NEWPORT HEIGHTS
MASTER DEVELOPMENT DRAINAGE PLAN (MDDP)

August, 1998

Prepared for:

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Project# 97-023

NEWPORT HEIGHTS (MDDP)
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 PROFESSIONAL ENGINEER KENT D. ROCKWELL 25086 8/18/98

DEVELOPER'S STATEMENT

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

Development Management, Inc.

BY: ______________________ DATE 8/7/98

Kent Petre

TITLE: President

ADDRESS: 4065 Sinton Road, Suite 200
Colorado Springs, CO 80907

CITY OF COLORADO SPRINGS

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

______________________ August 14, 1998

CITY ENGINEER DATE

NEWPORT HEIGHTS
MASTER DEVELOPMENT DRAINAGE PLAN (MDDP)
August, 1998

PURPOSE

The purpose of this MDDP is to identify the existing and proposed runoff patterns, major drainageways and drainage facilities tributary to the Newport Heights Development and to recommend drainage facilities and improvements required to facilitate the future development of the site. This plan should serve only as a guide for future final drainage reports and will vary once more detail information is available. Site specific design should be completed with individual drainage plans and reports at the time of platting/development.

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), 1997.

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

5. "Cottonwood Creek Drainage Basin Planning Study" by Ayres Associates, October, 1996.

GENERAL LOCATION AND DESCRIPTION

The Newport Heights Development is located within the City of Colorado Springs, El Paso County, Colorado, within Section 11 Township 13 South, Range 66 West of the 6th P.M. (see Vicinity Map - Figure 1). The site is bound on the north by Cottonwood Creek, on the east by future Austin Bluffs Parkway, on the south by future Dublin Boulevard and on the west by undeveloped land. Existing ground cover consists of well established native grasses over the entire site. The land is currently used for pasture purposes.

The development contains approximately 150 acres, none of which has been developed to date. Newport Heights will consist of single family residential development and open space/park tracts. The entire development lies within the Cottonwood Creek Drainage Basin.

The site consists of gently rolling hills of well established native grass with slopes of 1-10%. The northern half of the site generally slopes to the north toward Cottonwood Creek. The southern portion slopes south. Cottonwood Creek is located directly north of the site. A tributary of Cottonwood Creek is located directly west of the site. The future extension of Austin Bluffs Parkway is located to the east of the site. Future Dublin Boulevard borders the site on the south.

There are no existing drainage facilities on 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 underlying the Newport Heights Development consists of two soil types (See Figure 2). The first is Blakeland (Soil No. 8) which is considered a hydrological group A soil. The second soil type (Soil No. 98) is a combination of the Truckton series which is a hydrological group B soil and the Blakeland series which is a hydrological group A soil. Therefore, runoff coefficients were selected based on the A and B type soils.

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) Panels #08041CO517F, #08041CO528F & #08041CO536F, none of the site lies in a designated floodplain.

DRAINAGE CRITERIA

The current City of Colorado Springs/El Paso County Drainage Criteria was utilized in this report. Although the entire development is more than 100 acres, the acreage contributing to the individual outfalls is far less than 100 acres; therefore, peak runoff quantities were determined using the Rational Method for both the 5 year and 100 year storms.

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 rates for each of the basins is depicted on the Historic Drainage Plan provided in the appendix (Exhibits 1 and 2). The site has been divided into 4 historical drainage basins.

Basin H-1 consists of 86.34 acres of land along the south side of Cottonwood Creek. Peak runoff rates of Q_5 = 58.2 cfs and Q_{100} = 139.0 cfs generated from this basin sheet flow to Cottonwood Creek.

The area on the west side of future Austin Bluffs Parkway and north of future Dublin Boulevard comprises Basin II. This basin encompasses 34.02 acres and generates flows of 21.3 cfs during the 5 year storm and 51.2 cfs during the 100 year storm. These flows reach an existing storm sewer system within the future intersection of Dublin Boulevard and Austin Bluffs Parkway and then discharge into the Nor'Wood tributary of Cottonwood Creek.

Basin III consists of approximately 15.43 acres just north of future Dublin Boulevard. The peak runoff rates of Q_5 = 8.9 cfs and Q_{100} = 21.6 cfs generated from this basin discharge to the existing rough road cut of Dublin Boulevard and then continue westerly within the road cut to the Nor'Wood Tributary.

Basin H-4 is located at the extreme southwest corner of the future Newport Heights development. This area consist of 8.42 acres and generates flows of 6.8 cfs during the 5 year storm and 16.5 cfs during the 100 year storm. These flows discharge directly to the Nor'Wood Tributary as sheet flow.

DEVELOPED DRAINAGE BASIN DESCRIPTIONS

Newport Heights will consist of single family residential development and open space/park tracts.

A brief description of each developed drainage basin including developed runoff rates, drainage patterns and proposed drainage facilities for each basin is provided in this section of the report. A summary of peak developed runoff for the basins and designated design points are depicted on the Developed Drainage Plan provided in the back of the report (Exhibit 3 and 4). All proposed drainage facilities are approximate in size and may vary with actual layout and design.

Basin I consists of approximately 11.1 acres just west of future Austin Bluffs Parkway. Peak runoff rates of Q_5 = 23.3 cfs and Q_{100} = 46.6 cfs are generated from this basin. Bridle Pass Drive with ramp curb and a minimum slope of 2% has a 5 year storm street capacity of 15.9 cfs per side. Flows generated from this basin are split evenly on either side of Bridle Pass; therefore, there is adequate street capacity. A 10' sump inlet will be constructed on the north side of Bridle Pass at Austin Bluffs, and a 15' on-grade inlet on the south side. The collected runoff will discharge to the existing 48" RCP in Austin Bluffs via a 24" RCP.

Dream Weaver Drive and the lots just north of Dream Weaver Drive comprises Basin II. Peak runoff rates of 14.0 and 28.1 cfs are generated from this basin during the 5 year and 100 year storms, respectively. These flows continue easterly within Dream Weaver Drive as street flow with the majority of the flows generated from Basin II on the north side of Dream Weaver Drive. Dream Weaver Drive also has a minimum street capacity of 15.9 cfs per side during the 5 year storm which is adequate capacity. A 15' on-grade inlet will be constructed on the south side of Dream Weaver at Austin Bluffs as the street will be superelevated at the intersection. This inlet will collect 7.5 cfs during the 5 year storm and 11.1 cfs during the 100 year storm.

Austin Bluffs Parkway just downstream of Dream Weaver has a slope of 4% and a 5 year street capacity of 34 cfs. The 100 year street capacity of Austin Bluffs Parkway is 71.3 cfs. A 12' on-grade inlet exists on the west side of Austin Bluffs south of Dream Weaver. This inlet and the proposed inlet on Dream Weaver tie into an existing 54" RCP in Austin Bluffs.

Basin III consists of a future multi-family site and the rear portion of approximately 7 Newport Heights lots along Cabin Creek Drive. Peak flow rates of Q_5 = 18.3 cfs and Q_{100} = 36.1 cfs generated from this basin reach the intersection of Austin Bluffs Parkway and Dublin Boulevard.

At this time, it is uncertain how the multi-family site will be developed. A 36" RCP is stubbed into the south end of the site from the Austin Bluffs/Dublin intersection. A 24" RCP is stubbed to the site at the entrance on the west side of Austin Bluffs also.

Basin IV is located along Big Timber Drive and consists of approximately 5.03 acres. Runoff rates of 12.4 cfs during the 5 year storm and 25.0 cfs during the 100 year storm generated from Basin IV reach a proposed low point within Big Timber Drive. The low point is situated so that approximately half of the flows reach the low point from the east and west. Big Timber Drive has a 5 year street capacity of 15.9 cfs which is adequate to convey the flows generated from Basin IV to the low point. Two 5' inlets will be constructed at this low point. A 24" diameter RCP will be constructed to convey these flows directly to Cottonwood Creek.

The area just east of Basin IV, consisting of the front portion of 5 Newport Heights lots and the west half of Austin Bluffs Parkway, comprises Basin V. The flow rates of 7.8 cfs and 15.3 cfs generated during the 5 year and 100 year storms, respectively, flow easterly within Big Timber Drive and then northerly within Austin Bluffs Parkway. The proposed slope of Austin Bluffs Parkway just north of Big Timber Drive is 0.5 % resulting in a 5 year street capacity of 12.1 cfs per side and a 100 year street capacity of 25.2 cfs. These flows will flow to the southwest corner of the Woodmen Road and Austin Bluffs Parkway intersection to a future 16' sump inlet. Flows collected by this inlet will be discharged to Cottonwood Creek via an existing 54" RCP.

Basin VI consists of approximately 17.8 acres along Bridle Pass Drive. Peak runoff rates of 34.1 cfs and 67.9 cfs are generated from this basin during the 5 year and 100 year storms, respectively. Approximately half of the flows generated from this basin reach each side of Bridle Pass Drive which has adequate capacity to convey the flows to the intersection of Bridle Pass and Prairie Lane. Flows from Basin XI combine with the flows from Basin VI at this intersection. The street flows just upstream of the Prairie Lane and Bridle Pass intersection are 14.6 cfs side during the 5 year storm and 28.8 side cfs during the 100 year storm. Once the flows enter Bridle Pass from Basin XI, the street capacities are exceeded. Therefore, three 15' inlets will be constructed at this point.

The total flows collected at this point are 22.6 cfs during the 5 year storm and 34.7 cfs during the 100 year storm. A 24" diameter RCP will convey these flows to Cottonwood Creek.

Basins VII and VIII are located at the southeast corner of the proposed Newport Heights Development. Basin VII generates peak runoff rates of 10.5 cfs during the 5 year storm and 21.3 cfs during the 100 year storm. The minimum slope of Bridle Pass Drive and Cabin Creek Drive is 3% which equates to a minimum 5 year street capacity of 19.5 cfs per side. This is adequate street capacity to convey the flows to the proposed low point in Cabin Creek Drive.

Peak runoff rates of Q_5 = 9.0 cfs and Q_{100} = 18.1 cfs generated from Basin VIII reach the same low point in Cabin Creek Drive. The portion of Cabin Creek Drive within Basin VIII has a minimum slope of 2% and a corresponding street capacity of 15.9 cfs per side. The developed flows from Basins VII and VIII will be collected at the low point within an 8' and a 6' inlet. A 30" diameter RCP will convey the collected flows to the proposed storm sewer within Dublin Boulevard.

Basin IX is located along Bridle Pass Drive and generates flows of 15.0 cfs during the 5 year storm and 30.5 cfs during the 100 year storm. The minimum street capacity of this portion of Bridle Pass is 15.9 cfs per side.

The lots along Cabin Creek and Dream Weaver comprise Basin X. This basin generates flows of

14.2 cfs during the 5 year storm and 28.4 cfs during the 100 year storm. These flows combine with the flows from Basin IX at the intersection of Bridle Pass Drive and Dream Weaver Drive. At Design Point 3, the total flows generated from these two basins are Q_5 = 27.0 cfs and Q_{100} = 53.4 cfs. Vertical curb and gutter will be installed along Bridle Pass Drive from the intersection of Bridle Pass Drive and Dream Weaver Drive to the low point at Design Points 2 and 3. This increases the 5 year street capacity to 29.5 cfs per side.

The lots on either side of Prairie Lane comprise Basin XI. Prairie Lane at a minimum slope of 2% and a corresponding 5 year street capacity of 15.9 cfs per side has adequate capacity to convey the flows of Q_5 = 12.6 cfs and Q_{100} = 25.1 cfs. As stated above, an inlet will be constructed along the west side of Prairie Lane to collect a portion of these flows.

Basin XII consists of the rear portion of Newport Heights lots just north of Dublin Boulevard. Peak runoff rates of Q_5 = 9.3 cfs and Q_{100} = 19.0 cfs sheet flow from the back of these lots into Dublin Boulevard. Dublin Boulevard has a 5 year street capacity of 17.2 cfs and a 100 year street capacity of 35.7 cfs. These flows will continue easterly within Dublin Boulevard as street flow to a proposed 10' inlet to be constructed within the median of Dublin Boulevard. This inlet will collect all the flows generated from Basin XII except 3.9 cfs during the 5 year storm and 10.9 cfs during the 100 year storm. The flows bypassing this inlet will continue toward Austin Bluffs Parkway and then south within Austin Bluffs Parkway.

Basin XIIIA consists of approximately 2.57 acres along the west side of Dream Weaver Drive. Flows of 6.2 cfs during the 5 year storm and 12.4 cfs during the 100 year storm are generated from this basin. Basin XIIIB consists of 2.30 acres on the east side of Dream Weaver Drive and generates flows of 5.7 cfs and 11.4 cfs during the 5 year and 100 year storms, respectively. This portion of Dream Weaver has a minimum slope of 2% and a corresponding 5 year street capacity of 15.9 cfs per side which is adequate to convey these flows.

Basin XIV is located along the Whistle Bay Drive cul-de-sac. Peak runoff rates of Q_5 = 8.1 cfs and Q_{100} = 16.5 cfs are generated from this basin. Whistle Bay Drive has adequate capacity to convey these flows to Dream Weaver Drive.

The combined flows from Basins XIIIA, XIV and XVII reach the Many Moon Drive cul-de-sac at Design Point 4. The total flows at this point are 18.6 cfs during the 5 year storm and 36.5 cfs during the 100 year. A 10' inlet will be constructed at the end of the cul-de-sac to collect these flows. A 30" diameter RCP will convey the collected flows to Cottonwood Creek.

Likewise, the flows generated from Basin XIIIB combine with the flows generated from Basin XVIII which consists of the lots along Many Moon Drive south of the Dream Weaver and Many Moon Drive intersection. Peak runoff rates of 9.4 cfs are generated during the 5 year storm and 18.8 cfs during the 100 year storm. The total flows reaching the Ginger Cove Place cul-de-sac (Design Point 5) are Q_5 = 13.0 cfs and Q_{100} = 25.7 cfs. An 8' inlet and 24" diameter RCP will be constructed at the end of this cul-de-sac to collect and convey these flows to Cottonwood Creek.

Peak flow rates of Q_5 = 7.3 cfs and Q_{100} = 14.4 cfs are generated from Basin XV. These flows are collected at the north end of the Standing Rock Place cul-de-sac within a proposed 4' inlet. An 18" diameter RCP will be installed from the inlet north to Cottonwood Creek.

Basin XVI consists of several lots between the Standing Rock Place and Many Moon Drive cul-de-sacs. Runoff generated from this basin (Q_5 = 12.4 cfs and Q_{100} = 25.6 cfs) will sheet flow to the north directly into Cottonwood Creek.

Basin XIX comprises the lots within the Red Desert Drive cul-de-sac and generates flows of Q_5 = 3.0 cfs and Q_{100} = 5.9 cfs. A 4' inlet and an 18" RCP will collect these flows and convey them to Cottonwood Creek.

The lots on either side of Whistle Bay Drive from Dream Weaver Drive to Ginger Cove Drive make up Basin XX. Flow rates of Q_5 = 9.7 cfs and Q_{100} = 20.0 cfs flow southerly within Whistle Bay Drive and then easterly within Ginger Cove Place toward Dublin Boulevard. The minimum slope of Whistle Bay and Ginger Cove is 2% which corresponds to a 5 year street capacity of 15.9 cfs per side. A 10' radial inlet exists at the northerly corner of Dublin and Ginger Cove. A 12' on-grade inlet was constructed on the west side of Dublin just south of Ginger Cove. At this point, Dublin Boulevard has a 5 year street capacity of 24.3 cfs and a 100 year street capacity of 50.4 cfs which is more than adequate with the existing inlets. These two inlets outfall to the twin 132" CMP's under Dublin Boulevard. A 12' sump inlet is located on each side of Dublin Boulevard.

Basin XXI consists of approximately 7.42 acres along the west side of Dublin Boulevard between Galliant Drive and Ginger Cove Drive. Runoff generated from this basin discharges directly to the west side of Dublin Boulevard as sheet flow. The total flows within Dublin Boulevard are 19.1 cfs during the 5 year storm and 39.5 cfs during the 100 year storm. Dublin Boulevard at a slope of 5% and corresponding street capacities of Q_{5cap} = 38.4 cfs and Q_{100cap} = 79.7 cfs has adequate street capacity to convey these flows to the Dublin and Ginger Cove Place intersection.

Basin XXII consists of the rear portion of the lots just south of Ginger Cove Drive. Runoff generated from these lots (Q_5 = 4.6 cfs and Q_{100} = 9.4 cfs) sheet flows directly into Antelope Creek (Tributary 1).

Basin XXIII consists of approximately 10 acres of Newport Heights residential lots and 4.2 acres of open space. The runoff rates of 27.7 cfs and 57.1 cfs generated during the 5 year and 100 year storms, respectively, enter Cottonwood Creek directly as sheet flow.

Basin XXIV is located in the southwest corner of the proposed development. Runoff rates of Q_5 = 10.7 cfs and Q_{100} = 21.2 cfs discharge directly to Cottonwood Creek as sheet flow.

The Prudent line concept has been adopted for development along the major drainageways in the Nor'Wood development, this includes Cottonwood Creek and Antelope Creek (Tributary No. 1) which bound a portion of this site. A grade control structure is proposed to be constructed in Cottonwood Creek near the middle of the site as shown on the Developed Drainage Plan. One is also proposed just downstream of Woodmen Road. A grade control structure is also proposed to be constructed in Antelope Creek just downstream of Dublin Boulevard.

The peak runoff (100yr) in Cottonwood Creek along the site is 4919 cfs per the Ayres report.
The peak runoff (100yr) in Antelope Creek (Tributary #1) along the site is 4177 per the Ayres report.

All on-site residential and collecter streets, as well as adjoining arterial streets will remain within street capacity.

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

EROSION CONTROL

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

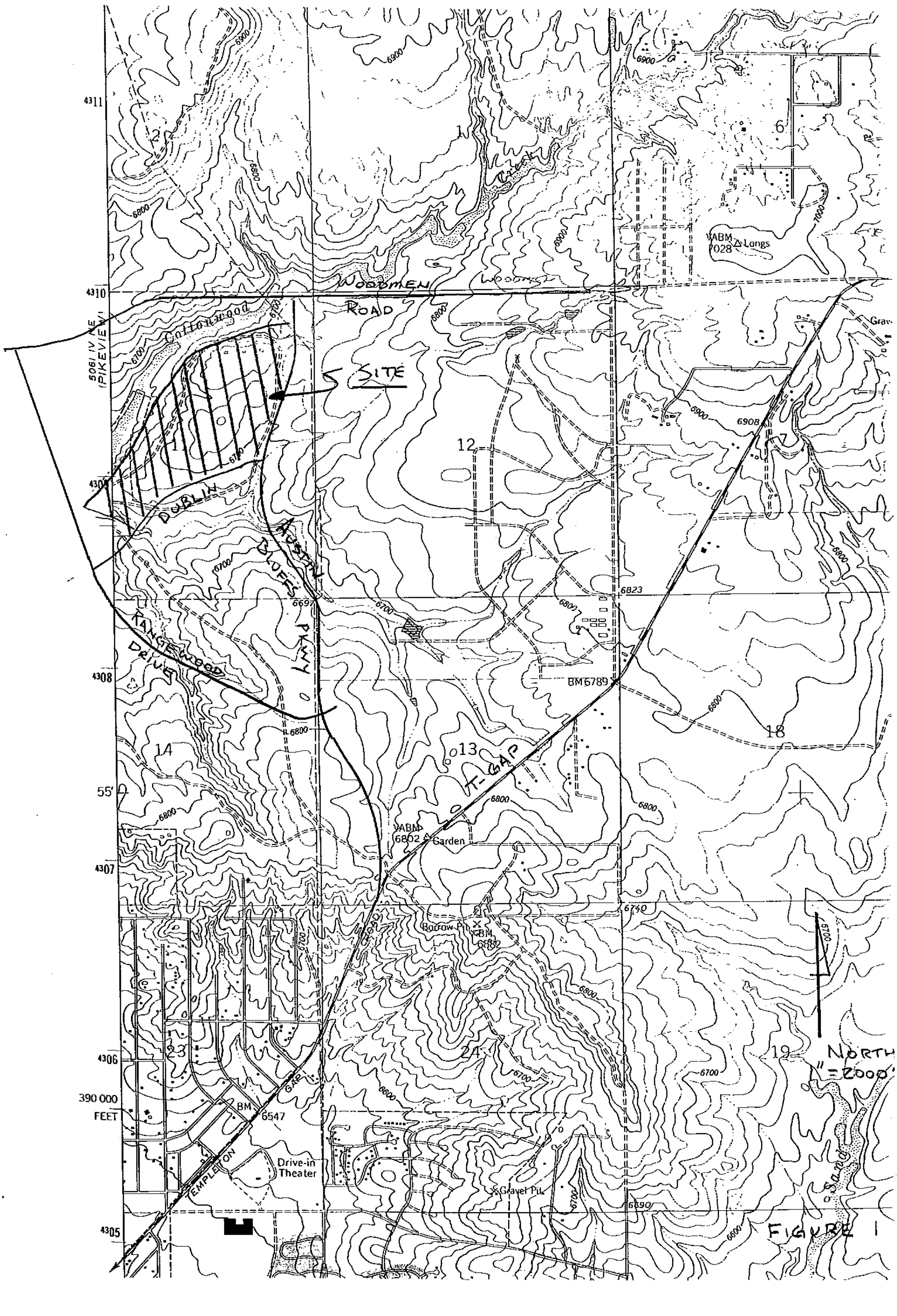
DRAINAGE, BRIDGE AND POND FEES

The Newport Heights Development lies within the Cottonwood Creek Drainage Basin. No Fees are required with the approval of this report, fees will be paid at the time of platting individual developments. The 1998 Drainage, Bridge and Pond Fees for the basin are listed below:

<u>Cottonwood Creek</u>

Drainage Fees:	$5455/ac.
Additional Drainage Fees (pending Cottonwood Creek Study):	$ 682/ac.
Bridge Fees:	$ 274/ac.
Additional Bridge Fees (pending Cottonwood Creek Study):	$ 269/ac.
Pond Fees (land):	$ 105/ac.
Pond Fees (facilities):	$ 331/ac.

APPENDIX



WOODMEN ROAD
SITE
DUBLIN
AUSTIN BLUFFS PKWY
RANGEWOOD DRIVE
T-GAP
Cottonwood
VABM 7028 Longs
VABM 6802 Garden
BM 6789
BM 6547
6823
6740
Borrow Pit
Drive-in Theater
Gravel Pit
5061 IV NE (PIKEVIEW)
390 000 FEET
4311
4310
4308
4307
4306
4305
55'
NORTH
1" = 2000'

FIGURE 1


WOODMEN ROAD
SITE
DUBLIN
AUSTIN BLUFFS PKWY
RANGEWOOD DRIVE
T-GAP
Creek
Cottonwood
NORTH
1" = 2000'

FIGURE 2

H· ˙ology

Location: H-1
Area: 86.34 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area

Composite: C5 0.25 C100 0.35 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	H	s%	v(fps)	T_c
OVERLAND	1000	93	9.3%		24.1

T_c Total: 24.1

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

I5: 2.7 in/hr I100 4.6 in/hr

Peak Flow: Q = CIA in cfs

Q5 58.2 cfs Q100: 139.0 cfs

Hydrology

Location: H-2
Area: 34.02 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area

Composite: C5 0.25 C100 0.35 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	H	s%	v(fps)	T_c
OVERLAND	850	42	5%		27.2

T_c Total: 27.2

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

I5: 2.5 in/hr I100 4.3 in/hr

Peak Flow: Q = CIA in cfs

Q5 21.3 cfs Q100: 51.2 cfs

Hydrology

Location: H-3
Area: 15.43 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area

Composite: C5 0.25 C100 0.35 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
OVERLAND	1000	4%		31.8

T_c Total: 31.8

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

I5: 2.3 in/hr I100 4.0 in/hr

Peak Flow: Q = CIA in cfs

Q5 8.9 cfs Q100: 21.6 cfs

Hydrology

Location: H-4
Area: 9.42 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area

Composite: C5 0.25 C100 0.35 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
OVERLAND	700 60	8.6%		20.7

T_c Total: 20.7

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

I5: 2.9 in/hr I100 5.0 in/hr

Peak Flow: Q = CIA in cfs

Q5 6.8 cfs Q100: 16.5 cfs

H ology

Location: I
Area: 11.1 Ac.
Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
Residential 1/8 Acre	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	H	s%	v(fps)	T_c
Overland	230	7	3.0%		9.9
Street	750	14	1.9%	2.8	4.5

T_c Total: 14.4

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

I5: 3.5 in/hr I100 6.0 in/hr

Peak Flow: Q = CIA in cfs

Q5 23.3 cfs Q100: 46.6 cfs

Hydrology

Location: II
Area: 5.82 Ac.
Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
Residential 1/8 Acre	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	H	s%	v(fps)	T_c
Overland	120	6	5%		6.0
Street	800	20	2.5%	3.1	4.3

T_c Total: 10.3

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

I5: 4.0 in/hr I100 6.9 in/hr

Peak Flow: Q = CIA in cfs

Q5 14.0 cfs Q100: 28.1 cfs

Hy[illegible]ology

Location: III
Area: 8.46 Ac.
Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
RESIDENTIAL 1/3 Ac	0.60	0.70	
MULTI-FAMILY	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
OVERLAND	300'	4%		10.2
STREET	650	2.2%	3.0	3.6

T_c Total: 13.8

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

I5: 3.6 in/hr I100 6.1 in/hr

Peak Flow: Q = CIA in cfs

Q5 18.3 cfs Q100: 36.1 cfs

Hydrology

Location: IV
Area: 5.03 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
RESIDENTIAL 1/3 Ac	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	H	s%	v(fps)	T_c
OVERLAND	200	12'	6%		7.3
STREET	350		2%	2.8	2.1

T_c Total: 9.4

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

I5: 4.1 in/hr I100 7.1 in/hr

Peak Flow: Q = CIA in cfs

Q5 12.4 cfs Q100: 25.0 cfs

Hydrology

Location: V

Area: 3.59 Ac.

Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
RESIDENTIAL 1/8 Ac	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	H	s%	v(fps)	T_c
OVERLAND	100	4	4%		5.9
STREET	1150	19	1.7%	2.5	7.7

T_c Total: 13.6

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

I5: 3.6 in/hr I100 6.1 in/hr

Peak Flow: Q = CIA in cfs

Q5 7.8 cfs Q100: 15.3 cfs

Hydrology

Location: VI

Area: 17.83 Ac.

Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area	AREA
RESIDENTIAL 1/3 Ac	0.60	0.70	95.2%	16.97
OPEN SPACE	0.25	0.35	4.8%	0.86

Composite: C5 0.58 C100 0.68 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	H	s%	v(fps)	T_c
OVERLAND	250	11	4.4%		9.1
STREET	1600	52	3.3%	3.7	7.2

T_c Total: 16.3

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

I5: 3.3 in/hr I100 5.6 in/hr

Peak Flow: Q = CIA in cfs

Q5 34.1 cfs Q100: 67.9 cfs

Hy[illegible]logy

Location: VII
Area: 4.48 Ac.
Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
RESIDENTIAL 1/8 Ac	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	H	s%	v(fps)	T_c
OVERLAND	200	8	4.0%		8.4
STREET	550	18	3.2%	3.5	2.6

T_c Total: 11.0

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

I5: 3.9 in/hr I100 6.8 in/hr

Peak Flow: Q = CIA in cfs

Q5 10.5 cfs Q100: 21.3 cfs

Hydrology

Location: VIII
Area: 3.64 Ac.
Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
RESIDENTIAL 1/8 Ac	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	H	s%	v(fps)	T_c
OVERLAND	200	12	6%		7.3
STREET	425		2%	2.8	2.5

T_c Total: 9.8

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

I5: 4.1 in/hr I100 7.1 in/hr

Peak Flow: Q = CIA in cfs

Q5 9.0 cfs Q100: 13.1 cfs

Hy[illegible]logy

Location: IX
Area: 6.40 Ac.
Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
RESIDENTIAL 1/4 Ac	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	H	s%	v(fps)	T_c
OVERLAND	160		5%		7.0
STREET	1000	50	5%	4.4%	3.8

T_c Total: 10.8

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

I5: 3.9 in/hr I100 6.8 in/hr

Peak Flow: Q = CIA in cfs

Q5 15.0 cfs Q100: 30.5 cfs

Hydrology

Location: X
Area: 6.06 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
RESIDE			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
OVERLAND	150	4.7%		6.9
STREET	850	2.4%	3.1	4.6

T_c Total: 11.5

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

I5: 3.9 in/hr I100 6.7 in/hr

Peak Flow: Q = CIA in cfs

Q5 14.2 cfs Q100: 28.4 cfs

Hy[illegible]logy

Location: XI
Area: 4.79 Ac.
Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
Residential ⅓ Ac	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
Overland	200	10%		6.2
Street	500	5%	4.4	1.9

T_c Total: 8.1

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

I5: 4.4 in/hr I100 7.5 in/hr

Peak Flow: Q = CIA in cfs

Q5 12.6 cfs Q100: 25.1 cfs

Hydrology

Location: XII
Area: 3.99 Ac.
Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
Residential ⅓ Acre			
Multi-Family			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
Overland	130	12%		4.7
Street	750	1%	2.0	6.2

T_c Total: 10.9

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

I5: 3.9 in/hr I100 6.8 in/hr

Peak Flow: Q = CIA in cfs

Q5 9.3 cfs Q100: 19.0 cfs

H ology

Location: XIII A
Area: 2.57 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
RESIDENTIAL 1/3 Ac	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_t
OVERLAND	100	3%		6.5
STREET	800	2.8%	3.4	3.9

T_c Total: 10.4

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

I5: 4.0 in/hr I100 6.9 in/hr

Peak Flow: Q = CIA in cfs

Q5 6.2 cfs Q100: 12.4 cfs

Hydrology

Location: XIV
Area: 3.31 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
RESIDENTIAL 1/8 Ac	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_t
OVERLAND	130	4%		6.7
STREET	550	2.5%	3.1	3.0

T_c Total: 9.7

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

I5: 4.1 in/hr I100 7.1 in/hr

Peak Flow: Q = CIA in cfs

Q5 8.1 cfs Q100: 16.5 cfs

Hyd'ogy

Location: XIII B
Area: 2.30 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
Residential 1/3 Ac	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
Overland	180	8%		6.3
Street	650	2.3%	3.4	3.2

T_c Total: 9.5

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

I5: 4.1 in/hr I100 7.1 in/hr

Peak Flow: Q = CIA in cfs

Q5 5.7 cfs Q100: 11.4 cfs

Hydrology

Location:
Area: Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area

Composite: C5 C100 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c

T_c Total:

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

I5: in/hr I100 in/hr

Peak Flow: Q = CIA in cfs

Q5 cfs Q100: cfs

Hydrology

Location: XV
Area: 2.58 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
Residential 1/3 A	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
Overland	130	6.2		5.8
Street	200	2.0%	2.8	1.2

T_c Total: 7.0

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

I5: 4.7 in/hr I100 8.0 in/hr

Peak Flow: Q = CIA in cfs

Q5 7.3 cfs Q100: 14.4 cfs

Hydrology

Location: XVI
Area: 4.82 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
1/8 Ac Residential	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	H	s%	v(fps)	T_c
Overland	300	28	9.3%		7.8

T_c Total: 7.8

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

I5: 4.3 in/hr I100 7.0 in/hr

Peak Flow: Q = CIA in cfs

Q5 12.4 cfs Q100: 25.6 cfs

Hy[illegible]ology

Location: XVII
Area: 2.27 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
Residential 1/8 Ac			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
Overland	200	6%		7.3
Street	250	3.2%	3.7	1.1

T_c Total: 8.4

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

I5: 4.3 in/hr I100 7.4 in/hr

Peak Flow: Q = CIA in cfs

Q5 5.9 cfs Q100: 11.8 cfs

Hydrology

Location: XVIII
Area: 3.73 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
Residential 1/8 Ac			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
Overland	100	4%		5.9
Street	750	5%	4.4	2.8

T_c Total: 8.7

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

I5: 4.2 in/hr I100 7.2 in/hr

Peak Flow: Q = CIA in cfs

Q5 9.4 cfs Q100: 18.3 cfs

Hy[illegible]logy

Location: XIX
Area: 1.12 Ac.
Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
RESIDENTIAL 1/3 Ac			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_t
OVERLAND	100	2%		7.4
STREET	150	5%	4.4	0.6

T_c Total: 8.0

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

I5: 4.4 in/hr   I100 7.5 in/hr

Peak Flow: Q = CIA in cfs

Q5 3.0 cfs   Q100: 5.9 cfs

Hydrology

Location: XX
Area: 3.76 Ac.
Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
RESIDENTIAL 1/3 Ac	0.60	0.70	

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_t
OVERLAND	100	4%		5.9
STREET	550	5.5%	4.8	1.9

T_c Total: 7.8

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

I5: 4.3 in/hr   I100 7.6 in/hr

Peak Flow: Q = CIA in cfs

Q5 9.7 cfs   Q100: 20.0 cfs

Hydrology

Location: XXI
Area: 7.42 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
Residential 1/3 Ac			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_t
Overland	150	8%		5.8
Street	500	5%	4.4	1.9

T_c Total: 7.7

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

I5: 4.3 in/hr I100 7.6 in/hr

Peak Flow: Q = CIA in cfs

Q5 19.1 cfs Q100: 39.5 cfs

Hydrology

Location: XXII
Area: 1.49 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
Residential 1/8 Ac			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_t
Overland	70	14%		3.3

T_c Total: Use 5.0

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

I5: 5.2 in/hr I100 9.0 in/hr

Peak Flow: Q = CIA in cfs

Q5 4.6 cfs Q100: 9.4 cfs

H: ology

Location: XXIII
Area: 14.21 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area	Area
Residential	0.60	0.70	71%	10.05
Open Space	0.25	0.35	29%	4.16

Composite: C5 0.50 C100 0.60 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
Overland	500	11%		11.4

T_c Total: 11.4

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

I5: 3.9 in/hr I100 6.7 in/hr

Peak Flow: Q = CIA in cfs

Q5 27.7 cfs Q100: 57.1 cfs

Hydrology

Location: XXIV
Area: 3.98 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	C5	C100	%Area
Residential 1/3 Ac			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
Overland	250	8%		7.4

T_c Total: 7.4

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

I5: 4.5 in/hr I100 7.6 in/hr

Peak Flow: Q = CIA in cfs

Q5 10.7 cfs Q100: 21.2 cfs

Hydrology

Location: DP #1
Area: 16.92 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	Area	C5	C100	%Area
I	11.1			
II	5.82			
	16.92			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_t
Basin I				14.4

T_c Total: 14.4

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

I5: 3.5 in/hr I100 6.0 in/hr

Peak Flow: Q = CIA in cfs

Q5 35.5 cfs Q100: 71.1 cfs

Hydrology

Location: DP #2
Area: 22.62 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	Area	C5	C100	%Area
VI	17.83			
XI	4.79			
	22.62			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_t
Basin VI				

T_c Total: 16.3

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

I5: 3.3 in/hr I100 5.6 in/hr

Peak Flow: Q = CIA in cfs

Q5 44.8 cfs Q100: 88.7 cfs

Hy ology

Location: DP #3
Area: 12.50 Ac.
Soil or Land Use: A

Runoff Coefficient, C:

Area Zone	Area	C5	C100	%Area
IX	6.40			
X	6.06			
	12.50			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_t
BASIN X				11.5
STREET	650	5.5%	4.8	2.3

T_c Total: 13.8

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

I5: 3.6 in/hr I100 6.1 in/hr

Peak Flow: Q = CIA in cfs

Q5 27.0 cfs Q100: 53.4 cfs

Hydrology

Location: DP #4
Area: 8.15 Ac.
Soil or Land Use:

Runoff Coefficient, C:

Area Zone	Area	C5	C100	%Area
XIIIA	2.57	0.60	0.70	
XVII	2.27			
XIV	3.31			
	8.15			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_t
BASIN XIIIA				10.4
STREET	550	3.7%	3.9	2.3

T_c Total: 12.7

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

I5: 3.9 in/hr I100 6.4 in/hr

Peak Flow: Q = CIA in cfs

Q5 18.6 cfs Q100: 36.5 cfs

Hydrology

Location: DP #5

Area: 6.03 Ac.

Soil or Land Use: ____________

Runoff Coefficient, C:

Area Zone	Area	C5	C100	%Area
XIIIB	2.30			
XVIII	3.73			
	6.03			

Composite: C5 0.60 C100 0.70 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c
BASIN XIIIB				9.5
STREET	1050	4.5%	4.2	4.2

T_c Total: 13.7

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

I5: 3.6 in/hr I100 6.1 in/hr

Peak Flow: Q = CIA in cfs

Q5 13.0 cfs Q100: 25.7 cfs

Hydrology

Location: ____________

Area: ____________ Ac.

Soil or Land Use: ____________

Runoff Coefficient, C:

Area Zone	C5	C100	%Area

Composite: C5 ______ C100 ______ 100%

Time of Concentration: T_c in minutes:

Travel Type	L(ft)	s%	v(fps)	T_c

T_c Total: ____________

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

I5: ______ in/hr I100 ______ in/hr

Peak Flow: Q = CIA in cfs

Q5 ______ cfs Q100: ______ cfs

BASIN I

$Q_5 = 23.3$ $Q_{100} = 46.6$

$S = 2\%$
$S_x = 2\%$

APPROXIMATELY 1.9 ACRES OF 11.1 REACHES AUSTIN BLUFFS PARKWAY INSTEAD OF REACHING INLETS ALONG BRIDLE PASS

ASSUME ½ FLOW PER SIDE OF STREET

$Q_5 = (23.3)\left(\frac{9.2}{11.1}\right) = 19.3$
$19.3/2 = 9.7$

$Q_{100} = 46.6\left(\frac{9.2}{11.1}\right) = 38.6$
$38.6/2 = 19.3$

$T = 3.04\left(\frac{Q}{S_o^{1/2}}\right)^{0.375}$

$T = 3.04\left(\frac{9.7}{(0.02)^{1/2}}\right)^{0.375}$

$T = 14.8$

$T = 3.04\left(\frac{19.3}{(0.02)^{1/2}}\right)^{0.375}$

$T = 19.2$

$F_w = 16.4\left[(T-2)(S_x)\right]^{1/6}(S_o)^{1/2}$

$F_w = 16.4\left[(14.8-2)(0.02)\right]^{1/6}(0.02)^{1/2}$
$= 1.85$

$F_w = 16.4\left[(19.2-2)(0.02)\right]^{1/6}(0.02)^{1/2}$
$F_w = 1.94$

$L_1 = 2.49(S_x)^{0.3}(F_w)(T)$
$= 2.49(0.02)^{0.3}(1.85)(14.8)$
$= 21.1$

$L_1 = 2.49(0.02)^{0.3}(1.94)(19.2)$
$= 28.7$

$L_2 = 3.27(S_x)^{0.5}(F_w)(T)$
$= 3.27(0.02)^{0.5}(1.85)(14.8)$
$= 12.7$

$L_2 = 3.27(0.02)^{0.5}(1.94)(19.2)$
$= 17.2$

$L_3 = 1.65(1.85)(14.8)$
$= 45.2$

$L_3 = 1.65(1.94)(19.2)$
$= 61.5$

USE $L = 15'$

$L_i > L_2$

$Q_i/Q = \left(\frac{L_i}{L_3}\right)^{0.4}$

$Q_i = 9.7\left(\frac{15}{45.2}\right)^{0.4}$

$Q_i = 6.2$
$Q_{FB} = 3.5$
$(3.5)(2) + 3.9 = 10.9$ TOTAL FLOWBY

$L_i < L_2$

$Q_i/Q = \frac{L_i}{L_1}$

$Q_i = 19.3\left(\frac{15}{28.7}\right)$
$= 10.1$

$Q_{FB} = 9.2$
$(9.2)(2) + 8.0 = 26.4$

BASIN II

$Q_5 = 14.0$ $Q_{100} = 28.1$

ASSUME ALL FLOWS REACH SOUTH SIDE OF DREAM WEAVER DRIVE TO MATCH SLOPE OF AUSTIN BLUFFS PARKWAY

$S_x = 2\%$ $S_o = 3.3\%$

$T = 3.04 \left[\frac{14.0}{(0.03)^{1/2}}\right]^{0.375} = 15.8$

$F_w = 16.4 \left[(15.8-2)(0.02)\right]^{1/6} (0.03)^{1/2} = 2.29$

$L_1 = 2.49(0.02)^{0.3}(15.8)(2.29) = 27.9$

$L_2 = 3.27(0.02)^{0.5}(15.8)(2.29) = 16.7$

$L_3 = 1.65(15.8)(2.29) = 59.7$

$L_i = 15 < L_2$

$Q_i/Q = \left(\frac{L_i}{L_1}\right)$

$Q_i = 14.0\left(\frac{15}{27.9}\right) = 7.5$

$Q_{FB} = 6.5$

$T = 3.04 \left[\frac{28.1}{(0.03)^{1/2}}\right]^{0.375} = 20.5$

$F_w = 16.4 \left[(20.5-2)(0.02)\right]^{1/6} (0.03)^{1/2} = 2.41$

$L_1 = 2.49(0.02)^{0.3}(20.5)(2.41) = 38.0$

$L_2 = 3.27(0.02)^{0.5}(20.5)(2.41) = 22.8$

$L_3 = 1.65(20.5)(2.41) = 81.5$

$L_i = 15 < L_2$

$Q_i/Q = \frac{L_i}{L_1}$

$Q_i = 28.1\left(\frac{15}{38.0}\right) = 11.1$

$Q_{FB} = 17.0$

BASIN III

ASSUME 30% OF FLOWS FROM BASIN III REACH AUSTIN BLUFFS PARKWAY

$Q_5 = 18.3 \times 0.3 = 5.5$

$Q_{100} = 36.1 \times 0.3 = 10.8$

UNROUTED FLOWS WITHIN AUSTIN BLUFFS PARKWAY JUST NORTH OF DUBLIN BOULEVARD

	Q_5	Q_{100}
BASIN I FLOWBY	10.9	26.4
BASIN II FLOWBY	6.5	17.0
30% OF BASIN III	5.5	10.8
	22.9	54.2

STREET CAPACITY DREAM WEAVER TO DUBLIN BLVD

$S = 2.5\%$

$$Q_{5\,CAP} = 171.7(S)^{1/2} = 171.7(0.025)^{1/2} = 27.1 \quad \therefore \text{ OK}$$

$$Q_{100\,CAP} = 356.6(0.025)^{1/2} = 56.4 \quad \therefore \text{ OK}$$

INLET ... ON AUSTIN BLUFFS PARKWAY JUST NORTH OF DUBLIN

$Q_5 = 22.9$

$S = 2\%$

$T = 3.04\left[\left(\frac{22.9}{(0.02)^{1/2}}\right)\right]^{0.375}$

$= 20.5$

$F_w = 16.4\left[(20.5-2)(0.02)\right]^{1/6}(0.02)^{1/2}$

$= 1.96$

$L_1 = 2.49(0.02)^{0.3}(20.5)(1.96)$

$= 30.9$

$L_2 = 3.27(0.02)^{0.5}(20.5)(1.96)$

$= 18.6$

$L_3 = 1.65(1.96)(20.5)$

$= 66.3$

$L_i = 20 > L_2$

$Q_i = Q\left(\frac{L_i}{L_3}\right)^{0.4}$

$= 22.9\left(\frac{20}{66.3}\right)^{0.4}$

$Q_i = 14.2$

Q_{FB} 8.7

$Q_{100} = 54.2$

$T = 3.04\left[\frac{54.2}{(0.02)^{1/2}}\right]^{0.375}$

$= 28.3$

$F_w = 16.4\left[(28.3-2)(0.02)\right]^{1/6}(0.02)^{1/2}$

$= 2.08$

$L_1 = 2.49(0.02)^{0.3}(28.3)(2.08)$

$= 45.3$

$L_2 = 3.27(0.02)^{0.5}(28.3)(2.08)$

$= 27.22$

$L_3 = 1.65(2.08)(28.3)$

$= 97.1$

$L_i = 20 < L_2$

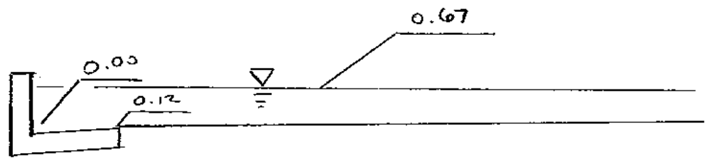
$Q_i = Q\left(\frac{L_i}{L_1}\right)$

$Q_i = 54.2\left(\frac{20}{45.3}\right)$

$Q_i = 23.9$

$Q_{FB} = 30.2$

100 YEAR STREET CAPACITY
AUSTIN BLUFFS PARKWAY



$$\frac{0.55}{0.02} = 27.5'$$

$$A = \tfrac{1}{2}(0.12)(2) + 2(0.55) + \tfrac{1}{2}(0.55)(27.5)$$
$$= 8.78$$

$$P = 27.5 + 2.0 + 0.67$$
$$P = 30.17$$

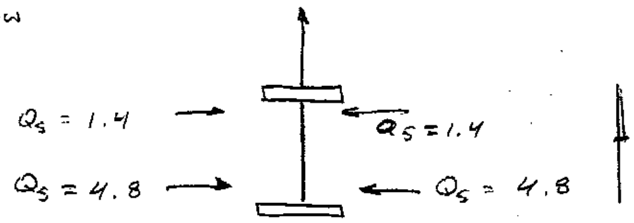
$$Q_{100CAP} = \frac{1.486}{0.016}(8.78)\left(\frac{8.78}{30.17}\right)^{0.67}(S)^{\frac{1}{2}}$$
$$= 356.6\ S^{\frac{1}{2}}$$

BASIN IV

SUMP INLET $\quad Q_5 = 12.4 \quad Q_{100} = 25.0$

ASSUME ½ OF FLOWS APPROACH INLET EACH DIRECTION. ASSUME MOST FLOW

<u>5 yr</u>



1.16 ACRES NORTH (23%)
3.87 ACRES SOUTH (77%)

APPROACH FLOWS

$$Q_5 = 0.56 \left(\frac{1}{n\ S_x}\right)(S_o)^{1/2}\, d^{8/3}$$

$$4.8 = 0.56 \left(\frac{1}{0.016(0.02)}\right)(0.002)^{1/2}(d)^{8/3}$$

$$0.061 = d^{8/3}$$

$$0.35 = d$$

$Q_5 = 9.6$ (SOUTH INLET)

$$Q_5 = 1.7\,(L_i + 1.8(w))(d_{max} + a)^{1.85} \qquad \text{(SOUTH SIDE)}$$

$$9.6 = 1.7\,(5 + 1.8(3))(d_{max} + a)^{1.85}$$

$$0.543 = (d_{max} + a)^{1.85}$$

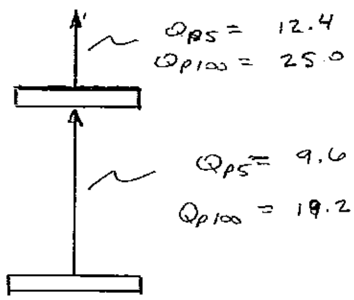
$$0.72 = d_{max} + a \qquad a = 0.33$$

$$0.39 = d_{max}$$

$$2.8 = 1.7\,(5 + 1.8(3))(d_{max} + a)^{1.85} \qquad \text{NORTH SIDE}$$

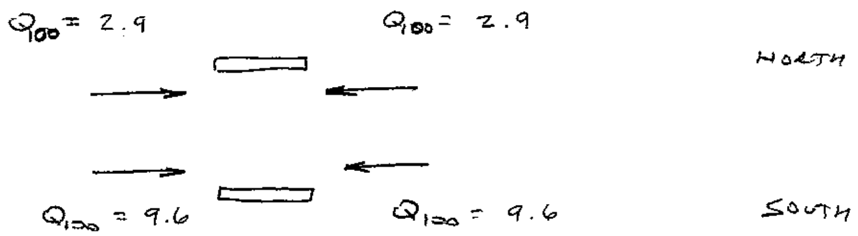
$$0.158 = (d_{max} + a)^{1.85}$$

$$0.37 = d_{max} + a$$



BASIN IV (CONT)

100 YEAR



APPROACH FLOWS

$$9.6 = 0.56 \left(\frac{1}{0.016\,(0.02)}\right)(0.002)^{1/2}\ d^{8/3}$$

$$0.122 = d^{8/3}$$

$$0.45 = d$$

$$19.2 = 1.7\,(5 + 1.8(3))(d_{max} + a)^{1.85} \qquad \text{(SOUTH SIDE)}$$

$$1.09 = (d_{max} + a)^{1.85}$$

$$1.04 = d_{max} + a \qquad \therefore \text{OK}$$

$$5.8 = 1.7\,(5 + 1.8(3))(d_{max} + a)^{1.85} \qquad \text{(NORTH SIDE)}$$

$$0.33 = (d_{max} + a)^{1.85}$$

$$0.55 = d_{max} + a$$

BASIN V

$Q_5 = 7.8$ $\qquad Q_{100} = 15.3$

AUSTIN BLUFFS PARKWAY @ 0.5 %

$Q_{5\,CAP} = 171.7\,(0.005)^{1/2}$
$= 12.1$

$Q_{100\,CAP} = 356.6\,(0.005)^{1/2}$
$= 25.2$

BASIN VI

$Q_5 = 34.1$ $\qquad Q_{100} = 67.9$

FLOWS @ BRIDGE PASS & PRAIRIE LANE INTERSECTION
(UPSTREAM OF PRAIRIE LANE AREA = 14.7

3.13 AC

$T_c = 9.1 + \frac{1200}{60(37)}$
14.5

$I_5 = 3.5$ $\qquad I_{100} = 6.0$

$Q_5 = (3.5)(0.60)(14.7)$ $\qquad Q_{100} = 6.0\,(0.70)(14.7)$
$Q_5 = 30.9$ $\qquad Q_{100} = 61.7$

1/2 ON EACH SIDE OF STREET

$Q_5 = \frac{30.9}{2} = 15.4$ $\qquad Q_{100} = \frac{61.7}{2} = 30.9$ ∴ OK

PLACE INLET ON PRAIRIE LANE (BASIN XI) TO COLLECT FLOWS PRIOR TO ENTERING BRIDGE PASS DRIVE

BASIN XI $Q_5 = 12.6$ $Q_{100} = 25.1$

ASSUME ALL FLOW GETS TO WEST SIDE OF PRAIRIE LANE FOR CROSS SLOPE TO MATCH BRIDLE PASS

$S_o = 2\%$
$S_x = 2\%$

$T_5 = 3.04 \left[\frac{12.6}{(0.02)^{1/2}}\right]^{0.375}$

$= 16.3$

$F_w = 16.4\left[(16.3-2)(0.02)\right]^{1/6}(0.02)^{1/2}$
$= 1.88$

$L_1 = 2.49(0.02)^{0.3}(16.3)(1.88)$
$= 23.6$

$L_2 = 3.27(0.02)^{0.5}(16.3)(1.88)$
$= 14.2$

$L_3 = 1.65(16.3)(1.88)$
$= 50.6$

$L_i = 15 > L_2$

$Q_i = Q\left(\frac{L_i}{L_3}\right)^{0.4}$

$= 12.6\left(\frac{15}{50.6}\right)^{0.4}$

$Q_i = 7.7$

$Q_{FB} = 4.9$ cfs

$T_{100} = 3.04\left[\frac{25.1}{(0.02)^{1/2}}\right]^{0.375}$

$= 21.2$

$F_w = 16.4\left[(21.2-2)(0.02)\right]^{1/6}(0.02)^{1/2}$
$= 1.98$

$L_1 = 2.49(0.02)^{0.3}(21.2)(1.98)$
$= 32.3$

$L_2 = 3.27(0.02)^{0.5}(21.2)(1.98)$
$= 19.4$

$L_3 = 1.65(21.2)(1.98)$
$= 69.3$

$L_i = 15 < L_L$

$Q_i = Q\left(\frac{L_i}{L_1}\right)$

$Q_i = 25.1\left(\frac{15}{32.3}\right)$

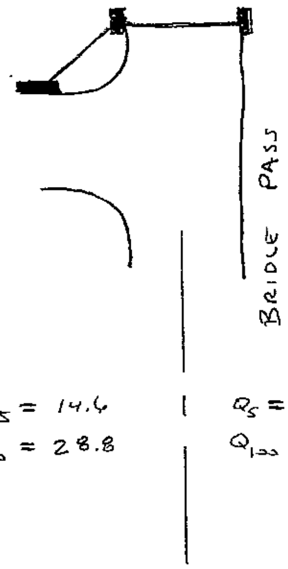
$Q_i = 11.7$

$Q_{FB} = 13.4$ cfs

DESIGN PT #2

$Q_5 = 44.8$ $Q_{100} = 88.7$

FLOWS @ INTERSECTION OF PRAIRIE LANE & BRIDLE PASS



4.79 ACRES
$Q_5 = 9.4$
$Q_{100} = 18.6$

$Q_5 = 14.6$ | $Q_5 = 14.6$
$Q_{100} = 28.8$ | $Q_{100} = 28.8$

ROUTED FLOWS

DP #2	TOTAL AREA =	22.62	
	BASIN XI	4.79	(21%)
	BASIN III (EAST)	14.70	(65%)
	BASIN VI (WEST)	3.13	(14%)

$S = 2/70 = 2.85\%$

PRAIRIE LANE INLET (ROUTED)

$Q_5 = 9.4$

$T = 3.04\left[\frac{9.4}{(0.02)^{1/2}}\right]^{0.375}$

$T_{100} = 14.7$

$F_w = 16.4\left[(14.7-2)(0.02)\right]^{1/6}(0.02)^{1/2}$
$= 1.84$

$L_1 = 2.49(0.02)^{0.3}(14.7)(1.84)$
$= 20.8$

$L_2 = 3.27(0.02)^{0.5}(14.7)(1.84)$
$L_2 = 12.5$

$L_3 = 1.65(14.7)(1.84)$
$= 44.6$

$L_i = 15 > L_2$

$Q_i = 9.4\left(\frac{15}{44.6}\right)^{0.4}$
$= 6.1$

$Q_{FB} = \overline{3.3}$

$Q_{100} = 18.6$

$T = 3.04\left[\left(\frac{18.6}{0.02}\right)^{1/2}\right]^{0.375}$

$T_{100} = 18.9$

$F_w = 16.4\left[(18.9-2)(0.02)\right]^{1/6}(0.02)^{1/2}$
$= 1.93$

$L_1 = 2.49(0.02)^{0.3}(18.9)(1.93)$
$= 28.1$

$L_2 = 3.27(0.02)^{0.5}(18.9)(1.93)$
$L_2 = 16.9$

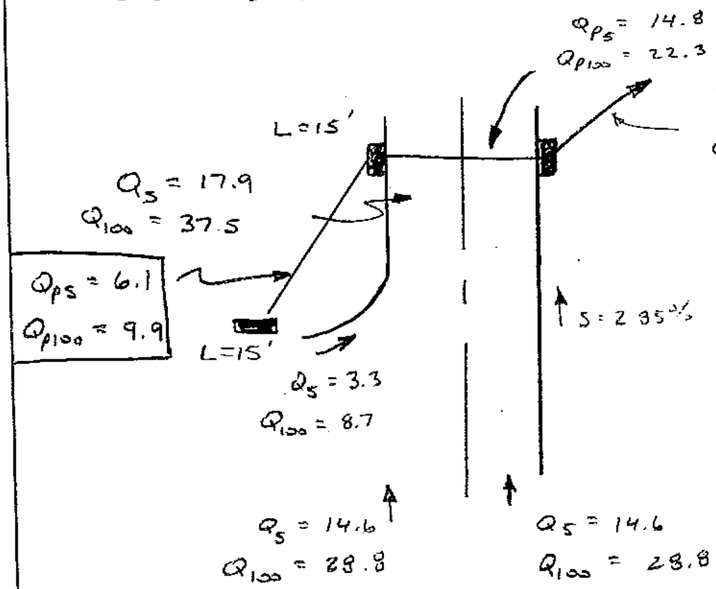
$L_3 = 1.65(18.9)(1.93)$
$= 60.2$

$L_i = 15 < 16.9$

$Q_i = 18.6\left(\frac{15}{28.1}\right)$
$= 9.9$

$Q_{FB} = \overline{8.7}$

JUST DOWNSTREAM OF PRAIRIE / BRIDLE PASS INTERSECTION



S = 2.85%

$$Q_{SCAP} = 112.6\,(0.0285)^{1/2} = 19.00 \text{ cfs / side}$$

$Q_S = 17.9$	$Q_S = 14.6$
$T_S = 3.04\left[\frac{17.9}{(0.0285)^{1/2}}\right]^{0.375}$	$T_S = 3.04\left[\frac{14.6}{(0.0285)^{1/2}}\right]^{0.375}$
$= 17.5$	$= 16.2$
$F_W = 16.4\left[(17.5-2)(0.02)\right]^{1/6}(0.0285)^{1/2}$	$F_W = 16.4\left[(16.2-2)(0.02)\right]^{1/6}(0.0285)^{1/2}$
$= 2.28$	$= 2.24$
$L_1 = 2.49(0.02)^{0.3}(17.5)(2.28)$	$L_1 = 2.49(0.02)^{0.3}(16.2)(2.24)$
$= 30.7$	$= 27.94$
$L_2 = 3.27(0.02)^{0.5}(17.5)(2.28)$	$L_2 = 3.27(0.02)^{0.5}(16.2)(2.24)$
$= 18.5$	$= 16.8$
$L_3 = 1.65(2.28)(17.5)$	$L_3 = 1.65(2.24)(16.2)$
$= 65.8$	$= 59.9$
$L_i = 15 < L_2$	$L_i = 15 < L_2$
$Q_i = Q\left(\frac{L_i}{L_1}\right) = 17.9\left(\frac{15}{30.7}\right) = 8.7$	$Q_i = 14.6\left(\frac{15}{27.94}\right) \approx 7.8$
$Q_{FB} = 9.2$	$Q_{FB} = 6.8$
$+\left(\frac{2.39}{22.62}\right)(44.8) = 4.7$	$+\left(\frac{0.74}{22.62}\right)(44.8) = 1.5$
13.9	8.3

$Q_{100} = 37.5$ $\qquad$ $Q_{100} = 28.8$

℄ WILL BE EXCEEDED ∴ $Q_{100} = 33.2$ cfs/SIDE

$$T = 3.04\left[\frac{33.2}{(0.0285)^{1/2}}\right]^{0.375}$$

$$= 22.0$$

$$F_w = 16.4\left[(22.0-2)(0.02)\right]^{1/6}(0.0285)^{1/2}$$
$$= 2.38$$

$$L_1 = 2.49\,(0.02)^{0.3}(22.0)(2.38)$$
$$= 40.3$$

$$L_2 = 3.27\,(0.02)^{0.5}(22.0)(2.38)$$
$$= 24.2$$

$$L_3 = 1.65\,(2.38)(22.0)$$
$$= 86.4$$

$$L_i = 15' < L_2$$

$$Q_i = 33.2\left(\frac{15}{40.3}\right)$$
$$= 12.4$$

Q_{FB} $\quad 20.8 \times 2 = 41.7$

$$+\left(\frac{3.13}{22.62}\right)(88.7) = 12.3$$

$$54.0$$

FLOW REACHING SUMP INLET @ DP#2 & 3

DP#3

WEST

$Q_5 = 13.5$ →
$Q_{100} = 26.7$

← $Q_5 = 8.3$ $\quad Q_{100} = 27.0$

$Q_5 = 13.5$
$Q_{100} = 26.7$ →

← $Q_5 = 13.9$ $\quad Q_{100} = 27.0$

EAST

SEE BASIN IX BELOW

BASIN VII & VIII

2.33 — BASIN VIII — $Q_5 = 5.8$ → ; $Q_{100} = 11.6$

1.31 — $Q_5 = 3.2$ → ; $Q_{100} = 6.5$

← $Q_5 = 8.4$; $Q_{100} = 17.1$ — WEST 3.60 ACRES — BASIN VII

← $Q_5 = 2.1$; $Q_{100} = 4.2$ — EAST 0.83

5 YR APPROACH

$$8.4 = 0.56 \left(\frac{1}{0.016\,(0.02)}\right)(0.002)^{1/2}\, d^{8/3}$$ 5 YR

$0.107 = d^{8/3}$

$0.43 = d$ $\therefore$ OK

$$8.4 + 5.8 = 1.7\,(8 + 1.8(3))(d_{max} + a)^{1.85}$$ WEST SIDE 5 YR

$0.623 = (d_{max} + a)^{1.85}$

$0.774 = d_{max} + a$

$0.44 = d_{max}$

$$2.1 + 3.2 = 1.7\,(6 + 1.8(3))(d_{max} + a)^{1.85}$$ EAST SIDE 5 YR

$0.273 = (d_{max} + a)^{1.85}$

$0.496 = d_{max} + a$

$$17.1 = 0.56 \left(\frac{1}{(0.016)(0.02)}\right)(0.002)^{1/2}\, d^{8/3}$$ 100 YR

$0.22 = d^{8/3}$

$0.57 = d$ $\therefore$ OK

$Q_{100} = 39.4/2 = 19.7$ cfs/SIDE

$$19.7 = 1.7\,(8 + 1.8(3))(d_{max} + a)^{1.85}$$

$0.86 = (d_{max} + a)^{1.85}$

$0.92 = d_{max} + a$

$$19.7 = 1.7\,(6 + 1.8(3))(d_{max} + a)^{1.85}$$

$1.02 = (d_{max} + a)^{1.85}$

$1.01 = d_{max} + a$

BASIN IX

Q_5 = 15.0 Q_{100} = 30.5

MIN STREET SLOPE = 3%

$Q_{5CAP} = 112.6 \cdot (S)^{1/2}$
$= 112.6\,(0.03)^{1/2}$
$= 19.5$ /SIDE RAMP CURB ∴ OK

ADD BASIN X FLOWS

TOTAL FLOWS @ DP #3

Q_5 = 27.0 Q_{100} = 53.4

TOTAL AREA = 12.50

2.11 ACRES DRAIN TO SOUTH SIDE BRIDLE PASS (17%)
10.39 ACRES DRAINS TO NORTH SIDE BRIDLE PASS (83%)

SOUTH
Q_5 = 4.6
Q_{100} = 9.1

NORTH
Q_5 = 22.4 STREET CAPACITY IS EXCEEDED BY 2.9 cfs
Q_{100} = 44.3

INSTALL 8" VERTICAL CURB AND GUTTER ON BOTH SIDES OF BRIDLE PASS DRIVE FROM CABIN CREEK DRIVE TO DESIGN PT 2 & 3.

$Q_5 = 170.2\,S^{1/2}$
$= 170.2\,(0.03)^{1/2}$
$= 29.5$ cfs/SIDE

DP # 3

$Q_5 = 13.5$ →
$Q_{100} = 26.7$

DP # 2

WEST

← $Q_5 = 8.3$ $Q_{100} = 27.0$

$Q_5 = 13.5$ →
$Q_{100} = 26.7$

← $Q_5 = 13.9$ $Q_{100} = 27.0$

EAST

5 YR APPROACH

$$13.9 = 0.56 \left(\frac{1}{0.016(0.02)}\right)(0.002)^{1/2} d^{8/3}$$
$$0.177 = d^{8/3}$$
$$0.52 = d \qquad \therefore \text{OK}$$

$$13.5 + 13.9 = 1.7\left(20 + 1.8(3)\right)(d_{max} + a)^{1.85}$$
$$0.634 = (d_{max} + a)^{1.85}$$
$$0.78 = d_{max} + a$$
$$0.45 = d_{max}$$

100 YR APPROACH

$$27.0 = 0.56\left(\frac{1}{(0.016)(0.02)}\right)(0.002)^{1/2} d^{8/3}$$
$$0.345 = d^{8/3}$$
$$0.67 = d \qquad \therefore \text{OK}$$

$$26.7 + 27.0 = 1.7\left(20 + 1.8(3)\right)(d_{max} + a)^{1.85}$$
$$1.24 = (d_{max} + a)^{1.85}$$
$$1.12 = d_{max} + a$$
$$0.79 = d_{max} \qquad \therefore \text{OK}$$

BASIN XII

$Q_5 = 9.3$ $\qquad$ $Q_{100} = 19.0$

SLOPE OF AUSTIN BLUFFS PARKWAY = 1%

$Q_{5\,CAP} = 171.7(0.01)^{1/2}$
$= 17.2$

$Q_{100\,CAP} = 356.6(0.01)^{1/2}$
$= 35.7$

FUTURE DUBLIN BOULEVARD IS SUPERELEVATED TOWARD MEDIAN

$Q_5 = 9.3$

$T = 3.04\left[\frac{9.3}{(0.01)^{1/2}}\right]^{0.375}$

$= 16.6$

$F_w = 16.4\left[(16.6-2)(0.02)\right]^{1/6}(0.01)^{1/2}$
$= 1.34$

$L_1 = 2.49(0.02)^{0.3}(16.6)(1.34)$
$= 17.1$

$L_2 = 3.27(0.02)^{0.5}(16.6)(1.34)$
$= 10.3$

$L_3 = 1.65(16.6)(1.34)$
$= 36.7$

$L_i = 10' < L_2$

$Q_i = 9.3\left(\frac{10}{17.1}\right)$
$= 5.4$

$Q_{FB} = 3.9$

$Q_{100} = 19.0$

$T = 3.04\left[\frac{19.0}{(0.01)^{1/2}}\right]^{0.375}$

$T = 21.7$

$F_w = 16.4\left[(21.7-2)(0.02)\right]^{1/6}(0.01)^{1/2}$
$= 1.40$

$L_1 = 2.49(0.02)^{0.3}(21.7)(1.40)$
$L_1 = 23.4$

$L_2 = 3.27(0.02)^{0.5}(21.7)(1.40)$
$= 14.0$

$L_3 = 1.65(21.7)(1.40)$
$= 50.1$

$L_i = 10 < L_2$

$Q_i = 19\left(\frac{10}{23.4}\right)$
$= 8.1$

$Q_{FB} = 10.9$

DP # 4

$Q_5 = 18.6$ $Q_{100} = 36.5$

SUMP INLET @ CUL-DE-SAC OF MANY MOON DRIVE

ASSUME ALL FLOWS APPROACH INLET FROM ONE SIDE

5 YR APPROACH FLOW

$$18.6 = 0.56\left(\frac{1}{0.016(0.02)}\right)(0.002)^{1/2} d^{8/3}$$
$$0.238 = d^{8/3}$$
$$0.58 = d$$

APPROACH SLOPE SHOULD BE HELD TO 0.5 %
AROUND CUL-DE-SAC

$$18.6 = 0.56\left(\frac{1}{(0.016)(0.02)}\right)(S)^{1/2}(0.5)^{8/3}$$

$$S_{min} = 0.455\%$$

TRY $L_i = 10'$
$$18.6 = 1.7\,(10 + 1.8(3))(d_{max} + a)^{1.85}$$
$$0.719 = (d_{max} + a)^{1.85}$$
$$0.83 = d_{max} + a$$
$$0.50 = d_{max}$$

100 YR. APPROACH

$$36.5 = 0.56\left(\frac{1}{(0.016)(0.02)}\right)(0.002)^{1/2} d^{8/3}$$
$$0.466 = d^{8/3}$$
$$0.75 = d$$

$$36.5 = 1.7\,(10 + 1.8(3))(d_{max} + a)^{1.85}$$
$$1.39 = (d_{max} + a)^{1.85}$$
$$1.20 = d_{max} + a$$
$$0.87 = d_{max}$$

DP #5

$Q_5 = 13.0$ $Q_{100} = 25.7$

SUMP INLET AT CUL-DE-SAC OF GINGER COVE PLACE

WORSE CASE - ASSUME ALL FLOWS APPROACH INLET FROM ONE SIDE

5 YR APPROACH

$$13.0 = 0.56 \left(\frac{1}{(0.016)(0.02)}\right)(0.002)^{1/2} d^{8/3}$$
$$0.166 = d^{8/3}$$
$$0.51 = d$$

TRY $L_i = 8'$

$$13.0 = 1.7\,(8 + 1.8\,(3))(d_{max} + a)^{1.85}$$
$$0.57 = (d_{max} + a)^{1.85}$$
$$0.74 = d_{max} + a$$
$$0.41 = d_{max}$$

100 YR APPROACH

$$25.7 = 0.56 \left(\frac{1}{(0.016)(0.02)}\right)(0.002)^{1/2} d^{8/3}$$
$$0.328 = d^{8/3}$$
$$0.66 = d$$

$$25.7 = 1.7\,(8 + 1.8\,(3))(d_{max} + a)^{1.85}$$
$$1.13 = (d_{max} + a)^{1.85}$$
$$1.07 = d_{max} + a$$
$$0.74 = d_{max}$$

BASIN XV

$Q_5 = 7.3$ $Q_{100} = 14.4$

SUMP INLET AT THE CUL-DE-SAC OF STANDING ROCK PL

WORSE CASE - ASSUME ALL FLOWS APPROACH INLET FROM ONE SIDE

5 YR APPROACH

$$7.3 = 0.56 \left(\frac{1}{(0.016)(0.02)}\right)(0.002)^{1/2} d^{8/3}$$
$$0.093 = d^{8/3}$$
$$0.41 = d$$

TRY $L_i = 6'$

$$7.3 = 1.7\,(4 + 1.8(3))(d_{max} + a)^{1.85}$$
$$0.457 = (d_{max} + a)^{1.85}$$
$$0.655 = d_{max} + a$$
$$0.33 = d_{max}$$

100 YR APPROACH O.K. PER PREVIOUS CALCULATIONS

$$14.4 = 1.7\,(4 + 1.8\,(3))(d_{max} + a)^{1.85}$$
$$0.901 = (d_{max} + a)^{1.85}$$
$$0.945 = d_{max} + a$$
$$0.615 = d_{max}$$

BASIN XIX

$Q_5 = 3.0$ $Q_{100} = 5.9$

SUMP INLET @ END OF RED DESERT PLACE

MINIMUM INLET LENGTH IS 4' ∴ USE 4' INLET
BASED ON BASIN XV CALCULATIONS

BASIN XXI

$Q_5 = 19.1$ $Q_{100} = 39.5$

DUBLIN CAPACITY
$S = 5\%$

$Q_{5CAP} = 171.7\ S^{1/2}$
$= 171.7\ (0.05)^{1/2}$
$= 38.4$

$Q_{100CAP} = 356.6\ S^{1/2}$
$= 356.6\ (0.05)^{1/2}$
$= 79.7$

∴ OK TO INTERSECTION OF GINGER GOVE & DUBLIN

$Q_5 = 19.1 + 3.5$
$= 22.6$

$Q_{100} = 39.5 + 8.7$
$= 48.2$

Q_{5CAP} @ 2% = 24.3

Q_{100CAP} @ 2% = 50.4

∴ INLETS ARE NOT REQUIRED UNTIL THE LOW POINT IN DUBLIN BOULEVARD