Worksheet 2: Runoff curve number and runoff

Project	By	Date
READING WOODS	J.B.	12-15-10
Location	**Checked**	**Date**
READING, MA		

Check one: ☑ Present ☐ Developed "E-6"

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS	98			0.36	35.3
B	OPEN-SPACE (GOOD)	61			0.49	29.9
					Totals ➡ 0.85	65.2

1/ Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{65.2}{0.85} = 76.7$; Use CN ➡ 77

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P (24-hour)	in			
Runoff, Q	in			

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Worksheet 2: Runoff curve number and runoff

Project	By	Date
READING WOODS	J.B.	12-21-10
Location	**Checked**	**Date**
READING, MA		

Check one: ☐ Present ☑ Developed "P-1"

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS	98			11.24	1101.5
B	WOODS (GOOD)	55			1.99	109.5
B	OPEN SPACE (GOOD)	61			10.09	615.5
B	MEADOW	58			2.50	145.0
					Totals ➡	25.81 / 1971.5

1/ Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{1971.5}{25.81} = 76.4$; **Use CN** ➡ 76

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P (24-hour)	in			
Runoff, Q	in			

(Use P and CN with table 2-1, figure 2-1, or equation 2-3 and 2-4)

Worksheet 2: Runoff curve number and runoff

Project	By	Date
READING WOODS	J.B.	12-16-10
Location	**Checked**	**Date**
READING, MA		

Check one: ☐ Present ☑ Developed "P-2"

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS	98			0.07	6.9
	WOODS (GOOD)	55			0.49	27.0
	OPEN SPACE (GOOD)	61			0.22	13.4
					Totals ➡ 0.78	47.3

1/ Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{47.3}{0.78} = 60.6$; Use CN ➡ 61

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P (24-hour)	in			
Runoff, Q	in			

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Worksheet 2: Runoff curve number and runoff

Project	By	Date
READING WOODS	J.B.	12-16-10
Location	**Checked**	**Date**
READING, MA		

Check one: ☐ Present ☑ Developed "P-3"

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS	98			0.17	16.7
B	WOODS (GOOD)	55			1.28	70.4
B	OPEN SPACE (GOOD)	61			0.83	50.6
					Totals ➡ 2.28	137.7

1/ Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{137.7}{2.28} = 60.4$ Use CN ➡ 60

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P (24-hour)	in			
Runoff, Q	in			

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Worksheet 2: Runoff curve number and runoff

Project	By	Date
READING WOODS	J.B.	12-21-10
Location	**Checked**	**Date**
READING, MA		

Check one: ☐ Present ☑ Developed "P-4"

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS	98			0.48	47.0
B	WOODS (GOOD)	55			0.15	8.3
B	OPEN SPACE (GOOD)	61			1.49	90.9
					Totals ➡ 2.12	146.2

1/ Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{146.2}{2.12} = 69.0$; Use CN ➡ 69

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P (24-hour)	in			
Runoff, Q	in			

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Worksheet 2: Runoff curve number and runoff

Project	By	Date
READING WOODS	J.B.	12-16-10
Location	**Checked**	**Date**
READING, MA		

Check one: ☐ Present ☑ Developed "P-5"

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS	98			0.16	15.7
B	WOOD (GOOD)	55			0.31	17.1
B	OPEN SPACE (GOOD)	61			0.16	9.8
					Totals ➡ 0.63	42.6

1/ Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{42.6}{0.63} = 67.6$; Use CN ➡ 68

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P (24-hour)	in			
Runoff, Q	in			

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Worksheet 2: Runoff curve number and runoff

Project	By	Date
READING WOODS	J.B.	12-21-10
Location	**Checked**	**Date**
READING, MA		

Check one: ☐ Present ☑ Developed "P-6"

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS	98			0.13	12.74
	OPEN SPACE (GOOD)	61			0.11	6.71
					Totals ➡ 0.24	19.45

1/ Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{19.45}{0.24} = 81.0$; Use CN ➡ 81

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P (24-hour)	in			
Runoff, Q	in			

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Worksheet 2: Runoff curve number and runoff

Project	By	Date
READING WOODS	J.B.	12-20-10
Location	**Checked**	**Date**
READING, MA		

Check one: ☐ Present ☑ Developed "P-7"

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1/] Table 2-2	CN [1/] Figure 2-3	CN [1/] Figure 2-4	Area ☑ acres ☐ mi² ☐ %	Product of CN x area
	IMPERVIOUS	98			0.42	41.2
B	WOODS (GOOD)	55			0.06	3.30
B	OPEN SPACE (GOOD)	61			0.66	40.3
					Totals ➡ 1.14	84.8

[1/] Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{84.8}{1.14} = 74.4$; Use CN ➡ 74

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P (24-hour)	in			
Runoff, Q	in			

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

TR55 Tc Worksheet

Hyd. No. 1

E-1

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.410		0.011		0.011		
Flow length (ft)	=	50.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	0.80		0.00		0.00		
Travel Time (min)	=	**18.44**	+	**0.00**	+	**0.00**	=	**18.44**
Shallow Concentrated Flow								
Flow length (ft)	=	600.00		140.00		112.00		
Watercourse slope (%)	=	2.10		1.00		5.70		
Surface description	=	Unpaved		Paved		Unpaved		
Average velocity (ft/s)	=	2.34		2.03		3.85		
Travel Time (min)	=	**4.28**	+	**1.15**	+	**0.48**	=	**5.91**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	=	**0.00**	+	**0.00**	+	**0.00**	=	**0.00**

Total Travel Time, Tc ..... 24.35 min

TR55 Tc Worksheet

Hyd. No. 2

E-2

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.410		0.011		0.011		
Flow length (ft)	=	50.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	1.60		0.00		0.00		
Travel Time (min)	**=**	**13.97**	**+**	**0.00**	**+**	**0.00**	**=**	**13.97**
Shallow Concentrated Flow								
Flow length (ft)	=	163.00		0.00		0.00		
Watercourse slope (%)	=	5.20		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	3.68		0.00		0.00		
Travel Time (min)	**=**	**0.74**	**+**	**0.00**	**+**	**0.00**	**=**	**0.74**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 14.71 min

TR55 Tc Worksheet

Hyd. No. 3

E-3

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.400		0.011		0.011		
Flow length (ft)	=	50.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	3.00		0.00		0.00		
Travel Time (min)	=	**10.65**	+	**0.00**	+	**0.00**	=	**10.65**
Shallow Concentrated Flow								
Flow length (ft)	=	207.00		0.00		0.00		
Watercourse slope (%)	=	5.60		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	3.82		0.00		0.00		
Travel Time (min)	=	**0.90**	+	**0.00**	+	**0.00**	=	**0.90**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	=	**0.00**	+	**0.00**	+	**0.00**	=	**0.00**

Total Travel Time, Tc ..... 11.56 min

TR55 Tc Worksheet

Hyd. No. 4

E-4

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.410		0.011		0.011		
Flow length (ft)	=	37.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	4.20		0.00		0.00		
Travel Time (min)	**=**	**7.47**	**+**	**0.00**	**+**	**0.00**	**=**	**7.47**
Shallow Concentrated Flow								
Flow length (ft)	=	540.00		0.00		0.00		
Watercourse slope (%)	=	4.80		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=	4.45		0.00		0.00		
Travel Time (min)	**=**	**2.02**	**+**	**0.00**	**+**	**0.00**	**=**	**2.02**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 9.49 min

TR55 Tc Worksheet

Hyd. No. 5

E-5

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.400		0.011		0.011		
Flow length (ft)	=	50.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	4.00		0.00		0.00		
Travel Time (min)	=	**9.50**	+	**0.00**	+	**0.00**	=	**9.50**
Shallow Concentrated Flow								
Flow length (ft)	=	194.00		68.00		0.00		
Watercourse slope (%)	=	4.10		4.10		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	3.27		4.12		0.00		
Travel Time (min)	=	**0.99**	+	**0.28**	+	**0.00**	=	**1.27**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	=	**0.00**	+	**0.00**	+	**0.00**	=	**0.00**

Total Travel Time, Tc ..... 10.76 min

TR55 Tc Worksheet

Hyd. No. 6

E-6

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.410		0.011		0.011		
Flow length (ft)	=	40.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	20.00		0.00		0.00		
Travel Time (min)	=	**4.26**	+	**0.00**	+	**0.00**	=	**4.26**
Shallow Concentrated Flow								
Flow length (ft)	=	311.00		0.00		0.00		
Watercourse slope (%)	=	3.60		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=	3.86		0.00		0.00		
Travel Time (min)	=	**1.34**	+	**0.00**	+	**0.00**	=	**1.34**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	=	**0.00**	+	**0.00**	+	**0.00**	=	**0.00**

Total Travel Time, Tc ..... 5.60 min

TR55 Tc Worksheet

Hyd. No. 9

P-1

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.410		0.011		0.011		
Flow length (ft)	=	50.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	0.80		0.00		0.00		
Travel Time (min)	=	**18.44**	+	**0.00**	+	**0.00**	=	**18.44**
Shallow Concentrated Flow								
Flow length (ft)	=	600.00		140.00		112.00		
Watercourse slope (%)	=	2.10		1.00		5.70		
Surface description	=	Unpaved		Paved		Unpaved		
Average velocity (ft/s)	=	2.34		2.03		3.85		
Travel Time (min)	=	**4.28**	+	**1.15**	+	**0.48**	=	**5.91**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	=	**0.00**	+	**0.00**	+	**0.00**	=	**0.00**

Total Travel Time, Tc ..... 24.35 min

TR55 Tc Worksheet

Hyd. No. 10

P-2

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.410		0.011		0.011		
Flow length (ft)	=	50.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	1.60		0.00		0.00		
Travel Time (min)	=	**13.97**	+	**0.00**	+	**0.00**	=	**13.97**
Shallow Concentrated Flow								
Flow length (ft)	=	163.00		0.00		0.00		
Watercourse slope (%)	=	5.20		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	3.68		0.00		0.00		
Travel Time (min)	=	**0.74**	+	**0.00**	+	**0.00**	=	**0.74**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	=	**0.00**	+	**0.00**	+	**0.00**	=	**0.00**

Total Travel Time, Tc ..... 14.71 min

TR55 Tc Worksheet

Hyd. No. 11

P-3

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.400		0.011		0.011		
Flow length (ft)	=	50.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	3.00		0.00		0.00		
Travel Time (min)	=	**10.65**	+	**0.00**	+	**0.00**	=	**10.65**
Shallow Concentrated Flow								
Flow length (ft)	=	207.00		0.00		0.00		
Watercourse slope (%)	=	5.60		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	3.82		0.00		0.00		
Travel Time (min)	=	**0.90**	+	**0.00**	+	**0.00**	=	**0.90**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	=	**0.00**	+	**0.00**	+	**0.00**	=	**0.00**

Total Travel Time, Tc ..... 11.56 min

TR55 Tc Worksheet

Hyd. No. 12

P-4

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.410		0.011		0.011		
Flow length (ft)	=	50.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	0.50		0.00		0.00		
Travel Time (min)	=	**22.25**	+	**0.00**	+	**0.00**	=	**22.25**
Shallow Concentrated Flow								
Flow length (ft)	=	480.00		0.00		0.00		
Watercourse slope (%)	=	5.00		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	3.61		0.00		0.00		
Travel Time (min)	=	**2.22**	+	**0.00**	+	**0.00**	=	**2.22**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	=	**0.00**	+	**0.00**	+	**0.00**	=	**0.00**

Total Travel Time, Tc ..... **24.47 min**

TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No. 13

P-5

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.400		0.011		0.011		
Flow length (ft)	=	50.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	4.00		0.00		0.00		
Travel Time (min)	=	**9.50**	+	**0.00**	+	**0.00**	=	**9.50**
Shallow Concentrated Flow								
Flow length (ft)	=	194.00		68.00		0.00		
Watercourse slope (%)	=	4.10		4.10		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	3.27		4.12		0.00		
Travel Time (min)	=	**0.99**	+	**0.28**	+	**0.00**	=	**1.27**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	=	**0.00**	+	**0.00**	+	**0.00**	=	**0.00**

Total Travel Time, Tc ..... 10.76 min

TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No. 14

P-6

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.410		0.011		0.011		
Flow length (ft)	=	50.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	2.00		0.00		0.00		
Travel Time (min)	=	**12.78**	+	**0.00**	+	**0.00**	=	**12.78**
Shallow Concentrated Flow								
Flow length (ft)	=	72.00		0.00		0.00		
Watercourse slope (%)	=	2.70		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=	3.34		0.00		0.00		
Travel Time (min)	=	**0.36**	+	**0.00**	+	**0.00**	=	**0.36**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	=	**0.00**	+	**0.00**	+	**0.00**	=	**0.00**

Total Travel Time, Tc ..... 13.14 min

TR55 Tc Worksheet

Hyd. No. 15

P-7

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.410		0.011		0.011		
Flow length (ft)	=	50.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.10		0.00		0.00		
Land slope (%)	=	1.00		0.00		0.00		
Travel Time (min)	=	**16.86**	+	**0.00**	+	**0.00**	=	**16.86**
Shallow Concentrated Flow								
Flow length (ft)	=	208.00		0.00		0.00		
Watercourse slope (%)	=	1.00		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	1.61		0.00		0.00		
Travel Time (min)	=	**2.15**	+	**0.00**	+	**0.00**	=	**2.15**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	=	**0.00**	+	**0.00**	+	**0.00**	=	**0.00**

Total Travel Time, Tc ..... 19.01 min

APPENDIX C

Hydrograph Reports
&
Detention Area Characteristics

Pre-Development

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	20.22	-------	-------	41.24	54.23	-------	79.53	E-1
2	SCS Runoff	-------	-------	0.182	-------	-------	0.675	1.028	-------	1.780	E-2
3	SCS Runoff	-------	-------	0.487	-------	-------	2.018	3.139	-------	5.510	E-3
4	SCS Runoff	-------	-------	7.681	-------	-------	12.58	15.39	-------	20.62	E-4
5	SCS Runoff	-------	-------	0.367	-------	-------	0.938	1.312	-------	2.073	E-5
6	SCS Runoff	-------	-------	1.146	-------	-------	2.280	2.971	-------	4.304	E-6
7	Reservoir	2	-------	0.182	-------	-------	0.675	1.029	-------	1.780	Headwall Area Outflow
8	Combine	1, 7	-------	20.40	-------	-------	41.85	55.15	-------	81.08	Flow to SP-1 (Pre)

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	20.22	1	739	101,974	----	------	------	E-1
2	SCS Runoff	0.182	1	737	1,143	----	------	------	E-2
3	SCS Runoff	0.487	1	734	3,117	----	------	------	E-3
4	SCS Runoff	7.681	1	719	17,586	----	------	------	E-4
5	SCS Runoff	0.367	1	730	1,580	----	------	------	E-5
6	SCS Runoff	1.146	1	725	3,630	----	------	------	E-6
7	Reservoir	0.182	1	738	1,131	2	132.17	18.3	Headwall Area Outflow
8	Combine	20.40	1	739	103,105	1, 7	------	------	Flow to SP-1 (Pre)

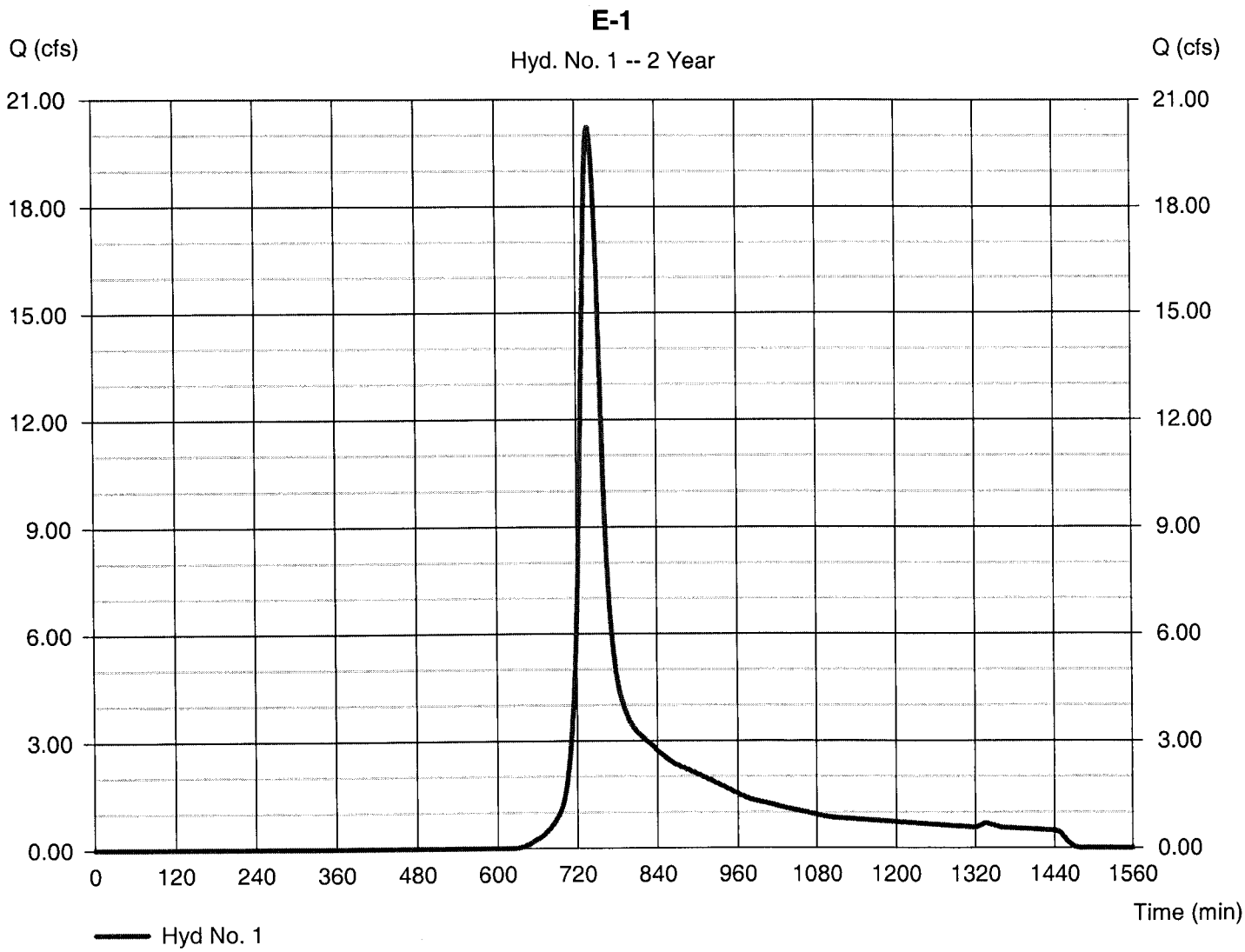
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 1

E-1

Hydrograph type	= SCS Runoff	Peak discharge	= 20.22 cfs
Storm frequency	= 2 yrs	Time to peak	= 739 min
Time interval	= 1 min	Hyd. volume	= 101,974 cuft
Drainage area	= 25.940 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.30 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



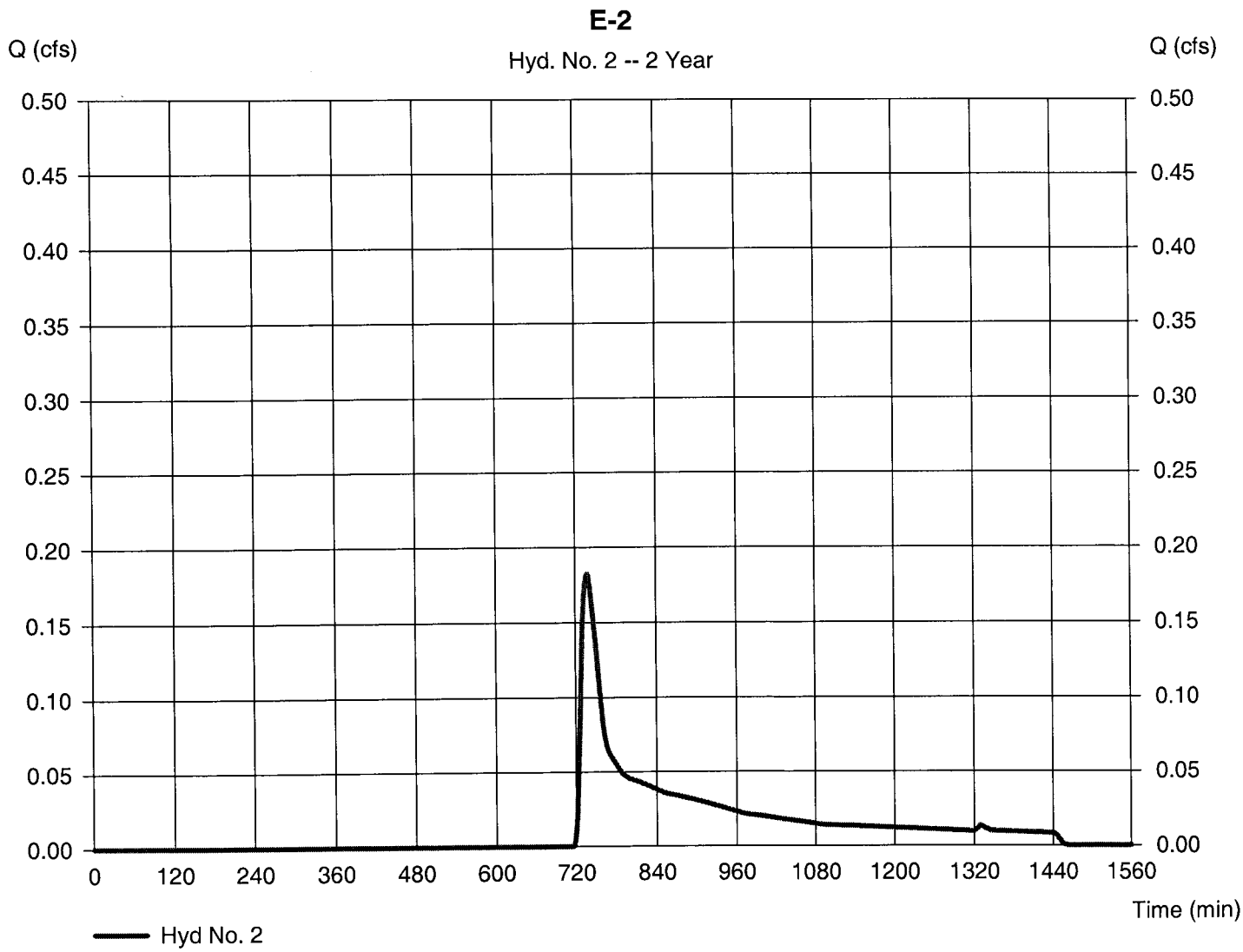
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 2

E-2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.182 cfs
Storm frequency	= 2 yrs	Time to peak	= 737 min
Time interval	= 1 min	Hyd. volume	= 1,143 cuft
Drainage area	= 0.780 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.70 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



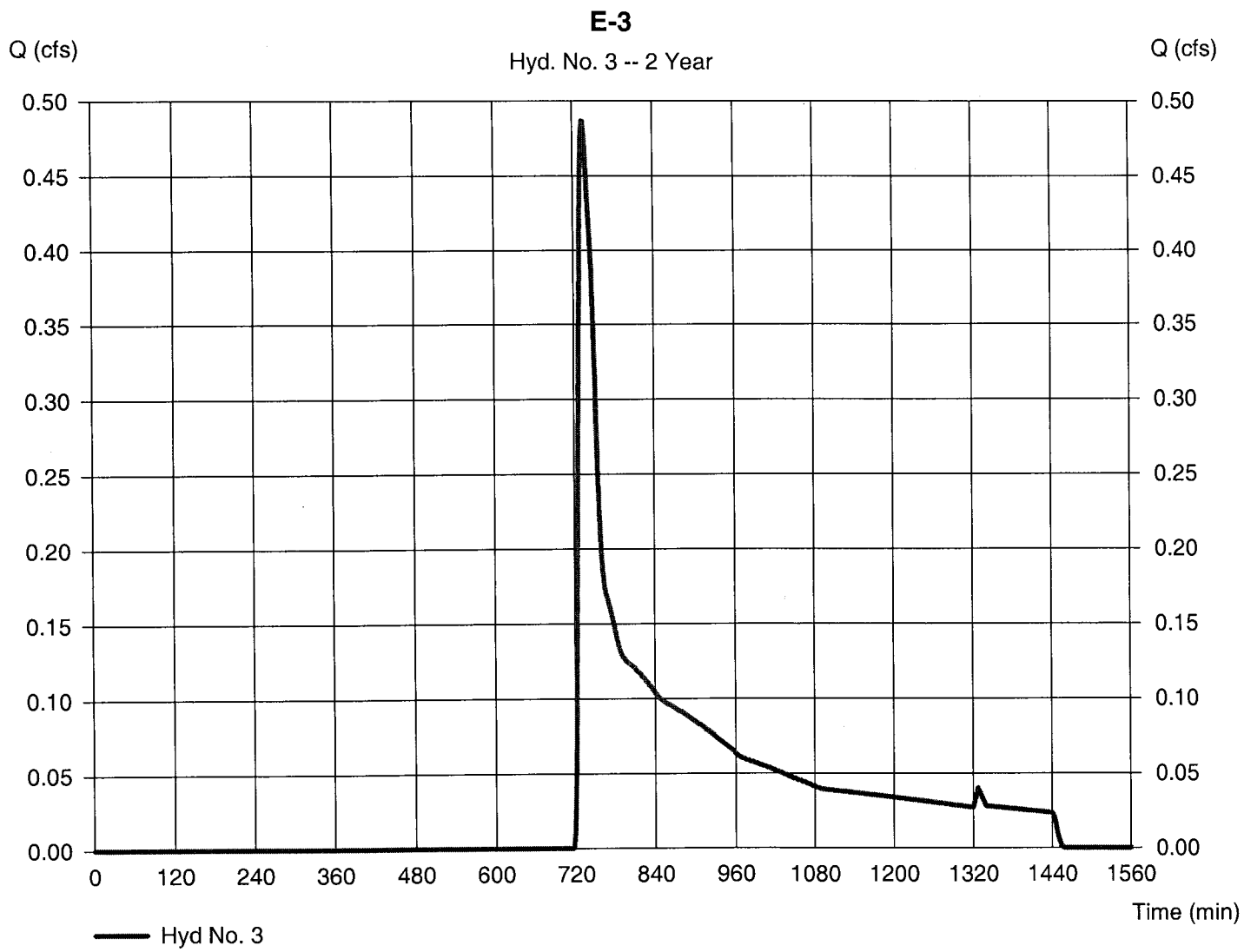
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 3

E-3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.487 cfs
Storm frequency	= 2 yrs	Time to peak	= 734 min
Time interval	= 1 min	Hyd. volume	= 3,117 cuft
Drainage area	= 2.280 ac	Curve number	= 60
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.60 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



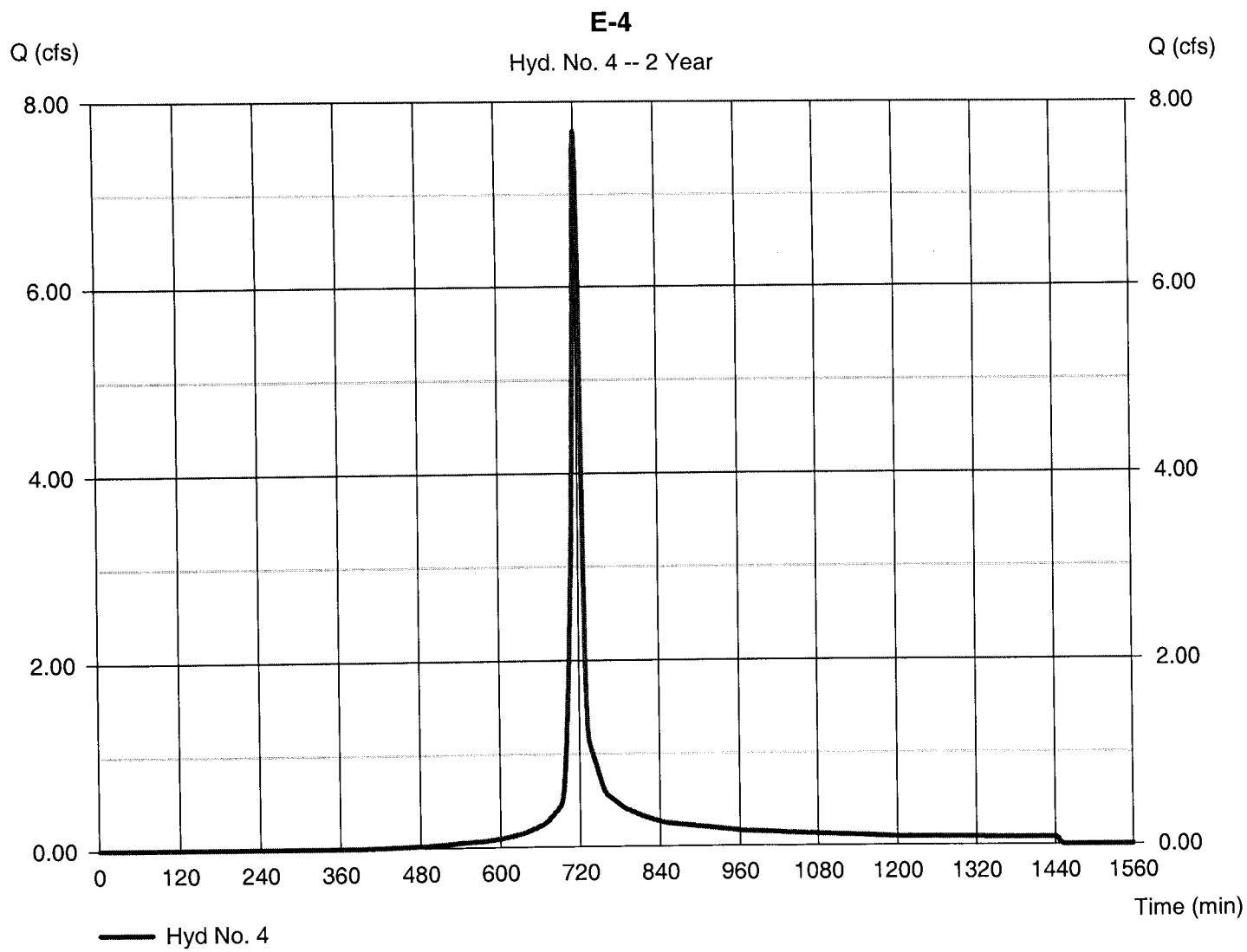
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 4

E-4

Hydrograph type	= SCS Runoff	Peak discharge	= 7.681 cfs
Storm frequency	= 2 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 17,586 cuft
Drainage area	= 2.540 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.50 min
Total precip.	= 3.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



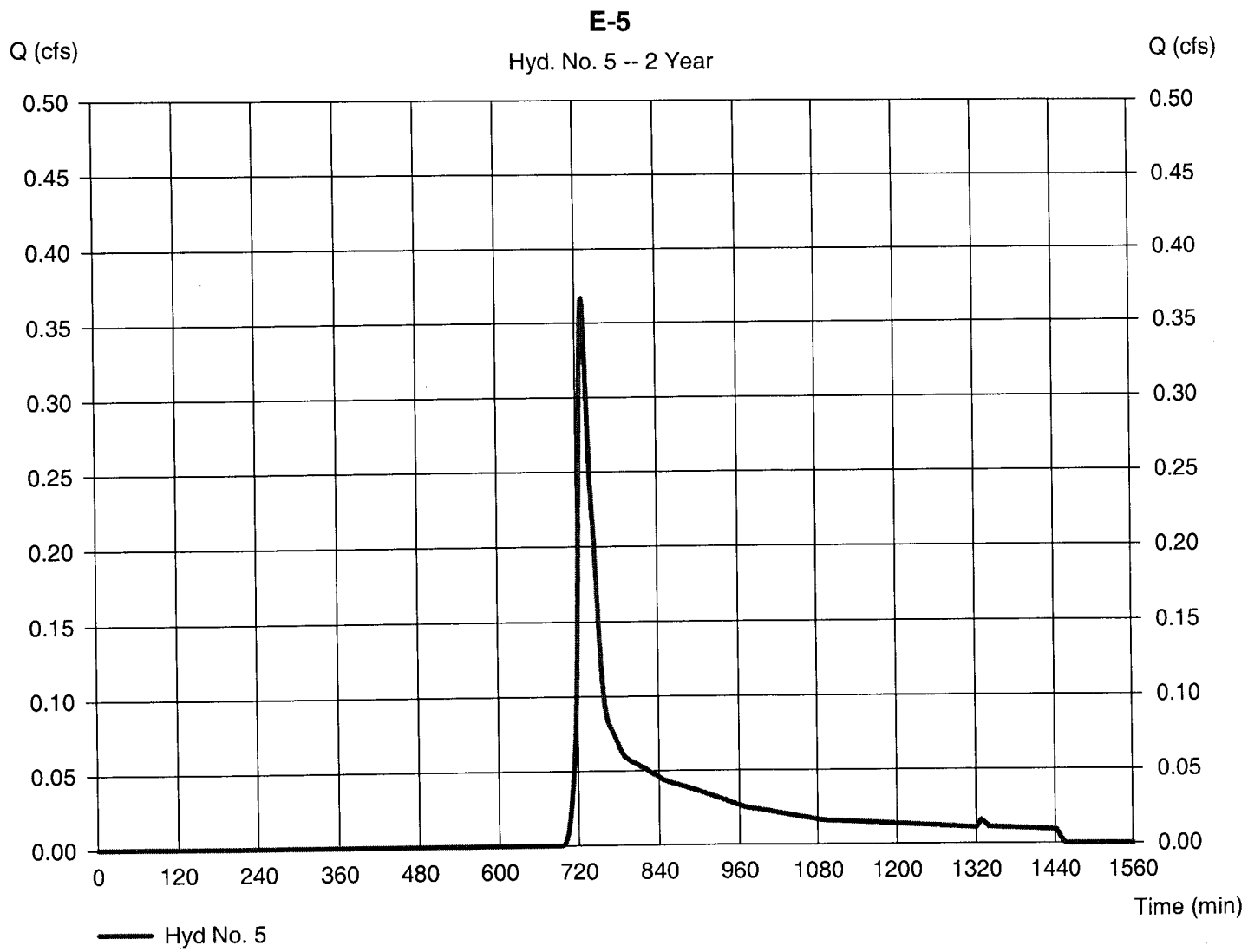
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Thursday, Dec 23, 2010

Hyd. No. 5

E-5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.367 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 1 min	Hyd. volume	= 1,580 cuft
Drainage area	= 0.630 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.80 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



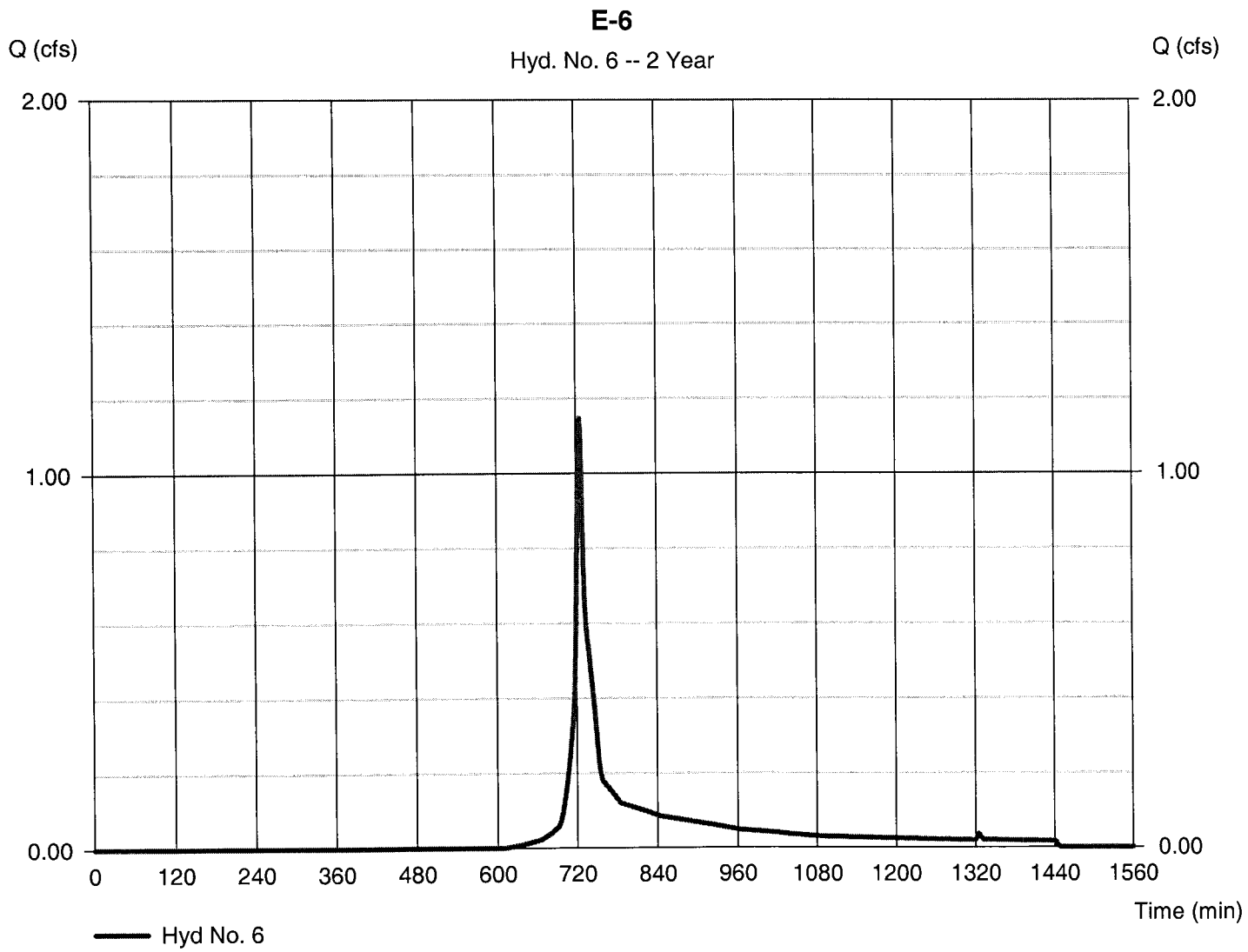
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Thursday, Dec 23, 2010

Hyd. No. 6

E-6

Hydrograph type	= SCS Runoff	Peak discharge	= 1.146 cfs
Storm frequency	= 2 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 3,630 cuft
Drainage area	= 0.850 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

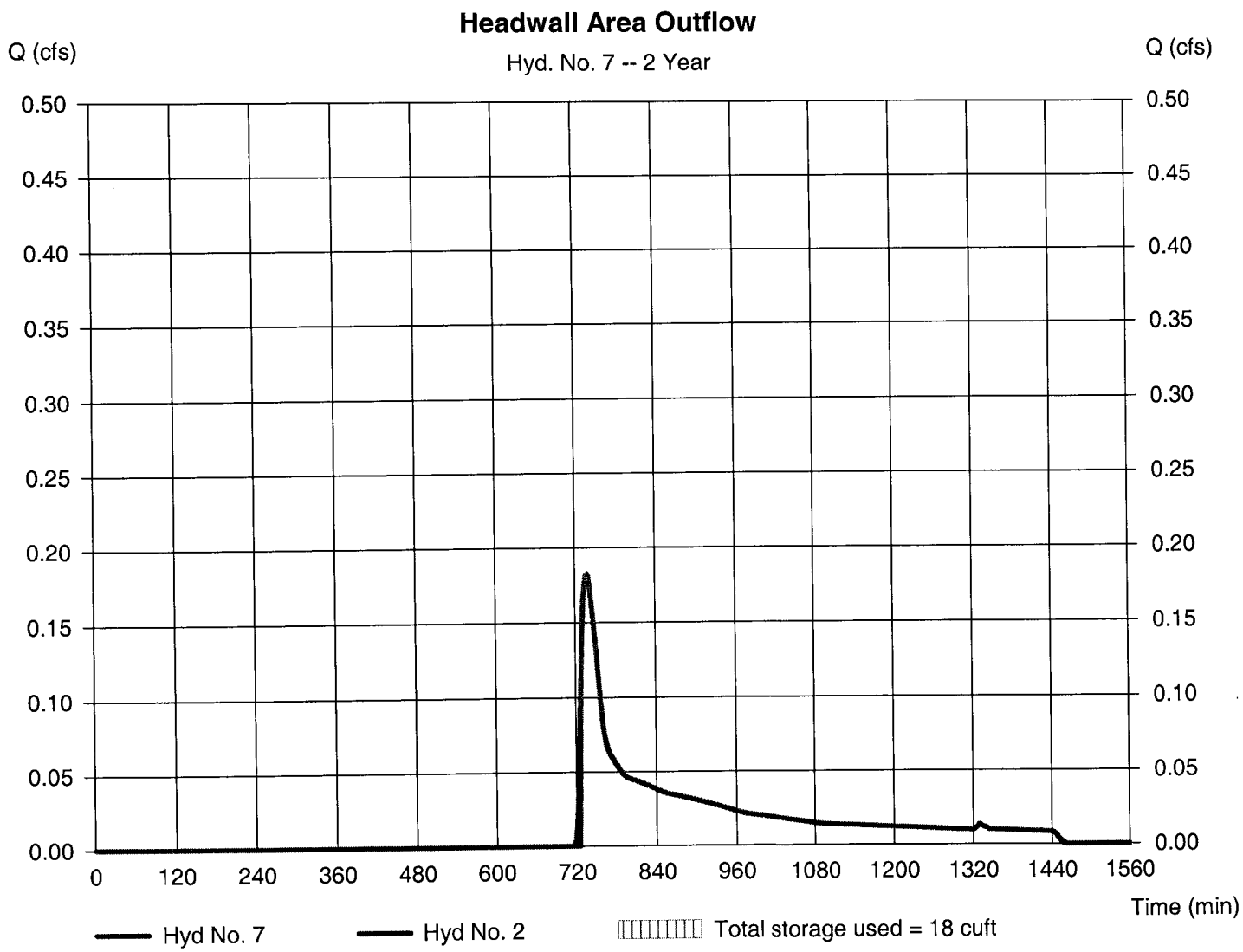
Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 7

Headwall Area Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.182 cfs
Storm frequency	= 2 yrs	Time to peak	= 738 min
Time interval	= 1 min	Hyd. volume	= 1,131 cuft
Inflow hyd. No.	= 2 - E-2	Max. Elevation	= 132.17 ft
Reservoir name	= Storage behind exist headwall	Max. Storage	= 18 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Pond No. 1 - Storage behind exist headwall

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 131.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	131.50	10	0	0
1.50	133.00	50	41	41
2.50	134.00	1,760	702	743
3.50	135.00	4,450	3,003	3,746
4.50	136.00	8,220	6,239	9,985
5.50	137.00	10,000	9,095	19,079

Culvert / Orifice Structures

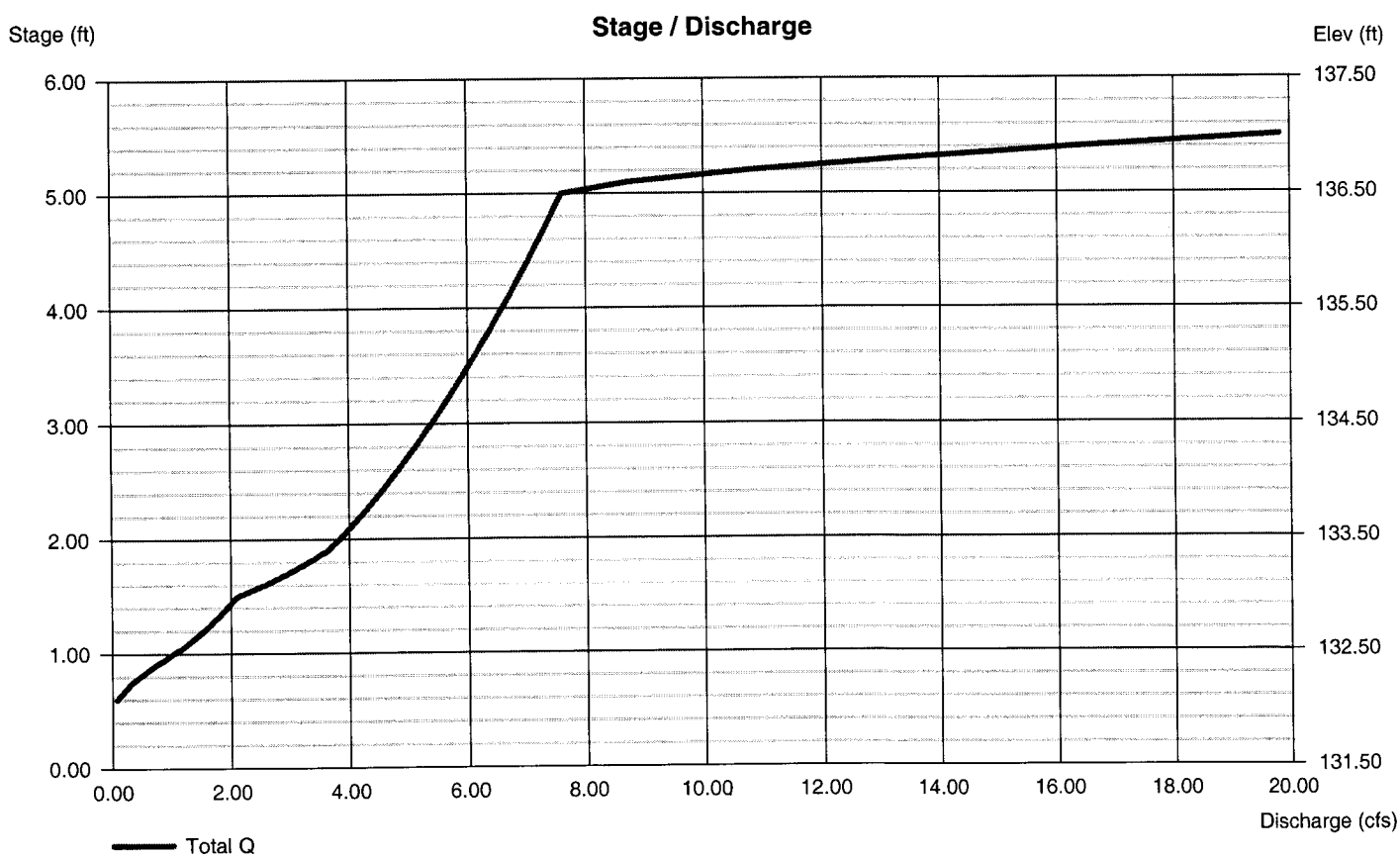
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	0.00	0.00	0.00
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 131.97	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.70	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 10.00	0.00	0.00	0.00
Crest El. (ft)	= 136.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



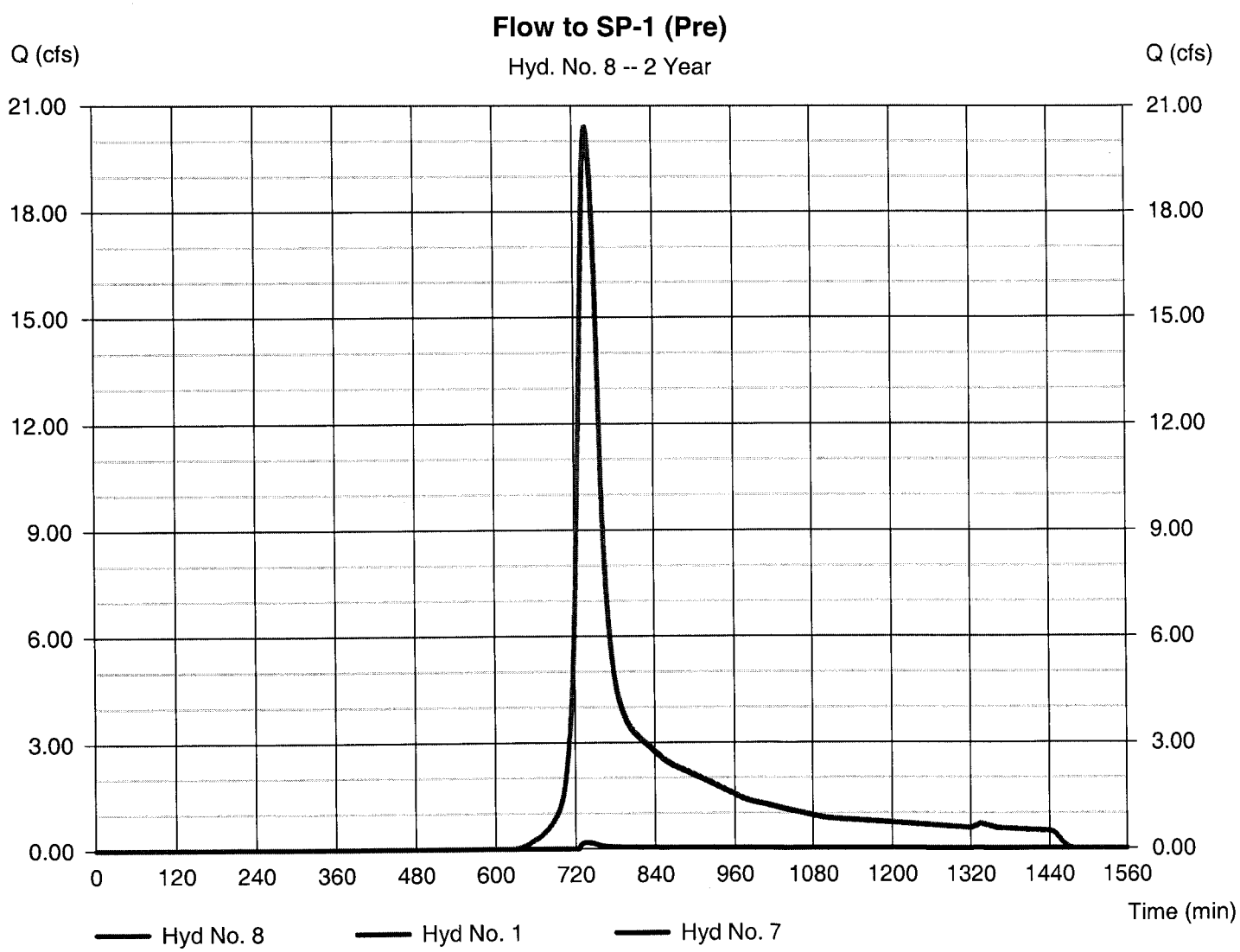
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 8

Flow to SP-1 (Pre)

Hydrograph type	= Combine	Peak discharge	= 20.40 cfs
Storm frequency	= 2 yrs	Time to peak	= 739 min
Time interval	= 1 min	Hyd. volume	= 103,105 cuft
Inflow hyds.	= 1, 7	Contrib. drain. area	= 25.940 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	41.24	1	738	200,547	----	------	------	E-1
2	SCS Runoff	0.675	1	732	3,056	----	------	------	E-2
3	SCS Runoff	2.018	1	730	8,591	----	------	------	E-3
4	SCS Runoff	12.58	1	719	29,470	----	------	------	E-4
5	SCS Runoff	0.938	1	729	3,567	----	------	------	E-5
6	SCS Runoff	2.280	1	725	7,034	----	------	------	E-6
7	Reservoir	0.675	1	732	3,043	2	132.38	24.2	Headwall Area Outflow
8	Combine	41.85	1	738	203,591	1, 7	------	------	Flow to SP-1 (Pre)

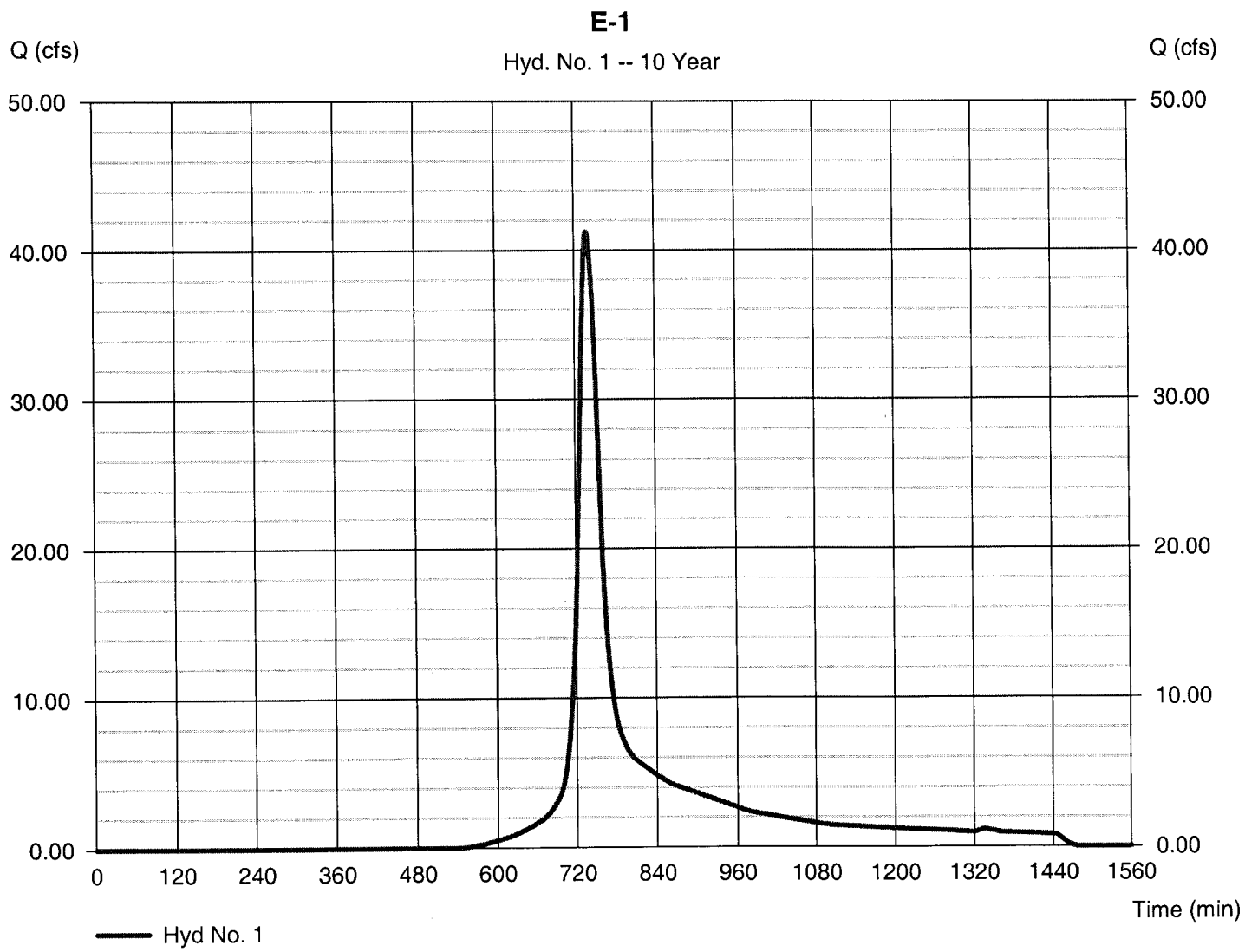
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 1

E-1

Hydrograph type	= SCS Runoff	Peak discharge	= 41.24 cfs
Storm frequency	= 10 yrs	Time to peak	= 738 min
Time interval	= 1 min	Hyd. volume	= 200,547 cuft
Drainage area	= 25.940 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.30 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



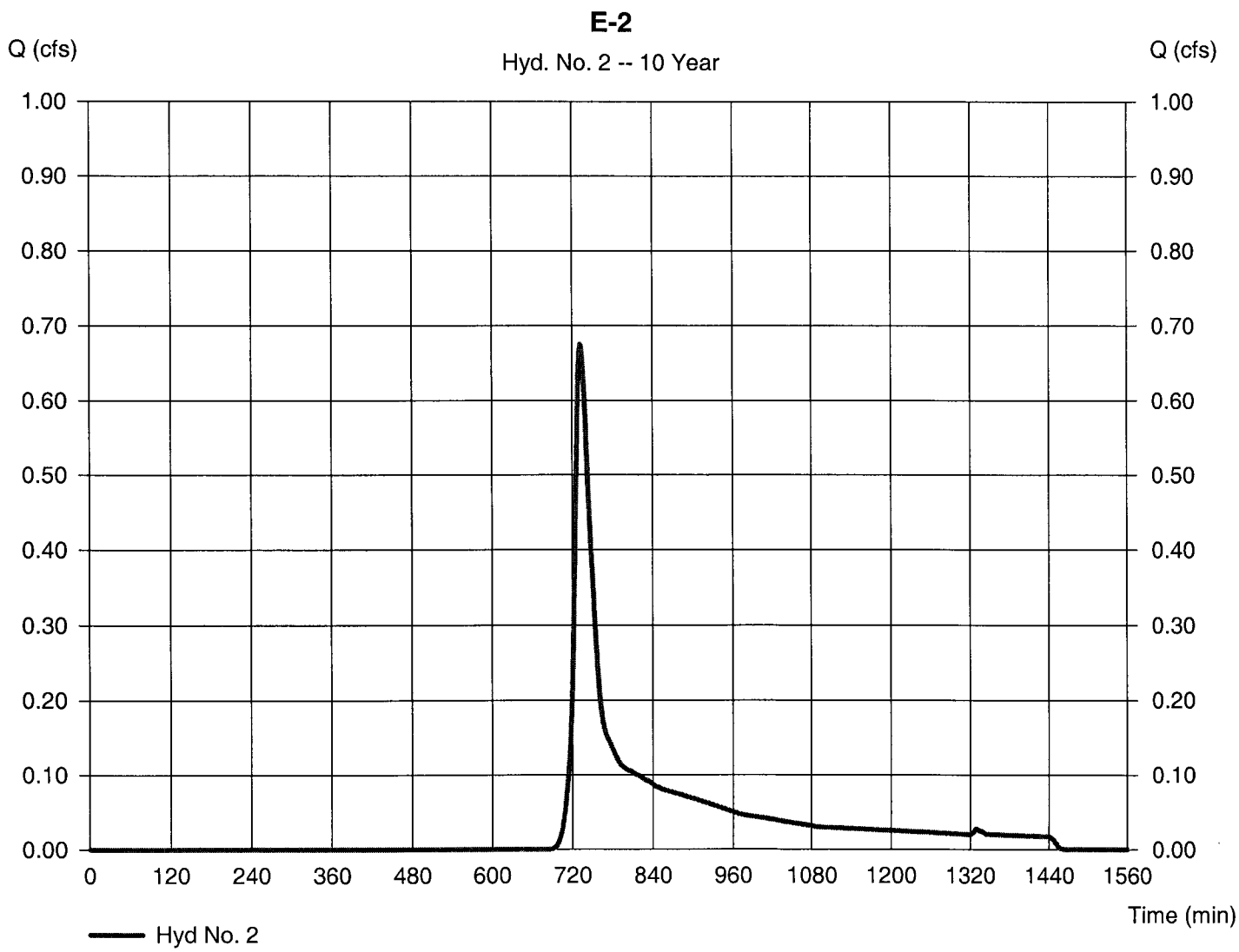
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 2

E-2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.675 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 3,056 cuft
Drainage area	= 0.780 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.70 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



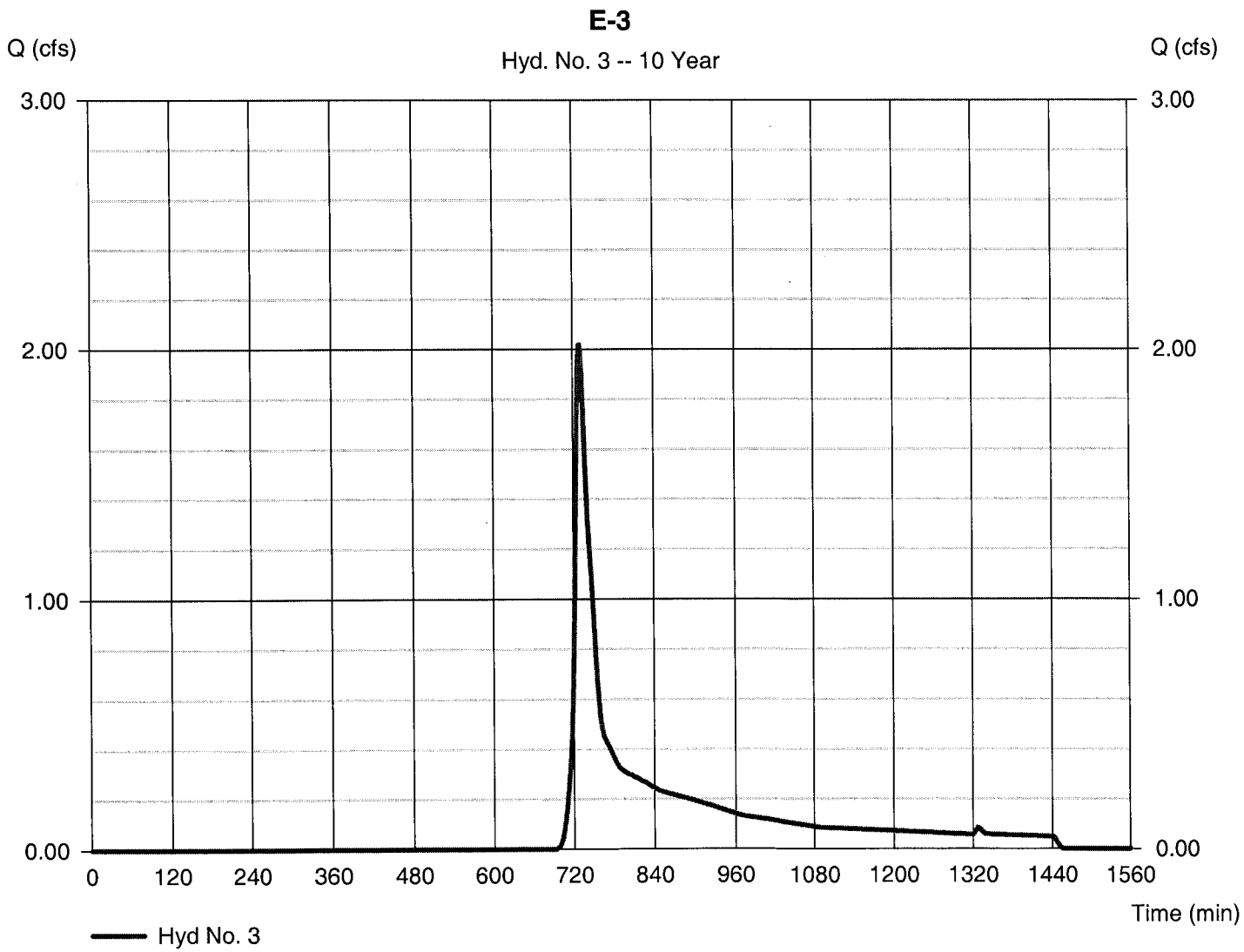
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Thursday, Dec 23, 2010

Hyd. No. 3

E-3

Hydrograph type	= SCS Runoff	Peak discharge	= 2.018 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 1 min	Hyd. volume	= 8,591 cuft
Drainage area	= 2.280 ac	Curve number	= 60
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.60 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



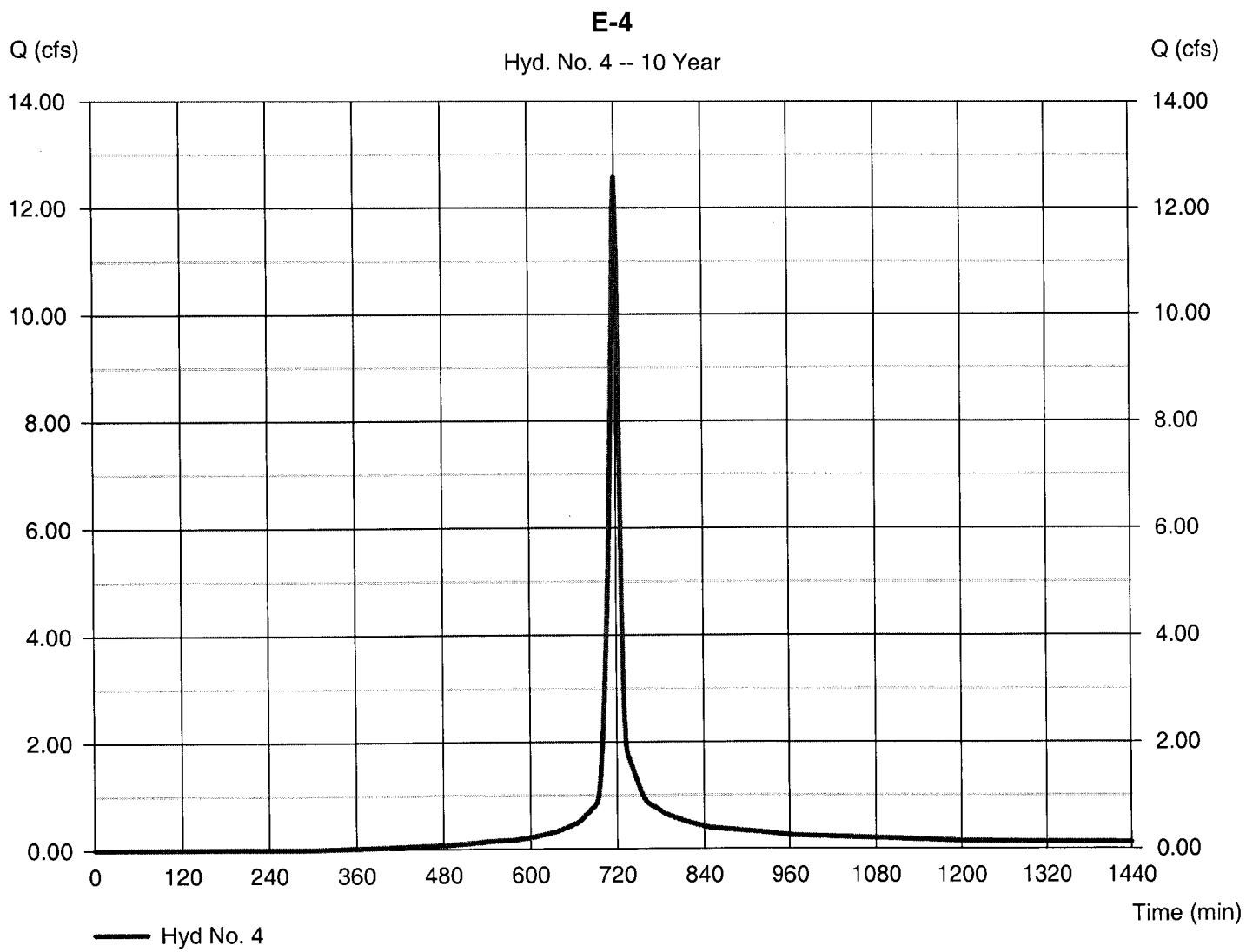
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 4

E-4

Hydrograph type	= SCS Runoff	Peak discharge	= 12.58 cfs
Storm frequency	= 10 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 29,470 cuft
Drainage area	= 2.540 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.50 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



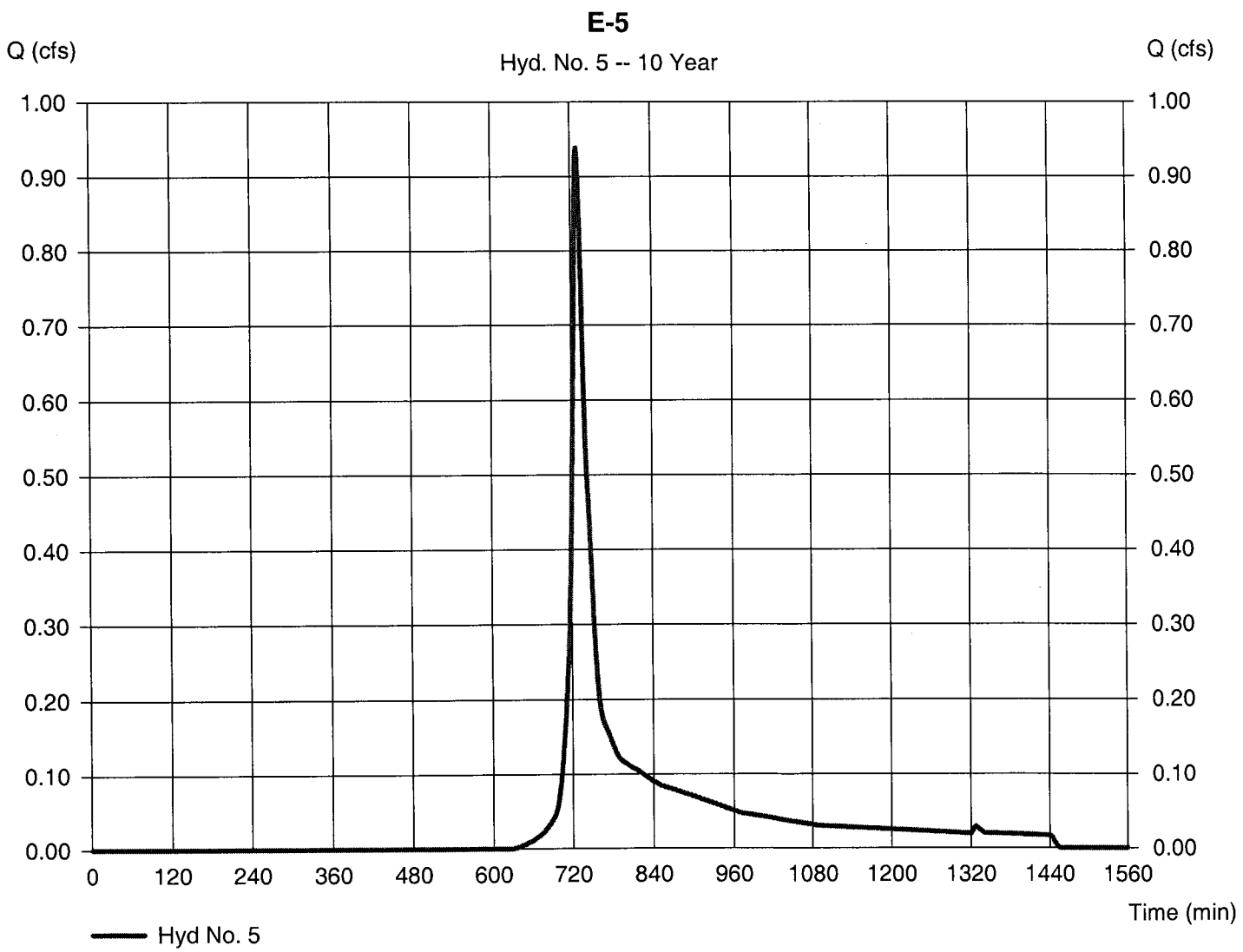
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 5

E-5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.938 cfs
Storm frequency	= 10 yrs	Time to peak	= 729 min
Time interval	= 1 min	Hyd. volume	= 3,567 cuft
Drainage area	= 0.630 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.80 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



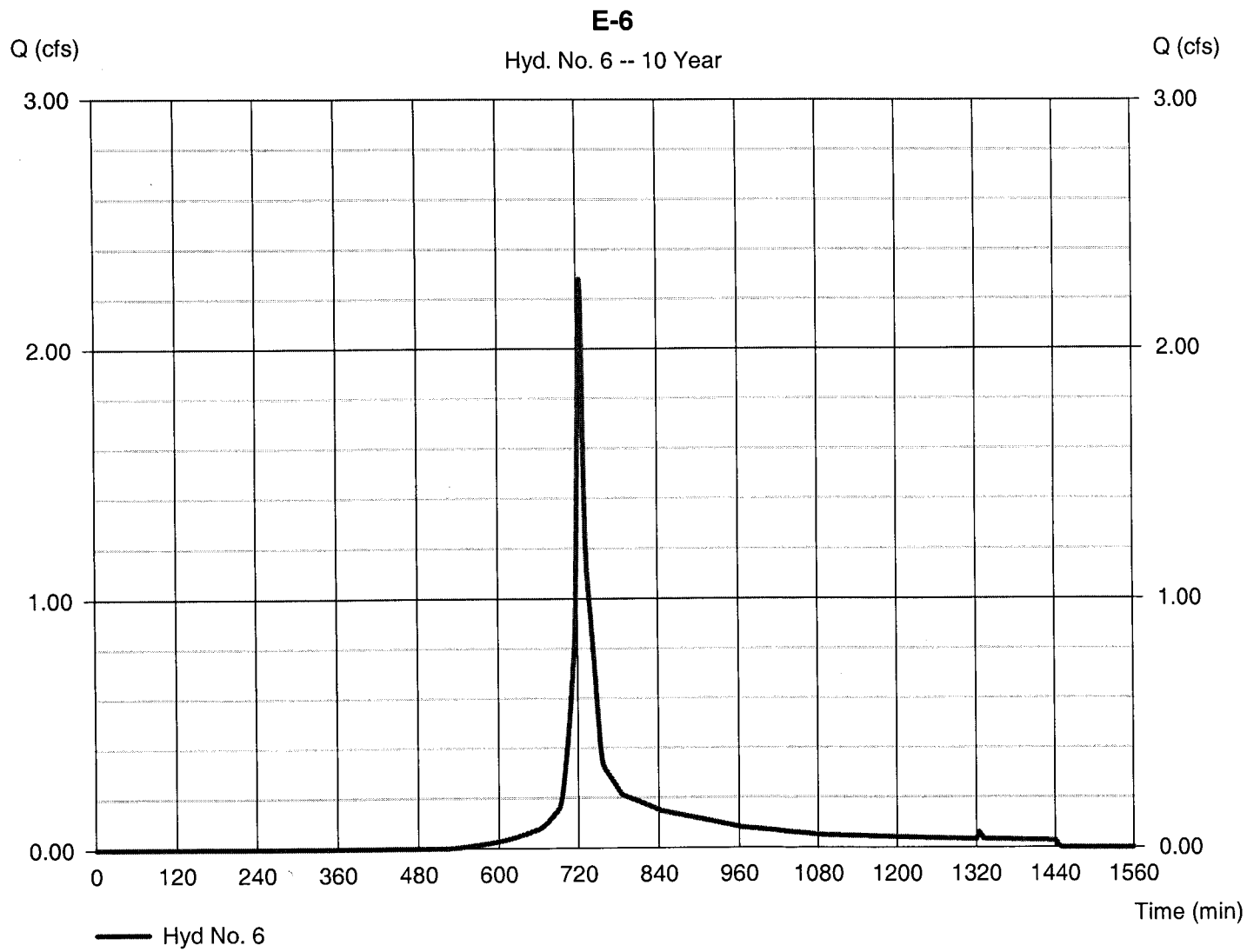
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 6

E-6

Hydrograph type	= SCS Runoff	Peak discharge	= 2.280 cfs
Storm frequency	= 10 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 7,034 cuft
Drainage area	= 0.850 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

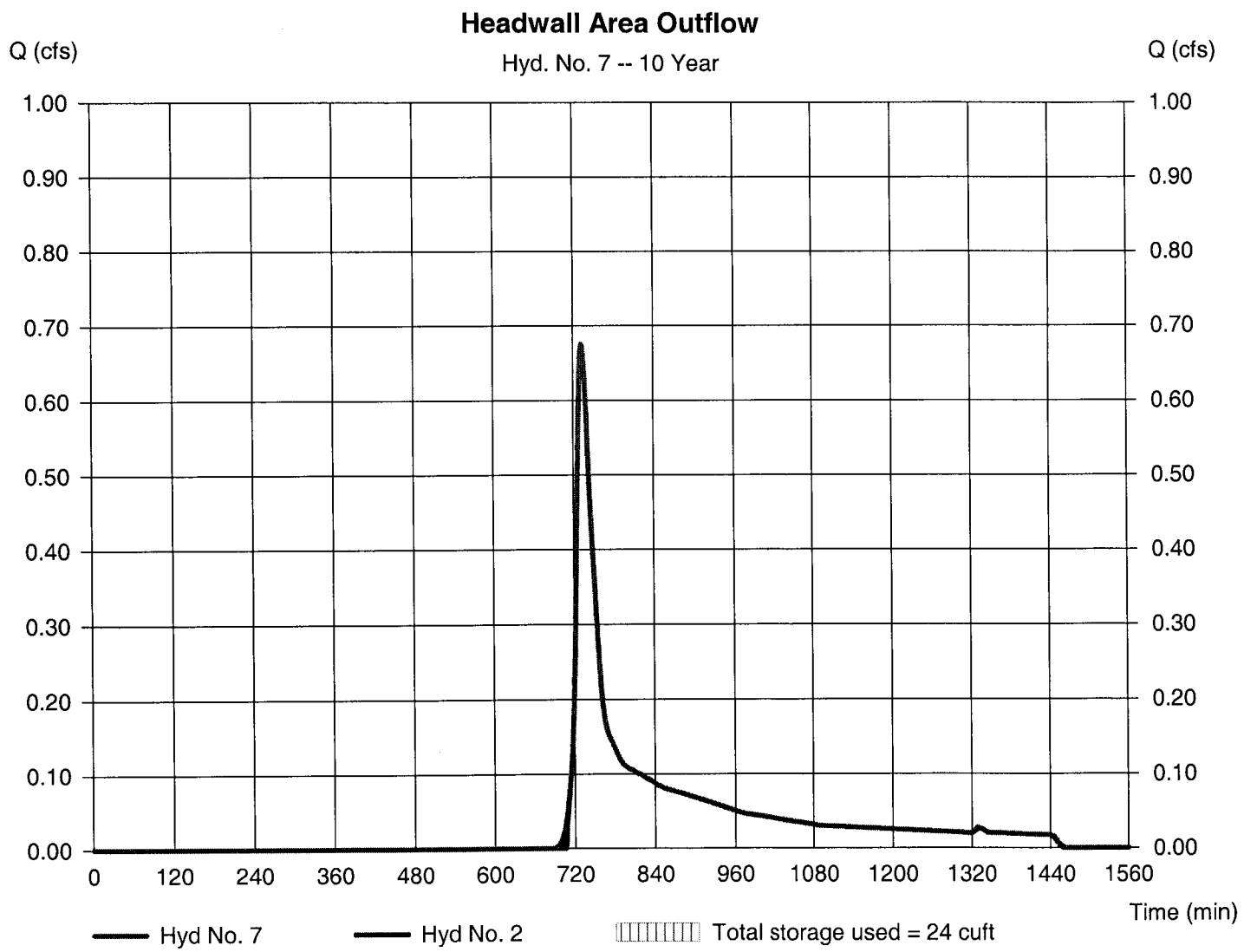
Hydraflow Hydrographs by Intelisolve v9.2 | Thursday, Dec 23, 2010

Hyd. No. 7

Headwall Area Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.675 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 3,043 cuft
Inflow hyd. No.	= 2 - E-2	Max. Elevation	= 132.38 ft
Reservoir name	= Storage behind exist headwall	Max. Storage	= 24 cuft

Storage Indication method used.



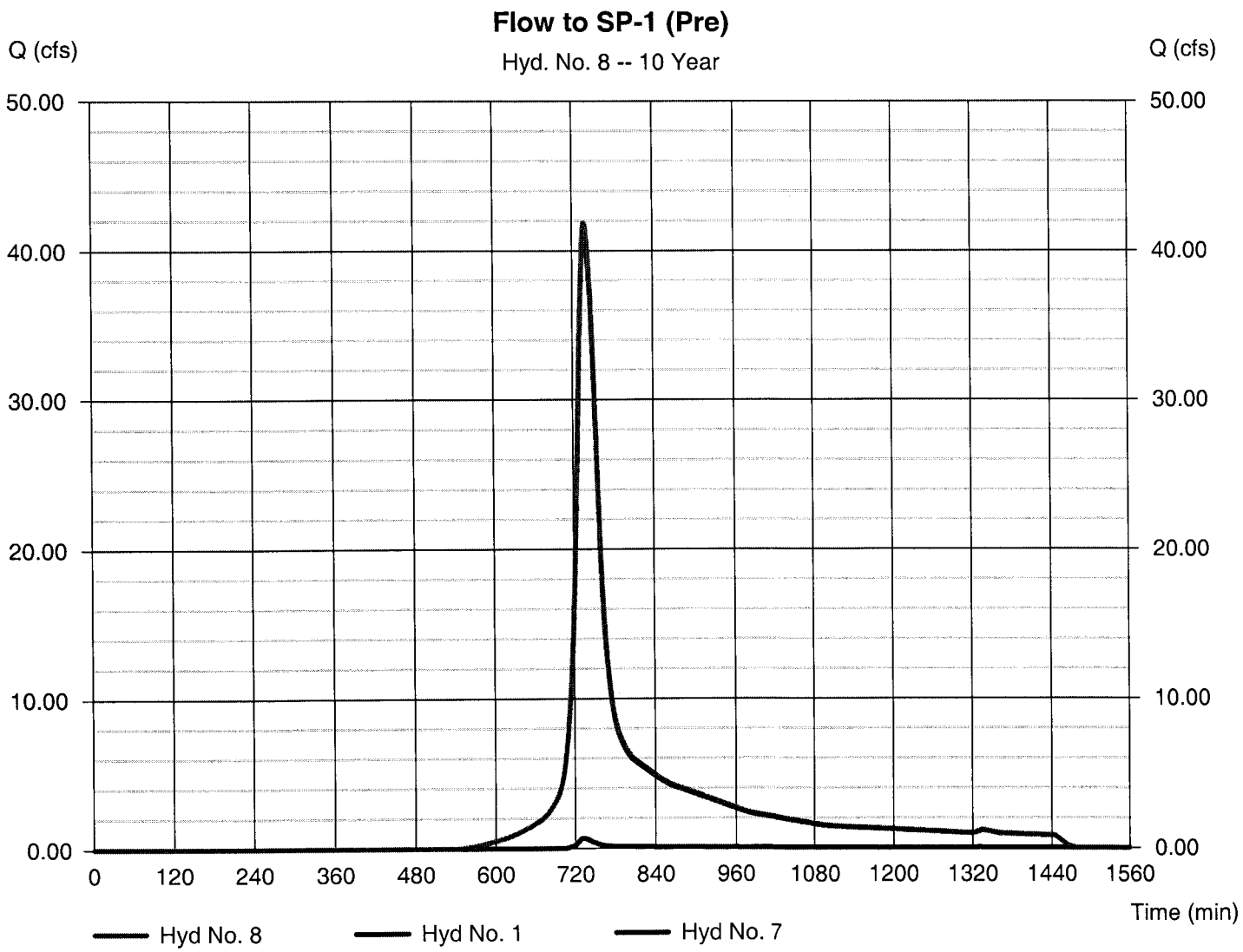
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 8

Flow to SP-1 (Pre)

Hydrograph type	= Combine	Peak discharge	= 41.85 cfs
Storm frequency	= 10 yrs	Time to peak	= 738 min
Time interval	= 1 min	Hyd. volume	= 203,591 cuft
Inflow hyds.	= 1, 7	Contrib. drain. area	= 25.940 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	54.23	1	737	262,216	----	------	------	E-1
2	SCS Runoff	1.028	1	731	4,396	----	------	------	E-2
3	SCS Runoff	3.139	1	729	12,466	----	------	------	E-3
4	SCS Runoff	15.39	1	719	36,462	----	------	------	E-4
5	SCS Runoff	1.312	1	728	4,879	----	------	------	E-5
6	SCS Runoff	2.971	1	725	9,151	----	------	------	E-6
7	Reservoir	1.029	1	732	4,384	2	132.50	27.5	Headwall Area Outflow
8	Combine	55.15	1	737	266,600	1, 7	------	------	Flow to SP-1 (Pre)

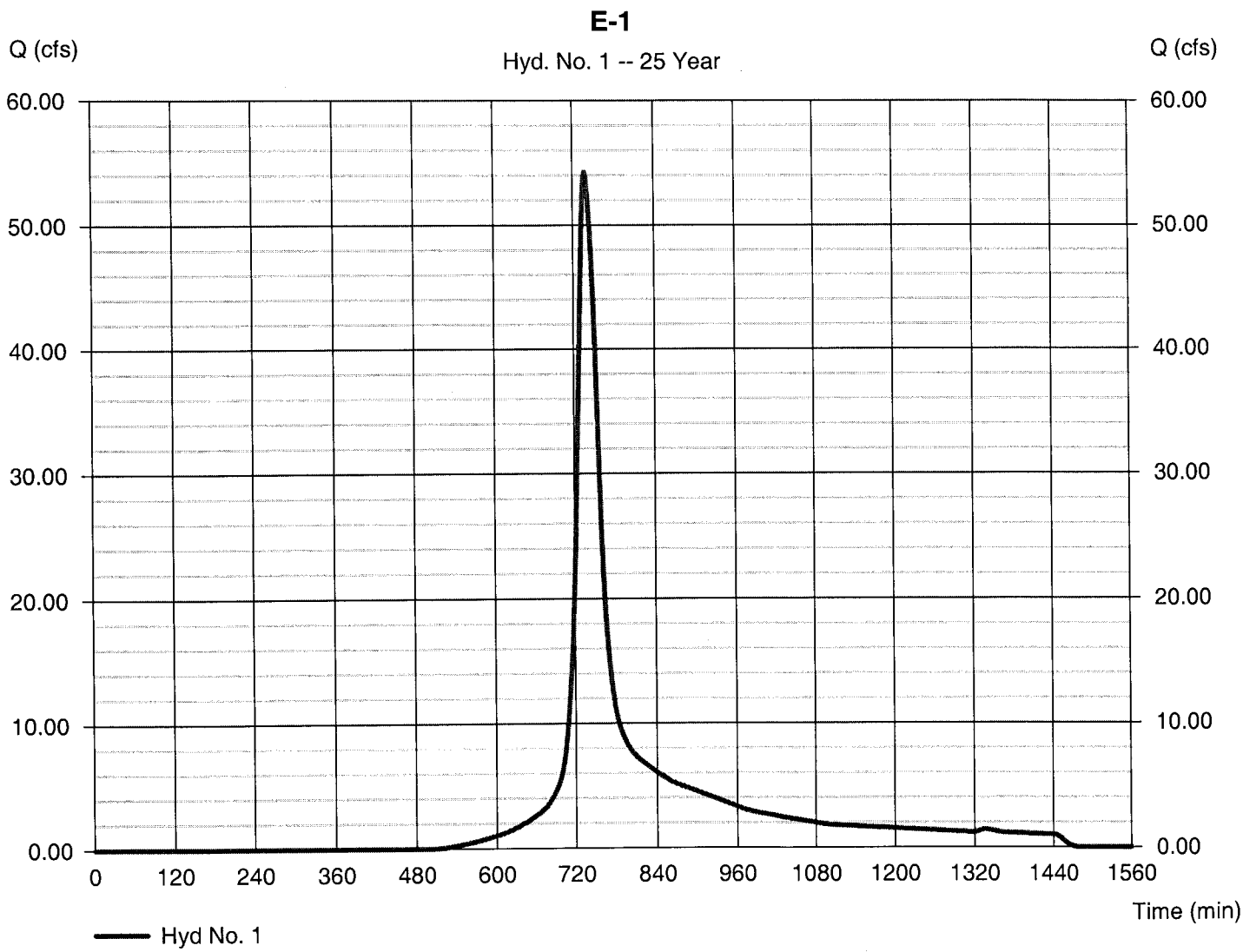
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 1

E-1

Hydrograph type	= SCS Runoff	Peak discharge	= 54.23 cfs
Storm frequency	= 25 yrs	Time to peak	= 737 min
Time interval	= 1 min	Hyd. volume	= 262,216 cuft
Drainage area	= 25.940 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.30 min
Total precip.	= 5.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



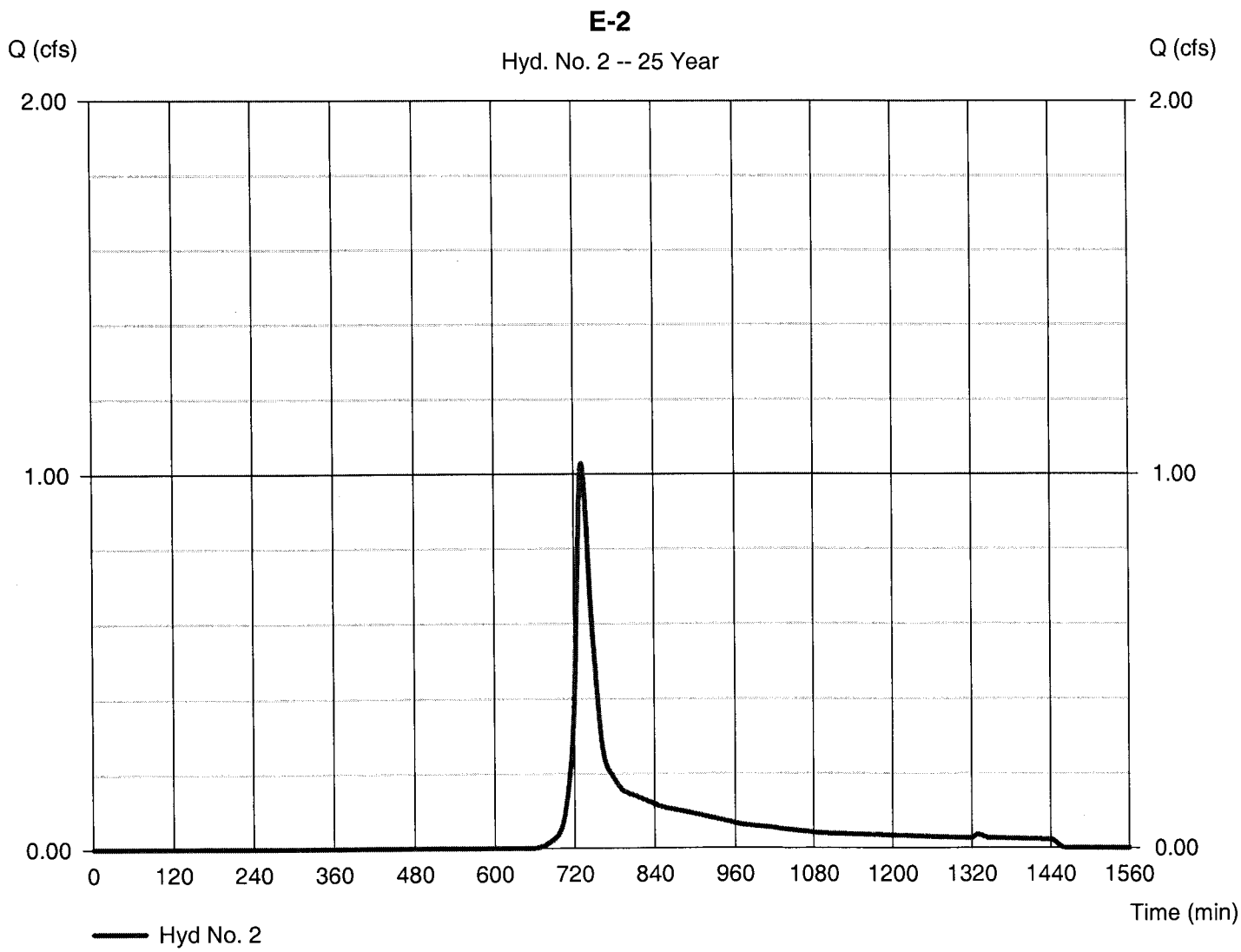
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 2

E-2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.028 cfs
Storm frequency	= 25 yrs	Time to peak	= 731 min
Time interval	= 1 min	Hyd. volume	= 4,396 cuft
Drainage area	= 0.780 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.70 min
Total precip.	= 5.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



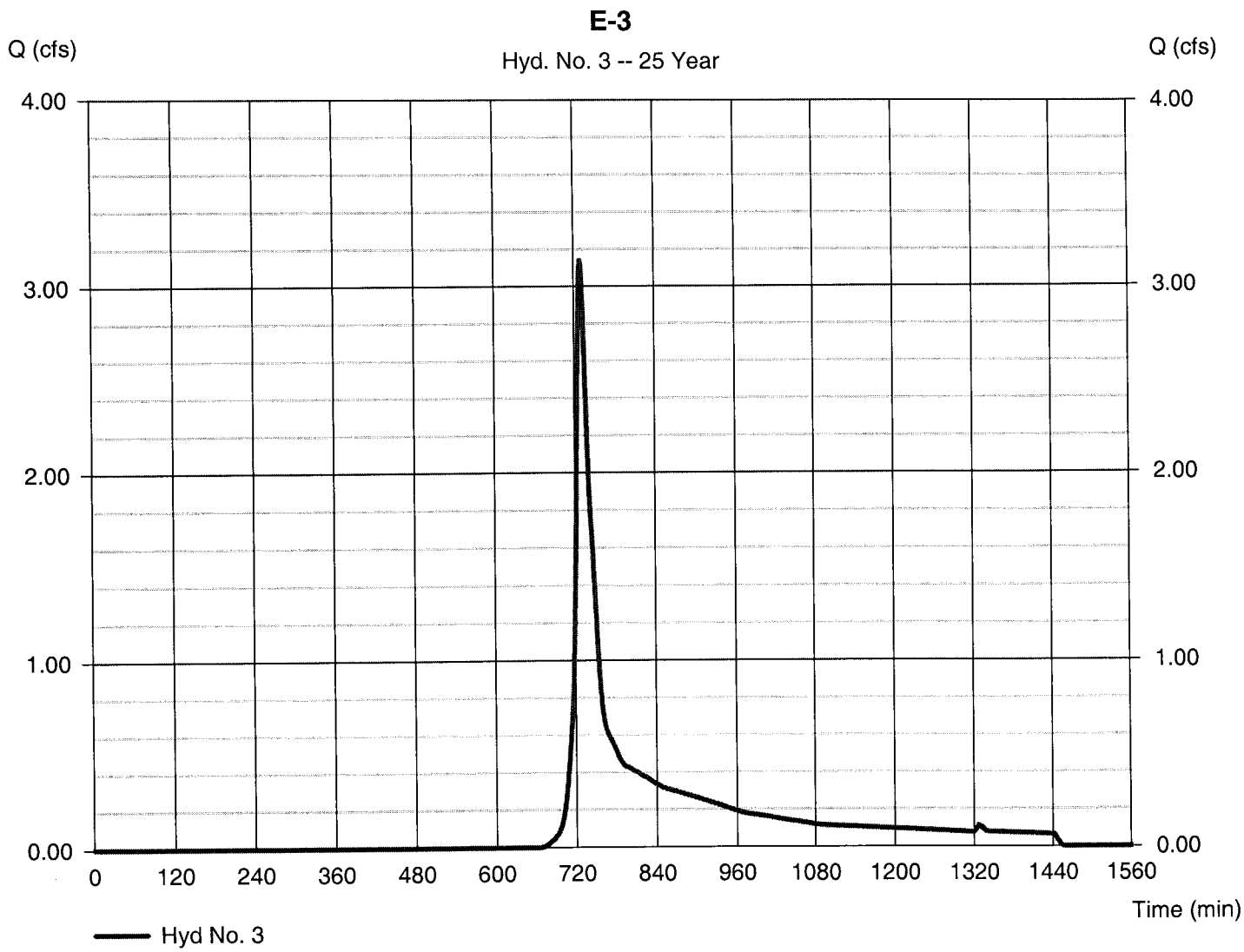
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Thursday, Dec 23, 2010

Hyd. No. 3

E-3

Hydrograph type	= SCS Runoff	Peak discharge	= 3.139 cfs
Storm frequency	= 25 yrs	Time to peak	= 729 min
Time interval	= 1 min	Hyd. volume	= 12,466 cuft
Drainage area	= 2.280 ac	Curve number	= 60
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.60 min
Total precip.	= 5.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



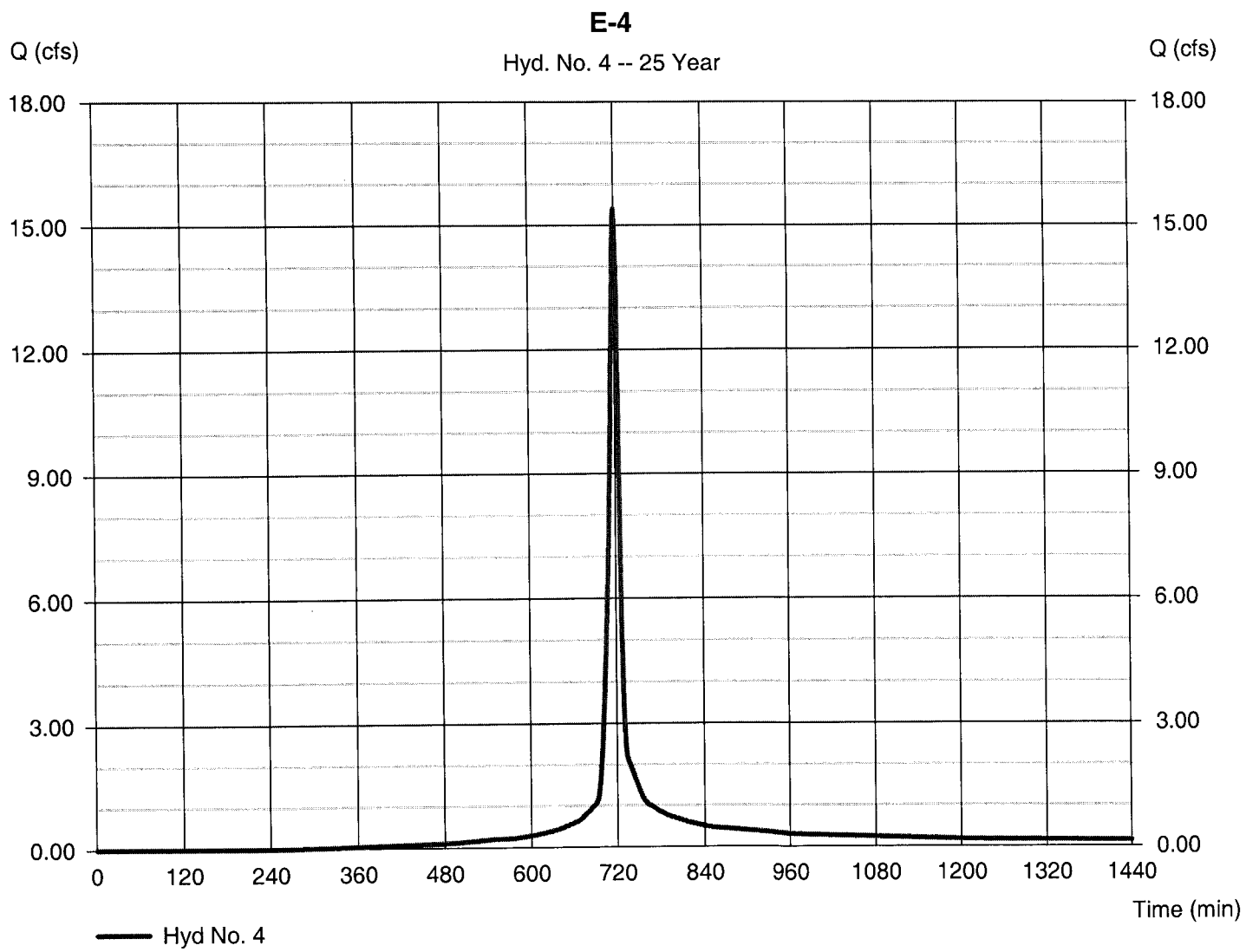
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 4

E-4

Hydrograph type	= SCS Runoff	Peak discharge	= 15.39 cfs
Storm frequency	= 25 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 36,462 cuft
Drainage area	= 2.540 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.50 min
Total precip.	= 5.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



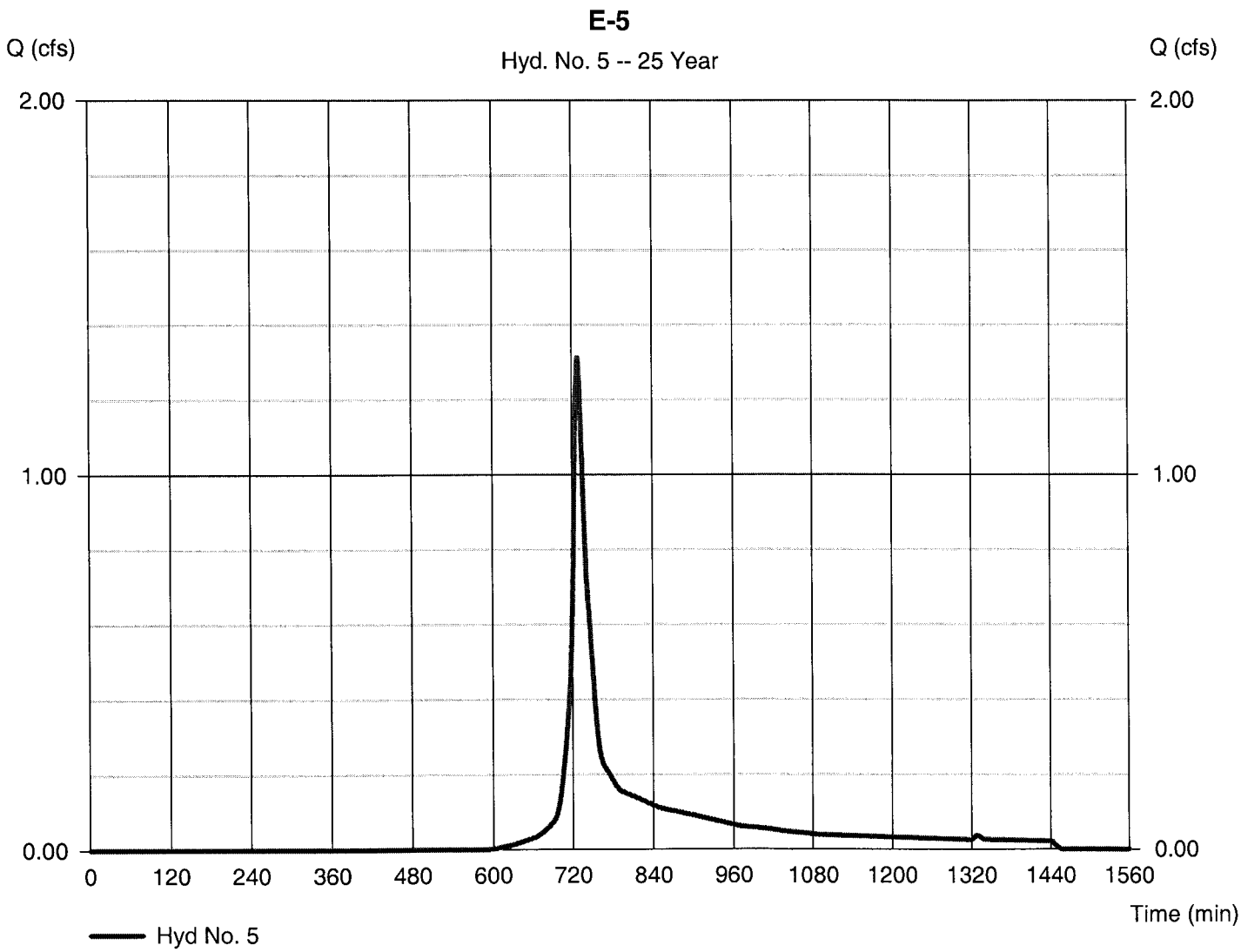
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 5

E-5

Hydrograph type	= SCS Runoff	Peak discharge	= 1.312 cfs
Storm frequency	= 25 yrs	Time to peak	= 728 min
Time interval	= 1 min	Hyd. volume	= 4,879 cuft
Drainage area	= 0.630 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.80 min
Total precip.	= 5.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



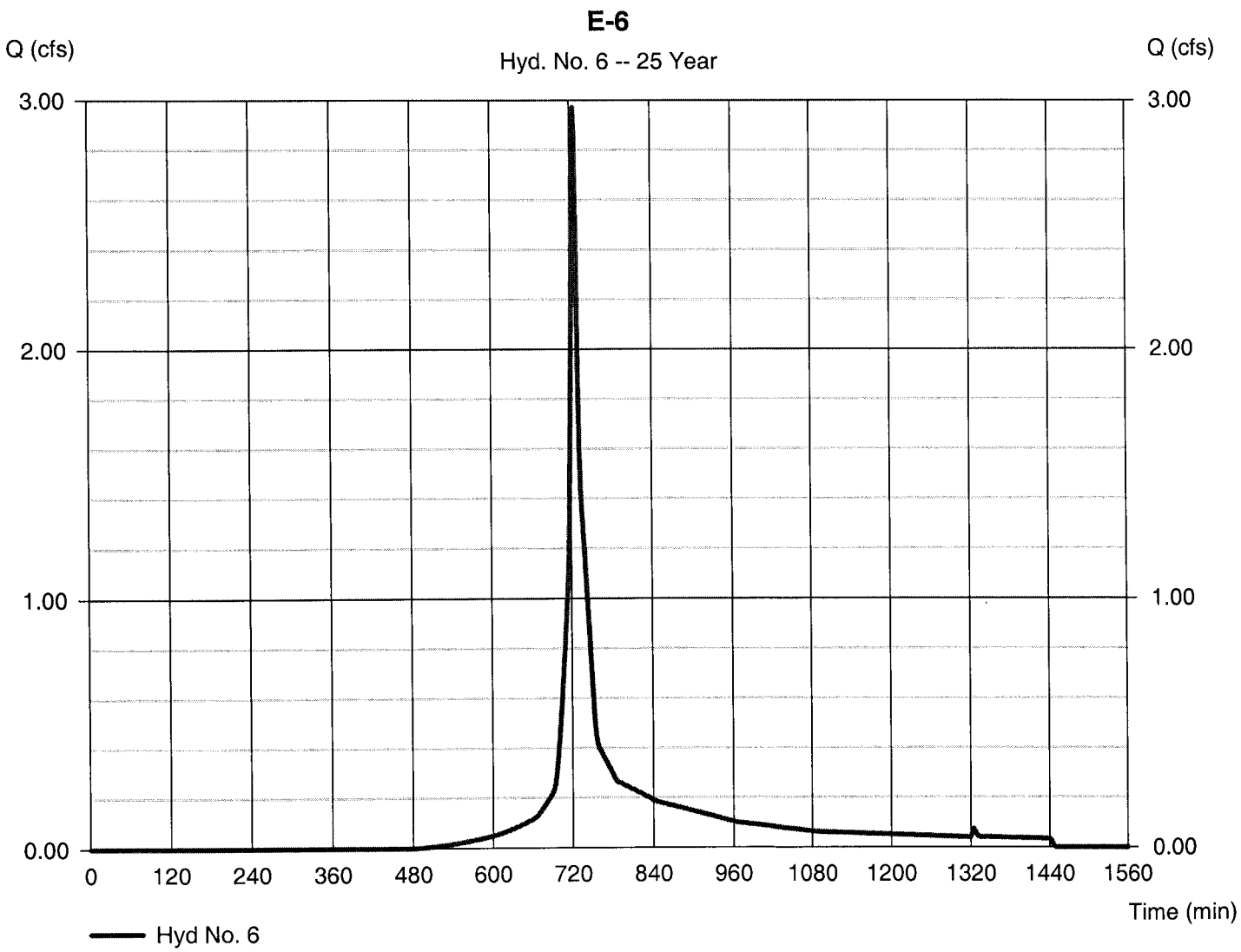
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 6

E-6

Hydrograph type	= SCS Runoff	Peak discharge	= 2.971 cfs
Storm frequency	= 25 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 9,151 cuft
Drainage area	= 0.850 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 5.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

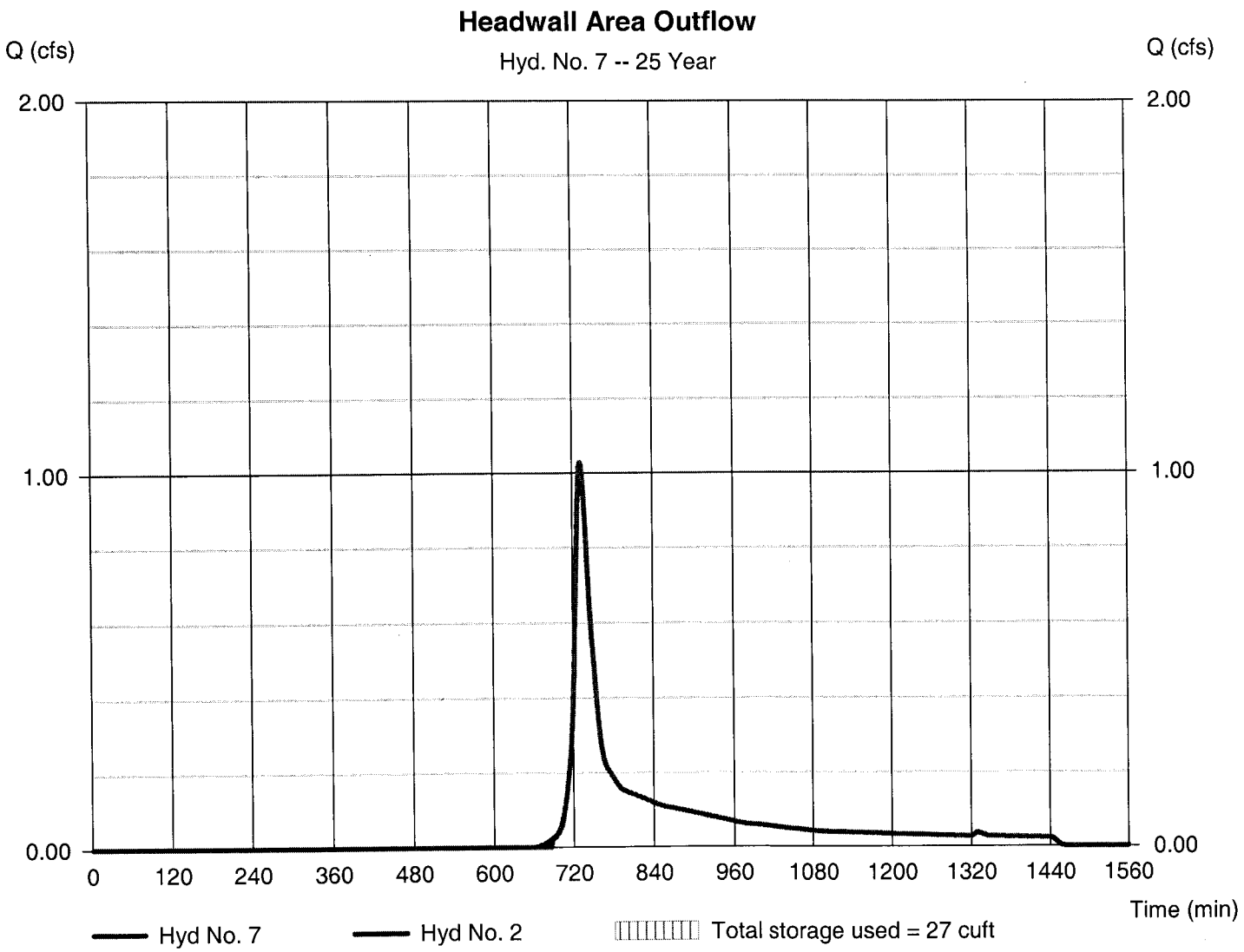
Hydraflow Hydrographs by Intelisolve v9.2 | Thursday, Dec 23, 2010

Hyd. No. 7

Headwall Area Outflow

Hydrograph type	= Reservoir	Peak discharge	= 1.029 cfs
Storm frequency	= 25 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 4,384 cuft
Inflow hyd. No.	= 2 - E-2	Max. Elevation	= 132.50 ft
Reservoir name	= Storage behind exist headwall	Max. Storage	= 27 cuft

Storage Indication method used.



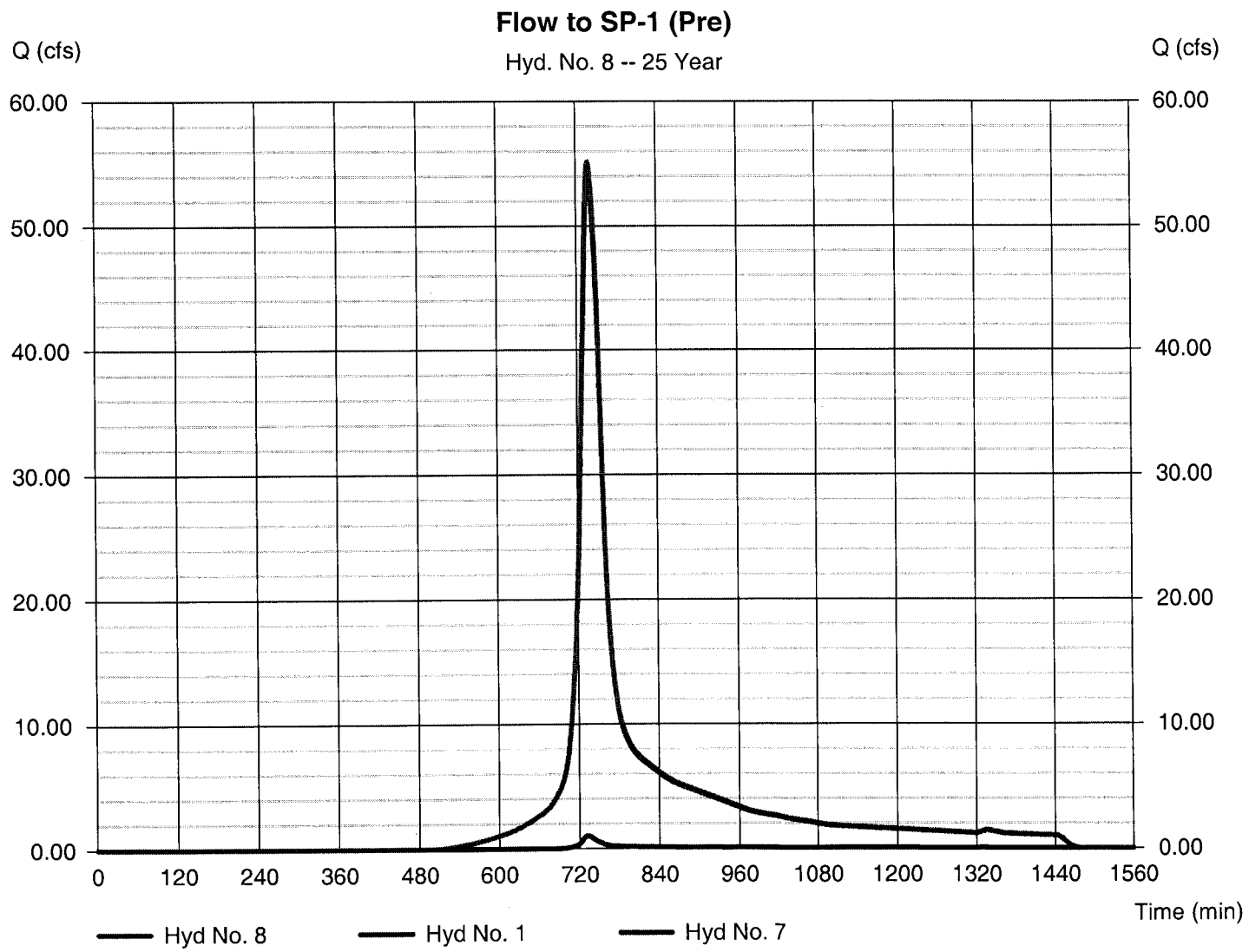
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 8

Flow to SP-1 (Pre)

Hydrograph type	= Combine	Peak discharge	= 55.15 cfs
Storm frequency	= 25 yrs	Time to peak	= 737 min
Time interval	= 1 min	Hyd. volume	= 266,600 cuft
Inflow hyds.	= 1, 7	Contrib. drain. area	= 25.940 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	79.53	1	737	384,162	----	------	------	E-1
2	SCS Runoff	1.780	1	731	7,244	----	------	------	E-2
3	SCS Runoff	5.510	1	729	20,749	----	------	------	E-3
4	SCS Runoff	20.62	1	719	49,783	----	------	------	E-4
5	SCS Runoff	2.073	1	728	7,563	----	------	------	E-5
6	SCS Runoff	4.304	1	725	13,321	----	------	------	E-6
7	Reservoir	1.780	1	731	7,232	2	132.82	36.3	Headwall Area Outflow
8	Combine	81.08	1	737	391,394	1, 7	------	------	Flow to SP-1 (Pre)

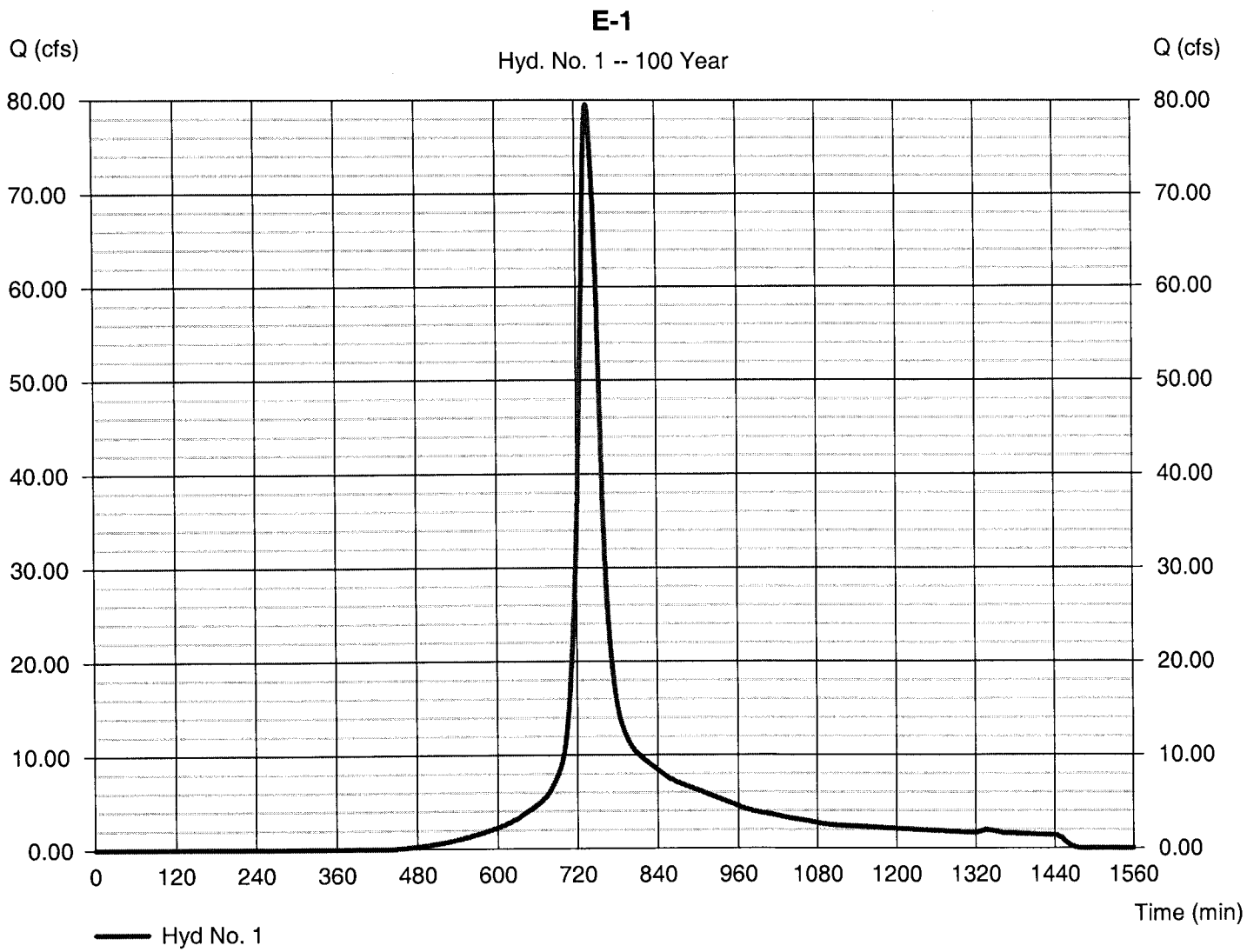
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 1

E-1

Hydrograph type	= SCS Runoff	Peak discharge	= 79.53 cfs
Storm frequency	= 100 yrs	Time to peak	= 737 min
Time interval	= 1 min	Hyd. volume	= 384,162 cuft
Drainage area	= 25.940 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.30 min
Total precip.	= 6.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



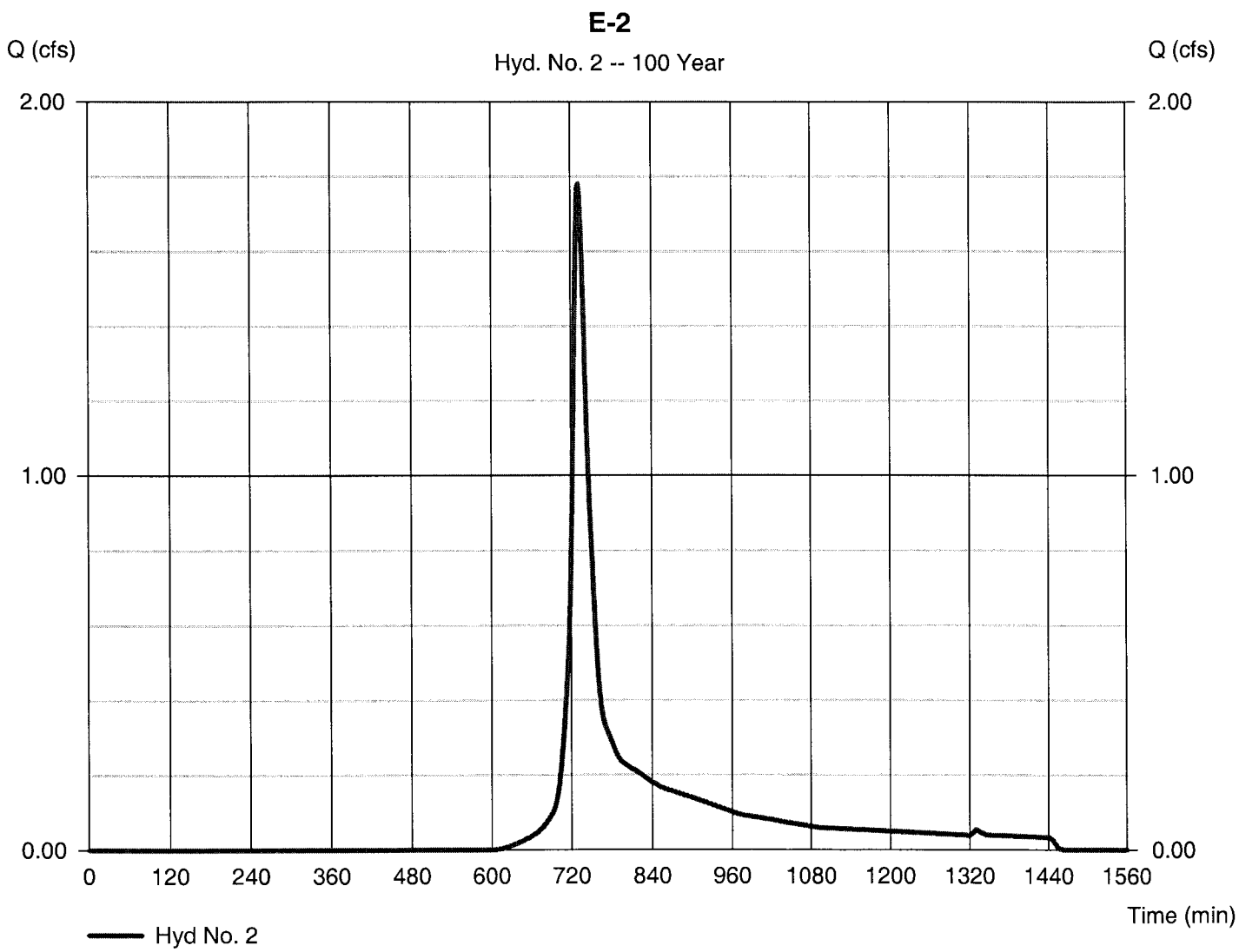
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 2

E-2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.780 cfs
Storm frequency	= 100 yrs	Time to peak	= 731 min
Time interval	= 1 min	Hyd. volume	= 7,244 cuft
Drainage area	= 0.780 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.70 min
Total precip.	= 6.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



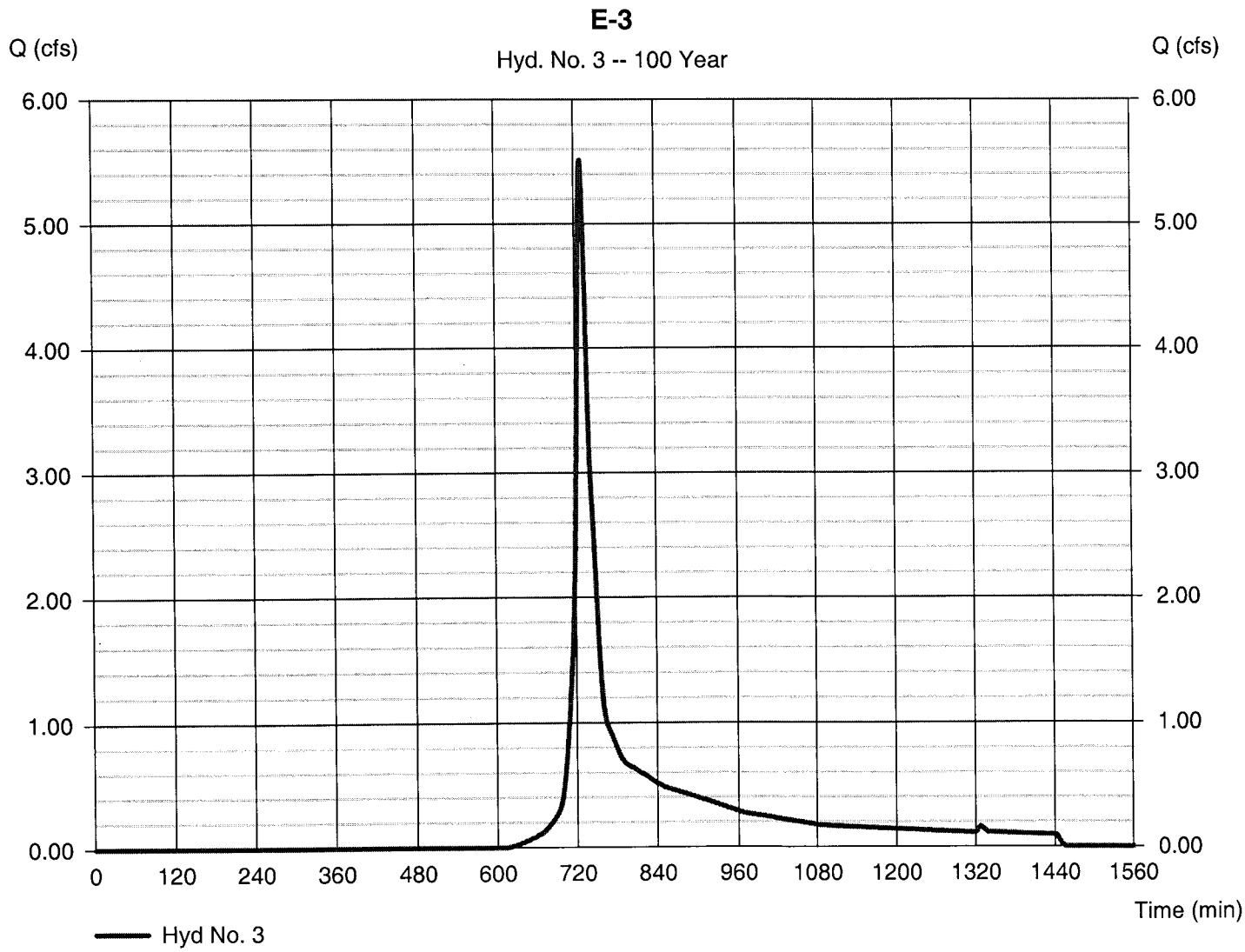
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 3

E-3

Hydrograph type	= SCS Runoff	Peak discharge	= 5.510 cfs
Storm frequency	= 100 yrs	Time to peak	= 729 min
Time interval	= 1 min	Hyd. volume	= 20,749 cuft
Drainage area	= 2.280 ac	Curve number	= 60
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.60 min
Total precip.	= 6.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



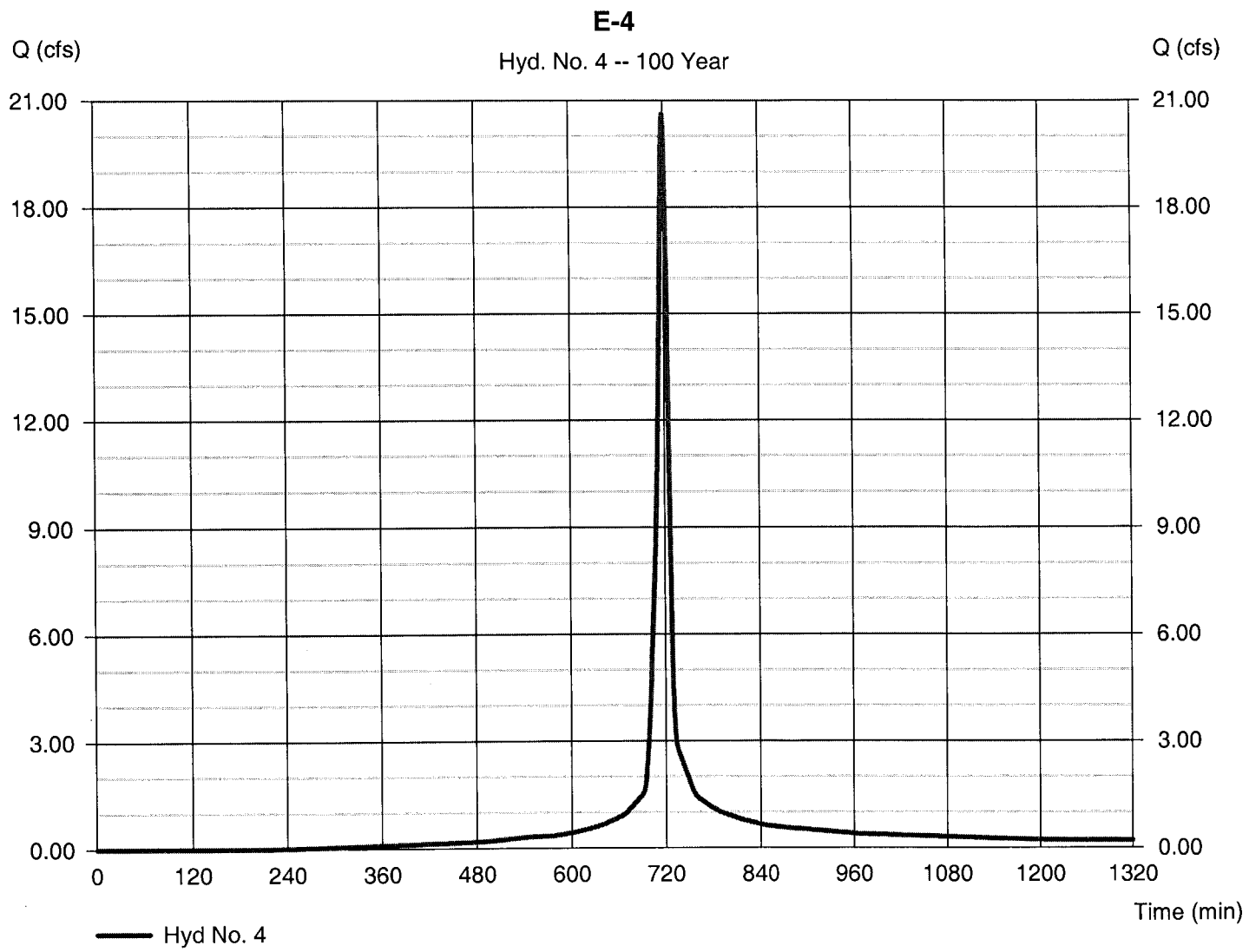
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 4

E-4

Hydrograph type	= SCS Runoff	Peak discharge	= 20.62 cfs
Storm frequency	= 100 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 49,783 cuft
Drainage area	= 2.540 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.50 min
Total precip.	= 6.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



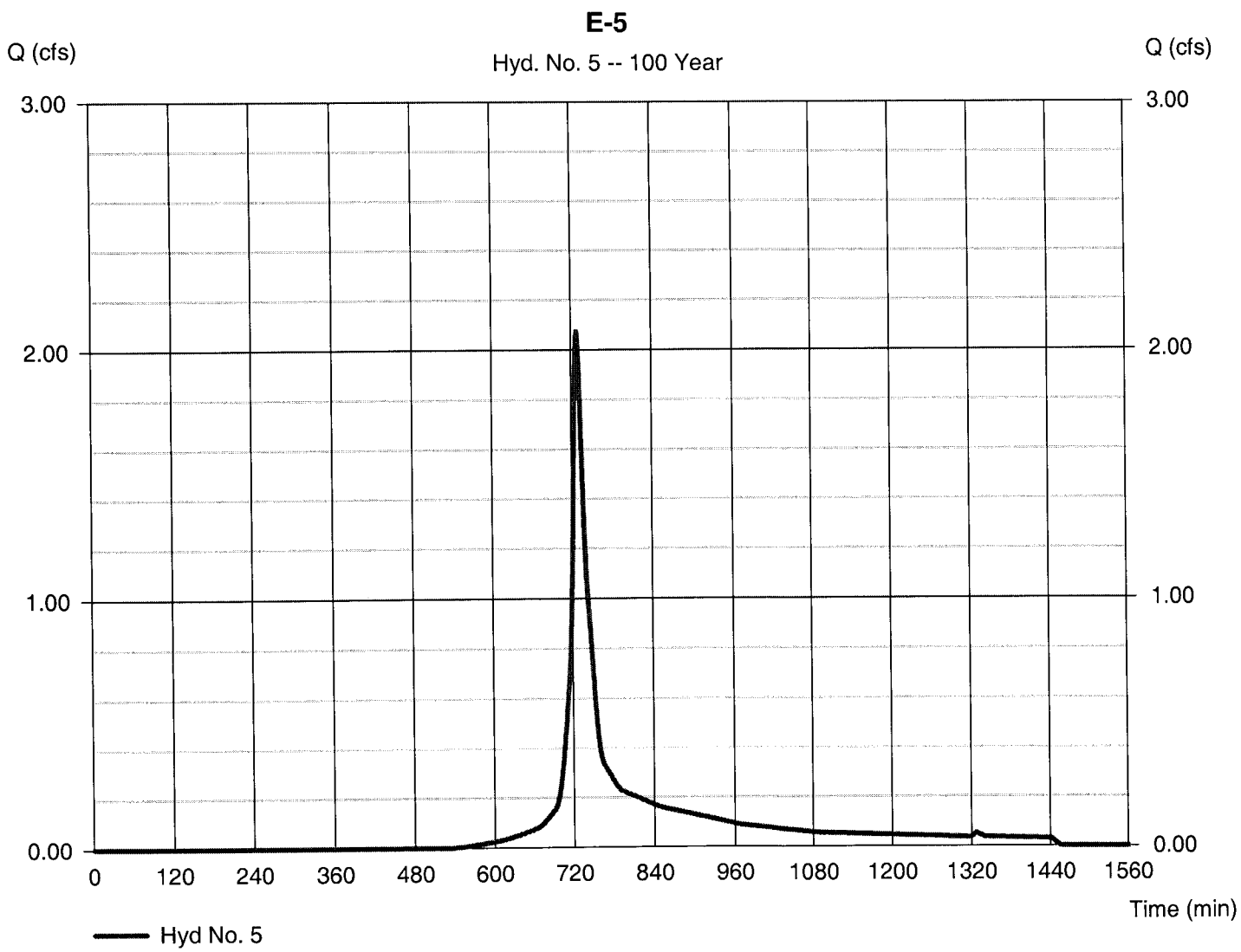
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Thursday, Dec 23, 2010

Hyd. No. 5

E-5

Hydrograph type	= SCS Runoff	Peak discharge	= 2.073 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 1 min	Hyd. volume	= 7,563 cuft
Drainage area	= 0.630 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.80 min
Total precip.	= 6.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



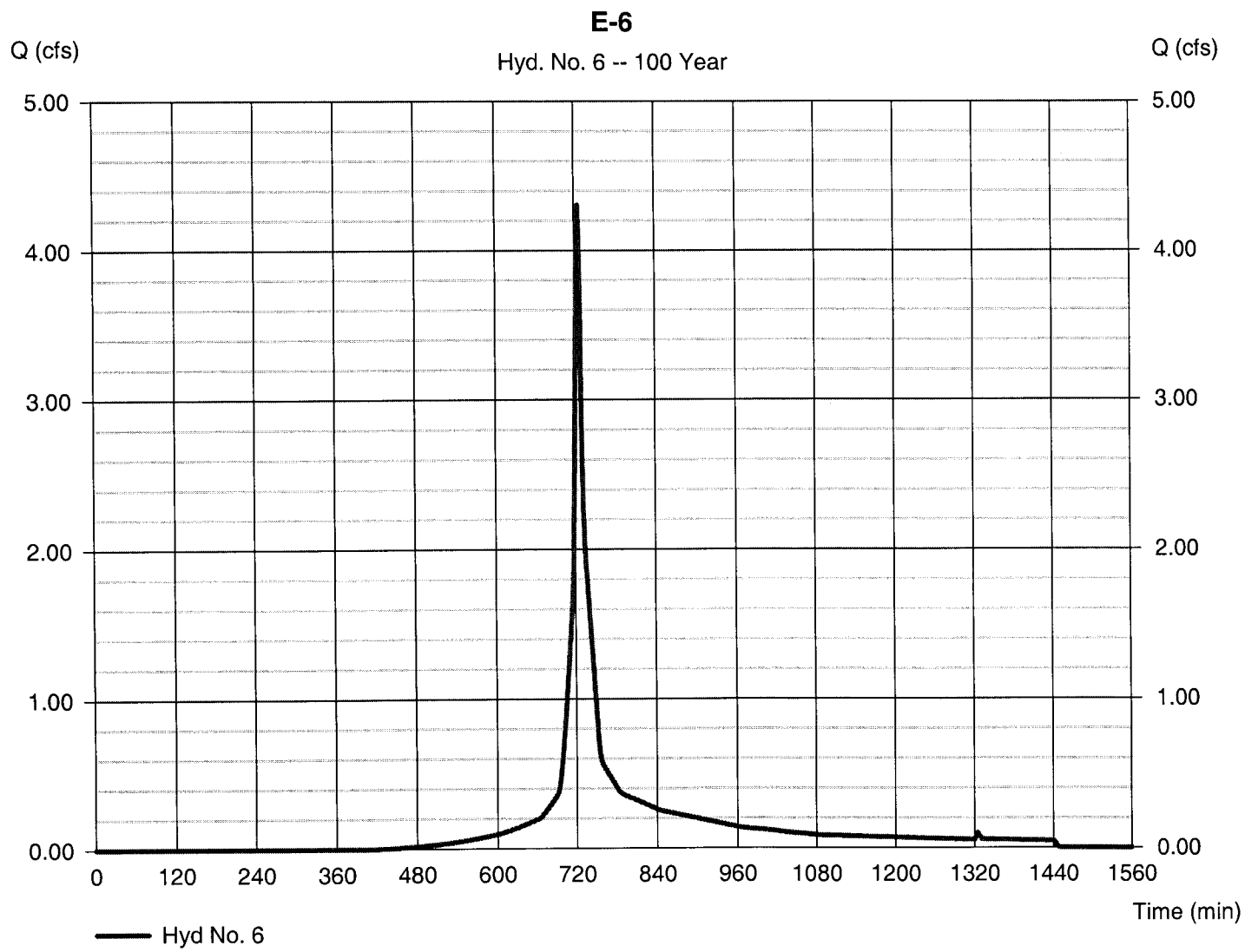
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Thursday, Dec 23, 2010

Hyd. No. 6

E-6

Hydrograph type	= SCS Runoff	Peak discharge	= 4.304 cfs
Storm frequency	= 100 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 13,321 cuft
Drainage area	= 0.850 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 6.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

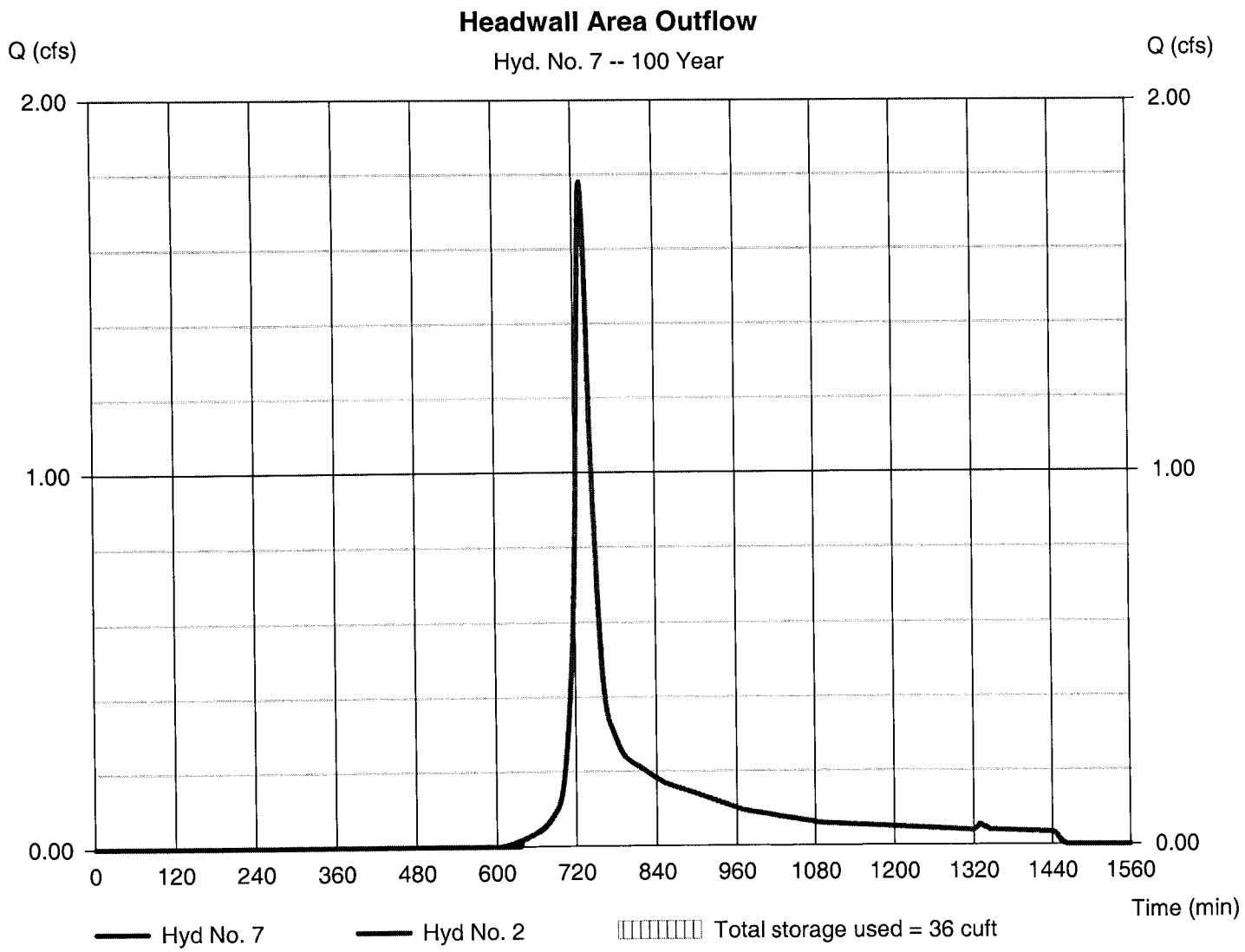
Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 7

Headwall Area Outflow

Hydrograph type	= Reservoir	Peak discharge	= 1.780 cfs
Storm frequency	= 100 yrs	Time to peak	= 731 min
Time interval	= 1 min	Hyd. volume	= 7,232 cuft
Inflow hyd. No.	= 2 - E-2	Max. Elevation	= 132.82 ft
Reservoir name	= Storage behind exist headwall	Max. Storage	= 36 cuft

Storage Indication method used.



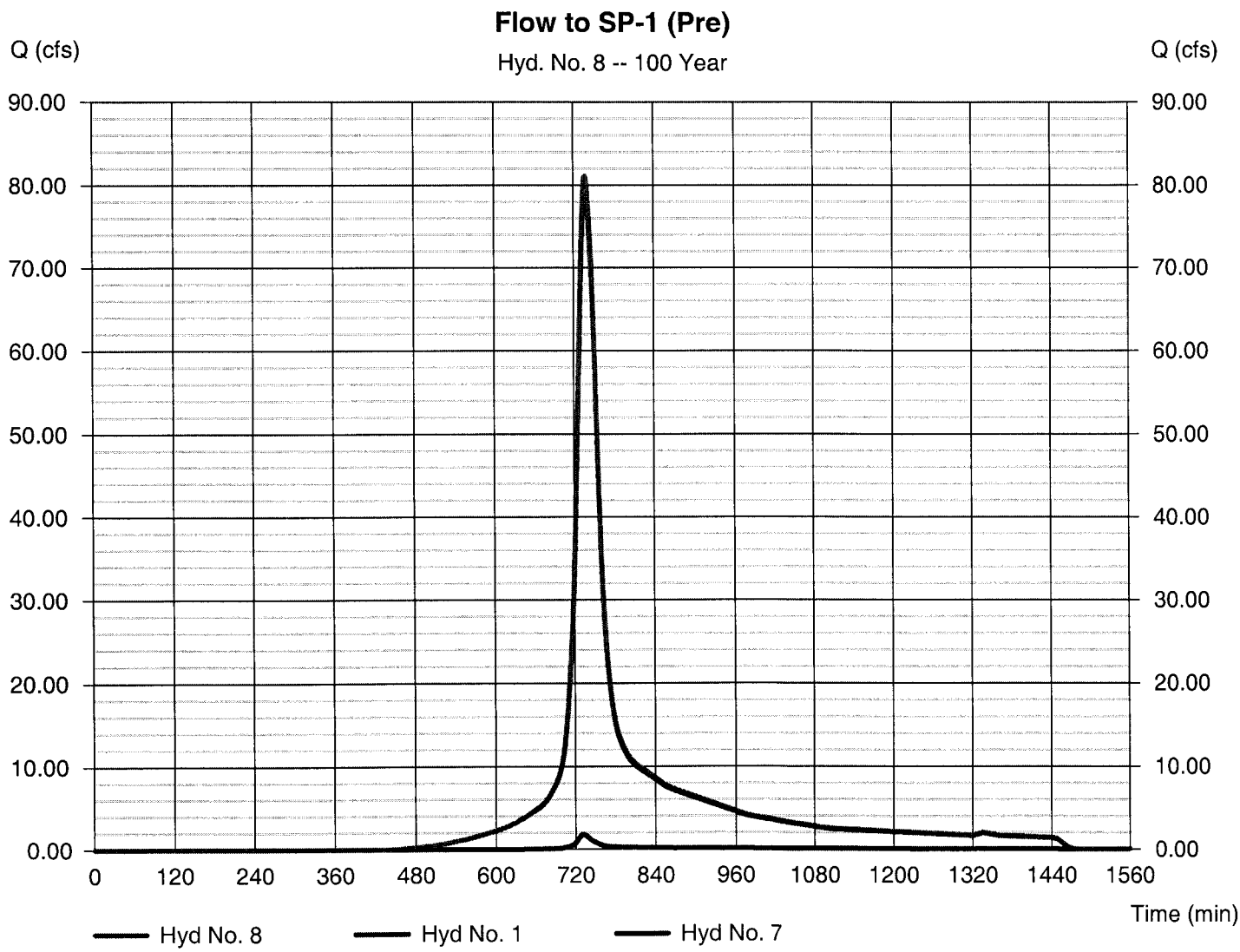
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 8

Flow to SP-1 (Pre)

Hydrograph type	= Combine	Peak discharge	= 81.08 cfs
Storm frequency	= 100 yrs	Time to peak	= 737 min
Time interval	= 1 min	Hyd. volume	= 391,394 cuft
Inflow hyds.	= 1, 7	Contrib. drain. area	= 25.940 ac



Pond Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Pond No. 1 - Storage behind exist headwall

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 131.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	131.50	10	0	0
1.50	133.00	50	41	41
2.50	134.00	1,760	702	743
3.50	135.00	4,450	3,003	3,746
4.50	136.00	8,220	6,239	9,985
5.50	137.00	10,000	9,095	19,079

Culvert / Orifice Structures

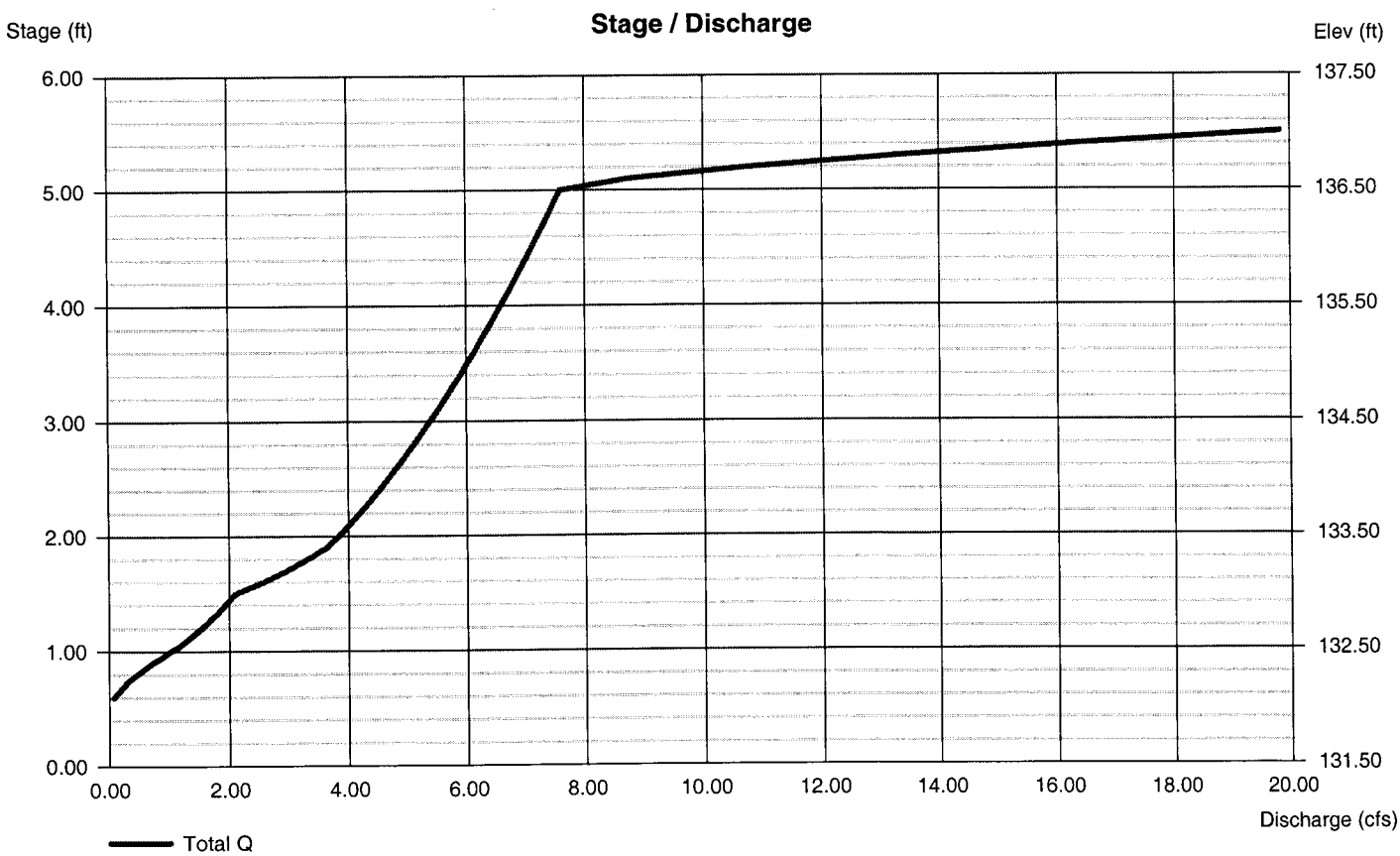
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	0.00	0.00	0.00
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 131.97	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.70	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 10.00	0.00	0.00	0.00
Crest El. (ft)	= 136.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Post-Development

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	20.12	-------	-------	41.04	53.96	-------	79.13	P-1
2	SCS Runoff	-------	-------	0.182	-------	-------	0.675	1.028	-------	1.780	P-2
3	SCS Runoff	-------	-------	0.487	-------	-------	2.018	3.139	-------	5.510	P-3
4	SCS Runoff	-------	-------	1.337	-------	-------	3.324	4.611	-------	7.213	P-4
5	SCS Runoff	-------	-------	0.367	-------	-------	0.938	1.312	-------	2.073	P-5
6	SCS Runoff	-------	-------	0.314	-------	-------	0.581	0.740	-------	1.042	P-6
7	SCS Runoff	-------	-------	0.856	-------	-------	1.827	2.436	-------	3.629	P-7
8	Reservoir	7	-------	0.000	-------	-------	0.000	0.000	-------	0.519	Recharge Area Outflow
9	Reservoir	2	-------	0.182	-------	-------	0.675	1.029	-------	1.780	Headwall Out (post)
10	Combine	1, 8, 9	-------	20.30	-------	-------	41.64	54.88	-------	80.69	Flow to SP-1 (Post)

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	20.12	1	739	101,463	----	------	------	P-1
2	SCS Runoff	0.182	1	737	1,143	----	------	------	P-2
3	SCS Runoff	0.487	1	734	3,117	----	------	------	P-3
4	SCS Runoff	1.337	1	730	5,571	----	------	------	P-4
5	SCS Runoff	0.367	1	730	1,580	----	------	------	P-5
6	SCS Runoff	0.314	1	729	1,193	----	------	------	P-6
7	SCS Runoff	0.856	1	735	4,024	----	------	------	P-7
8	Reservoir	0.000	1	1055	0	7	136.19	1,266	Recharge Area Outflow
9	Reservoir	0.182	1	738	1,131	2	132.17	18.3	Headwall Out (post)
10	Combine	20.30	1	739	102,594	1, 8, 9	------	------	Flow to SP-1 (Post)

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	41.04	1	738	199,542	----	------	------	P-1
2	SCS Runoff	0.675	1	732	3,056	----	------	------	P-2
3	SCS Runoff	2.018	1	730	8,591	----	------	------	P-3
4	SCS Runoff	3.324	1	729	12,332	----	------	------	P-4
5	SCS Runoff	0.938	1	729	3,567	----	------	------	P-5
6	SCS Runoff	0.581	1	729	2,185	----	------	------	P-6
7	SCS Runoff	1.827	1	734	8,162	----	------	------	P-7
8	Reservoir	0.000	1	685	0	7	137.30	3,403	Recharge Area Outflow
9	Reservoir	0.675	1	732	3,043	2	132.38	24.2	Headwall Out (post)
10	Combine	41.64	1	738	202,586	1, 8, 9	------	------	Flow to SP-1 (Post)

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	53.96	1	737	260,902	----	------	------	P-1
2	SCS Runoff	1.028	1	731	4,396	----	------	------	P-2
3	SCS Runoff	3.139	1	729	12,466	----	------	------	P-3
4	SCS Runoff	4.611	1	729	16,762	----	------	------	P-4
5	SCS Runoff	1.312	1	728	4,879	----	------	------	P-5
6	SCS Runoff	0.740	1	729	2,789	----	------	------	P-6
7	SCS Runoff	2.436	1	734	10,783	----	------	------	P-7
8	Reservoir	0.000	1	649	0	7	138.17	4,839	Recharge Area Outflow
9	Reservoir	1.029	1	732	4,384	2	132.50	27.5	Headwall Out (post)
10	Combine	54.88	1	737	265,286	1, 8, 9	------	------	Flow to SP-1 (Post)

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	79.13	1	737	382,237	----	------	------	P-1
2	SCS Runoff	1.780	1	731	7,244	----	------	------	P-2
3	SCS Runoff	5.510	1	729	20,749	----	------	------	P-3
4	SCS Runoff	7.213	1	728	25,785	----	------	------	P-4
5	SCS Runoff	2.073	1	728	7,563	----	------	------	P-5
6	SCS Runoff	1.042	1	729	3,961	----	------	------	P-6
7	SCS Runoff	3.629	1	734	16,008	----	------	------	P-7
8	Reservoir	0.519	1	766	1,040	7	140.36	6,923	Recharge Area Outflow
9	Reservoir	1.780	1	731	7,232	2	132.82	36.3	Headwall Out (post)
10	Combine	80.69	1	737	390,509	1, 8, 9	------	------	Flow to SP-1 (Post)

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	20.12	-------	-------	41.04	53.96	-------	79.13	P-1
2	SCS Runoff	-------	-------	0.182	-------	-------	0.675	1.028	-------	1.780	P-2
3	SCS Runoff	-------	-------	0.487	-------	-------	2.018	3.139	-------	5.510	P-3
4	SCS Runoff	-------	-------	1.337	-------	-------	3.324	4.611	-------	7.213	P-4
5	SCS Runoff	-------	-------	0.367	-------	-------	0.938	1.312	-------	2.073	P-5
6	SCS Runoff	-------	-------	0.314	-------	-------	0.581	0.740	-------	1.042	P-6
7	SCS Runoff	-------	-------	0.856	-------	-------	1.827	2.436	-------	3.629	P-7
8	Reservoir	7	-------	0.000	-------	-------	0.000	0.000	-------	0.519	Recharge Area Outflow
9	Reservoir	2	-------	0.182	-------	-------	0.675	1.029	-------	1.780	Headwall Out (post)
10	Combine	1, 8, 9	-------	20.30	-------	-------	41.64	54.88	-------	80.69	Flow to SP-1 (Post)

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	20.12	1	739	101,463	----	------	------	P-1
2	SCS Runoff	0.182	1	737	1,143	----	------	------	P-2
3	SCS Runoff	0.487	1	734	3,117	----	------	------	P-3
4	SCS Runoff	1.337	1	730	5,571	----	------	------	P-4
5	SCS Runoff	0.367	1	730	1,580	----	------	------	P-5
6	SCS Runoff	0.314	1	729	1,193	----	------	------	P-6
7	SCS Runoff	0.856	1	735	4,024	----	------	------	P-7
8	Reservoir	0.000	1	1055	0	7	136.19	1,266	Recharge Area Outflow
9	Reservoir	0.182	1	738	1,131	2	132.17	18.3	Headwall Out (post)
10	Combine	20.30	1	739	102,594	1, 8, 9	------	------	Flow to SP-1 (Post)

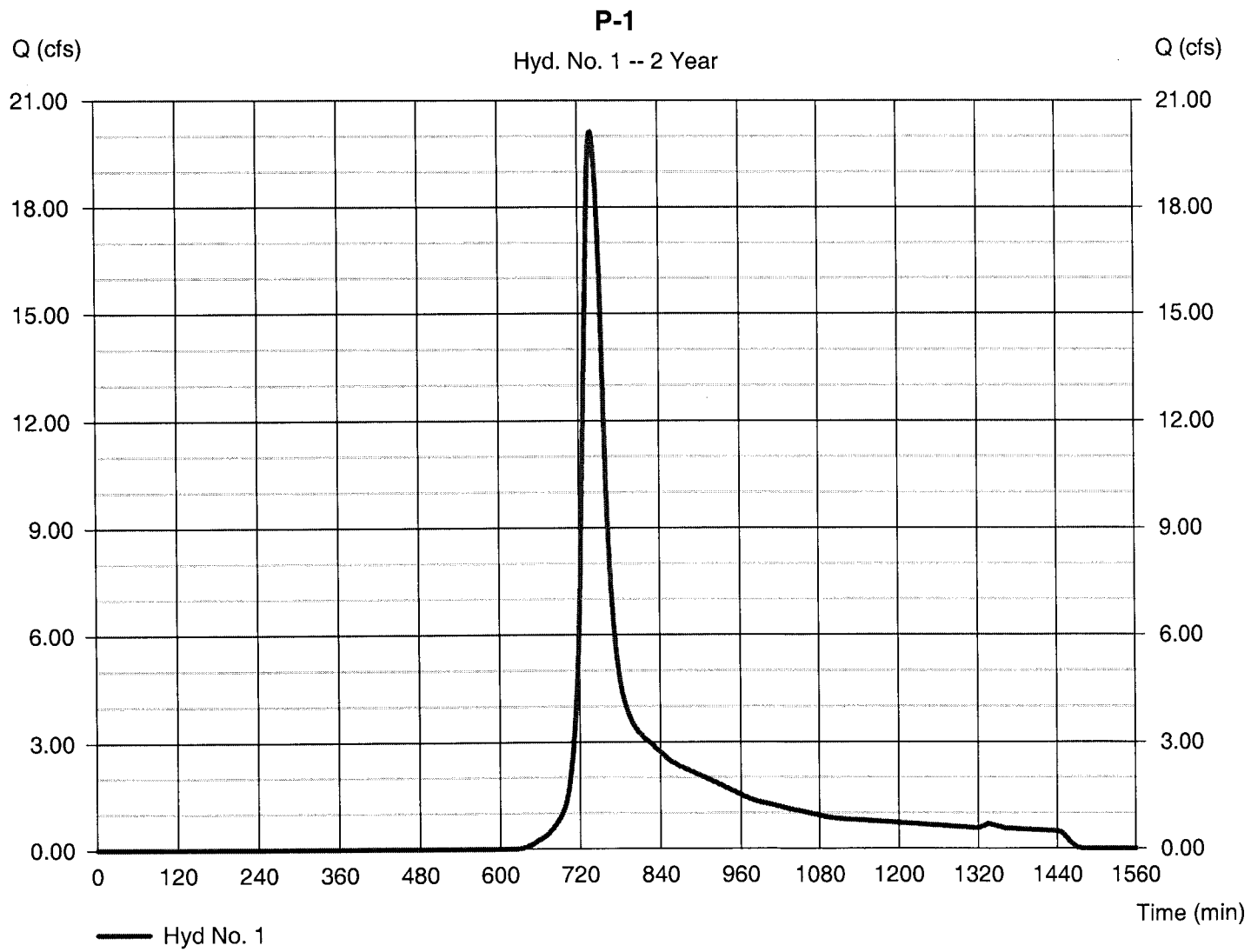
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 1

P-1

Hydrograph type	= SCS Runoff	Peak discharge	= 20.12 cfs
Storm frequency	= 2 yrs	Time to peak	= 739 min
Time interval	= 1 min	Hyd. volume	= 101,463 cuft
Drainage area	= 25.810 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.30 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



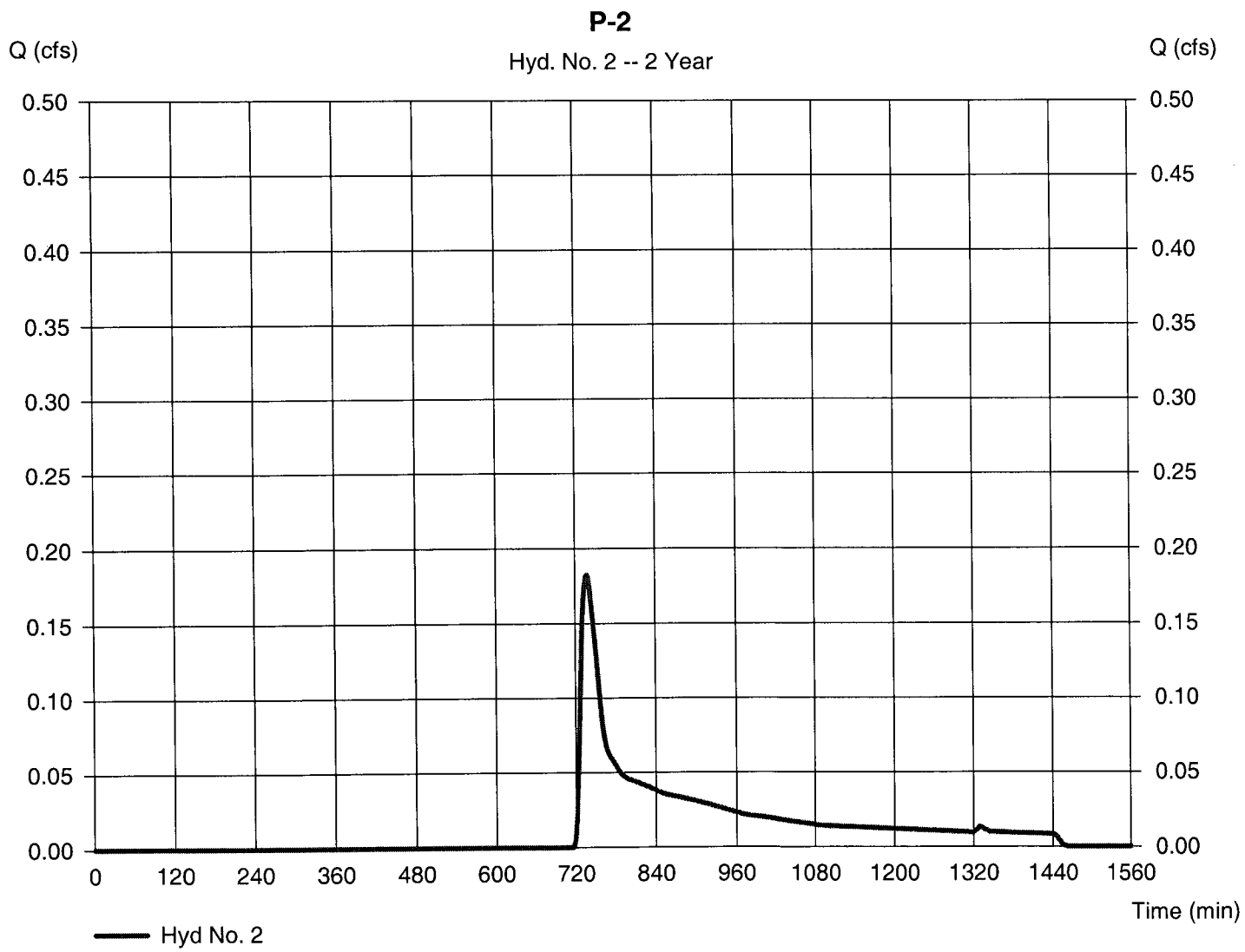
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 2

P-2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.182 cfs
Storm frequency	= 2 yrs	Time to peak	= 737 min
Time interval	= 1 min	Hyd. volume	= 1,143 cuft
Drainage area	= 0.780 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.70 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



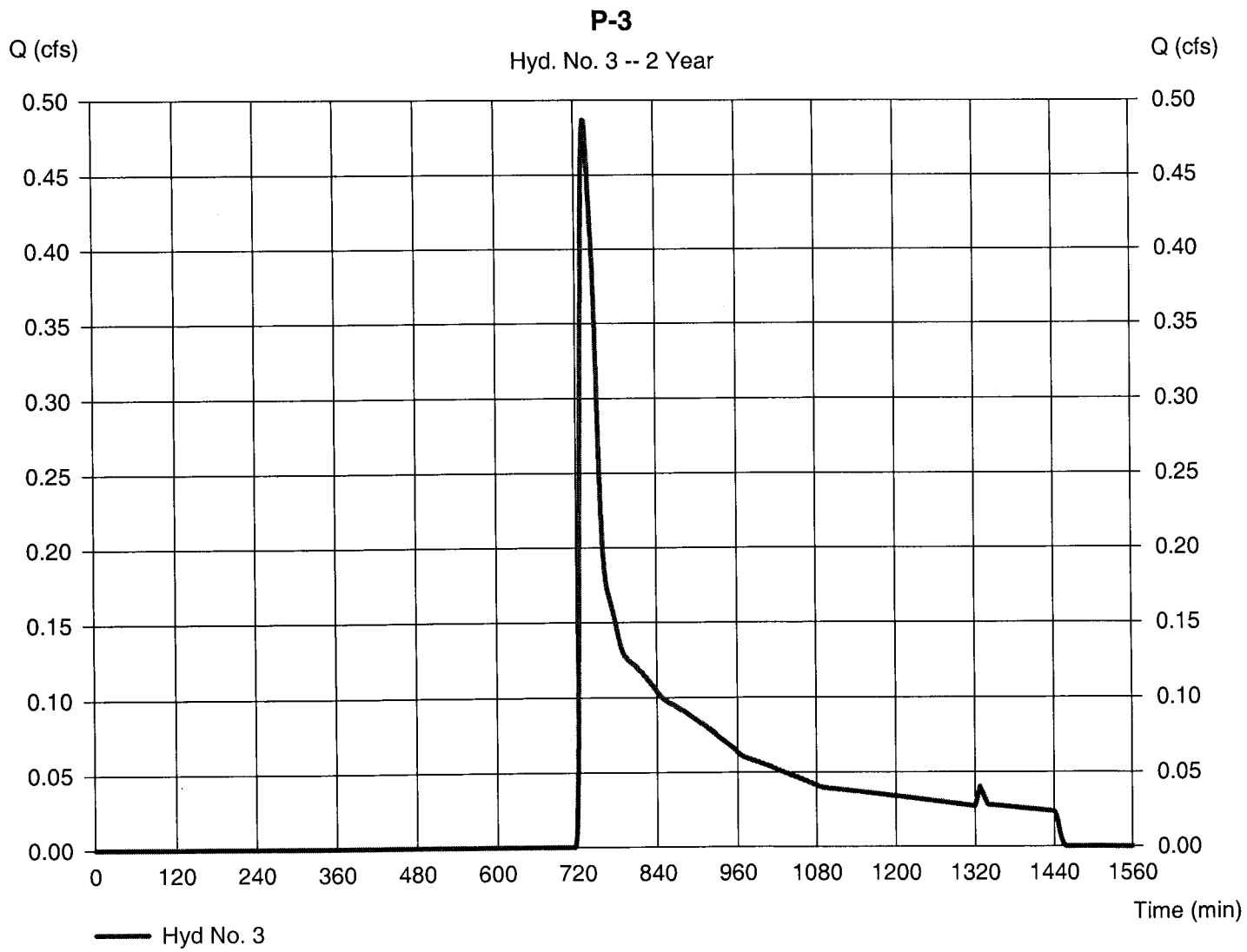
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 3

P-3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.487 cfs
Storm frequency	= 2 yrs	Time to peak	= 734 min
Time interval	= 1 min	Hyd. volume	= 3,117 cuft
Drainage area	= 2.280 ac	Curve number	= 60
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.56 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



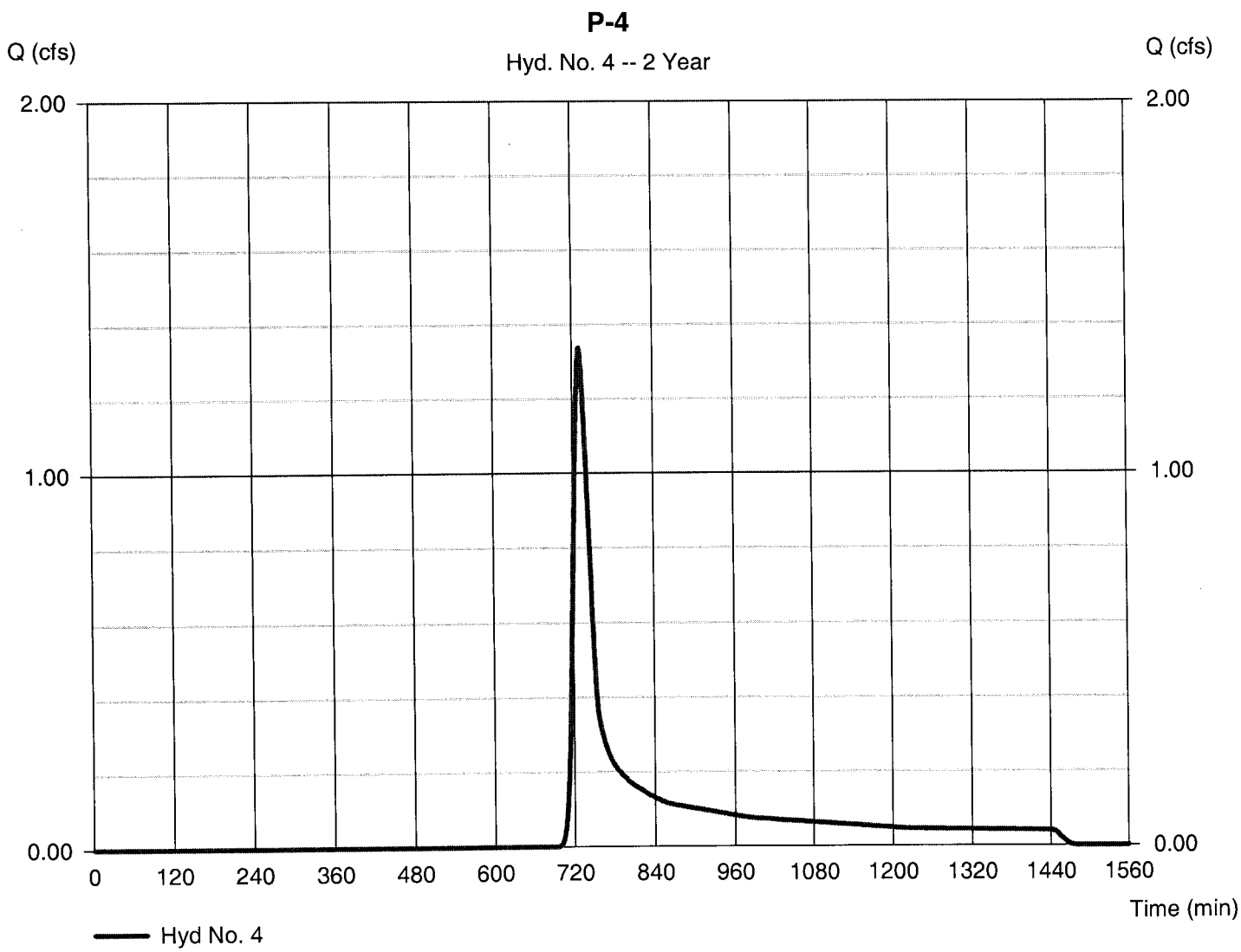
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 4

P-4

Hydrograph type	= SCS Runoff	Peak discharge	= 1.337 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 1 min	Hyd. volume	= 5,571 cuft
Drainage area	= 2.120 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.50 min
Total precip.	= 3.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



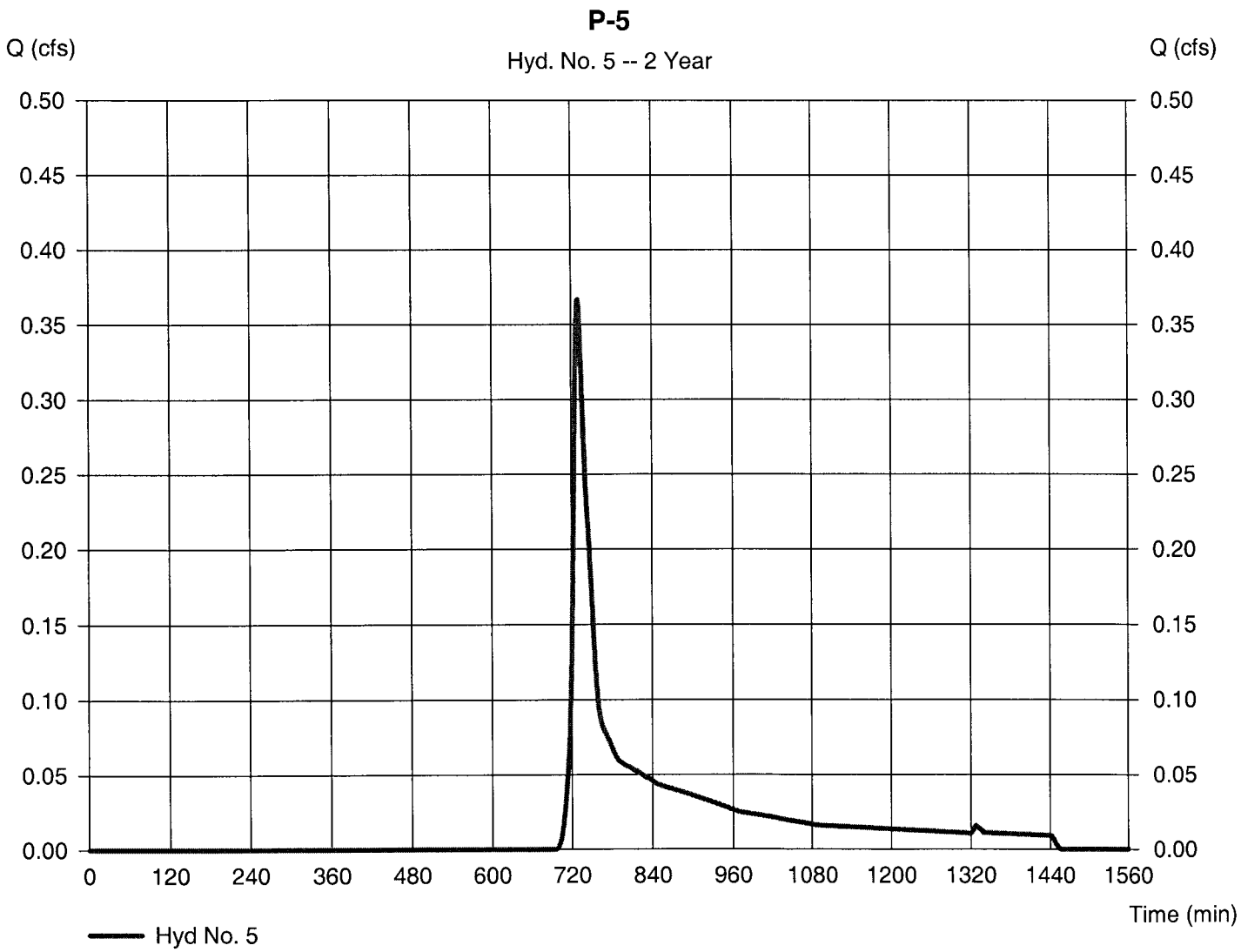
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 5

P-5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.367 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 1 min	Hyd. volume	= 1,580 cuft
Drainage area	= 0.630 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.76 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



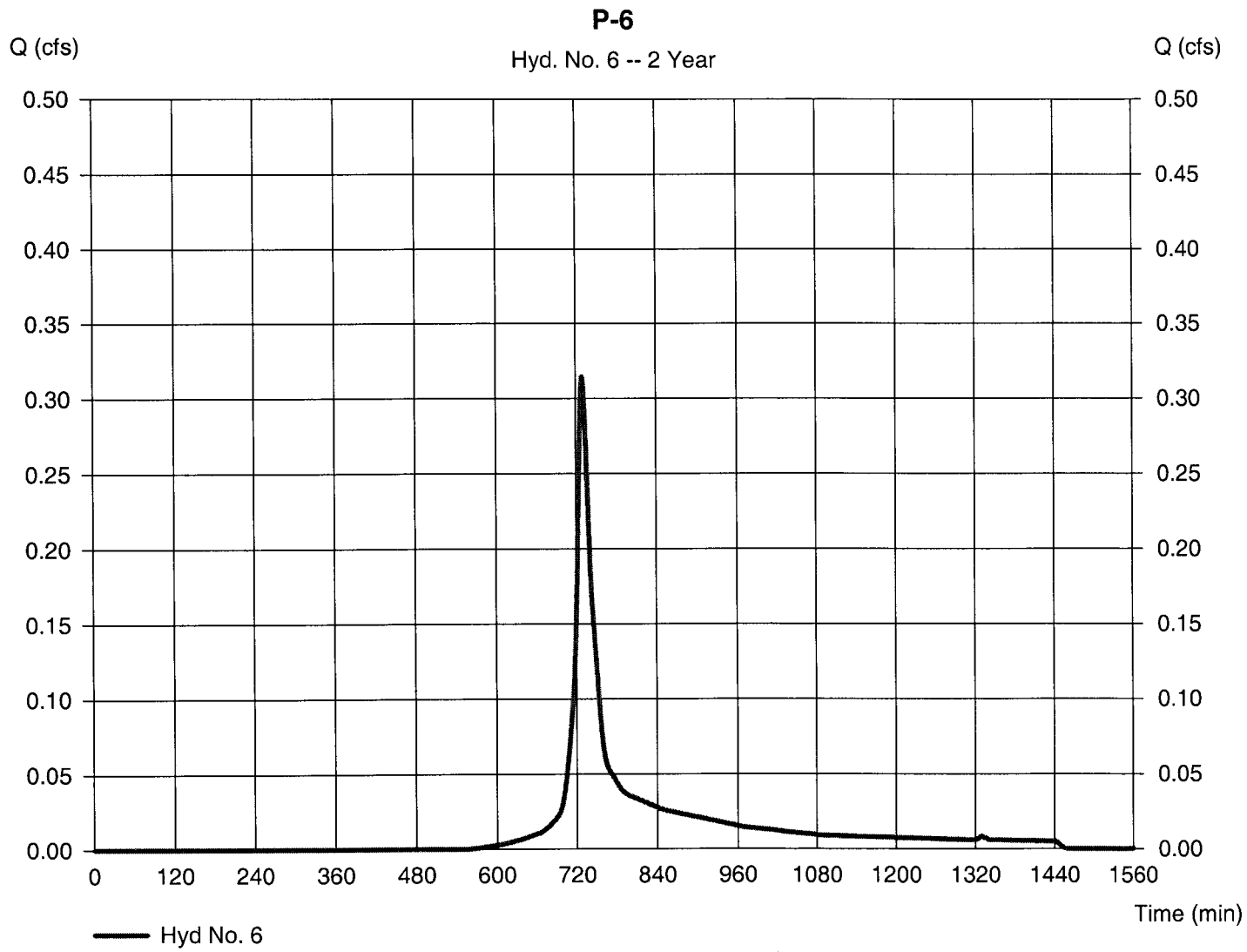
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 6

P-6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.314 cfs
Storm frequency	= 2 yrs	Time to peak	= 729 min
Time interval	= 1 min	Hyd. volume	= 1,193 cuft
Drainage area	= 0.240 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.14 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



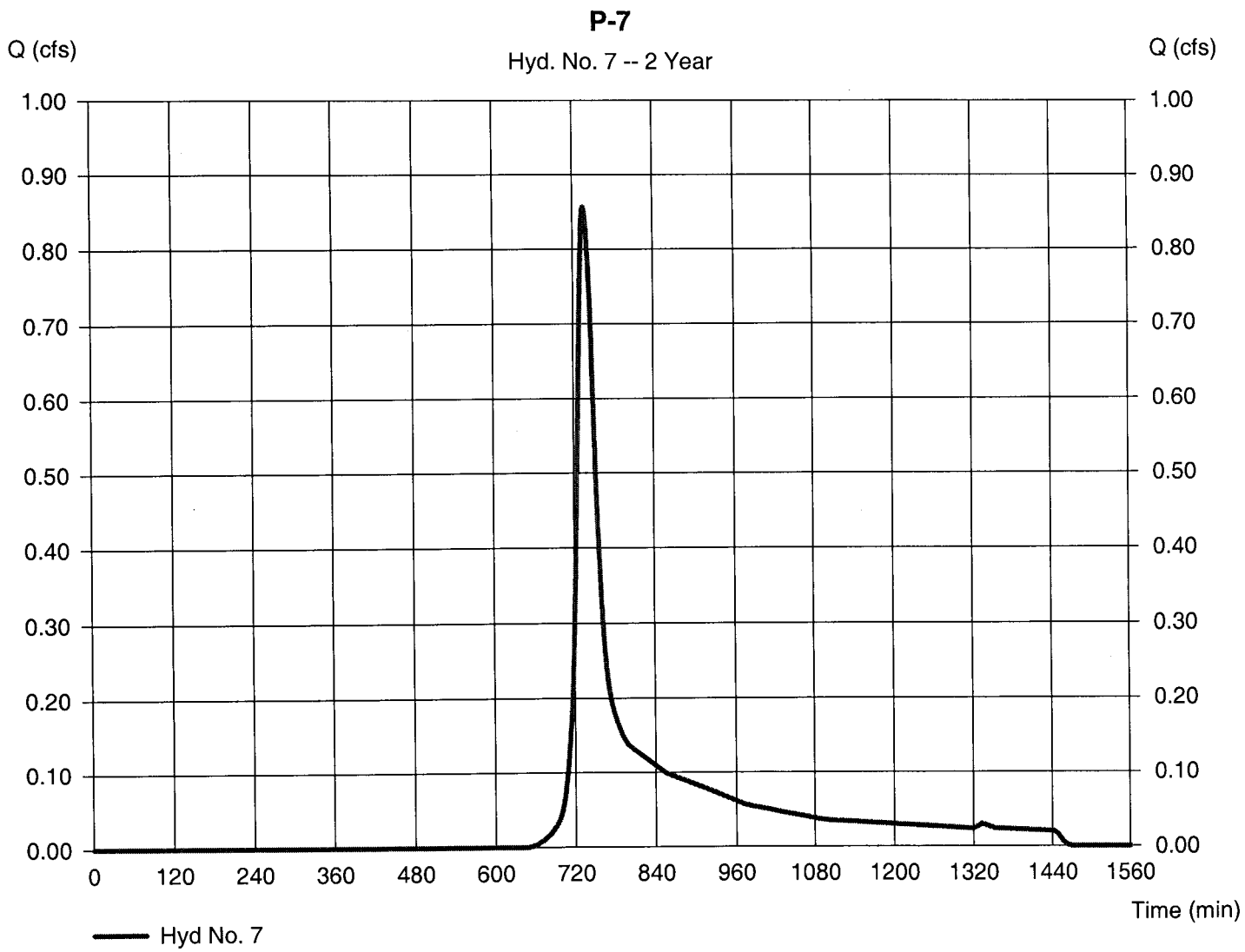
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 7

P-7

Hydrograph type	= SCS Runoff	Peak discharge	= 0.856 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 1 min	Hyd. volume	= 4,024 cuft
Drainage area	= 1.140 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.00 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

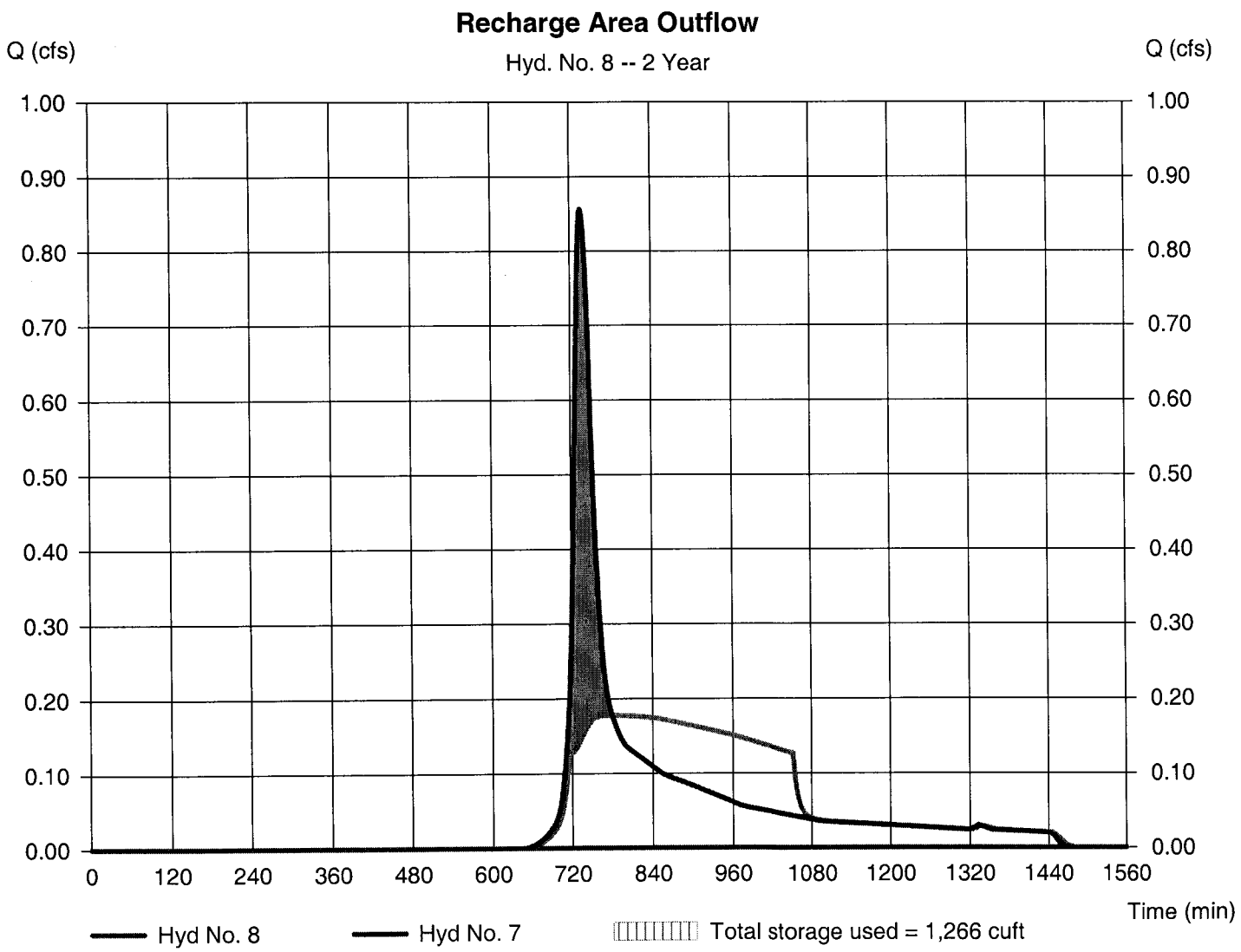
Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 8

Recharge Area Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 1055 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 7 - P-7	Max. Elevation	= 136.19 ft
Reservoir name	= Recharge System	Max. Storage	= 1,266 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

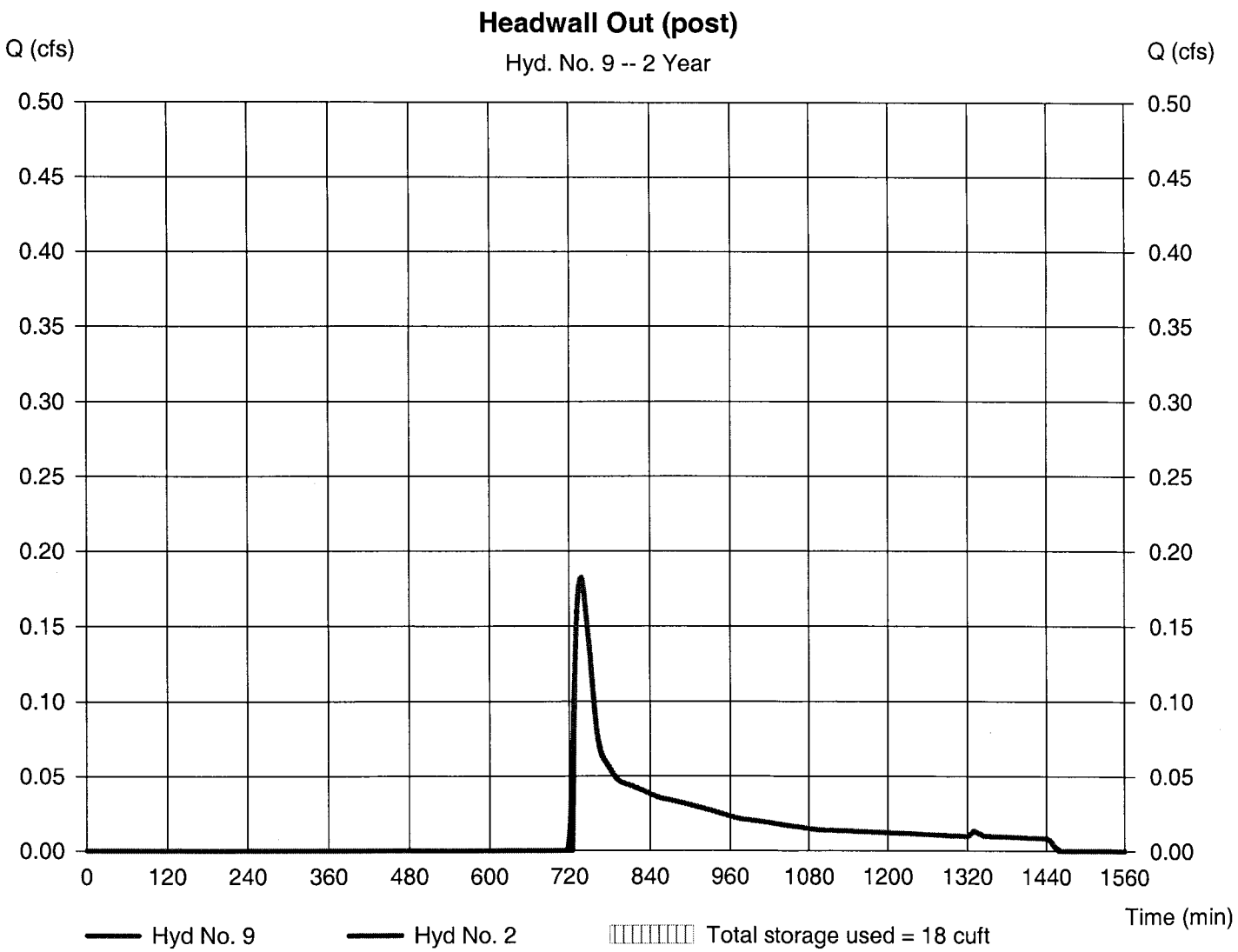
Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 9

Headwall Out (post)

Hydrograph type	= Reservoir	Peak discharge	= 0.182 cfs
Storm frequency	= 2 yrs	Time to peak	= 738 min
Time interval	= 1 min	Hyd. volume	= 1,131 cuft
Inflow hyd. No.	= 2 - P-2	Max. Elevation	= 132.17 ft
Reservoir name	= Storage behind exist headwall	Max. Storage	= 18 cuft

Storage Indication method used.



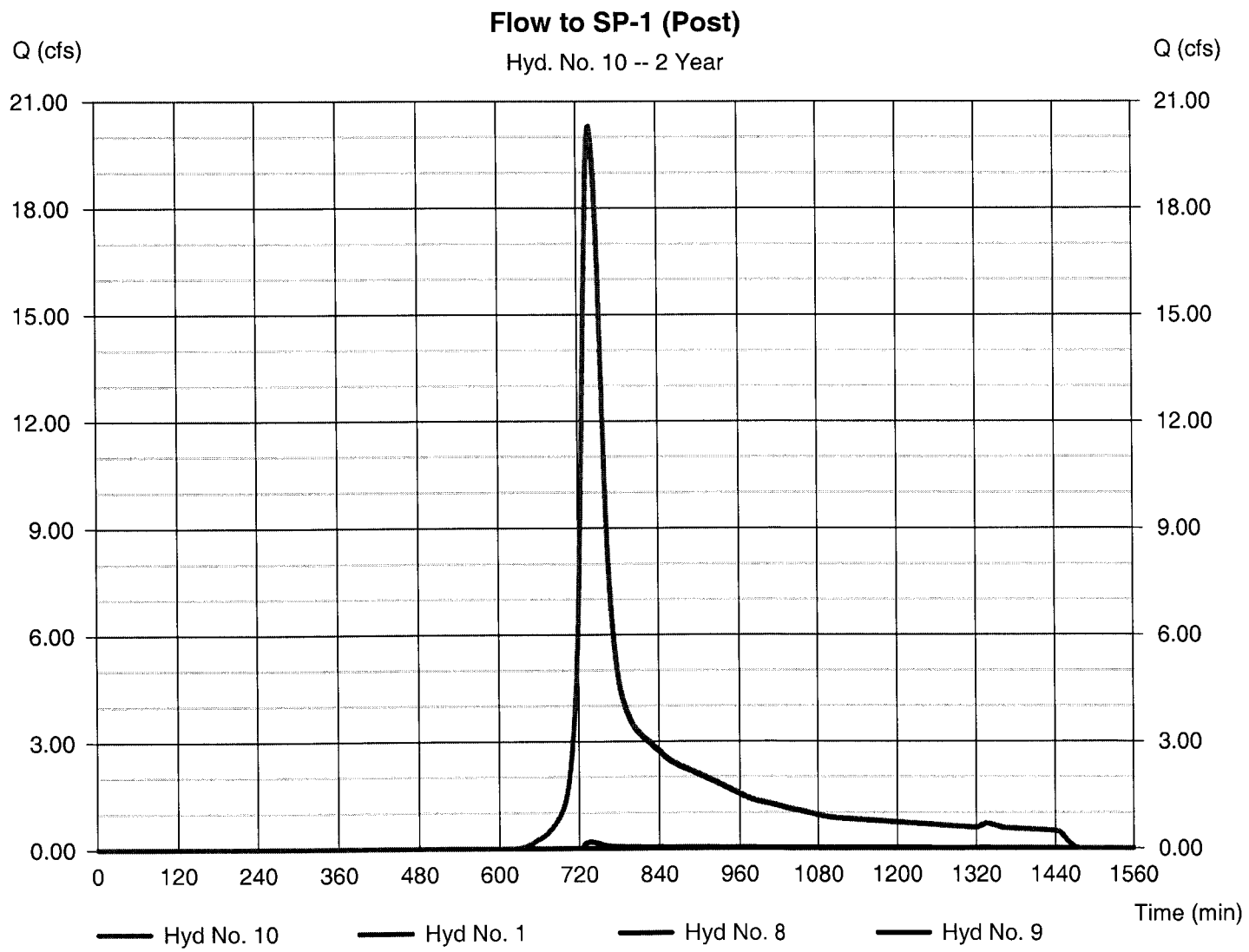
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 10

Flow to SP-1 (Post)

Hydrograph type	= Combine	Peak discharge	= 20.30 cfs
Storm frequency	= 2 yrs	Time to peak	= 739 min
Time interval	= 1 min	Hyd. volume	= 102,594 cuft
Inflow hyds.	= 1, 8, 9	Contrib. drain. area	= 25.810 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	41.04	1	738	199,542	----	------	------	P-1
2	SCS Runoff	0.675	1	732	3,056	----	------	------	P-2
3	SCS Runoff	2.018	1	730	8,591	----	------	------	P-3
4	SCS Runoff	3.324	1	729	12,332	----	------	------	P-4
5	SCS Runoff	0.938	1	729	3,567	----	------	------	P-5
6	SCS Runoff	0.581	1	729	2,185	----	------	------	P-6
7	SCS Runoff	1.827	1	734	8,162	----	------	------	P-7
8	Reservoir	0.000	1	685	0	7	137.30	3,403	Recharge Area Outflow
9	Reservoir	0.675	1	732	3,043	2	132.38	24.2	Headwall Out (post)
10	Combine	41.64	1	738	202,586	1, 8, 9	------	------	Flow to SP-1 (Post)

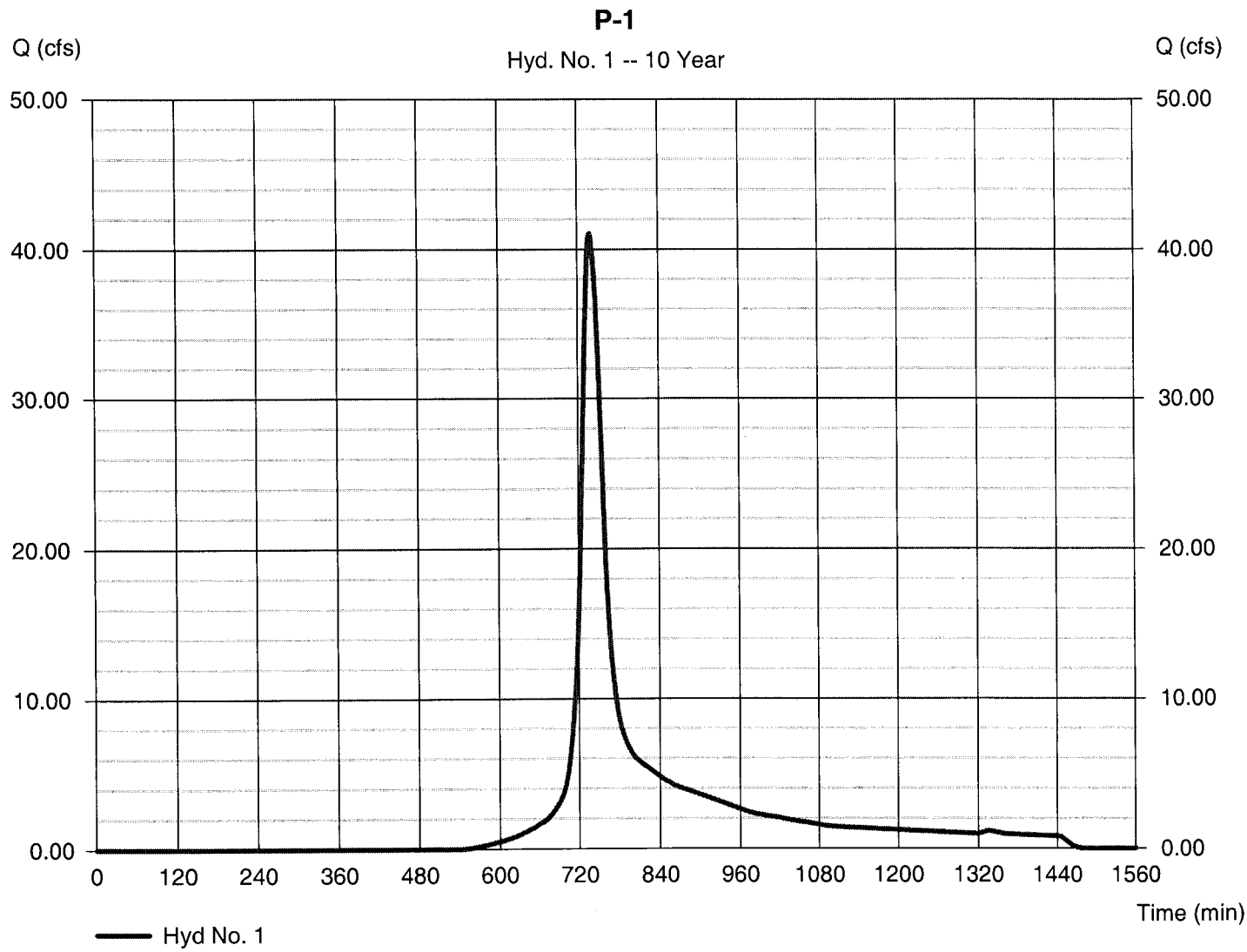
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 1

P-1

Hydrograph type	= SCS Runoff	Peak discharge	= 41.04 cfs
Storm frequency	= 10 yrs	Time to peak	= 738 min
Time interval	= 1 min	Hyd. volume	= 199,542 cuft
Drainage area	= 25.810 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.30 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



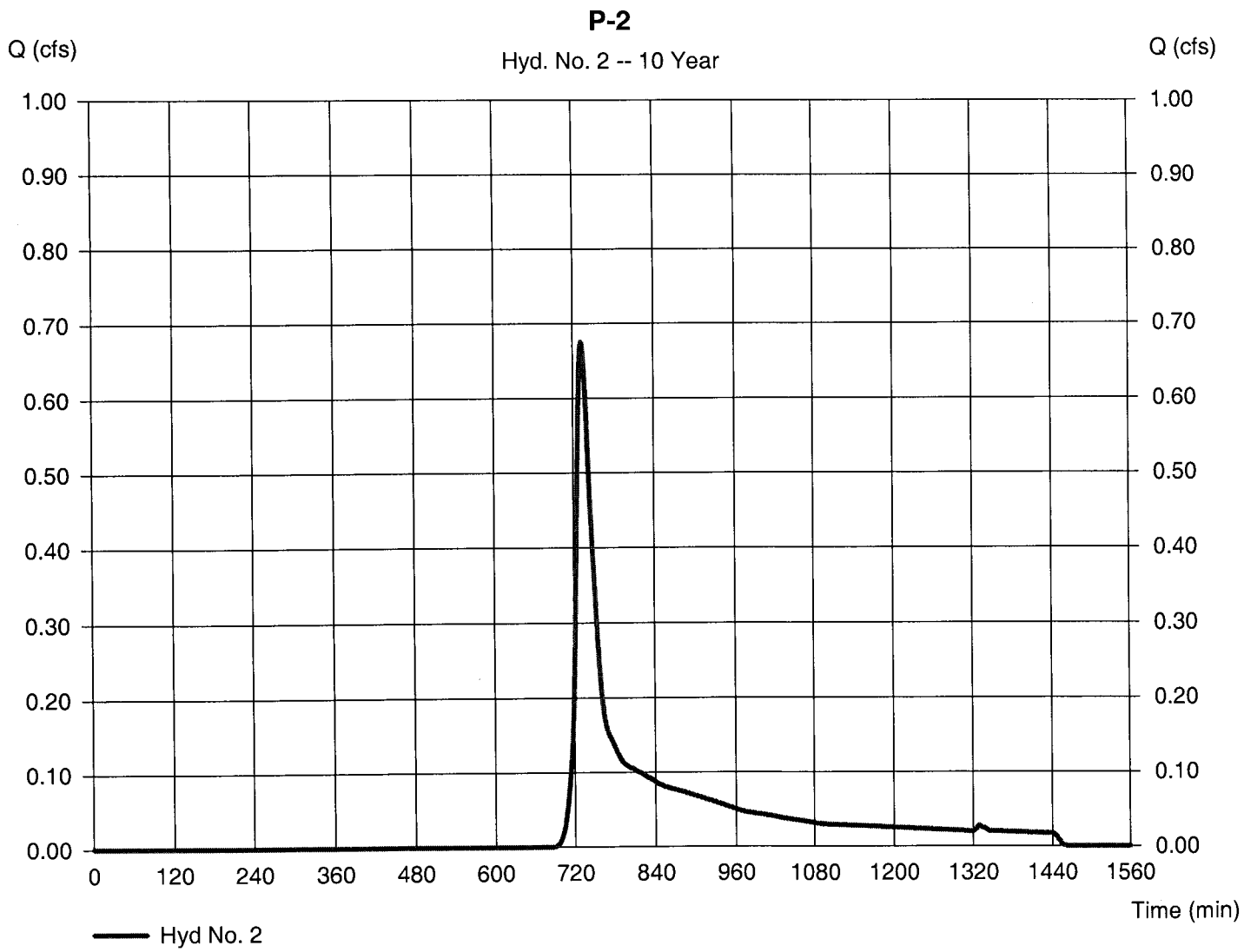
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Thursday, Dec 23, 2010

Hyd. No. 2

P-2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.675 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 3,056 cuft
Drainage area	= 0.780 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.70 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



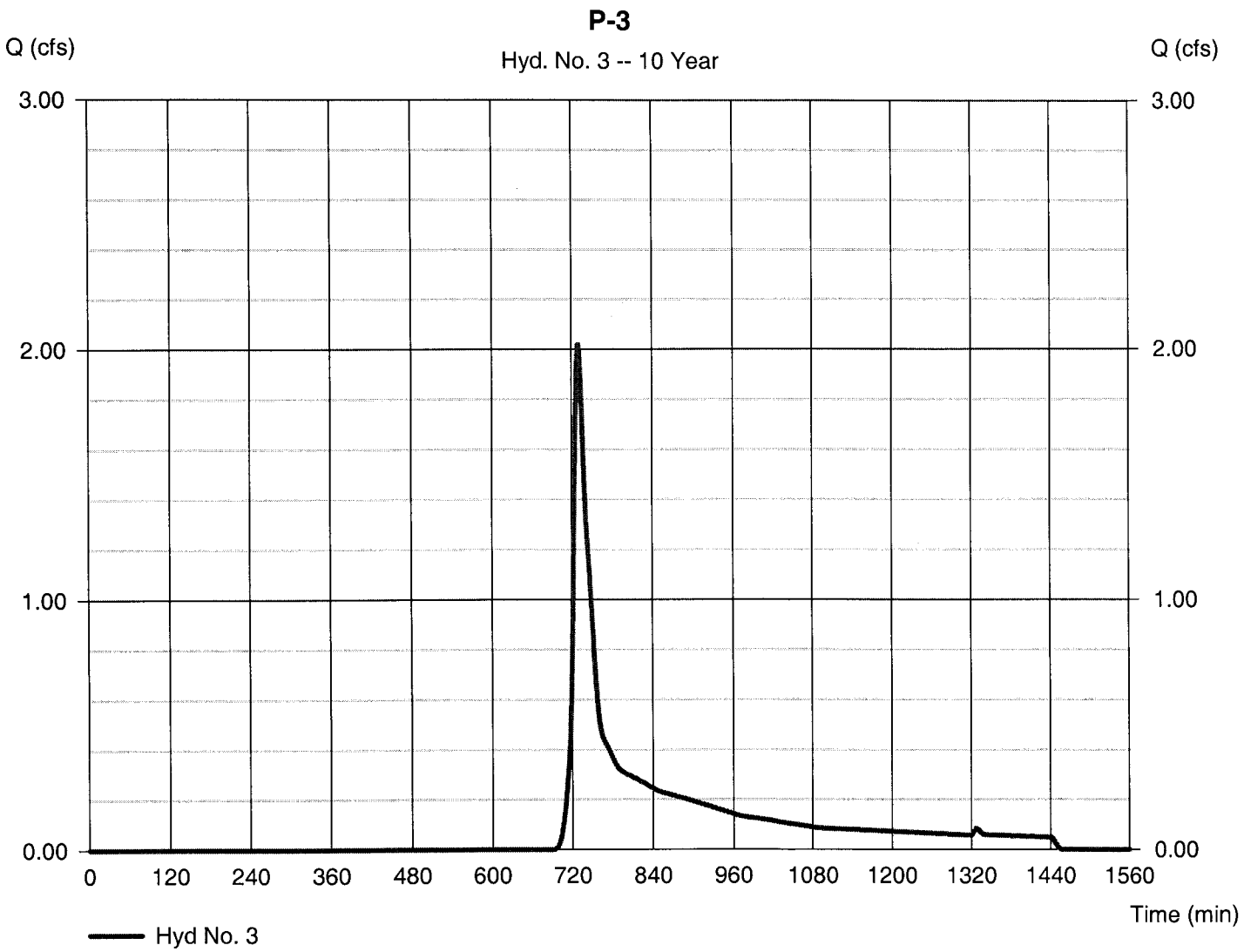
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 3

P-3

Hydrograph type	= SCS Runoff	Peak discharge	= 2.018 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 1 min	Hyd. volume	= 8,591 cuft
Drainage area	= 2.280 ac	Curve number	= 60
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.56 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



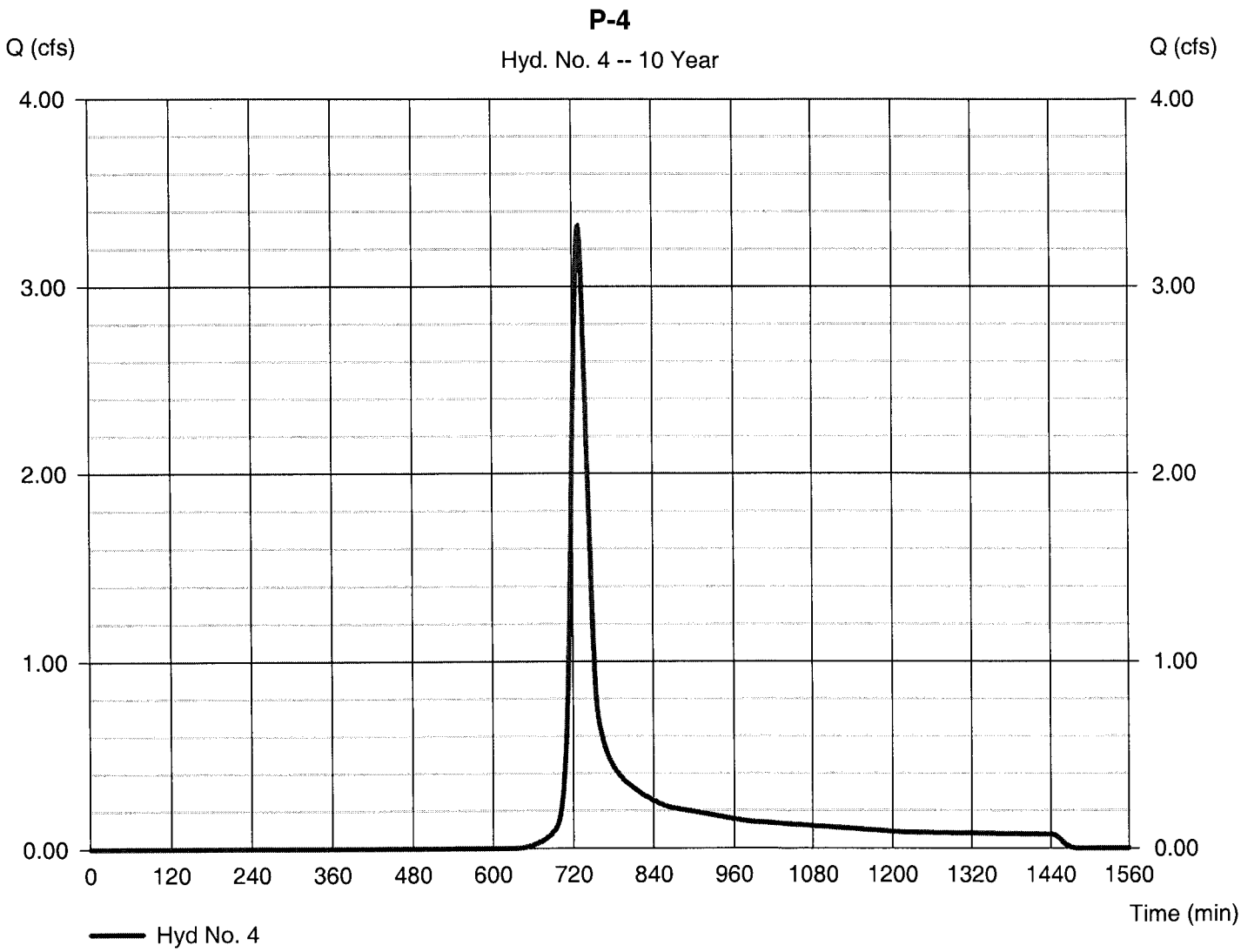
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 4

P-4

Hydrograph type	= SCS Runoff	Peak discharge	= 3.324 cfs
Storm frequency	= 10 yrs	Time to peak	= 729 min
Time interval	= 1 min	Hyd. volume	= 12,332 cuft
Drainage area	= 2.120 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.50 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



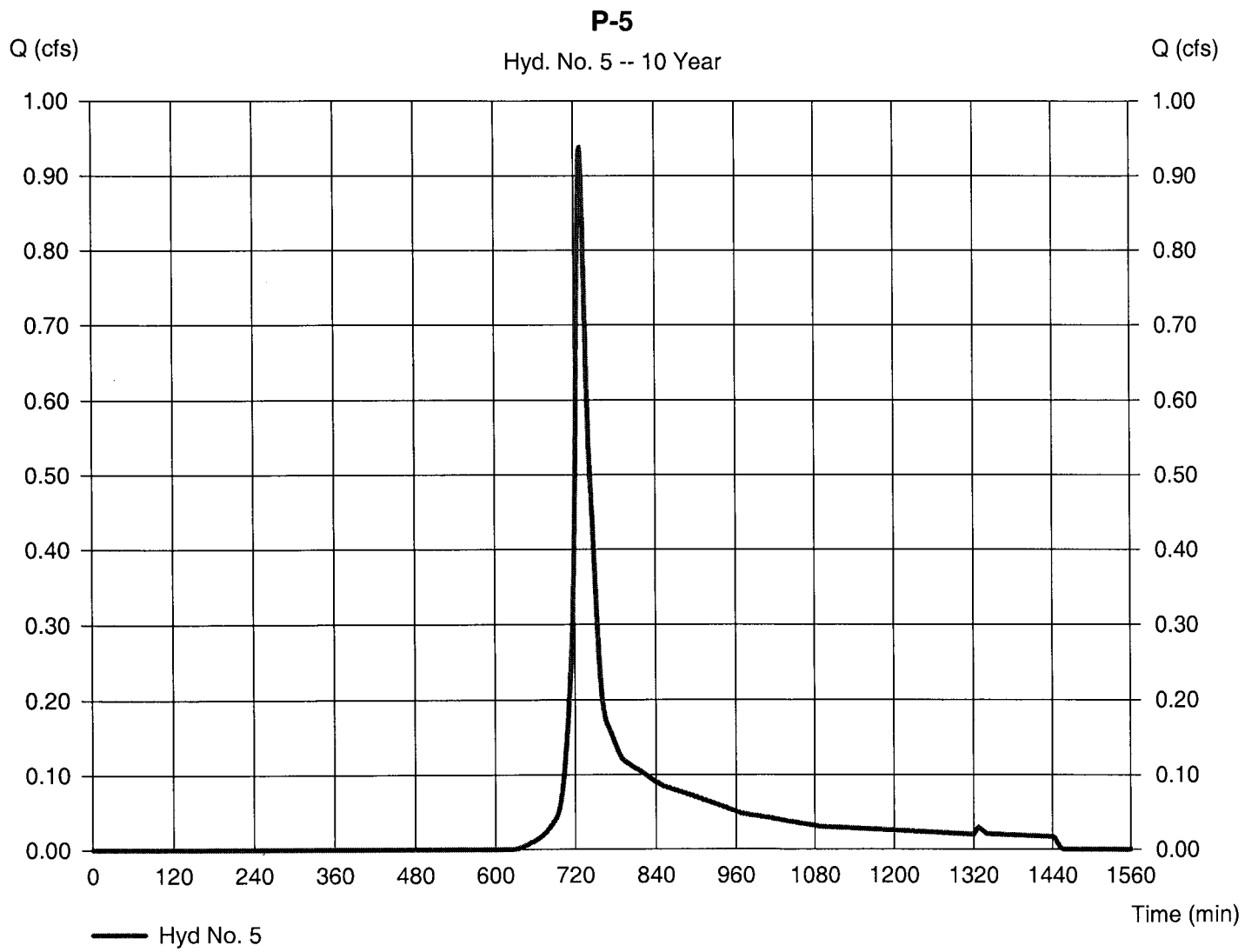
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 5

P-5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.938 cfs
Storm frequency	= 10 yrs	Time to peak	= 729 min
Time interval	= 1 min	Hyd. volume	= 3,567 cuft
Drainage area	= 0.630 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.76 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

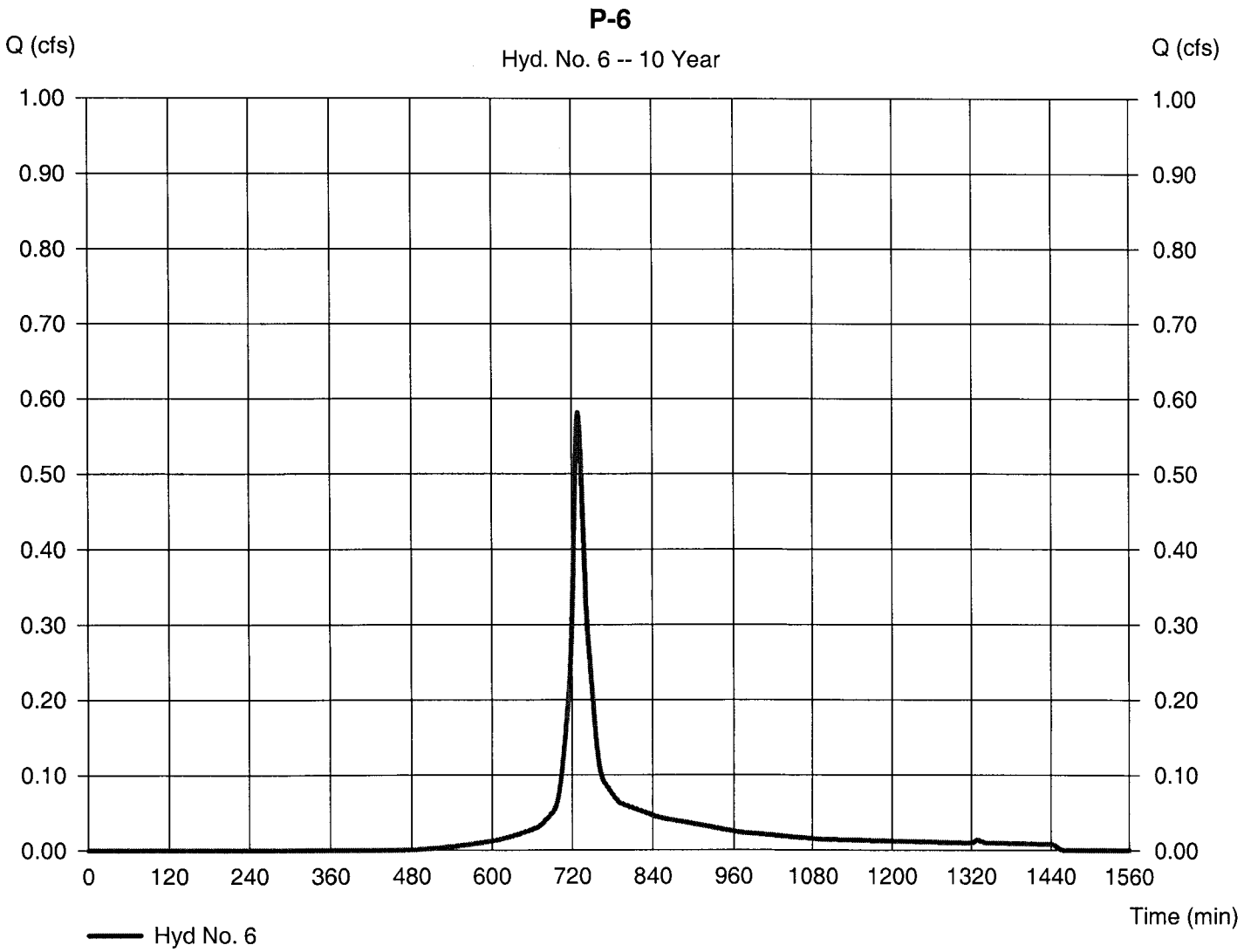
Hydraflow Hydrographs by Intelisolve v9.2

Thursday, Dec 23, 2010

Hyd. No. 6

P-6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.581 cfs
Storm frequency	= 10 yrs	Time to peak	= 729 min
Time interval	= 1 min	Hyd. volume	= 2,185 cuft
Drainage area	= 0.240 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.14 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



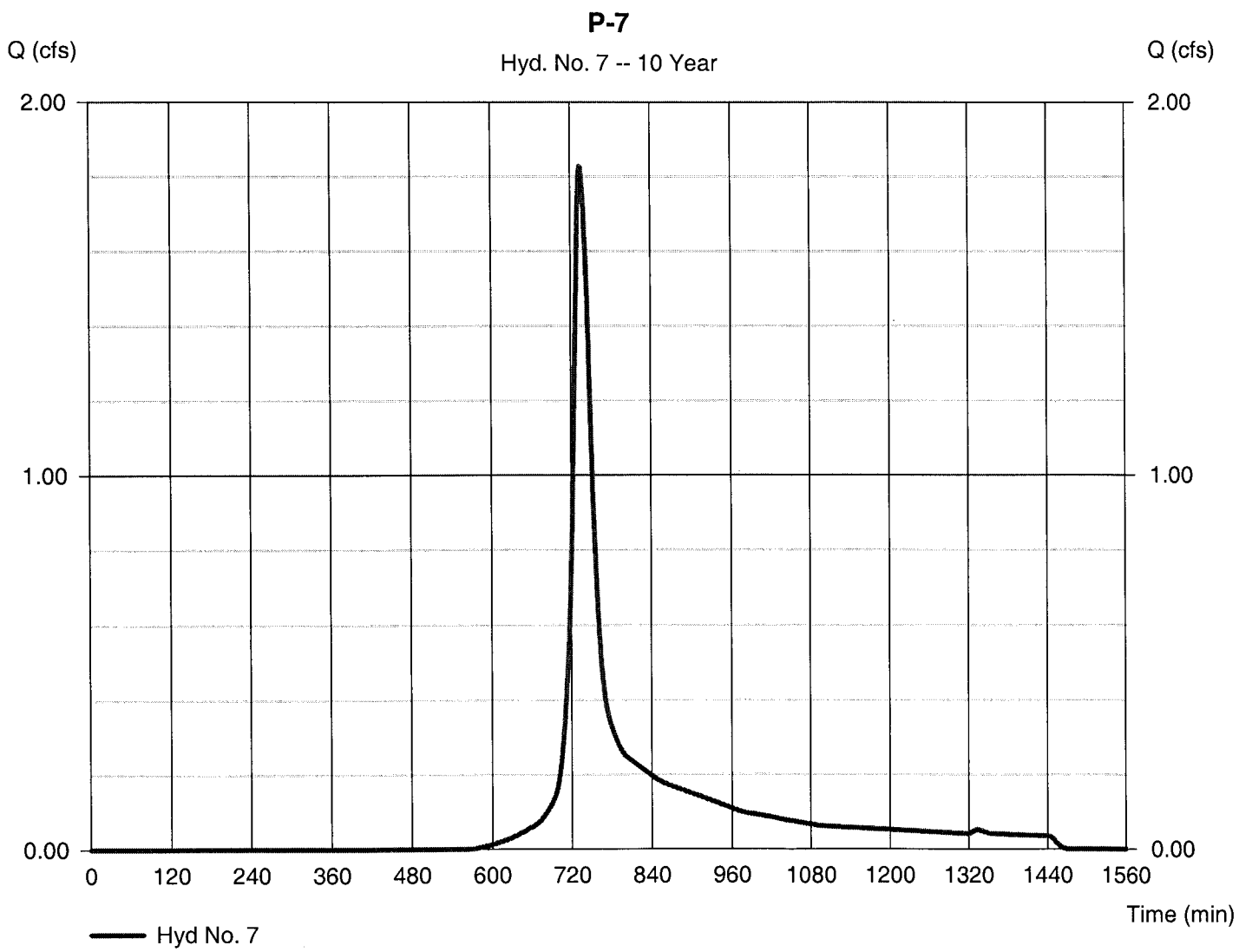
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 7

P-7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.827 cfs
Storm frequency	= 10 yrs	Time to peak	= 734 min
Time interval	= 1 min	Hyd. volume	= 8,162 cuft
Drainage area	= 1.140 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.00 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

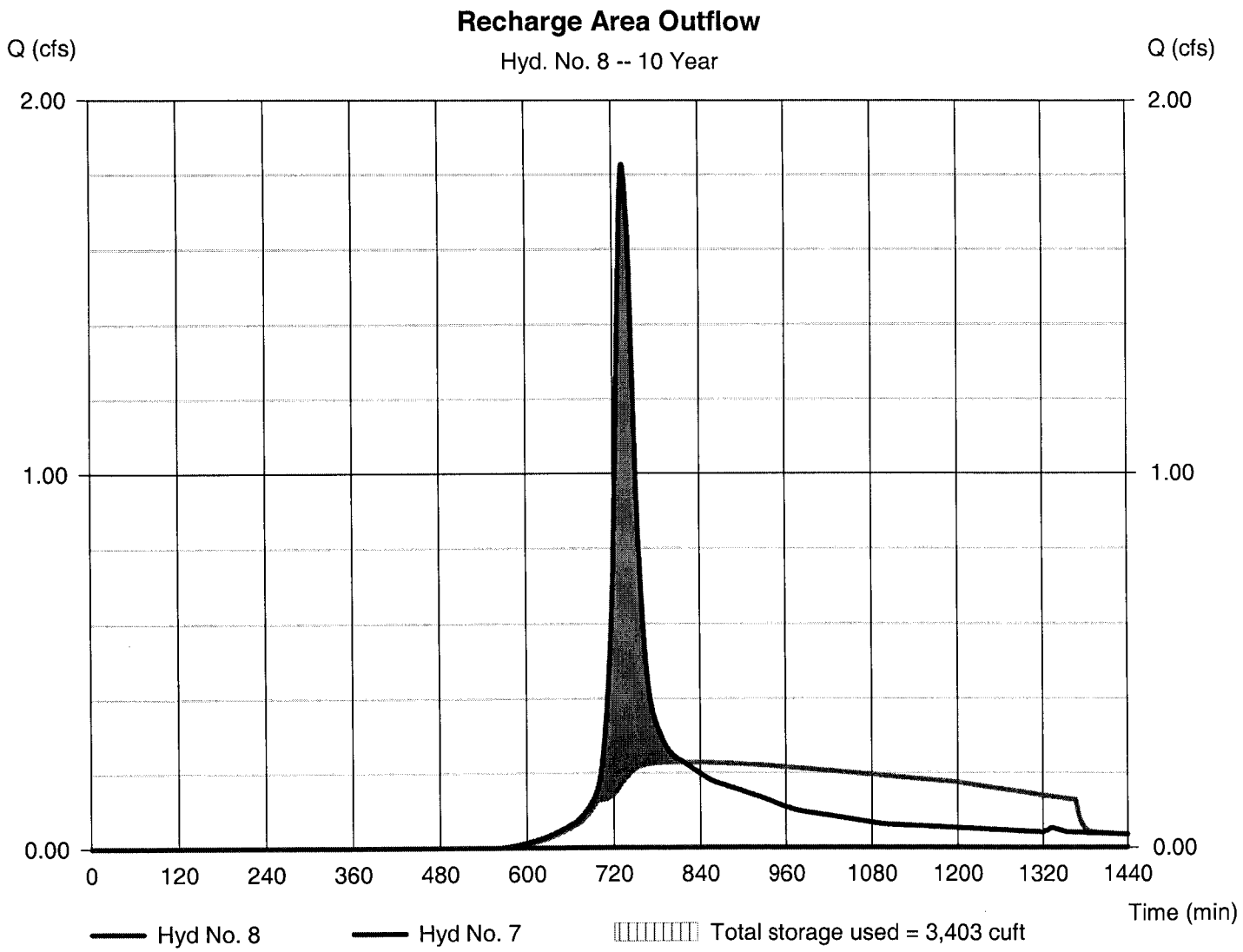
Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 8

Recharge Area Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 685 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 7 - P-7	Max. Elevation	= 137.30 ft
Reservoir name	= Recharge System	Max. Storage	= 3,403 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

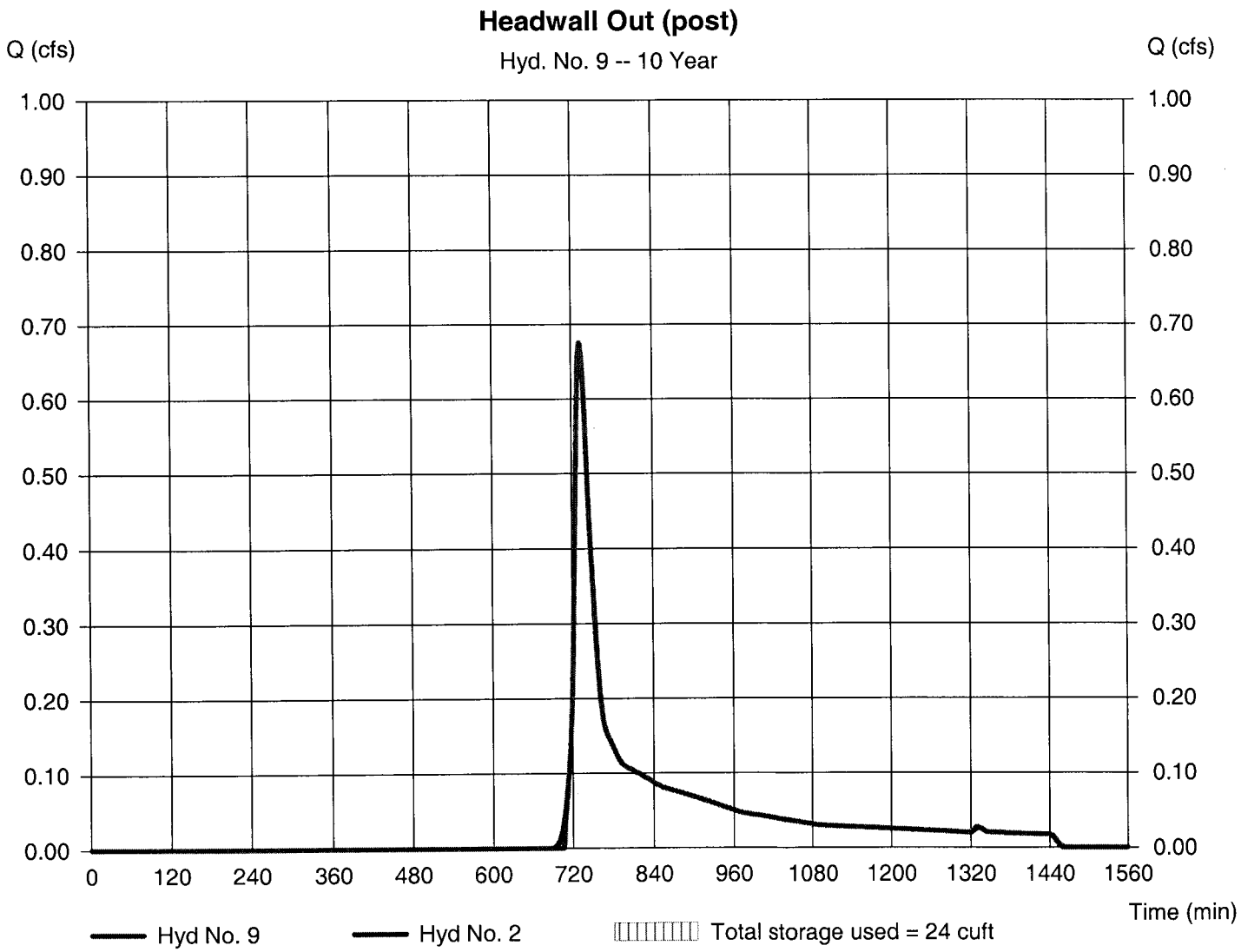
Hydraflow Hydrographs by Intelisolve v9.2 | Thursday, Dec 23, 2010

Hyd. No. 9

Headwall Out (post)

Hydrograph type	= Reservoir	Peak discharge	= 0.675 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 3,043 cuft
Inflow hyd. No.	= 2 - P-2	Max. Elevation	= 132.38 ft
Reservoir name	= Storage behind exist headwall	Max. Storage	= 24 cuft

Storage Indication method used.



Hydrograph Report

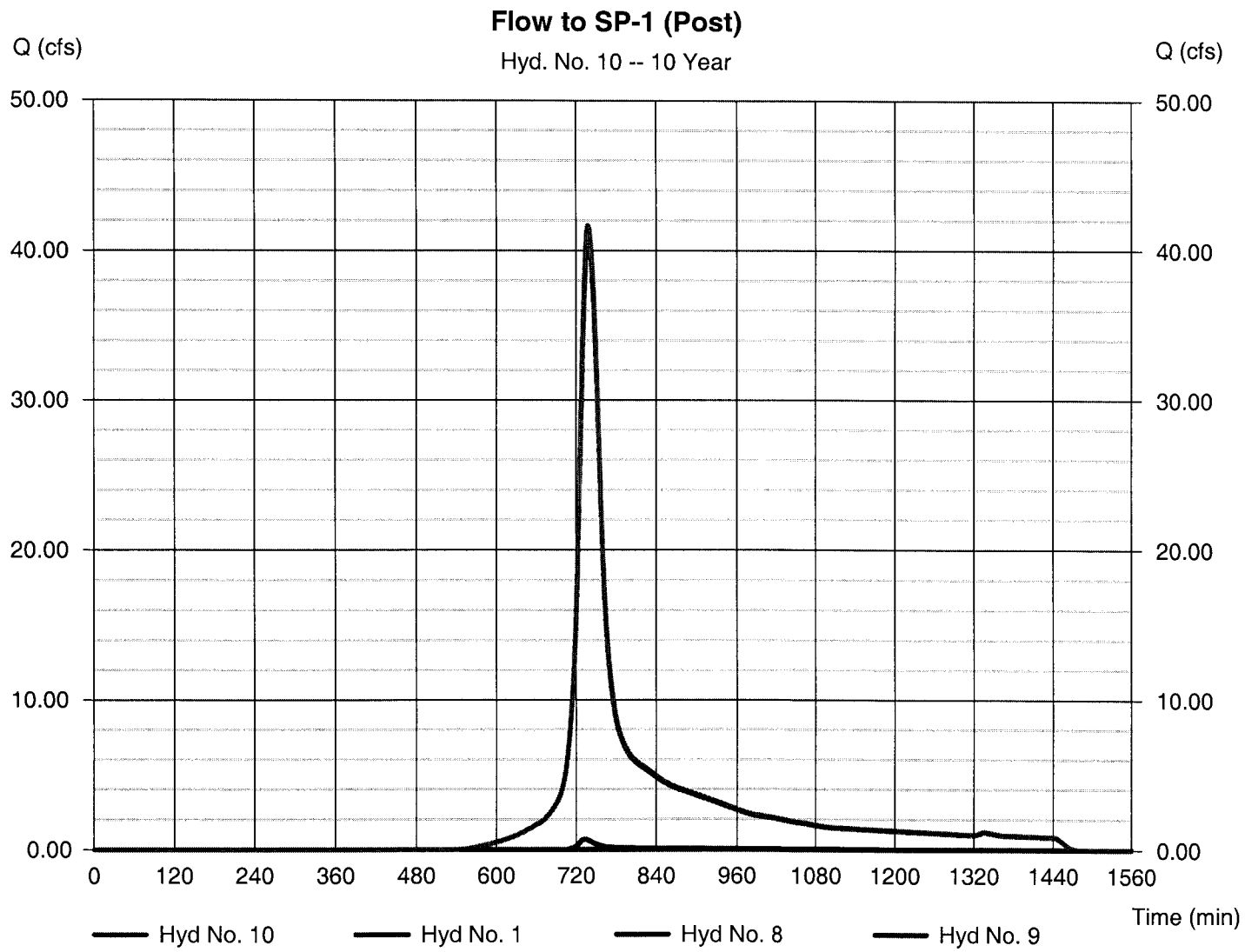
Hydraflow Hydrographs by Intelisolve v9.2

Thursday, Dec 23, 2010

Hyd. No. 10

Flow to SP-1 (Post)

Hydrograph type	= Combine	Peak discharge	= 41.64 cfs
Storm frequency	= 10 yrs	Time to peak	= 738 min
Time interval	= 1 min	Hyd. volume	= 202,586 cuft
Inflow hyds.	= 1, 8, 9	Contrib. drain. area	= 25.810 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	53.96	1	737	260,902	----	------	------	P-1
2	SCS Runoff	1.028	1	731	4,396	----	------	------	P-2
3	SCS Runoff	3.139	1	729	12,466	----	------	------	P-3
4	SCS Runoff	4.611	1	729	16,762	----	------	------	P-4
5	SCS Runoff	1.312	1	728	4,879	----	------	------	P-5
6	SCS Runoff	0.740	1	729	2,789	----	------	------	P-6
7	SCS Runoff	2.436	1	734	10,783	----	------	------	P-7
8	Reservoir	0.000	1	649	0	7	138.17	4,839	Recharge Area Outflow
9	Reservoir	1.029	1	732	4,384	2	132.50	27.5	Headwall Out (post)
10	Combine	54.88	1	737	265,286	1, 8, 9	------	------	Flow to SP-1 (Post)

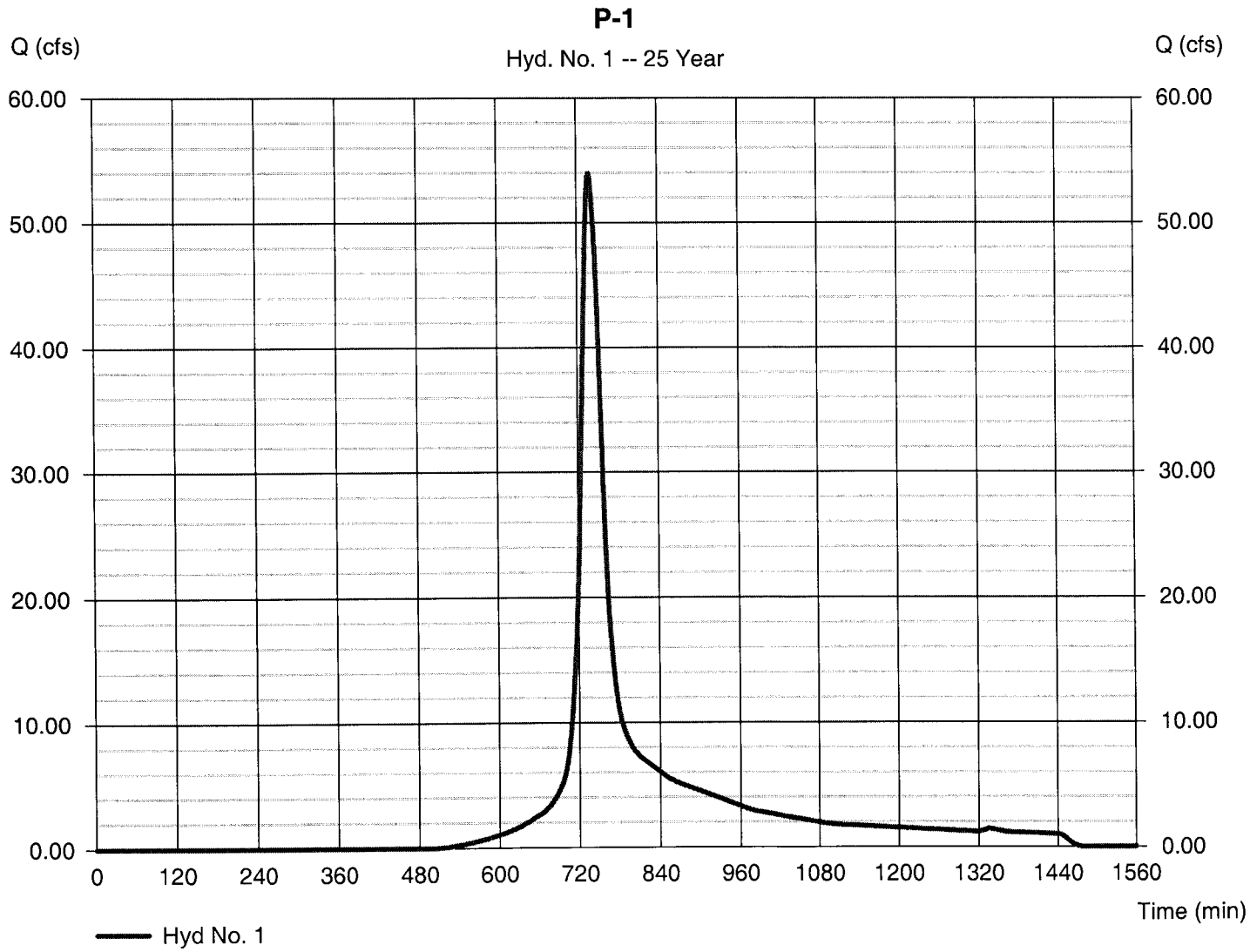
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 1

P-1

Hydrograph type	= SCS Runoff	Peak discharge	= 53.96 cfs
Storm frequency	= 25 yrs	Time to peak	= 737 min
Time interval	= 1 min	Hyd. volume	= 260,902 cuft
Drainage area	= 25.810 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.30 min
Total precip.	= 5.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

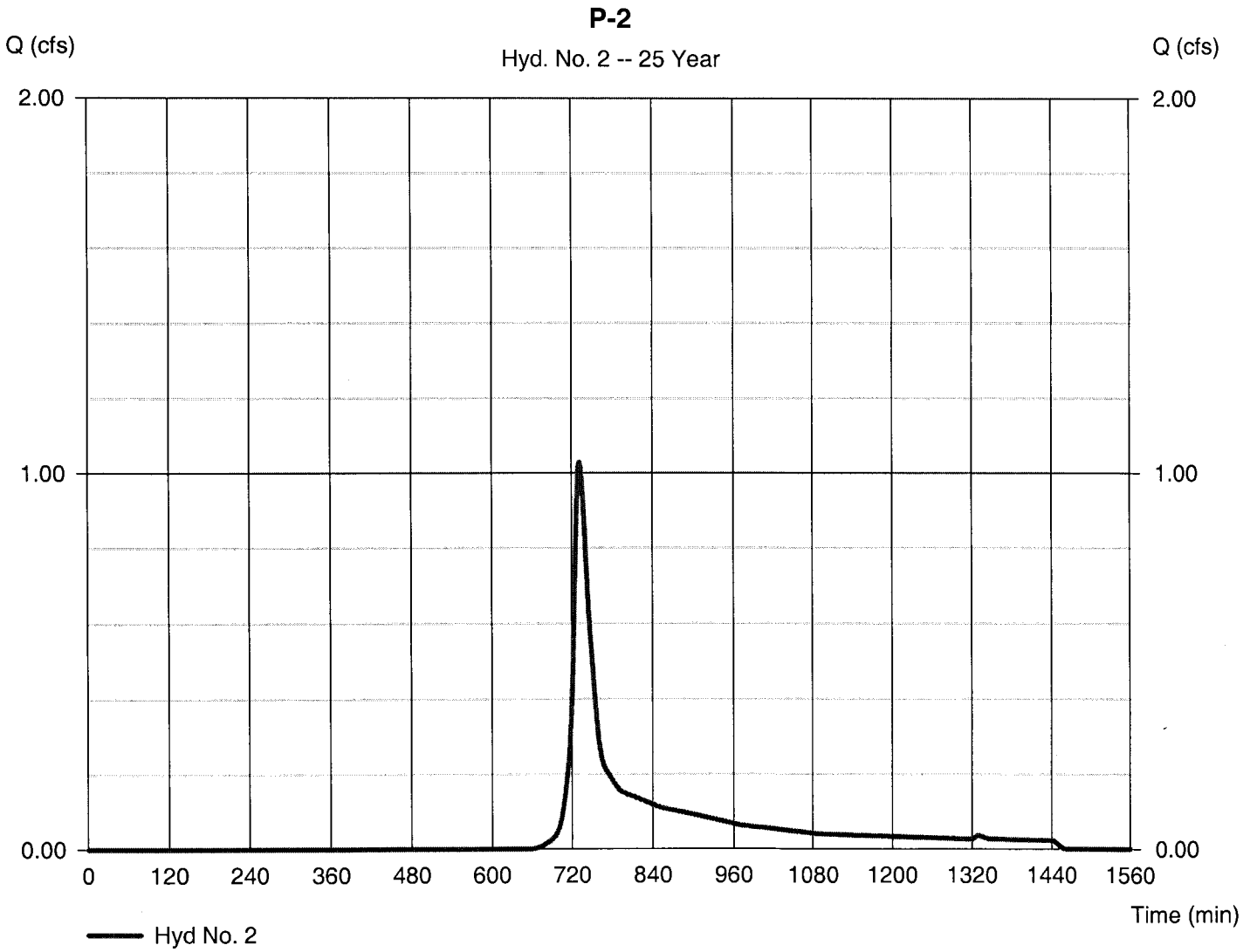
Hydraflow Hydrographs by Intelisolve v9.2

Thursday, Dec 23, 2010

Hyd. No. 2

P-2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.028 cfs
Storm frequency	= 25 yrs	Time to peak	= 731 min
Time interval	= 1 min	Hyd. volume	= 4,396 cuft
Drainage area	= 0.780 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.70 min
Total precip.	= 5.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



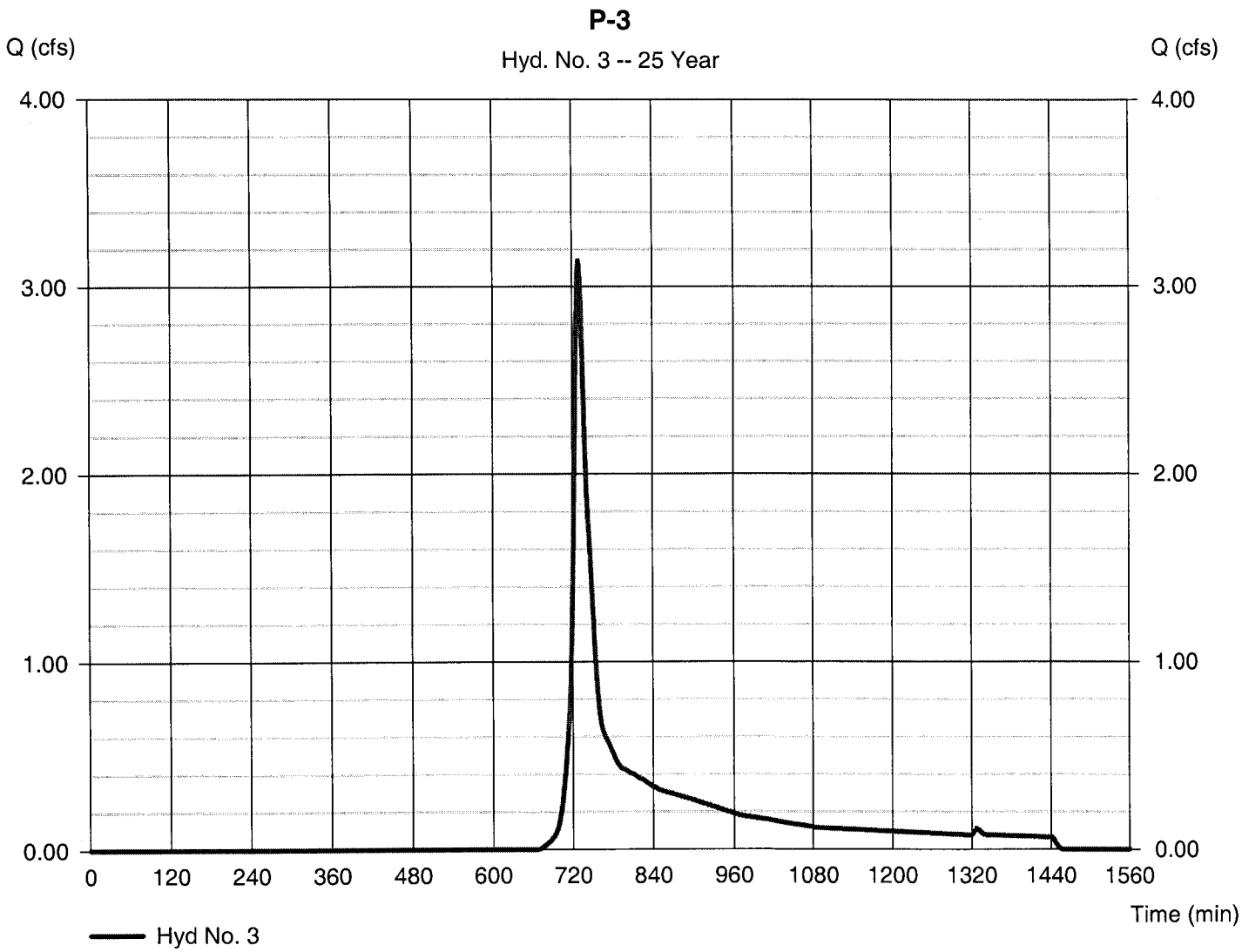
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 3

P-3

Hydrograph type	= SCS Runoff	Peak discharge	= 3.139 cfs
Storm frequency	= 25 yrs	Time to peak	= 729 min
Time interval	= 1 min	Hyd. volume	= 12,466 cuft
Drainage area	= 2.280 ac	Curve number	= 60
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.56 min
Total precip.	= 5.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

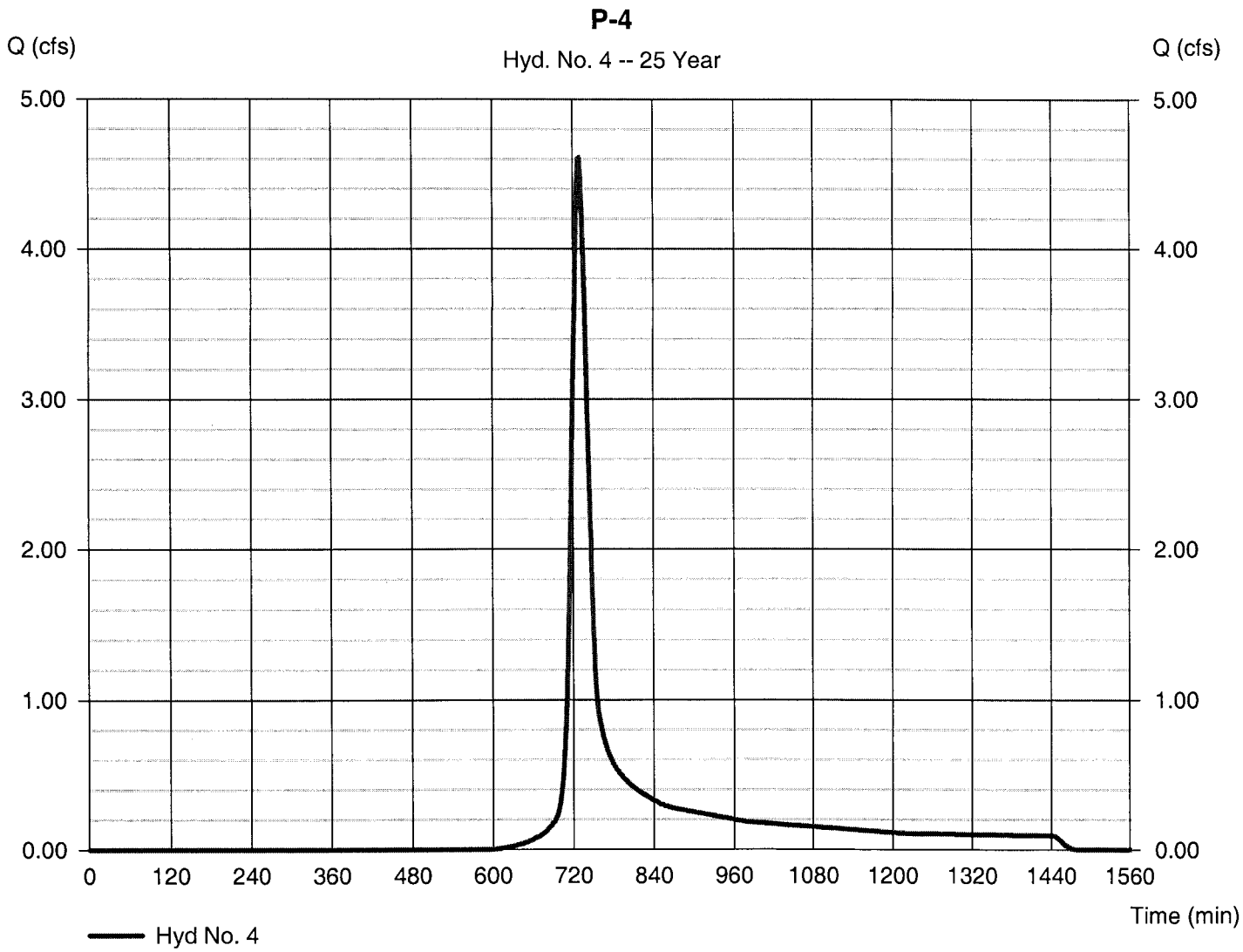
Hydraflow Hydrographs by Intelisolve v9.2

Thursday, Dec 23, 2010

Hyd. No. 4

P-4

Hydrograph type	= SCS Runoff	Peak discharge	= 4.611 cfs
Storm frequency	= 25 yrs	Time to peak	= 729 min
Time interval	= 1 min	Hyd. volume	= 16,762 cuft
Drainage area	= 2.120 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.50 min
Total precip.	= 5.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

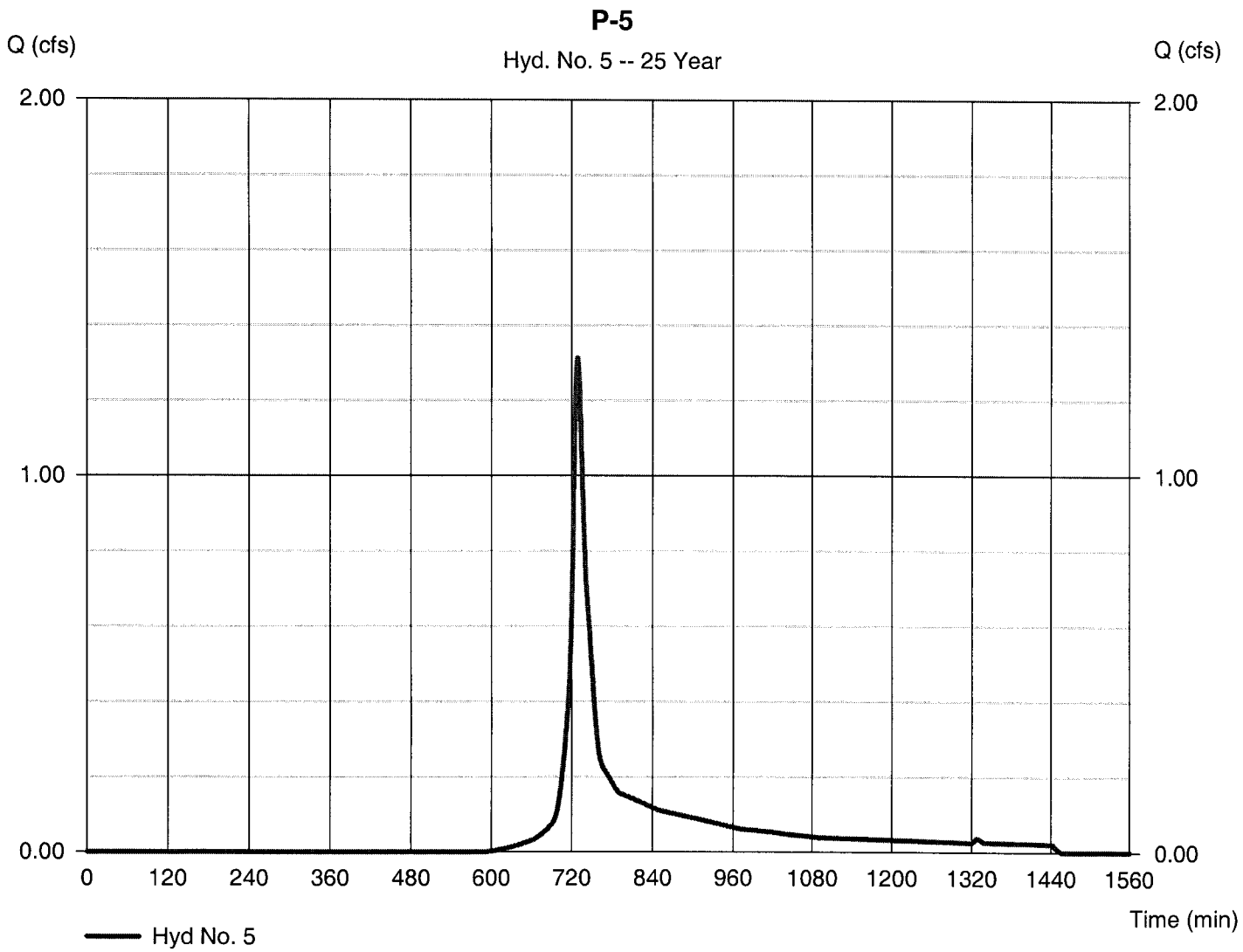
Hydraflow Hydrographs by Intelisolve v9.2

Thursday, Dec 23, 2010

Hyd. No. 5

P-5

Hydrograph type	= SCS Runoff	Peak discharge	= 1.312 cfs
Storm frequency	= 25 yrs	Time to peak	= 728 min
Time interval	= 1 min	Hyd. volume	= 4,879 cuft
Drainage area	= 0.630 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.76 min
Total precip.	= 5.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



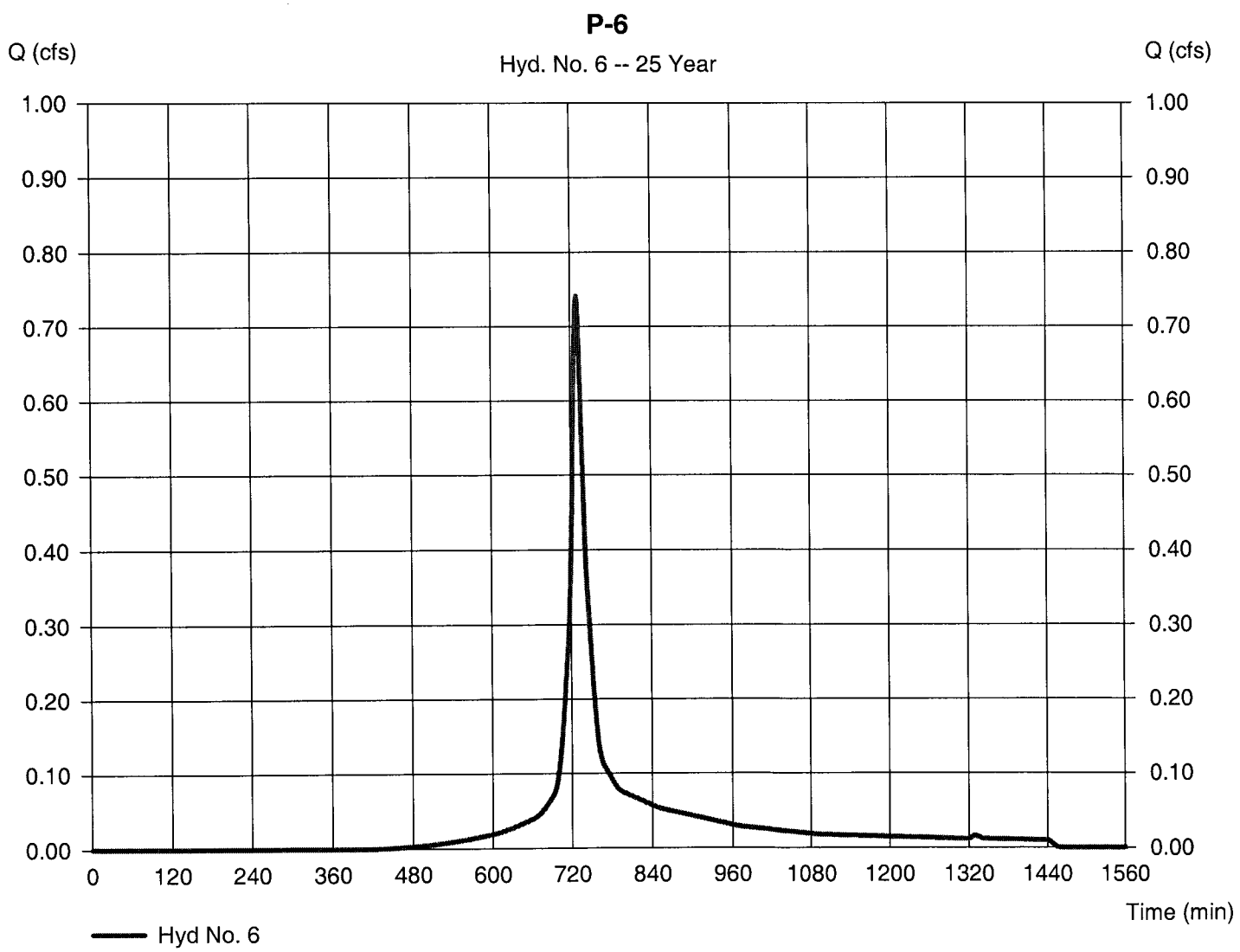
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 6

P-6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.740 cfs
Storm frequency	= 25 yrs	Time to peak	= 729 min
Time interval	= 1 min	Hyd. volume	= 2,789 cuft
Drainage area	= 0.240 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.14 min
Total precip.	= 5.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

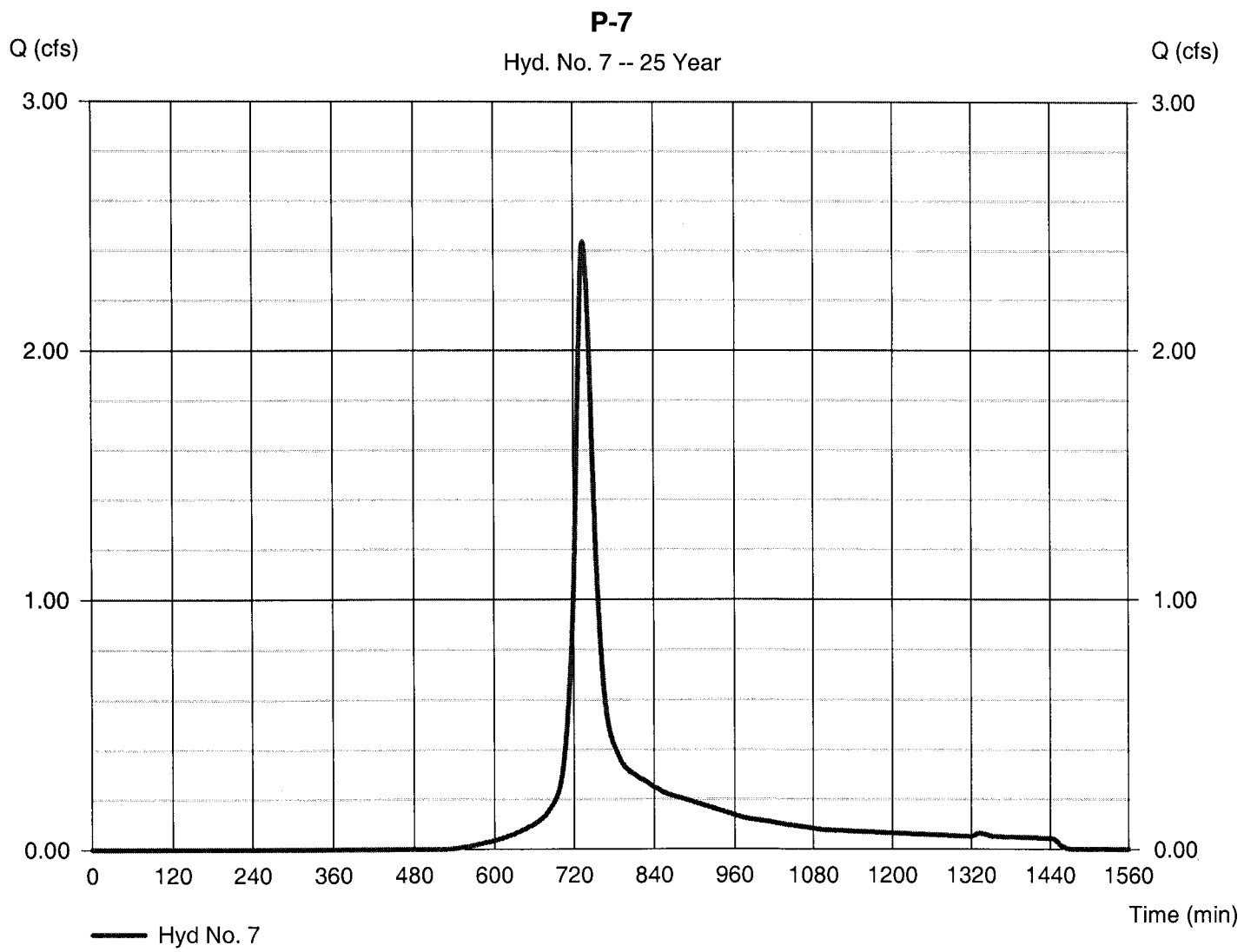
Hydraflow Hydrographs by Intelisolve v9.2

Thursday, Dec 23, 2010

Hyd. No. 7

P-7

Hydrograph type	= SCS Runoff	Peak discharge	= 2.436 cfs
Storm frequency	= 25 yrs	Time to peak	= 734 min
Time interval	= 1 min	Hyd. volume	= 10,783 cuft
Drainage area	= 1.140 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.00 min
Total precip.	= 5.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

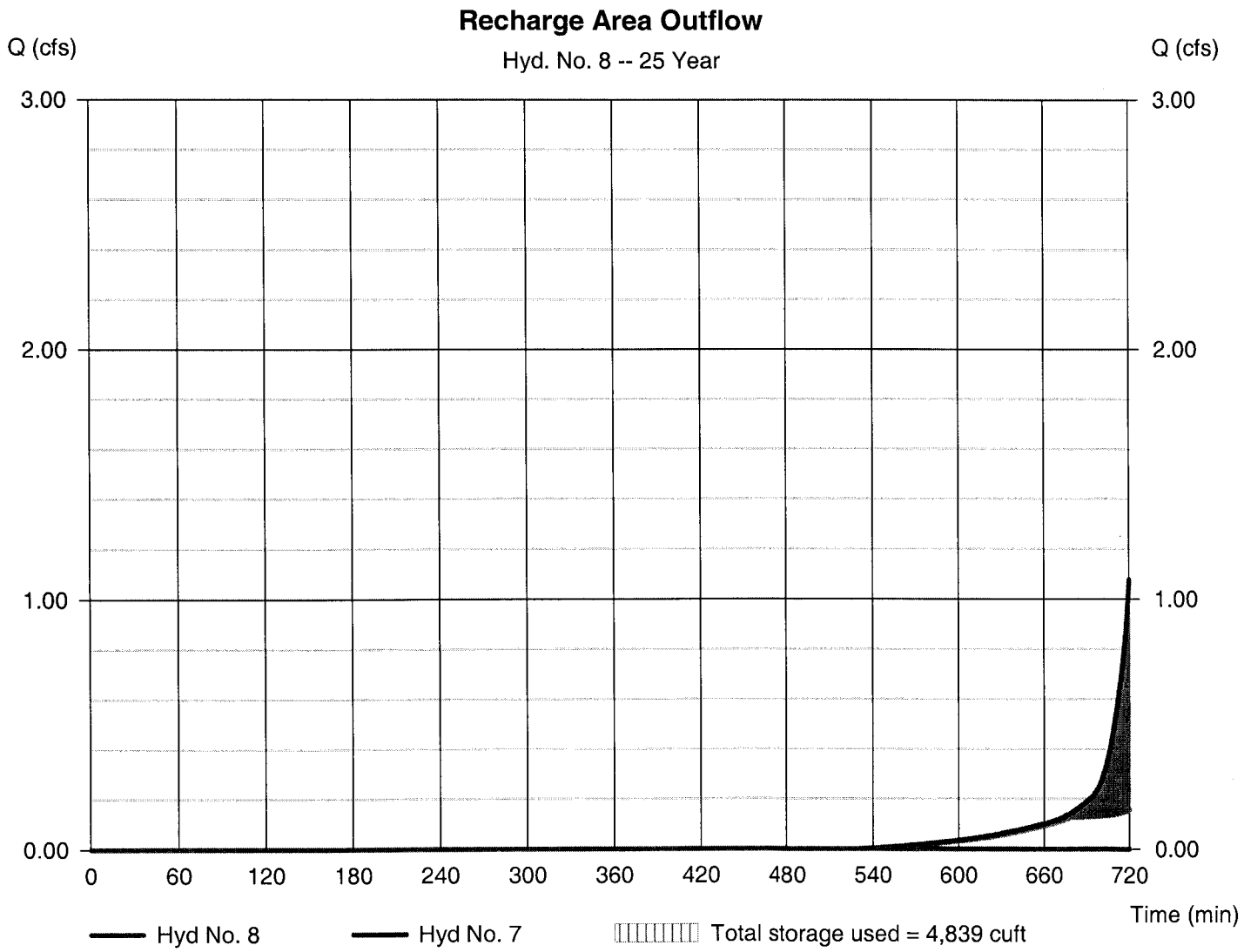
Hydraflow Hydrographs by Intelisolve v9.2 — Thursday, Dec 23, 2010

Hyd. No. 8

Recharge Area Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 649 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 7 - P-7	Max. Elevation	= 138.17 ft
Reservoir name	= Recharge System	Max. Storage	= 4,839 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

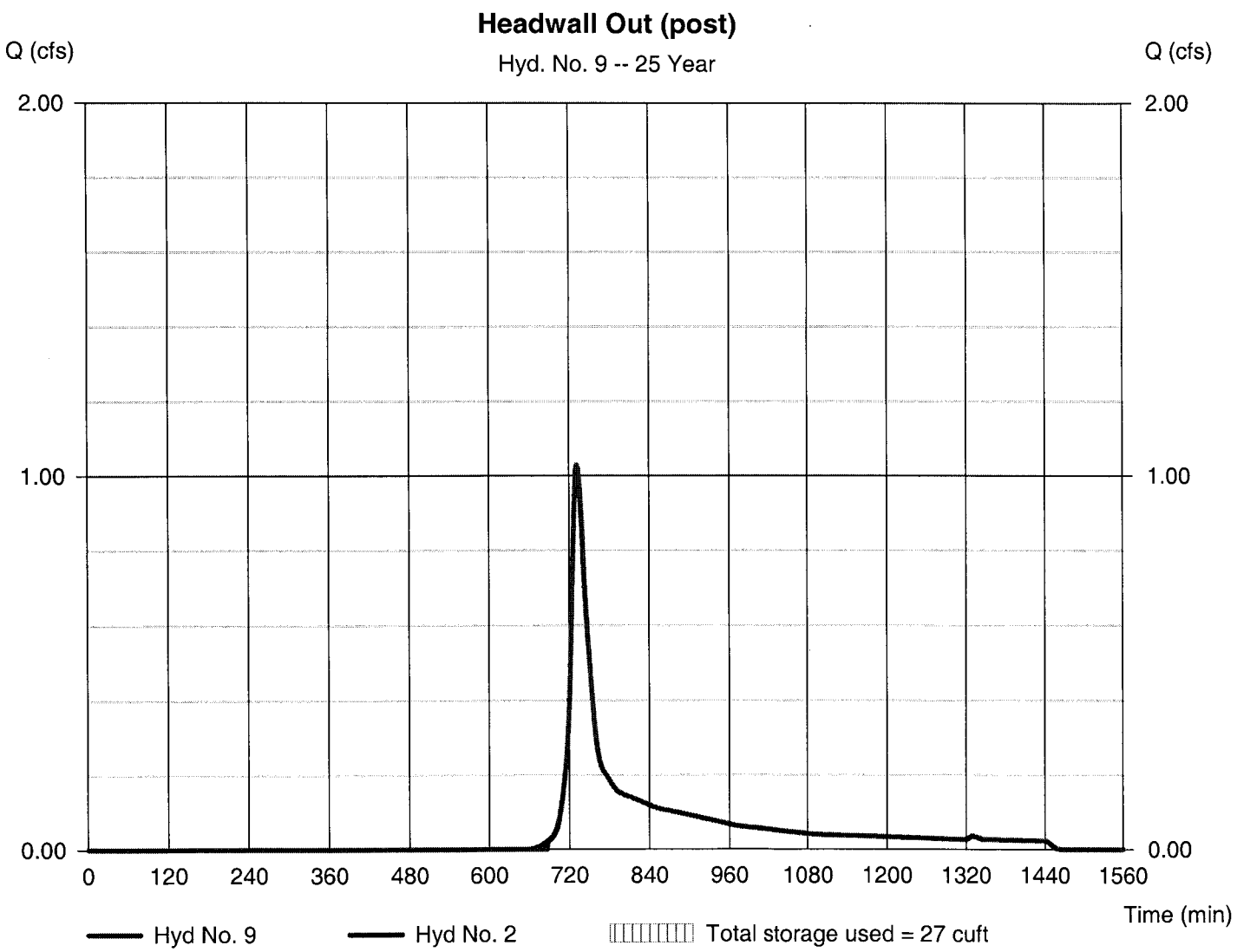
Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 9

Headwall Out (post)

Hydrograph type	= Reservoir	Peak discharge	= 1.029 cfs
Storm frequency	= 25 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 4,384 cuft
Inflow hyd. No.	= 2 - P-2	Max. Elevation	= 132.50 ft
Reservoir name	= Storage behind exist headwall	Max. Storage	= 27 cuft

Storage Indication method used.



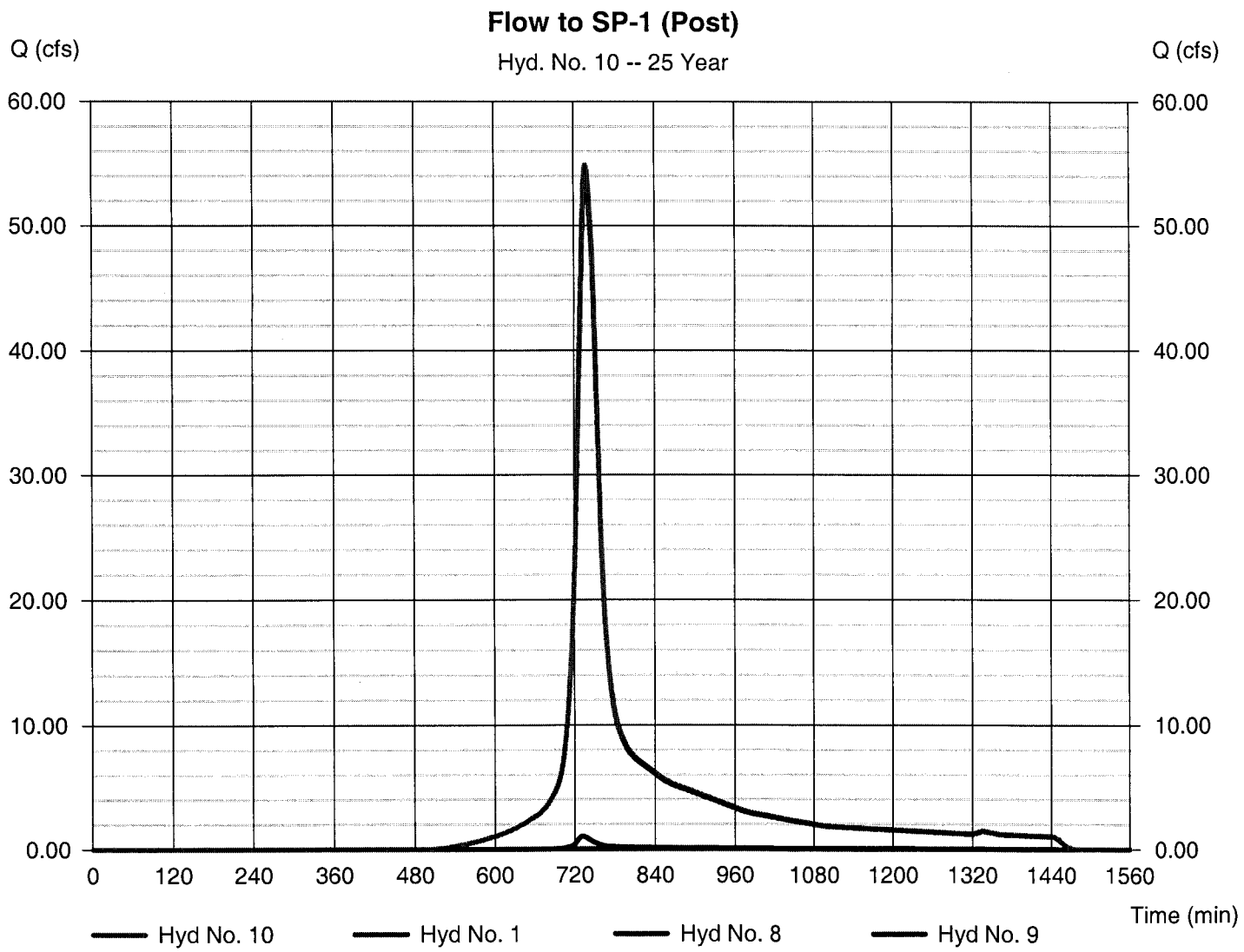
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Thursday, Dec 23, 2010

Hyd. No. 10

Flow to SP-1 (Post)

Hydrograph type	= Combine	Peak discharge	= 54.88 cfs
Storm frequency	= 25 yrs	Time to peak	= 737 min
Time interval	= 1 min	Hyd. volume	= 265,286 cuft
Inflow hyds.	= 1, 8, 9	Contrib. drain. area	= 25.810 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	79.13	1	737	382,237	----	------	------	P-1
2	SCS Runoff	1.780	1	731	7,244	----	------	------	P-2
3	SCS Runoff	5.510	1	729	20,749	----	------	------	P-3
4	SCS Runoff	7.213	1	728	25,785	----	------	------	P-4
5	SCS Runoff	2.073	1	728	7,563	----	------	------	P-5
6	SCS Runoff	1.042	1	729	3,961	----	------	------	P-6
7	SCS Runoff	3.629	1	734	16,008	----	------	------	P-7
8	Reservoir	0.519	1	766	1,040	7	140.36	6,923	Recharge Area Outflow
9	Reservoir	1.780	1	731	7,232	2	132.82	36.3	Headwall Out (post)
10	Combine	80.69	1	737	390,509	1, 8, 9	------	------	Flow to SP-1 (Post)