THE CITY OF WICHITA

OFFICE OF MAPD/DESIGN

DATE February 25, 1985

TO Forrest Nagley, Senior Planner

FROM Mike Lindebak, City Engineer

SUBJECT Sanitary Sewer for Lot 17, Block 4, Briarwood Estates

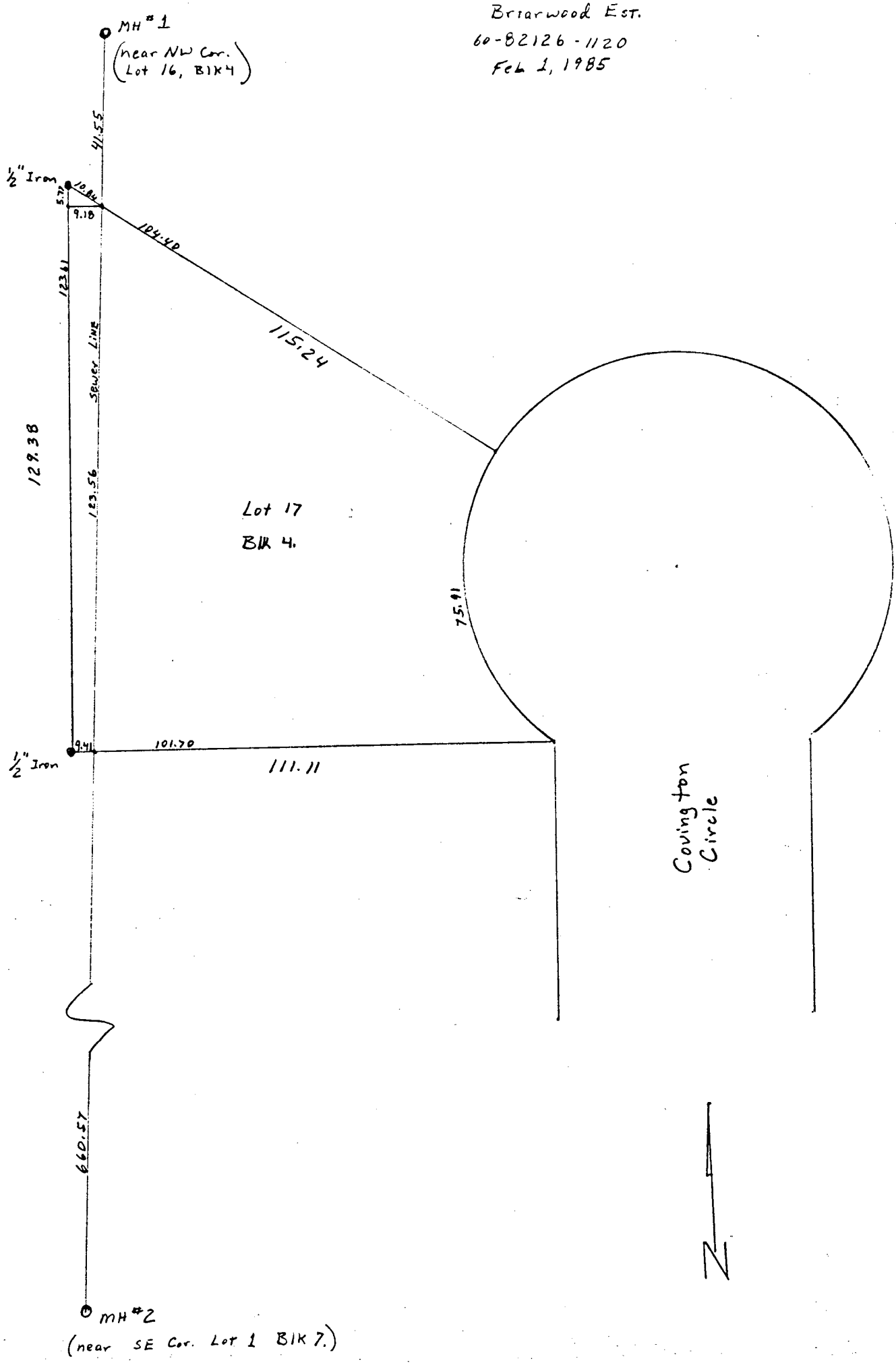
Professional Engineering Consultants has turned in a survey locating the sanitary sewer line at the rear of Lot 17, Block 4, Briarwood Estates.

I have no objection to vacating the east 5' of the 25' easement at the rear of Lot 17.

Mike Lindebak
City Engineer

ML:gr

Briarwood Est.
60-82126-1120
Feb 1, 1985



10300 west
Seattle 280
Realty Executive

Briarwood Estates CUP

WICHITA-SEDGWICK COUNTY
METROPOLITAN AREA PLANNING COMMISSION
CITY HALL, TENTH FLOOR, 455 NORTH MAIN STREET
WICHITA, KANSAS 67202-1688

March 8, 1984

NOTICE TO ADJOINING PROPERTY OWNERS:

NOTICE IS HEREBY GIVEN that on Thursday, March 22, 1984, said meeting beginning at 1:30 p.m., the Wichita-Sedgwick County Metropolitan Area Planning Commission, in the City Commission Meeting Room, City Hall, First Floor, 455 North Main Street, Wichita, Kansas will consider an application for amendment of the BRIARWOOD ESTATES RESIDENTIAL COMMUNITY UNIT PLAN, for property legally described as follows:

CASE NO. DP-136

Beginning at a point 80.96 feet east and 75.00 feet south of the NW corner of the NW¼ of Section 18, Township 27 South, Range 1 West of the 6th P.M.; thence bearing N87° 01'01" E Parallel to and 75 feet from the north line of said NW¼ a distance of 175.00 feet' thence bearing N 72° 58'50"E a distance of 103.08 feet; thence bearing N 87° 01'01" E parallel to and 50 feet from the north line of said NW¼ a distance of 860.00 feet; thence bearing S 3° 58'59"E a distance of 1202.53 feet; thence bearing S 35° 58'59" E a distance of 250.32 feet, thence bearing S 11° 50'30" W a distance of 486.43 feet; thence bearing S 3° 58'59" E a distance of 1085.36 feet; thence bearing N 84° 35'10" E a distance of 526.91 feet; thence bearing S 5° 24'50" a distance of 190.00 feet; thence bearing S 84° 35'10" W a distance of 1540.00 feet to a point lying 50 feet east of the west line of the SW¼ of said Section 18; thence bearing N 1° 52'55" W parallel to the west line of said SW¼ a distance of 367.70 feet to a point on the south line of the NW¼ of said SEction 18; thence bearing N 7° 21'29" W parallel to and 50 feet from the west line of said NW¼ a distance of 2539.16 feet; thence bearing N 6 40'41" E a distance of 103.08 feet; thence bearing N 7° 21'29" W parallel to and 75 feet from the west line of said NW¼ a distance of 175.00 feet to the point of beginning. Generally located on the east side of 119th Street West in an area south of 13th Street North.

The Development Plan of this area has been submitted as permitted under the Community Unit Plan provisions of Section 28.04.190 of the City Zoning Ordinance of the City of Wichita. The Development Plan is on file in the Planning Department Office, Tenth Floor, City Hall, 455 North Main, Wichita, Kansas, and is available for public information and review.

The Development Plan now on file proposes to create a residential C.U.P. that would permit a maximum of 437 dwelling units on 81.1 acres which is a density of 5.9 dwelling units per acre. Permitted uses include single family, zero lot-line; duplexes and townhouses. Building heights, setbacks parking ratio and other information relating to future development is shown on the plan.

The hearing of the proposed Development Plan, as provided in Section 28.04.190 of the City Zoning Ordinance of the City of Wichita, is to be held and the same will there be discussed nad considered by said Wichita-Sedgwick County Metropolitan Area Planning Commission. Those persons interested in this matter will be heard at that time.

The Citizens Participation Organization (CPO) neighborhood council will consider this case in the immediate future for the purpose of making a formal recommendation to the MAPC and BCC. If you have an interest in this case, you are encouraged to express your opinions at your CPO Council meeting. The date, time and location of the CPO meeting may be obtained by calling 268-4516.

Additional information concerning this case may be obtained from the Planning Department, 10th Floor, City Hall, or by calling 268-4421.

Robert A. Lakin
Secretary

JBs

March 12, 1981

Mr. Arthur E. Isom, P. E.
Federal Emergency Management Agency
Region VII
911 Walnut Street
Kansas City, Missouri 64106

Dear Mr. Isom:

Enclosed is a copy of my January 8, 1981 letter addressed to Mr. Steve Kinser regarding Briarwood Estates Addition.

Would you please advise me as to the status of this request.

Yours truly,

Paul B. Graves
Chief Engineer

PBG:gr

Enclosure

cc: Steve Kinser, Federal Emergency Management Agency
William H. Keltner, Professional Engineering Consultants
R. W. Bruggeman, Director of Engineering
Chris Breitenstein, Drainage and Flood Control Engineer

January 6, 1981

Mr. Steve Kinser
Federal Emergency Management Agency
Region VII
911 Walnut Street
Kansas City, Missouri 64106

Dear Mr. Kinser:

Enclosed is a print of Briarwood Estates Addition to Wichita, Sedgwick County, Kansas, which indicates areas of Blocks 8, 9 and 10 that have been removed from the 100-year Flood Plain by filling in those areas to an elevation equal to or above the 100-year line of demarcation. (These areas are shown on the print highlighted in yellow).

Your attention also is directed to the certification by William H. Keltner, Licensed Professional Engineer, certifying that: "I have caused to be surveyed a portion of Briarwood Estates Addition to Wichita, Kansas for the purpose of determining existing ground elevations and location of the Federal Emergency Management Agency (FEMA) 100-year Flood Plain, and that elevations in the field are at or above the contours shown on the accompanying drawing."

The developer is anxious to develop this portion of land and we are, therefore, requesting that this area be determined as not within the 100-year Flood Plain.

Yours truly,

Paul B. Graves
Chief Engineer

PBG:gr

Enclosure

cc: William H. Keltner, Professional Engineering Consultants - 1440 E. Engineer 67211
R. W. Bruggeman, Director of Engineering
Chris Breitenstein, Drainage and Flood Control Engineer

January 8, 1981

Mr. Steve Kinser
Federal Emergency Management Agency
Region VII
911 Walnut Street
Kansas City, Missouri 64106

Dear Mr. Kinser:

Enclosed is a print of Briarwood Estates Addition to Wichita, Sedgwick County, Kansas, which indicates areas of Blocks 8, 9 and 10 that have been removed from the 100-year Flood Plain by filling in those areas to an elevation equal to or above the 100-year line of demarcation. (These areas are shown on the print highlighted in yellow).

Your attention also is directed to the certification by William H. Keltner, Licensed Professional Engineer, certifying that: "I have caused to be surveyed a portion of Briarwood Estates Addition to Wichita, Kansas for the purpose of determining existing ground elevations and location of the Federal Emergency Management Agency (FEMA) 100-year Flood Plain, and that elevations in the field are at or above the contours shown on the accompanying drawing."

The developer is anxious to develop this portion of land and we are, therefore, requesting that this area be determined as not within the 100-year Flood Plain.

Yours truly,

Paul B. Graves
Chief Engineer

PBG:gr

Enclosure

cc: William H. Keltner, Professional Engineering Consultants
R. W. Bruggeman, Director of Engineering
Chris Breitenstein, Drainage and Flood Control Engineer

816-374-2161

Dec 15, 1980

CITY OF WICHITA FIS

Steve Kinser FEMA	Art Isom?	
R.W. Bruggeman	David Stough	Bob Feldner
Paul Graves	Carl Sandwith	MSM
Steve Lackey	Louise Olivarez	Paul Johnston
Chris Brittenstein	Jack Golbraith	
Mike Lindebak	Jim Jorgensen	

Kinser open by explaining intent of Flood Insurance Program and evolution of Flood Hazard Boundary Maps and progress toward Rate Maps and Floodway Maps. Since Wichita and County studies are so interelated it is not proper to put County into Regular Program while City is in Emergency Program.

Best available data

60.3 B 4 Pg 9 RWB asked about use of study data subsequent to FHBM's with effective date of 1977. Kinser pointed to requirement to use BEST AVAILABLE DATA" and that the information contained in FIS should be used EXCEPT where it is KNOWN to be WRONG (What standard?)

JAN 1981 Premium rates for actuarial rates will be going up. Insurance Agent can decide NOT to insure structures which are very low (below base flood elevation)

CITY OF WICHITA
FIS

Graves - Who is administrative agent for Flood Plain Management Program?

When will City get revised FIS study and maps?
In 1981? Probably

MSM - Is mapping only work which will be reviewed?

→ Be sure to send FEMA list of streams which are left out of both Wichita & County Studies.

RWB - If City uses elevations contained in FIS and requires 1st floor to be AT 100 year flood elevation.
Kinser recommends 1' of freeboard.
→ Levee policy must have 3' freeboard plus other safety factors.
→ Protected area WILL NOT BE REMOVED from Zone A unless levee meets POLICY. Corps guidelines include other freeboard requirements such as at structures, high velocity flow on curves.

1272.4
1187.4
85.0 → 100YR Flood elev.

BASEMENT POLICY – As of September, FEMA hoped to have a uniform policy to permit floodproofed basements. As of now each community must request an exception to permit floodproofed basements.

Kirk Van Auken Douglas Co.

Procedure – 1. Community should develope a standard for floodproofed basement.

Butler County is considering 2' freeboard.

1st floor elevations → State of Iowa - 1 foot freeboard

Lackey described City policy of designing curb to be 1 foot above 100 year flood.
Kinser - Good !!

FWPB - Discussed requirements for Riverside 4th
With 85.0 100 year elevation
Floor of Mobile homes - 86.0

Depth x Velocity > 7 Person can't stand up

CBS - Ask how long lag time between completion of channel improvements and authority of City to issue building permits

MEMO

PROFESSIONAL ENGINEERING CONSULTANTS
PROFESSIONAL ASSOCIATION
1440 EAST ENGLISH
WICHITA, KANSAS
ZIP CODE / 67211

TO: Steve Lackey, P. E.
Engineering Department
City Hall
ATTN:

PROJECT NO. 30-80214-2
PROJECT: Briarwood Estates
Storm Sewer
DATE: September 11, 1980

COPIES TO:
File

FROM: Dwaine Dunn
REFERENCE: Briarwood Estates Preliminary Street Grades

PLEASE ADVISE IMMEDIATELY OF ANY MISCONCEPTIONS OR OMISSIONS YOU BELIEVE TO BE CONTAINED HEREIN.

This memo is to confirm the results of a meeting this date in your office.

The Preliminary Street Grades were reviewed and the elimination of the storm drain and 100 year outfall between lots 7 and 8 Block 5 was discussed. Both of these items were given tentative approval along with the agreement to use 13th Street Grades as provided by the City for use in Echo Hills.

MEMO

PROFESSIONAL ENGINEERING CONSULTANTS PROFESSIONAL ASSOCIATION
1440 EAST ENGLISH
WICHITA, KANSAS
ZIP CODE / 67211

TO: Steve Lackey, P.E.
Engineering Dept.
City of Wichita

ATTN:

PROJECT NO. 30-80214-1-042

PROJECT: Briarwood Addn.
Streets - Phase I

DATE: August 21, 1980

COPIES TO:

File

R.D.P.

FROM: Dwaine Dunn

REFERENCE: Throated Intersections on 29 Foot Back-to-Back Streets

PLEASE ADVISE IMMEDIATELY OF ANY MISCONCEPTIONS OR OMISSIONS YOU BELIEVE TO BE CONTAINED HEREIN.

This memo is to confirm our telephone conversation of this date regarding the above referenced project.

Per our conversation, the throated intersections on the 29' Back-to-Back streets in this addition will be deleted and the intersections will be centered in the existing platted right-of-way.

THE CITY OF WICHITA

OFFICE OF Director of Public Works DATE May 21, 1980

TO Members of the Staff Screening and Selection Committee

FROM R. W. Bruggeman, Director of Public Works

SUBJECT Selection of Consultant - Phase I
Development of Briarwood Estates

The Engineering Division of the Department of Public Works and the Department of Water and Water Pollution Control have requested that a meeting of the Staff Screening and Selection Committee be held to select a consultant for the "Phase I Development of Briarwood Estates."

The developer of Briarwood Estates has submitted development guarantees for the construction of sanitary sewer laterals, street paving, storm sewers and storm drain for the following projects:

468 76 245 80954 000 000 001	Lateral 4, Main 12, Southwest Interceptor Sewer
468 76 245 80955 000 000 001	Storm Water Sewer No. 191
468 76 245 80956 000 000 001	Storm Water Drain No. 44
472 76 245 80945 000 000 001	Ponderosa and Shefford; Cardington Court; Covington, Merridale and Shefford; Alderny; Cardington; Covington Circle; Shefford Circle; all in Briarwood Estates - Street paving

The Engineering Division has proceeded with the preparation of plans and specifications for the lateral sewer. Due to the current workload and in anticipation that the Engineering Division staff will be working on 1980 CIP projects, it is advisable that a consultant be hired to prepare plans for the paving and drainage projects. There is also a need for the preparation of plans and specifications for water lines.

A meeting will be held on Thursday, May 29, 1980, at 1:00 P. M. in the Department of Public Works Conference, Eighth Floor of City Hall. Please plan to be in attendance or have a representative present at this meeting.

R. W. Bruggeman
Director of Public Works

RWB:gr

cc: John Wynkoop, Director of Water and Water Pollution Control
Dean Sellers, Acting City Engineer
Don Gisick, City Clerk

THE CITY OF WICHITA

OFFICE OF Public Works Engineering **DATE** May 20, 1980

TO R. W. Bruggeman, Director of Public Works

FROM Mike E. Lindebak, Program Development Engineer

SUBJECT Phase I Development
Briarwood Estates

The developer of Briarwood Estates has submitted development guarantees for the construction of sanitary sewer laterals, street paving, storm sewers, and storm drain for the following projects:

468 76 245 80954 000 000 001 -	Lateral 4, Main 12, Southwest Interceptor Sewer
468 76 245 80955 000 000 001 -	Storm Water Sewer No. 191
468 76 245 80956 000 000 001 -	Storm Water Drain No. 44
472 76 245 80945 000 000 001 -	Ponderosa and Shefford; Cardington Court; Covington, Merridale, and Shefford; Alderny; Cardington; Covington Circle; Shefford Circle, all in Briarwood Estates.

The Engineering Division has proceeded with the preparation of plans and specifications for the lateral sewer. Due to the current work load and in anticipation that Engineering Division staff will be working on 1980 CIP projects, it is advisable that a consultant be hired to prepare plans for the paving and drainage projects.

The Engineering firm of Professional Engineering Consultants did handle the plat for the developer. P.E.C. was contacted and would be available for these projects. No completion dates have been discussed with the developer or P.E.C.

Please call a meeting of the Consultant Selection Committee at your earliest convenience. Engineering staff will be available to outline the work required.

Mike E. Lindebak
Program Development Engineer

MEL:ck

cc: Dean Sellers
Acting City Engineer

Briarwood Estates 3/17/80

1. Channel cross section area is somewhat smaller than shown on printout
2. No freeboard between HWS and access easement elev. for the case of detention upstream. Water level outside the 100' easement and into private property for the case of undeveloped upstream w/ no detention.
3. Some section does not have the capacity to carry the design flow according to Mannings equation
4. The Storm Sewer is designed based on setting the outfall desired Hydraulic gradience at DWS elevation and 1.54' below street T.C. elevation. This leaves little or no grade on the hydraulic gradience and leads to very large pipe sizes with relatively small drainage area. A petition based on this design is conservative. However for the final design, should we consider to allow the H.G at gutter elevation to decrease the pipe sizes?
5. List of quantities for the storm sewer is not submitted

WICHITA – SEDGWICK COUNTY
W-SC
METROPOLITAN AREA PLANNING DEPARTMENT
CITY HALL – TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4561

March 14, 1980

Gary Wiley
Professional Engineering Consultants
1440 E. English
Wichita, Ks. 67211

Re: S/D 79-118 - Final plat of Briarwood Estates

Dear Mr. Wiley:

At the regular meeting of the Metropolitan Area Planning Commission on March 13, 1980, the above-captioned plat was considered. The action of the Planning Commission was to recommend that the plat be approved as recommended by the Subdivision Committee subject to the conditions stated in our letter of February 22, 1980, except that item A was changed to read as follows:

A. As a condition of drainage plan approval for Briarwood Estates, the applicant shall be required to submit a restrictive covenant which states that no building permits can be issued in Phases 2 and 3 of Echo Hills Addition until the detention ponds in Echo Hills II are built.

In addition to complying with those conditions, it is necessary that you meet the following requirements before this plat can be forwarded to the Board of City Commissioners for consideration:

1. Submission of the fully completed and signed tracing of the subdivision to the Metropolitan Area Planning Department.

2. Submission of a title report by an abstract or title insurance company or an attorney's opinion that fee title is vested in the plattor.

3. Certification that all taxes due and payable for 1979 and prior years have been paid.

Please call if you have any questions.

Very truly yours,

Louise Olivarez

Louise Olivarez
Senior Planner

LO:bh

cc: Inland Investment, Inc. 200 Douglas Bldg., 67202
Dean Sellers, Acting City Engineer
Paul Johnston, Flood Control

MEMO

PROFESSIONAL ENGINEERING CONSULTANTS
PROFESSIONAL ASSOCIATION
1440 EAST ENGLISH
WICHITA, KANSAS
ZIP CODE / 67211

TO: Yash Desai
Chief Drainage Engineer
7th Floor - City Hall
455 N. Main
Wichita, Kansas 67202

ATTN:

PROJECT NO. 30-79280-1120

PROJECT: Briarwood Estates

DATE: March 13, 1980

COPIES TO:

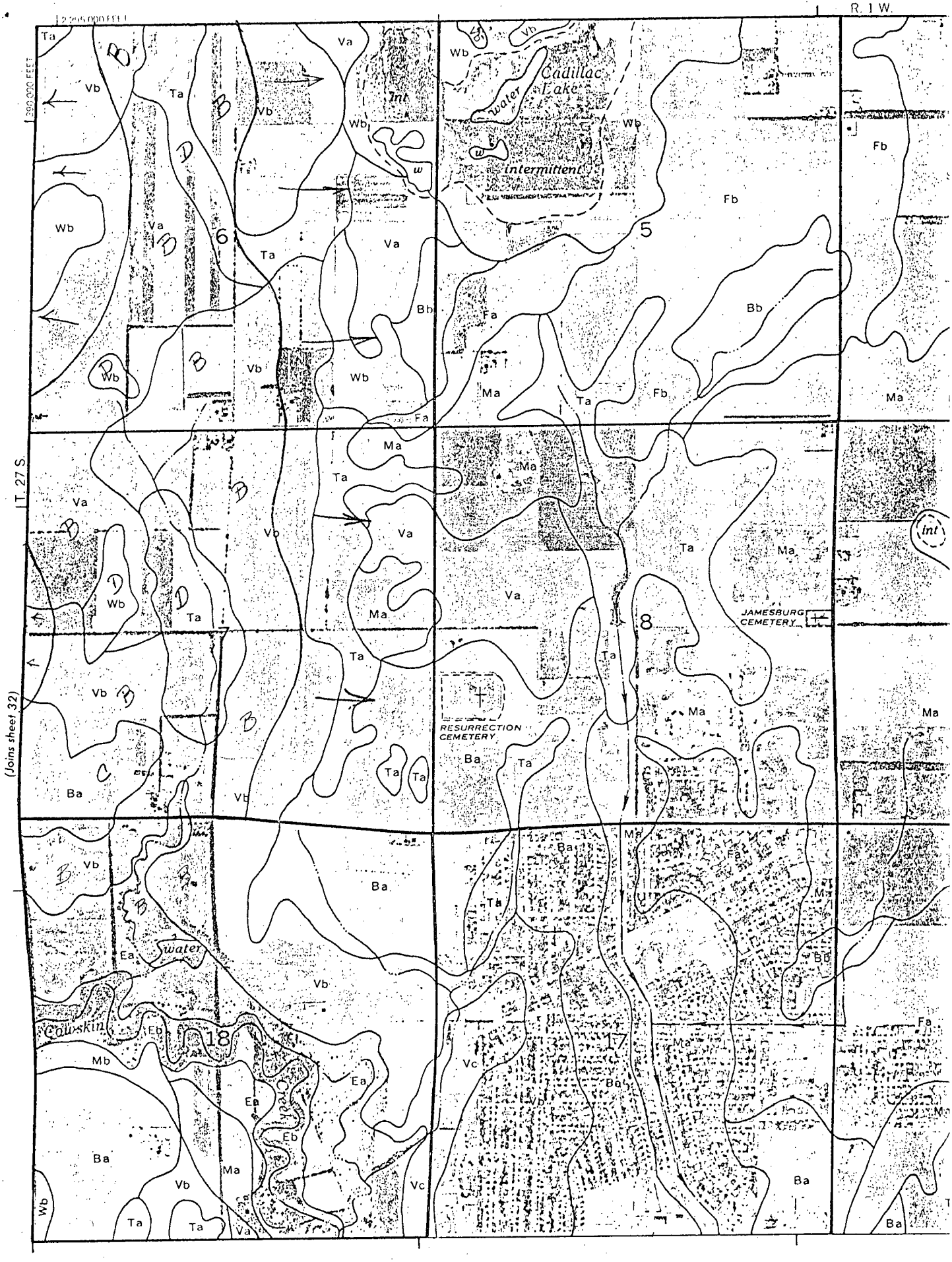
Paul Johnston
Mike Lindebak
Louise Olivarez
Phil Dietrich

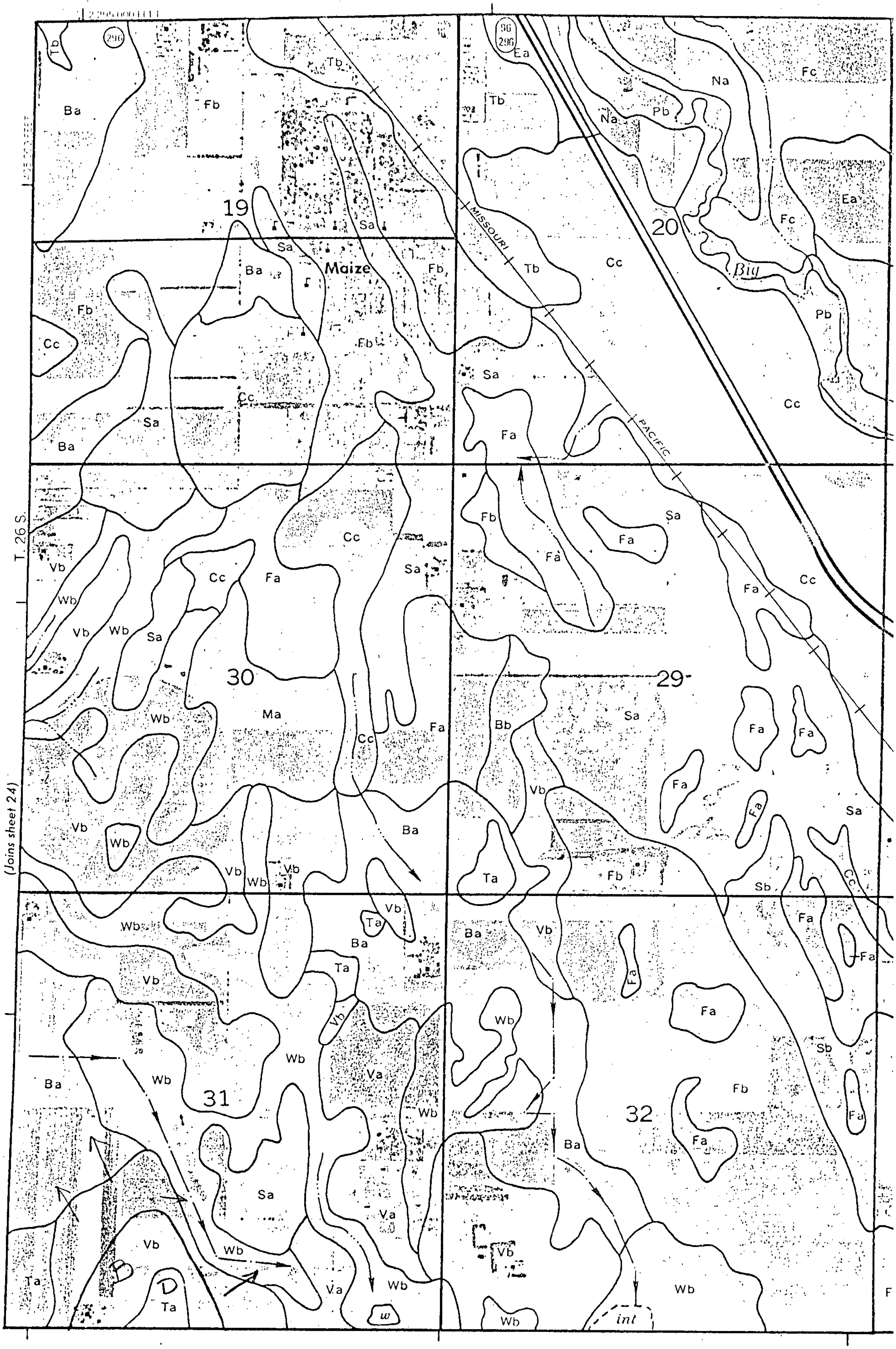
FROM: Chris Brennenstuhl

REFERENCE: Drainage Plan

PLEASE ADVISE IMMEDIATELY OF ANY MISCONCEPTIONS OR OMISSIONS YOU BELIEVE TO BE CONTAINED HEREIN.

Transmitted herewith are the maps and tables to supplement the calculations delivered to you on Tuesday March 11, 1980, for the Revised Drainage Plan of Briarwood Estates. Also included with this transmittal are the corrected backwater calculations (HEC-2) for both conditions (detained, developed and undetained, pre-developed) north of Echo Hills.


R. 1 W.
T. 27 S.
(Joins sheet 32)
Cadillac Lake
water
intermittent
JAMESBURG CEMETERY
RESURRECTION CEMETERY
Calvskin Creek
Ta
Va
Vb
Wb
Bb
Fa
Fb
Ma
Ba
Ea
Eb
Mb
Vc
5
6
7
8
17
18



Maize
19
20
29
30
31
32
T. 26 S.
(Joins sheet 24)
MISSOURI
PACIFIC
Big
96
296
Ba
Fb
Tb
Sa
Cc
Fa
Ea
Na
Pb
Fc
Vb
Wb
Ma
Bb
Ta
Sb
Va
int
w

TABLE 16.--SOIL AND WATER FEATURES

[Absence of an entry indicates the feature is not a concern. The definitions of "flooding" and "water table" in the Glossary explain such terms as "rare," "brief," and "perched." The symbol > means greater than]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness
					Ft			In	
Albion:									
[1]Aa:									
Albion part	B	None	---	---	>6.0	---	---	>60	---
Shellabarger part	B	None	---	---	>6.0	---	---	>60	---
[1]Ab:									
Albion part	B	None	---	---	>6.0	---	---	>60	---
Shellabarger part	B	None	---	---	>6.0	---	---	>60	---
Blanket:									
Ba, Bb	C	None	---	---	>6.0	---	---	>60	---
Canadian:									
Ca	B	Rare	---	---	>6.0	---	---	>60	---
[1]Cb:									
Canadian part	B	Rare	---	---	>6.0	---	---	>60	---
Waldeck part	C	Occasional	Brief	Mar-Oct	2.0-6.0	Apparent	Oct-Apr	>60	---
Carwile:									
Cc	D	Occasional	Brief to very long.	Apr-Oct	2.0-6.0	Apparent	Oct-Apr	>60	---
Clark:									
[1]Cd:									
Clark part	B	None	---	---	>6.0	---	---	>60	---
Ost part	B	None	---	---	>6.0	---	---	>60	---
Clime:									
Ce	C	None	---	---	>6.0	---	---	20-40	Rippable
Elandco:									
Ea, Eb, Ec	B	Rare to common.	Brief	Oct-May	>6.0	---	---	>60	---
Farnum:									
Fa, Fb, Fc	B	None	---	---	>6.0	---	---	>60	---
Goessel:									
Ga, Gb	D	None	---	---	>6.0	---	---	>60	---
Irwin:									
Ia, Ib, Ic	D	None	---	---	>6.0	---	---	>40	Hard
Lesho:									
La	C	Occasional	Very brief	Mar-Jul	2.0-6.0	Apparent	Jan-Dec	>60	---
Lincoln:									
Lb	A	Common	Very brief to brief.	Apr-Oct	5.0-8.0	Apparent	Nov-May	>60	---
Milan:									
Ma, Mb, Mc	B	None	---	---	>6.0	---	---	>60	---

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardnes
					Ft			In	
Naron: Na	B	None	---	---	>6.0	---	---	>60	---
Owens: Oc	D	None	---	---	>6.0	---	---	10-20	Rippabl
[1]Od: Owens part	D	None	---	---	>6.0	---	---	10-20	Rippabl
Rock outcrop part.									
Pits: Pa.									
Plevna: Pb	D	Frequent	Brief to long.	Mar-Oct	0-4.0	Apparent	Jan-Dec	>60	---
Pratt: Pc	A	None	---	---	>6.0	---	---	>60	---
[1]Pd: Pratt part	A	None	---	---	>6.0	---	---	>60	---
Tivoli part	A	None	---	---	>6.0	---	---	>60	---
Renfrow: Ra, Rb	D	None	---	---	>6.0	---	---	>60	---
[1]Rc: Renfrow part	D	None	---	---	>6.0	---	---	>60	---
Owens part	D	None	---	---	>6.0	---	---	10-20	Rippabl
Rosehill: Rd	D	None	---	---	>6.0	---	---	20-40	Rippabl
Shellabarger: Sa, Sb, Sc	B	None	---	---	>6.0	---	---	>60	---
Tabler: Ta	D	None	---	---	2.5-3.5	Perched	Oct-Apr	>60	---
[1]Tb: Tabler part	D	None	---	---	2.5-3.5	Perched	Oct-Apr	>60	---
Drummond part	D	Rare	---	---	2.0-6.0	Apparent	Nov-Apr	>60	---
Urban land: [1]Ua: Urban land part.									
Canadian part	B	Rare	---	---	>6.0	---	---	>60	---
[1]Ub: Urban land part.									
Elandco part	B	Rare to common.	Brief	Oct-May	>6.0	---	---	>60	---
[1]Uc: Urban land part.									
Farnum part	B	None	---	---	>6.0	---	---	>60	---

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness
					Ft			In	
Urban land:									
[1]Ud:									
Urban land part.									
Irwin part-----	D	None---------	---	---	>6.0	---	---	>40	Hard
[1]Ue:									
Urban land part.									
Tabler part----	D	None---------	---	---	2.5-3.5	Perched	Oct-Apr	>60	---
Vanoss:									
Va, Vb, Vc, Vd---	B	None---------	---	---	>6.0	---	---	>60	---
Vernon:									
Ve, Vf----------	D	None---------	---	---	>6.0	---	---	>60	---
Waldeck:									
Wa----------	C	Occasional	Brief-----	Mar-Oct	2.0-6.0	Apparent	Oct-Apr	>60	---
Waurika:									
Wb----------	D	None---------	---	---	1.0-2.0	Perched	Mar-May	>60	---

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

Table 4.--Runoff curve numbers for selected agricultural, suburban, and urban land use. (Antecedent moisture condition II).

[From SCS Tech. Release No. 55 (1975)]

LAND USE DESCRIPTION	HYDROLOGIC SOIL GROUP			
	A	B	C	D
Cultivated land: without conservation treatment	72	81	88	91
: with conservation treatment	62	71	78	81
Pasture or range land: poor condition	68	79	86	89
: good condition	39	61	74	80
Meadow: good condition	30	58	71	78
Wood or Forest land: thin stand, poor cover, no mulch	45	66	77	83
: good cover	25	55	70	77
Open Spaces, lawns, parks, golf courses, cemeteries, etc.				
good condition: grass cover on 75% or more of the area	39	61	74	80
fair condition: grass cover on 50% to 75% of the area	49	69	79	84
Commercial and business areas (85% impervious)	89	92	94	95
Industrial districts (72% impervious)	81	88	91	93
Residential:*				
Average lot size — Average % impervious**				
1/8 acre or less — 65	77	85	90	92
1/4 acre — 38	61	75	83	87
1/3 acre — 30	57	72	81	86
1/2 acre — 25	54	70	80	85
1 acre — 20	51	68	79	84
Paved parking lots, roofs, driveways, etc.	98	98	98	98
Streets and roads: paved with curbs and storm sewers	98	98	98	98
gravel	76	85	89	91
dirt	72	82	87	89

* Curve numbers are computed assuming the runoff from the house and driveway is directed towards the street with a minimum of roof water directed to lawns, where additional infiltration could occur.

** The remaining pervious areas (lawn) are considered to be in good pasture condition.

Table 1

SOIL COVER COMPLEX NUMBERS

(Antecedent Moisture Condition II)

Land Use or Cover 1/	Condition or Practice 1/	Hydrologic Soil Group			
		A	B	C	D
Misc. 2/		72	82	87	89
Cultivated	Gradient Terraces	62	71	78	81
Cultivated	Storage Type Terraces 3/	40	60	67	70
Cultivated	No Residue, No Terrace	72	81	88	91
Cultivated	With Residue, No Terrace	66	77	84	88
Grassland	Poor Veg. Cover	68	70	86	89
Grassland	Fair Veg. Cover	49	69	79	84
Grassland	Good Veg. Cover 4/	39	61	74	80

1/ Use estimated long-term land use and condition.

2/ Includes roads, farmsteads, urban, etc. (about 3% for most rural areas)

3/ Includes flat pothole areas and other areas with significant storage.

4/ Includes meadow and woodland.

Table 6

UNIT PEAK DISCHARGE VERSUS TIME OF CONCENTRATION

Tc (hours)	q_a* cfs/acre/in.	Tc (hours)	q_a* cfs/acre/in.
0.10	1.06	1.0	0.38
0.12	0.97	1.2	0.36
0.14	0.91	1.4	0.34
0.16	0.86	1.6	0.32
0.18	0.82	1.8	0.30
0.20	0.78	2.0	0.28
0.22	0.75	2.2	0.27
0.24	0.72	2.4	0.26
0.26	0.69	2.6	0.25
0.28	0.67	2.8	0.24
0.30	0.66	3.0	0.23
0.32	0.64	3.2	0.22
0.34	0.62	3.4	0.21
0.36	0.61	3.6	0.20
0.38	0.59	3.8	0.19
0.40	0.58	4.0	0.18
0.42	0.56	4.5	0.17
0.44	0.55		
0.46	0.54	5.0	0.16
0.48	0.53	5.5	0.15
0.5	0.52	6.0	0.14
0.6	0.48		
0.7	0.45		
0.8	0.42		
0.9	0.40		

*Unit peak discharge (q_a) is the peak flow in c.f.s. per acre of drainage area per inch of runoff from the drainage area.

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Project BRIARWOOD (MAIN) DETENTION

Item FLOOD ROUTING THROUGH POND A

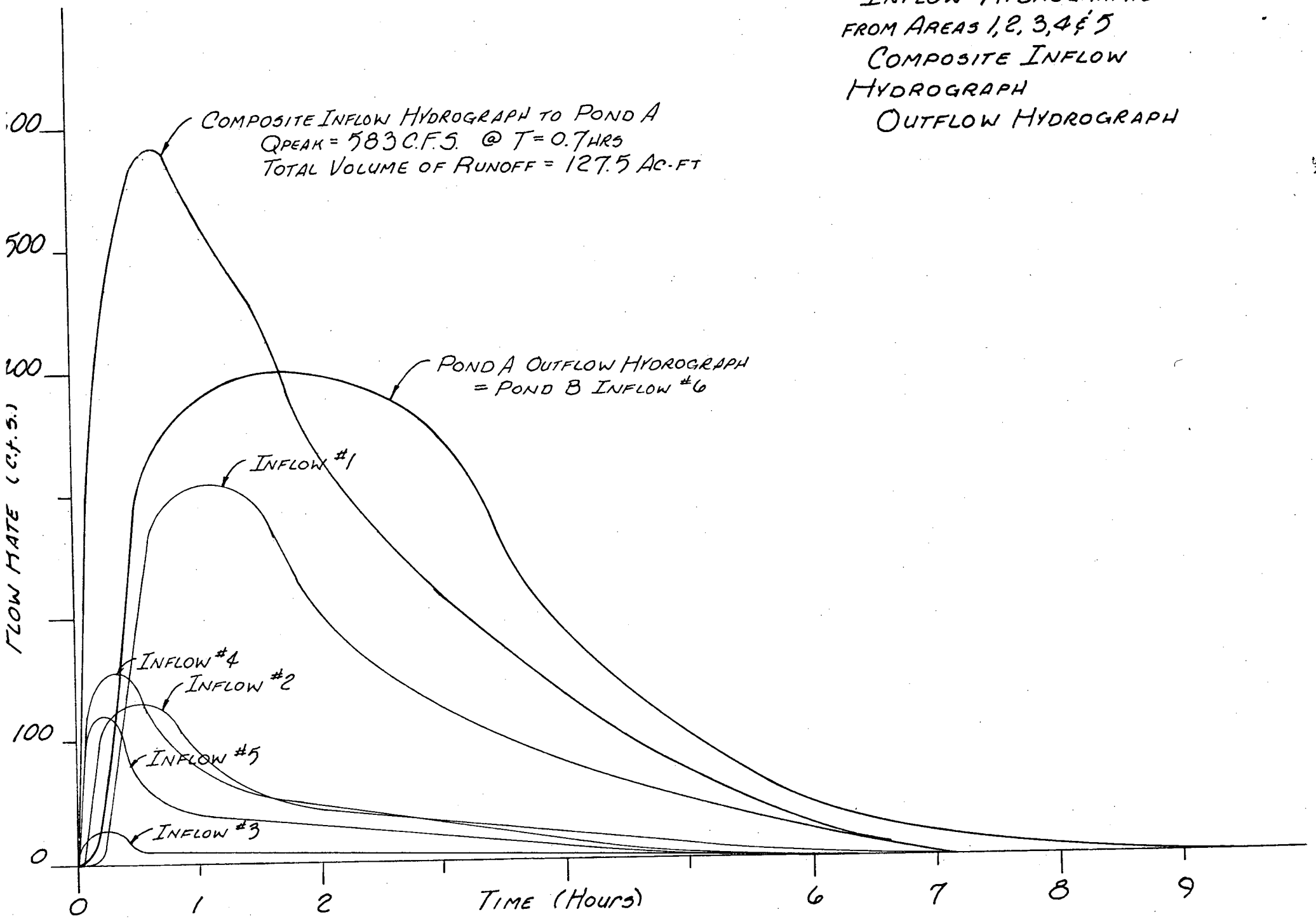
INFLOW HYDROGRAPH TO POND A

THE INDIVIDUAL INFLOW HYDROGRAPH OF EACH CONTRIBUTING AREA IS DEVELOPED FOLLOWING THIS CRITERIA OF:

1. AT TIME ZERO, INFLOW IS ZERO.
2. THE PEAK FLOW OCCURS AT THE TIME OF CONCENTRATION.
3. AT SIX HOURS AFTER THE TIME OF CONCENTRATION, INFLOW IS ZERO. (THIS IS THE CASE AS THE DESIGN STORM HAS A SIX HOUR DURATION.)
4. THE VOLUME UNDER THE HYDROGRAPH IS EQUAL TO THE DESIGN VOLUME OF RUNOFF.
5. APPROXIMATELY 20% OF THE VOLUME IS WITHIN THE RISING PORTION OF THE HYDROGRAPH.
6. THOSE CONTRIBUTING HYDROGRAPHS HAVING AT TRAVEL TIME ARE "LAGGED" BY AN AMOUNT EQUAL TO THEIR TRAVEL TIME (T_T) WITH ZERO FLOW OCCURING AT $T = T_T$, PEAK FLOW AT $T_p = T_c + T_T$, AND ZERO FLOW AT $T = T_c + 6 + T_T$

THE INDIVIDUAL HYDROGRAPHS ARE THEN ADDED TO PRODUCE THE COMPOSITE HYDROGRAPH WHICH REPRESENTS THE TOTAL INFLOW INTO POND A.

POND A
INFLOW HYDROGRAPHS
FROM AREAS 1, 2, 3, 4 & 5
COMPOSITE INFLOW
HYDROGRAPH
OUTFLOW HYDROGRAPH



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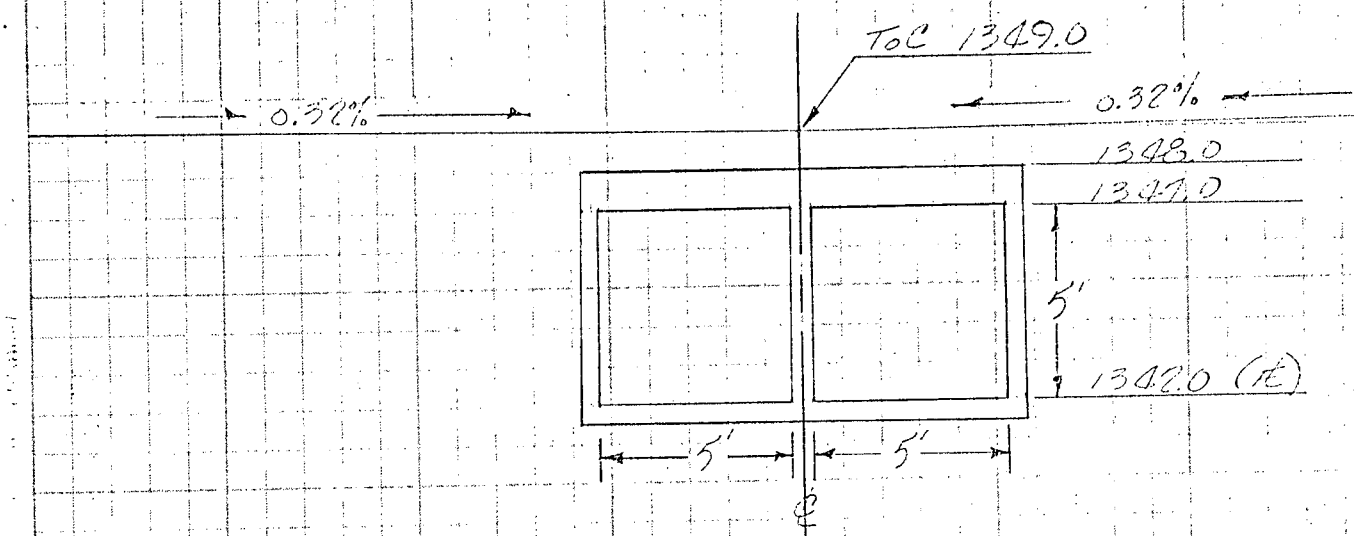
OUTFLOW HYDROGRAPH FOR POND A

THE OUTLET STRUCTURE TO BE USED IS A DOUBLE-5'x5' RCBC WITH ELEVATIONS AS SKETCHED BELOW



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OUTLET STRUCTURE CAPACITY FOR POND A

DS FE = 1341.50
US FE = 1342.00
SOFFIT = 1347.00

STRUCTURE

2-5'x5'x 45' RCBC

MANNING'S n = 0.015

ENT. LOSS COEF. = 0.15
OUT. LOSS COEF. = 1.00

PARTIALLY-FULL FLOW CONDITIONS (USHW ≤ 1347.00)

$$Q = \frac{1.486}{n} A R^{2/3} \sqrt{S}$$

$$S = \frac{1342.00 - 1341.50}{45} = 1.11\%$$

$$A = 2(5)(d) = 10d$$

$$R = \frac{A}{P}$$

$$P = 2[5 + 2d] = 10 + 4d$$

d = DEPTH OF FLOW
= USHW − USFE

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FULL FLOW CONDITIONS (USHW ≥ 1347.00)

$USHW = DSHW + h_c + h_o + h_s$

$h_c = 0.15 \frac{V^2}{2g}$ $\quad V = Q/A$

$= \frac{0.15\,Q^2}{(50)^2(2)(32.2)}$ $\quad A = 2(5)(5) = 50$

$= 0.00000093\,Q^2$ $\quad V = Q/50$

$h_o = 1.00 \frac{V^2}{2g}$

$= \frac{1.00\,Q^2}{(50)^2(2)(32.2)}$

$= 0.00000621\,Q^2$

$h_{s.o} = h_s + h_o = 0.00000971\,Q^2$

$h_s = SL$ $\quad L = 45.00$

$S = \left[\frac{Qn}{1.486\,AR^{2/3}}\right]^2$

$= \left[\frac{Q(0.015)}{(1.486)(50)R^{2/3}}\right]^2$

$R = \frac{A}{P}$ $\quad P = 2[2(5+5)] = 40$

$R = \frac{50}{40} = 1.25$

$= Q^2\left[\frac{0.015}{(1.486)(50)(1.25)^{2/3}}\right]$

$S = 0.00000002\,Q^2$

$SL = 0.00000014\,Q^2$

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USHW = DSHW + h_{exit} + h_s

DSHW = DSFE + D
= 1341.5 + 5.0 = 1346.5

USHW = 1346.5 + 0.0000071 Q^2 + 0.0000014 Q^2
= 1346.5 + 0.0000085 Q^2

$Q = \frac{1.486}{0.015} A R^{2/3} \sqrt{S}$

USHW ELEVATION	d (FT)	A	R	Q
1342	0	0	0	0
1342.2	0.20	2.00	0.19	6.79
1342.4	0.40	4.00	0.34	20.54
1342.6	0.60	6.00	0.48	38.62
1342.8	0.80	8.00	0.61	59.83
1343	1.00	10.00	0.71	83.44
1343.5	1.50	15.00	0.94	150.04
1344	2.00	20.00	1.11	224.05
1344.5	2.50	25.00	1.25	302.94
1345	3.00	30.00	1.36	385.24
1345.5	3.50	35.00	1.46	470.02
1346	4.00	40.00	1.54	556.61
1346.5	4.50	45.00	1.61	644.73
1347	5.00	50.00	1.67	733.97

USHW = 1346.5 + (8.5×10^{-6}) Q^2

USHW	$(8.5 \times 10^{-6}) Q^2$	Q^2	Q
1347	0.50	58789	242.47
1347.25	0.75	88184	296.96
1347.5	1.00	117579	342.90
1348	1.50	176368	419.96
1349	2.50	293947	542.17
1350	3.50	411525	641.50

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STORAGE CAPACITY IN POND A

ELEVATION	SURFACE AREA (Ac)	AVE. AREA (Ac)	VOLUME (Ac-FT)	Σ VOL. (Ac-FT)
1342	3.97			0
		4.02	0.80	
1342.2	4.07			0.80
		4.13	0.83	
1342.4	4.18			1.63
		4.23	0.85	
1342.6	4.28			2.48
		4.34	0.87	
1342.8	4.39			3.34
		4.44	0.89	
1343	4.49			4.23
		4.63	2.31	
1343.5	4.76			6.54
		4.89	2.44	
1344	5.02			8.99
		5.15	2.58	
1344.5	5.28			11.56
		5.42	2.71	
1345	5.55			14.27
		5.68	2.84	
1345.5	5.81			17.11
		5.94	2.97	
1346	6.07			20.08
		6.20	3.10	
1346.5	6.34			23.18
		6.40	1.60	
1346.75	6.47			24.78
		6.53	1.63	
1347	6.60			26.42
		6.67	1.67	
1347.25	6.73			28.08
		6.80	1.70	
1347.5	6.86			29.78
		6.99	3.50	
1348	7.13			33.28
		7.39	7.39	
1349	7.65			40.67

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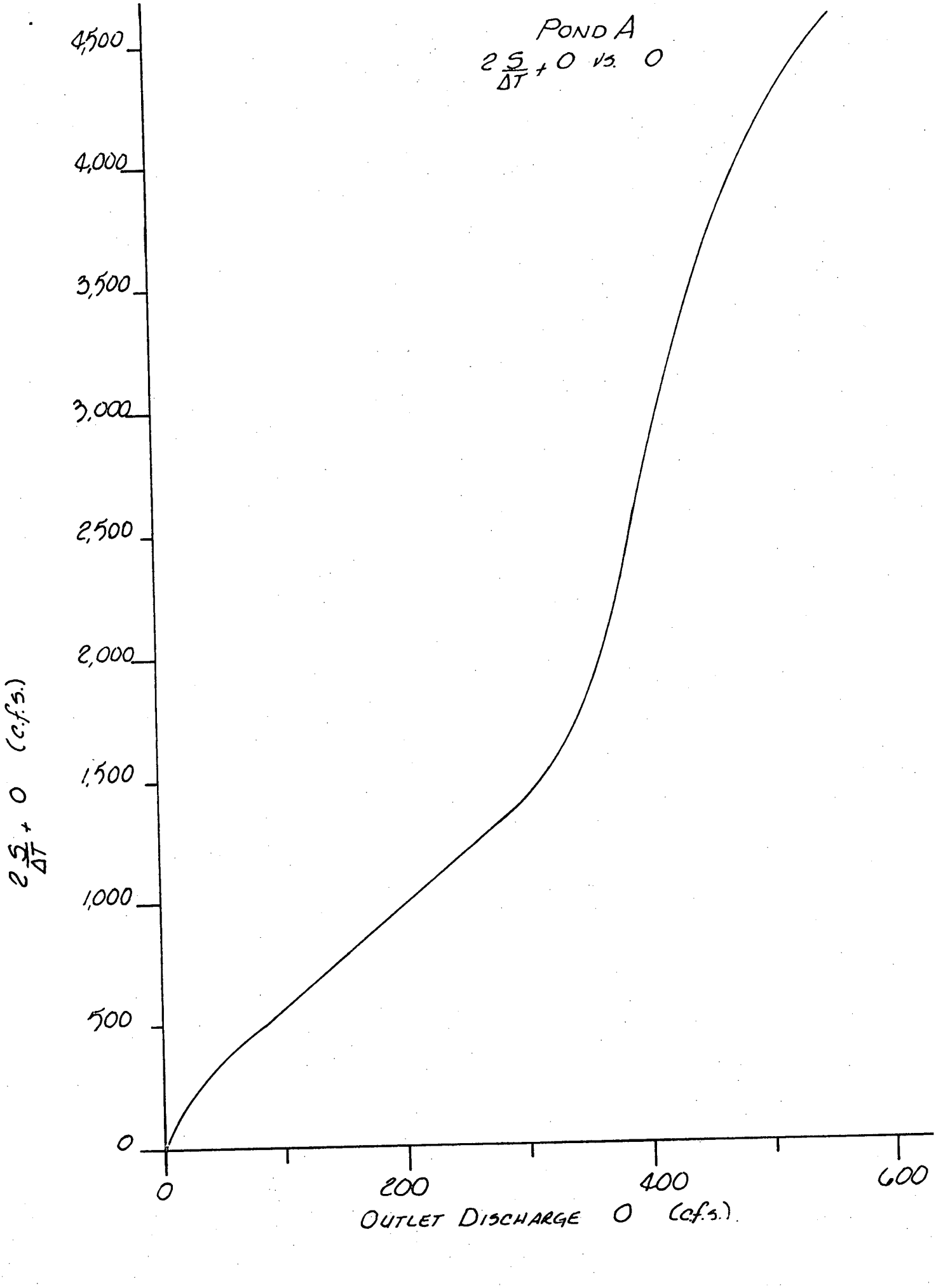
ELEVATION	STORAGE S (AC-FT)	$\frac{2S}{\Delta T}$ * (CFS)	OUTLET DISCHARGE O (CFS)	$\frac{2S}{\Delta T} + O$ (CFS)
1342	0	0	0	0
1342.2	0.80	77.4	6.8	84.2
1342.4	1.63	157.8	20.5	178.3
1342.6	2.48	240.1	38.6	278.7
1342.8	3.34	323.3	59.8	383.1
1343	4.23	409.5	83.4	492.9
1343.5	6.54	633.1	150.0	783.1
1344	8.99	870.2	224.1	1094.3
1344.5	11.56	1119.0	302.9	1421.9
1345	14.27	1381.3	342	1723.3
1345.5	17.11	1656.2	365	2021.2
1346	20.08	1943.7	382	2325.7
1346.5	23.18	2243.8	395	2638.8
1346.75	24.78	2398.7	403	2801.7
1347	26.42	2557.5	410	2967.5
1347.25	28.08	2718.1	420	3138.1
1347.5	29.78	2882.7	430	3312.7
1348	33.28	3221.5	455	3676.5
1349	40.67	3936.9	542.2	4479.1

* $\frac{2S}{\Delta T}$ (C.F.S.) $= \frac{2 \times S(AC\text{-}FT) \times 43560 \frac{FT^2}{AC}}{(\Delta T = 15\,MIN) \times 60 \frac{SEC}{MIN}}$


POND A
$2\frac{S}{\Delta T} + O$ vs. O
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
$2\frac{S}{\Delta T} + O$ (c.f.s.)
0
200
400
600
OUTLET DISCHARGE O (c.f.s.)

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FLOOD ROUTING THROUGH POND A

$\Delta T = 0.25$ HRS

TIME (HOURS)	INFLOW (CFS) I_i	I_j	$\frac{2S}{\Delta T} - O$ (CFS)	$\frac{2S}{\Delta T} + O$ (CFS)	OUTFLOW O (CFS)
0	0	435	0	—	0
0.25	435	562	299	435	68
0.50	562	582	756	1296	270
0.75	582	535	1190	1900	355
1.00	535	490	1547	2307	380
1.25	490	450	1788	2572	392
1.50	450	385	1934	2728	397
1.75	385	332	1969	2769	400
2.00	332	300	1894	2686	396
2.25	300	280	1746	2526	390
2.50	280	242	1566	2326	380
2.75	242	218	1352	2088	368
3.00	218	196	1120	1812	346
3.25	196	175	898	1534	318
3.50	175	155	739	1269	265
3.75	155	135	639	1069	215
4.00	135	117	555	929	187
4.25	117	100	491	807	158
4.50	100	85	444	708	132
4.75	85	71	401	629	114
5.00	71	59	357	557	100
5.25	59	48	327	487	80
5.50	48	37	298	434	68
5.75	37	26	263	383	60
6.00	26	19	236	326	45
6.25	19	12	209	281	36
6.50	12	8	188	240	26
6.75	8	2	162	208	23
7.00	2	0	133	172	17
7.25	0	0	112	140	13
7.50	0	0	92	112	10
7.75	0	0	76	92	8
8.00	0	0	62	76	7
8.25	0	0	52	62	5
8.50	0	0	44	52	4
9.50	0	0			0

Q_{OUT} PEAK @ 1346.7

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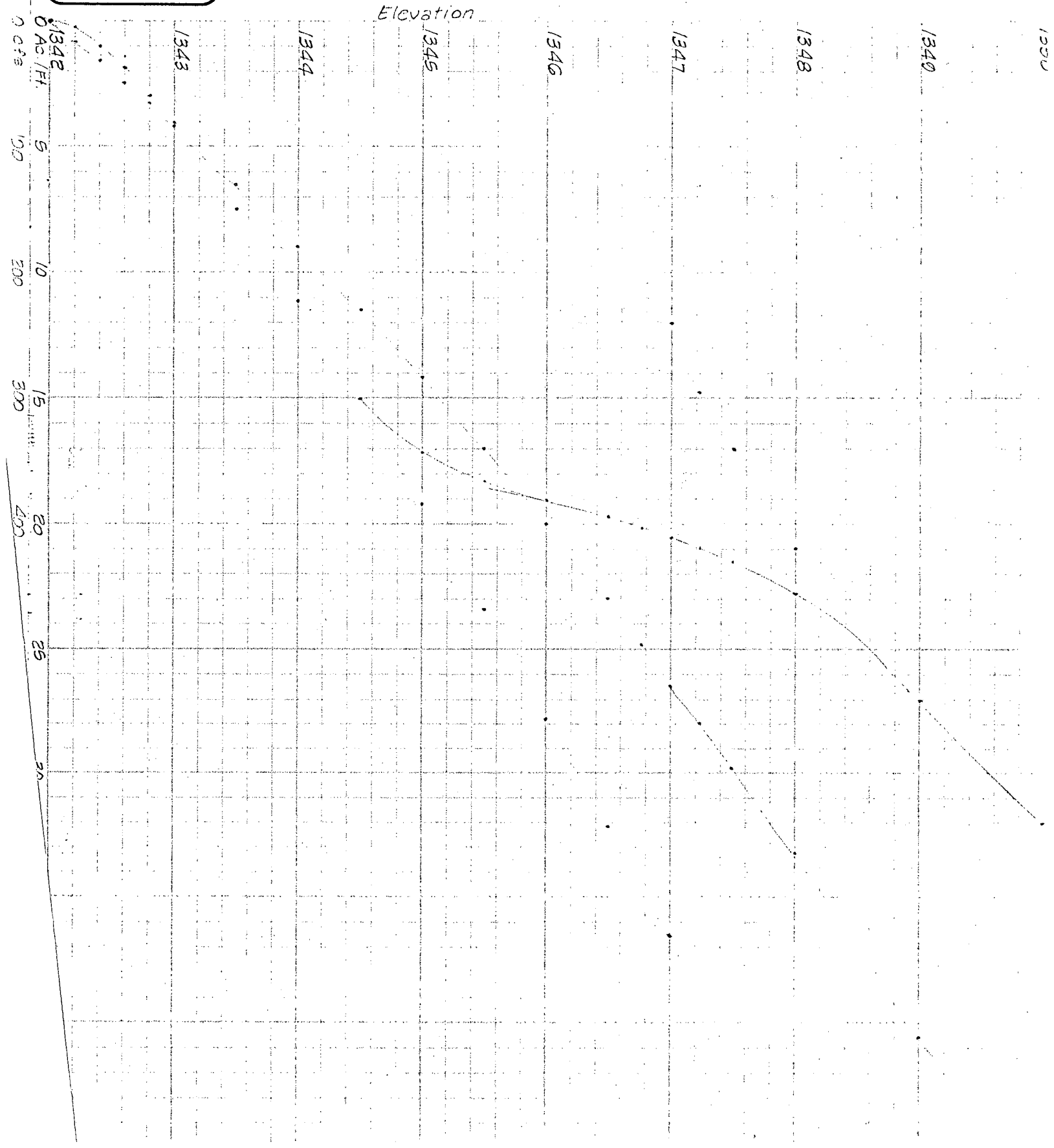
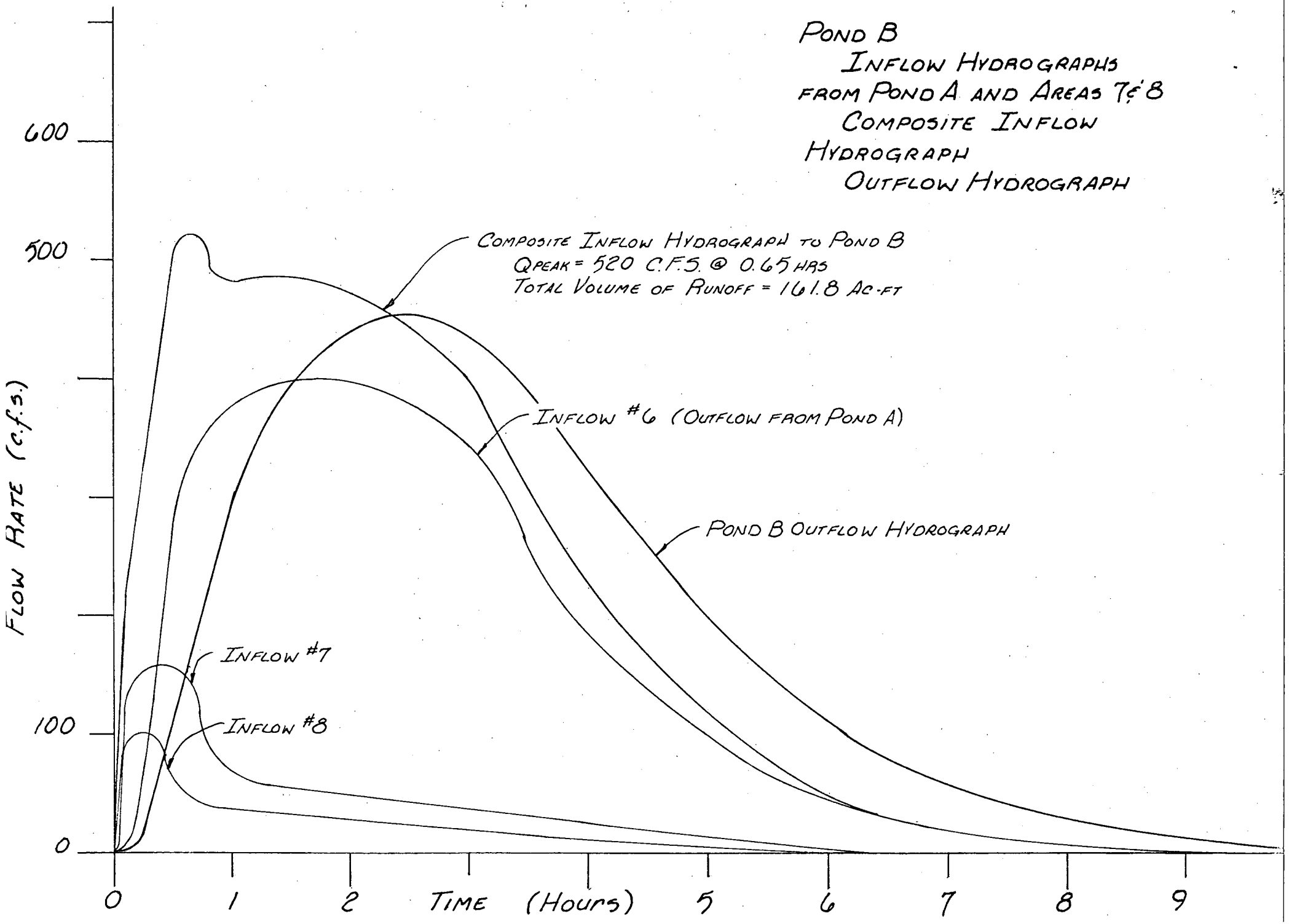


INFLOW HYDROGRAPH TO POND B.

USING THE SAME CRITERIA AS WITH POND A INFLOWS, THE INDIVIDUAL HYDROGRAPHS FROM AREAS 7 AND 8 WERE DEVELOPED AND ADDED TO THE OUTFLOW HYDROGRAPH FROM POND A (Q_6) TO PRODUCE THE TOTAL INFLOW HYDROGRAPH TO POND B. (TIME ZERO IS AT THE SAME POINT FOR ALL THREE INFLOW HYDROGRAPHS.)


POND B
INFLOW HYDROGRAPHS
FROM POND A AND AREAS 7 & 8
COMPOSITE INFLOW
HYDROGRAPH
OUTFLOW HYDROGRAPH
COMPOSITE INFLOW HYDROGRAPH TO POND B
QPEAK = 520 C.F.S. @ 0.65 HRS
TOTAL VOLUME OF RUNOFF = 161.8 AC-FT
INFLOW #6 (OUTFLOW FROM POND A)
POND B OUTFLOW HYDROGRAPH
INFLOW #7
INFLOW #8
FLOW RATE (c.f.s.)
600
500
100
0
0
1
2
TIME (Hours)
5
6
7
8
9

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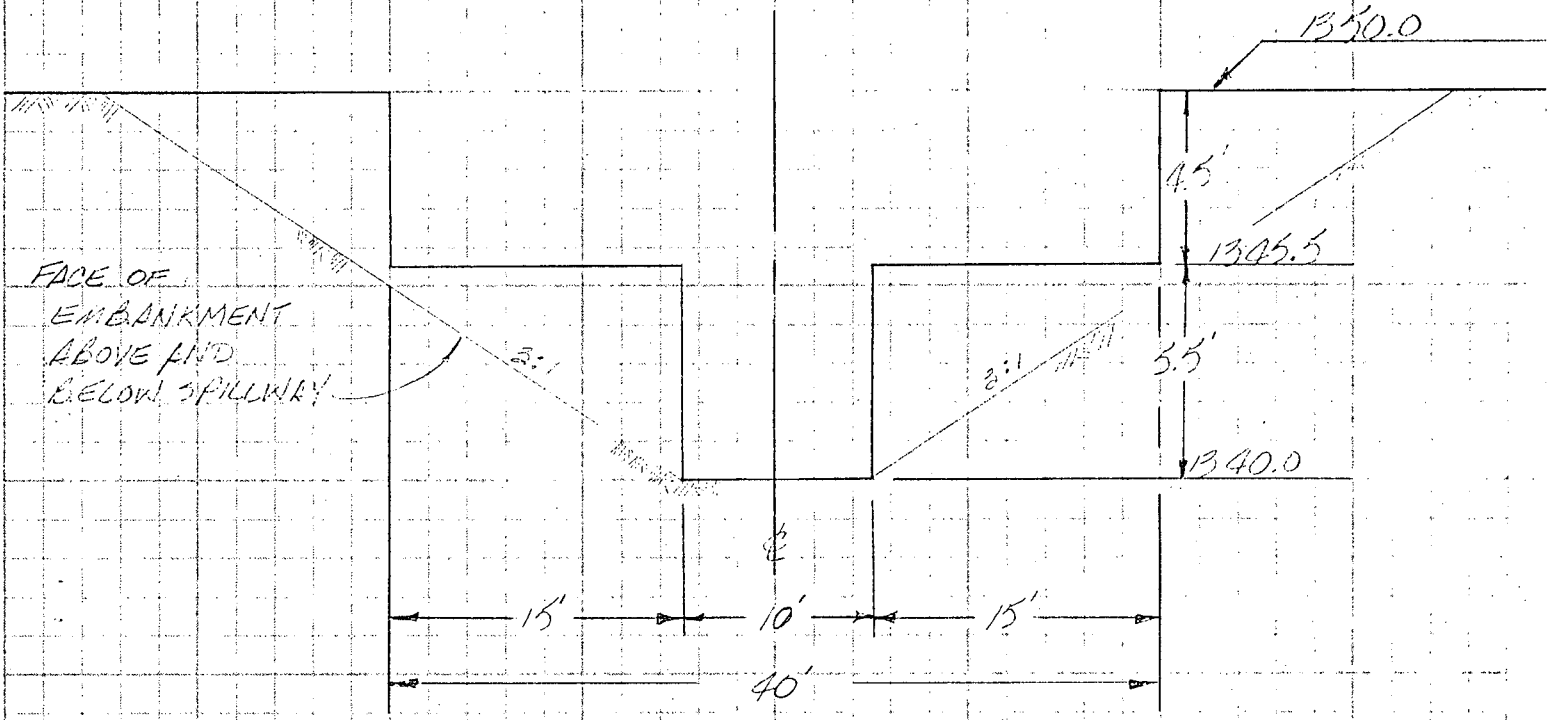
OUTFLOW HYDROGRAPH FOR POND B

THE OUTLET STRUCTURE TO BE USED IS A BI-LEVEL WEIR AS SHOWN BELOW



OUTLET STRUCTURE CAPACITY FOR POND B

$Q_{WEIR} = CLH^{3/2}$

C = FLOW COEFFICIENT (FROM BRATER AND KING HANDBOOK)

L = LENGTH OF WEIR $L_1 = 10.00$ FT, $L_2 = 40.00$ FT

H = DEPTH OF FLOW $0 \le H \le 5.5$, $L_1 = 10.00$ FT; $5.5 < H \le 10.0$, $L_2 = 40.00$ FT

= USAW − 1340.0

ELEVATION	H = ELEV−1340	C	L	$Q = CLH^{3/2}$
1340	0	—	10.0	0
1340.2	0.2	2.34	10.0	2.09
1340.4	0.4	2.50	10.0	6.32
1340.6	0.6	2.70	10.0	12.55
1340.8	0.8	2.68	10.0	19.18
1341	1.0	2.68	10.0	26.80
1342	2.0	2.65	10.0	74.95
1343	3.0	2.66	10.0	138.22
1344	4.0	2.70	10.0	216.00
1345	5.0	2.79	10.0	311.93
1345.5	5.5	2.88	10.0	371.48
1345.75	0.25	2.38	40.0	371.48 + 11.90 = 383.38
1346	0.5	2.60	40.0	371.48 + 36.77 = 408.25
1346.25	0.75	2.70	40.0	371.48 + 70.15 = 441.63
1346.5	1.0	2.68	40.0	371.48 + 107.20 = 478.68
1347	1.5	2.65	40.0	371.48 + 194.73 = 566.22
1348	2.5	2.67	40.0	371.48 + 422.16 = 793.64
1349	3.5	2.68	40.0	371.93 + 701.93 = 1073.42
1350	4.5	2.74	40.0	371.93 + 1046.24 = 1417.72

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STORAGE CAPACITY IN POND B

ELEVATION	SURFACE AREA (Ac)	AVE. AREA (Ac)	VOLUME (Ac-FT)	Σ VOL. (Ac-FT)
1340	3.69			0
		3.73	0.75	
1340.2	3.77			0.75
		3.81	0.76	
1340.4	3.85			1.51
		3.88	0.78	
1340.6	3.92			2.28
		3.96	0.79	
1340.8	4.00			3.08
		4.04	0.81	
1341	4.08			3.88
		4.27	4.27	
1342	4.46			8.15
		4.66	4.66	
1343	4.85			12.81
		5.04	5.04	
1344	5.23			17.85
		5.43	5.43	
1345	5.62			23.28
		5.72	2.86	
1345.5	5.81			26.14
		5.86	1.47	
1345.75	5.91			27.60
		5.96	1.49	
1346	6.01			29.09
		6.06	1.51	
1346.25	6.10			30.61
		6.15	1.54	
1346.5	6.20			32.14
		6.30	3.15	
1347	6.39			35.29
		6.59	6.59	
1348	6.78			41.88

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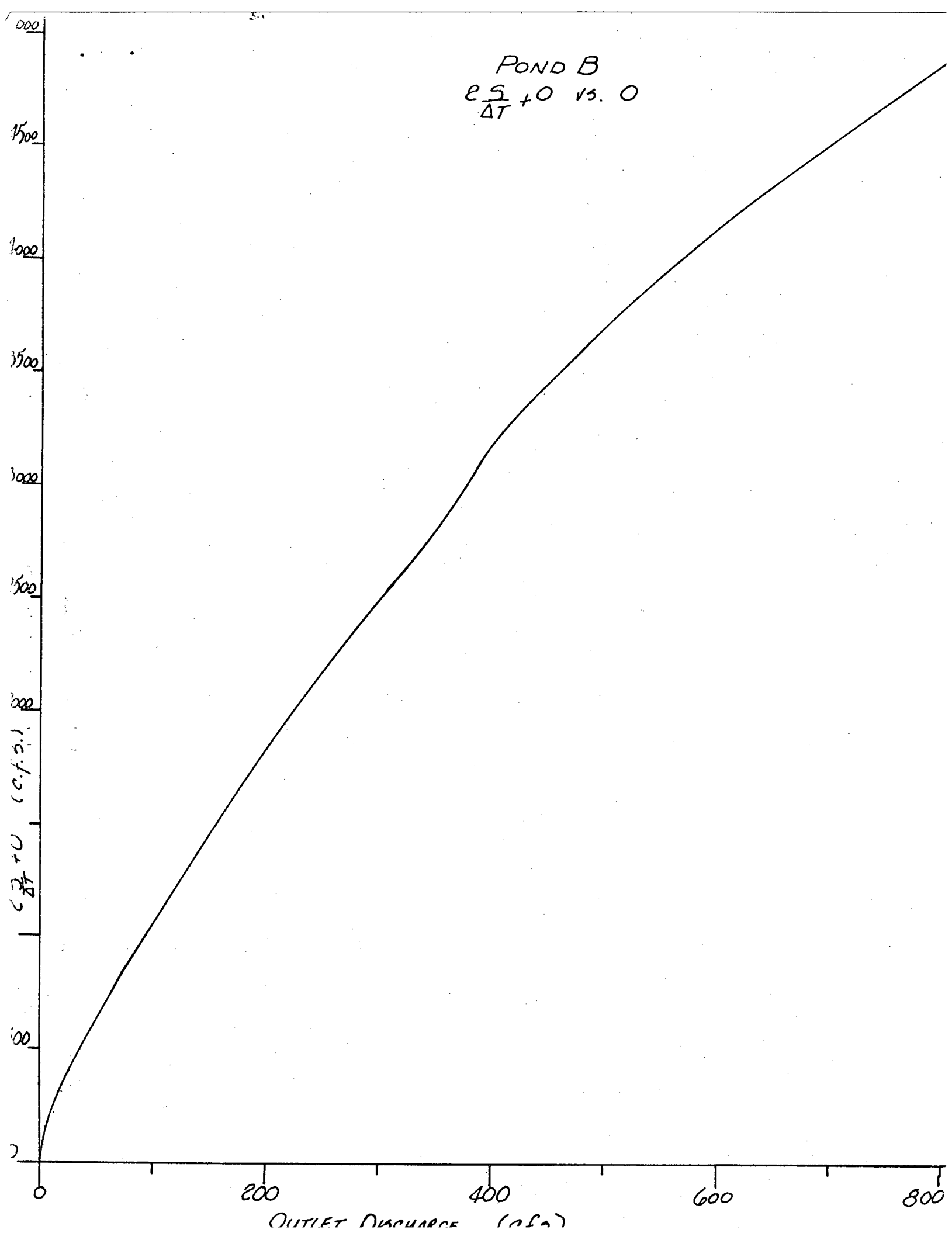
ELEVATION	STORAGE S (AC-FT)	$\frac{2S}{\Delta T}$ * (CFS)	OUTLET DISCHARGE O (CFS)	$\frac{2S}{\Delta T} + O$ (CFS)
1340	0	0	0	0
1340.2	0.75	72.6	2.1	74.7
1340.4	1.51	146.2	6.3	152.5
1340.6	2.28	220.7	12.6	233.3
1340.8	3.08	298.1	19.2	317.3
1341	3.88	375.6	26.8	402.4
1342	8.15	788.9	75.0	863.9
1343	12.81	1240.0	138.2	1378.2
1344	17.85	1727.9	216.0	1943.9
1345	23.38	2263.5	311.9	2565.4
1345.5	26.14	2530.4	371.5	2901.8
1345.75	27.60	2671.7	383.4	3055.1
1346	29.09	2815.9	408.3	3224.2
1346.25	30.61	2963.0	441.6	3404.7
1346.5	32.14	3111.2	478.7	3589.3
1347	35.29	3416.1	566.2	3982.3
1348	41.83	4054.0	793.6	4847.6

$$* \frac{2S}{\Delta T}\ (CFS) = \frac{2 \times S\ (AC\text{-}FT) \times 43560\ \frac{FT^2}{AC}}{(\Delta T = 15\ MIN) \times 60\ \frac{SEC}{MIN}}$$


POND B
$\frac{\varepsilon S}{\Delta T} + O$ vs. O
1500
1000
500
0
$\frac{\varepsilon S}{\Delta T} + O$ (c.f.s.)
0
200
400
600
800
OUTLET DISCHARGE (c.f.s.)

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FLOOD ROUTING THROUGH POND B

$\Delta T = 0.25$ HRS

TIME (HOURS)	INFLOW (CFS) I_i	INFLOW (CFS) I_j	$\frac{2S}{\Delta T} - O$ (CFS)	$\frac{2S}{\Delta T} + O$ (CFS)	O (CFS)
0	0	320	0	—	0
0.25	320	500	288	320	16
0.50	500	515	896	1108	106
0.75	515	482	1491	1911	210
1.00	482	485	1892	2488	298
1.25	485	485	2145	2859	357
1.50	485	480	2335	3115	390
1.75	480	472	2460	3300	420
2.00	472	460	2532	3412	440
2.25	460	443	2564	3464	450
2.50	443	422	2563	3467	452
2.75	422	400	2542	3428	443
3.00	400	353	2504	3364	430
3.25	353	307	2433	3257	412
3.50	307	264	2319	3098	387
3.75	264	228	2163	2890	361
4.00	228	194	2008	2660	326
4.25	194	166	1854	2430	288
4.50	166	140	1704	2214	255
4.75	140	118	1562	2010	224
5.00	118	97	1428	1820	196
5.25	97	78	1303	1643	170
5.50	78	62	1174	1478	152
5.75	62	49	1050	1314	132
6.00	49	37	937	1161	112
6.25	37	29	833	1023	95
6.50	29	23	739	879	80
6.75	23	17	633	791	79
7.00	17	13	565	673	54
7.25	13	10	503	595	46
7.50	10	8	448	526	39
7.75	8	7	402	466	32
8.00	7	5	365	417	26
8.25	5	4	331	377	23
8.50	4	0	302	340	19
10.50	0	0			0

OUTPEAK @ 1246.32

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Project BRENTWOOD TRIBUTARY

Item FULL DETENTION - PROPOSED CHANNEL

FLOWS INTO DETENTION POND A (NORTHERN OF TWO PONDS WITHIN PROPOSED ECHO HILLS II ADDITION)

AREA No 1 (TO EASTERLY OF TWO DRAINAGE STRUCTURES AT 21ST STREET)

DRAINAGE AREA (DA)*	230 Ac
TIME OF CONCENTRATION (KERPICH FORMULA)(Tc)	
LENGTH OF BASIN (L)*	1.30 MI
FALL THROUGH BASIN (H)*	22 FT
$T_c = \left[\frac{11.9 L^3}{H}\right]^{0.385}$	1.07 HR
UNIT PEAK DISCHARGE (q_u)**	0.37 $\frac{CFS}{AC-IN}$
PRECIPITATION [100YR-6HR] (P)	5.9 IN
SCS CURVE NUMBER (CN)***	79.2
RUNOFF [P = 5.9 IN, CN = 79.2] (R)	3.6 IN
PEAK FLOW RATE (Q_P)	
$Q_P = (q_u)(DA)(R)$	307 CFS
VOLUME OF RUNOFF (V)	
$V = \frac{(DA)(R)}{12 \frac{IN}{FT}}$	69.2 AC-FT

*FROM CALCULATIONS OF 1-8-80 FOR ECHO HILLS (SEE ATTACHED MAP)

**FROM SCS "HYDROLOGY GUIDE - KANSAS" (SEE ATTACHED TABLE)

***BASED ON SCS "SOIL SURVEY OF SEDGWICK COUNTY (SEE ATTACHED MAPS AND TABLES) USING AMC II FOR CULTIVATED USAGE WITHOUT CONSERVATION TREATMENT 80% B SOILS (CN = 77) AND 20% D SOILS (CN = 88)

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AREA No 2 (TO WESTERLY OF TWO DRAINAGE STRUCTURES AT 21ST STREET)

DRAINAGE AREA (DA)*	67 Ac
TIME OF CONCENTRATION (Tc)	
LENGTH OF BASIN (L)*	0.5 MI
FALL THROUGH BASIN (H)*	10 FT
$T_c = \left[\frac{11.9L^3}{H}\right]^{0.385}$	0.48 HR
UNIT PEAK DISCHARGE (q_u)**	0.53 $\frac{CFS}{AC-IN}$
PRECIPITATION [100YR-6HR] (P)	5.9 IN
SCS CURVE NUMBER (CN)***	79.2
RUNOFF [P=5.9 IN, CN=79.2] (R)	3.6 IN
PEAK FLOW RATE (Q_P)	
$Q_P = (q_u)(DA)(R)$	128 CFS
VOLUME OF RUNOFF (V)	
$V = \frac{(DA)(R)}{12 IN/FT}$	20.1 AC FT

*FROM CALCULATIONS OF 1-8-80

**FROM SCS "HYDROLOGY GUIDE - KANSAS"

***BASED ON SCS "SOIL SURVEY OF SEDGWICK COUNTY"

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AREA No 3 (AREA BETWEEN TWO DRAINAGEWAYS FLOWING INTO POND A)

DRAINAGE AREA (DA)*	9 Ac
TIME OF CONCENTRATION (Tc)	
LENGTH OF BASIN (L)*	0.13 MI
FALL THROUGH BASIN (H)*	4
$T_c = \left[\frac{11.9L^3}{H}\right]^{0.385}$	0.15 HR
	USE 0.25 HR MIN
UNIT PEAK DISCHARGE (qu)**	0.71 $\frac{CFS}{AC-IN}$
PRECIPITATION [100 YR, 6 HR] (P)	5.9 IN
SCS CURVE NUMBER (CN)***	85
RUNOFF [P = 5.9 IN, CN = 85] (R)	4.2 IN
PEAK FLOW RATE (Q_P)	
$Q_P = (q_u)(DA)(R)$	27 CFS
VOLUME OF RUNOFF (V)	
$V = \frac{(DA)(R)}{12\ IN/FT}$	3.2 AC-FT

* FROM CALCULATIONS ORIGINALLY SUBMITTED WITH 1988 PRELIMINARY STUDY IN CONJUNCTION WITH ECHO HILLS FINAL PLAT.

** FROM SCS "HYDROLOGY GUIDE KANSAS" USING 0.25 HR MIN

*** BASED ON SCS "SOIL SURVEY OF SEDGWICK COUNTY" FOR TYPE B SOILS WITH 1/8 ACRE RESIDENTIAL USAGE (CN = 85)

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AREA No. 4 (AREA ENTERING POND A FROM THE WEST)

DRAINAGE AREA (DA)*	60 Ac
TIME OF CONCENTRATION (Tc)	
LENGTH OF BASIN (L)*	0.42 mi
FALL THROUGH BASIN (H)*	13 FT
$T_c = \left[\frac{11.9 L^3}{H}\right]^{0.385}$	0.35 HR
UNIT PEAK DISCHARGE (q_u)**	0.61 $\frac{CFS}{Ac\text{-}IN}$
PRECIPITATION [100 YR, 6 HR] (P)	5.9 IN
SCS CURVE NUMBER (CN)***	85
RUNOFF [P = 5.9 IN, CN = 85]	4.2 IN
PEAK FLOW RATE (QP)	
$Q_P = (q_u \times DA \times R)$	155 CFS
VOLUME OF RUNOFF (V)	
$V = \frac{(DA \times R)}{12\ IN/FT}$	21.0 AC-FT

* FROM MAY TRIBUTARY CALCULATIONS

** FROM SCS "HYDROLOGY GUIDE - KANSAS"

*** BASED ON SCS SOIL SURVEY FOR SEDGWICK COUNTY." FOR TYPE B SOILS WITH 1/8 ACRE RESIDENTIAL USAGE (CN=85

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AREA No 5 (AREA ENTERING POND A FROM THE EAST)

DRAINAGE AREA (DA)*	40 Ac
TIME OF CONCENTRATION (Tc)	
LENGTH OF BASIN (L)*	0.28 MI
FALL THROUGH BASIN (H)*	10 FT
$T_c = \left[\frac{11.9L^3}{H}\right]^{0.385}$	0.25 HR
UNIT PEAK DISCHARGE (q_u)**	0.71 $\frac{CFS}{Ac-IN}$
PRECIPITATION [100YR, 6HR] (P)	5.9 IN
SCS CURVE NUMBER (CN)***	85
RUNOFF [P = 5.9 IN, CN = 85]	4.2 IN
PEAK FLOW RATE (Q_P)	
$Q_P = (q_u)(DA)(R)$	119 CFS
VOLUME OF RUNOFF (V)	
$V = \frac{(DA)(R)}{12\ IN/FT}$	14.0 Ac-FT

* FROM JAAX TRIBUTARY CALCULATIONS

** FROM SCS "HYDROLOGY GUIDE - KANSAS"

*** BASED ON SCS "SOIL SURVEY OF SEDGWICK COUNTY" FOR TYPE D SOILS WITH 1/8 ACRE RESIDENTIAL USAGE (CN=85)

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TRAVEL TIME FOR PEAK FLOWS FROM AREAS 1 & 2

AREA 1

BOTTOM WIDTH (B)	10.00 FT
SIDESLOPES (Z:1)	4:1
MANNING'S COEFFICIENT (n)	0.035
CHANNEL SLOPE (S)	0.87%
LENGTH OF CHANNEL (L_c)	700 FT
DESIGN FLOW RATE (Q_p)	307 CFS
REQUIRED DEPTH OF FLOW (D)	2.6 FT
VELOCITY IN CHANNEL (V_c)	5.7 FPS
TRAVEL TIME (T_T)	

$$T_T = \frac{L_c}{V_c \; 3600 \frac{SEC}{HR}}$$ 0.03 HR

AREA 2

USING SAME DESIGN CHANNEL WITH

LENGTH OF CHANNEL (L_c)	800 FT
DESIGN FLOW RATE	128 CFS
REQUIRED DEPTH OF FLOW (D)	1.7 FT
VELOCITY IN CHANNEL (V_c)	4.5 FPS
TRAVEL TIME (T_T)	

$$T_T = \frac{L_c}{\quad \frac{SEC}{HR}}$$

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SUMMARY OF DATA FOR FLOWS INTO POND A

ITEM	UNITS	CONTRIBUTING AREAS 1	2	3	4	5
DRAINAGE AREA	ACRES	230	67	9	60	40
LENGTH OF BASIN	MILES	1.30	0.50	0.13	0.42	0.28
FALL THRU BASIN	FEET	22	10	4	13	10
TIME OF CONCENTRATN	HOURS	1.07	0.48	0.25	0.35	0.25
UNIT PEAK DISCHARGE	CFS/AC-IN	0.37	0.53	0.71	0.61	0.71
PRECIPITATION	INCHES	5.9	5.9	5.9	5.9	5.9
SCS CURVE NUMBER		79.2	79.2	85	85	85
RUNOFF	INCHES	3.6	3.6	4.2	4.2	4.2
PEAK FLOW RATE	CFS	307	128	27	155	119
VOLUME OF RUNOFF	AC-FT	69.2	20.1	3.2	21.0	14.0
TRAVEL TIME		0.03	0.05	N/A	N/A	N/A
TIME AT PEAK $T_P = T_C + T_T$	HOURS	1.10	0.53	0.15	0.35	0.25

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CONTRIBUTING AREAS TO POND A UNDER PRE-DEVELOPED CONDITIONS. AREAS 1 AND 2 HAVE ALREADY BEEN ANALYZED AS PRE-DEVELOPED AND, THEREFORE, ALL VALUES ARE THE SAME. AREAS 3, 4, AND 5 HAVE THE SAME VALUES FOR ALL ITEMS EXCEPT SCS CURVE NUMBER WHICH BECOMES 77 (TYPE B SOILS, AMC II, CULTIVATED WITHOUT CONSERVATION TREATMENT).

ITEM	UNITS	CONTRIBUTING AREAS 1	2	3	4	5
DRAINAGE AREA	ACRES	230	67	9	60	40
LENGTH OF BASIN	MILES	1.30	0.50	0.13	0.42	0.28
FALL THRU BASIN	FEET	22	10	4	13	10
TIME OF CONCNTRTN	HOURS	1.07	0.48	0.25	0.35	0.25
UNIT PEAK DISCHARGE	$\frac{CFS}{Ac-IN}$	0.37	0.53	0.71	0.61	0.71
PRECIPITATION	INCHES	5.9	5.9	5.9	5.9	5.9
SCS CURVE NUMBER		79.2	79.2	77	77	77
RUNOFF	INCHES	3.6	3.6	3.4	3.4	3.4
PEAK FLOW RATE	CFS	310	128	22	125	96
VOLUME OF RUNOFF	AC-FT	7.2	20.2	2.5	17.0	11.3
TRAVEL TIME*	HOURS	0.29	0.29	0.20	0.15	0.25
TIME AT PEAK $T_P = T_C + T_T$	HOURS	1.36	0.77	0.45	0.50	0.40

* SEE CALCULATIONS ON PAGE 13.

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FLOWS INTO DETENTION POND B (SOUTHERN OF TWO PONDS WITHIN PROPOSED ECHO HILLS II ADDITION)

AREA No 7 (AREA ENTERING POND B FROM WEST)

DRAINAGE AREA (DA)*	60 Ac
TIME OF CONCENTRATION (T_c)	
LENGTH OF BASIN (L)*	0.47 MI
FALL THRU BASIN (H)*	13 FT
$T_c = \left[\frac{11.9L^3}{H}\right]^{0.385}$	0.41 HR
UNIT PEAK DISCHARGE (q_a)**	0.57 $\frac{CFS}{Ac-IN.}$
PRECIPITATION [100YR-6HR] (P)	5.9 IN
SCS CURVE NUMBER (CN)***	88.5
RUNOFF [P=5.9 IN, CN=88.5] (R)	4.6 IN
PEAK FLOW RATE (Q_P)	
$Q_P = (q_a)(DA)(R)$	157 CFS
VOLUME OF RUNOFF (V)	
$V = \frac{(DA)(R)}{12\ IN/FT}$	22.9 Ac-FT

* FROM JADE TRIBUTARY CALCULATIONS

** FROM SCS "HYDROLOGY GUIDE - KANSAS"

*** BASED ON SCS "SOIL SURVEY OF SEDGWICK COUNTY" FOR 1/8 ACRE RESIDENTIAL USAGE WITH 50% "B" SOILS (CN=85) AND 50% "D" SOILS (CN=92)

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AREA No. 8 (AREA ENTERING POND B FROM EAST)

DRAINAGE AREA (DA)*	33 AC
TIME OF CONCENTRATION (Tc)	
LENGTH OF BASIN (L)*	0.23 MI
FALL THROUGH BASIN (H)*	10 FT
$T_c = \left[\frac{11.9 L^3}{H}\right]^{0.385}$	0.19 HR
	USE 0.25 HR MIN
UNIT PEAK DISCHARGE (qa)**	0.71 $\frac{CFS}{AC-IN}$
PRECIPITATION [100YR, 6HR] (P)	5.9 IN
SCS CURVE NUMBER (CN)***	86.1
RUNOFF [P=5.9 IN, CN=86.1] (R)	4.3 IN
PEAK FLOW RATE (Qp)	
$Q_p = (q_a)(DA)(R)$	101 CFS
VOLUME OF RUNOFF (V)	
$V = \frac{(DA)(R)}{12\ IN/FT}$	11.9 AC-FT

* FROM JAAX TRIBUTARY CALCULATIONS

** FROM SCS "HYDROLOGY GUIDE – KANSAS"

*** BASED ON SCS "SOIL SURVEY OF SEDGWICK COUNTY" FOR 1/8 ACRE RESIDENTIAL USAGE WITH 85% "B" SOILS (CN=85) AND 15% "D" SOILS (CN=92)

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SUMMARY OF DATA FOR FLOWS INTO POND B

ITEM	UNITS	CONTRIBUTING AREAS Q6†	7	8
DRAINAGE AREA	ACRES	406	60	33
LENGTH OF BASIN	MILES		0.47	0.23
FALL THRU BASIN	FEET		13	10
TIME OF CONCNTRATN	HOURS		0.41	0.25
UNIT PEAK DISCHARGE	CFS/SQ-IN		0.57	0.71
PRECIPITATION	INCHES		5.9	5.9
SCS CURVE NUMBER			88.5	86.1
RUNOFF	INCHES		4.6	4.3
PEAK FLOW RATE	CFS	400	157	101
VOLUME OF RUNOFF	AC-FT	127	22.9	11.9
TRAVEL TIME	HOURS	N/A	N/A	N/A
TIME TO PEAK $T_P = T_C + T_T$	HOURS	1.75	0.41	0.25

† SEE INFLOW AND OUTFLOW HYDROGRAPHS FOR POND A; CALCULATIONS ON PAGES 1A TO 10A.

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CONTRIBUTING AREAS TO POND B UNDER PRE-DEVELOPED CONDITIONS. ALL ITEMS ARE THE SAME AS DEVELOPED EXCEPT SCS CURVE NUMBERS.

ITEM	UNITS	CONTRIBUTING AREAS 6	7	8
DRAINAGE AREA	ACRES	SEE PG 8 FOR SUMMARY OF AREAS THROUGH 5	60	33
LENGTH OF BASIN	MILES		0.47	0.23
FALL THRU BASIN	FEET		13	10
TIME OF CONCENTRATN	HOURS		0.41	0.25
UNIT PEAK DISCHARGE	CFS/AC-IN		0.57	0.71
PRECIPITATION	INCHES		5.9	5.9
SCS CURVE NUMBER			82.5*	78.7**
RUNOFF	INCHES		4.0	3.6
PEAK FLOW RATE	CFS		135	83
VOLUME OF RUNOFF	AC-FT		19.7	9.8
TRAVEL TIME†	HOURS		0	0
TIME AT PEAK $T_P = T_C + T_T$	HOURS		0.41	0.25

† SEE CALCULATIONS ON PAGE 13.

* 50% "B" SOILS (CN = 77) & 50% "D" SOILS (CN=88)

** 85% "B" SOILS (CN = 77) & 15% "D" SOILS (CN=83)

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TRAVEL TIME FOR PRE-DEVELOPED HYDROGRAPHS TO NORTH LINE OF EDDO HILLS ADDITION

ASSUMING AN AVERAGE VELOCITY OF 3 FPS,

$$T_T = \frac{L_c\ (FT)}{(3\ \frac{FT}{SEC} \times 3600\ \frac{SEC}{HR})}$$

WHERE L_c IS THE LENGTH OF THE CHANNEL

AREA	L_c (FT)	T_T (HRS)
1	3150	0.29
2	3100	0.29
3	2200	0.20
4	1600	0.15
5	1600	0.15
7	0	0
8	0	0

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INFLOW HYDROGRAPHS FOR STORM SEWER SYSTEMS

ITEM	UNITS	CONTRIBUTING AREAS				
		ECHO HILLS				DRIARWOOD
		100 → 220	300 → 360	400 → 640	700 → 720	380 → 400
DRAINAGE AREA	ACRES	17.1	12.8	48.0	2.5	2.7
TIME OF CONCENTRATION (FROM STORM DESIGN)	HOURS	0.32	0.28	0.28	0.30	0.27
UNIT PEAK DISCHARGE	CFS/AC-IN	0.64	0.67	0.59	0.66	0.68
PRECIPITATION	INCHES	5.9	5.9	5.9	5.9	5.9
SCS CURVE NUMBER (SEE BELOW)		87.1	89.2	86.3	85.0	85.0
RUNOFF	INCHES	4.4	4.7	4.3	4.2	4.2
PEAK FLOW RATE	CFS	48.5	40.0	123.1	6.9	7.7
VOLUME OF RUNOFF	AC-FT	6.3	5.0	17.4	0.9	1.0
TRAVEL TIME (SEE PG 17)	HOURS	0.44	0.40	0.31	0.30	0.27
TIME AT PEAK	HOURS	0.76	0.68	0.69	0.60	0.54

SCS CURVE NUMBERS — USAGE FOR ALL AREAS IS
1/8 AC RESIDENTIAL $CN_B = 85$,
$CN_C = 90$, $CN_D = 92$

ECHO HILLS	100 → 220	70% B	30% D	CN AVE	87.1
	300 → 360	40% B	60% D	CN AVE	89.2
	400 → 640	75% B	25% C	CN AVE	86.3
	700 → 720	100% B		CN AVE	85
DRIARWOOD	380 → 400	100% B		CN AVE	85

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ITEM	UNITS	CONTRIBUTING AREAS				
		BRIARWOOD	JOINT SYSTEM	BRIARWOOD		
		420→410	430→930	460→570	660→630	120→100
DRAINAGE AREA	ACRES	2.2	41.2	15.6	5.0	3.9
TIME OF CONCENTRATION (FROM SITE WIR DESIGN)	HOURS	0.28	0.40	0.31	0.37	0.34
UNIT PEAK DISCHARGE	CFS/AC-IN	0.67	0.58	0.65	0.60	0.62
PRECIPITATION	INCHES	5.9	5.9	5.9	5.9	5.9
SCS CURVE NUMBER (SEE BELOW)		85.0	89.5	85.0	85.0	85.0
RUNOFF	INCHES	4.2	4.7	4.2	4.2	4.2
PEAK FLOW RATE	CFS	6.2	112.2	42.7	12.6	10.2
VOLUME OF RUNOFF	AC-FT	0.8	16.1	5.5	1.8	1.4
TRAVEL TIME (SEE PG 17)	HOURS	0.23	0.19	0.10	0.07	0.03
TIME AT PEAK	HOURS	0.51	0.59	0.41	0.44	0.37

SCS CURVE NUMBERS — USAGE FOR ALL AREAS IS
1/8 AC RESIDENTIAL $CN_B = 85$ $CN_C = 90$

BRIARWOOD	420→410	100% B		$CN_{AVE} = 85$
JOINT SYSTEM	430→930	10% B	90% C	$CN_{AVE} = 89.5$
BRIARWOOD	460→570	100% B		$CN_{AVE} = 85$
	660→630	100% B		$CN_{AVE} = 85$
	120→100	100% B		$CN_{AVE} = 85$

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ITEM	UNITS	CONTRIBUTING AREA WESTLINK 14th 16th St	CONTRIBUTING AREA WESTLINK 14th 14th St		OUTLET FROM POND B (9)
DRAINAGE AREA	SQ MILES	16.0	23.8		
LENGTH OF BASIN	MILES	0.24	0.31		
FALL THRU BASIN	FEET	4	5		
TIME OF CONCENTRTN*	HOURS	0.29	0.36		2.50
UNIT PEAK DISCHARGE	CFS/ACIN	0.67	0.61		
PRECIPITATION	INCHES	5.9	5.9		
SCS CURVE NUMBER (SEE BELOW)		87.1	86.1		
RUNOFF	INCHES	4.4	4.3		
PEAK FLOW RATE	CFS	47.2	62.7		452
VOLUME OF RUNOFF	AC-FT	5.9	8.6		158
TRAVEL TIME (SEE PG 17)	HOURS	0.41	0.34		0.47
TIME AT PEAK	HOURS	0.65	0.65		2.97

* USING KERPICH FORMULA $T_c(HRS) = \left[\frac{11.9\, L^3(MI)}{H(FT)}\right]^{0.385}$

SCS CURVE NUMBER – USAGE FOR ALL AREAS IS 1/8 AC RESIDENTIAL $CN_B = 85$ $CN_D = 92$

WESTLINK 14th	16th St	70% B	30% D	$CN_{AVE} = 87.1$
	14th St	85% B	15% D	$CN_{AVE} = 86.1$

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TRAVEL TIMES

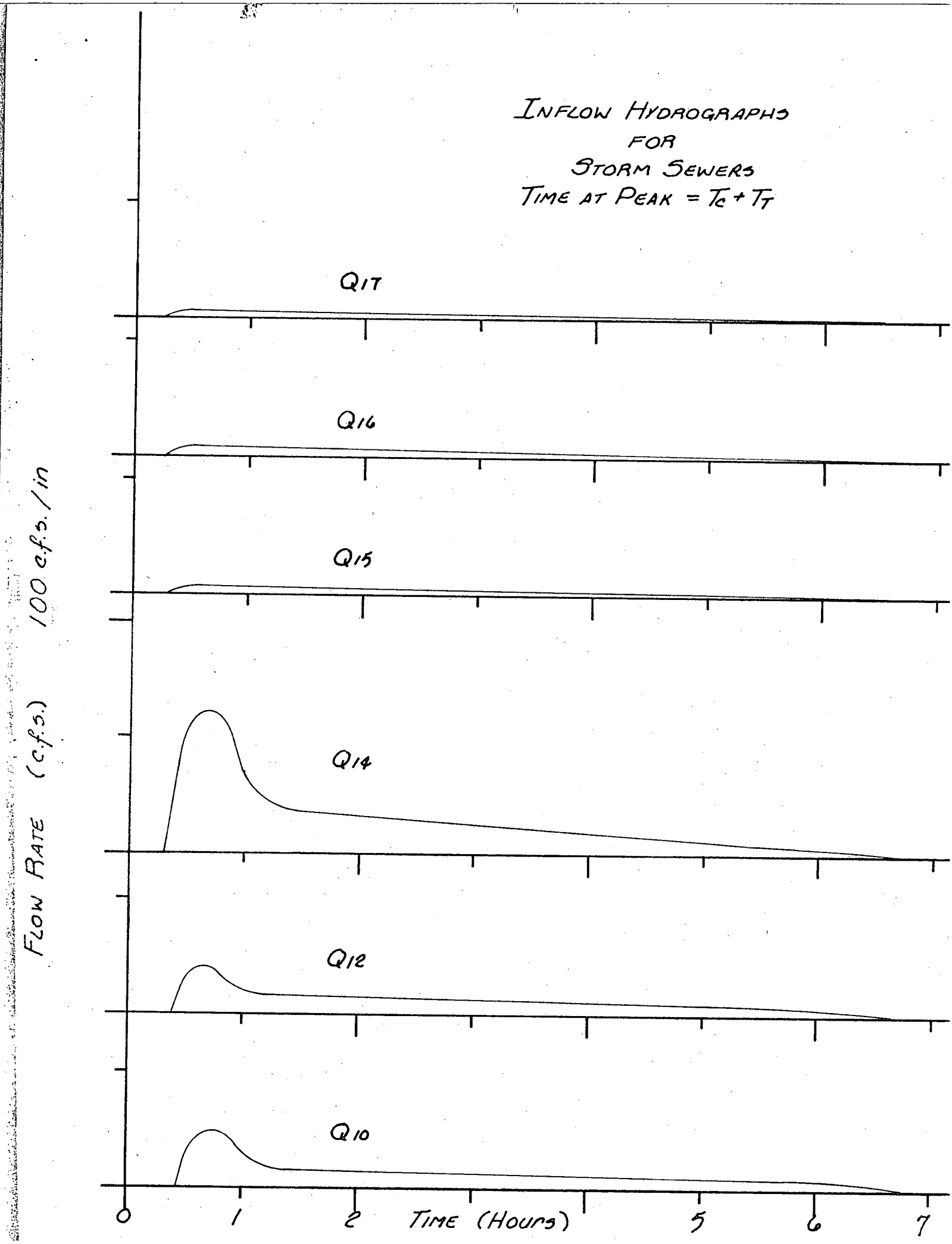
THROUGH PROPOSED CHANNEL/POND SYSTEM FROM STORM SEWER OUTLETS TO OUTLET OF SOUTH BRIARWOOD POND

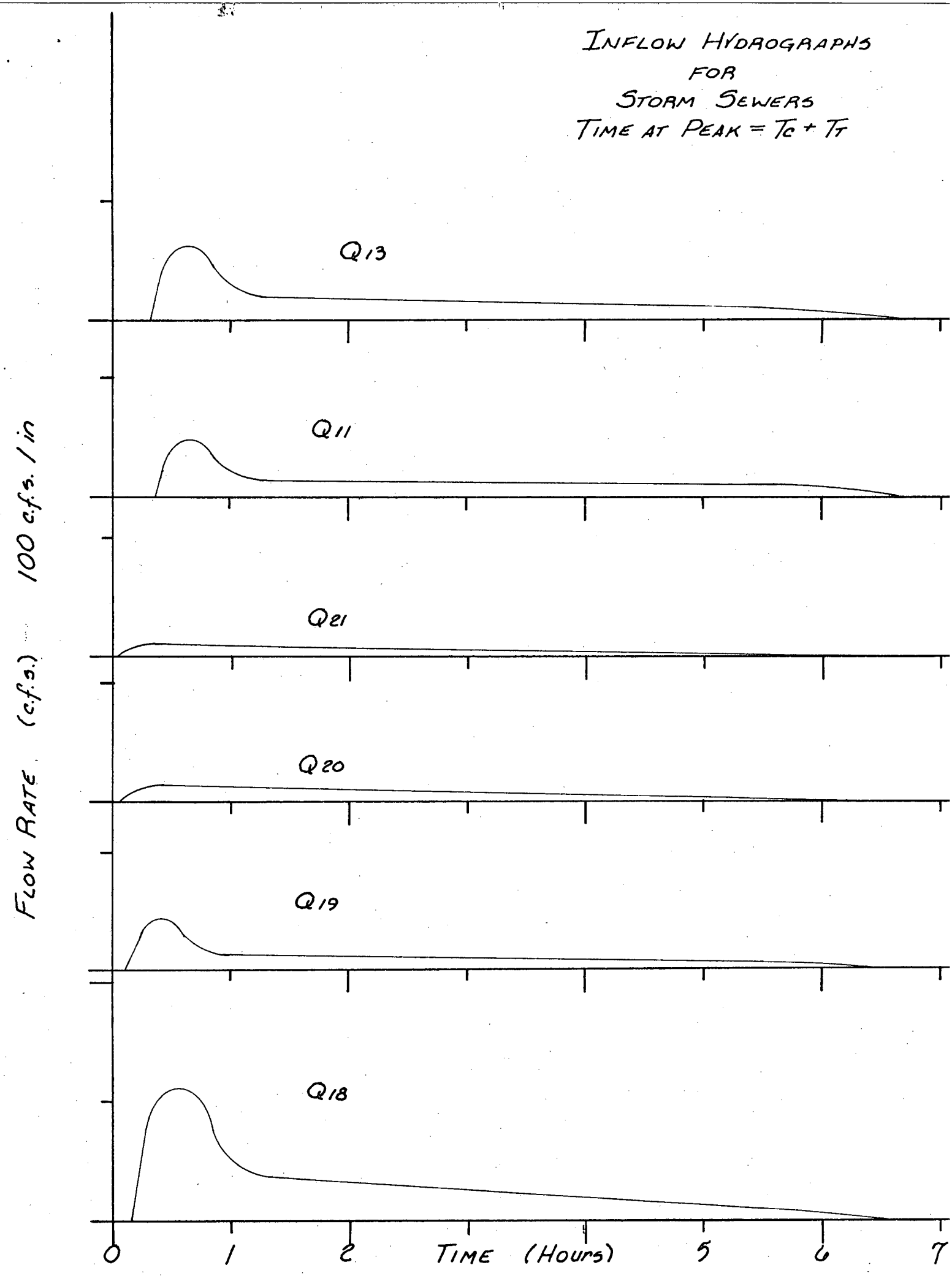
ASSUMED VELOCITIES: V_{c_1} = 3.5 FPS THRU CHANNEL

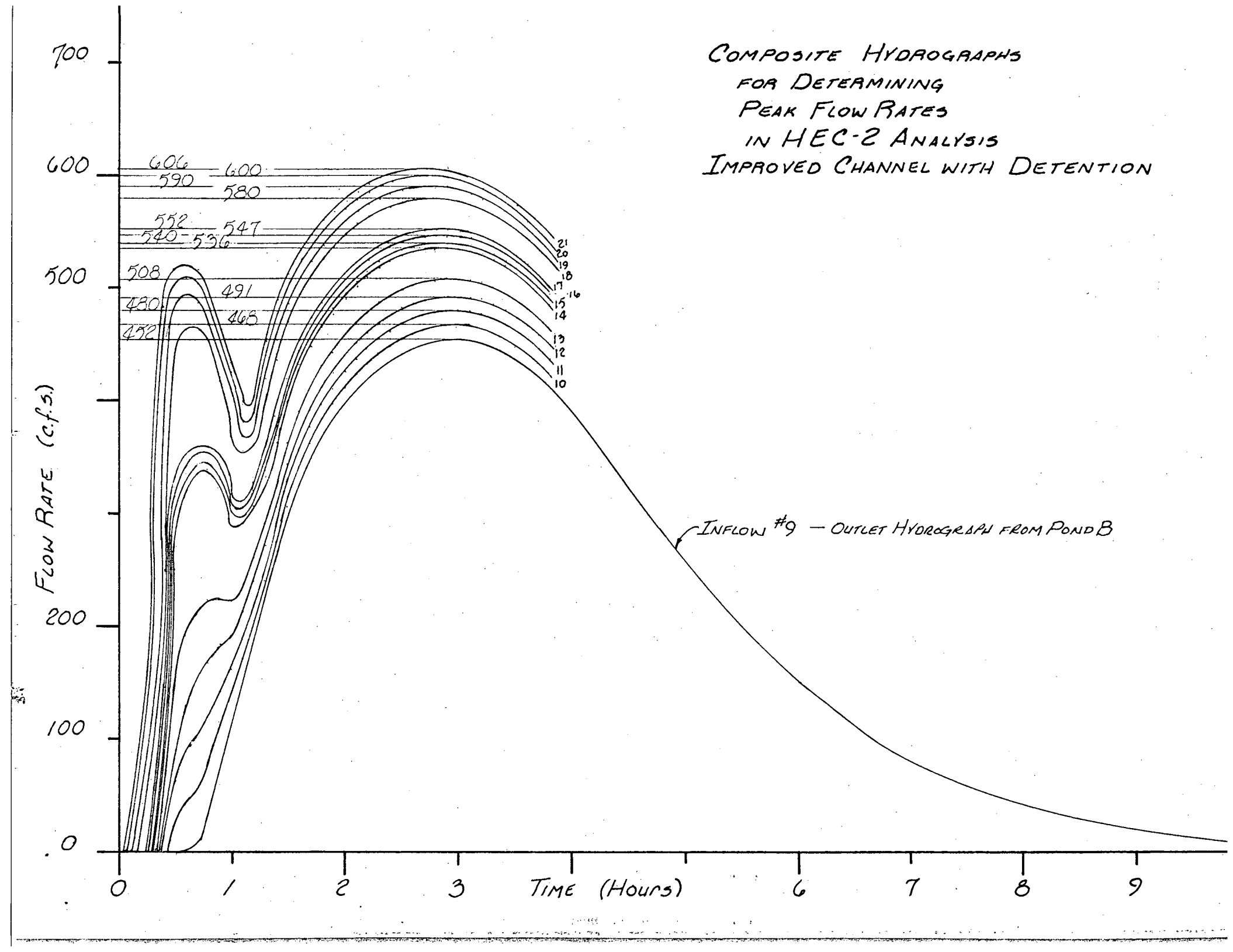
V_{c_2} = 1.5 FPS THRU POND

TRAVEL TIME: $T_T(HR) = \dfrac{L_{c_1}(FT)/V_{c_1}(FPS) + L_{c_2}(FT)/V_{c_2}(FPS)}{3600\ SEC/HR}$

FLOW No.	DESCRIPTION OF AREA	L_{c_1} (FT)	L_{c_2} (FT)	TRAVEL TIME T_T (HR) TO OUTLET OF SO. BRIARWOOD POND
9	OUTFLOW FROM POND B	3320	1100	0.47
10	ECHO HILLS 100→220	3020	1100	0.44
11	WESTWIK 14th 16th St	2620	1100	0.41
12	ECHO HILLS 300→360	2500	1100	0.40
13	WESTWIK 16th 14th St	1760	1100	0.34
14	ECHO HILLS 400→640	1340	1100	0.31
15	ECHO HILLS 700→720	1220	1100	0.30
16	BRIARWOOD 380→400	780	1100	0.27
17	BRIARWOOD 420→410	340	1100	0.23
18	JOINT SYSTEM 430→930	0	1040	0.19
19	BRIARWOOD 460→550	0	560	0.10
20	BRIARWOOD 660→650	0	380	0.07
21	BRIARWOOD 120→100	0	140	0.03


INFLOW HYDROGRAPHS
FOR
STORM SEWERS
TIME AT PEAK = $T_c + T_T$
Q17
Q16
Q15
Q14
Q12
Q10
FLOW RATE (c.f.s.) 100 c.f.s./in
0
1
2
TIME (Hours)
5
6
7


INFLOW HYDROGRAPHS
FOR
STORM SEWERS
TIME AT PEAK = Tc + Tf
Q13
Q11
Q21
Q20
Q19
Q18
FLOW RATE (c.f.s.) ... 100 c.f.s. / in
0
1
2
TIME (Hours)
5
6
7


COMPOSITE HYDROGRAPHS
FOR DETERMINING
PEAK FLOW RATES
IN HEC-2 ANALYSIS
IMPROVED CHANNEL WITH DETENTION
700
600
500
200
100
0
FLOW RATE (c.f.s.)
606
590
600
580
552
540
547
536
508
491
480
465
452
21
20
19
18
17
16
15
14
13
12
11
10
INFLOW #9 — OUTLET HYDROGRAPH FROM POND B
0
1
2
3
TIME (Hours)
6
7
8
9

PROFESSIONAL ENGINEERING CONSULTANTS
PROFESSIONAL ASSOCIATION
1440 EAST ENGLISH
WICHITA, KANSAS
ZIP CODE / 67211

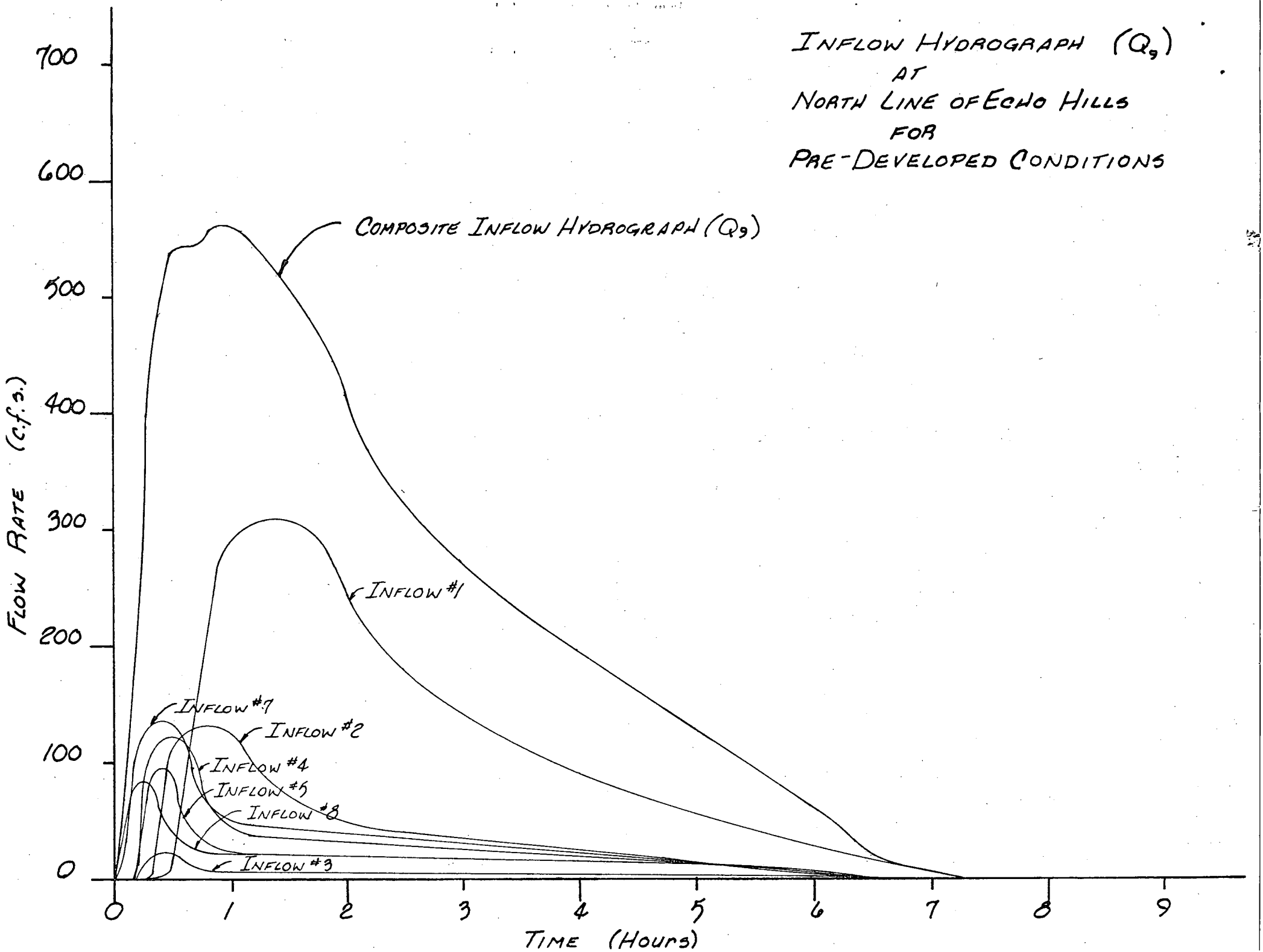
Date _____ Page 7.1 of _____

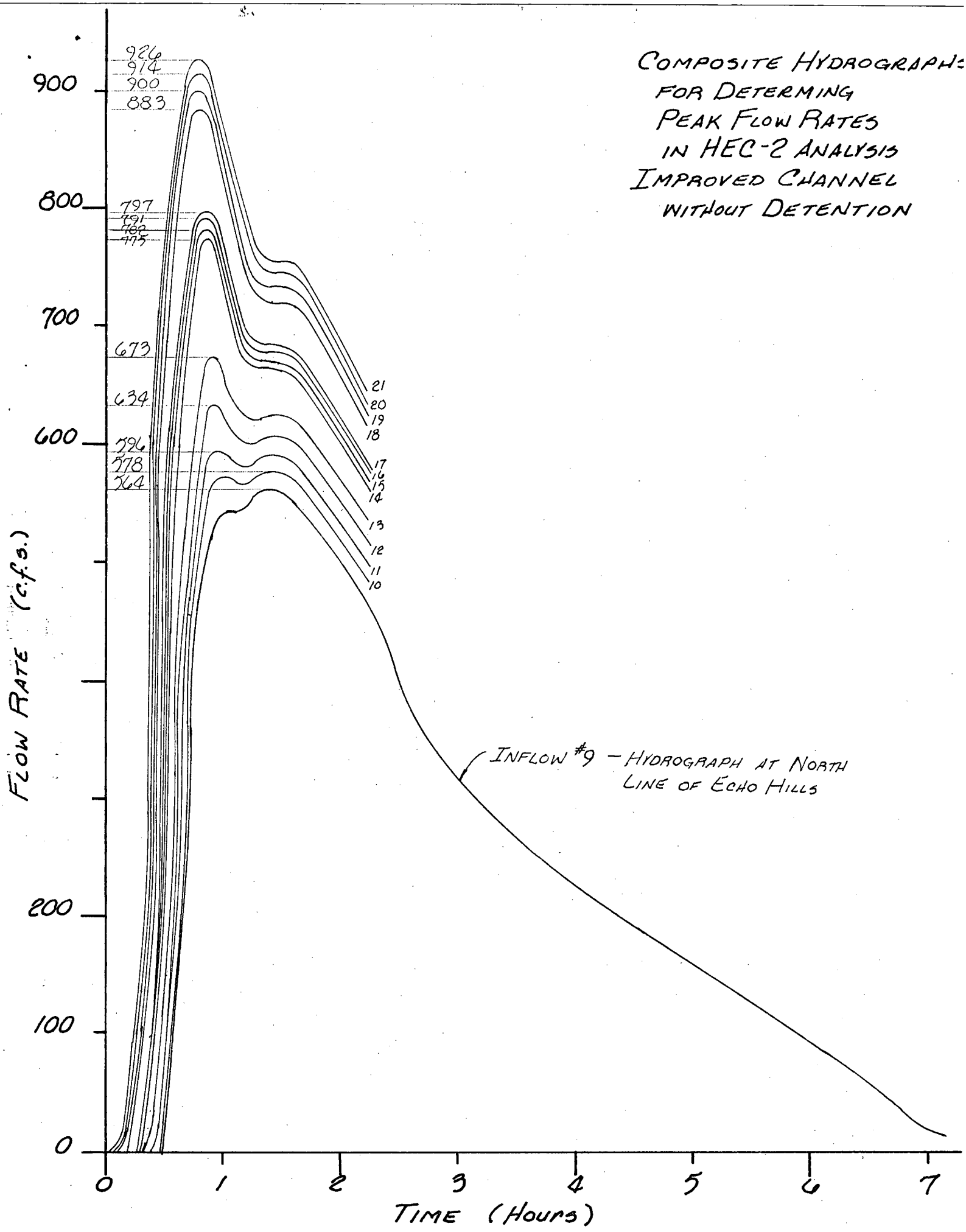
Project _____

Item _____

INPUT FLOW RATES FOR HEC-2 ANALYSIS
WITH DETENTION IN ECHO HILLS 2ND
WITH PROPOSED CHANNEL & POND SYSTEM
IN ECHO HILLS AND BRIARWOOD

STATION	FLOW RATE (CFS)
84+30	606 ←
89+55	600
94+35	590
96+35	580
101+40	552
107+10	547
109+65	540 ←
114+00	536
115+30	508
120+00	491
126+70	480
127+90	468
131+90	452
147+40	400


INFLOW HYDROGRAPH (Q_9)
AT
NORTH LINE OF ECHO HILLS
FOR
PRE-DEVELOPED CONDITIONS
COMPOSITE INFLOW HYDROGRAPH (Q_9)
INFLOW #1
INFLOW #7
INFLOW #2
INFLOW #4
INFLOW #5
INFLOW #8
INFLOW #3
FLOW RATE (c.f.s.)
TIME (Hours)
0
100
200
300
400
500
600
700
0
1
2
3
4
5
6
7
8
9


COMPOSITE HYDROGRAPHS FOR DETERMING PEAK FLOW RATES IN HEC-2 ANALYSIS IMPROVED CHANNEL WITHOUT DETENTION
926
914
900
883
797
791
782
775
673
634
596
578
564
21
20
19
18
17
16
15
14
13
12
11
10
INFLOW #9 – HYDROGRAPH AT NORTH LINE OF ECHO HILLS
FLOW RATE (c.f.s.)
900
800
700
600
200
100
0
0
1
2
3
4
5
6
7
TIME (Hours)

PROFESSIONAL ENGINEERING CONSULTANTS
PROFESSIONAL ASSOCIATION
1440 EAST ENGLISH
WICHITA, KANSAS
ZIP CODE / 67211

Date _____ Page 24 of _____

Project _____

Item _____

INPUT FLOW RATES FOR HEC-2 ANALYSIS

WITH UN-DEVELOPED LAND USE NORTH OF ECHO HILL

WITHOUT DETENTION

WITH PROPOSED CHANNEL & POND SYSTEM IN ECHO HILLS & BRIARWOOD

STATION	FLOW RATE (CFS)	
84+30	926	←
89+55	914	
94+35	900	
96+35	883	
101+40	797	
107+10	791	
109+65	782	←
114+00	775	
115+30	673	
120+00	634	
126+70	596	
127+90	578	
131+90	564	

WICHITA—SEDGWICK COUNTY
W-SC
METROPOLITAN AREA PLANNING DEPARTMENT
CITY HALL — TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4521

February 28, 1980

Professional Engineering Consultants
1440 E. English
Wichita, Ks. 67211

Re: S/D 79-118 - Final plat of Briarwood Estates

Gentlemen:

On February 28, 1980, the Metropolitan Area Planning Commission deferred action on the final plat of Briarwood Estates for two weeks because approval of the drainage plan has not yet been obtained. The plat will be placed on their Agenda of March 13, 1980, and will be reviewed on that date provided the drainage plan has been approved by then.

Please call if you have any questions.

Sincerely,

Louise Olivarez

Louise Olivarez
Senior Planner

LO:bh

cc: Inland Investment, Inc., 200 Douglas Bldg., 67202
Dean Sellers, Acting City Engineer
Paul Johnston, Flood Control

RECEIVED
FEB 29 1980
Engineering Division

WICHITA—SEDGWICK COUNTY
W-SC
METROPOLITAN AREA PLANNING DEPARTMENT
CITY HALL — TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4351

February 27, 1980

Professional Engineering Consultants
1440 E. English
Wichita, Ks. 67211

Re: S/D 79-118 - Final plat of Briarwood Estates

Gentlemen:

At the regular meeting of the Subdivision Committee of the Metropolitan Area Planning Commission, February 21, 1980, the above captioned plat was considered. The action of the Committee was to recommend that this plat be approved subject to:

A. The Subdivision Committee recommends approval of the final plat subject to approval of the drainage plan by City Engineering and Flood Control prior to the MAPC meeting of February 28, 1980.

B. The applicant shall guarantee the extension of sanitary sewer to serve all lots being platted.

C. The applicant shall guarantee the extension of City water to serve all lots being platted.

D. The applicant shall guarantee the paving of all interior streets.

E. The applicant shall submit a covenant to be recorded with the plat which provides for four off-street parking spaces per dwelling unit on lots being platted on a 58' street.

F. The following street name changes are recommended by Public Works and shall be shown on the final plat.

1. Merridale to Parkridge,
2. LaSalle/Briarwood to Cardington,
3. Wainscot to Shefford,
4. Londonderry to Covington,
5. Keystone between Pine Grove and Milstead shall be eliminated,
6. Keystone between Londonderry (Covington) and Wainscot (Shefford) shall be changed to a different name. Roberta Mendenhall shall be contacted for approval of any new street name.

G. The final plat tracing shall indicate the right-of-way dimensions on 119th Street, and on Cardington.

H. The applicant will guarantee a sidewalk on one side of Ponderosa/Shefford.

I. The applicant shall submit a Landowners Association Agreement which shall contain provisions for the ownership and maintenance of the Reserves and the floodway.

J. The first street east of 119th Street West between 13th and Briarwood shall be labeled on the final plat tracing as Parkridge.

K. The applicant shall contact the Soil Conservation Service regarding the removal of the existing terracing prior to development.

L. Recording within 30 days after approval by the Board of City Commissioners.

Enclosed with the applicant's copy of this letter is a list of the five methods which have been adopted as being acceptable for guaranteeing improvements required in the approval of plats. Forms for the bond and irrevocable letter of credit are available from this office.

The enclosed "marked" copy of the final plat is for your information and files.

This matter will be forwarded to the Planning Commission for its consideration on February 28, 1980, at 1:30 p.m. If you have any questions regarding this matter, please call.

Sincerely,

Louise Olivarez

Louise Olivarez
Senior Planner

LO:bh

cc: Inland Inv. Co., Inc., 200 Douglas Bldg., 67202
Dean Sellers, Assistant City Engineer
Paul Johnston, Flood Control

THE CITY OF WICHITA

OFFICE OF Flood Control and Landfill Div. DATE February 21, 1980

TO Louise Olivarez, Sr. Planner, MAPD

FROM Paul Johnston, Flood Control Engineer

SUBJECT - Briarwood Estates Addition - Drainage

In reference to subject Addition, it is requested that the following information be provided and approval and/or resolving of any problems be obtained through the Engineering and Flood Control Divisions prior to finalizing of the plat.

1) Q100 and verification of same passing through Briarwood Estates.

2) Cross-section information on proposed floodway, channelized sections, lakes, etc.

3) Backwater computations utilizing proposed channels and lakes, natural drainageways, drainage from the southwest area of Echo Hills and southeast section of Briarwood Estates, bends, proposed structure, etc.

4) Supply information on the proposed lakes within the reserves, ie. size, spillways, slopes, etc.

5) Additional areas exist requiring minimum pad elevations.

6) Storm and drainage easements to be shown on plat.

7) Appropriate wording in covenant of Homeowners Association regarding reserve areas and Floodway to insure that no buildings, structures, fences, trees or obstruction of any type are allowed. Copy of same to be provided to Flood Control.

8) Whoever is responsible for the design of the project will be required to contact the Division of Water Resources, Kansas State Board of Agriculture, pertaining to the proposed channelization, realignment of natural drainageway, change of cross-section areas and lakes, and secure any necessary approvals and/or permits.

9) Request that the proposed property lines not extend into the Floodway shown at the northeast section of the plat.

Paul Johnston, Flood Control Engineer
Flood Control and Landfill Division

PJ/glm

cc: Phil Dietrich
Dick Linn/PEC
Briarwood Estates Addn. Plat File
Echo Hills Addn. Plat File

MEMO

PROFESSIONAL ENGINEERING CONSULTANTS
PROFESSIONAL ASSOCIATION
1440 EAST ENGLISH
WICHITA, KANSAS
ZIP CODE / 67211

TO: Dean Sellers, P.E.
Acting City Engineer
City Hall - 7th Floor
455 N. Main
Wichita, Kansas 67202

ATTN: Yash Desai

PROJECT NO. 30-79280-1120

PROJECT: Briarwood Estates

DATE: February 1, 1980

COPIES TO:

Paul Johnston

Phil Dietrich

Louise Olivarez

FROM: Chris Brennenstuhl

REFERENCE: Final Drainage Plan

PLEASE ADVISE IMMEDIATELY OF ANY MISCONCEPTIONS OR OMISSIONS YOU BELIEVE TO BE CONTAINED HEREIN.

Transmitted herewith is the Final Drainage Plan for Briarwood Estates along with Storm Sewer calculations. Please note that only the area north of the floodway is being submitted at this time, as the southern portion will not be included on the Final Plat. Also, the calculations of the Back Water profile within the floodway has been previously submitted and approved with the Final Drainage Plan for Echo Hills Addition.

The Final Plat of Briarwood Estates will be filed on February 8, 1980, to be heard by MAPD - Subdivision Committee on February 21, 1980.

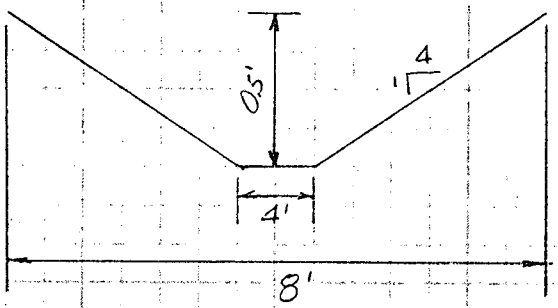
PROFESSIONAL ENGINEERING CONSULTANTS
PROFESSIONAL ASSOCIATION
1440 EAST ENGLISH
WICHITA, KANSAS
ZIP CODE / 67211

Date Jan 26 1980 Page ____ of ____

Project Briarwood Estates

Item 100 yr Flood Routing

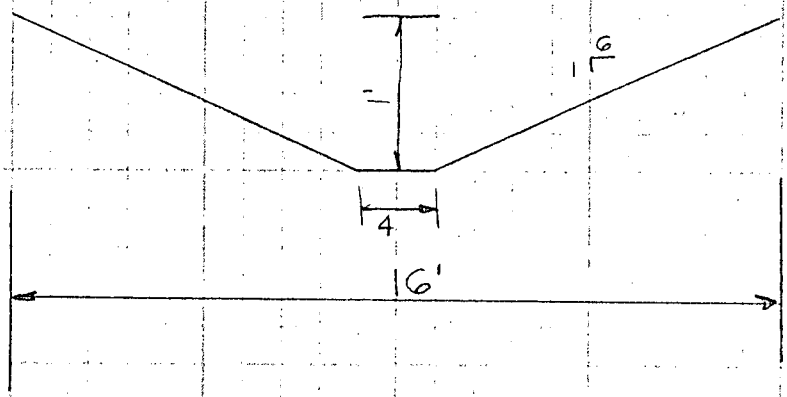
Flood Routing Overland and thru pipe 390-380 (15")
Head available: 3.02 ft
length of pipe = 185 ft
Slope = .0163
Q thru Pipe = 7.5 cfs
100 yr Q = 11.9 cfs
Overland Q = 4.5



Overland Swale

S = .001

Flood Routing Overland and thru pipe 440-430 (42")
Head available = 4.07 ft
length of pipe = 70 ft
Slope = .0581
Q thru Pipe = 31.8 cfs
100 yr Q = 66.2 cfs
Overland Q = 34.40 cfs



Overland Swale

S = .001

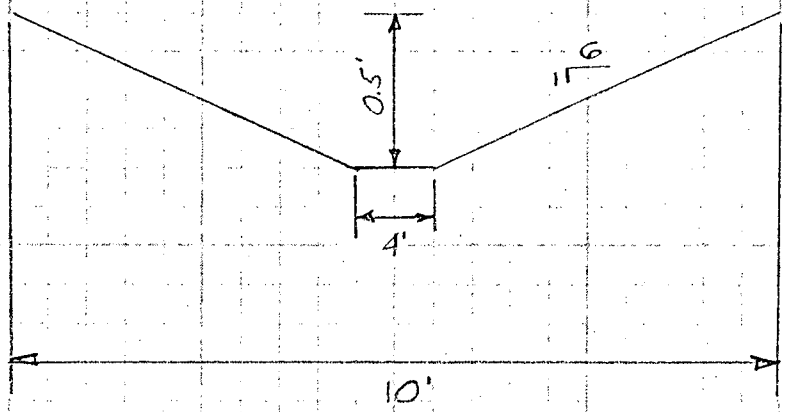
PROFESSIONAL ENGINEERING CONSULTANTS
PROFESSIONAL ASSOCIATION
1440 EAST ENGLISH
WICHITA, KANSAS
ZIP CODE / 67211

Date Jan 26 1990 Page _____ of _____

Project Briarwood Estates

Item 100yr. Flood Routing

Flood Routing Overland and thru pipe 110-100 (18")
Head available = 0.99 ft
length of Pipe = 160 ft
Slope = 0.0062
Q thru Pipe = 7.5 cfs
100yr Q = 11.6
Overland Q = 4.1



Overland Swale

S = .001

Flood Routing Overland and thru pipe 420-410 (15")
Head available = 3.24 ft
length of Pipe = 130 ft
Slope = .0249
Q thru Pipe = 9.6 cfs
100 yr Q = 9.6 cfs
Overland Q = 0 cfs

No Swale needed

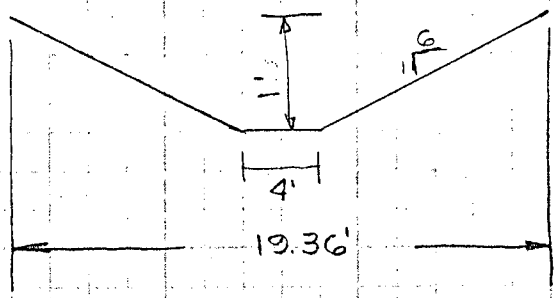
PROFESSIONAL ENGINEERING CONSULTANTS
PROFESSIONAL ASSOCIATION
1440 EAST ENGLISH
WICHITA, KANSAS
ZIP CODE / 67211

Date Jan 26 1980 Page _____ of _____

Project Briarwood Estates

Item 100 yr. Flood Routing

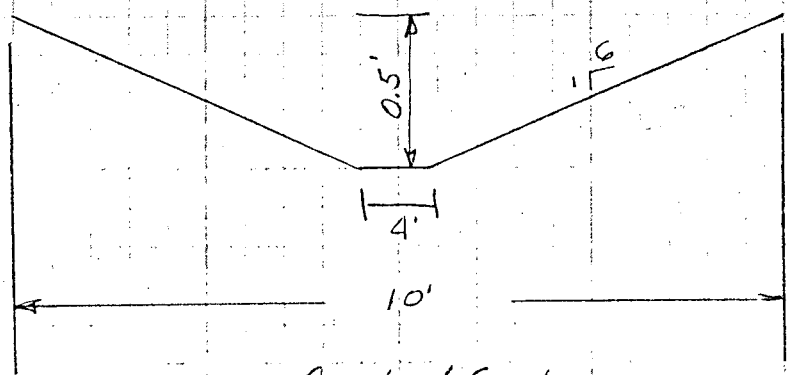
Flood Routing overland and thru pipe 180-170 (42")
Head available = 0.14 ft
length of pipe = 130 ft
slope = .0011
Q thru Pipe = 41.3 cfs
100 yr Q = 81.7 cfs
Overland Q = 40.40 cfs



S = .001

Overland Swale

Flood Routing Overland and thru pipe 140-130 (24")
Head available = 1.02 ft
length of pipe = 140 ft
slope = .0073
Q thru Pipe = 8 cfs
100 yr Q = 13.3 cfs
Overland Q = 5.3 cfs



Overland Swale

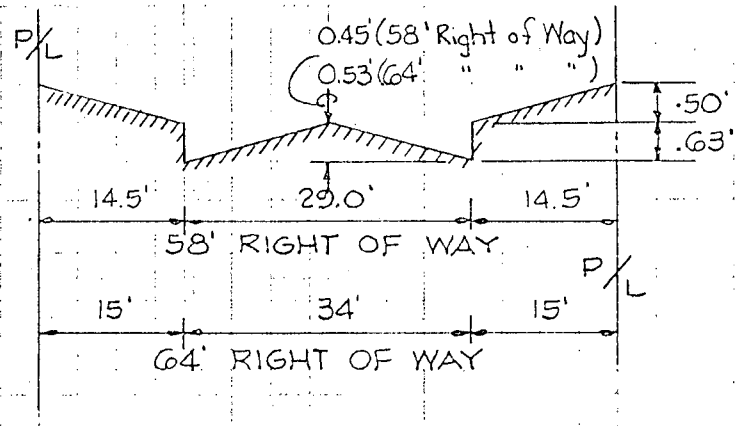
S = .001

PROFESSIONAL ENGINEERING CONSULTANTS
1440 LAKE PLEASANT
WICHITA, KANSAS
ZIP CODE / 67211

Date Jan 25 1980 Page ____ of ____

Project Brairwood Estates

Item Street Capacity



TYPICAL X-SECTION

$$Q = \frac{1.486\,(a)^{5/3}\,(s)^{1/2}}{0.013\,(p)^{2/3}}$$

58' Right-of-Way

$Q_2 = 135.18\,(s)^{1/2}$
$Q_{100} = 1016.\,(s)^{1/2}$

64' Right-of-Way

$Q_2 = 208.46\,(s)^{1/2}$
$Q_{100} = 1031.1\,(s)^{1/2}$

SLOPE %	58' RIGHT-OF-WAY		64' RIGHT-OF-WAY	
	Q_2	Q_{100}	Q_2	Q_{100}
0.32	7.65	57.47	11.79	58.33
0.5	9.56	71.84	14.74	72.91
0.54	9.93	74.66	15.32	75.77
0.57	10.21	76.71	15.74	77.85
0.586	10.35	77.78	15.96	78.93
0.59	10.38	78.04	16.01	79.20
0.6	10.47	78.70	16.15	79.87
0.67	11.06	83.16	17.06	84.40
0.727	11.53	86.63	17.77	87.92
0.77	11.86	89.15	18.29	90.48
0.78	11.94	89.73	18.41	91.06
0.83	12.32	92.56	18.99	93.94
1.0	13.52	101.60	20.85	103.11
1.02	13.65	102.61	21.05	104.14
1.20	14.81	111.30	22.84	112.95
1.27	15.23	114.50	23.49	116.20
1.33	15.59	117.17	24.04	118.91
1.36	15.76	118.48	24.31	120.25
1.54	16.78	126.08	25.87	127.96
1.67	17.47	131.30	26.94	133.25

PROFESSIONAL ENGINEERING CONSULTANTS
1440 EAST ENGLISH
WICHITA, KANSAS
ZIP CODE / 67211

Date Jan. 25, 1980 Page _____ of _____

Project Briarwood Estates

Item Curb Inlets - 100 Yr.

Node	Sump or on grade	Approach Slope(%)	Q Approach	Q in	Q by	Number of Inlets
570	mini sump	N/A	8.23	7.51	.72	1
560	on grade	0.60	7.78	3.27	4.51	1
550	mini sump	N/A	10.69	7.51	3.18	1
540	mini sump	N/A	8.33	7.51	.82	1
530	mini sump	N/A	10.43	7.51	2.92	1
520	on grade	1.27	14.67	2.20	12.47	1
220	on grade	0.32	5.19	3.53	1.66	1
210	on grade	0.32	4.20	3.15	1.05	1
200	manhole	N/A				
230	on grade	0.586	2.30	2.30	0	1
240	on grade	0.586	8.98	3.86	5.12	1
190	sump	N/A	9.32	9.32	0	1
180	sump	N/A	15.65	15.65	0	2
120	sump	N/A	6.42	6.42	0	1
110	sump	N/A	5.17	5.17	0	1
500	mini sump	N/A	21.56	15.02	6.54	2
480	sump	N/A	20.49	11.8	8.69	1
470	sump	N/A	18.92	18.92	0	2
150	on grade	0.78	3.66	2.49	1.17	1
140	on grade	0.78	15.42	2.78	12.64	1
660	mini sump	N/A	9.27	7.51	1.76	1

PROFESSIONAL ENGINEERING CONSULTANTS
1440 EAST ENGLISH
WICHITA, KANSAS
ZIP CODE / 67211

Date Jan. 25 1980 Page _____ of _____

Project Briarwood Estates

Item Curb Inlets - 100 Yr.

Node	Sump or on grade	Approach Slope(%)	Q Approach	Q in	Q by	Number of Inlets
650	on grade	0.78	7.16	2.79	4.37	1
640	manhole	N/A				
620	sump	N/A	11.80	11.80	0	1
610	sump	N/A	19.68	19.68	0	2
420	sump	N/A	9.65	9.65	0	2
400	sump	N/A	6.04	6.04	0	1
390	sump	N/A	5.86	5.86	0	1
450	sump	N/A	3.61	3.61	0	1
440	sump	N/A	2.60	2.60	0	1

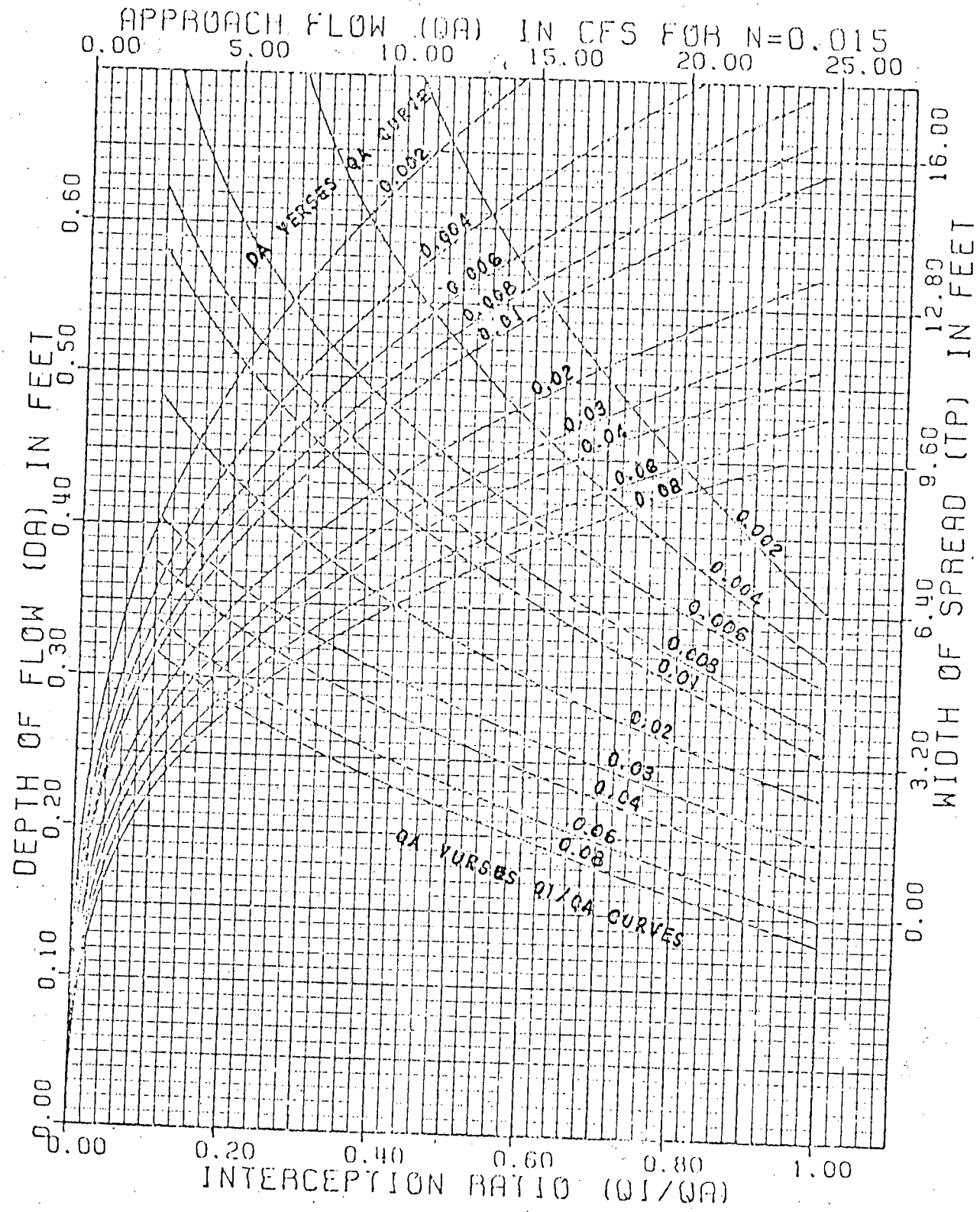


FIGURE A-7 DESIGN CURVES FOR SHC TYPE-22 STORM WATER INLET: L_o = 4 FEET AND S_x = 1/32.

WICHITA—SEDGWICK COUNTY
W-SC
METROPOLITAN AREA PLANNING DEPARTMENT
CITY HALL — TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4561

December 14, 1979

Gary Wiley, P. E. C., P. A.
1440 E. English
Wichita, Ks. 67211

Re: S/D 79-118 - Preliminary plat of Briarwood Estates

Dear Mr. Wiley:

At the regular meeting of the Subdivision Committee of the Metropolitan Area Planning Commission, December 13, 1979, the above captioned plat was considered. The action of the Committee was to approve the preliminary and authorize preparation of the final plat subject to the following:

A. Prior to submitting a final plat for the Subdivision Committee's review, final drainage calculations shall be provided and approval of a drainage plan shall be obtained.

B. The applicant shall guarantee any drainage improvements required on this plat.

C. The applicant shall guarantee the extension of sanitary sewer to serve all lots being platted.

D. The applicant shall guarantee the extension of City water to serve all lots being platted.

E. The applicant shall guarantee the paving of all interior streets.

F. The applicant shall submit a covenant to be recorded with the plat which provides that there will be four off-street parking spaces per dwelling unit on lots being platted on a 58-foot street.

G. The final plat shall show the following access control:

1. Complete access control across the north lot line of all lots being platted adjacent to 13th Street.
2. Complete access control across the west lot line of all lots being platted adjacent to 119th Street West.

3. Complete access control across the west line of Reserve A as platted on 119th Street West.

H. In order to provide for the possible future development of Reserve A, the final plat shall define the boundaries of the floodway within this reserve.

I. The final plat shall indicate the rights-of-way dimensions for 13th Street and 119th Street West.

J. The intersection of Ponderosa and LaSalle shall be redesigned to provide a conventional T-type intersection.

K. The applicant will guarantee a sidewalk on one side of Ponderosa and Wainscot.

L. The applicant shall submit a Homeowners' Association Agreement for review which shall contain provisions setting forth the ownership of and maintenance responsibility for the reserves and floodway areas indicated on the plat.

M. Existing buildings which encroach into proposed streets, easements or setbacks shall be removed prior to recording the plat or a guarantee shall be submitted which provides for their removal prior to installation of the streets or utilities.

N. The applicant shall contact Roberta Mendenhall in City Public Works Administration regarding suggested street name changes prior to filing a final plat.

O. The applicant shall contact the Soil Conservation Service regarding the removal of the existing terracing prior to development.

P. Utility easements as requested by K.G. and E. and City Engineering and shown on the "marked copy" of the preliminary plat shall be included on the final plat.

Q. The balance of the SW 1/4 of Section 18 is owned by an individual, not the Park Board, and it is expected that some day this land will be subdivided for residential use. The proposed alignment of Hickory Circle, with almost 300 feet of the street abutting the property to the south, will make it very difficult to subdivide the land to the south. While it may be desirable to provide an access point to the south, it should be done with a north-south street. Prior to filing a final plat, the applicant's engineer shall meet with the Planning staff to discuss this matter.

R. The applicant shall install or guarantee the installation of all utilities and facilities which are applicable and described in Article 8 of the MAPC Subdivision Regulations.

S. Requirements for a final plat (see pages 20-25, Part 4, Article 5 of the MAPC Subdivision Regulations).

Enclosed herewith is the "marked" copy of the preliminary plat for your information and files.

If you should have any questions concerning this matter, please call.

Sincerely,

Louise Olivarez
Senior Planner

LO:bh

Encl.

cc: Inland Inv. Co., Inc., 200 Douglas Bldg., 67202
X Dean Sellers, Acting City Engineer
Paul Johnston, Flood Control

Briarwood Estates

xxxxxx 268-4598 December 13, 1979

Professional Engineering Consultants
1440 East English
Wichita, Kansas

Attn: Chris Brennenstuhl

Subject: Briarwood Estates Addn. (formerly Lake Crest Estates)

Dear Chris:

Reference is made to the plan for subject Addition submitted to this office for review. I have reviewed the plan and comments are as follows:

1) Has an attempt been made through the Commission to approve a drainage basin policy of which this plat would lay?

2) For conveying Q100, developed or undeveloped, it appears that channelization will be required. Contact should be made with the Kansas State Board of Agriculture/Division of Water Resources to determine if a permit is required for any re-alignment, change of cross section area or the proposed lake.

3) Several lots in the northeast section are plotted such that the property line goes to the center of the indicated Floodway. We would prefer no encroachment. Invariably a property owner will attempt to fence off their property lines. Extending anything of this type will interfer with the integrity of the intended conveyance way. Also, any future maintenance or corrective measures such as erosion control, channel improvement or mowing could be handled easier through a Home Owners Association rather than through the concurrance of owners for the individual lots.

4) The formation of a Home Owners Association should be established to maintain the Floodway and Reserve areas.

5) To include the lots shown at the southwest corner of the plat, steps should be taken to contact the proper agencies and take the necessary steps to re-establish by realignment both the existing bank lines of Cowskin Creek and the Federal Insurance Administration floodway limits from existing to the proposed.

6)We request a print which is more legible showing clearer topography with contour elevations.

7) Utility easements will be necessary for both the north and northwest areas.

8) Hydrology data will be required along with an inflow-outflow hydrograph, backwater calculations, proposed swales, etc.

9) Various storm drainage easements are required.

If there are any questions or if further information is desired, please advise.

Yours truly,

Paul Johnston,
Flood Control Engineer
Flood Control and Landfill Division

PJ/glm

cc: Briarwood Estates Addn. Plat File
Louise Olivarez/MAPD
Phil Dietrich/Sedgwick County
Yash Desai/City Engineering Office

THE CITY OF WICHITA

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
CITY HALL — SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4301

December 10, 1979

Professional Engineering Consultants
1440 East English
Wichita, KS 67211

ATTENTION DICK LINN

Gentlemen:

Re: Drainage Plan: Briarwood Estates

This is to confirm the points discussed in the meeting last Thursday, December 6, 1979, about the subject drainage plan. As requested earlier, we do prefer to review drainage concept plans prior to sketch plat hearing and drainage plan prior to preliminary plat hearing for a new subdivision, because the geometrics of the improvement directly affect the drainage of a plat. Before a final plat is heard, all methods of financing public improvements, etc., should be approved, refer to Pages 19 and 20 of the Subdivision Regulation Requirements for preliminary plat.

It is agreed, however, that for this particular plat, because of the complex nature of the drainage for this subdivision, we are informing the Planning Department by a copy of this letter to hear the preliminary plat of Briarwood Estates based on the approved drainage concept as submitted. The hydrology of the tributary of the Cowskin Creek also may be submitted the same time as the final drainage plan is submitted before the Final Plat hearing. The hydrology of the Cowskin Creek Tributary Watershed in question shall be based on the Cowskin Creek under flood condition as determined in the Flood Insurance Study. Please note that any change necessary in the geometry of the final plat as a result of final drainage plan could necessitate a rehearing of the preliminary plat.

In the drainage concept plan we would like to minimize the flooding of the 13th Street (Arterial). This can be successfully done by providing a street (or 60' + Right-of-way) across from Parkridge Drive, south of 13th Street to the proposed Lake, preferably along the proposed storm water sewer alignment. This will also result in efficient discharge of the 100 year flood into the Tributary of the Cowskin Creek.

THE CITY OF WICHITA

Please feel free to call me at (316)268-4235 if I can be of further help in providing a speedy approval of the subject plat.

Very truly yours,

Yash D. Desai, P.E.
Drainage Chief Engineer

YDD/dla

cc: Jack Galbraith, Chief Planner - City of Wichita
Max Greene, Flood Control & Landfill Director - City of Wichita

THE CITY OF WICHITA

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
CITY HALL — SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4361

December 4, 1979

Professional Engineering Consultants
1440 East English
Wichita, KS 67211

ATTENTION CHRIS BRENENSTUHL

Gentlemen:

Re: Drainage Concept: Briarwood Estates

We have completed review of the drainage concept of the subject plat submitted to my office for approval. We regret to inform you that sufficient information to approve the drainage concept has not been submitted. Before a preliminary plat is scheduled to be heard by the Subdivision Committee, a complete drainage plan with calculations shall be submitted to my office for review. Until the two year frequency and the 100-year frequency storm runoff discharge requirements according to the City criteria have not been met (especially when additional area draining into this plat needs to be accounted for), approval of the plat geometry is difficult.

Therefore, before this preliminary plat can be heard by the Subdivision Committee please submit the Drainage Plan with calculations for the storm water sewer and the channels for the Cowskin Creek and its tributaries.

Please feel free to call me at (316)268-4235 if you need additional information or any other assistance pertaining to drainage.

Very truly yours,

Yash D. Desai, P.E.
Drainage Chief Engineer

YDD/dla

cc: Jack Galbraith, Chief Planner - City of Wichita
Max Greene, Flood Control & Landfill Director - City of Wichita
Phil Dietrich, Sedgwick County Engineering

WICHITA—SEDGWICK COUNTY
W.SC
METROPOLITAN AREA PLANNING DEPARTMENT
CITY HALL — TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4561

October 31, 1979

Mr. Gary Wiley
Professional Engineering Consultants
1440 E. English
Wichita, Kansas 67211

Re: S/D 79-118 - Sketch plat of Lake Crest Estates

Dear Mr. Wiley:

We have reviewed your sketch plat of Lake Crest Estates and discussed it with other departments, particularly Flood Control. I believe you also have been talking with Paul Johnston and Yash Desai about the drainage requirements for both this plat and Echo Hills. Final drainage plans for the Echo Hills area will need to be approved before anyone can accurately analyze the drainage requirements for Lake Crest Estates. It does appear likely, however, that some area will need to be designated as "floodway" all the way from 13th Street south to what is now labeled as "floodway and open space." Rear lot lines would be platted to the boundaires of this floodway and not to the centerline of the existing channel as now shown.

We have no objection to the general layout of the plat but point out that the improvement costs per lot for storm sewers, sanitary sewers, water, street paving, etc., will be very high because this type of lot arrangements requires many linear feet of pipe and pavement. All cul-de-sacs, as currently shown, could be platted with the narrower right-of-way of 50 feet, if desired by the applicant, and this might reduce the paving costs slightly. The other interior streets would need 64 feet of right-of-way and would need sidewalks on one side unless a majority of the lots have frontages greater than 100 feet.

I understand annexation of this property has already been requested. Annexation should be completed prior to recording this plat.

If a golf course is being proposed for some of the open space area, as we have heard, then the boundaries of the floodway will need to be defined so that the balance of the open space can be filled or excavated as needed for the golf course.

Depending upon the division of land ownership to the south and anticipated floodway needs to the south, the street being platted in the southwest corner of this property may need to be revised to provide for appropriate future street connections.

Please continue to work with Flood Control and City Engineering so as to determine the quantity of drainage waters which will be flowing into this area from the north prior to submitting a preliminary plat. At such time as the basics of a drainage concept have been decided upon, you may submit a preliminary plat for Subdivision Committee review.

Sincerely,

Louise Olivarez

Louise Olivarez
Senior Planner

LO:bh

cc: Inland Investment Co., Inc., Atten: Larry A. Chambers, 200 Douglas Bldg., 67202
Mr. Thurman Smith, 11216 W. Maple, 67209
Paul Johnston, Flood Control
Yash Desai, Engineering

Preliminary plat

SUBDIVISION REPORT

SUBDIVISION COMMITTEE
METROPOLITAN AREA
PLANNING COMMISSION

S/D NO. 79-118 Name Briarwood Estates
Date Application Rec'd. 9-18-79 Preliminary Approval _____
Scheduled S/D Meeting 12-13-79

DESCRIPTION

General Location East of 119th Street West in an area south of 13th Street

Owner Inland Investment Company, Inc.
Surveyor/Engineer Professional Engineering Consultants, P.A. (Gary Wiley)
Address 1440 E. English, 67211 Phone 262-2691

1. Gross Acreage of Plat 182.9 ac. +
2. Number of Lots:
   - Residential 209
   - Commercial _____
   - Industrial _____
   - Other _____
   - Total Number of Lots 209
3. Minimum Lot Frontage 60' @ setback ~~xxx~~
4. Minimum Lot Area 11,000 square ft.
5. Existing Zoning R-1 (County)
6. Proposed Zoning AA (City)
7. Lineal Feet of New Streets:
   - a. 64' R/W 4650 ft.
   - b. 58' R/W 8150 ft.
   - c. _____ R/W _____ ft.
   - d. _____ R/W _____ ft.
   - e. _____ R/W _____ ft.
   - TOTAL 12,800 ft.
8. Sidewalk adjacent to all streets? _____ yes XX no

9. Public Water Supply Yes (Yes-No), Name City of Wichita
10. Public Sanitary Sewers Yes (Yes-No), Name City of Wichita
11. Health Department Approval (where applicable) N/A (Yes-No)
12. City of Wichita X : Three-Mile Area _____

STAFF COMMENTS:

NOTE: Annexation of this property has been approved subject to platting.

A. The representative from City Public Works should be prepared to comment on the applicant's drainage concept plan.

B. The applicant or his engineer should be prepared to clarify the purposes and extent of the floodways and Reserves shown on this plat.

C. The applicant shall guarantee the extension of sanitary sewer and City water to serve all lots being platted.

D. The applicant shall guarantee the paving of all interior streets.

E. The applicant shall guarantee any drainage improvements required on this plat.

F. The applicant shall submit a covenant to be recorded with the plat which provides that there will be four off-street parking spaces per dwelling unit on lots being platted on a 58-foot street.

G. The final plat shall show the following access control:

1. Complete access control across the north lot line of all lots being platted adjacent to 13th Street.

2. Complete access control across the west lot line of all lots being platted adjacent to 119th Street West.

3. Complete access control across the west line of Reserve A as platted on 119th Street West.

H. The platted right-of-way width of Pine Grove/Keystone/Milstead, south of Ponderosa, shall be increased to 64 feet on the final plat.

(Over)

I. In order to provide for the possible future development of Reserve A, the final plat shall define the boundaries of the floodway within this reserve.

J. The final plat shall indicate the rights-of-way dimensions for 13th Street and 119th Street West.

K. Since Ponderosa/Wainscot is being platted in such a fashion as to function as a collector street, the final plat shall show this street as a collector. This collector designation will involve not only increasing the right-of-way to 66 feet, but also T-intersecting LaSalle with Ponderosa and straightening out Ponderosa's alignment as this location.

L. Sidewalks are required on both sides of Ponderosa/Wainscot Street. (Collector Street).

M. The applicant shall submit a Homeowners' Association Agreement for review which shall contain provisions setting forth the ownership of and maintenance responsibility for the reserves and floodway areas indicated on the plat.

N. Existing buildings which encroach into proposed streets, easements or setbacks shall be removed prior to recording the plat. The applicant shall submit a letter to the Planning Department verifying that these buildings are removed prior to release of the plat for recording.

O. The balance of the SW 1/4 of Section 18 is owned by an individual, not the Park Board, and it is expected that some day this land will be subdivided for residential use. The proposed alignment of Hickory Circle, with almost 300 feet of the street abutting the property to the south, will make it very difficult to subdivide the land to the south. While it may be desirable to provide an access point to the south, it should be done with a north-south street. Prior to filing a final plat, the applicant's engineer shall meet with the Planning staff to discuss this matter.

P. The applicant shall install or guarantee the installation of all utilities and facilities which are applicable and described in Article 8 of the MAPC Subdivision Regulations.

Q. Requirements for a final plat (see pages 20-25, Part 4, Article 5 of the MAPC Subdivision Regulations).

Final plat

SUBDIVISION REPORT

SUBDIVISION COMMITTEE
METROPOLITAN AREA
PLANNING COMMISSION

S/D NO. 79-118 Name Briarwood Estates
Date Application Rec'd. 9-18-79 Preliminary Approval 12-13-79
Scheduled S/D Meeting 2-21-80

DESCRIPTION

General Location East of 119th Street West, in an area south of 13th Street

Owner Inland Investment Company, Inc.
Surveyor/Engineer Professional Engineering Consultants
Address 1440 E. English 67211 Phone 262-2691

1. Gross Acreage of Plat 99.44 Ac.±
2. Number of Lots:
   - Residential 192
   - Commercial
   - Industrial
   - Other
   - Total Number of Lots 192
3. Minimum Lot Frontage 60" @ the setback
4. Minimum Lot Area 11,000 square ft.
5. Existing Zoning R-1
6. Proposed Zoning AA
7. Lineal Feet of New Streets:
   - a. 64' R/W 3710 ft.
   - b. 58' R/W 9090 ft.
   - c. R/W ft.
   - d. R/W ft.
   - e. R/W ft.
   - TOTAL 12,800 ft.
8. Sidewalk adjacent to all streets? yes X no
9. Public Water Supply Yes (Yes-No), Name City of Wichita
10. Public Sanitary Sewers Yes (Yes-No), Name City of Wichita
11. Health Department Approval (where applicable) N/A (Yes-No)
12. City of Wichita X * : Three-Mile Area

*To be annexed upon completion of platting

STAFF COMMENTS:

A. The City Engineer's representative shall be prepared to comment on the final drainage plan for this property and state what drainage guarantees will be required.

B. The applicant shall guarantee the extension of sanitary sewer to serve all lots being platted.

C. The applicant shall guarantee the extension of City water to serve all lots being platted.

D. The applicant shall guarantee the paving of all interior streets.

E. The applicant shall submit a covenant to be recorded with the plat which provides for four off-street parking spaces per dwelling unit on lots being platted on a 58-foot street.

F. The final plat tracing shall indicate the right-of-way dimensions on 119th Street, and on LaSalle/Briarwood.

G. The applicant will guarantee a sidewalk on one side of Ponderosa/ Wainscot.

H. The applicant shall submit a Landowners Association Agreement which shall contain provisions for the ownership and maintenance of the Reserves.

I. The first street east of 119th Street West between 13th and Briarwood shall be labeled on the final plat tracing.

J. The applicant shall contact the Soil Conservation Service regarding the removal of the existing terracing prior to development.

K. Recording within 30 days after approval by the Board of City Commissioners.

T9-303

DRAINAGE EASEMENT

472-76-2 45-8 1063-000-700

THIS EASEMENT made this _____ day of _____, 19____, by and between _____ of the first part and the City of Wichita on the second part.

WITNESSETH: That the said first part ____, in consideration of the sum of One Dollar ($1.00) and other valuable consideration, the receipt whereof is hereby acknowledged, do hereby grant and convey unto the said second party a perpetual right-of-way and easement for the purpose of constructing, maintaining, and repairing a drainage system, over, along and under the following described real estate situated in Sedgwick County, Kansas; to wit:

The North ten (10) feet of the East one hundred (100) feet of Lot 27, Block 3, of Briarwood Estates Addition to Wichita, Sedgwick County, Kansas.

And said second party is hereby granted the right to enter upon said premises at any time for the purpose of constructing, operating, maintaining, and repairing such drainage system.

IN WITNESS WHEREOF: The said first part ___ ha ___ signed these presents the day and year first written.

_____

_____

STATE OF KANSAS)
SEDGWICK COUNTY) SS

Personally appeared before me, a notary public, in and for the County and State aforesaid _____ to me personally known to be the same person ___ who executed the foregoing instrument of writing and said person ___ duly acknowledged the execution thereof.

Dated at Wichita, Kansas, this _____ day of _____, 19____.

_____
Notary Public

My Commission Expires: _____

DRAINAGE EASEMENT

472-76-245-8106-3-00-700

THIS EASEMENT made this _____ day of _____, 19____, by and between _____ of the first part and the City of Wichita on the second part.

WITNESSETH: That the said first part___, in consideration of the sum of One Dollar ($1.00) and other valuable consideration, the receipt whereof is hereby acknowledged, do hereby grant and convey unto the said second party a perpetual right-of-way and easement for the purpose of constructing, maintaining, and repairing a drainage system, over, along and under the following described real estate situated in Sedgwick County, Kansas; to wit:

The North ten (10) feet of the East one hundred (100) feet of Lot 27, Block 3, of Briarwood Estates Addition to Wichita, Sedgwick County, Kansas.

And said second party is hereby granted the right to enter upon said premises at any time for the purpose of constructing, operating, maintaining, and repairing such drainage system.

IN WITNESS WHEREOF: The said first part___ ha___ signed these presents the day and year first written.

_____

_____

STATE OF KANSAS)
SEDGWICK COUNTY) SS

Personally appeared before me, a notary public, in and for the County and State aforesaid _____ to me personally known to be the same person___ who executed the foregoing instrument of writing and said person___ duly acknowledged the execution thereof.

Dated at Wichita, Kansas, this _____ day of _____, 19____.

_____
Notary Public

My Commission Expires _____