STORMWATER FACILITIES MANAGEMENT

REPORT FOR

CVS/pharmacy®

Store # 10075

NEC Central and Oliver

Wichita, KS

Owner:

Missouri CVS Pharmacy, L.L.C.

A Limited Liability Company

Contact Person: Richard Smart

1165 North Clark Street

Chicago, IL 60610

Continuing Authority:

Missouri CVS Pharmacy, L.L.C.

A Missouri Limited Liability Company

Prepared By:

PREMIER CIVIL ENGINEERING

308 TCW Court

Lake St. Louis, MO 63367

City of Wichita/Sedgwick County
Subdivision Drainage Plan Checklist

Submit completed forms to
City of Wichita Public Works & Utilities, 455 N. Main 8th Floor, Wichita KS 67202; or
Sedgwick County Stormwater Management, 1144 S. Seneca, Wichita KS 67213

Project Name:	CVS PHARMACY - CENTRAL & OLIVER				
Total Area of Project:	1.9 acres				
Development Type:	Commercial	Other:			
Developer Name:	VELMEIR COMPANIES	Contact:	JIM COLLIER	Phone.	248-794-9768
Email:	jcollier@velmeir.com				
Engineer Name:	PREMIER CIVIL ENGINEERING	Contact:	MATT FOGARTY	Phone:	314-925-7452
Email.	mfogarty@pcestl.com				

Directions.

(1) Fill-out this checklist completely and include it with the Drainage Plan submittal. This checklist should be included in the bound copy, behind the cover sheet for the submittal. Incomplete Drainage Plans and checklists will not be accepted.

*(2) Indicate whether a plan element is included or not included in the submittal by choosing "**Yes**" or "**No**" from the dropdown list in the "**Element Included?**" column. The question must be answered for every plan element for this checklist to be considered complete. An explanation must be provided for all "**No**" answers.*

Drainage Plan Checklist

#	Plan Element Description	Element Included?	Explanation/Notes
1.0	**General**		
1.1	Digital copy of drainage plan, including preliminary Master Grading Plan, preliminary plat and proposed plat, in PDF format and one half size, bound, paper copy.	Yes	
1.2	Professional Engineer's seal, signature and date on plan cover.	Yes	
1.3	Site location map, using color ortho-imagery and showing the project boundaries, a north arrow and an accurate scale.	Yes	
1.4	Narrative of the development type, existing conditions and proposed impacts on stormwater runoff, wetlands, riparian zones and floodplains/floodways.	Yes	
1.5	Discussion of off-site conditions surrounding the proposed development.	Yes	
1.6	Summary table of runoff calculations (pre/post development).	Yes	
1.7	Narrative description of the type and function of the permanent structural stormwater management facilities.	Yes	
2.0	**Existing Conditions Information**		
2.1	**Existing Conditions Drainage Map**		
2.1.1	On-site and off-site topography: NAVD 88 datum, one-foot contours with spot elevations.	Yes	SHOWN ON PLAN
2.1.2	On-site and off-site drainage features, including perennial and intermittent streams (with names labeled), conveyance systems such as open channels, ditches, swales and areas of overland flow. Flow direction must be indicated by arrows.	Yes	SHOWN ON PLAN
2.1.3	Storm sewer system components, including storm drains, inlets, catch basins, gutters, manholes, headwalls, pipes and culverts. Material and size must be noted for all pipes and culverts.	Yes	SHOWN ON PLAN
2.1.4	Location and boundaries of natural features such as wetlands, lakes, ponds with the normal water elevation noted, rock outcroppings, wooded areas and tree rows.	Yes	SHOWN ON PLAN
2.1.5	Location, dimensions and elevations of existing bridges and culvert crossings.	Yes	SHOWN ON PLAN
2.1.6	Location of existing utilities (e.g., water, sewer, gas, electric, cable, etc.) with labels and easement boundaries.	Yes	SHOWN ON PLAN
2.1.7	Groundwater elevations, if applicable.	Yes	SHOWN ON PLAN
2.1.8	Delineation of predominant soil based on USDA soil surveys and/or on-site soil borings, indicate NRCS soil name and Hydrologic Soil Group for undisturbed surface soils.	Yes	SHOWN ON PLAN
2.1.9	Land use types per NRCS nomenclature.	Yes	SHOWN ON PLAN
2.1.10	Footprint of existing impervious areas (labeled, area given in acres).	Yes	SHOWN ON PLAN
2.1.11	Internal drainage subbasin boundaries used for hydrologic calculations (labeled with ID, total area in acres, impervious area in acres and curve number).	Yes	
2.1.12	Time of concentration flow paths. Indicate and label each segment separately (i.e., overland flow, shallow concentrated, channel1, channel2, etc.). For each segment, provide the appropriate data to calculate Tc (e.g., length, slope, cover type, paved/unpaved, roughness parameters, geometric properties, etc.).	Yes	SHOWN ON PLAN

Drainage Plan Checklist			
#	Plan Element Description	Element Included?	Explanation/Notes
2.2	**Existing Conditions Hydrology and Hydraulics Analysis**		
2.2.1	Narrative of the hydrologic analysis methodology used (e.g., unit hydrograph or other approved methods).	Yes	SEE COORESPONDING SECTION IN REPORT
2.2.2	A summary table of drainage subbasin hydrologic parameters (subbasin ID, area in acres, curve number, Tc, etc.)	Yes	
2.2.3	Table of existing condition runoff curve numbers with supporting data and calculations.	Yes	SEE COORESPONDING SECTION IN REPORT
2.2.4	Table of existing condition times of concentration with supporting data and calculations.	Yes	SEE COORESPONDING SECTION IN REPORT
2.2.5	A summary table of rainfall data used in the hydrologic analysis, and a reference for the source of the data.	Yes	SEE COORESPONDING SECTION IN REPORT
2.2.6	Cross-sections and other diagrams of existing open channels, bridge and culvert sections and other hydraulic features as required to illustrate the basis for hydraulic analysis	No	Not applicable to this report
2.2.7	Hydrologic and hydraulic analyses for runoff rates, volumes, velocities and elevations. Provide supporting data not specified above and identify assumptions. Include detailed calculations for the 2, 5, 10, 25 & 100-year, 24-hour storm events. Provide results in a tabular form. Provide digital copies of any computer files and models used	Yes	SEE COORESPONDING SECTION IN REPORT
3.0	**postdevelopment Conditions Information**		
3.1	**postdevelopment Conditions Drainage Map**		
3.1.1	Proposed project boundary	Yes	SHOWN ON PLAN
3.1.2	on-site and off-site topography: NAVD 88 datum, one-foot contours with spot elevations.	Yes	SHOWN ON PLAN
3.1.3	Existing on-site and off-site drainage features that are to remain after development, including perennial and intermittent streams (with names labeled), conveyance systems such as open channels, ditches, swales and areas of overland flow. Flow direction must be indicated by arrows	Yes	SHOWN ON PLAN
3.1.4	Location and description of off-site through-drainage conveyances which are confined to an easement, dedication and/or reserve	Yes	SHOWN ON PLAN
3.1.5	Footprint of proposed impervious areas, including roads, parking lots, buildings and other structures.	Yes	SHOWN ON PLAN
3.1.6	Location of proposed utilities (e.g., water, sewer, gas, electric, cable, etc.) with labels and easement boundaries.	Yes	SHOWN ON PLAN
3.1.7	Delineation of predominant soils, based on anticipated soil textures and NRCS guidelines if different from predevelopment soil conditions; indicate NRCS soil name and Hydrologic Soil Group for surface soils.	Yes	SHOWN ON PLAN
3.1.8	Land use cover per NRCS nomenclature	Yes	SHOWN ON PLAN
3.1.9	Internal drainage subbasin boundaries used for hydrologic calculations (labeled with ID, total area in acres, impervious area in acres and curve number)	Yes	SHOWN ON PLAN
3.1.10	Proposed limits of land disturbing activity (i.e., grading limits)	Yes	SHOWN ON PLAN
3.1.11	Time of concentration flow paths. Indicate and label each segment separately (i.e., overland flow, shallow concentrated, channel1, channel2, etc.). For each segment, provide the appropriate data to calculate Tc (e.g., length, slope, cover type, paved/unpaved, roughness parameters, geometric properties, etc.).	Yes	SHOWN ON PLAN
3.2	**Proposed Conveyances Map**		
3.2.1	on-site and off-site drainage features, including perennial and intermittent streams (with names labeled), proposed conveyance systems (such as open channels, ditches, swales and areas of overland flow, including backyard drainage) Flow direction must be indicated by arrows	Yes	SEE POSTDEVELOPMENT CONDITIONS DRAINAGE MAP
3.2.2	Storm sewer system components, including storm drains, inlets, catchbasins, gutters, manholes, headwalls, pipes and culverts. Material and size must be noted for all pipes and culverts.	Yes	SHOWN ON PLAN
3.2.3	For any subbasin or drainage area > 40 acres, show that the stormwater flow is confined to an open channel with required side benches and freeboard, or conformance to applicable policy and design requirements if partially enclosed.	Yes	SHOWN ON PLAN
3.2.4	Location(s) of stormwater management facilities and any associated drainage easements	Yes	
3.2.5	Proposed energy dissipaters and other channel protection devices.	Yes	SHOWN ON PLAN
3.2.6	Location(s) and dimension(s) of proposed channel, bridge and culvert crossings.	Yes	SHOWN ON PLAN
3.2.7	Normal pool and 100-year pool elevations for ponds and lakes.	Yes	
3.2.8	Permanent concrete outfall control structure(s) for ponds	Yes	SHOWN ON PLAN
3.2.9	Emergency overflow spillways and top of berm elevations for ponds and other volume/peak discharge control facilities	Yes	SHOWN ON PLAN
3.2.10	If floodplains, ponds, and stormwater management facilities located in reserves.	Yes	SHOWN ON PLAN
3.3	**postdevelopment Conditions Hydrology & Hydraulics**		

Drainage Plan Checklist			
#	Plan Element Description	Element Included?	Explanation/Notes
3.3.1	Narrative of the hydrologic analysis methodology used (e.g., unit hydrograph or other approved methods).	Yes	
3.3.2	A summary table of drainage subbasin hydrologic parameters (subbasin ID, area in acres, curve number, Tc, etc.).	Yes	
3.3.3	Table of postdevelopment condition runoff curve numbers with supporting data and calculations.	No	Does not apply to this project due to limited Green Area CN values based on 100% impervious This would enhance the conservative factor for the site detention.
3.3.4	Table of postdevelopment condition times of concentration with supporting data and calculations.	Yes	
3.3.5	Cross-sections and other diagrams of existing open channels, bridge and culvert sections and other hydraulic features as	No	Does not apply to this project
3.3.6	Hydrologic and hydraulic analyses for runoff rates, volumes, velocities and elevations. Provide supporting data not specified above and identify assumptions. Include detailed calculations for the 2, 5, 10, 25 & 100-year, 24-hour storm events. Provide results in a tabular form. Provide digital copies of any computer files and models used.	Yes	Hydroflow Report as part of Project Analysis
3.3.7	Downstream peak discharge assessment (10% Rule) results and supporting data and calculations Provide digital copies of any computer files and models used	No	10% rule does not apply for this project, total disturbed area is 2.19 acres
3.3.8	Stage-storage-discharge or other outlet rating curves and inflow/outflow hydrographs for all ponds.	Yes	
3.3.9	Demonstrate that the pond contours on the master grading plan and the stage-storage-discharge data are consistent for all ponds.	No	Does not apply for this project based on providing underground detention and porous pavement.
3.3.10	Demonstrate that all ponds have one foot of freeboard above the 100-year, 24-hour high water level	Yes	Underground Detention/Porous Pavement
3.3.11	Demonstrate that runoff from the proposed project site is discharged in the same manner as prior to development, using level spreaders, energy dissipaters, other devices or grading as required, or identify an appropriate flowage easement.	Yes	Refer to section 3.3.6, pursuant to conversations with Tim Davidson, Watershed area A has been reduced to remove runoff to residential area to the Southwest of the project.
3.4	**Stormwater Quantity Control Sizing**		
3.4.1	Hydraulic sizing calculations for all stormwater management controls.	Yes	
3.4.2	Table(s) listing all stormwater management controls. Present the types, sizes, elevations, flows, velocities and depths for each control, as applicable. Verify that velocities are self-cleaning and non-erosive.	Yes	
3.4.3	Typical details (including cross-sections where applicable) for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc.	Yes	Included details from Wichita Public Works for SB 303 and SB 108. Additional Details will be provided at the Construction Document Phase
3.5	**Stormwater Quality Management Facilities**		
3.5.1	Table(s) listing all stormwater management facilities. Present the description, % TSS removal value, water quality volume handled, contributing drainage area in acres and contributing impervious area in acres.	Yes	
3.5.2	Indicate the responsible party for maintenance, as shown in the plat text (i.e., Home Owners Association, Lot Owners Association, property owner, etc.)	Yes	
3.5.3	Water quality volume (total and by facility), with supporting data and calculations.	Yes	
3.5.4	% TSS removal value (total and by facility) with supporting data and calculation. Must be equal to or greater than 80%.	Yes	
3.5.5	Channel protection volume with supporting data and calculations.	Yes	
3.5.6	Water quality volume and channel protection volume orifice size calculations.	No	Water Quality being provided by flow. No channel protection is proposed.
3.5.7	Other calculations required for each stormwater management facility as specified in the Wichita/Sedgwick County Stormwater Manual.	No	This section is not applicable to this project.
3.5.8	Typical details (including cross-sections where applicable) for outlet structures, embankments, internal grading, forebays and other siltation prefilters, filtration/infiltration media, vegetation, check dams, operational controls, etc.	Yes	
4.0	**Floodplains**		
4.1	Reference the source of flood profile, floodplain, floodway and stream discharge information.	Yes	
4.2	Delineation of nearest base flood elevations.	Yes	
4.3	Delineation of predevelopment regulatory floodplain/floodway limits using FEMA's current GIS database; limits to be per elevation and scaled location.	Yes	
4.4	Delineation of postdevelopment regulatory floodplain/floodway limits; limits to be per elevation and scaled location, with project limits shown.	Yes	
4.5	Floodway data table and discharges	No	Project is not within floodway.
4.6	Hydrologic and hydraulic study information for local floodplain analysis, unnumbered Zone A elevation determinations and floodplain map revisions or required permits.	Yes	Floodplain Study submitted to Scott Lindeback previously
4.7	Regulatory floodway and four natural profile models (10, 50, 100 and 500-year) for existing and postdevelopment conditions	No	This section is not applicable to this project.
4.8	Floodplains and floodways located within a reserve, where necessary	No	This section is not applicable to this project

Drainage Plan Checklist			
#	Plan Element Description	Element Included?	Explanation/Notes
4.9	Floodplain cut and fill calculations for volume sensitive basins.	No	This section is not applicable to this project.
4.10	Demonstrate that floodway elevations and velocities do not increase due to construction in the floodway ("No Rise Certification").	No	This section is not applicable to this project.
5.0	**Federal, State and Local Permits**		
5.1	US Army Corps of Engineers regulatory program permits (Section 404 permit)	No	All permits will be obtained throughout the construction document review and approval process.
5.2	Kansas Department of Agriculture - Division of Water Resources Permits (Stream Obstruction, Channel Change, Floodplain Fill, Levee, Water Appropriations, Dam Safety permit, etc.).	No	
5.3	FEMA letters of map change/revision - LOMA, LOMR, LOMR-F, CLOMR, etc.; shall be included and approved when project modifies the limits of the floodplain/floodway.	No	All permits will be obtained throughout the construction document review and approval process
6.0	**Half Scale Preliminary Master Grading Plan**		
6.1	One set of plans and associated PDF of plans	Yes	
6.2	Professional Engineer's seal, signature and date	Yes	
6.3	Title block including subdivision name and phase and dated revision documentation.	Yes	
6.4	Future phases shown but cross-hatched as information only.	Yes	
6.5	Scale, not greater than 1-inch = 60 feet.	Yes	
6.6	North arrow.	Yes	
6.7	Index or legend key.	Yes	
6.8	Benchmarks (minimum of 2) used for site control (NAVD 88 vertical datum).	Yes	
6.9	Existing contours of entire site with contour interval of one foot.	Yes	
6.10	Proposed contours for channels, ponds, and other permanent stormwater management facilities, with contour interval of one foot.	Yes	
6.11	Spot elevations shown to the nearest tenth of a foot for critical locations, including lot and property boundaries.	Yes	
6.12	Proposed lot and street layout.	Yes	
6.13	Locations of underground storm drains.	Yes	
6.14	Overflow locations for storms exceeding storm drain capacity, with elevations.	Yes	
6.15	Top elevations of storm drains at all inlets, manholes, and flow line elevations for all outfalls.	Yes	
6.16	Locations of open ditches and lakes.	No	Not applicable to project
6.17	Flow direction arrows.	Yes	
6.18	Proposed flow line elevations of all open ditches at maximum 100 foot intervals, and 100-year flood elevations thereon.	No	Not applicable to project
6.19	Ponds: Location, bottom elevation, normal pool elevation, 100-year flood elevation, emergency overflow elevation.	No	
6.20	Proposed top-of-curb elevations at points where drainage will be required to flow over the curb.	No	No drainage over curb proposed for site
6.21	Platted minimum building opening elevation for each lot, in table form for all lots (excluding basement floor elevations)	Yes	
6.22	Standard foundation and elevation detail for slab on grade, full basement, view-out, partial view-out and/or walk-out construction.	No	
6.23	Top of foundation elevation for each lot.	Yes	
6.24	Notation for builders for each lot as to the type of structure that may be constructed and the view-out, walk-out or pad elevation, as applicable.	No	Does not apply to project
6.25	Indicate that all lots are above the 100-year flood elevation	Yes	
6.26	Indicate that grading around structures conforms to perimeter drainage requirements	Yes	
6.27	Indicate that backyard drainage grading conforms to backyard drainage requirements	No	Site is a commercial lot
6.28	Adjacent subdivision lot lines, with lot labels and subdivision names.	Yes	
6.29	Boundaries and labels for all easements, rights-of-way and reserves.	Yes	
6.30	Statement on proposed final plat: "*A drainage plan has been developed for the subdivision and all drainage easements, rights-of-way, or reserves shall remain at the established grades and remain unobstructed to allow for the conveyance of stormwater.*"	Yes	
End of Checklist			

PREMIER CIVIL ENGINEERING

May 25, 2012

Scott Lindeback P E.
City of Wichita
455 N. Main
Wichita, KS 67202

RE. CVS Store#10075-NEC Central and Oliver-Drainage Plan Submittal

Mr Lindeback,

Pursuant to the Subdivision Drainage Plan Checklist for the City of Wichita/Sedgwick County, please let this letter serve notice for the Project Narrative and Discussion of Off-site conditions that are required per the Drainage Plan Checklist. Located below this paragraph is a summary that has been placed into sections per the Drainage Plan Checklist.

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Section 1.3
Site Location Map

Site is located on the NEC Central and Oliver

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Section 1.4
Project Narrative

The Proposed CVS/Pharmacy will consist of a 13,225 sq. ft. building located on 1.39 acres. The disturbed area for the site will be approximately 1.93 acres. The site is currently undeveloped ground with an existing in-ground pool. The site is Soil Class "B" Urban land-Farnum, 0 to 3 percent slopes pursuant to the USDA soil survey.

Section 1.5
Offsite Conditions

A CVS Pharmacy is proposed at the Northeast corner of the intersection of East Central Avenue and North Oliver Street. Much of the tract of land located at the Northeast corner of East Central Avenue and North Oliver is shown on the Flood Insurance Rate Map Panel 359 of 700 for Sedgwick County Kansas in the Zone AE flood hazard area of the West Branch of Gypsum Creek with a base flood elevation of 1367. A consultant, AMEC, has been hired to complete a new study of the creek for the purpose of preparing new Flood Insurance Rate Maps for Sedgwick County. The AMEC study represents the newest and best information on the West Branch of Gypsum Creek. The City of Wichita ordinance requires that the floor elevation of new buildings be set a minimum of two feet above the base flood elevation shown on the map or two feet above the newest and best information if a newer study is available The purpose of this study is to determine the effects of the proposed grading on the revised base flood elevation which is approximately three feet lower than the base flood elevation shown on the map.
A copy of the SWMM hydrologic and hydraulic model for the West Branch Dry Creek of Gypsum Creek in Sedgwick County, KS was obtained from AMEC. This model included the triple box culvert under East Central Avenue (Culvert C5848-0068), the double box culvert under East Ninth Street (Culvert C5848-0112) and an open channel between the culverts. A single cross section defines the channel from Culvert C5848-0068 upstream to East Murdoch Street. To more accurately model the effects of the proposed CVS pharmacy located on the Northeast corner of the intersection of East Central Avenue and North Oliver Street, two cross sections were added to the AMEC model at the location of the upstream and downstream ends of the proposed building. These cross sections show existing topography. The Lidar topographic data obtained from the City of Wichita was used to cut the cross sections in the existing conditions model. Both cross sections were modified to reflect the proposed grading and building in the proposed conditions model. The rest of the AMEC model was left unchanged. A 100-year storm was run through each of the three models to determine the effect of adding the two cross sections and modifying the cross sections to reflect the proposed construction.

Section 1.6
Summary Table of Runoff Calculations (pre/post development)

	DESIGN STORM FLOWS (cfs)						
	1 YR	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
PRE DEVELOPED	11.08	13.92	17.96	20.79	24.42	27.64	31.26
POST DEVELOPED	7.975	10.02	12.93	14.96	17.57	19.89	22.50

Section 1.7
Description, Type and Function of Stormwater Management Facilities

The proposed impacts on stormwater runoff will be designed to be minimal per the Wichita Stormwater Manual. This site will consist of three separate watersheds. All three

watersheds will be impacted, however the watershed that is served by the residential properties to the Northeast will be reduced

The second and third watershed will drain to inlets located on the CVS Site and will connect to the existing storm sewers located on Central and Oliver. The watershed to Oliver will contain a Vortsentry HS unit. The Vortsentry HS will allow the collection of 80% of TSS. Pursuant to the Stormwater manual, this site is a redevelopment and 30% of the site must be treated.

Section 2.2.1
Narrative of Hydrologic analysis methodology used

The runoff method used for modeling the site was based on the 24 Hour SCS Hydrograph Method in Hydraflow Hydrographs Due to the limited Time of Concentration, User Input was needed vs. the TR-55 method to determine the peak Q at one minute intervals

Section 2.2.2
Summary Table of Drainage Sub basin Hydrologic Parameters

	AREA 1	AREA 2	AREA 3	AREA 4	AREA 5	AREA 6	AREA 7	AREA 8
AREA IN ACRES	1.78	0.08	0.04	0.25	0.11	0.09	0.16	.13
COEFFICIENT	.011	.011	.011	.011	.011	.011	.011	.011
CURVE NUMBER	98	98	98	98	98	98	98	98
TIME OF CONCENTRATION	3	2*	2*	2*	2*	2*	2*	2*

*** Areas are user defined inputs due to Q less than the time of concentration 1 minute interval. ***

Section 2.2.3
Table of Existing Condition Runoff Curve Numbers

Located in Section 2.2.2

Section 2.2.4
Table of Existing Conditions Time of Concentration

Located in Section 2.2.2

Section 2.2.5
Table of Rainfall data used in the Hydrologic Analysis

Located in Hydrographs Section 2.2.7

Section 2.2.7
Hydrologic and Hydraulic analyses for runoff Rates, Volumes Velocities and Elevations.

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Section 3.3

Section 3.3.1

The hydrologic analysis methodology used is the SCS Hydrograph based on TR-55 using Autodesk Storm and Sanitary Sewer Analysis 2012.

Section 3.3.2.

Summary Table of Drainage Sub-Basin Hydrologic Parameters

	AREA A	AREA B	AREA C	AREA D	AREA E	AREA F	AREA G	AREA H	AREA I
AREA IN ACRES	0.12	0.37	0.12	0.35	0.08	0.25	0.25	0.19	.17
CURVE NUMBER	98	80	98	98	98	98	98	98	98
COEFFICIENT	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
TIME OF CONCENTRATION	2	2	2	2	2	2	2	2	2

Section 3.3.3
Does not apply for project. Due to limited Green Area CN values based on 100% impervious. This would enhance the conservative factor for the site detention.

Section 3.3.4
Table of Post Development Conditions Time of Concentration

See Section 3.3.2

Section 3.3.5
Section does not apply for this project.

Section 3.3.6
Hydrologic and Hydraulic Analyses for Runoff Rates, Volumes, Velocities and Elevations Provided at the Construction Document Phase

Section 3.3 7
10% Rule does not apply for project. Total disturbed area for site is 1.92Acres

Section 3.3 8
Stage-Storage-Discharge or other Outlet Rating Curves and Inflow/Outflow hydrographs for all ponds.
No detention is provided for this site.

Section 3.3.9
Section does not apply to project.

Section 3.3.10

Refer to Section 3.3 6

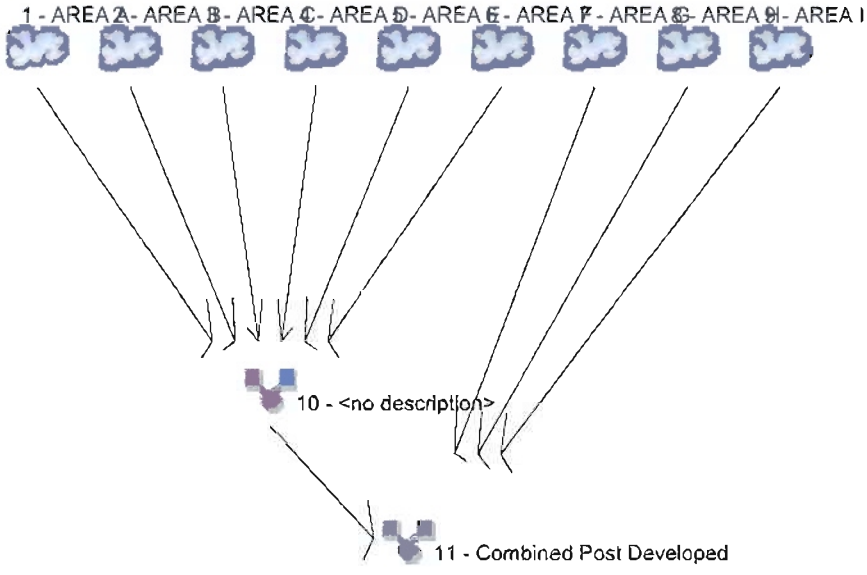
Section 3.3.11

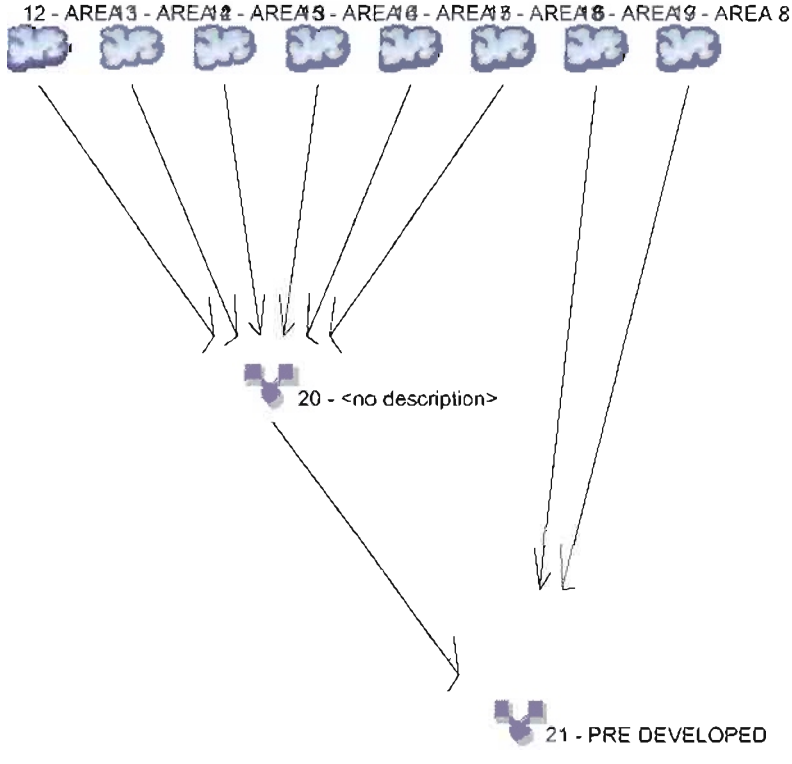
Does not apply to this project.

Section 3.4
Stormwater Quantity Control Sizing
Hydraulic Sizing calculations for all Stormwater Management controls.
Will be provided at the construction drawing phase.

Section 3.4 2 Table listing all stormwater Management Controls.

Watershed Model Schematic





Legend

Hyd.	Origin	Description
1	SCS Runoff	AREA A
2	SCS Runoff	AREA B
3	SCS Runoff	AREA C
4	SCS Runoff	AREA D
5	SCS Runoff	AREA E
6	SCS Runoff	AREA F
7	SCS Runoff	AREA G
8	SCS Runoff	AREA H
9	SCS Runoff	AREA I
10	Combine	<no description>
11	Combine	Combined Post Developed
12	SCS Runoff	AREA 1
13	SCS Runoff	AREA 2
14	SCS Runoff	AREA 3
15	SCS Runoff	AREA 4
16	SCS Runoff	AREA 5
17	SCS Runoff	AREA 6
18	SCS Runoff	AREA 7
19	SCS Runoff	AREA 8
20	Combine	<no description>
21	Combine	PRE DEVELOPED

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)							Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	----	0.504	0.633	----	0.817	0.945	1.110	1.256	1.421	AREA A
2	SCS Runoff	----	1.553	1.951	----	2.518	2.913	3.422	3.873	4.381	AREA B
3	SCS Runoff	----	0.504	0.633	----	0.817	0.945	1.110	1.256	1.421	AREA C
4	SCS Runoff	----	1.469	1.846	----	2.381	2.756	3.237	3.664	4.144	AREA D
5	SCS Runoff	----	0.336	0.422	----	0.544	0.630	0.740	0.837	0.947	AREA E
6	SCS Runoff	----	1.049	1.318	----	1.701	1.969	2.312	2.617	2.960	AREA F
7	SCS Runoff	----	1.049	1.318	----	1.701	1.969	2.312	2.617	2.960	AREA G
8	SCS Runoff	----	0.798	1.002	----	1.293	1.496	1.757	1.989	2.250	AREA H
9	SCS Runoff	----	0.714	0.896	----	1.157	1.339	1.572	1.780	2.013	AREA I
10	Combine	1, 2, 3, 4, 5, 6,	5.415	6.802	----	8.777	10.16	11.93	13.50	15.27	<no description>
11	Combine	7, 8, 9, 10	7.975	10.02	----	12.93	14.96	17.57	19.89	22.50	Combined Post Developed
12	SCS Runoff	----	7.472	9.386	----	12.11	14.02	16.46	18.63	21.08	AREA 1
13	SCS Runoff	----	0.336	0.422	----	0.544	0.630	0.740	0.837	0.947	AREA 2
14	SCS Runoff	----	0.168	0.211	----	0.272	0.315	0.370	0.419	0.474	AREA 3
15	SCS Runoff	----	1.049	1.318	----	1.701	1.969	2.312	2.617	2.960	AREA 4
16	SCS Runoff	----	0.462	0.580	----	0.748	0.866	1.017	1.152	1.302	AREA 5
17	SCS Runoff	----	0.378	0.475	----	0.612	0.709	0.832	0.942	1.066	AREA 6
18	SCS Runoff	----	0.672	0.844	----	1.089	1.260	1.480	1.675	1.895	AREA 7
19	SCS Runoff	----	0.546	0.685	----	0.885	1.024	1.202	1.361	1.539	AREA 8
20	Combine	12, 13, 14, 15, 16, 17,	9.864	12.39	----	15.99	18.50	21.73	24.60	27.83	<no description>
21	Combine	18, 19, 20	11.08	13.92	----	17.96	20.79	24.42	27.64	31.26	PRE DEVELOPED

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc. v9

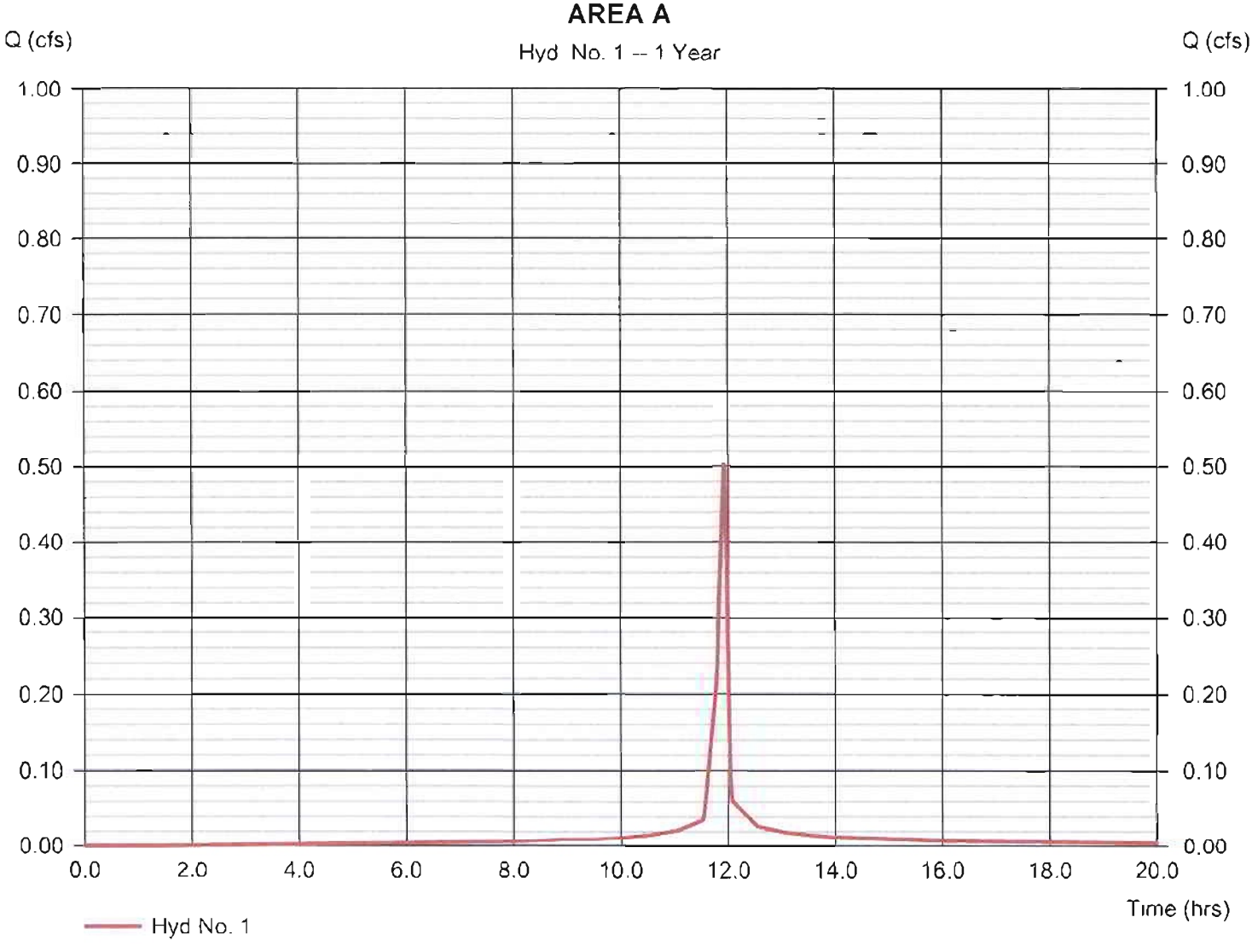
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph Description
1	SCS Runoff	0.504	1	715	0.024	----	----	----	AREA A
2	SCS Runoff	1.553	1	715	0.074	----	----	----	AREA B
3	SCS Runoff	0.504	1	715	0.024	----	----	----	AREA C
4	SCS Runoff	1.469	1	715	0.070	----	----	----	AREA D
5	SCS Runoff	0.336	1	715	0.016	----	----	----	AREA E
6	SCS Runoff	1.049	1	715	0.050	----	----	----	AREA F
7	SCS Runoff	1.049	1	715	0.050	----	----	----	AREA G
8	SCS Runoff	0.798	1	715	0.038	----	----	----	AREA H
9	SCS Runoff	0.714	1	715	0.034	----	----	----	AREA I
10	Combine	5.415	1	715	0.259	1, 2, 3, 4, 5, 6,	----	----	<no description>
11	Combine	7.975	1	715	0.381	7, 8, 9, 10	----	----	Combined Post Developed
12	SCS Runoff	7.472	1	715	0.357	----	----	----	AREA 1
13	SCS Runoff	0.336	1	715	0.016	----	----	----	AREA 2
14	SCS Runoff	0.168	1	715	0.008	----	----	----	AREA 3
15	SCS Runoff	1.049	1	715	0.050	----	----	----	AREA 4
16	SCS Runoff	0.462	1	715	0.022	----	----	----	AREA 5
17	SCS Runoff	0.378	1	715	0.018	----	----	----	AREA 6
18	SCS Runoff	0.672	1	715	0.032	----	----	----	AREA 7
19	SCS Runoff	0.546	1	715	0.026	----	----	----	AREA 8
20	Combine	9.864	1	715	0.472	12, 13, 14, 15, 16, 17,	----	----	<no description>
21	Combine	11.08	1	715	0.530	18, 19, 20	----	----	PRE DEVELOPED

Hydrograph Report

Hyd. No. 1

AREA A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.504 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.024 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

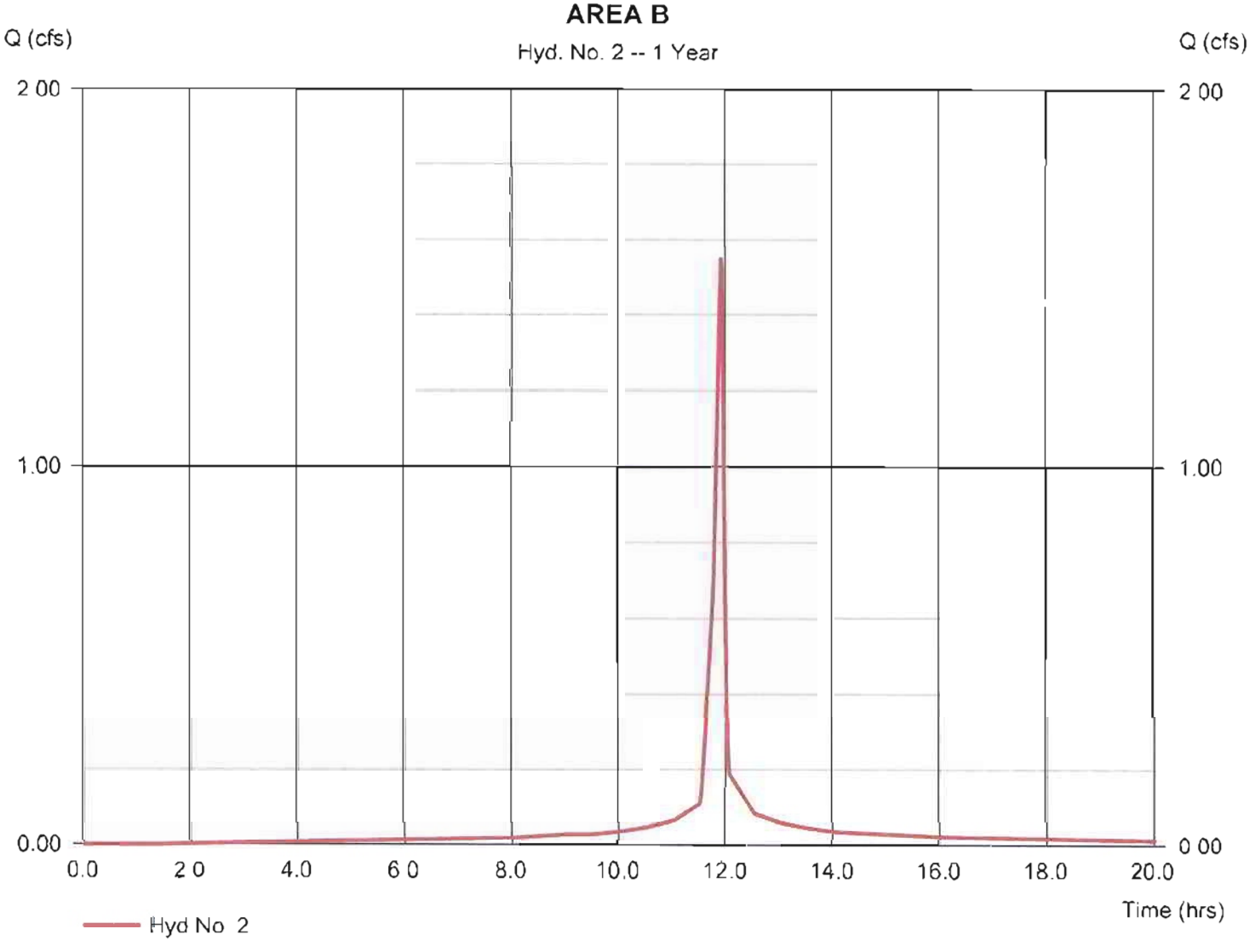


Hydrograph Report

Hyd. No. 2

AREA B

Hydrograph type	= SCS Runoff	Peak discharge	= 1.553 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.074 acft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

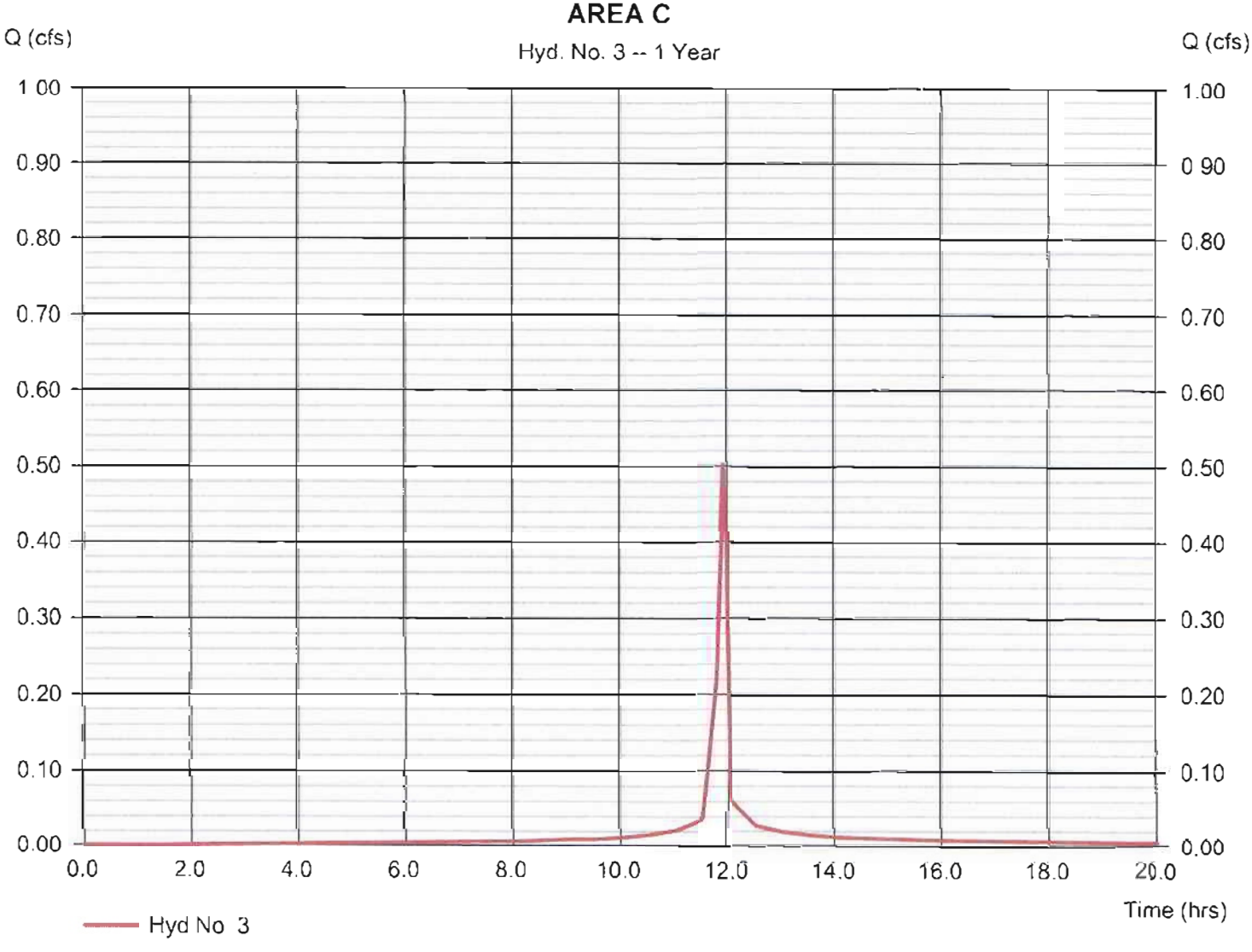


Hydrograph Report

Hyd. No. 3

AREA C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.504 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.024 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

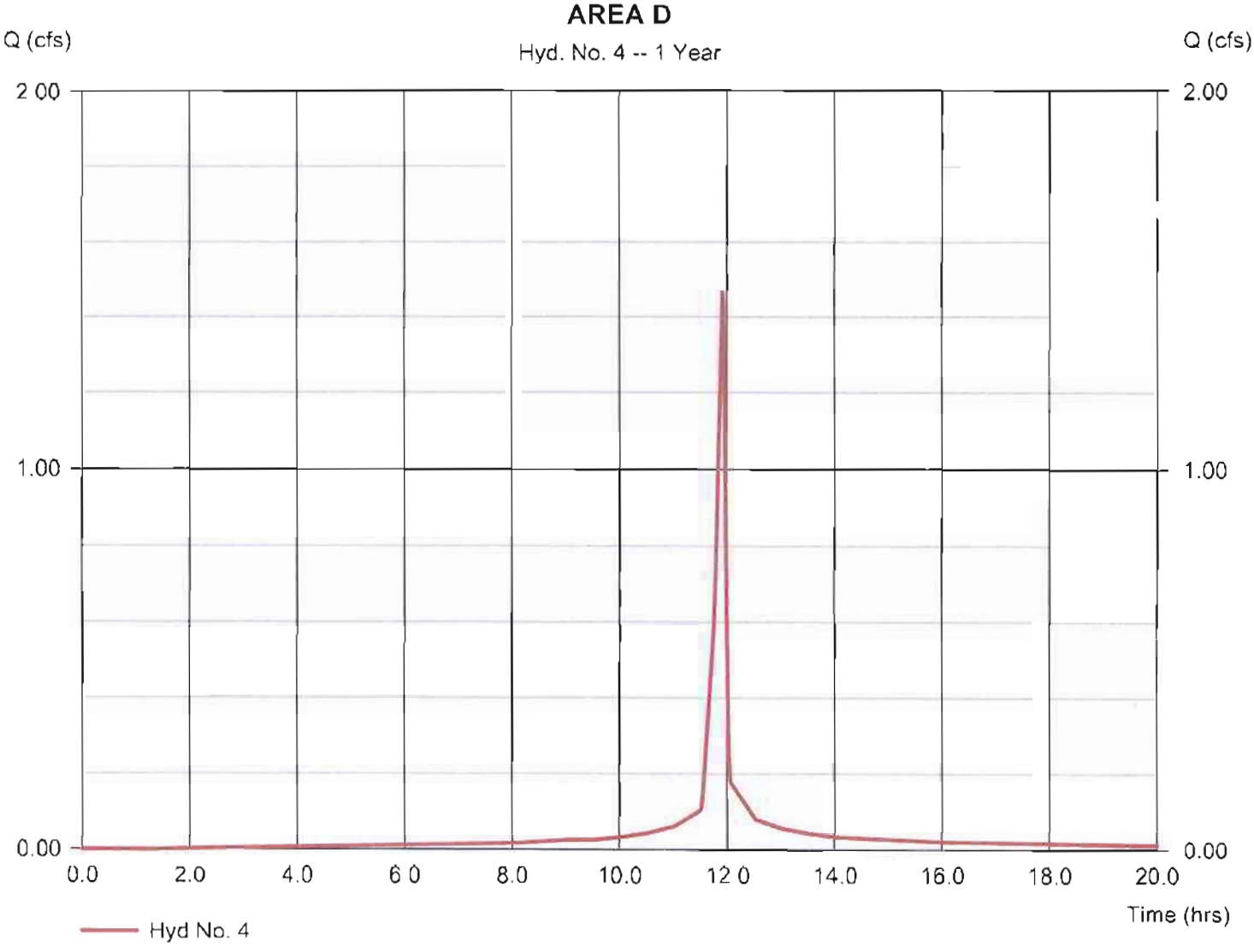


Hydrograph Report

Hyd. No. 4

AREA D

Hydrograph type	= SCS Runoff	Peak discharge	= 1.469 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.070 acft
Drainage area	= 0.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 1.70 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

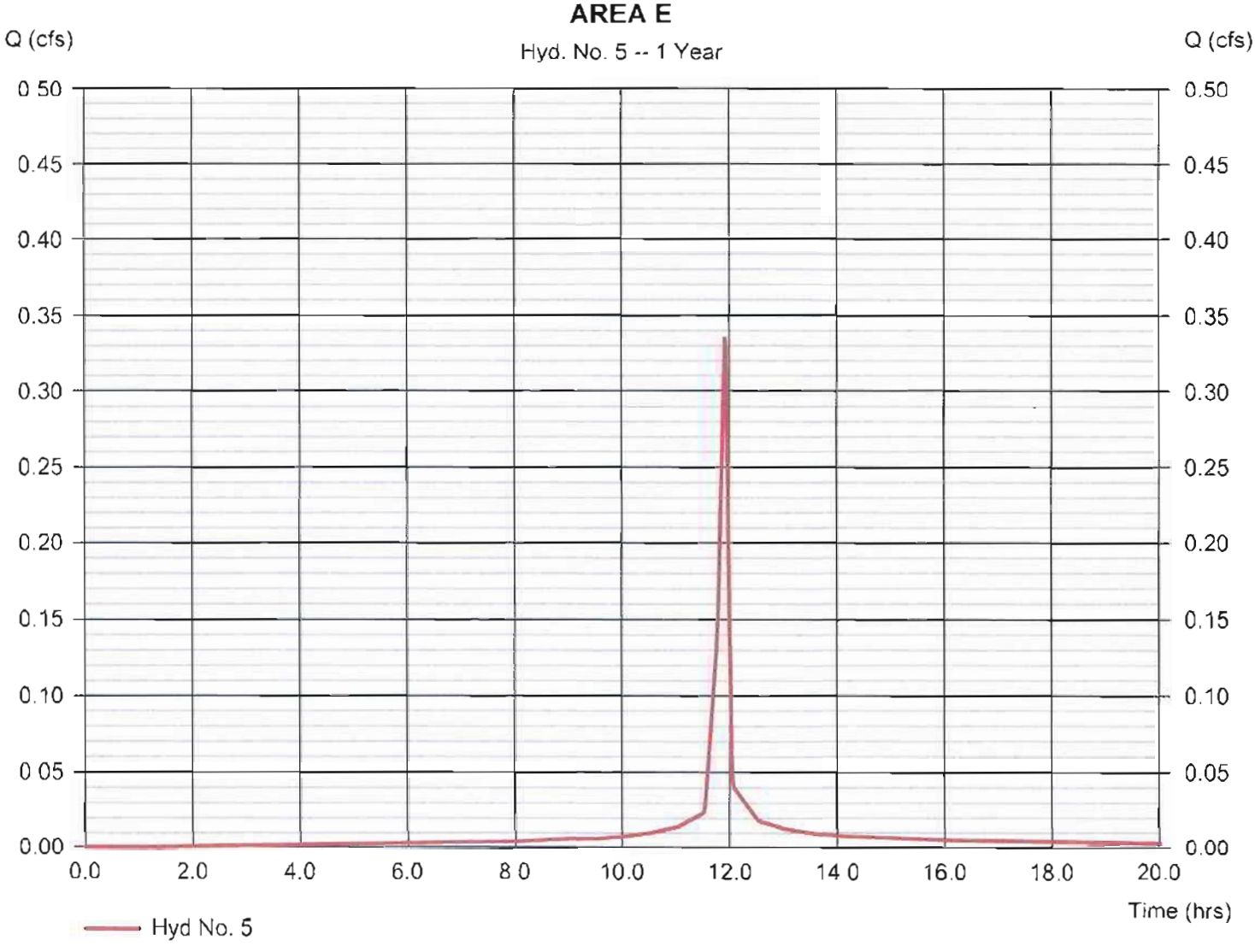


Hydrograph Report

Hyd. No. 5

AREA E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.336 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.016 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

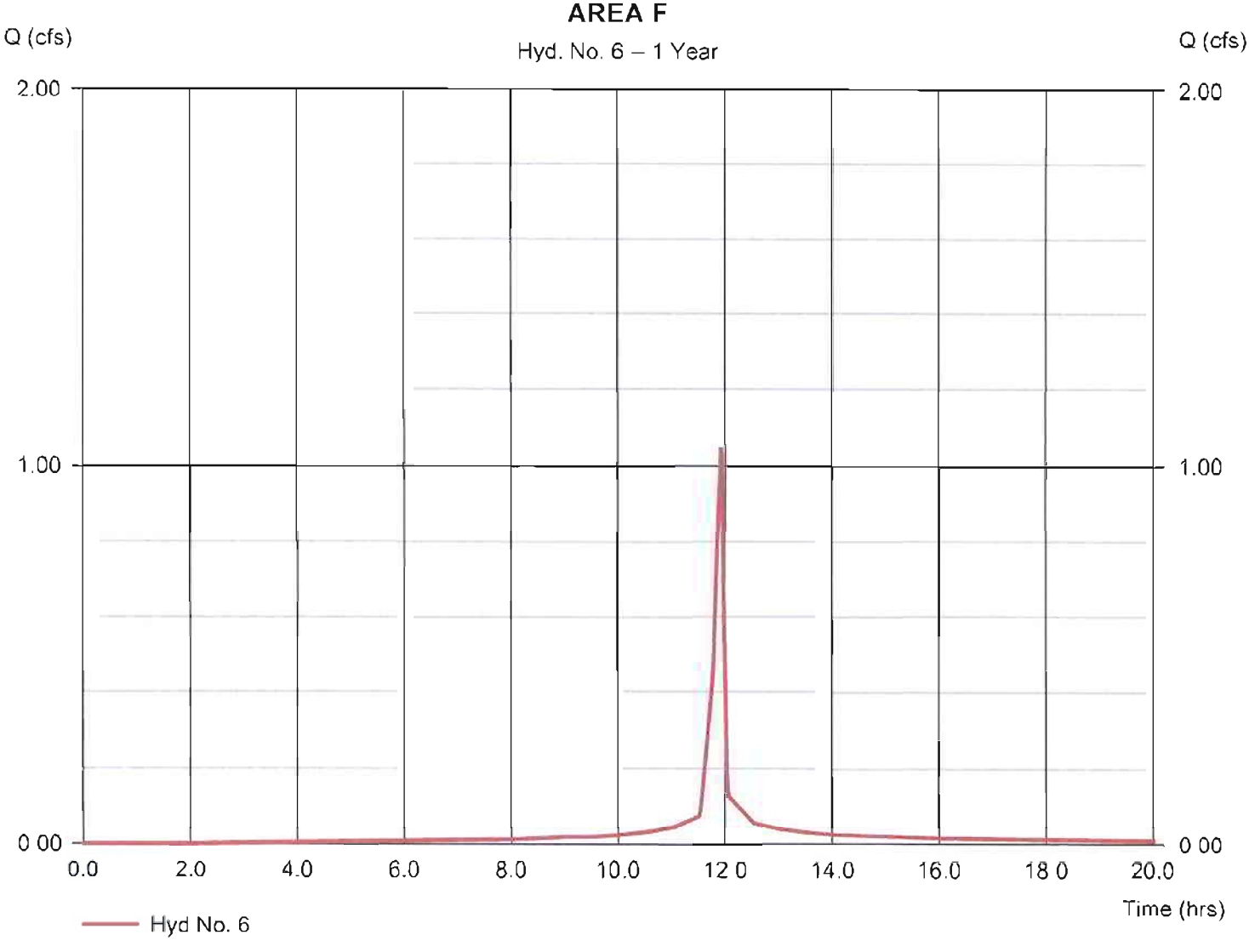


Hydrograph Report

Hyd. No. 6

AREA F

Hydrograph type	= SCS Runoff	Peak discharge	= 1.049 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.050 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

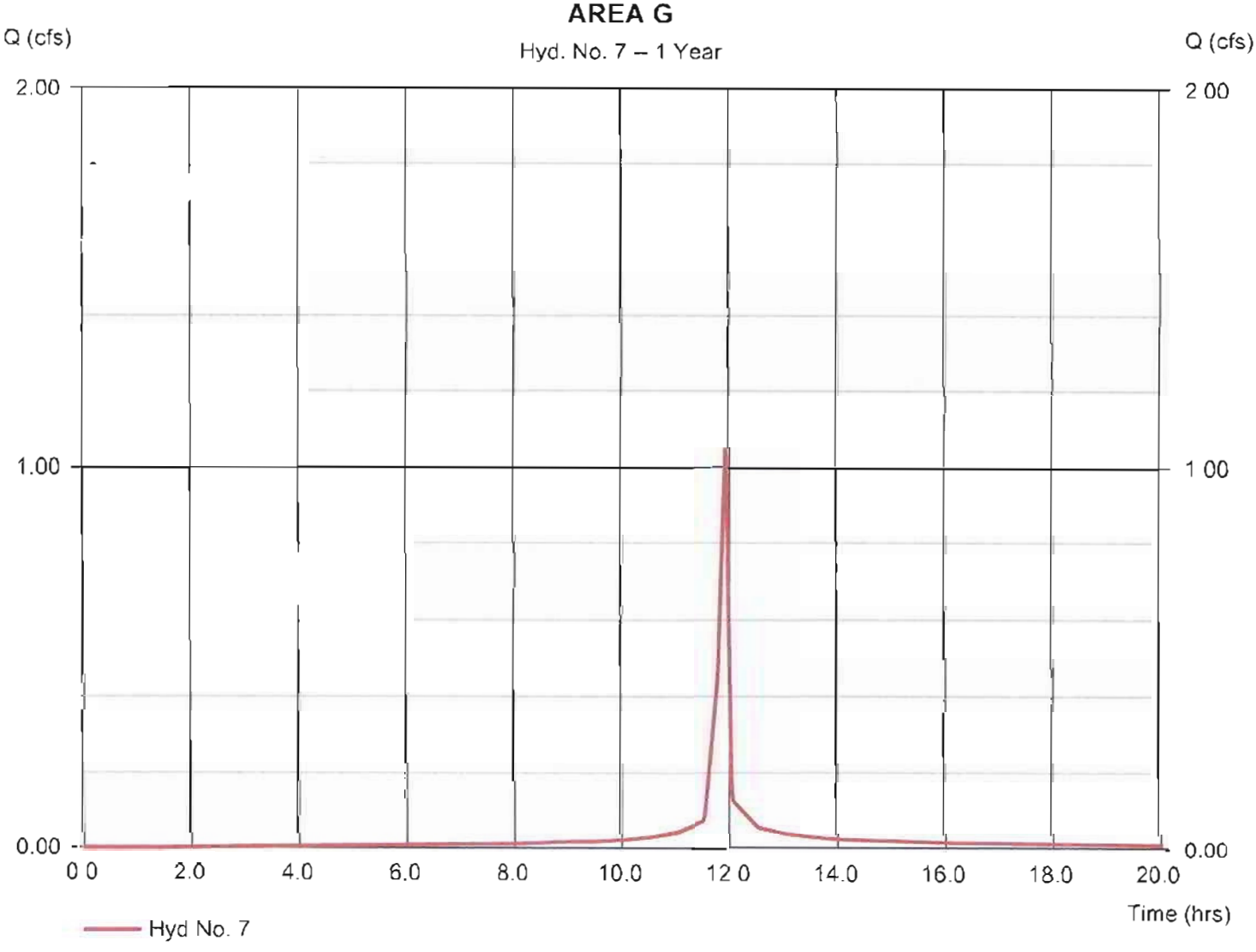


Hydrograph Report

Hyd. No. 7

AREA G

Hydrograph type	= SCS Runoff	Peak discharge	= 1.049 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.050 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

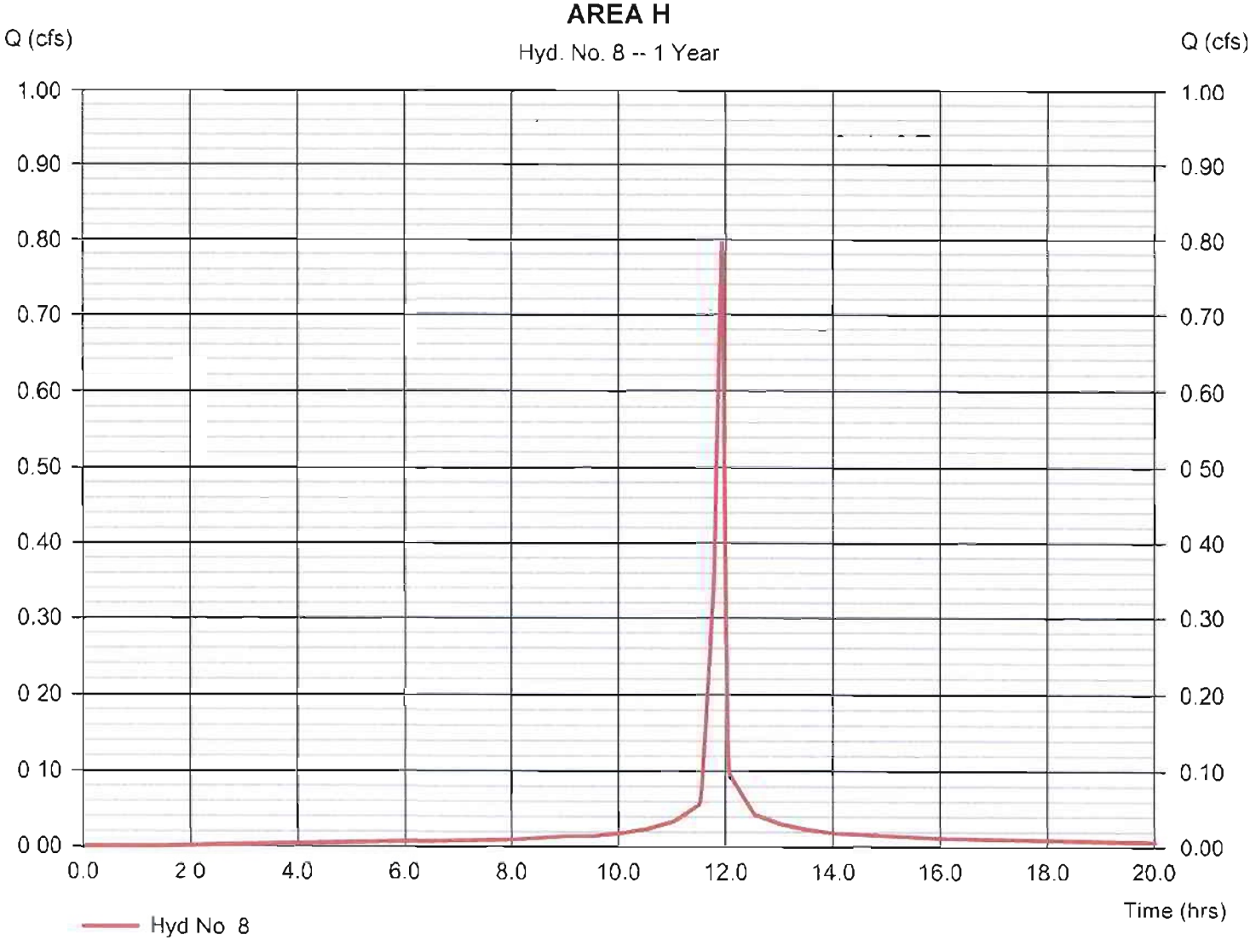


Hydrograph Report

Hyd. No. 8

AREA H

Hydrograph type	= SCS Runoff	Peak discharge	= 0.798 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.038 acft
Drainage area	= 0.190 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

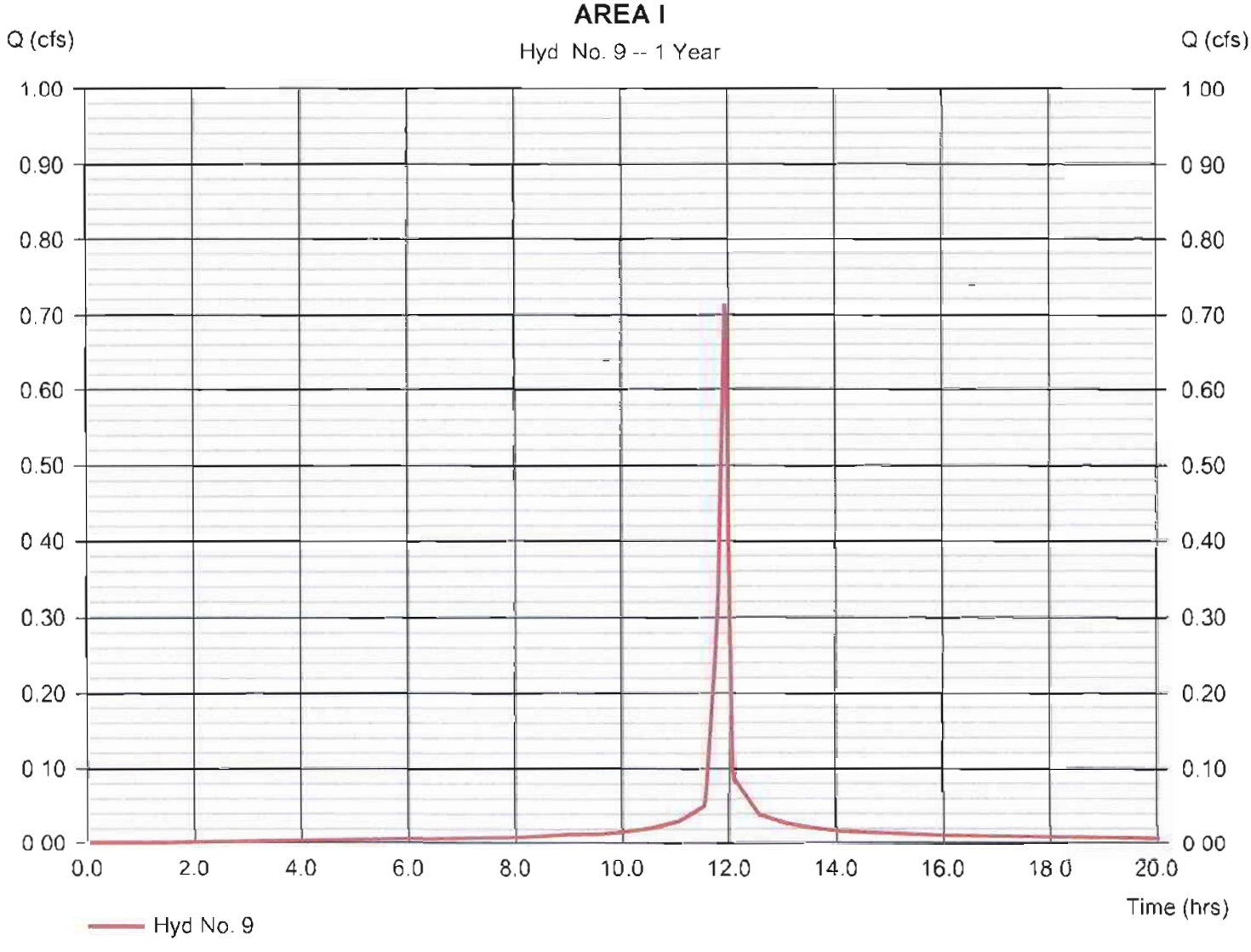


Hydrograph Report

Hyd. No. 9

AREA I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.714 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.034 acft
Drainage area	= 0.170 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

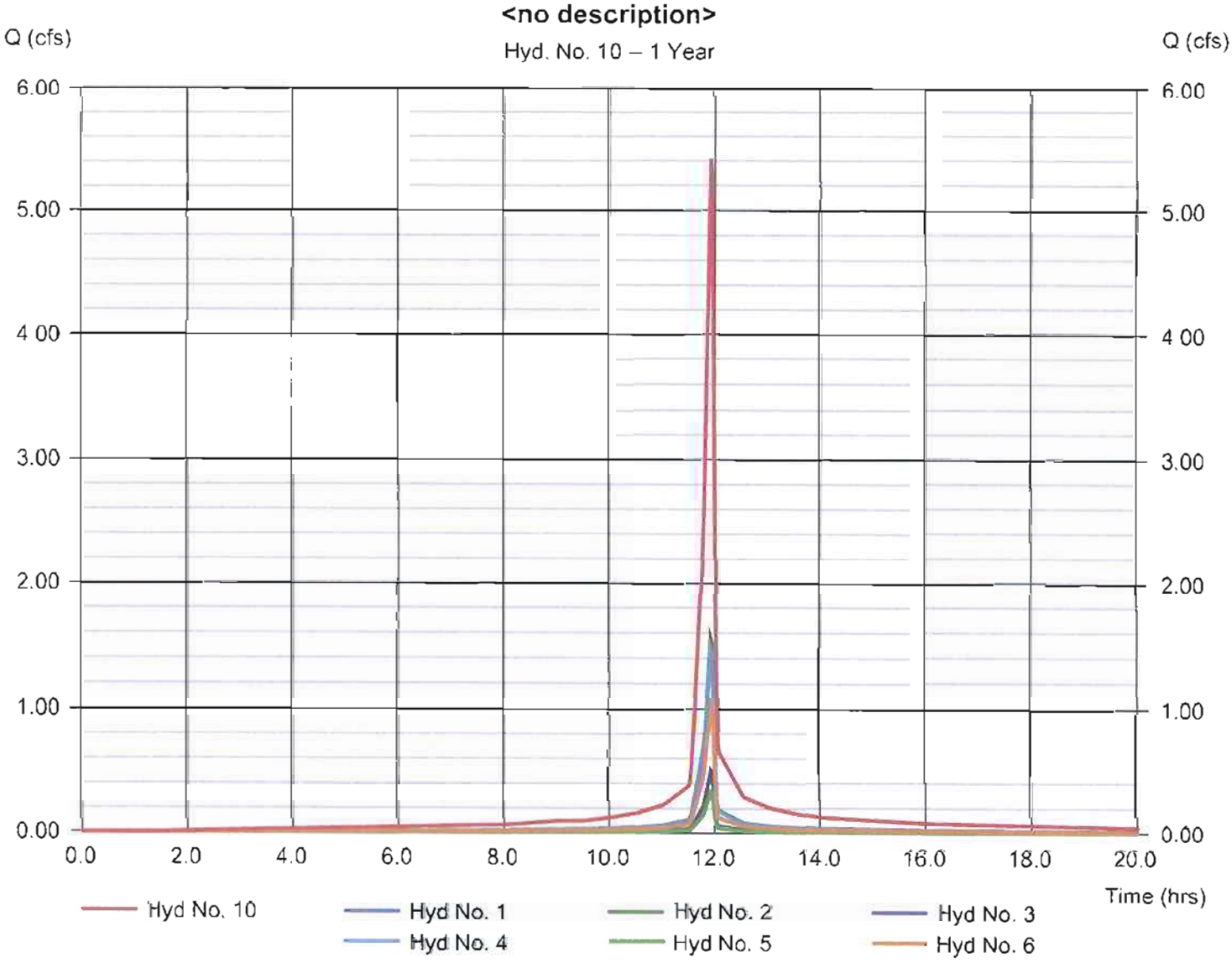


Hydrograph Report

Hyd. No. 10

<no description>

Hydrograph type	= Combine	Peak discharge	= 5.415 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.259 acft
Inflow hyds.	= 1, 2, 3, 4, 5, 6	Contrib. drain. area	= 1.290 ac

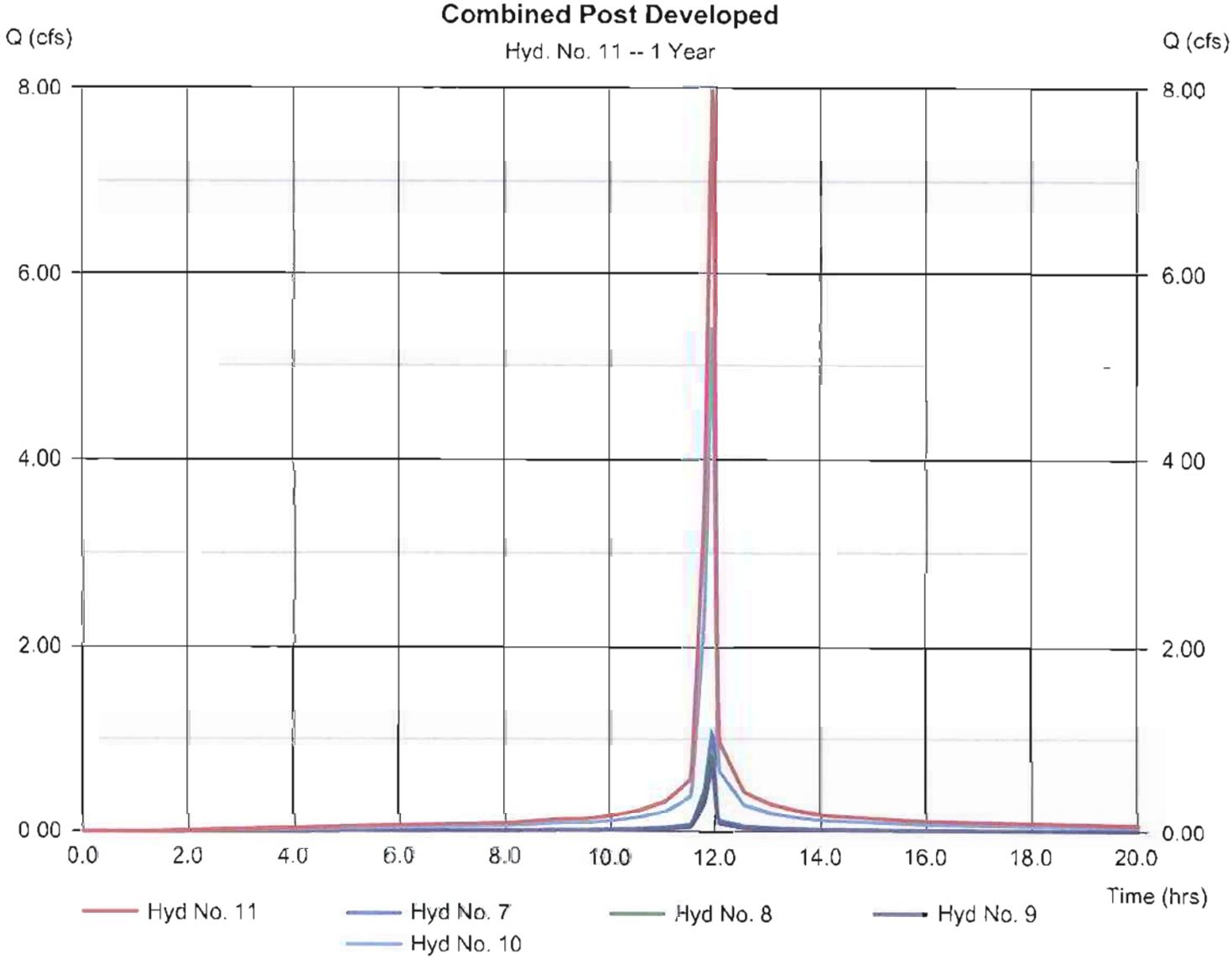


Hydrograph Report

Hyd. No. 11

Combined Post Developed

Hydrograph type	= Combine	Peak discharge	= 7.975 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.381 acft
Inflow hyds.	= 7, 8, 9, 10	Contrib. drain. area	= 0.610 ac

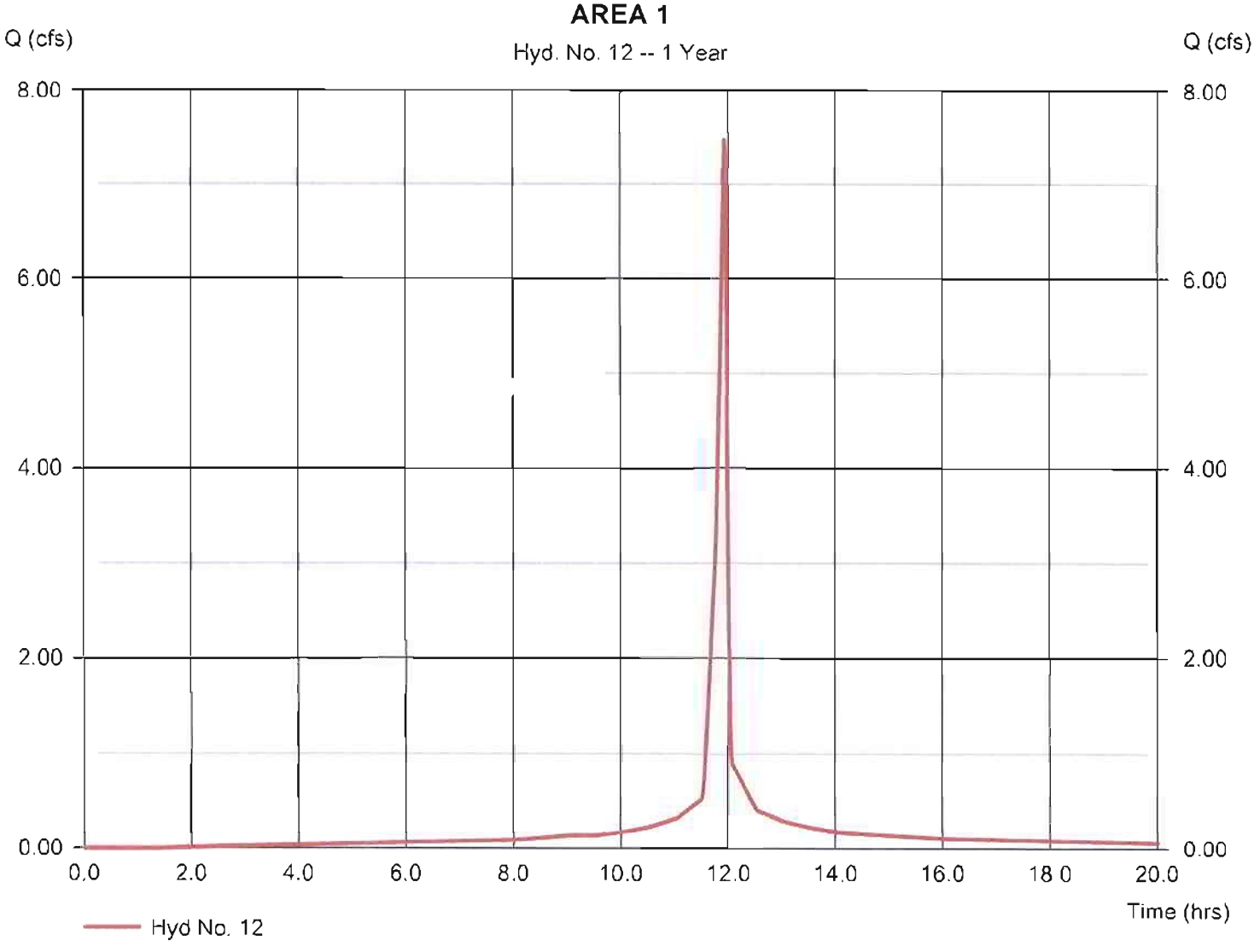


Hydrograph Report

Hyd. No. 12

AREA 1

Hydrograph type	= SCS Runoff	Peak discharge	= 7.472 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.357 acft
Drainage area	= 1.780 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 3.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

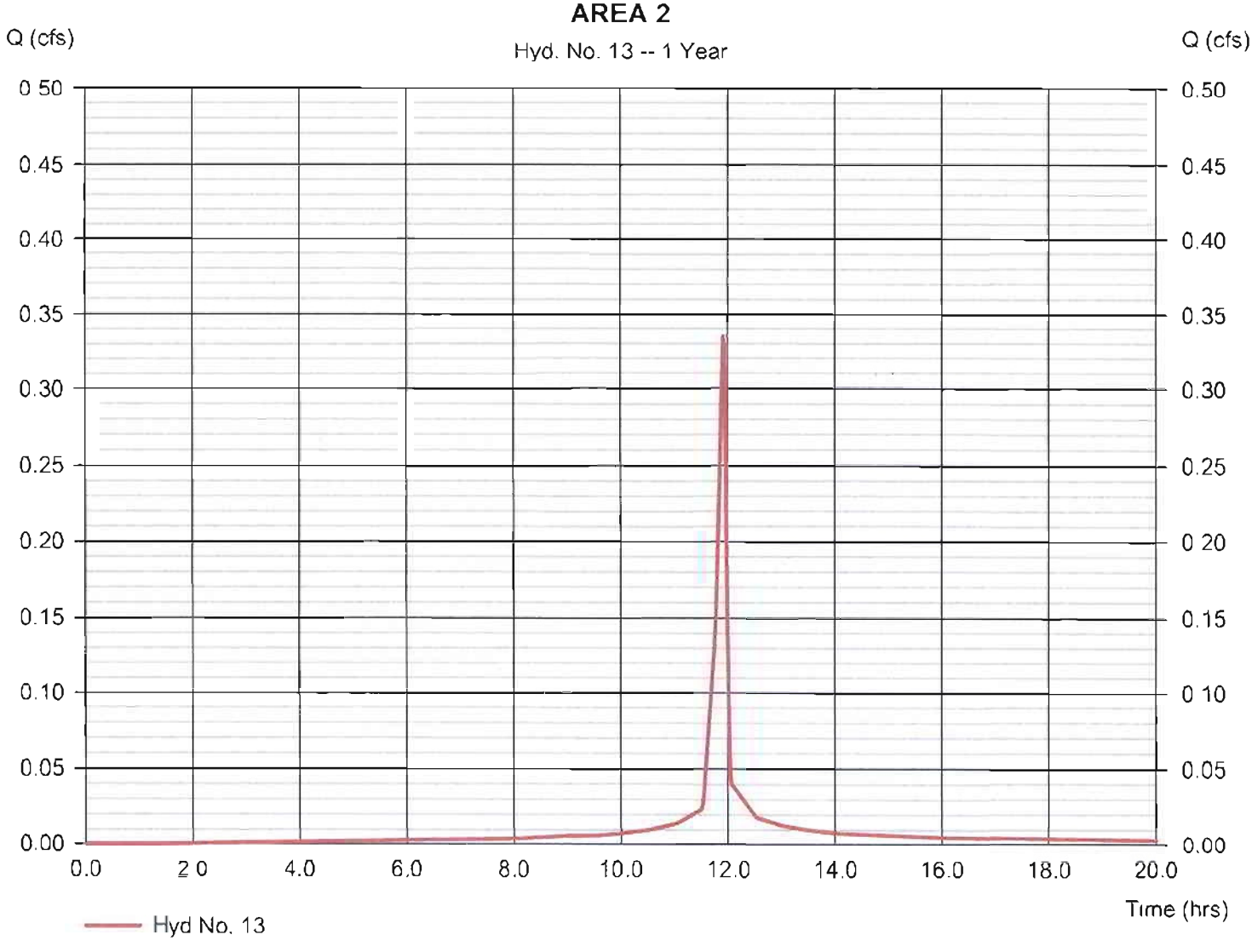


Hydrograph Report

Hyd. No. 13

AREA 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.336 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.016 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

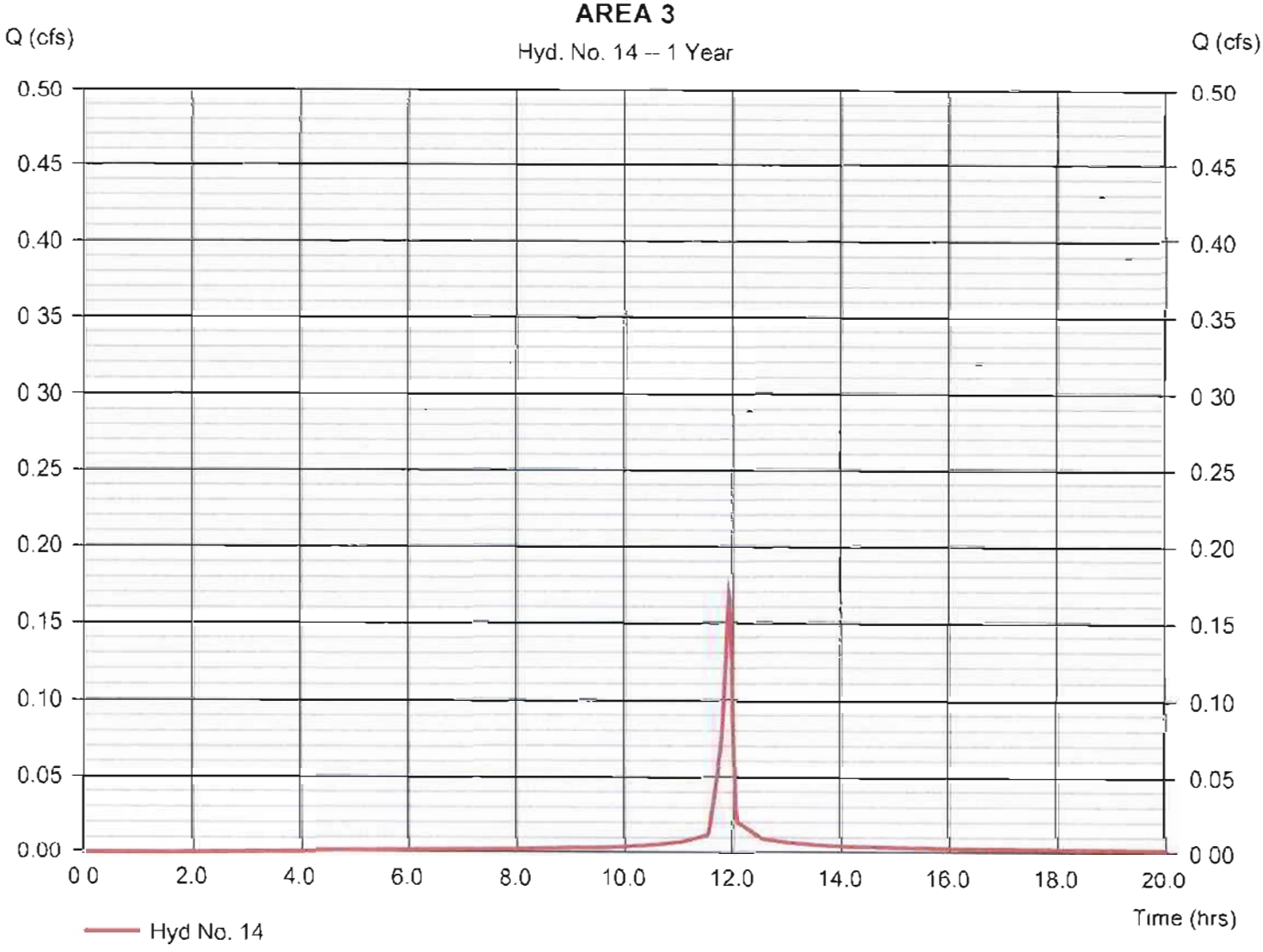


Hydrograph Report

Hyd. No. 14

AREA 3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.168 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.008 acft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

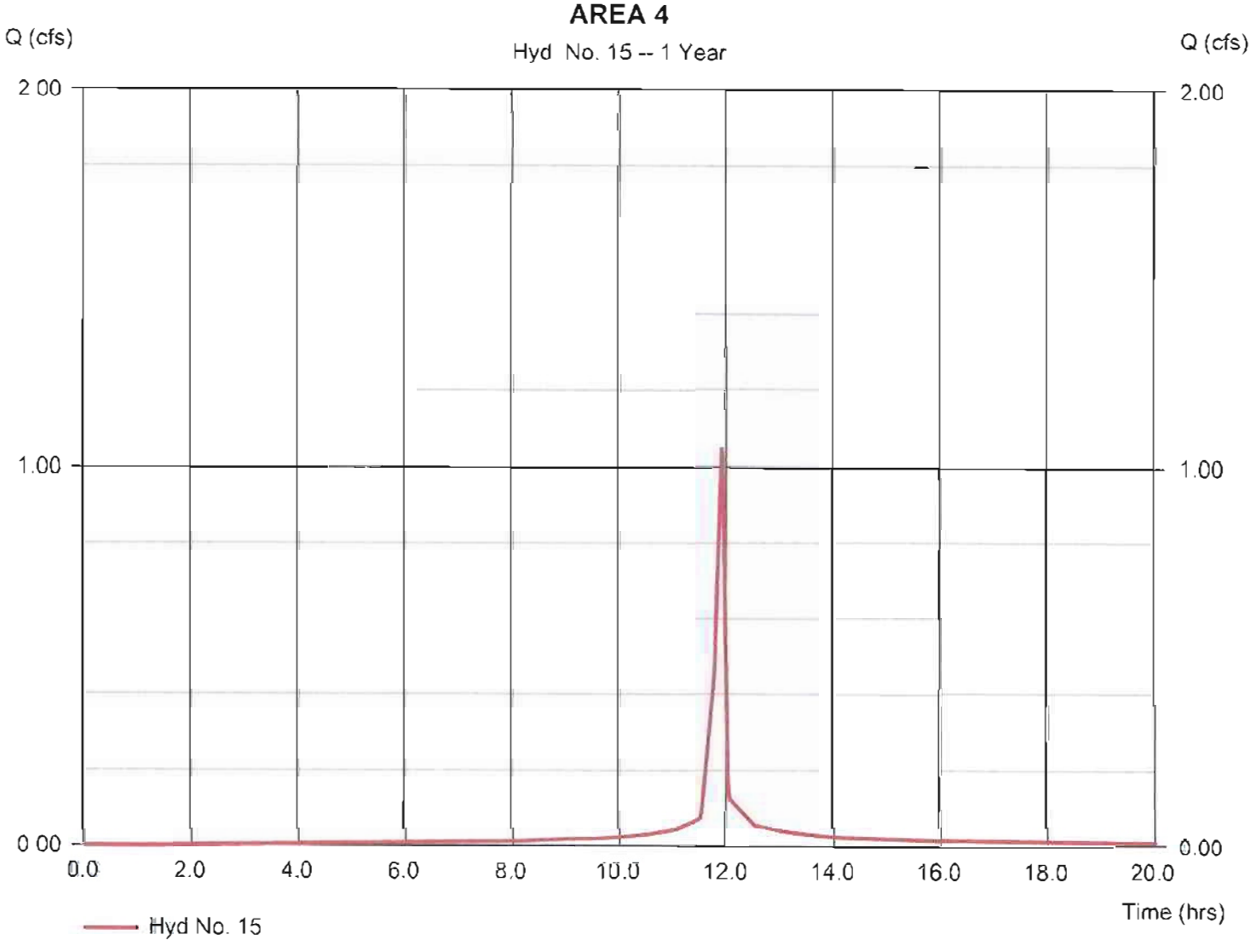


Hydrograph Report

Hyd. No. 15

AREA 4

Hydrograph type	= SCS Runoff	Peak discharge	= 1.049 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.050 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

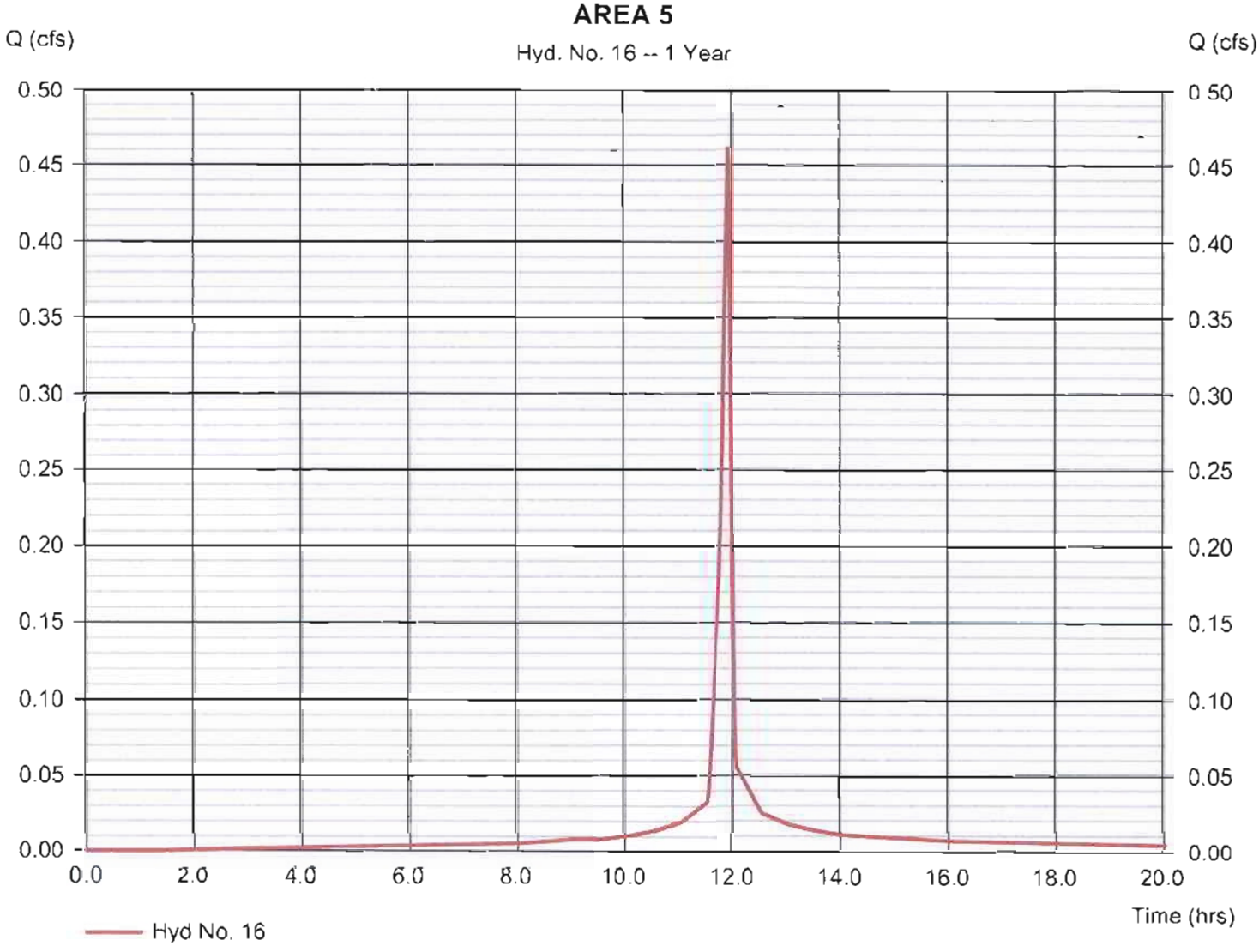


Hydrograph Report

Hyd. No. 16

AREA 5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.462 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.022 acft
Drainage area	= 0.110 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

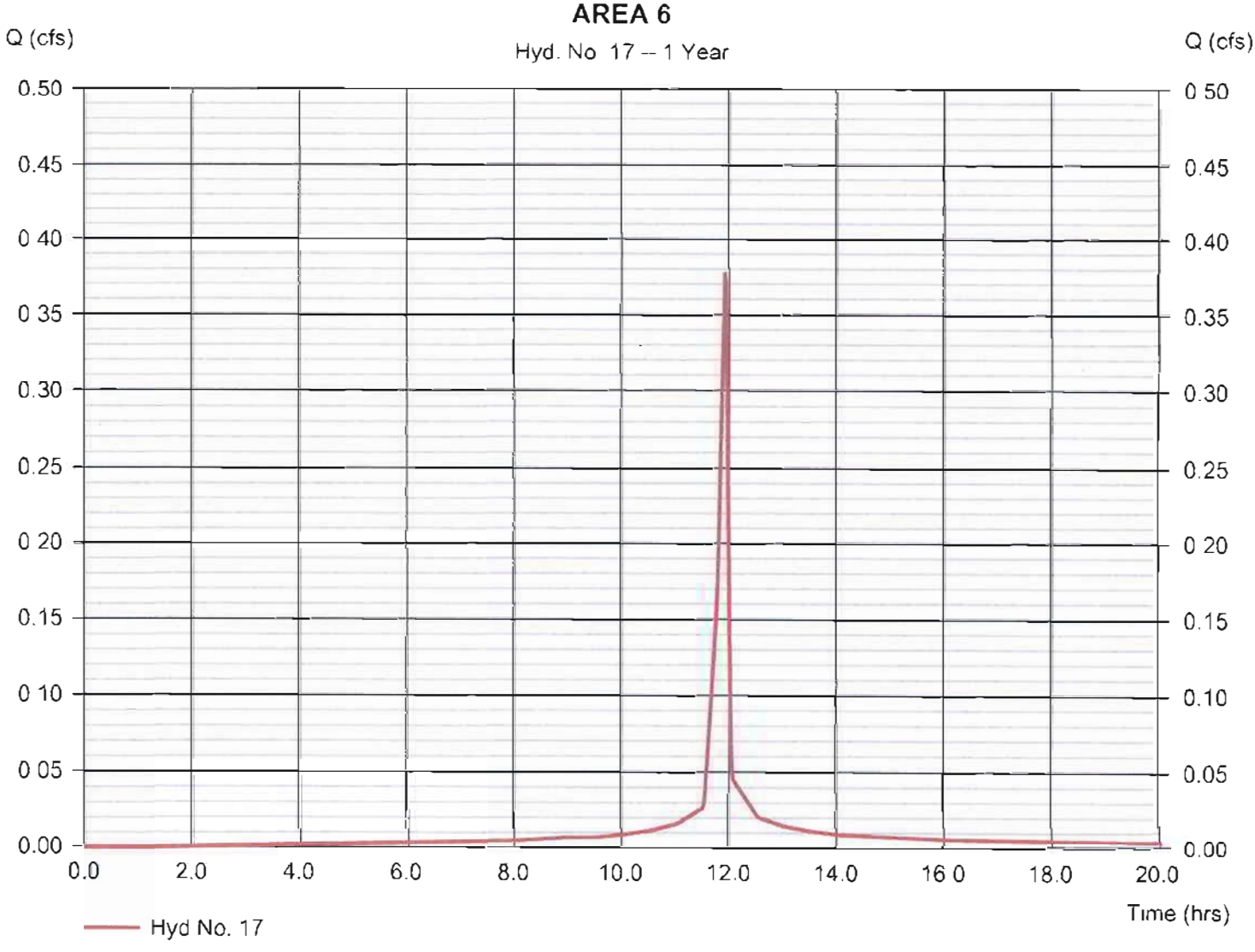


Hydrograph Report

Hyd. No. 17

AREA 6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.378 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.018 acft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

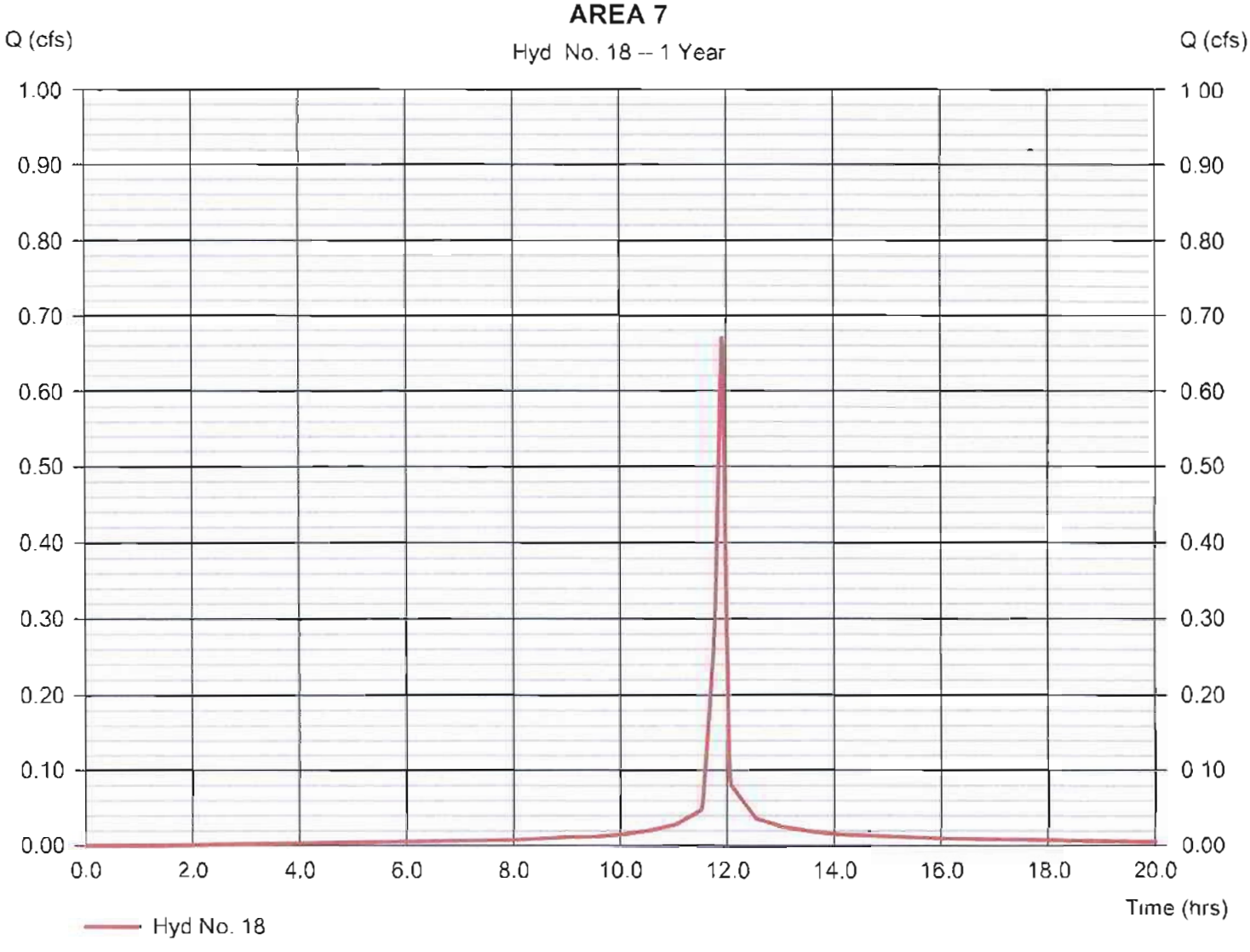


Hydrograph Report

Hyd. No. 18

AREA 7

Hydrograph type	= SCS Runoff	Peak discharge	= 0.672 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.032 acft
Drainage area	= 0.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

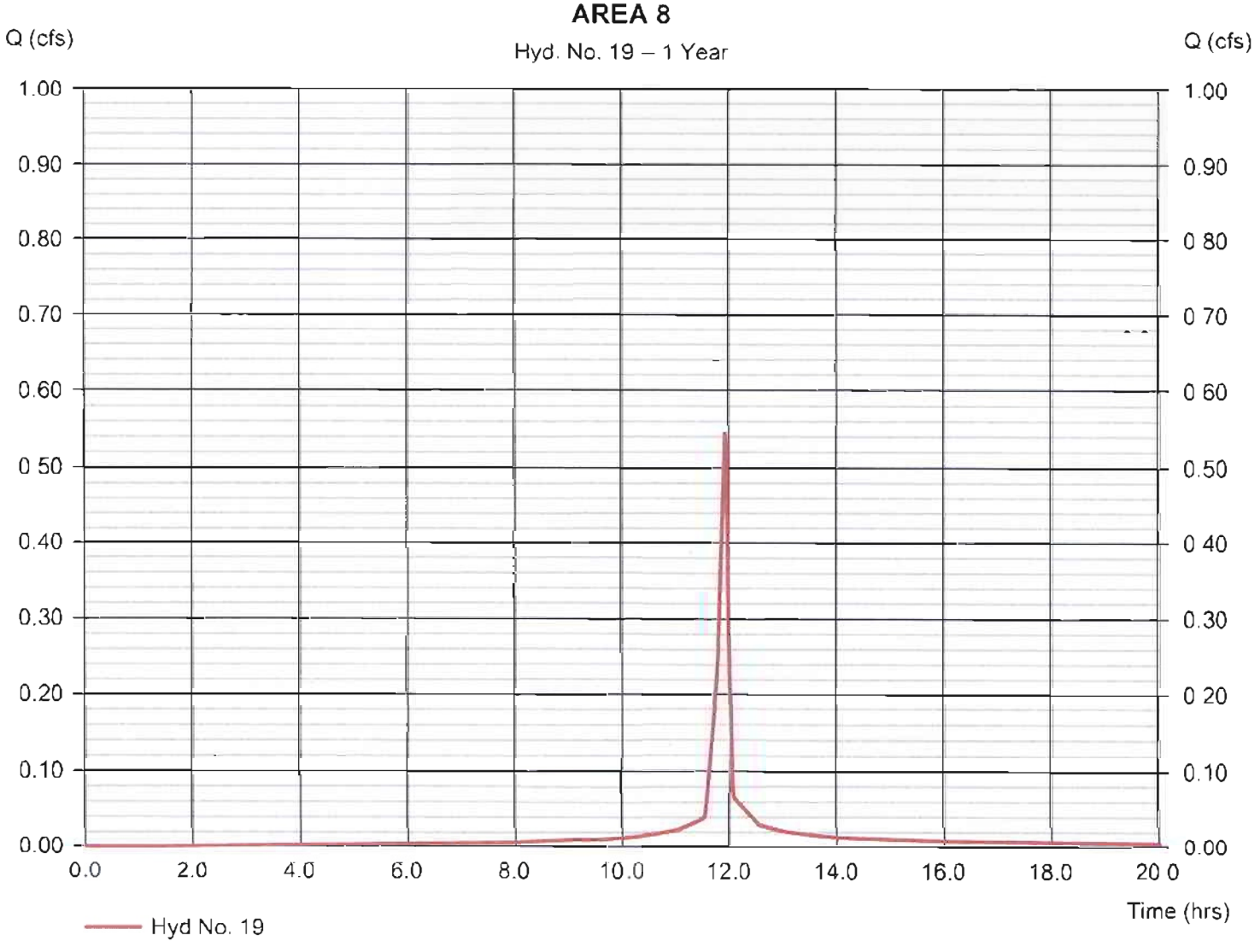


Hydrograph Report

Hyd. No. 19

AREA 8

Hydrograph type	= SCS Runoff	Peak discharge	= 0.546 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.026 acft
Drainage area	= 0.130 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

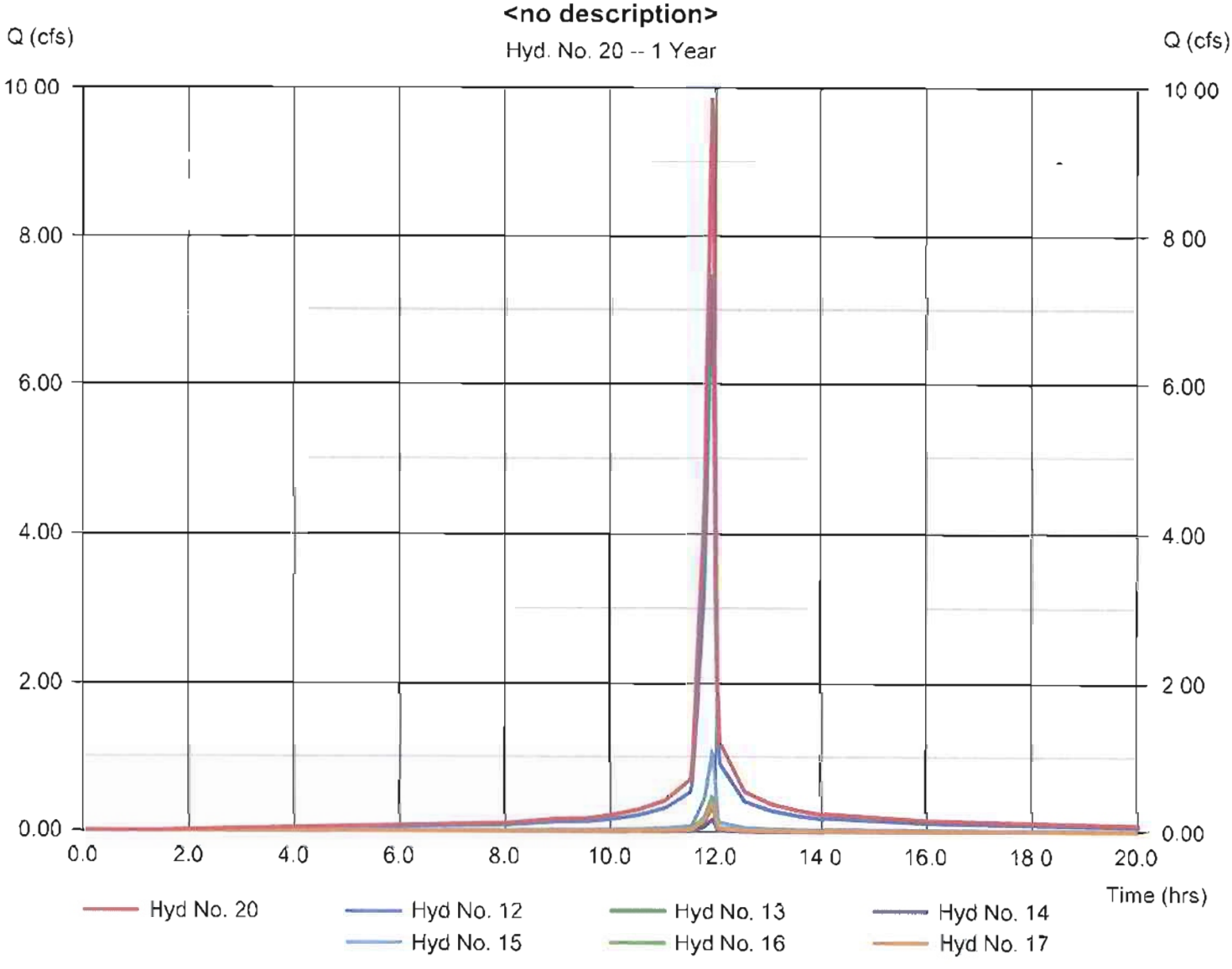


Hydrograph Report

Hyd. No. 20

<no description>

Hydrograph type	= Combine	Peak discharge	= 9.864 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.472 acft
Inflow hyds.	= 12, 13, 14, 15, 16, 17	Contrib. drain. area	= 2.350 ac

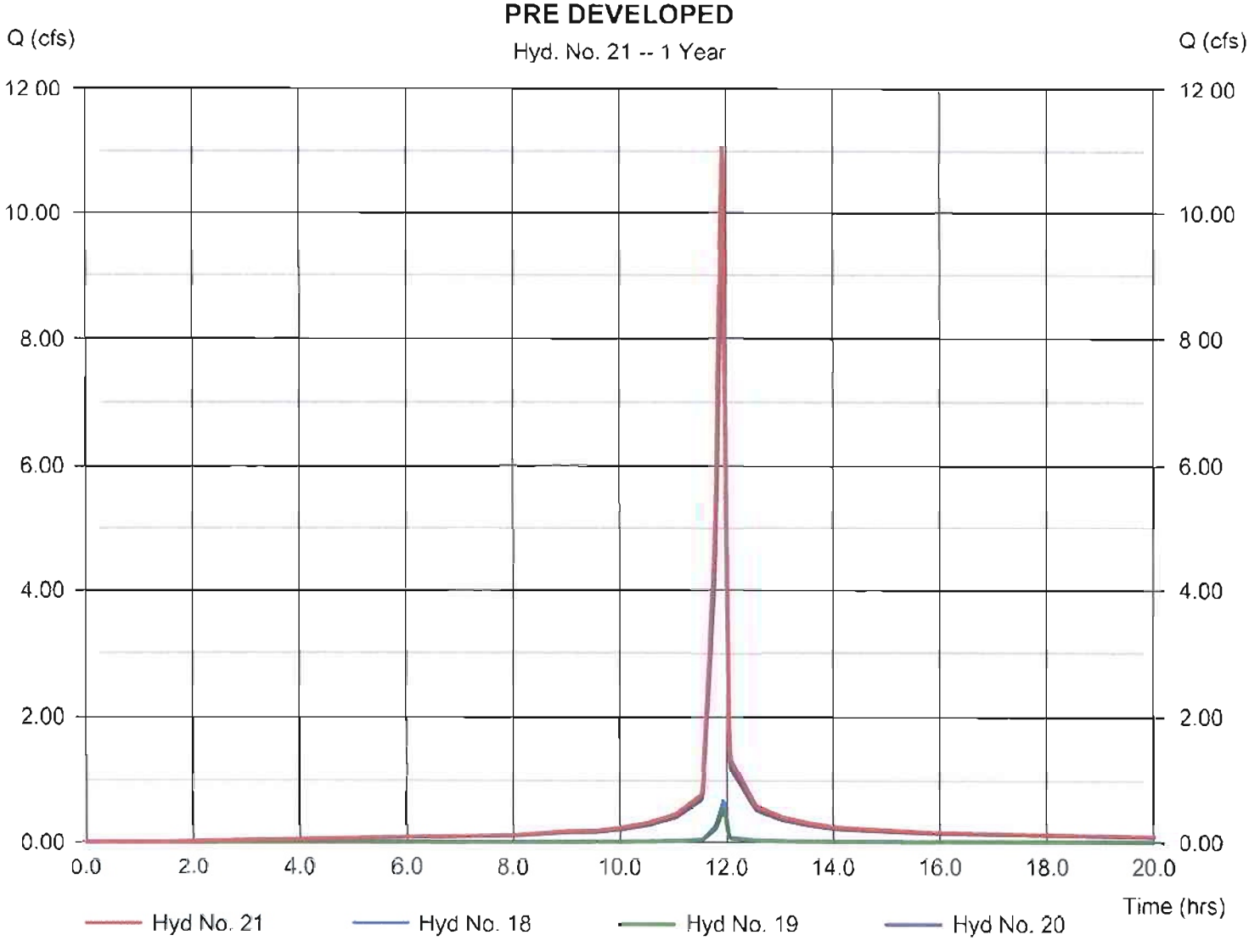


Hydrograph Report

Hyd. No. 21

PRE DEVELOPED

Hydrograph type	= Combine	Peak discharge	= 11.08 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.530 acft
Inflow hyds.	= 18, 19, 20	Contrib. drain. area	= 0.290 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc v9

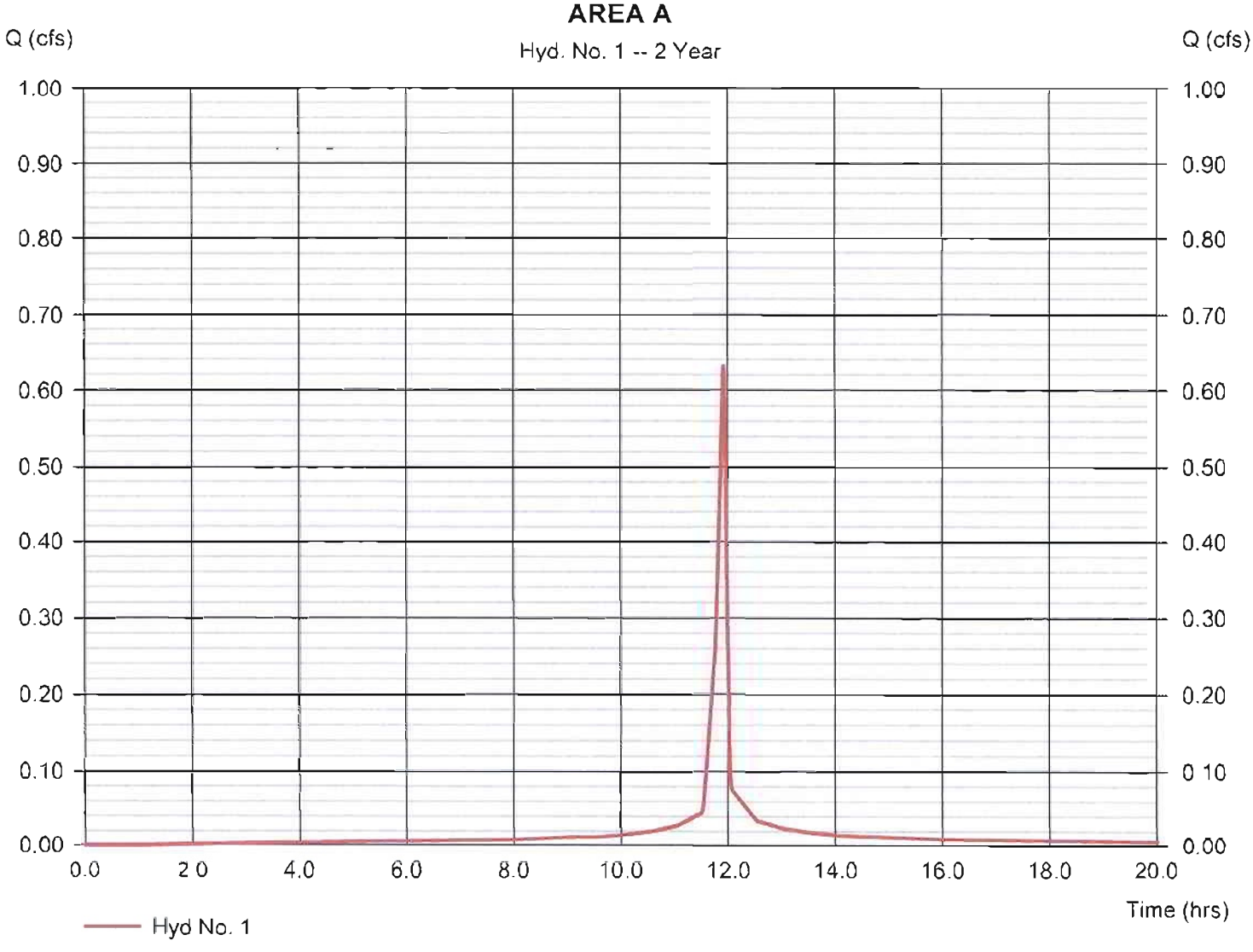
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph Description
1	SCS Runoff	0.633	1	715	0.031	---	---	---	AREA A
2	SCS Runoff	1.951	1	715	0.094	---	---	---	AREA B
3	SCS Runoff	0.633	1	715	0.031	---	---	---	AREA C
4	SCS Runoff	1.846	1	715	0.089	---	---	---	AREA D
5	SCS Runoff	0.422	1	715	0.020	---	---	---	AREA E
6	SCS Runoff	1.318	1	715	0.064	---	---	---	AREA F
7	SCS Runoff	1.318	1	715	0.064	---	---	---	AREA G
8	SCS Runoff	1.002	1	715	0.048	---	---	---	AREA H
9	SCS Runoff	0.896	1	715	0.043	---	---	---	AREA I
10	Combine	6.802	1	715	0.329	1, 2, 3, 4, 5, 6.	---	---	<no description>
11	Combine	10.02	1	715	0.485	7, 8, 9. 10	---	---	Combined Post Developed
12	SCS Runoff	9.386	1	715	0.454	---	---	---	AREA 1
13	SCS Runoff	0.422	1	715	0.020	---	---	---	AREA 2
14	SCS Runoff	0.211	1	715	0.010	---	---	---	AREA 3
15	SCS Runoff	1.318	1	715	0.064	---	---	---	AREA 4
16	SCS Runoff	0.580	1	715	0.028	---	---	---	AREA 5
17	SCS Runoff	0.475	1	715	0.023	---	---	---	AREA 6
18	SCS Runoff	0.844	1	715	0.041	---	---	---	AREA 7
19	SCS Runoff	0.685	1	715	0.033	---	---	---	AREA 8
20	Combine	12.39	1	715	0.600	12, 13, 14, 15, 16, 17,	---	---	<no description>
21	Combine	13.92	1	715	0.674	18, 19, 20	---	---	PRE DEVELOPED

Hydrograph Report

Hyd. No. 1

AREA A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.633 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.031 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

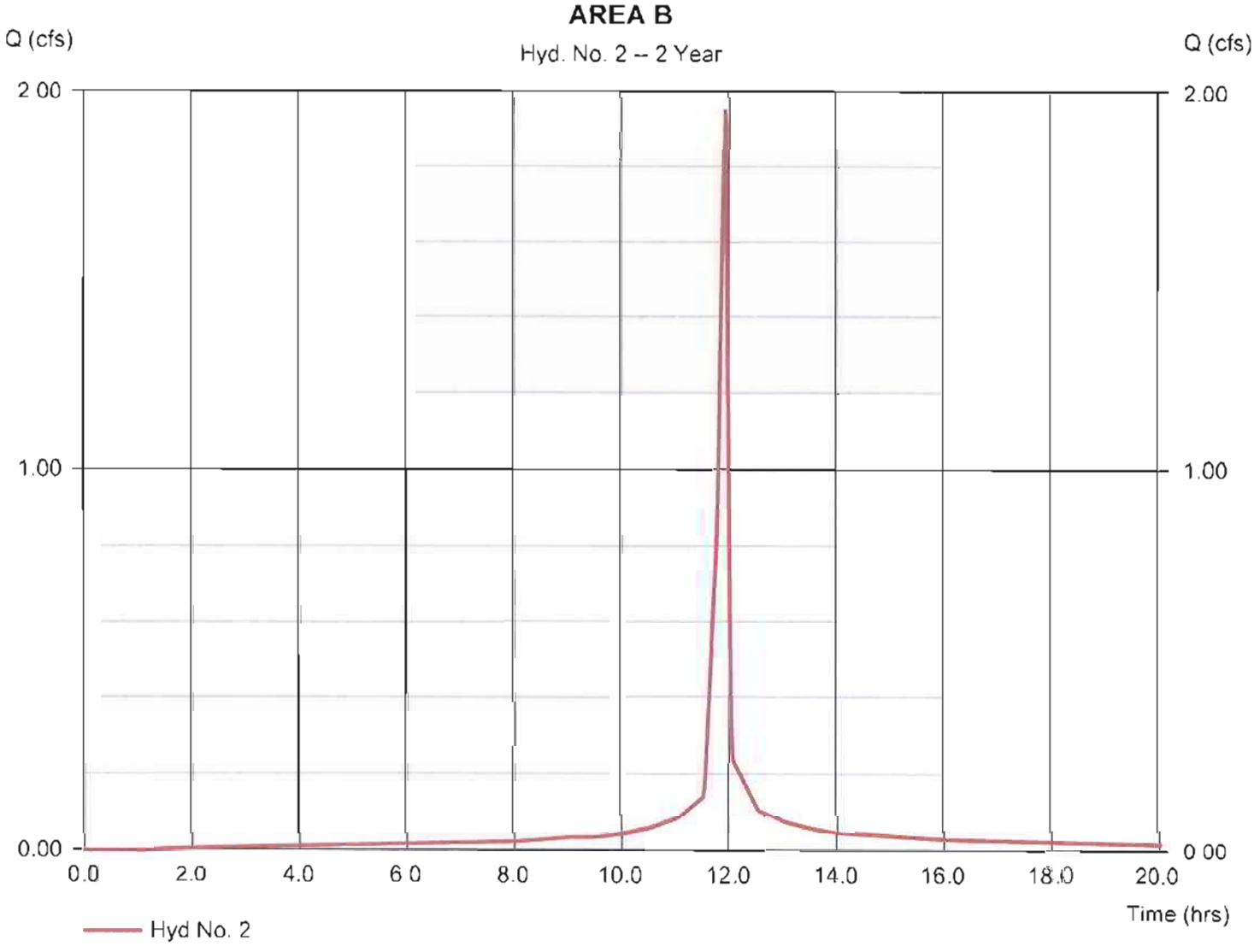


Hydrograph Report

Hyd. No. 2

AREA B

Hydrograph type	= SCS Runoff	Peak discharge	= 1.951 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.094 acft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

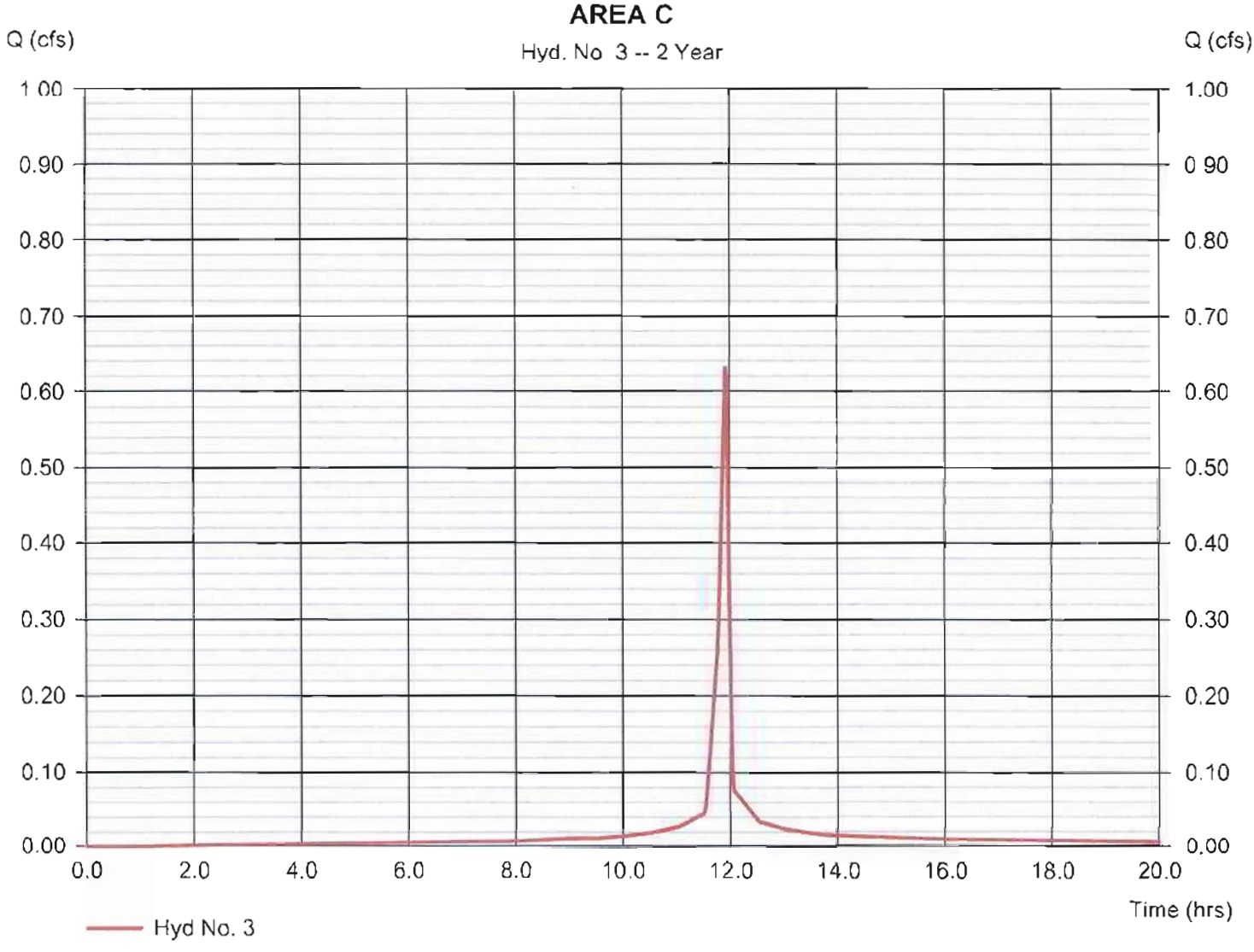


Hydrograph Report

Hyd. No. 3

AREA C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.633 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.031 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

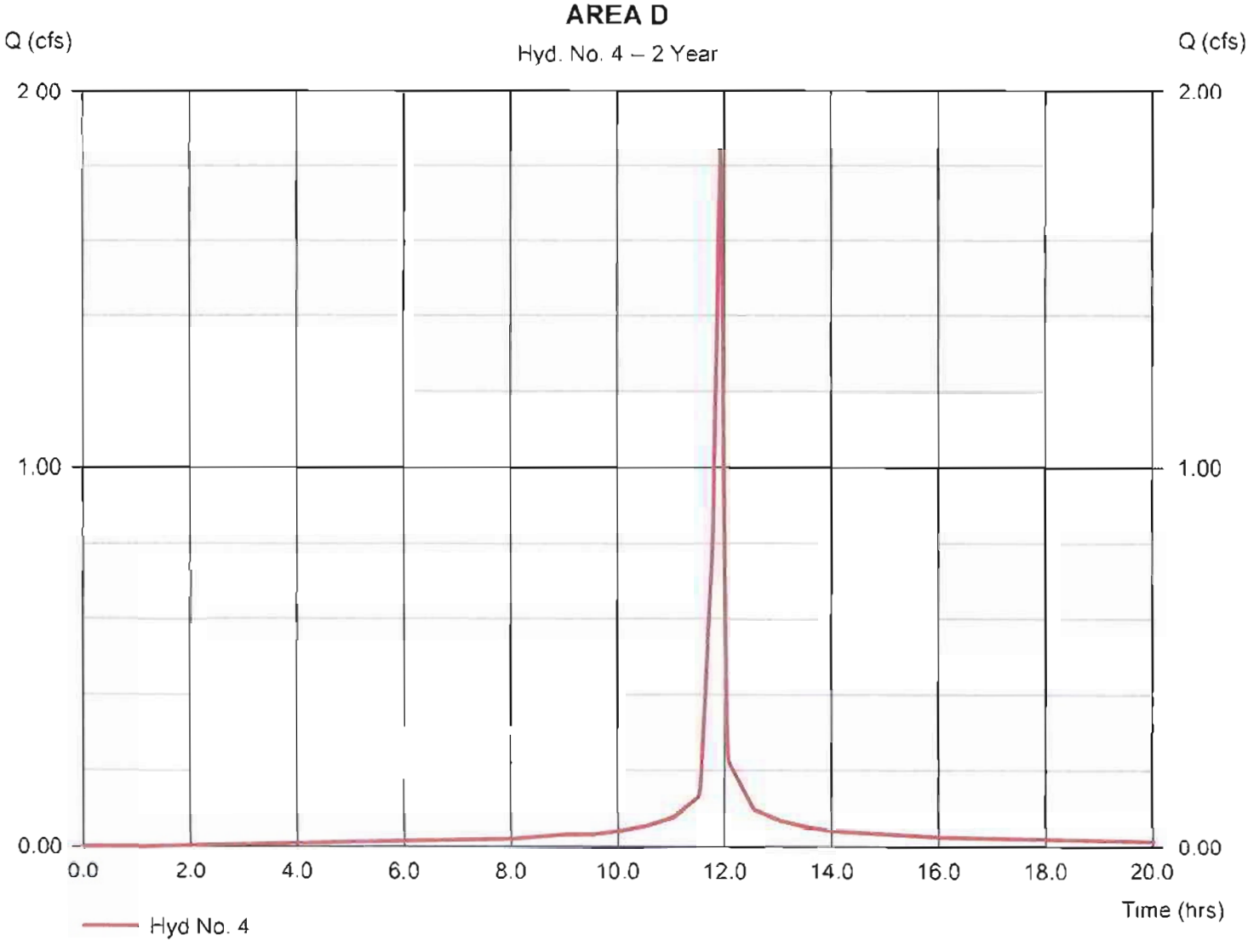


Hydrograph Report

Hyd. No. 4

AREA D

Hydrograph type	= SCS Runoff	Peak discharge	= 1.846 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.089 acft
Drainage area	= 0.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 1.70 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

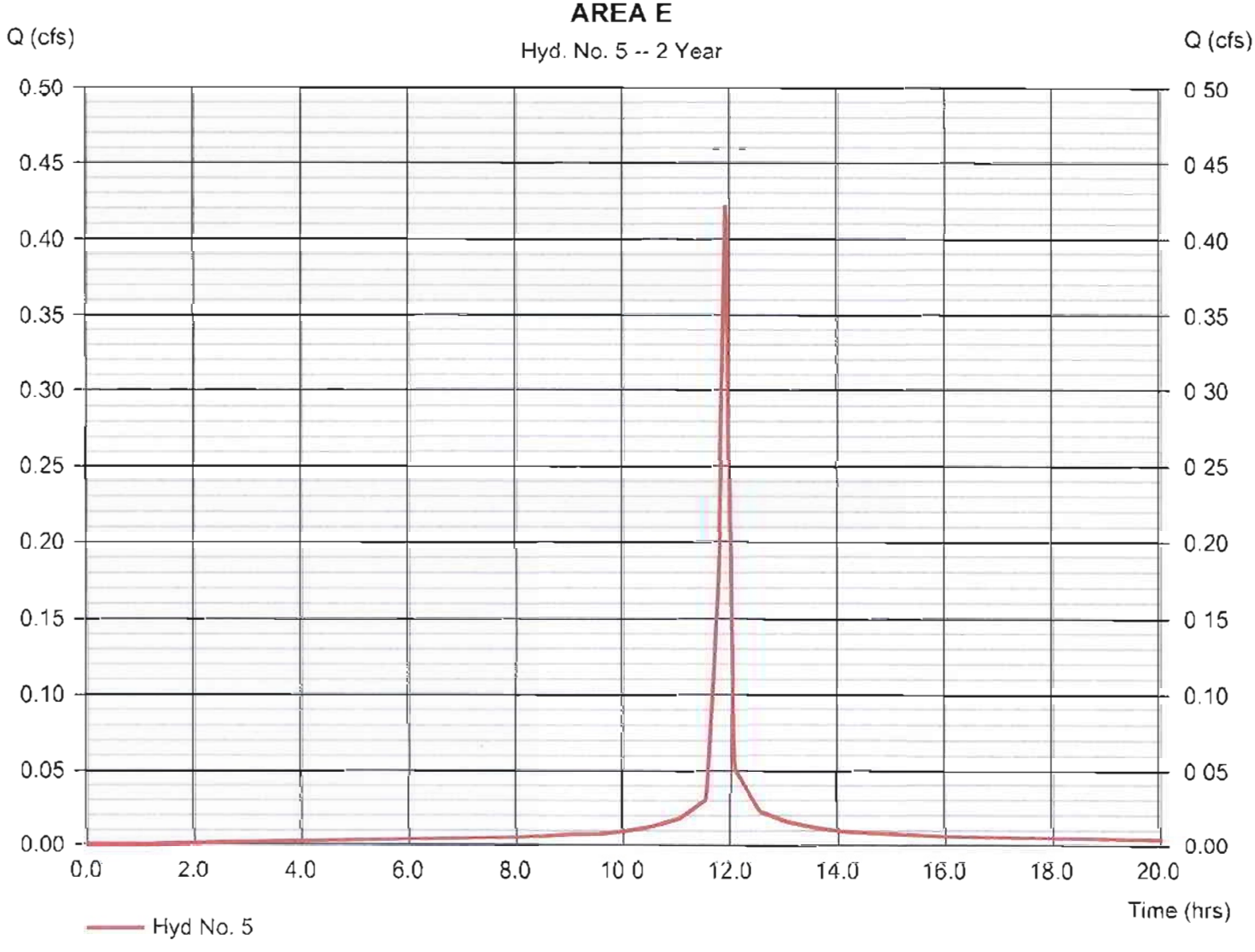


Hydrograph Report

Hyd. No. 5

AREA E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.422 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.020 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

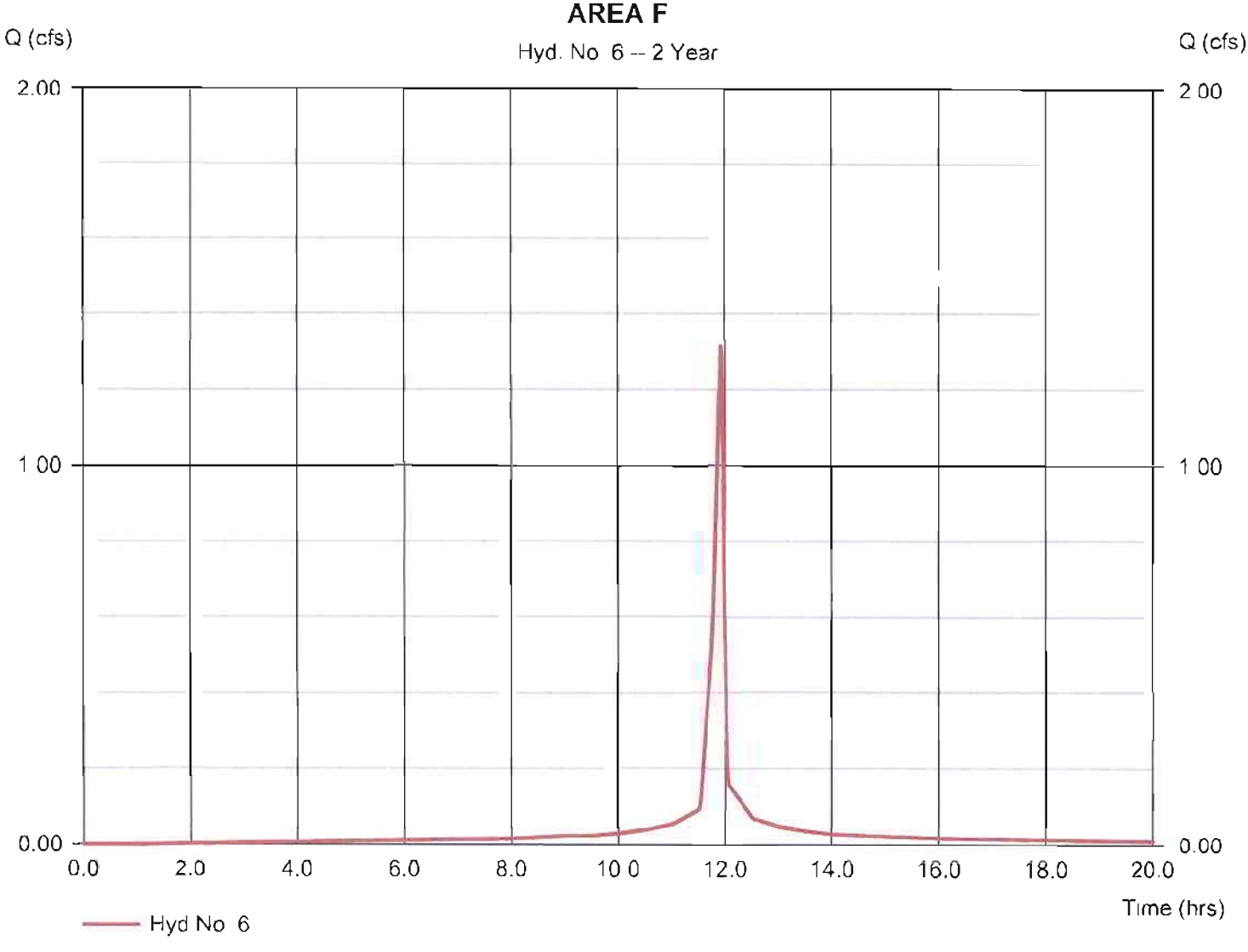


Hydrograph Report

Hyd. No. 6

AREA F

Hydrograph type	= SCS Runoff	Peak discharge	= 1.318 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.064 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

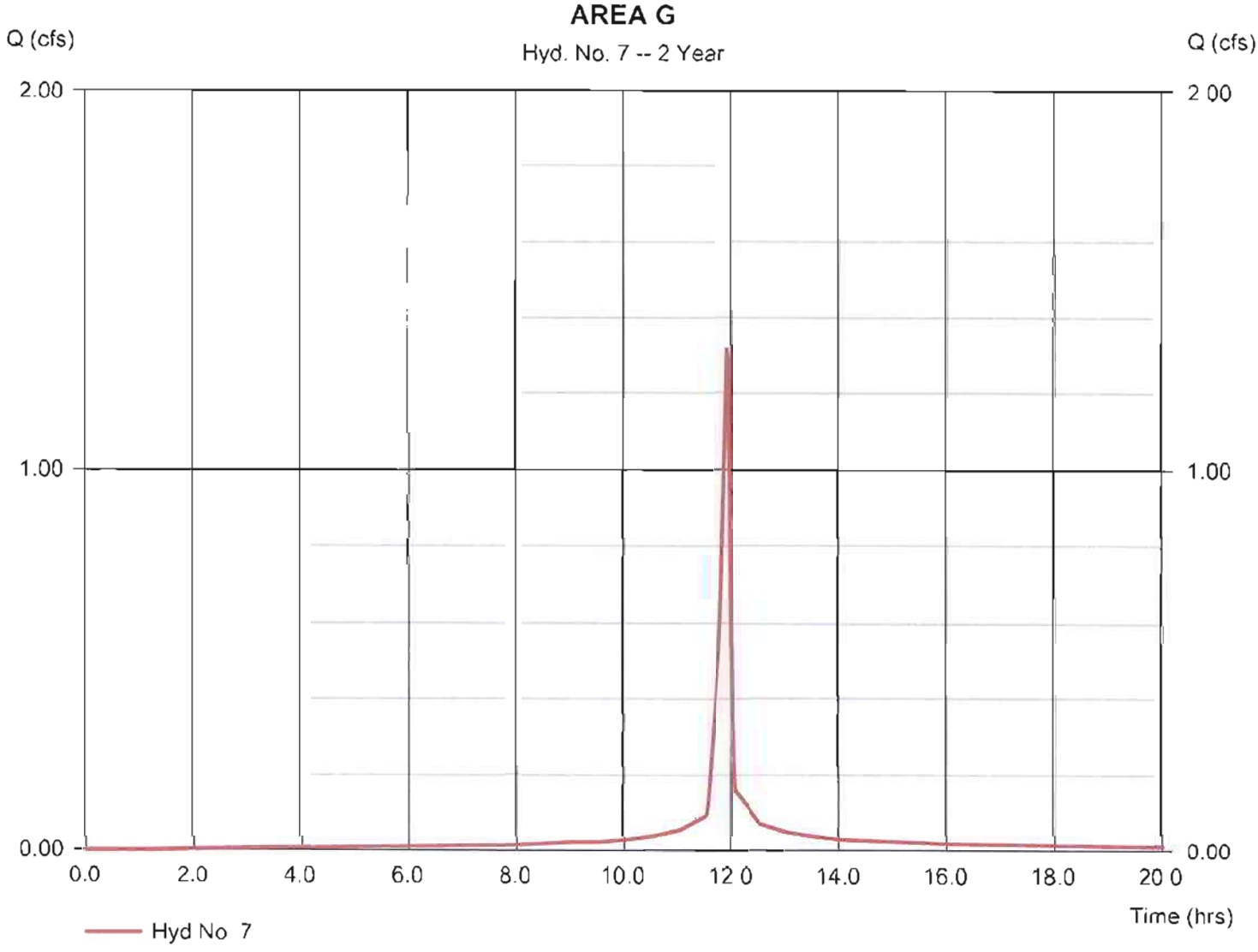


Hydrograph Report

Hyd. No. 7

AREA G

Hydrograph type	= SCS Runoff	Peak discharge	= 1.318 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.064 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

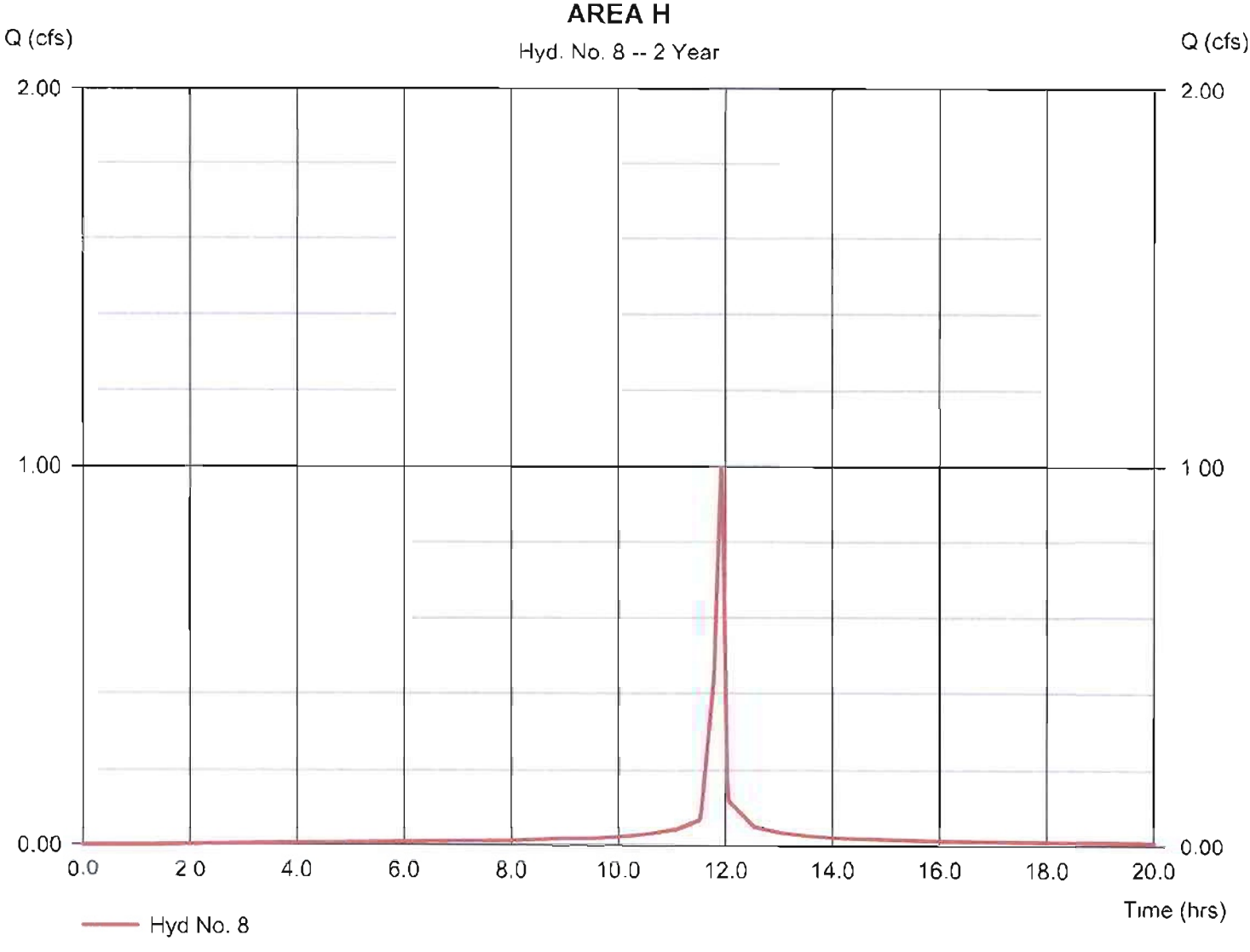


Hydrograph Report

Hyd. No. 8

AREA H

Hydrograph type	= SCS Runoff	Peak discharge	= 1.002 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.048 acft
Drainage area	= 0.190 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

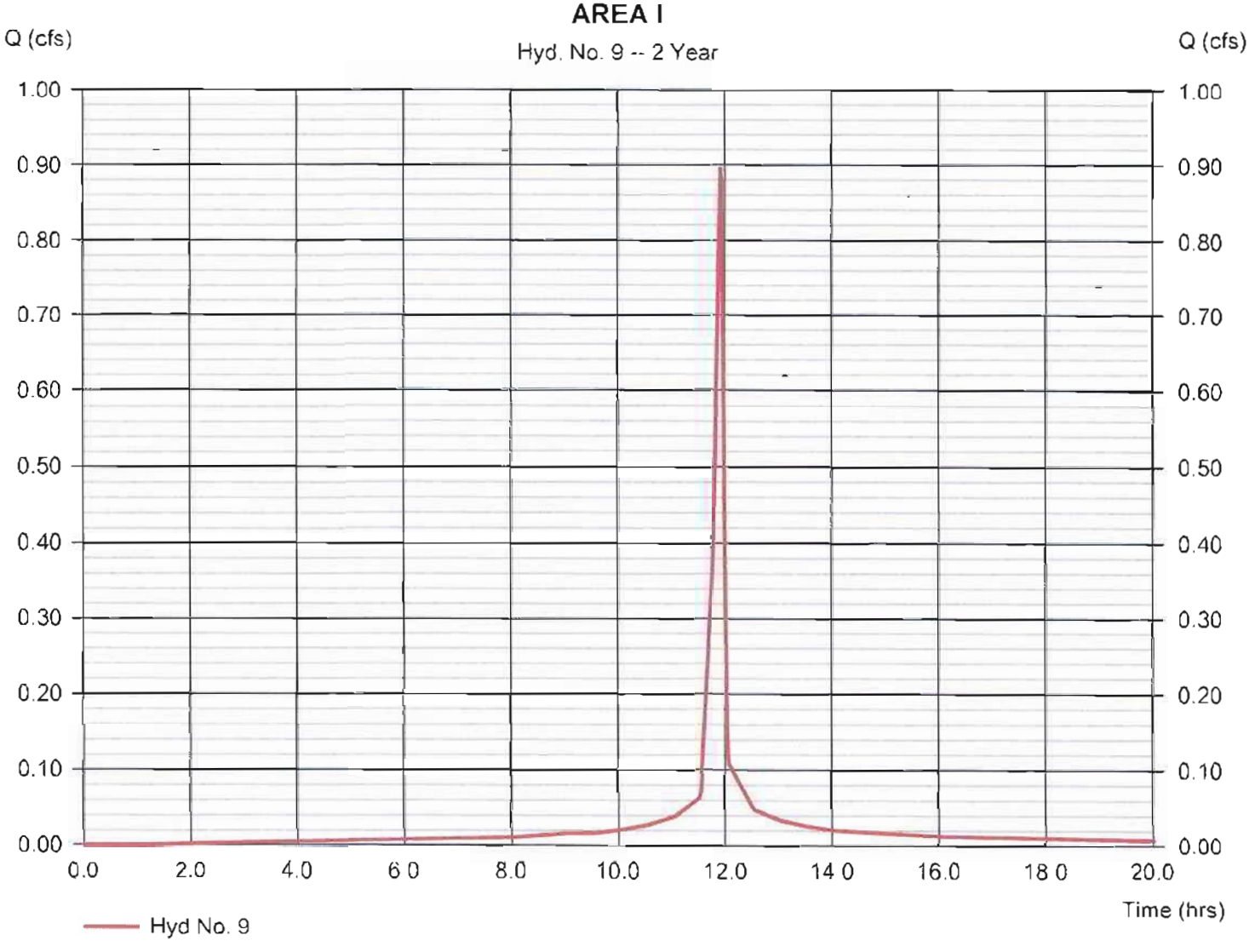


Hydrograph Report

Hyd. No. 9

AREA I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.896 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.043 acft
Drainage area	= 0.170 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

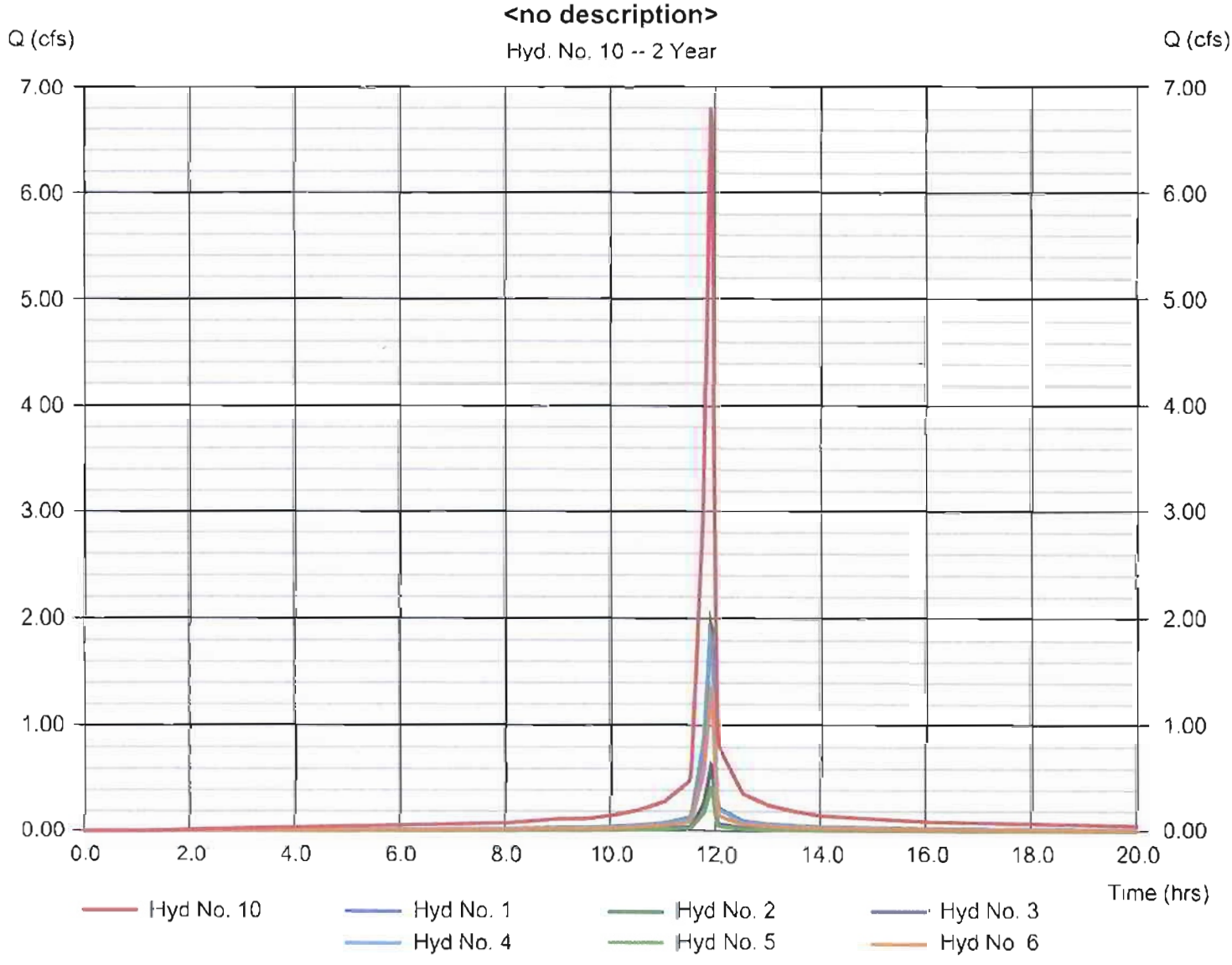


Hydrograph Report

Hyd. No. 10

<no description>

Hydrograph type	= Combine	Peak discharge	= 6.802 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.329 acft
Inflow hyds.	= 1, 2, 3, 4, 5, 6	Contrib. drain. area	= 1.290 ac

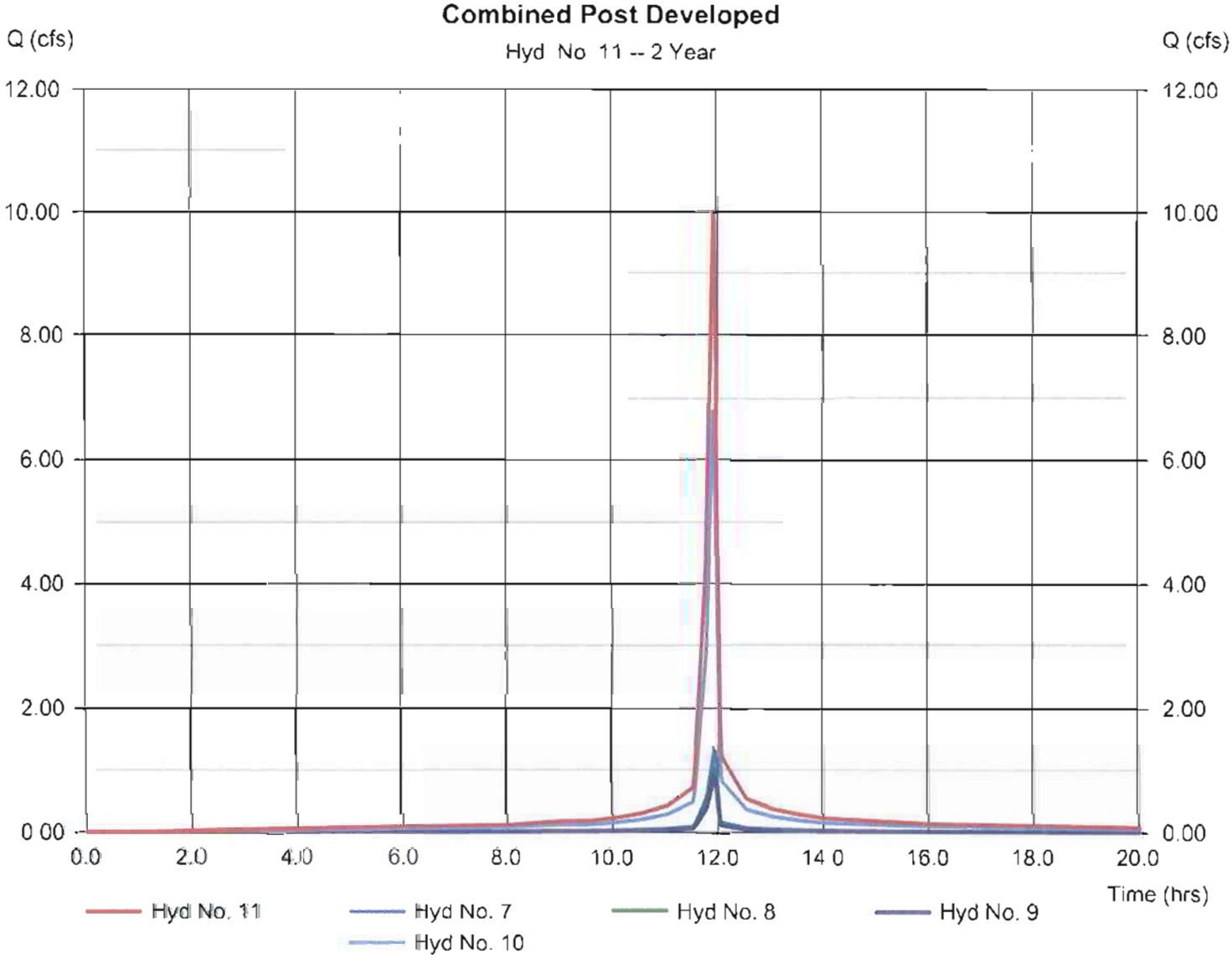


Hydrograph Report

Hyd. No. 11

Combined Post Developed

Hydrograph type	= Combine	Peak discharge	= 10.02 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.485 acft
Inflow hyds.	= 7, 8, 9, 10	Contrib. drain. area	= 0.610 ac

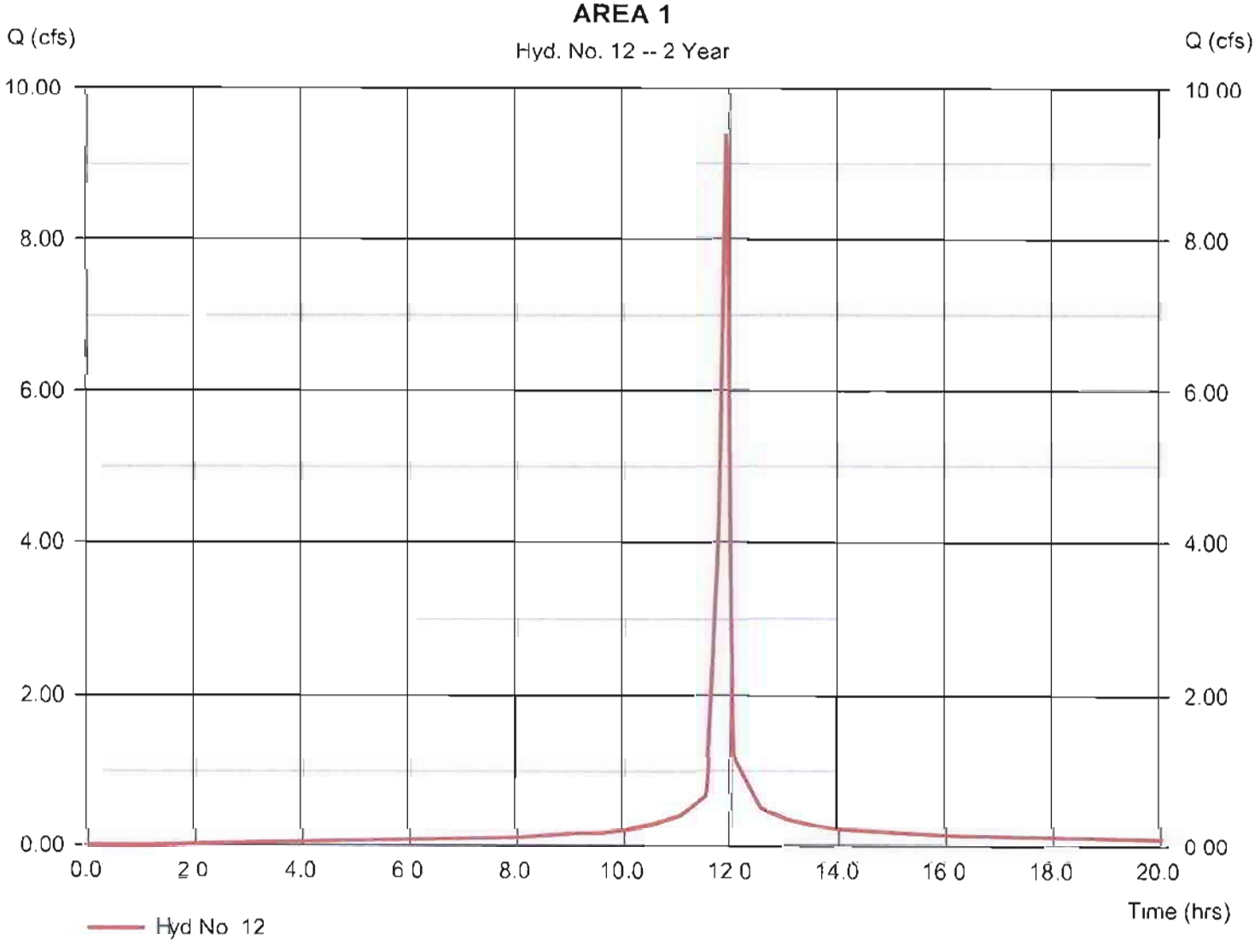


Hydrograph Report

Hyd. No. 12

AREA 1

Hydrograph type	= SCS Runoff	Peak discharge	= 9.386 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.454 acft
Drainage area	= 1.780 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 3.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

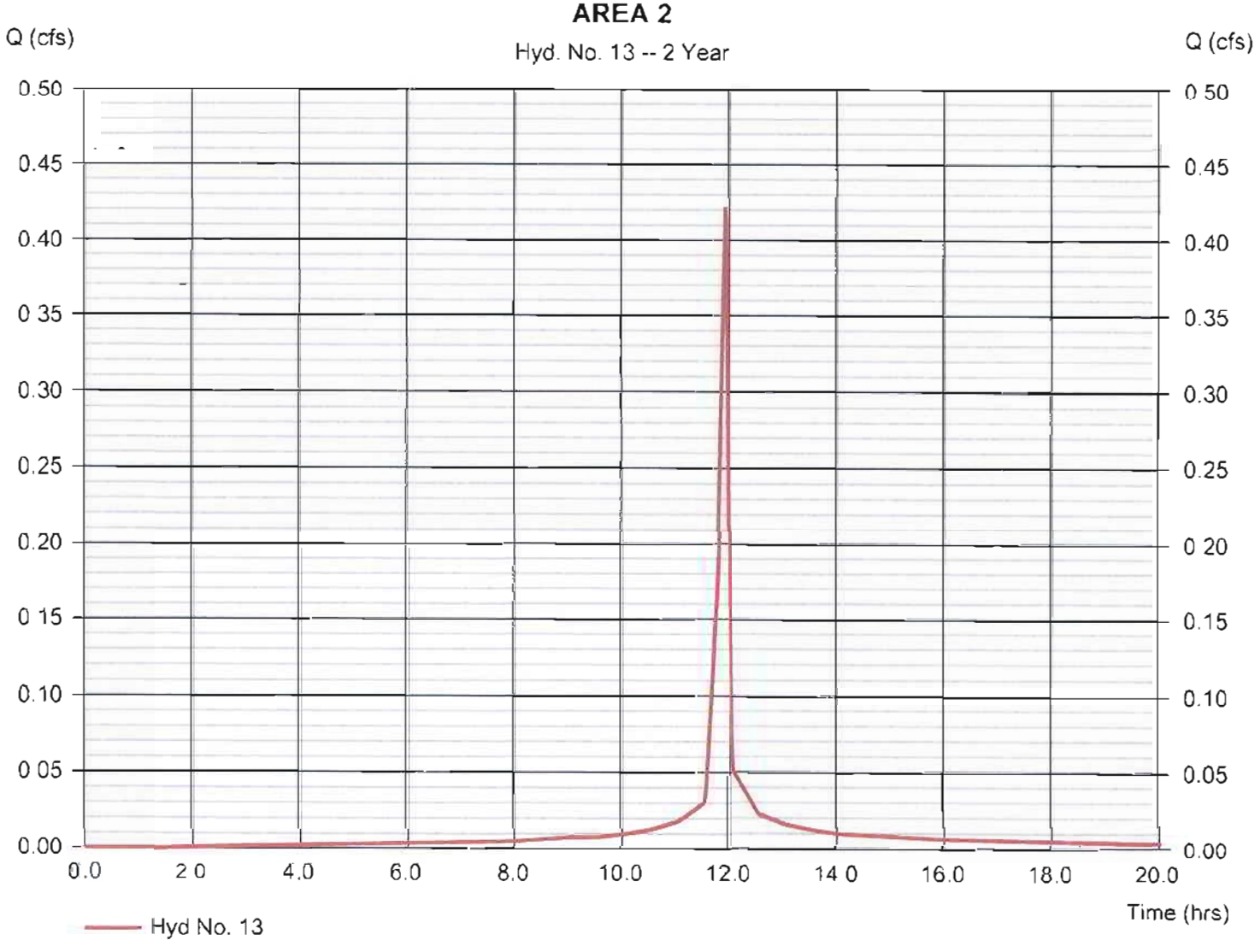


Hydrograph Report

Hyd. No. 13

AREA 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.422 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.020 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

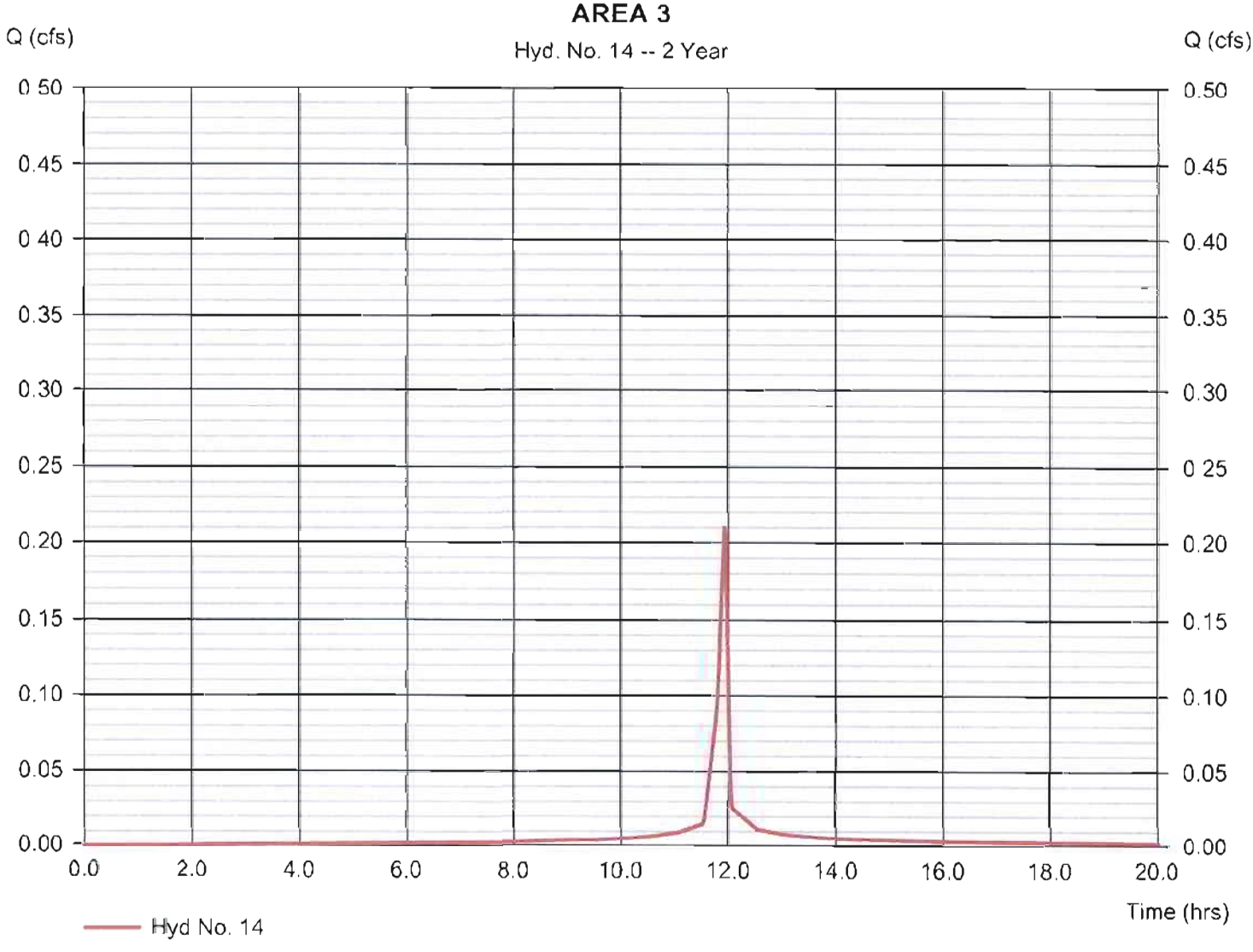


Hydrograph Report

Hyd. No. 14

AREA 3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.211 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.010 acft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

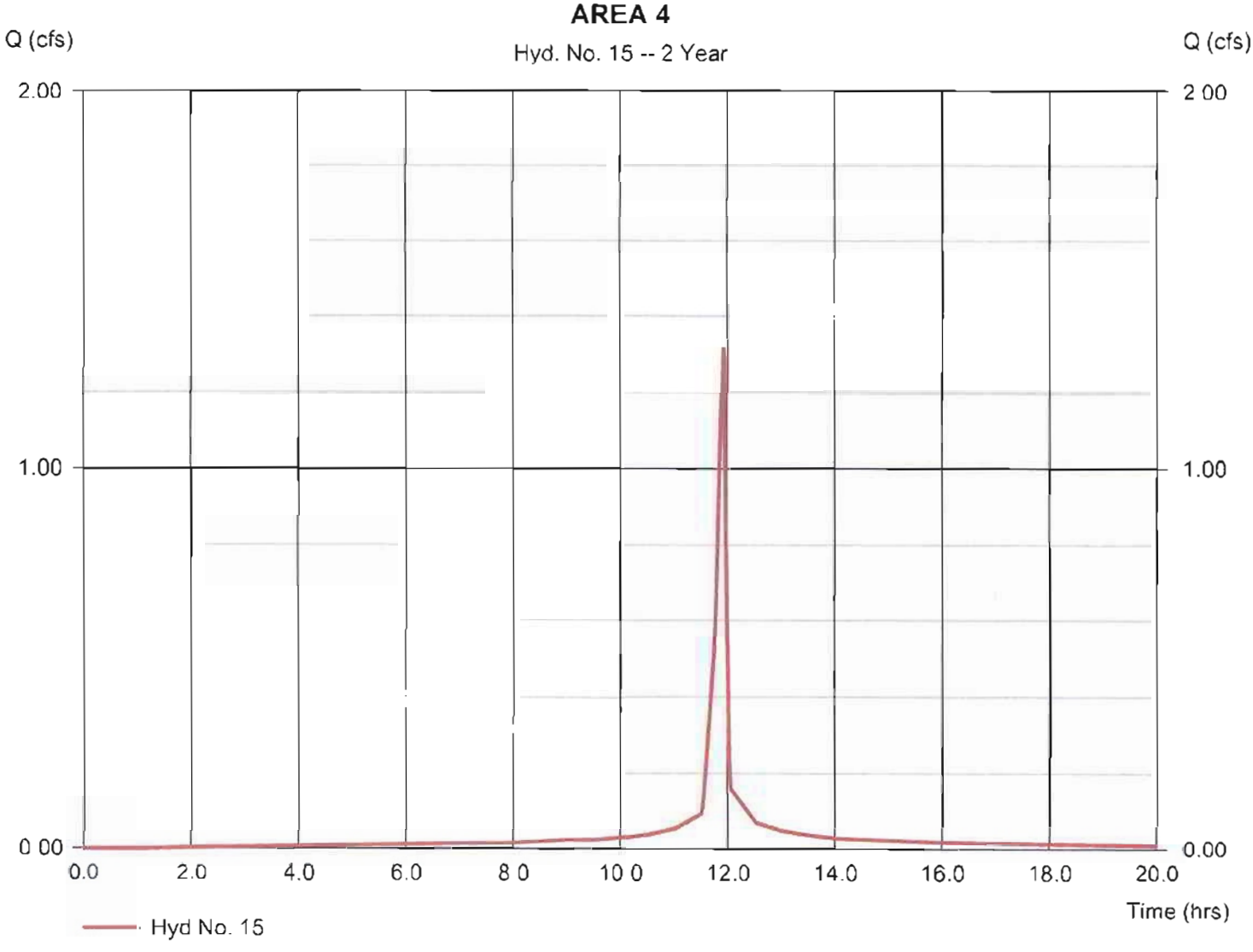


Hydrograph Report

Hyd. No. 15

AREA 4

Hydrograph type	= SCS Runoff	Peak discharge	= 1.318 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.064 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

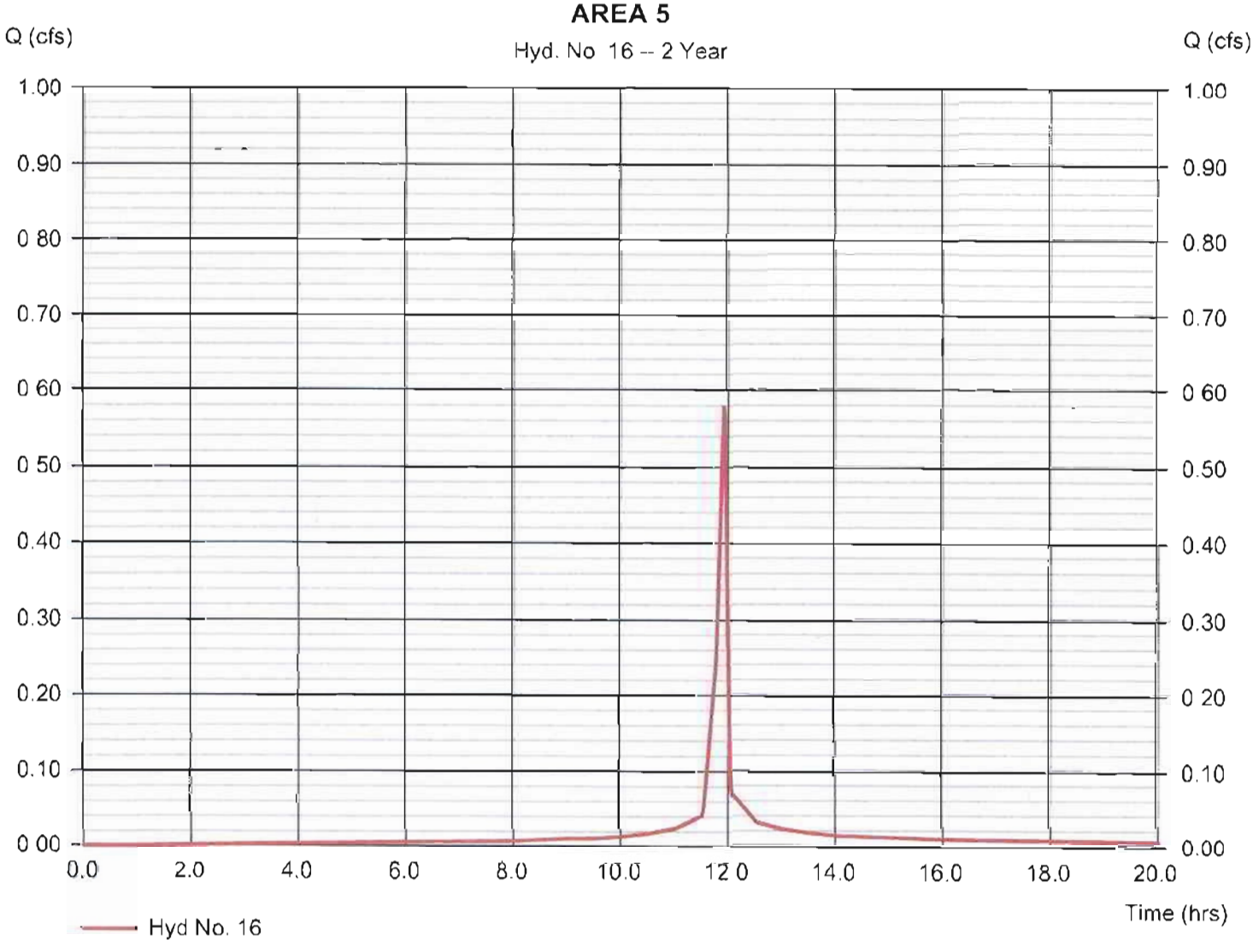


Hydrograph Report

Hyd. No. 16

AREA 5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.580 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.028 acft
Drainage area	= 0.110 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

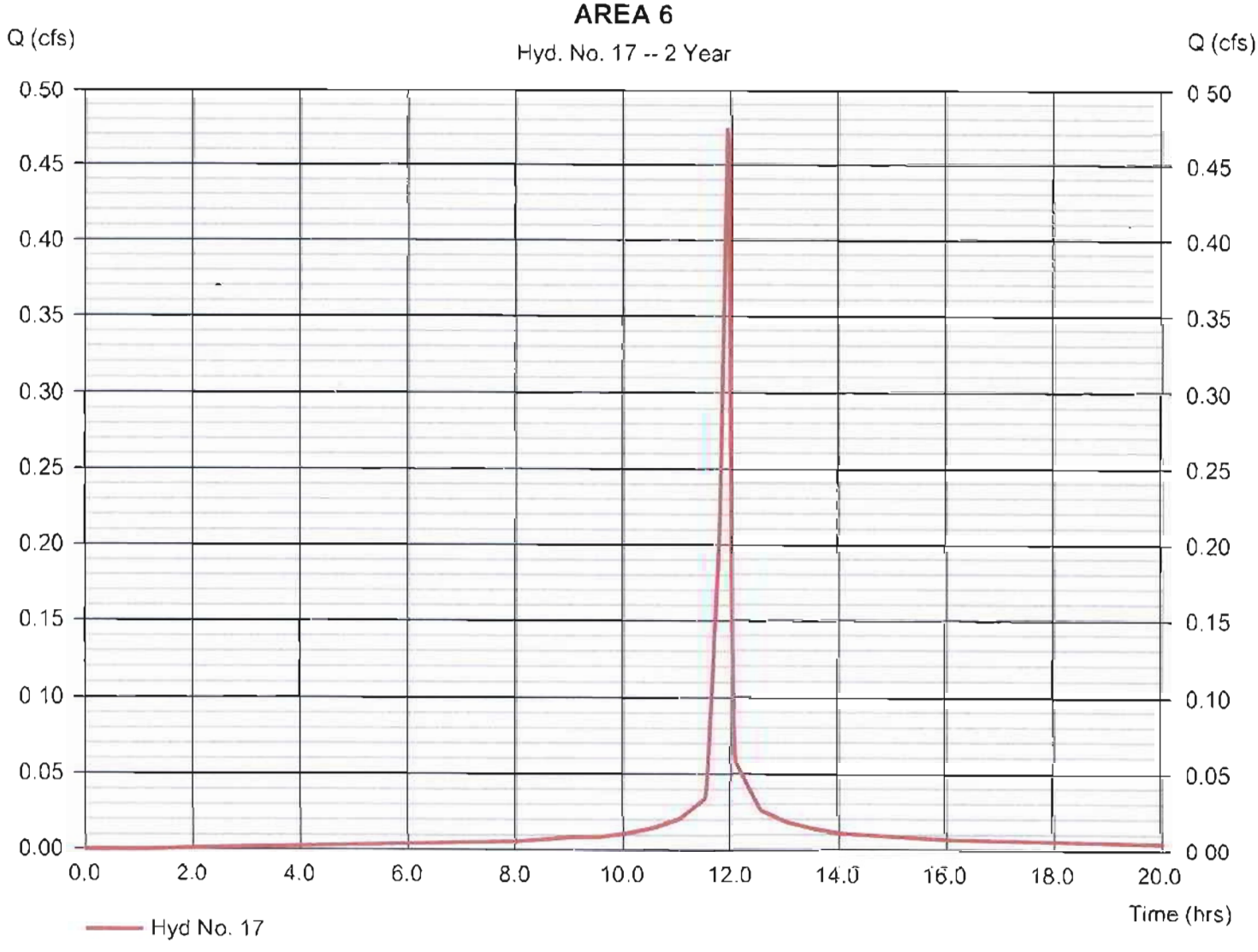


Hydrograph Report

Hyd. No. 17

AREA 6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.475 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.023 acft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

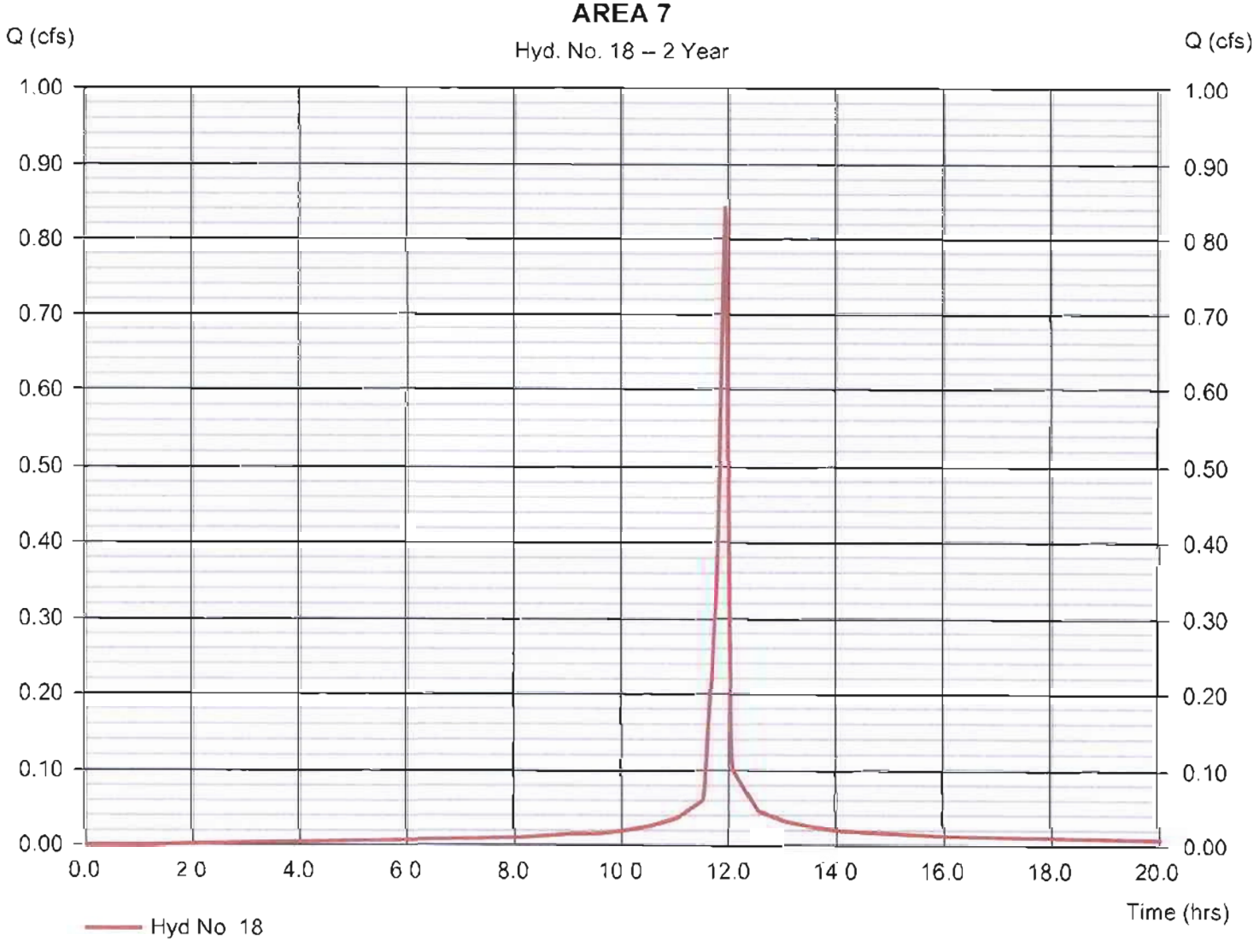


Hydrograph Report

Hyd. No. 18

AREA 7

Hydrograph type	= SCS Runoff	Peak discharge	= 0.844 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.041 acft
Drainage area	= 0.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

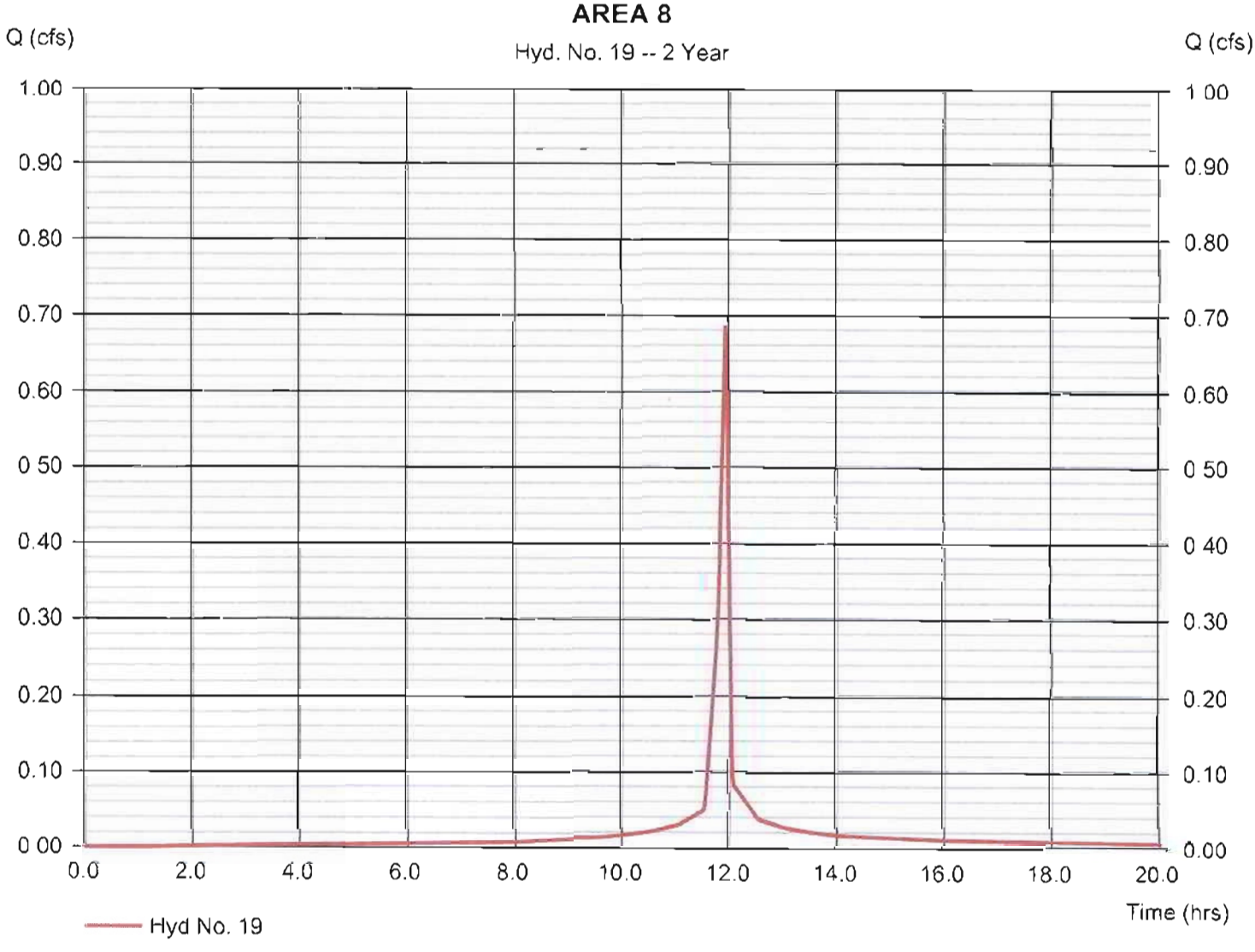


Hydrograph Report

Hyd. No. 19

AREA 8

Hydrograph type	= SCS Runoff	Peak discharge	= 0.685 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.033 acft
Drainage area	= 0.130 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

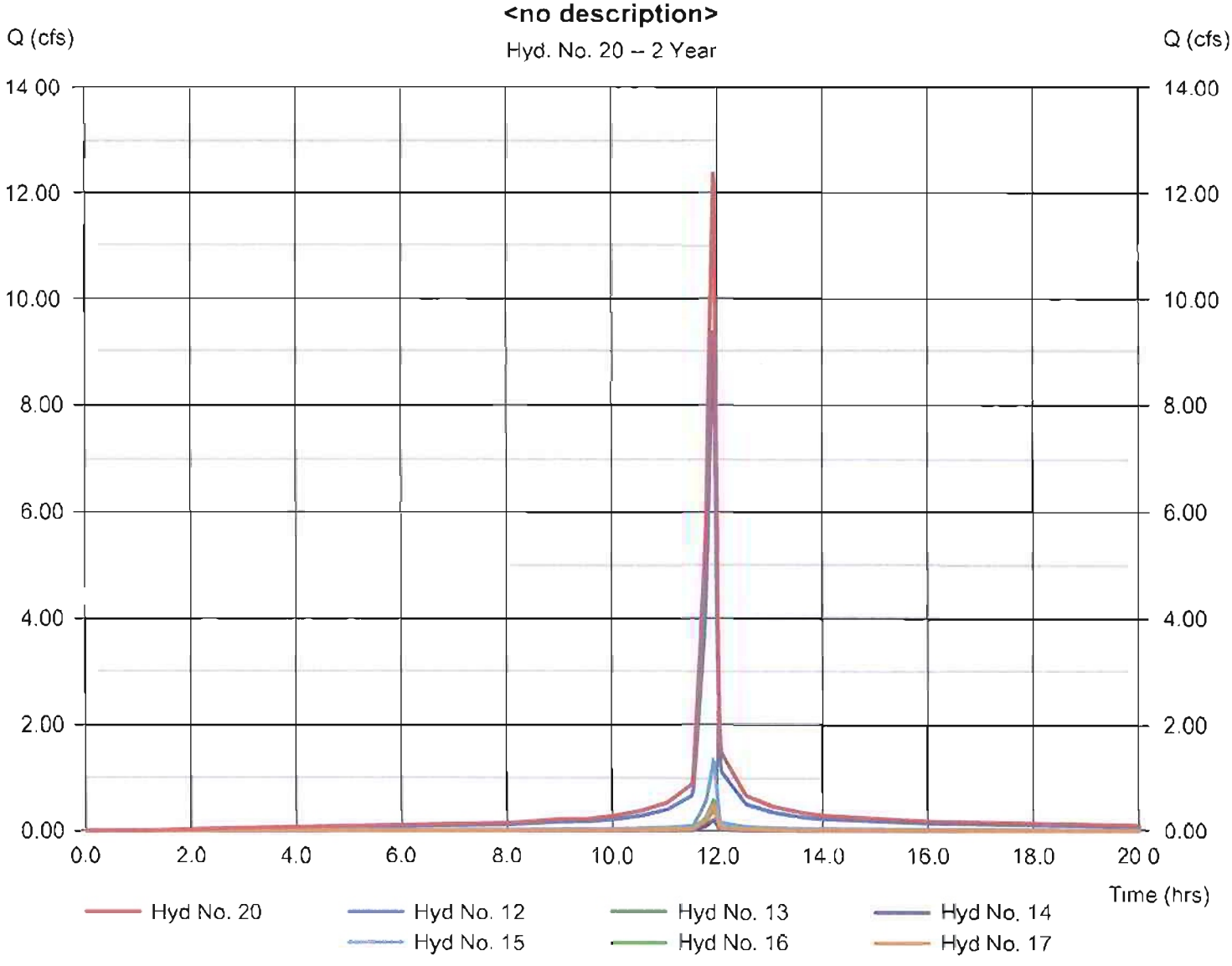


Hydrograph Report

Hyd. No. 20

<no description>

Hydrograph type	= Combine	Peak discharge	= 12.39 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.600 acft
Inflow hyds.	= 12, 13, 14, 15, 16, 17	Contrib. drain. area	= 2.350 ac

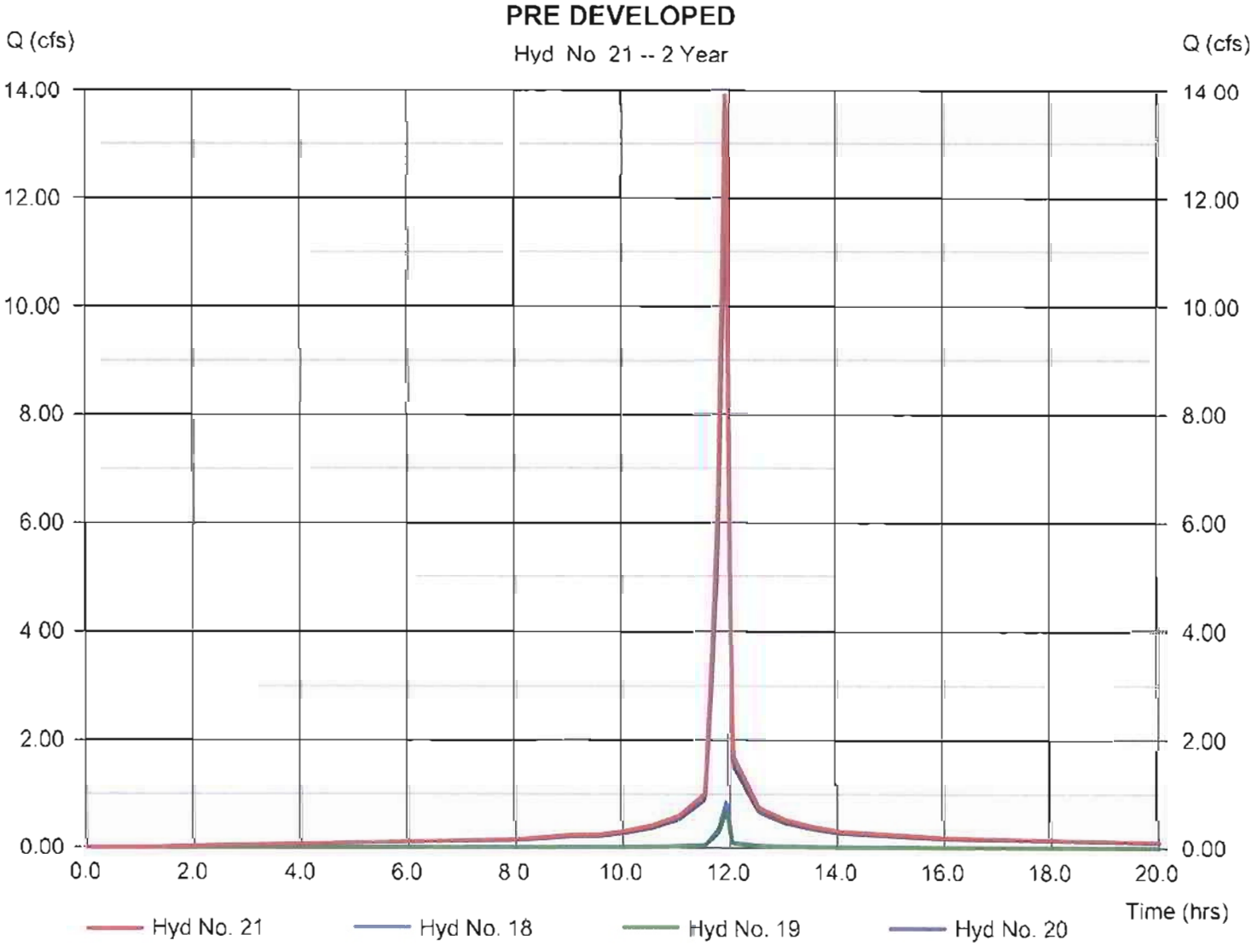


Hydrograph Report

Hyd. No. 21

PRE DEVELOPED

Hydrograph type	= Combine	Peak discharge	= 13.92 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.674 acft
Inflow hyds.	= 18, 19, 20	Contrib. drain. area	= 0.290 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc. v9

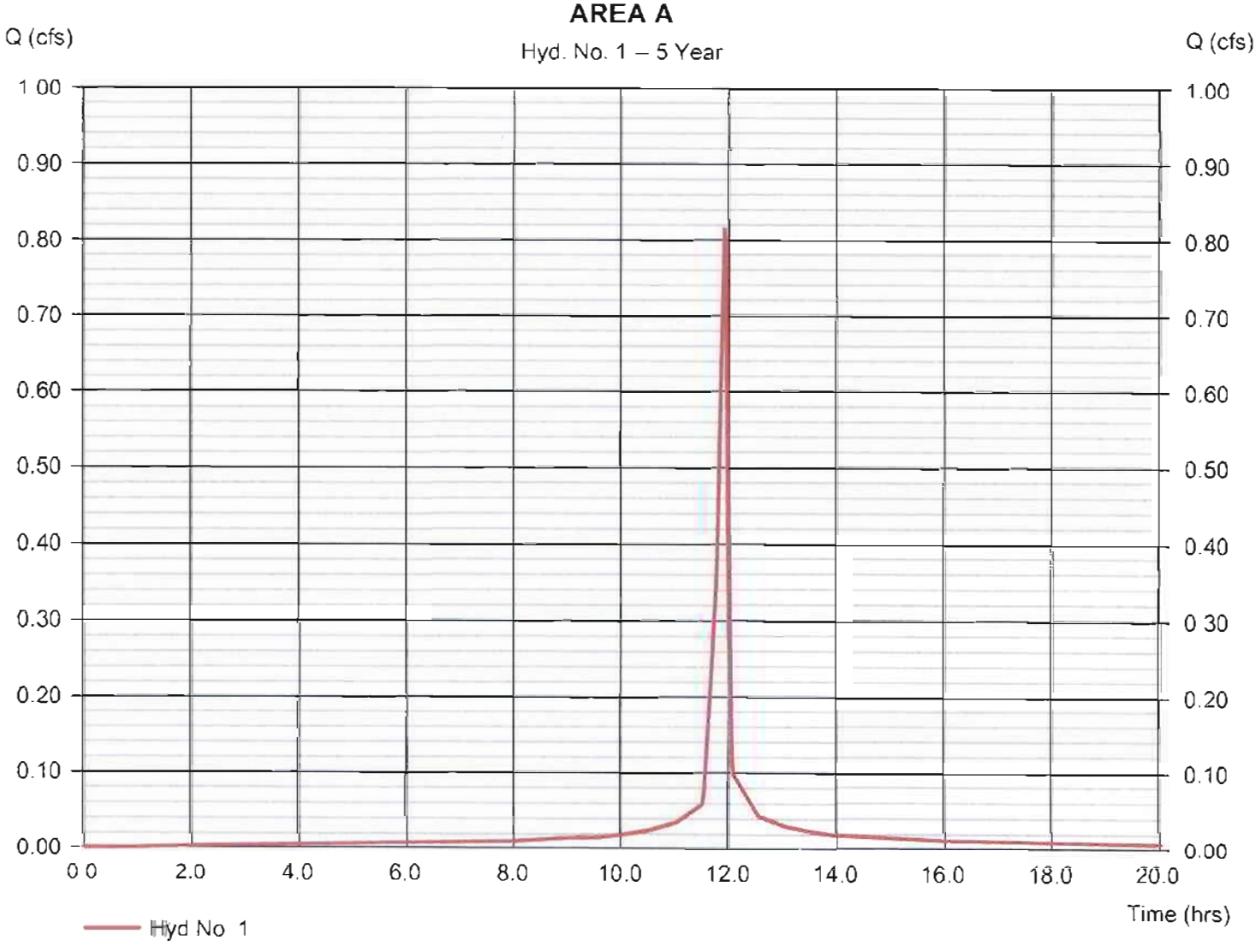
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph Description
1	SCS Runoff	0.817	1	715	0.040	-----	-----	-----	AREA A
2	SCS Runoff	2.518	1	715	0.123	-----	-----	-----	AREA B
3	SCS Runoff	0.817	1	715	0.040	-----	-----	-----	AREA C
4	SCS Runoff	2.381	1	715	0.117	-----	-----	-----	AREA D
5	SCS Runoff	0.544	1	715	0.027	-----	-----	-----	AREA E
6	SCS Runoff	1.701	1	715	0.083	-----	-----	-----	AREA F
7	SCS Runoff	1.701	1	715	0.083	-----	-----	-----	AREA G
8	SCS Runoff	1.293	1	715	0.063	-----	-----	-----	AREA H
9	SCS Runoff	1.157	1	715	0.057	-----	-----	-----	AREA I
10	Combine	8.777	1	715	0.430	1, 2, 3, 4, 5, 6,	-----	-----	<no description>
11	Combine	12.93	1	715	0.633	7, 8, 9, 10	-----	-----	Combined Post Developed
12	SCS Runoff	12.11	1	715	0.593	-----	-----	-----	AREA 1
13	SCS Runoff	0.544	1	715	0.027	-----	-----	-----	AREA 2
14	SCS Runoff	0.272	1	715	0.013	-----	-----	-----	AREA 3
15	SCS Runoff	1.701	1	715	0.083	-----	-----	-----	AREA 4
16	SCS Runoff	0.748	1	715	0.037	-----	-----	-----	AREA 5
17	SCS Runoff	0.612	1	715	0.030	-----	-----	-----	AREA 6
18	SCS Runoff	1.089	1	715	0.053	-----	-----	-----	AREA 7
19	SCS Runoff	0.885	1	715	0.043	-----	-----	-----	AREA 8
20	Combine	15.99	1	715	0.783	12, 13, 14, 15, 16, 17,	-----	-----	<no description>
21	Combine	17.96	1	715	0.879	18, 19, 20	-----	-----	PRE DEVELOPED

Hydrograph Report

Hyd. No. 1

AREA A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.817 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.040 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

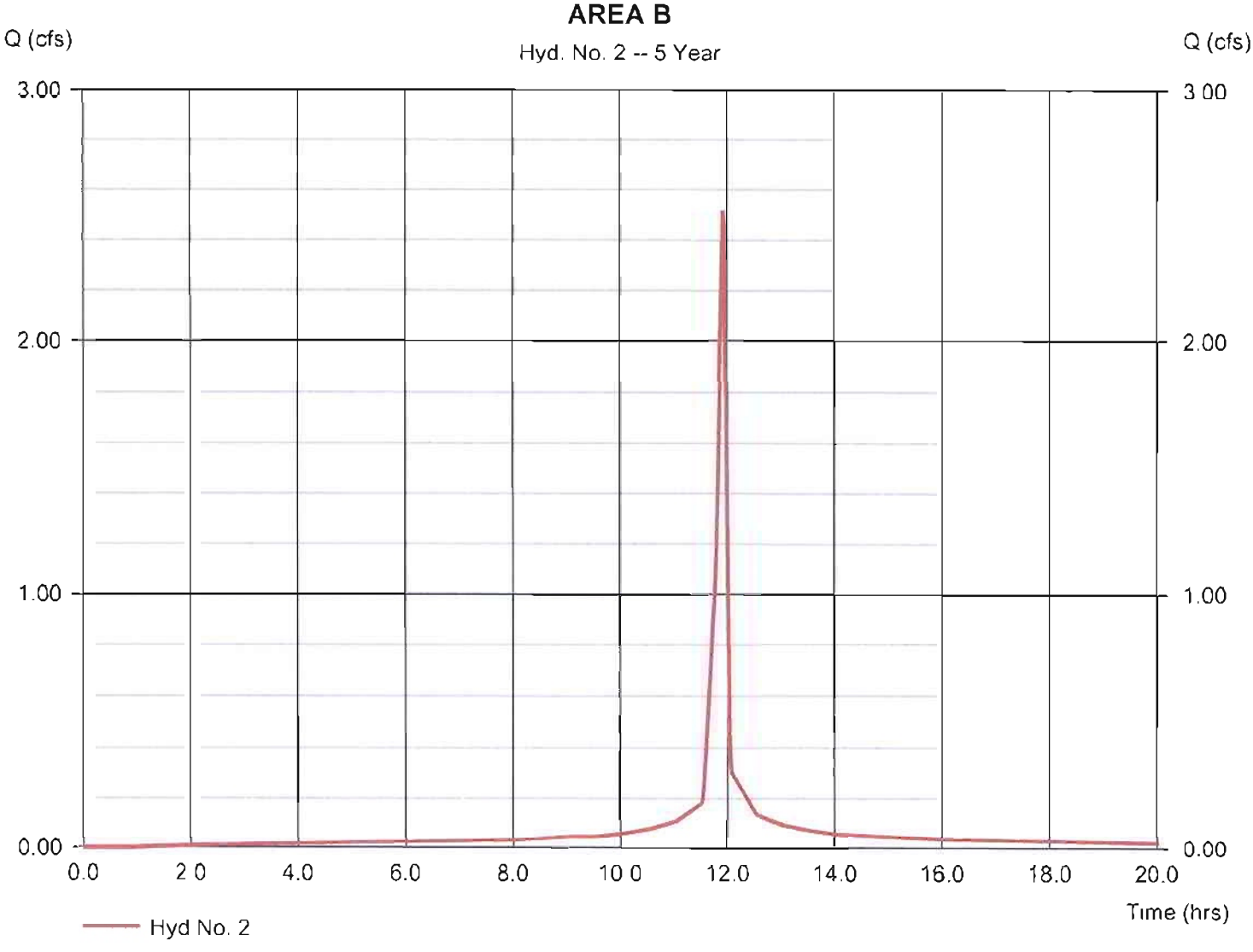


Hydrograph Report

Hyd. No. 2

AREA B

Hydrograph type	= SCS Runoff	Peak discharge	= 2.518 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.123 acft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

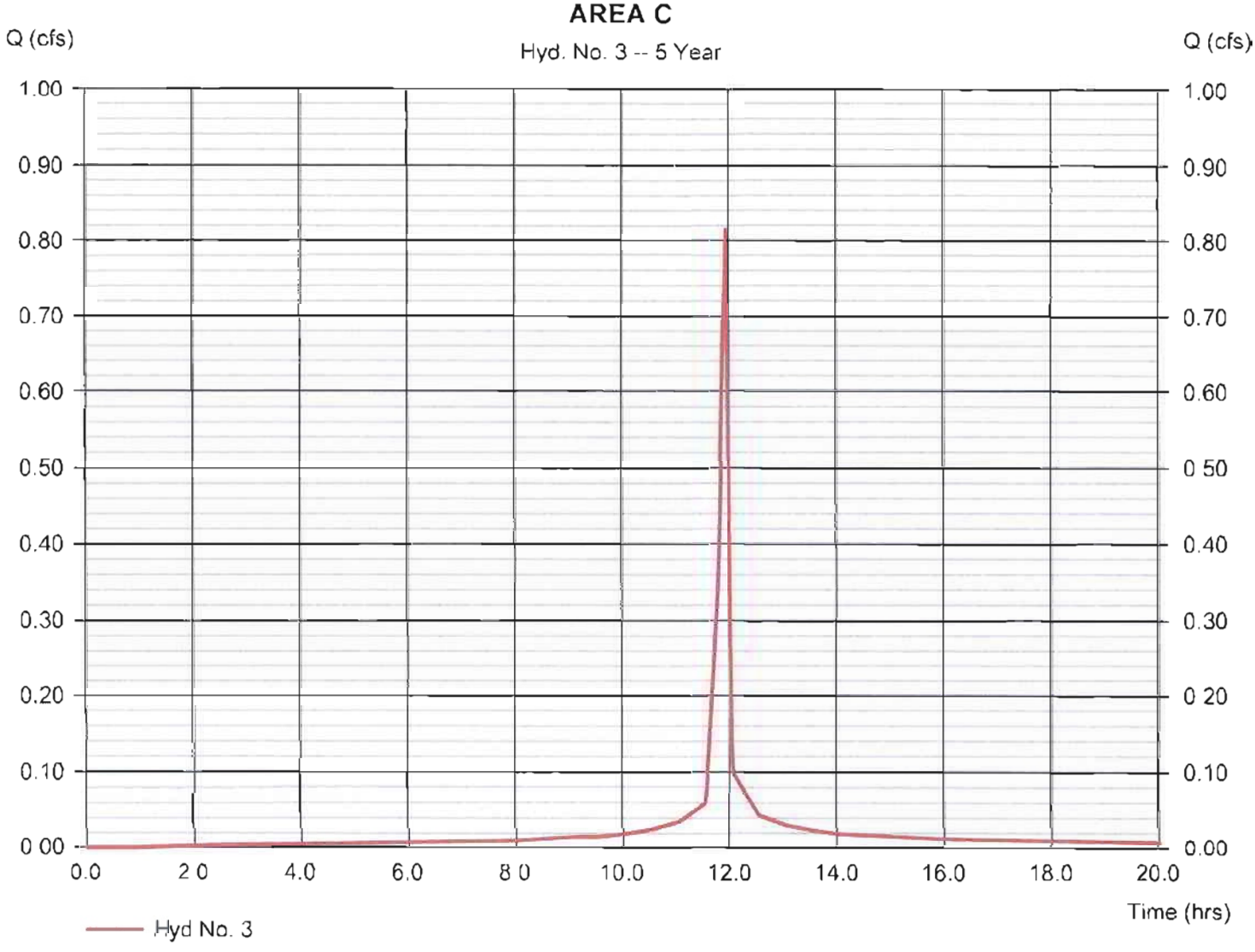


Hydrograph Report

Hyd. No. 3

AREA C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.817 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.040 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

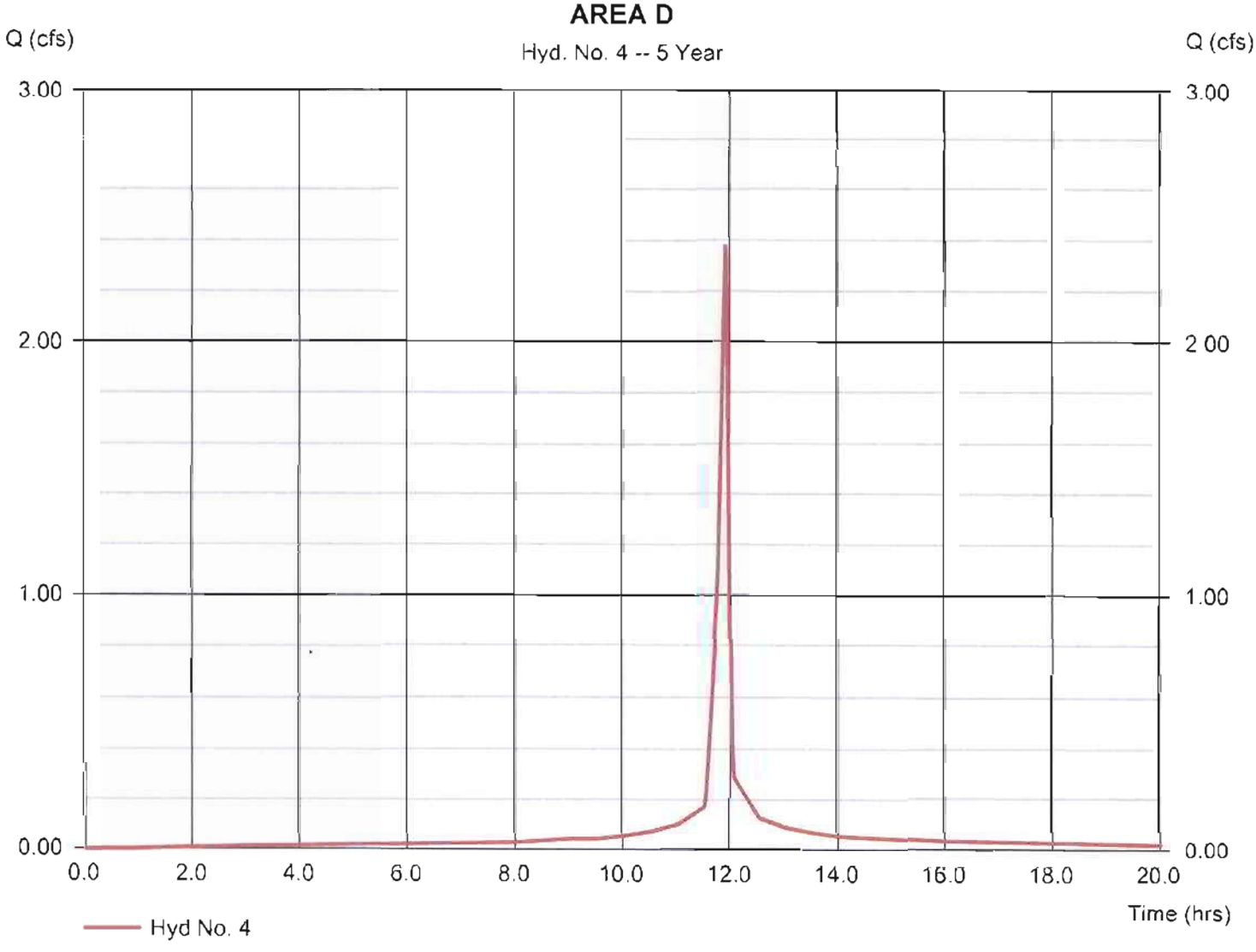


Hydrograph Report

Hyd. No. 4

AREA D

Hydrograph type	= SCS Runoff	Peak discharge	= 2.381 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.117 acft
Drainage area	= 0.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 1.70 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

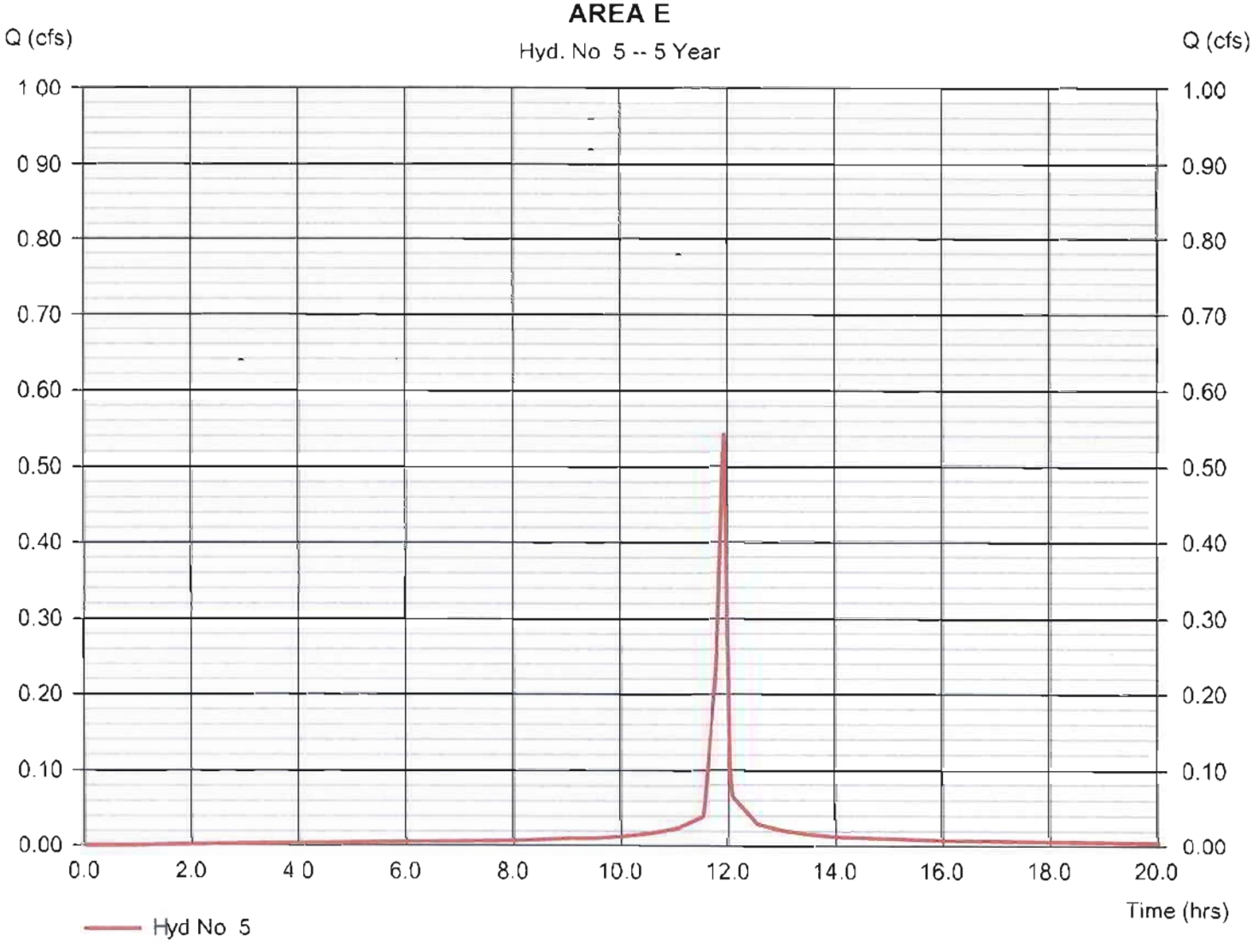


Hydrograph Report

Hyd. No. 5

AREA E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.544 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.027 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

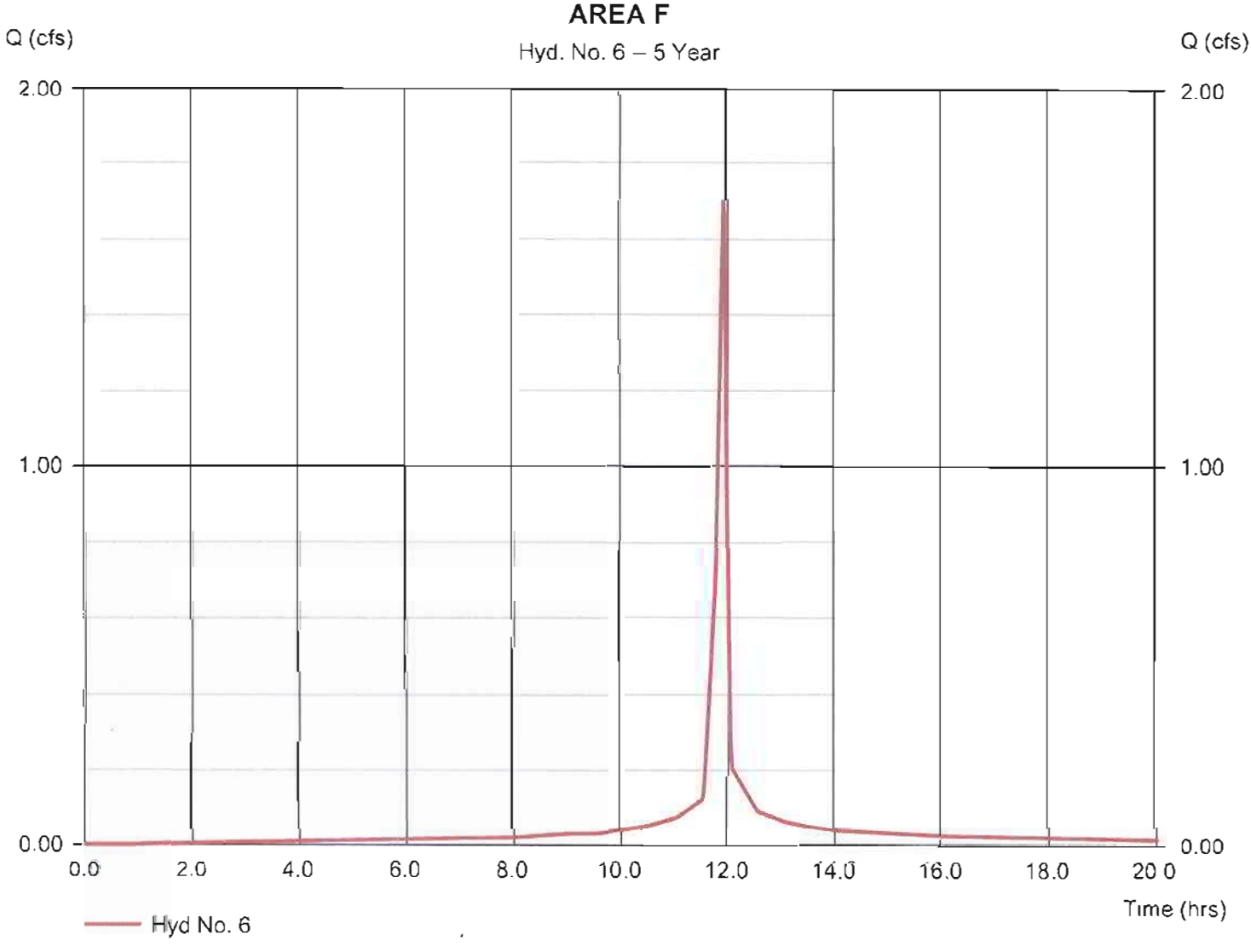


Hydrograph Report

Hyd. No. 6

AREA F

Hydrograph type	= SCS Runoff	Peak discharge	= 1.701 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.083 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

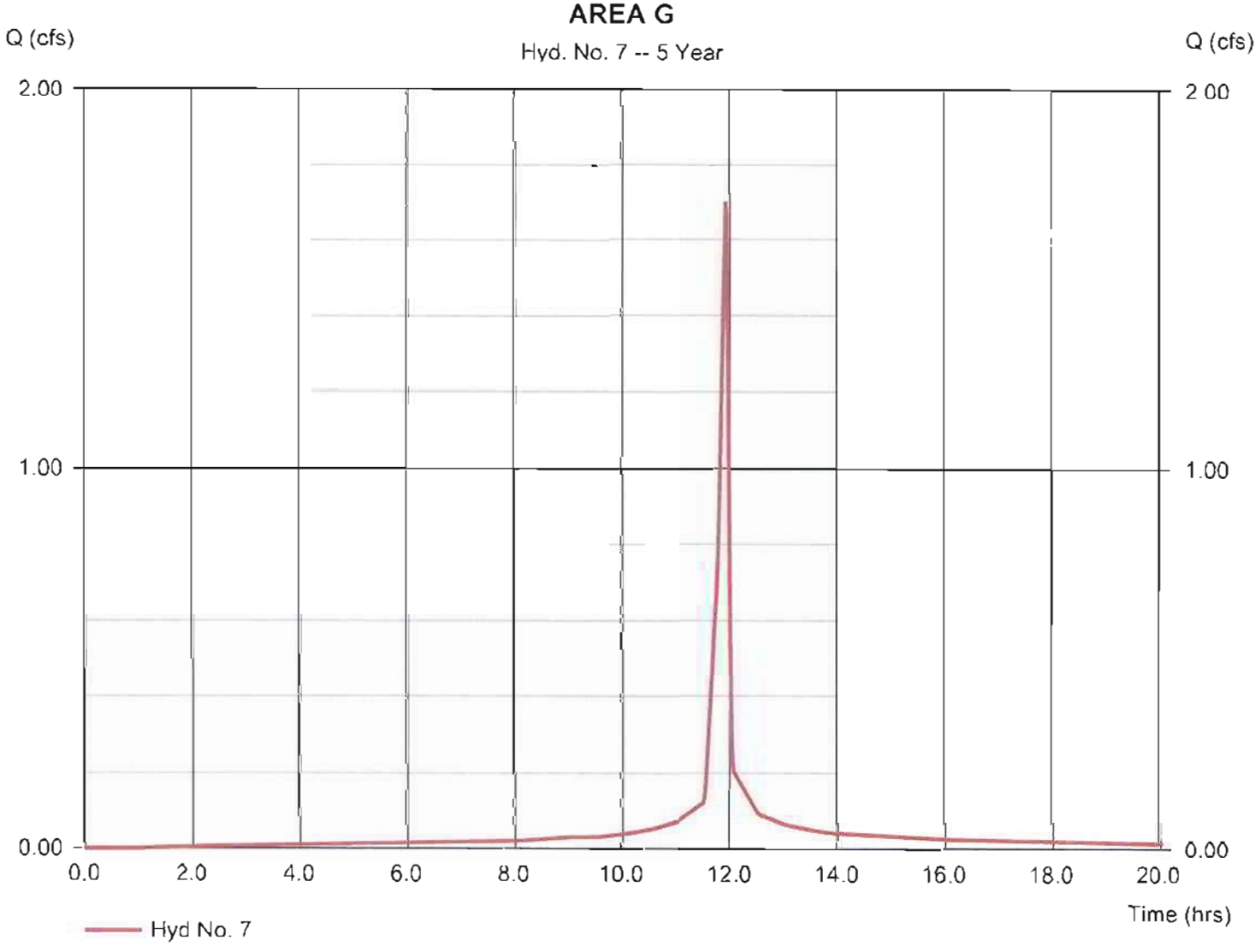


Hydrograph Report

Hyd. No. 7

AREA G

Hydrograph type	= SCS Runoff	Peak discharge	= 1.701 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.083 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

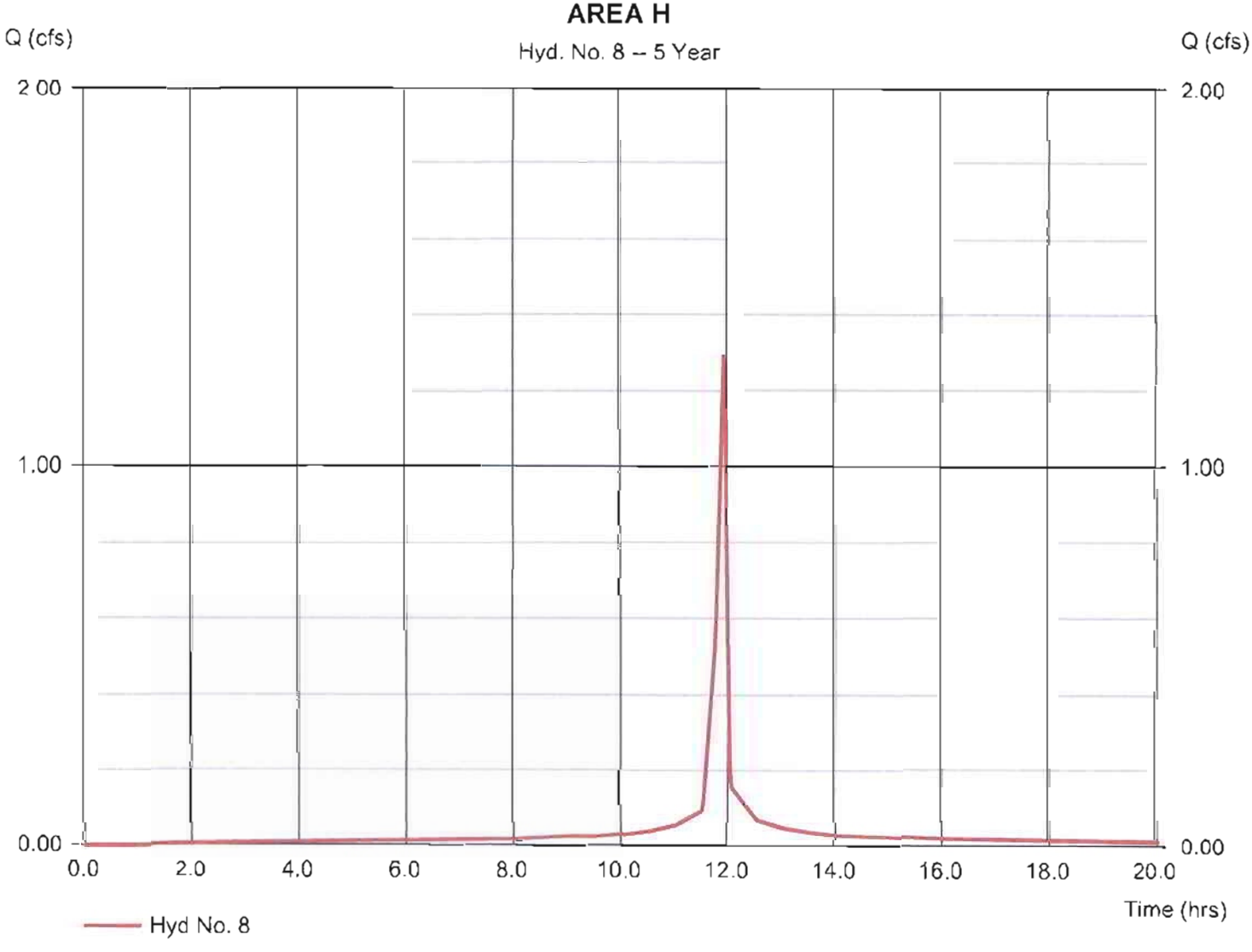


Hydrograph Report

Hyd. No. 8

AREA H

Hydrograph type	= SCS Runoff	Peak discharge	= 1.293 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.063 acft
Drainage area	= 0.190 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

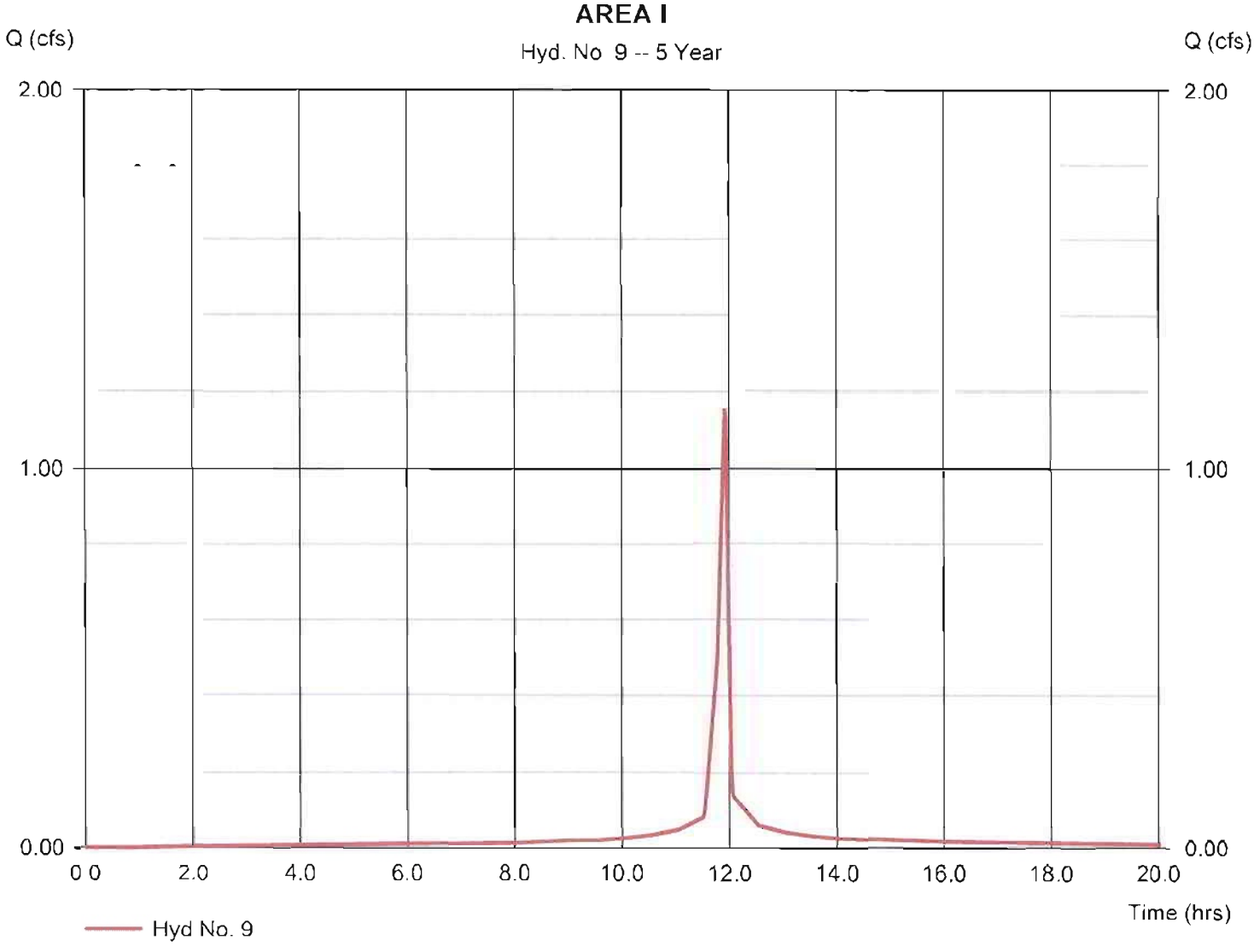


Hydrograph Report

Hyd. No. 9

AREA I

Hydrograph type	= SCS Runoff	Peak discharge	= 1.157 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.057 acft
Drainage area	= 0.170 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

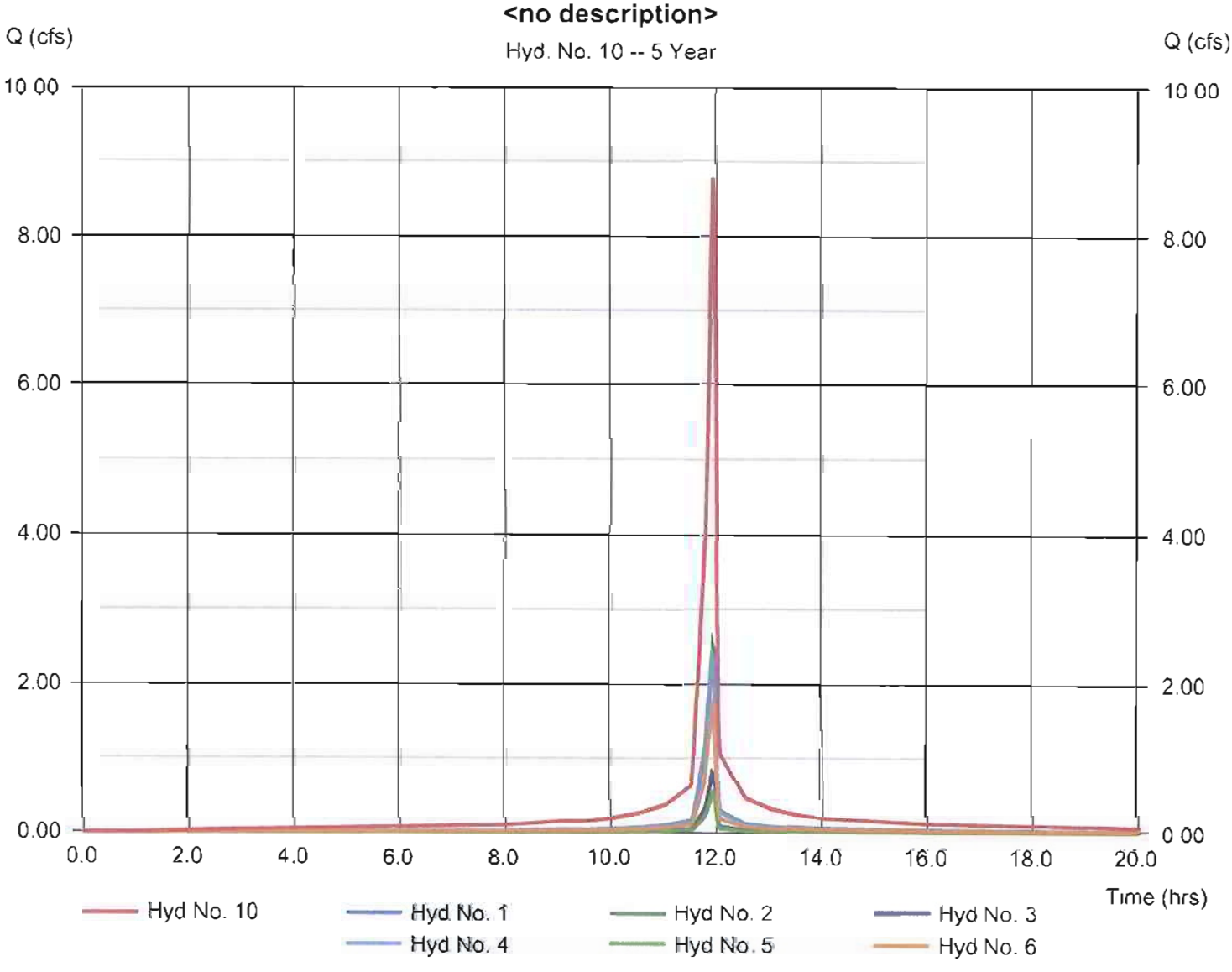


Hydrograph Report

Hyd. No. 10

<no description>

Hydrograph type	= Combine	Peak discharge	= 8.777 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.430 acft
Inflow hyds.	= 1, 2, 3, 4, 5, 6	Contrib. drain. area	= 1.290 ac

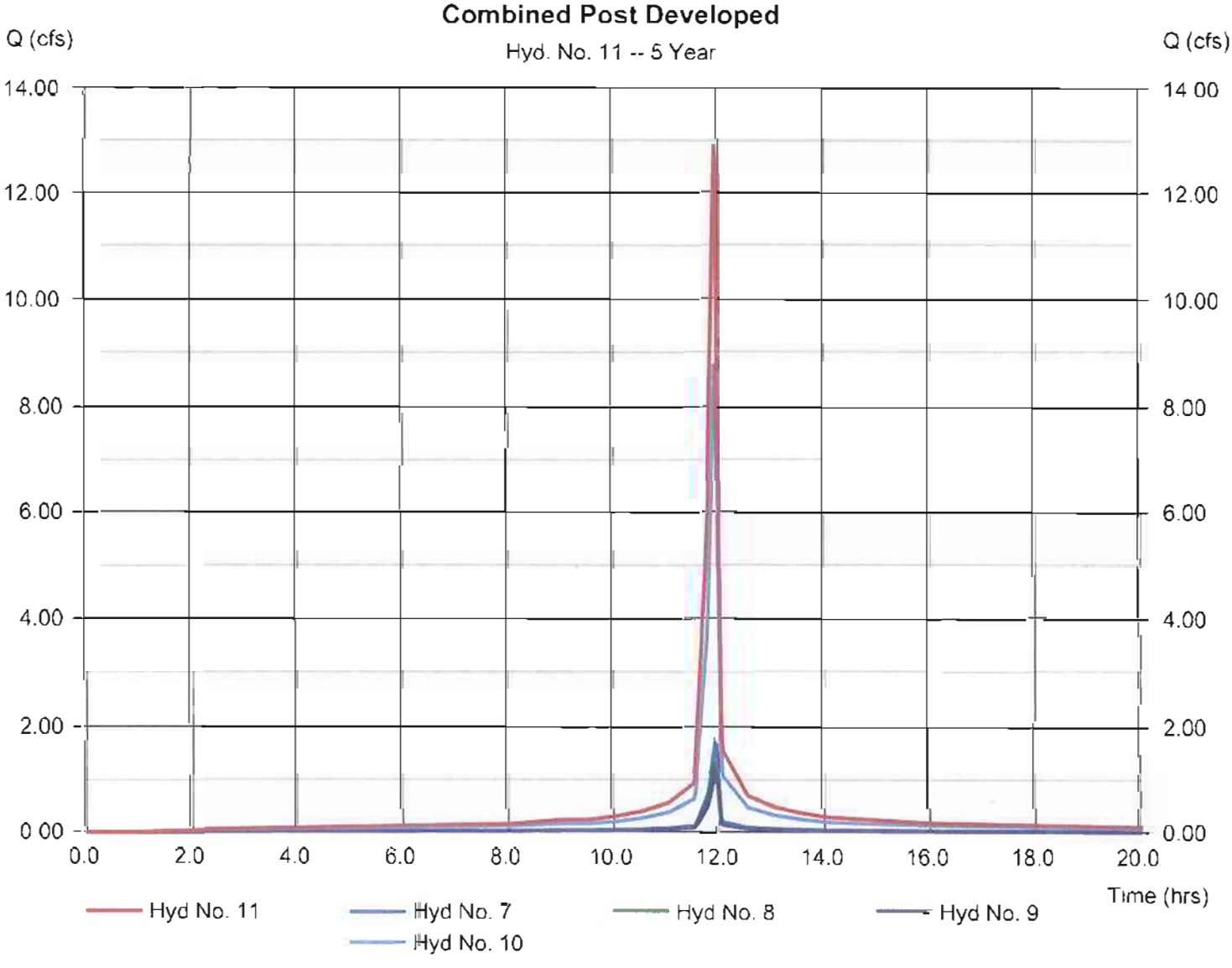


Hydrograph Report

Hyd. No. 11

Combined Post Developed

Hydrograph type	= Combine	Peak discharge	= 12.93 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.633 acft
Inflow hyds.	= 7, 8, 9, 10	Contrib. drain. area	= 0.610 ac

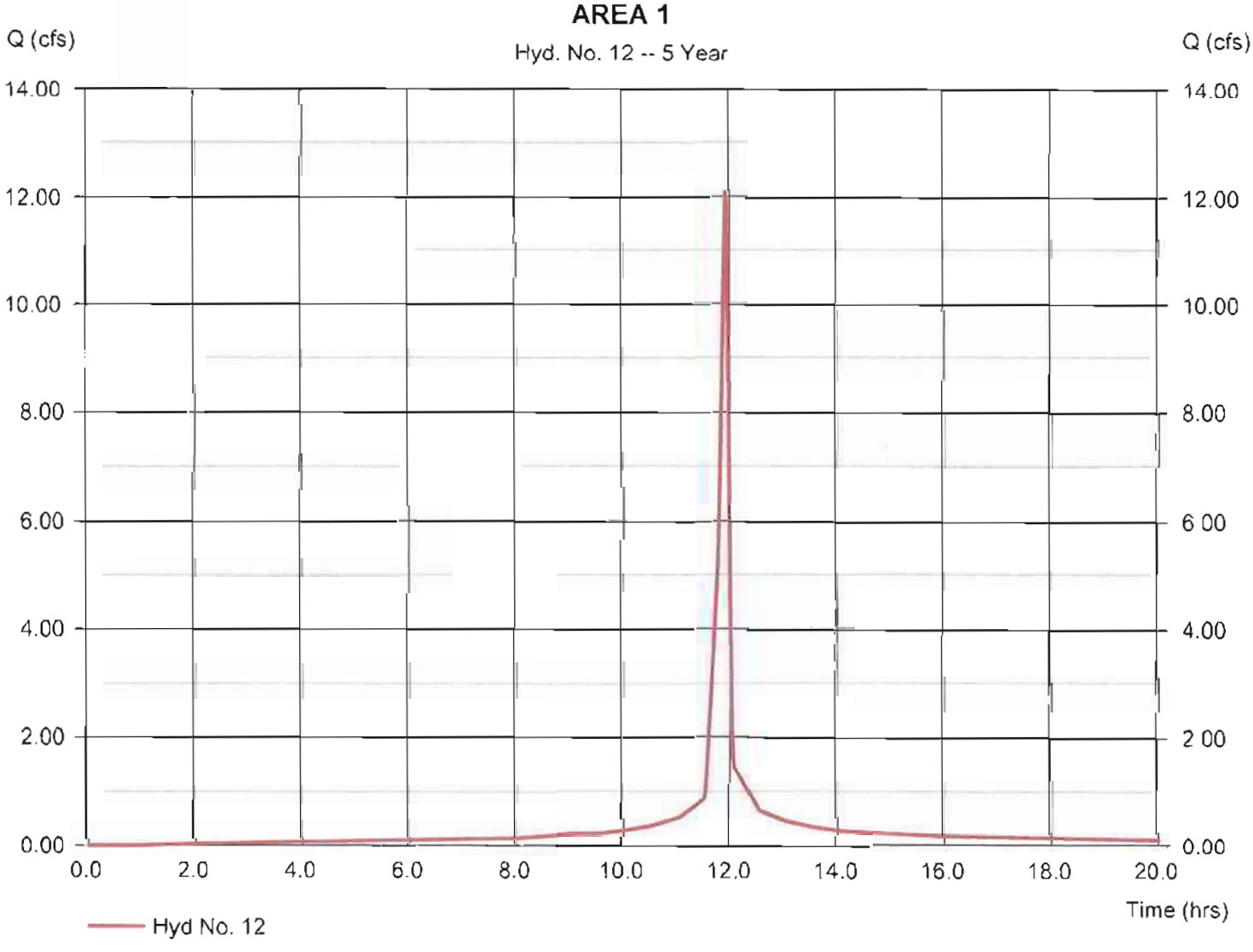


Hydrograph Report

Hyd. No. 12

AREA 1

Hydrograph type	= SCS Runoff	Peak discharge	= 12.11 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.593 acft
Drainage area	= 1.780 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 3.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

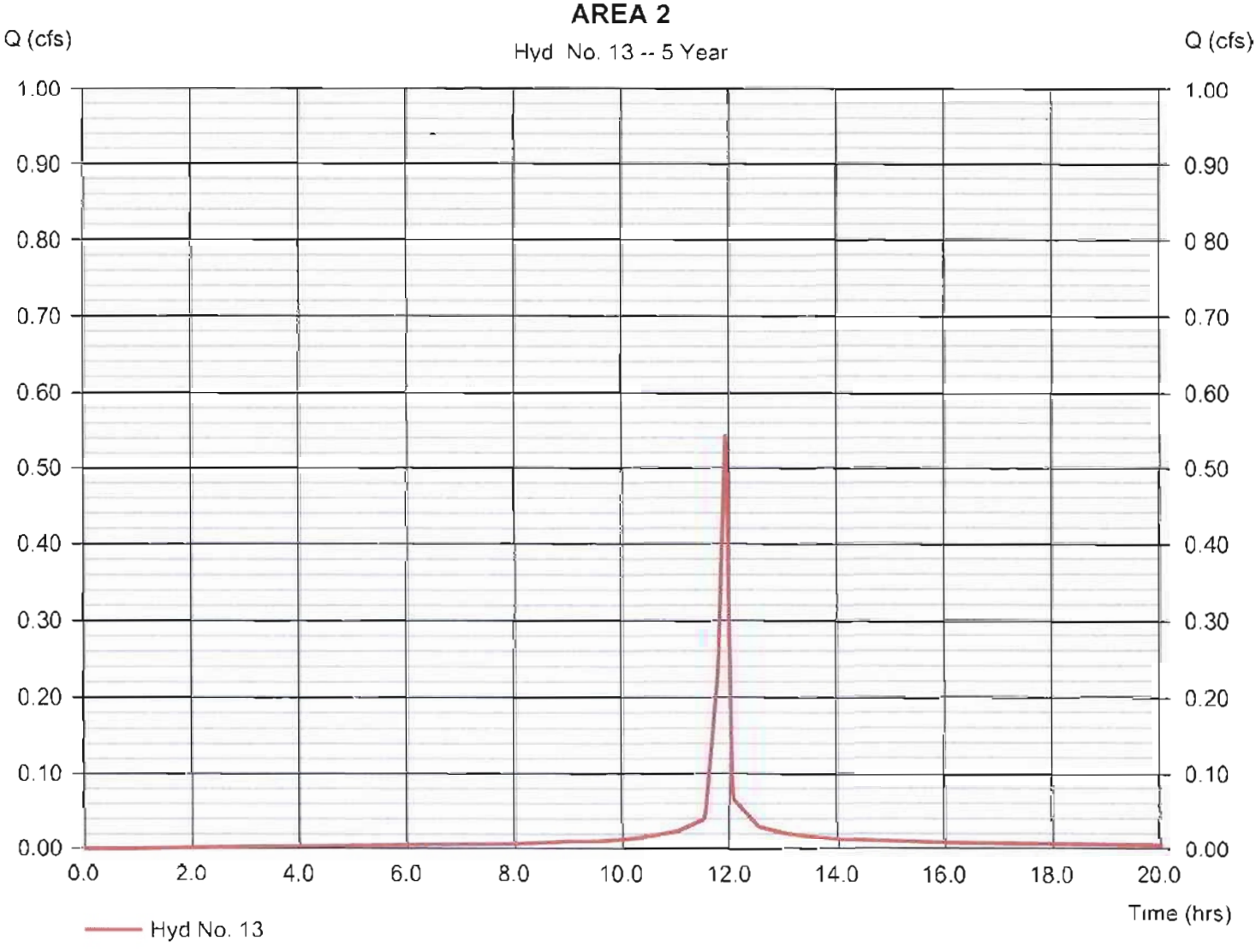


Hydrograph Report

Hyd. No. 13

AREA 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.544 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.027 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

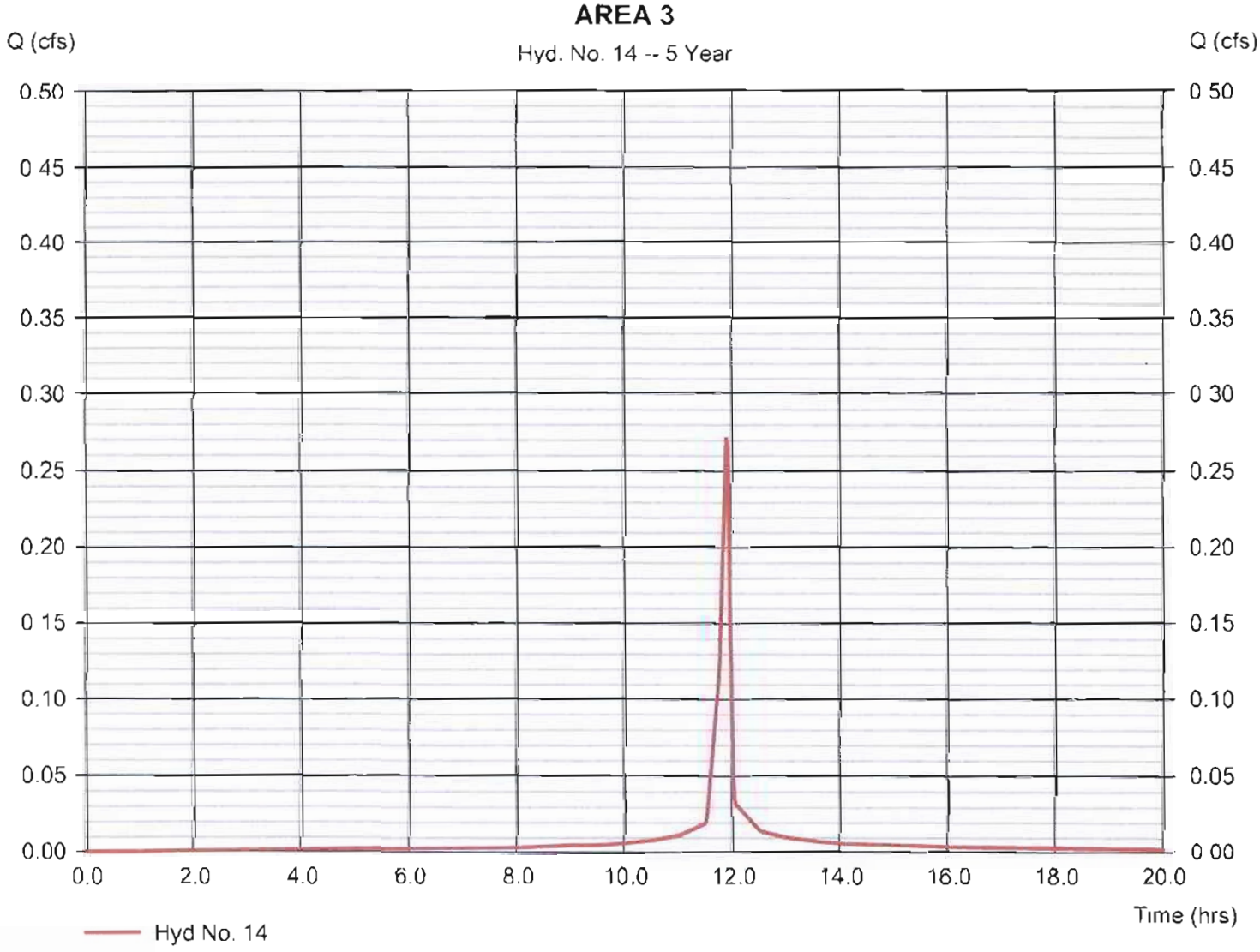


Hydrograph Report

Hyd. No. 14

AREA 3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.272 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.013 acft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

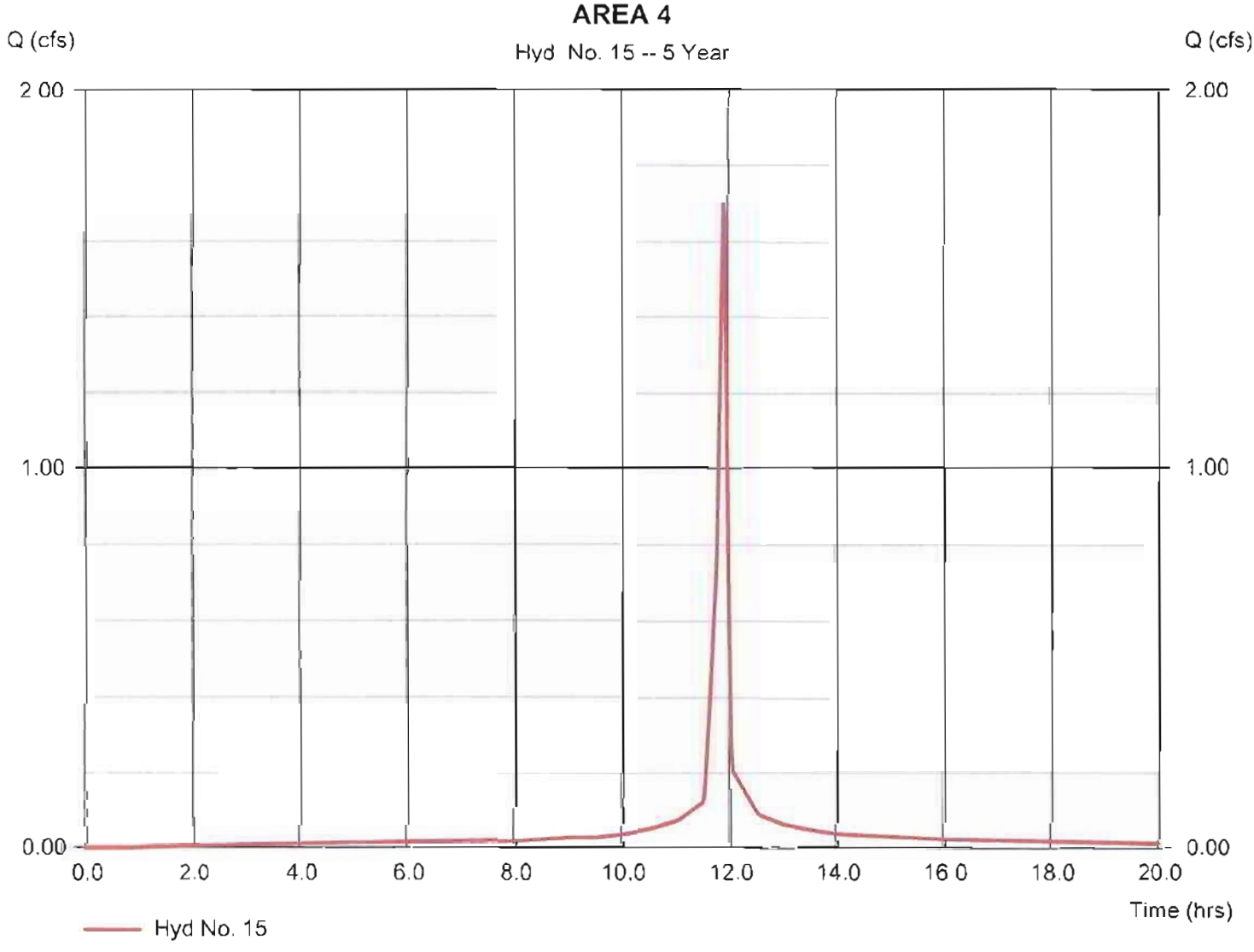


Hydrograph Report

Hyd. No. 15

AREA 4

Hydrograph type	= SCS Runoff	Peak discharge	= 1.701 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.083 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

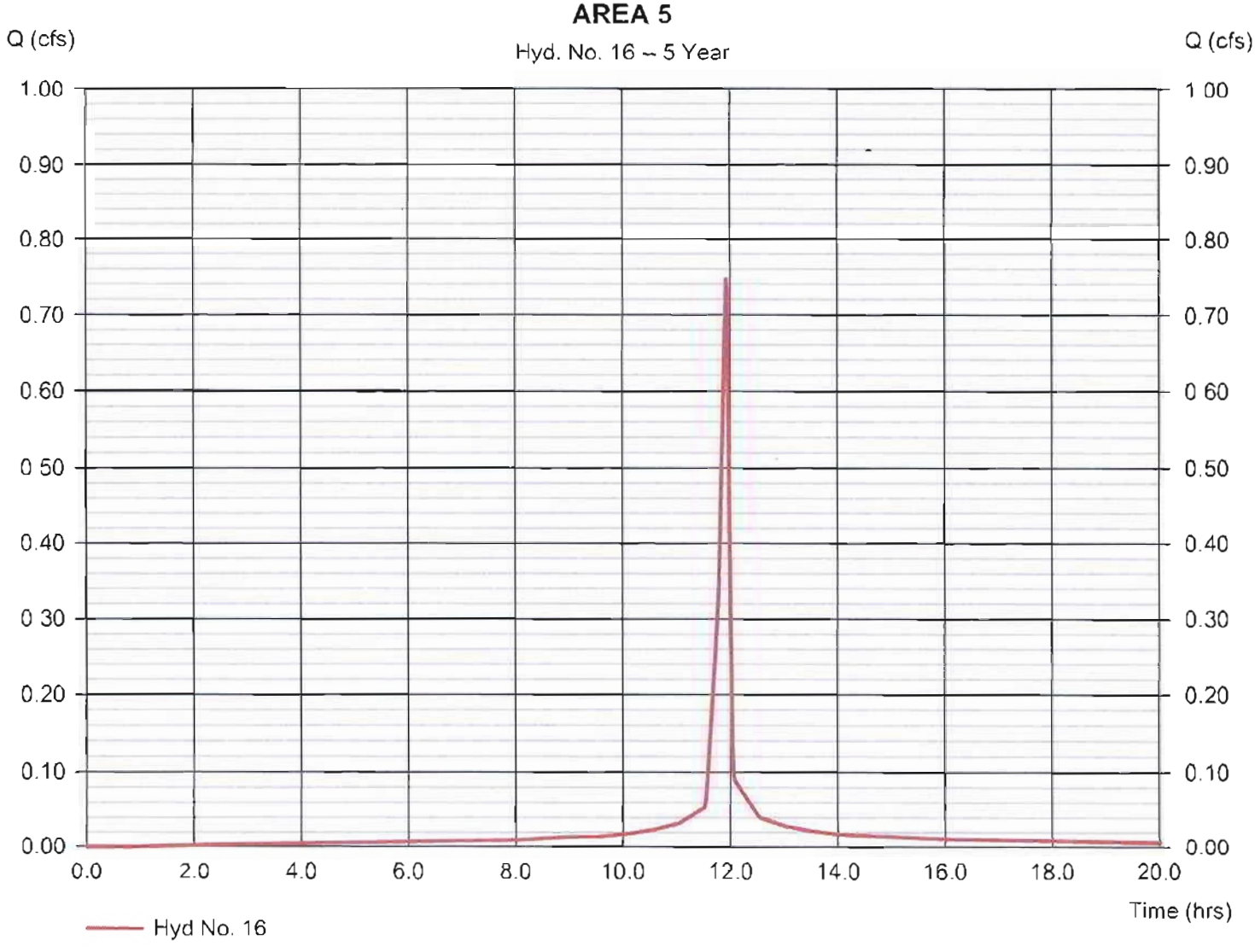


Hydrograph Report

Hyd. No. 16

AREA 5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.748 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.037 acft
Drainage area	= 0.110 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

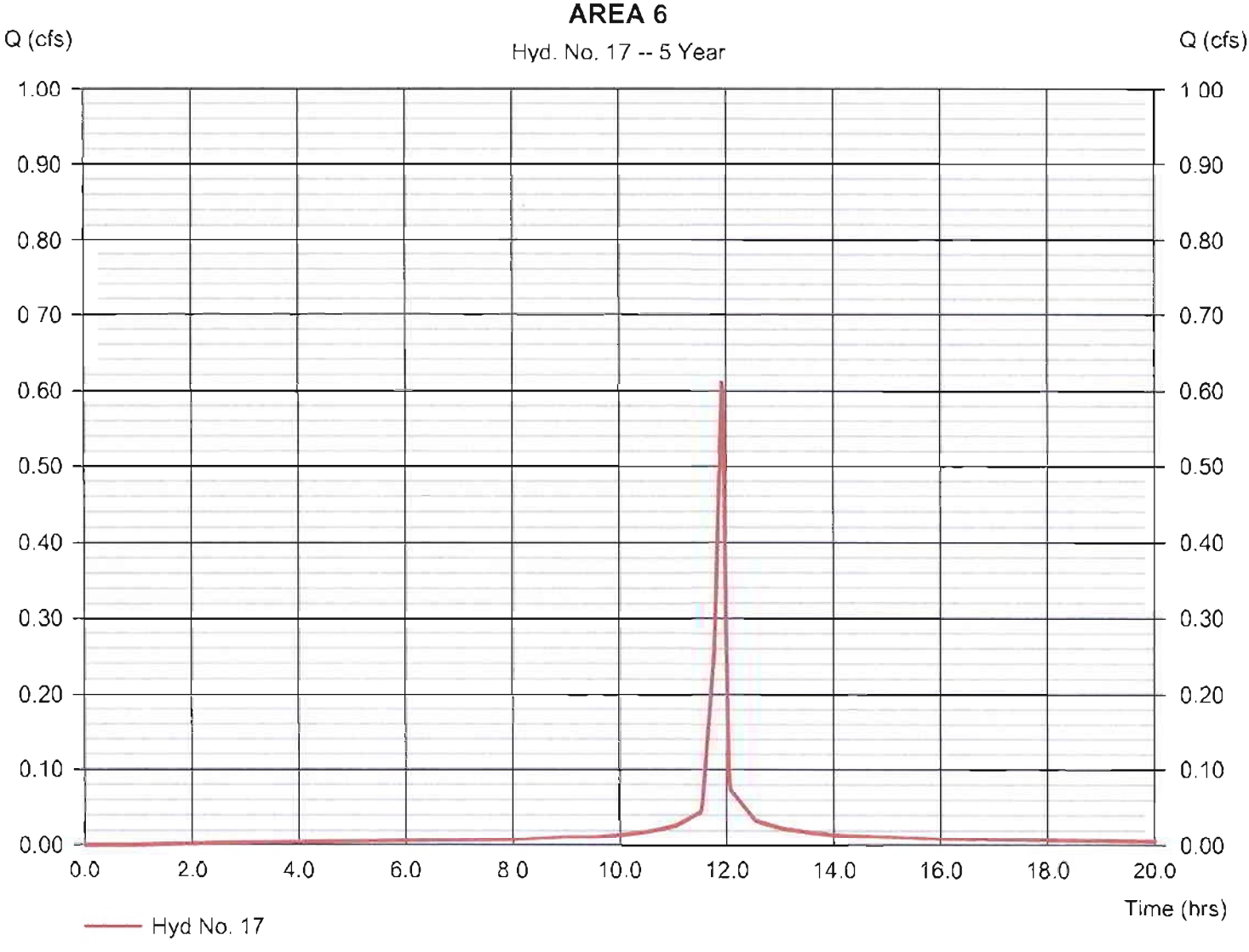


Hydrograph Report

Hyd. No. 17

AREA 6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.612 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.030 acft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

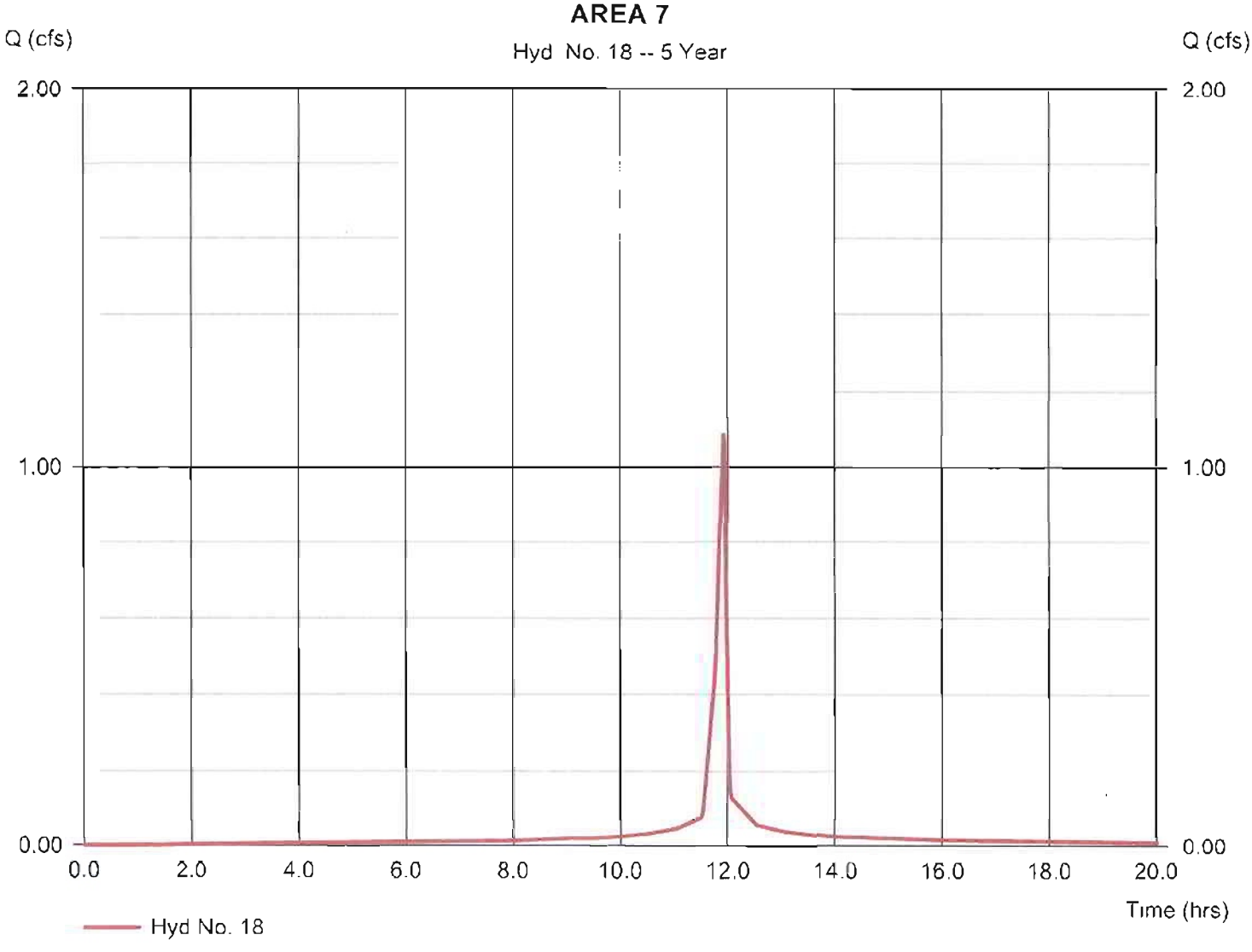


Hydrograph Report

Hyd. No. 18

AREA 7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.089 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.053 acft
Drainage area	= 0.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

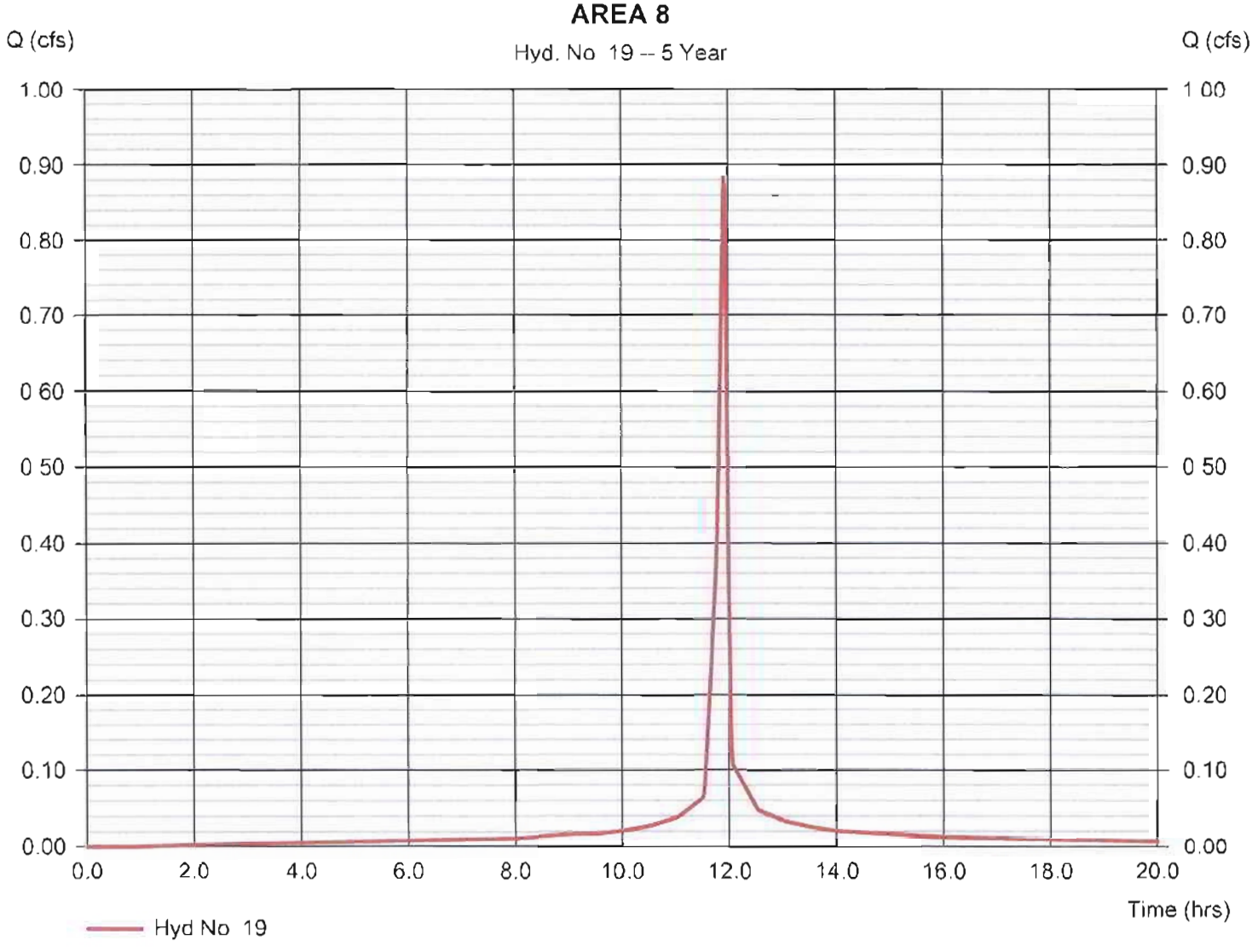


Hydrograph Report

Hyd. No. 19

AREA 8

Hydrograph type	= SCS Runoff	Peak discharge	= 0.885 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.043 acft
Drainage area	= 0.130 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

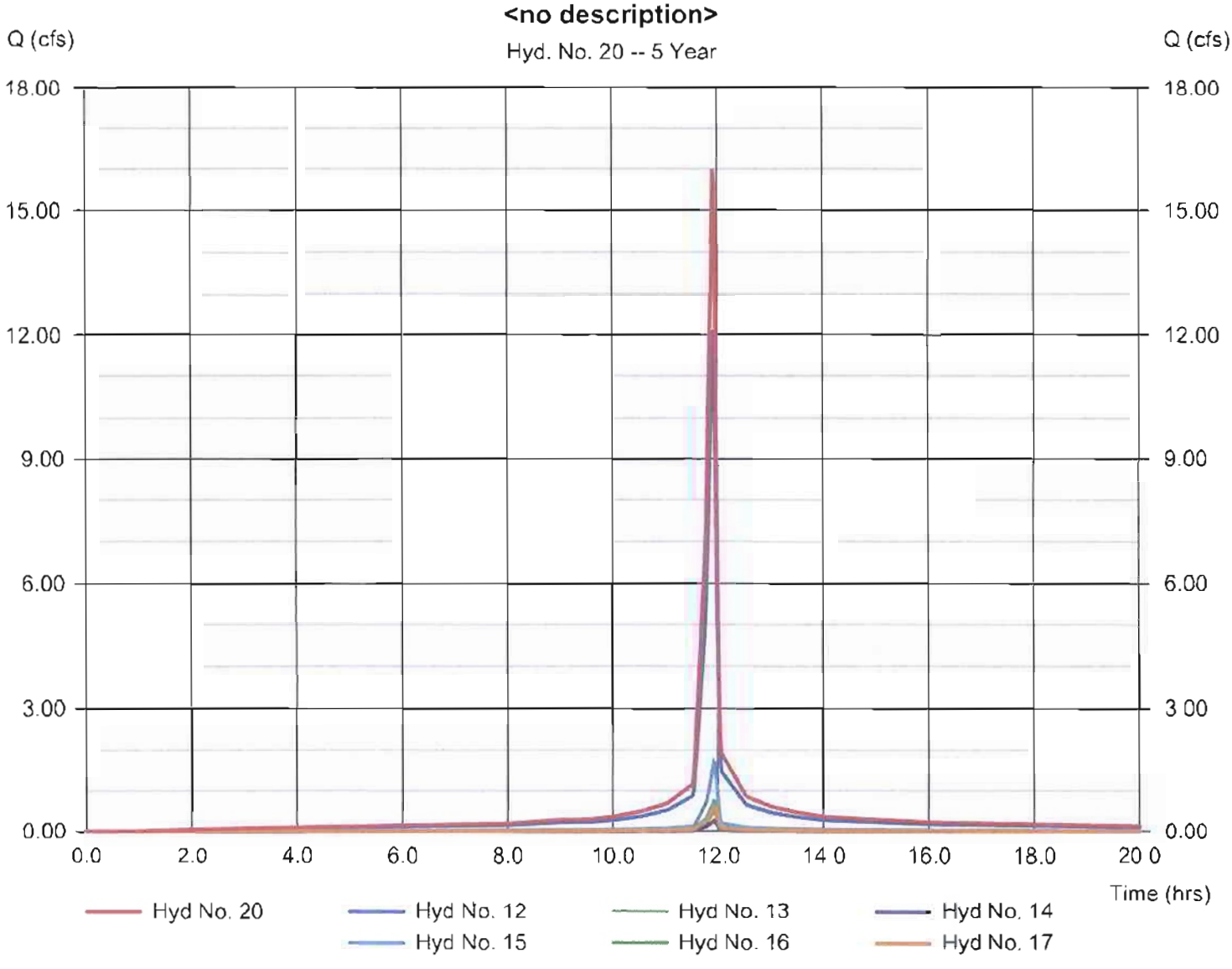


Hydrograph Report

Hyd. No. 20

<no description>

Hydrograph type	= Combine	Peak discharge	= 15.99 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.783 acft
Inflow hyds.	= 12, 13, 14, 15, 16, 17	Contrib. drain. area	= 2.350 ac

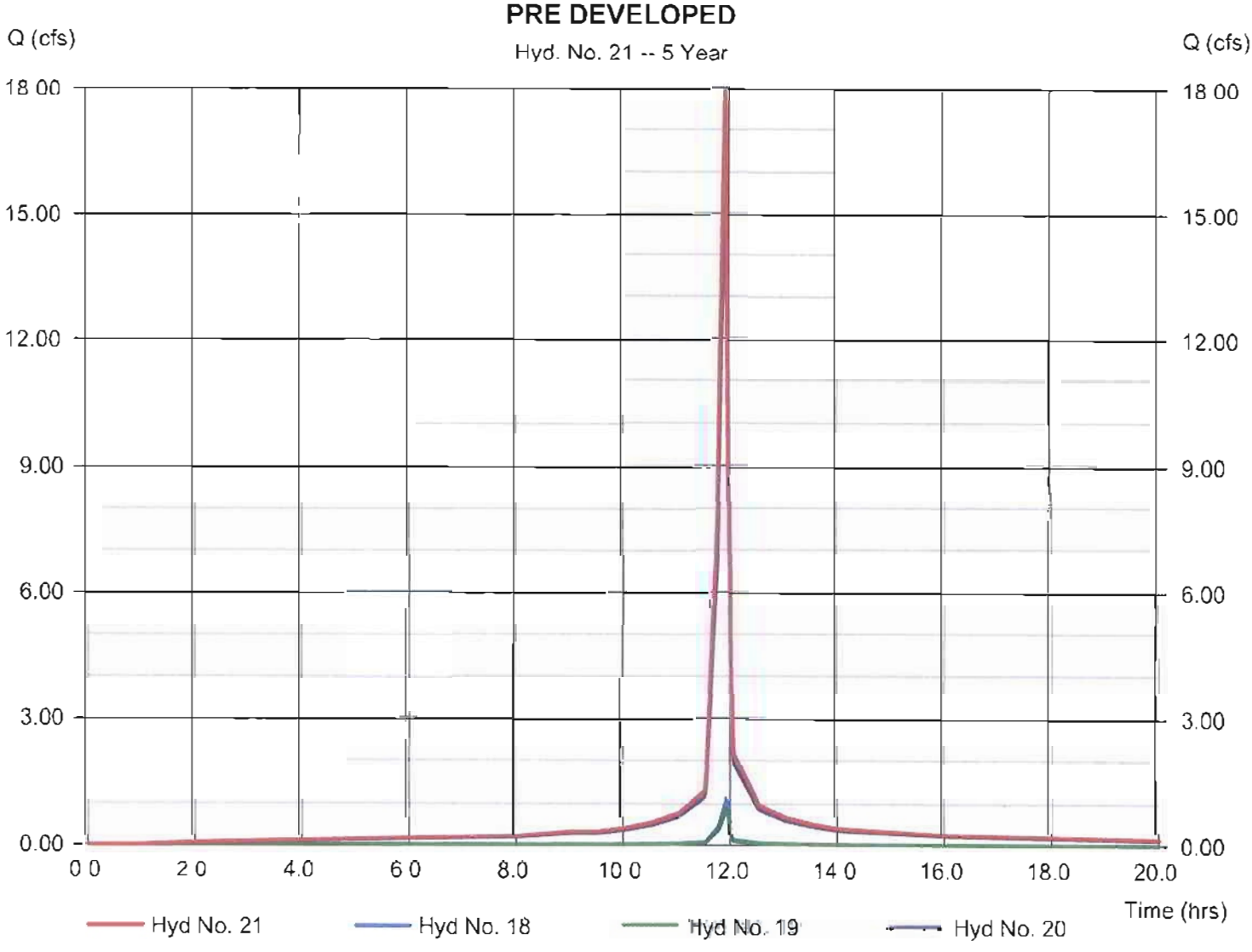


Hydrograph Report

Hyd. No. 21

PRE DEVELOPED

Hydrograph type	= Combine	Peak discharge	= 17.96 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.879 acft
Inflow hyds.	= 18, 19, 20	Contrib. drain. area	= 0.290 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc. v9

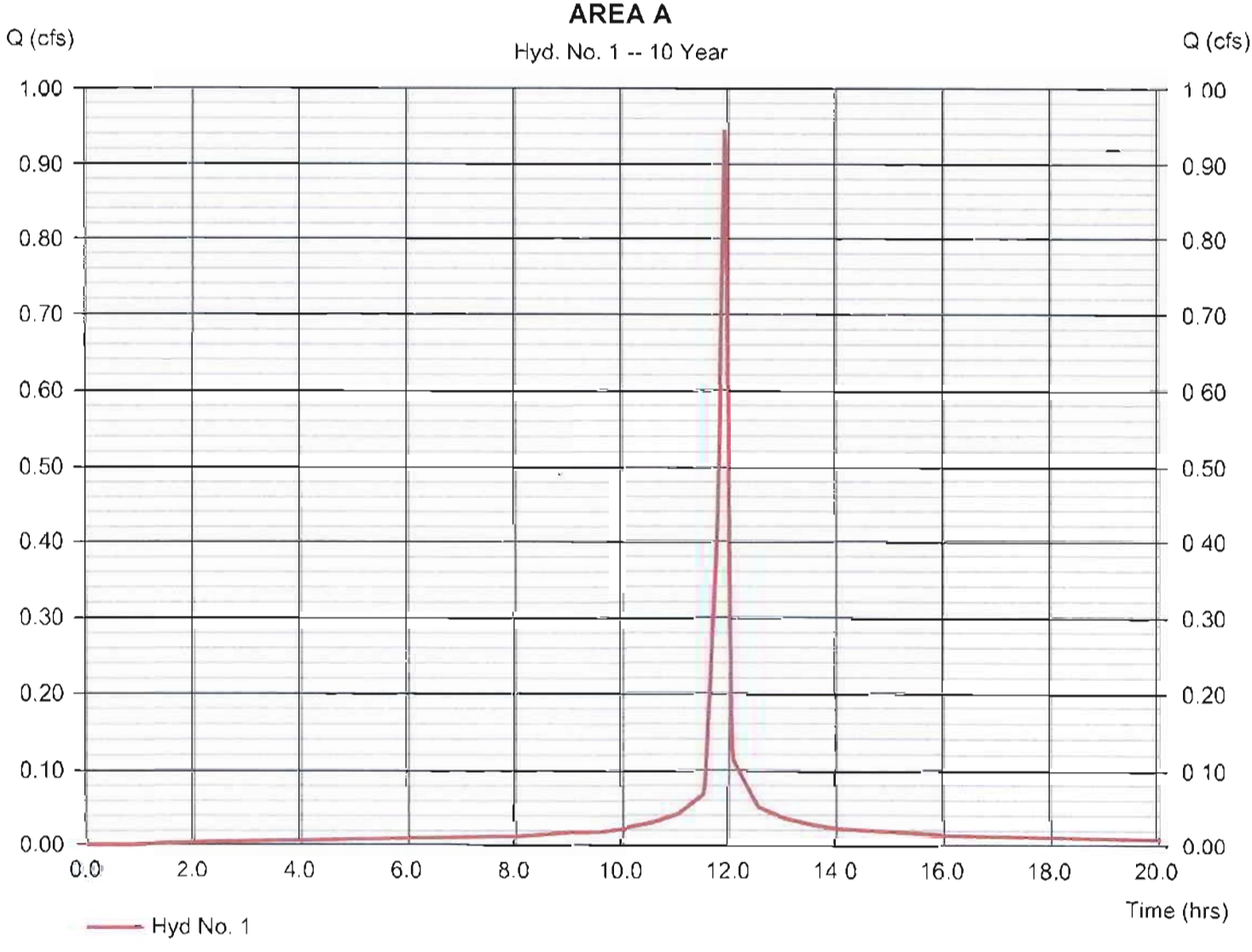
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph Description
1	SCS Runoff	0.945	1	715	0.047	-----	-----	-----	AREA A
2	SCS Runoff	2.913	1	715	0.143	-----	-----	-----	AREA B
3	SCS Runoff	0.945	1	715	0.047	-----	-----	-----	AREA C
4	SCS Runoff	2.756	1	715	0.136	-----	-----	-----	AREA D
5	SCS Runoff	0.630	1	715	0.031	-----	-----	-----	AREA E
6	SCS Runoff	1.969	1	715	0.097	-----	-----	-----	AREA F
7	SCS Runoff	1.969	1	715	0.097	-----	-----	-----	AREA G
8	SCS Runoff	1.496	1	715	0.074	-----	-----	-----	AREA H
9	SCS Runoff	1.339	1	715	0.066	-----	-----	-----	AREA I
10	Combine	10.16	1	715	0.500	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	-----	-----	<no description>
11	Combine	14.96	1	715	0.737	-----	-----	-----	Combined Post Developed
12	SCS Runoff	14.02	1	715	0.690	-----	-----	-----	AREA 1
13	SCS Runoff	0.630	1	715	0.031	-----	-----	-----	AREA 2
14	SCS Runoff	0.315	1	715	0.016	-----	-----	-----	AREA 3
15	SCS Runoff	1.969	1	715	0.097	-----	-----	-----	AREA 4
16	SCS Runoff	0.866	1	715	0.043	-----	-----	-----	AREA 5
17	SCS Runoff	0.709	1	715	0.035	-----	-----	-----	AREA 6
18	SCS Runoff	1.260	1	715	0.062	-----	-----	-----	AREA 7
19	SCS Runoff	1.024	1	715	0.050	-----	-----	-----	AREA 8
20	Combine	18.50	1	715	0.911	12, 13, 14, 15, 16, 17, 18, 19, 20	-----	-----	<no description>
21	Combine	20.79	1	715	1.024	-----	-----	-----	PRE DEVELOPED

Hydrograph Report

Hyd. No. 1

AREA A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.945 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.047 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

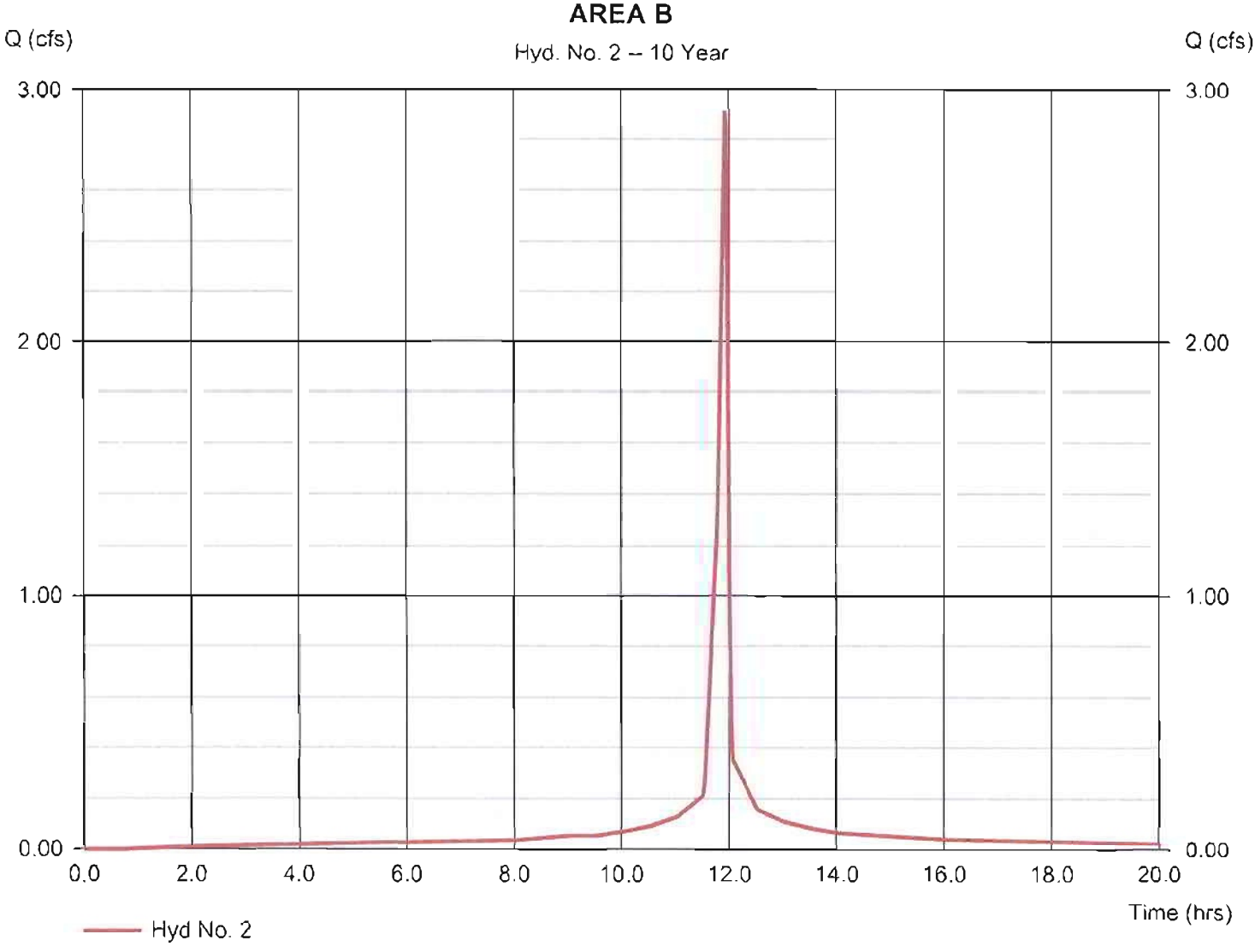


Hydrograph Report

Hyd. No. 2

AREA B

Hydrograph type	= SCS Runoff	Peak discharge	= 2.913 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.143 acft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

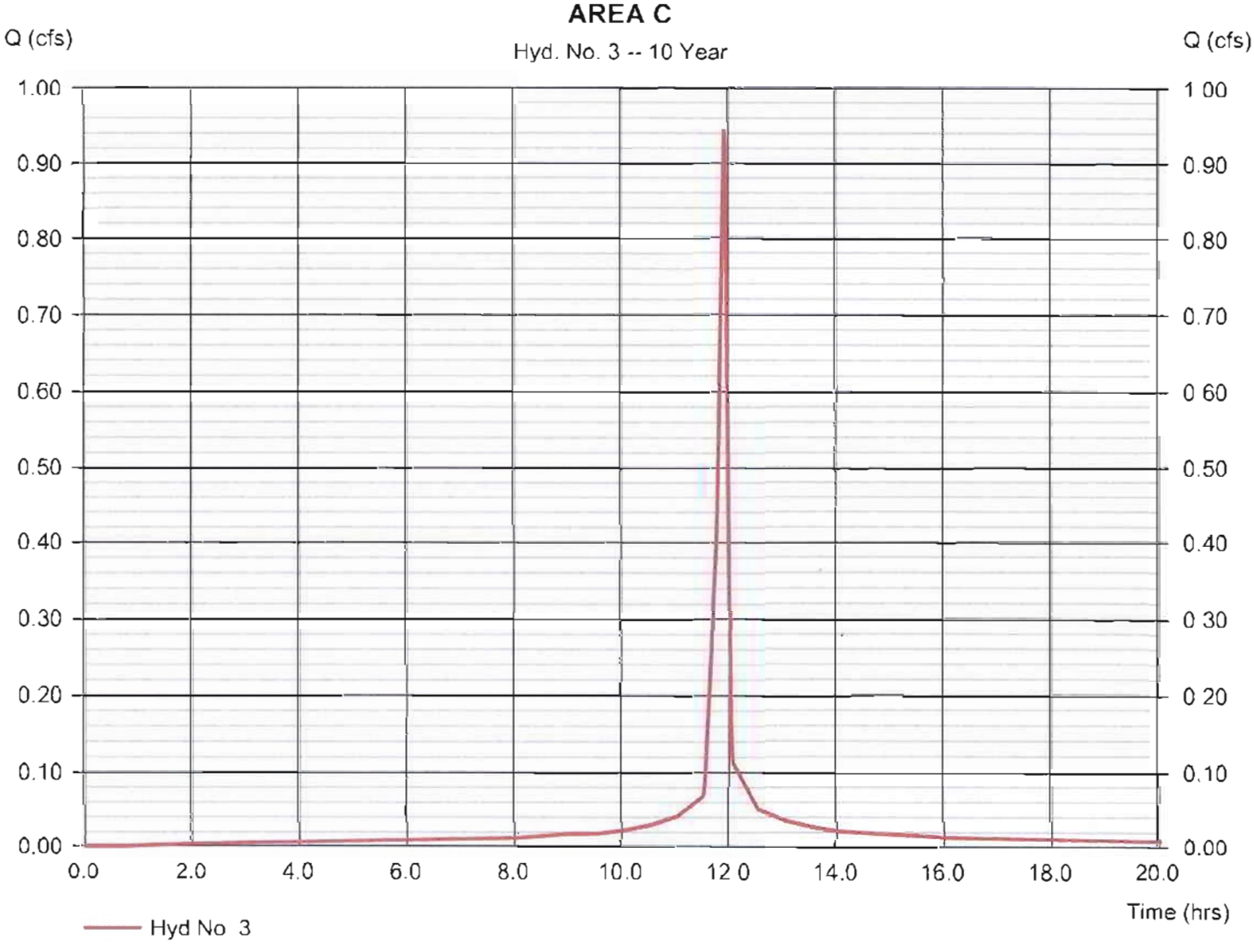


Hydrograph Report

Hyd. No. 3

AREA C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.945 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.047 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

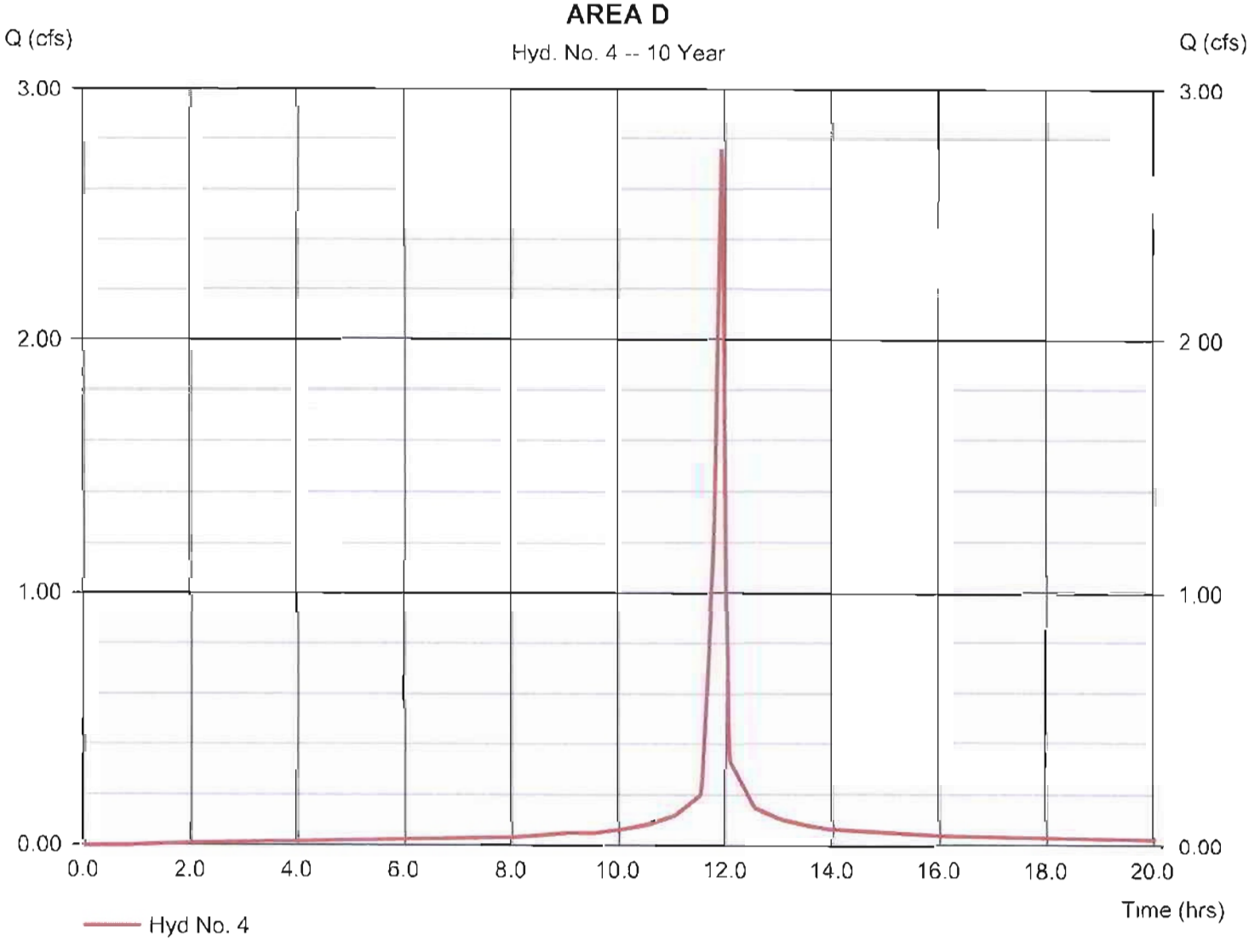


Hydrograph Report

Hyd. No. 4

AREA D

Hydrograph type	= SCS Runoff	Peak discharge	= 2.756 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.136 acft
Drainage area	= 0.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 1.70 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

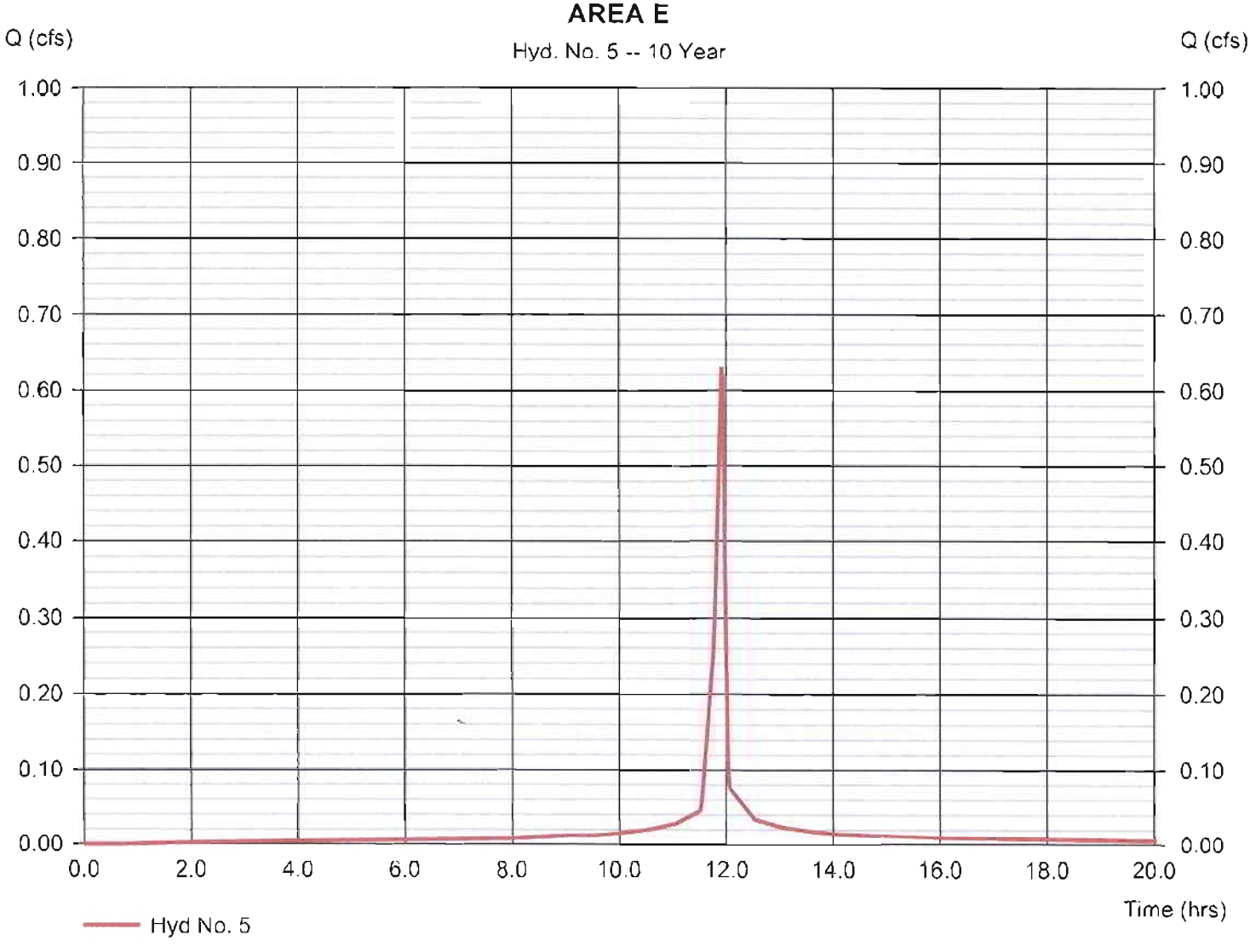


Hydrograph Report

Hyd. No. 5

AREA E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.630 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.031 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

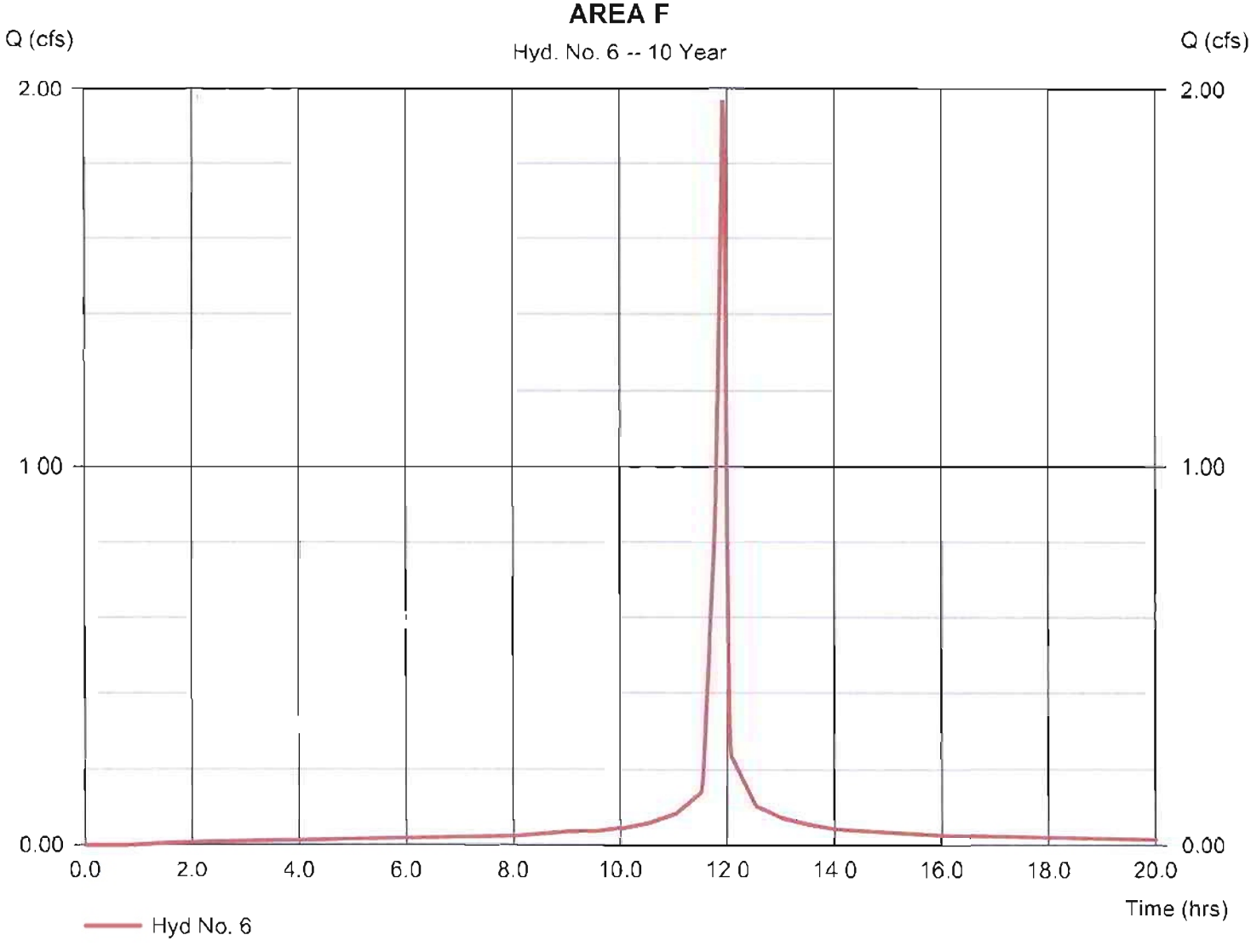


Hydrograph Report

Hyd. No. 6

AREA F

Hydrograph type	= SCS Runoff	Peak discharge	= 1.969 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.097 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

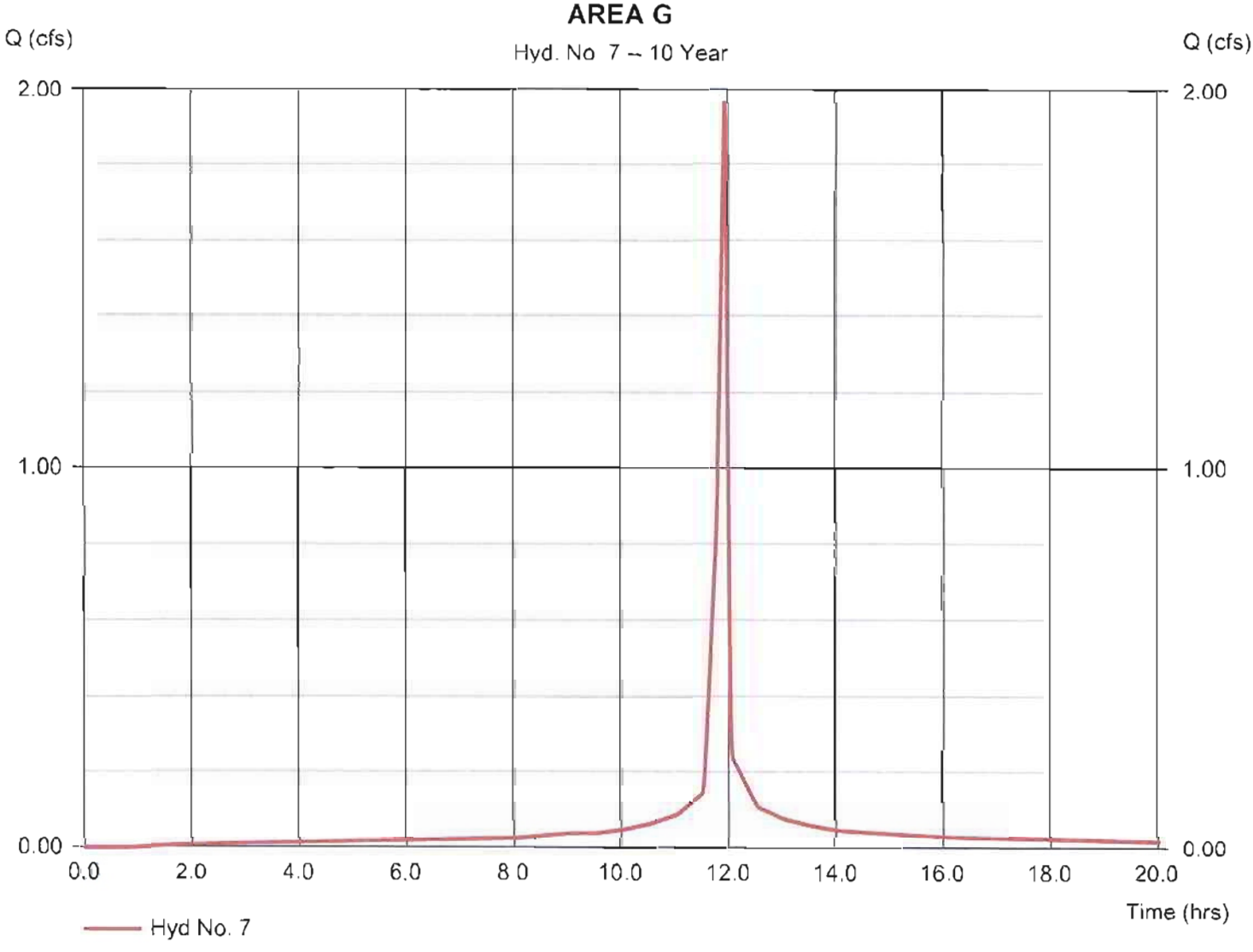


Hydrograph Report

Hyd. No. 7

AREA G

Hydrograph type	= SCS Runoff	Peak discharge	= 1.969 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.097 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

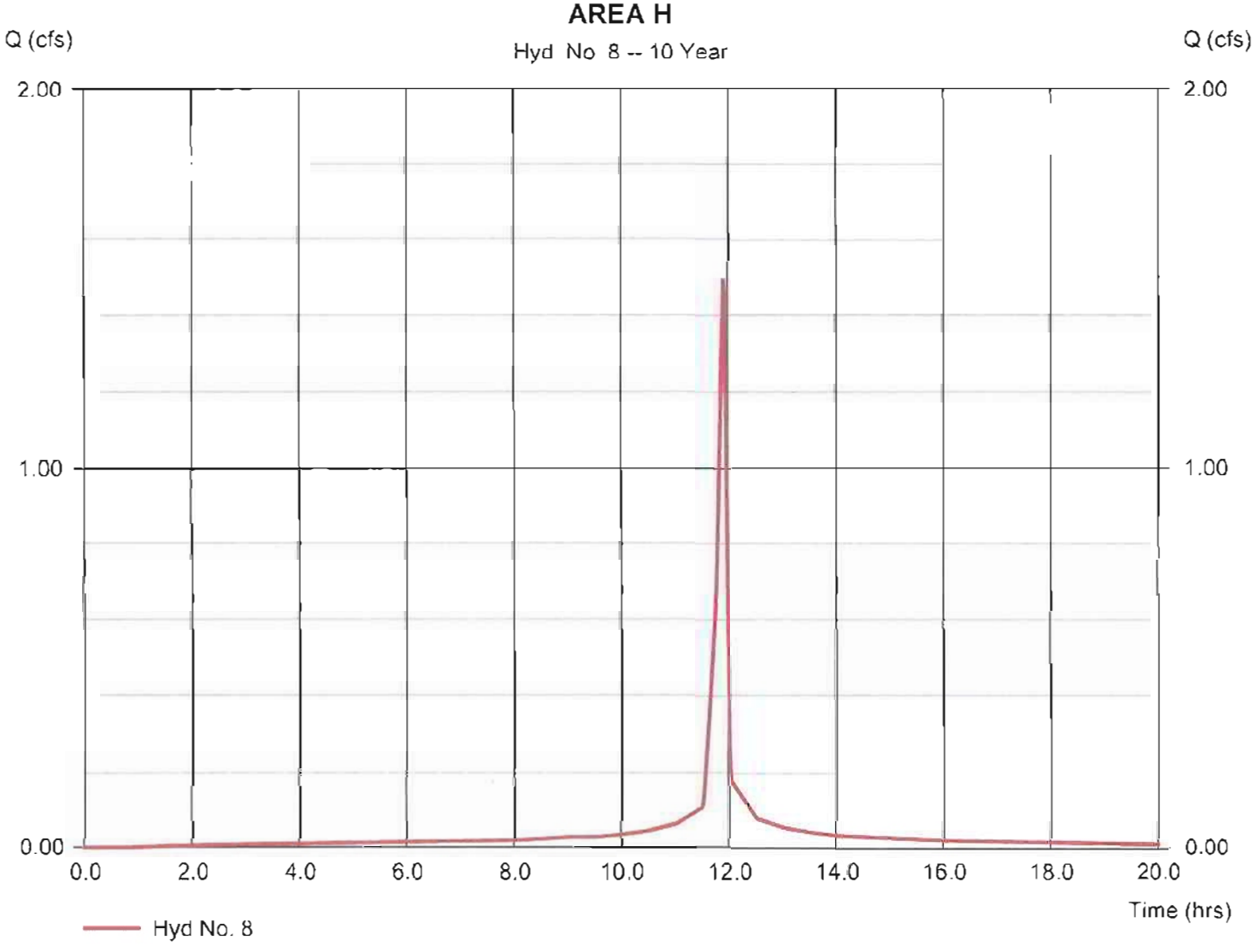


Hydrograph Report

Hyd. No. 8

AREA H

Hydrograph type	= SCS Runoff	Peak discharge	= 1.496 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.074 acft
Drainage area	= 0.190 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

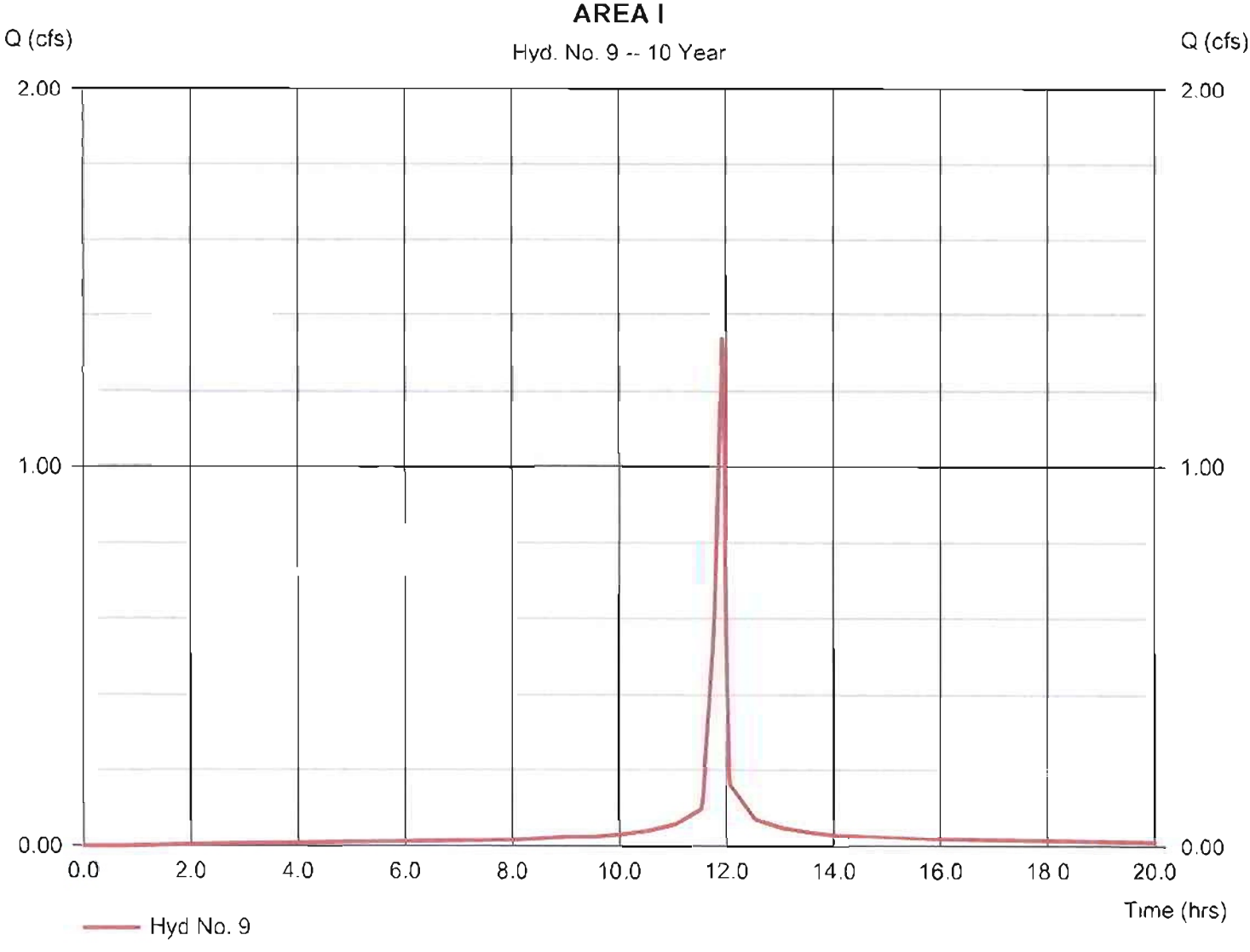


Hydrograph Report

Hyd. No. 9

AREA I

Hydrograph type	= SCS Runoff	Peak discharge	= 1.339 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.066 acft
Drainage area	= 0.170 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

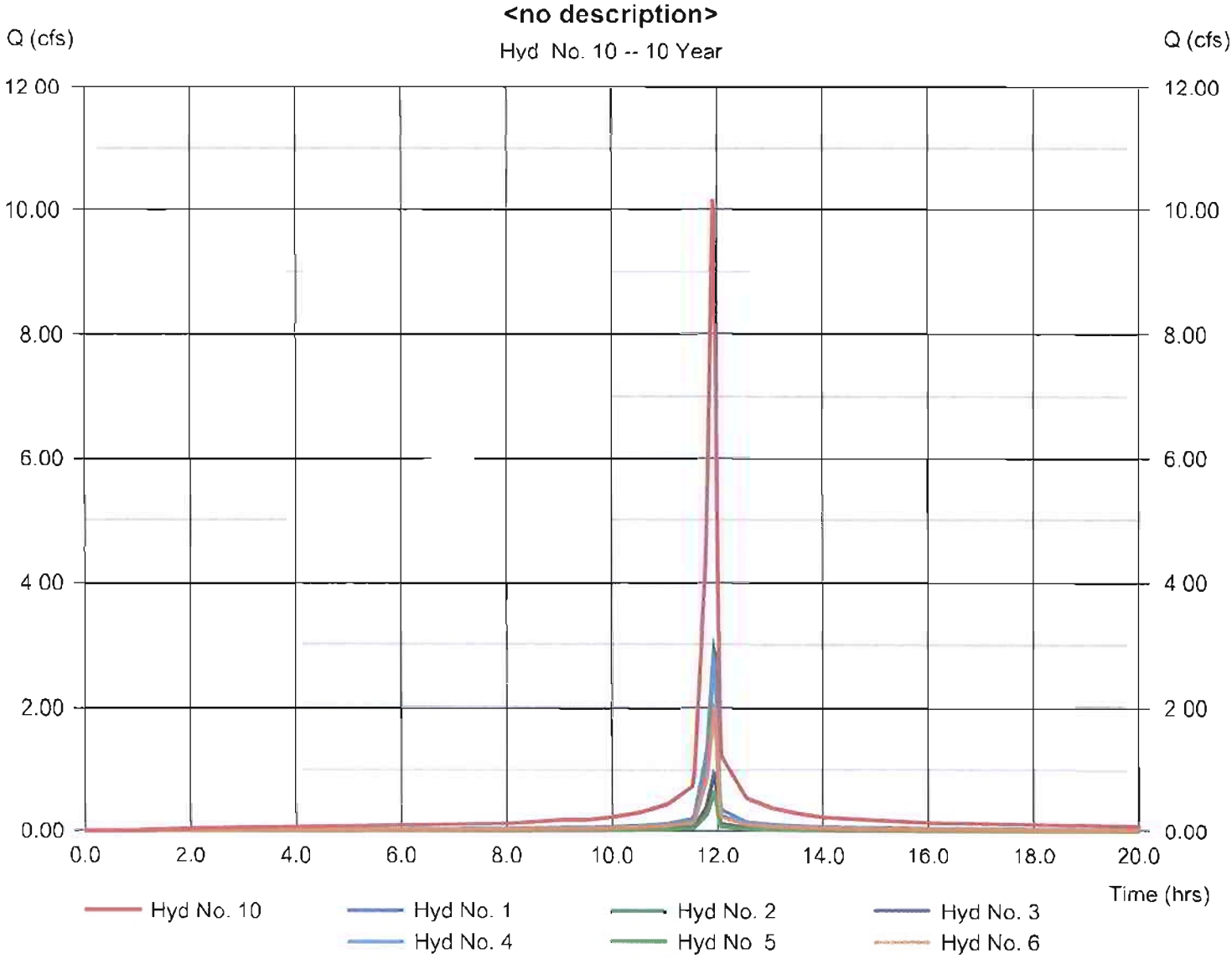


Hydrograph Report

Hyd. No. 10

<no description>

Hydrograph type	= Combine	Peak discharge	= 10.16 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.500 acft
Inflow hyds.	= 1, 2, 3, 4, 5, 6	Contrib. drain. area	= 1.290 ac

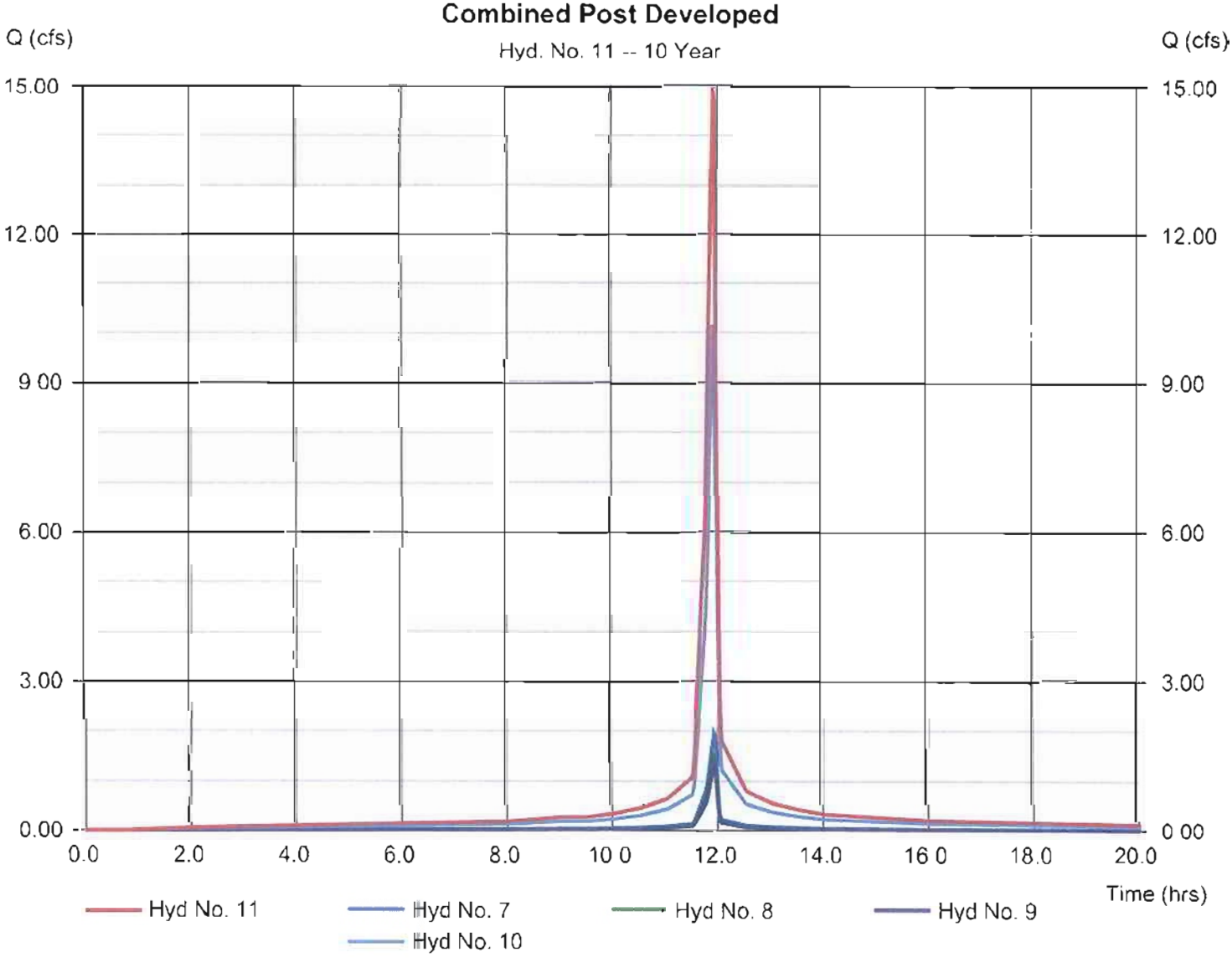


Hydrograph Report

Hyd. No. 11

Combined Post Developed

Hydrograph type	= Combine	Peak discharge	= 14.96 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.737 acft
Inflow hyds.	= 7, 8, 9, 10	Contrib. drain. area	= 0.610 ac

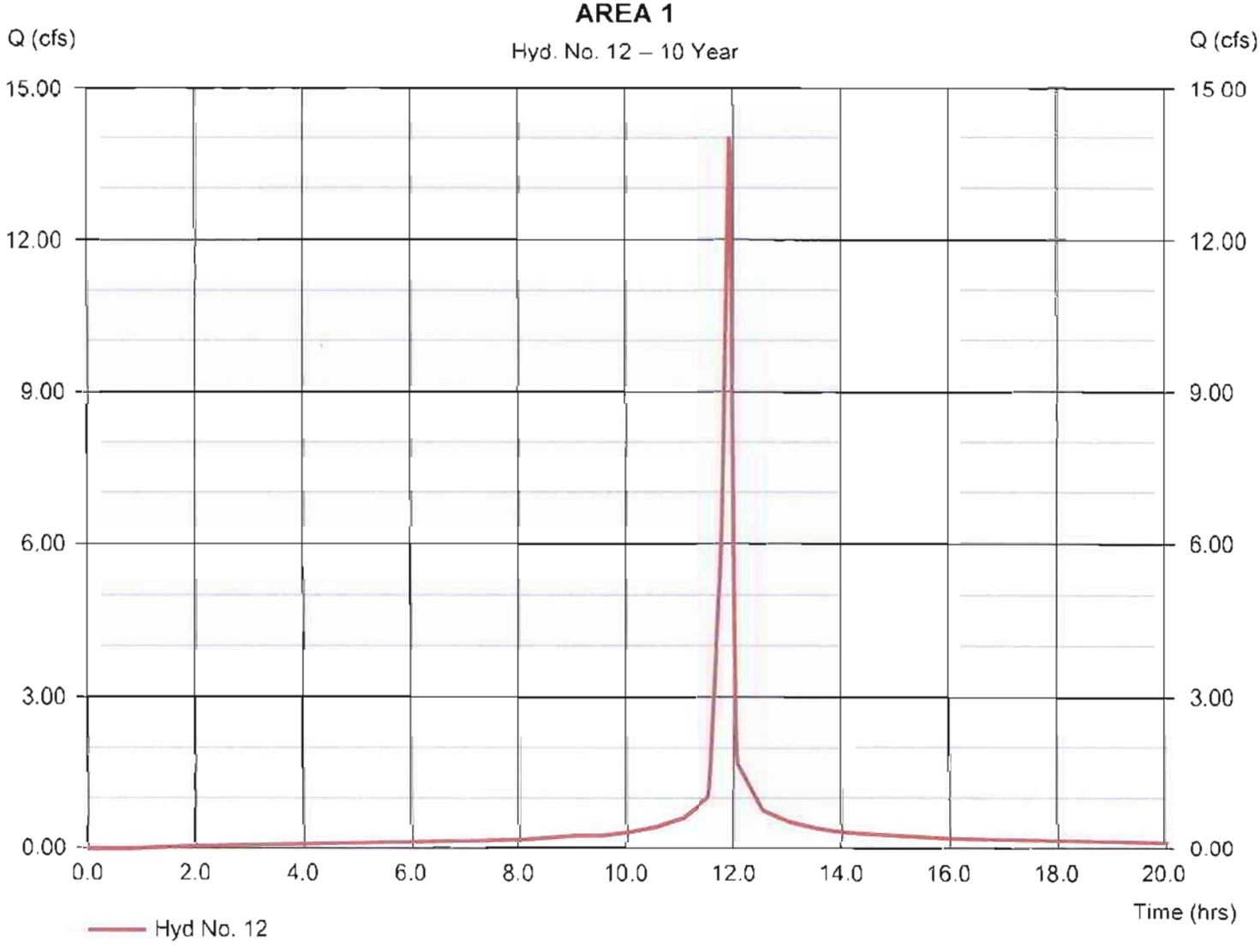


Hydrograph Report

Hyd. No. 12

AREA 1

Hydrograph type	= SCS Runoff	Peak discharge	= 14.02 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.690 acft
Drainage area	= 1.780 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 3.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

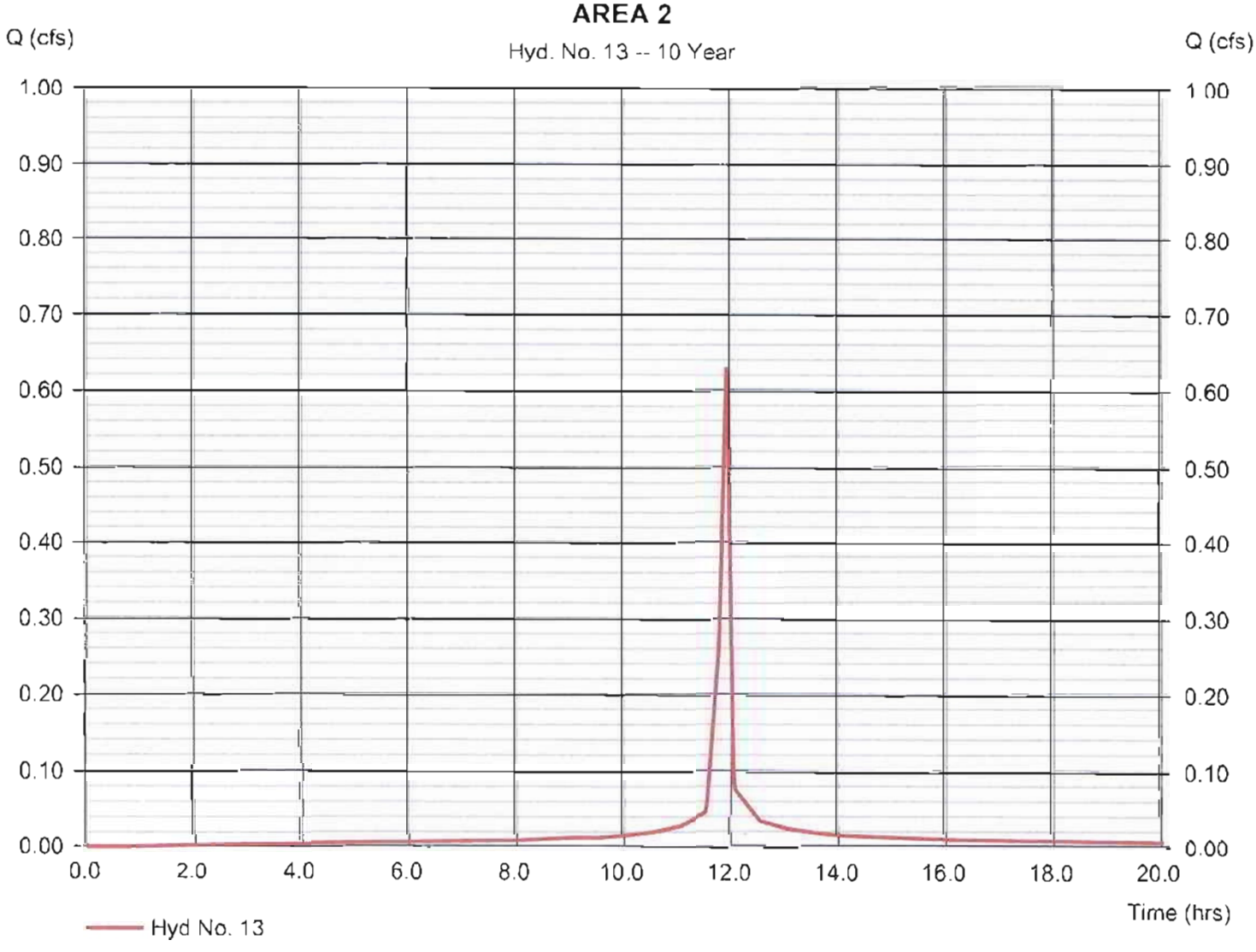


Hydrograph Report

Hyd. No. 13

AREA 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.630 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.031 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

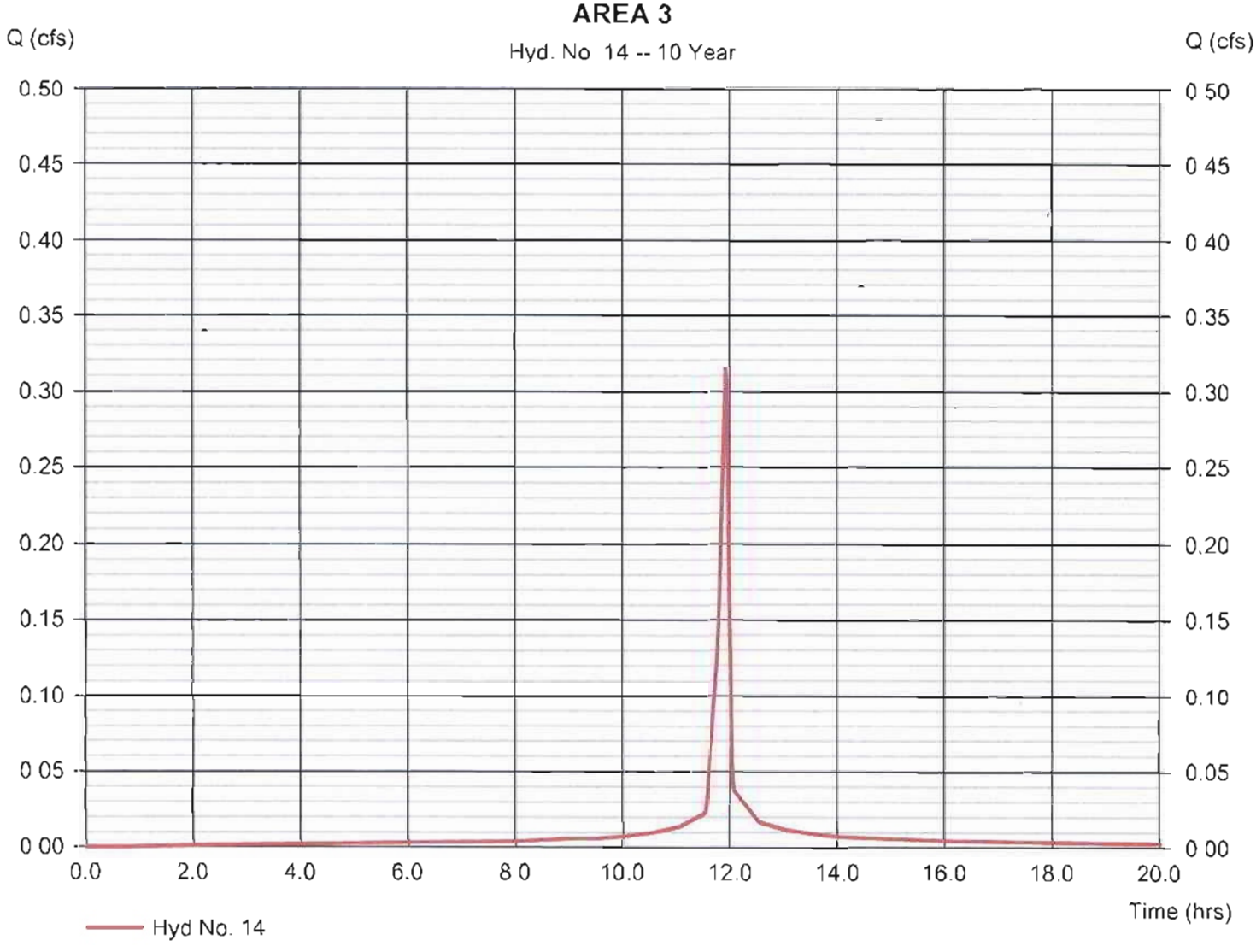


Hydrograph Report

Hyd. No. 14

AREA 3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.315 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.016 acft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

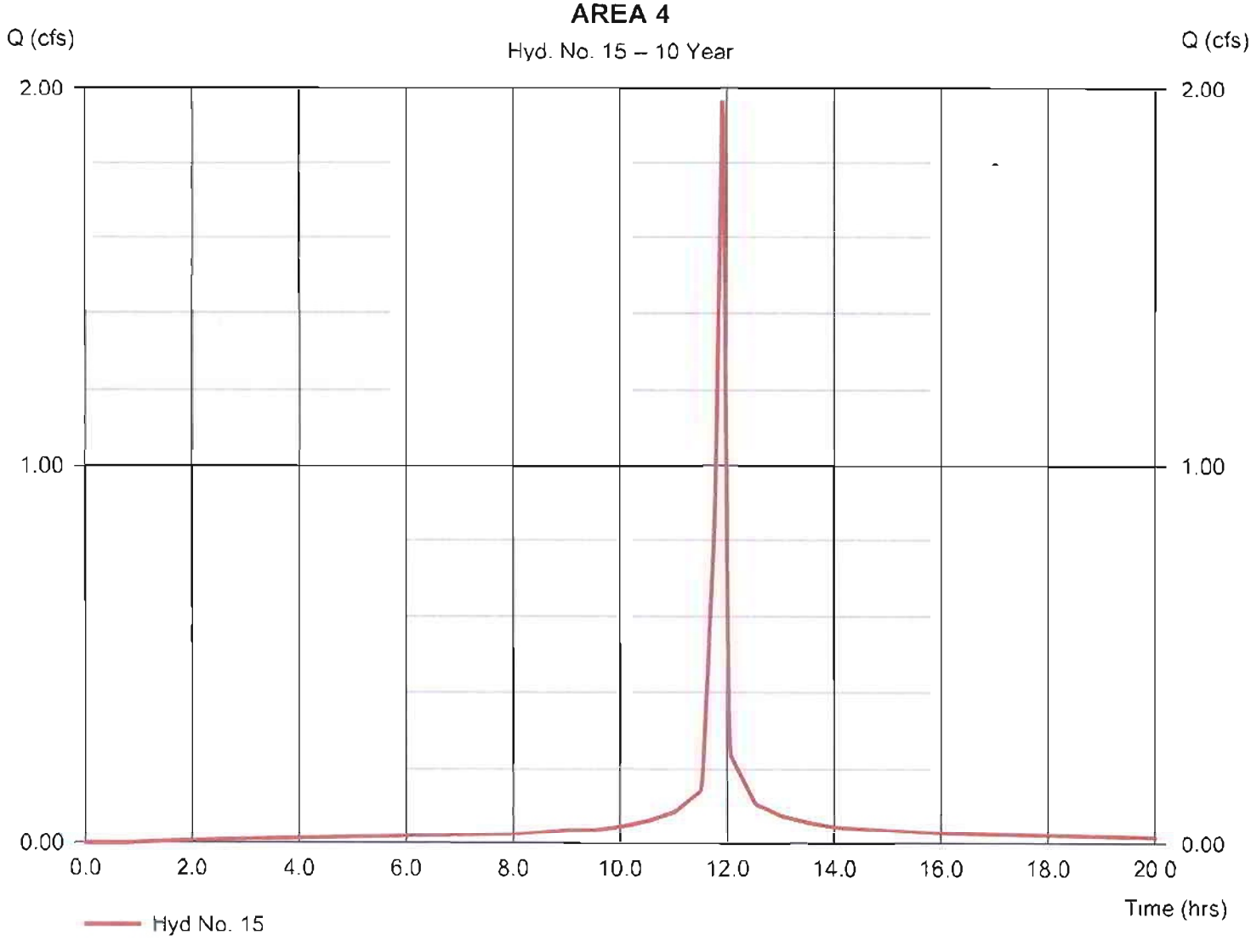


Hydrograph Report

Hyd. No. 15

AREA 4

Hydrograph type	= SCS Runoff	Peak discharge	= 1.969 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.097 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

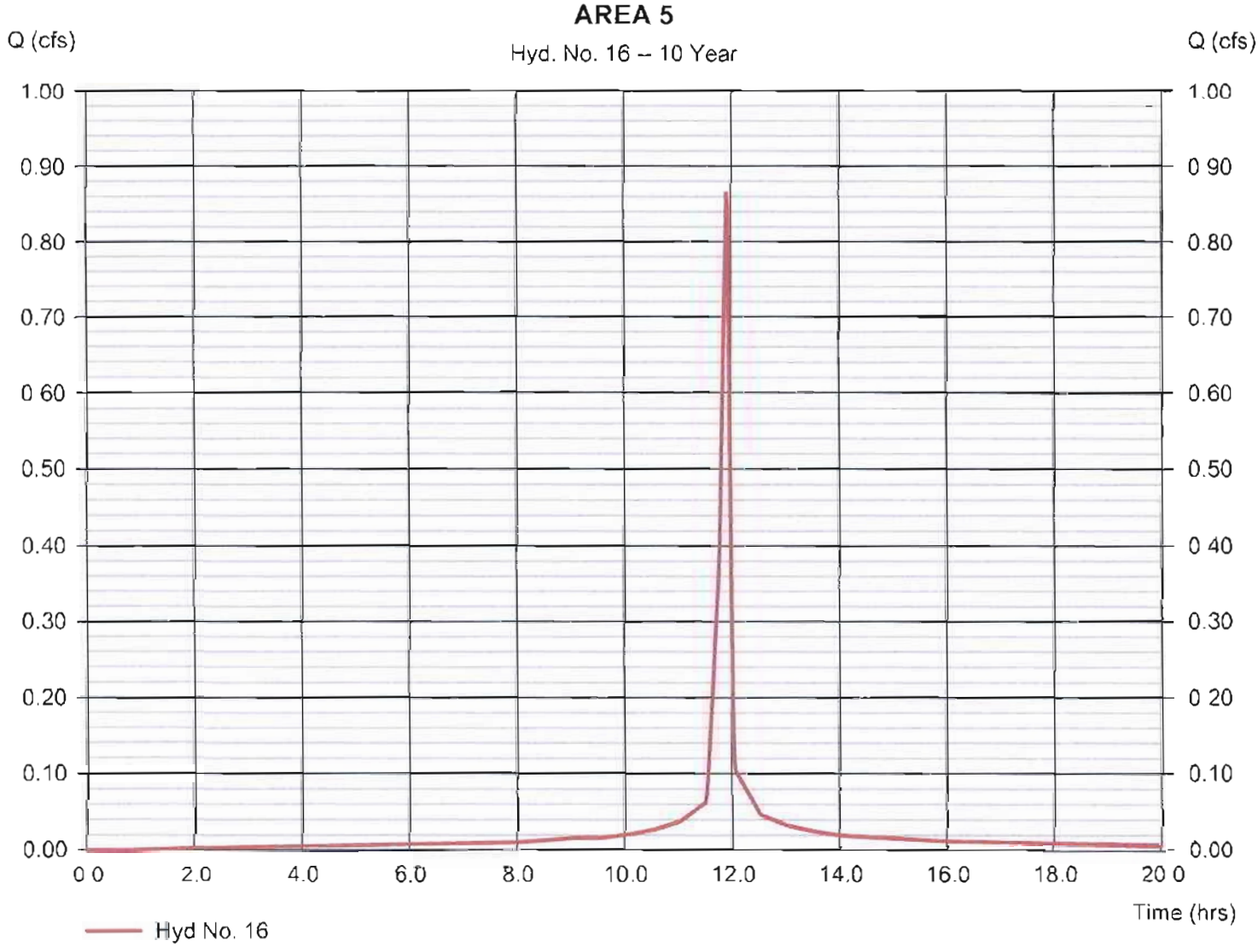


Hydrograph Report

Hyd. No. 16

AREA 5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.866 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.043 acft
Drainage area	= 0.110 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

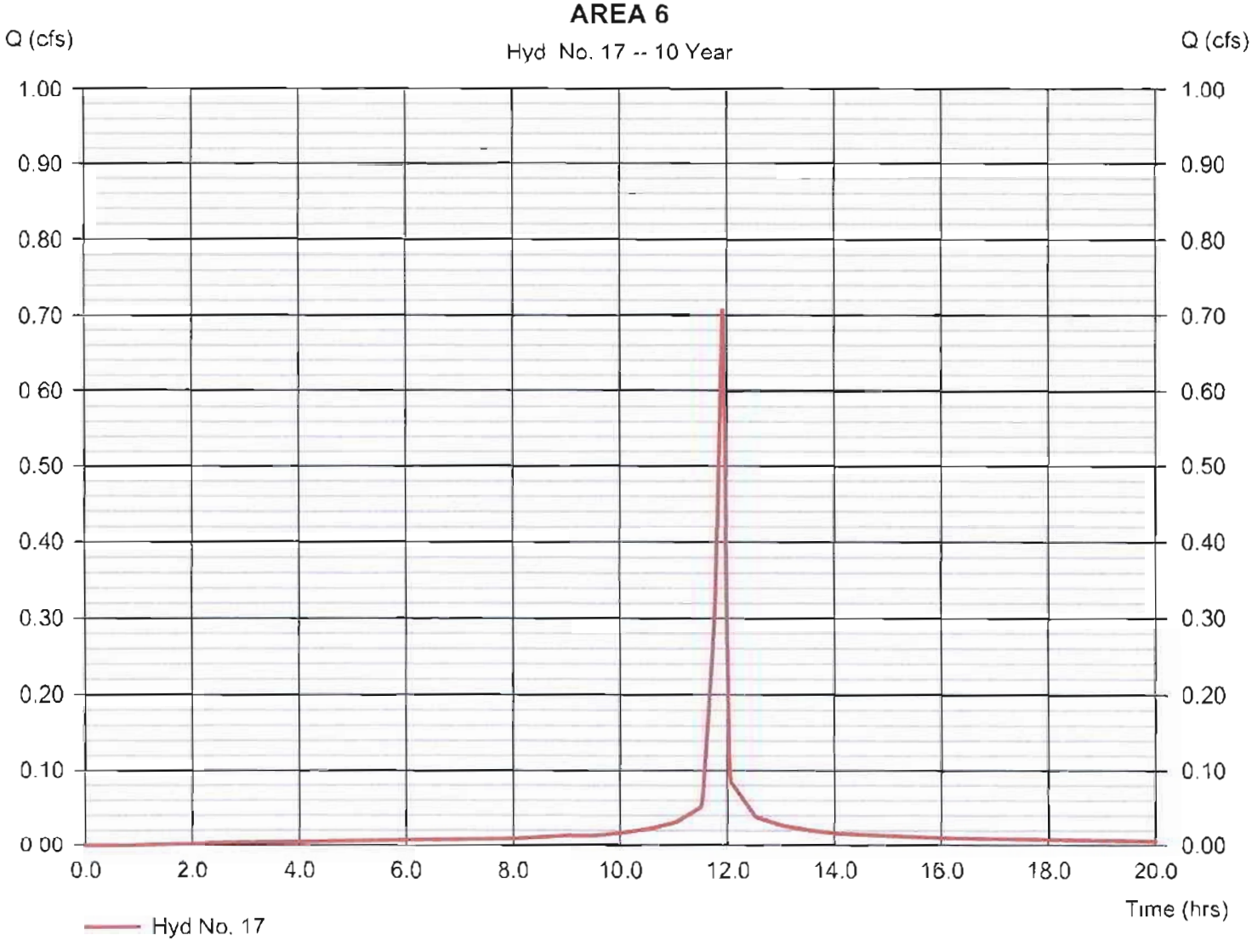


Hydrograph Report

Hyd. No. 17

AREA 6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.709 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.035 acft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

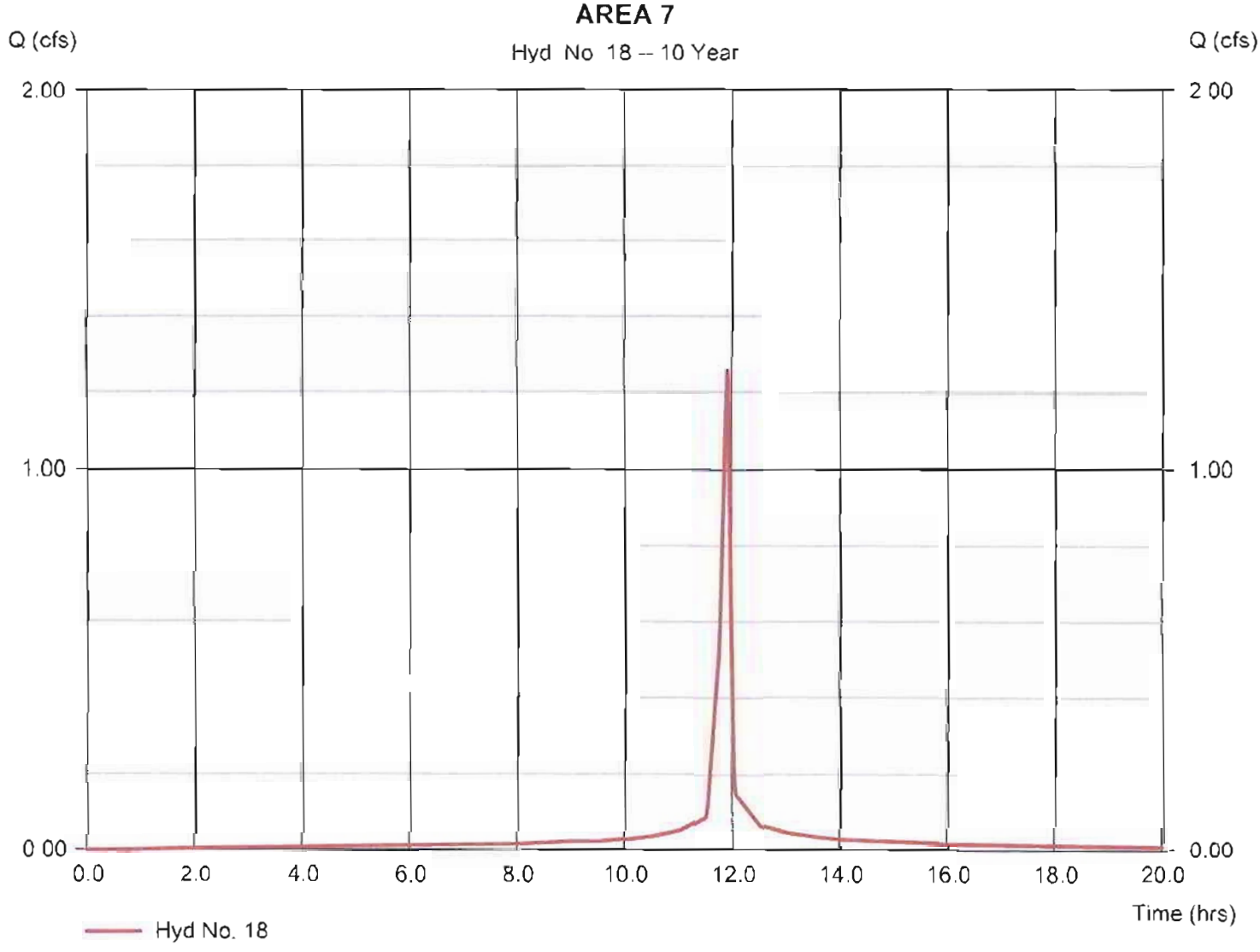


Hydrograph Report

Hyd. No. 18

AREA 7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.260 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.062 acft
Drainage area	= 0.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

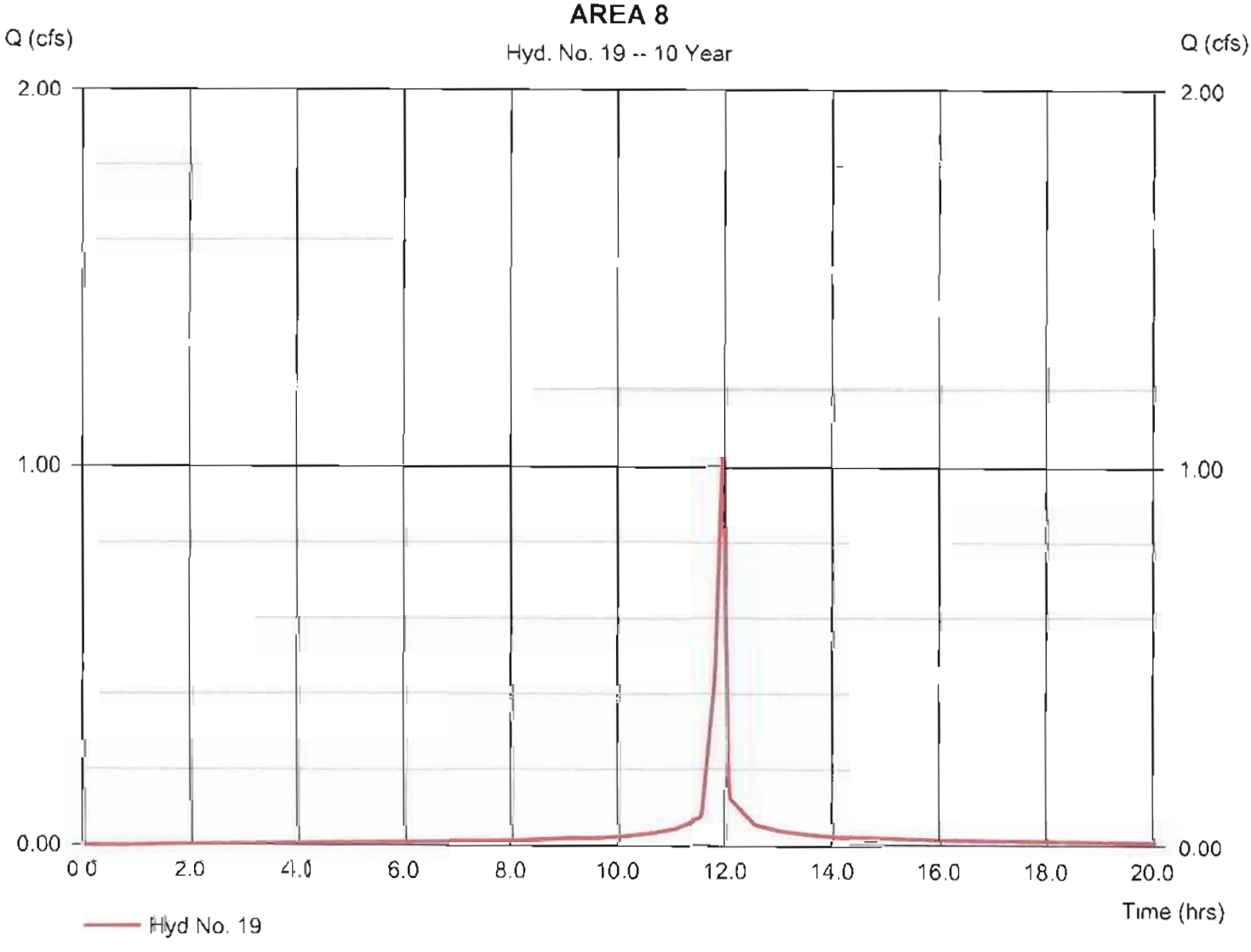


Hydrograph Report

Hyd. No. 19

AREA 8

Hydrograph type	= SCS Runoff	Peak discharge	= 1.024 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.050 acft
Drainage area	= 0.130 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

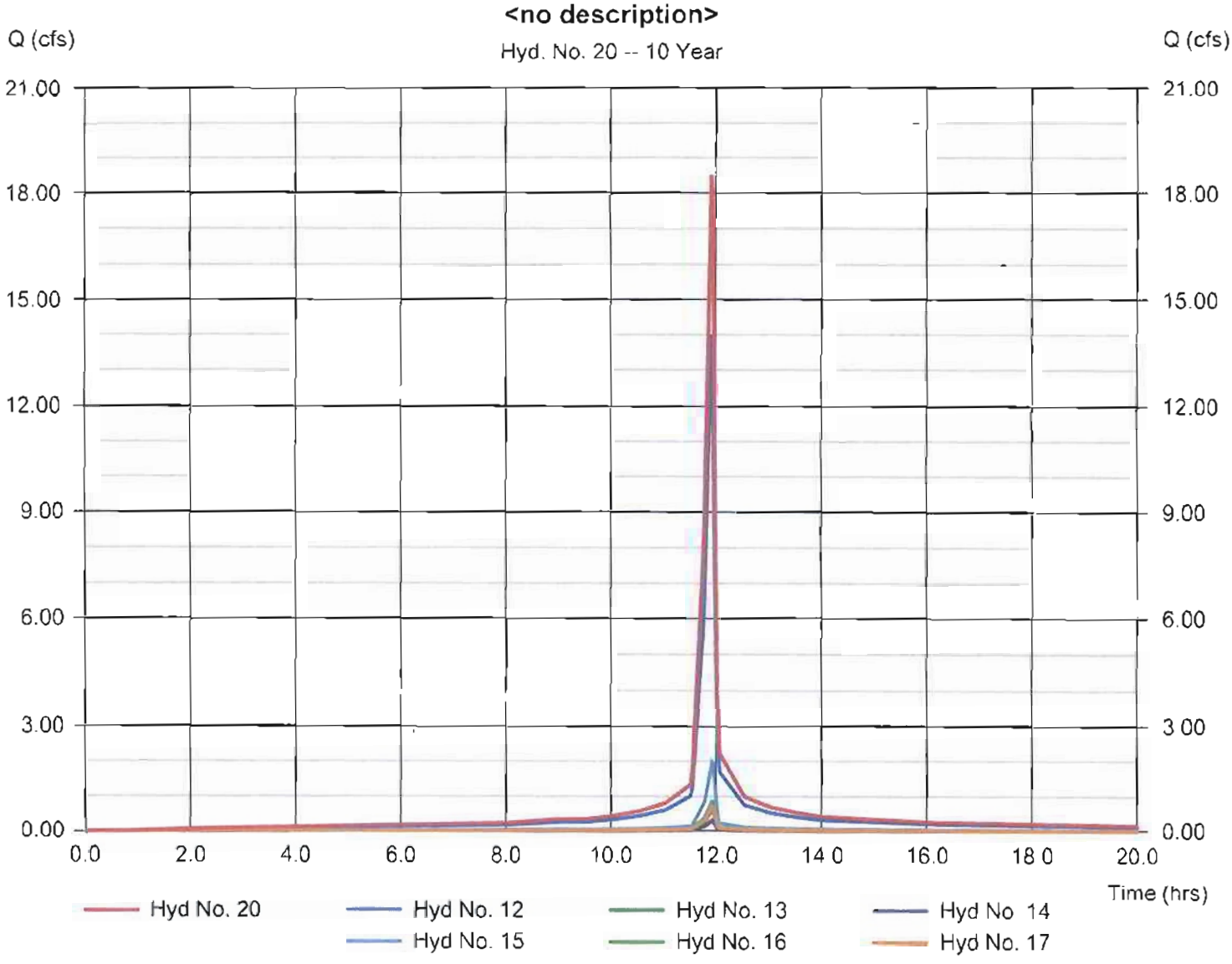


Hydrograph Report

Hyd. No. 20

<no description>

Hydrograph type	= Combine	Peak discharge	= 18.50 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.911 acft
Inflow hyds.	= 12, 13, 14, 15, 16, 17	Contrib. drain. area	= 2.350 ac

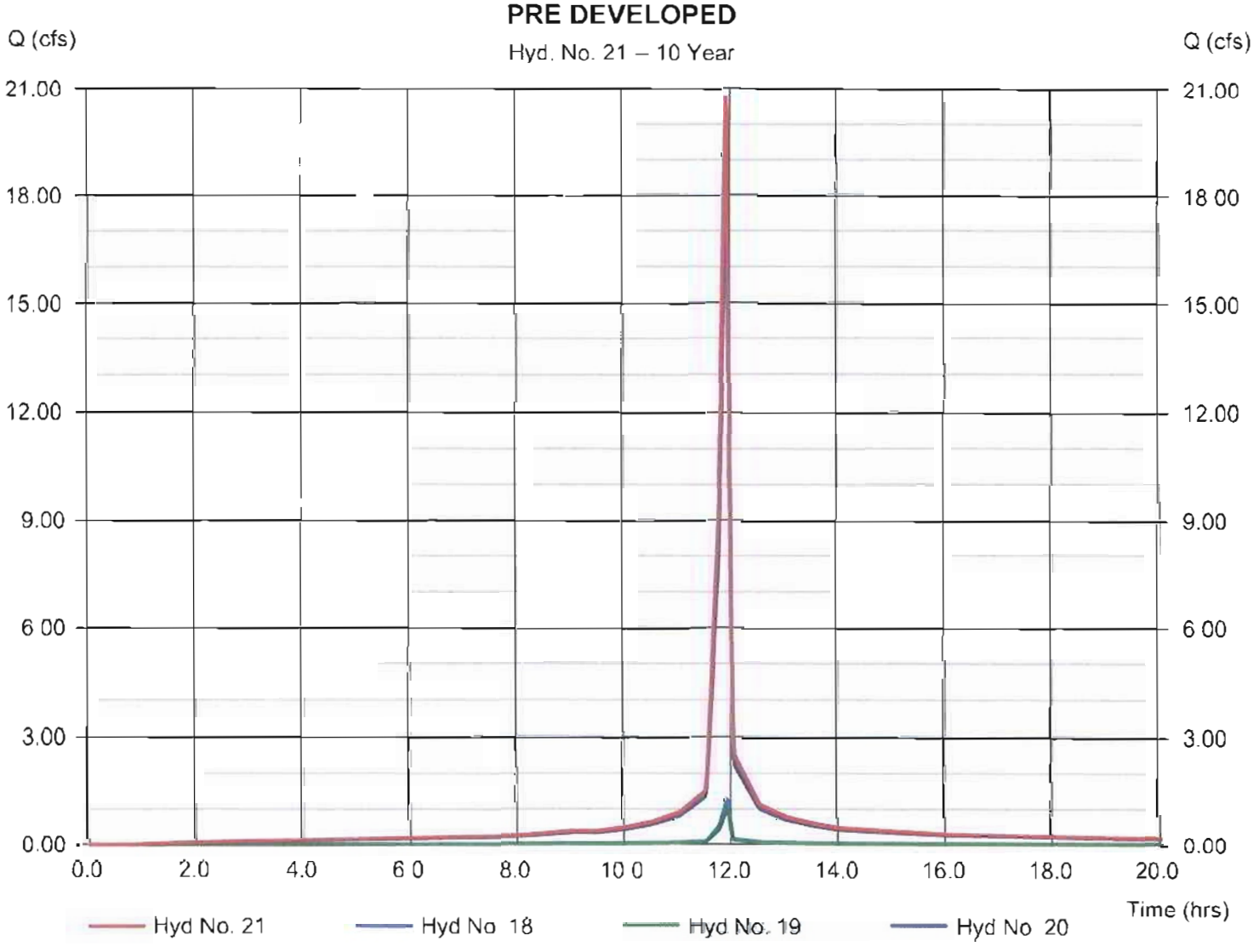


Hydrograph Report

Hyd. No. 21

PRE DEVELOPED

Hydrograph type	= Combine	Peak discharge	= 20.79 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 1.024 acft
Inflow hyds.	= 18, 19, 20	Contrib. drain. area	= 0.290 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc. v9

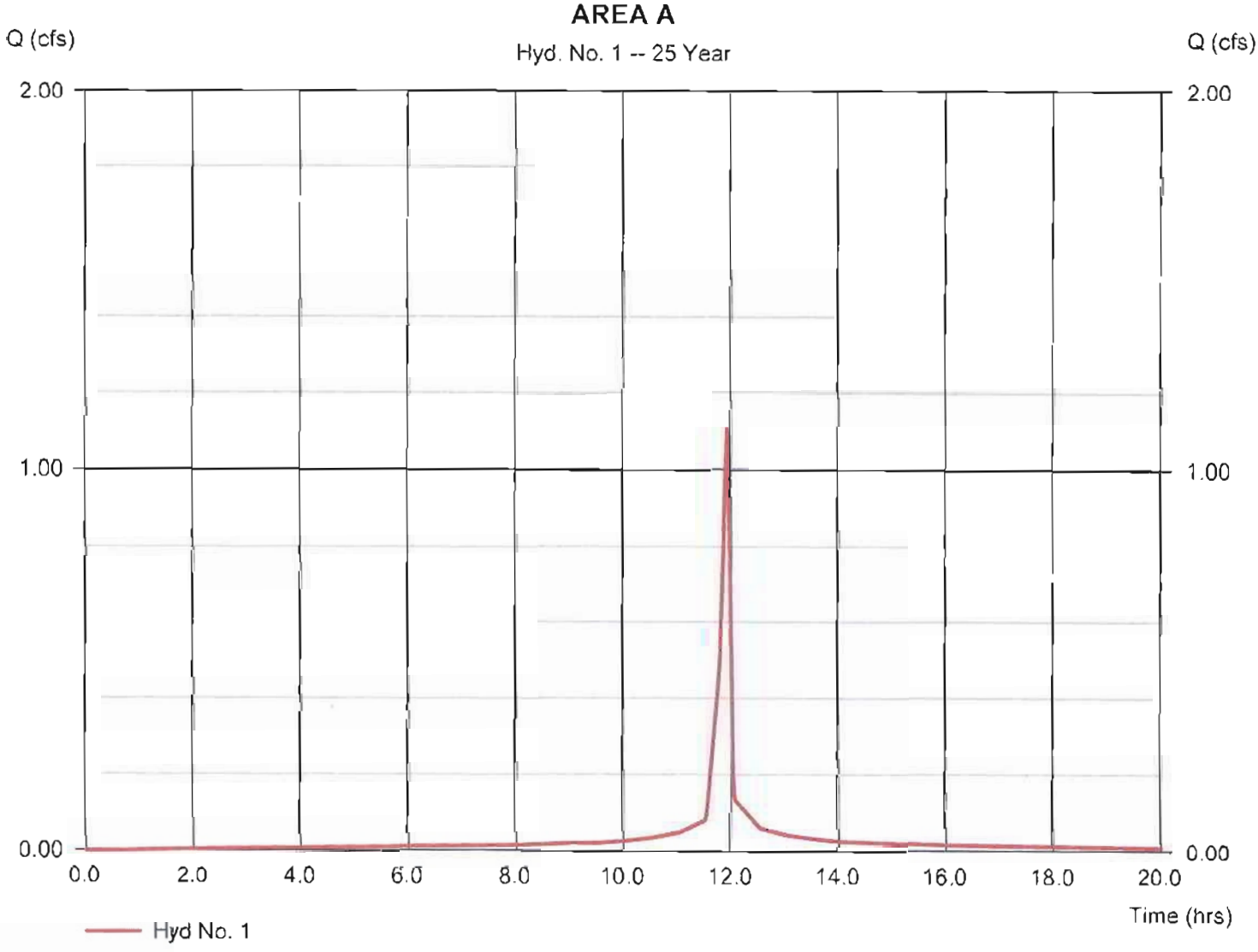
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph Description
1	SCS Runoff	1.110	1	715	0.055	----	----	----	AREA A
2	SCS Runoff	3.422	1	715	0.169	----	----	----	AREA B
3	SCS Runoff	1.110	1	715	0.055	----	----	----	AREA C
4	SCS Runoff	3.237	1	715	0.160	----	----	----	AREA D
5	SCS Runoff	0.740	1	715	0.037	----	----	----	AREA E
6	SCS Runoff	2.312	1	715	0.114	----	----	----	AREA F
7	SCS Runoff	2.312	1	715	0.114	----	----	----	AREA G
8	SCS Runoff	1.757	1	715	0.087	----	----	----	AREA H
9	SCS Runoff	1.572	1	715	0.078	----	----	----	AREA I
10	Combine	11.93	1	715	0.591	1, 2, 3,	----	----	<no description>
11	Combine	17.57	1	715	0.870	4, 5, 6, 7, 8, 9, 10	----	----	Combined Post Developed
12	SCS Runoff	16.46	1	715	0.815	----	----	----	AREA 1
13	SCS Runoff	0.740	1	715	0.037	----	----	----	AREA 2
14	SCS Runoff	0.370	1	715	0.018	----	----	----	AREA 3
15	SCS Runoff	2.312	1	715	0.114	----	----	----	AREA 4
16	SCS Runoff	1.017	1	715	0.050	----	----	----	AREA 5
17	SCS Runoff	0.832	1	715	0.041	----	----	----	AREA 6
18	SCS Runoff	1.480	1	715	0.073	----	----	----	AREA 7
19	SCS Runoff	1.202	1	715	0.060	----	----	----	AREA 8
20	Combine	21.73	1	715	1.076	12, 13, 14,	----	----	<no description>
21	Combine	24.42	1	715	1.209	15, 16, 17, 18, 19, 20	----	----	PRE DEVELOPED

Hydrograph Report

Hyd. No. 1

AREA A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.110 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.055 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

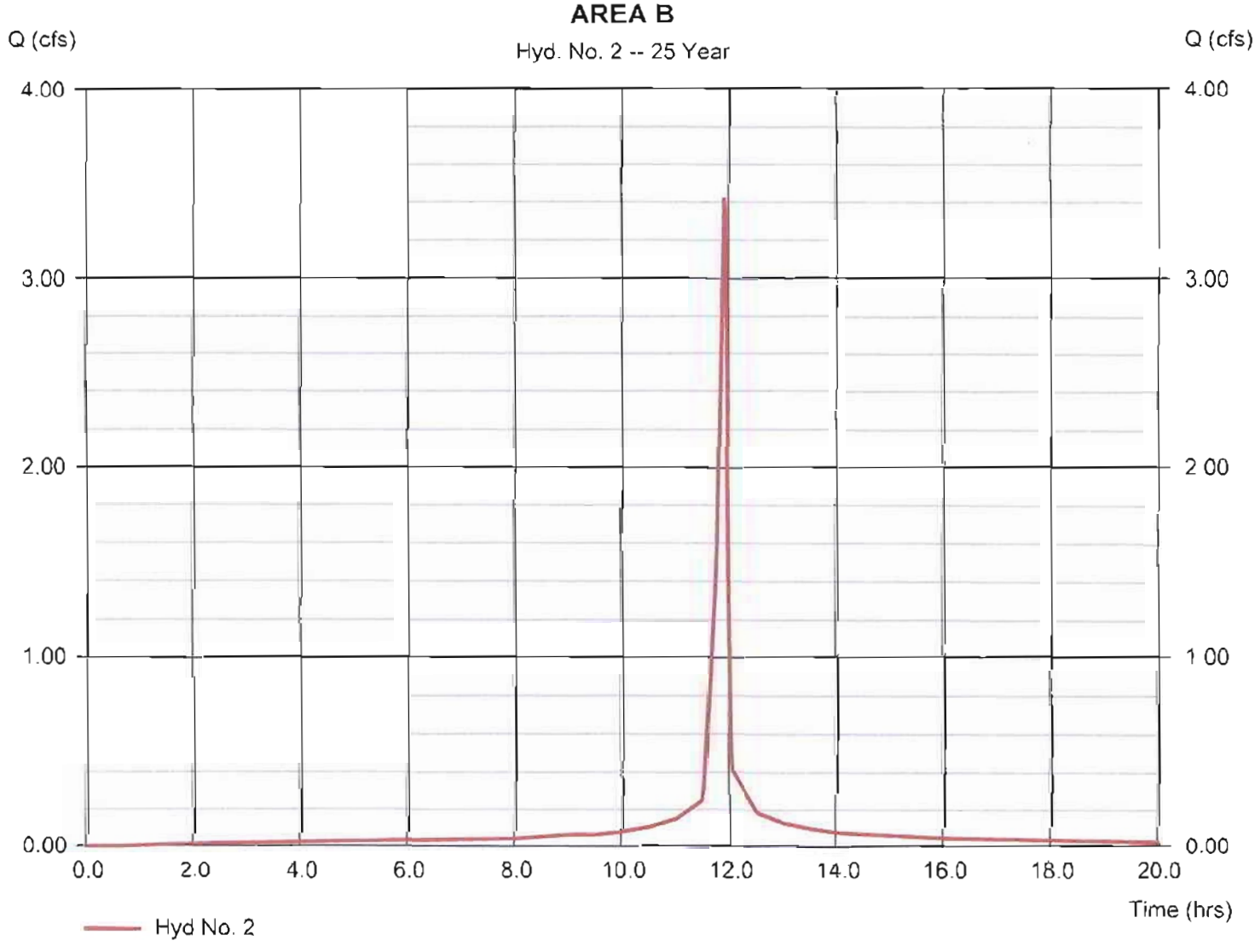


Hydrograph Report

Hyd. No. 2

AREA B

Hydrograph type	= SCS Runoff	Peak discharge	= 3.422 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.169 acft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

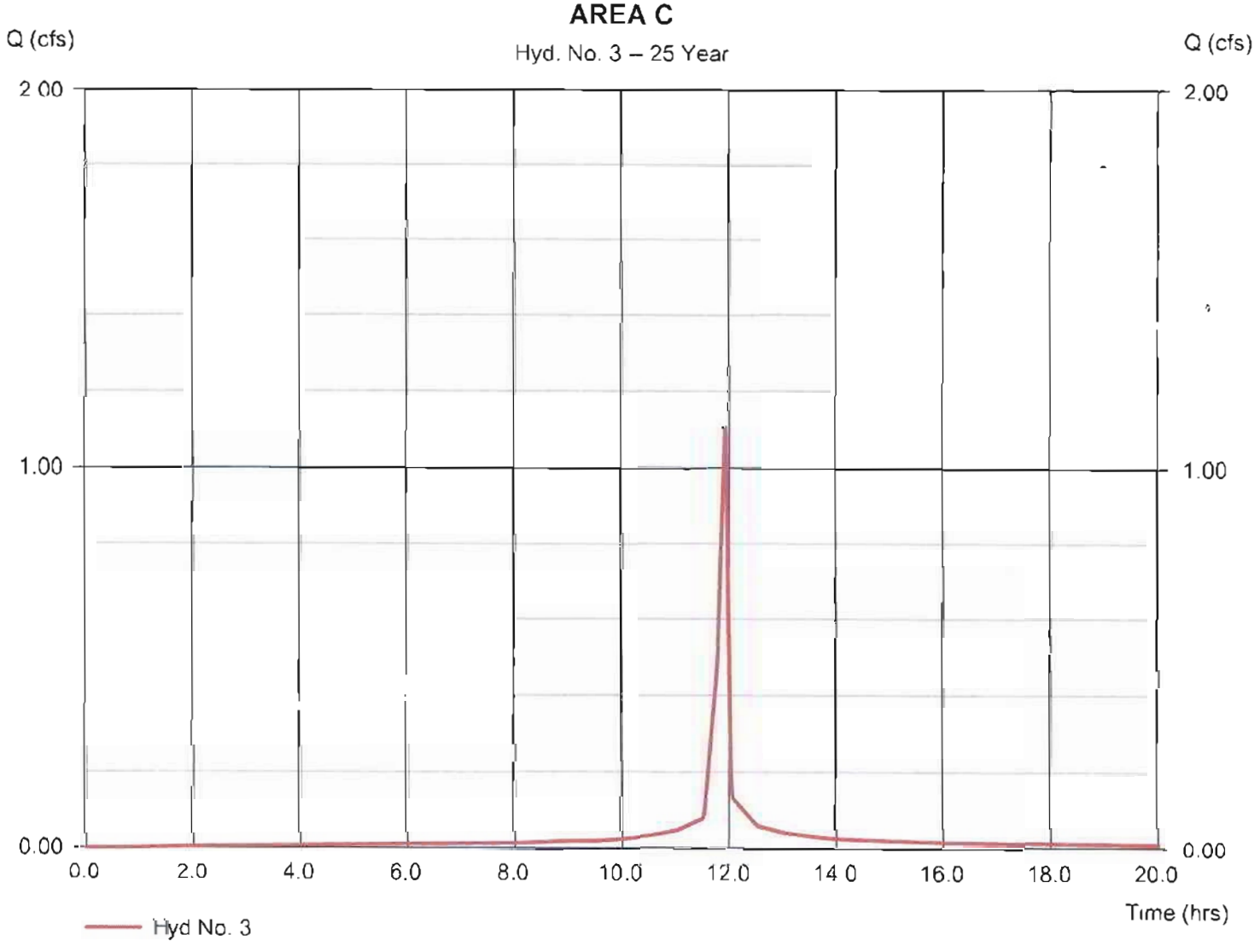


Hydrograph Report

Hyd. No. 3

AREA C

Hydrograph type	= SCS Runoff	Peak discharge	= 1.110 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.055 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

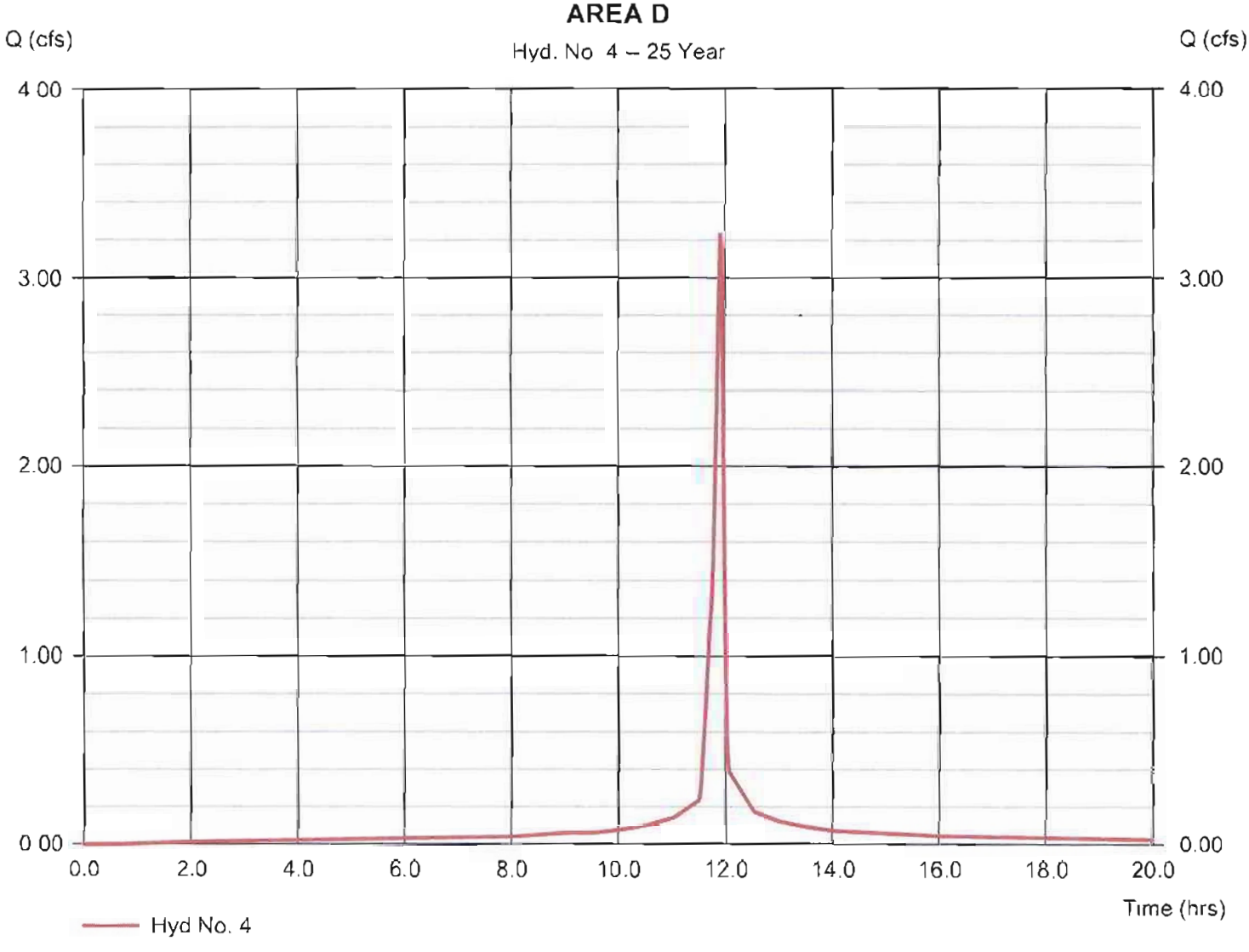


Hydrograph Report

Hyd. No. 4

AREA D

Hydrograph type	= SCS Runoff	Peak discharge	= 3.237 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.160 acft
Drainage area	= 0.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 1.70 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

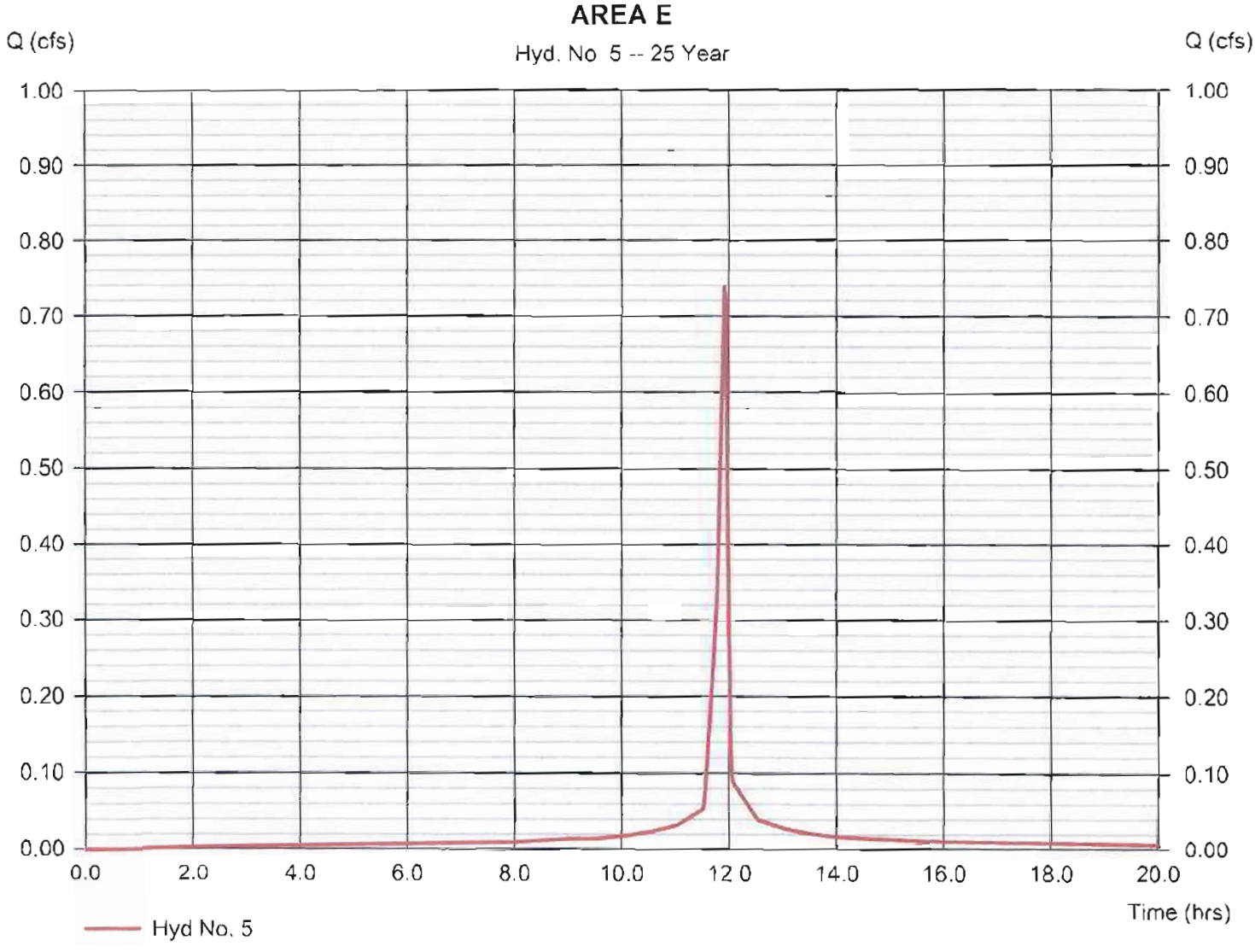


Hydrograph Report

Hyd. No. 5

AREA E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.740 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.037 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

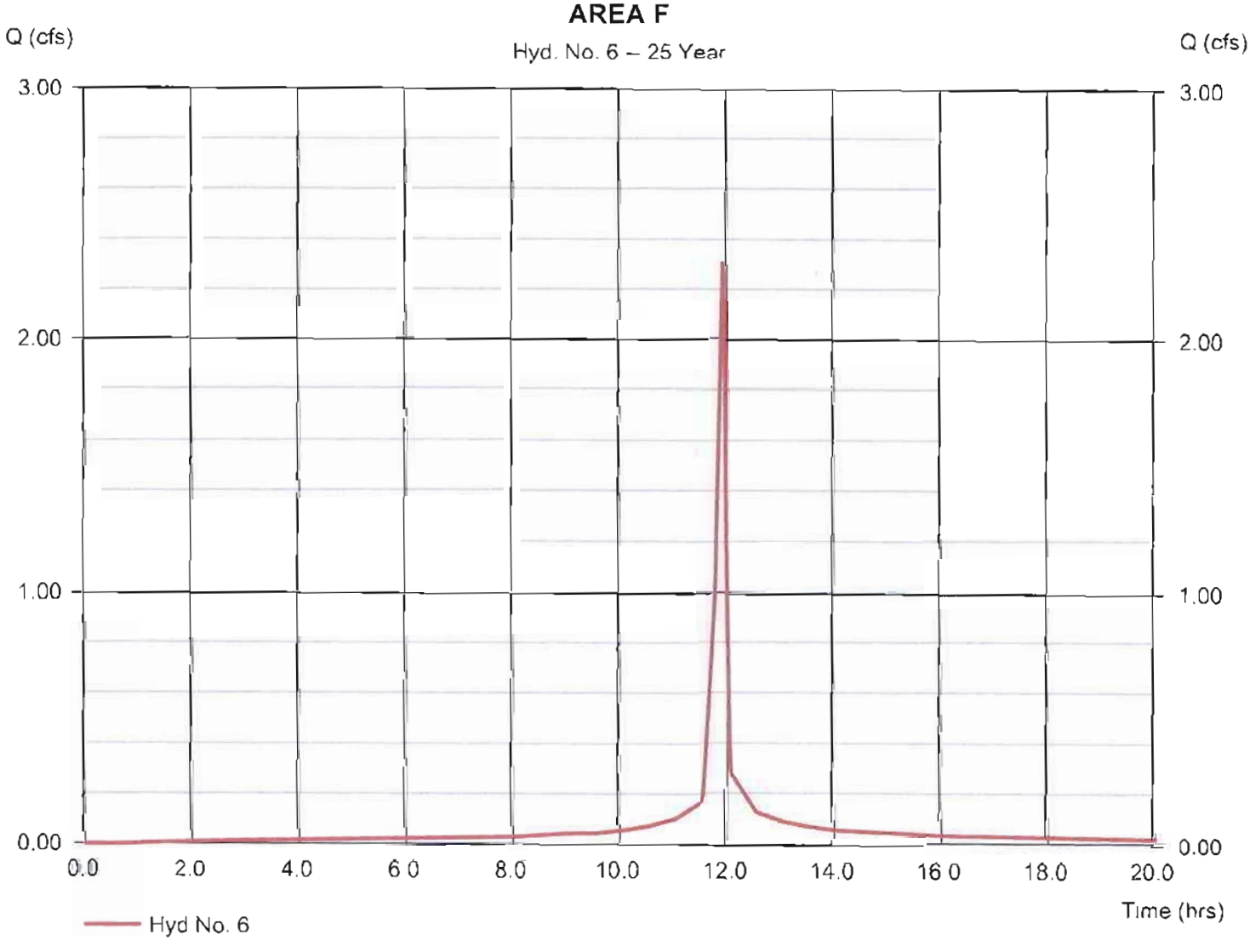


Hydrograph Report

Hyd. No. 6

AREA F

Hydrograph type	= SCS Runoff	Peak discharge	= 2.312 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.114 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

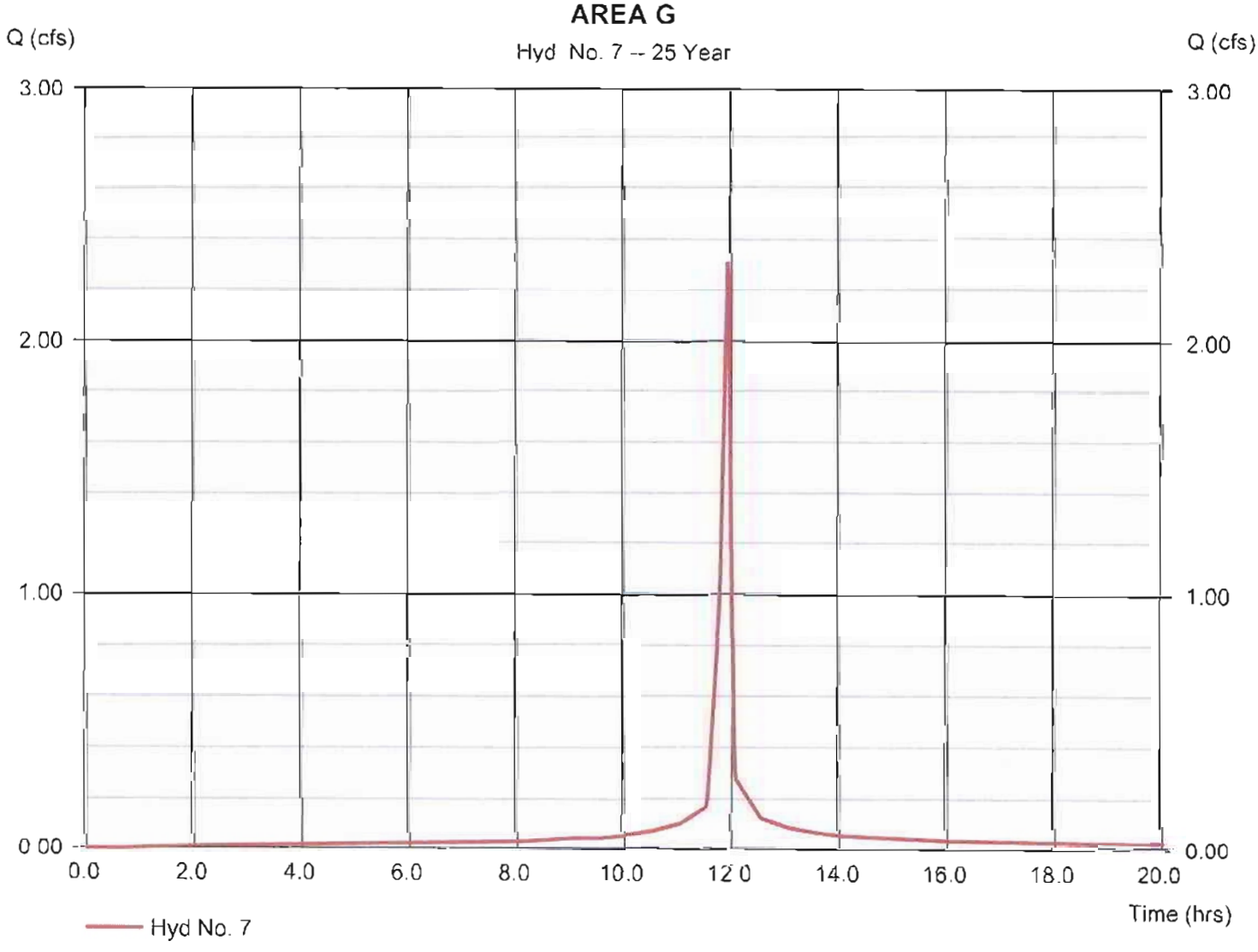


Hydrograph Report

Hyd. No. 7

AREA G

Hydrograph type	= SCS Runoff	Peak discharge	= 2.312 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.114 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

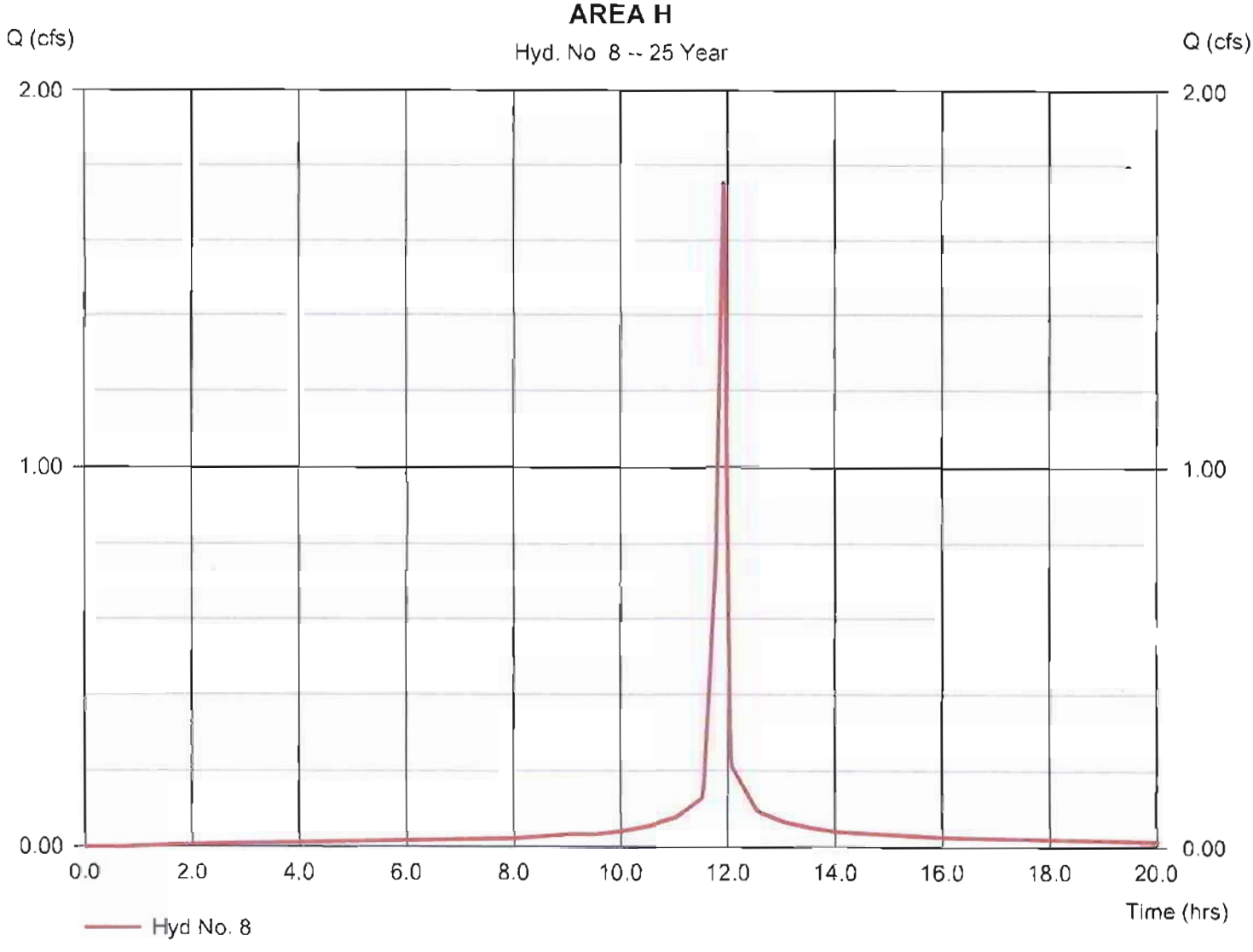


Hydrograph Report

Hyd. No. 8

AREA H

Hydrograph type	= SCS Runoff	Peak discharge	= 1.757 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.087 acft
Drainage area	= 0.190 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

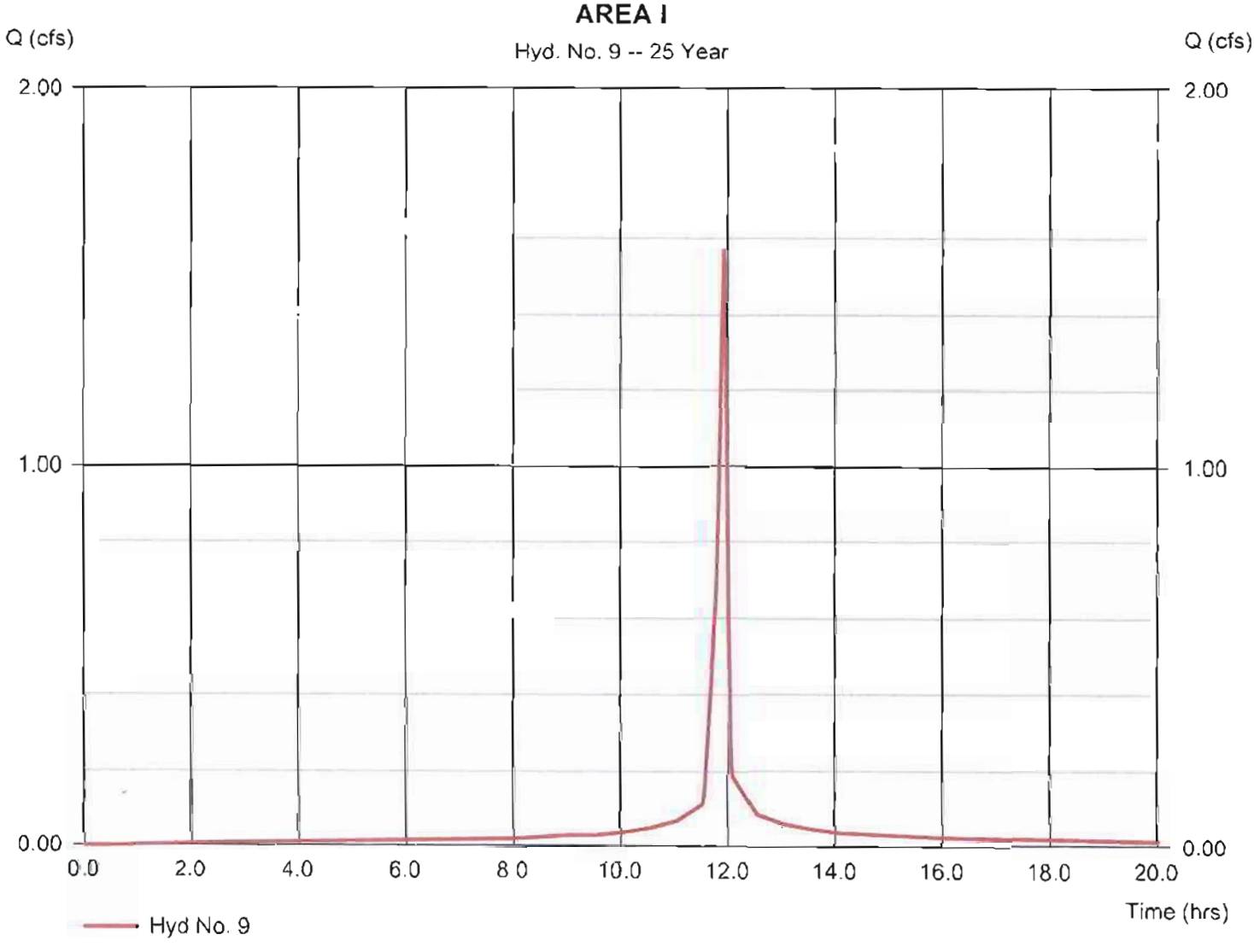


Hydrograph Report

Hyd. No. 9

AREA I

Hydrograph type	= SCS Runoff	Peak discharge	= 1.572 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.078 acft
Drainage area	= 0.170 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

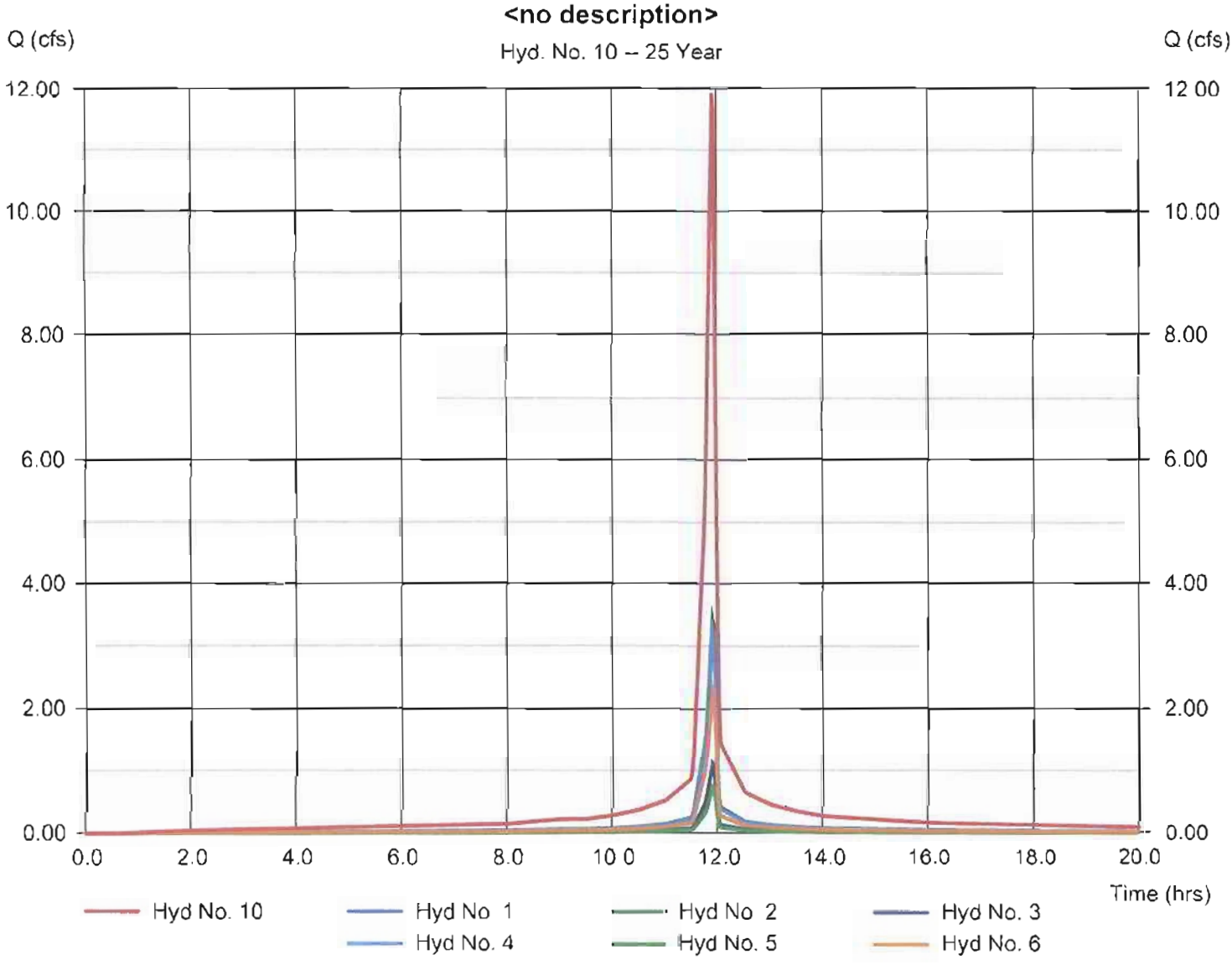


Hydrograph Report

Hyd. No. 10

<no description>

Hydrograph type	= Combine	Peak discharge	= 11.93 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.591 acft
Inflow hyds.	= 1, 2, 3, 4, 5, 6	Contrib. drain. area	= 1.290 ac

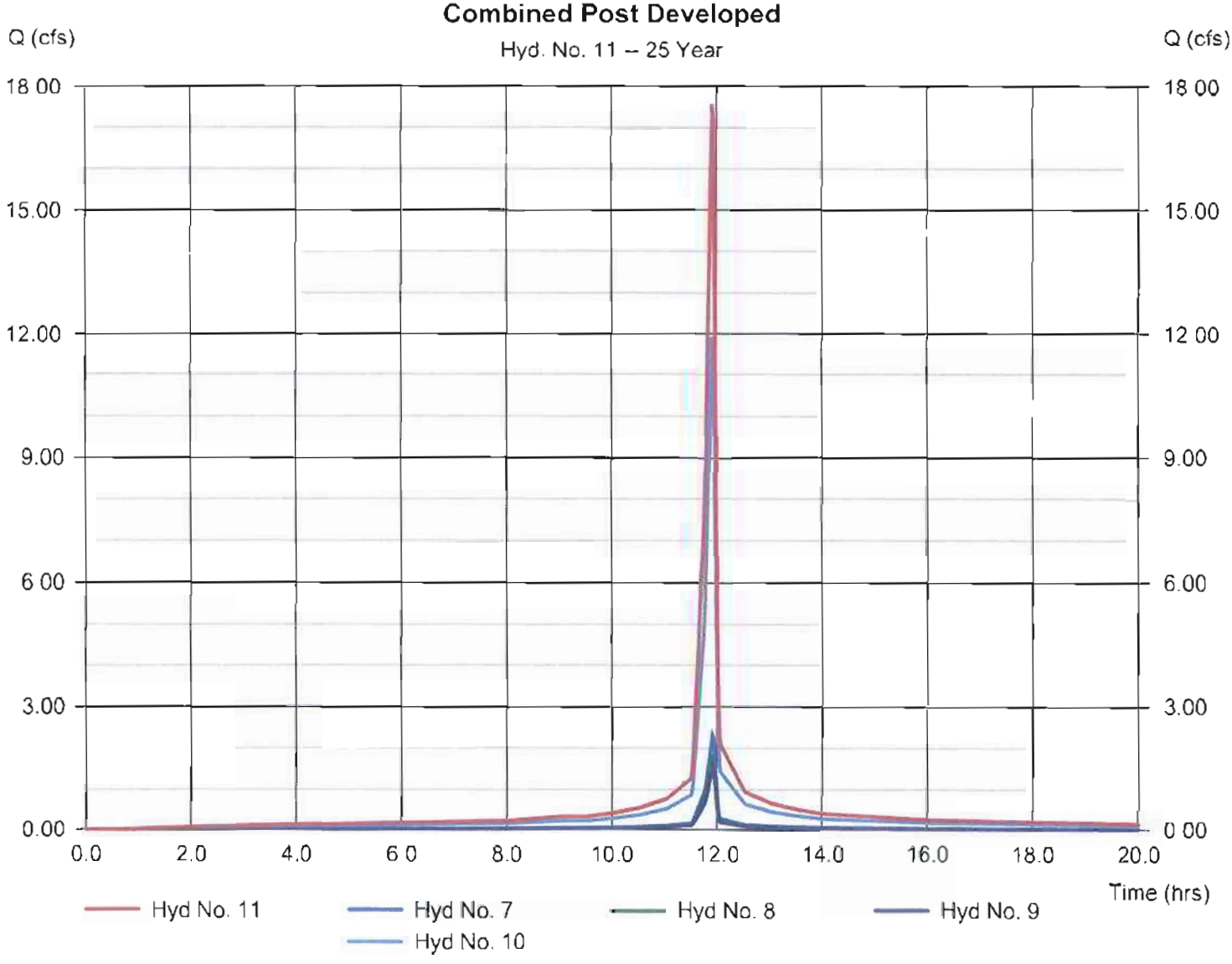


Hydrograph Report

Hyd. No. 11

Combined Post Developed

Hydrograph type	= Combine	Peak discharge	= 17.57 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.870 acft
Inflow hyds.	= 7, 8, 9, 10	Contrib. drain. area	= 0.610 ac

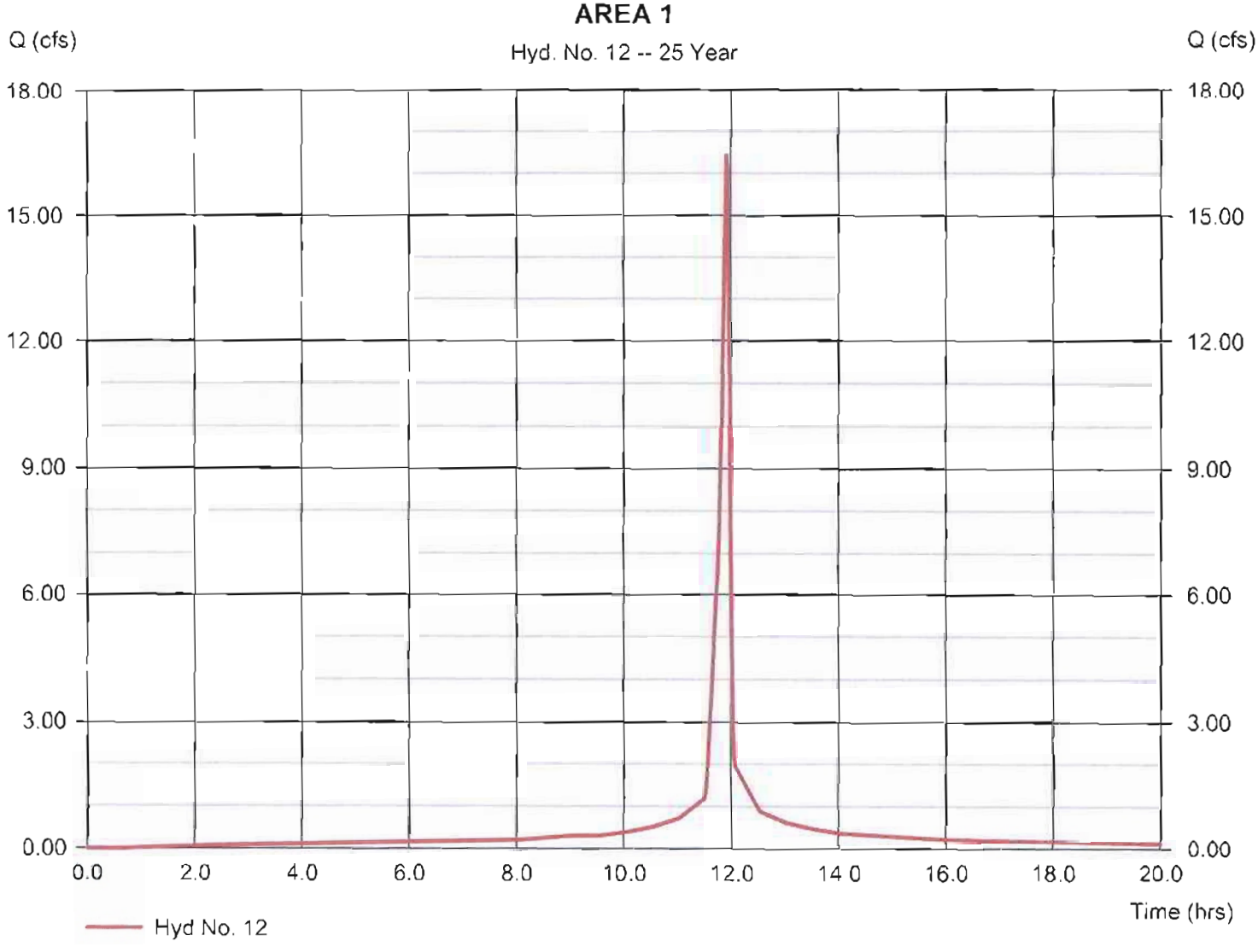


Hydrograph Report

Hyd. No. 12

AREA 1

Hydrograph type	= SCS Runoff	Peak discharge	= 16.46 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.815 acft
Drainage area	= 1.780 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 3.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

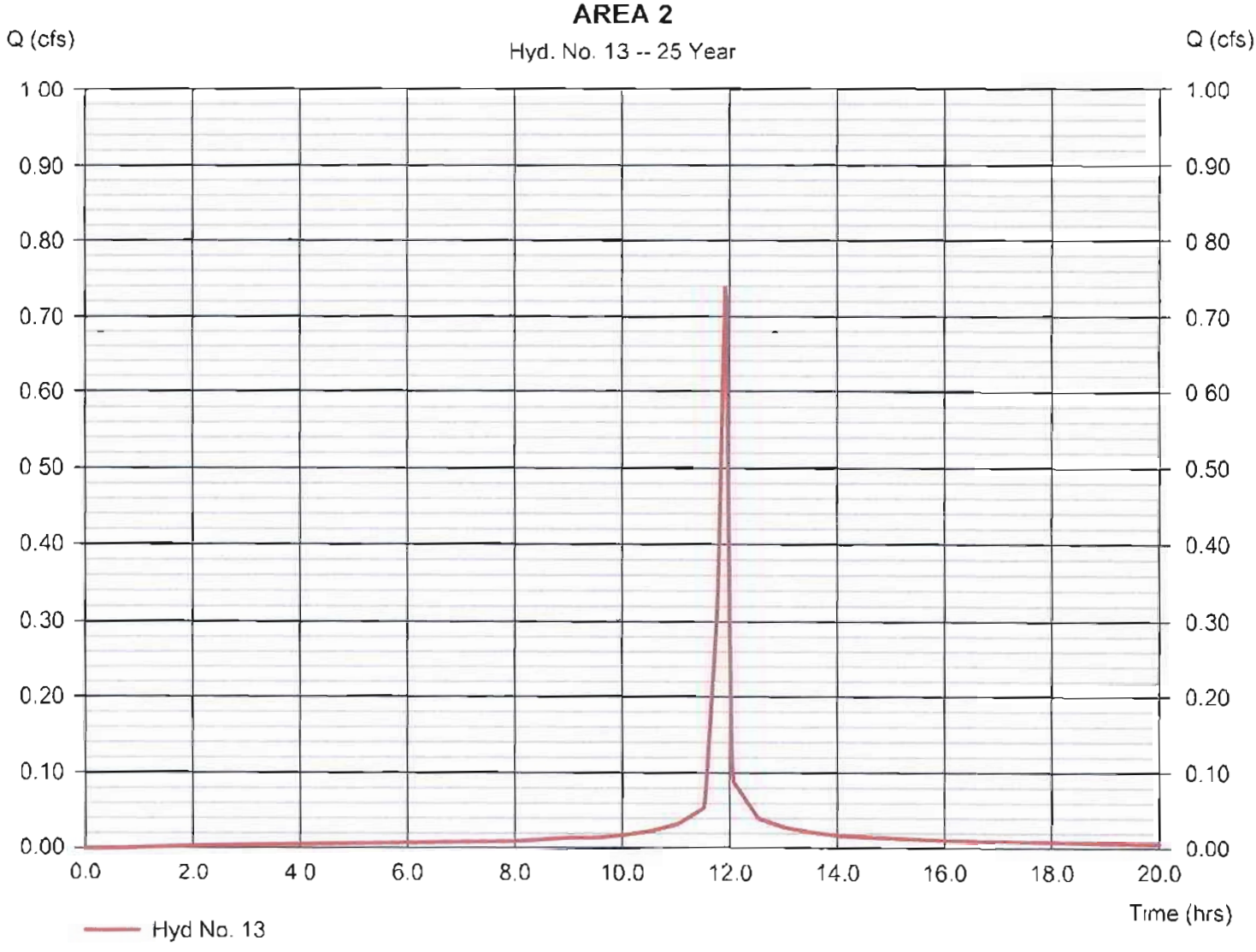


Hydrograph Report

Hyd. No. 13

AREA 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.740 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.037 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

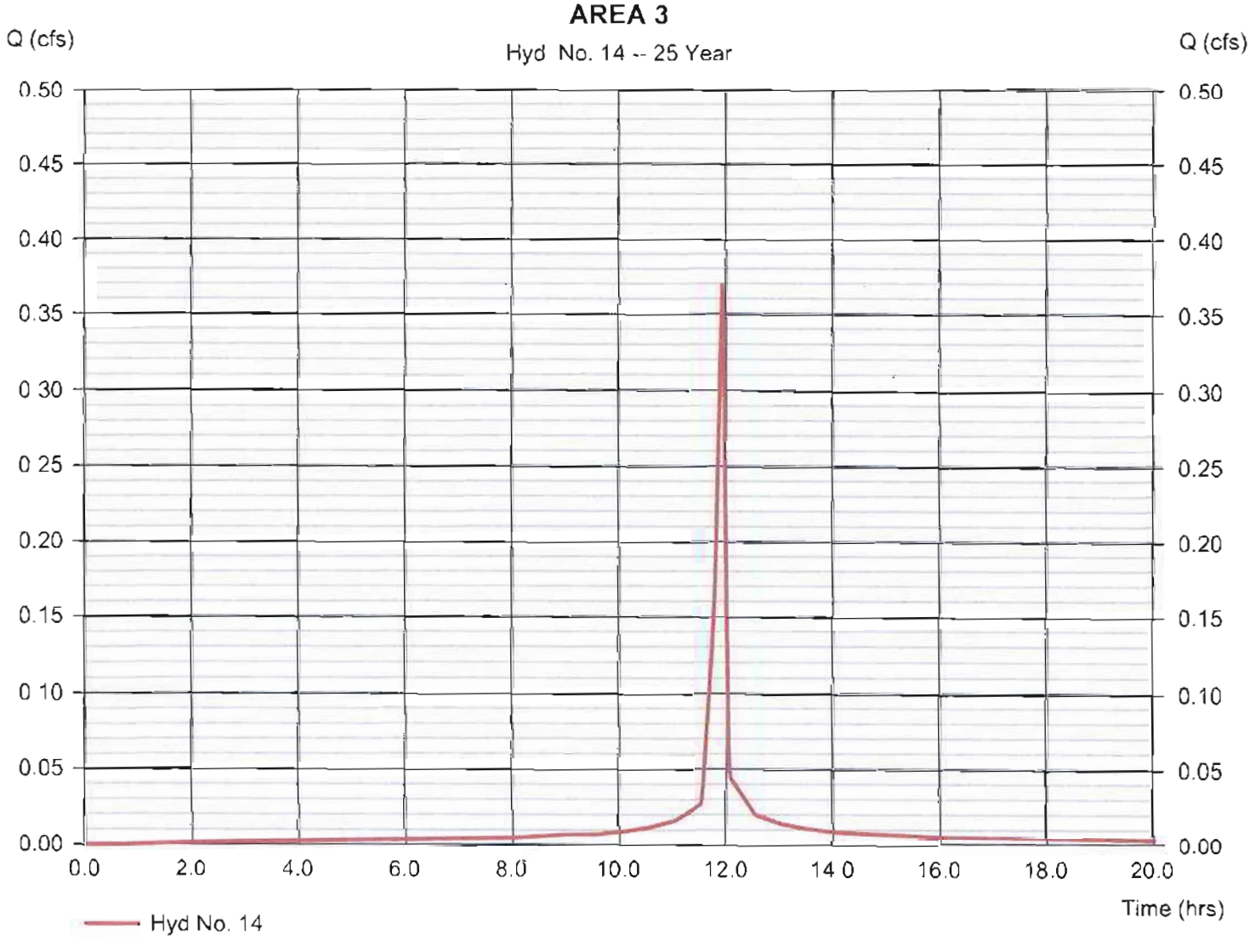


Hydrograph Report

Hyd. No. 14

AREA 3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.370 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.018 acft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

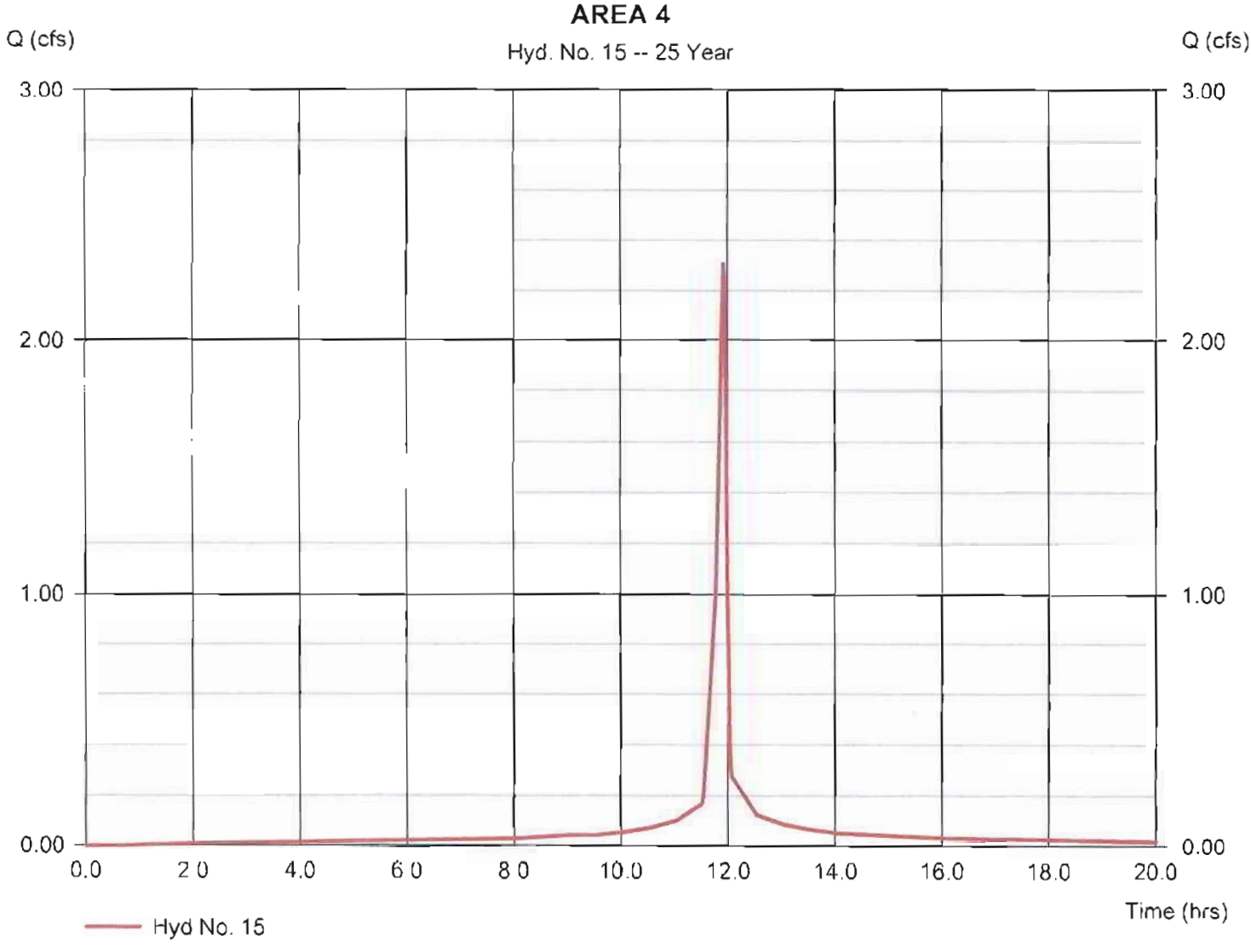


Hydrograph Report

Hyd. No. 15

AREA 4

Hydrograph type	= SCS Runoff	Peak discharge	= 2.312 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.114 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

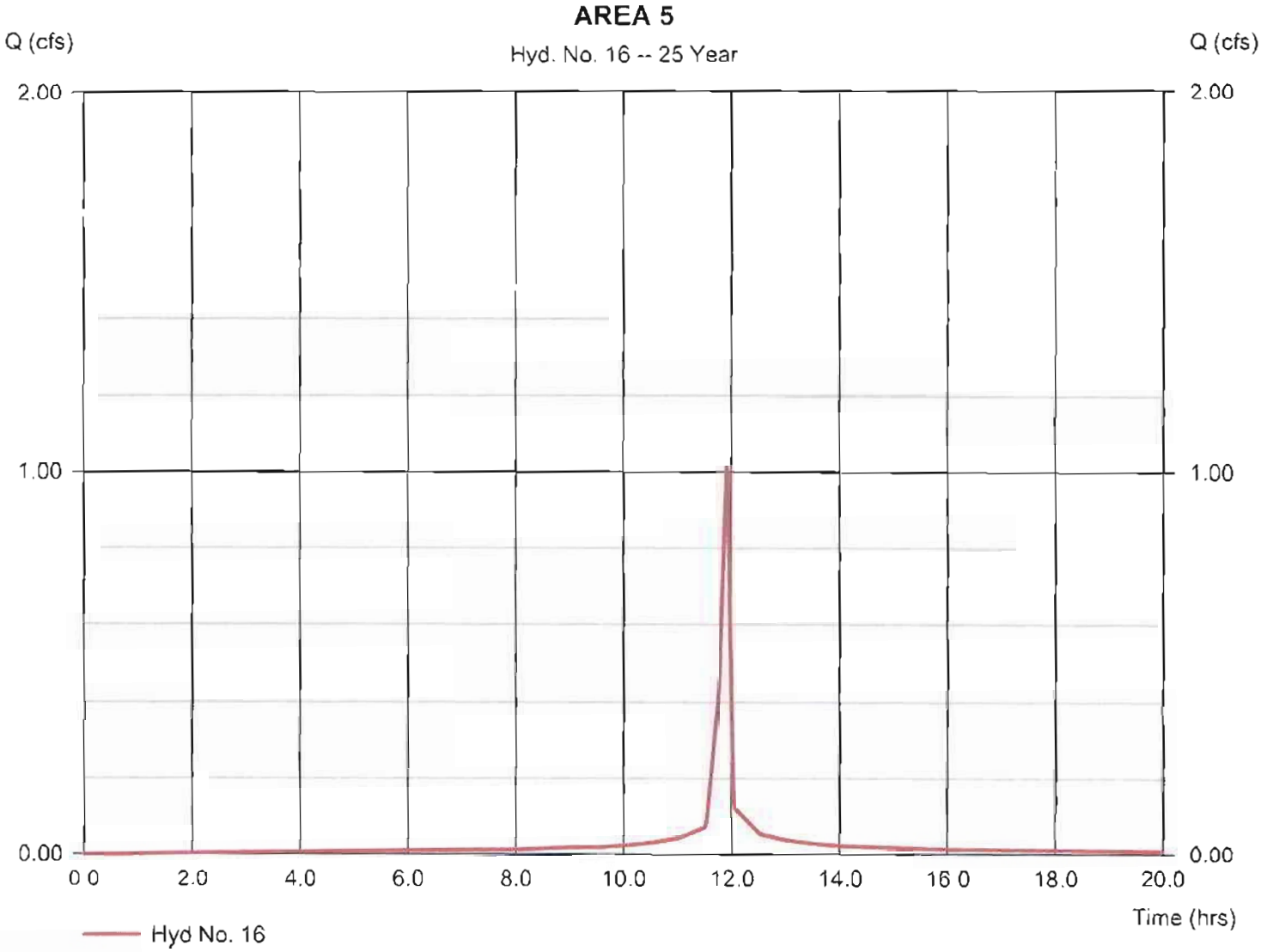


Hydrograph Report

Hyd. No. 16

AREA 5

Hydrograph type	= SCS Runoff	Peak discharge	= 1.017 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.050 acft
Drainage area	= 0.110 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

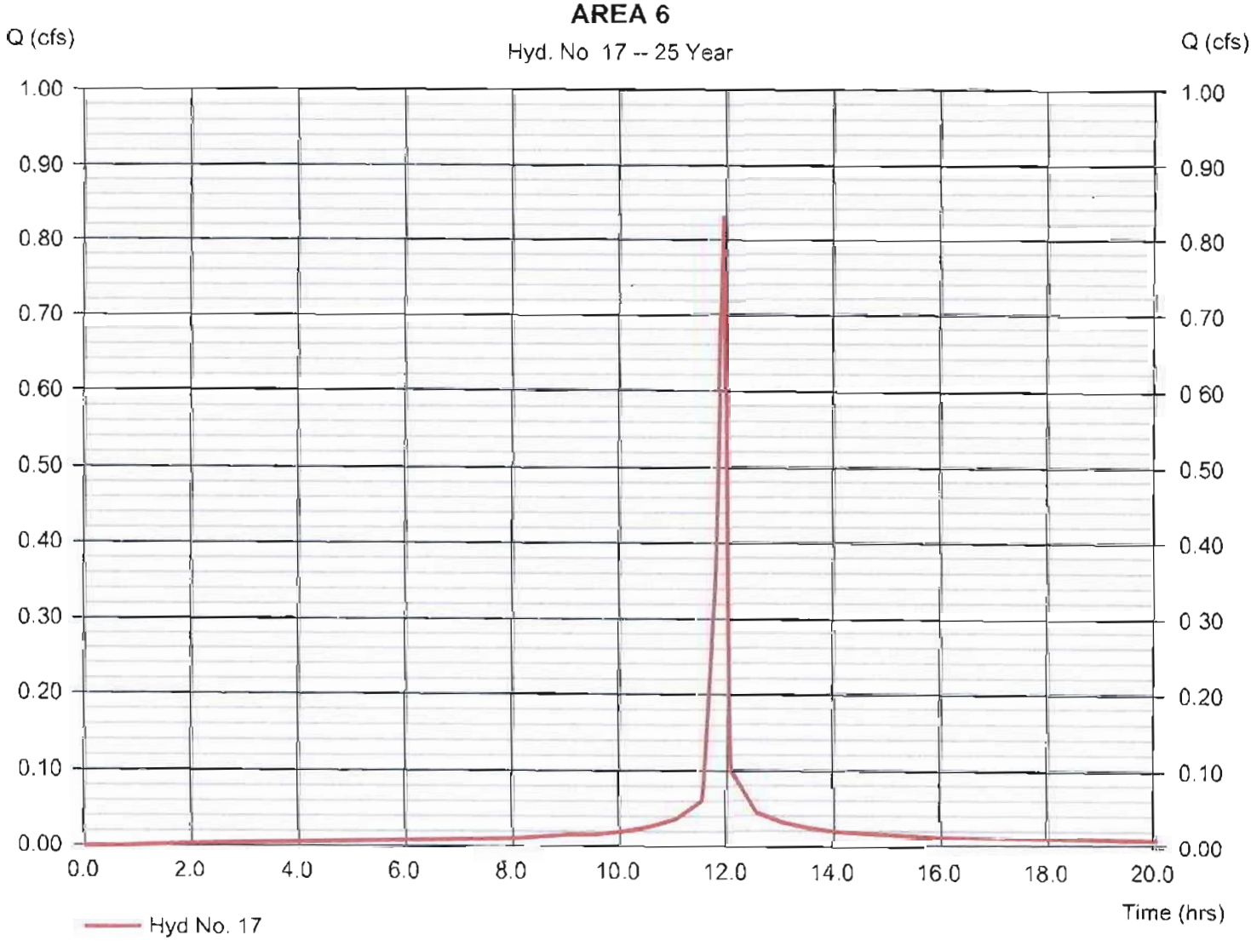


Hydrograph Report

Hyd. No. 17

AREA 6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.832 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.041 acft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

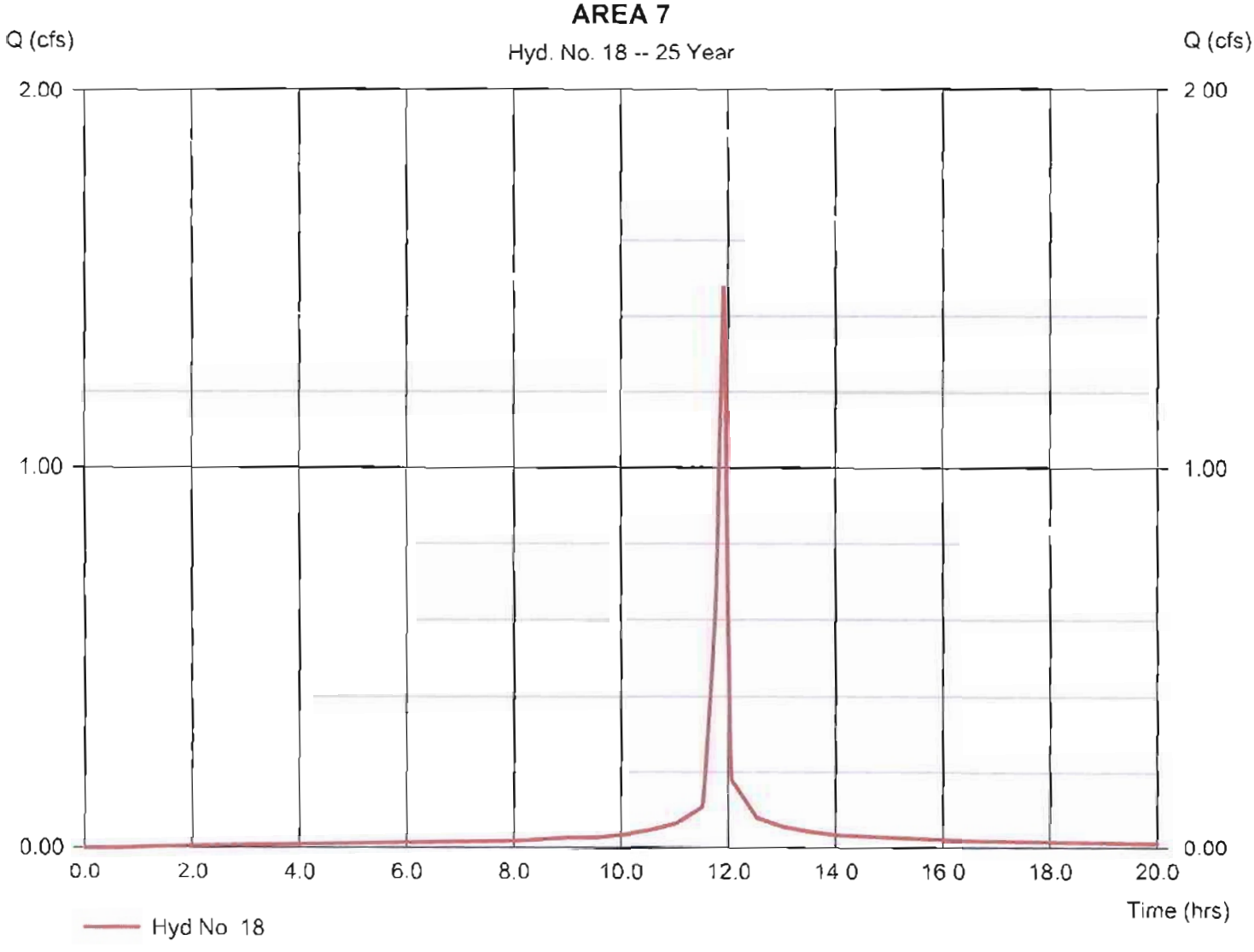


Hydrograph Report

Hyd. No. 18

AREA 7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.480 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.073 acft
Drainage area	= 0.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

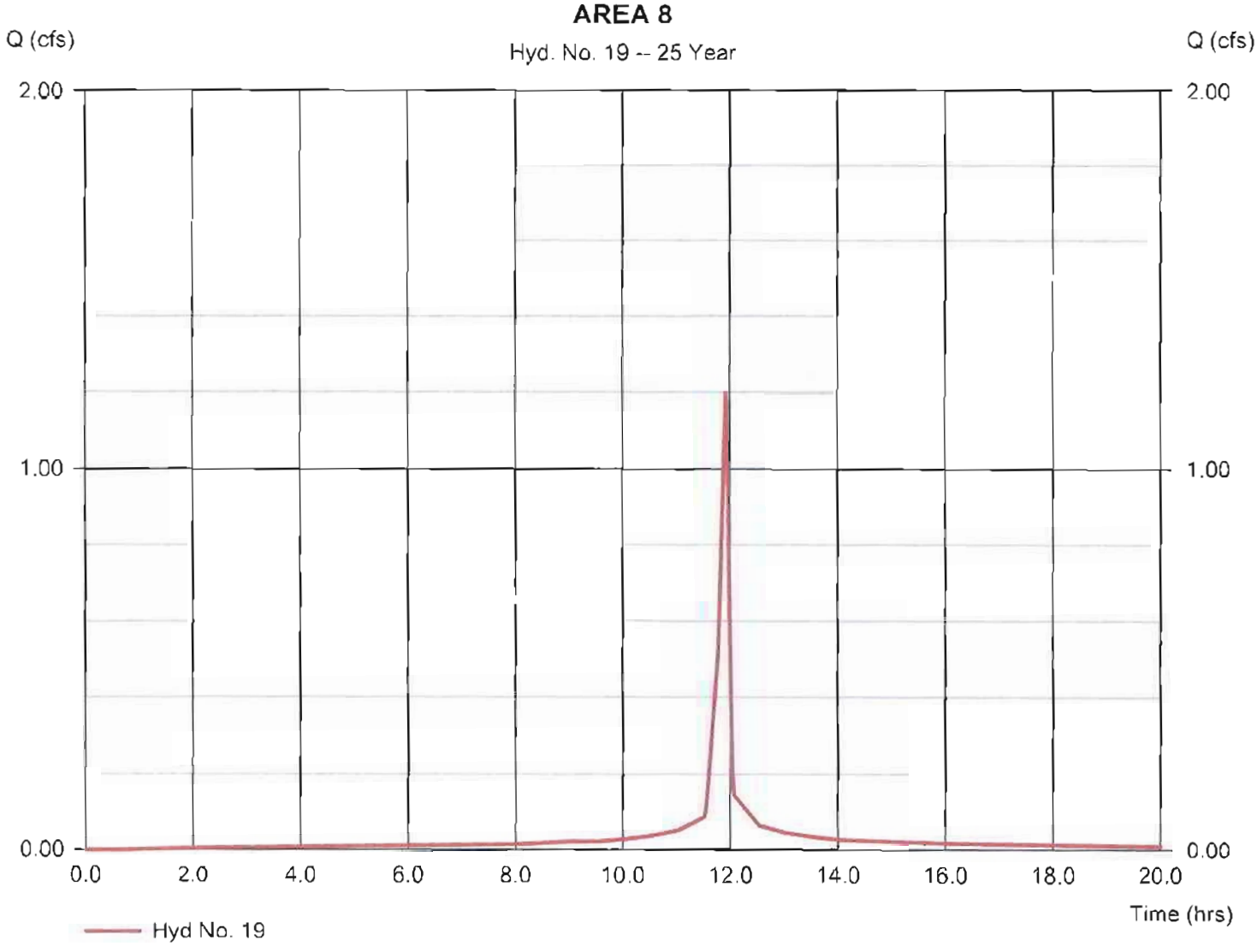


Hydrograph Report

Hyd. No. 19

AREA 8

Hydrograph type	= SCS Runoff	Peak discharge	= 1.202 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.060 acft
Drainage area	= 0.130 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

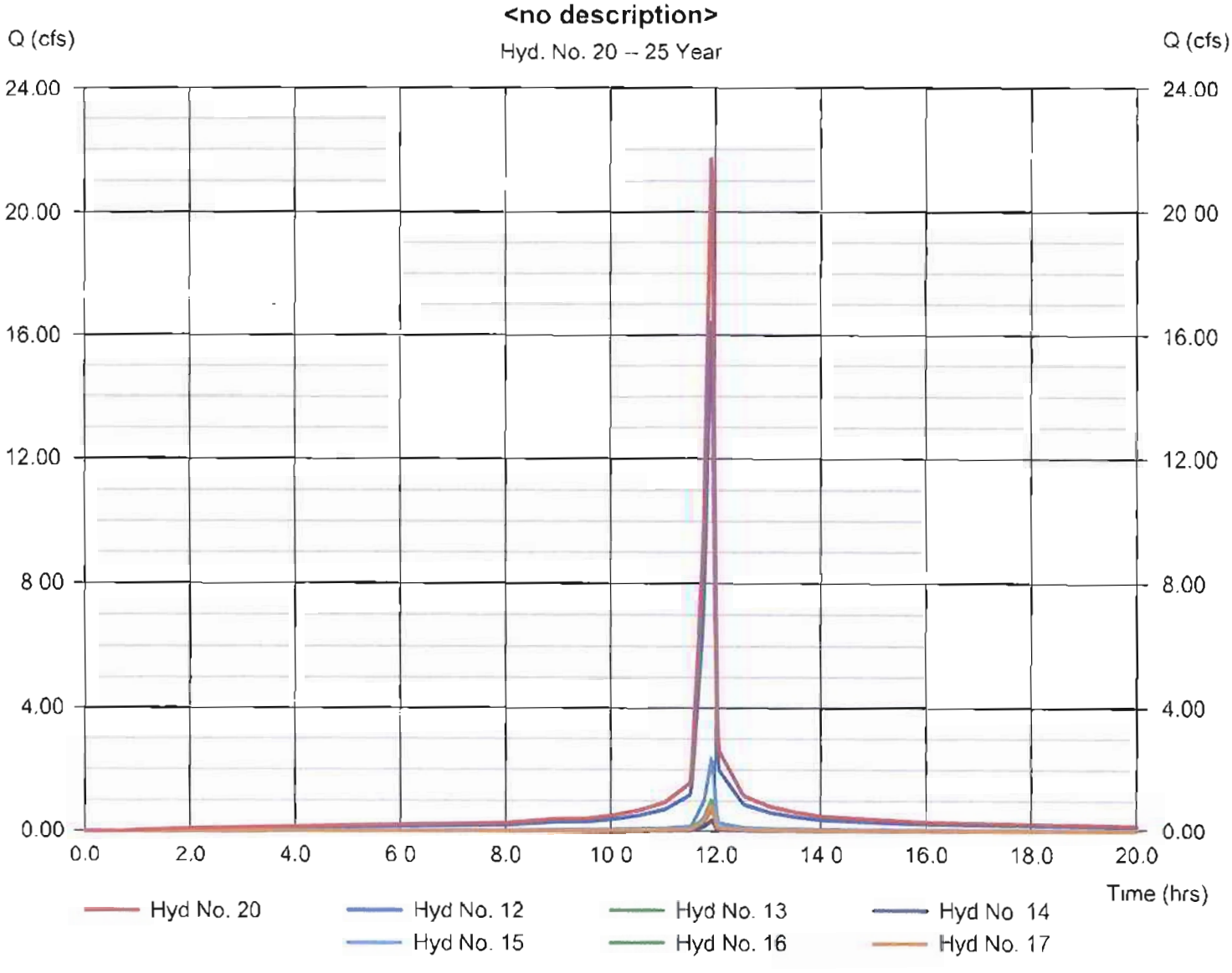


Hydrograph Report

Hyd. No. 20

<no description>

Hydrograph type	= Combine	Peak discharge	= 21.73 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 1.076 acft
Inflow hyds.	= 12, 13, 14, 15, 16, 17	Contrib. drain. area	= 2.350 ac

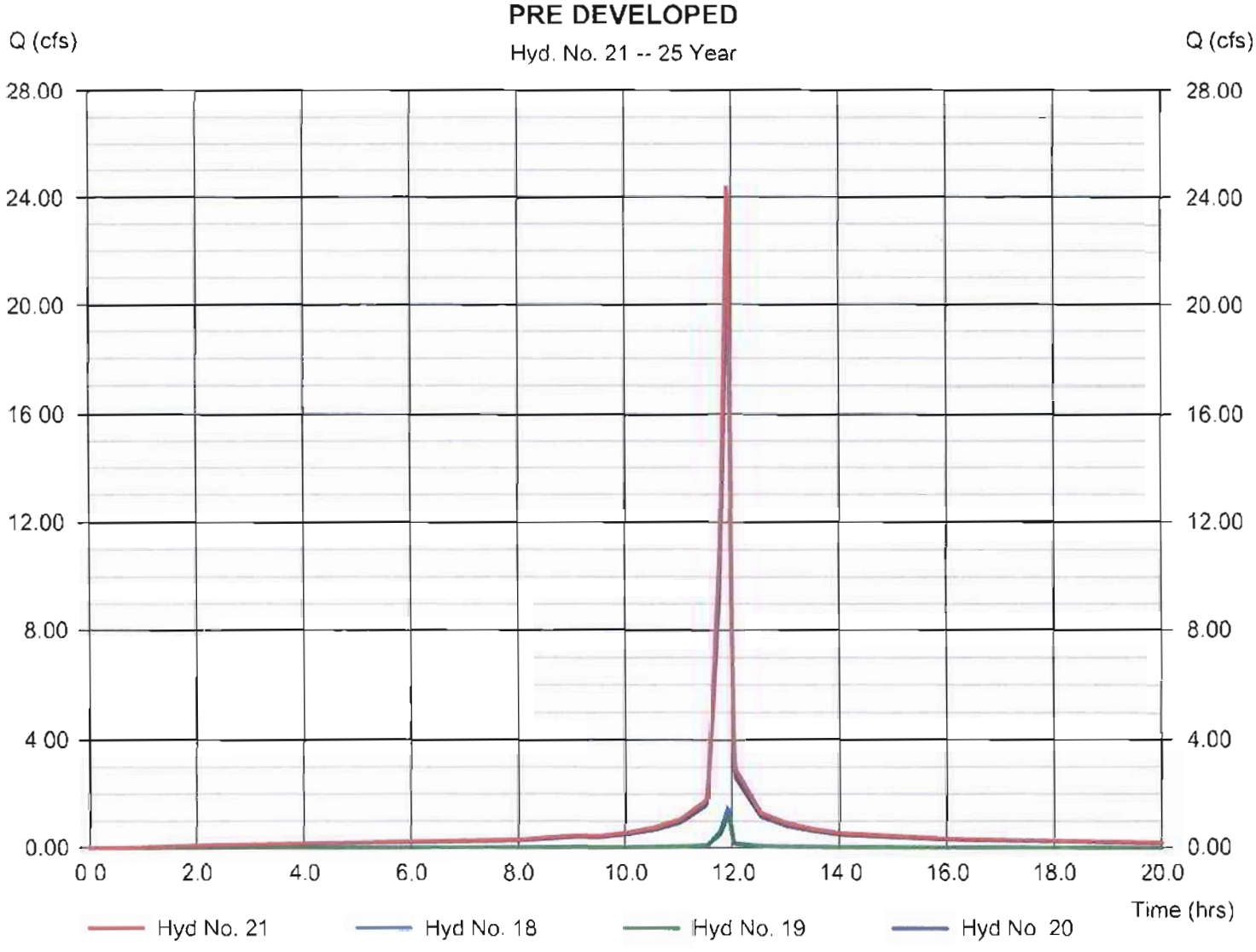


Hydrograph Report

Hyd. No. 21

PRE DEVELOPED

Hydrograph type	= Combine	Peak discharge	= 24.42 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 1.209 acft
Inflow hyds.	= 18, 19, 20	Contrib. drain. area	= 0.290 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc. v9

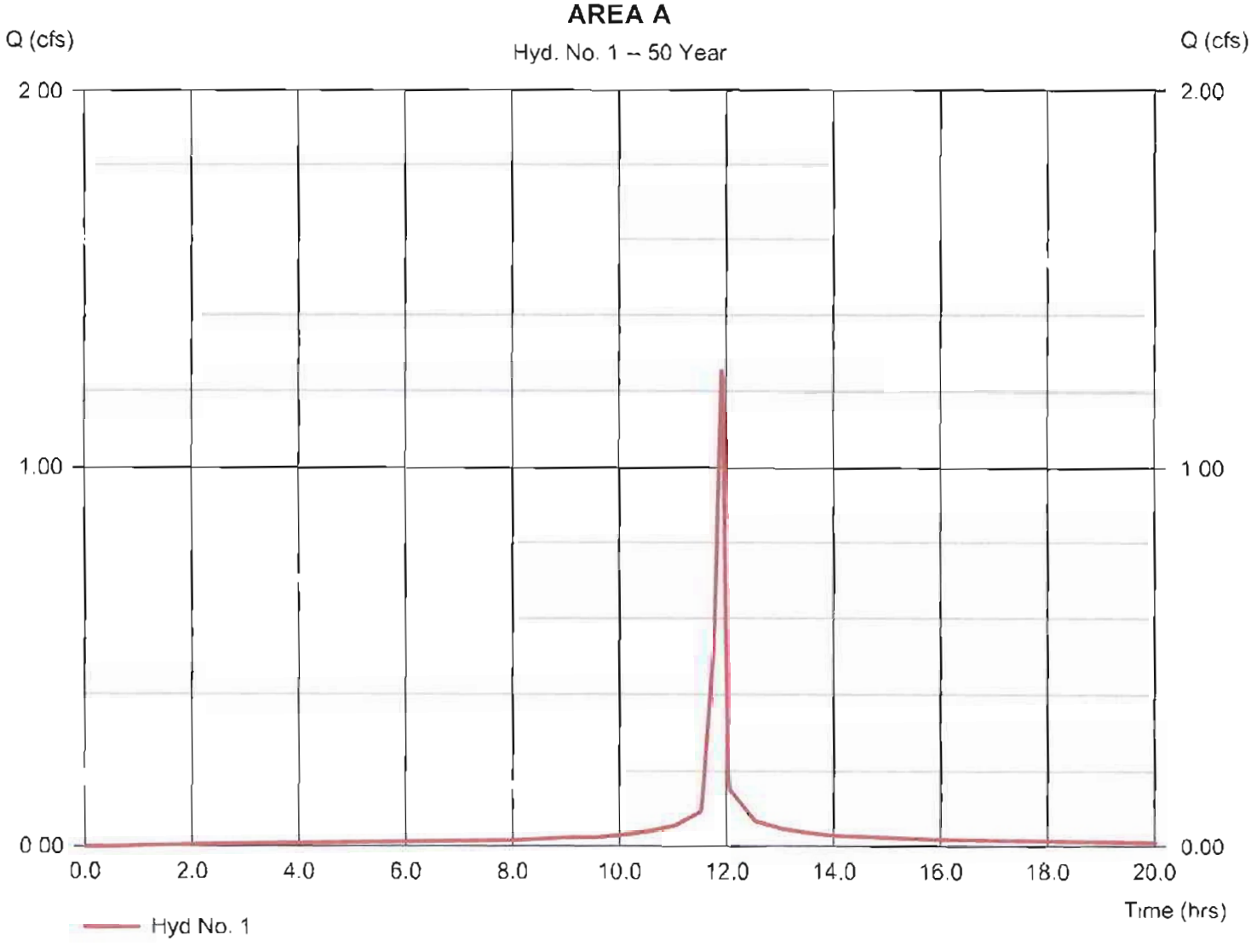
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph Description
1	SCS Runoff	1.256	1	715	0.062	---	---	---	AREA A
2	SCS Runoff	3.873	1	715	0.193	---	---	---	AREA B
3	SCS Runoff	1.256	1	715	0.062	---	---	---	AREA C
4	SCS Runoff	3.664	1	715	0.182	---	---	---	AREA D
5	SCS Runoff	0.837	1	715	0.042	---	---	---	AREA E
6	SCS Runoff	2.617	1	715	0.130	---	---	---	AREA F
7	SCS Runoff	2.617	1	715	0.130	---	---	---	AREA G
8	SCS Runoff	1.989	1	715	0.099	---	---	---	AREA H
9	SCS Runoff	1.780	1	715	0.088	---	---	---	AREA I
10	Combine	13.50	1	715	0.671	1, 2, 3,	---	---	<no description>
11	Combine	19.89	1	715	0.989	4, 5, 6, 7, 8, 9, 10	---	---	Combined Post Developed
12	SCS Runoff	18.63	1	715	0.926	---	---	---	AREA 1
13	SCS Runoff	0.837	1	715	0.042	---	---	---	AREA 2
14	SCS Runoff	0.419	1	715	0.021	---	---	---	AREA 3
15	SCS Runoff	2.617	1	715	0.130	---	---	---	AREA 4
16	SCS Runoff	1.152	1	715	0.057	---	---	---	AREA 5
17	SCS Runoff	0.942	1	715	0.047	---	---	---	AREA 6
18	SCS Runoff	1.675	1	715	0.083	---	---	---	AREA 7
19	SCS Runoff	1.361	1	715	0.068	---	---	---	AREA 8
20	Combine	24.60	1	715	1.223	12, 13, 14,	---	---	<no description>
21	Combine	27.64	1	715	1.374	15, 16, 17, 18, 19, 20	---	---	PRE DEVELOPED

Hydrograph Report

Hyd. No. 1

AREA A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.256 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.062 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

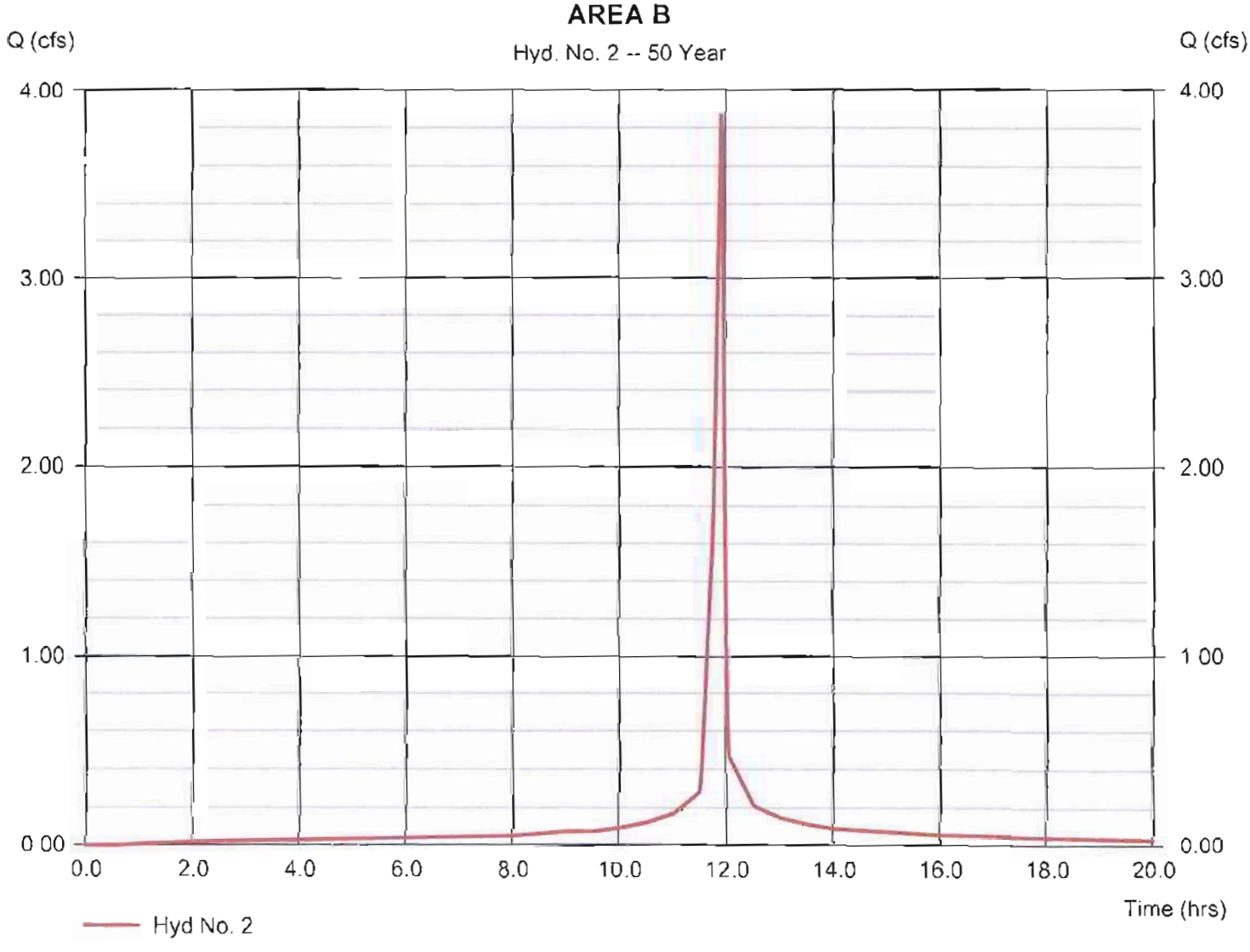


Hydrograph Report

Hyd. No. 2

AREA B

Hydrograph type	= SCS Runoff	Peak discharge	= 3.873 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.193 acft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

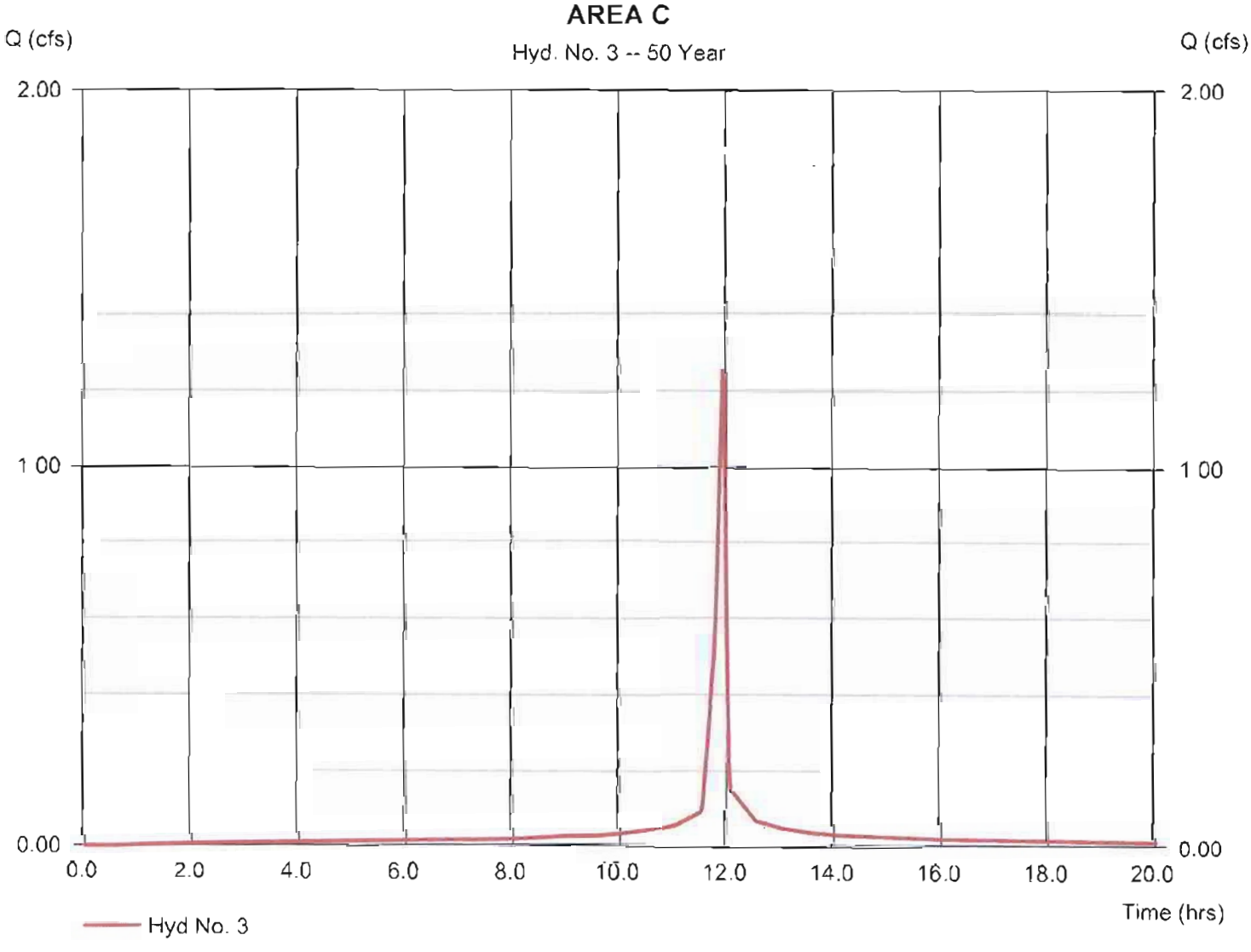


Hydrograph Report

Hyd. No. 3

AREA C

Hydrograph type	= SCS Runoff	Peak discharge	= 1.256 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.062 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

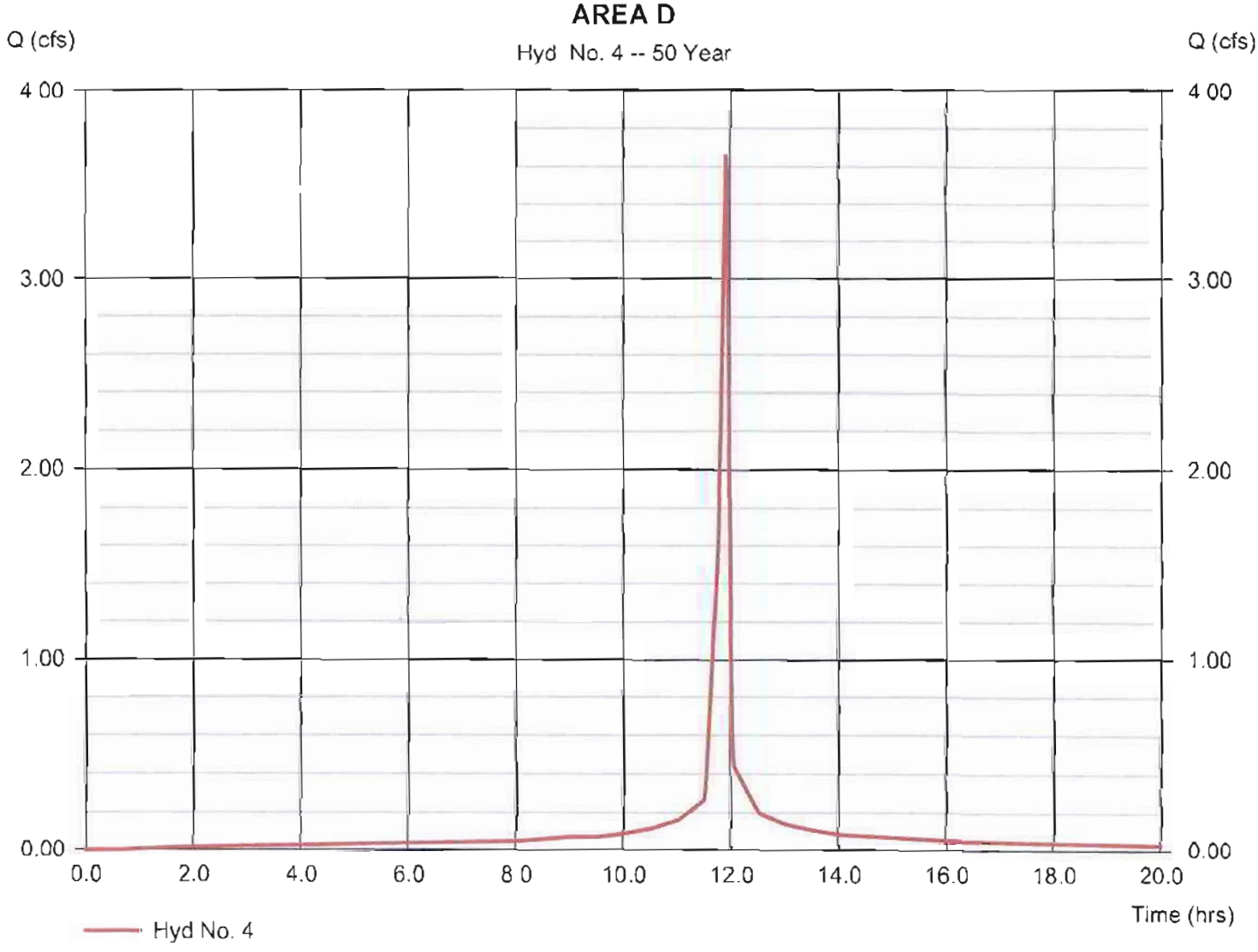


Hydrograph Report

Hyd. No. 4

AREA D

Hydrograph type	= SCS Runoff	Peak discharge	= 3.664 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.182 acft
Drainage area	= 0.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 1.70 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

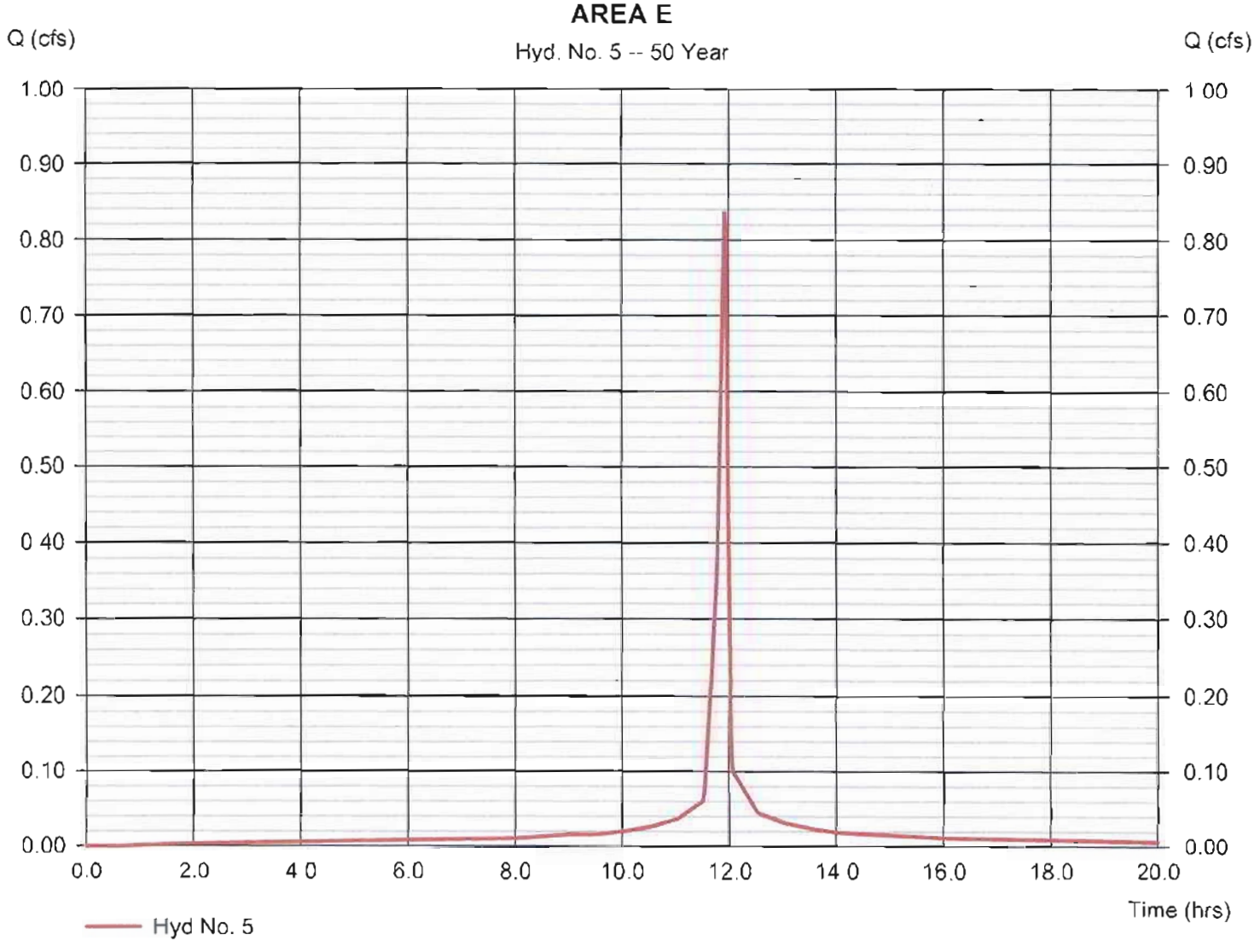


Hydrograph Report

Hyd. No. 5

AREA E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.837 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.042 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

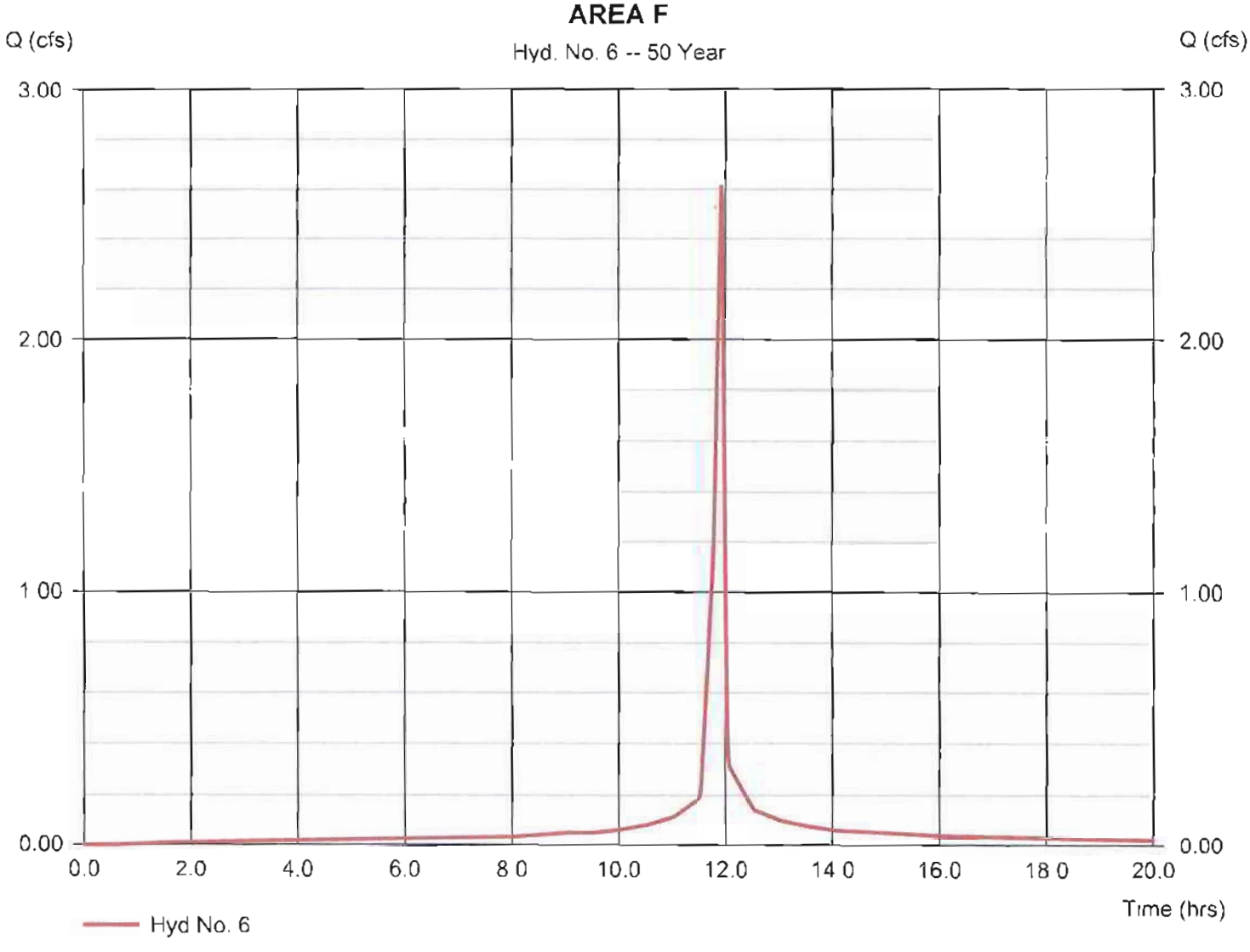


Hydrograph Report

Hyd. No. 6

AREA F

Hydrograph type	= SCS Runoff	Peak discharge	= 2.617 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.130 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

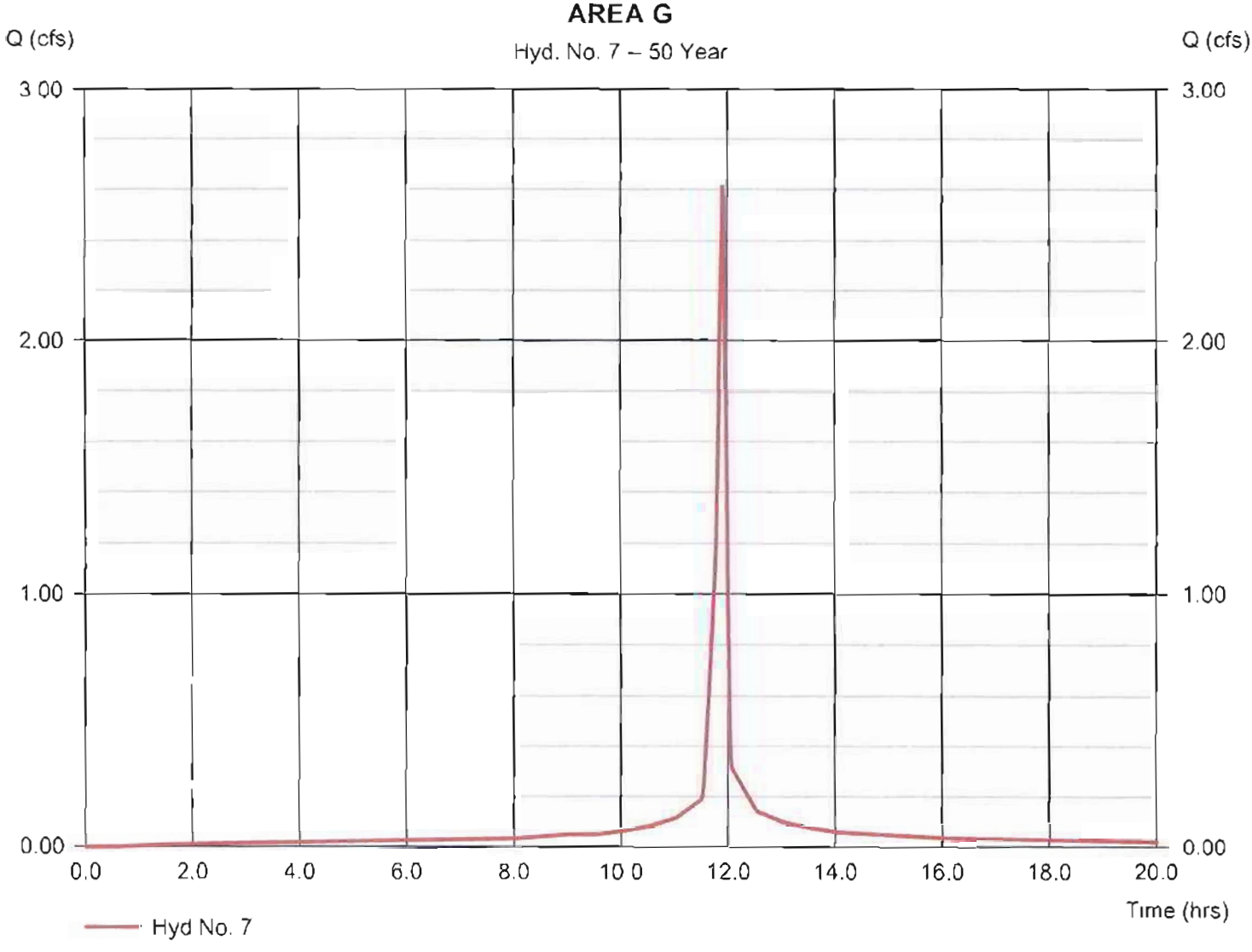


Hydrograph Report

Hyd. No. 7

AREA G

Hydrograph type	= SCS Runoff	Peak discharge	= 2.617 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.130 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

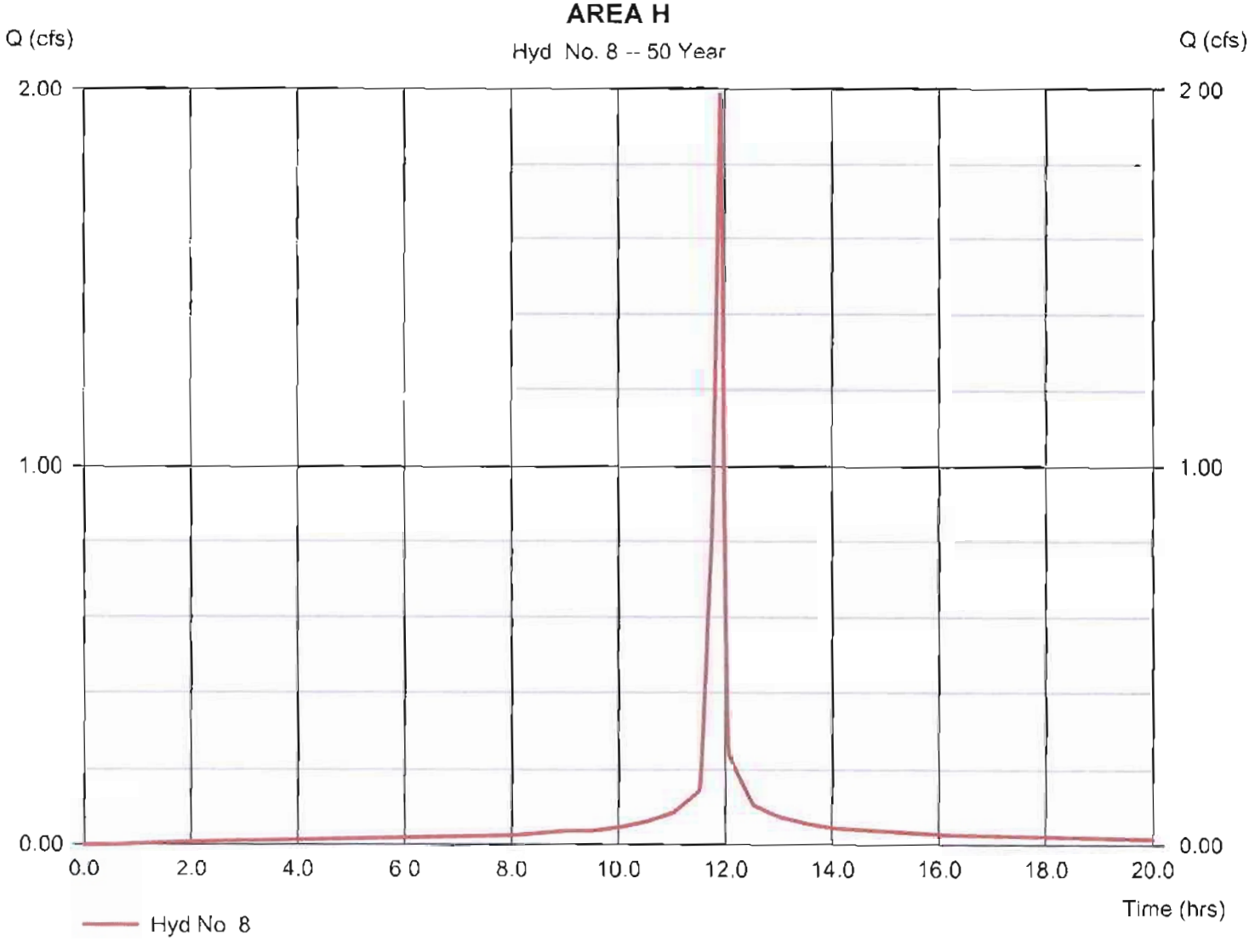


Hydrograph Report

Hyd. No. 8

AREA H

Hydrograph type	= SCS Runoff	Peak discharge	= 1.989 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.099 acft
Drainage area	= 0.190 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

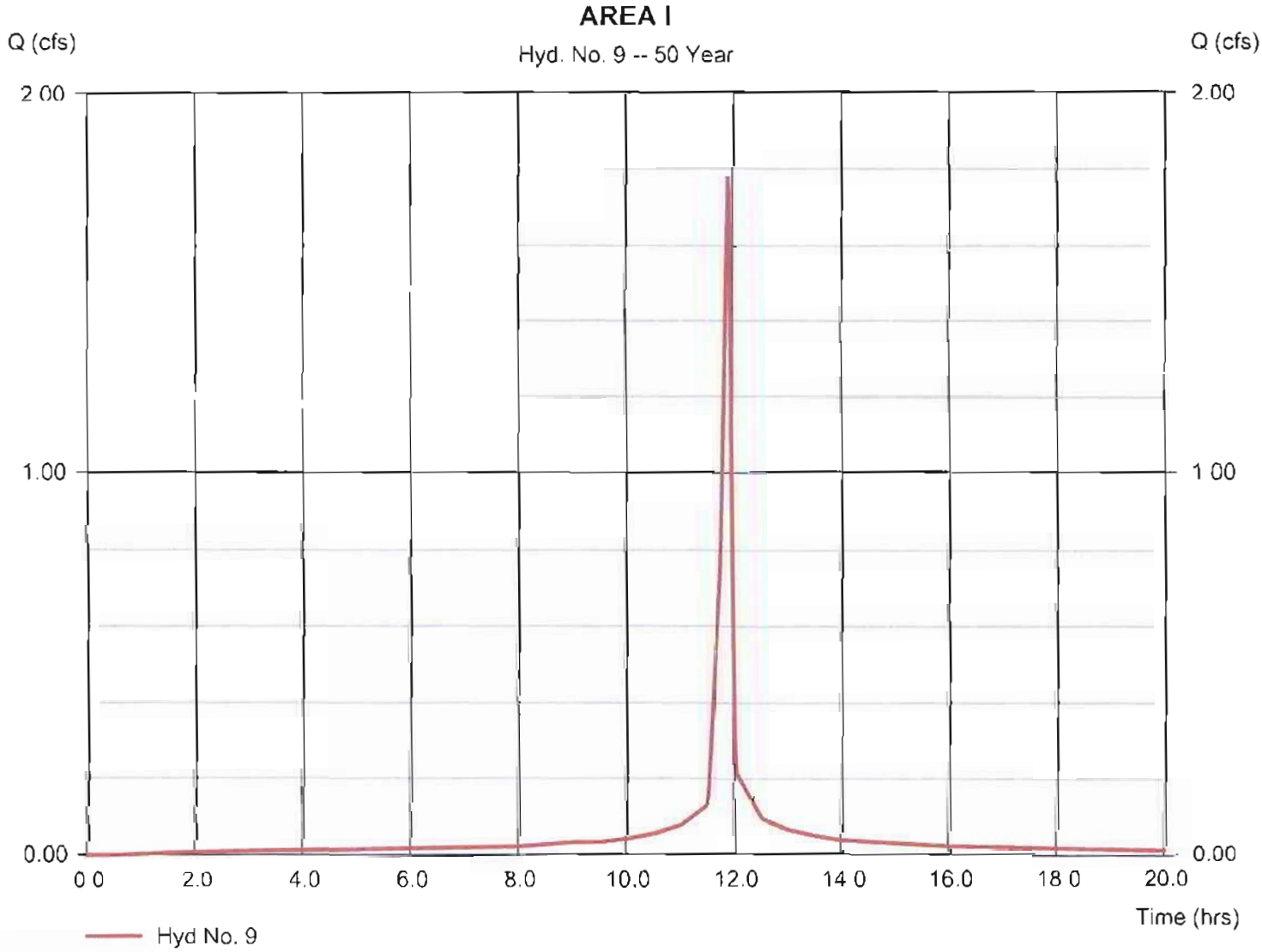


Hydrograph Report

Hyd. No. 9

AREA I

Hydrograph type	= SCS Runoff	Peak discharge	= 1.780 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.088 acft
Drainage area	= 0.170 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

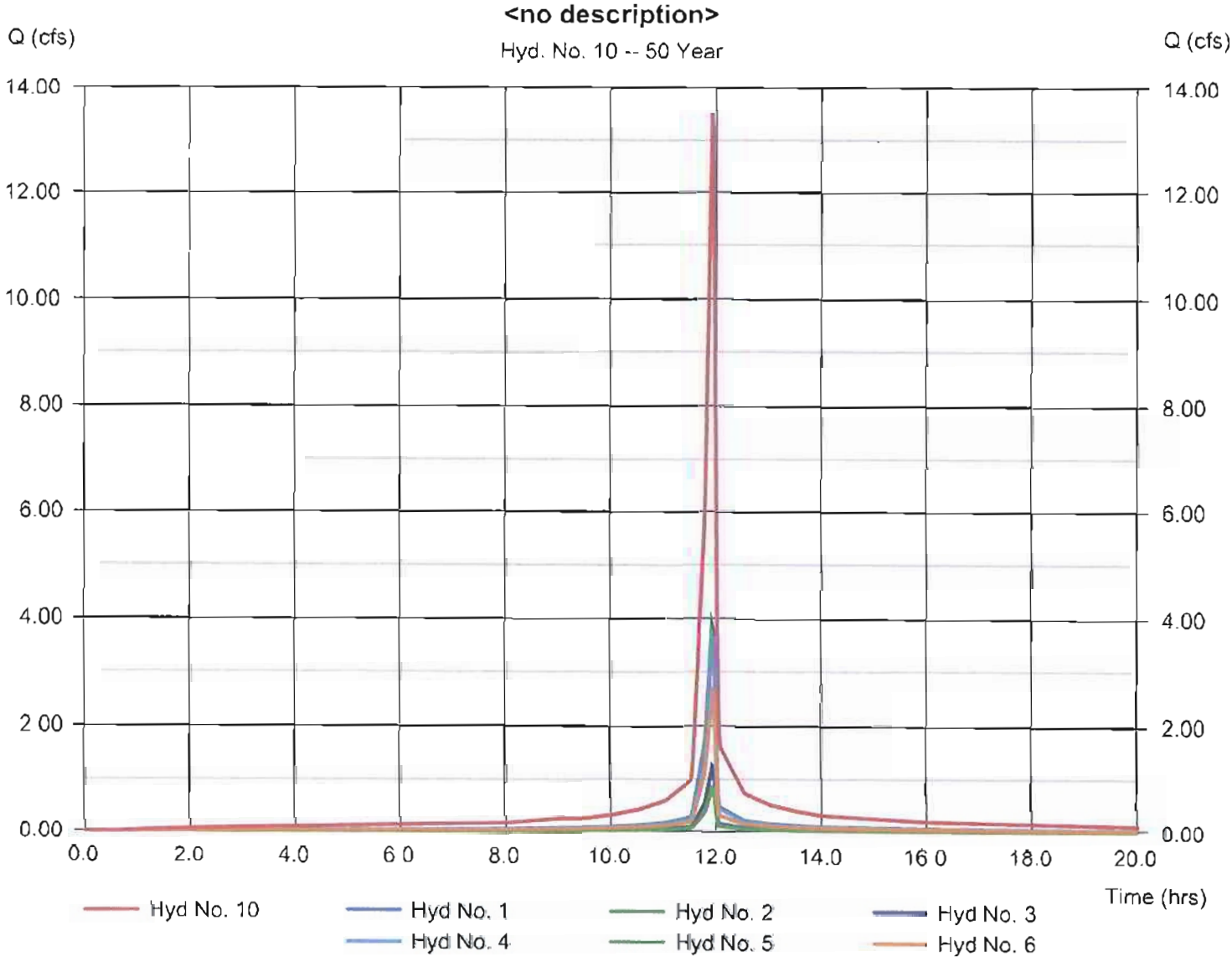


Hydrograph Report

Hyd. No. 10

<no description>

Hydrograph type	= Combine	Peak discharge	= 13.50 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.671 acft
Inflow hyds.	= 1, 2, 3, 4, 5, 6	Contrib. drain. area	= 1.290 ac

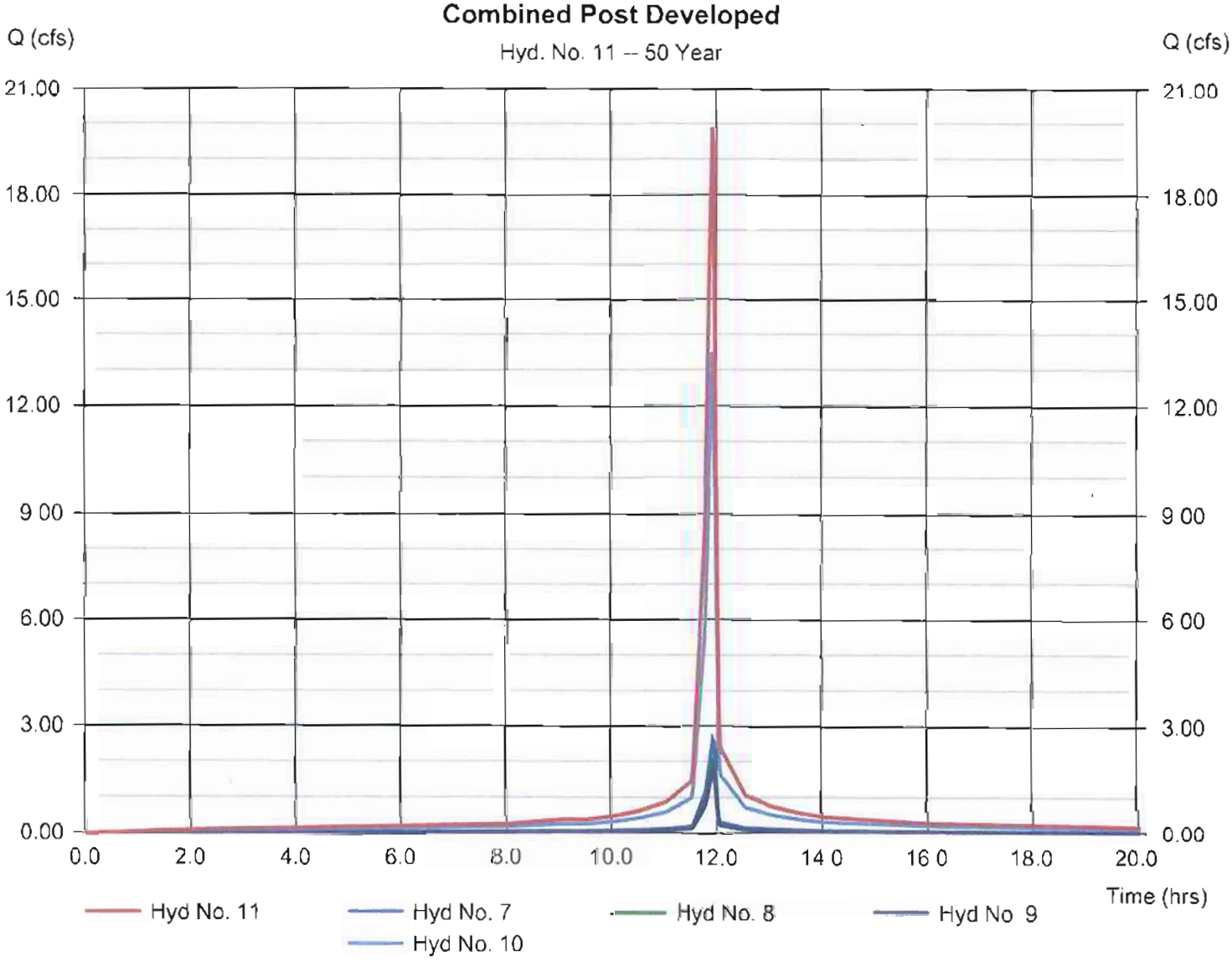


Hydrograph Report

Hyd. No. 11

Combined Post Developed

Hydrograph type	= Combine	Peak discharge	= 19.89 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.989 acft
Inflow hyds.	= 7, 8, 9, 10	Contrib. drain. area	= 0.610 ac

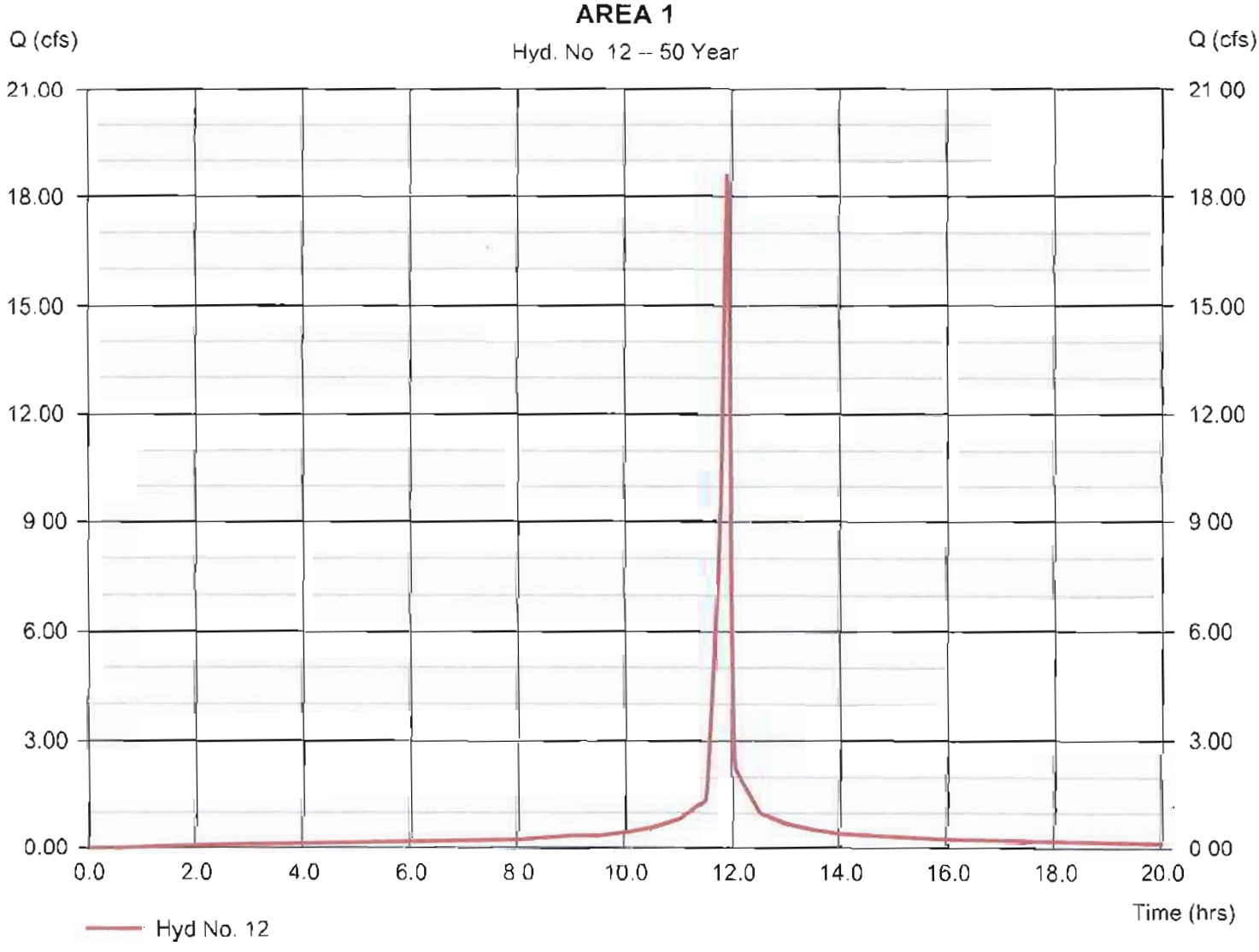


Hydrograph Report

Hyd. No. 12

AREA 1

Hydrograph type	= SCS Runoff	Peak discharge	= 18.63 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.926 acft
Drainage area	= 1.780 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 3.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

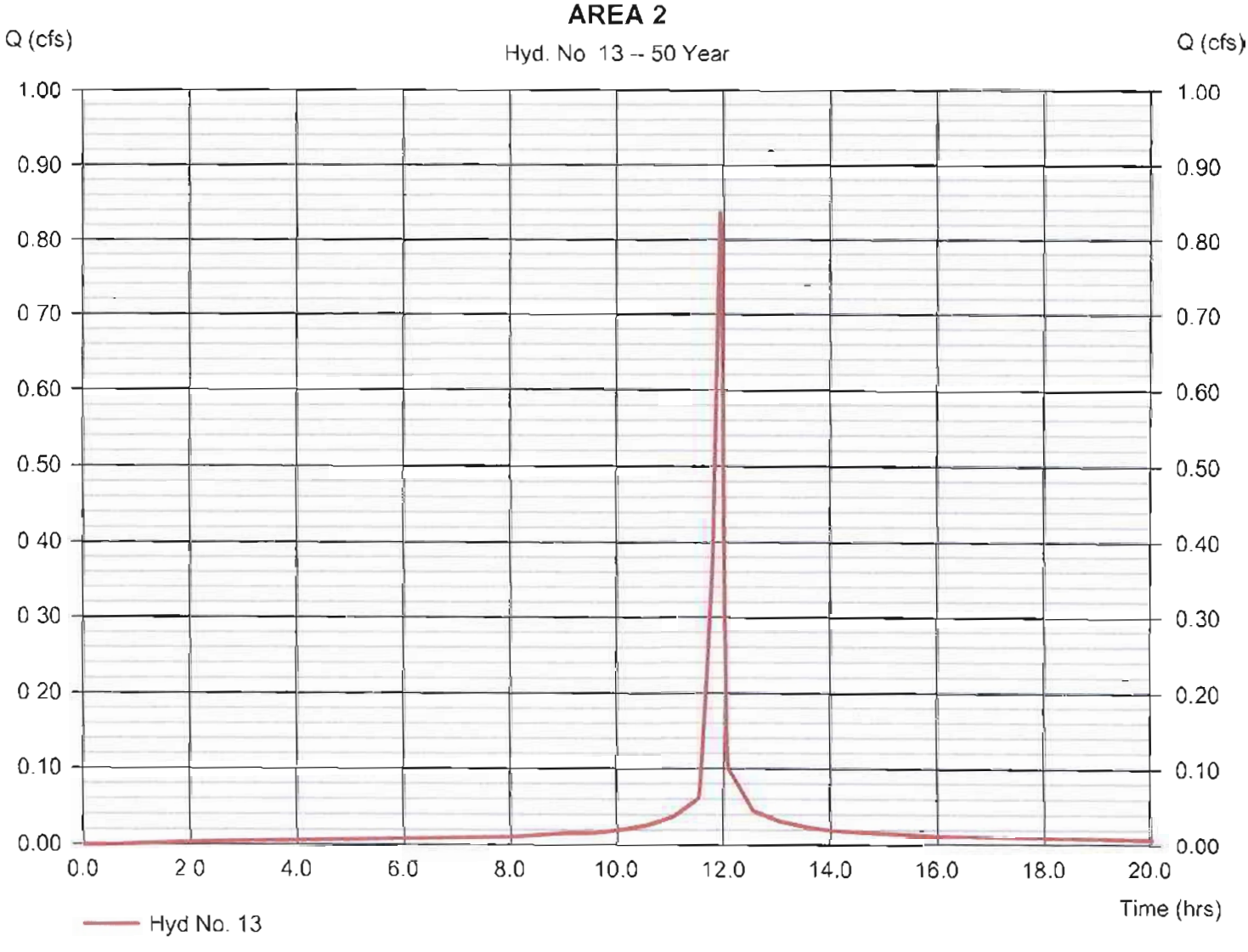


Hydrograph Report

Hyd. No. 13

AREA 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.837 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.042 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

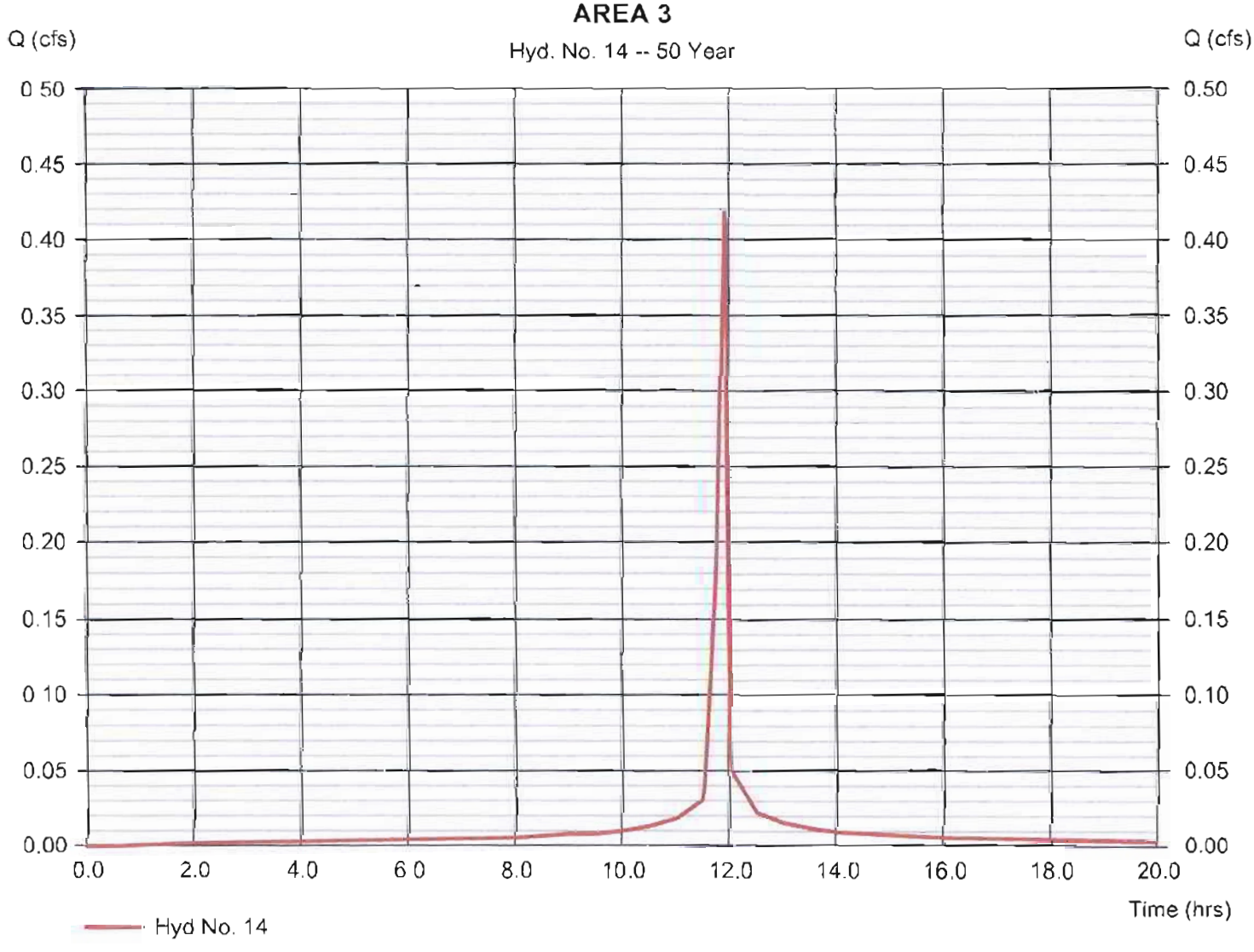


Hydrograph Report

Hyd. No. 14

AREA 3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.419 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.021 acft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

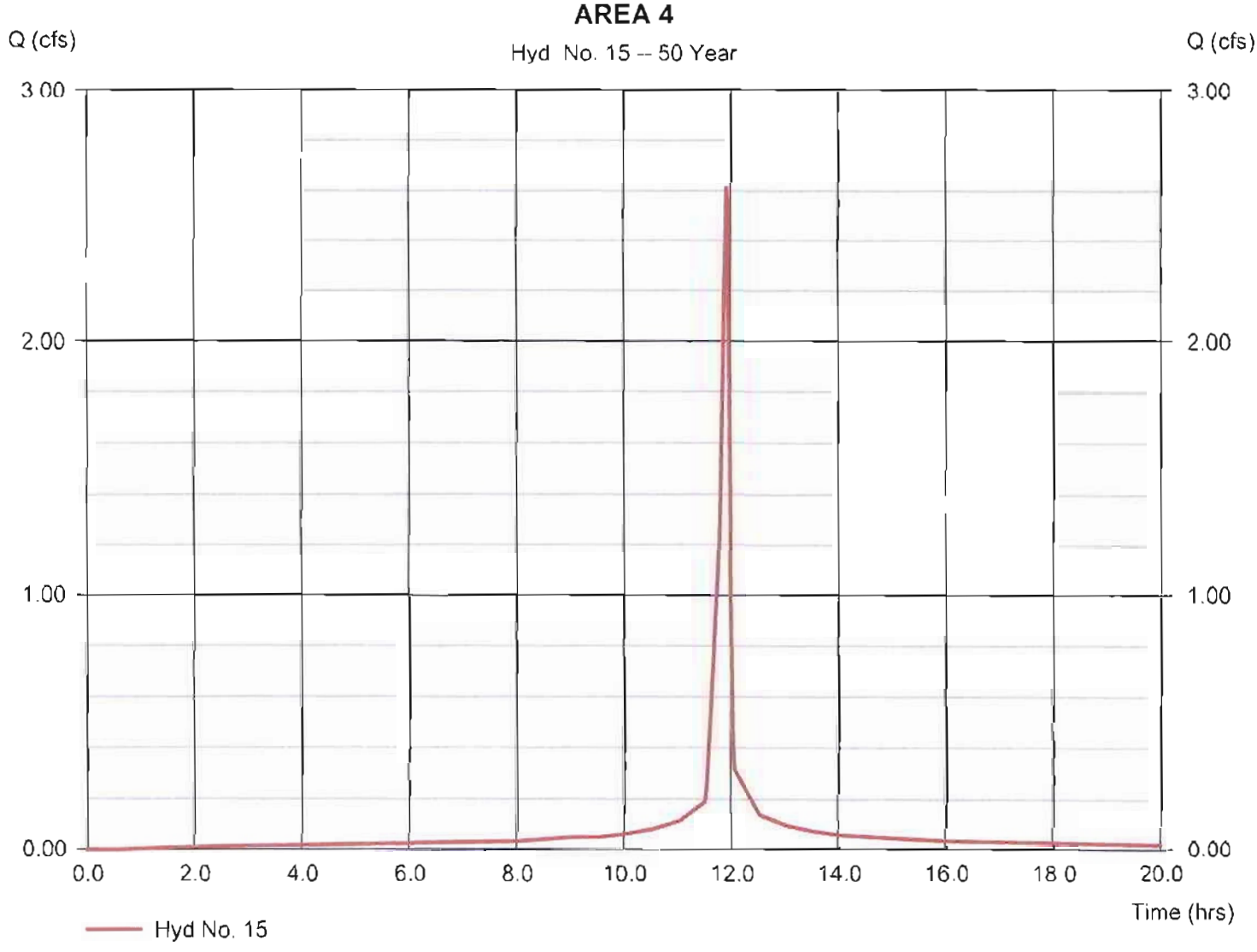


Hydrograph Report

Hyd. No. 15

AREA 4

Hydrograph type	= SCS Runoff	Peak discharge	= 2.617 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.130 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

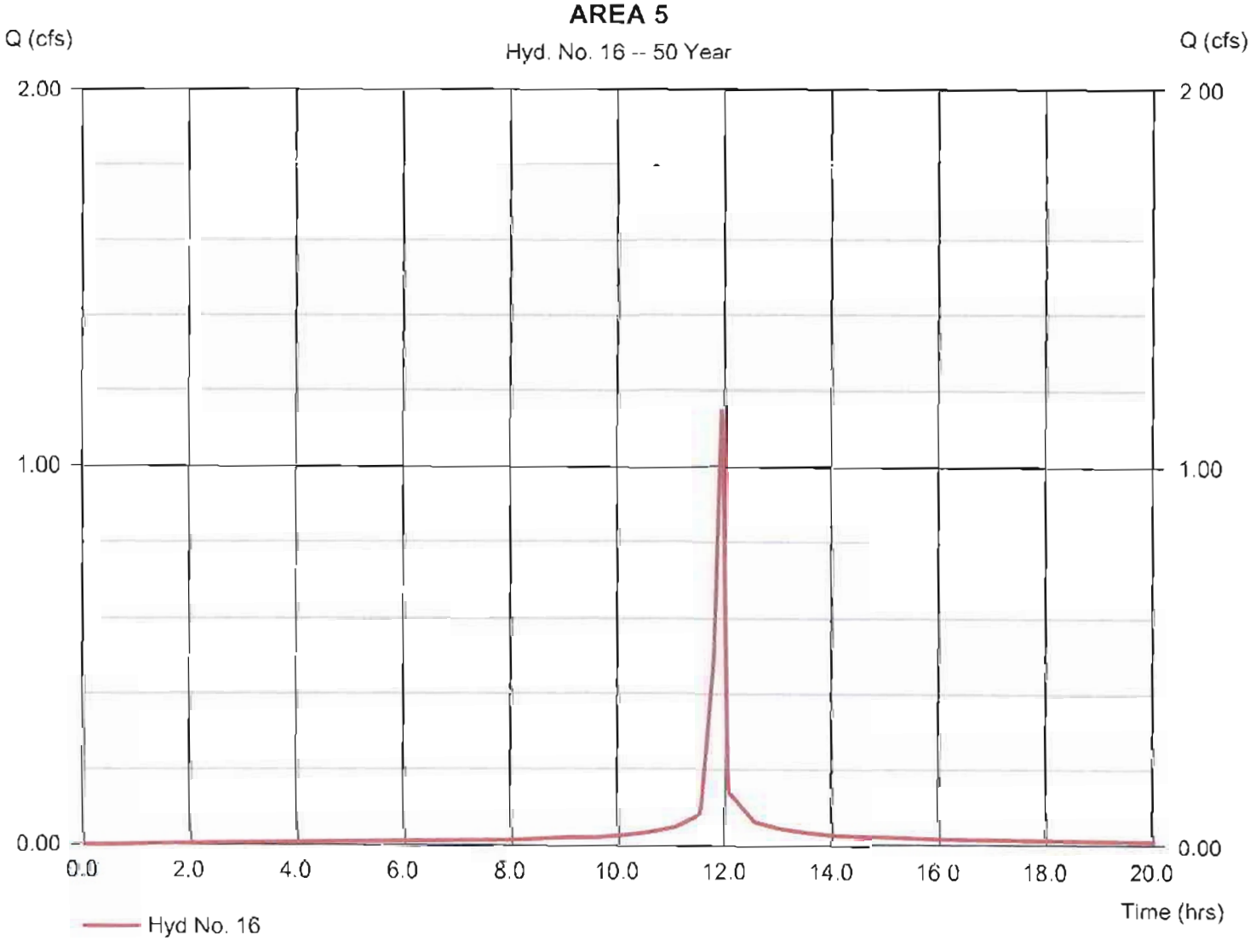


Hydrograph Report

Hyd. No. 16

AREA 5

Hydrograph type	= SCS Runoff	Peak discharge	= 1.152 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.057 acft
Drainage area	= 0.110 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

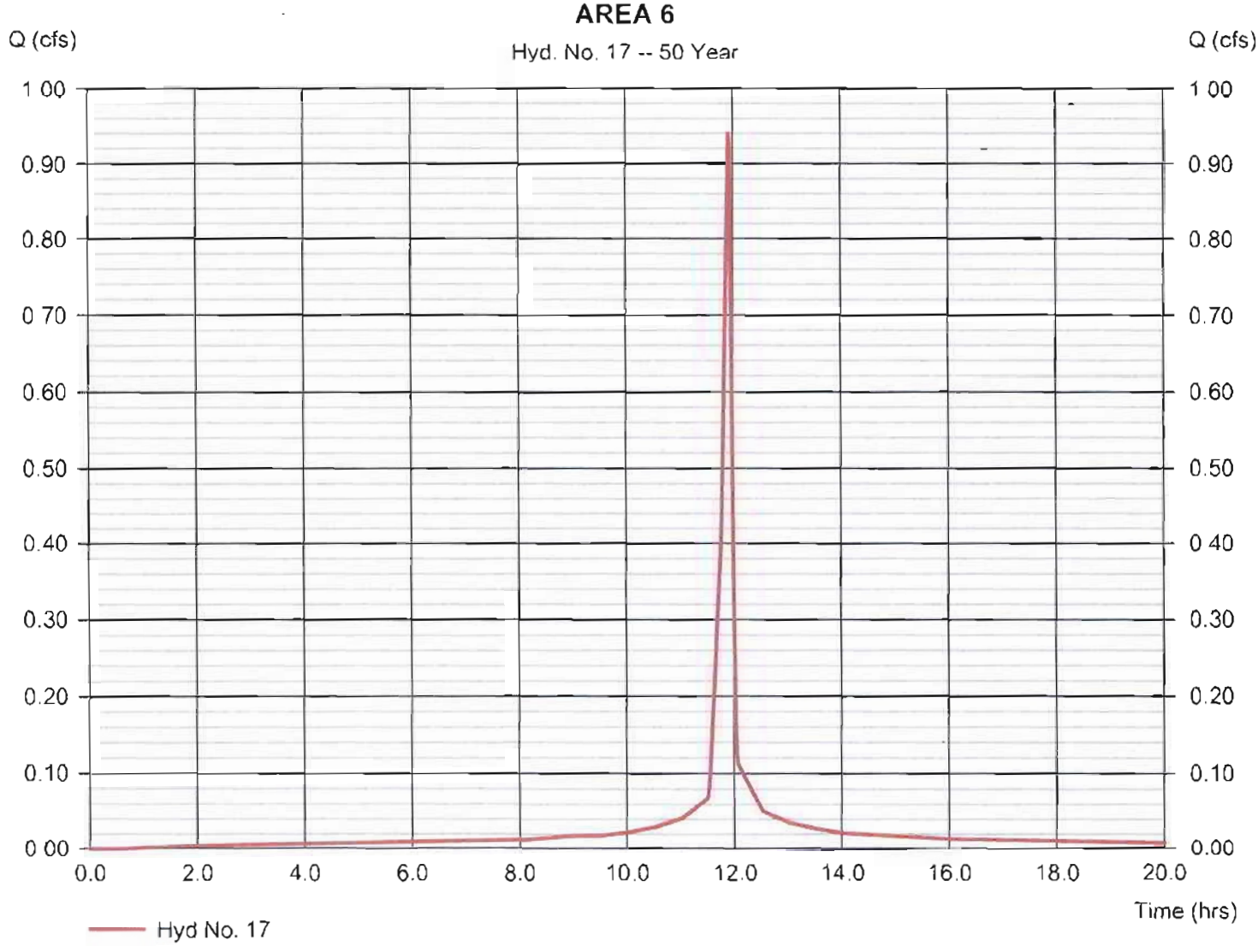


Hydrograph Report

Hyd. No. 17

AREA 6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.942 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.047 acft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

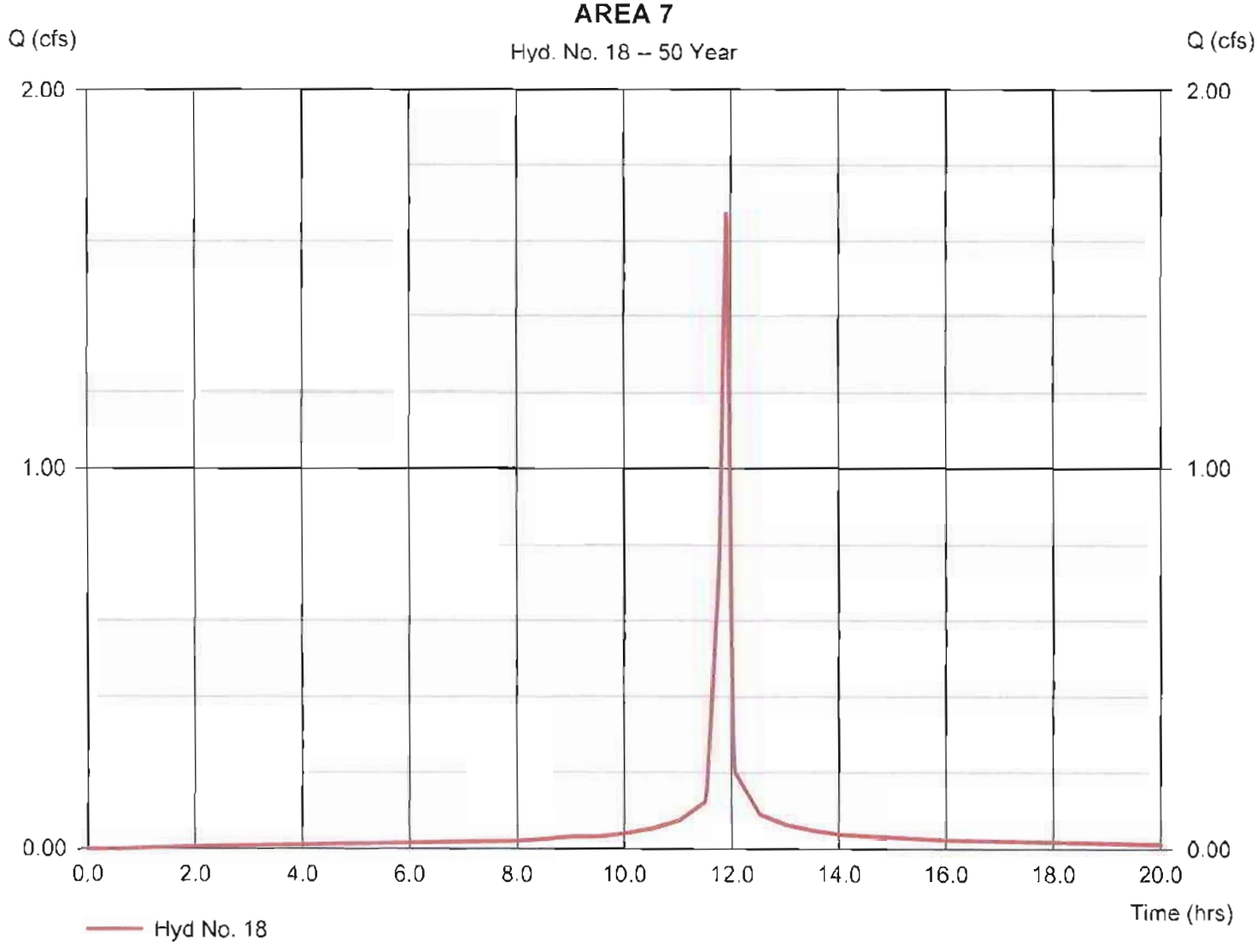


Hydrograph Report

Hyd. No. 18

AREA 7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.675 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.083 acft
Drainage area	= 0.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

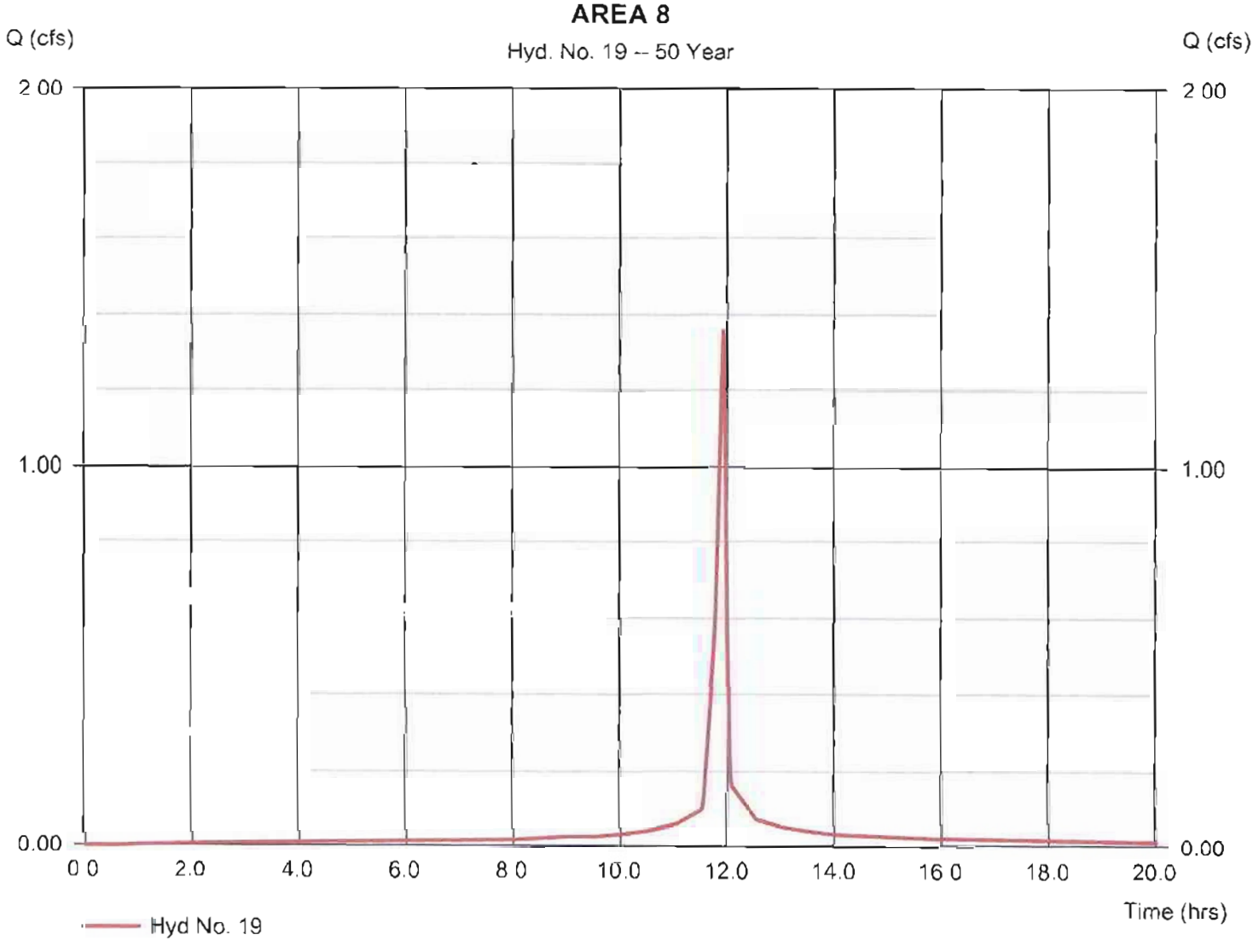


Hydrograph Report

Hyd. No. 19

AREA 8

Hydrograph type	= SCS Runoff	Peak discharge	= 1.361 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.068 acft
Drainage area	= 0.130 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

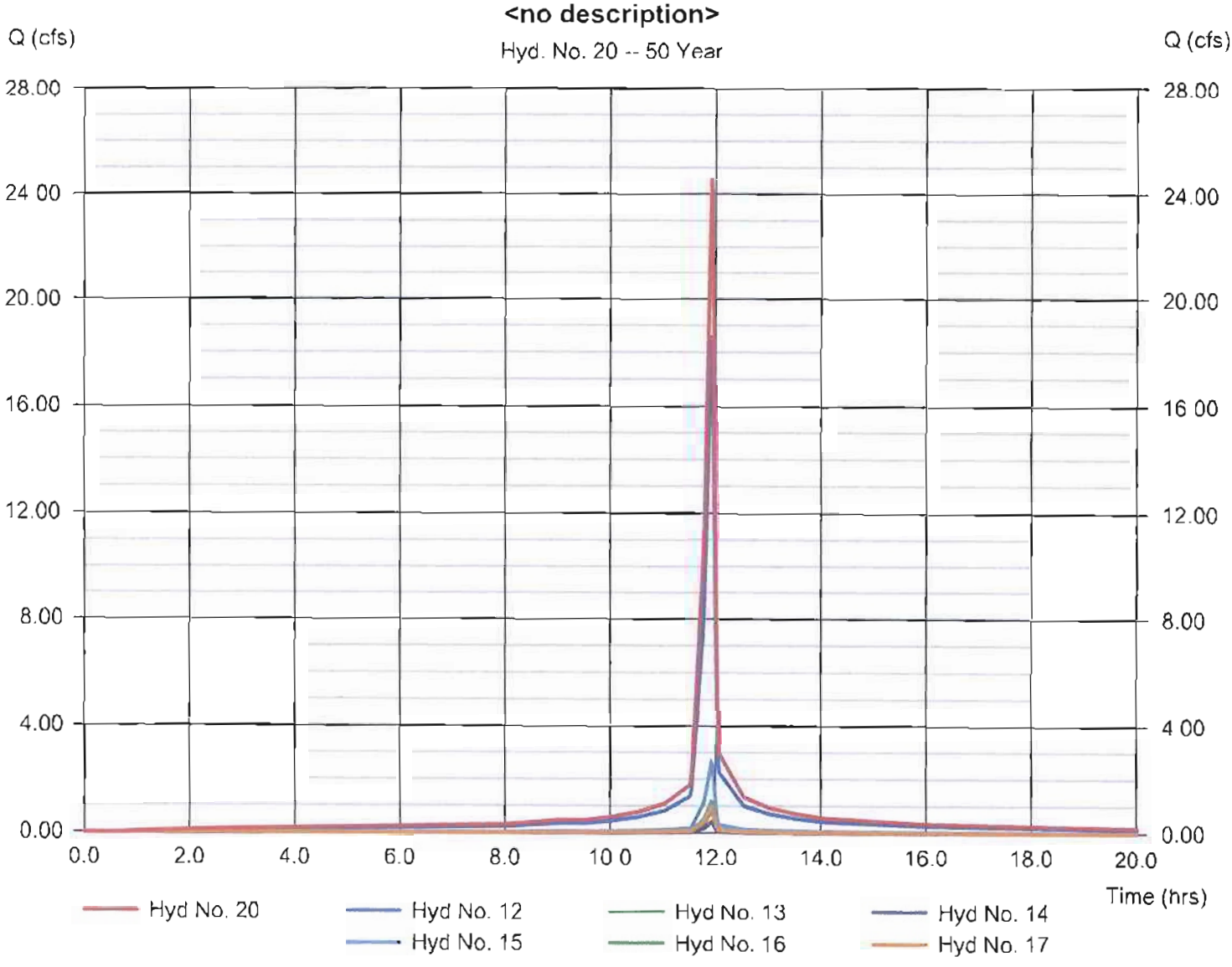


Hydrograph Report

Hyd. No. 20

<no description>

Hydrograph type	= Combine	Peak discharge	= 24.60 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 1.223 acft
Inflow hyds.	= 12, 13, 14, 15, 16, 17	Contrib. drain. area	= 2.350 ac

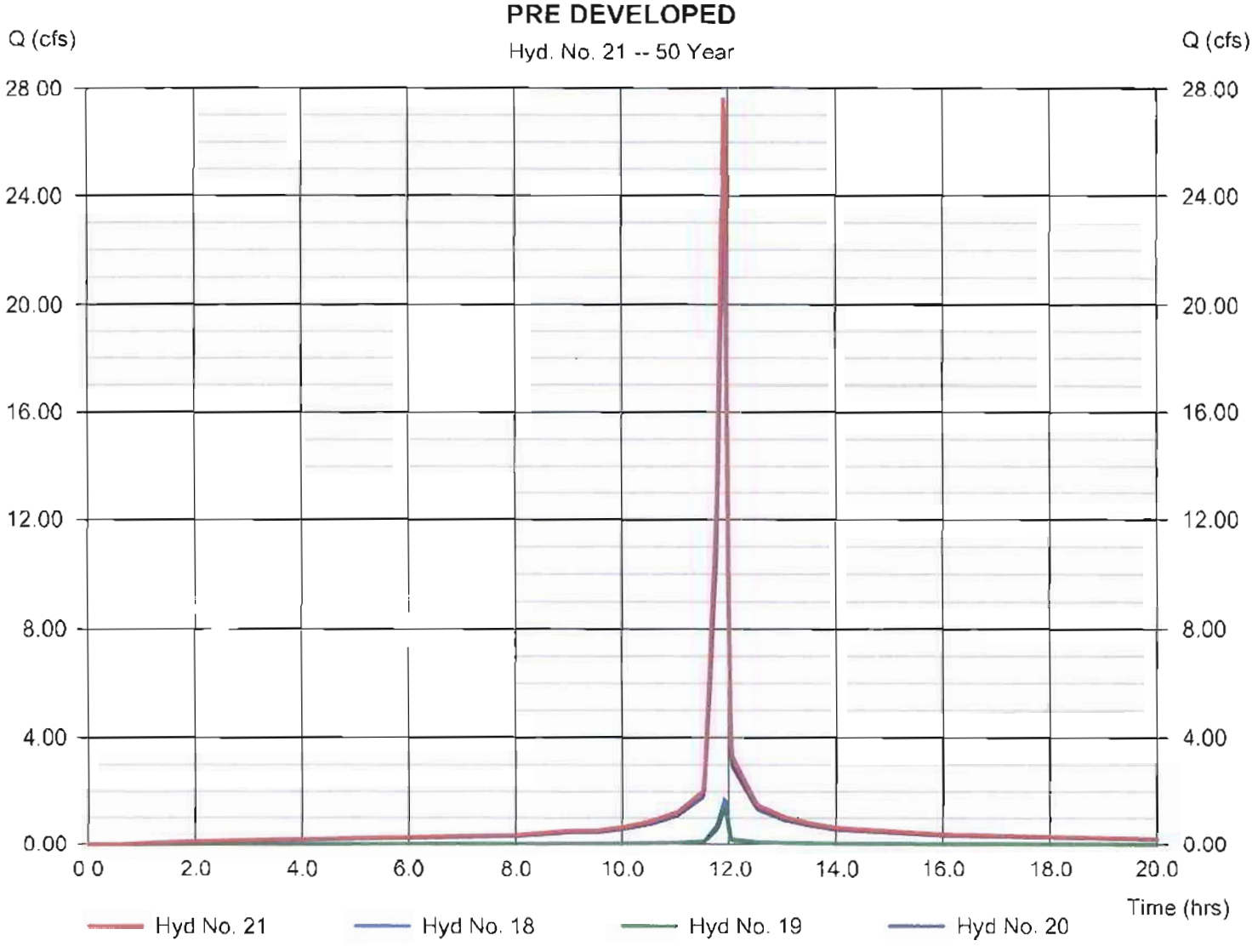


Hydrograph Report

Hyd. No. 21

PRE DEVELOPED

Hydrograph type	= Combine	Peak discharge	= 27.64 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 1.374 acft
Inflow hyds.	= 18, 19, 20	Contrib. drain. area	= 0.290 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc. v9

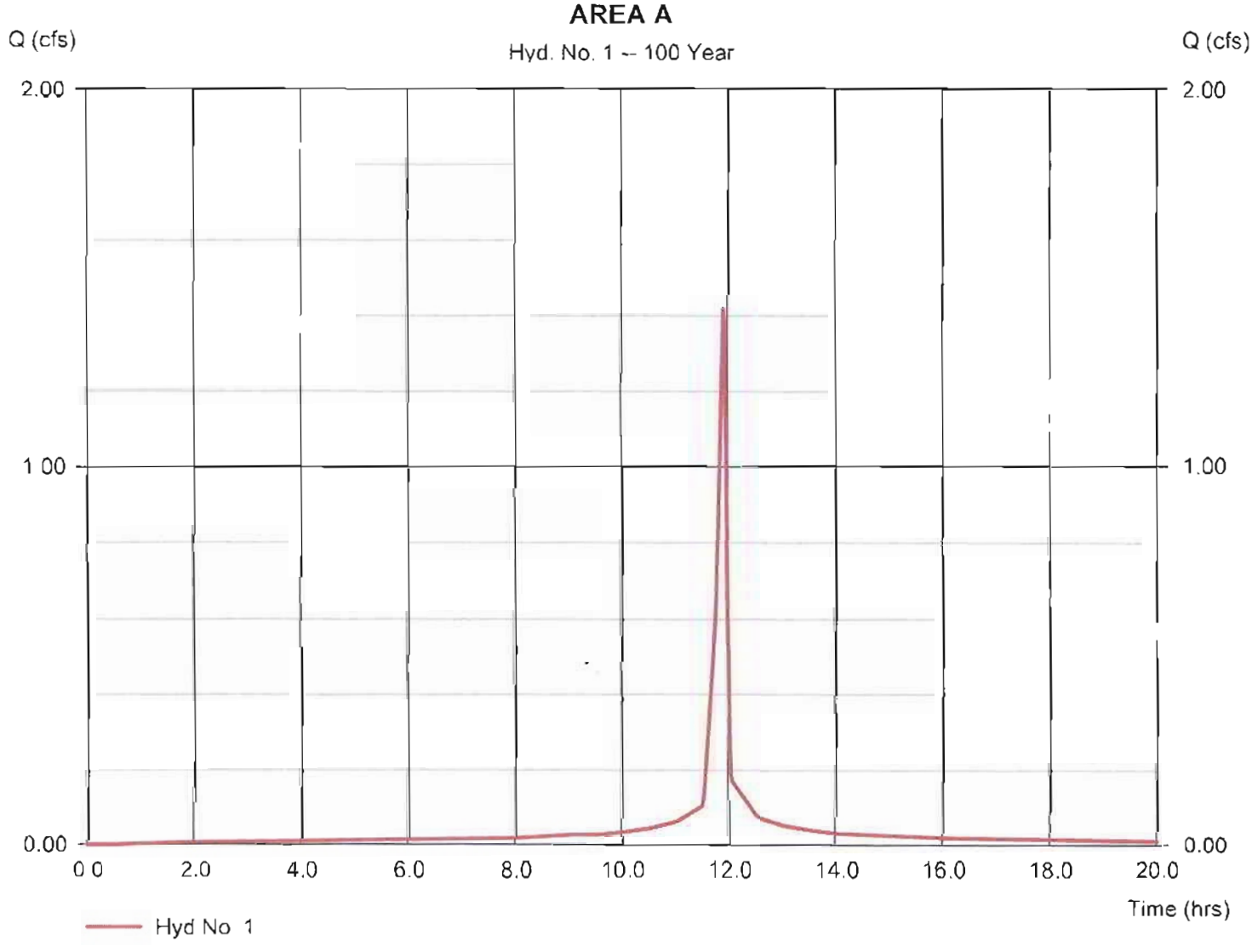
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph Description
1	SCS Runoff	1 421	1	715	0.071	----	----	----	AREA A
2	SCS Runoff	4.381	1	715	0.219	----	----	----	AREA B
3	SCS Runoff	1.421	1	715	0.071	----	----	----	AREA C
4	SCS Runoff	4.144	1	715	0 207	----	----	----	AREA D
5	SCS Runoff	0.947	1	715	0.047	----	----	----	AREA E
6	SCS Runoff	2.960	1	715	0.148	----	----	----	AREA F
7	SCS Runoff	2 960	1	715	0.148	----	----	----	AREA G
8	SCS Runoff	2.250	1	715	0 112	----	----	----	AREA H
9	SCS Runoff	2.013	1	715	0 100	----	----	----	AREA I
10	Combine	15.27	1	715	0.762	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	----	----	<no description>
11	Combine	22 50	1	715	1.122	----	----	----	Combined Post Developed
12	SCS Runoff	21.08	1	715	1.051	----	----	----	AREA 1
13	SCS Runoff	0.947	1	715	0.047	----	----	----	AREA 2
14	SCS Runoff	0.474	1	715	0.024	----	----	----	AREA 3
15	SCS Runoff	2 960	1	715	0.148	----	----	----	AREA 4
16	SCS Runoff	1.302	1	715	0 065	----	----	----	AREA 5
17	SCS Runoff	1.066	1	715	0.053	----	----	----	AREA 6
18	SCS Runoff	1 895	1	715	0.095	----	----	----	AREA 7
19	SCS Runoff	1.539	1	715	0.077	----	----	----	AREA 8
20	Combine	27 83	1	715	1.388	12, 13, 14, 15, 16, 17, 18, 19, 20	----	----	<no description>
21	Combine	31.26	1	715	1.559	----	----	----	PRE DEVELOPED

Hydrograph Report

Hyd. No. 1

AREA A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.421 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.071 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

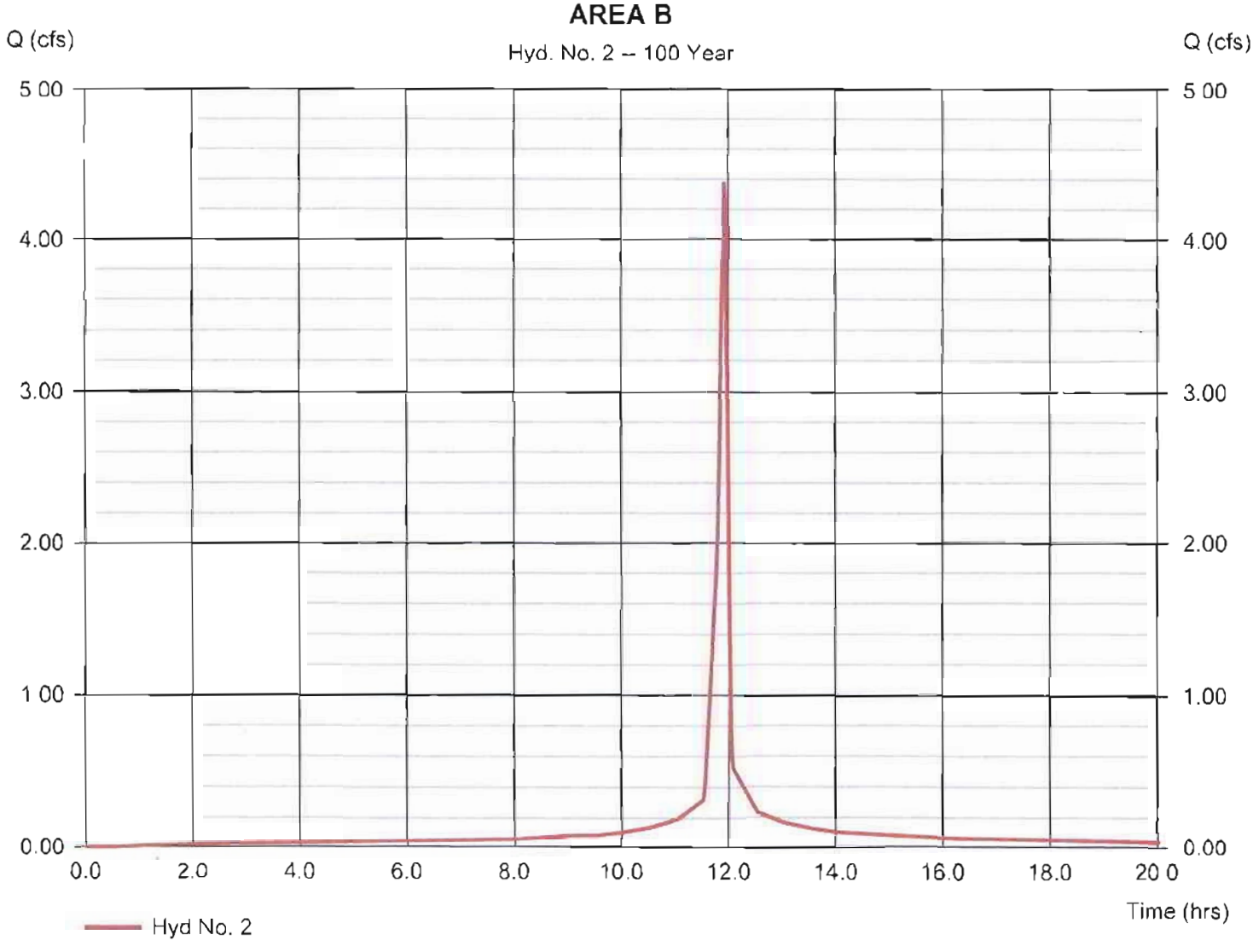


Hydrograph Report

Hyd. No. 2

AREA B

Hydrograph type	= SCS Runoff	Peak discharge	= 4.381 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.219 acft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

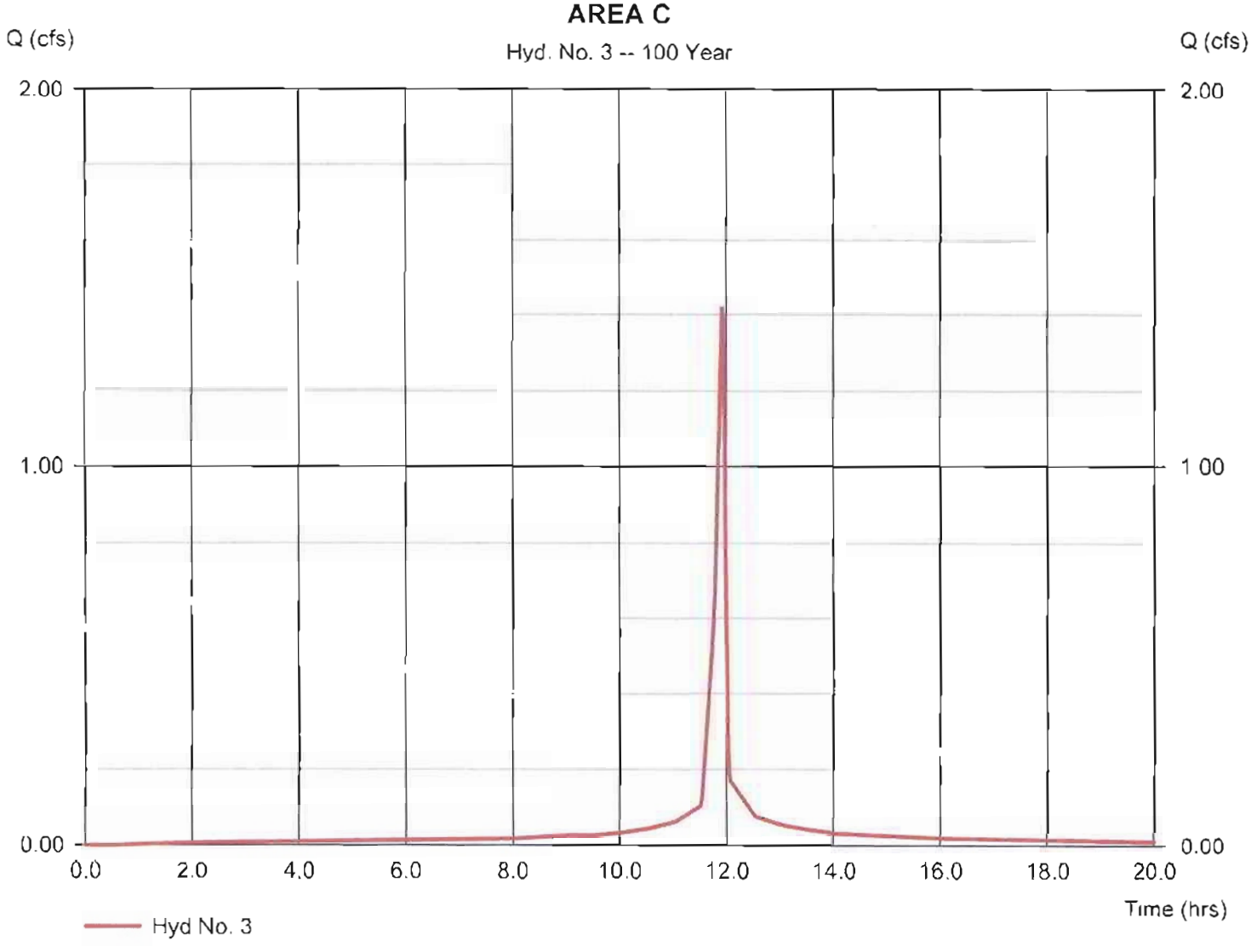


Hydrograph Report

Hyd. No. 3

AREA C

Hydrograph type	= SCS Runoff	Peak discharge	= 1.421 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.071 acft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

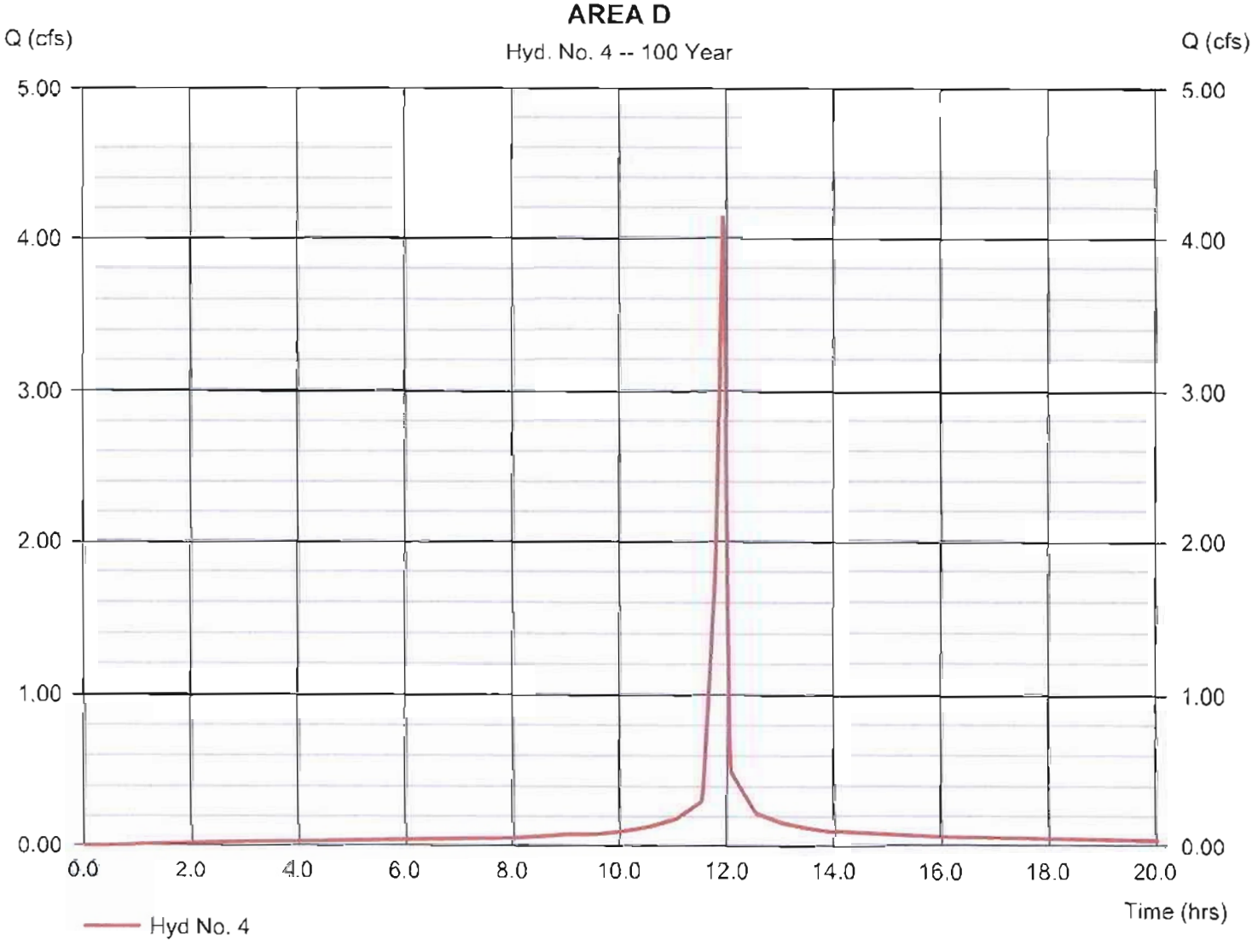


Hydrograph Report

Hyd. No. 4

AREA D

Hydrograph type	= SCS Runoff	Peak discharge	= 4.144 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.207 acft
Drainage area	= 0.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 1.70 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

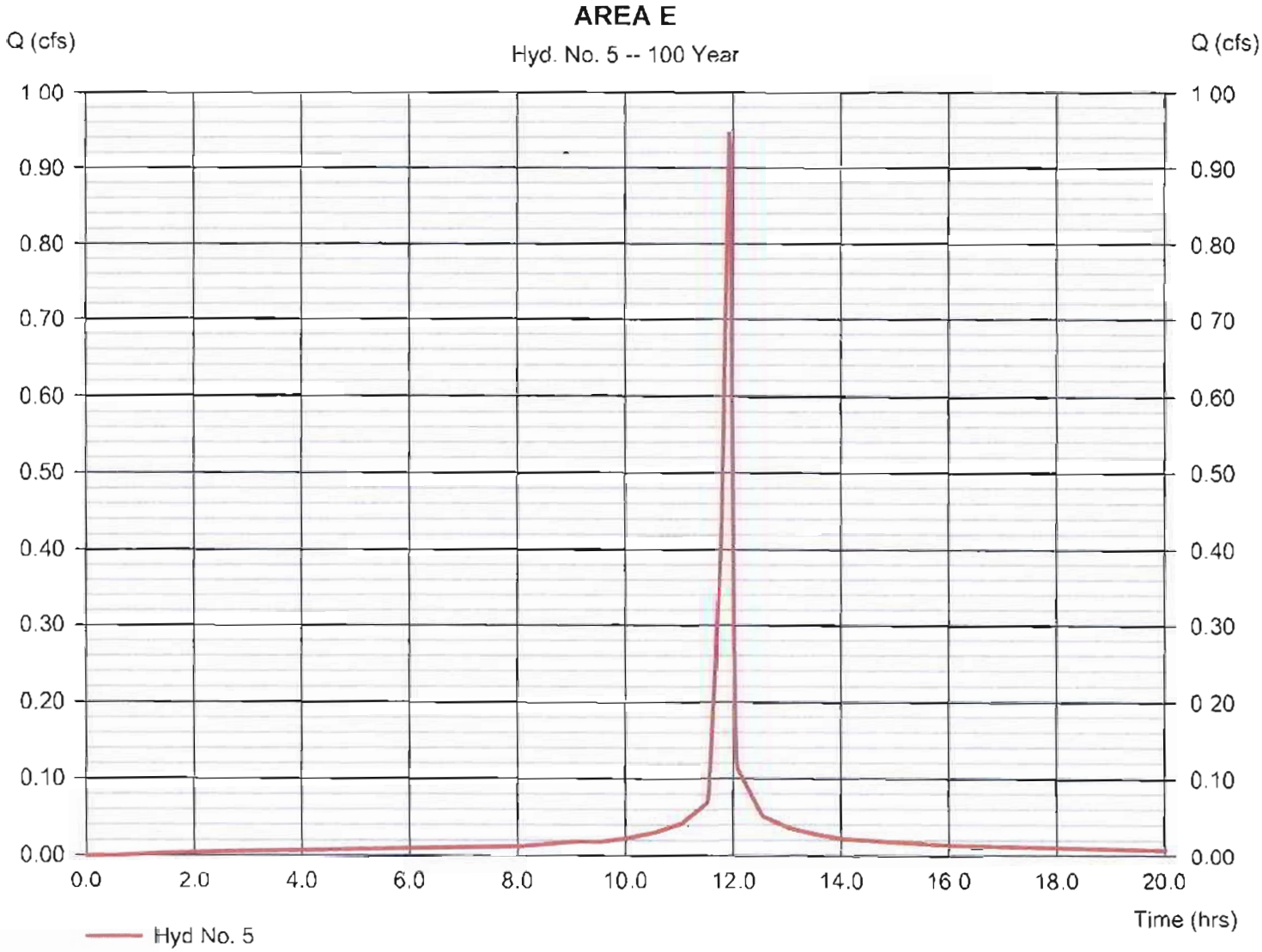


Hydrograph Report

Hyd. No. 5

AREA E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.947 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.047 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

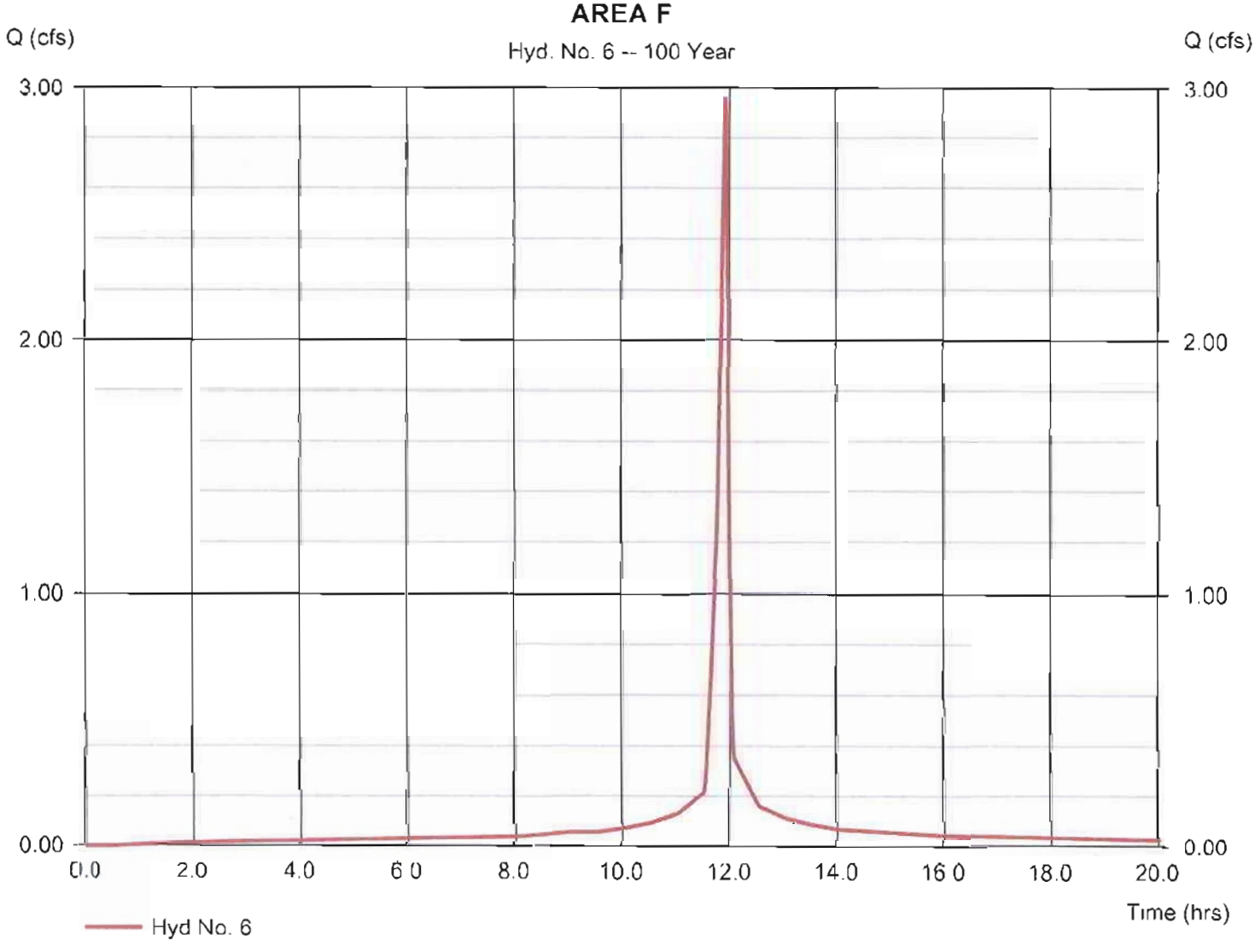


Hydrograph Report

Hyd. No. 6

AREA F

Hydrograph type	= SCS Runoff	Peak discharge	= 2.960 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.148 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

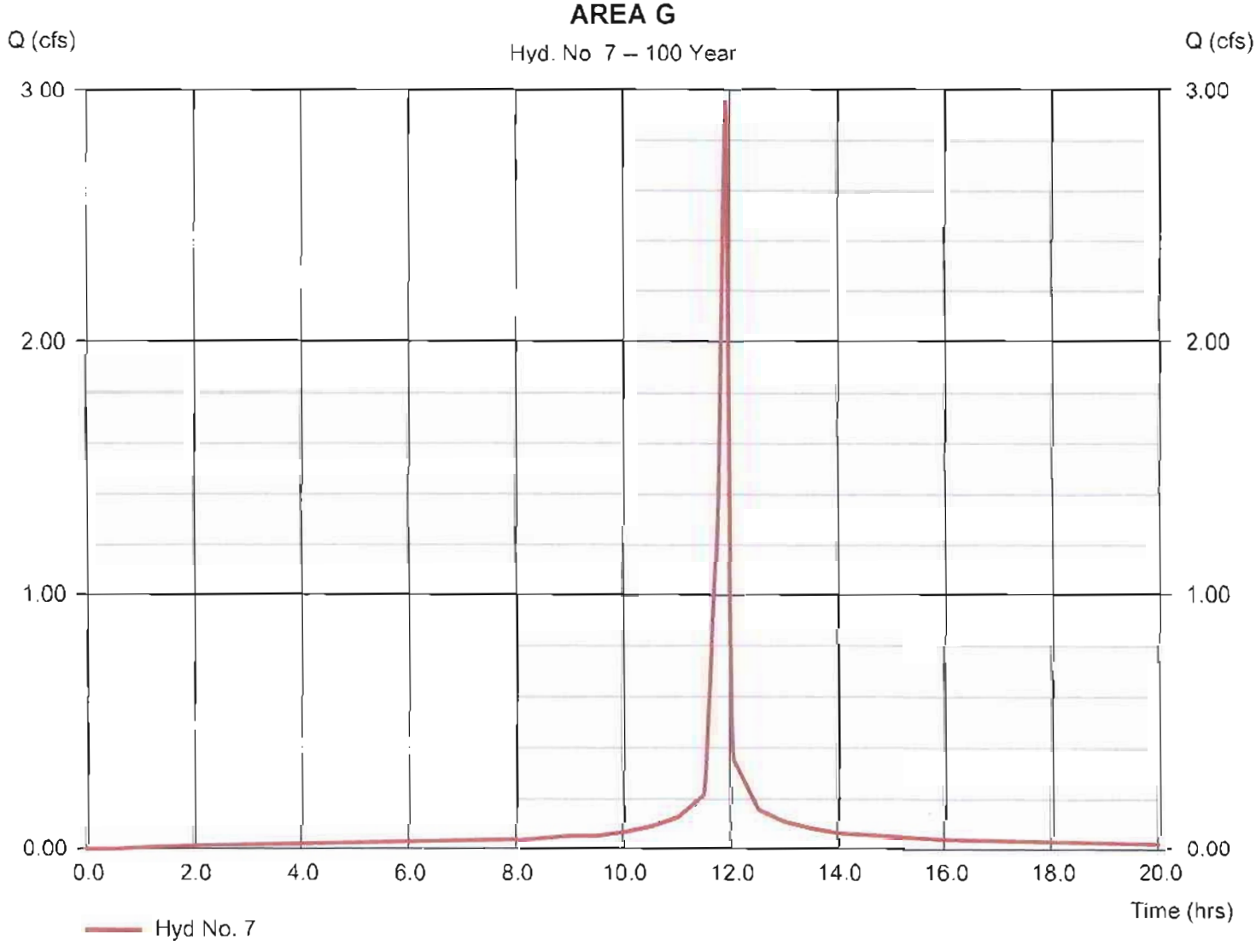


Hydrograph Report

Hyd. No. 7

AREA G

Hydrograph type	= SCS Runoff	Peak discharge	= 2.960 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.148 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

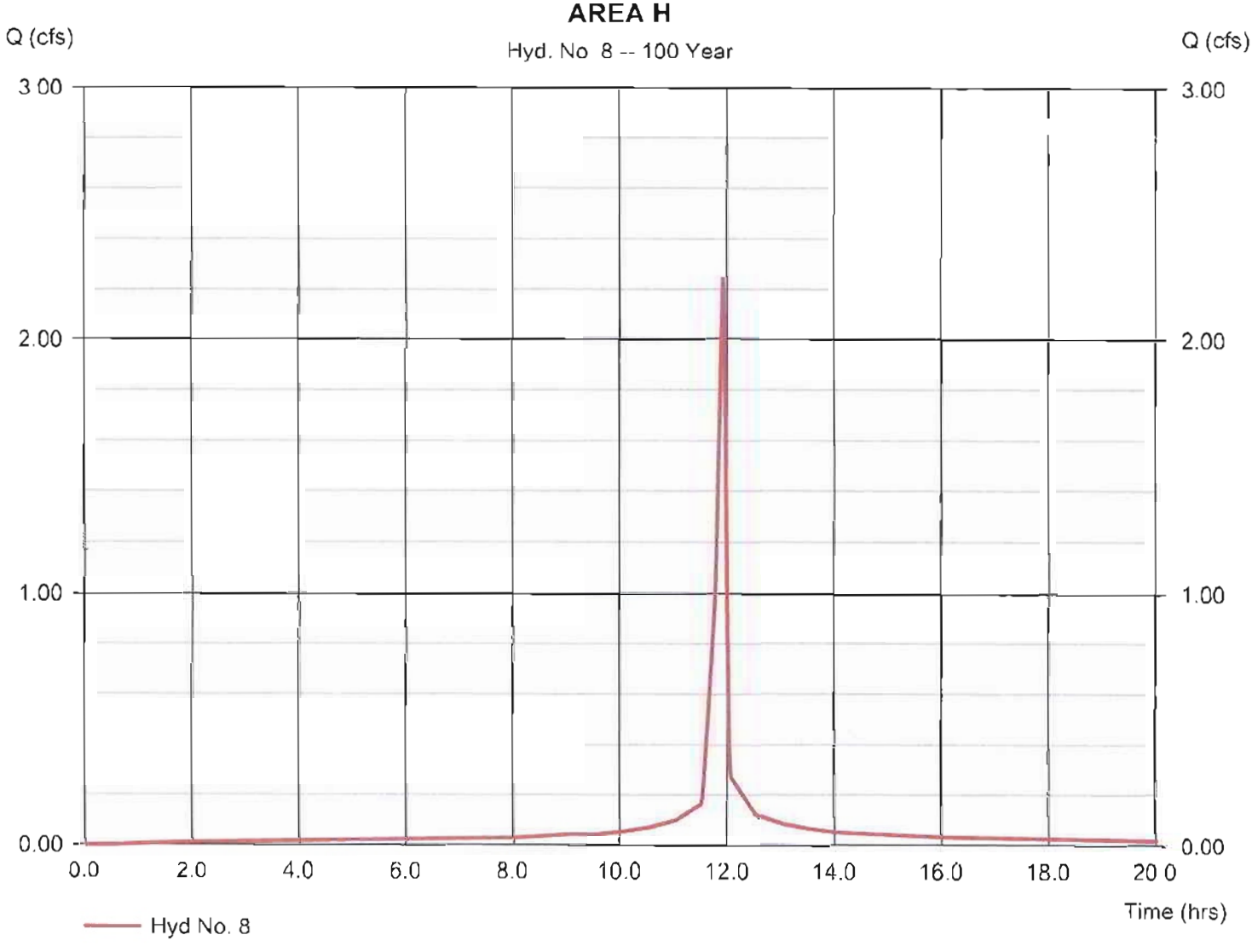


Hydrograph Report

Hyd. No. 8

AREA H

Hydrograph type	= SCS Runoff	Peak discharge	= 2.250 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.112 acft
Drainage area	= 0.190 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

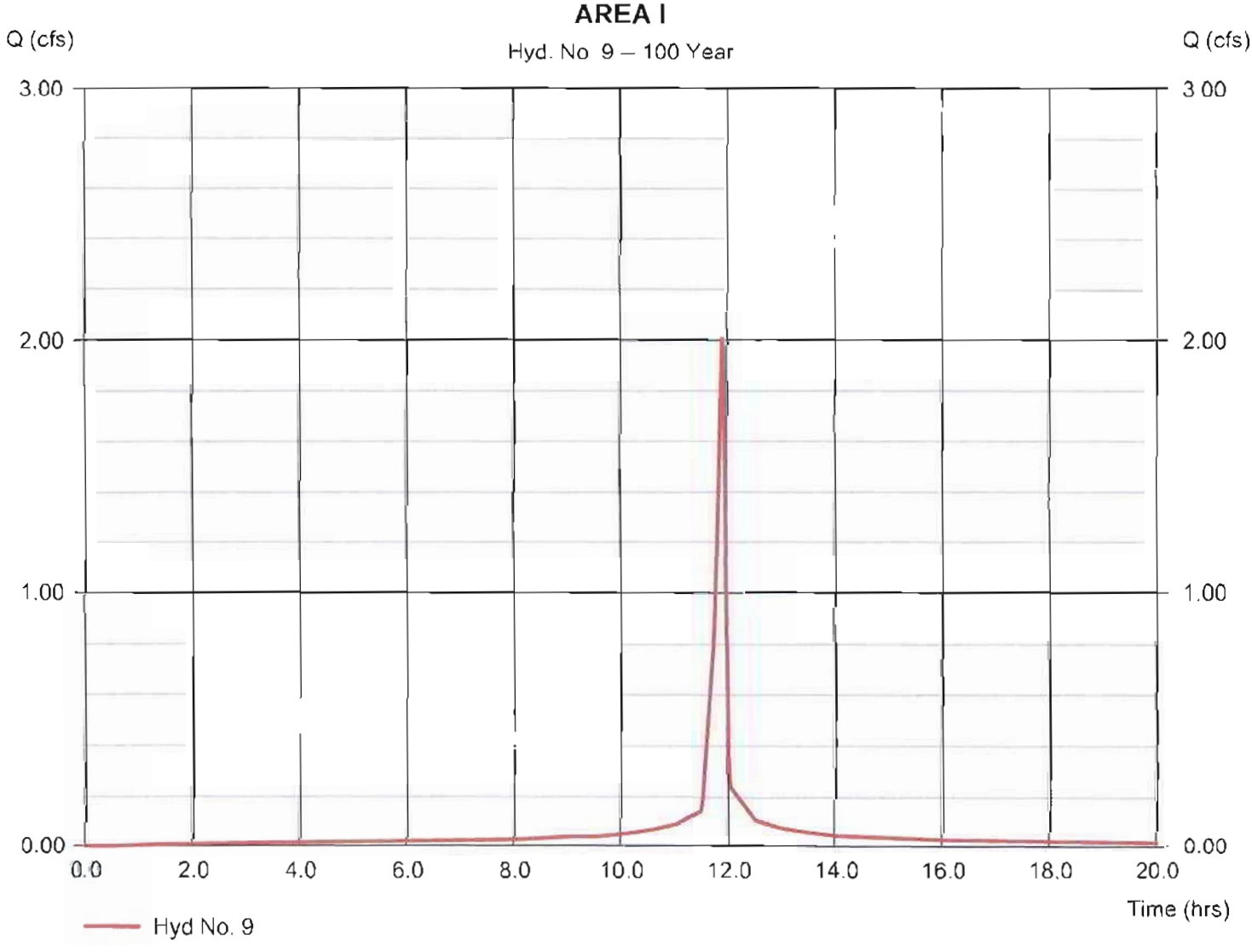


Hydrograph Report

Hyd. No. 9

AREA I

Hydrograph type	= SCS Runoff	Peak discharge	= 2.013 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.100 acft
Drainage area	= 0.170 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

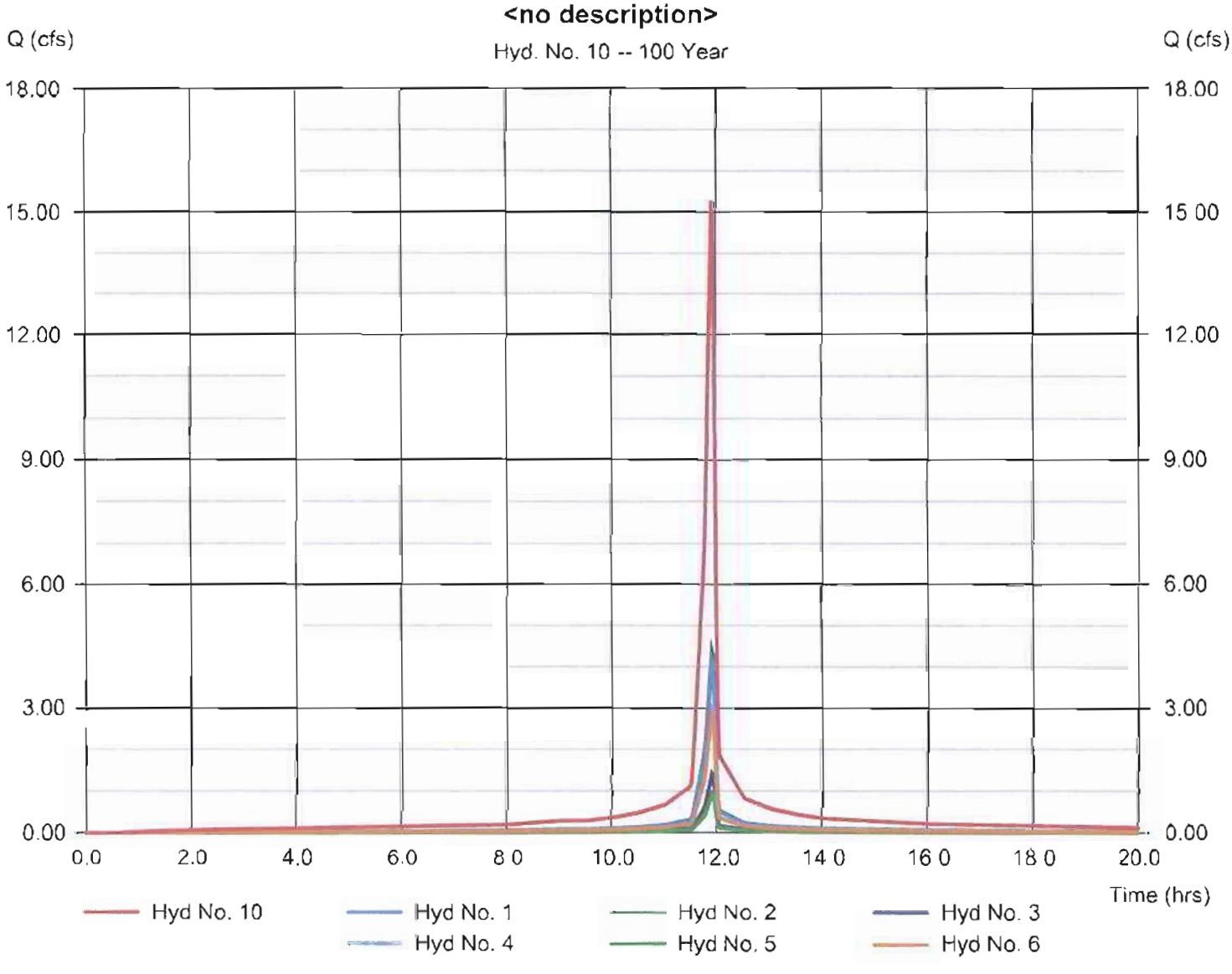


Hydrograph Report

Hyd. No. 10

<no description>

Hydrograph type	= Combine	Peak discharge	= 15.27 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.762 acft
Inflow hyds.	= 1, 2, 3, 4, 5, 6	Contrib. drain. area	= 1.290 ac

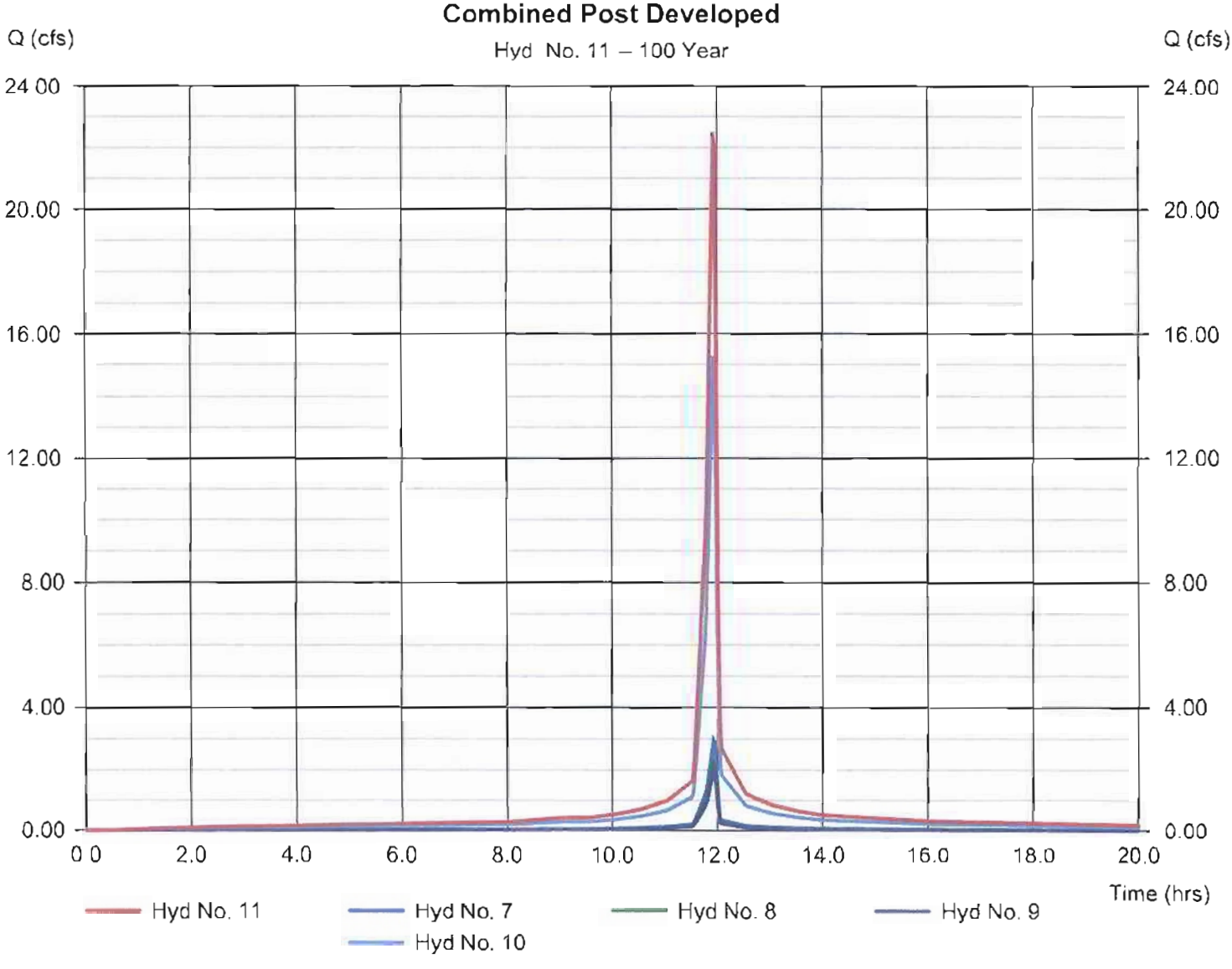


Hydrograph Report

Hyd. No. 11

Combined Post Developed

Hydrograph type	= Combine	Peak discharge	= 22.50 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 1.122 acft
Inflow hyds.	= 7, 8, 9, 10	Contrib. drain. area	= 0.610 ac

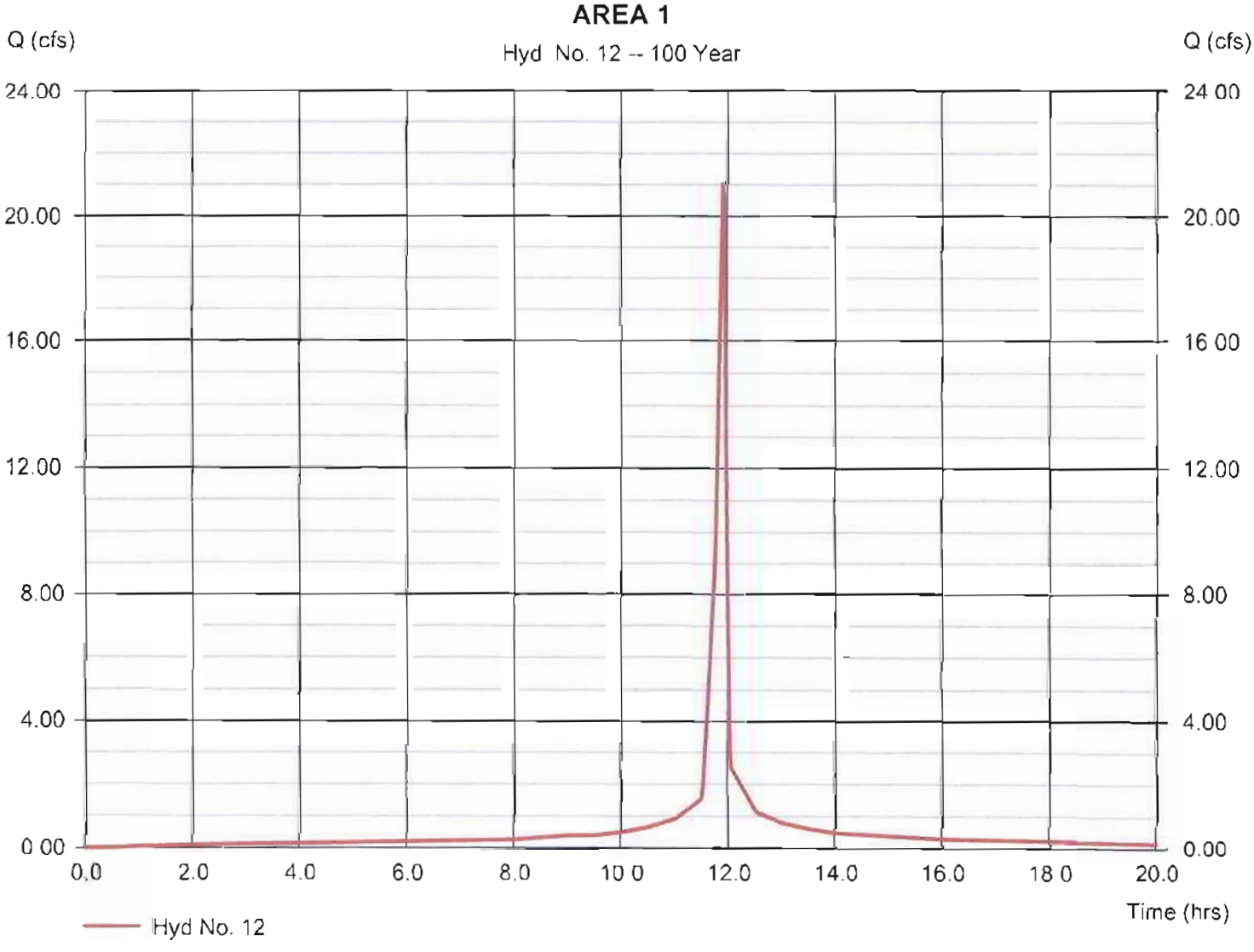


Hydrograph Report

Hyd. No. 12

AREA 1

Hydrograph type	= SCS Runoff	Peak discharge	= 21.08 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 1.051 acft
Drainage area	= 1.780 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 3.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

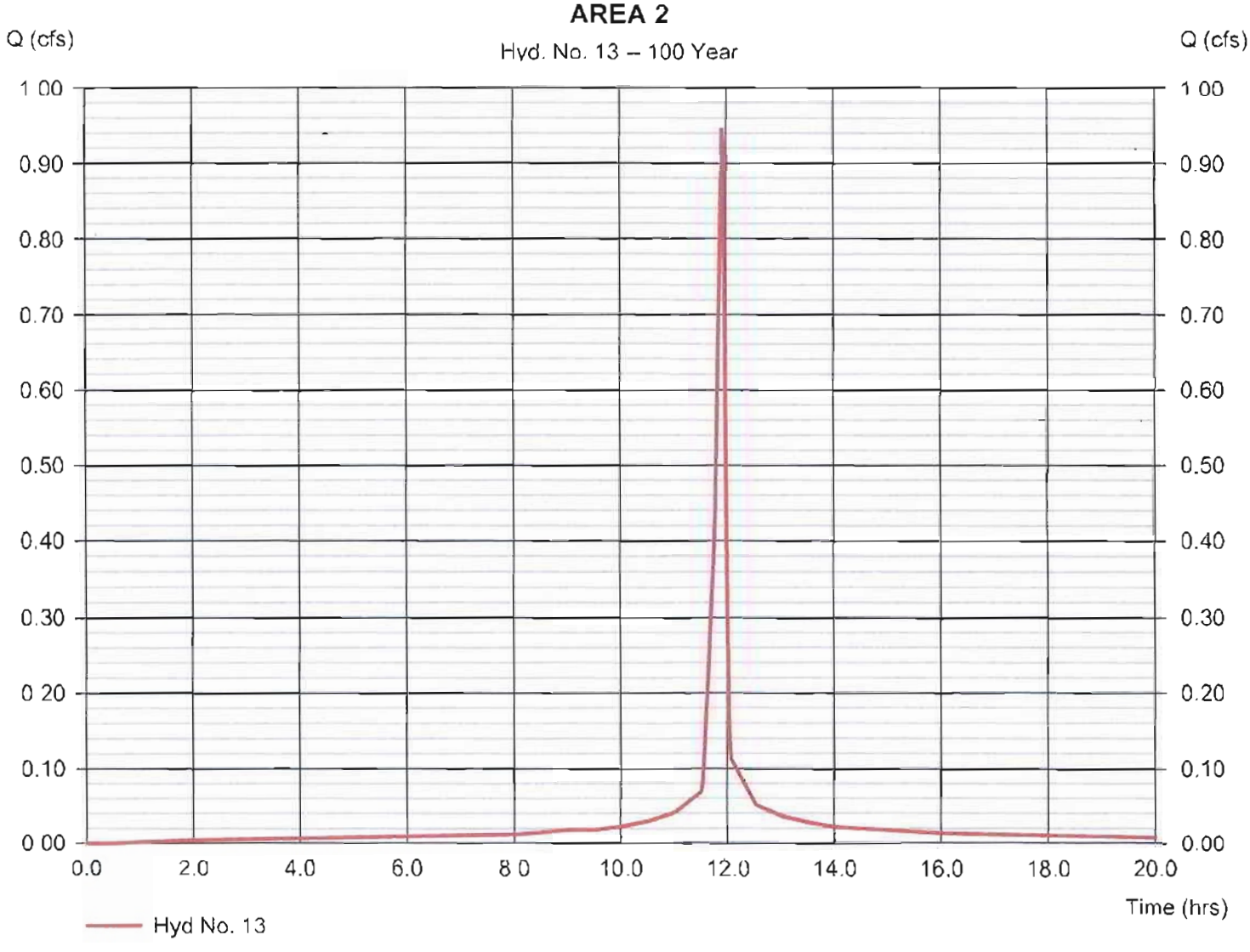


Hydrograph Report

Hyd. No. 13

AREA 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.947 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.047 acft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

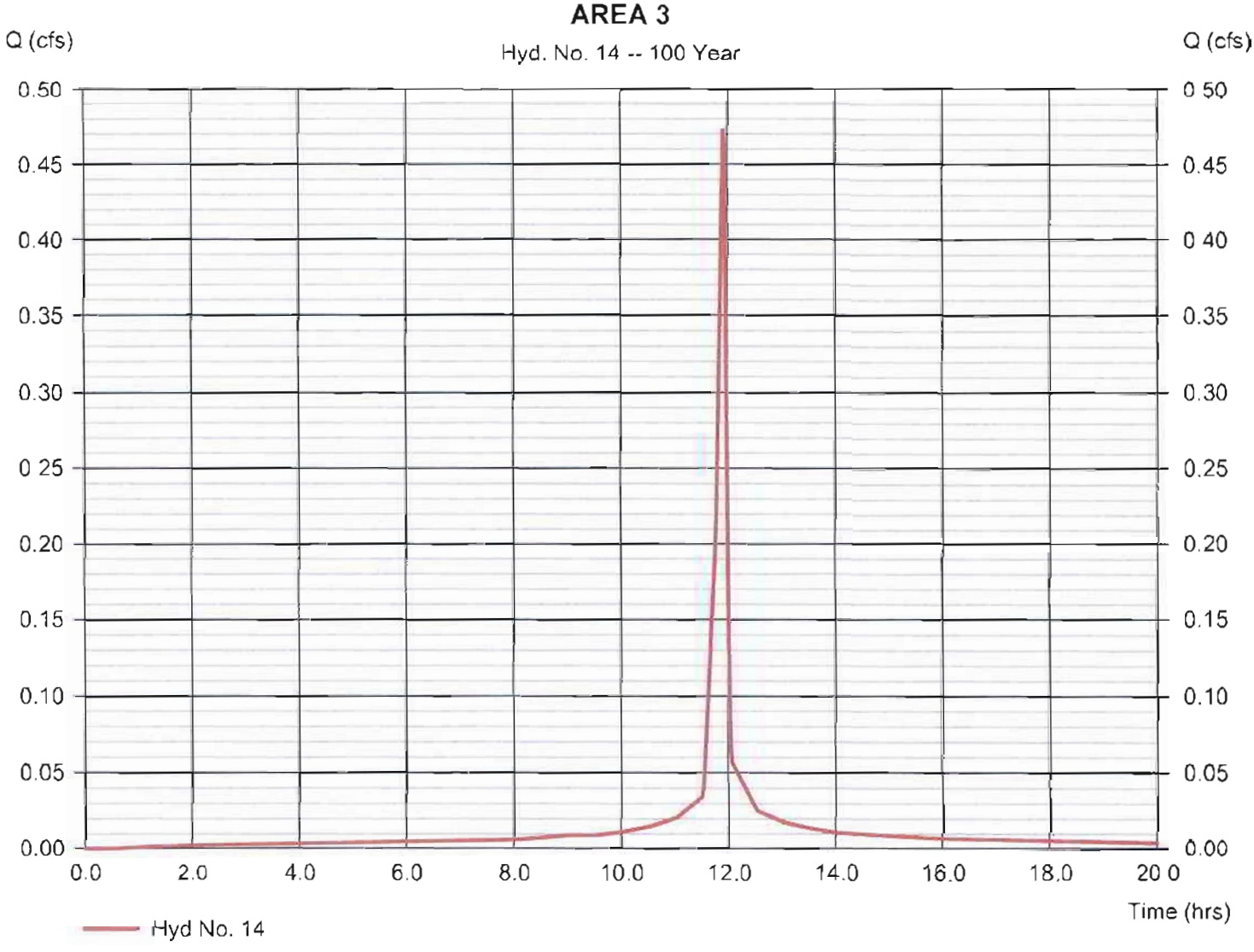


Hydrograph Report

Hyd. No. 14

AREA 3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.474 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.024 acft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

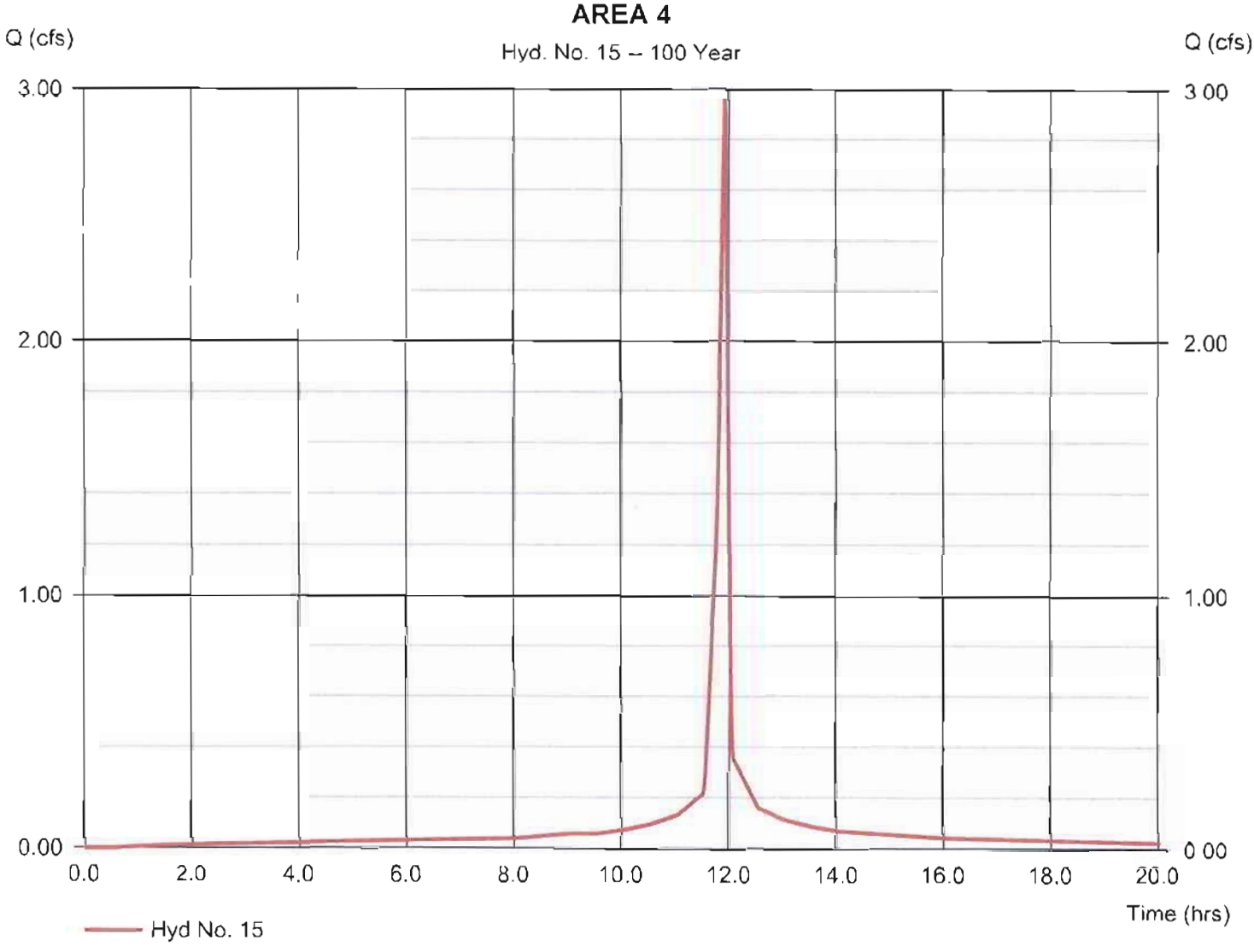


Hydrograph Report

Hyd. No. 15

AREA 4

Hydrograph type	= SCS Runoff	Peak discharge	= 2.960 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.148 acft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



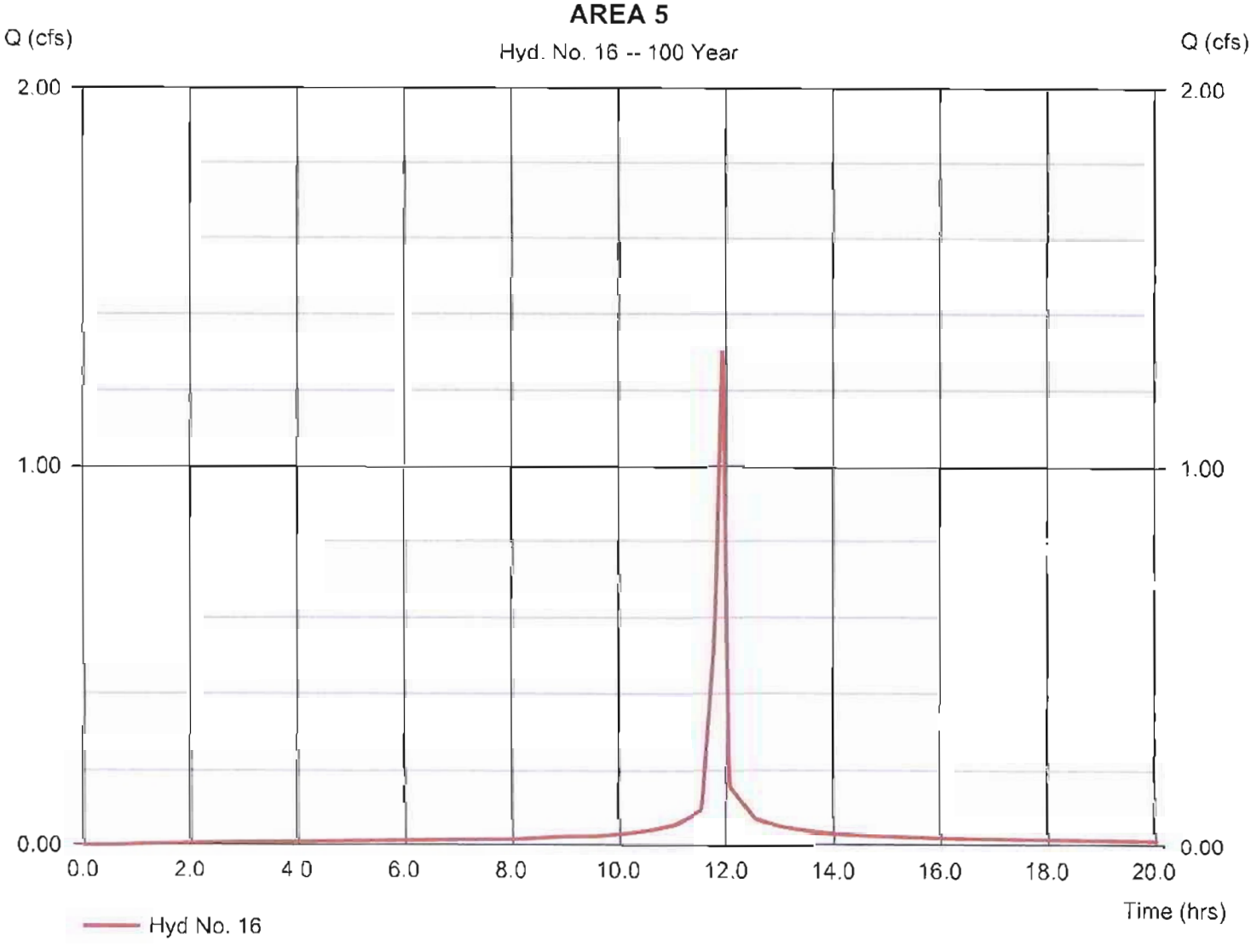
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc. v9 Tuesday, 00 29, 2012

Hyd. No. 16

AREA 5

Hydrograph type	= SCS Runoff	Peak discharge	= 1.302 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.065 acft
Drainage area	= 0.110 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

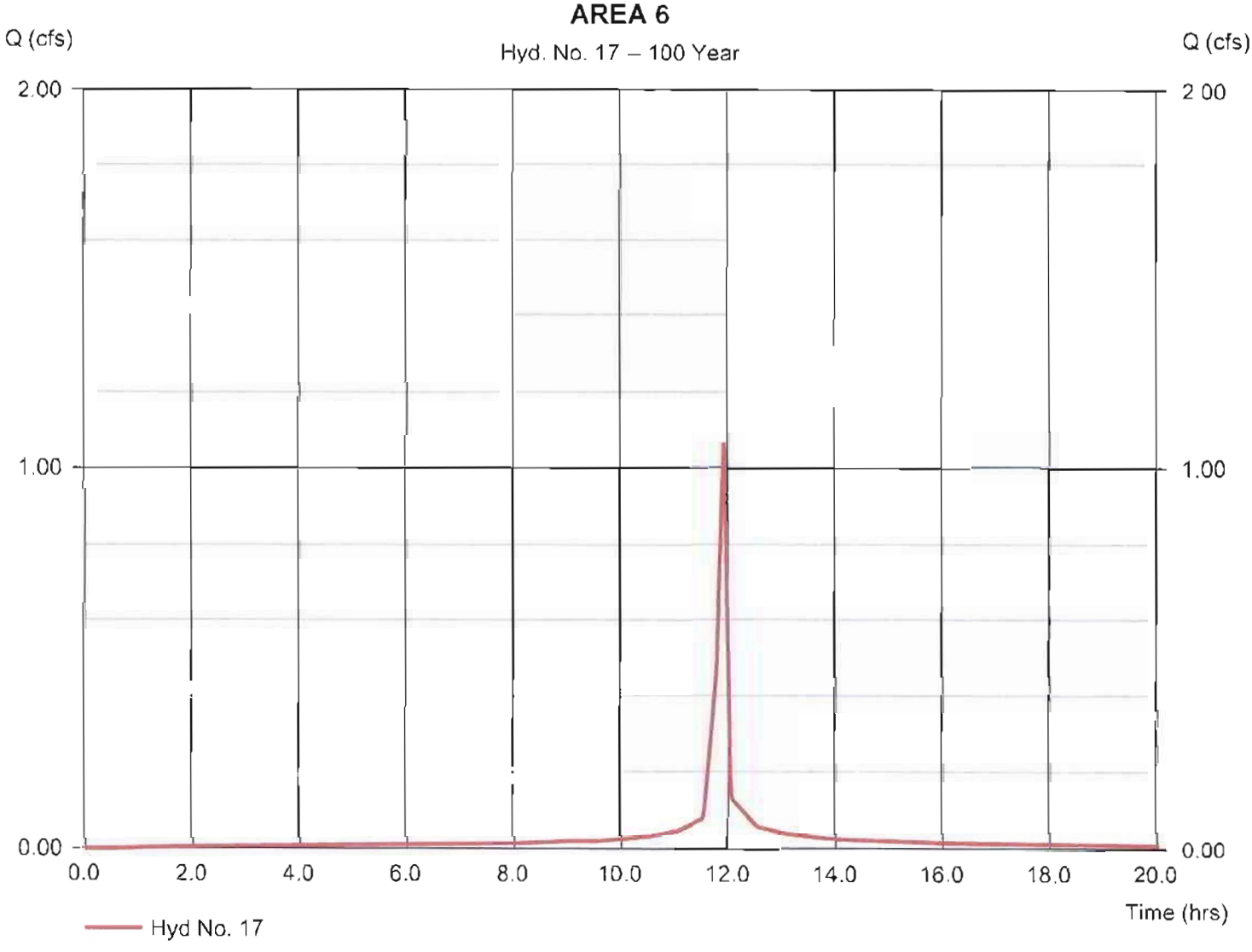


Hydrograph Report

Hyd. No. 17

AREA 6

Hydrograph type	= SCS Runoff	Peak discharge	= 1.066 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.053 acft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

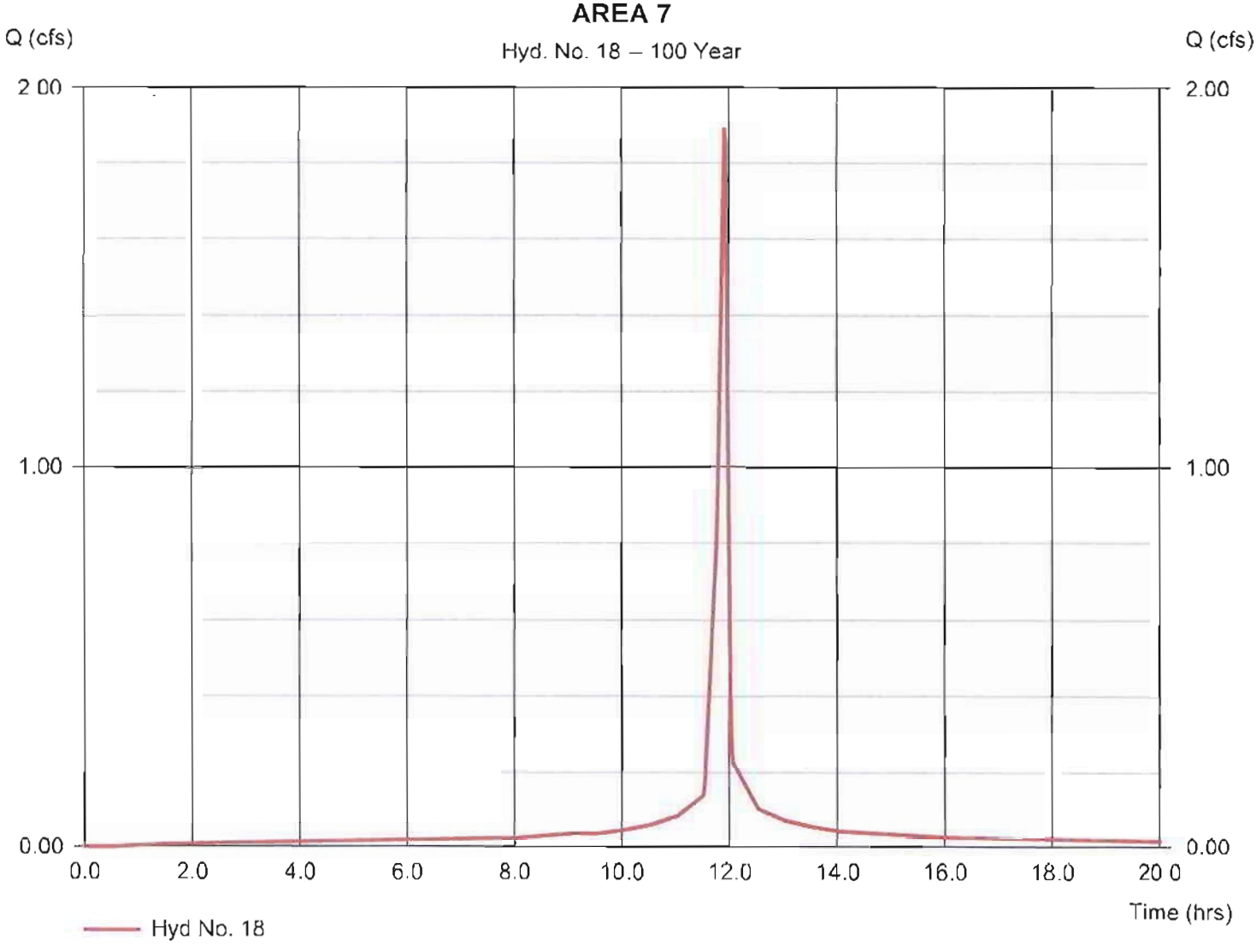


Hydrograph Report

Hyd. No. 18

AREA 7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.895 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.095 acft
Drainage area	= 0.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



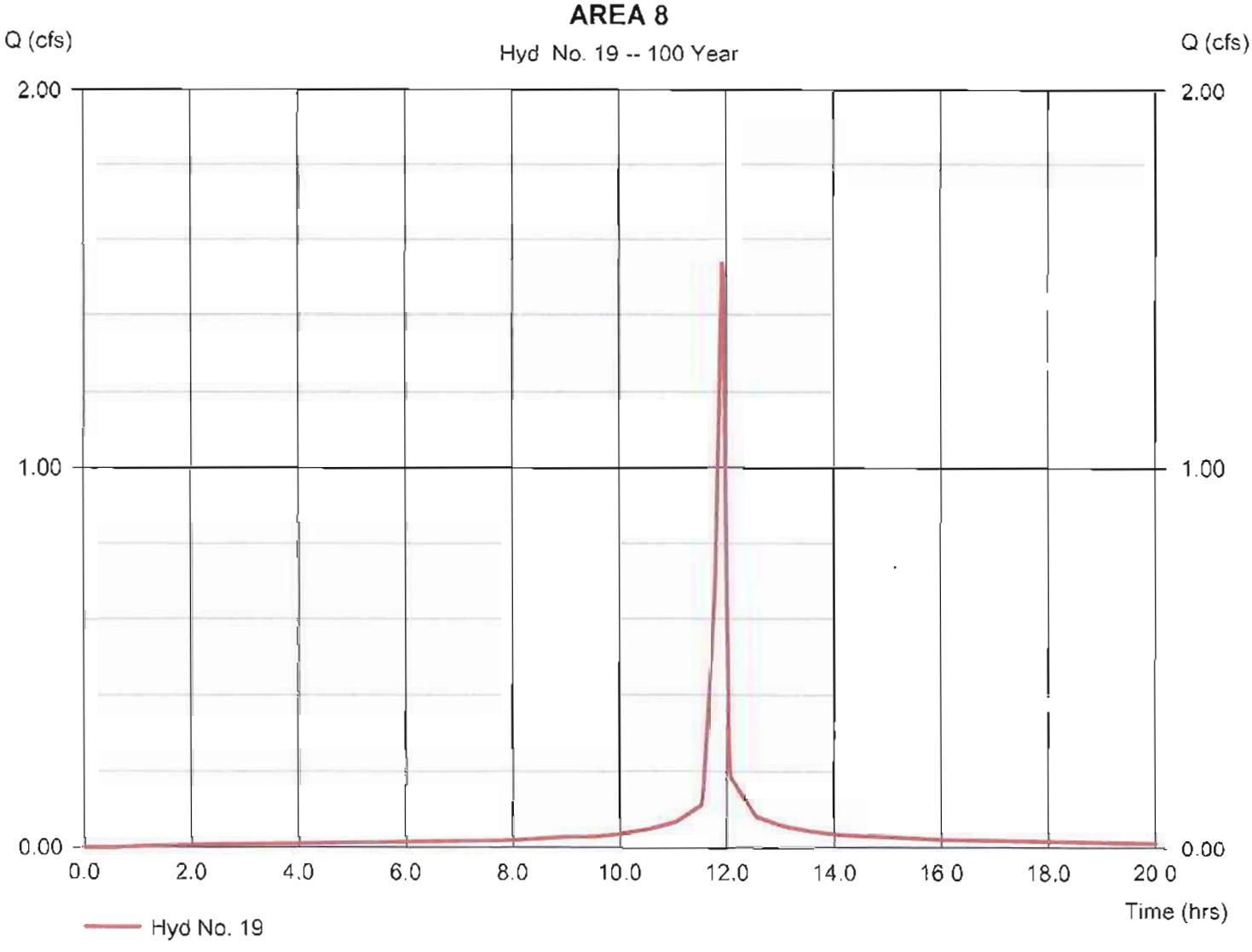
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc v9 Tuesday, 00 29, 2012

Hyd. No. 19

AREA 8

Hydrograph type	= SCS Runoff	Peak discharge	= 1.539 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0.077 acft
Drainage area	= 0.130 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 2.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

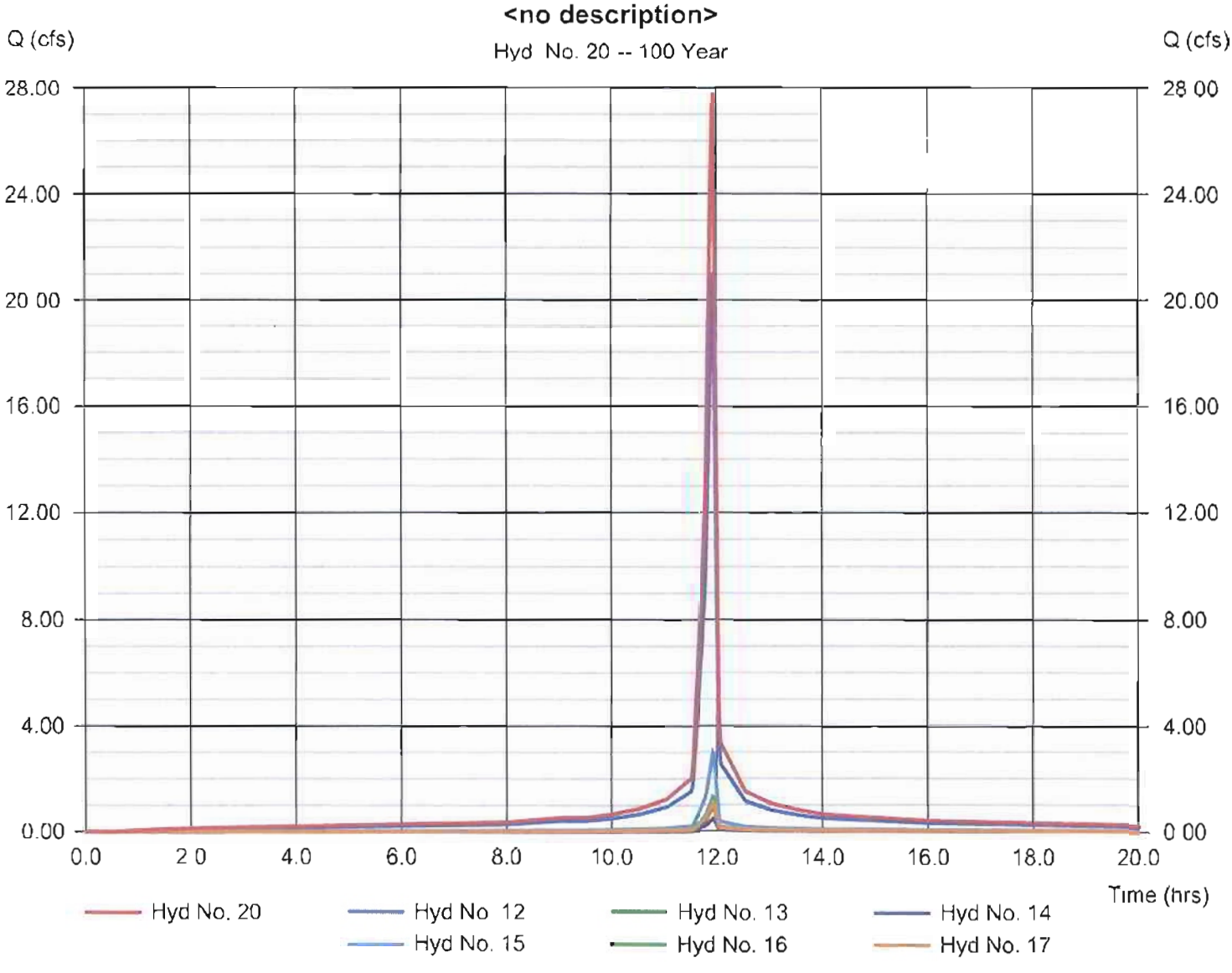


Hydrograph Report

Hyd. No. 20

<no description>

Hydrograph type	= Combine	Peak discharge	= 27.83 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 1.388 acft
Inflow hyds.	= 12, 13, 14, 15, 16, 17	Contrib. drain. area	= 2.350 ac

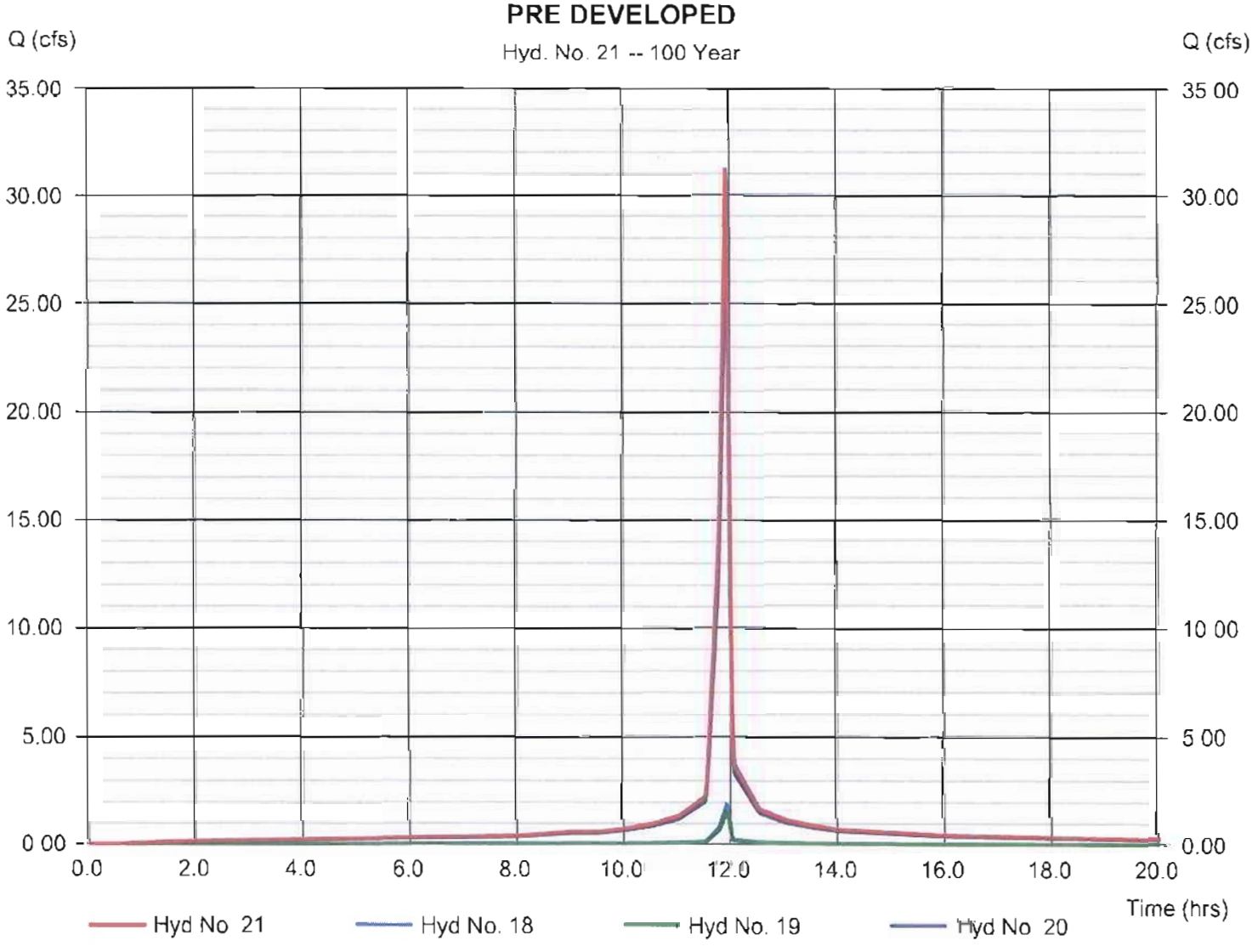


Hydrograph Report

Hyd. No. 21

PRE DEVELOPED

Hydrograph type	= Combine	Peak discharge	= 31.26 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 1.559 acft
Inflow hyds.	= 18, 19, 20	Contrib. drain. area	= 0.290 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	27 8967	9.8000	0.7047	------
2	76.3137	14 3000	0.8844	------
3	0.0000	0.0000	0.0000	------
5	52.6224	11.2000	0.7497	------
10	55.1841	11.1000	0 7229	------
25	60.7012	11 1000	0.7068	------
50	66.9222	11.3000	0.7004	------
100	62.2794	10 1000	0.6624	------

File name. WICHITA IDF IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (In/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.18	3.40	2.90	2.55	2 29	2.08	1.91	1 78	1 66	1.56	1 48	1.40
2	5.57	4.54	3.85	3.35	2.97	2.67	2.43	2 23	2.06	1.92	1.80	1 69
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.52	5.33	4.55	3.99	3 57	3.24	2.97	2.75	2 57	2.41	2 27	2.15
10	7.40	6.09	5.22	4.60	4 13	3.76	3 46	3.21	3.00	2 82	2 67	2.53
25	8.51	7.03	6.05	5.35	4.81	4.39	4 05	3.76	3.52	3.32	3.14	2 98
50	9.47	7.86	6.78	6 00	5.41	4 94	4.56	4 24	3.98	3 75	3 55	3.37
100	10.31	8.53	7.37	6.53	5.90	5.40	5 00	4.66	4 37	4.13	3.92	3 73

Tc = time in minutes. Values may exceed 60.

e name: C:\Users\user\Desktop\WICHITA STORMWATER\Wichita Point Rainfall Depths 24 Hour Design Storm.pcp

Storm Distribution	Rainfall Precipitation Table (In)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.80	3.50	0.00	4.50	5.20	6 10	6.90	7.80
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0 00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0 00	0.00	0 00	0.00	0.00	0.00
Huff-4th	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0.00

Hydraflow Table of Contents

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc. v9

Tuesday, 00 29, 2012

VortSentry® HS Maintenance

The VortSentry HS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit, i.e., unstable soils or heavy winter sanding will cause the treatment chamber to fill more quickly, but regular sweeping will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant deposition and transport may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (i.e. spring and fall) however more frequent inspections may be necessary in equipment washdown areas and in climates where winter sanding operations may lead to rapid accumulations of a large volume of sediment. It is useful and often required as part of a permit to keep a record of each inspection. A simple inspection and maintenance log form for doing so is available for download at www.contechstormwater.com.

The VortSentry HS should be cleaned when the sediment has accumulated to a depth of two feet in the treatment chamber. This determination can be made by taking two measurements with a stadia rod or similar measuring device; one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the distance given in Table 1, the VortSentry HS should be maintained to ensure effective treatment.

Cleaning

Cleaning of the VortSentry HS should be done during dry weather conditions when no flow is entering the system. Cleanout of the VortSentry HS with a vacuum truck is generally the most effective and convenient method of excavating pollutants from the system. Simply remove the manhole cover and insert the vacuum hose into the sump. All pollutants can be removed from this one access point from the surface with no requirements for Confined Space Entry.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use adsorbent pads, which solidify the oils. These are usually much easier to remove from the unit individually, and less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Floating trash can be netted out if you wish to separate it from the other pollutants.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure proper safety precautions. If anyone physically enters the unit, Confined Space Entry procedures need to be followed.

Disposal of all material removed from the VortSentry HS should be done is accordance with local regulations. In many locations, disposal of evacuated sediments may be handled in the same manner as disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.

VortSentry HS Model	Diameter		Distance Between Water Surface and Top of Storage Sump		Sediment Storage		Oil Spill Storage	
	in.	m	ft.	m	yd^3	m^3	gal.	liter
HS36	36	0.9	3.6	1.1	0.5	0.4	83	314
HS48	48	1.2	4.7	1.4	0.9	0.7	158	598
HS60	60	1.5	6.0	1.8	1.5	1.1	258	978
HS72	72	1.8	7.1	2.2	2.1	1.6	372	1409
HS84	84	2.1	8.4	2.6	2.9	2.2	649	2458
HS96	96	2.4	9.5	2.9	3.7	2.8	845	3199

Table 1. VortSentry HS Maintenance Indicators and Sediment Storage Capacities.

VortSentry HS Inspection & Maintenance Log

VortSentry HS Model: _____ Location: _____

Date	Water depth to shipment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

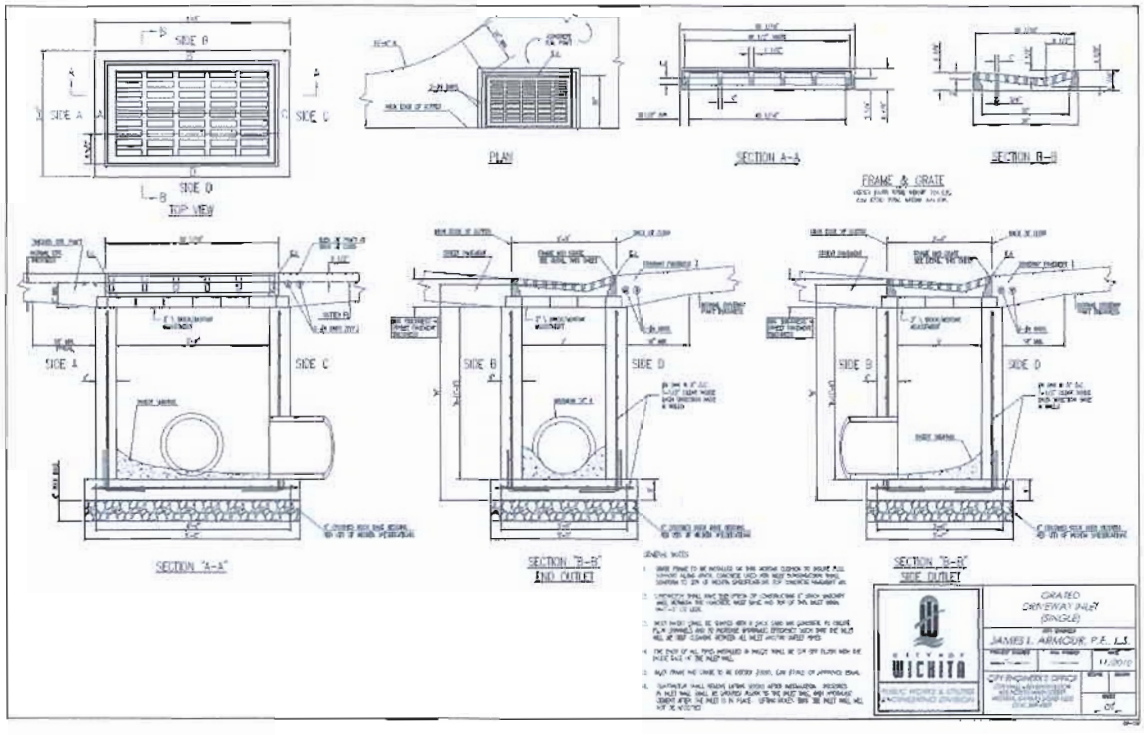
1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the distance given in Table 1, the system should be cleaned out. **Note: To avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.**

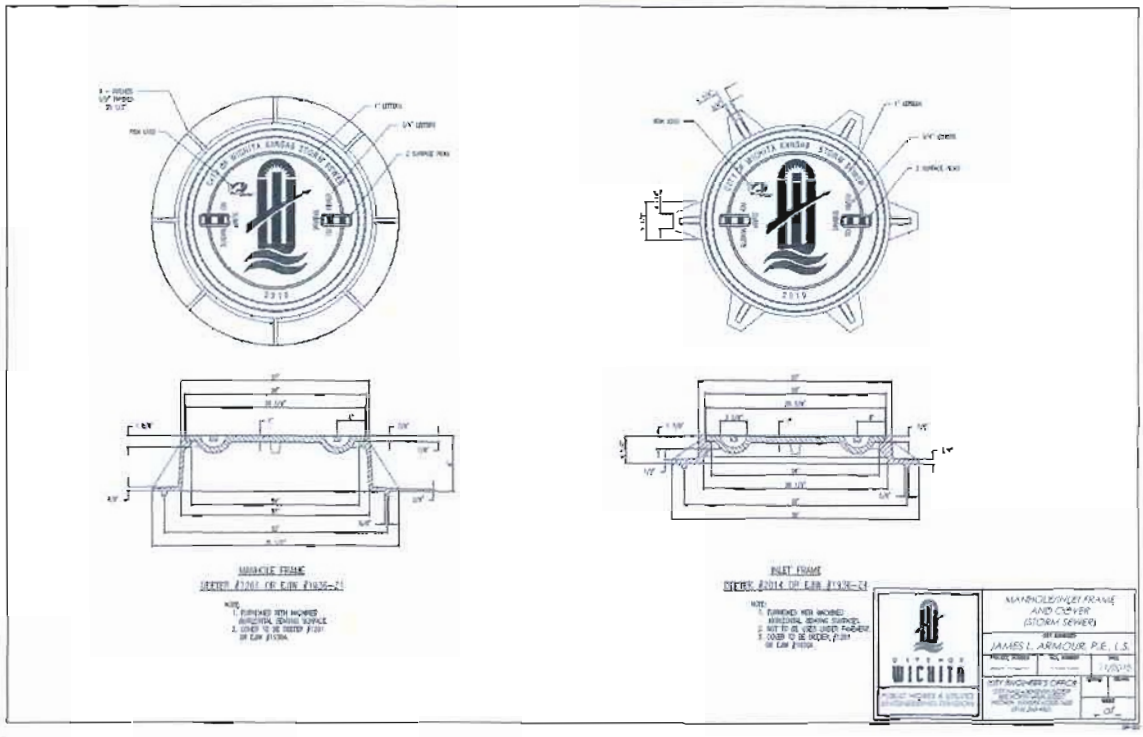
2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

PREMIER CIVIL ENGINEERING

Section 3.4.3
Typical details

Below are City of Wichita details that will be further analyzed based upon the approval of the Plat and preparation of the construction documents.





Section 3.5

Section 3.5.1
Table listing all Stormwater Management Facilities

	Stormwater Management Facilities	
	% TSS	WATER QUALITY FLOW
VORTSENTRY HS	80%	0.0523 ac-ft

Section 3.5.2
Responsible Party for Maintenance

The proposed Plat will indicate that it will be the responsibility of each individual property to owner maintain their Stormwater Management Controls and Facilities.

Section 3.5.3
Water Quality Volume for Facilities

	Hydrologic Soil Group			
Land Use	A	B	C	D
Undisturbed Woods, Meadows or Ag Land (R_{Vu})	0.02	0.03	0.04	0.05
Turf or Disturbed Soils (R_{Vo})	0.15	0.20	0.22	0.25
Impervious Cover (R_{Vi})	0.95	0.95	0.95	0.95

Calculation equation:

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Section 3.5.4
%TSS removal value for Facilities

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Section 3.5.5
Channel Protection Volume

Not required for redevelopment site.

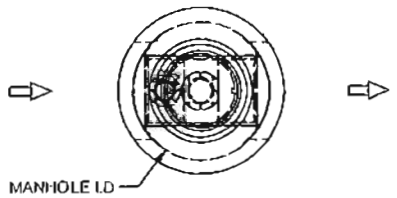
Section 3.5.6
Water quality volume and Channel Protection volume orifice Calculations
Volume calculations not provided for site Flow Calculation have been provided in the report.
See Section 3.3.6

Section 3.5.7
Not Applicable for this project

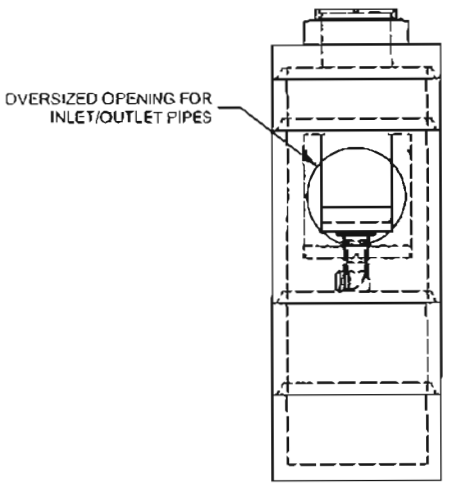
Section 3 5.8
Typical Details for Vortsentry HS

This CADD file is for the purpose of specifying stormwater treatment equipment to be furnished by CONTECH Stormwater Solutions and may only be transferred to other documents exactly as provided by CONTECH Stormwater Solutions. Title block information, excluding the CONTECH Stormwater Solutions logo and the VortSentry HS Stormwater Treatment System designation and patent number, may be deleted if necessary. Revisions to any part of this CADD file without prior coordination with CONTECH Stormwater Solutions shall be considered unauthorized use of proprietary information.

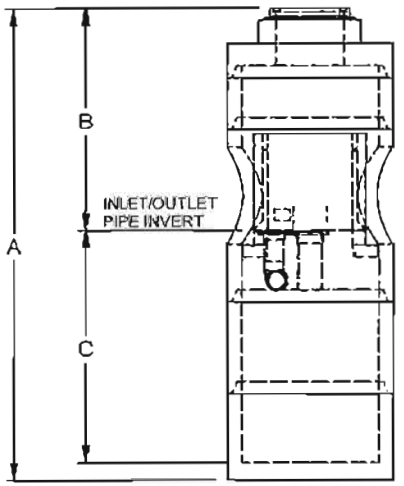
THE VORTSENTRY HS CONTROL SECTION SHALL BE STENCILED WITH THE CONTECH STORMWATER SOLUTIONS NAME AND LOGO. PIPE OPENINGS SHALL BE STENCILED "INLET" OR "OUTLET" AS APPROPRIATE



PLAN



LEFT SIDE



ELEVATION

NOTES

1 STORMWATER TREATMENT SYSTEM (SWTS) SHALL REMOVE 80% OF A SEDIMENT GRADATION WITH AN AVERAGE PARTICLE SIZE OF 240 MICRONS AT THE DESIGNATED TREATMENT FLOW RATE LISTED IN THE TABLE FOR EACH CORRESPONDING MODEL.

2 SWTS REMOVAL EFFICIENCY CLAIM SHALL BE CORROBORATED BY FULL SCALE LABORATORY TEST PERFORMANCE DATA

3. SWTS MAINTENANCE RECOMMENDATION SHALL BE SUPPORTED BY FULL SCALE WASH-OUT TESTING.

4 SWTS SHALL PROVIDE INTERNAL BYPASS OF FLOWS THAT EXCEED THE TREATMENT FLOW RATE.

5 SWTS MAXIMUM HYDRAULIC CAPACITY MAY VARY DEPENDING UPON THE INLET PIPE DIAMETER, MATERIAL AND SLOPE.

6. SWTS INVERTS IN AND OUT SHALL BE AT THE SAME ELEVATION INLET AND OUTLET PIPES MUST BE 180° FROM EACH OTHER

7 MINIMUM RIM TO INVERT DISTANCE MAY BE REDUCED DEPENDING UPON ACTUAL PIPE DIAMETER CONTACT CONTECH STORMWATER SOLUTIONS FOR SITE SPECIFIC INFORMATION

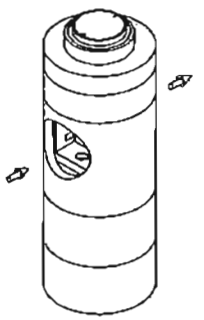
8. PIPE SIZE MAY BE SMALLER THAN THE MAXIMUM PIPE SHOWN ON THE TABLE; SEE SITE PLAN FOR PIPE SIZE

9 PURCHASER SHALL NOT BE RESPONSIBLE FOR ASSEMBLY OF INTERNAL COMPONENTS.

10 ACCESS FRAME AND COVER SUPPLIED WITH SYSTEM, NOT INSTALLED SWTS MAY ALSO HAVE A GRATED INLET COVER (NOT SHOWN)

11 PURCHASER TO PREPARE EXCAVATION AND PROVIDE LIFTING EQUIPMENT

12. VORTSENTRY HS BY CONTECH STORMWATER SOLUTIONS, PORTLAND, OR (800) 548-4667; SCARBOROUGH, ME (877) 907-8676, LINTHICUM, MD (866) 740-3318.



ASSEMBLED VIEW

VortSentry Model	Manhole Diameter (ID)		Total Treatment Flow Rate		Typical Total Distance Rim to Outside Bottom A		Typical Distance Rim to Invert B		Typical Depth Below Invert (Inside) C		Approximate Minimum Distance Rim to Invert (See Note 7)		Maximum Pipe Diameter (ID)	
	ft	mm	cfs	l/s	ft	m	ft	m	ft	mm	ft	m	In	mm
HS36	3	900	0 55	15 6	10.16	3 10	4.08	1.24	5.5833	1702	3.00	0.91	18	450
HS48	4	1200	1 20	34 0	13.25	4.04	6 00	1.83	6.75	2057	4 00	1.22	24	600
HS60	5	1500	2 20	62.3	16 38	4.99	6 50	1.98	9.21	2807	4 82	1 47	30	750
HS72	6	1800	3.70	104 8	16.56	5 05	6.75	2 06	9.15	2788	5 59	1.70	36	900
HS84	7	2100	5.60	158 6	18.85	5 75	7.75	2.36	10.35	3156	4 77	1.45	42	1050
HS96	8	2400	8.10	229.4	20.87	6.36	8.50	2.59	11.54	3518	6.91	2 11	48	1200

FOR INFORMATIONAL PURPOSES ONLY - NOT INTENDED FOR CONSTRUCTION

SP

TYPICAL DETAIL WITH SIZING TABLE STORMWATER TREATMENT SYSTEM VORTSENTRY® HS US PATENT PENDING

CONTECH® STORMWATER SOLUTIONS™
contechstormwater.com

SCALE	NONE
DRAWN	NDG
CHECKED	GWB
FILE NAME	VSHS TYPTBL
DATE	8/17/07

PREMIER CIVIL ENGINEERING

Section 4.0
Floodplain (Does not apply to the project)
The floodplain application has been attached on the following pages for review.

Section 5.0
Federal, State and Local Permits

All permits will be obtained throughout the construction document review and approval process.

Sincerely,

Matt Fogarty