

ATTACHMENT 12 – STORMWATER STUDY

Stormwater Management Study

**Wayland Town Center
Wayland, MA**

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Project Location and Description

The project site has an area of approximately 56.9 acres and is located at 400 Boston Post Road, in Wayland, MA (See Figure 1 - Locus Map). The site is bound by Route 20 (Boston Post Road) to the south, the Wayland Business Center property to the North, Sudbury River to the west and the Wayland meadows property and Route 27 (Old Sudbury Road) to the East. There are wetland areas on the site. The larger wetland is located at the western portion of the site adjacent to Sudbury River, two smaller wetland areas are at the north east portion of the site adjacent to the Wayland Business Center property, and on the south east portion of site adjacent to Route 20.

Approximately 25 acres of the site is currently developed. The existing development contains a building formerly occupied by Raytheon with a footprint area of $\pm 272,700$ square feet and a $\pm 10,500$ square foot building formerly utilized as a daycare center and associated parking. There is a Wastewater Treatment facility on site which is owned and operated by the Town of Wayland. The existing topography of the project site generally slopes east to west and ranges from elevation ± 146 at the eastern property line adjacent to the Wayland Meadows Property to elevation ± 116 at the western side of the site in the large wetland area adjacent to Sudbury River.

The proposed development program consists of demolishing the existing 272,700 square foot building and constructing a mixed use development consisting of residential, municipal and retail use buildings, with associated parking facilities, utilities, and stormwater collection system (See Figure 2 - Site Plan). The stormwater management system for the proposed project has been designed in accordance with the MADEP's Stormwater Management Policy and Standards and the Town of Wayland's Wetlands and Water Resources Bylaw Chapter 194 Rules and Regulations.

Stormwater quality control will be achieved through a program of Best Management Practices (BMP's). The proposed stormwater management system will significantly improve the quality of the stormwater runoff. The existing pavement runoff drains to catch basins which direct runoff to wetland resource areas without additional water quality treatment. The proposed stormwater management system for the project will include new catch basins with deep sumps and hoods, and the use of innovative low impact development (LID) techniques.

Low Impact Development is a stormwater management approach with the goal to mimic the site's pre-development hydrology. This is done by using design techniques that infiltrate, filter, store, and detain water throughout the site using decentralized micro-scale controls. LID includes structural and non-structural strategies such as retention areas, reduction of impervious surfaces, lengthening of flow paths, and the preservation of existing vegetation and landscape features. Redevelopment and improving stormwater quality of existing sites, and energy and water conservation are also examples of LID techniques.

LID techniques proposed for the project include the use of water quality swales, rain gardens, and bio-retention basins to increase times of concentration, promote groundwater recharge, and enhance water quality. The water quality swales will be planted with grass on the bottom and sides to slow the runoff velocity and filter pollutants. The rain gardens and bio-retention basins will be planted with a combination of grasses, perennials, shrubs, and small trees. The clean stormwater runoff from the building rooftops will be directed to the water quality swales and bio-retention basins to provide additional groundwater recharge.

Based on a review of The National Flood Hazard Insurance Rate Map for the Town of Wayland, Massachusetts, Community Panel No 250224 0002 C, Dated (Revised) February 19,1986, the project site is located within the following zones:

Zone A - Area of 100 year flood

Zone B – Area between 100 year and 500 year floods

Zone C - Area of Minimal Flooding

Design Objectives and Methodologies

The stormwater management system was designed to control post-development peak runoff from the site by keeping it at or below the levels of pre-development. This was done by analyzing the 2-year, 10-year, and 100-year 24-hour storm events using the Hydraflow Hydrographs 2004 computer program. Hydraflow uses TR-20, the SCS Unit Hydrograph method (an industry accepted method) capable of developing runoff hydrographs for both simple and complex drainage basins. Hydraflow computes SCS Method Runoff Hydrographs by convoluting a rainfall hyetograph through a unit hydrograph.

Utilizing the TR-20 method in Hydraflow, the following data is necessary for input:

Watershed Area: Areas of each watershed are calculated and expressed in acres for these calculations.

SCS Curve Number (CN): Based on the cover type and hydrologic soil group, a weighted curve number (CN) was determined for each of the existing watersheds utilizing Table 2-2a- *Runoff Curve Numbers For Urban Areas* and *Worksheet 2, Runoff Curve Number and Runoff* from the Soil Conservation Service Technical Release 55 – Urban Hydrology for Small Watersheds

Time Interval (Minutes): For the most compatible results with the existing conditions, this value is defined at 2 minutes.

Time of Concentration, Tc (Minutes): The time of concentration for each watershed was determined by finding the time necessary for runoff to travel from the hydraulically most distant point in the watershed to the point of concentration. Time of concentrations were calculated using TR-55 worksheets with a minimum recommended time of concentration of 6 minutes.

SCS 24-Hour Storm Type: For the greater New England region, a Type III storm is recommended for drainage calculations.

Rainfall Precipitation: Rainfall precipitations for the 2, 10, and 25 year, 24-hour storm events were obtained using Figure B-1 from Technical Paper No. 40 (TP-40) Rainfall Frequency Atlas of the United States and are as follows for Wayland, MA:

2-year storm event:	3.1 inches
10-year storm event:	4.5 inches
25-year storm event:	5.3 inches

As per Town of Wayland Wetland regulations, a 24 hour storm event with a depth of 1 inch will be required as part of the analysis. The minimum depth for a 24 hour 100 year storm depth will be 7 inches as per the Town of Wayland Wetland Regulations.

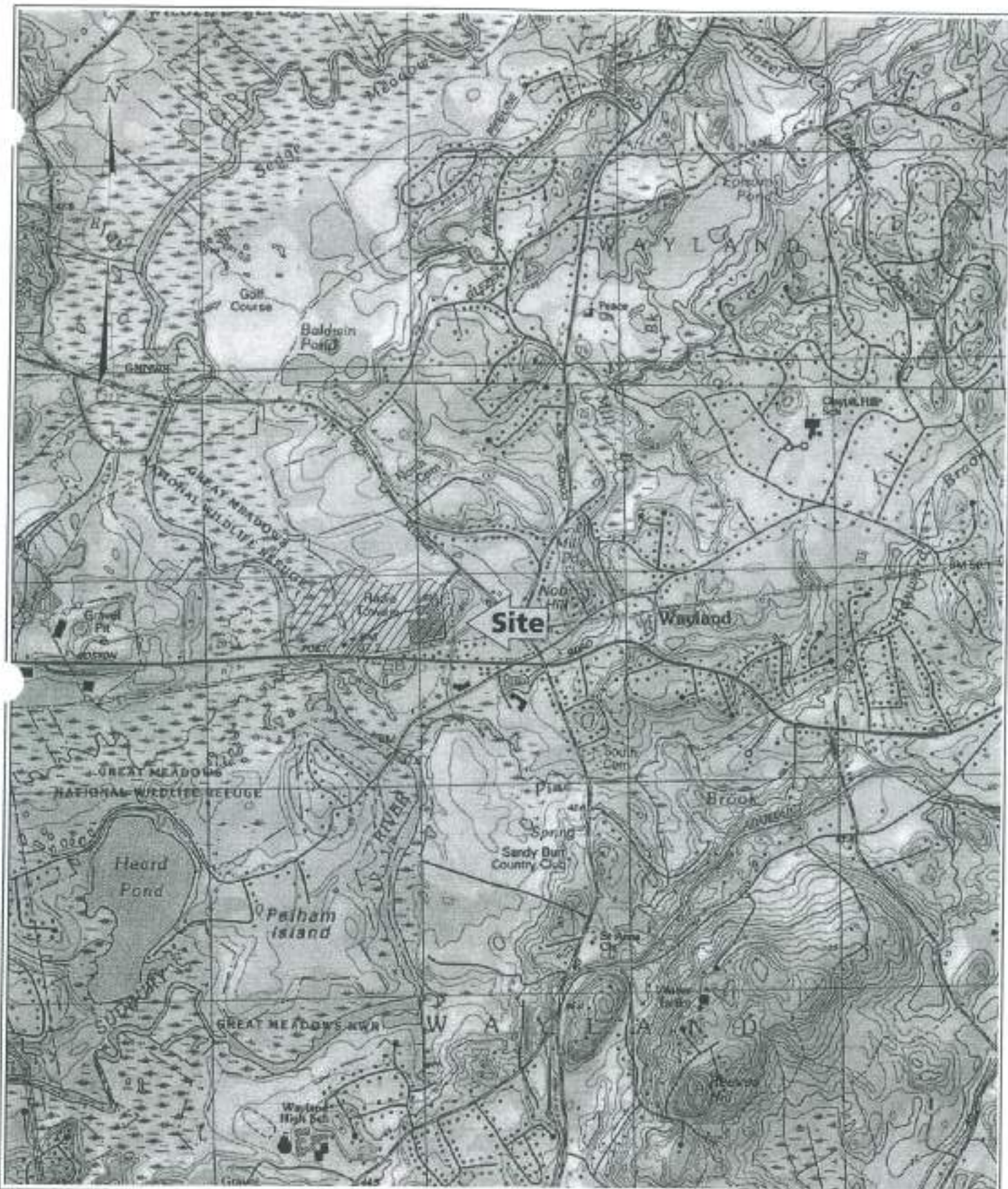
An on-site subsurface storm drainage collection system was designed to carry a minimum 10-year storm event through the site using the Hydraflow Storm Sewers Program. This program uses the Rational Method for estimating runoff and storm drainage pipes are sized based on calculated flows using Manning's Equation.

The site was divided into sub-areas, each contributing runoff to an individual catch basin inlet or roof drain. A value for area, time of concentration, and a runoff coefficient were calculated for each contributing sub-area. Rainfall intensities are calculated based on regional precipitation values provided in Technical Memorandum Hydro-35.

Existing Soils

The Soil Survey of Middlesex County, Massachusetts, completed by the National Resource Conservation Service (NRCS, formerly the Soil Conservation Service), was reviewed for general information on the soils within the site area (See Figure 3 - Soil Map). The mapped soils shown within the site limits are identified as follows:

Soil Number	Soil Type	Hydrologic Group
255A	Windsor Loamy Sand, 0 to 3 percent slopes	A
602	Urban Land	Null
36A	Saco Mucky Silt Loam, 0 to 1 percent slopes	D



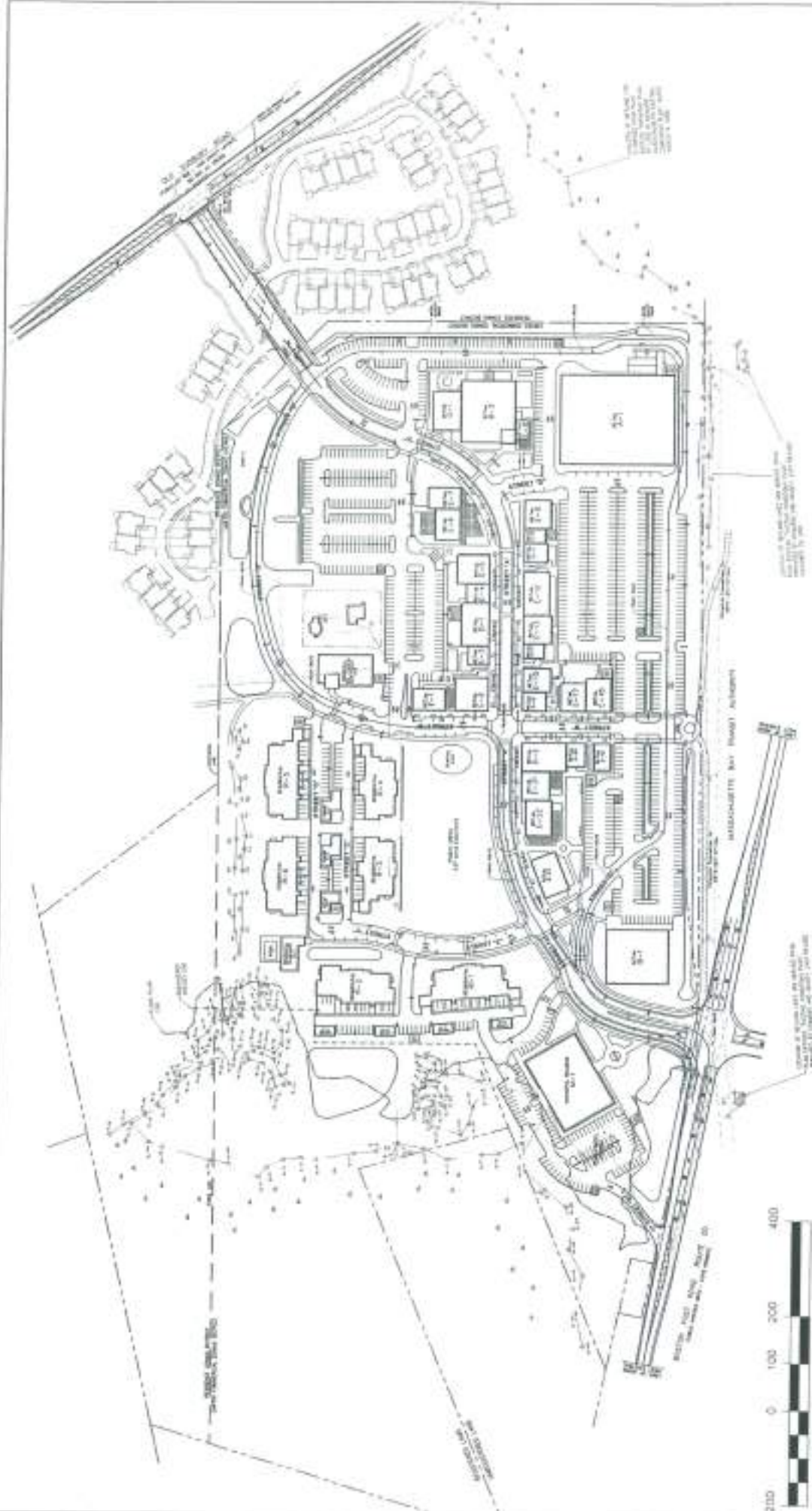
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Project Name:
**WAYLAND TOWN
 CENTER**
 WAYLAND, MA

Drawing Name:
SITE LOCUS MAP
 WAYLAND, MA
 QUADRANGLE
 MAP DATE: 1977

Drawing No.:
FIG. 1
 Project No.: 06032



Drawn by:	BB
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Project Name:
WAYLAND TOWN CENTER
 WAYLAND, MA

Drawing Number:
FIG.-2
 Project No.: 060332

Existing Conditions Runoff

The existing topography and land cover has been analyzed and 6 watershed areas were delineated with a combined area of ±43 acres for stormwater runoff. The watershed areas consist of the project site as well as any contributing off-site areas that direct runoff onto the project site. Six analysis points corresponding to the watersheds were used for determining the existing runoff leaving the site. The same points were used for the proposed runoff leaving the site to ensure that there will be no increase in peak runoff rates for the 2, 10, 25, and 100 year, 24 hour design storms (see Figure 4 – Pre-development watershed).

Watershed EW-1 is 17.42 acres and is predominantly impervious, consisting of the 6.26 acres of roof area of the existing Raytheon building, sidewalks and landscaped islands, a small area of runoff from offsite and a large portion of the existing parking lot. Runoff currently travels east to west and is captured by a number of catch basins and piped to a 36" combined sewer and storm pipe which discharges into the large wetland.

Watershed EW-2 has an area of 4.11 acres and consists mainly of paved areas with a small portion of a landscaped island and the roof runoff from the existing 10,500 square foot building. Runoff sheet flows northwest and is collected by catch basins and discharges directly into the wetland through an existing 18" storm pipe.

Watershed EW-3 is 12.27 acres in size and groundcover is predominantly previous consisting of grass, brush, woods and a small portion of the existing paved area. Runoff from this watershed is overland flow, which travels east to west directly into the existing wetland without any stormwater collection system capturing the runoff.

Watershed EW-4 has an area of 1.58 acres and is made up of the existing paved area and grass lawn area. Runoff currently sheet flows southwest into two ponds which are separated by the existing driveway entrance from Route 20 (Boston Post Road). These two ponds are connected by a culvert under the driveway and have no outlet, therefore during a large storm event, the ponds will overflow into Route 20.

Watershed EW-5 (EW-5A and EW-5B) is 8.08 acres in size and is consists of pavement, lawn, and brush areas. The existing Wayland Wastewater treatment plant is part of this watershed and a portion of runoff from off-site areas contributes to this watershed. Runoff from Watershed EW-5A is sheet flow which eventually flows north to the Wayland Commons property. Runoff from EW-5B consists of the Route 27 driveway and off-site areas. This runoff is collected in swales and a drainage culvert and flows to the wetland system north of the site.

Watershed EW-6 has an area of 2.45 acres, and is made up of the existing access driveway at the south east corner of the Raytheon Building and thick brush along the south east corner of the property. Runoff sheet flows south directly into the existing wetland located at the south-east corner of the property.

The existing peak rates of stormwater runoff leaving the site are summarized as follows:

Analysis Point	Contributing Watersheds	1-inch (CFS)	2-YEAR (CFS)	10-YEAR (CFS)	25-YEAR (CFS)	100-YEAR (CFS)	Receiving Watershed
Analysis Point 1 Existing 36" CMP combined storm/sewer culvert at Wetland	EW-1	3.37	32.36	54.24	66.82	93.47	Wetland system west of site
Analysis Point 2 Existing Culvert at Wetland	EW-2	0.86	8.25	13.82	17.03	23.83	
Analysis Point 3	EW-1, EW2, EW-3	4.17	40.12	67.90	84.73	122.31	
Analysis Point 4 Overland flow southeast to Boston Post Road	EW-4	0.00	0.00	0.00	0.00	2.68	Boston Post Road
Analysis Point 5 Overland flow to wetland system north of site	EW-5	0.00	0.02	0.46	1.48	5.40	Wetland system north of site
Analysis Point 6 Overland flow southeast to existing wetland	EW-6	0.00	0.27	2.03	3.47	7.07	Wetland system south of site



Drawn By: **FIG.-4**

Project No: **05032**

Client Name:

**PRE-DEVELOPMENT
WATERSHED PLAN**

Project Name:

**WAYLAND TOWN
CENTER
WAYLAND, MA**

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Project No:

Project No: **05032**
Drawing No: **FIG.-4**
Date: **06/08/2007**

Project No:

Project No: **05032**
Drawing No: **FIG.-4**
Date: **06/08/2007**

Proposed Conditions Runoff

The proposed site was also broken up into five watersheds with a combined area of ± 43 acres (See Figure 5 – Proposed Watershed Plan). Proposed watershed 4 was removed as there is no proposed runoff to Route 20. Catch basins and water quality swales and rain gardens have been designed to collect runoff and discharge into bio-retention basins which will discharge the runoff at a controlled rate. Six analysis points corresponding to the watersheds were used for determining the proposed runoff that will leave the site. The same points were used for the existing runoff leaving the site to ensure that there will be no increase in runoff rates for the 2, 10, 25, and 100 year, 24 hour design storms. A curve number and time of concentration were calculated for each watershed using Soil Conservation Service TR-55 methods (See Appendix C for Proposed Conditions Hydrology Calculations). The recommended minimum time of concentration of 6 minutes was used for watersheds PW-1, PW-2B, PW-5B, and PW-6B.

Watershed PW-1 is made up of the proposed paved areas, sidewalks, landscaped islands, roof areas and the existing Wayland Wastewater treatment plant. The area of PW-1 is 19.29 acres and is located in the northern portion of the site. The runoff from this watershed is collected in catch basins and water quality swales and directed to Bio-retention Basin 2. Runoff from Basin 2 and is discharged into the existing drain pipe which outlets into the large wetland located at the western portion of the site (Analysis Point 1).

Watershed PW-2 is made up of paved areas, sidewalks, roof areas and landscaped areas located at the southern portion of the site. The total area of all watersheds in PW-2 is 11.67 acres. The majority of the runoff from PW-2 is collected in rain gardens and discharge into Bio-retention Basin 1. Runoff is discharged into an existing drain pipe which discharges into the large wetland located at the western portion of the site (Analysis Point 2).

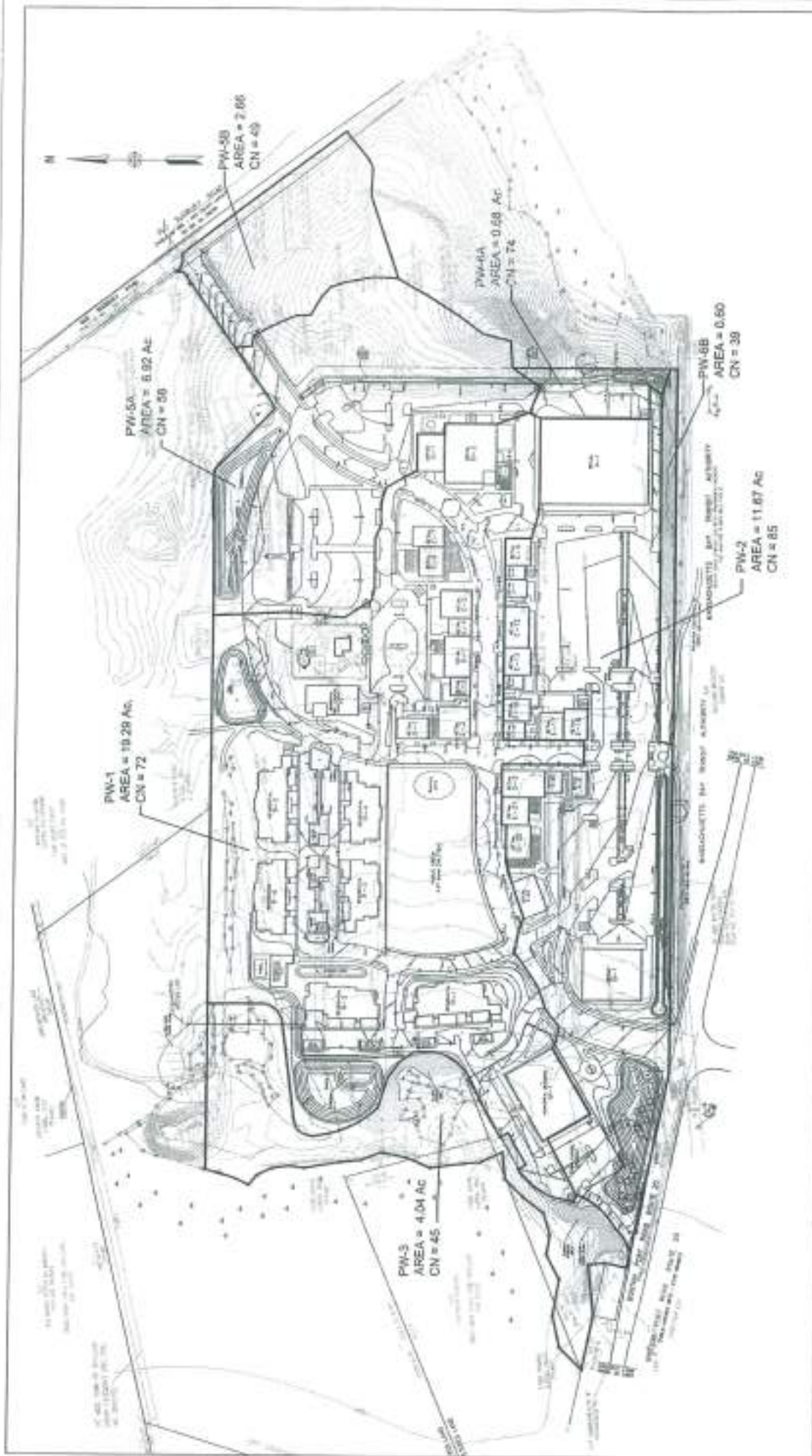
Watershed PW-3 is made up of undisturbed area consisting of grass, brush, and woods. The total area of all watersheds in PW-3 is 4.05 acres and is located in the western portion of the site. Runoff from this watershed will continue to runoff as it does presently, which is overland flow into the large wetland (Analysis Point 3).

Watershed PW-5 (PW-5A and 5B) is made up of paved areas and grass. The total area of all watersheds in PW-5 is 6.70 acres and is located at the north-eastern portion of the site. Runoff from PW-5A is predominately sheet flow into water quality swales which outlets into Bio-retention Basin 3 and infiltrates into the ground. Runoff from PW-5B is collected in swales and catch basins and is discharged to the wetland system via overland flow and a drainage culvert.

Watershed PW-6 (PW-6A and PW-6B) is made up of paved areas, landscaped islands, sidewalks and a small undisturbed area consisting of grass, and brush. The total area of all watersheds in PW-6 is 1.28 and it is located at the south eastern portion of the site. Runoff from the developed area (PW-6A) is sheet runoff into a water quality swale which outlets into Bio-retention basin 6. Runoff from the undisturbed area (PW-6B) will continue to runoff as it does presently, which is overland flow into the small wetland located at the south eastern corner of the property.

The peak rates of stormwater runoff leaving the site from the proposed development are summarized as follows:

Analysis Point	Contributing Watersheds	1 inch (CFS)	2-YEAR (CFS)	10-YEAR (CFS)	25-YEAR (CFS)	100-YEAR (CFS)	Receiving Watershed
Analysis Point 1 Existing CMP combined storm/sewer culvert at Wetland	PW-1	0.00	1.41	12.96	18.72	41.36	Wetland system west of site
Analysis Point 2 Existing Culvert at Wetland	PW-2	0.00	1.46	7.55	9.76	12.77	
Analysis Point 3 Wetlands West of Site	PW-1, PW2, PW-3	0.00	2.83	19.38	27.43	53.97	
Analysis Point 4 Overland flow southeast to Boston Post Road	PW-4	0.00	0.00	0.00	0.00	0.00	Boston Post Road
Analysis Point 5 Overland flow north to Wayland Meadows	PW-5	0.00	0.03	0.56	1.17	3.04	Wetland system north of site
Analysis Point 6 Overland flow southeast to existing wetland	PW-6	0.00	0.00	0.34	0.95	2.06	Wetland system south of site



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Project Name
WAYLAND TOWN CENTER
WAYLAND, MA

Primary Issue
POST-DEVELOPMENT WATERSHED PLAN

Drawing No.
FIG-5
Project No.
06032

Water Quality

Stormwater quality control will be achieved through a program of Best Management Practices (BMP's). The proposed development is designed to achieve a minimum 80% total suspended solids (TSS) removal in accordance with the MA DEP Stormwater Management Standards. Effective stormwater management practices include the use of curbing along all pavement edges, catch basins with deep sumps and hoods, and detention/infiltration devices, which will treat stormwater runoff from the proposed development and minimize potential indirect, long term impacts to down gradient resources. In addition, a sediment and erosion control plan will be implemented to protect these areas during and after construction of the proposed development.

Catch Basins:

The proposed catch basins will be equipped with deep sumps and hoods. The sumps capture sediments and coarse particles, and the hoods prevent hydrocarbons and other floatable debris from entering the drainage system, which will improve the performance of subsequent BMP's. The sump will be no less than 4' in depth and a regular maintenance schedule will be followed. A regular inspection and cleaning will ensure optimal effectiveness.

Water Quality Swales:

Water quality swales are used to provide peak runoff control as well as enhanced water quality. The swales will be planted with grass on the bottom and sides to slow the runoff velocity and filter pollutants. Runoff volume is controlled by reducing runoff velocity and promoting infiltration. Pollutant removal is achieved through sedimentation, filtration, nutrient uptake, and infiltration.

Bioretention Basins and Rain Gardens:

Bioretention basins and rain gardens are low impact development techniques that serve to promote groundwater recharge, and enhance water quality. They will be planted with a combination of grasses, perennials, shrubs, and wetland plantings and are designed to maximize the removal of pollutants from stormwater runoff through vegetation uptake, retention, and settling.

The following tables provide the Design Rates of Removal as set forth in the Massachusetts Stormwater Management Policy for the various BMP's utilized in this project:

Runoff collected in water quality swales and rain gardens:

BMP	Design Rate	Cumulative TSS Removal
Parking Lot Sweeping	10%	10%
Water Quality Swale / Rain Garden	70%	73%
Bio-retention Basin	80%	95%

Runoff collected in catch basins:

BMP	Design Rate	Cumulative TSS Removal
Parking Lot Sweeping	10%	10%
Catch Basin w/ Deep Sumps & Hooded Outlet	25%	33%
Forebay	25%	49%
Bio-retention Basin	80%	90%

Groundwater Recharge

Groundwater recharge for the proposed development will be provided in accordance with the MA DEP Stormwater Management Standards. These standards require that the annual recharge from the post-development site shall approximate the annual recharge from pre-development site conditions based on soil types. For hydrologic group A soil types, the volume that is required to be recharged is equal to 0.40 inches multiplied by the increase in impervious area. The proposed development is located entirely within hydrologic group A soils, therefore the volume required to be recharged is as follows:

Existing impervious area: ±21.8 acres
Proposed impervious area: ±22.2 acres
Increase in impervious area: ±0.4 acres

$$V = 0.4 \text{ acres} \times 0.40 \text{ inches} \times \frac{43,560 \text{ s.f.}}{1 \text{ acre}} \times \frac{1 \text{ ft.}}{12 \text{ inches}} = 580 \text{ cubic ft.}$$

The stormwater management system will provide the required groundwater recharge through the use of water quality swales, rain gardens, and bio-retention basins.

Summary

The stormwater collection and management system for the proposed development will provide mitigation of post-development stormwater runoff conditions utilizing a combination of detention basins and Low Impact Development techniques and "Best Management Practices" to reduce pollutant loadings within the stormwater prior to discharging it off site.

As shown in the following summary, the proposed stormwater management system has been designed to match or reduce post development peak discharges to less than the existing rates for all modeled storms.

Analysis Point 1 - Existing 36" CMP		
Summary Existing vs. Proposed Peak Discharge Rates		
Storm Event:	Existing Flow (CFS)	Proposed Flow (CFS)
1-inch	3.37	0.00
2-year	32.36	1.41
10-year	54.24	12.96
25-year	66.82	18.72
100-year	93.47	41.36

Analysis Point 2 – Existing Culvert		
Summary Existing vs. Proposed Peak Discharge Rates		
Storm Event:	Existing Flow (CFS)	Proposed Flow (CFS)
1-inch	0.86	0.00
2-year	8.25	1.46
10-year	13.82	7.55
25-year	17.03	9.76
100-year	23.83	12.77

Analysis Point 3 –Wetlands West of Site

Summary Existing vs. Proposed Peak Discharge Rates

Storm Event:	Existing Flow (CFS)	Proposed Flow (CFS)
1-inch	4.17	0.00
2-year	40.12	2.83
10-year	67.90	19.38
25-year	84.73	27.43
100-year	122.31	53.97

Analysis Point 4 - Boston Post Road

Summary Existing vs. Proposed Peak Discharge Rates

Storm Event:	Existing Flow (CFS)	Proposed Flow (CFS)
1-inch	0.00	0.00
2-year	0.00	0.00
10-year	0.00	0.00
25-year	0.00	0.00
100-year	2.68	0.00

Analysis Point 5 – Wayland Meadows

Summary Existing vs. Proposed Peak Discharge Rates

Storm Event:	Existing Flow (CFS)	Proposed Flow (CFS)
1-inch	0.00	0.00
2-year	0.02	0.03
10-year	0.46	0.56
25-year	1.48	1.17
100-year	5.40	3.04

Analysis Point 6 – Wetlands South of Site

Summary Existing vs. Proposed Peak Discharge Rates

Storm Event:	Existing Flow (CFS)	Proposed Flow (CFS)
1-inch	0.00	0.00
2-year	0.27	0.00
10-year	2.03	0.34
25-year	3.47	0.95
100-year	7.07	2.06

Stormwater Management Operation And Maintenance Plan

1. For inspection and maintenance schedule during and immediately following construction, see General and Erosion Control Notes included with Site Plans. The NPDES general permit will also include schedule information for inspection and maintenance of erosion controls during construction.
2. A checklist of all maintenance items will be developed and used for each stormwater treatment component. Each time an inspection is completed or a maintenance procedure is performed, it will be documented on the checklist. The checklist will be kept on the project site.
3. The property owner will be financially responsible for the implementation of this plan and for future system repairs as needed.
4. Sweep parking lot and driveway areas to remove sediments before they can enter the catch basins, twice annually, in the early spring and late fall, and on an as needed basis at other times.
5. Inspect and clean deep sump catch basins including the oil/grease traps to prevent blockage and to remove accumulated sediments on an annual basis in the spring.
6. Inspect and clean water quality swales and rain gardens an annual basis in the spring and on an as needed basis at other times.
7. Inspect and clean bio-retention basins on an annual basis in the spring and on an as needed basis at other times.
8. Inspect dumpster and compactor areas for spillage and clean as necessary.
9. Inspect landscape areas and edges of paved areas for any signs of erosion. Perform any necessary curb replacement, earth repair, reseeding or mulching upon identification.
10. Routinely pick up and remove litter from the parking areas and perimeter landscape areas. Clean leaves or trash from catch basin grates when observ

APPENDIX A: EXISTING CONDITIONS HYDROLOGY

Runoff Curve Numbers and Runoff

Time of Concentration

Pond Reports

Hydrograph Plots (2, 10, 25, 100 year storm events)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**

By: **RBM** Date **04/26/07**

Location: **Wayland, MA**

Checked: _____ Date _____

Check One: **Present**

Existing Watershed 1 (EW-1)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4			
					X	acres mi ² %	
A	Grass - good	39			3.24	126.36	
A	Impervious (pavement, roof)	98			14.18	1389.64	
A						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
Use only one CN source per line.		Totals =			17.42	1516	

CN (weighted) =

$\frac{\text{total product}}{\text{total area}}$

87.0264

Use CN=

87

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	2.00	3.29	5.38	

(Use P and CN with table 2-1, fig. 2-1,
or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**

By: **RBM** Date **04/26/07**

Location: **Wayland, MA**

Checked: _____ Date _____

Check One: **Present**

Existing Watershed 2 (EW-2)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4	X	acres mi ² %	
A	Grass - good	39			0.80	31.20	
A	Impervious (pavement, roof)	98			3.31	324.38	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
Use only one CN source per line.		Totals =			4.11	355.58	

Use only one CN source per line.

CN (weighted) =

$\frac{\text{total product}}{\text{total area}}$

86.5158

Use CN=

87

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	2.00	3.29	5.38	

(Use P and CN with table 2-1, fig. 2-1,
or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**
 Location: **Wayland, MA**
 Check One: **Present**

By: **RBM** Date **04/26/07**
 Checked: _____ Date _____
Existing Watershed 3 (EW-3)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4	X	acres mi ² %	
A	Grass - good	39			9.42	367.38	
A	Impervious (pavement, roof)	98			2.28	223.44	
A	Gravel	76			0.44	33.44	
A	Wetland	83			0.13	10.79	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
Use only one CN source per line.		Totals =			12.27	635.05	

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ **51.7563** Use CN= **52**

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	0.20	0.67	1.79	

(Use P and CN with table 2-1, fig. 2-1,
or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**

By: **RBM** Date: **04/26/07**

Location: **Wayland, MA**

Checked: _____ Date _____

Check One ☒ Present

Existing Watershed 4 (EW-4)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4			
					X	acres mi ² %	
A	Grass - good	39			0.63	24.57	
A	Impervious (pavement, roof)	98			0.95	93.10	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
Use only one CN source per line.					Totals =	1.58	117.67

CN (weighted) =

$$\frac{\text{total product}}{\text{total area}}$$

74.4747

Use CN=

74

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	1.10	2.13	3.96	

(Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**

By: **RBM** Date **04/26/07**

Location: **Wayland, MA**

Checked: _____ Date _____

Check One: **Present**

Existing Watershed 5A (EW-5A)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4	X	acres mi ² %	
A	Grass - good	39			4.79	186.81	
A	Impervious (pavement, roof)	98			0.20	19.60	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
Use only one CN source per line.		Totals =			4.99	206.41	

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ **41.3647** Use CN= **41**

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	0.01	0.20	0.88	

(Use P and CN with table 2-1, fig. 2-1,
or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**

By: RBM Date 04/26/07

Location: **Wayland, MA**

Checked: _____ Date _____

Check One: **Present**

Existing Watershed 5B (EW-5B)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio) *	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4			
					X	acres	
						%	
A	Grass - good	39			2.73		106.47
A	Impervious (pavement, roof)	98			0.36		35.28
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
Use only one CN source per line.		Totals =			3.09		141.75

Use only one CN source per line.

Totals =

3.09

141.75

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}}$$

45.8738

Use CN=

46

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	0.07	0.39	1.27	

(Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**

By: **RBM** Date **04/26/07**

Location: **Wayland, MA**

Checked: _____ Date _____

Check One: **Present**

Existing Watershed 6 (EW-6)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4			
					X	acres	
						mi ²	
						%	
A	Grass - good	39			1.79		69.81
A	Impervious (pavement, roof)	98			0.66		64.68
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
Totals =					2.45		134.49

Use only one CN source per line.

Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ **54.8939** Use CN= **55**

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	0.28	0.83	2.06	

(Use P and CN with table 2-1, fig. 2-1,
or eqs. 2-3 and 2-4.)

TR55 Tc Worksheet

Hydraflow Hydrographs by Intellisolve

Hyd. No. 1

EW-1 (PT. 1)

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.200	0.011	0.011	
Flow length (ft)	= 136.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.10	0.00	0.00	
Land slope (%)	= 14.70	0.00	0.00	
Travel Time (min)	= 7.22	+	0.00	+
			0.00	= 7.22
Shallow Concentrated Flow				
Flow length (ft)	= 60.00	0.00	0.00	
Watercourse slope (%)	= 0.50	0.00	0.00	
Surface description	= Paved	Paved	Paved	
Average velocity (ft/s)	= 1.44	0.00	0.00	
Travel Time (min)	= 0.70	+	0.00	+
			0.00	= 0.70
Channel Flow				
X sectional flow area (sqft)	= 7.00	0.00	0.00	
Wetted perimeter (ft)	= 4.71	0.00	0.00	
Channel slope (%)	= 1.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	= 12.95	0.00	0.00	
Flow length (ft)	= 1800.0	0.0	0.0	
Travel Time (min)	= 2.32	+	0.00	+
			0.00	= 2.32
Total Travel Time, Tc				10.23 min

TR55 Tc Worksheet

Hydraflow Hydrographs by Intelsolve

Hyd. No. 2

EW-2 (PT. 2)

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.011	0.011	0.011				
Flow length (ft)	= 100.0	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)	= 2.14	+	0.00	+	0.00	=	2.14
Shallow Concentrated Flow							
Flow length (ft)	= 673.00	0.00	0.00				
Watercourse slope (%)	= 1.20	0.00	0.00				
Surface description	= Paved	Paved	Paved				
Average velocity (ft/s)	= 2.23	0.00	0.00				
Travel Time (min)	= 5.04	+	0.00	+	0.00	=	5.04
Channel Flow							
X sectional flow area (sqft)	= 1.22	0.00	0.00				
Wetted perimeter (ft)	= 1.96	0.00	0.00				
Channel slope (%)	= 1.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	= 7.23	0.00	0.00				
Flow length (ft)	= 275.0	0.0	0.0				
Travel Time (min)	= 0.63	+	0.00	+	0.00	=	0.63
Total Travel Time, Tc					7.81 min		

TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 3

EW-3

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.200	0.011	0.011	
Flow length (ft)	= 100.0	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)	= 21.82	+ 0.00	+ 0.00	= 21.82
Shallow Concentrated Flow				
Flow length (ft)	= 972.00	148.00	0.00	
Watercourse slope (%)	= 1.30	2.70	0.00	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	= 1.84	2.65	0.00	
Travel Time (min)	= 8.81	+ 0.93	+ 0.00	= 9.74
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				31.60 min

TR55 Tc Worksheet

Hydraflow Hydrographs by Intellisolve

Hyd. No. 5

EW-4

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.200	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.10	0.00	0.00	
Land slope (%)	= 2.50	0.00	0.00	
Travel Time (min)	= 11.46	+	0.00	+
			0.00	= 11.46
Shallow Concentrated Flow				
Flow length (ft)	= 100.00	0.00	0.00	
Watercourse slope (%)	= 3.50	0.00	0.00	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	= 3.02	0.00	0.00	
Travel Time (min)	= 0.55	+	0.00	+
			0.00	= 0.55
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				12.00 min

TR55 Tc Worksheet

Hydraflow Hydrographs by Intellisolve

Hyd. No. 9

EW-5A

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.200	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.10	0.00	0.00	
Land slope (%)	= 1.50	0.00	0.00	
Travel Time (min)	= 14.06	+ 0.00	+ 0.00	= 14.06
Shallow Concentrated Flow				
Flow length (ft)	= 130.00	0.00	0.00	
Watercourse slope (%)	= 2.50	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 2.55	0.00	0.00	
Travel Time (min)	= 0.85	+ 0.00	+ 0.00	= 0.85
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				14.90 min

TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 10

E-5B

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.200	0.011	0.011	
Flow length (ft)	= 100.0	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)	= 16.53	+ 0.00	+ 0.00	= 16.53
Shallow Concentrated Flow				
Flow length (ft)	= 370.00	0.00	0.00	
Watercourse slope (%)	= 5.40	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 3.75	0.00	0.00	
Travel Time (min)	= 1.64	+ 0.00	+ 0.00	= 1.64
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				18.20 min

TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 12

EW-6 (PT. 6)

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.10	0.00	0.00	
Land slope (%)	= 6.00	0.00	0.00	
Travel Time (min)	= 9.34	+	0.00	+
			0.00	= 9.34
Shallow Concentrated Flow				
Flow length (ft)	= 240.00	0.00	0.00	
Watercourse slope (%)	= 0.85	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 1.49	0.00	0.00	
Travel Time (min)	= 2.69	+	0.00	+
			0.00	= 2.69
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				12.03 min

Pond Report

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:37 PM

Pond No. 7 - EX. BASIN

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	118.00	1,828	0	0
1.00	119.00	5,668	3,748	3,748
2.00	120.00	8,193	8,931	10,679

Culvert / Orifice Structures

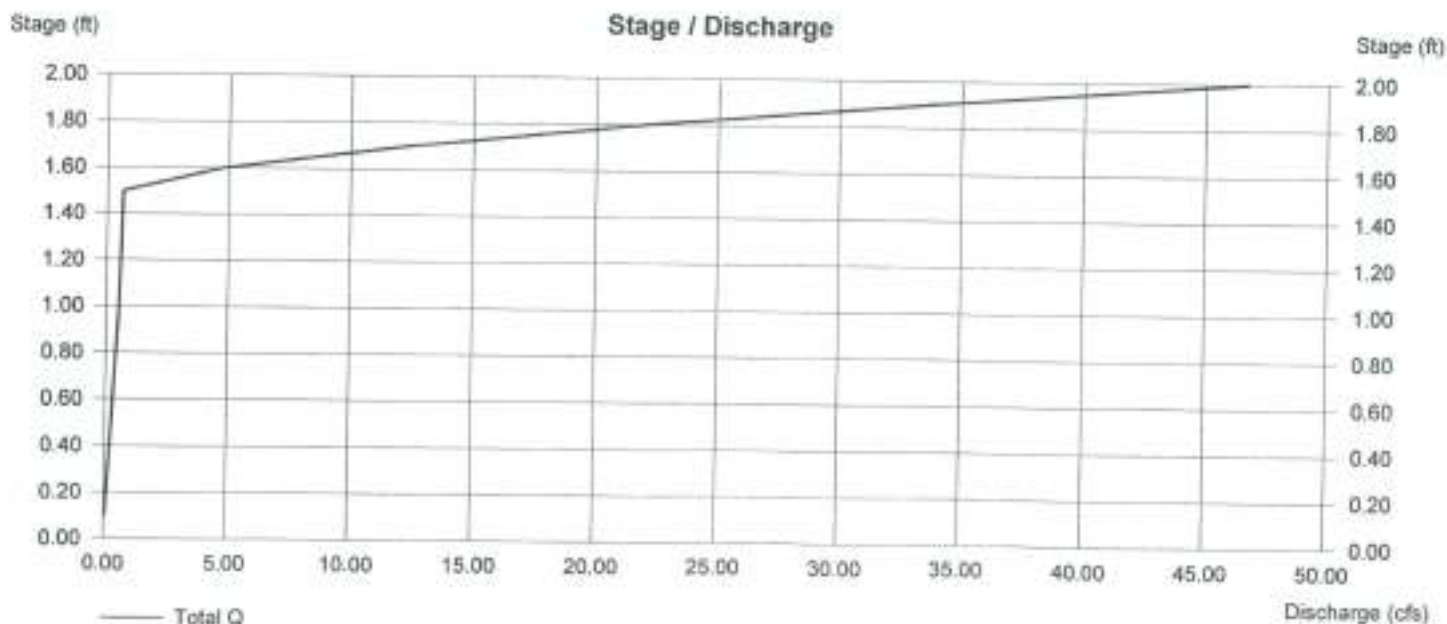
	[A]	[B]	[C]	[D]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .000	.000	.000	.000
Orif. Coeff.	= 0.00	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 50.00	0.00	0.00	0.00
Crest El. (ft)	= 119.50	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	—	—	—
Multi-Stage	= No	No	No	No

Exfiltration = 4.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	3.37	1	730	14,413	---	---	---	EW-1 (PT. 1)
2	SCS Runoff	0.86	1	727	3,257	---	---	---	EW-2 (PT. 2)
3	SCS Runoff	0.00	1	0	0	---	---	---	EW-3
4	Combine	4.17	1	729	17,670	1, 2, 3	---	---	EXIST. TOTAL TO RIVER (PT. 3)
5	SCS Runoff	0.00	1	890	131	---	---	---	EW-4
6	Reservoir	0.00	1	1015	124	5	118.01	26	EXIST. BASIN
7	Diversion1	0.00	1	1015	27	6	---	---	BASIN INFILTRATION
8	Diversion2	0.00	1	1015	96	6	---	---	BASIN OUTFLOW (PT. 4)
9	SCS Runoff	0.00	1	0	0	---	---	---	EW-5A
10	SCS Runoff	0.00	1	0	0	---	---	---	E-5B
11	Combine	0.00	1	0	0	9, 10	---	---	E-5A + E-5B (PT. 5)
12	SCS Runoff	0.00	1	0	0	---	---	---	EW-6 (PT. 6)
14	SCS Runoff	0.03	1	937	832	---	---	---	PW-1
15	Reservoir	0.02	1	1411	813	14	116.05	344	BASIN 2
16	Diversion1	0.02	1	1411	813	15	---	---	BASIN 2 INFILTRATION
17	Diversion2	0.00	1	1050	0	15	---	---	BASIN 2 OUTFLOW (PT. 1)
18	SCS Runoff	0.96	1	755	7,314	---	---	---	PW-2
19	Reservoir	0.18	1	916	7,298	18	115.01	2,958	BASIN 1
20	Diversion1	0.18	1	916	7,298	19	---	---	BASIN 1 INFILTRATION
21	Diversion2	0.00	1	888	0	19	---	---	BASIN 1 OUTFLOW (PT. 2)
22	SCS Runoff	0.00	1	0	0	---	---	---	PW-3
23	Combine	0.00	1	888	0	17, 21, 22	---	---	PROP. TOTAL TO RIVER (PT. 3)
24	SCS Runoff	0.00	1	0	0	---	---	---	PW-5A
25	Reservoir	0.00	1	0	0	24	124.00	0	BASIN 3
26	Diversion1	0.00	1	0	0	25	---	---	BASIN 3 INFILTRATION
27	Diversion2	0.00	1	0	0	25	---	---	BASIN 3 OUTFLOW
28	SCS Runoff	0.00	1	0	0	---	---	---	PW-5B
29	Combine	0.00	1	0	0	27, 28	---	---	TOTAL TO PT. 5
30	SCS Runoff	0.00	1	899	57	---	---	---	PW-6A
MSP_5-8-07.gpw					Return Period: 1 Year			Monday, May 7 2007, 4:37 PM	

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
31	Reservoir	0.00	1	1013	50	30	128.01	12	BASIN 4
32	Diversion1	0.00	1	1013	50	31	—	—	BASIN 4 INFILTRATION
33	Diversion2	0.00	1	0	0	31	—	—	BASIN 4 OUTFLOW
34	SCS Runoff	0.00	1	0	0	—	—	—	PW-6B
35	Combine	0.00	1	0	0	33, 34	—	—	TOTAL TO PT. 6
							.		
MSP_5-8-07.gpw					Return Period: 1 Year			Monday, May 7 2007, 4:37 PM	

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:37 PM

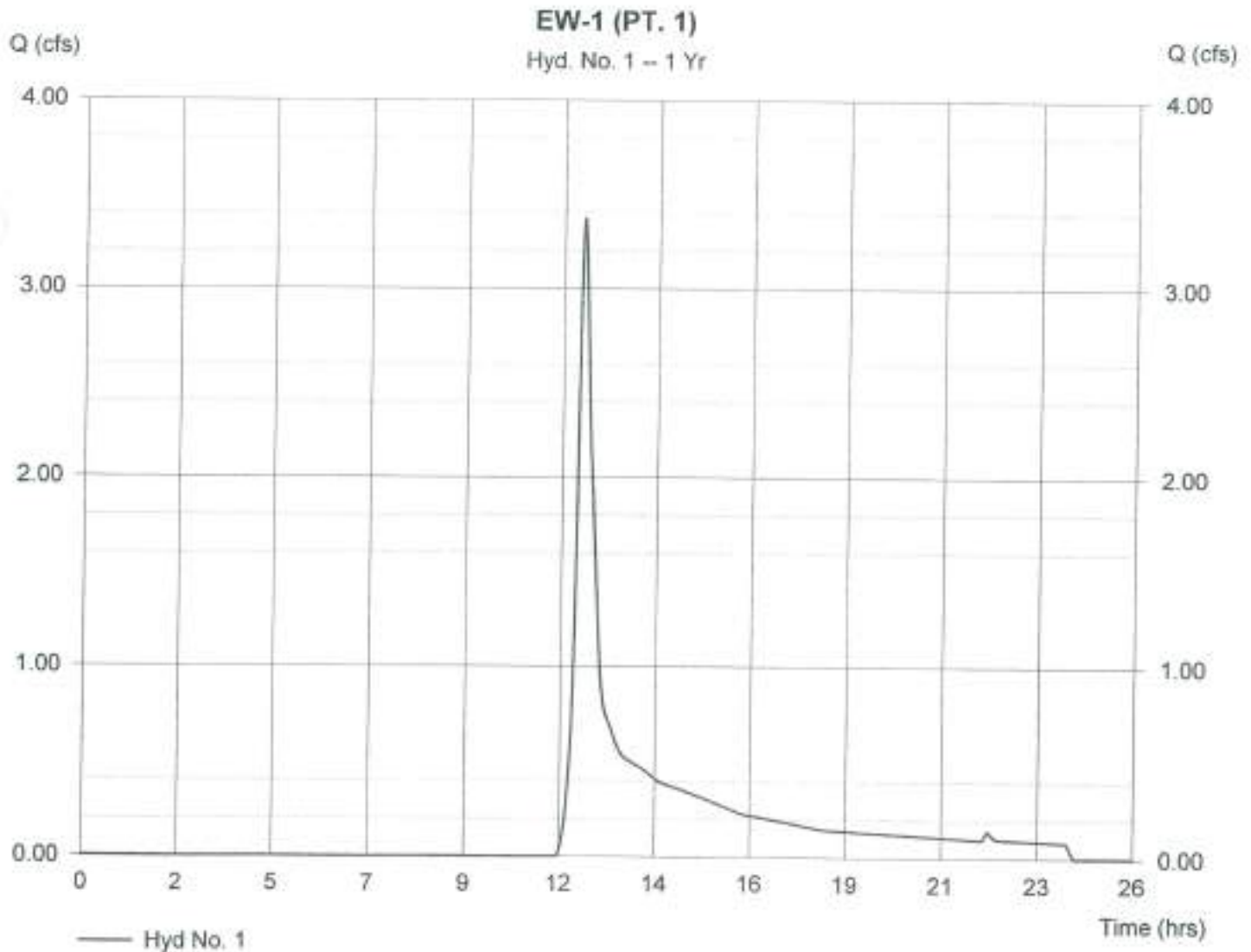
Hyd. No. 1

EW-1 (PT. 1)

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 17.420 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 3.37 cfs
Time interval = 1 min
Curve number = 87
Hydraulic length = 0 ft
Time of conc. (Tc) = 10.23 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 14,413 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:37 PM

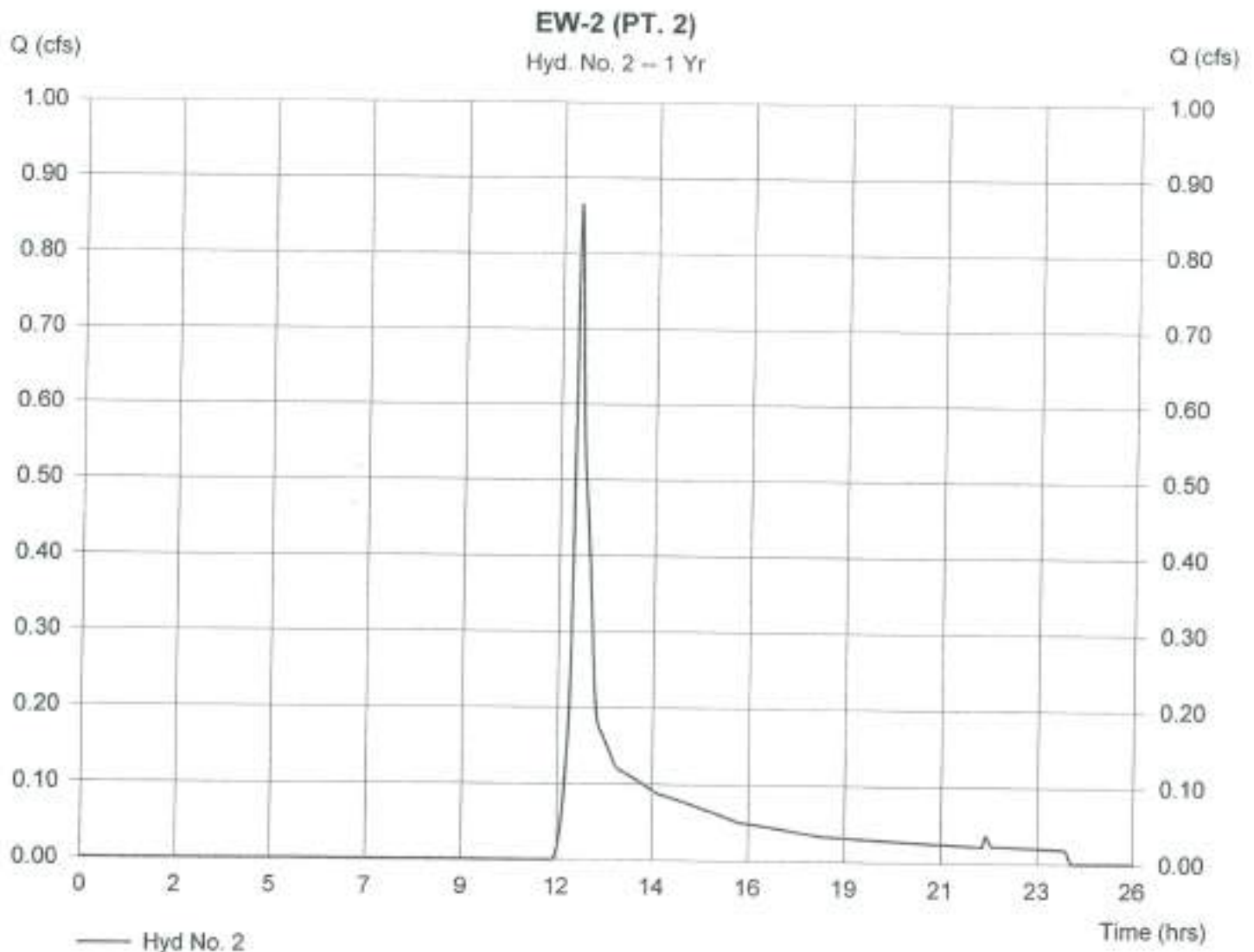
Hyd. No. 2

EW-2 (PT. 2)

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 4.110 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.86 cfs
Time interval = 1 min
Curve number = 87
Hydraulic length = 0 ft
Time of conc. (Tc) = 7.81 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 3,257 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:37 PM

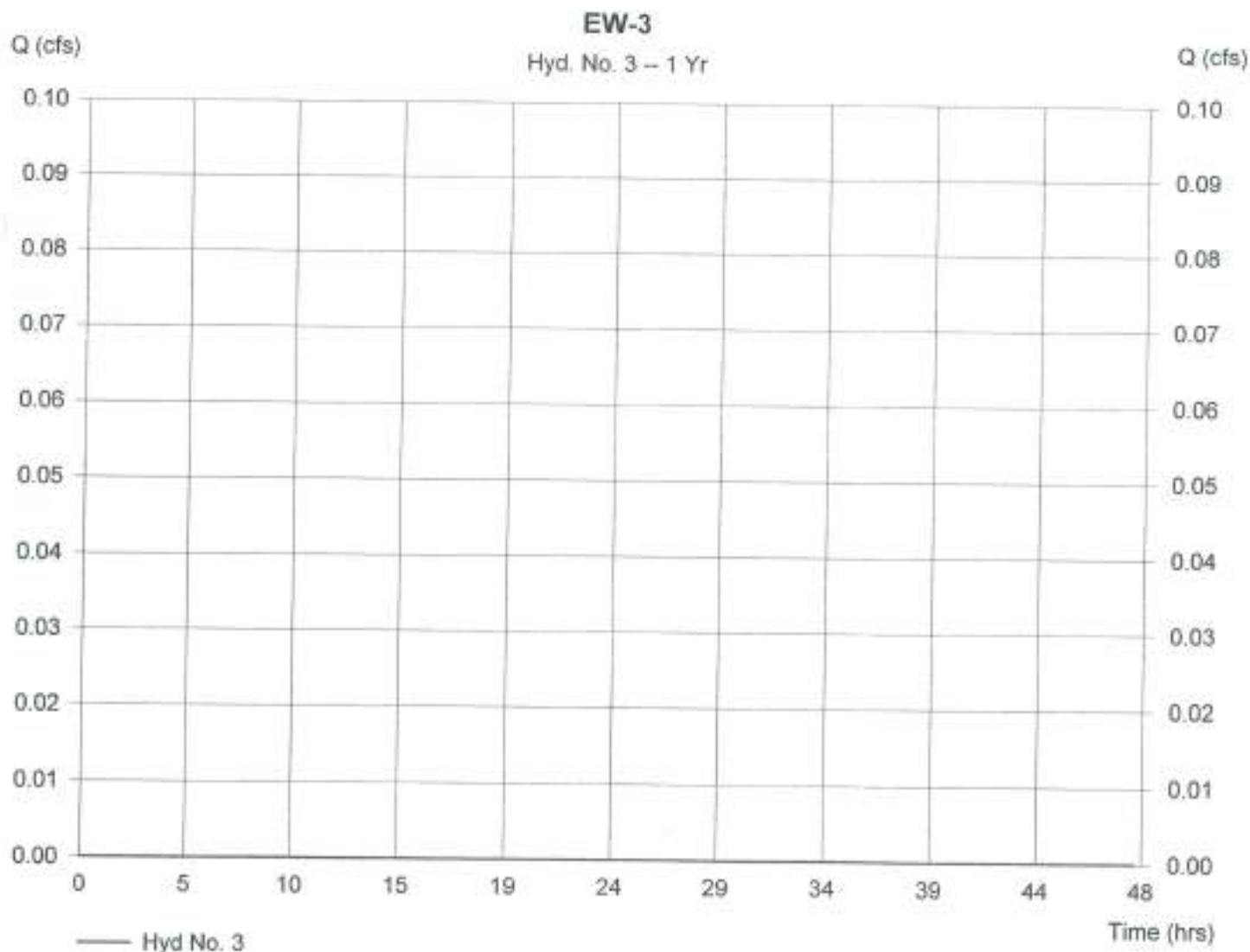
Hyd. No. 3

EW-3

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 12.310 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 52
Hydraulic length = 0 ft
Time of conc. (Tc) = 31.60 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:37 PM

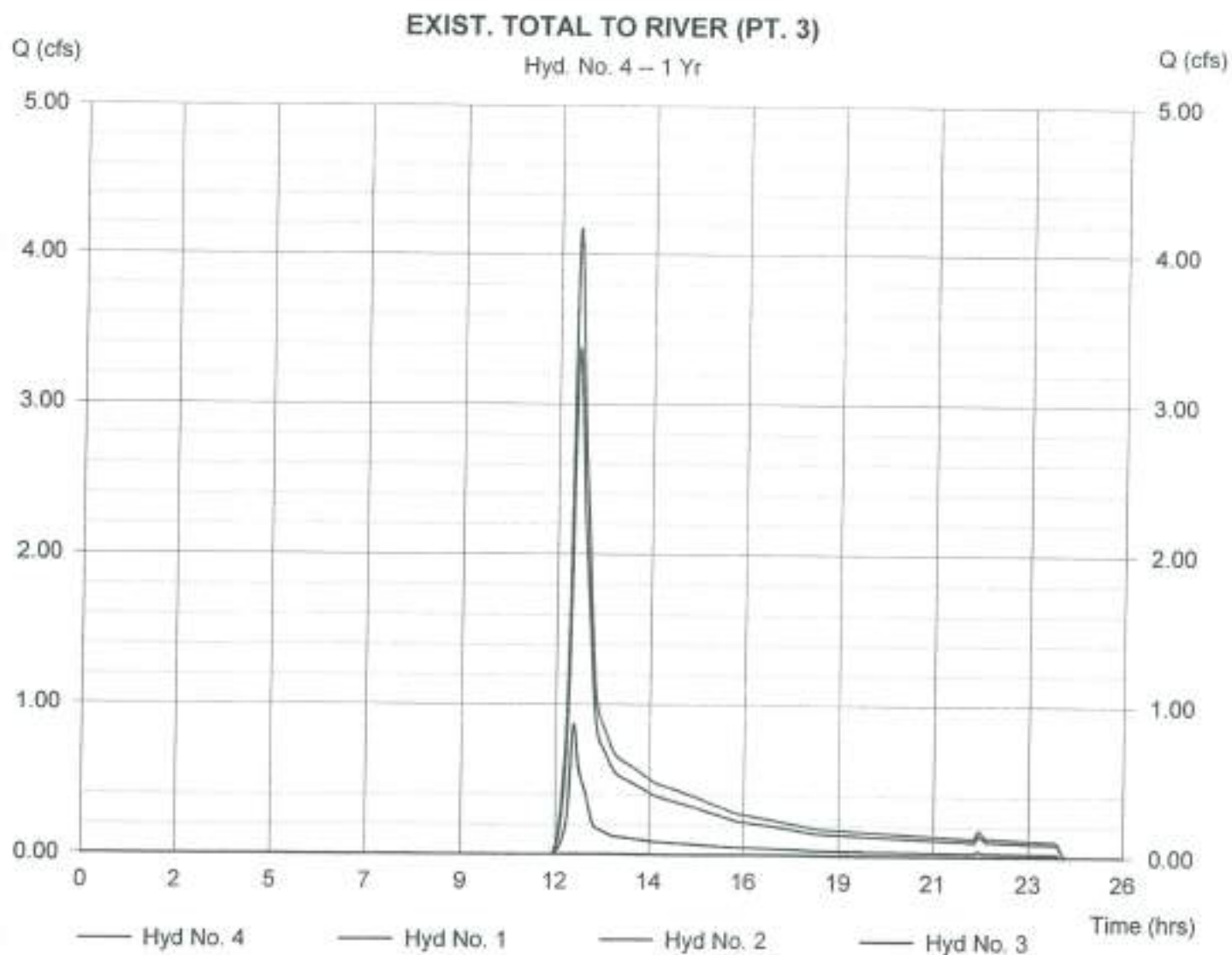
Hyd. No. 4

EXIST. TOTAL TO RIVER (PT. 3)

Hydrograph type = Combine
Storm frequency = 1 yrs
Inflow hyds. = 1, 2, 3

Peak discharge = 4.17 cfs
Time interval = 1 min

Hydrograph Volume = 17,670 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

Monday, May 7 2007, 4:37 PM

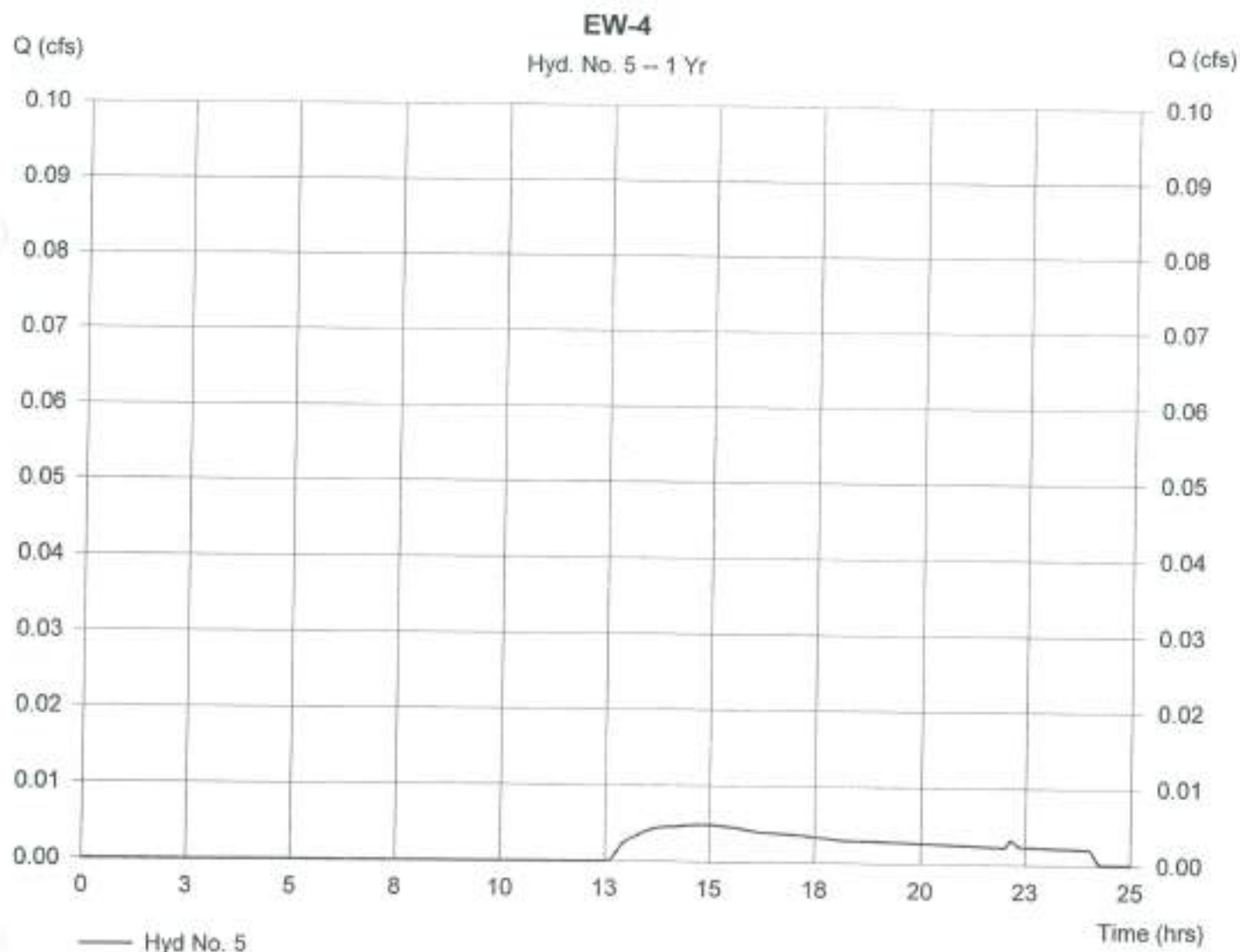
Hyd. No. 5

EW-4

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 1.580 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 74
Hydraulic length = 0 ft
Time of conc. (Tc) = 12.00 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 131 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:37 PM

Hyd. No. 6

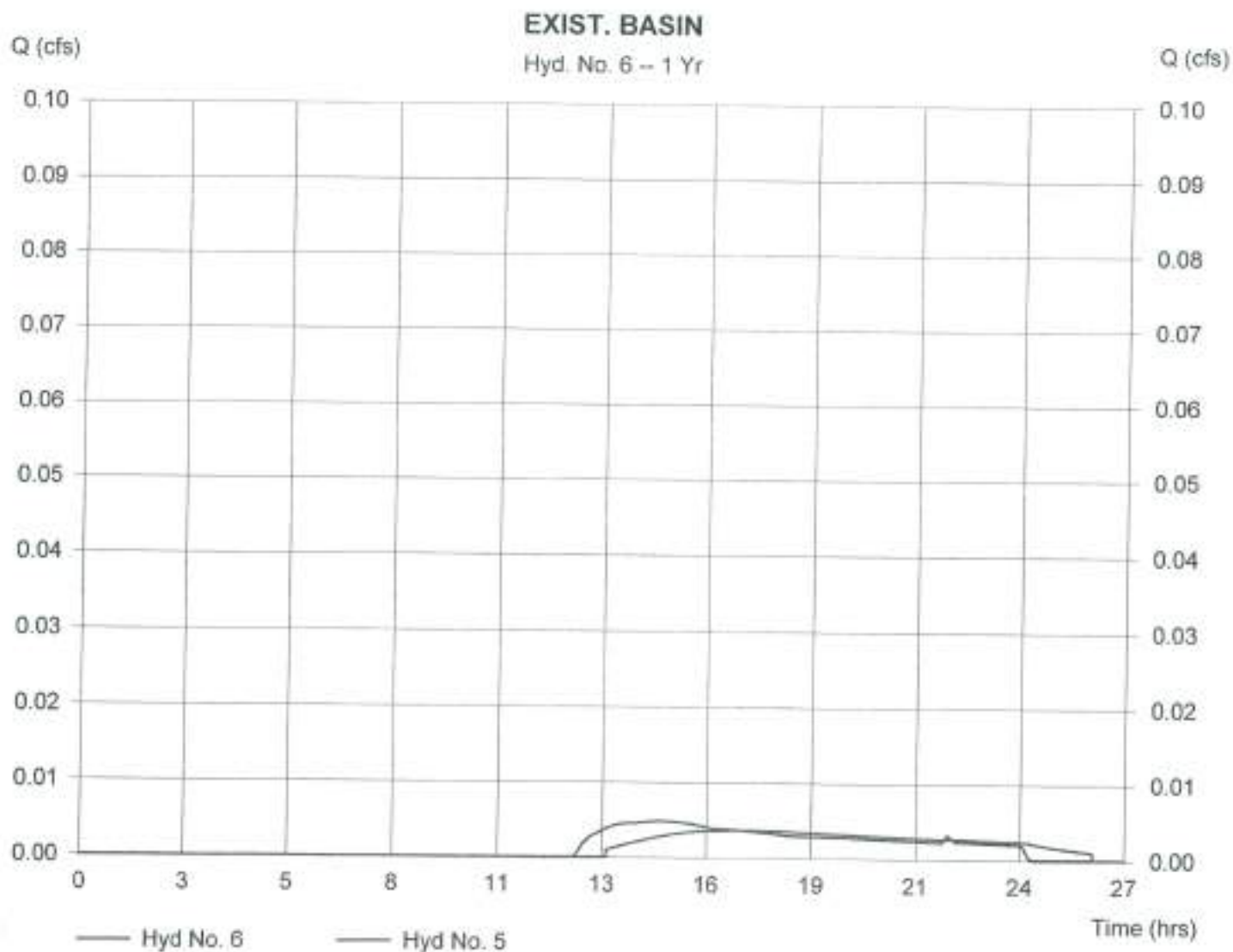
EXIST. BASIN

Hydrograph type = Reservoir
Storm frequency = 1 yrs
Inflow hyd. No. = 5
Reservoir name = EX. BASIN

Peak discharge = 0.00 cfs
Time interval = 1 min
Max. Elevation = 118.01 ft
Max. Storage = 26 cuft

Storage Indication method used.

Hydrograph Volume = 124 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:37 PM

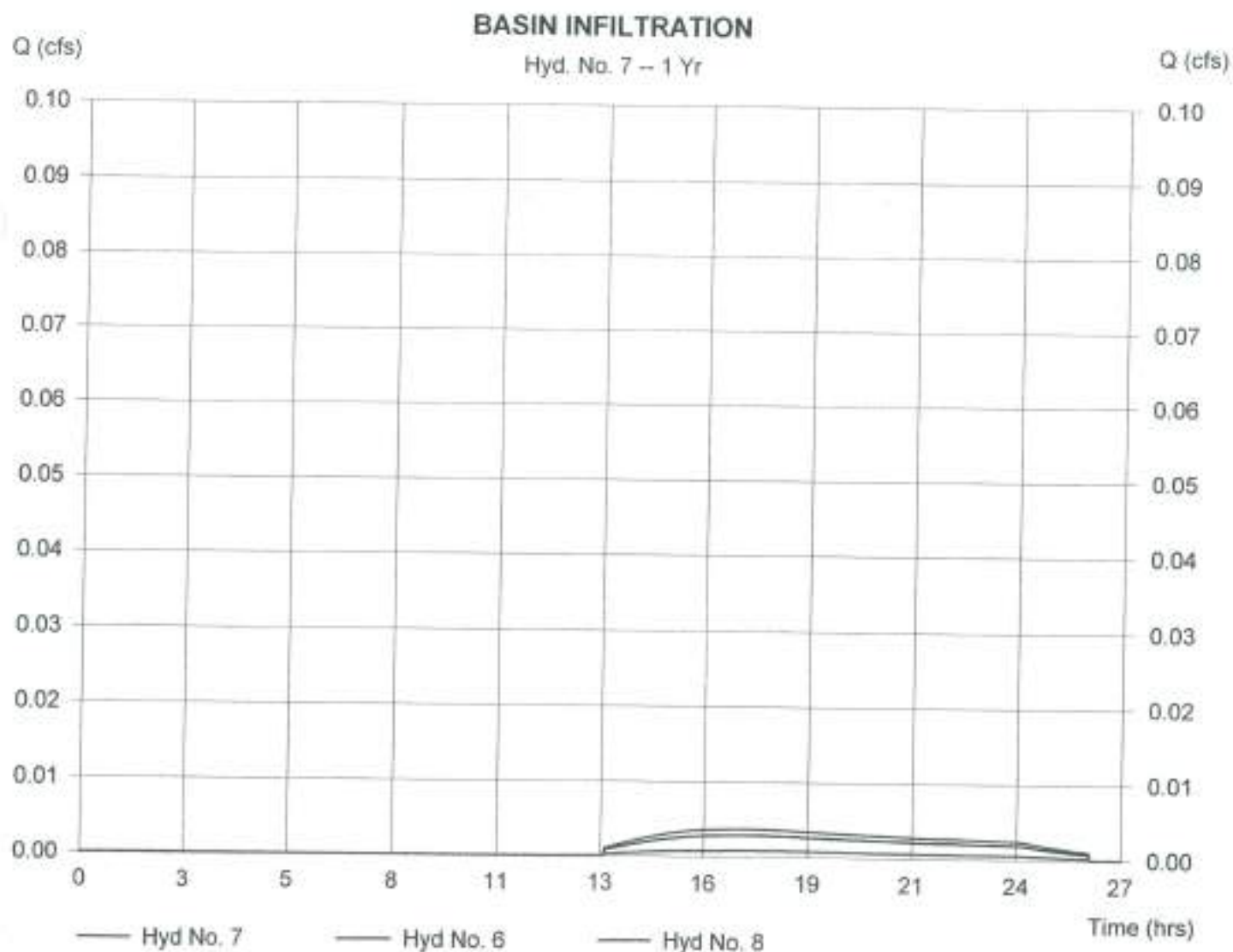
Hyd. No. 7

BASIN INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 1 yrs
Inflow hydrograph = 6
Diversion method = Pond - EX. BASIN

Peak discharge = 0.00 cfs
Time interval = 1 min
2nd diverted hyd. = 8
Pond structure = Exfiltration

Hydrograph Volume = 27 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:37 PM

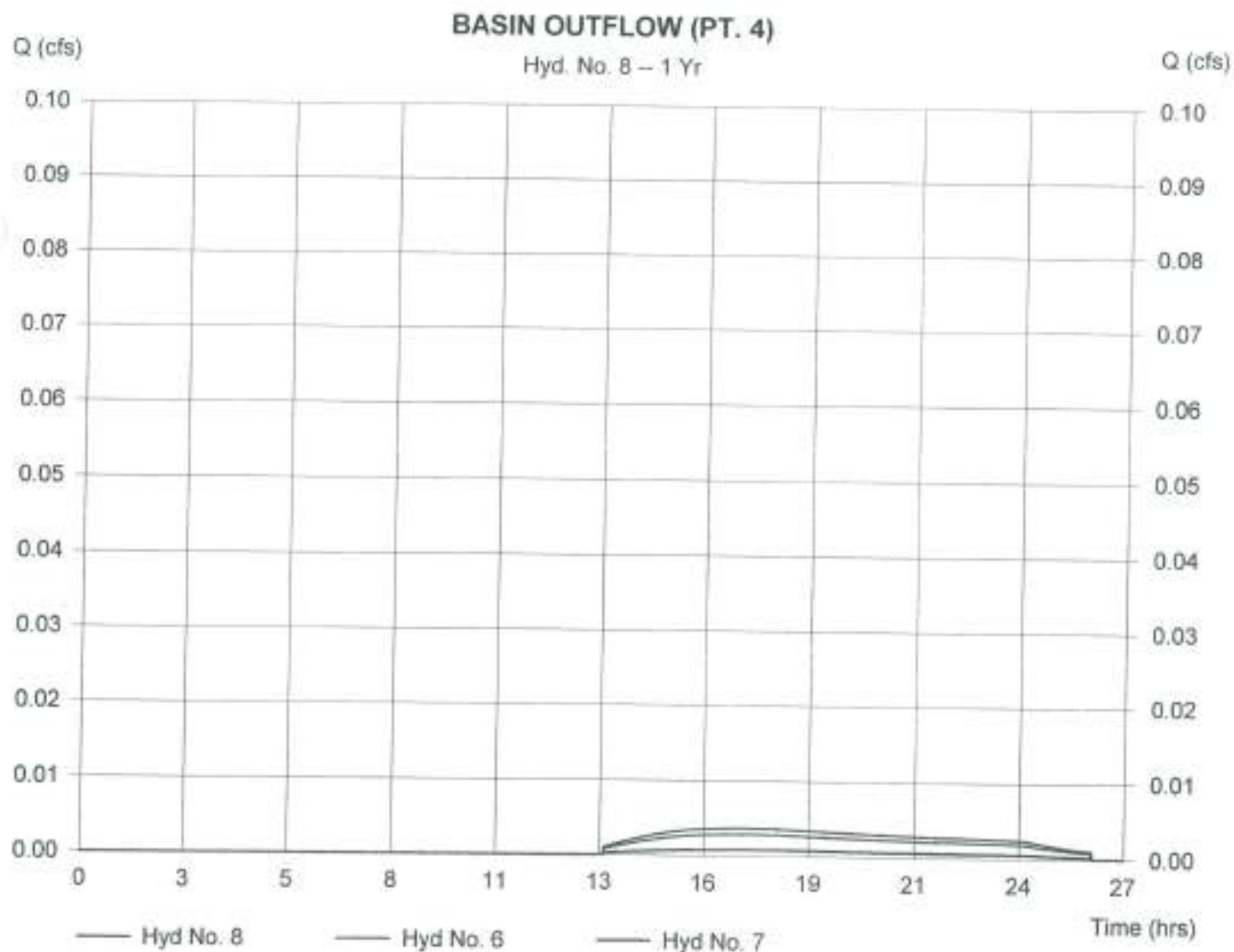
Hyd. No. 8

BASIN OUTFLOW (PT. 4)

Hydrograph type = Diversion2
Storm frequency = 1 yrs
Inflow hydrograph = 6
Diversion method = Pond - EX. BASIN

Peak discharge = 0.00 cfs
Time interval = 1 min
2nd diverted hyd. = 7
Pond structure = Exfiltration

Hydrograph Volume = 96 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:37 PM

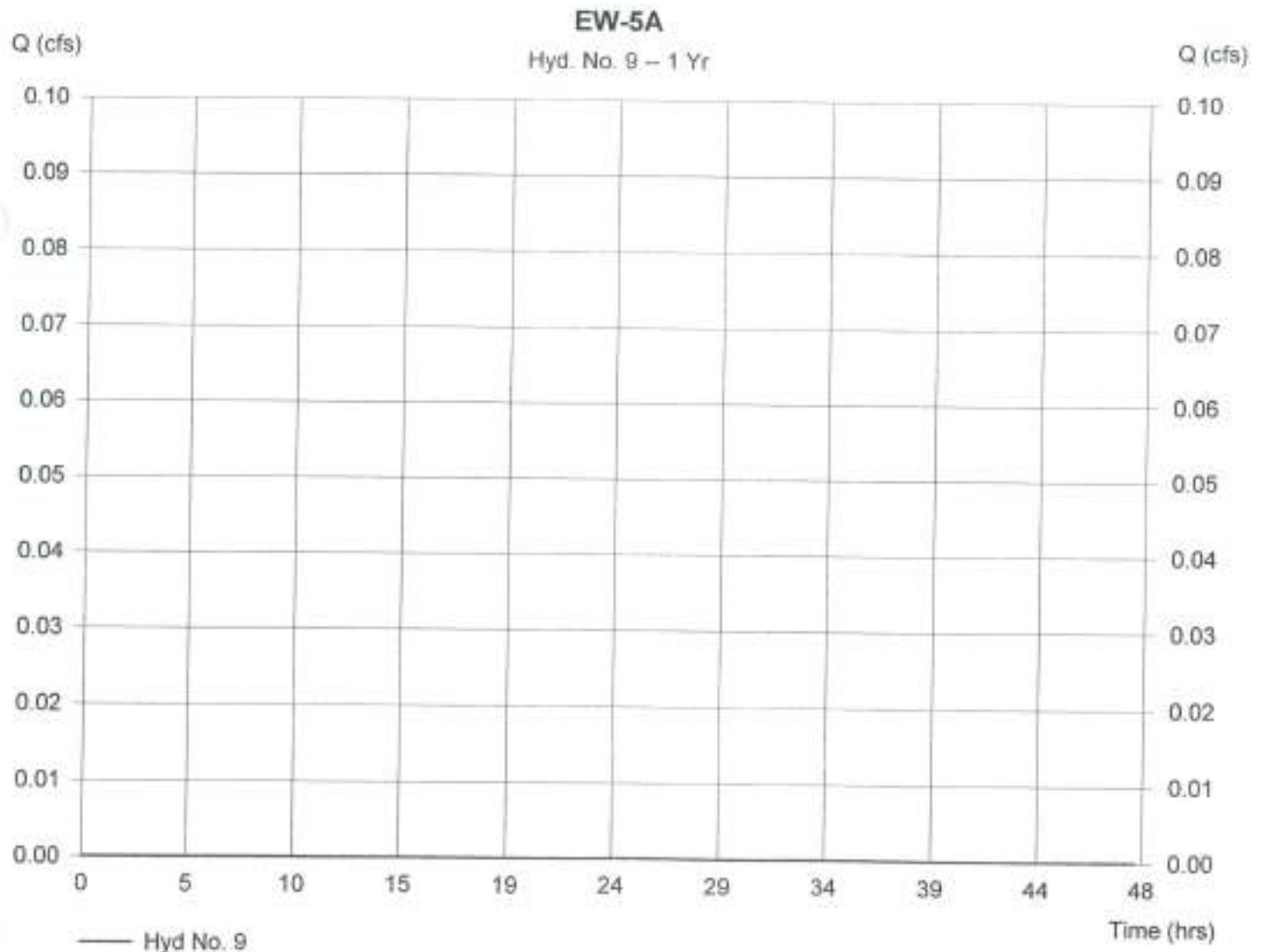
Hyd. No. 9

EW-5A

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 4.990 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 41
Hydraulic length = 0 ft
Time of conc. (Tc) = 14.90 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:37 PM

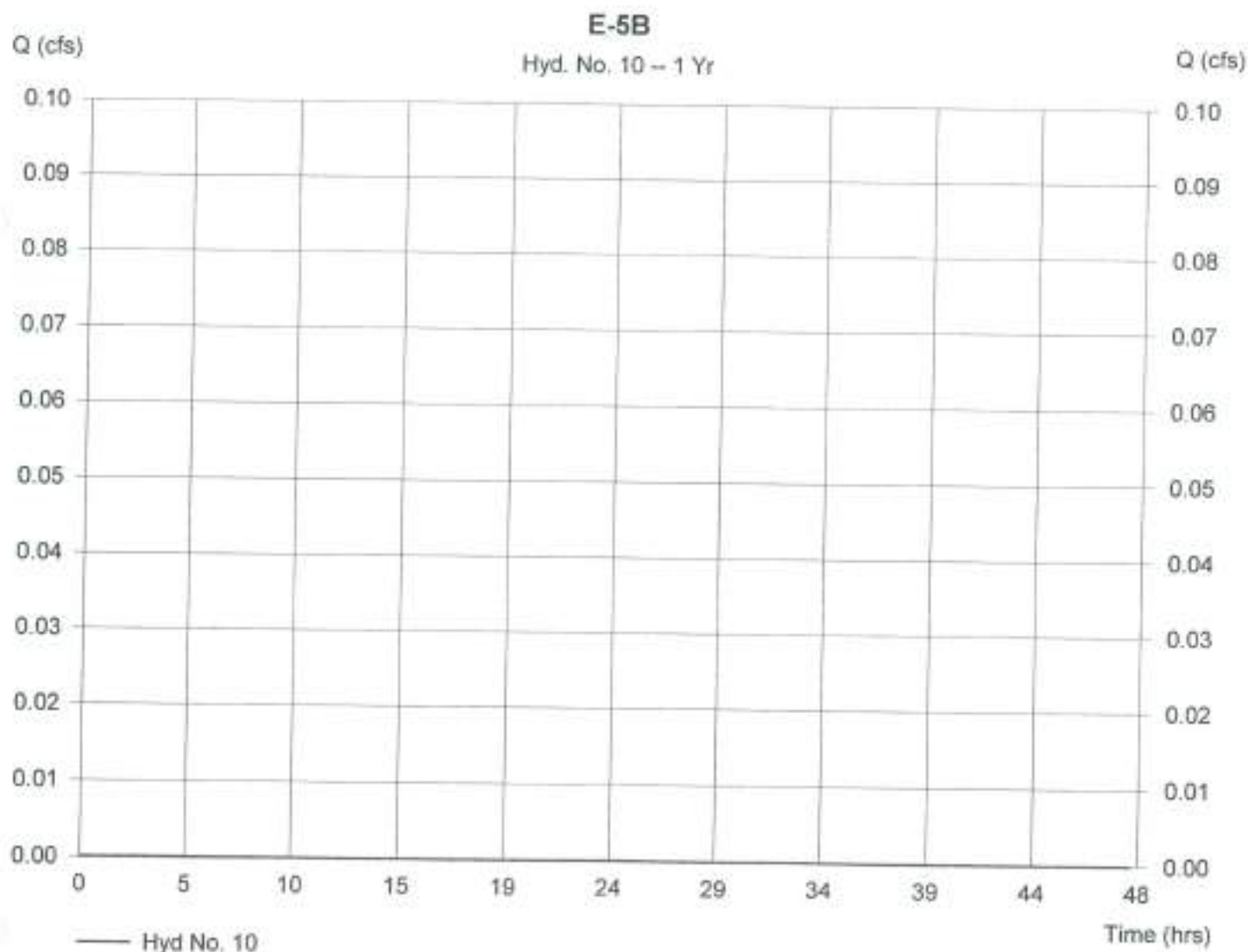
Hyd. No. 10

E-5B

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 3.090 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 46
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.20 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:37 PM

Hyd. No. 11

E-5A + E-5B (PT. 5)

Hydrograph type = Combine

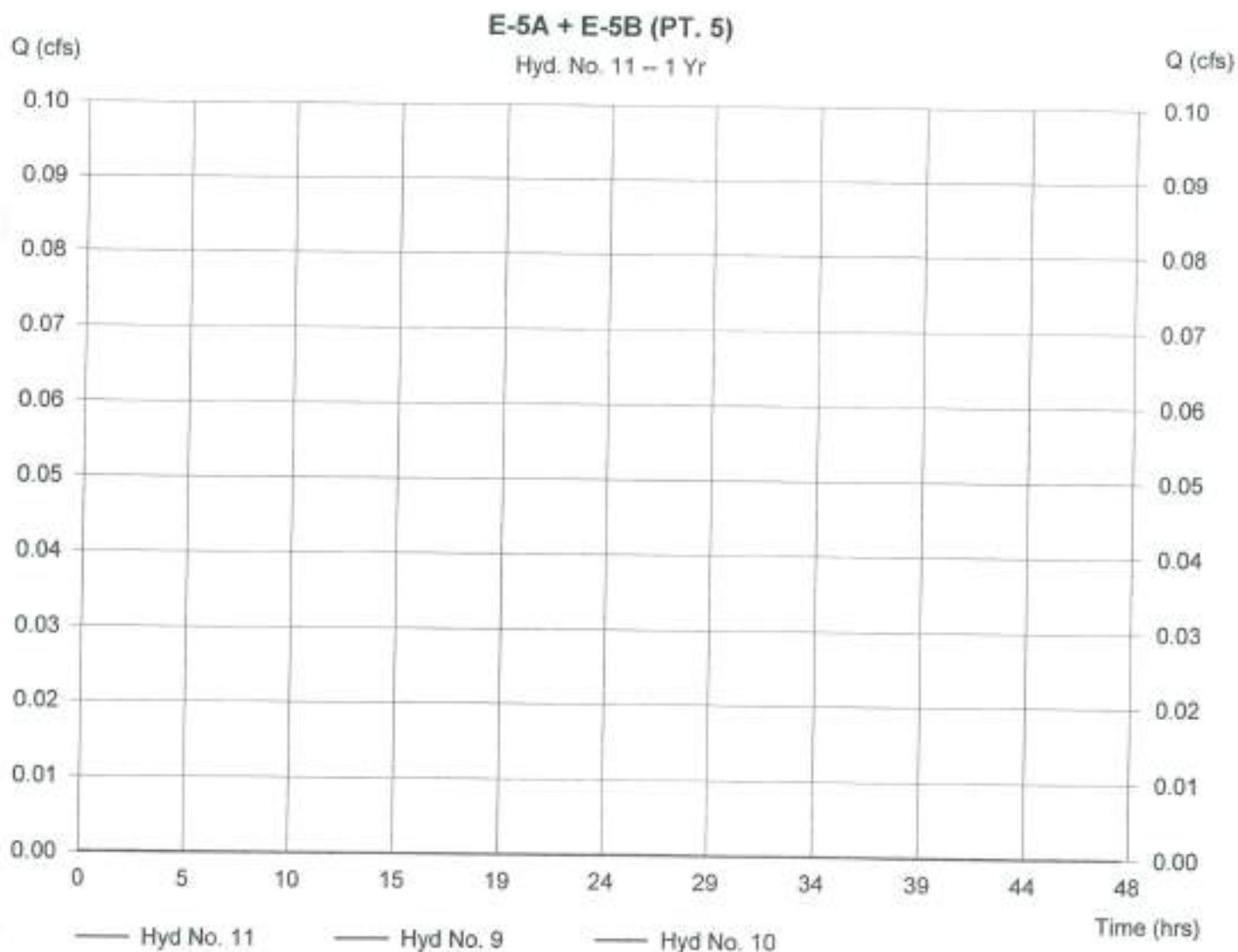
Storm frequency = 1 yrs

Inflow hyds. = 9, 10

Peak discharge = 0.00 cfs

Time interval = 1 min

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellsolve

Monday, May 7 2007, 4:37 PM

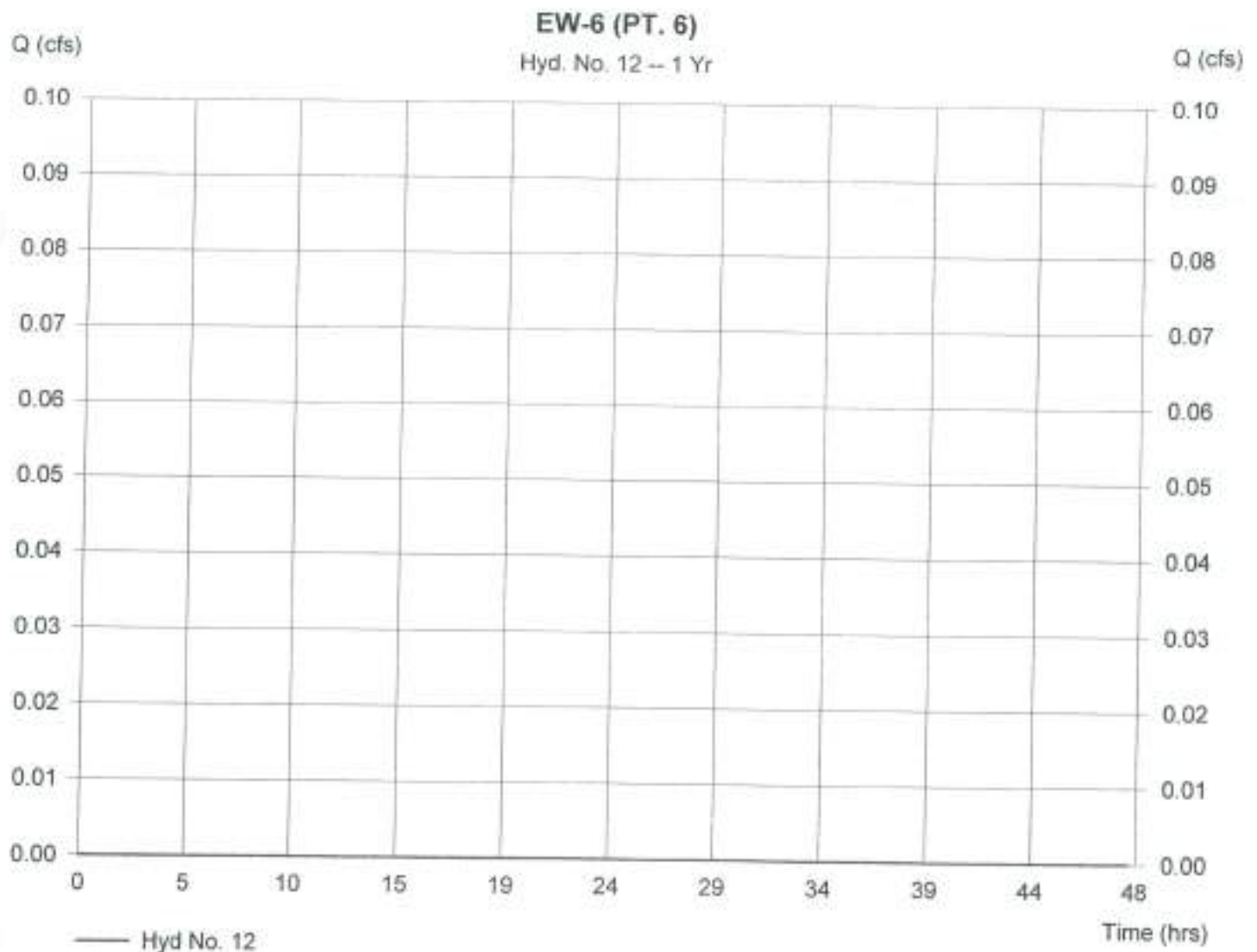
Hyd. No. 12

EW-6 (PT. 6)

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 2.450 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 55
Hydraulic length = 0 ft
Time of conc. (Tc) = 12.03 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 0 cuft



Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	32.36	1	728	117,574	—	—	—	EW-1 (PT. 1)
2	SCS Runoff	8.25	1	726	26,572	—	—	—	EW-2 (PT. 2)
3	SCS Runoff	0.35	1	773	6,744	—	—	—	EW-3
4	Combine	40.12	1	727	150,890	1, 2, 3	—	—	EXIST. TOTAL TO RIVER (PT. 3)
5	SCS Runoff	1.37	1	730	5,489	—	—	—	EW-4
6	Reservoir	0.28	1	766	5,482	5	118.53	1,969	EXIST. BASIN
7	Diversion1	0.06	1	766	1,208	6	—	—	BASIN INFILTRATION
8	Diversion2	0.21	1	766	4,274	6	—	—	BASIN OUTFLOW (PT. 4)
9	SCS Runoff	0.00	1	1329	61	—	—	—	EW-5A
10	SCS Runoff	0.02	1	925	502	—	—	—	E-5B
11	Combine	0.02	1	1331	563	9, 10	—	—	E-5A + E-5B (PT. 5)
12	SCS Runoff	0.27	1	726	1,943	—	—	—	EW-6 (PT. 6)
14	SCS Runoff	12.96	1	734	60,105	—	—	—	PW-1
15	Reservoir	2.34	1	788	59,980	14	118.92	24,557	BASIN 2
	Diversion1	0.93	1	788	48,612	15	—	—	BASIN 2 INFILTRATION
17	Diversion2	1.41	1	788	11,367	15	—	—	BASIN 2 OUTFLOW (PT. 1)
18	SCS Runoff	12.03	1	746	70,469	—	—	—	PW-2
19	Reservoir	2.50	1	800	70,305	18	120.04	35,839	BASIN 1
20	Diversion1	1.04	1	800	60,230	19	—	—	BASIN 1 INFILTRATION
21	Diversion2	1.46	1	800	10,075	19	—	—	BASIN 1 OUTFLOW (PT. 2)
22	SCS Runoff	0.02	1	946	489	—	—	—	PW-3
23	Combine	2.83	1	796	21,931	17, 21, 22	—	—	PROP. TOTAL TO RIVER (PT. 3)
24	SCS Runoff	0.84	1	754	7,649	—	—	—	PW-5A
25	Reservoir	0.17	1	970	7,631	24	124.28	3,000	BASIN 3
26	Diversion1	0.17	1	970	7,631	25	—	—	BASIN 3 INFILTRATION
27	Diversion2	0.00	1	871	0	25	—	—	BASIN 3 OUTFLOW
28	SCS Runoff	0.03	1	835	866	—	—	—	PW-5B
29	Combine	0.03	1	835	866	27, 28	—	—	TOTAL TO PT. 5
30	SCS Runoff	0.47	1	739	2,400	—	—	—	PW-6A
MSP_5-8-07.gpw					Return Period: 2 Year			Monday, May 7 2007, 4:39 PM	

Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
31	Reservoir	0.12	1	779	2,393	30	129.01	865	BASIN 4
32	Diversion1	0.12	1	779	2,393	31	-----	-----	BASIN 4 INFILTRATION
33	Diversion2	0.00	1	780	0	31	-----	-----	BASIN 4 OUTFLOW
34	SCS Runoff	0.00	1	0	0	---	-----	-----	PW-6B
35	Combine	0.00	1	780	0	33, 34	-----	-----	TOTAL TO PT. 6
MSP_5-8-07.gpw					Return Period: 2 Year			Monday, May 7 2007, 4:39 PM	

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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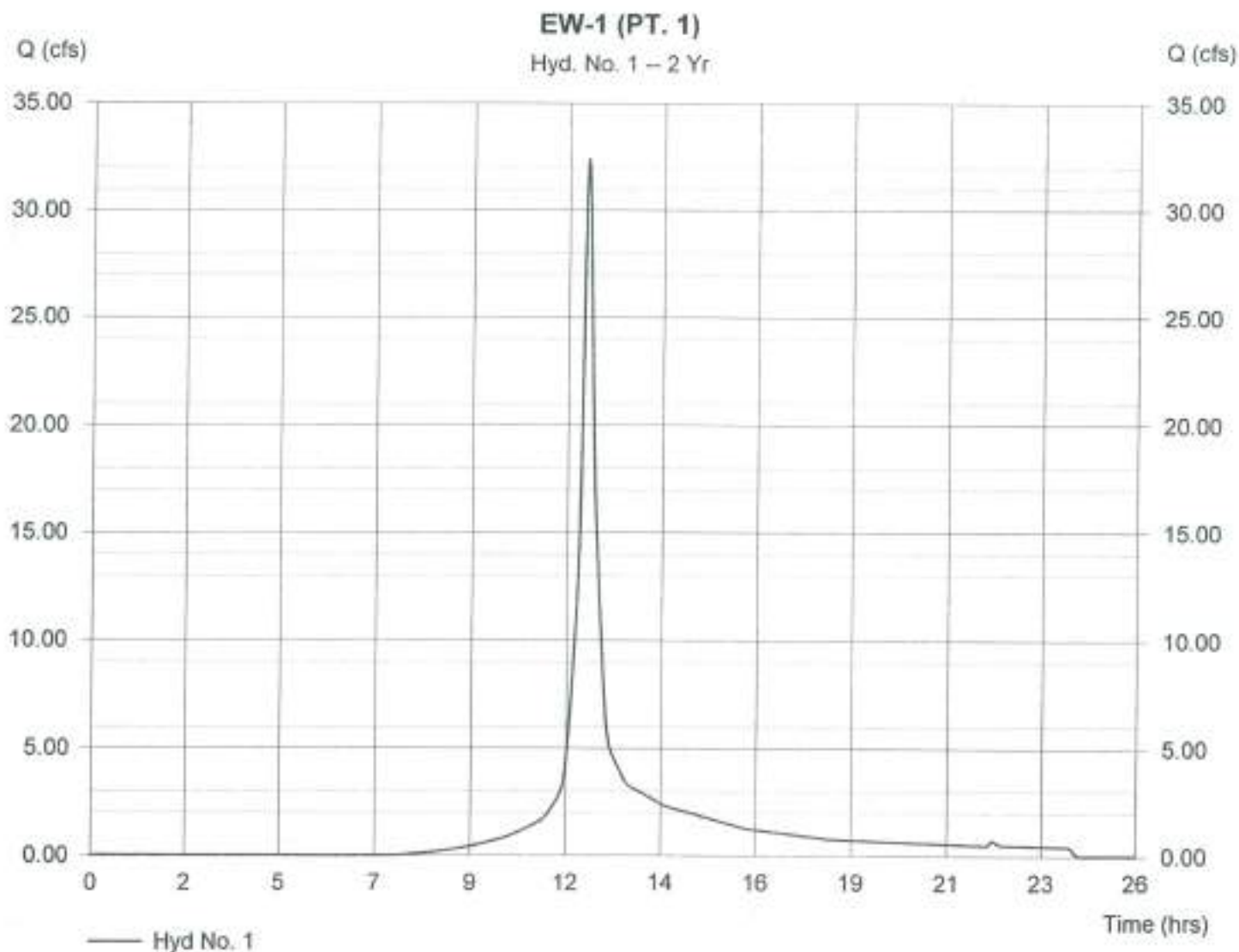
Hyd. No. 1

EW-1 (PT. 1)

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 17,420 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 32.36 cfs
Time interval = 1 min
Curve number = 87
Hydraulic length = 0 ft
Time of conc. (Tc) = 10.23 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 117,574 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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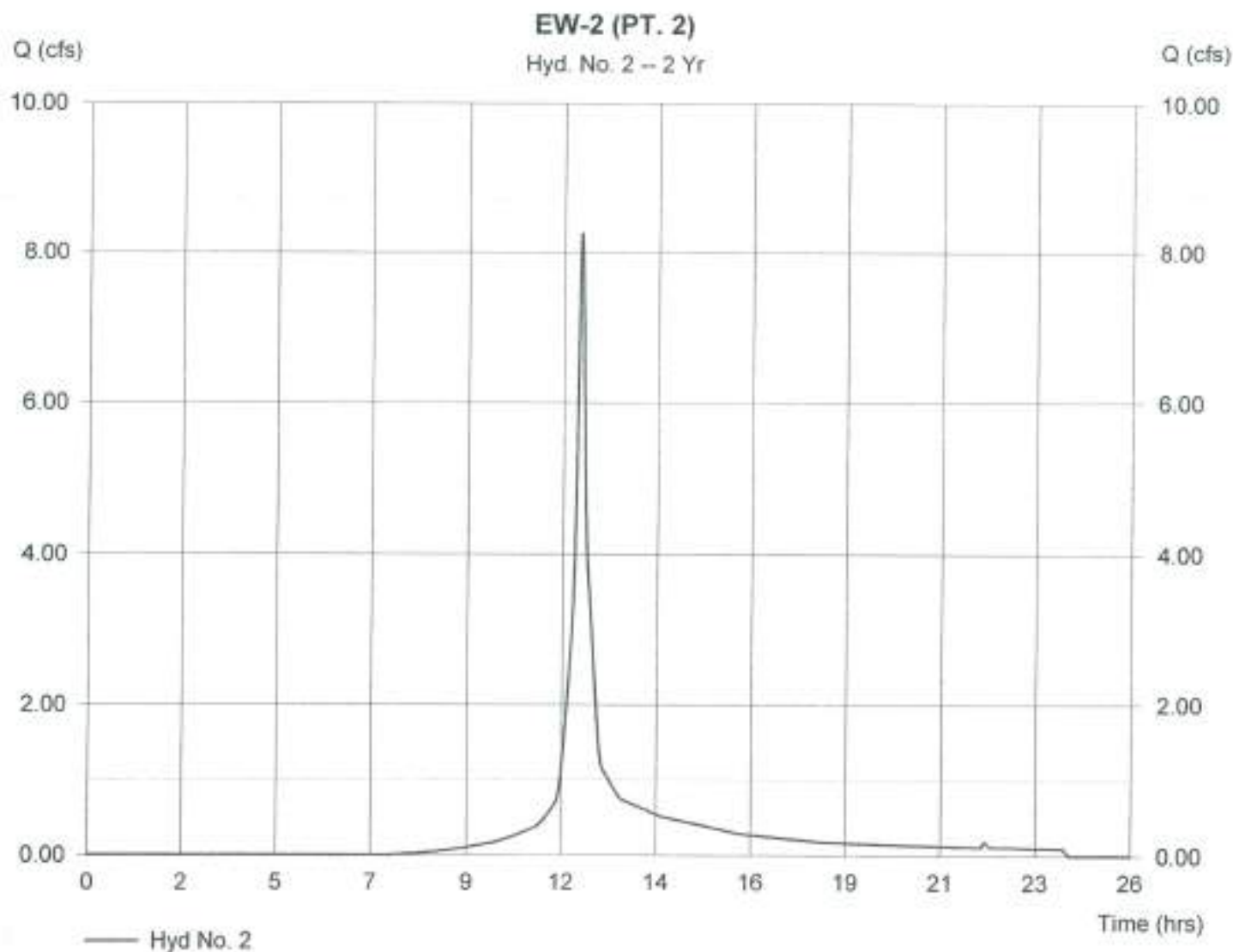
Hyd. No. 2

EW-2 (PT. 2)

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 4.110 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 8.25 cfs
Time interval = 1 min
Curve number = 87
Hydraulic length = 0 ft
Time of conc. (Tc) = 7.81 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 26,572 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:39 PM

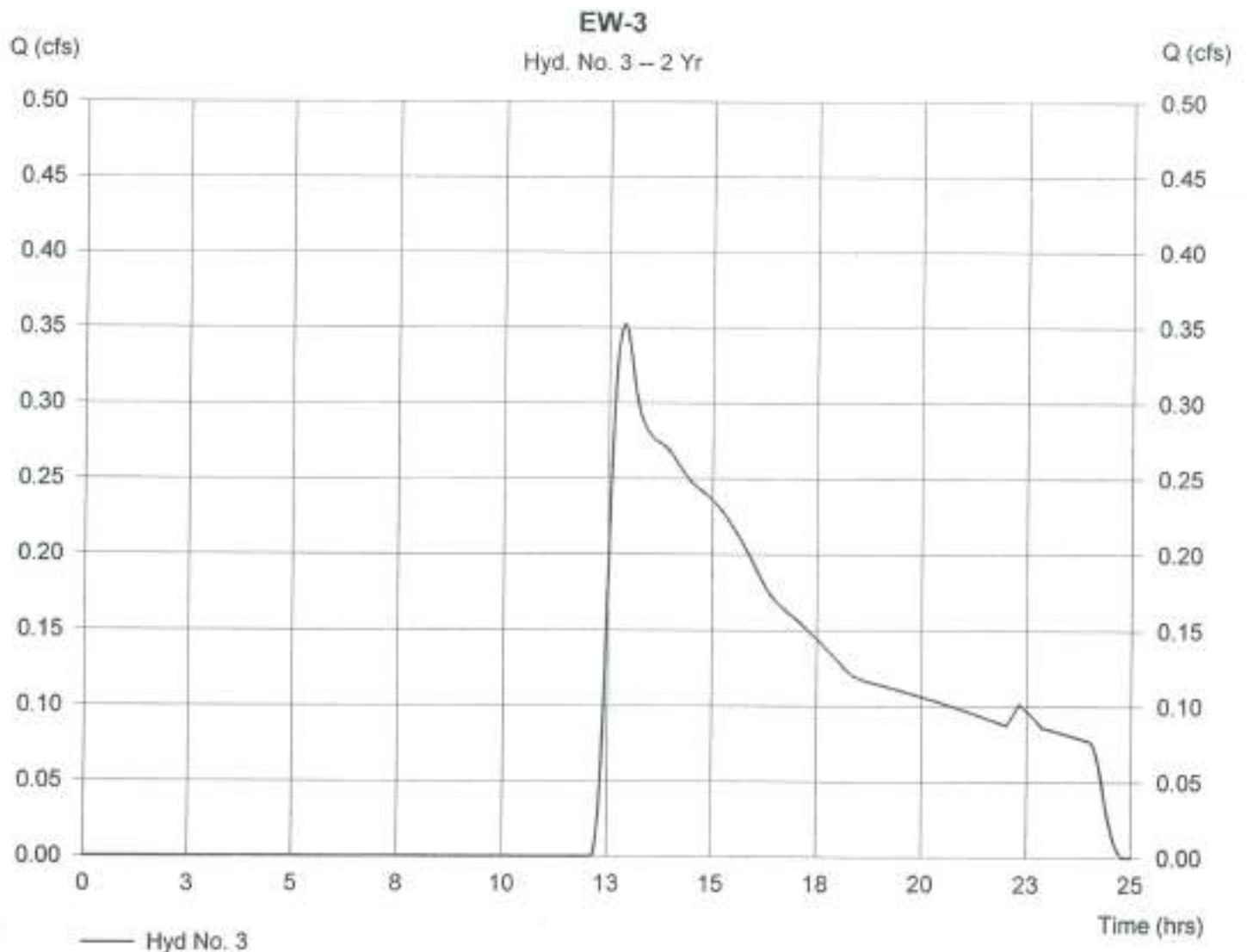
Hyd. No. 3

EW-3

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 12.310 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 0.35 cfs
Time interval = 1 min
Curve number = 52
Hydraulic length = 0 ft
Time of conc. (Tc) = 31.60 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 6,744 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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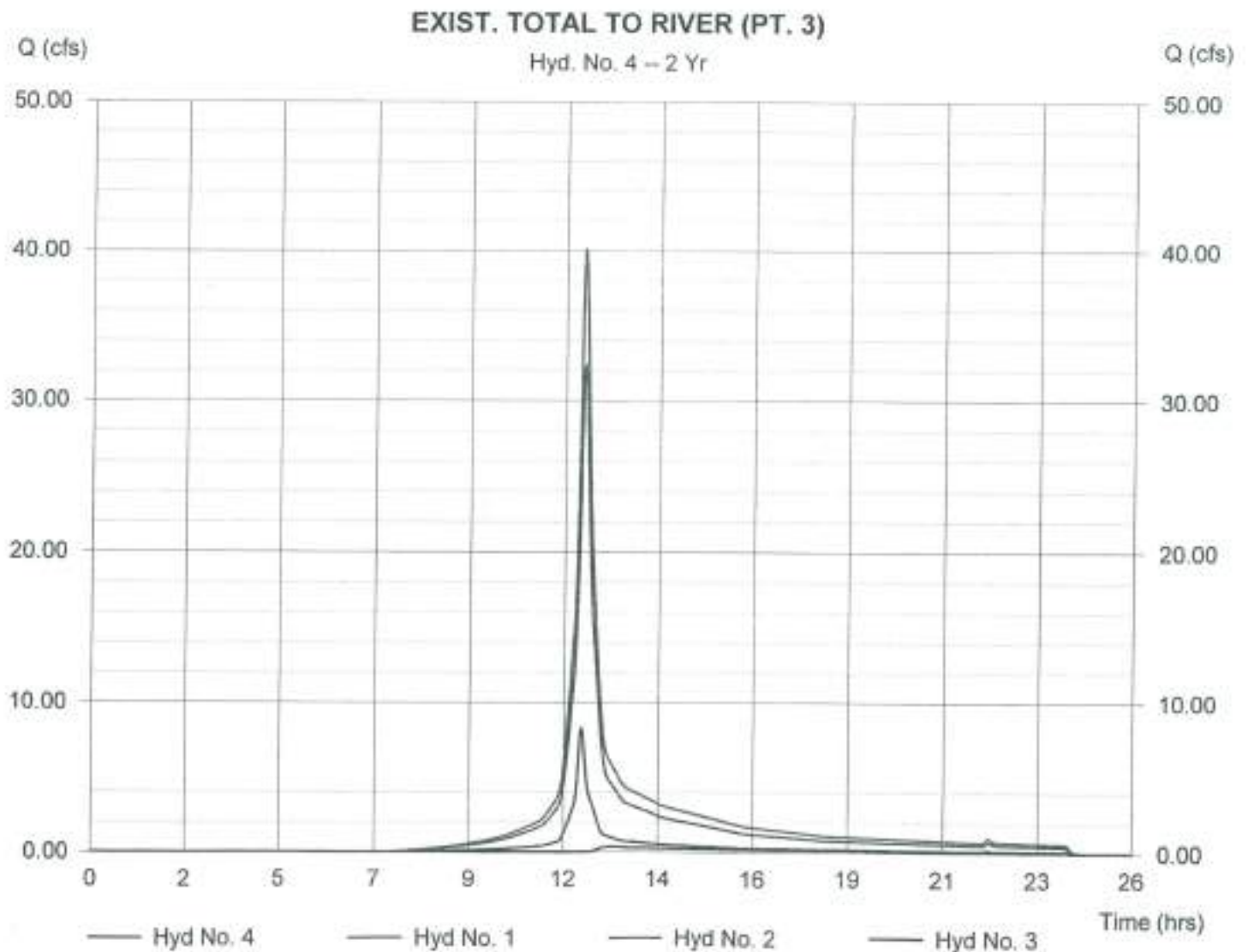
Hyd. No. 4

EXIST. TOTAL TO RIVER (PT. 3)

Hydrograph type = Combine
Storm frequency = 2 yrs
Inflow hyds. = 1, 2, 3

Peak discharge = 40.12 cfs
Time interval = 1 min

Hydrograph Volume = 150,890 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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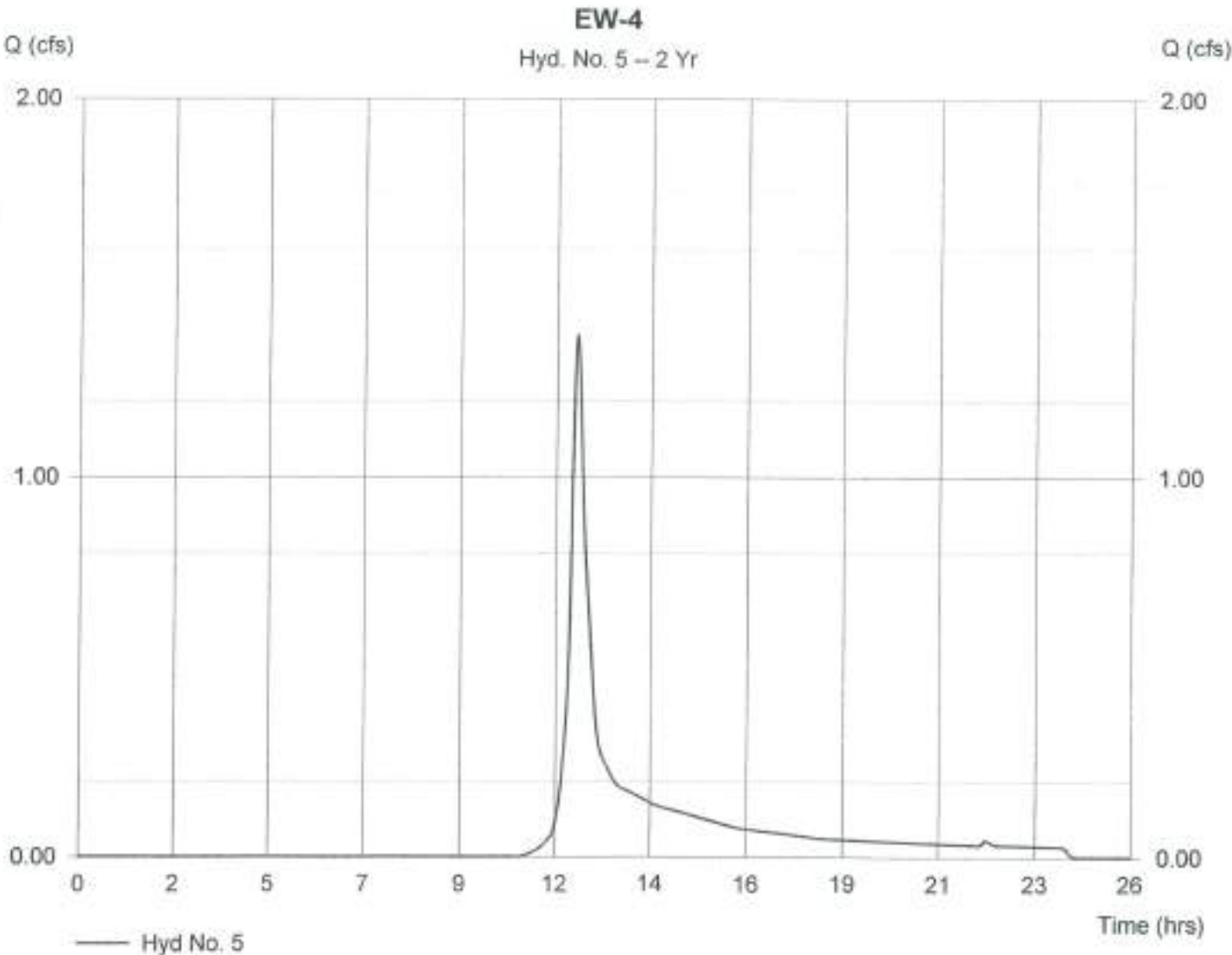
Hyd. No. 5

EW-4

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 1.580 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 1.37 cfs
Time interval = 1 min
Curve number = 74
Hydraulic length = 0 ft
Time of conc. (Tc) = 12.00 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 5,489 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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Hyd. No. 6

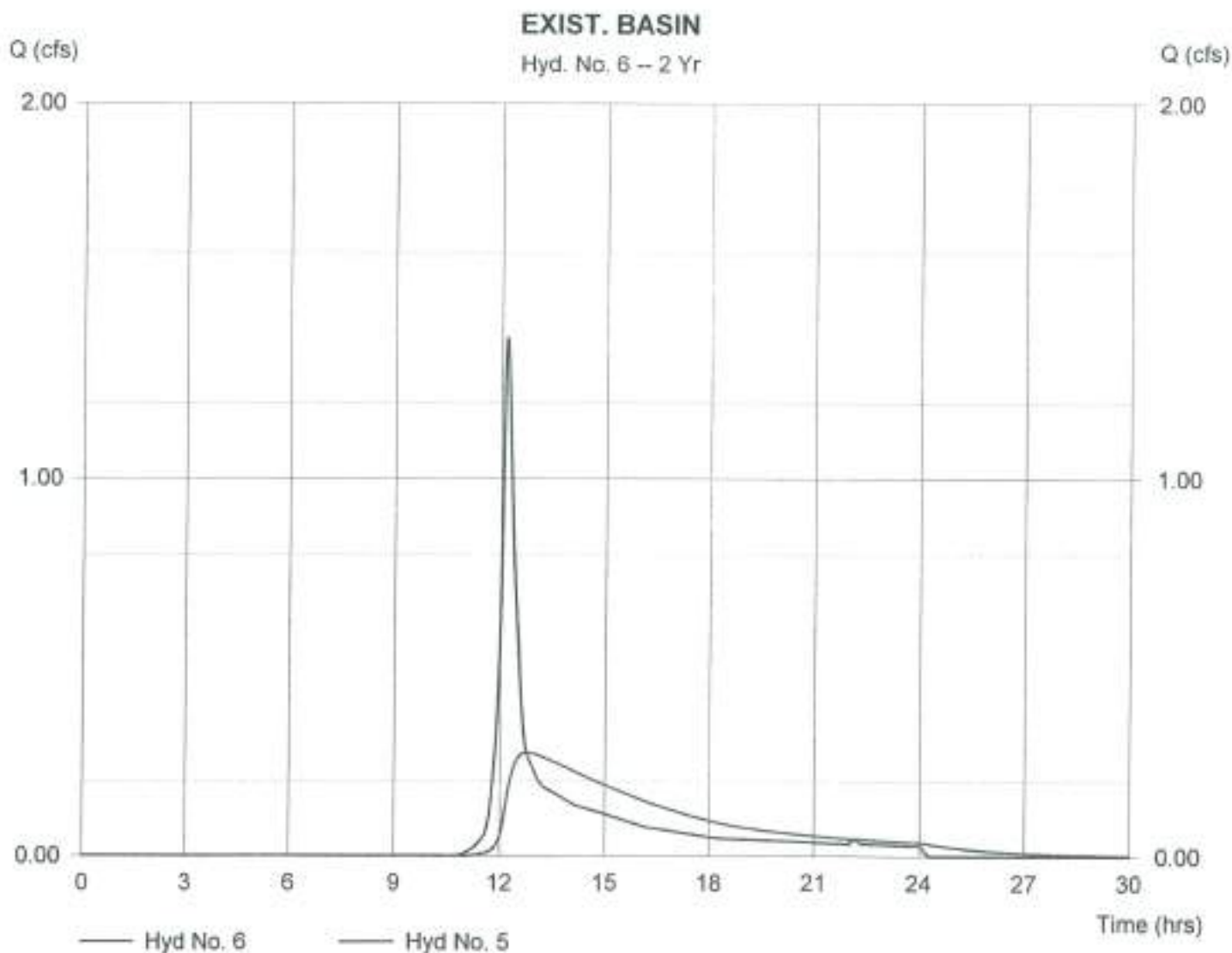
EXIST. BASIN

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 5
Reservoir name = EX. BASIN

Peak discharge = 0.28 cfs
Time interval = 1 min
Max. Elevation = 118.53 ft
Max. Storage = 1,969 cuft

Storage indication method used.

Hydrograph Volume = 5,482 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:39 PM

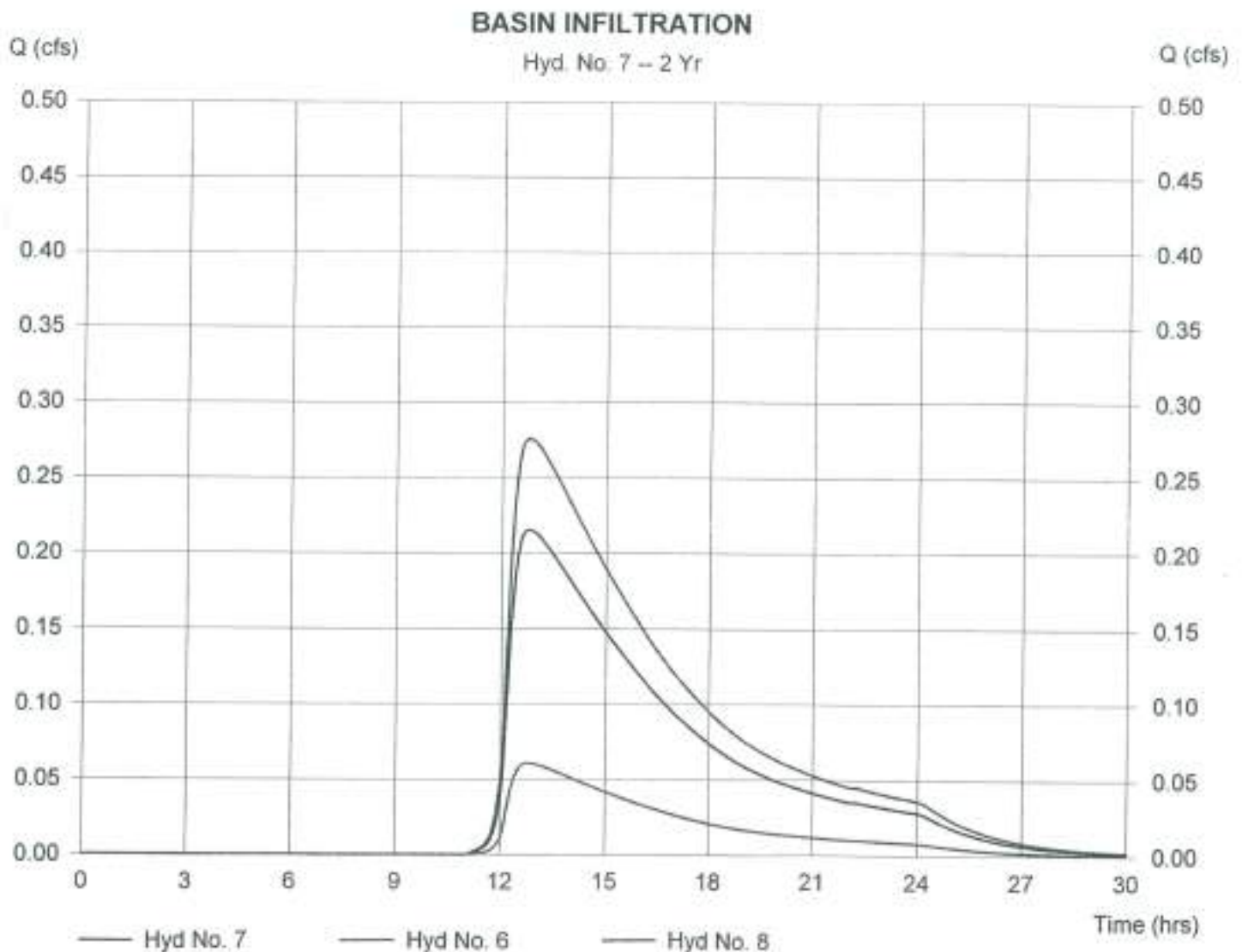
Hyd. No. 7

BASIN INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 2 yrs
Inflow hydrograph = 6
Diversion method = Pond - EX. BASIN

Peak discharge = 0.06 cfs
Time interval = 1 min
2nd diverted hyd. = 8
Pond structure = Exfiltration

Hydrograph Volume = 1,208 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

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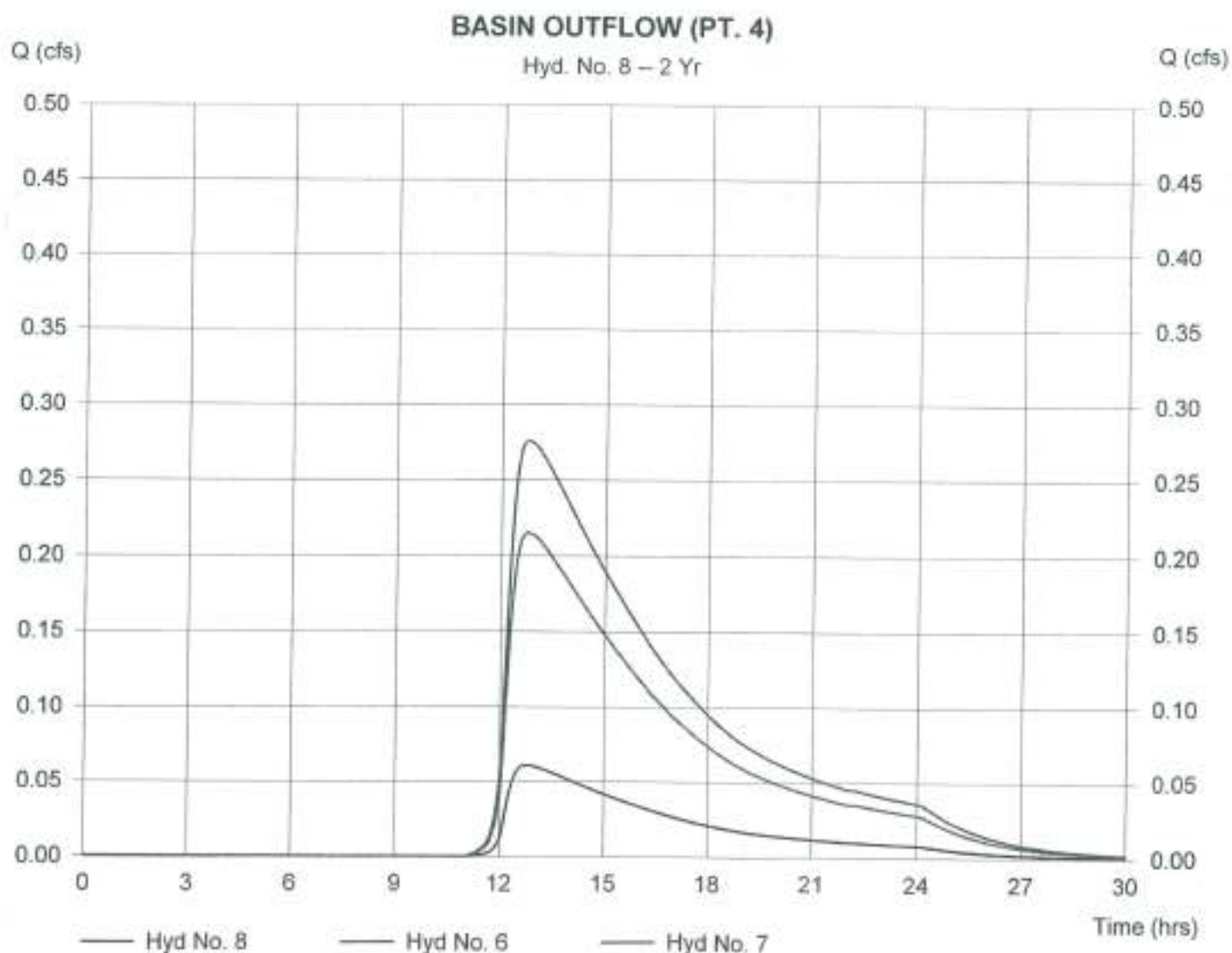
Hyd. No. 8

BASIN OUTFLOW (PT. 4)

Hydrograph type = Diversion2
Storm frequency = 2 yrs
Inflow hydrograph = 6
Diversion method = Pond - EX. BASIN

Peak discharge = 0.21 cfs
Time interval = 1 min
2nd diverted hyd. = 7
Pond structure = Exfiltration

Hydrograph Volume = 4,274 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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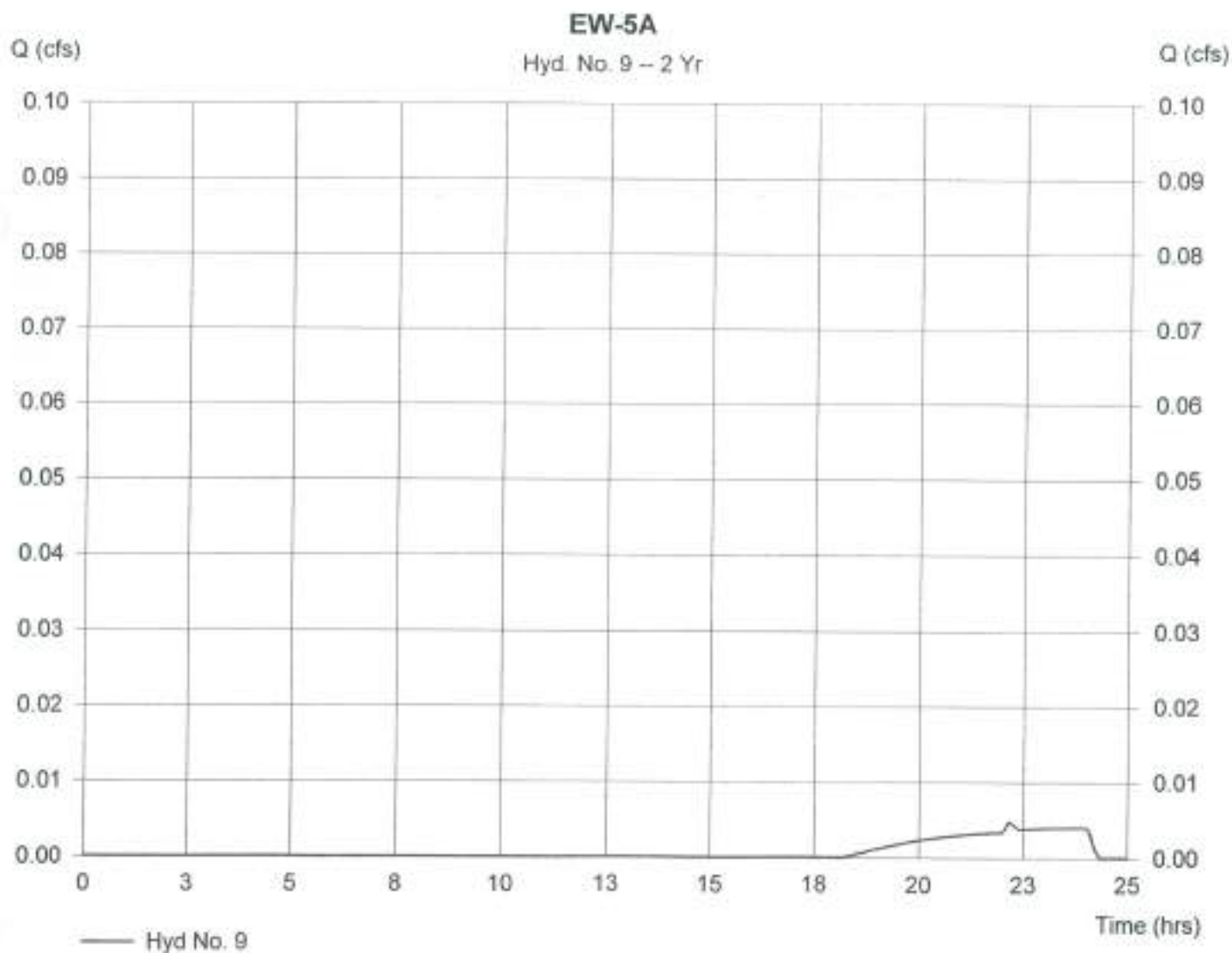
Hyd. No. 9

EW-5A

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 4.990 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 41
Hydraulic length = 0 ft
Time of conc. (Tc) = 14.90 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 61 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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Hyd. No. 10

E-5B

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 3.090 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 0.02 cfs
Time interval = 1 min
Curve number = 46
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.20 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 502 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

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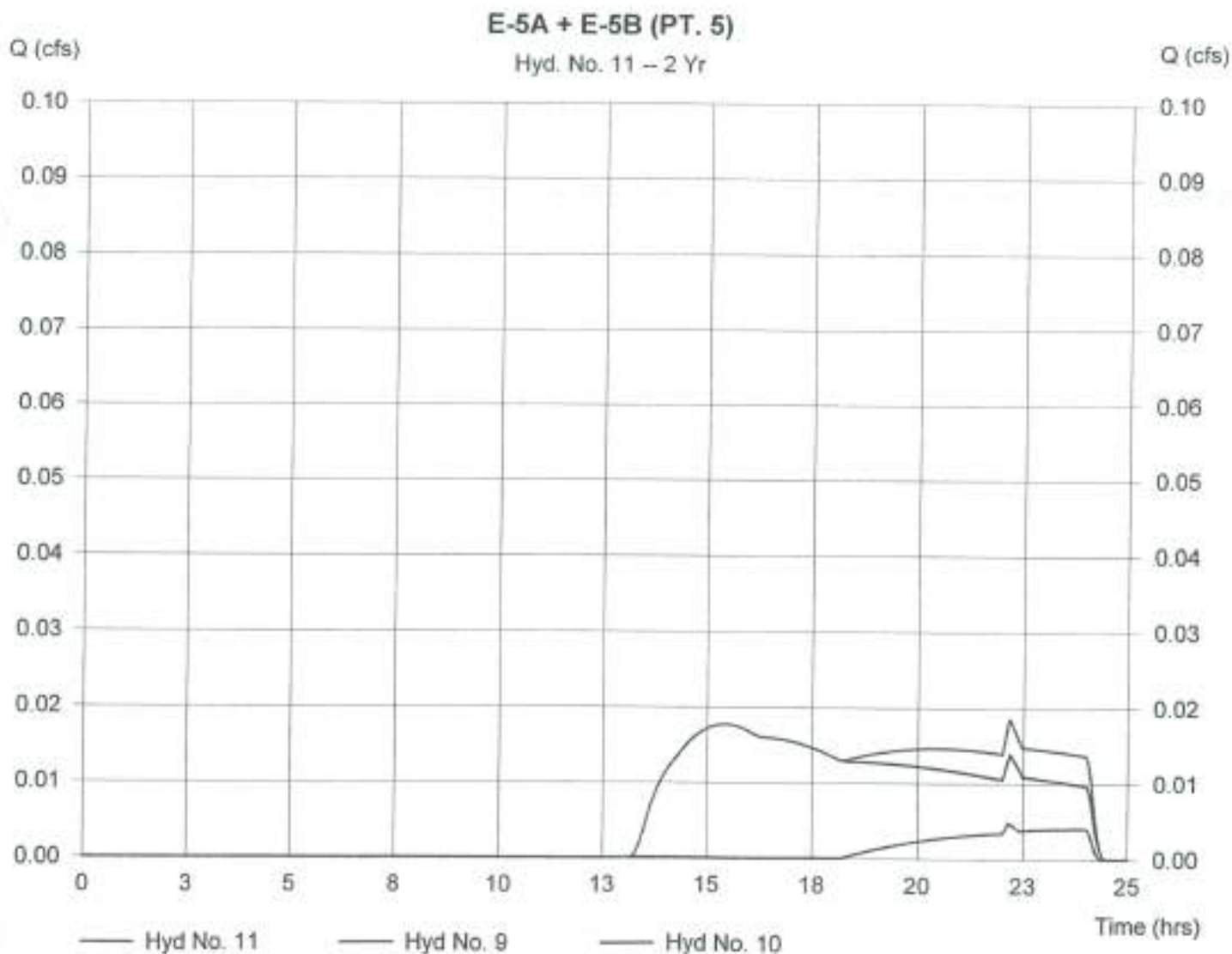
Hyd. No. 11

E-5A + E-5B (PT. 5)

Hydrograph type = Combine
Storm frequency = 2 yrs
Inflow hyds. = 9, 10

Peak discharge = 0.02 cfs
Time interval = 1 min

Hydrograph Volume = 563 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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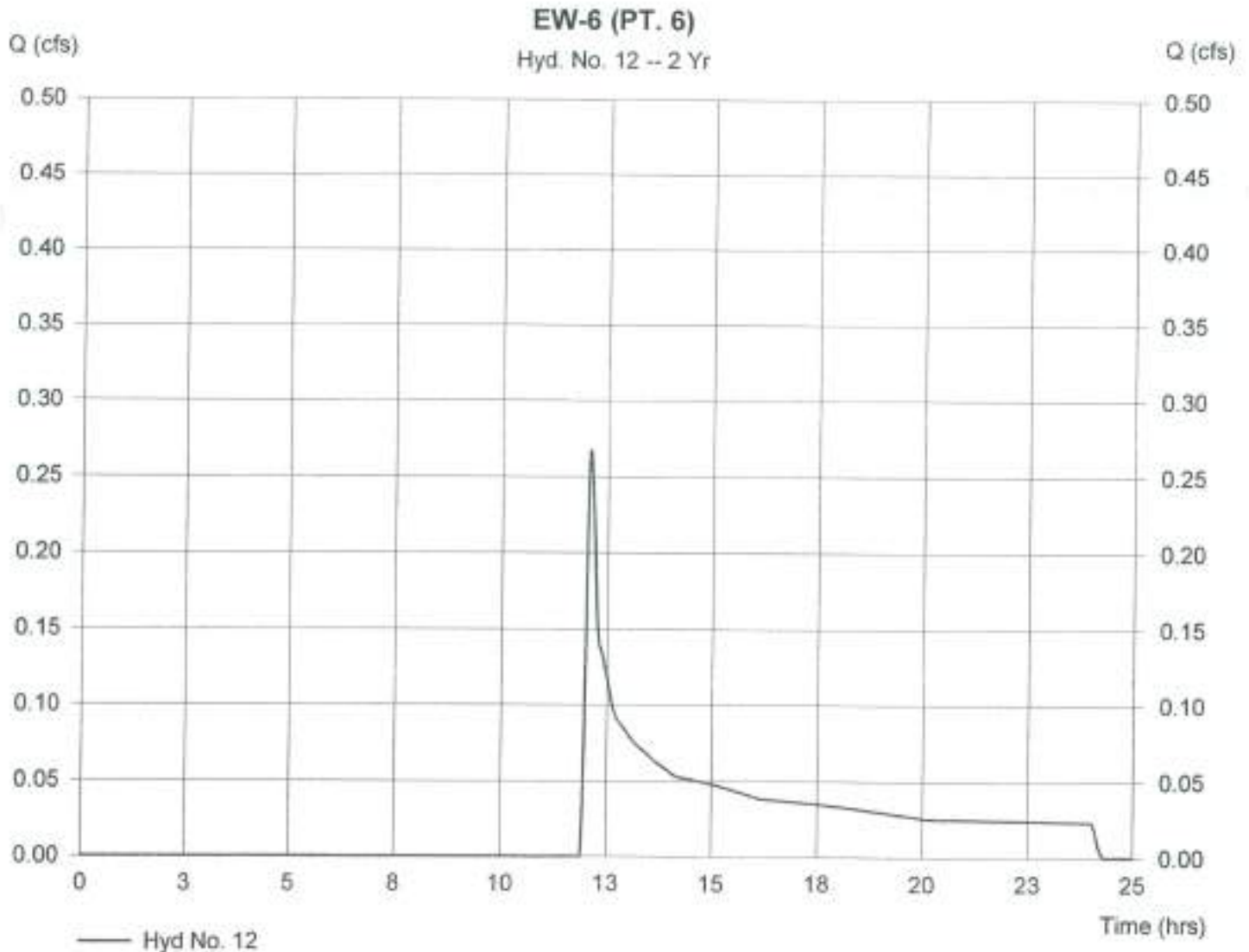
Hyd. No. 12

EW-6 (PT. 6)

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 2.450 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 0.27 cfs
Time interval = 1 min
Curve number = 55
Hydraulic length = 0 ft
Time of conc. (Tc) = 12.03 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 1,943 cuft



Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	54.24	1	728	199,459	---	---	---	EW-1 (PT. 1)
2	SCS Runoff	13.82	1	725	45,078	---	---	---	EW-2 (PT. 2)
3	SCS Runoff	3.32	1	753	26,855	---	---	---	EW-3
4	Combine	67.90	1	727	271,192	1, 2, 3	---	---	EXIST. TOTAL TO RIVER (PT. 3)
5	SCS Runoff	2.93	1	729	11,135	---	---	---	EW-4
6	Reservoir	0.55	1	763	11,128	5	119.10	4,411	EXIST. BASIN
7	Diversion1	0.12	1	763	2,458	6	---	---	BASIN INFILTRATION
8	Diversion2	0.42	1	763	8,671	6	---	---	BASIN OUTFLOW (PT. 4)
9	SCS Runoff	0.12	1	821	2,976	---	---	---	EW-5A
10	SCS Runoff	0.37	1	749	3,697	---	---	---	E-5B
11	Combine	0.46	1	751	6,673	9, 10	---	---	E-5A + E-5B (PT. 5)
12	SCS Runoff	2.03	1	723	6,500	---	---	---	EW-6 (PT. 5)
14	SCS Runoff	29.10	1	733	126,018	---	---	---	PW-1
15	Reservoir	14.14	1	752	125,827	14	120.32	40,325	BASIN 2
	Diversion1	1.17	1	752	58,824	15	---	---	BASIN 2 INFILTRATION
17	Diversion2	12.96	1	752	67,002	15	---	---	BASIN 2 OUTFLOW (PT. 1)
18	SCS Runoff	20.87	1	746	122,567	---	---	---	PW-2
19	Reservoir	8.63	1	777	122,325	18	121.30	52,563	BASIN 1
20	Diversion1	1.29	1	777	71,012	19	---	---	BASIN 1 INFILTRATION
21	Diversion2	7.55	1	777	51,313	19	---	---	BASIN 1 OUTFLOW (PT. 2)
22	SCS Runoff	0.38	1	752	4,339	---	---	---	PW-3
23	Combine	19.38	1	757	122,655	17, 21, 22	---	---	PROP. TOTAL TO RIVER (PT. 3)
24	SCS Runoff	3.67	1	746	22,561	---	---	---	PW-5A
25	Reservoir	0.54	1	906	22,521	24	124.91	9,663	BASIN 3
26	Diversion1	0.54	1	906	22,521	25	---	---	BASIN 3 INFILTRATION
27	Diversion2	0.00	1	760	0	25	---	---	BASIN 3 OUTFLOW
28	SCS Runoff	0.56	1	745	4,353	---	---	---	PW-5B
29	Combine	0.56	1	745	4,353	27, 28	---	---	TOTAL TO PT. 5
30	SCS Runoff	1.00	1	738	4,869	---	---	---	PW-6A
MSP_5-8-07.gpw					Return Period: 10 Year			Monday, May 7 2007, 4:39 PM	

Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
31	Reservoir	0.50	1	759	4,861	30	129.57	1,777	BASIN 4
32	Diversion1	0.15	1	759	4,391	31	----	-----	BASIN 4 INFILTRATION
33	Diversion2	0.34	1	759	470	31	----	-----	BASIN 4 OUTFLOW
34	SCS Runoff	0.01	1	881	248	---	----	-----	PW-6B
35	Combine	0.34	1	759	718	33, 34	----	-----	TOTAL TO PT. 6

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

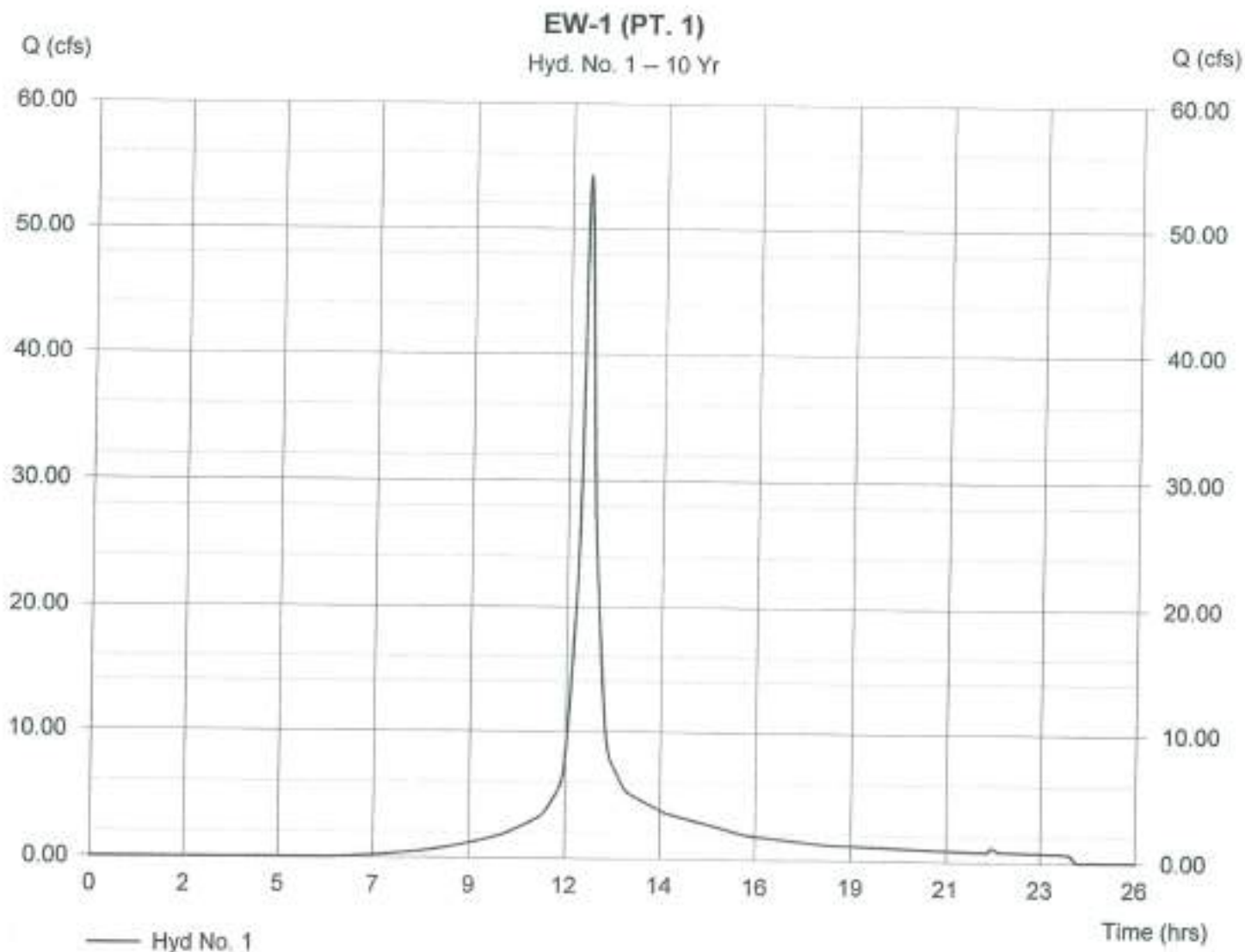
Hyd. No. 1

EW-1 (PT. 1)

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 17.420 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 54.24 cfs
Time interval = 1 min
Curve number = 87
Hydraulic length = 0 ft
Time of conc. (Tc) = 10.23 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 199,459 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

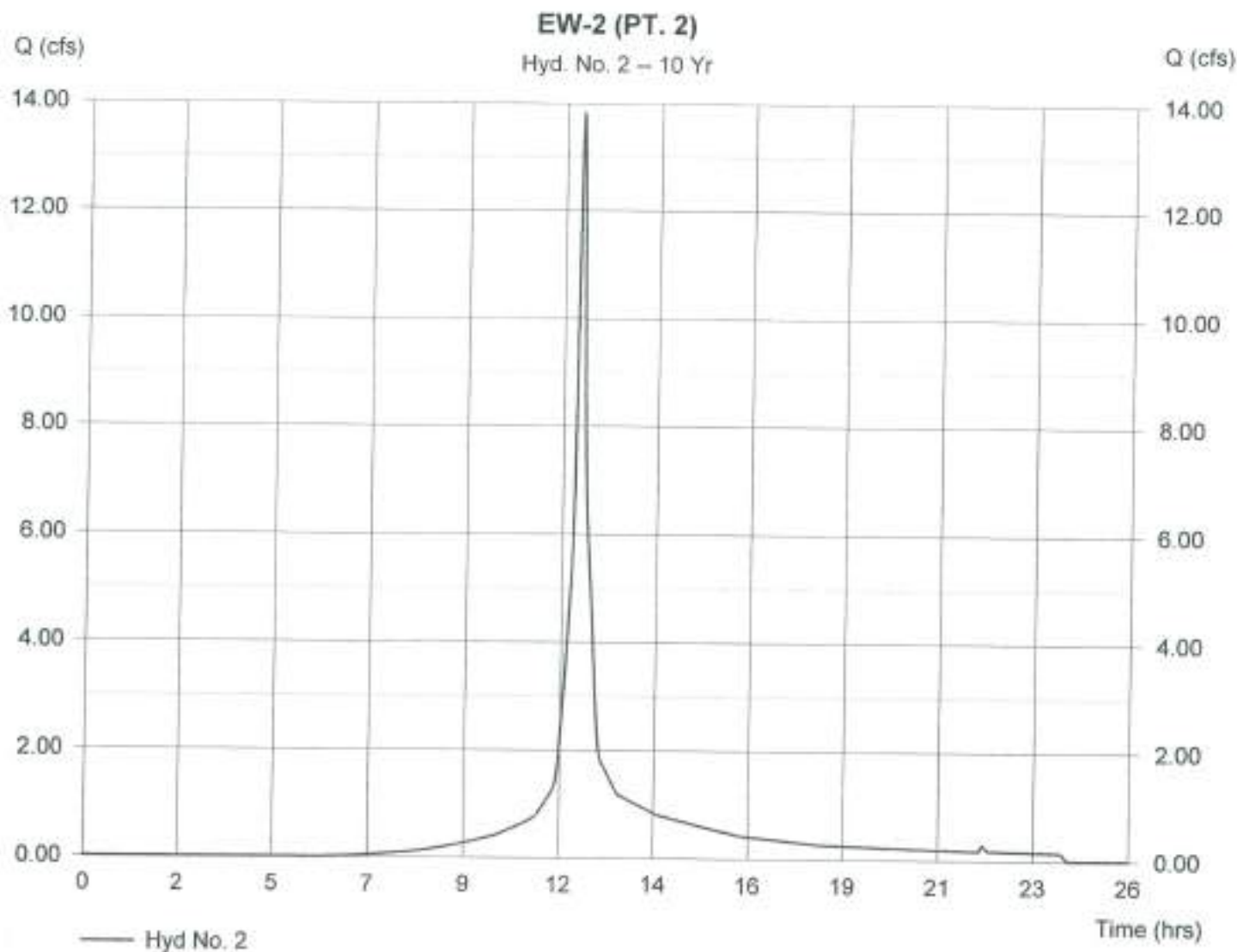
Hyd. No. 2

EW-2 (PT. 2)

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 4.110 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 13.82 cfs
Time interval = 1 min
Curve number = 87
Hydraulic length = 0 ft
Time of conc. (Tc) = 7.81 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 45,078 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

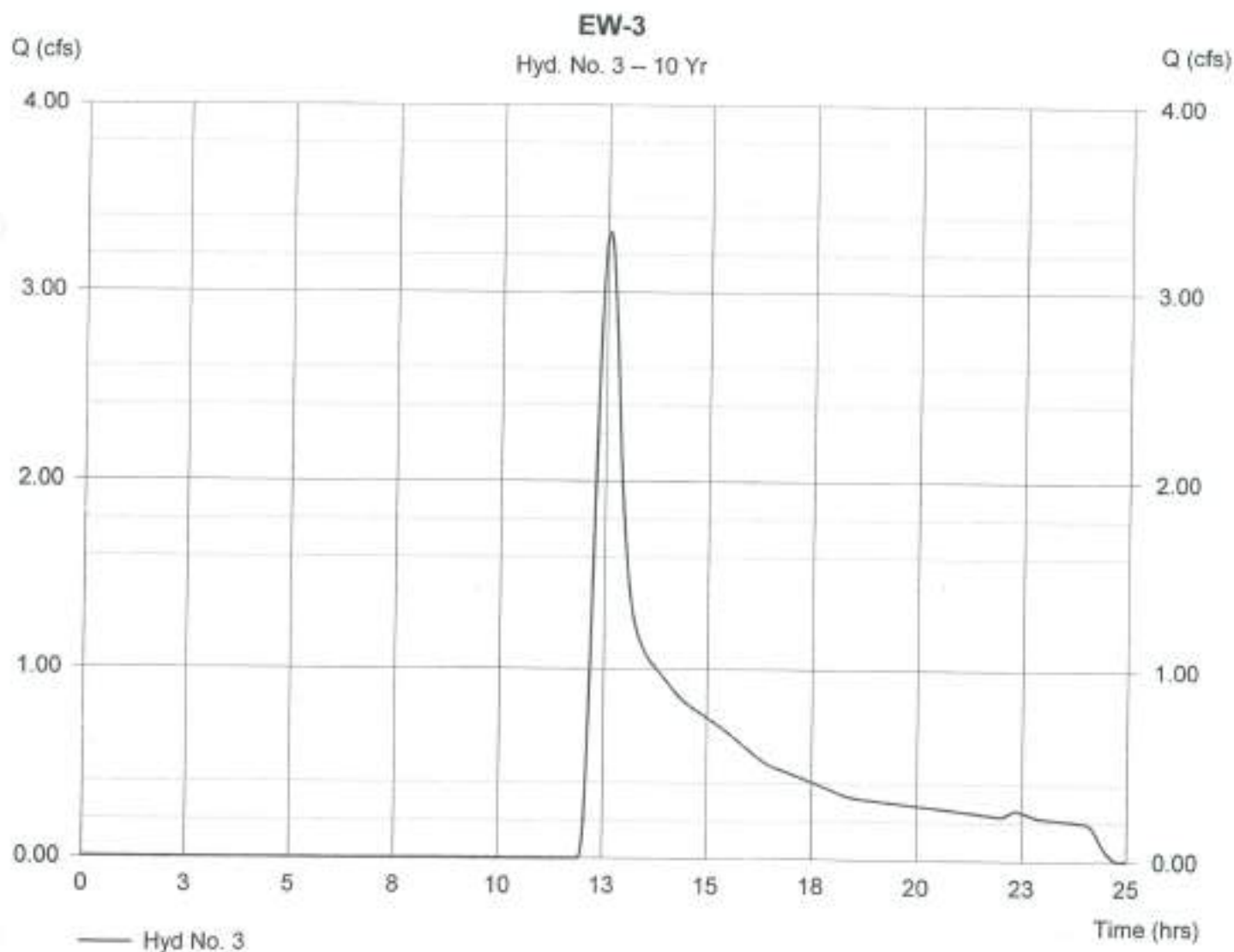
Hyd. No. 3

EW-3

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 12.310 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 3.32 cfs
Time interval = 1 min
Curve number = 52
Hydraulic length = 0 ft
Time of conc. (Tc) = 31.60 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 26,655 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

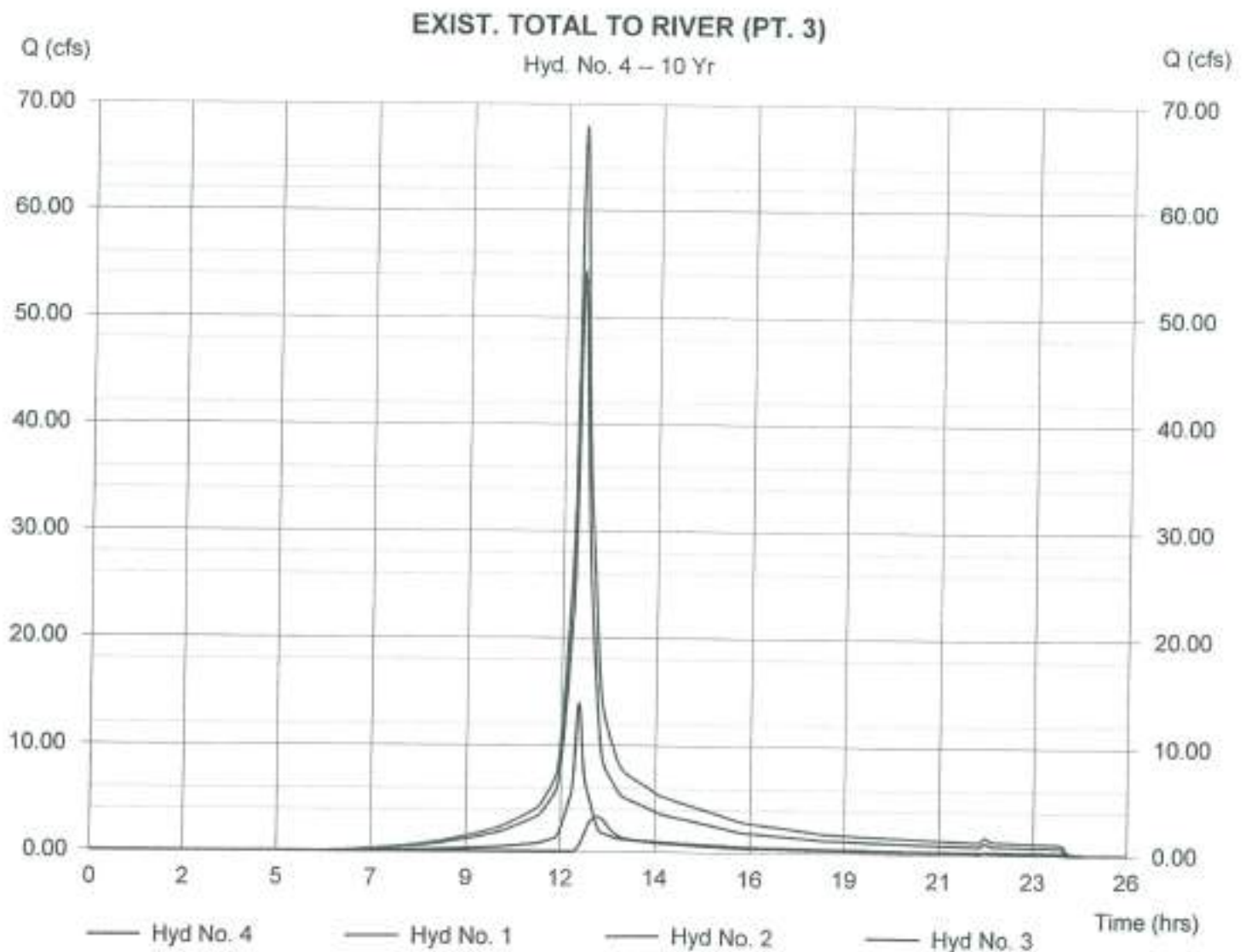
Hyd. No. 4

EXIST. TOTAL TO RIVER (PT. 3)

Hydrograph type = Combine
Storm frequency = 10 yrs
Inflow hyds. = 1, 2, 3

Peak discharge = 67.90 cfs
Time interval = 1 min

Hydrograph Volume = 271,192 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

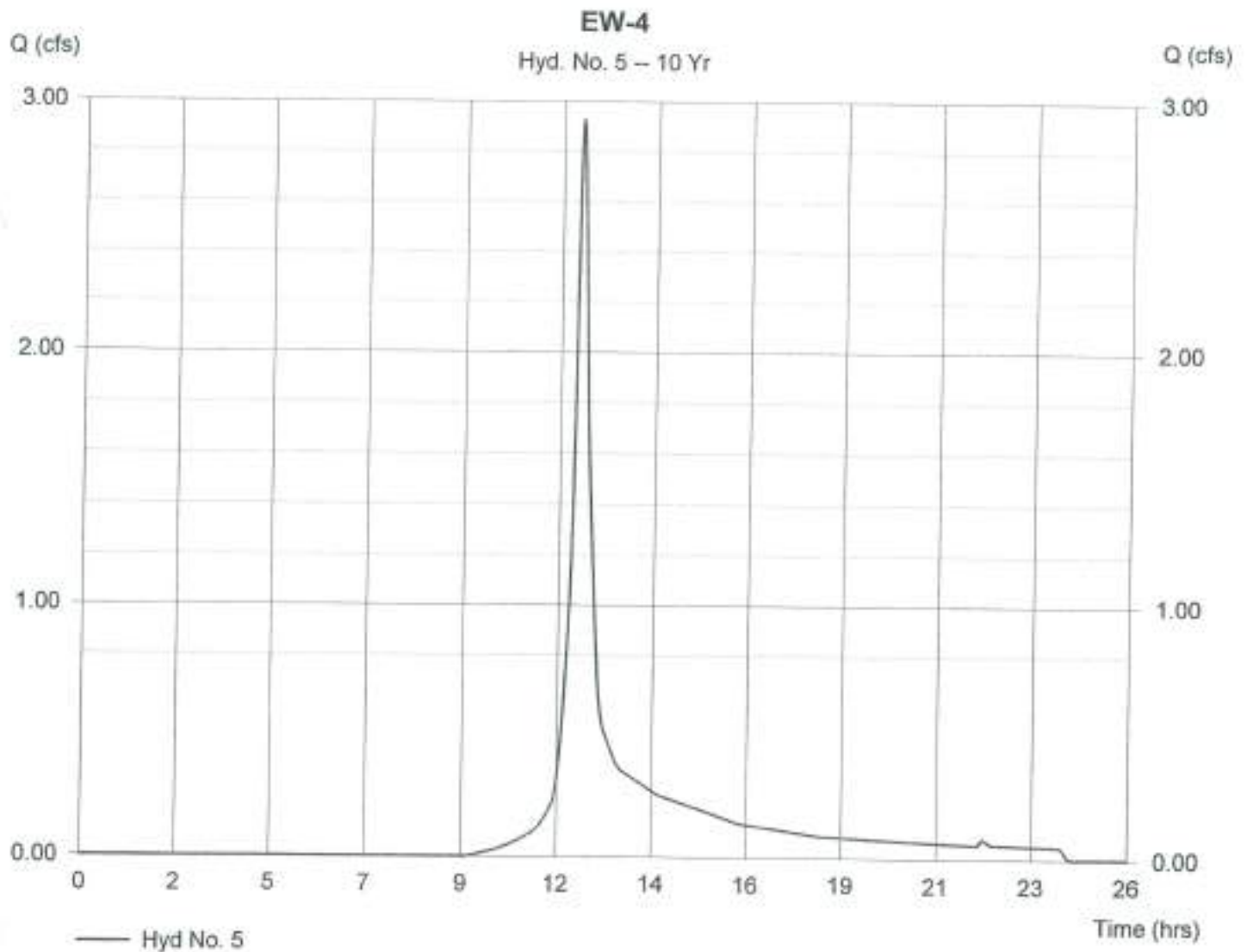
Hyd. No. 5

EW-4

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 1.580 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 2.93 cfs
Time interval = 1 min
Curve number = 74
Hydraulic length = 0 ft
Time of conc. (Tc) = 12.00 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 11,135 cuft



Hydrograph Plot

Hydrflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 6

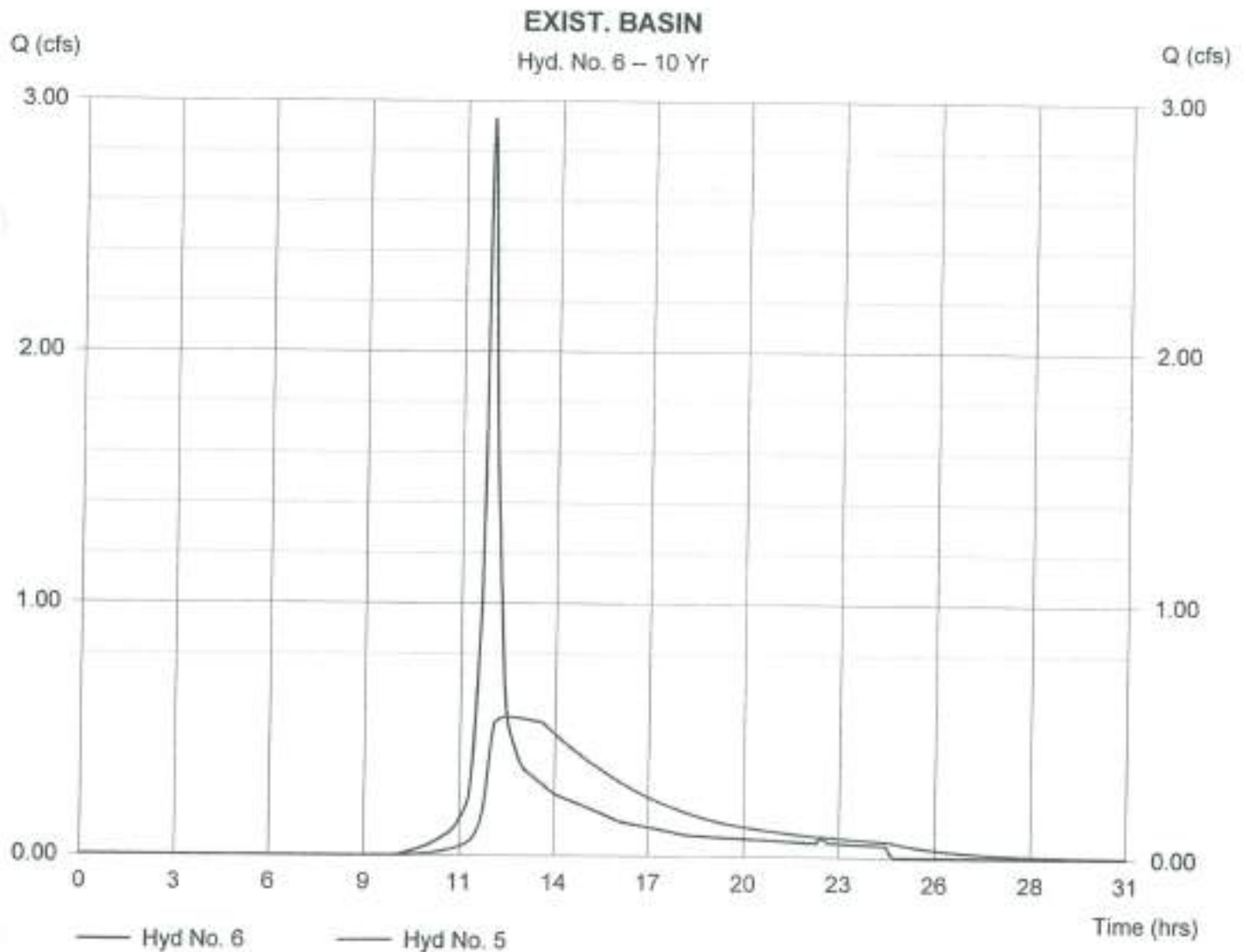
EXIST. BASIN

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 5
Reservoir name = EX. BASIN

Peak discharge = 0.55 cfs
Time interval = 1 min
Max. Elevation = 119.10 ft
Max. Storage = 4,411 cuft

Storage Indication method used,

Hydrograph Volume = 11,128 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

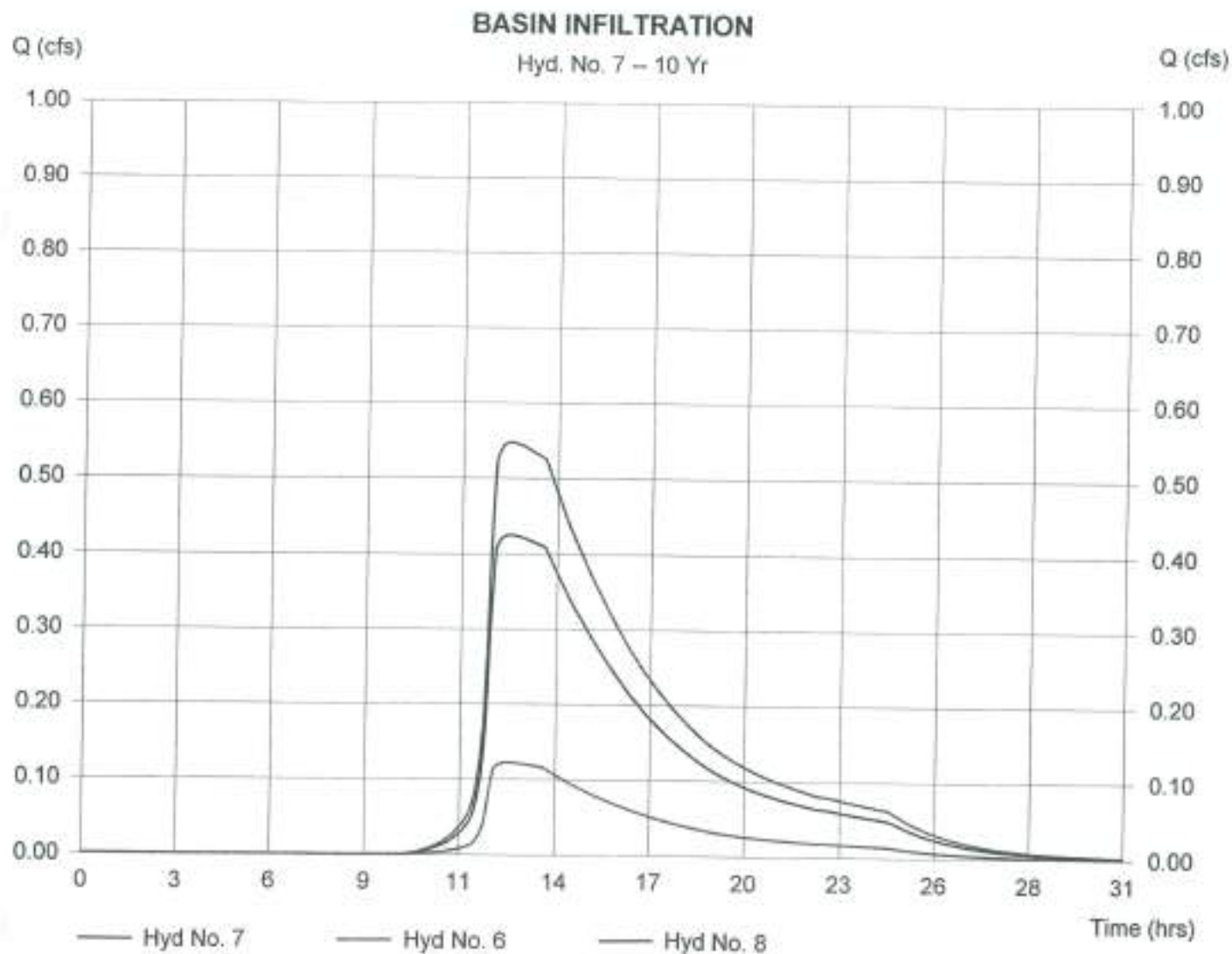
Hyd. No. 7

BASIN INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 10 yrs
Inflow hydrograph = 6
Diversion method = Pond - EX. BASIN

Peak discharge = 0.12 cfs
Time interval = 1 min
2nd diverted hyd. = 8
Pond structure = Exfiltration

Hydrograph Volume = 2,458 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

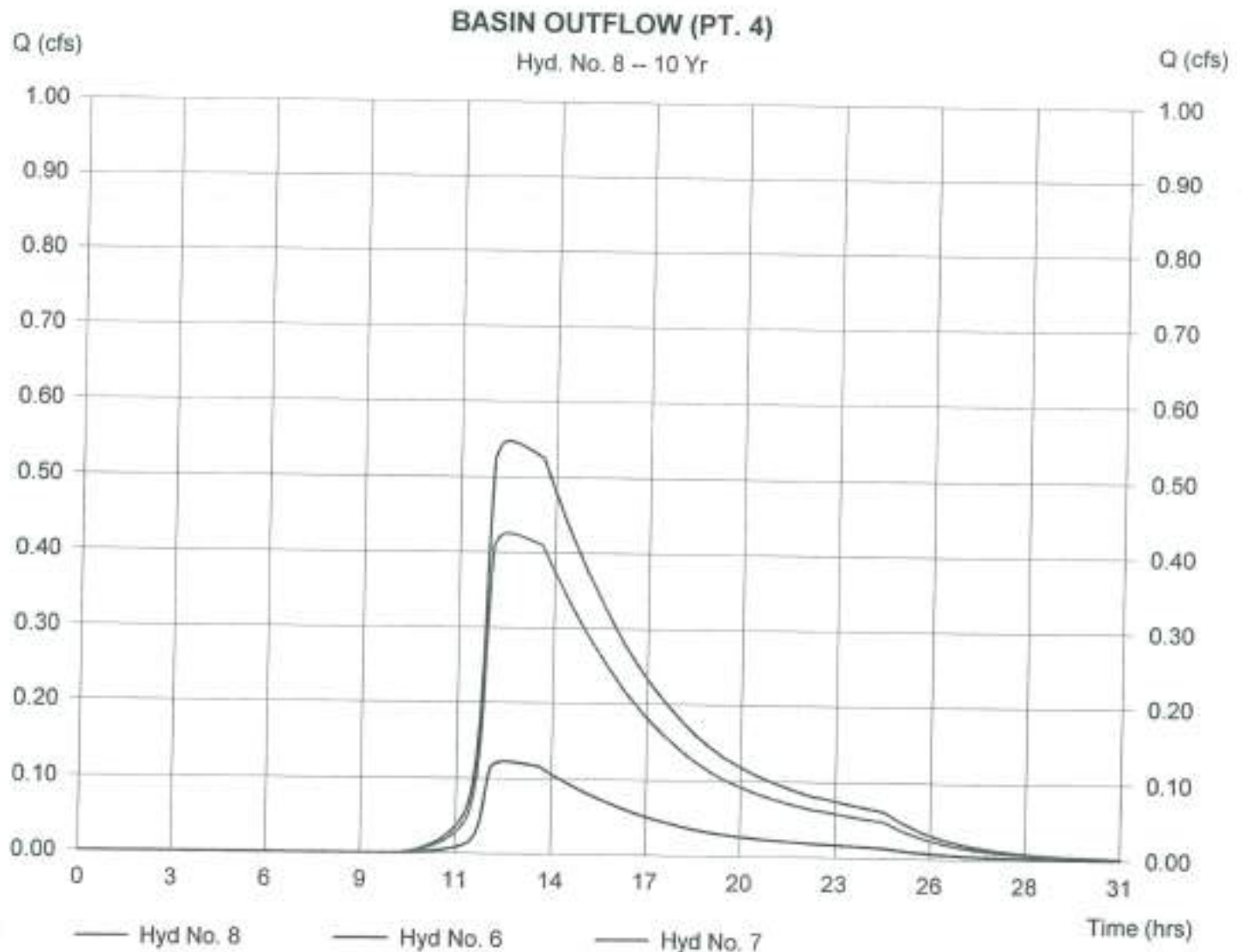
Hyd. No. 8

BASIN OUTFLOW (PT. 4)

Hydrograph type = Diversion2
Storm frequency = 10 yrs
Inflow hydrograph = 6
Diversion method = Pond - EX. BASIN

Peak discharge = 0.42 cfs
Time interval = 1 min
2nd diverted hyd. = 7
Pond structure = Exfiltration

Hydrograph Volume = 8,671 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

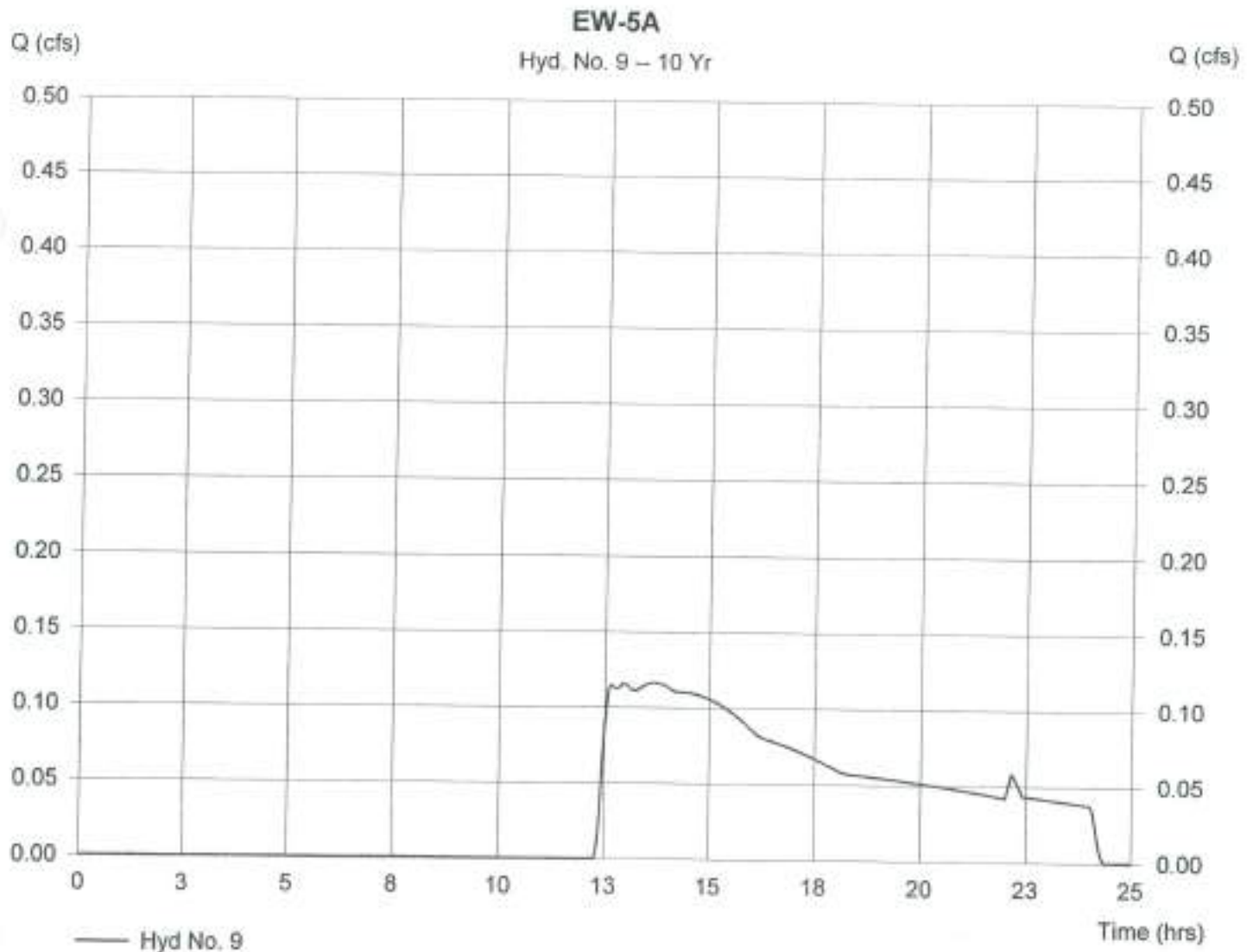
Hyd. No. 9

EW-5A

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 4.990 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 0.12 cfs
Time interval = 1 min
Curve number = 41
Hydraulic length = 0 ft
Time of conc. (Tc) = 14.90 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 2,976 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

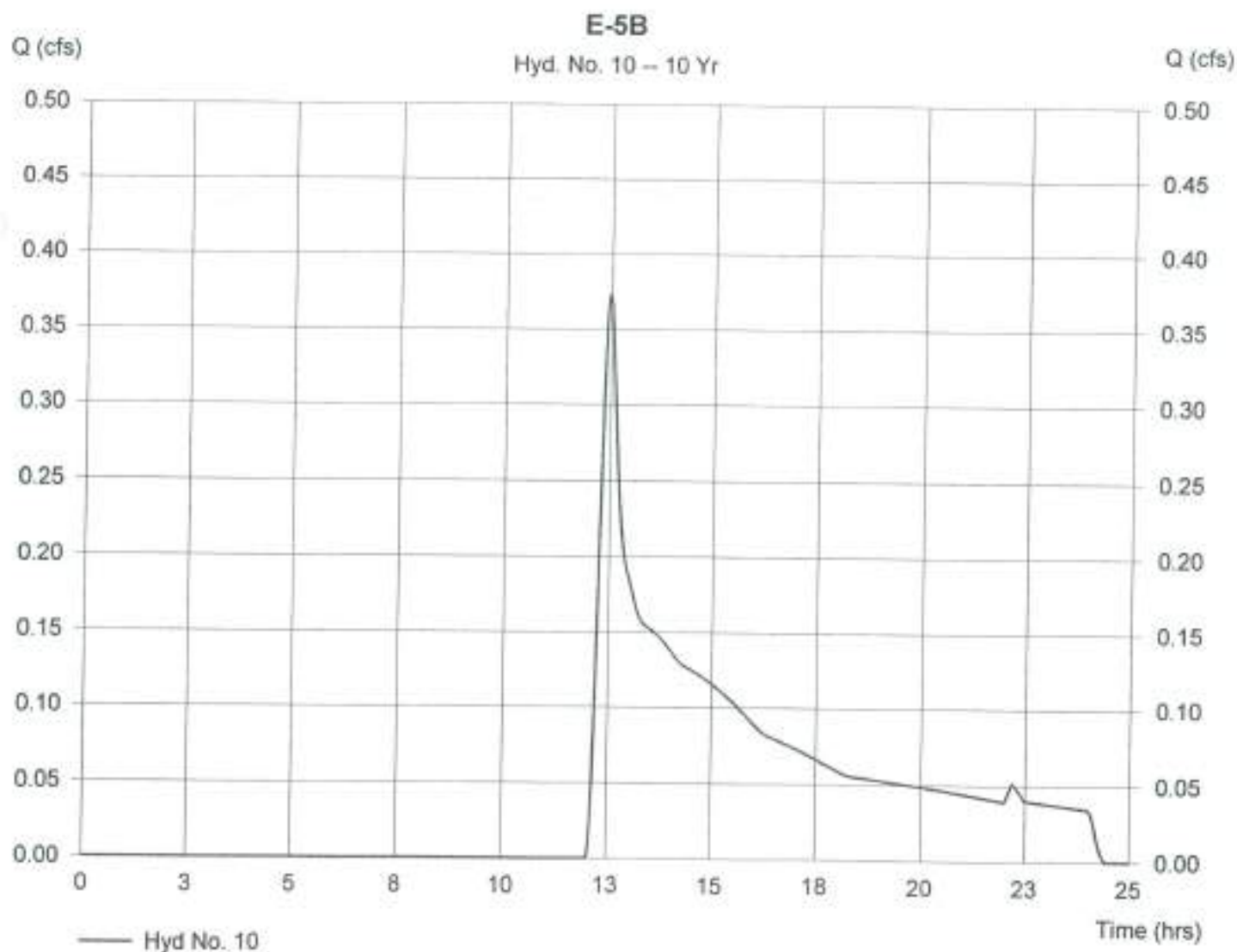
Hyd. No. 10

E-5B

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 3.090 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 0.37 cfs
Time interval = 1 min
Curve number = 46
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.20 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 3,697 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

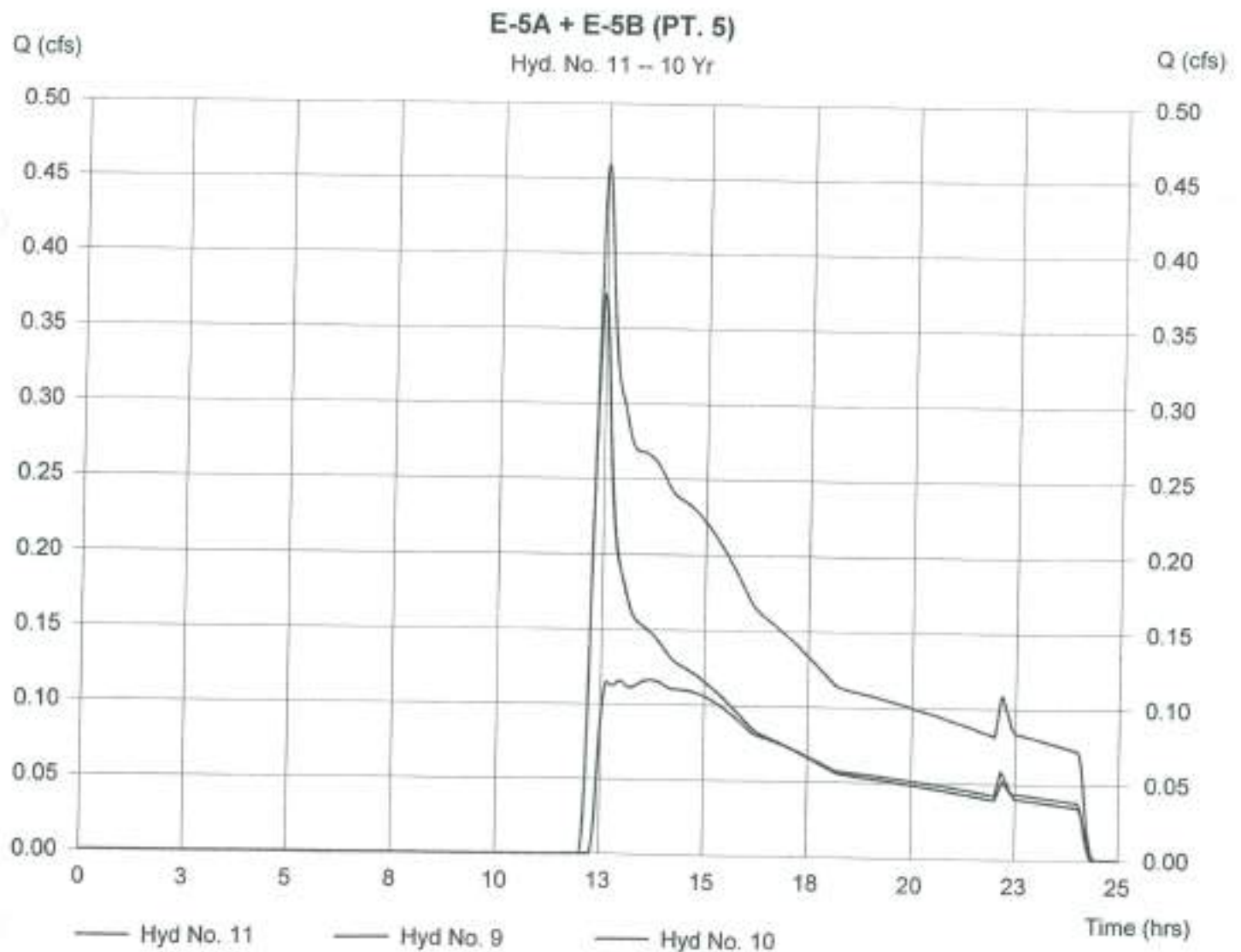
Hyd. No. 11

E-5A + E-5B (PT. 5)

Hydrograph type = Combine
Storm frequency = 10 yrs
Inflow hyds. = 9, 10

Peak discharge = 0.46 cfs
Time interval = 1 min

Hydrograph Volume = 6,673 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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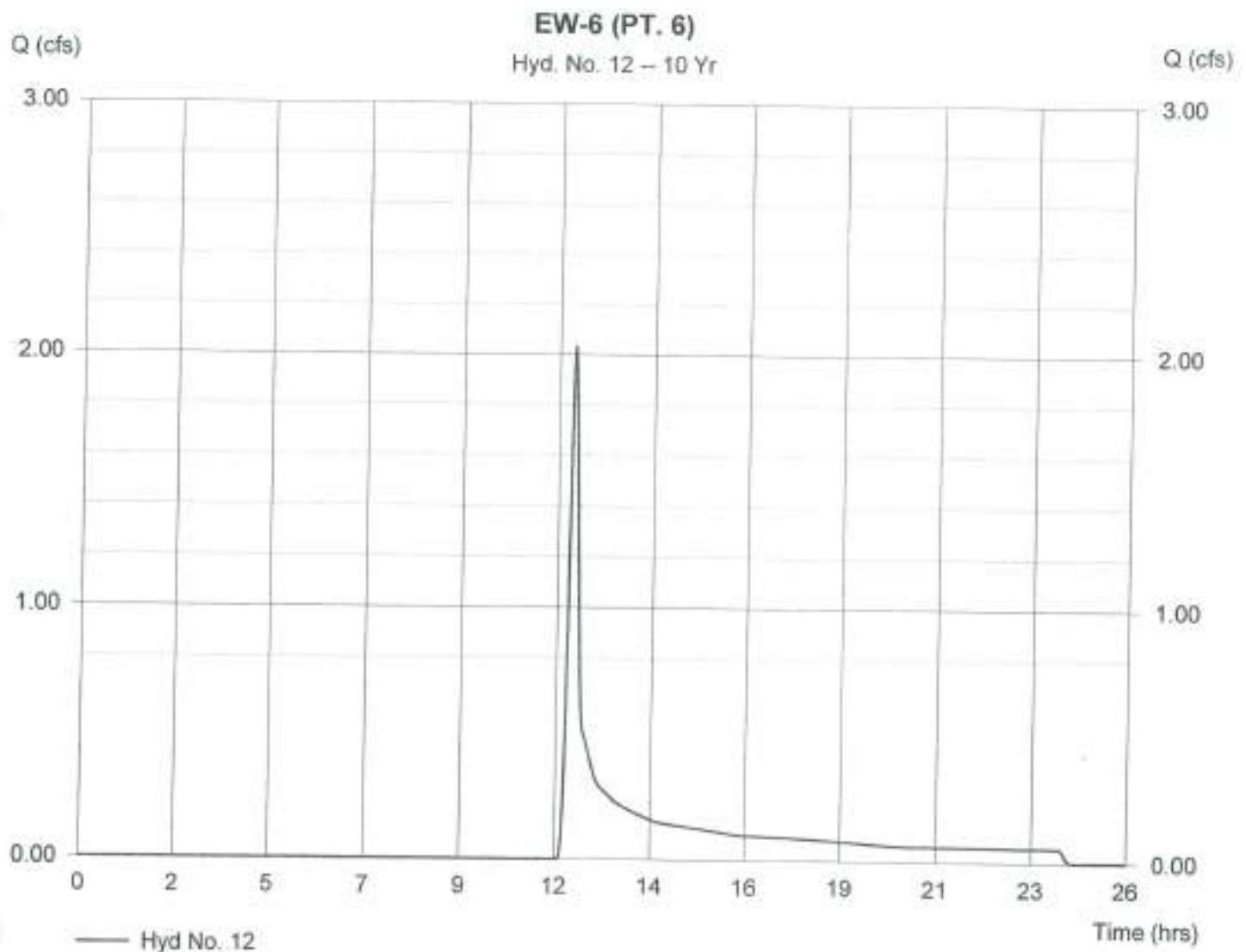
Hyd. No. 12

EW-6 (PT. 6)

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 2.450 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 2.03 cfs
Time interval = 1 min
Curve number = 55
Hydraulic length = 0 ft
Time of conc. (Tc) = 12.03 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 6,500 cuft



Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	66.82	1	728	247,842	---	---	---	EW-1 (PT. 1)
2	SCS Runoff	17.03	1	725	56,013	---	---	---	EW-2 (PT. 2)
3	SCS Runoff	6.16	1	750	42,300	---	---	---	EW-3
4	Combine	84.73	1	727	346,155	1, 2, 3	---	---	EXIST. TOTAL TO RIVER (PT. 3)
5	SCS Runoff	3.90	1	729	14,712	---	---	---	EW-4
6	Reservoir	0.61	1	771	14,705	5	119.35	6,207	EXIST. BASIN
7	Diversion1	0.14	1	771	3,288	6	---	---	BASIN INFILTRATION
8	Diversion2	0.47	1	771	11,417	6	---	---	BASIN OUTFLOW (PT. 4)
9	SCS Runoff	0.59	1	747	6,318	---	---	---	EW-5A
10	SCS Runoff	0.91	1	743	6,578	---	---	---	E-5B
11	Combine	1.48	1	745	12,896	9, 10	---	---	E-5A + E-5B (PT. 5)
12	SCS Runoff	3.47	1	722	9,920	---	---	---	EW-6 (PT. 6)
14	SCS Runoff	39.35	1	733	168,316	---	---	---	PW-1
15	Reservoir	20.15	1	750	168,100	14	121.07	51,728	BASIN 2
	Diversion1	1.43	1	750	63,044	15	---	---	BASIN 2 INFILTRATION
17	Diversion2	18.72	1	750	106,055	15	---	---	BASIN 2 OUTFLOW (PT. 1)
18	SCS Runoff	26.02	1	746	153,627	---	---	---	PW-2
19	Reservoir	11.12	1	777	153,345	18	122.13	64,154	BASIN 1
20	Diversion1	1.45	1	777	76,437	19	---	---	BASIN 1 INFILTRATION
21	Diversion2	9.67	1	777	76,908	19	---	---	BASIN 1 OUTFLOW (PT. 2)
22	SCS Runoff	1.00	1	746	7,931	---	---	---	PW-3
23	Combine	27.43	1	757	189,894	17, 21, 22	---	---	PROP. TOTAL TO RIVER (PT. 3)
24	SCS Runoff	5.84	1	744	33,348	---	---	---	PW-5A
25	Reservoir	0.83	1	877	33,292	24	125.39	14,786	BASIN 3
26	Diversion1	0.83	1	877	33,292	25	---	---	BASIN 3 INFILTRATION
27	Diversion2	0.00	1	778	0	25	---	---	BASIN 3 OUTFLOW
28	SCS Runoff	1.17	1	740	7,256	---	---	---	PW-5B
29	Combine	1.17	1	740	7,256	27, 28	---	---	TOTAL TO PT. 5
30	SCS Runoff	1.33	1	738	6,432	---	---	---	PW-6A
MSP_5-8-07.gpw					Return Period: 25 Year			Monday, May 7 2007, 4:39 PM	

Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
31	Reservoir	1.07	1	749	6,425	30	129.65	1,901	BASIN 4
32	Diversion1	0.16	1	749	4,977	31	-----	-----	BASIN 4 INFILTRATION
33	Diversion2	0.91	1	749	1,448	31	-----	-----	BASIN 4 OUTFLOW
34	SCS Runoff	0.04	1	744	595	---	-----	-----	PW-6B
35	Combine	0.95	1	749	2,042	33, 34	-----	-----	TOTAL TO PT. 5
					</				

Hydrograph Plot

Hydralow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

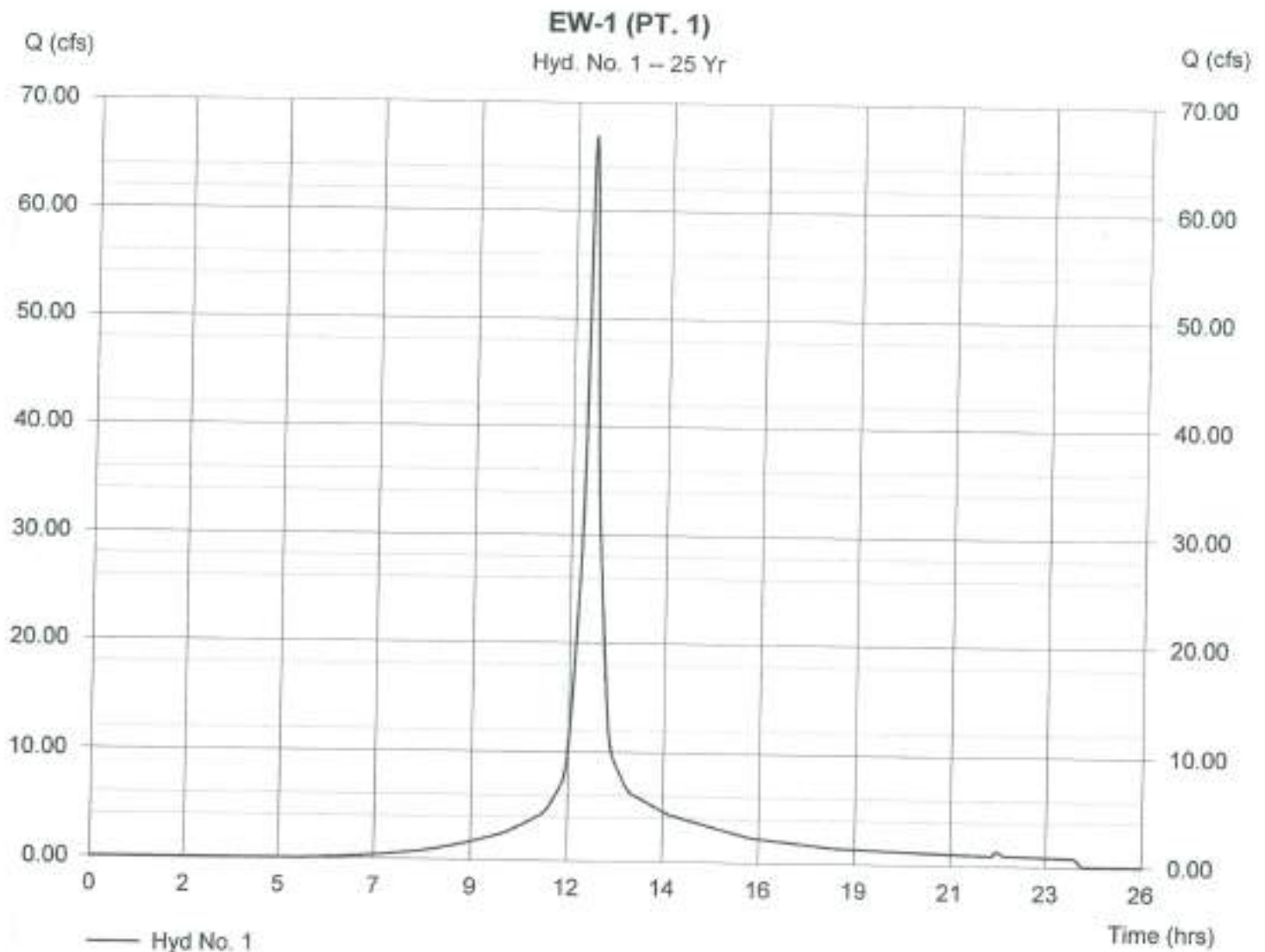
Hyd. No. 1

EW-1 (PT. 1)

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 17.420 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 66.82 cfs
Time interval = 1 min
Curve number = 87
Hydraulic length = 0 ft
Time of conc. (Tc) = 10.23 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 247,842 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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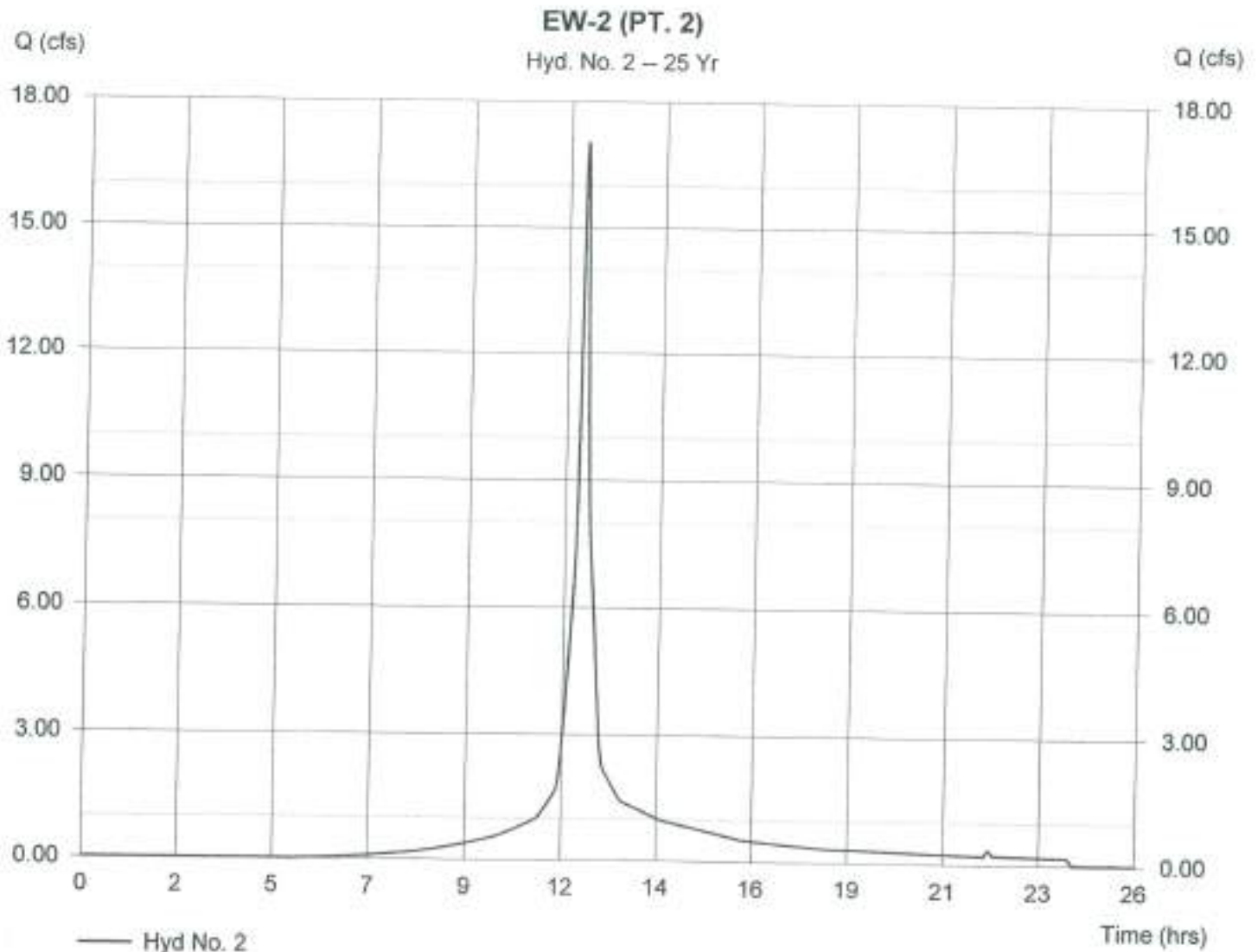
Hyd. No. 2

EW-2 (PT. 2)

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 4.110 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 17.03 cfs
Time interval = 1 min
Curve number = 87
Hydraulic length = 0 ft
Time of conc. (Tc) = 7.81 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 56,013 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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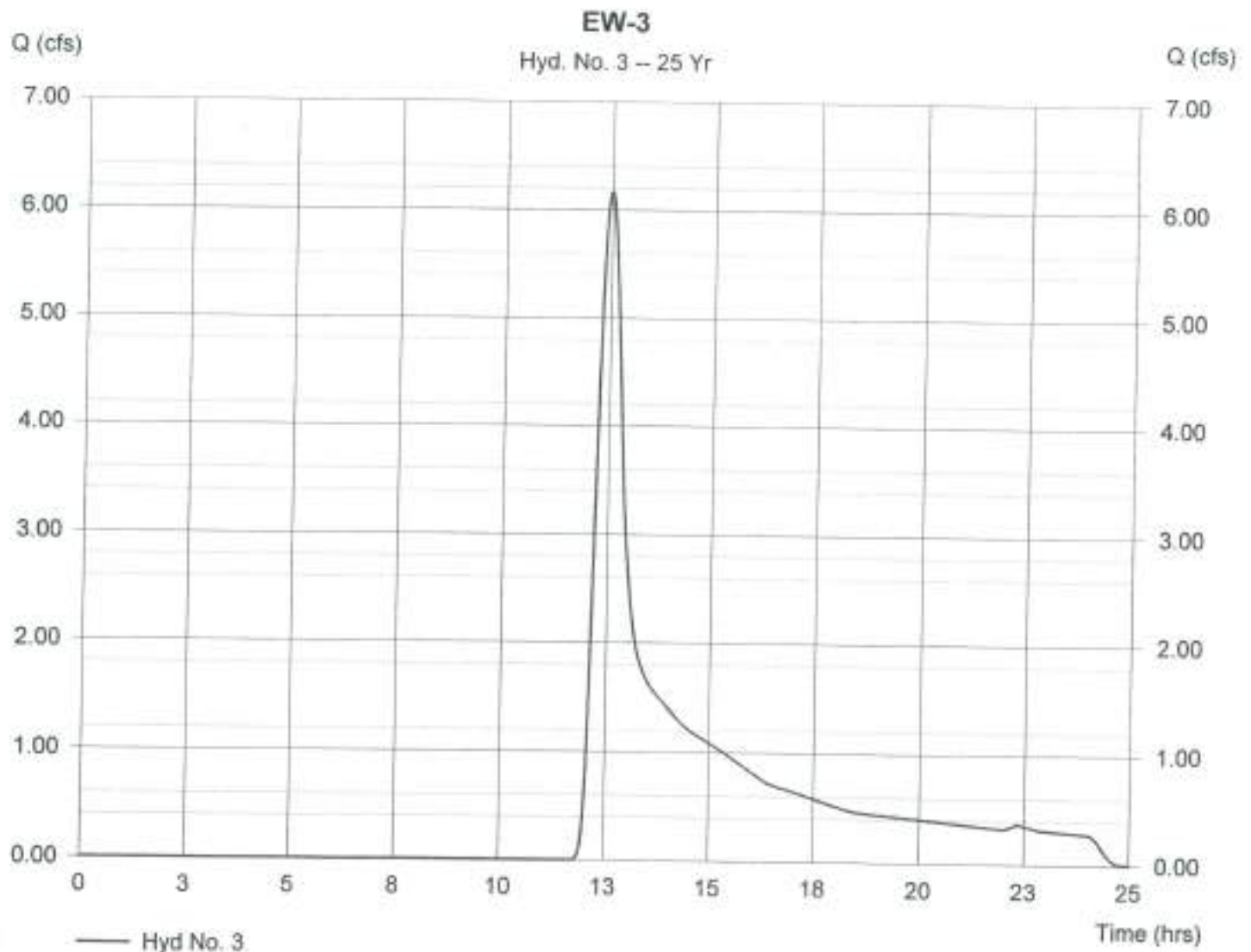
Hyd. No. 3

EW-3

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 12.310 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 6.16 cfs
Time interval = 1 min
Curve number = 52
Hydraulic length = 0 ft
Time of conc. (Tc) = 31.60 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 42,300 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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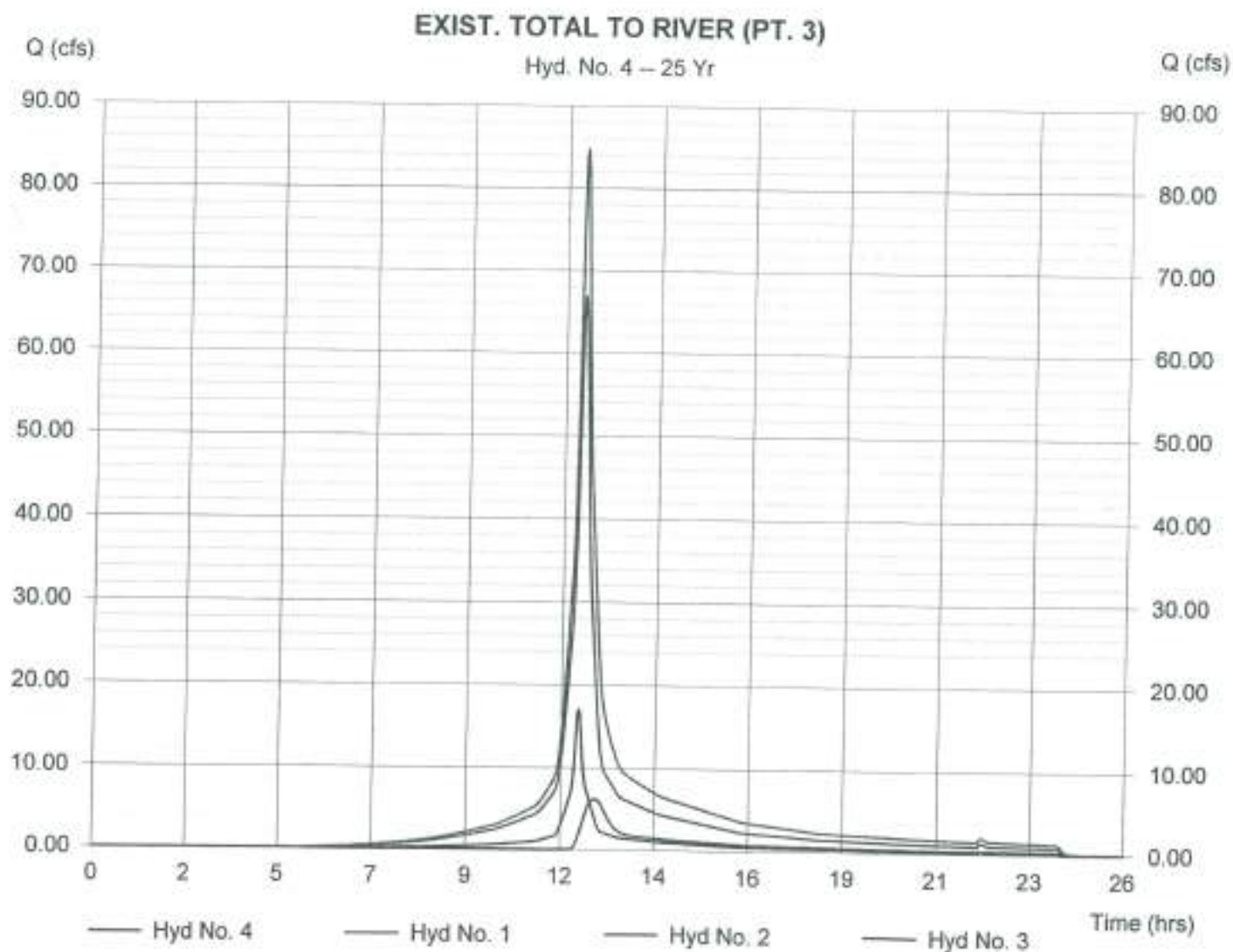
Hyd. No. 4

EXIST. TOTAL TO RIVER (PT. 3)

Hydrograph type = Combine
Storm frequency = 25 yrs
Inflow hyds. = 1, 2, 3

Peak discharge = 84.73 cfs
Time interval = 1 min

Hydrograph Volume = 346,155 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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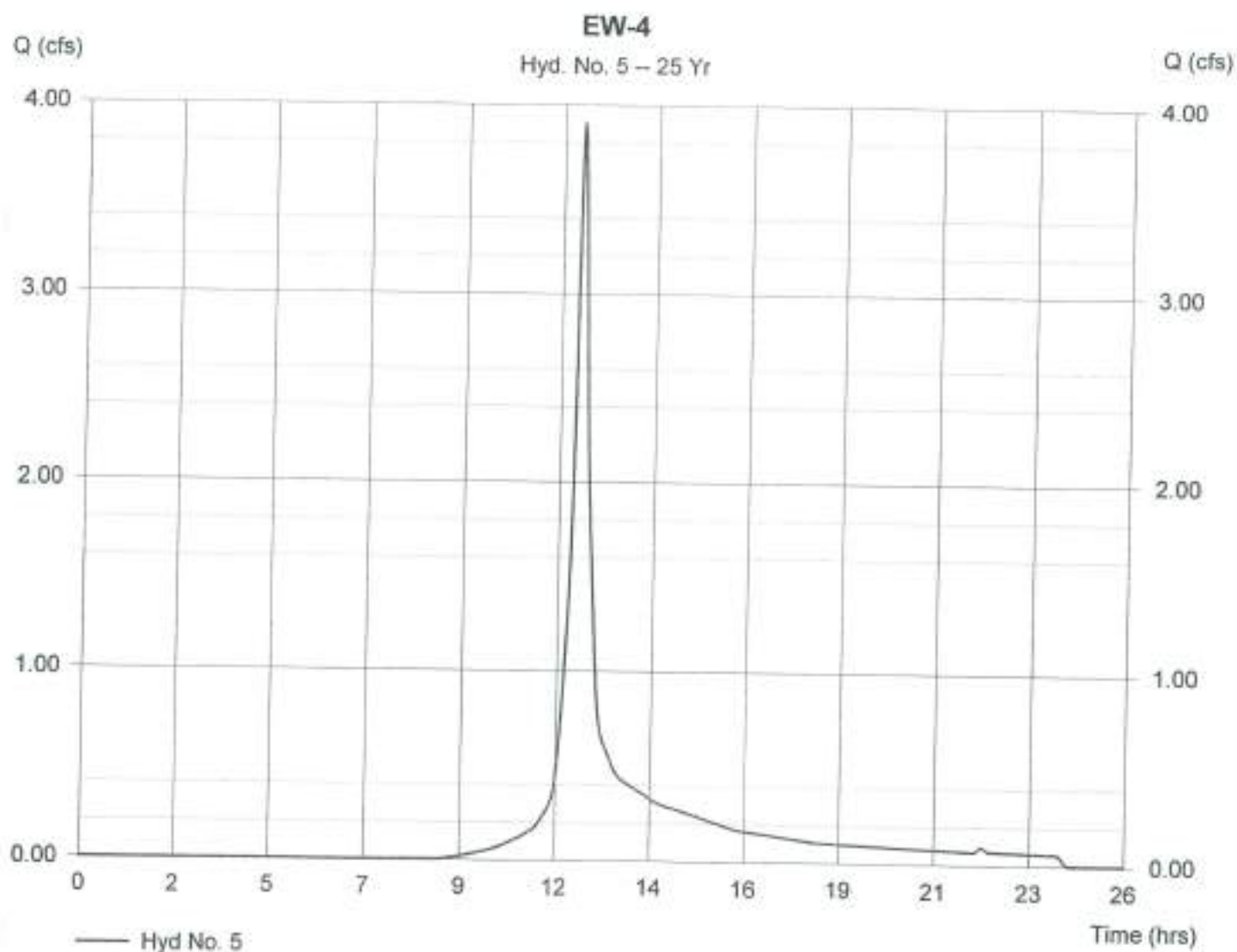
Hyd. No. 5

EW-4

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 1.580 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 3.90 cfs
Time interval = 1 min
Curve number = 74
Hydraulic length = 0 ft
Time of conc. (Tc) = 12.00 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 14,712 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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Hyd. No. 6

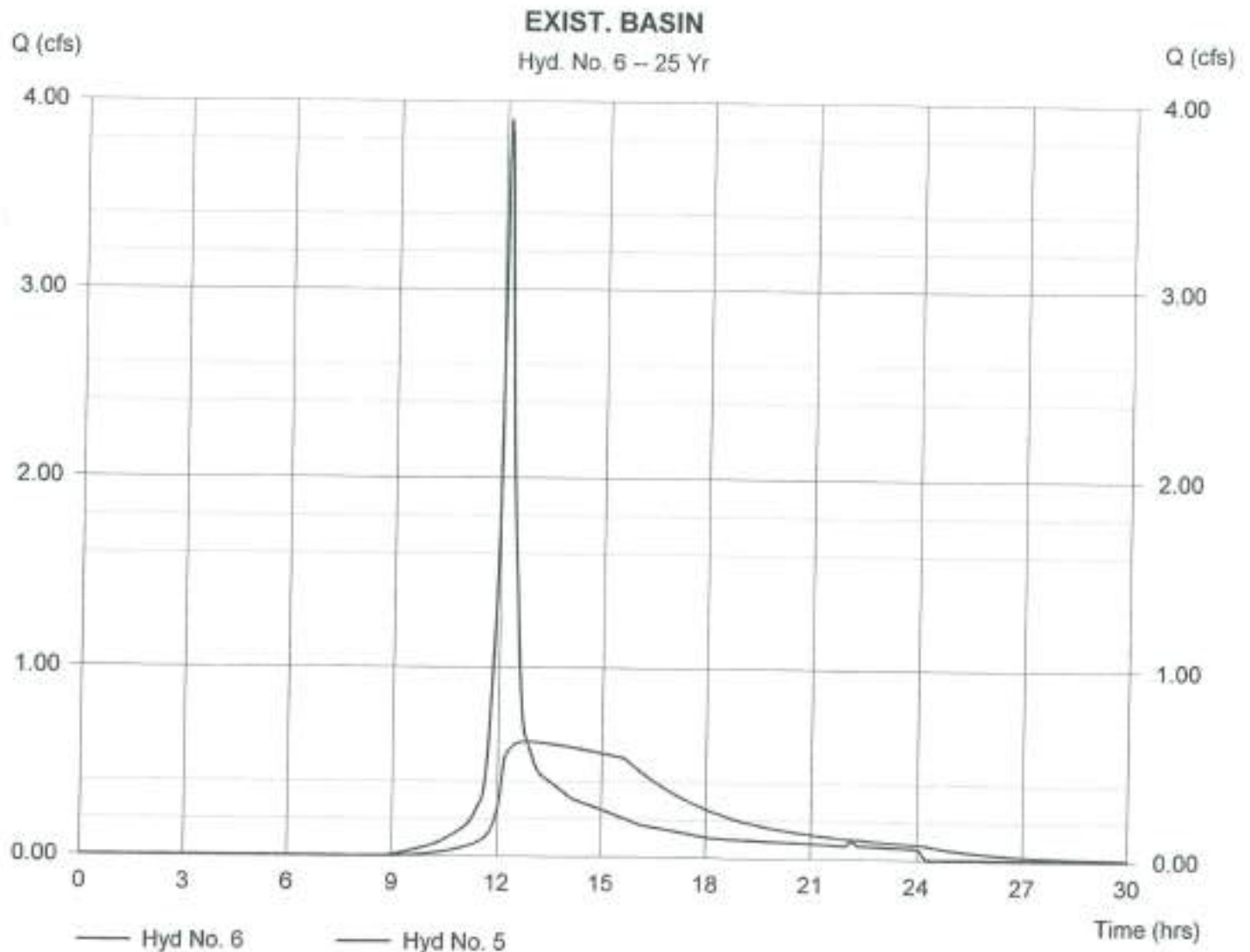
EXIST. BASIN

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 5
Reservoir name = EX. BASIN

Peak discharge = 0.61 cfs
Time interval = 1 min
Max. Elevation = 119.35 ft
Max. Storage = 6,207 cuft

Storage Indication method used.

Hydrograph Volume = 14,705 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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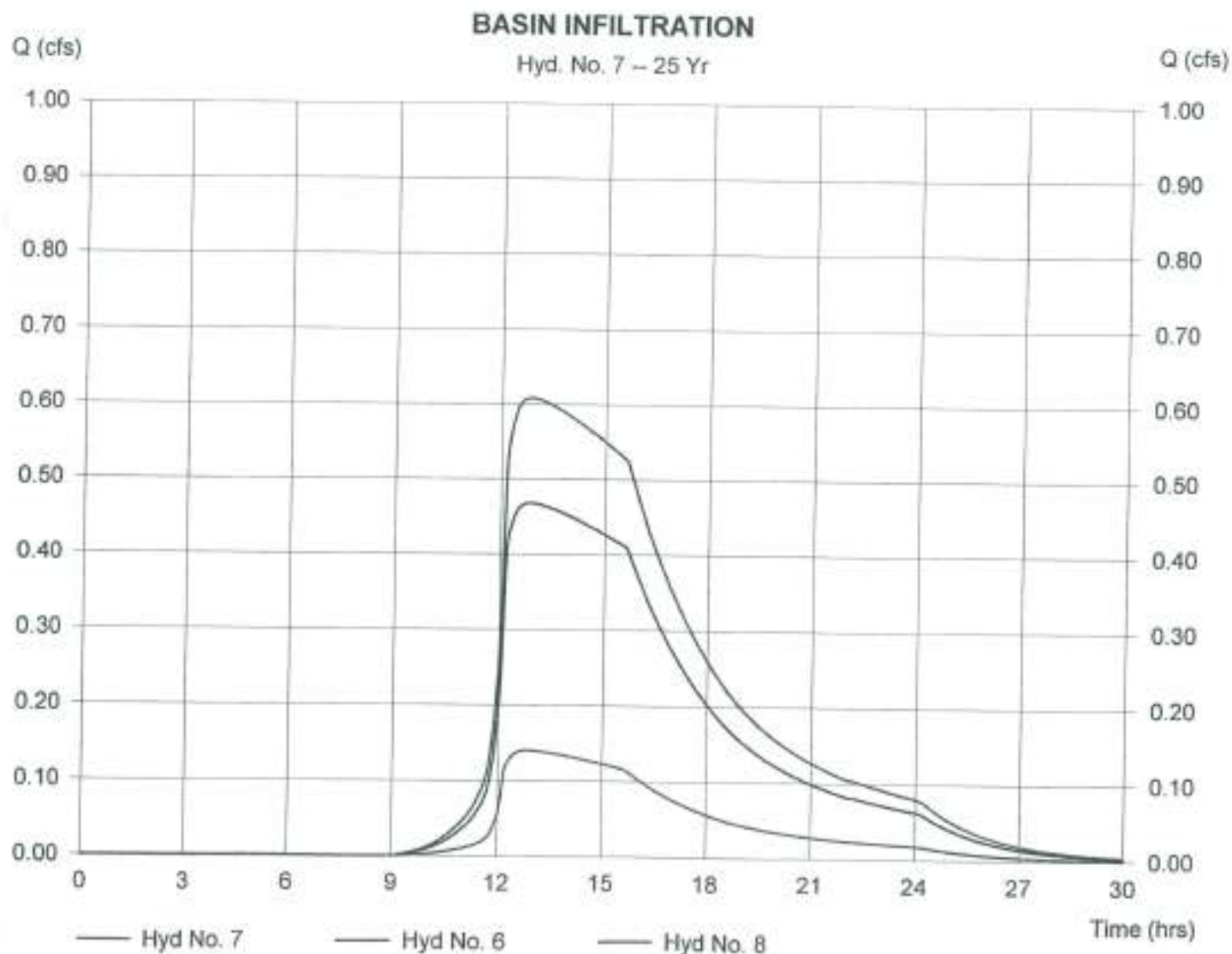
Hyd. No. 7

BASIN INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 25 yrs
Inflow hydrograph = 6
Diversion method = Pond - EX. BASIN

Peak discharge = 0.14 cfs
Time interval = 1 min
2nd diverted hyd. = 8
Pond structure = Exfiltration

Hydrograph Volume = 3,298 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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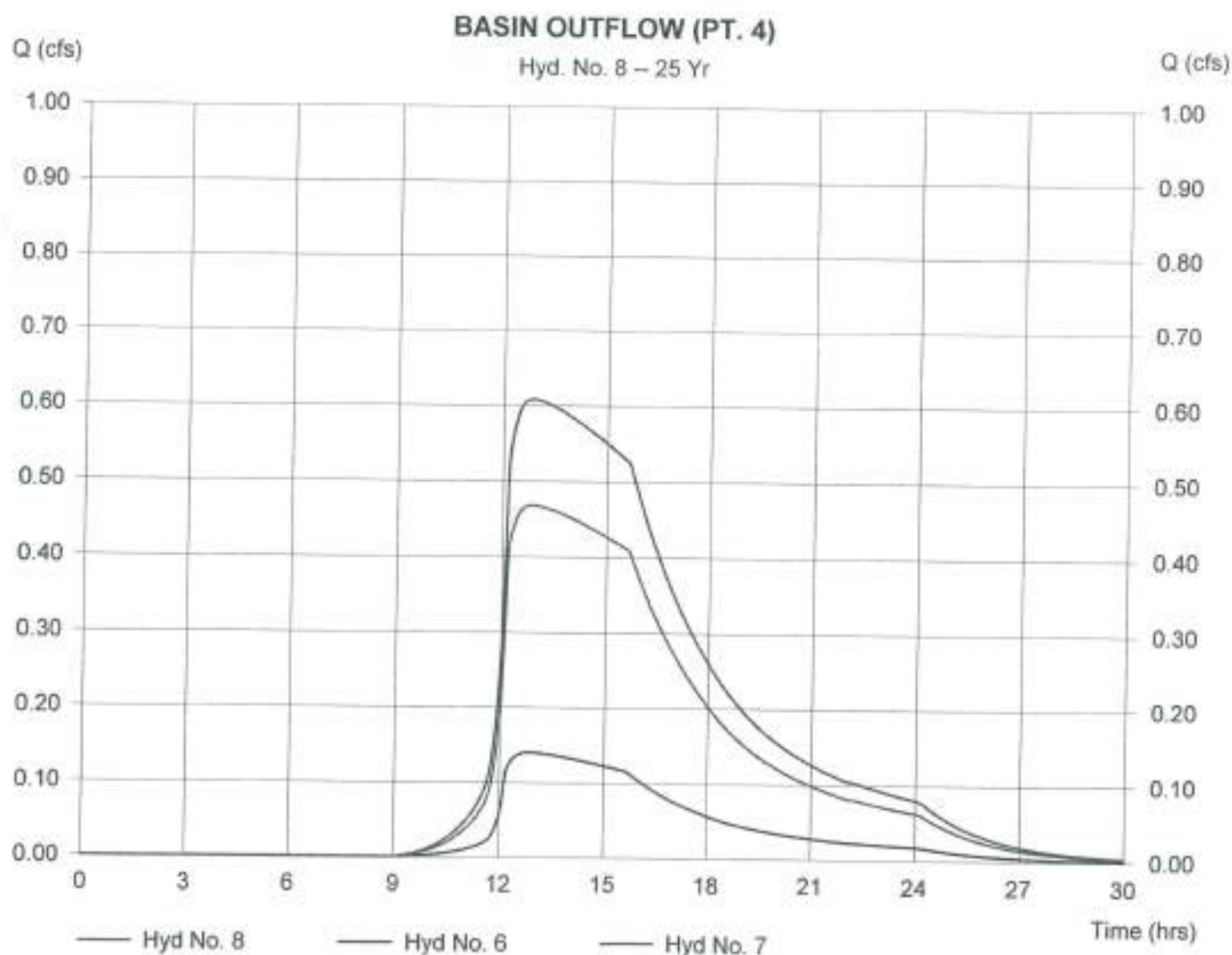
Hyd. No. 8

BASIN OUTFLOW (PT. 4)

Hydrograph type = Diversion2
Storm frequency = 25 yrs
Inflow hydrograph = 6
Diversion method = Pond - EX. BASIN

Peak discharge = 0.47 cfs
Time interval = 1 min
2nd diverted hyd. = 7
Pond structure = Exfiltration

Hydrograph Volume = 11,417 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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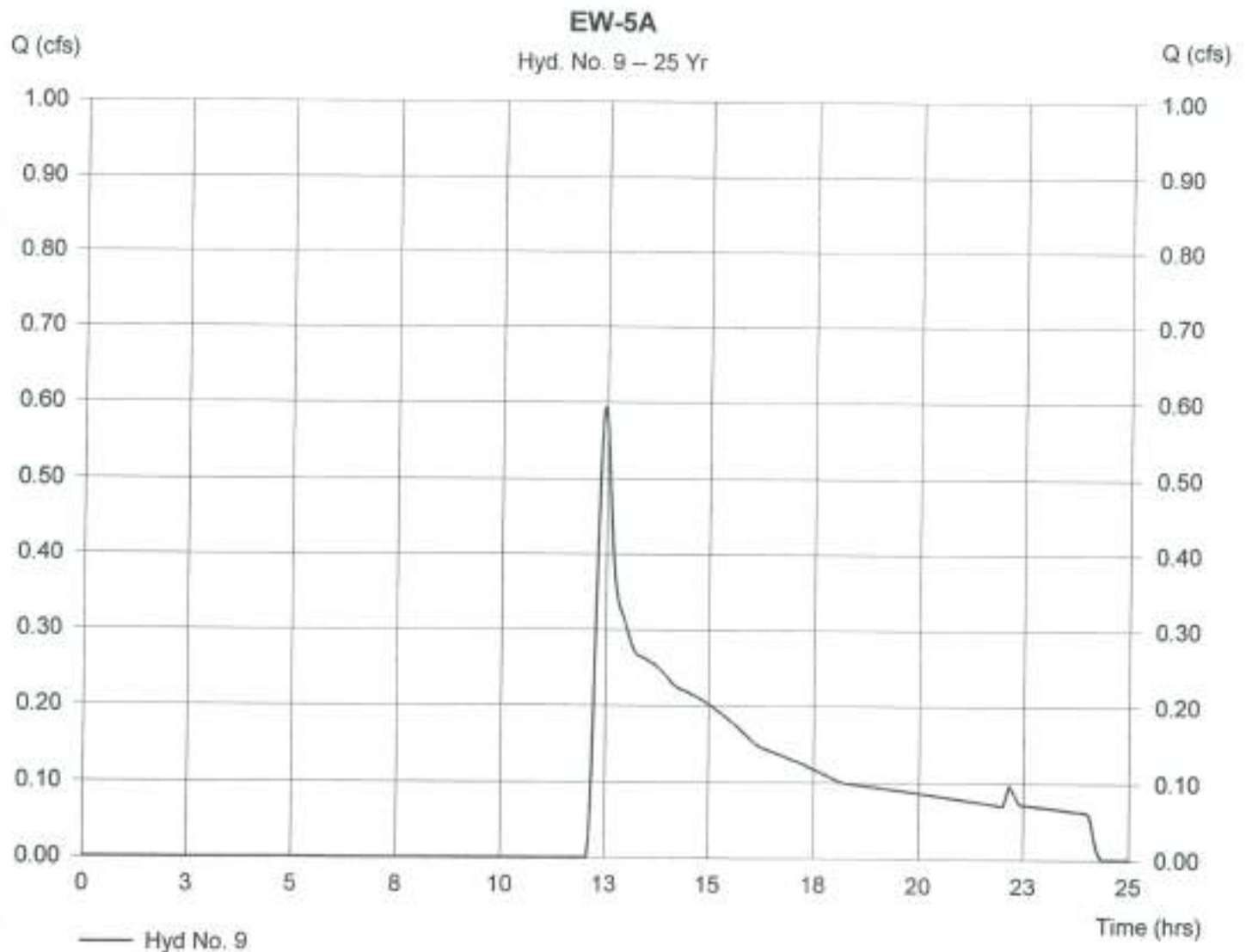
Hyd. No. 9

EW-5A

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 4.990 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 0.59 cfs
Time interval = 1 min
Curve number = 41
Hydraulic length = 0 ft
Time of conc. (Tc) = 14.90 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 6,318 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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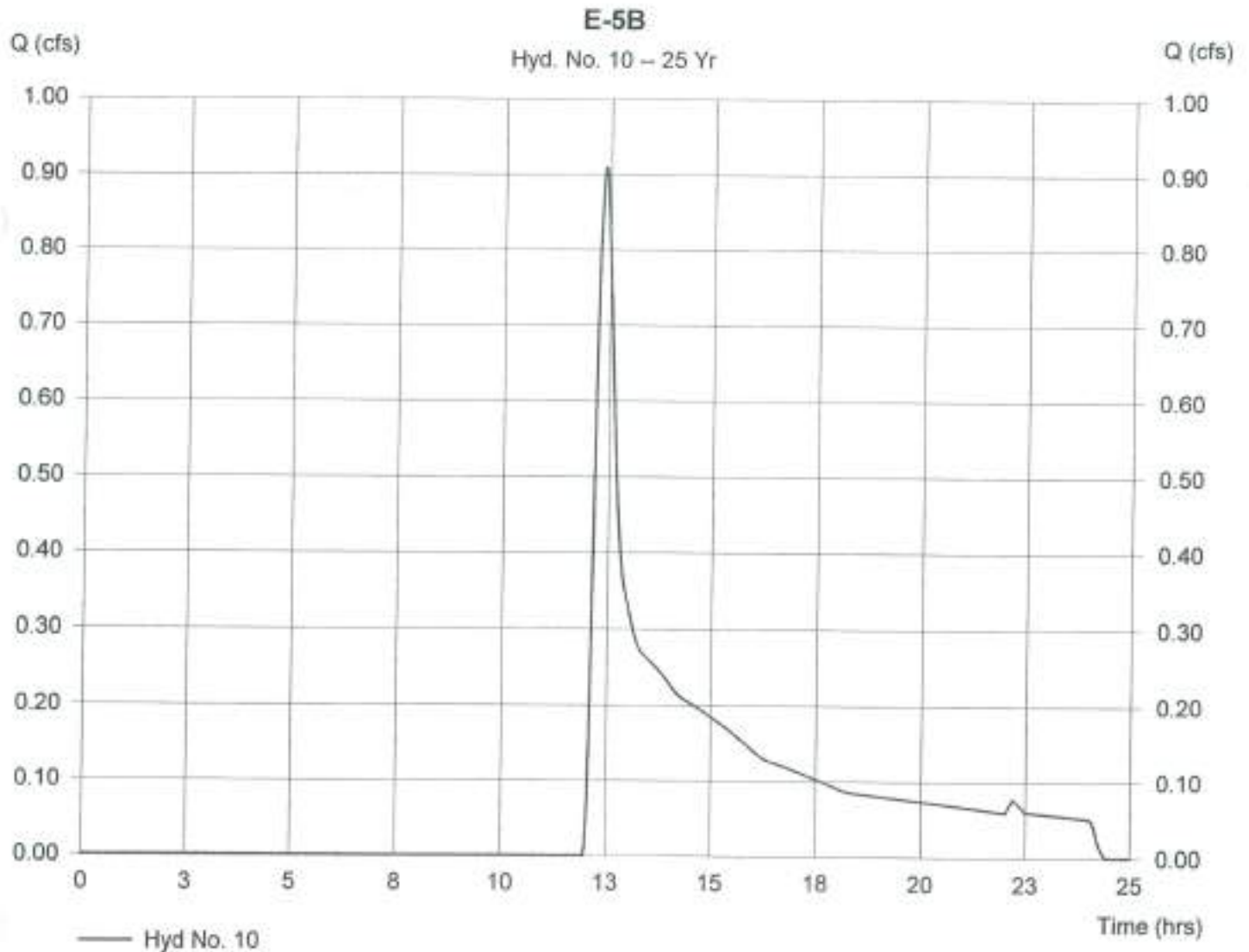
Hyd. No. 10

E-5B

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 3.090 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 0.91 cfs
Time interval = 1 min
Curve number = 46
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.20 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 6,578 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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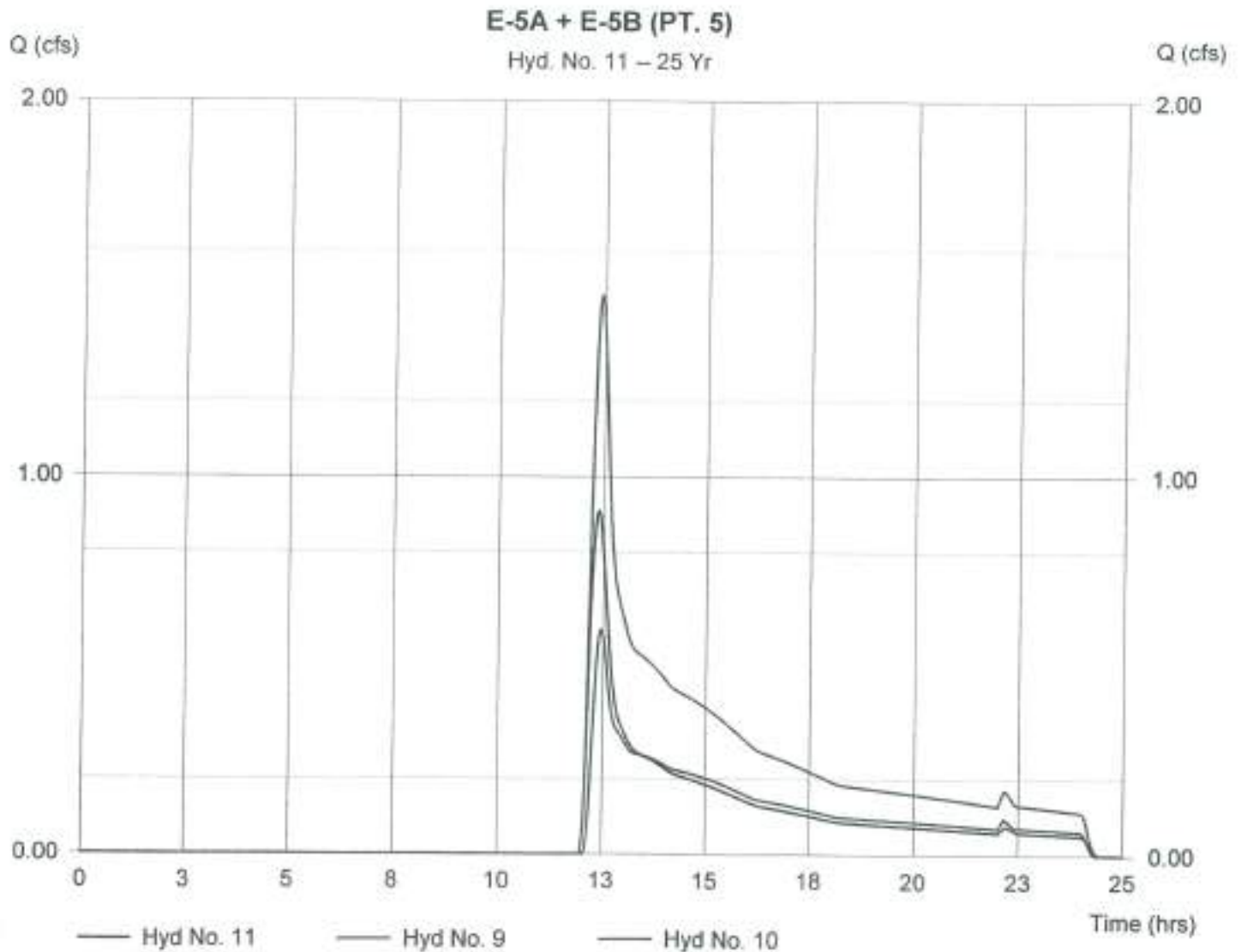
Hyd. No. 11

E-5A + E-5B (PT. 5)

Hydrograph type = Combine
Storm frequency = 25 yrs
Inflow hyds. = 9, 10

Peak discharge = 1.48 cfs
Time interval = 1 min

Hydrograph Volume = 12,896 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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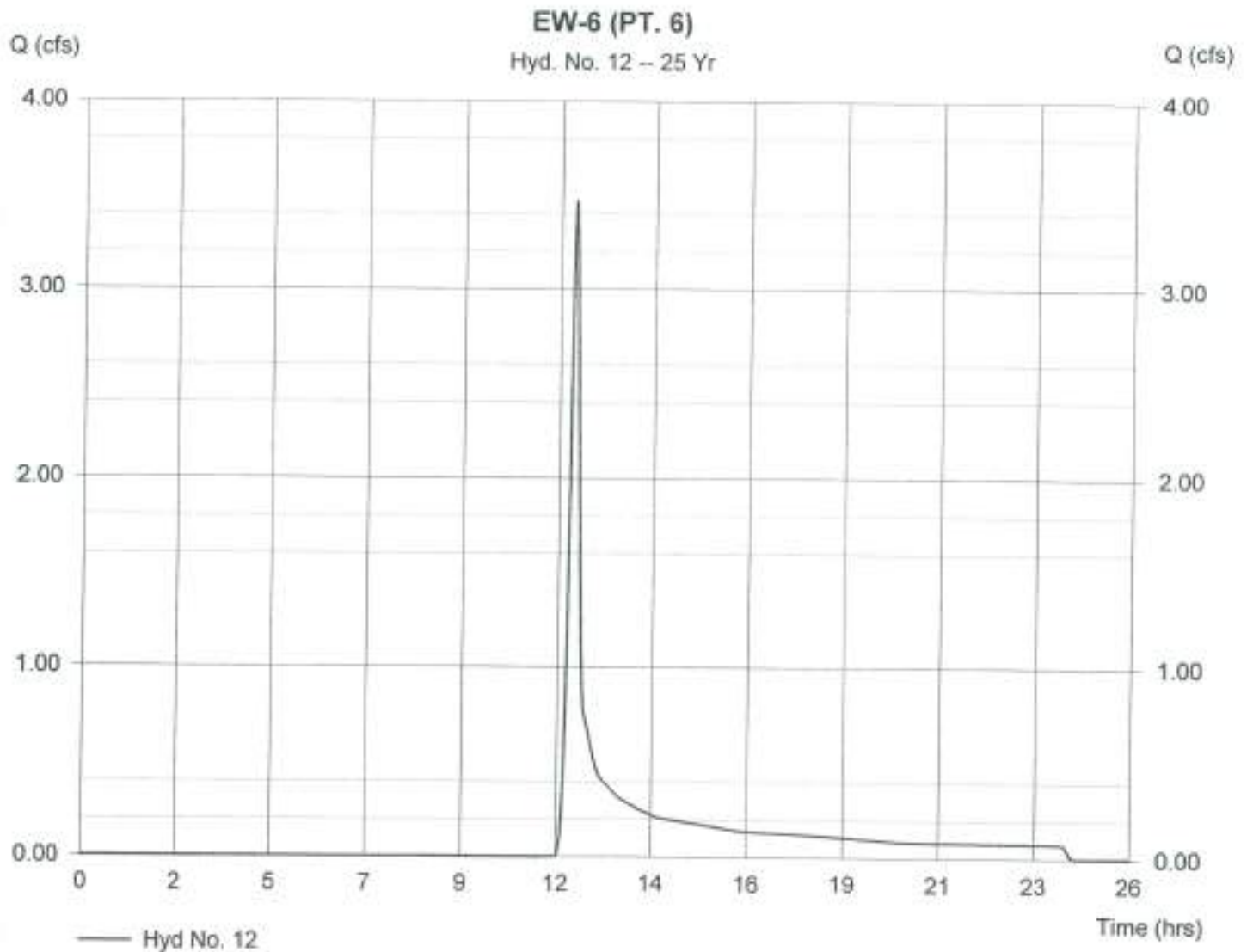
Hyd. No. 12

EW-6 (PT. 6)

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 2.450 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 3.47 cfs
Time interval = 1 min
Curve number = 55
Hydraulic length = 0 ft
Time of conc. (Tc) = 12.03 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 9,920 cuft



Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	93.47	1	728	352,671	---	---	---	EW-1 (PT. 1)
2	SCS Runoff	23.83	1	725	79,704	---	---	---	EW-2 (PT. 2)
3	SCS Runoff	13.92	1	746	83,057	---	---	---	EW-3
4	Combine	122.31	1	727	515,433	1, 2, 3	---	---	EXIST. TOTAL TO RIVER (PT. 3)
5	SCS Runoff	6.07	1	729	22,821	---	---	---	EW-4
6	Reservoir	3.68	1	740	22,814	5	119.57	7,722	EXIST. BASIN
7	Diversion1	0.16	1	740	4,363	6	---	---	BASIN INFILTRATION
8	Diversion2	3.52	1	740	18,451	6	---	---	BASIN OUTFLOW (PT. 4)
9	SCS Runoff	2.66	1	737	16,624	---	---	---	EW-5A
10	SCS Runoff	2.74	1	737	14,642	---	---	---	E-5B
11	Combine	5.40	1	737	31,266	9, 10	---	---	E-5A + E-5B (PT. 5)
12	SCS Runoff	7.07	1	722	18,593	---	---	---	EW-6 (PT. 6)
14	SCS Runoff	62.43	1	732	265,074	---	---	---	PW-1
15	Reservoir	43.15	1	744	264,837	14	122.22	70,428	BASIN 2
	Diversion1	1.79	1	744	69,332	15	---	---	BASIN 2 INFILTRATION
17	Diversion2	41.36	1	744	195,505	15	---	---	BASIN 2 OUTFLOW (PT. 1)
18	SCS Runoff	37.03	1	745	221,301	---	---	---	PW-2
19	Reservoir	14.55	1	778	220,950	18	123.71	92,121	BASIN 1
20	Diversion1	1.78	1	778	86,726	19	---	---	BASIN 1 INFILTRATION
21	Diversion2	12.77	1	778	134,224	19	---	---	BASIN 1 OUTFLOW (PT. 2)
22	SCS Runoff	3.18	1	739	18,140	---	---	---	PW-3
23	Combine	53.97	1	745	347,869	17, 21, 22	---	---	PROP. TOTAL TO RIVER (PT. 3)
24	SCS Runoff	11.30	1	741	60,074	---	---	---	PW-5A
25	Reservoir	1.31	1	885	59,973	24	126.54	29,511	BASIN 3
26	Diversion1	1.31	1	885	59,973	25	---	---	BASIN 3 INFILTRATION
27	Diversion2	0.00	1	739	0	25	---	---	BASIN 3 OUTFLOW
28	SCS Runoff	3.04	1	735	15,067	---	---	---	PW-5B
29	Combine	3.04	1	735	15,067	27, 28	---	---	TOTAL TO PT. 5
30	SCS Runoff	2.07	1	737	9,977	---	---	---	PW-6A
MSP_5-8-07.gpw					Return Period: 100 Year			Monday, May 7 2007, 4:39 PM	

Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
31	Reservoir	2.00	1	741	9,970	30	129.74	2,050	BASIN 4
32	Diversion1	0.17	1	741	6,037	31	-----	-----	BASIN 4 INFILTRATION
33	Diversion2	1.84	1	741	3,933	31	-----	-----	BASIN 4 OUTFLOW
34	SCS Runoff	0.28	1	728	1,726	---	-----	-----	PW-6B
35	Combine	2.06	1	740	5,659	33, 34	-----	-----	TOTAL TO PT. 6
MSP_5-8-07.gpw					Return Period: 100 Year			Monday, May 7 2007, 4:39 PM	

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

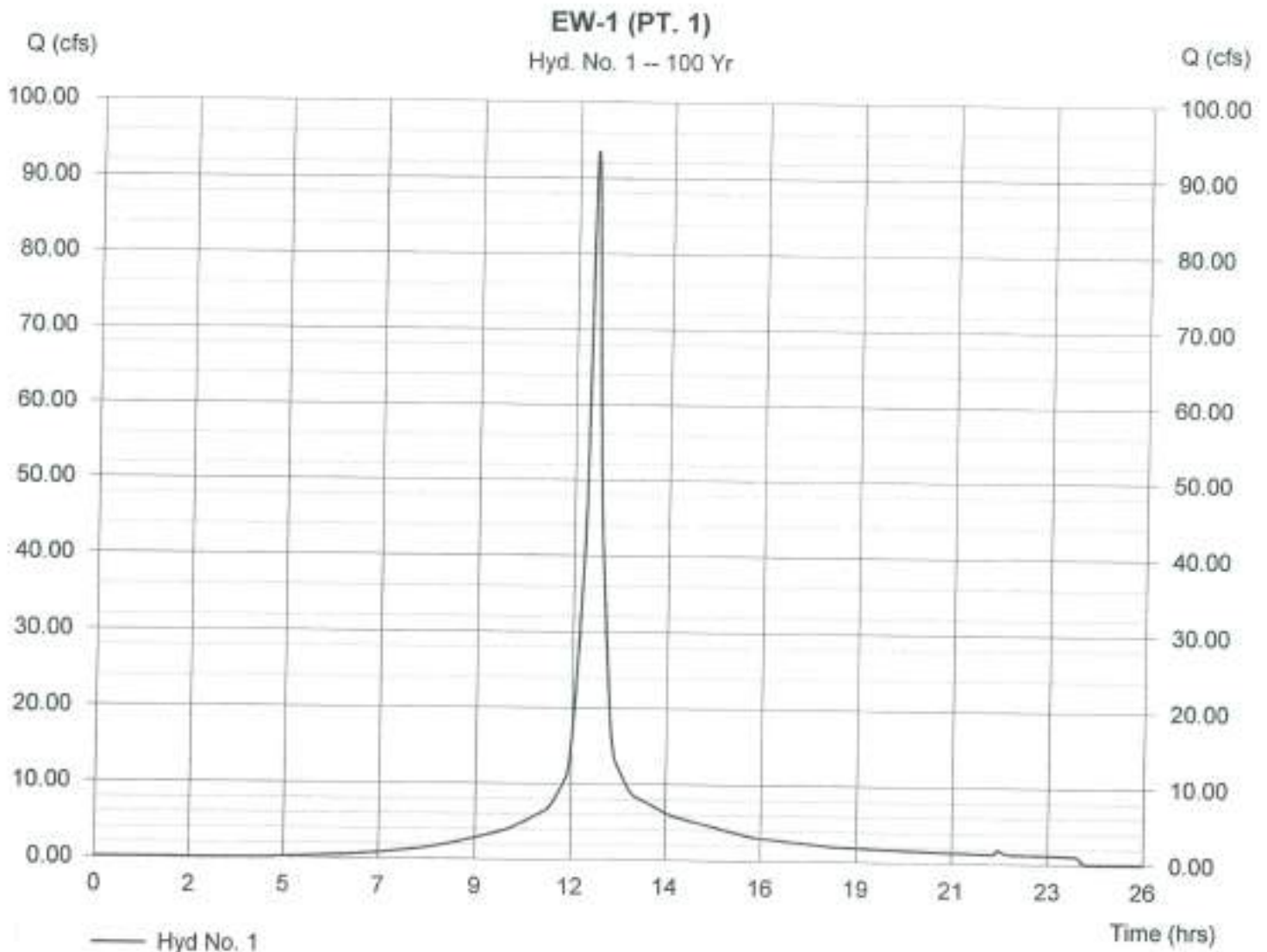
Hyd. No. 1

EW-1 (PT. 1)

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 17.420 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 93.47 cfs
Time interval = 1 min
Curve number = 87
Hydraulic length = 0 ft
Time of conc. (Tc) = 10.23 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 352,671 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

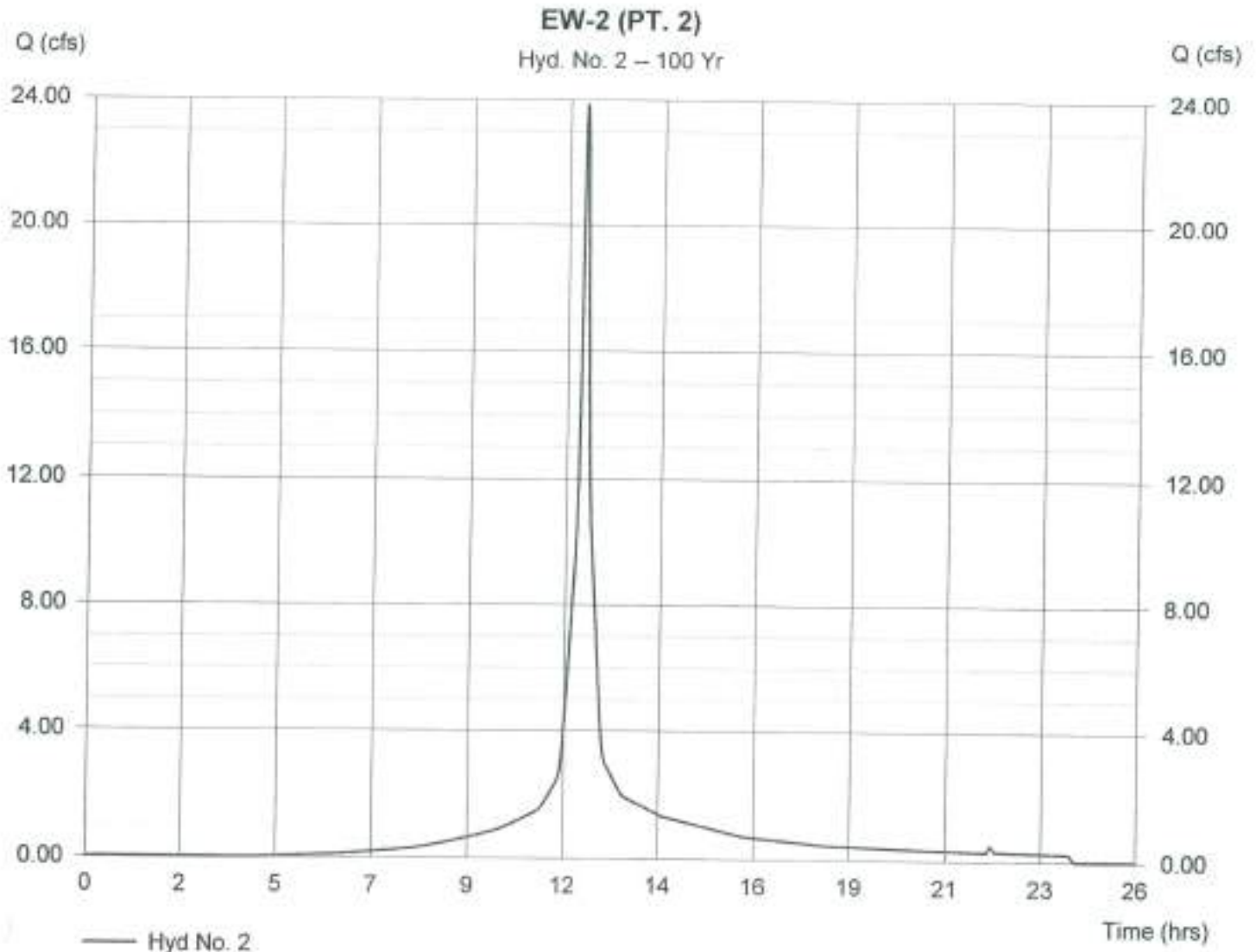
Hyd. No. 2

EW-2 (PT. 2)

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 4.110 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 23.83 cfs
Time interval = 1 min
Curve number = 87
Hydraulic length = 0 ft
Time of conc. (Tc) = 7.81 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 79,704 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

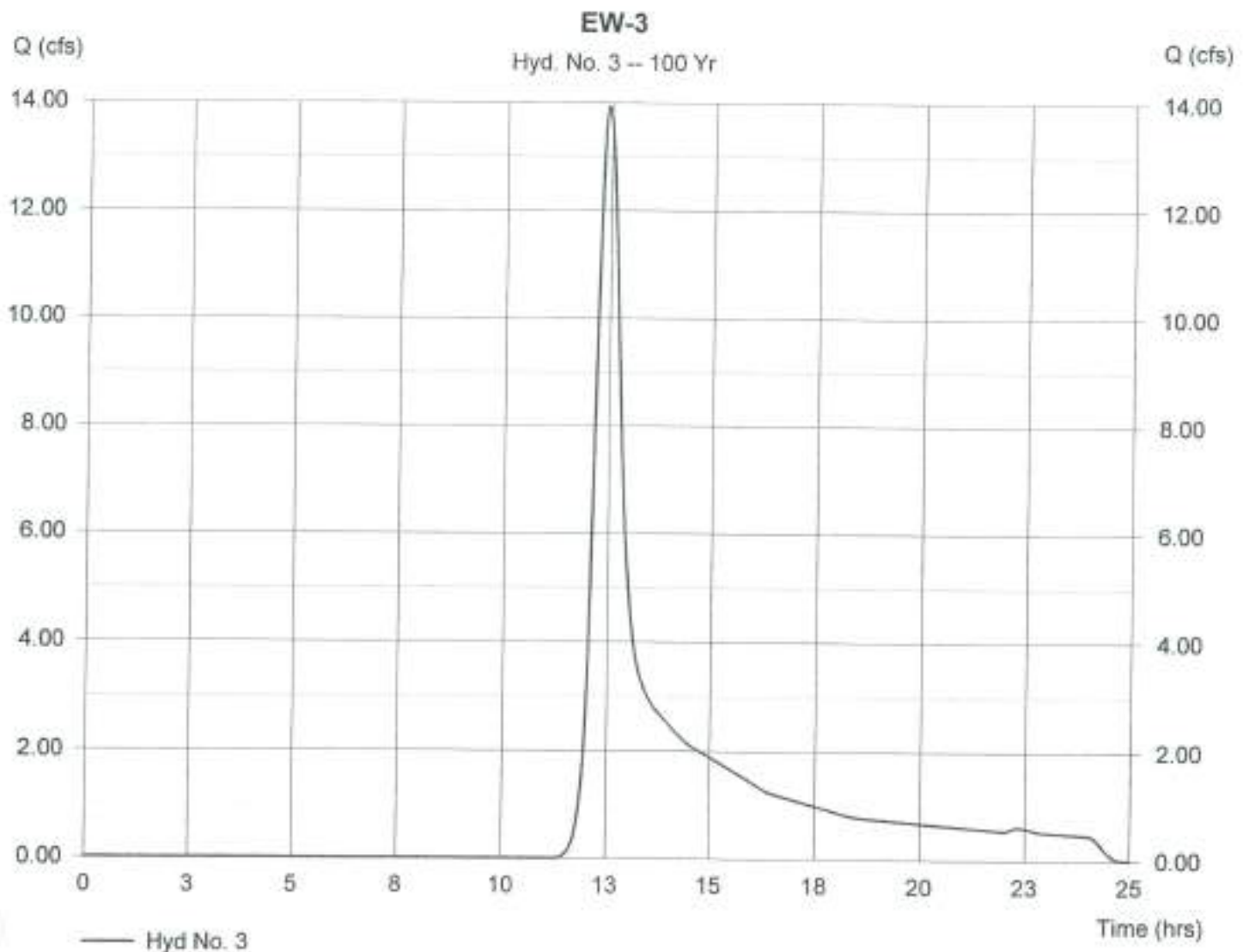
Hyd. No. 3

EW-3

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 12.310 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 13.92 cfs
Time interval = 1 min
Curve number = 52
Hydraulic length = 0 ft
Time of conc. (Tc) = 31.60 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 83,057 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

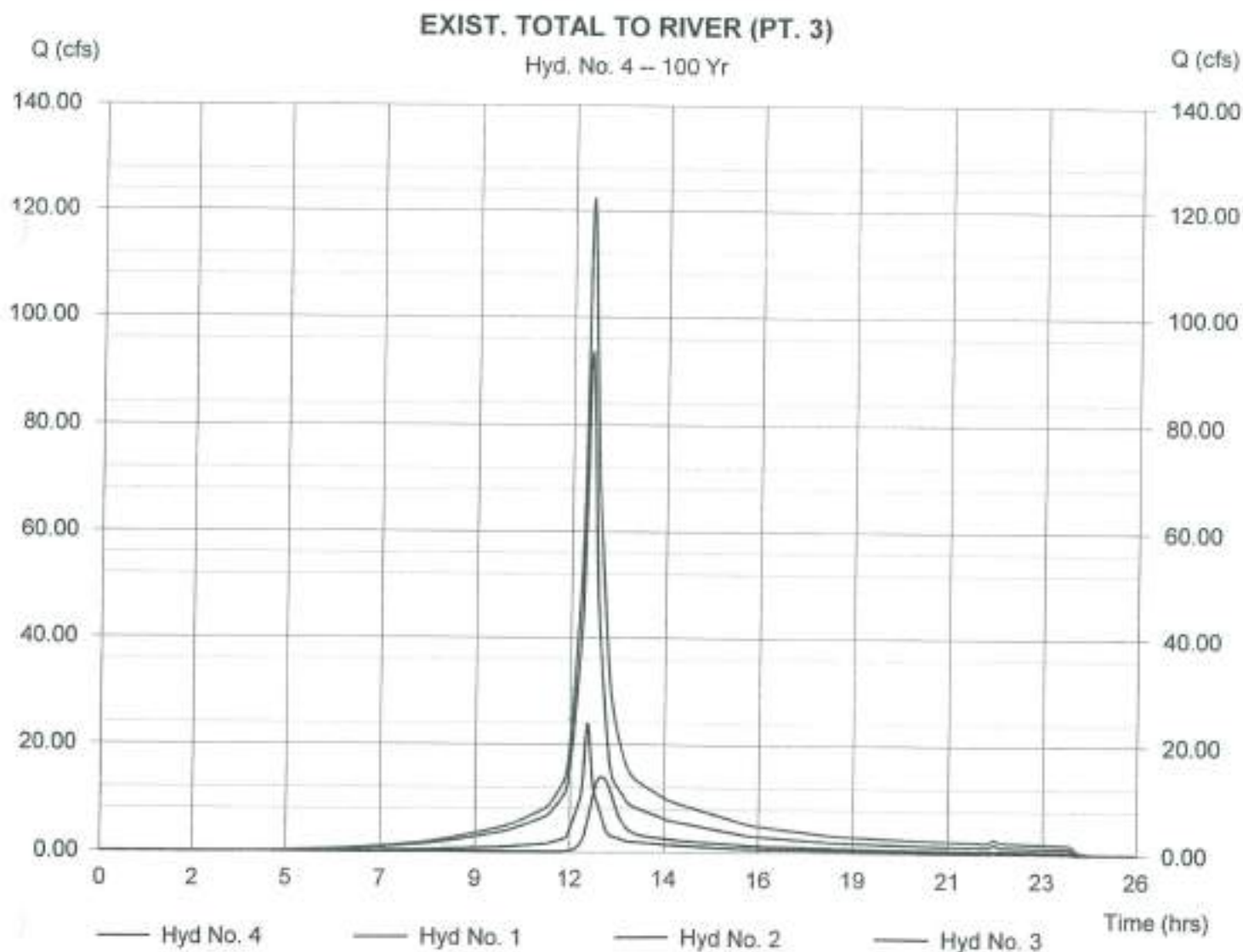
Hyd. No. 4

EXIST. TOTAL TO RIVER (PT. 3)

Hydrograph type = Combine
Storm frequency = 100 yrs
Inflow hyds. = 1, 2, 3

Peak discharge = 122.31 cfs
Time interval = 1 min

Hydrograph Volume = 515,433 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

Monday, May 7 2007, 4:40 PM

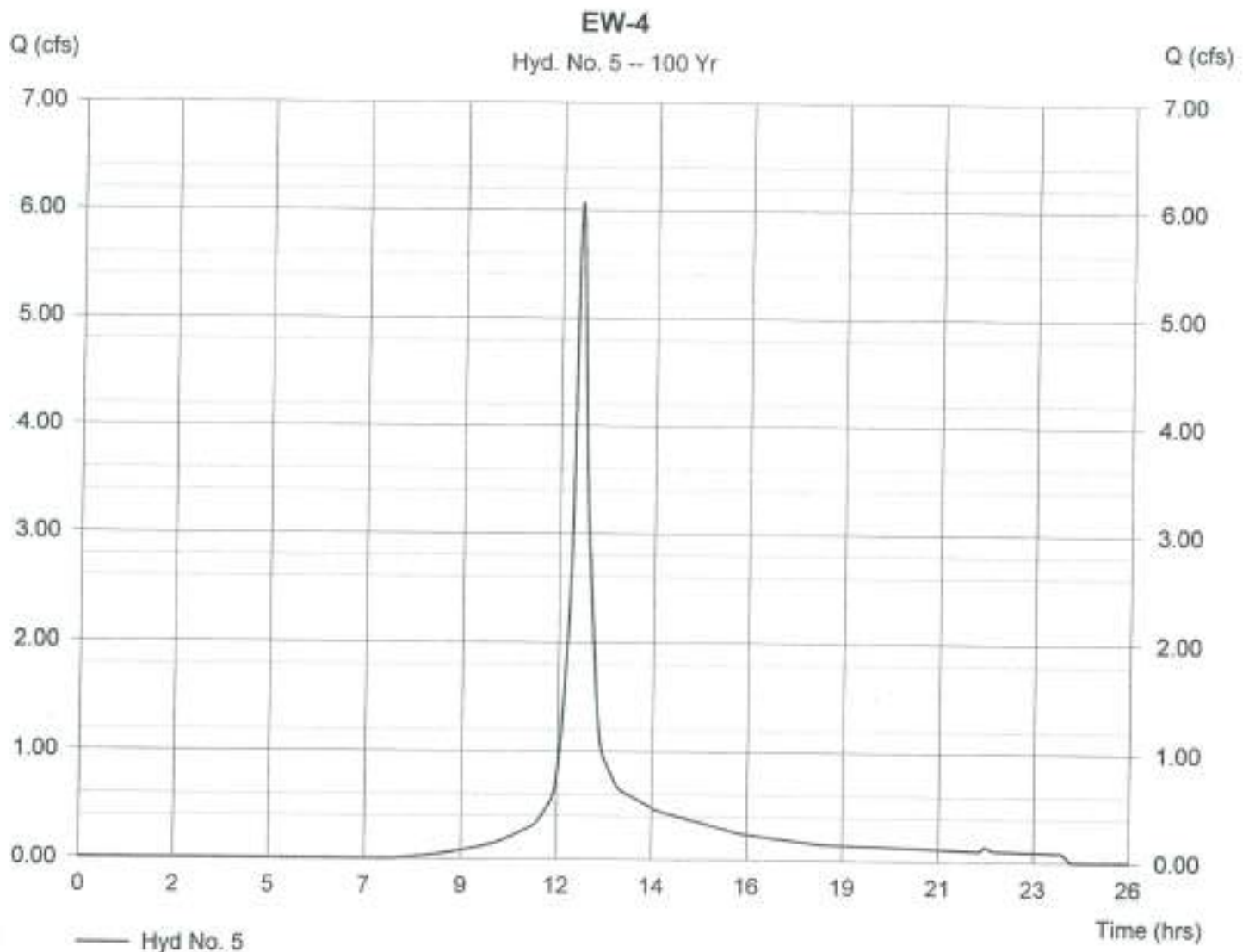
Hyd. No. 5

EW-4

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 1.580 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 6.07 cfs
Time interval = 1 min
Curve number = 74
Hydraulic length = 0 ft
Time of conc. (Tc) = 12.00 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 22,821 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 6

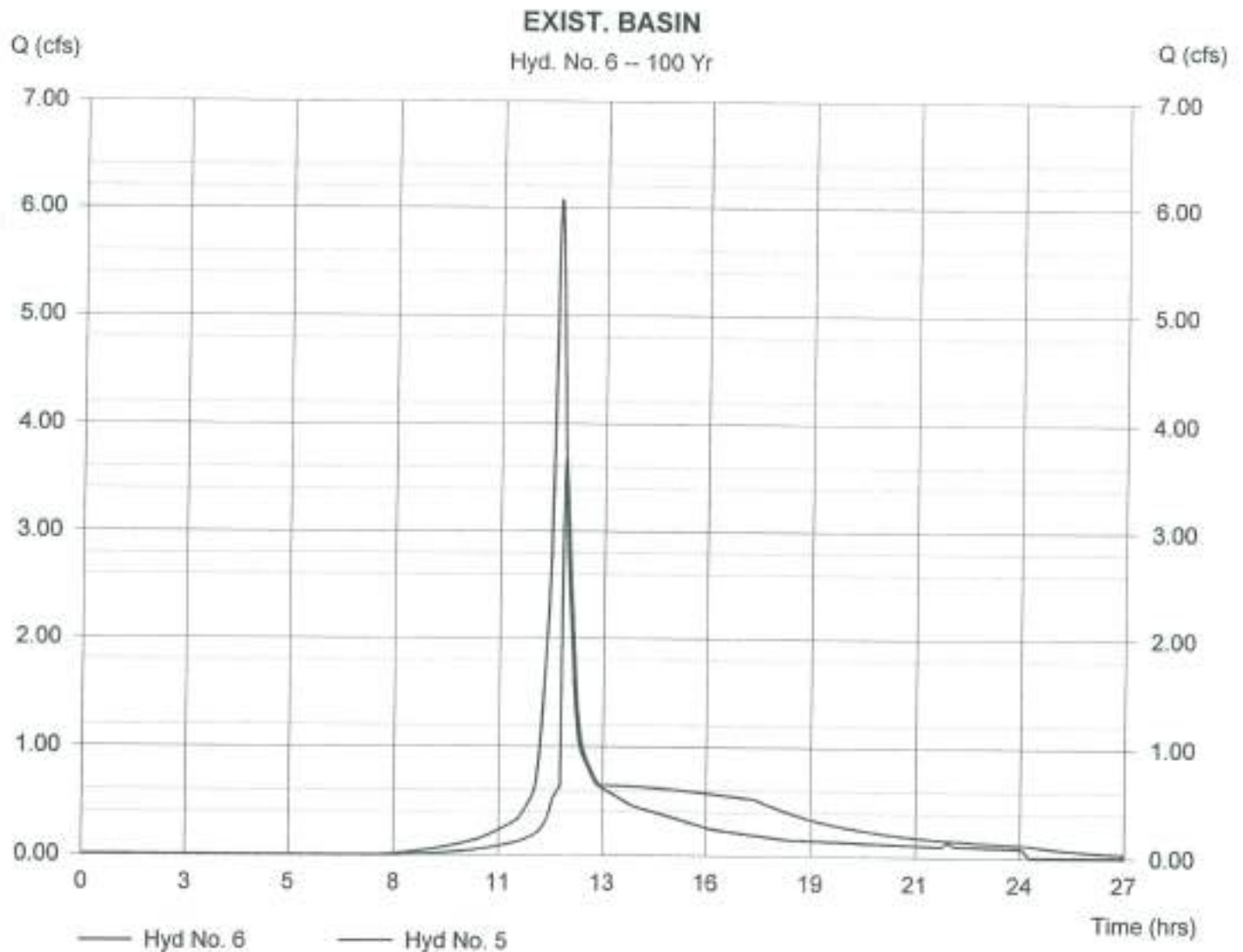
EXIST. BASIN

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 5
Reservoir name = EX. BASIN

Peak discharge = 3.68 cfs
Time interval = 1 min
Max. Elevation = 119.57 ft
Max. Storage = 7,722 cuft

Storage Indication method used,

Hydrograph Volume = 22,814 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

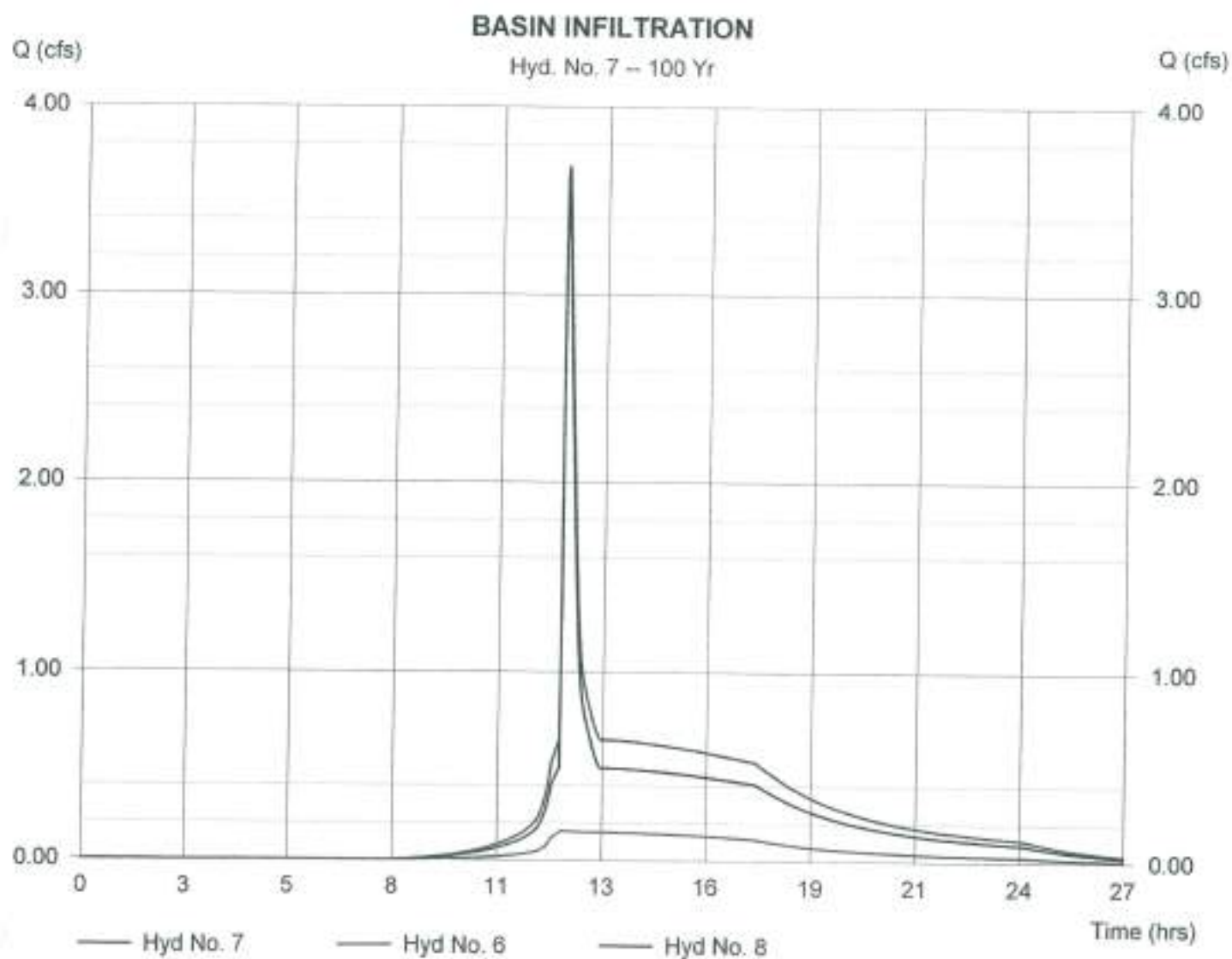
Hyd. No. 7

BASIN INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 100 yrs
Inflow hydrograph = 6
Diversion method = Pond - EX. BASIN

Peak discharge = 0.16 cfs
Time interval = 1 min
2nd diverted hyd. = 8
Pond structure = Exfiltration

Hydrograph Volume = 4,363 cuft



Hydrograph Plot

Hydraflow Hydrographs by IntelliSolve

Monday, May 7 2007, 4:40 PM

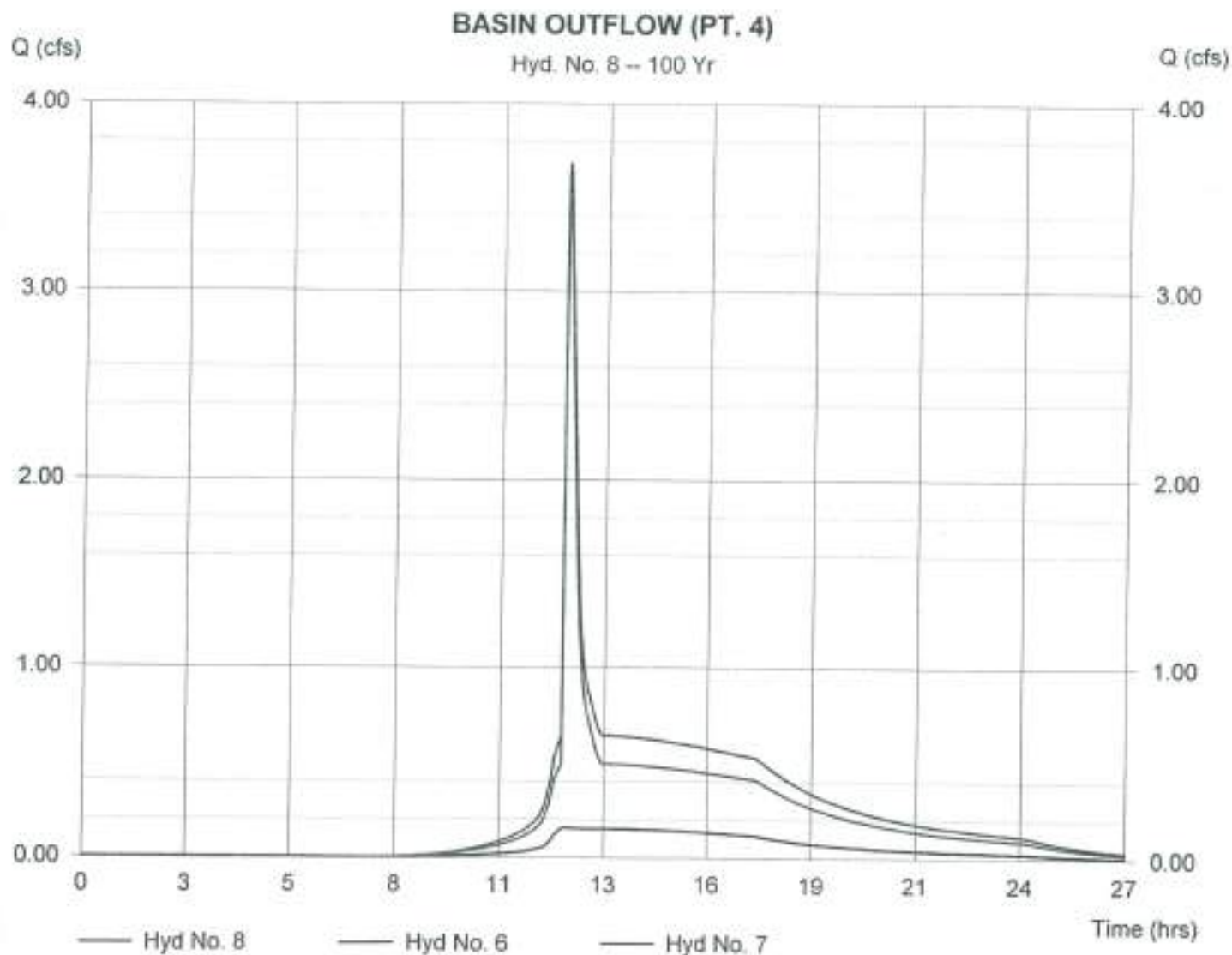
Hyd. No. 8

BASIN OUTFLOW (PT. 4)

Hydrograph type = Diversion2
Storm frequency = 100 yrs
Inflow hydrograph = 6
Diversion method = Pond - EX. BASIN

Peak discharge = 3.52 cfs
Time interval = 1 min
2nd diverted hyd. = 7
Pond structure = Exfiltration

Hydrograph Volume = 16,451 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

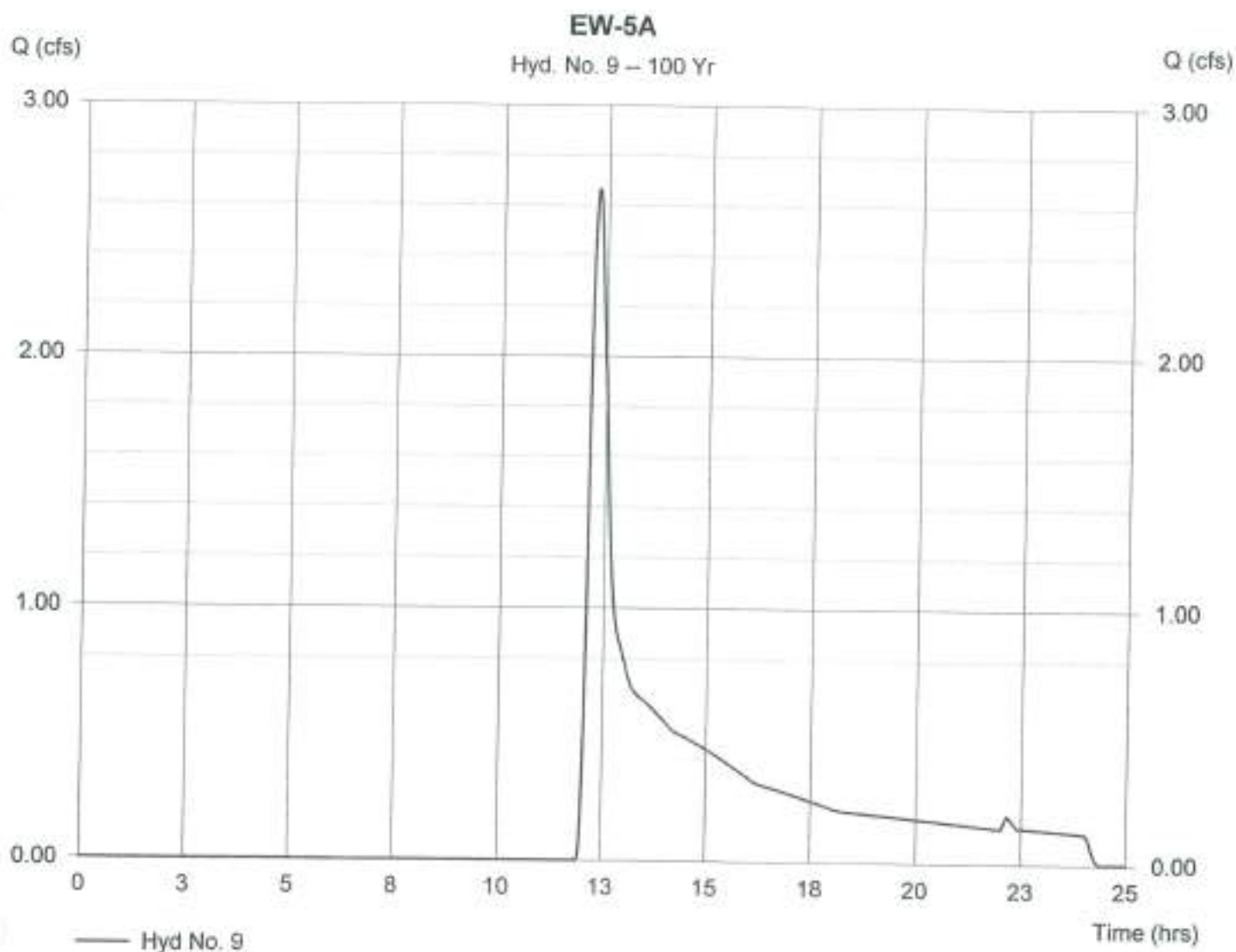
Hyd. No. 9

EW-5A

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 4.990 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 2.66 cfs
Time interval = 1 min
Curve number = 41
Hydraulic length = 0 ft
Time of conc. (Tc) = 14.90 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 16.624 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

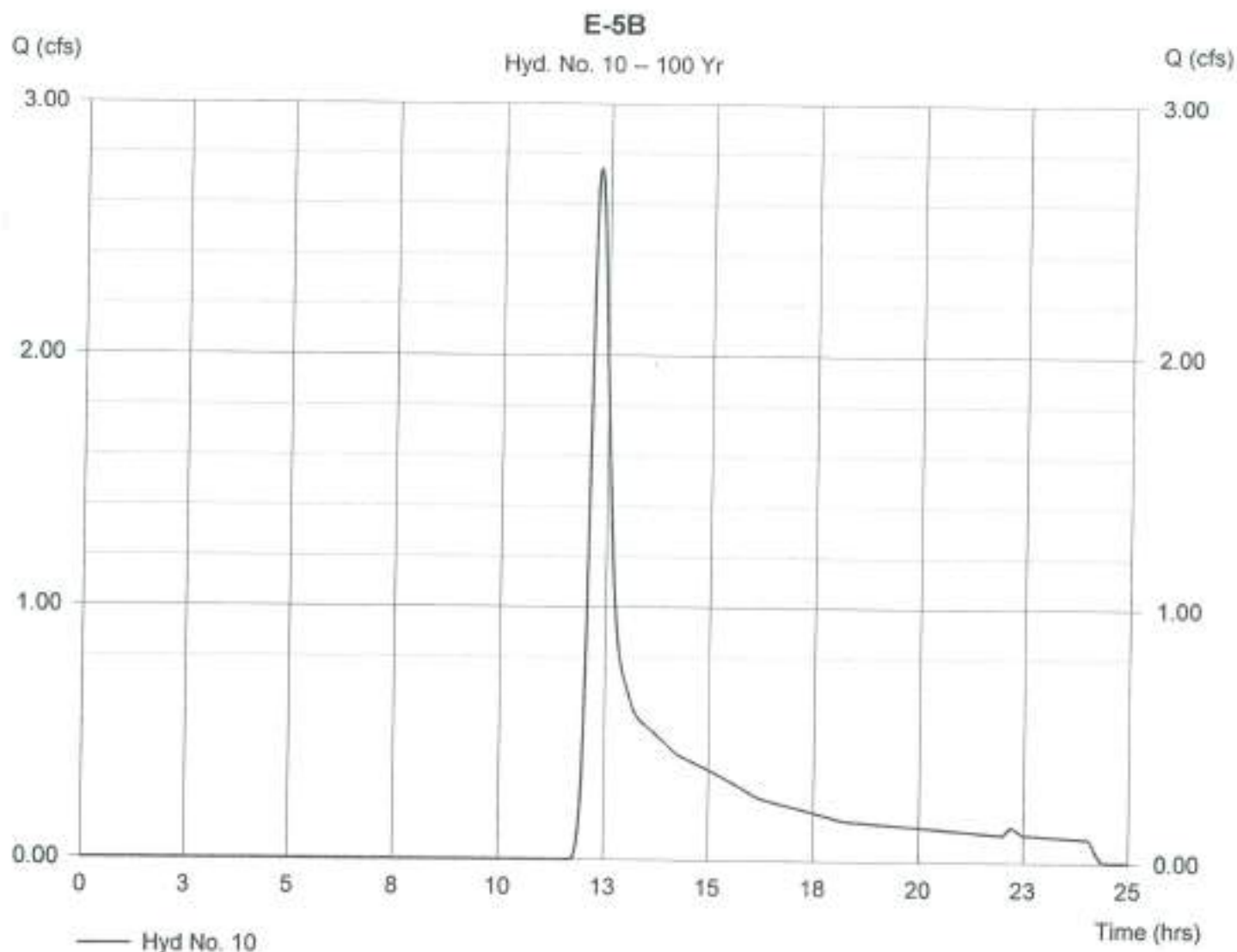
Hyd. No. 10

E-5B

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 3.090 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 2.74 cfs
Time interval = 1 min
Curve number = 46
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.20 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 14,642 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

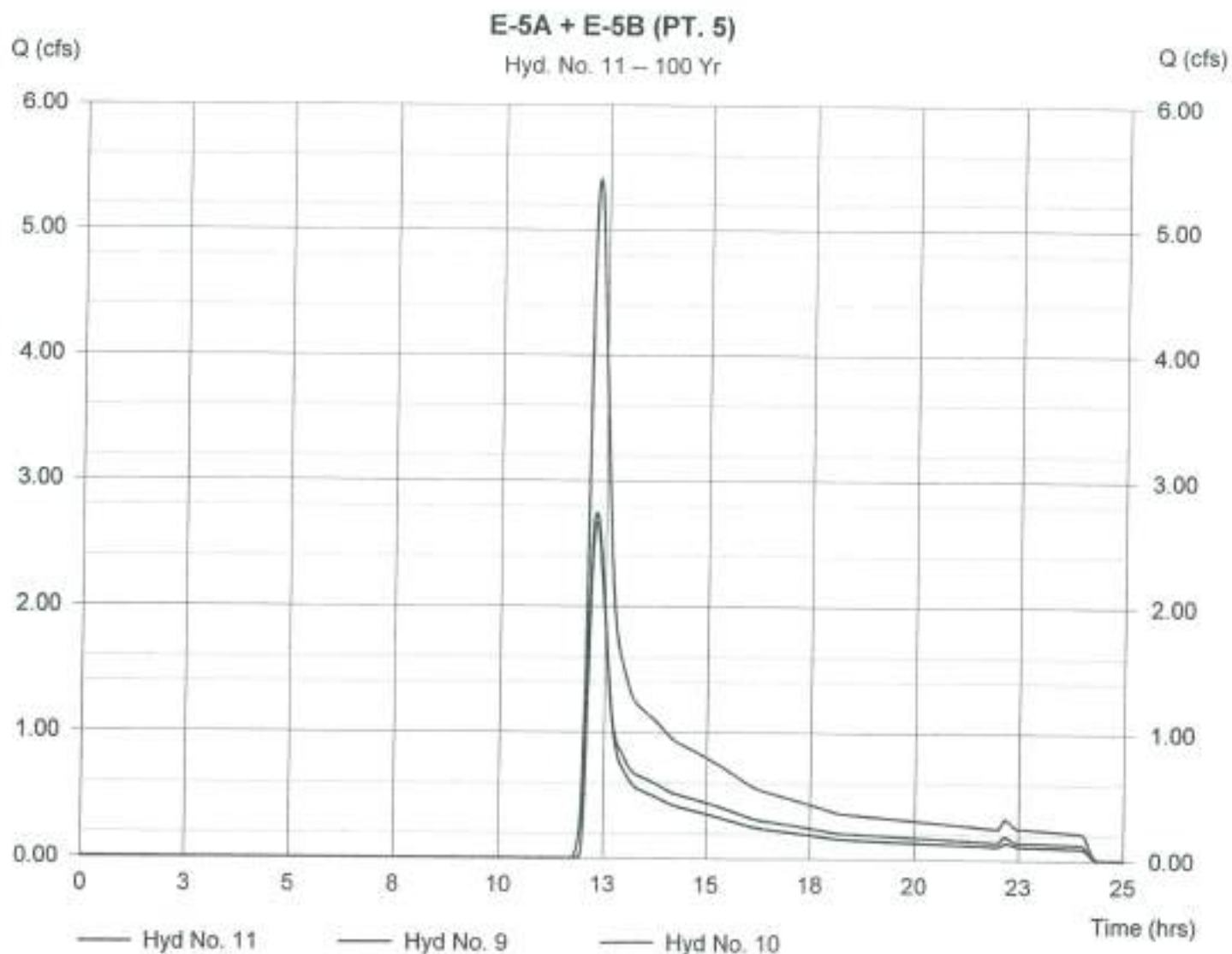
Hyd. No. 11

E-5A + E-5B (PT. 5)

Hydrograph type = Combine
Storm frequency = 100 yrs
Inflow hyds. = 9, 10

Peak discharge = 5.40 cfs
Time interval = 1 min

Hydrograph Volume = 31,266 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

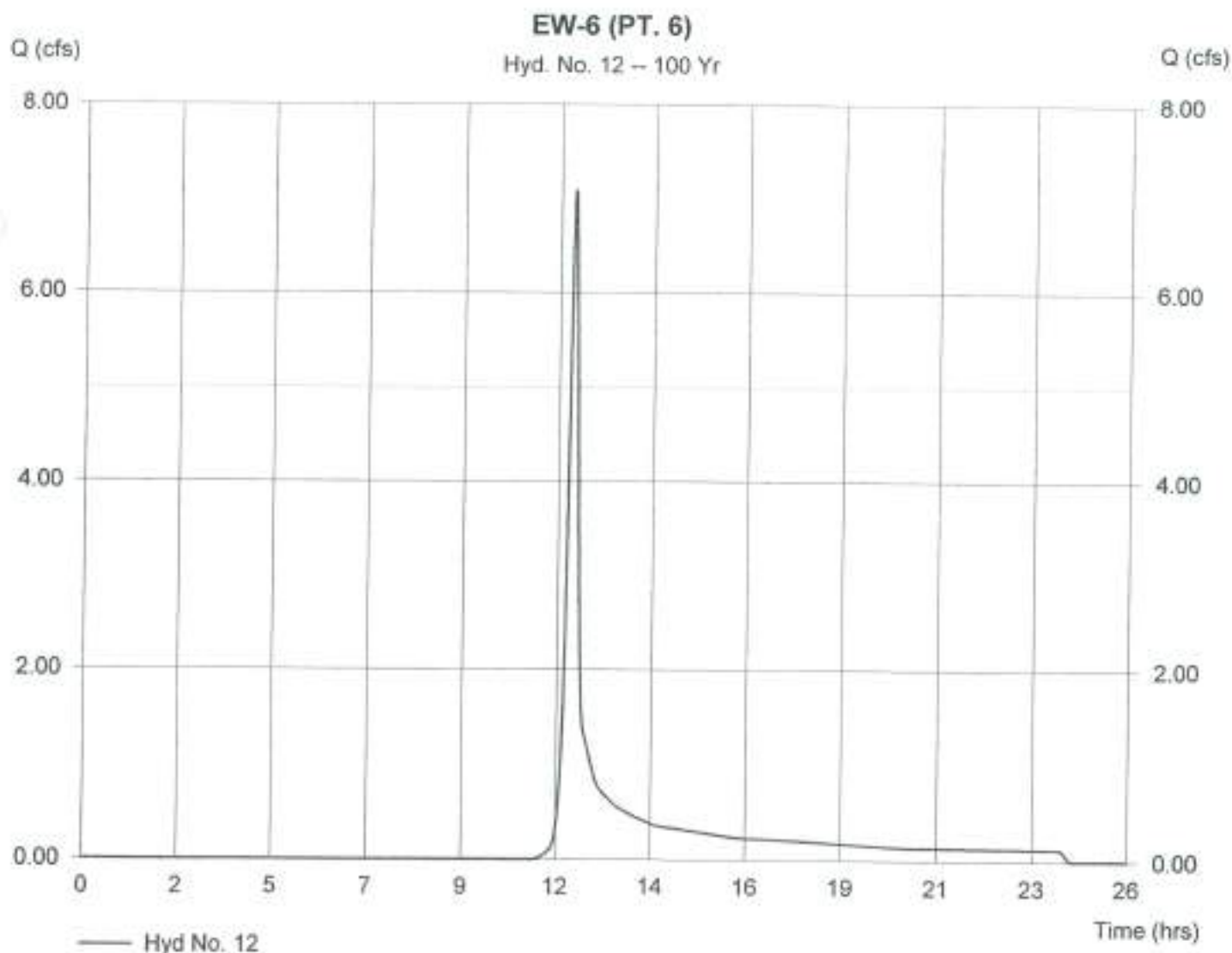
Hyd. No. 12

EW-6 (PT. 6)

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 2.450 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 7.07 cfs
Time interval = 1 min
Curve number = 55
Hydraulic length = 0 ft
Time of conc. (Tc) = 12.03 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 18,593 cuft



APPENDIX B: PROPOSED CONDITIONS HYDROLOGY

Runoff Curve Numbers and Runoff

Time of Concentration

Pond Reports

Hydrograph Plots (2, 10, 25, 100 year storm events)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**

By: **RBM** Date **04/26/07**

Location: **Wayland, MA**

Checked: _____ Date _____

Check One: **Present** Developed

PROPOSED WATERSHED 1 (PW-1)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4			
					X	acres	
						mi ²	
						%	
A	Grass - good	39			8.50		331.50
A	Impervious (pavement, roof)	98			10.79		1057.42
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
Use only one CN source per line.		Totals =			19.29		1388.92

Use only one CN source per line.

CN (weighted) =

$\frac{\text{total product}}{\text{total area}}$

72.0021

Use CN=

72

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	0.99	1.97	3.74	

(Use P and CN with table 2-1, fig. 2-1,
or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**

By: **RBM** Date **04/26/07**

Location: **Wayland, MA**

Checked: _____ Date _____

Check One: **Present** ☐ Developed ☐

PROPOSED WATERSHED 2 (PW-2)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4	X	acres mi ² %	
A	Grass - good	39			2.54	99.06	
A	Impervious (pavement, roof)	98			9.13	894.74	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
Use only one CN source per line.		Totals =			11.67	993.8	

Use only one CN source per line.

CN (weighted) =

$\frac{\text{total product}}{\text{total area}}$

85.1585

Use CN=

85

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	1.84	3.09	5.16	

(Use P and CN with table 2-1, fig. 2-1,
or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**

By: **RBM** Date **04/26/07**

Location: **Wayland, MA**

Checked: Date

Check One: **Present**

PROPOSED WATERSHED 3 (PW-3)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4			
					X	acres mi ² %	
A	Grass - good	39			3.52	137.28	
A	Wetland	83			0.52	43.16	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
		Totals =			4.04	180.44	

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ **44.6634** Use CN= **45**

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	0.06	0.35	1.19	

(Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**

By: **RBM** Date **04/26/07**

Location: **Wayland, MA**

Checked: Date

Check One: **Present** Developed

PROPOSED WATERSHED 5A (PW-5A)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4			
					X	acres	
						mi ²	
						%	
A	Grass - good	39			4.75		185.25
A	Impervious (pavement, roof)	98			2.17		212.66
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
Use only one CN source per line.		Totals =			6.92		397.91

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ **57.5014**

Use CN= **58**

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	0.38	1.01	2.34	

(Use P and CN with table 2-1, fig. 2-1,
or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center** By: **RBM** Date: **04/26/07**
 Location: **Wayland, MA** Checked: _____ Date: _____
 Check One: **Present** Developed _____ **PROPOSED WATERSHED 5B (PW-5B)**

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4			
					X	acres	
					*	mi ² %	
A	Grass - good	39			2.22	86.58	
A	Impervious (pavement, roof)	98			0.44	43.12	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
Use only one CN source per line.		Totals =			2.66	129.7	

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ **48.7594** Use CN= **49**

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	0.13	0.53	1.52	

(Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center** By: **RBM** Date: **04/26/07**
 Location: **Wayland, MA** Checked: _____ Date: _____
 Check One: **Present** Developed _____ **PROPOSED WATERSHED 6A (PW-6A)**

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio) *	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4			
					X	acres	
A	Grass - good	39			0.28	10.92	
A	Impervious (pavement, roof)	98			0.40	39.20	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
		Totals =			0.68	50.12	

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ **73.7059** Use CN= **74**

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	1.10	2.13	3.96	

(Use P and CN with table 2-1, fig. 2-1,
or eqs. 2-3 and 2-4.)

Worksheet 2: Runoff curve number and runoff

Project: **Wayland Town Center**

By: **RBM** Date: **04/26/07**

Location: **Wayland, MA**

Checked: _____ Date _____

Check One: **Present** Developed

PROPOSED WATERSHED 6B (PW-6B)

1. Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic conditions percent impervious unconnected/connected impervious area ratio)	CN			Area		Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4			
					X	acres mi ² %	
A	Grass - good	39			0.60	23.40	
A	Impervious (pavement, roof)	98			0.00	0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
Use only one CN source per line.		Totals =			0.6	23.4	

Use only one CN source per line.

Totals =

0.6

23.4

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}}$$

39.0000

Use CN=

39

2. Runoff

		Storm #1	Storm #2	Storm #3	
Frequency	yr.	2	10	100	
Rainfall, P (24 hour)	in.	3.30	4.70	6.90	
Runoff, Q	in.	0.00	0.14	0.73	

(Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 14

PW-1

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.200	0.011	0.011	
Flow length (ft)	= 100.0	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)	= 16.53	+	0.00	+
			0.00	= 16.53
Shallow Concentrated Flow				
Flow length (ft)	= 70.00	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)	= 0.72	+	0.00	+
			0.00	= 0.72
Channel Flow				
X sectional flow area (sqft)	= 1.77	0.00	0.00	
Wetted perimeter (ft)	= 2.36	0.00	0.00	
Channel slope (%)	= 0.50	0.00	0.00	
Manning's n-value	= 0.012	0.015	0.015	
Velocity (ft/s)	= 7.24	0.00	0.00	
Flow length (ft)	= 540.0	0.0	0.0	
Travel Time (min)	= 1.24	+	0.00	+
			0.00	= 1.24
Total Travel Time, Tc				18.50 min

TR55 Tc Worksheet

Hydraflow Hydrographs by Intelsolve

Hyd. No. 18

PW-2

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.200	0.011	0.011				
Flow length (ft)	= 100.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 3.10	0.00	0.00				
Land slope (%)	= 0.25	0.00	0.00				
Travel Time (min)	= 28.79	+	0.00	+	0.00	=	28.79
Shallow Concentrated Flow							
Flow length (ft)	= 400.00	0.00	0.00				
Watercourse slope (%)	= 0.25	0.00	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	= 0.81	0.00	0.00				
Travel Time (min)	= 8.26	+	0.00	+	0.00	=	8.26
Channel Flow							
X sectional flow area (sqft)	= 1.76	0.00	0.00				
Wetted perimeter (ft)	= 2.35	0.00	0.00				
Channel slope (%)	= 0.50	0.00	0.00				
Manning's n-value	= 0.012	0.015	0.015				
Velocity (ft/s)	= 7.23	0.00	0.00				
Flow length (ft)	= 205.0	0.0	0.0				
Travel Time (min)	= 0.47	+	0.00	+	0.00	=	0.47
Total Travel Time, Tc					37.50 min		

TR55 Tc Worksheet

Hydraflow Hydrographs by Intellisolve

Hyd. No. 22

PW-3

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.200	0.011	0.011	
Flow length (ft)	= 100.0	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)	= 12.53	+	0.00	+
			0.00	= 12.53
Shallow Concentrated Flow				
Flow length (ft)	= 430.00	0.00	0.00	
Watercourse slope (%)	= 0.50	0.00	0.00	
Surface description	= Unpaved	Unpaved	Unpaved	
Average velocity (ft/s)	= 1.14	0.00	0.00	
Travel Time (min)	= 6.28	+	0.00	+
			0.00	= 6.28
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				18.80 min

TR55 Tc Worksheet

Hydraflow Hydrographs by Intellisolve

Hyd. No. 24

PW-5A

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.200	0.011	0.011	
Flow length (ft)	= 100.0	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)	= 21.82	+ 0.00	+ 0.00	= 21.82
Shallow Concentrated Flow				
Flow length (ft)	= 360.00	0.00	0.00	
Watercourse slope (%)	= 0.50	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 1.14	0.00	0.00	
Travel Time (min)	= 5.26	+ 0.00	+ 0.00	= 5.26
Channel Flow				
X sectional flow area (sqft)	= 1.76	0.00	0.00	
Wetted perimeter (ft)	= 2.36	0.00	0.00	
Channel slope (%)	= 0.50	0.00	0.00	
Manning's n-value	= 0.012	0.015	0.015	
Velocity (ft/s)	= 7.21	0.00	0.00	
Flow length (ft)	= 80.0	0.0	0.0	
Travel Time (min)	= 0.18	+ 0.00	+ 0.00	= 0.18
Total Travel Time, Tc				27.30 min

TR55 Tc Worksheet

Hydraflow Hydrographs by Intellisolve

Hyd. No. 28

PW-5B

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.200	0.011	0.011	
Flow length (ft)	= 100.0	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)	= 16.53	+	0.00	+
			0.00	= 16.53
Shallow Concentrated Flow				
Flow length (ft)	= 370.00	0.00	0.00	
Watercourse slope (%)	= 5.40	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 3.75	0.00	0.00	
Travel Time (min)	= 1.64	+	0.00	+
			0.00	= 1.64
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				18.20 min

TR55 Tc Worksheet

Hydraflow Hydrographs by Intellisolve

Hyd. No. 30

PW-6A

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.200	0.011	0.011	
Flow length (ft)	= 100.0	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)	= 21.82	+	0.00	+
			0.00	= 21.82
Shallow Concentrated Flow				
Flow length (ft)	= 200.00	0.00	0.00	
Watercourse slope (%)	= 0.50	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 1.14	0.00	0.00	
Travel Time (min)	= 2.92	+	0.00	+
			0.00	= 2.92
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				24.70 min

Pond Report

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:33 PM

Pond No. 1 - BASIN 1

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	114.00	2,000	0	0
2.00	116.00	3,880	5,880	5,880
4.00	118.00	7,189	11,069	16,949
6.00	120.00	11,168	18,357	35,306
8.00	122.00	15,408	26,576	61,882
10.00	124.00	19,874	35,282	97,164

Culvert / Orifice Structures

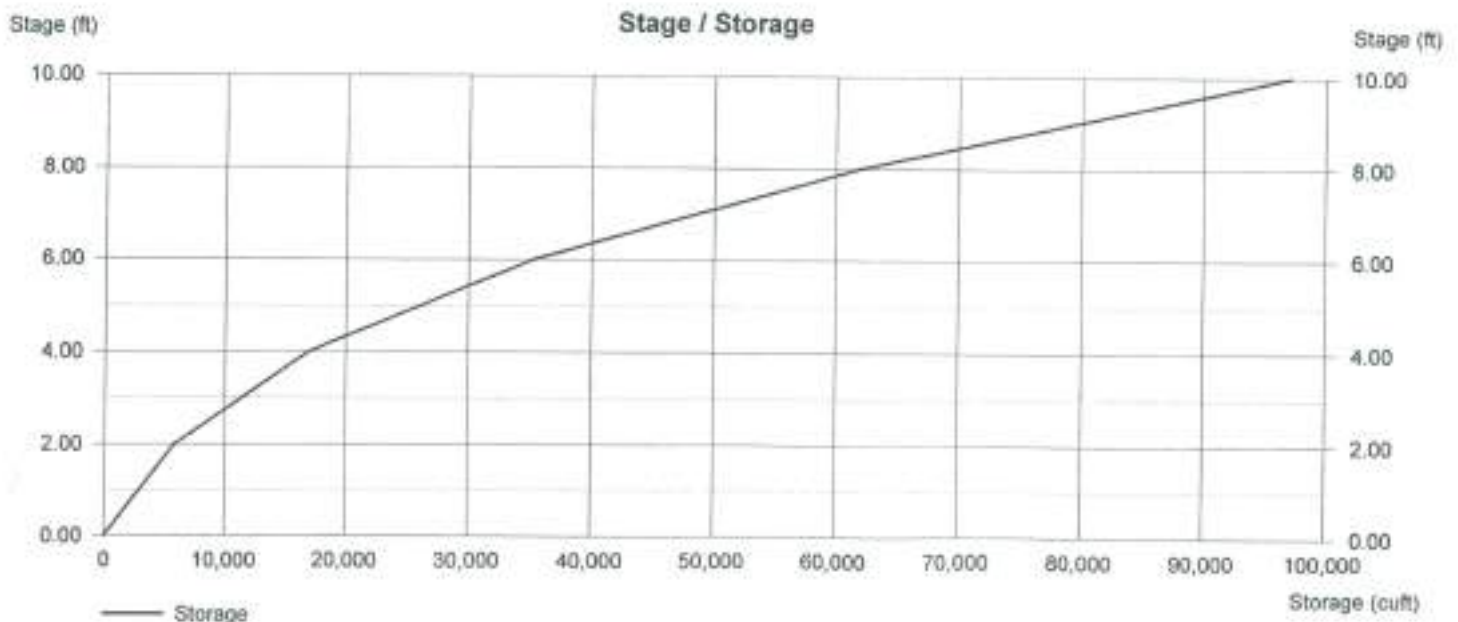
	[A]	[B]	[C]	[D]
Rise (in)	= 18.00	0.00	0.00	0.00
Span (in)	= 18.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 119.50	0.00	0.00	0.00
Length (ft)	= 200.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	0.00
N-Value	= .012	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

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

Exfiltration = 4.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Pond Report

Hydraflow Hydrographs by Intelsolve

Monday, May 7 2007, 4:34 PM

Pond No. 2 - BASIN 2

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	116.00	6,474	0	0
2.00	118.00	8,752	15,226	15,226
4.00	120.00	11,467	20,219	35,445
6.00	122.00	18,976	30,443	65,888
8.00	124.00	22,283	41,259	107,147

Culvert / Orifice Structures

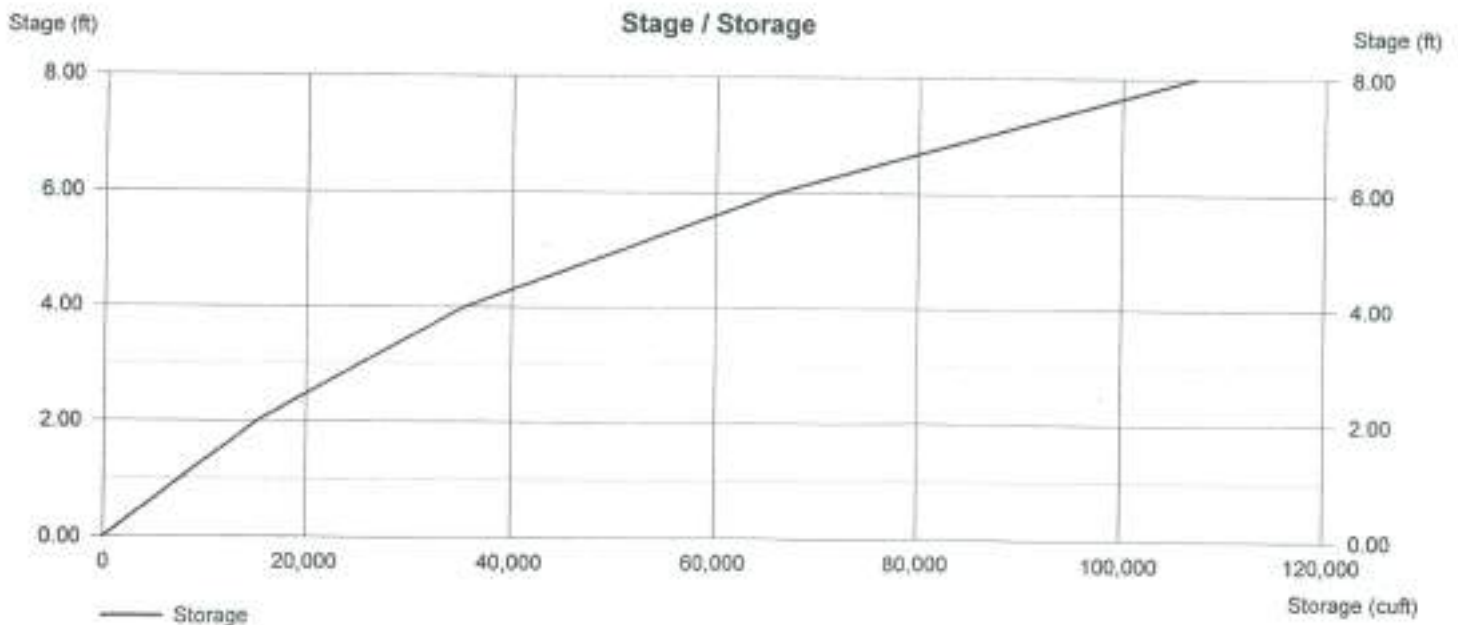
	[A]	[B]	[C]	[D]
Rise (in)	= 36.00	0.00	0.00	0.00
Span (in)	= 36.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 118.50	0.00	0.00	0.00
Length (ft)	= 45.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	0.00
N-Value	= .012	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

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

Exfiltration = 4.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Pond Report

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:34 PM

Pond No. 3 - BASIN 3

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	124.00	8,436	0	0
2.00	126.00	12,822	21,258	21,258
4.00	128.00	17,688	30,510	51,768
6.00	130.00	22,808	40,496	92,264

Culvert / Orifice Structures

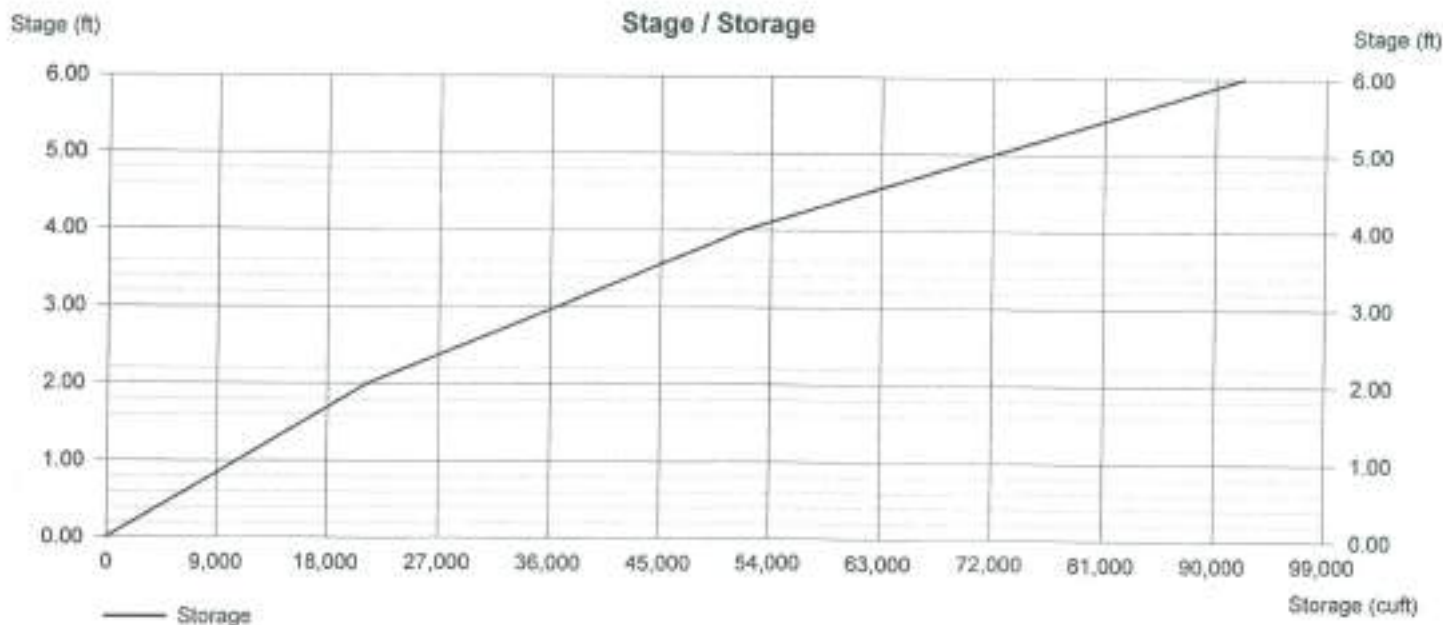
	[A]	[B]	[C]	[D]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

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

Exfiltration = 4.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Pond Report

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:35 PM

Pond No. 4 - BASIN 4

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	128.00	458	0	0
1.00	129.00	1,249	854	854
2.00	130.00	1,995	1,622	2,476

Culvert / Orifice Structures

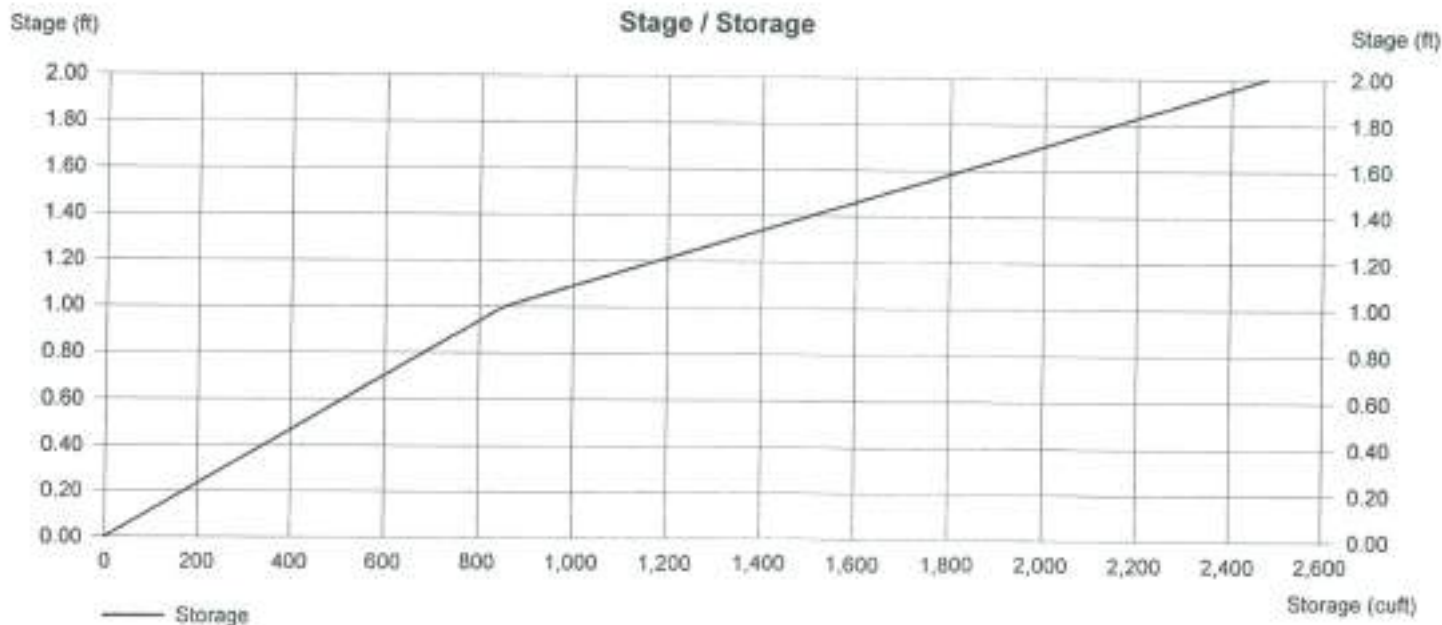
	[A]	[B]	[C]	[D]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .000	.000	.000	.000
Orif. Coeff.	= 0.00	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 6.00	0.00	0.00	0.00
Crest El. (ft)	= 129.50	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 4.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	3.37	1	730	14,413	---	---	---	EW-1 (PT. 1)
2	SCS Runoff	0.86	1	727	3,257	---	---	---	EW-2 (PT. 2)
3	SCS Runoff	0.00	1	0	0	---	---	---	EW-3
4	Combine	4.17	1	729	17,670	1, 2, 3	---	---	EXIST. TOTAL TO RIVER (PT. 3)
5	SCS Runoff	0.00	1	890	131	---	---	---	EW-4
6	Reservoir	0.00	1	1015	124	5	118.01	26	EXIST. BASIN
7	Diversion1	0.00	1	1015	27	6	---	---	BASIN INFILTRATION
8	Diversion2	0.00	1	1015	96	6	---	---	BASIN OUTFLOW (PT. 4)
9	SCS Runoff	0.00	1	0	0	---	---	---	EW-5A
10	SCS Runoff	0.00	1	0	0	---	---	---	E-5B
11	Combine	0.00	1	0	0	9, 10	---	---	E-5A + E-5B (PT. 5)
12	SCS Runoff	0.00	1	0	0	---	---	---	EW-6 (PT. 6)
14	SCS Runoff	0.03	1	937	832	---	---	---	PW-1
15	Reservoir	0.02	1	1411	813	14	116.05	344	BASIN 2
	Diversion1	0.02	1	1411	813	15	---	---	BASIN 2 INFILTRATION
	Diversion2	0.00	1	1050	0	15	---	---	BASIN 2 OUTFLOW (PT. 1)
18	SCS Runoff	0.96	1	755	7,314	---	---	---	PW-2
19	Reservoir	0.18	1	916	7,298	18	115.01	2,958	BASIN 1
20	Diversion1	0.18	1	916	7,298	19	---	---	BASIN 1 INFILTRATION
21	Diversion2	0.00	1	888	0	19	---	---	BASIN 1 OUTFLOW (PT. 2)
22	SCS Runoff	0.00	1	0	0	---	---	---	PW-3
23	Combine	0.00	1	888	0	17, 21, 22	---	---	PROP. TOTAL TO RIVER (PT. 3)
24	SCS Runoff	0.00	1	0	0	---	---	---	PW-5A
25	Reservoir	0.00	1	0	0	24	124.00	0	BASIN 3
26	Diversion1	0.00	1	0	0	25	---	---	BASIN 3 INFILTRATION
27	Diversion2	0.00	1	0	0	25	---	---	BASIN 3 OUTFLOW
28	SCS Runoff	0.00	1	0	0	---	---	---	PW-5B
29	Combine	0.00	1	0	0	27, 28	---	---	TOTAL TO PT. 5
30	SCS Runoff	0.00	1	899	57	---	---	---	PW-6A
MSP_5-8-07.gpw					Return Period: 1 Year			Monday, May 7 2007, 4:39 PM	

Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
31	Reservoir	0.00	1	1013	50	30	129.01	12	BASIN 4
32	Diversion1	0.00	1	1013	50	31	-----	-----	BASIN 4 INFILTRATION
33	Diversion2	0.00	1	0	0	31	-----	-----	BASIN 4 OUTFLOW
34	SCS Runoff	0.00	1	0	0	---	-----	-----	PW-6B
35	Combine	0.00	1	0	0	33, 34	-----	-----	TOTAL TO PT. 6
MSP_5-8-07.gpw					Return Period: 1 Year			Monday, May 7 2007, 4:39 PM	

Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:37 PM

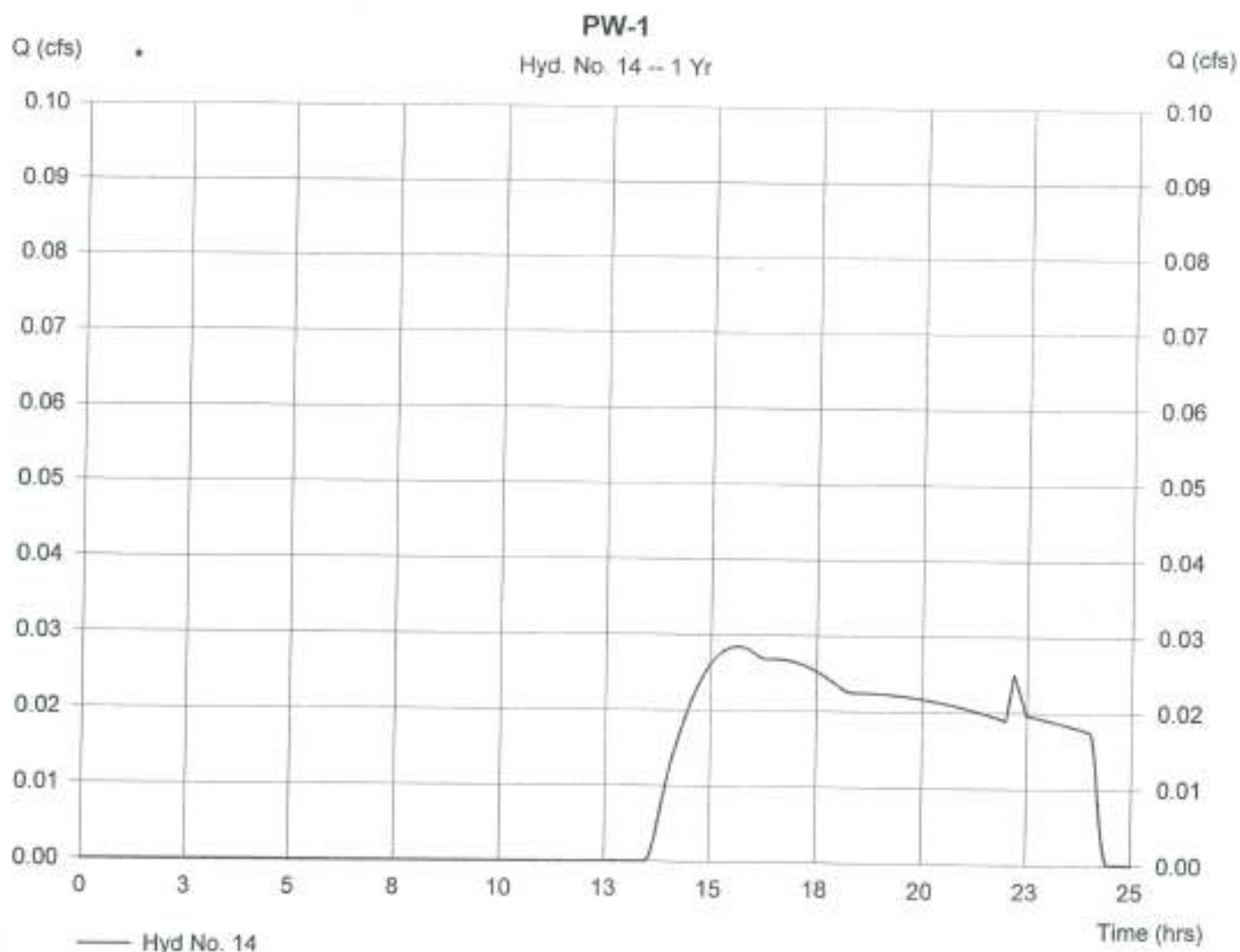
Hyd. No. 14

PW-1

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 19.290 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.03 cfs
Time interval = 1 min
Curve number = 72
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.50 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 832 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:37 PM

Hyd. No. 15

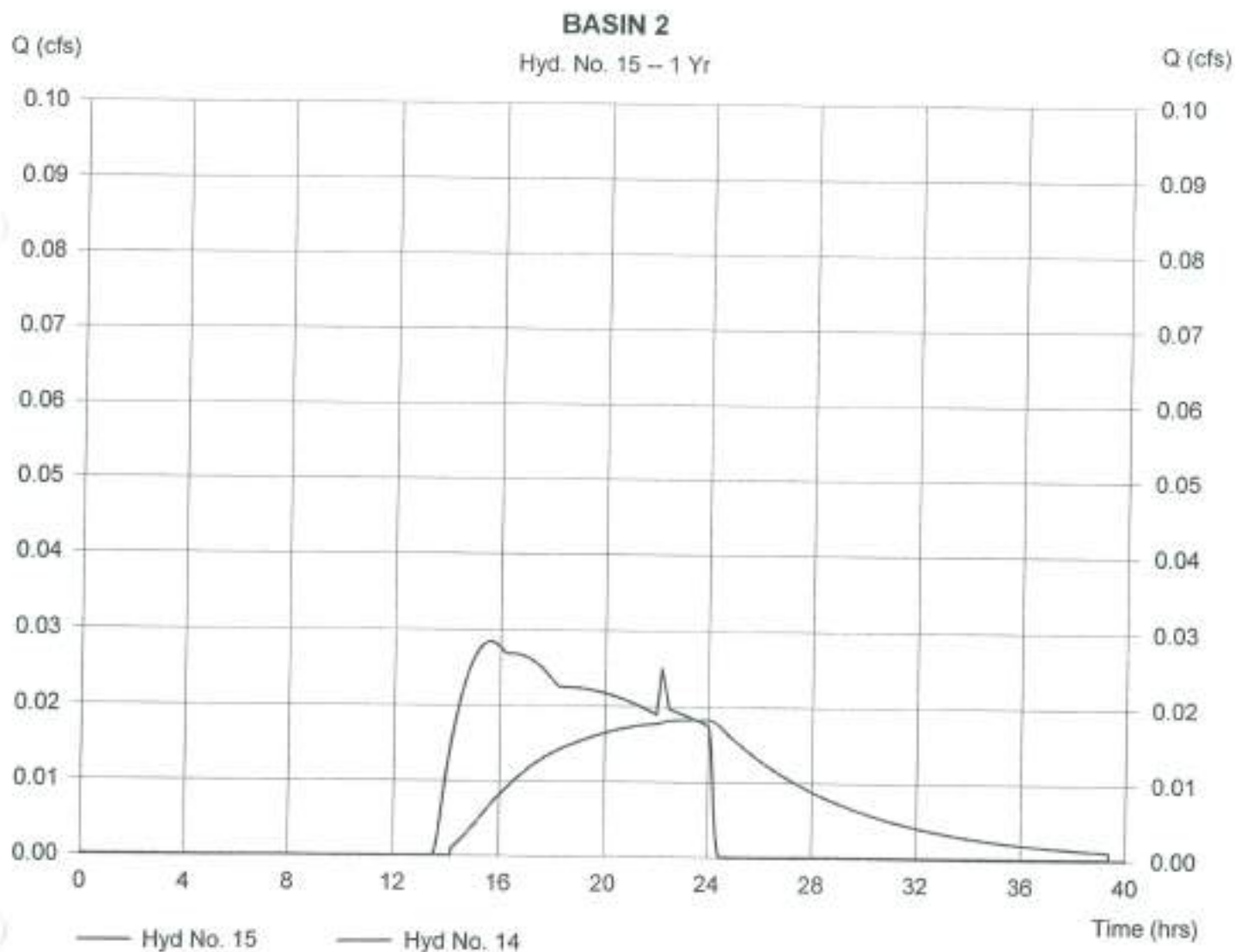
BASIN 2

Hydrograph type = Reservoir
Storm frequency = 1 yrs
Inflow hyd. No. = 14
Reservoir name = BASIN 2

Peak discharge = 0.02 cfs
Time interval = 1 min
Max. Elevation = 116.05 ft
Max. Storage = 344 cuft

Storage Indication method used.

Hydrograph Volume = 813 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:37 PM

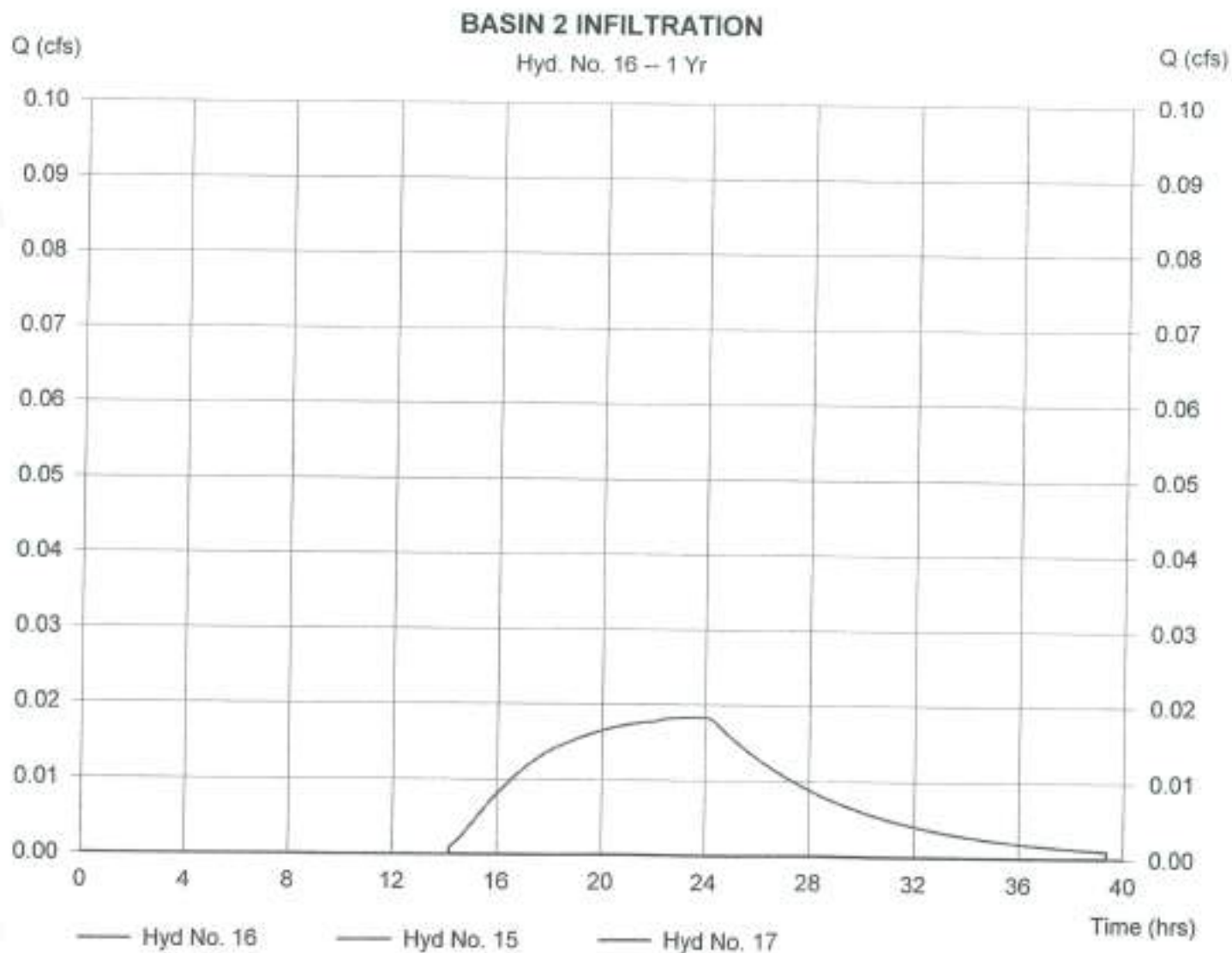
Hyd. No. 16

BASIN 2 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 1 yrs
Inflow hydrograph = 15
Diversion method = Pond - BASIN 2

Peak discharge = 0.02 cfs
Time interval = 1 min
2nd diverted hyd. = 17
Pond structure = Exfiltration

Hydrograph Volume = 813 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:37 PM

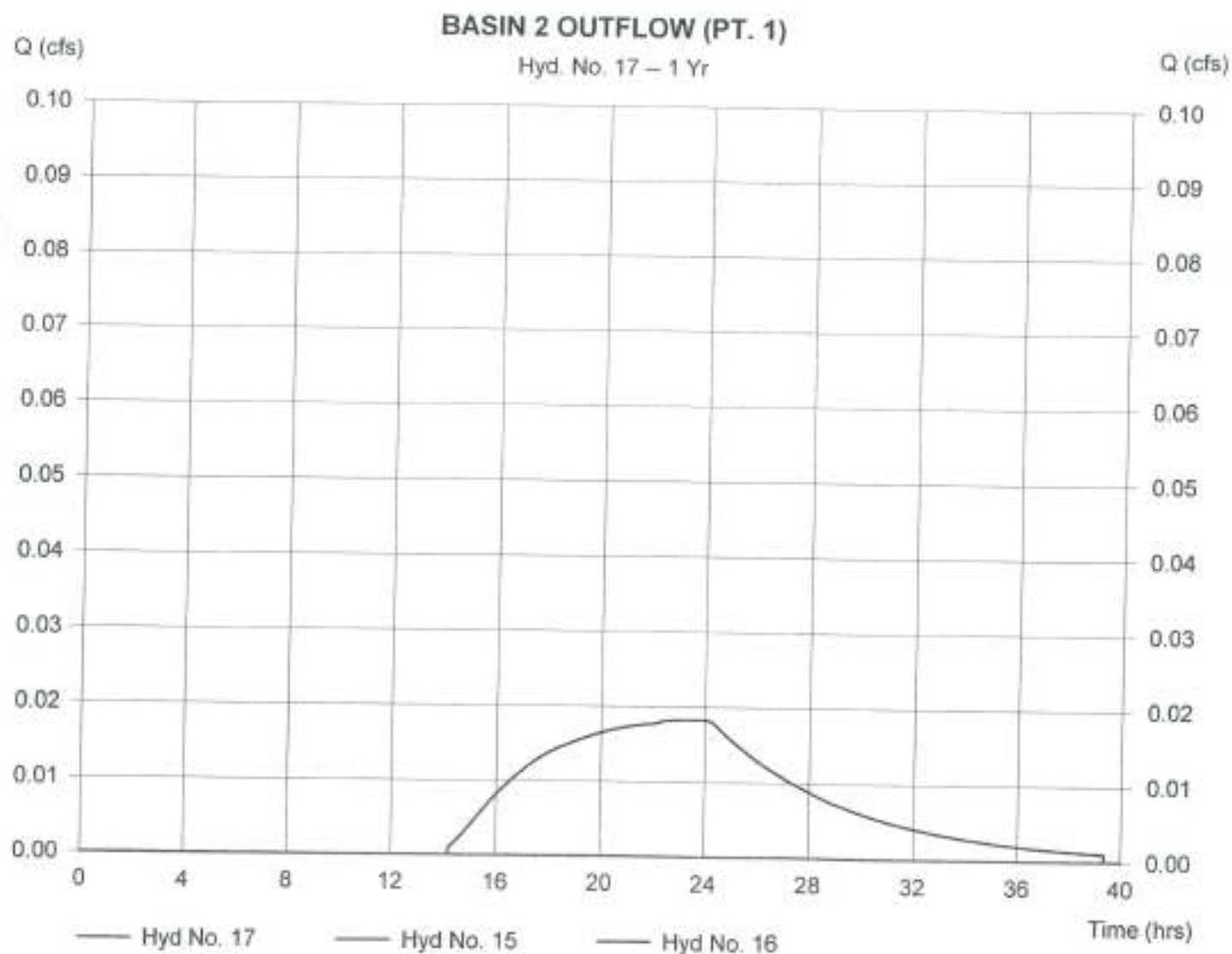
Hyd. No. 17

BASIN 2 OUTFLOW (PT. 1)

Hydrograph type = Diversion2
Storm frequency = 1 yrs
Inflow hydrograph = 15
Diversion method = Pond - BASIN 2

Peak discharge = 0.00 cfs
Time interval = 1 min
2nd diverted hyd. = 16
Pond structure = Exfiltration

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:37 PM

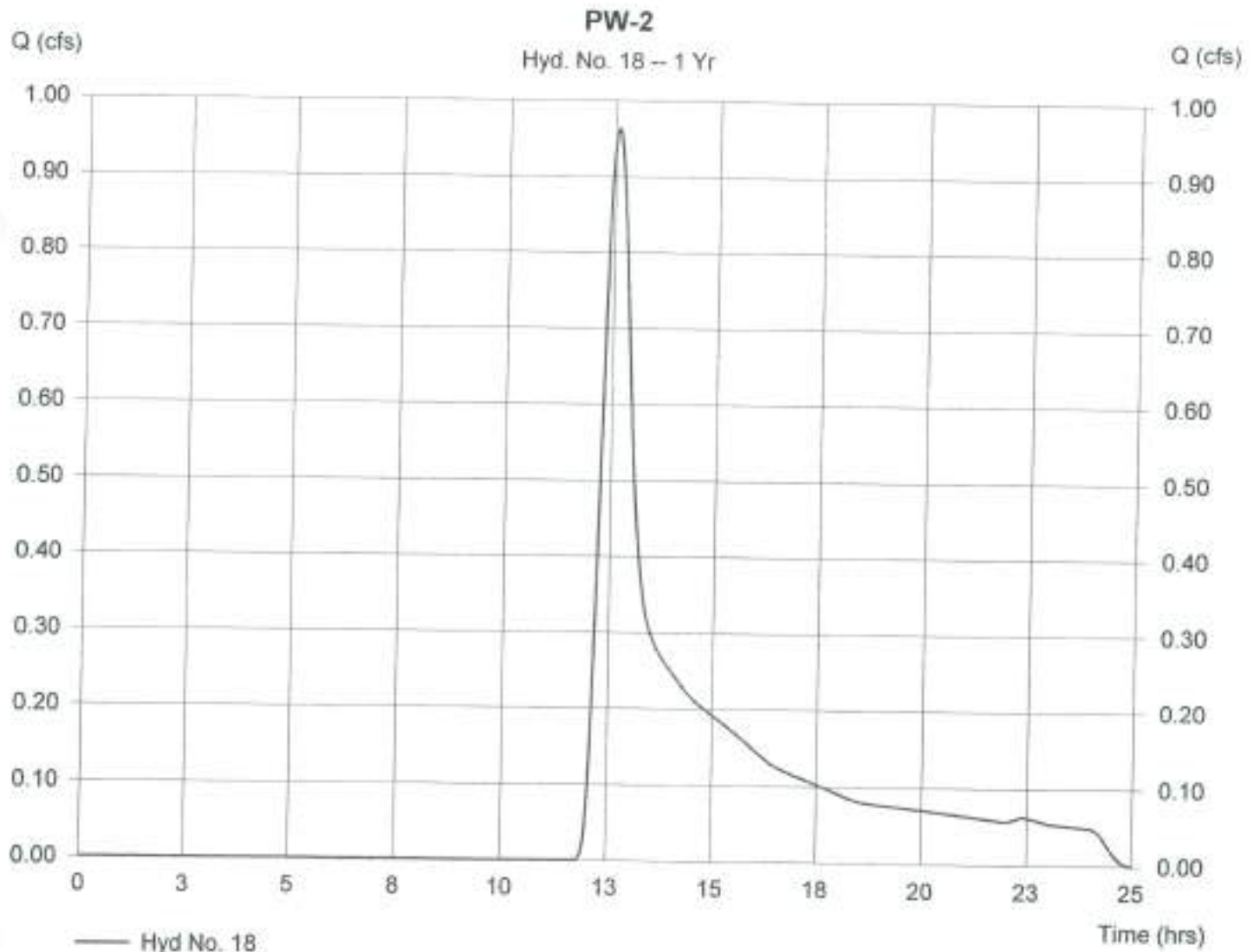
Hyd. No. 18

PW-2

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 11.670 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.96 cfs
Time interval = 1 min
Curve number = 85
Hydraulic length = 0 ft
Time of conc. (Tc) = 37.50 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 7,314 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

Monday, May 7 2007, 4:37 PM

Hyd. No. 19

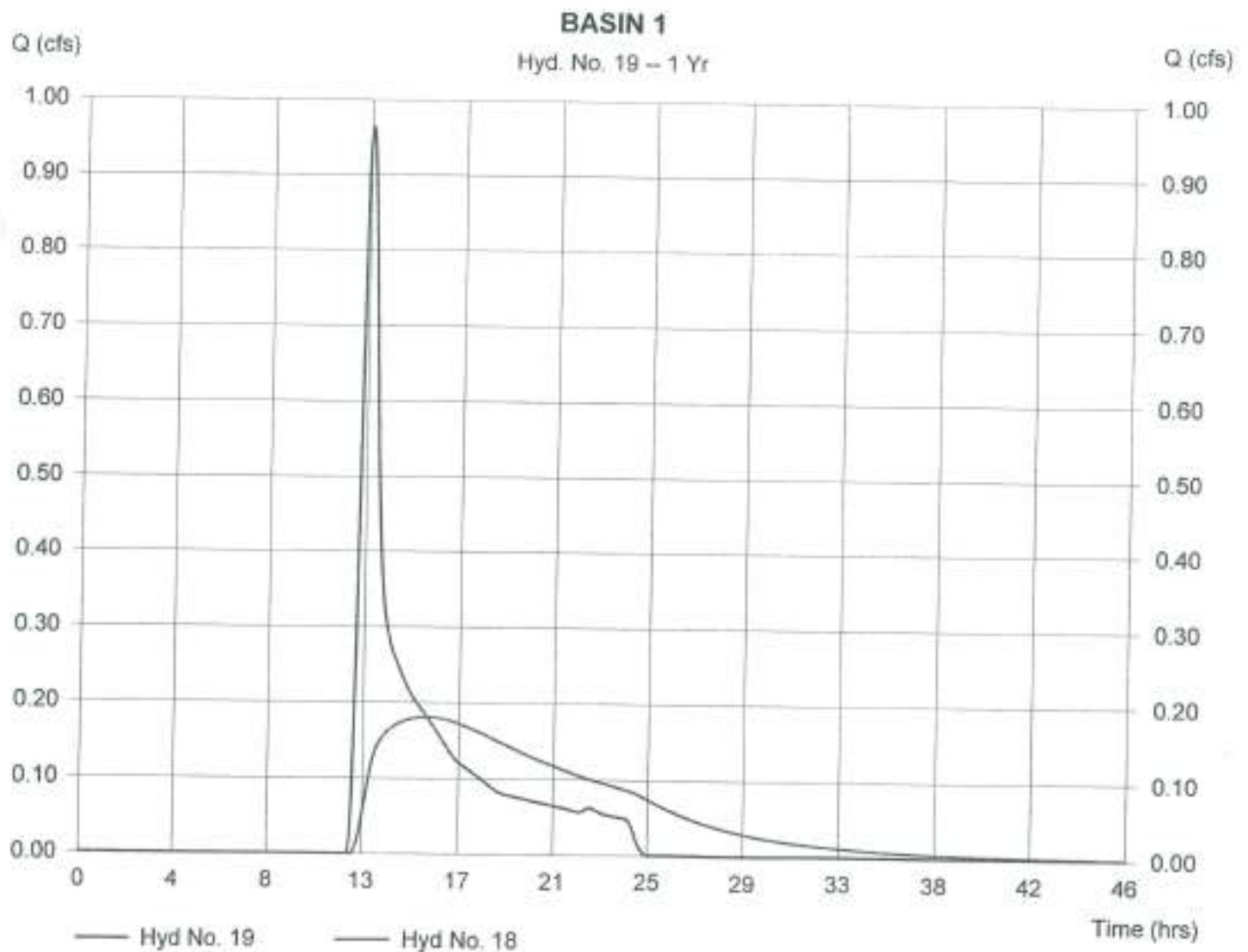
BASIN 1

Hydrograph type = Reservoir
Storm frequency = 1 yrs
Inflow hyd. No. = 18
Reservoir name = BASIN 1

Peak discharge = 0.18 cfs
Time interval = 1 min
Max. Elevation = 115.01 ft
Max. Storage = 2,958 cuft

Storage Indication method used.

Hydrograph Volume = 7,298 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:37 PM

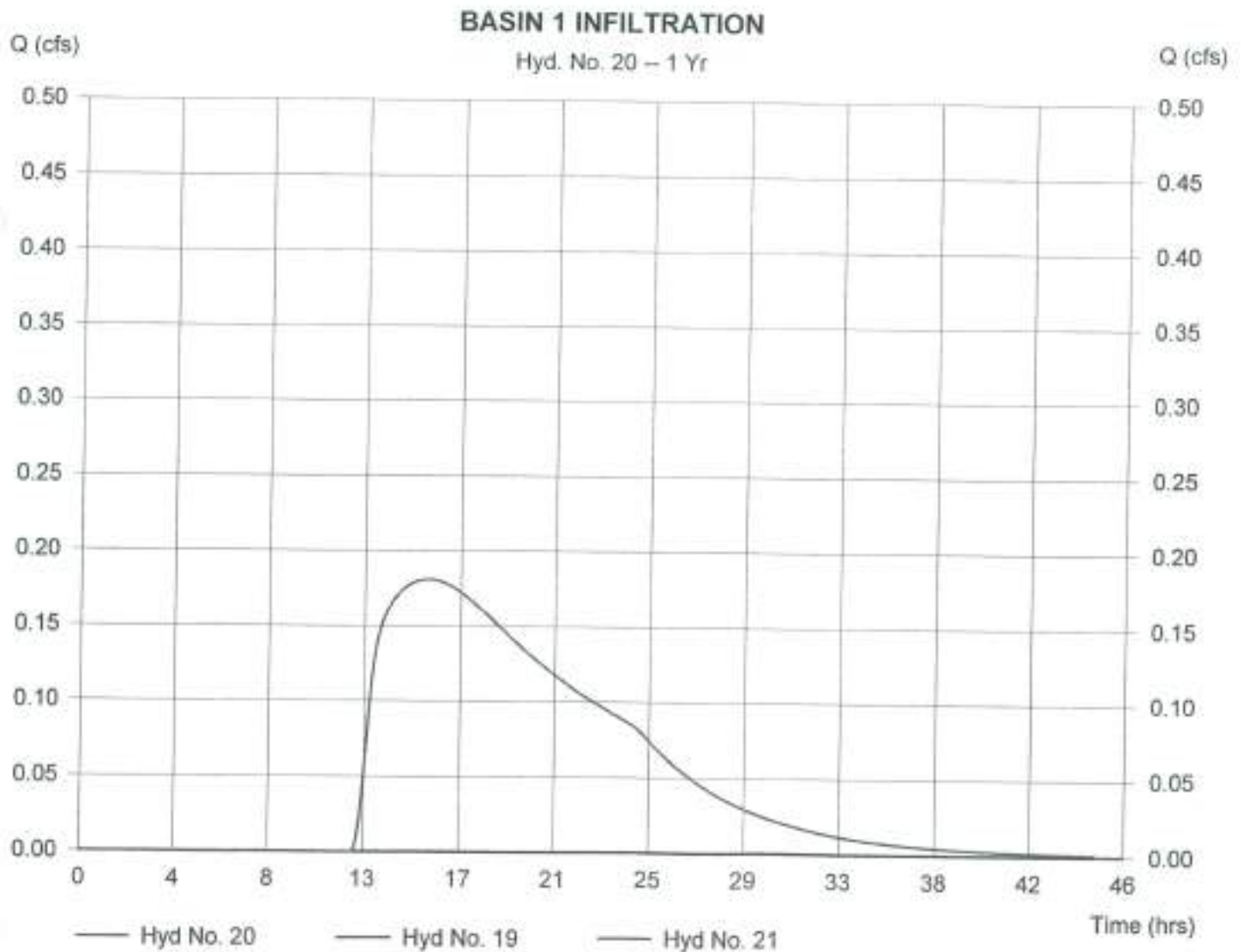
Hyd. No. 20

BASIN 1 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 1 yrs
Inflow hydrograph = 19
Diversion method = Pond - BASIN 1

Peak discharge = 0.18 cfs
Time interval = 1 min
2nd diverted hyd. = 21
Pond structure = Exfiltration

Hydrograph Volume = 7.298 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:38 PM

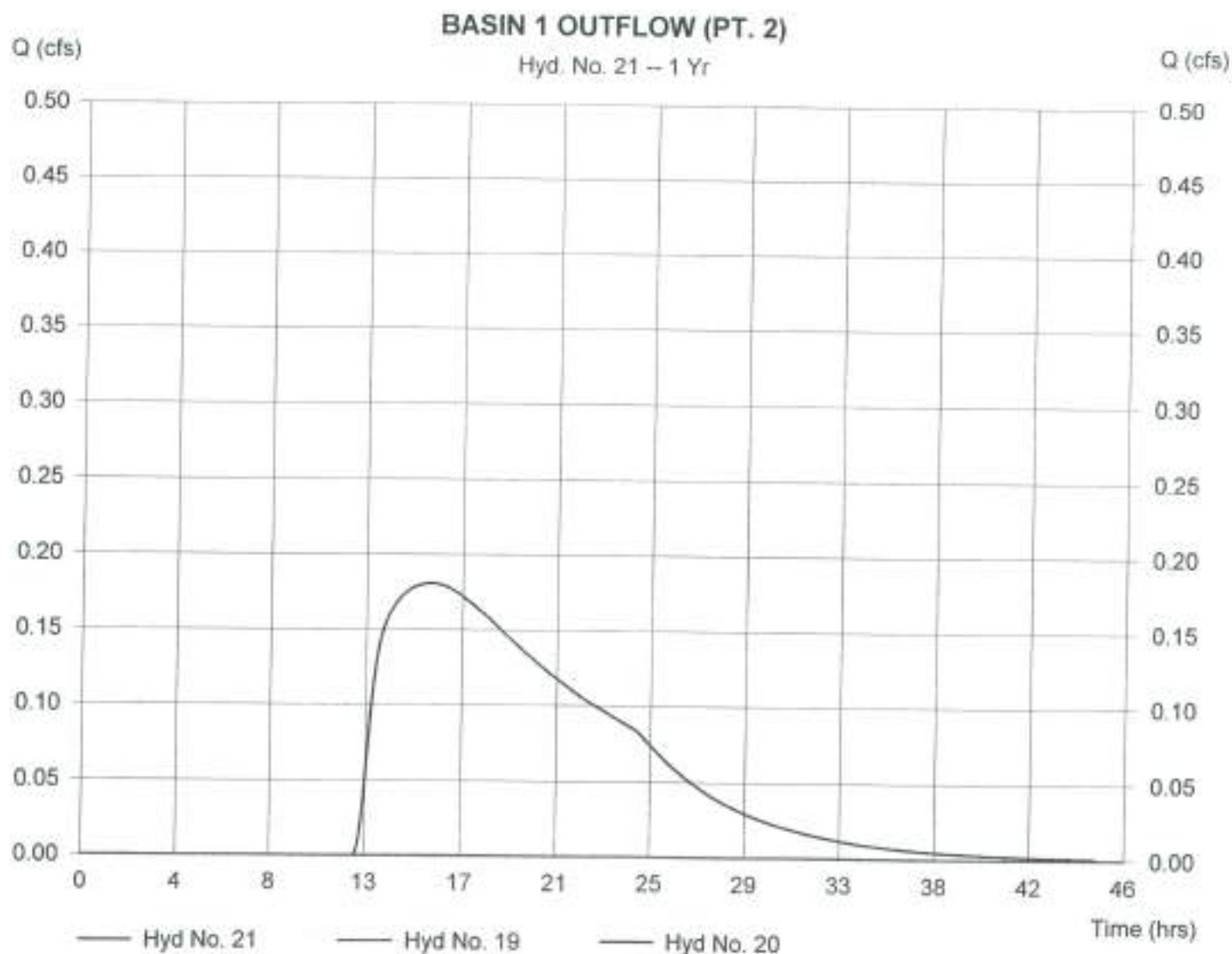
Hyd. No. 21

BASIN 1 OUTFLOW (PT. 2)

Hydrograph type = Diversion2
Storm frequency = 1 yrs
Inflow hydrograph = 19
Diversion method = Pond - BASIN 1

Peak discharge = 0.00 cfs
Time interval = 1 min
2nd diverted hyd. = 20
Pond structure = Exfiltration

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:38 PM

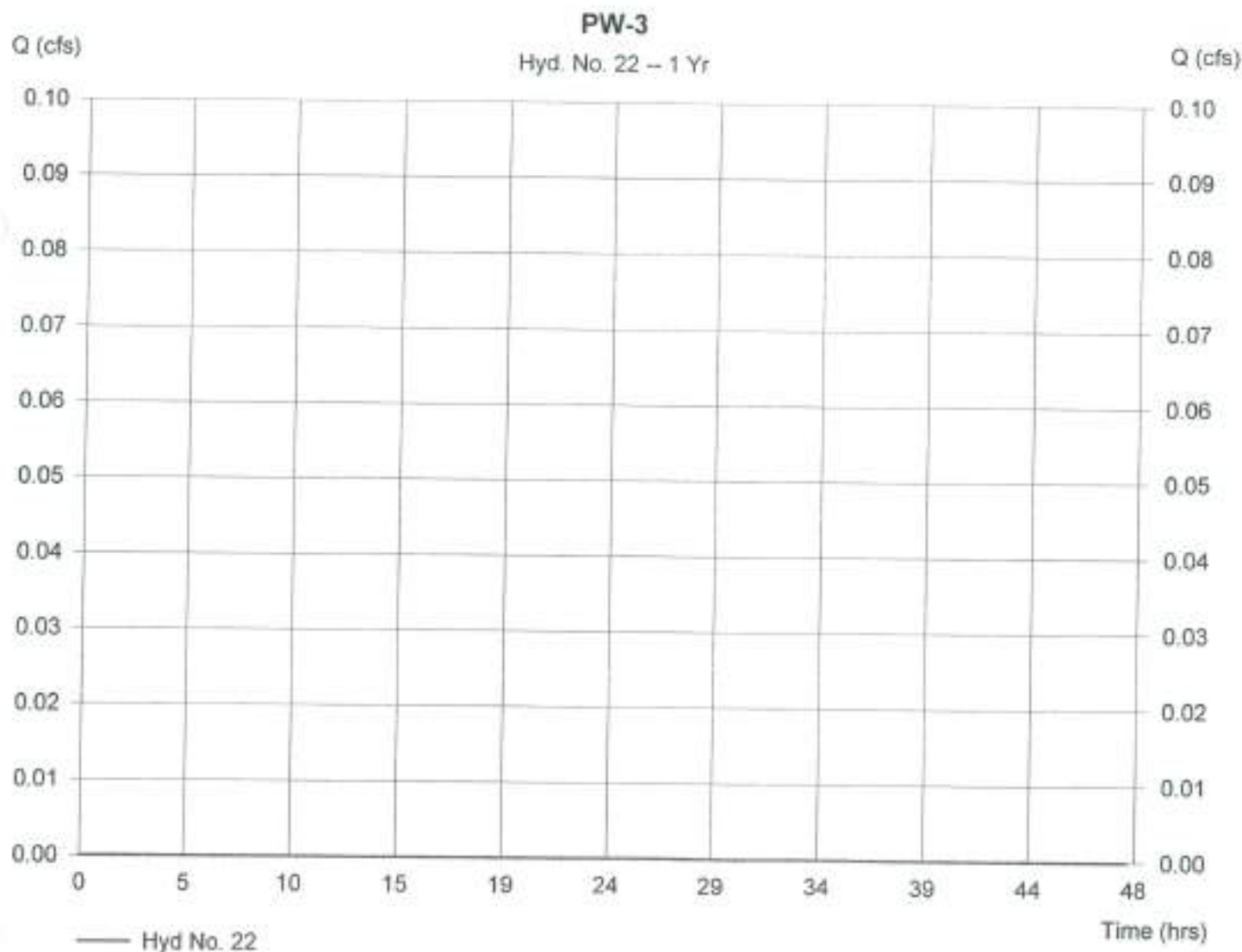
Hyd. No. 22

PW-3

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 4.040 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 45
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.80 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:38 PM

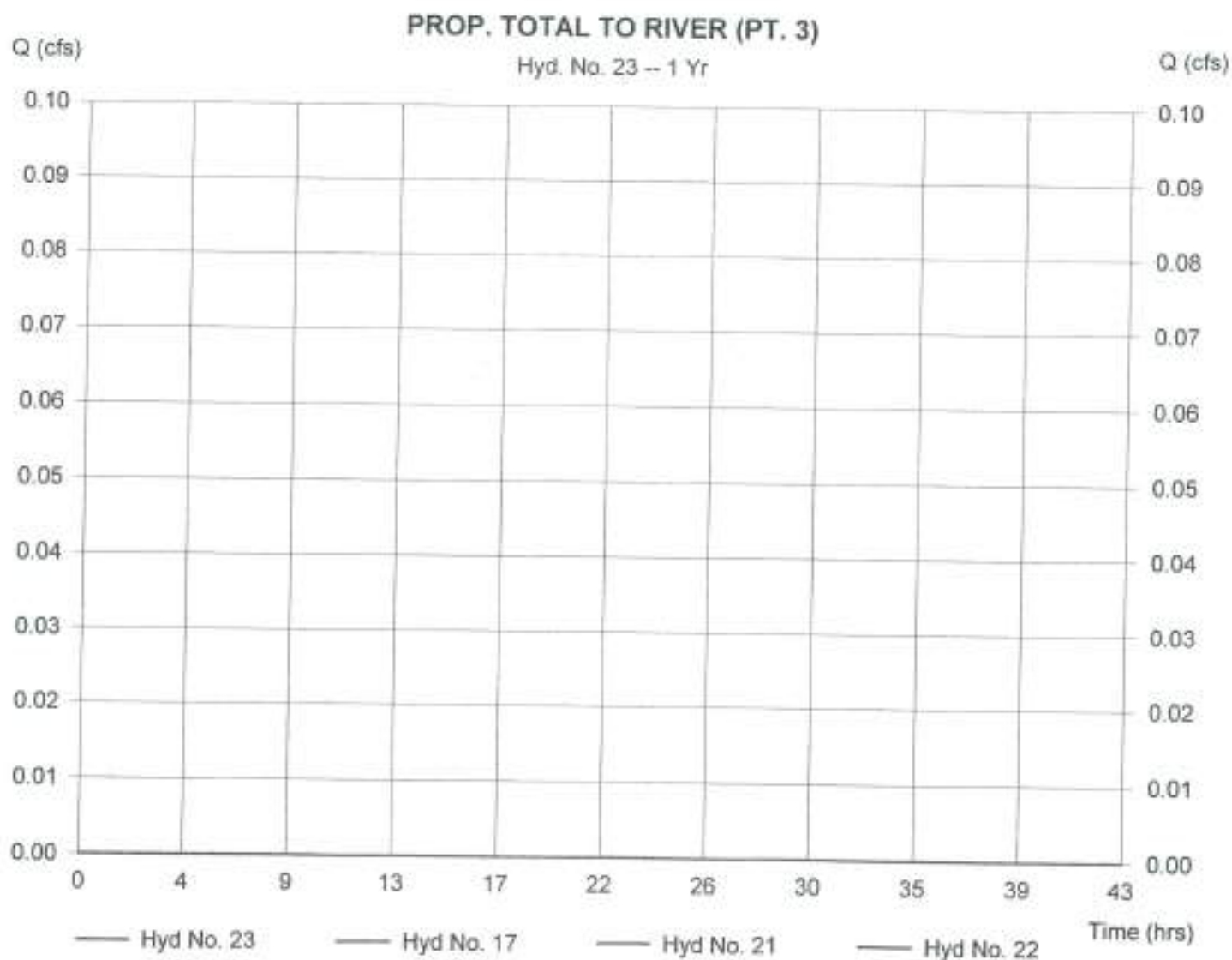
Hyd. No. 23

PROP. TOTAL TO RIVER (PT. 3)

Hydrograph type = Combine
Storm frequency = 1 yrs
Inflow hyds. = 17, 21, 22

Peak discharge = 0.00 cfs
Time interval = 1 min

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:38 PM

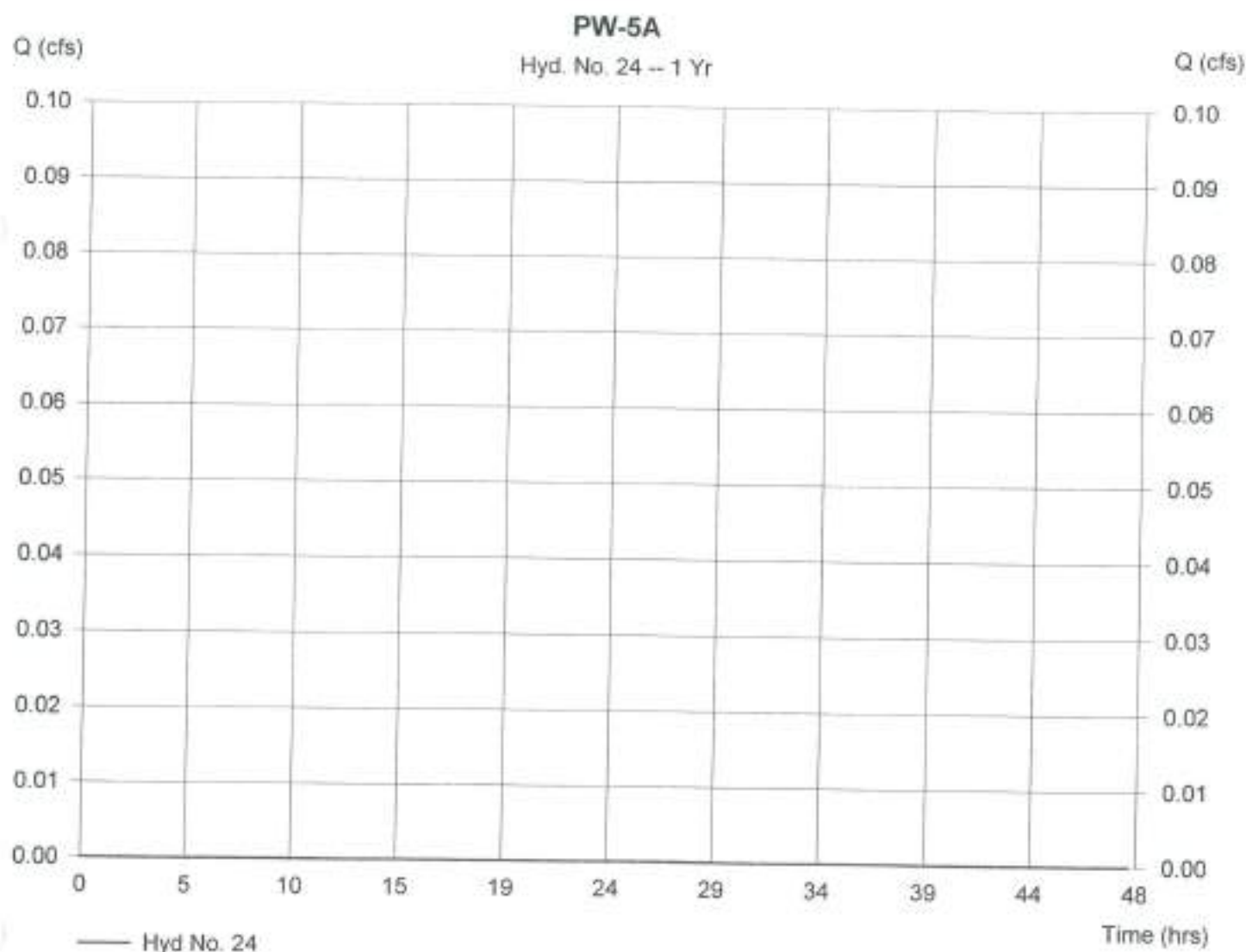
Hyd. No. 24

PW-5A

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 6.920 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 58
Hydraulic length = 0 ft
Time of conc. (Tc) = 27.30 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:38 PM

Hyd. No. 25

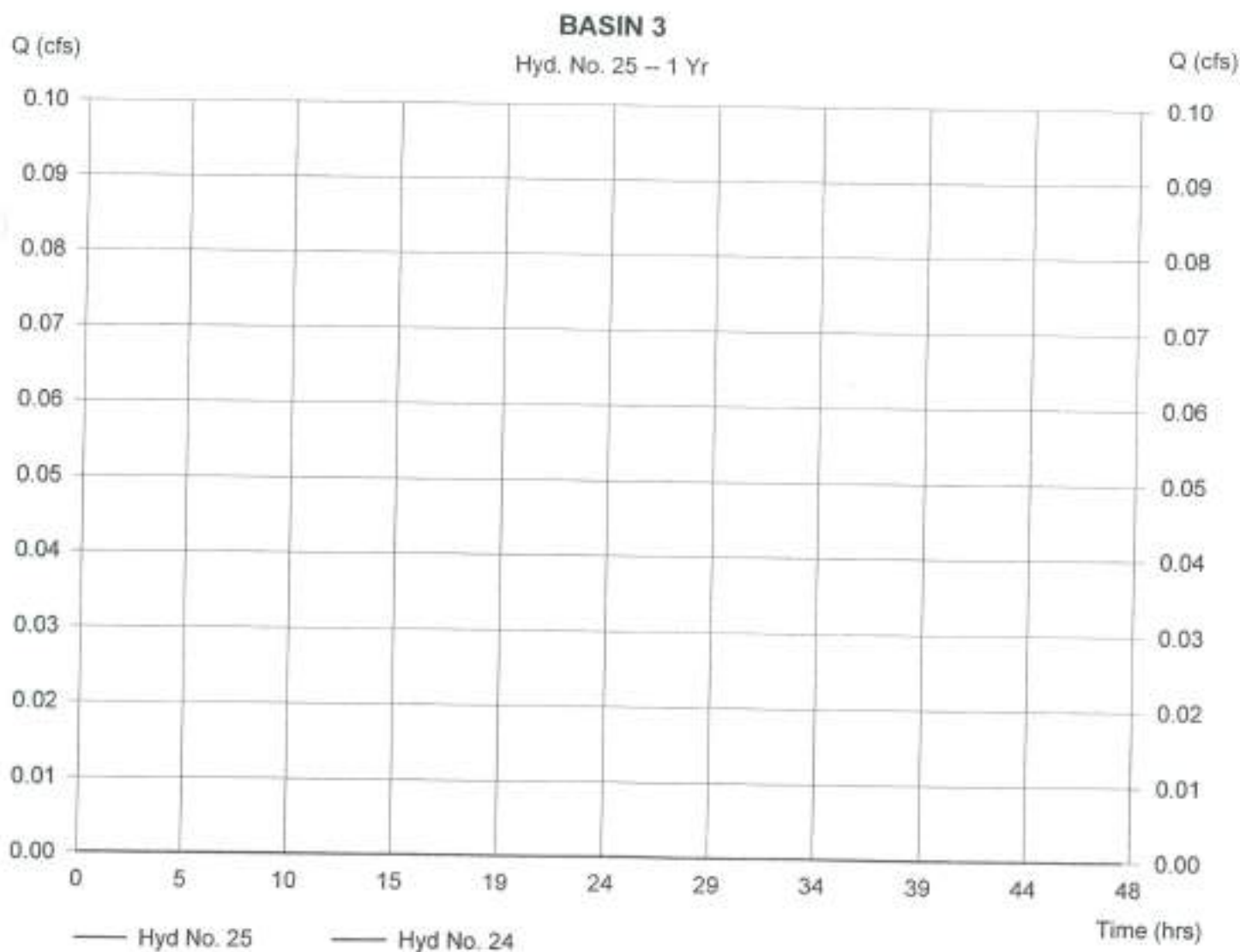
BASIN 3

Hydrograph type = Reservoir
Storm frequency = 1 yrs
Inflow hyd. No. = 24
Reservoir name = BASIN 3

Peak discharge = 0.00 cfs
Time interval = 1 min
Max. Elevation = 124.00 ft
Max. Storage = 0 cuft

Storage indication method used.

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:38 PM

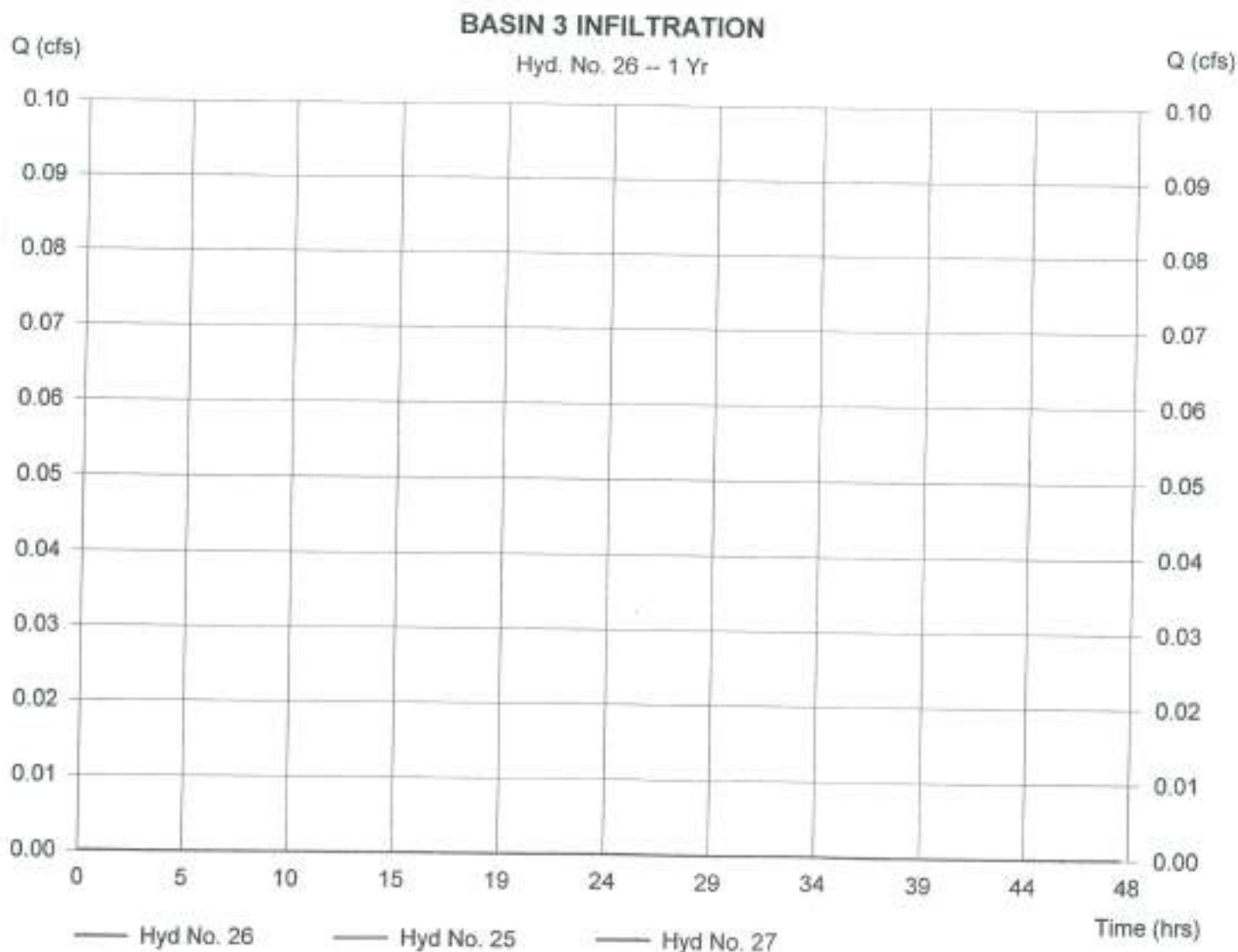
Hyd. No. 26

BASIN 3 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 1 yrs
Inflow hydrograph = 25
Diversion method = Pond - BASIN 3

Peak discharge = 0.00 cfs
Time interval = 1 min
2nd diverted hyd. = 27
Pond structure = Exfiltration

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:38 PM

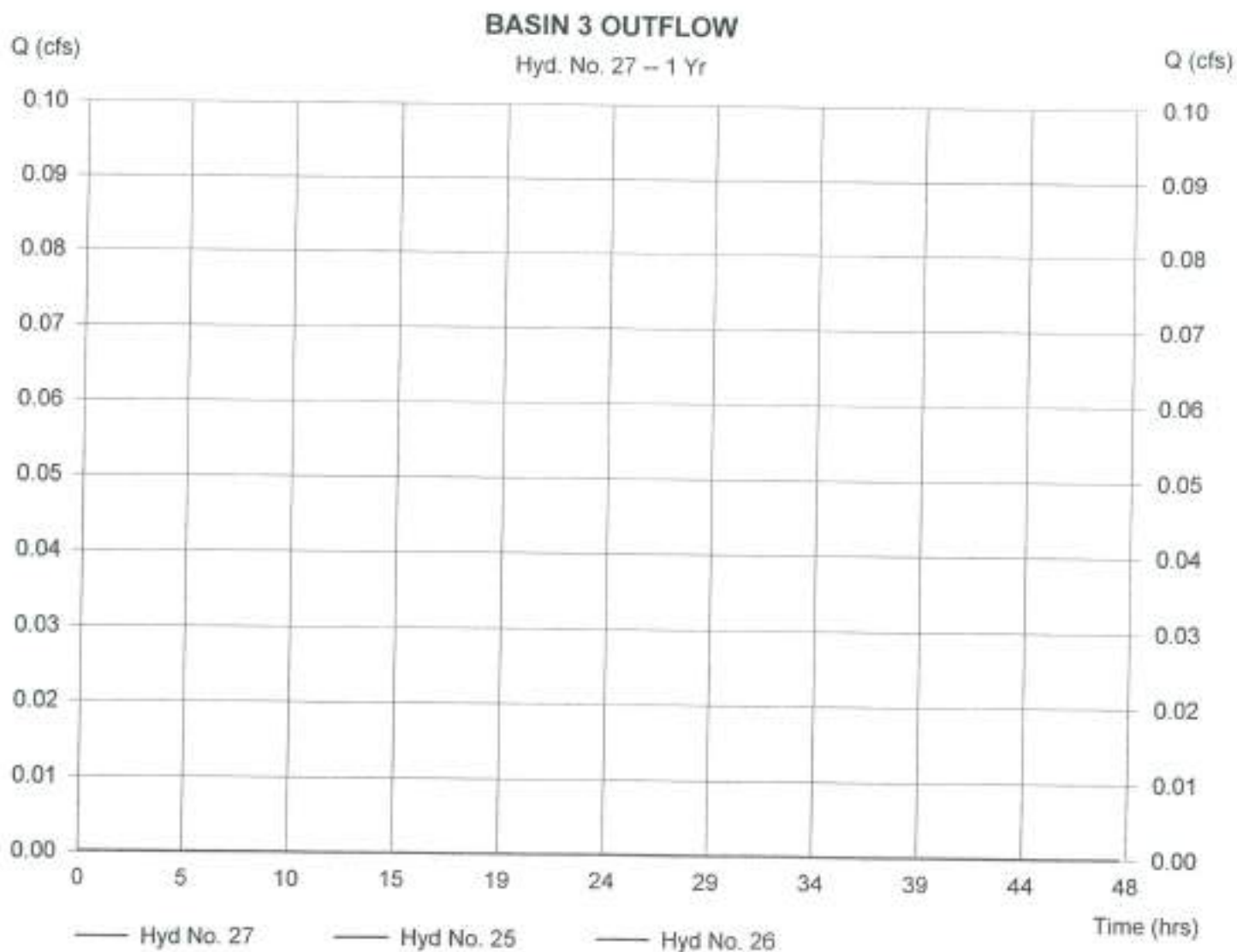
Hyd. No. 27

BASIN 3 OUTFLOW

Hydrograph type = Diversion2
Storm frequency = 1 yrs
Inflow hydrograph = 25
Diversion method = Pond - BASIN 3

Peak discharge = 0.00 cfs
Time interval = 1 min
2nd diverted hyd. = 26
Pond structure = Exfiltration

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:38 PM

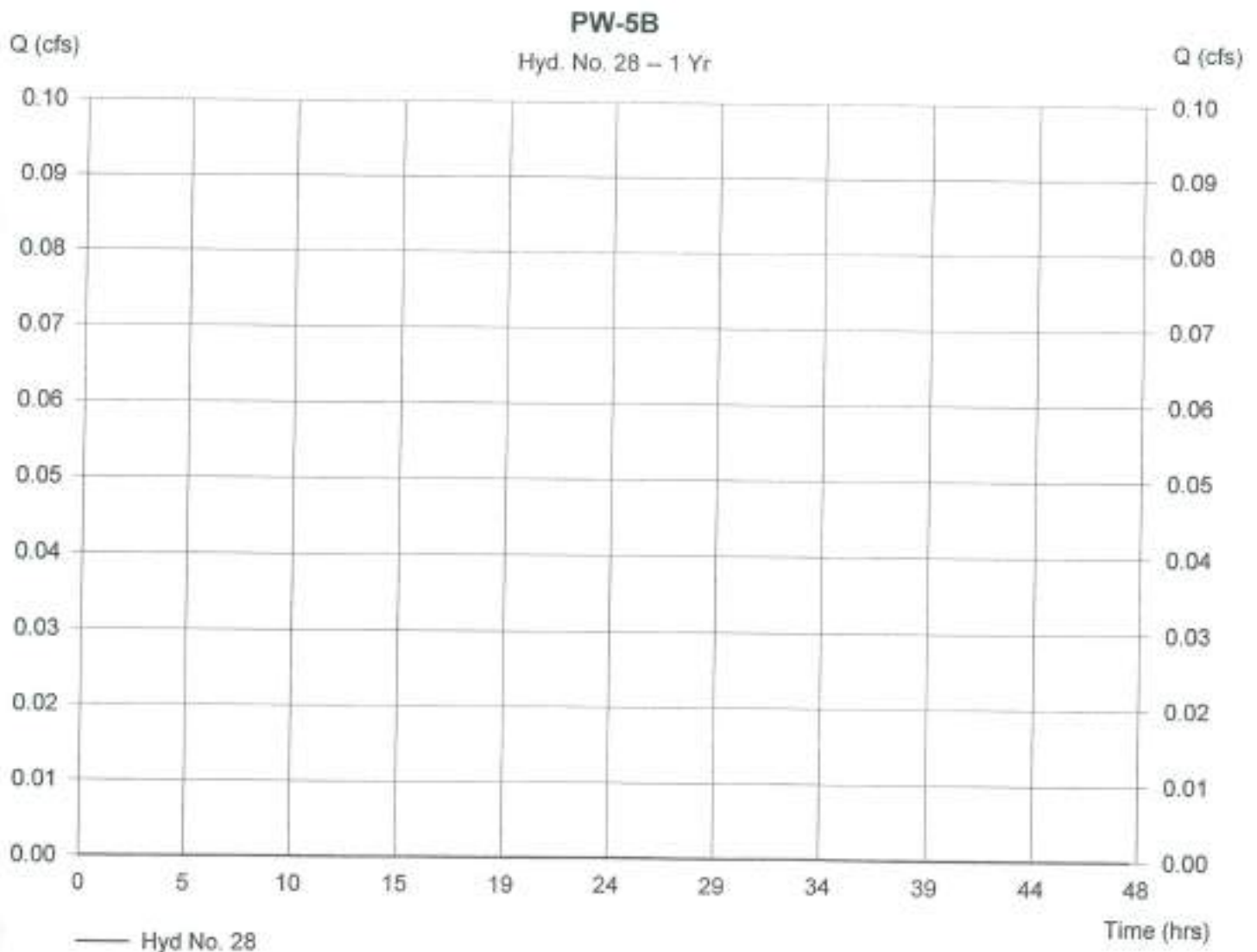
Hyd. No. 28

PW-5B

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 2.660 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 49
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.20 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:38 PM

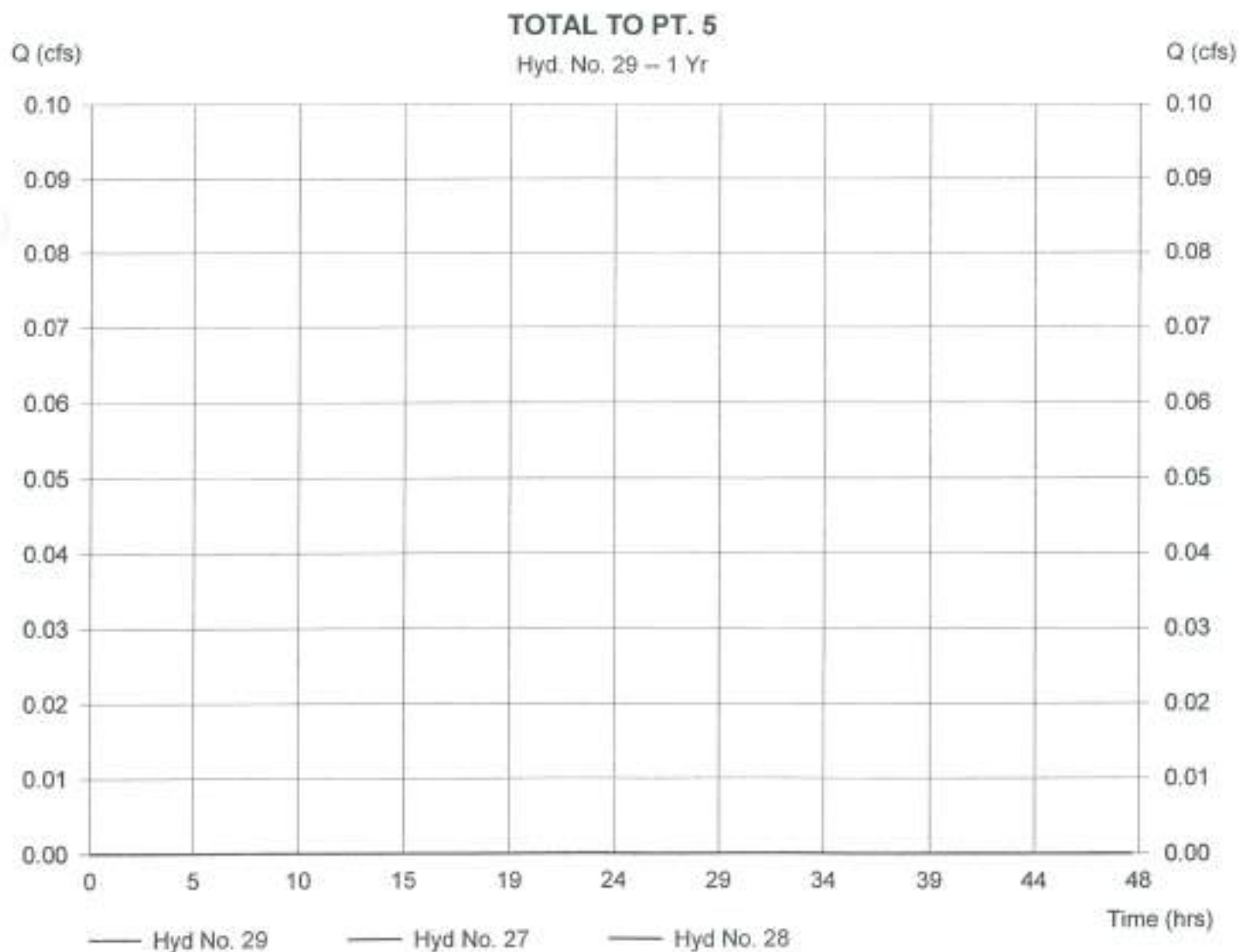
Hyd. No. 29

TOTAL TO PT. 5

Hydrograph type = Combine
Storm frequency = 1 yrs
Inflow hyds. = 27, 28

Peak discharge = 0.00 cfs
Time interval = 1 min

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:38 PM

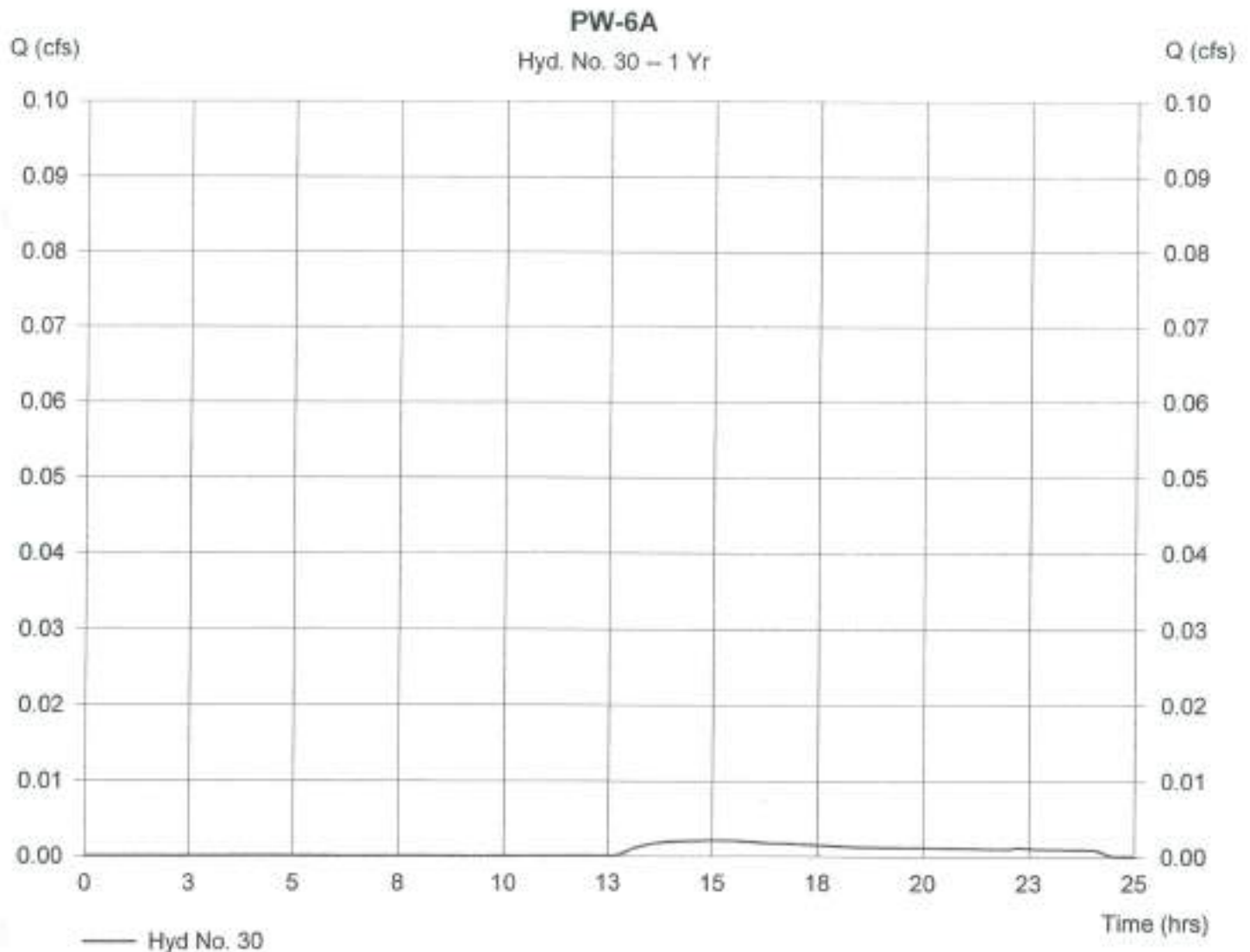
Hyd. No. 30

PW-6A

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 0.680 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 74
Hydraulic length = 0 ft
Time of conc. (Tc) = 24.70 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 57 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:38 PM

Hyd. No. 31

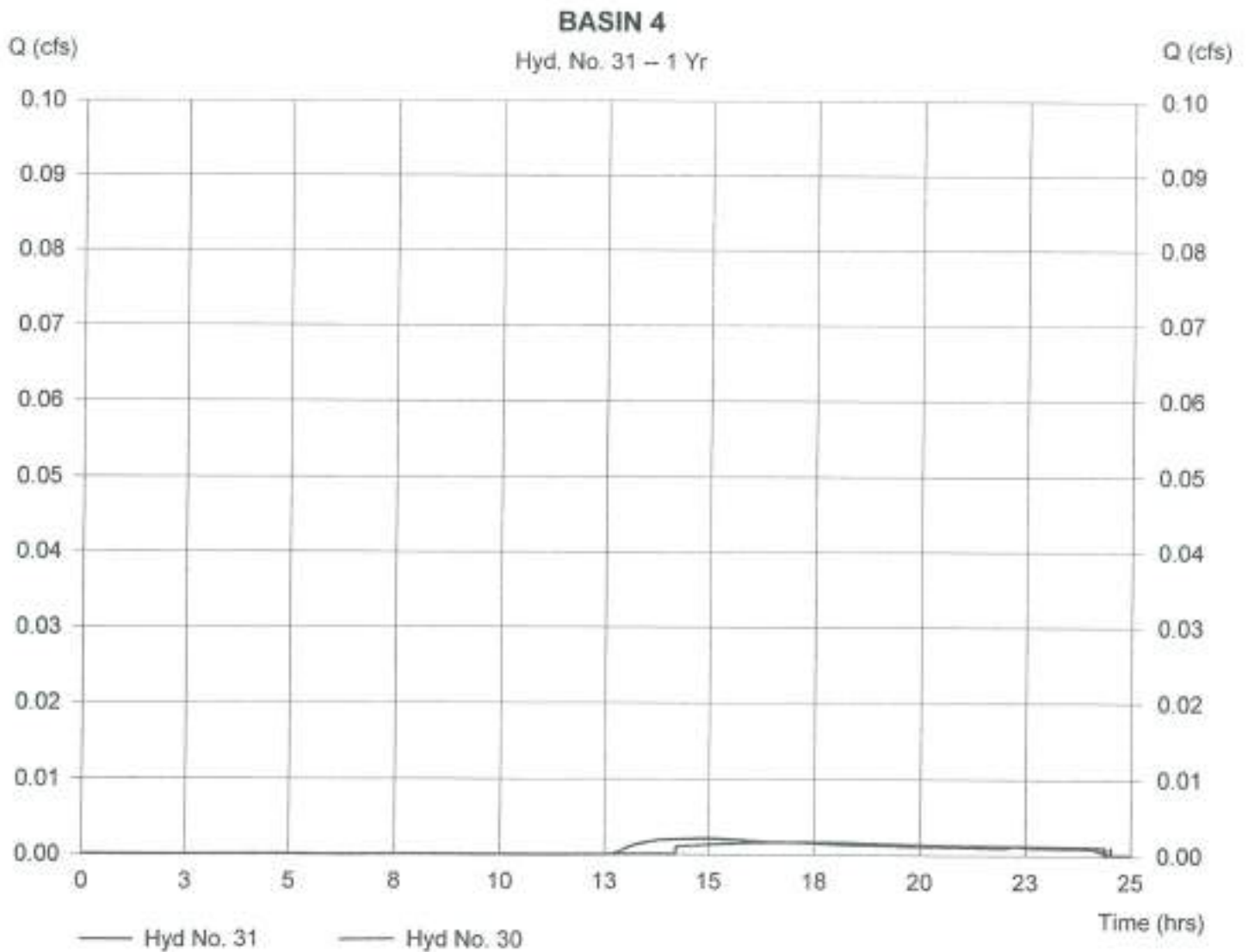
BASIN 4

Hydrograph type = Reservoir
Storm frequency = 1 yrs
Inflow hyd. No. = 30
Reservoir name = BASIN 4

Peak discharge = 0.00 cfs
Time interval = 1 min
Max. Elevation = 128.01 ft
Max. Storage = 12 cuft

Storage Indication method used.

Hydrograph Volume = 50 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:38 PM

Hyd. No. 32

BASIN 4 INFILTRATION

Hydrograph type = Diversion1

Storm frequency = 1 yrs

Inflow hydrograph = 31

Diversion method = Pond - BASIN 4

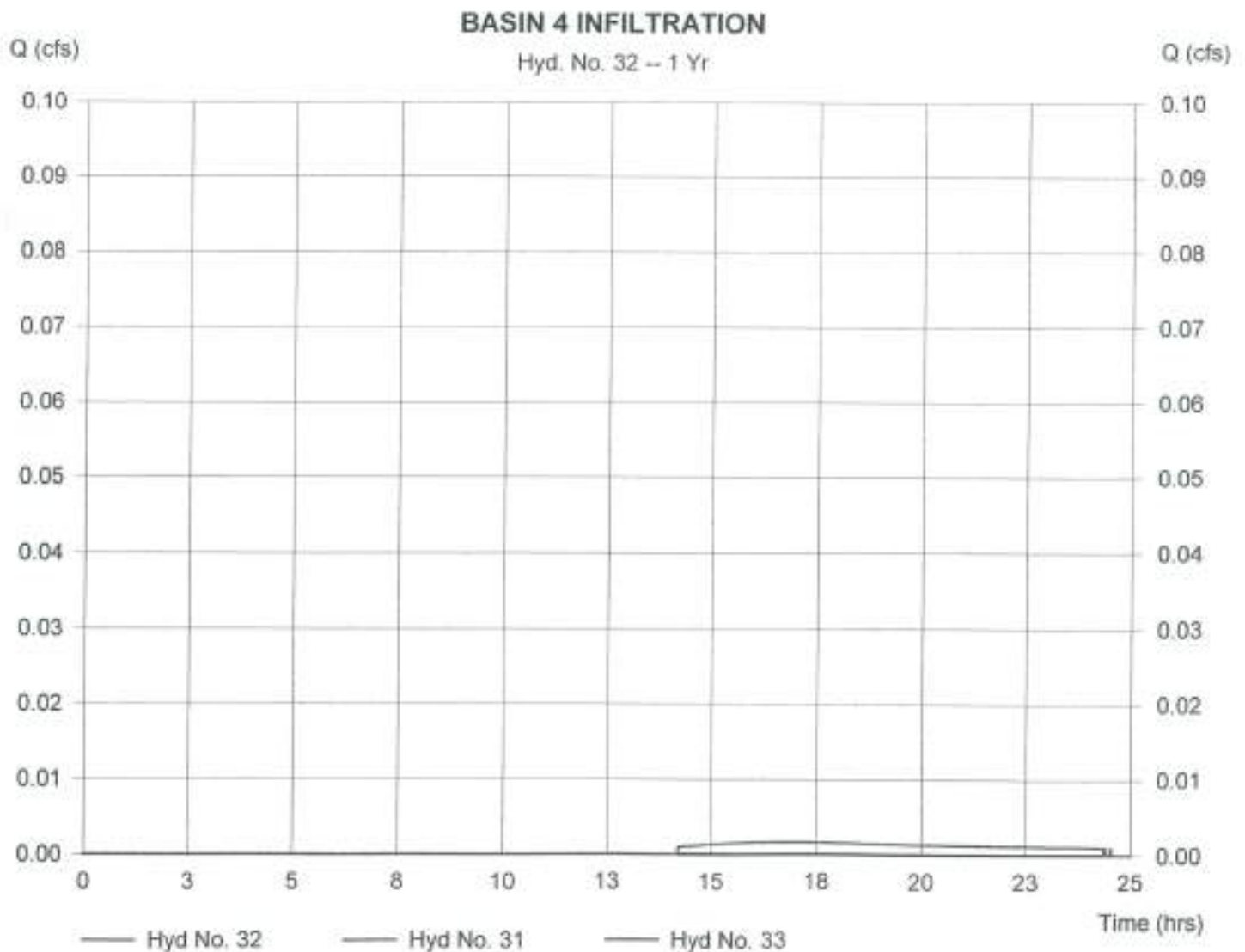
Peak discharge = 0.00 cfs

Time interval = 1 min

2nd diverted hyd. = 33

Pond structure = Exfiltration

Hydrograph Volume = 50 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:38 PM

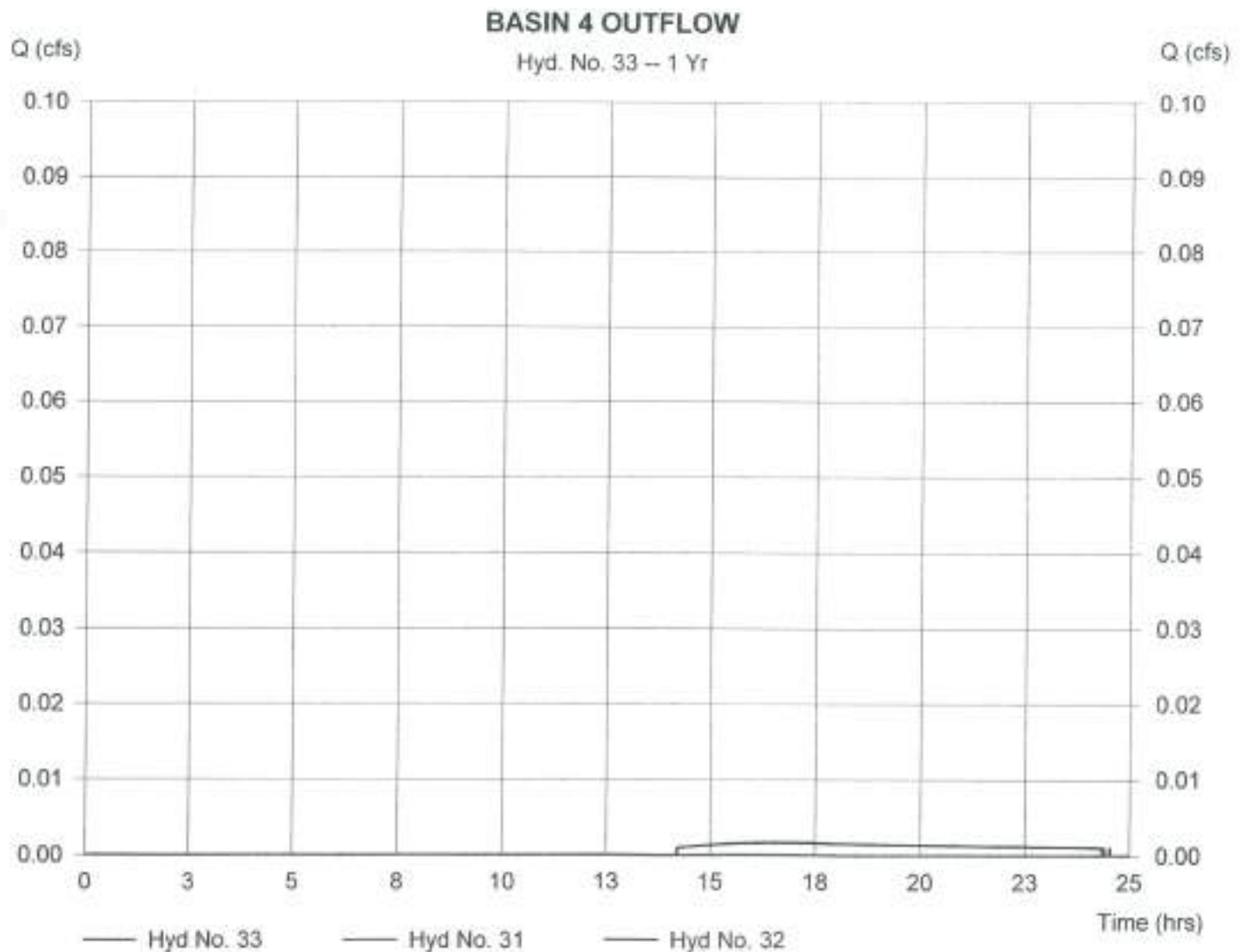
Hyd. No. 33

BASIN 4 OUTFLOW

Hydrograph type = Diversion2
Storm frequency = 1 yrs
Inflow hydrograph = 31
Diversion method = Pond - BASIN 4

Peak discharge = 0.00 cfs
Time interval = 1 min
2nd diverted hyd. = 32
Pond structure = Exfiltration

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:38 PM

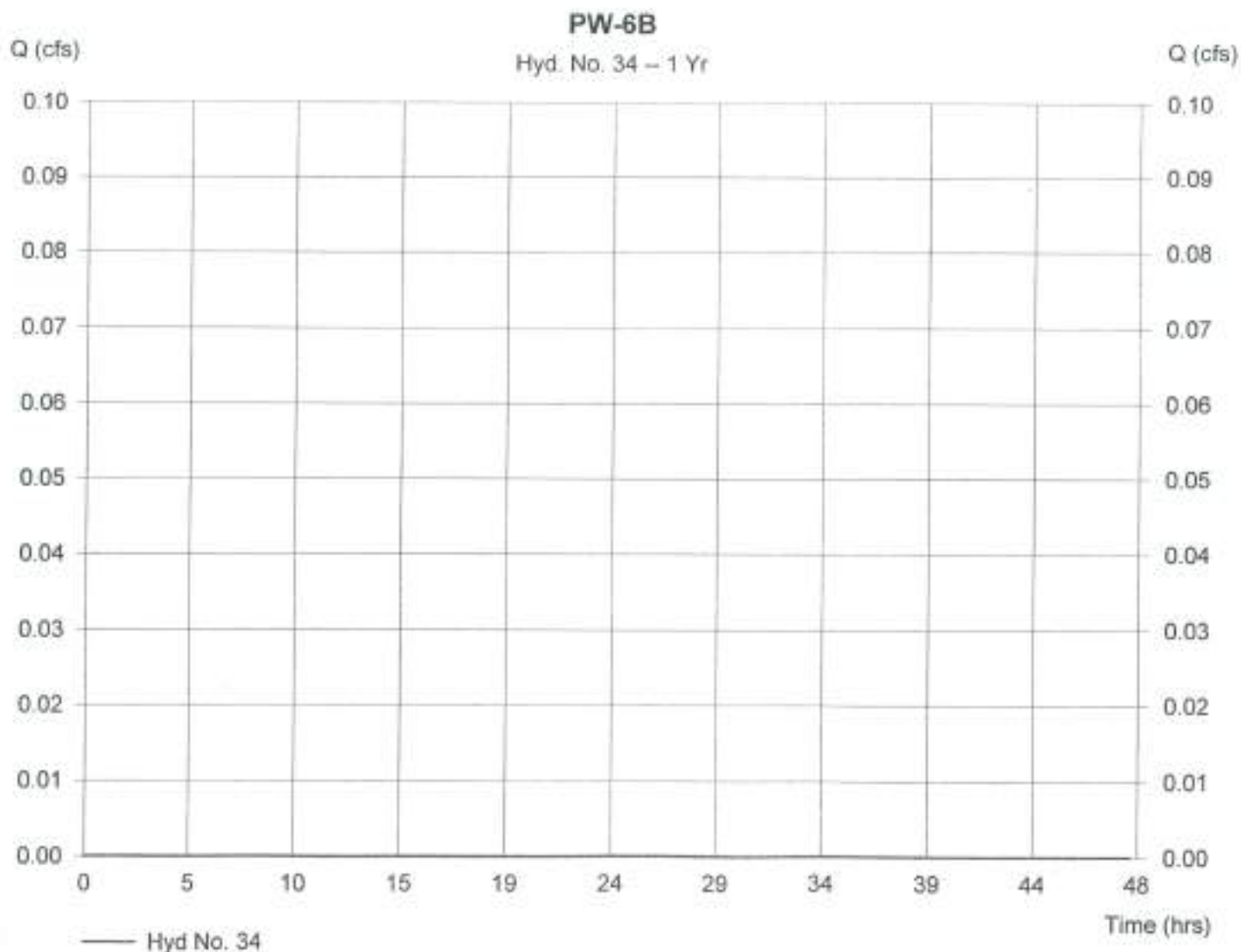
Hyd. No. 34

PW-6B

Hydrograph type = SCS Runoff
Storm frequency = 1 yrs
Drainage area = 0.600 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.00 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 39
Hydraulic length = 0 ft
Time of conc. (Tc) = 6.00 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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Hyd. No. 35

TOTAL TO PT. 6

Hydrograph type = Combine

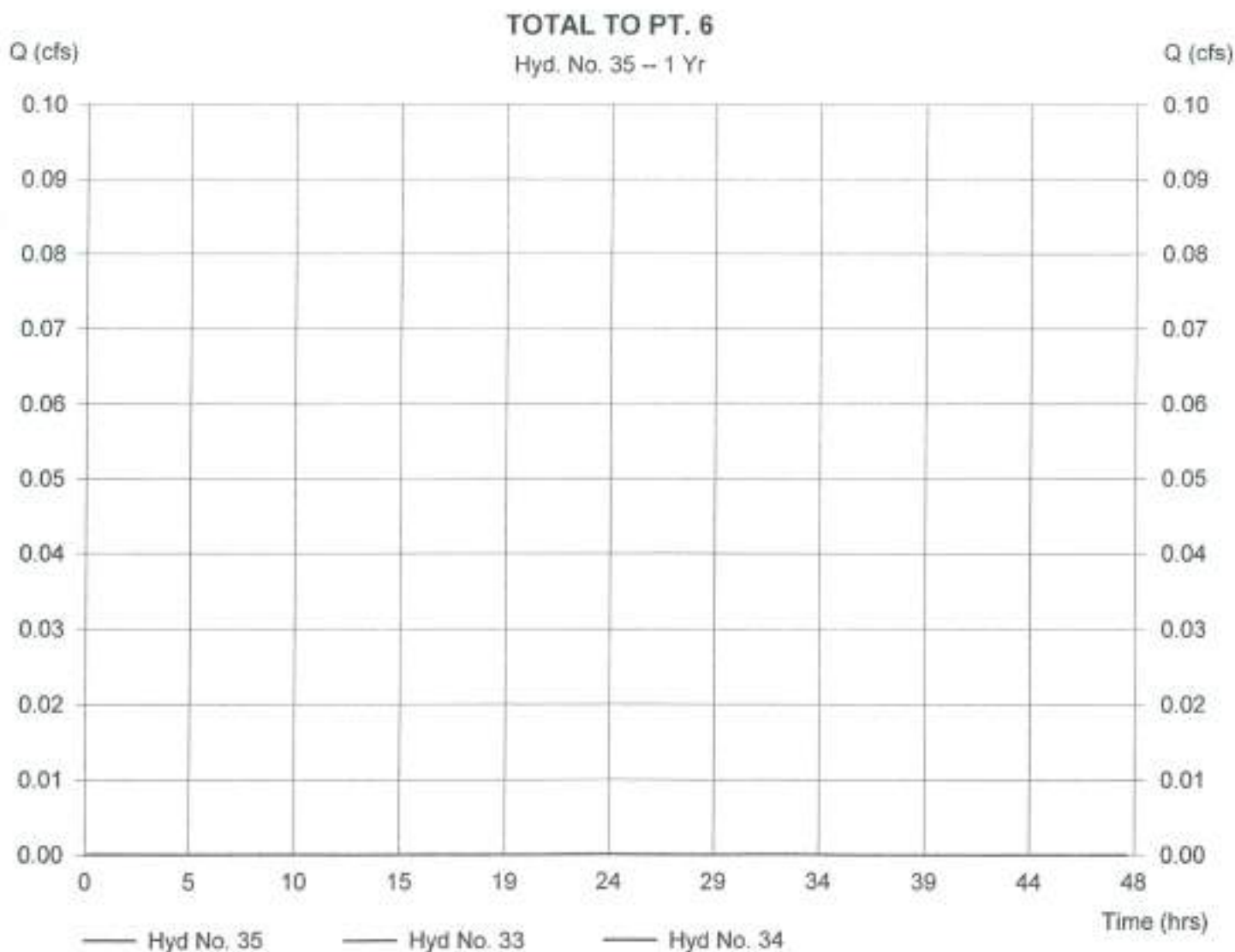
Storm frequency = 1 yrs

Inflow hyds. = 33, 34

Peak discharge = 0.00 cfs

Time interval = 1 min

Hydrograph Volume = 0 cuft



Hydrograph Summary Report

Hyd. #	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	32.36	1	728	117,574	---	---	---	EW-1 (PT. 1)
2	SCS Runoff	8.25	1	726	26,572	---	---	---	EW-2 (PT. 2)
3	SCS Runoff	0.35	1	773	6,744	---	---	---	EW-3
4	Combine	40.12	1	727	150,890	1, 2, 3	---	---	EXIST. TOTAL TO RIVER (PT. 3)
5	SCS Runoff	1.37	1	730	5,489	---	---	---	EW-4
6	Reservoir	0.28	1	766	5,482	5	118.53	1,969	EXIST. BASIN
7	Diversion1	0.06	1	766	1,208	6	---	---	BASIN INFILTRATION
8	Diversion2	0.21	1	766	4,274	6	---	---	BASIN OUTFLOW (PT. 4)
9	SCS Runoff	0.00	1	1329	61	---	---	---	EW-5A
10	SCS Runoff	0.02	1	925	502	---	---	---	E-5B
11	Combine	0.02	1	1331	563	9, 10	---	---	E-5A + E-5B (PT. 5)
12	SCS Runoff	0.27	1	726	1,943	---	---	---	EW-6 (PT. 6)
14	SCS Runoff	12.96	1	734	60,105	---	---	---	PW-1
15	Reservoir	2.34	1	788	59,980	14	118.92	24,557	BASIN 2
16	Diversion1	0.93	1	788	48,612	15	---	---	BASIN 2 INFILTRATION
17	Diversion2	1.41	1	788	11,367	15	---	---	BASIN 2 OUTFLOW (PT. 1)
18	SCS Runoff	12.03	1	746	70,469	---	---	---	PW-2
19	Reservoir	2.50	1	800	70,305	18	120.04	35,839	BASIN 1
20	Diversion1	1.04	1	800	60,230	19	---	---	BASIN 1 INFILTRATION
21	Diversion2	1.46	1	800	10,075	19	---	---	BASIN 1 OUTFLOW (PT. 2)
22	SCS Runoff	0.02	1	946	489	---	---	---	PW-3
23	Combine	2.83	1	796	21,931	17, 21, 22	---	---	PROP. TOTAL TO RIVER (PT. 3)
24	SCS Runoff	0.84	1	754	7,649	---	---	---	PW-5A
25	Reservoir	0.17	1	970	7,631	24	124.28	3,000	BASIN 3
26	Diversion1	0.17	1	970	7,631	25	---	---	BASIN 3 INFILTRATION
27	Diversion2	0.00	1	871	0	25	---	---	BASIN 3 OUTFLOW
28	SCS Runoff	0.03	1	835	866	---	---	---	PW-5B
29	Combine	0.03	1	835	866	27, 28	---	---	TOTAL TO PT. 5
30	SCS Runoff	0.47	1	739	2,400	---	---	---	PW-6A
MSP_5-8-07.gpw					Return Period: 2 Year			Monday, May 7 2007, 5:04 PM	

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
31	Reservoir	0.12	1	779	2,393	30	129.01	865	BASIN 4
32	Diversion1	0.12	1	779	2,393	31	-----	-----	BASIN 4 INFILTRATION
33	Diversion2	0.00	1	780	0	31	-----	-----	BASIN 4 OUTFLOW
34	SCS Runoff	0.00	1	0	0	---	-----	-----	PW-6B
35	Combine	0.00	1	780	0	33, 34	-----	-----	TOTAL TO PT. 6
MSP_5-8-07.gpw					Return Period: 2 Year			Monday, May 7 2007, 5:04 PM	

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:39 PM

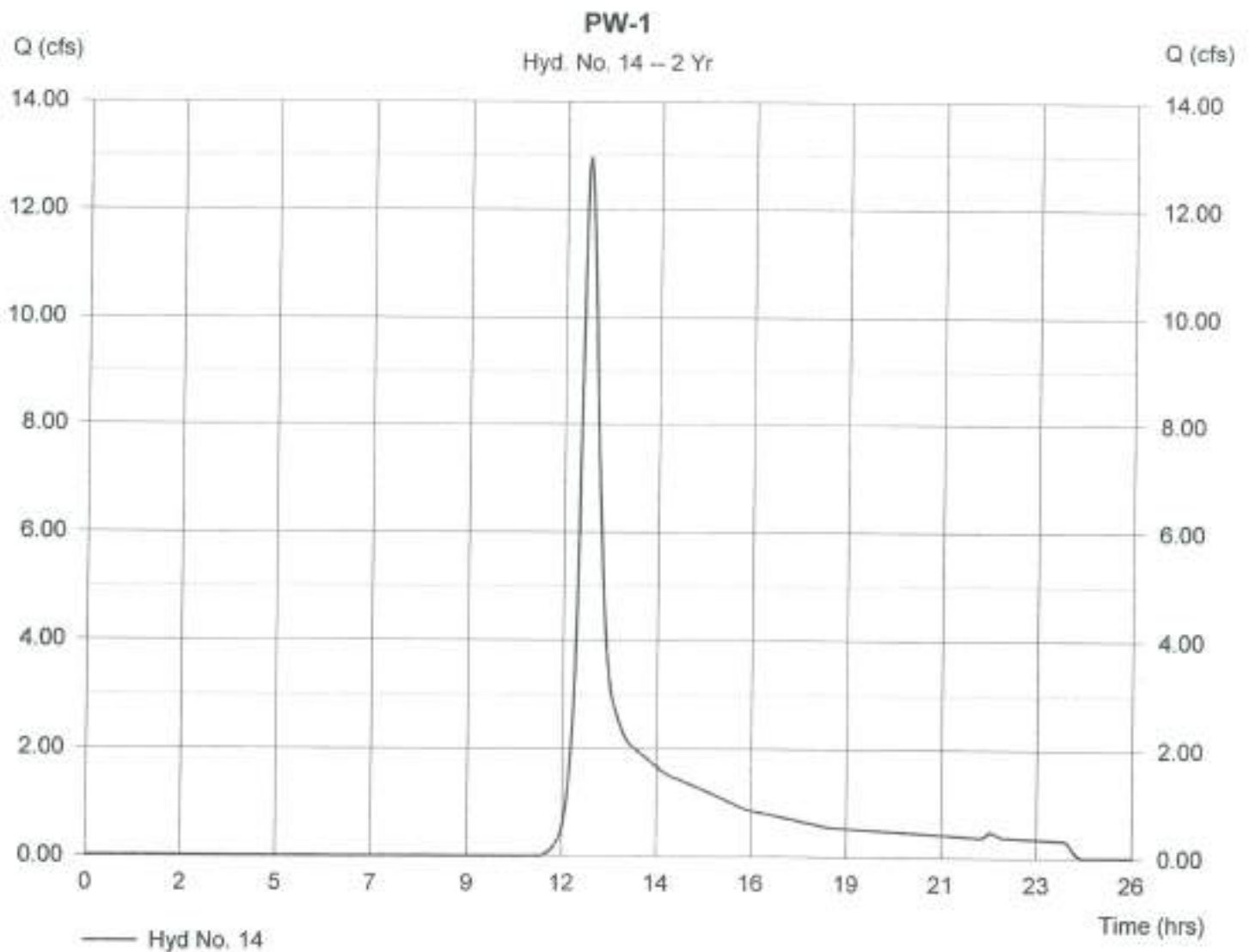
Hyd. No. 14

PW-1

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 19.290 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 12.96 cfs
Time interval = 1 min
Curve number = 72
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.50 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 60,105 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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Hyd. No. 15

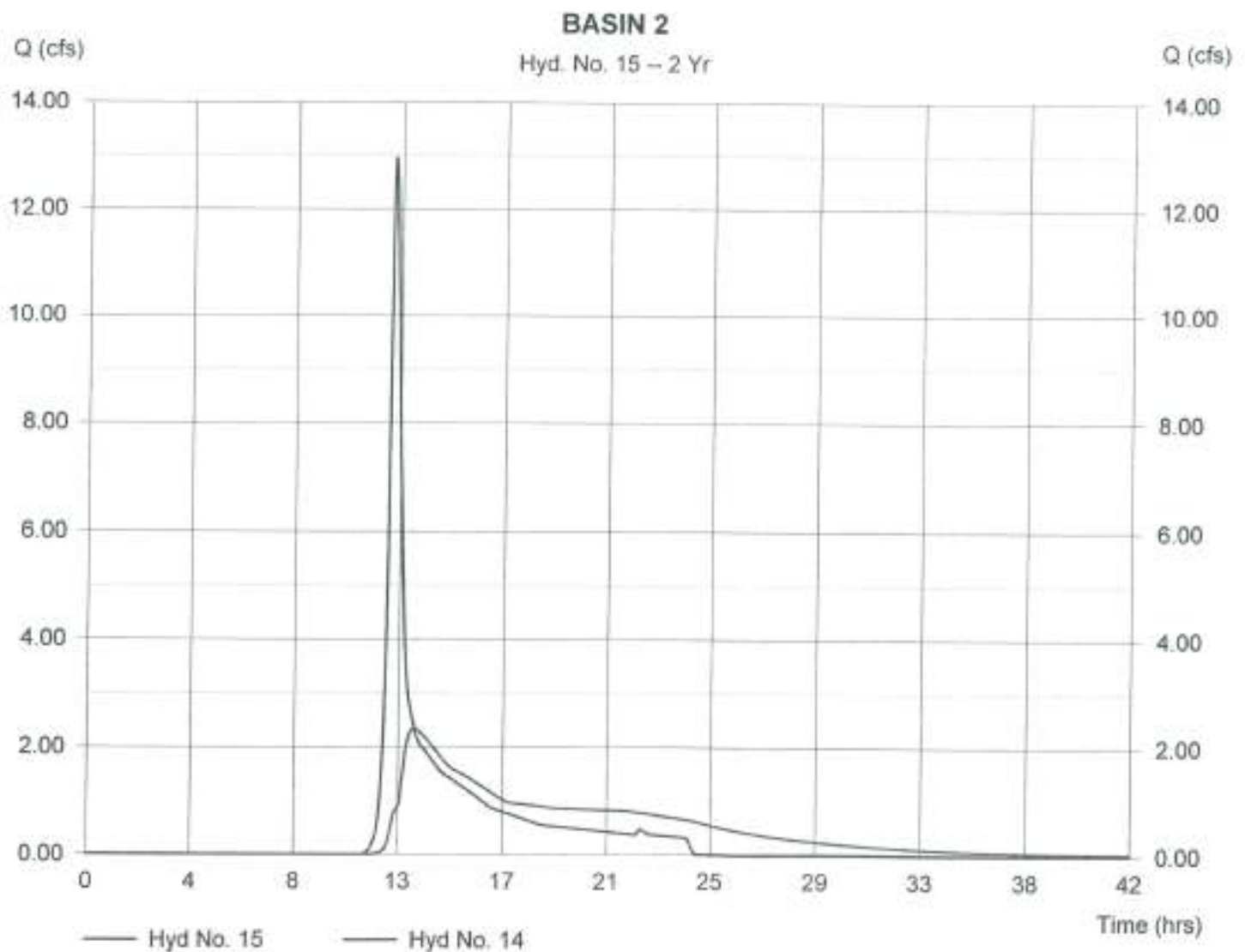
BASIN 2

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 14
Reservoir name = BASIN 2

Peak discharge = 2.34 cfs
Time interval = 1 min
Max. Elevation = 118.92 ft
Max. Storage = 24,557 cuft

Storage Indication method used.

Hydrograph Volume = 59,980 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:39 PM

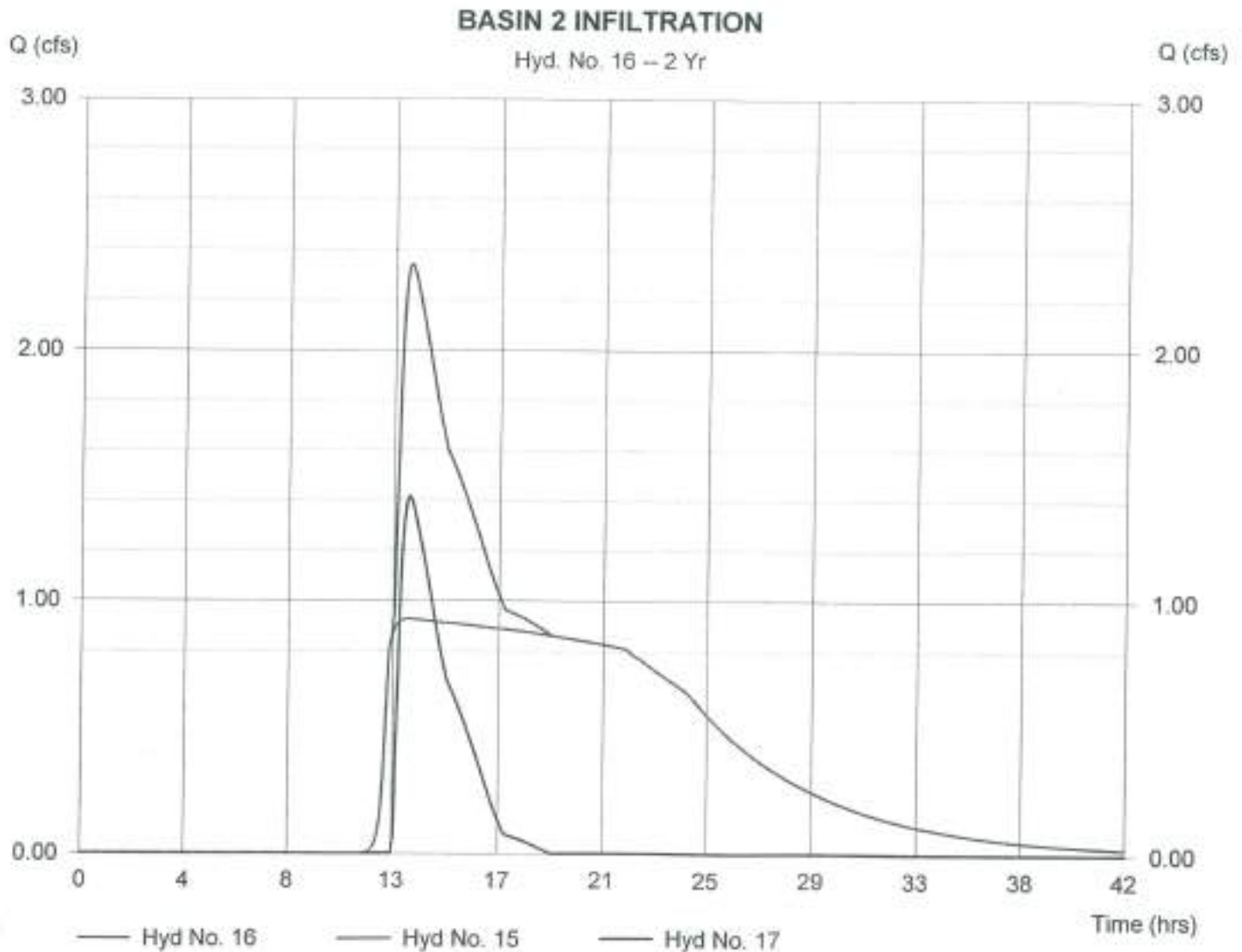
Hyd. No. 16

BASIN 2 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 2 yrs
Inflow hydrograph = 15
Diversion method = Pond - BASIN 2

Peak discharge = 0.93 cfs
Time interval = 1 min
2nd diverted hyd. = 17
Pond structure = Exfiltration

Hydrograph Volume = 48,612 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:39 PM

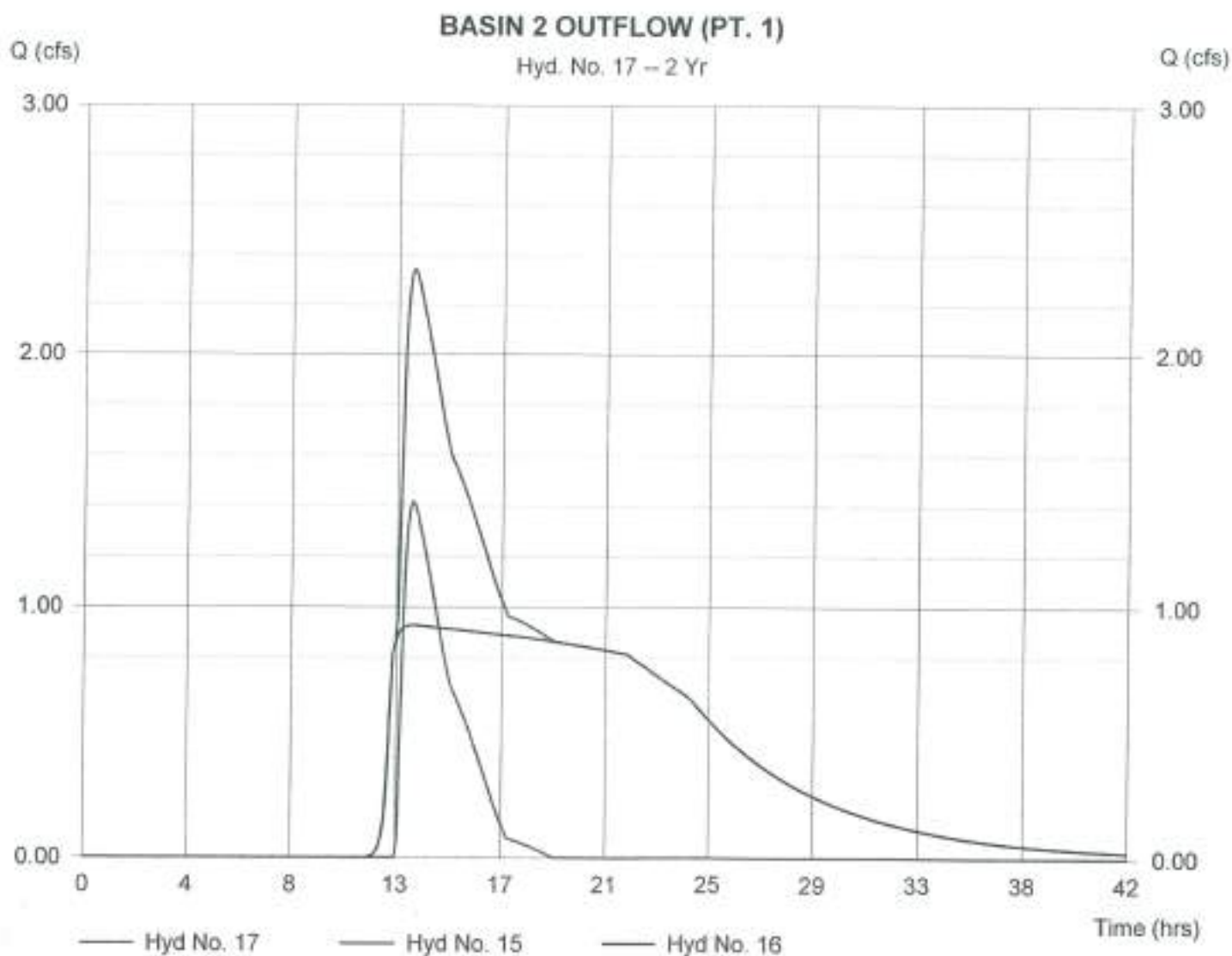
Hyd. No. 17

BASIN 2 OUTFLOW (PT. 1)

Hydrograph type = Diversion2
Storm frequency = 2 yrs
Inflow hydrograph = 15
Diversion method = Pond - BASIN 2

Peak discharge = 1.41 cfs
Time interval = 1 min
2nd diverted hyd. = 16
Pond structure = Exfiltration

Hydrograph Volume = 11,367 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:39 PM

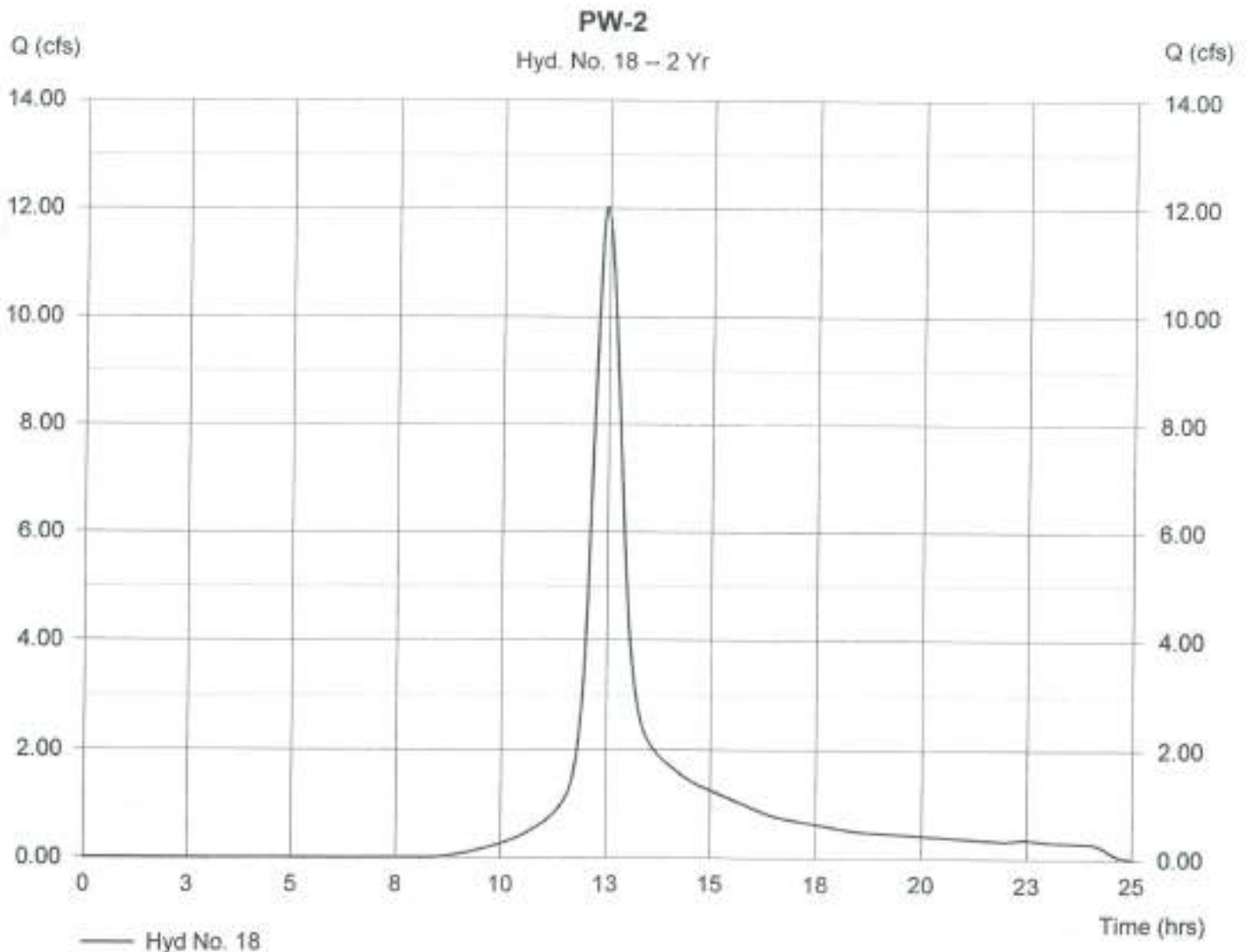
Hyd. No. 18

PW-2

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 11,670 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 12.03 cfs
Time interval = 1 min
Curve number = 85
Hydraulic length = 0 ft
Time of conc. (Tc) = 37.50 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 70,469 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

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Hyd. No. 19

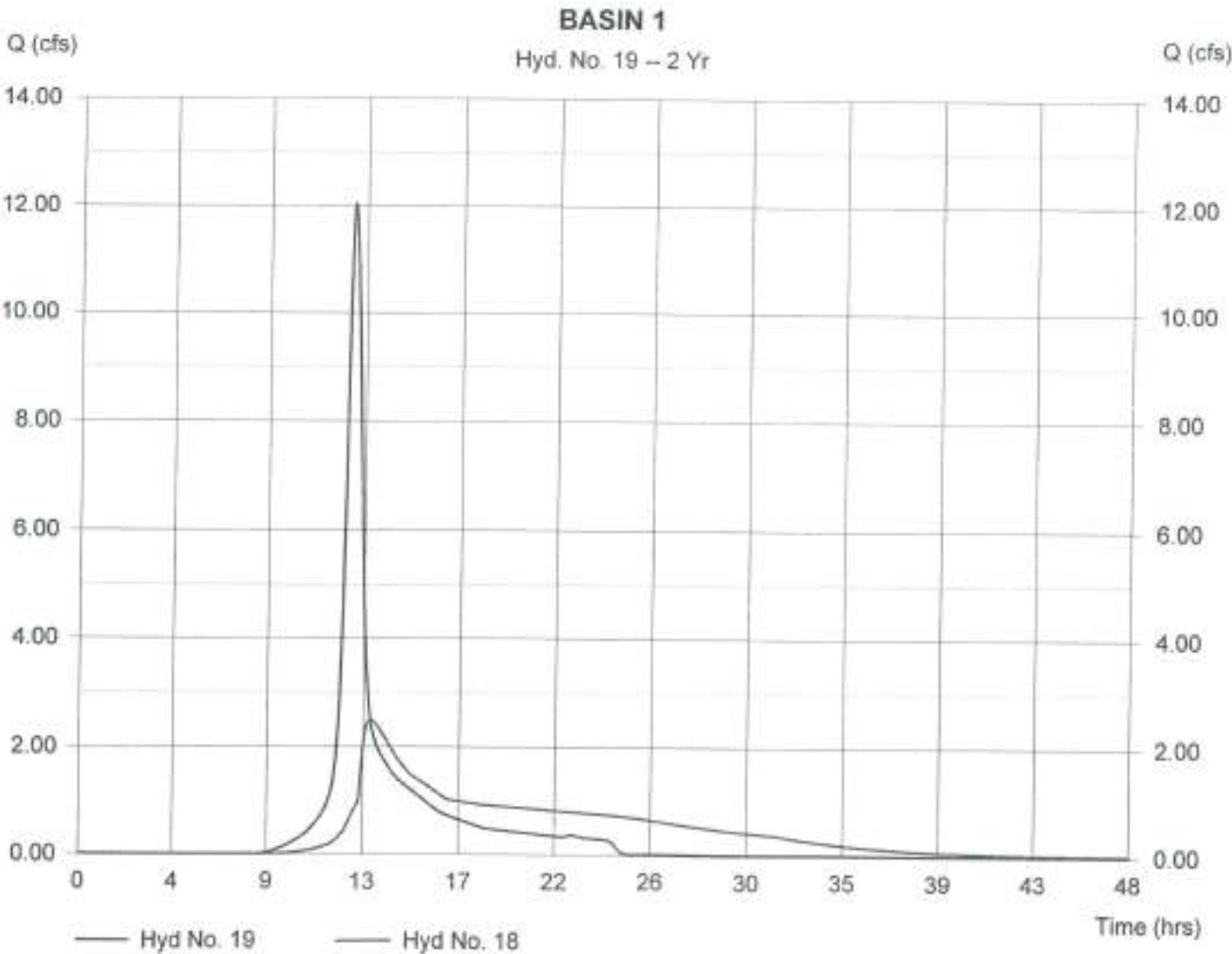
BASIN 1

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 18
Reservoir name = BASIN 1

Peak discharge = 2.50 cfs
Time interval = 1 min
Max. Elevation = 120.04 ft
Max. Storage = 35,839 cuft

Storage Indication method used.

Hydrograph Volume = 70,305 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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Hyd. No. 20

BASIN 1 INFILTRATION

Hydrograph type = Diversion1

Storm frequency = 2 yrs

Inflow hydrograph = 19

Diversion method = Pond - BASIN 1

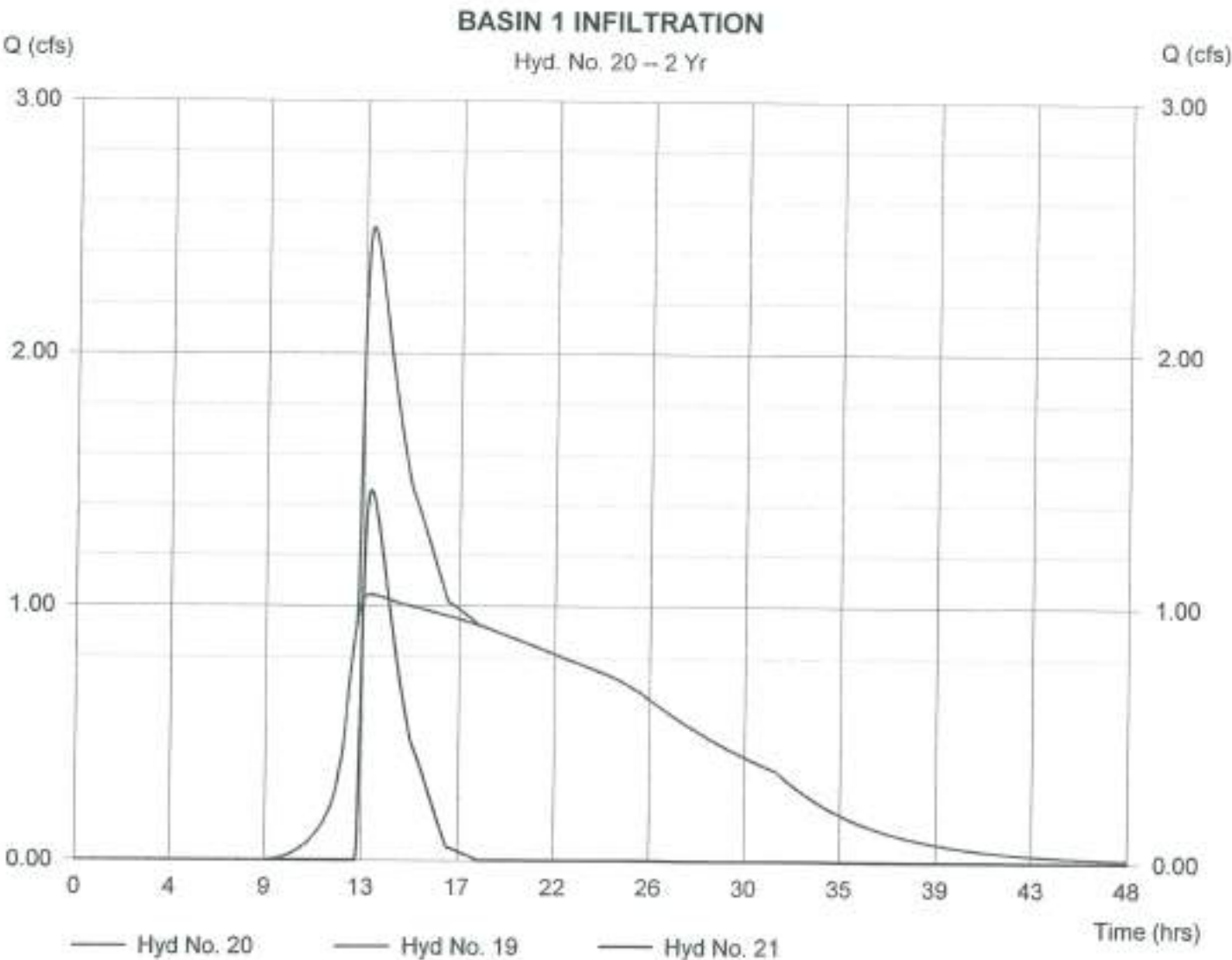
Peak discharge = 1.04 cfs

Time interval = 1 min

2nd diverted hyd. = 21

Pond structure = Exfiltration

Hydrograph Volume = 60,230 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:39 PM

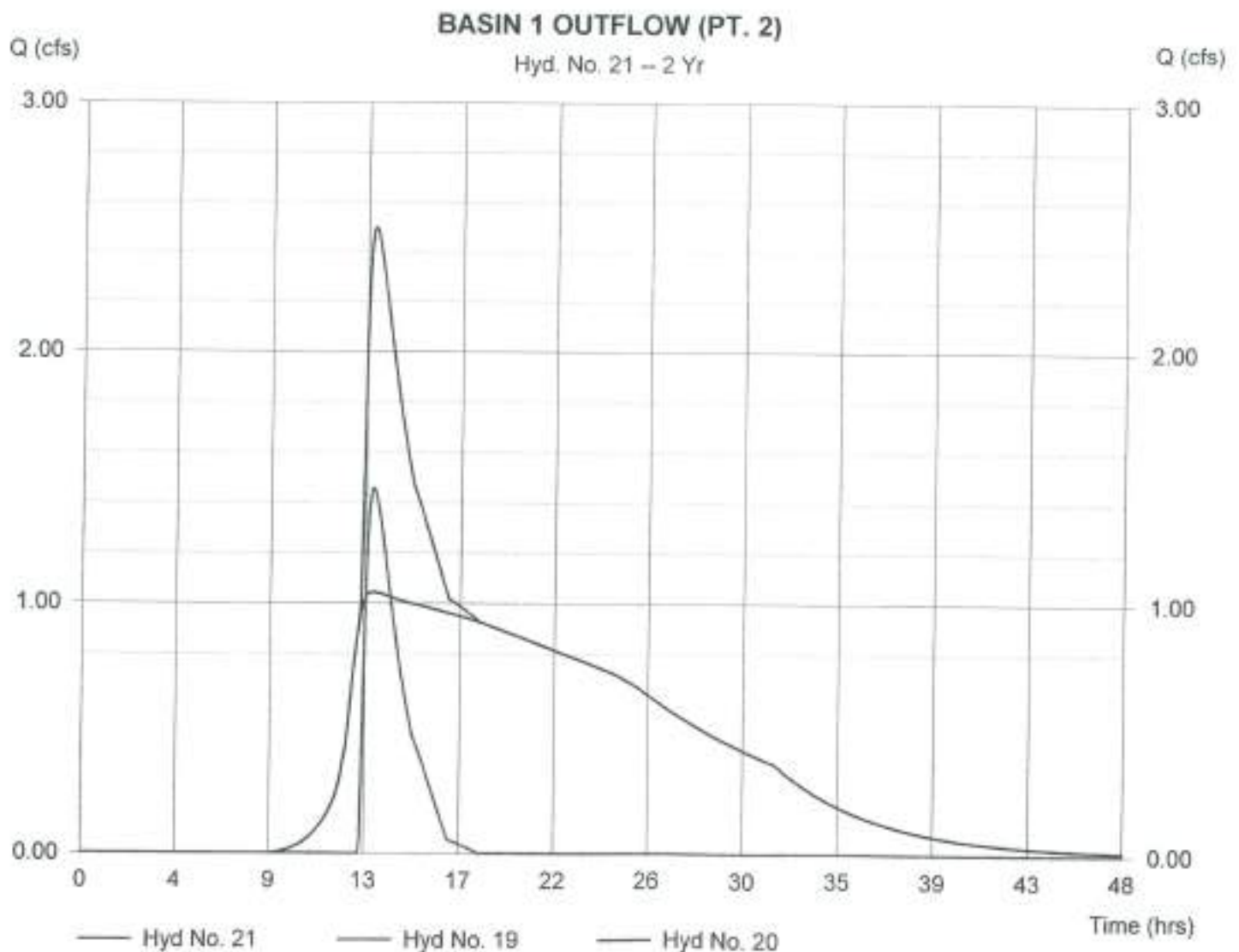
Hyd. No. 21

BASIN 1 OUTFLOW (PT. 2)

Hydrograph type = Diversion2
Storm frequency = 2 yrs
Inflow hydrograph = 19
Diversion method = Pond - BASIN 1

Peak discharge = 1.46 cfs
Time interval = 1 min
2nd diverted hyd. = 20
Pond structure = Exfiltration

Hydrograph Volume = 10,075 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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Hyd. No. 22

PW-3

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 4.040 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 0.02 cfs
Time interval = 1 min
Curve number = 45
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.80 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 489 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

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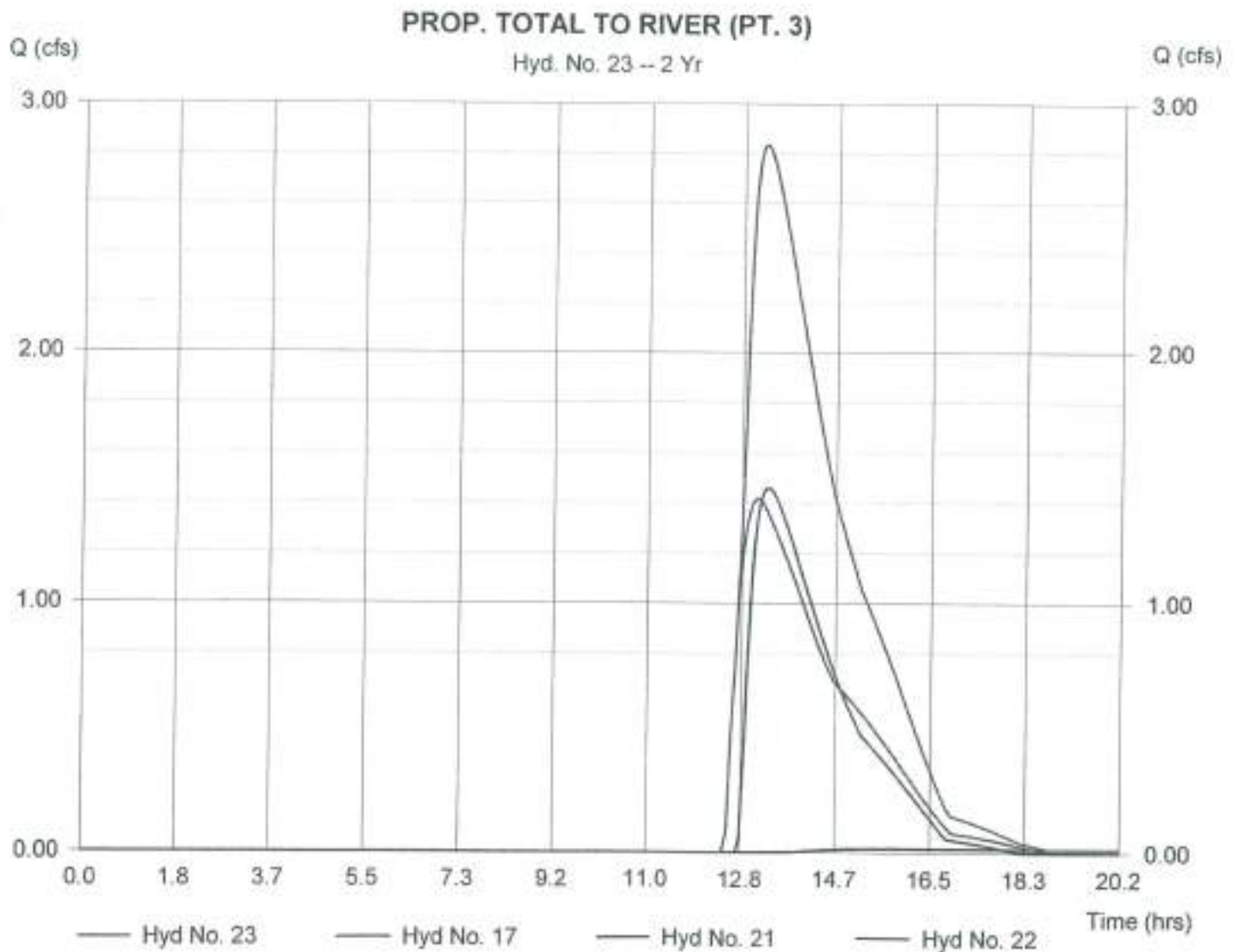
Hyd. No. 23

PROP. TOTAL TO RIVER (PT. 3)

Hydrograph type = Combine
Storm frequency = 2 yrs
Inflow hyds. = 17, 21, 22

Peak discharge = 2.83 cfs
Time interval = 1 min

Hydrograph Volume = 21,931 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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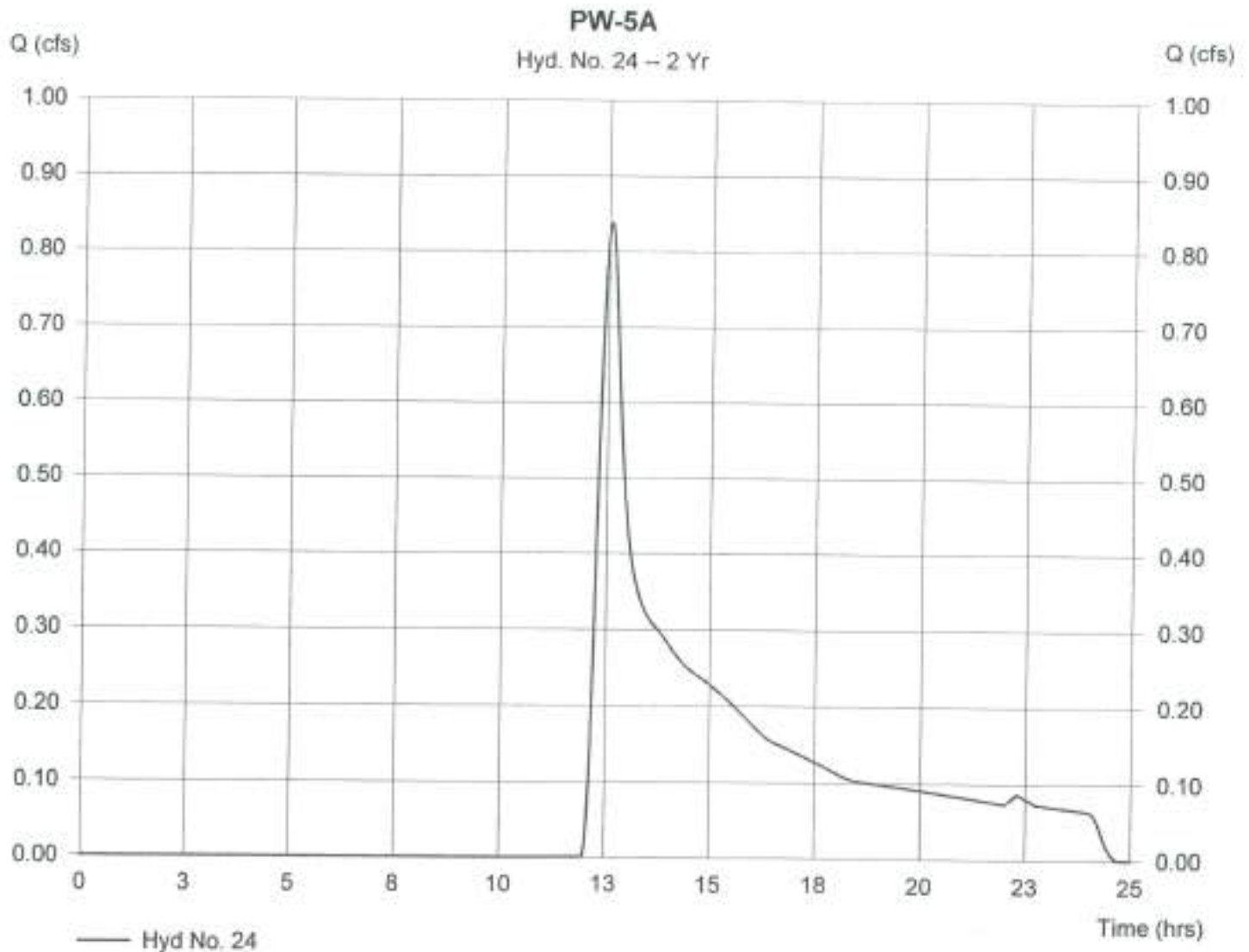
Hyd. No. 24

PW-5A

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 6.920 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 0.84 cfs
Time interval = 1 min
Curve number = 58
Hydraulic length = 0 ft
Time of conc. (Tc) = 27.30 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 7,649 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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Hyd. No. 25

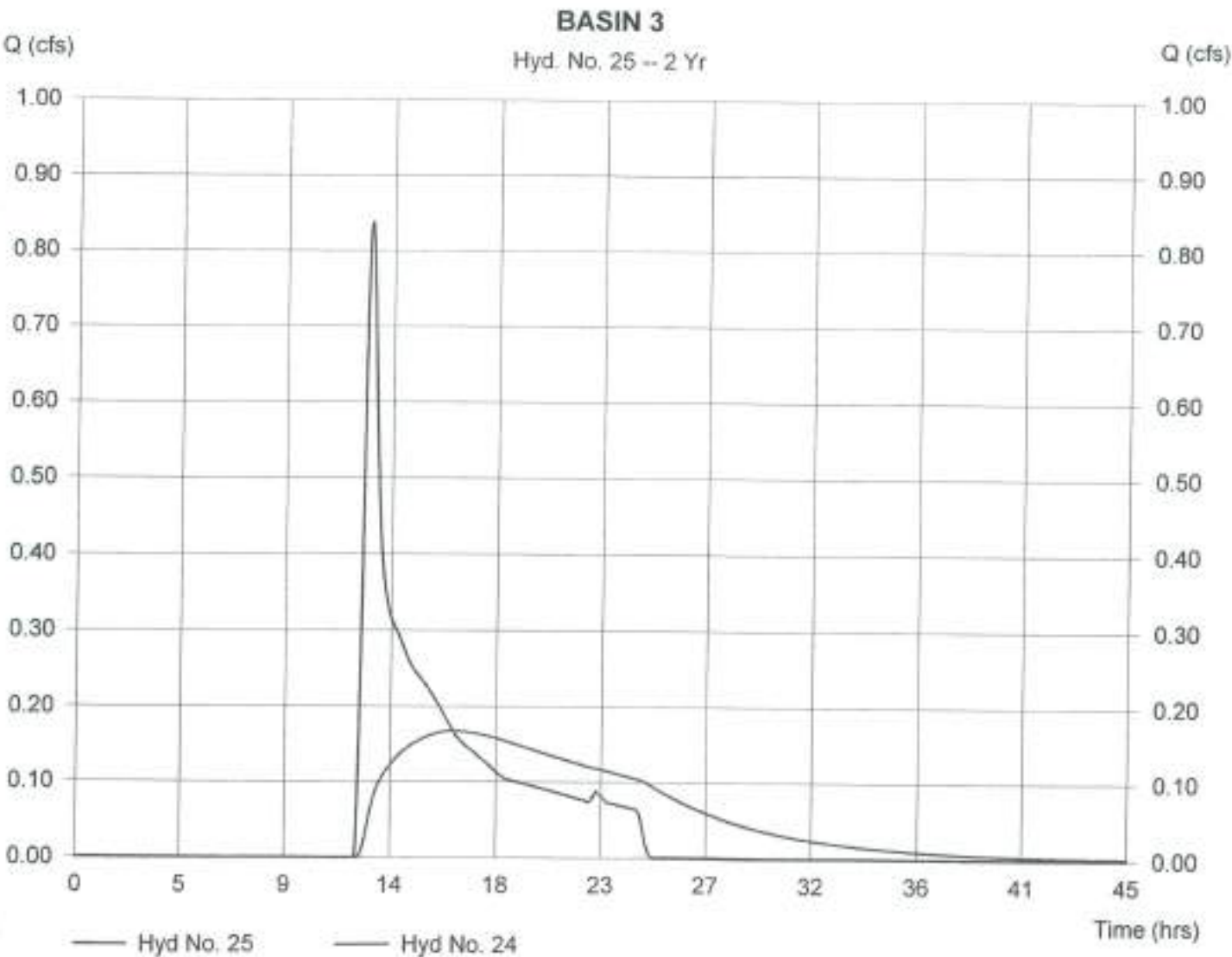
BASIN 3

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 24
Reservoir name = BASIN 3

Peak discharge = 0.17 cfs
Time interval = 1 min
Max. Elevation = 124.28 ft
Max. Storage = 3,000 cuft

Storage Indication method used.

Hydrograph Volume = 7,631 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:39 PM

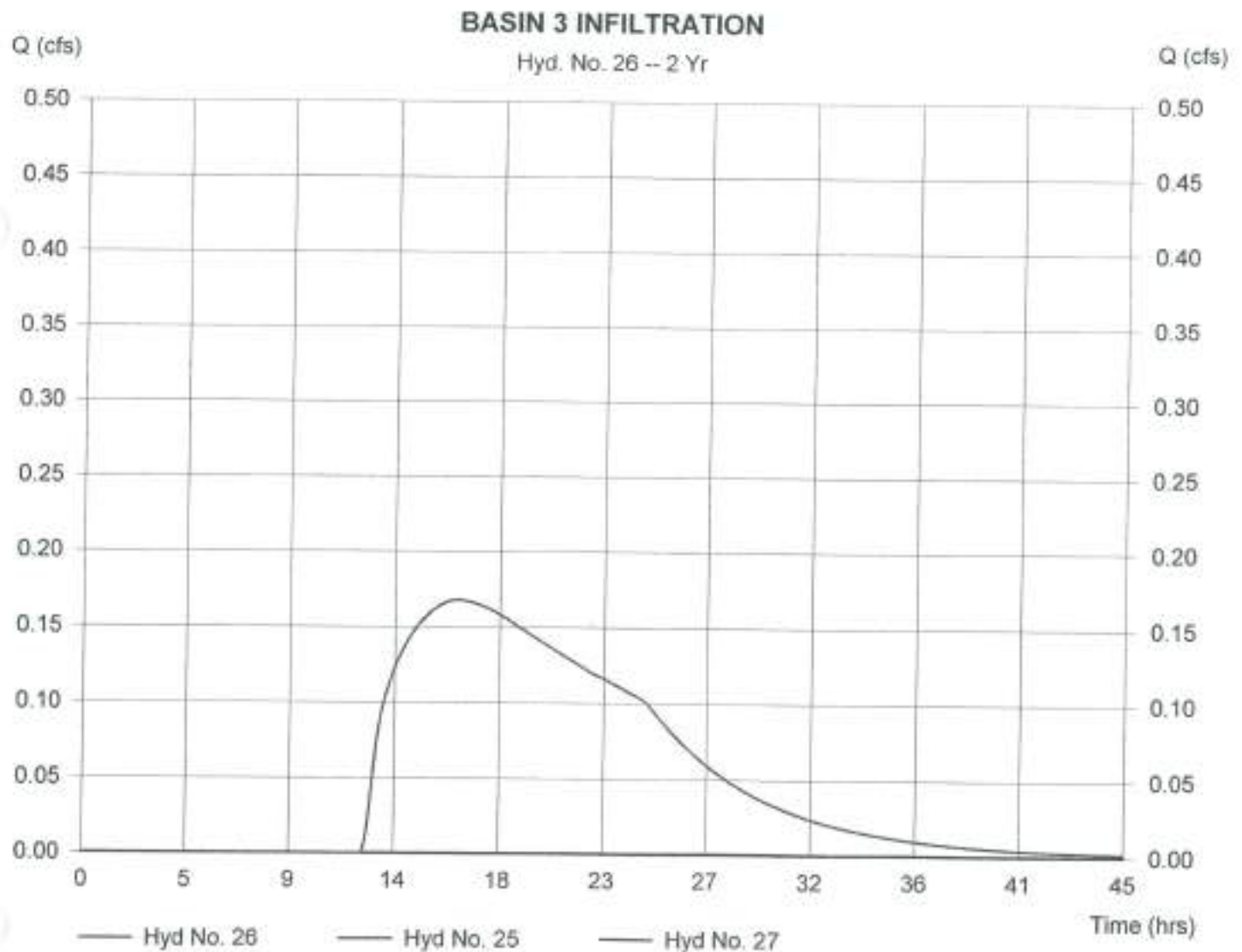
Hyd. No. 26

BASIN 3 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 2 yrs
Inflow hydrograph = 25
Diversion method = Pond - BASIN 3

Peak discharge = 0.17 cfs
Time interval = 1 min
2nd diverted hyd. = 27
Pond structure = Exfiltration

Hydrograph Volume = 7,631 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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Hyd. No. 27

BASIN 3 OUTFLOW

Hydrograph type = Diversion2
Storm frequency = 2 yrs
Inflow hydrograph = 25
Diversion method = Pond - BASIN 3

Peak discharge = 0.00 cfs
Time interval = 1 min
2nd diverted hyd. = 26
Pond structure = Exfiltration

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:39 PM

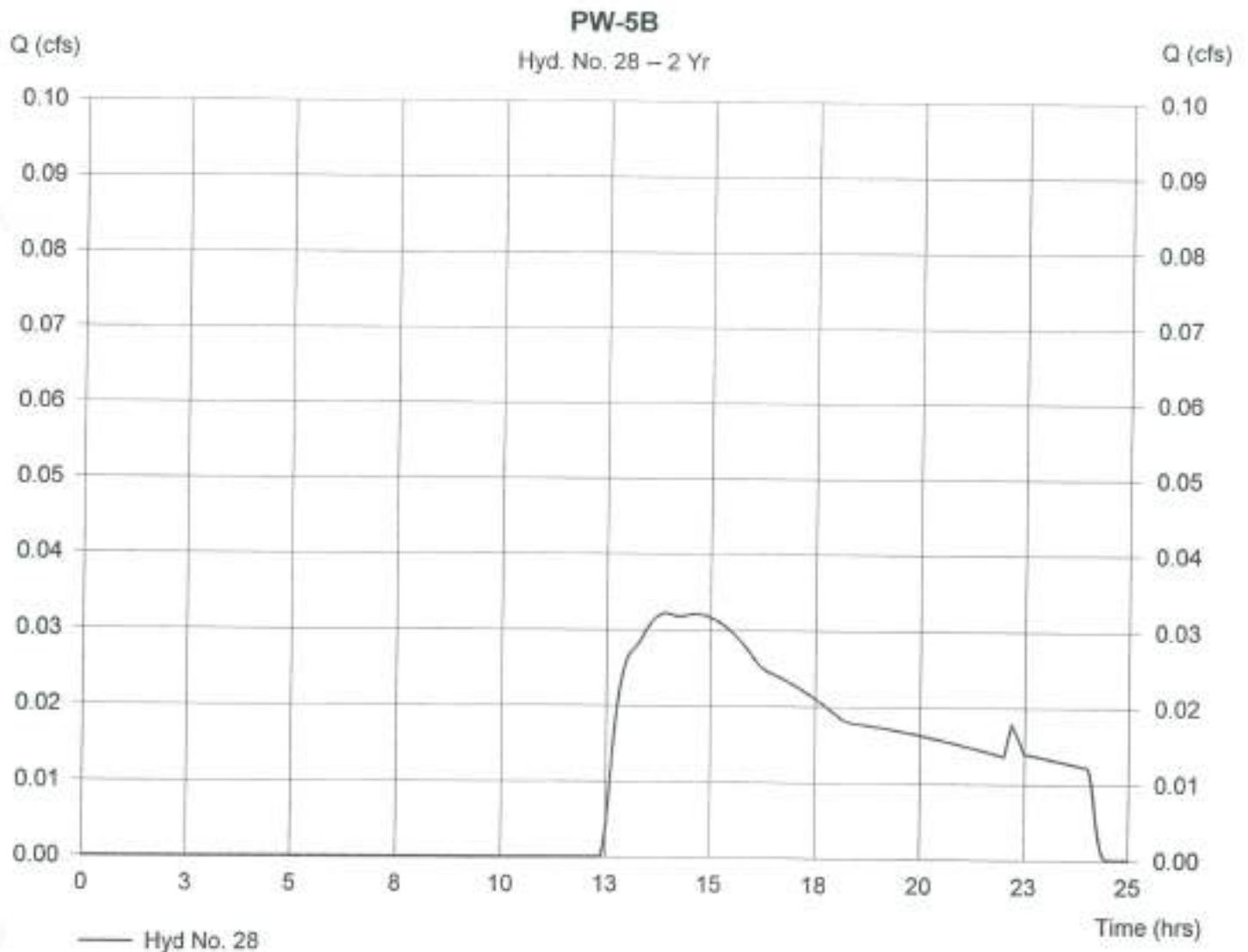
Hyd. No. 28

PW-5B

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 2.660 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 0.03 cfs
Time interval = 1 min
Curve number = 49
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.20 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 866 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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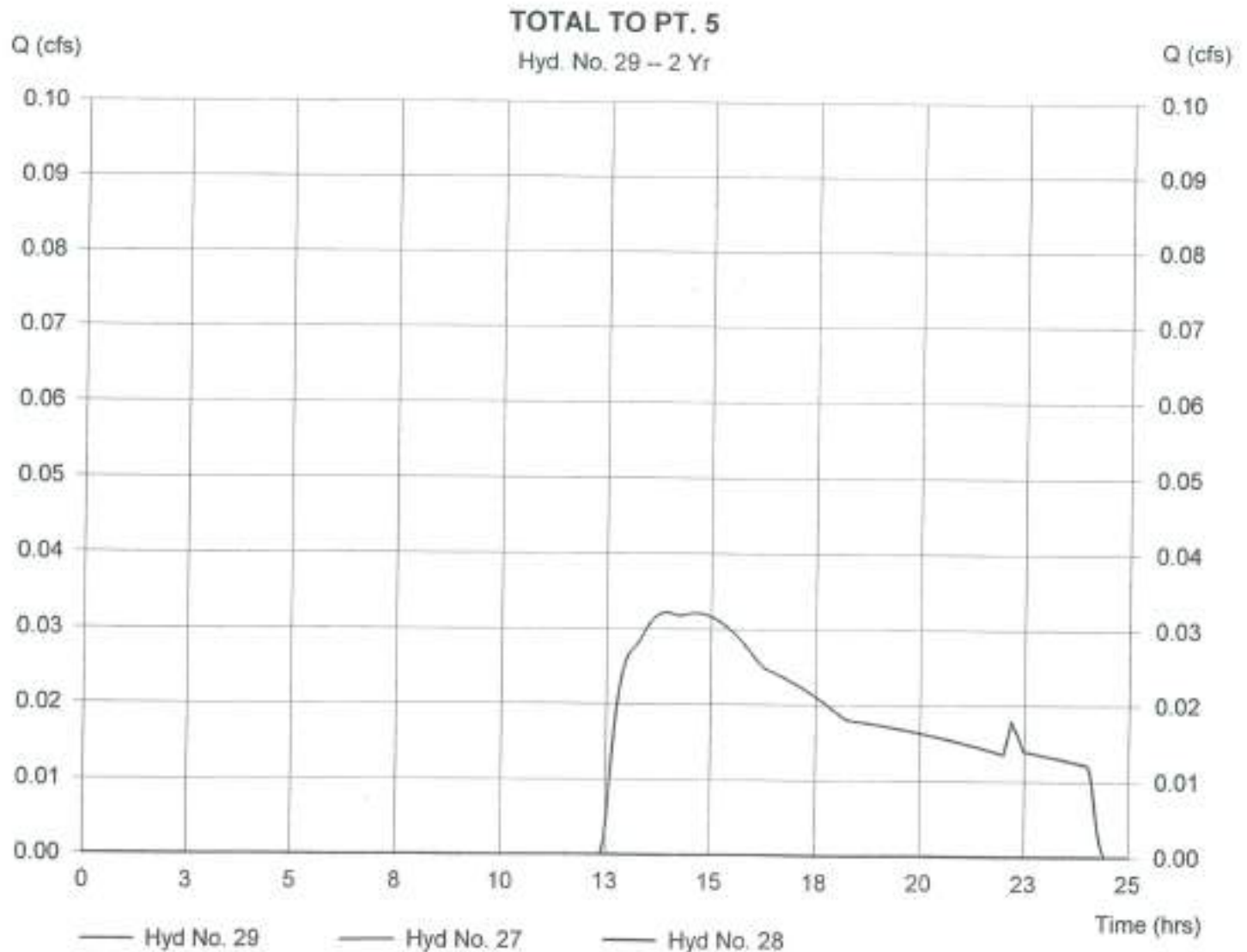
Hyd. No. 29

TOTAL TO PT. 5

Hydrograph type = Combine
Storm frequency = 2 yrs
Inflow hyds. = 27, 28

Peak discharge = 0.03 cfs
Time interval = 1 min

Hydrograph Volume = 866 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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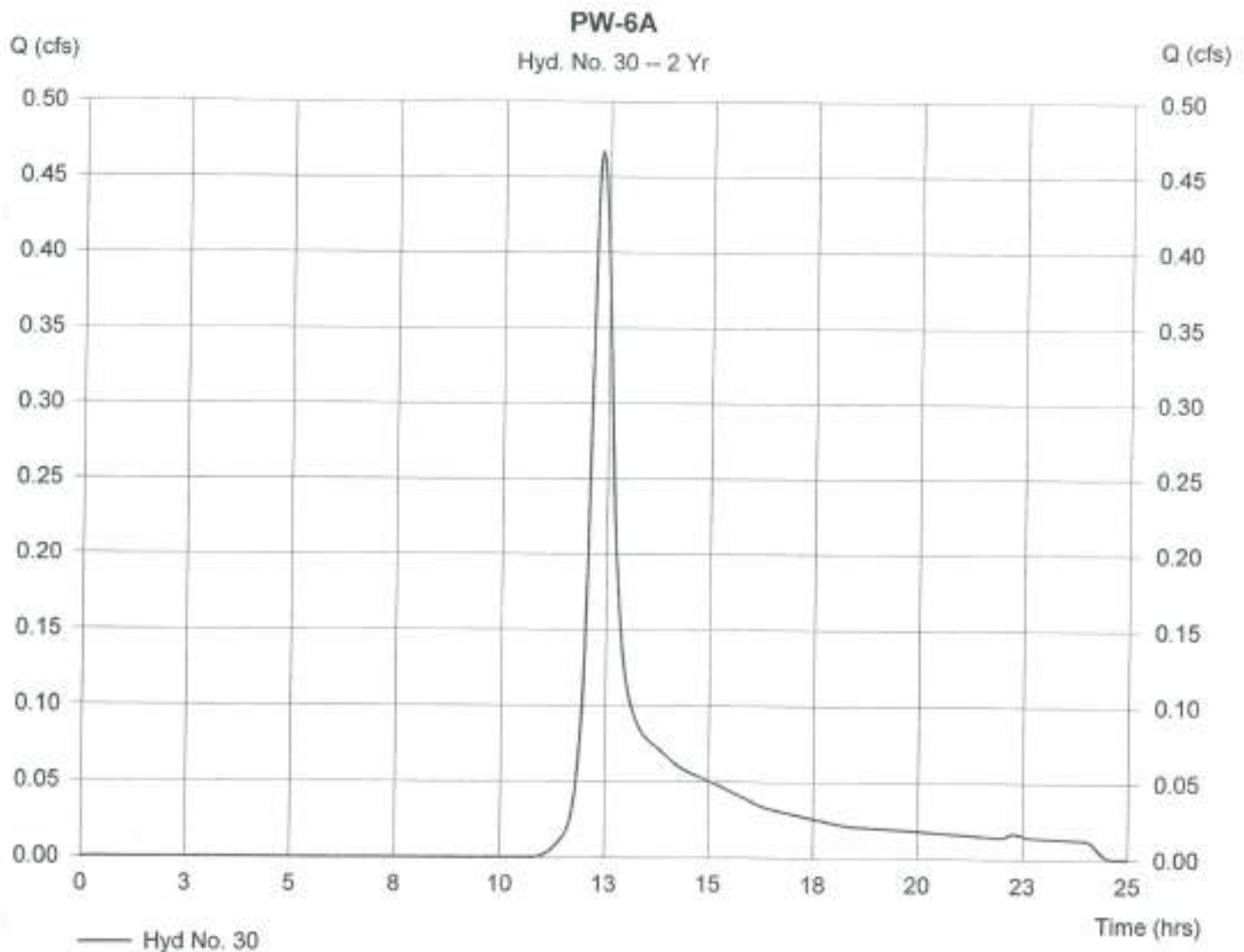
Hyd. No. 30

PW-6A

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 0.680 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 0.47 cfs
Time interval = 1 min
Curve number = 74
Hydraulic length = 0 ft
Time of conc. (Tc) = 24.70 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 2,400 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:39 PM

Hyd. No. 31

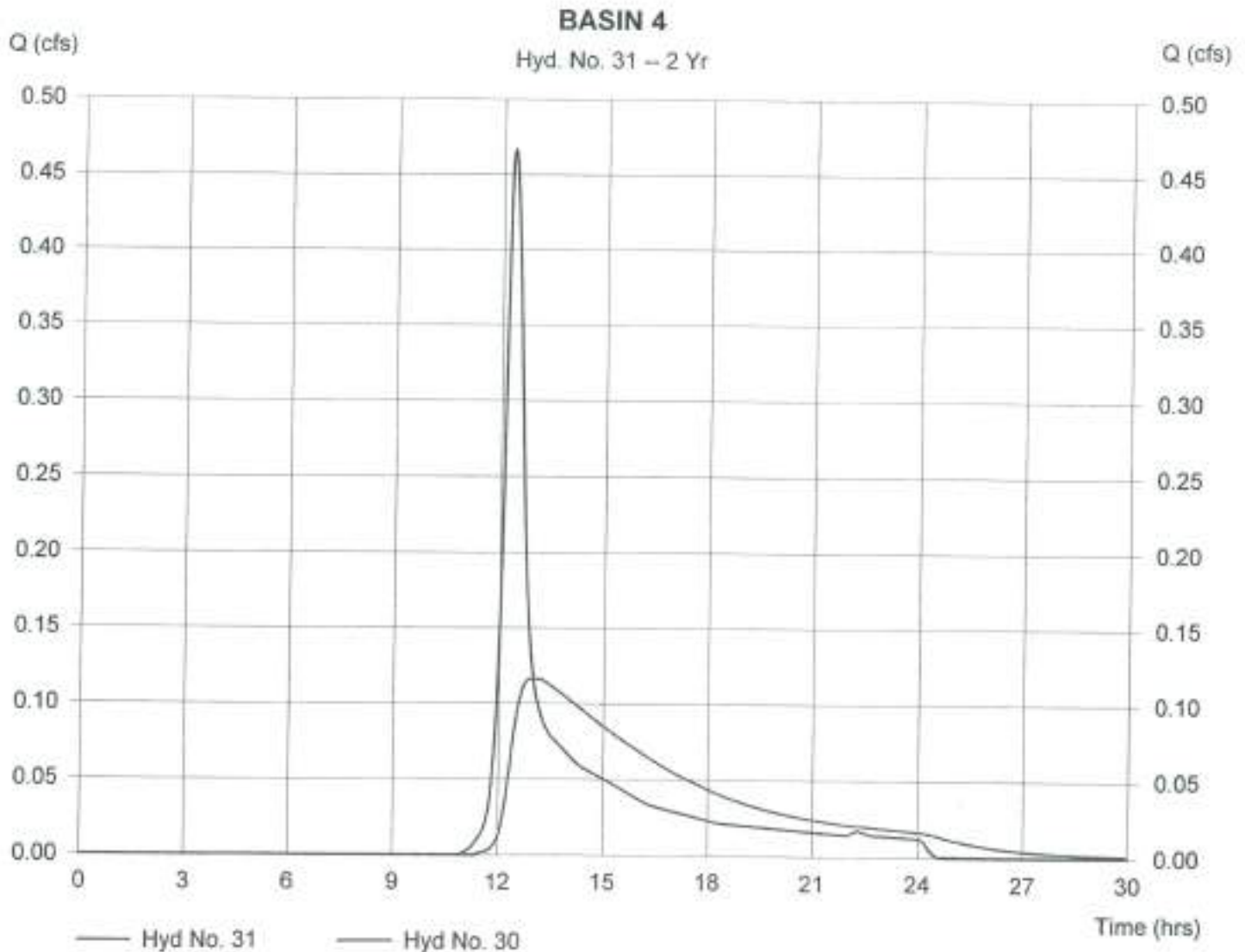
BASIN 4

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 30
Reservoir name = BASIN 4

Peak discharge = 0.12 cfs
Time interval = 1 min
Max. Elevation = 129.01 ft
Max. Storage = 865 cuft

Storage Indication method used.

Hydrograph Volume = 2,393 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:39 PM

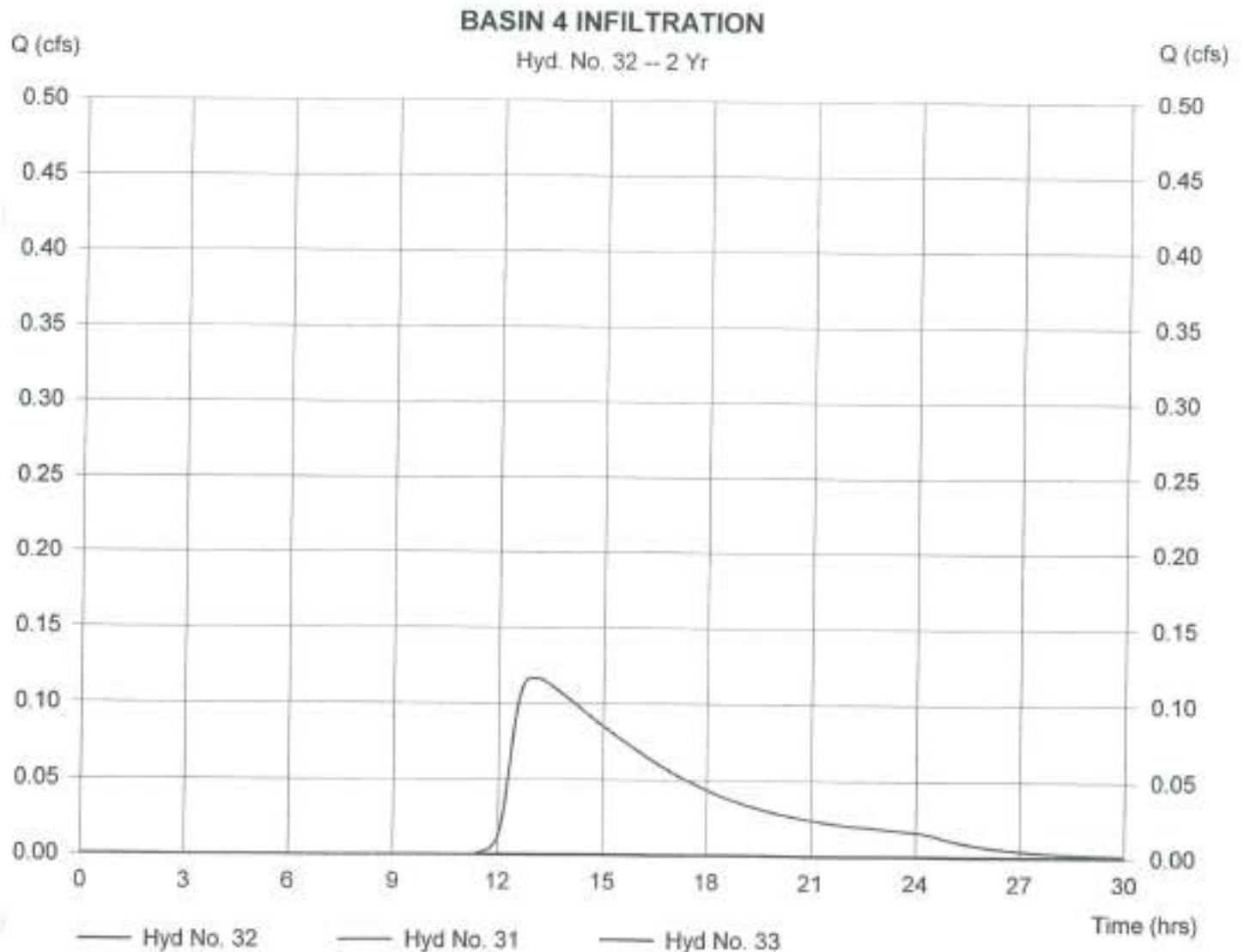
Hyd. No. 32

BASIN 4 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 2 yrs
Inflow hydrograph = 31
Diversion method = Pond - BASIN 4

Peak discharge = 0.12 cfs
Time interval = 1 min
2nd diverted hyd. = 33
Pond structure = Exfiltration

Hydrograph Volume = 2,393 cuft



Hydrograph Plot

Hydraflow Hydrographs by IntelliSolve

Monday, May 7 2007, 4:40 PM

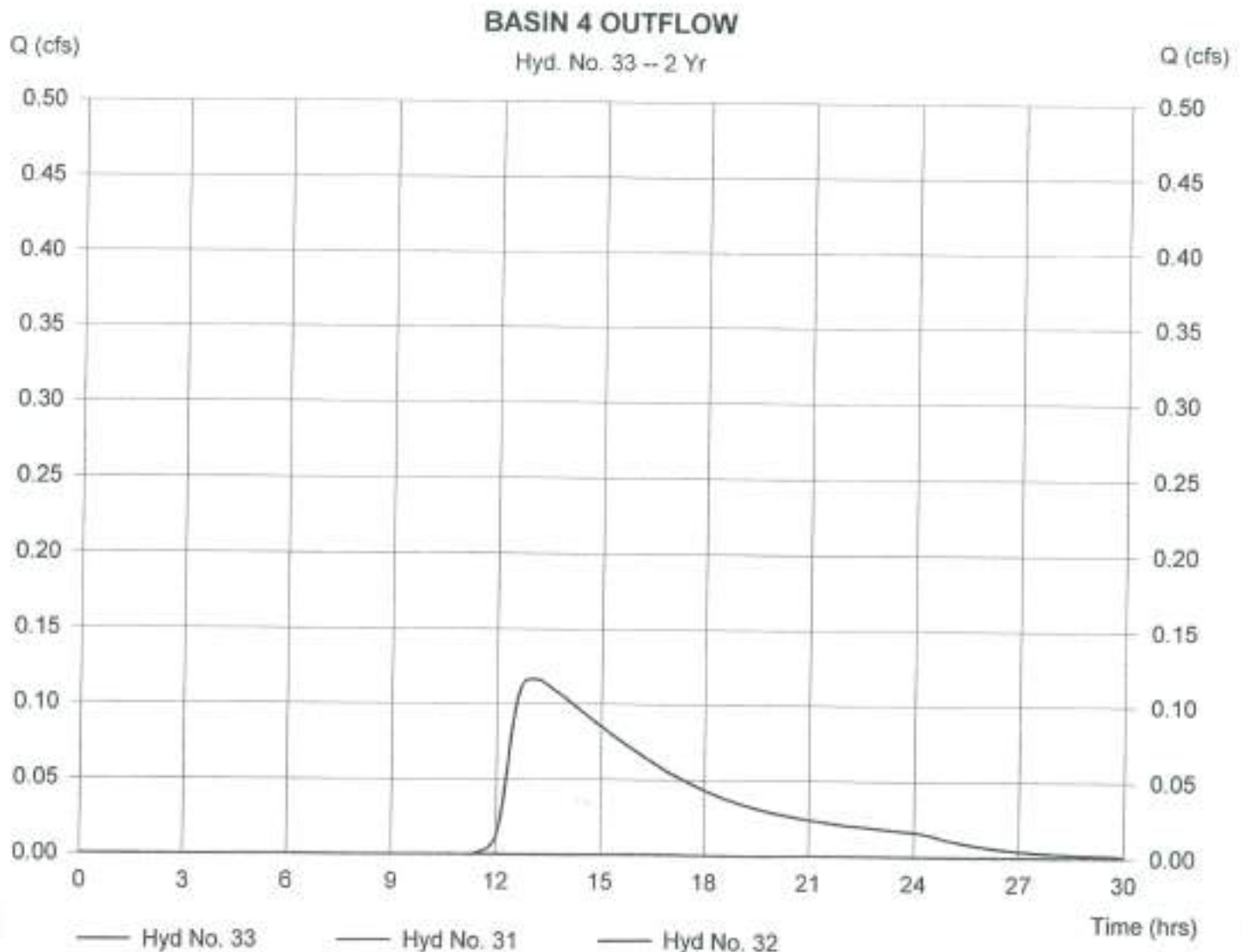
Hyd. No. 33

BASIN 4 OUTFLOW

Hydrograph type = Diversion2
Storm frequency = 2 yrs
Inflow hydrograph = 31
Diversion method = Pond - BASIN 4

Peak discharge = 0.00 cfs
Time interval = 1 min
2nd diverted hyd. = 32
Pond structure = Exfiltration

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by IntelliSolve

Monday, May 7 2007, 4:40 PM

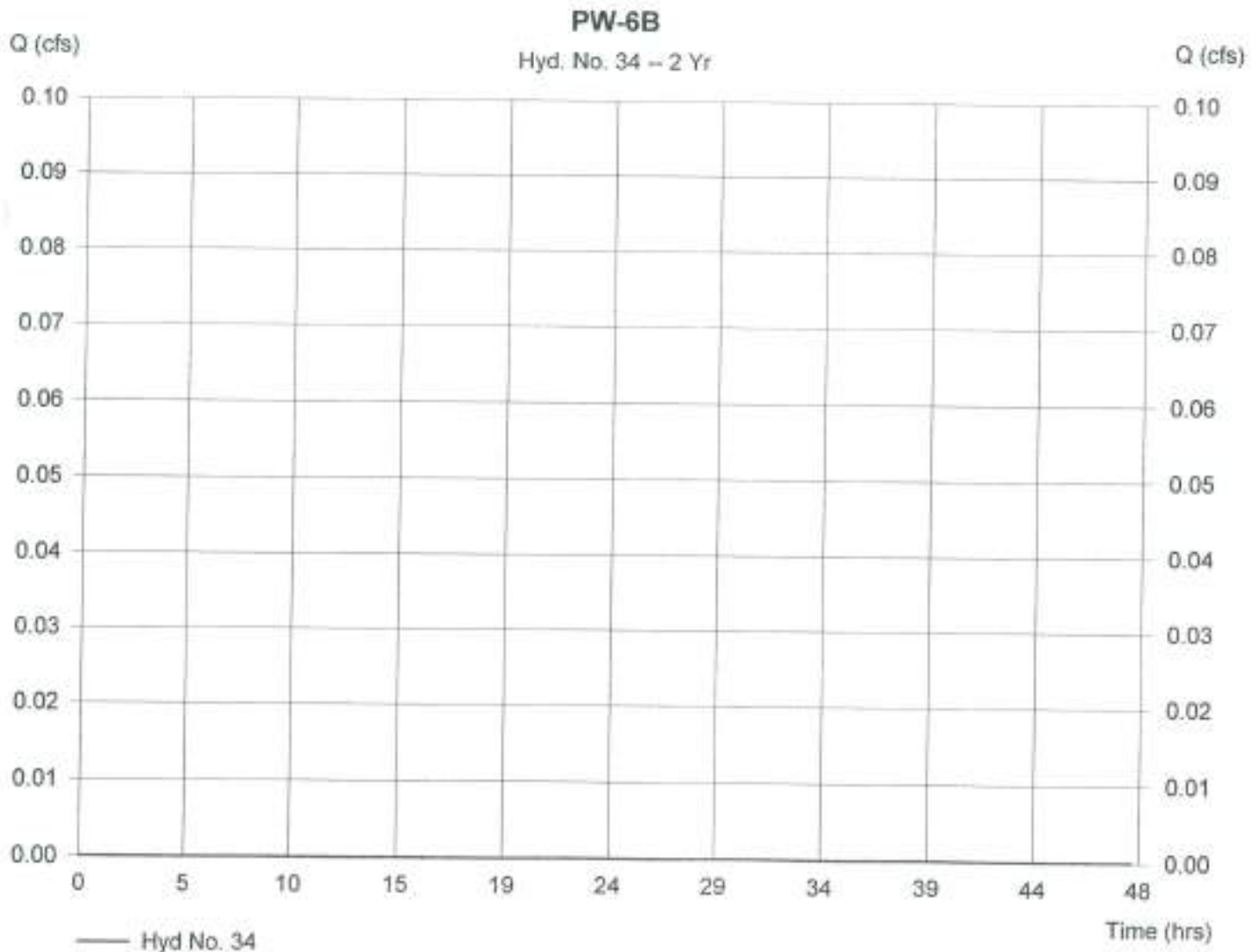
Hyd. No. 34

PW-6B

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 0.600 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.10 in
Storm duration = 24 hrs

Peak discharge = 0.00 cfs
Time interval = 1 min
Curve number = 39
Hydraulic length = 0 ft
Time of conc. (Tc) = 6.00 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

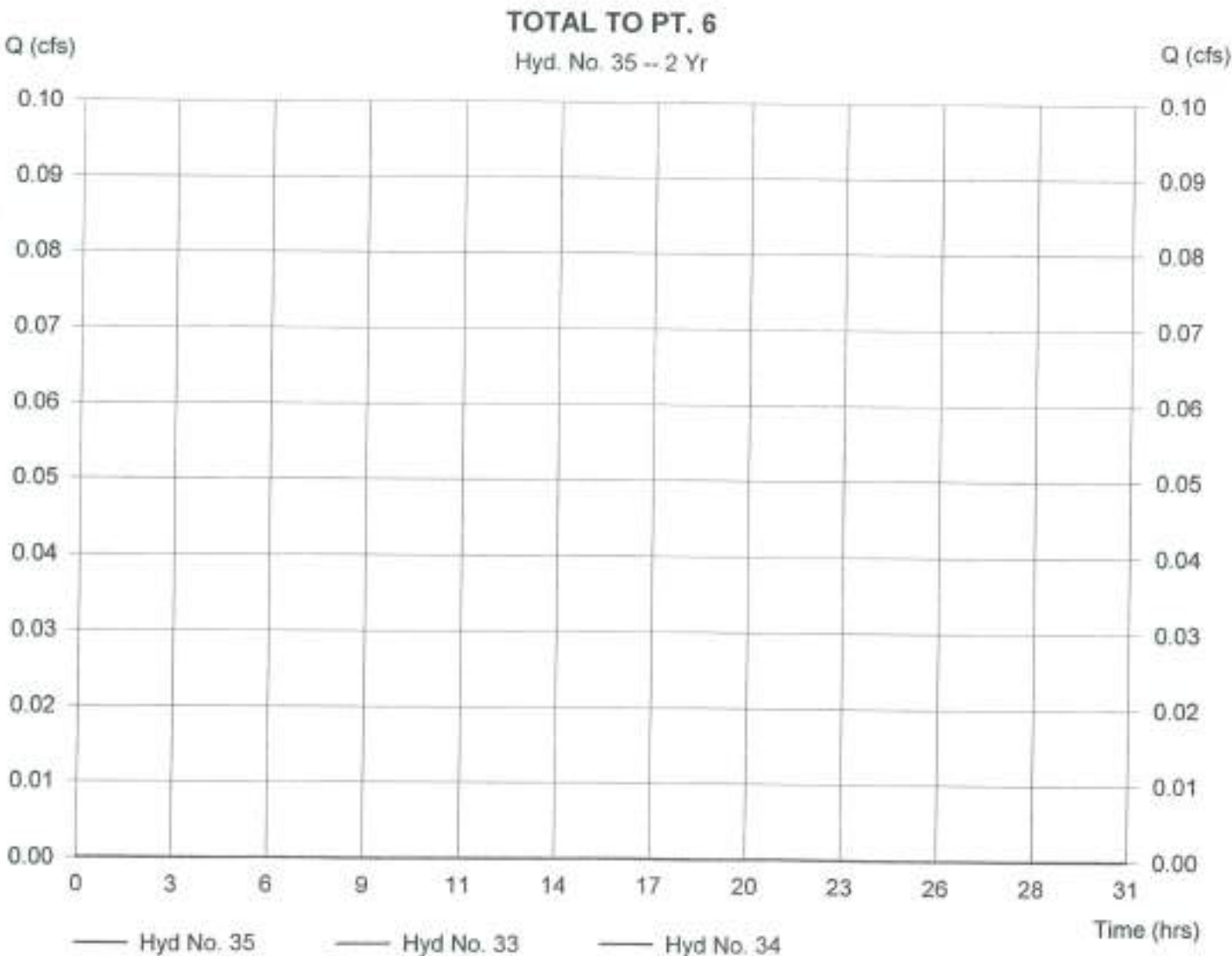
Hyd. No. 35

TOTAL TO PT. 6

Hydrograph type = Combine
Storm frequency = 2 yrs
Inflow hyds. = 33, 34

Peak discharge = 0.00 cfs
Time interval = 1 min

Hydrograph Volume = 0 cuft



Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	54.24	1	728	199,459	—	—	—	EW-1 (PT. 1)
2	SCS Runoff	13.82	1	725	45,078	—	—	—	EW-2 (PT. 2)
3	SCS Runoff	3.32	1	753	26,655	—	—	—	EW-3
4	Combine	67.90	1	727	271,192	1, 2, 3	—	—	EXIST. TOTAL TO RIVER (PT. 3)
5	SCS Runoff	2.93	1	729	11,135	—	—	—	EW-4
6	Reservoir	0.55	1	763	11,128	5	119.10	4,411	EXIST. BASIN
7	Diversion1	0.12	1	763	2,458	6	—	—	BASIN INFILTRATION
8	Diversion2	0.42	1	763	8,671	6	—	—	BASIN OUTFLOW (PT. 4)
9	SCS Runoff	0.12	1	821	2,976	—	—	—	EW-5A
10	SCS Runoff	0.37	1	749	3,697	—	—	—	E-5B
11	Combine	0.46	1	751	6,673	9, 10	—	—	E-5A + E-5B (PT. 5)
12	SCS Runoff	2.03	1	723	6,500	—	—	—	EW-6 (PT. 6)
14	SCS Runoff	29.10	1	733	126,018	—	—	—	PW-1
15	Reservoir	14.14	1	752	125,827	14	120.32	40,325	BASIN 2
	Diversion1	1.17	1	752	58,824	15	—	—	BASIN 2 INFILTRATION
17	Diversion2	12.96	1	752	67,002	15	—	—	BASIN 2 OUTFLOW (PT. 1)
18	SCS Runoff	20.87	1	746	122,567	—	—	—	PW-2
19	Reservoir	8.83	1	777	122,325	18	121.30	52,563	BASIN 1
20	Diversion1	1.29	1	777	71,012	19	—	—	BASIN 1 INFILTRATION
21	Diversion2	7.55	1	777	51,313	19	—	—	BASIN 1 OUTFLOW (PT. 2)
22	SCS Runoff	0.38	1	752	4,339	—	—	—	PW-3
23	Combine	19.38	1	757	122,655	17, 21, 22	—	—	PROP. TOTAL TO RIVER (PT. 3)
24	SCS Runoff	3.67	1	748	22,561	—	—	—	PW-5A
25	Reservoir	0.54	1	906	22,521	24	124.91	9,663	BASIN 3
26	Diversion1	0.54	1	906	22,521	25	—	—	BASIN 3 INFILTRATION
27	Diversion2	0.00	1	760	0	25	—	—	BASIN 3 OUTFLOW
28	SCS Runoff	0.56	1	745	4,353	—	—	—	PW-5B
29	Combine	0.56	1	745	4,353	27, 28	—	—	TOTAL TO PT. 5
30	SCS Runoff	1.00	1	738	4,869	—	—	—	PW-6A
MSP_5-8-07.gpw					Return Period: 10 Year			Monday, May 7 2007, 5:04 PM	

Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
31	Reservoir	0.50	1	759	4,861	30	129.57	1,777	BASIN 4
32	Diversion1	0.15	1	759	4,391	31	—	—	BASIN 4 INFILTRATION
33	Diversion2	0.34	1	759	470	31	—	—	BASIN 4 OUTFLOW
34	SCS Runoff	0.01	1	881	248	—	—	—	PW-6B
35	Combine	0.34	1	759	718	33, 34	—	—	TOTAL TO PT. 6
MSP_5-8-07.gpw					Return Period: 10 Year			Monday, May 7 2007, 5:04 PM	

Hydrograph Plot

Hydraflow Hydrographs by Intellsolve

Monday, May 7 2007, 4:40 PM

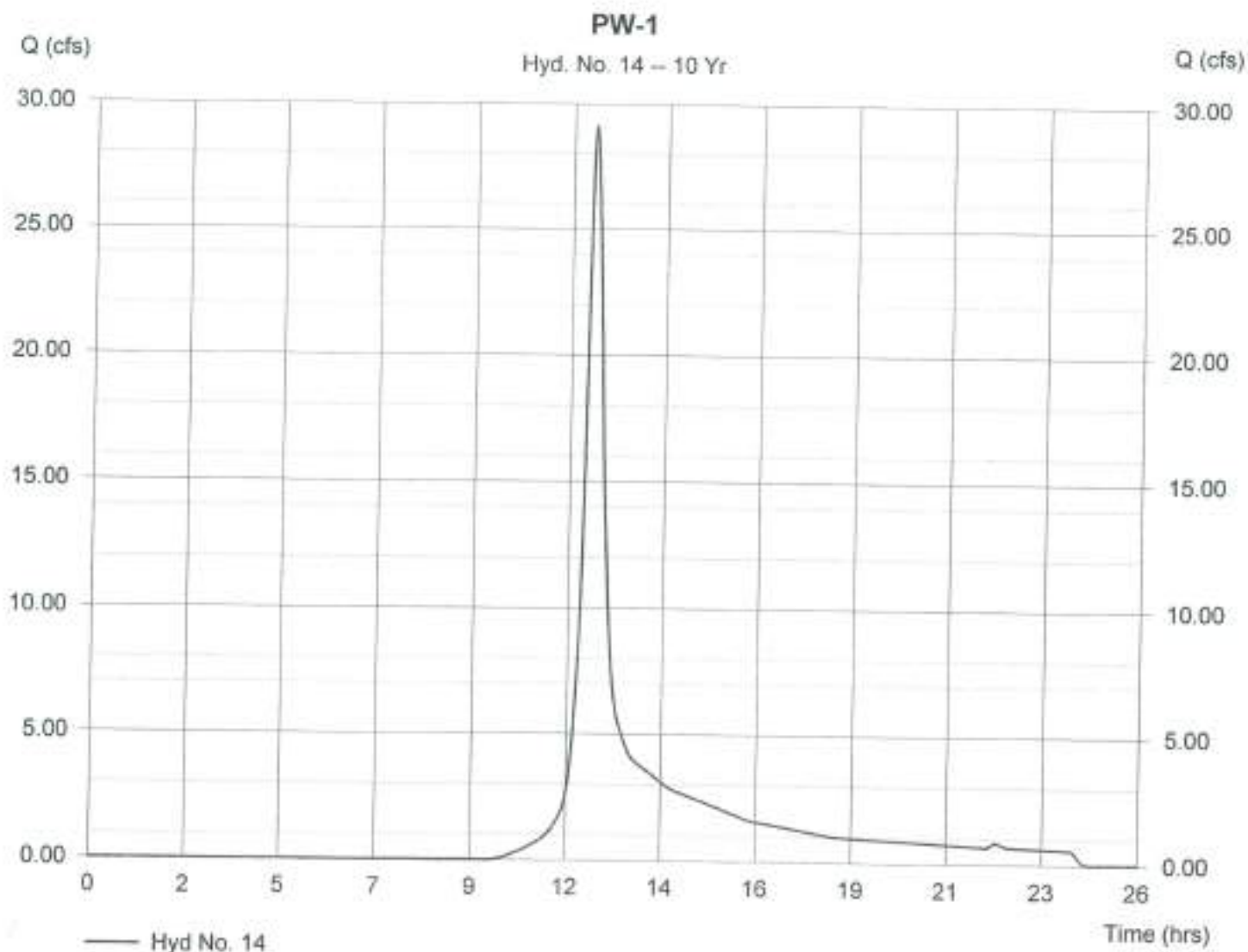
Hyd. No. 14

PW-1

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 19.290 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 29.10 cfs
Time interval = 1 min
Curve number = 72
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.50 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 126,018 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 15

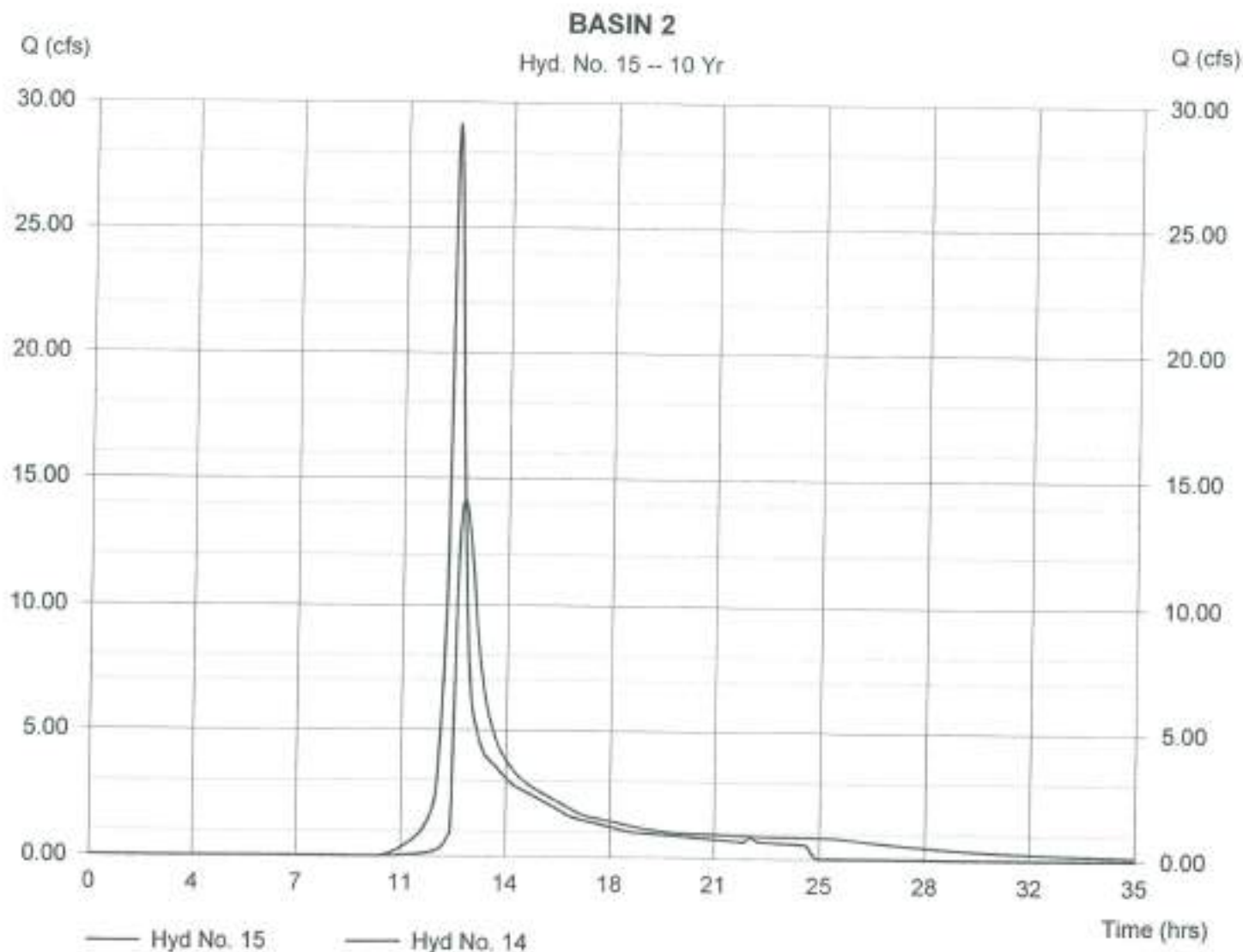
BASIN 2

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 14
Reservoir name = BASIN 2

Peak discharge = 14.14 cfs
Time interval = 1 min
Max. Elevation = 120.32 ft
Max. Storage = 40,325 cuft

Storage indication method used.

Hydrograph Volume = 125,827 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

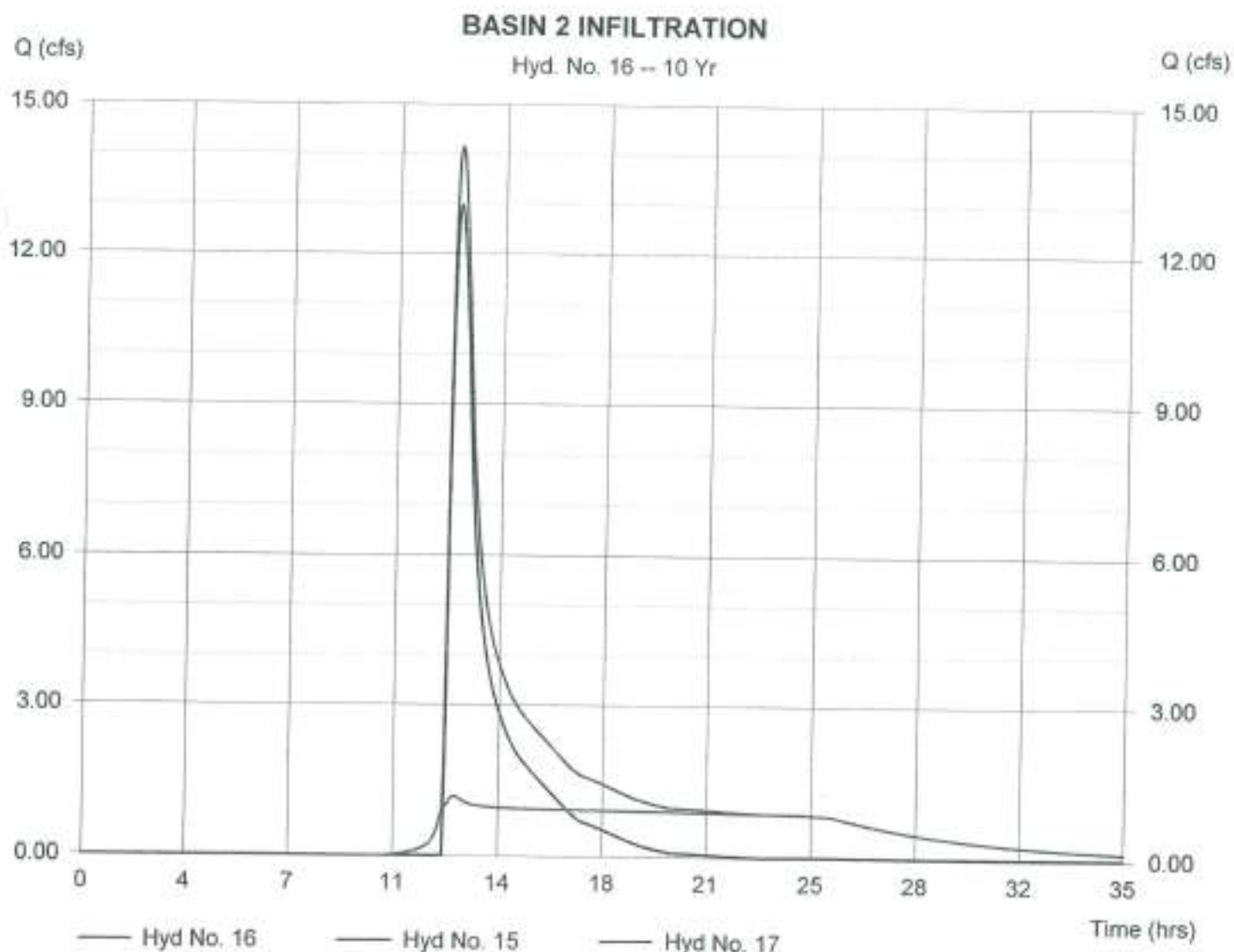
Hyd. No. 16

BASIN 2 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 10 yrs
Inflow hydrograph = 15
Diversion method = Pond - BASIN 2

Peak discharge = 1.17 cfs
Time interval = 1 min
2nd diverted hyd. = 17
Pond structure = Exfiltration

Hydrograph Volume = 58,824 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

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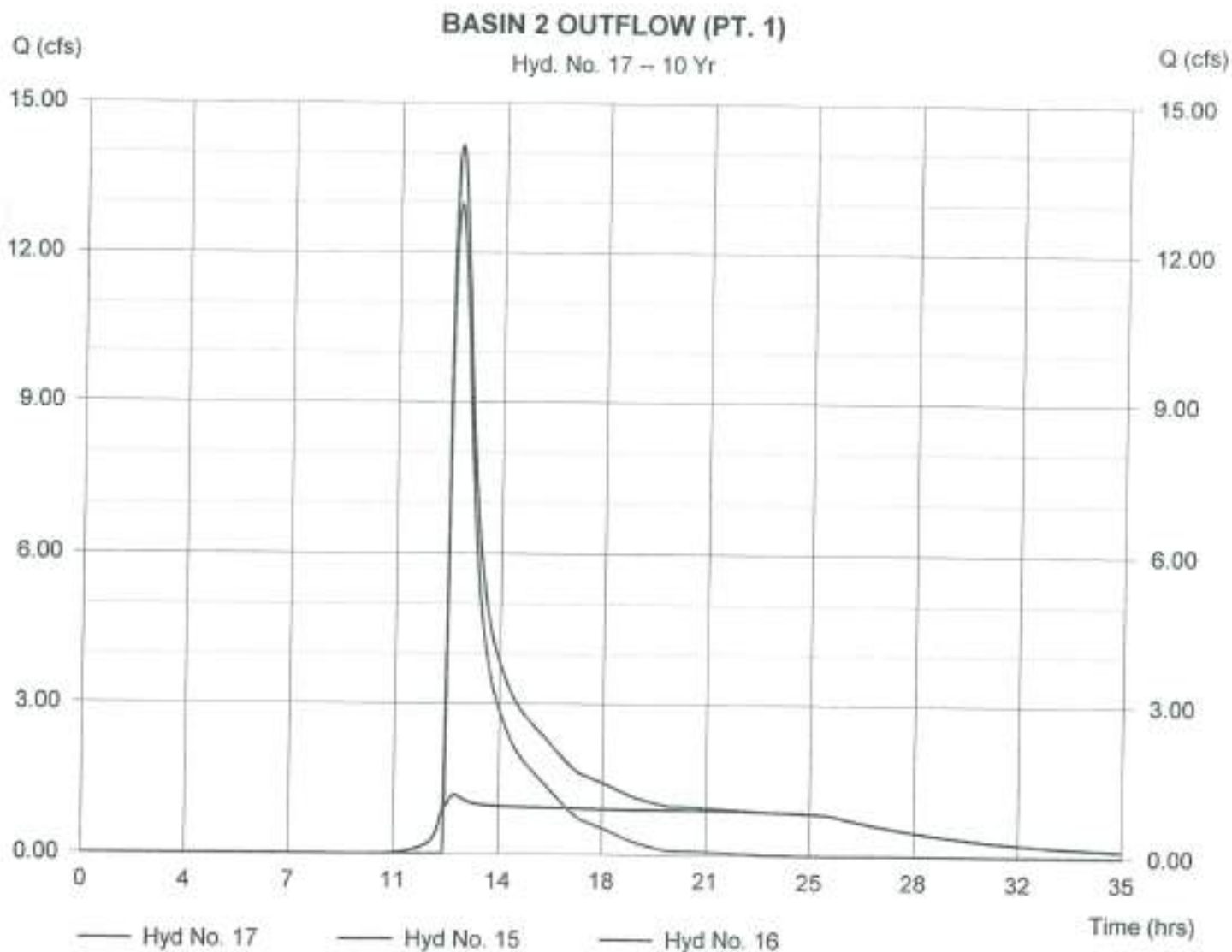
Hyd. No. 17

BASIN 2 OUTFLOW (PT. 1)

Hydrograph type = Diversion2
Storm frequency = 10 yrs
Inflow hydrograph = 15
Diversion method = Pond - BASIN 2

Peak discharge = 12.96 cfs
Time interval = 1 min
2nd diverted hyd. = 16
Pond structure = Exfiltration

Hydrograph Volume = 67,002 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

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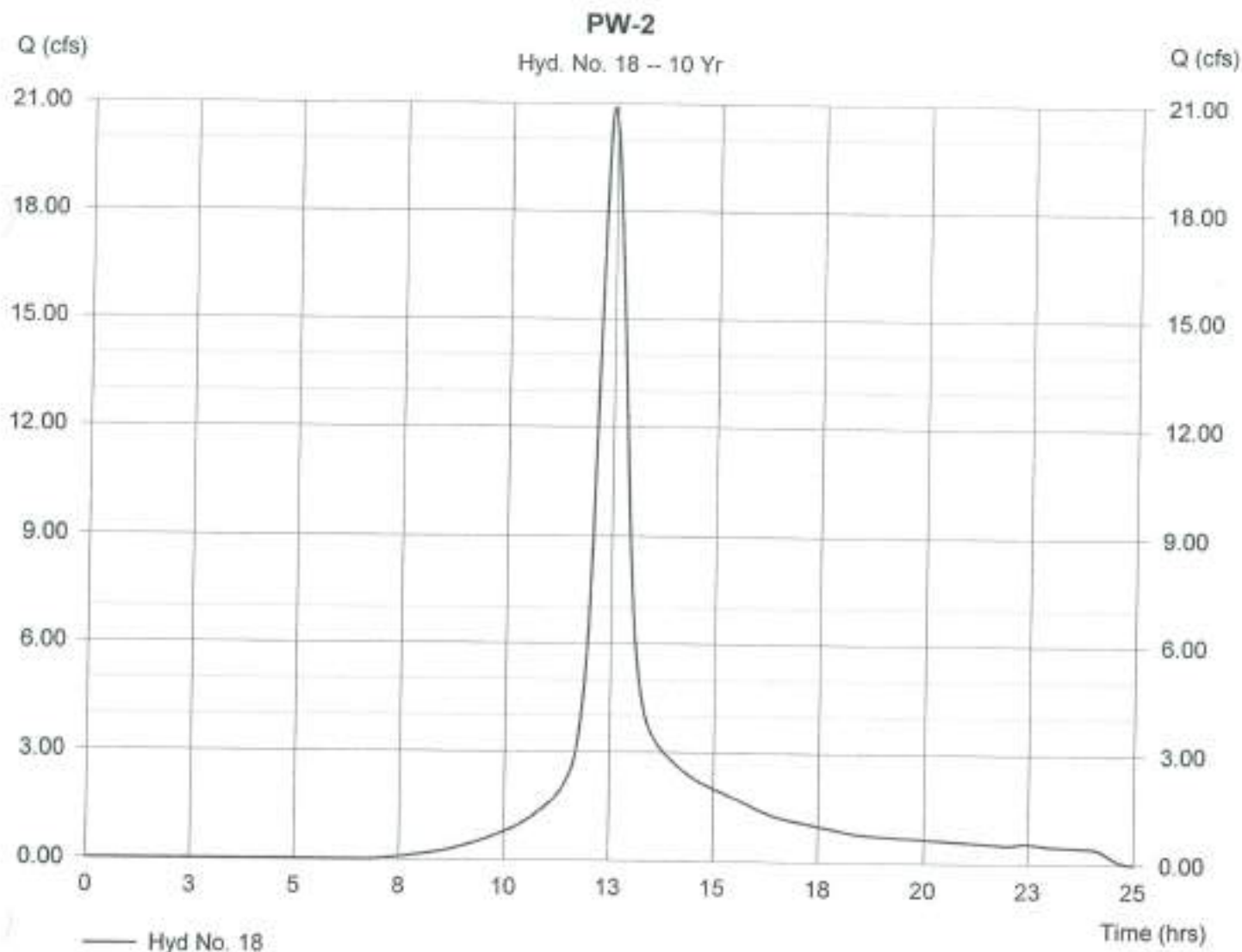
Hyd. No. 18

PW-2

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 11.670 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 20.87 cfs
Time interval = 1 min
Curve number = 85
Hydraulic length = 0 ft
Time of conc. (Tc) = 37.50 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 122,567 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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Hyd. No. 19

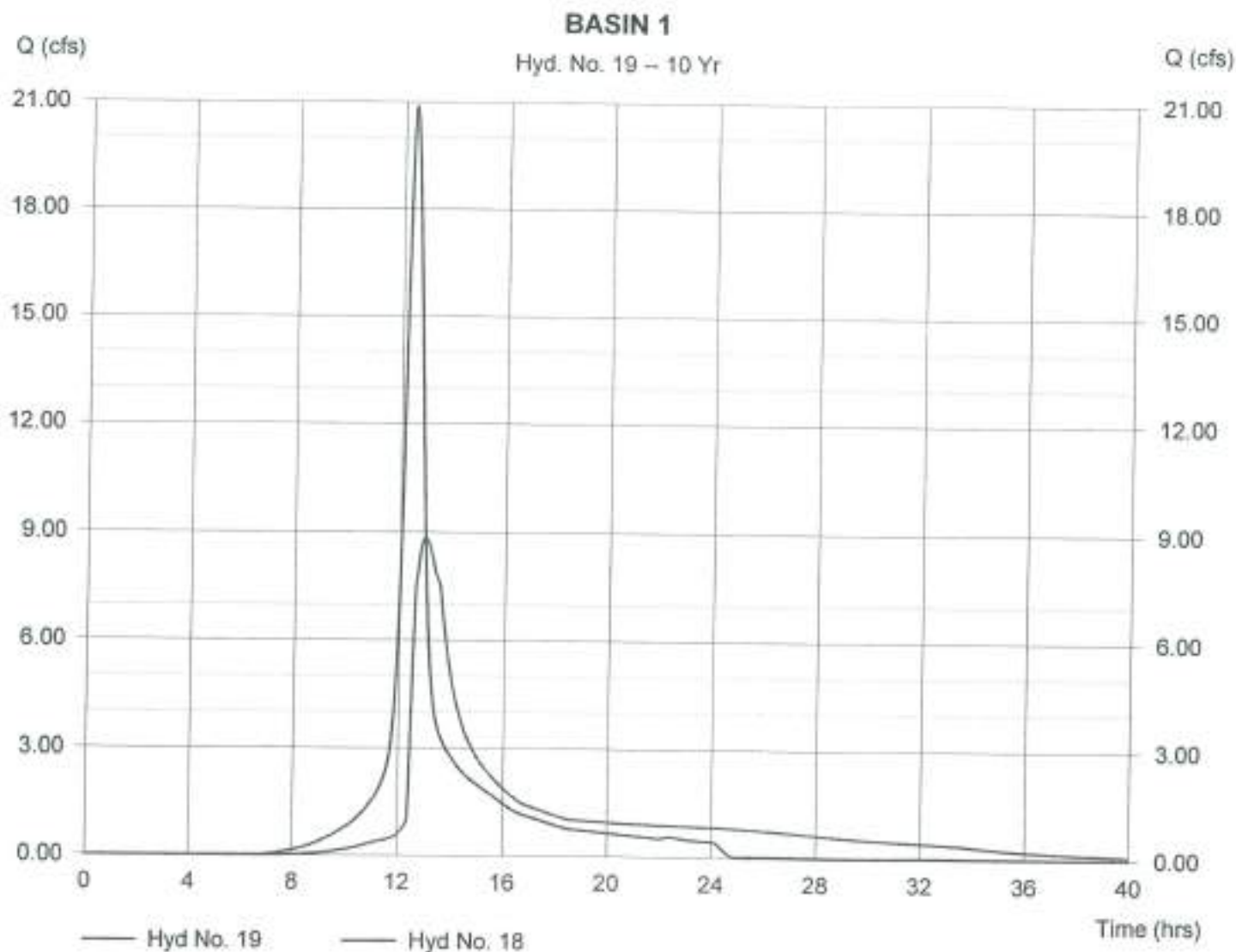
BASIN 1

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 18
Reservoir name = BASIN 1

Peak discharge = 8.83 cfs
Time interval = 1 min
Max. Elevation = 121.30 ft
Max. Storage = 52,563 cuft

Storage Indication method used:

Hydrograph Volume = 122,325 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

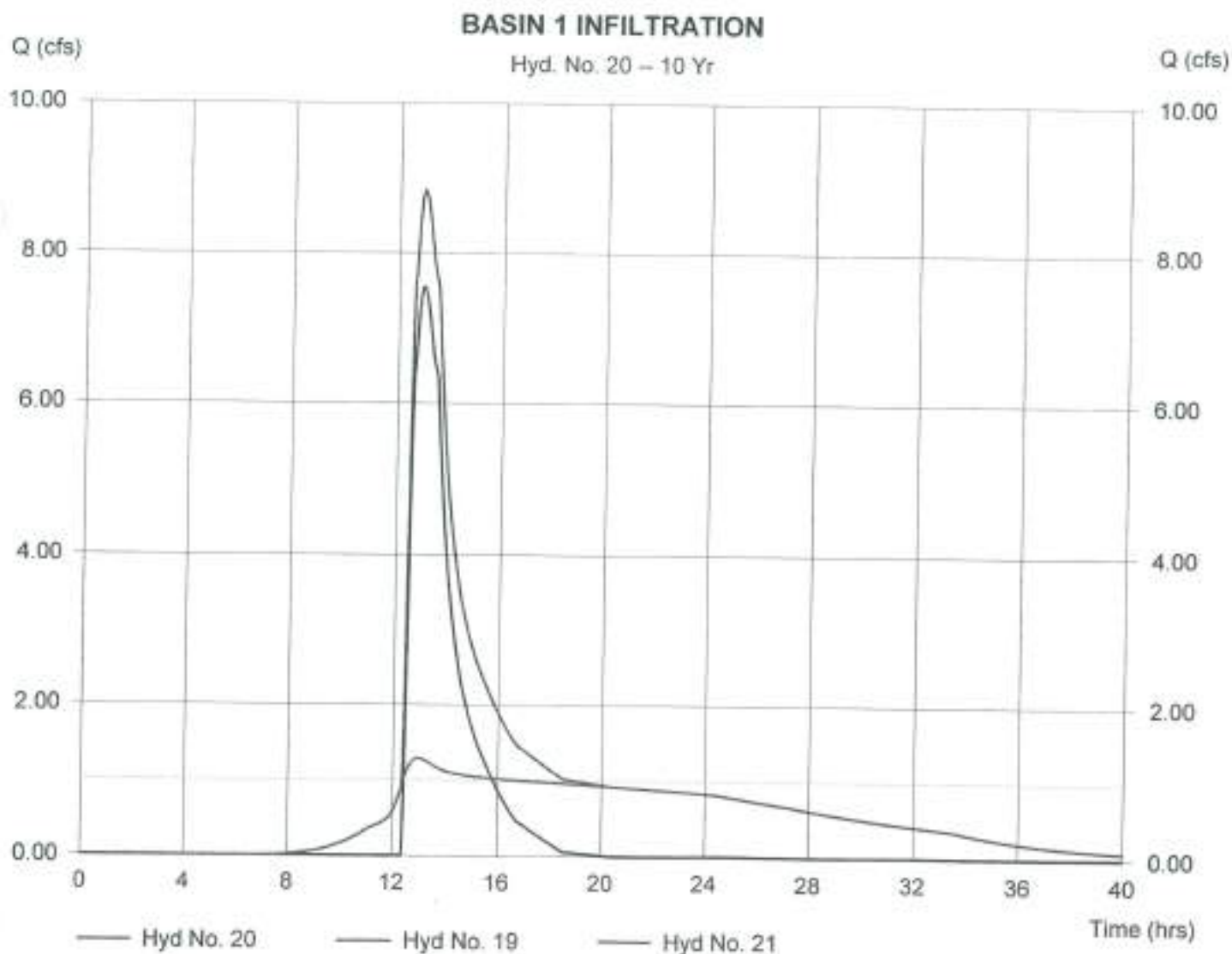
Hyd. No. 20

BASIN 1 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 10 yrs
Inflow hydrograph = 19
Diversion method = Pond - BASIN 1

Peak discharge = 1.29 cfs
Time interval = 1 min
2nd diverted hyd. = 21
Pond structure = Exfiltration

Hydrograph Volume = 71,012 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

Monday, May 7 2007, 4:40 PM

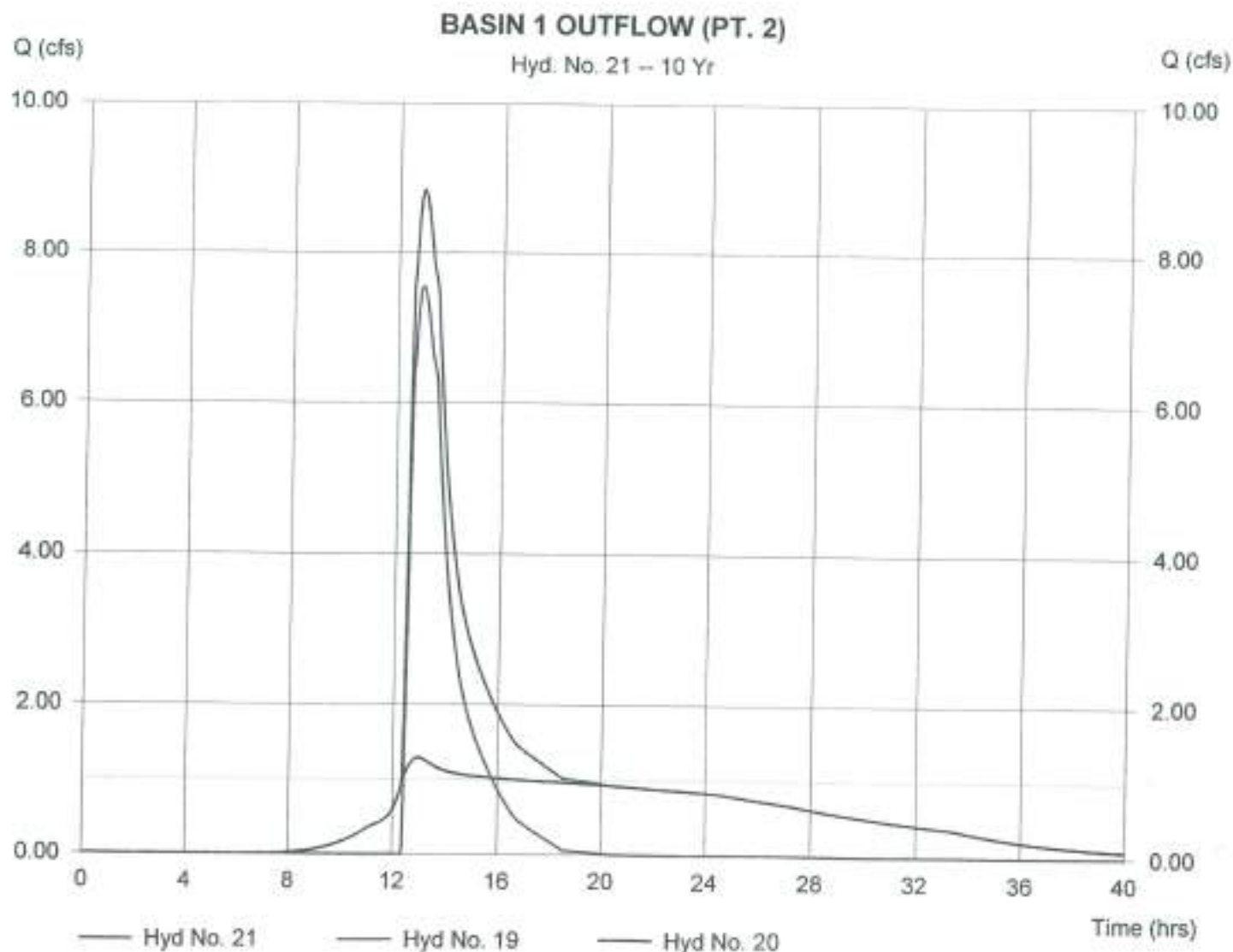
Hyd. No. 21

BASIN 1 OUTFLOW (PT. 2)

Hydrograph type = Diversion2
Storm frequency = 10 yrs
Inflow hydrograph = 19
Diversion method = Pond - BASIN 1

Peak discharge = 7.55 cfs
Time interval = 1 min
2nd diverted hyd. = 20
Pond structure = Exfiltration

Hydrograph Volume = 51,313 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

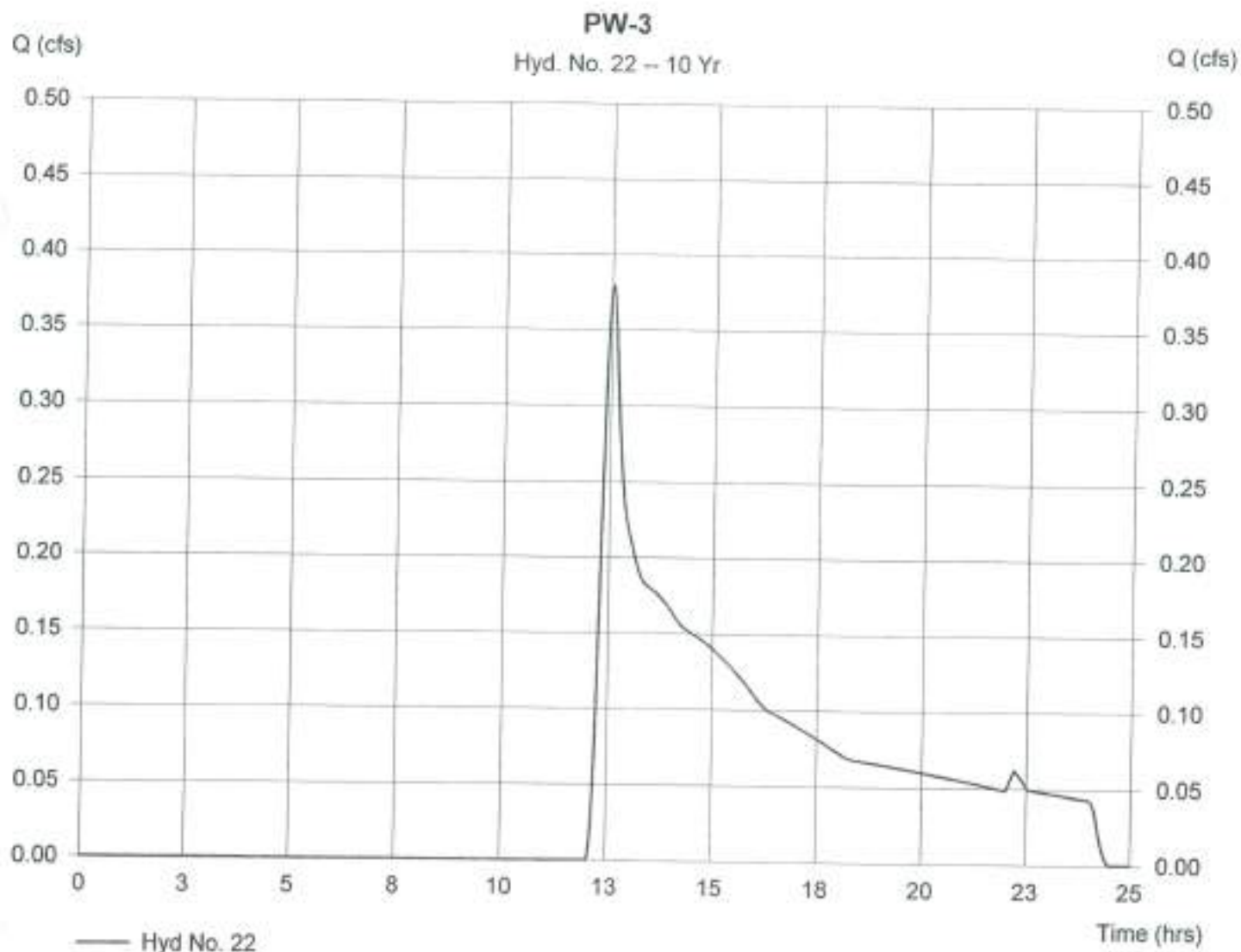
Hyd. No. 22

PW-3

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 4.040 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 0.38 cfs
Time interval = 1 min
Curve number = 45
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.80 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 4,339 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

Monday, May 7 2007, 4:40 PM

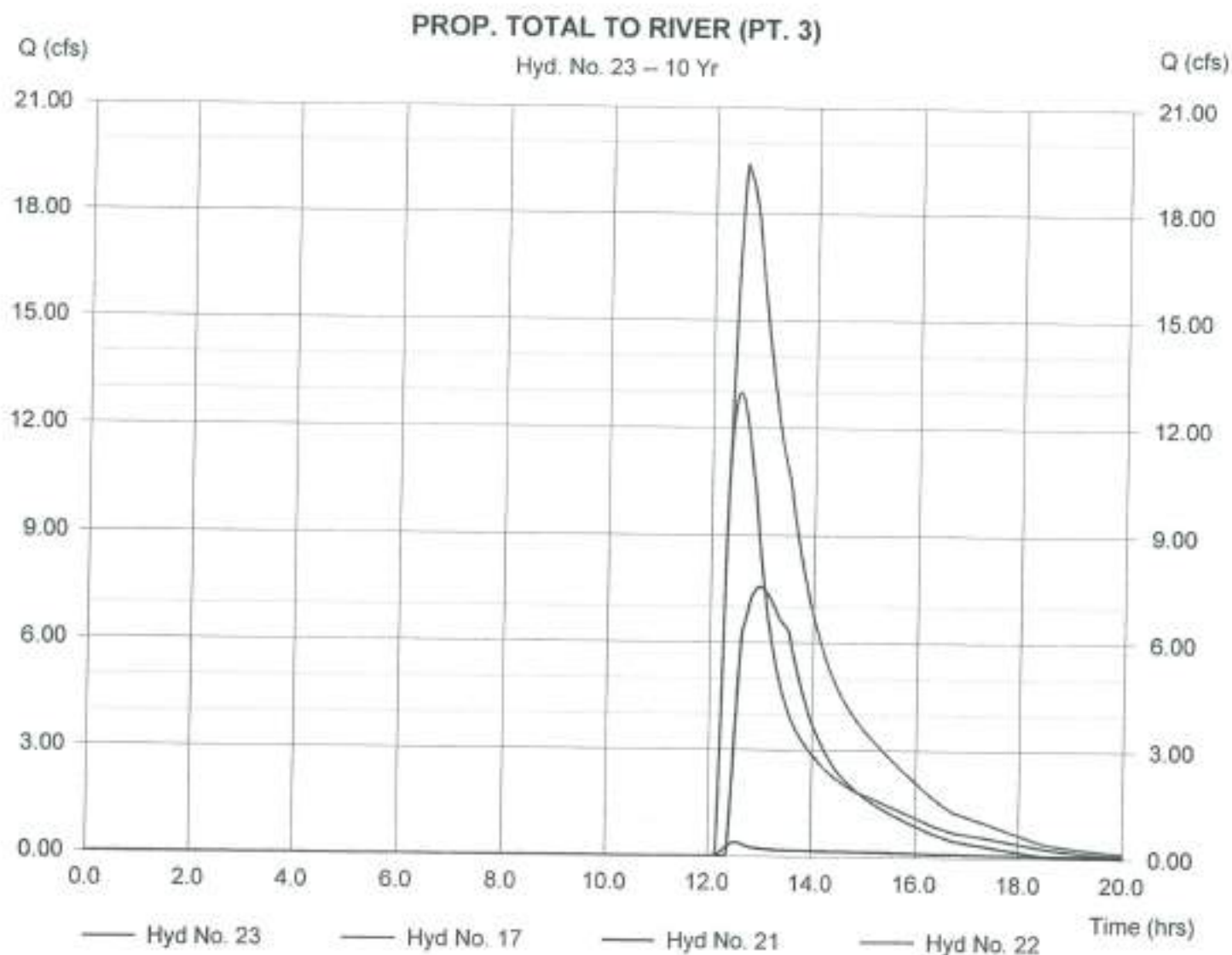
Hyd. No. 23

PROP. TOTAL TO RIVER (PT. 3)

Hydrograph type = Combine
Storm frequency = 10 yrs
Inflow hyds. = 17, 21, 22

Peak discharge = 19.38 cfs
Time interval = 1 min

Hydrograph Volume = 122,655 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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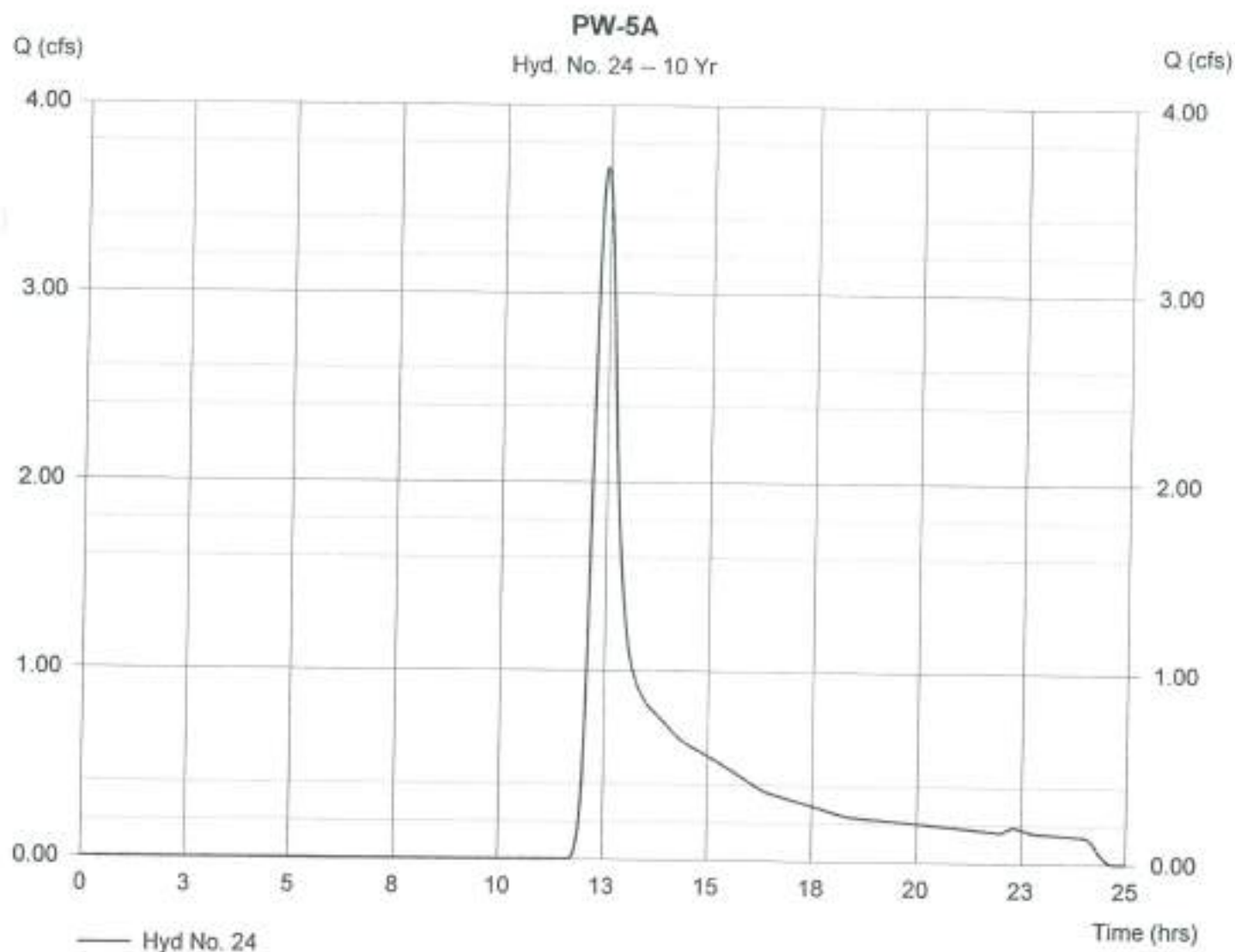
Hyd. No. 24

PW-5A

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 6.920 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 3.67 cfs
Time interval = 1 min
Curve number = 58
Hydraulic length = 0 ft
Time of conc. (Tc) = 27.30 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 22,561 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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Hyd. No. 25

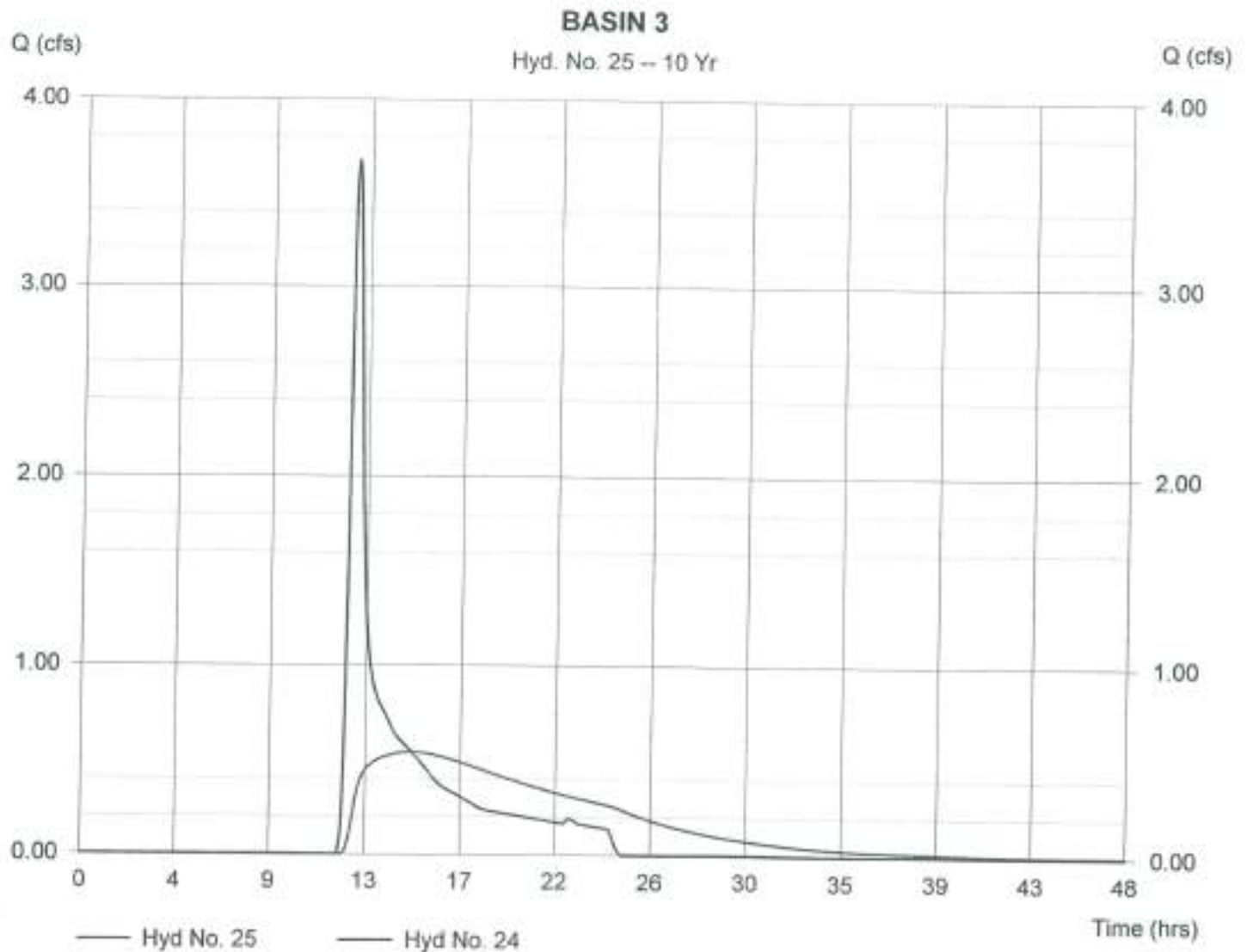
BASIN 3

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 24
Reservoir name = BASIN 3

Peak discharge = 0.54 cfs
Time interval = 1 min
Max. Elevation = 124.91 ft
Max. Storage = 9,663 cuft

Storage Indication method used,

Hydrograph Volume = 22,521 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

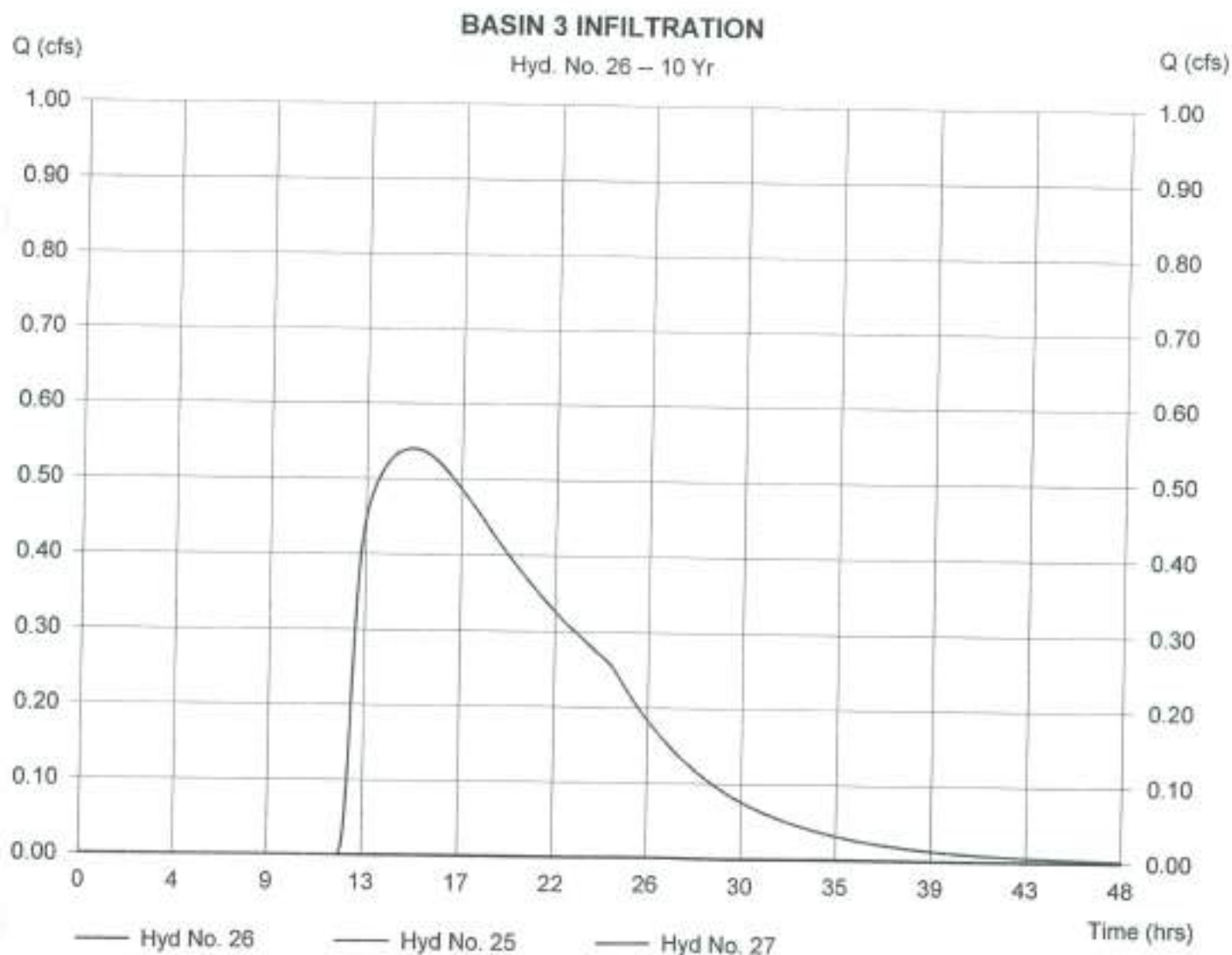
Hyd. No. 26

BASIN 3 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 10 yrs
Inflow hydrograph = 25
Diversion method = Pond - BASIN 3

Peak discharge = 0.54 cfs
Time interval = 1 min
2nd diverted hyd. = 27
Pond structure = Exfiltration

Hydrograph Volume = 22,521 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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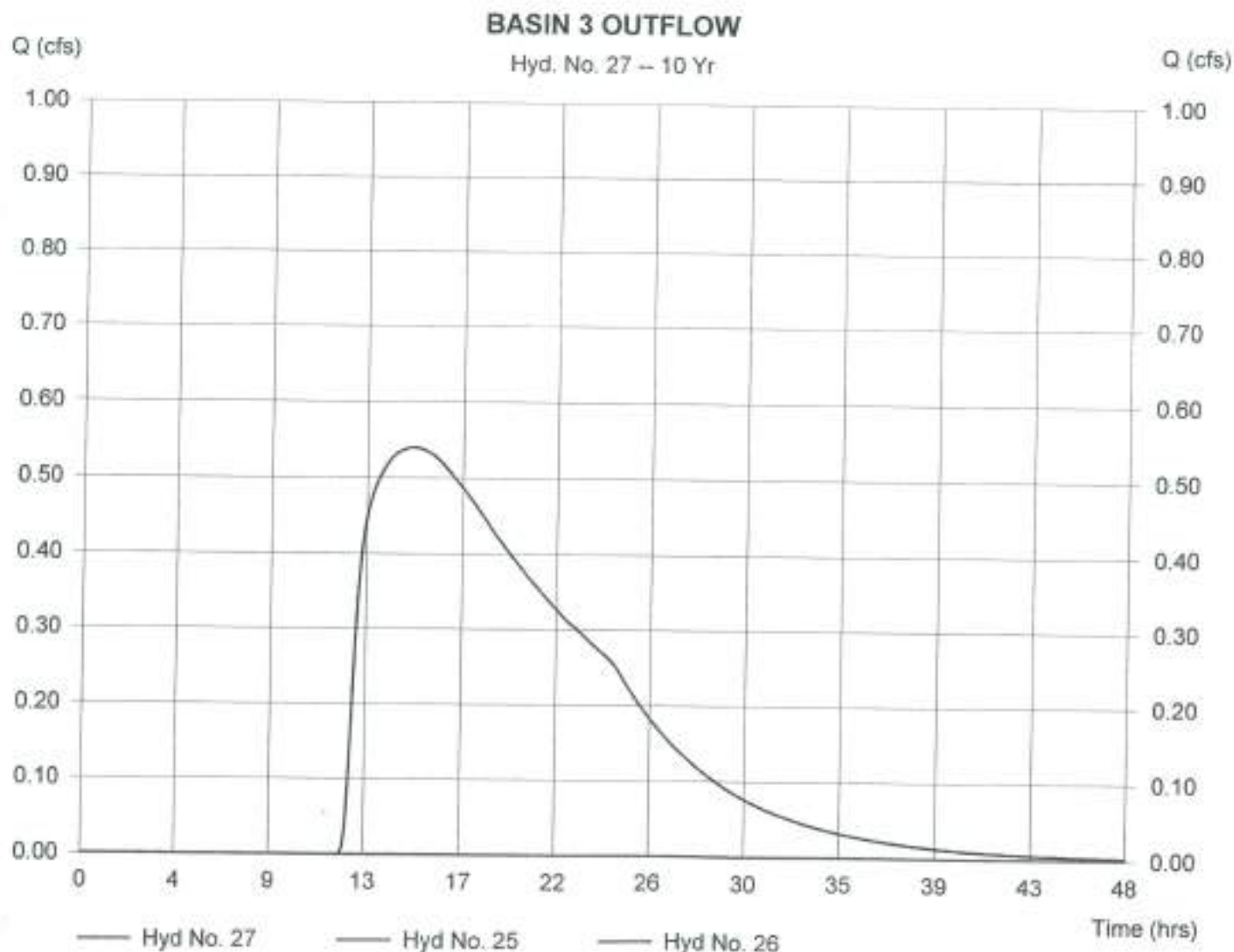
Hyd. No. 27

BASIN 3 OUTFLOW

Hydrograph type = Diversion2
Storm frequency = 10 yrs
Inflow hydrograph = 25
Diversion method = Pond - BASIN 3

Peak discharge = 0.00 cfs
Time interval = 1 min
2nd diverted hyd. = 26
Pond structure = Exfiltration

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by IntelliSolve

Monday, May 7 2007, 4:40 PM

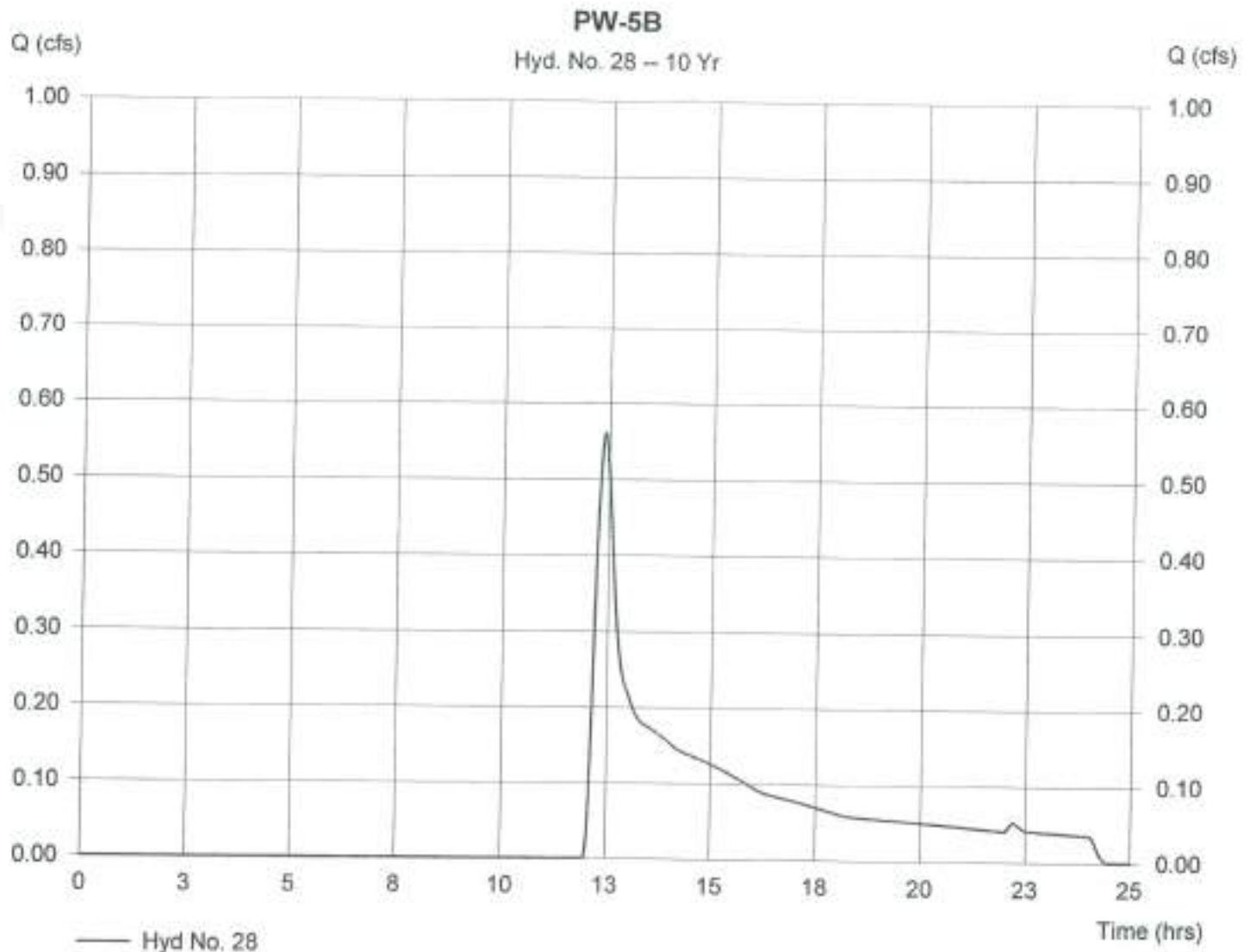
Hyd. No. 28

PW-5B

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 2.660 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 0.56 cfs
Time interval = 1 min
Curve number = 49
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.20 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 4,353 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

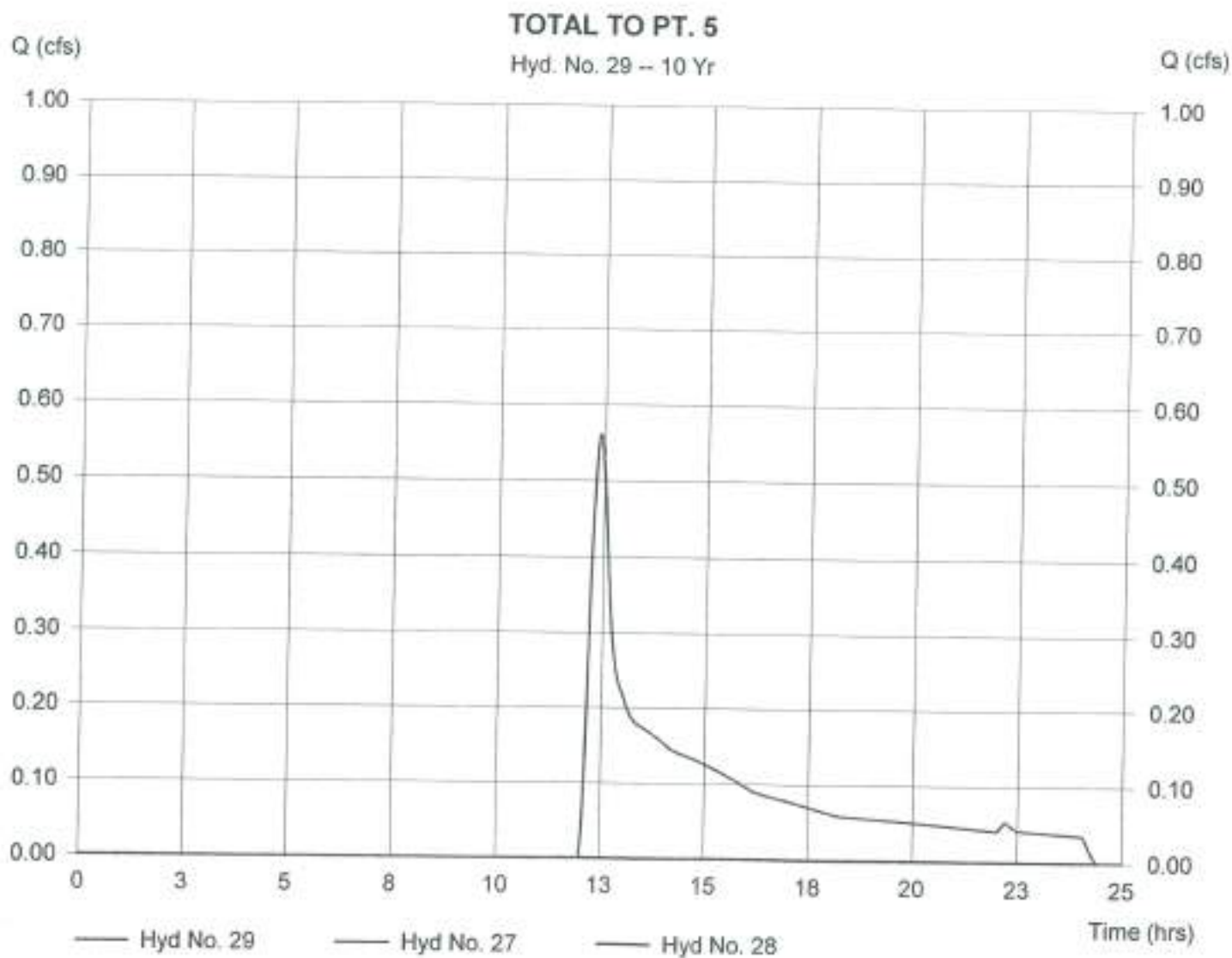
Hyd. No. 29

TOTAL TO PT. 5

Hydrograph type = Combine
Storm frequency = 10 yrs
Inflow hyds. = 27, 28

Peak discharge = 0.56 cfs
Time interval = 1 min

Hydrograph Volume = 4,353 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

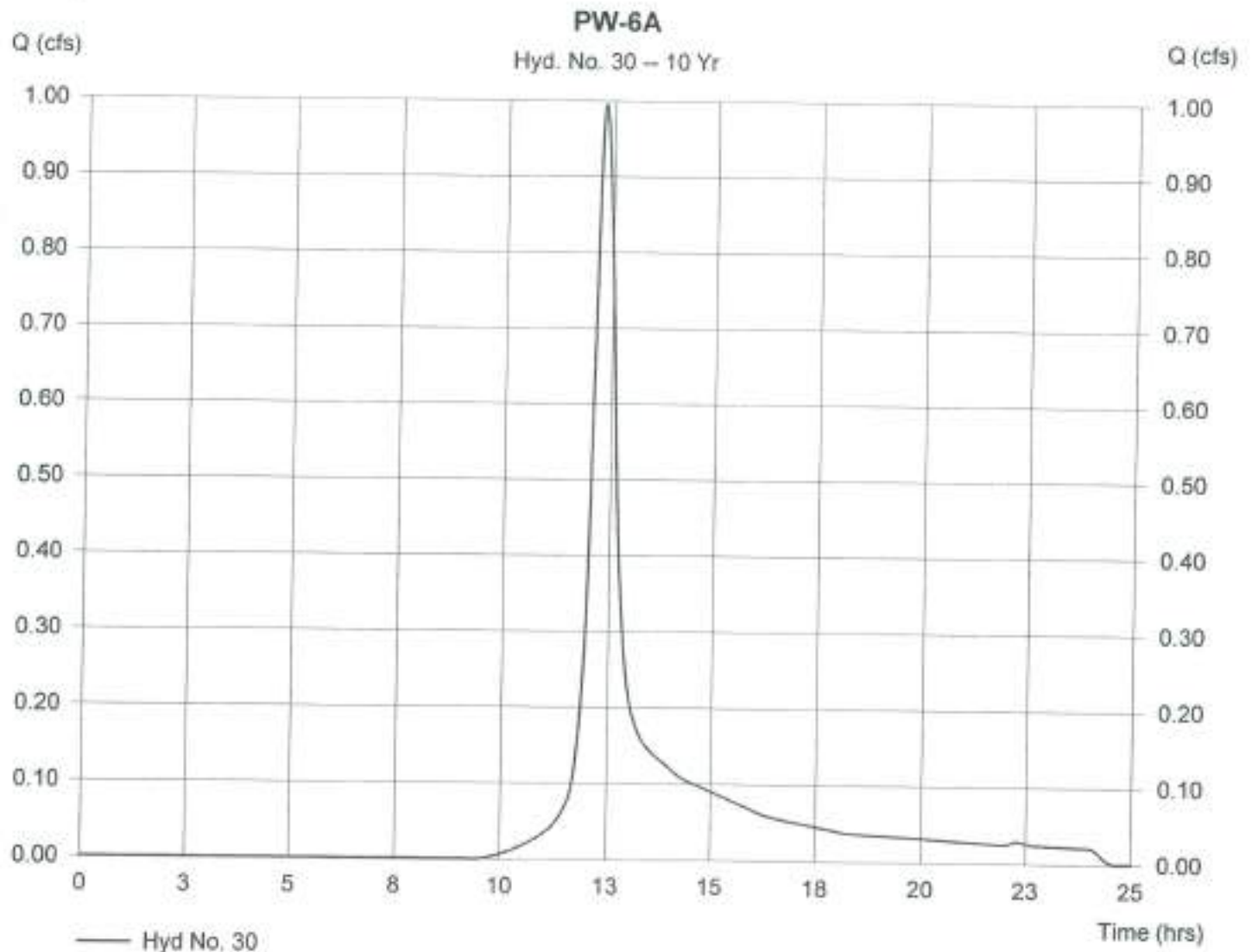
Hyd. No. 30

PW-6A

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 0.680 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 1.00 cfs
Time interval = 1 min
Curve number = 74
Hydraulic length = 0 ft
Time of conc. (Tc) = 24.70 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 4,869 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 31

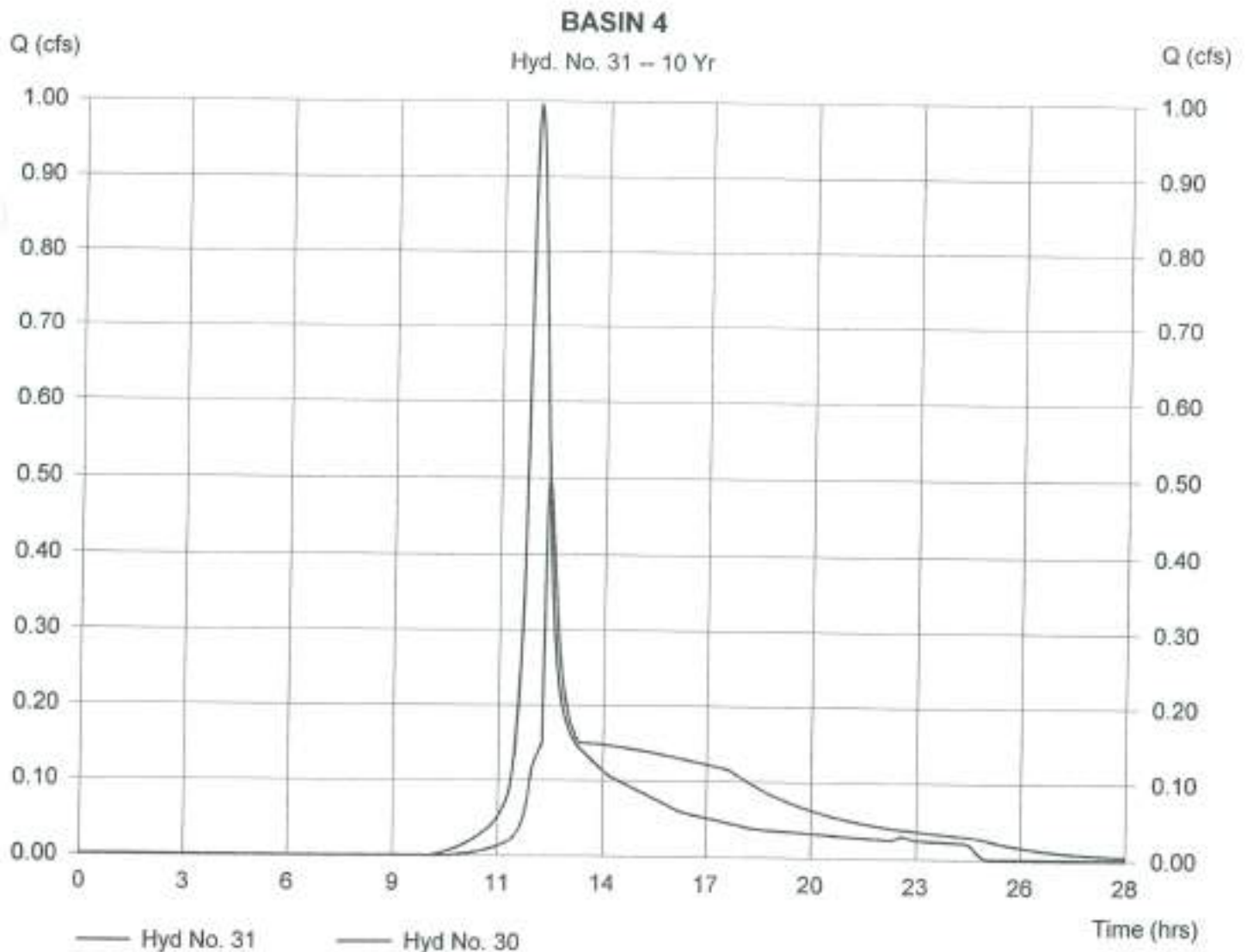
BASIN 4

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 30
Reservoir name = BASIN 4

Peak discharge = 0.50 cfs
Time interval = 1 min
Max. Elevation = 129.57 ft
Max. Storage = 1,777 cuft

Storage Indication method used.

Hydrograph Volume = 4,861 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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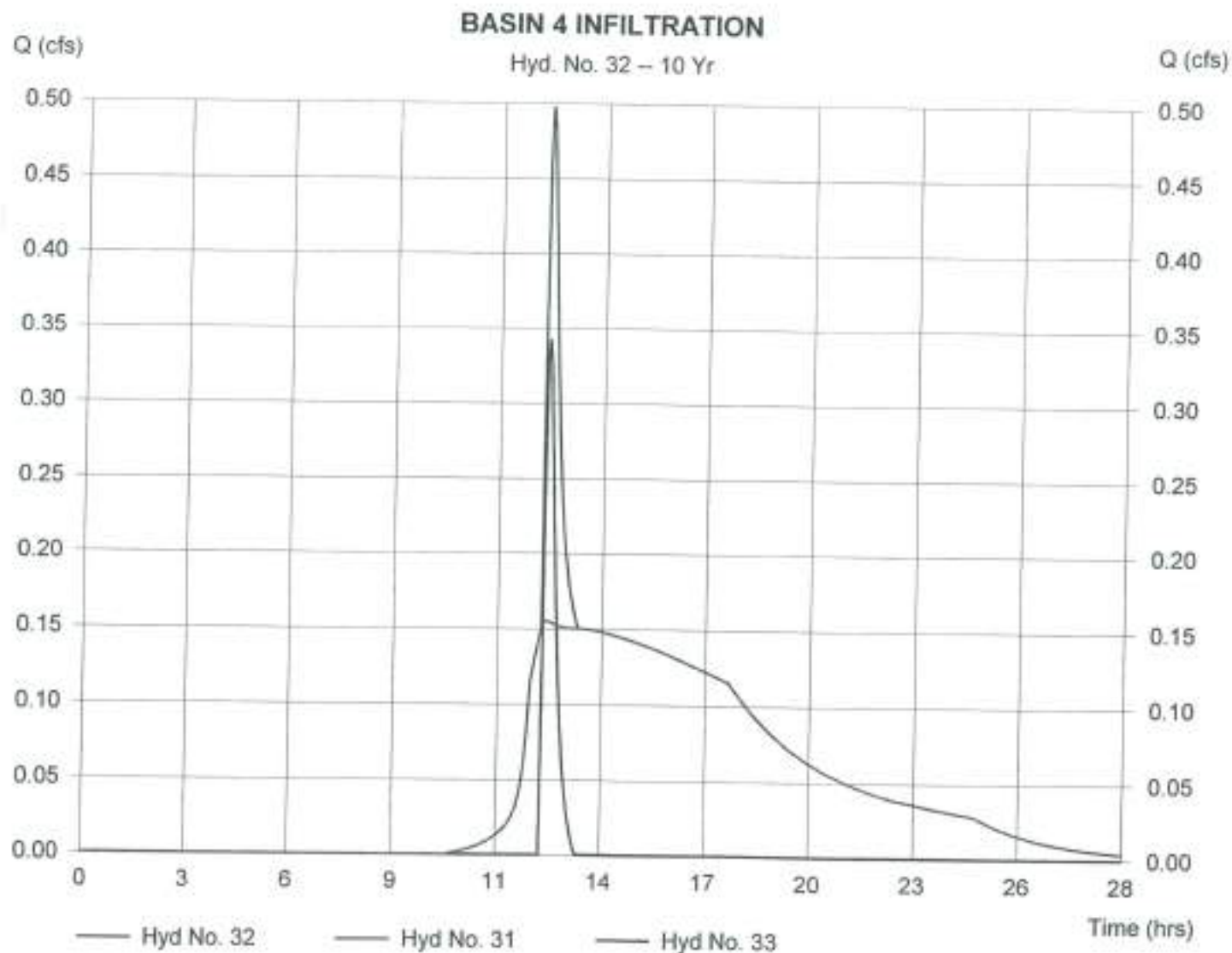
Hyd. No. 32

BASIN 4 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 10 yrs
Inflow hydrograph = 31
Diversion method = Pond - BASIN 4

Peak discharge = 0.15 cfs
Time interval = 1 min
2nd diverted hyd. = 33
Pond structure = Exfiltration

Hydrograph Volume = 4,391 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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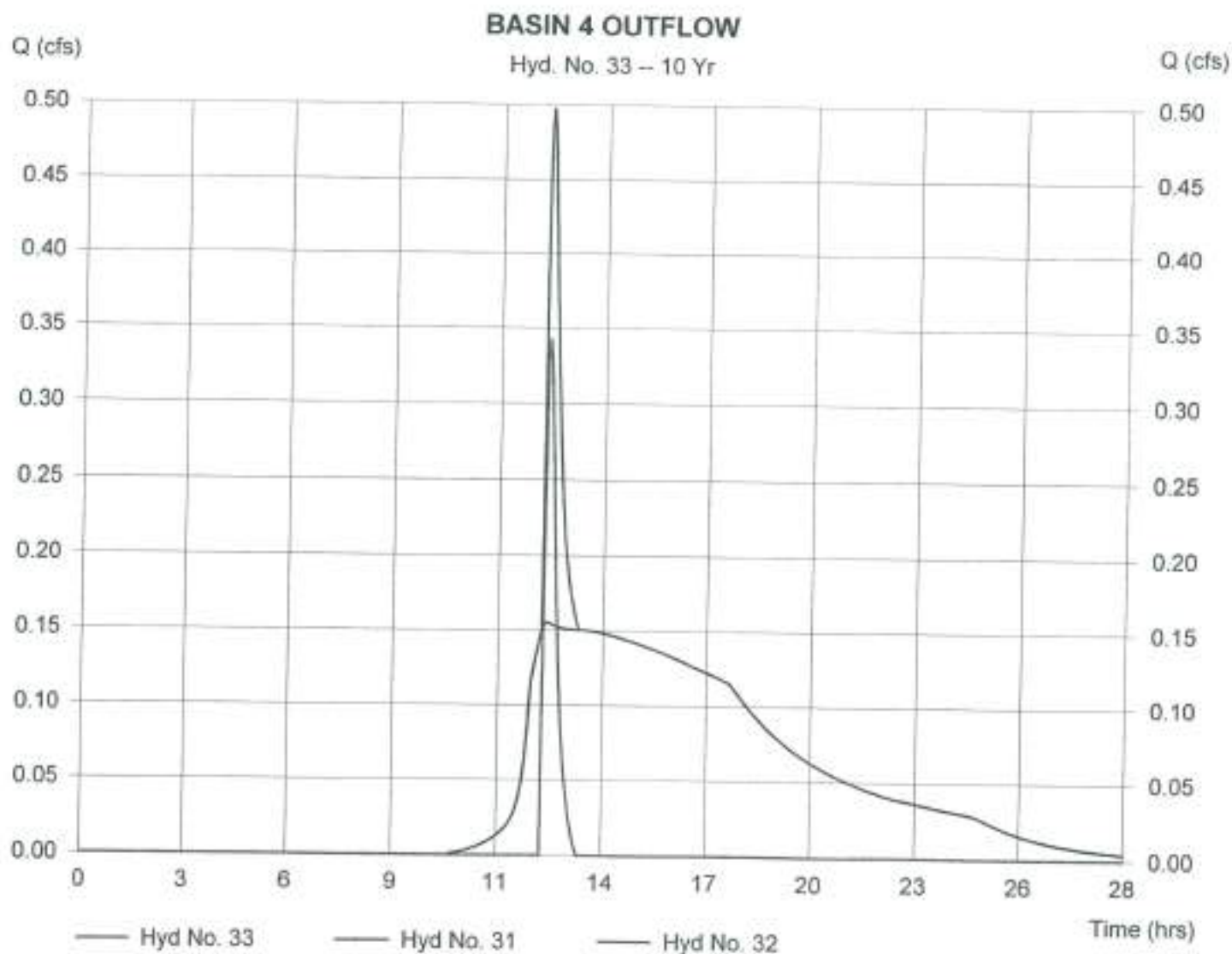
Hyd. No. 33

BASIN 4 OUTFLOW

Hydrograph type = Diversion2
Storm frequency = 10 yrs
Inflow hydrograph = 31
Diversion method = Pond - BASIN 4

Peak discharge = 0.34 cfs
Time interval = 1 min
2nd diverted hyd. = 32
Pond structure = Exfiltration

Hydrograph Volume = 470 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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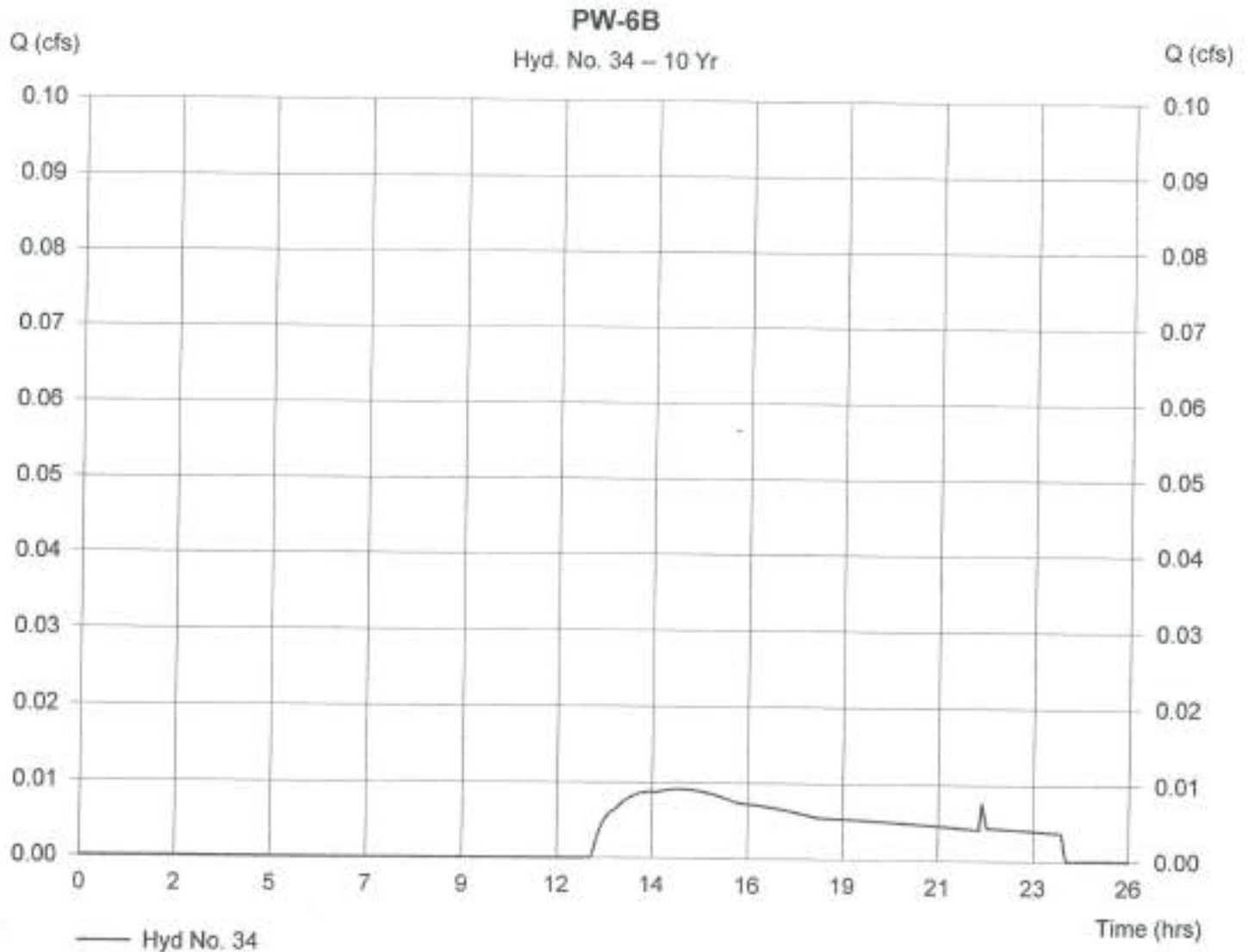
Hyd. No. 34

PW-6B

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 0.600 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 4.50 in
Storm duration = 24 hrs

Peak discharge = 0.01 cfs
Time interval = 1 min
Curve number = 39
Hydraulic length = 0 ft
Time of conc. (Tc) = 6.00 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 248 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

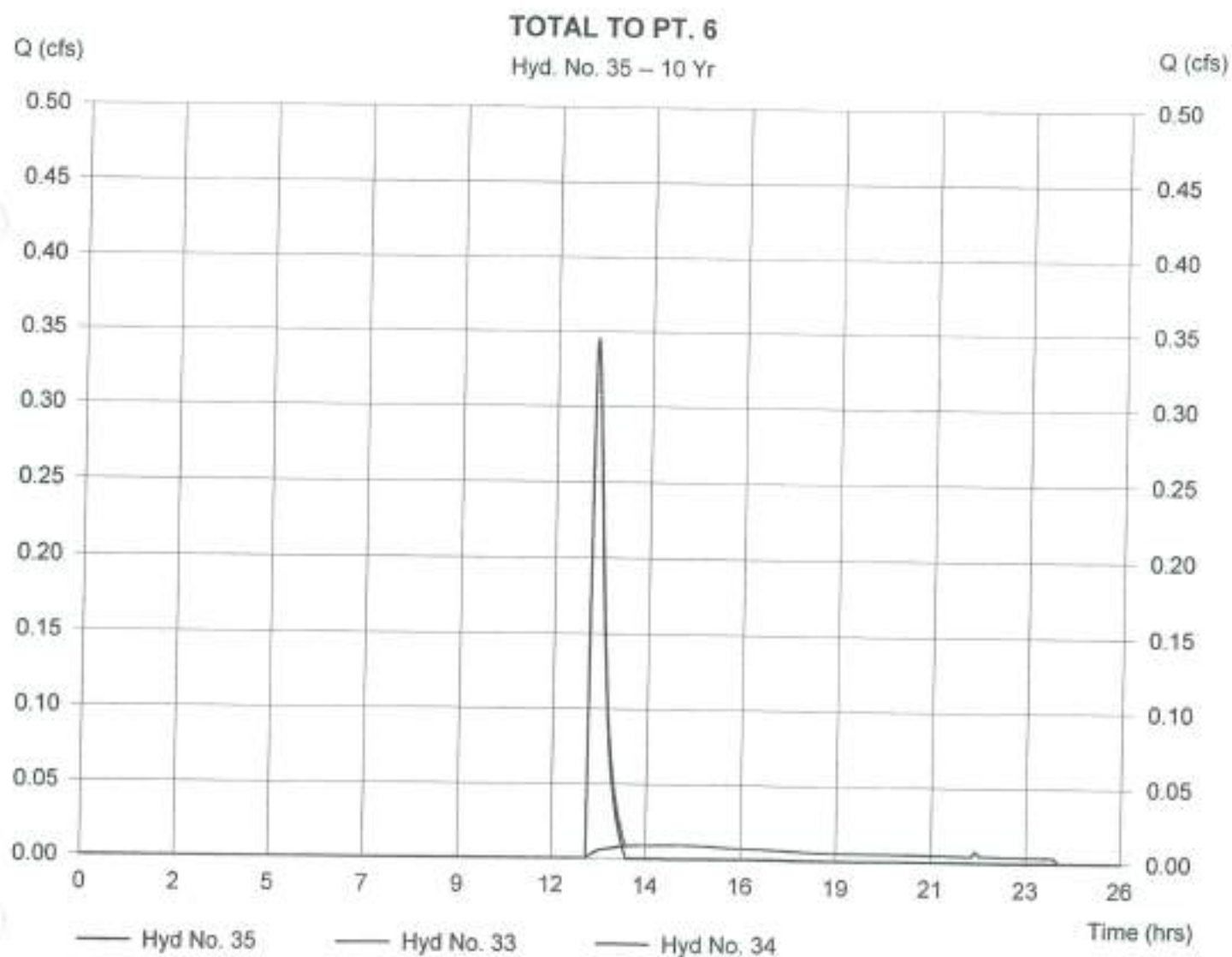
Hyd. No. 35

TOTAL TO PT. 6

Hydrograph type = Combine
Storm frequency = 10 yrs
Inflow hyds. = 33, 34

Peak discharge = 0.34 cfs
Time interval = 1 min

Hydrograph Volume = 718 cuft



Hydrograph Summary Report

Hyd. #	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	66.82	1	728	247,842	---	---	---	EW-1 (PT. 1)
2	SCS Runoff	17.03	1	725	56,013	---	---	---	EW-2 (PT. 2)
3	SCS Runoff	6.16	1	750	42,300	---	---	---	EW-3
4	Combine	84.73	1	727	346,155	1, 2, 3	---	---	EXIST. TOTAL TO RIVER (PT. 3)
5	SCS Runoff	3.90	1	729	14,712	---	---	---	EW-4
6	Reservoir	0.61	1	771	14,705	5	119.35	6,207	EXIST. BASIN
7	Diversion1	0.14	1	771	3,288	6 *	---	---	BASIN INFILTRATION
8	Diversion2	0.47	1	771	11,417	6	---	---	BASIN OUTFLOW (PT. 4)
9	SCS Runoff	0.59	1	747	6,318	---	---	---	EW-5A
10	SCS Runoff	0.91	1	743	6,578	---	---	---	E-5B
11	Combine	1.48	1	745	12,896	9, 10	---	---	E-5A + E-5B (PT. 5)
12	SCS Runoff	3.47	1	722	9,920	---	---	---	EW-6 (PT. 6)
14	SCS Runoff	39.35	1	733	168,316	---	---	---	PW-1
15	Reservoir	20.15	1	750	168,100	14	121.07	51,728	BASIN 2
	Diversion1	1.43	1	750	63,044	15	---	---	BASIN 2 INFILTRATION
17	Diversion2	18.72	1	750	105,055	15	---	---	BASIN 2 OUTFLOW (PT. 1)
18	SCS Runoff	26.02	1	746	153,627	---	---	---	PW-2
19	Reservoir	11.12	1	777	153,345	18	122.13	64,154	BASIN 1
20	Diversion1	1.45	1	777	76,437	19	---	---	BASIN 1 INFILTRATION
21	Diversion2	9.67	1	777	76,908	19	---	---	BASIN 1 OUTFLOW (PT. 2)
22	SCS Runoff	1.00	1	746	7,931	---	---	---	PW-3
23	Combine	27.43	1	757	189,894	17, 21, 22	---	---	PROP. TOTAL TO RIVER (PT. 3)
24	SCS Runoff	5.84	1	744	33,348	---	---	---	PW-5A
25	Reservoir	0.83	1	877	33,292	24	125.39	14,786	BASIN 3
26	Diversion1	0.83	1	877	33,292	25	---	---	BASIN 3 INFILTRATION
27	Diversion2	0.00	1	778	0	25	---	---	BASIN 3 OUTFLOW
28	SCS Runoff	1.17	1	740	7,256	---	---	---	PW-5B
29	Combine	1.17	1	740	7,256	27, 28	---	---	TOTAL TO PT. 5
30	SCS Runoff	1.33	1	738	6,432	---	---	---	PW-6A
MSP_5-8-07.gpw					Return Period: 25 Year		Monday, May 7 2007, 5:04 PM		

Hydrograph Summary Report

Ord.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
31	Reservoir	1.07	1	749	6,425	30	129.65	1,901	BASIN 4
32	Diversion1	0.16	1	749	4,977	31	-----	-----	BASIN 4 INFILTRATION
33	Diversion2	0.91	1	749	1,448	31	-----	-----	BASIN 4 OUTFLOW
34	SCS Runoff	0.04	1	744	595	---	-----	-----	PW-6B
35	Combine	0.95	1	749	2,042	33, 34	-----	-----	TOTAL TO PT. 6
MSP_5-8-07.gpw					Return Period: 25 Year			Monday, May 7 2007, 5:04 PM	

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

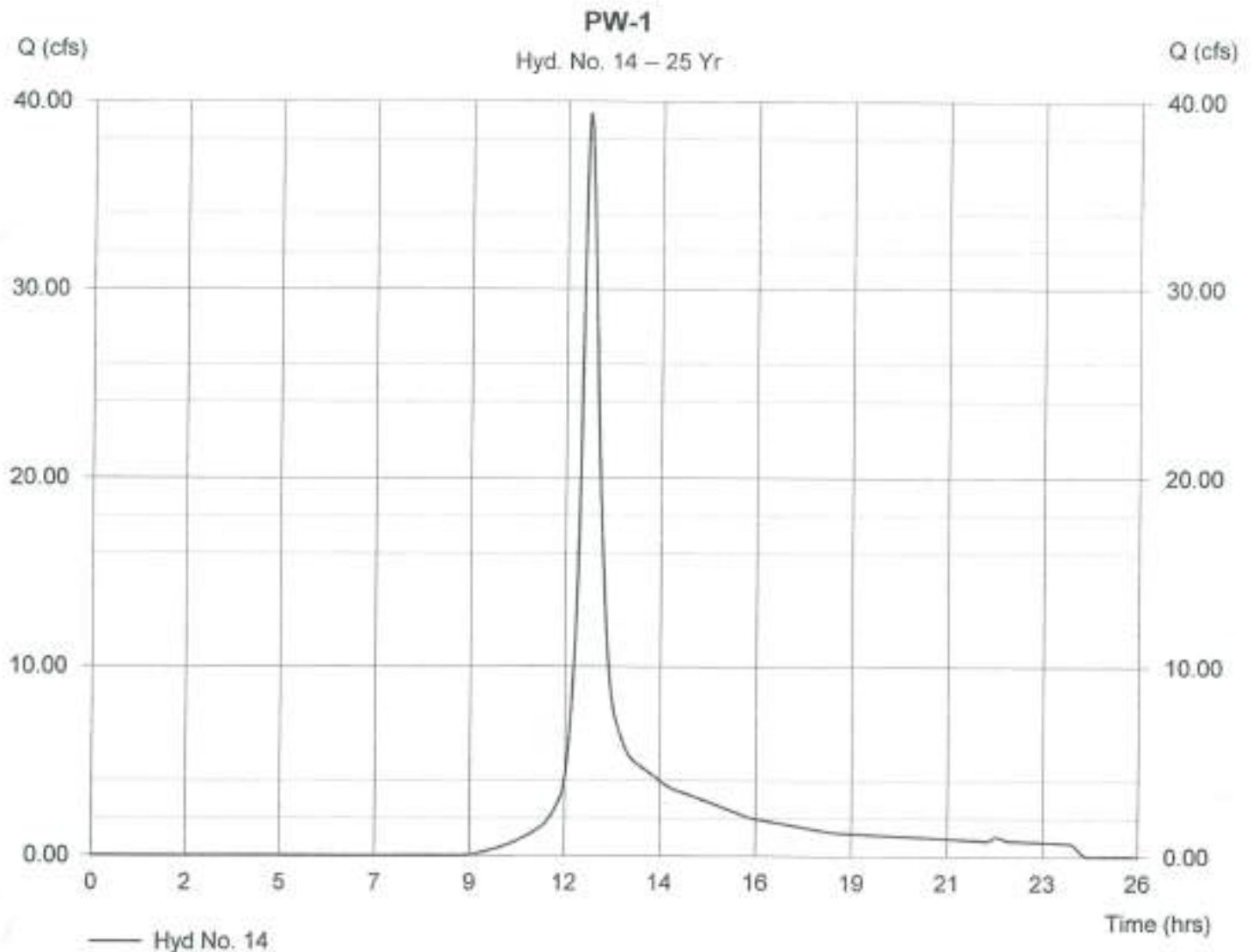
Hyd. No. 14

PW-1

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 19.290 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 39.35 cfs
Time interval = 1 min
Curve number = 72
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.50 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 168,316 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 15

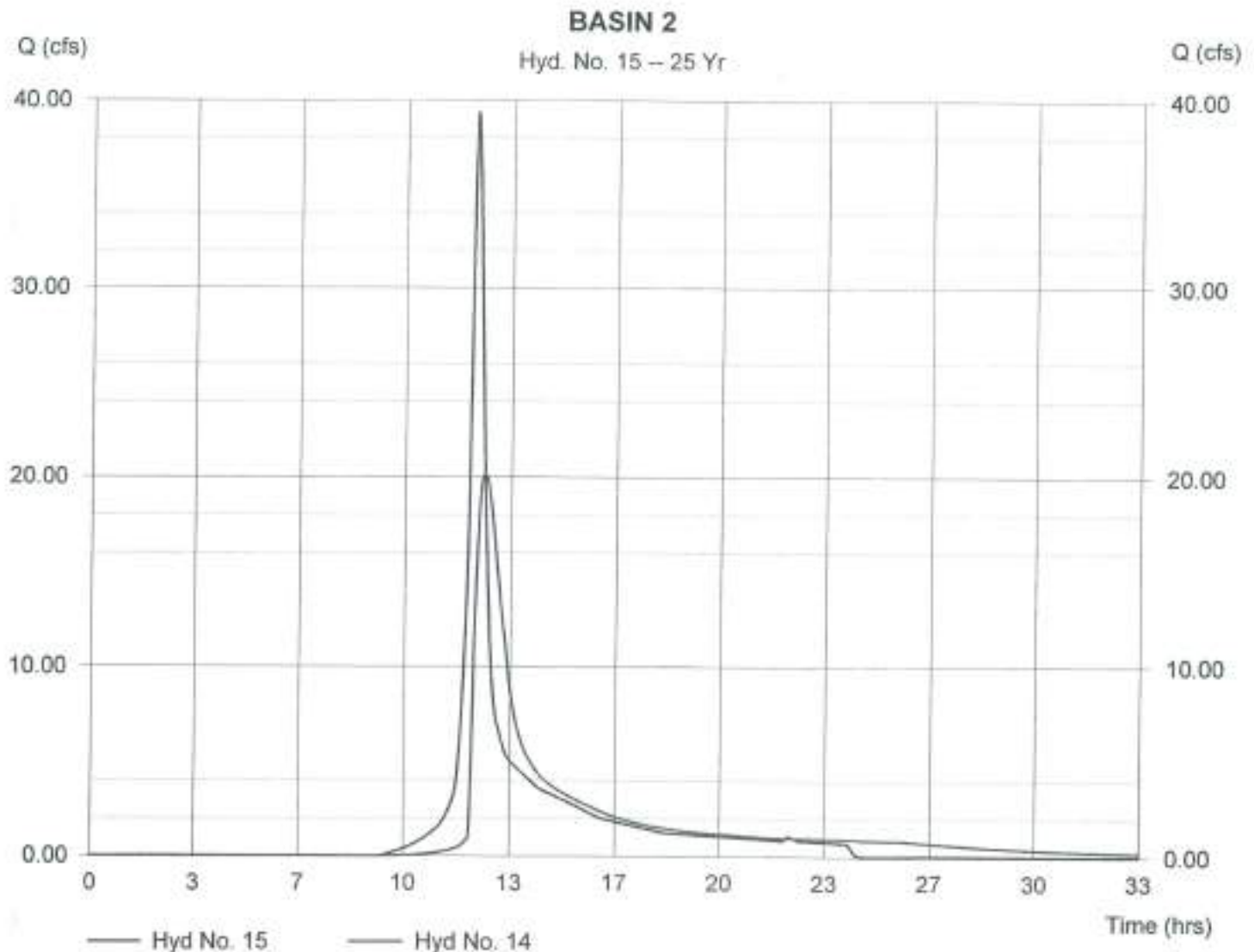
BASIN 2

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 14
Reservoir name = BASIN 2

Peak discharge = 20.15 cfs
Time interval = 1 min
Max. Elevation = 121.07 ft
Max. Storage = 51,728 cuft

Storage Indication method used

Hydrograph Volume = 168,100 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

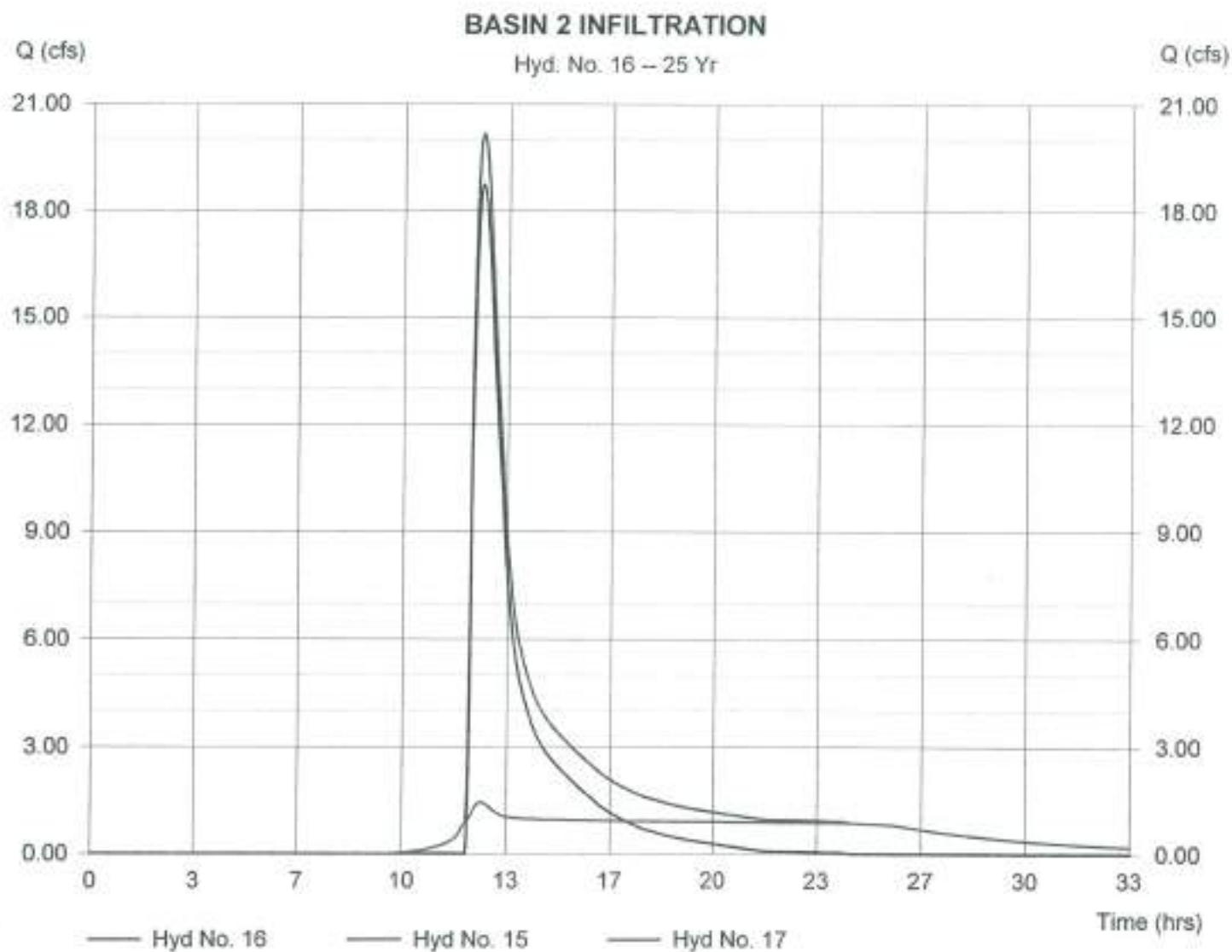
Hyd. No. 16

BASIN 2 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 25 yrs
Inflow hydrograph = 15
Diversion method = Pond - BASIN 2

Peak discharge = 1.43 cfs
Time interval = 1 min
2nd diverted hyd. = 17
Pond structure = Exfiltration

Hydrograph Volume = 63,044 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 17

BASIN 2 OUTFLOW (PT. 1)

Hydrograph type = Diversion2

Storm frequency = 25 yrs

Inflow hydrograph = 15

Diversion method = Pond - BASIN 2

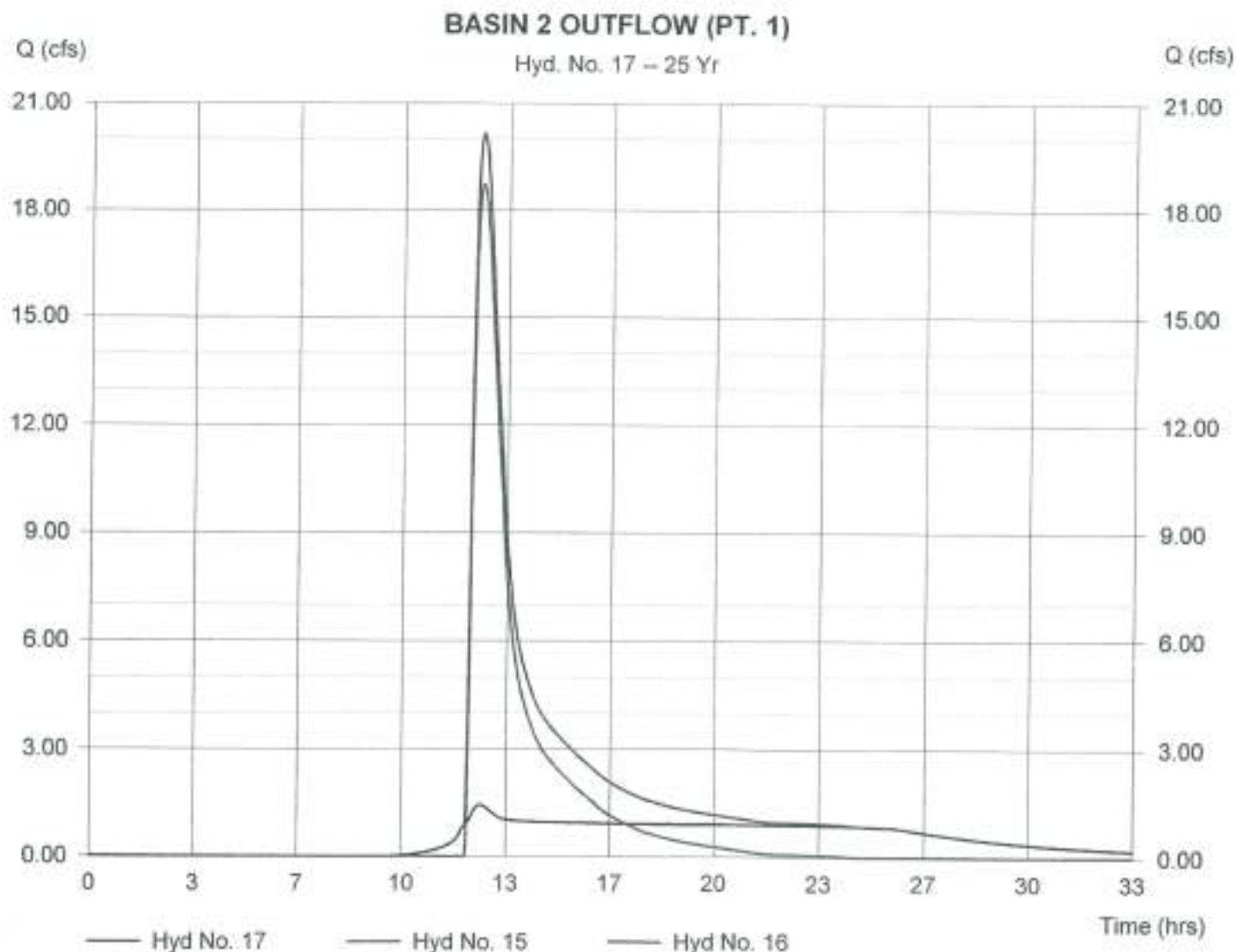
Peak discharge = 18.72 cfs

Time interval = 1 min

2nd diverted hyd. = 16

Pond structure = Exfiltration

Hydrograph Volume = 105,055 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

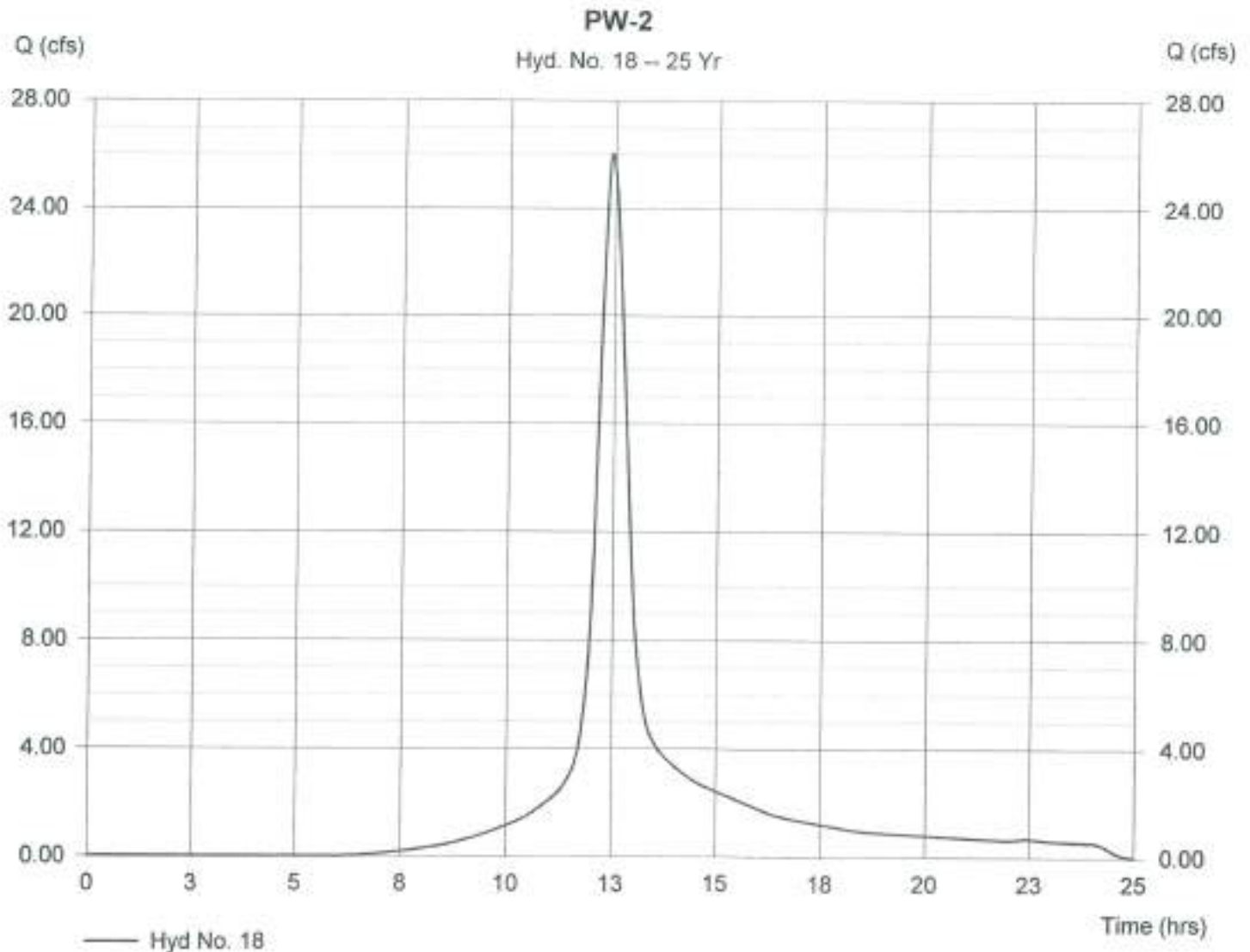
Hyd. No. 18

PW-2

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 11.670 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 26.02 cfs
Time interval = 1 min
Curve number = 85
Hydraulic length = 0 ft
Time of conc. (Tc) = 37.50 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 153,627 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 19

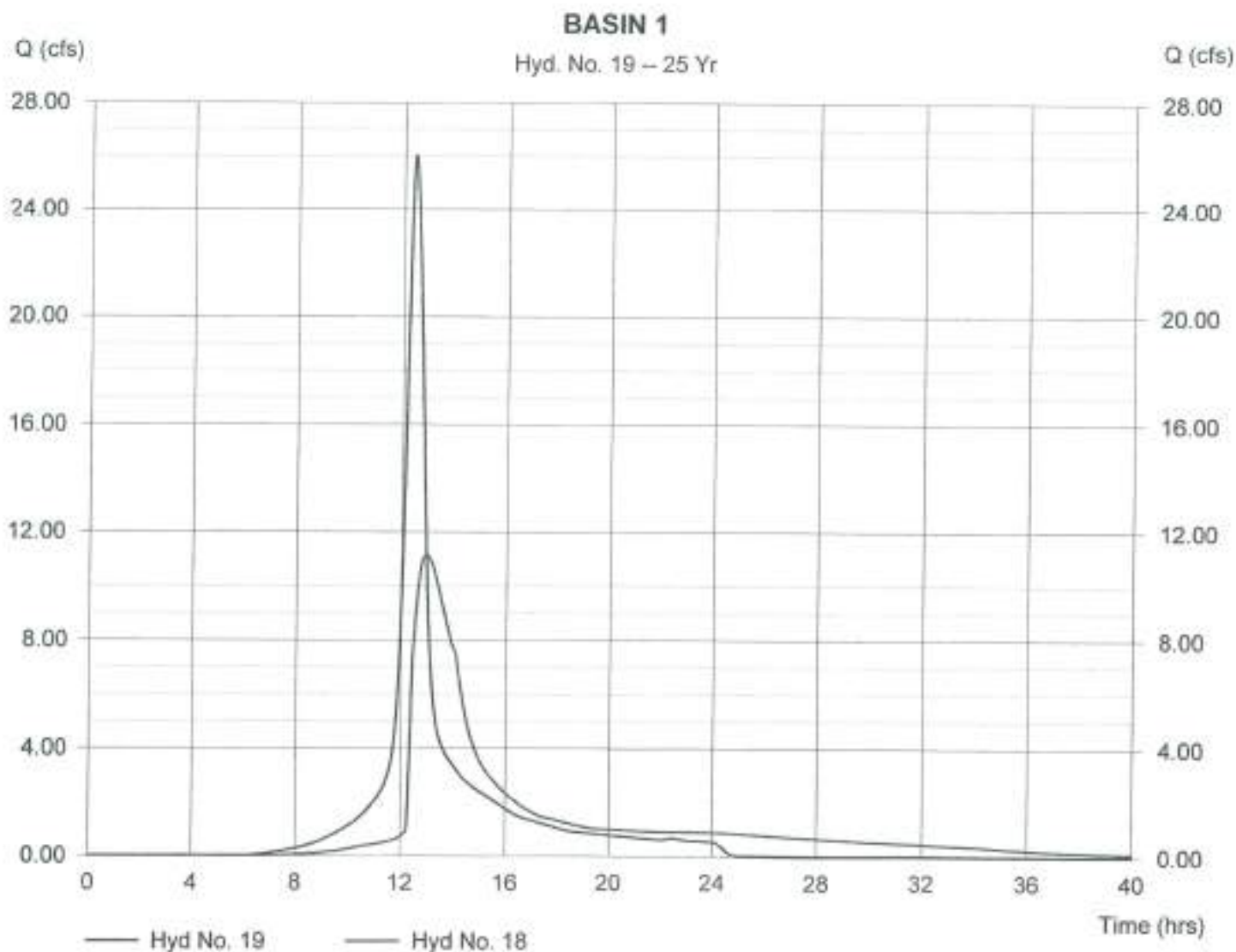
BASIN 1

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 18
Reservoir name = BASIN 1

Peak discharge = 11.12 cfs
Time interval = 1 min
Max. Elevation = 122.13 ft
Max. Storage = 64,154 cuft

Storage Indication method used

Hydrograph Volume = 153,345 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

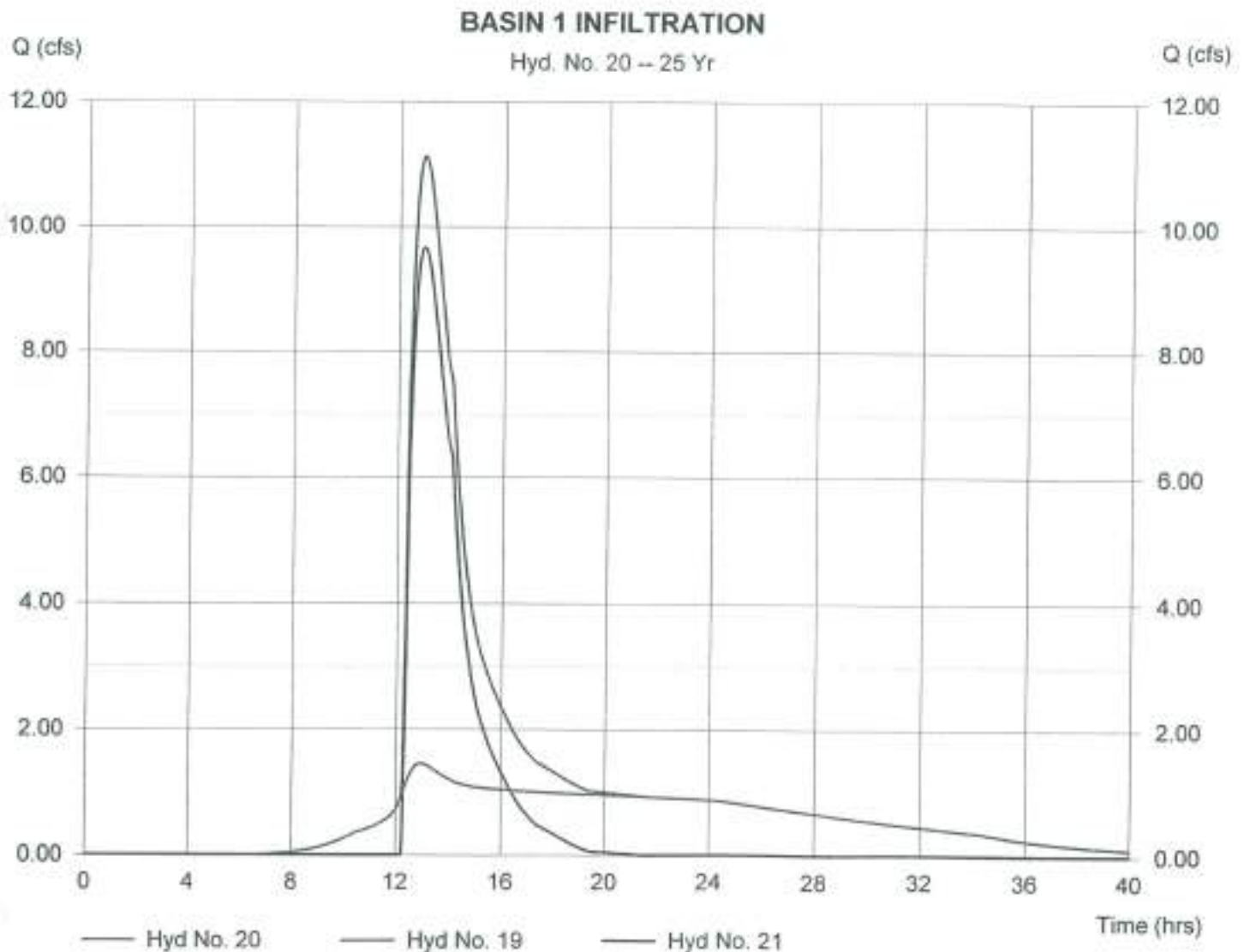
Hyd. No. 20

BASIN 1 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 25 yrs
Inflow hydrograph = 19
Diversion method = Pond - BASIN 1

Peak discharge = 1.45 cfs
Time interval = 1 min
2nd diverted hyd. = 21
Pond structure = Exfiltration

Hydrograph Volume = 75,437 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 21

BASIN 1 OUTFLOW (PT. 2)

Hydrograph type = Diversion2

Storm frequency = 25 yrs

Inflow hydrograph = 19

Diversion method = Pond - BASIN 1

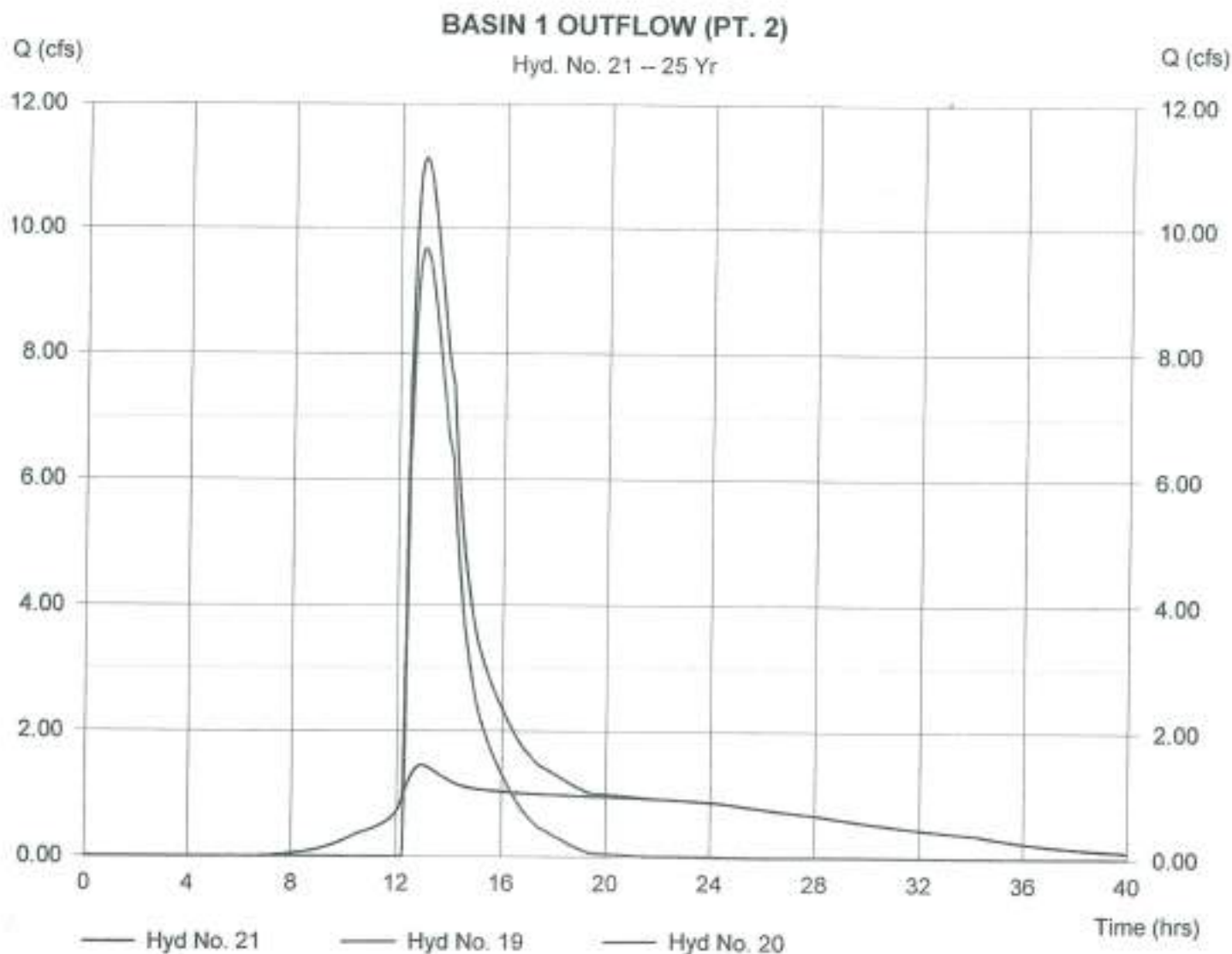
Peak discharge = 9.67 cfs

Time interval = 1 min

2nd diverted hyd. = 20

Pond structure = Exfiltration

Hydrograph Volume = 76,908 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

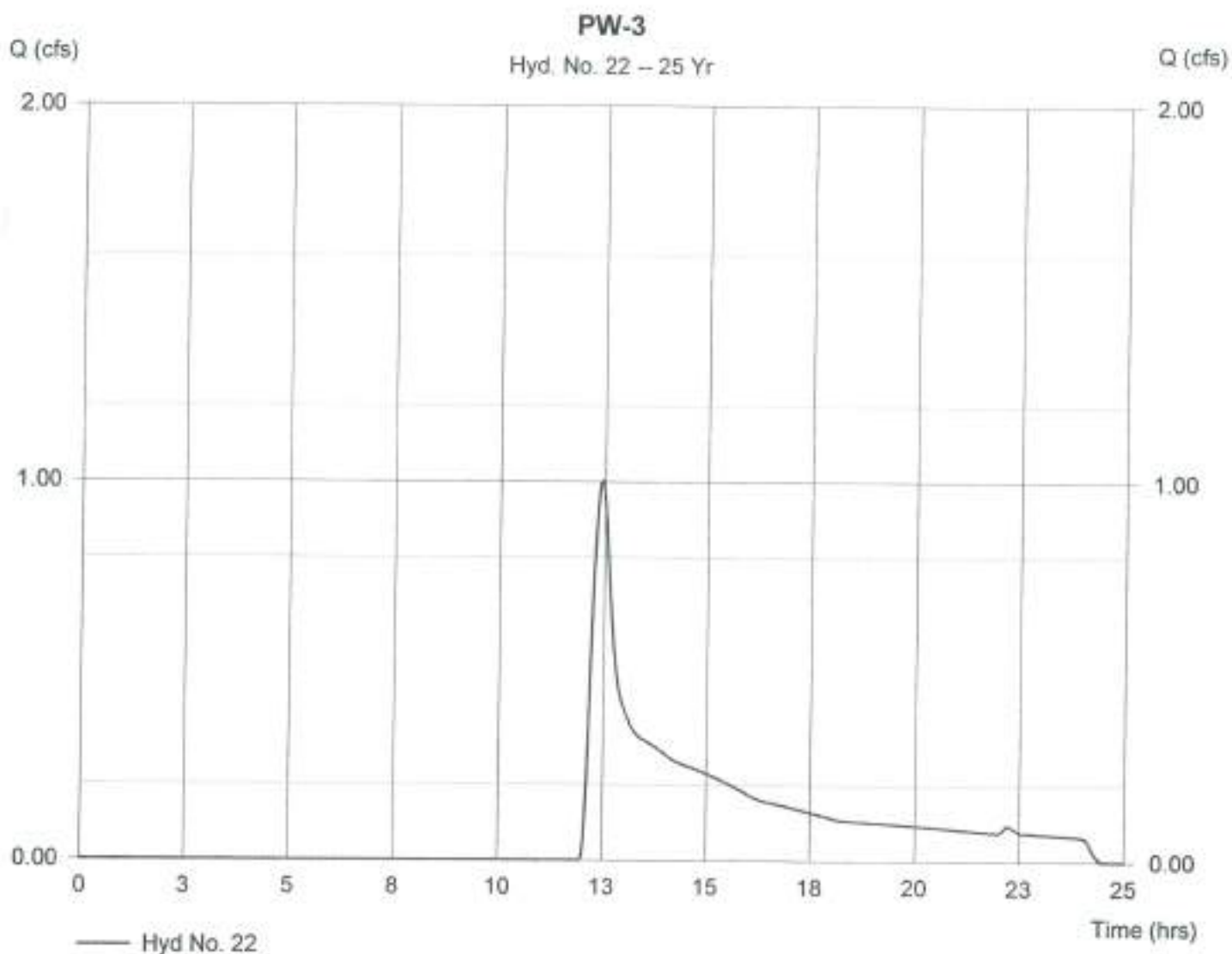
Hyd. No. 22

PW-3

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 4.040 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 1.00 cfs
Time interval = 1 min
Curve number = 45
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.80 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 7,931 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

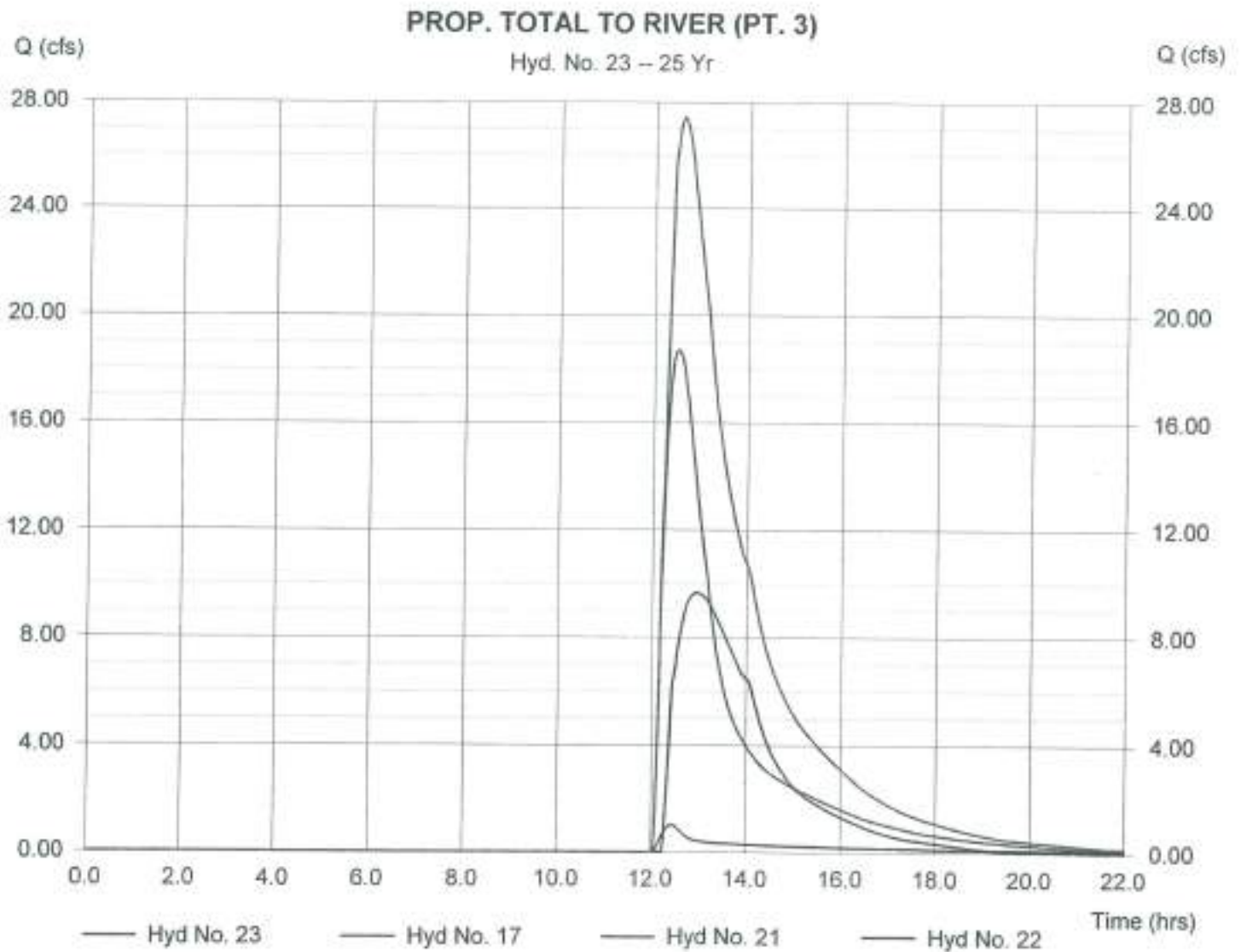
Hyd. No. 23

PROP. TOTAL TO RIVER (PT. 3)

Hydrograph type = Combine
Storm frequency = 25 yrs
Inflow hyds. = 17, 21, 22

Peak discharge = 27.43 cfs
Time interval = 1 min

Hydrograph Volume = 189,894 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

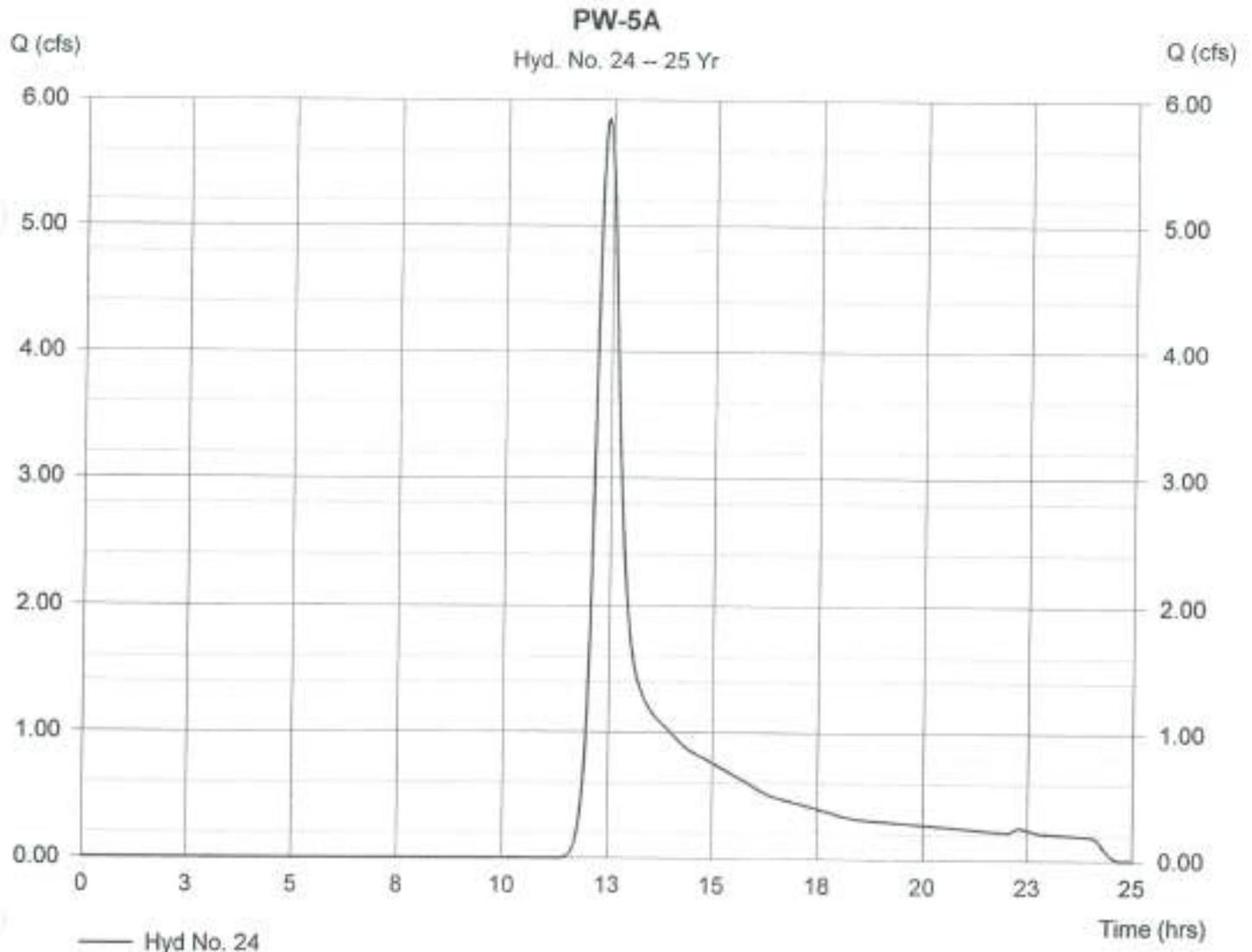
Hyd. No. 24

PW-5A

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 6.920 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 5.84 cfs
Time interval = 1 min
Curve number = 58
Hydraulic length = 0 ft
Time of conc. (Tc) = 27.30 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 33,348 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 25

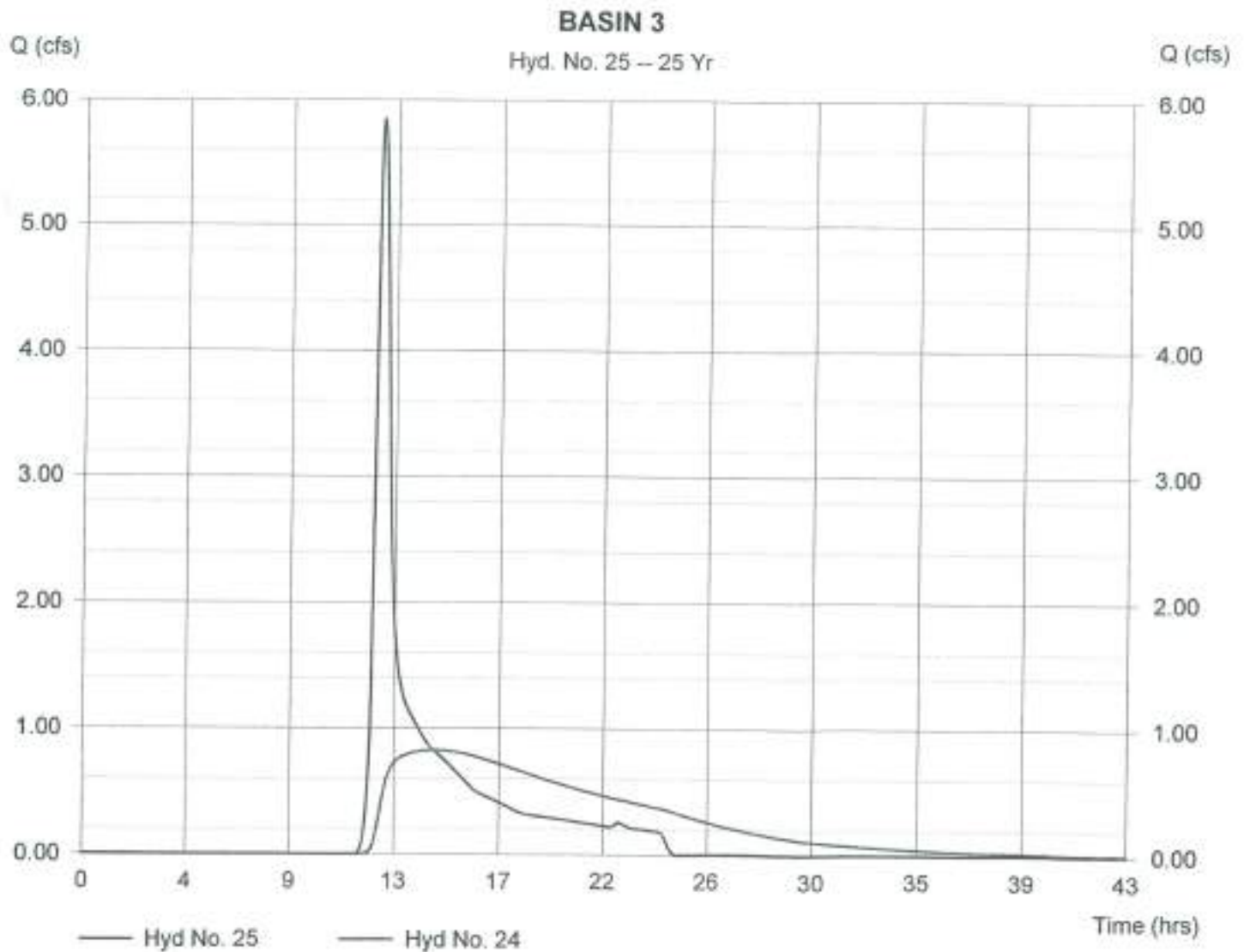
BASIN 3

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 24
Reservoir name = BASIN 3

Peak discharge = 0.83 cfs
Time interval = 1 min
Max. Elevation = 125.39 ft
Max. Storage = 14,786 cuft

Storage Indication method used.

Hydrograph Volume = 33,292 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 26

BASIN 3 INFILTRATION

Hydrograph type = Diversion1

Storm frequency = 25 yrs

Inflow hydrograph = 25

Diversion method = Pond - BASIN 3

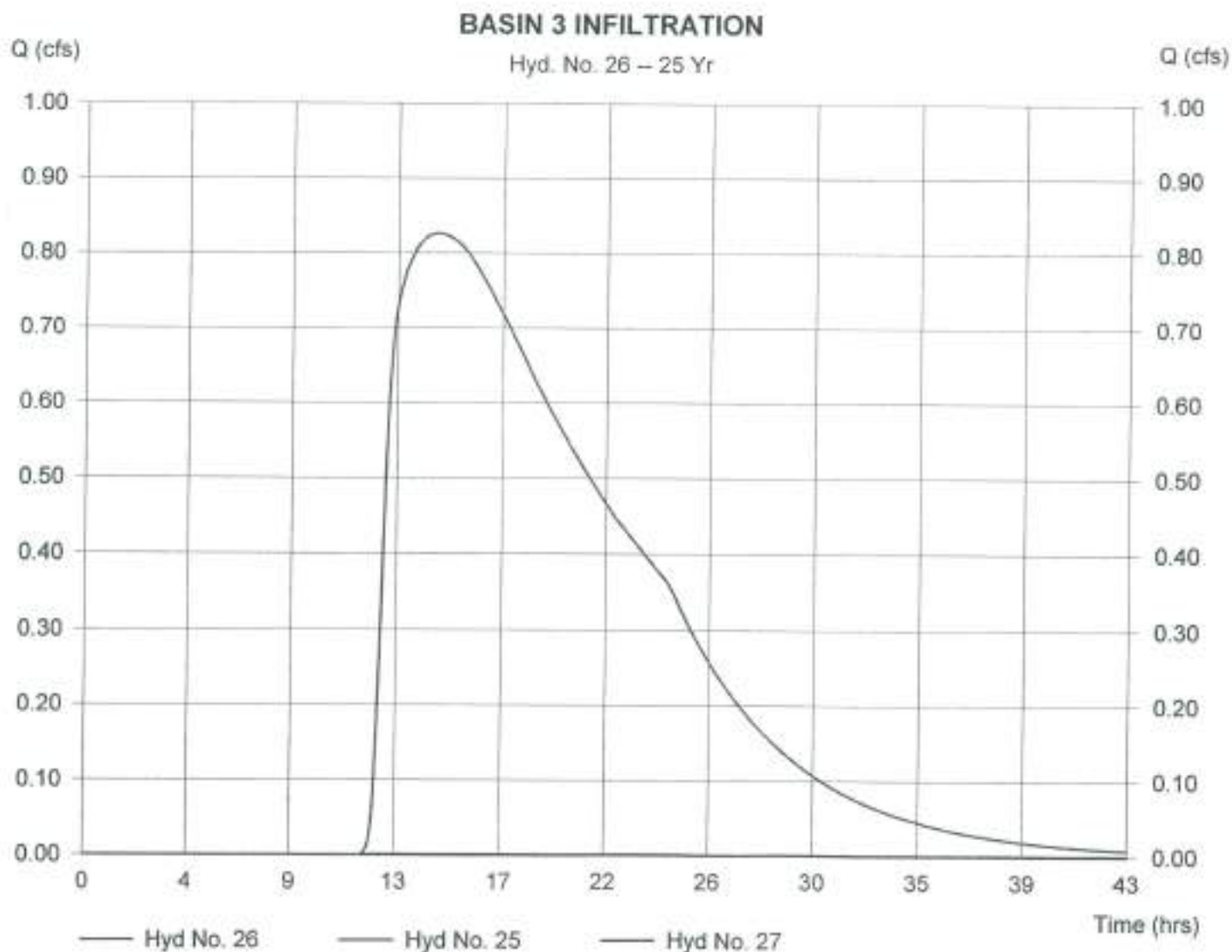
Peak discharge = 0.83 cfs

Time interval = 1 min

2nd diverted hyd. = 27

Pond structure = Exfiltration

Hydrograph Volume = 33,292 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

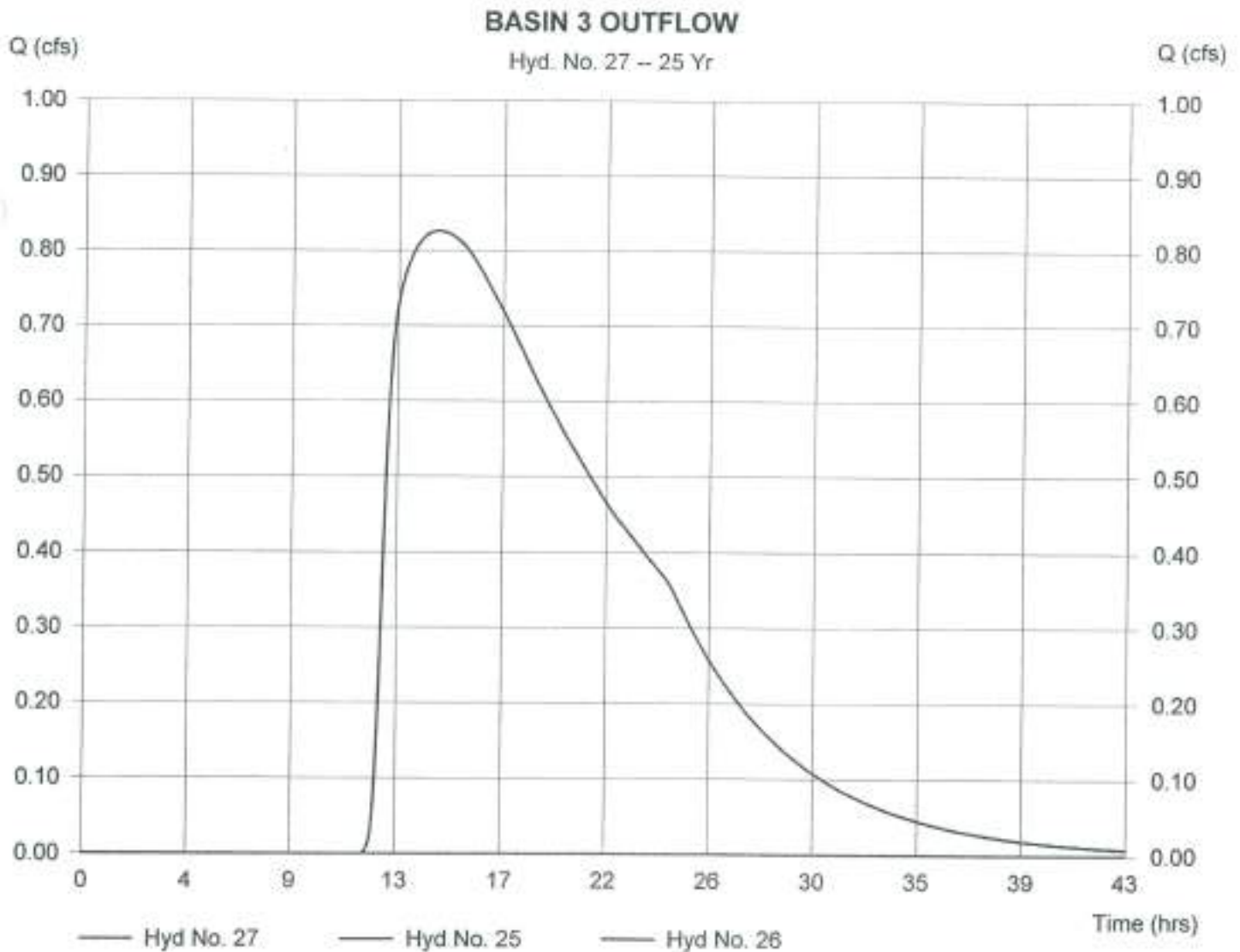
Hyd. No. 27

BASIN 3 OUTFLOW

Hydrograph type = Diversion2
Storm frequency = 25 yrs
Inflow hydrograph = 25
Diversion method = Pond - BASIN 3

Peak discharge = 0.00 cfs
Time interval = 1 min
2nd diverted hyd. = 26
Pond structure = Exfiltration

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

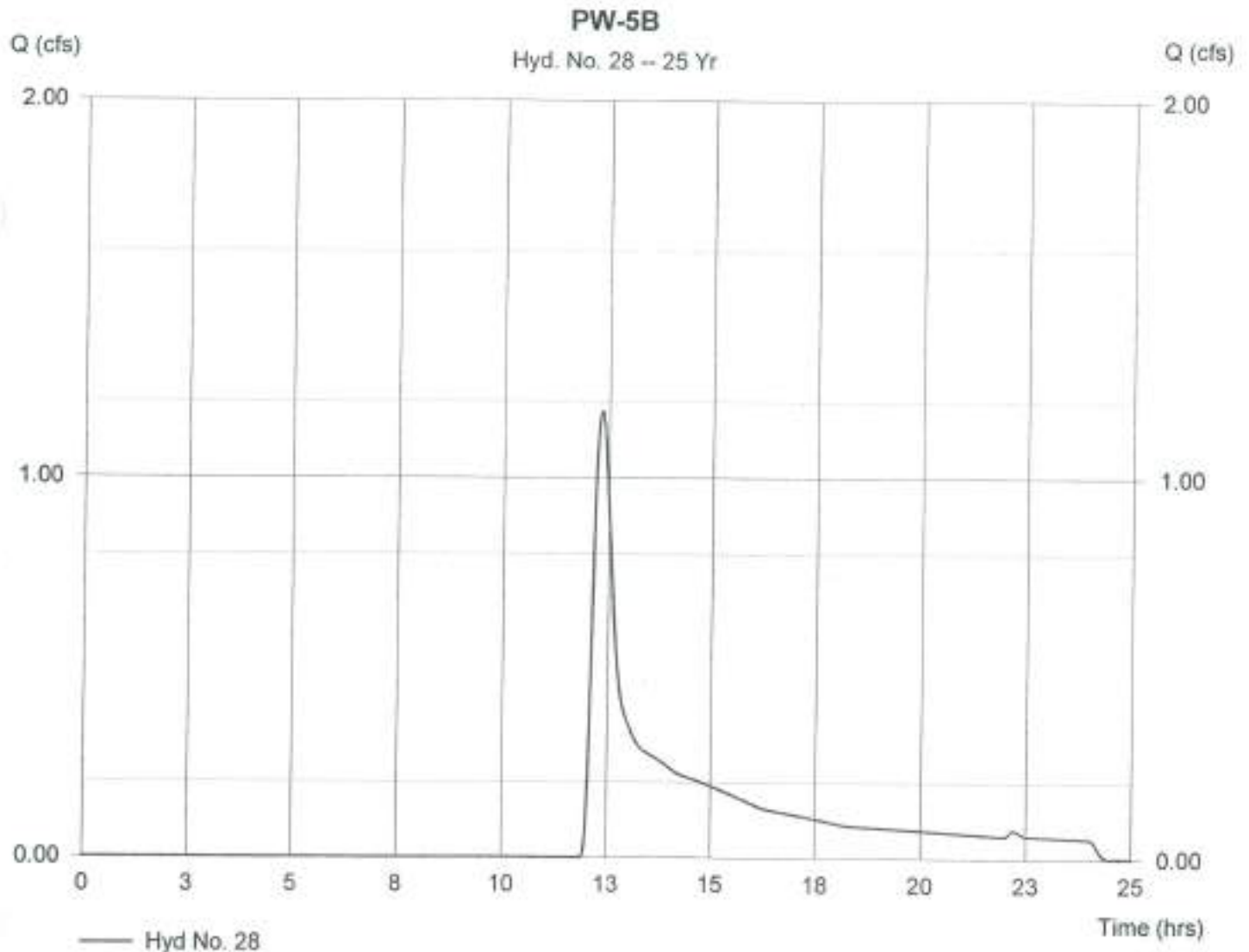
Hyd. No. 28

PW-5B

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 2.660 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 1.17 cfs
Time interval = 1 min
Curve number = 49
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.20 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 7,256 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

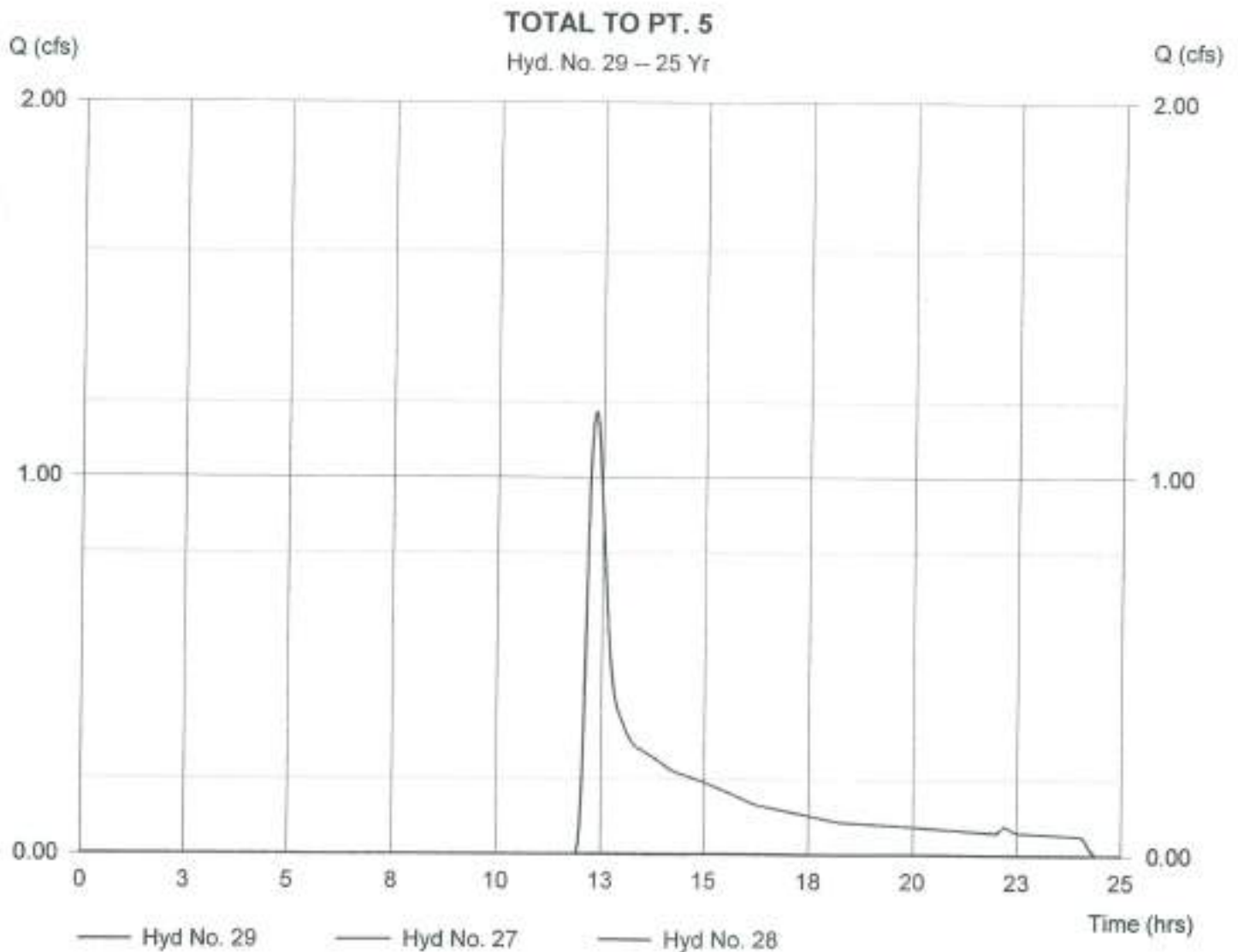
Hyd. No. 29

TOTAL TO PT. 5

Hydrograph type = Combine
Storm frequency = 25 yrs
Inflow hyds. = 27, 28

Peak discharge = 1.17 cfs
Time interval = 1 min

Hydrograph Volume = 7,256 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

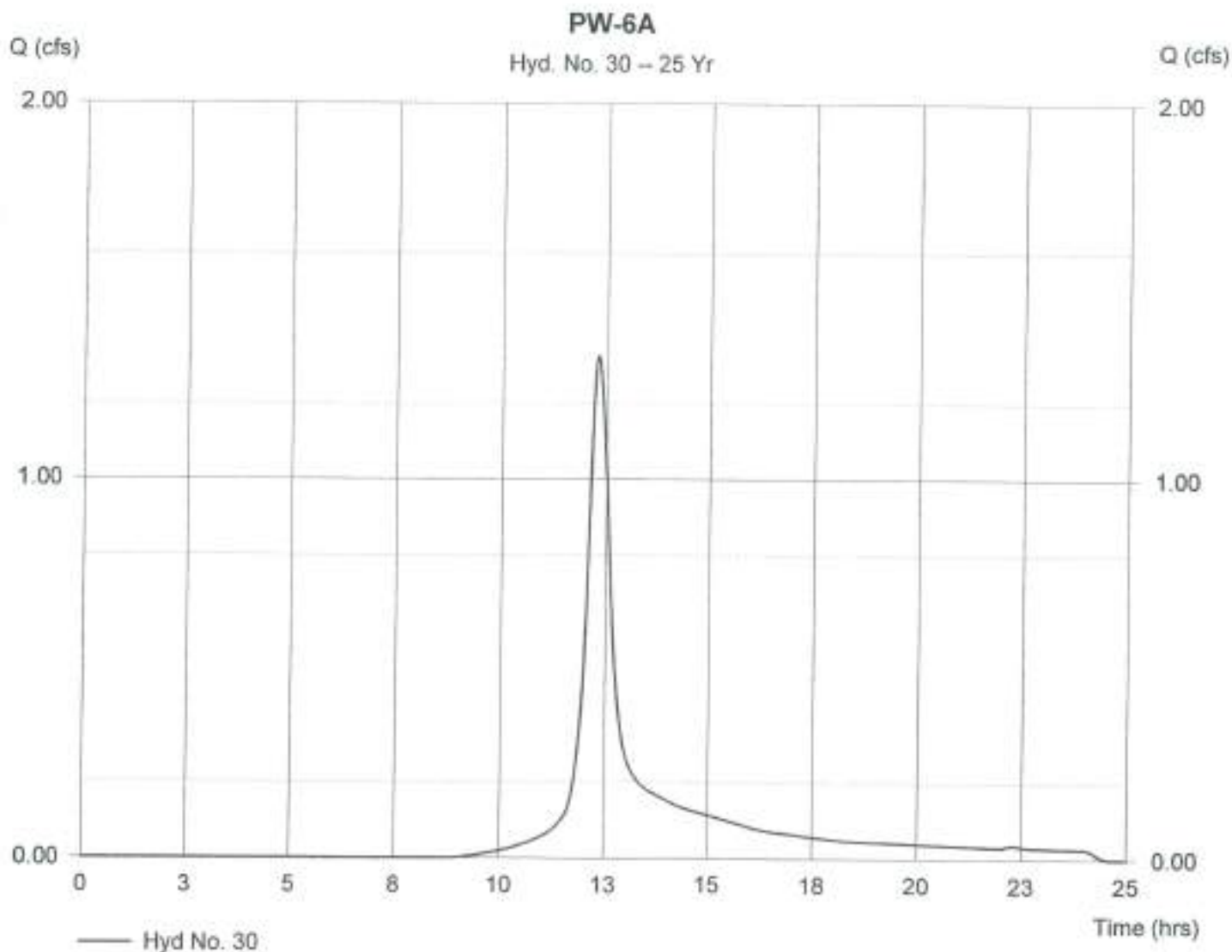
Hyd. No. 30

PW-6A

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 0.680 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 1.33 cfs
Time interval = 1 min
Curve number = 74
Hydraulic length = 0 ft
Time of conc. (Tc) = 24.70 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 6,432 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 31

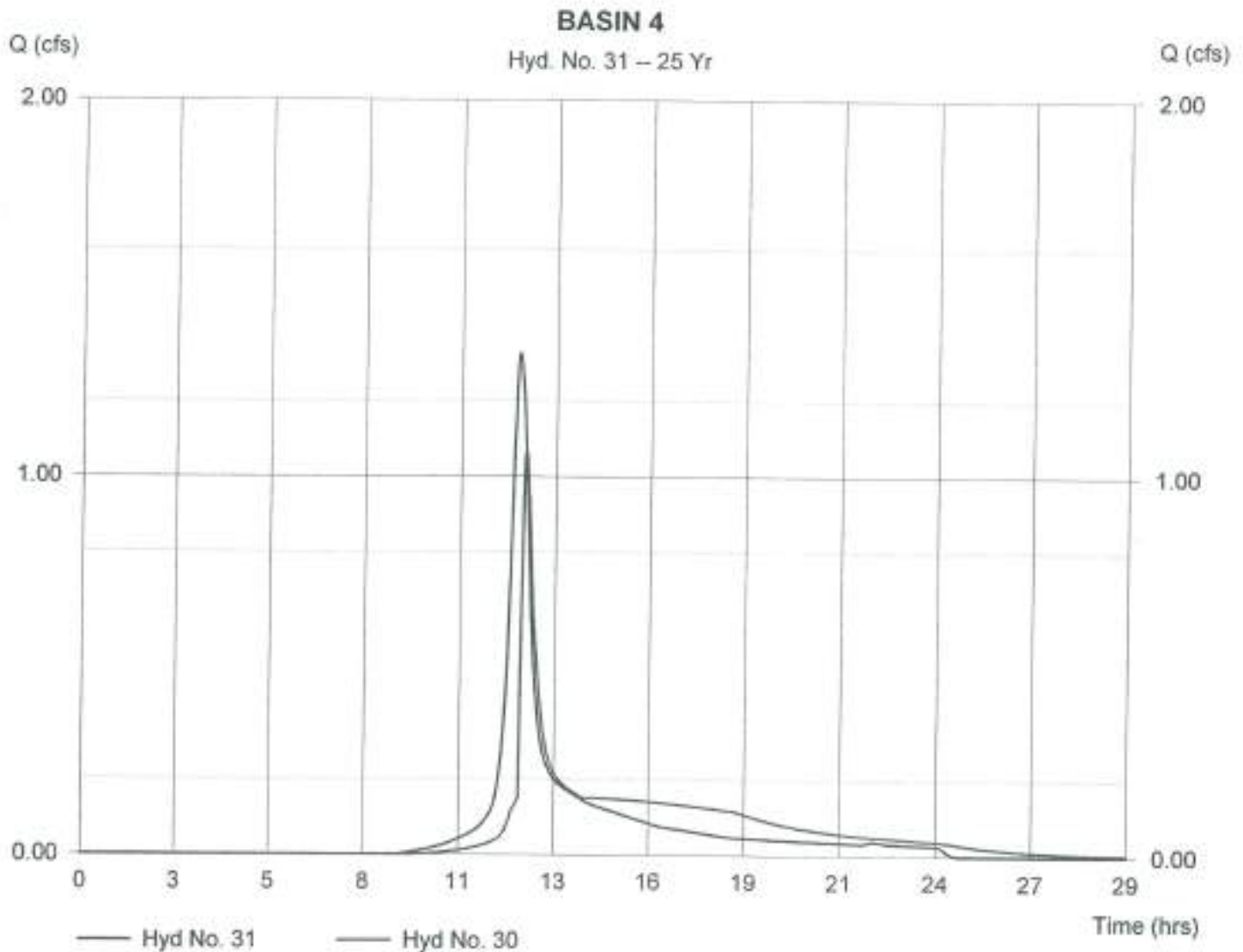
BASIN 4

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 30
Reservoir name = BASIN 4

Peak discharge = 1.07 cfs
Time interval = 1 min
Max. Elevation = 129.65 ft
Max. Storage = 1,901 cuft

Storage Indication method used

Hydrograph Volume = 6,425 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

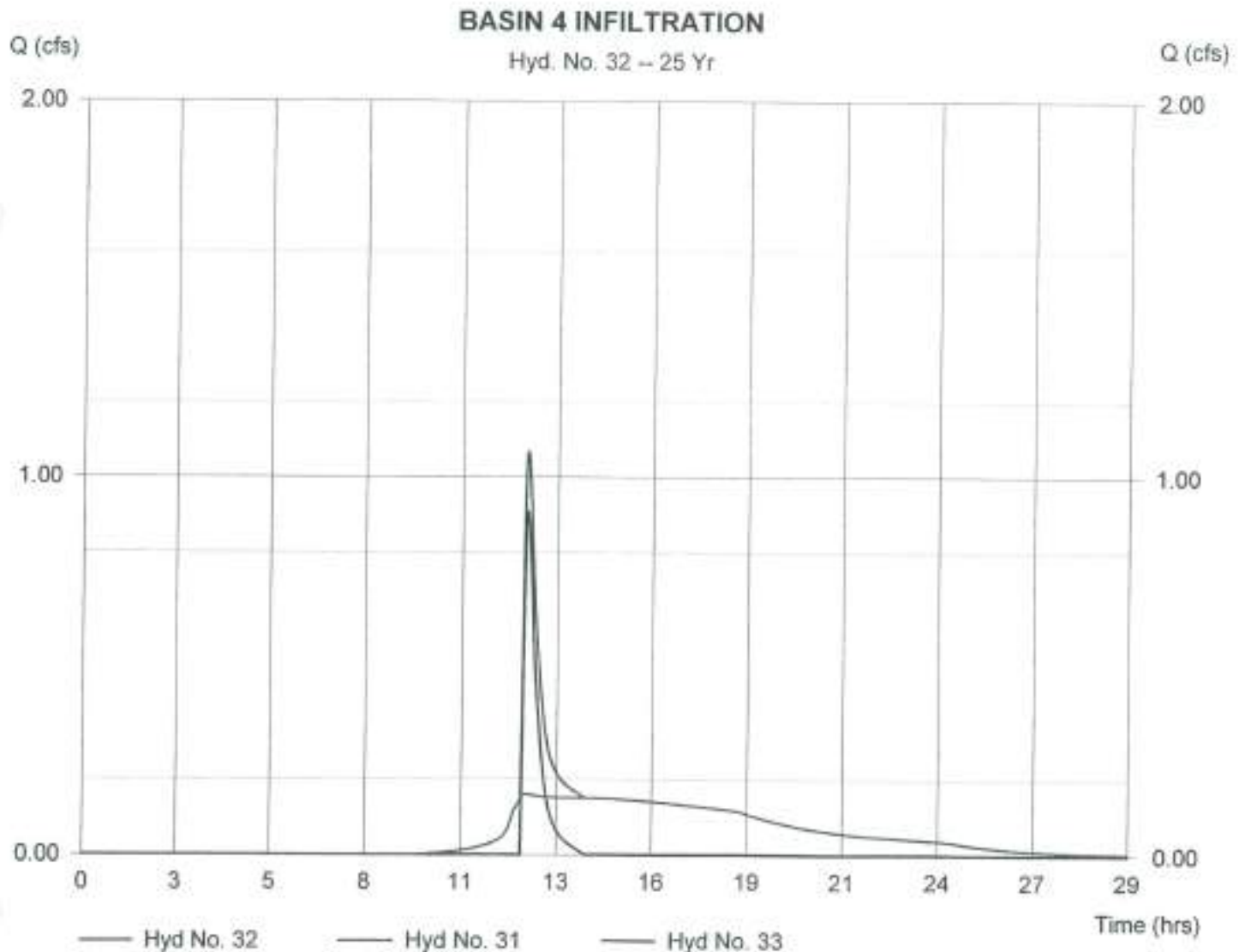
Hyd. No. 32

BASIN 4 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 25 yrs
Inflow hydrograph = 31
Diversion method = Pond - BASIN 4

Peak discharge = 0.16 cfs
Time interval = 1 min
2nd diverted hyd. = 33
Pond structure = Exfiltration

Hydrograph Volume = 4,977 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

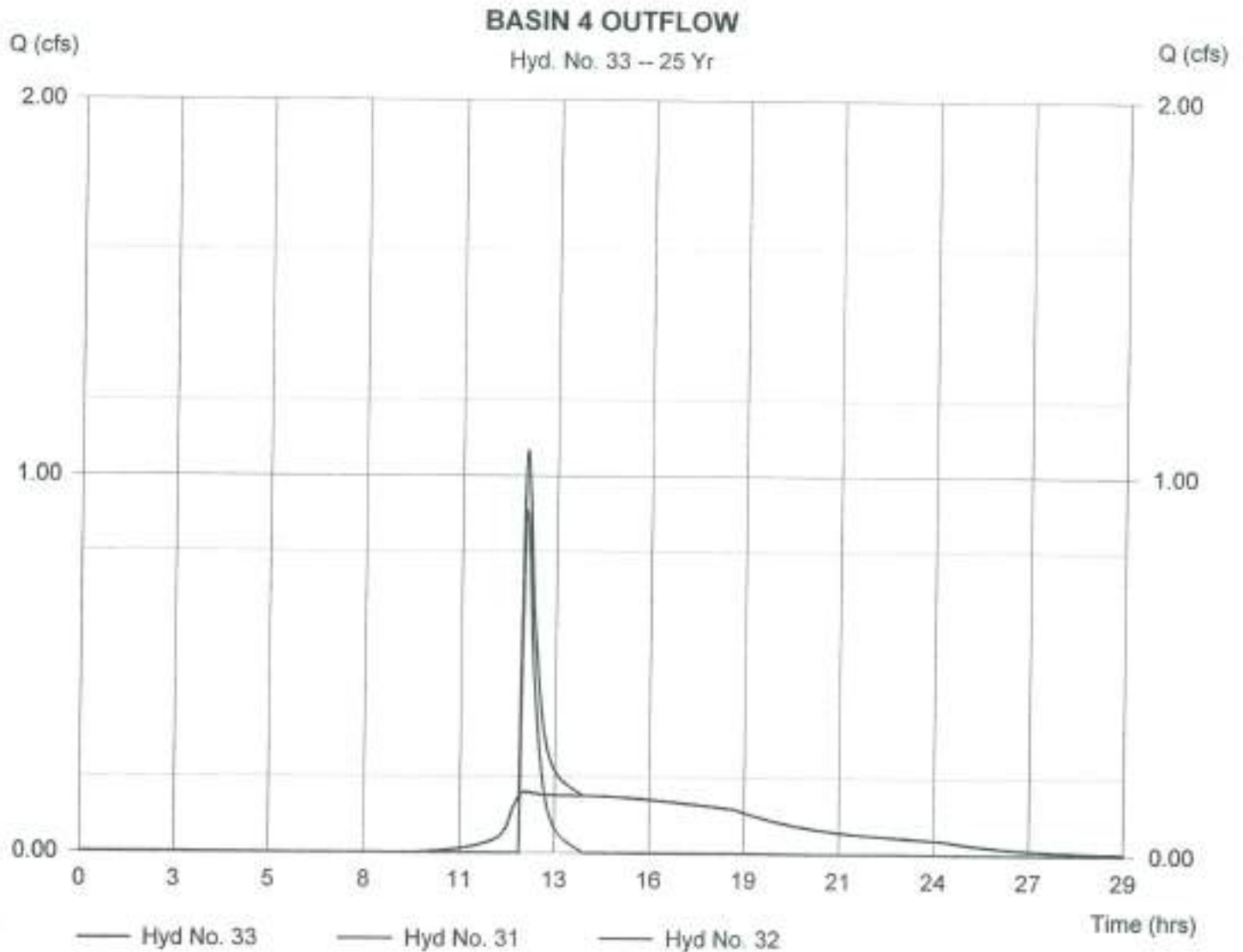
Hyd. No. 33

BASIN 4 OUTFLOW

Hydrograph type = Diversion2
Storm frequency = 25 yrs
Inflow hydrograph = 31
Diversion method = Pond - BASIN 4

Peak discharge = 0.91 cfs
Time interval = 1 min
2nd diverted hyd. = 32
Pond structure = Exfiltration

Hydrograph Volume = 1,448 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

Monday, May 7 2007, 4:40 PM

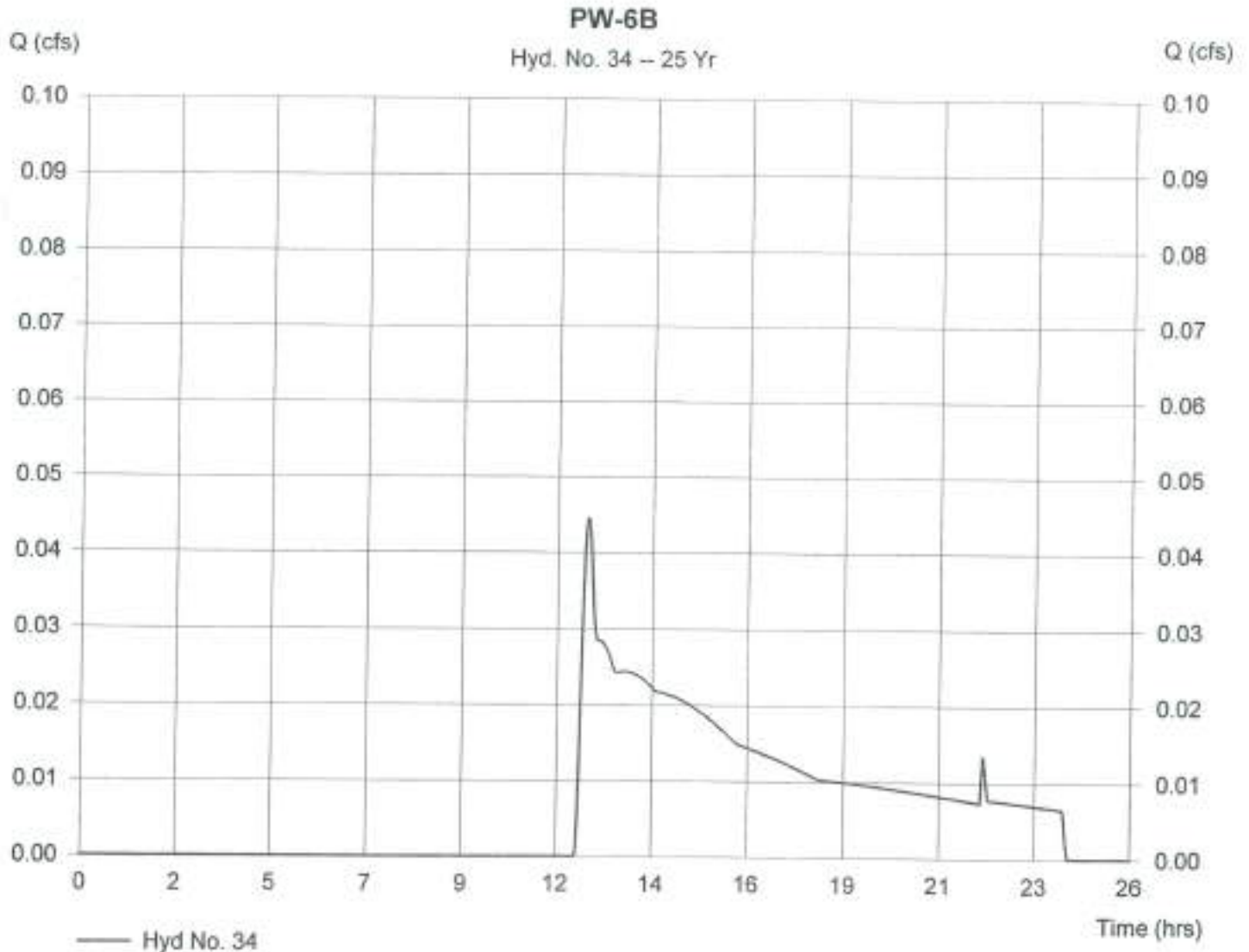
Hyd. No. 34

PW-6B

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 0.600 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 5.30 in
Storm duration = 24 hrs

Peak discharge = 0.04 cfs
Time interval = 1 min
Curve number = 39
Hydraulic length = 0 ft
Time of conc. (Tc) = 6.00 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 595 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

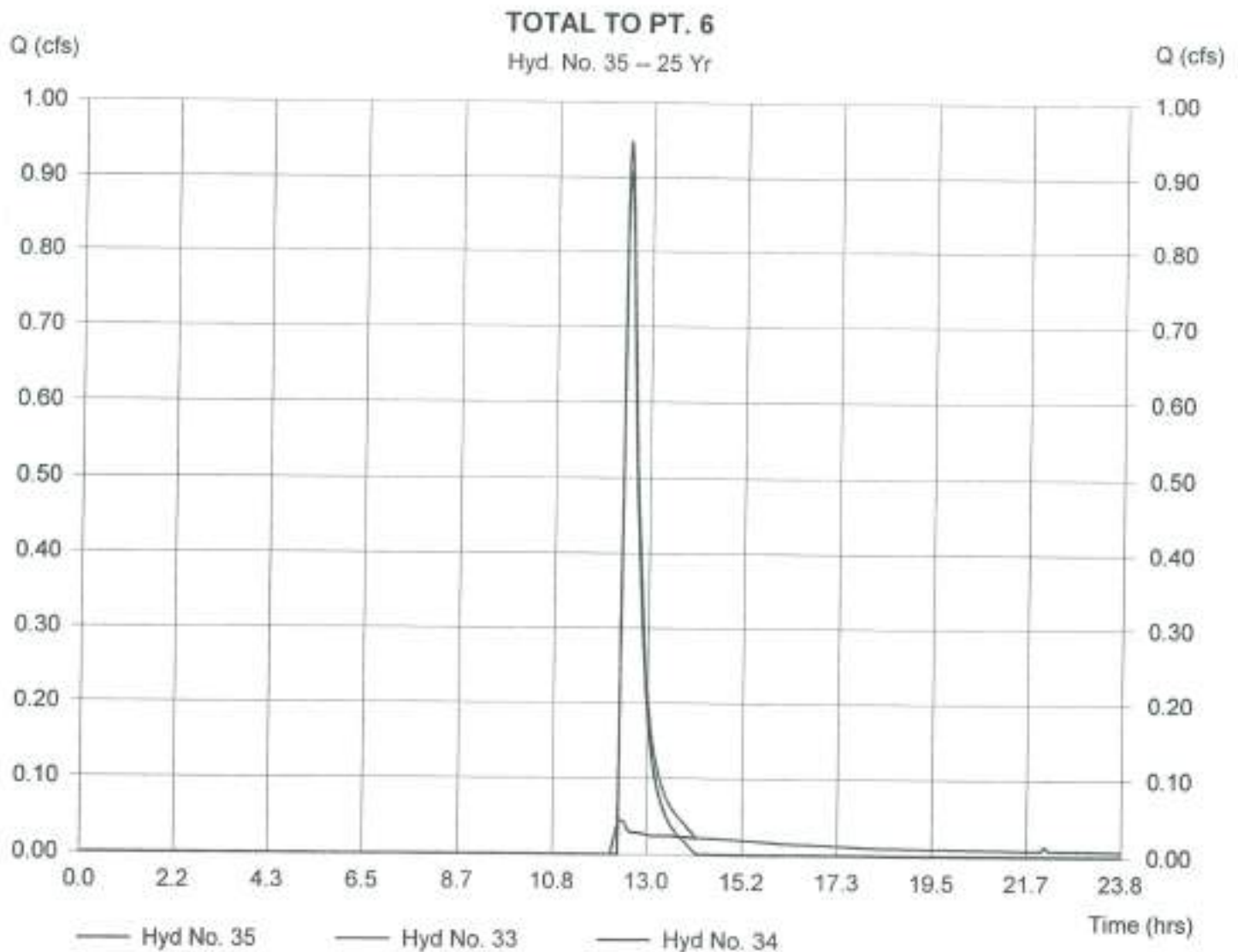
Hyd. No. 35

TOTAL TO PT. 6

Hydrograph type = Combine
Storm frequency = 25 yrs
Inflow hyds. = 33, 34

Peak discharge = 0.95 cfs
Time interval = 1 min

Hydrograph Volume = 2,042 cuft



Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	93.47	1	728	352,671	---	---	---	EW-1 (PT. 1)
2	SCS Runoff	23.83	1	725	79,704	---	---	---	EW-2 (PT. 2)
3	SCS Runoff	13.92	1	746	83,057	---	---	---	EW-3
4	Combine	122.31	1	727	515,433	1, 2, 3	---	---	EXIST. TOTAL TO RIVER (PT. 3)
5	SCS Runoff	6.07	1	729	22,821	---	---	---	EW-4
6	Reservoir	3.68	1	740	22,814	5	119.57	7,722	EXIST. BASIN
7	Diversion1	0.16	1	740	4,363	6	---	---	BASIN INFILTRATION
8	Diversion2	3.52	1	740	18,451	6	---	---	BASIN OUTFLOW (PT. 4)
9	SCS Runoff	2.66	1	737	16,624	---	---	---	EW-5A
10	SCS Runoff	2.74	1	737	14,642	---	---	---	E-5B
11	Combine	5.40	1	737	31,266	9, 10	---	---	E-5A + E-5B (PT. 5)
12	SCS Runoff	7.07	1	722	18,593	---	---	---	EW-6 (PT. 6)
14	SCS Runoff	62.43	1	732	265,074	---	---	---	PW-1
15	Reservoir	43.15	1	744	264,837	14	122.22	70,428	BASIN 2
	Diversion1	1.79	1	744	69,332	15	---	---	BASIN 2 INFILTRATION
17	Diversion2	41.36	1	744	195,505	15	---	---	BASIN 2 OUTFLOW (PT. 1)
18	SCS Runoff	37.03	1	745	221,301	---	---	---	PW-2
19	Reservoir	14.55	1	778	220,950	18	123.71	92,121	BASIN 1
20	Diversion1	1.78	1	778	86,726	19	---	---	BASIN 1 INFILTRATION
21	Diversion2	12.77	1	778	134,224	19	---	---	BASIN 1 OUTFLOW (PT. 2)
22	SCS Runoff	3.18	1	739	18,140	---	---	---	PW-3
23	Combine	53.97	1	745	347,869	17, 21, 22	---	---	PROP. TOTAL TO RIVER (PT. 3)
24	SCS Runoff	11.30	1	741	60,074	---	---	---	PW-5A
25	Reservoir	1.31	1	885	59,973	24	126.54	29,511	BASIN 3
26	Diversion1	1.31	1	885	59,973	25	---	---	BASIN 3 INFILTRATION
27	Diversion2	0.00	1	739	0	25	---	---	BASIN 3 OUTFLOW
28	SCS Runoff	3.04	1	735	15,067	---	---	---	PW-5B
29	Combine	3.04	1	735	15,067	27, 28	---	---	TOTAL TO PT. 5
30	SCS Runoff	2.07	1	737	9,977	---	---	---	PW-6A
MSP_5-8-07.gpw					Return Period: 100 Year		Monday, May 7 2007, 5:04 PM		

Hydrograph Summary Report

Hyd.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
31	Reservoir	2.00	1	741	9,970	30	129.74	2,050	BASIN 4
32	Diversion1	0.17	1	741	6,037	31	-----	-----	BASIN 4 INFILTRATION
33	Diversion2	1.84	1	741	3,933	31	-----	-----	BASIN 4 OUTFLOW
34	SCS Runoff	0.28	1	728	1,726	---	-----	-----	PW-6B
35	Combine	2.06	1	740	5,659	33, 34	-----	-----	TOTAL TO PT. 6
MSP_5-8-07.gpw					Return Period: 100 Year		Monday, May 7 2007, 5:04 PM		

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

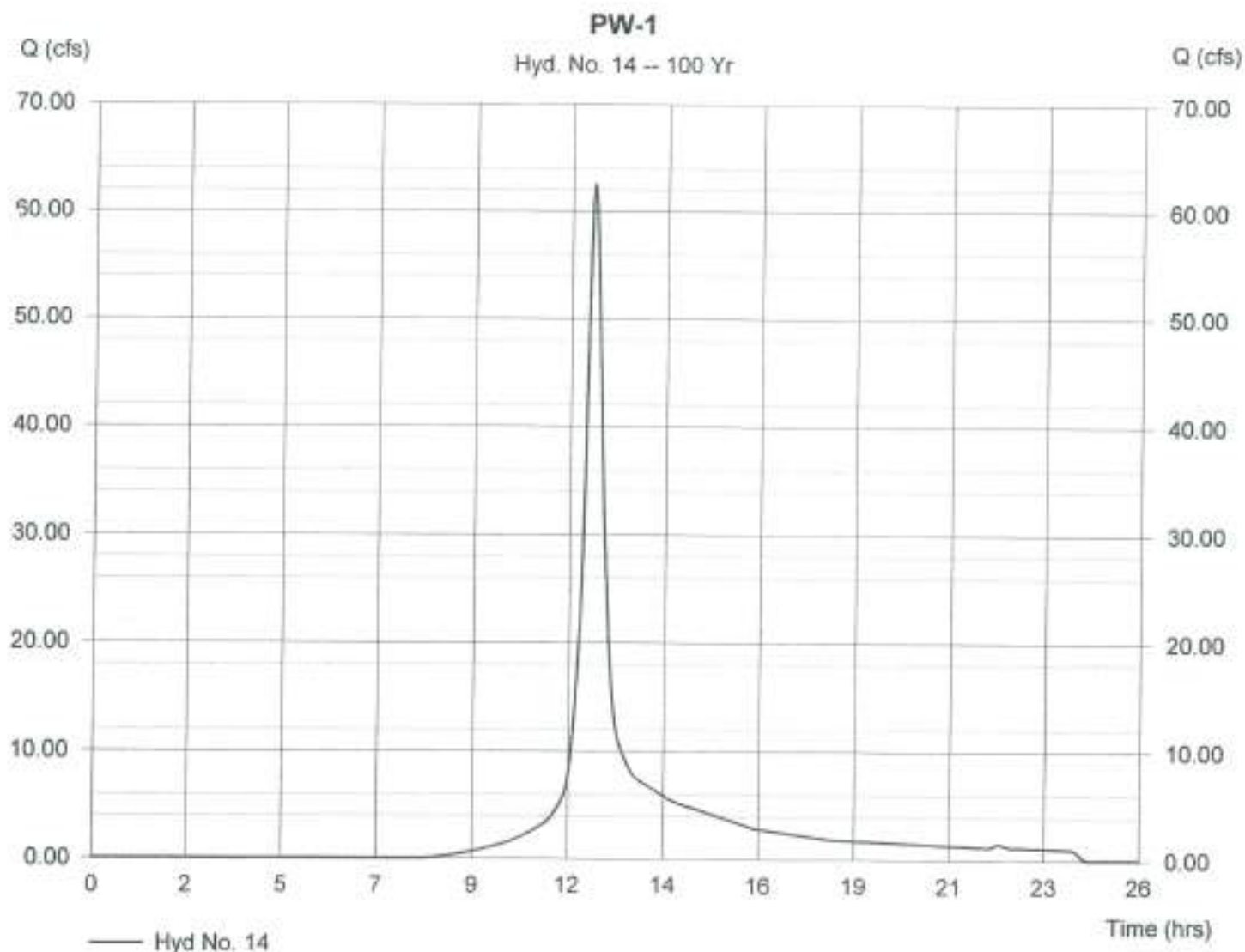
Hyd. No. 14

PW-1

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 19.290 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 62.43 cfs
Time interval = 1 min
Curve number = 72
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.50 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 265,074 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:40 PM

Hyd. No. 15

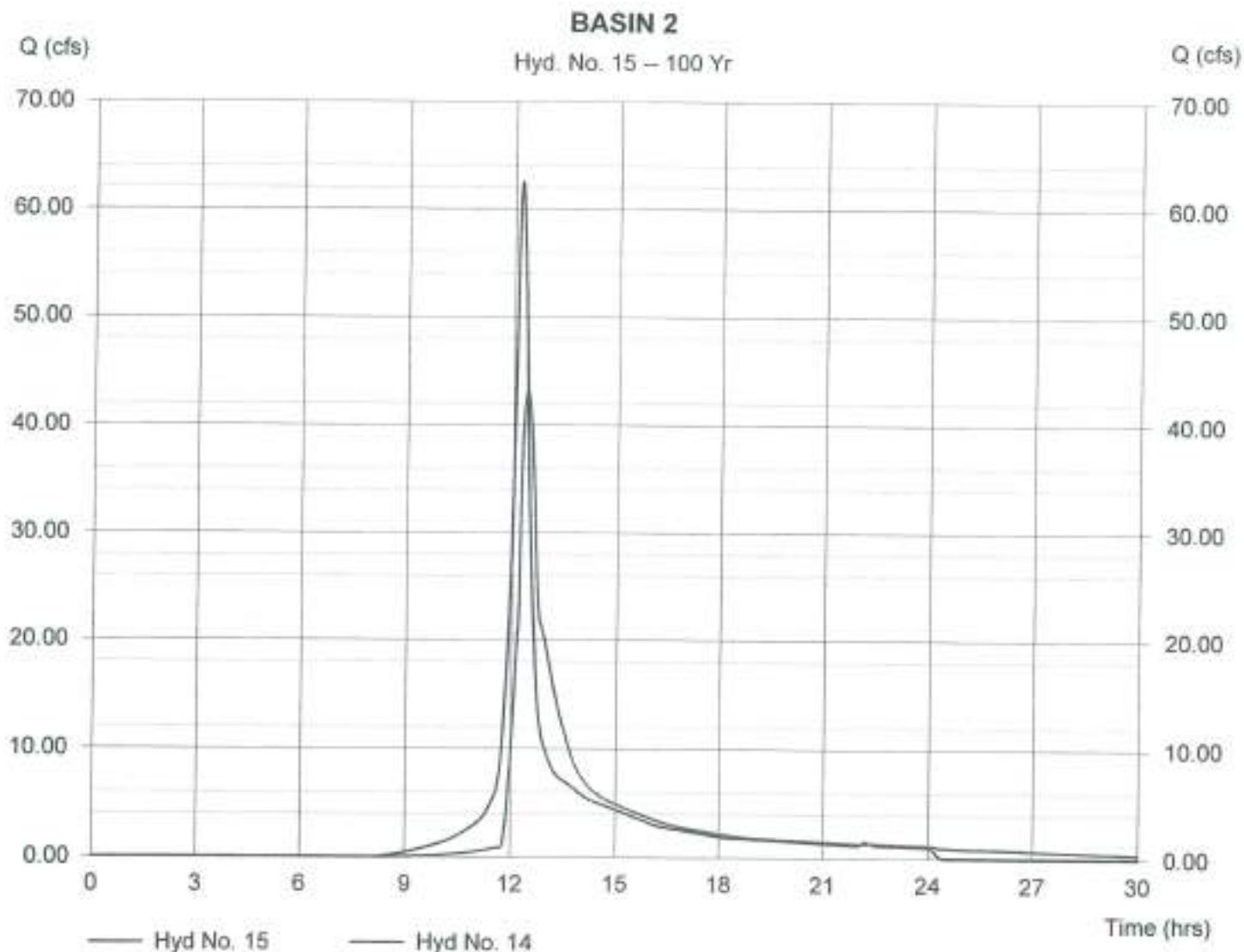
BASIN 2

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 14
Reservoir name = BASIN 2

Peak discharge = 43.15 cfs
Time interval = 1 min
Max. Elevation = 122.22 ft
Max. Storage = 70,428 cuft

Storage Indication method used:

Hydrograph Volume = 264,837 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:41 PM

Hyd. No. 16

BASIN 2 INFILTRATION

Hydrograph type = Diversion1

Storm frequency = 100 yrs

Inflow hydrograph = 15

Diversion method = Pond - BASIN 2

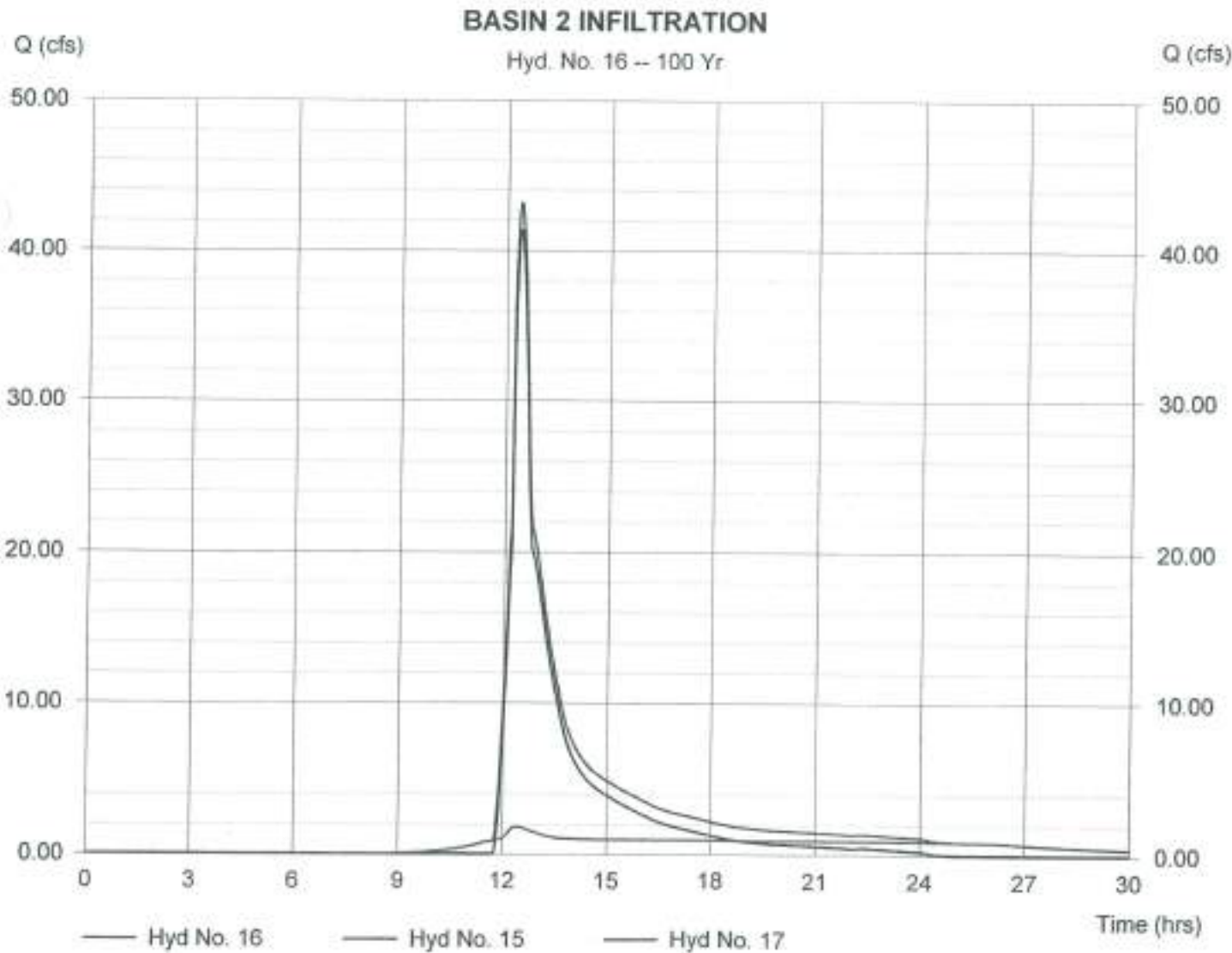
Peak discharge = 1.79 cfs

Time interval = 1 min

2nd diverted hyd. = 17

Pond structure = Exfiltration

Hydrograph Volume = 69,332 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7, 2007, 4:41 PM

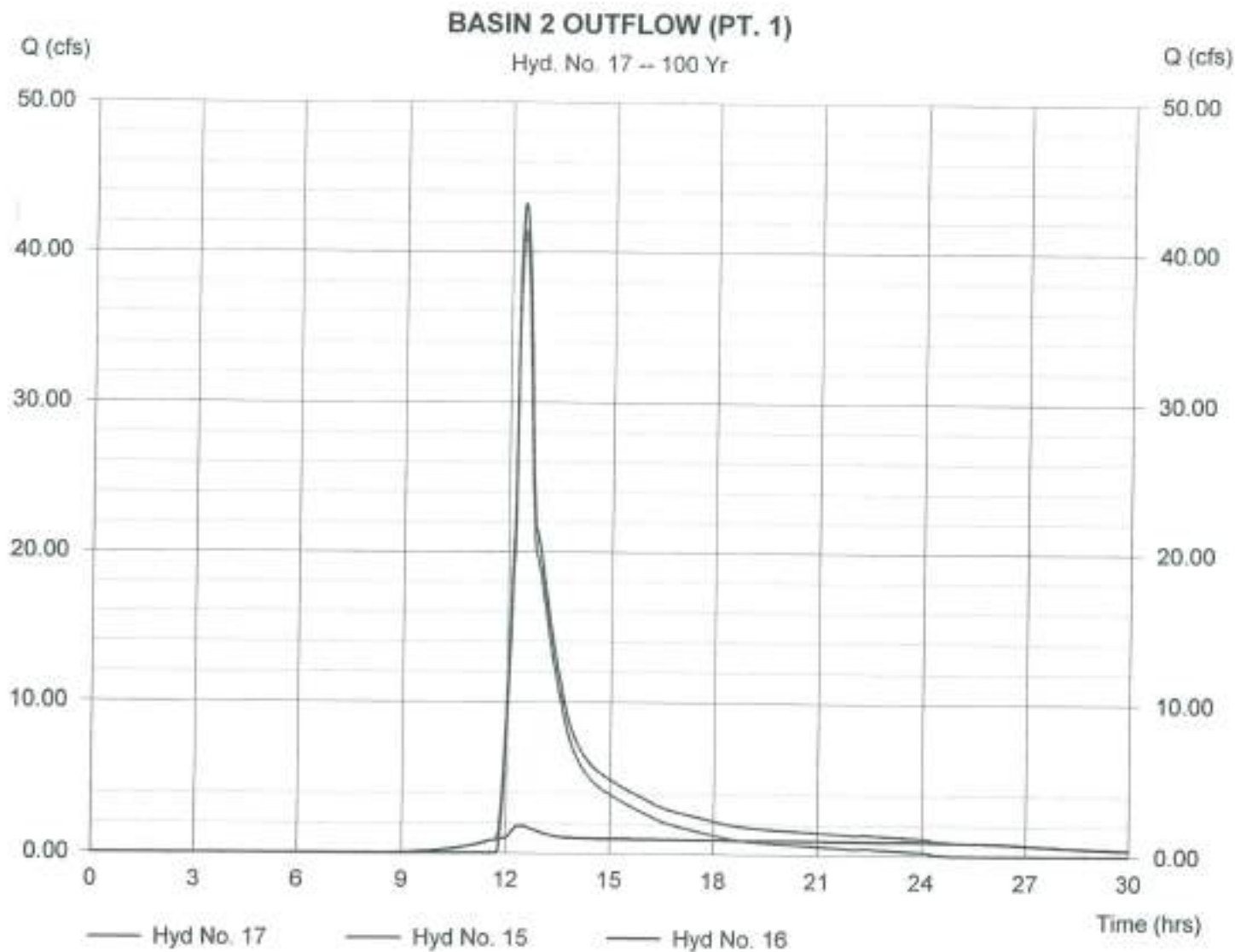
Hyd. No. 17

BASIN 2 OUTFLOW (PT. 1)

Hydrograph type = Diversion2
Storm frequency = 100 yrs
Inflow hydrograph = 15
Diversion method = Pond - BASIN 2

Peak discharge = 41.36 cfs
Time interval = 1 min
2nd diverted hyd. = 16
Pond structure = Exfiltration

Hydrograph Volume = 195,505 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:41 PM

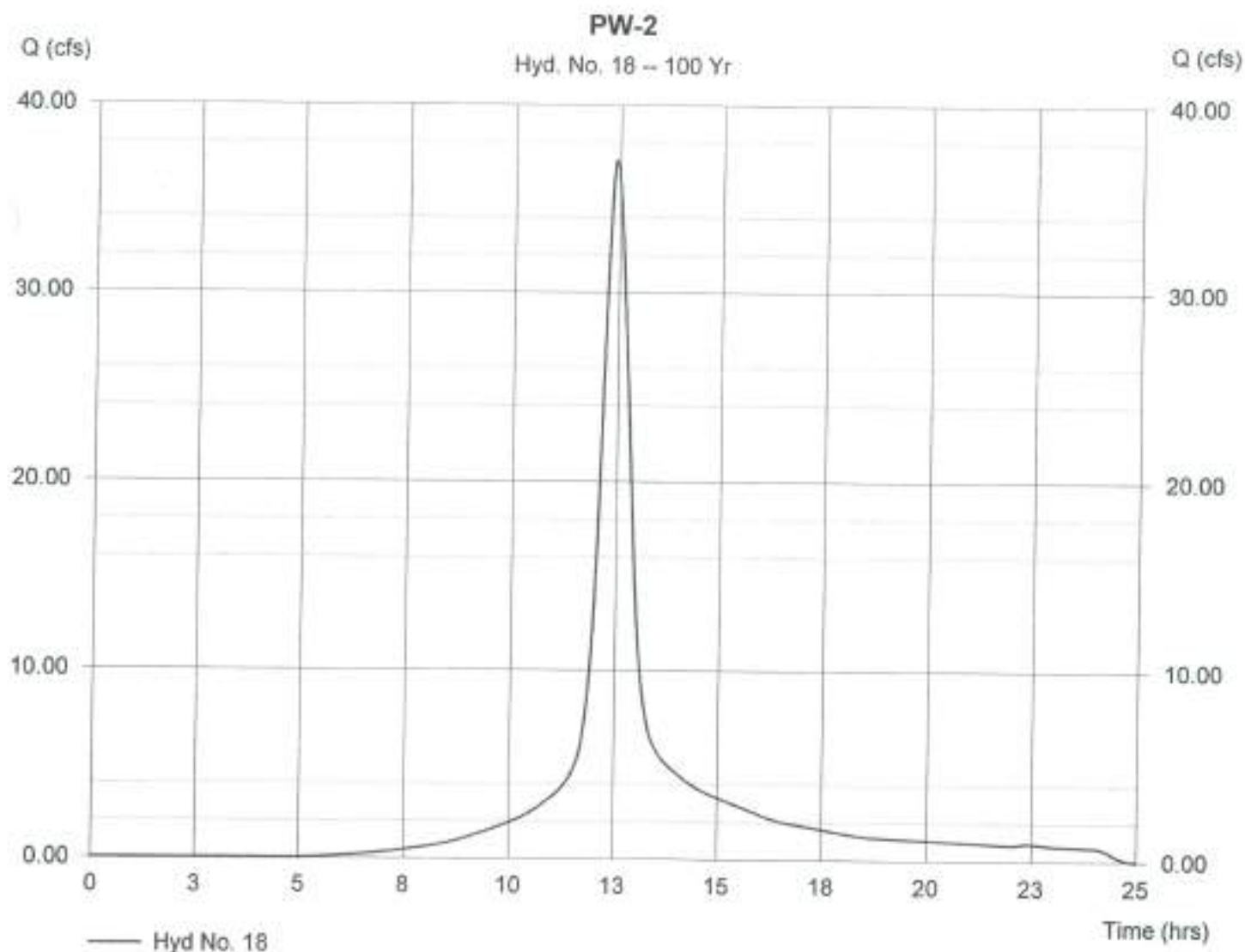
Hyd. No. 18

PW-2

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 11,670 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 37.03 cfs
Time interval = 1 min
Curve number = 85
Hydraulic length = 0 ft
Time of conc. (Tc) = 37.50 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 221,301 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:41 PM

Hyd. No. 19

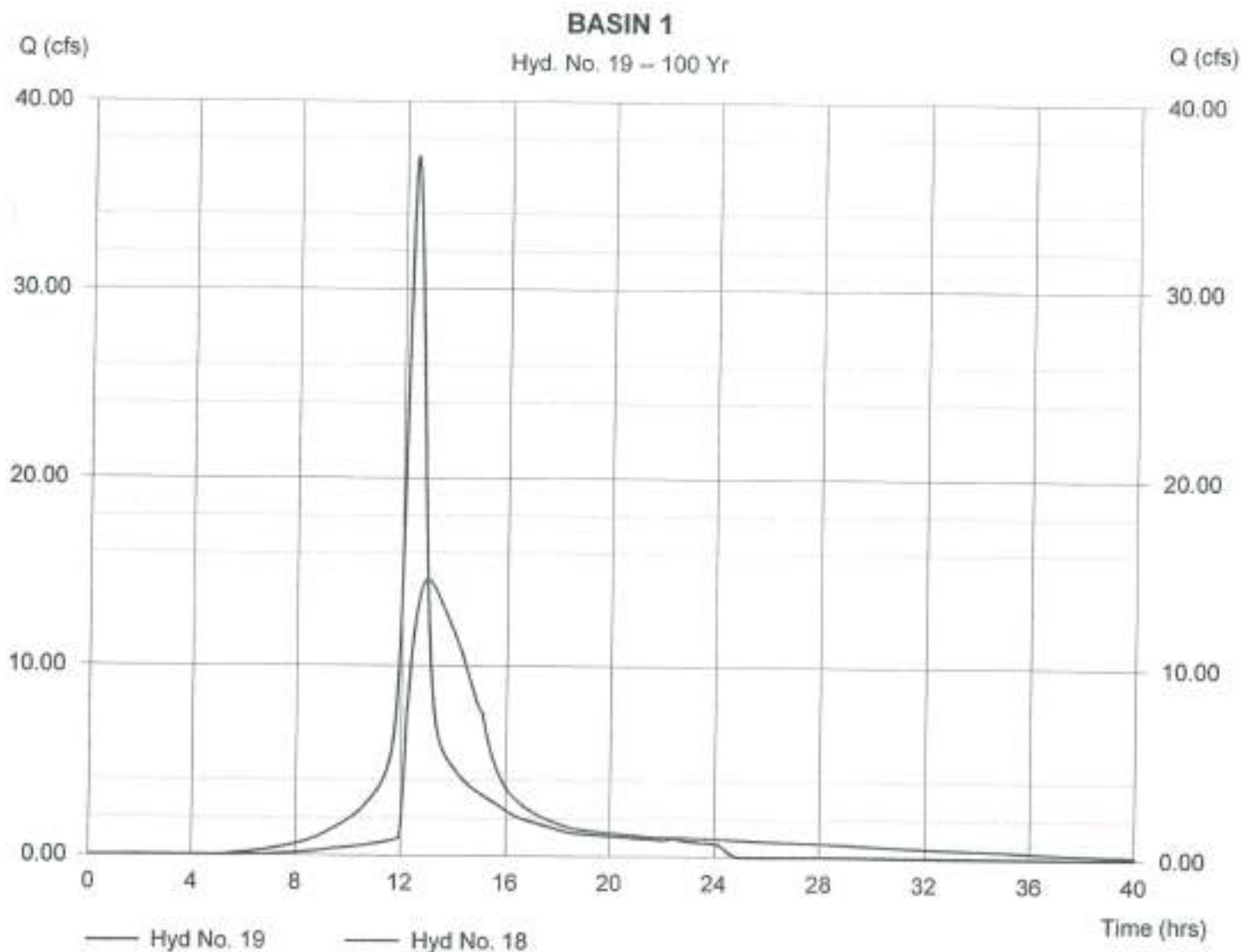
BASIN 1

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 18
Reservoir name = BASIN 1

Peak discharge = 14.55 cfs
Time interval = 1 min
Max. Elevation = 123.71 ft
Max. Storage = 92,121 cuft

Storage Indication method used.

Hydrograph Volume = 220,950 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:41 PM

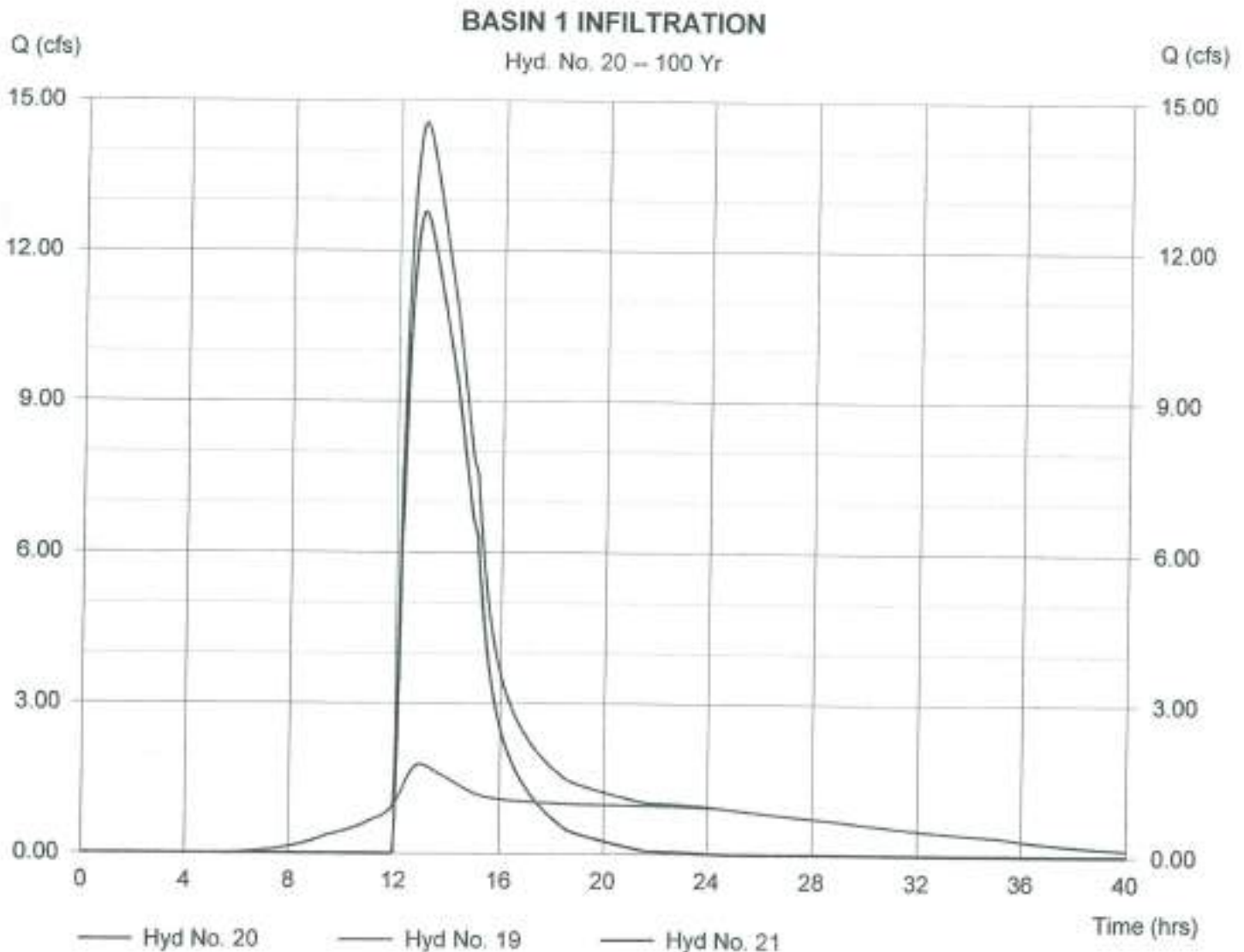
Hyd. No. 20

BASIN 1 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 100 yrs
Inflow hydrograph = 19
Diversion method = Pond - BASIN 1

Peak discharge = 1.78 cfs
Time interval = 1 min
2nd diverted hyd. = 21
Pond structure = Exfiltration

Hydrograph Volume = 86,726 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, May 7 2007, 4:41 PM

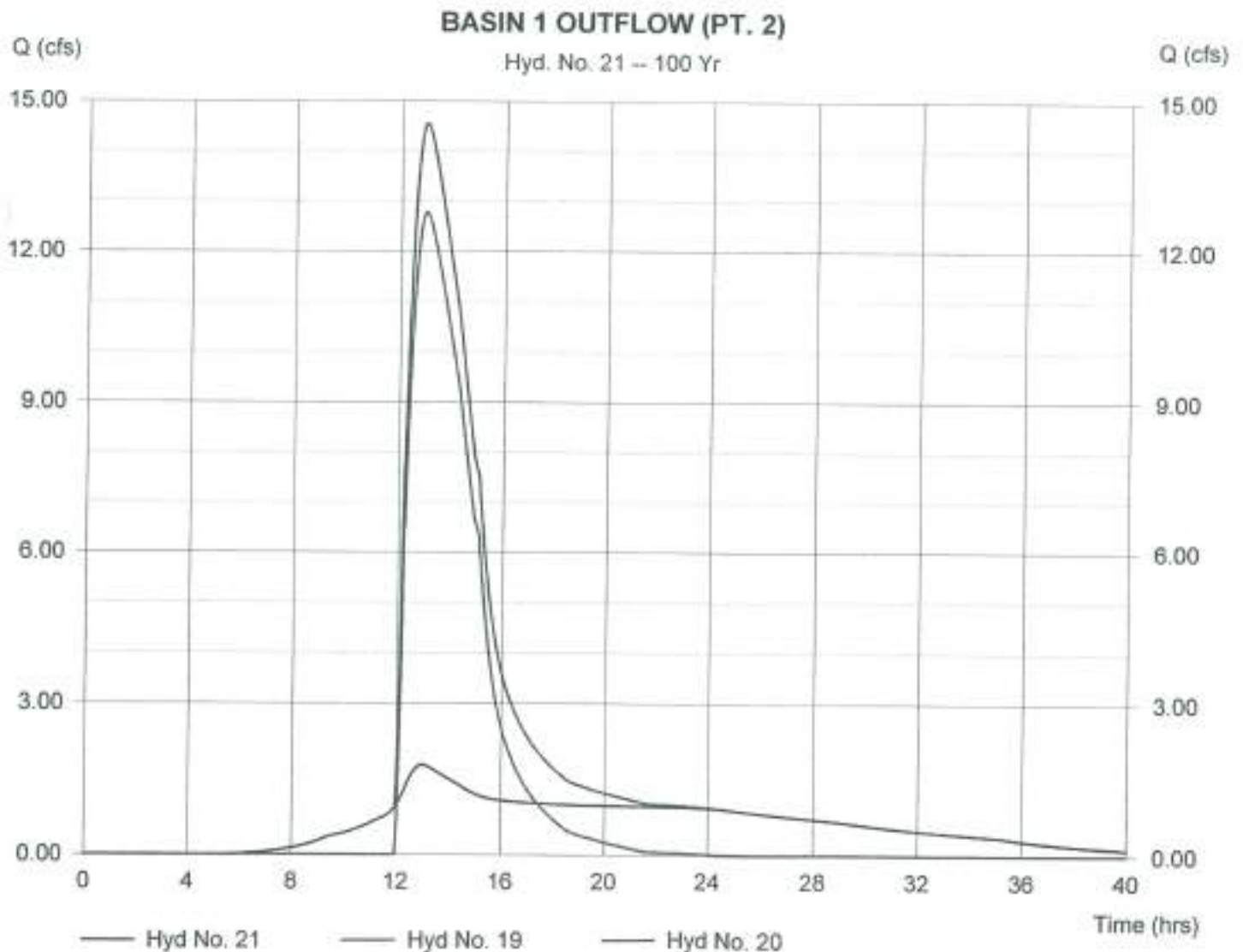
Hyd. No. 21

BASIN 1 OUTFLOW (PT. 2)

Hydrograph type = Diversion2
Storm frequency = 100 yrs
Inflow hydrograph = 19
Diversion method = Pond - BASIN 1

Peak discharge = 12.77 cfs
Time interval = 1 min
2nd diverted hyd. = 20
Pond structure = Exfiltration

Hydrograph Volume = 134,224 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intellisolve

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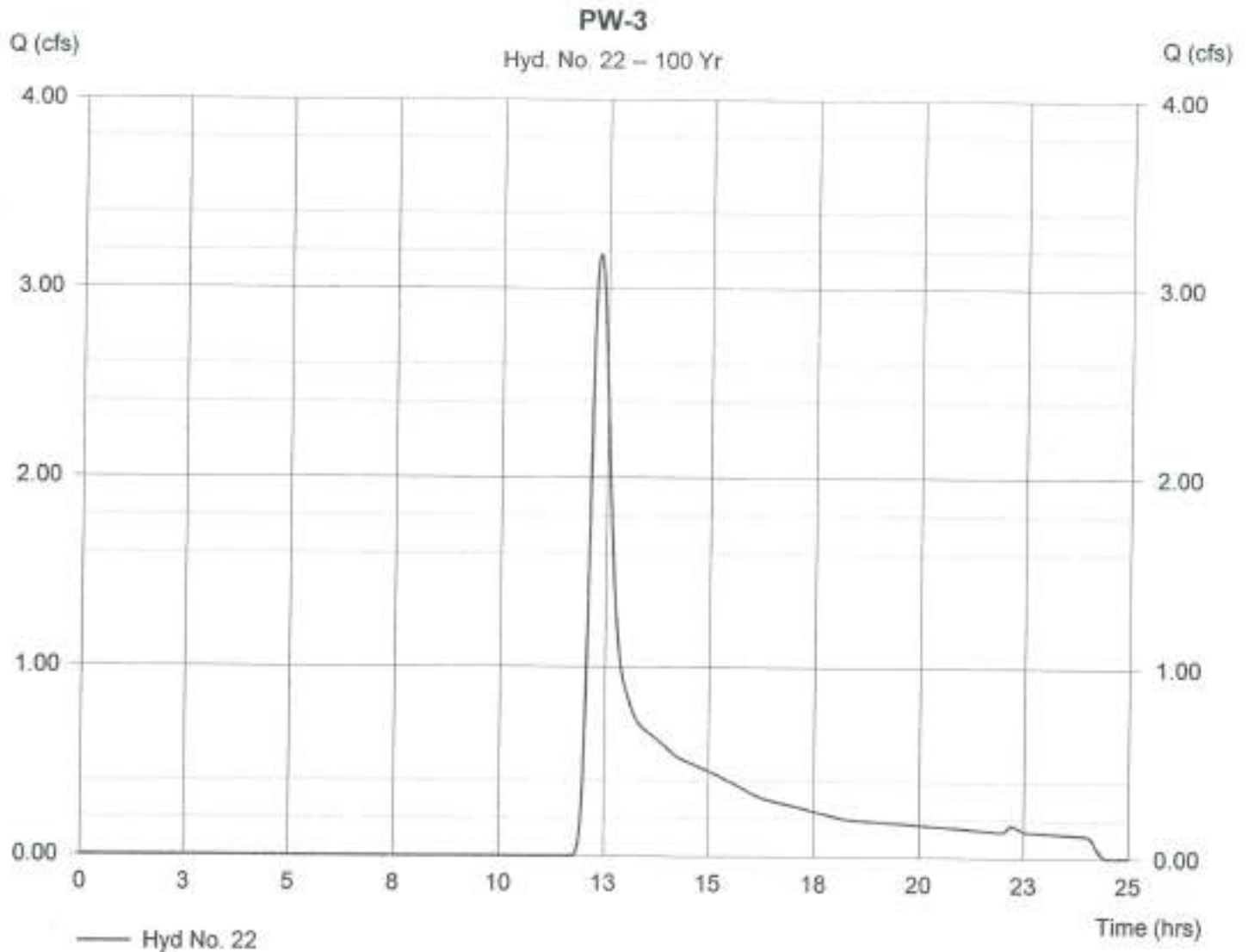
Hyd. No. 22

PW-3

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 4.040 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 3.18 cfs
Time interval = 1 min
Curve number = 45
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.80 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 18,140 cuft



Hydrograph Plot

Hydraflow Hydrographs by IntelliSolve

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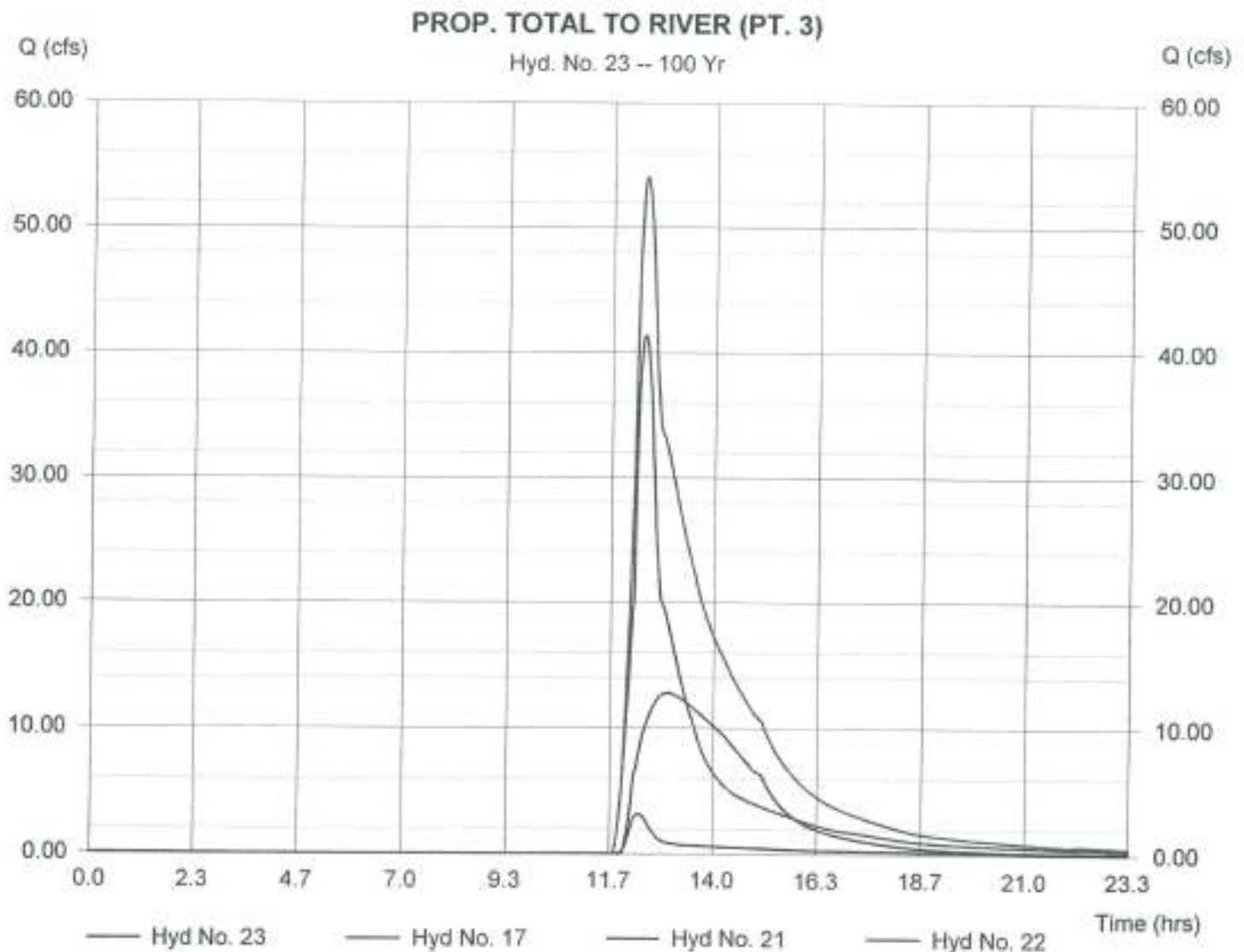
Hyd. No. 23

PROP. TOTAL TO RIVER (PT. 3)

Hydrograph type = Combine
Storm frequency = 100 yrs
Inflow hyds. = 17, 21, 22

Peak discharge = 53.97 cfs
Time interval = 1 min

Hydrograph Volume = 347,869 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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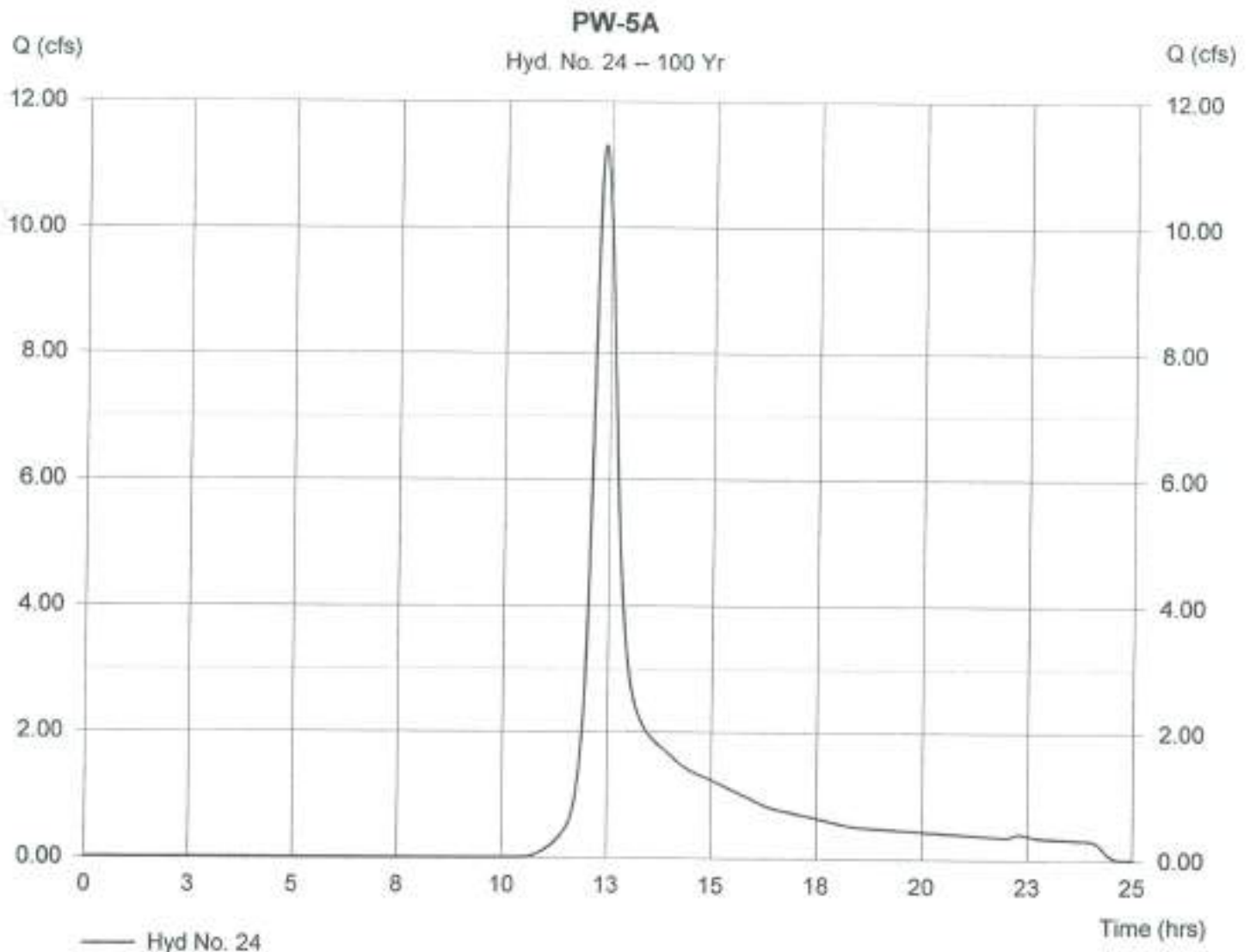
Hyd. No. 24

PW-5A

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 6.920 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 11.30 cfs
Time interval = 1 min
Curve number = 58
Hydraulic length = 0 ft
Time of conc. (Tc) = 27.30 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 60,074 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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Hyd. No. 25

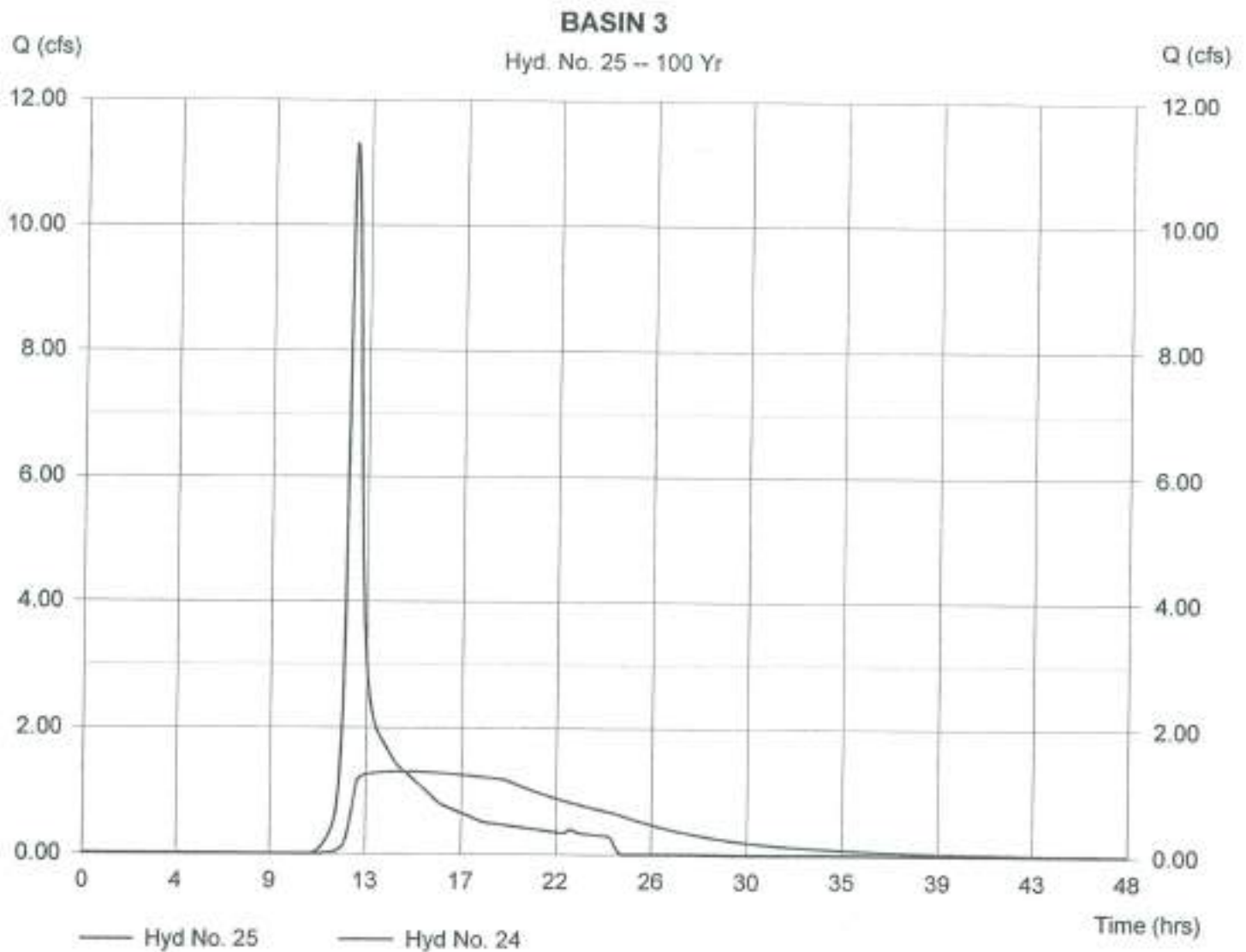
BASIN 3

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 24
Reservoir name = BASIN 3

Peak discharge = 1.31 cfs
Time interval = 1 min
Max. Elevation = 126.54 ft
Max. Storage = 29,511 cuft

Storage Indication method used

Hydrograph Volume = 59,973 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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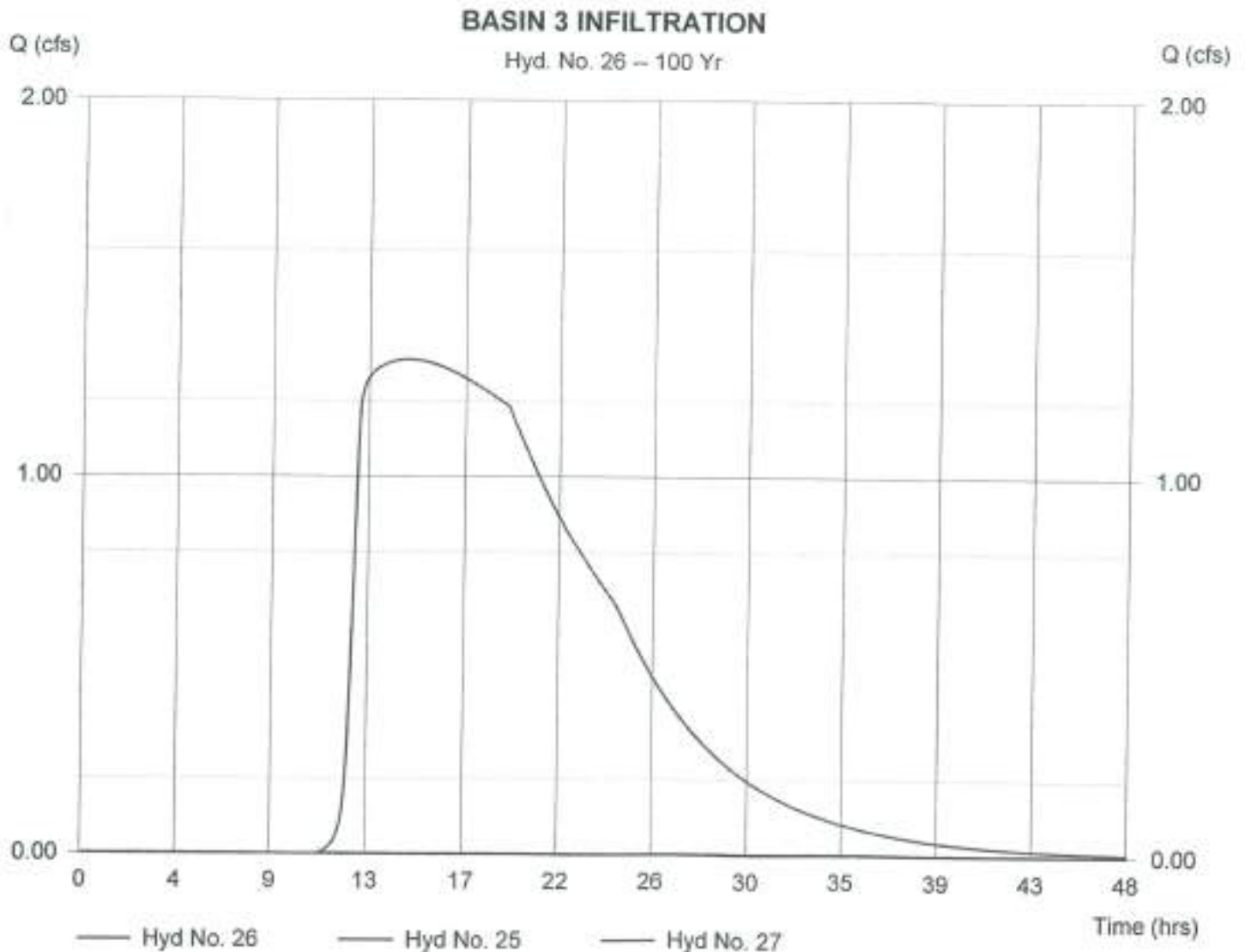
Hyd. No. 26

BASIN 3 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 100 yrs
Inflow hydrograph = 25
Diversion method = Pond - BASIN 3

Peak discharge = 1.31 cfs
Time interval = 1 min
2nd diverted hyd. = 27
Pond structure = Exfiltration

Hydrograph Volume = 59.973 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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Hyd. No. 27

BASIN 3 OUTFLOW

Hydrograph type = Diversion2

Storm frequency = 100 yrs

Inflow hydrograph = 25

Diversion method = Pond - BASIN 3

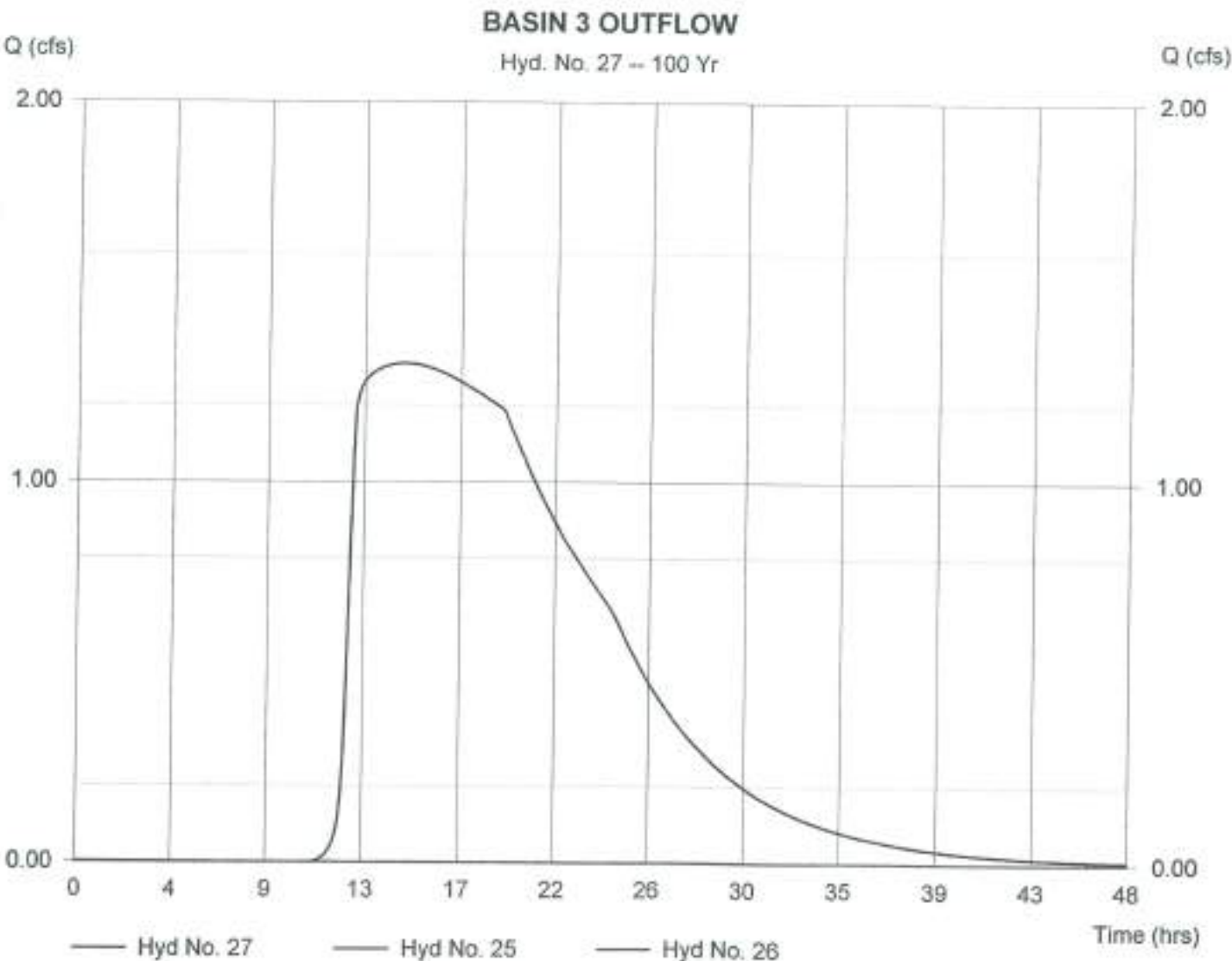
Peak discharge = 0.00 cfs

Time interval = 1 min

2nd diverted hyd. = 26

Pond structure = Exfiltration

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelsolve

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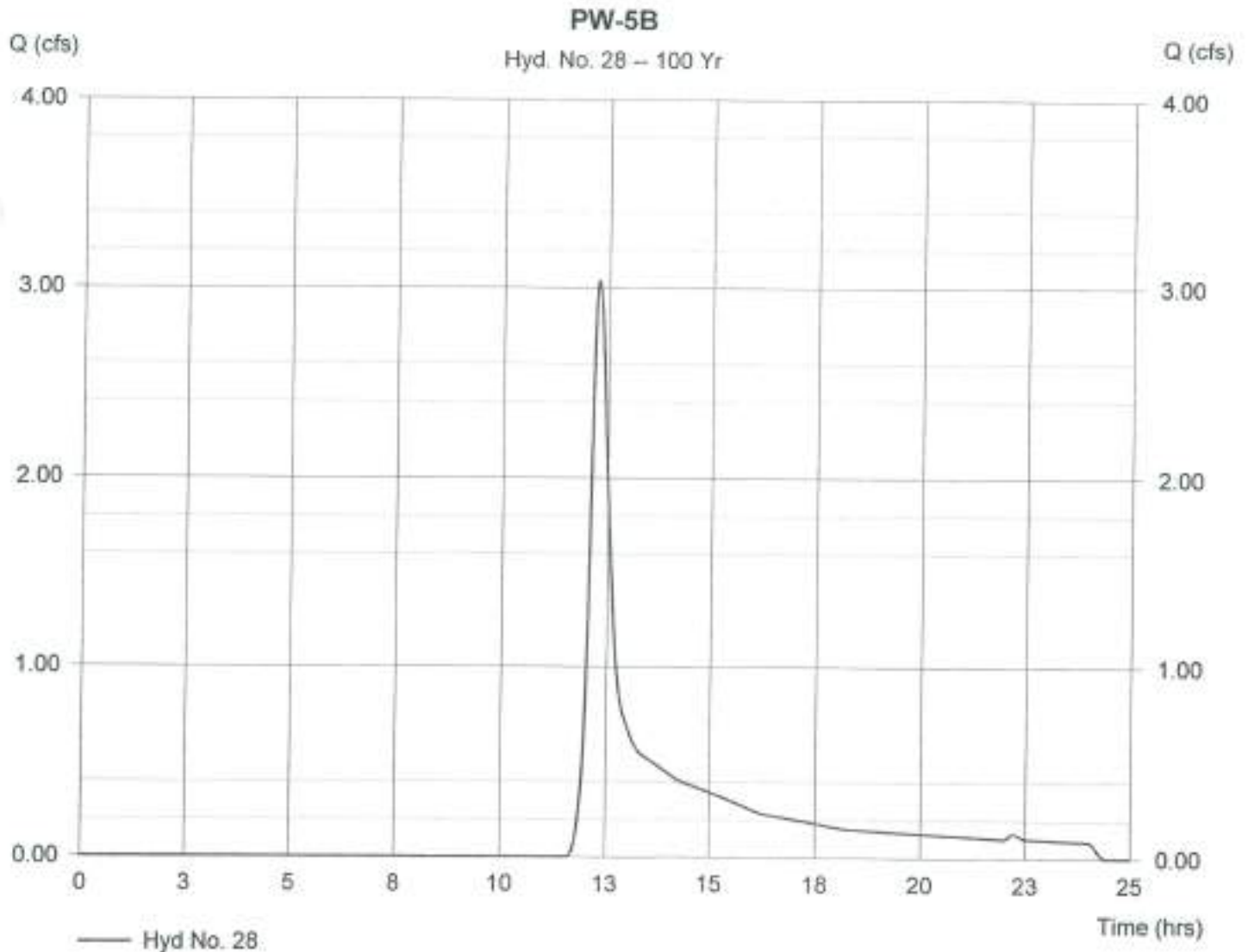
Hyd. No. 28

PW-5B

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 2.660 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 3.04 cfs
Time interval = 1 min
Curve number = 49
Hydraulic length = 0 ft
Time of conc. (Tc) = 18.20 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 15,067 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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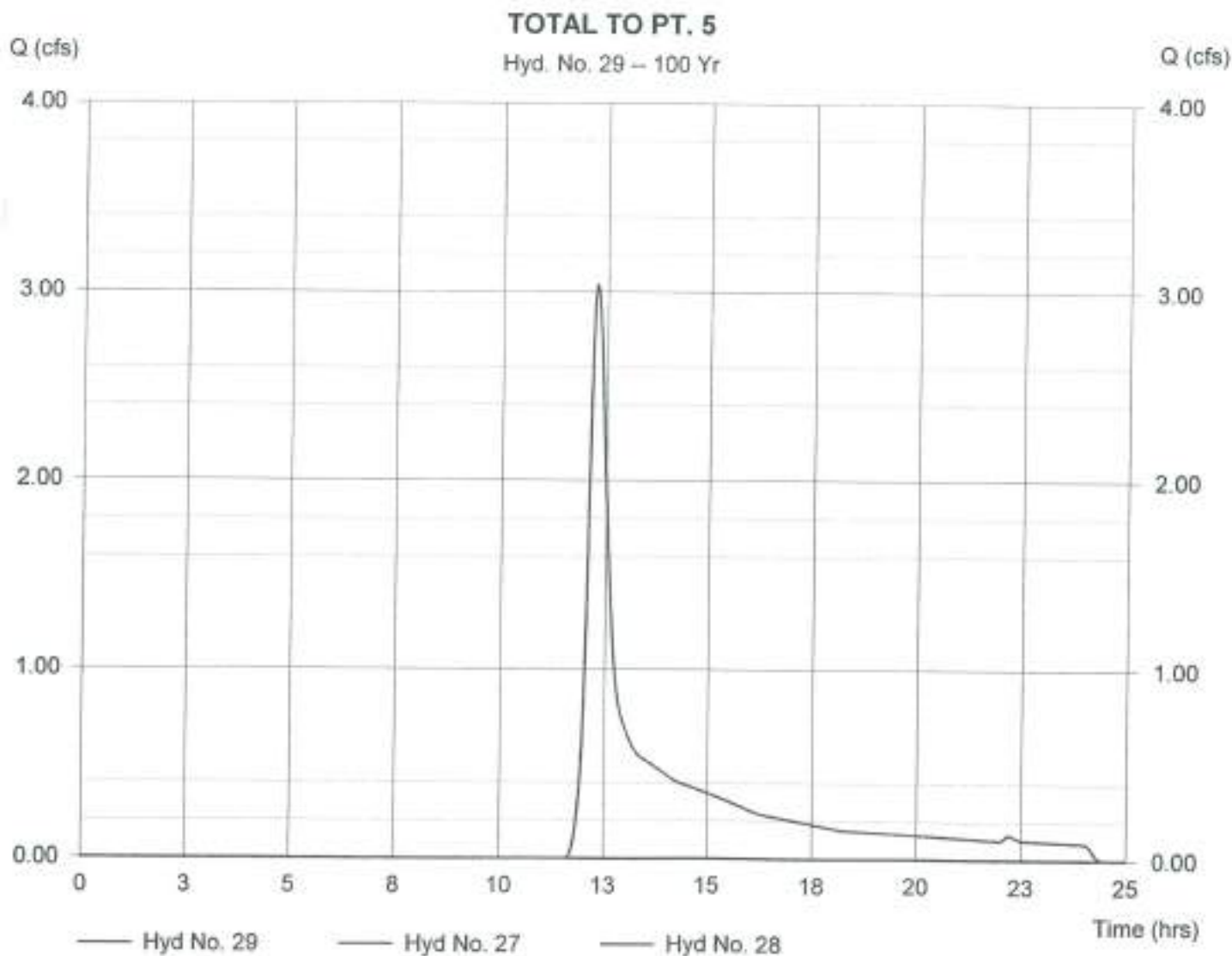
Hyd. No. 29

TOTAL TO PT. 5

Hydrograph type = Combine
Storm frequency = 100 yrs
Inflow hyds. = 27, 28

Peak discharge = 3.04 cfs
Time interval = 1 min

Hydrograph Volume = 15,087 cuft



Hydrograph Plot

Hydraflow Hydrographs by IntelliSolve

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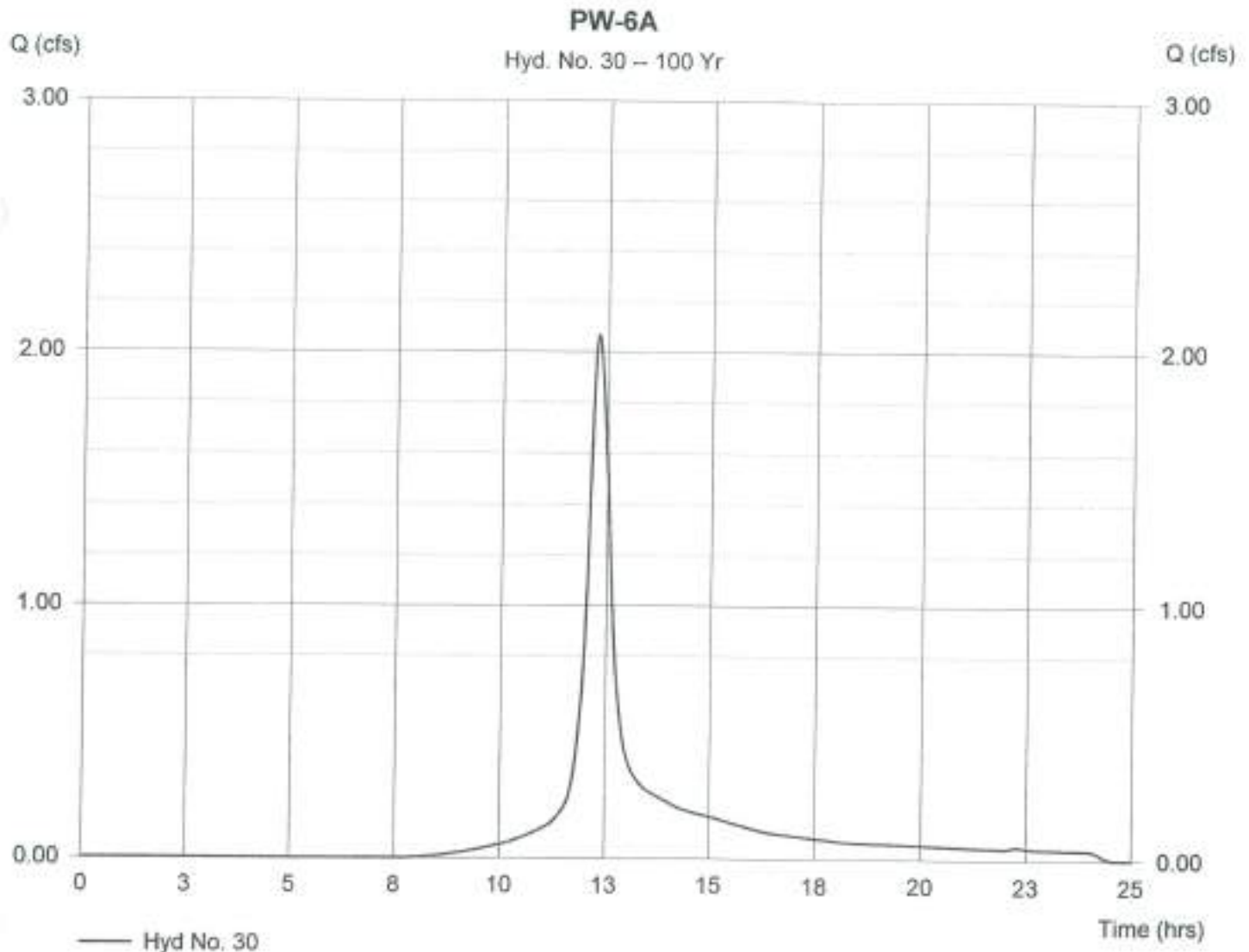
Hyd. No. 30

PW-6A

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 0.680 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 2.07 cfs
Time interval = 1 min
Curve number = 74
Hydraulic length = 0 ft
Time of conc. (Tc) = 24.70 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 9,977 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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Hyd. No. 31

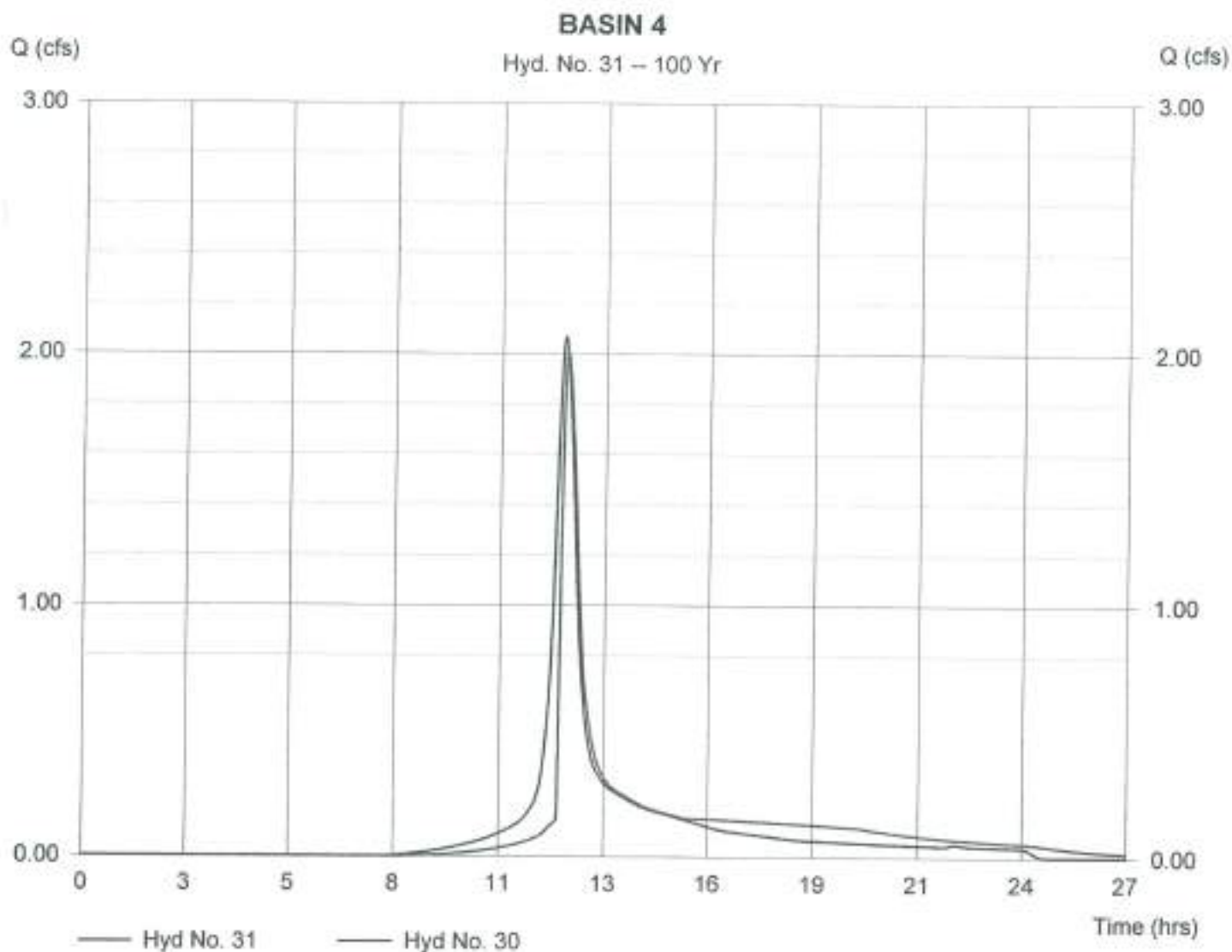
BASIN 4

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 30
Reservoir name = BASIN 4

Peak discharge = 2.00 cfs
Time interval = 1 min
Max. Elevation = 129.74 ft
Max. Storage = 2,050 cuft

Storage Indication method used:

Hydrograph Volume = 9,970 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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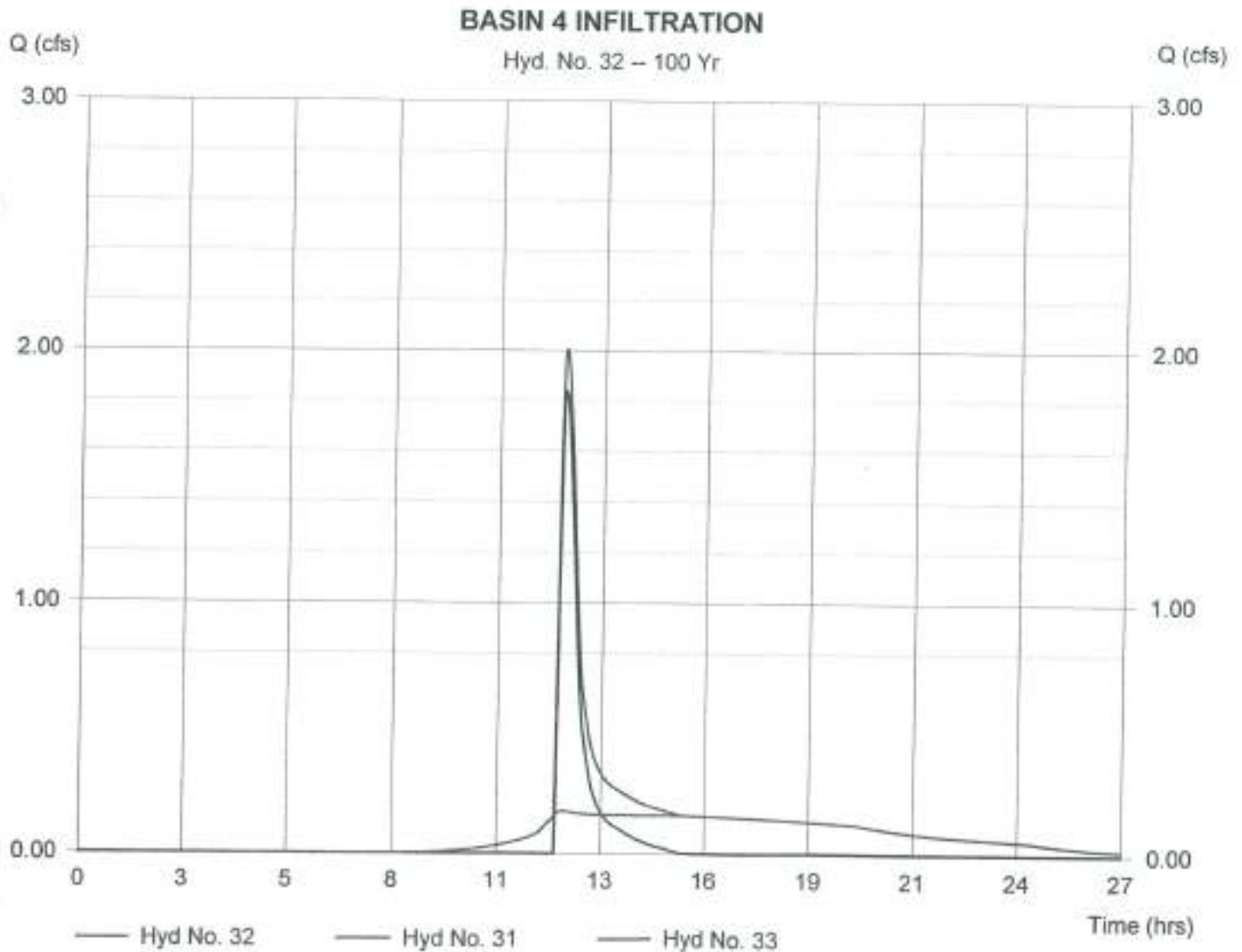
Hyd. No. 32

BASIN 4 INFILTRATION

Hydrograph type = Diversion1
Storm frequency = 100 yrs
Inflow hydrograph = 31
Diversion method = Pond - BASIN 4

Peak discharge = 0.17 cfs
Time interval = 1 min
2nd diverted hyd. = 33
Pond structure = Exfiltration

Hydrograph Volume = 6.037 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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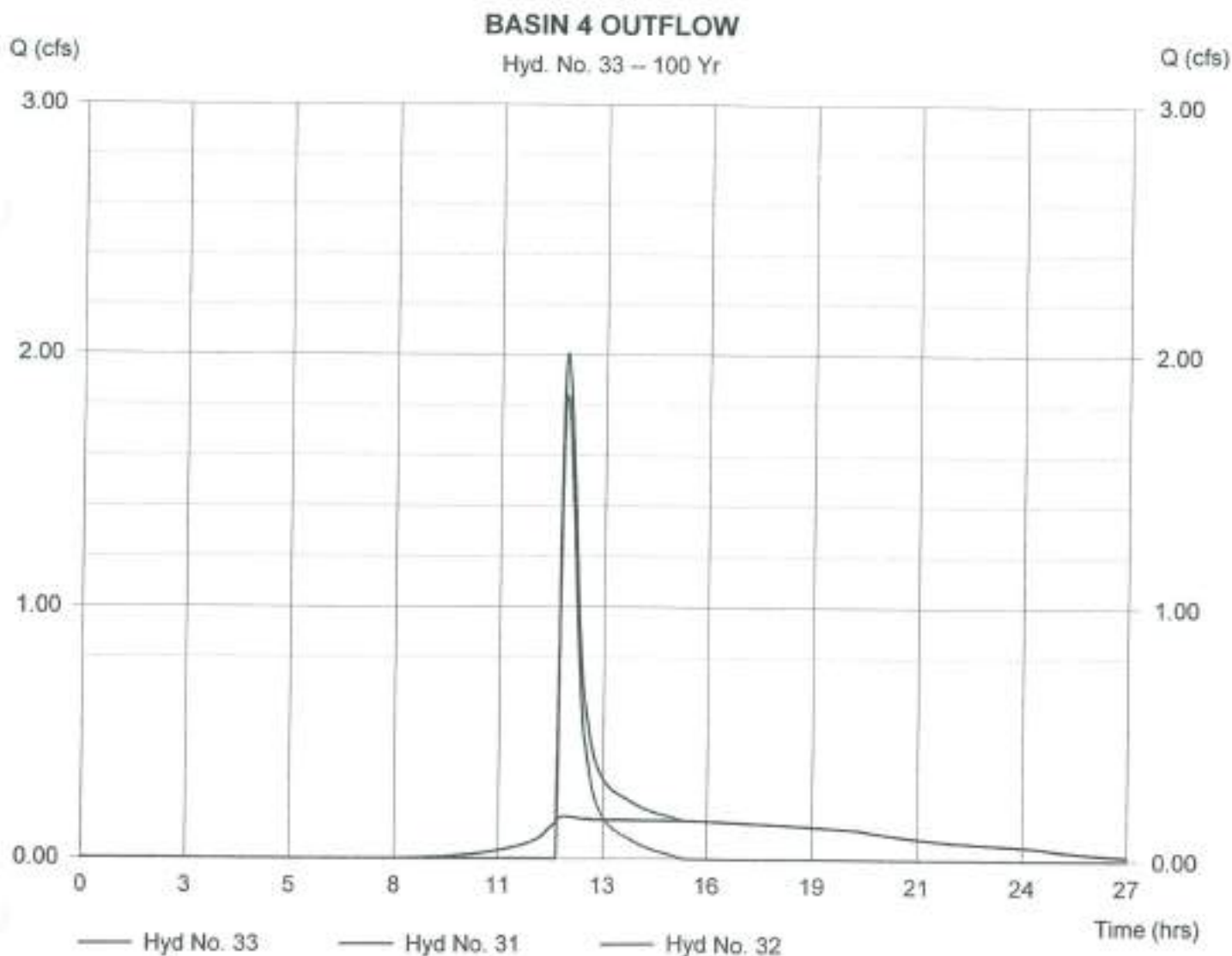
Hyd. No. 33

BASIN 4 OUTFLOW

Hydrograph type = Diversion2
Storm frequency = 100 yrs
Inflow hydrograph = 31
Diversion method = Pond - BASIN 4

Peak discharge = 1.84 cfs
Time interval = 1 min
2nd diverted hyd. = 32
Pond structure = Exfiltration

Hydrograph Volume = 3,933 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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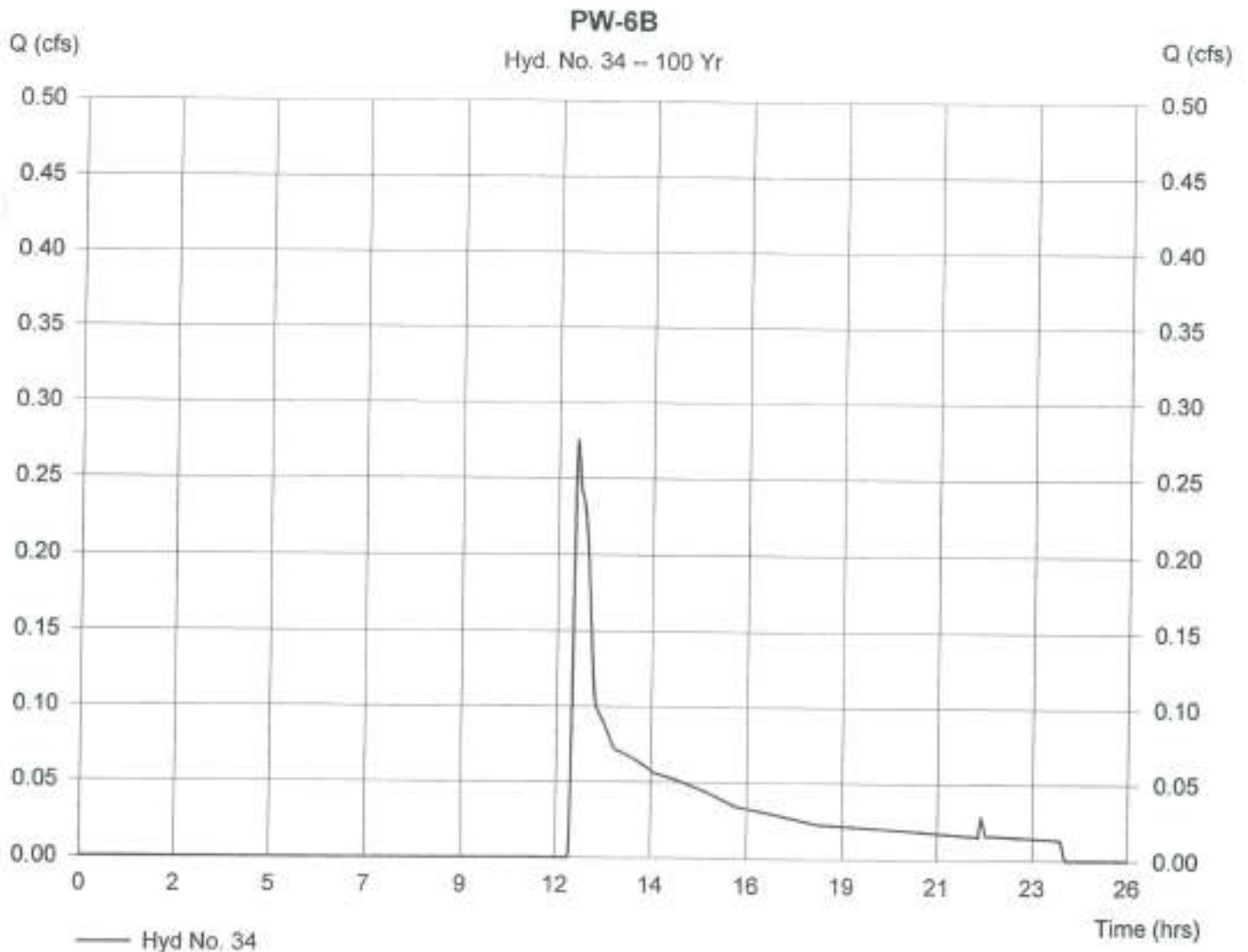
Hyd. No. 34

PW-6B

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 0.600 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.00 in
Storm duration = 24 hrs

Peak discharge = 0.28 cfs
Time interval = 1 min
Curve number = 39
Hydraulic length = 0 ft
Time of conc. (Tc) = 6.00 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 1,726 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

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Hyd. No. 35

TOTAL TO PT. 6

Hydrograph type = Combine

Storm frequency = 100 yrs

Inflow hyds. = 33, 34

Peak discharge = 2.06 cfs

Time interval = 1 min

Hydrograph Volume = 5,659 cuft

