DRAINAGE REPORT

FOR

RIO VOLCAN APARTMENTS

(Ladera Apartments)

Prepared by

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Prepared for

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MAY, 1995

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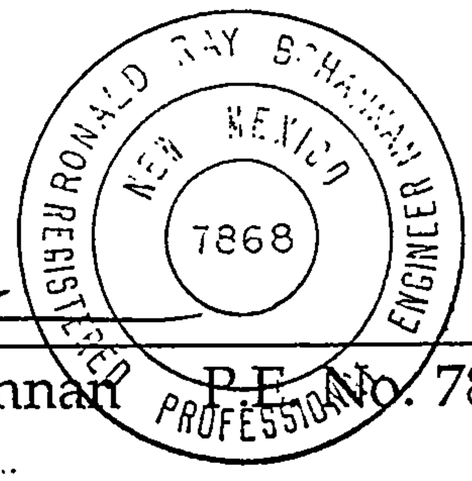
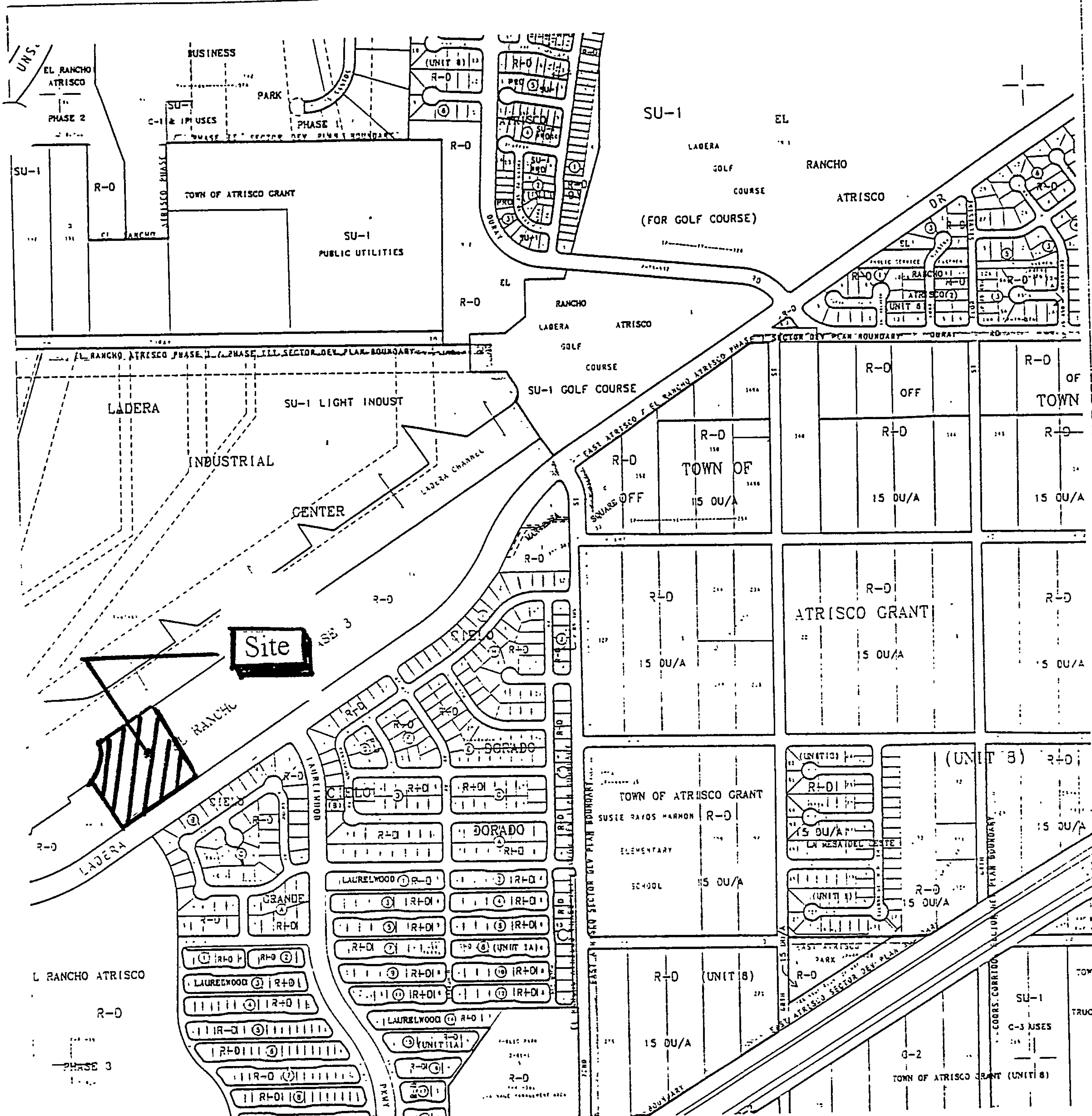
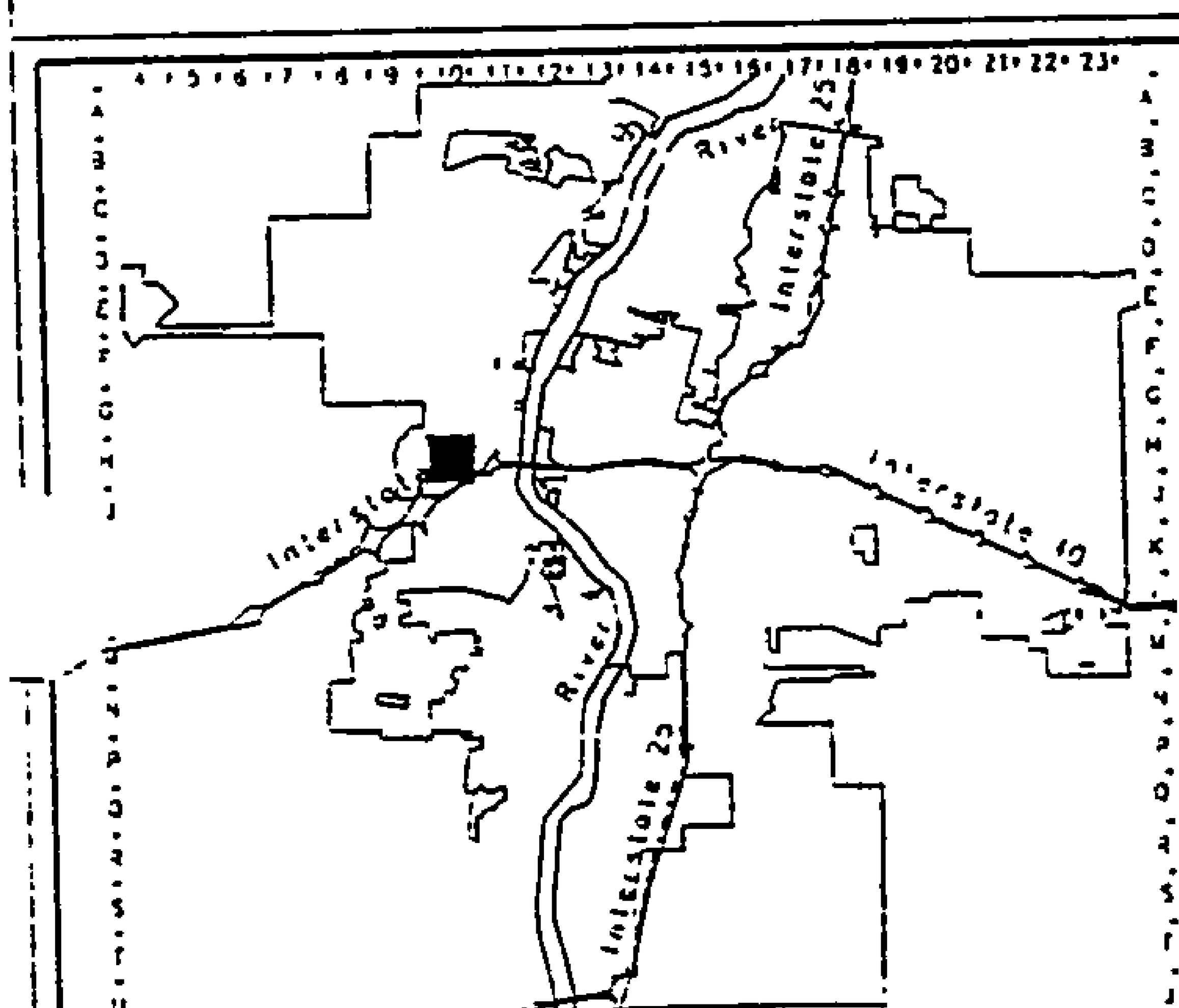
Revised August, 1995

Revised October, 1995



Ronald R. Bohannan P.E. No. 7868





North

750 375 0 750

Scale: 1" = 750'

Albuquerque **G**eographic **I**nformation **S**ystem

City of Albuquerque

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LEGAL DESCRIPTION

T10N

R2E

SEC 10

UNIFORM PROPERTY CODE

1-010-059

H-10-Z

INTRODUCTION

The Ladera Apartments is a 116 unit multifamily apartment complex that will be located north of Ladera Drive between Unser Boulevard and the Laurelwood subdivision containing 6.31 acres. The present zoning is R-D, which will remain the same. Located to the south is Laurelwood Subdivision and to the east is a new housing development entitled Traditions. The site is located on zone atlas page H-10 and has been highlighted.

The site development plan has been submitted by Dekker & Associates to the Design Review Board. We are requesting this plan be review for Site Plan for building permit and grading and drainage plan approval.

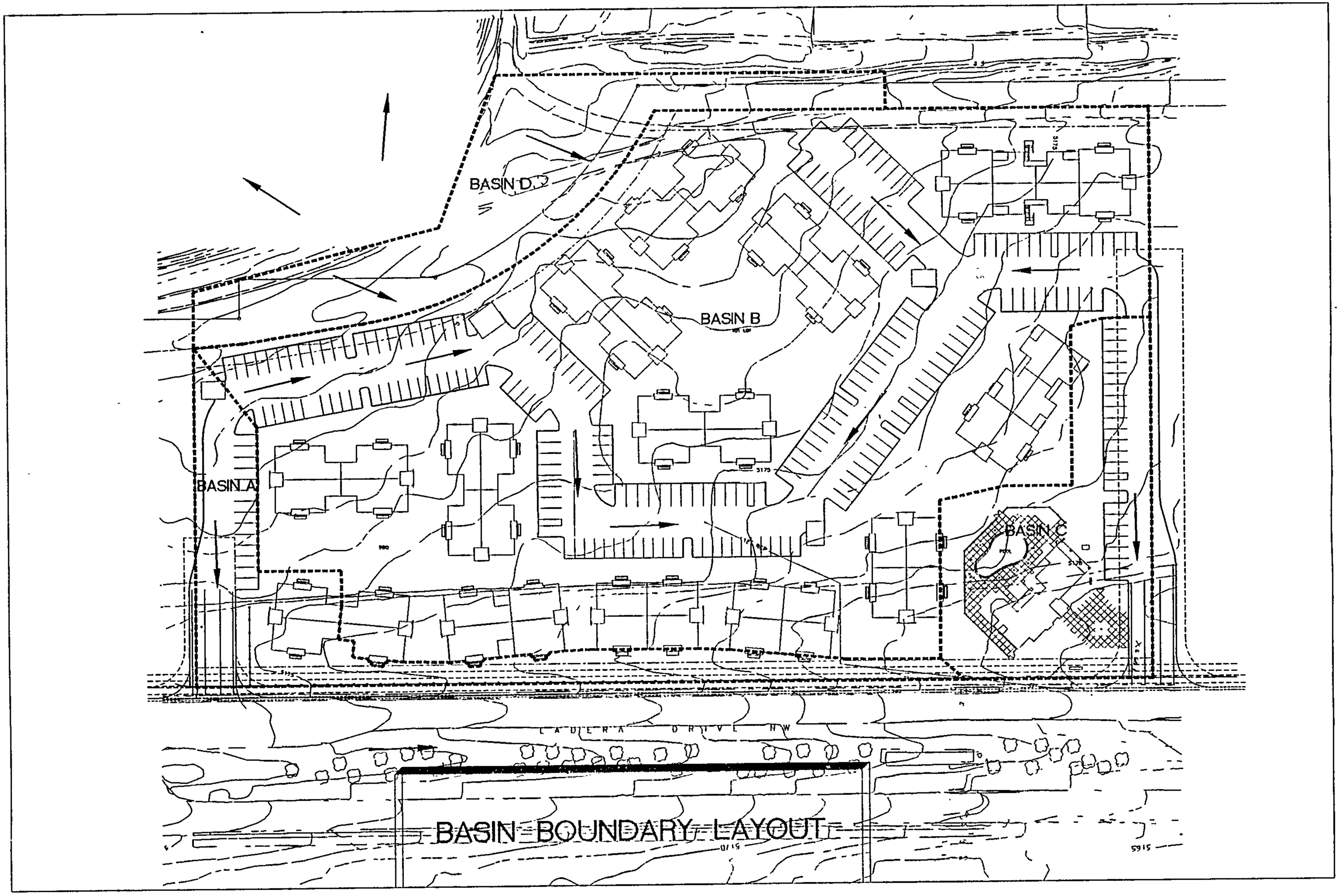
EXISTING CONDITIONS

A. The site currently is undeveloped and sheet flows from the north to Ladera Drive to the south. The natural fall is approximately 2.21 percent with approximately 17 feet of fall in 810 feet.

B. The site currently does not have any 100 year flood zone on the property as shown on FEMA Panel 350002-0021. The site lies adjacent to the Mirheaven system. The 100 year storm is contained within the channel.

C. The soils from the SCS Soil Survey of Bernalillo County are Bluepoint and Pajarito loamy fine sands and are classified as Hydrologic Soil Group "A" and "B" soils.

D. Presently the Mirheaven channel removes all upland flow from the north except a small area between the channel and the north property line.



BASIN BOUNDARY LAYOUT

This area contains a future bike trial that will continue to drain into the site.

The offsite area to the west, approximately 3.0 acres, is undeveloped. This upland area presently sheet flows runoff through the site and onto Ladera Drive NW. A proposed sideyard wall will divert these flows to Ladera Drive which is the historical outfall point.

The historical undeveloped flow rate from the site amounted to 12.79 cfs.

ON-SITE DRAINAGE MANAGEMENT PLAN

The site has been divided into four basins (see Grading & Drainage Plan in map pocket). Basins A & C are small basins that will drain to Ladera Drive and will drain discharge at a fully developed rate. Flow out of Basins A & C amounts to 3.05 and 2.69 cfs.

Basin B along with off-site Basin D with flow rates of 16.99 and 1.63 cfs will drain internally within the streets and the parking lots to the south parking area. The runoff is routed to a controlled pond and collected in a drop inlet with a 12.0" orifice plate, taken via a 18 inch storm drain pipe at a rate of 6.98 cfs to an existing drop inlet on Ladera Drive.

The emergency overflow for Basin B is through a drainage opening of 10 feet extended to 5 sidewalk culverts to Ladera Drive. The sidewalk culverts are designed to drain the 100 year storm under the culvert and the rest over the culverts. The flow allowable from this site was 2.28 cfs per acre per Isaacson & Arfman Drainage Report (H10/D13). The total peak discharge from site to Ladera Drive is 12.72 cfs,

which is less than allowable discharge of 14.39 cfs. All flows calculated were using the new hydrology.

DOWNSTREAM CAPACITY

Special Assessment District 212 included a storm drain as part of Ladera Drive NW. The design accounted for development of the site, but using the 1983 hydrology criteria. A new analysis was completed by Isaacson & Arfman using the new methodology. Under that project, additional improvements are being added to increase capacity in Ladera Drive storm drain. However, the capacity was used by the previous development resulting in a limitation of discharge from the remaining properties. The proposed improvements will allow the storm drain to flow under pressure flow. Based on Isaacson & Arfman Drainage Report (H10/D13) the allowable discharge is 2.28 cfs/acre, allowing to a total discharge of 14.39 cfs from our site. Located in the Appendix is the report for easy reference.

INFRASTRUCTURE LIST

The design solution will route flow to an existing drop inlet on Ladera Drive. As such, there will not be any drainage infrastructure list items required for this project requiring a guarantee.

CALCULATION INDEX

RUNOFF

CALCULATIONS

SAMPLE CALCULATIONS FOR BASIN A

The site is @ Zone 1

LAND TREATMENT

Treatment D:

D = 60 % for apartments

Treatment B:

B = 20.00 %

Treatment C:

C = 20.00 %

DEPTH (INCHES) @ 100-YEAR STORM

P_{60} = 1.87 inches

P_{360} = 2.20 inches

P_{1440} = 2.66 inches

DEPTH (INCHES) @ 10-YEAR STORM

P_{60} = 1.87 x 0.667
= 1.25 inches

P_{360} = 1.47

P_{1440} = 1.77

From attached AHYMO calculations:

Hydrograph Identification = 101.10
$Q_{p\text{-}100yr}$ = 3.05 cfs, Vol. = 0.106 AC-FT,

Hydrograph Identification = 111.10
$Q_{p\text{-}10yr}$ = 1.84 cfs, Vol. = 0.061 AC-FT

See the summary output from AHYMO calculations.

BASIN AREA

BASIN	AREA (SF)	AREA (MI^2)
A	36691.03	0.001316
B	205590.27	0.007375
C	32357.63	0.001161
D	34848.00	0.001250

100-YEAR (6-HR) STORM

	PROPOSED		EXISITNG	
BASIN	CFS	AC-FT	CFS	AC-FT
A	3.05	0.106	1.71	0.047
B	16.99	0.592	9.57	0.263
C	2.69	0.093	1.51	0.041
D	1.63	0.044	1.63	0.044

10-YEAR (6-HR) STORM

	PROPOSED		EXISITNG	
BASIN	CFS	AC-FT	CFS	AC-FT
A	1.84	0.061	0.65	0.016
B	10.24	0.342	3.62	0.088
C	1.62	0.054	0.57	0.014
D	0.62	0.015	0.62	0.015

SIDEWALK CULVERT,

DROP INLET, &

ORIFICE PLATE

CALCULATIONS

STORM SEWER INLET TYPE "DBL-D"

L = 88 ¾" - 2(6") - 6" - 14"(½")

ENDS CENTER PIECES MIDDLE BARS .

L = 63 ¾" = 5.3125'

W = 25"(½") - 13"(½")

CENTER PIECES

W = 19" = 1.5833'

Area:

A = L x W
  = 5.3125 x 1.5833
  = 8.41 SF

Using 50% clogging factor:

A = 8.41 - 0.5(8.41)
  = 4.21

Q = CA√(2gH)
C = 0.6
A = 4.21
Q = 18.62

Solve for H:

$$H = \left(\frac{Q}{CA}\right)^2 \frac{1}{2g}$$

$$H = \left(\frac{18.62}{0.6\,(4.21)}\right)^2 \frac{1}{2\,(32.2)}$$

H = 0.84'

ORIFICE EQUATION

$Q = CA\sqrt{(2gH)}$

C = 0.6
A = πr^2, r = 12.0/24
g = 32.2
H = Water Depth
Q = Flow

See the following table for calculations.

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name:

Comment: 12" Storm PVC Piepe

Solve For Actual Depth

Given Input Data:

Diameter.....	1.00 ft
Slope.....	0.0300 ft/ft
Manning's n.....	0.012
Discharge.....	6.98 cfs

Confined flow from "Double C" Inlet

Computed Results:

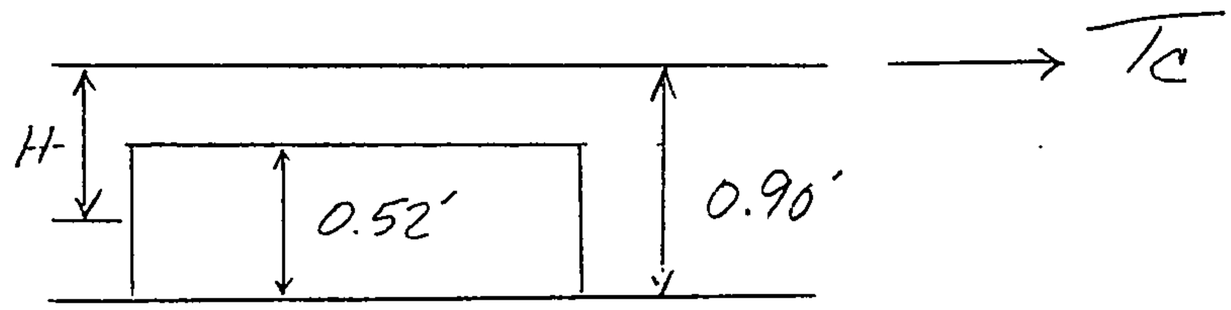
Depth.....	0.87 ft
Velocity.....	9.66 fps
Flow Area.....	0.72 sf
Critical Depth....	0.97 ft
Critical Slope....	0.0290 ft/ft
Percent Full.....	86.62 %
Full Capacity.....	6.69 cfs
QMAX @.94D.....	7.19 cfs
Froude Number.....	1.65 (flow is Supercritical)

EMERGENCY SPILLWAY CALCULATION

A drop inlet is used for the emergency spillway.
See the following calculations for drop inlet capacity.

Drop Inlet Capacity

Throat — "Double C"

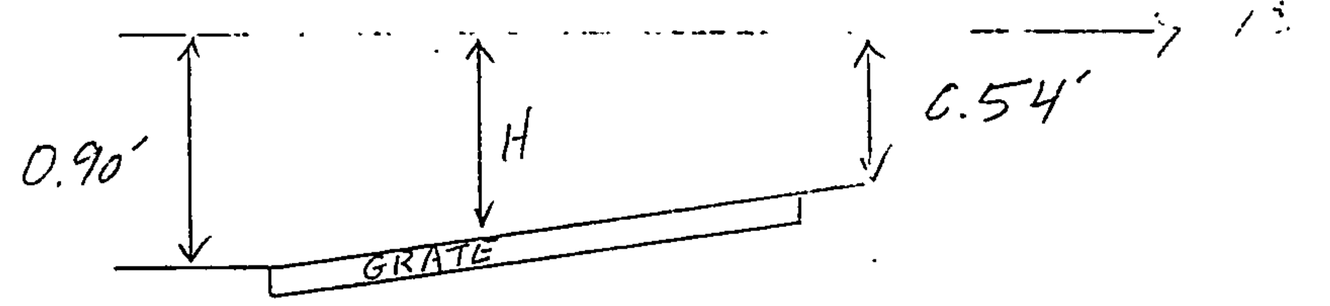


$H = 0.90 - .52/2 = 0.64$

$Q = CA\sqrt{2gH}$

$= 0.6\,(3.25)\sqrt{2(32.2)\,0.64} = 14.65$ cfs

Grate



$H = (0.90 + 0.54)/2 = 0.72$

$Q = 0.60(4.21)\sqrt{64.4(0.72)} = 17.20$ cfs

$Q_T = Q_{Throat} + Q_{Grate}$

$= 14.83 + 17.20 = 32.03$ cfs

See Grading & Drainage Plan For Storm Sewer Location.

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name:

Comment: 24" Storm PVC & RCP Piepe

Solve For Actual Depth

Given Input Data:

Diameter.....	2.00 ft
Slope.....	0.0135 ft/ft
Manning's n.....	0.012
Discharge.....	6.98 cfs

Confined flow from "Double D" Inlet

Computed Results:

Depth.....	0.67 ft
Velocity.....	7.49 fps
Flow Area.....	0.93 sf
Critical Depth....	0.94 ft
Critical Slope....	0.0040 ft/ft
Percent Full.....	33.73 %
Full Capacity.....	28.48 cfs
QMAX @.94D.....	30.63 cfs
Froude Number.....	1.88 (flow is Supercritical)

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name:

Comment: 24" Storm PVC & RCP Piepe

Solve For Actual Depth

Given Input Data:

Diameter.....	2.00 ft
Slope.....	0.0135 ft/ft
Manning's n.....	0.012
Discharge.....	18.92 cfs

← Full Flow @ Emergency Situation (From "Double C" Inlet)

Computed Results:

Depth.....	1.19 ft
Velocity.....	9.70 fps
Flow Area.....	1.95 sf
Critical Depth....	1.57 ft
Critical Slope....	0.0065 ft/ft
Percent Full.....	59.57 %
Full Capacity.....	28.48 cfs
QMAX @.94D.....	30.63 cfs
Froude Number.....	1.71 (flow is Supercritical)

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name:

Comment: FULL 100-YEAR FLOW

Solve For Actual Depth

Given Input Data:

Diameter.....	2.00 ft
Slope.....	0.0104 ft/ft
Manning's n.....	0.012
Discharge.....	18.92 cfs

Computed Results:

Depth.....	1.30 ft
Velocity.....	8.75 fps
Flow Area.....	2.16 sf
Critical Depth....	1.57 ft
Critical Slope....	0.0065 ft/ft
Percent Full.....	65.04 %
Full Capacity.....	24.99 cfs
QMAX @.94D.....	26.89 cfs
Froude Number.....	1.45 (flow is Supercritical)

Worksheet Name:

Comment: CONFINED FLOW

Solve For Actual Depth

Given Input Data:

Diameter.....	2.00 ft
Slope.....	0.0104 ft/ft
Manning's n.....	0.012
Discharge.....	6.98 cfs

Computed Results:

Depth.....	0.72 ft
Velocity.....	6.82 fps
Flow Area.....	1.02 sf
Critical Depth....	0.94 ft
Critical Slope....	0.0040 ft/ft
Percent Full.....	36.14 %
Full Capacity.....	24.99 cfs
QMAX @.94D.....	26.89 cfs
Froude Number.....	1.65 (flow is Supercritical)

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name:

Comment: FULL 100-YEAR FLOW

Solve For Actual Depth

Given Input Data:

Diameter.....	2.00 ft
Slope.....	0.0214 ft/ft
Manning's n.....	0.012
Discharge.....	18.92 cfs

Computed Results:

Depth.....	1.03 ft
Velocity.....	11.57 fps
Flow Area.....	1.64 sf
Critical Depth....	1.57 ft
Critical Slope....	0.0065 ft/ft
Percent Full.....	51.63 %
Full Capacity.....	35.85 cfs
QMAX @.94D.....	38.57 cfs
Froude Number.....	2.25 (flow is Supercritical)

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name:

Comment: CONFINED FLOW

Solve For Actual Depth

Given Input Data:

Diameter.....	2.00 ft
Slope.....	0.0214 ft/ft
Manning's n.....	0.012
Discharge.....	6.98 cfs

Computed Results:

Depth.....	0.60 ft
Velocity.....	8.84 fps
Flow Area.....	0.79 sf
Critical Depth....	0.94 ft
Critical Slope....	0.0040 ft/ft
Percent Full.....	29.91 %
Full Capacity.....	35.85 cfs
QMAX @.94D.....	38.57 cfs
Froude Number.....	2.37 (flow is Supercritical)

PONDING

CALCULATIONS

POND CALCULATONS

Surface Area @ 5169.00 = 25.06 SF, (Drop Inlet Cross-Section Area)
Surface Area @ 5170.00 = 25.06 SF
Surface Area @ 5171.00 = 25.06 SF
Surface Area @ 5172.00 = 9,277.62 SF
Surface Area @ 5172.50 = 16,499.75 SF

Ponding Volume @ 5169.00' ≤ Wt. Ht. ≤ 5171.00':

V = 25.06 x (5169.00-5171.00) = 50.12 CF

Ponding Volume @ 5169.00' ≤ Wt. Ht. ≤ 5172.00':

$$V = 50.12 + \left(\frac{9277.62 + 25.06}{2}\right) \cdot (71.00-72.00) = 4,701.46\ CF$$

V/LF-DEPTH = (9277.62-25.06)/(5172.00-5171.00)
= 9252.56 SF/LF-DEPTH

$$V@71.50 = 50.12 + \left(\frac{(9252.56(71.50-71.00)+25.06)+25.06}{2}\right) \cdot (71.50-71.00) = 1,219.22\ CF$$

Ponding Volume @ 5169.00' ≤ Wt. Ht. ≤ 5172.50':

$$V@72.50 = 4701.46 + \left(\frac{16499.75 + 9277.62}{2}\right) \cdot (72.50-72.00) = 11,145.80\ CF$$

V/LF-DEPTH = (16499.75-9277.62)/(5172.50-5172.00)
= 14,444.26 SF/LF-DEPTH

$$V@72.20 = 4701.46 + \left(\frac{(14444.26(72.20-72.00)+9277.62)+9277.62}{2}\right) \cdot (72.20-72.00)$$

V = 6,845.87 CF

See the following table for AHYMO input file

PARKING PONDING TABLE

ELEV.	WT. ELEV.	V (CF)	V (AC-FT)	12.00" OUT-FLOW (CFS)
5169.50	0.50	12.53	0.00029	2.67
5170.00	1.00	25.06	0.00058	3.78
5170.50	1.50	37.59	0.00086	4.63
5171.00	2.00	50.12	0.00115	5.35
5171.10	2.10	98.89	0.00227	5.48
5171.20	2.20	240.18	0.00551	5.61
5171.30	2.30	474.00	0.01088	5.74
5171.40	2.40	800.35	0.01837	5.86
5171.50	2.50	1219.22	0.02799	5.98
5171.60	2.60	1730.62	0.03973	6.10
5171.70	2.70	2334.54	0.05359	6.21
5171.80	2.80	3030.99	0.06958	6.33
5171.90	2.90	3819.96	0.08769	6.44
5172.00	3.00	4701.46	0.10793	6.55
5172.10	3.10	5701.44	0.13089	6.66
5172.20	3.20	6845.87	0.15716	6.76
5172.30	3.30	8134.74	0.18675	6.87
5172.40	3.40	9568.05	0.21965	6.97
5172.50	3.50	11145.80	0.25587	7.07

100-YEAR & 10-YEAR

RUNOFF

AHYMO INPUT AND

SUMMARY OUTPUT FILES

(UNDER EXISTING AND PROPOSED CONDITIONS)

```
**********************************************************************
*****                                                          *****
*****                DRAINAGE CALCULATION FOR                  *****
*****                  DRAINAGE  APARTMENTS                    *****
**********************************************************************
*****                     PONDING CONDITIONS                   *****
**********************************************************************
*                          100-YR  (6-HR)                            *
**********************************************************************
START                TIME=0.0
*****
***** BASIN D
*****
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.001250 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN B
*****
COMPUTE NM HYD       ID=2 HYD NO=101.2 AREA=0.007375 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=0.1333 HR MASS RAINFALL=-1
*****
***** ADDING BASINS B & D
*****
ADD HYD              ID=3 HYD NO=101.3 ID=1 ID=2
*****
***** PARKING PONDING
*****
ROUTE RESERVOIR      ID=1 HYD NO=501.1 INFLOW ID=3 CODE=24
                     OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                         0.00              0.00000        5169.00
                         2.67              0.00029        5169.50
                         3.78              0.00058        5170.00
                         4.63              0.00086        5170.50
                         5.35              0.00115        5171.00
                         5.48              0.00227        5171.10
                         5.61              0.00551        5171.20
                         5.74              0.01088        5171.30
                         5.86              0.01837        5171.40
                         5.98              0.02799        5171.50
                         6.10              0.03973        5171.60
                         6.21              0.05359        5171.70
                         6.33              0.06958        5171.80
                         6.44              0.08769        5171.90
                         6.55              0.10793        5172.00
                         6.66              0.13089        5172.10
                         6.76              0.15716        5172.20
                         6.87              0.18675        5172.30
                         6.97              0.21965        5172.40
                         7.07              0.25587        5172.50
**********************************************************************
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =08/24/1995

INPUT FILE = PD.DAT USER NO.= R_BOHANN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	101.10	-	1	.00125	2.89	.100	1.50556	1.500	3.616	PER IMP=	60.00
COMPUTE NM HYD	101.20	-	2	.00738	16.99	.592	1.50556	1.500	3.600	PER IMP=	60.00
ADD HYD	101.30	1& 2	3	.00863	19.88	.693	1.50550	1.500	3.602		
ROUTE RESERVOIR	501.10	3	1	.00863	6.98	.697	1.51430	1.766	1.265	AC-FT=	.224
FINISH											

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 08/24/1995
         START TIME (HR:MIN:SEC) = 17:20:31     USER NO.= R_BOHANN.I01
         INPUT FILE = PD.DAT

**********************************************************************
*****                                                          *****
*****                DRAINAGE CALCULATIÓN FOR                  *****
*****                  DRAINAGE  APARTMENTS                    *****
**********************************************************************
*****                     PONDING CONDITIONS                   *****
**********************************************************************
*                          100-YR  (6-HR)                            *
**********************************************************************
START              TIME=0.0
*****
***** BASIN D
*****
RAINFALL           TYPE=1 RAIN QUARTER=0.0 IN
                   RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                   RAIN DAY=2.66 IN DT=0.03333 HR

                  COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                  DT =    .033330 HOURS       END TIME =    5.999400 HOURS
                     .0000   .0016   .0033   .0050   .0067   .0085   .0103
                     .0122   .0141   .0160   .0180   .0201   .0222   .0243
                     .0266   .0289   .0312   .0337   .0362   .0388   .0415
                     .0443   .0472   .0502   .0534   .0567   .0601   .0637
                     .0675   .0715   .0758   .0809   .0865   .0924   .1050
                     .1334   .1771   .2398   .3254   .4379   .5814   .7600
                     .9780  1.1804  1.2649  1.3363  1.3997  1.4575  1.5106
                    1.5600  1.6061  1.6493  1.6900  1.7284  1.7646  1.7989
                    1.8314  1.8623  1.8915  1.9193  1.9456  1.9518  1.9576
                    1.9630  1.9682  1.9732  1.9780  1.9825  1.9869  1.9912
                    1.9953  1.9993  2.0031  2.0068  2.0104  2.0140  2.0174
                    2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
                    2.0420  2.0448  2.0475  2.0502  2.0528  2.0554  2.0580
                    2.0605  2.0629  2.0653  2.0677  2.0700  2.0723  2.0746
                    2.0768  2.0790  2.0812  2.0833  2.0855  2.0875  2.0896
                    2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
                    2.1051  2.1070  2.1088  2.1106  2.1124  2.1141  2.1159
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                    2.1401  2.1416  2.1431  2.1446  2.1460  2.1475  2.1489
                    2.1504  2.1518  2.1532  2.1546  2.1560  2.1573  2.1587
                    2.1600  2.1614  2.1627  2.1640  2.1654  2.1667  2.1680
                    2.1692  2.1705  2.1718  2.1731  2.1743  2.1756  2.1768
                    2.1780  2.1792  2.1804  2.1817  2.1829  2.1840  2.1852
                    2.1864  2.1876  2.1887  2.1899  2.1910  2.1922  2.1933
                    2.1944  2.1956  2.1967  2.1978  2.1989  2.2000

COMPUTE NM HYD      ID=1 HYD NO=101.1 AREA=0.001250 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=0.1333 HR MASS RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   2.9610    CFS   UNIT VOLUME =    .9955       B =   526.28      P60 = 1.8700
    AREA =      .000750 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330
```

K = .118429HR TP = .133300HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
UNIT PEAK = 1.3303 CFS UNIT VOLUME = .9906 B = 354.67 P60 = 1.8700
AREA = .000500 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

*****
***** BASIN B
*****
COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.007375 SQ MI
PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 17.470 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.8700
AREA = .004425 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118429HR TP = .133300HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
UNIT PEAK = 7.8490 CFS UNIT VOLUME = .9988 B = 354.67 P60 = 1.8700
AREA = .002950 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

*****
***** ADDING BASINS B & D
*****
ADD HYD ID=3 HYD NO=101.3 ID=1 ID=2
*****
***** PARKING PONDING
*****
ROUTE RESERVOIR ID=1 HYD NO=501.1 INFLOW ID=3 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.00	0.00000	5169.00
2.67	0.00029	5169.50
3.78	0.00058	5170.00
4.63	0.00086	5170.50
5.35	0.00115	5171.00
5.48	0.00227	5171.10
5.61	0.00551	5171.20
5.74	0.01088	5171.30
5.86	0.01837	5171.40
5.98	0.02799	5171.50
6.10	0.03973	5171.60
6.21	0.05359	5171.70
6.33	0.06958	5171.80
6.44	0.08769	5171.90
6.55	0.10793	5172.00
6.66	0.13089	5172.10
6.76	0.15716	5172.20
6.87	0.18675	5172.30
6.97	0.21965	5172.40
7.07	0.25587	5172.50

* * * * * * * * * * * * * * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)

.00	.00	5169.00	.000	.00
.80	.00	5169.00	.000	.00
1.60	14.10	5172.29	.182	6.85
2.40	.77	5171.62	.043	6.12
3.20	.14	5169.02	.000	.12
4.00	.08	5169.02	.000	.08
4.80	.08	5169.02	.000	.08
5.60	.10	5169.02	.000	.10
6.40	.01	5169.00	.000	.01

PEAK DISCHARGE = 6.982 CFS - PEAK OCCURS AT HOUR 1.77
MAXIMUM WATER SURFACE ELEVATION = 5172.412
MAXIMUM STORAGE = .2241 AC-FT INCREMENTAL TIME= .033330HRS

****

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 17:20:32

AHYMO

INPUT & OUTPUT

FILES FOR

THE PARKING PONDING

```
**********************************************************************
*****                                                          *****
*****              DRAINAGE CALCULATION FOR                    *****
*****                 LADERA  APARTMENTS                       *****
**********************************************************************
*****              UNDER  PROPESED  CONDITIONS                 *****
**********************************************************************
*                          100-YR (6-HR)                           *
**********************************************************************
START               TIME=0.0
*****
***** BASIN A
*****
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                    RAIN DAY=2.66 IN DT=0.03333 HR
COMPUTE NM HYD      ID=1 HYD NO=101.1 AREA=0.001316 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN B
*****
COMPUTE NM HYD      ID=1 HYD NO=101.2 AREA=0.007375 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN C
*****
COMPUTE NM HYD      ID=1 HYD NO=101.3 AREA=0.001161 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN D
*****
COMPUTE NM HYD      ID=1 HYD NO=101.4 AREA=0.001250 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=0.1333 HR MASS RAINFALL=-1
**********************************************************************
*                          10-YR   (6-HR)                          *
**********************************************************************
START               TIME=0.0
*****
***** BASIN A
*****
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                    RAIN DAY=1.77 IN DT=0.03333 HR
COMPUTE NM HYD      ID=1 HYD NO=110.1 AREA=0.001316 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN B
*****
COMPUTE NM HYD      ID=1 HYD NO=110.2 AREA=0.007375 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN C
*****
COMPUTE NM HYD      ID=1 HYD NO=110.3 AREA=0.001161 SQ MI
```

```
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN D
*****
COMPUTE NM HYD      ID=1 HYD NO=110.4 AREA=0.001250 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=0.1333 HR MASS RAINFALL=-1
**********************************************************************
*****               UNDER  EXISING  CONDITIONS                 *****
**********************************************************************
*                           100-YR (6-HR)                            *
**********************************************************************
START               TIME=0.0
*****
***** BASIN A
*****
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                    RAIN DAY=2.66 IN DT=0.03333 HR
COMPUTE NM HYD      ID=1 HYD NO=102.1 AREA=0.001316 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN B
*****
COMPUTE NM HYD      ID=1 HYD NO=102.2 AREA=0.007375 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN C
*****
COMPUTE NM HYD      ID=1 HYD NO=102.3 AREA=0.001161 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN D
*****
COMPUTE NM HYD      ID=1 HYD NO=102.4 AREA=0.001250 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=0.1333 HR MASS RAINFALL=-1
**********************************************************************
*                              10-YR                                 *
**********************************************************************
START               TIME=0.0
*****
***** BASIN A
*****
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                    RAIN DAY=1.77 IN DT=0.03333 HR
COMPUTE NM HYD      ID=1 HYD NO=111.1 AREA=0.001316 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN B
*****
COMPUTE NM HYD      ID=1 HYD NO=111.2 AREA=0.007375 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=0.1333 HR MASS RAINFALL=-1
```

```
*****
***** BASIN C
*****
COMPUTE NM HYD       ID=1 HYD NO=111.3 AREA=0.001161 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=0.1333 HR MASS RAINFALL=-1
*****
***** BASIN D
*****
COMPUTE NM HYD       ID=1 HYD NO=111.4 AREA=0.001250 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=0.1333 HR MASS RAINFALL=-1
**********************************************************************
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =06/27/1995

INPUT FILE = 1.DAT USER NO.= R_BOHANN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	101.10	-	1	.00132	3.05	.106	1.50556	1.500	3.616	PER IMP=	60.00
COMPUTE NM HYD	101.20	-	1	.00738	16.99	.592	1.50556	1.500	3.600	PER IMP=	60.00
COMPUTE NM HYD	101.30	-	1	.00116	2.69	.093	1.50556	1.500	3.617	PER IMP=	60.00
COMPUTE NM HYD	101.40	-	1	.00125	1.63	.044	.66738	1.533	2.036	PER IMP=	.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	1.470
COMPUTE NM HYD	110.10	-	1	.00132	1.84	.061	.86984	1.500	2.179	PER IMP=	60.00
COMPUTE NM HYD	110.20	-	1	.00738	10.24	.342	.86984	1.500	2.170	PER IMP=	60.00
COMPUTE NM HYD	110.30	-	1	.00116	1.62	.054	.86984	1.500	2.179	PER IMP=	60.00
COMPUTE NM HYD	110.40	-	1	.00125	.62	.015	.22437	1.533	.770	PER IMP=	.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	102.10	-	1	.00132	1.71	.047	.66738	1.533	2.036	PER IMP=	.00
COMPUTE NM HYD	102.20	-	1	.00738	9.57	.263	.66738	1.533	2.028	PER IMP=	.00
COMPUTE NM HYD	102.30	-	1	.00116	1.51	.041	.66738	1.533	2.036	PER IMP=	.00
COMPUTE NM HYD	102.40	-	1	.00125	1.63	.044	.66738	1.533	2.036	PER IMP=	.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	1.470
COMPUTE NM HYD	111.10	-	1	.00132	.65	.016	.22437	1.533	.770	PER IMP=	.00
COMPUTE NM HYD	111.20	-	1	.00738	3.62	.088	.22437	1.533	.767	PER IMP=	.00
COMPUTE NM HYD	111.30	-	1	.00116	.57	.014	.22437	1.533	.770	PER IMP=	.00
COMPUTE NM HYD	111.40	-	1	.00125	.62	.015	.22437	1.533	.770	PER IMP=	.00
FINISH											

CITY OF
Albuquerque

August 15, 1996

Martin J. Chávez, Mayor

Ronald R. Bohannan
Tierra West Dev. Management. Ser
4421 McLeod Rd. NE
Suite D
Albuquerque, NM 87109

RE: RIO VOLCAN/LADERA APARTMENTS (H10-D16) ENGINEER'S CERTIFICATION CERTIFICATE OF OCCUPANCY. ENGINEER'S CERTIFICATION DATED 6-13-96.

Dear Ron:

Based on the information provided on your July 23, 1996 submittal, the above referenced project is approved for a Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: *RIO VOLCAN APARTMENTS (Ladera Apartments)*

ZONE ATLAS/DRNG. FILE #: *H-10 / D-16*

DRB #: *95-202*

EPC #:

WORK ORDER #:

LEGAL DESCRIPTION: *TRACT 5-A-3 EL RANCHO ATRISCO*

CITY ADDRESS: *LADERA DRIVE BETWEEN UNSER BLVD. & LAURELWOOD SUBDIVISION*

ENGINEERING FIRM: *TIERRA WEST DEV. MAGT. SER.*

CONTACT: *RONALD R. BOHANNAN*

ADDRESS: *4421 McLEOD ROAD NE, SUITE D, 87109*

PHONE: *(505) 883-7592*

OWNER: *LADERA ASSOC. LIMITED PARTNERSHIP*

CONTACT: *JACK WESTMAN*

ADDRESS: *4155 MONTGOMERY BLVD. NE ALBQ, NM 87109*

PHONE: *(505) 883-5221*

ARCHITECT: *DEKKER/PERICH & ASSOCIATES*

CONTACT: *RON WITHERSPOON*

ADDRESS: *6501 AMERICA PKWY #675, 87110*

PHONE: *(505) 888-3111*

SURVEYOR: *PRECISION SURVEYS*

CONTACT: *LARRY MEDRANO*

ADDRESS: *2926 COORS BLVD. NW #105, 87120*

PHONE: *(505) 839-0569*

CONTRACTOR:

CONTACT:

ADDRESS:

PHONE:

TYPE OF SUBMITTAL:

_____ DRAINAGE REPORT

_____ DRAINAGE PLAN

_____ CONCEPTUAL GRADING & DRAINAGE PLAN

_____ GRADING PLAN

_____ EROSION CONTROL PLAN

_____ ENGINEER'S CERTIFICATION

_X_ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

_____ SKETCH PLAN APPROVAL

_____ PRELIMINARY PLAT APPROVAL

_____ S. DEV. PLAN FOR SUB'D. APPROVAL

_____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

_____ SECTOR PLAN APPROVAL

_____ FINAL PLAT APPROVAL

_____ FOUNDATION PERMIT APPROVAL

_____ BUILDING PERMIT APPROVAL

_____ CERTIFICATE OF OCCUPANCY APPROVAL

_____ GRADING PERMIT APPROVAL

_____ PAVING PERMIT APPROVAL

_____ S. A. D. DRAINAGE REPORT

_____ DRAINAGE REQUIREMENTS

_X_ OTHER Final Certification Phase 1

PRE-DESIGN MEETING:

_____ YES

_____ NO

_____ COPY PROVIDED

RECEIVED
JUL 25 1996

DATE SUBMITTED: July 25,1996

BY: *RONALD R. BOHANNAN*

CITY OF
Albuquerque

May 30, 1996

Martin J. Chávez, Mayor

Ronald R. Bohannan
Tierra West Dev. Management. Ser
4421 McLeod Rd. NE
Suite D
Albuquerque, NM 87109

RE: RIO VOLCAN/LADERA APARTMENTS (H10-D16) ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY (BUILDINGS 11, 12, AND 13).

Dear Ron:

Based on the information provided on your May 8, 1996 submittal, buildings 11, 12, and 13 of the above referenced project are not approved for a Certificate of Occupancy. Please address the following comments:

1. It is not acceptable to have the contractor perform the survey unless they are a licensed surveyor in the state of New Mexico. If the contractor is licensed, the following applies:

   The surveying associated with the certification must be in accordance with "New Mexico Engineering and Surveying Practice Act" Section 61-23-1 through 61-23-32 NMSD (1978) and the professional surveyor shall be identified by name and registration number.

2. I was unable to find the current Engineer's Certification on the plan sheet you submitted.

As mentioned in my letter dated March 26, 1996, I will no longer accept a portion of the project for final Certificate of Occupancy. The entire project will have to be complete prior to final approval. I can and will, if warranted, extend temporary Certificates of Occupancy until the project is complete. It appears that some of the previously approved, Temporary Certificate of Occupancies have expired. It is in the best

interest of your client to request extensions on all expired temporary Certificates of Occupancy.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
Eddie

CITY OF
Albuquerque

May 2, 1996

Martin J. Chávez, Mayor

Ronald R. Bohannan
Tierra West Dev. Management. Ser
4421 McLeod Rd. NE
Suite D
Albuquerque, NM 87109

RE: RIO VOLCAN/LADERA APARTMENTS (H10-D16) ENGINEER'S CERTIFICATION FOR TEMPORARY CERTIFICATE OF OCCUPANCY (BUILDINGS 8, 9, AND 10). ENGINEER'S CERTIFICATION DATED 4-8-96.

Dear Ron:

Based on the information provided on your April 11, 1996 submittal, buildings 8, 9, and 10 of the above referenced project are approved for a 30 day Temporary Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 27, 1995

Ronald R. Bohannan, PE
Tierra West Dev Mgmt Ser
4421 McLeod Road NE Suite D
Albuquerque, NM 87109

RE: CONC GRADING & DRAINAGE PLAN FOR LADERA APTS (H-10/D-16)
RECEIVED JUNE 1, 1995 FOR SITE DEV PLAN FOR B.P.
ENGINEER'S STAMP DATED 5/31/95

Dear Mr. Bohannan:

Based on the information included in the submittal referenced above, City Hydrology accepts the Conceptual Grading & Drainage Plan for Site Development Plan for Building Permit. What is the DRB number and is a plat required? The following comments must be addressed before Building Permit:

Diversion of upstream runoff from the west must not cause erosion or sediment damage to the adjacent property or the City right of way. Submit a copy of written permission from the appropriate property owner before grading on any adjacent property. The erosion control plan must be on the Grading Plan before a Rough Grading Permit will be issued.

AMAFCA must approve all discharges to the MireHaven Channel. Contact Kurt Browning to determine which permits or licenses are required. Identify which project Isaacson & Arfman analyzed Ladera Drive for. Include copies of any portion of the report that are needed to support the Downstream Capacity.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia
Fred Aguirre, DRB ??-???
Kurt Browning, AMAFCA
Jack Westman, 4600 Montgomery NE #7, 87109

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 8, 1995

Shahab Biazar
Tierra West Dev. Managment. Ser
4421 McLeod Rd. NE
Suite D
Albuquerque, NM 87109

RE: RIO VOLCAN/LADERA APARTMENTS (H10-D16) DRAINAGE REPORT SUBMITTAL FOR SITE DEVELOPMENT PLAN FOR BUILDING PERMIT AND GRADING PERMIT APPROVAL. ENGINEER'S STAMP DATED 8-31-95.

Dear Shahab:

Based on the information provided on your September 8, 1995 submittal, the above referenced project is approved for Site Development Plan for Building Permit and Grading Permit.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 27, 1995

Ronald R. Bohannan
Tierra West Development Management Service
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

RE: DRAINAGE REPORT FOR SITE DEVELOPMENT PLAN FOR PERMIT APPROVAL AND GRADING PERMIT APPROVAL. LADERA APARTMENTS (H10/D16). ENGINEER'S STAMP DATED 6-30-95.

Dear Mr. Bohannan:

Based on the information provided on your June 30, 1995 submittal, the Site Development Plan for Permit and Grading Permit are not approved.

Prior to approval, please address the following comments:

1. How do your proposed grades tie into adjacent properties? Show spots and contours a minimum of 25 feet beyond your property line. Will your development have any effect on AMAFCA's Right-of-Way?

2. After reviewing the drainage report you referenced by Isaacson & Arfman (H10/D13), I found that SAD No. 212 yields an allowable discharge rate of 2.28 cfs/acre. Your conclusions are based on an allowable discharge rate of 3.00 cfs/acre. The actual flow from your site is shown as 17.36 cfs, which is above the allowable. Note, pond depths greater than 18 inches require a safety fence.

3. Show location of temporary erosion berm. Show location of sideyard wall referenced in your drainage report under "Existing Conditions."

4. Whenever a private storm drain line is to connect to an existing storm inlet in the City's Right-of-Way, the SO-19 format must be used. This format can be found in the City of Albuquerque DPM section 22.7. I have enclosed a copy for your convienence. Please be sure to add the highlighted notes and City sign-off block.

I have enclosed a copy of your Grading & Drainage plan with mark-ups correlating to the above comments.

Please be advised that a separate permit is required for construction within City Right-of-Way. A copy of the approval letter must be on hand when applying for the excavation permit.

If I can be of further assistance, please feel free to contact me at 505-768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Associate

c: File
Andrew Garcia
Kurt Browning - AMAFCA

lam

Enclosures

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 28, 1995

Shahab Biazar
Tierra West Dev. Management. Ser
4421 McLeod Rd. NE
Suite D
Albuquerque, NM 87109

RE: RIO VOLCAN/LADERA APARTMENTS (H10-D16) DRAINAGE REPORT SUBMITTAL FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED 8-31-95.

Dear Shahab:

Based on the information provided on your September 22, 1995 submittal, the above referenced project is approved for Building Permit.

Prior to Certificate of Occupancy approval, an Engineer's Certification for the approved plan is required. Refer to the DPM for the Engineer's Certification checklist.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

October 10, 1995

Shahab Biazar
Tierra West Dev. Management. Ser
4421 McLeod Rd. NE
Suite D
Albuquerque, NM 87109

RE: RIO VOLCAN/LADERA APARTMENTS (H10-D16) DRAINAGE REPORT SUBMITTAL FOR SO-19 PERMIT APPROVAL. ENGINEER'S STAMP DATED 8-31-95.

Dear Shahab:

Based on the information provided on your October 10, 1995 submittal, the above referenced project is approved for SO-19 Permit.

Prior to Certificate of Occupancy approval, an Engineer's Certification for the approved plan is required. Refer to the DPM for the Engineer's Certification checklist.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Arlene Portillo
Andrew Garcia
File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 6, 1995

Shahab Biazar
Tierra Weśt Dev. Management. Ser
4421 McLeod Rd. NE
Suite D
Albuquerque, NM 87109

RE: CHANGES TO RIO VOLCAN/LADERA APARTMENTS (H10-D16) DRAINAGE REPORT SUBMITTAL FOR BUILDING PERMIT AND SO-19 PERMIT APPROVAL. ENGINEER'S STAMP DATED 10-23-95. PREVIOUS APPROVALS DATED SEPTEMBER 28, 1995 (BUILDING PERMIT) AND OCTOBER 10, 1995 (SO #19).

Dear Shahab:

Based on the information provided on your October 26, 1995 submittal, the changes to the above referenced project are approved for Building and SO-19 Permit.

Prior to Certificate of Occupancy approval, an Engineer's Certification for the approved plan is required. Refer to the DPM for the Engineer's Certification checklist.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Arlene Portillo
Andrew Garcia
File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 21, 1995

Shahab Biazar
Tierra West Dev. Management. Ser
4421 McLeod Rd. NE
Suite D
Albuquerque, NM 87109

RE: RIO VOLCAN/LADERA APARTMENTS (H10-D16). ENGINEER'S STAMP DATED 10-23-95.

Dear Shahab:

Per our conversation on December 21, 1995 regarding the above mentioned project, it is the City's understanding that the following design changes will ensue on the west most drive along Ladera.

1. The City will accept a water block of 0.80 feet at the west drive along Ladera. This will require that the current flow line grade of 75.96 feet must be changed to no less than 76.33 feet.

2. To provide a positive slope from your site to the driveway water block, a slope of 0.5% or more is acceptable. It is suggested that you try to maximize your slope as much as possible.

3. Prior to approval you must submit another drawing showing the design change. The drawing must have an revised stamp date.

I realize that this item will need to be reviewed as quickly as possible. Please call me at 768-3622, when you are ready to resubmit.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

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

December 27, 1995

Shahab Biazar
Tierra West Dev. Management. Ser
4421 McLeod Rd. NE
Suite D
Albuquerque, NM 87109

RE: REVISED GRADING PLAN FOR RIO VOLCAN/LADERA APARTMENTS (H10-D16). ENGINEER'S STAMP DATED 12-21-95.

Dear Shahab:

Based on the information provided on your December 22, 1995 submittal, the grade changes to the above referenced project are noted and approved.

Prior to Certificate of Occupancy approval, an Engineer's Certification for the approved plan is required. Refer to the DPM for the Engineer's Certification checklist.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
<File>

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

March 26, 1996

Ronald R. Bohannan
Tierra West Dev. Management. Ser
4421 McLeod Rd. NE
Suite D
Albuquerque, NM 87109

RE: RIO VOLCAN/LADERA APARTMENTS (H10-D16) ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY. ENGINEER'S CERTIFICATION DATED 3-21-95.

Dear Ron:

Based on the information provided on your March 21, 1996 submittal, the above referenced project is approved as follows:

1. Buildings 1, 2, 7, office, and Commons Building are approved for Final Certificate of Occupancy.

2. Buildings 3, 4, 5, and 6 are approved for a 30 day Temporary Certificate of Occupancy.

Please be certain to fill out all information on your Engineer's Certification. You left some lines blank.

In the future, I will no longer accept a portion of the project for Final Certificate of Occupancy. The entire project will have to be complete prior to final approval. I can and will, if warranted, extend Temporary Certificates of Occupancy until the project is complete.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE December 23, 1986 REF. NO._____

TO: The Record

FROM: Janet Saiers, Urban Planner, Parks & Recreation

SUBJECT: LAURELWOOD PARK

On December 18, 1986, I talked to Mike Radigan, 7425 Starwood Dr. N.W., 87120, who was representing the Laurelwood neighborhood. A 10 acres park site was given to the City in 1982. Of the 10 acres, 3 acres functions as a ponding area. In the future, this pond will not be necessary after a storm drainage system is constructed.

I told Mr. Radigan that approximately 12 neighborhood parks were dedicated before Laurelwood. The City developes neighborhood parks in chronological order, thus Laurelwood should come up for funding no sooner than the 1993 or 1995 Capital Improvement Program cycle. (Usually two or three neighborhood parks are funded each CIP cycle.)

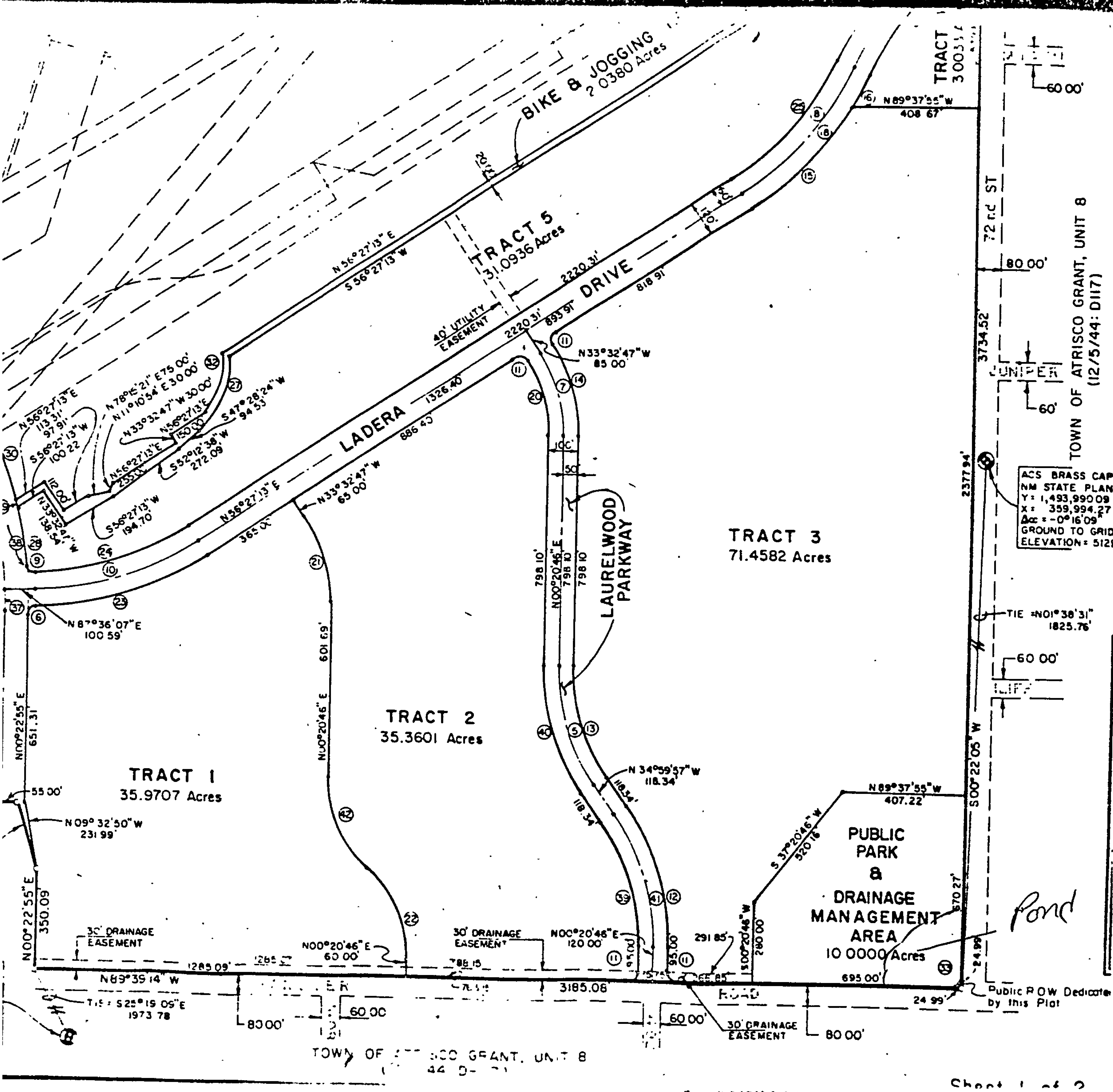
He said that at a recent meeting of the neighborhood association, Mr. Chuck Reynolds representing Presley Builders, indicated that Presley might want to build the park then turn it over to the City to maintain. I explained that the City would have to receive a written proposal from Presley before we could respond.

Fred

Mr. Radigan also brought up that the pond did not function properly last year. It seemed that it did not drain or was always soggy and had mosquitoes. (I said I would pass these questions on to the proper department.) He was also wondering about any plans for a vehicular connection on Laurelwood street south across the I-40.
(Refer to Bob Fosnaugh)

JS/tj

xc: City Engineer - Hydrology - Fred Aguirre 4+h
Environmental Health - Fred Malone
Chuck Reynolds - Presley Company
Office of Neighborhood Coordination
Mr. Mike Radigan
Pat Westbrook


BIKE & JOGGING
2.0380 Acres
TRACT 5
31.0936 Acres
40' UTILITY EASEMENT
LADERA DRIVE
2220.31'
893.91'
818.91'
1326.40
886.40
365.00
N56°27'13"E
S56°27'13"W
N33°32'47"W
85.00
N33°32'47"W
65.00
N87°36'07"E
100.59'
LAURELWOOD PARKWAY
798.10'
N00°20'46"E
TRACT 1
35.9707 Acres
TRACT 2
35.3601 Acres
TRACT 3
71.4582 Acres
N00°22'55"E
651.31
55.00'
N09°32'50"W
231.99'
N00°22'55"E
350.09'
601.69'
N00°20'46"E
N 34°59'57"W
118.34'
N89°37'55"W
408.67'
N89°37'55"W
407.22'
S37°20'46"W
520.16
PUBLIC PARK & DRAINAGE MANAGEMENT AREA
10.0000 Acres
Pond
570.27'
S00°20'46"W
280.00
291.85'
695.00'
24.99'
S00°22'05"W
2377.94'
3734.52'
72nd ST
80.00'
60.00'
60'
TOWN OF ATRISCO GRANT, UNIT 8
(12/5/44: D117)
ACS BRASS CAP
NM STATE PLANE
Y: 1,493,990.09
X: 359,994.27
Δα: -0°16'09"
GROUND TO GRID
TIE: N01°38'31"
1825.76'
30' DRAINAGE EASEMENT
N00°20'46"E
60.00'
N00°20'46"E
120.00'
1285.09'
N89°39'14"W
3185.08'
ROAD
TIE: S25°19'09"E
1973.78
80.00'
60.00
Public R.O.W. Dedicated by this Plat
TOWN OF
GRANT, UNIT 8
Sheet 1 of 2