PUBLIC WORKS/HYDROLOGY
L10/D11

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L10/D11

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DRAINAGE INFORMATION SHEET

PROJECT TITLE: Grading Plan Western Acreage ZONE ATLAS/DRAINAGE FILE # L10/D11

LEGAL DESCRIPTION: Tracts 13-B + 14-D VE. BARRETT SUBD.

CITY ADDRESS:

ENGINEERING FIRM: Greiner Inc CONTACT: Mark Holstad

ADDRESS: 5971 Jefferson Blvd NE PHONE: 345 3799

OWNER: Western Acreage, Inc. CONTACT: Arthur Brown

ADDRESS: 1931 Sawmatu NE 87110 PHONE: 265-5911

ARCHITECT: N/A CONTACT: —

ADDRESS: — PHONE: —

SURVEYOR: Greiner Inc CONTACT: —

ADDRESS: see ABOVE PHONE: —

CONTRACTOR: Moore & Cowart CONTACT: James L Moore

ADDRESS: 3100 Princeton Ave NE 87107 PHONE: 884-2228

PRE-DESIGN MEETING:

X YES DRB NO.

__ NO EPC NO.

NO COPY OF CONFERENCE RECAP SHEET PROVIDED - NONE PROVIDED BY C.O.A. MINUTES ATTACHED PROJECT NO.

TYPE OF SUBMITTAL:

__ DRAINAGE REPORT

__ DRAINAGE PLAN

__ CONCEPTUAL GRADING & DRAIN PLAN

X GRADING PLAN

__ EROSION CONTROL PLAN

__ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

__ SECTOR PLAN APPROVAL

__ SKETCH PLAT APPROVAL

__ PRELIMINARY PLAT APPROVAL

__ SITE DEVELOPMENT PLAN APPROVAL

__ FINAL PLAT APPROVAL

__ BUILDING PERMIT APPROVAL

__ FOUNDATION PERMIT APPROVAL

__ CERTIFICATE OF OCCUPANCY APPROVAL

__ ROUGH GRADING PERMIT APPROVAL

X GRADING/PAVING PERMIT APPROVAL

__ OTHER _____ (SPECIFY)

signed-off grading/paving 2/19/92 by Scott Dawes

FEB 7 1992

DATE SUBMITTED: 6 February 1992

BY: Mark Holstad

REV. 10/85 10

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SUPPLEMENTAL DRAINAGE REPORT

for

GRADING PLAN
WESTERN ACREAGE, INC.
TRACTS 13B AND 14D

February 6, 1992

Greiner Job No. E0115.00

Prepared for:
Western Acreage, Inc.

For Review by:
Pubic Works Department
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

FEB 7 1992

Mark S. Holstad, P.E.
Project Manager

Greiner, Inc.
5971 Jefferson Boulevard, NE, Suite 101
Albuquerque, New Mexico 87109
(505)345-3999

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Greiner

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FAX: (505) 345-8393

MINUTES

DATE: January 10, 1992

LOCATION: City of Albuquerque

SUBJECT: **ART BROWN PROPERTY PRE-DESIGN MEETING**

ATTENDEES: Gilbert Aldez, COA
Sheila Johnson, Greiner, Inc.

DISCUSSION:

Met with Gilbert Aldez at the City of Albuquerque at 8:30 AM.

1. Discussed pre-design meeting for the grading plan for the Art Brown property. Gilbert thought it was pretty straight forward and had no major comments. He said use the Rational Method to determine on-site hydrology. He also said that the Brown property must accept the existing off-site flows. He does not want to drain the upstream runoff in Unser Blvd.

   Gilbert provided a sample grading plan. He said we need to reseed after grading and a seeding specification will be needed on the plan, or a reference to the specifications in the Amole Del Norte Storm Diversion project. Also, it must be noted on the plan that the contractor must obtain a "Permit to Disturb Topsoil".

   A pre-design writeup was not done. He felt this grading plan was very simple and straight forward and didn't think it necessary. If someone other than himself reviews the plan when we submit it, Gilbert will discuss it with that person.

2. We also should determine if the City of Albuquerque has set any preliminary grades for Unser Blvd. and Stinson Rd. Jessie Ortiz at the Transportation Department could help in finding these. He thought we should look at preliminary street grades on Sunset Gardens Rd. to make certain the proposed grading would mesh with the surrounding area.

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EXISTING CONDITIONS

THE SITE CONSISTS OF TWO TRACTS OF LAND LOCATED ON THE SOUTH SIDE OF BRIDGE BOULEVARD BETWEEN UNSER BOULEVARD AND STINSON STREET. THE AREA IS ADJACENT TO THE AMOLE DEL NORTE STORM DIVERSION FACILITIES, A CITY OF ALBUQUERQUE DRAINAGE PROJECT CONSISTING OF A CONCRETE LINED CHANNEL ALONG THE SOUTH SIDE OF BRIDGE BOULEVARD. CONSTRUCTION OF THE CHANNEL WILL GENERATE AN EXCESS QUANTITY OF DIRT. THE OWNER OF TRACTS 13 AND 14 HAS NEGOTIATED WITH THE CITY TO PLACE THIS EXCESS DIRT ON HIS PROPERTY, NECESSITATING THIS GRADING PLAN.

CURRENTLY THE SITE IS UNDEVELOPED WITH AN ARROYO RUNNING EAST/WEST THROUGH THE MIDDLE OF THE PROPERTY. THE EXISTING ARROYO FLOWS EAST DRAINING ACROSS STINSON STREET AND ONWARD TO THE COORS DETENTION BASIN LOCATED AT THE SOUTHWEST CORNER OF BRIDGE BOULEVARD AND NORTH/SOUTH COORS BYPASS. CONSTRUCTION OF THE AMOLE DEL NORTE CHANNEL WILL REPLACE THE EXISTING ARROYO, THEREFORE, THE PROPERTY OWNER WOULD LIKE TO BUILD UP HIS PROPERTY TO DRAIN INTO THE CHANNEL.

PROPOSED CONDITIONS

AT THIS TIME THE PROPERTY OWNER WISHES TO PLACE FILL MATERIAL ON HIS PROPERTY. NO BUILDING CONSTRUCTION IS PLANNED. THIS GRADING PLAN PROPOSES TO RAISE AND LEVEL THE EXISTING SITE ALLOWING IT TO DRAIN INTO THE CHANNEL. ALL OFF SITE FLOWS WILL BE CONVEYED ACROSS THE PROPERTY TO THE NEW CHANNEL.

OFF-SITE FLOWS

FIVE OFF-SITE DRAINAGE AREAS FLOW INTO THE PROPERTY AND ARE SHOWN ON PLATES ONE AND TWO (ATTACHED). THESE AREAS ARE TO BE DIRECTED TO THE NEW CHANNEL AS SHOWN ON THE GRADING PLAN.

THE DRAINAGE PLAN FOR THE NEW CHANNEL ASSUMES THAT IN THE FUTURE OFF-SITE FLOW FROM THE WEST (AREA ONE) WOULD ENTER THE CHANNEL AT UNSER BOULEVARD IN A STORM DRAIN SYSTEM. CURRENTLY THERE ARE NO PLANS TO DEVELOP UNSER SOUTH OF BRIDGE BOULEVARD AND PLANS FOR A STORM DRAIN SYSTEM ARE FAR IN THE FUTURE. THIS GRADING PLAN PROPOSES TO RAISE THE PROJECT SITE, REDIRECTING THE FLOW INTO THE CHANNEL AS CALLED FOR IN THE AMOLE DEL NORTE DRAINAGE PLAN. ADDITIONAL RIP RAP PROTECTION WOULD BE REQUIRED WHERE THE FLOW ENTERS THE CHANNEL.

THE OTHER OFF-SITE AREAS ARE MUCH SMALLER THAN AREA ONE AND WILL BE DIRECTED TO THE CHANNEL THROUGH THE SITE, EMPTYING INTO THE CHANNEL AT CONCRETE RUNDOWNS.

CALCULATIONS ARE SHOWN OF THE FOLLOWING PAGES.

25× 32×

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Greiner

Job Western Acreage Computed By S Johnson Date 12 Jan 92
Description Checked By JB Date 2-5-92
H[illegible] on site V.E. Barrow Subdiv. Sheet 1 of 7
Tract 13 + 14

Area - Tract 13 - B - (after channel R/W is removed)
3.734 Ac.

Tract 14-D (after channel R/W is removed)
8.359 Ac.

Soil Types: MWH - Madurez - Hyd. Soil Group B
Fine Sandy loam

BKD - Blueprint " " " A
loamy fine sand
1.7 Ac in 14 Only

consider both sites together

Flow length = 1850 slope = $\frac{84.7 - 61.5}{1850}$ = .0125

$T_c = .0079 \frac{L^{.77}}{S^{.385}}$ = 13.32 min = .23 hrs

V = 2.23

Existing "C" value = 0.40 per Notice of Emergency Rule dated 1/14/86 rev. to Chp 22 p.17

Developed "C value = N/A for this analysis (CN value 92 used in Hydro for developed

Ghaut rainfall volume = 2.2" 100 yr
1.45" 10 yr

Dimentionless i (plate 22.2 D-2) = 1.82

intensity I_{100} = 2.2 (1.82) = 4.00
I_{10} = 1.45 (1.82) = 2.64

Q = CIA
Q_{100} = (.4)(4.00)(12.143) = 19.4 cfs
Q_{10} = (.4)(2.64)(12.143) = 12.8 cfs

25×10 32×10

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Greiner

Job Western Acreage Computed By [illegible] Date 29 Jan 92
Description On-site - after grading Checked By [illegible] Date 2-5-92
Sheet 2 of 7

Area to Swale A - (western portion)

Area = 3.7 Ac C = .4 undeveloped

$T_c = .0078 \frac{L^{.77}}{S^{.385}}$ Flow lew = 575 $S = \frac{83 - 76.7}{575}$

T_c = 6 min - use 10 min

i = 2.17 I_{100} = 2.2" (2.17) = 4.77
I_{10} = 1.45 (2.17) = 3.15

Q_{100} = (.4)(4.77)(3.7) = 7.1
Q_{10} = (.4)(3.15)(3.7) = 4.7

Area to Swale C (mid portion)

Area = 4.3 C = .4 undeveloped

T_c - use 10 minutes so I same as above

Q_{100} = (.4) 4.77 (4.3) = 8.2
Q_{10} = (.4) 3.15 (4.3) = 5.4

Area to Swale E (east portion)

Area = 1.2 C = .4

T_c - use 10 minutes so I same as above

Q_{100} = (.4) 4.77 (1.2) = 2.3

Q_{10} = (.4) 3.15 (1.2) = 1.5

25×10 32×10

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Greiner

Job Western Acreage Computed By [illegible] Date 13 Jan 92
Description Hydrology Checked By [illegible] Date 2-5-92
OFF-SITE AREAS Sheet 3 of 7

Soil Type- MWA - Madurez (Fine Sandy Loam) Hyd. Soil Group B
BKD - Bluepoint (Loamy Fine Sand) " " " A

Method- Hymo used for off-site area ① - west of site
Done in Amole Del Norte Storm Diversion Facilities
C.O.A. project #4076.90.

Sites to south - Use Rational per D.P.M. chapter 22.
(these were also done in Amole report but as "developed."
Correct basins are different)

Q from Hymo = 368 cfs
Vol = 20.1 AF
} Dev. 100 yr Q OFF SITE WEST ①

off site - south consists of 4 basins

Areas	Planimeter		Area	map scale 1" = 200'
②	8.17 ? 8.19	8.18	7.511 Ac	
③	14.81 14.81	14.81	13.600 Ac	
④	3.55 ? 3.55	3.55	3.260 Ac	
⑤	9.37 ? 9.35	9.36		
	+ 7.17 ? 7.16	7.17	30.31 = 27.833 Ac	
	+ 13.26 ? 13.30	13.28		

25×10 32×10

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Greiner

Job Western Acreage — Computed By [illegible] — Date 13 [illegible] 92
Description — Checked By [illegible] — Date 2-5-92
OFF-SITE AREAS — Sheet 4 of 7

C values

existing "C" = 0.40 - NO Development CURRENTLY

Time of Concentration $T_c = .0078 \frac{L^{.77}}{S^{.385}}$ - unless V<3 or V>6 - use overland per plate 22.2 (2-1 p5)

$V = \frac{L}{T_c(60)}$

② Length = 1200

Slope = $\frac{86.6 - 30.6}{1200} = .0052$

* T_c = 13.91 min, V=1.4 — use overland → V = .41 + T_c = 49 min

③ use overland flow

$S = \frac{84 - 73}{1030} = .0172$ V = 0.58 V = 0.58, T_c = 31 min

* 9.3 min, 10 min, V=1.3 — use overland

④ $S = \frac{84 - 74}{900} = .0111$

* T_c = 8.3 min, 10 min, V=1.8 — use overland → V = 0.60, T_c = 25 min

⑤ Length = 3720' Slope = $\frac{5106 - 5064}{3720} = .0113$

T_c = 24.6 min
V = 2.52 — close enough - ok

Rain fall volumes 100 yr = 2.2"
10 yr = 1.45

* NOTE: USE LOWER TC'S SINCE IT'S MORE CONSERVATIVE

25×10 32×10

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Greiner

Job Western Acreage Computed By S Johnson Date 13 Jan 92
Description Checked By [illegible] Date 2-5-92
Sheet 5 of 7

INTENSITY

Dimensionless:

② 1.80 $I_{100} = 1.8(2.2") = 3.96$
$I_{10} = 1.8(1.45) = 2.61$

③ 2.17 $I_{100} = 2.17(2.2) = 4.77$
+ ④ $I_{10} = 2.17(1.45) = 3.15$

⑤ 1.35 $I_{100} = 1.35(2.2) = 2.97$
$I_{10} = 1.35(1.45) = 1.96$

Q $Q = CIA$

EXISTING OFF SITE

② $Q_{100} = (.4)(3.96)(7.511) = 11.9$
$Q_{10} = \text{"}(2.61)\text{"} = 7.8$

③ $Q_{100} = (.4)(4.77)(13.600) = 25.9$
$Q_{10} = \text{"}(3.15)(\text{"}) = 17.1$

④ $Q_{100} = (.4)(4.77)(3.260) = 6.2$
$Q_{10} = (.4)(3.15)\text{"} = 4.1$

⑤ $Q_{100} = (.4)(2.97)(27.933) = 33.1$
$Q_{10} = \text{"}(1.96)\text{"} = 21.3$

Developed off-site - per Amole Del Norte Storm Diversion Facilities - OFF-SITE AREA INCLUDED IN "DEVELOPED" Hydro. Q_{100} is smaller than undeveloped - Basin - 21D east

This is due to Street development - Assume Eucaris Ave. will carry flow to Stinson Rd then south out of project

Q_{100} Developed - 53 cfs - Hydro - 30 Ac ±

25×10 32×10

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Greiner

Job Western Acreage Computed By S. Johnson Date 16 Jan 92
Description Swale calculations Checked By JP Date 2-5-92
Sheet 6 of 7

WEST BASIN

SWALE A

n = .03
S = 1.3%
Q = 7.1 cfs

@ 3:1 SS — Side slopes vary 3:1 max at
D = 0.37
V = 3.14
A = 2.29 — so Top Width = 5.26

n = .03
S = 4.5%
Q = 7.1

@ 5:1 SS
D = 0.56
V = 4.46
A = 1.59

Swale B (down stream end of west basin - perpendicular to channel)

n = .03
Q = 12 cfs
S = .014
SS = 10:1 - triangular
D = 0.66
V = 2.78
A = 4.32 — T.W. = 13.09

MID BASIN

Swale C

n = .03
Q = 8
S = 1.0%

@ 3:1 D = .96
V = 2.92
A = 2.74 so t.
so top width = 5.7

S = .0079 @ 3:1
D = 1.0
V = 2.67
A = 2.99 — T.W. = 6.0

Swale D (downstream end of mid basin - perpendicular to channel)

n = .03
Q = 32 cfs
S = .005

SS = 5:1
D = 1.50
V = 2.85
A = 11.22 - top width = 15.0

25× 32×

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Greiner

Job Western Acreage Computed By SJohnson Date 10 Jan 92
Description Swale Calculations Checked By JB Date 2-5-92
Sheet 2 of 2

EAST BASIN

Swale E

n=.03 D=.60
Q= 2.3 V=2.14
S= 1% A=1.07
SS= 3:1

Swale F

n=.03 SS= 10:1 D = 1.07
Q = 33 V = 2.90
S = .008 A = 11.37

Criteria DPM

unlined channels = ok "if erosion is not a factor"
+V does not exceed 8 fps
DPM - see 22.3 p. 62.

Berms + levees - 2' FB / Back protection req'd at 8 fps or greater -

if less than 4' high, berm must be 8' min wide

see 22.3 p. 91+92

25×10 32×10

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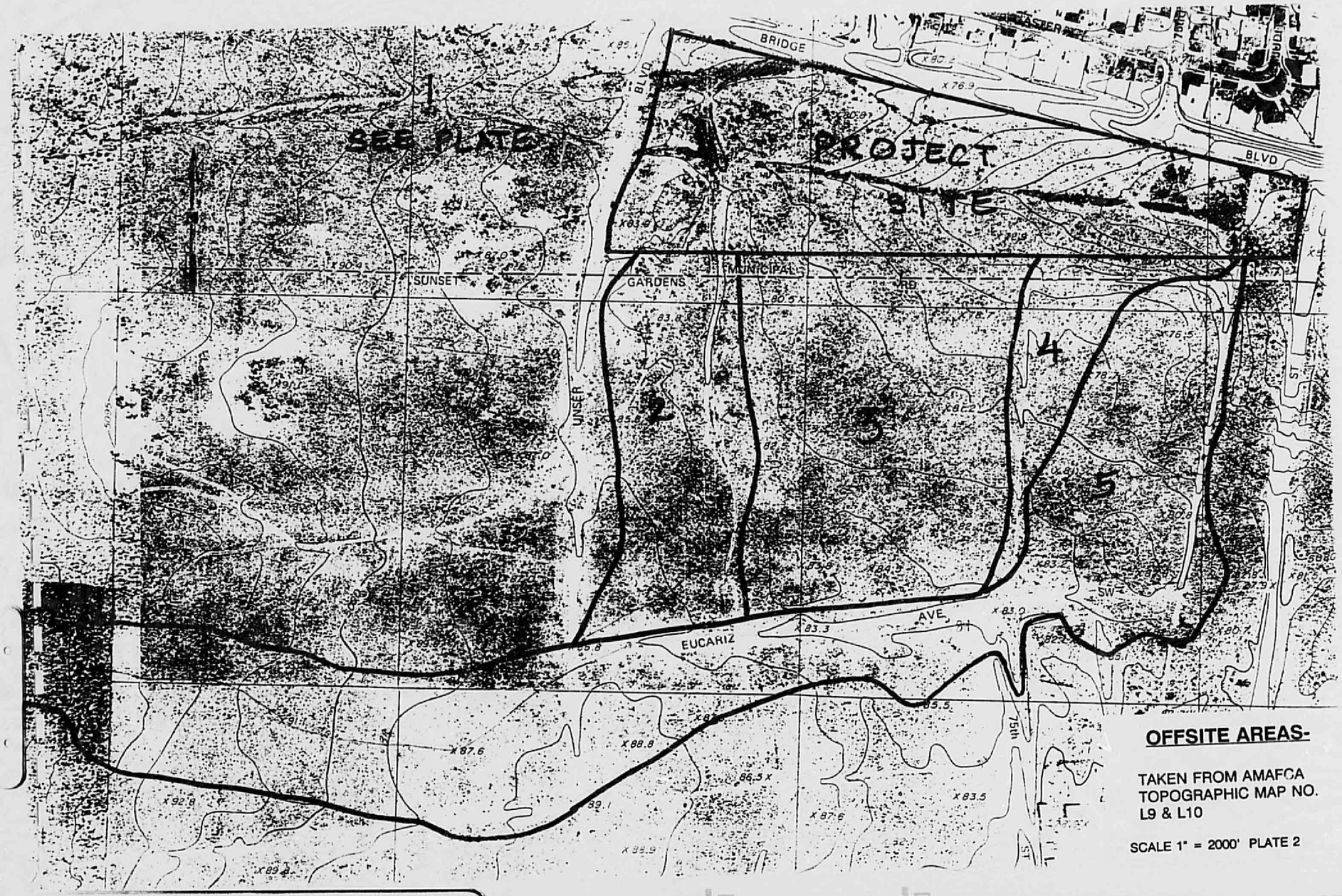

OFFSITE AREAS-

TAKEN FROM AMAFCA
TOPOGRAPHIC MAP NO.
L9 & L10

SCALE 1" = 2000' PLATE 2

25×10 32×10 25×10

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PLANS/PLATS ON FILE

FILE DESC: L10/D11

PLANS/PLATS 3

25×10 32×10

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