HYDROLOGY E17/D7 ONE PLAN

E 17/D8

1 PLAN

RICHARD E. LEONARD
EXECUTIVE ENGINEER

B. H. SWINBURNE, CHAIRMAN
R. WARD HUNNICUTT, VICE-CHAIRMAN
FRANCES McCOY, SECRETARY-TREASURER
VERNON DOAK, DIRECTOR
KLESTON LAWS, DIRECTOR

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2600 PROSPECT AVE., N.E.
P. O. BOX 25851 - ALBUQUERQUE, N. M. 87125
TELEPHONE 884-2215

October 14, 1982

Jaynes Corporation
2906 Broadway, N.E.
Albuquerque, NM 87102

Attn: Mr. Jim Roupas

Subject: Centurian Project
3600 Osuna Road, N.E.

Dear Sir:

We have inspected the inlet to the North Diversion Channel and accept it as meeting AMAFCA's requirements.

Sincerely,

Dan Sabo

Dan Sabo
Drainage Engineer

gfm

cy: Larry Blair

DENNEY-GROSS & ASSOCIATES, INC.
CONSULTING ENGINEERS
2400 COMANCHE ROAD, N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 884-0696

April 6, 1982

Mr. Fred Aguirre
City Engineering
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Drainage & Grading Plan
Windward Investments
Lot 1, Block A, Interstate
Industrial Tract

Dear Fred:

The enclosed revised drainage plan replaces the drawing prepared and stamped March 26, 1982 by our office.

Please call us if you need any additional information.

Very truly yours

Joseph M. Allen

JMA/lm

Enclosures

JACK M. CLIFFORD & COMPANY
2201 SAN PEDRO DRIVE NE
TWO SAN PEDRO PARK, SUITE 201
ALBUQUERQUE, NEW MEXICO 87110
PHONE (505) 884-5573

March 26, 1982

Mr. Ronald L. O'Neal
7602 Talbert Avenue
Unit A
Huntington Beach, California 92647

Dear Ron:

Jack M. Clifford & Co. has received your request to modify the existing grade of the Clifford owned property contiguous to your eastern boundry. This earth work will be allowed by Jack M. Clifford & Co. in the event that such work is performed in accordance with the section and plan submitted by the Burns-Peters Group.

Sincerely,

Knight Seavey, A.I.C.P.

KS:ls

cc: Mr. Norm Lazar of the Jaynes Corp.
Mr. Ron Peters of the Burns-Peters Group

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

March 11, 1981

Mr. Ron Taylor
Fred Denney & Associates, Inc.
2400 Comanche Road, N. E.
Albuquerque, NM 87107

Re: REVISED DRAINAGE REPORT - LOT 1, BLOCK A, INDUSTRIAL TRACT

Dear Mr. Taylor:

In response to your letter dated January 26, 1981, I find that with one exception the revised drainage report satisfies Mr. Conegliano's inquiries mailed to you on December 4, 1980. Mr. Conegliano required a retaining wall along the east property line to absorb the difference in grade proposed by your original plan. The revised plan submitted still indicates this change in grade with no provisions for a retaining wall.

However, this item can be addressed when the actual construction plans are submitted for a building permit. Therefore, the report is approved in concept only.

If you have any questions concerning the above, please feel free to call me.

Very truly yours,

Fred J. Aguirre

Fred J. Aguirre, P.E.
Civil Engineer

FJA:pp

FRED DENNEY & ASSOCIATES, INC.
CONSULTING ENGINEERS
2400 COMANCHE ROAD, N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 884-0696

January 26, 1981

RECEIVED
JAN 30 1981
CITY ENGINEER

Mr. Bruno Conegliano
Assistant Hydrology Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Revised Drainage Report
Lot 1, Block A Interstate
Industrial Tract
F.D. Job No. 463.21

Dear Mr. Conegliano:

In reference to your letter of December 4, 1980, enclosed herewith are three copies of the revised drainage report for subject project for your review and approval.

In your letter, your concerns were directed to the following:

1. Comment: The flow will by-pass the channel entrance and wash out the rundown; and the cross-sectional area of the channel is not adequate to handle the anticipated flow.

   Response: Curb and gutter has been added to channel the flow into the drainage inlet. Also, the channel has been modified to handle the anticipated 35.12 cfs flow. The modifications are shown on Page 5 of the drainage report and on Exhibit "F".

2. Comment: AMAFCA has requested that wire enclosed riprap be extended to tie into the existing riprap.

   Response: The wire enclosed riprap has been added to comply with AMAFCA's request.

3. Comment: Another item of concern pertains to the proposed grading which is shown to extend beyond the boundaries of this property.

3. Response: The grading plan has been changed to eliminate the vertical cut and the need for a retaining wall.

If you have any questions or require additional information, please do not hesitate to call.

Very truly yours,

Ron Taylor

Ron Taylor

RT/lm

Enclosures

cc: Dan Sabo/w. Encl.

Knight Seavey

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 4, 1980

Mr. Gary W. Tiblijas
Fred Denney & Associates
2400 Comanche Blvd. N.E.
Albuquerque, New Mexico 87107

RE: DRAINAGE REPORT FOR LOT 1, BLOCK A, INTERSTATE INDUSTRIAL TRACT

Dear Mr. Tiblijas:

I am forwarding for your review a letter that I have received from Mr. Dan Sabol with AMAFCA regarding the referenced development. The construction plans for the proposed rundown into the AMAFCA right-of-way will have to be submitted to AMAFCA for their specific concurrence.

My comments on the drainage report are as follows: I find that the grading plan is not quite sufficient to demonstrate how the flow will be collected and conveyed to the proposed rundown. More specifically, what provisions will be made so that the flows will not bypass the channel entrance and wash out the rundown? Since the cross-section area of the rundown will be 3.0 square feet, a velocity of 11.54 feet would be required to contain the flow and discharge the anticipated 34.62 cfs; (or is it 35.12 cfs as indicated on Page 4?). Correspondingly, a head of 2.1 ft. would be required to impart said velocity to the flow (if no entrance losses exist). Of course, the inlet conditions must reflect this design requirement and I have some reservations whether a potential depth of water approaching 2.5 feet at the inlet, would be acceptable to the developer of this property.

Another item of concern pertains to the proposed grading which is shown to extend beyond the boundaries of this property. Obviously, the City cannot express its concurrence to such a trespassing, unless an agreement with the property owner to the east is available. The grading plan shows a vertical cut of 2.5 feet adjacent to the eastern property line. The City cannot concur with such a proposal and a retaining wall must be supplied to protect the property to the east.

I believe that these concerns can be taken care of, on the construction plans, but I need to obtain a commitment to your compliance with the requirements discussed above, before I can express my concurrence to this drainage scheme.

Very truly yours,

Bruno Conegliano
Assistant Hydrology Engineer

BC/tsl

cc: Rich Leonard, AMAFCA
R. S. Heller, City Engineer
File

RICHARD E. LEONARD
EXECUTIVE ENGINEER

B. H. SWINBURNE, CHAIRMAN
WILLIAM V. HEREFORD, VICE-CHAIRMAN
FRANCIS McCOY, SECRETARY-TREASURER
VERNON DOAK, DIRECTOR
KLESTON LAWS, DIRECTOR

Albuquerque Metropolitan Arroyo Flood Control Authority
2600 PROSPECT AVE. N.E.
P. O. BOX 25851 · ALBUQUERQUE, N. M. 87125
TELEPHONE 884-2215

RECEIVED
DEC 04 1980
ENGINEER

December 2, 1980

Mr. Bruno Conegliano
Assistant City Engineer/Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Subject: Drainage Report Lot 1, Block A,
Interstate Industrial Tract

Dear Bruno:

We have reviewed the drainage report as it pertains to the North Diversion Channel.

We request that the wire enclosed riprap be extended to tie to the existing riprap in the AMAFCA side channel (Exhibit F).

Sincerely,

Dan Sabo

Dan Sabo
Engineer

ic
cc. Fred Denney & Associates, Inc.
Attn: Gary W. Tibljas

FRED DENNEY & ASSOCIATES, INC.
CONSULTING ENGINEERS
2400 COMANCHE ROAD, N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 345-8852

RECEIVED
NOV 21 1980
CITY ENGINEER

November 19, 1980

Mr. Bruno Conegliano
Assistant City Engineer/Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Drainage Report
Lot 1, Block A, Interstate
Industrial Tract
F.D. Job No. 463.21

Dear Bruno:

Transmitted herewith are two copies of the revised drainage report for subject project. This report will serve as an amendment to the original report dated July, 1980.

Please note that the architect has modified the site plan to some degree since the first submission by increasing the sizes of some building areas; but in general the overall treatment of the drainage management scheme has been unaltered.

By copy of this letter, we have forwarded one copy of the report to Richard E. Leonard for review and approval by AMAFCA.

Your expeditious review and approval will be greatly appreciated.

Very truly yours,

Gary W. Tibljas

GWT/am
Enclosures
cc: Knight Seavey/w. Enc.
Richard E. Leonard/w. Enc.

0065

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Re: Lot 1, Block A
Interstate Industrial Tract

August 7, 1980

RECEIVED
AUG 07 1980
CITY ENGINEER

Mr. Daniel Grochowski
Fred Denney & Associates, Inc.
Consulting Engineers
2400 Comanche Road NE
Albuquerque, NM 87107

Dear Mr. Grochowski:

While I do not have any reservations regarding the overall approach to the drainage provision for this site, more detailed information needs to be supplied with the construction plans. On said plans, the rundown profile must be shown to scale. The downstream flowline should be at a lower elevation than the upstream flowline. It is also requested that the wire-enclosed rip-rap be shown underlined by filter cloth.

On the basis of the information submitted, it is difficult to identify the location of the street right-of-way and of the AMAFCA channel right-of-way.

In my opinion it is desirable that the runoff be directed toward the AMAFCA inlet rather than against the roadway. Since this site interfaces immediately with an AMAFCA facility, you are requested to obtain the specific concurrence of Mr. Rich Leonard.

If you have any questions on the above plan, do not hesitate to contact me.

Very truly yours,

Bruno Conegliano
Assistant City Engineer-Hydrology

BC:lf

cc: Richard Heller ✓
Rich Leonard

FRED DENNEY & ASSOCIATES, INC.
CONSULTING ENGINEERS
2400 COMANCHE ROAD, N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 345-8852

July 17, 1980

RECEIVED
JUL 21 1980
CITY ENGINEER

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

Re: Lot 1, Block A, Interstate Industrial Tract
F.D. Job No. 463.12

Dear Bruno:

Transmitted herewith are two copies of the Drainage Report for Lot 1, Block A, Interstate Industrial Tract, for your review and approval. The tract is located on the Southwest corner of Osuna Boulevard and the AMAFCA North Diversion Channel.

Very truly yours,

Daniel Grochowski

Daniel Grochowski

DG/lm

Enclosures

cc: Knight Seavey/w. Encl.

REVISED

DRAINAGE MANAGEMENT STUDY

WINDWARD INVESTMENTS

LOT 1 - BLOCK A

INTERSTATE INDUSTRIAL TRACT

ALBUQUERQUE NEW MEXICO

Prepared for

Windward Investments

JANUARY, 1981

RECEIVED
JAN 30 1981
CITY ENGINEER

Fred Denney & Associates, Inc.

2400 Comanche Road. N.E.

Albuquerque, New Mexico 87107

I, Fred Denney, hereby certify that the enclosed documents and drawings were prepared under my supervision and are true and correct to the best of my knowledge and belief.

New Mexico Registered Professional
Engineer and Land Surveyor No. 1967

SEAL

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR
NO. 1967
NEW MEXICO
FRED N. DENNEY

REVISED
DRAINAGE MANAGEMENT STUDY
LOT 1 - BLOCK A
INTERSTATE INDUSTRIAL TRACT

I. GENERAL:

This study involves a drainage plan for Lot 1-Block A of the Interstate Industrial Tract, Albuquerque, New Mexico. The parcel contains an area of approximately 201,683 square feet (4.63 acres) and is bounded by Osuna Boulevard on the North, the A.M.A.F.C.A. North Diversion Channel on the West, the Bear Arroya Drainage Easement on the South and undeveloped land with a one hundred fifty foot wide Public Service Company of New Mexico Easement on the East (see Exhibit A).

In the latest publication of the Flood Hazard Boundary Maps, as published by the Flood Insurance Administration, the site is not located within a designated flood hazard area.

The site slopes uniformly to the west at a slope of approximately 2% and due to the proximity of the A.M.A.F.C.A. North Diversion Channel, the on-site runoff will be discharged directly into the channel via a small drainage ditch that runs along the western border of the site. This is the present mode in which the runoff generated within the site is introduced into the Diversion Channel. (See Exhibit B).

II. CRITERIA:

The Rational Method (Q=AIR) will be used to compute the runoff for a 100-year frequency storm. Intensities may be obtained from Exhibit C (City of Albuquerque-Master Plan for Drainage, 1961). Concentration times are determined using

average velocities in developed areas of two (2) feet per second and 1.5 feet per second in undeveloped areas. Composite runoff coefficients have been computed based on the runoff factors for each of the three types of surface receiving rainfall: roofed area, yard area and paved area.

III. OFF-SITE FLOWS:

As shown on Exhibit B an area consisting of approximately 7.0 undeveloped acres drains from east to west and is introduced onto the site.

This area has the following characteristics:

Area = 7.0 Acres (304,920 sf)

Length = 600 feet

Runoff Factor = 0.4

Off-Site Flow Calculations:

Tc = 600 ÷ 1.5(60) = 6.7 minutes Use 10.0 minutes

I = 189 ÷ (10.0 + 25) = 5.4 in/hr

Q = 7.0 x 5.4 x 0.4 = 15.12 cfs

This runoff will be carried to the on-site drainage outlet as will the runoff generated on site via the parking lot drive areas as illustrated on Exhibit F.

IV. COMPUTATIONS: (On-Site Runoff)

RUNOFF AREA	(SQ.FT.)	ACREAGE
Roofed Area	70,511 SF	1.62 Acres
Paved Area	89,277 SF	2.05 Acres
Yard (Landscaped Areas)	41,895 SF	0.96 Acres
TOTAL	201,683 SF	4.63 Acres

Runoff Criteria:

1. Rainfall from City Precipitation Map 2.3"
2. Runoff Factors:

Natural Soil	0.40
Paving and Roofed	0.90
Yard and Landscaped Areas	0.40

3. Composite Runoff:

Paving and Roofed:

(89,277 SF + 70,511 SF)(0.90) = 143,809

Yard and Landscaped:

(41,895 SF)(0.40) = 16,758

TOTAL = 160,567

Composite Runoff Coefficient:

(160,567/201,683) = 0.80

Total Runoff Within Area Before Development:

Runoff Area (A) = 201,683 SF

Runoff Factor (R) = 0.40

Precipitation (P) = 2.3 in. (see Exhibit D)

Volume Runoff (V) = (P/12)(A)(R)

= (2.3/12)(201,683)(0.40) = 15,462 cf

Total Runoff Within Area After Development:

Runoff Area (A) = 201,683 SF

Runoff Factor (R) = 0.80 (composite runoff coefficient)

Precipitation (P) = 2.3 in.

Volume Runoff (V) = (P/12)(A)(R)

= (2.2/12)(201,683)(0.80) = 29,580 cf

Time of Concentration:

Tc = 900 ÷ 2(60) = 7.5 minutes Use 10.0 minutes

Intensity:

From the City of Albuquerque Master Plan of Drainage

I = 189 ÷ (Tc + 25)

= 189 ÷ (10.0 + 25) = 5.4 in/hr

Runoff:

Q = 4.63 x 5.4 x 0.80 = 20.00 cfs

THEREFORE:

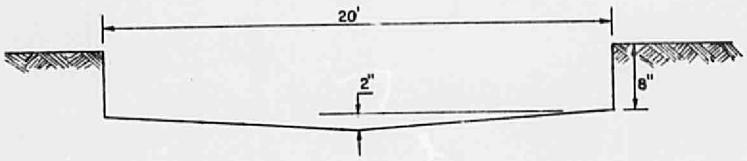
Total Runoff to Outlet Point:

On-Site Runoff	20.00 cfs
Off-Site Runoff	15.12 cfs
TOTAL RUNOFF	35.12 cfs

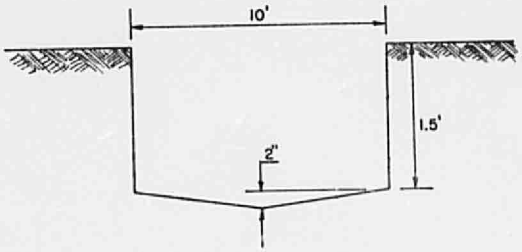
35.12 cfs will be introduced into the North Diversion Channel via the small drainage ditch which runs adjacent to the Parcel's Western Property Line (see Exhibit E).

The characteristics of the drainage outlet point are as follows: (see Exhibit F)

Inlet



Outlet



Inlet Section:

A = 14 SF

P = 21 ft

R = (A/P) = (14/21) = .67

n = 0.015

S = 0.10

$Q = (1.486/n)(R^{2/3})(S^{1/2})(A)$

Q = 335 cfs > 35.12 cfs O.K.

Head Depth:

$H = (Q/(CxR))^{2/3}$

$H = (35.12/(3.46x20))^{2/3} = .63$ ft < .67 ft O.K.

Outlet Section:

$A = 16$ SF

$P = 13$ ft

$R = (A/P) = (16/13) = 1.2$

$n = 0.015$

$S = 0.10$

$Q = (1.486/n)(R^{2/3})(S^{1/2})(A)$

$Q = (1.486/0.015)(1.2)^{2/3}(0.10)^{1/2}(16)$

$Q = 566$ cfs < 35.12 cfs O.K.

Head Depth:

$H = (Q/(CxD)^{2/3}$

$H = (35.12/(3.46x10))^{2/3} = 1.0$ ft < 1.5 ft O.K.

V. RECOMMENDATIONS:

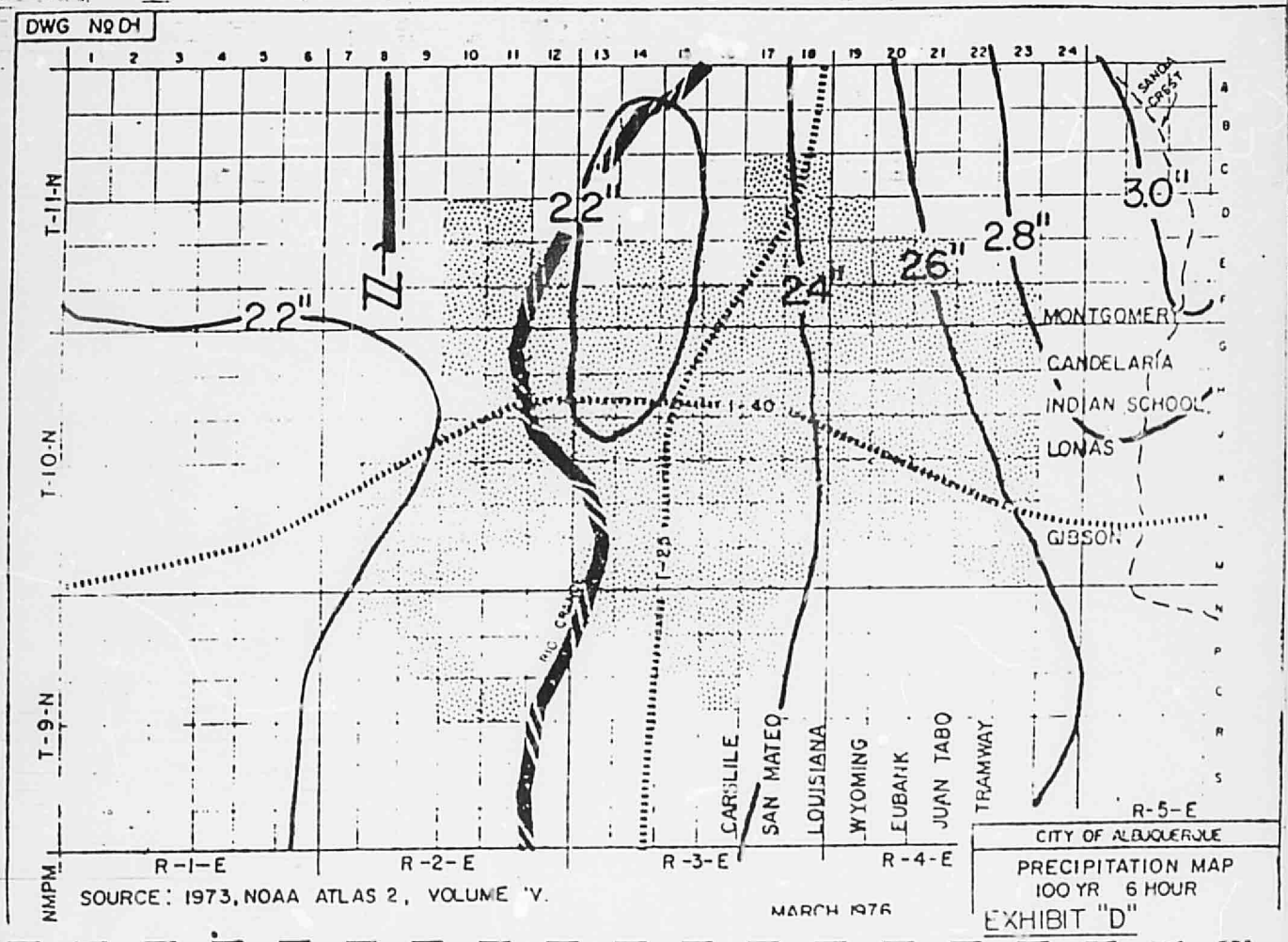
1. All runoff will drain to the Northwestern corner of subject development as shown.

2. The drainage outlet will be constructed as shown on Exhibit "G" and will transport runoff from the site to adjacent drainage ditch. The drainage ditch will transfer the runoff to the North Diversion Channel.

3. We recommend that the City of Albuquerque Drainage Engineer approve this plan as presented.

VI. BIBLIOGRAPHY:

1. City of Albuquerque Master Drainage Plan, AMAFCA 1972-2 Resolution.
2. Handbook of Hydraulics, King & Brater.
3. Open Channel Hydraulics, Chow.


DWG NO D-1
T-11-N
T-10-N
T-9-N
NMPM
R-1-E
R-2-E
R-3-E
R-4-E
R-5-E
2.2"
2.2"
2.4"
2.6"
2.8"
3.0"
I-40
I-25
MONTGOMERY
CANDELARIA
INDIAN SCHOOL
LOMAS
GIBSON
CARLILE
SAN MATEO
LOUISIANA
WYOMING
EUBANK
JUAN TABO
TRAMWAY
SANDIA CREST
CITY OF ALBUQUERQUE
PRECIPITATION MAP
100 YR 6 HOUR
EXHIBIT "D"
SOURCE: 1973, NOAA ATLAS 2, VOLUME V.
MARCH 1976

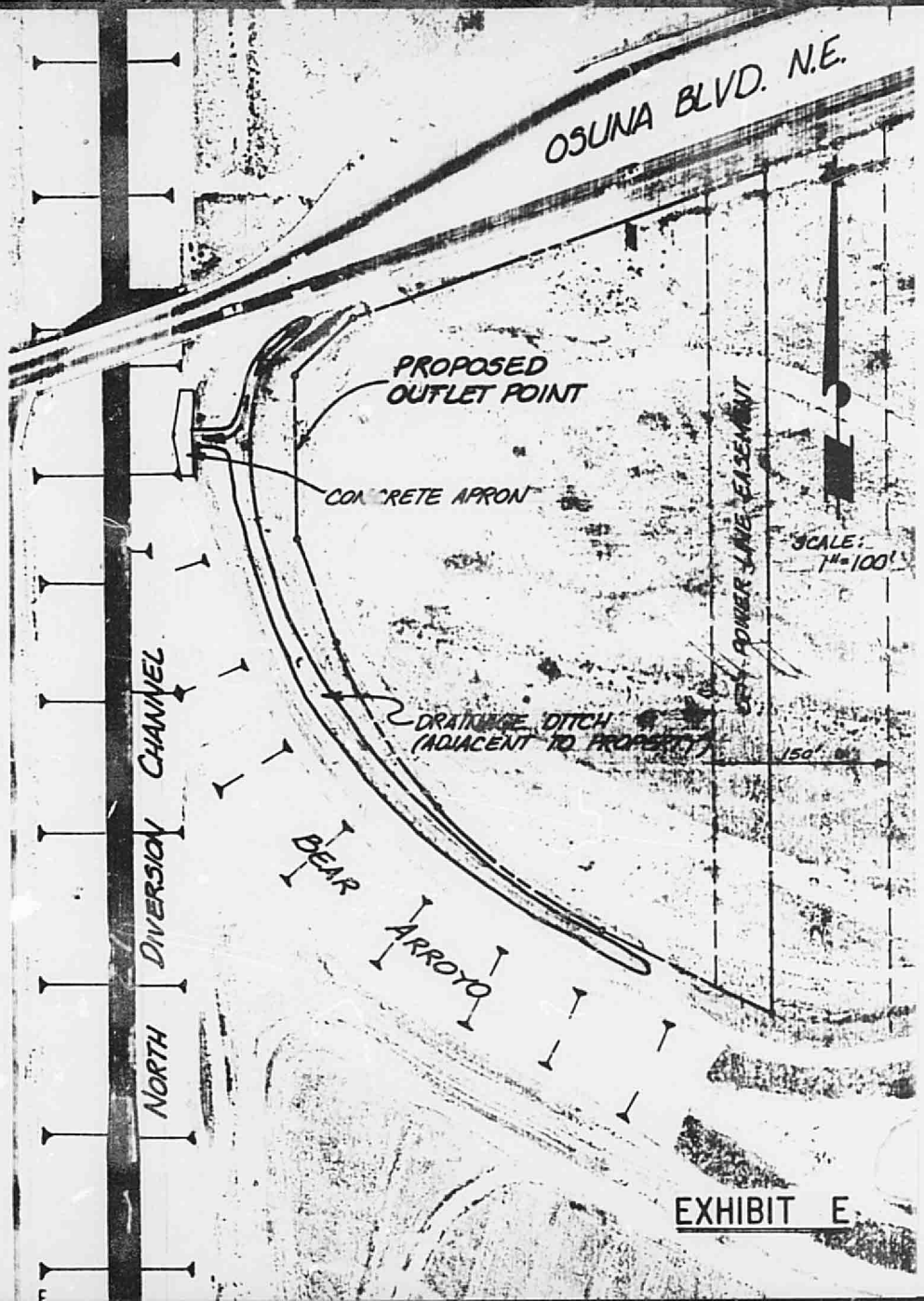

OSUNA BLVD. N.E.
PROPOSED OUTLET POINT
CONCRETE APRON
SCALE: 1"=100'
POWER LINE EASEMENT
DRAINAGE DITCH (ADJACENT TO PROPERTY)
150'
NORTH DIVERSION CHANNEL
BEAR ARROYO

EXHIBIT E

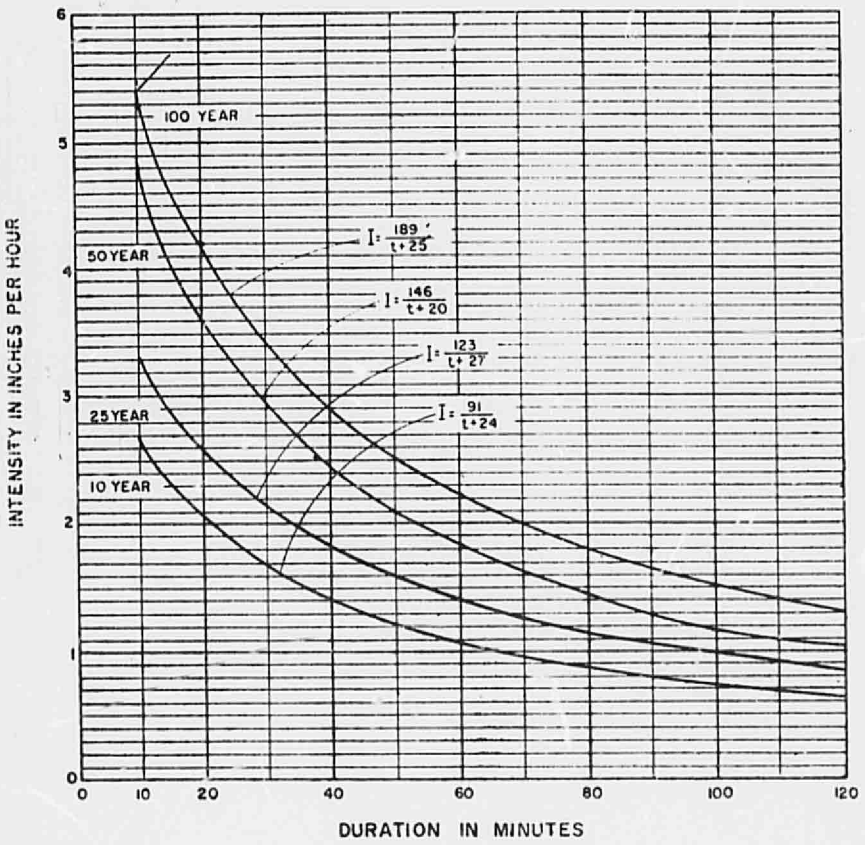


EXHIBIT "C"

MASTER PLAN OF DRAINAGE CITY OF ALBUQUERQUE - NEW MEXICO AND ENVIRONS	
INTENSITY DURATION FREQUENCY CURVES (ALBUQUERQUE AREA - 1961)	
GORDON HERKENHOFF & ASSOC CONSULTING ENGINEERS ALBUQUERQUE, NEW MEXICO	CHART 1

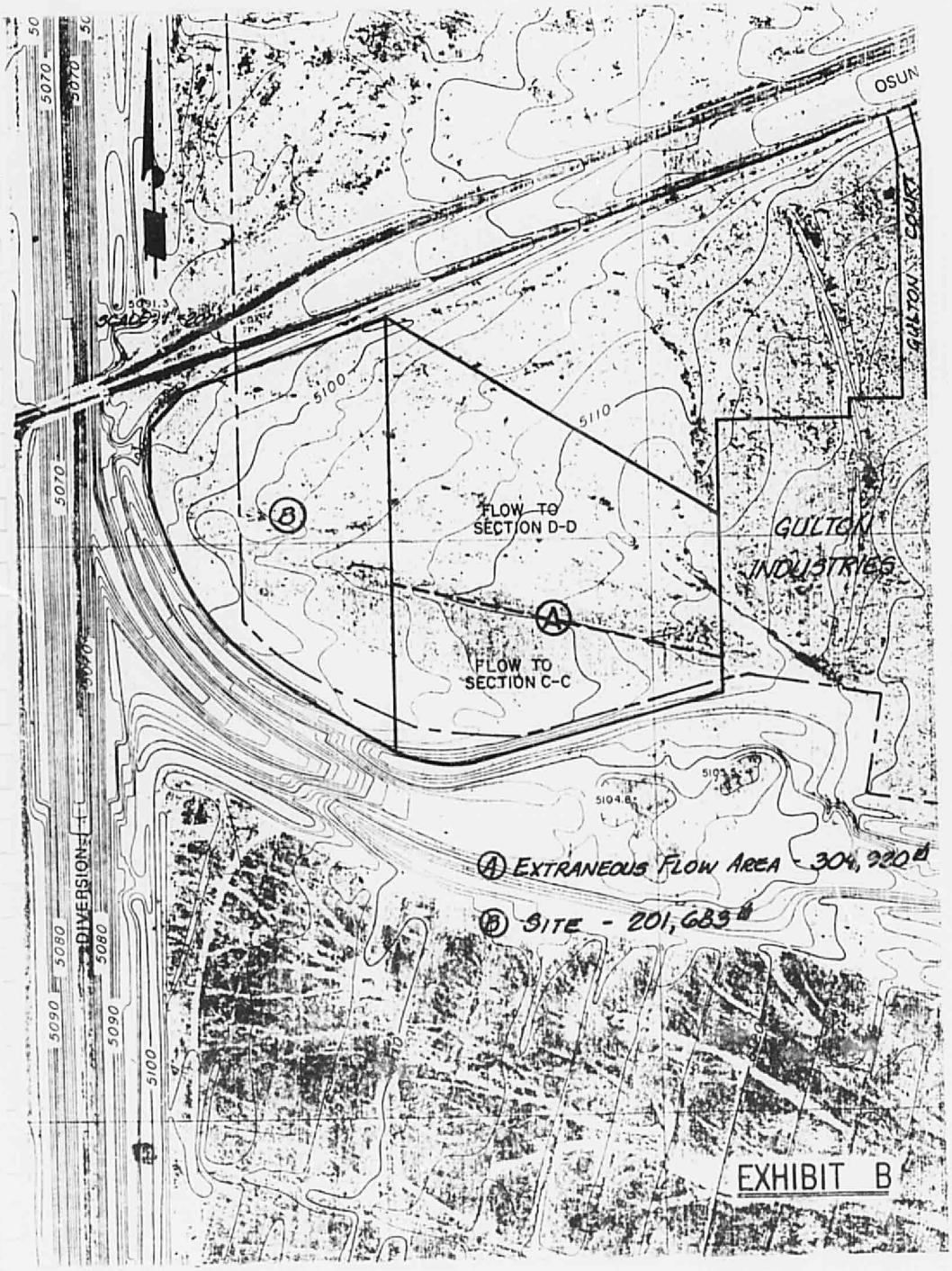

OSUN
GULTON COURT
GULTON INDUSTRIES
FLOW TO SECTION D-D
FLOW TO SECTION C-C
5100
5110
5070
5080
5090
5104.8
DIVERSION
Ⓐ EXTRANEOUS FLOW AREA - 304,920 ft²
Ⓑ SITE - 201,683 ft²

EXHIBIT B

EXHIBIT A

E-17-Z

1 2 6 3