DRAINAGE REPORT
FOR
SIERRA HILLS 2ND ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS

July 11, 2007

Ruggles & Bohm P.A.
Engineering, Surveying, Land Planning

DRAINAGE REPORT
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DRAINAGE ANALYSIS
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INTRODUCTION

This report contains supporting documentation and calculations for the proposed Sierra Hills 2nd Addition. The existing site is an L-shaped undeveloped 51.3-acre tract of land located ¼ mile west of 143rd Street East on the north side of Pawnee. The area is currently pasture land and drains generally southeasterly in two drainage basins. The site also has a small portion that drains offsite to the north. The first drainage basin flows to the southeast to a 29"x45" CMP under Pawnee. The second basin flows to the southeast corner of the site to an unnamed branch of the Spring branch of Fourmile Creek. Existing off-site drainage enters the site from Sierra Hills Golf Course in the western basin and at the north of the L from a property owned by USD 259 in the eastern basin. FEMA map 20173C0395E, effective date Feb., 2 2007 shows the proposed project site is located in unshaded Zone X, defined as areas located of the 500 year floodplain. A small portion located at the southest corner of the site is located in the shaded Zone X, defined as 500-year flood or in the 100-year flood with less than average depth of less than 1 foot. The northeast corners of lots 37 and 38, Block 2 are located in Zone AE and will be placed in a flood plain reserve or drainage easement.

The site will be developed into residential lots with on-site detention provided by the creation of three detention ponds.

HYDROLOGY

Peak flow rates for the tributary areas were determined using HEC-HMS. The times of concentration were calculated using the velocity method and overland flow rates from attachment E of the City of Wichita Drainage Criteria. The parameters and results of the existing and proposed analysis are shown in the tables below. The west offsite area is part of the Sierra Hills Golf course where an 18" pipe has been placed which carries water to another basin to the west. Therefore the amount of offsite water accepted by the proposed project site is reduced by the capacity of the 18" pipe.

Existing	Area	CN	TC (min.)	Q2 (cfs)	Q5 (cfs)	Q10 (cfs)	Q25 (cfs)	Q100 (cfs)
East	43.8 ac.	80	42	34.7	53.1	64.6	84.1	117.8
West	29.0 ac.	80	44	15.2	26.9	34.2	46.6	68.2
North	3.90 ac.	80	15	5.9	8.9	10.7	13.9	19.3

Proposed	Area	CN	TC (min.)	Q2 (cfs)	Q5 (cfs)	Q10 (cfs)	Q25 (cfs)	Q100 (cfs)
East	45.0 ac.	85.7	42	32.9	51.1	63.1	82.3	114.0
West	30.0 ac.	83	44	12.1	20.1	21.9	36.7	54.8
North	2.15 ac.	87	15	4.3	6.1	7.1	8.9	12.0

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.

PAWNEE CULVERT

The hydraulic characteristics of the culvert under Pawnee located in the west basin were modeled using HY-8. The rational equation yielded a Q_{100} of 87.0 cfs and a 100-year headwater of Elev. = 1315.98. The culvert will not over top Pawnee because the north ditch has an overtop elevation of 1314.24 and will allow 33 cfs to flow north along the ditch of Pawnee to the unnamed tributary to the Spring Branch of Fourmile Creek.

Pond Routing Information:

Three ponds will provide the detention required for this development. The western drainage basin contains a series of two ponds while the eastern basin is detained by a single pond.

Rainfall Data: The SCS Type II Rainfall Distribution as modeled by the HEC-RAS program is used for analysis, with a total 100year – 24 hour rainfall event of 7.8 inches (TR-55). This rainfall model is used for all basins.

The schematic hydraulic model indicates the modeling parameters for each of the basins draining to the detention pond area. A summary of the ponds' performance in the various design storms can be found in the tables below.

WEST POND 1

Design Storm	Peak Inflow (cfs)	Peak Outflow (cfs)	Allowable Release (cfs)	Peak Storage (ac-ft.)	Peak Elevation
2-yr	13.2	9.0	n/a	0.5	1318.5
5-yr	23.2	17.4	n/a	0.7	1318.8
10-yr	29.4	22.9	n/a	0.8	1319.0
25-yr	39.8	32.0	n/a	1.1	1319.2
100-yr	57.8	48.5	n/a	1.4	1319.6

The stage-storage data was calculated by HEC-HMS using the parameters located in the table below.

Stage	Area (ac-ft)
1318.00	0.83
1319.00	0.89
1320.00	0.95
1321.00	1.01

The outlet of this pond shall be controlled by a 10'x2' RCBC which will pass under Ironside Court and keep the pond at a static elevation of 1318.00. Lots 16-25, Block 1 as shown on the preliminary plat shall have a minimum pad elevation of 1322.00.

WEST POND 2

Design Storm	Peak Inflow (cfs)	Peak Outflow (cfs)	Allowable Release (cfs)	Peak Storage (ac-ft.)	Peak Elevation
2-yr	14.9	12.1	15.2	0.2	1315.4
5-yr	21.7	20.1	26.9	0.3	1315.7
10-yr	26.9	25.9	34.2	0.4	1315.9
25-yr	37.1	36.7	46.6	0.5	1316.1
100-yr	55.6	54.8	68.2	0.7	1316.4

The stage-storage data was calculated by HEC-HMS using the parameters located in the table below.

Stage	Area (ac-ft)
1315.0	0.45
1316.0	0.50
1317.0	0.54

The pond outlet of this pond shall be controlled by a broad crested weir 10' in length and will set the static elevation of the pond at 1315.00. Lots 29-36, Block 1 as shown on the preliminary plat shall have a minimum pad elevation of 1319.00

EAST POND

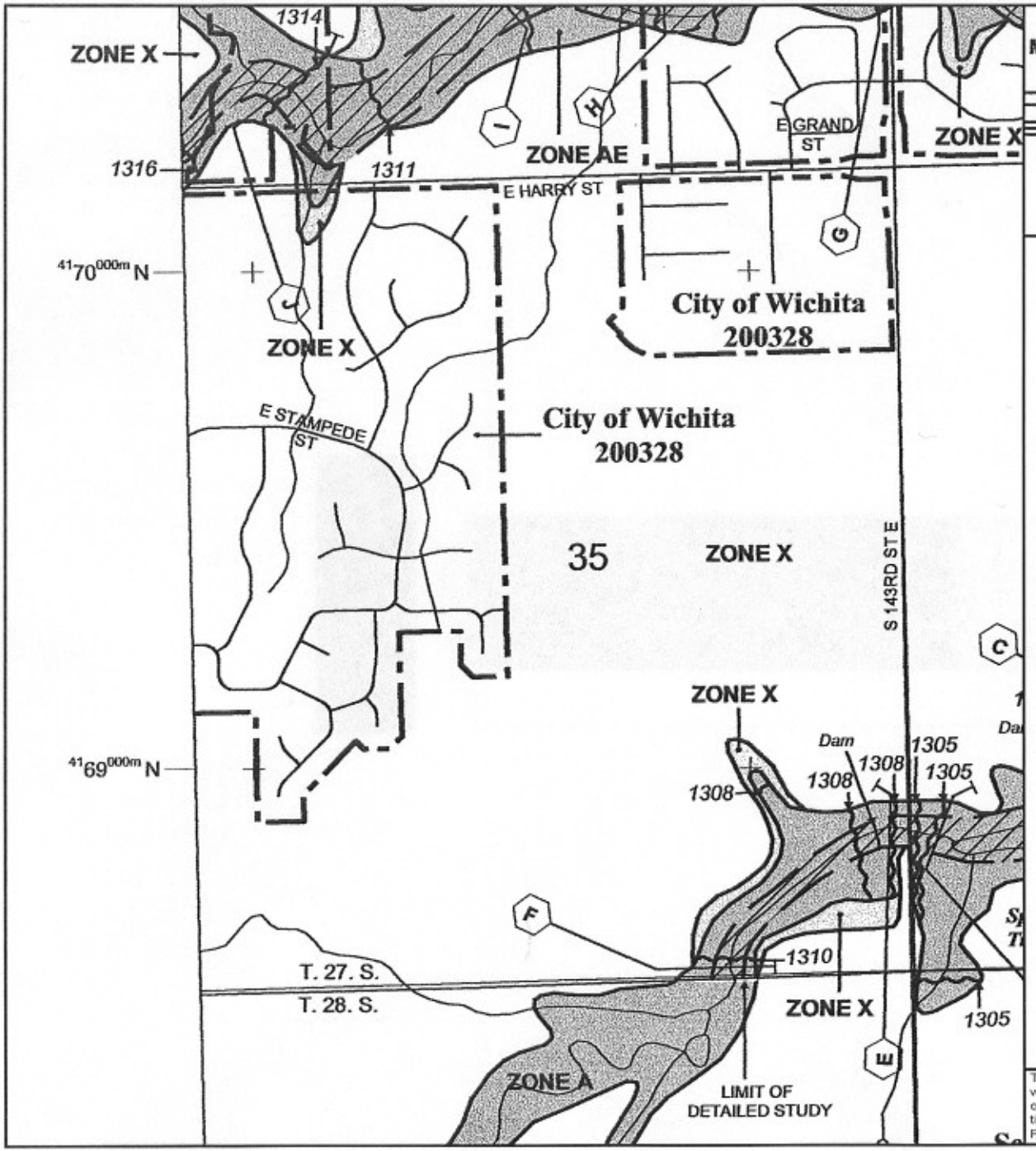
Design Storm	Peak Inflow (cfs)	Peak Outflow (cfs)	Allowable Release (cfs)	Peak Storage (ac-ft.)	Peak Elevation
2-yr	39.1	24.9		1.3	1311.9
5-yr	55.4	39.0		1.8	1312.2
10-yr	65.2	48		2.0	1312.3
25-yr	81.7	62.2		2.3	1312.5
100-yr	109.6	86.2		3.0	1312.9

The stage-storage data was calculated by HEC-HMS using the parameters located in the table below.

Stage	Area (ac-ft)
1311.0	1.46
1312.0	1.53
1313.0	1.61

The pond outlet of this pond shall be controlled by a broad crested weir 10' in length and will set the static elevation of the pond at 1311.00. Lots 46-52 and 54-58, Block 2 as shown on the preliminary plat shall have a minimum pad elevation of 1315.00

FEMA FIRM



MAP SCALE 1" = 1000'

1000 2000 FEET

0 300 600 METERS

PANEL 0395E

FIRM

FLOOD INSURANCE RATE MAP

SEDGWICK COUNTY, KANSAS
AND INCORPORATED AREAS

PANEL 395 OF 700

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEDGWICK COUNTY	200321	0395	E
WICHITA, CITY OF	200328	0395	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
20173C0395E

EFFECTIVE DATE
FEBRUARY 2, 2007

Federal Emergency Management Agency

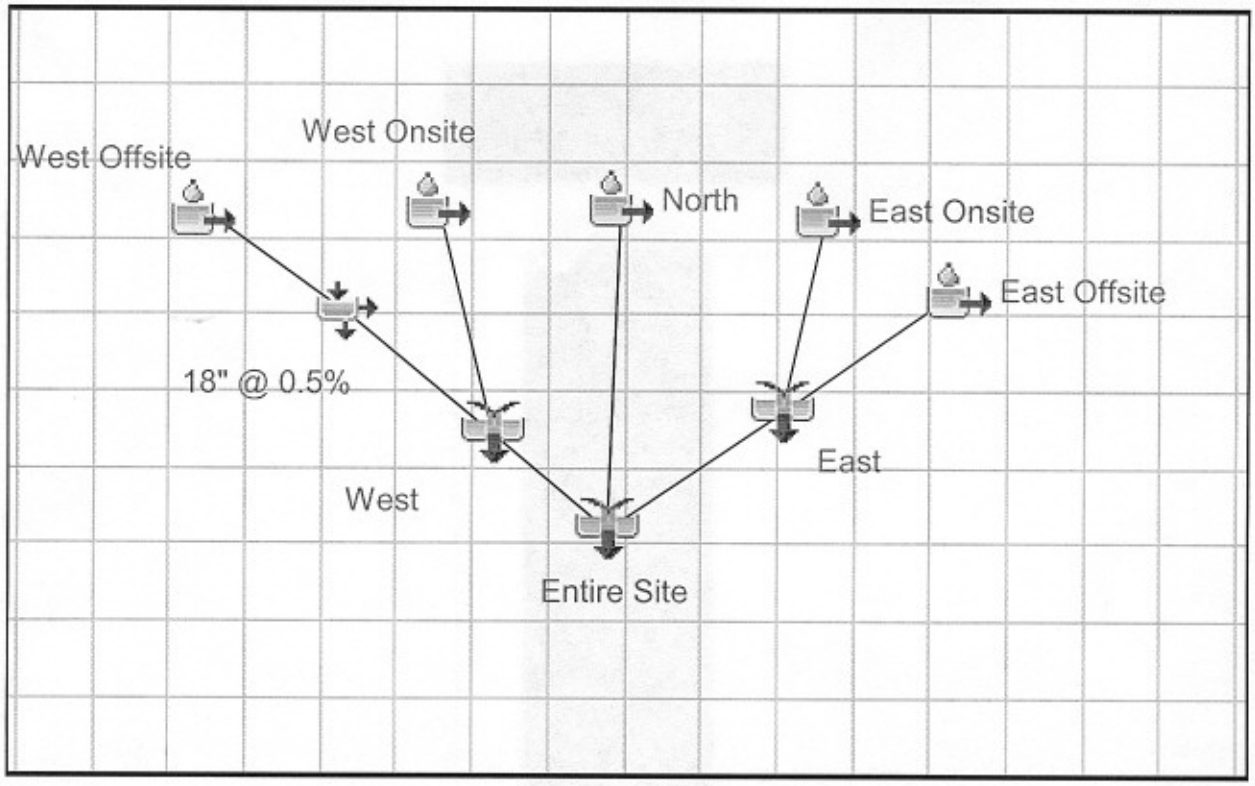
EXISTING CONDITIONS

HEC-HMS

Project : Sierra Hills 2nd

Basin Model : Existing

Jul 12 15:42:56 CDT 2007



Project: Sierra Hills 2nd Simulation Run: Ex 2

Start of Run: 01Jan2007, 12:00 Basin Model: Existing
End of Run: 02Jan2007, 12:05 Meteorologic Model: Wichita 2
Compute Time: 11Jul2007, 11:35:07 Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
18" @ 0.5%	0.0273	6.3	02Jan2007, 00:40	0.24
East	0.0684	34.7	02Jan2007, 00:35	1.61
East Offsite	0.0125	6.3	02Jan2007, 00:35	1.61
East Onsite	0.0559	28.4	02Jan2007, 00:35	1.61
Entire Site	0.1198	51.6	02Jan2007, 00:35	1.30
North	0.0061	5.9	02Jan2007, 00:10	1.63
West	0.0453	15.2	02Jan2007, 00:40	0.78
West Offsite	0.0273	13.4	02Jan2007, 00:40	1.61
West Onsite	0.0180	8.9	02Jan2007, 00:40	1.61

Project: Sierra Hills 2nd Simulation Run: Ex 2

Start of Run: 01Jan2007, 12:00
End of Run: 02Jan2007, 12:05
Compute Time: 11Jul2007, 11:35:07

Basin Model: Existing
Meteorologic Model: Wichita 2
Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
18" @ 0.5%	0.0273	6.3	02Jan2007, 00:40	0.24
East	0.0684	34.7	02Jan2007, 00:35	1.61
East Offsite	0.0125	6.3	02Jan2007, 00:35	1.61
East Onsite	0.0559	28.4	02Jan2007, 00:35	1.61
Entire Site	0.1198	51.6	02Jan2007, 00:35	1.30
North	0.0061	5.9	02Jan2007, 00:10	1.63
West	0.0453	15.2	02Jan2007, 00:40	0.78
West Offsite	0.0273	13.4	02Jan2007, 00:40	1.61
West Onsite	0.0180	8.9	02Jan2007, 00:40	1.61

Project: Sierra Hills 2nd Simulation Run: Ex 10

Start of Run: 01Jan2007, 12:00 Basin Model: Existing
End of Run: 02Jan2007, 12:05 Meteorologic Model: Wichita 10
Compute Time: 11Jul2007, 11:35:24 Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
18" @ 0.5%	0.0273	17.8	02Jan2007, 00:40	0.94
East	0.0684	64.6	02Jan2007, 00:35	2.94
East Offsite	0.0125	11.8	02Jan2007, 00:35	2.94
East Onsite	0.0559	52.8	02Jan2007, 00:35	2.94
Entire Site	0.1198	101.9	02Jan2007, 00:35	2.48
North	0.0061	10.7	02Jan2007, 00:10	2.97
West	0.0453	34.2	02Jan2007, 00:40	1.73
West Offsite	0.0273	24.9	02Jan2007, 00:40	2.94
West Onsite	0.0180	16.4	02Jan2007, 00:40	2.94

Project: Sierra Hills 2nd Simulation Run: Ex 25

Start of Run: 01Jan2007, 12:00
End of Run: 02Jan2007, 12:05
Compute Time: 11Jul2007, 11:35:33

Basin Model: Existing
Meteorologic Model: Wichita 25
Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
18" @ 0.5%	0.0273	25.2	02Jan2007, 00:35	1.46
East	0.0684	84.1	02Jan2007, 00:35	3.82
East Offsite	0.0125	15.4	02Jan2007, 00:35	3.82
East Onsite	0.0559	68.7	02Jan2007, 00:35	3.82
Entire Site	0.1198	134.8	02Jan2007, 00:35	3.28
North	0.0061	13.9	02Jan2007, 00:10	3.86
West	0.0453	46.6	02Jan2007, 00:35	2.39
West Offsite	0.0273	32.3	02Jan2007, 00:35	3.82
West Onsite	0.0180	21.3	02Jan2007, 00:35	3.82

Project: Sierra Hills 2nd Simulation Run: Existing 100

Start of Run: 01Jan2007, 12:00
End of Run: 02Jan2007, 12:05
Compute Time: 30May2007, 14:38:24

Basin Model: Existing
Meteorologic Model: Wichita 100
Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
18" @ 0.5%	0.0273	38.3	02Jan2007, 00:35	2.41
East	0.0684	117.8	02Jan2007, 00:35	5.37
East Offsite	0.0125	21.5	02Jan2007, 00:35	5.37
East Onsite	0.0559	96.2	02Jan2007, 00:35	5.37
Entire Site	0.1198	191.6	02Jan2007, 00:35	4.70
North	0.0061	19.3	02Jan2007, 00:05	5.42
West	0.0453	68.2	02Jan2007, 00:35	3.59
West Offsite	0.0273	45.4	02Jan2007, 00:35	5.37
West Onsite	0.0180	29.9	02Jan2007, 00:35	5.37

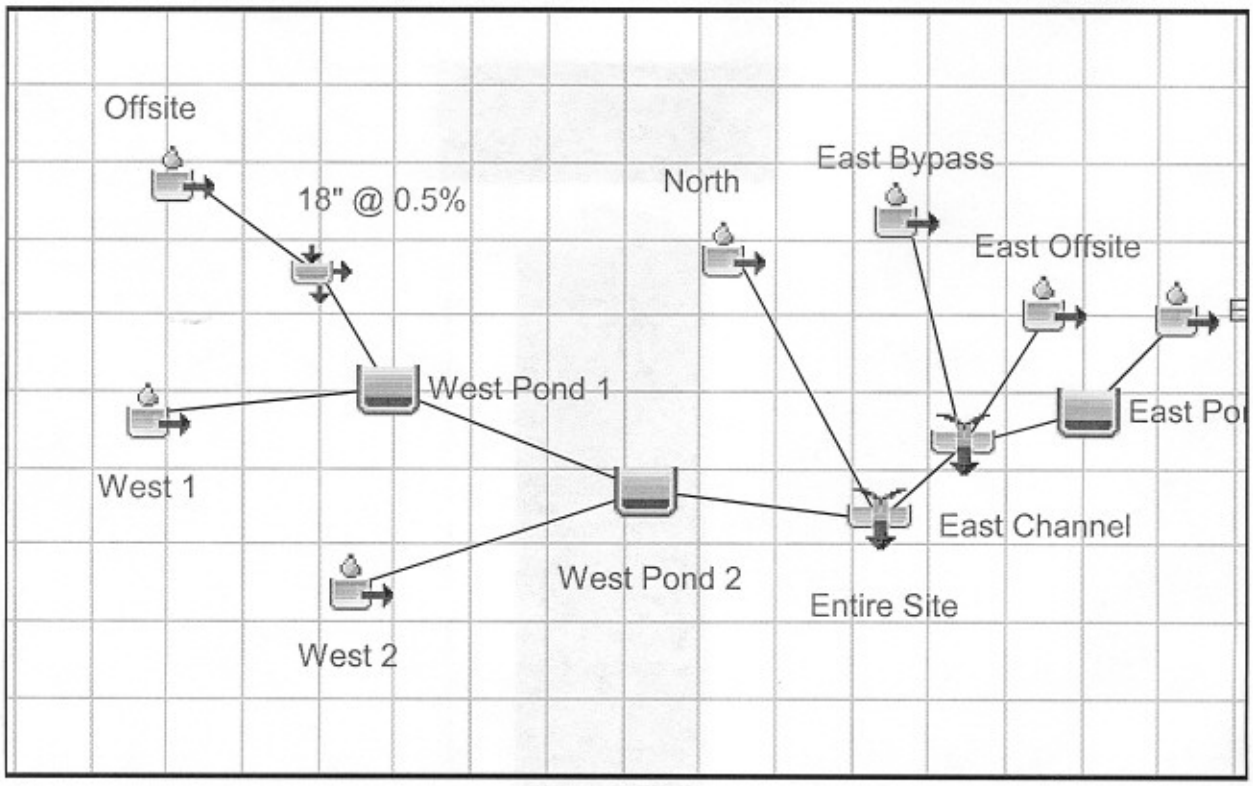
PROPOSED CONDITIONS

HEC-HMS

Project : Sierra Hills 2nd

Basin Model : Proposed

Jul 12 15:42:46 CDT 2007



Project: Sierra Hills 2nd Simulation Run: Prop 2

Start of Run: 01Jan2007, 12:00 Basin Model: Proposed
End of Run: 02Jan2007, 12:05 Meteorologic Model: Wichita 2
Compute Time: 11Jul2007, 13:53:05 Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
18" @ 0.5%	0.02730	6.3	02Jan2007, 00:40	0.24
East	0.04790	39.1	02Jan2007, 00:25	2.16
East Bypass	0.01167	15.0	02Jan2007, 00:10	2.17
East Channel	0.07037	32.9	02Jan2007, 00:45	2.06
East Offsite	0.01080	5.5	02Jan2007, 00:35	1.61
East Pond	0.04790	24.9	02Jan2007, 00:50	2.14
Entire Site	0.12066	45.2	02Jan2007, 00:40	1.66
North	0.00336	4.3	02Jan2007, 00:10	2.17
Offsite	0.02730	13.4	02Jan2007, 00:40	1.61
West 1	0.00933	8.5	02Jan2007, 00:20	2.16
West 2	0.01030	13.2	02Jan2007, 00:10	2.17
West Pond 1	0.03663	9.0	02Jan2007, 00:50	0.71
West Pond 2	0.04693	12.1	02Jan2007, 00:20	1.03

Project: Sierra Hills 2nd Simulation Run: Prop 5

Start of Run: 01Jan2007, 12:00 Basin Model: Proposed
End of Run: 02Jan2007, 12:05 Meteorologic Model: Wichita 5
Compute Time: 11Jul2007, 13:53:13 Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
18" @ 0.5%	0.02730	13.4	02Jan2007, 00:40	0.65
East	0.04790	55.4	02Jan2007, 00:25	3.07
East Bypass	0.01167	21.1	02Jan2007, 00:10	3.09
East Channel	0.07037	51.1	02Jan2007, 00:45	2.95
East Offsite	0.01080	8.4	02Jan2007, 00:35	2.43
East Pond	0.04790	39.0	02Jan2007, 00:45	3.04
Entire Site	0.12066	72.1	02Jan2007, 00:45	2.45
North	0.00336	6.1	02Jan2007, 00:10	3.09
Offsite	0.02730	20.5	02Jan2007, 00:40	2.42
West 1	0.00933	12.0	02Jan2007, 00:20	3.07
West 2	0.01030	18.6	02Jan2007, 00:10	3.09
West Pond 1	0.03663	17.4	02Jan2007, 00:50	1.24
West Pond 2	0.04693	20.1	02Jan2007, 00:55	1.64

Project: Sierra Hills 2nd Simulation Run: Prop 10

Start of Run: 01Jan2007, 12:00 Basin Model: Proposed
End of Run: 02Jan2007, 12:05 Meteorologic Model: Wichita 10
Compute Time: 11Jul2007, 13:53:20 Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
18" @ 0.5%	0.02730	17.8	02Jan2007, 00:40	0.94
East	0.04790	65.2	02Jan2007, 00:25	3.63
East Bypass	0.01167	24.8	02Jan2007, 00:05	3.65
East Channel	0.07037	63.1	02Jan2007, 00:40	3.50
East Offsite	0.01080	10.2	02Jan2007, 00:35	2.94
East Pond	0.04790	48.0	02Jan2007, 00:45	3.59
Entire Site	0.12066	89.6	02Jan2007, 00:40	2.94
North	0.00336	7.1	02Jan2007, 00:05	3.65
Offsite	0.02730	24.9	02Jan2007, 00:40	2.94
West 1	0.00933	14.1	02Jan2007, 00:20	3.63
West 2	0.01030	21.9	02Jan2007, 00:05	3.65
West Pond 1	0.03663	22.9	02Jan2007, 00:50	1.60
West Pond 2	0.04693	25.9	02Jan2007, 00:55	2.04

Project: Sierra Hills 2nd Simulation Run: Prop 25

Start of Run: 01Jan2007, 12:00 Basin Model: Proposed
End of Run: 02Jan2007, 12:05 Meteorologic Model: Wichita 25
Compute Time: 11Jul2007, 13:53:29 Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
18" @ 0.5%	0.02730	25.2	02Jan2007, 00:35	1.46
East	0.04790	81.7	02Jan2007, 00:25	4.57
East Bypass	0.01167	31.0	02Jan2007, 00:05	4.60
East Channel	0.07037	82.3	02Jan2007, 00:40	4.43
East Offsite	0.01080	13.3	02Jan2007, 00:35	3.82
East Pond	0.04790	62.2	02Jan2007, 00:45	4.53
Entire Site	0.12066	120.1	02Jan2007, 00:40	3.78
North	0.00336	8.9	02Jan2007, 00:05	4.60
Offsite	0.02730	32.3	02Jan2007, 00:35	3.82
West 1	0.00933	17.7	02Jan2007, 00:20	4.58
West 2	0.01030	27.4	02Jan2007, 00:05	4.60
West Pond 1	0.03663	32.0	02Jan2007, 00:50	2.22
West Pond 2	0.04693	36.7	02Jan2007, 00:50	2.74

Project: Sierra Hills 2nd Simulation Run: Prop 100

Start of Run: 01Jan2007, 12:00 Basin Model: Proposed
End of Run: 02Jan2007, 12:05 Meteorologic Model: Wichita 100
Compute Time: 11Jul2007, 13:53:37 Control Specifications: Control 1

Volume Units: IN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
18" @ 0.5%	0.02730	38.3	02Jan2007, 00:35	2.41
East	0.04790	109.6	02Jan2007, 00:25	6.20
East Bypass	0.01167	41.6	02Jan2007, 00:05	6.23
East Channel	0.07037	114.0	02Jan2007, 00:35	6.04
East Offsite	0.01080	18.6	02Jan2007, 00:35	5.37
East Pond	0.04790	86.2	02Jan2007, 00:40	6.15
Entire Site	0.12066	170.5	02Jan2007, 00:40	5.24
North	0.00336	12.0	02Jan2007, 00:05	6.23
Offsite	0.02730	45.4	02Jan2007, 00:35	5.37
West 1	0.00933	23.7	02Jan2007, 00:20	6.21
West 2	0.01030	36.7	02Jan2007, 00:05	6.23
West Pond 1	0.03663	48.5	02Jan2007, 00:45	3.35
West Pond 2	0.04693	54.8	02Jan2007, 00:45	3.97

PAWNEE RCBC
HY-8 ANALYSIS DATA

HY-8 Culvert Analysis Report

Table 1 - Summary of Culvert Flows at Crossing: Pawnee

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1312.03	0.00	0.00	0.00	1
1313.24	10.00	10.00	0.00	1
1313.83	20.00	20.00	0.00	1
1314.46	30.00	29.84	0.16	5
1314.86	40.00	37.77	2.20	5
1315.19	50.00	43.43	6.53	5
1315.46	60.00	47.42	12.56	6
1315.69	70.00	50.44	19.54	6
1315.86	80.00	52.44	27.53	5
1315.98	87.00	53.93	33.04	5
1316.18	100.00	56.33	43.65	5

Rating Curve Plot for Crossing: Pawnee

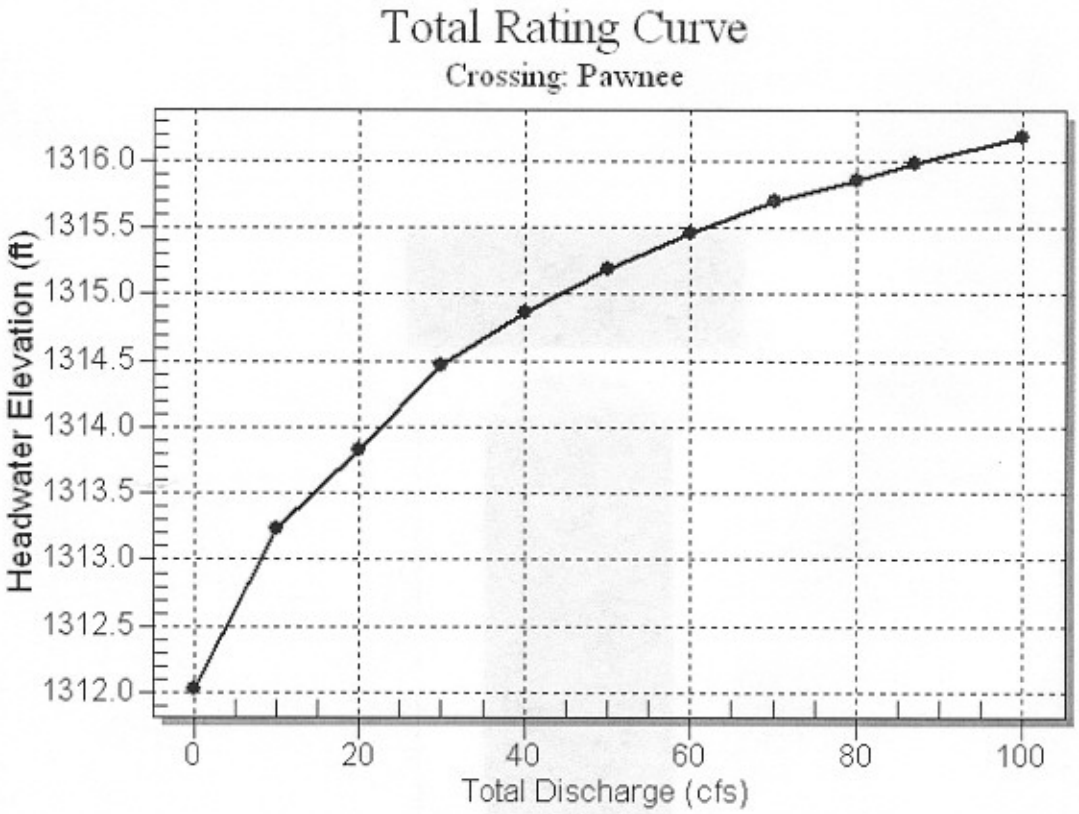


Table 2 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	1312.03	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
10.00	10.00	1313.24	1.131	1.208	2-M2c	0.984	0.798	0.798	0.370	4.245	2.641
20.00	20.00	1313.83	1.712	1.805	2-M2c	1.560	1.139	1.139	0.480	5.075	3.141
30.00	29.84	1314.46	2.228	2.431	2-M2c	2.417	1.583	1.583	0.558	6.085	3.476
40.00	37.77	1314.86	2.662	2.828	2-M2c	2.417	1.742	1.742	0.622	6.776	3.735
50.00	43.43	1315.19	3.003	3.158	2-M2c	2.417	1.844	1.844	0.676	7.290	3.949
60.00	47.42	1315.46	3.266	3.435	7-M2c	2.417	1.915	1.915	0.724	7.614	4.133
70.00	50.44	1315.69	3.477	3.665	7-M2c	2.417	1.959	1.959	0.767	7.887	4.296
80.00	52.44	1315.86	3.625	3.831	7-M2c	2.417	1.985	1.985	0.807	8.128	4.442
87.00	53.93	1315.98	3.738	3.951	7-M2c	2.417	2.004	2.004	0.833	8.285	4.536
100.00	56.33	1316.18	3.928	4.151	7-M2c	2.417	2.036	2.036	0.877	8.532	4.696

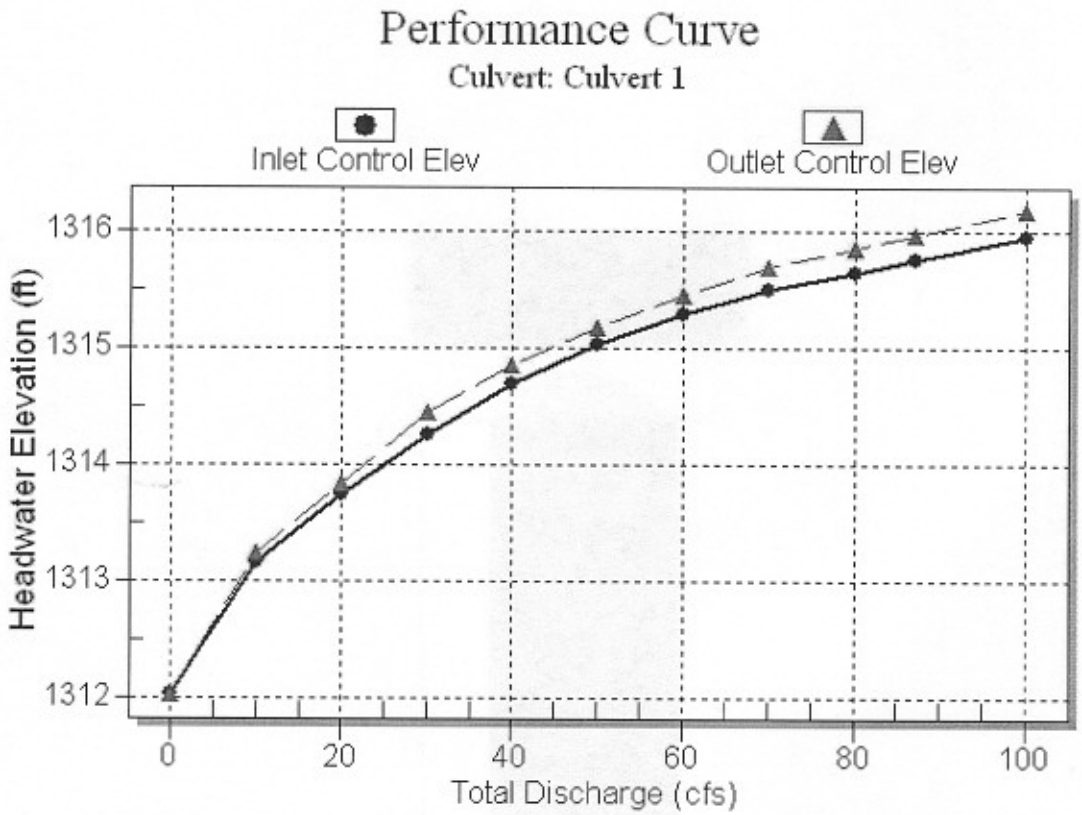
****

Inlet Elevation (invert): 1312.03 ft, Outlet Elevation (invert): 1311.87 ft

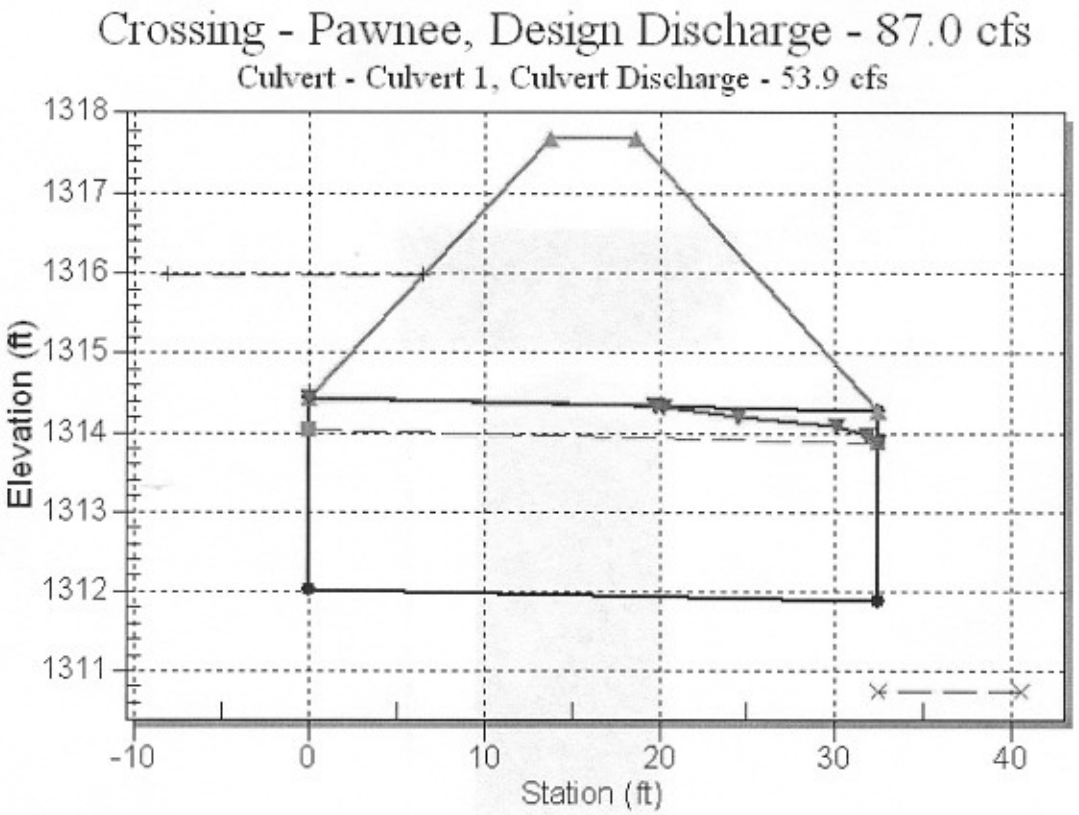
Culvert Length: 32.40 ft, Culvert Slope: 0.0049

****

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1312.03 ft

Outlet Station: 32.40 ft

Outlet Elevation: 1311.87 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: Elliptical

Barrel Span: 45.00 in

Barrel Rise: 29.00 in

Barrel Material:

Barrel Manning's n: 0.0240

Inlet Type:

Inlet Edge Condition:

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: Pawnee)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	1309.91	0.00	0.00	0.00	0.00
10.00	1310.28	0.37	2.64	0.62	1.08
20.00	1310.39	0.48	3.14	0.81	1.13
30.00	1310.47	0.56	3.48	0.94	1.16
40.00	1310.53	0.62	3.73	1.05	1.18
50.00	1310.59	0.68	3.95	1.14	1.20
60.00	1310.63	0.72	4.13	1.22	1.21
70.00	1310.68	0.77	4.30	1.29	1.22
80.00	1310.72	0.81	4.44	1.36	1.23
87.00	1310.74	0.83	4.54	1.40	1.24
100.00	1310.79	0.88	4.70	1.48	1.25

Tailwater Channel Data - Pawnee

Tailwater Channel Option: Irregular Channel

Channel Slope: 0.0270

User Defined Channel Cross-Section:

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	0.00	1311.50	0.0300
2	35.00	1309.91	0.0300
3	80.00	1311.26	0.0000

Roadway Data for Crossing: Pawnee

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Irregular Roadway Cross-Section:

Coord No.	Station (ft)	Elevation (ft)
1	0.00	1317.69
2	12.00	1314.24
3	25.13	1317.43

Roadway Surface: Gravel

Roadway Top Width: 5.00 ft

DETENTION POND

Project : Sierra Hills 2nd Simulation Run : Prop 2 Reservoir: West Pond 1

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 2
Compute Time :	11Jul2007, 13:53:05	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	13.2 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:30
Peak Outflow :	9.0 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:50
Total Inflow :	0.73 (IN)	Peak Storage :	0.5 (AC-FT)
Total Outflow :	0.71 (IN)	Peak Elevation :	1318.5 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 5 Reservoir: West Pond 1

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 5
Compute Time :	11Jul2007, 13:53:13	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	23.2 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:30
Peak Outflow :	17.4 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:50
Total Inflow :	1.27 (IN)	Peak Storage :	0.7 (AC-FT)
Total Outflow :	1.24 (IN)	Peak Elevation :	1318.8 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 10 Reservoir: West Pond 1

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 10
Compute Time :	11Jul2007, 13:53:20	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	29.4 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:30
Peak Outflow :	22.9 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:50
Total Inflow :	1.62 (IN)	Peak Storage :	0.8 (AC-FT)
Total Outflow :	1.60 (IN)	Peak Elevation :	1319.0 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 25 Reservoir: West Pond 1

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 25
Compute Time :	11Jul2007, 13:53:29	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	39.8 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:30
Peak Outflow :	32.0 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:50
Total Inflow :	2.25 (IN)	Peak Storage :	1.1 (AC-FT)
Total Outflow :	2.22 (IN)	Peak Elevation :	1319.2 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 100 Reservoir: West Pond 1

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 100
Compute Time :	11Jul2007, 13:53:37	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	57.8 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:30
Peak Outflow :	48.5 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:45
Total Inflow :	3.38 (IN)	Peak Storage :	1.4 (AC-FT)
Total Outflow :	3.35 (IN)	Peak Elevation :	1319.6 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 2 Reservoir: West Pond 2

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 2
Compute Time :	11Jul2007, 13:53:05	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	14.9 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:10
Peak Outflow :	12.1 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:20
Total Inflow :	1.03 (IN)	Peak Storage :	0.2 (AC-FT)
Total Outflow :	1.03 (IN)	Peak Elevation :	1315.4 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 5 Reservoir: West Pond 2

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 5
Compute Time :	11Jul2007, 13:53:13	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	21.7 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:10
Peak Outflow :	20.1 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:55
Total Inflow :	1.65 (IN)	Peak Storage :	0.3 (AC-FT)
Total Outflow :	1.64 (IN)	Peak Elevation :	1315.7 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 10 Reservoir: West Pond 2

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 10
Compute Time :	11Jul2007, 13:53:20	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	26.9 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:45
Peak Outflow :	25.9 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:55
Total Inflow :	2.05 (IN)	Peak Storage :	0.4 (AC-FT)
Total Outflow :	2.04 (IN)	Peak Elevation :	1315.9 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 25 Reservoir: West Pond 2

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 25
Compute Time :	11Jul2007, 13:53:29	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	37.1 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:45
Peak Outflow :	36.7 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:50
Total Inflow :	2.74 (IN)	Peak Storage :	0.5 (AC-FT)
Total Outflow :	2.74 (IN)	Peak Elevation :	1316.1 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 100 Reservoir: West Pond 2

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 100
Compute Time :	11Jul2007, 13:53:37	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	55.6 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:40
Peak Outflow :	54.8 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:45
Total Inflow :	3.98 (IN)	Peak Storage :	0.7 (AC-FT)
Total Outflow :	3.97 (IN)	Peak Elevation :	1316.4 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 2 Reservoir: East Pond

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 2
Compute Time :	11Jul2007, 13:53:05	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	39.1 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:25
Peak Outflow :	24.9 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:50
Total Inflow :	2.16 (IN)	Peak Storage :	1.3 (AC-FT)
Total Outflow :	2.14 (IN)	Peak Elevation :	1311.9 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 5 Reservoir: East Pond

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 5
Compute Time :	11Jul2007, 13:53:13	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	55.4 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:25
Peak Outflow :	39.0 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:45
Total Inflow :	3.07 (IN)	Peak Storage :	1.8 (AC-FT)
Total Outflow :	3.04 (IN)	Peak Elevation :	1312.2 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 10 Reservoir: East Pond

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 10
Compute Time :	11Jul2007, 13:53:20	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	65.2 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:25
Peak Outflow :	48.0 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:45
Total Inflow :	3.63 (IN)	Peak Storage :	2.0 (AC-FT)
Total Outflow :	3.59 (IN)	Peak Elevation :	1312.3 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 25 Reservoir: East Pond

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 25
Compute Time :	11Jul2007, 13:53:29	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	81.7 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:25
Peak Outflow :	62.2 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:45
Total Inflow :	4.57 (IN)	Peak Storage :	2.3 (AC-FT)
Total Outflow :	4.53 (IN)	Peak Elevation :	1312.5 (FT)

Project : Sierra Hills 2nd Simulation Run : Prop 100 Reservoir: East Pond

Start of Run :	01Jan2007, 12:00	Basin Model :	Proposed
End of Run :	02Jan2007, 12:05	Meteorologic Model :	Wichita 100
Compute Time :	11Jul2007, 13:53:37	Control Specifications :	Control 1

Volume Units : IN

Computed Results

Peak Inflow :	109.6 (CFS)	Date/Time of Peak Inflow :	02Jan2007, 00:25
Peak Outflow :	86.2 (CFS)	Date/Time of Peak Outflow :	02Jan2007, 00:40
Total Inflow :	6.20 (IN)	Peak Storage :	3.0 (AC-FT)
Total Outflow :	6.15 (IN)	Peak Elevation :	1312.9 (FT)