Figure B-14

Worksheet 4: Graphical Peak Discharge

(Reprinted from: 210-VI-TR-55, Second Ed., June 1986)

Project ______________________ By __________ Date __________

Location ______________________ Checked _______ Date __________

Circle one: Present Developed ______________________

1. Data:

Drainage area .... A_m = ________ mi^2 (acres/640)

Runoff curve number .... CN = ________ (From worksheet 2)

Time of concentration .... T_c = ________ (From worksheet 3)

Pond and swamp areas spread throughout watershed .... = ________ percent of A_m (________ acres or mi^2)

	Storm #1	Storm #2	Storm #3
2. Frequency .... yr			
3. Rainfall, P (24-hour) .... in			
4. Initial abstraction, I_a .... in (Use CN with Table B-5)			
5. Compute I_a/P			
6. Unit peak discharge, q_u .... csm/in (Use T_c and I_a/P with Figure B-16)			
7. Runoff, Q .... in (From worksheet 2)			
8. Pond & swamp adjustment factor, ... F_p (Use percent pond and swamp area with Table B-6. Factor is 1.0 for zero percent pond and swamp area).			
9. Peak discharge, q_p .... cfs (Where $q_p = q_u A_m Q F_p$)			

Figure B-15

Worksheet 4: Graphical Peak Discharge

Worksheet 4 for Example 6

Project ___Hickory Hill___ By ___SEC___ Date ___1-7-92___

Location ___Marion County, WV___ Checked ___ROA___ Date ___1-7-92___

Circle one: Present (Developed) ______

1. Data:

Drainage area ....A_m = 0.39 mi^2 (acres/640)

Runoff curve number.............................CN = 75 (From worksheet 2)

Time of concentration............................T_c = 1.57 (From worksheet 3)

Pond and swamp areas spread throughout watershed .... = ______ percent of A_m (______ acres or mi^2)

	Storm #1	Storm #2	Storm #3
2. Frequency .... yr	25		
3. Rainfall, P (24-hour) .... in	4.63		
4. Initial abstraction, I_a .... in (Use CN with Table B-5)	0.667		
5. Compute I_a/P	0.14		
6. Unit peak discharge, q_u ....csm/in (Use T_c and I_a/P with Figure B-16)	255		
7. Runoff, Q .... in (From worksheet 2)	2.20		
8. Pond & swamp adjustment factor, ... F_p (Use percent pond and swamp area with Table B-6. Factor is 1.0 for zero percent pond and swamp area).	1.0		
9. Peak discharge, q_p ....cfs (Where $q_p = q_u A_m Q F_p$)	219		

Figure B-16

Unit Peak Discharge (qu) for SCS Type II Rainfall Distribution

(Reprinted from: 210-VI-TR-55, Second Ed., June 1986)

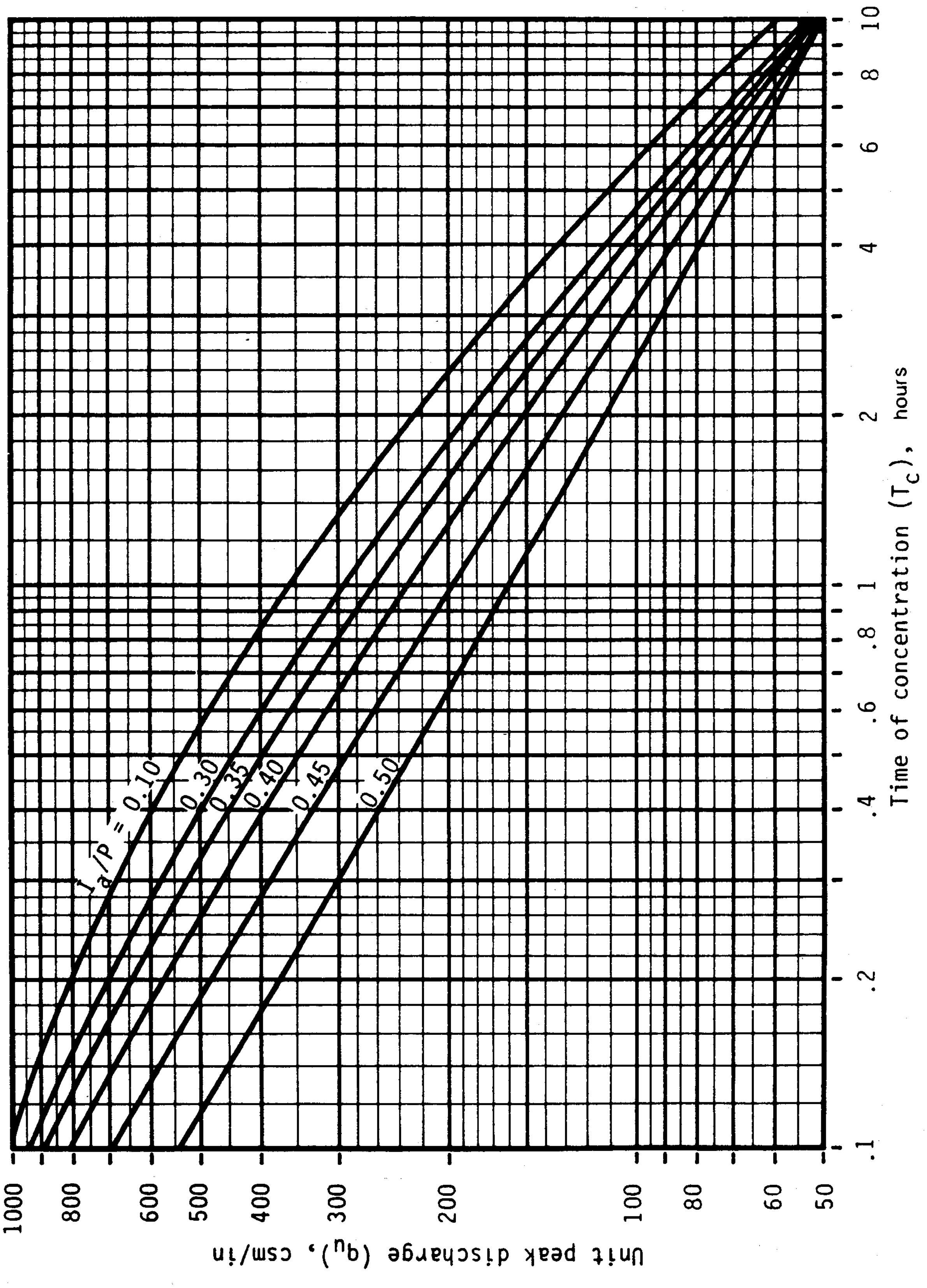

Exhibit B-1

HYDROLOGY: Average 24-Hour Precipitation For Various Frequencies by Counties

County	Freq. (Yrs.)						
	1	2	5	10	25	50	100
Barbour	2.36	2.75	3.50	4.22	4.79	5.30	5.77
Berkeley	2.46	2.97	3.95	4.80	5.50	6.30	6.75
Boone	2.38	2.72	3.48	3.96	4.65	5.00	5.45
Braxton	2.36	2.70	3.44	4.10	4.70	5.10	5.65
Brooke	2.22	2.51	3.21	3.77	4.35	4.77	4.95
Cabell	2.38	2.68	3.42	3.90	4.52	4.92	5.25
Calhoun	2.32	2.63	3.37	3.88	4.56	4.91	5.40
Clay	2.35	2.69	3.45	4.00	4.65	5.04	5.55
Doddridge	2.30	2.61	3.33	3.90	4.57	4.92	5.40
Fayette	2.38	2.75	3.54	4.10	4.75	5.25	5.70
Gilmer	2.33	2.65	3.37	3.95	4.60	4.96	5.47
Grant	2.42	2.88	3.75	4.60	4.98	5.75	6.30
Greenbrier	2.45	2.85	3.75	4.40	4.92	5.60	6.00
Hampshire	2.45	2.93	3.85	4.70	5.20	5.90	6.55
Hancock	2.20	2.50	3.19	3.74	4.30	4.72	4.85
Hardy	2.48	2.94	3.90	4.75	5.40	5.95	6.70
Harrison	2.32	2.66	3.37	4.00	4.65	4.98	5.55
Jackson	2.32	2.60	3.35	3.82	4.45	4.84	5.17
Jefferson	2.50	3.10	4.20	4.95	5.70	6.60	7.00
Kanawha	2.35	2.66	3.44	3.93	4.60	4.96	5.40
Lewis	2.35	2.67	3.40	4.10	4.68	5.10	5.60
Lincoln	2.38	2.70	3.44	3.93	4.58	4.96	5.35
Logan	2.40	2.74	3.50	3.98	4.67	5.10	5.50
McDowell	2.43	2.81	3.64	4.15	4.79	5.32	5.70
Marion	2.30	2.65	3.36	3.99	4.63	4.97	5.50
Marshall	2.25	2.54	3.25	3.81	4.44	4.82	5.10
Mason	2.34	2.60	3.37	3.83	4.45	4.84	5.12
Mercer	2.45	2.85	3.60	4.25	4.87	5.48	5.85
Mineral	2.41	2.87	3.74	4.55	4.95	5.70	6.25
Mingo	2.42	2.77	3.54	4.00	4.69	5.15	5.52
Monongalia	2.30	2.66	3.37	4.00	4.65	4.97	5.50

Exhibit B-1 (Continued)

HYDROLOGY: Average 24-Hour Precipitation For Various Frequencies by Counties

County	Freq. (Yrs.)						
	1	2	5	10	25	50	100
Monroe	2.47	2.89	3.82	4.45	4.97	5.75	6.25
Morgan	2.43	2.93	3.88	4.70	5.10	5.95	6.60
Nicholas	2.39	2.75	3.50	4.20	4.75	5.25	5.75
Ohio	2.24	2.52	3.22	3.79	4.39	4.78	5.00
Pendleton	2.46	2.93	3.85	4.70	5.30	5.85	6.55
Pleasants	2.27	2.54	3.28	3.78	4.42	4.79	5.15
Pocahontas	2.44	2.86	3.75	4.55	4.97	5.70	6.20
Preston	2.35	2.75	3.50	4.20	4.78	5.30	5.75
Putnam	2.34	2.65	3.40	3.86	4.51	4.89	5.25
Raleigh	2.40	2.77	3.56	4.10	4.75	5.25	5.68
Randolph	2.40	2.84	3.61	4.45	4.90	5.55	5.96
Ritchie	2.29	2.58	3.31	3.82	4.50	4.86	5.30
Roane	2.33	2.64	3.37	3.87	4.54	4.89	5.35
Summers	2.43	2.83	3.61	4.30	4.87	5.50	5.90
Taylor	2.34	2.72	3.43	4.10	4.72	5.12	5.65
Tucker	2.39	2.83	3.62	4.45	4.88	5.50	6.00
Tyler	2.28	2.55	3.28	3.80	4.46	4.84	5.20
Upshur	2.37	2.75	3.49	4.22	4.79	5.25	5.77
Wayne	2.42	2.74	3.49	3.95	4.58	4.99	5.40
Webster	2.39	2.76	3.55	4.30	4.82	5.40	5.85
Wetzel	2.28	2.58	3.28	3.85	4.50	4.86	5.25
Wirt	2.29	2.58	3.32	3.80	4.45	4.82	5.20
Wood	2.28	2.55	3.29	3.76	4.37	4.77	5.07
Wyoming	2.41	2.77	3.56	4.07	4.75	5.25	5.65

SCS Hydrologic Soil Groups — West Virginia

Soils are classified into hydrologic soil groups (HSG's) to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSG's; which are A, B, C, and D; are one element used in determining runoff curve numbers.

The infiltration rate is the rate at which water enters the soil at the soil surface. It is controlled by surface conditions. HSG also indicates the transmission rate—the rate at which the water moves within the soil. This rate is controlled by the soil profile. Approximate numerical ranges for transmission rates shown in the HSG definitions were first published by Musgrave (USDA, 1955). The four groups are defined by SCS soil scientists as follows:

Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission.

Group B soils have moderate infiltration rates when thoroughly wetted and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures.

These soils have a moderate rate of water transmission.

Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water, and soils with moderately fine to fine texture. These soils have a low rate of water transmission.

Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a high permanent water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission.

Disturbed Soil Profiles

As a result of urbanization, the soil profile may be considerably altered and the listed group classification may no longer apply. In these circumstances, use the following to determine HSG according to the texture of the new surface soil, provided that significant compaction has not occurred:

HSG	Soil textures
A	Sand or gravel
B	Silt or sandy silt
C	Sandy clay or silty clay
D	Clay

If significant compaction or settlement has occurred, contact the local SCS or SCD Office for assistance in classifying the soil.

Exhibit B-2 — Hydrology: Soil Names and Hydrologic Soil Groups *(continued)*

Albrights — C	Chagrin — B	Ginat — D
Allegheny — B	Chavies — B	Glenford — C
Allen (Use Gallia)	Chilhowie — C	Grigsby — B
Andover — D	Chilo (Use Ginat)	Guernsey — C
Ashton — B	Clarksburg — C	Guthrie (Use Lawrence)
Atkins — B	Clifton — B	Guyan — C
Barbour — B	Clymer — B	Guyandotte — B
Basher — B	Cookport — C	Hackers — B
Beech — C	Coolville — C	Hagerstown — C
Belmont — B	Corydon — D	Gartsells (Use Clymer)
Benevola — C	Cotaco — C	Hazleton — B
Berks — C	Craigsville — B	Holly — D
Bethesda — C	Culleoka — B	Holston (Use Allegheny)
Blackthorn — B	*Dekalb — C	Huntington — B
Blago — D	Dormont — C	Itmann — C
Blairton — C	Drall — B	Janelew — C
Bodine (Use Elliber)	Duffield —B	Jefferson — B
Braddock — B	Duncannon — B	Kanawha — B
Briery — C	Dunmore — B	Kaymine — C
Brinkerton — D	Dunning — D	Laidig — C
Brooke — D	Edgemont — B	Lakin — A
Brookside — C	Edom — C	Landes — B
Buchanan — C	Elkins — D	Latham — D
Calvin — C	Elliber — A	Lawrence — C
Calvin High Base Substratum (Use Cateache)	Ernest — C	Leadvale (use Ernest)
	Fairpoint — C	Leatherbark — C
Calvin Neutral Substratum (Use Cateache)	Faywood — C	Leetonia — C
	Fenwick — C	Lehew — C
Caney Ville — C	Fiveblock — C	Lickdale — C
Captina — C	Frankstown — B	Licking — C
Carbo — C	Frederick — B	Lily — B
Cateache — C	Gallia — B	Linden — B
Cavode — C	Gauley — C	Lindside — C
Cedarcreek — C	Gilpin — C	Litz — C

*For Dekalb, use B where bedrock is fractured.

Exhibit B-2 — Hydrology: Soil Names and Hydrologic Soil Groups *(Continued)*

Lobdell — B
Lodi — B
Macove — B
Mandy — C
Markland — C
Massanetta — B
McGary — C
Meckesville — C
Melvin — D
Mertz — C
Monongahela — C
Montevallo (use Weikert)
Moshannon — B
Murrill — B
Muskingum — C
Myra — C
Nolin — B
Nolo — D
Opequon — C
Orrville — C
Otwell — C
Peabody — D
Philo — B
Pickaway (use Lawrence)
Pineville — B
Pope — B
Potomac — A
Purdy — D
Ramsey — D
Rayne — B
Robertsville — D
Rushtown — A
Schaffenaker — A
Sciotoville — C
Sees — C
Senecaville — B
Sensabaugh — B
Sequatchie (use Chavies)
Sewell — C
Shelocta — B
Shouns — B
Simoda — C
Skidmore — B
Snowdog — C
Summers — B
Taggart — C
Teas (use Cateache)
Tilsit — C
Tioga — B
Toms — C
Trussel — C
Tumbez (use Opequon)
Tygart — D
Tyler — D
Upshur — D
Vandalia — D
Vincent — C
Waynesboro (use Braddock)
**Weikert — C
Wellston (use Rayne)
Westmoreland — B
Wharton — C
Wheeling — B
Woodfield — C
Wyatt (use Markland)
Zoar — C

*For Weikert, use D where Bedrock is solid and impervious.

Contact the Soil Conservation Service State Soil Scientist for hydrologic group of soil variants.