I-99

SUBDIVISION COMMITTEE
METROPOLITAN AREA PLANNING COMMISSION

AGENDA ITEM NO. 8
JANUARY 11, 2001

STAFF REPORT
(One-Step Final Plat)

CASE NUMBER: SUB 2000-122 -- REPLAT OF PART OF SPENCER GARDENS ADDITION

OWNER/APPLICANT: KCBB, Inc., 128 S. Dellrose, Wichita, KS 67218

SURVEYOR/ENGINEER: Austin Miller, P.A., 355 N. Waco, Suite 200, Wichita, KS 67202

LOCATION: South of Pawnee, West of Webb Road

SITE SIZE: 22.6 Acres

Ext W & SS to serve each lot SWS relocation

NUMBER OF LOTS

Residential:	
Office:	
Commercial:	7
Industrial:	1
Total:	8

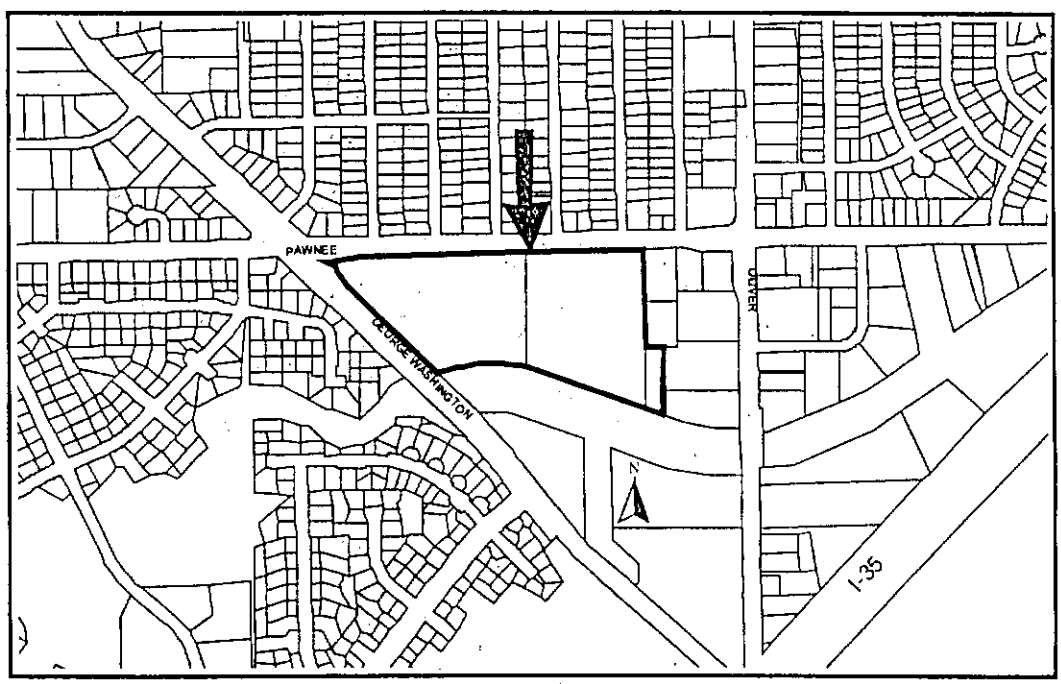
MINIMUM LOT AREA: 37,156 Sq. Ft.

CURRENT ZONING: LC, Limited Commercial; GC, General Commercial; LI, Limited Industrial

PROPOSED ZONING: Same

VICINITY MAP

W/S



NOTE: This is a replat of a portion of Spencer Gardens Addition. This site has been approved for a zone change (ZON 2000-60) from MF-29, Multi-Family Residential to LC, Limited Commercial, GC, General Commercial, and LI, Limited Industrial. An amendment to the Spencer Gardens Residential CUP (CUP 2000-50, DP-93, Amendment #1) was also approved.

STAFF COMMENTS:

A. Municipal services are available to serve the site. **City Engineering** needs to comment on the need for any guarantees or easements.

B. If improvements are guaranteed by petition, a notarized certificate listing the petitions shall be submitted to the Planning department for recording.

C. **City Engineering** needs to comment on the status of the applicant's drainage plan.

D. **City Engineering** needs to comment on the need for a temporary easement to cover the stormwater sewer line located on Lot 1 in addition to a guarantee for relocation.

E. **Traffic Engineering** needs to comment on the access controls. The CUP approval required four access openings on Pawnee to be located at the mid-point between the streets directly across Pawnee in addition to a fifth opening at the eastern edge of the plat. The plat proposes four access openings along Pawnee in compliance with the CUP; however the opening between lots 2 and 3 needs to be relocated onto Lot 3 to be midway between openings from Belmont and Crestway. Along George Washington Boulevard, the plat indicates two openings in accordance with the CUP; however the plat shall denote that the northern opening is limited to right-turns only. Distances should be shown for all segments of access control.

F. The drainage reserve needs to designated with solid lines as a distinct entity and not as part of Lot 8.

G. Provisions shall be made for ownership and maintenance of the proposed reserves. The applicant shall either form a lot owners' association prior to recording the plat or shall submit a covenant stating when the association will be formed, when the reserves will be deeded to the association and who is to own and maintain the reserves prior to the association taking over those responsibilities.

H. For those reserves being platted for drainage purposes, the required covenant which provides for ownership and maintenance of the reserves shall grant, to the appropriate governing body, the authority to maintain the drainage reserves in the event the owner(s) fail to do so. The covenant shall provide for the cost of such maintenance to be charged back to the owner(s) by the governing body.

I. The Applicant is reminded that a platting binder is required with the final plat. Approval of this plat will be subject to submittal of this binder and any relevant conditions found by such a review.

J. A cross-lot circulation agreement should be provided to assure access between the lots.

K. The access easements between Lots 1 and 2 and between Lots 3 and 4 shall be established by separate instrument. Initial construction responsibilities and future maintenance of the driveway within the easement should also be addressed by the text of the instrument.

L. The applicant shall submit an avigational easement covering all of the subject plat and a restrictive covenant assuring that adequate construction methods will be used to minimize the effects of noise pollution in the habitable structures constructed on subject property.

M. In accordance with the CUP, the following street improvements are required: a) The applicant shall guarantee one-half the cost of adding a continuous center left-turn lane on Pawnee from George Washington Boulevard to the existing five-lane section west of Oliver, b) The Applicant shall provide a continuous accel/decel lane along the south side of Pawnee.

N. A CUP Certificate shall be submitted to MAPD prior to City Council consideration, identifying the approved CUP (referenced as DP-93, Amendment #1) and its special conditions for development on this property.

O. The following lot dimensions are needed: a) west line of Lot 8, b) southwest corner of Lot 8, c) east and south lines of Lot 7, and d) east line of Lot 5.

P. Lot 8 exceeds the maximum lot width to lot depth ratio of 3 to 1. A modification will need to be approved.

Q. The legend needs to include the complete access control.

R. **County Surveying** advises that the basis of bearings needs to be shown.

S. The plattor's text shall include language that a drainage plan has been developed for the plat and that all drainage easements, rights-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of stormwater.

T. 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. (Water service and fire hydrants required by Article 8 for fire protection shall be as per the direction and approval of the Chief of the Fire Department.)

U. The applicant's engineer is advised that the Register of Deeds is requiring the name(s) of the notary public, who acknowledges the signatures on this plat, to be printed beneath the notary's signature.

V. To receive mail delivery without delay, and to avoid unnecessary expense, the applicant is advised of the necessity to meet with the U.S. Postal Service Growth Management Coordinator (Phone 316-729-0102) prior to development of the plat so that the type of delivery, and the tentative mailbox locations can be determined.

W. The applicant is advised that various State and Federal requirements (specifically but not limited to the Army Corps of Engineers, Kanopolis Project Office, Rt. 1, Box 317, Valley Center, KS 67147) for the control of soil and wind erosion and the protection of wetlands may impact how this site can be developed. It is the applicant's responsibility to contact all appropriate agencies to determine any such requirements.

X. The owner of the subdivision should be aware of the fact that the development of any subdivision greater than five (5) acres in size may require an NPDES Storm Water Discharge

Permit from the Kansas Department of Health and Environment in Topeka. Further, on all construction sites, the City of Wichita requires that best management practices be used to reduce pollutant loadings in storm water runoffs.

Y. Perimeter closure computations shall be submitted with the final plat tracing.

Z. Recording of the plat within thirty (30) days after approval by the City Council and/or County Commission.

AA. The representatives from the **utility companies** should be prepared to comment on the need for any additional utility easements to be platted on this property.

BB. The applicant is reminded that a disk shall be submitted with the final plat tracing to the Planning Department detailing this plat in digital format in AutoCAD. This will be used by the City and County GIS Department.

SUBDIVISION COMMITTEE
METROPOLITAN AREA PLANNING COMMISSION

AGENDA ITEM NO. 7
FEBRUARY 15, 2001

STAFF REPORT
(Revised One-Step Final Plat, Deferred 1/11/01)

CASE NUMBER: SUB 2000-122 -- REPLAT OF PART OF SPENCER GARDENS ADDITION

OWNER/APPLICANT: KCBB, Inc., 128 S. Dellrose, Wichita, KS 67218

SURVEYOR/ENGINEER: Austin Miller, P.A., 355 N. Waco, Suite 200, Wichita, KS 67202

LOCATION: South of Pawnee, West of Webb Road

SITE SIZE: 22.6 Acres

NUMBER OF LOTS

Residential:	
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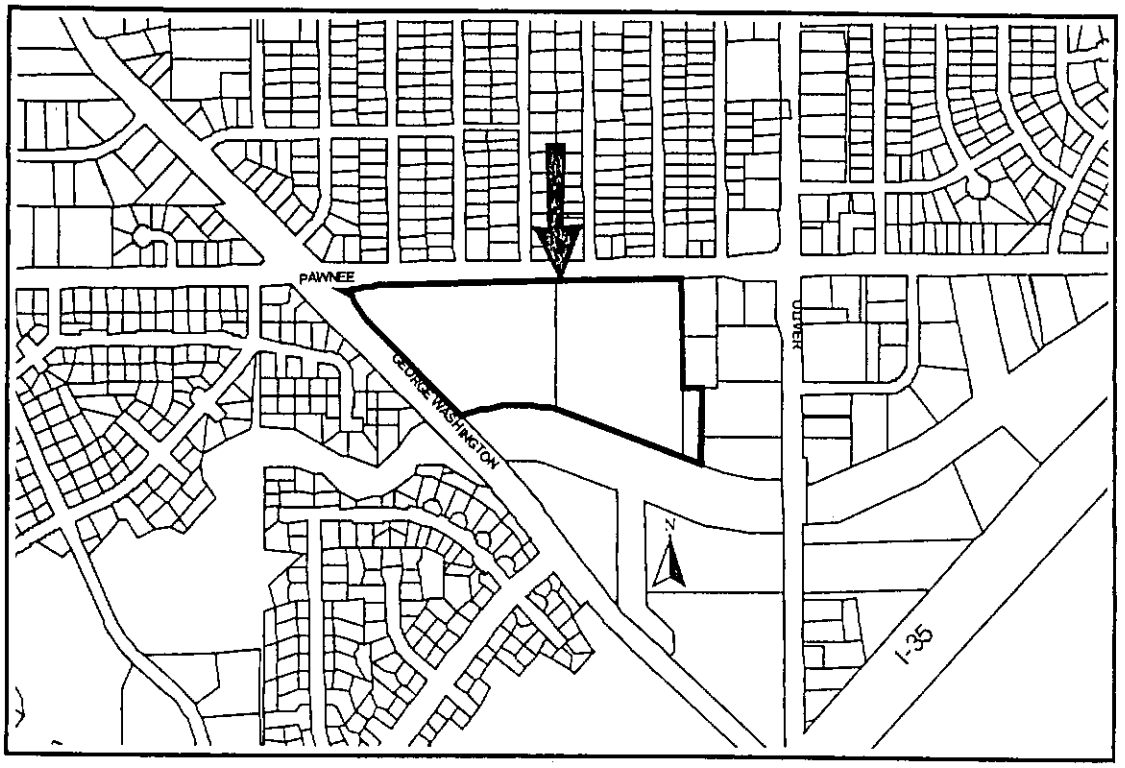
MINIMUM LOT AREA: 37,156 Sq. Ft.

CURRENT ZONING: LC, Limited Commercial; GC, General Commercial; LI, Limited Industrial

PROPOSED ZONING: Same

VICINITY MAP



Note: This is a replat of a portion of Spencer Gardens Addition. This site has been approved for a zone change (ZON 2000-60) from MF-29, Multi-Family Residential to LC, Limited Commercial, GC, General Commercial, and LI, Limited Industrial. An amendment to the Spencer Gardens Residential CUP (CUP 2000-50, DP-93, Amendment #1) was also approved.

STAFF COMMENTS:

A. Municipal services are available to serve the site. **City Engineering** needs to comment on the need for any guarantees or easements.

B. If improvements are guaranteed by petition, a notarized certificate listing the petitions shall be submitted to the Planning department for recording.

C. **City Engineering** needs to comment on the status of the applicant's drainage plan.

D. **City Engineering** needs to comment on the need for a temporary easement to cover the stormwater sewer line located on Lot 1 in addition to a guarantee for relocation.

E. The plat conforms with the CUP approval which permitted five access openings on Pawnee. Along George Washington Boulevard, the plat indicates two openings in accordance with the CUP; however the plat shall denote that the northern opening is limited to right-turns only. Distances should be shown for all segments of access control.

F. Provisions shall be made for ownership and maintenance of the proposed reserves. The applicant shall either form a lot owners' association prior to recording the plat or shall submit a covenant stating when the association will be formed, when the reserves will be deeded to the association and who is to own and maintain the reserves prior to the association taking over those responsibilities.

G. For those reserves being platted for drainage purposes, the required covenant which provides for ownership and maintenance of the reserves shall grant, to the appropriate governing body, the authority to maintain the drainage reserves in the event the owner(s) fail to do so. The covenant shall provide for the cost of such maintenance to be charged back to the owner(s) by the governing body.

H. The applicant is reminded that a platting binder is required with the final plat. Approval of this plat will be subject to submittal of this binder and any relevant conditions found by such a review.

I. A cross-lot circulation agreement should be provided to assure access between the lots.

J. The access easements between Lots 1 and 2 and between Lots 3 and 4 shall be established by separate instrument. Initial construction responsibilities and future maintenance of the driveway within the easement should also be addressed by the text of the instrument.

K. The applicant shall submit an avigational easement covering all of the subject plat and a restrictive covenant assuring that adequate construction methods will be used to minimize the effects of noise pollution in the habitable structures constructed on subject property.

L. In accordance with the CUP, the following street improvements are required: a) The applicant shall guarantee one-half the cost of adding a continuous center left-turn lane on Pawnee from George Washington Boulevard to the existing five-lane section west of Oliver, b) The applicant shall provide a continuous accel/decel lane along the south side of Pawnee.

M. A CUP Certificate shall be submitted to MAPD prior to City Council consideration, identifying the approved CUP (referenced as DP-93, Amendment #1) and its special conditions for development on this property.

N. The following lot dimensions are needed: a) west line of Lot 8, b) southwest corner of Lot 8, c) east and south lines of Lot 7, and d) east line of Lot 5.

O. Lot 8 exceeds the maximum lot width to lot depth ratio of 3 to 1. A modification will need to be approved.

P. **County Surveying** advises that the basis of bearings needs to be shown.

Q. The plattor's text shall include language that a drainage plan has been developed for the plat and that all drainage easements, rights-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of stormwater.

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. (Water service and fire hydrants required by Article 8 for fire protection shall be as per the direction and approval of the Chief of the Fire Department.)

S. The applicant's engineer is advised that the Register of Deeds is requiring the name(s) of the notary public, who acknowledges the signatures on this plat, to be printed beneath the notary's signature.

T. To receive mail delivery without delay, and to avoid unnecessary expense, the applicant is advised of the necessity to meet with the U.S. Postal Service Growth Management Coordinator (Phone 316-729-0102) prior to development of the plat so that the type of delivery, and the tentative mailbox locations can be determined.

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V. The owner of the subdivision should be aware of the fact that the development of any subdivision greater than five (5) acres in size may require an NPDES Storm Water Discharge Permit from the Kansas Department of Health and Environment in Topeka. Further, on all construction sites, the City of Wichita requires that best management practices be used to reduce pollutant loadings in storm water runoffs.

W. Perimeter closure computations shall be submitted with the final plat tracing.

X. Recording of the plat within thirty (30) days after approval by the City Council and/or County Commission.

Y. The representatives from the **utility companies** should be prepared to comment on the need for any additional utility easements to be platted on this property.

Z. The applicant is reminded that a disk shall be submitted with the final plat tracing to the Planning Department detailing this plat in digital format in AutoCAD. This will be used by the City and County GIS Department.

AUSTIN MILLER, P. A.

355 N Waco; Suite 200, Wichita, Kansas 67202 316.262.1281 fax: 316.262.6773 e-mail:dklassen@austinmiller.com

TRANSMITTAL

February 12, 2001

To: Vicky Huang, P.E.
City of Wichita
455 N. Main, 7th Floor
Wichita, KS 67202

RE: Revised Spencer Gardens Drainage Plan

AM No: 00390

We transmit the following:

_____ Bluelines	__X__ Photocopies	_____ Legal Desc.
_____ Originals	_____ Shop Drawings	_____ Application

# Copies	Dated	Description
2		Revised Drainage Plan & Calcs
2		Utility Plan

Remarks:

AUSTIN MILLER, P.A.

Doug Klassen, P.E.

AUSTIN MILLER P.A.
ENGINEERING SERVICES

February 12, 2001

Vicky Huang, P.E.
City of Wichita
455 N. Main, 7th Floor
Wichita, KS 67202

RE: Drainage Plan
Replat of Part of Spencer Gardens Addition

Dear Ms. Huang:

Please find enclosed with this letter the drainage plan and supporting calculations for the Replat of Part of Spencer Gardens. The following paragraphs summarize the methodology and conclusions derived from these calculations.

The subject property contains 22.6 Acres. The property is currently undeveloped, with grass vegetation. Stormwater sewer lines cross the property near the east and west edges of the property. Both are 30-inch pipes draining inlets in Pawnee. These pipes discharge into Gypsum Creek just south of the subject property. The property is currently sloping to the south, with substantial grade difference between the north and south property lines.

The proposed drainage plan would split the property into two drainage areas. The west half (DA-1) contains 11.55 Ac. The east half (DA-2) contains 11.05 Ac. Undeveloped runoff from these areas is calculated at 48.1 cfs and 46.1 cfs respectively. Developed runoff from these areas were calculated at 68.1 cfs and 65.2 cfs respectively. The proposed drainage plan would allow DA-1 to drain directly to Gypsum Creek, following the existing drainage pattern. Runoff from DA-2 would be diverted into a detention pond in the southeast corner of the property. This detention pond would then discharge into Gypsum Creek.

The detention pond and accompanying outfall structure were analyzed two ways. The first analysis considered only the drainage from DA-2 going to the pond. The second analysis included the drainage from the 30-inch stormwater sewer pipe adjacent to the pond. The analysis was performed assuming the 30-inch pipe was flowing full during a 100-year storm, and that the pipe discharged into the pond.

An 18-inch discharge pipe was used for the initial condition in which only the runoff from DA-2 was considered. The pond was sized as shown on the enclosed drainage plan. The depth of the pond is 5 feet. The resulting discharge is 14.4 cfs, with a water surface elevation of 1302.63 feet. When added to the developed runoff from DA-1, the total runoff for developed conditions is 82.5 cfs. This is less than the 94.2 cfs allowed; so adequate detention is provided in this case.

Transportation
Utilities
Urban Planning
Resources
Construction Services

355 N. Waco, Suite 200
Wichita, Kansas 67202
Tel 316-262-1281
Fax 316-262-6773
http://www.austinmiller.com

The second condition was analyzed using a 36" discharge pipe with the same pond dimensions. Flow through the 30-inch pipe at full-flow conditions was calculated at 45.4 cfs. This was added to the inflow of the detention pond. The 45.4 cfs was also added to the allowable discharge for this condition. Analysis of the pond results in a peak outflow of 52.1 cfs at an elevation of 1302.84 feet. This outflow added to the runoff from DA-1 gives a total of 120.2 cfs. The allowable discharge for this condition is 139.6 cfs. Once again, the detention provided should be adequate.

The layout of this development has not been determined yet, and therefore, the final design of the detention pond should be completed at the time of development. Determination of whether the existing 30-inch pipe is redirected into the detention pond should also be decided at the time of final pond design.

Please review the enclosed calculations and contact me if you have any questions.

Respectfully,
Austin Miller, P. A.

Doug Klassen, P.E.

JOB SPENCER GARDENS DRAINAGE
SHEET NO. 1 OF 2
CALCULATED BY DK DATE 12/22/00
CHECKED BY _____ DATE Revised 1/12/01
SCALE _____

SPENCER GARDENS DRAINAGE:

DA-2 = $\frac{481304}{43560}$ = 11.05 Ac

DA-1 = $\frac{503139}{43560}$ = 11.55 Ac

UNDEVELOPED CONDITIONS: SOIL GROUP D

5-YEAR: T_c = 23 min. C = 0.54 I = 3.73 in/hr

$Q_{5_{DA-1}}$ = (0.54)(3.73)(11.55) = 23.3 cfs

$Q_{5_{DA-2}}$ = (0.54)(3.73)(11.05) = 22.3 cfs

TOTAL Q_5 = 45.6 cfs

100-YEAR: T_c = 23 Min. C = 0.68 I = 6.13 in/hr

$Q_{100_{DA-1}}$ = (0.68)(6.13)(11.55) = 48.1 cfs

$Q_{100_{DA-2}}$ = (0.68)(6.13)(11.05) = 46.1 cfs

TOTAL Q_{100} = 94.2 cfs

DEVELOPED CONDITIONS:

5-YEAR: I = 4.56 C = 0.69

$Q_{5_{DA-1}}$ = (0.69)(4.56)(11.55) = 36.3 cfs

$Q_{5_{DA-2}}$ = (0.69)(4.56)(11.05) = 34.9 cfs

TOTAL Q_5 = 71.1 cfs

100-YEAR: I = 7.37 in/hr C = 0.80

$Q_{100_{DA-1}}$ = (0.80)(7.37)(11.55) = 68.1 cfs

$Q_{100_{DA-2}}$ = (0.80)(7.37)(11.05) = 65.2 cfs

TOTAL Q_{100} = 133.3 cfs

JOB SPENCER GARDENS DRAINAGE
SHEET NO. 2 OF 2
CALCULATED BY DK DATE 12/22/00
CHECKED BY _____ DATE _____
SCALE _____

CAPACITY OF 30" PIPE (EXISTING)

SLOPE = 1.22% $n = 0.013$

$A = 4.909\ ft^2$

$R = 0.625\ ft$

$$Q = \frac{1.49}{n} A R^{2/3} \sqrt{S}$$

$$= \frac{1.49}{0.013} (4.909)(0.625)^{2/3} \sqrt{0.0122}$$

$$= 45.4\ cfs$$

DA-2 + 30" = 46.1 + 45.4 = 91.5

TOTAL UNDEVELOPED RUNOFF INCL. 30":

48.1 + 46.1 + 45.4 = 139.6 cfs (ALLOWABLE)

TOTAL DEVELOPED RUNOFF W/ DETENTION POND:

68.1 + 52.1 = 120.2 cfs < 139.6 Allowed

Hydrograph Report

Hyd. No. 1

DA-2

Hydrograph type	= Rational	Peak discharge	= 65.11 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 11.05 ac	Runoff coeff.	= .8
Intensity	= 7.37 in/hr	Time of conc. (Tc)	= 15 min
I-D-F Curve	= WICHITA.IDF	Reced. limb factor	= 1

Total Volume = 58,596 cuft, 1.345 acft

Hydrograph Discharge Table

Time (hrs)	Outflow cfs)
0.02	4.34
0.03	8.68
0.05	13.02
0.07	17.36
0.08	21.70
0.10	26.04
0.12	30.38
0.13	34.72
0.15	39.06
0.17	43.40
0.18	47.75
0.20	52.09
0.22	56.43
0.23	60.77
0.25	65.11 <<
0.27	60.77
0.28	56.43
0.30	52.09
0.32	47.75
0.33	43.40
0.35	39.06
0.37	34.72
0.38	30.38
0.40	26.04
0.42	21.70
0.43	17.36
0.45	13.02
0.47	8.68
0.48	4.34

...End

Hydrograph Report

Hyd. No. 2

Hydrograph type	= Reservoir	Peak discharge	= 14.44 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 1	Reservoir name	= Pond 1
Max. Elevation	= 1302.63 ft	Max. Storage	= 43,365 cuft

Storage Indication method used.

Total Volume = 58,596 cuft, 1.345 acft

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.05	13.02	1299.11	1.99	-----	-----	-----	-----	-----	1.99
0.07	17.36	1299.19	2.64	-----	-----	-----	-----	-----	2.64
0.08	21.70	1299.30	3.30	-----	-----	-----	-----	-----	3.30
0.10	26.04	1299.43	3.94	-----	-----	-----	-----	-----	3.94
0.12	30.38	1299.58	4.53	-----	-----	-----	-----	-----	4.53
0.13	34.72	1299.76	5.25	-----	-----	-----	-----	-----	5.25
0.15	39.06	1299.96	5.91	-----	-----	-----	-----	-----	5.91
0.17	43.40	1300.16	6.47	-----	-----	-----	-----	-----	6.47
0.18	47.75	1300.36	7.03	-----	-----	-----	-----	-----	7.03
0.20	52.09	1300.59	7.81	-----	-----	-----	-----	-----	7.81
0.22	56.43	1300.84	8.87	-----	-----	-----	-----	-----	8.87
0.23	60.77	1301.09	9.83	-----	-----	-----	-----	-----	9.83
0.25	65.11 <<	1301.32	10.68	-----	-----	-----	-----	-----	10.68
0.27	60.77	1301.56	11.45	-----	-----	-----	-----	-----	11.45
0.28	56.43	1301.77	12.10	-----	-----	-----	-----	-----	12.10
0.30	52.09	1301.96	12.66	-----	-----	-----	-----	-----	12.66
0.32	47.75	1302.11	13.08	-----	-----	-----	-----	-----	13.08
0.33	43.40	1302.24	13.43	-----	-----	-----	-----	-----	13.43
0.35	39.06	1302.35	13.72	-----	-----	-----	-----	-----	13.72
0.37	34.72	1302.44	13.96	-----	-----	-----	-----	-----	13.96
0.38	30.38	1302.51	14.14	-----	-----	-----	-----	-----	14.14
0.40	26.04	1302.57	14.28	-----	-----	-----	-----	-----	14.28
0.42	21.70	1302.61	14.38	-----	-----	-----	-----	-----	14.38
0.43	17.36	1302.63	14.43	-----	-----	-----	-----	-----	14.43
0.45	13.02	1302.63	14.44	-----	-----	-----	-----	-----	14.44 <<
0.47	8.68	1302.62	14.40	-----	-----	-----	-----	-----	14.40
0.48	4.34	1302.58	14.32	-----	-----	-----	-----	-----	14.32
0.50	0.00	1302.54	14.20	-----	-----	-----	-----	-----	14.20
0.52	0.00	1302.48	14.06	-----	-----	-----	-----	-----	14.06
0.53	0.00	1302.43	13.92	-----	-----	-----	-----	-----	13.92
0.55	0.00	1302.37	13.78	-----	-----	-----	-----	-----	13.78
0.57	0.00	1302.32	13.63	-----	-----	-----	-----	-----	13.63
0.58	0.00	1302.26	13.49	-----	-----	-----	-----	-----	13.49
0.60	0.00	1302.21	13.35	-----	-----	-----	-----	-----	13.35
0.62	0.00	1302.16	13.21	-----	-----	-----	-----	-----	13.21
0.63	0.00	1302.11	13.06	-----	-----	-----	-----	-----	13.06
0.65	0.00	1302.06	12.92	-----	-----	-----	-----	-----	12.92

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.67	0.00	1302.01	12.78	-----	-----	-----	-----	-----	12.78
0.68	0.00	1301.95	12.62	-----	-----	-----	-----	-----	12.62
0.70	0.00	1301.89	12.45	-----	-----	-----	-----	-----	12.45
0.72	0.00	1301.84	12.29	-----	-----	-----	-----	-----	12.29
0.73	0.00	1301.78	12.12	-----	-----	-----	-----	-----	12.12
0.75	0.00	1301.73	11.96	-----	-----	-----	-----	-----	11.96
0.77	0.00	1301.67	11.79	-----	-----	-----	-----	-----	11.79
0.78	0.00	1301.62	11.63	-----	-----	-----	-----	-----	11.63
0.80	0.00	1301.57	11.47	-----	-----	-----	-----	-----	11.47
0.82	0.00	1301.51	11.30	-----	-----	-----	-----	-----	11.30
0.83	0.00	1301.46	11.14	-----	-----	-----	-----	-----	11.14
0.85	0.00	1301.41	10.97	-----	-----	-----	-----	-----	10.97
0.87	0.00	1301.36	10.81	-----	-----	-----	-----	-----	10.81
0.88	0.00	1301.32	10.64	-----	-----	-----	-----	-----	10.64
0.90	0.00	1301.27	10.48	-----	-----	-----	-----	-----	10.48
0.92	0.00	1301.22	10.31	-----	-----	-----	-----	-----	10.31
0.93	0.00	1301.17	10.15	-----	-----	-----	-----	-----	10.15
0.95	0.00	1301.13	9.99	-----	-----	-----	-----	-----	9.99
0.97	0.00	1301.08	9.82	-----	-----	-----	-----	-----	9.82
0.98	0.00	1301.04	9.66	-----	-----	-----	-----	-----	9.66
1.00	0.00	1300.99	9.49	-----	-----	-----	-----	-----	9.49
1.02	0.00	1300.94	9.29	-----	-----	-----	-----	-----	9.29
1.03	0.00	1300.89	9.10	-----	-----	-----	-----	-----	9.10
1.05	0.00	1300.85	8.91	-----	-----	-----	-----	-----	8.91
1.07	0.00	1300.80	8.72	-----	-----	-----	-----	-----	8.72
1.08	0.00	1300.75	8.52	-----	-----	-----	-----	-----	8.52
1.10	0.00	1300.71	8.33	-----	-----	-----	-----	-----	8.33
1.12	0.00	1300.66	8.13	-----	-----	-----	-----	-----	8.13
1.13	0.00	1300.62	7.94	-----	-----	-----	-----	-----	7.94
1.15	0.00	1300.58	7.75	-----	-----	-----	-----	-----	7.75
1.17	0.00	1300.54	7.55	-----	-----	-----	-----	-----	7.55
1.18	0.00	1300.50	7.37	-----	-----	-----	-----	-----	7.37
1.20	0.00	1300.46	7.27	-----	-----	-----	-----	-----	7.27
1.22	0.00	1300.42	7.17	-----	-----	-----	-----	-----	7.17
1.23	0.00	1300.38	7.08	-----	-----	-----	-----	-----	7.08
1.25	0.00	1300.35	6.98	-----	-----	-----	-----	-----	6.98
1.27	0.00	1300.31	6.88	-----	-----	-----	-----	-----	6.88
1.28	0.00	1300.27	6.79	-----	-----	-----	-----	-----	6.79
1.30	0.00	1300.24	6.69	-----	-----	-----	-----	-----	6.69
1.32	0.00	1300.20	6.59	-----	-----	-----	-----	-----	6.59
1.33	0.00	1300.17	6.49	-----	-----	-----	-----	-----	6.49
1.35	0.00	1300.13	6.40	-----	-----	-----	-----	-----	6.40
1.37	0.00	1300.10	6.30	-----	-----	-----	-----	-----	6.30
1.38	0.00	1300.06	6.20	-----	-----	-----	-----	-----	6.20
1.40	0.00	1300.03	6.11	-----	-----	-----	-----	-----	6.11
1.42	0.00	1300.00	6.01	-----	-----	-----	-----	-----	6.01
1.43	0.00	1299.96	5.89	-----	-----	-----	-----	-----	5.89
1.45	0.00	1299.92	5.78	-----	-----	-----	-----	-----	5.78
1.47	0.00	1299.89	5.66	-----	-----	-----	-----	-----	5.66
1.48	0.00	1299.85	5.54	-----	-----	-----	-----	-----	5.54

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
1.50	0.00	1299.81	5.43	-----	-----	-----	-----	-----	5.43
1.52	0.00	1299.78	5.31	-----	-----	-----	-----	-----	5.31
1.53	0.00	1299.75	5.19	-----	-----	-----	-----	-----	5.19
1.55	0.00	1299.71	5.08	-----	-----	-----	-----	-----	5.08
1.57	0.00	1299.68	4.95	-----	-----	-----	-----	-----	4.95
1.58	0.00	1299.65	4.80	-----	-----	-----	-----	-----	4.80
1.60	0.00	1299.62	4.66	-----	-----	-----	-----	-----	4.66
1.62	0.00	1299.59	4.54	-----	-----	-----	-----	-----	4.54
1.63	0.00	1299.56	4.45	-----	-----	-----	-----	-----	4.45
1.65	0.00	1299.53	4.36	-----	-----	-----	-----	-----	4.36
1.67	0.00	1299.50	4.27	-----	-----	-----	-----	-----	4.27
1.68	0.00	1299.48	4.15	-----	-----	-----	-----	-----	4.15
1.70	0.00	1299.45	4.04	-----	-----	-----	-----	-----	4.04
1.72	0.00	1299.43	3.92	-----	-----	-----	-----	-----	3.92
1.73	0.00	1299.40	3.81	-----	-----	-----	-----	-----	3.81
1.75	0.00	1299.38	3.69	-----	-----	-----	-----	-----	3.69
1.77	0.00	1299.35	3.57	-----	-----	-----	-----	-----	3.57
1.78	0.00	1299.33	3.45	-----	-----	-----	-----	-----	3.45
1.80	0.00	1299.31	3.34	-----	-----	-----	-----	-----	3.34
1.82	0.00	1299.29	3.22	-----	-----	-----	-----	-----	3.22
1.83	0.00	1299.27	3.10	-----	-----	-----	-----	-----	3.10
1.85	0.00	1299.25	2.98	-----	-----	-----	-----	-----	2.98
1.87	0.00	1299.23	2.87	-----	-----	-----	-----	-----	2.87
1.88	0.00	1299.21	2.76	-----	-----	-----	-----	-----	2.76
1.90	0.00	1299.19	2.64	-----	-----	-----	-----	-----	2.64
1.92	0.00	1299.18	2.51	-----	-----	-----	-----	-----	2.51
1.93	0.00	1299.16	2.39	-----	-----	-----	-----	-----	2.39
1.95	0.00	1299.15	2.27	-----	-----	-----	-----	-----	2.27
1.97	0.00	1299.13	2.16	-----	-----	-----	-----	-----	2.16
1.98	0.00	1299.12	2.05	-----	-----	-----	-----	-----	2.05
2.00	0.00	1299.11	1.95	-----	-----	-----	-----	-----	1.95
2.02	0.00	1299.09	1.79	-----	-----	-----	-----	-----	1.79
2.03	0.00	1299.08	1.58	-----	-----	-----	-----	-----	1.58
2.05	0.00	1299.07	1.40	-----	-----	-----	-----	-----	1.40
2.07	0.00	1299.07	1.24	-----	-----	-----	-----	-----	1.24
2.08	0.00	1299.06	1.09	-----	-----	-----	-----	-----	1.09

...End

Hydrograph Report

Hyd. No. 1

DA-2

Hydrograph type	= Rational	Peak discharge	= 65.11 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 11.05 ac	Runoff coeff.	= .8
Intensity	= 7.37 in/hr	Time of conc. (Tc)	= 15 min
I-D-F Curve	= WICHITA.IDF	Reced. limb factor	= 1

Total Volume = 58,596 cuft, 1.345 acft

Hydrograph Discharge Table

Time (hrs)	Outflow (cfs)
0.02	4.34
0.03	8.68
0.05	13.02
0.07	17.36
0.08	21.70
0.10	26.04
0.12	30.38
0.13	34.72
0.15	39.06
0.17	43.40
0.18	47.75
0.20	52.09
0.22	56.43
0.23	60.77
0.25	65.11 <<
0.27	60.77
0.28	56.43
0.30	52.09
0.32	47.75
0.33	43.40
0.35	39.06
0.37	34.72
0.38	30.38
0.40	26.04
0.42	21.70
0.43	17.36
0.45	13.02
0.47	8.68
0.48	4.34

...End

Hydrograph Report

Hyd. No. 2

Drainage from Exist 30"

Hydrograph type	= Rational	Peak discharge	= 45.37 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 7 ac	Runoff coeff.	= .88
Intensity	= 7.37 in/hr	Time of conc. (Tc)	= 15 min
I-D-F Curve	= WICHITA.IDF	Reced. limb factor	= 1

Total Volume = 40,832 cuft, 0.937 acft

Hydrograph Discharge Table

Time (hrs)	Outflow cfs)
0.02	3.02
0.03	6.05
0.05	9.07
0.07	12.10
0.08	15.12
0.10	18.15
0.12	21.17
0.13	24.20
0.15	27.22
0.17	30.25
0.18	33.27
0.20	36.30
0.22	39.32
0.23	42.34
0.25	45.37 <<
0.27	42.34
0.28	39.32
0.30	36.30
0.32	33.27
0.33	30.25
0.35	27.22
0.37	24.20
0.38	21.17
0.40	18.15
0.42	15.12
0.43	12.10
0.45	9.07
0.47	6.05
0.48	3.02

...End

Hydrograph Report

Hyd. No. 3

Hydrograph type	= Combine	Peak discharge	= 110.48 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
1st inflow hyd. No.	= 1	2nd inflow hyd. No.	= 2

Total Volume = 99,428 cuft, 2.283 acft

Hydrograph Discharge Table

Time (hrs)	1st Inflow (cfs)	+	2nd Inflow (cfs)	=	Outflow (cfs)
0.02	4.34		3.02		7.37
0.03	8.68		6.05		14.73
0.05	13.02		9.07		22.10
0.07	17.36		12.10		29.46
0.08	21.70		15.12		36.83
0.10	26.04		18.15		44.19
0.12	30.38		21.17		51.56
0.13	34.72		24.20		58.92
0.15	39.06		27.22		66.29
0.17	43.40		30.25		73.65
0.18	47.75		33.27		81.02
0.20	52.09		36.30		88.38
0.22	56.43		39.32		95.75
0.23	60.77		42.34		103.11
0.25	65.11 <<		45.37 <<		110.48 <<
0.27	60.77		42.34		103.11
0.28	56.43		39.32		95.75
0.30	52.09		36.30		88.38
0.32	47.75		33.27		81.02
0.33	43.40		30.25		73.65
0.35	39.06		27.22		66.29
0.37	34.72		24.20		58.92
0.38	30.38		21.17		51.56
0.40	26.04		18.15		44.19
0.42	21.70		15.12		36.83
0.43	17.36		12.10		29.46
0.45	13.02		9.07		22.10
0.47	8.68		6.05		14.73
0.48	4.34		3.02		7.37

...End

Hydrograph Report

Hyd. No. 4

Hydrograph type	= Reservoir	Peak discharge	= 52.10 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 3	Reservoir name	= Pond Option 3
Max. Elevation	= 1302.84 ft	Max. Storage	= 46,628 cuft

Storage Indication method used.

Total Volume = 99,428 cuft, 2.283 acft

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.02	7.37	1299.02	1.45	-----	-----	-----	-----	-----	1.45
0.03	14.73	1299.07	5.22	-----	-----	-----	-----	-----	5.22
0.05	22.10	1299.14	8.92	-----	-----	-----	-----	-----	8.92
0.07	29.46	1299.24	11.75	-----	-----	-----	-----	-----	11.75
0.08	36.83	1299.37	14.59	-----	-----	-----	-----	-----	14.59
0.10	44.19	1299.53	17.45	-----	-----	-----	-----	-----	17.45
0.12	51.56	1299.71	20.22	-----	-----	-----	-----	-----	20.22
0.13	58.92	1299.93	23.19	-----	-----	-----	-----	-----	23.19
0.15	66.29	1300.14	25.74	-----	-----	-----	-----	-----	25.74
0.17	73.65	1300.37	28.21	-----	-----	-----	-----	-----	28.21
0.18	81.02	1300.63	30.73	-----	-----	-----	-----	-----	30.72
0.20	88.38	1300.91	33.27	-----	-----	-----	-----	-----	33.27
0.22	95.75	1301.19	35.59	-----	-----	-----	-----	-----	35.59
0.23	103.11	1301.47	37.84	-----	-----	-----	-----	-----	37.84
0.25	110.48 <<	1301.78	40.13	-----	-----	-----	-----	-----	40.13
0.27	103.11	1302.07	42.60	-----	-----	-----	-----	-----	42.60
0.28	95.75	1302.29	45.47	-----	-----	-----	-----	-----	45.47
0.30	88.38	1302.46	47.69	-----	-----	-----	-----	-----	47.69
0.32	81.02	1302.61	49.39	-----	-----	-----	-----	-----	49.39
0.33	73.65	1302.71	50.63	-----	-----	-----	-----	-----	50.63
0.35	66.29	1302.79	51.48	-----	-----	-----	-----	-----	51.48
0.37	58.92	1302.83	51.96	-----	-----	-----	-----	-----	51.96
0.38	51.56	1302.84 <<	52.10	-----	-----	-----	-----	-----	52.10 <<
0.40	44.19	1302.83	51.92	-----	-----	-----	-----	-----	51.92
0.42	36.83	1302.78	51.42	-----	-----	-----	-----	-----	51.42
0.43	29.46	1302.71	50.63	-----	-----	-----	-----	-----	50.63
0.45	22.10	1302.62	49.52	-----	-----	-----	-----	-----	49.52
0.47	14.73	1302.50	48.10	-----	-----	-----	-----	-----	48.10
0.48	7.37	1302.36	46.35	-----	-----	-----	-----	-----	46.35
0.50	0.00	1302.19	44.26	-----	-----	-----	-----	-----	44.26
0.52	0.00	1302.02	41.98	-----	-----	-----	-----	-----	41.98
0.53	0.00	1301.84	40.54	-----	-----	-----	-----	-----	40.54
0.55	0.00	1301.66	39.23	-----	-----	-----	-----	-----	39.23
0.57	0.00	1301.48	37.91	-----	-----	-----	-----	-----	37.91
0.58	0.00	1301.31	36.59	-----	-----	-----	-----	-----	36.59
0.60	0.00	1301.15	35.28	-----	-----	-----	-----	-----	35.28
0.62	0.00	1300.99	33.95	-----	-----	-----	-----	-----	33.95

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Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.63	0.00	1300.81	32.40	-----	-----	-----	-----	-----	32.40
0.65	0.00	1300.64	30.85	-----	-----	-----	-----	-----	30.85
0.67	0.00	1300.48	29.31	-----	-----	-----	-----	-----	29.31
0.68	0.00	1300.33	27.76	-----	-----	-----	-----	-----	27.76
0.70	0.00	1300.19	26.21	-----	-----	-----	-----	-----	26.21
0.72	0.00	1300.05	24.66	-----	-----	-----	-----	-----	24.66
0.73	0.00	1299.91	22.93	-----	-----	-----	-----	-----	22.93
0.75	0.00	1299.77	20.59	-----	-----	-----	-----	-----	20.59
0.77	0.00	1299.64	19.24	-----	-----	-----	-----	-----	19.24
0.78	0.00	1299.52	17.38	-----	-----	-----	-----	-----	17.38
0.80	0.00	1299.42	15.52	-----	-----	-----	-----	-----	15.52
0.82	0.00	1299.32	13.64	-----	-----	-----	-----	-----	13.64
0.83	0.00	1299.24	11.76	-----	-----	-----	-----	-----	11.75
0.85	0.00	1299.17	9.86	-----	-----	-----	-----	-----	9.86
0.87	0.00	1299.11	8.05	-----	-----	-----	-----	-----	8.05
0.88	0.00	1299.07	5.38	-----	-----	-----	-----	-----	5.38
0.90	0.00	1299.04	3.27	-----	-----	-----	-----	-----	3.27
0.92	0.00	1299.03	1.98	-----	-----	-----	-----	-----	1.98
0.93	0.00	1299.02	1.20	-----	-----	-----	-----	-----	1.20

...End

Reservoir Report

Reservoir No. 3

Pond Option 3

Culvert / Orifice Structures

		[A]	[B]	[C]
Rise (in)	=	36.0	0.0	0.0
Span (in)	=	36.0	0.0	0.0
No. Barrels	=	1	0	0
Invert El. (ft)	=	1299.00	0.00	0.00
Length (ft)	=	50.0	0.0	0.0
Slope (%)	=	0.50	0.00	0.00
N-Value	=	.013	.013	.013
Orif. Coeff.	=	0.60	0.60	0.60
Multi-Stage	=	----	No	No

Weir Structures

		[A]	[B]	[C]
Crest Len (ft)	=	0.0	0.0	0.0
Crest El. (ft)	=	0.00	0.00	0.00
Weir Coeff.	=	3.00	3.00	3.00
Eqn. Exp.	=	1.50	1.50	1.50
Multi-Stage	=	No	No	No

Tailwater Elevation = 0.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage (ft)	Storage (cuft)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Discharge (cfs)
0.0	00	1299.00	0.00	---	---	---	---	---	0.00
0.1	933	1299.10	7.61	---	---	---	---	---	7.61
0.2	1,866	1299.20	10.76	---	---	---	---	---	10.76
0.3	2,799	1299.30	13.18	---	---	---	---	---	13.18
0.4	3,732	1299.40	15.22	---	---	---	---	---	15.22
0.5	4,665	1299.50	17.02	---	---	---	---	---	17.02
0.6	5,598	1299.60	18.64	---	---	---	---	---	18.64
0.7	6,531	1299.70	20.13	---	---	---	---	---	20.13
0.8	7,464	1299.80	20.80	---	---	---	---	---	20.80
0.9	8,397	1299.90	22.83	---	---	---	---	---	22.83
1.0	9,330	1300.00	24.07	---	---	---	---	---	24.07
1.1	10,453	1300.10	25.24	---	---	---	---	---	25.24
1.2	11,576	1300.20	26.36	---	---	---	---	---	26.36
1.3	12,699	1300.30	27.44	---	---	---	---	---	27.44
1.4	13,822	1300.40	28.47	---	---	---	---	---	28.47
1.5	14,945	1300.50	29.47	---	---	---	---	---	29.47
1.6	16,067	1300.60	30.44	---	---	---	---	---	30.44
1.7	17,190	1300.70	31.38	---	---	---	---	---	31.38
1.8	18,313	1300.80	32.29	---	---	---	---	---	32.29
1.9	19,436	1300.90	33.17	---	---	---	---	---	33.17
2.0	20,559	1301.00	34.04	---	---	---	---	---	34.04
2.1	21,879	1301.10	34.88	---	---	---	---	---	34.88
2.2	23,199	1301.20	35.70	---	---	---	---	---	35.70
2.3	24,519	1301.30	36.50	---	---	---	---	---	36.50
2.4	25,839	1301.40	37.28	---	---	---	---	---	37.28

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Stage / Storage / Discharge Table

Stage (ft)	Storage (cuft)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Discharge (cfs)
2.5	27,160	1301.50	38.05	---	---	---	---	---	38.05
2.6	28,480	1301.60	38.80	---	---	---	---	---	38.80
2.7	29,800	1301.70	39.54	---	---	---	---	---	39.54
2.8	31,120	1301.80	40.27	---	---	---	---	---	40.27
2.9	32,440	1301.90	40.98	---	---	---	---	---	40.98
3.0	33,760	1302.00	41.68	---	---	---	---	---	41.68
3.1	35,285	1302.10	43.05	---	---	---	---	---	43.05
3.2	36,809	1302.20	44.37	---	---	---	---	---	44.37
3.3	38,334	1302.30	45.66	---	---	---	---	---	45.66
3.4	39,859	1302.40	46.91	---	---	---	---	---	46.91
3.5	41,384	1302.50	48.13	---	---	---	---	---	48.13
3.6	42,908	1302.60	49.31	---	---	---	---	---	49.31
3.7	44,433	1302.70	50.47	---	---	---	---	---	50.47
3.8	45,958	1302.80	51.61	---	---	---	---	---	51.61
3.9	47,482	1302.90	52.72	---	---	---	---	---	52.72
4.0	49,007	1303.00	53.81	---	---	---	---	---	53.81
4.1	50,744	1303.10	54.87	---	---	---	---	---	54.87
4.2	52,481	1303.20	55.92	---	---	---	---	---	55.92
4.3	54,217	1303.30	56.94	---	---	---	---	---	56.94
4.4	55,954	1303.40	57.95	---	---	---	---	---	57.95
4.5	57,691	1303.50	58.94	---	---	---	---	---	58.94
4.6	59,428	1303.60	59.92	---	---	---	---	---	59.92
4.7	61,165	1303.70	60.87	---	---	---	---	---	60.87
4.8	62,901	1303.80	61.82	---	---	---	---	---	61.82
4.9	64,638	1303.90	62.75	---	---	---	---	---	62.75
5.0	66,375	1304.00	63.67	---	---	---	---	---	63.67

Hydrograph Report

Hyd. No. 5

DA-2 (5 year)

Hydrograph type	= Rational	Peak discharge	= 40.21 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 11.05 ac	Runoff coeff.	= .8
Intensity	= 4.55 in/hr	Time of conc. (Tc)	= 15 min
I-D-F Curve	= WICHITA.IDF	Reced. limb factor	= 1

Total Volume = 36,193 cuft, 0.831 acft

Hydrograph Discharge Table

Time (hrs)	Outflow cfs)
0.02	2.68
0.03	5.36
0.05	8.04
0.07	10.72
0.08	13.40
0.10	16.09
0.12	18.77
0.13	21.45
0.15	24.13
0.17	26.81
0.18	29.49
0.20	32.17
0.22	34.85
0.23	37.53
0.25	40.21 <<
0.27	37.53
0.28	34.85
0.30	32.17
0.32	29.49
0.33	26.81
0.35	24.13
0.37	21.45
0.38	18.77
0.40	16.09
0.42	13.40
0.43	10.72
0.45	8.04
0.47	5.36
0.48	2.68

...End

Hydrograph Report

Hyd. No. 6

Exist. 30" (5-year)

Hydrograph type	= Rational	Peak discharge	= 28.02 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 7 ac	Runoff coeff.	= .88
Intensity	= 4.55 in/hr	Time of conc. (Tc)	= 15 min
I-D-F Curve	= WICHITA.IDF	Reced. limb factor	= 1

Hydrograph Discharge Table

Total Volume = 25,220 cuft, 0.579 acft

Time (hrs)	Outflow cfs)
0.02	1.87
0.03	3.74
0.05	5.60
0.07	7.47
0.08	9.34
0.10	11.21
0.12	13.08
0.13	14.95
0.15	16.81
0.17	18.68
0.18	20.55
0.20	22.42
0.22	24.29
0.23	26.15
0.25	28.02 <<
0.27	26.15
0.28	24.29
0.30	22.42
0.32	20.55
0.33	18.68
0.35	16.81
0.37	14.95
0.38	13.08
0.40	11.21
0.42	9.34
0.43	7.47
0.45	5.60
0.47	3.74
0.48	1.87

...End

Hydrograph Report

Hyd. No. 7

Hydrograph type	= Combine	Peak discharge	= 68.24 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
1st inflow hyd. No.	= 5	2nd inflow hyd. No.	= 6

Total Volume = 61,413 cuft, 1.410 acft

Hydrograph Discharge Table

Time (hrs)	1st Inflow (cfs)	+	2nd Inflow (cfs)	=	Outflow (cfs)
0.02	2.68		1.87		4.55
0.03	5.36		3.74		9.10
0.05	8.04		5.60		13.65
0.07	10.72		7.47		18.20
0.08	13.40		9.34		22.75
0.10	16.09		11.21		27.29
0.12	18.77		13.08		31.84
0.13	21.45		14.95		36.39
0.15	24.13		16.81		40.94
0.17	26.81		18.68		45.49
0.18	29.49		20.55		50.04
0.20	32.17		22.42		54.59
0.22	34.85		24.29		59.14
0.23	37.53		26.15		63.69
0.25	40.21 <<		28.02 <<		68.24 <<
0.27	37.53		26.15		63.69
0.28	34.85		24.29		59.14
0.30	32.17		22.42		54.59
0.32	29.49		20.55		50.04
0.33	26.81		18.68		45.49
0.35	24.13		16.81		40.94
0.37	21.45		14.95		36.39
0.38	18.77		13.08		31.84
0.40	16.09		11.21		27.29
0.42	13.40		9.34		22.75
0.43	10.72		7.47		18.20
0.45	8.04		5.60		13.65
0.47	5.36		3.74		9.10
0.48	2.68		1.87		4.55

...End

Hydrograph Report

Hyd. No. 8

Hydrograph type	= Reservoir	Peak discharge	= 36.19 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyd. No.	= 7	Reservoir name	= Pond Option 3
Max. Elevation	= 1301.26 ft	Max. Storage	= 24,018 cuft

Storage Indication method used.

Total Volume = 61,413 cuft, 1.410 acft

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.03	9.10	1299.04	3.22	-----	-----	-----	-----	-----	3.23
0.05	13.65	1299.08	6.43	-----	-----	-----	-----	-----	6.43
0.07	18.20	1299.14	8.80	-----	-----	-----	-----	-----	8.80
0.08	22.75	1299.21	10.91	-----	-----	-----	-----	-----	10.91
0.10	27.29	1299.29	12.95	-----	-----	-----	-----	-----	12.95
0.12	31.84	1299.39	15.03	-----	-----	-----	-----	-----	15.03
0.13	36.39	1299.51	17.12	-----	-----	-----	-----	-----	17.12
0.15	40.94	1299.64	19.21	-----	-----	-----	-----	-----	19.21
0.17	45.49	1299.79	20.72	-----	-----	-----	-----	-----	20.72
0.18	50.04	1299.95	23.48	-----	-----	-----	-----	-----	23.48
0.20	54.59	1300.11	25.35	-----	-----	-----	-----	-----	25.35
0.22	59.14	1300.27	27.15	-----	-----	-----	-----	-----	27.15
0.23	63.69	1300.45	28.99	-----	-----	-----	-----	-----	28.99
0.25	68.24 <<	1300.64	30.85	-----	-----	-----	-----	-----	30.86
0.27	63.69	1300.83	32.53	-----	-----	-----	-----	-----	32.53
0.28	59.14	1300.98	33.85	-----	-----	-----	-----	-----	33.85
0.30	54.59	1301.08	34.74	-----	-----	-----	-----	-----	34.74
0.32	50.04	1301.16	35.39	-----	-----	-----	-----	-----	35.39
0.33	45.49	1301.22	35.84	-----	-----	-----	-----	-----	35.84
0.35	40.94	1301.25	36.10	-----	-----	-----	-----	-----	36.10
0.37	36.39	1301.26 <<	36.19	-----	-----	-----	-----	-----	36.19 <<
0.38	31.84	1301.25	36.12	-----	-----	-----	-----	-----	36.12
0.40	27.29	1301.22	35.88	-----	-----	-----	-----	-----	35.88
0.42	22.75	1301.18	35.49	-----	-----	-----	-----	-----	35.49
0.43	18.20	1301.11	34.94	-----	-----	-----	-----	-----	34.94
0.45	13.65	1301.02	34.23	-----	-----	-----	-----	-----	34.23
0.47	9.10	1300.91	33.24	-----	-----	-----	-----	-----	33.24
0.48	4.55	1300.77	32.01	-----	-----	-----	-----	-----	32.01
0.50	0.00	1300.61	30.58	-----	-----	-----	-----	-----	30.58
0.52	0.00	1300.46	29.03	-----	-----	-----	-----	-----	29.03
0.53	0.00	1300.30	27.49	-----	-----	-----	-----	-----	27.49
0.55	0.00	1300.16	25.94	-----	-----	-----	-----	-----	25.94
0.57	0.00	1300.03	24.39	-----	-----	-----	-----	-----	24.39
0.58	0.00	1299.88	22.47	-----	-----	-----	-----	-----	22.47
0.60	0.00	1299.74	20.43	-----	-----	-----	-----	-----	20.43
0.62	0.00	1299.62	18.91	-----	-----	-----	-----	-----	18.91
0.63	0.00	1299.50	17.05	-----	-----	-----	-----	-----	17.05

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Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.65	0.00	1299.40	15.19	-----	-----	-----	-----	-----	15.19
0.67	0.00	1299.31	13.32	-----	-----	-----	-----	-----	13.32
0.68	0.00	1299.23	11.42	-----	-----	-----	-----	-----	11.42
0.70	0.00	1299.16	9.50	-----	-----	-----	-----	-----	9.50
0.72	0.00	1299.10	7.76	-----	-----	-----	-----	-----	7.75
0.73	0.00	1299.06	4.87	-----	-----	-----	-----	-----	4.87
0.75	0.00	1299.04	2.95	-----	-----	-----	-----	-----	2.96
0.77	0.00	1299.02	1.79	-----	-----	-----	-----	-----	1.79
0.78	0.00	1299.01	1.09	-----	-----	-----	-----	-----	1.09

...End

Reservoir Report

Reservoir No. 3

Pond Option 3

Culvert / Orifice Structures

		[A]	[B]	[C]
Rise (in)	=	36.0	0.0	0.0
Span (in)	=	36.0	0.0	0.0
No. Barrels	=	1	0	0
Invert El. (ft)	=	1299.00	0.00	0.00
Length (ft)	=	50.0	0.0	0.0
Slope (%)	=	0.50	0.00	0.00
N-Value	=	.013	.013	.013
Orif. Coeff.	=	0.60	0.60	0.60
Multi-Stage	=	---	No	No

Weir Structures

		[A]	[B]	[C]
Crest Len (ft)	=	0.0	0.0	0.0
Crest El. (ft)	=	0.00	0.00	0.00
Weir Coeff.	=	3.00	3.00	3.00
Eqn. Exp.	=	1.50	1.50	1.50
Multi-Stage	=	No	No	No

Tailwater Elevation = 0.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage (ft)	Storage (cuft)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Discharge (cfs)
0.0	00	1299.00	0.00	---	---	---	---	---	0.00
0.1	933	1299.10	7.61	---	---	---	---	---	7.61
0.2	1,866	1299.20	10.76	---	---	---	---	---	10.76
0.3	2,799	1299.30	13.18	---	---	---	---	---	13.18
0.4	3,732	1299.40	15.22	---	---	---	---	---	15.22
0.5	4,665	1299.50	17.02	---	---	---	---	---	17.02
0.6	5,598	1299.60	18.64	---	---	---	---	---	18.64
0.7	6,531	1299.70	20.13	---	---	---	---	---	20.13
0.8	7,464	1299.80	20.80	---	---	---	---	---	20.80
0.9	8,397	1299.90	22.83	---	---	---	---	---	22.83
1.0	9,330	1300.00	24.07	---	---	---	---	---	24.07
1.1	10,453	1300.10	25.24	---	---	---	---	---	25.24
1.2	11,576	1300.20	26.36	---	---	---	---	---	26.36
1.3	12,699	1300.30	27.44	---	---	---	---	---	27.44
1.4	13,822	1300.40	28.47	---	---	---	---	---	28.47
1.5	14,945	1300.50	29.47	---	---	---	---	---	29.47
1.6	16,067	1300.60	30.44	---	---	---	---	---	30.44
1.7	17,190	1300.70	31.38	---	---	---	---	---	31.38
1.8	18,313	1300.80	32.29	---	---	---	---	---	32.29
1.9	19,436	1300.90	33.17	---	---	---	---	---	33.17
2.0	20,559	1301.00	34.04	---	---	---	---	---	34.04
2.1	21,879	1301.10	34.88	---	---	---	---	---	34.88
2.2	23,199	1301.20	35.70	---	---	---	---	---	35.70
2.3	24,519	1301.30	36.50	---	---	---	---	---	36.50
2.4	25,839	1301.40	37.28	---	---	---	---	---	37.28

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Stage / Storage / Discharge Table

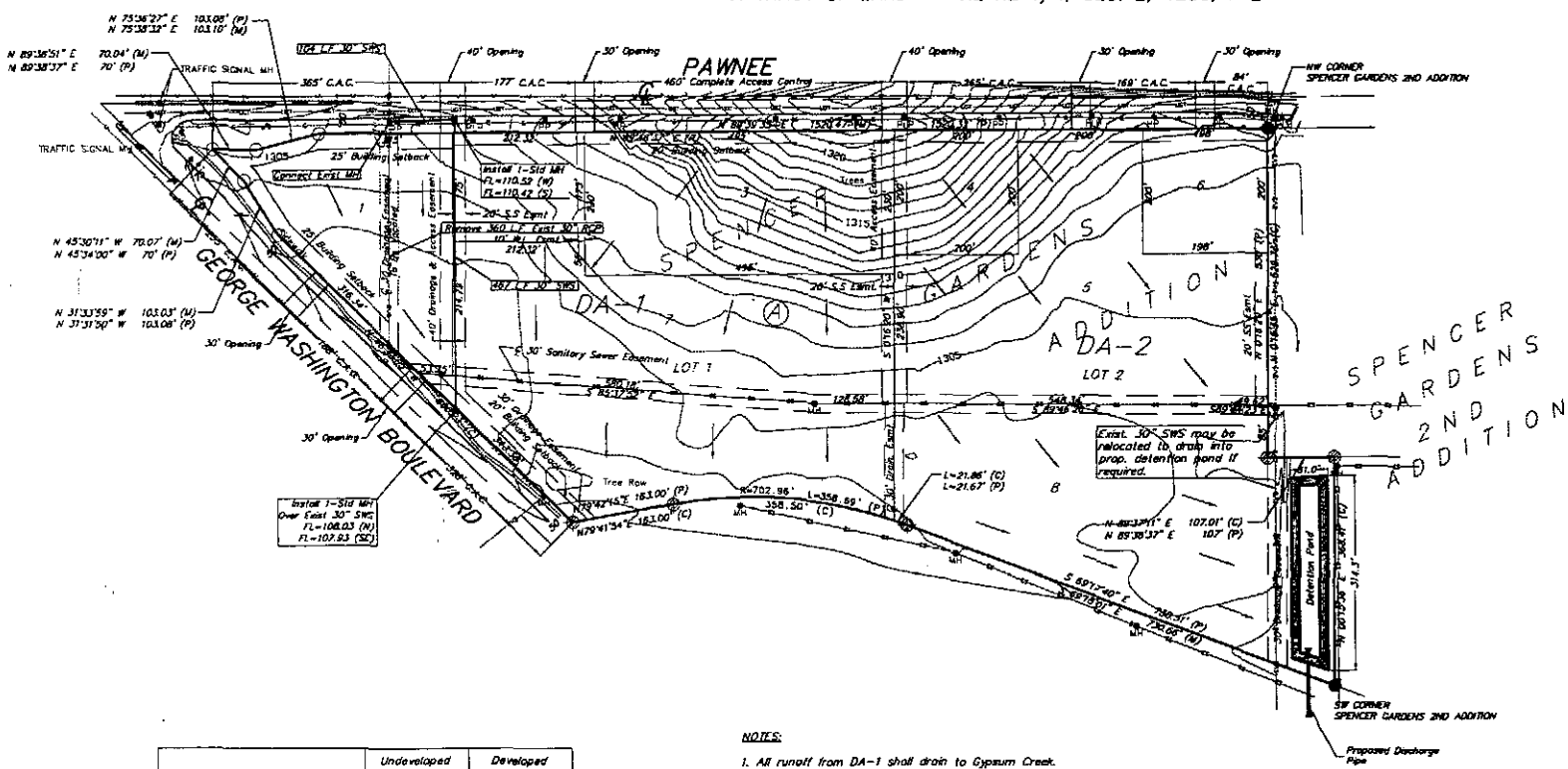
Stage (ft)	Storage (cuft)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Discharge (cfs)
2.5	27,160	1301.50	38.05	---	---	---	---	---	38.05
2.6	28,480	1301.60	38.80	---	---	---	---	---	38.80
2.7	29,800	1301.70	39.54	---	---	---	---	---	39.54
2.8	31,120	1301.80	40.27	---	---	---	---	---	40.27
2.9	32,440	1301.90	40.98	---	---	---	---	---	40.98
3.0	33,760	1302.00	41.68	---	---	---	---	---	41.68
3.1	35,285	1302.10	43.05	---	---	---	---	---	43.05
3.2	36,809	1302.20	44.37	---	---	---	---	---	44.37
3.3	38,334	1302.30	45.66	---	---	---	---	---	45.66
3.4	39,859	1302.40	46.91	---	---	---	---	---	46.91
3.5	41,384	1302.50	48.13	---	---	---	---	---	48.13
3.6	42,908	1302.60	49.31	---	---	---	---	---	49.31
3.7	44,433	1302.70	50.47	---	---	---	---	---	50.47
3.8	45,958	1302.80	51.61	---	---	---	---	---	51.61
3.9	47,482	1302.90	52.72	---	---	---	---	---	52.72
4.0	49,007	1303.00	53.81	---	---	---	---	---	53.81
4.1	50,744	1303.10	54.87	---	---	---	---	---	54.87
4.2	52,481	1303.20	55.92	---	---	---	---	---	55.92
4.3	54,217	1303.30	56.94	---	---	---	---	---	56.94
4.4	55,954	1303.40	57.95	---	---	---	---	---	57.95
4.5	57,691	1303.50	58.94	---	---	---	---	---	58.94
4.6	59,428	1303.60	59.92	---	---	---	---	---	59.92
4.7	61,165	1303.70	60.87	---	---	---	---	---	60.87
4.8	62,901	1303.80	61.82	---	---	---	---	---	61.82
4.9	64,638	1303.90	62.75	---	---	---	---	---	62.75
5.0	66,375	1304.00	63.67	---	---	---	---	---	63.67

DRAINAGE PLAN FOR:

REPLAT OF PART OF SPENCER GARDENS ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

A TRACT OF LAND IN THE NE 1/4, SEC. 2, T28S, R1E



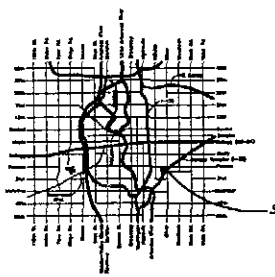
LEGEND

- Water Valve
- PP — Power Pole
- Light Pole
- PLP — Power & Light Pole
- Guy Wire
- MH — Manhole
- Tree
- Sign
- Fence
- Underground Gas Line
- Underground Telephone
- 3/4" Iron Pipe (found)
- 5/8" Rebar (found)
- 5/8" Rebar (set) AMPA CLS #104
- (M) Measured
- (P) Platted
- (C) Calculated

				Undeveloped		Developed	
Area #	Area (Ac)	t_c	I_{100}	Q_5 (cfs)	Q_{100}(cfs)	Q_5 (cfs)	Q_{100}(cfs)
1	11.55	4.56	7.37	23.3	48.1	38.3	68.1
2	11.05	4.56	7.37	22.3	46.1	34.8	65.2
TOTAL	22.60			45.6	94.2	71.1	133.3

NOTES:

1. All runoff from DA-1 shall drain to Gypsum Creek.
2. All runoff from DA-2 shall drain to proposed detention pond.
3. Detention pond may or may not be designed to include flow from existing 30" pipe.
4. Discharge pipe size:
   For 30" pipe draining into pond: 36" pipe.
   For 30" pipe not draining into pond: 18" pipe.
5. Detention pond size and shape are preliminary. Final size and shape shall be determined prior to development.
6. Surface drainage shall be coordinated at time of development to allow cross-lot drainage.
7. Detention pond shall be required at such time as 40% or more of the total area is developed.



LOCATION MAP

NOTE:
The utility information shown is the best available at the time of the survey. The information was obtained through Kansas One-Call or utility records and no representations are made as to the accurat depth and location of the utilities.

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