.74	5.1	(RUNOFF)
20.04	5.1	(RUNOFF)
22.42	4.2	(RUNOFF)
22.74	4.1	(RUNOFF)
23.04	4.1	(RUNOFF)
24.00	4.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.96 WATERSHED INCHES; 263 CFS-HRS; 21.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.28	1035.2	(NULL)
23.99	20.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.53 WATERSHED INCHES; 1537 CFS-HRS; 127.1 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.33	1443.0	(NULL)
23.99	29.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.47 WATERSHED INCHES; 2188 CFS-HRS; 180.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	97.1	(RUNOFF)
15.84	3.1	(RUNOFF)
17.34	2.4	(RUNOFF)
24.02	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.37 WATERSHED INCHES; 97 CFS-HRS; 8.0 ACRE-  
 FEET.

OPERATION RESVOR      STRUCTURE 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	49.7	274.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.25 WATERSHED INCHES;      95 CFS-HRS;      7.9 ACRE-FEET.

OPERATION REACH      XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	47.8	223.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
6.26 WATERSHED INCHES;      95 CFS-HRS;      7.9 ACRE-FEET.

OPERATION RUNOFF      XSECTION 43

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	289.3	(RUNOFF)
18.87	8.0	(RUNOFF)
20.86	7.1	(RUNOFF)
21.97	6.6	(RUNOFF)
23.10	6.0	(RUNOFF)
24.03	5.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.01 WATERSHED INCHES;      313 CFS-HRS;      25.9 ACRE-FEET.

OPERATION ADDHYD      XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	297.1	(NULL)
18.59	12.3	(NULL)
20.63	10.2	(NULL)
23.09	8.2	(NULL)
24.03	7.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.38 WATERSHED INCHES;      409 CFS-HRS;      33.8 ACRE-FEET.

OPERATION REACH      XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.50	1290.5	228.71
24.09	29.6	222.89

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.48 WATERSHED INCHES; 2189 CFS-HRS; 180.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	1468.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.02 WATERSHED INCHES; 2597 CFS-HRS; 214.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	802.9	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.09 WATERSHED INCHES; 1108 CFS-HRS; 91.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	107.1	(RUNOFF)
15.84	3.3	(RUNOFF)
18.85	2.0	(RUNOFF)
24.01	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.72 WATERSHED INCHES; 107 CFS-HRS; 8.9 ACRE-FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	59.2	337.87
24.03	1.4	333.09



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.72 WATERSHED INCHES; 108 CFS-HRS; 8.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.51	58.6	317.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.71 WATERSHED INCHES; 107 CFS-HRS; 8.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	858.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.14 WATERSHED INCHES; 1216 CFS-HRS; 100.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 51

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	84.8	(RUNOFF)
24.02	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.20 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	71.1	322.85
24.03	1.2	320.83

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.60 WATERSHED INCHES; 79 CFS-HRS; 6.5 ACRE-

FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	926.8	279.26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.10 WATERSHED INCHES; 1294 CFS-HRS; 107.0 ACRE-FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	800.3	279.01

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.10 WATERSHED INCHES; 1294 CFS-HRS; 107.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 53

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	494.4	(RUNOFF)
19.46	13.3	(RUNOFF)
20.86	12.1	(RUNOFF)
21.97	11.3	(RUNOFF)
23.10	10.3	(RUNOFF)
24.03	9.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.99 WATERSHED INCHES; 536 CFS-HRS; 44.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	1077.6	(NULL)
24.01	27.8	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .54  
 SQ.MI.

5.16 CFS	.45	.55	.66	.78	.91	1.04	1.18
1.33							
5.64 CFS	1.47	1.63	1.78	1.94	2.10	2.26	2.41

2.57								
6.12 CFS	2.73	2.90	3.07	3.24	3.42	3.60	3.78	
3.98								
6.60 CFS	4.18	4.40	4.62	4.84	5.07	5.31	5.54	
5.79								
7.08 CFS	6.03	6.28	6.54	6.81	7.09	7.38	7.67	
7.97								
7.56 CFS	8.26	8.56	8.86	9.16	9.46	9.77	10.08	
10.40								
8.04 CFS	10.72	11.06	11.40	11.75	12.10	12.45	12.80	
13.15								
8.52 CFS	13.50	13.85	14.21	14.58	14.96	15.35	15.75	
16.16								
9.00 CFS	16.58	17.04	17.55	18.10	18.71	19.38	20.12	
20.94								
9.48 CFS	21.83	22.79	23.81	24.90	26.05	27.25	28.50	
29.80								
9.96 CFS	31.14	32.52	33.95	35.43	36.94	38.49	40.07	
41.68								
10.44 CFS	43.34	45.05	46.83	48.77	50.94	53.43	56.28	
59.53								
10.92 CFS	63	67	72	77	82	89	96	
104								
11.40 CFS	112	121	132	146	164	186	212	
244								
11.88 CFS	285	342	426	551	729	905	1016	
1065								
12.36 CFS	1078	1069	1034	978	905	824	744	
669								
12.84 CFS	599	536	479	431	389	352	321	
295								
13.32 CFS	272	253	235	220	205	193	181	
171								
13.80 CFS	162	154	147	141	136	131	127	
123								
14.28 CFS	119	116	113	111	108	106	103	
101								
14.76 CFS	98.17	95.91	93.69	91.43	89.20	87.01	84.82	
82.60								
15.24 CFS	80.45	78.47	76.73	75.21	73.90	72.78	71.75	
70.75								
15.72 CFS	69.76	68.88	68.20	67.61	66.95	66.20	65.45	
64.77								
16.20 CFS	64.18	63.61	62.99	62.34	61.72	61.09	60.42	
59.76								
16.68 CFS	59.18	58.64	58.08	57.45	56.86	56.33	55.86	
55.35								
17.16 CFS	54.73	54.02	53.36	52.85	52.37	51.80	51.11	
50.39								
17.64 CFS	49.74	49.17	48.62	48.00	47.35	46.75	46.23	
45.73								
18.12 CFS	45.18	44.58	44.03	43.55	43.09	42.57	42.06	
41.73								
18.60 CFS	41.52	41.33	41.06	40.80	40.66	40.54	40.34	
40.09								
19.08 CFS	39.87	39.68	39.51	39.36	39.22	39.11	39.01	
38.93								

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19.56	CFS	38.83	38.63	38.42	38.30	38.19	37.97	37.72
37.56								
20.04	CFS	37.54	37.50	37.37	37.19	37.04	36.90	36.67
36.38								
20.52	CFS	36.17	36.09	36.04	35.88	35.67	35.55	35.49
35.35								
21.00	CFS	35.14	34.92	34.74	34.58	34.42	34.28	34.16
34.06								
21.48	CFS	33.98	33.89	33.72	33.50	33.35	33.25	33.09
32.94								
21.96	CFS	32.88	32.78	32.59	32.38	32.20	32.05	31.91
31.77								
22.44	CFS	31.65	31.55	31.43	31.20	30.97	30.84	30.71
30.49								
22.92	CFS	30.22	30.05	30.03	29.99	29.85	29.67	29.51
29.39								
23.40	CFS	29.27	29.12	28.86	28.59	28.46	28.41	28.36
28.18								
23.88	CFS	27.91	27.73	27.84	27.79	26.23	23.47	20.42
17.78								
24.36	CFS	15.29	12.87	10.59	8.57	6.85	5.43	4.29
3.39								
24.84	CFS	2.67	2.13	1.70	1.37	1.12	.92	.77
.66								
25.32	CFS	.57	.50	.45				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.28 WATERSHED INCHES; 1830 CFS-HRS; 151.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	3563.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.79 WATERSHED INCHES; 5722 CFS-HRS; 472.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.13	55.0	(RUNOFF)
20.04	1.1	(RUNOFF)
20.60	1.0	(RUNOFF)
20.83	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.31 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	3581.2	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55

HRS SQ.MI.	4.02 CFS	4.50 CFS	4.98 CFS	5.46 CFS	5.94 CFS	6.42 CFS	6.90 CFS	7.38 CFS	7.86 CFS	8.34 CFS	8.82 CFS	9.30 CFS	9.78 CFS	10.26 CFS	10.74 CFS	11.22 CFS	11.70 CFS	12.18 CFS	12.66 CFS	13.14 CFS	13.62 CFS	14.10 CFS	14.58 CFS	15.06 CFS	15.54 CFS
1.26	.46	1.43	3.28	5.77	9.04	13.34	19.82	28.31	38.06	49.33	61.79	76.71	104	141	190	304	575	2525	2569	1104	597	414	340	283	237
3.01	.53	1.61	3.56	6.12	9.51	13.99	20.78	29.48	39.37	50.81	63.46	79.34	108	146	199	326	648	3056	2298	999	564	402	332	277	234
5.43	.61	1.80	3.85	6.46	9.99	14.69	21.76	30.67	40.71	52.31	65.09	82.28	112	152	210	351	736	3423	2051	909	534	391	325	270	231
8.57	.71	2.02	4.15	6.82	10.50	15.44	22.75	31.88	42.10	53.79	66.70	85.47	117	157	222	377	847	3570	1832	834	507	381	317	263	228
12.73	.82	2.25	4.45	7.21	11.04	16.25	23.78	33.11	43.52	55.28	68.38	88.82	121	162	236	405	994	3547	1641	771	484	372	310	257	225
	.96	2.50	4.77	7.63	11.59	17.10	24.85	34.33	44.97	56.82	70.22	92.31	126	168	251	436	1203	3397	1478	718	463	363	303	251	222
	1.11	2.75	5.09	8.09	12.15	17.99	25.98	35.55	46.45	58.43	72.21	95.93	131	174	267	472	1511	3139	1339	672	444	355	297	246	220

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6.42 CFS	13.34	13.99	14.69	15.44	16.25	17.10	17.99
18.88							
6.90 CFS	19.82	20.78	21.76	22.75	23.78	24.85	25.98
27.14							
7.38 CFS	28.31	29.48	30.67	31.88	33.11	34.33	35.55
36.79							
7.86 CFS	38.06	39.37	40.71	42.10	43.52	44.97	46.45
47.90							
8.34 CFS	49.33	50.81	52.31	53.79	55.28	56.82	58.43
60.10							
8.82 CFS	61.79	63.46	65.09	66.70	68.38	70.22	72.21
74.34							
9.30 CFS	76.71	79.34	82.28	85.47	88.82	92.31	95.93
99.76							
9.78 CFS	104	108	112	117	121	126	131
136							
10.26 CFS	141	146	152	157	162	168	174
181							
10.74 CFS	190	199	210	222	236	251	267
284							
11.22 CFS	304	326	351	377	405	436	472
516							
11.70 CFS	575	648	736	847	994	1203	1511
1970							
12.18 CFS	2525	3056	3423	3570	3547	3397	3139
2851							
12.66 CFS	2569	2298	2051	1832	1641	1478	1339
1219							
13.14 CFS	1104	999	909	834	771	718	672
632							
13.62 CFS	597	564	534	507	484	463	444
428							
14.10 CFS	414	402	391	381	372	363	355
347							
14.58 CFS	340	332	325	317	310	303	297
290							
15.06 CFS	283	277	270	263	257	251	246
241							
15.54 CFS	237	234	231	228	225	222	220
217							

16.02 CFS	214	211	208	205	202	199	197
194							
16.50 CFS	192	189	187	185	183	181	179
177							
16.98 CFS	175	173	172	170	168	166	164
162							
17.46 CFS	160	159	157	155	153	151	149
147							
17.94 CFS	145	143	142	140	139	137	135
134							
18.42 CFS	132	131	129	128	128	127	126
126							
18.90 CFS	125	125	124	123	122	122	121
121							
19.38 CFS	120	120	120	119	119	118	118
117							
19.86 CFS	116	116	115	115	114	114	114
113							
20.34 CFS	113	112	112	111	110	110	109
109							
20.82 CFS	109	108	108	107	107	106	106
105							
21.30 CFS	104	104	104	104	103	103	102
102							
21.78 CFS	101	101	100	100	100	99	99
98							
22.26 CFS	97.74	97.19	96.73	96.34	96.01	95.69	95.25
94.69							
22.74 CFS	94.06	93.52	92.97	92.31	91.69	91.25	91.00
90.82							
23.22 CFS	90.51	90.10	89.64	89.18	88.70	88.13	87.46
86.78							
23.70 CFS	86.33	86.06	85.79	85.35	84.82	84.49	84.05
82.26							
24.18 CFS	77.61	69.85	60.77	51.52	43.01	35.75	29.78
24.88							
24.66 CFS	20.92	17.73	15.17	13.11	11.44	10.08	8.95
8.02							
25.14 CFS	7.24	6.60	6.06	5.61	5.24	4.92	4.64
4.39							
25.62 CFS	4.18	3.99	3.82	3.66	3.53	3.40	3.29
3.19							
26.10 CFS	3.09	3.01	2.92	2.85	2.78	2.71	2.65
2.58							
26.58 CFS	2.52	2.46	2.41	2.37			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.77 WATERSHED INCHES; 5769 CFS-HRS; 476.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 58

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PEAK TIME(HRS)

PEAK DISCHARGE(CFS)

PEAK

ELEVATION (FEET)		
12.13	162.6	(RUNOFF)
15.84	4.7	(RUNOFF)
17.34	3.6	(RUNOFF)
23.04	2.2	(RUNOFF)
23.70	2.0	(RUNOFF)
24.00	2.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.26 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-FEET.

OPERATION REACH XSECTION 59

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.43	1076.2	133.26
24.07	27.8	130.01

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.28 WATERSHED INCHES; 1830 CFS-HRS; 151.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.41	1121.1	(NULL)
23.98	29.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.34 WATERSHED INCHES; 1975 CFS-HRS; 163.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.39	4702.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.65 WATERSHED INCHES; 7743 CFS-HRS; 639.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 62

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.16	103.9	(RUNOFF)
15.84	3.2	(RUNOFF)
17.34	2.4	(RUNOFF)
24.01	1.4	(RUNOFF)

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		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99						
		MAIN TIME INCREMENT = .060 hr,					DRAINAGE AREA = .02	
HRS	SQ.MI.							
5.16	CFS	.50	.52	.54	.54	.55	.56	.58
.61								
5.64	CFS	.62	.64	.65	.65	.65	.68	.71
.73								
6.12	CFS	.74	.75	.78	.80	.82	.85	.88
.90								
6.60	CFS	.93	.96	.97	.99	1.03	1.06	1.07
1.10								
7.08	CFS	1.13	1.18	1.21	1.23	1.25	1.28	1.31
1.35								
7.56	CFS	1.37	1.39	1.42	1.45	1.49	1.51	1.56
1.59								
8.04	CFS	1.62	1.66	1.69	1.71	1.73	1.78	1.82
1.83								
8.52	CFS	1.86	1.91	1.96	2.00	2.03	2.05	2.07
2.09								
9.00	CFS	2.15	2.22	2.27	2.32	2.41	2.52	2.62
2.71								
9.48	CFS	2.78	2.86	2.96	3.07	3.18	3.29	3.38
3.47								
9.96	CFS	3.56	3.67	3.79	3.91	4.02	4.12	4.21
4.31								
10.44	CFS	4.43	4.57	4.73	4.97	5.27	5.61	5.98
6.36								
10.92	CFS	6.75	7.13	7.53	8.05	8.67	9.37	10.07
10.78								
11.40	CFS	11.55	12.29	13.07	14.91	17.93	20.45	22.85
26.72								
11.88	CFS	32.20	39.97	53.20	72.69	97.72	102.59	81.05
59.40								
12.36	CFS	45.97	36.48	30.54	26.98	23.14	19.40	17.02
15.60								
12.84	CFS	14.54	13.64	12.84	12.03	11.23	10.47	9.86
9.37								
13.32	CFS	8.91	8.47	8.03	7.58	7.16	6.76	6.45
6.22								
13.80	CFS	6.04	5.89	5.78	5.69	5.60	5.49	5.36
5.23								
14.28	CFS	5.11	5.01	4.93	4.84	4.72	4.59	4.45
4.34								
14.76	CFS	4.25	4.16	4.07	3.95	3.84	3.74	3.62
3.51								
15.24	CFS	3.42	3.37	3.35	3.34	3.33	3.33	3.29
3.24								
15.72	CFS	3.18	3.15	3.16	3.15	3.11	3.05	3.00
2.98								
16.20	CFS	2.97	2.95	2.91	2.87	2.85	2.81	2.76
2.74								
16.68	CFS	2.73	2.72	2.68	2.64	2.62	2.60	2.59
2.56								
17.16	CFS	2.50	2.44	2.42	2.43	2.42	2.37	2.31
2.27								
17.64	CFS	2.24	2.23	2.22	2.18	2.14	2.12	2.11
2.09								
18.12	CFS	2.05	2.01	2.00	1.99	1.97	1.93	1.91
1.94								
18.60	CFS	1.96	1.96	1.93	1.91	1.93	1.92	1.89
1.87								



19.08 CFS	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86
1.86								
19.56 CFS	1.84	1.81	1.79	1.81	1.80	1.77	1.75	
1.77								
20.04 CFS	1.80	1.80	1.77	1.75	1.74	1.73	1.70	
1.67								
20.52 CFS	1.68	1.71	1.72	1.69	1.67	1.68	1.69	
1.66								
21.00 CFS	1.63	1.62	1.62	1.61	1.61	1.61	1.61	
1.61								
21.48 CFS	1.61	1.61	1.57	1.55	1.56	1.56	1.54	
1.55								
21.96 CFS	1.56	1.54	1.52	1.50	1.49	1.49	1.49	
1.49								
22.44 CFS	1.49	1.49	1.48	1.44	1.42	1.44	1.43	
1.40								
22.92 CFS	1.38	1.40	1.43	1.43	1.40	1.38	1.37	
1.37								
23.40 CFS	1.37	1.35	1.32	1.30	1.32	1.35	1.34	
1.31								
23.88 CFS	1.27	1.27	1.36	1.32	.87	.41		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.90 WATERSHED INCHES; 104 CFS-HRS; 8.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 63

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 4744.5 (NULL)  
 12.38

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.67 WATERSHED INCHES; 7847 CFS-HRS; 648.5 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 7

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SUMMARY TABLE 1

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 SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT					.0 hrs.			
RAINTABLE NUMBER 1, ARC 2								
MAIN TIME INCREMENT .060 HOURS								
ALTERNATE		1	STORM	2				
XSECTION	1	RUNOFF	.21	1.22	---	12.26	137	652.4
XSECTION	2	RUNOFF	.03	1.03	---	12.20	18	600.0
STRUCTURE	58	RESVOR	.03	1.02	429.15	13.47	2	66.7
XSECTION	3	ADDHYD	.24	1.19	---	12.26	138	575.0
XSECTION	4	RUNOFF	.06	1.47	---	12.16	63	1050.0
XSECTION	6	RUNOFF	.08	1.06	---	12.19	53	662.5
XSECTION	9	RUNOFF	.06	1.27	---	12.19	49	816.7
XSECTION	10	RUNOFF	.03	1.29	---	12.23	19	633.3
STRUCTURE	52	RESVOR	.03	.86	454.47	13.33T	3T	100.0
XSECTION	12	ADDHYD	.09	1.15	---	12.19	49	544.4
XSECTION	13	RUNOFF	.04	1.67	---	12.18	49	1225.0
STRUCTURE	51	RESVOR	.04	1.67	397.47	12.42	22	550.0
XSECTION	15	RUNOFF	.08	1.19	---	12.16	66	825.0
XSECTION	17	ADDHYD	.21	1.27	---	12.21	110	523.8
XSECTION	18	ADDHYD	.59	1.23	---	12.25	334	566.1
XSECTION	19	RUNOFF	.27	1.01	---	12.33	122	451.9
XSECTION	20	REACH	.59	1.23	235.86	12.38	306	518.6
XSECTION	21	ADDHYD	.86	1.16	---	12.36	426	495.3
XSECTION	22	RUNOFF	.02	1.60	---	12.22	17	850.0
STRUCTURE	47	RESVOR	.02	1.60	414.10	12.37	12	600.0
XSECTION	23	RUNOFF	.08	1.60	---	12.20	80	1000.0
STRUCTURE	32	RESVOR	.08	1.60	368.24	12.32	61	762.5
XSECTION	25	RUNOFF	.05	1.58	---	12.19	46	920.0
STRUCTURE	34	RESVOR	.15	1.59	337.19	12.68	54	360.0
XSECTION	27	RUNOFF	.01	1.19	---	12.12	13	1300.0
XSECTION	28	ADDHYD	.16	1.56	---	12.67	56	350.0
XSECTION	29	RUNOFF	.05	1.96	---	12.11	81	1620.0
STRUCTURE	64	RESVOR	.05	1.96	---	12.11	81	1620.0

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL		DRAINAGE		ELEVATION (FT)	PEAK DISCHARGE		
	ID	OPERATION	AREA (SQ MI)	RUNOFF AMOUNT (IN)		TIME (HR)	RATE (CFS)	RATE (CSM)
	ALTERNATE	1	STORM	2				
XSECTION	31	RUNOFF	.17	1.75	---	12.33	142	835.3
XSECTION	33	RUNOFF	.05	1.60	---	12.21	46	920.0
XSECTION	36	RUNOFF	.02	1.64	---	12.27	21	1050.0
STRUCTURE	33	RESVOR	.02	1.64	325.68	12.45	15	750.0
XSECTION	38	RUNOFF	.07	1.33	---	12.13	69	985.7
XSECTION	39	ADDHYD	.36	1.67	---	12.32	265	736.1
XSECTION	41	RUNOFF	.02	1.57	---	12.18	25	1250.0
STRUCTURE	29	RESVOR	.02	1.56	268.66	13.00	4	200.0
XSECTION	43	RUNOFF	.12	.51	---	12.26	26	216.7
XSECTION	44	ADDHYD	.14	.68	---	12.26	28	200.0
XSECTION	46	ADDHYD	.67	1.43	---	12.44	320	477.6
XSECTION	47	RUNOFF	.28	1.40	---	12.32	185	660.7
XSECTION	48	RUNOFF	.02	1.78	---	12.17	30	1500.0
STRUCTURE	40	RESVOR	.02	1.78	334.19	12.33	16	800.0
XSECTION	51	RUNOFF	.02	1.47	---	12.19	21	1050.0
STRUCTURE	43	RESVOR	.02	.97	321.02	12.86	4	200.0
XSECTION	52	ADDHYD	.33	1.40	277.07	12.33	198	600.0
XSECTION	53	RUNOFF	.21	.50	---	12.26	44	209.5
XSECTION	54	ADDHYD	.54	1.05	---	12.46	208	385.2
XSECTION	55	ADDHYD	1.53	1.28	---	12.39	739	483.0
XSECTION	56	RUNOFF	.02	.61	---	12.14	6	300.0
XSECTION	57	ADDHYD	1.55	1.27	---	12.39	742	478.7
XSECTION	58	RUNOFF	.04	1.51	---	12.14	41	1025.0
XSECTION	62	RUNOFF	.02	1.90	---	12.17	30	1500.0
XSECTION	63	ADDHYD	2.15	1.23	---	12.41	948	440.9

RAINFALL OF 4.10 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

XSECTION	ALTERNATE		STORM		ELEVATION (FT)	PEAK DISCHARGE		
	1	5	1	5		TIME (HR)	RATE (CFS)	RATE (CSM)
XSECTION	1	RUNOFF	.21	1.90	---	12.25	218	1038.1

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL		DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
	ID	OPERATION				TIME (HR)	RATE (CFS)	RATE (CSM)
	ALTERNATE	1	STORM	5				
XSECTION	2	RUNOFF	.03	1.67	---	12.20	30	1000.0
STRUCTURE	58	RESVOR	.03	1.64	430.23	12.68	8	266.7
XSECTION	3	ADDHYD	.24	1.87	---	12.25	220	916.7
XSECTION	4	RUNOFF	.06	2.21	---	12.15	96	1600.0
XSECTION	6	RUNOFF	.08	1.70	---	12.19	88	1100.0
XSECTION	9	RUNOFF	.06	1.98	---	12.19	77	1283.3
XSECTION	10	RUNOFF	.03	1.99	---	12.23	30	1000.0
STRUCTURE	52	RESVOR	.03	1.54	454.90	12.72	9	300.0
XSECTION	12	ADDHYD	.09	1.84	---	12.19	77	855.6
XSECTION	13	RUNOFF	.04	2.45	---	12.18	72	1800.0
STRUCTURE	51	RESVOR	.04	2.45	397.96	12.39	34	850.0
XSECTION	15	RUNOFF	.08	1.87	---	12.16	106	1325.0
XSECTION	17	ADDHYD	.21	1.98	---	12.20	178	847.6
XSECTION	18	ADDHYD	.59	1.92	---	12.24	539	913.6
XSECTION	19	RUNOFF	.27	1.64	---	12.32	208	770.4
XSECTION	20	REACH	.59	1.92	236.60	12.37	487	825.4
XSECTION	21	ADDHYD	.86	1.83	---	12.36	691	803.5
XSECTION	22	RUNOFF	.02	2.37	---	12.22	25	1250.0
STRUCTURE	47	RESVOR	.02	2.37	414.35	12.33	21	1050.0
XSECTION	23	RUNOFF	.08	2.37	---	12.20	119	1487.5
STRUCTURE	32	RESVOR	.08	2.37	368.74	12.32	86	1075.0
XSECTION	25	RUNOFF	.05	2.35	---	12.19	68	1360.0
STRUCTURE	34	RESVOR	.15	2.36	338.39	12.46	127	846.7
XSECTION	27	RUNOFF	.01	1.88	---	12.12	20	2000.0
XSECTION	28	ADDHYD	.16	2.33	---	12.46	132	825.0
XSECTION	29	RUNOFF	.05	2.79	---	12.11	113	2260.0
STRUCTURE	64	RESVOR	.05	2.79	---	12.11	113	2260.0
XSECTION	31	RUNOFF	.17	2.55	---	12.32	207	1217.6
XSECTION	33	RUNOFF	.05	2.38	---	12.20	68	1360.0
XSECTION	36	RUNOFF	.02	2.42	---	12.27	30	1500.0

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SUMMARY TABLE 1

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 SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:

F-FLAT TOP HYDROGRAPH    T-TRUNCATED HYDROGRAPH    R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE		1	STORM	5			
STRUCTURE 33	RESVOR	.02	2.42	327.30	12.44	24	1200.0
XSECTION 38	RUNOFF	.07	2.05	---	12.13	107	1528.6
XSECTION 39	ADDHYD	.36	2.46	---	12.31	390	1083.3
XSECTION 41	RUNOFF	.02	2.34	---	12.17	37	1850.0
STRUCTURE 29	RESVOR	.02	2.32	270.05	12.93	5	250.0
XSECTION 43	RUNOFF	.12	.96	---	12.23	61	508.3
XSECTION 44	ADDHYD	.14	1.18	---	12.24	63	450.0
XSECTION 46	ADDHYD	.67	2.15	---	12.55	505	753.7
XSECTION 47	RUNOFF	.28	2.14	---	12.32	285	1017.9
XSECTION 48	RUNOFF	.02	2.59	---	12.17	44	2200.0
STRUCTURE 40	RESVOR	.02	2.59	335.09	12.35	22	1100.0
XSECTION 51	RUNOFF	.02	2.22	---	12.18	31	1550.0
STRUCTURE 43	RESVOR	.02	1.69	321.43	12.41	15	750.0
XSECTION 52	ADDHYD	.33	2.14	277.35	12.33	315	954.5
XSECTION 53	RUNOFF	.21	.95	---	12.23	103	490.5
XSECTION 54	ADDHYD	.54	1.68	---	12.43	351	650.0
XSECTION 55	ADDHYD	1.53	1.97	---	12.40	1132	739.9
XSECTION 56	RUNOFF	.02	1.11	---	12.14	13	650.0
XSECTION 57	ADDHYD	1.55	1.96	---	12.39	1137	733.5
XSECTION 58	RUNOFF	.04	2.27	---	12.13	61	1525.0
XSECTION 62	RUNOFF	.02	2.72	---	12.16	43	2150.0
XSECTION 63	ADDHYD	2.15	1.90	---	12.42	1500	697.7

RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	10			
XSECTION 1	RUNOFF	.21	2.56	---	12.25	295	1404.8
XSECTION 2	RUNOFF	.03	2.29	---	12.19	42	1400.0
STRUCTURE 58	RESVOR	.03	2.25	430.98	12.52	16	533.3
XSECTION 3	ADDHYD	.24	2.52	---	12.26	303	1262.5

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH    T-TRUNCATED HYDROGRAPH    R-RISING TRUNCATED

HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL		DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
	ID	OPERATION				TIME (HR)	RATE (CFS)	RATE (CSM)
	ALTERNATE	1	STORM	10				
XSECTION	4	RUNOFF	.06	2.91	---	12.15	125	2083.3
XSECTION	6	RUNOFF	.08	2.33	---	12.18	121	1512.5
XSECTION	9	RUNOFF	.06	2.64	---	12.18	103	1716.7
XSECTION	10	RUNOFF	.03	2.67	---	12.23	40	1333.3
STRUCTURE	52	RESVOR	.03	2.20	455.36	12.60	15	500.0
XSECTION	12	ADDHYD	.09	2.51	---	12.19	104	1155.6
XSECTION	13	RUNOFF	.04	3.18	---	12.18	92	2300.0
STRUCTURE	51	RESVOR	.04	3.18	398.37	12.38	46	1150.0
XSECTION	15	RUNOFF	.08	2.53	---	12.16	143	1787.5
XSECTION	17	ADDHYD	.21	2.65	---	12.20	243	1157.1
XSECTION	18	ADDHYD	.59	2.58	---	12.24	733	1242.4
XSECTION	19	RUNOFF	.27	2.26	---	12.32	290	1074.1
XSECTION	20	REACH	.59	2.58	237.23	12.37	658	1115.3
XSECTION	21	ADDHYD	.86	2.48	---	12.35	942	1095.3
XSECTION	22	RUNOFF	.02	3.09	---	12.22	33	1650.0
STRUCTURE	47	RESVOR	.02	3.09	414.77	12.32	27	1350.0
XSECTION	23	RUNOFF	.08	3.09	---	12.20	154	1925.0
STRUCTURE	32	RESVOR	.08	3.09	369.12	12.30	123	1537.5
XSECTION	25	RUNOFF	.05	3.07	---	12.19	89	1780.0
STRUCTURE	34	RESVOR	.15	3.08	338.90	12.39	185	1233.3
XSECTION	27	RUNOFF	.01	2.54	---	12.12	27	2700.0
XSECTION	28	ADDHYD	.16	3.04	---	12.37	192	1200.0
XSECTION	29	RUNOFF	.05	3.56	---	12.11	142	2840.0
STRUCTURE	64	RESVOR	.05	3.56	---	12.11	142	2840.0
XSECTION	31	RUNOFF	.17	3.28	---	12.32	264	1552.9
XSECTION	33	RUNOFF	.05	3.10	---	12.20	89	1780.0
XSECTION	36	RUNOFF	.02	3.14	---	12.27	39	1950.0
STRUCTURE	33	RESVOR	.02	3.14	327.87	12.39	34	1700.0
XSECTION	38	RUNOFF	.07	2.74	---	12.13	143	2042.9
XSECTION	39	ADDHYD	.36	3.18	---	12.30	512	1422.2

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SUMMARY TABLE 1

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 SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL		DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
	ID	OPERATION				TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE		1	STORM	10				
XSECTION	41	RUNOFF	.02	3.05	---	12.17	48	2400.0
STRUCTURE	29	RESVOR	.02	3.02	271.34	12.89	7	350.0
XSECTION	43	RUNOFF	.12	1.43	---	12.23	96	800.0
XSECTION	44	ADDHYD	.14	1.69	---	12.23	100	714.3
XSECTION	46	ADDHYD	.67	2.82	---	12.44	712	1062.7
XSECTION	47	RUNOFF	.28	2.83	---	12.32	379	1353.6
XSECTION	48	RUNOFF	.02	3.32	---	12.17	55	2750.0
STRUCTURE	40	RESVOR	.02	3.32	336.30	12.31	36	1800.0
XSECTION	51	RUNOFF	.02	2.92	---	12.18	41	2050.0
STRUCTURE	43	RESVOR	.02	2.37	321.86	12.32	28	1400.0
XSECTION	52	ADDHYD	.33	2.83	277.62	12.33	432	1309.1
XSECTION	53	RUNOFF	.21	1.42	---	12.22	164	781.0
XSECTION	54	ADDHYD	.54	2.29	---	12.41	497	920.4
XSECTION	55	ADDHYD	1.53	2.63	---	12.39	1633	1067.3
XSECTION	56	RUNOFF	.02	1.62	---	12.14	20	1000.0
XSECTION	57	ADDHYD	1.55	2.62	---	12.38	1640	1058.1
XSECTION	58	RUNOFF	.04	2.97	---	12.13	79	1975.0
XSECTION	62	RUNOFF	.02	3.48	---	12.16	54	2700.0
XSECTION	63	ADDHYD	2.15	2.55	---	12.40	2155	1002.3

RAINFALL OF 6.14 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	25				
XSECTION	1	RUNOFF	.21	3.62	---	12.24	416	1981.0
XSECTION	2	RUNOFF	.03	3.30	---	12.19	61	2033.3
STRUCTURE	58	RESVOR	.03	3.24	431.78	12.33	43	1433.3
XSECTION	3	ADDHYD	.24	3.57	---	12.26	446	1858.3
XSECTION	4	RUNOFF	.06	4.02	---	12.15	172	2866.7
XSECTION	6	RUNOFF	.08	3.35	---	12.18	175	2187.5
XSECTION	9	RUNOFF	.06	3.71	---	12.18	144	2400.0

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE		STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE		1	STORM	25				
XSECTION	10	RUNOFF	.03	3.74	---	12.22	56	1866.7
STRUCTURE	52	RESVOR	.03	3.25	455.90	12.44	32	1066.7
XSECTION	12	ADDHYD	.09	3.57	---	12.19	152	1688.9
XSECTION	13	RUNOFF	.04	4.32	---	12.18	125	3125.0
STRUCTURE	51	RESVOR	.04	4.32	398.95	12.37	63	1575.0
XSECTION	15	RUNOFF	.08	3.58	---	12.16	202	2525.0
XSECTION	17	ADDHYD	.21	3.73	---	12.20	349	1661.9
XSECTION	18	ADDHYD	.59	3.64	---	12.24	1050	1779.7
XSECTION	19	RUNOFF	.27	3.26	---	12.31	421	1559.3
XSECTION	20	REACH	.59	3.64	238.12	12.37	949	1608.5
XSECTION	21	ADDHYD	.86	3.52	---	12.35	1358	1579.1
XSECTION	22	RUNOFF	.02	4.22	---	12.21	44	2200.0
STRUCTURE	47	RESVOR	.02	4.22	415.30	12.30	41	2050.0
XSECTION	23	RUNOFF	.08	4.22	---	12.19	208	2600.0
STRUCTURE	32	RESVOR	.08	4.22	369.53	12.27	179	2237.5
XSECTION	25	RUNOFF	.05	4.19	---	12.19	121	2420.0
STRUCTURE	34	RESVOR	.15	4.22	340.51	12.41	234	1560.0
XSECTION	27	RUNOFF	.01	3.57	---	12.11	37	3700.0
XSECTION	28	ADDHYD	.16	4.17	---	12.39	243	1518.8
XSECTION	29	RUNOFF	.05	4.73	---	12.11	185	3700.0
STRUCTURE	64	RESVOR	.05	4.73	---	12.11	185	3700.0
XSECTION	31	RUNOFF	.17	4.43	---	12.31	354	2082.4
XSECTION	33	RUNOFF	.05	4.22	---	12.20	120	2400.0
XSECTION	36	RUNOFF	.02	4.27	---	12.27	53	2650.0
STRUCTURE	33	RESVOR	.02	4.27	328.46	12.32	53	2650.0
XSECTION	38	RUNOFF	.07	3.82	---	12.13	198	2828.6
XSECTION	39	ADDHYD	.36	4.32	---	12.29	703	1952.8
XSECTION	41	RUNOFF	.02	4.18	---	12.17	65	3250.0
STRUCTURE	29	RESVOR	.02	4.12	273.38	12.84	10	500.0
XSECTION	43	RUNOFF	.12	2.25	---	12.22	158	1316.7

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HYDROGRAPH

XSECTION/ STANDARD

PEAK DISCHARGE



STRUCTURE	CONTROL	DRAINAGE	RUNOFF					
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE		1	STORM	25				
XSECTION	44	ADDHYD	.14	2.56	---	12.22	163	1164.3
XSECTION	46	ADDHYD	.67	3.90	---	12.41	973	1452.2
XSECTION	47	RUNOFF	.28	3.92	---	12.31	523	1867.9
XSECTION	48	RUNOFF	.02	4.48	---	12.16	74	3700.0
STRUCTURE	40	RESVOR	.02	4.48	336.83	12.26	55	2750.0
XSECTION	51	RUNOFF	.02	4.03	---	12.18	56	2800.0
STRUCTURE	43	RESVOR	.02	3.46	322.35	12.26	47	2350.0
XSECTION	52	ADDHYD	.33	3.93	278.11	12.32	613	1857.6
XSECTION	53	RUNOFF	.21	2.23	---	12.22	268	1276.2
XSECTION	54	ADDHYD	.54	3.27	---	12.38	734	1359.3
XSECTION	55	ADDHYD	1.53	3.68	---	12.37	2319	1515.7
XSECTION	56	RUNOFF	.02	2.49	---	12.13	31	1550.0
XSECTION	57	ADDHYD	1.55	3.67	---	12.37	2330	1503.2
XSECTION	58	RUNOFF	.04	4.09	---	12.13	108	2700.0
XSECTION	62	RUNOFF	.02	4.65	---	12.16	71	3550.0
XSECTION	63	ADDHYD	2.15	3.59	---	12.38	3106	1444.7
RAINFALL OF		7.23 inches AND	24.00 hr	DURATION,	BEGINS AT	.0 hrs.		

ALTERNATE		1	STORM	50				
XSECTION	1	RUNOFF	.21	4.59	---	12.24	526	2504.8
XSECTION	2	RUNOFF	.03	4.24	---	12.19	78	2600.0
STRUCTURE	58	RESVOR	.03	4.15	432.07	12.26	71	2366.7
XSECTION	3	ADDHYD	.24	4.53	---	12.25	596	2483.3
XSECTION	4	RUNOFF	.06	5.03	---	12.15	213	3550.0
XSECTION	6	RUNOFF	.08	4.30	---	12.18	223	2787.5
XSECTION	9	RUNOFF	.06	4.69	---	12.18	181	3016.7
XSECTION	10	RUNOFF	.03	4.72	---	12.22	71	2366.7
STRUCTURE	52	RESVOR	.03	4.21	456.22	12.38	51	1700.0
XSECTION	12	ADDHYD	.09	4.55	---	12.19	196	2177.8

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F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE
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ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE		1	STORM	50			
XSECTION	13	RUNOFF	.04	5.35	---	153	3825.0
STRUCTURE	51	RESVOR	.04	5.35	399.39	83	2075.0
XSECTION	15	RUNOFF	.08	4.55	---	255	3187.5
XSECTION	17	ADDHYD	.21	4.71	---	450	2142.9
XSECTION	18	ADDHYD	.59	4.61	---	1361	2306.8
XSECTION	19	RUNOFF	.27	4.19	---	541	2003.7
XSECTION	20	REACH	.59	4.61	238.86	1235	2093.2
XSECTION	21	ADDHYD	.86	4.48	---	1761	2047.7
XSECTION	22	RUNOFF	.02	5.24	---	55	2750.0
STRUCTURE	47	RESVOR	.02	5.24	415.55	55	2750.0
XSECTION	23	RUNOFF	.08	5.24	---	257	3212.5
STRUCTURE	32	RESVOR	.08	5.24	369.84	229	2862.5
XSECTION	25	RUNOFF	.05	5.21	---	149	2980.0
STRUCTURE	34	RESVOR	.15	5.24	342.14	284	1893.3
XSECTION	27	RUNOFF	.01	4.57	---	47	4700.0
XSECTION	28	ADDHYD	.16	5.18	---	295	1843.8
XSECTION	29	RUNOFF	.05	5.78	---	220	4400.0
STRUCTURE	64	RESVOR	.05	5.78	---	220	4400.0
XSECTION	31	RUNOFF	.17	5.47	---	433	2547.1
XSECTION	33	RUNOFF	.05	5.25	---	148	2960.0
XSECTION	36	RUNOFF	.02	5.30	---	65	3250.0
STRUCTURE	33	RESVOR	.02	5.31	328.67	65	3250.0
XSECTION	38	RUNOFF	.07	4.81	---	247	3528.6
XSECTION	39	ADDHYD	.36	5.35	---	869	2413.9
XSECTION	41	RUNOFF	.02	5.19	---	80	4000.0
STRUCTURE	29	RESVOR	.02	5.12	273.78	28	1400.0
XSECTION	43	RUNOFF	.12	3.05	---	217	1808.3
XSECTION	44	ADDHYD	.14	3.38	---	224	1600.0
XSECTION	46	ADDHYD	.67	4.88	---	1223	1825.4
XSECTION	47	RUNOFF	.28	4.93	---	655	2339.3

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE
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ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 1 STORM 50							
XSECTION 48	RUNOFF	.02	5.52	---	12.16	89	4450.0
STRUCTURE 40	RESVOR	.02	5.52	337.36	12.29	58	2900.0
XSECTION 51	RUNOFF	.02	5.04	---	12.18	70	3500.0
STRUCTURE 43	RESVOR	.02	4.45	322.59	12.26	59	2950.0
XSECTION 52	ADDHYD	.33	4.94	278.85	12.31	764	2315.2
XSECTION 53	RUNOFF	.21	3.03	---	12.21	370	1761.9
XSECTION 54	ADDHYD	.54	4.20	---	12.38	905	1675.9
XSECTION 55	ADDHYD	1.53	4.65	---	12.36	2973	1943.1
XSECTION 56	RUNOFF	.02	3.31	---	12.13	42	2100.0
XSECTION 57	ADDHYD	1.55	4.64	---	12.36	2988	1927.7
XSECTION 58	RUNOFF	.04	5.09	---	12.13	134	3350.0
XSECTION 62	RUNOFF	.02	5.70	---	12.16	87	4350.0
XSECTION 63	ADDHYD	2.15	4.55	---	12.37	3951	1837.7

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 99							
XSECTION 1	RUNOFF	.21	5.72	---	12.24	653	3109.5
XSECTION 2	RUNOFF	.03	5.34	---	12.19	98	3266.7
STRUCTURE 58	RESVOR	.03	5.24	432.27	12.24	94	3133.3
XSECTION 3	ADDHYD	.24	5.66	---	12.24	747	3112.5
XSECTION 4	RUNOFF	.06	6.19	---	12.15	259	4316.7
XSECTION 6	RUNOFF	.08	5.40	---	12.18	278	3475.0
XSECTION 9	RUNOFF	.06	5.84	---	12.18	223	3716.7
XSECTION 10	RUNOFF	.03	5.86	---	12.22	87	2900.0
STRUCTURE 52	RESVOR	.03	5.35	456.47	12.34	70	2333.3
XSECTION 12	ADDHYD	.09	5.69	---	12.20	250	2777.8
XSECTION 13	RUNOFF	.04	6.54	---	12.17	185	4625.0
STRUCTURE 51	RESVOR	.04	6.54	399.85	12.34	105	2625.0
XSECTION 15	RUNOFF	.08	5.68	---	12.16	317	3962.5

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 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA	AMOUNT	ELEVATION	TIME	RATE	RATE

			(SQ MI)	(IN)	(FT)	(HR)	(CFS)	(CSM)
ALTERNATE	1	STORM	99					
XSECTION	17	ADDHYD	.21	5.86	---	12.20	565	2690.5
XSECTION	18	ADDHYD	.59	5.75	---	12.24	1717	2910.2
XSECTION	19	RUNOFF	.27	5.30	---	12.31	684	2533.3
XSECTION	20	REACH	.59	5.75	239.60	12.36	1565	2652.5
XSECTION	21	ADDHYD	.86	5.61	---	12.35	2232	2595.3
XSECTION	22	RUNOFF	.02	6.42	---	12.22	67	3350.0
STRUCTURE	47	RESVOR	.02	6.42	415.70	12.24	66	3300.0
XSECTION	23	RUNOFF	.08	6.42	---	12.19	312	3900.0
STRUCTURE	32	RESVOR	.08	6.42	370.13	12.26	284	3550.0
XSECTION	25	RUNOFF	.05	6.39	---	12.19	181	3620.0
STRUCTURE	34	RESVOR	.15	6.42	343.30	12.36	430	2866.7
XSECTION	27	RUNOFF	.01	5.67	---	12.11	59	5900.0
XSECTION	28	ADDHYD	.16	6.36	---	12.35	446	2787.5
XSECTION	29	RUNOFF	.05	6.96	---	12.11	262	5240.0
STRUCTURE	64	RESVOR	.05	6.96	---	12.11	262	5240.0
XSECTION	31	RUNOFF	.17	6.66	---	12.31	522	3070.6
XSECTION	33	RUNOFF	.05	6.43	---	12.20	178	3560.0
XSECTION	36	RUNOFF	.02	6.49	---	12.26	79	3950.0
STRUCTURE	33	RESVOR	.02	6.47	328.90	12.29	78	3900.0
XSECTION	38	RUNOFF	.07	5.96	---	12.13	304	4342.9
XSECTION	39	ADDHYD	.36	6.53	---	12.28	1035	2875.0
XSECTION	41	RUNOFF	.02	6.37	---	12.17	97	4850.0
STRUCTURE	29	RESVOR	.02	6.25	274.20	12.36	50	2500.0
XSECTION	43	RUNOFF	.12	4.01	---	12.21	289	2408.3
XSECTION	44	ADDHYD	.14	4.38	---	12.22	297	2121.4
XSECTION	46	ADDHYD	.67	6.02	---	12.49	1469	2192.5
XSECTION	47	RUNOFF	.28	6.09	---	12.31	803	2867.9
XSECTION	48	RUNOFF	.02	6.72	---	12.16	107	5350.0
STRUCTURE	40	RESVOR	.02	6.72	337.87	12.32	59	2950.0
XSECTION	51	RUNOFF	.02	6.20	---	12.18	85	4250.0

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HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

ALTERNATE	1	STORM	99						
STRUCTURE	43	RESVOR	.02	5.60	322.85	12.26	71	3550.0	
XSECTION	52	ADDHYD	.33	6.10	279.26	12.31	927	2809.1	
XSECTION	53	RUNOFF	.21	3.99	---	12.21	494	2352.4	
XSECTION	54	ADDHYD	.54	5.28	---	12.36	1078	1996.3	
XSECTION	55	ADDHYD	1.53	5.79	---	12.38	3563	2328.8	
XSECTION	56	RUNOFF	.02	4.31	---	12.13	55	2750.0	
XSECTION	57	ADDHYD	1.55	5.77	---	12.38	3581	2310.3	
XSECTION	58	RUNOFF	.04	6.26	---	12.13	163	4075.0	
XSECTION	62	RUNOFF	.02	6.90	---	12.16	104	5200.0	
XSECTION	63	ADDHYD	2.15	5.67	---	12.38	4744	2206.5	

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;

ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC REACH ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			

BASEFLOW IS .0 CFS

ALTERNATE	1	STORM	2							
7	2055	186	12.2	184	12.3	1.65	1.52	.011	.988	
	.80?									
11	1397	3	13.3	3	13.5	2.53	1.54	.004	.990	
	.47									
16	2449	64	12.2	59	12.3	2.42	1.40	.021	.928	
	.55									
20	4470	333	12.2	305	12.4	1.73	1.47	.031	.916	
	.50									
30	1561	80	12.1	74	12.2	1.16	1.56	.030	.920	
	.73?									
35	2077	236	12.2	221	12.4	1.15	1.41	.029	.936	
	.57									
42	2112	4	13.0	4	13.1	3.54	1.39	.006	.996	
	.40									

45	3148	310	12.3	297	12.5	4.57	1.16	.037	.958
.50									
49	1829	16	12.4	15	12.5	1.44	1.42	.038	.937
.40									
52	4744	197	12.4	178	12.5	1.16	1.52	.045	.903
.38									
59	1671	207	12.5	206	12.5	3.31	1.24	.016	.993
.74?									

ALTERNATE 1 STORM 5

7	2055	295	12.2	291	12.3	1.75	1.50	.010	.984
.86?									
11	1397	9	12.7	9	12.8	2.53	1.54	.005	.990
.64									
16	2449	102	12.2	96	12.3	2.47	1.39	.019	.940
.60									
20	4470	539	12.2	486	12.4	2.57	1.33	.043	.902
.47									
30	1561	113	12.1	106	12.2	1.20	1.54	.025	.940
.77?									

35	2077	342	12.2	324	12.3	1.19	1.40	.026	.946
.61									
42	2112	5	12.9	5	13.1	3.54	1.39	.005	.997
.44									
45	3148	488	12.4	469	12.5	5.06	1.13	.043	.961
.49									
49	1829	22	12.4	21	12.5	1.46	1.41	.030	.948
.42									
52	4744	313	12.4	288	12.5	1.23	1.50	.040	.919
.42									
59	1671	350	12.4	346	12.5	3.33	1.23	.016	.989
.78?									

ALTERNATE 1 STORM 10

7	2055	398	12.2	395	12.3	1.91	1.47	.010	.993
.89?									
11	1397	15	12.6	15	12.7	2.53	1.54	.005	.993
.72?									

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION ROUTING PARAMETERS

XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR	PEAK RATIO Q/I	ATT-KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
		ALTERNATE	1	STORM	10						
16	2449		137	12.2	130	12.3	2.50	1.38	.017	.952	
.63											
20	4470		733	12.2	658	12.4	3.29	1.25	.052	.898	
.46											
30	1561		141	12.1	135	12.2	1.23	1.53	.022	.952	
.81?											
35	2077		436	12.2	418	12.3	1.22	1.39	.024	.959	
.63											
42	2112		7	12.9	7	13.0	3.54	1.39	.005	.998	
.47											
45	3148		701	12.3	647	12.5	5.71	1.09	.054	.922	
.48											
49	1829		35	12.3	31	12.4	1.49	1.40	.036	.869	
.46											
52	4744		429	12.3	396	12.5	1.29	1.48	.038	.922	
.45											
59	1671		497	12.4	495	12.5	3.34	1.23	.015	.995	
.81?											
		ALTERNATE	1	STORM	25						
7	2055		571	12.2	569	12.3	2.56	1.36	.013	.996	
.87?											
11	1397		32	12.4	32	12.5	2.55	1.53	.007	.991	
.84?											
16	2449		199	12.2	192	12.3	2.54	1.37	.016	.967	
.67?											
20	4470		1050	12.2	948	12.4	3.75	1.22	.055	.902	
.46											
30	1561		184	12.1	177	12.2	1.26	1.52	.020	.963	
.84?											
35	2077		583	12.2	564	12.3	1.26	1.38	.021	.968	
.67?											
42	2112		10	12.8	10	13.0	3.54	1.39	.004	.997	
.51											
45	3148		937	12.3	870	12.4	6.70	1.04	.063	.929	
.45											
49	1829		54	12.2	48	12.4	1.51	1.38	.038	.886	
.50											
52	4744		612	12.3	567	12.4	1.39	1.45	.037	.928	
.47											
59	1671		732	12.4	728	12.5	3.23	1.24	.014	.994	
.86?											
		ALTERNATE	1	STORM	50						
7	2055		752	12.2	749	12.3	3.07	1.31	.016	.996	
.87?											
11	1397		50	12.4	50	12.4	2.60	1.51	.007	.988	
.90?											
16	2449		256	12.2	251	12.3	2.57	1.37	.016	.978	
.70?											

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;

ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT- KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
ALTERNATE		1	STORM	50							
20	4470		1360	12.2	1234	12.4	3.92	1.20	.055	.908	
.47											
30	1561		219	12.1	213	12.2	1.29	1.51	.018	.971	
.87?											
35	2077		713	12.2	693	12.3	1.32	1.37	.021	.972	
.68?											
42	2112		28	12.5	27	12.5	3.56	1.38	.009	.956	
.61											
45	3148		1147	12.3	1076	12.4	6.54	1.05	.060	.938	
.45											
49	1829		58	12.3	57	12.5	1.51	1.38	.031	.979	
.51											
52	4744		763	12.3	683	12.5	1.85	1.33	.059	.895	
.39											
59	1671		904	12.4	901	12.4	3.17	1.25	.012	.996	
.88?											
ALTERNATE		1	STORM	99							
7	2055		946	12.2	936	12.3	3.39	1.28	.017	.989	
.88?											
11	1397		70	12.4	70	12.4	2.65	1.49	.008	.999	
.95?											
16	2449		335	12.2	327	12.3	2.62	1.36	.015	.977	
.73?											
20	4470		1717	12.2	1565	12.4	3.99	1.20	.054	.911	
.48											
30	1561		261	12.1	255	12.2	1.32	1.50	.016	.978	
.89?											
35	2077		859	12.2	823	12.3	1.76	1.29	.027	.958	
.63											
42	2112		50	12.4	48	12.5	3.60	1.36	.013	.958	



.67?	45	3148	1424	12.4	1283	12.5	5.69	1.02	.087	.901
.36	49	1829	59	12.3	59	12.5	1.52	1.38	.024	.990
.51	52	4744	927	12.3	800	12.5	2.57	1.21	.089	.863
.32	59	1671	1078	12.4	1076	12.4	3.19	1.25	.011	.998
.90?										

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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
STRUCTURE 64	.05					
ALTERNATE 220	1	81	113	142	185	
STRUCTURE 58	.03					
ALTERNATE 71	1	2	8	16	43	
STRUCTURE 52	.03					
ALTERNATE 51	1	3	9	15	32	
STRUCTURE 51	.04					
ALTERNATE 83	1	22	34	46	63	
STRUCTURE 47	.02					
ALTERNATE 55	1	12	21	27	41	
STRUCTURE 43	.02					
ALTERNATE 59	1	4	15	28	47	
STRUCTURE 40	.02					
ALTERNATE	1	16	22	36	55	

58					
STRUCTURE	34	.15			
-----					
ALTERNATE	1		54	127	185
284					234
STRUCTURE	33	.02			
-----					
ALTERNATE	1		15	24	34
65					53
STRUCTURE	32	.08			
-----					
ALTERNATE	1		61	86	123
229					179
STRUCTURE	29	.02			
-----					
ALTERNATE	1		4	5	7
28					10
XSECTION	1	.21			
-----					
ALTERNATE	1		137	218	295
526					416
XSECTION	2	.03			
-----					
ALTERNATE	1		18	30	42
78					61
XSECTION	3	.24			
-----					

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION 3	.24					
-----						
ALTERNATE 1		138	220	303	446	
596						
XSECTION 4	.06					
-----						
ALTERNATE 1		63	96	125	172	
213						

XSECTION	6	.08				
ALTERNATE	1		53	88	121	175
223						
XSECTION	9	.06				
ALTERNATE	1		49	77	103	144
181						
XSECTION	10	.03				
ALTERNATE	1		19	30	40	56
71						
XSECTION	12	.09				
ALTERNATE	1		49	77	104	152
196						
XSECTION	13	.04				
ALTERNATE	1		49	72	92	125
153						
XSECTION	15	.08				
ALTERNATE	1		66	106	143	202
255						
XSECTION	17	.21				
ALTERNATE	1		110	178	243	349
450						
XSECTION	18	.59				
ALTERNATE	1		334	539	733	1050
1361						
XSECTION	19	.27				
ALTERNATE	1		122	208	290	421
541						
XSECTION	20	.59				
ALTERNATE	1		306	487	658	949
1235						
XSECTION	21	.86				
ALTERNATE	1		426	691	942	1358
1761						
XSECTION	22	.02				
ALTERNATE	1		17	25	33	44
55						

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION 23	.08					
ALTERNATE 257	1	80	119	154	208	
XSECTION 25	.05					
ALTERNATE 149	1	46	68	89	121	
XSECTION 27	.01					
ALTERNATE 47	1	13	20	27	37	
XSECTION 28	.16					
ALTERNATE 295	1	56	132	192	243	
XSECTION 29	.05					
ALTERNATE 220	1	81	113	142	185	
XSECTION 31	.17					
ALTERNATE 433	1	142	207	264	354	
XSECTION 33	.05					
ALTERNATE 148	1	46	68	89	120	
XSECTION 36	.02					
ALTERNATE 65	1	21	30	39	53	
XSECTION 38	.07					
ALTERNATE 247	1	69	107	143	198	
XSECTION 39	.36					

ALTERNATE 869	1		265	390	512	703
XSECTION	41	.02	-----			
ALTERNATE 80	1		25	37	48	65
XSECTION	43	.12	-----			
ALTERNATE 217	1		26	61	96	158
XSECTION	44	.14	-----			
ALTERNATE 224	1		28	63	100	163
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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION	46	.67	-----			
ALTERNATE 1223	1		320	505	712	973
XSECTION	47	.28	-----			
ALTERNATE 655	1		185	285	379	523
XSECTION	48	.02	-----			
ALTERNATE 89	1		30	44	55	74
XSECTION	51	.02	-----			
ALTERNATE 70	1		21	31	41	56
XSECTION	52	.33	-----			
ALTERNATE 764	1		198	315	432	613
XSECTION	53	.21	-----			

ALTERNATE 370	1		44	103	164	268
XSECTION	54	.54				
ALTERNATE 905	1		208	351	497	734
XSECTION	55	1.53				
ALTERNATE 2973	1		739	1132	1633	2319
XSECTION	56	.02				
ALTERNATE 42	1		6	13	20	31
XSECTION	57	1.55				
ALTERNATE 2988	1		742	1137	1640	2330
XSECTION	58	.04				
ALTERNATE 134	1		41	61	79	108
XSECTION	62	.02				
ALTERNATE 87	1		30	43	54	71
XSECTION	63	2.15				
ALTERNATE 3951	1		948	1500	2155	3106

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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
STRUCTURE 64	.05	
-----		
ALTERNATE 1		262
STRUCTURE 58	.03	
-----		
ALTERNATE 1		94
STRUCTURE 52	.03	
-----		
ALTERNATE 1		70
STRUCTURE 51	.04	
-----		
ALTERNATE 1		105
STRUCTURE 47	.02	
-----		
ALTERNATE 1		66
STRUCTURE 43	.02	
-----		
ALTERNATE 1		71
STRUCTURE 40	.02	
-----		
ALTERNATE 1		59
STRUCTURE 34	.15	
-----		
ALTERNATE 1		430
STRUCTURE 33	.02	
-----		
ALTERNATE 1		78
STRUCTURE 32	.08	
-----		
ALTERNATE 1		284
STRUCTURE 29	.02	
-----		
ALTERNATE 1		50
XSECTION 1	.21	
-----		
ALTERNATE 1		653
XSECTION 2	.03	
-----		
ALTERNATE 1		98

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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION 3	.24	
ALTERNATE 1		747
XSECTION 4	.06	
ALTERNATE 1		259
XSECTION 6	.08	
ALTERNATE 1		278
XSECTION 9	.06	
ALTERNATE 1		223
XSECTION 10	.03	
ALTERNATE 1		87
XSECTION 12	.09	
ALTERNATE 1		250
XSECTION 13	.04	
ALTERNATE 1		185
XSECTION 15	.08	
ALTERNATE 1		317
XSECTION 17	.21	
ALTERNATE 1		565
XSECTION 18	.59	
ALTERNATE 1		1717
XSECTION 19	.27	
ALTERNATE 1		684
XSECTION 20	.59	
ALTERNATE 1		1565
XSECTION 21	.86	
ALTERNATE 1		2232



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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION 22	.02	
ALTERNATE 1		67
XSECTION 23	.08	
ALTERNATE 1		312
XSECTION 25	.05	
ALTERNATE 1		181
XSECTION 27	.01	
ALTERNATE 1		59
XSECTION 28	.16	
ALTERNATE 1		446
XSECTION 29	.05	
ALTERNATE 1		262
XSECTION 31	.17	
ALTERNATE 1		522
XSECTION 33	.05	
ALTERNATE 1		178
XSECTION 36	.02	
ALTERNATE 1		79
XSECTION 38	.07	
ALTERNATE 1		304
XSECTION 39	.36	
ALTERNATE 1		1035

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XSECTION  41          .02
-----
  ALTERNATE  1          97

XSECTION  43          .12
-----
  ALTERNATE  1          289
    
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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION 44	.14	
-----		
ALTERNATE 1		297
XSECTION 46	.67	
-----		
ALTERNATE 1		1469
XSECTION 47	.28	
-----		
ALTERNATE 1		803
XSECTION 48	.02	
-----		
ALTERNATE 1		107
XSECTION 51	.02	
-----		
ALTERNATE 1		85
XSECTION 52	.33	
-----		
ALTERNATE 1		927
XSECTION 53	.21	
-----		
ALTERNATE 1		494
XSECTION 54	.54	
-----		
ALTERNATE 1		1078
XSECTION 55	1.53	
-----		
ALTERNATE 1		3563

XSECTION	56	.02	
-----			
ALTERNATE	1		55
XSECTION	57	1.55	
-----			
ALTERNATE	1		3581
XSECTION	58	.04	
-----			
ALTERNATE	1		163
XSECTION	62	.02	
-----			
ALTERNATE	1		104

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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION 63	2.15	
-----		
ALTERNATE 1		4744

1  
 TR20 ----- SCS  
 -  
 Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 04/18/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,25,50,100WITHMGMT  
 2.04TEST

END OF 1 JOBS IN THIS RUN

INPUT = subdas5.dat , GIVEN DATA FILE  
OUTPUT = subdas5.OUT , DATED  
04/18/\*\*,14:13:27

FILES GENERATED - DATED 04/18/\*\*,14:13:27

NONE!

TOTAL NUMBER OF WARNINGS = 26, MESSAGES = 12

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
HYDROLOGY\*\*\*\*\*

JOB TR-20		NOPLOTS		
TITLE	Ellicott City Flood Study- All Combined SAs-	MGMT	STRUCTURES,	
TITLE	CN WOODS.- 2,10,50,100 yr (24hr)-NOAA_C			
2 XSECTN	002	1.0	389.50	
8		389.00	0.00	0.00
8		389.25	1.65	1.06
8		389.50	6.25	2.75
8		389.75	14.40	5.06
8		390.00	26.75	8.00
8		390.25	45.54	14.33
8		390.50	68.67	15.00
8		390.75	96.11	18.88
8		391.00	127.89	23.00
8		391.25	164.08	27.38
8		391.50	204.77	32.00
8		391.75	250.06	36.88
9	ENDTBL			
2 XSECTN	005	1.0	367.00	
8		366.00	0.00	0.00
8		366.50	3.51	1.5
8		367.00	13.55	4.00
8		367.50	30.53	9.00
8		367.75	47.87	13.00
8		368.00	72.23	18.00
8		368.25	104.79	23.98
8		368.50	146.13	30.94
8		368.75	197.14	38.86
8		369.00	258.63	47.75
8		369.25	331.41	57.61
8		369.50	416.25	68.44
9	ENDTBL			
3	STRUCT	11		
8		380.00	0.00	0.00
8		381.00	2.70	0.53
8		382.20	53.00	1.16
8		383.80	186.80	1.40
9	ENDTBL			
2 XSECTN	008	1.0	330.00	
8		356.00	0.00	0.00
8		356.50	20.21	6.94
8		357.00	68.51	15.75
8		357.50	144.11	26.44
8		358.00	248.93	39.00
8		358.50	389.07	53.25
8		359.00	561.31	69.00
8		359.50	767.14	86.25
8		360.00	1008.16	105.00
8		361.00	1375.68	147.50
8		361.50	1604.19	171.38
9	ENDTBL			

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

2	XSECTN	016	1.0	333.08		
8			331.08	0.00	0.00	
8			332.08	80.21	8.00	
8			333.08	225.50	16.00	
8			333.58	310.09	20.00	
8			334.08	399.94	24.00	
8			334.58	493.86	28.00	
8			335.08	590.97	32.00	
8			335.58	690.67	36.00	
8			336.08	792.47	40.00	
8			336.58	896.02	44.00	
9	ENDTBL					
2	XSECTN	023	1.0	314.40		
8			313.22	0.00	0.00	
8			313.51	1.10	0.89	
8			313.81	3.51	1.84	
8			314.10	16.22	5.61	
8			314.40	34.66	9.74	
8			314.68	48.28	24.71	
8			314.96	79.66	42.09	
8			315.24	126.64	61.87	
8			315.52	189.07	84.06	
8			315.80	267.27	108.64	
8			316.08	361.75	135.63	
8			316.36	473.14	165.02	
8			316.64	602.11	196.81	
8			316.92	749.37	231.00	
8			317.20	878.70	277.25	
8			317.48	1103.89	329.14	
8			317.76	1358.10	382.70	
8			318.04	1640.58	437.94	
8			318.32	1950.87	494.86	
8			318.60	2288.69	553.45	
9	ENDTBL					
3	STRUCT	21				
8			364.00	0.00	0.00	
8			366.00	0.30	0.55	
8			368.00	0.50	1.31	
8			369.00	3.20	1.80	
8			370.00	5.20	2.29	
8			372.00	7.80	3.48	
8			374.00	9.60	5.00	
8			375.00	10.40	5.86	
8			376.00	45.30	6.79	
8			376.50	74.10	7.31	
8			377.00	106.80	7.83	
8			378.00	149.80	8.90	
8			379.00	155.60	10.06	
8			380.00	162.00	11.29	
9	ENDTBL					

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

3	STRUCT	22				
8			352.50	0.00	0.00	
8			358.65	100.00	0.91	
8			361.76	140.00	3.28	
8			363.64	160.00	5.47	
8			366.18	180.00	9.58	
8			368.71	200.00	14.77	

8			370.61	250.00	19.31
9	ENDTBL				
3	STRUCT	23			
9	ENDTBL				
2	XSECTN	027	1.0	317.00	
8			316.00	0.00	0.00
8			316.50	2.68	2.59
8			317.00	10.37	6.88
8			317.50	24.26	12.84
8			318.00	45.55	20.50
8			318.50	70.64	34.75
8			319.00	137.01	60.50
8			319.25	200.57	76.25
8			319.50	273.06	92.00
8			319.75	353.76	107.75
8			320.00	442.13	123.50
8			320.50	640.03	155.00
8			321.00	863.72	186.50
9	ENDTBL				
2	XSECTN	032	1.0	313.00	
8			310.00	0.00	0.00
8			311.00	12.25	5.50
8			312.00	52.16	16.00
8			312.50	83.38	23.13
8			313.00	123.94	31.50
8			313.25	148.02	36.16
8			313.50	174.79	41.13
8			313.75	204.34	46.41
8			314.00	236.81	52.00
8			314.50	278.65	65.75
8			315.00	353.72	84.00
9	ENDTBL				
2	XSECTN	034	1.0	338.50	
8			338.00	0.00	0.00
8			338.10	4.87	2.46
8			338.25	22.73	6.38
8			338.50	73.99	13.53
8			338.75	149.34	21.45
8			339.00	247.95	30.13
8			339.50	515.65	49.78
9	ENDTBL				
2	XSECTN	037	1.0	331.00	
8			330.00	0.00	0.00

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			330.25	14.29	3.25
8			330.50	46.85	7.00
8			330.75	95.34	11.25
8			331.00	159.64	16.00
8			331.25	240.13	21.25
8			331.50	337.44	27.00
8			331.75	452.26	33.25
8			332.00	585.36	40.00
8			332.50	875.33	55.81
8			333.00	1272.05	75.25
9	ENDTBL				
2	XSECTN	044	1.0	288.90	
8			287.68	0.00	0.00
8			287.99	1.15	0.94

8			288.29	3.69	1.95
8			288.60	17.06	5.98
8			288.90	36.44	10.37
8			289.19	63.07	39.25
8			289.47	121.85	69.50
8			289.76	206.05	101.12
8			290.05	313.23	134.09
8			290.33	442.07	168.42
8			290.62	591.78	204.12
8			290.91	761.87	241.18
8			291.19	952.02	279.60
8			291.48	1162.04	319.38
8			291.77	1391.84	360.52
8			292.05	1641.40	403.02
8			292.34	1910.74	446.89
8			292.63	2199.92	492.11
8			292.91	2509.04	538.70
8			293.20	2838.22	586.65
9	ENDTBL				
3	STRUCT	31			
8			356.38	0.0	0.00
8			357.26	10.90	0.02
8			357.50	12.30	0.03
8			358.00	14.70	0.05
8			359.00	18.70	0.10
8			360.00	22.00	0.16
8			361.00	24.90	0.25
8			361.50	26.20	0.30
8			362.00	27.50	0.36
8			362.50	28.70	0.43
8			362.90	29.60	0.49
8			363.50	51.30	0.60
8			363.75	65.70	0.67
8			364.00	82.60	0.72
8			364.20	83.30	0.83
8			364.60	100.00	0.88

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			366.80	260.00	1.47
8			366.92	340.00	1.49
8			366.98	380.00	1.50
9	ENDTBL				
3	STRUCT	32			
8			375.40	0.00	0.00
8			379.36	1.00	0.74
8			380.00	5.00	0.89
8			380.20	10.00	0.94
8			380.33	15.00	0.98
8			380.45	20.00	1.01
8			380.55	25.00	1.04
8			380.65	30.00	1.06
8			381.19	40.00	1.21
8			381.78	44.00	1.39
8			382.59	66.00	1.66
8			382.79	88.00	1.75
8			382.89	110.00	1.79
8			382.97	132.00	1.83
9	ENDTBL				
3	STRUCT	33			



8			350.00	0.00	0.00
8			354.30	1.00	1.08
8			354.47	2.00	1.15
8			354.87	5.00	1.30
8			355.38	10.00	1.50
8			356.18	20.00	1.84
8			356.88	40.00	2.15
8			357.27	60.00	2.33
8			357.46	80.00	2.42
8			358.08	100.00	2.73
8			358.14	120.00	2.76
8			358.19	140.00	2.78
8			358.25	171.00	2.81
8			358.27	180.00	2.82
9	ENDTBL				
3	STRUCT	34			
9	ENDTBL				
2	XSECTN	051	1.0	282.40	
8			281.10	0.00	0.00
8			281.42	1.24	1.09
8			281.75	3.96	2.26
8			282.07	18.30	6.92
8			282.40	39.09	12.00
8			282.88	67.33	37.27
8			283.36	131.17	65.87
8			283.84	225.10	97.78
8			284.32	348.01	133.01
8			284.80	499.91	171.56
8			285.28	681.29	213.43

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8			285.76	892.92	258.61
8			286.24	1135.70	307.11
8			286.72	1410.63	358.94
8			287.20	1718.74	414.08
8			287.68	2061.13	472.54
8			288.16	2438.87	534.31
8			288.64	2853.08	599.41
8			289.12	3301.76	667.84
8			289.60	3785.91	739.78
9	ENDTBL				
2	XSECTN	053	1.0	289.00	
8			288.00	0.00	0.00
8			288.50	9.00	2.88
8			289.00	34.26	7.50
8			289.50	79.27	13.88
8			290.00	147.75	22.00
8			290.50	227.49	31.94
8			291.00	332.02	43.75
8			291.50	463.75	57.44
8			291.75	540.56	64.98
8			292.00	625.07	73.00
9	ENDTBL				
2	XSECTN	063	1.0	248.40	
8			247.07	0.00	0.00
8			247.41	1.85	1.14
8			247.74	5.93	2.35
8			248.07	27.43	7.18
8			248.40	58.61	12.46

8		248.67	89.70	40.04
8		248.95	158.39	68.99
8		249.22	256.90	99.30
8		249.49	382.40	130.99
8		249.77	533.43	164.04
8		250.04	709.09	198.46
8		250.31	908.86	234.24
8		250.59	1132.40	271.40
8		250.86	1379.55	309.92
8		251.13	1650.25	349.81
8		251.41	1944.49	391.07
8		251.68	2262.35	433.69
8		251.95	2603.94	477.69
8		252.23	2969.40	523.05
8		252.50	3358.93	569.78
9	ENDTBL			
3	STRUCT	61		
8		329.75	0.00	0.00
8		330.00	1.56	0.01
8		332.00	4.37	0.13
8		334.00	5.96	0.39
8		334.10	6.01	0.40

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		334.50	10.20	0.47
8		335.00	16.10	0.56
8		336.00	28.91	0.75
8		337.00	40.10	0.97
9	ENDTBL			
3	STRUCT	62		
8		287.30	0.00	0.00
8		288.00	5.45	0.01
8		289.00	9.05	0.05
8		290.00	11.60	0.13
8		292.00	15.35	0.50
8		294.00	18.40	1.19
8		294.30	18.92	1.26
8		294.50	20.73	1.40
8		295.00	36.40	1.60
8		295.40	38.00	1.80
8		296.00	51.10	2.15
8		297.00	69.60	2.75
8		298.00	86.80	3.44
8		298.68	98.50	3.91
8		298.80	107.56	4.00
9	ENDTBL			
3	STRUCT	63		
8		259.43	0.00	0.00
8		260.00	1.30	0.026
8		260.50	1.70	0.050
8		261.00	2.10	0.075
8		261.50	2.40	0.095
8		262.00	2.70	0.119
8		262.50	2.90	0.160
8		263.00	3.20	0.205
8		263.50	3.40	0.245
8		264.00	3.60	0.285
8		264.50	3.80	0.360
8		265.00	3.90	0.415

8		265.50	4.10	0.480
8		266.00	11.00	0.537
8		266.50	15.40	0.620
8		267.00	16.00	0.709
8		267.50	30.30	0.798
8		268.00	56.00	0.887
8		268.50	145.68	0.976
9	ENDTBL			
2	XSECTN 065	1.0	300.50	
8		300.00	0.00	0.00
8		300.10	0.29	0.23
8		300.25	1.47	0.69
8		300.40	3.55	1.28
8		300.50	5.48	1.75
8		300.60	7.88	2.28

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		300.75	12.45	3.19
8		300.90	18.28	4.23
8		301.00	22.91	5.00
8		301.10	28.18	5.83
8		301.25	37.36	7.19
8		301.40	48.14	8.68
8		301.50	56.26	9.75
9	ENDTBL			
2	XSECTN 070	1.0	248.40	
8		247.07	0.00	0.00
8		247.41	1.85	1.14
8		247.74	5.93	2.35
8		248.07	27.43	7.18
8		248.40	58.61	12.46
8		248.67	89.70	40.04
8		248.95	158.39	68.99
8		249.22	256.90	99.30
8		249.49	382.40	130.99
8		249.77	533.43	164.04
8		250.04	709.09	198.46
8		250.31	908.86	234.24
8		250.59	1132.40	271.40
8		250.86	1379.55	309.92
8		251.13	1650.25	349.81
8		251.41	1944.49	391.07
8		251.68	2262.35	433.69
8		251.95	2603.94	477.69
8		252.23	2969.40	523.05
8		252.50	3358.93	569.78
9	ENDTBL			
2	XSECTN 072	1.0	248.40	
8		247.07	0.00	0.00
8		247.41	1.85	1.14
8		247.74	5.93	2.35
8		248.07	27.43	7.18
8		248.40	58.61	12.46
8		248.67	89.70	40.04
8		248.95	158.39	68.99
8		249.22	256.90	99.30
8		249.49	382.40	130.99
8		249.77	533.43	164.04
8		250.04	709.09	198.46

8		250.31	908.86	234.24
8		250.59	1132.40	271.40
8		250.86	1379.55	309.92
8		251.13	1650.25	349.81
8		251.41	1944.49	391.07
8		251.68	2262.35	433.69
8		251.95	2603.94	477.69
8		252.23	2969.40	523.05

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		252.50	3358.93	569.78	
9	ENDTBL				
2	XSECTN 077	1.0	229.00		
8		226.00	0.00	0.00	
8		226.50	11.73	5.31	
8		227.00	42.97	13.25	
8		227.50	96.50	23.81	
8		228.00	175.93	37.00	
8		228.50	258.13	54.25	
8		229.00	385.22	77.00	
8		229.50	561.82	105.25	
8		230.00	793.74	139.00	
8		230.50	1079.38	179.94	
8		231.00	1462.49	229.75	
8		231.50	1953.75	288.44	
8		232.00	2564.16	356.00	
8		232.50	3408.70	429.13	
8		233.00	4351.01	504.50	
9	ENDTBL				
2	XSECTN 080	1.0	212.00		
8		210.50	0.00	0.00	
8		210.75	4.72	2.23	
8		211.00	15.68	4.92	
8		211.25	32.36	8.06	
8		211.50	54.93	11.67	
8		211.75	83.70	15.73	
8		212.00	119.05	20.25	
8		212.25	163.87	25.14	
8		212.50	215.35	30.31	
8		212.75	273.55	35.77	
8		213.00	338.57	41.50	
8		214.00	669.42	67.25	
8		215.00	806.07	99.00	
8		216.00	1088.03	138.25	
8		217.00	1451.30	187.50	
8		218.00	1978.93	249.25	
8		219.00	2262.06	340.00	
8		220.00	3115.20	476.25	
8		221.00	4892.67	639.25	
9	ENDTBL				
5	RAINFL 9	.1			
8	0.0000	0.0013	0.0023	0.0034	0.0044
8	0.0055	0.0065	0.0076	0.0087	0.0098
8	0.0109	0.0121	0.0132	0.0143	0.0155
8	0.0167	0.0178	0.0190	0.0202	0.0214
8	0.0226	0.0238	0.0251	0.0263	0.0276
8	0.0288	0.0301	0.0314	0.0327	0.0340
8	0.0353	0.0366	0.0379	0.0393	0.0406
8	0.0420	0.0434	0.0447	0.0461	0.0475

8	0.0489	0.0504	0.0518	0.0532	0.0547
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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8	0.0562	0.0576	0.0591	0.0606	0.0621
8	0.0636	0.0651	0.0667	0.0682	0.0697
8	0.0713	0.0729	0.0745	0.0760	0.0776
8	0.0793	0.0809	0.0826	0.0843	0.0861
8	0.0879	0.0898	0.0916	0.0936	0.0955
8	0.0975	0.0996	0.1017	0.1038	0.1060
8	0.1082	0.1104	0.1127	0.1150	0.1174
8	0.1198	0.1223	0.1247	0.1273	0.1298
8	0.1324	0.1351	0.1378	0.1405	0.1432
8	0.1461	0.1490	0.1521	0.1554	0.1588
8	0.1623	0.1660	0.1699	0.1739	0.1780
8	0.1823	0.1868	0.1914	0.1961	0.2010
8	0.2061	0.2117	0.2179	0.2247	0.2321
8	0.2400	0.2490	0.2591	0.2702	0.2825
8	0.2955	0.3157	0.3370	0.3662	0.4067
8	0.4766	0.5933	0.6338	0.6630	0.6843
8	0.7045	0.7176	0.7298	0.7409	0.7510
8	0.7600	0.7679	0.7753	0.7821	0.7883
8	0.7939	0.7990	0.8039	0.8086	0.8132
8	0.8177	0.8220	0.8261	0.8301	0.8340
8	0.8377	0.8412	0.8446	0.8479	0.8510
8	0.8540	0.8568	0.8595	0.8622	0.8649
8	0.8676	0.8702	0.8727	0.8753	0.8778
8	0.8802	0.8826	0.8850	0.8873	0.8896
8	0.8918	0.8940	0.8962	0.8983	0.9004
8	0.9025	0.9045	0.9064	0.9084	0.9103
8	0.9121	0.9139	0.9157	0.9174	0.9191
8	0.9208	0.9224	0.9240	0.9256	0.9271
8	0.9287	0.9303	0.9318	0.9334	0.9349
8	0.9364	0.9379	0.9394	0.9409	0.9424
8	0.9439	0.9453	0.9468	0.9482	0.9496
8	0.9511	0.9525	0.9539	0.9553	0.9566
8	0.9580	0.9594	0.9607	0.9621	0.9634
8	0.9647	0.9660	0.9673	0.9686	0.9699
8	0.9712	0.9724	0.9737	0.9749	0.9762
8	0.9774	0.9786	0.9798	0.9810	0.9822
8	0.9834	0.9845	0.9857	0.9868	0.9879
8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000

9	ENDTBL							
6	RUNOFF	1	001	1	0.0336	73.792	0.4051	DA1
6	REACH	3	002	1 2	1170.0		1	
6	RUNOFF	1	003	1	0.0580	59.179	0.3751	DA2
6	ADDHYD	4	004	1 2 3			1	DA1+2
6	RESVOR	2	11 3	1			1	1
SWMF10								
6	REACH	3	005	1 2	797.0		1	
6	RUNOFF	1	006	3	0.0798	62.227	0.3921	DA3
6	ADDHYD	4	007	2 3 4			1	
DA12+3								
6	REACH	3	008	4 7	1221.0		1	1 SA1-
SA2								

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

6	RUNOFF	1	009	1	0.0734	65.689	0.4221	DA1	
6	RESVOR	2	21	1 2			1	1	
SWMF13									
6	RUNOFF	1	010	3	0.0097	63.326	0.1281	DA7	
6	RESVOR	2	22	2 3 4			1	1 HWY	
STOR									
6	RUNOFF	1	011	2	0.0544	61.012	0.2201	DA2	
6	ADDHYD	4	012	7 2 3			1		
SA1+DA2									
6	RUNOFF	1	013	5	0.0193	70.690	0.2481	DA3	
6	ADDHYD	4	014	4 3 6			1		
DA17+2									
6	ADDHYD	4	015	6 5 3			1		
DA172+3									
6	RESVOR	2	23	3 1			1	1	
HWYSTOR2									
6	REACH	3	016	1 2	920.0		1	1	
6	RUNOFF	1	017	3	0.0211	77.000	0.1641	DA4	
6	RUNOFF	1	018	4	0.0313	77.000	0.2551	DA5	
6	RUNOFF	1	019	5	0.0404	77.000	0.1681	DA6	
6	ADDHYD	4	020	3 4 6			1	1 DA4+5	
6	ADDHYD	4	021	6 5 1			1		
DA123+6									
6	ADDHYD	4	022	2 1 3			1		
DA45+6									
6	REACH	3	023	3 7	1379.0		1	1 SA2-	
SA3									
6	RUNOFF	1	024	1	0.0505	70.000	0.3401	DA1	
6	RESVOR	2	31	1 2			1	1 SWMF3	
6	RUNOFF	1	025	3	0.0748	70.000	0.3581	DA2	
6	ADDHYD	4	026	2 3 4			1	DA1+2	
6	REACH	3	027	4 1	1021.0		1		
6	RUNOFF	1	028	2	0.0599	70.003	0.3231	DA3	
6	ADDHYD	4	029	7 2 3			1		
SA2+DA3									
6	ADDHYD	4	030	1 3 5			1		
DA12+3									
6	RUNOFF	1	031	1	0.0692	71.403	0.2761	DA4	
6	REACH	3	032	1 6	1603.0		1		
6	RUNOFF	1	033	2	0.0084	77.000	0.1921	DA5	
6	RESVOR	2	32	2 3			1	1	
SWMF11									
6	REACH	3	034	3 7	583.0		1		
6	RUNOFF	1	035	1	0.0275	76.936	0.2481	DA6	
6	RESVOR	2	33	1 2			1	1 SWMF8	
6	ADDHYD	4	036	7 2 1			1	DA5+6	
6	RESVOR	2	34	1 2			1	1	
HWYSTOR3									
6	REACH	3	037	2 4	934.0		1		
6	RUNOFF	1	038	1	0.0328	75.074	0.1901	DA7	
6	ADDHYD	4	039	4 1 3			1		
DA56+7									
6	RUNOFF	1	040	2	0.0393	72.374	0.3671	DA8	
6	ADDHYD	4	041	5 2 1			1	DA3+8	
6	ADDHYD	4	042	6 1 2			1	DA4+8	
6	ADDHYD	4	043	3 2 1			1	DA7+8	
6	REACH	3	044	1 7	1428.0		1	1 SA3-	
SA4									
6	RUNOFF	1	045	1	0.0477	70.923	0.4121	DA1	
6	RUNOFF	1	046	2	0.0628	70.463	0.4401	DA2	

6	ADDHYD	4	047	1	2	3				1	DA1+2
6	RUNOFF	1	048			1	0.0469	70.100	0.2491		DA3
6	ADDHYD	4	049	7	1	2				1	1
SA3+DA3											
6	ADDHYD	4	050	2	3	4				1	1
DA12+3											
6	REACH	3	051	4		7	1275.0			1	1 SA4-
SA5											

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

6	RUNOFF	1	052			1	0.0087	41.639	0.1631		DA1
6	REACH	3	053	1		5	652.0			1	
6	RUNOFF	1	054			1	0.0072	33.729	0.2561		DA2
6	RUNOFF	1	055			2	0.0322	67.653	0.2491		DA3
6	ADDHYD	4	056	7	2	4				1	
SA4+DA3											
6	ADDHYD	4	057	5	1	3				1	1 DA1+2
6	ADDHYD	4	058	4	3	5				1	
DA12+3											
6	RUNOFF	1	059			1	0.0266	57.353	0.2611	1	DA4
6	ADDHYD	4	060	5	1	2				1	1
DA123+4											
6	RUNOFF	1	061			3	0.0173	49.856	0.2971		DA5
6	ADDHYD	4	062	2	3	6				1	1
DA1234+5											
6	REACH	3	063	6		7	1959.0			1	1 SA5-
SA6											
6	RUNOFF	1	064			1	0.0110	53.133	0.5211		DA1
6	RESVOR	2		61	1	2				1	1
SWMF19											
6	REACH	3	065	2		3	1283.0			1	
6	RUNOFF	1	066			1	0.0458	35.433	0.2391		DA2
6	RESVOR	2		62	1	2				1	1
SWMF18											
6	ADDHYD	4	067	3	2	4				1	DA1+2
6	RUNOFF	1	068			5	0.0778	55.744	0.2281		DA3
6	ADDHYD	4	069	4	5	1				1	
DA12+3											
6	REACH	3	070	1		2	2166.0			1	
6	RUNOFF	1	071			1	0.0119	40.504	0.1221		DA4
6	RESVOR	2		63	1	3				1	1 SWMF2
6	REACH	3	072	3		4	1081.0			1	
6	RUNOFF	1	073			5	0.1100	55.556	0.2051	1	DA5
6	ADDHYD	4	074	7	5	1				1	
SA5+DA5											
6	ADDHYD	4	075	2	4	6				1	1
DA123+4											
6	ADDHYD	4	076	1	6	2				1	1
DA12345											
6	REACH	3	077	2		7	884.0			1	1 SA6-
SA7											
6	RUNOFF	1	078			2	0.0510	54.507	0.1971	1	DA1
6	ADDHYD	4	079	7	2	1				1	
SA6+DA1											
6	REACH	3	080	1		2	1296.0			1	
6	RUNOFF	1	081			1	0.0313	48.837	0.1861		DA2
6	ADDHYD	4	082	1	2	3				1	DA1+2
6	RUNOFF	1	083			1	0.0513	56.701	0.1621		DA3
6	RUNOFF	1	084			4	0.1187	53.945	0.3211		DA4

```

6 ADDHYD 4 085 1 4 2 1 1 DA3+4
6 ADDHYD 4 086 3 2 1 1
DA123+4
6 RUNOFF 1 087 4 0.0159 51.979 0.1421 DA5
6 ADDHYD 4 088 1 4 7 1 1
DA1234+5
ENDATA
7 INCREM 6 .06
7 COMPUT 7 001 088 0.0 3.19 1.09 2 1 2
ENDCMP 1
7 COMPUT 7 001 088 0.0 4.10 1.09 2 1 5
ENDCMP 1
7 COMPUT 7 001 088 0.0 4.91 1.09 2 1 10
ENDCMP 1
7 COMPUT 7 001 088 0.0 6.14 1.09 2 1 25
ENDCMP 1

```

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

```

7 COMPUT 7 001 088 0.0 7.23 1.09 2 1 50
ENDCMP 1
7 COMPUT 7 001 088 0.0 8.47 1.09 2 1 99
ENDCMP 1
ENDJOB 2

```

\*\*\*\*\*END OF 80-80  
LIST\*\*\*\*\*

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EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .060 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
STARTING TIME = .00 RAIN DEPTH = 3.19 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
ALTERNATE NO. = 1 STORM NO. = 2 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.32	15.8	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.02 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
FEET.

OPERATION REACH XSECTION 2



PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.43 14.9 389.76

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.02 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.39 6.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .38 WATERSHED INCHES; 14 CFS-HRS; 1.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.42 21.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .61 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 11

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.74 14.0 381.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .61 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.83 13.8 367.01

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .61 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	13.4	(RUNOFF)
18.66	1.0 *	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .48 WATERSHED INCHES; 25 CFS-HRS; 2.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	14.7	(NULL)
12.77	21.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .55 WATERSHED INCHES; 61 CFS-HRS; 5.0 ACRE-FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.53	14.1	356.35
12.88	20.9	356.51

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .55 WATERSHED INCHES; 61 CFS-HRS; 5.0 ACRE-FEET.

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OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	17.6	(RUNOFF)
20.16	1.0 *	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .62 WATERSHED INCHES; 30 CFS-HRS; 2.4 ACRE-FEET.

\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE  
 STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
17.10	1.4 *	368.35
	* FIRST POINT OF FLAT PEAK	
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.38 WATERSHED INCHES;	18 CFS-HRS;	1.5 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	3.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.53 WATERSHED INCHES;	3 CFS-HRS;	.3 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
17.22	1.4 *	352.59
	* FIRST POINT OF FLAT PEAK	
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.38 WATERSHED INCHES;	18 CFS-HRS;	1.5 ACRE-
FEET.		

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OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	9.9	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.44 WATERSHED INCHES;	15 CFS-HRS;	1.3 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	20.3	(NULL)
12.86	24.4	(NULL)

24.00 2.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.52 WATERSHED INCHES; 76 CFS-HRS; 6.3 ACRE-
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.22 9.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.86 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-
FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.47 20.5 (NULL)
12.86 24.8 (NULL)
23.99 3.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.49 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-
FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.36 26.1 (NULL)
12.85 27.0 (NULL)
24.00 3.6 (NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.51 WATERSHED INCHES; 105 CFS-HRS; 8.7 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.36 26.1 (NULL)
12.85 27.0 (NULL)
24.00 3.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.51 WATERSHED INCHES; 105 CFS-HRS; 8.7 ACRE-

FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
\*\*\*

\*\*\* WARNING - XSECTION 16, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.36	26.1	331.41
12.85	27.0	331.42
24.00	3.6	331.12

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.51 WATERSHED INCHES; 105 CFS-HRS; 8.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	17.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.20 WATERSHED INCHES; 16 CFS-HRS; 1.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.21	22.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.20 WATERSHED INCHES; 24 CFS-HRS; 2.0 ACRE-FEET.

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OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	33.7	(RUNOFF)
17.34	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.20 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	39.2	(NULL)
20.86	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.20 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	72.5	(NULL)
15.84	3.3	(NULL)
18.85	2.1	(NULL)
24.01	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.20 WATERSHED INCHES; 72 CFS-HRS; 6.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	94.0	(NULL)
18.81	7.3	(NULL)
20.80	6.3	(NULL)
23.71	5.1	(NULL)
24.01	5.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.67 WATERSHED INCHES; 177 CFS-HRS; 14.6 ACRE-  
FEET.

OPERATION REACH XSECTION 23

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.38	67.8	314.85
24.05	5.1	313.85

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

.67 WATERSHED INCHES; 177 CFS-HRS; 14.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	19.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) .82 WATERSHED INCHES; 27 CFS-HRS; 2.2 ACRE-FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE TIME INCREMENT OF .043 HOURS. \*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES FIRST NEGATIVE VALUE IS 0 CFS. \*\*\*

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	17.4	358.66

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) .82 WATERSHED INCHES; 27 CFS-HRS; 2.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	28.7	(RUNOFF)
23.14	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) .82 WATERSHED INCHES; 40 CFS-HRS; 3.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	45.3	(NULL)
20.15	2.1	(NULL)
23.78	1.6	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.82 WATERSHED INCHES; 66 CFS-HRS; 5.5 ACRE-  
FEET.

OPERATION REACH XSECTION 27

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.44	42.1	317.92
20.21	2.1	316.39
23.21	1.7	316.32

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.82 WATERSHED INCHES; 66 CFS-HRS; 5.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.27	24.2	(RUNOFF)
19.47	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.82 WATERSHED INCHES; 32 CFS-HRS; 2.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.34	89.5	(NULL)
24.03	5.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.68 WATERSHED INCHES; 208 CFS-HRS; 17.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.38	129.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.71 WATERSHED INCHES; 275 CFS-HRS; 22.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	33.3	(RUNOFF)
21.98	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .89 WATERSHED INCHES; 40 CFS-HRS; 3.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	28.4	311.40
20.70	1.2 *	310.09
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .89 WATERSHED INCHES; 40 CFS-HRS; 3.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	6.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.20 WATERSHED INCHES; 7 CFS-HRS; .5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 0 CFS,  
 AT STRUCTURE 32  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
14.64	.4	377.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.06 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 34, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 34

\*\*\* MESSAGE - XSECTION 34, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

1  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.06 WATERSHED INCHES; 399 CFS-HRS; .5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	19.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.20 WATERSHED INCHES; 21 CFS-HRS; 1.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 33

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
 AT STRUCTURE 33  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
15.66	1.0	354.26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .92 WATERSHED INCHES; 16 CFS-HRS; 1.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
15.54	1.4 *	(NULL)
15.30	1.4	(NULL)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .95 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
15.54	1.4 *	(NULL)
15.30	1.4	(NULL)
	* FIRST POINT OF FLAT PEAK	

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.95 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
FEET.

\*\*\* WARNING - XSECTION 37, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 37

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
15.36 1.4 \* 330.02  
\* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.95 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.17 23.6 (RUNOFF)  
15.85 1.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.09 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.18 23.8 (NULL)  
17.33 2.2 (NULL)  
18.61 2.0 (NULL)  
24.01 1.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.02 WATERSHED INCHES; 45 CFS-HRS; 3.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.30 17.6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.94 WATERSHED INCHES; 24 CFS-HRS; 2.0 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 41  
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.37 145.5 (NULL)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .73 WATERSHED INCHES; 299 CFS-HRS; 24.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 42  
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.37 173.9 (NULL)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .74 WATERSHED INCHES; 338 CFS-HRS; 28.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 43  
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.35 186.8 (NULL)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .77 WATERSHED INCHES; 383 CFS-HRS; 31.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 44  
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.57 159.2 289.60  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .77 WATERSHED INCHES; 383 CFS-HRS; 31.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 45  
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.33 18.2 (RUNOFF)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .87 WATERSHED INCHES; 27 CFS-HRS; 2.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 46

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	22.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.84 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	40.6	(NULL)
20.13	1.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.85 WATERSHED INCHES; 61 CFS-HRS; 5.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	21.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.83 WATERSHED INCHES; 25 CFS-HRS; 2.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	168.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.77 WATERSHED INCHES; 408 CFS-HRS; 33.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.50	201.0	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .93  
SQ.MI.

10.98	CFS	.43	.55	.68	.83	1.01	1.23	1.51
1.88								
11.46	CFS	2.39	3.08	4.01	5.30	7.08	9.49	12.75
17.24								
11.94	CFS	24	33	49	73	103	135	162
182								
12.42	CFS	195	200	200	195	187	177	166
155								
12.90	CFS	145	135	126	118	110	104	98
92								
13.38	CFS	86.99	82.24	77.82	73.70	69.83	66.21	62.85
59.74								
13.86	CFS	56.90	54.34	52.04	49.99	48.17	46.55	45.09
43.76								
14.34	CFS	42.56	41.45	40.44	39.51	38.63	37.80	37.00
36.23								

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14.82	CFS	35.50	34.79	34.10	33.43	32.77	32.11	31.45
30.80								
15.30	CFS	30.17	29.57	29.02	28.54	28.12	27.76	27.44
27.15								
15.78	CFS	26.88	26.64	26.42	26.22	26.03	25.84	25.65
25.46								
16.26	CFS	25.28	25.11	24.93	24.75	24.58	24.39	24.21
24.02								
16.74	CFS	23.84	23.67	23.49	23.32	23.15	22.98	22.82
22.65								
17.22	CFS	22.47	22.28	22.09	21.91	21.72	21.53	21.34
21.13								
17.70	CFS	20.93	20.73	20.53	20.33	20.13	19.94	19.75
19.56								
18.18	CFS	19.38	19.19	19.01	18.84	18.66	18.49	18.33
18.20								
18.66	CFS	18.09	17.98	17.89	17.81	17.74	17.66	17.59
17.51								
19.14	CFS	17.43	17.35	17.27	17.20	17.14	17.08	17.03
16.98								
19.62	CFS	16.93	16.87	16.81	16.74	16.67	16.60	16.52
16.47								
20.10	CFS	16.42	16.37	16.32	16.27	16.21	16.14	16.06
15.98								
20.58	CFS	15.91	15.85	15.79	15.73	15.68	15.63	15.57
15.51								
21.06	CFS	15.45	15.38	15.31	15.24	15.17	15.12	15.06
15.02								
21.54	CFS	14.97	14.93	14.87	14.81	14.75	14.69	14.63
14.58								
22.02	CFS	14.53	14.48	14.42	14.36	14.29	14.23	14.17
14.11								
22.50	CFS	14.06	14.01	13.95	13.89	13.82	13.76	13.69
13.61								
22.98	CFS	13.54	13.48	13.43	13.38	13.33	13.28	13.23
13.17								
23.46	CFS	13.12	13.05	12.97	12.90	12.84	12.79	12.73
12.67								

23.94 CFS	12.61	12.57	12.52	12.33	11.92	11.31	10.55
9.68							
24.42 CFS	8.76	7.88	7.06	6.33	5.70	5.15	4.70
4.32							
24.90 CFS	4.00	3.74	3.51	3.34	3.18	3.06	2.95
2.86							
25.38 CFS	2.78	2.71	2.64	2.58	2.53	2.48	2.43
2.38							
25.86 CFS	2.34	2.30	2.26	2.22	2.19	2.15	2.12
2.10							
26.34 CFS	2.07	2.04	2.02	2.00	1.98	1.95	1.93
1.91							
26.82 CFS	1.89	1.88	1.86	1.84	1.82	1.81	1.79
1.77							
27.30 CFS	1.76	1.74	1.73	1.71	1.70	1.68	1.67
1.65							
27.78 CFS	1.64	1.63	1.61	1.60	1.59	1.57	1.56
1.55							
28.26 CFS	1.54	1.53	1.51	1.50	1.49	1.48	1.47
1.46							
28.74 CFS	1.45	1.44	1.43	1.42	1.41	1.40	1.39
1.38							
29.22 CFS	1.37	1.36	1.35	1.35	1.34	1.33	1.32
1.31							
29.70 CFS	1.30	1.29	1.29	1.28	1.27	1.26	1.26
1.25							
30.18 CFS	1.24	1.24	1.23	1.22	1.22	1.21	1.20
1.19							
30.66 CFS	1.19	1.18	1.17	1.17	1.16	1.16	1.15
1.14							
31.14 CFS	1.14	1.13	1.13	1.12	1.11	1.11	1.10
1.10							
31.62 CFS	1.09	1.09	1.08	1.08	1.07	1.07	1.06
1.06							
32.10 CFS	1.05	1.05	1.04	1.04	1.03	1.03	1.02
1.02							
32.58 CFS	1.01	1.01	1.01	1.00	1.00	.99	.99
.99							
33.06 CFS	.98	.98	.97	.97	.96	.96	.96
.95							
33.54 CFS	.95	.95	.94	.94	.93	.93	.93
.92							
34.02 CFS	.92						

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .78 WATERSHED INCHES; 469 CFS-HRS; 38.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 51

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PEAK TIME(HRS)  
 ELEVATION(FEET)  
 12.69

PEAK DISCHARGE(CFS)  
 188.7

PEAK  
 283.65

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.78 WATERSHED INCHES; 469 CFS-HRS; 38.8 ACRE-
FEET.

OPERATION RUNOFF XSECTION 52

\*\*\* MESSAGE - XSECTION 52, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.78 WATERSHED INCHES; 145 CFS-HRS; 38.8 ACRE-
FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,
UNLESS NEW RATING TABLE VALUES ARE INSERTED.
\*\*\*

OPERATION REACH XSECTION 53

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-
FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-
FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.22 12.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.71 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-
FEET.

OPERATION ADDHYD XSECTION 56

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.68	193.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .78 WATERSHED INCHES; 484 CFS-HRS; 40.0 ACRE-FEET.

\*\*\* WARNING - XSECTION 57  
 NO HYDROGRAPH IN INPUT LOCATION 5 OR 1 FOR ADDHYD OPERATION.  
 \*\*\*

OPERATION ADDHYD XSECTION 57

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .78 WATERSHED INCHES; 145 CFS-HRS; 40.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.68	193.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .77 WATERSHED INCHES; 484 CFS-HRS; 40.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	2.4	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .03 SQ.MI.

HRS	12.06	12.54	13.02	13.50	13.98	14.46		
CFS	2.09	1.20	.84	.63	.56			
	.20	1.98	1.15	.80	.62	.55		
	.80	1.85	1.10	.76	.61	.54		
	1.61	1.69	1.04	.73	.60	.53		
	2.15	1.53	.99	.70	.59	.52		
	2.34	1.41	.95	.67	.58	.51		
	2.32	1.33	.91	.65	.57	.50		
	2.21	1.26	.87	.64	.56			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .32 WATERSHED INCHES; 5 CFS-HRS; .4 ACRE-FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.68 194.7 (NULL)  
 1  
 TR20 ----- SCS  
 -

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .75 WATERSHED INCHES; 489 CFS-HRS; 40.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

\*\*\* MESSAGE - XSECTION 61, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .75 WATERSHED INCHES; 216 CFS-HRS; 40.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.68	194.9	(NULL)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2						
HRS	MAIN TIME INCREMENT = .060 hr,			DRAINAGE AREA = 1.02			
SQ.MI.							
11.16 CFS	.50	.62	.76	.93	1.14	1.41	1.77
2.26							
11.64 CFS	2.93	3.89	5.26	7.17	9.83	13.57	19.06
27.74							
12.12 CFS	42	60	82	105	129	151	170
183							
12.60 CFS	192	195	194	189	183	174	165
155							
13.08 CFS	146	137	128	120	113	107	100
95							
13.56 CFS	89.49	84.59	80.03	75.80	71.87	68.23	64.88
61.80							
14.04 CFS	59.01	56.47	54.18	52.12	50.26	48.59	47.08
45.71							
14.52 CFS	44.45	43.29	42.22	41.22	40.28	39.40	38.56
37.75							
15.00 CFS	36.97	36.22	35.48	34.76	34.05	33.36	32.69
32.05							
15.48 CFS	31.44	30.88	30.37	29.91	29.48	29.10	28.77
28.47							
15.96 CFS	28.20	27.94	27.70	27.48	27.27	27.06	26.86
26.66							
16.44 CFS	26.47	26.28	26.08	25.89	25.70	25.51	25.32
25.13							
16.92 CFS	24.94	24.76	24.58	24.40	24.22	24.03	23.84
23.66							
17.40 CFS	23.47	23.28	23.08	22.87	22.67	22.47	22.26
22.05							

17.88	CFS	21.84	21.63	21.42	21.22	21.01	20.81	20.61
20.41								
18.36	CFS	20.22	20.03	19.84	19.67	19.50	19.35	19.21
19.07								
18.84	CFS	18.96	18.86	18.76	18.67	18.58	18.50	18.42
18.33								
19.32	CFS	18.26	18.18	18.11	18.05	17.98	17.92	17.86
17.80								
19.80	CFS	17.74	17.67	17.60	17.53	17.47	17.41	17.35
17.28								
20.28	CFS	17.22	17.17	17.11	17.04	16.97	16.90	16.83
16.76								
20.76	CFS	16.69	16.63	16.57	16.51	16.45	16.38	16.32
16.25								
21.24	CFS	16.19	16.12	16.05	15.99	15.93	15.87	15.82
15.76								
21.72	CFS	15.70	15.65	15.59	15.53	15.47	15.42	15.36
15.30								
22.20	CFS	15.23	15.17	15.11	15.05	14.99	14.93	14.87
14.81								
22.68	CFS	14.74	14.68	14.62	14.55	14.48	14.41	14.34
14.28								
23.16	CFS	14.22	14.15	14.09	14.04	13.98	13.93	13.86
13.80								
23.64	CFS	13.73	13.67	13.61	13.54	13.47	13.40	13.36
13.31								
24.12	CFS	13.15	12.88	12.51	12.06	11.50	10.83	10.07
9.26								
24.60	CFS	8.46	7.68	6.96	6.30	5.71	5.20	4.76
4.39								

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25.08	CFS	4.07	3.80	3.58	3.39	3.23	3.09	2.98
2.88								
25.56	CFS	2.79	2.72	2.65	2.59	2.53	2.47	2.42
2.38								
26.04	CFS	2.33	2.29	2.25	2.22	2.18	2.15	2.12
2.09								
26.52	CFS	2.06	2.04	2.02	1.99	1.97	1.95	1.93
1.91								
27.00	CFS	1.89	1.87	1.85	1.84	1.82	1.80	1.78
1.77								
27.48	CFS	1.75	1.74	1.72	1.71	1.69	1.68	1.66
1.65								
27.96	CFS	1.63	1.62	1.61	1.60	1.58	1.57	1.56
1.55								
28.44	CFS	1.53	1.52	1.51	1.50	1.49	1.48	1.47
1.46								
28.92	CFS	1.45	1.44	1.43	1.42	1.41	1.40	1.39
1.38								
29.40	CFS	1.37	1.36	1.35	1.34	1.33	1.32	1.32
1.31								
29.88	CFS	1.30	1.29	1.28	1.28	1.27	1.26	1.25
1.25								
30.36	CFS	1.24	1.23	1.23	1.22	1.21	1.21	1.20
1.19								

30.84 CFS	1.18	1.18	1.17	1.17	1.16	1.15	1.15
1.14							
31.32 CFS	1.14	1.13	1.12	1.12	1.11	1.11	1.10
1.10							
31.80 CFS	1.09	1.09	1.08	1.08	1.07	1.07	1.06
1.06							
32.28 CFS	1.05	1.05	1.04	1.04	1.03	1.03	1.02
1.02							
32.76 CFS	1.01	1.01	1.00	1.00	1.00	.99	.99
.98							
33.24 CFS	.98	.98	.97	.97	.96	.96	.95
.95							
33.72 CFS	.95	.94	.94	.94	.93	.93	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .74 WATERSHED INCHES; 491 CFS-HRS; 40.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.93	175.3	249.00

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .74 WATERSHED INCHES; 490 CFS-HRS; 40.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 64

\*\*\* MESSAGE - XSECTION 64, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .74 WATERSHED INCHES; 228 CFS-HRS; 40.5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 61

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 0 CFS,  
 AT STRUCTURE 61  
 \*\*\*

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	.3	329.80

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .20 WATERSHED INCHES; 1 CFS-HRS; .1 ACRE-  
 FEET.

OPERATION REACH XSECTION 65

\*\*\* MESSAGE - XSECTION 65, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.20 WATERSHED INCHES; 217 CFS-HRS; .1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 66

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 62

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-  
FEET.

\*\*\* WARNING - XSECTION 67  
NO HYDROGRAPH IN INPUT LOCATION 3 OR 2 FOR ADDHYD OPERATION.  
\*\*\*

OPERATION ADDHYD XSECTION 67

\*\*\* MESSAGE - XSECTION 67, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.00 WATERSHED INCHES; 217 CFS-HRS; .0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 68

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	5.0	(RUNOFF)
15.88	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.27 WATERSHED INCHES; 13 CFS-HRS; 1.1 ACRE-

FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	5.0	(NULL)
15.87	1.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .17 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.63	4.5	247.62

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .17 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 71

\*\*\* MESSAGE - XSECTION 71, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .17 WATERSHED INCHES; 108 CFS-HRS; 1.2 ACRE-FEET.

OPERATION RESVOR STRUCTURE 63

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 0 CFS,  
 AT STRUCTURE 63  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
24.06	.0	259.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-FEET.

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\*\*\* WARNING - XSECTION 72, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 72

\*\*\* MESSAGE - HYDROGRAPH CONTAINS NO FLOW.  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.34	6.9	(RUNOFF)
17.36	1.1	(RUNOFF)

	HYDROGRAPH POINTS FOR		ALTERNATE = 1,	STORM = 2				
	MAIN	TIME INCREMENT = .060 hr,	DRAINAGE AREA = .11					
HRS								
SQ.MI.								
12.00 CFS	.00	.59	2.63	4.87	6.26	6.85	6.93	
6.67								
12.48 CFS	6.41	6.24	5.82	5.22	4.77	4.50	4.31	
4.15								
12.96 CFS	4.00	3.83	3.65	3.47	3.32	3.20	3.08	
2.97								
13.44 CFS	2.85	2.73	2.60	2.48	2.39	2.32	2.26	
2.22								
13.92 CFS	2.19	2.17	2.16	2.13	2.10	2.06	2.02	
2.00								
14.40 CFS	1.97	1.95	1.91	1.87	1.83	1.79	1.76	
1.73								
14.88 CFS	1.70	1.66	1.62	1.59	1.54	1.50	1.47	
1.45								
15.36 CFS	1.44	1.44	1.44	1.45	1.44	1.42	1.40	
1.39								
15.84 CFS	1.40	1.40	1.39	1.37	1.35	1.34	1.34	
1.34								
16.32 CFS	1.32	1.31	1.30	1.29	1.27	1.26	1.26	
1.26								
16.80 CFS	1.24	1.23	1.22	1.22	1.21	1.20	1.18	
1.16								
17.28 CFS	1.14	1.15	1.15	1.13	1.11	1.09	1.08	
1.07								
17.76 CFS	1.07	1.05	1.03	1.03	1.02	1.02	1.00	
.98								
18.24 CFS	.98	.97	.97	.95	.94	.95	.96	
.97								
18.72 CFS	.95	.95	.96	.96	.94	.94	.93	
.93								
19.20 CFS	.93	.93	.93	.93	.94	.94	.93	
.92								
19.68 CFS	.91	.92	.92	.90	.90	.90	.92	
.92								
20.16 CFS	.91	.90	.90	.89	.88	.87	.87	
.88								
20.64 CFS	.89	.88	.87	.87	.88	.87	.86	
.85								
21.12 CFS	.85	.85	.85	.85	.85	.85	.85	
.85								
21.60 CFS	.84	.82	.83	.83	.82	.82	.83	
.83								

22.08 CFS .80	.81	.80	.80	.80	.80	.80	.80
22.56 CFS .76	.80	.78	.77	.78	.78	.76	.75
23.04 CFS .74	.77	.78	.77	.76	.75	.75	.75
23.52 CFS .70	.73	.72	.73	.74	.74	.72	.71
24.00 CFS	.74	.73	.53	.28			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.26 WATERSHED INCHES; 19 CFS-HRS; 1.5 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.92	179.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.70 WATERSHED INCHES; 509 CFS-HRS; 42.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.63	4.5	(NULL)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2						
	MAIN TIME INCREMENT = .060 hr,			DRAINAGE AREA = .15			
HRS SQ.MI.							
12.12 CFS 4.35	.11	.60	1.46	2.39	3.20	3.79	4.15
12.60 CFS 3.50	4.45	4.44	4.32	4.14	3.95	3.78	3.63
13.08 CFS 2.58	3.38	3.25	3.13	3.00	2.88	2.78	2.68
13.56 CFS 1.92	2.48	2.38	2.29	2.19	2.11	2.04	1.98
14.04 CFS 1.66	1.88	1.84	1.81	1.78	1.75	1.72	1.68
14.52 CFS 1.44	1.63	1.61	1.58	1.55	1.52	1.49	1.47
15.00 CFS 1.22	1.41	1.38	1.36	1.33	1.30	1.27	1.24
15.48 CFS 1.14	1.20	1.19	1.18	1.17	1.17	1.15	1.14
15.96 CFS 1.08	1.13	1.13	1.12	1.11	1.10	1.09	1.08
16.44 CFS	1.07	1.06	1.05	1.04	1.03	1.03	1.02



1.01								
16.92 CFS	1.00	1.00	.99	.98	.98	.97	.96	
.95								
17.40 CFS	.94	.93	.93	.92	.90	.89	.88	
.88								
17.88 CFS	.87	.86	.85	.84	.83	.82	.81	
.81								
18.36 CFS	.80	.79	.78	.77	.77	.77	.77	
.77								
18.84 CFS	.76	.76	.76	.76	.76	.75	.75	
.75								
19.32 CFS	.75	.75	.75	.75	.75	.75	.74	
.74								
19.80 CFS	.74	.74	.73	.73	.73	.73	.73	
.73								
20.28 CFS	.73	.72	.72	.72	.71	.71	.70	
.71								
20.76 CFS	.71	.70	.70	.70	.70	.69	.69	
.69								
21.24 CFS	.68	.68	.68	.68	.68	.68	.68	
.68								
21.72 CFS	.67	.67	.67	.67	.66	.66	.66	
.66								
22.20 CFS	.65	.65	.65	.65	.64	.64	.64	
.64								
22.68 CFS	.64	.63	.63	.63	.62	.62	.61	
.62								
23.16 CFS	.62	.62	.61	.61	.61	.60	.60	
.60								
23.64 CFS	.59	.59	.59	.59	.59	.58	.58	
.58								
24.12 CFS	.58	.55	.47					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .16 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 76

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.92	183.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .63 WATERSHED INCHES; 524 CFS-HRS; 43.3 ACRE-FEET.

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.99	182.9	228.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .63 WATERSHED INCHES; 524 CFS-HRS; 43.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.38 2.6 (RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05  
 SQ.MI.

HRS	MAIN	TIME	INCREMENT	ALTERNATE	STORM	DRAINAGE	AREA	
12.06 CFS	.17	.75	1.47	2.06	2.42	2.56	2.53	
2.48								
12.54 CFS	2.45	2.30	2.07	1.91	1.81	1.75	1.69	
1.63								
13.02 CFS	1.57	1.50	1.43	1.37	1.32	1.28	1.23	
1.18								
13.50 CFS	1.13	1.08	1.03	.99	.97	.95	.93	
.92								
13.98 CFS	.91	.91	.90	.88	.87	.85	.84	
.83								
14.46 CFS	.82	.81	.79	.77	.76	.74	.73	
.72								
14.94 CFS	.70	.69	.67	.65	.64	.62	.62	
.61								
15.42 CFS	.61	.61	.62	.61	.60	.60	.59	
.60								
15.90 CFS	.60	.59	.58	.57	.57	.57	.57	
.56								
16.38 CFS	.56	.56	.55	.54	.54	.54	.54	
.53								
16.86 CFS	.53	.52	.52	.52	.51	.51	.49	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .23 WATERSHED INCHES; 8 CFS-HRS; .6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.99 184.5 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .62 WATERSHED INCHES; 531 CFS-HRS; 43.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 80

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.05	184.3	212.35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .62 WATERSHED INCHES; 531 CFS-HRS; 43.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 81

\*\*\* MESSAGE - XSECTION 81, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .62 WATERSHED INCHES; 208 CFS-HRS; 43.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.05	184.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .61 WATERSHED INCHES; 534 CFS-HRS; 44.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	4.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .30 WATERSHED INCHES; 10 CFS-HRS; .8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.57	5.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .22 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.51	8.3	(NULL)
15.82	2.0	(NULL)
24.00	1.1	(NULL)

HRS SQ.MI.	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2							
	MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17							
12.00 CFS	.00	.87	3.33	5.34	6.50	7.38	7.93	
8.14								
12.48 CFS	8.23	8.27	7.90	7.37	6.93	6.57	6.28	
6.04								
12.96 CFS	5.82	5.60	5.36	5.11	4.90	4.71	4.54	
4.37								
13.44 CFS	4.20	4.03	3.86	3.69	3.55	3.43	3.34	
3.26								
13.92 CFS	3.21	3.17	3.13	3.10	3.05	3.00	2.95	
2.91								
14.40 CFS	2.88	2.84	2.80	2.74	2.68	2.63	2.59	
2.54								
14.88 CFS	2.50	2.44	2.39	2.34	2.28	2.22	2.17	
2.14								
15.36 CFS	2.12	2.11	2.10	2.10	2.09	2.07	2.05	
2.04								
15.84 CFS	2.04	2.03	2.02	2.00	1.98	1.96	1.96	
1.95								
16.32 CFS	1.93	1.92	1.91	1.89	1.87	1.85	1.84	
1.84								
16.80 CFS	1.82	1.80	1.79	1.78	1.78	1.76	1.74	
1.71								
17.28 CFS	1.69	1.69	1.68	1.66	1.63	1.61	1.59	
1.58								
17.76 CFS	1.57	1.55	1.53	1.51	1.50	1.49	1.47	
1.45								
18.24 CFS	1.44	1.43	1.42	1.40	1.39	1.40	1.40	
1.41								
18.72 CFS	1.40	1.39	1.40	1.40	1.39	1.38	1.37	
1.37								
19.20 CFS	1.37	1.37	1.37	1.37	1.37	1.37	1.37	
1.35								
19.68 CFS	1.34	1.35	1.34	1.33	1.32	1.33	1.34	
1.34								
20.16 CFS	1.33	1.33	1.32	1.31	1.30	1.28	1.28	
1.29								
20.64 CFS	1.30	1.29	1.28	1.29	1.29	1.28	1.26	
1.26								
21.12 CFS	1.25	1.25	1.25	1.25	1.25	1.25	1.25	
1.25								
21.60 CFS	1.23	1.22	1.22	1.22	1.21	1.21	1.22	
1.21								
22.08 CFS	1.20	1.19	1.18	1.18	1.18	1.18	1.18	
1.18								
22.56 CFS	1.17	1.16	1.15	1.15	1.14	1.13	1.12	
1.12								
23.04 CFS	1.13	1.13	1.13	1.12	1.11	1.11	1.10	
1.10								
23.52 CFS	1.08	1.07	1.07	1.08	1.08	1.07	1.05	
1.05								
24.00 CFS	1.08	1.05	.84	.59	.40			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .24 WATERSHED INCHES; 27 CFS-HRS; 2.2 ACRE-

FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.05	190.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .57 WATERSHED INCHES; 560 CFS-HRS; 46.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

\*\*\* MESSAGE - XSECTION 87, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

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 TR20 ----- SCS  
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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .57 WATERSHED INCHES; 209 CFS-HRS; 46.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.05	190.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .56 WATERSHED INCHES; 562 CFS-HRS; 46.4 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
 STARTING TIME = .00 RAIN DEPTH = 4.10 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. = 5 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	26.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.65 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	25.5	389.97

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.65 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 3

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	18.0	(RUNOFF)
20.15	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .77 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	42.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.09 WATERSHED INCHES; 65 CFS-HRS; 5.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.57	34.2	381.75

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.09 WATERSHED INCHES; 65 CFS-HRS; 5.3 ACRE-FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.66	33.7	367.55

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.09 WATERSHED INCHES; 65 CFS-HRS; 5.3 ACRE-FEET.

FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	31.5	(RUNOFF)
23.74	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .93 WATERSHED INCHES; 48 CFS-HRS; 4.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 7

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.58	54.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.02 WATERSHED INCHES; 112 CFS-HRS; 9.3 ACRE-FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.67	53.5	356.84

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.02 WATERSHED INCHES; 112 CFS-HRS; 9.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	36.1	(RUNOFF)
20.14	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.13 WATERSHED INCHES; 53 CFS-HRS; 4.4 ACRE-FEET.

\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE  
 STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
14.16	4.7 *	369.75
	* FIRST POINT OF	FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .87 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	6.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .99 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-FEET.

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OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
14.28	4.7 *	352.79
	* FIRST POINT OF	FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .87 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	25.7	(RUNOFF)
20.09	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .86 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.63	62.7	(NULL)
24.00	3.8	(NULL)



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .98 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	16.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.44 WATERSHED INCHES; 18 CFS-HRS; 1.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.64	63.4	(NULL)
23.99	5.3	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .95 WATERSHED INCHES; 183 CFS-HRS; 15.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	61.8	(NULL)
12.61	69.1	(NULL)
24.00	5.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .98 WATERSHED INCHES; 201 CFS-HRS; 16.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	61.8	(NULL)
12.61	69.1	(NULL)
24.00	5.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .98 WATERSHED INCHES; 201 CFS-HRS; 16.6 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
 \*\*\*

\*\*\* WARNING - XSECTION 16, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.28	61.8	331.85
12.61	69.1	331.94
24.00	5.7	331.15

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .98 WATERSHED INCHES; 201 CFS-HRS; 16.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	28.2	(RUNOFF)
15.84	1.1	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 26 CFS-HRS; 2.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.21	35.7	(RUNOFF)
18.65	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 38 CFS-HRS; 3.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	53.6	(RUNOFF)
15.84	2.1	(RUNOFF)
22.47	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	62.6	(NULL)
17.32	2.1	(NULL)
24.01	1.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	115.6	(NULL)
15.84	4.7	(NULL)
17.34	3.7	(NULL)
23.72	2.1	(NULL)
24.01	2.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 113 CFS-HRS; 9.3 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	170.7	(NULL)
20.59	10.0	(NULL)
21.94	9.1	(NULL)
23.05	8.4	(NULL)
24.00	7.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.18 WATERSHED INCHES; 314 CFS-HRS; 25.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.36	130.5	315.26

24.05 7.8 313.91

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.18 WATERSHED INCHES; 314 CFS-HRS; 25.9 ACRE-
FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.27 35.8 (RUNOFF)
23.13 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.40 WATERSHED INCHES; 45 CFS-HRS; 3.8 ACRE-
FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE
TIME INCREMENT OF .043 HOURS.
\*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES
FIRST NEGATIVE VALUE IS 0 CFS.
\*\*\*

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.45 26.2 361.49
23.15 1.0 356.46

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.40 WATERSHED INCHES; 45 CFS-HRS; 3.8 ACRE-
FEET.

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OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.29 51.6 (RUNOFF)
18.67 2.0 (RUNOFF)
23.98 1.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.40 WATERSHED INCHES; 67 CFS-HRS; 5.6 ACRE-
FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	75.8	(NULL)
20.15	3.1	(NULL)
20.69	3.0	(NULL)
23.78	2.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 113 CFS-HRS; 9.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	68.6	318.46

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 113 CFS-HRS; 9.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	43.7	(RUNOFF)
24.01	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 54 CFS-HRS; 4.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	171.0	(NULL)
24.04	8.9	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.21 WATERSHED INCHES; 368 CFS-HRS; 30.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	232.8	(NULL)
24.03	11.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.25 WATERSHED INCHES; 481 CFS-HRS; 39.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.23	58.3	(RUNOFF)
24.03	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.49 WATERSHED INCHES; 66 CFS-HRS; 5.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 32

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.35	51.4	311.98
24.09	1.4	310.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.49 WATERSHED INCHES; 66 CFS-HRS; 5.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.17	10.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 10 CFS-HRS; .8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
 AT STRUCTURE 32  
 \*\*\*

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PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
14.40	.7	378.01

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.64 WATERSHED INCHES; 9 CFS-HRS; .7 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 34, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 34

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
 AT XSECTION 34  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
14.34	.7	338.01
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.63 WATERSHED INCHES;	9 CFS-HRS;	.7 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	31.7	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.88 WATERSHED INCHES;	33 CFS-HRS;	2.8 ACRE-
FEEET.		

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.92	5.9	354.96
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.54 WATERSHED INCHES;	27 CFS-HRS;	2.3 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.94	6.4	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.56 WATERSHED INCHES;	36 CFS-HRS;	3.0 ACRE-
FEEET.		

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OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.94	6.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.56 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-FEET.

\*\*\* WARNING - XSECTION 37, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT, UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.03	6.4	330.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.56 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	38.6	(RUNOFF)
17.35	1.2	(RUNOFF)
18.63	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.75 WATERSHED INCHES; 37 CFS-HRS; 3.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	39.1	(NULL)
23.71	2.0	(NULL)
24.01	2.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.65 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 40

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	30.7	(RUNOFF)
20.14	1.0	(RUNOFF)
20.68	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.55 WATERSHED INCHES; 39 CFS-HRS; 3.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	261.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.27 WATERSHED INCHES; 520 CFS-HRS; 43.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	312.9	(NULL)
24.03	13.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.29 WATERSHED INCHES; 587 CFS-HRS; 48.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	334.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.32 WATERSHED INCHES; 660 CFS-HRS; 54.5 ACRE-  
FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.50	303.3	290.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.32 WATERSHED INCHES; 659 CFS-HRS; 54.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 45

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	32.5	(RUNOFF)
20.14	1.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.46 WATERSHED INCHES;	45 CFS-HRS;	3.7 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	40.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.43 WATERSHED INCHES;	58 CFS-HRS;	4.8 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	72.7	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.44 WATERSHED INCHES;	103 CFS-HRS;	8.5 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	38.8	(RUNOFF)
21.97	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.40 WATERSHED INCHES;	42 CFS-HRS;	3.5 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	321.3	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.33 WATERSHED INCHES;	702 CFS-HRS;	58.0 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 50

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	384.2	(NULL)

	HYDROGRAPH POINTS FOR		ALTERNATE = 1,	STORM = 5			
HRS	MAIN TIME INCREMENT = .060 hr,		DRAINAGE AREA =	.93			
SQ.MI.							
9.96 CFS	.43	.51	.59	.68	.77	.87	.97
1.09							
10.44 CFS	1.21	1.34	1.49	1.67	1.89	2.19	2.56
3.02							
10.92 CFS	3.59	4.27	5.07	6.00	7.08	8.34	9.80
11.50							
11.40 CFS	13.43	15.63	18.11	21.06	24.76	29.50	35.49
43.12							
11.88 CFS	53	67	87	118	165	223	283
333							
12.36 CFS	367	383	382	370	354	334	314
293							
12.84 CFS	274	255	238	222	207	193	180
167							
13.32 CFS	156	146	137	129	121	114	108
102							
13.80 CFS	97.27	92.64	88.51	84.88	81.70	78.91	76.45
74.23							
14.28 CFS	72.23	70.38	68.69	67.12	65.66	64.26	62.92
61.60							
14.76 CFS	60.31	59.06	57.84	56.65	55.48	54.32	53.16
52.00							
15.24 CFS	50.84	49.72	48.65	47.67	46.79	46.03	45.36
44.76							
15.72 CFS	44.20	43.67	43.18	42.73	42.32	41.91	41.51
41.11							
16.20 CFS	40.72	40.35	39.98	39.62	39.27	38.92	38.56
38.19							
16.68 CFS	37.82	37.48	37.14	36.80	36.47	36.15	35.84
35.53							
17.16 CFS	35.21	34.88	34.53	34.17	33.83	33.50	33.16
32.81							
17.64 CFS	32.45	32.08	31.73	31.38	31.04	30.70	30.38
30.08							
18.12 CFS	29.77	29.47	29.17	28.88	28.59	28.30	28.02
27.76							
18.60 CFS	27.55	27.36	27.20	27.06	26.93	26.81	26.70
26.57							
19.08 CFS	26.44	26.31	26.18	26.05	25.94	25.84	25.75
25.67							
19.56 CFS	25.60	25.51	25.41	25.31	25.20	25.08	24.96
24.84							
20.04 CFS	24.74	24.65	24.58	24.51	24.43	24.34	24.23
24.09							
20.52 CFS	23.96	23.83	23.73	23.64	23.55	23.47	23.39
23.31							
21.00 CFS	23.21	23.11	23.00	22.88	22.77	22.66	22.57
22.49							
21.48 CFS	22.42	22.36	22.28	22.20	22.10	22.00	21.90

21.81								
21.96	CFS	21.73	21.66	21.58	21.49	21.39	21.28	21.18
21.08								
22.44	CFS	20.99	20.91	20.84	20.75	20.65	20.55	20.44
20.33								
22.92	CFS	20.21	20.10	20.00	19.92	19.86	19.79	19.72
19.64								
23.40	CFS	19.55	19.46	19.36	19.24	19.12	19.02	18.94
18.86								
23.88	CFS	18.78	18.69	18.62	18.53	18.26	17.63	16.62
15.31								
24.36	CFS	13.81	12.27	10.83	9.54	8.43	7.50	6.74
6.13								
24.84	CFS	5.64	5.24	4.93	4.67	4.46	4.29	4.15
4.03								
25.32	CFS	3.92	3.82	3.74	3.66	3.58	3.51	3.44
3.37								
25.80	CFS	3.31	3.25	3.18	3.13	3.07	3.01	2.96
2.90								
26.28	CFS	2.85	2.80	2.75	2.70	2.66	2.61	2.57
2.52								
26.76	CFS	2.48	2.44	2.39	2.36	2.32	2.28	2.25
2.22								
27.24	CFS	2.19	2.16	2.14	2.12	2.09	2.07	2.05
2.03								
27.72	CFS	2.01	1.99	1.97	1.95	1.93	1.91	1.90
1.88								
28.20	CFS	1.86	1.85	1.83	1.82	1.80	1.79	1.77
1.76								
28.68	CFS	1.74	1.73	1.71	1.70	1.69	1.67	1.66
1.65								
29.16	CFS	1.63	1.62	1.61	1.60	1.59	1.57	1.56
1.55								
29.64	CFS	1.54	1.53	1.52	1.51	1.50	1.49	1.48
1.47								
30.12	CFS	1.46	1.45	1.44	1.43	1.42	1.41	1.40
1.39								
30.60	CFS	1.39	1.38	1.37	1.36	1.35	1.35	1.34
1.33								
31.08	CFS	1.32	1.32	1.31	1.30	1.29	1.29	1.28
1.27								

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31.56	CFS	1.26	1.26	1.25	1.24	1.24	1.23	1.22
1.22								
32.04	CFS	1.21	1.20	1.20	1.19	1.19	1.18	1.17
1.17								
32.52	CFS	1.16	1.16	1.15	1.15	1.14	1.14	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.34 WATERSHED INCHES; 804 CFS-HRS; 66.5 ACRE-  
FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.59	366.0	284.38

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.34 WATERSHED INCHES; 804 CFS-HRS; 66.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 52

\*\*\* MESSAGE - XSECTION 52, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.34 WATERSHED INCHES; 205 CFS-HRS; 66.5 ACRE-FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT, UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 53

\*\*\* MESSAGE - XSECTION 53, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.34 WATERSHED INCHES; 203 CFS-HRS; 66.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - XSECTION 54, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.34 WATERSHED INCHES; 74 CFS-HRS; 66.5 ACRE-FEET.

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OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	23.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.25 WATERSHED INCHES; 26 CFS-HRS; 2.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.59	375.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.34 WATERSHED INCHES; 830 CFS-HRS; 68.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 57

\*\*\* MESSAGE - XSECTION 57, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.34 WATERSHED INCHES; 209 CFS-HRS; 68.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.59	375.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.31 WATERSHED INCHES; 831 CFS-HRS; 68.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	8.0	(RUNOFF)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5						
		DRAINAGE AREA = .03						
HRS	MAIN	TIME INCREMENT = .060 hr,						
SQ.MI.								
11.94 CFS	.30	.94	2.34	4.74	7.09	7.95	7.55	
6.66								
12.42 CFS	5.85	5.18	4.68	4.23	3.75	3.32	3.00	
2.79								
12.90 CFS	2.61	2.47	2.34	2.21	2.09	1.97	1.88	
1.79								
13.38 CFS	1.72	1.64	1.56	1.49	1.41	1.35	1.30	
1.26								
13.86 CFS	1.22	1.20	1.18	1.16	1.15	1.13	1.11	
1.08								

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14.34 CFS	1.06	1.05	1.03	1.01	.99	.97	.95
.93							

14.82 CFS .77	.91	.89	.87	.85	.83	.81	.79
15.30 CFS .71	.75	.74	.74	.74	.73	.73	.72
15.78 CFS .67	.71	.70	.70	.70	.69	.68	.68
16.26 CFS .63	.67	.66	.66	.65	.65	.64	.63
16.74 CFS .59	.62	.62	.61	.61	.60	.60	.60
17.22 CFS .53	.58	.57	.56	.56	.56	.55	.54
17.70 CFS	.53	.52	.52	.51	.50	.50	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.68 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.58	379.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.30 WATERSHED INCHES; 842 CFS-HRS; 69.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.36 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.58	380.8	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.02  
SQ.MI.

10.14 CFS 1.19	.50	.58	.66	.75	.85	.96	1.07
10.62 CFS 3.61	1.33	1.48	1.67	1.90	2.20	2.57	3.04
11.10 CFS 14.03	4.31	5.14	6.12	7.27	8.62	10.18	11.97
11.58 CFS 62.67	16.41	19.25	22.70	26.98	32.43	39.51	49.07
12.06 CFS 364	83	114	155	201	250	296	336
12.54 CFS 286	378	380	373	360	343	324	305
13.02 CFS 165	268	250	233	218	203	189	177

13.50	CFS	154	145	136	128	121	114	108
103								
13.98	CFS	98.15	93.85	90.03	86.65	83.64	80.96	78.56
76.40								
14.46	CFS	74.42	72.60	70.90	69.30	67.79	66.34	64.94
63.58								
14.94	CFS	62.25	60.94	59.67	58.42	57.17	55.93	54.72
53.55								
15.42	CFS	52.42	51.36	50.39	49.50	48.70	47.96	47.30
46.71								
15.90	CFS	46.16	45.65	45.16	44.69	44.25	43.83	43.41
43.01								

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16.38	CFS	42.61	42.22	41.83	41.45	41.07	40.69	40.32
39.95								
16.86	CFS	39.57	39.21	38.86	38.52	38.19	37.84	37.49
37.14								
17.34	CFS	36.79	36.44	36.08	35.71	35.34	34.97	34.60
34.23								
17.82	CFS	33.86	33.48	33.11	32.76	32.42	32.07	31.74
31.41								
18.30	CFS	31.09	30.78	30.47	30.16	29.87	29.61	29.37
29.14								
18.78	CFS	28.94	28.77	28.62	28.48	28.33	28.20	28.07
27.94								
19.26	CFS	27.80	27.68	27.55	27.44	27.34	27.25	27.15
27.05								
19.74	CFS	26.96	26.86	26.75	26.62	26.51	26.40	26.30
26.19								
20.22	CFS	26.10	26.01	25.92	25.82	25.70	25.59	25.47
25.36								
20.70	CFS	25.24	25.12	25.02	24.93	24.84	24.74	24.64
24.54								
21.18	CFS	24.43	24.32	24.21	24.10	24.00	23.91	23.83
23.74								
21.66	CFS	23.65	23.57	23.48	23.38	23.28	23.19	23.10
23.01								
22.14	CFS	22.92	22.82	22.73	22.63	22.53	22.42	22.33
22.24								
22.62	CFS	22.14	22.04	21.95	21.85	21.74	21.62	21.50
21.40								
23.10	CFS	21.30	21.20	21.11	21.03	20.95	20.87	20.78
20.68								
23.58	CFS	20.57	20.46	20.36	20.26	20.16	20.05	19.95
19.89								
24.06	CFS	19.81	19.57	19.12	18.48	17.65	16.59	15.33
13.94								
24.54	CFS	12.52	11.15	9.91	8.81	7.87	7.08	6.42
5.89								
25.02	CFS	5.45	5.10	4.81	4.57	4.38	4.22	4.08
3.96								
25.50	CFS	3.86	3.77	3.68	3.60	3.53	3.46	3.39
3.32								
25.98	CFS	3.26	3.20	3.14	3.08	3.03	2.97	2.92
2.86								



26.46 CFS	2.81	2.76	2.71	2.67	2.62	2.58	2.53
2.49							
26.94 CFS	2.44	2.40	2.36	2.33	2.29	2.26	2.23
2.20							
27.42 CFS	2.17	2.14	2.12	2.10	2.07	2.05	2.03
2.01							
27.90 CFS	1.99	1.97	1.95	1.94	1.92	1.90	1.88
1.87							
28.38 CFS	1.85	1.83	1.82	1.80	1.79	1.77	1.76
1.74							
28.86 CFS	1.73	1.72	1.70	1.69	1.68	1.66	1.65
1.64							
29.34 CFS	1.62	1.61	1.60	1.59	1.58	1.57	1.55
1.54							
29.82 CFS	1.53	1.52	1.51	1.50	1.49	1.48	1.47
1.46							
30.30 CFS	1.45	1.44	1.43	1.42	1.41	1.40	1.40
1.39							
30.78 CFS	1.38	1.37	1.36	1.35	1.35	1.34	1.33
1.32							
31.26 CFS	1.32	1.31	1.30	1.29	1.29	1.28	1.27
1.26							
31.74 CFS	1.26	1.25	1.24	1.24	1.23	1.23	1.22
1.21							
32.22 CFS	1.21	1.20	1.19	1.19	1.18	1.18	1.17
1.16							
32.70 CFS	1.16	1.15	1.15				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.28 WATERSHED INCHES; 846 CFS-HRS; 69.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.78	354.1	249.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.28 WATERSHED INCHES; 846 CFS-HRS; 69.9 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.53	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .49 WATERSHED INCHES; 3 CFS-HRS; .3 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.62	1.3	329.97
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.49 WATERSHED INCHES;	3 CFS-HRS;	.3 ACRE-
FEET.		

OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.79	1.3	300.22
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.49 WATERSHED INCHES;	3 CFS-HRS;	.3 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 66

\*\*\* MESSAGE - XSECTION 66, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.49 WATERSHED INCHES;	143 CFS-HRS;	.3 ACRE-
FEET.		

\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
TIME INCREMENT OF .043 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

OPERATION RESVOR STRUCTURE 62

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 0 CFS,  
AT STRUCTURE 62  
\*\*\*

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
24.06	.1	287.31
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.01 WATERSHED INCHES;	0 CFS-HRS;	.0 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.79	1.3	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.10 WATERSHED INCHES;	4 CFS-HRS;	.3 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	20.1	(RUNOFF)
22.48	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.60 WATERSHED INCHES;	30 CFS-HRS;	2.5 ACRE-
FEEET.		

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	20.2	(NULL)
24.02	1.1	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.39 WATERSHED INCHES;	34 CFS-HRS;	2.8 ACRE-
FEEET.		

OPERATION REACH XSECTION 70

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	16.7	247.91
24.09	1.1	247.27
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.39 WATERSHED INCHES;	34 CFS-HRS;	2.8 ACRE-
FEEET.		

OPERATION RUNOFF XSECTION 71

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\*\*\* MESSAGE - XSECTION 71, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .39 WATERSHED INCHES; 200 CFS-HRS; 2.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 63

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 0 CFS,  
 AT STRUCTURE 63  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
14.52	.1	259.46

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .08 WATERSHED INCHES; 1 CFS-HRS; .1 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 72, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 72

\*\*\* MESSAGE - XSECTION 72, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .08 WATERSHED INCHES; 209 CFS-HRS; .1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	29.6	(RUNOFF)
17.35	2.1	(RUNOFF)
24.01	1.3	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5								
HRS	MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .11			
SQ.MI.								
11.88 CFS	.06	.57	2.90	9.00	20.38	28.67	28.31	
24.70								
12.36 CFS	21.59	18.86	16.87	15.61	14.07	12.29	10.96	
10.17								
12.84 CFS	9.60	9.13	8.71	8.28	7.83	7.38	7.00	
6.71								
13.32 CFS	6.44	6.17	5.89	5.61	5.33	5.07	4.86	
4.70								
13.80 CFS	4.58	4.48	4.41	4.36	4.31	4.25	4.17	
4.09								
14.28 CFS	4.01	3.94	3.89	3.84	3.76	3.67	3.58	
3.50								
14.76 CFS	3.43	3.37	3.31	3.22	3.14	3.07	2.98	
2.90								
15.24 CFS	2.83	2.79	2.77	2.77	2.77	2.77	2.75	
2.72								

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15.72 CFS	2.67	2.65	2.66	2.66	2.63	2.59	2.56
2.54							
16.20 CFS	2.53	2.53	2.50	2.47	2.45	2.42	2.39
2.37							
16.68 CFS	2.36	2.36	2.33	2.30	2.28	2.28	2.27
2.25							
17.16 CFS	2.21	2.16	2.13	2.14	2.14	2.10	2.06
2.02							
17.64 CFS	2.00	1.99	1.98	1.95	1.91	1.90	1.89
1.88							
18.12 CFS	1.85	1.82	1.80	1.79	1.78	1.75	1.73
1.75							
18.60 CFS	1.77	1.78	1.75	1.74	1.75	1.75	1.73
1.71							
19.08 CFS	1.71	1.70	1.70	1.70	1.70	1.71	1.71
1.71							
19.56 CFS	1.70	1.67	1.66	1.67	1.67	1.65	1.63
1.64							
20.04 CFS	1.67	1.67	1.65	1.63	1.63	1.62	1.59
1.57							
20.52 CFS	1.57	1.60	1.61	1.59	1.57	1.58	1.59
1.57							
21.00 CFS	1.55	1.53	1.53	1.53	1.53	1.53	1.53
1.53							
21.48 CFS	1.53	1.53	1.50	1.48	1.48	1.49	1.48
1.48							
21.96 CFS	1.49	1.48	1.46	1.44	1.44	1.43	1.43
1.43							
22.44 CFS	1.43	1.43	1.42	1.39	1.38	1.39	1.39
1.36							
22.92 CFS	1.34	1.35	1.38	1.38	1.36	1.35	1.34
1.33							
23.40 CFS	1.33	1.32	1.29	1.27	1.29	1.31	1.31
1.29							
23.88 CFS	1.25	1.25	1.31	1.29	.94	.51	.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.59 WATERSHED INCHES; 42 CFS-HRS; 3.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET) 12.77 364.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.21 WATERSHED INCHES; 888 CFS-HRS; 73.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)

12.39		16.7	(NULL)
24.09		1.1	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15

HRS	SQ.MI.	CFS						
12.00		.17	.87	2.85	6.95	11.88	15.31	16.60
16.51								
12.48		15.74	14.76	13.82	12.89	11.86	10.86	10.00
9.30								
12.96		8.72	8.23	7.78	7.36	6.96	6.59	6.25
5.95								
13.44		5.67	5.41	5.17	4.93	4.69	4.48	4.29
4.13								
13.92		4.00	3.89	3.80	3.72	3.65	3.59	3.52
3.45								
14.40		3.38	3.33	3.27	3.22	3.16	3.09	3.03
2.97								
14.88		2.91	2.86	2.80	2.74	2.68	2.62	2.55
2.49								
15.36		2.44	2.39	2.37	2.35	2.33	2.32	2.29
2.27								
15.84		2.25	2.23	2.22	2.21	2.19	2.17	2.15
2.13								
16.32		2.12	2.10	2.09	2.07	2.05	2.03	2.01
1.99								
16.80		1.98	1.97	1.96	1.94	1.93	1.92	1.91
1.89								

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17.28		1.87	1.84	1.83	1.82	1.80	1.78	1.76
1.74								
17.76		1.72	1.70	1.69	1.67	1.65	1.63	1.62
1.61								
18.24		1.59	1.57	1.55	1.54	1.53	1.51	1.50
1.50								
18.72		1.51	1.50	1.50	1.50	1.50	1.49	1.48
1.47								
19.20		1.47	1.46	1.46	1.46	1.46	1.46	1.46
1.46								
19.68		1.45	1.45	1.44	1.44	1.43	1.42	1.42
1.42								
20.16		1.43	1.43	1.42	1.42	1.41	1.40	1.39
1.38								
20.64		1.38	1.38	1.38	1.38	1.38	1.38	1.37
1.36								
21.12		1.35	1.35	1.34	1.34	1.34	1.33	1.33
1.33								
21.60		1.33	1.33	1.32	1.31	1.31	1.30	1.30
1.30								
22.08		1.30	1.29	1.28	1.28	1.27	1.27	1.26
1.26								
22.56		1.26	1.26	1.25	1.24	1.23	1.23	1.22
1.21								
23.04		1.20	1.21	1.21	1.21	1.20	1.19	1.19
1.18								

23.52 CFS	1.18	1.17	1.15	1.15	1.15	1.16	1.15
1.14							
24.00 CFS	1.13	1.14	1.14	1.06	.89	.69	.52
.40							

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .37 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.76	375.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.12 WATERSHED INCHES; 923 CFS-HRS; 76.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.83	374.8	228.96

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.12 WATERSHED INCHES; 923 CFS-HRS; 76.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	11.9	(RUNOFF)
15.86	1.2	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05  
 SQ.MI.

HRS	11.94 CFS	.12	.88	3.20	8.09	11.52	11.43	10.07
	8.89							
HRS	12.42 CFS	7.81	7.05	6.58	5.93	5.16	4.63	4.33
	4.10							
HRS	12.90 CFS	3.91	3.74	3.55	3.36	3.17	3.01	2.89
	2.78							
HRS	13.38 CFS	2.66	2.54	2.42	2.30	2.19	2.10	2.03
	1.98							
HRS	13.86 CFS	1.95	1.92	1.89	1.88	1.85	1.82	1.78
	1.74							

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14.34 CFS	1.72	1.69	1.67	1.64	1.60	1.56	1.52
1.50							

14.82 CFS	1.47	1.44	1.41	1.37	1.34	1.30	1.26
1.24							
15.30 CFS	1.22	1.21	1.21	1.21	1.21	1.20	1.19
1.17							
15.78 CFS	1.16	1.17	1.17	1.15	1.13	1.12	1.11
1.11							
16.26 CFS	1.11	1.09	1.08	1.08	1.06	1.05	1.04
1.04							
16.74 CFS	1.03	1.02	1.01	1.00	1.00	1.00	.99
.97							
17.22 CFS	.95	.94	.94	.94	.92	.90	.89
.88							
17.70 CFS	.87	.87	.85	.84	.83	.83	.83
.81							
18.18 CFS	.80	.79	.79	.78	.77	.76	.77
.78							
18.66 CFS	.78	.77	.77	.77	.77	.76	.75
.75							
19.14 CFS	.75	.75	.75	.75	.75	.75	.75
.75							
19.62 CFS	.74	.73	.74	.74	.72	.72	.72
.74							
20.10 CFS	.74	.73	.72	.72	.71	.70	.69
.69							
20.58 CFS	.71	.71	.70	.69	.70	.70	.69
.68							
21.06 CFS	.68	.67	.67	.67	.67	.67	.68
.68							
21.54 CFS	.67	.66	.65	.66	.66	.65	.65
.66							
22.02 CFS	.65	.64	.64	.63	.63	.63	.63
.63							
22.50 CFS	.63	.63	.62	.61	.61	.61	.60
.59							
22.98 CFS	.60	.61	.61	.60	.59	.59	.59
.59							
23.46 CFS	.58	.57	.56	.57	.58	.58	.57
.55							
23.94 CFS	.55	.58	.57	.40			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .55 WATERSHED INCHES; 18 CFS-HRS; 1.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.83	378.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.10 WATERSHED INCHES; 941 CFS-HRS; 77.8 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 80.  
 \*\*\*

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		



12.83 378.9 213.12

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.10 WATERSHED INCHES; 941 CFS-HRS; 77.8 ACRE-
FEET.

OPERATION RUNOFF XSECTION 81

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 2.3 (RUNOFF)
12.83

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.32 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-
FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 380.4 (NULL)
12.83

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.08 WATERSHED INCHES; 947 CFS-HRS; 78.3 ACRE-
FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 17.4 (RUNOFF)
12.18 1.1 (RUNOFF)
17.35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.65 WATERSHED INCHES; 21 CFS-HRS; 1.8 ACRE-
FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 20.6 (RUNOFF)
12.33 1.3 (RUNOFF)
24.01

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.52 WATERSHED INCHES; 40 CFS-HRS; 3.3 ACRE-
FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.26	33.1	(NULL)
23.08	2.1	(NULL)
24.00	2.0	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 HRS SQ.MI.

11.88 CFS	.22	.98	3.66	10.13	22.19	30.66	32.91
32.49							
12.36 CFS	30.62	27.93	25.70	23.93	21.75	19.49	17.69
16.26							
12.84 CFS	15.13	14.27	13.51	12.78	12.08	11.40	10.82
10.32							
13.32 CFS	9.86	9.43	9.02	8.60	8.19	7.80	7.46
7.19							
13.80 CFS	6.97	6.79	6.65	6.54	6.45	6.35	6.24
6.13							

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14.28 CFS	6.01	5.91	5.83	5.74	5.63	5.52	5.39
5.27							
14.76 CFS	5.17	5.07	4.97	4.86	4.75	4.64	4.51
4.39							
15.24 CFS	4.29	4.21	4.16	4.14	4.12	4.11	4.09
4.05							
15.72 CFS	4.00	3.97	3.96	3.95	3.92	3.87	3.83
3.80							
16.20 CFS	3.78	3.76	3.73	3.69	3.67	3.62	3.58
3.55							
16.68 CFS	3.53	3.51	3.48	3.45	3.42	3.40	3.38
3.35							
17.16 CFS	3.30	3.25	3.21	3.20	3.18	3.15	3.09
3.04							
17.64 CFS	3.01	2.98	2.96	2.92	2.88	2.85	2.83
2.81							
18.12 CFS	2.77	2.73	2.70	2.68	2.66	2.62	2.61
2.61							
18.60 CFS	2.63	2.63	2.61	2.60	2.61	2.60	2.58
2.57							
19.08 CFS	2.55	2.54	2.54	2.54	2.54	2.54	2.54
2.54							
19.56 CFS	2.53	2.50	2.49	2.50	2.48	2.46	2.44
2.45							
20.04 CFS	2.47	2.47	2.46	2.45	2.43	2.42	2.39
2.36							
20.52 CFS	2.36	2.38	2.39	2.37	2.36	2.36	2.36
2.34							
21.00 CFS	2.32	2.30	2.29	2.28	2.28	2.28	2.28
2.28							
21.48 CFS	2.28	2.28	2.25	2.23	2.23	2.22	2.21
2.21							
21.96 CFS	2.22	2.21	2.19	2.17	2.15	2.15	2.14
2.14							

22.44 CFS	2.14	2.14	2.13	2.09	2.08	2.08	2.07
2.04							
22.92 CFS	2.03	2.03	2.05	2.05	2.04	2.02	2.01
2.00							
23.40 CFS	1.99	1.98	1.94	1.92	1.93	1.95	1.95
1.93							
23.88 CFS	1.90	1.89	1.95	1.90	1.52	1.08	.72
.45							

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .56 WATERSHED INCHES; 62 CFS-HRS; 5.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.82	395.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.02 WATERSHED INCHES; 1009 CFS-HRS; 83.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	2.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .44 WATERSHED INCHES; 5 CFS-HRS; .4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.82	396.8	(NULL)
23.97	25.7	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.01 WATERSHED INCHES; 1013 CFS-HRS; 83.8 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
 STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS

ALTERNATE NO. = 1

STORM NO. =10

RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	37.3	(RUNOFF)
20.13	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.27 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	35.2	390.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.27 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	31.3	(RUNOFF)
23.98	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.19 WATERSHED INCHES; 45 CFS-HRS; 3.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	64.6	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.59 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.50	56.6	382.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.59 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.58	55.0	367.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.59 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	51.3	(RUNOFF)
20.67	2.1	(RUNOFF)
23.76	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.53	90.4	(NULL)
20.11	4.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.50 WATERSHED INCHES; 166 CFS-HRS; 13.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.59	89.7	357.14

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.50 WATERSHED INCHES; 166 CFS-HRS; 13.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	55.2	(RUNOFF)
20.13	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.64 WATERSHED INCHES; 78 CFS-HRS; 6.4 ACRE-FEET.

\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE  
 STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
13.91	7.1	371.49

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.38 WATERSHED INCHES; 65 CFS-HRS; 5.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.13	10.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.48 WATERSHED INCHES; 9 CFS-HRS; .8 ACRE-FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
14.04	7.1 *	352.94
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.37 WATERSHED INCHES; 65 CFS-HRS; 5.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 11

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
12.20	42.3	(RUNOFF)
15.85	2.4	(RUNOFF)
24.02	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.31 WATERSHED INCHES; 46 CFS-HRS; 3.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	105.3	(NULL)
20.07	6.3	(NULL)
24.00	5.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.45 WATERSHED INCHES; 212 CFS-HRS; 17.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	23.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.02 WATERSHED INCHES; 25 CFS-HRS; 2.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.58	108.8	(NULL)
23.98	7.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.43 WATERSHED INCHES; 276 CFS-HRS; 22.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.53	117.5	(NULL)
23.99	7.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.47 WATERSHED INCHES; 302 CFS-HRS; 24.9 ACRE-  
 FEET.

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OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.53	117.5	(NULL)
23.99	7.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.47 WATERSHED INCHES; 302 CFS-HRS; 24.9 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
 \*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.53	117.5	332.34
23.99	7.8	331.18

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.47 WATERSHED INCHES; 302 CFS-HRS; 24.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	38.0	(RUNOFF)
17.34	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	48.4	(RUNOFF)
21.97	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 51 CFS-HRS; 4.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 19

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	72.5	(RUNOFF)
17.34	2.0	(RUNOFF)
24.00	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 66 CFS-HRS; 5.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	84.7	(NULL)
15.82	3.4	(NULL)
19.47	2.0	(NULL)
24.01	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 86 CFS-HRS; 7.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	156.5	(NULL)
15.84	6.0	(NULL)
17.33	4.7	(NULL)
21.95	3.1	(NULL)
24.01	2.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 152 CFS-HRS; 12.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	248.4	(NULL)
20.04	14.5	(NULL)
20.58	13.8	(NULL)
23.04	11.3	(NULL)
24.00	10.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.71 WATERSHED INCHES; 454 CFS-HRS; 37.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 23

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	201.2	315.56
24.05	10.5	313.97

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.71 WATERSHED INCHES; 453 CFS-HRS; 37.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	52.1	(RUNOFF)
23.99	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE TIME INCREMENT OF .043 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	40.6	363.20
23.79	1.3	356.48

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	75.0	(RUNOFF)
20.68	2.4	(RUNOFF)
23.97	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 95 CFS-HRS; 7.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 26

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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.35	105.4	(NULL)
20.15	4.1	(NULL)
23.78	3.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 159 CFS-HRS; 13.2 ACRE-  
FEET.

OPERATION REACH XSECTION 27

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.47	98.6	318.71

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 159 CFS-HRS; 13.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.26	63.1	(RUNOFF)
18.67	2.1	(RUNOFF)
24.01	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 76 CFS-HRS; 6.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.32	260.6	(NULL)
24.04	11.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.74 WATERSHED INCHES; 529 CFS-HRS; 43.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.36	345.9	(NULL)
24.03	15.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.79 WATERSHED INCHES; 689 CFS-HRS; 56.9 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	82.9	(RUNOFF)
21.97	2.1	(RUNOFF)
24.03	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.08 WATERSHED INCHES; 93 CFS-HRS; 7.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	73.9	312.35
20.74	2.2	310.18
24.09	1.8	310.14

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.08 WATERSHED INCHES; 93 CFS-HRS; 7.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	14.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.55 WATERSHED INCHES; 14 CFS-HRS; 1.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
 AT STRUCTURE 32  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
14.16	.9	378.97

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.18 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-

FEET.

\*\*\* WARNING - XSECTION 34, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 34  
1  
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\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
AT XSECTION 34  
\*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
14.28	.9	338.02
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.17 WATERSHED INCHES;		12 CFS-HRS;
FEET.		1.0 ACRE-

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	43.0	(RUNOFF)
20.10	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.54 WATERSHED INCHES;		45 CFS-HRS;
FEET.		3.7 ACRE-

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.63	13.0	355.62
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.14 WATERSHED INCHES;		38 CFS-HRS;
FEET.		3.1 ACRE-

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.64	13.7	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.15 WATERSHED INCHES;		50 CFS-HRS;
		4.1 ACRE-

FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.64	13.7	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.15 WATERSHED INCHES;	50 CFS-HRS;	4.1 ACRE-
FEET.		

\*\*\* WARNING - XSECTION 37, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT, UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

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OPERATION REACH XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.71	13.6	330.24
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.15 WATERSHED INCHES;	50 CFS-HRS;	4.1 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	53.1	(RUNOFF)
15.85	2.1	(RUNOFF)
21.96	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.38 WATERSHED INCHES;	50 CFS-HRS;	4.2 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	53.9	(NULL)
19.72	3.0	(NULL)
24.01	2.4	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.26 WATERSHED INCHES;	100 CFS-HRS;	8.3 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	43.0	(RUNOFF)
23.77	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.16 WATERSHED INCHES; 55 CFS-HRS; 4.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	386.5	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.81 WATERSHED INCHES; 743 CFS-HRS; 61.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	460.5	(NULL)
24.03	17.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.84 WATERSHED INCHES; 836 CFS-HRS; 69.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	495.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.88 WATERSHED INCHES; 936 CFS-HRS; 77.4 ACRE-FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	461.3	290.37

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.87 WATERSHED INCHES; 936 CFS-HRS; 77.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	46.6	(RUNOFF)
23.10	1.3 *	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.04 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	58.0	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.00 WATERSHED INCHES; 81 CFS-HRS; 6.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	104.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.02 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	55.8	(RUNOFF)
24.02	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.98 WATERSHED INCHES; 60 CFS-HRS; 4.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 49



PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 12.47 487.6 (NULL)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.88 WATERSHED INCHES; 996 CFS-HRS; 82.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 12.43 579.8 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .93  
 HRS SQ.MI.  
 9.18 CFS .49 .55 .62 .69 .77 .85 .94  
 1.04  
 9.66 CFS 1.15 1.26 1.39 1.54 1.73 1.94 2.20  
 2.49  
 10.14 CFS 2.83 3.22 3.66 4.15 4.67 5.22 5.82  
 6.45  
 10.62 CFS 7.15 7.91 8.78 9.77 10.91 12.19 13.62  
 15.21  
 11.10 CFS 16.97 18.94 21.18 23.73 26.64 29.90 33.55  
 37.64  
 11.58 CFS 42 49 56 66 79 96 118  
 149  
 12.06 CFS 197 267 355 445 518 563 579  
 572  
 12.54 CFS 552 524 491 457 423 391 361  
 334  
 13.02 CFS 310 287 267 248 231 215 200  
 186  
 13.50 CFS 174 163 153 144 136 129 122  
 117  
 13.98 CFS 112 108 104 101 98 96 93  
 91

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14.46 CFS 89.23 87.34 85.54 83.78 82.05 80.34 78.67  
 77.05  
 14.94 CFS 75.46 73.90 72.36 70.81 69.26 67.72 66.21  
 64.78  
 15.42 CFS 63.48 62.33 61.35 60.50 59.74 59.03 58.35  
 57.72  
 15.90 CFS 57.14 56.60 56.09 55.57 55.05 54.54 54.04  
 53.57  
 16.38 CFS 53.11 52.65 52.19 51.72 51.23 50.76 50.30  
 49.85  
 16.86 CFS 49.42 48.99 48.57 48.16 47.76 47.35 46.91  
 46.45  
 17.34 CFS 45.98 45.52 45.08 44.64 44.18 43.70 43.21  
 42.73

17.82	CFS	42.26	41.79	41.34	40.89	40.46	40.04	39.62
39.20								
18.30	CFS	38.78	38.38	37.98	37.60	37.24	36.94	36.70
36.48								
18.78	CFS	36.29	36.12	35.95	35.77	35.58	35.39	35.18
34.98								
19.26	CFS	34.79	34.62	34.47	34.34	34.22	34.11	33.98
33.83								
19.74	CFS	33.67	33.50	33.33	33.15	32.97	32.82	32.70
32.60								
20.22	CFS	32.50	32.39	32.27	32.11	31.92	31.73	31.55
31.40								
20.70	CFS	31.27	31.16	31.05	30.94	30.83	30.70	30.55
30.39								
21.18	CFS	30.23	30.06	29.92	29.79	29.68	29.59	29.50
29.41								
21.66	CFS	29.30	29.17	29.03	28.89	28.75	28.64	28.54
28.43								
22.14	CFS	28.31	28.17	28.01	27.86	27.72	27.59	27.48
27.38								
22.62	CFS	27.26	27.12	26.97	26.82	26.66	26.49	26.33
26.19								
23.10	CFS	26.09	26.00	25.91	25.82	25.70	25.58	25.45
25.31								
23.58	CFS	25.14	24.98	24.84	24.72	24.62	24.51	24.39
24.30								
24.06	CFS	24.18	23.82	22.97	21.55	19.68	17.54	15.37
13.39								
24.54	CFS	11.68	10.24	9.08	8.16	7.44	6.88	6.44
6.09								
25.02	CFS	5.81	5.58	5.39	5.23	5.09	4.97	4.85
4.75								
25.50	CFS	4.65	4.55	4.46	4.37	4.28	4.20	4.12
4.04								
25.98	CFS	3.96	3.88	3.81	3.74	3.67	3.60	3.53
3.47								
26.46	CFS	3.40	3.34	3.28	3.22	3.16	3.11	3.05
3.00								
26.94	CFS	2.94	2.89	2.84	2.79	2.74	2.70	2.65
2.61								
27.42	CFS	2.56	2.52	2.48	2.44	2.40	2.36	2.32
2.29								
27.90	CFS	2.26	2.23	2.20	2.17	2.15	2.13	2.11
2.09								
28.38	CFS	2.07	2.05	2.03	2.01	1.99	1.97	1.96
1.94								
28.86	CFS	1.92	1.90	1.89	1.87	1.86	1.84	1.83
1.81								
29.34	CFS	1.80	1.78	1.77	1.76	1.74	1.73	1.72
1.70								
29.82	CFS	1.69	1.68	1.67	1.65	1.64	1.63	1.62
1.61								
30.30	CFS	1.60	1.58	1.57	1.56	1.55	1.54	1.53
1.52								
30.78	CFS	1.51	1.50	1.49	1.48	1.47	1.46	1.46
1.45								
31.26	CFS	1.44	1.43	1.42	1.41	1.40	1.39	1.39
1.38								
31.74	CFS	1.37	1.36	1.36	1.35			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 1140 CFS-HRS; 94.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.56	559.2	284.96

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 1140 CFS-HRS; 94.2 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 52

\*\*\* MESSAGE - XSECTION 52, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 210 CFS-HRS; 94.2 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53

\*\*\* MESSAGE - XSECTION 53, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 207 CFS-HRS; 94.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - XSECTION 54, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.90 WATERSHED INCHES; 189 CFS-HRS; 94.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	34.2	(RUNOFF)
19.47	1.0	(RUNOFF)
20.10	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.79 WATERSHED INCHES; 37 CFS-HRS; 3.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 56

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	572.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 1177 CFS-HRS; 97.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

\*\*\* MESSAGE - XSECTION 57, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.89 WATERSHED INCHES; 214 CFS-HRS; 97.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	573.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.87 WATERSHED INCHES; 1179 CFS-HRS; 97.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	14.6	(RUNOFF)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10							
HRS	MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .03			
SQ.MI.								
11.76 CFS	.30	.60	1.08	1.91	3.37	5.95	10.08	
13.66								
12.24 CFS	14.61	13.33	11.38	9.74	8.43	7.48	6.68	
5.87								
12.72 CFS	5.15	4.64	4.27	3.99	3.75	3.54	3.34	
3.14								
13.20 CFS	2.97	2.82	2.68	2.56	2.45	2.33	2.21	

2.10								
13.68 CFS	2.00	1.92	1.86	1.81	1.77	1.74	1.71	
1.69								
14.16 CFS	1.66	1.63	1.59	1.56	1.54	1.51	1.49	
1.45								
14.64 CFS	1.42	1.38	1.35	1.33	1.30	1.27	1.24	
1.21								
15.12 CFS	1.18	1.14	1.11	1.09	1.08	1.07	1.07	
1.06								
15.60 CFS	1.06	1.05	1.03	1.02	1.02	1.02	1.01	
1.00								
16.08 CFS	.99	.98	.97	.97	.96	.95	.94	
.93								
16.56 CFS	.92	.91	.90	.90	.89	.88	.87	
.87								
17.04 CFS	.86	.86	.84	.83	.81	.81	.81	
.80								
17.52 CFS	.79	.77	.76	.75	.75	.74	.73	
.72								
18.00 CFS	.71	.71	.70	.69	.68	.68	.67	
.66								
18.48 CFS	.66	.66	.66	.66	.66	.66	.66	
.66								
18.96 CFS	.65	.65	.64	.64	.64	.64	.64	
.64								
19.44 CFS	.64	.64	.64	.63	.62	.62	.62	
.62								

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19.92 CFS	.61	.61	.62	.62	.62	.61	.61	
.60								
20.40 CFS	.60	.59	.59	.59	.59	.59	.59	
.59								
20.88 CFS	.59	.58	.58	.57	.57	.57	.57	
.57								
21.36 CFS	.57	.57	.57	.57	.56	.55	.55	
.55								
21.84 CFS	.55	.55	.55	.55	.54	.54	.53	
.53								
22.32 CFS	.53	.53	.53	.53	.53	.52	.51	
.51								
22.80 CFS	.51	.51	.50	.50	.50	.51	.50	
.50								

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.08 WATERSHED INCHES; 19 CFS-HRS; 1.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET) 580.5 (NULL)  
12.55

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

1.84 WATERSHED INCHES; 1197 CFS-HRS; 98.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.30 3.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.65 WATERSHED INCHES; 7 CFS-HRS; .6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.55 583.4 (NULL)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10						
		MAIN TIME INCREMENT = .060 hr,					DRAINAGE AREA = 1.02	
HRS	SQ.MI.							
9.30 CFS	1.05	.50	.56	.63	.70	.78	.86	.95
9.78 CFS	2.55	1.16	1.28	1.41	1.58	1.76	1.98	2.24
10.26 CFS	6.65	2.89	3.29	3.73	4.22	4.76	5.34	5.97
10.74 CFS	16.14	7.41	8.25	9.20	10.28	11.51	12.88	14.42
11.22 CFS	41.12	18.07	20.24	22.70	25.50	28.64	32.18	36.25
11.70 CFS	201	47	55	64	77	93	116	150
12.18 CFS	577	266	339	414	484	538	571	583
12.66 CFS	346	558	532	500	467	434	403	373
13.14 CFS	194	321	298	277	258	240	223	208
13.62 CFS	123	181	170	160	151	142	135	129
14.10 CFS	96	118	114	110	107	104	101	99
14.58 CFS	81.07	94.06	92.02	90.07	88.19	86.35	84.56	82.80
15.06 CFS	68.30	79.38	77.71	76.05	74.39	72.77	71.20	69.70
15.54 CFS	61.05	67.03	65.89	64.87	63.96	63.13	62.39	61.71

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16.02 CFS 60.43 59.84 59.28 58.73 58.20 57.67 57.14  
56.64

16.50	CFS	56.14	55.64	55.14	54.64	54.15	53.66	53.18
52.70								
16.98	CFS	52.24	51.80	51.36	50.91	50.45	49.99	49.53
49.06								
17.46	CFS	48.58	48.09	47.60	47.11	46.62	46.12	45.61
45.10								
17.94	CFS	44.60	44.12	43.65	43.18	42.72	42.26	41.82
41.38								
18.42	CFS	40.95	40.52	40.12	39.76	39.44	39.14	38.87
38.65								
18.90	CFS	38.45	38.26	38.06	37.86	37.66	37.46	37.26
37.06								
19.38	CFS	36.88	36.72	36.57	36.43	36.29	36.14	36.00
35.85								
19.86	CFS	35.68	35.49	35.32	35.16	35.01	34.86	34.72
34.60								
20.34	CFS	34.48	34.34	34.17	34.00	33.83	33.67	33.50
33.34								
20.82	CFS	33.20	33.08	32.96	32.83	32.69	32.55	32.39
32.23								
21.30	CFS	32.07	31.92	31.78	31.65	31.54	31.43	31.31
31.20								
21.78	CFS	31.08	30.95	30.81	30.68	30.56	30.43	30.30
30.16								
22.26	CFS	30.03	29.88	29.73	29.59	29.45	29.32	29.19
29.05								
22.74	CFS	28.92	28.78	28.62	28.44	28.28	28.13	28.00
27.86								
23.22	CFS	27.74	27.62	27.52	27.41	27.29	27.14	26.99
26.83								
23.70	CFS	26.69	26.55	26.41	26.26	26.13	26.05	25.94
25.61								
24.18	CFS	24.98	24.06	22.82	21.24	19.36	17.32	15.31
13.45								
24.66	CFS	11.80	10.40	9.25	8.32	7.58	7.00	6.53
6.16								
25.14	CFS	5.86	5.62	5.42	5.25	5.11	4.98	4.86
4.75								
25.62	CFS	4.65	4.55	4.46	4.37	4.28	4.20	4.11
4.03								
26.10	CFS	3.96	3.88	3.81	3.73	3.66	3.60	3.53
3.46								
26.58	CFS	3.40	3.34	3.28	3.22	3.16	3.10	3.05
2.99								
27.06	CFS	2.94	2.89	2.84	2.79	2.74	2.69	2.65
2.61								
27.54	CFS	2.56	2.52	2.48	2.44	2.40	2.36	2.32
2.29								
28.02	CFS	2.26	2.23	2.20	2.17	2.15	2.13	2.11
2.08								
28.50	CFS	2.06	2.04	2.03	2.01	1.99	1.97	1.95
1.94								
28.98	CFS	1.92	1.90	1.89	1.87	1.86	1.84	1.83
1.81								
29.46	CFS	1.80	1.78	1.77	1.75	1.74	1.73	1.72
1.70								
29.94	CFS	1.69	1.68	1.66	1.65	1.64	1.63	1.62
1.61								
30.42	CFS	1.59	1.58	1.57	1.56	1.55	1.54	1.53
1.52								
30.90	CFS	1.51	1.50	1.49	1.48	1.47	1.46	1.45
1.45								
31.38	CFS	1.44	1.43	1.42	1.41	1.40	1.39	1.38
1.38								

31.86 CFS 1.37 1.36

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.82 WATERSHED INCHES; 1204 CFS-HRS; 99.5 ACRE-
FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.71 552.1 249.80

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.82 WATERSHED INCHES; 1204 CFS-HRS; 99.5 ACRE-
FEET.

OPERATION RUNOFF XSECTION 64

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.46 2.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.83 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.76 2.2 330.45

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.83 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-
FEET.

OPERATION REACH XSECTION 65

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.90 2.2 300.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.82 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-
FEET.

OPERATION RUNOFF XSECTION 66

\*\*\* MESSAGE - XSECTION 66, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).



\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.82 WATERSHED INCHES; 201 CFS-HRS; .5 ACRE-
FEET.

\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE
TIME INCREMENT OF .043 HOURS.
\*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES
FIRST NEGATIVE VALUE IS 0 CFS.
\*\*\*

OPERATION RESVOR STRUCTURE 62

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 0 CFS,
AT STRUCTURE 62
\*\*\*

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
14.58 .3 287.33

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.08 WATERSHED INCHES; 2 CFS-HRS; .2 ACRE-
FEET.

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.94 2.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.23 WATERSHED INCHES; 8 CFS-HRS; .7 ACRE-
FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.21 40.0 (RUNOFF)
15.83 2.8 (RUNOFF)
24.03 1.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.98 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-
FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.21	39.8	(NULL)
20.87	2.0	(NULL)
24.03	1.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .66 WATERSHED INCHES; 57 CFS-HRS; 4.7 ACRE-FEET.

OPERATION REACH XSECTION 70

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.34	33.8	248.14
20.72	2.1	247.43
24.09	1.7	247.38

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .66 WATERSHED INCHES; 57 CFS-HRS; 4.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 71

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\*\*\* MESSAGE - XSECTION 71, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .66 WATERSHED INCHES; 207 CFS-HRS; 4.7 ACRE-FEET.

OPERATION RESVOR STRUCTURE 63

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 0 CFS,  
 AT STRUCTURE 63  
 \*\*\*

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.84	.4	259.59

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .23 WATERSHED INCHES; 2 CFS-HRS; .1 ACRE-FEET.

\*\*\* WARNING - XSECTION 72, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 72

\*\*\* MESSAGE - XSECTION 72, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.23 WATERSHED INCHES; 214 CFS-HRS; .1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.20	58.2	(RUNOFF)
17.35	3.1	(RUNOFF)
22.47	2.1	(RUNOFF)
24.02	1.9	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11 SQ.MI.

HRS	11.76	12.24	12.72	13.20	13.68	14.16	14.64
CFS	57.65	19.59	11.37	7.69	6.38	5.48	4.56
	.40	53.92	17.32	10.77	7.36	6.26	5.33
	1.32	44.89	16.00	10.29	7.11	6.13	5.21
	3.20	37.64	15.04	9.84	6.92	6.00	5.11
	6.58	31.90	14.25	9.41	6.76	5.90	5.02
	13.39	27.97	13.53	8.98	6.65	5.82	4.91
	25.80	25.46	12.82	8.54	6.56	5.73	4.79
	45.69	22.67	12.09	8.10	6.48	5.61	4.67

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15.12 CFS	4.43	4.30	4.19	4.13	4.10	4.09	4.09
4.09							
15.60 CFS	4.06	4.01	3.94	3.91	3.92	3.92	3.88
3.81							
16.08 CFS	3.76	3.73	3.72	3.71	3.67	3.63	3.60
3.56							
16.56 CFS	3.51	3.47	3.46	3.45	3.42	3.37	3.34
3.33							
17.04 CFS	3.32	3.28	3.22	3.15	3.11	3.12	3.11
3.07							
17.52 CFS	3.00	2.94	2.91	2.90	2.88	2.83	2.79
2.76							
18.00 CFS	2.75	2.73	2.69	2.64	2.61	2.60	2.58
2.54							
18.48 CFS	2.52	2.54	2.57	2.57	2.54	2.52	2.54
2.54							

18.96 CFS	2.51	2.48	2.47	2.47	2.46	2.46	2.47
2.47							
19.44 CFS	2.47	2.47	2.46	2.42	2.40	2.41	2.41
2.38							
19.92 CFS	2.35	2.36	2.40	2.41	2.38	2.36	2.35
2.33							
20.40 CFS	2.30	2.26	2.27	2.30	2.32	2.29	2.26
2.27							
20.88 CFS	2.28	2.26	2.22	2.21	2.20	2.20	2.20
2.20							
21.36 CFS	2.20	2.20	2.20	2.19	2.16	2.12	2.13
2.14							
21.84 CFS	2.12	2.12	2.14	2.13	2.09	2.07	2.06
2.05							
22.32 CFS	2.05	2.05	2.05	2.05	2.04	2.00	1.97
1.99							
22.80 CFS	1.98	1.95	1.92	1.93	1.97	1.98	1.95
1.92							
23.28 CFS	1.91	1.91	1.90	1.89	1.84	1.82	1.84
1.87							
23.76 CFS	1.88	1.84	1.79	1.78	1.87	1.85	1.34
.73							
24.24 CFS	.35						

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .97 WATERSHED INCHES; 69 CFS-HRS; 5.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.70	569.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.74 WATERSHED INCHES; 1273 CFS-HRS; 105.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.34	33.8	(NULL)
22.03	2.0	(NULL)
24.09	1.8	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15 SQ.MI.

11.88 CFS	.49	1.23	2.64	5.34	10.41	19.03	28.17
33.24							
12.36 CFS	33.69	31.75	28.91	26.07	23.66	21.53	19.45
17.56							
12.84 CFS	16.05	14.87	13.96	13.22	12.58	11.98	11.41
10.87							
13.32 CFS	10.39	9.96	9.56	9.17	8.79	8.36	7.91
7.48							
13.80 CFS	7.10	6.78	6.52	6.31	6.15	6.01	5.90
5.78							
14.28 CFS	5.66	5.55	5.45	5.36	5.27	5.18	5.08
4.98							
14.76 CFS	4.87	4.77	4.68	4.59	4.50	4.40	4.30

4.20								
15.24	CFS	4.10	4.00	3.91	3.85	3.80	3.77	3.75
3.73								

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15.72	CFS	3.70	3.66	3.62	3.60	3.58	3.56	3.53
3.50								
16.20	CFS	3.46	3.44	3.42	3.40	3.37	3.34	3.31
3.28								
16.68	CFS	3.24	3.22	3.20	3.18	3.15	3.12	3.10
3.08								
17.16	CFS	3.06	3.03	2.99	2.95	2.92	2.91	2.88
2.85								
17.64	CFS	2.81	2.77	2.74	2.72	2.69	2.65	2.62
2.60								
18.12	CFS	2.58	2.55	2.52	2.49	2.47	2.44	2.42
2.39								
18.60	CFS	2.38	2.38	2.39	2.38	2.37	2.37	2.37
2.36								
19.08	CFS	2.34	2.33	2.32	2.31	2.31	2.31	2.31
2.31								
19.56	CFS	2.31	2.31	2.29	2.28	2.27	2.26	2.25
2.24								
20.04	CFS	2.23	2.24	2.24	2.24	2.23	2.22	2.21
2.19								
20.52	CFS	2.17	2.16	2.16	2.17	2.17	2.16	2.15
2.15								
21.00	CFS	2.14	2.13	2.11	2.10	2.09	2.08	2.08
2.08								
21.48	CFS	2.08	2.08	2.08	2.07	2.05	2.03	2.03
2.02								
21.96	CFS	2.02	2.02	2.02	2.01	1.99	1.98	1.97
1.96								
22.44	CFS	1.96	1.95	1.95	1.95	1.93	1.91	1.90
1.90								
22.92	CFS	1.89	1.87	1.86	1.86	1.87	1.87	1.86
1.84								
23.40	CFS	1.83	1.83	1.82	1.80	1.78	1.77	1.77
1.78								
23.88	CFS	1.77	1.75	1.74	1.75	1.76	1.62	1.33
1.01								
24.36	CFS	.74	.54	.39				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.63 WATERSHED INCHES; 59 CFS-HRS; 4.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.69	590.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.61 WATERSHED INCHES; 1332 CFS-HRS; 110.1 ACRE-

FEET.

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.76	589.3	229.56
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.61 WATERSHED INCHES; 1332 CFS-HRS; 110.1 ACRE-		
FEET.		

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	24.8	(RUNOFF)
20.86	1.0	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05  
 SQ.MI.  
 11.82 CFS .29 .92 2.30 5.24 10.74 19.64 24.65  
 22.70

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES, VERSION

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12.30 CFS	18.84	15.90	13.55	11.94	10.93	9.73	8.41
7.48							
12.78 CFS	6.93	6.54	6.20	5.90	5.59	5.27	4.96
4.70							
13.26 CFS	4.50	4.31	4.12	3.93	3.74	3.55	3.37
3.23							
13.74 CFS	3.12	3.04	2.98	2.93	2.89	2.86	2.82
2.76							
14.22 CFS	2.70	2.65	2.60	2.57	2.53	2.48	2.42
2.35							
14.70 CFS	2.30	2.26	2.22	2.17	2.11	2.06	2.01
1.95							
15.18 CFS	1.90	1.85	1.83	1.81	1.81	1.81	1.81
1.80							
15.66 CFS	1.77	1.74	1.73	1.74	1.74	1.72	1.69
1.67							
16.14 CFS	1.65	1.65	1.64	1.63	1.61	1.60	1.58
1.55							
16.62 CFS	1.54	1.54	1.53	1.52	1.49	1.48	1.48
1.47							
17.10 CFS	1.46	1.43	1.40	1.38	1.39	1.38	1.36
1.33							
17.58 CFS	1.30	1.29	1.29	1.28	1.26	1.24	1.23
1.22							
18.06 CFS	1.21	1.19	1.17	1.16	1.16	1.15	1.13
1.12							
18.54 CFS	1.13	1.14	1.15	1.13	1.12	1.13	1.13
1.11							

19.02 CFS	1.10	1.10	1.10	1.10	1.10	1.10	1.10
1.10							
19.50 CFS	1.10	1.10	1.08	1.07	1.08	1.07	1.06
1.05							
19.98 CFS	1.05	1.07	1.07	1.06	1.05	1.04	1.04
1.02							
20.46 CFS	1.01	1.01	1.03	1.03	1.02	1.01	1.01
1.02							
20.94 CFS	1.00	.99	.98	.98	.98	.98	.98
.98							
21.42 CFS	.98	.98	.98	.96	.94	.95	.95
.94							
21.90 CFS	.95	.96	.95	.93	.92	.92	.92
.92							
22.38 CFS	.92	.92	.92	.91	.89	.88	.89
.89							
22.86 CFS	.87	.86	.86	.88	.88	.87	.86
.85							
23.34 CFS	.85	.85	.84	.82	.81	.82	.84
.84							
23.82 CFS	.82	.80	.79	.84	.82	.58	.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.91 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.76	596.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.59 WATERSHED INCHES; 1362 CFS-HRS; 112.5 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 80.  
\*\*\*

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.76	596.4	213.78

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.59 WATERSHED INCHES; 1362 CFS-HRS; 112.5 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	7.4	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.60 WATERSHED INCHES;	12 CFS-HRS;	1.0 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.75	599.4	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.56 WATERSHED INCHES;	1374 CFS-HRS;	113.5 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	32.5	(RUNOFF)
21.95	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.04 WATERSHED INCHES;	34 CFS-HRS;	2.8 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	43.7	(RUNOFF)
21.97	2.2	(RUNOFF)
24.02	1.9	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.87 WATERSHED INCHES;	67 CFS-HRS;	5.5 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 85

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	67.5	(NULL)
21.95	3.2	(NULL)
22.72	3.0	(NULL)
24.00	2.8	(NULL)

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HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 HRS SQ.MI.

11.70 CFS	.28	.76	1.71	3.57	7.19	14.44	28.72
51.25							
12.18 CFS	65.94	67.44	64.26	57.90	50.93	45.42	41.21
36.72							
12.66 CFS	32.49	29.13	26.48	24.43	22.82	21.48	20.22
19.00							
13.14 CFS	17.87	16.90	16.07	15.32	14.61	13.94	13.27
12.62							
13.62 CFS	12.00	11.46	11.02	10.65	10.37	10.14	9.96
9.81							
14.10 CFS	9.65	9.48	9.29	9.11	8.95	8.81	8.67
8.50							
14.58 CFS	8.32	8.12	7.94	7.77	7.62	7.46	7.29
7.12							
15.06 CFS	6.95	6.76	6.57	6.41	6.29	6.22	6.17
6.15							
15.54 CFS	6.13	6.09	6.03	5.95	5.90	5.89	5.87
5.82							
16.02 CFS	5.75	5.68	5.64	5.60	5.57	5.52	5.47
5.43							
16.50 CFS	5.36	5.30	5.25	5.22	5.19	5.14	5.09
5.04							
16.98 CFS	5.01	4.99	4.94	4.87	4.78	4.73	4.71
4.68							
17.46 CFS	4.62	4.55	4.47	4.42	4.38	4.34	4.28
4.22							
17.94 CFS	4.18	4.15	4.12	4.06	4.00	3.96	3.93
3.90							
18.42 CFS	3.84	3.81	3.82	3.84	3.84	3.82	3.80
3.82							
18.90 CFS	3.80	3.77	3.75	3.72	3.71	3.70	3.70
3.70							
19.38 CFS	3.70	3.70	3.70	3.69	3.65	3.63	3.63
3.61							
19.86 CFS	3.58	3.55	3.56	3.59	3.59	3.57	3.55
3.54							
20.34 CFS	3.52	3.47	3.43	3.43	3.45	3.46	3.44
3.42							
20.82 CFS	3.42	3.42	3.39	3.36	3.34	3.32	3.31
3.30							
21.30 CFS	3.30	3.30	3.30	3.30	3.30	3.26	3.22
3.22							
21.78 CFS	3.21	3.19	3.19	3.21	3.19	3.16	3.13
3.11							
22.26 CFS	3.10	3.09	3.09	3.09	3.09	3.07	3.02
3.00							
22.74 CFS	3.00	2.98	2.95	2.92	2.92	2.95	2.95
2.93							
23.22 CFS	2.91	2.89	2.88	2.87	2.85	2.80	2.77
2.78							
23.70 CFS	2.80	2.80	2.77	2.72	2.71	2.80	2.73
2.19							
24.18 CFS	1.56	1.04	.65	.40			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .92 WATERSHED INCHES; 101 CFS-HRS; 8.4 ACRE-  
 FEET.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.74	627.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.49 WATERSHED INCHES; 1475 CFS-HRS; 121.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	6.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .76 WATERSHED INCHES; 8 CFS-HRS; .6 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.74	629.3	(NULL)
23.97	34.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.48 WATERSHED INCHES; 1483 CFS-HRS; 122.5 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
 STARTING TIME = .00 RAIN DEPTH = 6.14 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =25 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	53.9	(RUNOFF)
20.13	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.28 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	53.0	390.33

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.28 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	54.5	(RUNOFF)
20.14	2.1	(RUNOFF)
20.68	2.0	(RUNOFF)
23.98	1.6	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.94 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	105.0	(NULL)
20.14	3.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.43 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-FEET.

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	109.7	382.88

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.43 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	103.3	368.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.42 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	84.2	(RUNOFF)
20.14	3.1	(RUNOFF)
23.74	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.21 WATERSHED INCHES; 114 CFS-HRS; 9.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	182.5	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.32 WATERSHED INCHES; 257 CFS-HRS; 21.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	176.4	357.65

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.33 WATERSHED INCHES; 257 CFS-HRS; 21.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	87.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.51 WATERSHED INCHES; 119 CFS-HRS; 9.8 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE

STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.

\*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.98	9.8 *	374.19
	* FIRST POINT OF FLAT PEAK	
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.22 WATERSHED INCHES;	105 CFS-HRS;	8.7 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	17.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.30 WATERSHED INCHES;	14 CFS-HRS;	1.2 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 22

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
14.16	9.8 *	353.10
	* FIRST POINT OF FLAT PEAK	
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.22 WATERSHED INCHES;	105 CFS-HRS;	8.7 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	71.2	(RUNOFF)
15.84	3.5	(RUNOFF)
20.09	2.1	(RUNOFF)
24.02	1.6	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.10 WATERSHED INCHES;	74 CFS-HRS;	6.1 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	210.9	(NULL)
24.00	6.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.27 WATERSHED INCHES; 331 CFS-HRS; 27.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	35.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.98 WATERSHED INCHES; 37 CFS-HRS; 3.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	215.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.25 WATERSHED INCHES; 435 CFS-HRS; 36.0 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	233.1	(NULL)
23.97	12.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.30 WATERSHED INCHES; 472 CFS-HRS; 39.0 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	233.1	(NULL)
23.97	12.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.30 WATERSHED INCHES; 472 CFS-HRS; 39.0 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
 \*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	233.1	333.13
23.97	12.1	331.23

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.30 WATERSHED INCHES; 472 CFS-HRS; 39.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	53.7	(RUNOFF)
20.05	1.1	(RUNOFF)
20.62	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.60 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 18

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	68.5	(RUNOFF)
24.03	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.60 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	102.0	(RUNOFF)
15.84	3.5	(RUNOFF)
19.75	2.0	(RUNOFF)
20.06	2.0	(RUNOFF)
24.00	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

3.60 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.18	119.5	(NULL)
15.82	4.5	(NULL)
17.31	3.5	(NULL)
23.07	2.1	(NULL)
24.01	2.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.60 WATERSHED INCHES; 122 CFS-HRS; 10.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.16	220.5	(NULL)
15.84	8.0	(NULL)
17.33	6.2	(NULL)
18.63	5.0	(NULL)
21.75	4.0	(NULL)
21.95	4.0	(NULL)
24.01	3.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.60 WATERSHED INCHES; 216 CFS-HRS; 17.8 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 22

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.19	392.3	(NULL)
12.40	322.0	(NULL)
20.03	21.7	(NULL)
20.55	20.7	(NULL)
23.04	17.0	(NULL)
24.00	15.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.59 WATERSHED INCHES; 687 CFS-HRS; 56.8 ACRE-  
FEET.

OPERATION REACH XSECTION 23



PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	336.3	316.00
24.04	15.6	314.09

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.59 WATERSHED INCHES; 687 CFS-HRS; 56.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	78.6	(RUNOFF)
20.68	2.2	(RUNOFF)
23.99	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 95 CFS-HRS; 7.8 ACRE-  
 FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .043 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	72.6	363.85
20.70	2.2	356.55
23.79	1.7	356.52

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 95 CFS-HRS; 7.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	113.1	(RUNOFF)
20.68	3.2	(RUNOFF)
23.97	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 141 CFS-HRS; 11.6 ACRE-

FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.31	182.6	(NULL)
18.68	6.1	(NULL)
20.69	5.4	(NULL)
23.78	4.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.92 WATERSHED INCHES; 236 CFS-HRS; 19.5 ACRE-FEET.

OPERATION REACH XSECTION 27

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.42	166.8	319.12
20.20	5.6	316.69
23.20	4.5	316.62

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.91 WATERSHED INCHES; 236 CFS-HRS; 19.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.25	95.1	(RUNOFF)
23.77	2.0	(RUNOFF)
24.01	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.91 WATERSHED INCHES; 113 CFS-HRS; 9.3 ACRE-FEET.

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OPERATION ADDHYD XSECTION 29

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.31	425.3	(NULL)
24.03	17.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.63 WATERSHED INCHES; 800 CFS-HRS; 66.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	574.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.69 WATERSHED INCHES; 1035 CFS-HRS; 85.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	122.6	(RUNOFF)
20.66	3.0	(RUNOFF)
24.03	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.05 WATERSHED INCHES; 136 CFS-HRS; 11.3 ACRE-FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	111.5	312.85
20.73	3.0	310.25
24.09	2.4	310.19

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.05 WATERSHED INCHES; 136 CFS-HRS; 11.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	20.5	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.60 WATERSHED INCHES; 20 CFS-HRS; 1.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.81	3.4	379.74

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.10 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-
FEET.

\*\*\* WARNING - XSECTION 34, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,
UNLESS NEW RATING TABLE VALUES ARE INSERTED.
\*\*\*

OPERATION REACH XSECTION 34

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.91 3.4 338.07

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.09 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-
FEET.

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.20 60.5 (RUNOFF)
23.75 1.0 (RUNOFF)
24.03 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.59 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.44 29.6 356.52

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.15 WATERSHED INCHES; 56 CFS-HRS; 4.6 ACRE-
FEET.

OPERATION ADDHYD XSECTION 36

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.45 30.5 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.13 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-

FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	30.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.13 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
 \*\*\*

OPERATION REACH XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	30.5	330.37

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.13 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	75.7	(RUNOFF)
17.34	2.1	(RUNOFF)
24.01	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.41 WATERSHED INCHES; 72 CFS-HRS; 6.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	85.1	(NULL)
18.81	4.2	(NULL)
23.05	3.1	(NULL)
24.01	2.9	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.26 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	63.2	(RUNOFF)
23.98	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.14 WATERSHED INCHES; 80 CFS-HRS; 6.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	633.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.72 WATERSHED INCHES; 1115 CFS-HRS; 92.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	743.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.75 WATERSHED INCHES; 1251 CFS-HRS; 103.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	810.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.80 WATERSHED INCHES; 1396 CFS-HRS; 115.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	769.9	290.92

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.79 WATERSHED INCHES; 1395 CFS-HRS; 115.3 ACRE-  
 FEET.

1 TR20 ----- SCS

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OPERATION RUNOFF XSECTION 45

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.31	69.4	(RUNOFF)
20.10	2.2 *	(RUNOFF)
23.11	1.7	(RUNOFF)

\* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.00 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.32	87.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.96 WATERSHED INCHES; 120 CFS-HRS; 9.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.32	156.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.98 WATERSHED INCHES; 212 CFS-HRS; 17.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.20	83.7	(RUNOFF)
20.10	2.1	(RUNOFF)
20.65	2.0	(RUNOFF)
24.03	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.44	812.7	(NULL)

1 TR20 ----- SCS  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.80 WATERSHED INCHES; 1484 CFS-HRS; 122.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.42 951.4 (NULL)

HRS SQ.MI.	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25							
	MAIN	TIME	INCREMENT = .060 hr,	DRAINAGE AREA = .93				
7.98 CFS .94	.46	.52	.59	.66	.73	.80	.87	
8.46 CFS 1.77	1.02	1.10	1.18	1.27	1.37	1.49	1.62	
8.94 CFS 3.98	1.94	2.14	2.35	2.61	2.89	3.22	3.57	
9.42 CFS 8.47	4.42	4.90	5.42	5.96	6.53	7.14	7.78	
9.90 CFS 15.13	9.20	9.94	10.71	11.52	12.36	13.25	14.18	
10.38 CFS 25.18	16.11	17.12	18.16	19.26	20.46	21.81	23.36	
10.86 CFS 51.35	27.29	29.70	32.41	35.41	38.72	42.42	46.60	
11.34 CFS 127	57	63	69	77	85	96	109	
11.82 CFS 737	148	175	211	262	338	447	589	
12.30 CFS 700	856	928	951	931	888	832	768	
12.78 CFS 329	633	569	511	461	419	384	355	
13.26 CFS 196	306	286	267	251	235	221	208	
13.74 CFS 138	185	175	166	159	152	147	142	
14.22 CFS 115	134	131	128	125	122	119	117	
14.70 CFS 97	112	110	108	105	103	101	99	
15.18 CFS 82.65	94.57	92.41	90.30	88.32	86.54	85.01	83.72	
15.66 CFS 76.35	81.70	80.81	79.94	79.11	78.35	77.66	77.01	
16.14 CFS 71.14	75.65	74.96	74.29	73.65	73.04	72.42	71.79	
16.62 CFS 66.30	70.48	69.82	69.18	68.58	68.00	67.42	66.85	
17.10 CFS 61.51	65.76	65.22	64.63	63.98	63.32	62.69	62.10	
17.58 CFS 56.44	60.89	60.23	59.55	58.90	58.26	57.65	57.03	
18.06 CFS 52.06	55.86	55.31	54.76	54.20	53.64	53.10	52.57	



18.54	CFS	51.60	51.21	50.91	50.67	50.46	50.26	50.07
49.89								
19.02	CFS	49.68	49.45	49.21	48.96	48.74	48.55	48.38
48.25								
19.50	CFS	48.14	48.02	47.88	47.70	47.49	47.27	47.05
46.81								
19.98	CFS	46.57	46.36	46.20	46.08	45.96	45.81	45.63
45.40								
20.46	CFS	45.13	44.84	44.57	44.36	44.19	44.04	43.89
43.74								
20.94	CFS	43.57	43.39	43.17	42.94	42.68	42.45	42.24
42.06								
21.42	CFS	41.90	41.77	41.65	41.52	41.35	41.15	40.93
40.72								
21.90	CFS	40.52	40.36	40.22	40.08	39.90	39.70	39.47
39.25								
22.38	CFS	39.05	38.87	38.72	38.58	38.41	38.21	37.99
37.77								
22.86	CFS	37.54	37.30	37.06	36.86	36.71	36.59	36.48
36.34								
23.34	CFS	36.17	35.99	35.80	35.59	35.34	35.08	34.86
34.68								
23.82	CFS	34.53	34.37	34.16	33.99	33.79	33.27	32.06
29.91								
24.30	CFS	27.03	23.75	20.54	17.69	15.32	13.43	11.97
10.86								
24.78	CFS	10.03	9.40	8.91	8.53	8.23	7.98	7.76
7.57								
25.26	CFS	7.40	7.25	7.11	6.97	6.83	6.70	6.57
6.43								
25.74	CFS	6.30	6.17	6.04	5.92	5.79	5.67	5.55
5.44								
26.22	CFS	5.32	5.21	5.11	5.00	4.90	4.80	4.70
4.60								

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26.70	CFS	4.51	4.42	4.33	4.25	4.16	4.08	4.00
3.92								
27.18	CFS	3.85	3.77	3.70	3.63	3.56	3.49	3.43
3.36								
27.66	CFS	3.30	3.24	3.18	3.12	3.07	3.01	2.95
2.90								
28.14	CFS	2.85	2.80	2.75	2.70	2.66	2.61	2.57
2.52								
28.62	CFS	2.48	2.44	2.40	2.36	2.32	2.28	2.24
2.21								
29.10	CFS	2.17	2.14	2.10	2.07	2.04	2.01	1.98
1.95								
29.58	CFS	1.92	1.89	1.87	1.85	1.83	1.82	1.80
1.78								
30.06	CFS	1.77	1.76	1.75	1.73	1.72	1.71	1.70
1.68								
30.54	CFS	1.67	1.66	1.65	1.64	1.63	1.62	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.82 WATERSHED INCHES; 1696 CFS-HRS; 140.2 ACRE-

FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.53	923.5	285.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.82 WATERSHED INCHES; 1696 CFS-HRS; 140.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .64 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT, UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	1.7	288.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .64 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - XSECTION 54, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
 \*\*\*

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .64 WATERSHED INCHES; 212 CFS-HRS; .3 ACRE-FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)  
 12.20 52.6 (RUNOFF)  
 24.02 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.69 WATERSHED INCHES; 56 CFS-HRS; 4.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.52 944.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.82 WATERSHED INCHES; 1752 CFS-HRS; 144.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.33 1.8 (NULL)

HRS	SQ.MI.	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25						
		MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02						
12.12 CFS		.26	.96	1.54	1.73	1.73	1.65	1.55
1.48								
12.60 CFS		1.43	1.32	1.20	1.11	1.05	1.01	.98
.94								
13.08 CFS		.91	.87	.83	.79	.77	.74	.71
.69								
13.56 CFS		.66	.63	.60	.58	.56	.55	.54
.53								
14.04 CFS		.53	.52	.52	.51	.50	.49	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .45 WATERSHED INCHES; 5 CFS-HRS; .4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.52 946.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.78 WATERSHED INCHES; 1757 CFS-HRS; 145.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 59

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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)						PEAK (RUNOFF)	
12.22	26.5							
	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25							
	MAIN TIME INCREMENT = .060 hr,						DRAINAGE AREA = .03	
HRS SQ.MI.								
11.46 CFS 3.88	.47	.63	.86	1.20	1.63	2.14	2.85	
11.94 CFS 19.54	5.46	8.19	12.87	19.66	25.55	26.29	23.42	
12.42 CFS 6.75	16.42	14.04	12.29	10.85	9.45	8.25	7.37	
12.90 CFS 4.16	6.28	5.89	5.55	5.22	4.90	4.61	4.37	
13.38 CFS 2.85	3.97	3.78	3.59	3.41	3.23	3.08	2.95	
13.86 CFS 2.43	2.77	2.71	2.66	2.62	2.58	2.53	2.48	
14.34 CFS 2.05	2.38	2.34	2.30	2.26	2.21	2.15	2.10	
14.82 CFS 1.68	2.01	1.97	1.92	1.87	1.83	1.78	1.73	
15.30 CFS 1.56	1.65	1.62	1.61	1.61	1.60	1.60	1.58	
15.78 CFS 1.46	1.54	1.53	1.53	1.52	1.50	1.48	1.47	
16.26 CFS 1.35	1.45	1.44	1.42	1.41	1.39	1.38	1.36	
16.74 CFS 1.26	1.34	1.33	1.32	1.30	1.29	1.29	1.28	
17.22 CFS 1.13	1.24	1.22	1.21	1.21	1.19	1.17	1.15	
17.70 CFS 1.04	1.12	1.12	1.10	1.09	1.07	1.06	1.06	
18.18 CFS .98	1.03	1.01	1.01	1.00	.99	.97	.97	
18.66 CFS .95	.99	.98	.97	.97	.97	.97	.96	
19.14 CFS .94	.95	.94	.94	.94	.94	.94	.94	
19.62 CFS .91	.93	.92	.92	.92	.91	.90	.90	
20.10 CFS .87	.92	.91	.90	.90	.89	.88	.87	
20.58 CFS .85	.87	.88	.88	.87	.86	.87	.86	
21.06 CFS .83	.84	.84	.84	.83	.83	.83	.83	
21.54 CFS .81	.83	.83	.81	.81	.81	.81	.80	
22.02 CFS .78	.81	.80	.79	.78	.78	.78	.78	
22.50 CFS .73	.78	.77	.76	.75	.75	.75	.74	
22.98 CFS .72	.73	.74	.74	.74	.73	.72	.72	
23.46 CFS .68	.71	.70	.69	.69	.70	.70	.70	
23.94 CFS	.68	.69	.69	.59	.41			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.79 WATERSHED INCHES; 31 CFS-HRS; 2.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.52 959.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.75 WATERSHED INCHES; 1787 CFS-HRS; 147.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.26 9.5 (RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.20 WATERSHED INCHES; 13 CFS-HRS; 1.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.52 965.0 (NULL)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25						
		MAIN TIME INCREMENT = .060 hr,					DRAINAGE AREA = 1.02	
HRS	SQ.MI.							
8.10	CFS	.48	.54	.61	.68	.75	.82	.89
.96								
8.58	CFS	1.04	1.13	1.21	1.30	1.41	1.53	1.67
1.83								
9.06	CFS	2.01	2.20	2.44	2.70	3.00	3.33	3.70
4.13								
9.54	CFS	4.60	5.10	5.64	6.22	6.83	7.48	8.17
8.90								
10.02	CFS	9.66	10.45	11.27	12.13	13.03	13.97	14.95
15.96								
10.50	CFS	16.99	18.07	19.21	20.43	21.78	23.32	25.09
27.14								
10.98	CFS	29.48	32.13	35.09	38.41	42.13	46.33	51.10
56.48								
11.46	CFS	63	69	77	86	97	110	128
150								
11.94	CFS	179	219	277	361	469	590	715
828								

12.42 CFS 702	913	958	963	938	892	834	770
12.90 CFS 338	636	575	519	471	430	395	365
13.38 CFS 203	315	295	276	259	243	228	215
13.86 CFS 145	192	182	174	166	160	154	149
14.34 CFS 121	141	138	135	132	129	126	123
14.82 CFS 102	118	116	113	111	109	106	104
15.30 CFS 87.59	99.39	97.18	95.10	93.19	91.50	90.02	88.73
15.78 CFS 80.93	86.56	85.63	84.76	83.93	83.13	82.37	81.65
16.26 CFS 75.38	80.22	79.50	78.80	78.12	77.45	76.76	76.07
16.74 CFS 70.30	74.70	74.03	73.36	72.71	72.10	71.50	70.90
17.22 CFS 65.06	69.67	69.03	68.40	67.75	67.08	66.40	65.72
17.70 CFS 59.72	64.39	63.70	63.00	62.30	61.62	60.98	60.35
18.18 CFS 55.17	59.09	58.49	57.90	57.32	56.73	56.16	55.64
18.66 CFS 52.94	54.76	54.38	54.07	53.83	53.61	53.39	53.17
19.14 CFS 51.32	52.71	52.48	52.24	52.00	51.80	51.62	51.46
19.62 CFS 49.73	51.17	51.01	50.84	50.65	50.42	50.17	49.94
20.10 CFS 48.14	49.53	49.33	49.15	49.00	48.84	48.65	48.40
20.58 CFS 46.49	47.89	47.65	47.40	47.18	47.00	46.85	46.68
21.06 CFS 44.77	46.28	46.07	45.84	45.60	45.36	45.14	44.94
21.54 CFS 43.32	44.61	44.46	44.29	44.12	43.94	43.73	43.51
22.02 CFS 41.75	43.14	42.96	42.78	42.59	42.39	42.18	41.96
22.50 CFS 40.11	41.56	41.38	41.19	41.00	40.81	40.61	40.36
22.98 CFS 38.64	39.87	39.66	39.46	39.27	39.10	38.95	38.80
23.46 CFS 36.91	38.46	38.24	38.01	37.78	37.56	37.34	37.12
23.94 CFS 28.99	36.71	36.57	36.39	35.88	34.90	33.49	31.54
24.42 CFS 10.81	25.99	22.86	19.88	17.25	15.03	13.26	11.88
24.90 CFS 7.54	9.99	9.37	8.89	8.51	8.20	7.94	7.73
25.38 CFS 6.40	7.37	7.22	7.07	6.93	6.80	6.66	6.53
25.86 CFS 5.41	6.27	6.14	6.01	5.88	5.76	5.64	5.52
26.34 CFS 4.58	5.29	5.18	5.08	4.97	4.87	4.77	4.67

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26.82 CFS	4.49	4.40	4.31	4.22	4.14	4.06	3.98
3.90							
27.30 CFS	3.83	3.75	3.68	3.61	3.54	3.47	3.41
3.35							
27.78 CFS	3.28	3.22	3.16	3.11	3.05	2.99	2.94
2.89							
28.26 CFS	2.84	2.79	2.74	2.69	2.64	2.60	2.55
2.51							
28.74 CFS	2.47	2.43	2.39	2.35	2.31	2.27	2.23
2.20							
29.22 CFS	2.16	2.13	2.09	2.06	2.03	2.00	1.97
1.94							
29.70 CFS	1.91	1.89	1.87	1.85	1.83	1.81	1.79
1.78							
30.18 CFS	1.77	1.75	1.74	1.73	1.72	1.70	1.69
1.68							
30.66 CFS	1.67	1.66	1.64	1.63			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.73 WATERSHED INCHES; 1801 CFS-HRS; 148.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.65	925.9	250.33

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.73 WATERSHED INCHES; 1801 CFS-HRS; 148.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	6.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.45 WATERSHED INCHES; 10 CFS-HRS; .9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.76	3.9	331.69

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.45 WATERSHED INCHES; 10 CFS-HRS; .9 ACRE-  
 FEET.

OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.89	3.9	300.42

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.45 WATERSHED INCHES; 10 CFS-HRS; .8 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.60	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .30 WATERSHED INCHES; 9 CFS-HRS; .7 ACRE-  
 FEET.

\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .043 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.62	2.0	287.56

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .30 WATERSHED INCHES; 9 CFS-HRS; .7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.85	5.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .52 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		



12.20	75.2	(RUNOFF)
23.09	2.1	(RUNOFF)
24.02	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.66 WATERSHED INCHES; 83 CFS-HRS; 6.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 69

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	76.5	(NULL)
21.97	3.1	(NULL)
24.02	2.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.18 WATERSHED INCHES; 102 CFS-HRS; 8.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	63.9	248.45
22.02	3.0	247.51
24.09	2.6	247.47

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.18 WATERSHED INCHES; 102 CFS-HRS; 8.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	2.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .57 WATERSHED INCHES; 4 CFS-HRS; .4 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	1.4	260.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .57 WATERSHED INCHES; 4 CFS-HRS; .4 ACRE-

FEET.

\*\*\* WARNING - XSECTION 72, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT, UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 72

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.75	1.3	247.32

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.57 WATERSHED INCHES; 4 CFS-HRS; .4 ACRE-FEET.

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OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	110.7	(RUNOFF)
15.85	6.0	(RUNOFF)
17.34	4.7	(RUNOFF)
22.47	3.1	(RUNOFF)
24.01	2.8	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11 SQ.MI.

11.40 CFS	.47	.91	1.49	2.42	3.85	5.52	7.58
10.65							
11.88 CFS	15.23	22.52	35.74	58.21	91.79	110.44	99.36
79.89							
12.36 CFS	65.49	54.51	46.97	42.21	37.26	32.03	28.19
25.86							
12.84 CFS	24.20	22.85	21.65	20.45	19.24	18.04	17.05
16.27							
13.32 CFS	15.54	14.84	14.13	13.41	12.72	12.06	11.52
11.12							
13.80 CFS	10.80	10.56	10.37	10.22	10.09	9.93	9.73
9.51							
14.28 CFS	9.31	9.15	9.01	8.87	8.68	8.46	8.24
8.04							
14.76 CFS	7.88	7.73	7.57	7.37	7.18	7.01	6.80
6.60							
15.24 CFS	6.44	6.34	6.29	6.27	6.27	6.26	6.22
6.14							
15.72 CFS	6.03	5.98	5.99	5.99	5.92	5.82	5.74
5.70							
16.20 CFS	5.68	5.65	5.59	5.52	5.48	5.41	5.33
5.28							

16.68 CFS	5.26	5.24	5.19	5.12	5.07	5.05	5.03
4.98							
17.16 CFS	4.89	4.77	4.72	4.73	4.72	4.65	4.54
4.45							
17.64 CFS	4.40	4.38	4.35	4.28	4.21	4.17	4.15
4.13							
18.12 CFS	4.06	3.99	3.94	3.92	3.90	3.83	3.80
3.83							
18.60 CFS	3.87	3.88	3.83	3.80	3.83	3.82	3.77
3.73							
19.08 CFS	3.72	3.71	3.71	3.71	3.71	3.71	3.71
3.71							
19.56 CFS	3.70	3.63	3.60	3.62	3.62	3.57	3.53
3.55							
20.04 CFS	3.60	3.61	3.57	3.53	3.51	3.50	3.44
3.39							
20.52 CFS	3.40	3.45	3.47	3.43	3.39	3.40	3.42
3.37							
21.00 CFS	3.32	3.30	3.29	3.28	3.28	3.28	3.28
3.28							
21.48 CFS	3.29	3.28	3.23	3.17	3.18	3.19	3.16
3.16							
21.96 CFS	3.19	3.17	3.12	3.08	3.07	3.06	3.06
3.06							
22.44 CFS	3.06	3.06	3.04	2.97	2.94	2.96	2.95
2.90							
22.92 CFS	2.86	2.88	2.94	2.95	2.90	2.86	2.84
2.83							
23.40 CFS	2.83	2.81	2.74	2.70	2.74	2.78	2.79
2.73							
23.88 CFS	2.66	2.65	2.79	2.73	1.99	1.07	.51
.25							

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.64 WATERSHED INCHES; 117 CFS-HRS; 9.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.64	958.8	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.62 WATERSHED INCHES; 1917 CFS-HRS; 158.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	64.7	(NULL)

22.02 3.2 (NULL)  
 24.09 2.8 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15

HRS SQ.MI.								
11.52 CFS	.39	.68	1.11	1.75	2.62	3.72	5.22	
7.39								
12.00 CFS	10.72	16.30	25.78	40.65	55.86	63.76	63.61	
59.28								
12.48 CFS	53.67	48.23	43.67	39.71	35.93	32.53	29.75	
27.59								
12.96 CFS	25.87	24.43	23.16	21.98	20.85	19.78	18.82	
17.96								
13.44 CFS	17.15	16.39	15.64	14.91	14.20	13.54	12.95	
12.44								
13.92 CFS	12.01	11.64	11.33	11.06	10.82	10.58	10.33	
10.03								
14.40 CFS	9.72	9.44	9.19	8.96	8.73	8.51	8.30	
8.11								
14.88 CFS	7.94	7.78	7.61	7.43	7.26	7.08	6.90	
6.72								
15.36 CFS	6.57	6.45	6.37	6.31	6.27	6.22	6.17	
6.10								
15.84 CFS	6.03	5.99	5.96	5.93	5.88	5.81	5.75	
5.71								
16.32 CFS	5.67	5.63	5.58	5.53	5.48	5.42	5.36	
5.32								
16.80 CFS	5.28	5.24	5.20	5.15	5.11	5.07	5.04	
4.99								
17.28 CFS	4.92	4.85	4.80	4.77	4.73	4.67	4.60	
4.54								
17.76 CFS	4.49	4.45	4.40	4.34	4.29	4.25	4.21	
4.17								
18.24 CFS	4.11	4.06	4.02	3.99	3.94	3.90	3.88	
3.88								
18.72 CFS	3.88	3.88	3.86	3.85	3.85	3.83	3.81	
3.78								
19.20 CFS	3.76	3.75	3.74	3.74	3.74	3.74	3.74	
3.73								
19.68 CFS	3.71	3.68	3.67	3.66	3.64	3.62	3.60	
3.61								
20.16 CFS	3.62	3.62	3.60	3.58	3.57	3.54	3.50	
3.48								
20.64 CFS	3.48	3.49	3.49	3.47	3.46	3.46	3.44	
3.42								
21.12 CFS	3.39	3.37	3.36	3.35	3.34	3.34	3.33	
3.33								
21.60 CFS	3.33	3.31	3.28	3.26	3.26	3.24	3.23	
3.23								
22.08 CFS	3.23	3.21	3.19	3.17	3.15	3.14	3.13	
3.12								
22.56 CFS	3.12	3.11	3.09	3.06	3.04	3.03	3.01	
2.98								
23.04 CFS	2.96	2.97	2.98	2.98	2.96	2.94	2.92	
2.91								
23.52 CFS	2.89	2.87	2.83	2.82	2.82	2.83	2.82	
2.79								
24.00 CFS	2.76	2.78	2.79	2.59	2.16	1.65	1.22	
.89								
24.48 CFS	.65	.47						

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.13 WATERSHED INCHES; 107 CFS-HRS; 8.8 ACRE-

FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.63	999.9	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.45 WATERSHED INCHES; 2024 CFS-HRS; 167.3 ACRE-  
FEET.

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.70	998.9	230.36

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.45 WATERSHED INCHES; 2024 CFS-HRS; 167.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	48.4	(RUNOFF)
17.35	2.1	(RUNOFF)
24.01	1.3	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05  
SQ.MI.

HRS	11.52	12.00	12.48	12.96	13.44	13.92	14.40	14.88	15.36
CFS	9.46	23.53	10.09	6.58	4.70	4.08	3.45	2.83	2.68
	.34	15.43	20.35	9.57	6.27	4.62	4.02	3.38	2.81
	.71	25.53	18.41	9.04	5.95	4.56	3.96	3.29	2.81
	1.27	40.86	16.24	8.50	5.64	4.50	3.87	3.21	2.81
	1.96	48.35	13.92	7.98	5.35	4.43	3.78	3.13	2.81
	2.85	42.93	12.30	7.55	5.11	4.34	3.67	3.04	2.78
	4.19	34.38	11.36	7.21	4.94	4.24	3.59	2.95	2.74
	6.21	28.24	10.67	6.89	4.81	4.15	3.52	2.87	2.70

15.84 CFS	2.69	2.68	2.65	2.61	2.57	2.55	2.54
2.53							
16.32 CFS	2.50	2.47	2.45	2.42	2.39	2.37	2.36
2.35							
16.80 CFS	2.33	2.29	2.27	2.26	2.26	2.23	2.19
2.14							
17.28 CFS	2.11	2.12	2.12	2.08	2.03	1.99	1.97
1.96							
17.76 CFS	1.95	1.92	1.89	1.87	1.86	1.85	1.82
1.79							
18.24 CFS	1.77	1.76	1.75	1.72	1.70	1.72	1.74
1.74							
18.72 CFS	1.72	1.71	1.72	1.72	1.69	1.68	1.67
1.67							
19.20 CFS	1.66	1.67	1.67	1.67	1.67	1.67	1.66
1.63							
19.68 CFS	1.61	1.63	1.63	1.60	1.58	1.59	1.62
1.62							
20.16 CFS	1.60	1.59	1.58	1.57	1.55	1.52	1.53
1.55							
20.64 CFS	1.56	1.54	1.52	1.53	1.54	1.51	1.49
1.48							
21.12 CFS	1.48	1.48	1.48	1.48	1.48	1.48	1.48
1.47							
21.60 CFS	1.45	1.42	1.43	1.44	1.42	1.42	1.44
1.42							
22.08 CFS	1.40	1.39	1.38	1.38	1.38	1.38	1.38
1.38							
22.56 CFS	1.37	1.34	1.32	1.33	1.33	1.30	1.29
1.30							
23.04 CFS	1.32	1.33	1.30	1.29	1.28	1.27	1.27
1.26							
23.52 CFS	1.23	1.21	1.23	1.25	1.25	1.23	1.19
1.19							
24.00 CFS	1.26	1.23	.87	.45			

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.56 WATERSHED INCHES; 51 CFS-HRS; 4.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET) 1011.7 (NULL)  
12.70

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.42 WATERSHED INCHES; 2075 CFS-HRS; 171.5 ACRE-  
FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.76	1009.7	215.72
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.42 WATERSHED INCHES;	2075 CFS-HRS;	171.5 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	19.4	(RUNOFF)
17.35	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.13 WATERSHED INCHES;	23 CFS-HRS;	1.9 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.76	1015.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.39 WATERSHED INCHES;	2098 CFS-HRS;	173.4 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	59.3	(RUNOFF)
15.47	3.0	(RUNOFF)
17.34	2.3	(RUNOFF)
24.00	1.4	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.74 WATERSHED INCHES;	57 CFS-HRS;	4.8 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	87.5	(RUNOFF)
21.94	3.3	(RUNOFF)
23.13	3.0	(RUNOFF)
24.01	2.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.51 WATERSHED INCHES; 116 CFS-HRS; 9.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	134.9	(NULL)
20.83	5.2	(NULL)
24.00	4.2	(NULL)

HRS	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25							
	MAIN	TIME	INCREMENT =	.060 hr,				
SQ.MI.	.17							
11.34 CFS	.44	.72	1.05	1.51	2.49	3.98	5.85	
8.39								
11.82 CFS	12	18	27	42	69	109	132	
132								
12.30 CFS	121	106	91	80	71	63	55	
49								
12.78 CFS	43.91	40.18	37.37	34.96	32.76	30.69	28.77	
27.15								
13.26 CFS	25.74	24.48	23.31	22.20	21.10	20.03	19.01	
18.13								
13.74 CFS	17.41	16.83	16.35	15.97	15.68	15.42	15.16	
14.87								
14.22 CFS	14.56	14.26	14.00	13.77	13.54	13.27	12.97	
12.66								
14.70 CFS	12.36	12.10	11.86	11.60	11.32	11.05	10.78	
10.48								
15.18 CFS	10.19	9.93	9.75	9.62	9.54	9.50	9.47	
9.41								
15.66 CFS	9.31	9.18	9.10	9.08	9.04	8.96	8.85	
8.75								
16.14 CFS	8.67	8.62	8.56	8.48	8.40	8.33	8.23	
8.12								
16.62 CFS	8.05	7.99	7.95	7.87	7.79	7.72	7.67	
7.63								
17.10 CFS	7.55	7.44	7.30	7.22	7.19	7.14	7.06	
6.94								
17.58 CFS	6.82	6.73	6.67	6.61	6.52	6.43	6.37	
6.32								
18.06 CFS	6.26	6.18	6.09	6.02	5.97	5.92	5.84	
5.79								
18.54 CFS	5.80	5.83	5.84	5.79	5.77	5.79	5.77	
5.72								
19.02 CFS	5.68	5.64	5.62	5.61	5.60	5.60	5.60	
5.60								
19.50 CFS	5.61	5.58	5.52	5.48	5.49	5.46	5.41	
5.37								
19.98 CFS	5.38	5.42	5.43	5.40	5.37	5.34	5.30	
5.23								
20.46 CFS	5.17	5.17	5.20	5.22	5.19	5.15	5.16	
5.15								
20.94 CFS	5.11	5.06	5.02	4.99	4.98	4.97	4.96	
4.96								
21.42 CFS	4.96	4.96	4.95	4.89	4.84	4.84	4.83	
4.79								
21.90 CFS	4.80	4.82	4.78	4.74	4.70	4.67	4.65	
4.64								
22.38 CFS	4.63	4.63	4.63	4.60	4.53	4.49	4.50	



4.47							
22.86 CFS	4.41	4.37	4.37	4.42	4.42	4.39	4.36
4.33							

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23.34 CFS	4.30	4.29	4.26	4.18	4.14	4.16	4.19
4.19							
23.82 CFS	4.14	4.07	4.05	4.19	4.08	3.28	2.34
1.57							
24.30 CFS	.98	.60	.38				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.58 WATERSHED INCHES; 173 CFS-HRS; 14.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.75	1060.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.30 WATERSHED INCHES; 2271 CFS-HRS; 187.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	14.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.36 WATERSHED INCHES; 14 CFS-HRS; 1.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.75	1063.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.29 WATERSHED INCHES; 2285 CFS-HRS; 188.8 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT	FROM XSECTION 1 TO XSECTION 88
STARTING TIME = .00	RAIN DEPTH = 7.23 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2	MAIN TIME INCREMENT = .060 HOURS
ALTERNATE NO. = 1	STORM NO. =50 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	69.4	(RUNOFF)
23.10	1.6	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.22 WATERSHED INCHES;		7.6 ACRE-
FEET.		

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	69.1	390.50
20.20	2.0	389.27
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.22 WATERSHED INCHES;		7.6 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	77.5	(RUNOFF)
23.98	2.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.68 WATERSHED INCHES;		8.3 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	144.6	(NULL)
20.14	4.6	(NULL)
23.14	3.7	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.25 WATERSHED INCHES;		15.9 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)  
 12.35    143.4    383.28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.24 WATERSHED INCHES;                  192 CFS-HRS;                  15.8 ACRE-  
 FEET.

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OPERATION REACH      XSECTION      5  
  
 PEAK TIME(HRS)                                  PEAK DISCHARGE(CFS)                                  PEAK  
 ELEVATION(FEET)  
 12.42    142.6    368.48  
  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.24 WATERSHED INCHES;                  191 CFS-HRS;                  15.8 ACRE-  
 FEET.

OPERATION RUNOFF      XSECTION      6  
  
 PEAK TIME(HRS)                                  PEAK DISCHARGE(CFS)                                  PEAK  
 ELEVATION(FEET)  
 12.30    116.9    (RUNOFF)  
 23.13    3.2    (RUNOFF)  
 23.75    3.0    (RUNOFF)  
  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES;                  154 CFS-HRS;                  12.7 ACRE-  
 FEET.

OPERATION ADDHYD      XSECTION      7  
  
 PEAK TIME(HRS)                                  PEAK DISCHARGE(CFS)                                  PEAK  
 ELEVATION(FEET)  
 12.37    249.8    (NULL)  
  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.12 WATERSHED INCHES;                  345 CFS-HRS;                  28.5 ACRE-  
 FEET.

OPERATION REACH      XSECTION      8  
  
 PEAK TIME(HRS)                                  PEAK DISCHARGE(CFS)                                  PEAK  
 ELEVATION(FEET)  
 12.44    248.6    358.00  
  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.12 WATERSHED INCHES;                  345 CFS-HRS;                  28.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 117.2 (RUNOFF)  
 12.32

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.35 WATERSHED INCHES; 159 CFS-HRS; 13.1 ACRE-  
 FEET.

1 TR20 ----- SCS  
 -

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\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE

STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 28.2 375.51  
 13.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.04 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 23.4 (RUNOFF)  
 12.13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.10 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET) 27.3 354.18  
 13.25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.03 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 11

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)

12.19	99.4	(RUNOFF)
15.83	4.5	(RUNOFF)
17.31	3.5	(RUNOFF)
23.09	2.1	(RUNOFF)
23.74	2.0	(RUNOFF)
24.02	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.87 WATERSHED INCHES; 101 CFS-HRS; 8.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 12

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	295.9	(NULL)
24.01	8.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.06 WATERSHED INCHES; 446 CFS-HRS; 36.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	46.1	(RUNOFF)
20.87	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.88 WATERSHED INCHES; 48 CFS-HRS; 4.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	302.6	(NULL)
23.98	14.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.05 WATERSHED INCHES; 589 CFS-HRS; 48.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	328.0	(NULL)
23.99	15.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.10 WATERSHED INCHES; 637 CFS-HRS; 52.7 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.39	328.0	(NULL)
23.99	15.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.10 WATERSHED INCHES; 637 CFS-HRS; 52.7 ACRE-  
 FEET.

1 TR20 ----- SCS

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\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
 \*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.39	328.0	333.68
23.99	15.5	331.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.10 WATERSHED INCHES; 637 CFS-HRS; 52.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	67.9	(RUNOFF)
15.84	2.2	(RUNOFF)
22.74	1.0	(RUNOFF)
23.05	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.57 WATERSHED INCHES; 62 CFS-HRS; 5.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	86.2	(RUNOFF)
18.84	2.0	(RUNOFF)

24.02 1.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.57 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.15	128.8	(RUNOFF)
15.84	4.3	(RUNOFF)
17.34	3.3	(RUNOFF)
22.42	2.0	(RUNOFF)
24.00	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.57 WATERSHED INCHES; 119 CFS-HRS; 9.8 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	150.8	(NULL)
15.82	5.5	(NULL)
17.31	4.3	(NULL)
20.07	3.2	(NULL)
20.63	3.0	(NULL)
24.01	2.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.57 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	278.6	(NULL)
15.83	9.8	(NULL)
17.33	7.6	(NULL)
18.62	6.1	(NULL)
18.85	6.0	(NULL)
21.45	5.1	(NULL)
24.01	4.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.57 WATERSHED INCHES; 274 CFS-HRS; 22.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 22

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	528.4	(NULL)
20.04	26.5	(NULL)
20.58	25.6	(NULL)
23.04	21.3	(NULL)
23.68	20.1	(NULL)
24.00	19.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.43 WATERSHED INCHES; 910 CFS-HRS; 75.2 ACRE-FEET.

OPERATION REACH XSECTION 23

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.37	469.4	316.35
24.06	19.7	314.16

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.43 WATERSHED INCHES; 910 CFS-HRS; 75.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	102.5	(RUNOFF)
18.67	3.0	(RUNOFF)
23.99	2.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 124 CFS-HRS; 10.3 ACRE-FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .043 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
-----------------------------------	---------------------	------



12.35	94.0	364.46
18.70	3.0	356.63
23.79	2.1	356.55

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 124 CFS-HRS; 10.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	149.3	(RUNOFF)
20.14	4.1	(RUNOFF)
23.98	3.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	235.1	(NULL)
18.68	7.6	(NULL)
20.69	6.7	(NULL)
23.78	5.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 308 CFS-HRS; 25.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 27

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.40	224.8	319.33
20.21	6.9	316.78
23.20	5.6	316.69

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 308 CFS-HRS; 25.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	124.5	(RUNOFF)

20.68	3.2	(RUNOFF)
24.01	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 147 CFS-HRS; 12.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	582.5	(NULL)
24.04	22.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.48 WATERSHED INCHES; 1057 CFS-HRS; 87.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	793.1	(NULL)
24.04	27.4	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.55 WATERSHED INCHES; 1365 CFS-HRS; 112.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	159.9	(RUNOFF)
18.66	4.3	(RUNOFF)
23.11	3.1	(RUNOFF)
24.02	2.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.96 WATERSHED INCHES; 177 CFS-HRS; 14.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	146.6	313.23
18.73	4.3	310.35
23.19	3.1	310.26
24.09	2.9	310.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.96 WATERSHED INCHES; 177 CFS-HRS; 14.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.17	25.7	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.57 WATERSHED INCHES; 25 CFS-HRS; 2.0 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	8.6	380.15

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.97 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 34

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	8.6	338.13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.97 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.20	76.5	(RUNOFF)
24.03	1.2	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.56 WATERSHED INCHES; 81 CFS-HRS; 6.7 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
12.36	50.2	357.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.09 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	54.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.06 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	54.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.06 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
 \*\*\*

OPERATION REACH XSECTION 37

1 TR20 ----- SCS

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	54.5	330.54

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.06 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	96.8	(RUNOFF)
15.84	3.4	(RUNOFF)
19.47	2.0	(RUNOFF)
24.01	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.36 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	119.9	(NULL)
18.59	5.0	(NULL)
21.95	4.0	(NULL)
24.01	3.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.20 WATERSHED INCHES; 186 CFS-HRS; 15.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	82.8	(RUNOFF)
20.68	2.2	(RUNOFF)
23.97	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.06 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.34	869.5	(NULL)
24.03	29.0	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.58 WATERSHED INCHES; 1468 CFS-HRS; 121.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.33	1014.6	(NULL)
24.03	31.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.62 WATERSHED INCHES; 1645 CFS-HRS; 135.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	1124.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 1831 CFS-HRS; 151.3 ACRE-FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	1077.0	291.36

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 1831 CFS-HRS; 151.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	90.5	(RUNOFF)
20.13	2.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.91 WATERSHED INCHES; 120 CFS-HRS; 9.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	113.7	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.86 WATERSHED INCHES; 156 CFS-HRS; 12.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	204.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

3.88 WATERSHED INCHES; 277 CFS-HRS; 22.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.20	109.8	(RUNOFF)
23.10	2.1	(RUNOFF)
24.03	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.82 WATERSHED INCHES; 116 CFS-HRS; 9.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.43	1131.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.68 WATERSHED INCHES; 1946 CFS-HRS; 160.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.41	1314.9	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50										
HRS	MAIN	TIME	INCREMENT	=	.060	hr,	DRAINAGE	AREA	=	.93
SQ.MI.										
7.20 CFS	.50	.56	.64	.71	.79	.86	.94			
1.02										
7.68 CFS	1.10	1.19	1.28	1.38	1.49	1.62	1.78			
1.96										
8.16 CFS	2.17	2.40	2.67	2.95	3.26	3.60	3.95			
4.32										
8.64 CFS	4.71	5.12	5.55	5.98	6.42	6.85	7.28			
7.73										
9.12 CFS	8.21	8.72	9.27	9.87	10.53	11.25	12.02			
12.83										
9.60 CFS	13.66	14.53	15.46	16.44	17.48	18.55	19.65			
20.77										
10.08 CFS	21.95	23.19	24.51	25.91	27.36	28.85	30.39			
31.98										
10.56 CFS	33.67	35.51	37.60	40.02	42.84	46.09	49.77			
53.85										
11.04 CFS	58	63	69	75	81	89	98			
107										
11.52 CFS	117	129	144	163	187	217	255			
305										

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12.00 CFS	376	482	635	829	1030	1199	1295
1314							
12.48 CFS	1275	1199	1109	1010	908	809	718
637							
12.96 CFS	570	515	471	435	405	380	358
338							
13.44 CFS	320	303	287	271	256	242	229
218							
13.92 CFS	207	198	190	184	178	172	167
163							
14.40 CFS	159	155	151	147	144	141	137
134							
14.88 CFS	131	128	125	122	119	116	113
111							
15.36 CFS	108	106	104	102	101	100	99
98							
15.84 CFS	96.62	95.69	94.86	94.07	93.26	92.41	91.55
90.72							
16.32 CFS	89.95	89.20	88.44	87.67	86.87	86.04	85.22
84.44							
16.80 CFS	83.70	82.99	82.29	81.58	80.90	80.24	79.58
78.85							
17.28 CFS	78.05	77.23	76.44	75.72	75.00	74.25	73.42
72.58							
17.76 CFS	71.76	70.97	70.21	69.46	68.72	68.01	67.32
66.65							
18.24 CFS	65.95	65.26	64.59	63.94	63.31	62.74	62.26
61.91							
18.72 CFS	61.64	61.42	61.19	60.97	60.75	60.51	60.23
59.93							
19.20 CFS	59.63	59.36	59.13	58.94	58.78	58.65	58.53
58.38							
19.68 CFS	58.17	57.92	57.66	57.41	57.14	56.87	56.64
56.47							
20.16 CFS	56.36	56.25	56.10	55.90	55.63	55.32	54.97
54.65							
20.64 CFS	54.42	54.25	54.10	53.94	53.77	53.60	53.39
53.15							
21.12 CFS	52.87	52.58	52.31	52.07	51.87	51.71	51.57
51.46							
21.60 CFS	51.32	51.13	50.89	50.63	50.38	50.16	49.97
49.80							
22.08 CFS	49.63	49.42	49.16	48.88	48.60	48.34	48.12
47.94							
22.56 CFS	47.76	47.56	47.32	47.03	46.74	46.46	46.16
45.86							
23.04 CFS	45.60	45.41	45.28	45.15	44.98	44.76	44.53
44.29							
23.52 CFS	44.03	43.72	43.40	43.13	42.93	42.78	42.60
42.38							
24.00 CFS	42.18	41.97	41.38	39.87	37.07	33.28	29.00
24.84							
24.48 CFS	21.20	18.21	15.86	14.09	12.80	11.86	11.19
10.69							
24.96 CFS	10.31	10.01	9.77	9.57	9.39	9.24	9.10
8.95							
25.44 CFS	8.81	8.66	8.52	8.37	8.22	8.07	7.93
7.78							
25.92 CFS	7.64	7.50	7.36	7.23	7.10	6.97	6.84
6.72							
26.40 CFS	6.60	6.48	6.36	6.25	6.14	6.03	5.92



5.81								
26.88 CFS	5.70	5.59	5.48	5.36	5.25	5.14	5.04	
4.93								
27.36 CFS	4.83	4.73	4.63	4.54	4.45	4.35	4.26	
4.18								
27.84 CFS	4.09	4.01	3.93	3.86	3.78	3.70	3.63	
3.56								
28.32 CFS	3.49	3.43	3.36	3.30	3.23	3.17	3.12	
3.06								
28.80 CFS	3.00	2.94	2.89	2.84	2.79	2.74	2.69	
2.64								
29.28 CFS	2.59	2.55	2.50	2.46	2.42	2.38	2.34	
2.30								
29.76 CFS	2.26	2.22	2.18	2.15	2.11	2.08	2.05	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.70 WATERSHED INCHES; 2223 CFS-HRS; 183.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.51	1284.0	286.50

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.70 WATERSHED INCHES; 2223 CFS-HRS; 183.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	4.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.06 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.26	4.3	288.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

1.06 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 54

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
AT XSECTION 54  
\*\*\*

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.54 .6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.47 WATERSHED INCHES; 2 CFS-HRS; .2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.20 70.0 (RUNOFF)  
24.03 1.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.56 WATERSHED INCHES; 74 CFS-HRS; 6.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 56

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.50 1312.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.69 WATERSHED INCHES; 2297 CFS-HRS; 189.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.27 4.7 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02  
SQ.MI.  
12.00 CFS .11 .52 1.54 3.43 4.57 4.49 4.05  
3.62  
12.48 CFS 3.24 2.98 2.80 2.52 2.23 2.04 1.91

1.82								
12.96 CFS	1.75	1.67	1.59	1.51	1.43	1.37	1.31	
1.26								
13.44 CFS	1.21	1.16	1.10	1.05	1.00	.96	.94	
.91								
13.92 CFS	.90	.89	.88	.87	.86	.84	.82	
.81								
14.40 CFS	.80	.79	.78	.76	.74	.73	.71	
.70								
14.88 CFS	.69	.67	.66	.64	.62	.61	.59	
.58								
15.36 CFS	.57	.57	.57	.57	.57	.56	.56	
.55								
15.84 CFS	.55	.55	.55	.54	.53	.53	.53	
.52								
16.32 CFS	.52	.52	.51	.51	.50	.50		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .79 WATERSHED INCHES; 8 CFS-HRS; .7 ACRE-FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.50 1316.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.65 WATERSHED INCHES; 2305 CFS-HRS; 190.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.22 38.4 (RUNOFF)  
 21.98 1.0 (RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .03 SQ.MI.

HRS								
11.10 CFS	.48	.60	.74	.90	1.08	1.29	1.52	
1.77								
11.58 CFS	2.14	2.73	3.43	4.24	5.33	6.89	9.26	
13.07								
12.06 CFS	19.70	29.31	37.36	38.06	33.31	27.50	22.87	
19.40								
12.54 CFS	16.89	14.82	12.85	11.20	9.98	9.12	8.45	
7.92								
13.02 CFS	7.44	6.99	6.55	6.17	5.83	5.55	5.29	
5.03								
13.50 CFS	4.78	4.54	4.30	4.09	3.92	3.78	3.68	
3.59								

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13.98 CFS 3.09	3.53	3.47	3.41	3.35	3.28	3.21	3.14
14.46 CFS 2.59	3.04	2.98	2.91	2.84	2.77	2.70	2.65
14.94 CFS 2.14	2.53	2.47	2.40	2.34	2.27	2.21	2.16
15.42 CFS 2.01	2.12	2.11	2.11	2.10	2.07	2.04	2.02
15.90 CFS 1.88	2.01	2.00	1.97	1.94	1.92	1.91	1.90
16.38 CFS 1.74	1.86	1.84	1.82	1.80	1.78	1.77	1.76
16.86 CFS 1.59	1.72	1.70	1.69	1.68	1.67	1.65	1.61
17.34 CFS 1.45	1.58	1.57	1.56	1.53	1.50	1.48	1.47
17.82 CFS 1.32	1.44	1.42	1.40	1.39	1.38	1.36	1.34
18.30 CFS 1.28	1.31	1.30	1.28	1.27	1.27	1.28	1.28
18.78 CFS 1.23	1.27	1.27	1.27	1.26	1.25	1.24	1.23
19.26 CFS 1.20	1.23	1.23	1.23	1.23	1.23	1.22	1.21
19.74 CFS 1.18	1.20	1.20	1.19	1.17	1.17	1.18	1.19
20.22 CFS 1.14	1.17	1.16	1.16	1.15	1.13	1.12	1.13
20.70 CFS 1.09	1.14	1.12	1.12	1.12	1.12	1.10	1.09
21.18 CFS 1.07	1.08	1.08	1.08	1.08	1.08	1.08	1.08
21.66 CFS 1.03	1.05	1.05	1.05	1.04	1.04	1.04	1.04
22.14 CFS 1.00	1.02	1.01	1.01	1.01	1.01	1.00	1.00
22.62 CFS .95	.99	.97	.97	.97	.96	.95	.94
23.10 CFS .91	.96	.96	.95	.94	.93	.93	.92
23.58 CFS .89	.90	.90	.90	.91	.90	.88	.87
24.06 CFS	.89	.76	.53	.31			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.50 WATERSHED INCHES; 43 CFS-HRS; 3.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.50 1334.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.62 WATERSHED INCHES; 2348 CFS-HRS; 194.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK



97								
16.38	CFS	96.56	95.73	94.90	94.06	93.20	92.34	91.50
90.66								
16.86	CFS	89.83	89.04	88.29	87.55	86.82	86.07	85.30
84.51								
17.34	CFS	83.71	82.90	82.06	81.22	80.39	79.57	78.73
77.87								
17.82	CFS	76.99	76.12	75.29	74.49	73.71	72.93	72.16
71.41								
18.30	CFS	70.68	69.96	69.23	68.52	67.87	67.31	66.80
66.36								
18.78	CFS	66.01	65.74	65.50	65.25	64.98	64.72	64.44
64.14								
19.26	CFS	63.84	63.56	63.31	63.10	62.93	62.77	62.60
62.41								
19.74	CFS	62.22	61.99	61.72	61.42	61.15	60.92	60.70
60.49								
20.22	CFS	60.31	60.16	60.00	59.78	59.49	59.19	58.89
58.60								
20.70	CFS	58.32	58.07	57.89	57.74	57.55	57.34	57.11
56.86								
21.18	CFS	56.60	56.31	56.03	55.78	55.56	55.38	55.22
55.05								
21.66	CFS	54.87	54.68	54.47	54.21	53.96	53.74	53.53
53.32								
22.14	CFS	53.10	52.87	52.63	52.35	52.07	51.81	51.57
51.35								
22.62	CFS	51.13	50.89	50.65	50.39	50.08	49.75	49.45
49.18								
23.10	CFS	48.93	48.70	48.49	48.32	48.14	47.94	47.70
47.43								
23.58	CFS	47.13	46.84	46.57	46.30	46.04	45.80	45.59
45.44								
24.06	CFS	45.25	44.63	43.40	41.57	38.97	35.55	31.55
27.43								
24.54	CFS	23.59	20.27	17.54	15.40	13.79	12.60	11.72
11.08								
25.02	CFS	10.60	10.24	9.95	9.71	9.52	9.34	9.19
9.04								
25.50	CFS	8.90	8.75	8.61	8.46	8.31	8.16	8.02
7.87								
25.98	CFS	7.73	7.59	7.45	7.31	7.18	7.05	6.92
6.80								
26.46	CFS	6.68	6.55	6.44	6.32	6.21	6.10	5.99
5.88								
26.94	CFS	5.77	5.66	5.55	5.43	5.32	5.21	5.10
5.00								
27.42	CFS	4.89	4.79	4.69	4.60	4.50	4.41	4.32
4.23								
27.90	CFS	4.15	4.06	3.98	3.90	3.83	3.75	3.68
3.61								
28.38	CFS	3.54	3.47	3.40	3.34	3.27	3.21	3.15
3.09								
28.86	CFS	3.04	2.98	2.92	2.87	2.82	2.77	2.72
2.67								
29.34	CFS	2.62	2.58	2.53	2.49	2.44	2.40	2.36
2.32								
29.82	CFS	2.28	2.24	2.21	2.17	2.13	2.10	

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.59 WATERSHED INCHES; 2368 CFS-HRS; 195.7 ACRE-  
FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.62	1296.2	250.77

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.59 WATERSHED INCHES; 2367 CFS-HRS; 195.6 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	9.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.09 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.85	4.9	332.65

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.09 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-  
FEET.

OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.97	4.9	300.47

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.09 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	6.2	(RUNOFF)
15.88	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.59 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-  
FEET.

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\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
TIME INCREMENT OF .043 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.50	5.9	288.14
15.89	1.3	287.47

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.59 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.62	10.3	(NULL)
24.03	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.88 WATERSHED INCHES; 32 CFS-HRS; 2.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	110.9	(RUNOFF)
21.46	3.0	(RUNOFF)
24.02	2.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.34 WATERSHED INCHES; 118 CFS-HRS; 9.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	116.0	(NULL)
18.65	5.0	(NULL)
21.97	4.1	(NULL)



24.02 3.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.72 WATERSHED INCHES; 150 CFS-HRS; 12.4 ACRE-
FEET.

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OPERATION REACH XSECTION 70

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.38 81.7 248.60
20.16 4.6 247.64
24.08 3.5 247.55

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.72 WATERSHED INCHES; 150 CFS-HRS; 12.4 ACRE-
FEET.

OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.15 5.9 (RUNOFF)

\*\*\* WARNING - XSECTION 71, MAIN TIME INCREMENT TOO LARGE, COMPUTED PEAK
( 5.95) EXCEEDS ADJACENT COORDINATE ( 5.66) BY 5 %.
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.97 WATERSHED INCHES; 7 CFS-HRS; .6 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.57 2.3 261.37

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.97 WATERSHED INCHES; 7 CFS-HRS; .6 ACRE-
FEET.

OPERATION REACH XSECTION 72

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.72 2.3 247.45

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.97 WATERSHED INCHES; 7 CFS-HRS; .6 ACRE-

FEET.

OPERATION RUNOFF XSECTION 73

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PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.18	162.6	(RUNOFF)
15.85	7.9	(RUNOFF)
17.34	6.2	(RUNOFF)
18.64	5.1	(RUNOFF)
18.86	5.0	(RUNOFF)
21.96	4.2	(RUNOFF)
24.01	3.6	(RUNOFF)

HRS	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50							
	MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .11 SQ.MI.			
10.98 CFS	.42	.71	1.08	1.52	2.06	2.67	3.36	
4.17								
11.46 CFS	5.06	6.05	7.75	10.35	13.20	16.47	21.28	
28.47								
11.94 CFS	39.42	59.04	91.49	138.76	162.50	144.34	114.84	
92.80								
12.42 CFS	76.41	65.40	58.42	51.34	43.92	38.50	35.27	
32.96								
12.90 CFS	31.06	29.37	27.71	26.04	24.40	23.03	21.94	
20.95								
13.38 CFS	19.98	19.01	18.03	17.09	16.19	15.45	14.91	
14.48								
13.86 CFS	14.14	13.88	13.68	13.49	13.27	13.00	12.70	
12.43								
14.34 CFS	12.21	12.02	11.82	11.57	11.28	10.97	10.70	
10.48								
14.82 CFS	10.29	10.07	9.80	9.54	9.31	9.03	8.76	
8.54								
15.30 CFS	8.41	8.34	8.32	8.31	8.30	8.24	8.13	
7.99								
15.78 CFS	7.91	7.94	7.93	7.84	7.71	7.59	7.53	
7.51								
16.26 CFS	7.47	7.39	7.30	7.24	7.15	7.04	6.98	
6.94								
16.74 CFS	6.92	6.85	6.75	6.69	6.66	6.64	6.56	
6.44								
17.22 CFS	6.29	6.21	6.23	6.21	6.12	5.98	5.86	
5.80								
17.70 CFS	5.77	5.73	5.64	5.54	5.49	5.46	5.42	
5.33								
18.18 CFS	5.24	5.18	5.16	5.12	5.03	4.99	5.03	
5.09								
18.66 CFS	5.10	5.03	4.99	5.03	5.02	4.95	4.90	
4.88								
19.14 CFS	4.87	4.86	4.86	4.86	4.86	4.87	4.87	
4.85								

19.62 CFS	4.76	4.72	4.75	4.74	4.67	4.62	4.64
4.72							
20.10 CFS	4.73	4.67	4.62	4.60	4.58	4.51	4.43
4.45							
20.58 CFS	4.51	4.54	4.49	4.43	4.45	4.47	4.41
4.35							
21.06 CFS	4.31	4.30	4.29	4.29	4.29	4.29	4.29
4.29							
21.54 CFS	4.28	4.21	4.14	4.15	4.17	4.12	4.13
4.17							
22.02 CFS	4.14	4.07	4.02	4.00	3.99	3.99	3.99
3.99							
22.50 CFS	3.99	3.96	3.88	3.83	3.86	3.85	3.78
3.73							
22.98 CFS	3.75	3.83	3.84	3.78	3.73	3.70	3.69
3.69							
23.46 CFS	3.66	3.57	3.52	3.56	3.62	3.63	3.55
3.46							
23.94 CFS	3.45	3.62	3.56	2.59	1.40	.68	.33

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.32 WATERSHED INCHES; 165 CFS-HRS; 13.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.61	1345.8	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.46 WATERSHED INCHES; 2532 CFS-HRS; 209.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.38	83.5	(NULL)
23.14	4.1	(NULL)
24.08	3.8	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15 SQ.MI.

11.16 CFS	.37	.55	.79	1.07	1.41	1.80	2.25
2.78							
11.64 CFS	3.45	4.41	5.64	7.14	9.11	11.81	15.76
22.02							
12.12 CFS	32.34	48.56	66.29	78.47	83.12	82.55	79.18
74.59							
12.60 CFS	69.75	64.85	59.83	54.89	50.32	46.40	43.05

40.19								
13.08	CFS	37.69	35.47	33.45	31.62	29.99	28.53	27.22
26.02								
13.56	CFS	24.89	23.83	22.80	21.80	20.87	20.02	19.24
18.54								
14.04	CFS	17.87	17.26	16.70	16.18	15.69	15.23	14.80
14.41								
14.52	CFS	14.05	13.71	13.37	13.02	12.69	12.37	12.06
11.74								
15.00	CFS	11.40	11.07	10.74	10.43	10.12	9.83	9.57
9.35								
15.48	CFS	9.18	9.03	8.92	8.83	8.73	8.62	8.52
8.44								
15.96	CFS	8.38	8.32	8.24	8.16	8.08	8.01	7.94
7.88								
16.44	CFS	7.81	7.74	7.67	7.59	7.51	7.44	7.38
7.33								
16.92	CFS	7.26	7.19	7.13	7.08	7.02	6.96	6.87
6.78								
17.40	CFS	6.71	6.66	6.60	6.52	6.44	6.35	6.28
6.21								
17.88	CFS	6.14	6.07	5.99	5.93	5.87	5.81	5.74
5.67								
18.36	CFS	5.61	5.55	5.49	5.43	5.39	5.37	5.36
5.34								
18.84	CFS	5.31	5.30	5.29	5.27	5.24	5.21	5.19
5.16								
19.32	CFS	5.15	5.13	5.13	5.12	5.12	5.11	5.09
5.06								
19.80	CFS	5.04	5.02	5.00	4.97	4.95	4.95	4.95
4.94								
20.28	CFS	4.93	4.91	4.89	4.86	4.82	4.79	4.77
4.77								
20.76	CFS	4.76	4.75	4.73	4.72	4.71	4.68	4.65
4.63								
21.24	CFS	4.60	4.59	4.57	4.56	4.55	4.55	4.54
4.52								
21.72	CFS	4.49	4.47	4.45	4.43	4.42	4.41	4.40
4.38								
22.20	CFS	4.36	4.33	4.31	4.29	4.27	4.26	4.25
4.24								
22.68	CFS	4.22	4.18	4.16	4.14	4.11	4.08	4.06
4.05								
23.16	CFS	4.05	4.05	4.03	4.01	3.99	3.97	3.95
3.92								
23.64	CFS	3.88	3.86	3.85	3.85	3.84	3.81	3.78
3.78								
24.12	CFS	3.78	3.61	3.22	2.72	2.22	1.79	1.42
1.13								
24.60	CFS	.89	.70	.55	.43			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.66 WATERSHED INCHES; 157 CFS-HRS; 13.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 76

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.60	1415.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.26 WATERSHED INCHES; 2690 CFS-HRS; 222.3 ACRE-FEET.

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.67	1414.2	230.94

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.26 WATERSHED INCHES; 2689 CFS-HRS; 222.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 78

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	72.2	(RUNOFF)
15.85	3.6	(RUNOFF)
20.08	2.1	(RUNOFF)
20.63	2.1	(RUNOFF)
20.86	2.0	(RUNOFF)
24.01	1.6	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05 SQ.MI.

HRS							
11.16 CFS	.39	.60	.86	1.15	1.50	1.88	2.33
3.07							
11.64 CFS	4.19	5.42	6.86	9.00	12.22	17.19	26.16
40.84							
12.12 CFS	62.47	72.24	63.10	49.75	40.34	33.28	28.54
25.66							
12.60 CFS	22.53	19.24	16.95	15.62	14.63	13.81	13.08
12.34							
13.08 CFS	11.59	10.86	10.26	9.79	9.35	8.92	8.49
8.05							
13.56 CFS	7.63	7.23	6.91	6.67	6.48	6.34	6.22
6.14							
14.04 CFS	6.06	5.96	5.83	5.70	5.58	5.48	5.40
5.31							
14.52 CFS	5.19	5.06	4.92	4.80	4.71	4.62	4.52
4.40							
15.00 CFS	4.29	4.18	4.06	3.93	3.84	3.78	3.76
3.75							
15.48 CFS	3.74	3.74	3.71	3.66	3.59	3.56	3.58
3.57							
15.96 CFS	3.53	3.47	3.42	3.39	3.38	3.37	3.33
3.29							
16.44 CFS	3.26	3.22	3.17	3.14	3.13	3.12	3.09
3.04							
16.92 CFS	3.01	3.00	2.99	2.96	2.90	2.83	2.80
2.81							

17.40 CFS	2.80	2.76	2.69	2.64	2.61	2.60	2.58
2.54							
17.88 CFS	2.50	2.47	2.46	2.45	2.40	2.36	2.34
2.33							
18.36 CFS	2.31	2.27	2.25	2.27	2.30	2.30	2.27
2.25							
18.84 CFS	2.27	2.27	2.23	2.21	2.20	2.20	2.20
2.20							
19.32 CFS	2.20	2.20	2.20	2.20	2.19	2.15	2.13
2.15							
19.80 CFS	2.14	2.11	2.09	2.10	2.14	2.14	2.11
2.09							
20.28 CFS	2.08	2.07	2.03	2.00	2.01	2.04	2.05
2.03							
20.76 CFS	2.00	2.01	2.02	1.99	1.96	1.95	1.94
1.94							
21.24 CFS	1.94	1.94	1.94	1.94	1.94	1.94	1.90
1.87							

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21.72 CFS	1.88	1.89	1.86	1.87	1.89	1.87	1.84
1.82							
22.20 CFS	1.81	1.81	1.80	1.80	1.80	1.80	1.79
1.75							
22.68 CFS	1.73	1.75	1.74	1.71	1.68	1.70	1.73
1.74							
23.16 CFS	1.71	1.68	1.67	1.67	1.67	1.65	1.61
1.59							
23.64 CFS	1.61	1.64	1.64	1.61	1.56	1.56	1.65
1.61							
24.12 CFS	1.13	.59	.28				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.22 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.66 1433.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.22 WATERSHED INCHES; 2763 CFS-HRS; 228.3 ACRE-FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.73 1427.8 216.94

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.22 WATERSHED INCHES; 2762 CFS-HRS; 228.3 ACRE-FEET.

FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	32.1	(RUNOFF)
21.46	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.69 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.73	1435.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.18 WATERSHED INCHES; 2796 CFS-HRS; 231.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 83

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	86.1	(RUNOFF)
15.85	3.8	(RUNOFF)
21.46	2.1	(RUNOFF)
21.95	2.0	(RUNOFF)
24.00	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.44 WATERSHED INCHES; 81 CFS-HRS; 6.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	131.5	(RUNOFF)
19.47	5.0	(RUNOFF)
21.95	4.3	(RUNOFF)
24.01	3.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.17 WATERSHED INCHES; 166 CFS-HRS; 13.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.20	202.9	(NULL)
20.08	7.1	(NULL)
21.95	6.3	(NULL)
24.00	5.5	(NULL)

HRS SQ.MI.	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50							
	MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .17			
10.92 CFS	.42	.58	.78	1.07	1.48	2.04	2.74	3.59
11.40 CFS	4.63	5.78	7.11	9.28	12.42	15.93	20.26	26.44
11.88 CFS	35	49	73	112	168	200	195	177
12.36 CFS	154	131	114	101	88	77	68	61
12.84 CFS	55.47	51.34	47.90	44.81	41.89	39.21	36.92	34.96
13.32 CFS	33.21	31.60	30.06	28.54	27.07	25.69	24.47	23.49
13.80 CFS	22.67	22.01	21.50	21.08	20.73	20.36	19.96	19.54
14.28 CFS	19.14	18.78	18.45	18.13	17.77	17.37	16.94	16.53
14.76 CFS	16.17	15.85	15.50	15.12	14.76	14.39	13.99	13.60
15.24 CFS	13.25	12.99	12.82	12.72	12.65	12.61	12.52	12.38
15.72 CFS	12.21	12.10	12.08	12.02	11.92	11.77	11.62	11.51
16.20 CFS	11.44	11.37	11.26	11.15	11.05	10.91	10.77	10.67
16.68 CFS	10.59	10.54	10.43	10.32	10.22	10.16	10.10	10.00
17.16 CFS	9.85	9.67	9.55	9.51	9.45	9.33	9.17	9.02
17.64 CFS	8.90	8.82	8.74	8.62	8.50	8.41	8.34	8.27
18.12 CFS	8.15	8.04	7.95	7.88	7.81	7.70	7.64	7.65
18.60 CFS	7.69	7.69	7.64	7.61	7.63	7.60	7.54	7.48

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19.08 CFS	7.44	7.41	7.39	7.38	7.38	7.38	7.38	7.38
19.56 CFS	7.35	7.26	7.21	7.22	7.18	7.12	7.06	7.07
20.04 CFS	7.13	7.14	7.09	7.05	7.01	6.97	6.88	6.79
20.52 CFS	6.79	6.83	6.85	6.81	6.76	6.77	6.76	



6.70							
21.00 CFS	6.64	6.59	6.55	6.53	6.52	6.51	6.51
6.51							
21.48 CFS	6.51	6.50	6.42	6.34	6.34	6.33	6.27
6.29							
21.96 CFS	6.32	6.27	6.21	6.16	6.11	6.09	6.07
6.06							
22.44 CFS	6.06	6.06	6.02	5.93	5.88	5.89	5.85
5.77							
22.92 CFS	5.72	5.73	5.78	5.79	5.74	5.70	5.66
5.63							
23.40 CFS	5.61	5.57	5.47	5.41	5.44	5.47	5.48
5.41							
23.88 CFS	5.32	5.30	5.48	5.34	4.31	3.07	2.05
1.26							
24.36 CFS	.78	.49					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.25 WATERSHED INCHES; 247 CFS-HRS; 20.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.72	1502.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.08 WATERSHED INCHES; 3043 CFS-HRS; 251.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	22.1	(RUNOFF)
15.84	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.98 WATERSHED INCHES; 20 CFS-HRS; 1.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.72	1506.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.07 WATERSHED INCHES; 3064 CFS-HRS; 253.2 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

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EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
 STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 9

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	87.5	(RUNOFF)
20.13	2.4	(RUNOFF)
23.11	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.32 WATERSHED INCHES; 115 CFS-HRS; 9.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	87.3	390.67

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.32 WATERSHED INCHES; 115 CFS-HRS; 9.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	105.4	(RUNOFF)
20.68	3.2	(RUNOFF)
23.98	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.59 WATERSHED INCHES; 134 CFS-HRS; 11.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	189.8	(NULL)
20.13	5.7	(NULL)
23.14	4.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.23 WATERSHED INCHES; 250 CFS-HRS; 20.6 ACRE-  
 FEET.

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\*\*\* WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 11,  
 VALUE EXTRAPOLATED.  
 \*\*\*

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	188.3	383.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.22 WATERSHED INCHES; 249 CFS-HRS; 20.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	187.7	368.70

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.21 WATERSHED INCHES; 249 CFS-HRS; 20.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	156.2	(RUNOFF)
20.13	4.9	(RUNOFF)
23.74	3.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.95 WATERSHED INCHES; 203 CFS-HRS; 16.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	331.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.09 WATERSHED INCHES; 452 CFS-HRS; 37.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	330.5	358.29

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.09 WATERSHED INCHES; 453 CFS-HRS; 37.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.31 153.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.35 WATERSHED INCHES; 206 CFS-HRS; 17.0 ACRE-  
FEET.

\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE  
TABLE  
STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
\*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.76 64.2 376.33

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.03 WATERSHED INCHES; 191 CFS-HRS; 15.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.13 30.9 (RUNOFF)  
15.83 1.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.08 WATERSHED INCHES; 26 CFS-HRS; 2.1 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.90 60.2 356.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.02 WATERSHED INCHES; 191 CFS-HRS; 15.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 11  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	133.7	(RUNOFF)
15.82	5.6	(RUNOFF)
20.87	3.1	(RUNOFF)
24.03	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.81 WATERSHED INCHES; 134 CFS-HRS; 11.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	395.3	(NULL)
24.01	10.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.02 WATERSHED INCHES; 586 CFS-HRS; 48.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	58.5	(RUNOFF)
23.10	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.95 WATERSHED INCHES; 62 CFS-HRS; 5.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	403.3	(NULL)
23.98	17.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.02 WATERSHED INCHES; 776 CFS-HRS; 64.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)			
12.37	437.7		(NULL)
24.00	18.7		(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.07 WATERSHED INCHES; 837 CFS-HRS; 69.2 ACRE-  
 FEET.

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OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	437.7	(NULL)
24.00	18.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.07 WATERSHED INCHES; 837 CFS-HRS; 69.2 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
 \*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	437.7	334.28
24.00	18.7	331.31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.07 WATERSHED INCHES; 837 CFS-HRS; 69.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	84.0	(RUNOFF)
17.34	2.1	(RUNOFF)
24.00	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.70 WATERSHED INCHES; 78 CFS-HRS; 6.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.20	107.1	(RUNOFF)
20.86	2.1	(RUNOFF)
24.03	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.70 WATERSHED INCHES; 115 CFS-HRS; 9.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	159.9	(RUNOFF)
15.84	5.1	(RUNOFF)
19.44	3.0	(RUNOFF)
24.00	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.70 WATERSHED INCHES; 149 CFS-HRS; 12.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	187.2	(NULL)
15.82	6.7	(NULL)
17.31	5.1	(NULL)
18.85	4.1	(NULL)
22.74	3.1	(NULL)
23.07	3.0	(NULL)
24.01	2.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.70 WATERSHED INCHES; 193 CFS-HRS; 15.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	345.1	(NULL)
15.83	11.8	(NULL)
17.33	9.1	(NULL)
18.85	7.2	(NULL)
21.45	6.1	(NULL)
23.06	5.4	(NULL)
23.72	5.1	(NULL)
24.01	5.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

5.70 WATERSHED INCHES; 341 CFS-HRS; 28.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 22

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	692.8	(NULL)
18.81	33.4	(NULL)
20.05	31.2	(NULL)
20.59	30.0	(NULL)
21.94	27.7	(NULL)
23.04	25.6	(NULL)
23.68	24.2	(NULL)
24.00	23.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.44 WATERSHED INCHES; 1177 CFS-HRS; 97.3 ACRE-  
FEET.

OPERATION REACH XSECTION 23

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	634.2	316.70
24.06	23.7	314.22

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.44 WATERSHED INCHES; 1177 CFS-HRS; 97.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	130.8	(RUNOFF)
20.68	3.3	(RUNOFF)
23.99	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.87 WATERSHED INCHES; 159 CFS-HRS; 13.1 ACRE-  
FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
TIME INCREMENT OF .043 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 31, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*



OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	126.4	364.96
20.69	3.3	356.64
23.79	2.6	356.59

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.85 WATERSHED INCHES; 158 CFS-HRS; 13.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	189.3	(RUNOFF)
20.13	5.1	(RUNOFF)
23.13	4.0	(RUNOFF)
23.99	3.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.87 WATERSHED INCHES; 235 CFS-HRS; 19.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	313.5	(NULL)
18.67	9.2	(NULL)
20.68	8.1	(NULL)
23.78	6.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.86 WATERSHED INCHES; 393 CFS-HRS; 32.5 ACRE-  
FEET.

OPERATION REACH XSECTION 27

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	300.7	319.59
20.74	8.1	316.85
23.21	6.8	316.77

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.87 WATERSHED INCHES; 394 CFS-HRS; 32.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	158.9	(RUNOFF)
20.12	4.1	(RUNOFF)
23.77	3.1	(RUNOFF)
24.01	3.0	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.87 WATERSHED INCHES; 188 CFS-HRS; 15.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	779.5	(NULL)
20.08	35.2	(NULL)
23.08	28.8	(NULL)
24.04	26.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.49 WATERSHED INCHES; 1366 CFS-HRS; 112.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	1066.2	(NULL)
24.04	33.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.57 WATERSHED INCHES; 1759 CFS-HRS; 145.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	203.3	(RUNOFF)
18.66	5.2	(RUNOFF)
21.96	4.2	(RUNOFF)
24.03	3.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.03 WATERSHED INCHES; 225 CFS-HRS; 18.6 ACRE-  
FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	187.8	313.61
18.73	5.2	310.42
20.74	4.5	310.37
24.09	3.5	310.29

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.03 WATERSHED INCHES; 225 CFS-HRS; 18.6 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	32.0	(RUNOFF)
15.84	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.70 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-  
FEET.

\*\*\* MESSAGE - RESERVOIR ROUTING, STRUCTURE 32, TRUNCATED AT 400 POINTS  
WITH .32 AC-FT ( .06 WATERSHED INCHES) FLOOD STORAGE  
REMAINING IN RESERVOIR AT ELEV. 377.09.  
\*\*\*

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	19.2	380.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.99 WATERSHED INCHES; 27 CFS-HRS; 2.2 ACRE-  
FEET.

OPERATION REACH XSECTION 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	19.2	338.22

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.99 WATERSHED INCHES; 27 CFS-HRS; 2.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	95.2	(RUNOFF)
18.87	2.1	(RUNOFF)
24.02	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.70 WATERSHED INCHES; 101 CFS-HRS; 8.4 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	78.9	357.45

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.18 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	93.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.14 WATERSHED INCHES; 119 CFS-HRS; 9.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	93.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.14 WATERSHED INCHES; 119 CFS-HRS; 9.8 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
 \*\*\*

OPERATION REACH XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.32 93.9 330.74

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.14 WATERSHED INCHES; 119 CFS-HRS; 9.8 ACRE-
FEET.

OPERATION RUNOFF XSECTION 38

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.17, 15.84, 17.34, 21.96, 24.01 and discharge values like 121.0, 4.1, 3.2, 2.0, 1.8.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.47 WATERSHED INCHES; 116 CFS-HRS; 9.6 ACRE-
FEET.

OPERATION ADDHYD XSECTION 39

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Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.23, 20.84, 24.01 and discharge values like 173.1, 5.0, 4.1.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.30 WATERSHED INCHES; 235 CFS-HRS; 19.4 ACRE-
FEET.

OPERATION RUNOFF XSECTION 40

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.27, 23.76 and discharge values like 103.5, 2.0.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.15 WATERSHED INCHES; 131 CFS-HRS; 10.8 ACRE-
FEET.

OPERATION ADDHYD XSECTION 41

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.33, 24.04 and discharge values like 1163.3, 35.0.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.61 WATERSHED INCHES; 1890 CFS-HRS; 156.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	1354.4	(NULL)
24.04	38.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 2115 CFS-HRS; 174.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	1513.8	(NULL)
24.03	42.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.71 WATERSHED INCHES; 2349 CFS-HRS; 194.2 ACRE-  
 FEET.

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OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	1454.4	291.84

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.70 WATERSHED INCHES; 2349 CFS-HRS; 194.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	115.2	(RUNOFF)
23.09	2.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.97 WATERSHED INCHES; 153 CFS-HRS; 12.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	145.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.92 WATERSHED INCHES; 199 CFS-HRS; 16.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	260.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.94 WATERSHED INCHES; 353 CFS-HRS; 29.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	140.6	(RUNOFF)
20.65	3.1	(RUNOFF)
20.87	3.0	(RUNOFF)
24.03	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.88 WATERSHED INCHES; 148 CFS-HRS; 12.2 ACRE-FEET.

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OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	1527.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.71 WATERSHED INCHES; 2496 CFS-HRS; 206.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	1766.1	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .93  
 SQ.MI.

6.42 CFS	.49	.56	.63	.70	.78	.86	.93
1.01							
6.90 CFS	1.09	1.19	1.29	1.39	1.50	1.64	1.80
2.00							
7.38 CFS	2.21	2.45	2.72	3.03	3.37	3.72	4.09
4.48							
7.86 CFS	4.90	5.33	5.78	6.24	6.72	7.21	7.71
8.21							
8.34 CFS	8.70	9.21	9.73	10.26	10.79	11.34	11.92
12.52							
8.82 CFS	13.12	13.71	14.29	14.86	15.46	16.12	16.83
17.60							
9.30 CFS	18.46	19.42	20.49	21.66	22.89	24.17	25.51
26.93							
9.78 CFS	28.44	30.04	31.70	33.39	35.11	36.88	38.73
40.67							
10.26 CFS	42.69	44.75	46.84	48.96	51.14	53.45	55.98
58.85							
10.74 CFS	62	66	71	76	82	88	95
102							
11.22 CFS	110	120	130	142	155	169	186
206							
11.70 CFS	233	267	309	361	429	524	663
864							
12.18 CFS	1121	1401	1625	1750	1759	1677	1551
1409							
12.66 CFS	1269	1138	1014	903	808	728	661
604							
13.14 CFS	556	514	479	449	422	398	376
356							
13.62 CFS	337	319	301	285	271	257	246
236							
14.10 CFS	227	219	213	206	200	195	190
185							
14.58 CFS	181	177	172	168	164	160	156
153							
15.06 CFS	149	145	142	138	134	131	128
126							
15.54 CFS	123	122	120	119	117	116	115
114							
16.02 CFS	113	112	111	110	109	108	107
106							
16.50 CFS	105	104	103	102	101	100	99
98							
16.98 CFS	97.53	96.70	95.91	95.11	94.23	93.24	92.21
91.25							
17.46 CFS	90.38	89.53	88.61	87.60	86.55	85.54	84.59
83.68							
17.94 CFS	82.76	81.86	81.00	80.19	79.38	78.54	77.70
76.89							
18.42 CFS	76.11	75.37	74.68	74.12	73.72	73.43	73.18
72.92							
18.90 CFS	72.66	72.41	72.12	71.79	71.42	71.05	70.73
70.46							
19.38 CFS	70.24	70.07	69.92	69.79	69.61	69.36	69.05
68.74							
19.86 CFS	68.43	68.11	67.78	67.50	67.30	67.20	67.08
66.91							
20.34 CFS	66.66	66.34	65.95	65.52	65.13	64.85	64.66
64.51							
20.82 CFS	64.34	64.14	63.93	63.69	63.39	63.05	62.69
62.36							
21.30 CFS	62.08	61.85	61.67	61.52	61.39	61.23	61.00
60.71							



21.78 CFS 60.39 60.10 59.84 59.63 59.46 59.28 59.05  
58.76

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22.26 CFS	58.43	58.10	57.82	57.59	57.40	57.22	57.01
56.73							
22.74 CFS	56.40	56.07	55.75	55.42	55.07	54.78	54.59
54.47							
23.22 CFS	54.35	54.16	53.91	53.63	53.35	53.03	52.67
52.28							
23.70 CFS	51.94	51.71	51.55	51.35	51.07	50.82	50.57
49.86							
24.18 CFS	48.02	44.47	39.59	34.14	28.93	24.47	20.85
17.96							
24.66 CFS	15.75	14.17	13.06	12.29	11.73	11.32	11.00
10.74							
25.14 CFS	10.53	10.34	10.18	10.02	9.89	9.75	9.62
9.50							
25.62 CFS	9.38	9.26	9.14	9.02	8.91	8.80	8.68
8.57							
26.10 CFS	8.47	8.35	8.23	8.11	7.98	7.84	7.71
7.57							
26.58 CFS	7.44	7.31	7.18	7.05	6.92	6.80	6.68
6.56							
27.06 CFS	6.44	6.33	6.22	6.11	6.00	5.89	5.79
5.69							
27.54 CFS	5.59	5.49	5.39	5.28	5.18	5.07	4.97
4.87							
28.02 CFS	4.77	4.67	4.57	4.48	4.39	4.30	4.21
4.12							
28.50 CFS	4.04	3.96	3.88	3.80	3.72	3.65	3.58
3.51							
28.98 CFS	3.44	3.37	3.31	3.25	3.18	3.12	3.07

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.74 WATERSHED INCHES; 2849 CFS-HRS; 235.4 ACRE-  
FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.49 1727.2 287.21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.74 WATERSHED INCHES; 2849 CFS-HRS; 235.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 52

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.17 8.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.63 WATERSHED INCHES; 9 CFS-HRS; .8 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	8.0	288.45

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.63 WATERSHED INCHES; 9 CFS-HRS; .8 ACRE-  
 FEET.

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OPERATION RUNOFF XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .85 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	90.7	(RUNOFF)
20.87	2.0	(RUNOFF)
24.03	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.59 WATERSHED INCHES; 95 CFS-HRS; 7.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	1765.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.74 WATERSHED INCHES; 2944 CFS-HRS; 243.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.25 9.7 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02  
 HRS SQ.MI.

11.94 CFS	.44	.95	2.13	4.50	8.11	9.66	8.70
7.39							
12.42 CFS	6.35	5.52	4.98	4.60	4.09	3.57	3.24
3.03							
12.90 CFS	2.87	2.74	2.61	2.47	2.33	2.20	2.10
2.01							
13.38 CFS	1.93	1.84	1.76	1.67	1.59	1.52	1.46
1.41							
13.86 CFS	1.38	1.35	1.33	1.32	1.30	1.28	1.26
1.23							
14.34 CFS	1.21	1.19	1.17	1.16	1.13	1.10	1.08
1.05							
14.82 CFS	1.03	1.01	.99	.97	.94	.92	.89
.87							
15.30 CFS	.85	.84	.84	.84	.84	.84	.83
.82							
15.78 CFS	.81	.80	.81	.80	.79	.78	.77
.77							
16.26 CFS	.77	.76	.75	.75	.74	.73	.72
.72							
16.74 CFS	.71	.71	.70	.69	.69	.69	.68
.68							
17.22 CFS	.66	.65	.64	.65	.64	.63	.62
.61							
17.70 CFS	.60	.60	.59	.58	.58	.57	.57
.56							

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18.18 CFS	.55	.55	.54	.54	.54	.53	.52
.53							
18.66 CFS	.54	.53	.53	.53	.53	.53	.52
.52							
19.14 CFS	.51	.51	.51	.51	.51	.51	.52
.52							
19.62 CFS	.51	.50	.50	.50	.50	.49	.49
.50							
20.10 CFS	.50	.50	.50				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.28 WATERSHED INCHES; 13 CFS-HRS; 1.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	1771.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.68 WATERSHED INCHES; 2957 CFS-HRS; 244.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	52.8	(RUNOFF)
24.03	1.2	(RUNOFF)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99							
	MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .03							
HRS								
SQ.MI.								
10.68 CFS	.50	.58	.68	.78	.90	1.03	1.16	
1.33								
11.16 CFS	1.52	1.74	1.99	2.27	2.58	2.92	3.29	
3.84								
11.64 CFS	4.73	5.79	6.99	8.52	10.75	14.14	19.54	
28.39								
12.12 CFS	41.43	51.56	52.15	45.27	37.11	30.67	25.78	
22.37								
12.60 CFS	19.56	16.92	14.68	13.07	11.92	11.03	10.32	
9.69								
13.08 CFS	9.09	8.51	8.00	7.56	7.19	6.85	6.51	
6.18								
13.56 CFS	5.86	5.55	5.28	5.06	4.88	4.74	4.63	
4.54								
14.04 CFS	4.47	4.40	4.31	4.22	4.12	4.04	3.97	
3.90								
14.52 CFS	3.83	3.74	3.64	3.55	3.47	3.40	3.33	
3.24								
15.00 CFS	3.16	3.08	3.00	2.91	2.83	2.77	2.73	
2.71								
15.48 CFS	2.70	2.70	2.68	2.65	2.61	2.58	2.57	
2.57								
15.96 CFS	2.55	2.52	2.48	2.45	2.44	2.42	2.40	
2.38								
16.44 CFS	2.35	2.32	2.29	2.27	2.25	2.24	2.22	
2.20								
16.92 CFS	2.17	2.15	2.14	2.13	2.10	2.05	2.02	
2.01								
17.40 CFS	2.00	1.98	1.95	1.91	1.88	1.86	1.85	
1.83								
17.88 CFS	1.80	1.78	1.76	1.75	1.73	1.70	1.68	
1.66								
18.36 CFS	1.65	1.63	1.61	1.61	1.62	1.63	1.62	
1.61								
18.84 CFS	1.61	1.61	1.60	1.58	1.57	1.56	1.56	
1.56								
19.32 CFS	1.56	1.56	1.56	1.56	1.55	1.54	1.52	
1.52								
19.80 CFS	1.52	1.50	1.49	1.49	1.50	1.51	1.50	
1.49								
20.28 CFS	1.48	1.47	1.45	1.43	1.42	1.43	1.44	
1.44								
20.76 CFS	1.42	1.42	1.42	1.41	1.40	1.38	1.38	
1.37								
21.24 CFS	1.37	1.37	1.37	1.37	1.37	1.36	1.35	

1.33								
21.72 CFS	1.33	1.33	1.32	1.32	1.32	1.32	1.31	
1.29								

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22.20 CFS	1.28	1.27	1.27	1.27	1.27	1.27	1.26	
1.25								
22.68 CFS	1.23	1.23	1.23	1.21	1.20	1.19	1.21	
1.21								
23.16 CFS	1.21	1.19	1.18	1.18	1.17	1.17	1.15	
1.13								
23.64 CFS	1.13	1.14	1.15	1.14	1.12	1.10	1.13	
1.13								
24.12 CFS	.96	.67	.39					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.38 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	1796.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.65 WATERSHED INCHES; 3015 CFS-HRS; 249.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	23.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.52 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	1810.3	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.02  
 SQ.MI.

6.48 CFS	.46	.52	.59	.66	.74	.81	.89
.97							
6.96 CFS	1.05	1.14	1.24	1.34	1.45	1.57	1.72
1.90							
7.44 CFS	2.10	2.33	2.59	2.88	3.20	3.54	3.90

4.29								
7.92 CFS	4.70	5.14	5.59	6.07	6.56	7.07	7.58	
8.10								
8.40 CFS	8.62	9.15	9.69	10.23	10.79	11.36	11.95	
12.56								
8.88 CFS	13.19	13.81	14.42	15.03	15.66	16.32	17.05	
17.84								
9.36 CFS	18.71	19.67	20.74	21.90	23.14	24.45	25.83	
27.28								
9.84 CFS	28.82	30.44	32.14	33.89	35.69	37.55	39.48	
41.50								
10.32 CFS	43.60	45.76	47.96	50.21	52.54	54.99	57.67	
60.68								
10.80 CFS	64	68	73	78	84	90	98	
105								
11.28 CFS	114	124	135	147	161	176	194	
217								
11.76 CFS	245	281	326	384	463	575	737	
943								
12.24 CFS	1172	1411	1621	1764	1810	1767	1664	
1530								
12.72 CFS	1388	1250	1120	1000	896	806	730	
665								
13.20 CFS	610	563	523	489	459	432	408	
385								
13.68 CFS	365	345	327	310	294	280	267	
256								

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14.16 CFS	246	238	230	223	217	211	205	
200								
14.64 CFS	195	191	186	182	177	173	169	
165								
15.12 CFS	161	157	153	149	145	142	139	
136								
15.60 CFS	134	132	130	128	127	125	124	
123								
16.08 CFS	122	121	119	118	117	116	115	
114								
16.56 CFS	113	112	111	110	109	108	107	
106								
17.04 CFS	105	104	103	102	101	100	99	
98								
17.52 CFS	97.28	96.28	95.29	94.25	93.19	92.10	91.04	
90.03								
18.00 CFS	89.06	88.11	87.17	86.24	85.34	84.46	83.59	
82.70								
18.48 CFS	81.85	81.08	80.41	79.82	79.31	78.92	78.63	
78.37								
18.96 CFS	78.07	77.76	77.44	77.11	76.74	76.38	76.04	
75.75								
19.44 CFS	75.50	75.30	75.13	74.93	74.71	74.48	74.20	
73.86								
19.92 CFS	73.50	73.17	72.89	72.62	72.37	72.17	72.01	
71.83								
20.40 CFS	71.56	71.20	70.83	70.45	70.09	69.76	69.48	

69.29								
20.88	CFS	69.12	68.90	68.65	68.37	68.07	67.74	67.39
67.05								
21.36	CFS	66.75	66.50	66.29	66.11	65.93	65.71	65.48
65.22								
21.84	CFS	64.91	64.60	64.34	64.11	63.87	63.63	63.39
63.10								
22.32	CFS	62.79	62.46	62.17	61.91	61.68	61.44	61.18
60.91								
22.80	CFS	60.61	60.25	59.87	59.52	59.23	58.96	58.70
58.49								
23.28	CFS	58.32	58.13	57.90	57.62	57.28	56.92	56.57
56.24								
23.76	CFS	55.92	55.61	55.34	55.09	54.92	54.69	53.90
52.36								
24.24	CFS	50.03	46.66	42.19	37.00	31.76	27.02	22.99
19.70								
24.72	CFS	17.11	15.18	13.80	12.81	12.10	11.59	11.20
10.90								
25.20	CFS	10.65	10.45	10.27	10.11	9.96	9.82	9.69
9.57								
25.68	CFS	9.44	9.32	9.20	9.08	8.97	8.85	8.74
8.63								
26.16	CFS	8.52	8.41	8.29	8.17	8.04	7.91	7.78
7.64								
26.64	CFS	7.51	7.38	7.24	7.11	6.99	6.86	6.74
6.62								
27.12	CFS	6.50	6.39	6.28	6.16	6.05	5.95	5.85
5.74								
27.60	CFS	5.64	5.54	5.44	5.34	5.23	5.13	5.03
4.92								
28.08	CFS	4.82	4.72	4.62	4.53	4.44	4.34	4.25
4.17								
28.56	CFS	4.08	4.00	3.92	3.84	3.77	3.69	3.62
3.55								
29.04	CFS	3.48	3.41	3.34	3.28	3.22	3.15	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.61 WATERSHED INCHES; 3044 CFS-HRS; 251.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.59	1750.6	251.23

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.61 WATERSHED INCHES; 3043 CFS-HRS; 251.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 64

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	13.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.89 WATERSHED INCHES;	21 CFS-HRS;	1.7 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.93	5.9	333.88
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.89 WATERSHED INCHES;	21 CFS-HRS;	1.7 ACRE-
FEET.		

OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.05	5.9	300.52
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.89 WATERSHED INCHES;	21 CFS-HRS;	1.7 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	16.2	(RUNOFF)
23.10	1.1	(RUNOFF)
23.75	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.01 WATERSHED INCHES;	30 CFS-HRS;	2.5 ACRE-
FEET.		

\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE TIME INCREMENT OF .043 HOURS.  
\*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES FIRST NEGATIVE VALUE IS 0 CFS.  
\*\*\*

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.51	11.6	290.02
23.12	1.1	287.44
23.77	1.0	287.43

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.01 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.61	16.7	(NULL)
24.04	1.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.37 WATERSHED INCHES; 50 CFS-HRS; 4.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 68

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	154.4	(RUNOFF)
20.87	4.0	(RUNOFF)
24.02	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.19 WATERSHED INCHES; 160 CFS-HRS; 13.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	164.6	(NULL)
20.10	6.1	(NULL)
22.74	5.0	(NULL)
24.03	4.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.42 WATERSHED INCHES; 211 CFS-HRS; 17.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	108.1	248.74

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.42 WATERSHED INCHES; 211 CFS-HRS; 17.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 71

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.14	11.5	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.52 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.62	3.1	262.91

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.51 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-  
FEET.

OPERATION REACH XSECTION 72

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.76	3.1	247.51

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.51 WATERSHED INCHES; 12 CFS-HRS; 1.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	227.4	(RUNOFF)
15.85	10.2	(RUNOFF)
17.34	8.0	(RUNOFF)
19.76	6.1	(RUNOFF)
20.08	6.0	(RUNOFF)
22.43	5.1	(RUNOFF)
24.01	4.6	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11  
SQ.MI.

10.44 CFS	.40	.58	.77	1.00	1.27	1.58	1.94
2.34							
10.92 CFS	2.78	3.26	3.79	4.44	5.21	6.11	7.11
8.21							
11.40 CFS	9.45	10.79	12.25	14.88	19.02	23.38	28.15
35.14							
11.88 CFS	46	61	89	133	197	227	199

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12.36	CFS	126	103	88	78	68	58	51
47								
12.84	CFS	43.40	40.84	38.58	36.35	34.13	31.94	30.12
28.68								
13.32	CFS	27.36	26.08	24.79	23.50	22.26	21.08	20.11
19.39								
13.80	CFS	18.82	18.37	18.03	17.76	17.51	17.22	16.86
16.47								
14.28	CFS	16.11	15.81	15.56	15.30	14.98	14.59	14.18
13.83								
14.76	CFS	13.55	13.29	13.01	12.66	12.32	12.02	11.66
11.31								
15.24	CFS	11.02	10.84	10.76	10.73	10.71	10.70	10.62
10.47								
15.72	CFS	10.29	10.19	10.22	10.20	10.09	9.92	9.77
9.69								

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16.20	CFS	9.66	9.61	9.50	9.38	9.30	9.19	9.05
8.96								
16.68	CFS	8.92	8.89	8.80	8.67	8.59	8.55	8.51
8.42								
17.16	CFS	8.26	8.07	7.97	7.99	7.97	7.85	7.67
7.51								
17.64	CFS	7.43	7.39	7.34	7.22	7.10	7.03	6.99
6.95								
18.12	CFS	6.83	6.71	6.63	6.60	6.55	6.44	6.38
6.43								
18.60	CFS	6.51	6.52	6.43	6.38	6.43	6.42	6.33
6.26								
19.08	CFS	6.23	6.22	6.21	6.21	6.21	6.22	6.22
6.22								
19.56	CFS	6.19	6.08	6.02	6.06	6.05	5.96	5.90
5.93								
20.04	CFS	6.02	6.04	5.96	5.90	5.87	5.84	5.75
5.65								
20.52	CFS	5.67	5.75	5.79	5.73	5.64	5.67	5.69
5.62								
21.00	CFS	5.54	5.49	5.48	5.47	5.46	5.46	5.46
5.47								
21.48	CFS	5.47	5.45	5.37	5.27	5.29	5.31	5.25
5.26								
21.96	CFS	5.31	5.27	5.18	5.12	5.10	5.08	5.08
5.08								
22.44	CFS	5.08	5.08	5.04	4.93	4.87	4.91	4.90
4.81								
22.92	CFS	4.74	4.77	4.87	4.88	4.80	4.74	4.71
4.69								
23.40	CFS	4.68	4.65	4.53	4.47	4.53	4.60	4.61
4.52								
23.88	CFS	4.40	4.38	4.60	4.52	3.29	1.78	.86
.42								

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.17 WATERSHED INCHES; 225 CFS-HRS; 18.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.58	1821.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.47 WATERSHED INCHES; 3268 CFS-HRS; 270.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	110.9	(NULL)
20.14	6.5	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15 SQ.MI.

10.74 CFS	.49	.63	.79	.97	1.19	1.43	1.70
2.02							
11.22 CFS	2.38	2.80	3.29	3.85	4.48	5.18	5.97
6.96							
11.70 CFS	8.34	10.10	12.21	14.91	18.55	23.80	32.03
45.19							
12.18 CFS	65.28	87.23	102.95	109.93	110.71	107.84	103.07
97.63							
12.66 CFS	91.87	85.76	79.68	74.03	68.95	64.44	60.45
56.75							
13.14 CFS	53.32	50.14	47.24	44.62	42.27	40.03	38.02
36.18							
13.62 CFS	34.48	32.90	31.41	30.04	28.80	27.70	26.73
25.88							
14.10 CFS	25.13	24.44	23.81	23.20	22.63	22.08	21.55
21.02							
14.58 CFS	20.50	19.96	19.42	18.88	18.35	17.85	17.36
16.89							
15.06 CFS	16.38	15.86	15.35	14.85	14.38	13.95	13.57
13.25							
15.54 CFS	12.99	12.75	12.52	12.28	12.05	11.83	11.65
11.50							
16.02 CFS	11.36	11.22	11.08	10.94	10.83	10.72	10.62
10.52							

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16.50 CFS	10.42	10.31	10.20	10.09	10.00	9.91	9.82
9.73							
16.98 CFS	9.64	9.55	9.48	9.40	9.31	9.20	9.09
8.99							
17.46 CFS	8.91	8.83	8.73	8.62	8.51	8.41	8.31
8.22							
17.94 CFS	8.12	8.02	7.93	7.85	7.77	7.67	7.58

7.50							
18.42 CFS	7.42	7.34	7.26	7.20	7.16	7.14	7.11
7.07							
18.90 CFS	7.04	7.02	7.00	6.96	6.92	6.88	6.85
6.83							
19.38 CFS	6.81	6.80	6.78	6.78	6.76	6.74	6.70
6.67							
19.86 CFS	6.65	6.62	6.59	6.55	6.55	6.55	6.54
6.52							
20.34 CFS	6.49	6.47	6.43	6.38	6.34	6.32	6.31
6.30							
20.82 CFS	6.27	6.25	6.24	6.22	6.19	6.15	6.12
6.09							
21.30 CFS	6.06	6.04	6.02	6.01	6.00	5.99	5.97
5.93							
21.78 CFS	5.90	5.88	5.85	5.83	5.82	5.81	5.78
5.75							
22.26 CFS	5.72	5.68	5.66	5.64	5.62	5.61	5.59
5.56							
22.74 CFS	5.52	5.49	5.46	5.43	5.39	5.35	5.34
5.34							
23.22 CFS	5.33	5.30	5.28	5.25	5.23	5.20	5.16
5.12							
23.70 CFS	5.08	5.07	5.07	5.05	5.01	4.97	4.97
4.97							
24.18 CFS	4.78	4.34	3.76	3.17	2.63	2.17	1.78
1.45							
24.66 CFS	1.18	.96	.77	.62	.49		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.35 WATERSHED INCHES; 222 CFS-HRS; 18.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.58	1920.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.23 WATERSHED INCHES; 3490 CFS-HRS; 288.5 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 77.  
 \*\*\*

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.58	1920.8	231.47

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.23 WATERSHED INCHES; 3490 CFS-HRS; 288.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 78

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	101.8	(RUNOFF)
15.85	4.6	(RUNOFF)
17.34	3.6	(RUNOFF)
23.73	2.1	(RUNOFF)
24.01	2.1	(RUNOFF)

HRS SQ.MI.	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99							
	MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05							
10.74 CFS	.46	.61	.78	.97	1.17	1.40	1.68	2.02
11.22 CFS	2.40	2.84	3.31	3.86	4.44	5.11	6.30	8.13
11.70 CFS	10.04	12.15	15.32	20.03	27.14	39.83	60.14	89.40
12.18 CFS	102	88	69	55	45	38	34	30
12.66 CFS	25.62	22.53	20.71	19.37	18.26	17.28	16.27	15.27
13.14 CFS	14.30	13.50	12.87	12.28	11.70	11.13	10.55	9.99
13.62 CFS	9.46	9.03	8.72	8.47	8.28	8.13	8.01	7.90
14.10 CFS	7.77	7.60	7.42	7.26	7.14	7.02	6.91	6.76
14.58 CFS	6.58	6.40	6.24	6.11	6.00	5.87	5.71	5.56
15.06 CFS	5.42	5.26	5.10	4.97	4.90	4.87	4.85	4.85
15.54 CFS	4.84	4.80	4.73	4.65	4.61	4.63	4.62	4.56
16.02 CFS	4.48	4.42	4.38	4.37	4.35	4.30	4.24	4.21
16.50 CFS	4.16	4.09	4.06	4.04	4.02	3.98	3.92	3.89
16.98 CFS	3.87	3.86	3.81	3.74	3.65	3.61	3.62	3.61
17.46 CFS	3.55	3.47	3.40	3.36	3.35	3.32	3.27	3.21
17.94 CFS	3.18	3.17	3.15	3.09	3.03	3.01	2.99	2.97
18.42 CFS	2.92	2.89	2.92	2.95	2.96	2.91	2.89	2.92
18.90 CFS	2.91	2.87	2.84	2.83	2.82	2.82	2.82	2.82
19.38 CFS	2.82	2.82	2.82	2.81	2.75	2.73	2.75	2.74
19.86 CFS	2.70	2.67	2.69	2.74	2.74	2.70	2.68	2.66
20.34 CFS	2.65	2.60	2.56	2.57	2.61	2.63	2.60	2.56
20.82 CFS	2.57	2.59	2.55	2.51	2.49	2.48	2.48	2.48
21.30 CFS	2.48	2.48	2.48	2.48	2.48	2.43	2.39	

2.40							
21.78 CFS	2.41	2.38	2.39	2.41	2.39	2.35	2.32
2.31							
22.26 CFS	2.31	2.31	2.31	2.31	2.31	2.29	2.24
2.21							
22.74 CFS	2.23	2.22	2.18	2.15	2.17	2.21	2.22
2.18							
23.22 CFS	2.15	2.14	2.13	2.13	2.11	2.06	2.03
2.06							
23.70 CFS	2.09	2.09	2.05	1.99	1.99	2.10	2.06
1.45							
24.18 CFS	.75	.35					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.05 WATERSHED INCHES; 100 CFS-HRS; 8.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.57	1952.8	(NULL)
23.97	67.0	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.18 WATERSHED INCHES; 3591 CFS-HRS; 296.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.64	1944.7	217.94

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.18 WATERSHED INCHES; 3591 CFS-HRS; 296.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 81

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	48.3	(RUNOFF)
15.85	2.4	(RUNOFF)
24.01	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.41 WATERSHED INCHES; 49 CFS-HRS; 4.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 82

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.64	1957.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.14 WATERSHED INCHES; 3639 CFS-HRS; 300.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.15	118.7	(RUNOFF)
15.46	5.1	(RUNOFF)
15.84	4.9	(RUNOFF)
18.84	3.1	(RUNOFF)
24.00	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.30 WATERSHED INCHES; 109 CFS-HRS; 9.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 84

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	188.3	(RUNOFF)
20.13	6.3	(RUNOFF)
20.68	6.0	(RUNOFF)
23.13	5.1	(RUNOFF)
24.01	4.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.99 WATERSHED INCHES; 229 CFS-HRS; 18.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	285.6	(NULL)
20.08	9.1	(NULL)
21.95	8.1	(NULL)
23.07	7.4	(NULL)
24.00	7.0	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
SQ.MI.



10.44	CFS	.48	.59	.74	.94	1.22	1.57	2.00
2.50								
10.92	CFS	3.08	3.72	4.42	5.28	6.30	7.47	8.81
10.27								
11.40	CFS	11.95	13.77	15.81	19.31	24.22	29.60	36.10
45.28								
11.88	CFS	58	77	111	165	241	282	276
247								
12.36	CFS	214	180	155	136	119	103	91
81								
12.84	CFS	73.61	68.08	63.38	59.15	55.22	51.62	48.57
45.95								
13.32	CFS	43.60	41.45	39.41	37.39	35.44	33.60	32.00
30.69								
13.80	CFS	29.62	28.74	28.05	27.50	27.02	26.53	26.00
25.44								
14.28	CFS	24.90	24.42	24.00	23.57	23.09	22.56	21.99
21.47								
14.76	CFS	20.99	20.56	20.11	19.61	19.13	18.65	18.12
17.61								
15.24	CFS	17.16	16.82	16.59	16.46	16.38	16.31	16.19
16.01								
15.72	CFS	15.79	15.65	15.60	15.53	15.39	15.20	15.01
14.86								
16.20	CFS	14.77	14.67	14.52	14.38	14.25	14.08	13.89
13.76								
16.68	CFS	13.66	13.58	13.44	13.29	13.17	13.08	13.00
12.87								
17.16	CFS	12.68	12.44	12.29	12.24	12.15	12.01	11.80
11.60								
17.64	CFS	11.45	11.34	11.24	11.08	10.92	10.81	10.72
10.63								
18.12	CFS	10.48	10.33	10.21	10.12	10.03	9.89	9.80
9.82								
18.60	CFS	9.87	9.87	9.80	9.76	9.79	9.75	9.67
9.60								
19.08	CFS	9.54	9.50	9.47	9.46	9.46	9.45	9.45
9.45								
19.56	CFS	9.42	9.30	9.24	9.25	9.20	9.12	9.05
9.05								
20.04	CFS	9.13	9.13	9.08	9.03	8.98	8.92	8.80
8.69								
20.52	CFS	8.69	8.74	8.77	8.71	8.65	8.66	8.65
8.57								
21.00	CFS	8.49	8.43	8.38	8.35	8.33	8.32	8.32
8.32								
21.48	CFS	8.32	8.30	8.20	8.10	8.10	8.08	8.01
8.03								
21.96	CFS	8.06	8.00	7.93	7.86	7.81	7.77	7.75
7.74								
22.44	CFS	7.74	7.73	7.69	7.57	7.50	7.51	7.46
7.37								
22.92	CFS	7.30	7.30	7.38	7.38	7.33	7.27	7.21
7.18								
23.40	CFS	7.15	7.10	6.97	6.90	6.93	6.97	6.98
6.90								

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23.88 CFS	6.78	6.75	6.97	6.78	5.47	3.92	2.63
1.63							
24.36 CFS	1.00	.63	.38				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.08 WATERSHED INCHES; 338 CFS-HRS; 28.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.63	2067.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.02 WATERSHED INCHES; 3977 CFS-HRS; 328.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	32.0	(RUNOFF)
17.34	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.76 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.63	2074.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.01 WATERSHED INCHES; 4006 CFS-HRS; 331.0 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 9, ARC 2							
MAIN TIME INCREMENT .060 HOURS							
ALTERNATE 1 STORM 2							
STRUCTURE 11	RESVOR	.09	.61	381.27	12.74	14	155.6
XSECTION 8	REACH	.17	.55	356.51	12.88	21	123.5
STRUCTURE 21	RESVOR	.07	.38	368.35	17.10F	1F	14.3
STRUCTURE 22	RESVOR	.07	.38	352.59	17.22F	1F	14.3
STRUCTURE 23	RESVOR	.32	.51	---	12.85	27	84.4
XSECTION 16	REACH	.32	.51	331.42	12.85	27	84.4
XSECTION 20	ADDHYD	.05	1.20	---	12.18	39	780.0
XSECTION 23	REACH	.41	.67	314.85	12.38	68	165.9
STRUCTURE 31	RESVOR	.05	.82	358.66	12.39	17	340.0
STRUCTURE 32	RESVOR	.01	1.06	---	20.70	0	.0
STRUCTURE 33	RESVOR	.03	.92	354.26	15.66R	1R	33.3
STRUCTURE 34	RESVOR	.04	.95	---	15.54F	1F	25.0
XSECTION 44	REACH	.77	.77	289.60	12.57	159	206.5
XSECTION 49	ADDHYD	.82	.77	---	12.55	169	206.1
XSECTION 51	REACH	.93	.78	283.65	12.69	189	203.2
XSECTION 60	ADDHYD	1.01	.75	---	12.68	195	193.1
XSECTION 62	ADDHYD	1.02	.74	---	12.68	195	191.2
XSECTION 63	REACH	1.02	.74	249.00	12.93	175	171.6
STRUCTURE 61	RESVOR	.01	.20	---	20.13	0	.0
STRUCTURE 62	RESVOR	.05	.00	---	.00	0	.0
STRUCTURE 63	RESVOR	.01	.00	---	15.87	0	.0
XSECTION 76	ADDHYD	1.28	.63	---	12.92	183	143.0
XSECTION 77	REACH	1.28	.63	228.04	12.99	183	143.0
XSECTION 88	ADDHYD	1.55	.56	---	13.05	190	122.6

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 4.10 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	5				
STRUCTURE	11	RESVOR	.09	1.09	381.75	12.57	34	377.8
XSECTION	8	REACH	.17	1.02	356.84	12.67	53	311.8
STRUCTURE	21	RESVOR	.07	.87	369.75	14.16F	5F	71.4
STRUCTURE	22	RESVOR	.07	.87	352.79	14.28F	5F	71.4
STRUCTURE	23	RESVOR	.32	.98	---	12.61	69	215.6
XSECTION	16	REACH	.32	.98	331.94	12.61	69	215.6
XSECTION	20	ADDHYD	.05	1.89	---	12.18	63	1260.0
XSECTION	23	REACH	.41	1.18	315.26	12.36	130	317.1
STRUCTURE	31	RESVOR	.05	1.40	361.49	12.45	26	520.0
STRUCTURE	32	RESVOR	.01	1.64	378.01	14.40R	1R	100.0
STRUCTURE	33	RESVOR	.03	1.54	354.96	12.92	6	200.0
STRUCTURE	34	RESVOR	.04	1.56	---	12.94	6	150.0
XSECTION	44	REACH	.77	1.32	290.02	12.50	303	393.5
XSECTION	49	ADDHYD	.82	1.33	---	12.49	321	391.5
XSECTION	51	REACH	.93	1.34	284.38	12.59	366	393.5
XSECTION	60	ADDHYD	1.01	1.30	---	12.58	379	375.2
XSECTION	62	ADDHYD	1.02	1.28	---	12.58	381	373.5
XSECTION	63	REACH	1.02	1.28	249.43	12.78	354	347.1
STRUCTURE	61	RESVOR	.01	.49	329.97	12.62	1	100.0
STRUCTURE	62	RESVOR	.05	.01	---	21.97	0	.0
STRUCTURE	63	RESVOR	.01	.08	---	24.09	0	.0
XSECTION	76	ADDHYD	1.28	1.12	---	12.76	375	293.0
XSECTION	77	REACH	1.28	1.12	228.96	12.83	375	293.0
XSECTION	88	ADDHYD	1.55	1.01	---	12.82	397	256.1

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	10				
STRUCTURE	11	RESVOR	.09	1.59	382.24	12.50	57	633.3
XSECTION	8	REACH	.17	1.50	357.14	12.59	90	529.4

STRUCTURE	21	RESVOR	.07	1.38	371.49	13.91	7	100.0
STRUCTURE	22	RESVOR	.07	1.37	352.94	14.04F	7F	100.0
STRUCTURE	23	RESVOR	.32	1.47	---	12.53	117	365.6
XSECTION	16	REACH	.32	1.47	332.34	12.53	117	365.6
XSECTION	20	ADDHYD	.05	2.55	---	12.18	85	1700.0
XSECTION	23	REACH	.41	1.71	315.56	12.35	201	490.2
STRUCTURE	31	RESVOR	.05	1.97	363.20	12.43	41	820.0
STRUCTURE	32	RESVOR	.01	2.18	378.97	14.16R	1R	100.0
STRUCTURE	33	RESVOR	.03	2.14	355.62	12.63	13	433.3
STRUCTURE	34	RESVOR	.04	2.15	---	12.64	14	350.0
XSECTION	44	REACH	.77	1.87	290.37	12.48	461	598.7
XSECTION	49	ADDHYD	.82	1.88	---	12.47	488	595.1
XSECTION	51	REACH	.93	1.90	284.96	12.56	559	601.1
XSECTION	60	ADDHYD	1.01	1.84	---	12.55	580	574.3
XSECTION	62	ADDHYD	1.02	1.82	---	12.55	583	571.6
XSECTION	63	REACH	1.02	1.82	249.80	12.71	552	541.2
STRUCTURE	61	RESVOR	.01	.83	330.45	12.76	2	200.0
STRUCTURE	62	RESVOR	.05	.08	---	19.47	0	.0
STRUCTURE	63	RESVOR	.01	.23	---	20.72	0	.0
XSECTION	76	ADDHYD	1.28	1.61	---	12.69	591	461.7
XSECTION	77	REACH	1.28	1.61	229.56	12.76	589	460.2
XSECTION	88	ADDHYD	1.55	1.48	---	12.74	629	405.8

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				ELEVATION	TIME	RATE	RATE	
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	(FT)	(HR)	(CFS)	(CSM)	
RAINFALL OF 6.14 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.								
ALTERNATE 1 STORM 25								
STRUCTURE	11	RESVOR	.09	2.43	382.88	12.33	110	1222.2
XSECTION	8	REACH	.17	2.33	357.65	12.47	176	1035.3
STRUCTURE	21	RESVOR	.07	2.22	374.19	13.98F	10F	142.9
STRUCTURE	22	RESVOR	.07	2.22	353.10	14.16F	10F	142.9
STRUCTURE	23	RESVOR	.32	2.30	---	12.44	233	728.1
XSECTION	16	REACH	.32	2.30	333.13	12.44	233	728.1
XSECTION	20	ADDHYD	.05	3.60	---	12.18	120	2400.0
XSECTION	23	REACH	.41	2.59	316.00	12.34	336	819.5

STRUCTURE	31	RESVOR	.05	2.92	363.85	12.34	73	1460.0
STRUCTURE	32	RESVOR	.01	3.10	379.74	12.81	3	300.0
STRUCTURE	33	RESVOR	.03	3.15	356.52	12.44	30	1000.0
STRUCTURE	34	RESVOR	.04	3.13	---	12.45	30	750.0
XSECTION	44	REACH	.77	2.79	290.92	12.46	770	1000.0
XSECTION	49	ADDHYD	.82	2.80	---	12.44	813	991.5
XSECTION	51	REACH	.93	2.82	285.82	12.53	923	992.5
XSECTION	60	ADDHYD	1.01	2.75	---	12.52	959	949.5
XSECTION	62	ADDHYD	1.02	2.73	---	12.52	965	946.1
XSECTION	63	REACH	1.02	2.73	250.33	12.65	926	907.8
STRUCTURE	61	RESVOR	.01	1.45	331.69	12.76	4	400.0
STRUCTURE	62	RESVOR	.05	.30	287.56	12.62	2	40.0
STRUCTURE	63	RESVOR	.01	.57	260.10	12.55	1	100.0
XSECTION	76	ADDHYD	1.28	2.45	---	12.63	1000	781.3
XSECTION	77	REACH	1.28	2.45	230.36	12.70	999	780.5
XSECTION	88	ADDHYD	1.55	2.29	---	12.75	1064	686.5

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A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
				AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)

RAINFALL OF 7.23 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 50

STRUCTURE	11	RESVOR	.09	3.24	383.28	12.35	143	1588.9
XSECTION	8	REACH	.17	3.12	358.00	12.44	249	1464.7
STRUCTURE	21	RESVOR	.07	3.04	375.51	13.11	28	400.0
STRUCTURE	22	RESVOR	.07	3.03	354.18	13.25	27	385.7
STRUCTURE	23	RESVOR	.32	3.10	---	12.39	328	1025.0
XSECTION	16	REACH	.32	3.10	333.68	12.39	328	1025.0
XSECTION	20	ADDHYD	.05	4.57	---	12.17	151	3020.0
XSECTION	23	REACH	.41	3.43	316.35	12.37	469	1143.9
STRUCTURE	31	RESVOR	.05	3.81	364.46	12.35	94	1880.0
STRUCTURE	32	RESVOR	.01	3.97	380.15	12.48	9	900.0
STRUCTURE	33	RESVOR	.03	4.09	357.08	12.36	50	1666.7
STRUCTURE	34	RESVOR	.04	4.06	---	12.38	55	1375.0
XSECTION	44	REACH	.77	3.67	291.36	12.44	1077	1398.7
XSECTION	49	ADDHYD	.82	3.68	---	12.43	1132	1380.5

XSECTION	51	REACH	.93	3.70	286.50	12.51	1284	1380.6
XSECTION	60	ADDHYD	1.01	3.62	---	12.50	1334	1320.8
XSECTION	62	ADDHYD	1.02	3.59	---	12.50	1344	1317.6
XSECTION	63	REACH	1.02	3.59	250.77	12.62	1296	1270.6
STRUCTURE	61	RESVOR	.01	2.09	332.65	12.85	5	500.0
STRUCTURE	62	RESVOR	.05	.59	288.14	12.50	6	120.0
STRUCTURE	63	RESVOR	.01	.97	261.37	12.57	2	200.0
XSECTION	76	ADDHYD	1.28	3.26	---	12.60	1415	1105.5
XSECTION	77	REACH	1.28	3.26	230.94	12.67	1414	1104.7
XSECTION	88	ADDHYD	1.55	3.07	---	12.72	1507	972.3

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 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 99

STRUCTURE	11	RESVOR	.09	4.22	383.82	12.34	188	2088.9
XSECTION	8	REACH	.17	4.09	358.29	12.43	330	1941.2
STRUCTURE	21	RESVOR	.07	4.03	376.33	12.76	64	914.3
STRUCTURE	22	RESVOR	.07	4.02	356.20	12.90	60	857.1
STRUCTURE	23	RESVOR	.32	4.07	---	12.37	438	1368.8
XSECTION	16	REACH	.32	4.07	334.28	12.37	438	1368.8
XSECTION	20	ADDHYD	.05	5.70	---	12.17	187	3740.0
XSECTION	23	REACH	.41	4.44	316.70	12.35	634	1546.3
STRUCTURE	31	RESVOR	.05	4.85	364.96	12.31	126	2520.0
STRUCTURE	32	RESVOR	.01	4.99	380.43	12.32	19	1900.0
STRUCTURE	33	RESVOR	.03	5.18	357.45	12.30	79	2633.3
STRUCTURE	34	RESVOR	.04	5.14	---	12.32	94	2350.0
XSECTION	44	REACH	.77	4.70	291.84	12.42	1454	1888.3
XSECTION	49	ADDHYD	.82	4.71	---	12.41	1527	1862.2
XSECTION	51	REACH	.93	4.74	287.21	12.49	1727	1857.0
XSECTION	60	ADDHYD	1.01	4.65	---	12.48	1797	1779.2
XSECTION	62	ADDHYD	1.02	4.61	---	12.48	1810	1774.5
XSECTION	63	REACH	1.02	4.61	251.23	12.59	1751	1716.7
STRUCTURE	61	RESVOR	.01	2.89	333.88	12.93	6	600.0
STRUCTURE	62	RESVOR	.05	1.01	290.02	12.51	12	240.0

STRUCTURE	63	RESVOR	.01	1.51	262.91	12.62	3	300.0
XSECTION	76	ADDHYD	1.28	4.23	---	12.58	1921	1500.8
XSECTION	77	REACH	1.28	4.23	231.47	12.58	1921	1500.8
XSECTION	88	ADDHYD	1.55	4.01	---	12.63	2075	1338.7

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION                      ROUTING PARAMETERS

XSEC	REACH	FLOOD PLAIN	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR	PEAK RATIO Q/I	ATT-KIN
			PEAK	TIME	PEAK	TIME	COEFF	POWER			
ID	LENGTH	LENGTH	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	(C)

BASEFLOW IS .0 CFS

ALTERNATE	1	STORM	2							
2	1170	16	12.3	15	12.4	1.54	1.38	.031	.947	
.54										
5	797	14	12.7	14	12.8	2.01	1.37	.006	.991	
.77?										
8	1221	21	12.8	21	12.9	1.13	1.49	.008	.972	
.56										
16	920	27	12.8	27	12.8	3.61	1.49	.001	1.000	
1.00?										
23	1379	94	12.2	68	12.4	1.54	1.06	.091	.721	
.28										
27	1021	45	12.3	42	12.4	.75	1.36	.036	.928	
.48										
32	1603	33	12.2	28	12.4	1.21	1.36	.062	.851	
.42										
34	583	0	14.6	0	14.6	1.14	1.62	.001	.995	
.37										
37	934	1	15.3	1	15.4	2.31	1.55	.001	.999	
.51										
44	1428	187	12.4	159	12.5	1.01	1.14	.071	.851	
.29										
51	1275	200	12.5	188	12.7	1.00	1.18	.042	.939	
.36										
53	652	0	.0	0	.0	.000	.00	.000	.000	
.00										



63	1959	195	12.7	175	12.9	1.71	1.08	.075	.899	
.25										
65	1283	0	12.9	0	13.1	2.54	1.48	.017	.932	
.28										
70	2166	5	12.4	4	12.6	1.50	1.61	.019	.882	
.32										
72	1081	0	.0	0	.0	.000	.00	.000	.000	
.00										
77	884	183	12.9	183	13.0	1.24	1.37	.004	.998	
.89?										
80	1296	184	13.0	184	13.1	1.55	1.45	.003	.999	
.90?										
ALTERNATE		1	STORM	5						
-----										
2	1170	27	12.3	25	12.4	1.56	1.37	.028	.955	
.59										
5	797	34	12.5	34	12.7	2.33	1.17	.019	.989	
.71?										
8	1221	54	12.6	53	12.7	1.13	1.49	.008	.990	
.69?										
16	920	69	12.6	69	12.6	3.61	1.49	.001	1.000	
1.00?										
23	1379	170	12.2	130	12.4	1.28	1.12	.074	.766	
.32										
27	1021	76	12.3	68	12.5	1.10	1.17	.061	.902	
.41										
32	1603	58	12.2	51	12.4	1.23	1.35	.055	.882	
.47										
34	583	1	14.4	1	14.3	1.14	1.62	.001	.997	
.43										

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MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC ID	REACH LENGTH COEFF	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT- KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
ALTERNATE		1	STORM	5							
-----											
37	934		6	13.0	6	13.0	2.31	1.55	.001	.998	

.74?									
44	1428	333	12.4	303	12.5	.52	1.31	.039	.908
.38									
51	1275	383	12.4	366	12.6	.64	1.29	.028	.957
.45									
53	652	0	13.3	0	13.4	2.05	1.40	.007	.956
.32									
63	1959	380	12.6	354	12.8	.89	1.24	.046	.931
.33									
65	1283	1	12.6	1	12.8	2.54	1.48	.018	.945
.41									
70	2166	20	12.2	17	12.4	1.56	1.47	.034	.821
.41									
72	1081	0	14.5	0	14.9	1.50	1.61	.014	.912
.14									
77	884	375	12.8	375	12.8	1.89	1.22	.008	.999
.85?									
80	1296	379	12.8	379	12.8	1.57	1.44	.003	1.000
1.00?									

ALTERNATE		1	STORM	10						
2	1170		37	12.3	35	12.4	1.75	1.26	.039	.945
.55										
5	797		56	12.5	55	12.6	2.23	1.20	.018	.974
.76?										
8	1221		90	12.5	90	12.6	1.15	1.48	.008	.994
.76?										
16	920		117	12.5	117	12.5	3.61	1.49	.001	1.000
1.00?										
23	1379		248	12.2	201	12.4	.97	1.19	.055	.811
.36										
27	1021		105	12.4	98	12.5	1.08	1.18	.056	.935
.43										
32	1603		82	12.2	73	12.4	1.29	1.33	.054	.890
.49										
34	583		1	14.2	1	14.3	1.14	1.62	.001	.998
.47										
37	934		14	12.7	14	12.7	2.31	1.55	.002	.999
.87?										
44	1428		492	12.3	461	12.5	.39	1.37	.029	.937
.44										
51	1275		579	12.4	558	12.5	.52	1.34	.023	.964
.51										
53	652		0	12.5	0	12.7	2.05	1.40	.010	.932
.47										
63	1959		583	12.5	552	12.7	.62	1.33	.034	.947
.39										
65	1283		2	12.8	2	12.9	2.51	1.46	.014	.987
.46										
70	2166		39	12.2	34	12.4	1.68	1.41	.037	.858
.46										

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MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

XSEC ID	REACH LENGTH COEFF	FLOOD PLAIN LENGTH (FT)	HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT- KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
	ALTERNATE	1	STORM	10							
72	1081		0	12.8	0	13.1	1.50	1.61	.013	.936	
.25											
77	884		589	12.7	589	12.8	1.93	1.22	.009	.999	
.89?											
80	1296		595	12.8	595	12.8	1.62	1.43	.003	1.000	
1.00?											
	ALTERNATE	1	STORM	25							
2	1170		54	12.3	53	12.4	.42	1.81	.008	.979	
.76?											
5	797		104	12.3	103	12.4	2.04	1.24	.017	.986	
.85?											
8	1221		179	12.4	176	12.5	1.23	1.45	.010	.986	
.85?											
16	920		231	12.4	231	12.4	3.62	1.49	.001	1.000	
1.00?											
23	1379		391	12.2	336	12.4	.73	1.27	.041	.860	
.43											
27	1021		182	12.3	167	12.4	.77	1.27	.045	.915	
.51											
32	1603		122	12.2	110	12.3	1.34	1.31	.050	.906	
.51											
34	583		3	12.8	3	12.9	1.14	1.62	.002	.996	
.68?											
37	934		30	12.5	30	12.5	2.31	1.55	.002	1.000	
1.00?											
44	1428		807	12.4	768	12.5	.30	1.43	.023	.952	
.52											
51	1275		951	12.4	923	12.5	.46	1.36	.020	.970	
.58											
53	652		2	12.2	2	12.3	2.05	1.40	.014	.917	
.63											
63	1959		963	12.5	926	12.7	.46	1.39	.026	.961	
.47											
65	1283		4	12.8	4	12.9	2.48	1.44	.012	.988	
.51											
70	2166		75	12.2	63	12.3	1.65	1.32	.052	.838	
.43											
72	1081		1	12.5	1	12.7	1.50	1.61	.012	.973	

.38  
 77 884 998 12.7 997 12.7 1.94 1.22 .009 1.000  
 .94?  
 80 1296 1010 12.7 1009 12.8 3.08 1.20 .010 .999  
 .88?

ALTERNATE 1 STORM 50  
 -----

2 1170 69 12.3 69 12.4 .30 2.00 .003 .996  
 .92?  
 5 797 143 12.4 143 12.4 1.95 1.26 .015 .995  
 .89?

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MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION ROUTING PARAMETERS  
 -----

XSEC ID	REACH LENGTH COEFF	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT- KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
		ALTERNATE 1	STORM 50	-----							
8	1221		250	12.4	248	12.4	1.28	1.44	.009	.993	
	.90?										
16	920		326	12.4	326	12.4	3.78	1.47	.001	1.000	
	1.00?										
23	1379		526	12.2	469	12.4	.65	1.29	.035	.892	
	.46										
27	1021		235	12.3	224	12.4	.54	1.37	.030	.953	
	.58										
32	1603		158	12.2	146	12.3	1.36	1.31	.047	.919	
	.54										
34	583		9	12.5	9	12.5	1.14	1.62	.003	.989	
	.85?										
37	934		54	12.4	54	12.4	2.32	1.54	.003	1.000	
	1.00?										
44	1428		1117	12.3	1073	12.4	.27	1.45	.020	.961	
	.57										
51	1275		1314	12.4	1277	12.5	.44	1.37	.018	.972	
	.62										
53	652		5	12.2	4	12.2	2.05	1.40	.017	.927	
	.75?										

63	1959	1340	12.5	1294	12.6	.40	1.42	.023	.965	
.51										
65	1283	5	12.8	5	13.0	2.47	1.43	.009	.997	
.54										
70	2166	114	12.2	81	12.4	1.78	1.11	.139	.711	
.26										
72	1081	2	12.6	2	12.7	1.50	1.61	.009	.985	
.44										
77	884	1415	12.6	1414	12.7	1.90	1.22	.009	.999	
.97?										
80	1296	1433	12.7	1427	12.7	4.19	1.12	.016	.995	
.84?										
ALTERNATE		1	STORM	99						
-----										
2	1170	88	12.3	87	12.4	.28	2.00	.002	.998	
.95?										
5	797	188	12.4	187	12.4	1.88	1.27	.013	.998	
.93?										
8	1221	331	12.4	330	12.4	1.29	1.44	.008	.997	
.94?										
16	920	437	12.4	437	12.4	3.98	1.45	.001	1.000	
1.00?										
23	1379	685	12.2	634	12.4	.60	1.31	.031	.926	
.49										
27	1021	313	12.3	299	12.4	.41	1.44	.023	.957	
.65										
32	1603	201	12.2	187	12.3	1.37	1.30	.044	.933	
.56										
34	583	19	12.3	19	12.4	1.14	1.62	.004	.999	
1.00?										

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MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

XSEC ID	REACH LENGTH COEFF	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT- KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
ALTERNATE		1	STORM	99							
37	934		93	12.3	93	12.3	2.39	1.52	.003	1.000	

1.00?									
44	1428	1507	12.3	1454	12.4	.26	1.46	.018	.965
.61									
51	1275	1759	12.4	1726	12.5	.43	1.38	.017	.981
.65									
53	652	8	12.2	8	12.2	2.05	1.40	.017	.971
.83?									
63	1959	1810	12.5	1749	12.6	.37	1.44	.020	.966
.56									
65	1283	6	12.9	6	13.0	2.46	1.42	.007	.997
.55									
70	2166	163	12.2	108	12.4	1.88	1.05	.186	.662
.22									
72	1081	3	12.6	3	12.8	1.50	1.61	.006	.993
.48									
77	884	1915	12.6	1915	12.6	1.79	1.23	.008	1.000
1.00?									
80	1296	1945	12.6	1942	12.7	4.36	1.11	.016	.998
.85?									

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
STRUCTURE 63	.01					
-----						
ALTERNATE 1	2	0	0	0	1	
STRUCTURE 62	.05					
-----						
ALTERNATE 1	6	0	0	0	2	
STRUCTURE 61	.01					
-----						
ALTERNATE 1	5	0	1	2	4	
STRUCTURE 34	.04					
-----						
ALTERNATE 1	55	1	6	14	30	
STRUCTURE 33	.03					
-----						
ALTERNATE 1		1?	6	13	30	

50					
STRUCTURE	32		.01		
-----					
ALTERNATE	1			0	1?
9					1?
					3
STRUCTURE	31		.05		
-----					
ALTERNATE	1			17	26
94					41
					73
STRUCTURE	23		.32		
-----					
ALTERNATE	1			27	69
328					117
					233
STRUCTURE	22		.07		
-----					
ALTERNATE	1			1	5
27					7
					10
STRUCTURE	21		.07		
-----					
ALTERNATE	1			1	5
28					7
					10
STRUCTURE	11		.09		
-----					
ALTERNATE	1			14	34
143					57
					110
XSECTION	8		.17		
-----					
ALTERNATE	1			21	53
249					90
					176
XSECTION	16		.32		
-----					
ALTERNATE	1			27	69
328					117
					233
XSECTION	20		.05		
-----					

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50

XSECTION	20		.05				
ALTERNATE	1			39	63	85	120
151							
XSECTION	23		.41				
ALTERNATE	1			68	130	201	336
469							
XSECTION	44		.77				
ALTERNATE	1			159	303	461	770
1077							
XSECTION	49		.82				
ALTERNATE	1			169	321	488	813
1132							
XSECTION	51		.93				
ALTERNATE	1			189	366	559	923
1284							
XSECTION	60		1.01				
ALTERNATE	1			195	379	580	959
1334							
XSECTION	62		1.02				
ALTERNATE	1			195	381	583	965
1344							
XSECTION	63		1.02				
ALTERNATE	1			175	354	552	926
1296							
XSECTION	76		1.28				
ALTERNATE	1			183	375	591	1000
1415							
XSECTION	77		1.28				
ALTERNATE	1			183	375	589	999
1414							
XSECTION	88		1.55				
ALTERNATE	1			190	397	629	1064
1507							

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
------------------------------	-----------------------------	--------------------------



STRUCTURE	63	.01	
-----			
ALTERNATE	1		3
STRUCTURE	62	.05	
-----			
ALTERNATE	1		12
STRUCTURE	61	.01	
-----			
ALTERNATE	1		6

1  
 TR20 ----- SCS  
 -

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 06/05/\*\* CN WOODS.- 2,10,50,100 yr (24hr)-NOAA\_C  
 2.04TEST  
 15:23:05 SUMMARY, JOB NO. 1 PAGE  
 173

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
STRUCTURE 34	.04	
-----		
ALTERNATE 1		94
STRUCTURE 33	.03	
-----		
ALTERNATE 1		79
STRUCTURE 32	.01	
-----		
ALTERNATE 1		19
STRUCTURE 31	.05	
-----		
ALTERNATE 1		126
STRUCTURE 23	.32	
-----		
ALTERNATE 1		438
STRUCTURE 22	.07	
-----		
ALTERNATE 1		60
STRUCTURE 21	.07	
-----		
ALTERNATE 1		64
STRUCTURE 11	.09	
-----		

ALTERNATE	1		188
XSECTION	8	.17	
ALTERNATE	1		330
XSECTION	16	.32	
ALTERNATE	1		438
XSECTION	20	.05	
ALTERNATE	1		187
XSECTION	23	.41	
ALTERNATE	1		634
XSECTION	44	.77	
ALTERNATE	1		1454

1 TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 06/05/\*\* CN WOODS.- 2,10,50,100 yr (24hr)-NOAA\_C  
 2.04TEST  
 15:23:05 SUMMARY, JOB NO. 1 PAGE  
 174

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION 49	.82	
ALTERNATE 1		1527
XSECTION 51	.93	
ALTERNATE 1		1727
XSECTION 60	1.01	
ALTERNATE 1		1797
XSECTION 62	1.02	
ALTERNATE 1		1810
XSECTION 63	1.02	
ALTERNATE 1		1751
XSECTION 76	1.28	

ALTERNATE	1	1921
XSECTION	77	1.28
-----		
ALTERNATE	1	1921
XSECTION	88	1.55
-----		
ALTERNATE	1	2075

1 TR20 ----- SCS  
-

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
VERSION  
06/05/\*\* CN WOODS.- 2,10,50,100 yr (24hr)-NOAA\_C  
2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = xtralwd.dat , GIVEN DATA FILE  
OUTPUT = xtralwd.OUT , DATED  
06/05/\*\*,15:23:05

FILES GENERATED - DATED 06/05/\*\*,15:23:05

NONE!

TOTAL NUMBER OF WARNINGS = 57, MESSAGES = 50

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
 HYDROLOGY\*\*\*\*\*

JOB	TR-20	NOPLOTS				
TITLE	Ellicott City Flood Study-Tiber/South Sub-Drainage Areas					
TITLE	27 Subareas MGMT-sTD NOAA_C 2,5,10,50,100 WOODS (GOOD)					
5	RAINFL	1	.1			
8	0.0000	0.0013	0.0023	0.0034	0.0044	
8	0.0055	0.0065	0.0076	0.0087	0.0098	
8	0.0109	0.0121	0.0132	0.0143	0.0155	
8	0.0167	0.0178	0.0190	0.0202	0.0214	
8	0.0226	0.0238	0.0251	0.0263	0.0276	
8	0.0288	0.0301	0.0314	0.0327	0.0340	
8	0.0353	0.0366	0.0379	0.0393	0.0406	
8	0.0420	0.0434	0.0447	0.0461	0.0475	
8	0.0489	0.0504	0.0518	0.0532	0.0547	
8	0.0562	0.0576	0.0591	0.0606	0.0621	
8	0.0636	0.0651	0.0667	0.0682	0.0697	
8	0.0713	0.0729	0.0745	0.0760	0.0776	
8	0.0793	0.0809	0.0826	0.0843	0.0861	
8	0.0879	0.0898	0.0916	0.0936	0.0955	
8	0.0975	0.0996	0.1017	0.1038	0.1060	
8	0.1082	0.1104	0.1127	0.1150	0.1174	
8	0.1198	0.1223	0.1247	0.1273	0.1298	
8	0.1324	0.1351	0.1378	0.1405	0.1432	
8	0.1461	0.1490	0.1521	0.1554	0.1588	
8	0.1623	0.1660	0.1699	0.1739	0.1780	
8	0.1823	0.1868	0.1914	0.1961	0.2010	
8	0.2061	0.2117	0.2179	0.2247	0.2321	
8	0.2400	0.2490	0.2591	0.2702	0.2825	
8	0.2955	0.3157	0.3370	0.3662	0.4067	
8	0.4766	0.5933	0.6338	0.6630	0.6843	
8	0.7045	0.7176	0.7298	0.7409	0.7510	
8	0.7600	0.7679	0.7753	0.7821	0.7883	
8	0.7939	0.7990	0.8039	0.8086	0.8132	
8	0.8177	0.8220	0.8261	0.8301	0.8340	
8	0.8377	0.8412	0.8446	0.8479	0.8510	
8	0.8540	0.8568	0.8595	0.8622	0.8649	
8	0.8676	0.8702	0.8727	0.8753	0.8778	
8	0.8802	0.8826	0.8850	0.8873	0.8896	
8	0.8918	0.8940	0.8962	0.8983	0.9004	
8	0.9025	0.9045	0.9064	0.9084	0.9103	
8	0.9121	0.9139	0.9157	0.9174	0.9191	
8	0.9208	0.9224	0.9240	0.9256	0.9271	
8	0.9287	0.9303	0.9318	0.9334	0.9349	
8	0.9364	0.9379	0.9394	0.9409	0.9424	
8	0.9439	0.9453	0.9468	0.9482	0.9496	
8	0.9511	0.9525	0.9539	0.9553	0.9566	
8	0.9580	0.9594	0.9607	0.9621	0.9634	
8	0.9647	0.9660	0.9673	0.9686	0.9699	
8	0.9712	0.9724	0.9737	0.9749	0.9762	
8	0.9774	0.9786	0.9798	0.9810	0.9822	
8	0.9834	0.9845	0.9857	0.9868	0.9879	

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

8	0.9891	0.9902	0.9913	0.9924	0.9935
8	0.9945	0.9956	0.9967	0.9977	0.9987
8	1.0000	1.0000	1.0000	1.0000	1.0000

9 ENDTBL

3 STRUCT 58

8		424.00	0.00	0.00
8		429.09	2.00	0.72
8		429.59	4.00	0.85
8		430.00	6.00	0.96
8		430.21	8.00	1.02
8		430.36	10.00	1.06
8		430.49	12.00	1.10
8		430.64	14.00	1.15
8		430.74	15.00	1.18
8		431.22	17.09	1.33
8		431.68	33.53	1.49
8		432.18	80.87	1.67
8		432.37	108.22	1.74

9 ENDTBL

2 XSECTN 007

8		1.0	319.00	
8		318.00	0.00	0.00
8		318.25	10.19	3.39
8		318.50	32.80	7.08
8		318.75	65.48	11.07
8		319.00	107.54	15.35
8		320.00	367.34	35.47
8		321.00	663.16	60.18
8		322.00	1052.26	89.31
8		323.00	1529.69	131.30

9 ENDTBL

3 STRUCT 52

8		451.90	0.00	0.00
8		454.05	0.34	0.73
8		454.30	0.36	0.85
8		455.60	18.83	1.65
8		456.10	41.43	2.00
8		456.50	72.96	2.28

9 ENDTBL

2 XSECTN 011

8		1.0	415.00	
8		414.00	0.00	0.00
8		414.25	7.22	1.98
8		414.50	23.69	4.29
8		414.75	48.28	6.93
8		415.00	81.00	9.89
8		416.00	299.51	25.08
8		417.00	488.53	45.33
8		418.00	779.05	70.44
8		419.00	809.36	107.84

9 ENDTBL

3 STRUCT 51

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		396.00	0.00	0.00
8		396.50	4.38	0.27
8		397.00	12.40	0.65
8		397.50	22.78	1.07
8		398.00	35.07	1.54
8		398.50	49.45	2.05
8		399.00	64.75	2.59

8			399.45	86.12	3.10
9	ENDTBL				
2	XSECTN	016	1.0	331.00	
8			330.00	0.00	0.00
8			330.25	5.94	1.92
8			330.50	21.34	4.68
8			330.75	47.19	8.28
8			331.00	85.01	12.73
8			332.00	385.16	38.91
8			333.00	704.29	76.97
8			334.00	1202.25	125.34
8			335.00	1592.91	187.47
9	ENDTBL				
2	XSECTN	020	1.0	235.00	
8			234.00	0.00	0.00
8			234.25	9.06	3.27
8			234.50	29.33	6.89
8			234.75	58.86	10.87
8			235.00	97.22	15.19
8			236.00	339.40	36.03
8			237.00	586.83	61.50
8			238.00	902.53	90.59
8			239.00	1290.91	123.25
8			240.00	1750.59	159.40
8			241.00	1985.66	201.02
8			242.00	2381.26	250.13
9	ENDTBL				
3	STRUCT	47			
8			410.00	0.00	0.00
8			413.89	5.00	0.05
8			414.04	10.00	0.15
8			414.17	15.00	0.24
8			414.28	20.00	0.27
8			415.00	30.68	0.38
8			415.27	39.01	0.42
8			415.52	52.87	0.45
8			415.79	71.61	0.49
8			416.07	95.27	0.54
9	ENDTBL				
3	STRUCT	32			
8			367.00	0.00	0.00
8			367.37	10.00	0.29
8			367.59	20.00	0.47

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)

\*\*\*\*\*

8			367.78	30.00	0.62
8			367.94	40.00	0.76
8			368.09	50.00	0.89
8			368.44	75.00	1.18
8			368.82	88.96	1.52
8			369.30	142.54	1.95
8			369.79	219.99	2.41
8			370.11	280.10	2.72
8			370.33	326.70	2.93
8			370.56	378.34	3.15
9	ENDTBL				
3	STRUCT	34			
8			329.00	0.00	0.00
8			332.62	30.00	0.72

8			336.99	50.00	2.59
8			337.92	70.00	3.17
8			338.11	90.00	3.29
8			338.19	100.00	3.34
8			338.26	109.00	3.39
8			338.55	150.00	3.58
8			338.61	160.00	3.63
8			338.64	165.00	3.65
8			338.70	175.00	3.69
8			338.73	179.50	3.71
8			343.01	310.00	7.34
8			343.91	680.58	8.20
9	ENDTBL				
3	STRUCT	64			
9	ENDTBL				
2	XSECTN	030	1.0	357.00	
8			356.00	0.00	0.00
8			356.25	11.94	4.48
8			356.50	38.65	9.42
8			356.75	77.59	14.83
8			357.00	128.16	20.70
8			358.00	446.97	48.84
8			359.00	544.48	91.80
8			360.00	941.05	156.94
8			361.00	1597.14	242.00
9	ENDTBL				
2	XSECTN	035	1.0	317.00	
8			316.00	0.00	0.00
8			316.25	12.78	5.64
8			316.50	44.21	13.12
8			316.75	94.71	22.44
8			317.00	166.16	33.59
8			318.00	703.03	96.58
8			319.00	1203.58	187.92
8			320.00	2039.69	306.56
8			321.00	3441.07	443.04

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

9	ENDTBL				
3	STRUCT	33			
8			323.00	0.00	0.00
8			323.20	5.00	0.01
8			324.01	10.00	0.06
8			325.62	15.00	0.19
8			326.73	18.00	0.29
8			327.09	20.00	0.33
8			327.38	25.00	0.36
8			327.54	28.00	0.38
8			327.63	30.00	0.39
8			328.16	38.10	0.46
8			328.84	73.25	0.54
8			329.21	106.03	0.59
9	ENDTBL				
3	STRUCT	29			
8			266.00	0.00	0.00
8			273.38	10.00	2.49
8			273.62	20.00	2.64
8			273.91	35.00	2.82
8			274.10	46.00	2.94

8			274.35	55.00	3.10
8			274.51	58.00	3.20
8			274.61	60.00	3.28
8			274.90	65.00	3.47
8			275.21	98.51	3.68
8			275.54	139.16	3.92
8			275.89	189.97	4.18
8			276.27	253.87	4.48
8			276.50	299.40	4.67
9	ENDTBL				
2	XSECTN	042	1.0	223.00	
8			222.00	0.00	0.00
8			222.25	2.73	0.83
8			222.50	10.35	2.16
8			222.75	23.82	3.97
8			223.00	44.24	6.28
8			224.00	215.28	20.42
8			225.00	406.10	41.61
8			226.00	702.08	67.86
8			227.00	890.97	103.46
9	ENDTBL				
2	XSECTN	045	1.0	223.00	
8			222.00	0.00	0.00
8			222.25	2.28	0.83
8			222.50	8.62	2.16
8			222.75	19.85	3.97
8			223.00	36.86	6.28
8			224.00	179.35	20.41
8			225.00	338.28	41.30

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			226.00	584.84	67.85
8			227.00	830.09	103.44
8			228.00	1249.11	151.47
8			229.00	1307.14	232.37
8			230.00	2023.03	366.57
9	ENDTBL				
3	STRUCT	40			
8			333.00	000.00	0.00
8			334.00	15.15	0.40
8			334.25	16.92	0.47
8			334.50	18.53	0.55
8			334.75	20.02	0.63
8			335.00	21.40	0.68
8			335.50	23.92	0.77
8			335.86	25.59	0.80
8			336.00	27.61	0.82
8			336.25	33.80	0.84
8			336.50	42.02	0.93
8			336.75	51.79	1.01
8			336.86	56.51	1.05
8			337.00	57.30	1.08
8			337.50	58.38	1.31
8			338.00	59.45	1.68
9	ENDTBL				
2	XSECTN	049	1.0	317.00	
8			316.00	0.00	0.00
8			316.25	3.06	1.70
8			316.50	11.11	4.19



8			316.75	24.79	7.47
8			317.00	44.94	11.55
8			318.00	206.80	35.78
8			319.00	333.28	74.89
8			320.00	609.60	131.05
9	ENDTBL				
3	STRUCT	43			
8			317.30	0.00	0.00
8			318.00	0.19	0.08
8			319.00	0.24	0.27
8			320.75	0.30	0.79
8			321.00	3.22	0.85
8			321.75	23.58	1.09
8			322.00	32.83	1.17
8			322.20	40.94	1.20
8			322.40	49.63	1.27
8			322.80	68.56	1.45
8			322.90	73.60	1.49
9	ENDTBL				
2	XSECTN	052	1.0	279.00	
8			276.00	0.00	0.00
8			276.25	15.37	5.56

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			276.50	49.97	11.77		
8			276.75	100.75	18.63		
8			277.00	167.09	26.14		
8			278.00	591.48	62.65		
8			279.00	793.41	115.06		
8			280.00	1313.82	188.91		
8			281.00	2138.14	282.44		
9	ENDTBL						
2	XSECTN	059	1.0	128.00			
8			129.00	0.00	0.00		
8			129.25	1.13	0.50		
8			129.50	5.18	1.55		
8			129.75	13.39	3.16		
8			130.00	26.84	5.32		
8			131.00	191.72	26.64		
8			132.00	508.02	58.78		
8			133.00	945.51	95.90		
8			134.00	1449.27	136.08		
8			135.00	2016.68	178.64		
8			138.00	4199.86	314.48		
9	ENDTBL						
6	RUNOFF	1 001	1 0.2101	67.59	0.319	1	1 141
6	RUNOFF	1 002	2 0.0292	70.00	0.232	1	1 142
6	RESVOR	2 58 2 3				1	1
SWMF58							
6	ADDHYD	4 003	1 3 4			1	1
1+2+58							
6	RUNOFF	1 004	1 0.0617	69.82	0.170	1	1 143
6	ADDHYD	4 005	4 1 2			1	1+2+3
6	RUNOFF	1 006	1 0.0799	69.42	0.216	1	1 144
6	REACH	3 007	2 3	2055.0		1	
6	ADDHYD	4 008	1 3 2			1	SA14
6	RUNOFF	1 009	1 0.0604	68.79	0.220	1	1 153
6	RUNOFF	1 010	3 0.0264	61.24	0.290	1	1 151
6	RESVOR	2 52 3 4				1	1

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SWMF52
6 REACH 3 011 4 5 1396.5 1
6 ADDHYD 4 012 1 5 6 1 1
153+151
6 RUNOFF 1 013 1 0.0447 69.86 0.210 1 1 152
6 RESVOR 2 51 1 3 1 1
SWMF51
6 ADDHYD 4 014 6 3 1 1
012+51
6 RUNOFF 1 015 3 0.0815 70.00 0.176 1 1 154
6 REACH 3 016 1 4 2448.6 1
6 ADDHYD 4 017 3 4 5 1 1 SA15
6 ADDHYD 4 018 2 5 1 1 1
SA14+15
6 RUNOFF 1 019 2 0.2701 67.42 0.425 1 1 131
6 REACH 3 020 1 3 4470.1 1 1 SA13
6 ADDHYD 4 021 2 3 4 1 1
14+15+13
6 RUNOFF 1 022 1 0.0185 70.00 0.283 1 1 121
6 RESVOR 2 47 1 2 1 1
SWMF47
6 RUNOFF 1 023 3 0.0812 70.00 0.245 1 1 122
6 RESVOR 2 32 3 5 1 1
SWMF32
6 ADDHYD 4 024 2 5 1 1
121+122
    
```

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

```

6 RUNOFF 1 025 2 0.0465 70.00 0.236 1 1 123
6 ADDHYD 4 026 1 2 5 1
024+123
6 RESVOR 2 34 5 3 1 1
SWMF34
6 RUNOFF 1 027 2 0.0126 70.00 0.100 1 1 124
6 ADDHYD 4 028 3 2 5 1 1 SA12
6 RUNOFF 1 029 2 0.0499 70.00 0.100 1 1 111
6 RESVOR 2 64 2 3 1 1
SWMF64
6 REACH 3 030 3 6 1561.1 1
6 RUNOFF 1 031 7 0.1745 70.06 0.449 1 1 112
6 ADDHYD 4 032 6 7 3 1
111+112
6 RUNOFF 1 033 1 0.0477 70.00 0.258 1 1 113
6 ADDHYD 4 034 3 1 2 1
032+113
6 REACH 3 035 2 3 2077.3 1
6 RUNOFF 1 036 6 0.0244 70.95 0.370 1 1 114
6 RESVOR 2 33 6 7 1 1
SWMF33
6 ADDHYD 4 037 3 7 1 1
111-114
6 RUNOFF 1 038 2 0.0684 70.78 0.136 1 1 115
6 ADDHYD 4 039 1 2 3 1 1 SA11
6 ADDHYD 4 040 5 3 6 1 12+11
6 RUNOFF 1 041 1 0.0236 68.13 0.200 1 1 101
6 RESVOR 2 29 1 3 1 1
SWMF29
6 REACH 3 042 3 5 2112.0 1
6 RUNOFF 1 043 1 0.1211 53.16 0.263 1 1 102
    
```

```

6 ADDHYD 4 044 5 1 2 1 1 SA10
6 REACH 3 045 6 3 3147.6 1
6 ADDHYD 4 046 2 3 1 1 1
10+12+11
6 RUNOFF 1 047 2 0.2822 70.66 0.434 1 1 81
6 RUNOFF 1 048 3 0.0248 70.00 0.190 1 1 82
6 RESVOR 2 40 3 5 1 1
SWMF40
6 REACH 3 049 5 6 1829.0 1
6 ADDHYD 4 050 2 6 7 1 81+82
6 RUNOFF 1 051 2 0.0218 67.17 0.220 1 1 83
6 RESVOR 2 43 2 3 1 1
SWMF43
6 ADDHYD 4 052 7 3 2 1 1
81+82+83
6 REACH 3 052 2 3 4744.2 1
6 RUNOFF 1 053 5 0.2083 54.12 0.262 1 1 84
6 ADDHYD 4 054 3 5 2 1 1 SA8
6 ADDHYD 4 055 4 1 3 1 1 13+10
6 RUNOFF 1 056 6 0.0166 62.15 0.134 1 1 92
6 ADDHYD 4 057 3 6 7 1 1 1
13+10+92
6 RUNOFF 1 058 1 0.0357 61.31 0.141 1 1 93
6 REACH 3 059 2 3 1670.5 1
6 ADDHYD 4 060 1 3 4 1
SA8+93
6 ADDHYD 4 061 7 4 1 1 92+93
6 RUNOFF 1 062 2 0.0233 43.44 0.186 1 1 1 91
6 ADDHYD 4 063 1 2 3 1 1
OUTFALL
ENDATA
7 INCREM 6 .06
7 COMPUT 7 001 063 0.0 3.19 1.01 2 1 2
ENDCMP 1

```

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

```

7 COMPUT 7 001 063 0.0 4.10 1.01 2 1 05
ENDCMP 1
7 COMPUT 7 001 063 0.0 4.91 1.01 2 1 10
ENDCMP 1
7 COMPUT 7 001 063 0.0 6.14 1.01 2 1 25
ENDCMP 1
7 COMPUT 7 001 063 0.0 7.23 1.01 2 1 50
ENDCMP 1
7 COMPUT 7 001 063 0.0 8.47 1.01 2 1 99
ENDCMP 1
ENDCMP 1
ENDJOB 2

```

\*\*\*\*\*END OF 80-80  
LIST\*\*\*\*\*

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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EXECUTIVE CONTROL INCREM      MAIN TIME INCREMENT =    .060 HOURS

EXECUTIVE CONTROL COMPUT      FROM XSECTION    1    TO XSECTION    63  
 STARTING TIME =    .00            RAIN DEPTH =    3.19            RAIN DURATION =    1.00  
 ANT. RUNOFF COND. = 2            MAIN TIME INCREMENT =    .060 HOURS  
 ALTERNATE NO. = 1                STORM NO. = 2            RAIN TABLE NO. = 1

OPERATION RUNOFF    XSECTION    1

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	69.2	(RUNOFF)
20.68	3.1	(RUNOFF)
24.01	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW =    .00 CFS)  
                                  .71 WATERSHED INCHES;            96 CFS-HRS;            7.9 ACRE-  
 FEET.

OPERATION RUNOFF    XSECTION    2

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	13.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW =    .00 CFS)  
                                  .82 WATERSHED INCHES;            15 CFS-HRS;            1.3 ACRE-  
 FEET.

OPERATION RESVOR    STRUCTURE 58

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
13.68	1.6 *	427.97
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW =    .00 CFS)  
                                  .81 WATERSHED INCHES;            15 CFS-HRS;            1.3 ACRE-  
 FEET.

OPERATION ADDHYD    XSECTION    3

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	69.9	(NULL)
20.11	4.1	(NULL)
24.00	3.0	(NULL)

1

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .72 WATERSHED INCHES; 111 CFS-HRS; 9.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.17	32.2	(RUNOFF)
19.75	1.0	(RUNOFF)
20.06	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .81 WATERSHED INCHES; 32 CFS-HRS; 2.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.23	94.6	(NULL)
20.08	5.1	(NULL)
23.08	4.1	(NULL)
24.00	3.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .74 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.20	37.0	(RUNOFF)
15.85	2.2	(RUNOFF)
23.09	1.1	(RUNOFF)
23.74	1.0	(RUNOFF)
24.03	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .79 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 7

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.32	91.7	318.91
20.15	5.1	318.12
23.15	4.1	318.10
24.07	3.8	318.09

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TR20 ----- SCS

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.74 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	119.5	(NULL)
20.66	6.1	(NULL)
23.12	5.1	(NULL)
24.04	4.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.75 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	26.4	(RUNOFF)
18.87	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.76 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	4.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.45 WATERSHED INCHES; 8 CFS-HRS; .6 ACRE-  
FEET.

\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE  
TABLE  
STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
\*\*\*

OPERATION RESVOR STRUCTURE 52

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 0 CFS,  
AT STRUCTURE 52  
\*\*\*

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
24.12	.2	453.24

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.24 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-  
FEET.

\*\*\* WARNING - XSECTION 11, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 11

\*\*\* MESSAGE - XSECTION 11, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).  
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.24 WATERSHED INCHES; 399 CFS-HRS; .3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	26.4	(NULL)
22.48	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.60 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	21.7	(RUNOFF)
15.86	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.81 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.56	8.3	396.75

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.81 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 14

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	30.6	(NULL)
18.59	2.1	(NULL)
24.01	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .67 WATERSHED INCHES; 57 CFS-HRS; 4.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	42.7	(RUNOFF)
15.85	2.3	(RUNOFF)
23.72	1.1	(RUNOFF)
24.01	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 43 CFS-HRS; 3.6 ACRE-FEET.

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	27.0	330.55
24.08	1.5	330.06

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .67 WATERSHED INCHES; 57 CFS-HRS; 4.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	60.0	(NULL)
20.83	3.1	(NULL)
24.01	2.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .73 WATERSHED INCHES; 100 CFS-HRS; 8.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 18

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 2.04TEST  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	176.5	(NULL)
18.59	10.5	(NULL)
20.63	9.3	(NULL)
21.95	8.6	(NULL)
24.03	7.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .74 WATERSHED INCHES; 285 CFS-HRS; 23.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	76.4	(RUNOFF)
20.14	4.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .70 WATERSHED INCHES; 122 CFS-HRS; 10.1 ACRE-  
 FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.42	157.8	235.25
24.09	7.4	234.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .74 WATERSHED INCHES; 285 CFS-HRS; 23.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.40	232.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .73 WATERSHED INCHES; 407 CFS-HRS; 33.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	7.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 10 CFS-HRS; .8 ACRE-  
 FEET.

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OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	6.1	413.92

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 10 CFS-HRS; .8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	36.9	(RUNOFF)
23.75	1.0	(RUNOFF)
24.02	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 43 CFS-HRS; 3.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	24.3	367.67

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 43 CFS-HRS; 3.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	30.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 53 CFS-HRS; 4.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)
12.21 21.7 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.82 WATERSHED INCHES; 25 CFS-HRS; 2.0 ACRE-
FEET.

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OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.31 46.0 (NULL)
21.94 2.2 (NULL)
24.01 1.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.82 WATERSHED INCHES; 78 CFS-HRS; 6.4 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.64 31.4 332.92

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.82 WATERSHED INCHES; 78 CFS-HRS; 6.4 ACRE-
FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.12 8.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.82 WATERSHED INCHES; 7 CFS-HRS; .6 ACRE-
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 1.5%.
\*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.54 33.2 (NULL)
23.98 2.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 84 CFS-HRS; 7.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 29

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	32.2	(RUNOFF)
17.67	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 26 CFS-HRS; 2.2 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .5%.  
 \*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	32.2	(NULL)
17.67	1.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 26 CFS-HRS; 2.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	26.8	356.39
17.39	1.1	356.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 26 CFS-HRS; 2.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	59.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

.82 WATERSHED INCHES; 93 CFS-HRS; 7.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	77.2	(NULL)
23.10	3.0	(NULL)
24.04	2.9	(NULL)

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2.04TEST  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.82 WATERSHED INCHES; 119 CFS-HRS; 9.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	21.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.82 WATERSHED INCHES; 25 CFS-HRS; 2.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	97.4	(NULL)
21.97	4.0	(NULL)
24.04	3.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.82 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-  
FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	89.3	316.72
20.16	4.5	316.09
24.10	3.5	316.07

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.82 WATERSHED INCHES; 145 CFS-HRS; 11.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	9.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .87 WATERSHED INCHES; 14 CFS-HRS; 1.1 ACRE-FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE TIME INCREMENT OF .047 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

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OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	8.8	323.81

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .87 WATERSHED INCHES; 14 CFS-HRS; 1.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	98.1	(NULL)
23.16	4.0	(NULL)
24.09	3.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .83 WATERSHED INCHES; 158 CFS-HRS; 13.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	41.8	(RUNOFF)
15.47	2.0	(RUNOFF)
21.94	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .86 WATERSHED INCHES; 38 CFS-HRS; 3.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	114.0	(NULL)
20.01	6.1	(NULL)
21.88	5.5	(NULL)
23.99	4.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.83 WATERSHED INCHES; 196 CFS-HRS; 16.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 40

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2.04TEST

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	145.4	(NULL)
20.80	8.4	(NULL)
21.88	7.9	(NULL)
23.99	6.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.83 WATERSHED INCHES; 281 CFS-HRS; 23.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	10.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.73 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
13.44	1.4 *	267.05
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.73 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-  
FEET.

\*\*\* WARNING - XSECTION 42, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,

UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 42

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
13.62	1.4 *	222.13
	* FIRST POINT OF FLAT PEAK	
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.73 WATERSHED INCHES;	11 CFS-HRS;	.9 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 43

1  
TR20 ----- SCS  
-  
Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
VERSION  
06/05/\*\* 27 Subareas MGMT-STD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
2.04TEST  
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PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.56	4.4	(RUNOFF)
15.88	1.3	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.20 WATERSHED INCHES;	16 CFS-HRS;	1.3 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 44

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.59	5.2	(NULL)
24.03	1.1	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.29 WATERSHED INCHES;	27 CFS-HRS;	2.2 ACRE-
FEET.		

OPERATION REACH XSECTION 45

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.52	141.3	223.73
24.05	6.8	222.43
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.83 WATERSHED INCHES;	280 CFS-HRS;	23.2 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 46



PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.52	146.4	(NULL)
24.04	7.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .71 WATERSHED INCHES; 307 CFS-HRS; 25.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	103.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .85 WATERSHED INCHES; 156 CFS-HRS; 12.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 48

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas MGMT-STD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
 2.04TEST  
 16:08:27 PASS 1 JOB NO. 1 PAGE  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	12.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 13 CFS-HRS; 1.1 ACRE-FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	6.8	333.45

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 13 CFS-HRS; 1.1 ACRE-FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.60	6.1	316.34

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 13 CFS-HRS; 1.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	108.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .85 WATERSHED INCHES; 169 CFS-HRS; 14.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	8.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .69 WATERSHED INCHES; 10 CFS-HRS; .8 ACRE-FEET.

\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE  
 STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 43

1  
 TR20 ----- SCS  
 -

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
 2.04TEST  
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\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 0 CFS,  
 AT STRUCTURE 43  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
22.62	.3	319.90

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .43 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	108.2	276.78

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 175 CFS-HRS; 14.4 ACRE-FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	93.2	276.71

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .82 WATERSHED INCHES; 175 CFS-HRS; 14.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.52	9.3	(RUNOFF)
15.88	2.4	(RUNOFF)
24.03	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .22 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.53	102.5	(NULL)
23.99	5.5	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .54 SQ.MI.

HRS	11.58	8.85	12.06	101	12.54	65		
CFS	8.85	101	65					
	.35	.65	1.12	1.82	2.81	4.18	6.09	
	13	21	33	49	67	83	95	
	102	100	96	90	83	77	71	

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TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
 2.04TEST  
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13.02 CFS	60.08	55.41	51.24	47.53	44.25	41.32	38.69
36.32							
13.50 CFS	34.16	32.20	30.41	28.78	27.30	25.96	24.76
23.69							
13.98 CFS	22.76	21.96	21.25	20.63	20.07	19.56	19.10
18.69							
14.46 CFS	18.29	17.92	17.55	17.19	16.84	16.49	16.16
15.83							
14.94 CFS	15.49	15.16	14.83	14.50	14.17	13.84	13.53
13.24							
15.42 CFS	12.98	12.75	12.56	12.39	12.23	12.08	11.95
11.84							
15.90 CFS	11.75	11.65	11.54	11.44	11.34	11.25	11.16
11.07							

16.38 CFS	10.98	10.89	10.80	10.70	10.60	10.51	10.43
10.34							
16.86 CFS	10.25	10.16	10.08	10.00	9.92	9.83	9.73
9.63							
17.34 CFS	9.55	9.47	9.37	9.27	9.16	9.06	8.97
8.87							
17.82 CFS	8.77	8.67	8.57	8.48	8.40	8.31	8.21
8.12							
18.30 CFS	8.04	7.96	7.88	7.79	7.73	7.69	7.65
7.60							
18.78 CFS	7.57	7.54	7.53	7.50	7.47	7.43	7.41
7.38							
19.26 CFS	7.35	7.33	7.31	7.30	7.29	7.27	7.25
7.22							
19.74 CFS	7.21	7.19	7.16	7.12	7.10	7.09	7.08
7.06							
20.22 CFS	7.04	7.02	7.00	6.97	6.93	6.89	6.87
6.86							
20.70 CFS	6.83	6.80	6.79	6.78	6.76	6.73	6.70
6.67							
21.18 CFS	6.64	6.61	6.59	6.57	6.55	6.54	6.53
6.50							
21.66 CFS	6.47	6.45	6.43	6.41	6.38	6.37	6.35
6.32							
22.14 CFS	6.29	6.27	6.24	6.22	6.19	6.17	6.15
6.13							
22.62 CFS	6.10	6.07	6.04	6.02	5.98	5.94	5.91
5.90							
23.10 CFS	5.89	5.86	5.84	5.81	5.80	5.78	5.75
5.71							
23.58 CFS	5.67	5.64	5.63	5.61	5.58	5.55	5.52
5.52							
24.06 CFS	5.51	5.31	4.92	4.46	4.00	3.52	3.03
2.55							
24.54 CFS	2.12	1.75	1.44	1.18	.98	.82	.70
.60							
25.02 CFS	.52	.47					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .59 WATERSHED INCHES; 205 CFS-HRS; 16.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.44	371.3	(NULL)
24.03	18.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .72 WATERSHED INCHES; 714 CFS-HRS; 59.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	4.4	(RUNOFF)

\*\*\* WARNING - XSECTION 56, MAIN TIME INCREMENT TOO LARGE, COMPUTED PEAK ( 4.40) EXCEEDS ADJACENT COORDINATE ( 4.15) BY 5 %.  
 \*\*\*

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TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
 2.04TEST  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .48 WATERSHED INCHES; 5 CFS-HRS; .4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.44 373.2 (NULL)

		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2						
		DRAINAGE AREA = 1.55						
HRS	MAIN	TIME	INCREMENT =					
SQ.MI.	.060 hr,							
11.46 CFS	.27	.61	1.19	2.37	4.34	7.36	11.94	
18.94								
11.94 CFS	30	48	78	129	201	271	326	
359								
12.42 CFS	373	368	353	332	308	283	260	
238								
12.90 CFS	219	202	188	174	163	152	142	
134								
13.38 CFS	126	120	113	108	102	97	93	
88								
13.86 CFS	84.64	81.37	78.55	76.12	74.01	72.13	70.40	
68.77								
14.34 CFS	67.24	65.80	64.45	63.17	61.90	60.62	59.33	
58.06								
14.82 CFS	56.82	55.62	54.44	53.26	52.10	50.92	49.73	
48.54								
15.30 CFS	47.40	46.37	45.47	44.71	44.09	43.58	43.10	
42.63								
15.78 CFS	42.16	41.74	41.38	41.04	40.68	40.30	39.91	
39.53								
16.26 CFS	39.19	38.85	38.51	38.17	37.83	37.46	37.09	
36.73								
16.74 CFS	36.40	36.09	35.77	35.45	35.15	34.86	34.58	
34.28								
17.22 CFS	33.93	33.55	33.19	32.87	32.56	32.23	31.86	
31.48								
17.70 CFS	31.10	30.75	30.41	30.06	29.72	29.39	29.09	
28.79								
18.18 CFS	28.47	28.16	27.85	27.57	27.28	26.99	26.75	
26.58								
18.66 CFS	26.46	26.35	26.23	26.14	26.07	25.97	25.85	
25.72								
19.14 CFS	25.59	25.47	25.36	25.27	25.20	25.14	25.10	
25.05								
19.62 CFS	24.98	24.86	24.76	24.67	24.56	24.43	24.31	
24.24								
20.10 CFS	24.21	24.16	24.11	24.03	23.95	23.83	23.67	
23.51								
20.58 CFS	23.40	23.33	23.28	23.20	23.13	23.08	23.01	

22.91								
21.06	CFS	22.79	22.67	22.55	22.44	22.35	22.27	22.22
22.17								
21.54	CFS	22.13	22.07	21.97	21.86	21.77	21.67	21.57
21.51								
22.02	CFS	21.46	21.39	21.29	21.18	21.06	20.96	20.87
20.79								
22.50	CFS	20.73	20.67	20.58	20.46	20.34	20.24	20.12
19.98								
22.98	CFS	19.86	19.78	19.74	19.70	19.64	19.56	19.48
19.39								
23.46	CFS	19.29	19.18	19.02	18.89	18.80	18.75	18.70
18.60								
23.94	CFS	18.49	18.43	18.41	18.00	16.84	15.13	13.14
11.08								
24.42	CFS	9.16	7.52	6.17	5.10	4.25	3.60	3.10
2.71								
24.90	CFS	2.40	2.16	1.97	1.81	1.68	1.57	1.48
1.40								
25.38	CFS	1.33	1.27	1.22	1.17	1.13	1.10	1.06
1.03								
25.86	CFS	1.00	.95	.92	.89	.88	.87	.85
.84								
26.34	CFS	.82	.81	.80	.78	.77	.76	.75
.74								
26.82	CFS	.73	.72	.71	.70	.69	.68	.67
.66								
27.30	CFS	.65	.64	.63	.62	.61	.60	.60
.59								
27.78	CFS	.58	.57	.57	.56	.56	.55	.54
.54								
28.26	CFS	.53	.53	.52	.51	.51	.50	.50

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .72 WATERSHED INCHES; 719 CFS-HRS; 59.4 ACRE-  
 FEET.

1

TR20 ----- SCS

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION

06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)

2.04TEST

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OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		(RUNOFF)
12.16	8.0	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .45 WATERSHED INCHES; 10 CFS-HRS; .9 ACRE-  
 FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.62	101.1	130.45

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.59 WATERSHED INCHES; 205 CFS-HRS; 16.9 ACRE-
FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.62 104.1 (NULL)
23.98 5.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.58 WATERSHED INCHES; 215 CFS-HRS; 17.8 ACRE-
FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.48 460.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.68 WATERSHED INCHES; 934 CFS-HRS; 77.2 ACRE-
FEET.

OPERATION RUNOFF XSECTION 62

\*\*\* MESSAGE - XSECTION 62, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.68 WATERSHED INCHES; 181 CFS-HRS; 77.2 ACRE-
FEET.

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas
VERSION
06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)
2.04TEST
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OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.48 460.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.68 WATERSHED INCHES; 935 CFS-HRS; 77.2 ACRE-
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63

STARTING TIME = .00                      RAIN DEPTH = 4.10                      RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2                      MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1                      STORM NO. = 5                      RAIN TABLE NO. = 1

OPERATION RUNOFF    XSECTION    1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	134.0	(RUNOFF)
19.47	5.1	(RUNOFF)
21.94	4.3	(RUNOFF)
24.02	3.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.24 WATERSHED INCHES;      168 CFS-HRS;      13.9 ACRE-FEET.

OPERATION RUNOFF    XSECTION    2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	24.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES;      26 CFS-HRS;      2.2 ACRE-FEET.

OPERATION RESVOR    STRUCTURE    58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.94	4.8	429.76

1 TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION

06/05/\*\*      27 Subareas MGMT-STD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
 2.04TEST  
 16:08:27                      PASS    2    JOB NO.    1                      PAGE  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.38 WATERSHED INCHES;      26 CFS-HRS;      2.1 ACRE-FEET.

OPERATION ADDHYD    XSECTION    3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	135.5	(NULL)
20.11	6.2	(NULL)
20.66	5.9	(NULL)
24.01	4.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.26 WATERSHED INCHES;      194 CFS-HRS;      16.1 ACRE-FEET.



OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	58.2	(RUNOFF)
17.34	2.0	(RUNOFF)
24.00	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.38 WATERSHED INCHES; 55 CFS-HRS; 4.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	180.4	(NULL)
18.63	8.4	(NULL)
20.63	7.4	(NULL)
23.08	6.2	(NULL)
24.01	5.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.28 WATERSHED INCHES; 249 CFS-HRS; 20.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	68.0	(RUNOFF)
15.85	3.3	(RUNOFF)
19.48	2.0	(RUNOFF)
24.02	1.5	(RUNOFF)

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
 2.04TEST  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.36 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	177.2	319.27
18.70	8.4	318.21
20.69	7.4	318.18
23.15	6.2	318.15
24.07	5.8	318.14

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

1.28 WATERSHED INCHES; 249 CFS-HRS; 20.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	232.6	(NULL)
18.65	10.6	(NULL)
20.67	9.3	(NULL)
21.97	8.5	(NULL)
24.04	7.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.30 WATERSHED INCHES; 320 CFS-HRS; 26.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	49.0	(RUNOFF)
15.83	2.5	(RUNOFF)
24.02	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.32 WATERSHED INCHES; 51 CFS-HRS; 4.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	11.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.88 WATERSHED INCHES; 15 CFS-HRS; 1.2 ACRE-  
FEET.

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\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE  
TABLE  
STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
\*\*\*

OPERATION RESVOR STRUCTURE 52

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
AT STRUCTURE 52  
\*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
19.86	.5	454.31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .48 WATERSHED INCHES; 8 CFS-HRS; .7 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 11, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 11

\*\*\* MESSAGE - NO SIGNIFICANT PEAK FOUND, MAX. DISCHARGE 1 CFS,  
 AT XSECTION 11  
 \*\*\*

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
20.04	.5	414.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .47 WATERSHED INCHES; 8 CFS-HRS; .7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	49.0	(NULL)
17.32	2.3	(NULL)
24.02	1.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.06 WATERSHED INCHES; 59 CFS-HRS; 4.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	39.6	(RUNOFF)
21.46	1.0	(RUNOFF)

1

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES; 40 CFS-HRS; 3.3 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.47	16.5	397.20
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.39 WATERSHED INCHES;		40 CFS-HRS;
FEET.		3.3 ACRE-

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	59.5	(NULL)
20.63	3.0	(NULL)
24.01	2.4	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.17 WATERSHED INCHES;		99 CFS-HRS;
FEET.		8.2 ACRE-

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	76.8	(RUNOFF)
15.85	3.5	(RUNOFF)
19.75	2.1	(RUNOFF)
20.06	2.1	(RUNOFF)
24.01	1.6	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.40 WATERSHED INCHES;		73 CFS-HRS;
FEET.		6.1 ACRE-

OPERATION REACH XSECTION 16

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	53.9	330.79
20.69	3.0	330.13
24.08	2.4	330.10
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.17 WATERSHED INCHES;		99 CFS-HRS;
FEET.		8.2 ACRE-

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OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	114.2	(NULL)
20.07	5.2	(NULL)
23.06	4.2	(NULL)
23.72	4.0	(NULL)
24.01	4.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.25 WATERSHED INCHES; 173 CFS-HRS; 14.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	340.3	(NULL)
18.63	16.1	(NULL)
20.64	14.3	(NULL)
21.95	13.1	(NULL)
23.09	12.0	(NULL)
24.03	11.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.28 WATERSHED INCHES; 492 CFS-HRS; 40.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	147.5	(RUNOFF)
20.13	6.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.23 WATERSHED INCHES; 215 CFS-HRS; 17.7 ACRE-  
FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	311.3	235.88
20.15	14.9	234.32
23.14	12.0	234.29
24.09	11.3	234.28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.28 WATERSHED INCHES; 492 CFS-HRS; 40.7 ACRE-  
FEET.

1 TR20 ----- SCS

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OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	457.3	(NULL)
20.14	21.2	(NULL)
23.14	17.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.27 WATERSHED INCHES; 707 CFS-HRS; 58.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.24	14.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.40 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.39	10.3	414.05

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.40 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	67.5	(RUNOFF)
20.10	2.0	(RUNOFF)
24.03	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.40 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	48.8	368.07

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.40 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.35	58.9	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.40 WATERSHED INCHES;	90 CFS-HRS;	7.4 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	39.2	(RUNOFF)
21.97	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.40 WATERSHED INCHES;	42 CFS-HRS;	3.5 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	89.2	(NULL)
20.62	3.5	(NULL)
24.03	2.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.40 WATERSHED INCHES;	132 CFS-HRS;	10.9 ACRE-
FEET.		

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.73	45.0	335.89
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.39 WATERSHED INCHES;	132 CFS-HRS;	10.9 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	14.5	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.40 WATERSHED INCHES;	11 CFS-HRS;	.9 ACRE-
FEET.		

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\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 3.4%.  
 \*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.70	47.2	(NULL)
23.98	3.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	57.4	(RUNOFF)
15.82	2.1	(RUNOFF)
22.47	1.1	(RUNOFF)
22.72	1.0	(RUNOFF)
23.02	1.0	(RUNOFF)
23.99	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 45 CFS-HRS; 3.7 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .7%.  
 \*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	57.4	(NULL)
15.82	2.1	(NULL)
22.47	1.1	(NULL)
22.72	1.0	(NULL)
23.02	1.0	(NULL)
23.99	1.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 45 CFS-HRS; 3.7 ACRE-FEET.



OPERATION REACH XSECTION 30

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	50.8	356.58
15.89	2.1	356.04
22.79	1.0	356.02
23.10	1.0	356.02
24.05	1.0	356.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.39 WATERSHED INCHES; 45 CFS-HRS; 3.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	108.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.40 WATERSHED INCHES; 158 CFS-HRS; 13.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	140.4	(NULL)
18.87	6.0	(NULL)
21.75	5.0	(NULL)
24.04	4.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.40 WATERSHED INCHES; 202 CFS-HRS; 16.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	38.3	(RUNOFF)
21.97	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.40 WATERSHED INCHES; 43 CFS-HRS; 3.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 34

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	177.9	(NULL)
18.87	7.3	(NULL)
21.97	6.0	(NULL)
24.04	5.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 245 CFS-HRS; 20.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.38	166.3	317.00
20.16	6.8	316.13
24.10	5.2	316.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 246 CFS-HRS; 20.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	17.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.46 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
 FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .047 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.46	13.3	325.09

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.46 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 37

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.38	179.2	(NULL)
20.16	7.5	(NULL)
23.16	6.0	(NULL)
24.09	5.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.40 WATERSHED INCHES; 268 CFS-HRS; 22.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	74.0	(RUNOFF)
15.47	3.1	(RUNOFF)
17.34	2.3	(RUNOFF)
24.00	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.45 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.35	207.6	(NULL)
21.88	8.2	(NULL)
23.99	7.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.41 WATERSHED INCHES; 332 CFS-HRS; 27.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.36	250.2	(NULL)
20.79	12.7	(NULL)
21.87	11.8	(NULL)
23.99	10.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.41 WATERSHED INCHES; 475 CFS-HRS; 39.3 ACRE-FEET.

FEET.

OPERATION RUNOFF XSECTION 41

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	19.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
	1.28 WATERSHED INCHES;	19 CFS-HRS;
	FEET.	1.6 ACRE-

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.20	2.7 *	267.97
	* FIRST POINT OF FLAT PEAK	
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
	1.27 WATERSHED INCHES;	19 CFS-HRS;
	FEET.	1.6 ACRE-

\*\*\* WARNING - XSECTION 42, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
\*\*\*

OPERATION REACH XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.38	2.7 *	222.24
	* FIRST POINT OF FLAT PEAK	
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
	1.27 WATERSHED INCHES;	19 CFS-HRS;
	FEET.	1.6 ACRE-

OPERATION RUNOFF XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	19.9	(RUNOFF)
24.03	1.3	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
	.49 WATERSHED INCHES;	38 CFS-HRS;
	FEET.	3.2 ACRE-

OPERATION ADDHYD XSECTION 44

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	20.9	(NULL)
23.09	2.0	(NULL)
24.03	1.9	(NULL)

1

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .62 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 45

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.48	242.3	224.40
24.05	10.1	222.53

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.41 WATERSHED INCHES; 475 CFS-HRS; 39.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.47	260.0	(NULL)
24.04	12.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.24 WATERSHED INCHES; 533 CFS-HRS; 44.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	184.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.44 WATERSHED INCHES; 262 CFS-HRS; 21.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	22.8	(RUNOFF)

15.85 1.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.40 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.36 12.5 333.82

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.40 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-
FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.54 11.5 316.51

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.39 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-
FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.34 193.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.44 WATERSHED INCHES; 284 CFS-HRS; 23.5 ACRE-
FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.19 16.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.22 WATERSHED INCHES; 17 CFS-HRS; 1.4 ACRE-
FEET.

\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE
TABLE

STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.

\*\*\*

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
14.22	1.4	320.84
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.75 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-		
FEET.		

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	193.8	277.06

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
 2.04TEST  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.39 WATERSHED INCHES; 295 CFS-HRS; 24.4 ACRE-		
FEET.		

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.50	173.3	277.01

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.39 WATERSHED INCHES; 295 CFS-HRS; 24.4 ACRE-		
FEET.		

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	40.5	(RUNOFF)
19.49	3.0	(RUNOFF)
24.03	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
.53 WATERSHED INCHES; 71 CFS-HRS; 5.9 ACRE-		
FEET.		

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	203.2	(NULL)

24.00		8.6				(NULL)			
HRS		HYDROGRAPH POINTS FOR				ALTERNATE = 1,		STORM = 5	
SQ.MI.		MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .54			
10.92	CFS	.41	.62	.88	1.21	1.59	2.05	2.58	
3.21									
11.40	CFS	3.94	4.78	5.75	6.86	8.17	9.81	11.92	
14.62									
11.88	CFS	18	23	30	45	70	104	137	
166									
12.36	CFS	187	200	203	199	188	175	160	
146									
12.84	CFS	133	120	110	100	91	84	78	
72									
13.32	CFS	67.13	62.73	58.78	55.21	51.96	49.02	46.39	
44.12									
13.80	CFS	42.12	40.36	38.80	37.45	36.28	35.25	34.32	
33.47									
14.28	CFS	32.69	31.97	31.30	30.66	30.04	29.42	28.81	
28.19									
14.76	CFS	27.60	27.02	26.44	25.86	25.28	24.70	24.12	
23.54									
15.24	CFS	22.96	22.42	21.93	21.49	21.11	20.79	20.51	
20.25									
15.72	CFS	20.01	19.78	19.60	19.44	19.27	19.08	18.90	
18.73									
16.20	CFS	18.57	18.42	18.25	18.08	17.92	17.76	17.59	
17.41									
16.68	CFS	17.25	17.10	16.95	16.79	16.63	16.49	16.36	
16.22									
17.16	CFS	16.06	15.88	15.71	15.56	15.42	15.26	15.08	
14.89									
17.64	CFS	14.71	14.55	14.38	14.21	14.03	13.86	13.71	
13.57									
18.12	CFS	13.41	13.25	13.10	12.96	12.82	12.68	12.54	
12.43									
18.60	CFS	12.37	12.31	12.24	12.17	12.14	12.11	12.06	
12.00									
19.08	CFS	11.94	11.89	11.85	11.80	11.76	11.73	11.71	
11.69									

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TR20 ----- SCS

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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19.56	CFS	11.67	11.62	11.57	11.54	11.51	11.45	11.38
11.34								
20.04	CFS	11.33	11.31	11.28	11.24	11.21	11.17	11.12
11.04								
20.52	CFS	10.98	10.95	10.92	10.88	10.83	10.80	10.78
10.74								
21.00	CFS	10.69	10.64	10.59	10.54	10.49	10.45	10.41
10.39								
21.48	CFS	10.36	10.34	10.30	10.25	10.21	10.18	10.13
10.09								
21.96	CFS	10.06	10.03	9.99	9.94	9.89	9.84	9.80
9.76								
22.44	CFS	9.72	9.69	9.66	9.60	9.55	9.51	9.46



9.40							
22.92 CFS	9.32	9.27	9.25	9.24	9.20	9.15	9.12
9.08							
23.40 CFS	9.05	9.01	8.94	8.86	8.82	8.80	8.77
8.72							
23.88 CFS	8.66	8.61	8.62	8.60	8.24	7.56	6.74
5.90							
24.36 CFS	5.08	4.26	3.49	2.82	2.26	1.82	1.47
1.19							
24.84 CFS	.98	.81	.69	.60	.52	.47	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.06 WATERSHED INCHES; 366 CFS-HRS; 30.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.39	708.3	(NULL)
24.03	27.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.25 WATERSHED INCHES; 1239 CFS-HRS; 102.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	10.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .93 WATERSHED INCHES; 10 CFS-HRS; .8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.38	712.5	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 5  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55 SQ.MI.

HRS							
10.80 CFS	.33	.60	.98	1.52	2.24	3.16	4.38
5.96							
11.28 CFS	7.97	10.47	13.47	17.07	21.24	26.17	32.81
41.64							
11.76 CFS	53	67	86	113	152	217	319
457							
12.24 CFS	585	672	709	706	673	627	578
527							
12.72 CFS	479	434	395	362	333	308	287
269							
13.20 CFS	253	238	225	213	203	193	185
176							
13.68 CFS	168	161	154	148	142	137	131
126							
14.16 CFS	122	118	114	111	108	105	102
100							

1

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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14.64	CFS	97.28	94.91	92.61	90.42	88.33	86.28	84.27
82.28								
15.12	CFS	80.30	78.30	76.32	74.43	72.73	71.27	70.08
69.11								
15.60	CFS	68.32	67.58	66.83	66.07	65.38	64.79	64.23
63.66								
16.08	CFS	63.04	62.40	61.78	61.22	60.68	60.13	59.58
59.02								
16.56	CFS	58.42	57.81	57.23	56.70	56.21	55.70	55.18
54.69								
17.04	CFS	54.23	53.78	53.29	52.73	52.11	51.53	51.02
50.53								
17.52	CFS	50.00	49.41	48.80	48.19	47.64	47.10	46.55
46.01								
18.00	CFS	45.49	45.02	44.54	44.05	43.54	43.06	42.61
42.15								
18.48	CFS	41.70	41.33	41.06	40.89	40.73	40.56	40.41
40.29								
18.96	CFS	40.14	39.95	39.74	39.54	39.35	39.18	39.05
38.95								
19.44	CFS	38.87	38.81	38.75	38.63	38.45	38.28	38.13
37.95								
19.92	CFS	37.74	37.55	37.44	37.39	37.34	37.25	37.13
36.98								
20.40	CFS	36.79	36.53	36.27	36.09	35.99	35.91	35.79
35.67								
20.88	CFS	35.59	35.48	35.32	35.13	34.92	34.72	34.55
34.40								
21.36	CFS	34.29	34.20	34.13	34.07	33.97	33.80	33.61
33.45								
21.84	CFS	33.30	33.14	33.06	32.98	32.86	32.70	32.51
32.33								
22.32	CFS	32.16	32.01	31.89	31.80	31.71	31.57	31.37
31.18								
22.80	CFS	31.02	30.82	30.60	30.40	30.28	30.22	30.17
30.07								
23.28	CFS	29.95	29.80	29.66	29.51	29.31	29.07	28.85
28.72								
23.76	CFS	28.65	28.57	28.42	28.24	28.15	28.12	27.46
25.60								
24.24	CFS	22.80	19.54	16.26	13.29	10.83	8.86	7.33
6.14								
24.72	CFS	5.23	4.53	3.99	3.57	3.23	2.95	2.72
2.54								
25.20	CFS	2.38	2.24	2.13	2.03	1.94	1.86	1.80
1.73								
25.68	CFS	1.68	1.63	1.59	1.54	1.50	1.47	1.44
1.38								
26.16	CFS	1.35	1.31	1.29	1.28	1.26	1.24	1.22
1.20								
26.64	CFS	1.19	1.17	1.15	1.14	1.12	1.11	1.10
1.08								
27.12	CFS	1.07	1.05	1.04	1.03	1.02	1.00	.99
.98								

27.60 CFS	.97	.96	.94	.93	.92	.91	.90
.89							
28.08 CFS	.88	.87	.87	.86	.85	.84	.83
.83							
28.56 CFS	.82	.81	.80	.79	.79	.78	.77
.76							
29.04 CFS	.76	.75	.74	.73	.73	.72	.71
.71							
29.52 CFS	.70	.70	.69	.68	.68	.67	.66
.66							
30.00 CFS	.65	.65	.64	.63	.63	.62	.62
.61							
30.48 CFS	.61	.60	.60	.59	.59	.58	.58
.57							
30.96 CFS	.57	.56	.56	.55	.55	.55	.54
.54							
31.44 CFS	.53	.53	.52	.52	.52	.51	.51
.50							
31.92 CFS	.50	.50					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.25 WATERSHED INCHES; 1249 CFS-HRS; 103.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.15	20.5	(RUNOFF)
16.17	1.1	(RUNOFF)

1

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .88 WATERSHED INCHES; 20 CFS-HRS; 1.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.56	201.2	131.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.06 WATERSHED INCHES; 366 CFS-HRS; 30.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.55	207.8	(NULL)
23.98	9.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.05 WATERSHED INCHES; 386 CFS-HRS; 31.9 ACRE-
FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.42 892.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.19 WATERSHED INCHES; 1636 CFS-HRS; 135.2 ACRE-
FEET.

OPERATION RUNOFF XSECTION 62

\*\*\* MESSAGE - XSECTION 62, NO PEAK COMPUTED (ONLY 1 HYDROGRAPH POINT(S)).
\*\*\*

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.19 WATERSHED INCHES; 208 CFS-HRS; 135.2 ACRE-
FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.42 892.3 (NULL)

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.18 WATERSHED INCHES; 1638 CFS-HRS; 135.4 ACRE-
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63
STARTING TIME = .00 RAIN DEPTH = 4.91 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS
ALTERNATE NO. = 1 STORM NO. =10 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.25 200.4 (RUNOFF)
18.67 7.1 (RUNOFF)
20.68 6.3 (RUNOFF)

23.12 5.3 (RUNOFF)  
 24.02 4.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.78 WATERSHED INCHES; 242 CFS-HRS; 20.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	35.9	(RUNOFF)
18.87	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 37 CFS-HRS; 3.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.58	12.4	430.52

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.94 WATERSHED INCHES; 37 CFS-HRS; 3.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 3

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 -  
 Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
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 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	204.1	(NULL)
18.65	8.7	(NULL)
20.12	8.0	(NULL)
20.67	7.7	(NULL)
23.76	6.1	(NULL)
24.01	6.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.80 WATERSHED INCHES; 278 CFS-HRS; 23.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	83.9	(RUNOFF)
15.85	3.5	(RUNOFF)
19.75	2.0	(RUNOFF)

20.06	2.0	(RUNOFF)
24.00	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.95 WATERSHED INCHES; 78 CFS-HRS; 6.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	268.6	(NULL)
18.81	10.8	(NULL)
20.08	10.0	(NULL)
20.63	9.6	(NULL)
23.08	8.1	(NULL)
24.01	7.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.83 WATERSHED INCHES; 356 CFS-HRS; 29.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	98.4	(RUNOFF)
15.83	4.4	(RUNOFF)
17.32	3.5	(RUNOFF)
23.09	2.1	(RUNOFF)
24.02	2.0	(RUNOFF)

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.92 WATERSHED INCHES; 99 CFS-HRS; 8.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	265.4	319.61
18.70	10.9	318.26
20.15	10.0	318.25
20.70	9.6	318.24
23.15	8.1	318.20
24.07	7.5	318.18

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.83 WATERSHED INCHES; 356 CFS-HRS; 29.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	346.4	(NULL)
18.66	13.7	(NULL)
20.67	12.1	(NULL)
21.99	11.1	(NULL)
23.12	10.2	(NULL)
24.04	9.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.85 WATERSHED INCHES; 455 CFS-HRS; 37.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	71.6	(RUNOFF)
15.83	3.3	(RUNOFF)
18.87	2.1	(RUNOFF)
19.47	2.0	(RUNOFF)
24.02	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.87 WATERSHED INCHES; 73 CFS-HRS; 6.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

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2.04TEST  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	18.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.33 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-FEET.

\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE  
STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
\*\*\*

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
13.64	2.4	454.45

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.93 WATERSHED INCHES; 16 CFS-HRS; 1.3 ACRE-
FEET.

\*\*\* WARNING - XSECTION 11, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN
2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,
UNLESS NEW RATING TABLE VALUES ARE INSERTED.
\*\*\*

OPERATION REACH XSECTION 11

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
13.79 2.4 414.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.92 WATERSHED INCHES; 16 CFS-HRS; 1.3 ACRE-
FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.19 71.6 (NULL)
23.74 2.0 (NULL)
24.02 2.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.58 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-
FEET.

OPERATION RUNOFF XSECTION 13

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas
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2.04TEST
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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.18 57.1 (RUNOFF)
15.84 2.5 (RUNOFF)
24.02 1.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.96 WATERSHED INCHES; 56 CFS-HRS; 4.7 ACRE-
FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
12.44 25.3 397.60



RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.96 WATERSHED INCHES; 56 CFS-HRS; 4.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.21	88.9	(NULL)
20.62	4.0	(NULL)
24.01	3.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.71 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	110.5	(RUNOFF)
15.85	4.6	(RUNOFF)
17.34	3.6	(RUNOFF)
23.06	2.2	(RUNOFF)
23.72	2.1	(RUNOFF)
24.01	2.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 104 CFS-HRS; 8.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 16

1 TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.31	81.8	330.98
20.68	4.0	330.17
24.08	3.2	330.13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.71 WATERSHED INCHES; 145 CFS-HRS; 12.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	169.4	(NULL)
18.57	7.6	(NULL)
21.95	6.1	(NULL)

24.01 5.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.81 WATERSHED INCHES; 248 CFS-HRS; 20.5 ACRE-
FEET.

OPERATION ADDHYD XSECTION 18

Table with 3 columns: PEAK TIME(HRS) ELEVATION(FEET), PEAK DISCHARGE(CFS), PEAK. Rows include values like 12.25, 18.63, 20.10, 20.64, 21.95, 23.10, 24.03 and discharge values like 506.0, 21.3, 19.5, 18.7, 17.1, 15.7, 14.8.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.84 WATERSHED INCHES; 704 CFS-HRS; 58.2 ACRE-
FEET.

OPERATION RUNOFF XSECTION 19

Table with 3 columns: PEAK TIME(HRS) ELEVATION(FEET), PEAK DISCHARGE(CFS), PEAK. Row includes values 12.33, 220.9, (RUNOFF).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.77 WATERSHED INCHES; 308 CFS-HRS; 25.5 ACRE-
FEET.

OPERATION REACH XSECTION 20

1 TR20 ----- SCS

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Table with 3 columns: PEAK TIME(HRS) ELEVATION(FEET), PEAK DISCHARGE(CFS), PEAK. Rows include values like 12.37, 20.14, 23.14, 24.09 and discharge values like 458.8, 19.5, 15.7, 14.7.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.84 WATERSHED INCHES; 704 CFS-HRS; 58.1 ACRE-
FEET.

OPERATION ADDHYD XSECTION 21

Table with 3 columns: PEAK TIME(HRS) ELEVATION(FEET), PEAK DISCHARGE(CFS), PEAK. Row includes values 12.36, 676.2, (NULL).

20.14 27.8 (NULL)  
 23.13 22.5 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.81 WATERSHED INCHES; 1012 CFS-HRS; 83.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.23 20.7 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.38 14.8 414.17

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 24 CFS-HRS; 1.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.20 97.0 (RUNOFF)  
 23.10 2.2 (RUNOFF)  
 23.75 2.0 (RUNOFF)  
 24.02 2.0 (RUNOFF)

1

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.32 74.5 368.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	88.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 127 CFS-HRS; 10.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	56.6	(RUNOFF)
24.03	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 59 CFS-HRS; 4.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	134.7	(NULL)
20.62	4.6	(NULL)
24.02	3.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 186 CFS-HRS; 15.3 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.62	77.8	337.99

1 TR20 ----- SCS  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 186 CFS-HRS; 15.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	20.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.98 WATERSHED INCHES; 16 CFS-HRS; 1.3 ACRE-
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -.9%.
\*\*\*

OPERATION ADDHYD XSECTION 28

Table with 3 columns: PEAK TIME(HRS), PEAK DISCHARGE(CFS), PEAK ELEVATION(FEET). Rows show values for 12.14, 12.62, and 23.98 hours, with discharge values of 52.9, 81.2, and 4.1 CFS respectively. Peak elevations are listed as (NULL).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.97 WATERSHED INCHES; 202 CFS-HRS; 16.7 ACRE-
FEET.

OPERATION RUNOFF XSECTION 29

Table with 3 columns: PEAK TIME(HRS), PEAK DISCHARGE(CFS), PEAK ELEVATION(FEET). Rows show values for 12.12, 17.67, and 23.99 hours, with discharge values of 82.4, 2.0, and 1.4 CFS respectively. Peak elevations are listed as (RUNOFF).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.98 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .5%.
\*\*\*

OPERATION RESVOR STRUCTURE 64

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Table with 3 columns: PEAK TIME(HRS), PEAK DISCHARGE(CFS), PEAK ELEVATION(FEET). Rows show values for 12.12, 17.67, and 23.99 hours, with discharge values of 82.4, 2.0, and 1.4 CFS respectively. Peak elevations are listed as (NULL).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.98 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-
FEET.

OPERATION REACH XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	75.1	356.73
17.39	2.2	356.05
24.05	1.4	356.03

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.34	156.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 222 CFS-HRS; 18.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	203.3	(NULL)
20.87	7.0	(NULL)
21.97	6.5	(NULL)
24.04	5.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 285 CFS-HRS; 23.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	55.6	(RUNOFF)
24.02	1.2	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 61 CFS-HRS; 5.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

12.24	257.3	(NULL)
18.87	9.6	(NULL)
20.87	8.5	(NULL)
23.09	7.2	(NULL)
24.04	6.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 346 CFS-HRS; 28.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.36	242.3	317.14
20.68	8.6	316.17
23.16	7.2	316.14
24.10	6.8	316.13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 346 CFS-HRS; 28.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.29	25.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.04 WATERSHED INCHES; 32 CFS-HRS; 2.7 ACRE-  
 FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .047 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.49	17.6	326.57

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.04 WATERSHED INCHES; 32 CFS-HRS; 2.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	258.8	(NULL)
20.69	9.4	(NULL)
24.10	7.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.98 WATERSHED INCHES; 378 CFS-HRS; 31.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.13	105.6	(RUNOFF)
15.46	4.1	(RUNOFF)
17.34	3.1	(RUNOFF)
21.45	2.1	(RUNOFF)
21.73	2.0	(RUNOFF)
21.94	2.0	(RUNOFF)
24.00	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.03 WATERSHED INCHES; 89 CFS-HRS; 7.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	301.6	(NULL)
20.79	11.5	(NULL)
21.88	10.7	(NULL)
23.99	9.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.99 WATERSHED INCHES; 468 CFS-HRS; 38.7 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.34	354.1	(NULL)
21.87	15.4	(NULL)
23.99	13.2	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)



1.98 WATERSHED INCHES; 669 CFS-HRS; 55.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.18	28.5	(RUNOFF)
15.85	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.82 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
13.13	4.0	268.93

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.82 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-  
FEET.

OPERATION REACH XSECTION 42

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
13.26	4.0 *	222.29
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.82 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 43

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
12.25	44.6	(RUNOFF)
22.47	2.1	(RUNOFF)
24.02	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.83 WATERSHED INCHES; 65 CFS-HRS; 5.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 44

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	46.1	(NULL)
18.58	4.3	(NULL)
21.94	3.2	(NULL)
24.02	2.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .99 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-FEET.

OPERATION REACH XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	342.5	225.02
24.04	13.2	222.60

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.98 WATERSHED INCHES; 670 CFS-HRS; 55.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	374.7	(NULL)
24.04	15.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.77 WATERSHED INCHES; 762 CFS-HRS; 63.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	264.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.02 WATERSHED INCHES; 368 CFS-HRS; 30.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	33.0	(RUNOFF)
17.35	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.97 WATERSHED INCHES; 32 CFS-HRS; 2.6 ACRE-FEET.

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OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	17.3	334.31
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.97 WATERSHED INCHES;		2.6 ACRE-
FEET.		

OPERATION REACH XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.54	16.3	316.60
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.97 WATERSHED INCHES;		2.6 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	277.3	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.02 WATERSHED INCHES;		33.0 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	24.0	(RUNOFF)
15.83	1.1	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.75 WATERSHED INCHES;		2.0 ACRE-
FEET.		

\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE  
 STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.73	5.8	321.10

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.27 WATERSHED INCHES; 18 CFS-HRS; 1.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	277.6	277.26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.97 WATERSHED INCHES; 417 CFS-HRS; 34.5 ACRE-  
FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	252.4	277.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.96 WATERSHED INCHES; 417 CFS-HRS; 34.5 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	85.1	(RUNOFF)
20.87	4.1	(RUNOFF)
24.03	3.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
.88 WATERSHED INCHES; 119 CFS-HRS; 9.8 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	308.5	(NULL)
24.00	11.6	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10  
MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .54  
SQ.MI.

HRS								
10.20 CFS	.37	.53	.71	.92	1.14	1.38	1.65	
1.93								
10.68 CFS	2.24	2.58	2.97	3.40	3.89	4.45	5.08	
5.78								
11.16 CFS	6.55	7.42	8.41	9.55	10.84	12.31	13.95	
15.79								

11.64	CFS	17.95	20.63	24.14	28.90	35.68	46.23	63.56
92.78								
12.12	CFS	139	193	239	274	297	308	306
294								
12.60	CFS	275	253	231	210	190	172	156
142								
13.08	CFS	130	120	111	103	96	89	84
78								
13.56	CFS	73.86	69.66	65.86	62.44	59.38	56.66	54.27
52.20								
14.04	CFS	50.42	48.86	47.47	46.21	45.05	43.99	43.01
42.09								

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas

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14.52	CFS	41.20	40.32	39.43	38.56	37.71	36.89	36.08
35.26								
15.00	CFS	34.45	33.65	32.85	32.03	31.23	30.48	29.81
29.22								
15.48	CFS	28.71	28.29	27.91	27.57	27.23	26.92	26.68
26.46								
15.96	CFS	26.23	25.97	25.71	25.47	25.25	25.04	24.81
24.58								
16.44	CFS	24.35	24.12	23.88	23.64	23.41	23.21	23.00
22.77								
16.92	CFS	22.56	22.36	22.18	21.99	21.77	21.52	21.27
21.07								
17.40	CFS	20.87	20.66	20.40	20.14	19.89	19.67	19.44
19.20								
17.88	CFS	18.96	18.73	18.52	18.33	18.11	17.89	17.68
17.49								
18.36	CFS	17.31	17.11	16.92	16.78	16.69	16.62	16.52
16.44								
18.84	CFS	16.39	16.36	16.29	16.21	16.13	16.06	15.99
15.93								
19.32	CFS	15.88	15.83	15.80	15.78	15.75	15.68	15.61
15.57								
19.80	CFS	15.52	15.44	15.35	15.28	15.26	15.25	15.20
15.15								
20.28	CFS	15.10	15.05	14.97	14.86	14.78	14.73	14.71
14.65								
20.76	CFS	14.58	14.53	14.51	14.46	14.39	14.31	14.23
14.17								
21.24	CFS	14.11	14.05	14.00	13.96	13.93	13.90	13.85
13.77								
21.72	CFS	13.72	13.67	13.61	13.55	13.52	13.48	13.41
13.34								
22.20	CFS	13.27	13.21	13.15	13.10	13.05	13.01	12.96
12.89								
22.68	CFS	12.80	12.75	12.69	12.60	12.50	12.43	12.40
12.38								
23.16	CFS	12.33	12.27	12.22	12.17	12.13	12.07	11.97
11.87								
23.64	CFS	11.80	11.78	11.75	11.68	11.59	11.52	11.55
11.53								
24.12	CFS	10.99	10.00	8.82	7.67	6.51	5.37	4.32
3.43								

24.60 CFS      2.71      2.14      1.70      1.35      1.10      .90      .75  
 .64  
 25.08 CFS      .56      .49

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.55 WATERSHED INCHES;      536 CFS-HRS;      44.3 ACRE-  
 FEET.

OPERATION ADDHYD      XSECTION      55

PEAK TIME(HRS)      PEAK DISCHARGE(CFS)      PEAK  
 ELEVATION(FEET)  
 12.38      1041.1      (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.79 WATERSHED INCHES;      1774 CFS-HRS;      146.6 ACRE-  
 FEET.

OPERATION RUNOFF      XSECTION      56

PEAK TIME(HRS)      PEAK DISCHARGE(CFS)      PEAK  
 ELEVATION(FEET)  
 12.14      16.7      (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.39 WATERSHED INCHES;      15 CFS-HRS;      1.2 ACRE-  
 FEET.

OPERATION ADDHYD      XSECTION      57

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS)      PEAK DISCHARGE(CFS)      PEAK  
 ELEVATION(FEET)  
 12.38      1047.6      (NULL)

HYDROGRAPH POINTS FOR      ALTERNATE = 1,      STORM =10  
 MAIN TIME INCREMENT = .060 hr,      DRAINAGE AREA = 1.55  
 SQ.MI.

HRS	10.14	10.62	11.10	11.58	12.06	12.54	13.02
CFS	3.91	17.45	56.62	264	979	475	276
	.46	4.82	20.35	65	362	911	437
	.72	5.90	23.69	76	513	839	405
	1.05	7.19	27.53	90	709	769	376
	1.45	8.71	31.98	109	885	698	350
	1.93	10.49	37.08	131	1001	630	327
	2.49	12.53	42.85	161	1046	570	308
	3.14	14.85	49.36	203	1031	519	291

13.50 CFS	262	250	238	227	217	208	200
193							
13.98 CFS	187	181	176	172	168	164	160
156							
14.46 CFS	151	147	142	138	134	130	126
123							
14.94 CFS	119	116	113	110	107	104	102
99							
15.42 CFS	97.24	95.49	94.05	92.85	91.73	90.61	89.49
88.47							
15.90 CFS	87.59	86.76	85.92	85.02	84.09	83.21	82.40
81.63							
16.38 CFS	80.87	80.10	79.32	78.50	77.67	76.87	76.14
75.45							
16.86 CFS	74.75	74.05	73.36	72.72	72.11	71.44	70.68
69.83							
17.34 CFS	69.03	68.33	67.66	66.95	66.15	65.31	64.49
63.73							
17.82 CFS	63.00	62.25	61.51	60.81	60.16	59.52	58.84
58.15							
18.30 CFS	57.49	56.87	56.26	55.65	55.13	54.76	54.51
54.29							
18.78 CFS	54.05	53.85	53.67	53.45	53.18	52.88	52.58
52.30							
19.26 CFS	52.06	51.86	51.70	51.58	51.48	51.38	51.21
50.96							
19.74 CFS	50.72	50.50	50.26	49.97	49.71	49.55	49.47
49.40							
20.22 CFS	49.28	49.11	48.90	48.64	48.29	47.95	47.70
47.55							
20.70 CFS	47.44	47.29	47.14	47.01	46.86	46.65	46.39
46.11							
21.18 CFS	45.85	45.61	45.42	45.26	45.14	45.05	44.96
44.82							
21.66 CFS	44.60	44.35	44.14	43.92	43.72	43.60	43.50
43.34							
22.14 CFS	43.13	42.88	42.63	42.40	42.20	42.05	41.92
41.80							
22.62 CFS	41.61	41.34	41.09	40.87	40.62	40.33	40.06
39.90							
23.10 CFS	39.82	39.74	39.62	39.45	39.25	39.05	38.85
38.60							
23.58 CFS	38.28	38.00	37.81	37.71	37.61	37.41	37.17
37.04							
24.06 CFS	36.97	36.12	33.73	30.06	25.74	21.42	17.51
14.26							
24.54 CFS	11.67	9.63	8.04	6.82	5.87	5.14	4.57
4.11							
25.02 CFS	3.74	3.44	3.19	2.98	2.80	2.65	2.52
2.40							
25.50 CFS	2.30	2.21	2.13	2.06	1.99	1.93	1.88
1.83							
25.98 CFS	1.78	1.74	1.69	1.63	1.59	1.56	1.53
1.50							
26.46 CFS	1.48	1.46	1.43	1.41	1.39	1.37	1.35
1.33							
26.94 CFS	1.31	1.30	1.28	1.26	1.24	1.23	1.21
1.20							
27.42 CFS	1.18	1.16	1.15	1.14	1.12	1.11	1.10
1.08							
27.90 CFS	1.07	1.05	1.04	1.03	1.02	1.00	1.00
.99							
28.38 CFS	.97	.96	.95	.94	.93	.92	.91
.91							

28.86 CFS .83	.90	.89	.88	.87	.86	.85	.84
29.34 CFS .77	.82	.82	.81	.80	.79	.78	.77
29.82 CFS .71	.76	.75	.75	.74	.73	.72	.72
30.30 CFS .66	.70	.70	.69	.68	.68	.67	.67
30.78 CFS .61	.65	.65	.64	.63	.63	.62	.62
31.26 CFS .57	.61	.60	.60	.59	.59	.58	.58

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31.74 CFS .53	.57	.56	.56	.55	.55	.54	.54
32.22 CFS .50	.53	.53	.52	.52	.51	.51	.51
32.70 CFS	.50						

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.79 WATERSHED INCHES; 1789 CFS-HRS; 147.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.14	33.4	(RUNOFF)
17.34	1.2	(RUNOFF)
18.60	1.0	(RUNOFF)
18.84	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.34 WATERSHED INCHES; 31 CFS-HRS; 2.5 ACRE-  
FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.52	305.8	131.36
24.05	11.6	129.69

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
1.55 WATERSHED INCHES; 536 CFS-HRS; 44.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.52	316.3	(NULL)



23.98 12.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.53 WATERSHED INCHES; 566 CFS-HRS; 46.8 ACRE-
FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 12.40 1334.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.72 WATERSHED INCHES; 2355 CFS-HRS; 194.6 ACRE-
FEET.

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OPERATION RUNOFF XSECTION 62

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 12.38 1.7 (RUNOFF)

Table with 9 columns: HRS, SQ.MI., MAIN, TIME INCREMENT, ALTERNATE, DRAINAGE AREA, STORM, and 8 data points for hydrograph points.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.35 WATERSHED INCHES; 5 CFS-HRS; .4 ACRE-
FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET) 12.40 1336.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.71 WATERSHED INCHES; 2360 CFS-HRS; 195.1 ACRE-
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 6.14 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =25 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	308.2	(RUNOFF)
18.67	9.8	(RUNOFF)
20.12	9.0	(RUNOFF)
20.68	8.7	(RUNOFF)
23.12	7.3	(RUNOFF)
24.03	6.7	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.69 WATERSHED INCHES; 365 CFS-HRS; 30.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	53.6	(RUNOFF)
23.09	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 55 CFS-HRS; 4.5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.41	28.4	431.54

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.87 WATERSHED INCHES; 54 CFS-HRS; 4.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 3

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	325.3	(NULL)

18.66	11.7	(NULL)
20.67	10.3	(NULL)
24.02	8.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.71 WATERSHED INCHES; 419 CFS-HRS; 34.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.16	125.4	(RUNOFF)
15.84	4.8	(RUNOFF)
17.34	3.7	(RUNOFF)
18.62	3.0	(RUNOFF)
23.72	2.1	(RUNOFF)
24.00	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.90 WATERSHED INCHES; 115 CFS-HRS; 9.5 ACRE-  
 FEET.

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	421.2	(NULL)
18.82	14.5	(NULL)
20.08	13.5	(NULL)
20.64	13.0	(NULL)
21.95	11.9	(NULL)
24.01	10.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.75 WATERSHED INCHES; 534 CFS-HRS; 44.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	148.7	(RUNOFF)
15.83	6.1	(RUNOFF)
17.32	4.8	(RUNOFF)
21.97	3.1	(RUNOFF)
24.02	2.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.86 WATERSHED INCHES; 147 CFS-HRS; 12.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	417.8	320.17
18.70	14.7	318.30
20.15	13.5	318.29
20.70	13.0	318.28
22.01	11.9	318.27
24.07	10.2	318.25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.75 WATERSHED INCHES; 534 CFS-HRS; 44.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 8

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	540.0	(NULL)
18.67	18.5	(NULL)
20.12	17.1	(NULL)
20.67	16.4	(NULL)
21.99	15.0	(NULL)
23.12	13.8	(NULL)
23.77	13.0	(NULL)
24.04	12.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.77 WATERSHED INCHES; 681 CFS-HRS; 56.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	108.5	(RUNOFF)
15.82	4.6	(RUNOFF)
23.09	2.1	(RUNOFF)
23.74	2.0	(RUNOFF)
24.02	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.80 WATERSHED INCHES; 109 CFS-HRS; 9.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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ELEVATION(FEET)			
12.24	30.9		(RUNOFF)
19.47	1.0		(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.12 WATERSHED INCHES; 36 CFS-HRS; 3.0 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.83	8.3	454.86

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.70 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-  
 FEET.

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OPERATION REACH XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.93	8.2	414.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.70 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	108.7	(NULL)
18.62	4.1	(NULL)
22.74	3.0	(NULL)
24.01	2.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.46 WATERSHED INCHES; 138 CFS-HRS; 11.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
12.18	85.1	(RUNOFF)
15.84	3.4	(RUNOFF)
19.76	2.0	(RUNOFF)
20.08	2.0	(RUNOFF)
24.02	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.90 WATERSHED INCHES; 84 CFS-HRS; 6.9 ACRE-FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	40.1	398.17

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.90 WATERSHED INCHES; 84 CFS-HRS; 6.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 14

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	137.5	(NULL)
21.95	5.1	(NULL)
24.01	4.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.61 WATERSHED INCHES; 221 CFS-HRS; 18.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	165.1	(RUNOFF)
15.85	6.3	(RUNOFF)
17.34	4.9	(RUNOFF)
22.47	3.1	(RUNOFF)
24.01	2.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 153 CFS-HRS; 12.7 ACRE-FEET.

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
12.30	128.3	331.14
20.68	5.6	330.23
24.08	4.3	330.18

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.61 WATERSHED INCHES; 221 CFS-HRS; 18.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	261.4	(NULL)
18.57	10.5	(NULL)
20.62	9.1	(NULL)
21.95	8.3	(NULL)
23.72	7.2	(NULL)
24.01	7.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.72 WATERSHED INCHES; 374 CFS-HRS; 30.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 18

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	786.3	(NULL)
18.64	29.0	(NULL)
20.10	26.5	(NULL)
20.64	25.4	(NULL)
21.96	23.3	(NULL)
23.10	21.4	(NULL)
23.75	20.2	(NULL)
24.03	20.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.75 WATERSHED INCHES; 1056 CFS-HRS; 87.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	342.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.67 WATERSHED INCHES; 466 CFS-HRS; 38.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.37	705.7	237.38
20.14	26.5	234.47
23.14	21.4	234.40
24.09	20.0	234.38

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.75 WATERSHED INCHES; 1056 CFS-HRS; 87.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.36	1041.4	(NULL)
20.14	38.1	(NULL)
23.13	30.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.73 WATERSHED INCHES; 1522 CFS-HRS; 125.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	31.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.91 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	25.5	414.65

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.92 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
-----------------------------------	---------------------	------



12.20	145.9	(RUNOFF)
21.97	3.2	(RUNOFF)
24.02	2.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 153 CFS-HRS; 12.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	113.2	369.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 153 CFS-HRS; 12.6 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	138.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 187 CFS-HRS; 15.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	84.9	(RUNOFF)
20.09	2.1	(RUNOFF)
20.64	2.0	(RUNOFF)
24.03	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 87 CFS-HRS; 7.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.28	204.5	(NULL)
20.62	6.3	(NULL)
23.71	5.0	(NULL)
24.02	4.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 275 CFS-HRS; 22.7 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	175.2	338.70

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 275 CFS-HRS; 22.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	31.0	(RUNOFF)
15.46	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 24 CFS-HRS; 2.0 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -.0%.  
 \*\*\*

OPERATION ADDHYD XSECTION 28

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	70.6	(NULL)
12.39	183.2	(NULL)
23.98	5.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 299 CFS-HRS; 24.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.12	122.6	(RUNOFF)
15.46	4.1	(RUNOFF)
16.95	3.2	(RUNOFF)
17.32	3.0	(RUNOFF)

21.45	2.0	(RUNOFF)
21.72	2.0	(RUNOFF)
21.91	2.0	(RUNOFF)
23.99	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -.2%.  
 \*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.12	122.6	(NULL)
15.46	4.1	(NULL)
16.95	3.2	(NULL)
17.32	3.0	(NULL)
21.45	2.0	(NULL)
21.72	2.0	(NULL)
21.91	2.0	(NULL)
23.99	1.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 94 CFS-HRS; 7.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 30

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	114.7	356.93
15.52	4.1	356.08
15.89	3.9	356.08
17.39	3.0	356.06
21.51	2.0	356.04
24.05	1.9	356.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 94 CFS-HRS; 7.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.33	236.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 329 CFS-HRS; 27.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.25	306.2	(NULL)
20.09	10.1	(NULL)
20.87	9.6	(NULL)
23.09	8.1	(NULL)
24.04	7.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 422 CFS-HRS; 34.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.21	84.0	(RUNOFF)
20.86	2.0	(RUNOFF)
24.02	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 90 CFS-HRS; 7.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 34

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.23	388.0	(NULL)
18.87	13.2	(NULL)
20.09	12.3	(NULL)
20.87	11.6	(NULL)
21.97	10.8	(NULL)
24.04	9.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 512 CFS-HRS; 42.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
----------------	---------------------	----------------------

12.34	368.5	317.38
20.16	12.2	316.24
20.92	11.6	316.23
22.00	10.7	316.21
24.10	9.2	316.18

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 512 CFS-HRS; 42.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.28	37.6	(RUNOFF)
20.68	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.00 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE TIME INCREMENT OF .047 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.40	31.9	327.75
20.69	1.1	323.04

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.01 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.35	398.8	(NULL)
20.16	13.3	(NULL)
20.91	12.7	(NULL)
22.00	11.7	(NULL)
23.80	10.1	(NULL)
24.10	10.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.93 WATERSHED INCHES; 560 CFS-HRS; 46.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.13	156.1	(RUNOFF)
15.84	5.4	(RUNOFF)
17.34	4.2	(RUNOFF)
20.04	3.2	(RUNOFF)
20.60	3.0	(RUNOFF)
24.00	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES; 132 CFS-HRS; 10.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.32	462.5	(NULL)
23.99	12.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.94 WATERSHED INCHES; 692 CFS-HRS; 57.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	636.1	(NULL)
23.99	17.9	(NULL)

1

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.93 WATERSHED INCHES; 990 CFS-HRS; 81.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.18	43.1	(RUNOFF)
20.08	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.74 WATERSHED INCHES; 42 CFS-HRS; 3.4 ACRE-

FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.05	6.2	270.56
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.73 WATERSHED INCHES;	42 CFS-HRS;	3.4 ACRE-
FEET.		

OPERATION REACH XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
13.19	6.2	222.36
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.72 WATERSHED INCHES;	41 CFS-HRS;	3.4 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	92.5	(RUNOFF)
21.98	3.3	(RUNOFF)
23.11	3.0	(RUNOFF)
24.03	2.9	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.45 WATERSHED INCHES;	113 CFS-HRS;	9.4 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 44

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	95.0	(NULL)
20.63	5.3	(NULL)
23.74	4.0	(NULL)
24.03	4.0	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.66 WATERSHED INCHES;	155 CFS-HRS;	12.8 ACRE-
FEET.		

OPERATION REACH XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.48	592.0	226.03
24.04	17.9	222.71

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.93 WATERSHED INCHES; 990 CFS-HRS; 81.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	649.5	(NULL)
24.04	21.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.65 WATERSHED INCHES; 1145 CFS-HRS; 94.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	398.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.98 WATERSHED INCHES; 543 CFS-HRS; 44.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	49.1	(RUNOFF)
21.46	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-FEET.

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OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	24.6	335.64

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-FEET.



FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.52	23.1	316.72
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.91 WATERSHED INCHES;	47 CFS-HRS;	3.9 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	417.3	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.97 WATERSHED INCHES;	589 CFS-HRS;	48.7 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	37.1	(RUNOFF)
15.82	1.6	(RUNOFF)
18.64	1.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.65 WATERSHED INCHES;	37 CFS-HRS;	3.1 ACRE-
FEET.		

\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE  
 STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	18.5	321.56

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.15 WATERSHED INCHES;	30 CFS-HRS;	2.5 ACRE-
FEET.		

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	432.8	277.63

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 619 CFS-HRS; 51.2 ACRE-FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	399.4	277.55

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.92 WATERSHED INCHES; 619 CFS-HRS; 51.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	170.3	(RUNOFF)
18.66	7.0	(RUNOFF)
20.87	6.2	(RUNOFF)
23.11	5.3	(RUNOFF)
23.75	5.1	(RUNOFF)
24.02	5.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.53 WATERSHED INCHES; 205 CFS-HRS; 17.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	503.1	(NULL)
24.00	16.1	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .54 SQ.MI.

HRS	9.24	1.79	9.72	4.25	10.20	7.80	10.68	14.85	11.16	33.71	11.64	186																																		
CFS	9.24	1.79	9.72	4.25	10.20	7.80	10.68	14.85	11.16	33.71	11.64	186																																		
	.48	.62	.77	.95	1.13	1.34	1.56	2.04	2.31	2.59	2.89	3.21	3.54	3.89	4.25	4.63	5.03	5.45	5.89	6.34	6.81	7.29	7.80	8.35	8.97	9.67	10.47	11.39	12.42	13.58	14.85	16.26	17.83	19.60	21.61	23.90	26.57	29.76	33.71	39	46	54	66	81	102	134

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12.12	CFS	265	352	420	465	493	503	493
466								
12.60	CFS	429	388	348	312	280	251	227
206								
13.08	CFS	188	173	160	148	138	128	120
113								
13.56	CFS	106	100	94	89	85	81	77
74								
14.04	CFS	71.74	69.58	67.64	65.86	64.23	62.73	61.34
60.03								
14.52	CFS	58.75	57.47	56.18	54.91	53.69	52.50	51.33
50.14								
15.00	CFS	48.96	47.80	46.63	45.44	44.28	43.21	42.25
41.42								
15.48	CFS	40.72	40.13	39.62	39.14	38.66	38.23	37.89
37.58								
15.96	CFS	37.25	36.87	36.49	36.14	35.82	35.52	35.19
34.85								
16.44	CFS	34.52	34.19	33.83	33.48	33.15	32.86	32.56
32.23								
16.92	CFS	31.92	31.64	31.38	31.11	30.79	30.41	30.05
29.76								
17.40	CFS	29.48	29.16	28.80	28.42	28.06	27.74	27.42
27.08								
17.88	CFS	26.72	26.39	26.10	25.83	25.53	25.21	24.91
24.64								
18.36	CFS	24.38	24.09	23.82	23.63	23.52	23.42	23.29
23.17								
18.84	CFS	23.11	23.06	22.97	22.84	22.72	22.62	22.52
22.44								
19.32	CFS	22.36	22.30	22.26	22.22	22.18	22.08	21.97
21.91								
19.80	CFS	21.84	21.72	21.58	21.49	21.47	21.46	21.39
21.31								
20.28	CFS	21.23	21.16	21.04	20.88	20.75	20.69	20.64
20.57								
20.76	CFS	20.46	20.41	20.38	20.31	20.20	20.08	19.98
19.88								
21.24	CFS	19.79	19.71	19.64	19.59	19.55	19.51	19.43
19.31								
21.72	CFS	19.23	19.17	19.07	18.99	18.95	18.89	18.80
18.69								
22.20	CFS	18.59	18.51	18.42	18.34	18.27	18.22	18.15
18.04								
22.68	CFS	17.92	17.84	17.75	17.62	17.48	17.38	17.35
17.33								
23.16	CFS	17.26	17.17	17.09	17.03	16.96	16.87	16.73
16.58								
23.64	CFS	16.49	16.46	16.42	16.33	16.19	16.09	16.14
16.08								
24.12	CFS	15.32	13.82	12.09	10.36	8.68	7.05	5.55
4.32								
24.60	CFS	3.34	2.59	2.02	1.58	1.26	1.02	.84
.70								
25.08	CFS	.60	.53	.47				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

2.38 WATERSHED INCHES; 824 CFS-HRS; 68.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.39 1647.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.70 WATERSHED INCHES; 2667 CFS-HRS; 220.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.13 27.5 (RUNOFF)  
15.84 1.1 (RUNOFF)

1

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.20 WATERSHED INCHES; 24 CFS-HRS; 1.9 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET)  
12.39 1656.8 (NULL)

HRS	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25							
	MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = 1.55			
SQ.MI.								
9.12 CFS	.40	.59	.83	1.13	1.48	1.88	2.36	
2.90								
9.60 CFS	3.51	4.23	5.05	5.99	7.03	8.15	9.36	
10.64								
10.08 CFS	12.00	13.46	15.00	16.62	18.30	20.04	21.86	
23.76								
10.56 CFS	25.78	27.96	30.40	33.18	36.37	40.01	44.09	
48.63								
11.04 CFS	54	59	65	72	80	89	99	
111								
11.52 CFS	123	137	156	181	213	252	303	
372								
12.00 CFS	473	628	856	1143	1397	1564	1645	
1649								
12.48 CFS	1574	1455	1322	1188	1059	943	841	
755								
12.96 CFS	683	625	577	536	500	468	439	
413								

13.44 CFS 274	389	367	348	330	314	300	286
13.92 CFS 219	264	255	248	241	235	230	224
14.40 CFS 182	214	210	205	201	196	192	187
14.88 CFS 144	177	172	167	162	157	153	148
15.36 CFS 125	140	137	134	132	130	129	127
15.84 CFS 115	124	122	121	120	119	117	116
16.32 CFS 106	114	113	112	111	109	108	107
16.80 CFS 98	105	104	103	102	101	100	99
17.28 CFS 89.18	96.81	95.67	94.66	93.70	92.68	91.54	90.34
17.76 CFS 81.27	88.11	87.09	86.04	85.01	84.02	83.11	82.21
18.24 CFS 75.24	80.32	79.39	78.53	77.67	76.82	76.10	75.58
18.72 CFS 72.53	74.93	74.59	74.30	74.04	73.74	73.37	72.95
19.20 CFS 70.60	72.14	71.80	71.53	71.31	71.13	70.99	70.85
19.68 CFS 68.16	70.25	69.91	69.60	69.25	68.86	68.49	68.27
20.16 CFS 65.67	68.05	67.89	67.65	67.37	66.99	66.50	66.02
20.64 CFS 63.84	65.47	65.31	65.10	64.90	64.72	64.50	64.20
21.12 CFS 61.84	63.45	63.08	62.75	62.48	62.26	62.09	61.96
21.60 CFS 59.79	61.65	61.33	60.99	60.69	60.39	60.12	59.94
22.08 CFS 57.60	59.57	59.27	58.93	58.58	58.26	57.99	57.77
22.56 CFS 55.00	57.43	57.16	56.80	56.44	56.13	55.78	55.38
23.04 CFS 53.33	54.78	54.67	54.56	54.39	54.16	53.88	53.61
23.52 CFS 51.00	52.97	52.53	52.14	51.89	51.75	51.60	51.33
24.00 CFS 23.83	50.82	50.71	49.44	46.14	41.09	35.15	29.19
24.48 CFS 6.06	19.37	15.82	13.02	10.86	9.18	7.88	6.86
24.96 CFS 3.24	5.42	4.91	4.49	4.15	3.87	3.62	3.41
25.44 CFS 2.37	3.08	2.94	2.82	2.71	2.61	2.53	2.44
25.92 CFS 1.91	2.30	2.24	2.18	2.13	2.08	2.03	1.96
26.40 CFS 1.67	1.88	1.84	1.81	1.77	1.75	1.72	1.69
26.88 CFS 1.48	1.64	1.62	1.59	1.57	1.55	1.53	1.50
27.36 CFS 1.33	1.46	1.44	1.42	1.40	1.39	1.37	1.35

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27.84 CFS	1.31	1.30	1.28	1.27	1.25	1.23	1.21
1.20							
28.32 CFS	1.18	1.17	1.16	1.14	1.13	1.12	1.11
1.09							
28.80 CFS	1.08	1.07	1.06	1.05	1.03	1.02	1.01
1.00							
29.28 CFS	.99	.98	.97	.96	.94	.94	.93
.91							
29.76 CFS	.90	.89	.88	.88	.87	.86	.85
.84							
30.24 CFS	.83	.82	.81	.81	.80	.79	.78
.77							
30.72 CFS	.76	.76	.75	.74	.73	.73	.72
.71							
31.20 CFS	.71	.70	.69	.69	.68	.67	.67
.66							
31.68 CFS	.65	.65	.64	.64	.63	.62	.62
.61							
32.16 CFS	.61	.60	.60	.59	.59		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.69 WATERSHED INCHES; 2690 CFS-HRS; 222.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	55.6	(RUNOFF)
15.84	2.3	(RUNOFF)
23.04	1.1	(RUNOFF)
23.70	1.1	(RUNOFF)
24.00	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.13 WATERSHED INCHES; 49 CFS-HRS; 4.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	500.4	131.98
24.05	16.1	129.80

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.38 WATERSHED INCHES; 824 CFS-HRS; 68.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.49	516.8	(NULL)
23.97	17.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.36 WATERSHED INCHES; 873 CFS-HRS; 72.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 61

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	2154.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.60 WATERSHED INCHES; 3564 CFS-HRS; 294.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.21	7.1	(RUNOFF)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25							
	MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .02			
HRS								
SQ.MI.								
12.00 CFS	.36	1.71	4.84	6.90	6.73	5.99	5.34	
4.73								
12.48 CFS	4.32	4.07	3.66	3.18	2.88	2.70	2.57	
2.46								
12.96 CFS	2.35	2.24	2.12	2.00	1.91	1.83	1.76	
1.69								
13.44 CFS	1.61	1.54	1.46	1.39	1.34	1.30	1.27	
1.24								
13.92 CFS	1.23	1.21	1.20	1.18	1.16	1.14	1.12	
1.10								
14.40 CFS	1.09	1.07	1.05	1.03	1.00	.98	.96	
.95								
14.88 CFS	.93	.90	.88	.86	.84	.81	.79	
.78								
15.36 CFS	.78	.78	.78	.78	.78	.77	.75	
.75								
15.84 CFS	.75	.75	.74	.73	.72	.72	.72	
.72								
16.32 CFS	.71	.70	.69	.69	.68	.67	.67	
.67								
16.80 CFS	.66	.65	.65	.65	.64	.64	.62	
.61								
17.28 CFS	.60	.61	.61	.60	.58	.57	.57	
.57								
17.76 CFS	.56	.55	.54	.54	.54	.54	.53	
.52								
18.24 CFS	.51	.51	.51	.50	.49	.50	.51	
.51								

18.72 CFS .50 .50 .50 .50 .49

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .75 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	2159.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.58 WATERSHED INCHES; 3575 CFS-HRS; 295.4 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

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EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 7.23 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =50 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	410.3	(RUNOFF)
18.67	12.2	(RUNOFF)
20.13	11.3	(RUNOFF)
20.68	10.8	(RUNOFF)
21.94	9.9	(RUNOFF)
23.12	9.0	(RUNOFF)
24.02	8.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.55 WATERSHED INCHES; 481 CFS-HRS; 39.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	70.1	(RUNOFF)
24.02	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 72 CFS-HRS; 5.9 ACRE-  
 FEET.



OPERATION RESVOR STRUCTURE 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	56.7	431.92

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.75 WATERSHED INCHES; 71 CFS-HRS; 5.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 3

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.26	461.9	(NULL)
18.66	14.2	(NULL)
20.12	13.2	(NULL)
20.67	12.7	(NULL)
23.76	10.1	(NULL)
24.01	9.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.57 WATERSHED INCHES; 552 CFS-HRS; 45.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.16	164.0	(RUNOFF)
15.84	5.9	(RUNOFF)
17.34	4.6	(RUNOFF)
21.45	3.1	(RUNOFF)
21.75	3.0	(RUNOFF)
21.95	3.0	(RUNOFF)
24.01	2.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.79 WATERSHED INCHES; 151 CFS-HRS; 12.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.23	582.3	(NULL)
18.82	17.8	(NULL)
20.09	16.6	(NULL)
20.64	16.0	(NULL)

21.95	14.7	(NULL)
23.08	13.5	(NULL)
24.01	12.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.62 WATERSHED INCHES; 703 CFS-HRS; 58.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	194.9	(RUNOFF)
15.83	7.6	(RUNOFF)
17.31	5.9	(RUNOFF)
20.87	4.2	(RUNOFF)
24.02	3.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.75 WATERSHED INCHES; 193 CFS-HRS; 16.0 ACRE-  
 FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	576.8	320.71
18.70	18.0	318.34
20.15	16.6	318.32
20.70	15.9	318.31
22.01	14.7	318.30
23.15	13.5	318.29
24.07	12.6	318.28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.62 WATERSHED INCHES; 703 CFS-HRS; 58.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	726.0	(NULL)
18.66	22.8	(NULL)
20.12	21.0	(NULL)
20.67	20.2	(NULL)
21.99	18.5	(NULL)
23.12	17.0	(NULL)
23.77	16.1	(NULL)
24.04	15.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.64 WATERSHED INCHES; 896 CFS-HRS; 74.0 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	143.6	(RUNOFF)
20.87	3.1	(RUNOFF)
24.02	2.5	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.68 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.24	43.0	(RUNOFF)
23.11	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.89 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.67	15.2	455.35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.46 WATERSHED INCHES; 42 CFS-HRS; 3.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.75	15.2	414.37

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

2.46 WATERSHED INCHES; 42 CFS-HRS; 3.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	143.8	(NULL)
18.83	5.0	(NULL)
21.96	4.1	(NULL)
24.01	3.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.30 WATERSHED INCHES; 185 CFS-HRS; 15.3 ACRE-  
FEET.

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OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	112.0	(RUNOFF)
15.83	4.3	(RUNOFF)
17.33	3.3	(RUNOFF)
21.96	2.2	(RUNOFF)
22.76	2.0	(RUNOFF)
24.02	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.79 WATERSHED INCHES; 109 CFS-HRS; 9.0 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.39	54.5	398.66

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.79 WATERSHED INCHES; 109 CFS-HRS; 9.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	184.1	(NULL)
20.07	7.2	(NULL)
21.95	6.3	(NULL)
24.01	5.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.47 WATERSHED INCHES; 294 CFS-HRS; 24.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	216.1	(RUNOFF)
15.84	7.9	(RUNOFF)
17.34	6.1	(RUNOFF)
21.45	4.1	(RUNOFF)
24.01	3.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 200 CFS-HRS; 16.6 ACRE-  
 FEET.

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OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.29	173.0	331.29
20.13	7.2	330.27
20.68	6.9	330.27
24.08	5.4	330.23

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.46 WATERSHED INCHES; 294 CFS-HRS; 24.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	348.6	(NULL)
18.58	13.1	(NULL)
20.80	11.1	(NULL)
21.95	10.3	(NULL)
23.06	9.5	(NULL)
24.01	8.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.60 WATERSHED INCHES; 494 CFS-HRS; 40.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)

12.25	1050.6	(NULL)
18.63	35.9	(NULL)
20.10	32.8	(NULL)
20.64	31.4	(NULL)
21.96	28.8	(NULL)
23.10	26.4	(NULL)
23.75	25.0	(NULL)
24.03	24.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.63 WATERSHED INCHES; 1390 CFS-HRS; 114.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	457.1	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.54 WATERSHED INCHES; 616 CFS-HRS; 50.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	953.8	238.13
20.14	32.8	234.53
23.14	26.4	234.46
24.09	24.7	234.44

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.63 WATERSHED INCHES; 1390 CFS-HRS; 114.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	1398.5	(NULL)
20.14	47.2	(NULL)
23.13	38.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.60 WATERSHED INCHES; 2006 CFS-HRS; 165.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	40.8	(RUNOFF)
20.11	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 45 CFS-HRS; 3.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	36.1	415.18
20.15	1.0	410.80

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.80 WATERSHED INCHES; 45 CFS-HRS; 3.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 23

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.20	191.4	(RUNOFF)
21.45	4.1	(RUNOFF)
24.03	3.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 200 CFS-HRS; 16.5 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	159.7	369.41

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 200 CFS-HRS; 16.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.30	195.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 245 CFS-HRS; 20.2 ACRE-

FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.19	111.5	(RUNOFF)
23.09	2.1	(RUNOFF)
24.02	1.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.81 WATERSHED INCHES; 114 CFS-HRS; 9.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	287.6	(NULL)
20.08	8.2	(NULL)
20.62	7.9	(NULL)
24.01	6.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.81 WATERSHED INCHES; 359 CFS-HRS; 29.7 ACRE-FEET.

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OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.42	214.4	339.88

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.82 WATERSHED INCHES; 360 CFS-HRS; 29.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.12	40.1	(RUNOFF)
16.17	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.82 WATERSHED INCHES; 31 CFS-HRS; 2.6 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.



THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .6%.  
\*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.41	224.3	(NULL)
23.98	6.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.82 WATERSHED INCHES; 391 CFS-HRS; 32.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 29

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.12	158.9	(RUNOFF)
15.46	5.0	(RUNOFF)
16.17	4.5	(RUNOFF)
17.32	3.7	(RUNOFF)
18.58	3.1	(RUNOFF)
18.82	3.0	(RUNOFF)
23.02	2.3	(RUNOFF)
23.68	2.1	(RUNOFF)
23.99	2.4	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.82 WATERSHED INCHES; 123 CFS-HRS; 10.2 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .3%.  
\*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.12	158.9	(NULL)
15.46	5.0	(NULL)
16.17	4.5	(NULL)
17.32	3.7	(NULL)
18.58	3.1	(NULL)
18.82	3.0	(NULL)
23.02	2.3	(NULL)
23.68	2.1	(NULL)
23.99	2.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.82 WATERSHED INCHES; 123 CFS-HRS; 10.2 ACRE-
FEET.

OPERATION REACH XSECTION 30

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Rows include values like 12.18, 150.8, 357.07.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.80 WATERSHED INCHES; 122 CFS-HRS; 10.1 ACRE-
FEET.

OPERATION RUNOFF XSECTION 31

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Row includes 12.33, 308.7, (RUNOFF).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.81 WATERSHED INCHES; 429 CFS-HRS; 35.5 ACRE-
FEET.

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OPERATION ADDHYD XSECTION 32

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET). Rows include values like 12.24, 401.1, (NULL).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.81 WATERSHED INCHES; 552 CFS-HRS; 45.6 ACRE-
FEET.

OPERATION RUNOFF XSECTION 33

Table with 3 columns: PEAK TIME (HRS), PEAK DISCHARGE (CFS), PEAK ELEVATION (FEET).

ELEVATION(FEET)		
12.21	109.6	(RUNOFF)
23.10	2.1	(RUNOFF)
23.75	2.0	(RUNOFF)
24.03	2.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 117 CFS-HRS; 9.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	508.9	(NULL)
18.87	16.3	(NULL)
20.09	15.2	(NULL)
20.87	14.4	(NULL)
21.97	13.3	(NULL)
23.09	12.2	(NULL)
24.04	11.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 669 CFS-HRS; 55.3 ACRE-FEET.

OPERATION REACH XSECTION 35

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	488.9	317.60
20.16	15.2	316.27
20.92	14.4	316.26
22.02	13.3	316.25
23.16	12.1	316.24
24.10	11.4	316.22

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 669 CFS-HRS; 55.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	48.9	(RUNOFF)
23.76	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.91 WATERSHED INCHES; 62 CFS-HRS; 5.1 ACRE-FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .047 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.36	46.8	328.33
23.79	1.0	323.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.90 WATERSHED INCHES; 61 CFS-HRS; 5.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.33	531.1	(NULL)
20.16	16.5	(NULL)
20.91	15.7	(NULL)
22.01	14.5	(NULL)
23.16	13.2	(NULL)
24.10	12.4	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.82 WATERSHED INCHES; 730 CFS-HRS; 60.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	203.2	(RUNOFF)
15.46	7.0	(RUNOFF)
15.84	6.7	(RUNOFF)
17.34	5.2	(RUNOFF)
18.84	4.2	(RUNOFF)
22.74	3.1	(RUNOFF)
23.04	3.1	(RUNOFF)
24.00	3.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.89 WATERSHED INCHES; 172 CFS-HRS; 14.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	617.0	(NULL)
23.99	15.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.83 WATERSHED INCHES; 902 CFS-HRS; 74.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	833.6	(NULL)
23.99	22.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.82 WATERSHED INCHES; 1291 CFS-HRS; 106.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	56.8	(RUNOFF)
15.84	2.2	(RUNOFF)
23.08	1.0	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.61 WATERSHED INCHES; 55 CFS-HRS; 4.5 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
13.00	8.3	272.12

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.59 WATERSHED INCHES; 55 CFS-HRS; 4.5 ACRE-  
FEET.

OPERATION REACH XSECTION 42

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
-----------------------------------	---------------------	------

13.13 8.3 222.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.58 WATERSHED INCHES; 55 CFS-HRS; 4.5 ACRE-
FEET.

OPERATION RUNOFF XSECTION 43

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.23, 19.48, 21.98, 24.02 and (RUNOFF).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.09 WATERSHED INCHES; 163 CFS-HRS; 13.5 ACRE-
FEET.

OPERATION ADDHYD XSECTION 44

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.23, 18.58, 20.08, 21.93, 24.02 and (NULL).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.34 WATERSHED INCHES; 218 CFS-HRS; 18.0 ACRE-
FEET.

OPERATION REACH XSECTION 45

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Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.46, 24.04, 775.2, 22.1, 226.78, 222.78.

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.83 WATERSHED INCHES; 1293 CFS-HRS; 106.9 ACRE-
FEET.

OPERATION ADDHYD XSECTION 46

Table with 3 columns: PEAK TIME (HRS) ELEVATION (FEET), PEAK DISCHARGE (CFS), PEAK. Rows include values like 12.43, 24.03, 865.1, 27.3, (NULL), (NULL).

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.50 WATERSHED INCHES; 1511 CFS-HRS; 124.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	517.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.88 WATERSHED INCHES; 706 CFS-HRS; 58.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	64.5	(RUNOFF)
15.85	2.4	(RUNOFF)
23.73	1.1	(RUNOFF)
24.01	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 61 CFS-HRS; 5.0 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.29	43.2	336.53
24.03	1.0	333.07

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 61 CFS-HRS; 5.0 ACRE-  
 FEET.

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OPERATION REACH XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.43	38.3	316.92

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 61 CFS-HRS; 5.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.33	550.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.87 WATERSHED INCHES; 767 CFS-HRS; 63.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	49.5	(RUNOFF)
15.82	2.0	(RUNOFF)
21.97	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.51 WATERSHED INCHES; 49 CFS-HRS; 4.1 ACRE-FEET.

\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE  
 STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	34.7	322.05

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.99 WATERSHED INCHES; 42 CFS-HRS; 3.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	584.8	277.98

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 809 CFS-HRS; 66.8 ACRE-FEET.

OPERATION REACH XSECTION 52



PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	543.1	277.89

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.81 WATERSHED INCHES; 809 CFS-HRS; 66.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	254.0	(RUNOFF)
18.87	9.2	(RUNOFF)
20.86	8.2	(RUNOFF)
21.98	7.6	(RUNOFF)
24.03	6.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.18 WATERSHED INCHES; 294 CFS-HRS; 24.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.40	699.4	(NULL)
24.01	20.3	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .54 SQ.MI.

HRS								
8.40 CFS	.47	.61	.76	.92	1.09	1.26	1.45	
1.64								
8.88 CFS	1.84	2.03	2.23	2.44	2.65	2.87	3.11	
3.36								
9.36 CFS	3.63	3.92	4.24	4.58	4.94	5.31	5.70	
6.12								
9.84 CFS	6.56	7.03	7.51	8.01	8.53	9.06	9.63	
10.22								
10.32 CFS	10.83	11.45	12.10	12.75	13.44	14.16	14.95	
15.83								
10.80 CFS	16.84	18.01	19.35	20.90	22.66	24.73	27.16	
30.01								
11.28 CFS	33.35	37.21	41.60	46.50	51.96	58.51	66.89	
77.32								
11.76 CFS	90	107	130	162	209	284	394	
512								
12.24 CFS	605	664	695	697	672	626	568	
507								
12.72 CFS	450	399	356	318	286	259	237	
217								
13.20 CFS	201	186	173	162	152	142	134	
126								
13.68 CFS	119	113	107	102	98	94	91	
88								
14.16 CFS	85.89	83.64	81.57	79.66	77.89	76.23	74.60	
72.97								
14.64 CFS	71.33	69.72	68.15	66.64	65.14	63.63	62.13	
60.65								
15.12 CFS	59.15	57.63	56.15	54.77	53.56	52.52	51.64	
50.91								

15.60 CFS 50.27 49.67 49.06 48.51 48.08 47.70 47.28  
46.79

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16.08 CFS	46.30	45.85	45.44	45.05	44.62	44.18	43.77
43.34							
16.56 CFS	42.88	42.42	42.01	41.63	41.24	40.82	40.42
40.06							
17.04 CFS	39.74	39.39	38.97	38.49	38.02	37.65	37.30
36.90							
17.52 CFS	36.42	35.93	35.47	35.06	34.66	34.22	33.77
33.35							
18.00 CFS	32.98	32.64	32.25	31.85	31.46	31.12	30.79
30.43							
18.48 CFS	30.08	29.84	29.70	29.59	29.42	29.27	29.20
29.14							
18.96 CFS	29.01	28.86	28.70	28.57	28.45	28.34	28.24
28.17							
19.44 CFS	28.11	28.07	28.01	27.89	27.75	27.66	27.57
27.42							
19.92 CFS	27.23	27.11	27.09	27.06	26.99	26.88	26.79
26.70							
20.40 CFS	26.54	26.32	26.16	26.09	26.04	25.94	25.81
25.74							
20.88 CFS	25.70	25.61	25.46	25.30	25.17	25.05	24.93
24.83							
21.36 CFS	24.74	24.68	24.63	24.58	24.48	24.32	24.22
24.14							
21.84 CFS	24.02	23.91	23.87	23.80	23.67	23.53	23.40
23.29							
22.32 CFS	23.18	23.08	22.99	22.93	22.85	22.70	22.54
22.44							
22.80 CFS	22.34	22.17	21.98	21.85	21.82	21.79	21.71
21.60							
23.28 CFS	21.50	21.41	21.33	21.21	21.03	20.83	20.72
20.68							
23.76 CFS	20.64	20.52	20.35	20.22	20.30	20.25	19.19
17.21							
24.24 CFS	14.92	12.73	10.59	8.51	6.63	5.07	3.87
2.96							
24.72 CFS	2.28	1.77	1.39	1.11	.91	.75	.64
.56							
25.20 CFS	.49						

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.18 WATERSHED INCHES; 1102 CFS-HRS; 91.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
ELEVATION(FEET) 2241.6 (NULL)  
12.38

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

3.56 WATERSHED INCHES; 3517 CFS-HRS; 290.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	37.9	(RUNOFF)
17.34	1.1	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.98 WATERSHED INCHES; 32 CFS-HRS; 2.6 ACRE-		
FEET.		

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	2254.8	(NULL)

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	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50						
HRS	MAIN TIME INCREMENT = .060 hr,			DRAINAGE AREA = 1.55			
SQ.MI.							
8.28 CFS	.36	.54	.76	1.04	1.35	1.70	2.10
2.55							
8.76 CFS	3.04	3.59	4.20	4.85	5.55	6.32	7.15
8.03							
9.24 CFS	8.98	9.99	11.11	12.30	13.58	14.92	16.33
17.82							
9.72 CFS	19.40	21.11	22.91	24.78	26.72	28.73	30.83
33.04							
10.20 CFS	35.37	37.80	40.29	42.83	45.45	48.18	51.06
54.18							
10.68 CFS	57.69	61.74	66.41	71.77	77.78	84.44	91.70
99.63							
11.16 CFS	109	119	131	144	159	175	193
214							
11.64 CFS	241	277	321	376	445	538	671
876							
12.12 CFS	1177	1550	1889	2149	2250	2219	2093
1926							
12.60 CFS	1750	1577	1414	1259	1114	991	889
807							
13.08 CFS	738	680	632	590	553	521	491
464							
13.56 CFS	439	415	393	374	357	342	329
317							
14.04 CFS	308	299	292	284	278	271	265
260							
14.52 CFS	254	249	243	238	233	227	222
217							
15.00 CFS	212	207	202	197	191	185	180

175							
15.48 CFS	171	168	165	163	161	158	156
154							
15.96 CFS	153	151	149	148	146	145	143
142							
16.44 CFS	140	139	137	136	134	133	132
130							
16.92 CFS	129	128	127	126	124	123	121
120							
17.40 CFS	119	117	116	115	113	112	110
109							
17.88 CFS	108	106	105	104	103	102	100
99							
18.36 CFS	98.11	97.01	95.92	94.99	94.32	93.86	93.45
93.02							
18.84 CFS	92.64	92.30	91.91	91.45	90.92	90.40	89.90
89.47							
19.32 CFS	89.13	88.85	88.62	88.44	88.25	87.94	87.51
87.08							
19.80 CFS	86.69	86.26	85.78	85.32	85.03	84.89	84.75
84.54							
20.28 CFS	84.24	83.88	83.40	82.79	82.19	81.76	81.50
81.30							
20.76 CFS	81.05	80.78	80.55	80.27	79.90	79.45	78.96
78.49							
21.24 CFS	78.08	77.75	77.48	77.26	77.09	76.93	76.69
76.30							
21.72 CFS	75.87	75.49	75.12	74.78	74.55	74.36	74.09
73.72							
22.20 CFS	73.29	72.85	72.45	72.11	71.84	71.62	71.40
71.07							
22.68 CFS	70.61	70.17	69.78	69.34	68.84	68.38	68.09
67.95							
23.16 CFS	67.82	67.61	67.31	66.96	66.62	66.27	65.83
65.28							
23.64 CFS	64.79	64.47	64.30	64.11	63.78	63.36	63.14
62.96							
24.12 CFS	61.41	57.35	51.11	43.73	36.31	29.65	24.12
19.71							
24.60 CFS	16.24	13.54	11.44	9.81	8.53	7.51	6.69
6.03							
25.08 CFS	5.49	5.05	4.68	4.37	4.11	3.88	3.69
3.51							
25.56 CFS	3.36	3.22	3.10	2.99	2.89	2.80	2.71
2.64							
26.04 CFS	2.57	2.50	2.44	2.38	2.32	2.25	2.20
2.15							
26.52 CFS	2.11	2.07	2.03	2.00	1.97	1.94	1.90
1.88							
27.00 CFS	1.85	1.82	1.79	1.76	1.74	1.71	1.69
1.66							
27.48 CFS	1.64	1.62	1.60	1.57	1.55	1.53	1.51
1.49							
27.96 CFS	1.47	1.45	1.43	1.41	1.39	1.37	1.36
1.34							
28.44 CFS	1.32	1.30	1.29	1.27	1.26	1.24	1.23
1.21							
28.92 CFS	1.20	1.18	1.17	1.16	1.14	1.13	1.12
1.11							
29.40 CFS	1.09	1.08	1.07	1.05	1.04	1.03	1.02
1.01							
29.88 CFS	1.00	.98	.97	.96	.95	.94	.93
.92							
30.36 CFS	.91	.90	.89	.88	.87	.86	.85

.84							
30.84 CFS	.84	.83	.82	.81	.80	.79	.78
.78							

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31.32 CFS	.77	.76	.75	.74	.74	.73
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.55 WATERSHED INCHES; 3549 CFS-HRS; 293.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	77.1	(RUNOFF)
15.46	3.1	(RUNOFF)
17.34	2.3	(RUNOFF)
24.00	1.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
2.90 WATERSHED INCHES; 67 CFS-HRS; 5.5 ACRE-  
FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.47	696.5	132.43
24.07	20.3	129.88

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.18 WATERSHED INCHES; 1102 CFS-HRS; 91.1 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	719.3	(NULL)
23.98	21.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.16 WATERSHED INCHES; 1169 CFS-HRS; 96.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	2952.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.45 WATERSHED INCHES; 4718 CFS-HRS; 389.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 62

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	14.7	(RUNOFF)
15.86	1.1	(RUNOFF)

	HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50						
	DRAINAGE AREA = .02						
HRS	MAIN	TIME	INCREMENT = .060 hr,				
SQ.MI.							
11.88 CFS	.25	.91	2.59	6.02	11.76	14.67	13.21
10.98							
12.36 CFS	9.35	8.01	7.14	6.60	5.86	5.05	4.54
4.23							
12.84 CFS	4.01	3.81	3.63	3.45	3.25	3.06	2.91
2.79							
13.32 CFS	2.67	2.55	2.44	2.32	2.20	2.09	2.00
1.94							
13.80 CFS	1.90	1.86	1.83	1.81	1.79	1.76	1.73
1.69							
14.28 CFS	1.66	1.63	1.61	1.58	1.55	1.51	1.47
1.44							
14.76 CFS	1.41	1.39	1.36	1.32	1.29	1.26	1.22
1.19							
15.24 CFS	1.16	1.15	1.14	1.14	1.14	1.14	1.13
1.12							
15.72 CFS	1.10	1.09	1.10	1.10	1.08	1.06	1.05
1.04							
16.20 CFS	1.04	1.04	1.02	1.01	1.01	.99	.98
.97							
16.68 CFS	.97	.97	.96	.94	.94	.93	.93
.92							
17.16 CFS	.90	.88	.87	.88	.87	.86	.84
.82							
17.64 CFS	.82	.81	.81	.79	.78	.78	.77
.77							
18.12 CFS	.75	.74	.73	.73	.73	.71	.71
.72							
18.60 CFS	.73	.73	.71	.71	.72	.72	.71
.70							
19.08 CFS	.70	.70	.70	.70	.70	.70	.70
.70							
19.56 CFS	.69	.68	.68	.68	.68	.67	.66
.67							
20.04 CFS	.68	.68	.67	.67	.66	.66	.65
.64							
20.52 CFS	.64	.65	.66	.65	.64	.64	.65
.64							
21.00 CFS	.63	.62	.62	.62	.62	.62	.62

.62							
21.48 CFS	.62	.62	.61	.60	.60	.61	.60
.60							
21.96 CFS	.61	.60	.59	.59	.58	.58	.58
.58							
22.44 CFS	.58	.58	.58	.56	.56	.57	.56
.55							
22.92 CFS	.54	.55	.56	.56	.55	.54	.54
.54							
23.40 CFS	.54	.54	.52	.51	.52	.53	.53
.52							
23.88 CFS	.51	.51	.54	.52	.35		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.21 WATERSHED INCHES; 18 CFS-HRS; 1.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	2961.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.42 WATERSHED INCHES; 4736 CFS-HRS; 391.4 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

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EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
 STARTING TIME = .00 RAIN DEPTH = 8.47 RAIN DURATION = 1.00  
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
 ALTERNATE NO. = 1 STORM NO. =99 RAIN TABLE NO. = 1

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	527.8	(RUNOFF)
18.67	15.0	(RUNOFF)
20.67	13.2	(RUNOFF)
21.93	12.1	(RUNOFF)
23.12	11.1	(RUNOFF)
24.01	10.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.58 WATERSHED INCHES; 621 CFS-HRS; 51.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.19	89.6	(RUNOFF)
19.46	2.1	(RUNOFF)
24.02	1.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.87 WATERSHED INCHES; 92 CFS-HRS; 7.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.25	83.3	432.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.79 WATERSHED INCHES; 90 CFS-HRS; 7.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 3

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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.25	611.1	(NULL)
18.65	17.5	(NULL)
20.67	15.2	(NULL)
23.77	12.3	(NULL)
24.01	12.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.61 WATERSHED INCHES; 711 CFS-HRS; 58.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
12.15	209.3	(RUNOFF)
15.84	7.3	(RUNOFF)
17.34	5.6	(RUNOFF)
20.06	4.2	(RUNOFF)
20.62	4.0	(RUNOFF)
23.72	3.2	(RUNOFF)
24.00	3.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.84 WATERSHED INCHES; 193 CFS-HRS; 15.9 ACRE-FEET.



OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.21	773.8	(NULL)
18.63	22.0	(NULL)
20.09	20.1	(NULL)
20.64	19.3	(NULL)
21.95	17.7	(NULL)
23.08	16.3	(NULL)
23.74	15.4	(NULL)
24.01	15.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 904 CFS-HRS; 74.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	248.5	(RUNOFF)
15.82	9.4	(RUNOFF)
17.31	7.2	(RUNOFF)
20.87	5.1	(RUNOFF)
23.08	4.3	(RUNOFF)
23.74	4.1	(RUNOFF)
24.02	4.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.80 WATERSHED INCHES; 247 CFS-HRS; 20.4 ACRE-  
 FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	765.2	321.26
18.69	22.0	318.38
20.15	20.1	318.36
20.70	19.2	318.35
22.01	17.7	318.33
23.15	16.3	318.32
23.80	15.4	318.31
24.07	15.2	318.31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 904 CFS-HRS; 74.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.26	968.2	(NULL)
18.65	27.9	(NULL)
20.12	25.5	(NULL)
20.67	24.4	(NULL)
21.99	22.4	(NULL)
23.12	20.6	(NULL)
23.77	19.5	(NULL)
24.04	19.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.68 WATERSHED INCHES; 1151 CFS-HRS; 95.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 9

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	184.9	(RUNOFF)
19.76	4.1	(RUNOFF)
20.09	4.1	(RUNOFF)
23.09	3.2	(RUNOFF)
23.74	3.1	(RUNOFF)
24.03	3.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.72 WATERSHED INCHES; 184 CFS-HRS; 15.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	57.5	(RUNOFF)
24.03	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.83 WATERSHED INCHES; 65 CFS-HRS; 5.4 ACRE-  
 FEET.

\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE  
 TABLE  
 STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.51	28.8	455.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.38 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-FEET.

OPERATION REACH XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.59	28.5	414.55

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.38 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 12

1  
 TR20 ----- SCS  
 -  
 Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas MGMT-STD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
 2.04TEST  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	186.2	(NULL)
18.83	6.2	(NULL)
21.76	5.0	(NULL)
24.02	4.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.31 WATERSHED INCHES; 241 CFS-HRS; 19.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	143.0	(RUNOFF)
15.83	5.3	(RUNOFF)
17.33	4.1	(RUNOFF)
19.76	3.1	(RUNOFF)
20.08	3.0	(RUNOFF)
24.02	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.85 WATERSHED INCHES; 140 CFS-HRS; 11.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
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OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	451.4	(NULL)
18.58	16.0	(NULL)
20.06	14.4	(NULL)
20.80	13.6	(NULL)
21.95	12.6	(NULL)
23.07	11.6	(NULL)
24.01	10.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.63 WATERSHED INCHES; 637 CFS-HRS; 52.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 18

1 TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION

06/05/\*\* 27 Subareas MGMT-STD NOAA\_C 2,5,10,50,100 WOODS (GOOD)

2.04TEST

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.25	1391.2	(NULL)
18.63	43.9	(NULL)
20.10	39.9	(NULL)
20.64	38.2	(NULL)
21.96	35.0	(NULL)
23.10	32.1	(NULL)
23.75	30.4	(NULL)
24.03	30.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.67 WATERSHED INCHES; 1788 CFS-HRS; 147.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	590.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.56 WATERSHED INCHES; 795 CFS-HRS; 65.7 ACRE-FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.37	1258.0	238.92
20.14	39.9	234.59
23.15	32.1	234.52
24.09	30.0	234.51

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.67 WATERSHED INCHES; 1788 CFS-HRS; 147.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.35	1833.9	(NULL)
20.13	57.6	(NULL)
23.13	46.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.63 WATERSHED INCHES; 2583 CFS-HRS; 213.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 22

1 TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.22	51.9	(RUNOFF)
21.96	1.1	(RUNOFF)
23.11	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	51.0	415.49
20.15	1.3	410.97

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.86 WATERSHED INCHES; 58 CFS-HRS; 4.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.20	244.2	(RUNOFF)
18.65	6.0	(RUNOFF)
20.87	5.2	(RUNOFF)
23.75	4.2	(RUNOFF)
24.02	4.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.86 WATERSHED INCHES; 255 CFS-HRS; 21.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	213.2	369.75

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.86 WATERSHED INCHES; 255 CFS-HRS; 21.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	263.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.86 WATERSHED INCHES; 313 CFS-HRS; 25.9 ACRE-  
 FEET.

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.19	141.8	(RUNOFF)
20.09	3.2	(RUNOFF)
20.64	3.0	(RUNOFF)
24.03	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 146 CFS-HRS; 12.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.25	391.9	(NULL)
20.62	9.6	(NULL)
24.03	7.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.86 WATERSHED INCHES; 459 CFS-HRS; 37.9 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.42	267.2	341.61
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.87 WATERSHED INCHES;	459 CFS-HRS;	38.0 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	50.8	(RUNOFF)
17.32	1.2	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.85 WATERSHED INCHES;	39 CFS-HRS;	3.3 ACRE-
FEET.		

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27. THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT -.4%.  
\*\*\*

OPERATION ADDHYD XSECTION 28

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	279.5	(NULL)
23.98	8.3	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.87 WATERSHED INCHES;	499 CFS-HRS;	41.2 ACRE-
FEET.		

OPERATION RUNOFF XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.11	201.3	(RUNOFF)
15.46	6.2	(RUNOFF)
15.82	5.9	(RUNOFF)
17.32	4.6	(RUNOFF)
21.45	3.1	(RUNOFF)
21.72	3.0	(RUNOFF)
21.91	3.0	(RUNOFF)
23.99	2.9	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		



4.85 WATERSHED INCHES; 156 CFS-HRS; 12.9 ACRE-  
FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .1%.  
\*\*\*

OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.11	201.3	(NULL)
15.46	6.2	(NULL)
15.82	5.9	(NULL)
17.32	4.6	(NULL)
21.45	3.1	(NULL)
21.72	3.0	(NULL)
21.91	3.0	(NULL)
23.99	2.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.85 WATERSHED INCHES; 156 CFS-HRS; 12.9 ACRE-  
FEET.

OPERATION REACH XSECTION 30

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-  
Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.18	193.4	357.20
15.52	6.2	356.13
15.89	5.9	356.12
17.39	4.6	356.10
21.51	3.1	356.06
21.78	3.0	356.06
24.05	2.8	356.06

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.87 WATERSHED INCHES; 157 CFS-HRS; 13.0 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	396.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.87 WATERSHED INCHES; 549 CFS-HRS; 45.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 32

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.23	513.6	(NULL)
18.86	16.4	(NULL)
20.09	15.3	(NULL)
20.87	14.5	(NULL)
21.97	13.4	(NULL)
23.08	12.2	(NULL)
24.04	11.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 706 CFS-HRS; 58.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.20	139.5	(RUNOFF)
20.86	3.1	(RUNOFF)
24.03	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 150 CFS-HRS; 12.4 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 34

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.22	650.9	(NULL)
18.63	20.2	(NULL)
18.86	19.9	(NULL)
20.09	18.5	(NULL)
20.87	17.5	(NULL)
21.97	16.2	(NULL)
23.09	14.8	(NULL)
24.04	14.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 856 CFS-HRS; 70.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	628.7	317.86

20.16	18.5	316.30
20.92	17.5	316.29
22.02	16.2	316.28
23.15	14.8	316.27
24.10	13.9	316.26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 855 CFS-HRS; 70.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 36

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.27	61.8	(RUNOFF)
23.76	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.98 WATERSHED INCHES; 78 CFS-HRS; 6.5 ACRE-FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE TIME INCREMENT OF .047 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 33, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 33

1

TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.31	61.8	328.62
23.79	1.3	323.05

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.98 WATERSHED INCHES; 78 CFS-HRS; 6.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.32	690.5	(NULL)
20.16	20.1	(NULL)
20.92	19.1	(NULL)
22.01	17.7	(NULL)
23.15	16.1	(NULL)
23.80	15.2	(NULL)
24.10	15.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.88 WATERSHED INCHES; 934 CFS-HRS; 77.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.13	258.4	(RUNOFF)
15.84	8.2	(RUNOFF)
17.34	6.3	(RUNOFF)
18.60	5.1	(RUNOFF)
18.84	5.1	(RUNOFF)
21.94	4.1	(RUNOFF)
24.00	3.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.97 WATERSHED INCHES; 219 CFS-HRS; 18.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.29	802.2	(NULL)
23.99	18.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.90 WATERSHED INCHES; 1153 CFS-HRS; 95.3 ACRE-  
 FEET.

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 TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.30	1066.7	(NULL)
23.99	26.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.89 WATERSHED INCHES; 1651 CFS-HRS; 136.5 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
12.17	73.4	(RUNOFF)
17.34	2.1	(RUNOFF)
24.02	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.64 WATERSHED INCHES; 71 CFS-HRS; 5.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.67	16.5	273.54

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.61 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.79	15.8	222.60

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.61 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	200.7	(RUNOFF)
20.11	6.3	(RUNOFF)
20.66	6.0	(RUNOFF)
23.11	5.1	(RUNOFF)
24.03	4.8	(RUNOFF)

1

TR20 ----- SCS

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.90 WATERSHED INCHES; 226 CFS-HRS; 18.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	205.8	(NULL)
18.58	10.7	(NULL)
20.08	9.3	(NULL)
20.63	8.8	(NULL)
23.09	7.1	(NULL)
24.03	6.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.18 WATERSHED INCHES; 297 CFS-HRS; 24.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.44	999.2	227.40
24.04	26.8	222.85

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.89 WATERSHED INCHES; 1651 CFS-HRS; 136.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	1126.9	(NULL)
24.03	33.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.51 WATERSHED INCHES; 1948 CFS-HRS; 160.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.31	659.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.94 WATERSHED INCHES; 900 CFS-HRS; 74.4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.17	81.7	(RUNOFF)
17.34	2.3	(RUNOFF)
24.01	1.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.86 WATERSHED INCHES; 78 CFS-HRS; 6.4 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	57.6	337.13
24.03	1.3	333.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 78 CFS-HRS; 6.4 ACRE-FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.41	54.2	317.06

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.86 WATERSHED INCHES; 78 CFS-HRS; 6.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	708.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.94 WATERSHED INCHES; 978 CFS-HRS; 80.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	63.7	(RUNOFF)
15.81	2.5	(RUNOFF)
24.02	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.53 WATERSHED INCHES; 64 CFS-HRS; 5.3 ACRE-FEET.

1 TR20 ----- SCS

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\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE TABLE  
 STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.  
 THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
 \*\*\*

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.27	51.8	322.45
24.03	1.1	320.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.01 WATERSHED INCHES; 56 CFS-HRS; 4.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.32	758.4	278.83

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 1034 CFS-HRS; 85.5 ACRE-FEET.

OPERATION REACH XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	681.5	278.45

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 1034 CFS-HRS; 85.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.22	360.2	(RUNOFF)
19.47	11.4	(RUNOFF)
20.11	11.1	(RUNOFF)
21.46	10.1	(RUNOFF)
21.97	9.7	(RUNOFF)
24.03	8.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.01 WATERSHED INCHES; 404 CFS-HRS; 33.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 54

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.39	893.3	(NULL)
24.01	25.1	(NULL)



		HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99						
HRS		MAIN TIME INCREMENT = .060 hr,			DRAINAGE AREA = .54			
SQ.MI.								
7.62	CFS	.43	.56	.71	.87	1.04	1.22	1.41
1.61								
8.10	CFS	1.82	2.03	2.25	2.47	2.70	2.93	3.16
3.40								
8.58	CFS	3.65	3.90	4.16	4.42	4.69	4.97	5.25
5.52								
9.06	CFS	5.80	6.09	6.39	6.71	7.06	7.43	7.84
8.29								
9.54	CFS	8.77	9.28	9.81	10.36	10.94	11.56	12.22
12.89								
10.02	CFS	13.59	14.30	15.04	15.80	16.60	17.43	18.28
19.15								
10.50	CFS	20.08	21.11	22.28	23.62	25.18	26.98	29.07
31.48								
10.98	CFS	34.20	37.24	40.62	44.43	48.71	53.53	58.98
65.07								
11.46	CFS	72	79	88	100	115	132	155
185								
11.94	CFS	227	290	389	534	688	796	860
889								
12.42	CFS	890	862	809	741	667	594	528
470								
12.90	CFS	420	376	340	309	283	260	240
224								
13.38	CFS	209	195	183	172	162	152	144
137								
13.86	CFS	130	125	120	116	112	109	106
103								
14.34	CFS	101	98	96	94	92	90	88
86								
14.82	CFS	83.70	81.80	79.86	77.96	76.08	74.20	72.30
70.45								
15.30	CFS	68.75	67.24	65.93	64.82	63.87	63.03	62.21
61.40								
15.78	CFS	60.68	60.12	59.63	59.09	58.46	57.83	57.26
56.75								
16.26	CFS	56.25	55.72	55.16	54.63	54.08	53.50	52.93
52.41								
16.74	CFS	51.95	51.46	50.92	50.41	49.96	49.55	49.11
48.58								
17.22	CFS	47.97	47.38	46.93	46.50	46.00	45.40	44.78
44.21								
17.70	CFS	43.70	43.20	42.65	42.08	41.55	41.09	40.66
40.17								
18.18	CFS	39.66	39.18	38.75	38.35	37.89	37.45	37.15
36.97								
18.66	CFS	36.82	36.60	36.39	36.29	36.20	36.04	35.84
35.64								
19.14	CFS	35.48	35.33	35.19	35.07	34.97	34.90	34.84
34.76								
19.62	CFS	34.60	34.42	34.32	34.21	34.01	33.79	33.64
33.62								
20.10	CFS	33.59	33.48	33.33	33.21	33.09	32.90	32.64
32.45								
20.58	CFS	32.36	32.31	32.18	32.00	31.90	31.85	31.73
31.55								
21.06	CFS	31.35	31.19	31.04	30.90	30.78	30.67	30.59
30.52								
21.54	CFS	30.45	30.31	30.12	29.99	29.89	29.75	29.62
29.57								

22.02 CFS	29.47	29.31	29.13	28.97	28.83	28.70	28.58
28.48							
22.50 CFS	28.39	28.28	28.09	27.90	27.78	27.66	27.45
27.21							
22.98 CFS	27.05	27.02	26.99	26.87	26.72	26.59	26.48
26.38							
23.46 CFS	26.25	26.02	25.77	25.64	25.60	25.54	25.39
25.17							
23.94 CFS	25.01	25.10	25.05	23.69	21.27	18.50	15.95
13.48							
24.42 CFS	11.06	8.83	6.92	5.36	4.14	3.20	2.48
1.94							
24.90 CFS	1.53	1.23	1.00	.82	.69	.60	.52
.47							

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.15 WATERSHED INCHES; 1438 CFS-HRS; 118.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 55

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.37	2946.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.58 WATERSHED INCHES; 4531 CFS-HRS; 374.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.13	50.2	(RUNOFF)
19.74	1.0	(RUNOFF)
20.04	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.93 WATERSHED INCHES; 42 CFS-HRS; 3.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.36	2963.9	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55  
 SQ.MI.  
 7.50 CFS .36 .54 .78 1.06 1.39 1.76 2.18

2.65								
7.98 CFS	3.18	3.77	4.43	5.16	5.95	6.77	7.64	
8.55								
8.46 CFS	9.50	10.45	11.43	12.46	13.53	14.63	15.74	
16.85								
8.94 CFS	17.95	19.05	20.23	21.49	22.81	24.23	25.76	
27.45								
9.42 CFS	29.27	31.22	33.26	35.37	37.59	39.95	42.46	
45.10								
9.90 CFS	47.82	50.61	53.46	56.43	59.56	62.83	66.22	
69.68								
10.38 CFS	73	77	80	84	89	94	99	
106								
10.86 CFS	114	123	132	143	154	167	182	
199								
11.34 CFS	217	238	260	285	313	350	399	
458								
11.82 CFS	530	621	743	918	1189	1582	2085	
2557								
12.30 CFS	2865	2963	2890	2703	2468	2231	2002	
1789								
12.78 CFS	1597	1429	1285	1152	1032	932	851	
782								
13.26 CFS	725	677	636	600	567	537	509	
483								
13.74 CFS	458	436	416	399	385	373	363	
354								
14.22 CFS	345	337	329	322	315	309	302	
296								
14.70 CFS	289	282	276	270	264	258	252	
246								
15.18 CFS	240	234	228	223	219	215	212	
209								
15.66 CFS	205	202	198	195	192	190	188	
185								
16.14 CFS	183	180	178	176	175	173	171	
169								
16.62 CFS	167	165	163	162	160	159	157	
156								
17.10 CFS	154	153	151	149	147	146	144	
143								
17.58 CFS	141	139	137	136	134	132	131	
129								
18.06 CFS	128	126	125	123	122	120	119	
118								
18.54 CFS	117	116	115	115	114	114	113	
113								
19.02 CFS	112	112	111	110	110	109	109	
109								

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19.50 CFS	108	108	108	107	107	106	106	
105								
19.98 CFS	104	104	104	104	103	103	103	
102								
20.46 CFS	101	101	100	100	99	99	99	

98								
20.94	CFS	98.13	97.67	97.11	96.51	95.93	95.43	95.02
94.69								
21.42	CFS	94.43	94.23	94.03	93.74	93.25	92.72	92.25
91.79								
21.90	CFS	91.38	91.11	90.88	90.54	90.08	89.55	89.01
88.51								
22.38	CFS	88.10	87.77	87.50	87.23	86.82	86.26	85.72
85.23								
22.86	CFS	84.70	84.09	83.52	83.17	83.01	82.85	82.59
82.21								
23.34	CFS	81.79	81.36	80.94	80.40	79.72	79.12	78.73
78.52								
23.82	CFS	78.29	77.88	77.37	77.11	76.93	75.02	69.95
62.13								
24.30	CFS	52.92	43.75	35.59	28.89	23.56	19.39	16.15
13.64								
24.78	CFS	11.69	10.17	8.95	7.97	7.17	6.51	5.96
5.51								
25.26	CFS	5.13	4.81	4.54	4.31	4.10	3.91	3.75
3.60								
25.74	CFS	3.47	3.35	3.24	3.14	3.05	2.96	2.88
2.81								
26.22	CFS	2.74	2.67	2.61	2.53	2.47	2.42	2.37
2.32								
26.70	CFS	2.29	2.25	2.21	2.17	2.14	2.10	2.07
2.04								
27.18	CFS	2.01	1.98	1.95	1.92	1.89	1.86	1.84
1.81								
27.66	CFS	1.78	1.76	1.73	1.71	1.69	1.66	1.64
1.62								
28.14	CFS	1.60	1.57	1.55	1.53	1.51	1.49	1.47
1.45								
28.62	CFS	1.43	1.41	1.39	1.38	1.36	1.34	1.33
1.31								
29.10	CFS	1.30	1.28	1.26	1.25	1.23	1.22	1.21
1.19								
29.58	CFS	1.18	1.16	1.15	1.13	1.12	1.11	1.09
1.08								
30.06	CFS	1.07	1.06	1.04	1.03	1.02	1.01	1.00
.99								
30.54	CFS	.97	.96	.95	.94	.93	.92	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.57 WATERSHED INCHES; 4573 CFS-HRS; 377.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.14	102.8	(RUNOFF)
15.84	3.7	(RUNOFF)
20.83	2.1	(RUNOFF)
24.00	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.84 WATERSHED INCHES; 89 CFS-HRS; 7.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.46	891.1	132.88
24.07	25.1	129.97

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.15 WATERSHED INCHES; 1438 CFS-HRS; 118.9 ACRE-FEET.

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OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.45	920.9	(NULL)
23.97	26.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.13 WATERSHED INCHES; 1527 CFS-HRS; 126.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.38	3861.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.45 WATERSHED INCHES; 6100 CFS-HRS; 504.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
12.18	25.0	(RUNOFF)
17.35	1.2	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02 SQ.MI.

11.70 CFS	.23	.58	1.18	2.18	3.79	6.95	12.57
21.28							
12.18 CFS	25.01	21.73	17.48	14.50	12.20	10.72	9.81
8.64							
12.66 CFS	7.40	6.62	6.15	5.80	5.51	5.23	4.95
4.66							
13.14 CFS	4.38	4.15	3.97	3.80	3.63	3.46	3.29
3.12							
13.62 CFS	2.96	2.83	2.74	2.67	2.62	2.58	2.54
2.51							
14.10 CFS	2.47	2.42	2.37	2.32	2.28	2.25	2.22

2.17								
14.58 CFS	2.11	2.06	2.01	1.97	1.94	1.90	1.84	
1.80								
15.06 CFS	1.76	1.70	1.65	1.61	1.59	1.59	1.58	
1.58								
15.54 CFS	1.58	1.57	1.55	1.52	1.51	1.52	1.52	
1.50								
16.02 CFS	1.47	1.45	1.44	1.44	1.43	1.41	1.40	
1.39								
16.50 CFS	1.37	1.35	1.34	1.34	1.33	1.32	1.30	
1.29								
16.98 CFS	1.28	1.28	1.26	1.24	1.21	1.20	1.21	
1.20								
17.46 CFS	1.18	1.15	1.13	1.12	1.12	1.11	1.09	
1.07								
17.94 CFS	1.06	1.06	1.05	1.03	1.01	1.00	1.00	
.99								
18.42 CFS	.97	.97	.98	.99	.99	.98	.97	
.98								
18.90 CFS	.98	.96	.95	.95	.95	.95	.95	
.95								
19.38 CFS	.95	.95	.95	.95	.93	.92	.93	
.93								
19.86 CFS	.91	.90	.91	.93	.93	.91	.90	
.90								
20.34 CFS	.90	.88	.87	.87	.89	.89	.88	
.87								
20.82 CFS	.88	.88	.86	.85	.85	.84	.84	
.84								
21.30 CFS	.84	.84	.85	.85	.84	.83	.81	
.82								
21.78 CFS	.82	.81	.82	.82	.81	.80	.79	
.79								

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22.26 CFS	.79	.79	.79	.79	.79	.78	.76	
.76								
22.74 CFS	.77	.76	.74	.74	.74	.76	.76	
.75								
23.22 CFS	.74	.73	.73	.73	.72	.70	.70	
.71								
23.70 CFS	.72	.72	.70	.68	.68	.73	.71	
.47								

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 1.82 WATERSHED INCHES; 27 CFS-HRS; 2.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 63

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 12.38 3874.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

4.43 WATERSHED INCHES; 6127 CFS-HRS; 506.3 ACRE-  
FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 7

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SUMMARY TABLE 1

-----  
SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 3.19 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.  
RAINTABLE NUMBER 1, ARC 2  
MAIN TIME INCREMENT .060 HOURS

ALTERNATE	1	STORM	2					
XSECTION	1	RUNOFF	.21	.71	---	12.28	69	328.6
XSECTION	2	RUNOFF	.03	.82	---	12.20	14	466.7
STRUCTURE	58	RESVOR	.03	.81	427.97	13.68F	2F	66.7
XSECTION	3	ADDHYD	.24	.72	---	12.28	70	291.7
XSECTION	4	RUNOFF	.06	.81	---	12.17	32	533.3
XSECTION	6	RUNOFF	.08	.79	---	12.20	37	462.5
XSECTION	9	RUNOFF	.06	.76	---	12.20	26	433.3
XSECTION	10	RUNOFF	.03	.45	---	12.29T	4T	133.3
STRUCTURE	52	RESVOR	.03	.24	---	18.87	0	.0
XSECTION	12	ADDHYD	.09	.60	---	12.20	26	288.9
XSECTION	13	RUNOFF	.04	.81	---	12.19	22	550.0
STRUCTURE	51	RESVOR	.04	.81	396.75	12.56	8	200.0
XSECTION	15	RUNOFF	.08	.82	---	12.17	43	537.5
XSECTION	17	ADDHYD	.21	.73	---	12.20	60	285.7
XSECTION	18	ADDHYD	.59	.74	---	12.27	177	300.0
XSECTION	19	RUNOFF	.27	.70	---	12.36	76	281.5
XSECTION	20	REACH	.59	.74	235.25	12.42	158	267.8
XSECTION	21	ADDHYD	.86	.73	---	12.40	232	269.8
XSECTION	22	RUNOFF	.02	.82	---	12.24	8	400.0
STRUCTURE	47	RESVOR	.02	.82	413.92	12.38	6	300.0
XSECTION	23	RUNOFF	.08	.82	---	12.21	37	462.5
STRUCTURE	32	RESVOR	.08	.82	367.67	12.39	24	300.0

XSECTION	25	RUNOFF	.05	.82	---	12.21	22	440.0
STRUCTURE	34	RESVOR	.15	.82	332.92	12.64	31	206.7
XSECTION	27	RUNOFF	.01	.82	---	12.12	8	800.0
XSECTION	28	ADDHYD	.16	.82	---	12.54	33	206.3
XSECTION	29	RUNOFF	.05	.82	---	12.12	32	640.0
STRUCTURE	64	RESVOR	.05	.82	---	12.12	32	640.0

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)					
ALTERNATE	1	STORM	2					
XSECTION	31	RUNOFF	.17	.82	---	12.36	60	352.9
XSECTION	33	RUNOFF	.05	.82	---	12.23	21	420.0
XSECTION	36	RUNOFF	.02	.87	---	12.30	10	500.0
STRUCTURE	33	RESVOR	.02	.87	323.81	12.41	9	450.0
XSECTION	38	RUNOFF	.07	.86	---	12.14	42	600.0
XSECTION	39	ADDHYD	.36	.83	---	12.38	114	316.7
XSECTION	41	RUNOFF	.02	.73	---	12.19	10	500.0
STRUCTURE	29	RESVOR	.02	.73	267.05	13.44F	1F	50.0
XSECTION	43	RUNOFF	.12	.20	---	12.56	4	33.3
XSECTION	44	ADDHYD	.14	.29	---	12.59	5	35.7
XSECTION	46	ADDHYD	.67	.71	---	12.52	146	217.9
XSECTION	47	RUNOFF	.28	.85	---	12.35	103	367.9
XSECTION	48	RUNOFF	.02	.82	---	12.18	13	650.0
STRUCTURE	40	RESVOR	.02	.82	333.45	12.38	7	350.0
XSECTION	51	RUNOFF	.02	.69	---	12.20	8	400.0
STRUCTURE	43	RESVOR	.02	.43	---	23.99	0	.0
XSECTION	52	ADDHYD	.33	.82	276.78	12.36	108	327.3
XSECTION	53	RUNOFF	.21	.22	---	12.52	9	42.9
XSECTION	54	ADDHYD	.54	.59	---	12.53	102	188.9
XSECTION	55	ADDHYD	1.53	.72	---	12.44	371	242.5
XSECTION	56	RUNOFF	.02	.48	---	12.15T	4T	200.0
XSECTION	57	ADDHYD	1.55	.72	---	12.44	373	240.6
XSECTION	58	RUNOFF	.04	.45	---	12.16	8	200.0
XSECTION	62	RUNOFF	.02	.68	---	.00	0	.0
XSECTION	63	ADDHYD	2.15	.68	---	12.48	461	214.4



RAINFALL OF 4.10 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	5				
XSECTION	1	RUNOFF	.21	1.24	---	12.26	134	638.1

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AMOUNT	ELEVATION	TIME	RATE	RATE
ID	OPERATION	AREA (SQ MI)	(IN)	(FT)	(HR)	(CFS)	(CSM)	
ALTERNATE 1 STORM 5								
XSECTION	2	RUNOFF	.03	1.40	---	12.20	25	833.3
STRUCTURE	58	RESVOR	.03	1.38	429.76	12.94	5	166.7
XSECTION	3	ADDHYD	.24	1.26	---	12.26	135	562.5
XSECTION	4	RUNOFF	.06	1.38	---	12.16	58	966.7
XSECTION	6	RUNOFF	.08	1.36	---	12.19	68	850.0
XSECTION	9	RUNOFF	.06	1.32	---	12.19	49	816.7
XSECTION	10	RUNOFF	.03	.88	---	12.26	11	366.7
STRUCTURE	52	RESVOR	.03	.48	454.31	19.86R	1R	33.3
XSECTION	12	ADDHYD	.09	1.06	---	12.19	49	544.4
XSECTION	13	RUNOFF	.04	1.39	---	12.19	40	1000.0
STRUCTURE	51	RESVOR	.04	1.39	397.20	12.47	17	425.0
XSECTION	15	RUNOFF	.08	1.40	---	12.17	77	962.5
XSECTION	17	ADDHYD	.21	1.25	---	12.20	114	542.9
XSECTION	18	ADDHYD	.59	1.28	---	12.25	340	576.3
XSECTION	19	RUNOFF	.27	1.23	---	12.34	147	544.4
XSECTION	20	REACH	.59	1.28	235.88	12.38	311	527.1
XSECTION	21	ADDHYD	.86	1.27	---	12.36	457	531.4
XSECTION	22	RUNOFF	.02	1.40	---	12.24	14	700.0
STRUCTURE	47	RESVOR	.02	1.40	414.05	12.39	10	500.0
XSECTION	23	RUNOFF	.08	1.40	---	12.21	67	837.5
STRUCTURE	32	RESVOR	.08	1.40	368.07	12.34	49	612.5
XSECTION	25	RUNOFF	.05	1.40	---	12.20	39	780.0
STRUCTURE	34	RESVOR	.15	1.39	335.89	12.73	45	300.0
XSECTION	27	RUNOFF	.01	1.40	---	12.12	14	1400.0
XSECTION	28	ADDHYD	.16	1.40	---	12.70	47	293.8

XSECTION	29	RUNOFF	.05	1.40	---	12.12	57	1140.0
STRUCTURE	64	RESVOR	.05	1.40	---	12.12	57	1140.0
XSECTION	31	RUNOFF	.17	1.40	---	12.35	109	641.2
XSECTION	33	RUNOFF	.05	1.40	---	12.22	38	760.0
XSECTION	36	RUNOFF	.02	1.46	---	12.29	17	850.0

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL		DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
	OPERATION	ALTERNATE				1	STORM	5
STRUCTURE 33	RESVOR		.02	1.46	325.09	12.46	13	650.0
XSECTION 38	RUNOFF		.07	1.45	---	12.14	74	1057.1
XSECTION 39	ADDHYD		.36	1.41	---	12.35	208	577.8
XSECTION 41	RUNOFF		.02	1.28	---	12.18	19	950.0
STRUCTURE 29	RESVOR		.02	1.27	267.97	13.20F	3F	150.0
XSECTION 43	RUNOFF		.12	.49	---	12.29	20	166.7
XSECTION 44	ADDHYD		.14	.62	---	12.30	21	150.0
XSECTION 46	ADDHYD		.67	1.24	---	12.47	260	388.1
XSECTION 47	RUNOFF		.28	1.44	---	12.34	184	657.1
XSECTION 48	RUNOFF		.02	1.40	---	12.17	23	1150.0
STRUCTURE 40	RESVOR		.02	1.40	333.82	12.36	12	600.0
XSECTION 51	RUNOFF		.02	1.22	---	12.19	16	800.0
STRUCTURE 43	RESVOR		.02	.75	320.84	14.22T	1T	50.0
XSECTION 52	ADDHYD		.33	1.39	277.06	12.34	194	587.9
XSECTION 53	RUNOFF		.21	.53	---	12.27	41	195.2
XSECTION 54	ADDHYD		.54	1.06	---	12.48	203	375.9
XSECTION 55	ADDHYD		1.53	1.25	---	12.39	708	462.7
XSECTION 56	RUNOFF		.02	.93	---	12.14	10	500.0
XSECTION 57	ADDHYD		1.55	1.25	---	12.38	712	459.4
XSECTION 58	RUNOFF		.04	.88	---	12.15	21	525.0
XSECTION 62	RUNOFF		.02	1.19	---	.00	0	.0
XSECTION 63	ADDHYD		2.15	1.18	---	12.42	892	414.9

RAINFALL OF 4.91 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 10

XSECTION	1	RUNOFF	.21	1.78	---	12.25	200	952.4
XSECTION	2	RUNOFF	.03	1.97	---	12.20	36	1200.0
STRUCTURE	58	RESVOR	.03	1.94	430.52	12.58	12	400.0
XSECTION	3	ADDHYD	.24	1.80	---	12.26	204	850.0

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AMOUNT	ELEVATION	TIME	RATE	RATE
ID	OPERATION	AREA (SQ MI)	(IN)	(FT)	(HR)	(CFS)	(CSM)	
ALTERNATE	1	STORM	10					
XSECTION	4	RUNOFF	.06	1.95	---	12.16	84	1400.0
XSECTION	6	RUNOFF	.08	1.92	---	12.19	98	1225.0
XSECTION	9	RUNOFF	.06	1.87	---	12.19	72	1200.0
XSECTION	10	RUNOFF	.03	1.33	---	12.25	18	600.0
STRUCTURE	52	RESVOR	.03	.93	454.45	13.64T	2T	66.7
XSECTION	12	ADDHYD	.09	1.58	---	12.19	72	800.0
XSECTION	13	RUNOFF	.04	1.96	---	12.18	57	1425.0
STRUCTURE	51	RESVOR	.04	1.96	397.60	12.44	25	625.0
XSECTION	15	RUNOFF	.08	1.97	---	12.16	110	1375.0
XSECTION	17	ADDHYD	.21	1.81	---	12.20	169	804.8
XSECTION	18	ADDHYD	.59	1.84	---	12.25	506	857.6
XSECTION	19	RUNOFF	.27	1.77	---	12.33	221	818.5
XSECTION	20	REACH	.59	1.84	236.48	12.37	459	778.0
XSECTION	21	ADDHYD	.86	1.81	---	12.36	676	786.0
XSECTION	22	RUNOFF	.02	1.97	---	12.23	21	1050.0
STRUCTURE	47	RESVOR	.02	1.97	414.17	12.38	15	750.0
XSECTION	23	RUNOFF	.08	1.97	---	12.20	97	1212.5
STRUCTURE	32	RESVOR	.08	1.97	368.43	12.32	74	925.0
XSECTION	25	RUNOFF	.05	1.97	---	12.20	57	1140.0
STRUCTURE	34	RESVOR	.15	1.97	337.99	12.62	78	520.0
XSECTION	27	RUNOFF	.01	1.98	---	12.12	21	2100.0
XSECTION	28	ADDHYD	.16	1.97	---	12.62	81	506.3
XSECTION	29	RUNOFF	.05	1.98	---	12.12	82	1640.0
STRUCTURE	64	RESVOR	.05	1.98	---	12.12	82	1640.0
XSECTION	31	RUNOFF	.17	1.97	---	12.34	156	917.6
XSECTION	33	RUNOFF	.05	1.97	---	12.21	56	1120.0
XSECTION	36	RUNOFF	.02	2.04	---	12.29	25	1250.0

STRUCTURE	33	RESVOR	.02	2.04	326.57	12.49	18	900.0
XSECTION	38	RUNOFF	.07	2.03	---	12.13	106	1514.3
XSECTION	39	ADDHYD	.36	1.99	---	12.32	302	838.9

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)
ALTERNATE		1	STORM	10				
XSECTION	41	RUNOFF	.02	1.82	---	12.18	28	1400.0
STRUCTURE	29	RESVOR	.02	1.82	268.93	13.13	4	200.0
XSECTION	43	RUNOFF	.12	.83	---	12.25	45	375.0
XSECTION	44	ADDHYD	.14	.99	---	12.25	46	328.6
XSECTION	46	ADDHYD	.67	1.77	---	12.46	375	559.7
XSECTION	47	RUNOFF	.28	2.02	---	12.33	264	942.9
XSECTION	48	RUNOFF	.02	1.97	---	12.17	33	1650.0
STRUCTURE	40	RESVOR	.02	1.97	334.31	12.36	17	850.0
XSECTION	51	RUNOFF	.02	1.75	---	12.19	24	1200.0
STRUCTURE	43	RESVOR	.02	1.27	321.10	12.73	6	300.0
XSECTION	52	ADDHYD	.33	1.97	277.26	12.33	278	842.4
XSECTION	53	RUNOFF	.21	.88	---	12.25	85	404.8
XSECTION	54	ADDHYD	.54	1.55	---	12.44	308	570.4
XSECTION	55	ADDHYD	1.53	1.79	---	12.38	1041	680.4
XSECTION	56	RUNOFF	.02	1.39	---	12.14	17	850.0
XSECTION	57	ADDHYD	1.55	1.79	---	12.38	1048	676.1
XSECTION	58	RUNOFF	.04	1.34	---	12.14	33	825.0
XSECTION	62	RUNOFF	.02	.35	---	12.38T	2T	100.0
XSECTION	63	ADDHYD	2.15	1.71	---	12.40	1336	621.4

RAINFALL OF 6.14 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE		1	STORM	25				
XSECTION	1	RUNOFF	.21	2.69	---	12.25	308	1466.7
XSECTION	2	RUNOFF	.03	2.91	---	12.19	54	1800.0
STRUCTURE	58	RESVOR	.03	2.87	431.54	12.41	28	933.3
XSECTION	3	ADDHYD	.24	2.71	---	12.26	325	1354.2
XSECTION	4	RUNOFF	.06	2.90	---	12.16	125	2083.3

XSECTION	6	RUNOFF	.08	2.86	---	12.18	149	1862.5
XSECTION	9	RUNOFF	.06	2.80	---	12.19	109	1816.7

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ID	OPERATION	AREA (SQ MI)						
ALTERNATE	1	STORM	25					
XSECTION	10	RUNOFF	.03	2.12	---	12.24	31	1033.3
STRUCTURE	52	RESVOR	.03	1.70	454.86	12.83	8	266.7
XSECTION	12	ADDHYD	.09	2.46	---	12.19	109	1211.1
XSECTION	13	RUNOFF	.04	2.90	---	12.18	85	2125.0
STRUCTURE	51	RESVOR	.04	2.90	398.17	12.41	40	1000.0
XSECTION	15	RUNOFF	.08	2.91	---	12.16	165	2062.5
XSECTION	17	ADDHYD	.21	2.72	---	12.20	261	1242.9
XSECTION	18	ADDHYD	.59	2.75	---	12.24	786	1332.2
XSECTION	19	RUNOFF	.27	2.67	---	12.32	343	1270.4
XSECTION	20	REACH	.59	2.75	237.38	12.37	706	1196.6
XSECTION	21	ADDHYD	.86	2.73	---	12.36	1041	1210.5
XSECTION	22	RUNOFF	.02	2.91	---	12.22	31	1550.0
STRUCTURE	47	RESVOR	.02	2.92	414.65	12.33	25	1250.0
XSECTION	23	RUNOFF	.08	2.91	---	12.20	146	1825.0
STRUCTURE	32	RESVOR	.08	2.91	369.04	12.32	113	1412.5
XSECTION	25	RUNOFF	.05	2.91	---	12.19	85	1700.0
STRUCTURE	34	RESVOR	.15	2.91	338.70	12.40	175	1166.7
XSECTION	27	RUNOFF	.01	2.92	---	12.12	31	3100.0
XSECTION	28	ADDHYD	.16	2.91	---	12.39	183	1143.8
XSECTION	29	RUNOFF	.05	2.92	---	12.12	123	2460.0
STRUCTURE	64	RESVOR	.05	2.92	---	12.12	123	2460.0
XSECTION	31	RUNOFF	.17	2.92	---	12.33	236	1388.2
XSECTION	33	RUNOFF	.05	2.91	---	12.21	84	1680.0
XSECTION	36	RUNOFF	.02	3.00	---	12.28	38	1900.0
STRUCTURE	33	RESVOR	.02	3.01	327.75	12.40	32	1600.0
XSECTION	38	RUNOFF	.07	2.99	---	12.13	156	2228.6
XSECTION	39	ADDHYD	.36	2.94	---	12.32	463	1286.1
XSECTION	41	RUNOFF	.02	2.74	---	12.18	43	2150.0
STRUCTURE	29	RESVOR	.02	2.73	270.56	13.05	6	300.0

XSECTION 43 RUNOFF .12 1.45 --- 12.23 92 766.7  
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	1	STORM	25					
XSECTION	44	ADDHYD	.14	1.66	---	12.23	95	678.6
XSECTION	46	ADDHYD	.67	2.65	---	12.47	649	968.7
XSECTION	47	RUNOFF	.28	2.98	---	12.32	398	1421.4
XSECTION	48	RUNOFF	.02	2.92	---	12.17	49	2450.0
STRUCTURE	40	RESVOR	.02	2.92	335.64	12.36	25	1250.0
XSECTION	51	RUNOFF	.02	2.65	---	12.19	37	1850.0
STRUCTURE	43	RESVOR	.02	2.15	321.56	12.41	19	950.0
XSECTION	52	ADDHYD	.33	2.92	277.63	12.33	433	1312.1
XSECTION	53	RUNOFF	.21	1.53	---	12.23	170	809.5
XSECTION	54	ADDHYD	.54	2.38	---	12.42	503	931.5
XSECTION	55	ADDHYD	1.53	2.70	---	12.39	1647	1076.5
XSECTION	56	RUNOFF	.02	2.20	---	12.13	28	1400.0
XSECTION	57	ADDHYD	1.55	2.69	---	12.39	1657	1069.0
XSECTION	58	RUNOFF	.04	2.13	---	12.14	56	1400.0
XSECTION	62	RUNOFF	.02	.75	---	12.21	7	350.0
XSECTION	63	ADDHYD	2.15	2.58	---	12.41	2159	1004.2
RAINFALL OF	7.23 inches	AND	24.00 hr	DURATION,	BEGINS AT	.0 hrs.		
ALTERNATE	1	STORM	50					
XSECTION	1	RUNOFF	.21	3.55	---	12.25	410	1952.4
XSECTION	2	RUNOFF	.03	3.81	---	12.19	70	2333.3
STRUCTURE	58	RESVOR	.03	3.75	431.92	12.30	57	1900.0
XSECTION	3	ADDHYD	.24	3.57	---	12.26	462	1925.0
XSECTION	4	RUNOFF	.06	3.79	---	12.16	164	2733.3
XSECTION	6	RUNOFF	.08	3.75	---	12.18	195	2437.5
XSECTION	9	RUNOFF	.06	3.68	---	12.18	144	2400.0
XSECTION	10	RUNOFF	.03	2.89	---	12.24	43	1433.3
STRUCTURE	52	RESVOR	.03	2.46	455.35	12.67	15	500.0
XSECTION	12	ADDHYD	.09	3.30	---	12.18	144	1600.0

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:

F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)					
ALTERNATE	1	STORM	50					
XSECTION	13	RUNOFF	.04	3.79	---	12.18	112	2800.0
STRUCTURE	51	RESVOR	.04	3.79	398.66	12.39	54	1350.0
XSECTION	15	RUNOFF	.08	3.81	---	12.16	216	2700.0
XSECTION	17	ADDHYD	.21	3.60	---	12.20	349	1661.9
XSECTION	18	ADDHYD	.59	3.63	---	12.25	1051	1781.4
XSECTION	19	RUNOFF	.27	3.54	---	12.31	457	1692.6
XSECTION	20	REACH	.59	3.63	238.13	12.37	954	1616.9
XSECTION	21	ADDHYD	.86	3.60	---	12.36	1398	1625.6
XSECTION	22	RUNOFF	.02	3.81	---	12.22	41	2050.0
STRUCTURE	47	RESVOR	.02	3.80	415.18	12.31	36	1800.0
XSECTION	23	RUNOFF	.08	3.81	---	12.20	191	2387.5
STRUCTURE	32	RESVOR	.08	3.81	369.41	12.29	160	2000.0
XSECTION	25	RUNOFF	.05	3.81	---	12.19	111	2220.0
STRUCTURE	34	RESVOR	.15	3.82	339.88	12.42	214	1426.7
XSECTION	27	RUNOFF	.01	3.82	---	12.12	40	4000.0
XSECTION	28	ADDHYD	.16	3.82	---	12.41	224	1400.0
XSECTION	29	RUNOFF	.05	3.82	---	12.12	159	3180.0
STRUCTURE	64	RESVOR	.05	3.82	---	12.12	159	3180.0
XSECTION	31	RUNOFF	.17	3.81	---	12.33	309	1817.6
XSECTION	33	RUNOFF	.05	3.81	---	12.21	110	2200.0
XSECTION	36	RUNOFF	.02	3.91	---	12.27	49	2450.0
STRUCTURE	33	RESVOR	.02	3.90	328.33	12.36	47	2350.0
XSECTION	38	RUNOFF	.07	3.89	---	12.13	203	2900.0
XSECTION	39	ADDHYD	.36	3.83	---	12.30	617	1713.9
XSECTION	41	RUNOFF	.02	3.61	---	12.18	57	2850.0
STRUCTURE	29	RESVOR	.02	3.59	272.12	13.00	8	400.0
XSECTION	43	RUNOFF	.12	2.09	---	12.23	140	1166.7
XSECTION	44	ADDHYD	.14	2.34	---	12.23	144	1028.6
XSECTION	46	ADDHYD	.67	3.50	---	12.43	865	1291.0
XSECTION	47	RUNOFF	.28	3.88	---	12.32	517	1846.4

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE 1		STORM	50					
XSECTION	48	RUNOFF	.02	3.81	---	12.17	65	3250.0
STRUCTURE	40	RESVOR	.02	3.81	336.53	12.29	43	2150.0
XSECTION	51	RUNOFF	.02	3.51	---	12.19	49	2450.0
STRUCTURE	43	RESVOR	.02	2.99	322.05	12.32	35	1750.0
XSECTION	52	ADDHYD	.33	3.81	277.98	12.32	585	1772.7
XSECTION	53	RUNOFF	.21	2.18	---	12.22	254	1209.5
XSECTION	54	ADDHYD	.54	3.18	---	12.40	699	1294.4
XSECTION	55	ADDHYD	1.53	3.56	---	12.38	2242	1465.4
XSECTION	56	RUNOFF	.02	2.98	---	12.13	38	1900.0
XSECTION	57	ADDHYD	1.55	3.55	---	12.38	2255	1454.8
XSECTION	58	RUNOFF	.04	2.90	---	12.14	77	1925.0
XSECTION	62	RUNOFF	.02	1.21	---	12.19	15	750.0
XSECTION	63	ADDHYD	2.15	3.42	---	12.39	2962	1377.7

RAINFALL OF 8.47 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1		STORM	99					
XSECTION	1	RUNOFF	.21	4.58	---	12.25	528	2514.3
XSECTION	2	RUNOFF	.03	4.87	---	12.19	90	3000.0
STRUCTURE	58	RESVOR	.03	4.79	432.20	12.25	83	2766.7
XSECTION	3	ADDHYD	.24	4.61	---	12.25	611	2545.8
XSECTION	4	RUNOFF	.06	4.84	---	12.15	209	3483.3
XSECTION	6	RUNOFF	.08	4.80	---	12.18	248	3100.0
XSECTION	9	RUNOFF	.06	4.72	---	12.18	185	3083.3
XSECTION	10	RUNOFF	.03	3.83	---	12.23	58	1933.3
STRUCTURE	52	RESVOR	.03	3.38	455.82	12.51	29	966.7
XSECTION	12	ADDHYD	.09	4.31	---	12.19	186	2066.7
XSECTION	13	RUNOFF	.04	4.85	---	12.18	143	3575.0
STRUCTURE	51	RESVOR	.04	4.85	399.18	12.37	73	1825.0
XSECTION	15	RUNOFF	.08	4.87	---	12.16	275	3437.5

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.

A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)					
ALTERNATE	1	STORM	99					
XSECTION	17	ADDHYD	.21	4.63	---	12.20	451	2147.6
XSECTION	18	ADDHYD	.59	4.67	---	12.25	1391	2357.6
XSECTION	19	RUNOFF	.27	4.56	---	12.31	590	2185.2
XSECTION	20	REACH	.59	4.67	238.92	12.37	1258	2132.2
XSECTION	21	ADDHYD	.86	4.63	---	12.35	1834	2132.6
XSECTION	22	RUNOFF	.02	4.87	---	12.22	52	2600.0
STRUCTURE	47	RESVOR	.02	4.86	415.49	12.27	51	2550.0
XSECTION	23	RUNOFF	.08	4.86	---	12.20	244	3050.0
STRUCTURE	32	RESVOR	.08	4.86	369.75	12.27	213	2662.5
XSECTION	25	RUNOFF	.05	4.87	---	12.19	142	2840.0
STRUCTURE	34	RESVOR	.15	4.87	341.61	12.42	267	1780.0
XSECTION	27	RUNOFF	.01	4.85	---	12.11	51	5100.0
XSECTION	28	ADDHYD	.16	4.87	---	12.41	280	1750.0
XSECTION	29	RUNOFF	.05	4.85	---	12.11	201	4020.0
STRUCTURE	64	RESVOR	.05	4.85	---	12.11	201	4020.0
XSECTION	31	RUNOFF	.17	4.87	---	12.32	397	2335.3
XSECTION	33	RUNOFF	.05	4.87	---	12.20	139	2780.0
XSECTION	36	RUNOFF	.02	4.98	---	12.27	62	3100.0
STRUCTURE	33	RESVOR	.02	4.98	328.62	12.31	62	3100.0
XSECTION	38	RUNOFF	.07	4.97	---	12.13	258	3685.7
XSECTION	39	ADDHYD	.36	4.90	---	12.29	802	2227.8
XSECTION	41	RUNOFF	.02	4.64	---	12.17	73	3650.0
STRUCTURE	29	RESVOR	.02	4.61	273.54	12.67	16	800.0
XSECTION	43	RUNOFF	.12	2.90	---	12.22	201	1675.0
XSECTION	44	ADDHYD	.14	3.18	---	12.22	206	1471.4
XSECTION	46	ADDHYD	.67	4.51	---	12.41	1127	1682.1
XSECTION	47	RUNOFF	.28	4.94	---	12.31	659	2353.6
XSECTION	48	RUNOFF	.02	4.86	---	12.17	82	4100.0
STRUCTURE	40	RESVOR	.02	4.87	337.13	12.27	58	2900.0
XSECTION	51	RUNOFF	.02	4.53	---	12.18	64	3200.0

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A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL		DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
	OPERATION					TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE	1	STORM	99					
STRUCTURE 43	RESVOR		.02	4.01	322.45	12.27	52	2600.0
XSECTION 52	ADDHYD		.33	4.87	278.83	12.32	758	2297.0
XSECTION 53	RUNOFF		.21	3.01	---	12.22	360	1714.3
XSECTION 54	ADDHYD		.54	4.15	---	12.39	893	1653.7
XSECTION 55	ADDHYD		1.53	4.58	---	12.37	2946	1925.5
XSECTION 56	RUNOFF		.02	3.93	---	12.13	50	2500.0
XSECTION 57	ADDHYD		1.55	4.57	---	12.36	2964	1912.3
XSECTION 58	RUNOFF		.04	3.84	---	12.14	103	2575.0
XSECTION 62	RUNOFF		.02	1.82	---	12.18	25	1250.0
XSECTION 63	ADDHYD		2.15	4.43	---	12.38	3875	1802.3

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;

ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

XSEC REACH ID LENGTH COEFF	FLOOD PLAIN LENGTH	HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
		INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR	PEAK RATIO Q/I	ATT-KIN
(FT)	(FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	(k*)	(Q*)	(C)

BASEFLOW IS .0 CFS

ALTERNATE	1	STORM	2						
7 2055 .71?		95	12.2	91	12.3	1.55	1.55	.011	.961
11 1397 .22		0	24.1	0	23.6	2.53	1.54	.002	.980
16 2449 .48		30	12.2	27	12.4	2.35	1.42	.023	.889
20 4470 .44		175	12.2	158	12.4	1.59	1.50	.031	.904
30 1561 .59		32	12.1	26	12.2	1.12	1.58	.044	.815
35 2077 .48		96	12.2	89	12.4	1.07	1.44	.031	.928
42 2112 .33		1	13.4	1	13.6	3.54	1.39	.007	.995
45 3148 .56		145	12.4	141	12.5	3.07	1.35	.020	.971
49 1829 .32		7	12.4	6	12.6	1.43	1.43	.045	.899
52 4744 .33		108	12.4	93	12.5	1.09	1.55	.052	.862
59 1671 .69?		102	12.5	101	12.6	3.06	1.27	.015	.984
ALTERNATE	1	STORM	5						
7 2055 .80?		180	12.2	177	12.3	1.64	1.52	.010	.986
11 1397 .29		1	19.9	1	20.0	2.53	1.54	.002	.993
16 2449 .54		58	12.2	54	12.3	2.41	1.40	.022	.918
20 4470 .50		340	12.2	310	12.4	1.74	1.47	.029	.914
30 1561 .68?		57	12.1	50	12.2	1.14	1.57	.035	.879
35 2077 .54		177	12.2	166	12.4	1.13	1.42	.029	.935
42 2112 .38		3	13.2	3	13.4	3.54	1.39	.006	.997
45 3148 .53		250	12.4	242	12.5	3.85	1.23	.028	.968
49 1829 .37		12	12.4	11	12.5	1.44	1.43	.039	.917
52 4744 .38		193	12.4	173	12.5	1.16	1.52	.045	.895
59 1671 .74?		203	12.5	201	12.5	3.31	1.24	.016	.988
ALTERNATE	1	STORM	10						
7 2055 .85?		267	12.2	265	12.3	1.72	1.51	.010	.993
11 1397 .46		2	13.6	2	13.8	2.53	1.54	.003	.991

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION				ROUTING PARAMETERS							
XSEC ID	REACH LENGTH COEFF	FLOOD PLAIN	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR	PEAK RATIO Q/I	ATT- KIN (C)
		LENGTH	PEAK	TIME	PEAK	TIME	COEFF	POWER			
	(FT)	(FT)	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	
ALTERNATE		1	STORM	10							
16	2449		87	12.2	82	12.3	2.46	1.39	.020	.935	
.58											
20	4470		506	12.2	458	12.4	2.42	1.35	.040	.906	
.48											
30	1561		82	12.1	75	12.2	1.17	1.56	.030	.908	
.73?											
35	2077		257	12.2	242	12.4	1.16	1.41	.027	.941	
.58											
42	2112		4	13.1	4	13.3	3.54	1.39	.005	.997	
.41											
45	3148		354	12.4	343	12.5	4.93	1.14	.038	.969	
.49											
49	1829		17	12.4	16	12.5	1.45	1.42	.035	.945	
.40											
52	4744		276	12.4	252	12.5	1.21	1.50	.040	.915	
.41											
59	1671		308	12.4	305	12.5	3.32	1.24	.015	.992	
.77?											
ALTERNATE		1	STORM	25							
7	2055		419	12.2	417	12.3	1.99	1.45	.010	.996	
.89?											
11	1397		8	12.8	8	13.0	2.53	1.54	.004	.992	
.63											
16	2449		136	12.2	128	12.3	2.50	1.38	.018	.946	
.63											
20	4470		786	12.2	705	12.4	3.41	1.24	.053	.897	
.46											
30	1561		122	12.1	115	12.2	1.21	1.54	.026	.936	
.79?											
35	2077		388	12.2	367	12.4	1.21	1.40	.025	.946	
.62											

42	2112	6	13.0	6	13.2	3.54	1.39	.005	.998
.46									
45	3148	635	12.4	592	12.5	5.47	1.10	.050	.932
.49									
49	1829	25	12.4	23	12.5	1.47	1.41	.029	.940
.43									
52	4744	430	12.4	399	12.5	1.29	1.48	.036	.927
.45									
59	1671	503	12.4	500	12.5	3.34	1.23	.015	.994
.82?									

ALTERNATE 1 STORM 50

7	2055	582	12.2	577	12.3	2.60	1.36	.014	.992
.87?									
11	1397	15	12.7	15	12.8	2.53	1.54	.005	.993
.72?									
16	2449	182	12.2	173	12.3	2.53	1.38	.017	.950
.66									

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MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.

QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION ROUTING PARAMETERS

XSEC ID	REACH LENGTH COEFF	FLOOD PLAIN LENGTH (FT)	INFLOW		OUTFLOW		Q-A EQ.		LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT- KIN (C)
			PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)			
		ALTERNATE 1 STORM 50									
20	4470		1050	12.2	952	12.4	3.75	1.22	.055	.907	
.46											
30	1561		159	12.1	151	12.2	1.24	1.53	.023	.951	
.82?											
35	2077		507	12.2	485	12.3	1.24	1.39	.023	.956	
.65											
42	2112		8	13.0	8	13.1	3.54	1.39	.004	.998	
.49											
45	3148		832	12.3	774	12.5	6.78	1.04	.064	.930	
.44											
49	1829		43	12.3	38	12.4	1.50	1.39	.037	.886	
.48											
52	4744		581	12.3	540	12.4	1.35	1.47	.034	.929	

.48									
59	1671	697	12.4	696	12.5	3.25	1.24	.014	.998
.85?									
ALTERNATE	1	STORM	99						
7	2055	767	12.2	763	12.3	3.10	1.31	.016	.995
.87?									
11	1397	29	12.5	29	12.6	2.54	1.53	.005	.996
.82?									
16	2449	238	12.2	229	12.3	2.56	1.37	.016	.965
.69?									
20	4470	1390	12.2	1257	12.4	3.93	1.20	.056	.904
.47									
30	1561	201	12.1	193	12.2	1.27	1.52	.021	.963
.86?									
35	2077	648	12.2	626	12.3	1.27	1.38	.021	.966
.68?									
42	2112	16	12.7	16	12.8	3.54	1.39	.006	.962
.56									
45	3148	1067	12.3	997	12.4	6.60	1.04	.062	.934
.45									
49	1829	57	12.3	54	12.4	1.51	1.38	.036	.942
.51									
52	4744	756	12.3	679	12.5	1.82	1.33	.058	.899
.40									
59	1671	890	12.4	890	12.5	3.17	1.25	.012	.999
.88?									

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
STRUCTURE 64	.05					
ALTERNATE 159	1	32	57	82	123	
STRUCTURE 58	.03					
ALTERNATE 57	1	2	5	12	28	
STRUCTURE 52	.03					
ALTERNATE 1	1	0	1?	2	8	

15						
STRUCTURE	51	.04				
ALTERNATE	1		8	17	25	40
54						
STRUCTURE	47	.02				
ALTERNATE	1		6	10	15	25
36						
STRUCTURE	43	.02				
ALTERNATE	1		0	1	6	19
35						
STRUCTURE	40	.02				
ALTERNATE	1		7	12	17	25
43						
STRUCTURE	34	.15				
ALTERNATE	1		31	45	78	175
214						
STRUCTURE	33	.02				
ALTERNATE	1		9	13	18	32
47						
STRUCTURE	32	.08				
ALTERNATE	1		24	49	74	113
160						
STRUCTURE	29	.02				
ALTERNATE	1		1	3	4	6
8						
XSECTION	1	.21				
ALTERNATE	1		69	134	200	308
410						
XSECTION	2	.03				
ALTERNATE	1		14	25	36	54
70						
XSECTION	3	.24				

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION 3	.24					
----- ALTERNATE 462	1	70	135	204	325	
XSECTION 4	.06					
----- ALTERNATE 164	1	32	58	84	125	
XSECTION 6	.08					
----- ALTERNATE 195	1	37	68	98	149	
XSECTION 9	.06					
----- ALTERNATE 144	1	26	49	72	109	
XSECTION 10	.03					
----- ALTERNATE 43	1	4	11	18	31	
XSECTION 12	.09					
----- ALTERNATE 144	1	26	49	72	109	
XSECTION 13	.04					
----- ALTERNATE 112	1	22	40	57	85	
XSECTION 15	.08					
----- ALTERNATE 216	1	43	77	110	165	
XSECTION 17	.21					
----- ALTERNATE 349	1	60	114	169	261	
XSECTION 18	.59					
----- ALTERNATE 1051	1	177	340	506	786	
XSECTION 19	.27					
----- ALTERNATE	1	76	147	221	343	



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XSECTION 20 .59

-----  
 ALTERNATE 1 158 311 459 706  
 954

XSECTION 21 .86

-----  
 ALTERNATE 1 232 457 676 1041  
 1398

XSECTION 22 .02

-----  
 ALTERNATE 1 8 14 21 31  
 41

1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION

06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)

2.04TEST

16:08:27

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SUMMARY, JOB NO. 1

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SUMMARY TABLE 3

-----  
 STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION 23 .08						
----- ALTERNATE 1 191		37	67	97	146	
XSECTION 25 .05						
----- ALTERNATE 1 111		22	39	57	85	
XSECTION 27 .01						
----- ALTERNATE 1 40		8	14	21	31	
XSECTION 28 .16						
----- ALTERNATE 1 224		33	47	81	183	
XSECTION 29 .05						
----- ALTERNATE 1 159		32	57	82	123	
XSECTION 31 .17						
-----						

ALTERNATE 309	1	60	109	156	236
XSECTION	33	.05			
ALTERNATE 110	1	21	38	56	84
XSECTION	36	.02			
ALTERNATE 49	1	10	17	25	38
XSECTION	38	.07			
ALTERNATE 203	1	42	74	106	156
XSECTION	39	.36			
ALTERNATE 617	1	114	208	302	463
XSECTION	41	.02			
ALTERNATE 57	1	10	19	28	43
XSECTION	43	.12			
ALTERNATE 140	1	4	20	45	92
XSECTION	44	.14			
ALTERNATE 144	1	5	21	46	95

1 TR20 ----- SCS  
-

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
VERSION  
06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
2.04TEST  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		2	5	10	25	50
XSECTION	46	.67				
ALTERNATE 865	1	146	260	375	649	
XSECTION	47	.28				

ALTERNATE 517	1		103	184	264	398
XSECTION	48	.02				
ALTERNATE 65	1		13	23	33	49
XSECTION	51	.02				
ALTERNATE 49	1		8	16	24	37
XSECTION	52	.33				
ALTERNATE 585	1		108	194	278	433
XSECTION	53	.21				
ALTERNATE 254	1		9	41	85	170
XSECTION	54	.54				
ALTERNATE 699	1		102	203	308	503
XSECTION	55	1.53				
ALTERNATE 2242	1		371	708	1041	1647
XSECTION	56	.02				
ALTERNATE 38	1		4	10	17	28
XSECTION	57	1.55				
ALTERNATE 2255	1		373	712	1048	1657
XSECTION	58	.04				
ALTERNATE 77	1		8	21	33	56
XSECTION	62	.02				
ALTERNATE 15	1		0	0	2	7
XSECTION	63	2.15				
ALTERNATE 2962	1		461	892	1336	2159

## SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
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1

TR20 ----- SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
 2.04TEST  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
STRUCTURE 64	.05	
-----		
ALTERNATE 1		201
STRUCTURE 58	.03	
-----		
ALTERNATE 1		83
STRUCTURE 52	.03	
-----		
ALTERNATE 1		29
STRUCTURE 51	.04	
-----		
ALTERNATE 1		73
STRUCTURE 47	.02	
-----		
ALTERNATE 1		51
STRUCTURE 43	.02	
-----		
ALTERNATE 1		52
STRUCTURE 40	.02	
-----		
ALTERNATE 1		58
STRUCTURE 34	.15	
-----		
ALTERNATE 1		267
STRUCTURE 33	.02	
-----		
ALTERNATE 1		62
STRUCTURE 32	.08	
-----		
ALTERNATE 1		213

STRUCTURE	29	.02	
-----			
ALTERNATE	1		16
XSECTION	1	.21	
-----			
ALTERNATE	1		528
XSECTION	2	.03	
-----			
ALTERNATE	1		90
-----			
1	TR20		SCS

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
 VERSION  
 06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
 2.04TEST  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION 3	.24	
-----		
ALTERNATE 1		611
XSECTION 4	.06	
-----		
ALTERNATE 1		209
XSECTION 6	.08	
-----		
ALTERNATE 1		248
XSECTION 9	.06	
-----		
ALTERNATE 1		185
XSECTION 10	.03	
-----		
ALTERNATE 1		58
XSECTION 12	.09	
-----		
ALTERNATE 1		186
XSECTION 13	.04	
-----		
ALTERNATE 1		143
XSECTION 15	.08	
-----		
ALTERNATE 1		275

XSECTION	17	.21	
-----			
ALTERNATE	1		451
XSECTION	18	.59	
-----			
ALTERNATE	1		1391
XSECTION	19	.27	
-----			
ALTERNATE	1		590
XSECTION	20	.59	
-----			
ALTERNATE	1		1258
XSECTION	21	.86	
-----			
ALTERNATE	1		1834

1 TR20 ----- SCS  
-

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
VERSION  
06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
2.04TEST  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION	22	.02
-----		
ALTERNATE	1	52
XSECTION	23	.08
-----		
ALTERNATE	1	244
XSECTION	25	.05
-----		
ALTERNATE	1	142
XSECTION	27	.01
-----		
ALTERNATE	1	51
XSECTION	28	.16
-----		
ALTERNATE	1	280
XSECTION	29	.05
-----		
ALTERNATE	1	201

XSECTION	31	.17	
-----			
ALTERNATE	1		397
XSECTION	33	.05	
-----			
ALTERNATE	1		139
XSECTION	36	.02	
-----			
ALTERNATE	1		62
XSECTION	38	.07	
-----			
ALTERNATE	1		258
XSECTION	39	.36	
-----			
ALTERNATE	1		802
XSECTION	41	.02	
-----			
ALTERNATE	1		73
XSECTION	43	.12	
-----			
ALTERNATE	1		201

1 TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
VERSION

06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
2.04TEST  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
XSECTION 44	.14	
-----		
ALTERNATE 1		206
XSECTION 46	.67	
-----		
ALTERNATE 1		1127
XSECTION 47	.28	
-----		
ALTERNATE 1		659
XSECTION 48	.02	
-----		
ALTERNATE 1		82

XSECTION	51	.02	
-----			
ALTERNATE	1		64
XSECTION	52	.33	
-----			
ALTERNATE	1		758
XSECTION	53	.21	
-----			
ALTERNATE	1		360
XSECTION	54	.54	
-----			
ALTERNATE	1		893
XSECTION	55	1.53	
-----			
ALTERNATE	1		2946
XSECTION	56	.02	
-----			
ALTERNATE	1		50
XSECTION	57	1.55	
-----			
ALTERNATE	1		2964
XSECTION	58	.04	
-----			
ALTERNATE	1		103
XSECTION	62	.02	
-----			
ALTERNATE	1		25

1 TR20 ----- SCS  
-

Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
VERSION

06/05/\*\* 27 Subareas MGMT-sTD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
2.04TEST  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 99
------------------------------	-----------------------------	--------------------------

XSECTION	63	2.15	
-----			
ALTERNATE	1		3875

1 TR20 ----- SCS  
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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas



VERSION  
06/05/\*\* 27 Subareas MGMT-STD NOAA\_C 2,5,10,50,100 WOODS (GOOD)  
2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = sbda5wd.dat , GIVEN DATA FILE  
OUTPUT = sbda5wd.OUT , DATED  
06/05/\*\*,16:08:27

FILES GENERATED - DATED 06/05/\*\*,16:08:27

NONE!

TOTAL NUMBER OF WARNINGS = 30, MESSAGES = 19

\*\*\* TR-20 RUN COMPLETED \*\*\*

1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
 HYDROLOGY\*\*\*\*\*

JOB TR-20		NOPLOTS			
TITLE Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,					
TITLE CN MGMT- EXISTING COND.- OBS.-7-30-16 ELYM2 total rainfall					
2	XSECTN	002	1.0	389.50	
8			389.00	0.00	0.00
8			389.25	1.65	1.06
8			389.50	6.25	2.75
8			389.75	14.40	5.06
8			390.00	26.75	8.00
8			390.25	45.54	14.33
8			390.50	68.67	15.00
8			390.75	96.11	18.88
8			391.00	127.89	23.00
8			391.25	164.08	27.38
8			391.50	204.77	32.00
8			391.75	250.06	36.88
9	ENDTBL				
2	XSECTN	005	1.0	367.00	
8			366.00	0.00	0.00
8			366.50	3.51	1.5
8			367.00	13.55	4.00
8			367.50	30.53	9.00
8			367.75	47.87	13.00
8			368.00	72.23	18.00
8			368.25	104.79	23.98
8			368.50	146.13	30.94
8			368.75	197.14	38.86
8			369.00	258.63	47.75
8			369.25	331.41	57.61
8			369.50	416.25	68.44
9	ENDTBL				
3	STRUCT	11			
8			380.00	0.00	0.00
8			381.00	2.70	0.53
8			382.20	53.00	1.16
8			383.80	186.80	1.40
9	ENDTBL				
2	XSECTN	008	1.0	330.00	
8			356.00	0.00	0.00
8			356.50	20.21	6.94
8			357.00	68.51	15.75
8			357.50	144.11	26.44
8			358.00	248.93	39.00
8			358.50	389.07	53.25
8			359.00	561.31	69.00
8			359.50	767.14	86.25
8			360.00	1008.16	105.00
8			361.00	1375.68	147.50
8			361.50	1604.19	171.38
9	ENDTBL				

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
 \*\*\*\*\*

2	XSECTN	016	1.0	333.08	
8			331.08	0.00	0.00
8			332.08	80.21	8.00
8			333.08	225.50	16.00
8			333.58	310.09	20.00
8			334.08	399.94	24.00
8			334.58	493.86	28.00
8			335.08	590.97	32.00
8			335.58	690.67	36.00
8			336.08	792.47	40.00
8			336.58	896.02	44.00
9	ENDTBL				
2	XSECTN	023	1.0	314.40	
8			313.22	0.00	0.00
8			313.51	1.10	0.89
8			313.81	3.51	1.84
8			314.10	16.22	5.61
8			314.40	34.66	9.74
8			314.68	48.28	24.71
8			314.96	79.66	42.09
8			315.24	126.64	61.87
8			315.52	189.07	84.06
8			315.80	267.27	108.64
8			316.08	361.75	135.63
8			316.36	473.14	165.02
8			316.64	602.11	196.81
8			316.92	749.37	231.00
8			317.20	878.70	277.25
8			317.48	1103.89	329.14
8			317.76	1358.10	382.70
8			318.04	1640.58	437.94
8			318.32	1950.87	494.86
8			318.60	2288.69	553.45
9	ENDTBL				
3	STRUCT	21			
8			364.00	0.00	0.00
8			366.00	0.30	0.55
8			368.00	0.50	1.31
8			369.00	3.20	1.80
8			370.00	5.20	2.29
8			372.00	7.80	3.48
8			374.00	9.60	5.00
8			375.00	10.40	5.86
8			376.00	45.30	6.79
8			376.50	74.10	7.31
8			377.00	106.80	7.83
8			378.00	149.80	8.90
8			379.00	155.60	10.06
8			380.00	162.00	11.29
9	ENDTBL				

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

3	STRUCT	22			
8			352.50	0.00	0.00
8			358.65	100.00	0.91
8			361.76	140.00	3.28
8			363.64	160.00	5.47
8			366.18	180.00	9.58
8			368.71	200.00	14.77

8			370.61	250.00	19.31
9	ENDTBL				
3	STRUCT	23			
9	ENDTBL				
2	XSECTN	027	1.0	317.00	
8			316.00	0.00	0.00
8			316.50	2.68	2.59
8			317.00	10.37	6.88
8			317.50	24.26	12.84
8			318.00	45.55	20.50
8			318.50	70.64	34.75
8			319.00	137.01	60.50
8			319.25	200.57	76.25
8			319.50	273.06	92.00
8			319.75	353.76	107.75
8			320.00	442.13	123.50
8			320.50	640.03	155.00
8			321.00	863.72	186.50
9	ENDTBL				
2	XSECTN	032	1.0	313.00	
8			310.00	0.00	0.00
8			311.00	12.25	5.50
8			312.00	52.16	16.00
8			312.50	83.38	23.13
8			313.00	123.94	31.50
8			313.25	148.02	36.16
8			313.50	174.79	41.13
8			313.75	204.34	46.41
8			314.00	236.81	52.00
8			314.50	278.65	65.75
8			315.00	353.72	84.00
9	ENDTBL				
2	XSECTN	034	1.0	338.50	
8			338.00	0.00	0.00
8			338.10	4.87	2.46
8			338.25	22.73	6.38
8			338.50	73.99	13.53
8			338.75	149.34	21.45
8			339.00	247.95	30.13
8			339.50	515.65	49.78
9	ENDTBL				
2	XSECTN	037	1.0	331.00	
8			330.00	0.00	0.00

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			330.25	14.29	3.25
8			330.50	46.85	7.00
8			330.75	95.34	11.25
8			331.00	159.64	16.00
8			331.25	240.13	21.25
8			331.50	337.44	27.00
8			331.75	452.26	33.25
8			332.00	585.36	40.00
8			332.50	875.33	55.81
8			333.00	1272.05	75.25
9	ENDTBL				
2	XSECTN	044	1.0	288.90	
8			287.68	0.00	0.00
8			287.99	1.15	0.94

8			288.29	3.69	1.95
8			288.60	17.06	5.98
8			288.90	36.44	10.37
8			289.19	63.07	39.25
8			289.47	121.85	69.50
8			289.76	206.05	101.12
8			290.05	313.23	134.09
8			290.33	442.07	168.42
8			290.62	591.78	204.12
8			290.91	761.87	241.18
8			291.19	952.02	279.60
8			291.48	1162.04	319.38
8			291.77	1391.84	360.52
8			292.05	1641.40	403.02
8			292.34	1910.74	446.89
8			292.63	2199.92	492.11
8			292.91	2509.04	538.70
8			293.20	2838.22	586.65
9	ENDTBL				
3	STRUCT	31			
8			356.38	0.0	0.00
8			357.26	10.90	0.02
8			357.50	12.30	0.03
8			358.00	14.70	0.05
8			359.00	18.70	0.10
8			360.00	22.00	0.16
8			361.00	24.90	0.25
8			361.50	26.20	0.30
8			362.00	27.50	0.36
8			362.50	28.70	0.43
8			362.90	29.60	0.49
8			363.50	51.30	0.60
8			363.75	65.70	0.67
8			364.00	82.60	0.72
8			364.20	83.30	0.83
8			364.60	100.00	0.88

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			366.80	260.00	1.47
8			366.92	340.00	1.49
8			366.98	380.00	1.50
9	ENDTBL				
3	STRUCT	32			
8			375.40	0.00	0.00
8			379.36	1.00	0.74
8			380.00	5.00	0.89
8			380.20	10.00	0.94
8			380.33	15.00	0.98
8			380.45	20.00	1.01
8			380.55	25.00	1.04
8			380.65	30.00	1.06
8			381.19	40.00	1.21
8			381.78	44.00	1.39
8			382.59	66.00	1.66
8			382.79	88.00	1.75
8			382.89	110.00	1.79
8			382.97	132.00	1.83
9	ENDTBL				
3	STRUCT	33			

8			350.00	0.00	0.00
8			354.30	1.00	1.08
8			354.47	2.00	1.15
8			354.87	5.00	1.30
8			355.38	10.00	1.50
8			356.18	20.00	1.84
8			356.88	40.00	2.15
8			357.27	60.00	2.33
8			357.46	80.00	2.42
8			358.08	100.00	2.73
8			358.14	120.00	2.76
8			358.19	140.00	2.78
8			358.25	171.00	2.81
8			358.27	180.00	2.82
9	ENDTBL				
3	STRUCT	34			
9	ENDTBL				
2	XSECTN	051	1.0	282.40	
8			281.10	0.00	0.00
8			281.42	1.24	1.09
8			281.75	3.96	2.26
8			282.07	18.30	6.92
8			282.40	39.09	12.00
8			282.88	67.33	37.27
8			283.36	131.17	65.87
8			283.84	225.10	97.78
8			284.32	348.01	133.01
8			284.80	499.91	171.56
8			285.28	681.29	213.43

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			285.76	892.92	258.61
8			286.24	1135.70	307.11
8			286.72	1410.63	358.94
8			287.20	1718.74	414.08
8			287.68	2061.13	472.54
8			288.16	2438.87	534.31
8			288.64	2853.08	599.41
8			289.12	3301.76	667.84
8			289.60	3785.91	739.78
9	ENDTBL				
2	XSECTN	053	1.0	289.00	
8			288.00	0.00	0.00
8			288.50	9.00	2.88
8			289.00	34.26	7.50
8			289.50	79.27	13.88
8			290.00	147.75	22.00
8			290.50	227.49	31.94
8			291.00	332.02	43.75
8			291.50	463.75	57.44
8			291.75	540.56	64.98
8			292.00	625.07	73.00
9	ENDTBL				
2	XSECTN	063	1.0	248.40	
8			247.07	0.00	0.00
8			247.41	1.85	1.14
8			247.74	5.93	2.35
8			248.07	27.43	7.18
8			248.40	58.61	12.46

8		248.67	89.70	40.04
8		248.95	158.39	68.99
8		249.22	256.90	99.30
8		249.49	382.40	130.99
8		249.77	533.43	164.04
8		250.04	709.09	198.46
8		250.31	908.86	234.24
8		250.59	1132.40	271.40
8		250.86	1379.55	309.92
8		251.13	1650.25	349.81
8		251.41	1944.49	391.07
8		251.68	2262.35	433.69
8		251.95	2603.94	477.69
8		252.23	2969.40	523.05
8		252.50	3358.93	569.78
9	ENDTBL			
3	STRUCT	61		
8		329.75	0.00	0.00
8		330.00	1.56	0.01
8		332.00	4.37	0.13
8		334.00	5.96	0.39
8		334.10	6.01	0.40

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		334.50	10.20	0.47
8		335.00	16.10	0.56
8		336.00	28.91	0.75
8		337.00	40.10	0.97
9	ENDTBL			
3	STRUCT	62		
8		287.30	0.00	0.00
8		288.00	5.45	0.01
8		289.00	9.05	0.05
8		290.00	11.60	0.13
8		292.00	15.35	0.50
8		294.00	18.40	1.19
8		294.30	18.92	1.26
8		294.50	20.73	1.40
8		295.00	36.40	1.60
8		295.40	38.00	1.80
8		296.00	51.10	2.15
8		297.00	69.60	2.75
8		298.00	86.80	3.44
8		298.68	98.50	3.91
8		298.80	107.56	4.00
9	ENDTBL			
3	STRUCT	63		
8		259.43	0.00	0.00
8		260.00	1.30	0.026
8		260.50	1.70	0.050
8		261.00	2.10	0.075
8		261.50	2.40	0.095
8		262.00	2.70	0.119
8		262.50	2.90	0.160
8		263.00	3.20	0.205
8		263.50	3.40	0.245
8		264.00	3.60	0.285
8		264.50	3.80	0.360
8		265.00	3.90	0.415

8		265.50	4.10	0.480
8		266.00	11.00	0.537
8		266.50	15.40	0.620
8		267.00	16.00	0.709
8		267.50	30.30	0.798
8		268.00	56.00	0.887
8		268.50	145.68	0.976
9	ENDTBL			
2	XSECTN 065	1.0	300.50	
8		300.00	0.00	0.00
8		300.10	0.29	0.23
8		300.25	1.47	0.69
8		300.40	3.55	1.28
8		300.50	5.48	1.75
8		300.60	7.88	2.28

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		300.75	12.45	3.19
8		300.90	18.28	4.23
8		301.00	22.91	5.00
8		301.10	28.18	5.83
8		301.25	37.36	7.19
8		301.40	48.14	8.68
8		301.50	56.26	9.75
9	ENDTBL			
2	XSECTN 070	1.0	248.40	
8		247.07	0.00	0.00
8		247.41	1.85	1.14
8		247.74	5.93	2.35
8		248.07	27.43	7.18
8		248.40	58.61	12.46
8		248.67	89.70	40.04
8		248.95	158.39	68.99
8		249.22	256.90	99.30
8		249.49	382.40	130.99
8		249.77	533.43	164.04
8		250.04	709.09	198.46
8		250.31	908.86	234.24
8		250.59	1132.40	271.40
8		250.86	1379.55	309.92
8		251.13	1650.25	349.81
8		251.41	1944.49	391.07
8		251.68	2262.35	433.69
8		251.95	2603.94	477.69
8		252.23	2969.40	523.05
8		252.50	3358.93	569.78
9	ENDTBL			
2	XSECTN 072	1.0	248.40	
8		247.07	0.00	0.00
8		247.41	1.85	1.14
8		247.74	5.93	2.35
8		248.07	27.43	7.18
8		248.40	58.61	12.46
8		248.67	89.70	40.04
8		248.95	158.39	68.99
8		249.22	256.90	99.30
8		249.49	382.40	130.99
8		249.77	533.43	164.04
8		250.04	709.09	198.46



8		250.31	908.86	234.24
8		250.59	1132.40	271.40
8		250.86	1379.55	309.92
8		251.13	1650.25	349.81
8		251.41	1944.49	391.07
8		251.68	2262.35	433.69
8		251.95	2603.94	477.69
8		252.23	2969.40	523.05

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8		252.50	3358.93	569.78		
9	ENDTBL					
2	XSECTN	077	1.0	229.00		
8			226.00	0.00	0.00	
8			226.50	11.73	5.31	
8			227.00	42.97	13.25	
8			227.50	96.50	23.81	
8			228.00	175.93	37.00	
8			228.50	258.13	54.25	
8			229.00	385.22	77.00	
8			229.50	561.82	105.25	
8			230.00	793.74	139.00	
8			230.50	1079.38	179.94	
8			231.00	1462.49	229.75	
8			231.50	1953.75	288.44	
8			232.00	2564.16	356.00	
8			232.50	3408.70	429.13	
8			233.00	4351.01	504.50	
9	ENDTBL					
2	XSECTN	080	1.0	212.00		
8			210.50	0.00	0.00	
8			210.75	4.72	2.23	
8			211.00	15.68	4.92	
8			211.25	32.36	8.06	
8			211.50	54.93	11.67	
8			211.75	83.70	15.73	
8			212.00	119.05	20.25	
8			212.25	163.87	25.14	
8			212.50	215.35	30.31	
8			212.75	273.55	35.77	
8			213.00	338.57	41.50	
8			214.00	669.42	67.25	
8			215.00	806.07	99.00	
8			216.00	1088.03	138.25	
8			217.00	1451.30	187.50	
8			218.00	1978.93	249.25	
8			219.00	2262.06	340.00	
8			220.00	3115.20	476.25	
8			221.00	4892.67	639.25	
9	ENDTBL					
5	RAINFL	5	0.05			
8		0.0000	0.0000	0.0000	0.0000	0.0061
8		0.0061	0.0121	0.0242	0.0364	0.0424
8		0.0424	0.0424	0.0424	0.0485	0.0606
8		0.0667	0.0727	0.0727	0.0727	0.0727
8		0.0788	0.0848	0.1030	0.1212	0.1333
8		0.1576	0.1818	0.1879	0.2000	0.2182
8		0.2242	0.2303	0.2424	0.2606	0.2909
8		0.3212	0.3576	0.4061	0.4667	0.5394

8 0.6061 0.6606 0.7030 0.7394 0.7576  
 1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)

\*\*\*\*\*

8		0.7758		0.7939		0.8182		0.8424		0.8788
8		0.9091		0.9212		0.9333		0.9455		0.9515
8		0.9576		0.9697		0.9758		0.9818		0.9818
8		0.9818		0.9818		0.9818		0.9879		0.9879
8		0.9879		0.9879		0.9939		0.9939		0.9939
8		0.9939		0.9939		1.0000		1.0000		1.0000
9	ENDTBL									
6	RUNOFF 1 001	1		0.0336	80.992		0.4051			DA1
6	REACH 3 002	1	2	1170.0			1			
6	RUNOFF 1 003		1	0.0580	79.488		0.3751			DA2
6	ADDHYD 4 004	1	2 3				1			DA1+2
6	RESVOR 2 11 3	1					1		1	
	SWMF10									
6	REACH 3 005	1	2	797.0			1			
6	RUNOFF 1 006		3	0.0798	77.284		0.3921			DA3
6	ADDHYD 4 007	2	3 4				1			
	DA12+3									
6	REACH 3 008	4	7	1221.0			1		1	SA1-
	SA2									
6	RUNOFF 1 009		1	0.0734	90.928		0.4221			DA1
6	RESVOR 2 21 1	2					1		1	
	SWMF13									
6	RUNOFF 1 010		3	0.0097	72.007		0.1281			DA7
6	RESVOR 2 22 2 3 4						1		1	HWY
	STOR									
6	RUNOFF 1 011		2	0.0544	73.278		0.2201			DA2
6	ADDHYD 4 012	7	2 3				1			
	SA1+DA2									
6	RUNOFF 1 013		5	0.0193	79.062		0.2481			DA3
6	ADDHYD 4 014	4	3 6				1			
	DA17+2									
6	ADDHYD 4 015	6	5 3				1			
	DA172+3									
6	RESVOR 2 23 3	1					1		1	
	HWYSTOR2									
6	REACH 3 016	1	2	920.0			1		1	
6	RUNOFF 1 017		3	0.0211	87.900		0.1641			DA4
6	RUNOFF 1 018		4	0.0313	91.880		0.2551			DA5
6	RUNOFF 1 019		5	0.0404	84.467		0.1681			DA6
6	ADDHYD 4 020	3	4 6				1		1	DA4+5
6	ADDHYD 4 021	6	5 1				1			
	DA123+6									
6	ADDHYD 4 022	2	1 3				1			
	DA45+6									
6	REACH 3 023	3	7	1379.0			1		1	SA2-
	SA3									
6	RUNOFF 1 024		1	0.0505	82.333		0.3401			DA1
6	RESVOR 2 31 1	2					1		1	SWMF3
6	RUNOFF 1 025		3	0.0748	81.676		0.3581			DA2
6	ADDHYD 4 026	2	3 4				1			DA1+2
6	REACH 3 027	4	1	1021.0			1			
6	RUNOFF 1 028		2	0.0599	78.523		0.3231			DA3
6	ADDHYD 4 029	7	2 3				1			
	SA2+DA3									
6	ADDHYD 4 030	1	3 5				1			
	DA12+3									

6	RUNOFF	1	031		1	0.0692	86.978	0.2761	DA4
6	REACH	3	032	1	6	1603.0		1	
6	RUNOFF	1	033		2	0.0084	95.000	0.1921	DA5
6	RESVOR	2		32	2	3		1	1
SWMF11									
6	REACH	3	034	3	7	583.0		1	
6	RUNOFF	1	035		1	0.0275	94.960	0.2481	DA6
6	RESVOR	2		33	1	2		1	1 SWMF8
6	ADDHYD	4	036	7	2	1		1	DA5+6

1

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

6	RESVOR	2		34	1	2		1	1
HWYSTOR3									
6	REACH	3	037	2	4	934.0		1	
6	RUNOFF	1	038		1	0.0328	85.878	0.1901	DA7
6	ADDHYD	4	039	4	1	3		1	
DA56+7									
6	RUNOFF	1	040		2	0.0393	80.311	0.3671	DA8
6	ADDHYD	4	041	5	2	1		1	DA3+8
6	ADDHYD	4	042	6	1	2		1	DA4+8
6	ADDHYD	4	043	3	2	1		1	DA7+8
6	REACH	3	044	1	7	1428.0		1	1 SA3-
SA4									
6	RUNOFF	1	045		1	0.0477	80.798	0.4121	DA1
6	RUNOFF	1	046		2	0.0628	79.968	0.4401	DA2
6	ADDHYD	4	047	1	2	3		1	DA1+2
6	RUNOFF	1	048		1	0.0469	80.250	0.2491	DA3
6	ADDHYD	4	049	7	1	2		1	
SA3+DA3									
6	ADDHYD	4	050	2	3	4		1	1
DA12+3									
6	REACH	3	051	4	7	1275.0		1	1 SA4-
SA5									
6	RUNOFF	1	052		1	0.0087	41.639	0.1631	DA1
6	REACH	3	053	1	5	652.0		1	
6	RUNOFF	1	054		1	0.0072	33.729	0.2561	DA2
6	RUNOFF	1	055		2	0.0322	77.752	0.2491	DA3
6	ADDHYD	4	056	7	2	4		1	
SA4+DA3									
6	ADDHYD	4	057	5	1	3		1	DA1+2
6	ADDHYD	4	058	4	3	5		1	
DA12+3									
6	RUNOFF	1	059		1	0.0266	70.478	0.2611	1 DA4
6	ADDHYD	4	060	5	1	2		1	
DA123+4									
6	RUNOFF	1	061		3	0.0173	69.728	0.2971	DA5
6	ADDHYD	4	062	2	3	6		1	1
DA1234+5									
6	REACH	3	063	6	7	1959.0		1	1 SA5-
SA6									
6	RUNOFF	1	064		1	0.0110	84.520	0.5211	DA1
6	RESVOR	2		61	1	2		1	1
SWMF19									
6	REACH	3	065	2	3	1283.0		1	
6	RUNOFF	1	066		1	0.0458	70.198	0.2391	DA2
6	RESVOR	2		62	1	2		1	1
SWMF18									
6	ADDHYD	4	067	3	2	4		1	DA1+2
6	RUNOFF	1	068		5	0.0778	76.176	0.2281	DA3

```

6 ADDHYD 4 069 4 5 1 1
DA12+3
6 REACH 3 070 1 2 2166.0 1
6 RUNOFF 1 071 1 0.0119 80.036 0.1221 DA4
6 RESVOR 2 63 1 3 1 1 SWMF2
6 REACH 3 072 3 4 1081.0 1
6 RUNOFF 1 073 5 0.1100 64.864 0.2051 1 DA5
6 ADDHYD 4 074 7 5 1 1
SA5+DA5
6 ADDHYD 4 075 2 4 6 1 1
DA123+4
6 ADDHYD 4 076 1 6 2 1 1
DA12345
6 REACH 3 077 2 7 884.0 1 1 SA6-
SA7
6 RUNOFF 1 078 2 0.0510 70.802 0.1971 1 DA1
6 ADDHYD 4 079 7 2 1 1
SA6+DA1
6 REACH 3 080 1 2 1296.0 1
6 RUNOFF 1 081 1 0.0313 67.555 0.1861 DA2
6 ADDHYD 4 082 1 2 3 1 DA1+2
1

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

```

6 RUNOFF 1 083 1 0.0513 73.958 0.1621 DA3
6 RUNOFF 1 084 4 0.1187 68.693 0.3211 DA4
6 ADDHYD 4 085 1 4 2 1 1 DA3+4
6 ADDHYD 4 086 3 2 1 1
DA123+4
6 RUNOFF 1 087 4 0.0159 86.785 0.1421 DA5
6 ADDHYD 4 088 1 4 7 1 1 1
DA1234+5
ENDATA
7 INCREM 6 .06
7 COMPUT 7 001 088 0.0 6.60 1.05 2 1 01
ENDCMP 1
ENDJOB 2

```

\*\*\*\*\*END OF 80-80  
LIST\*\*\*\*\*

```

1
TR20 ----- SCS
-
Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,
VERSION
05/05/** CN MGMT- EXISTING COND.- OBS.-7-30-16 ELYM2 total rainfall
2.04TEST
11:17:40 PASS 1 JOB NO. 1 PAGE
1

```

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .060 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 88  
STARTING TIME = .00 RAIN DEPTH = 6.60 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
ALTERNATE NO. = 1 STORM NO. = 1 RAIN TABLE NO. = 5

OPERATION RUNOFF XSECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.23	109.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.43 WATERSHED INCHES; 96 CFS-HRS; 7.9 ACRE-FEET.

OPERATION REACH XSECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.29	109.1	390.85

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.43 WATERSHED INCHES; 96 CFS-HRS; 7.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.21	188.7	(RUNOFF)
3.71	6.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.27 WATERSHED INCHES; 160 CFS-HRS; 13.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.24	293.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.33 WATERSHED INCHES; 256 CFS-HRS; 21.2 ACRE-FEET.

\*\*\* WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 11,  
 VALUE EXTRAPOLATED.  
 \*\*\*

1  
 TR20 ----- SCS  
 -  
 Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/05/\*\* CN MGMT- EXISTING COND.- OBS.-7-30-16 ELYM2 total rainfall  
 2.04TEST  
 11:17:40 PASS 1 JOB NO. 1 PAGE  
 2

OPERATION RESVOR STRUCTURE 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

2.26 291.6 385.05  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.33 WATERSHED INCHES; 256 CFS-HRS; 21.2 ACRE-  
 FEET.

OPERATION REACH XSECTION 5  
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 2.32 291.5 369.11  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.32 WATERSHED INCHES; 256 CFS-HRS; 21.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 6  
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 2.22 241.1 (RUNOFF)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.03 WATERSHED INCHES; 208 CFS-HRS; 17.2 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 7  
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 2.28 520.2 (NULL)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.19 WATERSHED INCHES; 463 CFS-HRS; 38.3 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 8.  
 \*\*\*

OPERATION REACH XSECTION 8  
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK  
 ELEVATION(FEET)  
 2.28 520.2 358.88  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.19 WATERSHED INCHES; 463 CFS-HRS; 38.3 ACRE-  
 FEET.

1  
 TR20 ----- SCS  
 -  
 Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
 VERSION  
 05/05/\*\* CN MGMT- EXISTING COND.- OBS.-7-30-16 ELYM2 total rainfall  
 2.04TEST  
 11:17:40 PASS 1 JOB NO. 1 PAGE  
 3

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
1.58	59.6	(RUNOFF)
2.23	281.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.53 WATERSHED INCHES; 262 CFS-HRS; 21.7 ACRE-  
FEET.

\*\*\* MESSAGE - STRUCTURE 21, USER ENTERED STARTING ELEVATION OR STRUCTURE  
TABLE  
STARTS 4.00 FEET BELOW ASSUMED CREST ELEVATION AT 368.00.  
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
\*\*\*

OPERATION RESVOR STRUCTURE 21

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.68	156.9	379.21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.29 WATERSHED INCHES; 250 CFS-HRS; 20.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.05	34.8	(RUNOFF)
2.51	20.1	(RUNOFF)
3.20	1.6	(RUNOFF)
3.41	1.7	(RUNOFF)
3.66	1.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.49 WATERSHED INCHES; 22 CFS-HRS; 1.8 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 22

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
3.10	135.3	361.40

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.29 WATERSHED INCHES; 250 CFS-HRS; 20.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 11

1  
TR20 ----- SCS  
-  
Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
VERSION  
05/05/\*\* CN MGMT- EXISTING COND.- OBS.-7-30-16 ELYM2 total rainfall  
2.04TEST

11:17:40  
4

PASS 1 JOB NO. 1

PAGE

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.12	180.9	(RUNOFF)
2.55	102.6	(RUNOFF)
3.24	7.7	(RUNOFF)
3.45	6.9	(RUNOFF)
3.71	6.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.62 WATERSHED INCHES; 127 CFS-HRS; 10.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.23	657.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.05 WATERSHED INCHES; 590 CFS-HRS; 48.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.13	71.4	(RUNOFF)
2.56	39.0	(RUNOFF)
3.45	2.5	(RUNOFF)
3.72	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.22 WATERSHED INCHES; 53 CFS-HRS; 4.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.28	726.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.36 WATERSHED INCHES; 841 CFS-HRS; 69.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 15

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.26	780.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.35 WATERSHED INCHES; 894 CFS-HRS; 73.9 ACRE-  
FEET.

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OPERATION RESVOR STRUCTURE 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.26	780.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.35 WATERSHED INCHES; 894 CFS-HRS; 73.9 ACRE-  
FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 16.  
\*\*\*

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.26	780.3	336.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.35 WATERSHED INCHES; 894 CFS-HRS; 73.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.84	1.8	(RUNOFF)
1.36	18.5	(RUNOFF)
1.48	16.4	(RUNOFF)
2.06	101.5	(RUNOFF)
2.52	49.4	(RUNOFF)
3.23	3.6	(RUNOFF)
3.42	3.7	(RUNOFF)
3.67	3.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.19 WATERSHED INCHES; 71 CFS-HRS; 5.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.87	4.9	(RUNOFF)
1.41	31.1	(RUNOFF)
2.12	143.0	(RUNOFF)
2.55	70.6	(RUNOFF)
3.46	4.4	(RUNOFF)
3.72	4.0	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.64 WATERSHED INCHES; 114 CFS-HRS; 9.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.37	27.6	(RUNOFF)
1.49	25.7	(RUNOFF)
2.07	182.7	(RUNOFF)
2.53	91.0	(RUNOFF)
3.23	6.7	(RUNOFF)
3.43	6.7	(RUNOFF)
3.68	6.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.81 WATERSHED INCHES; 125 CFS-HRS; 10.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.86	6.6	(NULL)
1.39	49.3	(NULL)
2.09	240.2	(NULL)
2.53	119.0	(NULL)
3.22	8.9	(NULL)
3.43	8.0	(NULL)
3.69	7.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
5.46 WATERSHED INCHES; 185 CFS-HRS; 15.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.86	7.5	(NULL)
1.38	76.7	(NULL)
1.47	72.1	(NULL)
2.08	420.3	(NULL)
2.53	209.9	(NULL)
3.23	15.6	(NULL)
3.43	14.7	(NULL)
3.68	13.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

5.18 WATERSHED INCHES; 310 CFS-HRS; 25.6 ACRE-  
FEET.

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OPERATION ADDHYD XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
.86	7.5	(NULL)
1.51	114.4	(NULL)
2.18	1098.7	(NULL)
2.50	847.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.54 WATERSHED INCHES; 1204 CFS-HRS; 99.5 ACRE-  
FEET.

OPERATION REACH XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
.96	6.1	313.87
2.30	1042.2	317.40

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.53 WATERSHED INCHES; 1203 CFS-HRS; 99.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.18	180.8	(RUNOFF)
3.73	5.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.57 WATERSHED INCHES; 149 CFS-HRS; 12.3 ACRE-  
FEET.

\*\*\* WARNING - STRUCTURE 31, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
TIME INCREMENT OF .043 HOURS.  
\*\*\*

OPERATION RESVOR STRUCTURE 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.23	176.4	365.65
3.76	5.5	356.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

4.56 WATERSHED INCHES; 149 CFS-HRS; 12.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 25

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.20	258.9	(RUNOFF)
3.72	8.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.50 WATERSHED INCHES; 217 CFS-HRS; 18.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.21	434.0	(NULL)
3.74	13.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.53 WATERSHED INCHES; 366 CFS-HRS; 30.2 ACRE-  
FEET.

OPERATION REACH XSECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.29	424.8	319.95

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.54 WATERSHED INCHES; 367 CFS-HRS; 30.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.18	201.7	(RUNOFF)
2.56	119.4	(RUNOFF)
3.73	6.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.17 WATERSHED INCHES; 161 CFS-HRS; 13.3 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.96	6.1	(NULL)
2.28	1217.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.49 WATERSHED INCHES; 1364 CFS-HRS; 112.8 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.96	6.2	(NULL)
2.28	1640.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.50 WATERSHED INCHES; 1731 CFS-HRS; 143.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.91	3.1	(RUNOFF)
1.47	49.1	(RUNOFF)
2.14	288.1	(RUNOFF)
2.56	150.8	(RUNOFF)
3.45	9.5	(RUNOFF)
3.73	8.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.09 WATERSHED INCHES; 227 CFS-HRS; 18.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.60	46.6	311.86
2.24	269.4	314.39
3.80	7.7	310.63

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.09 WATERSHED INCHES; 227 CFS-HRS; 18.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION (FEET)		
.51	1.2	(RUNOFF)
.83	2.6	(RUNOFF)
1.36	11.0	(RUNOFF)
2.07	42.3	(RUNOFF)
2.53	19.7	(RUNOFF)
3.24	1.4	(RUNOFF)
3.43	1.4	(RUNOFF)
3.69	1.3	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.00 WATERSHED INCHES; 33 CFS-HRS; 2.7 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
2.19	34.4	380.89
2.57	19.0	380.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.84 WATERSHED INCHES; 32 CFS-HRS; 2.6 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 34.  
 \*\*\*

OPERATION REACH XSECTION 34

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
2.19	34.4	338.31
2.57	19.0	338.22

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.84 WATERSHED INCHES; 32 CFS-HRS; 2.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 35

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
.55	3.1	(RUNOFF)
.86	7.5	(RUNOFF)
1.40	33.1	(RUNOFF)
2.11	130.5	(RUNOFF)
2.55	63.1	(RUNOFF)
3.22	4.7	(RUNOFF)
3.45	3.9	(RUNOFF)

3.72 3.6 (RUNOFF)  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 6.00 WATERSHED INCHES; 106 CFS-HRS; 8.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.20	120.5	358.14

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.83 WATERSHED INCHES; 103 CFS-HRS; 8.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 36

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.20	154.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.83 WATERSHED INCHES; 135 CFS-HRS; 11.2 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.20	154.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.83 WATERSHED INCHES; 135 CFS-HRS; 11.2 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 37.  
 \*\*\*

OPERATION REACH XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.20	154.8	330.98

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.83 WATERSHED INCHES; 135 CFS-HRS; 11.2 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
.86	1.3	(RUNOFF)
1.38	24.2	(RUNOFF)
2.08	147.6	(RUNOFF)
2.53	73.3	(RUNOFF)
3.24	5.3	(RUNOFF)
3.43	5.1	(RUNOFF)
3.69	4.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.96 WATERSHED INCHES; 105 CFS-HRS; 8.7 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
.87	1.5	(NULL)
1.39	25.2	(NULL)
1.48	23.5	(NULL)
2.15	280.5	(NULL)
3.40	19.8	(NULL)
3.67	14.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.42 WATERSHED INCHES; 240 CFS-HRS; 19.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 40

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.21	131.0	(RUNOFF)
3.71	4.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.36 WATERSHED INCHES; 110 CFS-HRS; 9.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 41

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
.96	6.2	(NULL)
2.28	1763.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)



4.49 WATERSHED INCHES; 1842 CFS-HRS; 152.2 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 42

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.97	8.7	(NULL)
2.27	2030.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.55 WATERSHED INCHES; 2069 CFS-HRS; 171.0 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 43

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.25	2267.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.62 WATERSHED INCHES; 2309 CFS-HRS; 190.8 ACRE-  
FEET.

OPERATION REACH XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.34	2209.0	292.64

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.62 WATERSHED INCHES; 2308 CFS-HRS; 190.8 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.23	153.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.41 WATERSHED INCHES; 136 CFS-HRS; 11.2 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.25	193.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.32 WATERSHED INCHES; 175 CFS-HRS; 14.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.24	346.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.36 WATERSHED INCHES; 311 CFS-HRS; 25.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 48

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.52	21.1	(RUNOFF)
2.13	177.7	(RUNOFF)
2.56	96.2	(RUNOFF)
3.22	7.3	(RUNOFF)
3.46	6.1	(RUNOFF)
3.72	5.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.35 WATERSHED INCHES; 132 CFS-HRS; 10.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.33	2313.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.61 WATERSHED INCHES; 2440 CFS-HRS; 201.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.32	2638.9	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .93  
 SQ.MI.  
 .60 CFS .24 .50 .69 .94 2.00 4.35 7.08

8.77							
1.08 CFS	9	12	21	43	79	130	188
241							
1.56 CFS	281	309	327	353	411	519	690
937							
2.04 CFS	1268	1687	2096	2428	2614	2632	2536
2379							
2.52 CFS	2220	2091	1994	1892	1761	1601	1425
1263							
3.00 CFS	1109	962	820	687	574	485	422
374							
3.48 CFS	339	309	281	256	234	210	184
157							
3.96 CFS	130	104	82	65	52	42	34
28							
4.44 CFS	23.87	20.91	18.91	17.56	16.65	16.01	15.54
15.17							
4.92 CFS	14.86	14.60	14.38	14.17	13.98	13.81	13.68
13.57							
5.40 CFS	13.46	13.35	13.25	13.14	13.03	12.92	12.82
12.71							
5.88 CFS	12.61	12.51	12.40	12.30	12.20	12.11	12.01
11.91							
6.36 CFS	11.82	11.73	11.63	11.54	11.45	11.37	11.28
11.19							
6.84 CFS	11.11	11.02	10.94	10.86	10.77	10.69	10.61
10.53							
7.32 CFS	10.46	10.38	10.30	10.23	10.14	10.05	9.96
9.86							
7.80 CFS	9.76	9.65	9.55	9.45	9.34	9.24	9.14
9.04							
8.28 CFS	8.94	8.85	8.75	8.66	8.56	8.47	8.38
8.29							
8.76 CFS	8.20	8.11	8.03	7.94	7.86	7.77	7.69
7.61							
9.24 CFS	7.53	7.45	7.37	7.29	7.22	7.14	7.07
6.99							
9.72 CFS	6.91	6.84	6.75	6.65	6.55	6.45	6.34
6.23							
10.20 CFS	6.13	6.02	5.92	5.82	5.72	5.62	5.52
5.43							
10.68 CFS	5.33	5.24	5.15	5.06	4.98	4.89	4.81
4.73							

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11.16 CFS	4.65	4.57	4.48	4.40	4.31	4.22	4.13
4.05							
11.64 CFS	3.96	3.88	3.80	3.72	3.64	3.57	3.49
3.42							
12.12 CFS	3.35	3.28	3.21	3.15	3.08	3.02	2.96
2.90							
12.60 CFS	2.85	2.79	2.73	2.68	2.63	2.58	2.53
2.48							
13.08 CFS	2.43	2.39	2.34	2.30	2.26	2.22	2.18
2.14							
13.56 CFS	2.10	2.06	2.03	1.99	1.95	1.92	1.89

1.85								
14.04 CFS	1.82	1.79	1.76	1.73	1.70	1.67	1.65	
1.62								
14.52 CFS	1.59	1.57	1.54	1.52	1.50	1.47	1.45	
1.43								
15.00 CFS	1.41	1.38	1.36	1.34	1.32	1.31	1.29	
1.28								
15.48 CFS	1.27	1.26	1.26	1.25	1.24	1.24	1.23	
1.23								
15.96 CFS	1.22	1.22	1.21	1.21	1.20	1.20	1.19	
1.19								
16.44 CFS	1.18	1.18	1.17	1.17	1.16	1.16	1.15	
1.15								
16.92 CFS	1.15	1.14	1.14	1.13	1.13	1.12	1.12	
1.12								
17.40 CFS	1.11	1.11	1.10	1.10	1.09	1.09	1.09	
1.08								
17.88 CFS	1.07	1.07	1.06	1.06	1.05	1.05	1.05	
1.04								
18.36 CFS	1.04	1.03	1.03	1.03	1.02	1.02	1.02	
1.01								
18.84 CFS	1.01	1.01	1.00	1.00	1.00	.99	.99	
.99								
19.32 CFS	.98	.98	.98	.97	.97	.96	.96	
.96								
19.80 CFS	.95	.95	.95	.94	.94	.94	.94	
.93								
20.28 CFS	.93	.93	.92	.92	.92	.91	.91	
.91								
20.76 CFS	.90	.90	.90	.90	.89	.89	.89	
.88								
21.24 CFS	.88	.88	.88	.87	.87	.87	.86	
.86								
21.72 CFS	.86	.86	.85	.85	.85	.84	.84	
.84								
22.20 CFS	.84	.83	.83	.83	.82	.82	.82	
.82								
22.68 CFS	.81	.81	.81	.81	.80	.80	.80	
.80								
23.16 CFS	.79	.79	.79	.79	.78	.78	.78	
.78								
23.64 CFS	.77	.77	.77	.77	.76	.76	.76	
.76								
24.12 CFS	.75	.75	.75					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.58 WATERSHED INCHES; 2751 CFS-HRS; 227.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.41	2598.9	288.35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.58 WATERSHED INCHES; 2751 CFS-HRS; 227.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)  
 2.17 6.0 (RUNOFF)  
 2.53 6.5 (RUNOFF)  
 1  
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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .81 WATERSHED INCHES; 5 CFS-HRS; .4 ACRE-  
 FEET.

\*\*\* WARNING - XSECTION 53, INSUFFICIENT LOW FLOW RATING, PEAK FLOW LESS THAN  
 2ND TABLE VALUE. THIS REACH ROUTING MAY BE INCORRECT,  
 UNLESS NEW RATING TABLE VALUES ARE INSERTED.  
 \*\*\*

OPERATION REACH XSECTION 53

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.25	5.8	288.32
2.60	6.3	288.35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .81 WATERSHED INCHES; 5 CFS-HRS; .4 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 54

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.60	2.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .32 WATERSHED INCHES; 1 CFS-HRS; .1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 55

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.13	115.1	(RUNOFF)
2.56	64.0	(RUNOFF)
3.22	4.9	(RUNOFF)
3.46	4.1	(RUNOFF)
3.72	3.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.08 WATERSHED INCHES; 85 CFS-HRS; 7.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 56

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.41	2657.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.56 WATERSHED INCHES; 2836 CFS-HRS; 234.4 ACRE-FEET.

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OPERATION ADDHYD XSECTION 57

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.26	6.7	(NULL)
2.60	8.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 .59 WATERSHED INCHES; 6 CFS-HRS; .5 ACRE-FEET.

OPERATION ADDHYD XSECTION 58

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.41	2663.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.50 WATERSHED INCHES; 2842 CFS-HRS; 234.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.15	78.0	(RUNOFF)
2.56	47.2	(RUNOFF)
3.46	3.1	(RUNOFF)
3.72	2.8	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1								
HRS	MAIN TIME INCREMENT = .060 hr,				DRAINAGE AREA = .03			
SQ.MI.								
1.26 CFS	.20	.92	2.04	3.05	4.02	4.62	4.92	
5.91								
1.74 CFS	8.85	14.09	21.34	31.71	46.58	62.92	74.64	
77.92								
2.22 CFS	72.30	61.61	50.74	43.88	42.90	45.64	46.97	
42.51								
2.70 CFS	35.10	27.72	22.21	19.15	16.64	13.30	9.01	
5.53								
3.18 CFS	3.89	3.77	3.31	2.84	2.99	3.06	2.38	
1.79								

3.66 CFS      2.26      2.79      2.39      1.52      .83      .48  
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.33 WATERSHED INCHES;      57 CFS-HRS;      4.7 ACRE-  
 FEET.

OPERATION ADDHYD      XSECTION      60

PEAK TIME(HRS)      PEAK DISCHARGE(CFS)      PEAK  
 ELEVATION(FEET)  
 2.41      2706.7      (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.47 WATERSHED INCHES;      2899 CFS-HRS;      239.6 ACRE-  
 FEET.

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OPERATION RUNOFF      XSECTION      61

PEAK TIME(HRS)      PEAK DISCHARGE(CFS)      PEAK  
 ELEVATION(FEET)  
 2.18      47.5      (RUNOFF)  
 2.57      30.0      (RUNOFF)  
 3.73      1.7      (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.26 WATERSHED INCHES;      36 CFS-HRS;      3.0 ACRE-  
 FEET.

OPERATION ADDHYD      XSECTION      62

PEAK TIME(HRS)      PEAK DISCHARGE(CFS)      PEAK  
 ELEVATION(FEET)  
 2.40      2736.7      (NULL)

		HYDROGRAPH POINTS FOR      ALTERNATE = 1,      STORM = 1						
		MAIN TIME INCREMENT = .060 hr,					DRAINAGE AREA = 1.02	
HRS	SQ.MI.							
.72 CFS	9.29	.40	.61	.84	1.66	3.55	6.03	7.98
1.20 CFS	282	12	22	43	79	126	183	238
1.68 CFS	1377	317	349	391	462	585	777	1045
2.16 CFS	2431	1770	2155	2474	2675	2736	2689	2575
2.64 CFS	1204	2283	2151	2024	1884	1725	1549	1374
3.12 CFS	364	1043	893	757	635	536	462	407
3.60 CFS	142	329	301	276	252	225	198	170

4.08 CFS	115	92	73	58	47	38	31
26							
4.56 CFS	22.41	19.95	18.27	17.13	16.35	15.78	15.35
15.01							
5.04 CFS	14.72	14.48	14.26	14.06	13.88	13.74	13.62
13.51							
5.52 CFS	13.40	13.29	13.18	13.08	12.97	12.86	12.76
12.65							
6.00 CFS	12.55	12.45	12.35	12.24	12.15	12.05	11.95
11.86							
6.48 CFS	11.77	11.67	11.58	11.49	11.40	11.31	11.23
11.14							
6.96 CFS	11.06	10.97	10.89	10.81	10.73	10.65	10.57
10.49							
7.44 CFS	10.41	10.34	10.26	10.18	10.09	10.00	9.90
9.80							
7.92 CFS	9.69	9.59	9.49	9.39	9.28	9.18	9.08
8.98							
8.40 CFS	8.89	8.79	8.70	8.60	8.51	8.42	8.33
8.24							
8.88 CFS	8.15	8.06	7.98	7.89	7.81	7.72	7.64
7.56							
9.36 CFS	7.48	7.40	7.32	7.25	7.17	7.10	7.02
6.95							
9.84 CFS	6.87	6.78	6.69	6.59	6.49	6.38	6.28
6.17							
10.32 CFS	6.07	5.96	5.86	5.76	5.66	5.56	5.47
5.37							
10.80 CFS	5.28	5.19	5.10	5.01	4.93	4.84	4.76
4.68							
11.28 CFS	4.60	4.52	4.43	4.34	4.26	4.17	4.08
4.00							
11.76 CFS	3.91	3.83	3.75	3.67	3.60	3.52	3.45
3.38							
12.24 CFS	3.31	3.24	3.17	3.11	3.05	2.99	2.93
2.87							
12.72 CFS	2.81	2.76	2.70	2.65	2.60	2.55	2.50
2.45							
13.20 CFS	2.41	2.36	2.32	2.28	2.23	2.19	2.15
2.12							
13.68 CFS	2.08	2.04	2.00	1.97	1.93	1.90	1.87
1.84							
14.16 CFS	1.80	1.77	1.74	1.71	1.68	1.66	1.63
1.60							
14.64 CFS	1.58	1.55	1.53	1.50	1.48	1.46	1.44
1.41							
15.12 CFS	1.39	1.37	1.35	1.33	1.31	1.30	1.29
1.27							

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15.60 CFS	1.27	1.26	1.25	1.25	1.24	1.24	1.23
1.23							
16.08 CFS	1.22	1.22	1.21	1.21	1.20	1.20	1.19
1.18							
16.56 CFS	1.18	1.17	1.17	1.16	1.16	1.16	1.15
1.15							



17.04 CFS	1.14	1.14	1.13	1.13	1.13	1.12	1.12
1.11							
17.52 CFS	1.11	1.10	1.10	1.10	1.09	1.09	1.08
1.07							
18.00 CFS	1.07	1.06	1.06	1.05	1.05	1.05	1.04
1.04							
18.48 CFS	1.04	1.03	1.03	1.02	1.02	1.02	1.01
1.01							
18.96 CFS	1.01	1.00	1.00	1.00	.99	.99	.99
.98							
19.44 CFS	.98	.98	.97	.97	.97	.96	.96
.96							
19.92 CFS	.95	.95	.95	.94	.94	.94	.93
.93							
20.40 CFS	.93	.92	.92	.92	.92	.91	.91
.91							
20.88 CFS	.90	.90	.90	.89	.89	.89	.88
.88							
21.36 CFS	.88	.88	.87	.87	.87	.86	.86
.86							
21.84 CFS	.86	.85	.85	.85	.84	.84	.84
.84							
22.32 CFS	.83	.83	.83	.82	.82	.82	.82
.81							
22.80 CFS	.81	.81	.81	.80	.80	.80	.80
.79							
23.28 CFS	.79	.79	.79	.78	.78	.78	.78
.77							
23.76 CFS	.77	.77	.77	.76	.76	.76	.76
.75							
24.24 CFS	.75						

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.45 WATERSHED INCHES; 2935 CFS-HRS; 242.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.51	2675.9	252.01

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.45 WATERSHED INCHES; 2935 CFS-HRS; 242.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.29	34.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.81 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 61

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.51	28.4	335.96

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.82 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
 FEET.

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OPERATION REACH XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.60	28.1	301.10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.81 WATERSHED INCHES; 34 CFS-HRS; 2.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.14	136.0	(RUNOFF)
2.56	81.5	(RUNOFF)
3.23	6.2	(RUNOFF)
3.45	5.4	(RUNOFF)
3.71	5.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.31 WATERSHED INCHES; 98 CFS-HRS; 8.1 ACRE-  
 FEET.

\*\*\* WARNING - STRUCTURE 62, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .043 HOURS.  
 \*\*\*

\*\*\* WARNING - STRUCTURE 62, RESERVOIR ROUTING HAS NEGATIVE DISCHARGES  
 FIRST NEGATIVE VALUE IS 0 CFS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.62	73.0	297.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.30 WATERSHED INCHES; 98 CFS-HRS; 8.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)  
 2.62 101.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.60 WATERSHED INCHES; 132 CFS-HRS; 10.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 68

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.55	25.4	(RUNOFF)
2.12	275.5	(RUNOFF)
2.55	152.5	(RUNOFF)
3.23	11.4	(RUNOFF)
3.45	10.0	(RUNOFF)
3.71	9.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.92 WATERSHED INCHES; 197 CFS-HRS; 16.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.15	320.7	(NULL)
2.56	252.7	(NULL)
3.39	37.9	(NULL)
3.70	32.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.78 WATERSHED INCHES; 329 CFS-HRS; 27.2 ACRE-FEET.

OPERATION REACH XSECTION 70

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.34	257.4	249.22
2.63	246.1	249.19

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.78 WATERSHED INCHES; 329 CFS-HRS; 27.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 71

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		

1.34	6.4	(RUNOFF)
1.49	6.0	(RUNOFF)
2.04	52.1	(RUNOFF)
2.51	27.6	(RUNOFF)
2.82	8.0	(RUNOFF)
3.20	2.3	(RUNOFF)
3.41	2.2	(RUNOFF)
3.66	2.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.32 WATERSHED INCHES; 33 CFS-HRS; 2.7 ACRE-  
 FEET.

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OPERATION RESVOR STRUCTURE 63

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.13	43.9	267.77
2.55	24.4	267.29

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.31 WATERSHED INCHES; 33 CFS-HRS; 2.7 ACRE-  
 FEET.

OPERATION REACH XSECTION 72

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.22	41.8	248.22
2.62	24.0	248.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.34 WATERSHED INCHES; 33 CFS-HRS; 2.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 73

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.12	288.2	(RUNOFF)
2.55	178.8	(RUNOFF)
3.24	13.6	(RUNOFF)
3.44	12.8	(RUNOFF)
3.70	12.1	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .11  
 SQ.MI.  
 1.32 CFS .40 1.45 3.48 6.84 8.78 9.97 15.19  
 28.32  
 1.80 CFS 48 77 121 186 252 286 279

245							
2.28 CFS	195	157	145	155	177	175	144
111							
2.76 CFS	85.63	69.58	63.96	55.77	39.27	22.01	11.30
10.92							
3.24 CFS	13.58	10.34	8.31	12.58	11.55	6.45	5.36
11.15							
3.72 CFS	11.70	7.04	3.33	1.63	.79	.37	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.78 WATERSHED INCHES; 197 CFS-HRS; 16.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 74

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.52	2850.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.28 WATERSHED INCHES; 3133 CFS-HRS; 258.9 ACRE-FEET.

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 2.04TEST  
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OPERATION ADDHYD XSECTION 75

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.30	290.8	(NULL)
2.62	270.0	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .15

HRS							
SQ.MI.							
1.20 CFS	.30	1.19	3.33	7.17	12.45	17.70	22.51
26.38							
1.68 CFS	29	33	40	52	69	93	134
183							
2.16 CFS	240	276	290	287	277	268	264
267							
2.64 CFS	270	263	248	231	214	198	181
163							
3.12 CFS	142	122	107	94	82	71	63
57							
3.60 CFS	50.72	45.79	42.97	41.11	38.91	36.30	33.81
31.61							
4.08 CFS	29.71	28.11	26.66	25.33	24.10	22.94	21.83
20.65							
4.56 CFS	19.24	17.30	14.30	11.61	9.57	7.97	6.68
5.58							
5.04 CFS	4.61	3.80	3.14	2.61	2.03	1.51	1.10
.80							
5.52 CFS	.58	.42					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.83 WATERSHED INCHES; 362 CFS-HRS; 29.9 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 76

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.52	3114.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.23 WATERSHED INCHES; 3495 CFS-HRS; 288.8 ACRE-  
 FEET.

\*\*\* WARNING - ROUTING COEFFICIENT (C) EQUALS 1.0,  
 CONSIDER SMALLER MAIN TIME INCREMENT FOR XSECTION 77.  
 \*\*\*

OPERATION REACH XSECTION 77

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.52	3114.8	232.33

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.23 WATERSHED INCHES; 3495 CFS-HRS; 288.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 78

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.57	10.2	(RUNOFF)
2.11	162.5	(RUNOFF)
2.54	93.5	(RUNOFF)
3.24	7.0	(RUNOFF)
3.44	6.6	(RUNOFF)
3.69	6.2	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1  
 HRS MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .05  
 SQ.MI.

1.20 CFS	.04	.75	3.42	6.21	7.70	9.68	10.17
9.92							
1.68 CFS	13	23	36	53	79	115	149
162							
2.16 CFS	154	131	102	81	76	81	93
90							
2.64 CFS	72.62	55.76	42.64	34.70	32.34	27.93	19.15
10.30							

3.12 CFS      4.99      5.49      6.98      5.04      4.15      6.54      5.77  
 2.99  
 3.60 CFS      2.80      5.79      5.95      3.36      1.57      .75      .34

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.37 WATERSHED INCHES;      111 CFS-HRS;      9.2 ACRE-  
 FEET.

OPERATION ADDHYD      XSECTION      79

PEAK TIME(HRS)      PEAK DISCHARGE(CFS)      PEAK  
 ELEVATION(FEET)  
 2.52      3207.3      (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.20 WATERSHED INCHES;      3605 CFS-HRS;      297.9 ACRE-  
 FEET.

OPERATION REACH      XSECTION      80

PEAK TIME(HRS)      PEAK DISCHARGE(CFS)      PEAK  
 ELEVATION(FEET)  
 2.60      3178.4      220.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.20 WATERSHED INCHES;      3605 CFS-HRS;      297.9 ACRE-  
 FEET.

OPERATION RUNOFF      XSECTION      81

PEAK TIME(HRS)      PEAK DISCHARGE(CFS)      PEAK  
 ELEVATION(FEET)  
 2.10      91.5      (RUNOFF)  
 2.54      54.8      (RUNOFF)  
 3.23      4.1      (RUNOFF)  
 3.43      4.0      (RUNOFF)  
 3.69      3.8      (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.04 WATERSHED INCHES;      61 CFS-HRS;      5.1 ACRE-  
 FEET.

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OPERATION ADDHYD      XSECTION      82

PEAK TIME(HRS)      PEAK DISCHARGE(CFS)      PEAK  
 ELEVATION(FEET)  
 2.59      3228.3      (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.17 WATERSHED INCHES;      3667 CFS-HRS;      303.0 ACRE-

FEET.

OPERATION RUNOFF XSECTION 83

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
1.51	15.2	(RUNOFF)
2.08	184.7	(RUNOFF)
2.52	103.3	(RUNOFF)
3.23	7.8	(RUNOFF)
3.42	8.0	(RUNOFF)
3.67	7.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.69 WATERSHED INCHES; 122 CFS-HRS; 10.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 84

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.19	306.7	(RUNOFF)
2.57	200.0	(RUNOFF)
3.73	11.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.16 WATERSHED INCHES; 242 CFS-HRS; 20.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 85

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.15	465.8	(NULL)
2.53	299.8	(NULL)
3.42	22.2	(NULL)
3.68	18.0	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .17  
 HRS SQ.MI.

1.14 CFS	.09	.91	4.00	10.94	16.15	19.49	25.68
27.48							
1.62 CFS	29	39	62	94	139	207	302
396							
2.10 CFS	455	465	435	375	320	288	284
299							
2.58 CFS	293	259	222	180	149	130	110
85							
3.06 CFS	59.64	40.12	32.34	28.60	21.50	19.68	22.15
18.80							

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Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
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3.54 CFS	13.88	13.12	17.56	17.05	13.01	9.43	5.96
3.62							
4.02 CFS	2.26	1.41	.87	.54	.35		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.32 WATERSHED INCHES; 364 CFS-HRS; 30.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 86

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.58	3517.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.08 WATERSHED INCHES; 4030 CFS-HRS; 333.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 87

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.83	1.0	(RUNOFF)
1.34	13.9	(RUNOFF)
1.49	11.8	(RUNOFF)
2.05	77.2	(RUNOFF)
2.52	38.0	(RUNOFF)
3.22	2.8	(RUNOFF)
3.42	3.0	(RUNOFF)
3.67	3.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.06 WATERSHED INCHES; 52 CFS-HRS; 4.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 88

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.85	1.2	(NULL)
2.58	3549.0	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55  
 SQ.MI.

HRS	.72 CFS	.32	.87	1.24	1.04	.86	1.64	3.82
	8.39							
	1.20 CFS	14	21	37	51	73	113	158
	213							
	1.68 CFS	286	381	491	628	815	1079	1397
	1725							
	2.16 CFS	2024	2291	2531	2773	3029	3279	3478
	3549							
	2.64 CFS	3476	3305	3081	2863	2670	2480	2271
	2039							
	3.12 CFS	1805	1591	1397	1213	1047	901	770
	656							
	3.60 CFS	567	507	459	413	371	332	297
	264							
	4.08 CFS	233	202	173	146	122	101	85
	72							

4.56 CFS	61.14	52.59	45.47	38.93	33.49	29.34	26.24
23.88							
5.04 CFS	22.02	20.49	19.24	18.20	17.35	16.55	15.80
15.19							
5.52 CFS	14.70	14.31	14.01	13.76	13.55	13.37	13.21
13.07							

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6.00 CFS	12.93	12.81	12.69	12.57	12.46	12.35	12.25
12.15							
6.48 CFS	12.05	11.96	11.86	11.77	11.68	11.58	11.49
11.40							
6.96 CFS	11.32	11.23	11.14	11.06	10.98	10.89	10.81
10.73							
7.44 CFS	10.65	10.57	10.49	10.41	10.34	10.26	10.17
10.09							
7.92 CFS	9.99	9.90	9.80	9.69	9.59	9.49	9.39
9.29							
8.40 CFS	9.19	9.09	8.99	8.89	8.79	8.70	8.60
8.51							
8.88 CFS	8.42	8.33	8.24	8.15	8.06	7.98	7.89
7.81							
9.36 CFS	7.73	7.64	7.56	7.48	7.40	7.32	7.25
7.17							
9.84 CFS	7.10	7.02	6.95	6.86	6.78	6.69	6.59
6.49							
10.32 CFS	6.38	6.28	6.17	6.07	5.96	5.86	5.76
5.66							
10.80 CFS	5.56	5.47	5.37	5.28	5.19	5.10	5.02
4.93							
11.28 CFS	4.85	4.76	4.68	4.60	4.52	4.43	4.34
4.26							
11.76 CFS	4.17	4.09	4.00	3.92	3.83	3.75	3.67
3.60							
12.24 CFS	3.52	3.45	3.38	3.31	3.24	3.18	3.11
3.05							
12.72 CFS	2.99	2.93	2.87	2.82	2.76	2.70	2.65
2.60							
13.20 CFS	2.55	2.50	2.45	2.41	2.36	2.32	2.28
2.23							
13.68 CFS	2.19	2.15	2.12	2.08	2.04	2.00	1.97
1.93							
14.16 CFS	1.90	1.87	1.84	1.80	1.77	1.74	1.71
1.69							
14.64 CFS	1.66	1.63	1.61	1.58	1.55	1.53	1.50
1.48							
15.12 CFS	1.46	1.43	1.41	1.39	1.37	1.35	1.33
1.32							
15.60 CFS	1.30	1.29	1.27	1.27	1.26	1.25	1.25
1.24							
16.08 CFS	1.23	1.23	1.22	1.22	1.21	1.21	1.20
1.20							
16.56 CFS	1.19	1.19	1.18	1.18	1.17	1.17	1.16
1.16							
17.04 CFS	1.15	1.15	1.15	1.14	1.14	1.13	1.13
1.12							

17.52 CFS	1.12	1.12	1.11	1.11	1.10	1.10	1.09
1.09							
18.00 CFS	1.09	1.08	1.07	1.07	1.06	1.06	1.05
1.05							
18.48 CFS	1.04	1.04	1.04	1.03	1.03	1.03	1.02
1.02							
18.96 CFS	1.02	1.01	1.01	1.00	1.00	1.00	1.00
.99							
19.44 CFS	.99	.99	.98	.98	.98	.97	.97
.96							
19.92 CFS	.96	.96	.95	.95	.95	.94	.94
.94							
20.40 CFS	.94	.93	.93	.93	.92	.92	.92
.91							
20.88 CFS	.91	.91	.90	.90	.90	.89	.89
.89							
21.36 CFS	.89	.88	.88	.88	.87	.87	.87
.87							
21.84 CFS	.86	.86	.86	.85	.85	.85	.85
.84							
22.32 CFS	.84	.84	.83	.83	.83	.83	.82
.82							
22.80 CFS	.82	.81	.81	.81	.81	.81	.80
.80							
23.28 CFS	.80	.80	.79	.79	.79	.79	.78
.78							
23.76 CFS	.78	.78	.77	.77	.77	.77	.76
.76							
24.24 CFS	.76						

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.09 WATERSHED INCHES; 4082 CFS-HRS; 337.4 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1  
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SUMMARY TABLE 1  
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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
				TIME (HR)	RATE (CFS)	RATE (CSM)	ELEVATION (FT)
RAINFALL OF 6.60 inches AND		3.60 hr DURATION, BEGINS AT		.0 hrs.			
RAINTABLE NUMBER 5,		ARC 2					
MAIN TIME INCREMENT		.060 HOURS					
ALTERNATE 1		STORM 1					
STRUCTURE 11	RESVOR	.09	4.33	385.05	2.26	292	3244.4
XSECTION 8	REACH	.17	4.19	358.88	2.28	520	3058.8
STRUCTURE 21	RESVOR	.07	5.29	379.21	2.68	157	2242.9
STRUCTURE 22	RESVOR	.07	5.29	361.40	3.10	135	1928.6
STRUCTURE 23	RESVOR	.32	4.35	---	2.26	780	2437.5
XSECTION 16	REACH	.32	4.35	336.02	2.26	780	2437.5
XSECTION 20	ADDHYD	.05	5.46	---	2.09	240	4800.0
XSECTION 23	REACH	.41	4.53	317.40	2.30	1042	2541.5
STRUCTURE 31	RESVOR	.05	4.56	365.65	2.23	176	3520.0
STRUCTURE 32	RESVOR	.01	5.84	380.89	2.19	34	3400.0
STRUCTURE 33	RESVOR	.03	5.83	358.14	2.20	120	4000.0
STRUCTURE 34	RESVOR	.04	5.83	---	2.20	155	3875.0
XSECTION 44	REACH	.77	4.62	292.64	2.34	2209	2868.8
XSECTION 51	REACH	.93	4.58	288.35	2.41	2599	2794.6
XSECTION 62	ADDHYD	1.02	4.45	---	2.40	2737	2683.3
XSECTION 63	REACH	1.02	4.45	252.01	2.51	2676	2623.5
STRUCTURE 61	RESVOR	.01	4.82	335.96	2.51	28	2800.0
STRUCTURE 62	RESVOR	.05	3.30	297.20	2.62	73	1460.0
STRUCTURE 63	RESVOR	.01	4.31	267.77	2.13	44	4400.0
XSECTION 76	ADDHYD	1.28	4.23	---	2.52	3115	2433.6
XSECTION 77	REACH	1.28	4.23	232.33	2.52	3115	2433.6
XSECTION 88	ADDHYD	1.55	4.09	---	2.58	3549	2289.7

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SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION				ROUTING PARAMETERS			
XSEC REACH ID LENGTH COEFF	FLOOD PLAIN LENGTH	INFLOW		OUTFLOW		Q-A EQ. COEFF POWER	PEAK RATIO Q/I
		PEAK	TIME	PEAK	TIME		

	(FT)	(FT)	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	(C)
BASEFLOW IS			.0	CFS							
ALTERNATE	1	STORM	1								
2	1170		109	2.2	109	2.3	.26	2.00	.005	.999	
.99?											
5	797		291	2.3	291	2.3	1.79	1.29	.019	1.000	
.99?											
8	1221		520	2.3	520	2.3	1.31	1.43	.013	1.000	
1.00?											
16	920		779	2.3	779	2.3	4.57	1.40	.002	1.000	
1.00?											
23	1379		1096	2.2	1040	2.3	.72	1.27	.057	.948	
.50											
27	1021		434	2.2	424	2.3	.33	1.50	.029	.977	
.72?											
32	1603		286	2.2	267	2.2	1.71	1.22	.083	.934	
.52											
34	583		34	2.2	34	2.2	1.15	1.61	.006	1.000	
1.00?											
37	934		154	2.2	154	2.2	2.49	1.50	.005	1.000	
1.00?											
44	1428		2251	2.2	2209	2.3	.25	1.46	.028	.981	
.66											
51	1275		2632	2.3	2597	2.4	.44	1.37	.027	.987	
.70?											
53	652		6	2.5	6	2.6	2.05	1.40	.035	.955	
.79?											
63	1959		2736	2.4	2674	2.5	.35	1.44	.032	.977	
.61											
65	1283		28	2.5	28	2.6	2.51	1.37	.022	.991	
.72?											
70	2166		320	2.2	257	2.3	1.22	1.17	.169	.804	
.27											
72	1081		43	2.2	42	2.2	1.69	1.41	.034	.968	
.76?											
77	884		3114	2.5	3114	2.5	1.31	1.30	.010	1.000	
1.00?											
80	1296		3207	2.5	3173	2.6	6.03	1.01	.046	.989	
.72?											

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SUMMARY TABLE 3  
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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/  
 STRUCTURE DRAINAGE  
 AREA STORM NUMBERS.....

ID	(SQ MI)	
STRUCTURE 63	.01	1
-----		
ALTERNATE 1		44
STRUCTURE 62	.05	
-----		
ALTERNATE 1		73
STRUCTURE 61	.01	
-----		
ALTERNATE 1		28
STRUCTURE 34	.04	
-----		
ALTERNATE 1		155
STRUCTURE 33	.03	
-----		
ALTERNATE 1		120
STRUCTURE 32	.01	
-----		
ALTERNATE 1		34
STRUCTURE 31	.05	
-----		
ALTERNATE 1		176
STRUCTURE 23	.32	
-----		
ALTERNATE 1		780
STRUCTURE 22	.07	
-----		
ALTERNATE 1		135
STRUCTURE 21	.07	
-----		
ALTERNATE 1		157
STRUCTURE 11	.09	
-----		
ALTERNATE 1		292
XSECTION 8	.17	
-----		
ALTERNATE 1		520
XSECTION 16	.32	
-----		
ALTERNATE 1		780
XSECTION 20	.05	
-----		

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 20	.05	
-----		
ALTERNATE 1		240
XSECTION 23	.41	
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ALTERNATE 1		1042
XSECTION 44	.77	
-----		
ALTERNATE 1		2209
XSECTION 51	.93	
-----		
ALTERNATE 1		2599
XSECTION 62	1.02	
-----		
ALTERNATE 1		2737
XSECTION 63	1.02	
-----		
ALTERNATE 1		2676
XSECTION 76	1.28	
-----		
ALTERNATE 1		3115
XSECTION 77	1.28	
-----		
ALTERNATE 1		3115
XSECTION 88	1.55	
-----		
ALTERNATE 1		3549

1

TR20 ----- SCS

Ellicott City Flood Study- All Combined SAs- MGMT STRUCTURES,  
VERSION  
05/05/\*\* CN MGMT- EXISTING COND.- OBS.-7-30-16 ELYM2 total rainfall  
2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST  
FILES

INPUT = JULOBS.DAT , GIVEN DATA FILE  
OUTPUT = JULOBS.OUT , DATED  
05/05/\*\*,11:17:40

FILES GENERATED - DATED 05/05/\*\*,11:17:40

NONE!

TOTAL NUMBER OF WARNINGS = 10, MESSAGES = 1

\*\*\* TR-20 RUN COMPLETED \*\*\*



1

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20  
HYDROLOGY\*\*\*\*\*

JOB TR-20		NOPLOTS				
TITLE Ellicott City Flood Study-Tiber/South Sub-Drainage Areas						
TITLE 27 Subareas Includes Management and CN reductions-01= 7/30 storm						
5	RAINFL 5	0.05				
8		0.0000	0.0061	0.0061	0.0061	0.0061
8		0.0061	0.0121	0.0242	0.0364	0.0424
8		0.0424	0.0424	0.0424	0.0485	0.0606
8		0.0667	0.0727	0.0727	0.0727	0.0727
8		0.0788	0.0848	0.1030	0.1212	0.1333
8		0.1576	0.1818	0.1879	0.2000	0.2182
8		0.2242	0.2303	0.2424	0.2606	0.2909
8		0.3212	0.3576	0.4061	0.4667	0.5394
8		0.6061	0.6606	0.7030	0.7394	0.7576
8		0.7758	0.7939	0.8182	0.8424	0.8788
8		0.9091	0.9212	0.9333	0.9455	0.9515
8		0.9576	0.9697	0.9758	0.9818	0.9818
8		0.9818	0.9818	0.9818	0.9879	0.9879
8		0.9879	0.9879	0.9939	0.9939	0.9939
8		0.9939	0.9939	1.0000	1.0000	1.0000
9	ENDTBL					
3	STRUCT	58				
8			424.00	0.00	0.00	
8			429.09	2.00	0.72	
8			429.59	4.00	0.85	
8			430.00	6.00	0.96	
8			430.21	8.00	1.02	
8			430.36	10.00	1.06	
8			430.49	12.00	1.10	
8			430.64	14.00	1.15	
8			430.74	15.00	1.18	
8			431.22	17.09	1.33	
8			431.68	33.53	1.49	
8			432.18	80.87	1.67	
8			432.37	108.22	1.74	
9	ENDTBL					
2	XSECTN	007	1.0	319.00		
8			318.00	0.00	0.00	
8			318.25	10.19	3.39	
8			318.50	32.80	7.08	
8			318.75	65.48	11.07	
8			319.00	107.54	15.35	
8			320.00	367.34	35.47	
8			321.00	663.16	60.18	
8			322.00	1052.26	89.31	
8			323.00	1529.69	131.30	
9	ENDTBL					
3	STRUCT	52				
8			451.90	0.00	0.00	
8			454.05	0.34	0.73	
8			454.30	0.36	0.85	

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			455.60	18.83	1.65
8			456.10	41.43	2.00
8			456.50	72.96	2.28
9	ENDTBL				
2	XSECTN	011	1.0	415.00	
8			414.00	0.00	0.00
8			414.25	7.22	1.98
8			414.50	23.69	4.29
8			414.75	48.28	6.93
8			415.00	81.00	9.89
8			416.00	299.51	25.08
8			417.00	488.53	45.33
8			418.00	779.05	70.44
8			419.00	809.36	107.84
9	ENDTBL				
3	STRUCT	51			
8			396.00	0.00	0.00
8			396.50	4.38	0.27
8			397.00	12.40	0.65
8			397.50	22.78	1.07
8			398.00	35.07	1.54
8			398.50	49.45	2.05
8			399.00	64.75	2.59
8			399.45	86.12	3.10
9	ENDTBL				
2	XSECTN	016	1.0	331.00	
8			330.00	0.00	0.00
8			330.25	5.94	1.92
8			330.50	21.34	4.68
8			330.75	47.19	8.28
8			331.00	85.01	12.73
8			332.00	385.16	38.91
8			333.00	704.29	76.97
8			334.00	1202.25	125.34
8			335.00	1592.91	187.47
9	ENDTBL				
2	XSECTN	020	1.0	235.00	
8			234.00	0.00	0.00
8			234.25	9.06	3.27
8			234.50	29.33	6.89
8			234.75	58.86	10.87
8			235.00	97.22	15.19
8			236.00	339.40	36.03
8			237.00	586.83	61.50
8			238.00	902.53	90.59
8			239.00	1290.91	123.25
8			240.00	1750.59	159.40
8			241.00	1985.66	201.02
8			242.00	2381.26	250.13
9	ENDTBL				

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

3	STRUCT	47			
8			410.00	0.00	0.00
8			413.89	5.00	0.05
8			414.04	10.00	0.15
8			414.17	15.00	0.24
8			414.28	20.00	0.27
8			415.00	30.68	0.38

8			415.27	39.01	0.42
8			415.52	52.87	0.45
8			415.79	71.61	0.49
8			416.07	95.27	0.54
9	ENDTBL				
3	STRUCT	32			
8			367.00	0.00	0.00
8			367.37	10.00	0.29
8			367.59	20.00	0.47
8			367.78	30.00	0.62
8			367.94	40.00	0.76
8			368.09	50.00	0.89
8			368.44	75.00	1.18
8			368.82	88.96	1.52
8			369.30	142.54	1.95
8			369.79	219.99	2.41
8			370.11	280.10	2.72
8			370.33	326.70	2.93
8			370.56	378.34	3.15
9	ENDTBL				
3	STRUCT	34			
8			329.00	0.00	0.00
8			332.62	30.00	0.72
8			336.99	50.00	2.59
8			337.92	70.00	3.17
8			338.11	90.00	3.29
8			338.19	100.00	3.34
8			338.26	109.00	3.39
8			338.55	150.00	3.58
8			338.61	160.00	3.63
8			338.64	165.00	3.65
8			338.70	175.00	3.69
8			338.73	179.50	3.71
8			343.01	310.00	7.34
8			343.91	680.58	8.20
9	ENDTBL				
3	STRUCT	64			
9	ENDTBL				
2	XSECTN	030	1.0	357.00	
8			356.00	0.00	0.00
8			356.25	11.94	4.48
8			356.50	38.65	9.42
8			356.75	77.59	14.83

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)

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8			357.00	128.16	20.70
8			358.00	446.97	48.84
8			359.00	544.48	91.80
8			360.00	941.05	156.94
8			361.00	1597.14	242.00
9	ENDTBL				
2	XSECTN	035	1.0	317.00	
8			316.00	0.00	0.00
8			316.25	12.78	5.64
8			316.50	44.21	13.12
8			316.75	94.71	22.44
8			317.00	166.16	33.59
8			318.00	703.03	96.58
8			319.00	1203.58	187.92

8			320.00	2039.69	306.56
8			321.00	3441.07	443.04
9	ENDTBL				
3	STRUCT	33			
8			323.00	0.00	0.00
8			323.20	5.00	0.01
8			324.01	10.00	0.06
8			325.62	15.00	0.19
8			326.73	18.00	0.29
8			327.09	20.00	0.33
8			327.38	25.00	0.36
8			327.54	28.00	0.38
8			327.63	30.00	0.39
8			328.16	38.10	0.46
8			328.84	73.25	0.54
8			329.21	106.03	0.59
9	ENDTBL				
3	STRUCT	29			
8			266.00	0.00	0.00
8			273.38	10.00	2.49
8			273.62	20.00	2.64
8			273.91	35.00	2.82
8			274.10	46.00	2.94
8			274.35	55.00	3.10
8			274.51	58.00	3.20
8			274.61	60.00	3.28
8			274.90	65.00	3.47
8			275.21	98.51	3.68
8			275.54	139.16	3.92
8			275.89	189.97	4.18
8			276.27	253.87	4.48
8			276.50	299.40	4.67
9	ENDTBL				
2	XSECTN	042	1.0	223.00	
8			222.00	0.00	0.00
8			222.25	2.73	0.83

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

8			222.50	10.35	2.16
8			222.75	23.82	3.97
8			223.00	44.24	6.28
8			224.00	215.28	20.42
8			225.00	406.10	41.61
8			226.00	702.08	67.86
8			227.00	890.97	103.46
9	ENDTBL				
2	XSECTN	045	1.0	223.00	
8			222.00	0.00	0.00
8			222.25	2.28	0.83
8			222.50	8.62	2.16
8			222.75	19.85	3.97
8			223.00	36.86	6.28
8			224.00	179.35	20.41
8			225.00	338.28	41.30
8			226.00	584.84	67.85
8			227.00	830.09	103.44
8			228.00	1249.11	151.47
8			229.00	1307.14	232.37
8			230.00	2023.03	366.57

9	ENDTBL				
3	STRUCT	40			
8			333.00	000.00	0.00
8			334.00	15.15	0.40
8			334.25	16.92	0.47
8			334.50	18.53	0.55
8			334.75	20.02	0.63
8			335.00	21.40	0.68
8			335.50	23.92	0.77
8			335.86	25.59	0.80
8			336.00	27.61	0.82
8			336.25	33.80	0.84
8			336.50	42.02	0.93
8			336.75	51.79	1.01
8			336.86	56.51	1.05
8			337.00	57.30	1.08
8			337.50	58.38	1.31
8			338.00	59.45	1.68
9	ENDTBL				
2	XSECTN	049	1.0	317.00	
8			316.00	0.00	0.00
8			316.25	3.06	1.70
8			316.50	11.11	4.19
8			316.75	24.79	7.47
8			317.00	44.94	11.55
8			318.00	206.80	35.78
8			319.00	333.28	74.89
8			320.00	609.60	131.05
9	ENDTBL				

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
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3	STRUCT	43			
8			317.30	0.00	0.00
8			318.00	0.19	0.08
8			319.00	0.24	0.27
8			320.75	0.30	0.79
8			321.00	3.22	0.85
8			321.75	23.58	1.09
8			322.00	32.83	1.17
8			322.20	40.94	1.20
8			322.40	49.63	1.27
8			322.80	68.56	1.45
8			322.90	73.60	1.49
9	ENDTBL				
2	XSECTN	052	1.0	279.00	
8			276.00	0.00	0.00
8			276.25	15.37	5.56
8			276.50	49.97	11.77
8			276.75	100.75	18.63
8			277.00	167.09	26.14
8			278.00	591.48	62.65
8			279.00	793.41	115.06
8			280.00	1313.82	188.91
8			281.00	2138.14	282.44
9	ENDTBL				
2	XSECTN	059	1.0	128.00	
8			129.00	0.00	0.00
8			129.25	1.13	0.50
8			129.50	5.18	1.55

8				129.75	13.39	3.16		
8				130.00	26.84	5.32		
8				131.00	191.72	26.64		
8				132.00	508.02	58.78		
8				133.00	945.51	95.90		
8				134.00	1449.27	136.08		
8				135.00	2016.68	178.64		
8				138.00	4199.86	314.48		
9	ENDTBL							
6	RUNOFF	1 001	1	0.2101	77.19	0.319	1	1 141
6	RUNOFF	1 002	2	0.0292	74.00	0.232	1	1 142
6	RESVOR	2 58 2	3				1	1
SWMF58								
6	ADDHYD	4 003	1 3 4				1	
1+2+58								
6	RUNOFF	1 004	1	0.0617	81.09	0.170	1	1 143
6	ADDHYD	4 005	4 1 2				1	1+2+3
6	RUNOFF	1 006	1	0.0799	74.51	0.216	1	1 144
6	REACH	3 007	2 3	2055.0			1	
6	ADDHYD	4 008	1 3 2				1	SA14
6	RUNOFF	1 009	1	0.0604	78.12	0.220	1	1 153
6	RUNOFF	1 010	3	0.0264	78.36	0.290	1	1 151
6	RESVOR	2 52 3	4				1	1
SWMF52								
6	REACH	3 011	4 5	1396.5			1	

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)  
\*\*\*\*\*

6	ADDHYD	4 012	1 5 6				1	1
153+151								
6	RUNOFF	1 013	1	0.0447	83.97	0.210	1	1 152
6	RESVOR	2 51 1	3				1	1
SWMF51								
6	ADDHYD	4 014	6 3 1				1	
012+51								
6	RUNOFF	1 015	3	0.0815	76.80	0.176	1	1 154
6	REACH	3 016	1 4	2448.6			1	
6	ADDHYD	4 017	3 4 5				1	1 SA15
6	ADDHYD	4 018	2 5 1				1	1
SA14+15								
6	RUNOFF	1 019	2	0.2701	73.58	0.425	1	1 131
6	REACH	3 020	1 3	4470.1			1	1 SA13
6	ADDHYD	4 021	2 3 4				1	1
14+15+13								
6	RUNOFF	1 022	1	0.0185	83.00	0.283	1	1 121
6	RESVOR	2 47 1	2				1	1
SWMF47								
6	RUNOFF	1 023	3	0.0812	83.00	0.245	1	1 122
6	RESVOR	2 32 3	5				1	1
SWMF32								
6	ADDHYD	4 024	2 5 1				1	
121+122								
6	RUNOFF	1 025	2	0.0465	82.74	0.236	1	1 123
6	ADDHYD	4 026	1 2 5				1	
024+123								
6	RESVOR	2 34 5	3				1	1
SWMF34								
6	RUNOFF	1 027	2	0.0126	76.91	0.100	1	1 124
6	ADDHYD	4 028	3 2 5				1	1 SA12
6	RUNOFF	1 029	2	0.0499	87.76	0.100	1	1 111

6 RESVOR	2	64	2	3				1	1
SWMF64									
6 REACH	3	030	3	6	1561.1			1	
6 RUNOFF	1	031		7	0.1745	85.00	0.449	1	1 112
6 ADDHYD	4	032	6	7	3			1	
111+112									
6 RUNOFF	1	033		1	0.0477	83.06	0.258	1	1 113
6 ADDHYD	4	034	3	1	2			1	
032+113									
6 REACH	3	035	2	3	2077.3			1	
6 RUNOFF	1	036		6	0.0244	83.54	0.370	1	1 114
6 RESVOR	2	33	6	7				1	1
SWMF33									
6 ADDHYD	4	037	3	7	1			1	
111-114									
6 RUNOFF	1	038		2	0.0684	79.13	0.136	1	1 115
6 ADDHYD	4	039	1	2	3			1	1 SA11
6 ADDHYD	4	040	5	3	6			1	12+11
6 RUNOFF	1	041		1	0.0236	82.59	0.200	1	1 101
6 RESVOR	2	29	1	3				1	1
SWMF29									
6 REACH	3	042	3	5	2112.0			1	
6 RUNOFF	1	043		1	0.1211	62.77	0.263	1	1 102
6 ADDHYD	4	044	5	1	2			1	1 SA10
6 REACH	3	045	6	3	3147.6			1	
6 ADDHYD	4	046	2	3	1			1	1
10+12+11									
6 RUNOFF	1	047		2	0.2822	80.17	0.434	1	1 81
6 RUNOFF	1	048		3	0.0248	85.45	0.190	1	1 82
6 RESVOR	2	40	3	5				1	1
SWMF40									
6 REACH	3	049	5	6	1829.0			1	
6 ADDHYD	4	050	2	6	7			1	81+82
6 RUNOFF	1	051		2	0.0218	81.19	0.220	1	1 83
6 RESVOR	2	43	2	3				1	1
SWMF43									
6 ADDHYD	4	052	7	3	2			1	1
81+82+83									

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\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)

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6 REACH	3	052	2	3	4744.2			1	
6 RUNOFF	1	053		5	0.2083	62.56	0.262	1	1 84
6 ADDHYD	4	054	3	5	2			1	1 SA8
6 ADDHYD	4	055	4	1	3			1	1 13+10
6 RUNOFF	1	056		6	0.0166	65.36	0.134	1	1 92
6 ADDHYD	4	057	3	6	7			1	1
13+10+92									
6 RUNOFF	1	058		1	0.0357	81.76	0.141	1	1 93
6 REACH	3	059	2	3	1670.5			1	
6 ADDHYD	4	060	1	3	4			1	
SA8+93									
6 ADDHYD	4	061	7	4	1			1	92+93
6 RUNOFF	1	062		2	0.0233	86.98	0.186	1	1 91
6 ADDHYD	4	063	1	2	3			1	1
OUTFALL									
ENDATA									
7 INCREM	6				.06				
7 COMPUT	7	001	063	0.0		6.60		1.05	2 1 01
ENDCMP 1									

ENDJOB 2

\*\*\*\*\*END OF 80-80

LIST\*\*\*\*\*

1

TR20 ----- SCS

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
VERSION

03/06/\*\* 27 Subareas Includes Management and CN reductions-01= 7/30

sto2.04TEST

17:28:22

PASS 1 JOB NO. 1

PAGE

1

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .060 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 63  
STARTING TIME = .00 RAIN DEPTH = 6.60 RAIN DURATION = 1.00  
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .060 HOURS  
ALTERNATE NO. = 1 STORM NO. = 1 RAIN TABLE NO. = 5

OPERATION RUNOFF XSECTION 1

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
2.18	688.9	(RUNOFF)
2.56	412.7	(RUNOFF)
3.73	22.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.02 WATERSHED INCHES; 546 CFS-HRS; 45.1 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 2

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
2.13	97.4	(RUNOFF)
2.55	55.5	(RUNOFF)
3.23	4.1	(RUNOFF)
3.45	3.7	(RUNOFF)
3.71	3.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.69 WATERSHED INCHES; 70 CFS-HRS; 5.7 ACRE-  
FEET.

OPERATION RESVOR STRUCTURE 58

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
2.20	90.6	432.25
2.58	53.8	431.89

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.68 WATERSHED INCHES; 69 CFS-HRS; 5.7 ACRE-  
FEET.



OPERATION ADDHYD XSECTION 3

1

TR20 ----- SCS

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Ellicott City Flood Study-Tiber/South Sub-Drainage Areas  
VERSION

03/06/\*\* 27 Subareas Includes Management and CN reductions-01= 7/30

sto2.04TEST

17:28:22

PASS 1 JOB NO. 1

PAGE

2

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.18	780.7	(NULL)
2.56	466.2	(NULL)
3.73	27.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.99 WATERSHED INCHES; 615 CFS-HRS; 50.9 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 4

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
1.38	31.9	(RUNOFF)
1.49	31.6	(RUNOFF)
2.07	259.3	(RUNOFF)
2.53	134.7	(RUNOFF)
3.23	10.0	(RUNOFF)
3.43	10.0	(RUNOFF)
3.68	9.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.44 WATERSHED INCHES; 177 CFS-HRS; 14.6 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 5

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
1.56	97.1	(NULL)
2.16	998.7	(NULL)
2.54	593.1	(NULL)
3.40	47.5	(NULL)
3.70	36.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.08 WATERSHED INCHES; 792 CFS-HRS; 65.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 6

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
1.55	22.8	(RUNOFF)
2.11	275.5	(RUNOFF)
2.55	152.8	(RUNOFF)
3.24	11.3	(RUNOFF)

3.44	10.3	(RUNOFF)
3.70	9.9	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.74 WATERSHED INCHES; 193 CFS-HRS; 16.0 ACRE-  
FEET.

OPERATION REACH XSECTION 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
1.63	96.8	318.94
2.23	989.3	321.84
2.60	591.2	320.76
3.76	35.6	318.52

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.08 WATERSHED INCHES; 792 CFS-HRS; 65.5 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.21	1219.7	(NULL)
2.57	742.0	(NULL)
3.73	44.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.01 WATERSHED INCHES; 985 CFS-HRS; 81.4 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
1.52	23.3	(RUNOFF)
2.11	226.3	(RUNOFF)
2.55	121.2	(RUNOFF)
3.24	8.8	(RUNOFF)
3.44	8.0	(RUNOFF)
3.70	7.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.12 WATERSHED INCHES; 161 CFS-HRS; 13.3 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
2.16	92.1	(RUNOFF)
2.56	52.5	(RUNOFF)
3.73	2.9	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.15 WATERSHED INCHES; 71 CFS-HRS; 5.8 ACRE-  
FEET.

\*\*\* MESSAGE - STRUCTURE 52, USER ENTERED STARTING ELEVATION OR STRUCTURE  
TABLE  
STARTS 2.40 FEET BELOW ASSUMED CREST ELEVATION AT 454.30.  
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.  
\*\*\*

OPERATION RESVOR STRUCTURE 52

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.33	67.6	456.43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.86 WATERSHED INCHES; 66 CFS-HRS; 5.4 ACRE-  
FEET.

OPERATION REACH XSECTION 11

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.39	67.4	414.90

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
3.86 WATERSHED INCHES; 66 CFS-HRS; 5.4 ACRE-  
FEET.

OPERATION ADDHYD XSECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.53	23.4	(NULL)
2.13	237.7	(NULL)
2.53	178.8	(NULL)
3.41	21.8	(NULL)
3.69	17.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.04 WATERSHED INCHES; 227 CFS-HRS; 18.7 ACRE-  
FEET.

OPERATION RUNOFF XSECTION 13

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
1.40	27.7	(RUNOFF)
2.10	190.8	(RUNOFF)
2.54	96.4	(RUNOFF)
3.24	6.9	(RUNOFF)
3.44	6.4	(RUNOFF)
3.70	6.0	(RUNOFF)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.76 WATERSHED INCHES; 137 CFS-HRS; 11.3 ACRE-FEET.

\*\*\* WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 51,  
VALUE EXTRAPOLATED.  
\*\*\*

OPERATION RESVOR STRUCTURE 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.29	117.4	400.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.76 WATERSHED INCHES; 137 CFS-HRS; 11.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.19	337.4	(NULL)
2.52	281.0	(NULL)
3.64	34.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
4.28 WATERSHED INCHES; 364 CFS-HRS; 30.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
1.40	27.8	(RUNOFF)
1.51	30.1	(RUNOFF)
2.08	310.0	(RUNOFF)
2.53	167.2	(RUNOFF)
3.23	12.4	(RUNOFF)
3.43	12.7	(RUNOFF)
3.68	11.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.98 WATERSHED INCHES; 210 CFS-HRS; 17.3 ACRE-  
 FEET.

OPERATION REACH XSECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.28	332.4	331.82
2.56	281.0	331.65

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.28 WATERSHED INCHES; 364 CFS-HRS; 30.0 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.16	576.4	(NULL)
2.52	446.8	(NULL)
3.66	47.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.17 WATERSHED INCHES; 573 CFS-HRS; 47.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.20	1781.8	(NULL)
2.55	1186.3	(NULL)
3.70	89.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.07 WATERSHED INCHES; 1558 CFS-HRS; 128.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 19

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
2.25	723.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.65 WATERSHED INCHES; 636 CFS-HRS; 52.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.37	1651.5	239.78

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.06 WATERSHED INCHES; 1558 CFS-HRS; 128.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.34	2310.6	(NULL)

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RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.93 WATERSHED INCHES; 2194 CFS-HRS; 181.3 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.15	71.3	(RUNOFF)
2.56	38.8	(RUNOFF)
3.45	2.4	(RUNOFF)
3.72	2.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 55 CFS-HRS; 4.6 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.17	70.6	415.78
2.57	38.2	415.24

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.64 WATERSHED INCHES; 55 CFS-HRS; 4.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 23

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.49	44.8	(RUNOFF)

2.12	327.2	(RUNOFF)
2.55	171.8	(RUNOFF)
3.22	13.0	(RUNOFF)
3.45	10.9	(RUNOFF)
3.72	10.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 243 CFS-HRS; 20.1 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.18	309.8	370.25
2.56	168.4	369.46

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.64 WATERSHED INCHES; 243 CFS-HRS; 20.1 ACRE-  
 FEET.

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OPERATION ADDHYD XSECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.18	380.3	(NULL)
2.56	206.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.64 WATERSHED INCHES; 299 CFS-HRS; 24.7 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.48	25.2	(RUNOFF)
2.12	188.2	(RUNOFF)
2.55	98.4	(RUNOFF)
3.23	7.2	(RUNOFF)
3.45	6.3	(RUNOFF)
3.71	5.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.62 WATERSHED INCHES; 139 CFS-HRS; 11.4 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
2.16	559.6	(NULL)
2.56	304.9	(NULL)
3.69	19.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.63 WATERSHED INCHES; 437 CFS-HRS; 36.1 ACRE-FEET.

OPERATION RESVOR STRUCTURE 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.25	504.6	343.48

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.63 WATERSHED INCHES; 436 CFS-HRS; 36.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 27

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.33	5.4	(RUNOFF)
1.49	5.2	(RUNOFF)
2.03	52.5	(RUNOFF)
2.50	29.1	(RUNOFF)
2.83	8.5	(RUNOFF)
3.19	2.9	(RUNOFF)
3.39	2.3	(RUNOFF)
3.65	2.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.00 WATERSHED INCHES; 32 CFS-HRS; 2.7 ACRE-FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 27.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT 1.4%.  
 \*\*\*

OPERATION ADDHYD XSECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.25	538.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.58 WATERSHED INCHES; 469 CFS-HRS; 38.8 ACRE-FEET.



OPERATION RUNOFF XSECTION 29

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
.80	4.6	(RUNOFF)
1.32	53.3	(RUNOFF)
1.48	39.5	(RUNOFF)
2.02	255.3	(RUNOFF)
2.50	128.1	(RUNOFF)
2.83	37.1	(RUNOFF)
3.19	12.5	(RUNOFF)
3.39	10.1	(RUNOFF)
3.65	10.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.18 WATERSHED INCHES; 167 CFS-HRS; 13.8 ACRE-  
 FEET.

\*\*\* WARNING - MAIN TIME INCREMENT ( .060) IS GREATER THAN 50% OF THE  
 TIME OF CONCENTRATION ( .10) FOR SUBWATERSHED XSECTION 29.  
 THIS WILL REDUCE THE COMPUTED PEAK BY ABOUT .9%.  
 \*\*\*

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OPERATION RESVOR STRUCTURE 64

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
.80	4.6	(NULL)
1.32	53.3	(NULL)
1.48	39.5	(NULL)
2.02	255.3	(NULL)
2.50	128.1	(NULL)
2.83	37.1	(NULL)
3.19	12.5	(NULL)
3.39	10.1	(NULL)
3.65	10.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.18 WATERSHED INCHES; 167 CFS-HRS; 13.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 30

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
.87	4.6	356.10
1.38	51.4	356.58
1.54	39.1	356.50
2.08	252.2	357.39
2.56	125.8	356.99
2.88	36.5	356.48

3.25	11.3	356.24
3.45	9.5	356.20
3.71	10.3	356.21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.17 WATERSHED INCHES; 167 CFS-HRS; 13.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.25	592.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 548 CFS-HRS; 45.3 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 32

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.89	5.9	(NULL)
1.56	129.9	(NULL)
2.19	771.5	(NULL)
3.71	32.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.93 WATERSHED INCHES; 715 CFS-HRS; 59.1 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.50	26.1	(RUNOFF)
2.13	189.0	(RUNOFF)
2.56	100.4	(RUNOFF)
3.45	6.4	(RUNOFF)
3.72	5.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.65 WATERSHED INCHES; 143 CFS-HRS; 11.8 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 34

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.89	6.2	(NULL)

1.56	155.4	(NULL)
2.17	954.7	(NULL)
3.71	37.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.89 WATERSHED INCHES; 858 CFS-HRS; 70.9 ACRE-  
 FEET.

OPERATION REACH XSECTION 35

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
.97	5.3	316.10
1.64	149.2	316.94
2.27	922.8	318.44
3.77	36.1	316.44

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.89 WATERSHED INCHES; 858 CFS-HRS; 70.9 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 36

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PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.20	86.4	(RUNOFF)
3.71	2.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.71 WATERSHED INCHES; 74 CFS-HRS; 6.1 ACRE-  
 FEET.

\*\*\* WARNING - STRUCTURE 33, MAIN TIME INCREMENT EXCEEDS MAXIMUM ALLOWABLE  
 TIME INCREMENT OF .047 HOURS.  
 \*\*\*

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
2.22	86.1	328.99
3.77	2.6	323.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.71 WATERSHED INCHES; 74 CFS-HRS; 6.1 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 37

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION(FEET)		
.97	5.5	(NULL)
1.64	159.9	(NULL)
2.26	1006.9	(NULL)
3.77	38.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.87 WATERSHED INCHES; 932 CFS-HRS; 77.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 38

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.35	32.1	(RUNOFF)
1.49	32.1	(RUNOFF)
2.05	289.1	(RUNOFF)
2.51	153.9	(RUNOFF)
3.21	11.6	(RUNOFF)
3.42	12.4	(RUNOFF)
3.66	12.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.23 WATERSHED INCHES; 187 CFS-HRS; 15.4 ACRE-FEET.

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OPERATION ADDHYD XSECTION 39

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
.97	5.5	(NULL)
2.22	1162.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.75 WATERSHED INCHES; 1119 CFS-HRS; 92.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.24	1694.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.70 WATERSHED INCHES; 1589 CFS-HRS; 131.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 41

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
----------------	---------------------	------

ELEVATION (FEET)		
1.40	13.3	(RUNOFF)
1.49	13.0	(RUNOFF)
2.09	99.1	(RUNOFF)
2.54	50.5	(RUNOFF)
3.24	3.7	(RUNOFF)
3.43	3.5	(RUNOFF)
3.69	3.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.60 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-  
 FEET.

OPERATION RESVOR STRUCTURE 29

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
2.34	48.9	274.18
2.58	47.5	274.14

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.60 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-  
 FEET.

OPERATION REACH XSECTION 42

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PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
2.47	47.4	223.02
2.64	47.3	223.02

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.60 WATERSHED INCHES; 70 CFS-HRS; 5.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 43

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
2.17	274.3	(RUNOFF)
2.57	183.0	(RUNOFF)
3.45	12.5	(RUNOFF)
3.72	11.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.58 WATERSHED INCHES; 202 CFS-HRS; 16.7 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.17	282.6	(NULL)
2.57	229.9	(NULL)
3.44	21.9	(NULL)
3.72	20.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.91 WATERSHED INCHES; 272 CFS-HRS; 22.5 ACRE-FEET.

OPERATION REACH XSECTION 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.40	1430.3	229.17

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.70 WATERSHED INCHES; 1589 CFS-HRS; 131.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 46

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.39	1643.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.31 WATERSHED INCHES; 1860 CFS-HRS; 153.7 ACRE-FEET.

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OPERATION RUNOFF XSECTION 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.25	883.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.34 WATERSHED INCHES; 791 CFS-HRS; 65.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 48

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.39	17.7	(RUNOFF)
1.47	16.4	(RUNOFF)
2.08	110.8	(RUNOFF)
2.53	55.2	(RUNOFF)
3.24	4.0	(RUNOFF)

3.43	3.8	(RUNOFF)
3.69	3.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.92 WATERSHED INCHES; 79 CFS-HRS; 6.5 ACRE-  
 FEET.

\*\*\* WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 40,  
 VALUE EXTRAPOLATED.  
 \*\*\*

OPERATION RESVOR STRUCTURE 40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.29	60.0	338.27

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.93 WATERSHED INCHES; 79 CFS-HRS; 6.5 ACRE-  
 FEET.

OPERATION REACH XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.48	59.6	317.09

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.92 WATERSHED INCHES; 79 CFS-HRS; 6.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 50

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
2.25	940.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.39 WATERSHED INCHES; 869 CFS-HRS; 71.8 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 51

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK
ELEVATION(FEET)		
1.50	10.7	(RUNOFF)
2.11	87.4	(RUNOFF)
2.55	45.3	(RUNOFF)
3.24	3.3	(RUNOFF)
3.44	3.0	(RUNOFF)

3.70 2.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.45 WATERSHED INCHES; 63 CFS-HRS; 5.2 ACRE-
FEET.

\*\*\* MESSAGE - STRUCTURE 43, USER ENTERED STARTING ELEVATION OR STRUCTURE
TABLE
STARTS 3.45 FEET BELOW ASSUMED CREST ELEVATION AT 320.75.
THIS CAN DECREASE OUTFLOW HYDROGRAPH VOLUME.
\*\*\*

\*\*\* WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 43,
VALUE EXTRAPOLATED.
\*\*\*

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
2.21 75.0 322.93
3.70 2.6 320.95

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.17 WATERSHED INCHES; 59 CFS-HRS; 4.8 ACRE-
FEET.

OPERATION ADDHYD XSECTION 52

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
2.25 1014.1 279.42

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.37 WATERSHED INCHES; 928 CFS-HRS; 76.7 ACRE-
FEET.

OPERATION REACH XSECTION 52

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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
2.42 876.2 279.16

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.37 WATERSHED INCHES; 928 CFS-HRS; 76.7 ACRE-
FEET.

OPERATION RUNOFF XSECTION 53

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK



ELEVATION (FEET)		
2.17	468.8	(RUNOFF)
2.57	313.7	(RUNOFF)
3.45	21.5	(RUNOFF)
3.72	19.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.56 WATERSHED INCHES; 344 CFS-HRS; 28.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 54

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
2.34	1168.7	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .54 SQ.MI.

HRS								
1.14 CFS	.32	1.02	3.17	8.01	16.73	30.37	48.65	
68.35								
1.62 CFS	87	106	132	170	229	320	461	
644								
2.10 CFS	837	1001	1108	1159	1169	1158	1147	
1138								
2.58 CFS	1114	1054	976	894	814	743	670	
591								
3.06 CFS	504	423	355	302	252	209	177	
151								
3.54 CFS	126	105	95	87	76	64	54	
46								
4.02 CFS	38.51	31.68	25.61	20.47	16.23	12.79	10.02	
7.80								
4.50 CFS	6.11	4.78	3.76	2.98	2.37	1.89	1.54	
1.26								
4.98 CFS	1.04	.87	.75	.65	.57	.52	.47	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 3.67 WATERSHED INCHES; 1272 CFS-HRS; 105.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 55

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK
ELEVATION (FEET)		
2.36	3947.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.10 WATERSHED INCHES; 4054 CFS-HRS; 335.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 56

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PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
2.07	48.2	(RUNOFF)
2.52	30.3	(RUNOFF)
3.21	2.4	(RUNOFF)
3.41	2.5	(RUNOFF)
3.66	2.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 2.83 WATERSHED INCHES; 30 CFS-HRS; 2.5 ACRE-  
 FEET.

OPERATION ADDHYD XSECTION 57

PEAK TIME (HRS) ELEVATION (FEET)	PEAK DISCHARGE (CFS)	PEAK
2.36	3967.4	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1  
 MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = 1.55  
 SQ.MI.

HRS	MAIN	TIME	INCREMENT	=	.060	hr,	ALTERNATE	=	1,	STORM	=	1
.84 CFS	.08	.69	1.78	3.02	3.69	4.25	7.36					
17.19												
1.32 CFS	41	86	147	223	296	355	409					
466												
1.80 CFS	551	695	931	1284	1773	2348	2929					
3415												
2.28 CFS	3792	3959	3910	3742	3550	3381	3229					
3078												
2.76 CFS	2884	2644	2382	2116	1860	1616	1383					
1167												
3.24 CFS	957	777	642	543	464	401	352					
315												
3.72 CFS	284	259	238	216	190	164	141					
120												
4.20 CFS	104	91	80	71	63	55	49					
43												
4.68 CFS	37.60	33.16	29.39	26.19	23.45	21.16	19.19					
17.50												
5.16 CFS	16.03	14.77	13.68	12.72	11.89	11.16	10.51					
9.94												
5.64 CFS	9.43	8.98	8.58	8.23	7.93	7.65	7.40					
7.16												
6.12 CFS	6.95	6.75	6.56	6.39	6.22	6.05	5.89					
5.75												
6.60 CFS	5.61	5.49	5.37	5.25	5.14	5.04	4.94					
4.84												
7.08 CFS	4.75	4.66	4.57	4.48	4.40	4.32	4.24					
4.16												
7.56 CFS	4.08	4.01	3.94	3.87	3.80	3.73	3.67					
3.61												
8.04 CFS	3.54	3.48	3.42	3.37	3.31	3.25	3.20					
3.14												
8.52 CFS	3.09	3.04	2.99	2.94	2.90	2.85	2.80					
2.76												
9.00 CFS	2.71	2.67	2.63	2.59	2.54	2.50	2.46					
2.42												
9.48 CFS	2.38	2.35	2.31	2.27	2.24	2.21	2.17					
2.14												
9.96 CFS	2.11	2.08	2.04	2.01	1.98	1.95	1.92					
1.89												

10.44 CFS	1.87	1.84	1.81	1.79	1.76	1.73	1.71
1.68							
10.92 CFS	1.66	1.63	1.61	1.59	1.56	1.54	1.52
1.50							
11.40 CFS	1.48	1.46	1.43	1.41	1.40	1.38	1.36
1.34							
11.88 CFS	1.32	1.30	1.28	1.27	1.25	1.23	1.21
1.20							
12.36 CFS	1.18	1.17	1.15	1.14	1.12	1.11	1.09
1.08							
12.84 CFS	1.06	1.05	1.04	1.02	1.01	1.00	.98
.97							
13.32 CFS	.96	.95	.93	.92	.91	.90	.89
.88							
13.80 CFS	.87	.86	.85	.84	.83	.82	.81
.80							
14.28 CFS	.79	.78	.77	.76	.75	.74	.74
.73							
14.76 CFS	.72	.71	.70	.69	.69	.68	.67
.66							
15.24 CFS	.66	.65	.64	.64	.63	.62	.62
.61							
15.72 CFS	.60	.60	.59	.59	.58	.57	.57
.56							

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16.20 CFS	.56	.55	.54	.54	.53	.53	.53
.52							
16.68 CFS	.51	.51	.51	.50	.50		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.09 WATERSHED INCHES; 4085 CFS-HRS; 337.6 ACRE-  
 FEET.

OPERATION RUNOFF XSECTION 58

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
1.35	21.0	(RUNOFF)
1.49	19.8	(RUNOFF)
2.05	158.3	(RUNOFF)
2.52	82.0	(RUNOFF)
3.22	6.1	(RUNOFF)
3.42	6.6	(RUNOFF)
3.67	6.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.52 WATERSHED INCHES; 104 CFS-HRS; 8.6 ACRE-  
 FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS) ELEVATION(FEET)	PEAK DISCHARGE(CFS)	PEAK
-----------------------------------	---------------------	------

2.41 1167.3 133.44

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.67 WATERSHED INCHES; 1272 CFS-HRS; 105.1 ACRE-
FEET.

OPERATION ADDHYD XSECTION 60

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
2.49 1232.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.72 WATERSHED INCHES; 1376 CFS-HRS; 113.7 ACRE-
FEET.

OPERATION ADDHYD XSECTION 61

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
2.36 5186.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.99 WATERSHED INCHES; 5461 CFS-HRS; 451.3 ACRE-
FEET.

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OPERATION RUNOFF XSECTION 62

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK
ELEVATION(FEET)
.85 1.4 (RUNOFF)
1.38 18.7 (RUNOFF)
2.08 107.0 (RUNOFF)
2.53 52.4 (RUNOFF)
3.23 3.8 (RUNOFF)
3.43 3.7 (RUNOFF)
3.69 3.5 (RUNOFF)

Table with 9 columns: HRS, SQ.MI., and 7 columns of hydrograph points. Includes headers for HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1 and MAIN TIME INCREMENT = .060 hr, DRAINAGE AREA = .02.

3.12 CFS      2.34      2.90      3.79      2.52      2.22      3.68      3.01  
 1.43  
 3.60 CFS      1.39      3.34      3.19      1.60      .72      .32

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 5.09 WATERSHED INCHES;      76 CFS-HRS;      6.3 ACRE-  
 FEET.

OPERATION ADDHYD      XSECTION      63

PEAK TIME (HRS)      PEAK DISCHARGE (CFS)      PEAK  
 ELEVATION (FEET)  
 2.36      5230.0      (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)  
 4.00 WATERSHED INCHES;      5537 CFS-HRS;      457.6 ACRE-  
 FEET.

EXECUTIVE CONTROL ENDCMP      COMPUTATIONS COMPLETED FOR PASS      1

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SUMMARY TABLE 1

-----  
 SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
 F-FLAT TOP HYDROGRAPH      T-TRUNCATED HYDROGRAPH      R-RISING TRUNCATED  
 HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RUNOFF	PEAK DISCHARGE			
ID	OPERATION	AREA (SQ MI)	AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 6.60 inches AND 3.60 hr DURATION, BEGINS AT .0 hrs.  
 RAINFALL NUMBER 5, ARC 2  
 MAIN TIME INCREMENT .060 HOURS

ALTERNATE      1      STORM      1

XSECTION	1	RUNOFF	.21	4.02	---	2.18	689	3281.0
XSECTION	2	RUNOFF	.03	3.69	---	2.13	97	3233.3
STRUCTURE	58	RESVOR	.03	3.68	432.25	2.20	91	3033.3
XSECTION	4	RUNOFF	.06	4.44	---	2.07	259	4316.7
XSECTION	6	RUNOFF	.08	3.74	---	2.11	276	3450.0
XSECTION	9	RUNOFF	.06	4.12	---	2.11	226	3766.7
XSECTION	10	RUNOFF	.03	4.15	---	2.16	92	3066.7
STRUCTURE	52	RESVOR	.03	3.86	456.43	2.33	68	2266.7
XSECTION	12	ADDHYD	.09	4.04	---	2.13	238	2644.4
XSECTION	13	RUNOFF	.04	4.76	---	2.10	191	4775.0
STRUCTURE	51	RESVOR	.04	4.76	400.11	2.29	117	2925.0

XSECTION	15	RUNOFF	.08	3.98	---	2.08	310	3875.0
XSECTION	17	ADDHYD	.21	4.17	---	2.16	576	2742.9
XSECTION	18	ADDHYD	.59	4.07	---	2.20	1782	3020.3
XSECTION	19	RUNOFF	.27	3.65	---	2.25	724	2681.5
XSECTION	20	REACH	.59	4.06	239.78	2.37	1652	2800.0
XSECTION	21	ADDHYD	.86	3.93	---	2.34	2311	2687.2
XSECTION	22	RUNOFF	.02	4.65	---	2.15	71	3550.0
STRUCTURE	47	RESVOR	.02	4.64	415.78	2.17	71	3550.0
XSECTION	23	RUNOFF	.08	4.65	---	2.12	327	4087.5
STRUCTURE	32	RESVOR	.08	4.64	370.25	2.18	310	3875.0
XSECTION	25	RUNOFF	.05	4.62	---	2.12	188	3760.0
STRUCTURE	34	RESVOR	.15	4.63	343.48	2.25	505	3366.7
XSECTION	27	RUNOFF	.01	4.00	---	2.03	52	5200.0
XSECTION	28	ADDHYD	.16	4.58	---	2.25	539	3368.8
XSECTION	29	RUNOFF	.05	5.18	---	2.02	255	5100.0
STRUCTURE	64	RESVOR	.05	5.18	---	2.02	255	5100.0
XSECTION	31	RUNOFF	.17	4.87	---	2.25	593	3488.2

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SUMMARY TABLE 1

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SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.  
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:  
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED  
HYDROGRAPH

XSECTION/ STRUCTURE	STANDARD CONTROL		DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
	OPERATION	STORM				TIME (HR)	RATE (CFS)	RATE (CSM)
	ALTERNATE	1						
XSECTION	33	RUNOFF	.05	4.65	---	2.13	189	3780.0
XSECTION	36	RUNOFF	.02	4.71	---	2.20	86	4300.0
STRUCTURE	33	RESVOR	.02	4.71	328.99	2.22	86	4300.0
XSECTION	38	RUNOFF	.07	4.23	---	2.05	289	4128.6
XSECTION	39	ADDHYD	.36	4.75	---	2.22	1163	3230.6
XSECTION	41	RUNOFF	.02	4.60	---	2.09	99	4950.0
STRUCTURE	29	RESVOR	.02	4.60	274.18	2.34	49	2450.0
XSECTION	43	RUNOFF	.12	2.58	---	2.17	274	2283.3
XSECTION	44	ADDHYD	.14	2.91	---	2.17	283	2021.4
XSECTION	46	ADDHYD	.67	4.31	---	2.39	1643	2452.2
XSECTION	47	RUNOFF	.28	4.34	---	2.25	884	3157.1
XSECTION	48	RUNOFF	.02	4.92	---	2.08	111	5550.0
STRUCTURE	40	RESVOR	.02	4.93	338.27	2.29	60	3000.0
XSECTION	51	RUNOFF	.02	4.45	---	2.11	87	4350.0

STRUCTURE	43	RESVOR	.02	4.17	322.93	2.21	75	3750.0
XSECTION	52	ADDHYD	.33	4.37	279.42	2.25	1014	3072.7
XSECTION	53	RUNOFF	.21	2.56	---	2.17	469	2233.3
XSECTION	54	ADDHYD	.54	3.67	---	2.34	1169	2164.8
XSECTION	55	ADDHYD	1.53	4.10	---	2.36	3948	2580.4
XSECTION	56	RUNOFF	.02	2.83	---	2.07	48	2400.0
XSECTION	57	ADDHYD	1.55	4.09	---	2.36	3967	2559.4
XSECTION	58	RUNOFF	.04	4.52	---	2.05	158	3950.0
XSECTION	62	RUNOFF	.02	5.09	---	2.08	107	5350.0
XSECTION	63	ADDHYD	2.15	4.00	---	2.36	5230	2432.6

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SUMMARY TABLE 2

-----  
 MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS  
 USED;

LENGTH FACTOR - VALUE K\* GREATER THAN 1.0;  
 ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

HYDROGRAPH INFORMATION				ROUTING PARAMETERS							
XSEC ID	REACH LENGTH	FLOOD PLAIN LENGTH	INFLOW		OUTFLOW		Q-A EQ.		PEAK RATIO Q/I	ATT- KIN	
			PEAK	TIME	PEAK	TIME	COEFF	POWER			LENGTH FACTOR
COEFF	(FT)	(FT)	(CFS)	(HR)	(CFS)	(HR)	(X)	(M)	(k*)	(Q*)	(C)
BASEFLOW IS .0 CFS											
ALTERNATE		1	STORM		1						
7	2055		999	2.2	988	2.2	3.47	1.27	.029	.989	
.88?											
11	1397		68	2.3	67	2.4	2.64	1.50	.012	.998	
.94?											
16	2449		335	2.2	332	2.3	2.62	1.36	.024	.992	
.73?											
20	4470		1771	2.2	1637	2.3	4.09	1.19	.088	.924	
.48											
30	1561		252	2.0	251	2.1	1.31	1.51	.025	.995	
.89?											
35	2077		954	2.2	922	2.3	2.08	1.24	.054	.966	
.61											
42	2112		49	2.3	47	2.5	3.60	1.36	.020	.968	
.67?											
45	3148		1679	2.2	1430	2.4	5.56	1.00	.166	.852	
.32											
49	1829		60	2.3	60	2.5	1.52	1.38	.037	.993	
.51											

52 4744 1008 2.2 875 2.4 2.70 1.19 .151 .868  
 .32  
 59 1671 1169 2.3 1167 2.4 3.21 1.24 .019 .999  
 .90?

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
STRUCTURE 64	.05	
-----		
ALTERNATE 1		255
STRUCTURE 58	.03	
-----		
ALTERNATE 1		91
STRUCTURE 52	.03	
-----		
ALTERNATE 1		68
STRUCTURE 51	.04	
-----		
ALTERNATE 1		117
STRUCTURE 47	.02	
-----		
ALTERNATE 1		71
STRUCTURE 43	.02	
-----		
ALTERNATE 1		75
STRUCTURE 40	.02	
-----		
ALTERNATE 1		60
STRUCTURE 34	.15	
-----		
ALTERNATE 1		505
STRUCTURE 33	.02	
-----		
ALTERNATE 1		86
STRUCTURE 32	.08	
-----		



ALTERNATE	1		310
STRUCTURE	29	.02	
-----			
ALTERNATE	1		49
XSECTION	1	.21	
-----			
ALTERNATE	1		689
XSECTION	2	.03	
-----			
ALTERNATE	1		97
XSECTION	4	.06	
-----			

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SUMMARY TABLE 3  
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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 4	.06	
-----		
ALTERNATE 1		259
XSECTION 6	.08	
-----		
ALTERNATE 1		276
XSECTION 9	.06	
-----		
ALTERNATE 1		226
XSECTION 10	.03	
-----		
ALTERNATE 1		92
XSECTION 12	.09	
-----		
ALTERNATE 1		238
XSECTION 13	.04	
-----		
ALTERNATE 1		191
XSECTION 15	.08	
-----		
ALTERNATE 1		310

XSECTION	17	.21	
-----			
ALTERNATE	1		576
XSECTION	18	.59	
-----			
ALTERNATE	1		1782
XSECTION	19	.27	
-----			
ALTERNATE	1		724
XSECTION	20	.59	
-----			
ALTERNATE	1		1652
XSECTION	21	.86	
-----			
ALTERNATE	1		2311
XSECTION	22	.02	
-----			
ALTERNATE	1		71
XSECTION	23	.08	
-----			
ALTERNATE	1		327

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION	25	.05
-----		
ALTERNATE	1	188
XSECTION	27	.01
-----		
ALTERNATE	1	52
XSECTION	28	.16
-----		
ALTERNATE	1	539
XSECTION	29	.05
-----		
ALTERNATE	1	255

XSECTION	31	.17	
-----			
ALTERNATE	1		593
XSECTION	33	.05	
-----			
ALTERNATE	1		189
XSECTION	36	.02	
-----			
ALTERNATE	1		86
XSECTION	38	.07	
-----			
ALTERNATE	1		289
XSECTION	39	.36	
-----			
ALTERNATE	1		1163
XSECTION	41	.02	
-----			
ALTERNATE	1		99
XSECTION	43	.12	
-----			
ALTERNATE	1		274
XSECTION	44	.14	
-----			
ALTERNATE	1		283
XSECTION	46	.67	
-----			
ALTERNATE	1		1643

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES  
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION	47	.28
-----		
ALTERNATE	1	884
XSECTION	48	.02
-----		
ALTERNATE	1	111

XSECTION	51	.02	
-----			
ALTERNATE	1		87
XSECTION	52	.33	
-----			
ALTERNATE	1		1014
XSECTION	53	.21	
-----			
ALTERNATE	1		469
XSECTION	54	.54	
-----			
ALTERNATE	1		1169
XSECTION	55	1.53	
-----			
ALTERNATE	1		3948
XSECTION	56	.02	
-----			
ALTERNATE	1		48
XSECTION	57	1.55	
-----			
ALTERNATE	1		3967
XSECTION	58	.04	
-----			
ALTERNATE	1		158
XSECTION	62	.02	
-----			
ALTERNATE	1		107
XSECTION	63	2.15	
-----			
ALTERNATE	1		5230

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END OF 1 JOBS IN THIS RUN

INPUT = SUBDAS.DAT , GIVEN DATA FILE  
OUTPUT = SUBDAS.OUT , DATED  
03/06/\*\*,17:28:22

FILES GENERATED - DATED 03/06/\*\*,17:28:22

NONE!

TOTAL NUMBER OF WARNINGS = 6, MESSAGES = 2

\*\*\* TR-20 RUN COMPLETED \*\*\*