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CONSULTING ENGINEERS

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Project Name: Terradyne West

Project Number: 1809

Description: Runoff from total development(existing and developed conditions)

Computed By: Kenny E. Hill

TOTAL DRAINAGE AREA

50.8 acres

Length: 3350' **Elevation Difference:** 30' **Slope:** 0.90%

Soil Type

Rd	85%	Type D
Ce	2%	Type C
Ec	3%	Type B
Gb	10%	Type D

SCS Curve Numbers (CN) Existing Condition

95%	Type D	Pasture good Condition	CN=80	76
02%	Type C	Pasture good Condition	CN=74	1.5
03%	Type B	Pasture good Condition	CN=61	<u>1.8</u>
Composite CN				79.3

Lag Time: 0.902 hrs or 90.2 min. Tc

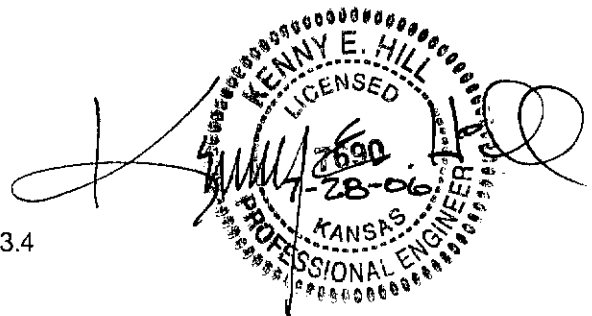
Existing Runoff

Q25	Q50	Q100
84.31 cfs	97.75 cfs	117.08 cfs

FUTURE CONDITION

SCS Curve Numbers (CN) Developed Condition

11.0 ac.	Patio Homes	CN=92	1012
7.9 ac.	Half Acre Lots	CN=85	672
31.9 ac.	Golf Course	CN=80	<u>2552</u>
Composite CN			4236/50.8=83.4



Hydraulic Length Modified

50% of the total length modified

Lag Factor 0.73

Percent Impervious

11.0 ac.	Patio Homes	65% Impervious	715
7.90 ac.	Half acre Lots	25% Impervious	197.5
<u>31.9 ac.</u>	Golf Course	0	<u> </u>

50.8 ac. 912.5 / 50.8 = 18% Impervious

Lag Factor = 0.88

Multiply Existing Condition Lag Time by 0.88 x 0.73 $0.88 \times 0.73 \times .902 = 0.579$ for Developed Condition Lag time.

Lag = .579 hrs

$T_c = 0.579 \text{ hrs} \times 60 \text{ min./0.6} = 57.9 \text{ min.}$ Developed Condition

Developed Condition Runoff

Q25	Q50	Q100
124.89 cfs	143.21 cfs	169.41 cfs

Difference Between Existing and Developed Runoff

Q25	Q50	Q100
40.58 cfs	45.46 cfs	52.33 cfs

DRAINAGE AREA TO POND

20.57 acres

Length: 1400' **Elevation Difference:** 28' **Slope:** 2.0%

Soil Type

Rd 85% Type D

SCS Curve Number (CN) Existing Condition

Type D Pasture good Condition CN=80 76

Lag Time: 0.332 hrs or 33.2 min. T_c

FUTURE CONDITION

SCS Curve Numbers (CN) Developed Condition

5.2 ac.	Patio Homes	CN=92	478
15.37 ac.	Golf Course	CN=80	<u>1230</u>

Composite CN 1708 / 20.57=83.0

Hydraulic Length Modified

50% of the total length modified

Lag Factor 0.73

Percent Impervious

5.2 ac. Patio Homes	65% Impervious	338
15.37 ac. Golf Course	0	_____

20.57 ac. 338 / 20.57 = 16.4% Impervious

Lag Factor = 0.91

Multiply Existing Condition Lag Time by $0.91 \times 0.73 \times 0.332 = 0.221$ for Developed Condition Lag time.

Lag = .221 hrs

$T_c = 0.221 \text{ hrs} \times 60 \text{ min./hr} / 0.6 = 22.1 \text{ min. Developed Condition}$

Developed Condition Runoff

Q25	Q50	Q100
80.27 cfs	92.07 cfs	108.94 cfs

Routed through Ponding Area

Q25	Q50	Q100	
13.31 cfs	15.23 cfs	17.71 cfs	
1317.27	1317.51	1317.87	Water Surface Elevation

Reduction in Runoff through Ponding Area

Q25	Q50	Q100
66.96cfs	76.84cfs	91.23cfs

The calculated increased runoff after total development is 52.33 cfs for a 100 year storm. The reduction in runoff provided by the ponding area is 91.23 cfs for the same storm. Resulting in a 100 year storm discharge, after total development of this area, of about 38.9 cfs less than what it is at the present time.

Hydrograph Plot

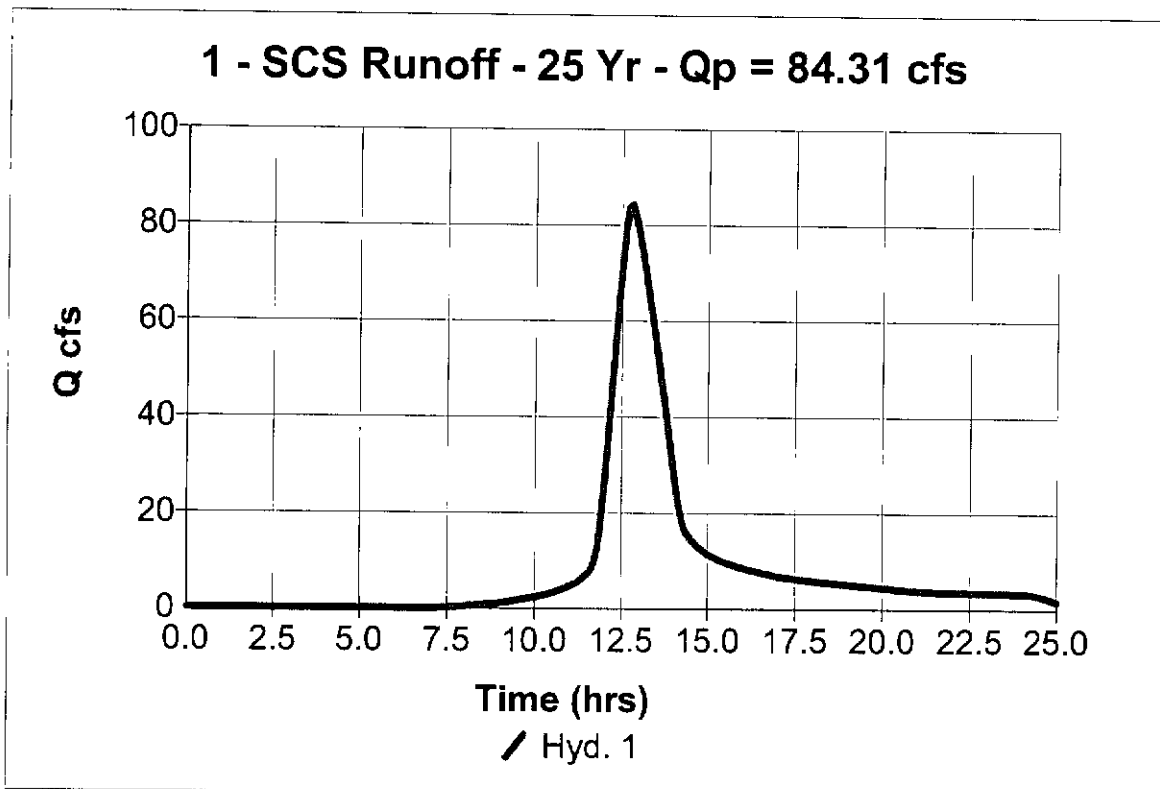
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

Existing Condition

Hydrograph type	= SCS Runoff	Peak discharge	= 84.31 cfs
Storm frequency	= 25 yrs	Time interval	= 6 min
Drainage area	= 50.80 ac	Curve number	= 79.3
Basin Slope	= 0.9 %	Hydraulic length	= 3350 ft
Tc method	= LAG	Time of conc. (Tc)	= 90.2 min
Total precip.	= 6.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 16.848 acft



Hydrograph Plot

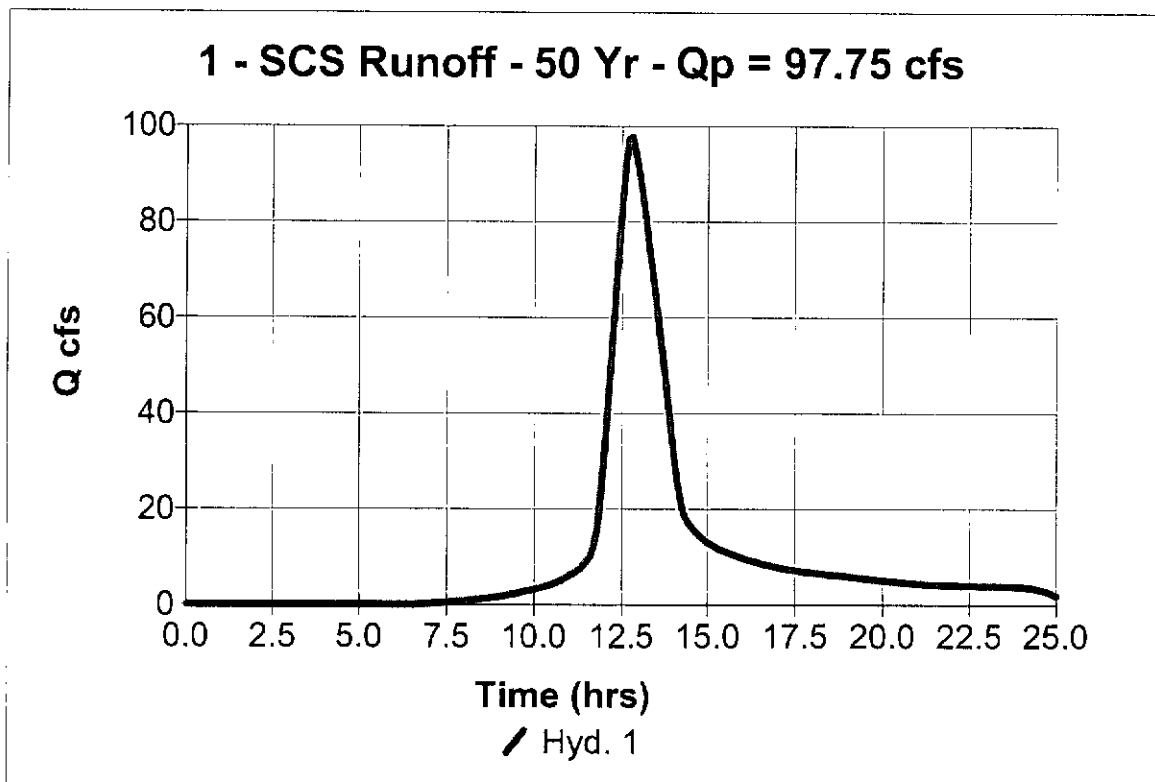
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

Existing Condition

Hydrograph type	= SCS Runoff	Peak discharge	= 97.75 cfs
Storm frequency	= 50 yrs	Time interval	= 6 min
Drainage area	= 50.80 ac	Curve number	= 79.3
Basin Slope	= 0.9 %	Hydraulic length	= 3350 ft
Tc method	= LAG	Time of conc. (Tc)	= 90.2 min
Total precip.	= 7.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 19.547 acft



Hydrograph Plot

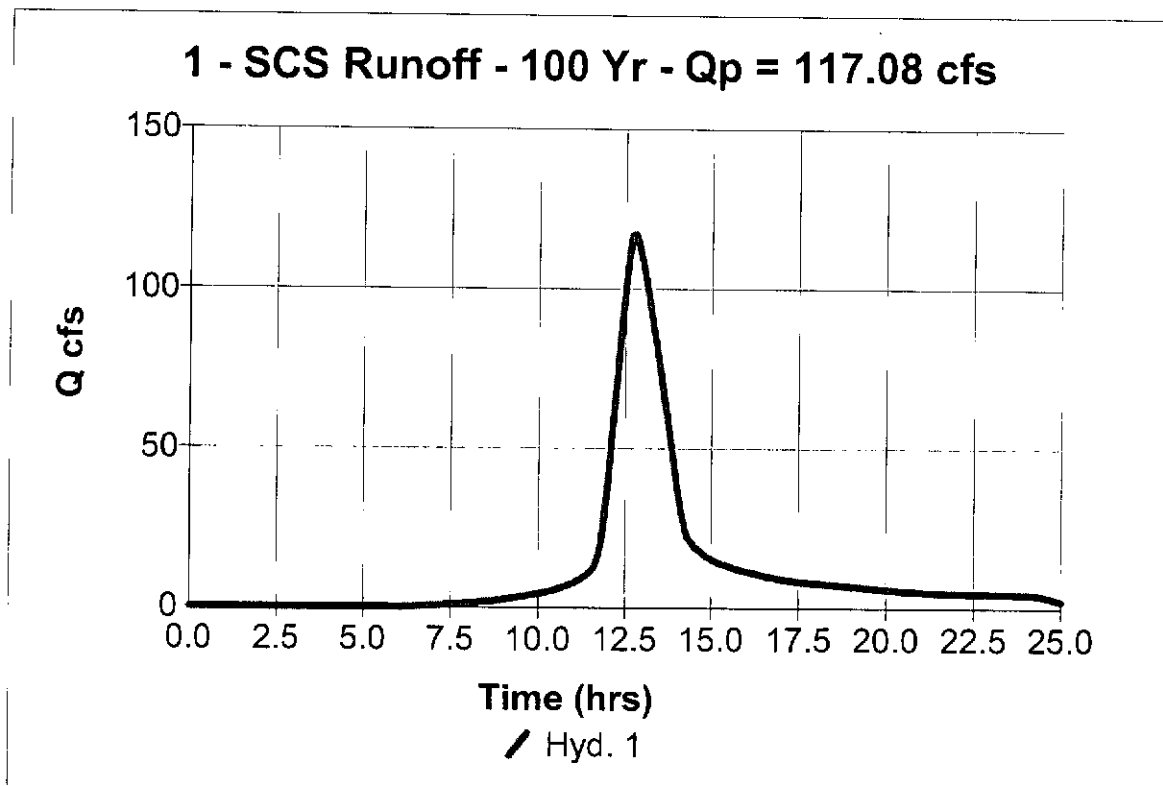
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

Existing Condition

Hydrograph type	= SCS Runoff	Peak discharge	= 117.08 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 50.80 ac	Curve number	= 79.3
Basin Slope	= 0.9 %	Hydraulic length	= 3350 ft
Tc method	= LAG	Time of conc. (Tc)	= 90.2 min
Total precip.	= 8.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 23.465 acft



Hydrograph Plot

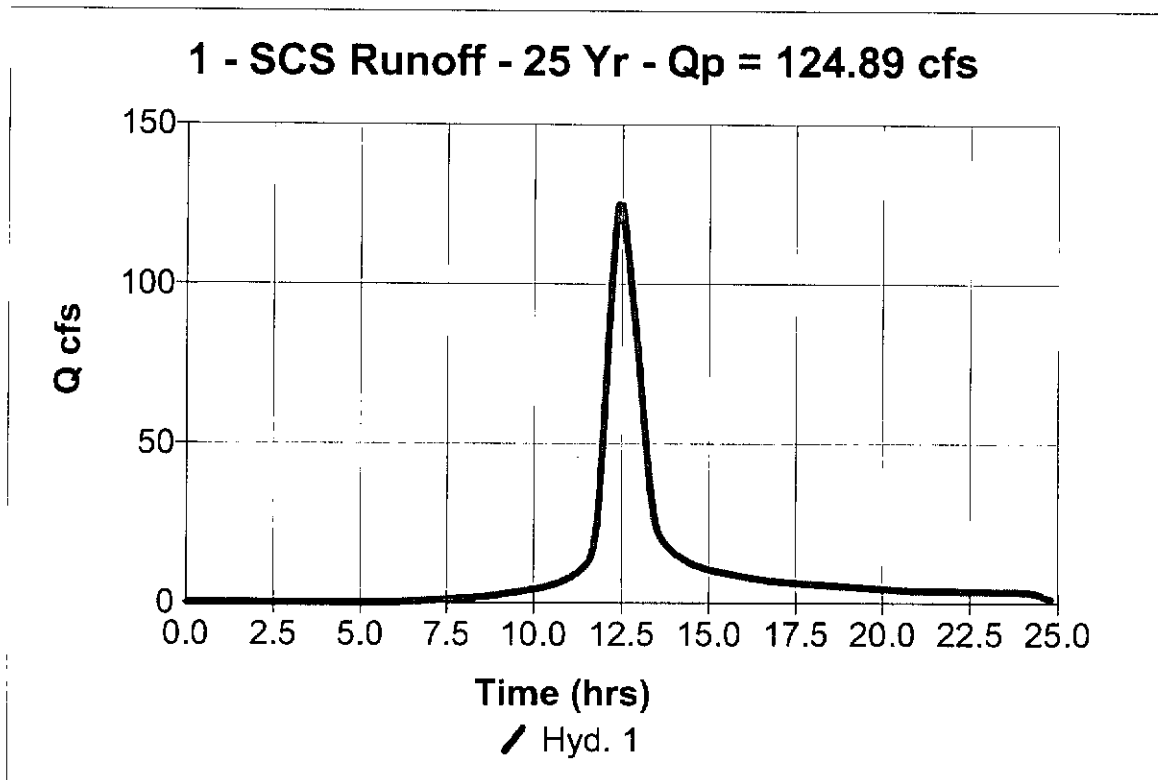
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

Developed Condition

Hydrograph type	= SCS Runoff	Peak discharge	= 124.89 cfs
Storm frequency	= 25 yrs	Time interval	= 6 min
Drainage area	= 50.80 ac	Curve number	= 83.4
Basin Slope	= 0.9 %	Hydraulic length	= 3350 ft
Tc method	= USER	Time of conc. (Tc)	= 57.9 min
Total precip.	= 6.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 18.684 acft



Hydrograph Plot

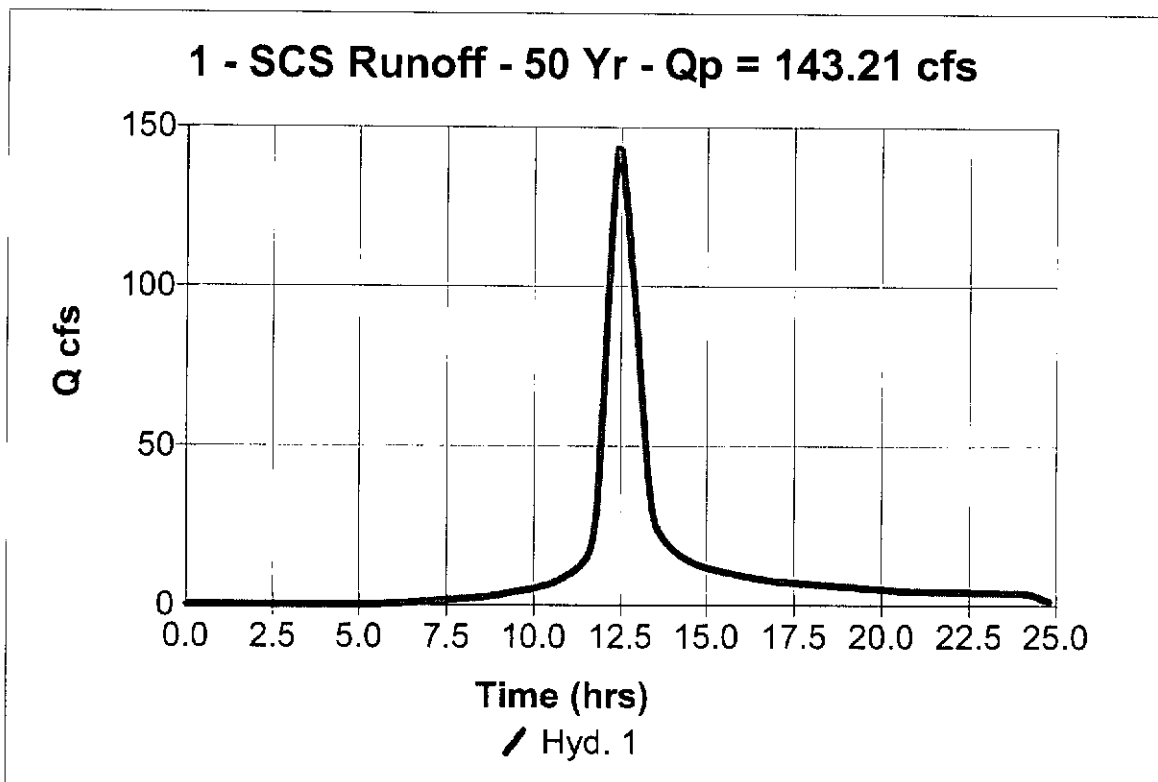
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

Developed Condition

Hydrograph type	= SCS Runoff	Peak discharge	= 143.21 cfs
Storm frequency	= 50 yrs	Time interval	= 6 min
Drainage area	= 50.80 ac	Curve number	= 83.4
Basin Slope	= 0.9 %	Hydraulic length	= 3350 ft
Tc method	= USER	Time of conc. (Tc)	= 57.9 min
Total precip.	= 7.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 21.474 acft



Hydrograph Plot

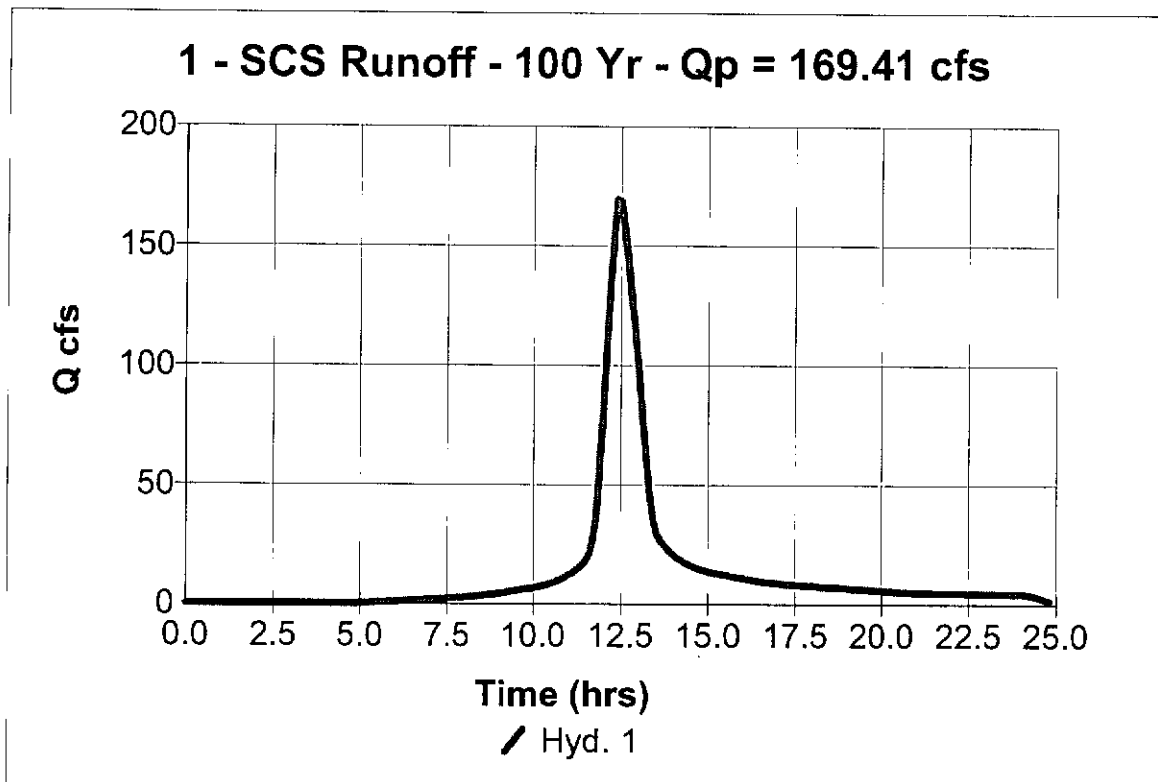
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

Developed Condition

Hydrograph type	= SCS Runoff	Peak discharge	= 169.41 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 50.80 ac	Curve number	= 83.4
Basin Slope	= 0.9 %	Hydraulic length	= 3350 ft
Tc method	= USER	Time of conc. (Tc)	= 57.9 min
Total precip.	= 8.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 25.504 acft



Hydrograph Plot

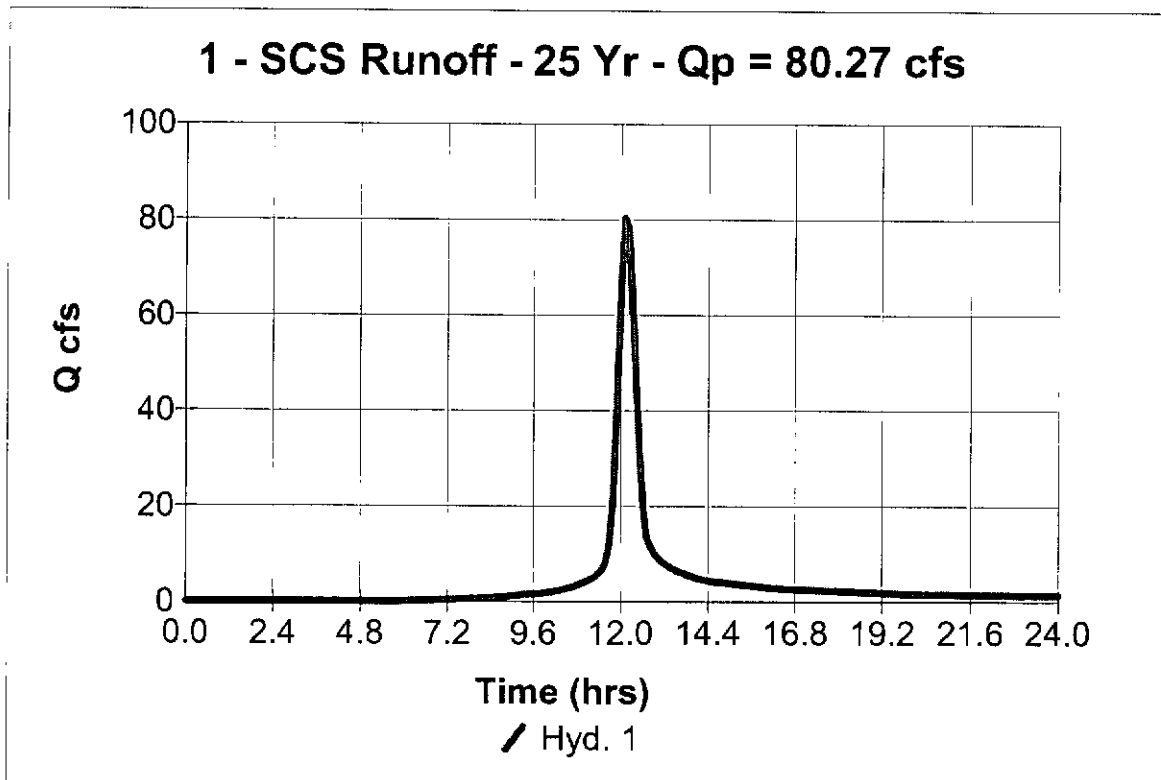
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

Golf Course to Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 80.27 cfs
Storm frequency	= 25 yrs	Time interval	= 6 min
Drainage area	= 20.57 ac	Curve number	= 83
Basin Slope	= 2.0 %	Hydraulic length	= 1400 ft
Tc method	= USER	Time of conc. (Tc)	= 22.1 min
Total precip.	= 6.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 7.492 acft



Hydrograph Plot

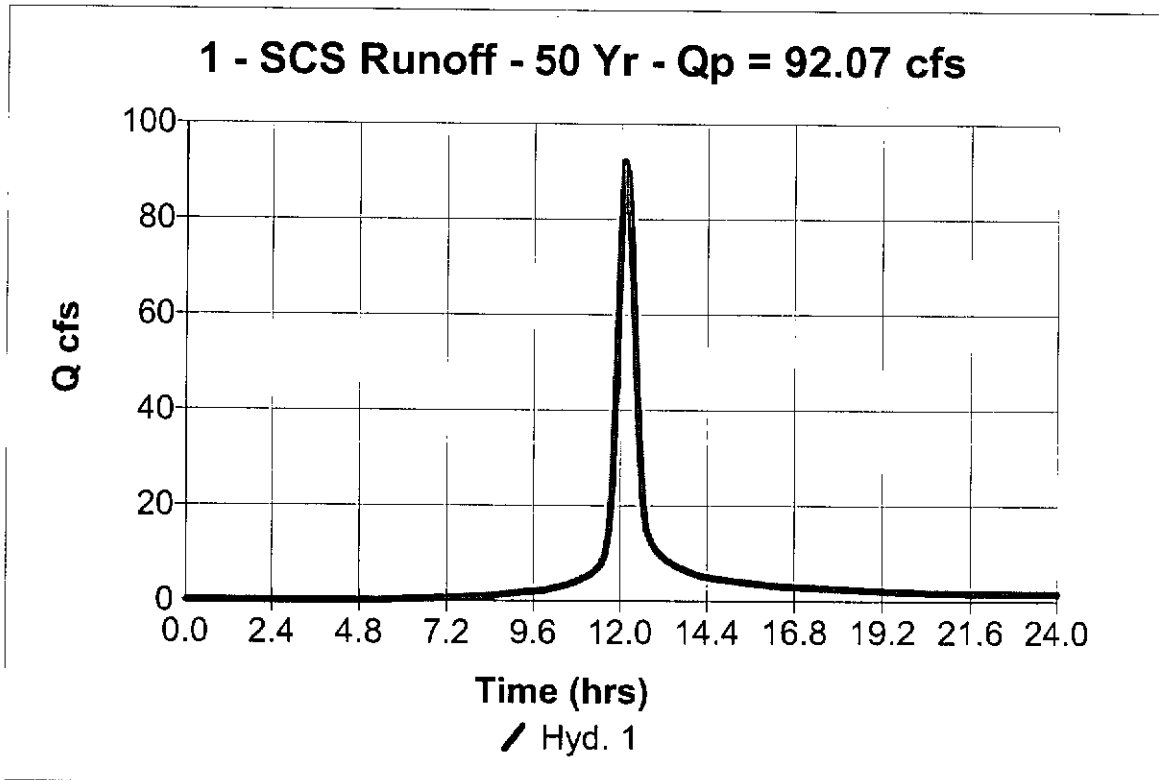
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

Golf Course to Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 92.07 cfs
Storm frequency	= 50 yrs	Time interval	= 6 min
Drainage area	= 20.57 ac	Curve number	= 83
Basin Slope	= 2.0 %	Hydraulic length	= 1400 ft
Tc method	= USER	Time of conc. (Tc)	= 22.1 min
Total precip.	= 7.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 8.618 acft



Hydrograph Plot

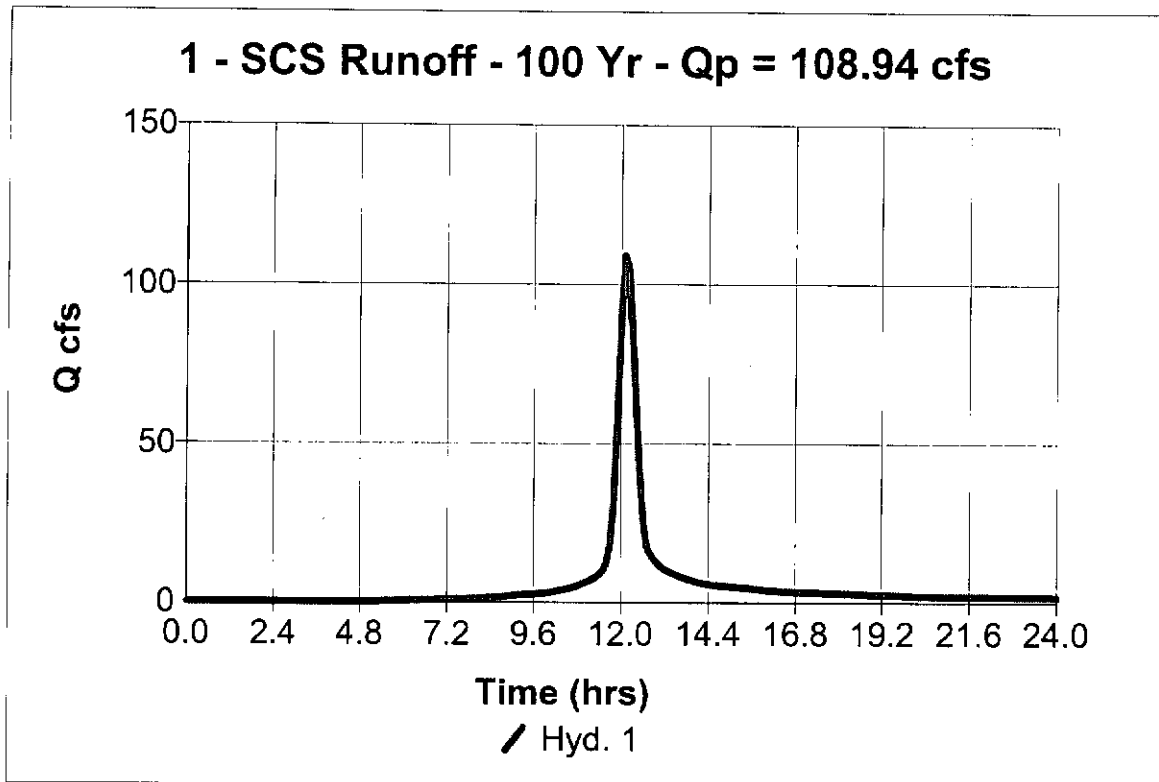
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

Golf Course to Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 108.94 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 20.57 ac	Curve number	= 83
Basin Slope	= 2.0 %	Hydraulic length	= 1400 ft
Tc method	= USER	Time of conc. (Tc)	= 22.1 min
Total precip.	= 8.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 10.246 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

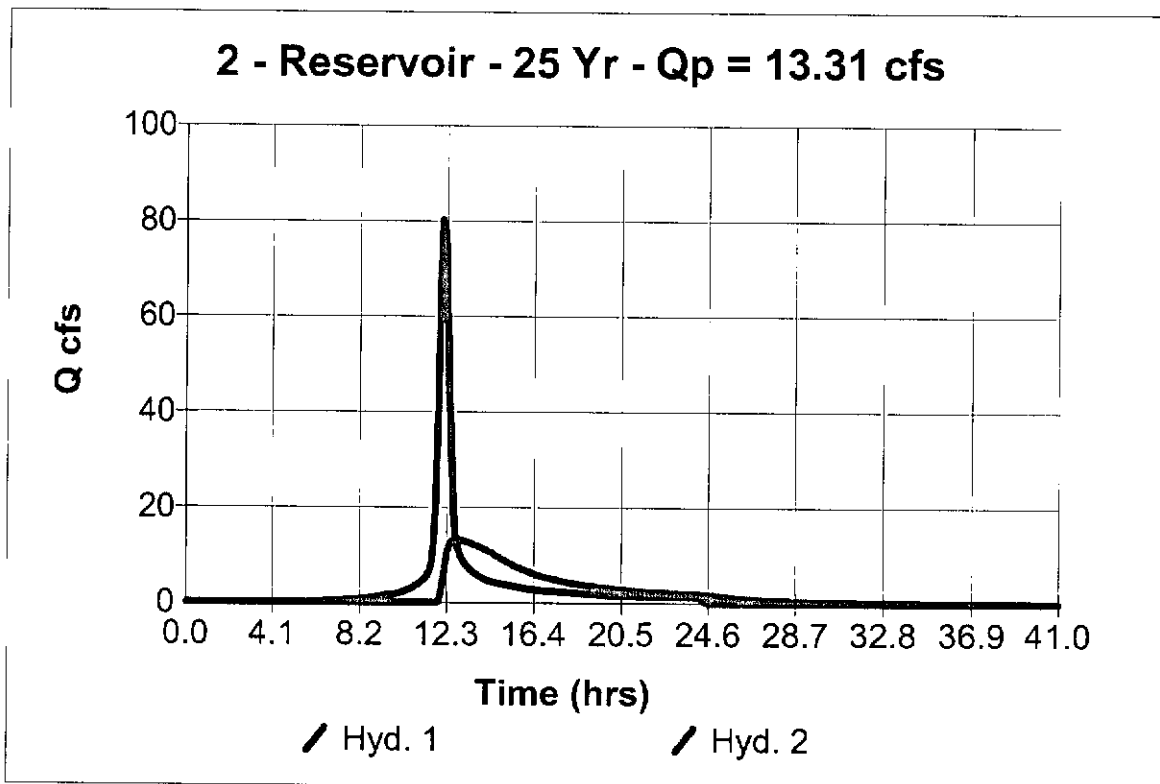
Route Through Pond

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 1
Max. Elevation = 1317.27 ft

Peak discharge = 13.31 cfs
Time interval = 6 min
Reservoir name = Dry Pond
Max. Storage = 4.167 acft

Storage Indication method used.

Hydrograph Volume = 6.365 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

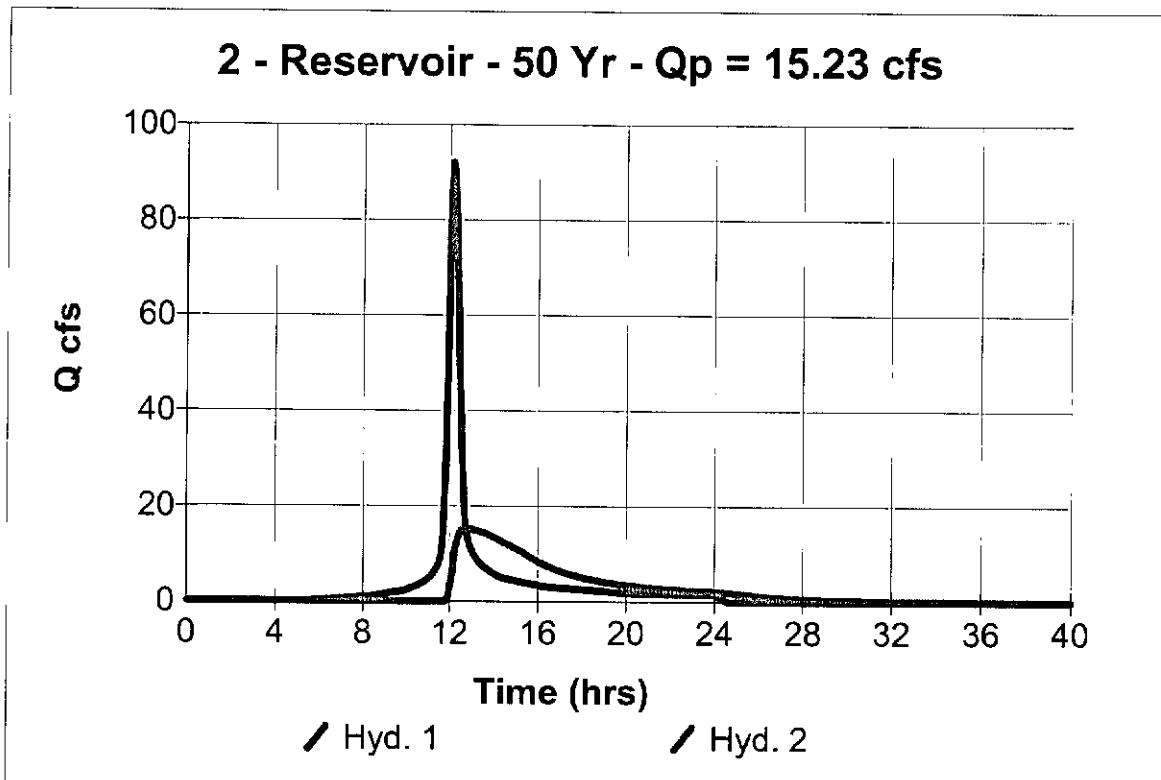
Route Through Pond

Hydrograph type = Reservoir
Storm frequency = 50 yrs
Inflow hyd. No. = 1
Max. Elevation = 1317.51 ft

Peak discharge = 15.23 cfs
Time interval = 6 min
Reservoir name = Dry Pond
Max. Storage = 4.806 acft

Storage Indication method used.

Hydrograph Volume = 7.492 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

Route Through Pond

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 1
Max. Elevation = 1317.87 ft

Peak discharge = 17.71 cfs
Time interval = 6 min
Reservoir name = Dry Pond
Max. Storage = 5.745 acft

Storage Indication method used.

Hydrograph Volume = 9.120 acft

