DRAINAGE REPORT FOR
TRACT B-8
SUBDIVISION AT SEVEN BAR NORTH

APRIL 10, 1998

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I. INTRODUCTION

This report summarizes the revisions made to a previously submitted and approved Drainage Report. The previous report, "Revised Drainage Report for Tracts B-7, B-8, and B-9 Subdivision at Seven Bar North," dated June 1995 is in City A-13/D-7 file. These revisions are an increased lot count in Tract B-8 only from 53 lots in the June 1995 report to 58 lots in this revised report. Streets have remained essentially identical in layout between the two reports. We have included pertinent maps and plans from the 1995 report for your convenience and comparison.

A13/D7e

II. PURPOSE

The purpose of this report is to obtain approval for the revised preliminary and final plat, grading plan, building permit, and work order for Tract B-8. Development of Tract B-8 will occur in one phase, to be called "Catamount at Seven Bar North."

The preliminary plat and grading plan is anticipated to be heard at DRB on May 5, 1998. For clarity's and reduced paperwork's sake, we have not attempted to revise and resubmit the bulky previous report, but instead are submitting this report as an "addendum" that provides new calculations and materials only in areas where drainage conditions have changed.

III. HYDROLOGIC/HYDRAULIC COMPARISON BETWEEN REPORTS

All information pertaining to "Tract B-8" in the June 1995 report remains essentially unchanged except for lot density. It has changed from 3.56 to 3.89 dwelling units per acre. An analysis of impervious area was performed to compare the actual difference of the two fully developed conditions. The results show a negligible increase of only 0.3 cfs over the entire site in the 100-year, 6-hour storm event. Accordingly, there is no need to revise the vast majority of the storm drain/street drainage system calculations of the previous report. The results of the analysis are in the Appendix in a spreadsheet format.

As previously mentioned, we have enclosed plans and plats from the June 1995 and March 1998 reports in the Appendix for comparison and reference. The developed storm drainage system proposed and approved in the June 1995 report has not changed. The horizontal and vertical alignments of the residential streets have not changed except for the minor extension of the cul-de-sac road (which continues its previous slope of 8%). Essentially, we have moved lot lines and added five lots to the site. Due to the revised lot configuration, the majority of the pads have changed elevation only +/- one foot. We still incorporate split level pads and backyard ponds at some lots. Calculations for the backyard ponds are included in Appendix B.

Please refer to Plate 3, Proposed Subdivision Site Grading and Drainage Plan (March 1998). Tie slopes will be kept to a 3:1 maximum. The runoff from the east boundary (Tract B-9) will sheet flow to an existing pond near Sierrita Road as described in the 1995 report. Runoff from the northern boundary tie slope, north of Westside Boulevard's temporary asphalt curb, is confined within the Westside Boulevard right-of-way and conveyed via an earthen channel to an existing beehive covered manhole. The runoff from Westside Boulevard's asphalt is conveyed by the south curb and gutter to an existing pair of inlets located just east of the Westside Boulevard and Seven Bar Loop Road intersection.

IV. CONCLUSION

In conclusion, the increase in lot density and revised pad elevations has a negligible impact on the hydrological and hydraulic calculations on the previously approved drainage plan. Therefore, we recommend that this revised plan be approved for revised preliminary and final plat, grading plan, building permit and work order for Tract B-8.

HYDROLOGIC DATA-SEVEN BAR NORTH TRACT 8
JUNE, 1995

PEAK DISCHARGE, CFS/ACRE

EVENT	A	B	C	D
100-YR (1)	1.29	2.03	2.87	4.37
10-YR (2)	0.24	0.76	1.49	2.89
3	0.44	0.67	0.99	1.97
4	0	0.22	0.44	1.24
2	0.24	0.76	1.49	2.89

FULLY DEVELOPED CONDITIONS:

SUMMARY OF HYDROLOGIC DATA

RATIONAL METHOD

BASIN ID	AREA AC	AREA SQ.MI.	% LAND TREATMENT A	B	C	D	TIME TO PEAK	10-YR DISCHARGE CFS/AC	Q(10YR) CFS	COMPOSITE C	I (IN/HR)	Q(100YR) (CFS)
8A	3.756	0.0059	3.2	20.4	20.4	55.9	0.1333	2.08	7.8	0.74	4.70	13.1
8B	3.832	0.0060	2.4	27.2	27.2	43.3	0.1333	1.87	7.2	0.69	4.70	12.5
8C	3.768	0.0059	2.7	24.2	24.2	48.9	0.1333	1.96	7.4	0.71	4.70	12.6
8D	2.560	0.0040	5.0	12.8	12.8	69.4	0.1333	2.31	5.9	0.79	4.70	9.5
8E	1.698	0.0027	2.7	22.2	22.2	52.9	0.1333	2.04	3.5	0.73	4.70	5.8
SUMS	***15.6***											***53.5***

HYDROLOGIC DATA-SEVEN BAR NORTH TRACT 8
JUNE, 1995

IMPERVIOUS AREA DATA

	LOT WIDTH	(IN FEET)	50	55	60	65	70	75	80	
	PAD WIDTH		40	45	50	55	60	65	70	
	PAD DEPTH		65	65	65	65	65	65	65	
	DRIVEWAY	(20'x20')	400	400	400	400	400	400	400	
(INCLUDED WITH ROAD)	WALKWAY	(4' WIDE)	200	220	240	260	280	300	320	
(NOT INCLUDED WITH BACKYARD PONDING)	PATIO	(10'x10')	100	100	100	100	100	100	100	
	TOTAL IMPERVIOUS		3300	3645	3990	4335	4680	5025	5370	
			sq.ft/lot	sq.ft/lot	sq.ft/lot	sq.ft/lot	sq.ft/lot	sq.ft/lot	sq.ft/lot	

ROADWAY CALCULATIONS

ROADWAY	TYPE 1	TYPE 2	TYPE 3	TYPE 4	CUL 1 a
F-F WIDTH	28	51	26	0	
SIDEWALK	4	4	4	0	0
RADIUS					40
	36 sq.ft/ft	59 sq.ft/ft	34 sq.ft/ft	0 sq.ft/ft	5027 sq.ft

CALCULATIONS

Q(100YR) (CFS)	BASIN ID	AREA TYPE D AC	PERCENT TYPE D	TOTAL NUMBER OF LOTS PER BASIN 50'	55'	60'	65'	70'	75'	80'	
13.1	8A	2.10	55.9	0	0	0	0	2	8	3	
12.5	8B	1.66	43.3	0	0	0	1	6	3	0	
12.6	8C	1.84	48.9	0	0	0	2	3	3	3	
9.5	8D	1.78	69.4	0	0	0	6	3	3	2	
5.8	8E	0.90	52.9	0	0	0	0	1	2	2	Total Lots
53.5				0	0	0	9	15	19	10	***53***

TOTAL LENGTH ROADWAY PER BASIN TYPE 1	TYPE 2	TYPE 3	TYPE 4	NUMBER OF CUL-DE-SACS PER BASIN
600	61	0	0	0.13
639	0	0	0	0.34
644	0	0	0	0.64
182	0	0	0	1.00
362	0	0	0	0.13

HYDROLOGIC DATA-SEVEN BAR NORTH TRACT 8
MARCH, 1998

PEAK DISCHARGE, CFS/ACRE

EVENT	A	B	C	D
100-YR (1)	1.29	2.03	2.87	4.37
10-YR (2)	0.24	0.76	1.49	2.89
3	0.44	0.67	0.99	1.97
4	0	0.22	0.44	1.24
2	0.24	0.76	1.49	2.89

FULLY DEVELOPED CONDITIONS:

SUMMARY OF HYDROLOGIC DATA										RATIONAL METHOD		
BASIN ID	AREA AC	AREA SQ.MI.	% LAND TREATMENT A	B	C	D	TIME TO PEAK	10-YR DISCHARGE CFS/AC	Q(10YR) CFS	COMPOSITE C	I (IN/HR)	Q(100YR) (CFS)
8A	3.756	0.0059	3.4	20.7	20.7	55.2	0.1333	2.07	7.8	0.74	4.70	13.0
8B	3.832	0.0060	2.6	26.7	26.7	44.0	0.1333	1.88	7.2	0.69	4.70	12.5
8C	3.768	0.0059	2.9	24.1	24.1	48.8	0.1333	1.96	7.4	0.71	4.70	12.6
8D	2.560	0.0040	5.4	10.2	10.2	74.3	0.1333	2.39	6.1	0.81	4.70	9.8
8E	1.698	0.0027	3.2	20.1	20.1	56.5	0.1333	2.09	3.6	0.74	4.70	5.9
SUMS	***15.6***											***53.8***

HYDROLOGIC DATA-SEVEN BAR NORTH TRACT 8
MARCH, 1998

IMPERVIOUS AREA DATA

	LOT WIDTH	(IN FEET)	50	55	60	65	70	75	80	
	PAD WIDTH		40	45	50	55	60	65	70	
	PAD DEPTH		65	65	65	65	65	65	65	
	DRIVEWAY	(20'x20')	400	400	400	400	400	400	400	
(INCLUDED WITH ROAD)	WALKWAY	(4' WIDE)	200	220	240	260	280	300	320	
(NOT INCLUDED WITH BACKYARD PONDING)	PATIO	(10'x10')	100	100	100	100	100	100	100	
	TOTAL IMPERVIOUS		3300	3645	3990	4335	4680	5025	5370	
			sq.ft/lot	sq.ft/lot	sq.ft/lot	sq.ft/lot	sq.ft/lot	sq.ft/lot	sq.ft/lot	

ROADWAY CALCULATIONS

ROADWAY	TYPE 1	TYPE 2	TYPE 3	TYPE 4	CUL 1
F-F WIDTH	28	51	26	0	
SIDEWALK	4	4	4	0	0
RADIUS					40
	36	59	34	0	5027
	sq.ft/ft	sq.ft/ft	sq.ft/ft	sq.ft/ft	sq.ft

CALCULATIONS

Q(100YR) (CFS)	BASIN ID	AREA TYPE D AC	PERCENT TYPE D	TOTAL NUMBER OF 50' LOTS PER BASIN	55'	60'	65'	70'	75'	80'		TOTAL LENGTH TYPE 1 ROADWAY PER BASIN	TYPE 2	TYPE 3	TYPE 4	NUMBER OF CUL-DE-SACS PER BASIN
13.0	8A	2.07	55.2	0	0	0	6	5	3	0		600	61	0	0	0.13
12.5	8B	1.69	44.0	0	0	0	8	3	0	0		639	0	0	0	0.34
12.6	8C	1.84	48.8	0	0	0	7	5	0	0		644	0	0	0	0.64
9.8	8D	1.90	74.3	0	0	0	4	10	1	0		0	0	255	0	1.00
5.9	8E	0.96	56.5	0	0	0	2	2	2	0	Total Lots	362	0	0	0	0.13
53.8				0	0	0	27	25	6	0	***58***					

BACKYARD PONDS

ASSUMING: (50% treatment "B" and 50% treatment "C") X (Backyard Area) + (100 sf X Treatment "D")
for 10 day, 100 year volumes

$$V(10) = \frac{V(360) + Ad*(P(10) - P(360))}{12 \text{ in/ft}}$$

Where: E is the weighted excess percipitation
A is the area in each treatment type

eq. a-7 DPM

E for treatment "B" and "C" portions:

$$E = \frac{EaAa+EbAb+EcAc+EdAd}{Aa+Ab+Ac+Ad}$$

eq. a-5 DPM

Given: Ea = n/a, Eb = 0.67, Ec = 0.99, Ed = 1.97

P10 = 3.67
P360 = 2.20

$$E = \frac{[.67+.99]}{2*(12)} = 0.069 \text{ ft}$$

(converts inches to feet)

V(10) = [(X BACKYARD AREA -100 sf) x E] + 100 sf* [(1.97) + (3.67-2.20)]/12] eq. a-9 DPM

CATAMOUNT AT SEVEN BAR NORTH

LOT # UNIT B-7	BACKYARD AREA (SQ. FT.)	REQUIRED V (10) (CU. FT.)	POND DIMENSION (FT.) *(AVG. WIDTHS)* L	W1	W2	D	POND VOLUME (CU. FT.)	C	I	Q(10) CFS
23	7400	539	41	28	25	0.5	543	0.52	4.7	0.42
31	3020	237	29	18	15	0.5	239	0.52	4.7	0.17
32	2250	184	35	12	9	0.5	184	0.52	4.7	0.13
40	1160	109	26	10	7	0.5	111	0.52	4.7	0.07
41	1040	100	24	10	7	0.5	102	0.52	4.7	0.06
48	4960	371	38	21	18	0.5	371	0.52	4.7	0.28
(triangular pond 3:1 slope)			L1	L2	L3	D				
54	7090	518	36	36	51	1.0	596	0.52	4.7	0.40
55	3120	244	34	16	13	0.5	247	0.52	4.7	0.18
56	4245	322	35	20	17	0.5	324	0.52	4.7	0.24
57	3720	285	35	18	15	0.5	289	0.52	4.7	0.21

TOTAL = 2.13