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BIO/MARBLEUE

STORM DRAINAGE STUDY  
RELATIVE TO DEVELOPMENT OF  
LOT D-2, MESA DEL NORTE HEIGHTS NO. 10  
ALBUQUERQUE, NEW MEXICO

APRIL, 1977



MacCORNACK & BURNS  
CONSULTING ENGINEERS, INC.  
1721 GIRARD BLVD., N.E.  
ALBUQUERQUE, NEW MEXICO 87106

J19-04B



**MacCormack & Burns**  
consulting engineers, inc.

1721 Girard Boulevard, N.E.  
Albuquerque, New Mexico 87106

a division of Boule Engineering Corporation  
505 / 266-7789

April 12, 1977

BURNS & PETERS, Architects  
Attention Bill Burns  
8100 Mountain Road Place N.E.  
Albuquerque, New Mexico 87112

Storm Drainage Study Relative to Development of Lot D-2,  
Mesa del Norte Heights No. 10, Albuquerque, New Mexico

Transmitted herewith is the "Storm Drainage Study relative to development of Lot D-2, Mesa del Norte Heights No. 10, Albuquerque, New Mexico."

This study comprises a comprehensive analysis in accordance with the requirements of Resolution No. 1972-2, Albuquerque Metropolitan Arroyo Flood Control Authority, and the City of Albuquerque.

Thank you for the opportunity of participating in your project.

MacCORNACK AND BURNS, INC.

*Fred Burns*  
Fred Burns, PE

bb  
Encl.

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## TABLE OF CONTENTS

1.	PURPOSE .....	1
2.	SCOPE .....	1
3.	LOCATION .....	1
4.	EXISTING DRAINAGE CONDITIONS .....	2
	A. General .....	2
	B. Topography .....	2
	C. Drainage Areas .....	2
5.	PROPOSED DRAINAGE PLANS .....	3
	A. Criteria .....	3
	(1) General .....	3
	(2) Project Storm .....	3
	(3) Areal Data .....	3
	(4) Other Studies .....	3
	B. Flood Protection .....	3
	(1) Existing Conditions .....	3
	(2) Future Conditions .....	4
	C. Site Drainage .....	4
6.	CONCLUSIONS AND RECOMMENDATIONS .....	4

## APPENDIX

STORM DRAINAGE STUDY  
RELATIVE TO DEVELOPMENT OF  
LOT D-2, MESA DEL NORTE HEIGHTS NO. 10  
ALBUQUERQUE, NEW MEXICO

1. PURPOSE: This report is to transmit data relative to estimation of quantity and proposed means of proper handling of storm runoff drainage as it is related to development of Tract D-2, Mesa del Norte Heights No. 10, said lot being a replat of Lot D, Mesa del Norte Heights No. 10 and Lot 5, Block 17, East End Addition, Albuquerque, New Mex'co.
2. SCOPE: This report is to establish criteria and means of construction such that the development of the proposed facility will be protected from storm runoff and, further, will not create increased flooding potential for contiguous properties.
3. LOCATION: The land area under study of this report is a parcel located within the City of Albuquerque in the SE  $\frac{1}{4}$ , Section 18, T 10 N, R4E, N.M.P.M. bounded on the east by Texas Street N.E. and on the south by Marble Avenue N.E. The westerly boundary extends in a northerly direction from the Marble Avenue right-of-way a distance of 150.00 feet to intersect the northerly boundary of the property which extends from said intersection 134.82 feet in an easterly direction, thence 100.00 feet in a southerly direction, thence 165.00 feet in an easterly direction to the right-of-way of Texas Street N.E. The land area of

of this tract being .6531 acres of land more or less.

4. EXISTING DRAINAGE CONDITIONS:

A. General: The tract under study is presently undeveloped and drains in a northwesterly direction through adjacent property and ultimately empties into Pennsylvania Avenue N.E. where the flow is collected in the city storm sewerage system. Immediately northwest of the property lies an existing church building with an asphalt parking area that drains away from the property. Also adjacent to the northern property line is an area presently being developed which does not contribute flow to the property being studied. Drainage from the east is intercepted by Texas Street and enters the city storm drainage system. Drainage from areas immediately south and west drain away from the property.

B. Topography: The tract is located on the alluvial clino-plain of the Sandia Mountains approximately midway between the foothills and the valley floor. The elevation of the land at the high point is approximately 5340.4 ±. The tract slopes downward to the west and northwest at slopes varying from 1 - 2%. The area is sparsely vegetated and is for the most part bare soil consisting of decomposed granite with a high percentage of caliche, and traces of silty, sandy, loamy clay. There are no notable geologic features unusual to the area.

C. Drainage Areas: The property under consideration is located within the watershed of the Arroyo del Embudo.

The upslope watershed in the immediate vicinity is densely populated and developed with storm sewerage and street drainage so as to minimize any drainage effects to the property.

5. PROPOSED DRAINAGE PLANS:

A. Criteria:

- (1) General: Resolution No. 1972-2, Albuquerque Metropolitan Arroyo Flood Control Authority.
- (2) Project Storm: 100-year Intensity; frequency duration as shown on the Curves of Figures 2 & 3, "1963 Master Plan of Drainage for the City of Albuquerque and Environs," as prepared by Gordon Herkenhoff and Associates, Inc., Consulting Engineers.
- (3) Areal Data: "Flood Plain Information Albuquerque Arroyos - Part 1" by Corps of Engineers, U. S. Army, Albuquerque District, June 1970.
- (4) Other Studies: "Storm Drainage Study relative to Development of Tract D Mesa del Norte Heights No. 10 and Lot 5, Block 17 East End Addition for Elderly Handicapped Housing Facilities," as prepared by MacCornack and Burns, Consulting Engineers, Inc., Albuquerque, New Mexico.

B. Flood Protection:

- (1) Existing Conditions: Upslope properties are, for the most part, developed and no significant alterations in existing drainage patterns are anticipated.

Texas Street intercepts flows from a contributing drainage area of 21 acres. The boundaries of the basin are shown in Fig. 1. Flow is then directed to inlets to the diversion channel located in the center of Interstate 25. Major flow patterns from the south are intercepted by Lomas Boulevard and carried west. Local flow from the area between the property and Lomas Boulevard is intercepted by Tennessee Street and Marble Avenue and transported to Pennsylvania Street where it is injected into the City storm sewerage system.

(2) Future Conditions: Future development will not significantly alter drainage patterns.

C. Site Drainage: The proposed development includes construction of two eight-plex apartment buildings, paved parking lot and various landscaping features. To comply with AMAFCA Resolution No. 1972-2, the calculated increase in site runoff will be temporarily retained on the site for percolation into the subsurface.

6. CONCLUSIONS AND RECOMMENDATIONS: On the basis of the study of this report, the following recommendations are proposed:
- A. Provide site grading such that the increased runoff from the building and parking lot areas is retained and allowed to percolate on the site.
  - B. Provide adequate fill to prevent flow from Marble Avenue from entering the property.
  - C. Provide a berm at the intersection of Marble Avenue and

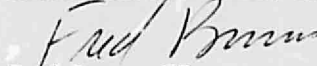


Texas Street to prevent the intrusion of flow to the site from the 21-acre Texas Street Drainage Basin during a 100-year frequency flood.

Provided the above listed recommendations are implemented prior to or concurrent with the development of the property, it is concluded that the proposed development will not create a flood hazard to surrounding properties, nor will the property itself be in danger of flooding.

Respectfully Submitted,

MacCORNACK AND BURNS, INC.



Fred Burns, PE  
New Mexico Registration #4000

Job (2) B-Dex Apartment Buildings Sheet No. 1 of       
 Subject Drainage Study Job No.       
 Client Burns & Peters By VTC Date 4/77  
 MAC CORNACK & BURNS Consulting Engineers, Inc., Albuquerque, NM

Calculation of Average Runoff Coefficient  
 Reference - Ven Te Chow - Handbook of Applied Hydrology

Coverage	Area (Ac.)	Coefficient	C x A.
Asphalt	.2580	.95	.2451
Concrete	.0402	1.0	.0402
Roofing	.1350	.90	.1215
Grass	<u>.1289</u>	.30	<u>.0656</u>
	.6531		.4724

$$\text{Runoff Coefficient} = \frac{.4724}{.6531} = .7233$$

$$\text{Average Slope} = .66\% \quad \text{Length} = 300'$$

$$T_c = .00013 \left( \frac{300^{.77}}{.0066^{.585}} \right)^{60} = 4.4 \text{ min.}$$

$$i = 1.89 / 4.4 + 25 = 6.43 \text{ in/hr.}$$

$$Q_{\text{undeveloped}} = .6531 (.35 \times 6.43) = 1.47 \text{ cfs.}$$

$$Q_{\text{developed}} = .6531 (.7233)(6.43) = 3.04 \text{ cfs.}$$

Job (2) B-Plex Apartment Buildings Sheet No. 2 of       
 Subject Drainage Study Job No.       
 Client Buens & Peters By VJC Date 4/72  
 MAC CORNACK & BURNS Consulting Engineers, Inc., Albuquerque, NM

Calculate Volume of Storage Required to maintain 1.47 cfs.

$t_2$ (min.)	$I$ (in./hr.)	$Q_2$ (cfs)	Storage Req. (C.f.)
5	6.3	2.98	365
8	5.73	2.71	480
10	5.4	2.55	527
15	4.73	2.23	569 ← <u>Max.</u>
20	4.2	1.98	518
30	3.4	1.60	202
40	2.91	1.40	
50	2.52	1.2	

