WOODMEN POINTE
MASTER DEVELOPMENT DRAINAGE REPORT
&
FINAL DRAINAGE REPORT
for
WOODMEN POINTE FILING NO. 1

March, 2003

Prepared for:

US Home Corporation
7222 Commerce Center Drive
Colorado Springs, CO 80919
(719) 593-8583

Prepared by:

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Project# 00-094

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DRAINAGE PLAN STATEMENTS

ENGINEER'S STATEMENT

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City of Colorado Springs for drainage reports, and said drainage report is in conformity with the Master Plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Kent D. Rockwell, P.E.

COLORADO REGISTERED KENT D. ROCKWELL FOR 25086 9/11/03 PROFESSIONAL ENGINEER

DEVELOPER'S STATEMENT

I, the developer, have read and will comply with all the requirements specified in this drainage report and plan.

US Home Corporation

BY: _____ 9.10.03
Kevin Walker DATE

TITLE:

ADDRESS: 7222 Commerce Center Drive
Colorado Springs, CO 80919

CITY OF COLORADO SPRINGS

Filed in accordance with Section 15-3-906 of the code of the City of Colorado Springs, 1980, as amended.

_____ 9/25/03
CITY ENGINEER DATE

The ponds shown are privately maintained and within the Private Lines Should the ponds wash out, they will not be replaced by the City.

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PURPOSE

The purpose of this report is to identify the existing and proposed runoff patterns and drainage facilities required for the proposed Woodmen Pointe Subdivision which is located northeast of the Austin Bluffs Parkway and Woodmen Road intersection.

SUMMARY OF DATA

The sources of information used in the development of this study are listed below:

1. City of Colorado Springs and El Paso County "Drainage Criteria Manual", October 1987, revised November 1991.

2. Soil Survey for El Paso County, Colorado, U.S. Department of Agriculture, Soil Conservation Service, June 1980.

3. "Flood Insurance Studies for Colorado Springs and El Paso County, Colorado", prepared by the Federal Emergency Management Agency (FEMA), 1985.

4. "Cottonwood Creek Drainage Basin Planning Study" by URS Consultants, Inc., August 1995.

5. "Cottonwood Creek Prudent Line Study" by Ayres & Associates, 1996.

6. "Woodmen Road Drainage Report (Havenwood Drive to Powers Boulevard), by Rockwell Minchow Consultants, Inc., April, 1999.

GENERAL LOCATION AND DESCRIPTION

The Woodmen Pointe Project is located within the northeastern portion of the City of Colorado Springs, El Paso County, Colorado. (see Vicinity Map - Figure 1). The site is within the southwest quarter of Section 1, Township 13 South, Range 66 West of the 6th P.M. and is bound on the west by existing single family residential development, on the north by additional single family residential development, and a park site, on the east by open space and on the south by Cottonwood Creek and Woodmen Road. The overall Woodmen Pointe development consists of approximately 80 acres. Woodmen Pointe will be developed into approximately 40 acres of single family residential development east of Austin Bluffs Parkway, and approximately 10 acres of development west of Austin Bluffs Parkway. The remaining area consists of existing electric easements, Austin Bluffs Parkway right-of-way and Cottonwood Creek.

(The single-family residential portion of Woodmen Pointe is east of Austin Bluffs Parkway. This report addresses the drainage within the residential portion in detail. Drainage on the west side of Austin Bluffs Parkway is described in conceptual terms, since no development plan has been prepared for this area.)

Well-established native grasses exist throughout the proposed development. The topography generally slopes from north to south toward Cottonwood Creek. Cottonwood Creek runs along the southerly portion of the site crossing Austin Bluffs Parkway just north of Woodmen Road and then crossing Woodmen Road just west of Austin Bluffs Parkway. The entire development lies within the Cottonwood Creek Drainage Basin.

Austin Bluffs Parkway extends northerly from Woodmen Road within the western one-third of the proposed development. Cottonwood Creek extends from east to west within the southerly portion of the site.

SOILS

According to the Soil Survey of El Paso County Area, Colorado, prepared by the U.S. Department of Agriculture Soil Conservation Service, the soils in the Woodmen Pointe Development fall under two soil classification (see Soils Map - Figure 2). The soils underlying the site consist of the Blakeland Series (Soil 8), classified under Hydrologic Group "A" and Stapleton Series (Soil 83), classified under Hydrologic Group "B".

CLIMATE

This area of El Paso County can be described as the foothills, with total precipitation amounts typical of a semi-arid region. Winters are generally cold and dry, and summers relatively warm and dry. Precipitation ranges from 12 to 14 inches per year, with the majority of this moisture occurring in the spring and summer in the form of rainfall. Thunderstorms are common during the summer months.

FLOODPLAIN STATEMENT

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) #08041C0528 F, dated March 17, 1997, a 100 year floodplain exists within this property. However, the Prudent Line concept is being utilized through this section of Cottonwood Creek. The Prudent Line basically parallels the 100 year floodplain but is approximately 100 feet wider than the 100 year floodplain on both sides. No lots or houses will be allowed within the Prudent Line.

DRAINAGE CRITERIA

The current City of Colorado Springs/El Paso County Drainage Criteria was utilized in this report. Peak runoff quantities were determined using the Rational Method for both the 5 year and 100 year storms, as required for drainage basins less than 100 acres.

HISTORIC DRAINAGE BASIN DESCRIPTIONS

A brief description of each historic drainage basin for the site is provided in this section of the report. A summary of peak historic runoff for the basins is depicted on the Historic Drainage Plan (Exhibit 1) provided in the appendix. The site has been divided into 4 historical drainage basins.

Basin A consists of 6.33 acres at the southwest corner of the proposed development. This basin generates runoff rates of 4.4 cubic feet per second (cfs) during the 5 year storm and 11.7 cfs during the 100 year storm. These flows sheet flow to the south toward Woodmen Road. The majority of these flows reach a roadside swale along the north side of Woodmen Road. Runoff reaching the roadside swale flow easterly into Cottonwood Creek.

Basin B, located just north of Basin A, comprises an additional 12.38 acres. Runoff rates of $Q_5 = 11.5$ cfs and $Q_{100} = 29.0$ cfs are generated from this basin. An existing deep swale, running along the west side of Austin Bluffs Parkway, collects these flows. The swale discharges to Cottonwood Creek just northeast of the Austin Bluffs Parkway and Woodmen Road intersection.

Approximately 9.97 acres along the east side of Austin Bluffs Parkway comprises Basin C. Basin C generates flows of 7.2 cfs during the 5 year storm and 18.5 cfs during the 100 year storm. These flows reach a roadside swale along the east side of Austin Bluffs Parkway. The swale carries these flows southerly into Cottonwood Creek.

The easternmost 55.84 acres of the site comprises Basin D. Runoff rates of $Q_5 = 41.9$ cfs and $Q_{100} = 97.7$ cfs generated from this basin sheet flow directly into Cottonwood Creek.

DEVELOPED DRAINAGE BASIN DESCRIPTIONS

A brief description of each developed drainage basin for the site is provided in this section of the report. A summary of peak developed runoff for the basins is depicted on the Developed Drainage Plan provided in the appendix. All proposed drainage facilities are approximate in size and may vary with actual layout and design.

Within the single family residential development, side lot line swales will be created on the downstream lots to convey flows from the upstream lots and into the street. Swales will be constructed by the homebuilders and maintained by the homeowner to limit concentrated flows and to disperse the flows as much as possible. Lot Drainage Plans will be prepared for the residential lots as they are developed and platted.

The Cottonwood Creek Drainage Basin Planning Study allows for the release of developed flows from the proposed Woodmen Pointe Development. However, at the request of the City Engineering Department, small detention areas have been added to the south side of the proposed residential lots to control some of the runoff generated from the Woodmen Pointe development. These ponds will act as temporary-informal facilities to limit the release of all the developed flows from this site.

Individual lot drainage is the responsibility of the lot owner/builder.

The single family residential area is described by Basins I through XII and Basins XVII through XXI. Basins XIII through XVI define the future development west of Austin Bluffs Parkway and generally define anticipated flows for this area. The drainage analysis for the west area will have to be further refined once the exact development is determined.

Basin I consists of 2.18 acres within the single-family development along the eastern side of the proposed development. Runoff rates of $Q_5 = 4.5$ cfs and $Q_{100} = 9.6$ cfs are generated from this basin. These flows sheet flow to the east into Cottonwood Creek.

The proposed park just north of Woodmen Pointe will discharge flow rates of $Q_5 = 4.0$ cfs and $Q_{100} = 14.0$ cfs to a proposed 18" RCP to be constructed within the trail tract extending northerly from Manston Drive.

The northern portion of the site between Fargo Drive and Manston Drive comprises Basin IIA. This 5.35 acre basin generates runoff rates of 12.8 cfs during the 5 year storm and 26.6 cfs during the 100 year storm. These flows are conveyed easterly as street flow within Manston Drive to a proposed low point. A 8' sump inlet will collect these flows and an 24" RCP will convey the collected flows southerly within Curie Road.

Basin IIB is located directly southeast of Basin IIA and generates runoff rates of $Q_5 = 5.0$ cfs and $Q_{100} = 10.7$ cfs. These flows will reach the low point at the southerly end of Curie Road as street flows. A 10' sump inlet will collect these flows at the south end of the Curie Road cul-de-sac. Additional flows will reach this same inlet from Basin III which is located along the east side of Curie Road.

Runoff rates of $Q_5 = 3.7$ cfs and $Q_{100} = 7.8$ cfs generated from Basin III flow southerly within the east side of Curie Road to the proposed cul-de-sac. A 10' sump inlet will be installed at the end of the Curie Road cul-de-sac to collect a total of 8.7 cfs during the 5 year storm and 18.5 cfs during the 100 year storm. A 30" RCP will convey all the collected flows from Basins IIA, IIB, III and the park site southerly to the proposed temporary detention pond just north of Cottonwood Creek ($Q_5 = 25.5$ cfs and $Q_{100} = 59.1$ cfs).

Basin IV consists of approximately 4.43 acres just northeast of Fargo Drive. Runoff rates of $Q_5 = 10.6$ cfs and $Q_{100} = 23.3$ cfs will be conveyed within the east and north sides of Fargo Drive to the Fargo Drive and Chancellor Drive intersection. Fargo Drive at a minimum slope of 3% and a 5 year street capacity of 19.5 cfs per side has adequate capacity to convey these flows. The flows generated from Basin IV will turn westerly and combine with the flows generated from Basin V.

The area north of Chancellor Drive and south of Fargo Drive comprises Basin V. This 5.83 acre basin generates runoff rates of 10.3 cfs during the 5 year storm and 22.9 cfs during the 100 year storm. Combined flows of $Q_5 = 20.6$ cfs and $Q_{100} = 44.8$ cfs generated from Basins IV and V reach Design Point #1 as street flow. Chancellor Drive has a minimum slope of 3% just prior to the low point which equates to a street capacity of 19.5 cfs per side. The street capacity is exceeded just upstream of the low point, therefore, a 15' inlet will be installed just upstream of the low point. This 15' inlet will collect 12.3 cfs during the 5 year storm and 20.2 cfs during the 100 year storm. A 24" RCP will convey the collected flows to the 15' sump inlet located just downstream. Runoff rates of 8.7 cfs during the 5 year storm and 24.6 cfs during the 100 year storm will approach the proposed low point from the east. Additional flows from Basin VII will reach this same inlet from the north.

Basin VI is located along the south side of Chancellor Drive and consists of 2.23 acres. A 5' sump inlet will be installed at the low point of this basin to collect runoff rates of $Q_5 = 6.3$ cfs and $Q_{100} = 13.3$ cfs from Basin VI plus runoff of $Q_5 = 1.7$ cfs and $Q_{100} = 3.6$ cfs generated from Basin VIII.

Runoff rates of $Q_5 = 6.9$ cfs and $Q_{100} = 14.9$ cfs are generated from the 3.26 acre Basin VII. According to the Fairfax Filing No. 6 drainage report, additional flows of $Q_5 = 1.0$ cfs and $Q_{100} = 4.0$ cfs enters the site within Chancellor Drive as street flow. These flows continue southerly as street flow and reach the low point within Chancellor Drive. A 15' sump inlet will collect the flows from Basin IV, V and VII.

Basin VIII consists of 0.57 acres along the western side of Chancellor Drive. Runoff rates of 1.7 cfs during the 5 year storm and 3.6 cfs during the 100 year storm are generated from Basin VIII. These runoff rates flow southerly within Chancellor Drive to the proposed 5' sump inlet at the low point of Basins VI and VIII.

The combined collected flows from Basins IV, V, VI, VII and VIII of $Q_5 = 34.9$ cfs and $Q_{100} = 74.5$ cfs (Design Point #2) will be piped southerly to the proposed private detention pond just north of Cottonwood Creek within a 30" RCP.

Basin IX consists of the rear portion of the residential lots and the commercial lot just south of Descartes Drive. This 1.35 acre basin generates runoff rates of 4.8 cfs and 9.4 cfs during the 5 year and 100 year storms, respectively. These flows will be collected within future inlets within the commercial site. A 18" RCP will be stubbed into this parcel from the Descartes Drive system to collect these flows.

The south half of Descartes Drive and the east half of Austin Bluffs Parkway comprise Basin X. Runoff rates of $Q_5 = 3.9$ cfs and $Q_{100} = 7.6$ cfs generated from this basin flow southerly within the east side of Austin Bluffs Parkway to Cottonwood Creek. These flows will discharge through a proposed curb cut just north of the Cottonwood Creek bridge and discharge directly into Cottonwood Creek via an existing swale.

Basins XI-A, XI-B and XI-C consist of the rear portion of the single-family lots along the north side of Cottonwood Creek and open space just south of the lots. Runoff from Basins XI-A and XI-C discharge to proposed detention ponds. Runoff from Basin XI-B discharges directly to Cottonwood Creek as sheet flow. The proposed pond areas are being installed at the request of the City of Colorado Springs as an interim solution to downstream maintenance along Cottonwood Creek. Runoff rates of $Q_5 = 6.1$ cfs and $Q_{100} = 13.6$ cfs from Basin XI-A will discharge into the western pond. The runoff rates of $Q_5 = 9.6$ cfs and $Q_{100} = 24.9$ cfs generated from Basin XI-B will discharge directly into Cottonwood Creek as sheet flow. Additional runoff rates of 2.0 cfs during the 5 year storm and 5.0 cfs during the 100 year storm from Basin XI-C will discharge into the easterly pond.

Since the ponds are interim and release rates are not necessarily held to historic rates the release rates from these ponds will be determined at the time of final design. Release rates will be based on the available volume which can be obtained by maximizing the grading in the areas of the pond areas.

The area along the south side of Cottonwood Creek east of Austin Bluffs Parkway comprises Basin XII. Runoff rates of $Q_5 = 11.0$ cfs and $Q_{100} = 28.2$ cfs are currently generated from this basin. At this time, it is assumed this basin will remain undeveloped. In the event this basin is developed, the developed runoff will discharge directly into Cottonwood Creek.

Basins XIII through Basin XVI are located along the western side of Austin Bluffs Parkway. These basins are based on conceptual grading and are approximate in size. The following descriptions are for reference only and will vary once actual development plans are produced.

Basin XIII is located in the extreme northwest corner of the proposed development. Runoff rates of 6.1 and 12.8 cfs are generated from this basin during the 5 year and 100 year storms, respectively. These flows will most likely be collected within future proposed inlets and discharged directly to the existing 6' x 11' concrete box culvert.

Basin XIV is also part of the future development. It is assumed that runoff generated from this basin (approximately 14.1 cfs during the 5 year storm and 26.6 cfs during the 100 year storm) will also be collected within on-site inlets and pipe to the existing box culvert within Austin Bluffs Parkway.

The extreme southwest corner of the basin comprises Basin XV. This basin basically consists of an existing electric easement and is not anticipated to develop, remaining as open space. The runoff rates of Q_5 = 8.8 cfs and Q_{100}= 22.7 cfs generated from this basin will continue to sheet flow to the south and then easterly within a roadside swale along the north side of Woodmen Road. This flows eventually discharge directly into Cottonwood Creek.

Basin XVI consists of the western half of Austin Bluffs Parkway and generates runoff rates of 17.4 cfs during the 5 year storm and 31.0 cfs during the 100 year storm. These runoff rates reach Austin Bluffs Parkway and then continue southerly as street flow. (This assumes the existing channel west of Austin Bluffs Parkway will be filled in the future. Otherwise, these flows will discharge directly to the channel.) Like Basin X, inlets will be placed just north of Cottonwood Creek to collect these flows once Austin Bluffs Parkway is widened.

Basin XVII consists of the rear portion of lots along Pascal Court and the north half of Descartes Drive. This 3.04 acre basin generates runoff rates of 7.1 cfs during the 5 year storm and 15.8 cfs during the 100 year storm. These flows discharge directly to Descartes Drive as sheet flow and then flow southwesterly to Austin Bluffs Parkway. A 15' on-grade inlet will be installed at the northeast corner of Austin Bluffs Parkway and Descartes Drive to collect approximately 4.5 cfs during the 5 year storm and 7.7 cfs during the 100 year storm. The remaining flows of Q_5 = 2.6 cfs and Q_{100} = 8.1 cfs will reach Austin Bluffs Parkway and continue southerly as street flow.

The area along the east side of Austin Bluffs Drive from Descartes Drive to Meadow Ridge Drive comprises Basin XVIII. This 8.62 acre basin consists mainly of open space located just north of Woodmen Pointe and the rear lots of the residential lots backing onto Austin Bluffs Parkway. Runoff rates of Q_5 = 13.5 cfs and Q_{100} = 29.8 cfs generated from this basin also reach the northeast corner of Austin Bluffs Parkway and Descartes Drive. An additional 15' inlet will be installed just north of Descartes Drive and will collect runoff rates of 7.1 cfs during the 5 year storm and 11.0 cfs during the 100 year storm. Runoff rates of Q_5 = 6.4 cfs and Q_{100} = 18.8 cfs will bypass this inlet and also continue southerly along the east side of Austin Bluffs Parkway. The combined street flows from Basins XVII and XVIII flowing south of Descartes along the east side of Austin Bluffs Parkway will be 9.0 cfs during the 5 year storm and 26.9 cfs during the 100 year storm. The total street flows within the east side of Austin Bluffs Parkway at the south end of Basin X will be 12.9 cfs during the 5 year storm and 34.5 cfs during the 100 year storm. This is within the street capacity of Austin Bluffs Parkway. These flows will discharge through a proposed curb cut just north of the Cottonwood Creek bridge and discharge directly into Cottonwood Creek via an existing swale.

Basin XIX is located north of Pascal Court and generates runoff rates of 10.6 cfs during the 5 year storm and 22.7 cfs during the 100 year storm. Approximately, 70% of this basin reach a proposed 15' on-grade inlet along the north side of Pascal Court. This inlet will collect 4.8 cfs during the 5 year storm and 8.1 cfs during the 100 year storm. The remaining flows (Q_5 = 5.8 cfs and Q_{100} = 14.6 cfs) bypassing this inlet will flow southwesterly across Pascal Drive to a proposed sump inlet at the low point of Basin XX and XXI.

Approximately 0.67 acres of residential lots located along the west side of the Pascal Court cul-de-sac comprises Basin XX. Runoff rates of Q_5 = 2.0 cfs and Q_{100} = 4.3 cfs reach the low point of this basin.

Basin XXI is located along the south side of Pascal Court and generates runoff rates of 3.2 cfs during the 5 year storm and 7.0 cfs during the 100 year storm. An 8' sump inlet will collect the combined runoff from Basins XX and XXI and the bypass flows from Basin XIX (Q_5 = 11.0 cfs and Q_{100} = 25.9 cfs). A 24" RCP will convey all the flows from Basin XIX, XX and XXI to the proposed 15' sump inlet along the north side of Descartes Drive (Q_5 = 15.8cfs and Q_{100} = 34.0 cfs) .

The total flows of 33.7 cfs during the 5 year storm and 73.1 cfs during the 100 year storm generated from Basin XVII, XVIII, XIX, XX, and XXI will be convey within a 30" RCP to the existing box culvert within Austin Bluffs Parkway (Design Point #3).

DRAINAGE, BRIDGE AND POND FEES

Woodmen Pointe is within the Cottonwood Creek Drainage Basin. The 2003 Drainage, Bridge and Pond Fees are listed below for the approximate area of the proposed single-family lots only. These fees will be adjusted at time of final plat submittal.

DRAINAGE FEE ($8,002/Acre Total)

	Acres	$/Acre	Total Fee
Capital Improvements Portion	40.573	$5,882.00	$238,650.39
Land Portion	40.573	$ 1,705.00	**$69,176.96
Cash Portion	40.573	$ 415.00	$16,837.79
BRIDGE FEES	40.573	$ 676.00	$27,427.35
			$352,092.49

** see below

Land Credit for the Prudent Line

Right-of-way acquisition costs are the land area acreage between the prudent line and the 100-year floodplain, which is 10.569 acres. The ROW cost is based on the Park and School land value of $40,130.00 per acre. Total reimbursement for the land is 10.569 acres times $40,130.00 or $424,133.97.

The Land Portion of the Cottonwood Creek Fee does not have to be paid as the reimbursement available is greater than the amount due. The developer will be eligible for a land reimbursement of $424,133.97 minus $69,176.96 or **$354,957.01

Total Fees Due at time of platting:
Drainage Fee - $238,650.39 + $16,837.79 = $255,488.18
Bridge Fee - $27,427.35

DRAINAGE FACILTIES (Public Non-Reimbursable)

The following drainage facilities will be required within the single-family area. Facilities for the area west of Austin Bluffs Parkway area can not be estimated at this time. All these facilities are public non-reimbursable drainage facilities.

Single Family Area

ITEM	QUANTITY		UNIT PRICE	EXTENDED COST
5' D-10-R Inlets	1	Ea.	$2,200.00	$ 2,200.00
8' D-10-R Inlets	2	Ea.	$2,500.00	$ 5,000.00
10' D-10-R Inlets	1	Ea.	$3,000.00	$ 3,000.00
15' D-10-R Inlets	5	Ea.	$4,000.00	$ 20,000.00
20' D-10-R Inlets	1	Ea.	$5,500.00	$ 5,500.00
18" RCP	885	L.F.	$28.00	$ 24,780.00
24" RCP	920	L.F.	$32.00	$ 29,440.00
30" RCP	690	L.F.	$40.00	$ 27,600.00
			Sub-Total	$ 117,520.00
			15% Eng. & Contingency	$ 17,628.00
			Grand Total	$ 135,148.00

The temporary detention ponds are being created as part of the overlot grading operations. Due to the fact that these ponds are informal ponds and the release rates and outfall structure size are based on available pond volume and not necessarily historic release rates, the outfall structures are approximate in size and may vary upon final design.

These ponds will also act as wetland mitigation areas. The establishment of the wetlands will be in accordance with the wetland mitigation permit.

Pond Facilities

ITEM	QUANTITY		UNIT PRICE	EXTENDED COST
Rip Rap Dissipators	500	C.Y.	$65.00	$ 32,500.00
24" RCP	150	L.F.	$32.00	$ 4,800.00
Outfall Structure	2	Ea.	$8,000.00	$ 16,000.00
			Sub-Total	$ 53,300.00
			15% Eng. & Contingency	$ 7,995.00
			Grand Total	$ 61,295.00

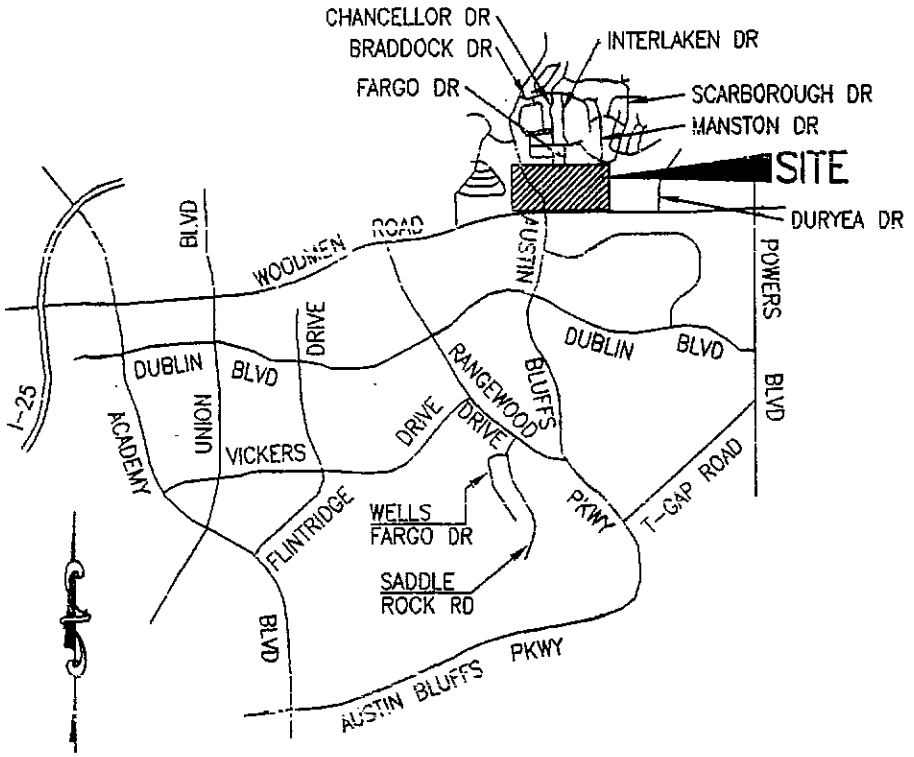
The proposed detention ponds will be maintained by US Home or their assigns.

According to the Cottonwood Creek Drainage Basin Planning Study, no improvements are required along the adjacent stretch of Cottonwood Creek.

EROSION CONTROL

Erosion control measures will be installed per the approved grading/erosion control plans.

APPENDIX



Vicinity Map

NOT TO SCALE

FILE: 00094con.dwg
JOB NO. 00-094 DATE: 12/1/01

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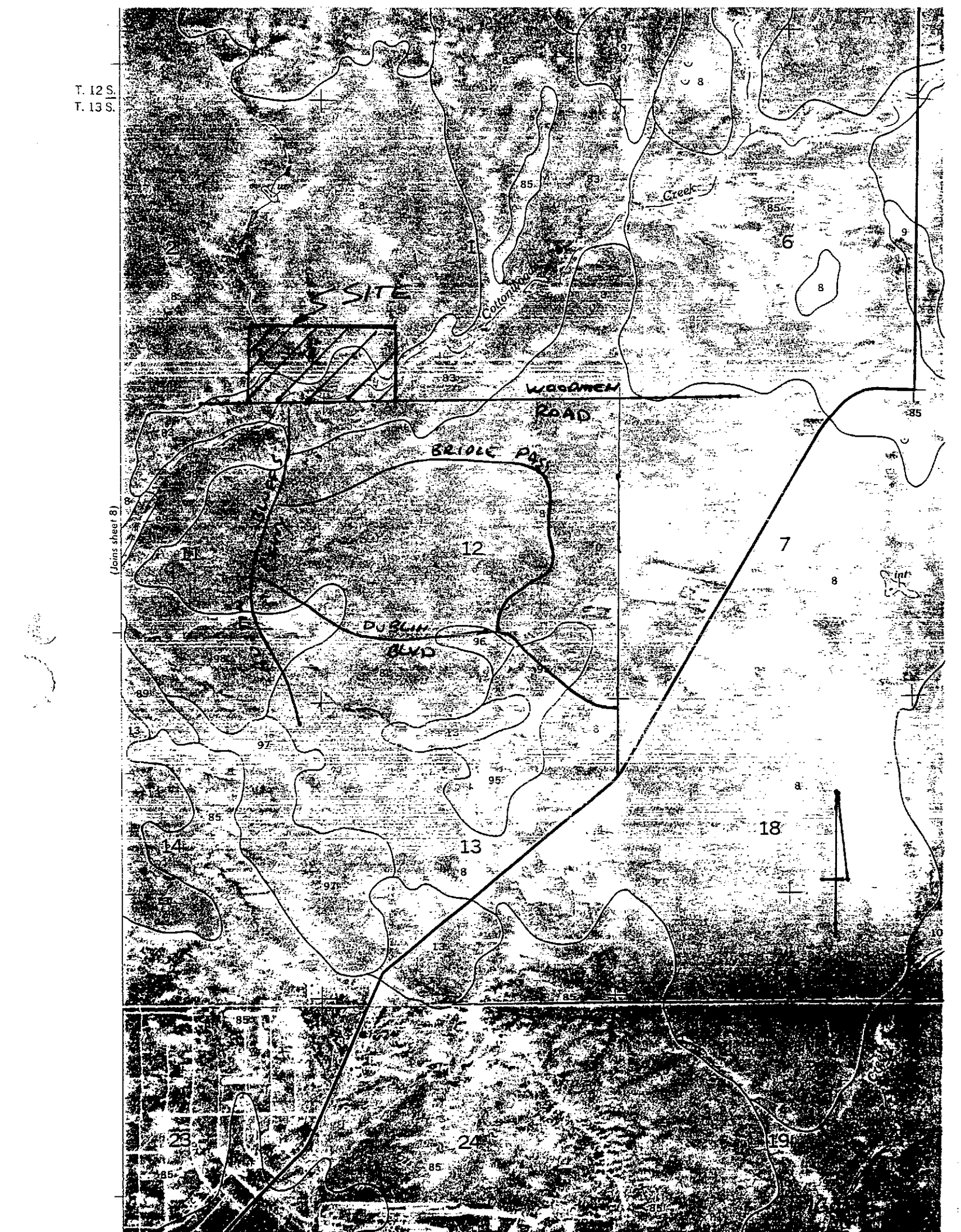
T. 12 S.
T. 13 S.
(Joins sheet 8)
SITE
Cottonwood Creek
WOODMEN ROAD
BRIDLE PATH
DUBLIN BLVD
1
2
6
7
8
11
12
13
14
18
19
23
24

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: A
AREA: 6.33
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Pasture	6.33	0.25	0.35	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	6.33			100%

COMPOSITE: C5= 0.25 C100= 0.35

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	650	10		18.95		16.72
Swale	300	1.5	2	2.50	2.2	2.27
Tc Total:				21.45		19.00

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
2.8 in/hr	5.3 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
4.4 in/hr	11.7 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: B
AREA: 12.38
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Pasture	12.38	0.25	0.35	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	12.38			100%

COMPOSITE: C5= 0.25 C100= 0.35

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	250	20		9.35		8.25
Swale	900	3	5	3.00	5.2	2.88
Tc Total:				12.35		11.14

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.7 in/hr	6.7 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
11.5 in/hr	29.0 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: C
AREA: 9.97
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Pasture	9.97	0.25	0.35	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	9.97			100%

COMPOSITE: C5= 0.25 C100= 0.35

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	550	10		17.44		15.38
Swale	500	3	2.5	3.33	2.7	3.09
Tc Total:				20.77		18.47

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
2.9 in/hr	5.3 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
7.2 in/hr	18.5 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: D
AREA: 55.84
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Pasture	55.84	0.25	0.35	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	55.84			100%

COMPOSITE: C5= 0.25 C100= 0.35

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	850	13		19.88		17.54
Tc Total:				19.88		17.54

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.0 in/hr	5.0 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
41.9 in/hr	97.7 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: Park Site
AREA: 4.2
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Park	4.00	0.30	0.55	95.24%
Concrete	0.20	0.90	0.90	4.76%
	0.00	0.00	0.00	0.00%
	0.00	0.00	0.00	0.00%
	4.20			100%

COMPOSITE: C5= 0.33 C100= 0.57

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	300	2.5		19.15		13.17
Swale	220	4	2.5	1.47	2.7	1.36
Tc Total:				20.62		14.52

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
2.9 in/hr	5.9 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
4.0 in/hr	14.0 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: I
AREA: 2.18
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	1.80	0.60	0.70	82.57%
Open Space	0.38	0.25	0.35	17.43%
	0.00	0.00	0.00	0.00%
	0.00	0.00	0.00	0.00%
	2.18			100%

COMPOSITE: C5= 0.54 C100= 0.64

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	300	13		11.81		10.42
Tc Total:				11.81		10.42

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.8 in/hr	6.9 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
4.5 in/hr	9.6 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: II-A
AREA: 5.35
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	5.35	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	5.35			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	2		5.26		4.21
Street	825	1.5	2.5	5.50	2.7	5.09
Tc Total:				10.76		9.30

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.0 in/hr	7.1 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
12.8 in/hr	26.6 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: II-B
AREA: 1.71
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	1.71	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	1.71			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc in Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	10		4.37		3.50
Street	400	4	4	1.67	4.2	1.59
Tc Total:				6.04		5.09

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.9 in/hr	8.9 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
5.0 in/hr	10.7 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: III
AREA: 1.34
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	1.34	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	1.34			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc in Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	2		5.26		4.21
Street	600	5	4.5	2.22	4.7	2.13
Tc Total:				7.48		6.34

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.6 in/hr	8.3 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
3.7 in/hr	7.8 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: IV
AREA: 4.43
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	4.43	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	4.43			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	200	3		9.20		7.36
Street	400	5	4.5	1.48	4.7	1.42
Tc Total:				10.68		8.78

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.0 in/hr	7.5 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
10.6 in/hr	23.3 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: V
AREA: 5.83
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	3.4	0.60	0.70	58.32%
Open Space	2.43	0.25	0.35	41.68%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	5.83			100%

COMPOSITE: C5= 0.45 C100= 0.55

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	250	16		10.07		8.88
Street	200	3	3.5	0.95	3.7	0.90
Tc Total:				11.02		9.78

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.9 in/hr	7.1 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
10.3 in/hr	22.9 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: VI
AREA: 2.23
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	1.31	0.60	0.70	58.74%
Street	0.92	0.90	0.90	41.26%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	2.23			100%

COMPOSITE: C5= 0.72 C100= 0.78

TIME OF CONCENTRATION: Tc in Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	2		5.26		4.21
Street	950	3.5	3.8	4.17	4	3.96
Tc Total:				9.43		8.17

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.9 in/hr	7.6 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
6.3 in/hr	13.3 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: VII
AREA: 3.26
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	2.57	0.60	0.70	78.83%
Open Space	0.69	0.25	0.35	21.17%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	3.26			100%

COMPOSITE: C5= 0.53 C100= 0.63

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	150	13		8.35		7.37
Street	500	5	4.5	1.85	4.7	1.77
Tc Total:				10.20		9.14

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.0 in/hr	7.3 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
6.9 in/hr	14.9 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: VIII
AREA: 0.57
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.57	0.60	0.70	100.00%
	0	0.00	0.35	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0.57			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	70	4		4.95		3.96
Street	150	2	2.8	0.89	3	0.83
Tc Total:				5.84		4.79

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.9 in/hr	9.0 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
1.7 in/hr	3.6 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: IX
AREA: 1.35
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.5	0.60	0.70	37.04%
Commercial	0.85	0.90	0.90	62.96%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	1.35			100%

COMPOSITE: C5= 0.79 C100= 0.83

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	3		6.51		5.21
Street	200	3	3.4	0.98	3.6	0.93
Tc Total:				7.49		6.13

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.5 in/hr	8.4 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
4.8 in/hr	9.4 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: X
AREA: 1.78
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Street	0.85	0.90	0.90	47.75%
Landscaping	0.93	0.25	0.35	52.25%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	1.78			100%

COMPOSITE: C5= 0.56 C100= 0.61

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	3		7.82		6.90
Street	800	4	4	3.33	4.2	3.17
Tc Total:				11.15		10.08

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.9 in/hr	7.0 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
3.9 in/hr	7.6 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XI-A
AREA: 3.36
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.96	0.60	0.70	28.57%
Open Space/Pond	2.4	0.25	0.35	71.43%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	3.36			100%

COMPOSITE: C5= 0.35 C100= 0.45

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	33.33		5.00		4.41
Tc Total:				5.00		4.41

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
5.2 in/hr	9.0 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
6.1 in/hr	13.6 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XI-B
AREA: 9.15
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.86	0.60	0.70	9.40%
Open Space/Pond	8.29	0.25	0.35	90.60%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	9.15			100%

COMPOSITE: C5= 0.28 C100= 0.38

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	400	15		13.01		11.48
Tc Total:				13.01		11.48

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.7 in/hr	7.1 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
9.6 in/hr	24.9 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XI-C
AREA: 1.55
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.14	0.60	0.70	9.03%
Open Space/Pond	1.41	0.25	0.35	90.97%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	1.55			100%

COMPOSITE: C5= 0.28 C100= 0.38

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	200	33.33		7.07		6.24
Tc Total:				7.07		6.24

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.6 in/hr	8.4 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
2.0 in/hr	5.0 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XII
AREA: 10.76
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Open Space	10.76	0.25	0.35	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	10.76			100%

COMPOSITE: C5= 0.25 C100= 0.35

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	200	13		9.64		8.51
Tc Total:				9.64		8.51

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.1 in/hr	7.5 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
11.0 in/hr	28.2 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XIII
AREA: 3.69
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Open Space	2.51	0.25	0.35	68.02%
Street/Bldg	1.18	0.90	0.90	31.98%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	3.69			100%

COMPOSITE: C5= 0.46 C100= 0.53

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	250	12		11.07		9.77
Swale	400	3.5	3.7	1.80	3.9	1.71
Tc Total:				12.87		11.48

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.6 in/hr	6.6 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
6.1 in/hr	12.8 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XIV
AREA: 7.18
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Open Space	3.54	0.25	0.35	49.30%
Street/Bldg	3.64	0.90	0.90	50.70%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	7.18			100%

COMPOSITE: C5= 0.58 C100= 0.63

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	250	6		13.91		12.28
Swale	450	3.5	3.7	2.03	3.9	1.92
Tc Total:				15.94		14.20

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.4 in/hr	5.9 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
14.1 in/hr	26.6 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XV
AREA: 9.54
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Open Space	9.54	0.25	0.35	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	9.54			100%

COMPOSITE: C5= 0.25 C100= 0.35

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	400	18		12.25		10.81
	0					
Tc Total:				12.25		10.81

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.7 in/hr	6.8 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
8.8 in/hr	22.7 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XVI
AREA: 4.52
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Open Space	0.68	0.25	0.35	15.04%
Street	3.84	0.90	0.90	84.96%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	4.52			100%

COMPOSITE: C5= 0.80 C100= 0.82

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	40	16		4.03		3.55
Swale	600	3.5	3.7	2.70	3.9	2.56
Tc Total:				6.73		6.12

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.8 in/hr	8.4 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
17.4 in/hr	31.0 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XVII
AREA: 3.04
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Open Space	0.52	0.25	0.35	17.11%
1/8 Acre Residential	2.52	0.60	0.70	82.89%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	3.04			100%

COMPOSITE: C5= 0.54 C100= 0.64

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	200	7		6.96		5.57
Street	400	5	4.5	1.48	4.7	1.42
Tc Total:				8.44		6.98

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.3 in/hr	8.1 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
7.1 in/hr	15.8 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XVIII
AREA: 8.62
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Open Space	6	0.25	0.35	68.34%
1/8 Acre Residential	1.61	0.60	0.70	18.34%
Streets	1.17	0.90	0.90	13.33%
	0	0.00	0.00	0.00%
	8.78			100%

COMPOSITE: C5= 0.40 C100= 0.49

TIME OF CONCENTRATION: Tc in Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	300	8.5		7.99		6.39
Street	700	3	3.5	3.33	3.7	3.15
Tc Total:				11.33		9.55

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.9 in/hr	7.1 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
13.5 in/hr	29.8 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XXIX
AREA: 4.11
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	4.11	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	4.11			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	120	3		7.13		5.70
Street	450	5	4.5	1.67	4.7	1.60
Tc Total:				8.79		7.30

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.3 in/hr	7.9 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
10.6 in/hr	22.7 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XX
AREA: 0.67
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.67	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0.67			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	3		4.60		3.68
Street	200	4	4	0.83	4.2	0.79
Tc Total:				5.43		4.47

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
5.0 in/hr	9.2 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
2.0 in/hr	4.3 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: XXI
AREA: 1.12
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	1.12	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	1.12			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	3		4.60		3.68
Street	500	5	4.5	1.85	4.7	1.77
Tc Total:				6.45		5.45

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
4.8 in/hr	8.9 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
3.2 in/hr	7.0 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: DP#1
AREA: 10.26
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
IV	4.43	0.60	0.70	43.18%
V	5.83	0.45	0.55	56.82%
	0	0.00	0.00	0.00%
	10.26			100%

COMPOSITE: C5= 0.51 C100= 0.61

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	250	16		10.07		8.88
Street	200	3	3.5	0.95	3.7	0.90
Tc Total:				11.02		9.78

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.9 in/hr	7.1 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
20.6 in/hr	44.8 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: DP#2
AREA: 16.32
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
IV	4.43	0.60	0.70	27.14%
V	5.83	0.45	0.55	35.72%
VI	2.23	0.72	0.78	13.66%
VII	3.26	0.53	0.63	19.98%
VIII	0.57	0.60	0.70	3.49%
	16.32			100%

COMPOSITE: C5= 0.55 C100= 0.64

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	250	16		10.07		8.88
Street	200	3	3.5	0.95	3.7	0.90
Tc Total:				11.02		9.78

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.9 in/hr	7.1 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
34.9 in/hr	74.5 in/hr

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: WOODMEN POINTE

BASIN: DP#3
AREA: 17.56
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
XVII	3.04	0.54	0.64	17.31%
XVIII	8.62	0.40	0.49	49.09%
XIX	4.11	0.60	0.70	23.41%
XX	0.67	0.60	0.70	3.82%
XXI	1.12	0.60	0.70	6.38%
	17.56			100%

COMPOSITE: C5= 0.49 C100= 0.59

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	300	8.5		7.99		6.39
Street	700	3	3.5	3.33	3.7	3.15
Tc Total:				11.33		9.55

Intensity, I (inches/hr) from Fig 5-1

I5	**I100**
3.9 in/hr	7.1 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	**Q100**
33.7 in/hr	73.1 in/hr

Woodmen Pointe

Sump Inlet BASIN II-A

		5 YEAR	100 YEAR		
APPROACH FLOWS (worse case)		12.8	26.6	s(x)=	0.02
	d =	0.51	0.67	s(l)=	0.002
				n=	0.016
TOTAL FLOWS		12.8	26.6	L=	8
	d(max)=	0.40	0.76		

Woodmen Pointe

Sump Inlet BASIN II-B & III

		5 YEAR	100 YEAR		
APPROACH FLOWS (worse case)		5.0	10.7	s(x)=	0.02
	d =	0.36	0.47	s(l)=	0.002
				n=	0.016
TOTAL FLOWS		8.7	18.5	L=	10
	d(max)=	0.22	0.50		

Woodmen Pointe

INLET BASIN V

Q5 =	19.5	Q100 =	42.4
SL =	0.008	SO =	0.02

5 YEAR		100 YEAR	
T	22.90	T	30.64
FW	1.27	FW	1.34
L1	22.4	L1	31.5
L2	13.4	L2	18.9
L3	47.9	L3	67.6

Li =	15.00		
5 YR Q =	19.5	100 YR Q	42.4
5 YR Qi =	12.3	100 YR Qi	20.2
5 YR Qfb =	7.2	100 YR Qfb	22.2

Woodmen Pointe

Sump Inlet BASIN V & VII

		5 YEAR	100 YEAR		
APPROACH FLOWS (worse case)		8.7	24.6	s(x)=	0.02
	d =	0.44	0.65	s(l)=	0.002
				n=	0.016
TOTAL FLOWS		16.6	43.5		
				L=	10
	d(max)=	0.45	0.99		

Woodmen Pointe

Sump Inlet BASIN VI & VIII

		5 YEAR	100 YEAR		
APPROACH FLOWS (worse case)		6.3	13.3	s(x)=	0.02
	d =	0.39	0.51	s(l)=	0.002
				n=	0.016
TOTAL FLOWS		8.0	16.9		
				L=	5
	d(max)=	0.32	0.65		

Woodmen Pointe

INLET BASIN XVII

Q5 =	7.1	Q100 =	15.8
SL =	0.035	SO =	0.02

5 YEAR		100 YEAR	
T	11.89	T	16.05
FW	2.34	FW	2.48
L1	21.4	L1	30.7
L2	12.9	L2	18.4
L3	45.9	L3	65.7

Li = 15.00

5 YR Q =	7.1	100 YR Q	15.8
5 YR Qi =	4.5	100 YR Qi	7.7
5 YR Qfb =	2.6	100 YR Qfb	8.1

Woodmen Pointe

INLET BASIN XVIII

Q5 =	13.5	Q100 =	29.8
SL =	0.035	SO =	0.02

5 YEAR

T	15.13
FW	2.46
L1	28.6
L2	17.2
L3	61.3

100 YEAR

T	20.36
FW	2.60
L1	40.7
L2	24.4
L3	87.2

Li = 15.00

5 YR Q =	13.5	100 YR Q	29.8
5 YR Qi =	7.1	100 YR Qi	11.0
5 YR Qfb =	6.4	100 YR Qfb	18.8

Woodmen Pointe

INLET BASIN XIX

Q5 =	7.4		Q100 =	15.9
SL =	0.03		SO =	0.02

5 YEAR			100 YEAR	
T	12.43		T	16.56
FW	2.19		FW	2.31
L1	20.9		L1	29.5
L2	12.6		L2	17.7
L3	44.9		L3	63.2
Li =		15.00		
5 YR Q =		7.4	100 YR Q	15.9
5 YR Qi =		4.8	100 YR Qi	8.1
5 YR Qfb =		2.6	100 YR Qfb	7.8

Woodmen Pointe

Sump Inlet BASIN XX & XXI

		5 YEAR	100 YEAR		
APPROACH FLOWS (worse case)		9.0	21.6	s(x)=	0.02
	d =	0.44	0.62	s(l)=	0.002
				n=	0.016
TOTAL FLOWS		11.0	25.9	L=	8
	d(max)=	0.34	0.74		