

DRAINAGE REPORT
for
CRYSTAL RIDGE SUBDIVISION

Prepared for
Brown / NZ Joint Venture
3411 Candelaria NE
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July 1997



PURPOSE

The purpose of this report is to present the Drainage Management Plan for the proposed 133 lot residential subdivision presented herein. This report is submitted for Final Plat and Work Order approvals. This site was previously masterplanned as future units of Hunter's Run (L21/D7).

EXISTING CONDITIONS

Tract A, Hunter's Run Subdivision, Unit I, comprising an area of 27.31 Ac. is currently undeveloped. The area is bounded by a residential subdivision, Hunter's Run, Unit I, on the east, by the Calabacillas Arroyo on the south, by undeveloped land zoned for apartments on the west and by Seven Bar Loop Road on the north.

The site is comprised of sandy soils with poor vegetation cover and steep slopes ranging from 4% to 24%. Current on-site runoff flows to an existing sedimentation pond constructed at the west end of Hunter's Run, Unit I, then discharges to the storm drain constructed with Unit I. Off-site flows have no impact on this site.

PROPOSED MANAGEMENT PLAN

Crystal Ridge is to be constructed into a 133 lot residential subdivision in 3 phases. The drainage scheme is to collect runoff in the streets for conveyance to an existing 60 inch storm drain constructed in Loren Ave during development of Hunter's Run, Phase I. The storm drain outfall is at the Calabacillas. Per the attached calculations, it is shown that the runoff from this project, 81 cfs, is slightly below the masterplan value of 90.11 cfs. This decrease is due to the fact that Phase 3 of this project has a lower density and we are proposing to utilize rear yard ponds for 8 of the lots in Phase 3. *30" 3 or 4 phases. 113-08*

2 rear yard ponds, ok they do add it in
As shown in the calculation portion of this report, the rear yard ponds are sized for twice the 100 year - 6 hour storm. Per the note on the Grading Plan, the roofs on these lots will have to drain to the street in front.

The remainder of the lots in the project will drain to the side lot lines then to the streets. The plan reflects that there will be 10' Private Drainage Easements on all side lot lines. The Grading Plan also indicates this condition on the Typical Lot Layout.

Street capacities have been verified, including the potential for hydraulic jumps. Flows are confined to the streets utilizing mountable and 8" standard curbs. We are proposing to place 2 Type "A" inlets between Phase I of Hunter's Ridge and Phase I of this project since there will be a grade change with a potential for highly unstable flow. The Hunter's Run Masterplan required that 13 cfs be pulled from the street, which these inlets will accomplish.

INTERIM EROSION CONTROL

The erosion control plan calls for 1.50' deep depressions behind the sidewalk outside the right-of-way to prevent runoff from reaching the streets until home construction. We opted for depressions vs. berms so that the home builder has a place to put excess foundation excavations. *? Is this allowed?*

CONCLUSIONS

This report has shown that this project can easily handle storm waters while conforming to the Hunter's Run Drainage Management Plan.



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT CRYSTAL RIDGE
SUBJECT DRAINAGE
BY MG DATE 7/14/97
CHECKED _____ DATE _____
SHEET 1 OF _____

This project entails development of an currently undeveloped 27.31 Ac. parcel into a 133 lot residential subdivision.

This parcel was part of a previously (1994) masterplanned subdivision titled Hunters Run. This parcel was called Phases II & III. Phase I has been constructed and accepted.

Per the attached "Drainage Map" from the approved "Hunters Run" DMP, the outfall from the project was designed for 113 cfs with 25 cfs coming from Unit I. The remaining 88 cfs was allocated to Units II & III. We will verify those flows with this project.

ON-SITE

The entire site will drain to the existing Storm Drain in Loren, but we will break site into 4 basins so as to check street capacities.

Precipitation Event 1 $P_1 = 1.87$ $P_6 = 2.20$ $P_{24} = 2.66$

Table 2.
CALCULATED FLOW FOR EACH SUBBASIN
UNDER BASIN 1 & 2

BASIN	AREA Ac	% AREA	Qp (CFS) 100 - YR	Qp (CFS) 10 - YR
1	9.8892	100.00	31.34	17.42
SUBBASIN				
1-1	3.7590	38.01	11.91	6.62
1-2	3.3745	34.12	10.69	5.94
1-3	2.7557	27.87	8.73	4.85
BASIN				
2	31.9579	100.00	106.42	61.28
SUBBASIN				
2-1	1.8086	5.66	6.02	3.47
2-2	4.2061	13.16	14.01	8.07
2-3	4.1664	13.04	13.87	7.99
2-4	2.8457	8.90	9.48	5.46
2-5	2.4117	7.55	8.03	4.62
2-6	2.9240	9.15	9.74	5.61
2-7	2.8437	8.90	9.47	5.45
2-8	1.8274	5.72	6.09	3.50
2-9	3.7834	11.84	12.60	7.25
2-10	5.1409	16.09	17.12	9.86

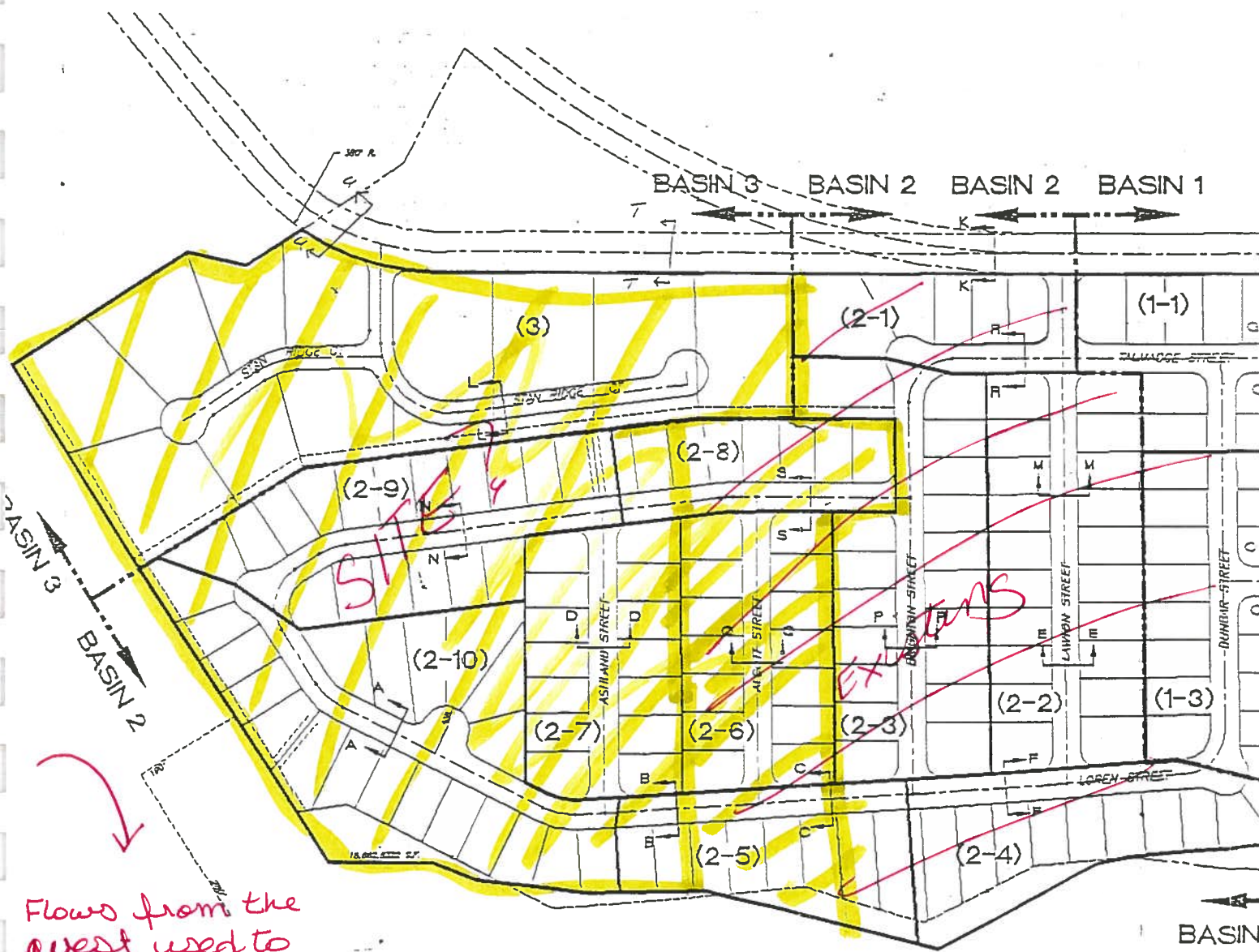
Area allocated to SD w/ this project. $Q = 43.33$
(See following sheets for Subbasin Layout)
See following sheets for subbasin Layout

*The existing storm drain system was designed to accept 49.75 cfs. As a result of development to the west, these places are no longer a consideration.
Hunters Run Report

$$Q_{ALL} = \sum (Q_{2-5} \text{ thru } Q_{2-10}) + Q_3 + OS$$

$$(4.62 + 5.61 + 5.45 + 3.50 + 7.25 + 9.86) + 27.07 + 49.75$$

$$Q_{ALL} = 113.11 \text{ cfs}$$



Flows from the west used to enter this site.

FIGURE 3

Development to the west has eliminated the 49.75 cfs

of off-site flow. The storm drain that this subdivision drains to was designed to handle this off-site flow. Q_{Au} = See pg 3 (previous page)



Land Treatments

Areas 1, 2 & 3 :

Treatment A = 0

Treatment B = 41%

Treatment C = 11%

Treatment D = 48% (1400[#] Pad on 5000[#] lot)

Area 4 :

Treatment A =

Treatment B = 54%

Treatment C = 11%

Treatment D = (1800[#] Pad on 10,000[#] lot) = 36%

Per the Attached AHVMO:

D.A. 1 = 22.60 cfs

D.A. 2 = 15.35 cfs

D.A. 3 = 18.87 cfs

D.A. 4 = 23.77 cfs

Rear Ponds = $\frac{.41}{.81}$ IS: 88 ✓

Primary difference lies in fact that Unit 3 of this project will utilize some rear lot ponding.



Need to chk. Street Capacities:

Per the following Calc's, street capacities
incl. potential for hydraulic jumps are
o.k. Curb Heights will be:

La Canada - mountable curb - $d = 0.54'$

La Canada (S. of Ridge Runner) - std. curb - $d = 0.66'$

Ridge Runner - mountable curb - $0.54'$

Barrett (E. of La Canada) - std. curb - $0.77'$

Loren (W. of Amatista) - mountable curb - $0.48'$

Loren (E. of Amatista) - std. curb - $0.72'$

Amatista - mountable curb - $0.36'$

CUARZO - mountable curb - $0.30'$

* Due to A significant Grade Change on
Loren where unit 2 matches up with unit 1,
we will place Z-Type A inlets where SD
was stubbed out.

----- 32-FT F-F, 8" CURB STREET SECTION -----

----- STREET CAPACITY BASED ON 100-YR STORM -----

FLOW	SLOPE	Dn	Vn	D*V	Fr	E	D2
CFS	FT/FT	FT	FT/S	FT ² /S		FT	FT

37.95	.03090	.457	5.461	2.495	1.424	.920	.719
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----- END OF THE OUTPUT FILE -----

REAR YARD PONDS

AHYMO Results

VOLUME_{PEAK} = 0.011 Acre-Feet

STORAGE TO BE PROVIDED IN REAR YARD PONDS

VOLUME_{REQD} = 0.022 Acre-Feet

ELEV.	LENGTH	WIDTH	AREA (ft ²)	VOLUME (ft ³)	STORAGE AC. FT
100.00	32	27	864.00		
				957	0.0219697
101.00	35	30	1050.00		