H16/D21

2 PLANS

APPROVED 1-21-80
SEE REVISED Report & Grading plan

3/13/80

Rocky Mountain Roofing Co.

1. Cannot verify the intensities used. Where did they come from.

2. ~~Under developed condition, your area and~~ ~~sketch map do not add up to total~~ area ~~you are~~ containing.

3. Why is 2.4 inches for the Q_{100} 6 hr. storm used in one place and 2.6 used in another? Also where did the Q_5 6 hr. storm value of 1.37 in./hr. come from?

4. On table of computations for discharge from Basin #1, cannot verify: Accumulated runoff, Orifice head, or Storage volume.

Approved by Fred Aguirre

1-21-80

T. T. Burnett Engineering, Inc.
Consulting Engineers
120 MORNINGSIDE N. E.
ALBUQUERQUE, NEW MEXICO 87108
TELEPHONE
(505) 255-7745

January 3, 1980

Mr. Bruno Conegliano
Asst. City Engineer - Hydrology
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Dear Mr. Conegliano:

Submitted herewith are three copies of the Drainage Report for Rocky Mountain Roofing Company for your review.

Very truly yours,

Jean J. Bordenave
President

ms

DRAINAGE REPORT

FOR

ROCKY MOUNTAIN ROOFING CO.

JANUARY 1980

DRAINAGE REPORT

FOR

ROCKY MOUNTAIN ROOFING CO.

JANUARY 1980

RECEIVED
JAN 03 1980
CITY ENGINEER

Prepared By:

T. T. Burnett Engineering, Inc.
120 Morningside Drive NE
Albuquerque, New Mexico 87108

Prepared For:

Rocky Mountain Roofing Co.
2114 Claremont NE
Albuquerque, New Mexico 87107

Jean J. Bordenave, N.M.P.E. & L.S. #5110

TABLE OF CONTENTS

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LOCATION AND TERRAIN	1
PROPOSED DEVELOPMENT	2
INTERNAL DRAINAGE	2
UPLAND DRAINAGE	2
CONCLUSION	3

COMPUTATIONS W/Q_5 AND Q_{100} RAINFALL INTENSITY CHARTS

PLATES

I Location Map H-16-Z

II Grading Plan

III Flood Hazard Boundary Map

DRAINAGE REPORT

FOR

ROCKY MOUNTAIN ROOFING CO.

JANUARY 1980

PURPOSE

The purpose of this report is to present to governing agencies a reasonable method of complying with the City Interim Drainage Guidelines, dated November 13, 1979, and thereby lessen runoff from the proposed development to an amount not in excess of the flow to be expected from the property in its present state. The report is composed of a narrative of existing and proposed conditions and computations to determine recommended runoff control structures.

LOCATION AND TERRAIN

The proposed development is located on the south side of Claremont Avenue, just east of Princeton Drive, in the northeast quadrant of the City. (See Plate I for exact location.) The tract and surrounding area slopes south at a grade of less than two percent.

The soil is composed of silty sand with some gravel, with no vegetation. Site has been graded previously. Due to the lack of vegetative cover and the frequent use of the property as a parking area, the infiltration rate is low.

PROPOSED DEVELOPMENT

It is proposed to construct a structure of approximately 8,400 square feet and an asphalt parking lot of approximately 5,087 square feet. The remainder of the area will retain a pervious surface.

INTERNAL DRAINAGE

Roof, parking area and pervious surfaces shall be graded to drain to ponds as shown on Plate II. Details of pond overflows and outlets shall be constructed as shown on sheets 1, 2 and 3 of the Computations. The front one-third of the building, the parking lot and fuel pump area will drain to detention Pond #1 and will be released at a Q_5 rate to Claremont Avenue. The remainder of the building, dock and pervious areas will drain to retention Pond #2. Runoff stored within this pond will be dissipated through infiltration and evaporation.

UPLAND DRAINAGE

Drainage from the north is intercepted by Claremont Avenue and is conveyed westerly to Princeton Drive beyond the property in question. There are developed lots to both the east and west of this development, and both drain away from the proposed development. Due to steep grades immediately to the south of this development, no runoff is introduced from this area.

CONCLUSION

Construction of ponds and grading of the site as per recommendations outlined in this report will provide storm water protection for the 100 year storm (with an allowable Q_5 discharge rate) for the proposed development and meet the current drainage guidelines of the local governing agencies.

Drainage Report
for
Rocky Mountain Roofing

(MAP H-16)

Runoff Source

1. Existing Condition: Total parcel consists of graded soil void of vegetation. (350' x 125')
   a. Undeveloped Q_5;
   Total Area = 43,750 Intensity = 3.00 Runoff Coeff.= 0.45
   C i a = (0.45)(3)(1) = 1.35 cfs
   b. Undeveloped Q_{100};
   Total Area = 43,750 Intensity = 5.5 Runoff Coeff = 0.45
   C i a = (0.45)(5.5)(1) = 2.48 cfs
   c. Soil, Area = 43,750 Runoff Coeff = 0.45 Effec. Area = 19,688

2. Developed Condition: (100 Yr 6 hour storm)
   Yard Area = 27,757 Runoff Coeff = 0.75 Effec. Area 20,818

Rvm't, S/W, Loading Dock	= 6,553	0.95	6,225
Building =	8,400	0.95	7,980
Planters =	1,040	0	0
	43,750		35,023

Pond Required (100YR 6 hour storm)
(~~2.6~~ 1/2)(35,023 − 19,688) = 3,323 ft³

Basin # 1 125' x 125' = 15,625, Runoff Factor = 0.82,
intensity = 5.5 (See Attached Q_{100} Chart)
Peak Runoff Rate = Q = (0.82)(5.5)(15,625/43,750) = 1.62 cfs

Basin # 2 225' x 125' = 28,125, Runoff Factor = 0.80
intensity = 5.5 (See Attached Q_{100} Chart)
Peak Runoff Rate = Q = (0.80)(5.5) 28,125/43,560) = 2.84 cfs

Drainage Report
for
Rocky Mountain Roofing Co.

Determine Pond Size For Basin #1

Drainage Area #1 125' x 125' = 15,625 ft² (0.36 Ac)

Q_{100} – Impervious Areas:

Front ⅓ of Bldg	= 3800 ft²
S/W + Dock	= 815 ft²
Parking Lot	= 5012 ft²
	9127 ft²

Pervious Areas:

Fuel Island Area	= 3170 ft²
Pond Area	= 2450 ft²
Planters	= 878 ft²
	6498 ft²

Composite "C"

Impervious Areas: $C = 0.95 \frac{9,127}{15,625} = 0.55$

Pervious Areas: $C = 0.65 \frac{6,498}{15,625} = 0.27$

$C = 0.82$

Pond Volume Requirements: (Q_{100} 6 Hr Storm = 2.4"/hr)

Volume = Runoff Coeff x Area x Precip.

$V = 0.82 \times 15,625 \times \frac{2.4}{12} = 2,563 \text{ ft}^3$

Pond Depth = 1.42 ft

Q_5 – Impervious Areas: $C = 0.95 \frac{9,127}{15,625} = 0.55$

Pervious Areas: $C = 0.65 \frac{6,498}{15,625} = 0.27$

$C = 0.82$

Pond Volume Requirements: (Q_5 6 Hr Storm = 1.37"/hr)

Volume = Runoff Coeff x Area x Precip.

$V = 0.82 \times 15,625 \times \frac{1.37}{12} = 1463$

Average Pond Volume = 2013 ft³

Drainage Report
for
Rocky Mountain Roofing Co.

Detention Pond Basin #1 (Discharge @ Q_5)

Storm Time	Accum Rainfall	Accum. Runoff	Orifice Head		Discharge Rate	Increm. Discharge	Accum. Discharge	Storage Vol.
min	Inches	ft³	ft		cfs	ft³	ft³	ft³
0	0			.12	.32	96.5	97	218
5	0.32	315	.23	.48	.66	196	293	955
10	0.49	1248	.73	.75	.82	247	540	1039
15	0.62	1579	.77	.77	.83	250	790	1044
20	0.72	1834	.78	.77	.83	248	1039	999
25	0.80	2038	.76	.73	.81	242	1281	910
30	0.86	2191	.71	.68	.78	235	1516	828
35	0.92	2344	.66					

$Q = CaV\sqrt{2g}$

$$d = \frac{-1 \pm \sqrt{1 + 0.00488\ Vol}}{1.8614}$$

Basin #2 225' x 125'

	Area ft²	Runoff Coeff.	Effective Area ft²
	28,125.00	0.45	12,656.25
Yard Area:	22,175.00	0.75	16,631.00
Loading Dock or Sidewalk:	850.00	0.95	808.00
Approx Rear ⅔ of Bldg.:	5100.00	0.95	4,845.00
Totals	28,125.00		22,284.00

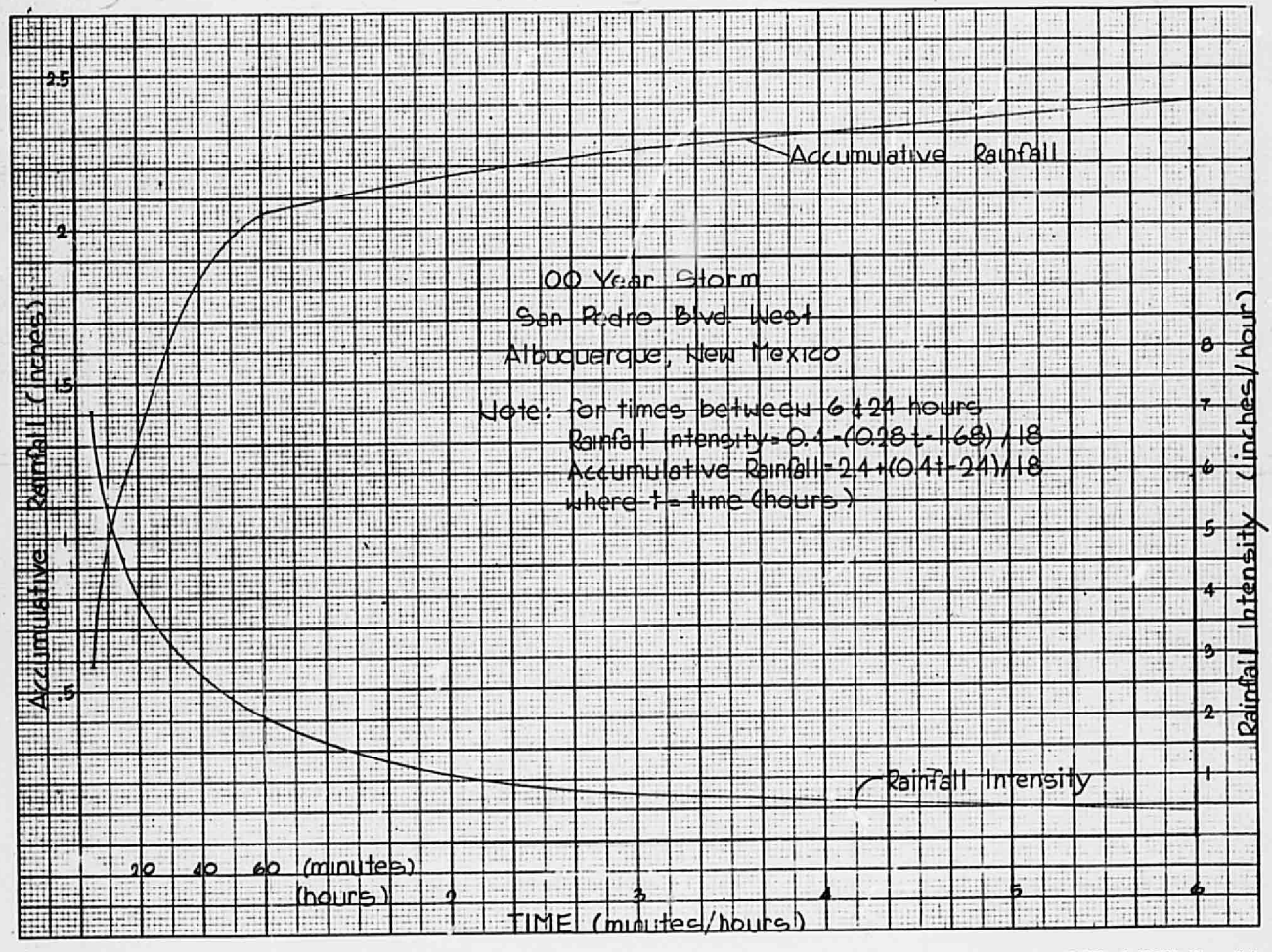
Pond Required, Basin #2

$2.4/12 \times .79 \times 28{,}125 = 4{,}443.75\ ft^3$

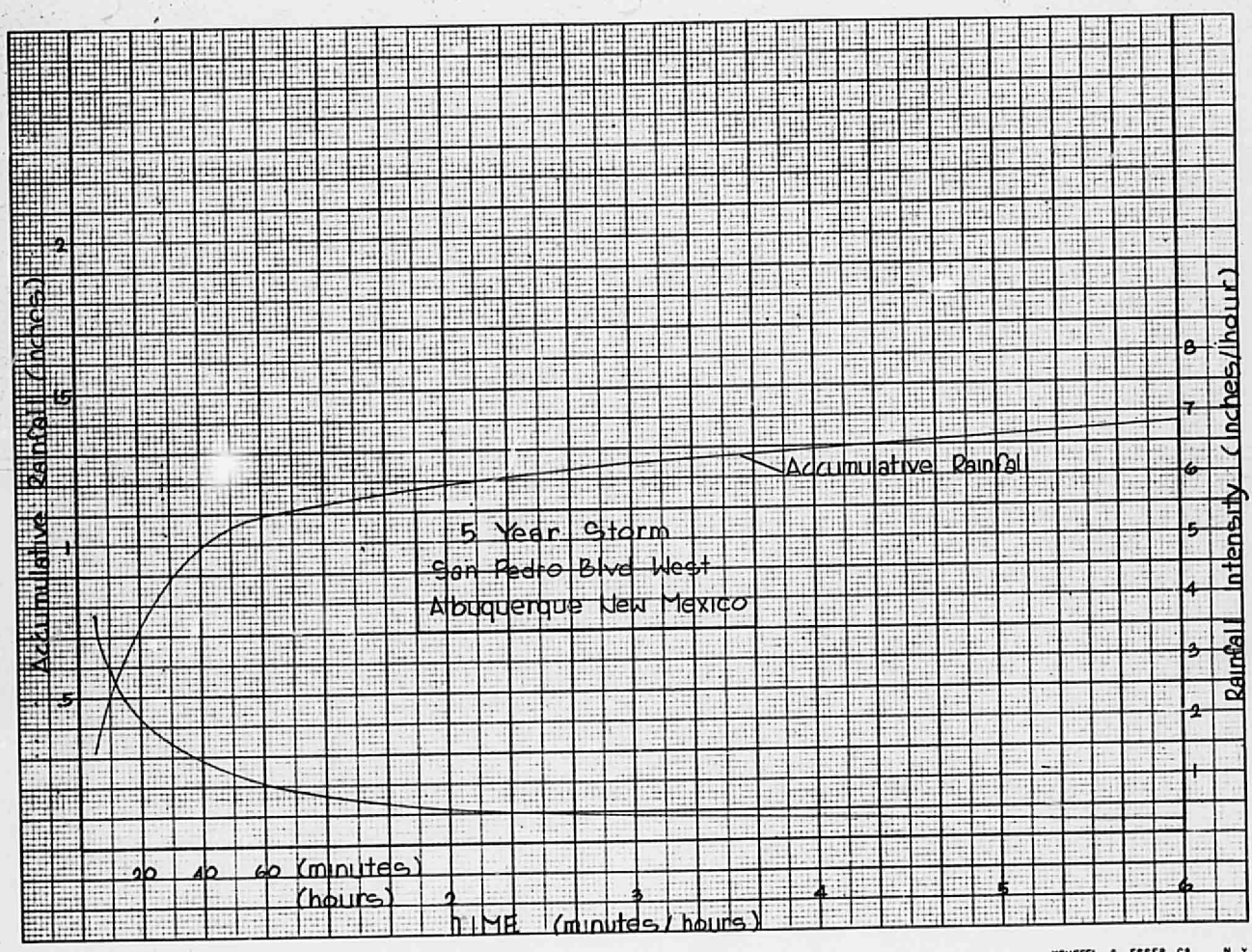
Drainage Report
for
Rocky Mountain Roofing Co.

Pond Provided. Basin #2

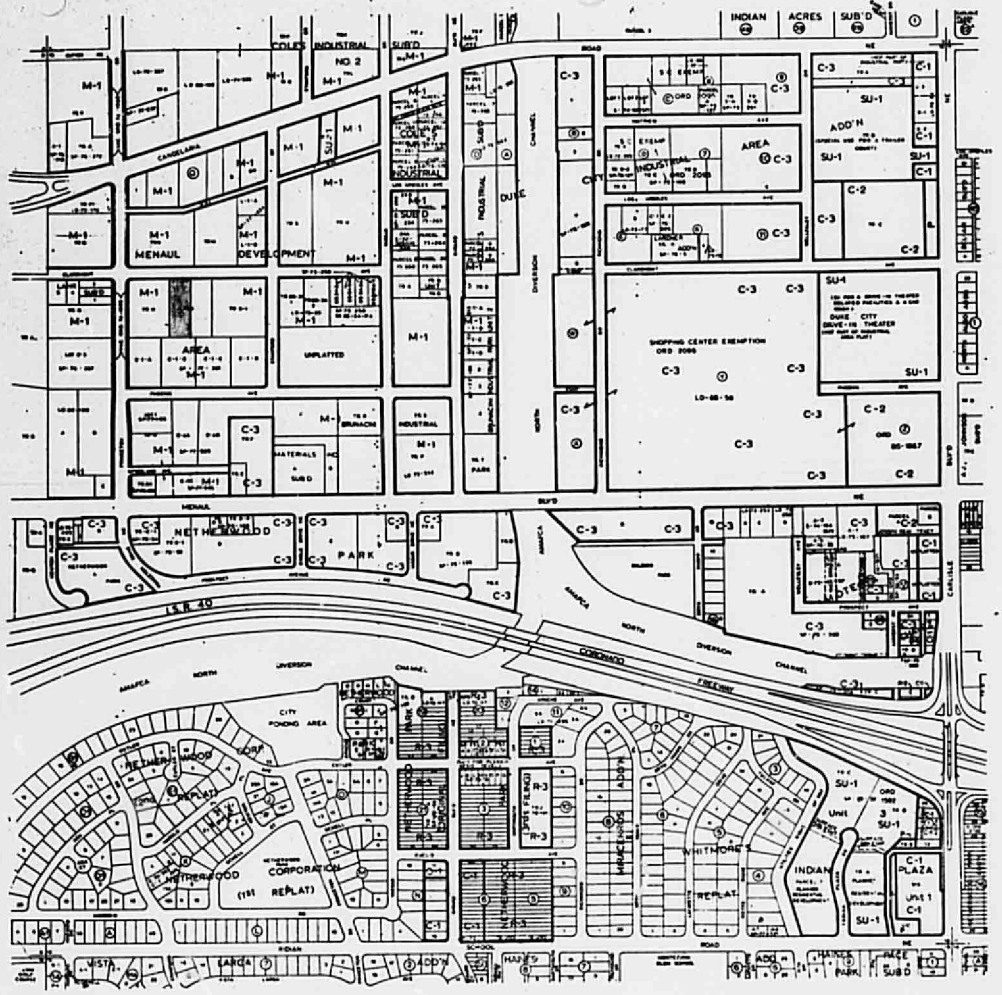
Contour Elev.	Area #	Volume
97°	5704	4805 ft³
95±	3032	



KEUFFEL & ESSER CO. N. Y.

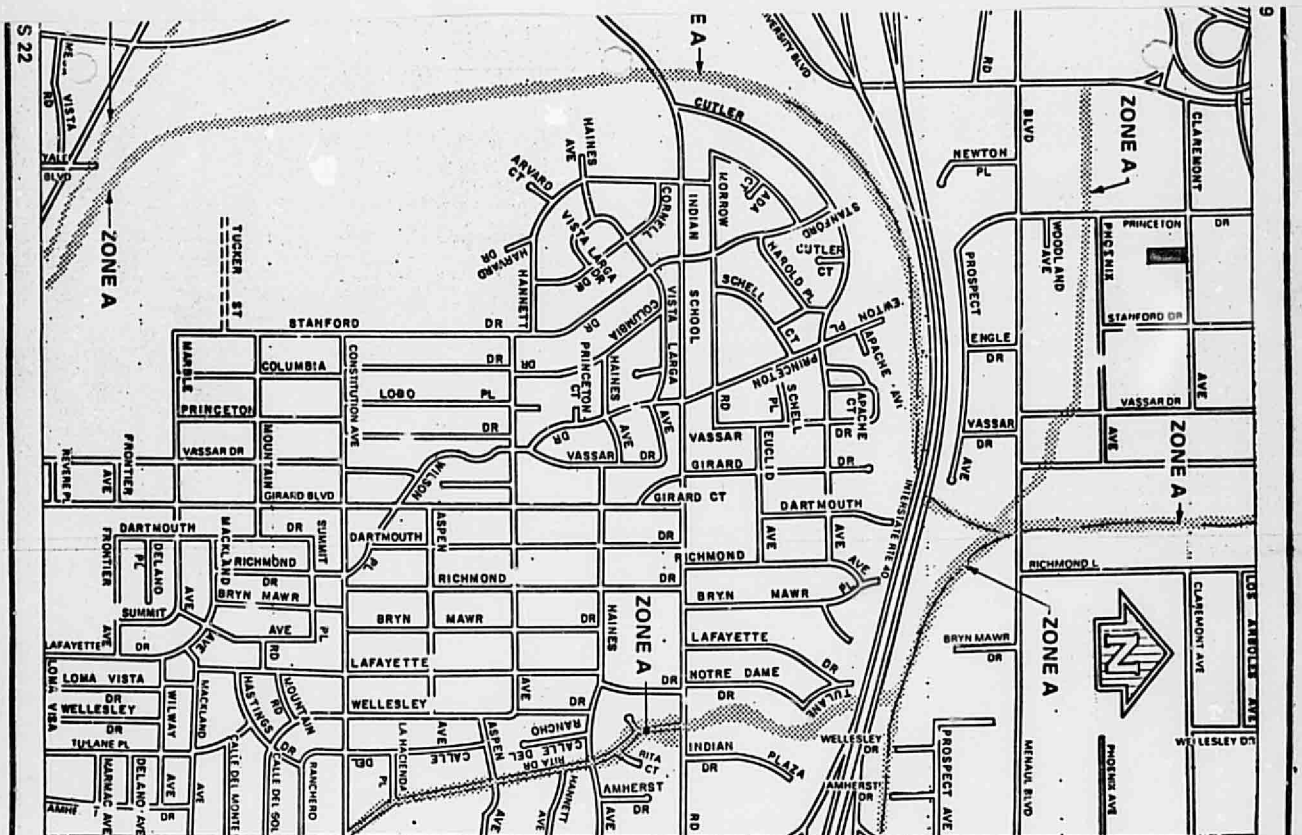


KEUFFEL & ESSER CO. N. Y.


INDIAN
ACRES
SUB'D
COLES INDUSTRIAL NO 2
SUB'D
M-1
MENAUL DEVELOPMENT
AREA
UNPLATTED
INDUSTRIAL
DUKE
DIVERSION
CHANNEL
C-3
SU-1
ADD'N
AREA
C-2
SHOPPING CENTER EXEMPTION ORD 2095
LO-88-56
DRIVE - IN THEATER
MENAUL
NETHERWOOD
PARK
I & R 40
ARMIJO NORTH DIVERSION CHANNEL
CORONADO FREEWAY
CITY PONDING AREA
NETHERWOOD (REPLAT)
NETHERWOOD CORPORATION (1ST REPLAT)
R-3
HIGHLANDS ADDN
WHITMORE'S REPLAT
INDIAN
C-1 PLAZA
UNIT 1
VISTA LARGA ADD'N
INDIAN ROAD
CARLISLE

H-16-Z

PLATE #I



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DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

CITY OF ALBUQUERQUE, NM
(BERNALILLO CO.)

APPROXIMATE SCALE
1000 0 1000 2000 3000 FEET

FLOOD HAZARD BOUNDARY MAP

MAP REVISED
2/14/78

PLATE # III

SMEAD–HASTINGS, MN.
NO. T118GN