HYDROLOGY

F14/D3

CHAMISA ADDN.

F14-D3

1 PLAN

Drainage File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 14, 1978

Glenn A. Sears, PE
Construction Consultant
1043 Columbia N.E.
Albuquerque, New Mexico

RE: Chamisa Addition

Dear Mr. Sears:

I am in substantial agreement with the method of handling the runoff from the above referenced addition. The development plans for this property will have to indicate the location, dimensions and depth of the back yard ponds. The only reservation that I have is with the private street and the driveways. The compaction resulting from the traffic would not allow any inflitration as it is assumed in the drainage report. As a consequence ponding requirements will be higher than what is reported. Please review these estimates and submit the revised figures together with the construction plans.

Very truly yours,

Bruno Conegliano

Bruno Conegliano
Asst. City Engineer-Hydrology

BC/gm

cc; V.M. Kimmick
Drainage file

GLENN A. SEARS, PE
Construction Consultant
1043 Columbia NE
Albuquerque, New Mexico 87106
277-2702
4423

DRAINAGE REPORT

for

CHAMISA ADDITION

March 1978

Glenn A. Sears
P. E. No. 6362
New Mexico

DRAINAGE REPORT

For

CHAMISA ADDITION

PURPOSE

This report determines the point rainfall to be expected in a 100 year storm, falling on the Chamisa Subdivision under the developed conditions. Guidelines are established for impounding all of the expected rainfall.

LOCATION AND DESCRIPTION

Chamisa Addition is located on 9th Street N.W. about 400 feet south of Montano. The land measures approximately 200 feet by 200 feet and has approximately 0.5 feet change in elevation. The existing ground is approximately 1.0 feet higher than 9th Street on the east and Juanita Lane on the south.

The proposed development is R-1 with six dwellings.

HYDROLOGY AND DRAINAGE

Point rainfall quantities were obtained from NOAA Precipitation Frequency Atlas of the Western United States, Volume IV, New Mexico. There is no drainage entering the property in its undeveloped state and none will enter after development. All rainfall will be retained in retention areas and the subdivision will have no net runoff.

RECOMMENDATIONS

The area between the private road and the yardwalls should be graded in such a way that a one foot depression exists on both sides of the road and around the cul de sac. The back yards should be graded to provide a 0.6 foot depression over the full width of the rear yard.

Computation of 100 yr storm (Point Rainfall)

Basic Data taken from NOAA "Precipitation Frequency Atlas of the Western United States," Volume IV, New Mexico.

Duration, hrs	Inches of rainfall for 100yr storm.
24	3.20
6	2.65

Computation of 100 yr 1 hr storm

$$Y = 0.494 + 0.755 \left[X_3 \left(\frac{X_3}{X_4} \right) \right]$$

where
Y = 100 yr 1 hr rainfall
X_3 = 100 yr 6 hr rainfall
X_4 = 100 yr 24 hr rainfall

$$Y = 0.494 + 0.755 \left[2.65 \left(\frac{2.65}{3.20} \right) \right]$$

$Y = \underline{\underline{2.15 \text{ in}}}$

Computation of 100 yr 2 hr storm & 3 hr storms

2 hr value = $0.341 (2.65) + 0.659 (2.15) = \underline{\underline{2.32 \text{ in}}}$

3 hr value = $0.569 (2.65) + 0.431 (2.15) = 2.43 \text{ in}$

Computation of 100 yr 5, 10, 15, 30 minute point values

Duration, min	Inches of rainfall for 100 yr storm
5	$(.29)(2.15) = 0.62$
10	$(.45)(2.15) = 0.97$
15	$(.57)(2.15) = 1.23$
30	$(.79)(2.15) = 1.70$

Duration Min	Total Rain In.	Δ Rain In.	Δ Rain Rearranged	66% Infiltration In.	66% Initial Loss, In.	66% Excess Rain	66% Excess Rain	34% Initial Loss, In.	34% Excess Rain
0	0	0	0	0	0	0	0	0	0
10	0.97	0.97	0.22	0.18	0.60	0	0	0.1	0.12
20	1.40	0.43	0.43	0.18	0.56	0	0	0	0.43
30	1.70	0.30	0.97	0.18	0.31	0.48	0.32		0.97
40	1.92	0.22	0.30	0.18	0	0.12	0.8		0.30
50	2.07	0.15	0.15	0.18		0	0		0.15
60	2.15	0.08	0.08	0.18					0.08
70	2.23	0.08	0.08	0.09					0.08
80	2.28	0.05	0.05	0.09					0.05
90	2.29	0.01	0.01	0.09					0.01
100	2.30	0.01	0.01	0.09					0.01
110	2.31	0.01	0.01	0.09					0.01
120	2.32	0.01	0.01	0.09					0.01
180	2.43	0.11							
360	2.65	0.22							

Infiltration rates: 1.08 in/hr for first hour; 0.54 in/hr thereafter for pervious areas, zero infiltration for impervious areas.

Initial loss: 0.6 in. for depressed storage in lawns & shrubbery areas.
0.1 in for initial loss in depression storage on roofs & pavements.

34% EXCESS RAIN, IN	TOTAL EXCESS RAIN
0	0
0.04	0.04
0.15	0.43
0.33	0.65
0.10	0.18
0.05	0.05
.03	0.03
.03	0.03
.02	0.02
0	0
0	0
0	0
0	0
0.04	0.04
0.07	0.07

TOTAL EXCESS 1.54 IN. OR 860 ft^3

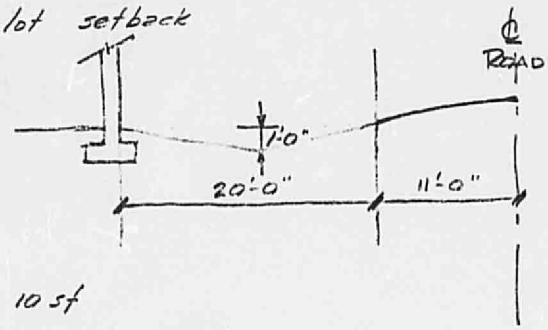
Typical Lot -

Building area	2000 sf
Walks, drives, etc.	300 sf
	2300 sf
Total lot area	6,700 sf
impervious area	2300 sf or 34%
pervious area	4400 sf or 66%

Total excess rain 1.54 in

$\frac{1.54''}{12} \times 6700\ sf = 860\ ft.$ storage capacity

Typical front lot setback

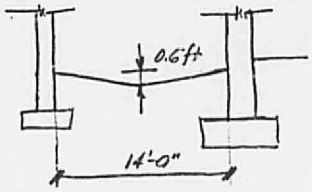


$20 \times 1 \times .5 = 10\ sf$

Length of storage = 50 ft

Total front yard storage = $50 \times 10 = \underline{500\ ft^3}$

Typical back yard storage



$14 \times 0.6 \times .5 = 4.2\ sf$

length of storage = 100 ft

Total back yard storage = $100 \times 4.2 = \underline{420\ ft^3}$

TOTAL STORAGE $\boxed{920\ ft^3}$

LANDS of SPROUL
INVESTMENT CORP
SU-1
GRECIAN
ADDN
TRAIL ACRES ESTATES
SUBD
GAVILAN
RA-2
ADDN
TRAIL ACRES
GOLDA
LINDA
ADDN
LEATHERWOOD
HAPPER
TIERRA DEL RIO SUBD
MONTANO ROAD
ZAPF
VALLEY
NORTH FOURTH STREET
HOMESITES
PARTITION of LANDS of PEDRO ARMIJO
DOUGLAS MacARTHUR SCHOOL
SUNVALE ADDN
ACKERMAN
VISTA
SANDIA
PLAZA
GARDEN ACRES
SIERRA DELTA
FREEMAN
HERSON SUBD
R.E. GALL
MOUNTAIN PLACE
C-1
C-2
C-3
R-1
R-2
R-3
O-1
HC-2
F-14-Z

1929