



Ruggles & Bohm, P.A

Engineering, Surveying, Land Planning
924 N. Main
Wichita, Kansas 67203

Date: Thursday, November 20, 2008

MEMO

To: Scott Lindebak
City Hall
455 N. Main
Wichita, KS 67202

Description:

- Confirmation
- Transmittal
- Transmittal under separate cover by

From: Alex M. Lane, P.E.

Purpose:

- Approval
- Review & comment
- Use
- Other : _____
- Distribution
- Information
- Record

Project: Girrens Addition

Enclosures/Attachments:

- Prints
- Originals
- Diskettes containing: _____
- Other: _____
- Change Order
- Shop Drawings

RB Project No.: 3220P

Other Project Reference No.: _____

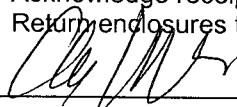
Copies	Description
1	Drainage Plan

Remarks: _____

Copies to:
Julianne Kallman

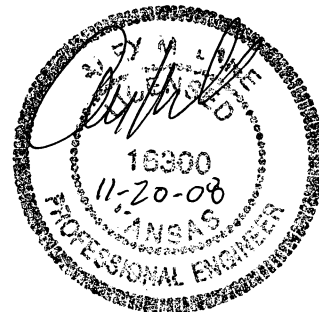
If checked below, please:

- Acknowledge receipt of enclosures
- Return enclosures to us.

Signed 

**DRAINAGE REPORT
GIRRENS ADDITION
WICHITA, SEDGWICK COUNTY,
KANSAS**

November 18, 2008



**Girrens Addition
DRAINAGE ANALYSIS
November 18, 2008**

INTRODUCTION

This report contains supporting documentation and calculations for the proposed Girren's Addition development. The proposed site is an undeveloped 38.5 acre parcel of land located in the NE ¼ of Section 1 T28S R2W at the southwest corner of Pawnee Street and 119th Street West. The area is currently farm ground and the soil types located on site are Farnum (40%) and Blanket (60%), both silty silty loams in hydrologic groups B and C respectively. Calfskin Creek runs just off the west edge of the plat. The tributary passes under Pawnee Street through an existing Bridge structure. The drainage patterns of the site currently direct the water off the site in two directions. A 25.2 acre tributary area drains to the west and into the Calfskin Creek. The other on site tributary area of 8.8 acres drains generally to the northeast and to a 24" RCP culvert under 119th Street West. There are no offsite areas draining onto the site. Calfskin Creek is located within FEMA Zone A as shown on FIRM 20173C0340E, a firmette of the project area is attached within this report. The western plat line is located just outside the floodplain boundary. The boundaries of the plat are located to stay out of the floodplain boundary.

HYDROLOGY

The rational method was used to determine peak flow rates for the basins located within the plat. The attached Drainage Plan shows the on site drainage calculations. The storm sewer layout shown on the attached drainage plan is conceptual in nature. The final storm water sewer design shall be performed during preparation of construction drawings. Minimum Pads are set with information from the LOMA for Southwest Passage Addition.

<u>Lots</u>	<u>Min. Pad</u>
Lot 1, Blk 1	1334.1
Lot 7, Blk 1	1334.3
Lot 8, Blk 1	1334.3

The bridge on Pawnee just west of the project location has a tributary area of app. 6.1 square miles. The Stormwater Technical Manual policy paper on detention is currently under development by the Technical Advisory Committee. The policy paper states that downstream runoff shall be evaluated at a point at the in the conveyance where the project site is equal to or less than 10% of the total drainage area. The site area is 38.5 acres of the 3904 acre tributary area, or less than one percent. The policy paper also requires channel protection for developments. However, sites where the development area is less than 5% of the watershed area upstream of the development area are exempted from the requirement. As

shown above the site area is less than 1% of the total tributary area and the site is exempt from the channel protection requirement.

DETENTION ANALYSIS

A HEC-HMS model was created to determine the effects of detention on the flows at the bridge over Calfskin Creek at Pawnee. The existing condition 100-year flow of 3377.4 cfs falls within 4% of the Q₁₀₀ used for the Southwest Passage Addition LOMR, 3501 cfs. The parameters and results of the model are shown in the table below.

<u>Node or Junc.</u>	<u>Existing</u>			<u>Proposed</u>			<u>No Detention</u>		
	<u>Tc</u>	<u>CN</u>	<u>Q (cfs)</u>	<u>Tc</u>	<u>CN</u>	<u>Q (cfs)</u>	<u>Tc</u>	<u>CN</u>	<u>Q (cfs)</u>
Calfskin	225	80	1559.6	225	80	1584.4	225	80	1584.4
North Offsite	157	80	1971.6	157	80	1971.6	157	80	1971.6
Girrens	21	80	92.4	15	88	132.8	15	88	132.8
Reservoir-1	--	--	--	--	--	91.8	--	--	--
Pawnee	--	--	3383.1	--	--	3410.0	--	--	3407.7

As demonstrated in the table above the downstream runoff is increased at the Pawnee bridge in either of the following cases, with detention provided or with no detention. In fact, there is a slight increase in the runoff at the Pawnee bridge when detention is provided. Therefore no detention will be provided for this development.

Stormwater treatment is not required at this time so no plans are included to provide treatment for the runoff. However, if stormwater treatment or other permanent BMPs become a requirement for development there is an opportunity to provide the measures in the floodplain to the west of the plat. At the time of this report the same owner controls both the project site and the floodplain of the Calfskin Creek to the west of the proposed plat.

GIRRENS ADDITION

Wichita, Sedgwick County, Kansas

The undersigned, holders of a mortgage on a portion of the above described property do hereby consent to this plat of "GIRRENS ADDITION" within Sedgwick County, Kansas.

State of Kansas) SS
Sedgwick County)

The foregoing instrument acknowledged before me this _____ day of _____, 2008, by _____ Vice President, on behalf of _____, Vice President
Sunflower Bank, WA

My appointment expires _____ Notary Public

This plat of "GIRRENS ADDITION" within Sedgwick County, Kansas has been submitted to and approved by the Wichita-Sedgwick County Metropolitan Area Planning Commission, Wichita, Kansas.

Derived this _____ day of _____, 2008.

Wichita-Sedgwick County Metropolitan Area Planning Commission

Chair _____
Secretary _____
John L. Sallinger

This plat approved and all dedications shown herein accepted by the City Council of the City of Wichita, Kansas, this _____ day of _____, 2008.

At the Direction of the City Council

Mayor _____
City Clerk _____
Karen Sublett

Reviewed in accordance with K.S.A. 28-2203 on this _____ day of _____, 2008.

County Clerk _____
Trish L. Roberts, LS #1248
Sedgwick County, Kansas

Entered on transfer record this _____ day of _____, 2008.

Notary Public _____
Don Bruce

State of Kansas) SS
Sedgwick County)

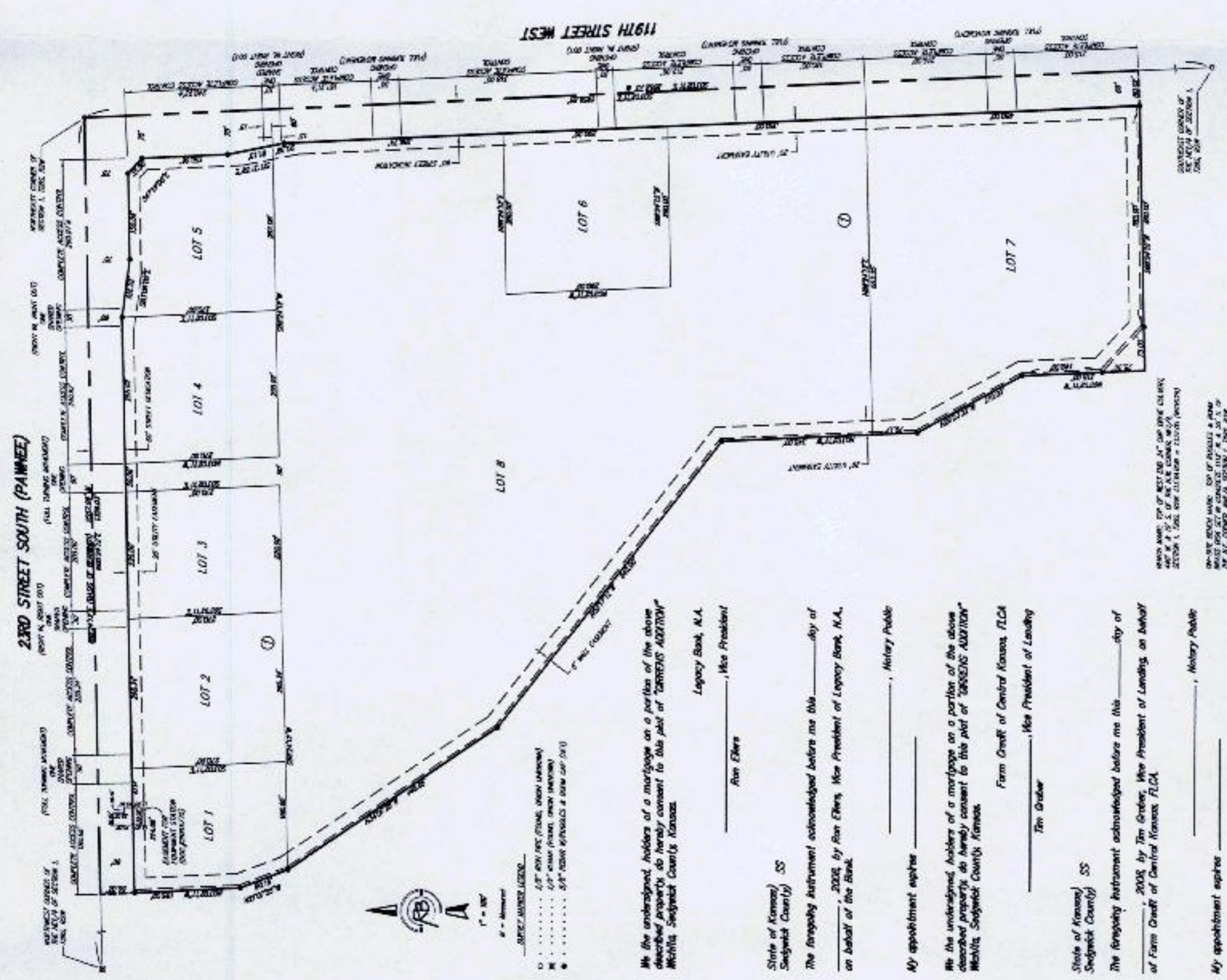
This is to certify that this plat has been filed for record in the office of the Register of Deeds, this _____ day of _____, 2008, at _____, Kansas, and is duly recorded.

Register of Deeds _____
Don Monk

My appointment expires _____ Notary Public

Rayne Donahughan

Ruggles & Isolin, P.A.
150 South Main Street
Wichita, Kansas 67202
www.rugglesandisolinn.com



23RD STREET SOUTH (PAINEE)
19TH STREET WEST

LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7

1" = 40'

NEARLY ALL LOTS ARE 1/4 SECTION

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Farm Credit of Central Kansas, FLCA

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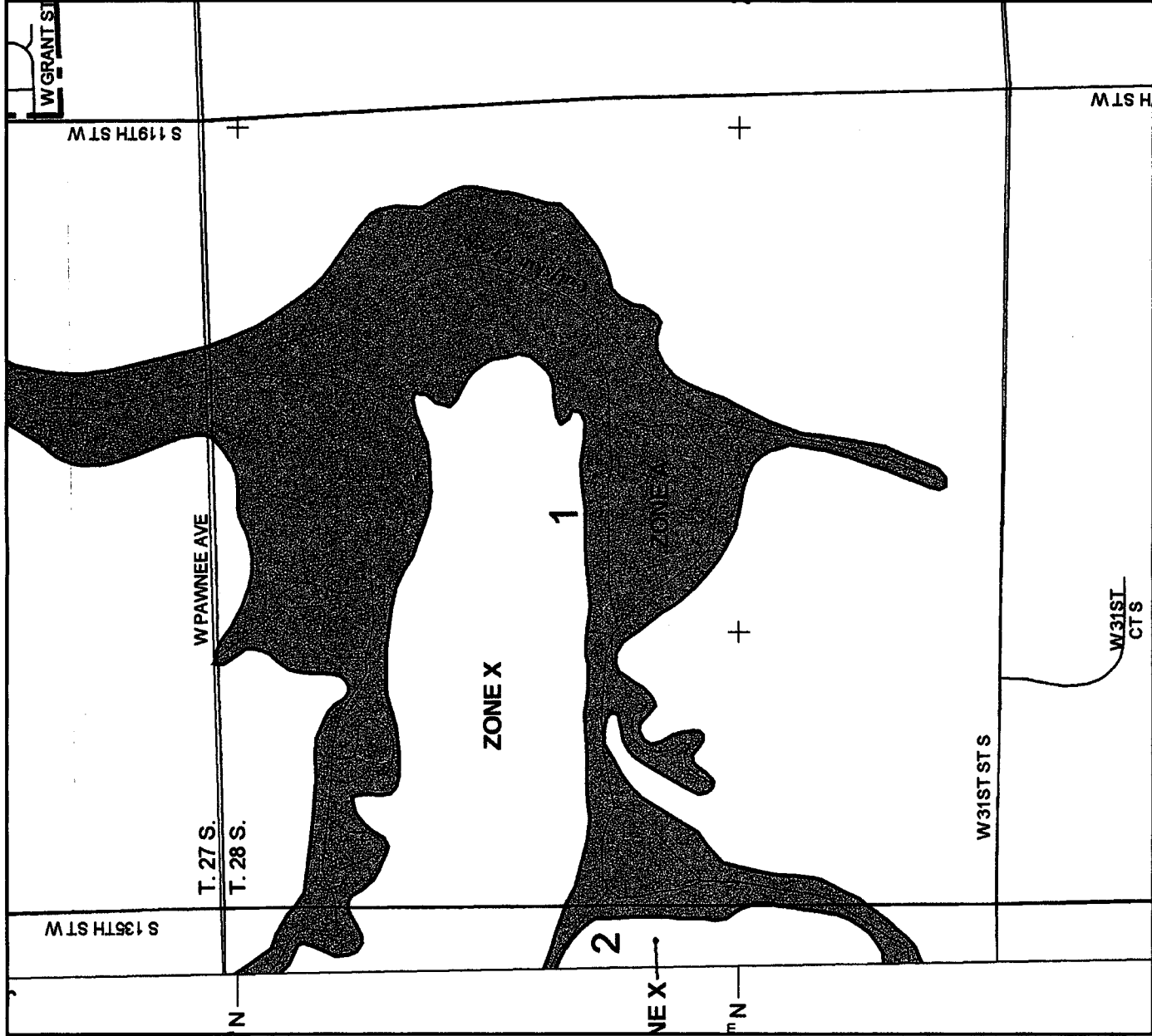
Ruggles & Isolin, P.A.
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Wichita, Kansas 67202
www.rugglesandisolinn.com

↑
N
1" = 200'

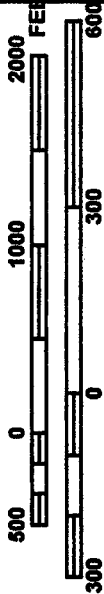


DRAINAGE PLAN

FEMA FIRM



MAP SCALE 1" = 1000'



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
 SEDGWICK COUNTY
 WICHITA, CITY OF

NUMBER
 200321
 200326

PANEL SUFFIX
 0340 E
 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.



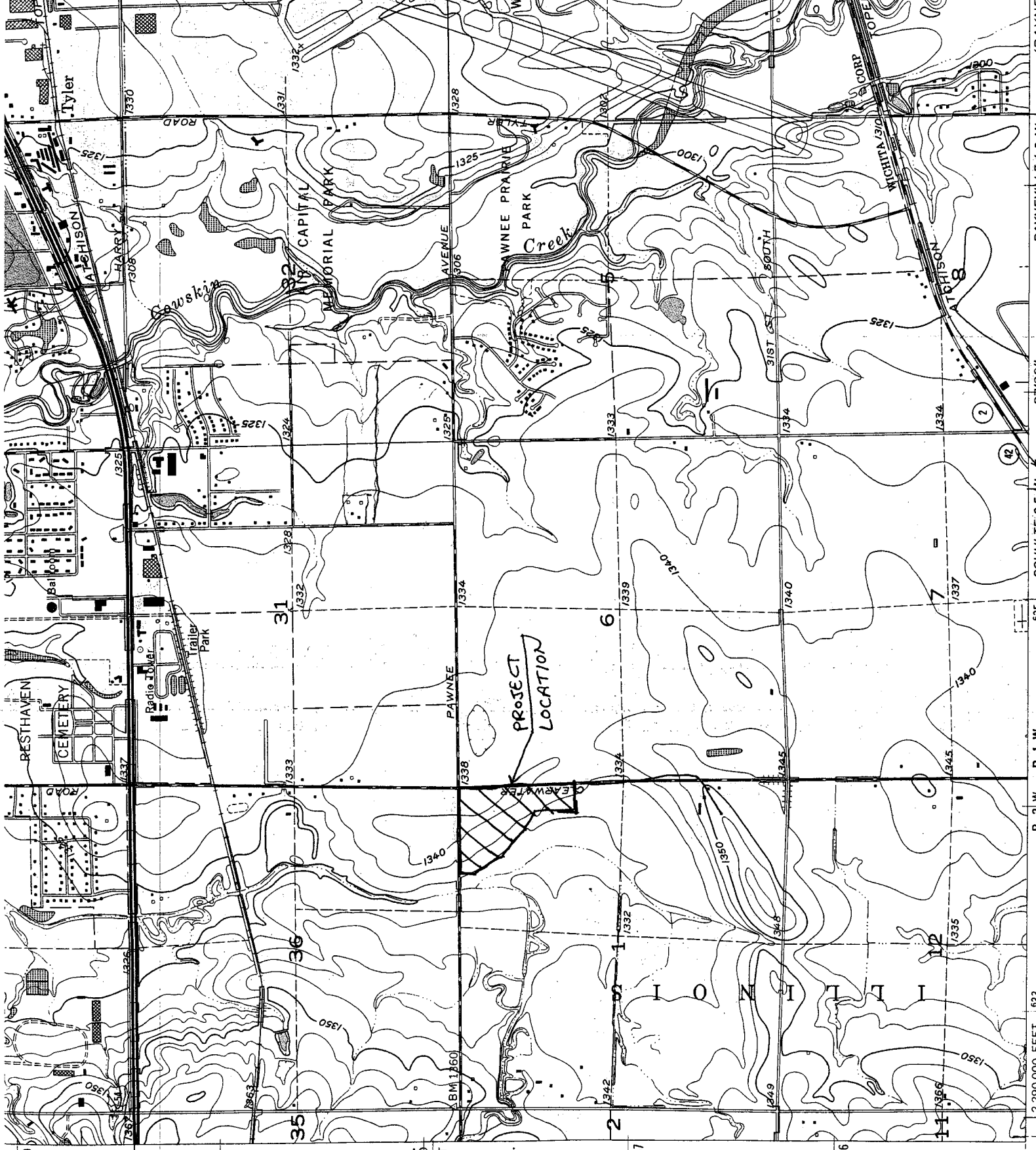
MAP NUMBER
20173C0340E

EFFECTIVE DATE
FEBRUARY 2, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

USGS MAP



4170
40'
KINGMAN 35 MI.
GODDARD 4.2 MI.

T. 27 S.
360 000
FEET

T. 28 S.

4167

4166

37°37'30" - 63
97°30' 12 290 000 FEET

R. 2 W. R. 1 W.

SCHULTE 0.5 MI.
VINA 1.5 MI.

27°30'

BAYNEV (BAYNEV 6550 III

HEC-HMS DATA

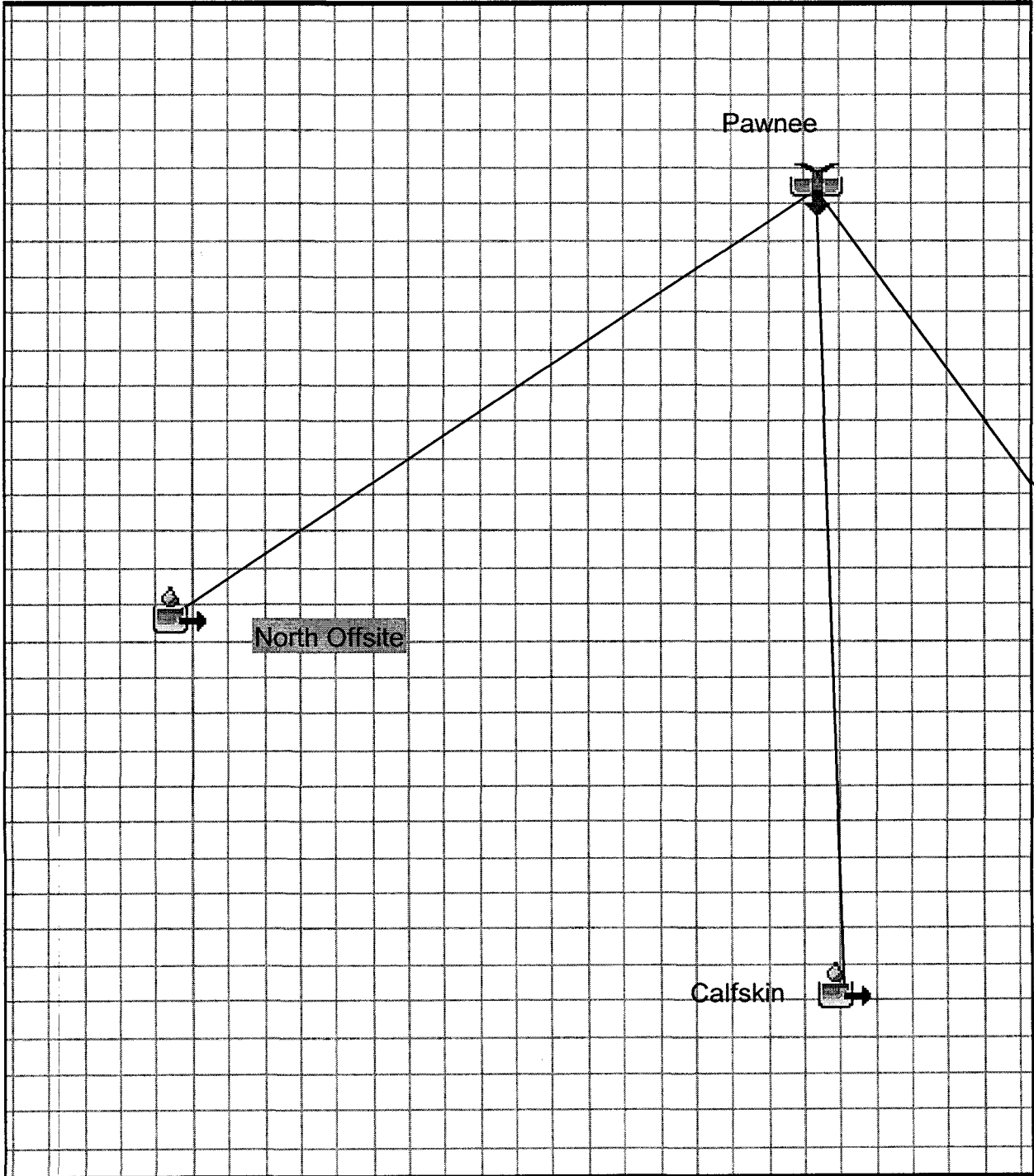


HEC-HMS

Project : Project 1

Basin Model : Existing

Nov 20 16:19:15 CST 2008



Project: Project 1 Simulation Run: Exist100

Start of Run: 31Oct2005, 00:00 Basin Model: Existing
End of Run: 01Nov2005, 00:15 Meteorologic Model: Met100
Compute Time: 20Nov2008, 16:01:45 Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Calfskin	2.461	1559.6	31Oct2005, 14:45	5.15
Girrens	0.039	92.4	31Oct2005, 12:15	5.42
North Offsite	3.700	1971.6	31Oct2005, 15:45	5.48
Pawnee	6.200	3383.1	31Oct2005, 15:15	5.35

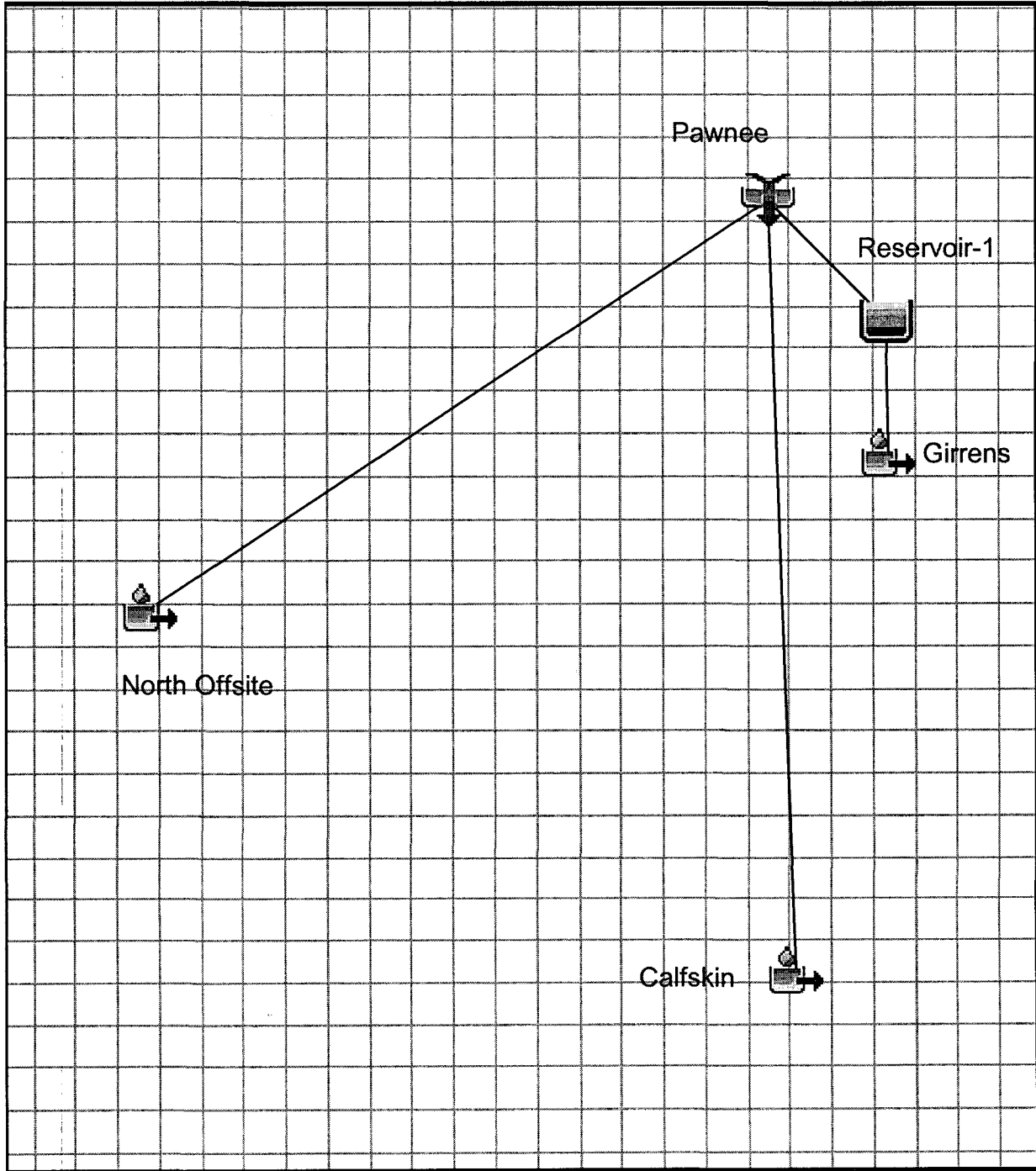


HEC-HMS

Project : Project 1

Basin Model : Proposed Detained

Nov 20 16:19:28 CST 2008



Project: Project 1 Simulation Run: Prop 100

Start of Run: 31Oct2005, 00:00 Basin Model: Proposed Detained
End of Run: 01Nov2005, 00:15 Meteorologic Model: Met100
Compute Time: 20Nov2008, 11:39:28 Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Calfskin	2.5000	1584.4	31Oct2005, 14:45	5.15
Girrens	0.0478	132.8	31Oct2005, 12:00	6.36
North Offsite	3.7000	1971.6	31Oct2005, 15:45	5.48
Pawnee	6.2478	3410.0	31Oct2005, 15:15	5.35
Reservoir-1	0.0478	91.8	31Oct2005, 12:30	6.27

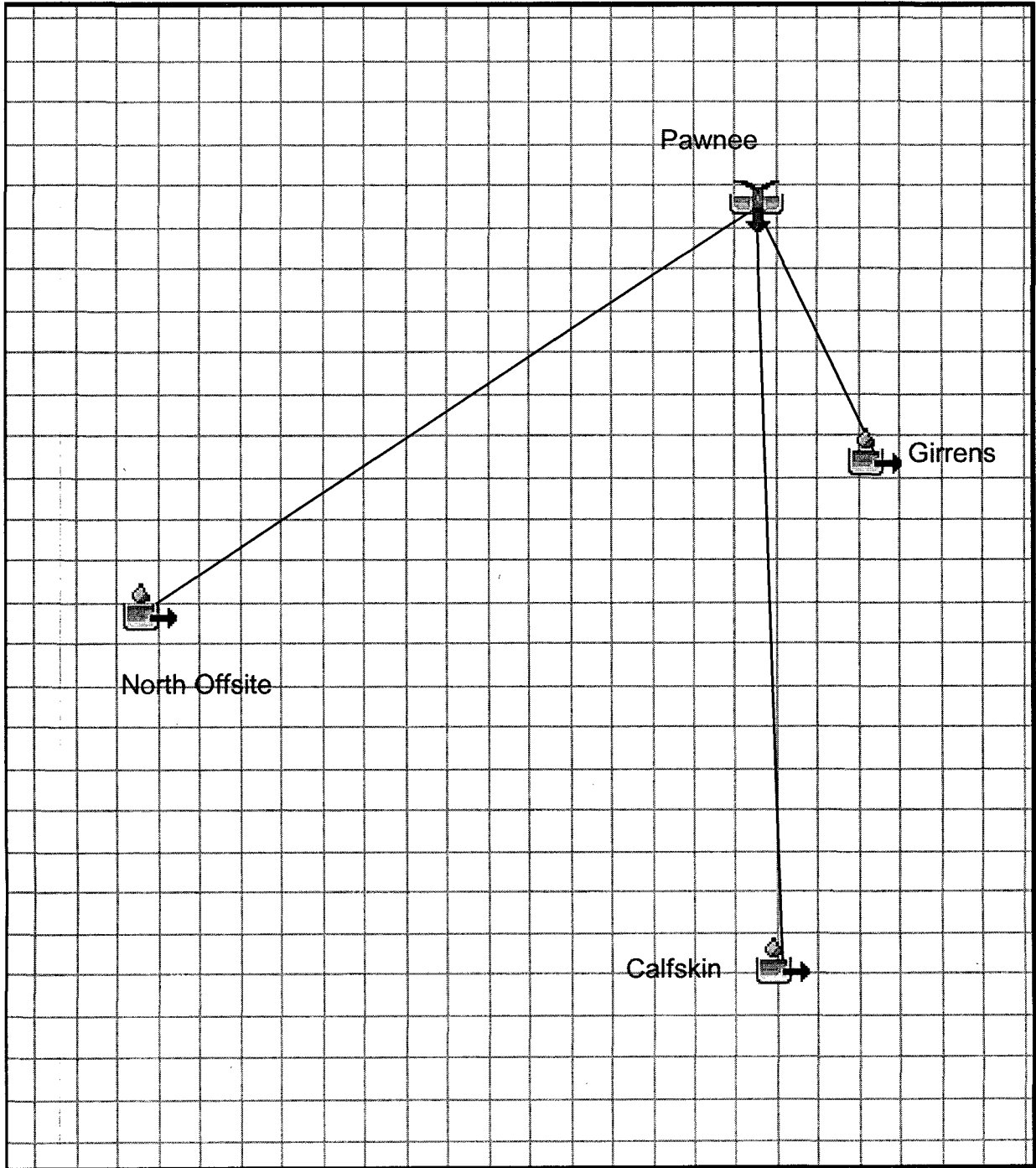


HEC-HMS

Project : Project 1

Basin Model : Proposed No Detention

Nov 20 16:19:35 CST 2008



Project: Project 1 Simulation Run: PropNoDet100

Start of Run: 31Oct2005, 00:00 Basin Model: Proposed No Detention
End of Run: 01Nov2005, 00:15 Meteorologic Model: Met100
Compute Time: 20Nov2008, 11:08:00 Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Calfskin	2.5000	1584.4	31Oct2005, 14:45	5.15
Girrens	0.0478	132.8	31Oct2005, 12:00	6.36
North Offsite	3.7000	1971.6	31Oct2005, 15:45	5.48
Pawnee	6.2478	3407.7	31Oct2005, 15:15	5.36



Public Works, Engineering Division Stormwater Management Subdivision Submittal Checklist

Reviewer: _____	Date: _____
Subdivision Name: _____	Location: _____
Total Land Area Of Ownership: _____ Acres	
Type: _____ Residential _____ Commercial _____ Industrial _____ Recreation _____ Municipal _____ Other	
Applicant: _____	Contact: _____ Phone #: _____
Engineer: _____	Contact: _____ Phone #: _____

Please check the appropriate box:

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

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

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



Stormwater Management Subdivision Submittal Checklist

J. Location of existing utilities (e.g., water, sewer, gas, electric) and easements			Drainage Plan	✓	
K. Location of existing conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow			Drainage Plan	✓	
L. Flow paths			Drainage Plan	✓	
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			Site is not a good candidate for detention ∴ no detention		
O. Assumed pre-developed runoff curve numbers			Drainage Plan (c-factor)	✓	
P. Existing time of concentrations used in calculations			Drainage Plan	✓	
Q. Evaluate immediate downstream drainage capacity, not to exceed more than 0.25 miles downstream of site			Drainage Report refer to Calfskin Creek Drainage Study	✓	
R. Existing structural elevations (e.g., invert of pipes, manholes, etc.)					
S. Cross-section data for open channels					✓
T. Ground water elevations, if applicable					✓

Tab 3. Post-Development Hydrologic Analysis	Applicant			Engr	
	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			Drainage Plan	✓	
C. Assumed post-developed runoff curve numbers			Drainage Report (c-factor)	✓	
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. Dam safety analysis, where necessary					✓
I. Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.)			no STRUCTURES PRESENT	✓	
J. Design water surface elevations and normal pool elevation for ponds.					✓
K. Typical detail for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc. To include height, width, elevation, and/or diameter.					✓
L. Proposed limits of clearing and grading					
M. Location of existing and proposed roads, buildings, parking lots and other impervious areas.			⊕ Configuration & Location of proposed parking lots & Road not known at this time	✓	
N. Location of existing and proposed utilities (e.g., water, sewer) and easements			Locations of proposed utilities not known at this time	✓	
O. Location of existing and proposed conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow				✓	
P. Preliminary location and dimensions of proposed channel modifications, such as bridge or culvert crossings					✓



Stormwater Management Subdivision Submittal Checklist

Q. Preliminary selection and location of stormwater controls					✓
R. Emergency overflow structure's flow path			Determined w/ grading & storm sewer design		✓
S. Detention facility provides one-foot of freeboard above the HWL and emergency outfall shown (top of berm elevation shown)					✓
T. The 100-year 24-hour HWL delineated on the plan for detention pond					✓
U. Lowest opening elevations table on the plat for structures located adjacent to channels or ponds					
V. Stormwater Management Facilities located within a Reserve					✓
W. Maintenance of stormwater management facility specified in the plat text as the responsibility of the Homeowner or Business Association					✓
X. Off-site drainage easements or agreements required					✓

Tab 4. Floodplain Submittal	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Provide source of flood profile					✓
B. Nearest base flood elevations					✓
C. Delineation of pre-developed regulatory floodplain/floodway limits					✓
D. Delineation of post-developed regulatory floodplain and floodway limits					✓
E. Floodplain boundary determination per elevation (project limits shown)					✓
F. Provide source of floodway data table and discharges					✓
G. Provide all hydrologic and hydraulic study information for site-specific floodplain studies, unnumbered Zone A area elevation determinations and flood plain map revisions					✓
H. Provide regulatory floodway and four natural profile models (10,50,100, and 500-yr) for existing and future watershed conditions					✓
I. Location of floodplain/floodway limits and relationship of site to upstream/downstream properties (floodplain limits to be per elevation and scaled location)					✓
J. Flood plains and floodways located within a Reserve					✓

Tab 5. Federal, State and Local Permits (to be provided prior to construction unless otherwise specified)	Applicant			Engr	
	I/R	NA	Explanation / Location in Plan	I/R	NA
A. US Army Corps of Engineers - Regulatory program permits (404 water quality certification)					✓
B. Kansas Department of Agriculture - Division of Water Resources Permits (Stream Obstruction, Channel Change, Flood Plain Fill, Levee, Water Appropriations, Dam safety permit, etc.)					✓
C. Federal Emergency Management Agency (FEMA) Letter of Map Changes (LOMA, LOMR, LOMR-f, CLOMR, etc.) CLOMR shall be included and approved for fill placed in the regulatory floodway					✓
D. Kansas Department of Transportation					✓
E. Sedgwick County Right-of-way Permit					✓