

CITY OF ALBUQUERQUE



August 20, 2007

Amy L.D. Niese, P.E.
Isaacson & Arfman, PA
128 Monroe St. NE
Albuquerque, NM 87108

RE: Bell Trading Post, Lots 1-6, 7A-9A, & 10, (J-13/D085)
Engineers Certification for Release of Financial Guaranty (W.O. # 758382)
Engineers Stamp dated 10/24/05
Engineers Certification dated 8/16/07

Based upon the information provided in your Engineer's Certification Submittal dated 8/17/07, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

P.O. Box 1293

If you have any questions, you can contact me at 924-3982.

Sincerely,

Albuquerque



Timothy Sims

New Mexico 87103

Plan Checker-Hydrology
Development and Building Services

www.cabq.gov

C: Marilyn Maldonado
File
WO # 758382

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Bell Trading Post Homes ZONE MAP / DRG. FILE #: J-13/D85
DRB #: 1003885 EPC #: 1003967 WORK ORDER #: 758382

LEGAL DESCRIPTION: Lots 1-6, 7A-9A, and 10, Bell Trading Post Homes
CITY ADDRESS: 220, 216, 212, 209, 205, and 201 Laguna and 1515, 1509, 1505, and 1501 Roma Avenue

ENGINEERING FIRM: Isaacson & Arfman, P.A. CONTACT: Amy L. D. Niese, PE
ADDRESS: 128 Monroe St. NE PHONE: 268-8828
CITY, STATE: Albuquerque, NM ZIP CODE: 87108

OWNER: Family Housing Development Corporation CONTACT: Lori Weber
ADDRESS: PO Box 91525 PHONE: 550-6184
CITY, STATE: Albuquerque, NM ZIP CODE: 87199

ARCHITECT: ADDRESS: CITY, STATE: CONTACT: PHONE: ZIP CODE:

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich
ADDRESS: 4109 Montgomery PHONE: 884-1990
CITY, STATE: Albuquerque, New Mexico ZIP CODE: 87107

CONTRACTOR: ADDRESS: CITY, STATE: CONTACT: PHONE: ZIP CODE:

CHECK TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1ST *REQUIRES TCL or equal*
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☒ ENGINEER'S CERTIFICATION (HYDROLOGY)
☐ CLOMR / LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEER'S CERTIFICATION (TCL)
☐ ENGINEER'S CERTIFICATION (DRB APPR, SITE PLAN)
☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

☒ SIA / FINANCIAL GUARANTEE RELEASE
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPR.
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY (PERM)
☐ CERTIFICATE OF OCCUPANCY (TEMP)
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☐ OTHER

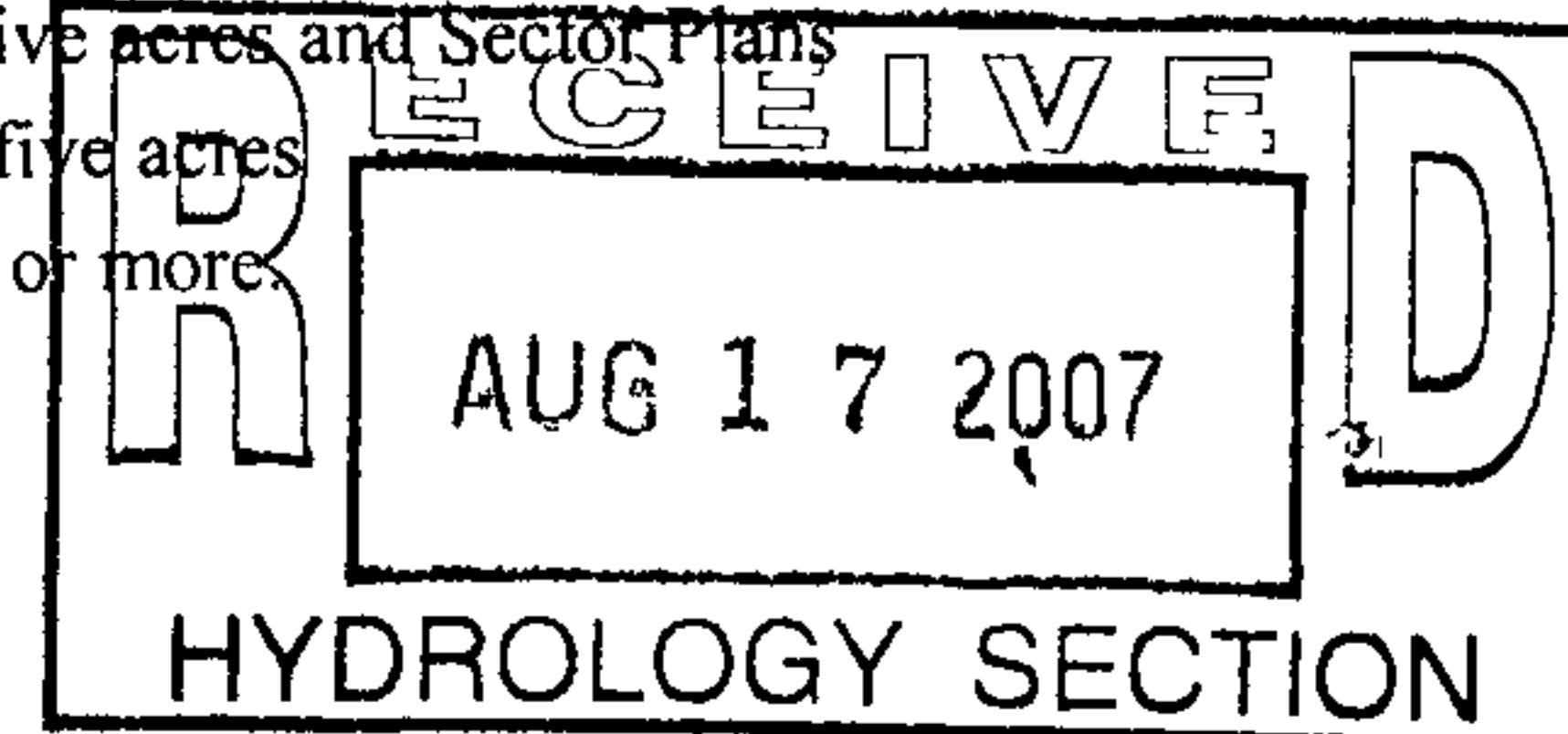
WAS A PRE-DESIGN CONFERENCE ATTENDED:

☐ YES
☒ NO
☐ COPY PROVIDED

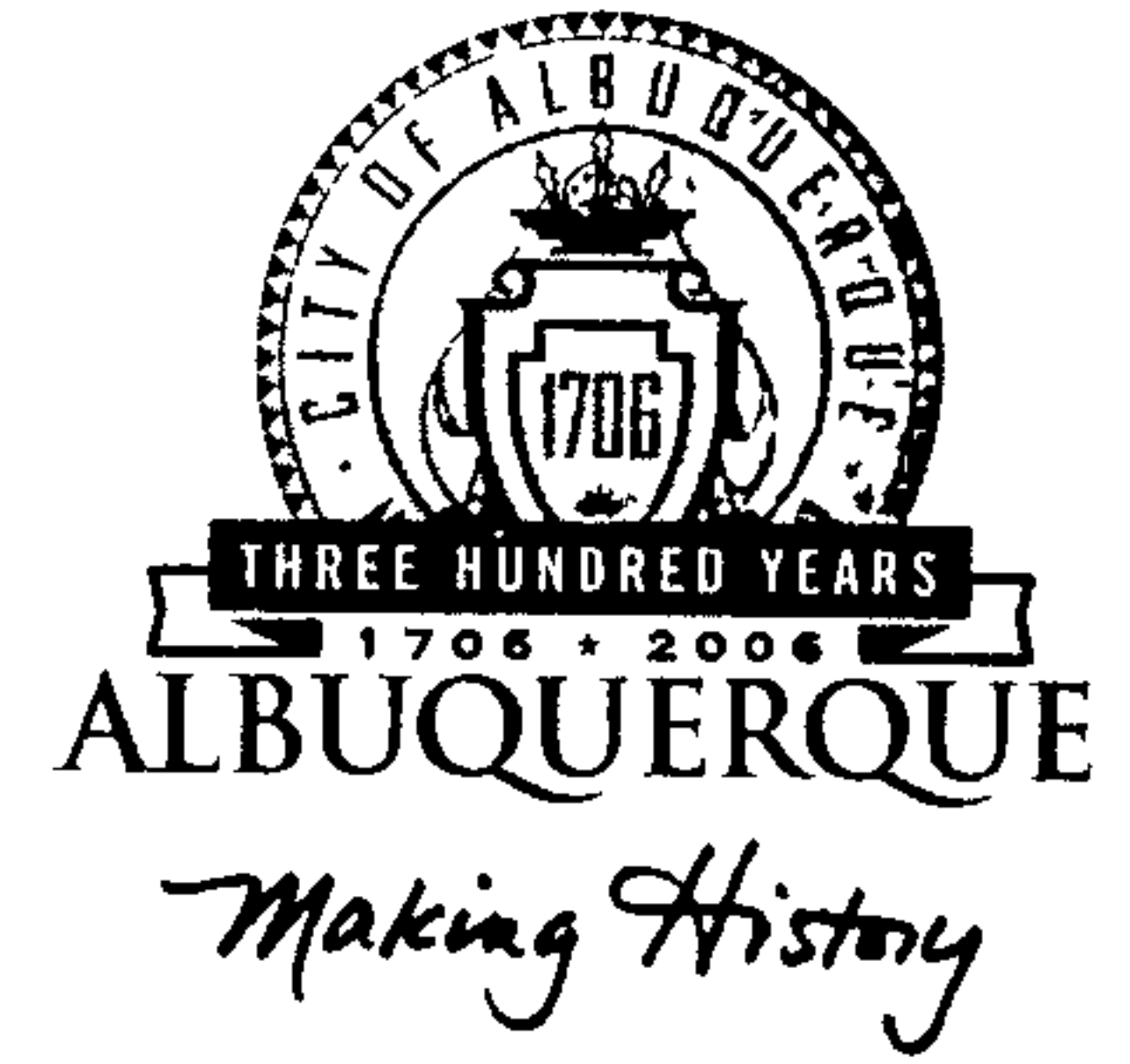
DATE SUBMITTED: Thursday, August 16, 2007 BY: 
Amy L. D. Niese, PE, Isaacson & Arfman, P.A.

Requests for approvals of Site Development Plans and / or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. Conceptual Grading and Drainage Plan: Required for approval of Site Development Plans greater than five acres and Sector Plans
2. Drainage Plans: Required for building permits, grading permits, paving permits and site plans less than five acres
3. Drainage Report: Required for subdivisions containing more than ten (10) lots or constituting five acres or more



CITY OF ALBUQUERQUE



November 4, 2005

Amy L.D. Niese, PE
Isaacson & Arfman, PA
128 Monroe St. NE.
Albuquerque, NM 87108

Re: Bell Trading Post Homes, Block 13 Perea Addition
Grading and Drainage Plan
Engineer's Stamp dated 10-24-05 (J 13/D85)

Dear Ms. Niese,

Based upon the information provided in your submittal received 10-28-05, the above referenced plan is approved for Preliminary Plat action by DRB and Grading Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Rudy E. Rael, Associate Engineer
Planning Department.
Building and Development Services

C: File

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Bell Trading Post Homes
DRB #: 1003885 EPC #: 1003967

ZONE MAP / DRG. FILE #: J-13 / D85
WORK ORDER #: _____

LEGAL DESCRIPTION: Lots 4-7, 9-12, 21-24; Block 13; Perea Addition
CITY ADDRESS: _____

ENGINEERING FIRM: Isaacson & Arfman, P.A. CONTACT: Amy Niese, PE
ADDRESS: 128 Monroe St. NE PHONE: 268-8828
CITY, STATE: Albuquerque, NM ZIP CODE: 87108

OWNER: City of Albuquerque, Metropolitan Redevelopment Agency CONTACT: _____
ADDRESS: PO Box 1293 PHONE: 924-3479
CITY, STATE: Albuquerque, NM ZIP CODE: 87103

ARCHITECT: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich
ADDRESS: 4109 Montgomery PHONE: 884-1990
CITY, STATE: Albuquerque, New Mexico ZIP CODE: 87107

CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

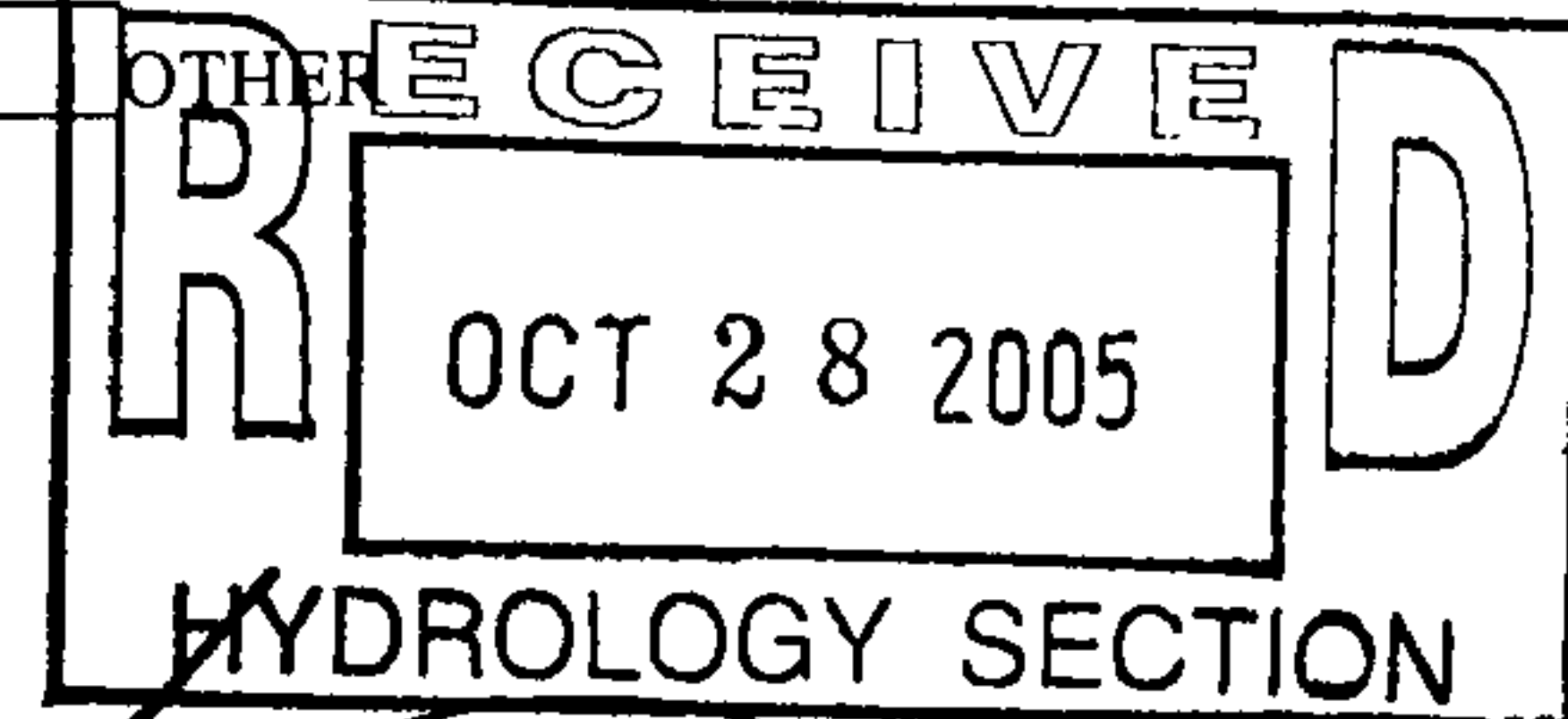
- ☒ DRAINAGE REPORT
☐ DRAINAGE PLAN 1ST *REQUIRES TCL or equal*
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
☐ CLOMR / LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEER'S CERTIFICATION (TCL)
☐ ENGINEER'S CERTIFICATION (DRB APPR, SITE PLAN)
☐ OTHER

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☒ NO
☐ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA / FINANCIAL GUARANTEE RELEASE
☒ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG. PERMIT APPR.
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY (PERM)
☐ CERTIFICATE OF OCCUPANCY (TEMP)
☒ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☐ OTHER



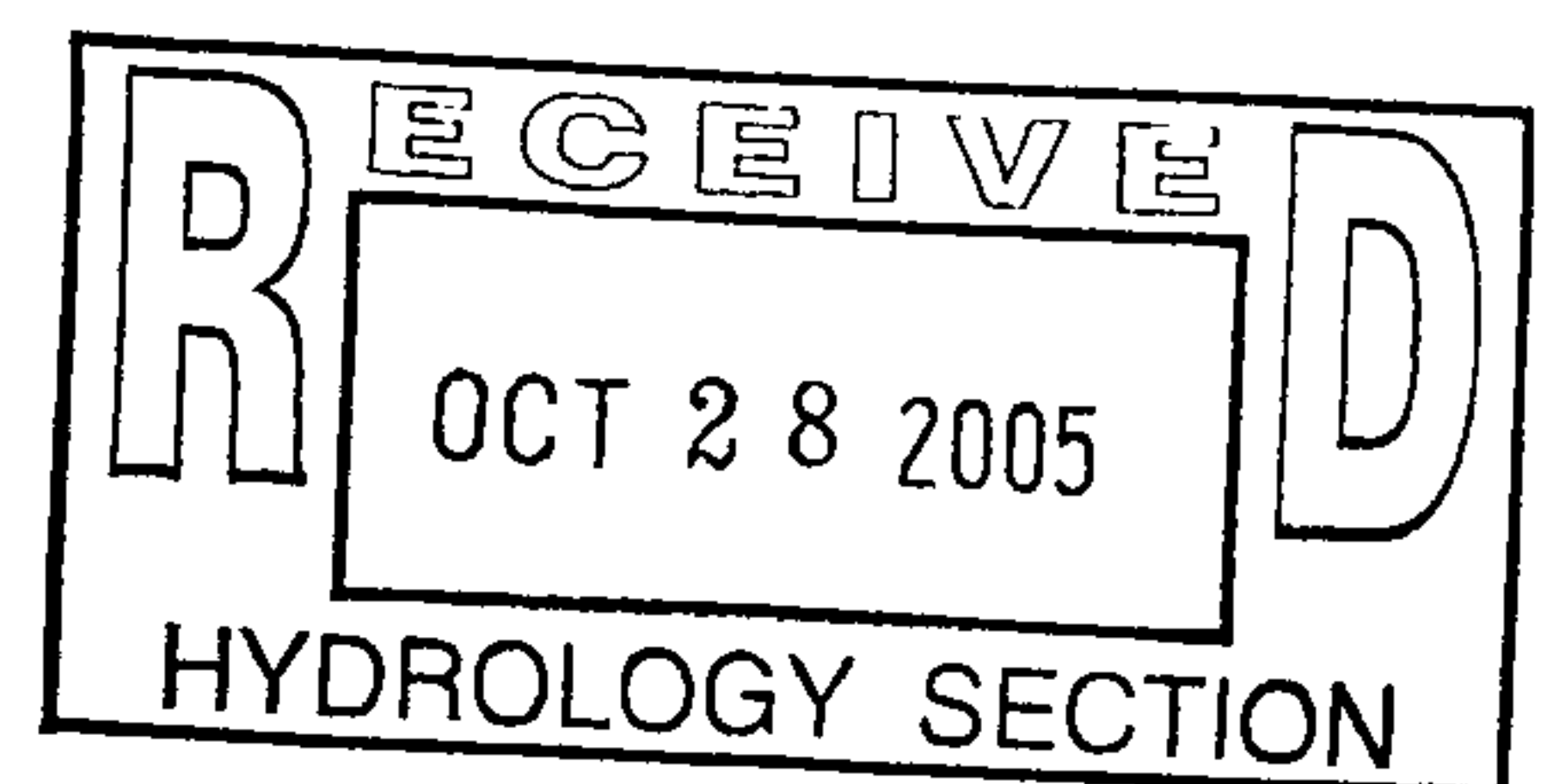
DATE SUBMITTED: Tuesday, October 25, 2005 10/28/05 BY: Amy L. D. Niese, PE, Isaacson & Arfman, P.A.

Requests for approvals of Site Development Plans and / or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. Conceptual Grading and Drainage Plan: Required for approval of Site Development Plans greater than five acres and Sector Plans
2. Drainage Plans: Required for building permits, grading permits, paving permits and site plans less than five acres
3. Drainage Report Required for subdivisions containing more than ten (10) lots or constituting five acres or more.

DRAINAGE REPORT
FOR
BELL TRADING POST
HOMES SUBDIVISION

ALBUQUERQUE, NEW MEXICO
OCTOBER 2005

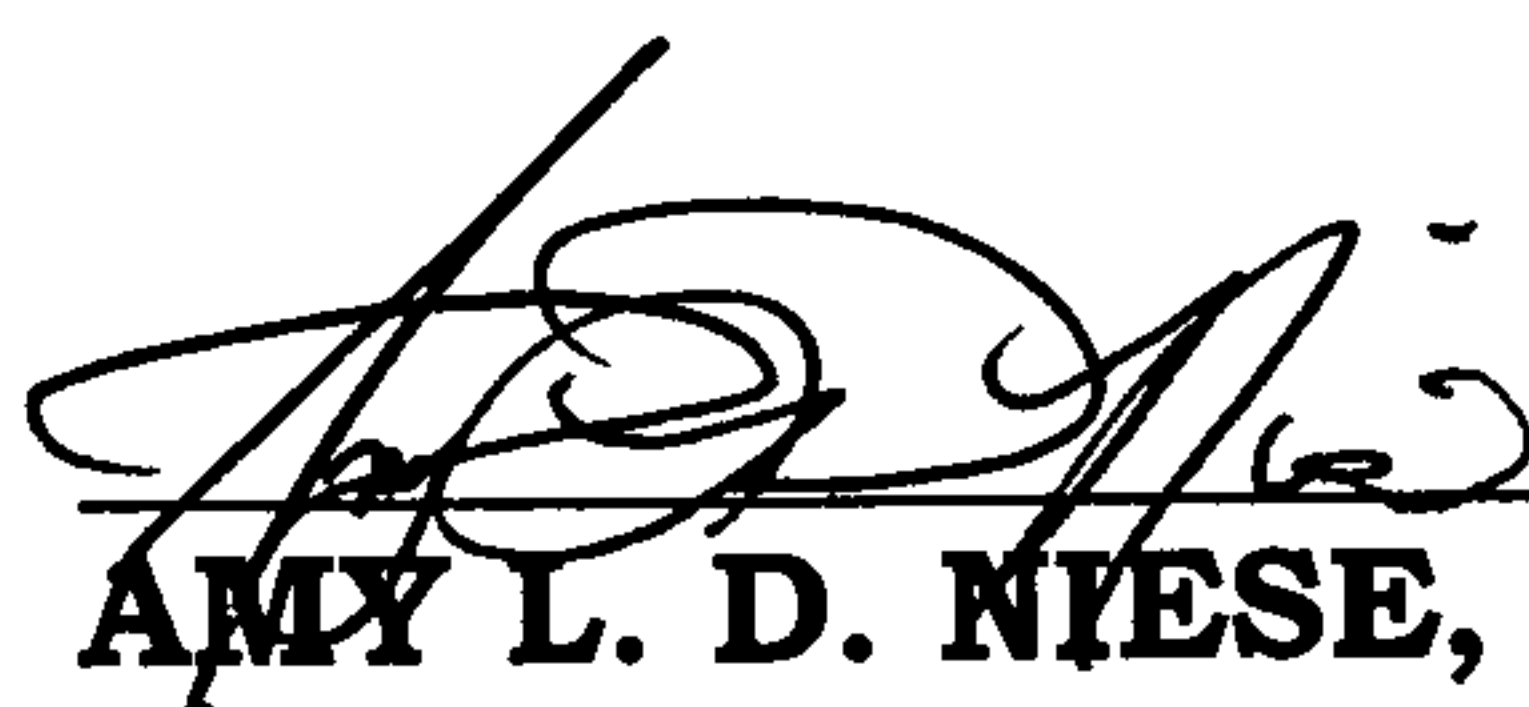


DRAINAGE REPORT
FOR
BELL TRADING POST
HOMES SUBDIVISION

ALBUQUERQUE, NEW MEXICO
OCTOBER 2005

Prepared by:

ISAACSON & ARFMAN, P.A.
128 Monroe Street NE
Albuquerque, NM 87108
(505) 268-8828


AMY L. D. NIESE, PE



Date

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VICINITY MAP

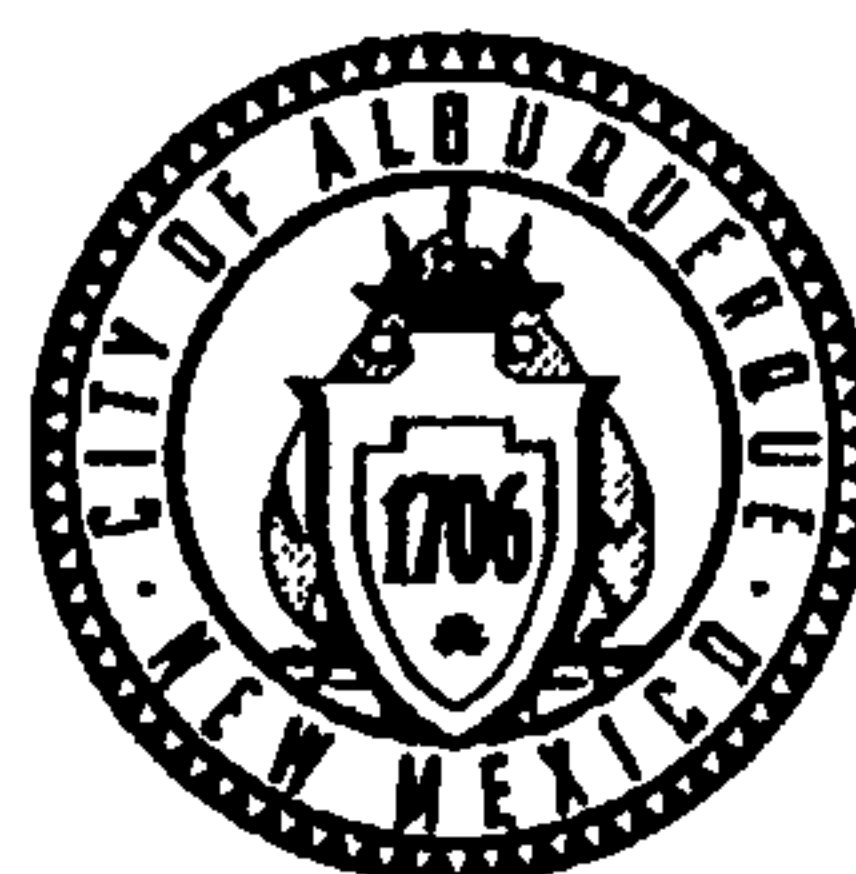
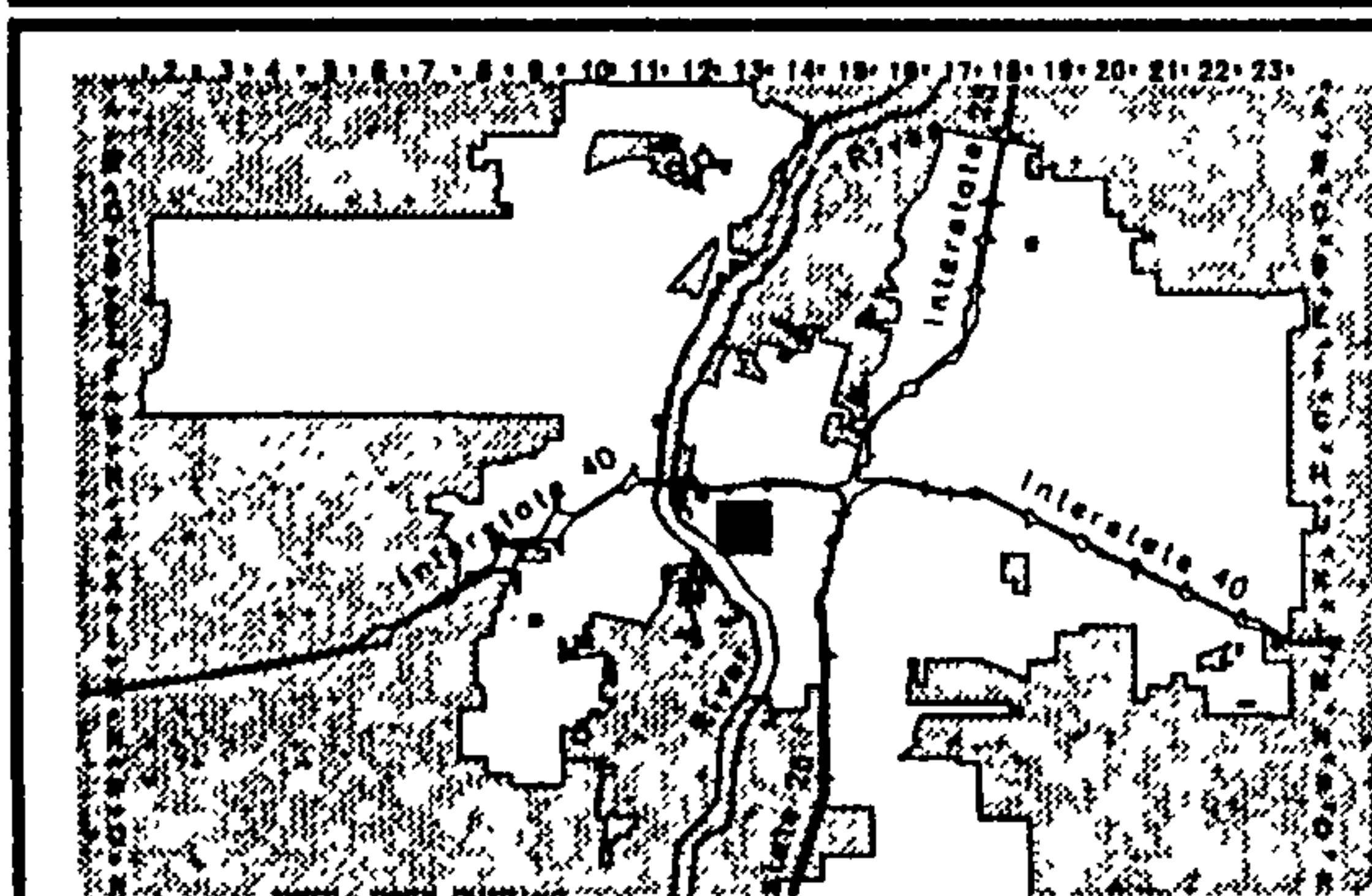
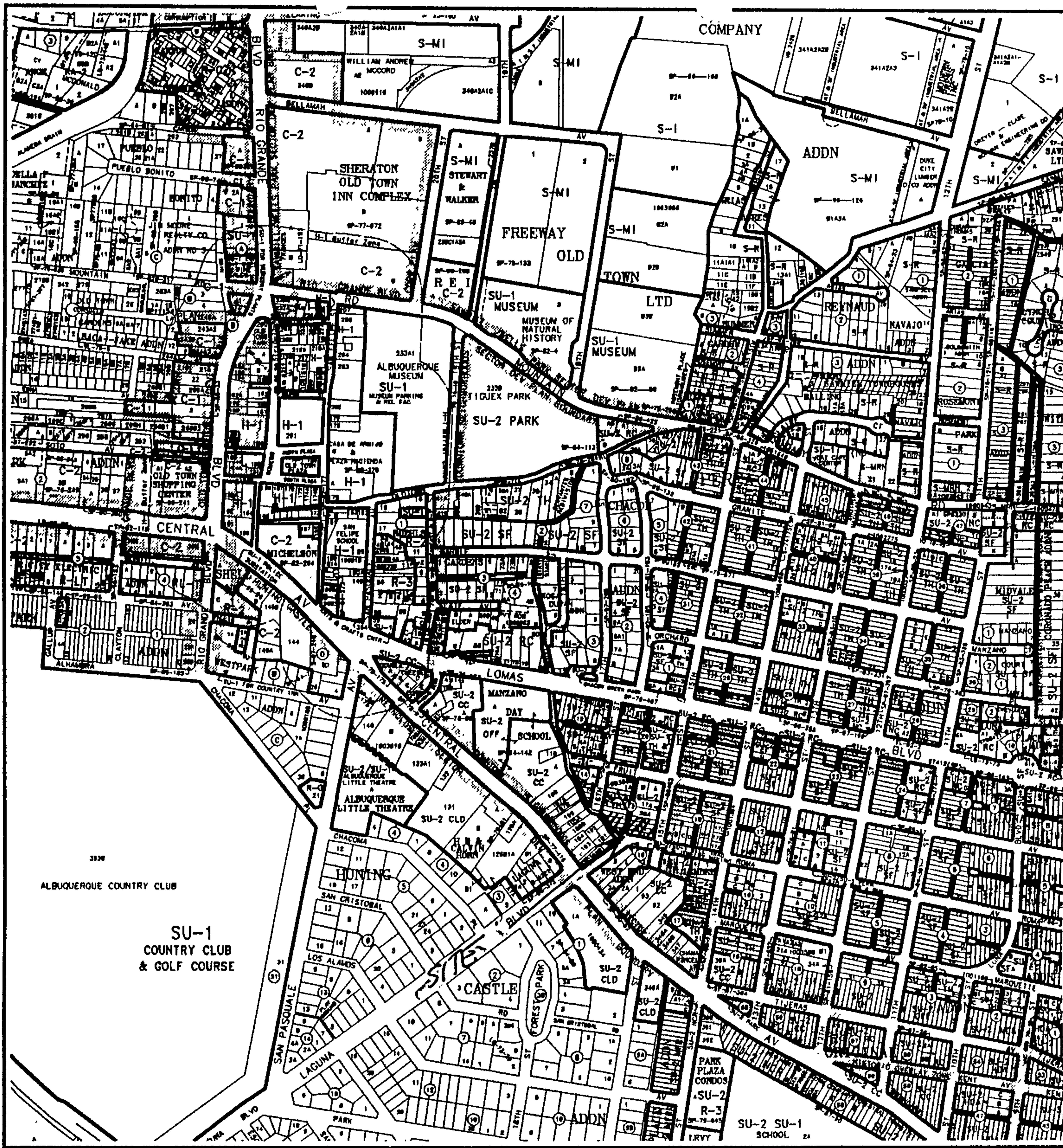
- I. PROJECT INFORMATION**
- II. INTRODUCTION**
- III. EXISTING CONDITIONS**
- IV. PROPOSED CONDITIONS**
- V. SUMMARY & CONCLUSIONS**

APPENDICES

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APPENDIX B: AHYMO Run and Calculations

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GRAPHIC SCALE IN FEET



Zone Atlas Page

J-13-Z

I. PROJECT INFORMATION

PROPOSED LEGAL DESCRIPTION:

Bell Trading Post Homes

EXISTING LEGAL DESCRIPTION:

Lots 4-7, 9-12, 21-24; Block 13; Perea Addition
(Filed May 1, 1891 in Book C2, Page 43)

ENGINEER:

Isaacson & Arfman, P.A.
128 Monroe Street NE
Albuquerque, NM 87108
(505) 268-8828
Attn: Amy L. D. Niese, PE

SURVEYOR:

Aldrich Land Surveying, Inc.
PO Box 30701
Albuquerque, NM 87190-0701
(505) 884-1990
Attn: Tim Aldrich, NMPLS No. 7719

DEVELOPER:

Family Housing Development Corporation
PO Box 91525
Albuquerque, NM 87199
(505) 873-9638

NUMBER OF PROPOSED LOTS: 10

TOTAL AREAS: 0.94 Acres

FLOODPLAIN: Zone ~~X~~² per Panel 333E FIRM Map dated 11/19/03

II. INTRODUCTION

This project is being submitted for Grading and Drainage approval.

Please see the enclosed Zone Atlas Map J-13. The site is bounded by 16th Street to the west, residential homes to the north, 15th Street to the east, and Roma Avenue to the south. The project covers 0.94 acres and will be developed into 10 subdivision lots.

III. EXISTING CONDITIONS

Currently the site is vacant and covered in old asphalt except for alley right-of-way running through it that is gravel. The site is not in the 100 year flood plain per Panel 333E FIRM Map dated November 19, 2003. All of the zoning is SU-2 TH.

In general, the area is very flat. 16th Street drains toward the north. The alley has a high point near the existing Lot 8 and drains north and south. 15th Street drains south. There is a high point at the intersection of Roma Avenue, Laguna Boulevard, and the alley so the water from the alley drains east. Existing drainage from proposed lots 1 through 6 drains toward the alley. Existing drainage from proposed lots 7 through 10 drains southeast towards 15th Street and Roma Avenue. Drainage is not entering from adjacent lots. The existing flows for the 100 year storm for the entire site are 4.28 cfs.

IV. PROPOSED CONDITIONS

This infill site will be developed into 10 subdivision lots. Proposed lots 1 through 6 will drain to the alley. Proposed lots 7 through 10 will drain to Roma Avenue. The developed flows for the 100 year storm are 3.88 cfs. Please see the enclosed AHYMO run. The decrease in flow is 0.40 cfs which is due to the asphalt being removed from the site. The proposed flows are below the historic rate. As a result, the subdivision will discharge freely to the alley and Roma Avenue. All of the flow will go to the intersection at 15th and Roma as before.

The inverted alley can contain up to 2.67 cfs. The flow to the alley is 2.60 cfs so it is sufficient to contain the flow.

V. SUMMARY & CONCLUSIONS

The existing vacant lots will be developed into 10 subdivision lots. The site is not in the 100 year flood plain. The site is an infill site. The existing flow is 4.28 cfs. The developed flow is 3.88 cfs which is less than the existing flow. The flow is below the historic rate. As a result, the drainage will discharge freely from the site to the alley and Roma Avenue.

APPENDIX A

Bell Trading Post Homes Grading and Drainage Plan

APPENDIX B

AHYMO Run and Calculations


```
- VERSION:    1997.02d          RUN DATE (MON/DAY/YR) =10/18/2005  
USER NO.= AHYMO-I-9702dIsa-Arfman1
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[illegible]

AHYMO PROGRAM (AHYMO_97) - - Version: 1997.02d
 RUN DATE (MON/DAY/YR) = 10/18/2005
 START TIME (HR:MIN:SEC) = 16:42:35 USER NO.= AHYMO-I-9702dIsa-Arfman1
 INPUT FILE = 1304.DAT

*S BELL TRADING POST HOMES
 *S FAMILY HOUSING DEVELOPMENT CORPORATION
 *S

 *
 * 1304.DAT
 * OCTOBER 18, 2005
 * BY AMY L. D. NIESE, PE
 *
 *
 * A 0.94 ACRE SITE BOUNDED BY 15TH ST, 16TH ST, AND ROMA AVE.
 *
 *

START RAINFALL BEGINS AT 0.0 HRS
 RAINFALL TYPE=1 RAIN QUARTER=0 RAIN ONE=1.90
 RAIN SIX=2.20 RAIN DAY=2.63 DT=0.03333HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
 DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

*S EXISTING BASIN A - LOTS

COMPUTE NM HYD ID=1 HYD NO=100.00 AREA=0.00146 SQ MI
 PER A=0 PER B=10 PER C=0 PER D=90
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
 7.106420
 UNIT PEAK = 5.1877 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.9000
 AREA = .001314 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

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AREA = .000146 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
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PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.83784 INCHES = .1431 ACRE-FEET
PEAK DISCHARGE RATE = 3.94 CFS AT 1.500 HOURS BASIN AREA = .0015 SQ. MI.

* EXISTING BASIN B - ALLEY

COMPUTE NM HYD ID=2 HYD NO=200.00 AREA=0.00019 SQ MI
PER A=0 PER B=20.0 PER C=80 PER D=0.0
TP=-0.1333 HR MASS RAIN=-1

4.278236 K = .111116HR TP = .133300HR K/TP RATIO = .833580 SHAPE CONSTANT, N =
UNIT PEAK = .53210 CFS UNIT VOLUME = .9746 B = 373.31 P60 = 1.9000
AREA = .000190 SQ MI IA = .38000 INCHES INF = .91400 INCHES PER HOUR
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PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 200.00

RUNOFF VOLUME = .93568 INCHES = .0095 ACRE-FEET
PEAK DISCHARGE RATE = .34 CFS AT 1.500 HOURS BASIN AREA = .0002 SQ. MI.

*S PROPOSED BASIN A - LOTS

COMPUTE NM HYD ID=3 HYD NO=300.00 AREA=0.00146 SQ MI
PER A=0 PER B=37 PER C=0 PER D=63
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7.106420 K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 3.6314 CFS UNIT VOLUME = .9961 B = 526.28 P60 = 1.9000
AREA = .000920 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

3.599930 K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE CONSTANT, N =
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AREA = .000540 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 300.00

RUNOFF VOLUME = 1.49079 INCHES = .1161 ACRE-FEET
PEAK DISCHARGE RATE = 3.33 CFS AT 1.500 HOURS BASIN AREA = .0015 SQ. MI.

* EXISTING BASIN B - ALLEY

COMPUTE NM HYD ID=4 HYD NO=400.00 AREA=0.00019 SQ MI
PER A=0 PER B=0.0 PER C=0 PER D=100.0
TP=-0.1333 HR MASS RAIN=-1

7.106420 K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = .75013 CFS UNIT VOLUME = .9840 B = 526.28 P60 = 1.9000
AREA = .000190 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=1

HYDROGRAPH FROM AREA 400.00

RUNOFF VOLUME = 1.96638 INCHES = .0199 ACRE-FEET
PEAK DISCHARGE RATE = .55 CFS AT 1.500 HOURS BASIN AREA = .0002 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:42:35


```

*S                               BELL TRADING POST HOMES
*S                               FAMILY HOUSING DEVELOPMENT CORPORATION
*S
*****
*
*      1304.DAT
*      OCTOBER 18, 2005
*      BY AMY L. D. NIESE, PE
*
*
*      A 0.94 ACRE SITE BOUNDED BY 15TH ST, 16TH ST, AND ROMA AVE.
*
*
*****

START          RAINFALL BEGINS AT 0.0 HRS
RAINFALL       TYPE=1 RAIN QUARTER=0 RAIN ONE=1.90
               RAIN SIX=2.20 RAIN DAY=2.63 DT=0.03333HR

*S  EXISTING BASIN A - LOTS

COMPUTE NM HYD      ID=1 HYD NO=100.00 AREA=0.00146 SQ MI
                   PER A=0 PER B=10 PER C=0 PER D=90
                   TP=-0.1333 HR   MASS RAIN=-1
PRINT HYD          ID=1   CODE=1

*   EXISTING BASIN B - ALLEY

COMPUTE NM HYD      ID=2 HYD NO=200.00 AREA=0.00019 SQ MI
                   PER A=0 PER B=20.0 PER C=80 PER D=0.0
                   TP=-0.1333 HR   MASS RAIN=-1
PRINT HYD          ID=2   CODE=1

*S  PROPOSED BASIN A - LOTS

COMPUTE NM HYD      ID=3 HYD NO=300.00 AREA=0.00146 SQ MI
                   PER A=0 PER B=37 PER C=0 PER D=63
                   TP=-0.1333 HR   MASS RAIN=-1
PRINT HYD          ID=3   CODE=1

*   EXISTING BASIN B - ALLEY

COMPUTE NM HYD      ID=4 HYD NO=400.00 AREA=0.00019 SQ MI
                   PER A=0 PER B=0.0 PER C=0 PER D=100.0
                   TP=-0.1333 HR   MASS RAIN=-1
PRINT HYD          ID=4   CODE=1

FINISH

```


EXISTING FLOWS

ALLEY $\frac{16 \times 260}{20 \times 260} = 80\% C$ 20% B

SITE 90% D 10% B

$A = 20 \times 260 = 5200 = 0.119 AC$
 $= 0.00019 SPN$

$A = 0.9353 AC = 40,742.8 = 0.00146 SPN$

$Q = 0.34 CFS$ AND 3.94 FOR AT/MO

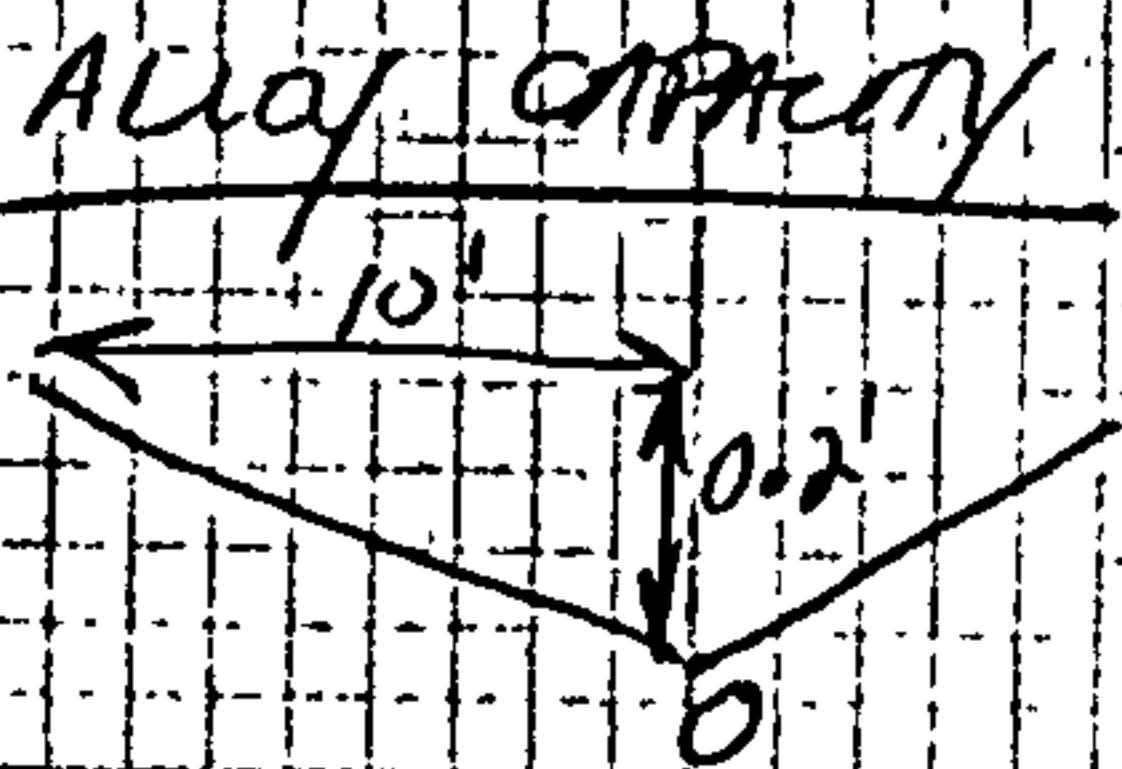
PROPOSED FLOWS

ALLEY 100% D (ASPHALT)

LOT 7 $\frac{76 \times 28}{34 \times 140} = 63\% D$

LOT 1 $\frac{26 \times 116}{34 \times 140} = 63\% D$

$Q = 0.55 CFS$ AND 3.33 FOR AT/MO



$Q = 1.49 A R^{2/3} S^{1/2}$

$A = 2(1/2) \cdot 10(0.2) = 2$

$R = \frac{A}{WP} = \frac{2}{2\sqrt{10^2 + 0.2^2}} = 0.10$

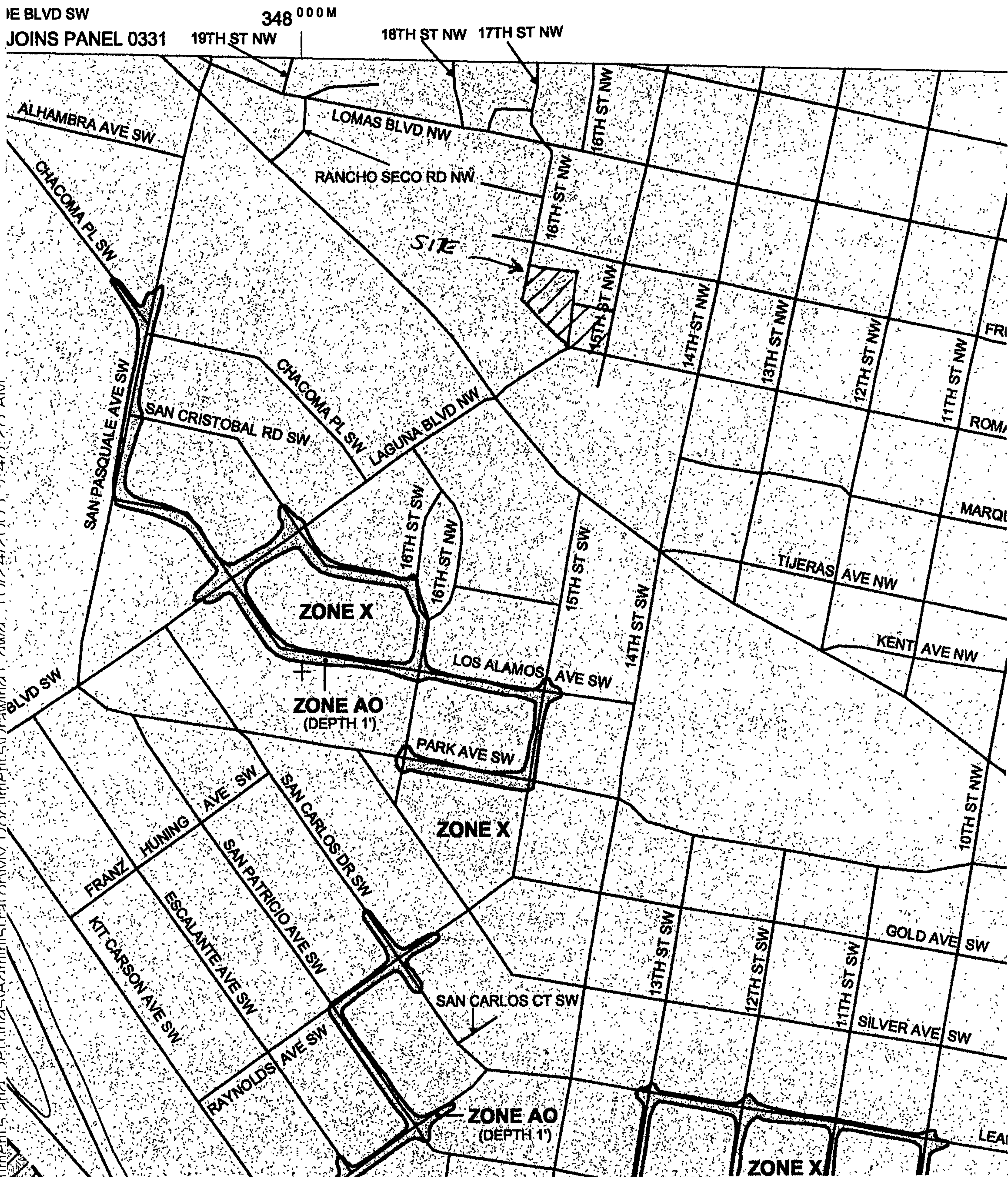
$Q = \frac{1.49(2)(0.10)^{2/3}\sqrt{.005}}{.017} = 2.67$

Flow TO ALLEY

$\frac{3.33 CFS}{0.94 AC} \times 0.58 AC + 0.55 CFS = 2.60 CFS < 2.67 CFS$

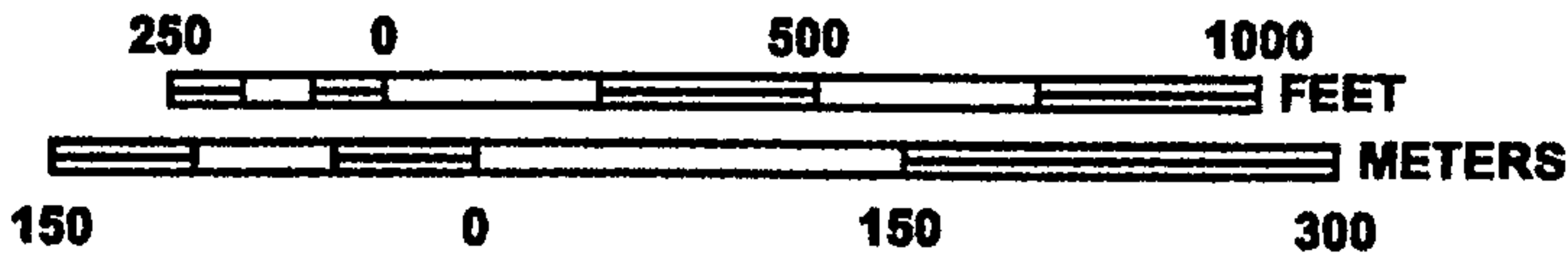
APPENDIX C

FIRM Map



SW

MAP SCALE 1" = 500'



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0333E

FIRM

FLOOD INSURANCE RATE MAP

**BERNALILLO COUNTY,
NEW MEXICO
AND INCORPORATED AREAS**

PANEL 333 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

<u>COMMUNITY</u>	<u>NUMBER</u>	<u>PANEL</u>	<u>SUFFIX</u>
ALBUQUERQUE, CITY OF	350002	0333	E
BERNALILLO COUNTY	350001	0333	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



**MAP NUMBER
35001C0333E
MAP REVISED
NOVEMBER 19, 2003**

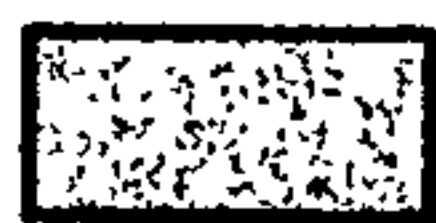
Federal Emergency Management Agency

C:\Documents and Settings\Administrator\My Documents\Drawings\Drawings\10/24/2005 9:49:28 AM

37.5"

AVE SW

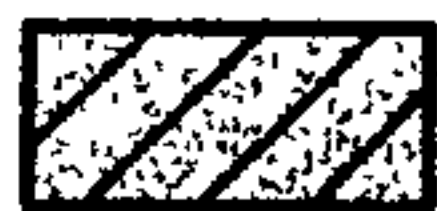
LEGEND



SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.



FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.



OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
---------------	---



OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.



COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS



OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.



Floodplain boundary



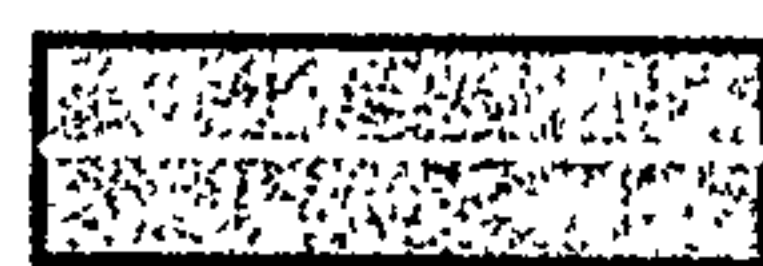
Floodway boundary



Zone D boundary



CBRS and OPA boundary



Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.



Base Flood Elevation line and value; elevation in feet*

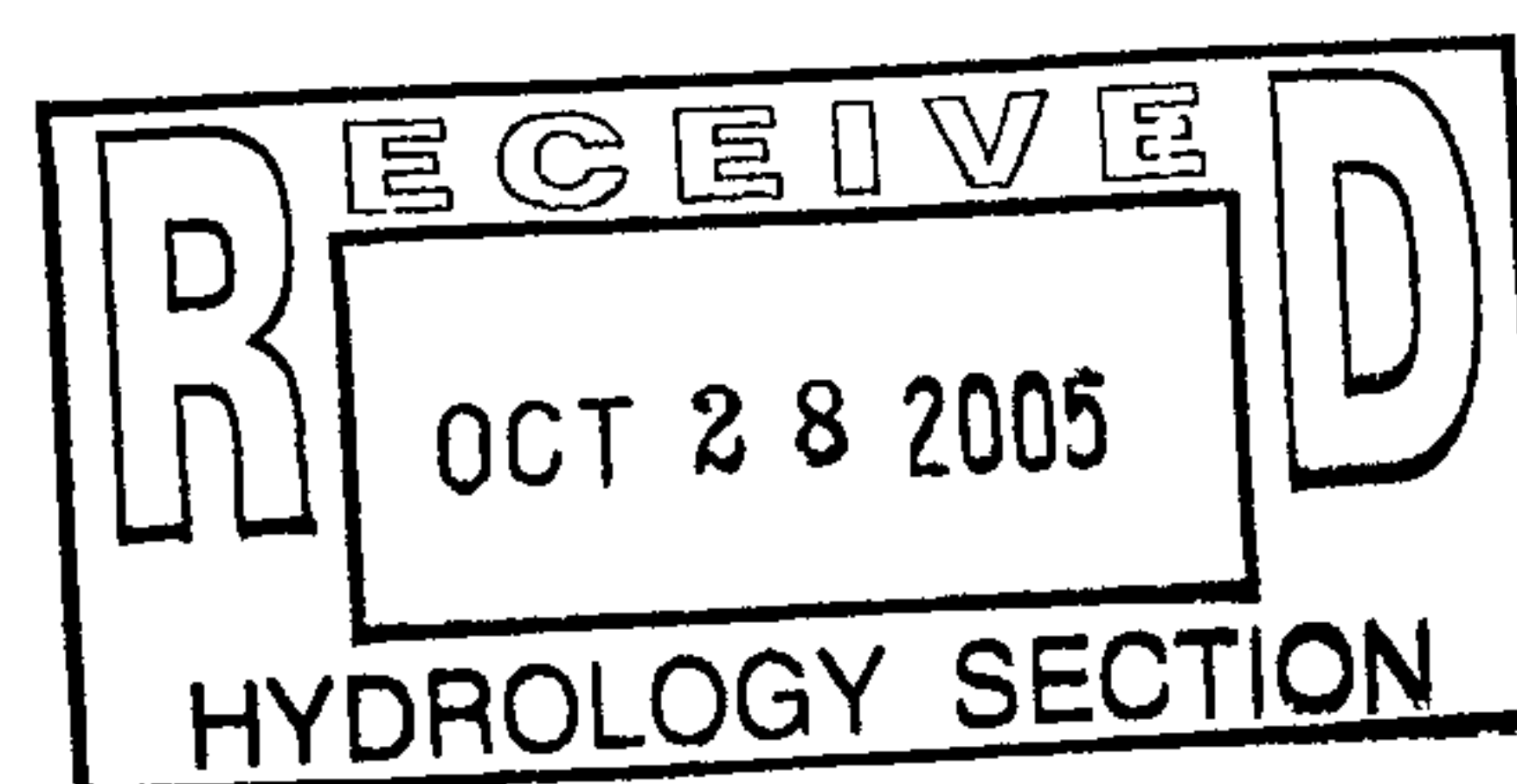
(EL 987)

Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

DRAINAGE REPORT
FOR
BELL TRADING POST
HOMES SUBDIVISION

ALBUQUERQUE, NEW MEXICO
OCTOBER 2005



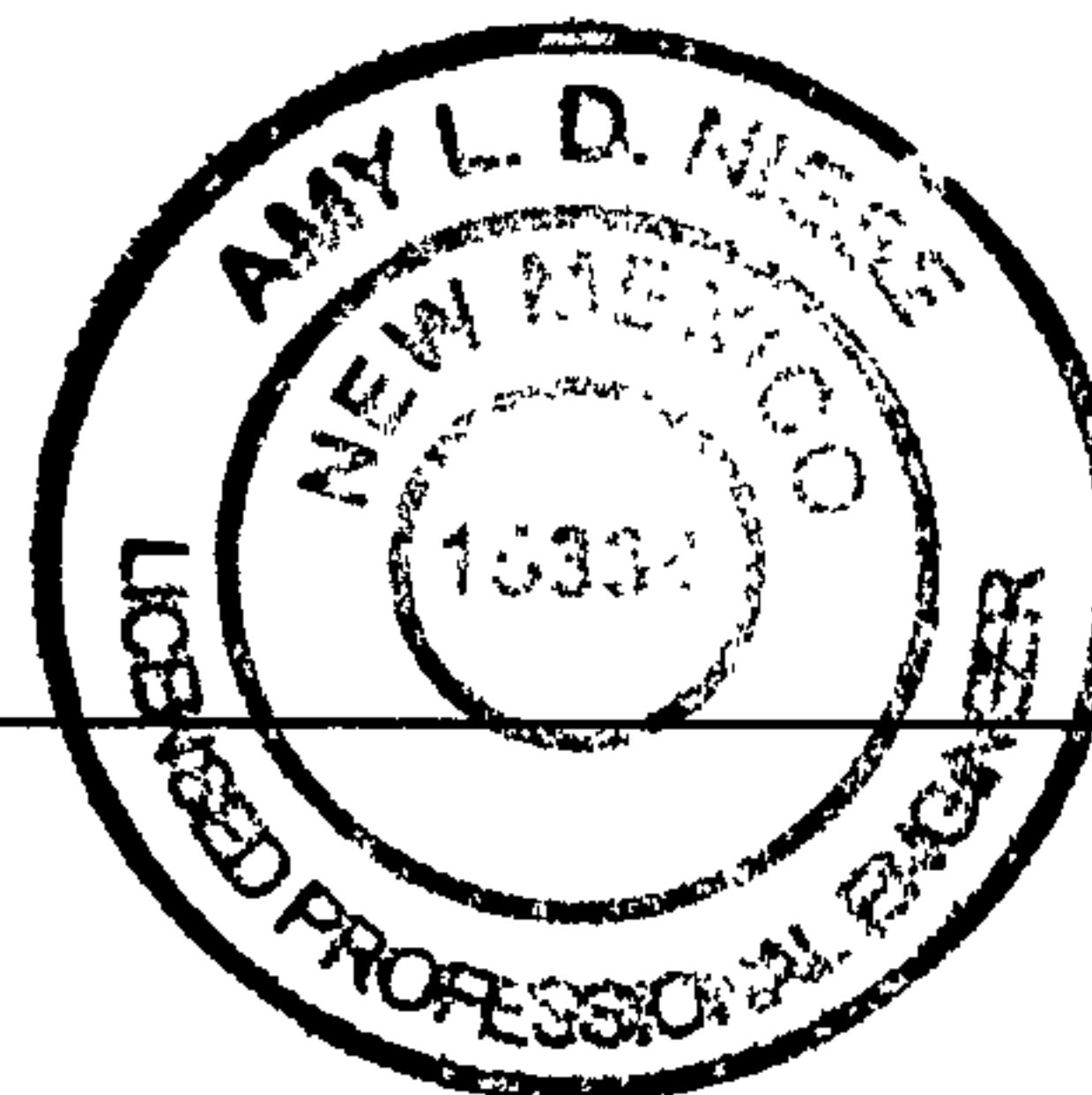
DRAINAGE REPORT
FOR
BELL TRADING POST
HOMES SUBDIVISION

ALBUQUERQUE, NEW MEXICO
OCTOBER 2005

Prepared by:

ISAACSON & ARFMAN, P.A.
128 Monroe Street NE
Albuquerque, NM 87108
(505) 268-8828


AMY L. D. NIESE, PE



10/24/05
Date

TABLE OF CONTENTS

VICINITY MAP

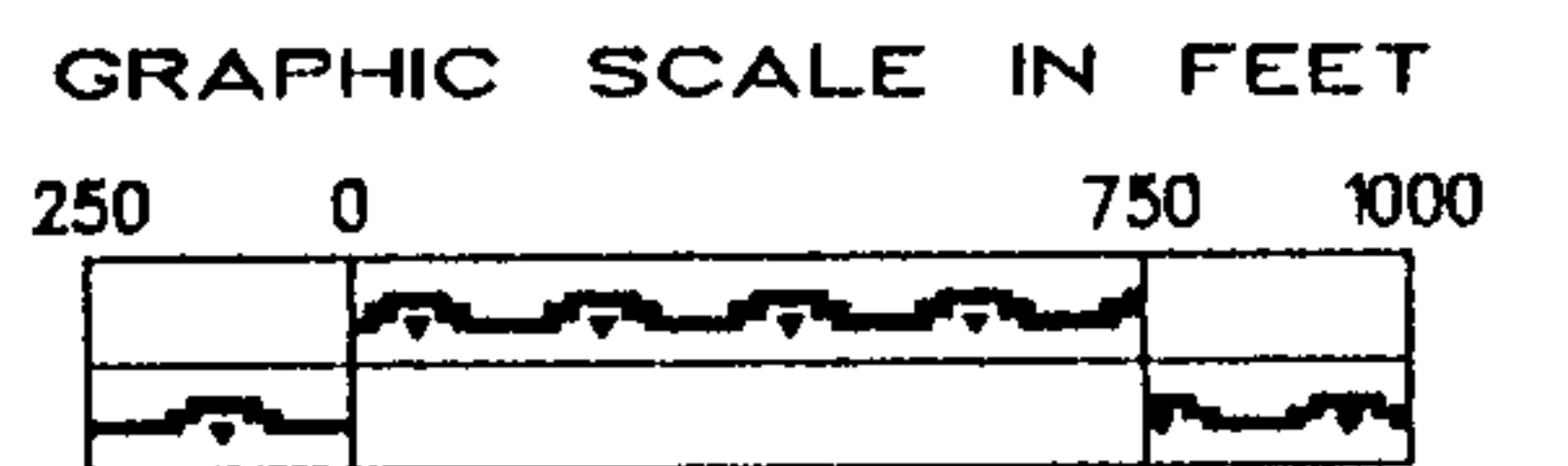
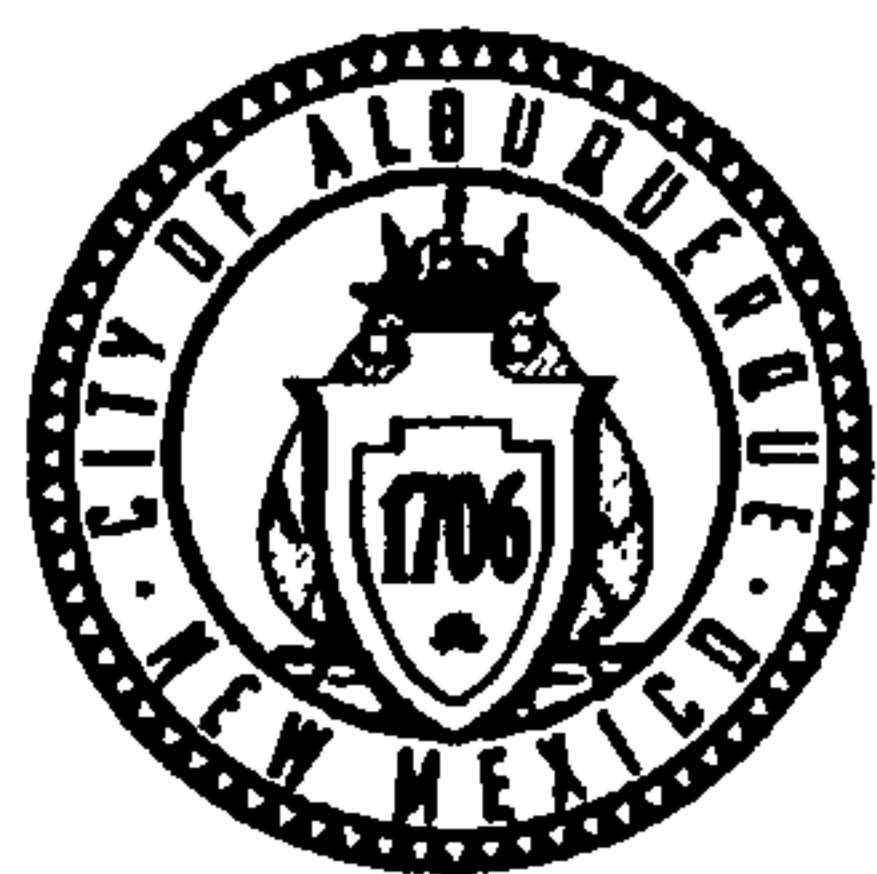
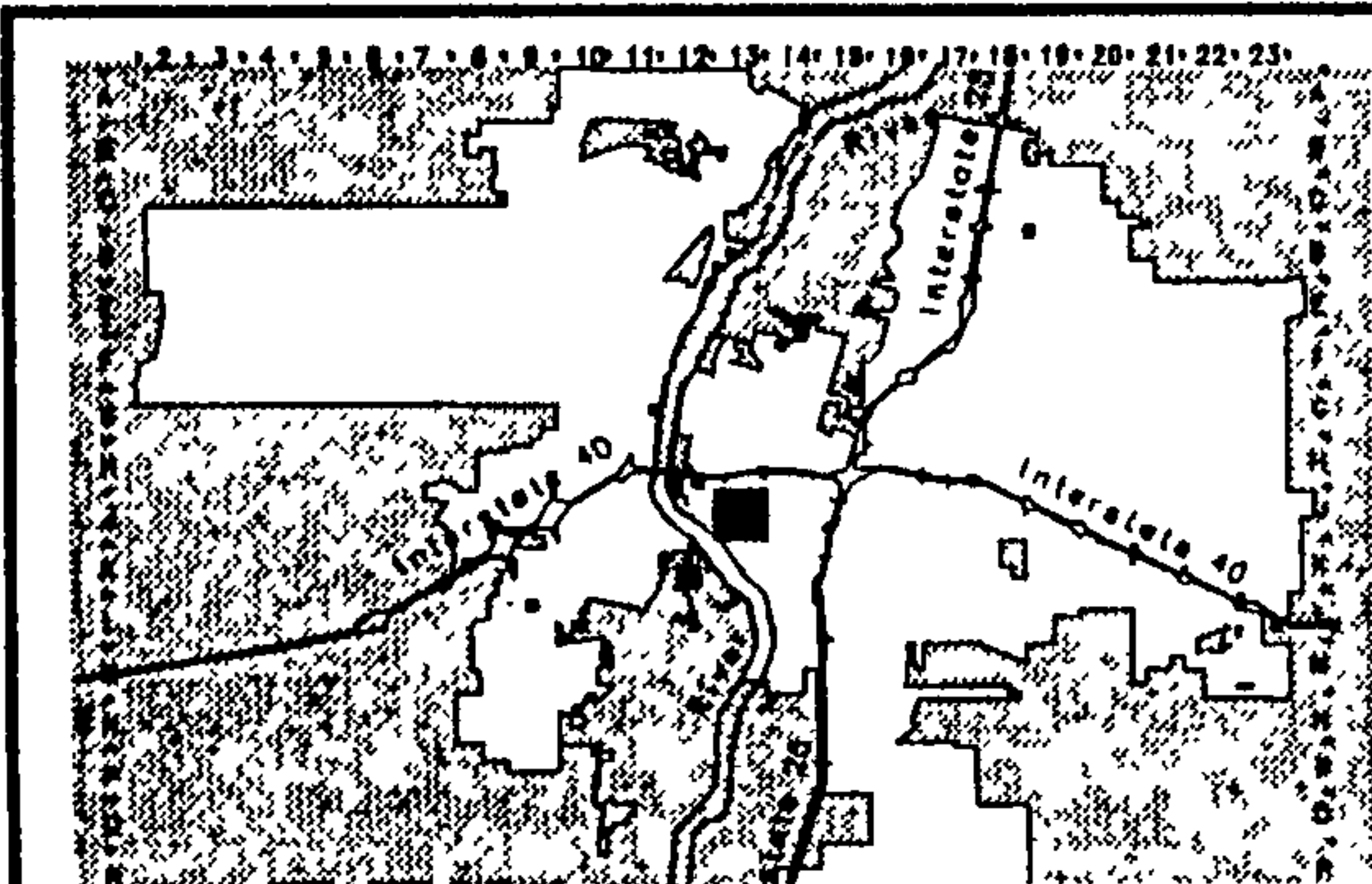
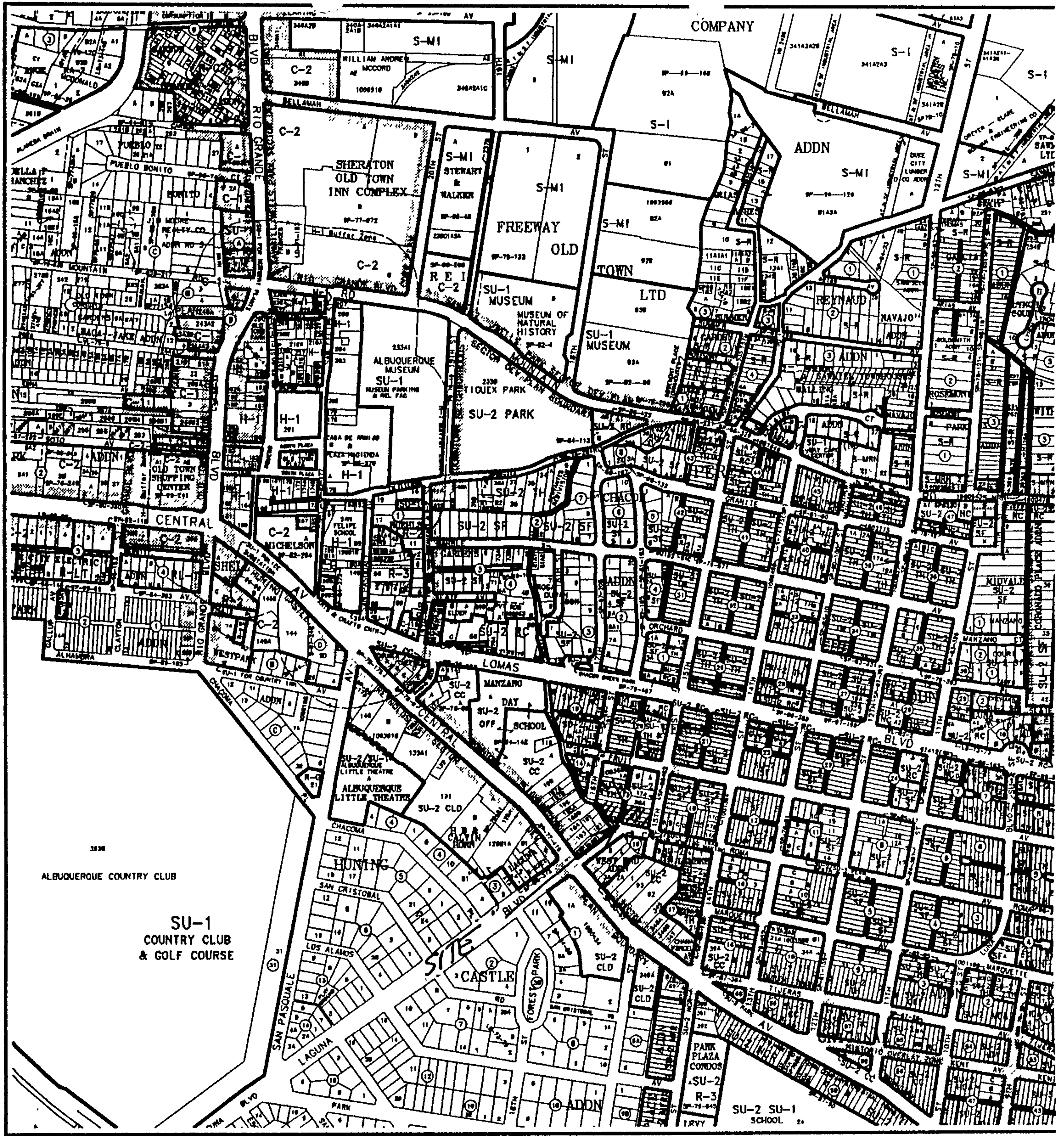
- I. PROJECT INFORMATION**
- II. INTRODUCTION**
- III. EXISTING CONDITIONS**
- IV. PROPOSED CONDITIONS**
- V. SUMMARY & CONCLUSIONS**

APPENDICES

APPENDIX A: Bell Trading Post Homes Grading and Drainage Plan

APPENDIX B: AHYMO Run and Calculations

APPENDIX C: FIRM Map



Zone Atlas Page
J-13-Z

I. PROJECT INFORMATION

PROPOSED LEGAL DESCRIPTION:

Bell Trading Post Homes

EXISTING LEGAL DESCRIPTION:

Lots 4-7, 9-12, 21-24; Block 13; Perea Addition
(Filed May 1, 1891 in Book C2, Page 43)

ENGINEER:

Isaacson & Arfman, P.A.
128 Monroe Street NE
Albuquerque, NM 87108
(505) 268-8828
Attn: Amy L. D. Niese, PE

SURVEYOR:

Aldrich Land Surveying, Inc.
PO Box 30701
Albuquerque, NM 87190-0701
(505) 884-1990
Attn: Tim Aldrich, NMPLS No. 7719

DEVELOPER:

Family Housing Development Corporation
PO Box 91525
Albuquerque, NM 87199
(505) 873-9638

NUMBER OF PROPOSED LOTS: 10

TOTAL AREAS: 0.94 Acres

FLOODPLAIN: Zone X per Panel 333E FIRM Map dated 11/19/03

II. INTRODUCTION

This project is being submitted for Grading and Drainage approval.

Please see the enclosed Zone Atlas Map J-13. The site is bounded by 16th Street to the west, residential homes to the north, 15th Street to the east, and Roma Avenue to the south. The project covers 0.94 acres and will be developed into 10 subdivision lots.

III. EXISTING CONDITIONS

Currently the site is vacant and covered in old asphalt except for alley right-of-way running through it that is gravel. The site is not in the 100 year flood plain per Panel 333E FIRM Map dated November 19, 2003. All of the zoning is SU-2 TH.

In general, the area is very flat. 16th Street drains toward the north. The alley has a high point near the existing Lot 8 and drains north and south. 15th Street drains south. There is a high point at the intersection of Roma Avenue, Laguna Boulevard, and the alley so the water from the alley drains east. Existing drainage from proposed lots 1 through 6 drains toward the alley. Existing drainage from proposed lots 7 through 10 drains southeast towards 15th Street and Roma Avenue. Drainage is not entering from adjacent lots. The existing flows for the 100 year storm for the entire site are 4.28 cfs.

IV. PROPOSED CONDITIONS

This infill site will be developed into 10 subdivision lots. Proposed lots 1 through 6 will drain to the alley. Proposed lots 7 through 10 will drain to Roma Avenue. The developed flows for the 100 year storm are 3.88 cfs. Please see the enclosed AHYMO run. The decrease in flow is 0.40 cfs which is due to the asphalt being removed from the site. The proposed flows are below the historic rate. As a result, the subdivision will discharge freely to the alley and Roma Avenue. All of the flow will go to the intersection at 15th and Roma as before.

The inverted alley can contain up to 2.67 cfs. The flow to the alley is 2.60 cfs so it is sufficient to contain the flow.

V. SUMMARY & CONCLUSIONS

The existing vacant lots will be developed into 10 subdivision lots. The site is not in the 100 year flood plain. The site is an infill site. The existing flow is 4.28 cfs. The developed flow is 3.88 cfs which is less than the existing flow. The flow is below the historic rate. As a result, the drainage will discharge freely from the site to the alley and Roma Avenue.

APPENDIX A

Bell Trading Post Homes Grading and Drainage Plan

APPENDIX B

AHYMO Run and Calculations

RUN DATE (MON/DAY/YR) =10/18/2005
USER NO.= AHYMO-I-9702dIsa-Arfman1

RUN DATE (MON/DAY/YR) =10/18/2005
USER NO.= AHYMO-I-9702dIsa-Arfman1

AHYMO PROGRAM (AHYMO_97) - - Version: 1997.02d
 RUN DATE (MON/DAY/YR) = 10/18/2005
 START TIME (HR:MIN:SEC) = 16:42:35 USER NO.= AHYMO-I-9702dIsa-Arfman1
 INPUT FILE = 1304.DAT

*S BELL TRADING POST HOMES
 *S FAMILY HOUSING DEVELOPMENT CORPORATION
 *S

 *
 * 1304.DAT
 * OCTOBER 18, 2005
 * BY AMY L. D. NIESE, PE
 *
 *
 * A 0.94 ACRE SITE BOUNDED BY 15TH ST, 16TH ST, AND ROMA AVE.
 *
 *

START RAINFALL BEGINS AT 0.0 HRS
 RAINFALL TYPE=1 RAIN QUARTER=0 RAIN ONE=1.90
 RAIN SIX=2.20 RAIN DAY=2.63 DT=0.03333HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
 DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

*S EXISTING BASIN A - LOTS

COMPUTE NM HYD ID=1 HYD NO=100.00 AREA=0.00146 SQ MI
 PER A=0 PER B=10 PER C=0 PER D=90
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K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 5.1877 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.9000
 AREA = .001314 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
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3.599930 K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE CONSTANT, N =
UNIT PEAK = .35876 CFS UNIT VOLUME = .9614 B = 327.55 P60 = 1.9000
AREA = .000146 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.83784 INCHES = .1431 ACRE-FEET
PEAK DISCHARGE RATE = 3.94 CFS AT 1.500 HOURS BASIN AREA = .0015 SQ. MI.

* EXISTING BASIN B - ALLEY

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UNIT PEAK = .53210 CFS UNIT VOLUME = .9746 B = 373.31 P60 = 1.9000
AREA = .000190 SQ MI IA = .38000 INCHES INF = .91400 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

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PARTIAL HYDROGRAPH 200.00

RUNOFF VOLUME = .93568 INCHES = .0095 ACRE-FEET
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*S PROPOSED BASIN A - LOTS

COMPUTE NM HYD ID=3 HYD NO=300.00 AREA=0.00146 SQ MI
PER A=0 PER B=37 PER C=0 PER D=63
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7.106420 K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 3.6314 CFS UNIT VOLUME = .9961 B = 526.28 P60 = 1.9000
AREA = .000920 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

3.599930 K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE CONSTANT, N =
UNIT PEAK = 1.3274 CFS UNIT VOLUME = .9903 B = 327.55 P60 = 1.9000
AREA = .000540 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 300.00

RUNOFF VOLUME = 1.49079 INCHES = .1161 ACRE-FEET
PEAK DISCHARGE RATE = 3.33 CFS AT 1.500 HOURS BASIN AREA = .0015 SQ. MI.

* EXISTING BASIN B - ALLEY

COMPUTE NM HYD ID=4 HYD NO=400.00 AREA=0.00019 SQ MI
PER A=0 PER B=0.0 PER C=0 PER D=100.0
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
7.106420
UNIT PEAK = .75013 CFS UNIT VOLUME = .9840 B = 526.28 P60 = 1.9000
AREA = .000190 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=1

HYDROGRAPH FROM AREA 400.00

RUNOFF VOLUME = 1.96638 INCHES = .0199 ACRE-FEET
PEAK DISCHARGE RATE = .55 CFS AT 1.500 HOURS BASIN AREA = .0002 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:42:35


```

*S                      BELL TRADING POST HOMES
*S                      FAMILY HOUSING DEVELOPMENT CORPORATION
*S
*****
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RAINFALL       TYPE=1 RAIN QUARTER=0 RAIN ONE=1.90
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PRINT HYD           ID=1   CODE=1

*   EXISTING BASIN B - ALLEY

COMPUTE NM HYD      ID=2 HYD NO=200.00 AREA=0.00019 SQ MI
                   PER A=0 PER B=20.0 PER C=80 PER D=0.0
                   TP=-0.1333 HR   MASS RAIN=-1
PRINT HYD           ID=2   CODE=1

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                   TP=-0.1333 HR   MASS RAIN=-1
PRINT HYD           ID=3   CODE=1

*   EXISTING BASIN B - ALLEY

COMPUTE NM HYD      ID=4 HYD NO=400.00 AREA=0.00019 SQ MI
                   PER A=0 PER B=0.0 PER C=0 PER D=100.0
                   TP=-0.1333 HR   MASS RAIN=-1
PRINT HYD           ID=4   CODE=1

FINISH

```


EXISTING FLOWS

$$\text{ALLEY} \quad \frac{16 \times 260}{20 \times 260} = 80\% \text{ C} \quad 20\% \text{ B}$$

$$\text{SITE} \quad 90\% \text{ D} \quad 10\% \text{ B}$$

$$A = 20 \times 260 = 5200 = 0.119 \text{ AC} \\ = 0.00019 \text{ SPN}$$

$$A = 0.9353 \text{ AC} = 40,742 \text{ SF} = 0.00146 \text{ SPN}$$

$$Q = 0.34 \text{ CFS AND } 3.94 \text{ POL ANYMO}$$

PROPOSED FLOWS

$$\text{ALLEY} \quad 100\% \text{ D (ASPHALT)}$$

$$\text{LOT 7} \quad \frac{76 \times 28}{34 \times 100} = 63\% \text{ D}$$

$$\text{LOT 1} \quad \frac{26 \times 116}{34 \times 140} = 63\% \text{ D}$$

$$Q = 0.55 \text{ CFS AND } 3.33 \text{ POL ANYMO}$$

ALLEY CAPACITY



$$Q = 1.49 A R^{2/3} S^{1/2}$$

$$A = 26\frac{1}{2} \times 10(.2) = 2$$

$$R = \frac{A}{WP} = \frac{2}{2\sqrt{10^2 + 0.2^2}} = 0.10$$

$$Q = \frac{1.49 (2) (0.10)^{2/3} \sqrt{.005}}{.017} = 2.67$$

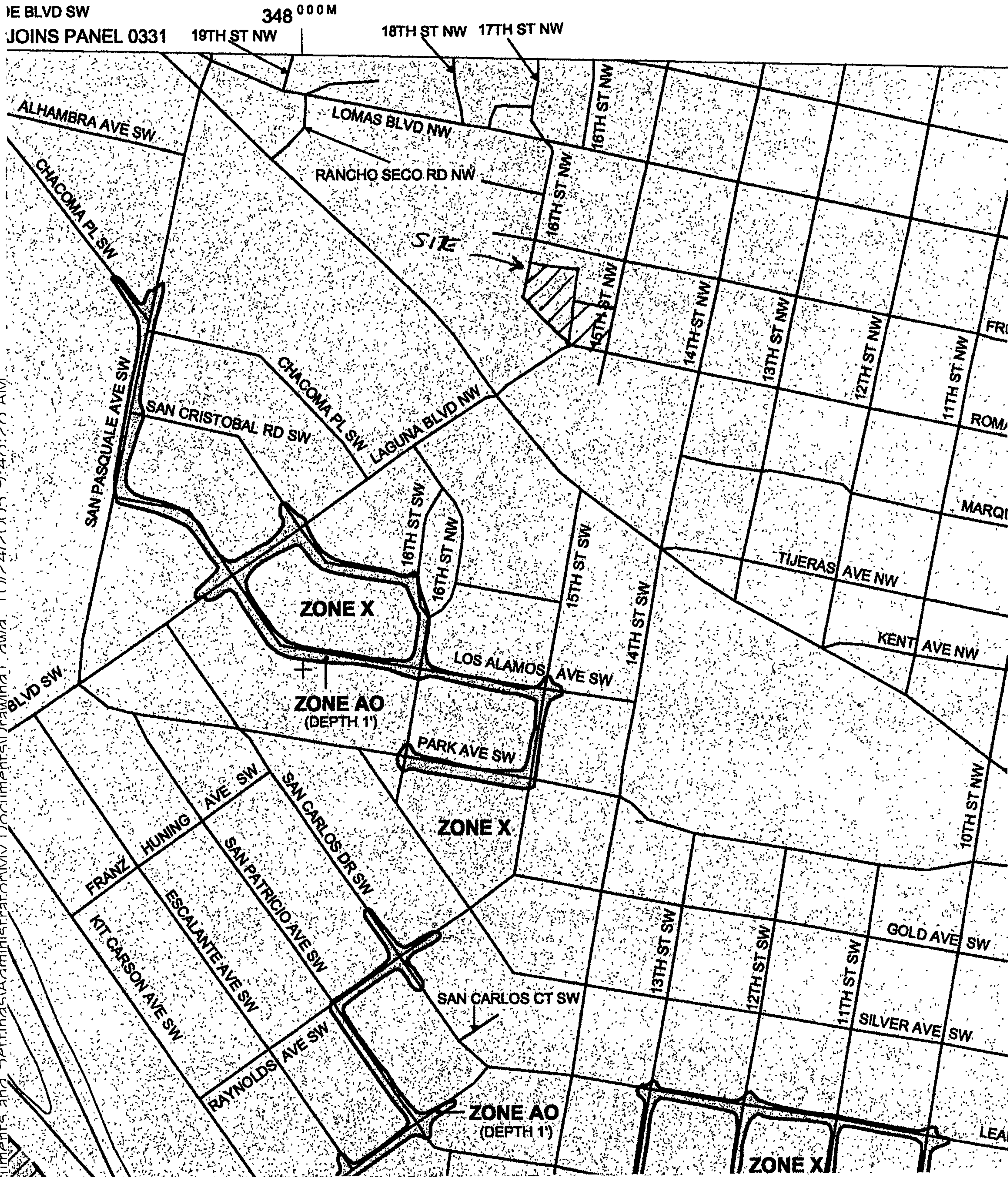
FLOW TO ALLEY

$$\frac{3.33 \text{ CFS}}{0.94 \text{ AC}} \times 0.58 \text{ AC} + 0.55 \text{ CFS} = 2.60 \text{ CFS} < 2.67 \text{ CFS}$$

APPENDIX C

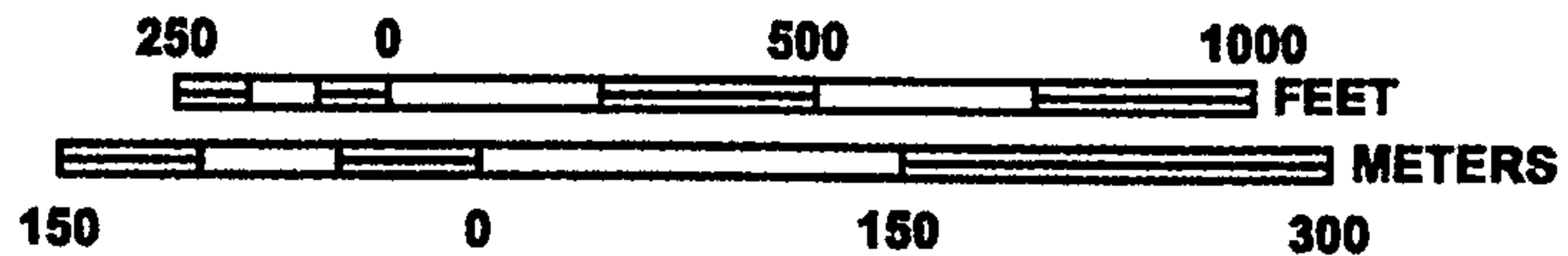
FIRM Map

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SW

MAP SCALE 1" = 500'



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0333E

FIRM

FLOOD INSURANCE RATE MAP

**BERNALILLO COUNTY,
NEW MEXICO
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PANEL 333 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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<u>COMMUNITY</u>	<u>NUMBER</u>	<u>PANEL</u>	<u>SUFFIX</u>
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BERNALILLO COUNTY	350001	0333	E

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**MAP NUMBER
35001C0333E**

**MAP REVISED
NOVEMBER 19, 2003**

Federal Emergency Management Agency

37.5"

AVE SW

LEGEND



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- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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- ZONE AR** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.



FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.



OTHER FLOOD AREAS

- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.



OTHER AREAS

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.



COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS



OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.



Floodplain boundary



Floodway boundary



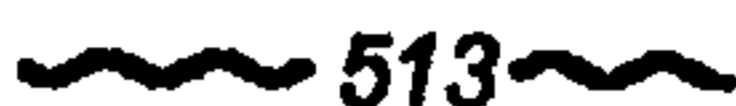
Zone D boundary



CBRS and OPA boundary



Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.



Base Flood Elevation line and value; elevation in feet*

(EL 987)

Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988