Baughman

TRANSMITTAL

TO	FROM
Vicky Huang	Trevor Kurth
COMPANY	DATE:
City of Wichita	4-2-07
ADDRESS	PROJECT
7th Floor City Hall	Lillie 2nd Addition
CITY/ STATE.	PROJECT NUMBER
Wichita, Kansas	

RE
Lillie 2nd Addition Drainage/Grading Plan

VIA DELIVERY

We are sending you ☒ ATTACHED ☐ UNDER SEPARATE COVER
☒ PLANS ☐ PRINTS ☐ SHOP DRAWINGS ☐ SAMPLES ☐ SPECS
☐ COPY OF LETTER ☐ CHANGE ORDER ☐ DISK ☐ OTHER

COPIES	DATE	DESCRIPTION
1	4-2-07	Lillie 2nd Addition Drainage/Grading Plan

☐ URGENT ☒ FOR APPROVAL ☐ FOR YOUR INFO ☒ FOR REVIEW & COMMENT
☐ APPROVED, AS NOTED ☐ REVISE AS NOTED ☐ REVISE AND RETURN
☐ AS REQUESTED ☐ PLEASE REPLY ☐ FOR BIDS DUE ☐

NOTES/ COMMENTS:

SIGNED _____
Trevor R Kurth, I E

Copy file

ENGINEERING
SURVEYING
PLANNING
LANDSCAPE ARCHITECTURE

Baughman Company, P A
315 Ellis Street
Wichita, Kansas 67203
P 316 262 7271
F 316 262 0149

DRAINAGE PLAN

LILLIE 2ND ADDITION

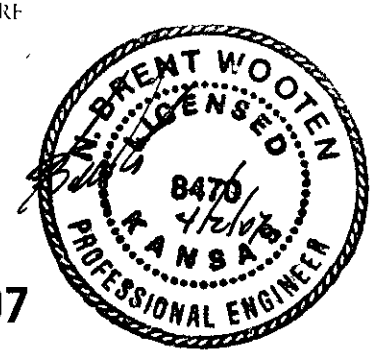
TO

WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY

Baughman

ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE



02 APRIL 2007

ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE

DRAINAGE PLAN
LILLIE 2ND ADDITION

FINAL REPORT

Prepared by Baughman Company, P.A.
02 April 2007

By N. Brent Wooten, P.E.
Trevor R. Kurth, I.E.
Nicholas H. Jefferson, I.E.

REPORT CONTENTS

Adopted February 23, 2007

WICHITA

Public Works, Engineering Division
Final Drainage Plan Submittal Checklist

Reviewer _____ Date _____

Subdivision Name LILLIE 2ND ADD Location MAIZE ROAD & HIDDEN VALLEY

Total Land Area Of Ownership ±17 Acres

Type _____Residential __X__Commercial _____Industrial _____Recreation _____Municipal _____Other

Applicant LILLIE Contact _____ Phone # _____

Engineer BAUGHMAN CO Contact TREVOR KUBTH Phone # 262-7271

Please check the appropriate box

I = Included, NA = Non-Applicable, R= Required prior to development
(If "NA" is checked, an explanation must be entered)

	Applicant			Engr	
Tab 1 Project Narrative	**I**	**NA**	**Explanation / Location in Plan**	**I**	**NA**
A Site Location Map, using USGS Map	X				
B Discussion of development, existing conditions, and proposed impacts on stormwater, wetland, riparian, and flood plain	X				
C Discussion of offsite conditions	X				
D Summary of runoff calculations (pre/post development) No increase in peak discharge for all storm series	X				
E Narrative description of the type and function of the permanent best management practices that are incorporated into the site design	X				
F Copy of the plat	X				
G Preliminary grading plan (The final grading plan shall be sealed, signed and dated prior to Engineering receiving the final sanitary sewer plans One plan sheet and PDF shall be submitted to the Subdivision Engineer)	X				
H Professional Engineer seal, signature and date on cover of report	X				
I CD of drainage plan in PDF format (one file) and one paper copy bound with this checklist included behind the cover		X	Upon Approval, pdfs will be submitted on CD		

	Applicant			Engr	
Tab 2 Existing Conditions Runoff Calculations	**I**	**NA**	***Explanation / Location in Plan***	**I**	**NA**
A Copy of applicable orthophoto showing proposed project boundaries (preferable in color)	X				
B Runoff Method (Rational, Hydrograph Method, or other approved methods by Engineering)	X				
C Existing topography (no greater than 2-foot contours, 1-foot recommend)	X				
D Total Site Area and Total Impervious Area (acres)	X				
E Benchmarks used for site control	X				
F Streams, creeks, and waterway labeled	X				
G *Predominant soils from USDA soil surveys, and/or* on site soil borings	X				
H Location and boundaries of natural features such as wetlands, lakes, and ponds with the normal water elevation noted	X				
I Location of existing roads, buildings, parking lots and other impervious areas	X				

Consulting Engineer Initials TK

J Location of existing utilities (e g , water, sewer, gas, electric) and easements	✓				
K Location of existing conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	✓				
L Flow paths	✓				
M Location and dimensions of existing channels, bridges or culvert crossings	✓				
N Existing conditions hydrologic analysis for runoff rates, volumes and velocities showing methodologies used and supporting calculations (2, 5, 10, 25 & 100 *year, 24-hour storm events) or Critical Duration*	✓				
O Assumed pre-developed runoff curve numbers	✓				
P Existing time of concentrations used in calculations	✓				
Q Evaluate immediate downstream drainage capacity, *not to exceed more than 0 25 miles downstream of* site	✓				
R Existing structural elevations (e g , invert of pipes, manholes, etc)	✓				
S Cross-section data for open channels	✓				
T Ground water elevations, if applicable		✓	NA		

	Applicant			Engr	
Tab 3 Post-Development Hydrologic Analysis	**I**	**NA**	**Explanation / Location in Plan**	**I**	**NA**
A Proposed (post-development) conditions hydrologic and hydraulic analysis for runoff rates, volumes, HGL, and velocities showing the methodologies used and *supporting calculations for all applicable design storms* (2, 5, 10, 25 & 100 year, 24-hour storm events)	✓				
B Proposed time of concentrations used in calculations	✓				
C Assumed post-developed runoff curve numbers	✓				
D Proposed contours for detention facilities (to equal area used in outlet rating curves)	✓				
E Preliminary sizing calculations for stormwater controls including contributing drainage area, storage, and outlet configuration	✓				
F Stage-storage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities	✓				
G Final analysis of potential upstream/downstream impact/effects of project, where necessary	✓				
H Existing and proposed structural elevations (e g , invert of pipes, manholes, etc)	✓				
I Design water surface elevations and normal pool elevation for ponds	✓				
J Typical detail for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc To include height, width, elevation, and/or diameter	✓				
K Proposed limits of clearing and grading	✓				
L Location of existing and proposed roads, buildings, parking lots and other impervious areas	✓				
M Location of existing and proposed utilities (e g , water, sewer) and easements	✓				
N Location of existing and proposed conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	✓				
O Preliminary location and dimensions of proposed *channel modifications, such as bridge or culvert* crossings	✓				

Consulting Engineer Initials AK

P Preliminary selection and location of stormwater controls	x				
Q Emergency overflow structure's flow path	x				
R Detention facility provides one-foot of freeboard above the HWL and emergency outfall shown (top of berm elevation shown)	x				
S The 100-year 24-hour HWL delineated on the plan for detention pond	x				
T Lowest opening elevations table on the plat for structures located adjacent to channels or ponds	x				
U Stormwater Management Facilities located within a Reserve	x				
V Maintenance responsibility of stormwater management facility shall be specified in the platters text (e g HOA, Lot Owners Association, or lot)	x				
W Off-site drainage easements or agreements required, where necessary		x	NA		

	Applicant			Engr	
Tab 4 Floodplain Submittal	**I**	**NA**	**Explanation / Location in Plan**	**I**	**NA**
A Provide source of flood profile	x				
B Nearest base flood elevations	x				
C Delineation of pre-developed regulatory floodplain/floodway limits		x	No change in limits		
D Delineation of post-developed regulatory floodplain and floodway limits		x	"		
E Floodplain boundary determination per elevation (project limits shown)		x	"		
F Provide source of floodway data table and discharges	x				
G Provide all hydrologic and hydraulic study information for site-specific floodplain studies, unnumbered Zone A area elevation determinations and flood plain map revisions or required permits		x	NA. Zone AE		
H Provide regulatory floodway and four natural profile models (10,50,100, and 500-yr) for existing and future watershed conditions		x	"		
I Location of floodplain/floodway limits and relationship of site to upstream/downstream properties (floodplain limits to be per elevation and scaled location)		x	"		
J Flood plains and floodways located within a Reserve, where necessary	x				

	Applicant			Engr	
Tab 5 Federal, State and Local Permits (to be provided prior to construction unless otherwise specified)	**I/R**	**NA**	**Explanation / Location in Plan**	**I/R**	**NA**
A US Army Corps of Engineers - Regulatory program permits (404 water quality certification)		x	None permitting expected		
B Kansas Department of Agriculture - Division of Water Resources Permits (Stream Obstruction, Channel Change, Flood Plain Fill, Levee, Water Appropriations, Dam safety permit, etc)		x	"		
C Federal Emergency Management Agency (FEMA) Letter of Map Changes (LOMA, LOMR, LOMR-f, CLOMR, etc) Shall be included and approved when project modifies the limits of the floodway		x	"		
D Kansas Department of Transportation		x	"		
E Sedgwick County Right-of-way Permit		x	"		

Consulting Engineer Initials TRK

PROJECT NARRATIVE

EXISTING CONDITIONS

The site is located at the intersection of Hidden Valley Road and Maize Road in west Wichita The site is bounded on the south by Hidden Valley Road, the east by Maize Road, and residential subdivisions to the north and west The Calfskin Creek is located on the south side of Hidden Valley Road

The site consists of approximately 17 acres The majority of the site is open space with an existing building and parking lot (to be removed upon development) The site generally drains to the south and under Hidden Valley Road into the Calfskin Creek

The site has been platted and approved as Lillie Addition The only changes being made to the original 'Lillie Addition Drainage Plan' (July 08, 2005), is the cul-de-sac length has been reduced and lot lines shifted The reserves for the storm water detention ponds have remained

A FEMA Zone AE encroaches the property at the southwest and southeast corners No FEMA Floodway lies on the property as of this report date

PROPOSED CONDITIONS

The site is proposed to be developed into 3 commercial lots with associated streets, utilities and drainage structures The west portion of the site will drain into a proposed pond and then into the Calfskin Creek via an existing 18" CMP The east portion will drain into another proposed pond and outlet into the adjacent 36" storm sewer system

The FEMA Floodplain that encroaches the property will mainly be included in Reserves (locations of proposed ponds) The BFE established by the FIRM Panels will be the basis for minimum pads established on the proposed lots No fill is expected in the area of the mapped floodplain

OFFSITE CONDITIONS

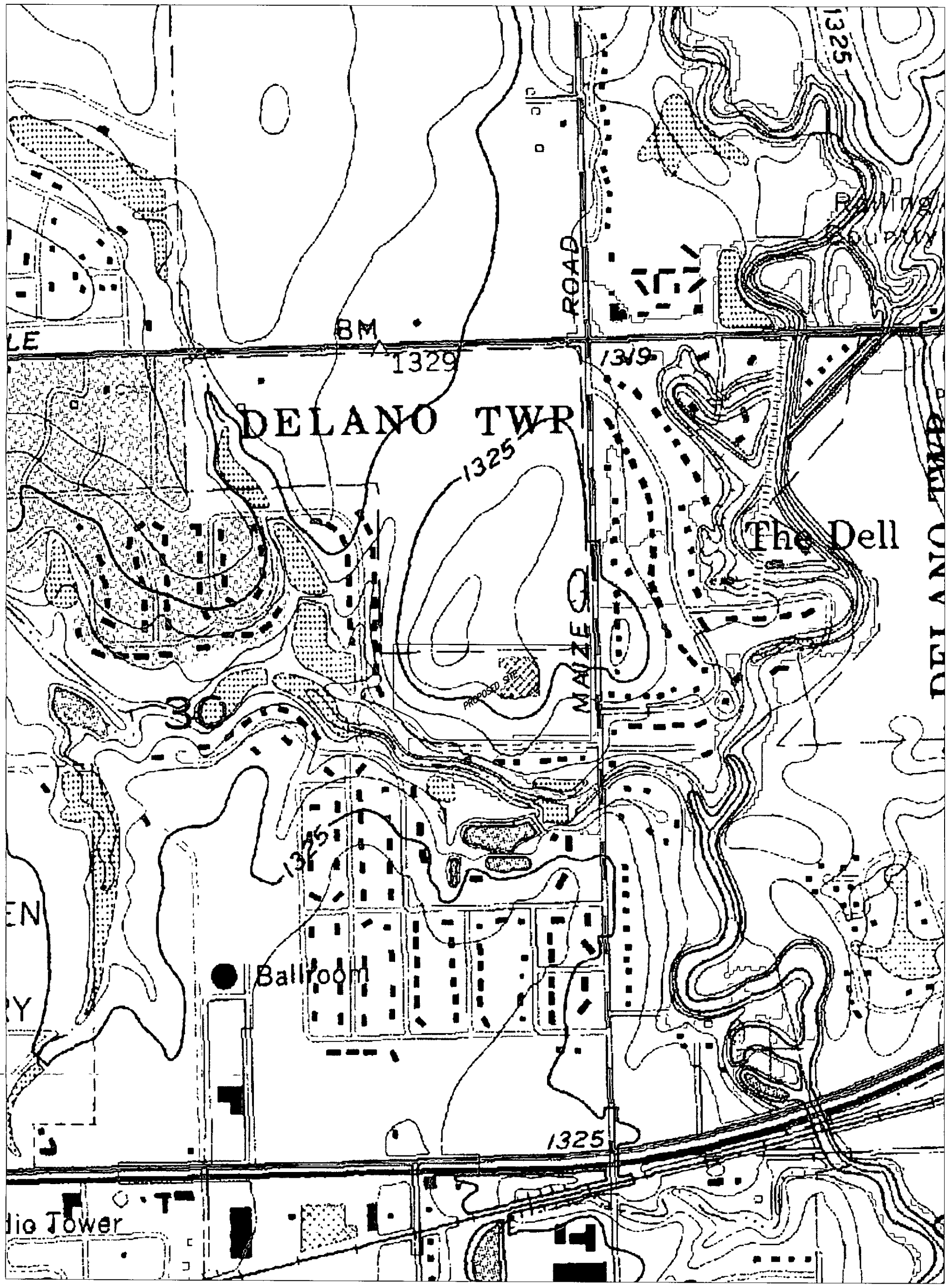
The site generally drains to the south and directly into the Calfskin Creek There are existing CMP's under Hidden Valley Road which convey the runoff from the site into the Calfskin Creek There is a mapped Zone AE FEMA Floodplain which lies on portion of the property The FEMA Floodway lies just to the south of the property and on portions of Hidden Valley Road

There does not appear to be any offsite flow encroaching the property from the adjacent properties

AERIAL EXHIBIT

LILLIE 2ND ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS



SCALE 1" = 600'

AERIAL EXHIBIT

Baughman Company, P.A.
315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

ONE - STEP FINAL PLAT

LILLIE 2ND ADDITION

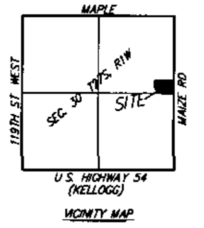
WICHITA, SEDGWICK COUNTY, KANSAS

0 100 200

DATE OF PREPARATION MARCH 26, 2006
DATE OF TOPOGRAPHY MAY 5, 2003
CONTOUR INTERVAL 1 FOOT

NOTE
ADDITIONAL BUILDING SETBACK REQUIREMENTS PER COMMUNITY UNIT PLAN DP-286 ON FILE WITH THE CITY OF WICHITA, KANSAS.

OWNER/DEVELOPER
PHYSICIANS DEVELOPEMENT LLC
% MATT LILLIE
7200 W 13TH ST SUITE #5
WICHITA KS 67212
PH (316) 773-5600



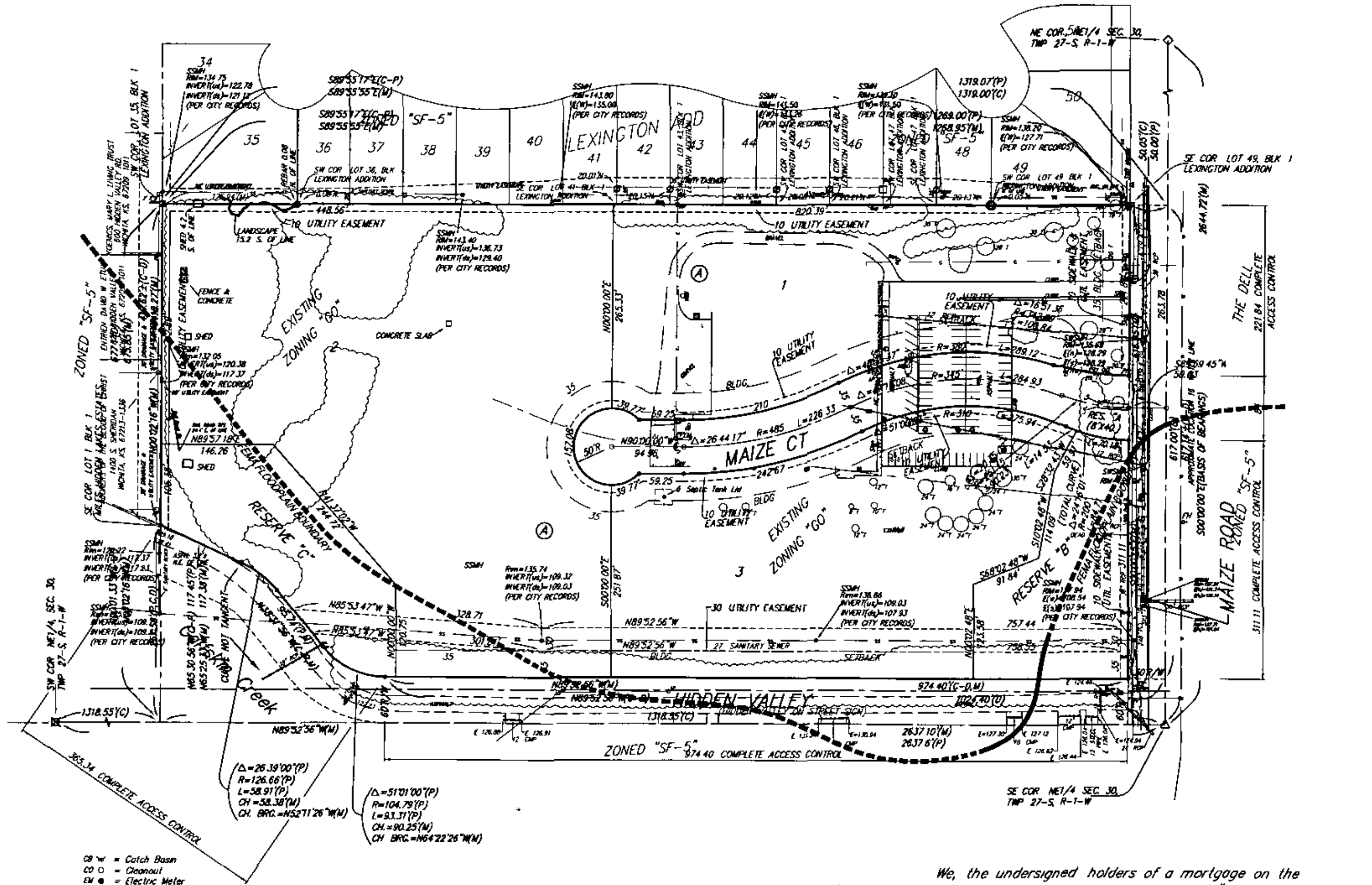
VICINITY MAP

- • = #4 BAUGHMAN REBAR (SET)
- ◇ = 3/4 IRON PIPE IN THIMBLE (FOUND)
- △ = 1/2 IRON PIPE IN THIMBLE (FOUND)
- ⊠ = 3/8 SQUARE REBAR (FOUND)
- ø = #4 REBAR W/ "SRB" CAP (FOUND)
- ◘ = #4 REBAR W/ ARMSTRONG CAP (FOUND)
- ▽ = #4 REBAR W/ "POE" CAP (FOUND)
- □ = #4 REBAR (FOUND)

(M) = MEASURED
(D) = DESCRIBED
(P) = PLATTED
(C) = CALCULATED
(C-P) = CALCULATED PER PLATTED INFO.
(C-D) = CALCULATED PER DESCRIBED INFO.

MINIMUM BUILDING PAD ELEVATIONS FOR LOWEST OPENING TO THE STRUCTURES		
LOT	BLOCK	ELEVATION MSL
2,3	A	1319.5

BENCHMARK
CITY OF WICHITA BENCHMARK DISC - MAIZE ROAD & McCORMICK (HIDDEN VALLEY) 0.5 MI S. OF MAPLE ON THE NE CORNER OF R.C.B.C. OVER COWSKIN CREEK SOUTH OF HIDDEN VALLEY
ELEV = 1318.93 NGVD29



CB = Catch Basin
CO = Cleanout
EM = Electric Meter
FP = Flag Pole
GM = Gas Meter
Guy = Guy Anchor
JBox = Electrical Junction Box
LP = Light Pole
MB = Mail Box
RD = Roof Drain
PP = Power Pole
Sign = Sign
SSMH = Sanitary Sewer Manhole
SWB Ped = Southwestern Bell Pedestal
SWSMH = Stormwater Sewer Manhole
Well = Cased Well
WV = Water Valve
FH = Fire Hydrant

WATER LINE
SBC TELEPHONE
GAS LINE
CABLE TV
FENCE
ELECTRIC LINE
SANITARY SEWER

NOTE
FEMA FLOODPLAIN BOUNDARY SCALED PER LOCATION PER FEMA FIRM PANEL 340 OF 700 FOR SEDGWICK COUNTY KANSAS, MAP NUMBER 20032103 40E EFFECTIVE FEBRUARY 2 2007

NOTE.
A DRAINAGE PLAN HAS BEEN DEVELOPED FOR THIS SUBDIVISION AND IS ON FILE WITH THE CITY OF WICHITA KANSAS. DRAINAGE INTENT SHALL REMAIN AS DEPICTED OR AS MODIFIED WITH THE APPROVAL OF THE CITY ENGINEER OF THE CITY OF WICHITA KANSAS. NO OBSTRUCTIONS WHICH IMPEDE THE FLOW OF THIS DRAINAGE PLAN SHALL BE ALLOWED.

We, the undersigned holders of a mortgage on the above described property, do hereby consent to this plat of "LILLIE 2ND ADDITION" Wichita, Sedgwick County Kansas

Conway Bank, N A

______________________ (Title)

State of Kansas)
Sedgwick County) SS The foregoing instrument acknowledged before me this____day of__________ 2007, by__________ ____________of Conway Bank N A on behalf of the bank
(Title)

______________________ Notary Public

My Appt Exp ________

State of Kansas)
Sedgwick County) SS We Baughman Company P.A., Surveyors in aforesaid county and state do hereby certify that we have surveyed and platted "LILLIE 2ND ADDITION" Wichita, Sedgwick County, Kansas and that the accompanying plat is a true and correct exhibit of the property surveyed, described as and being a replat of all of Lots 1, 2 and 3, Block A, together with all of Reserves "A" "B", and "C" and together with all of Maize Ct all as platted and dedicated in Lillie Addition Wichita, Sedgwick County, Kansas

All being situated in the NE1/4 of Sec 30, Twp 27-S R-1-W of the 6th P.M., Sedgwick County, Kansas

Existing public easements and dedications being vacated by virtue of K.S.A 12-512(b)

Baughman Company, P.A

______________________ Surveyor
Michael G Conrey

Know all men by these presents that we, the undersigned have caused the land in the surveyors certificate to be platted into a Lots, a Block, a Street and Reserves to be known as "LILLIE ADDITION" Wichita, Sedgwick County, Kansas. The utility easements are hereby granted as indicated for the construction and maintenance of all public utilities. The sidewalk and utility easements are hereby reserved for the construction and maintenance of public sidewalks and for the construction and maintenance of all public utilities The street is hereby dedicated to and for the use of the public Reserve "A" is hereby reserved for streets, entry monuments, open space utilities, and landscaping Reserve "B" is hereby reserved for lakes, landscaping, drainage purposes entry monuments signage, sidewalks and utilities as confined to easements Reserve "C" is hereby reserved for lakes, landscaping drainage purposes, and utilities as confined to easements. Reserves "A" "B" and "C" shall be owned and maintained by the lot owners association for the addition Access controls shall be as depicted on the face of the plat and are hereby granted to the City of Wichita Kansas The Minimum Building Pad Elevation for the lowest opening to the structures shall be as indicated on the face of the plat

Physicians Development, LLC, a Limited Liability Company

______________________, Member
Matt Lillie

State of Kansas)
Sedgwick County) SS The foregoing instrument acknowledged before me, this____day of__________ 2007 by Matt Lillie, Member of Physicians Development LLC a Limited Liability Company on behalf of the Limited Liability Company

______________________ Notary Public

My Appt Exp ________

This plat of "LILLIE 2ND ADDITION", Wichita Sedgwick County Kansas has been submitted to and approved by the Wichita-Sedgwick County Metropolitan Area Planning Commission, Wichita Kansas

Dated this________day of__________, 2007
Wichita-Sedgwick County Metropolitan Area Planning Commission

______________________, Chair
Darrell A Downing

______________________, Secretary
John L Schlegel

This plat approved and all dedications shown hereon accepted by the City Council of the City of Wichita Kansas this________day of__________ 2007

______________________ Mayor
Carlos Mayans

______________________, City Clerk
Karen Sublett

Reviewed in accordance with K.S.A 58-2005 on this______day of__________, 2007

____
Tricia L Robello, L.S. #1246
Deputy County Surveyor
Sedgwick County, Kansas

Entered on transfer record this______day of__________, 2007

______________________ County Clerk
Don Brace

State of Kansas)
Sedgwick County) SS This is to certify that this plat has been filed for record in the office of the Register of Deeds, this______day of__________ 2007 at_____o'clock___M and is duly recorded

______________________, Register of Deeds
Bill Meek

______________________ Deputy
Tonya Buckingham

LILLIE 2ND ADDITION
26 MARCH 2007

Baughman Company, P A
315 Ellis S Wichita KS 67211 P 316-262-7271 F 316-262-0149
Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

F \PLAT\LILLIE2\DWG\LILLIE2P DWG MGC

EXISTING CONDITIONS RUNOFF CALCULATIONS

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in calculating the existing conditions runoff values

- STORM SERIES
  - SCS Curve Number Method utilized for site runoff
  - 24-hour, 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, 100-yr Storm Events

- SITE FLOW
  - HydraFlow Hydrographs utilized for site runoff
  - Time of Concentration using City of Wichita minimum 15 min

SITE CHARACTERISTICS

The current site is mostly open space with an existing building and parking lot The soil type for this area is Type B, therefore a Curve Number (CN) of 69 was used for open spaces in fair condition The site generally flows to the south and under Hidden Valley Road via an 18" CMP and directly into the Calfskin Creek A portion of the site drains to a storm sewer system in the Maize Road ROW via 2-12" RCPs There is also an 18" RCP and 24" RCP just offsite to the south which conveys runoff to the Calfskin Creek

EXISTING CONDITIONS HYDROLOGIC ANALYSIS

The site produces approximately 92 cfs of runoff in the 100-year storm event This was based on a 15 minute time of concentration (Tc) and a CN or 69 As stated earlier, the majority of the site flows to the south and into the Calfskin Creek There is minimal sheet flow from the surrounding properties that encroaches this site The two (2) 12" RCPs which connect to the 36" storm sewer system will be removed upon construction

DOWNSTREAM DRAINAGE CAPACITY

As stated earlier, the site drains to the south and into the Calfskin Creek This area has historically had flooding problems, therefore, detention has been provided on the site to minimize the runoff to the Creek Portions of the site are in FEMA Zone AE Floodplains and will be located in Reserves

The existing 36" RCP storm sewer system will be utilized upon development The outlet for the proposed east pond will be an 18" RCP and will connect into the storm sewer system This pipe will replace the two 12" RCPs that the site currently utilizes

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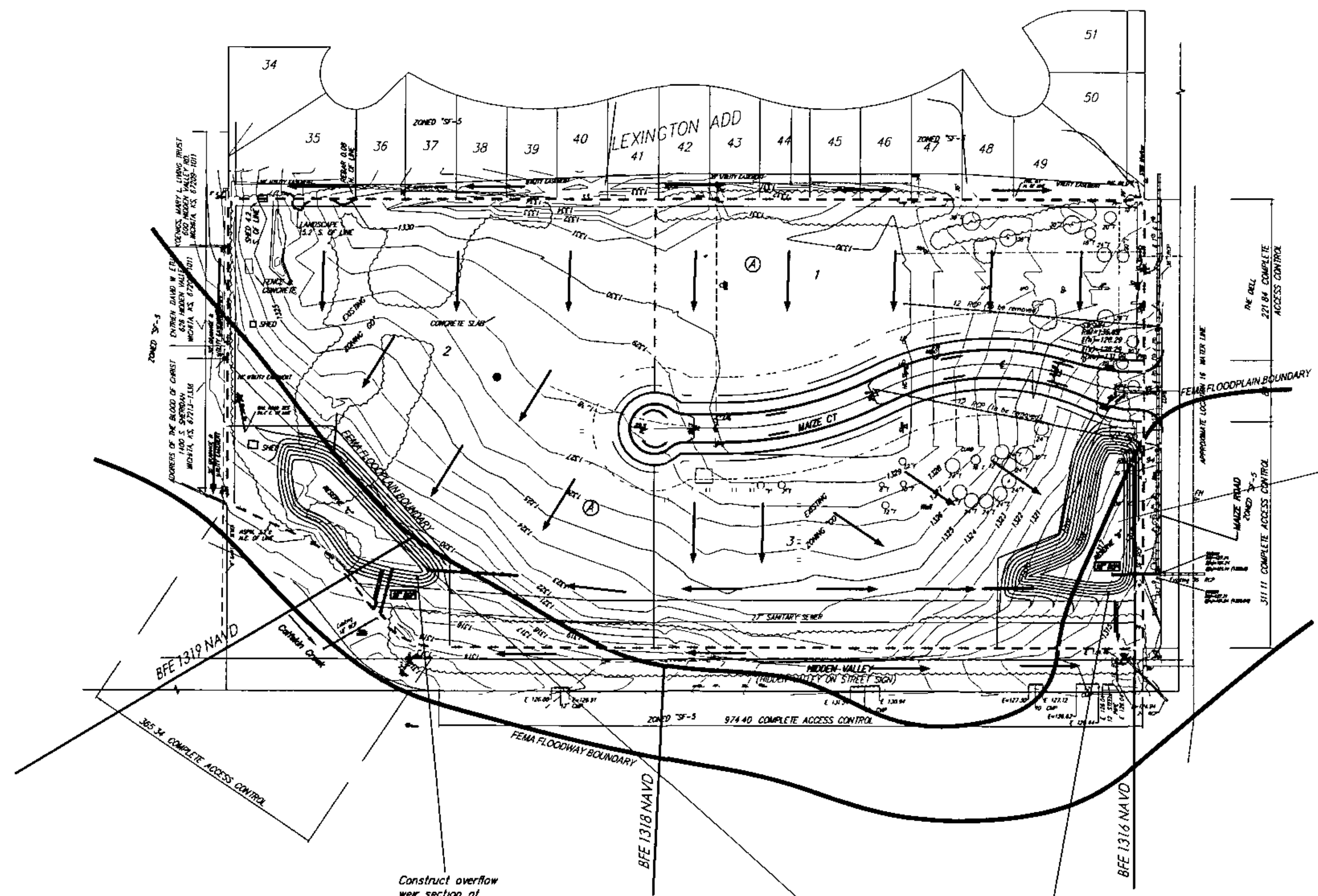
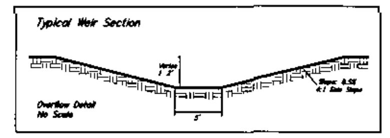
DRAINAGE & GRADING PLAN

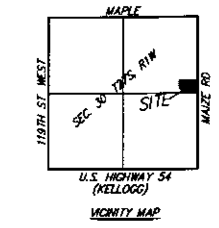
LILLIE 2ND ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

WEST BASIN AREA = 8 3 acres	
EXISTING	DEVELOPED
CN = 69	CN = 92
Tc = 15 min	Tc = 15 min
Q_2 = 9 3 cfs	Q_2 = 27 cfs
Q_{10} = 22 cfs	Q_{10} = 42 cfs
Q_{100} = 44 cfs	Q_{100} = 66 cfs







VICINITY MAP

0 100 200

DATE OF PREPARATION: MARCH 26, 2006
DATE OF TOPOGRAPHY: MAY 5, 2003
CONTOUR INTERVAL 1 FOOT

NOTE
ADDITIONAL BUILDING SETBACK REQUIREMENTS PER COMMUNITY UNIT PLAN DP-286 ON FILE WITH THE CITY OF WICHITA, KANSAS.

OWNER/DEVELOPER:
PHYSICIANS DEVELOPEMENT LLC
% MATT LILLIE
7200 W 13TH ST SUITE #5
WICHITA, KS 67212
PH. (316) 773-5600

= #4 BAUGHMAN REBAR (SET)
= 3/4 IRON PIPE IN THIMBLE (FOUND)
= 1/2 IRON PIPE IN THIMBLE (FOUND)
= 3/8 SQUARE REBAR (FOUND)
= #4 REBAR W/ "SRB" CAP (FOUND)
= #4 REBAR W/ "ARMSTRONG" CAP (FOUND)
= #4 REBAR W/ "POE" CAP (FOUND)
= #4 REBAR (FOUND)

BENCHMARK
CITY OF WICHITA BENCHMARK DISC - MAIZE ROAD & McCORMICK (HIDDEN VALLEY) 0.5 MI S. OF MAPLE ON THE NE CORNER OF R.C.B.C. OVER COWSKIN CREEK SOUTH OF HIDDEN VALLEY
ELEV = 1318.93 NGVD29

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(C-P) = CALCULATED PER PLATTED INFO.
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MINIMUM BUILDING PAD ELEVATIONS FOR LOWEST OPENING TO THE STRUCTURES		
LOT	BLOCK	ELEVATION MSL
2,3	A	1319.5

PROPOSED POND B (Static WS = 1311 0)			
STAGE	INFLOW	OUTFLOW	ELEVATION
2 yr	29 cfs	11 cfs	1313 4
10 yr	46 cfs	14 cfs	1314 6
100 yr	71 cfs	15 cfs	1316 4

PROPOSED POND	
ELEVATION	AREA (acres)
13 1	9 000
1312	11 000
1313	13 100
1314	15 500
1315	18,000
1316	18,000
1317	18,000

EAST BASIN AREA = 9 0 acres	
EXISTING	DEVELOPED
CN = 69	CN = 92
Tc = 15 min	Tc = 15 min
Q_2 = 10 cfs	Q_2 = 29 cfs
Q_{10} = 24 cfs	Q_{10} = 46 cfs
Q_{100} = 48 cfs	Q_{100} = 71 cfs

Construct overflow weir section at 1316 5 See detail above

Construct overflow weir section at 1316.5 See detail above

PROPOSED POND B (Static WS = 1313 5)			
STAGE	INFLOW	OUTFLOW	ELEVATION
2 yr	27 cfs	6 7 cfs	1315 7
10 yr	42 cfs	11 cfs	1316 7
100 yr	66 cfs	37 cfs	1317 5

PROPOSED POND	
ELEVATION	AREA (acres)
1313 5	11 ?00
1314	13,000
1315	15,?50
1316	16 ?20
1317	20,000
1318	20,000

CB = Catch Basin

EM = Electric Meter
FP = Flag Pole
GM = Gas Meter
Guy = Guy Anchor
JBox = Electrical Junction Box
LP = Light Pole
MB = Mail Box
RD = Roof Drain
PP = Power Pole
Sign = Sign

SWSMH = Stormwater Sewer Manhole
Well = Cased Well
WV = Water Valve
FH = Fire Hydrant

WATER LINE
GAS LINE
CABLE TV
FENCE
ELECTRIC LINE

NOTE
FEMA FLOODPLAIN BOUNDARY SCALED PER LOCATION PER FEMA FIRM PANEL 340 OF 700 FOR SEDGWICK COUNTY KANSAS. MAP NUMBER 2003210340E EFFECTIVE FEBRUARY 2 2007

DRAINAGE & GRADING PLAN
LILLIE 2ND ADDITION
26 MARCH 2007

Baughman Company, P A
Baughman
F 316-262-0149
ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

F |PLAT|LILLIE2|DWG|LILLIE2P DWG-MGC

AERIAL EXHIBIT

LILLIE 2ND ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

SCALE 1" = 300'

AERIAL EXHIBIT

Baughman Company , P.A.
315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

POST-DEVELOPMENT HYDROLOGIC ANALYSIS

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in developing the drainage and grading plans.

- STORM SERIES
  - SCS Curve Number Method utilized
  - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, 100-yr Storm Events Modeled

- Developed Site Runoff
  - Calculated in HydraFlow Hydrographs
  - Developed CN = 92 (Commercial & Business)
  - Minimum Tc = 15 min

DETENTION FACILITIES

There will be two (2) detention facilities that this site utilizes for storm water detention. The first, located at the southeast corner of the site, will detain the eastern 9 acres of the developed site. The second, located at the southwest corner, will detain the remaining 8.3 acres. These ponds will be referred to as the Southeast pond and the Southwest pond.

- **Southeast Pond**

  The southeast pond will serve the east potion of the proposed property. This pond will have a static water surface of 1311.0. This pond will drain into an existing SWS in the Maize Road ROW. There are currently 2-12" RCPs which connect into this system which will be removed. The outlet for the pond will be an 18" RCP with an overflow weir at elevation 1316.5. The 100-year water surface elevation of the pond is a 1316.4 (with no tailwater applied). The Base Flood Elevation at this location is a 1315.5 NGVD. The overflow weir is not expected to function until the 100-year flood event is achieved. The minimum opening for building pads for this area will be placed at least 2 feet above the highest water surface, in this case, the 100-year water surface of the pond.

- **Southwest Pond**

  The southwest pond will detain the runoff from the western portion of the proposed site. This pond will have a static water surface of a 1313.5. The pond will be located in a FEMA 100-year Floodplain. The pond will drain via a 15" RCP to the south and then into an existing 18" RCP located under Hidden Valley Road. This pipe drains directly into the Calfskin Creek. The pond will also have a 5' overflow weir section at elevation 1316.5. The proposed southwest pond will have a 100-year water surface of a 1317.5 (no tailwater applied). The 100-year water surface elevation of the Calfskin Creek at this location is a 1318.5 NGVD. The lowest opening to structures in this area will be at least 2 feet above the FEMA BFE.

POTENTIAL UPSTREAM/DOWNSTREAM IMPACTS

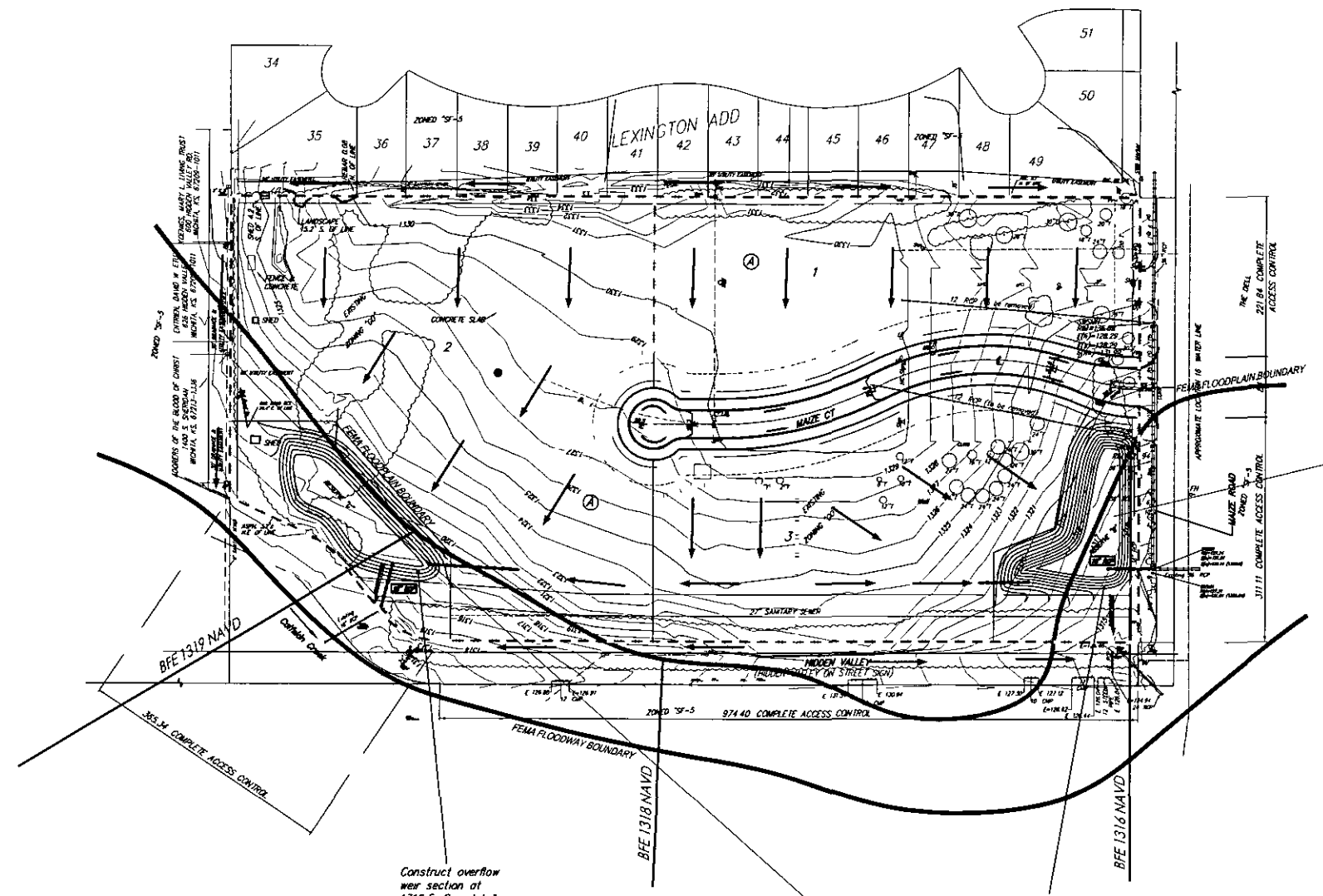
No potential upstream impacts are expected with this development. The site will detain its runoff in two separate ponds and utilize existing pipes to convey the runoff to the south and into the Calfskin Creek. No rise in the FEMA Base Flood Elevations are expected from this development as little to no fill will be placed in the FEMA SFHA.

DRAINAGE & GRADING PLAN

LILLIE 2ND ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

WEST BASIN AREA = 8.3 acres	
EXISTING	DEVELOPED
CN = 69	CN = 92
Tc = 15 min	Tc = 15 min
Q_2 = 9.3 cfs	Q_2 = 27 cfs
Q_{10} = 22 cfs	Q_{10} = 42 cfs
Q_{100} = 44 cfs	Q_{100} = 66 cfs



Typical Weir Section

Overflow Detail
No Scale

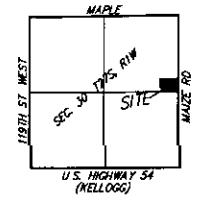
PROPOSED POND B (Static WS = 1311.0)			
STAGE	INFLOW	OUTFLOW	ELEVATION
2 yr	18 cfs	11 cfs	1313.1
10 yr	42 cfs	11 cfs	1314.9
100 yr	66 cfs	11 cfs	1316.1

PROPOSED POND	
ELEVATION	AREA (acres)
1311	9.000
1312	11.150
1313	12.500
1314	13.850
1315	15.000
1316	16.825
1317	20.500
1318	21.500

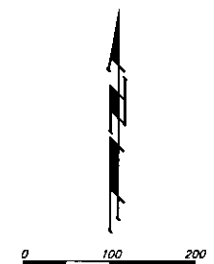
PROPOSED POND B (Static WS = 1313.5)			
STAGE	INFLOW	OUTFLOW	ELEVATION
2 yr	31 cfs	5.7 cfs	1313.7
10 yr	42 cfs	11 cfs	1314.9
100 yr	66 cfs	37 cfs	1317.5

PROPOSED POND	
ELEVATION	AREA (acres)
1311.5	11.500
1314	13.850
1315	14.850
1316	16.825
1317	20.500
1318	21.500

EAST BASIN AREA = 9.0 acres	
EXISTING	DEVELOPED
CN = 69	CN = 92
Tc = 15 min	Tc = 15 min
Q_2 = 10 cfs	Q_2 = 29 cfs
Q_{10} = 24 cfs	Q_{10} = 46 cfs
Q_{100} = 48 cfs	Q_{100} = 71 cfs



VICINITY MAP



DATE OF PREPARATION MARCH 28, 2006
DATE OF TOPOGRAPHY MAY 9, 2003
CONTOUR INTERVAL 1 FOOT

NOTE,
ADDITIONAL BUILDING SETBACK REQUIREMENTS PER COMMUNITY UNIT PLAN DP-286 ON FILE WITH THE CITY OF WICHITA, KANSAS.

OWNER/DEVELOPER
PHYSICIANS DEVELOPMENT LLC
% MATT LELIE
7200 W 13TH ST SUITE J5
WICHITA, KS 67212
PH: (316) 773-5600

BENCHMARK
CITY OF WICHITA BENCHMARK DOC. =
MAIZE ROAD @ McCORMICK (HIDDEN VALLEY)
0.5 MI. S. OF MAPLE ON THE NE CORNER
OF R.C.B.C. OVER CONDON CREEK
SOUTH OF HIDDEN VALLEY
ELEV = 1318.93 NGVD29

= #4 BAUDMAN REBAR (SET)
= 3/4" IRON PIPE IN THIMBLE (FOUND)
= 1/2" IRON PIPE IN THIMBLE (FOUND)
= 3/8" SQUARE REBAR (FOUND)
= #4 REBAR W/ 2IN. CAP (FOUND)
= #4 REBAR W/ LONGTRONG CAP (FOUND)
= #4 REBAR W/ "PDE" CAP (FOUND)
= #4 REBAR (FOUND)

(M) = MEASURED
(D) = DESCRIBED
(P) = PLATTED
(C) = CALCULATED
(C-P) = CALCULATED PER PLATTED INFO.
(C-D) = CALCULATED PER DESCRIBED INFO.

MINIMUM BUILDING PAD ELEVATIONS FOR LOWEST OPENING TO THE STRUCTURES		
LOT	BLOCK	ELEVATION MSL
23	A	1319.5

CB = Catch Basin
EM = Electric Meter
FP = Flag Pole
GM = Gas Meter
Guy = Guy Anchor
Elec = Electrical Junction Box
LP = Light Pole
MB = Mail Box
RD = Roof Drain
PP = Power Pole
Sign = Sign

Sewer = Storm water Sewer Manhole
Well = Cased Well
WV = Water Valve
FH = Fire Hydrant

WATER LINE
GAS LINE
CABLE TV
FENCE
ELECTRIC LINE

NOTE
FEMA FLOODPLAIN BOUNDARY SCALED PER LOCATION PER FEMA FIRM PANEL 340 OF 700 FOR SEDGWICK COUNTY, KANSAS, MAP NUMBER 20093210340E EFFECTIVE FEBRUARY 2, 2007

DRAINAGE & GRADING PLAN
LILLIE 2ND ADDITION
26 MARCH 2007

Baughman Company, P.A.
105 Elm St. Wichita, KS 67211 P 316.262.4771 F 316.262.0149

SOURCE OF FLOODPLAIN INFORMATION

Portions of the site lie within FEMA Zone AE SFHA This means, that a base flood elevation has been determined by detailed study on this reach of the creek This is per FEMA FIRM Panel 340 of 700 for Sedgwick County, Kansas, effective February 2, 2007

The Base Flood Elevation (BFE) varies across the proposed site from 1316-1319 NAVD The minimum pad for lowest openings will be set to give at least a 2' freeboard to these flooding elevations Little to no fill is expected to be placed the 100-year floodplain, therefore no rise or study of the reach is expected For this reason, additional detailed studies were not performed

The FEMA FIRM panel for this area is located in Exhibit 6 The data table and flood profiles are located in the following pages as Exhibits 7 & 8, respectively

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding particularly from local drainage sources of small size The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information Accordingly flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction

FEMA recommends that a Flood Insurance Policy be purchased for structures in areas where levees are shown as providing protection from the 1% annual chance flood Flooding is not covered by standard property/fire/dwelling insurance policies nor is it covered by Homeowners Insurance Renters Insurance Condominium Owners Insurance or Commercial Property Insurance Contact your insurance agent and local floodplain administrator for further information. Visit http://www.fema.gov/pdf/fhm/frm_gsah.pdf for information on levees and the risk of flooding in areas shown as being protected by levees.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 14 The horizontal datum was NAD 83 GRS80 spheroid Differences in datum, spheroid projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address

Spatial Reference System Division
National Geodetic Survey NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description and/or location information about the bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at http://www.ngs.noaa.gov

Base map information shown on this FIRM was provided by Sedgwick County GIS as digital data in Kansas State Plane Coordinate System South at a scale of 1 12,000 from photography dated June 2000

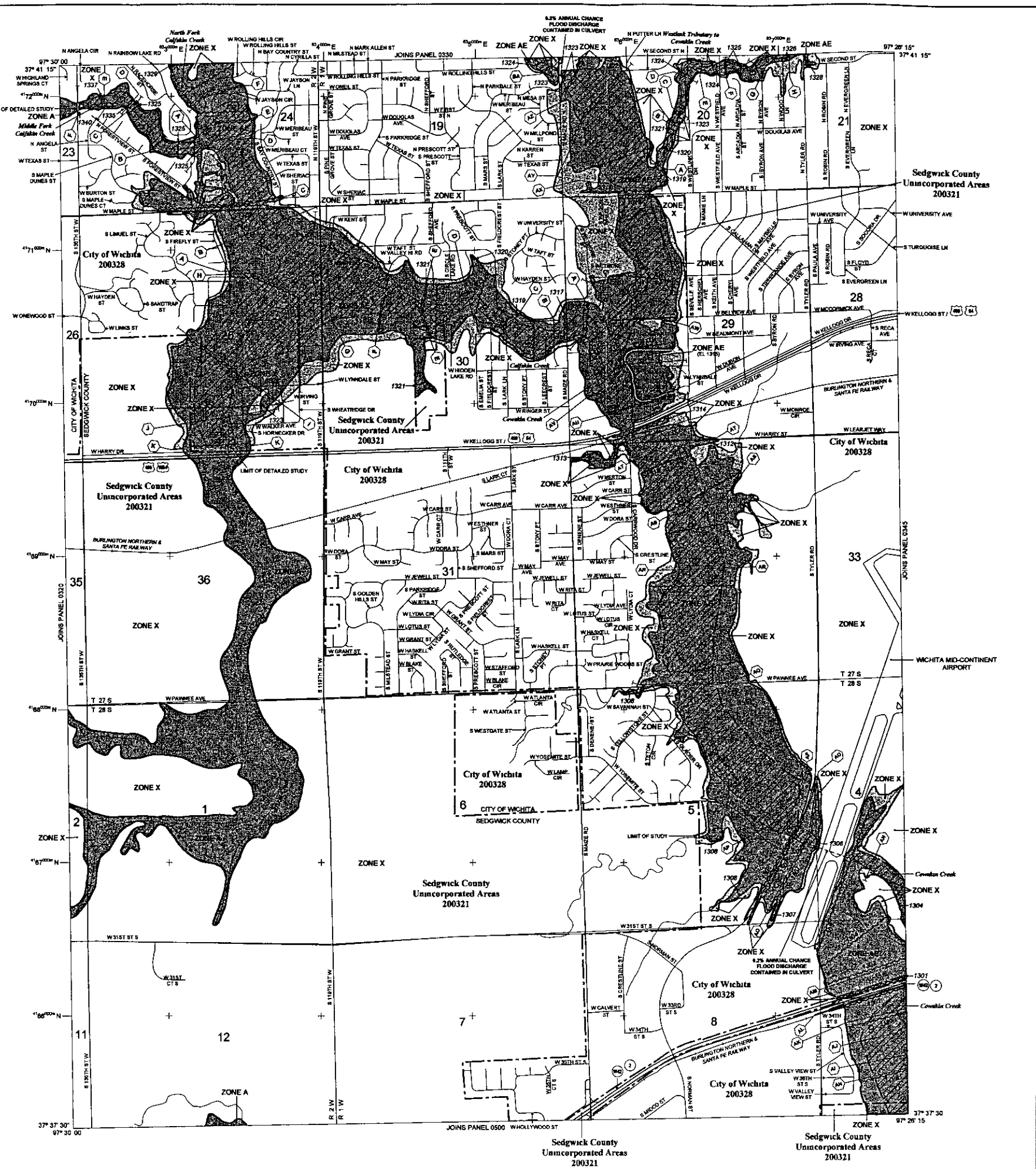
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

This map reflects more detailed up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the FEMA Map Service Center at 1-800-358-9616 for information on available products associated with this FIRM Available products may include previously issued Letters of Map Change a Flood Insurance Study report, and/or digital versions of this map The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.fema.gov/msc

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1 877 FEMA MAP (1-877-336-2627) or visit the FEMA website at http://www.fema.gov



LEGEND

▨ SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction, no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▧ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▧ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
—— ——	Floodway boundary
—— - ——	Zone D boundary
•	CBRS and OPA boundary
←	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

Ⓐ———Ⓐ	Cross section line
㉓- - - - -㉓	Transect line
45° 02' 08" 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere.
⁴⁵89ᵐᵐ N	1000-meter Universal Transverse Mercator grid values, zone 14
ML5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP

FEBRUARY 2 2007

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0340E

FIRM

FLOOD INSURANCE RATE MAP

SEDGWICK COUNTY, KANSAS
AND INCORPORATED AREAS

PANEL 340 OF 700

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEDGWICK COUNTY	200321	0340	E
WICHITA, CITY OF	200328	0340	E

Notice to User The Map Number shown below should be used when placing map orders the Community Number shown above should be used on insurance applications for the subject community

MAP NUMBER
20173C0340E

EFFECTIVE DATE
FEBRUARY 2, 2007

Federal Emergency Management Agency

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
CALFSKIN CREEK								
A	1,010	480	3,368	3.9	1,316 1	1,316 1	1,316 7	0 6
B	1,850	314	2,995	4 3	1,317 5	1,317 5	1,318 3	0 8
C	3,085	300	2,732	4.8	1,319 0	1,319 0	1,319 7	0 7
D	4,160	255	2,335	5 6	1,320.3	1,320.3	1,321.1	0 8
E	5,380	600	4,729	2 7	1,321.4	1,321 4	1,322 3	0.9
F	6,355	888	7,679	1 7	1,321 9	1,321 9	1,322 9	1 0
G	7,765	1,571	11,887	1 1	1,322 1	1,322 1	1,323 1	1 0
H	9,040	1,832	10,671	0 6	1,322 2	1,322 2	1,323 2	1 0
I	11,190	917	4,123	1 6	1,322 4	1,322 4	1,323 3	0 9
J	12,370	725	3,567	1 8	1,323 1	1,323 1	1,323 9	0 8
K	13,080	600	2,606	2 5	1,323 6	1,323 6	1,324 3	0 7

[1]Feet above confluence with Cowskin Creek

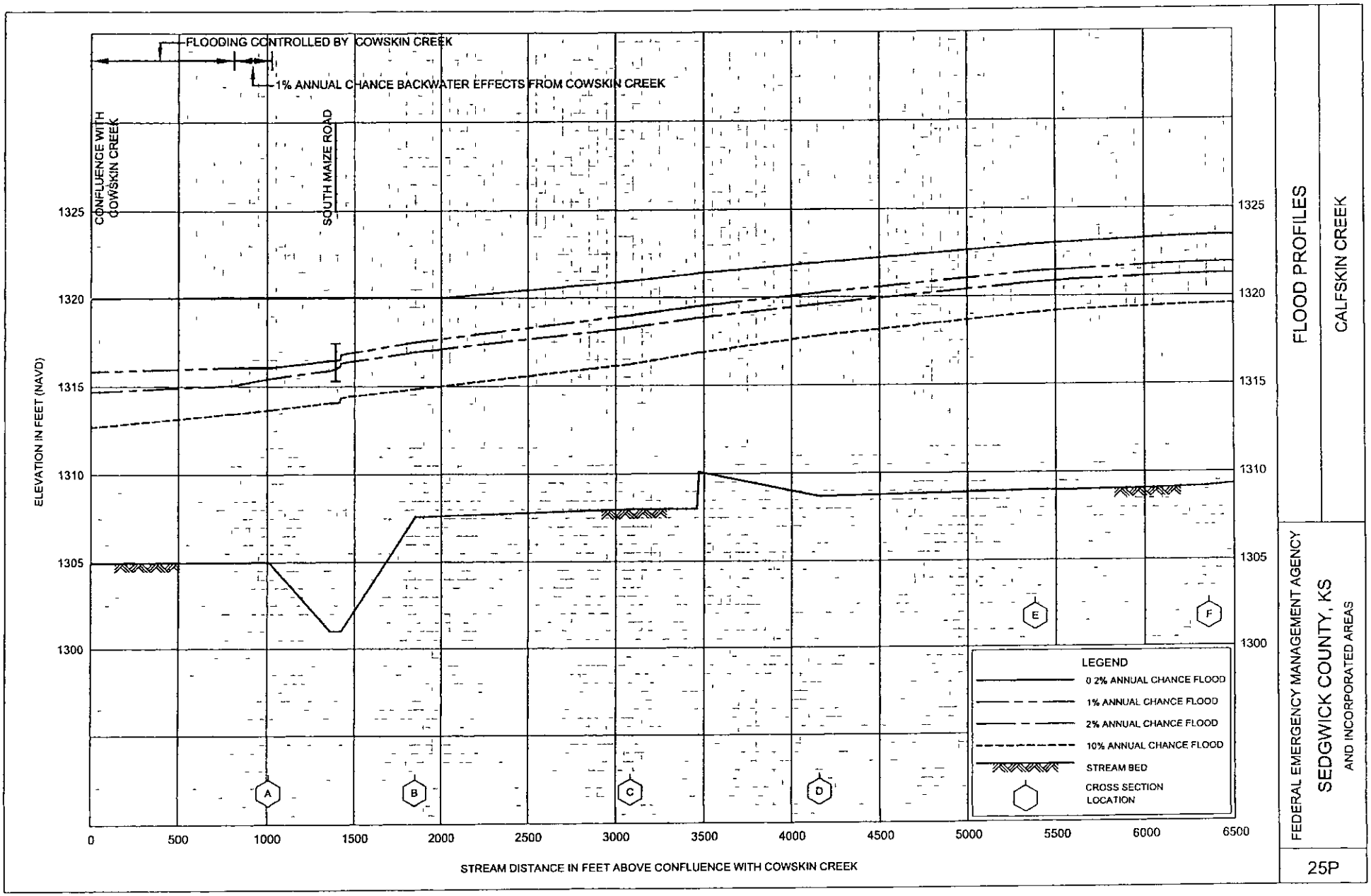
TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

SEDGWICK COUNTY, KS
AND INCORPORATED AREAS

FLOODWAY DATA

CALFSKIN CREEK



FLOOD PROFILES

CALFSKIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SEDGWICK COUNTY, KS

AND INCORPORATED AREAS

25P

FEDERAL, STATE, & LOCAL PERMITTING

US ARMY CORPS OF ENGINEERS
There does not appear to any USACOE permitting needed on the site at this time

KANSAS DEPT OF AGRICULTURE – DWR PERMITTING
Little to no fill is expected to be placed in the 100-year Floodplain, therefore, no DWR permitting is expected According to the DWR rules and regulations, an exemption is allowed on floodplain fills where the amount of fill placed is less than 1600 cu yds and is less than 2 feet in height

FEMA
A FEMA Zone AE exists on this property as of April 2, 2007 These areas will be located mainly in reserves, where the proposed ponds will be located No change in the floodplain of floodway is expected, therefore, no permitting will be needed from FEMA on this development

KANSAS DEPT OF TRANSPORTATION
There does not appear to be any KDOT permitting needed on the proposed project

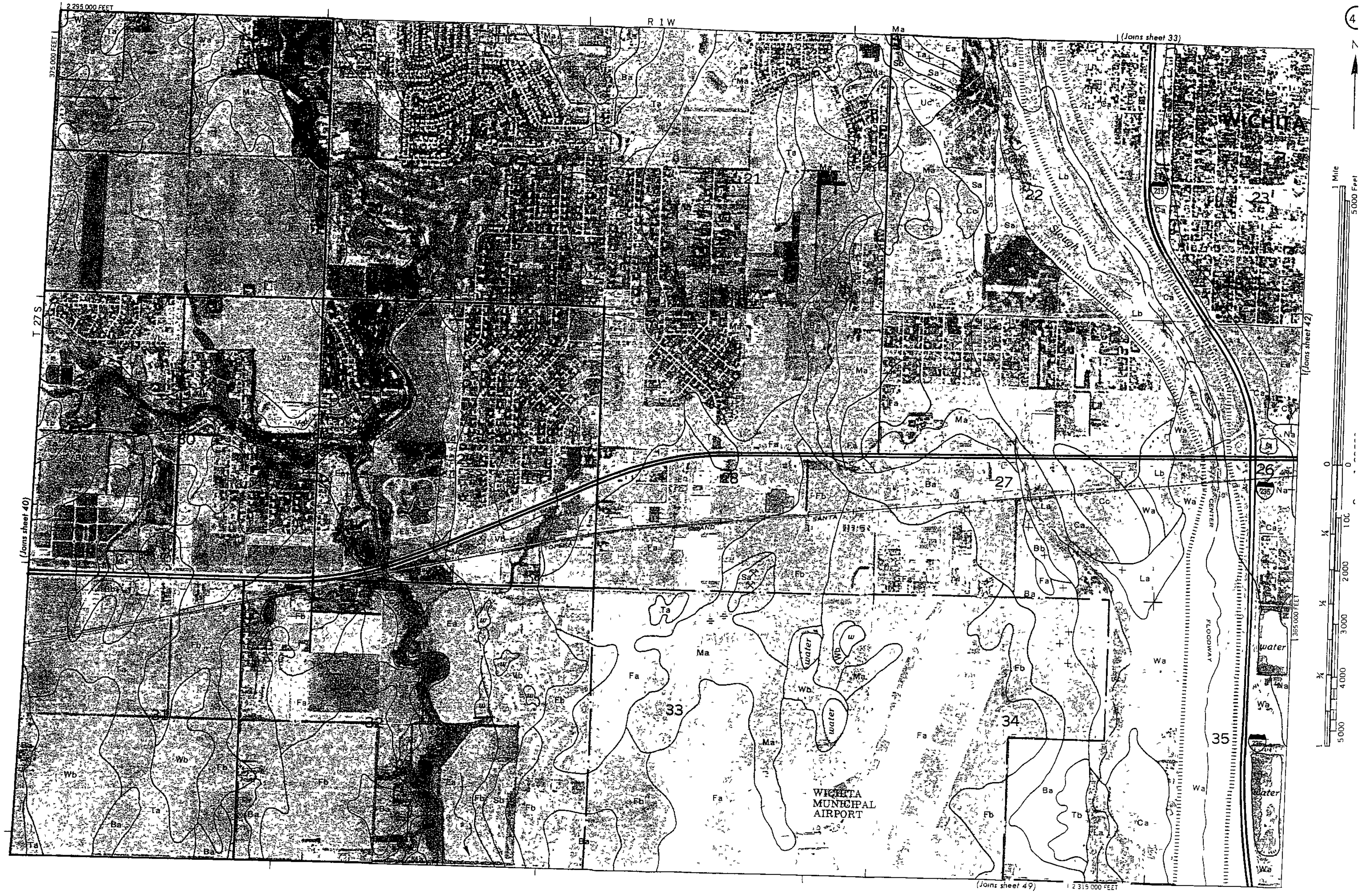
SEDGWICK COUNTY ROW
There does not appear to be any Sedgwick County Permitting on the proposed project

SUPPORTING CALCULATIONS

APPENDIX A: USGS Soils Survey

APPENDIX B: HydraFlow Hydrographs
- -Southeast Pond
- -Southwest Pond

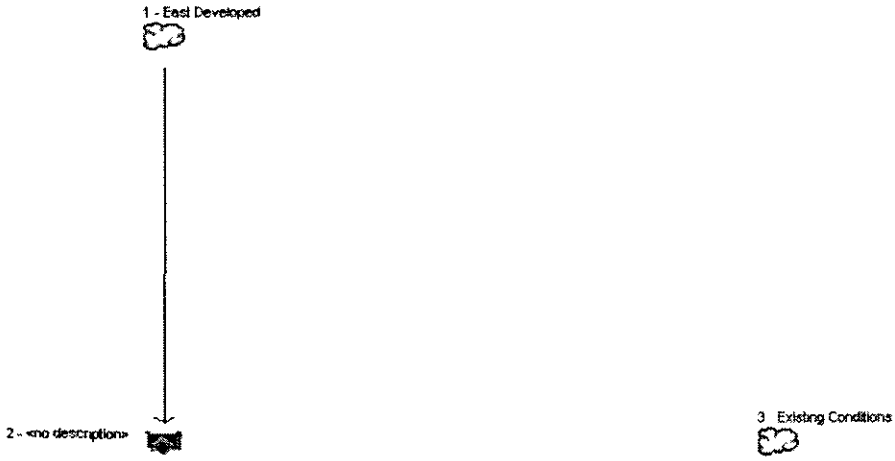
USGS Soils Survey


R 1 W
T 27 S
(Joins sheet 33)
(Joins sheet 42)
(Joins sheet 40)
(Joins sheet 49)
2 295 000 FEET
375 000 FEET
365 000 FEET
2 315 000 FEET
WICHITA
WICHITA MUNICIPAL AIRPORT
CENTER
FLOODWAY
VALLEY
Slough
SANTA FE
water
1 Mile
5000 Feet

HydraFlow Hydrographs

Southeast Pond
Southwest Pond

Watershed Model Schematic



Legend

Hyd	Origin	Description
1	SCS Runoff	East Developed
2	Reservoir	<no description>
3	SCS Runoff	Existing Conditions

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9 02

Hyd No	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	29 02	2	722	83,989	---	------	------	East Developed
2	Reservoir	11 05	2	734	83,970	1	1313 44	28,250	<no description>
3	SCS Runoff	10 06	2	724	30,386	---	------	------	Existing Conditions

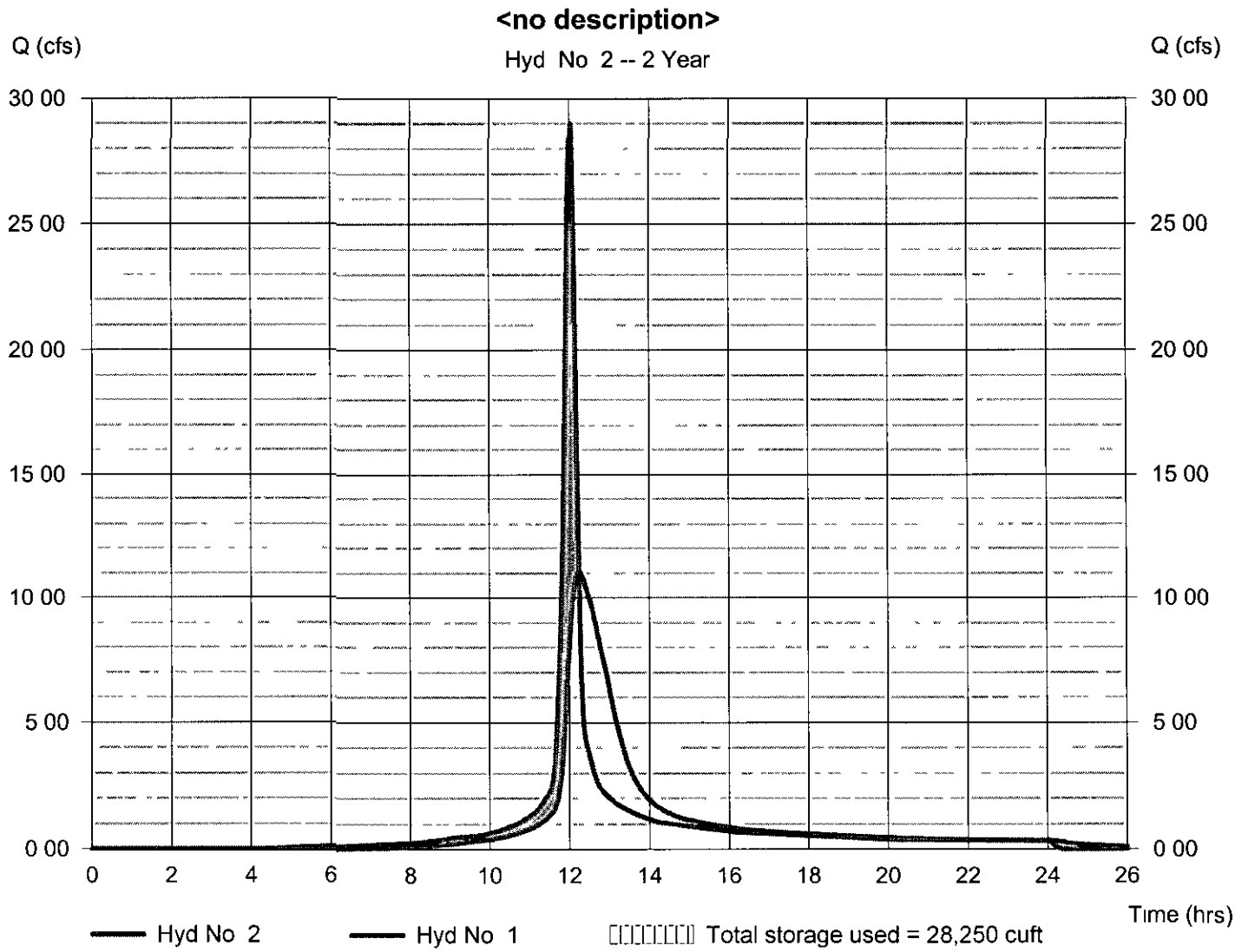
Hydrograph Report

Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 11 05 cfs
Storm frequency	= 2 yrs	Time to peak	= 12 23 hrs
Time interval	= 2 min	Hyd volume	= 83,970 cuft
Inflow hyd. No.	= 1 - East Developed	Max Elevation	= 1313.44 ft
Reservoir name	= <New Pond>	Max Storage	= 28,250 cuft

Storage Indication method used



Pond Report

Hydraflow Hydrographs by Intelisolve v9 02 — Monday, Apr 2, 2007

Pond No 1 - <New Pond>

Pond Data

Contours - User-defined contour areas Conic method used for volume calculation Beginning Elevation = 1311 00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr Storage (cuft)	Total storage (cuft)
0 00	1311 00	9,000	0	0
1 00	1312 00	11,000	9,982	9,982
2 00	1313 00	13,100	12,034	22,016
3 00	1314 00	15,500	14,282	36,298
4 00	1315 00	18,000	16,733	53,030
5 00	1316 00	18,000	17,998	71,029
6 00	1317 00	18,000	17,998	89,027

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18 00	0 00	0 00	0 00
Span (in)	= 18 00	0 00	0 00	0 00
No Barrels	= 1	0	0	0
Invert El (ft)	= 1311 00	0 00	0 00	0 00
Length (ft)	= 65 00	0 00	0 00	0 00
Slope (%)	= 3 00	0 00	0 00	n/a
N-Value	= 013	013	013	n/a
Orifice Coeff	= 0 60	0 60	0 60	0 60
Multi-Stage	= n/a	No	No	No

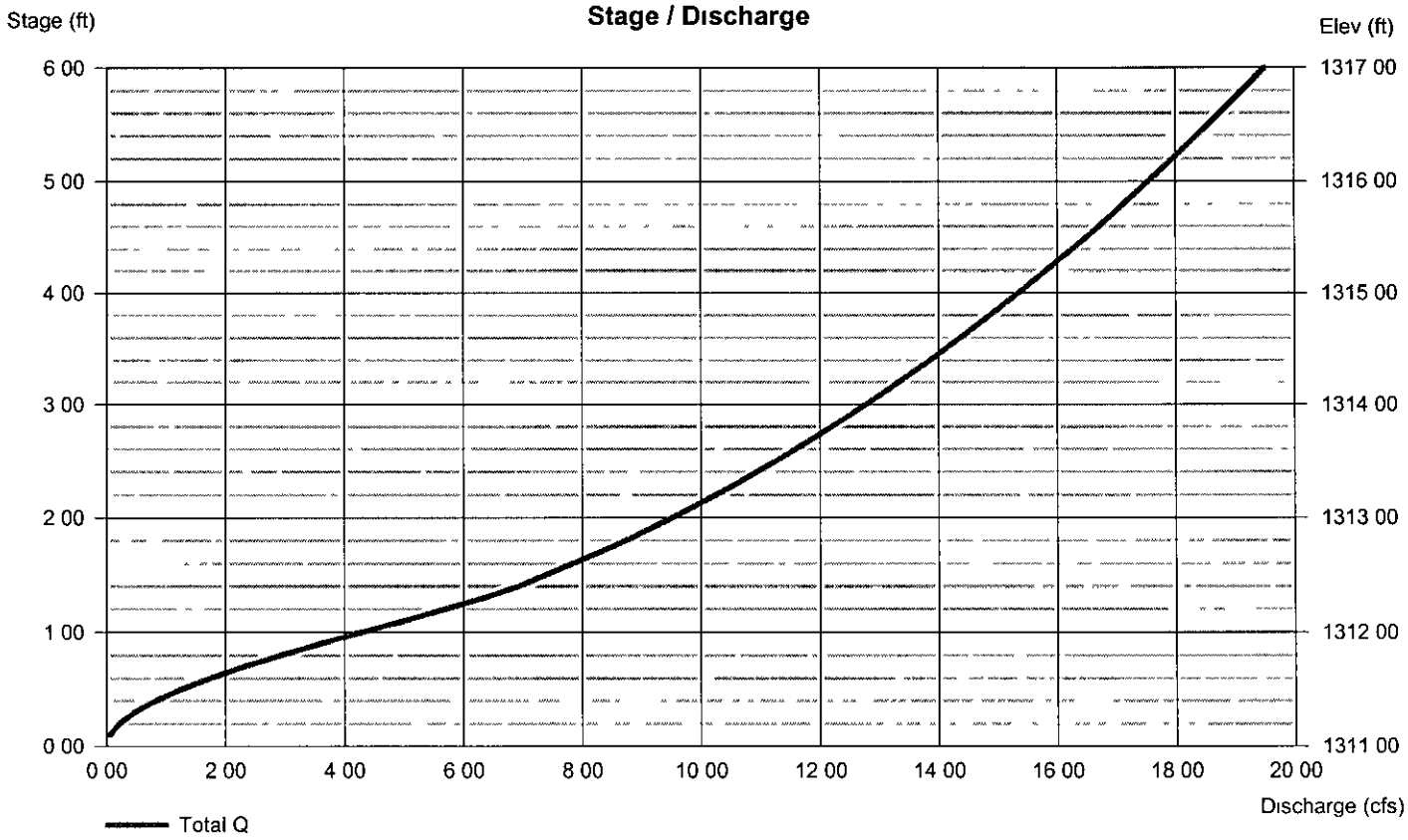
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0 00	0 00	0 00	0 00
Crest El (ft)	= 0 00	0 00	0 00	0 00
Weir Coeff	= 3 33	3 33	3 33	3 33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil (in/hr) = 0 000 (by Contour)

TW Elev (ft) = 0 00

Note Culvert/Orifice outflows are analyzed under inlet and outlet control Weir risers are checked for orifice conditions



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9 02

Hyd No	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0 000	2	n/a	0	----	------	------	East Developed
2	Reservoir	0 000	2	n/a	0	1	1311 00	0 000	<no description>
3	SCS Runoff	0 000	2	n/a	0	----	------	------	Existing Conditions

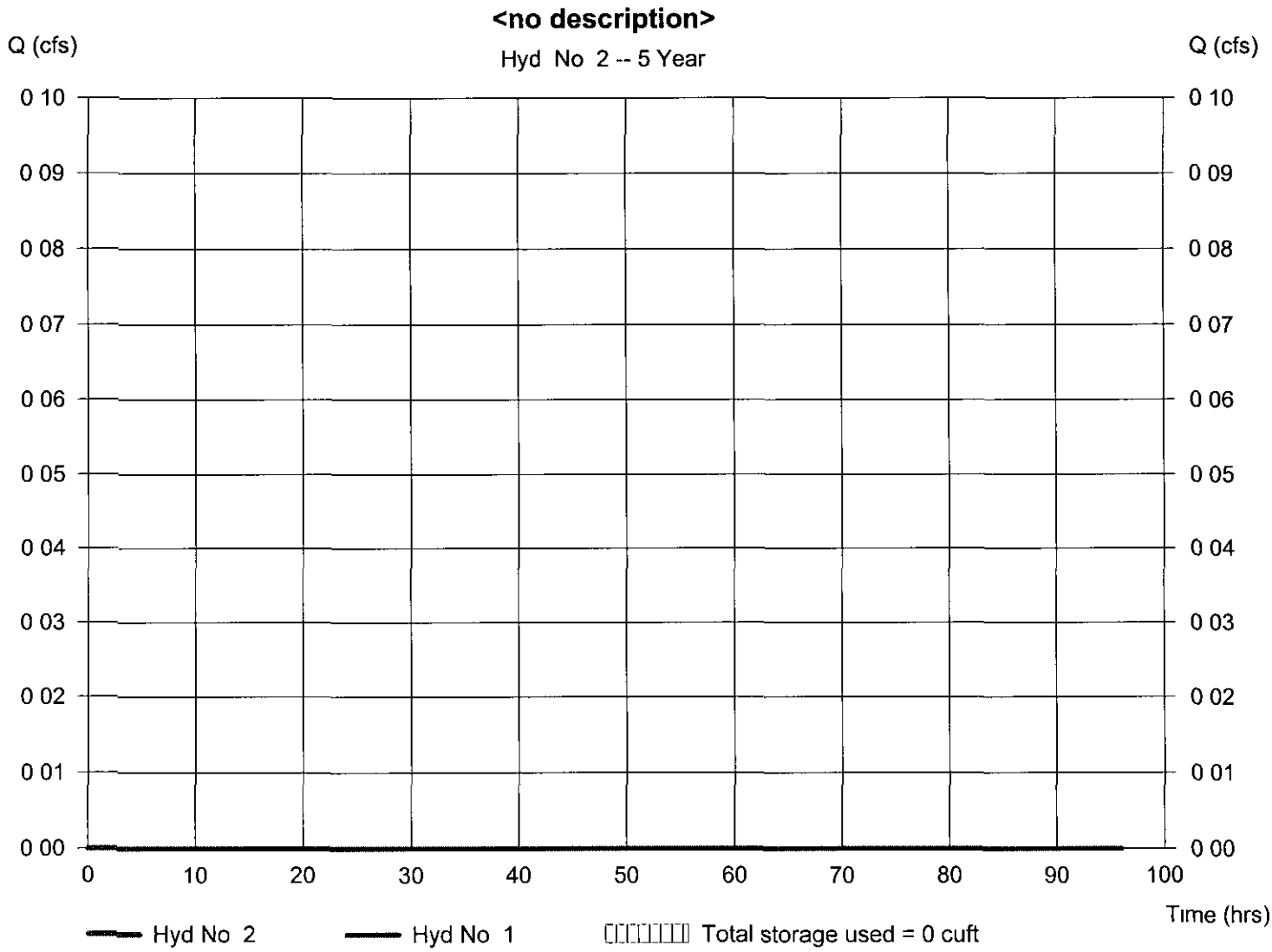
Hydrograph Report

Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 0 000 cfs
Storm frequency	= 5 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd volume	= 0 cuft
Inflow hyd No	= 1 - East Developed	Max Elevation	= 1311 00 ft
Reservoir name	= <New Pond>	Max Storage	= 0 cuft

Storage Indication method used



Pond Report

Hydraflow Hydrographs by Intelisolve v9 02 — Monday, Apr 2, 2007

Pond No 1 - <New Pond>

Pond Data

Contours - User-defined contour areas Conic method used for volume calculation Begining Elevation = 1311 00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr Storage (cuft)	Total storage (cuft)
0 00	1311 00	9,000	0	0
1 00	1312 00	11,000	9,982	9,982
2 00	1313 00	13,100	12,034	22,016
3 00	1314 00	15,500	14,282	36,298
4 00	1315 00	18,000	16,733	53,030
5 00	1316 00	18,000	17,998	71,029
6 00	1317 00	18,000	17,998	89,027

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18 00	0 00	0 00	0 00
Span (in)	= 18 00	0 00	0 00	0 00
No Barrels	= 1	0	0	0
Invert El (ft)	= 1311 00	0 00	0 00	0 00
Length (ft)	= 65 00	0 00	0 00	0 00
Slope (%)	= 3 00	0 00	0 00	n/a
N-Value	= 013	013	013	n/a
Orifice Coeff	= 0 60	0 60	0 60	0 60
Multi-Stage	= n/a	No	No	No

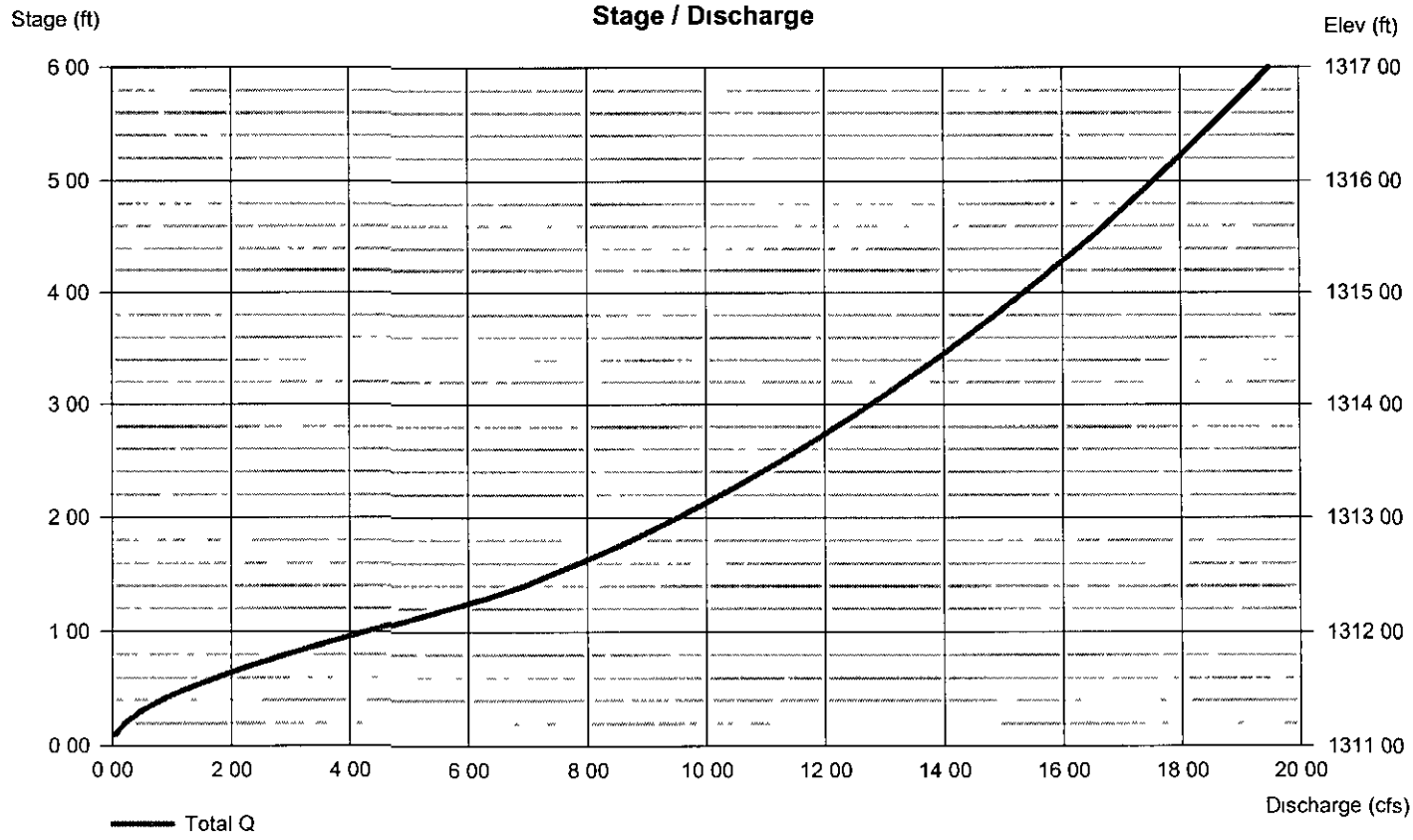
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0 00	0 00	0 00	0 00
Crest El (ft)	= 0 00	0 00	0 00	0 00
Weir Coeff	= 3 33	3 33	3 33	3 33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil (in/hr) = 0 000 (by Contour)

TW Elev (ft) = 0 00

Note Culvert/Orifice outflows are analyzed under inlet and outlet control Weir risers are checked for orifice conditions



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9 02

Hyd No	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	45 93	2	722	136,484	----	-----	-----	East Developed
2	Reservoir	14 44	2	736	136,466	1	1314 63	46,863	<no description>
3	SCS Runoff	23 52	2	722	67,017	----	-----	------	Existing Conditions

Hydrograph Report

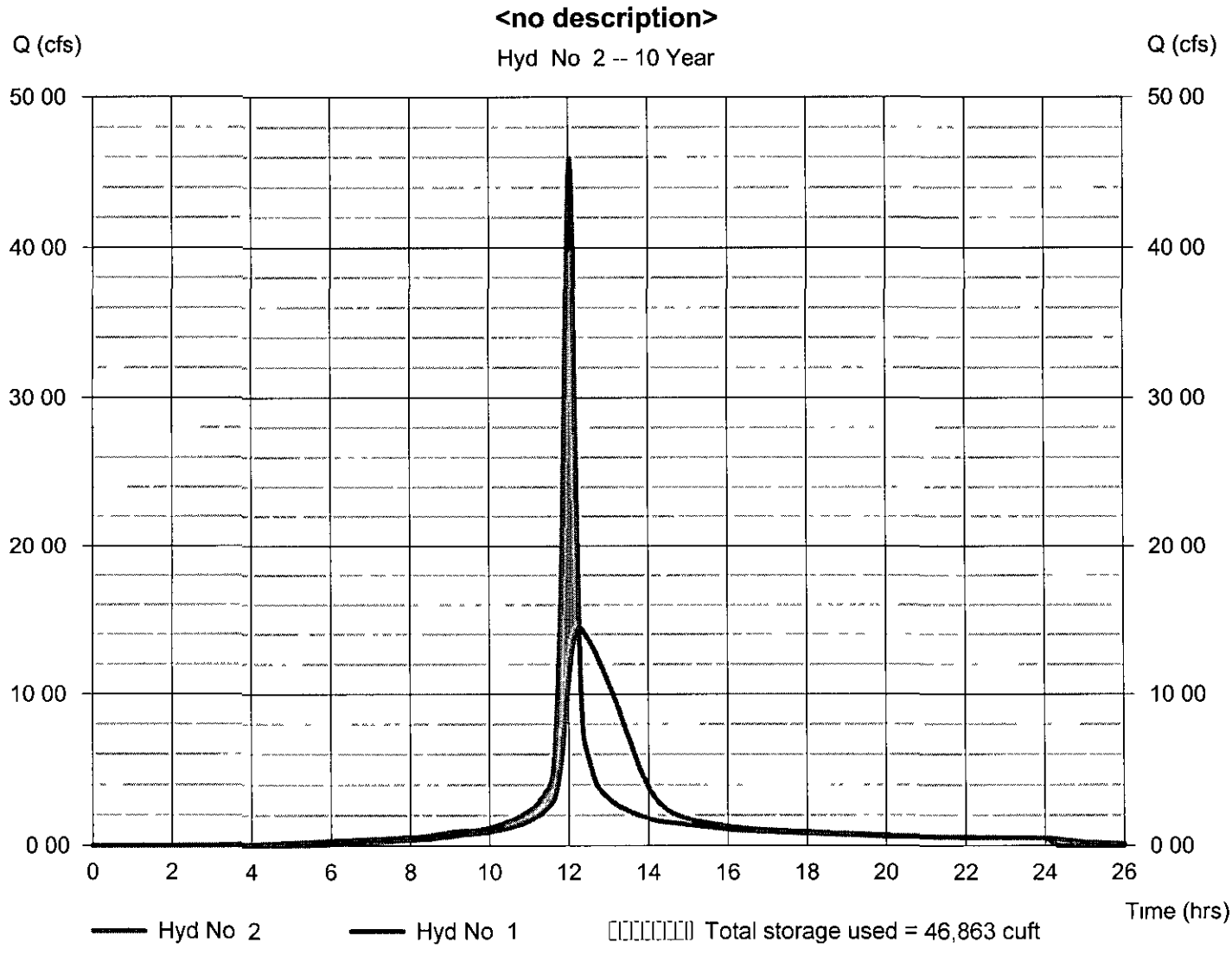
Hydraflow Hydrographs by Intelisolve v9 02 — Monday, Apr 2, 2007

Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 14 44 cfs
Storm frequency	= 10 yrs	Time to peak	= 12 27 hrs
Time interval	= 2 min	Hyd volume	= 136,466 cuft
Inflow hyd No	= 1 - East Developed	Max Elevation	= 1314 63 ft
Reservoir name	= <New Pond>	Max Storage	= 46,863 cuft

Storage Indication method used



Pond Report

Pond No 1 - <New Pond>

Pond Data

Contours - User-defined contour areas Conic method used for volume calculation Begining Elevation = 1311 00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr Storage (cuft)	Total storage (cuft)
0 00	1311 00	9,000	0	0
1 00	1312 00	11,000	9,982	9,982
2 00	1313 00	13,100	12,034	22,016
3 00	1314 00	15,500	14,282	36,298
4 00	1315 00	18,000	16,733	53,030
5 00	1316 00	18,000	17,998	71,029
6 00	1317 00	18,000	17,998	89,027

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18 00	0 00	0 00	0 00
Span (in)	= 18 00	0 00	0 00	0 00
No Barrels	= 1	0	0	0
Invert El (ft)	= 1311 00	0 00	0 00	0 00
Length (ft)	= 65 00	0 00	0 00	0 00
Slope (%)	= 3 00	0 00	0 00	n/a
N-Value	= 013	013	013	n/a
Orifice Coeff	= 0 60	0 60	0 60	0 60
Multi-Stage	= n/a	No	No	No

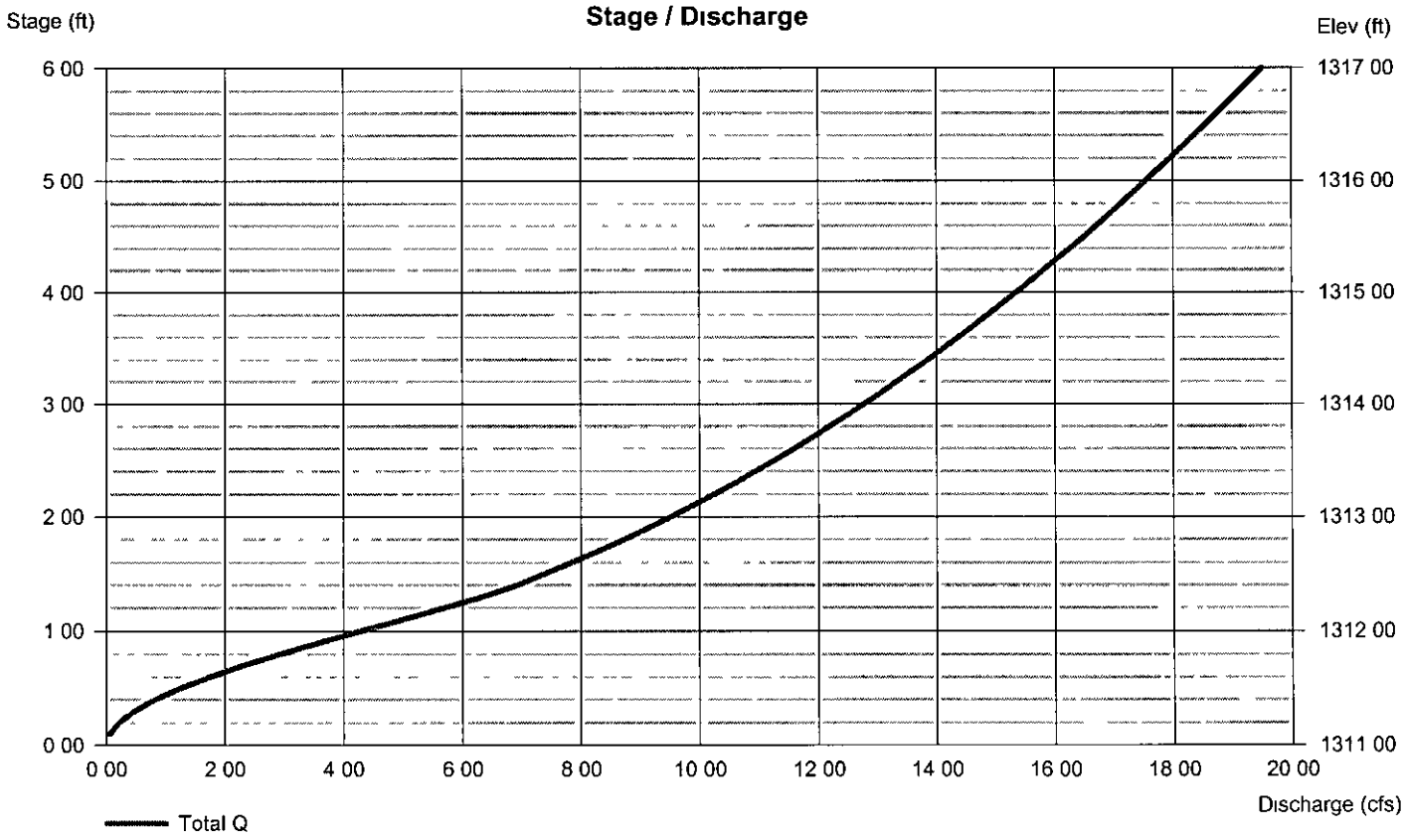
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0 00	0 00	0 00	0 00
Crest El (ft)	= 0 00	0 00	0 00	0 00
Weir Coeff	= 3 33	3 33	3 33	3 33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil (in/hr) = 0 000 (by Contour)

TW Elev (ft) = 0 00

Note Culvert/Orifice outflows are analyzed under inlet and outlet control Weir risers are checked for orifice conditions



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9 02

Hyd No	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	71 44	2	722	218,052	---	------	------	East Developed
2	Reservoir	18 24	2	738	218,034	1	1316 36	77,297	<no description>
3	SCS Runoff	47 50	2	722	133,153	---	------	------	Existing Conditions

Hydrograph Report

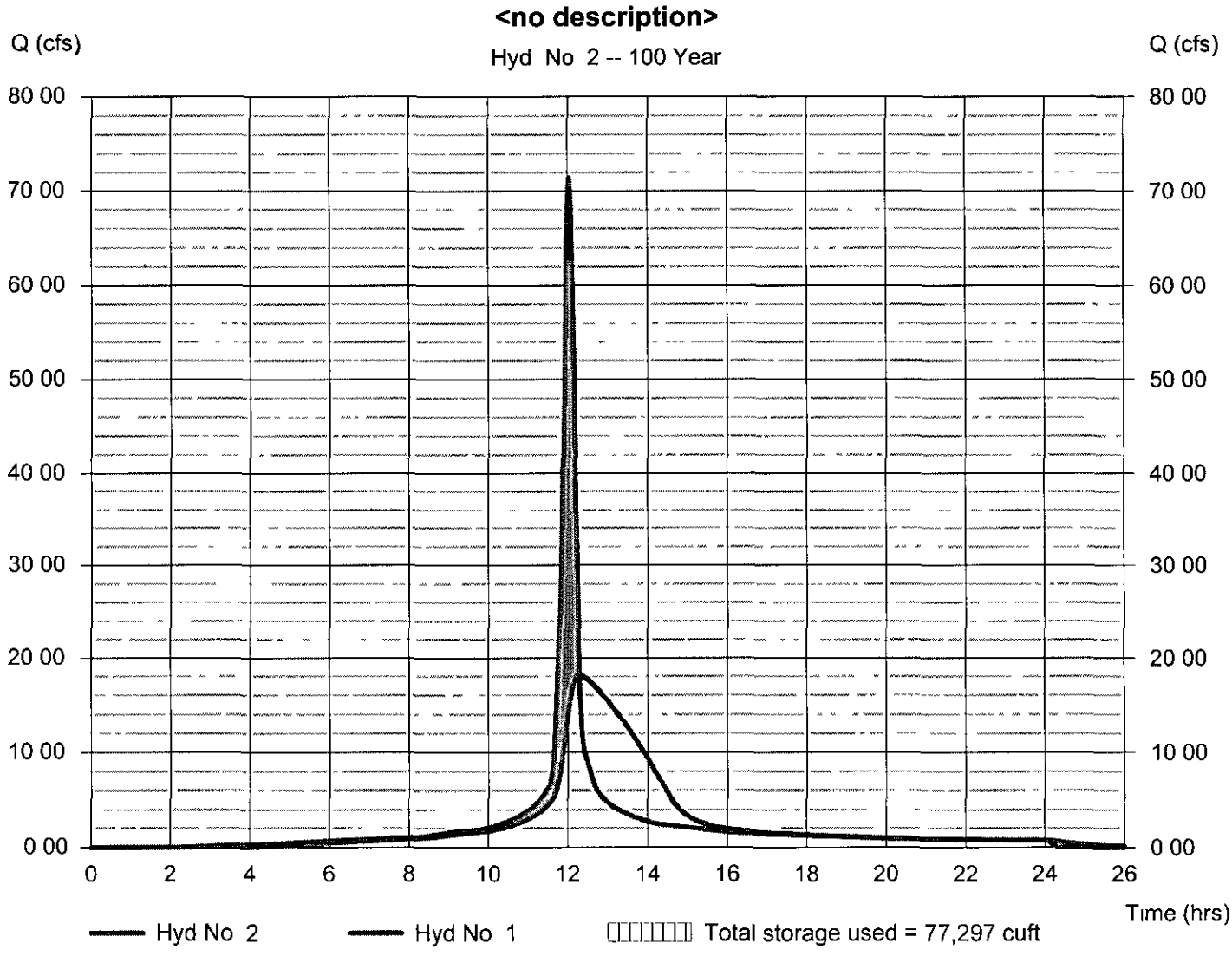
Hydraflow Hydrographs by Intelisolve v9 02 — Monday, Apr 2, 2007

Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 18 24 cfs
Storm frequency	= 100 yrs	Time to peak	= 12 30 hrs
Time interval	= 2 min	Hyd volume	= 218,034 cuft
Inflow hyd No	= 1 - East Developed	Max Elevation	= 1316 36 ft
Reservoir name	= <New Pond>	Max Storage	= 77,297 cuft

Storage Indication method used



Pond Report

Pond No. 1 - <New Pond>

Pond Data

Contours - User-defined contour areas Conic method used for volume calculation Beginning Elevation = 1311 00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr Storage (cuft)	Total storage (cuft)
0 00	1311 00	9,000	0	0
1 00	1312 00	11,000	9,982	9,982
2 00	1313 00	13,100	12,034	22,016
3 00	1314 00	15,500	14,282	36,298
4 00	1315 00	18,000	16,733	53,030
5 00	1316 00	18,000	17,998	71,029
6 00	1317 00	18,000	17,998	89,027

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18 00	0 00	0 00	0 00
Span (in)	= 18 00	0 00	0 00	0 00
No Barrels	= 1	0	0	0
Invert El (ft)	= 1311 00	0 00	0 00	0 00
Length (ft)	= 65 00	0 00	0 00	0 00
Slope (%)	= 3 00	0 00	0 00	n/a
N-Value	= 013	013	013	n/a
Orifice Coeff	= 0 60	0 60	0 60	0 60
Multi-Stage	= n/a	No	No	No

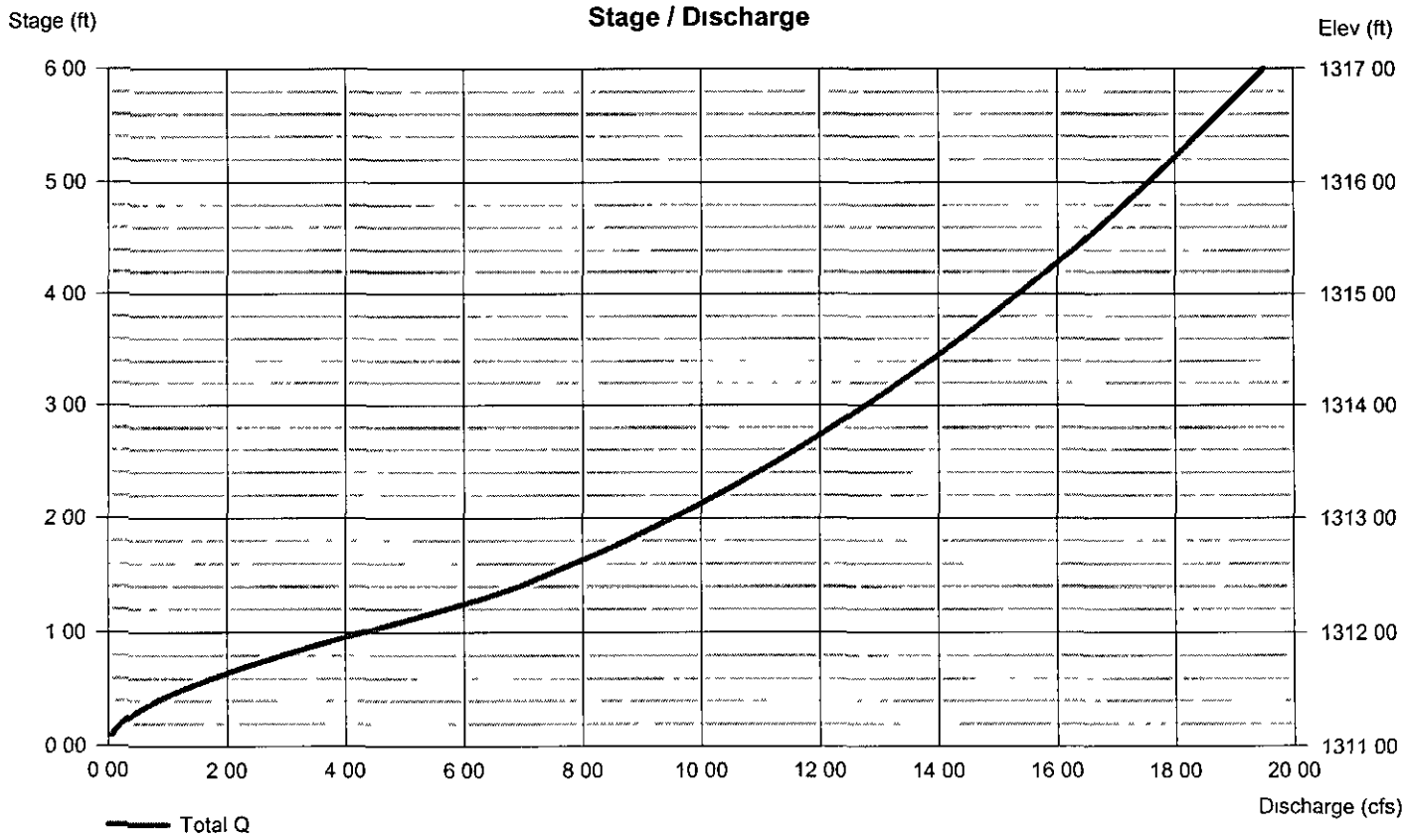
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0 00	0 00	0 00	0 00
Crest El (ft)	= 0 00	0 00	0 00	0 00
Weir Coeff	= 3 33	3 33	3 33	3 33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil (in/hr) = 0 000 (by Contour)

TW Elev (ft) = 0 00

Note Culvert/Orifice outflows are analyzed under inlet and outlet control Weir risers are checked for orifice conditions



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0 0000	0 0000	0 0000	-------
2	69 8703	13 1000	0 8658	-------
3	0 0000	0 0000	0 0000	-------
5	79 2597	14 6000	0 8369	-------
10	88 2351	15 5000	0 8279	-------
25	102 6072	16 5000	0 8217	-------
50	114 8193	17 2000	0 8199	-------
100	127 1596	17 8000	0 8186	-------

File name SampleFHA idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
2	5 69	4 61	3 89	3 38	2 99	2 69	2 44	2 24	2 07	1 93	1 81	1 70
3	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
5	6 57	5 43	4 65	4 08	3 65	3 30	3 02	2 79	2 59	2 42	2 27	2 15
10	7 24	6 04	5 21	4 59	4 12	3 74	3 43	3 17	2 95	2 77	2 60	2 46
25	8 25	6 95	6 03	5 34	4 80	4 38	4 02	3 73	3 48	3 26	3 07	2 91
50	9 04	7 65	6 66	5 92	5 34	4 87	4 49	4 16	3 88	3 65	3 44	3 25
100	9 83	8 36	7 30	6 50	5 87	5 36	4 94	4 59	4 29	4 03	3 80	3 60

Tc = time in minutes Values may exceed 60

Precip file name SCS_24HR pcp

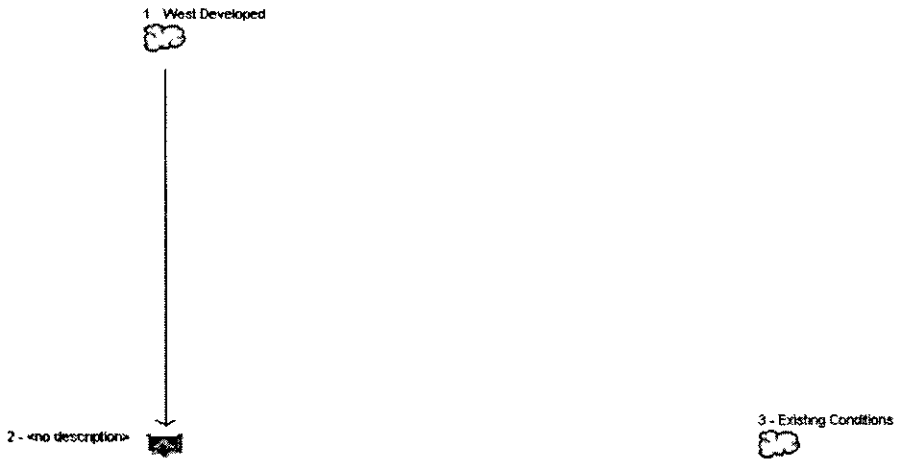
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0 00	3 50	0 00	3 30	5 20	5 77	6 80	7 80
SCS 6-Hr	0 00	1 80	0 00	0 00	2 60	0 00	0 00	4 00
Huff-1st	0 00	1 55	0 00	2 75	4 00	5 38	6 50	8 00
Huff-2nd	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Huff-3rd	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Huff-4th	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Huff-Indy	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Custom	0 00	1 75	0 00	2 80	3 90	5 25	6 00	7 10

Hydraflow Table of Contents

Hydraflow Hydrographs by Intelisolve v9 02

Monday, Apr 2, 2007

Watershed Model Schematic



Legend

Hyd	Origin	Description
1	SCS Runoff	West Developed
2	Reservoir	<no description>
3	SCS Runoff	Existing Conditions

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9 02

Hyd No	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	26 76	2	722	77,456	----	------	------	West Developed
2	Reservoir	6 794	2	738	77,408	1	1315 66	31,896	<no description>
3	SCS Runoff	9 282	2	724	28,023	----	------	------	Existing Conditions

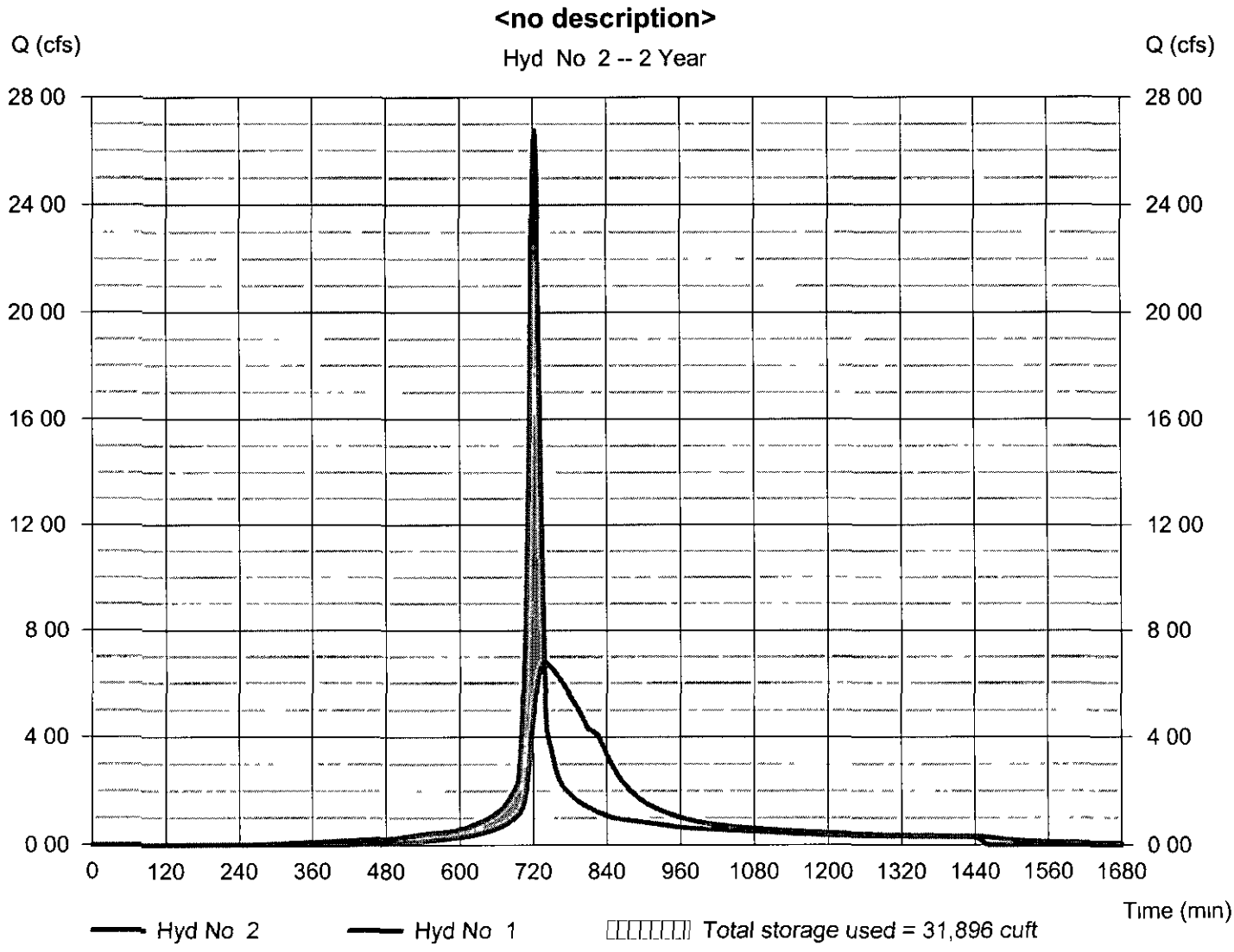
Hydrograph Report

Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 6 794 cfs
Storm frequency	= 2 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd volume	= 77,408 cuft
Inflow hyd No	= 1 - West Developed	Max Elevation	= 1315 66 ft
Reservoir name	= <New Pond>	Max Storage	= 31,896 cuft

Storage Indication method used



Pond Report

Hydraflow Hydrographs by Intelisolve v9 02 — Monday, Apr 2, 2007

Pond No 1 - <New Pond>

Pond Data

Contours - User-defined contour areas Conic method used for volume calculation Begining Elevation = 1313 50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr Storage (cuft)	Total storage (cuft)
0 00	1313 50	11,500	0	0
0 50	1314 00	13,000	6,121	6,121
1 50	1315 00	15,850	14,400	20,521
2 50	1316 00	18,820	17,312	37,833
3 50	1317 00	20,000	19,405	57,238
4 50	1318 00	20,000	19,998	77,236

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15 00	0 00	0 00	0 00
Span (in)	= 15 00	0 00	0 00	0 00
No Barrels	= 1	0	0	0
Invert El (ft)	= 1313 50	0 00	0 00	0 00
Length (ft)	= 65 00	0 00	0 00	0 00
Slope (%)	= 0 80	0 00	0 00	n/a
N-Value	= 013	013	013	n/a
Orifice Coeff	= 0 60	0 60	0 60	0 60
Multi-Stage	= n/a	No	No	No

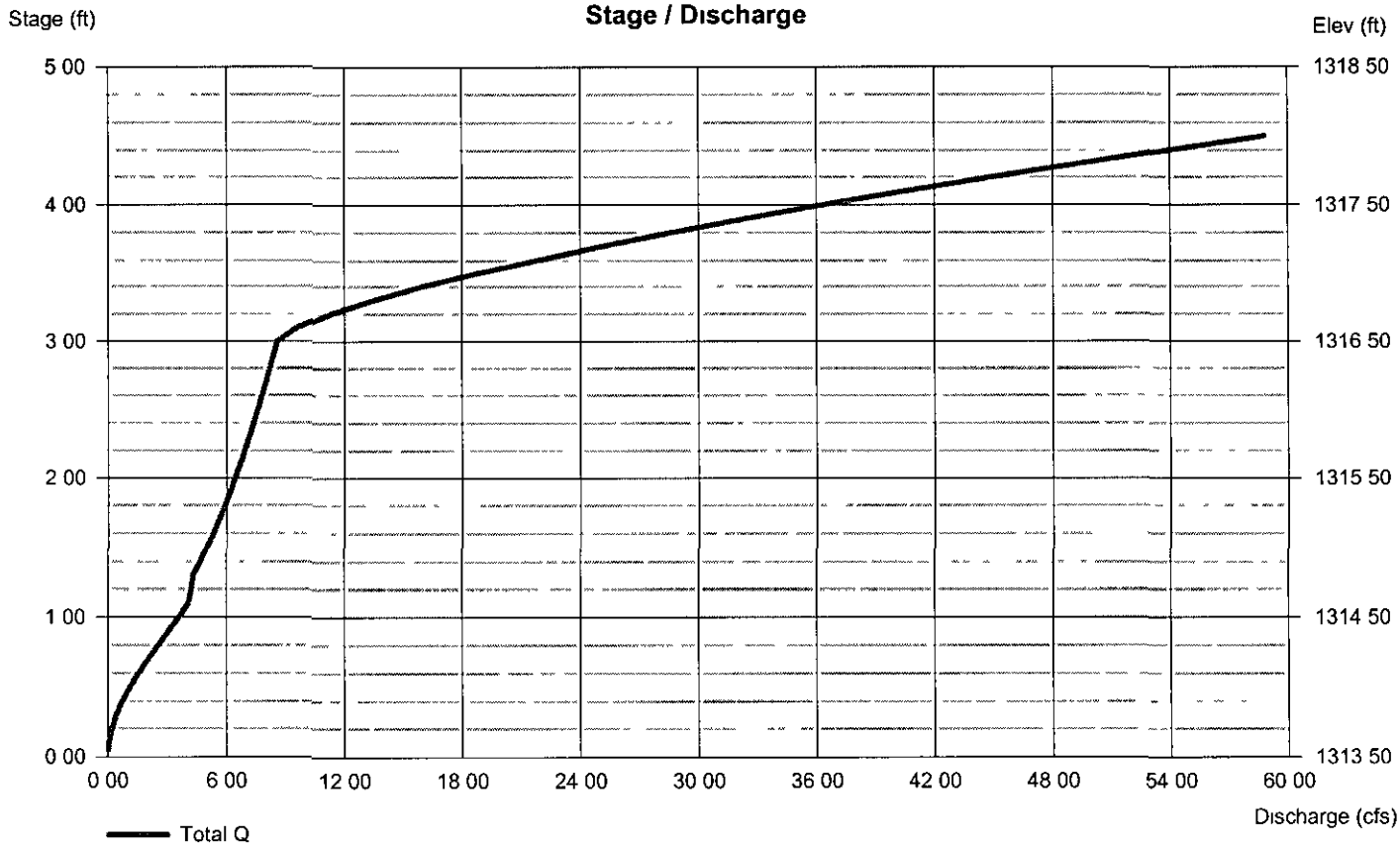
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 10 00	0 00	0 00	0 00
Crest El (ft)	= 1316 50	0 00	0 00	0 00
Weir Coeff	= 2 60	3 33	3 33	3 33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil (in/hr) = 0 000 (by Contour)

TW Elev (ft) = 0 00

Note Culvert/Orifice outflows are analyzed under inlet and outlet control Weir risers are checked for orifice conditions



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9 02

Hyd No	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0 000	2	n/a	0	----	------	------	West Developed
2	Reservoir	0 000	2	n/a	0	1	1313 50	0 000	<no description>
3	SCS Runoff	0 000	2	n/a	0	----	------	------	Existing Conditions

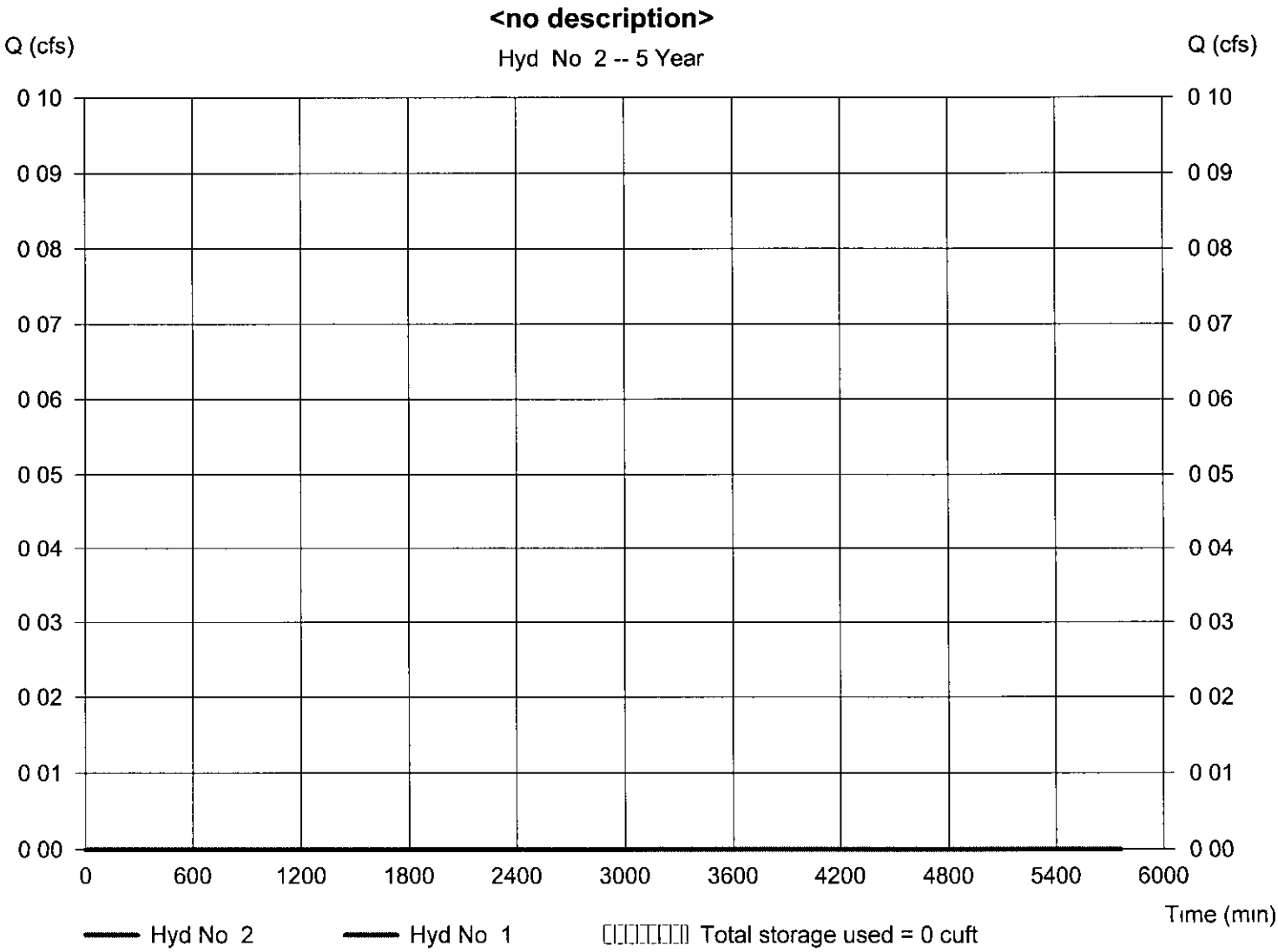
Hydrograph Report

Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 0 000 cfs
Storm frequency	= 5 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd volume	= 0 cuft
Inflow hyd No	= 1 - West Developed	Max Elevation	= 1313 50 ft
Reservoir name	= <New Pond>	Max Storage	= 0 cuft

Storage Indication method used



Pond Report

Pond No 1 - <New Pond>

Pond Data

Contours - User-defined contour areas Conic method used for volume calculation Begining Elevation = 1313 50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr Storage (cuft)	Total storage (cuft)
0 00	1313 50	11,500	0	0
0 50	1314 00	13,000	6,121	6,121
1 50	1315 00	15,850	14,400	20,521
2 50	1316 00	18,820	17,312	37,833
3 50	1317 00	20,000	19,405	57,238
4 50	1318 00	20,000	19,998	77,236

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15 00	0 00	0 00	0 00
Span (in)	= 15 00	0 00	0 00	0 00
No Barrels	= 1	0	0	0
Invert El (ft)	= 1313 50	0 00	0 00	0 00
Length (ft)	= 65 00	0 00	0 00	0 00
Slope (%)	= 0 80	0 00	0 00	n/a
N-Value	= 013	013	013	n/a
Orifice Coeff	= 0 60	0 60	0 60	0 60
Multi-Stage	= n/a	No	No	No

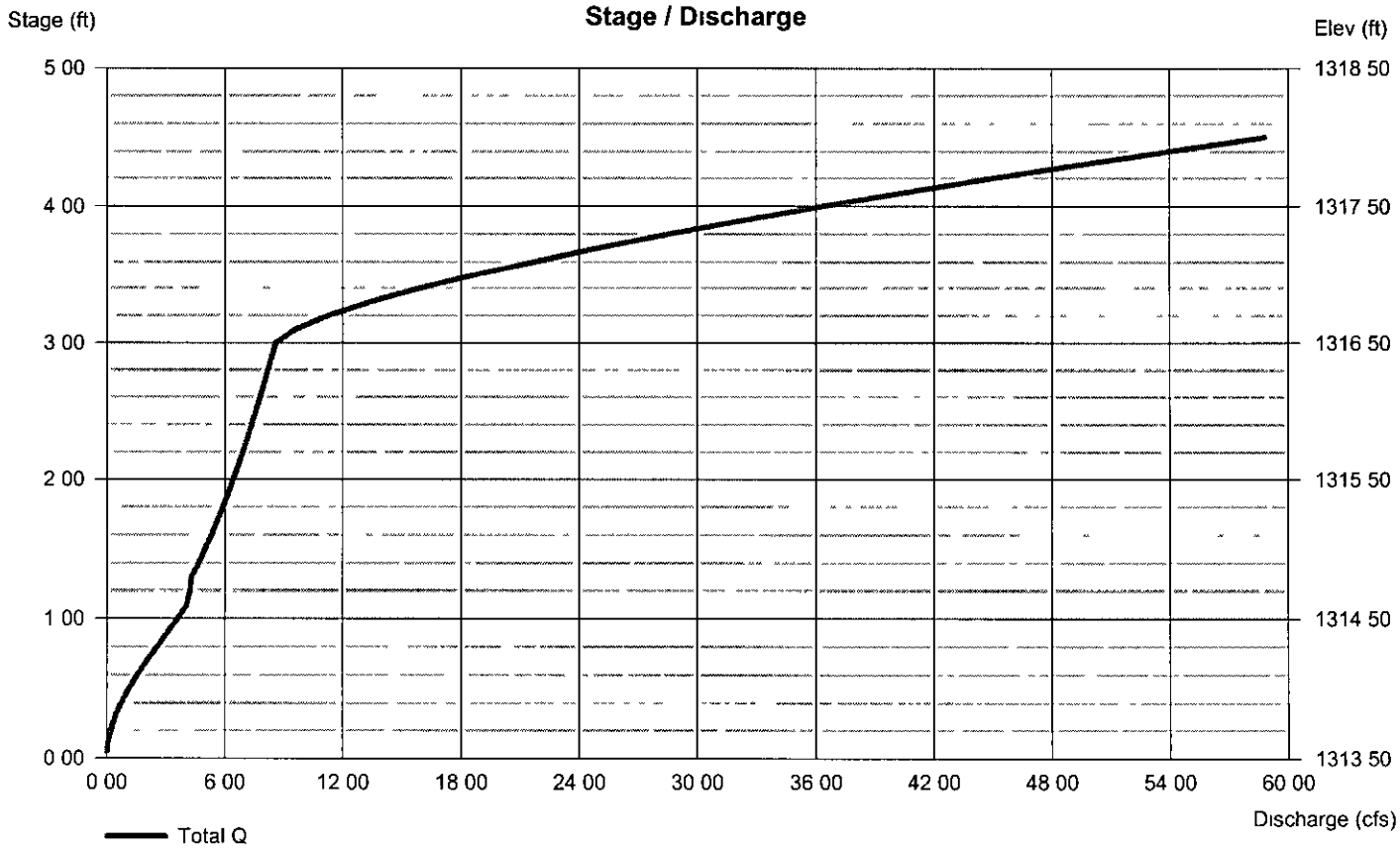
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 10 00	0 00	0 00	0 00
Crest El (ft)	= 1316 50	0 00	0 00	0 00
Weir Coeff	= 2 60	3 33	3 33	3 33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil (in/hr) = 0 000 (by Contour)

TW Elev (ft) = 0 00

Note Culvert/Orifice outflows are analyzed under inlet and outlet control Weir risers are checked for orifice conditions



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9 02

Hyd No	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	42 36	2	722	125,869	----	------	------	West Developed
2	Reservoir	11 19	2	738	125,820	1	1316 70	51,336	<no description>
3	SCS Runoff	21 69	2	722	61,805	----	------	------	Existing Conditions

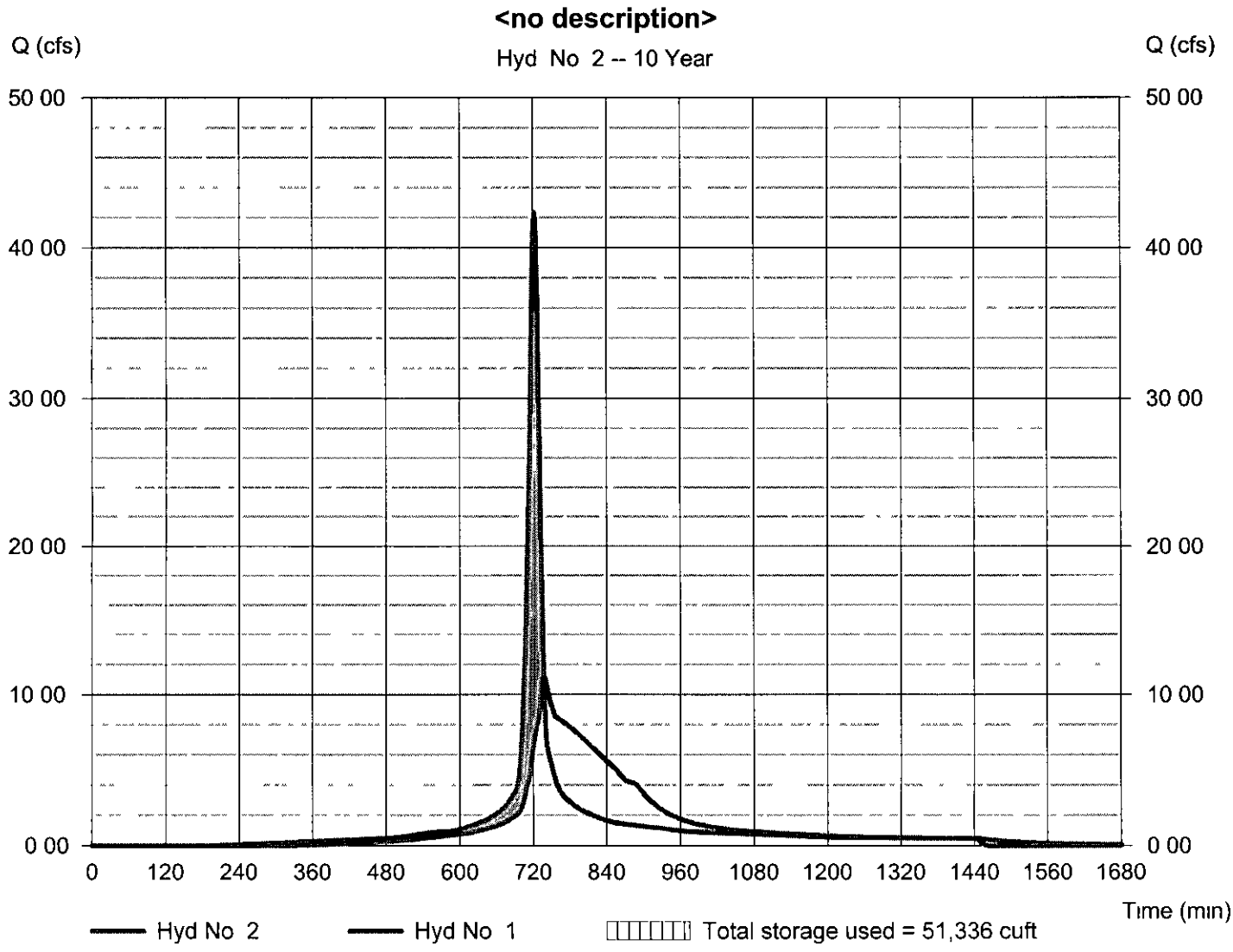
Hydrograph Report

Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 11 19 cfs
Storm frequency	= 10 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd volume	= 125,820 cuft
Inflow hyd No	= 1 - West Developed	Max Elevation	= 1316 70 ft
Reservoir name	= <New Pond>	Max Storage	= 51,336 cuft

Storage Indication method used



Pond Report

Hydraflow Hydrographs by Intelisolve v9 02 — Monday, Apr 2, 2007

Pond No. 1 - <New Pond>

Pond Data

Contours - User-defined contour areas Conic method used for volume calculation Beginning Elevation = 1313 50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr Storage (cuft)	Total storage (cuft)
0 00	1313 50	11,500	0	0
0 50	1314 00	13,000	6,121	6,121
1 50	1315 00	15,850	14,400	20,521
2 50	1316 00	18,820	17,312	37,833
3 50	1317 00	20,000	19,405	57,238
4 50	1318 00	20,000	19,998	77,236

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15 00	0 00	0 00	0 00
Span (in)	= 15 00	0 00	0 00	0 00
No Barrels	= 1	0	0	0
Invert El (ft)	= 1313 50	0 00	0 00	0 00
Length (ft)	= 65 00	0 00	0 00	0 00
Slope (%)	= 0 80	0 00	0 00	n/a
N-Value	= 013	013	013	n/a
Orifice Coeff	= 0 60	0 60	0 60	0 60
Multi-Stage	= n/a	No	No	No

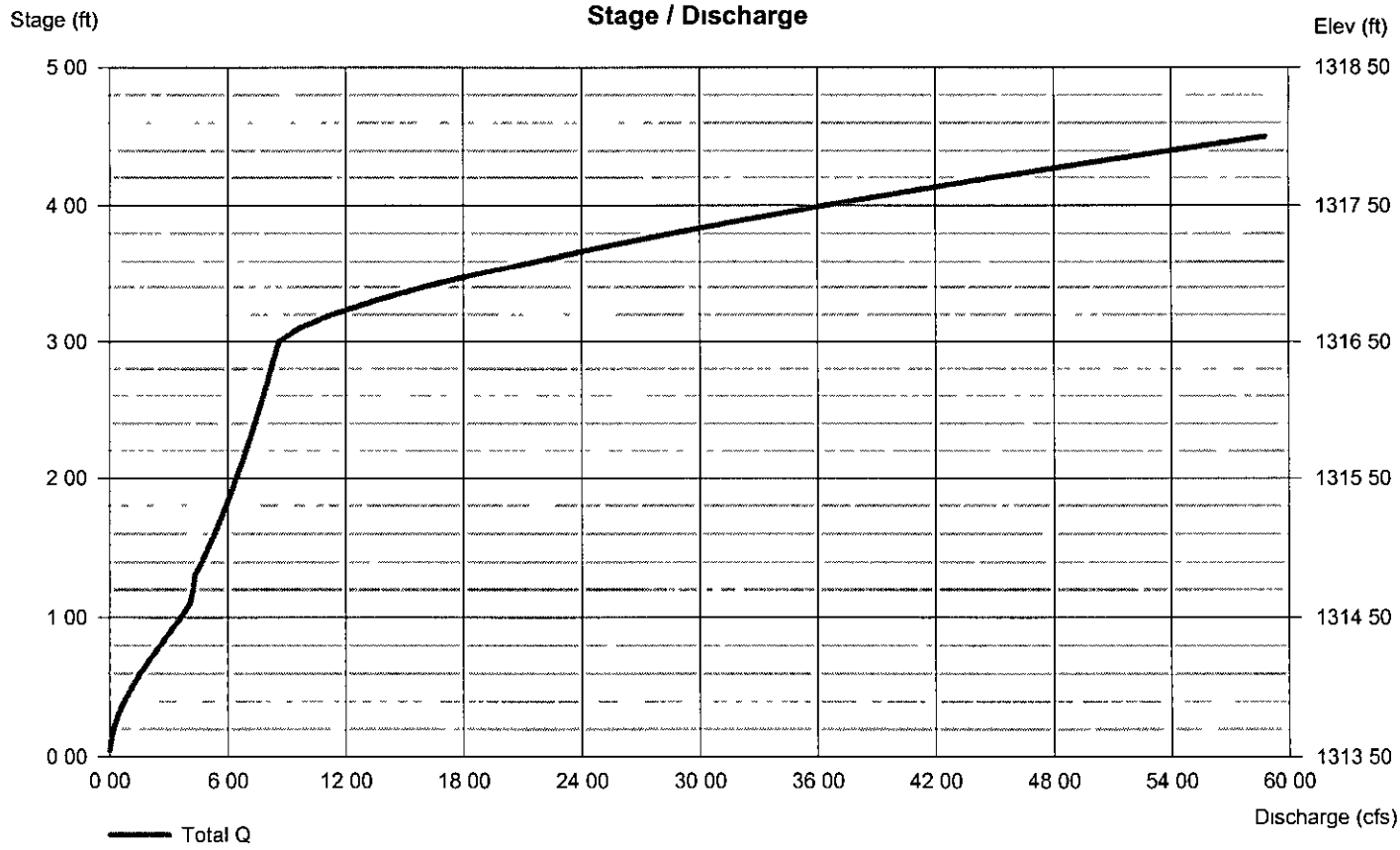
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 10 00	0 00	0 00	0 00
Crest El (ft)	= 1316 50	0 00	0 00	0 00
Weir Coeff	= 2 60	3 33	3 33	3 33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil (in/hr) = 0 000 (by Contour)

TW Elev (ft) = 0 00

Note Culvert/Orifice outflows are analyzed under inlet and outlet control Weir risers are checked for orifice conditions



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9 02

Hyd No	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	65 89	2	722	201,093	----	------	------	West Developed
2	Reservoir	37 04	2	730	201,044	1	1317 53	67,605	<no description>
3	SCS Runoff	43 80	2	722	122,797	----	------	------	Existing Conditions

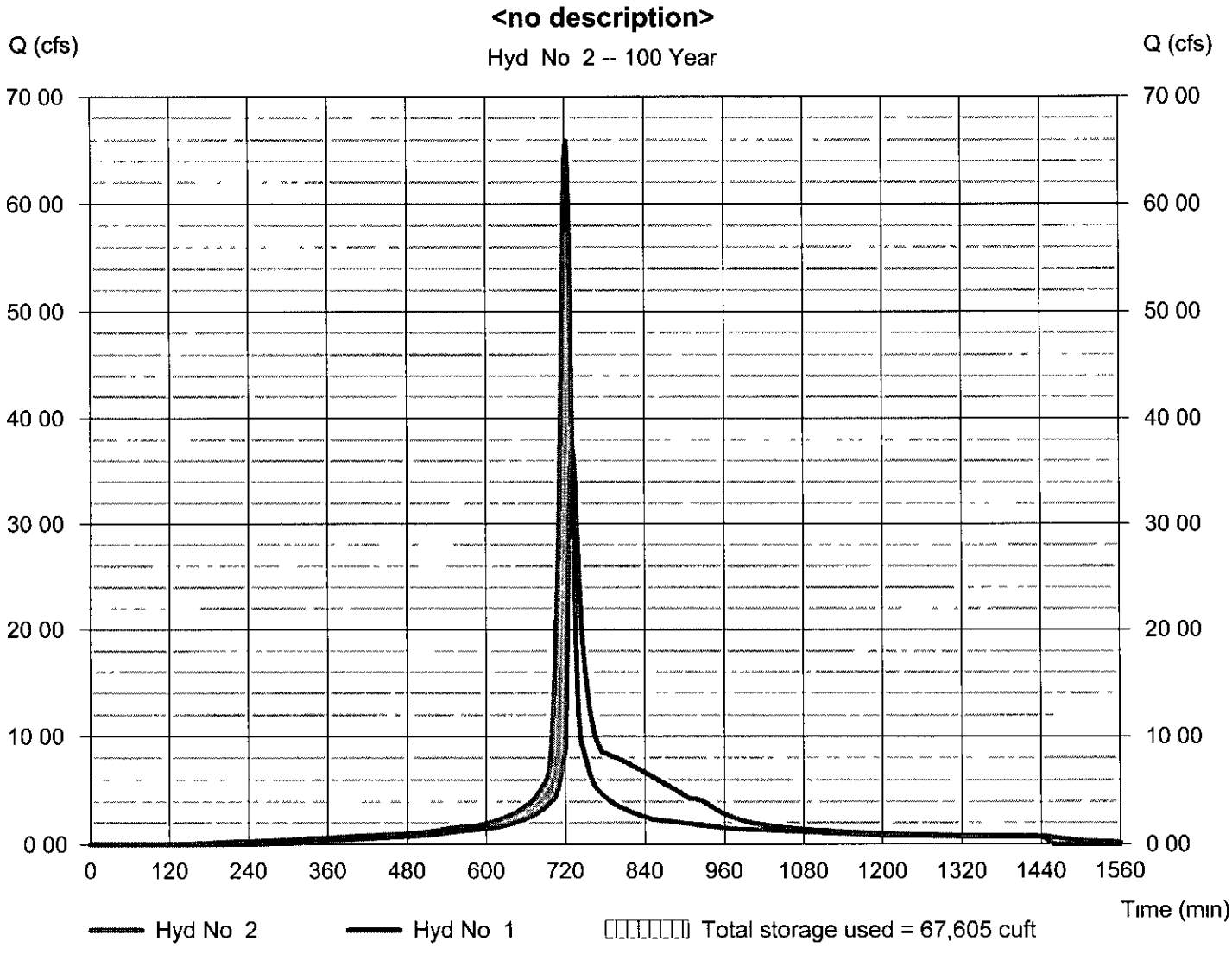
Hydrograph Report

Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 37 04 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd volume	= 201,044 cuft
Inflow hyd No	= 1 - West Developed	Max Elevation	= 1317 53 ft
Reservoir name	= <New Pond>	Max Storage	= 67,605 cuft

Storage Indication method used



Pond Report

Hydraflow Hydrographs by Intelisolve v9 02 — Monday, Apr 2, 2007

Pond No 1 - <New Pond>

Pond Data

Contours - User-defined contour areas Conic method used for volume calculation Beginning Elevation = 1313 50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr Storage (cuft)	Total storage (cuft)
0 00	1313 50	11,500	0	0
0 50	1314 00	13,000	6,121	6,121
1 50	1315 00	15,850	14,400	20,521
2 50	1316 00	18,820	17,312	37,833
3 50	1317 00	20,000	19,405	57,238
4 50	1318 00	20,000	19,998	77,236

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15 00	0 00	0 00	0 00
Span (in)	= 15 00	0 00	0 00	0 00
No Barrels	= 1	0	0	0
Invert El (ft)	= 1313 50	0 00	0 00	0 00
Length (ft)	= 65 00	0 00	0 00	0 00
Slope (%)	= 0 80	0 00	0 00	n/a
N-Value	= 013	013	013	n/a
Orifice Coeff	= 0 60	0 60	0 60	0 60
Multi-Stage	= n/a	No	No	No

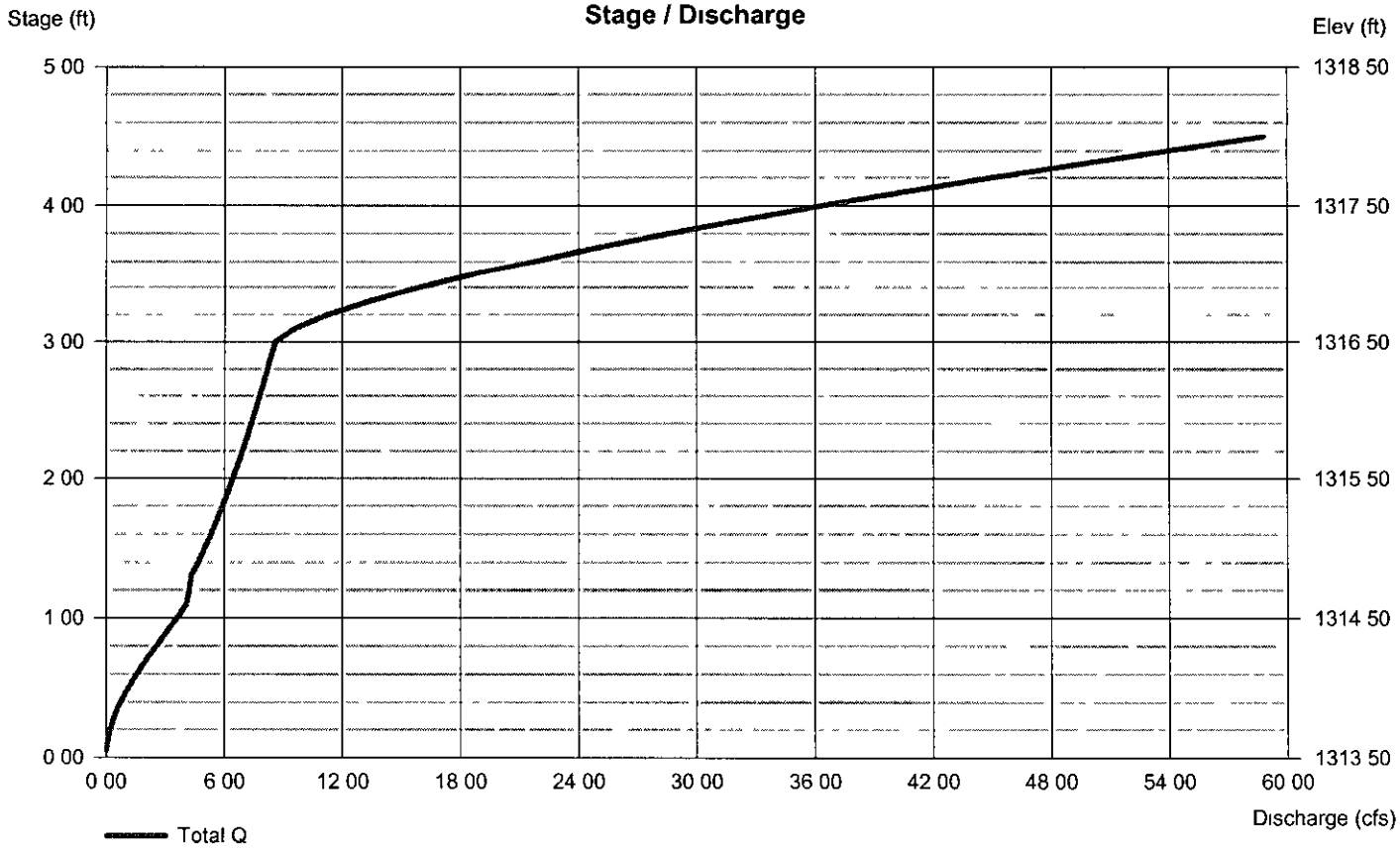
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 10 00	0 00	0 00	0 00
Crest El (ft)	= 1316 50	0 00	0 00	0 00
Weir Coeff	= 2 60	3 33	3 33	3 33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil (in/hr) = 0 000 (by Contour)

TW Elev (ft) = 0 00

Note Culvert/Orifice outflows are analyzed under inlet and outlet control Weir risers are checked for orifice conditions



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0 0000	0 0000	0 0000	--------
2	69 8703	13 1000	0 8658	--------
3	0 0000	0 0000	0 0000	--------
5	79 2597	14 6000	0 8369	--------
10	88 2351	15 5000	0 8279	--------
25	102 6072	16 5000	0 8217	--------
50	114 8193	17 2000	0 8199	--------
100	127 1596	17 8000	0 8186	--------

File name SampleFHA idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
2	5 69	4 61	3 89	3 38	2 99	2 69	2 44	2 24	2 07	1 93	1 81	1 70
3	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
5	6 57	5 43	4 65	4 08	3 65	3 30	3 02	2 79	2 59	2 42	2 27	2 15
10	7 24	6 04	5 21	4 59	4 12	3 74	3 43	3 17	2 95	2 77	2 60	2 46
25	8 25	6 95	6 03	5 34	4 80	4 38	4 02	3 73	3 48	3 26	3 07	2 91
50	9 04	7 65	6 66	5 92	5 34	4 87	4 49	4 16	3 88	3 65	3 44	3 25
100	9 83	8 36	7 30	6 50	5 87	5 36	4 94	4 59	4 29	4 03	3 80	3 60

Tc = time in minutes Values may exceed 60

Precip file name SCS_24HR pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0 00	3 50	0 00	3 30	5 20	5 77	6 80	7 80
SCS 6-Hr	0 00	1 80	0 00	0 00	2 60	0 00	0 00	4 00
Huff-1st	0 00	1 55	0 00	2 75	4 00	5 38	6 50	8 00
Huff-2nd	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Huff-3rd	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Huff-4th	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Huff-Indy	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Custom	0 00	1 75	0 00	2 80	3 90	5 25	6 00	7 10

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PLAN SHEETS

DRAINAGE PLAN Scale 1:100