



## Drainage Plan Ellson Court Addition Pre-Development vs. Post-Development Runoff

### Existing Conditions

The existing site, of the proposed Ellson Court Addition, contains 2.32 acres of vacant land. The existing soil is Rd - Rose Hill/silty clay with a hydrological soil group D. The runoff length for the site is 650 feet at a slope of 1.7 %.

Using the TR-20 computer model, MKEC determined the pre-developed runoff from the Ellson Court Addition (listed in Table 2) for the 2, 5, 10, and 100-year events, along with the offsite runoff (through the Fountains Addition, New Life Christian Church, and SE of Fountains Addition).

The lake storage data and drainage area for the Fountains Addition come from POE & Associates design. MKEC verified the drainage area and then developed the runoff curve number and time of concentration. Table 1 compares the values used by POE & Associates and MKEC Engineering Consultants. The lake discharge rating comes from HY-8 culvert analysis. The existing discharges from the pond and surrounding areas, and the maximum storage elevations for the pond as calculated by MKEC for the 2, 5, 10, and 100-year events are listed in Table 2. POE & Associates had calculated a discharge of 186 cfs and water surface elevation of 1368.41 for a 100-year (6-hr) event using HEC-1.

Table 1

<i>Discharge values from</i>	<i>Storage</i>	<i>Da</i>		<i>Tc</i>
<i>Fountains Addn.</i>	<i>Ac-Ft</i>	<i>Acres</i>	<i>CN</i>	<i>Hours</i>
POE & Assoc.	5.82	60.1	81.7	0.32
MKEC	5.82	60.1	90.3	0.65

Table 2

<i>Existing runoff</i>	<i>2-Yr</i>	<i>5-Yr</i>	<i>10-Yr</i>	<i>100-Yr</i>	<i>Major July Storm</i>
Discharge from Pond (cfs)	54	95	121	217	
Pond Elevation (ft)	1367.43	1367.98	1368.27	1369.37	
Runoff from Church (cfs)	7	11	13	21	
Runoff form Ellson Court (cfs)	3	5	7	11	
Runoff from SE of Ellson Court (cfs)	14	23	28	49	
Comb. Runoff at Ellson St.	67	118	151	275	
Water elevation at Ellson St. (Street El. = 1364.53)	1360.43	1361.22	1361.68	1363.22	1366.53*

\*According to an observation made by a resident of the Fountains, Unconfirmed reports of 4" in 1 1/2 hours.

The discharge from Fountains Addition Pond during the larger storms will be slightly lower than the rates shown in the TR-20 report. The weir opening above the 1368.4 elevation becomes narrower as the weir becomes part of the wing-wall. The weir structure will act more as an inlet as the water forms around the "wing-walls" of the box (as the pond reaches higher elevations) and drops into the opening. At this point velocity losses will occur.

The New Life Christian Church has approximately 4.1 acres draining into the basin. The curve number is 85, from which about 25% of the area is impervious ground. The time of concentration equals 0.47 hours. The offsite runoff from the church lot is shown in Table 2.

**Proposed Conditions from Ellson Court Addition**

The length of runoff remained the same for the existing site under proposed conditions (650 feet), along with the slope (1.7 %). The coefficients increased due to the increase in impervious area. Using the TR-20 computer model, MKEC determined the post-development runoff from the site (listed in Table 3) for the 2, 5, 10, and 100-year events.

	2-Yr	5-Yr	10-Yr	100-Yr
<i>Ellson Court Addition</i>		8	9	15/
Post-Developed (cfs)	5			

The discharges from the TR-20 run were placed into a HEC-RAS model to develop water surface elevations in the ditch channel. The HEC-RAS report plan #1 contains the water surface elevations and discharges.

A recent intense rainstorm (July 2000) produced flooding over Ellson Street near by resident reported the water had been two feet deep on Ellson Street during this rainstorm "bumper high." We placed this information into the modeling program (HEC-RAS) as plan #2 to use as a comparison to plan #1. The two feet of high water over Ellson Street has no effect on the pond elevation in Fountains addition. Minimum pads for Ellson Court have been set according to this recorded event.



\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY\*\*\*\*\*

JOB TR-20		SUMMARY				
TITLE 003 POND @ ELLSON COURT ADDITION NGS 2,5,10,100-YR EVENTS						
TITLE	FAA	TC	28SEP99	PRELIM.	EVALUATIONS	K=484 FILENAME EC.T20
4	DIMHYD			0.02		484
8		.000	.030	.100	.190	.310
8		.470	.660	.820	.930	.990
8		1.000	.990	.930	.860	.780
8		.680	.560	.460	.390	.330
8		.280	.241	.207	.174	.147
8		.126	.107	.091	.077	.066
8		.055	.047	.040	.034	.029
8		.025	.021	.018	.015	.013
8		.011	.009	.008	.007	.006
8		.005	.004	.003	.002	.001
8		.000	.000	.000	.000	.000
9	ENDTEL					
5	RAINFEL 7		0.08333			6-HR M&L
8		0.0000	0.0033	0.0066	0.0099	0.0132
8		0.0166	0.0198	0.0248	0.0296	0.0346
8		0.0404	0.0463	0.0522	0.0590	0.0658
8		0.0727	0.0796	0.0864	0.0933	0.1136
8		0.1340	0.1572	0.1832	0.2124	0.2473
8		0.2850	0.3400	0.4464	0.6034	0.6752
8		0.7220	0.7409	0.7598	0.7758	0.7919
8		0.8072	0.8224	0.8310	0.8396	0.8468
8		0.8540	0.8628	0.8714	0.8773	0.8832
8		0.8890	0.8939	0.8988	0.9038	0.9086
8		0.9136	0.9184	0.9233	0.9282	0.9332
8		0.9380	0.9429	0.9478	0.9527	0.9576
8		0.9626	0.9664	0.9704	0.9742	0.9782
8		0.9821	0.9860	0.9884	0.9906	0.9930
8		0.9954	0.9976	1.0000	1.0000	1.0000
9	ENDTEL					
5	RAINFEL 8		0.5			24-HRSCS ZONE 5
8		.000	.002	.005	.009	.013
8		.018	.023	.029	.035	.042
8		.050	.059	.068	.078	.089
8		.101	.114	.128	.144	.162
8		.183	.208	.244	.339	.723
8		.773	.802	.825	.844	.861
8		.876	.890	.903	.914	.924
8		.934	.943	.951	.959	.966
8		.972	.977	.982	.986	.990
8		.993	.996	.998	1.000	1.000
9	ENDTEL					
3	STRUCT	10				Point Po

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 \*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

8			1364.4	0.0	0.0				
8			1365.4	12.05	1.12				
8			1366.4	24.34	2.45				
8			1367.4	57.46	4.02				
8			1368.4	139.39	5.83				
8			1369.4	263.57	7.91				
9	ENDTEL								
6	RUNOFF	1	001	2	0.0939	90.3	0.6492		1 FOUNT
6	RESVOR	2	10 2	3	1364.4				1 FOUNT PO
6	RUNOFF	1	015	1	0.0064	85.0	0.4707		1 CHURCH
6	RUNOFF	1	020	2	0.0036	80.0	0.4279		1 EC PRE
6	RUNOFF	1	025	4	0.0036	87.0	0.3160		1 EC POST
6	RUNOFF	1	027	5	0.0204	80.0	0.6742		1 SF FOUNT
6	ADDHYD	4	030	1 4 6					
6	ADDHYD	4	035	5 6 7					
6	ADDHYD	4	040	3 7 1					
	ENDATA								
7	INCREM	6			0.0833				
7	COMPUT	7	001	040	0.0	2.52	1.0	7 2 11	01 2-YR 6-H
	ENDCMP	1							
7	COMPUT	7	001	040	0.0	3.42	1.0	7 2 12	02 5-YR 6-H
	ENDCMP	1							
7	COMPUT	7	001	040	0.0	4.02	1.0	7 2 13	03 10-YR 6-
	ENDCMP	1							
7	COMPUT	7	001	040	0.0	5.94	1.0	7 2 16	06 100-YR 6
	ENDCMP	1							
7	COMPUT	7	001	040	0.0	3.48	1.0	2 2 21	01 2-YR TYP
	ENDCMP	1							
7	COMPUT	7	001	040	0.0	4.55	1.0	2 2 22	02 5-YR TYP
	ENDCMP	1							
7	COMPUT	7	001	040	0.0	5.25	1.0	2 2 23	03 10-YR TY
	ENDCMP	1							
7	COMPUT	7	001	040	0.0	7.80	1.0	2 2 26	06 100-YR T
	ENDCMP	1							
7	COMPUT	7	001	040	0.0	3.48	1.0	8 2 41	01 2-YR ZON
	ENDCMP	1							
7	COMPUT	7	001	040	0.0	4.55	1.0	8 2 42	02 5-YR ZON
	ENDCMP	1							
7	COMPUT	7	001	040	0.0	5.25	1.0	8 2 43	03 10-YR ZO
	ENDCMP	1							
7	COMPUT	7	001	040	0.0	7.80	1.0	8 2 46	06 100-YR Z
	ENDCMP	1							
	ENDJOB	2							

\*\*\*\*\*END OF 80-80 LIST\*\*\*\*\*

1  
 TR20 -----  
 POND @ ELLSON COURT ADDITION NCG 2,5,10,100-YR EVENTS      VERSION  
 08/14/\*\*      TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME EC.T20      10/01/90  
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COMPUTED PEAK RATE FACTOR = 484.00

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EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .08 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 2-YR 6-H  
STARTING TIME = .00 RAIN DEPTH = 2.52 RAIN DURATION= 1.00  
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
ALTERNATE NO.=11 STORM NO.= 1 RAIN TABLE NO.= 7

\*\*\* WARNING - XSECTION 20, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS  
{ 21. % OF MAX. HYDROGRAPH COORDINATE)  
MAIN TIME INCREMENT TOO SMALL. \*\*\*

\*\*\* WARNING - XSECTION 25, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS  
{ 12. % OF MAX. HYDROGRAPH COORDINATE)  
MAIN TIME INCREMENT TOO SMALL. \*\*\*

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 5-YR 6-H  
STARTING TIME = .00 RAIN DEPTH = 3.42 RAIN DURATION= 1.00  
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
ALTERNATE NO.=12 STORM NO.= 2 RAIN TABLE NO.= 7

\*\*\* WARNING - XSECTION 20, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS  
{ 11. % OF MAX. HYDROGRAPH COORDINATE)  
MAIN TIME INCREMENT TOO SMALL. \*\*\*

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 10-YR 6-  
STARTING TIME = .00 RAIN DEPTH = 4.02 RAIN DURATION= 1.00  
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
ALTERNATE NO.=13 STORM NO.= 3 RAIN TABLE NO.= 7

1  
TR20 -----  
POND # EILSON COURT ADDITION NGG 2,5,10,100-YR EVENTS VERSION  
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EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 100-YR 6  
STARTING TIME = .00 RAIN DEPTH = 5.94 RAIN DURATION= 1.00  
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
ALTERNATE NO.=16 STORM NO.= 6 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

Page 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 2-YR TYP  
 STARTING TIME = .00 RAIN DEPTH = 3.48 RAIN DURATION= 1.00  
 ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
 ALTERNATE NO.=21 STORM NO.= 1 RAIN TABLE NO.= 2

\*\*\* WARNING - XSECTION 20, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS  
 ( 13. % OF MAX. HYDROGRAPH COORDINATE)  
 MAIN TIME INCREMENT TOO SMALL. \*\*\*

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 5-YR TYP  
 STARTING TIME = .00 RAIN DEPTH = 4.55 RAIN DURATION= 1.00  
 ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
 ALTERNATE NO.=22 STORM NO.= 2 RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 10-YR TY  
 STARTING TIME = .00 RAIN DEPTH = 5.25 RAIN DURATION= 1.00  
 ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
 ALTERNATE NO.=23 STORM NO.= 3 RAIN TABLE NO.= 2

1

TR20 -----  
 POND @ ELLSON COURT ADDITION NGG 2,5,10,100-YR EVENTS VERSION  
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EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 7

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 100-YR T  
 STARTING TIME = .00 RAIN DEPTH = 7.80 RAIN DURATION= 1.00  
 ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
 ALTERNATE NO.=26 STORM NO.= 6 RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 8

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 2-YR 2ON  
 STARTING TIME = .00 RAIN DEPTH = 3.48 RAIN DURATION= 1.00  
 ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
 ALTERNATE NO.=41 STORM NO.= 1 RAIN TABLE NO.= 8

\*\*\* WARNING - XSECTION 20, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS  
 ( 15. % OF MAX. HYDROGRAPH COORDINATE)  
 MAIN TIME INCREMENT TOO SMALL. \*\*\*

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\*\*\* WARNING - XSECTION 25, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS  
( 11. % OF MAX. HYDROGRAPH COORDINATE)  
MAIN TIME INCREMENT TOO SMALL. \*\*\*

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 9

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 5-YR ZON  
STARTING TIME = .00 RAIN DEPTH = 4.55 RAIN DURATION= 1.00  
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
ALTERNATE NO.=42 STORM NO.= 2 RAIN TABLE NO.= 8

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 10

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 10-YR ZO  
STARTING TIME = .00 RAIN DEPTH = 5.25 RAIN DURATION= 1.00  
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
ALTERNATE NO.=43 STORM NO.= 3 RAIN TABLE NO.= 8

1

TR20 -----  
POND @ ELLSON COURT ADDITION NGG 2,5,10,100-YR EVENTS VERSION  
08/14/\*\* TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME EC.T20 10/01/90  
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EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 11

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 40 100-YR Z  
STARTING TIME = .00 RAIN DEPTH = 7.80 RAIN DURATION= 1.00  
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS  
ALTERNATE NO.=46 STORM NO.= 6 RAIN TABLE NO.= 8

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 12

1

TR20 -----  
POND @ ELLSON COURT ADDITION NGG 2,5,10,100-YR EVENTS VERSION  
08/14/\*\* TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME EC.T20 10/01/90  
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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 ID	STANDARD CONTROL OPERATION	DRAINAGE AREA	RUNOFF AMOUNT	PEAK DISCHARGE		
				ELEVATION	TIME	RATE

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(SQ MI) (IN) (FT) (HR) (CFS) (CSM)

RAINFALL OF 2.52 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.  
 RAINFALL NUMBER 7, AMC 2  
 MAIN TIME INCREMENT .08 HOURS

ALTERNATE 11 STORM 1

XSECTION	1	RUNOFF	.09	1.57	---	2.71	83	922.2
STRUCTURE	10	RESVOR	.09	1.57	1366.86	3.19	40	444.4
XSECTION	15	RUNOFF	.01	1.19	---	2.61	5	500.0
XSECTION	20	RUNOFF	.00	.90	---	2.60T		2T*****
XSECTION	25	RUNOFF	.00	1.33	---	2.51T		4T*****
XSECTION	27	RUNOFF	.02	.90	---	2.77	10	500.0
XSECTION	30	ADDHYD	.01	1.24	---	2.56	9	900.0
XSECTION	35	ADDHYD	.03	1.01	---	2.65	17	566.7
XSECTION	40	ADDHYD	.12	1.43	---	3.10	48	400.0

RAINFALL OF 3.42 inches AND 6.00 hr DURATTION, BEGINS AT .0 hrs.

ALTERNATE 12 STORM 2

XSECTION	1	RUNOFF	.09	2.40	---	2.70	128	1422.2
STRUCTURE	10	RESVOR	.09	2.40	1367.63	3.06	76	844.4
XSECTION	15	RUNOFF	.01	1.94	---	2.60	9	900.0
XSECTION	20	RUNOFF	.00	1.57	---	2.59T		4T*****
XSECTION	25	RUNOFF	.00	2.11	---	2.50	6	*****
XSECTION	27	RUNOFF	.02	1.57	---	2.75	17	850.0
XSECTION	30	ADDHYD	.01	2.00	---	2.55	14	1400.0
XSECTION	35	ADDHYD	.03	1.72	---	2.64	29	966.7
XSECTION	40	ADDHYD	.12	2.23	---	3.01	93	775.0

RAINFALL OF 4.02 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 13 STORM 3

XSECTION	1	RUNOFF	.09	2.96	---	2.69	158	1755.6
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1  
 TR20 -----  
 POND @ ELLSON COURT ADDITION NCG 2,5,10,100-YR EVENTS VERSION  
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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 ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)

ALTERNATE 13		STORM 3					
STRUCTURE	10	RESVOR	.09	2.96	1367.98	3.00	105 1166.7
XSECTION	15	RUNOFF	.01	2.47	---	2.60	11 1100.0
XSECTION	20	RUNOFF	.00	2.06	---	2.58	5 *****
XSECTION	25	RUNOFF	.00	2.65	---	2.50	8 *****
XSECTION	27	RUNOFF	.02	2.06	---	2.74	23 1150.0
XSECTION	30	ADDHYD	.01	2.54	---	2.54	18 1800.0
XSECTION	35	ADDHYD	.03	2.22	---	2.64	38 1266.7
XSECTION	40	ADDHYD	.12	2.78	---	2.95	130 1083.3

RAINFALL OF 5.94 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 16		STORM 6					
XSECTION	1	RUNOFF	.09	4.82	---	2.69	256 2844.4
STRUCTURE	10	RESVOR	.09	4.82	1368.90	2.91	201 2233.3
XSECTION	15	RUNOFF	.01	4.24	---	2.59	19 1900.0
XSECTION	20	RUNOFF	.00	3.72	---	2.57	10 *****
XSECTION	25	RUNOFF	.00	4.43	---	2.49	13 *****
XSECTION	27	RUNOFF	.02	3.72	---	2.72	42 2100.0
XSECTION	30	ADDHYD	.01	4.31	---	2.54	31 3100.0
XSECTION	35	ADDHYD	.03	3.92	---	2.62	69 2300.0
XSECTION	40	ADDHYD	.12	4.60	---	2.86	252 2100.0

RAINFALL OF 3.48 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.  
 RAINFALL NUMBER 2, AMC 2

ALTERNATE 21		STORM 1					
XSECTION	1	RUNOFF	.09	2.45	---	12.26	105 1166.7
STRUCTURE	10	RESVOR	.09	2.45	1367.29	12.66	54 600.0
XSECTION	15	RUNOFF	.01	2.00	---	12.17	7 700.0
XSECTION	20	RUNOFF	.00	1.62	---	12.15T	3T*****

1  
 TR20 -----  
 POND @ ELLSON COURT ADDITION NGG 2,5,10,100-YR EVENTS VERSION  
 08/14/\*\* TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME EC.T20 10/01/90  
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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 ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

ALTERNATE		21	STORM		1		
XSECTION	25	RUNOFF	.00	2.16	---	12.07	5 *****
XSECTION	27	RUNOFF	.02	1.62	---	12.30	14 700.0
XSECTION	30	ADDHYD	.01	2.06	---	12.12	12 1200.0
XSECTION	35	ADDHYD	.03	1.76	---	12.20	25 833.3
XSECTION	40	ADDHYD	.12	2.28	---	12.54	67 558.3
RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE		22	STORM		2		
XSECTION	1	RUNOFF	.09	3.47	---	12.26	146 1622.2
STRUCTURE	10	RESVOR	.09	3.47	1367.86	12.56	95 1055.6
XSECTION	15	RUNOFF	.01	2.95	---	12.16	11 1100.0
XSECTION	20	RUNOFF	.00	2.50	---	12.14	5 *****
XSECTION	25	RUNOFF	.00	3.14	---	12.07	8 *****
XSECTION	27	RUNOFF	.02	2.50	---	12.29	23 1150.0
XSECTION	30	ADDHYD	.01	3.02	---	12.11	18 1800.0
XSECTION	35	ADDHYD	.03	2.67	---	12.19	38 1266.7
XSECTION	40	ADDHYD	.12	3.27	---	12.51	118 983.3
RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE		23	STORM		3		
XSECTION	1	RUNOFF	.09	4.15	---	12.26	174 1933.3
STRUCTURE	10	RESVOR	.09	4.15	1368.18	12.53	121 1344.4
XSECTION	15	RUNOFF	.01	3.60	---	12.16	13 1300.0
XSECTION	20	RUNOFF	.00	3.11	---	12.14	7 *****
XSECTION	25	RUNOFF	.00	3.80	---	12.07	9 *****
XSECTION	27	RUNOFF	.02	3.11	---	12.29	28 1400.0
XSECTION	30	ADDHYD	.01	3.67	---	12.11	21 2100.0
XSECTION	35	ADDHYD	.03	3.29	---	12.19	46 1533.3
1 TR20 -----							
POND @ ELLSON COURT ADDITION NCG 2,5,10,100-YR EVENTS VERSION							
08/14/** TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME EC.T20 10/01/90							
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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 ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE		
				ELEVATION (FT)	TIME (HR)	RATE (CFS)

ALTERNATE 23 STORM 3  
 -----  
 XSECTION 40 ADDHYD .12 3.94 --- 12.47 151 1258.3  
 RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 26 STORM 6  
 -----  
 XSECTION 1 RUNOFF .09 6.63 --- 12.25 273 3033.3  
 STRUCTURE 10 RESVOR .09 6.63 1369.02 12.46 217 2411.1  
 XSECTION 15 RUNOFF .01 6.02 --- 12.15 21 2100.0  
 XSECTION 20 RUNOFF .00 5.43 --- 12.13 11 \*\*\*\*\*  
 XSECTION 25 RUNOFF .00 6.25 --- 12.07 15 \*\*\*\*\*  
  
 XSECTION 27 RUNOFF .02 5.43 --- 12.28 49 2450.0  
 XSECTION 30 ADDHYD .01 6.10 --- 12.11 35 3500.0  
 XSECTION 35 ADDHYD .03 5.65 --- 12.19 79 2633.3  
 XSECTION 40 ADDHYD .12 6.39 --- 12.41 275 2291.7  
 RAINFALL OF 3.48 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.  
 RAINFALL NUMBER 8, AMC 2

ALTERNATE 41 STORM 1  
 -----  
 XSECTION 1 RUNOFF .09 2.46 --- 12.17 102 1133.3  
 STRUCTURE 10 RESVOR .09 2.46 1367.39 12.54 57 633.3  
 XSECTION 15 RUNOFF .01 2.00 --- 12.08 7 700.0  
 XSECTION 20 RUNOFF .00 1.62 --- 12.06T 3T\*\*\*\*\*  
 XSECTION 25 RUNOFF .00 2.16 --- 12.01T 4T\*\*\*\*\*  
  
 XSECTION 27 RUNOFF .02 1.62 --- 12.20 14 700.0  
 XSECTION 30 ADDHYD .01 2.06 --- 12.05 11 1100.0  
 XSECTION 35 ADDHYD .03 1.76 --- 12.12 24 800.0  
 XSECTION 40 ADDHYD .12 2.29 --- 12.43 71 591.7

1  
 TR20 -----  
 POND @ ELLSON COURT ADDITION NGG 2,5,10,100-YR EVENTS VERSION  
 08/14/\*\* TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME EC.T20 10/01/90  
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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 ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

Fc.out

RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 42 STORM 2							
XSECTION 1	RUNOFF	.09	3.47	---	12.17	140	1555.6
STRUCTURE 10	RESVOR	.09	3.47	1367.92	12.45	100	1111.1
XSECTION 15	RUNOFF	.01	2.95	---	12.08	10	1000.0
XSECTION 20	RUNOFF	.00	2.50	---	12.06	5	*****
XSECTION 25	RUNOFF	.00	3.14	---	12.01	6	*****
XSECTION 27	RUNOFF	.02	2.50	---	12.19	22	1100.0
XSECTION 30	ADDHYD	.01	3.02	---	12.05	16	1600.0
XSECTION 35	ADDHYD	.03	2.67	---	12.12	37	1233.3
XSECTION 40	ADDHYD	.12	3.28	---	12.39	124	1033.3

RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 43 STORM 3							
XSECTION 1	RUNOFF	.09	4.14	---	12.17	166	1844.4
STRUCTURE 10	RESVOR	.09	4.14	1368.22	12.42	125	1388.9
XSECTION 15	RUNOFF	.01	3.60	---	12.08	12	1200.0
XSECTION 20	RUNOFF	.00	3.11	---	12.06	6	*****
XSECTION 25	RUNOFF	.00	3.80	---	12.01	8	*****
XSECTION 27	RUNOFF	.02	3.11	---	12.19	28	1400.0
XSECTION 30	ADDHYD	.01	3.67	---	12.05	19	1900.0
XSECTION 35	ADDHYD	.03	3.29	---	12.12	45	1500.0
XSECTION 40	ADDHYD	.12	3.94	---	12.35	157	1308.3

1  
 TR20 -----  
 POND @ ELLSON COURT ADDITION NGG 2,5,10,100-YR EVENTS VERSION  
 08/14/\*\* TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME EC.T20 10/01/90  
 10:19:11 PAGE 10

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 ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 46 STORM 6							
XSECTION 1	RUNOFF	.09	6.64	---	12.17	262	2911.1
STRUCTURE 10	RESVOR	.09	6.64	1369.05	12.35	220	2444.4
XSECTION 15	RUNOFF	.01	6.01	---	12.08	19	1900.0
XSECTION 20	RUNOFF	.00	5.43	---	12.06	10	*****

XSECTION	25	RUNOFF	.00	6.25	Ec.out	---	12.00	12	*****
XSECTION	27	RUNOFF	.02	5.44	---	---	12.19	48	2400.0
XSECTION	30	ADDHYD	.01	6.10	---	---	12.05	31	3100.0
XSECTION	35	ADDHYD	.03	5.65	---	---	12.12	76	2533.3
XSECTION	40	ADDHYD	.12	6.40	---	---	12.30	280	2333.3

1  
 TR20 -----  
 POND @ ELLSON COURT ADDITION NGG 2,5,10,100-YR EVENTS      VERSION  
 08/14/\*\*      TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME EC.T20      10/01/90  
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SUMMARY TABLE 3  
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STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6
STRUCTURE 10	.09				
ALTERNATE 11		40	*****	*****	*****
ALTERNATE 12		*****	76	*****	*****
ALTERNATE 13		*****	*****	105	*****
ALTERNATE 16		*****	*****	*****	201
ALTERNATE 21		54	*****	*****	*****
ALTERNATE 22		*****	95	*****	*****
ALTERNATE 23		*****	*****	121	*****
ALTERNATE 26		*****	*****	*****	217
ALTERNATE 41		57	*****	*****	*****
ALTERNATE 42		*****	100	*****	*****
ALTERNATE 43		*****	*****	125	*****
ALTERNATE 46		*****	*****	*****	220
XSECTION 1	.09				
ALTERNATE 11		83	*****	*****	*****
ALTERNATE 12		*****	128	*****	*****
ALTERNATE 13		*****	*****	158	*****
ALTERNATE 16		*****	*****	*****	256
ALTERNATE 21		105	*****	*****	*****
ALTERNATE 22		*****	146	*****	*****
ALTERNATE 23		*****	*****	174	*****
ALTERNATE 26		*****	*****	*****	273
ALTERNATE 41		102	*****	*****	*****
ALTERNATE 42		*****	140	*****	*****
ALTERNATE 43		*****	*****	166	*****
ALTERNATE 46		*****	*****	*****	262

XSECTION	15	.01				
ALTERNATE	11		5	*****	*****	*****
ALTERNATE	12		*****	9	*****	*****
ALTERNATE	13		*****	*****	11	*****
ALTERNATE	16		*****	*****	*****	19
ALTERNATE	21		7	*****	*****	*****
ALTERNATE	22		*****	11	*****	*****
ALTERNATE	23		*****	*****	13	*****

1  
 TR20 POND @ ELLSON COURT ADDITION NGC 2,5,10,100-YR EVENTS VERSION  
 08/14/\*\* TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME EC.T20 10/01/90  
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6
XSECTION 15 .01					
ALTERNATE	26	*****	*****	*****	21
ALTERNATE	41	7	*****	*****	*****
ALTERNATE	42	*****	10	*****	*****
ALTERNATE	43	*****	*****	12	*****
ALTERNATE	46	*****	*****	*****	19
XSECTION 20 .00					
ALTERNATE	11	2	*****	*****	*****
ALTERNATE	12	*****	4	*****	*****
ALTERNATE	13	*****	*****	5	*****
ALTERNATE	16	*****	*****	*****	10
ALTERNATE	21	3	*****	*****	*****
ALTERNATE	22	*****	5	*****	*****
ALTERNATE	23	*****	*****	7	*****
ALTERNATE	26	*****	*****	*****	11
ALTERNATE	41	3	*****	*****	*****
ALTERNATE	42	*****	5	*****	*****
ALTERNATE	43	*****	*****	6	*****
ALTERNATE	46	*****	*****	*****	10
XSECTION 25 .00					
ALTERNATE	11	4	*****	*****	*****
ALTERNATE	12	*****	6	*****	*****
ALTERNATE	13	*****	*****	8	*****

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                Ec.out
ALTERNATE 16 ***** ***** 13
ALTERNATE 21 ***** *****
ALTERNATE 22 ***** 8 *****
ALTERNATE 23 ***** 9 *****
ALTERNATE 26 ***** ***** 15
ALTERNATE 41 ***** 4 *****
ALTERNATE 42 ***** 6 *****
ALTERNATE 43 ***** ***** 8 *****
ALTERNATE 46 ***** ***** 12
XSECTION 27 .02
-----
ALTERNATE 11 ***** 10 *****
ALTERNATE 12 ***** 17 *****

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1
TR20 -----
POND @ ELLSON COURT ADDITION NCG 2.5,10,100-YR EVENTS VERSION
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6
XSECTION 27 .02					
ALTERNATE 13		*****	*****	23	*****
ALTERNATE 16		*****	*****	*****	42
ALTERNATE 21		14	*****	*****	*****
ALTERNATE 22		*****	23	*****	*****
ALTERNATE 23		*****	*****	28	*****
ALTERNATE 26		*****	*****	*****	49
ALTERNATE 41		14	*****	*****	*****
ALTERNATE 42		*****	22	*****	*****
ALTERNATE 43		*****	*****	28	*****
ALTERNATE 46		*****	*****	*****	48
XSECTION 30 .01					
ALTERNATE 11		9	*****	*****	*****
ALTERNATE 12		*****	14	*****	*****
ALTERNATE 13		*****	*****	18	*****
ALTERNATE 16		*****	*****	*****	31
ALTERNATE 21		12	*****	*****	*****
ALTERNATE 22		*****	18	*****	*****
ALTERNATE 23		*****	*****	21	*****

```

                                Ec.out
ALTERNATE 26 ***** 35
ALTERNATE 41 ***** 11 *****
ALTERNATE 42 ***** 16 *****

ALTERNATE 43 ***** 19 *****
ALTERNATE 46 ***** 31

XSECTION 35 .03
-----
ALTERNATE 11 ***** 17 *****
ALTERNATE 12 ***** 29 *****
ALTERNATE 13 ***** 38 *****
ALTERNATE 16 ***** 69
ALTERNATE 21 ***** 25 *****

ALTERNATE 22 ***** 38 *****
ALTERNATE 23 ***** 46 *****
ALTERNATE 26 ***** 79
ALTERNATE 41 ***** 24 *****
ALTERNATE 42 ***** 37 *****

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1
TR20 -----
08/14/** POND @ ELUSON COURT ADDITION NGG 2,5,10,100-YR EVENTS VERSION
10:19:11 TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME EC.T20 10/01/90
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6
XSECTION 35 .03					
ALTERNATE 43				45	
ALTERNATE 46					76
XSECTION 40 .12					
ALTERNATE 11		48			
ALTERNATE 12		93			
ALTERNATE 13			130		
ALTERNATE 16					252
ALTERNATE 21		67			
ALTERNATE 22			118		
ALTERNATE 23				151	
ALTERNATE 26					275
ALTERNATE 41		71			
ALTERNATE 42			124		
ALTERNATE 43				157	

END OF 1 JOBS IN THIS RUN  
1

SCS TR-20, VERSION 10/01/90  
FILES

INPUT = EC.T20  
OUTPUT = EC.OUT , DATED 08/14/\*\*,10:19:11

FILES GENERATED - DATED 08/14/\*\*,10:19:11

NONE!

\*\*\* TR-20 RUN COMPLETED \*\*\*





**DRAINAGE ANALYSIS SUMMARY  
ELLSON COURT ADDITION**

Area ID	Area ac	Accum. Area ac	C2	C5	C10	C100	Elev		Flow Length	Tc2 min	Tc5 min	Tc10 min	Tc100 min	I2 in/hr	I5 in/hr	I10 in/hr	I100 in/hr	Q2 cfs	Q5 cfs	Q10 cfs	Q100 cfs
							Max	Min													
A	0.89		0.50	0.54	0.62	0.76	1368.50	1365.00	230.00	15	15	15	15	3.83	4.56	5.22	7.37	1.71	2.20	2.89	5.00
B	0.47		0.50	0.54	0.62	0.76	1368.50	1364.60	400.00	22	20	17	15	3.25	4.00	4.95	7.37	0.76	1.00	1.43	2.60
C	0.13		0.50	0.54	0.62	0.76	1368.50	1366.00	50.00	15	15	15	15	3.83	4.56	5.22	7.37	0.25	0.32	0.42	0.73
D	0.14		0.50	0.54	0.62	0.76	1367.50	1365.00	50.00	15	15	15	15	3.83	4.56	5.22	7.37	0.28	0.35	0.47	0.81