APPENDIX C

BASIN HYDROLOGY DATA

NOAA ATLAS 14 OUTPUT

POINT PRECIPITATION FREQUENCY ESTIMATES FROM NOAA ATLAS 14

Virginia 38.01302 N 78.97012 W 1400 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 2, Version 3
G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley
NOAA, National Weather Service, Silver Spring, Maryland, 2004

Extracted: Tue Apr 14 2009

Confidence Limits | Seasonality | Location Maps | Other Info. | GIS data | Maps | Docs | Return to State Map

Precipitation Frequency Estimates (inches)

ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.30	0.48	0.60	0.83	1.03	1.23	1.33	1.69	2.10	2.60	3.04	3.46	3.99	4.56	6.07	7.49	9.42	11.18
2	0.36	0.58	0.73	1.00	1.26	1.49	1.61	2.02	2.51	3.15	3.68	4.18	4.81	5.46	7.22	8.86	11.10	13.10
5	0.43	0.69	0.88	1.25	1.60	1.89	2.04	2.53	3.14	3.99	4.64	5.26	5.98	6.70	8.67	10.43	12.87	14.98
10	0.49	0.78	0.99	1.44	1.87	2.23	2.40	2.98	3.71	4.69	5.43	6.14	6.92	7.66	9.80	11.61	14.19	16.37
25	0.56	0.89	1.12	1.66	2.21	2.66	2.87	3.59	4.51	5.70	6.56	7.39	8.22	8.96	11.33	13.16	15.86	18.10
50	0.61	0.96	1.22	1.84	2.49	3.02	3.25	4.10	5.21	6.55	7.48	8.41	9.28	9.99	12.52	14.33	17.10	19.36
100	0.65	1.04	1.31	2.01	2.77	3.38	3.65	4.64	5.97	7.46	8.46	9.49	10.38	11.03	13.71	15.46	18.27	20.52
200	0.70	1.11	1.40	2.17	3.05	3.75	4.05	5.21	6.80	8.45	9.50	10.63	11.52	12.10	14.90	16.56	19.40	21.60
500	0.75	1.19	1.49	2.37	3.40	4.24	4.59	6.00	7.98	9.87	10.98	12.23	13.11	13.52	16.48	17.97	20.78	22.89
1000	0.79	1.24	1.56	2.53	3.69	4.62	5.03	6.66	9.01	11.04	12.16	13.52	14.35	14.68	17.67	19.00	21.76	23.78

50-yr, 24-hr = 6.55 in

100-yr, 24-hr = 7.46 in

* These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.
Please refer to NOAA Atlas 14 Document for more information. NOTE: Formatting forces estimates near zero to appear as zero.

* Upper bound of the 90% confidence interval Precipitation Frequency Estimates (inches)

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.34	0.54	0.67	0.92	1.15	1.36	1.49	1.89	2.39	2.90	3.37	3.81	4.37	4.95	6.55	8.04	10.05	11.81
2	0.40	0.64	0.81	1.11	1.40	1.66	1.80	2.27	2.85	3.51	4.08	4.61	5.25	5.94	7.79	9.51	11.84	13.86
5	0.48	0.77	0.97	1.38	1.77	2.10	2.28	2.84	3.55	4.44	5.14	5.80	6.53	7.27	9.36	11.18	13.72	15.85
10	0.54	0.87	1.10	1.59	2.07	2.48	2.67	3.34	4.20	5.21	6.01	6.75	7.54	8.31	10.57	12.44	15.12	17.31
25	0.61	0.98	1.24	1.84	2.44	2.96	3.19	4.01	5.09	6.32	7.24	8.11	8.97	9.72	12.22	14.10	16.91	19.15
50	0.67	1.06	1.35	2.03	2.75	3.35	3.63	4.58	5.88	7.26	8.25	9.23	10.12	10.84	13.51	15.35	18.24	20.48
100	0.72	1.15	1.45	2.22	3.06	3.75	4.07	5.19	6.74	8.27	9.32	10.42	11.31	11.98	14.82	16.58	19.52	21.72
200	0.77	1.23	1.55	2.41	3.38	4.17	4.54	5.84	7.69	9.35	10.47	11.67	12.57	13.15	16.12	17.79	20.74	22.89
500	0.83	1.32	1.66	2.65	3.80	4.75	5.17	6.77	9.10	10.92	12.11	13.43	14.31	14.72	17.89	19.36	22.26	24.28
1000	0.89	1.39	1.75	2.83	4.14	5.21	5.69	7.55	10.34	12.24	13.43	14.85	15.68	16.00	19.22	20.50	23.35	25.25

* The upper bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are greater than.
** These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.

Please refer to NOAA Atlas 14 Document for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

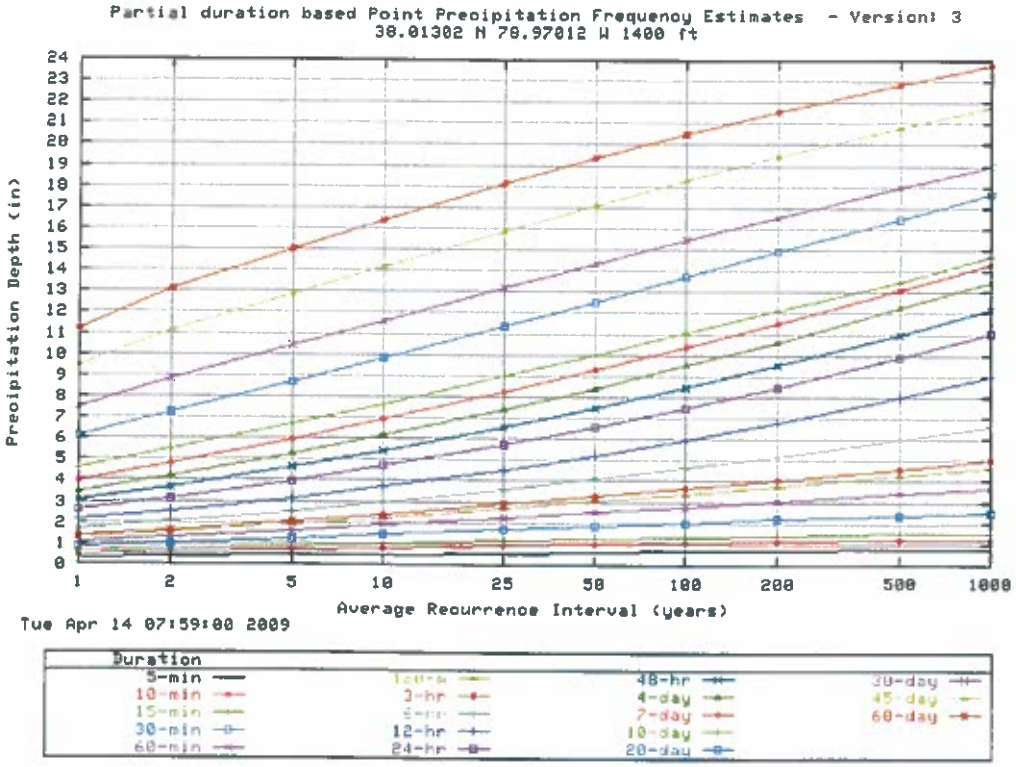
* Lower bound of the 90% confidence interval Precipitation Frequency Estimates (inches)

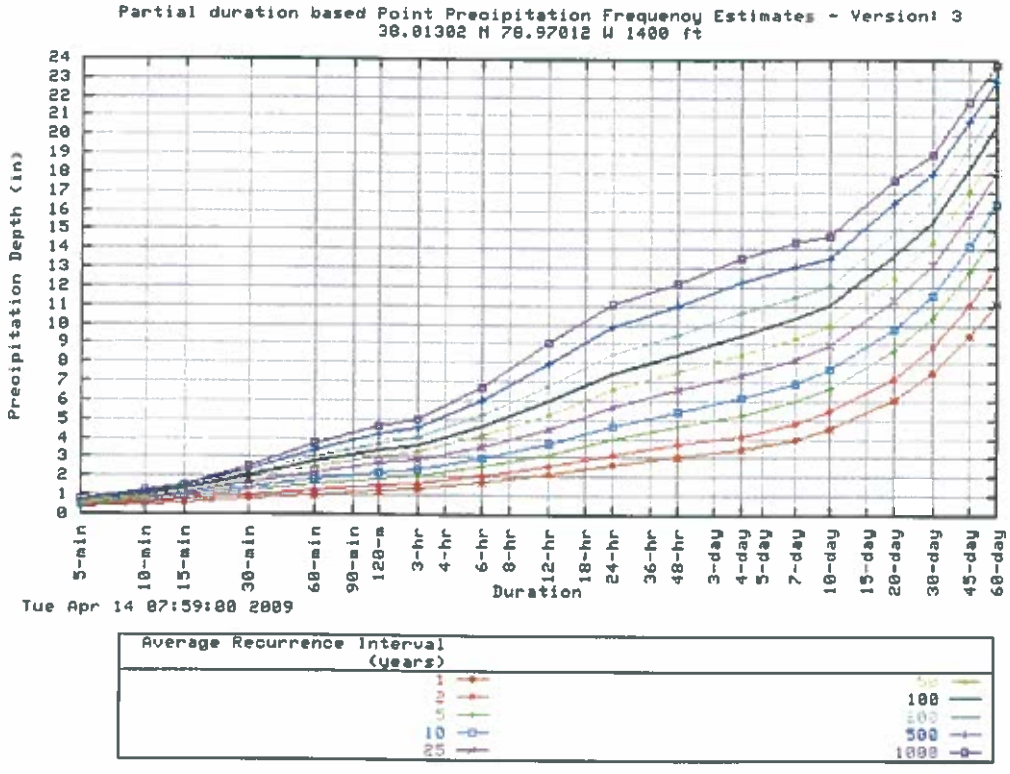
ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.27	0.44	0.55	0.75	0.94	1.11	1.20	1.52	1.88	2.34	2.75	3.15	3.66	4.19	5.64	7.00	8.85	10.54
2	0.33	0.52	0.66	0.91	1.14	1.34	1.45	1.82	2.26	2.83	3.33	3.80	4.40	5.03	6.72	8.28	10.41	12.37
5	0.39	0.62	0.79	1.12	1.44	1.70	1.83	2.27	2.81	3.58	4.19	4.78	5.47	6.15	8.05	9.73	12.06	14.13
10	0.44	0.70	0.89	1.29	1.68	2.00	2.15	2.67	3.30	4.20	4.89	5.56	6.30	7.02	9.08	10.82	13.29	15.43
25	0.50	0.79	1.00	1.49	1.98	2.38	2.56	3.18	3.98	5.08	5.87	6.66	7.47	8.18	10.47	12.24	14.82	17.05
50	0.54	0.86	1.09	1.64	2.22	2.68	2.88	3.61	4.54	5.80	6.66	7.54	8.38	9.09	11.53	13.29	15.95	18.20
100	0.58	0.92	1.16	1.77	2.44	2.97	3.20	4.04	5.13	6.57	7.48	8.47	9.33	10.00	12.59	14.30	17.00	19.26
200	0.61	0.97	1.22	1.90	2.66	3.26	3.52	4.48	5.75	7.37	8.34	9.43	10.30	10.91	13.62	15.26	18.00	20.24
500	0.65	1.02	1.29	2.05	2.94	3.64	3.93	5.07	6.59	8.49	9.54	10.74	11.60	12.11	14.98	16.49	19.21	21.38
1000	0.67	1.06	1.33	2.16	3.15	3.92	4.24	5.53	7.30	9.39	10.48	11.77	12.61	13.08	15.97	17.38	20.06	22.16

* The lower bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are less than.

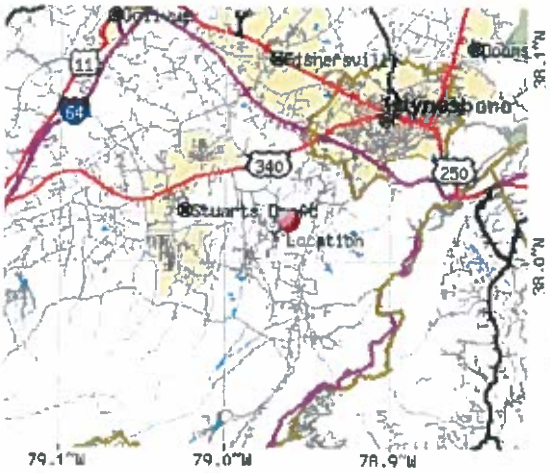
** These precipitation frequency estimates are based on a partial duration maxima series. ARI is the Average Recurrence Interval.
Please refer to NOAA Atlas 14 Document for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

Text version of tables





Maps -



These maps were produced using a direct map request from the U.S. Census Bureau Mapping and Cartographic Resources Tiger Map Server.

Please read disclaimer for more information.

LEGEND

State	Connector
County	Stream
Indian Resv	Military Area
Lake/Pond/Ocean	National Park
Street	Other Park
Expressway	City
Highway	County

Scale 1:228503 *average--true scale depends on monitor resolution

0 2 4 6 8 mi

0 2 4 6 8 10 km

Other Maps/Photographs -

View USGS digital orthophoto quadrangle (DOQ) covering this location from TerraServer; USGS Aerial Photograph may also be available from this site. A DOQ is a computer-generated image of an aerial photograph in which image displacement caused by terrain relief and camera tilts has been removed. It combines the image characteristics of a photograph with the geometric qualities of a map. Visit the USGS for more information.

Watershed/Stream Flow Information -

Find the Watershed for this location using the U.S. Environmental Protection Agency's site.

Climate Data Sources -

Precipitation frequency results are based on data from a variety of sources, but largely NCDC. The following links provide general information about observing sites in the area, regardless of if their data was used in this study. For detailed information about the stations used in this study, please refer to NOAA Atlas 14 Document.

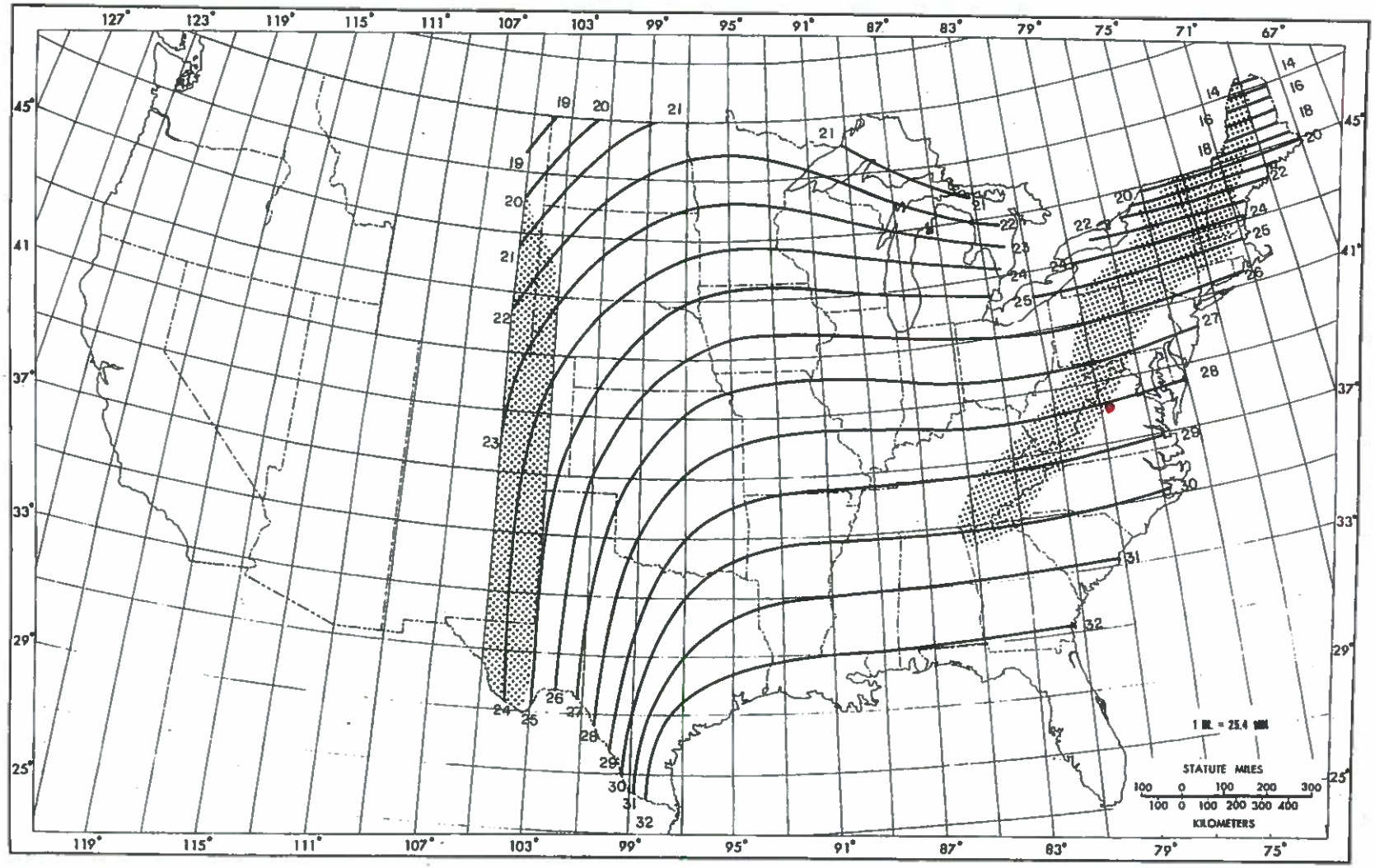
Using the National Climatic Data Center's (NCDC) station search engine, locate other climate stations within

+/-30 minutes ...OR... +/-1 degree of this location (38.01302/-78.97012). Digital ASCII data can be obtained directly from NCDC.

Hydrometeorological Design Studies Center
DOC/NOAA/National Weather Service
1325 East-West Highway
Silver Spring, MD 20910

(301) 713-1669
Questions?: HDSC.Questions@noaa.gov

Disclaimer



PMP = 28 in
½PMP = 14 in

Figure 18.--All-season PMP (in.) for 6 hr 10 mi^2 (26 km^2).

Source: NOAA HMR51 (6/78)

SCS CURVE NUMBER AND LAG TIME CALCULATIONS

THOMPSON & LITTON

Worksheet 2: Runoff Curve Number*

Project: Waynesboro Nursery Dam
Location: Augusta County, Virginia
Subbasin: entire basin
Dev. Condition: Present

By: WRW Date: 3/9/2009
Checked: TAM Date: 4-14-09

Soil Name and Hydrologic Group	Cover Description (Cover type, treatment, and hydrologic description; % impervious; connected or disconnected, etc)	CN* Table 2-2	CN* Figure 2-3	CN* Figure 2-4	Area** Acres	Product CN*Area
Water	Lake	100			12	1200
Allegheny-Cotaco C	Meadow - Continuous Grass	71			455	32305
Buchanan C	Woods, Fair Hydrologic Condition	73			21	1533
Burketown C	Woods, Fair Hydrologic Condition	73			6	438
Chavies (B)	Meadow - Continuous Grass	58			105	6090
Cotaco (B)	Woods, Fair Hydrologic Condition	60			29	1740
Craigsville (B)	Woods, Fair Hydrologic Condition	60			68	4080
Drall (B)	Woods, Fair Hydrologic Condition	60			81	4860
Frederick-Christian (B)	Woods, Fair Hydrologic Condition	60			2	120
Monongahela C	Woods, Fair Hydrologic Condition	73			605	44165
Philo (D)	Woods, Fair Hydrologic Condition	79			17	1343
Purdy (D)	Woods, Fair Hydrologic Condition	79			10	790
Sequoia C	Woods, Fair Hydrologic Condition	73			12	876
Sherando (B)	Woods, Fair Hydrologic Condition	60			323	19380
Unison (B)	Woods, Fair Hydrologic Condition	60			190	11400
		Totals:			1936	130320

*Use only one CN source per line.

**Indicate units (acres, square miles, or %)

Composite CN= 67

THOMPSON & LITTON

Worksheet 3: Time of Concentration (Tc)*

Project:	Waynesboro Nursery Dam	By:	WRW	Date:	3/9/2009
Location:	Augusta County, Virginia	Checked:	TAM	Date:	4-14-09
Subbasin:	entire basin				
Dev. Condition:	Present				

Note: Attach map indicating flow segments

Sheet Flow

		Segment	1
1	Surface Description (Table 3-1)		Woods
2	Manning's n (Table 3-1)		0.400
3	Flow Length L (L<= 300 ft)	ft	300
4	Change in Elevation	ft	30
5	2-yr Rainfall, P2	in	3.0
6	Land Slope, s	ft/ft	0.100
7	Tt=0.007(nL)^0.8/(P2^0.5*s^0.4)	hr	0.47

Shallow Concentrated Flow

		Segment	2
8	Surface Description (paved/unpaved)		unpaved
9	Flow Length L	ft	4120
10	Change in Elevation	ft	610
11	Watercourse Slope, s	ft/ft	0.148
12	Average Velocity, V (Fig 3-1)	fps	6.25
13	Tt=L/(3600V)	hr	0.18

Channel Flow

		Segment	3
14a	Channel Bottom Width, B	ft	5.00
14b	Channel Side Slope z, where zH:1V		1
14c	Full Bank Flow Depth, d	ft	2.00
14d	Cross Sectional Flow Area, A	sf	14.00
15	Wetter Perimeter, P	ft	10.66
16	Hydraulic Radius, R=A/P	ft	1.31
17	Channel Drop	ft	400
18	Channel Slope, S	ft/ft	0.015
19	Manning's n		0.100
20	V=1.49*R^0.667*S^0.5/n	fps	2.2
21	Flow Length L	ft	26100
22	Tt=L/(3600V)	hr	3.28

Flow in Reservoir

		Segment	4
23	Acceleration due to Gravity g	fps^2	32.2
24	Mean Depth of Reservoir Dm	ft	3.5

25	Vw=(gDm)^0.5	fps	10.6
26	Flow Length L	ft	1170
27	Tt=L/(3600Vw)	hr	0.03
28	**Total Tt or Tc (7+13+22+27)**	hr	3.96
		LAG (hr)	2.37

*Reference: Procedure from SCS TR-55, Urban Hydrology for Small Watersheds (June 1986)

HEC-HMS HYDROGRAPH OUTPUT

South River Dam #19 - Augusta County, Virginia
HEC-HMS Hydrograph Output
24-hr 50-yr Type II Storm

Date	Time	Inflow (CFS)	Date	Time	Inflow (CFS)	Date	Time	Inflow (CFS)	Date	Time	Inflow (CFS)
1-Jan-10	0:00	0	1-Jan-10	12:30	223	2-Jan-10	1:00	118	2-Jan-10	13:30	0
1-Jan-10	0:15	0	1-Jan-10	12:45	343	2-Jan-10	1:15	112	2-Jan-10	13:45	0
1-Jan-10	0:30	0	1-Jan-10	13:00	494	2-Jan-10	1:30	105	2-Jan-10	14:00	0
1-Jan-10	0:45	0	1-Jan-10	13:15	667	2-Jan-10	1:45	97	2-Jan-10	14:15	0
1-Jan-10	1:00	0	1-Jan-10	13:30	822	2-Jan-10	2:00	88	2-Jan-10	14:30	0
1-Jan-10	1:15	0	1-Jan-10	13:45	945	2-Jan-10	2:15	79	2-Jan-10	14:45	0
1-Jan-10	1:30	0	1-Jan-10	14:00	1,029	2-Jan-10	2:30	70	2-Jan-10	15:00	0
1-Jan-10	1:45	0	1-Jan-10	14:15	1,074	2-Jan-10	2:45	61	2-Jan-10	15:15	0
1-Jan-10	2:00	0	1-Jan-10	14:30	1,093	2-Jan-10	3:00	53	2-Jan-10	15:30	0
1-Jan-10	2:15	0	1-Jan-10	14:45	1,074	2-Jan-10	3:15	45	2-Jan-10	15:45	0
1-Jan-10	2:30	0	1-Jan-10	15:00	1,038	2-Jan-10	3:30	38	2-Jan-10	16:00	0
1-Jan-10	2:45	0	1-Jan-10	15:15	984	2-Jan-10	3:45	32	2-Jan-10	16:15	0
1-Jan-10	3:00	0	1-Jan-10	15:30	911	2-Jan-10	4:00	27	2-Jan-10	16:30	0
1-Jan-10	3:15	0	1-Jan-10	15:45	823	2-Jan-10	4:15	23	2-Jan-10	16:45	0
1-Jan-10	3:30	0	1-Jan-10	16:00	743	2-Jan-10	4:30	19	2-Jan-10	17:00	0
1-Jan-10	3:45	0	1-Jan-10	16:15	678	2-Jan-10	4:45	17	2-Jan-10	17:15	0
1-Jan-10	4:00	0	1-Jan-10	16:30	620	2-Jan-10	5:00	14	2-Jan-10	17:30	0
1-Jan-10	4:15	0	1-Jan-10	16:45	569	2-Jan-10	5:15	12	2-Jan-10	17:45	0
1-Jan-10	4:30	0	1-Jan-10	17:00	526	2-Jan-10	5:30	10	2-Jan-10	18:00	0
1-Jan-10	4:45	0	1-Jan-10	17:15	485	2-Jan-10	5:45	9	2-Jan-10	18:15	0
1-Jan-10	5:00	0	1-Jan-10	17:30	449	2-Jan-10	6:00	7	2-Jan-10	18:30	0
1-Jan-10	5:15	0	1-Jan-10	17:45	414	2-Jan-10	6:15	6	2-Jan-10	18:45	0
1-Jan-10	5:30	0	1-Jan-10	18:00	386	2-Jan-10	6:30	5	2-Jan-10	19:00	0
1-Jan-10	5:45	0	1-Jan-10	18:15	359	2-Jan-10	6:45	4	2-Jan-10	19:15	0
1-Jan-10	6:00	0	1-Jan-10	18:30	336	2-Jan-10	7:00	4	2-Jan-10	19:30	0
1-Jan-10	6:15	0	1-Jan-10	18:45	315	2-Jan-10	7:15	3	2-Jan-10	19:45	0
1-Jan-10	6:30	0	1-Jan-10	19:00	296	2-Jan-10	7:30	3	2-Jan-10	20:00	0
1-Jan-10	6:45	0	1-Jan-10	19:15	279	2-Jan-10	7:45	2	2-Jan-10	20:15	0
1-Jan-10	7:00	0	1-Jan-10	19:30	264	2-Jan-10	8:00	2	2-Jan-10	20:30	0
1-Jan-10	7:15	0	1-Jan-10	19:45	250	2-Jan-10	8:15	2	2-Jan-10	20:45	0
1-Jan-10	7:30	0	1-Jan-10	20:00	238	2-Jan-10	8:30	1	2-Jan-10	21:00	0
1-Jan-10	7:45	0	1-Jan-10	20:15	227	2-Jan-10	8:45	1	2-Jan-10	21:15	0
1-Jan-10	8:00	0	1-Jan-10	20:30	216	2-Jan-10	9:00	1	2-Jan-10	21:30	0
1-Jan-10	8:15	0	1-Jan-10	20:45	206	2-Jan-10	9:15	1	2-Jan-10	21:45	0
1-Jan-10	8:30	0	1-Jan-10	21:00	197	2-Jan-10	9:30	1	2-Jan-10	22:00	0
1-Jan-10	8:45	0	1-Jan-10	21:15	188	2-Jan-10	9:45	1	2-Jan-10	22:15	0
1-Jan-10	9:00	0	1-Jan-10	21:30	181	2-Jan-10	10:00	0	2-Jan-10	22:30	0
1-Jan-10	9:15	0	1-Jan-10	21:45	174	2-Jan-10	10:15	0	2-Jan-10	22:45	0
1-Jan-10	9:30	0	1-Jan-10	22:00	167	2-Jan-10	10:30	0	2-Jan-10	23:00	0
1-Jan-10	9:45	0	1-Jan-10	22:15	162	2-Jan-10	10:45	0	2-Jan-10	23:15	0
1-Jan-10	10:00	0	1-Jan-10	22:30	156	2-Jan-10	11:00	0	2-Jan-10	23:30	0
1-Jan-10	10:15	1	1-Jan-10	22:45	151	2-Jan-10	11:15	0	2-Jan-10	23:45	0
1-Jan-10	10:30	2	1-Jan-10	23:00	147	2-Jan-10	11:30	0	3-Jan-10	0:00	0
1-Jan-10	10:45	4	1-Jan-10	23:15	143	2-Jan-10	11:45	0			
1-Jan-10	11:00	6	1-Jan-10	23:30	139	2-Jan-10	12:00	0			
1-Jan-10	11:15	11	1-Jan-10	23:45	135	2-Jan-10	12:15	0			
1-Jan-10	11:30	17	2-Jan-10	0:00	132	2-Jan-10	12:30	0			
1-Jan-10	11:45	29	2-Jan-10	0:15	129	2-Jan-10	12:45	0			
1-Jan-10	12:00	66	2-Jan-10	0:30	126	2-Jan-10	13:00	0			
1-Jan-10	12:15	133	2-Jan-10	0:45	122	2-Jan-10	13:15	0			

South River Dam #19 - Augusta County, Virginia
HEC-HMS Hydrograph Output
24-hr 100-yr Type II Storm

Date	Time	Inflow (CFS)	Date	Time	Inflow (CFS)	Date	Time	Inflow (CFS)	Date	Time	Inflow (CFS)
1-Jan-10	0:00	0	1-Jan-10	12:30	302	2-Jan-10	1:00	140	2-Jan-10	13:30	0.00
1-Jan-10	0:15	0	1-Jan-10	12:45	453	2-Jan-10	1:15	133	2-Jan-10	13:45	0.00
1-Jan-10	0:30	0	1-Jan-10	13:00	643	2-Jan-10	1:30	125	2-Jan-10	14:00	0.00
1-Jan-10	0:45	0	1-Jan-10	13:15	857	2-Jan-10	1:45	115	2-Jan-10	14:15	0.00
1-Jan-10	1:00	0	1-Jan-10	13:30	1,049	2-Jan-10	2:00	105	2-Jan-10	14:30	0.00
1-Jan-10	1:15	0	1-Jan-10	13:45	1,199	2-Jan-10	2:15	94	2-Jan-10	14:45	0.00
1-Jan-10	1:30	0	1-Jan-10	14:00	1,299	2-Jan-10	2:30	83	2-Jan-10	15:00	0.00
1-Jan-10	1:45	0	1-Jan-10	14:15	1,352	2-Jan-10	2:45	72	2-Jan-10	15:15	0.00
1-Jan-10	2:00	0	1-Jan-10	14:30	1,371	2-Jan-10	3:00	62	2-Jan-10	15:30	0.00
1-Jan-10	2:15	0	1-Jan-10	14:45	1,343	2-Jan-10	3:15	53	2-Jan-10	15:45	0.00
1-Jan-10	2:30	0	1-Jan-10	15:00	1,294	2-Jan-10	3:30	45	2-Jan-10	16:00	0.00
1-Jan-10	2:45	0	1-Jan-10	15:15	1,224	2-Jan-10	3:45	38	2-Jan-10	16:15	0.00
1-Jan-10	3:00	0	1-Jan-10	15:30	1,130	2-Jan-10	4:00	32	2-Jan-10	16:30	0.00
1-Jan-10	3:15	0	1-Jan-10	15:45	1,018	2-Jan-10	4:15	27	2-Jan-10	16:45	0.00
1-Jan-10	3:30	0	1-Jan-10	16:00	917	2-Jan-10	4:30	23	2-Jan-10	17:00	0.00
1-Jan-10	3:45	0	1-Jan-10	16:15	835	2-Jan-10	4:45	20	2-Jan-10	17:15	0.00
1-Jan-10	4:00	0	1-Jan-10	16:30	761	2-Jan-10	5:00	17	2-Jan-10	17:30	0.00
1-Jan-10	4:15	0	1-Jan-10	16:45	698	2-Jan-10	5:15	14	2-Jan-10	17:45	0.00
1-Jan-10	4:30	0	1-Jan-10	17:00	644	2-Jan-10	5:30	12	2-Jan-10	18:00	0.00
1-Jan-10	4:45	0	1-Jan-10	17:15	593	2-Jan-10	5:45	10	2-Jan-10	18:15	0.00
1-Jan-10	5:00	0	1-Jan-10	17:30	547	2-Jan-10	6:00	9	2-Jan-10	18:30	0.00
1-Jan-10	5:15	0	1-Jan-10	17:45	504	2-Jan-10	6:15	7	2-Jan-10	18:45	0.00
1-Jan-10	5:30	0	1-Jan-10	18:00	469	2-Jan-10	6:30	6	2-Jan-10	19:00	0.00
1-Jan-10	5:45	0	1-Jan-10	18:15	436	2-Jan-10	6:45	5	2-Jan-10	19:15	0.00
1-Jan-10	6:00	0	1-Jan-10	18:30	407	2-Jan-10	7:00	4	2-Jan-10	19:30	0.00
1-Jan-10	6:15	0	1-Jan-10	18:45	381	2-Jan-10	7:15	4	2-Jan-10	19:45	0.00
1-Jan-10	6:30	0	1-Jan-10	19:00	358	2-Jan-10	7:30	3	2-Jan-10	20:00	0.00
1-Jan-10	6:45	0	1-Jan-10	19:15	336	2-Jan-10	7:45	3	2-Jan-10	20:15	0.00
1-Jan-10	7:00	0	1-Jan-10	19:30	318	2-Jan-10	8:00	2	2-Jan-10	20:30	0.00
1-Jan-10	7:15	0	1-Jan-10	19:45	301	2-Jan-10	8:15	2	2-Jan-10	20:45	0.00
1-Jan-10	7:30	0	1-Jan-10	20:00	286	2-Jan-10	8:30	2	2-Jan-10	21:00	0.00
1-Jan-10	7:45	0	1-Jan-10	20:15	272	2-Jan-10	8:45	1	2-Jan-10	21:15	0.00
1-Jan-10	8:00	0	1-Jan-10	20:30	259	2-Jan-10	9:00	1	2-Jan-10	21:30	0.00
1-Jan-10	8:15	0	1-Jan-10	20:45	247	2-Jan-10	9:15	1	2-Jan-10	21:45	0.00
1-Jan-10	8:30	0	1-Jan-10	21:00	236	2-Jan-10	9:30	1	2-Jan-10	22:00	0.00
1-Jan-10	8:45	0	1-Jan-10	21:15	225	2-Jan-10	9:45	1	2-Jan-10	22:15	0.00
1-Jan-10	9:00	0	1-Jan-10	21:30	216	2-Jan-10	10:00	1	2-Jan-10	22:30	0.00
1-Jan-10	9:15	0	1-Jan-10	21:45	207	2-Jan-10	10:15	0	2-Jan-10	22:45	0.00
1-Jan-10	9:30	1	1-Jan-10	22:00	200	2-Jan-10	10:30	0	2-Jan-10	23:00	0.00
1-Jan-10	9:45	1	1-Jan-10	22:15	193	2-Jan-10	10:45	0	2-Jan-10	23:15	0.00
1-Jan-10	10:00	3	1-Jan-10	22:30	186	2-Jan-10	11:00	0	2-Jan-10	23:30	0.00
1-Jan-10	10:15	4	1-Jan-10	22:45	180	2-Jan-10	11:15	0	2-Jan-10	23:45	0.00
1-Jan-10	10:30	7	1-Jan-10	23:00	175	2-Jan-10	11:30	0	3-Jan-10	0:00	0.00
1-Jan-10	10:45	11	1-Jan-10	23:15	170	2-Jan-10	11:45	0			
1-Jan-10	11:00	16	1-Jan-10	23:30	165	2-Jan-10	12:00	0			
1-Jan-10	11:15	24	1-Jan-10	23:45	161	2-Jan-10	12:15	0			
1-Jan-10	11:30	34	2-Jan-10	0:00	157	2-Jan-10	12:30	0			
1-Jan-10	11:45	52	2-Jan-10	0:15	153	2-Jan-10	12:45	0			
1-Jan-10	12:00	101	2-Jan-10	0:30	149	2-Jan-10	13:00	0			
1-Jan-10	12:15	188	2-Jan-10	0:45	145	2-Jan-10	13:15	0			

South River Dam #19 - Augusta County, Virginia
HEC-HMS Hydrograph Output
6-hour 0.5 PMF

Date	Time	Inflow (CFS)	Date	Time	Inflow (CFS)
1-Jan-10	0:00	0	1-Jan-10	12:30	115
1-Jan-10	0:15	0	1-Jan-10	12:45	97
1-Jan-10	0:30	6	1-Jan-10	13:00	82
1-Jan-10	0:45	33	1-Jan-10	13:15	70
1-Jan-10	1:00	87	1-Jan-10	13:30	60
1-Jan-10	1:15	171	1-Jan-10	13:45	50
1-Jan-10	1:30	290	1-Jan-10	14:00	42
1-Jan-10	1:45	451	1-Jan-10	14:15	35
1-Jan-10	2:00	644	1-Jan-10	14:30	29
1-Jan-10	2:15	842	1-Jan-10	14:45	24
1-Jan-10	2:30	1,027	1-Jan-10	15:00	19
1-Jan-10	2:45	1,194	1-Jan-10	15:15	15
1-Jan-10	3:00	1,354	1-Jan-10	15:30	12
1-Jan-10	3:15	1,534	1-Jan-10	15:45	10
1-Jan-10	3:30	1,730	1-Jan-10	16:00	8
1-Jan-10	3:45	1,950	1-Jan-10	16:15	6
1-Jan-10	4:00	2,198	1-Jan-10	16:30	5
1-Jan-10	4:15	2,469	1-Jan-10	16:45	3
1-Jan-10	4:30	2,730	1-Jan-10	17:00	2
1-Jan-10	4:45	2,947	1-Jan-10	17:15	2
1-Jan-10	5:00	3,110	1-Jan-10	17:30	1
1-Jan-10	5:15	3,213	1-Jan-10	17:45	0
1-Jan-10	5:30	3,265	1-Jan-10	18:00	0
1-Jan-10	5:45	3,276	1-Jan-10	18:15	0
1-Jan-10	6:00	3,238	1-Jan-10	18:30	0
1-Jan-10	6:15	3,168	1-Jan-10	18:45	0
1-Jan-10	6:30	3,060	1-Jan-10	19:00	0
1-Jan-10	6:45	2,912	1-Jan-10	19:15	0
1-Jan-10	7:00	2,734	1-Jan-10	19:30	0
1-Jan-10	7:15	2,553	1-Jan-10	19:45	0
1-Jan-10	7:30	2,362	1-Jan-10	20:00	0
1-Jan-10	7:45	2,158	1-Jan-10	20:15	0
1-Jan-10	8:00	1,947	1-Jan-10	20:30	0
1-Jan-10	8:15	1,737	1-Jan-10	20:45	0
1-Jan-10	8:30	1,529	1-Jan-10	21:00	0
1-Jan-10	8:45	1,329	1-Jan-10	21:15	0
1-Jan-10	9:00	1,144	1-Jan-10	21:30	0
1-Jan-10	9:15	978	1-Jan-10	21:45	0
1-Jan-10	9:30	828	1-Jan-10	22:00	0
1-Jan-10	9:45	699	1-Jan-10	22:15	0
1-Jan-10	10:00	591	1-Jan-10	22:30	0
1-Jan-10	10:15	502	1-Jan-10	22:45	0
1-Jan-10	10:30	427	1-Jan-10	23:00	0
1-Jan-10	10:45	364	1-Jan-10	23:15	0
1-Jan-10	11:00	310	1-Jan-10	23:30	0
1-Jan-10	11:15	264	1-Jan-10	23:45	0
1-Jan-10	11:30	224	2-Jan-10	0:00	0
1-Jan-10	11:45	190			
1-Jan-10	12:00	161			
1-Jan-10	12:15	136			

South River Dam #19 - Augusta County, Virginia
HEC-HMS Hydrograph Output
6-hour PMF

Date	Time	Inflow (CFS)	Date	Time	Inflow (CFS)
1-Jan-10	0:00	0	1-Jan-10	12:30	253
1-Jan-10	0:15	0	1-Jan-10	12:45	213
1-Jan-10	0:30	30	1-Jan-10	13:00	179
1-Jan-10	0:45	140	1-Jan-10	13:15	152
1-Jan-10	1:00	338	1-Jan-10	13:30	129
1-Jan-10	1:15	631	1-Jan-10	13:45	109
1-Jan-10	1:30	1,040	1-Jan-10	14:00	92
1-Jan-10	1:45	1,579	1-Jan-10	14:15	77
1-Jan-10	2:00	2,191	1-Jan-10	14:30	63
1-Jan-10	2:15	2,781	1-Jan-10	14:45	52
1-Jan-10	2:30	3,302	1-Jan-10	15:00	41
1-Jan-10	2:45	3,735	1-Jan-10	15:15	32
1-Jan-10	3:00	4,124	1-Jan-10	15:30	25
1-Jan-10	3:15	4,514	1-Jan-10	15:45	20
1-Jan-10	3:30	4,914	1-Jan-10	16:00	16
1-Jan-10	3:45	5,348	1-Jan-10	16:15	13
1-Jan-10	4:00	5,820	1-Jan-10	16:30	10
1-Jan-10	4:15	6,320	1-Jan-10	16:45	7
1-Jan-10	4:30	6,791	1-Jan-10	17:00	5
1-Jan-10	4:45	7,175	1-Jan-10	17:15	3
1-Jan-10	5:00	7,448	1-Jan-10	17:30	2
1-Jan-10	5:15	7,595	1-Jan-10	17:45	1
1-Jan-10	5:30	7,637	1-Jan-10	18:00	0
1-Jan-10	5:45	7,590	1-Jan-10	18:15	0
1-Jan-10	6:00	7,440	1-Jan-10	18:30	0
1-Jan-10	6:15	7,224	1-Jan-10	18:45	0
1-Jan-10	6:30	6,930	1-Jan-10	19:00	0
1-Jan-10	6:45	6,555	1-Jan-10	19:15	0
1-Jan-10	7:00	6,123	1-Jan-10	19:30	0
1-Jan-10	7:15	5,690	1-Jan-10	19:45	0
1-Jan-10	7:30	5,246	1-Jan-10	20:00	0
1-Jan-10	7:45	4,777	1-Jan-10	20:15	0
1-Jan-10	8:00	4,301	1-Jan-10	20:30	0
1-Jan-10	8:15	3,830	1-Jan-10	20:45	0
1-Jan-10	8:30	3,367	1-Jan-10	21:00	0
1-Jan-10	8:45	2,924	1-Jan-10	21:15	0
1-Jan-10	9:00	2,515	1-Jan-10	21:30	0
1-Jan-10	9:15	2,150	1-Jan-10	21:45	0
1-Jan-10	9:30	1,821	1-Jan-10	22:00	0
1-Jan-10	9:45	1,537	1-Jan-10	22:15	0
1-Jan-10	10:00	1,299	1-Jan-10	22:30	0
1-Jan-10	10:15	1,105	1-Jan-10	22:45	0
1-Jan-10	10:30	939	1-Jan-10	23:00	0
1-Jan-10	10:45	801	1-Jan-10	23:15	0
1-Jan-10	11:00	682	1-Jan-10	23:30	0
1-Jan-10	11:15	580	1-Jan-10	23:45	0
1-Jan-10	11:30	492	2-Jan-10	0:00	0
1-Jan-10	11:45	417			
1-Jan-10	12:00	354			
1-Jan-10	12:15	299			