CITY OF ALBUQUERQUE

THREE HUNDRED YEARS
1706 • 2006
ALBUQUERQUE
Making History

August 2, 2005

Dennis Lorenz, P.E.
Brasher & Lorenz
2201 San Pedro NE, Building 1 Suite 1200
Albuquerque, NM 87110

Re: South Pointe, Site Development Plan
Engineer's Stamp dated 7-07-05 (L23-D24)

Dear Mr. Lorenz,

Based upon the information provided in your submittal received 7-07-05, the above referenced plan is approved for Site Development Plan for Building Permit action by the DRB. However, the above referenced plan cannot be approved for Building Permit until the following comments are addressed:

1. Provide a profile of the alley, including top of wall and bottom of wall elevations.
2. Clearly define all existing versus proposed masonry walls.
3. The Highway Department must approve the proposed grading within their Right of Way.
4. Provide details for the proposed drainage channel.
5. What modifications are to be made to the existing drainage channels? Provide details.
6. Define the FIRM number.
7. Provide an analysis of the street capacities.

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro, P.E.
Senior Engineer, Planning Dept.
Development and Building 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: SOUTH POINTE
DRB #: 04DRB01528 EPC#:NA

ZONE MAP/DRG. FILE #:L23/D24
WORK ORDER#:NA

LEGAL DESCRIPTION: TRACT B, BLOCK 7, TRACT C, BLOCK 2, WELLS SANDIA MANOR
CITY ADDRESS:MODESTO AVENUE NE

ENGINEERING FIRM: BRASHER & LORENZ
ADDRESS: 2201 SAN PEDRO NE BLDG 1 SUITE 1200
CITY, STATE: ALBUQUERQUE, NEW MEXICO

CONTACT: D. LORENZ
PHONE: 888-6088
ZIP CODE: 87110

OWNER: JUDE BACA
ADDRESS: 3913 72ND STREET NW
CITY, STATE: ALBUQUERQUE, NEW MEXICO

CONTACT: JUDE BACA
PHONE: 379-7877
ZIP CODE: 87120

ARCHITECT: NONE
ADDRESS: _
CITY, STATE: _

CONTACT:
PHONE:
ZIP CODE:

SURVEYOR: PRECISION SURVEYS
ADDRESS: 8414 JEFFERSON NE
CITY, STATE: ALBUQUERQUE, NM

CONTACT: L. MEDRANO
PHONE: 856-5700
ZIP CODE: 87113

CONTRACTOR: NA
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL, ***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)
- ☐ ENGINEERS CERTIFICATION (TCL)
- ☐ ENGINEERS 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 APPROVAL
- ☐ 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 (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☒ YES
- ☐ NO
- ☐ COPY PROVIDED

RECEIVED
JUL 0 7 2005
HYDROLOGY SECTION

DATE SUBMITTED: July 7, 2005

BY:DENNIS LORENZ

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope ot 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 (5) acres and Sector Plans.
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

CONCEPTUAL DRAINAGE REPORT
FOR
SOUTH POINTE

ALBUQUERQUE
NEW MEXICO

Prepared For:

Jude Baca
3913 72nd Street NW
Albuquerque, New Mexico 87120

Prepared by:

BRASHER AND LORENZ, INC.
Consulting Engineers
2201 San Pedro NE, Building 1, Suite 1200
Albuquerque, New Mexico 87110

RECEIVED
JUL 07 2005
HYDROLOGY SECTION

July 2005

DENNIS A. LORENZ
NEW MEXICO
9647
REGISTERED PROFESSIONAL ENGINEER

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PROJECT HYDROLOGY
AHYMO OUTPUT FILES
EXISTING CONDITIONS
DEVELOPED CONDITIONS

EXHIBITS (Located in back pocket)

CONCEPTUAL GRADING AND DRAINAGE PLAN

PURPOSE AND SCOPE

Pursuant to the established Drainage Ordinance for the City of Albuquerque and the Development Process Manual, this Conceptual Grading and Drainage Plan outlines the drainage management criteria for controlling developed runoff from the project site. The project consists of the construction of a 27 lot residential subdivision. Proposed site improvements include paving, landscaping, utility, grading, and drainage improvements. This plan is presented to establish conceptual grading and drainage criteria to support site plan review by the City of Albuquerque Development Review Board.

SITE DESCIPTION

The project site is approximately 5.0-acres in size and is located north of Interstate 40, between Trimble Boulevard NE and Camino de la Sierra NE. The project site is particularly described as Tract B, Block 2 and Tract C, Block 7, Wells Sandia Manor. The site is bounded on the north and east by developed residential properties and on the south by Interstate 40. Site topography is very rugged, generally sloping from north to south at varying gradients. The site is covered with native vegetation consisting of native grasses, cactus and shrubs. Given the project site is located at the foothills of the Sandia Mountains, granite boulders are present.

As shown by the attached FIRM Panel (Figure 2), the site is not impacted by a mapped Flood Hazard Zone.

EXISTING CONDITIONS

The site presently drains south to existing drainage improvements located within the Interstate 40 right-of-way. As shown by the Plan, the easterly portion of the site, along with contributing off-site basins concentrating within Camino de la Sierra NE drain south to an existing 48-inch RCP culvert that drains across the freeway. The westerly portion of the site, along with contributing off-site basins concentrating within Trimble Boulevard NE, drain south to an existing 5'x5' concrete box culvert that also drains across the freeway (see Figure 3). The drainage basins currently draining the each structure are described as follows:

1. Basins A and B concentrate within Trimble Blvd and drain by a concrete rundown to the 5'x5' CBC at I-40. Also draining to the CBC are Basins D1, D2, E1, E2 and E3. Peak existing flow at the CBC is estimated at 224.8 cfs.
2. Basin C concentrates within Camino de la Sierra and drains by a concrete rundown to the 48-inch culvert at I-40. Also draining to the culvert are Basins F1, F2 and F3. Peak existing flow at the culvert is estimated at 72.7 cfs.

PROPOSED CONDITIONS

As shown by the Plan, the project consists of the construction of a 27 lot residential subdivision, with associated site improvements. The Plan shows the elevations and detail

necessary to demonstrate the grading and drainage criteria for development of the property. Flow arrows give the direction of drainage flows and the project hydrology is tabulated for both existing and proposed conditions.

The plan proposes to free discharge on-site flows to the existing culverts described above, as follows:

E3, F3?

1. Basins A and B will continue to drain to the 5'x5' CBC from Trimble Blvd. The existing cul-de-sac will be rebuilt and the drainage rundown improved.
2. Basin C will continue to drain to the 48-inch culvert from Camino de la Sierra. The existing cul-de-sac will be rebuilt and the drainage rundown improved.
3. Basins D1, E1 and F1 represent flows from the existing residential area to the north that will drain to the existing Alley, which will be paved. The alley will drain east and west to Trimble and Camino de la Sierra, then to the interstate improvements.
4. On-site Basins D2.1, E2.1, E2.2 and E2.3 will drain to the 5'x5' CBC.
5. On-site Basin F2.1 will drain to the 48-inch culvert.

Total estimated developed flow at the 5'x5' CBC is 241.1 cfs, or a 16.3 cfs increase.
Total estimated developed flow at the 48-inch is 70.2 cfs, or a 2.5 cfs decrease.

As stated above, this plan is presented to establish conceptual grading and drainage criteria to support site plan review by the Development Review Board, and does not provide the detail necessary for construction. Upon site plan approval, a comprehensive grading and drainage plan will be prepared for preliminary plat and building permit purposes that provides the required details and supportive calculations.

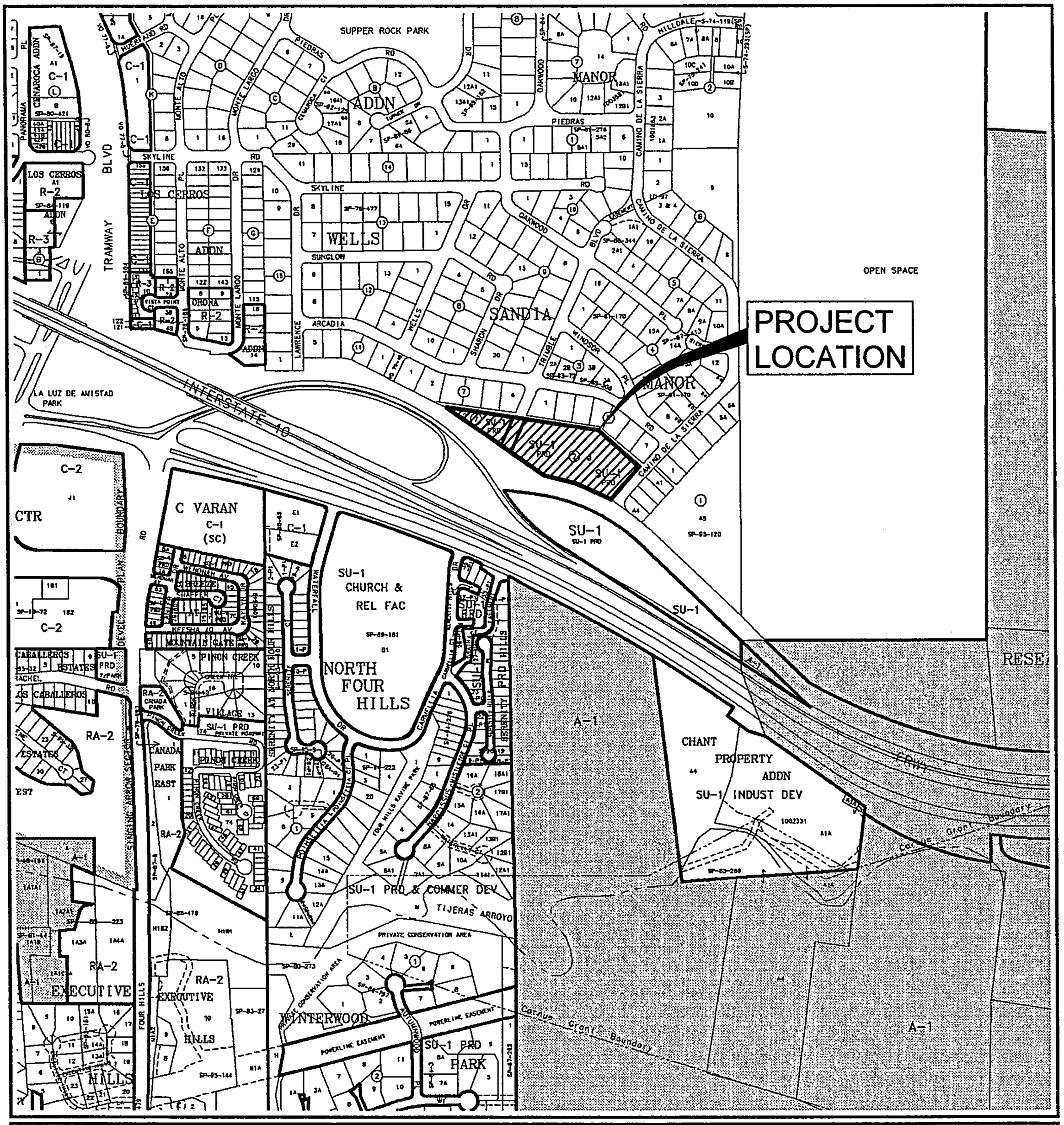
EROSION CONTROL

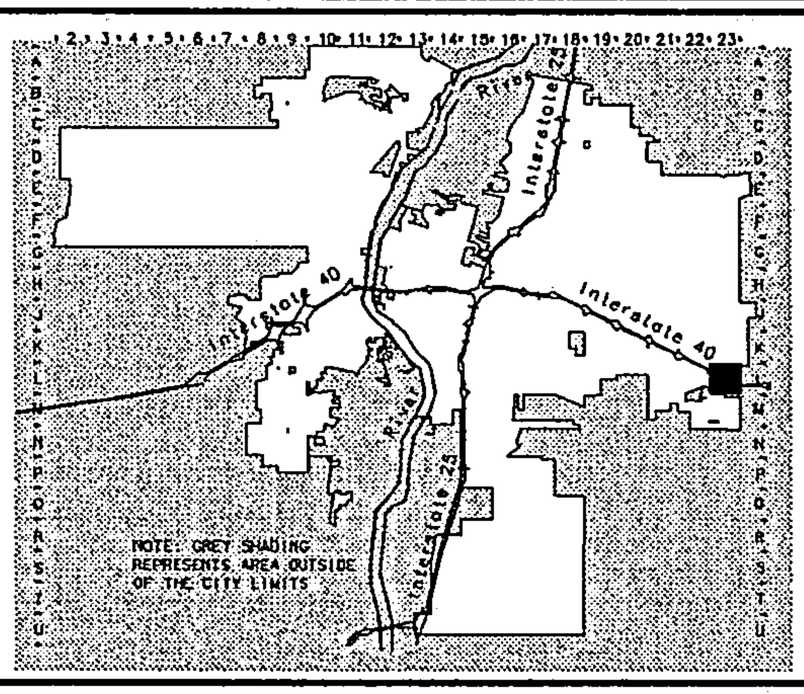
Since the disturbed area is determined to be more than 1.0-acres a Storm Water Pollution Prevention Plan and Notice of Intent are required prior to construction. A complete Storm Water Pollution Prevention Plan will be prepared in advance of construction outlining the short term and long term erosion, sediment and pollution control aspects of the project.

APPENDIX

MAPS

1





Albuquerque Geographic Information System
PLANNING DEPARTMENT

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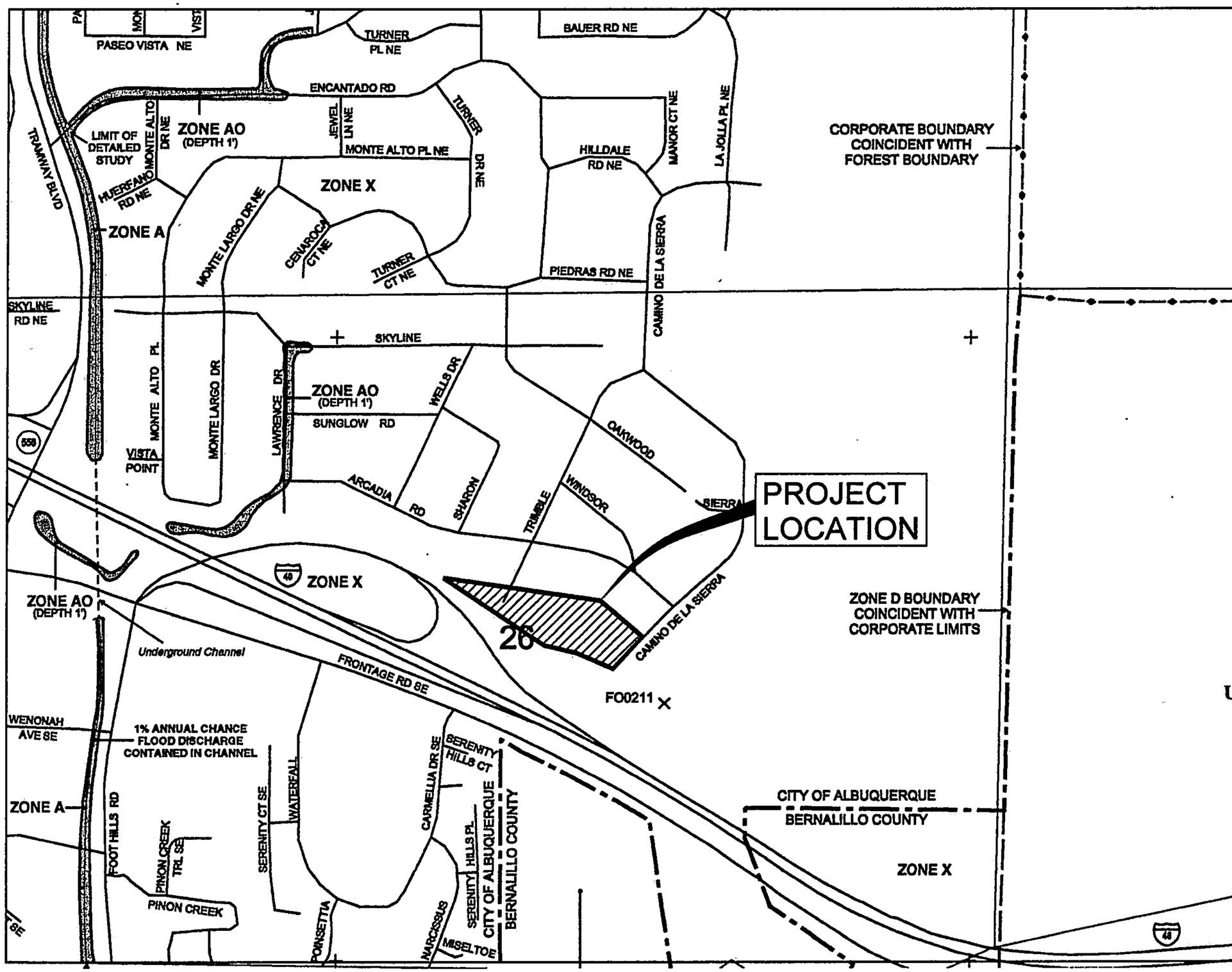
GRAPHIC SCALE IN FEET
250 0 750 1000

Zone Atlas Page

L-23-Z

Map Amended through September 02, 2004



MAP SCALE 1" = 500'

0 500 1000 FEET

PANEL 0378E

FIRM

FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO

AND INCORPORATED AREAS

PANEL 378 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0378	E
BERNALILLO COUNTY	350001	0378	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.

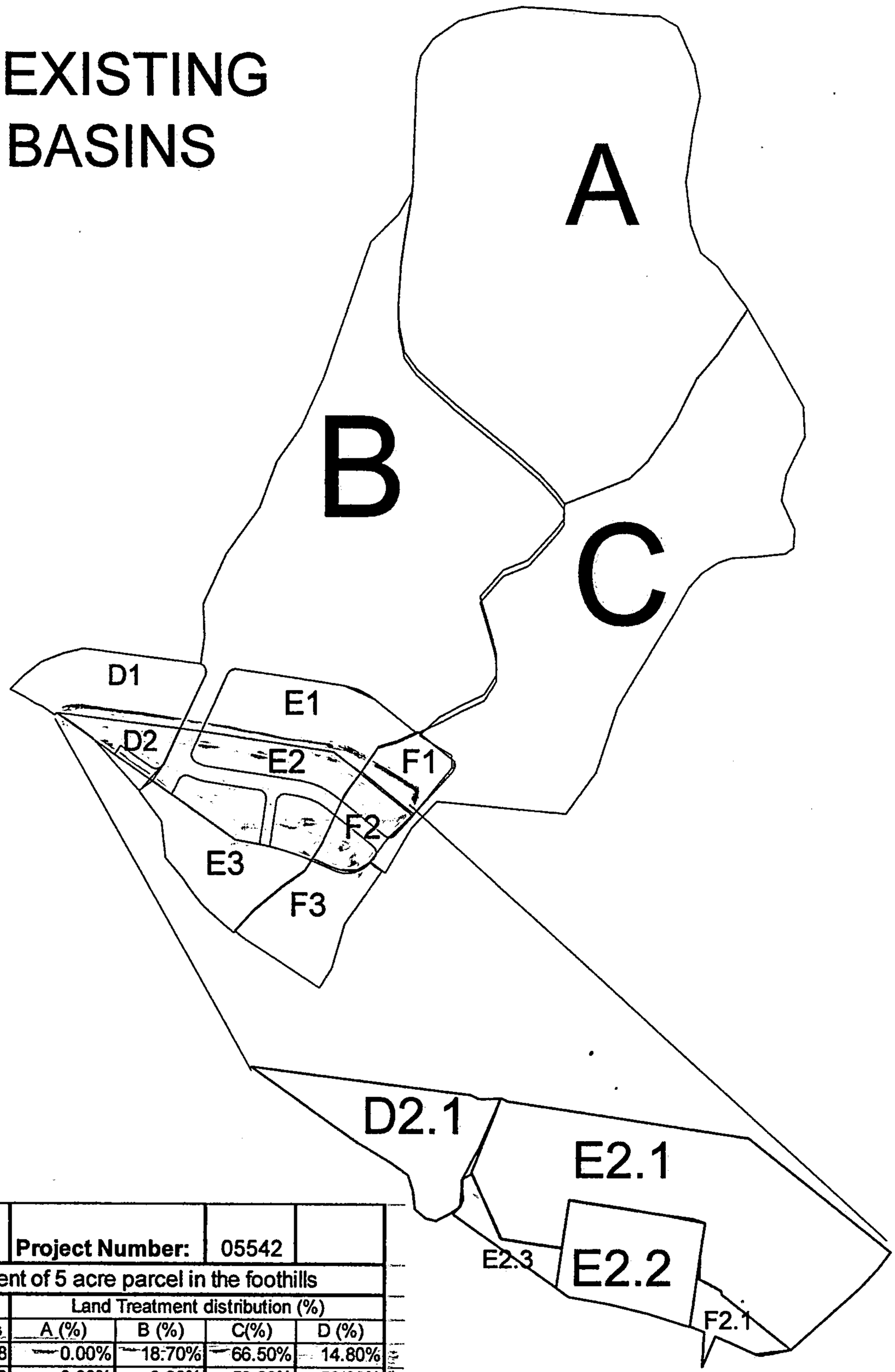
MAP NUMBER
35001C0378E

MAP REVISED
NOVEMBER 19, 2003

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

EXISTING BASINS

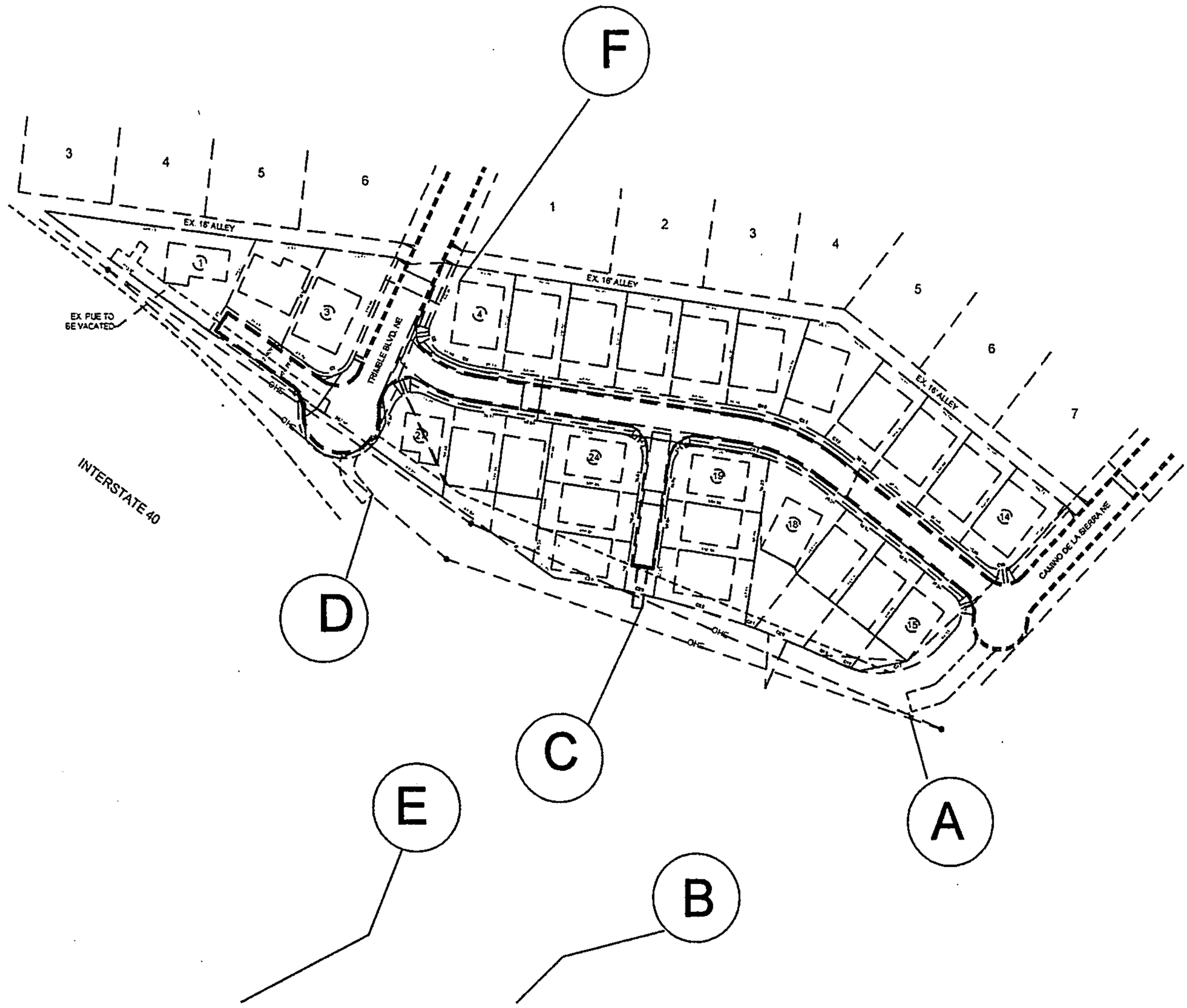


DEVELOPED BASINS

Project Name:	South Pointe		Project Number:	05542	
Project Description:	Development of 5 acre parcel in the foothills				
	Area	Area	Land Treatment distribution (%)			
Basin ID	Acres	square miles	A (%)	B (%)	C(%)	D (%)
A	25.747	0.040229688	0.00%	18.70%	66.50%	14.80%
B	18.865	0.029476563	0.00%	0.00%	50.00%	50.00%
C	15.803	0.024692188	0.00%	20.19%	70.00%	9.81%
D1	2.211	0.003454688	0.00%	0.00%	50.00%	50.00%
D2	0.838	0.001309375	0.00%	50.00%	50.00%	0.00%
D2.1	0.982231405	0.001534737	0.00%	0.00%	55.00%	45.00%
E1	2.52	0.0039375	0.00%	0.00%	50.00%	50.00%
E2	3.49	0.005453125	0.00%	50.00%	50.00%	0.00%
E2.1	3.032943067	0.004738974	0.00%	0.00%	49.00%	51.00%
E2.2	0.866597796	0.001354059	0.00%	0.00%	49.00%	51.00%
E2.3	0.189591598	0.000296237	0.00%	0.00%	49.00%	51.00%
E3	2.11	0.003296875	0.00%	50.00%	50.00%	0.00%
F1	0.905	0.001414063	0.00%	0.00%	50.00%	50.00%
F2	1.08	0.0016875	0.00%	50.00%	50.00%	0.00%
F2.1	0.242883379	0.000379505	0.00%	0.00%	49.00%	51.00%
F3	1.94	0.00303125	0.00%	50.00%	50.00%	0.00%

CALCULATIONS

CULVERT CAPACITIES



I. CHANNEL CAPACITIES

Developed Conditions						
ANALYSIS POINT	CHANNEL DESCRIPTION	Q_{100} cfs	SLOPE %	VELOCITY fps	DEPTH ft	FROUDE NO ac-ft
A	20' W rectangular	62.68	10%	13.6	0.23	4.99
C	10' W rectangular	3.92	9%	5.7	0.07	3.86
D	15' W rectangular	230.17	8%	24	0.64*	5.29
F	16' Triangular	11.31	2%	4.3	0.41	1.67

* Modify existing to provide 8" minimum curb height.

II. CULVERT CAPACITIES

Developed Conditions					
ANALYSIS POINT	CULVERT DESCRIPTION	Q_{100} cfs	HW/D	CAPACITY cfs	COMMENTS
B	48" RCP	70.23	1.2	90	Existing culvert is sufficient
E	5' x 5' Box Culvert	241.09	2.5	360	Existing culvert is sufficient

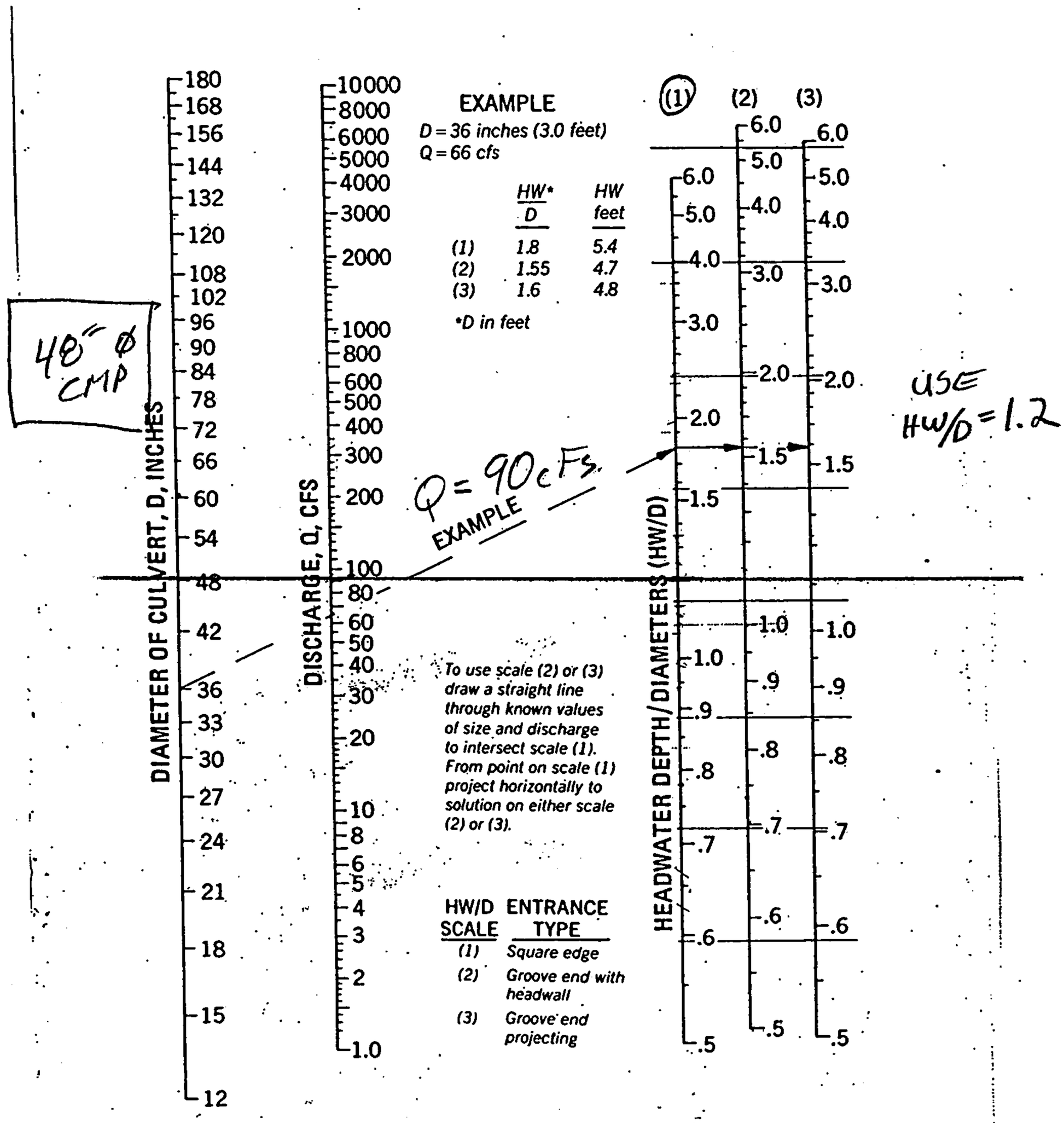
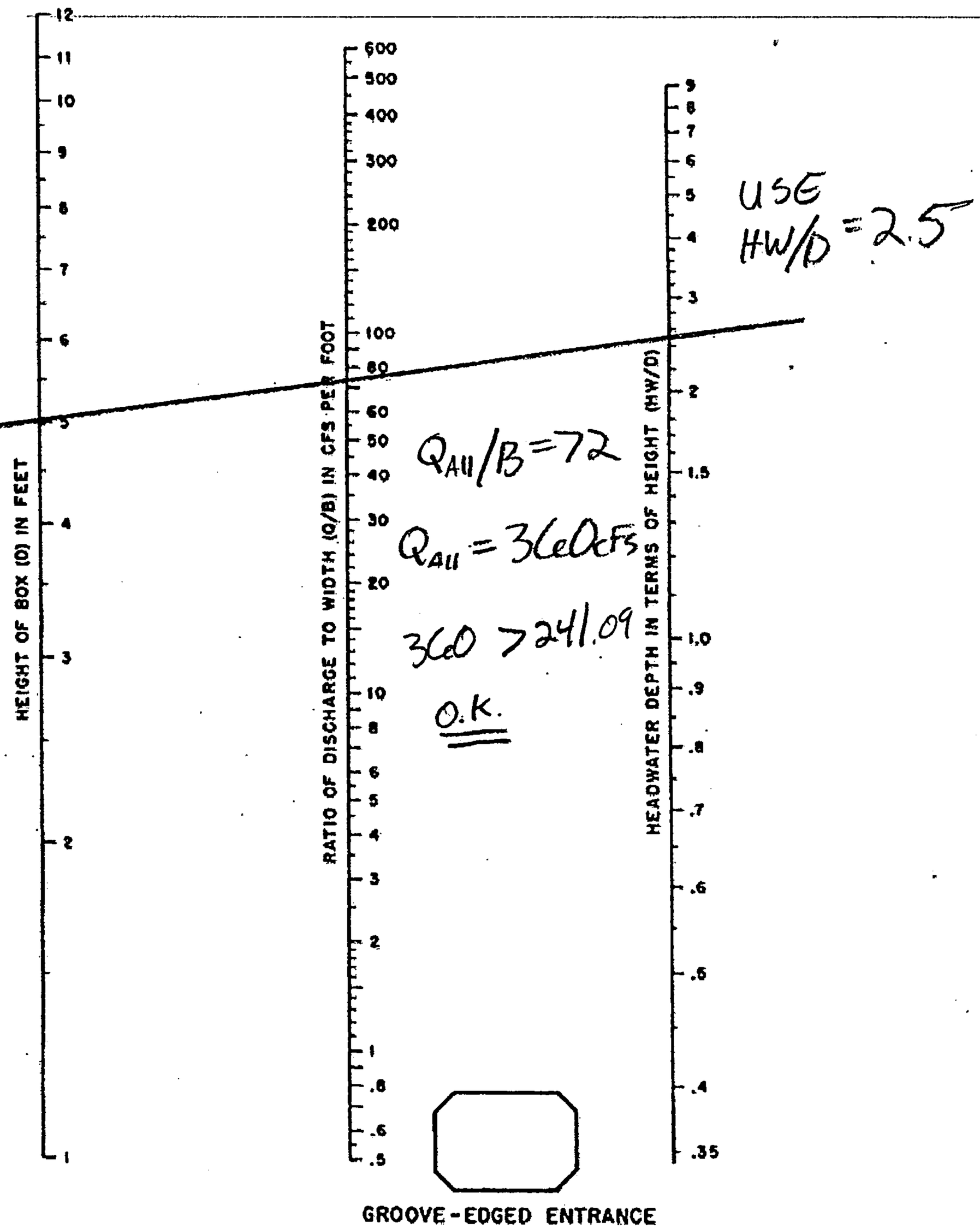


Figure 3.25. Headwater Depth for Circular Concrete Pipe Culverts with Inlet Control.

The Cretex Companies, Inc.

Culvert Nomograph

Concrete Box Culverts with Inlet Control



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PROJECT HYDROLOGY

AHYMO OUTPUT FILES

EXISTING CONDITIONS

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ADD HYD	EAST	12&10	13	.02779	66.27	2.228	1.50315	1.500	3.726	
ADD HYD	48.00	13&11	14	.03082	72.71	2.430	1.47837	1.500	3.686	
ADD HYD	ERUNDOWN.1	1& 2	15	.06971	182.20	6.551	1.76193	1.500	4.084	
ADD HYD	ERUNDOWN.2	15& 4	16	.07316	192.12	6.927	1.77539	1.500	4.103	
ADD HYD	ERUNDOWN.3	16& 5	17	.07447	194.90	7.015	1.76618	1.500	4.089	
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*************************************************************************
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                    RAIN SIX=2.90  RAIN DAY=3.65  DT=0.03333 HRS

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                  2.6743  2.6780  2.6817  2.6853  2.6889  2.6925  2.6960
                  2.6995  2.7029  2.7063  2.7097  2.7131  2.7164  2.7197
                  2.7229  2.7262  2.7294  2.7325  2.7357  2.7388  2.7419
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                  2.8890  2.8912  2.8934  2.8956  2.8978  2.9000

* EXISTING OFFSITE BASIN A - 25.747 ACRES
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     AREA =      .006035 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
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     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=1  CODE=20
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HYDROGRAPH FROM AREA OFFSITE.A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	16.6	4.000	.3	5.999	.3		
.667	.4	2.666	1.8	4.666	.2	6.666	.0		
1.333	22.7	3.333	.5	5.333	.2				

```
RUNOFF VOLUME =      1.55277 INCHES      =       3.3316 ACRE-FEET
PEAK DISCHARGE RATE =      97.65 CFS  AT   1.500 HOURS   BASIN AREA =   .0402 SQ. MI.

* EXISTING OFFSITE BASIN B = 18.865 ACRES
COMPUTE NM HYD      ID=2  HYD NO=OFFSITE.B DA=0.02948 SQ MI
                    PER A=0 PER B=0 PER C=50 PER D=50
                    TP=0.1333 HR  MASS RAIN=-1

K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   58.194    CFS   UNIT VOLUME =    .9992       B =   526.28      P60 = 2.2300
AREA =      .014740 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
UNIT PEAK =   41.639    CFS   UNIT VOLUME =    1.000       B =   376.56      P60 = 2.2300
AREA =      .014740 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=2  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.B

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	18.1	4.000	.6	5.999	.6		
.667	1.0	2.666	2.0	4.666	.6	6.666	.0		
1.333	23.9	3.333	.8	5.333	.6				

```
RUNOFF VOLUME =      2.04739 INCHES      =       3.2190 ACRE-FEET
PEAK DISCHARGE RATE =      84.56 CFS  AT   1.500 HOURS   BASIN AREA =   .0295 SQ. MI.

* EXISTING OFFSITE BASIN C = 15.803  ACRES
COMPUTE NM HYD      ID=3  HYD NO= OFFSITE.C DA=0.024692 SQ MI
                    PER A=0 PER B=20  PER C=70  PER D=10
                    TP=0.1333 HR  MASS RAIN=-1

K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   9.7485    CFS   UNIT VOLUME =    .9982       B =   526.28      P60 = 2.2300
AREA =      .002469 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

K =   .115442HR    TP =   .133300HR    K/TP RATIO =   .866030     SHAPE CONSTANT, N =  4.103703
UNIT PEAK =   60.354    CFS   UNIT VOLUME =    1.000       B =   362.03      P60 = 2.2300
AREA =      .022223 SQ MI    IA =    .38333 INCHES    INF =    .92333 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=3  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	9.6	4.000	.1	5.999	.1		
.667	.2	2.666	1.0	4.666	.1	6.666	.0		
1.333	13.2	3.333	.2	5.333	.1				

RUNOFF VOLUME = 1.48923 INCHES = 1.9612 ACRE-FEET
PEAK DISCHARGE RATE = 58.61 CFS AT 1.500 HOURS BASIN AREA = .0247 SQ. MI.

```
* EXISTING OFFSITE BASIN D1 = 2.211  ACRES
COMPUTE NM HYD      ID=4  HYD NO=OFFSITE.D1  DA=0.00345 SQ MI
                    PER A=0 PER B=0  PER C=50  PER D=50
                    TP=0.1333 HR  MASS RAIN=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   6.8104    CFS   UNIT VOLUME =    .9976       B =   526.28      P60 = 2.2300
     AREA =      .001725 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
     UNIT PEAK =   4.8729    CFS   UNIT VOLUME =    .9977       B =   376.56      P60 = 2.2300
     AREA =      .001725 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=4  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.D1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	2.1	4.000	.1	5.999	.1		
.667	.1	2.666	.2	4.666	.1	6.666	.0		
1.333	2.8	3.333	.1	5.333	.1				

RUNOFF VOLUME = 2.04739 INCHES = .3767 ACRE-FEET
PEAK DISCHARGE RATE = 9.91 CFS AT 1.500 HOURS BASIN AREA = .0035 SQ. MI.

```
* EXISTING UNDEVELOPED SITE BASIN D2 = 0.838  ACRES
COMPUTE NM HYD      ID=5  HYD NO=ONSITE.D2  DA=0.001309 SQ MI
                    PER A=0 PER B=50  PER C=50  PER D=0
                    TP=0.1333 HR  MASS RAIN=-1

     K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
     UNIT PEAK =   3.3932    CFS   UNIT VOLUME =    .9963       B =   345.54      P60 = 2.2300
     AREA =      .001309 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=5  CODE=20
```

HYDROGRAPH FROM AREA ONSITE.D2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.5	2.666	.0				
.667	.0	2.000	.4	3.333	.0				

RUNOFF VOLUME = 1.25116 INCHES = .0873 ACRE-FEET
PEAK DISCHARGE RATE = 2.79 CFS AT 1.500 HOURS BASIN AREA = .0013 SQ. MI.

```
* EXISTING OFFSITE BASIN E1 = 2.52  ACRES
COMPUTE NM HYD      ID=6  HYD NO=OFFSITE.E1  DA=0.003937 SQ MI
                    PER A=0 PER B=0  PER C=50  PER D=50
                    TP=0.1333 HR  MASS RAIN=-1

K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   7.7717    CFS   UNIT VOLUME =    .9978       B =   526.28      P60 = 2.2300
AREA =      .001969 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
UNIT PEAK =   5.5608    CFS   UNIT VOLUME =    .9979       B =   376.56      P60 = 2.2300
AREA =      .001969 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=6  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.E1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	2.4	4.000	.1	5.999	.1		
.667	.1	2.666	.3	4.666	.1	6.666	.0		
1.333	3.2	3.333	.1	5.333	.1				

RUNOFF VOLUME = 2.04739 INCHES = .4299 ACRE-FEET
PEAK DISCHARGE RATE = 11.31 CFS AT 1.500 HOURS BASIN AREA = .0039 SQ. MI.

```
* EXISTING UNDEVELOPED SITE BASIN E2 = 3.49  ACRES
COMPUTE NM HYD      ID=7  HYD NO=ONSITE.E2  DA=0.005453 SQ MI
                    PER A=0 PER B=50  PER C=50  PER D=0
                    TP=0.1333 HR  MASS RAIN=-1

K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
UNIT PEAK =   14.135    CFS   UNIT VOLUME =    .9994       B =   345.54      P60 = 2.2300
AREA =      .005453 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=7  CODE=20
```

HYDROGRAPH FROM AREA ONSITE.E2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	2.1	2.666	.2				
.667	.0	2.000	1.5	3.333	.0				

RUNOFF VOLUME = 1.25116 INCHES = .3639 ACRE-FEET
PEAK DISCHARGE RATE = 11.57 CFS AT 1.500 HOURS BASIN AREA = .0055 SQ. MI.

```
* EXISTING OFFSITE BASIN E3 = 2.11  ACRES
COMPUTE NM HYD      ID=8  HYD NO= OFFSITE.E3  DA=0.003296 SQ MI
                    PER A=0 PER B=50  PER C=50  PER D=0
                    TP=0.1333 HR  MASS RAIN=-1

     K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
     UNIT PEAK =   8.5440    CFS   UNIT VOLUME =    .9989       B =   345.54      P60 = 2.2300
     AREA =      .003296 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=8  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.E3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.3	2.666	.1				
.667	.0	2.000	.9	3.333	.0				

RUNOFF VOLUME = 1.25116 INCHES = .2199 ACRE-FEET
PEAK DISCHARGE RATE = 7.00 CFS AT 1.500 HOURS BASIN AREA = .0033 SQ. MI.

```
* EXISTING OFFSITE BASIN F1 = 0.905  ACRES
COMPUTE NM HYD      ID=9  HYD NO= OFFSITE.F1  DA=0.001414 SQ MI
                    PER A=0 PER B=0  PER C=50  PER D=50
                    TP=0.1333 HR  MASS RAIN=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   2.7913    CFS   UNIT VOLUME =    .9955       B =   526.28      P60 = 2.2300
     AREA =      .000707 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
     UNIT PEAK =   1.9972    CFS   UNIT VOLUME =    .9937       B =   376.56      P60 = 2.2300
     AREA =      .000707 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=9  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.F1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.2	2.666	.1	4.000	.0	5.333	.0
.667	.0	2.000	.9	3.333	.0	4.666	.0	5.999	.0

RUNOFF VOLUME = 2.04739 INCHES = .1544 ACRE-FEET
PEAK DISCHARGE RATE = 4.08 CFS AT 1.500 HOURS BASIN AREA = .0014 SQ. MI.

```
* EXISTING UNDEVELOPED SITE BASIN F2 = 1.08  ACRES
COMPUTE NM HYD      ID=10  HYD NO=ONSITE.F2  DA=0.001687 SQ MI
                    PER A=0 PER B=50  PER C=50  PER D=0
                    TP=0.1333 HR  MASS RAIN=-1

     K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
     UNIT PEAK =   4.3731    CFS   UNIT VOLUME =    .9973       B =   345.54      P60 = 2.2300
     AREA =      .001687 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=10  CODE=20
```

HYDROGRAPH FROM AREA ONSITE.F2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.7	2.666	.1				
.667	.0	2.000	.5	3.333	.0				

RUNOFF VOLUME = 1.25116 INCHES = .1126 ACRE-FEET
PEAK DISCHARGE RATE = 3.59 CFS AT 1.500 HOURS BASIN AREA = .0017 SQ. MI.

```
* EXISTING OFFSITE BASIN F3 = 2.11  ACRES
COMPUTE NM HYD      ID=11  HYD NO= OFFSITE.F3  DA=0.0030312 SQ MI
                    PER A=0 PER B=50  PER C=50  PER D=0
                    TP=0.1333 HR  MASS RAIN=-1

     K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
     UNIT PEAK =   7.8576    CFS   UNIT VOLUME =    .9987       B =   345.54      P60 = 2.2300
     AREA =      .003031 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=11  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.F3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.2	2.666	.1				
.667	.0	2.000	.8	3.333	.0				

RUNOFF VOLUME = 1.25116 INCHES = .2023 ACRE-FEET
PEAK DISCHARGE RATE = 6.44 CFS AT 1.500 HOURS BASIN AREA = .0030 SQ. MI.

```
* ADD BASIN C TO BASIN F1
ADD HYD            ID=12  HYD NO=BASIN.C.F1  ID I=3 ID II=9
PRINT HYD          ID=12 CODE=20
```

HYDROGRAPH FROM AREA BASIN.C.F1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	10.4	4.000	.2	5.999	.1		
.667	.2	2.666	1.1	4.666	.1	6.666	.0		
1.333	14.3	3.333	.3	5.333	.1				

RUNOFF VOLUME = 1.51944 INCHES = 2.1155 ACRE-FEET
PEAK DISCHARGE RATE = 62.68 CFS AT 1.500 HOURS BASIN AREA = .0261 SQ. MI.

```
* ADD COMPOSITE C AND F1 TO F2 FOR ANALYSIS POINT AT CAMINO DE LA SIERRA
ADD HYD            ID=13  HYD NO=EAST RUNDOWN  ID I=12 ID II=10
PRINT HYD          ID=13 CODE=20
```

HYDROGRAPH FROM AREA EAST

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	10.9	4.000	.2	5.999	.1		
.667	.2	2.666	1.2	4.666	.1	6.666	.0		
1.333	15.0	3.333	.3	5.333	.1				

RUNOFF VOLUME = 1.50315 INCHES = 2.2281 ACRE-FEET
PEAK DISCHARGE RATE = 66.27 CFS AT 1.500 HOURS BASIN AREA = .0278 SQ. MI.

```
* ADD COMPOSITE AT CAMINO DE LA SIERRA AND F3 FOR SUMMARY AT 48" CULVERT
ADD HYD            ID=14  HYD NO=48 IN CULVERT  ID I=13 ID II=11
PRINT HYD          ID=14 CODE=20
```

OUTFLOW HYDROGRAPH REACH 48.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	11.7	4.000	.2	5.999	.1		
.667	.2	2.666	1.3	4.666	.1	6.666	.0		
1.333	16.2	3.333	.3	5.333	.1				

RUNOFF VOLUME = 1.47837 INCHES = 2.4304 ACRE-FEET
PEAK DISCHARGE RATE = 72.71 CFS AT 1.500 HOURS BASIN AREA = .0308 SQ. MI.

```
* ADD HYDROGRAPHS ON WEST SIDE TO TREMBLE RUNDOWN 'POINT 3'
* BASINS(HYDROGRAPHS) A(1)+B(2)+D1(4)+D2(5)+E1(6)+E2(7)
* AND 5' X 5' CULVERT 'POINT 4' - POINT 3 + E3(8)
ADD HYD            ID=15  HYD NO=ERUNDOWN.1  ID I=1 ID II=2
PRINT HYD          ID=15 CODE=20
```

HYDROGRAPH FROM AREA ERUNDOWN.1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	34.6	4.000	.9	5.999	.9		
.667	1.4	2.666	3.7	4.666	.8	6.666	.0		
1.333	46.5	3.333	1.3	5.333	.8				

RUNOFF VOLUME = 1.76193 INCHES = 6.5506 ACRE-FEET
PEAK DISCHARGE RATE = 182.20 CFS AT 1.500 HOURS BASIN AREA = .0697 SQ. MI.

ADD HYD ID=16 HYD NO=ERUNDOWN.2 ID I=15 ID II=4
PRINT HYD ID=16 CODE=20

HYDROGRAPH FROM AREA ERUNDOWN.2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	36.7	4.000	1.0	5.999	.9		
.667	1.5	2.666	4.0	4.666	.9	6.666	.0		
1.333	49.3	3.333	1.4	5.333	.9				

RUNOFF VOLUME = 1.77539 INCHES = 6.9273 ACRE-FEET
PEAK DISCHARGE RATE = 192.12 CFS AT 1.500 HOURS BASIN AREA = .0732 SQ. MI.

ADD HYD ID=17 HYD NO=ERUNDOWN.3 ID I=16 ID II=5
PRINT HYD ID=17 CODE=20

HYDROGRAPH FROM AREA ERUNDOWN.3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	37.1	4.000	1.0	5.999	.9		
.667	1.5	2.666	4.0	4.666	.9	6.666	.0		
1.333	49.8	3.333	1.4	5.333	.9				

RUNOFF VOLUME = 1.76618 INCHES = 7.0146 ACRE-FEET
PEAK DISCHARGE RATE = 194.90 CFS AT 1.500 HOURS BASIN AREA = .0745 SQ. MI.

ADD HYD ID=18 HYD NO=ERUNDOWN.4 ID I=17 ID II=6
PRINT HYD ID=18 CODE=20

HYDROGRAPH FROM AREA ERUNDOWN.4

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	39.5	4.000	1.1	5.999	1.0		
.667	1.6	2.666	4.3	4.666	1.0	6.666	.0		
1.333	53.0	3.333	1.5	5.333	1.0				

RUNOFF VOLUME = 1.78029 INCHES = 7.4445 ACRE-FEET
PEAK DISCHARGE RATE = 206.21 CFS AT 1.500 HOURS BASIN AREA = .0784 SQ. MI.

```
ADD HYD          ID=19  HYD NO=ERUNDOWN.SUM  ID I=18 ID II=7
PRINT HYD        ID=19 CODE=20
```

HYDROGRAPH FROM AREA ERUNDOWN.SUM

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	41.0	4.000	1.1	5.999	1.0		
.667	1.6	2.666	4.5	4.666	1.0	6.666	.0		
1.333	55.2	3.333	1.5	5.333	1.0				

RUNOFF VOLUME = 1.74589 INCHES = 7.8084 ACRE-FEET
PEAK DISCHARGE RATE = 217.78 CFS AT 1.500 HOURS BASIN AREA = .0839 SQ. MI.

```
ADD HYD          ID=20  HYD NO=BXCULVERTSUM  ID I=19 ID II=8
PRINT HYD        ID=20 CODE=20
```

HYDROGRAPH FROM AREA BXCULVERTSUM

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	41.9	4.000	1.1	5.999	1.0		
.667	1.6	2.666	4.6	4.666	1.0	6.666	.0		
1.333	56.4	3.333	1.6	5.333	1.0				

RUNOFF VOLUME = 1.72717 INCHES = 8.0283 ACRE-FEET
PEAK DISCHARGE RATE = 224.78 CFS AT 1.500 HOURS BASIN AREA = .0872 SQ. MI.

```
FINISH
```

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 08:44:38

DEVELOPED CONDITIONS

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =07/06/2005
INPUT FILE = C:\PROJEC~1\05542S~1\HYDROL~1\DEVELO~1\05542A~1.TXT USER NO.= AHYMO-I-9702c01000T35-AH

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	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.900
COMPUTE NM HYD	OFFSITE.A	-	1	.04023	97.65	3.332	1.55277	1.500	3.792	PER IMP= 15.00
COMPUTE NM HYD	OFFSITE.B	-	2	.02948	84.56	3.219	2.04739	1.500	4.482	PER IMP= 50.00
COMPUTE NM HYD	OFFSITE.C	-	3	.02469	58.61	1.961	1.48923	1.500	3.709	PER IMP= 10.00
COMPUTE NM HYD	OFFSITE.D1	-	4	.00345	9.91	.377	2.04739	1.500	4.490	PER IMP= 50.00
COMPUTE NM HYD	ONSITE.D2	-	5	.00153	4.35	.163	1.98799	1.500	4.427	PER IMP= 45.00
COMPUTE NM HYD	OFFSITE.E1	-	6	.00394	11.31	.430	2.04739	1.500	4.489	PER IMP= 50.00
COMPUTE NM HYD	ONSITE.E2.1	-	7	.00474	13.66	.520	2.05927	1.500	4.502	PER IMP= 51.00
COMPUTE NM HYD	OFFSITE.E3	-	8	.00330	7.00	.220	1.25116	1.500	3.317	PER IMP= .00
COMPUTE NM HYD	OFFSITE.F1	-	9	.00141	4.08	.154	2.04739	1.500	4.503	PER IMP= 50.00
COMPUTE NM HYD	ONSITE.F2.1	-	10	.00038	1.11	.042	2.05927	1.500	4.583	PER IMP= 51.00
COMPUTE NM HYD	OFFSITE.F3	-	11	.00303	6.44	.202	1.25116	1.500	3.317	PER IMP= .00
COMPUTE NM HYD	ONSITE2.2	-	21	.00135	3.92	.149	2.05927	1.500	4.520	PER IMP= 51.00
COMPUTE NM HYD	ONSITE2.3	-	22	.00303	8.74	.333	2.05927	1.500	4.506	PER IMP= 51.00
ADD HYD	BASIN.C.F1	3& 9	12	.02611	62.68	2.116	1.51944	1.500	3.752	
ADD HYD	48.IN.CULVER	12&10	13	.02649	63.80	2.157	1.52718	1.500	3.764	
ADD HYD	48.IN.CULVER	13&11	14	.02952	70.23	2.360	1.49883	1.500	3.718	
ADD HYD	ERUNDOWN.1	1& 2	15	.06971	182.20	6.551	1.76193	1.500	4.084	
ADD HYD	ERUNDOWN.2	15& 4	16	.07316	192.12	6.927	1.77539	1.500	4.103	
ADD HYD	ERUNDOWN.3	16& 5	17	.07469	196.46	7.090	1.77975	1.500	4.110	
ADD HYD	ERUNDOWN.4	17& 6	18	.07863	207.77	7.520	1.79315	1.500	4.129	
ADD HYD	ERUNDWN.S1	18& 7	19	.08337	221.43	8.040	1.80828	1.500	4.150	
ADD HYD	ERUNDWN.S2	19&22	23	.08640	230.17	8.373	1.81708	1.500	4.162	
ADD HYD	ERUNDWN.S2	23&21	24	.08776	234.09	8.522	1.82081	1.500	4.168	
ADD HYD	BXCLVERTSUM	24& 8	20	.09105	241.09	8.742	1.80019	1.500	4.137	
FINISH										

```
    AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02d
         RUN DATE (MON/DAY/YR) = 07/06/2005
         START TIME (HR:MIN:SEC) = 16:21:10     USER NO.= AHYMO-I-9702c01000T35-AH
         INPUT FILE = C:\PROJEC~1\05542S~1\HYDROL~1\DEVELO~1\05542A~1.TXT
*****************************************************************************
*                         SOUTH POINTE PROJECT NUMBER 05542
*                    PROJECT HYDROLOGY - FILE NAME 05542 AHYMO INPUTEX
*****************************************************************************
START                TIME=0.0  PUNCH CODE=0
RAINFALL             TYPE=1  RAIN QUARTER=0.0  RAIN ONE=2.23
                     RAIN SIX=2.90  RAIN DAY=3.65  DT=0.03333 HRS
                COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =    .033330 HOURS       END TIME =     5.999400 HOURS
                   .0000   .0055   .0110   .0167   .0225   .0284   .0345
                   .0406   .0469   .0534   .0600   .0668   .0738   .0809
                   .0882   .0958   .1035   .1115   .1197   .1282   .1370
                   .1461   .1555   .1653   .1754   .1860   .1971   .2086
                   .2207   .2334   .2469   .2530   .2596   .2667   .2818
                   .3156   .3677   .4425   .5446   .6787   .8498  1.0629
                  1.3228  1.5642  1.6650  1.7500  1.8257  1.8946  1.9579
                  2.0168  2.0718  2.1233  2.1719  2.2176  2.2608  2.3018
                  2.3405  2.3773  2.4122  2.4453  2.4767  2.4850  2.4927
                  2.5002  2.5074  2.5143  2.5210  2.5275  2.5338  2.5400
                  2.5459  2.5518  2.5575  2.5630  2.5685  2.5738  2.5790
                  2.5841  2.5891  2.5940  2.5988  2.6036  2.6082  2.6128
                  2.6173  2.6218  2.6262  2.6305  2.6347  2.6389  2.6431
                  2.6471  2.6512  2.6552  2.6591  2.6630  2.6668  2.6706
                  2.6743  2.6780  2.6817  2.6853  2.6889  2.6925  2.6960
                  2.6995  2.7029  2.7063  2.7097  2.7131  2.7164  2.7197
                  2.7229  2.7262  2.7294  2.7325  2.7357  2.7388  2.7419
                  2.7450  2.7480  2.7511  2.7541  2.7570  2.7600  2.7629
                  2.7658  2.7687  2.7716  2.7745  2.7773  2.7801  2.7829
                  2.7857  2.7885  2.7912  2.7939  2.7966  2.7993  2.8020
                  2.8046  2.8073  2.8099  2.8125  2.8151  2.8177  2.8202
                  2.8228  2.8253  2.8279  2.8304  2.8329  2.8353  2.8378
                  2.8402  2.8427  2.8451  2.8475  2.8499  2.8523  2.8547
                  2.8571  2.8594  2.8618  2.8641  2.8664  2.8687  2.8710
                  2.8733  2.8756  2.8779  2.8801  2.8824  2.8846  2.8868
                  2.8890  2.8912  2.8934  2.8956  2.8978  2.9000
     * EXISTING OFFSITE BASIN A - 25.747 ACRES
    COMPUTE NM HYD       ID=1  HYD NO= OFFSITE.A DA=0.04023 SQ MI
                         PER A=0  PER B=19  PER C=66 PER D=15
                         TP=0.1333 HR  MASS RAIN=-1

 K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =   23.825    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 2.2300
          AREA =      .006035 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

 K =   .115474HR    TP =   .133300HR    K/TP RATIO =   .866273     SHAPE CONSTANT, N =  4.102444
          UNIT PEAK =   92.849    CFS   UNIT VOLUME =    1.000       B =   361.94      P60 = 2.2300
          AREA =      .034196 SQ MI    IA =    .38353 INCHES    INF =    .92388 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

    PRINT HYD            ID=1  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	16.6	4.000	.3	5.999	.3		
.667	.4	2.666	1.8	4.666	.2	6.666	.0		
1.333	22.7	3.333	.5	5.333	.2				

RUNOFF VOLUME = 1.55277 INCHES = 3.3316 ACRE-FEET
PEAK DISCHARGE RATE = 97.65 CFS AT 1.500 HOURS BASIN AREA = .0402 SQ. MI.

```
* EXISTING OFFSITE BASIN B = 18.865 ACRES
COMPUTE NM HYD      ID=2  HYD NO=OFFSITE.B DA=0.02948 SQ MI
                    PER A=0 PER B=0 PER C=50 PER D=50
                    TP=0.1333 HR  MASS RAIN=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   58.194    CFS   UNIT VOLUME =    .9992       B =   526.28      P60 = 2.2300
     AREA =      .014740 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


     K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
     UNIT PEAK =   41.639    CFS   UNIT VOLUME =    1.000       B =   376.56      P60 = 2.2300
     AREA =      .014740 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=2  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.B

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	18.1	4.000	.6	5.999	.6		
.667	1.0	2.666	2.0	4.666	.6	6.666	.0		
1.333	23.9	3.333	.8	5.333	.6				

RUNOFF VOLUME = 2.04739 INCHES = 3.2190 ACRE-FEET
PEAK DISCHARGE RATE = 84.56 CFS AT 1.500 HOURS BASIN AREA = .0295 SQ. MI.

```
* EXISTING OFFSITE BASIN C = 15.803  ACRES
COMPUTE NM HYD      ID=3  HYD NO= OFFSITE.C DA=0.024692 SQ MI
                    PER A=0 PER B=20  PER C=70  PER D=10
                    TP=0.1333 HR  MASS RAIN=-1
     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   9.7485    CFS   UNIT VOLUME =    .9982       B =   526.28      P60 = 2.2300
     AREA =      .002469 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     K =   .115442HR    TP =   .133300HR    K/TP RATIO =   .866030     SHAPE CONSTANT, N =  4.103703
     UNIT PEAK =   60.354    CFS   UNIT VOLUME =    1.000       B =   362.03      P60 = 2.2300
     AREA =      .022223 SQ MI    IA =    .38333 INCHES    INF =    .92333 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=3  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	9.6	4.000	.1	5.999	.1		
.667	.2	2.666	1.0	4.666	.1	6.666	.0		
1.333	13.2	3.333	.2	5.333	.1				

RUNOFF VOLUME = 1.48923 INCHES = 1.9612 ACRE-FEET
PEAK DISCHARGE RATE = 58.61 CFS AT 1.500 HOURS BASIN AREA = .0247 SQ. MI.

```
* EXISTING OFFSITE BASIN D1 = 2.211  ACRES
COMPUTE NM HYD      ID=4  HYD NO=OFFSITE.D1  DA=0.00345 SQ MI
                    PER A=0 PER B=0  PER C=50  PER D=50
                    TP=0.1333 HR  MASS RAIN=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   6.8104    CFS   UNIT VOLUME =    .9976       B =   526.28      P60 = 2.2300
     AREA =      .001725 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
     UNIT PEAK =   4.8729    CFS   UNIT VOLUME =    .9977       B =   376.56      P60 = 2.2300
     AREA =      .001725 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=4  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.D1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	2.1	4.000	.1	5.999	.1		
.667	.1	2.666	.2	4.666	.1	6.666	.0		
1.333	2.8	3.333	.1	5.333	.1				

RUNOFF VOLUME = 2.04739 INCHES = .3767 ACRE-FEET
PEAK DISCHARGE RATE = 9.91 CFS AT 1.500 HOURS BASIN AREA = .0035 SQ. MI.

```
* EXISTING DEVELOPED SITE BASIN D2.1 = 0.9822  ACRES
COMPUTE NM HYD      ID=5  HYD NO=ONSITE.D2  DA=0.001534 SQ MI
                    PER A=0 PER B=0  PER C=55  PER D=45
                    TP=0.1333 HR  MASS RAIN=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   2.7253    CFS   UNIT VOLUME =    .9949       B =   526.28      P60 = 2.2300
     AREA =      .000690 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
     UNIT PEAK =   2.3834    CFS   UNIT VOLUME =    .9949       B =   376.56      P60 = 2.2300
     AREA =      .000844 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=5  CODE=20
```

HYDROGRAPH FROM AREA ONSITE.D2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.2	2.666	.1	4.000	.0	5.333	.0
.667	.0	2.000	.9	3.333	.0	4.666	.0	5.999	.0

RUNOFF VOLUME = 1.98799 INCHES = .1626 ACRE-FEET
PEAK DISCHARGE RATE = 4.35 CFS AT 1.500 HOURS BASIN AREA = .0015 SQ. MI.

```
* EXISTING OFFSITE BASIN E1 = 2.52  ACRES
COMPUTE NM HYD      ID=6  HYD NO=OFFSITE.E1  DA=0.003937 SQ MI
                    PER A=0 PER B=0  PER C=50  PER D=50
                    TP=0.1333 HR  MASS RAIN=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   7.7717    CFS   UNIT VOLUME =    .9978       B =   526.28      P60 = 2.2300
     AREA =      .001969 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
     UNIT PEAK =   5.5608    CFS   UNIT VOLUME =    .9979       B =   376.56      P60 = 2.2300
     AREA =      .001969 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330
PRINT HYD           ID=6  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.E1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	2.4	4.000	.1	5.999	.1		
.667	.1	2.666	.3	4.666	.1	6.666	.0		
1.333	3.2	3.333	.1	5.333	.1				

RUNOFF VOLUME = 2.04739 INCHES = .4299 ACRE-FEET
PEAK DISCHARGE RATE = 11.31 CFS AT 1.500 HOURS BASIN AREA = .0039 SQ. MI.

```
* EXISTING DEVELOPED SITE BASIN E2.1 = 3.033  ACRES
COMPUTE NM HYD      ID=7  HYD NO=ONSITE.E2.1  DA=0.004739 SQ MI
                    PER A=0 PER B=0  PER C=49  PER D=51
                    TP=0.1333 HR  MASS RAIN=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   9.5420    CFS   UNIT VOLUME =    .9982       B =   526.28      P60 = 2.2300
     AREA =      .002417 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
     UNIT PEAK =   6.5597    CFS   UNIT VOLUME =    .9984       B =   376.56      P60 = 2.2300
     AREA =      .002322 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=7  CODE=20
```

HYDROGRAPH FROM AREA ONSITE.E2.1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	2.9	4.000	.1	5.999	.1		
.667	.2	2.666	.3	4.666	.1	6.666	.0		
1.333	3.9	3.333	.1	5.333	.1				

```
RUNOFF VOLUME =     2.05927 INCHES     =        .5205 ACRE-FEET
PEAK DISCHARGE RATE =      13.66 CFS  AT   1.500 HOURS   BASIN AREA =   .0047 SQ. MI.

* EXISTING OFFSITE BASIN E3 = 2.11  ACRES
COMPUTE NM HYD      ID=8  HYD NO=OFFSITE.E3  DA=0.003296 SQ MI
                    PER A=0 PER B=50  PER C=50  PER D=0
                    TP=0.1333 HR  MASS RAIN=-1

K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
UNIT PEAK =   8.5440    CFS   UNIT VOLUME =    .9989       B =   345.54      P60 = 2.2300
AREA =      .003296 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=8  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.E3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.3	2.666	.1				
.667	.0	2.000	.9	3.333	.0				

```
RUNOFF VOLUME =     1.25116 INCHES     =        .2199 ACRE-FEET
PEAK DISCHARGE RATE =       7.00 CFS  AT   1.500 HOURS   BASIN AREA =   .0033 SQ. MI.

* EXISTING OFFSITE BASIN F1 = 0.905  ACRES
COMPUTE NM HYD      ID=9  HYD NO=OFFSITE.F1  DA=0.001414 SQ MI
                    PER A=0 PER B=0  PER C=50  PER D=50
                    TP=0.1333 HR  MASS RAIN=-1

K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   2.7913    CFS   UNIT VOLUME =    .9955       B =   526.28      P60 = 2.2300
AREA =      .000707 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
UNIT PEAK =   1.9972    CFS   UNIT VOLUME =    .9937       B =   376.56      P60 = 2.2300
AREA =      .000707 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=9  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.F1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.2	2.666	.1	4.000	.0	5.333	.0
.667	.0	2.000	.9	3.333	.0	4.666	.0	5.999	.0

```
RUNOFF VOLUME =     2.04739 INCHES     =        .1544 ACRE-FEET
PEAK DISCHARGE RATE =       4.08 CFS  AT   1.500 HOURS   BASIN AREA =   .0014 SQ. MI.


* EXISTING DEVELOPED SITE BASIN F2.1 = 0.243  ACRES
COMPUTE NM HYD      ID=10  HYD NO=ONSITE.F2.1  DA=0.00038 SQ MI
                    PER A=0 PER B=0  PER C=49  PER D=51
                    TP=0.1333 HR  MASS RAIN=-1

K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   .76513    CFS   UNIT VOLUME =    .9840       B =   526.28      P60 = 2.2300
AREA =      .000194 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
UNIT PEAK =   .52599    CFS   UNIT VOLUME =    .9754       B =   376.56      P60 = 2.2300
AREA =      .000186 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=10  CODE=20
```

HYDROGRAPH FROM AREA ONSITE.F2.1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.3	2.666	.0	4.000	.0	5.333	.0
.667	.0	2.000	.2	3.333	.0	4.666	.0	5.999	.0

```
RUNOFF VOLUME =     2.05927 INCHES     =        .0417 ACRE-FEET
PEAK DISCHARGE RATE =       1.11 CFS  AT   1.500 HOURS   BASIN AREA =   .0004 SQ. MI.


* EXISTING OFFSITE BASIN F3 = 2.11  ACRES
COMPUTE NM HYD      ID=11  HYD NO=OFFSITE.F3  DA=0.0030312 SQ MI
                    PER A=0 PER B=50  PER C=50  PER D=0
                    TP=0.1333 HR  MASS RAIN=-1

K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
UNIT PEAK =   7.8576    CFS   UNIT VOLUME =    .9987       B =   345.54      P60 = 2.2300
AREA =      .003031 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=11  CODE=20
```

HYDROGRAPH FROM AREA OFFSITE.F3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.2	2.666	.1				
.667	.0	2.000	.8	3.333	.0				

```
RUNOFF VOLUME =      1.25116 INCHES      =         .2023 ACRE-FEET
PEAK DISCHARGE RATE =        6.44 CFS  AT   1.500 HOURS   BASIN AREA =   .0030 SQ. MI.


* EXISTING OFFSITE BASIN E2.2 = 0.8666  ACRES
COMPUTE NM HYD       ID=21  HYD NO=ONSITE2.2  DA=0.001354 SQ MI
                     PER A=0 PER B=0 PER C=49  PER D=51
                     TP=0.1333 HR  MASS RAIN=-1

K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   2.7263    CFS   UNIT VOLUME =    .9949       B =   526.28      P60 = 2.2300
AREA =      .000691 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
UNIT PEAK =   1.8742    CFS   UNIT VOLUME =    .9937       B =   376.56      P60 = 2.2300
AREA =      .000663 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD            ID=21  CODE=20
```

HYDROGRAPH FROM AREA ONSITE2.2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.1	2.666	.1	4.000	.0	5.333	.0
.667	.0	2.000	.8	3.333	.0	4.666	.0	5.999	.0

```
RUNOFF VOLUME =      2.05927 INCHES      =         .1487 ACRE-FEET
PEAK DISCHARGE RATE =        3.92 CFS  AT   1.500 HOURS   BASIN AREA =   .0014 SQ. MI.

* EXISTING OFFSITE BASIN E2.3 = 0.1896  ACRES
COMPUTE NM HYD       ID=22  HYD NO=ONSITE2.3  DA=0.0030312 SQ MI
                     PER A=0 PER B=0  PER C=49  PER D=51
                     TP=0.1333 HR  MASS RAIN=-1

K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   6.1033    CFS   UNIT VOLUME =    .9976       B =   526.28      P60 = 2.2300
AREA =      .001546 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

K =   .109928HR    TP =   .133300HR    K/TP RATIO =   .824663     SHAPE CONSTANT, N =  4.329256
UNIT PEAK =   4.1958    CFS   UNIT VOLUME =    .9974       B =   376.56      P60 = 2.2300
AREA =      .001485 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD            ID=22  CODE=20
```

HYDROGRAPH FROM AREA ONSITE2.3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	1.9	4.000	.1	5.999	.1		
.667	.1	2.666	.2	4.666	.1	6.666	.0		
1.333	2.5	3.333	.1	5.333	.1				

RUNOFF VOLUME = 2.05927 INCHES = .3329 ACRE-FEET
PEAK DISCHARGE RATE = 8.74 CFS AT 1.500 HOURS BASIN AREA = .0030 SQ. MI.

```
* ADD BASIN C TO BASIN F1 FOR ANALYSIS POINT "A" AT CAMINO DE LA SIERRA
ADD HYD            ID=12  HYD NO=BASIN.C.F1  ID I=3 ID II=9
PRINT HYD          ID=12 CODE=20
```

HYDROGRAPH FROM AREA BASIN.C.F1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	10.4	4.000	.2	5.999	.1		
.667	.2	2.666	1.1	4.666	.1	6.666	.0		
1.333	14.3	3.333	.3	5.333	.1				

RUNOFF VOLUME = 1.51944 INCHES = 2.1155 ACRE-FEET
PEAK DISCHARGE RATE = 62.68 CFS AT 1.500 HOURS BASIN AREA = .0261 SQ. MI.

```
* ADD COMPOSITE AT CAMINO DE LA SIERRA AND F2.1 & F3 FOR SUMMARY AT 48" CULVERT
ADD HYD            ID=13  HYD NO=48.IN.CULVERT  ID I=12 ID II=10
PRINT HYD          ID=13 CODE=20
```

HYDROGRAPH FROM AREA 48.IN.CULVERT

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	10.7	4.000	.2	5.999	.1		
.667	.2	2.666	1.1	4.666	.1	6.666	.0		
1.333	14.6	3.333	.3	5.333	.1				

RUNOFF VOLUME = 1.52718 INCHES = 2.1573 ACRE-FEET
PEAK DISCHARGE RATE = 63.80 CFS AT 1.500 HOURS BASIN AREA = .0265 SQ. MI.

```
* ADD COMPOSITE AT CAMINO DE LA SIERRA AND F3 FOR SUMMARY AT 48" CULVERT
ADD HYD            ID=14  HYD NO=48.IN.CULVERT  ID I=13 ID II=11
PRINT HYD          ID=14 CODE=20
```

HYDROGRAPH FROM AREA 48.IN.CULVERT

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	11.5	4.000	.2	5.999	.1		
.667	.2	2.666	1.2	4.666	.1	6.666	.0		
1.333	15.8	3.333	.3	5.333	.1				

RUNOFF VOLUME = 1.49883 INCHES = 2.3595 ACRE-FEET
PEAK DISCHARGE RATE = 70.23 CFS AT 1.500 HOURS BASIN AREA = .0295 SQ. MI.

```
* ADD HYDROGRAPHS ON WEST SIDE TO TREMBLE RUNDOWN 'POINT 3'
* BASINS(HYDROGRAPHS) A(1)+B(2)+D1(4)+D2(5)+E1(6)+E2.1(7)+E2.2(21)+E2.3(22)
* AND 5' X 5' CULVERT 'POINT 4' - POINT 3 + E3(8)
ADD HYD            ID=15  HYD NO=ERUNDOWN.1  ID I=1 ID II=2
PRINT HYD          ID=15 CODE=20
```

HYDROGRAPH FROM AREA ERUNDOWN.1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	34.6	4.000	.9	5.999	.9		
.667	1.4	2.666	3.7	4.666	.8	6.666	.0		
1.333	46.5	3.333	1.3	5.333	.8				

RUNOFF VOLUME = 1.76193 INCHES = 6.5506 ACRE-FEET
PEAK DISCHARGE RATE = 182.20 CFS AT 1.500 HOURS BASIN AREA = .0697 SQ. MI.

```
ADD HYD            ID=16  HYD NO=ERUNDOWN.2  ID I=15 ID II=4
PRINT HYD          ID=16 CODE=20
```

HYDROGRAPH FROM AREA ERUNDOWN.2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	36.7	4.000	1.0	5.999	.9		
.667	1.5	2.666	4.0	4.666	.9	6.666	.0		
1.333	49.3	3.333	1.4	5.333	.9				

RUNOFF VOLUME = 1.77539 INCHES = 6.9273 ACRE-FEET
PEAK DISCHARGE RATE = 192.12 CFS AT 1.500 HOURS BASIN AREA = .0732 SQ. MI.

```
ADD HYD            ID=17  HYD NO=ERUNDOWN.3  ID I=16 ID II=5
PRINT HYD          ID=17 CODE=20
```

HYDROGRAPH FROM AREA ERUNDOWN.3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	37.6	4.000	1.0	5.999	1.0		
.667	1.6	2.666	4.1	4.666	.9	6.666	.0		
1.333	50.5	3.333	1.4	5.333	.9				

RUNOFF VOLUME = 1.77975 INCHES = 7.0899 ACRE-FEET
PEAK DISCHARGE RATE = 196.46 CFS AT 1.500 HOURS BASIN AREA = .0747 SQ. MI.

```
ADD HYD          ID=18  HYD NO=ERUNDOWN.4  ID I=17 ID II=6
PRINT HYD        ID=18 CODE=20
```

HYDROGRAPH FROM AREA ERUNDOWN.4

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	40.1	4.000	1.1	5.999	1.0		
.667	1.7	2.666	4.3	4.666	1.0	6.666	.0		
1.333	53.7	3.333	1.6	5.333	1.0				

RUNOFF VOLUME = 1.79315 INCHES = 7.5198 ACRE-FEET
PEAK DISCHARGE RATE = 207.77 CFS AT 1.500 HOURS BASIN AREA = .0786 SQ. MI.

```
ADD HYD          ID=19  HYD NO=ERUNDWN.S1  ID I=18 ID II=7
PRINT HYD        ID=19 CODE=20
```

HYDROGRAPH FROM AREA ERUNDWN.S1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	43.0	4.000	1.2	5.999	1.1		
.667	1.8	2.666	4.6	4.666	1.1	6.666	.0		
1.333	57.6	3.333	1.7	5.333	1.1				

RUNOFF VOLUME = 1.80828 INCHES = 8.0403 ACRE-FEET
PEAK DISCHARGE RATE = 221.43 CFS AT 1.500 HOURS BASIN AREA = .0834 SQ. MI.

```
ADD HYD          ID=23  HYD NO=ERUNDWN.S2  ID I=19 ID II=22
PRINT HYD        ID=23 CODE=20
```

HYDROGRAPH FROM AREA ERUNDWN.S2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	44.9	4.000	1.3	5.999	1.2		
.667	1.9	2.666	4.8	4.666	1.2	6.666	.0		
1.333	60.1	3.333	1.8	5.333	1.2				

RUNOFF VOLUME = 1.81708 INCHES = 8.3732 ACRE-FEET
PEAK DISCHARGE RATE = 230.17 CFS AT 1.500 HOURS BASIN AREA = .0864 SQ. MI.

```
ADD HYD          ID=24  HYD NO=ERUNDWN.S2  ID I=23 ID II=21
PRINT HYD        ID=24 CODE=20
```

HYDROGRAPH FROM AREA ERUNDWN.S2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	45.7	4.000	1.3	5.999	1.2		
.667	2.0	2.666	4.9	4.666	1.2	6.666	.0		
1.333	61.2	3.333	1.8	5.333	1.2				

RUNOFF VOLUME = 1.82081 INCHES = 8.5219 ACRE-FEET
PEAK DISCHARGE RATE = 234.09 CFS AT 1.500 HOURS BASIN AREA = .0878 SQ. MI.

```
ADD HYD          ID=20  HYD NO=BXCLVERTSUM  ID I=24 ID II=8
PRINT HYD        ID=20 CODE=20
```

HYDROGRAPH FROM AREA BXCLVERTSUM

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	46.6	4.000	1.3	5.999	1.2		
.667	2.0	2.666	5.0	4.666	1.2	6.666	.0		
1.333	62.5	3.333	1.8	5.333	1.2				

RUNOFF VOLUME = 1.80019 INCHES = 8.7418 ACRE-FEET
PEAK DISCHARGE RATE = 241.09 CFS AT 1.500 HOURS BASIN AREA = .0911 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:21:11

CITY OF
Albuquerque
Public Works Department

May 6 1997

Martin J. Chavez, Mayor

Robert E. Gurulé, Director

Ronald Bohannan
Tierra West Development
4421 McLeod Rd. NE Suite D
Albuquerque, New Mexico 87109

RE: REVISED DRAINAGE PLAN FOR BERRY TOWN (L23-D24) REVISION DATED 4/15/97

Dear Mr. Bohannan:

Based on the information provided on your April 16,1997 resubmittal, listed are some concerns that will need to be addressed prior to final approval:

1. Your analysis of the street capacity indicates that the hydraulic jump is way above the street R/W. You will need to address the damage the jump could have on the proposed development and propose a solution.

2. Also, the hydraulic jump is higher than the existing rundowns. Please address how you propose to correct the problem.

3. An adequate rundown will be required on the units to the Northwest.

4. Street capacity of the proposed street.

5. Clarify where the property line is in reference to the existing 5x5 CCB.

6. Please address the final outfall. Will the additional developed run-off have an impact on the downsteam facilities?

7. Sign-off block for the NMSHD.

If I can be of further assistance, please feel free to contact me at 924-3986.

C: Andrew Garcia
File

Sincerely

Bernie J. Montoya

Bernie J. Montoya CE
Associate Engineer

JN 9600 #
Incoming
Shahab

New Mexico
State Highway and Transportation Department

INTRA-DEPARTMENTAL CORRESPONDENCE

DATE: April 15, 1997 **FILE REFERENCE:** Dist. 3

TO: Kathy Trujillo
Traffic Engineer, D.O. 3

FROM: James S. Lowe JSL
Drainage Development Engineer

Bob Oberdorfer

SUBJECT: Berry Town Subdivision near I-40

We have reviewed the Drainage Report on the subject project by Tierra West, dated April 10, 1997 and have the following comments:

1. Please coordinate with the City of Albuquerque and Resource Technology Inc. (RTI) concerning the development of the "Foothills Trail Southern Access and Trailhead Parking" project which is now in the study phase. The project is located just south of tract B on the Department's Right-of-way. The City is proposing to rebuild the rundown channel on Camino De Sierra further west.

2. Old U.S. 66 is on the State and National Historic register and our opinion should be preserved; therefore, we are recommending to the City that drainage from Camino De Sierra should not bedischarged onto the road-bed. This was not mentioned on the Airspace Request Application comments; however, Rae VanHoven agrees that it should be considered. There is a discrepancy of 40 cfs between the two Drainage Reports pertaining to the flow at the Camino De Sierra rundown.

3. It appears from your Grading and Drainage Plan that you are filling in the Department's right-of-way. Please move the fill back to the property and keep development out of our right-of-way. The fill is also in possible conflict with the City's proposed drainage plan. We are also concerned with the on-site flow from tract B which runs over your proposed fill slope.

4. Since you are adding flow to the existing 5' x 5' CBC, the downstream channel on the other side of I-40 should be inspected for problems and the results should be indicated in the report.

We do not recommend approval of the Drainage Report until these comments are addressed by both the City and the Developer.

xc: G. Herrera
R. VanHoven
M. Barnes
Jim Cavness, Property Management
S. Biazav, Tierra West
E. Diniz, RTI

Tierra West Development Management Services

April 15, 1997

RECEIVED
APR 16 1997
HYDROLOGY SECTION

Mr. Bernie J. Montoya
City of Albuquerque
Hydrology Department
Post Office Box 1293
Albuquerque, NM 87103

RE: DRAINAGE REPORT FOR BERRY TOWN (L23/D24) RESPONSE TO COMMENTS RECEIVED IN YOUR LETTER DATED APRIL 04, 1997

Dear Mr. Montoya:

The following are responses to comments in your letter received and dated April 04, 1997.

1. The street capacity exceeds the depth of 0.87' at the present conditions, and we are not able to check the street capacity using the figures in DPM. Therefore, we have used a program which calculates true depth of the water in the street.

2. We are not ponding within the State Highway R/W. The 5 x 5 CCB pipe is at inlet condition and the runoff ponds at the inlet. We ran the calculation to check the ponding depth to make sure the runoff does not back up into the frontage road or into Trimble Boulevard. The ponding depth is only 1.43' above the top of the pipe. Therefore, the runoff does not pond at the inlet for too long.

3. This drainage report has been submitted to State Highway Department for review and approval. Once we have obtained the approval form State Highway department, I will forward you a copy of the letter.

4. Slope treatments will be provided over the slopes at the drainage points. See revised grading plan for slope treatments and drainage points.

5. The natural slope around the site directs the runoff towards the 5 x 5 CCB. The runoff from the south end of the Camino De La Sierra flows south and west where it meets the runoff at the south end of the Trimble Boulevard and, from that point, the runoff continues south to the existing 5 x 5 CCB.

4421 McLeod Rd. NE, Suite D • Albuquerque, NM 87109 • (505) 883-7592

Please contact me if there are any questions or concerns regarding this submittal.

Sincerely yours,

Shahab Biazar, P.E.

Job No. 960011
sb

RECEIVED
APR 16 1997
HYDROLOGY SECTION

DRAINAGE REPORT
FOR

Berry Town

Prepared by:

Tierra West Development Management Services
4421 McLeod Rd., NE, Suite D
Albuquerque, New Mexico 87109

Prepared for:

Tim Eichenberg
Heights Reality Ltd.
1305 San Pedro, NE
Albuquerque, New Mexico 87110

RECEIVED
APR 16 1997
HYDROLOGY SECTION

March 19, 1997
Revised April 15, 1997

I certify that this report was prepared under my supervision, and I am a registered professional engineer in the state of New Mexico in good standing.

RONALD RAY BOHANNAN
NEW MEXICO
7868
REGISTERED PROFESSIONAL ENGINEER

Ronald R. Bohannan
PE NO. 7868

Job No 960011

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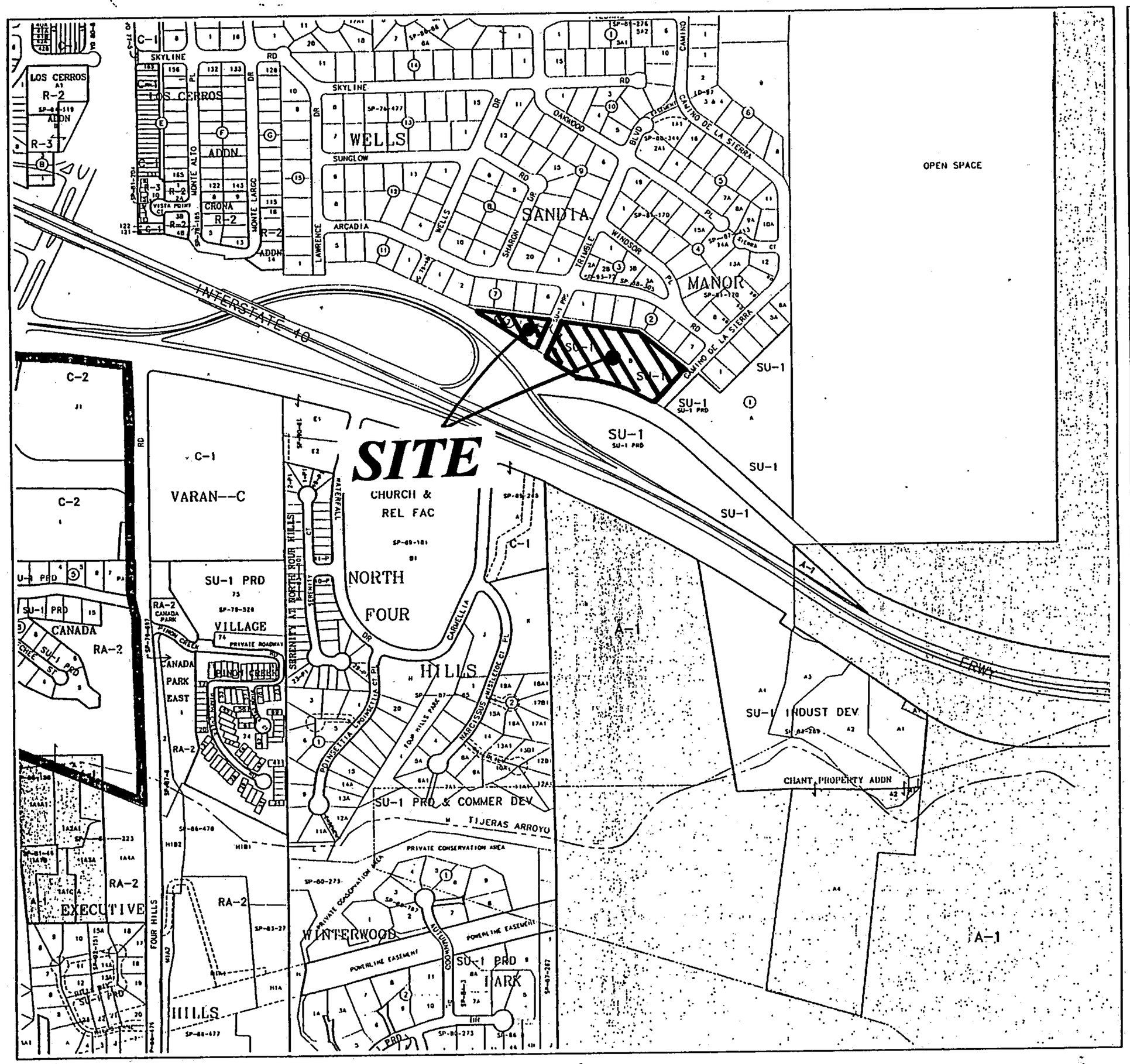
AHYMO OUTPUT 29-33

MAP POCKET

Grading And Drainage Plan
Overall Basin Layout



SCALE IN FEET

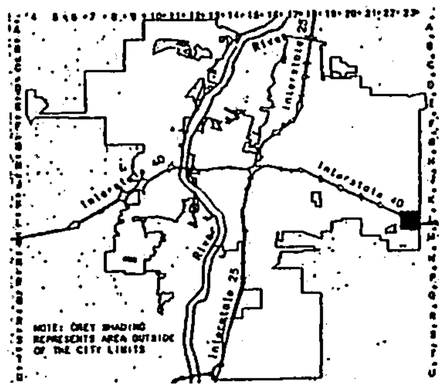
250 0 500 1000

PHOTOCOPY--NOT TO SCALE

North

A Albuquerque G Geographic I Information S System
City of Albuquerque

© Planning Department
Map Amended through September 13, 1994



LEGAL DESCRIPTION

T10N

R4E

SEC 20

UNIFORM PROPERTY CODE

1-023-056

L-23-Z

INTRODUCTION/LOCATION

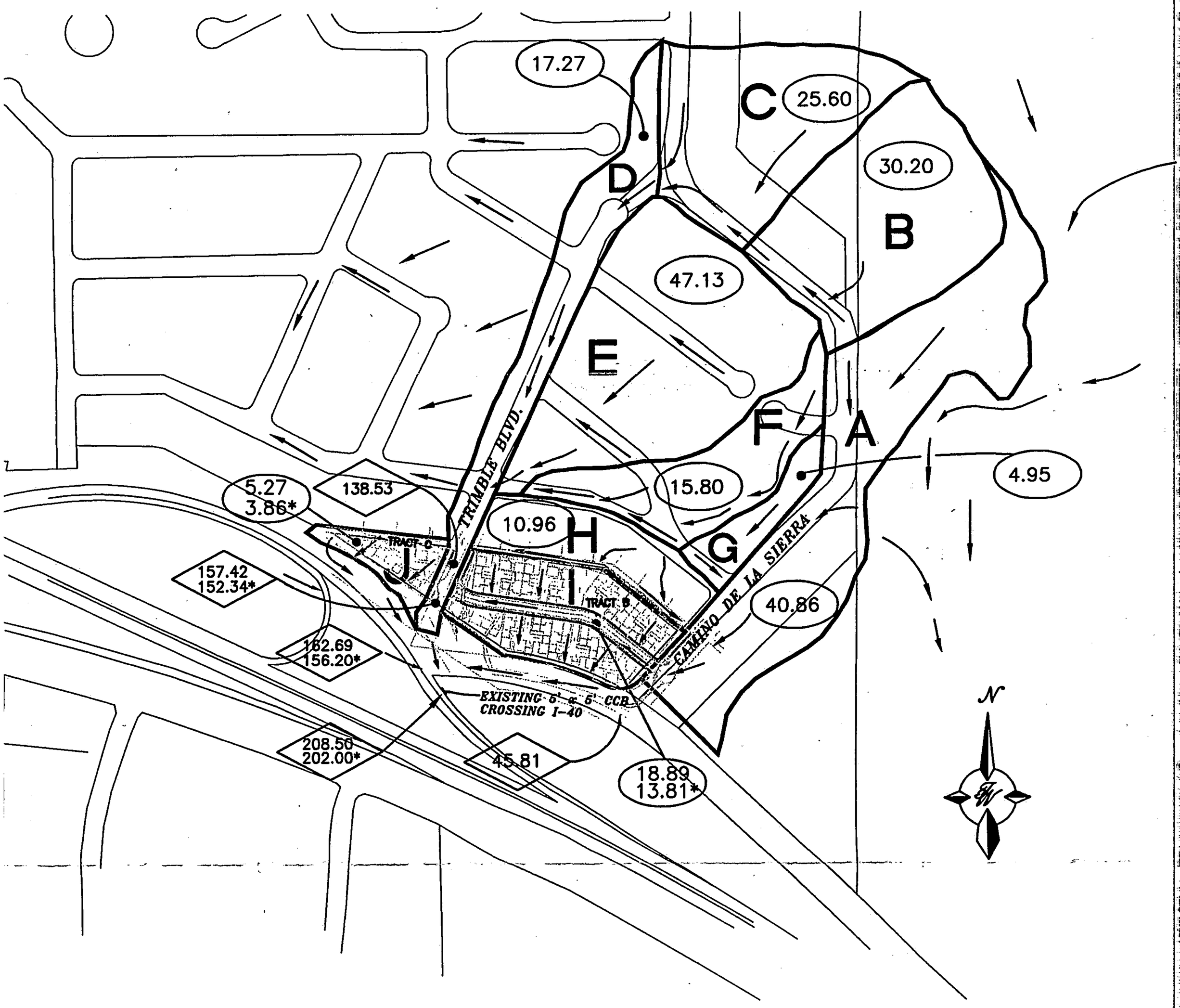
Tierra West Development Management Services on behalf of Heights Realty Ltd. has prepared this drainage report for the purpose of analyzing a proposed 42 unit townhouse development. We are requesting that this report be reviewed for Preliminary Plat, Site Plan, and Grading and Drainage Plan approval. The legal description is Tract B, Block 2 and Tract C, Block 7 of Wells Sandia Manor. The project is entitled Berry Town, and is located half a block south of Arcadia Road and on the west side of Camino de La Sierra. See attached Vicinity Map (L-23) for exact site location. The total area consists of 4.23 acres, with Tract B containing 2.68 acres and Tract C containing 1.55 acres. The purpose of this report is to prepare a drainage management plan and grading plan to build the 42 town homes.

EXISTING CONDITIONS

The site is currently undeveloped sloping from north to south between grades 1 to 10 percent slope. All of the immediate offsite areas drain to the two existing streets. The upland flow has been shown on the following exhibit (Overall Basin Layout). The offsite flows drain south through both Trimble Boulevard and Camino de La Sierra. The flows are contained within the street and do not impact the project. The following describe the existing on-site and offsite runoff.

- A portion of Basin H (from the rear yards of the existing houses) drains to the alley along the north side of Tract B. The alley then drains west and east to Trimble Boulevard and Camino de La Sierra.
- Basin A and G drain along the east edge of the property. Runoff due east of the site,

A	BASIN
40.86	DEVELOPED FLOW FOR THE BASIN
45.81	TOTAL FLOW AT THAT POINT
*	UNDER EXISTING CONDITIONS



OVERALL BASIN LAYOUT

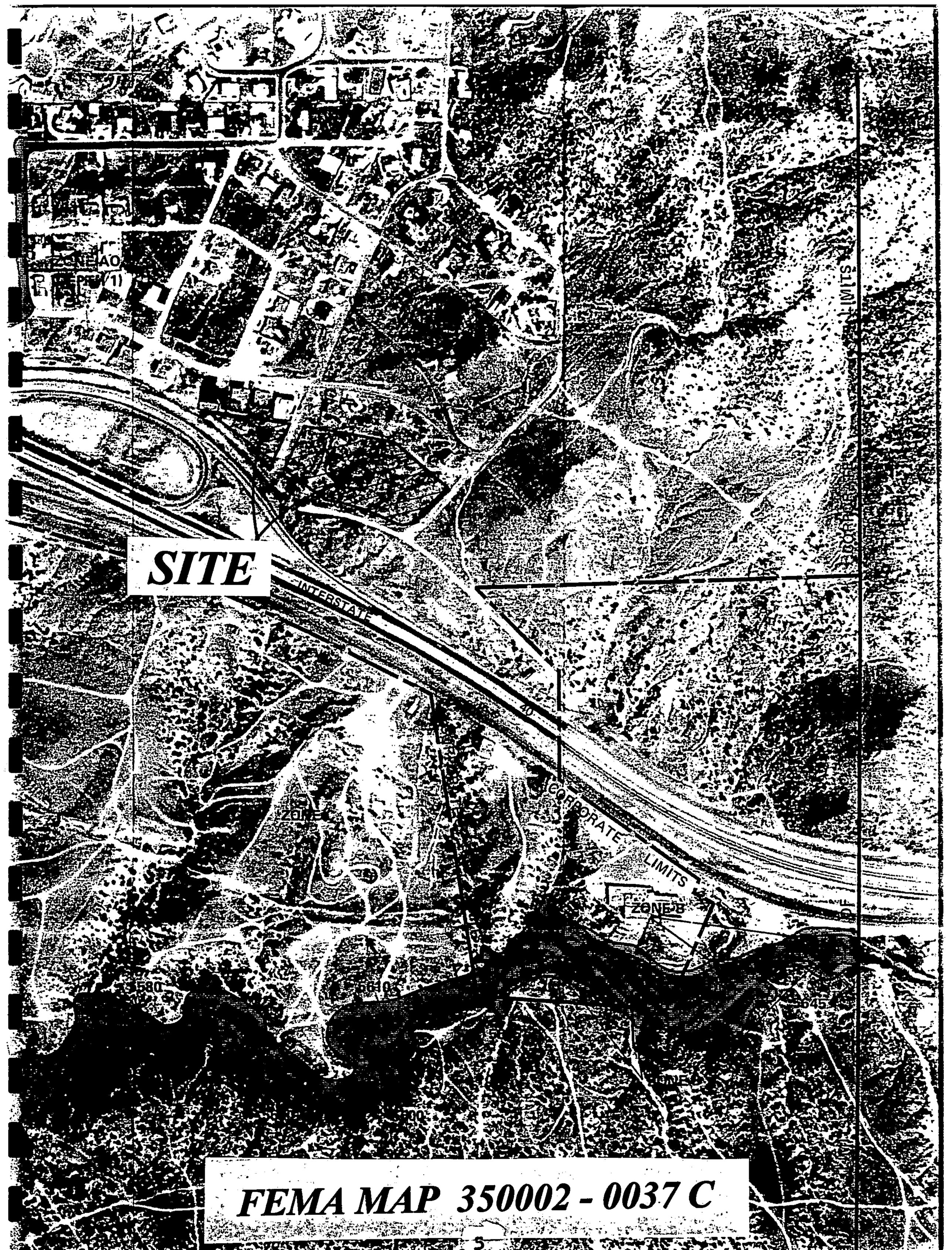
shown as Basin A (with runoff of 40.86 cfs), drains south to Camino de La Sierra. Basin G (with runoff of 4.95 cfs) contributes to basin A. Both Basins A and G, via Camino de La Sierra, drain to an existing concrete channel. From that point the runoff drains, via an earthen drainage swale along the south end of Tract B, to an existing culvert which routes the runoff across Interstate 40.

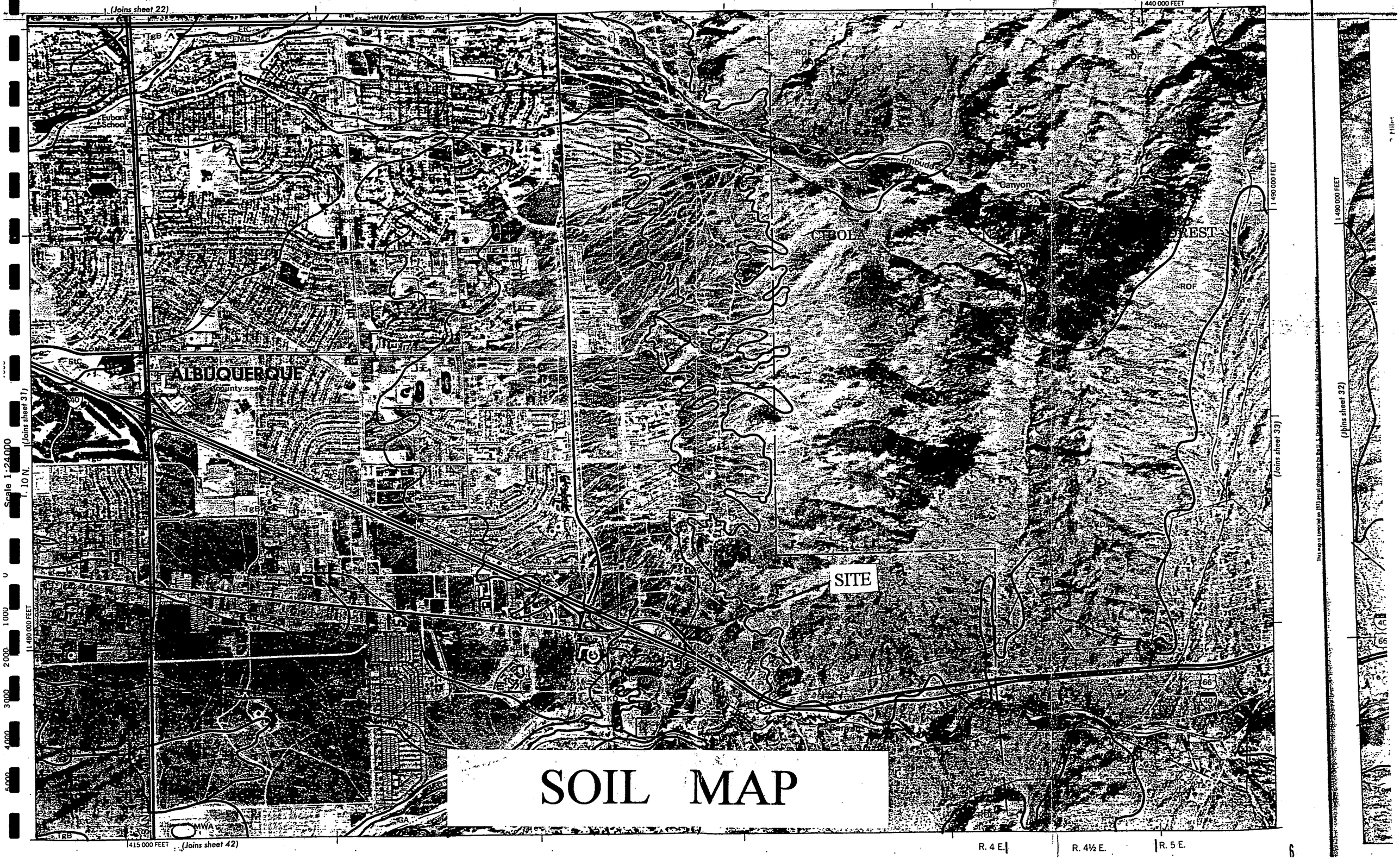
- Tract B falls within Basin I and drains to Trimble Boulevard at a flow rate of 13.81 cfs.
- Tract C falls within Basin J. This basin drains south and east at a flow rate of 3.86 cfs to an existing concrete culvert, and from there drains across Interstate 40 along with the rest of the runoff from the offsite basins.
- Offsite Basins B, C, D, E, F, and H drain to Trimble Boulevard. Trimble Boulevard conveys the water south through the subdivision, at a rate of 138.53 cfs, connecting to the existing culvert crossing I-40. These flows along with the flows from Basins A, G, I, and J meet at this culvert and cross I-40 with a combined flow rate of 156.20 cfs.

Please find the "Overall Basin Layout" located in the map pocket for the basin locations and existing conditions.

FEMA Map and Soil Conditions

The site is located within FEMA MAP panel # 350002-00037 C as shown on the attached excerpt. The map indicates that the site does not lie within a 100-year flood plain. Based on sheet number 32 of the Soil Conservation Service Soil Survey of Bernalillo County (see attached exhibit),


ZONE AO
(1)
SITE
INTERSTATE
40
CORPORATE LIMITS
ZONE B
580
640
645
FEMA MAP 350002 - 0037 C


(Joins sheet 22)
440 000 FEET
Eubank School
ALBUQUERQUE
County seat
Embudo
Canyon
CIBOLA
NATIONAL
FOREST
SITE
(Joins sheet 31)
(Joins sheet 33)
(Joins sheet 42)
415 000 FEET
1 490 000 FEET
T. 10 N.
R. 4 E.
R. 4½ E.
R. 5 E.
Scale 1:24 000
SOIL MAP

the site contains two types of soil classifications. Tract C contains the soil classification of Embudo-Tijeras complex (EtC). The Embudo soil shows up in drainage ways and depressions, which is present on low ridges in narrow undulations. The runoff is medium, and the hazard of water erosion is moderate for the soil series. Tract B falls within Tesajo-Millett stony sandy loams (Te). The Millett soil presents on ridges of alluvial fans. The Tesajo soil is located in swales adjacent or parallel to the intermittent streams and is subject to flooding. Runoff is medium, and the hazard of water erosion is moderate for the soil series.

ON-SITE DRAINAGE MANAGEMENT PLAN

The drainage patterns for Tract B and C will remain the same. Tract B (Basin I), will produce a developed runoff rate of 18.89 cfs, which will drain south and west to the existing culvert on the southwest side of the project. Tract C (Basin J), will produce a developed runoff rate of 5.27 cfs, which will drain south and east to the same existing culvert. The site is located at the bottom of the overall basin, and the runoff from this site will drain in and out of the storm sewer culvert before the upstream runoff reaches the existing culvert at the bottom. This development will increase the overall runoff by 6.49 cfs from 202.00 cfs to 208.50 cfs. Since the increase in the runoff for the overall basin is minimal, there will not be an impact on the storm sewer structures downstream.

The existing culvert is a 5' x 5' concrete box culvert which reduces half way through the crossing (under the Interstate) to a 4' x 3' concrete box culvert (prior to discharge to the other side of Interstate 40). The culvert has been analyzed under AHYMO for ponding condition at the entrance. The ponding depth at the inlet does not reach to the top of the culvert and illustrates that the culvert has much greater capacity than 208.50 cfs.

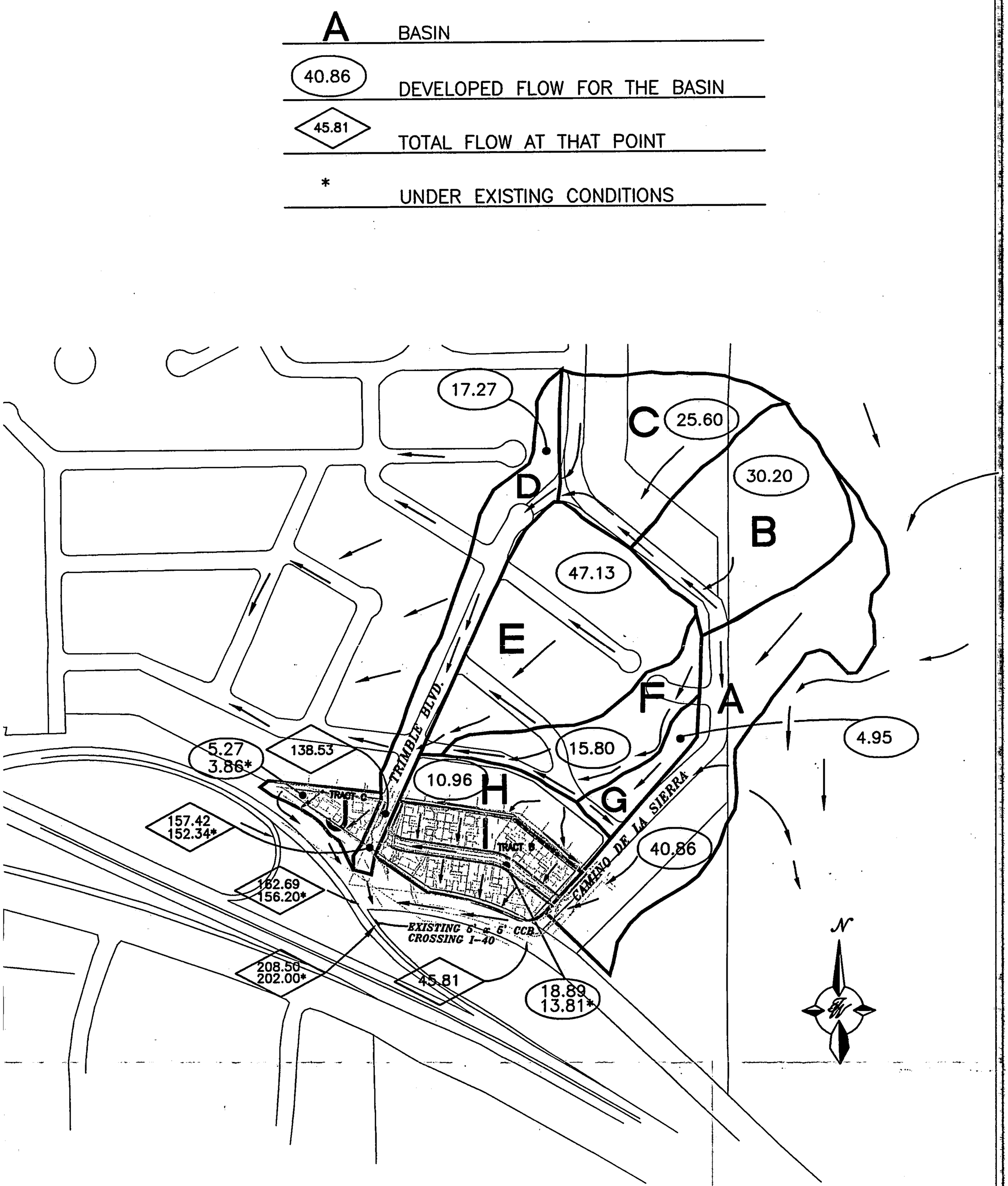
Trimble Boulevard and Camino de La Sierra have been analyzed for street runoff capacity. Do to the steepness and magnitude of the runoff in both of the streets, the water will go through a hydraulic jump in both streets. The grades are designed in such way so that the runoff will not encroach into the pads. The pad elevations near Trimble Boulevard and Camino de La Sierra are setup at ±2' above street elevations. A drainage swale will be built at the east end of Tract B (along Camino de La Sierra) to divert the runoff (which might jump the curb) back to the street. For the same reason a wall will be built along Trimble Boulevard (at the east end of the Tract C) to maintain the water within the street. The roads for the subdivision connecting to Trimble Boulevard and Camino de La Sierra are built high enough and will keep the runoff from entering the site. The runoff through the internal streets is very minimal and the streets have more than enough capacity to handle the runoff. See enclosed Grading and Drainage Plan (in the map pocket).

RUNOFF CALCULATIONS

Runoff calculations were performed using Albuquerque Metropolitan Arroyo Flood Control Authority's Hydrological Modeling and Drainage Criteria (AHYMO). See the following sheet for drainage input information and summary runoff tables for the 100-year and 10-year (6-hour) storm under proposed and existing conditions. Also see the AHYMO input files and summary output, as well as output file for runoff routing and ponding calculations.

Section I

Runoff Calculations



OVERALL BASIN LAYOUT

RUNOFF CALCULATIONS

The site is @ Zone 4

LAND TREATMENT

D = 60 %, B = 20 %, C = 20 %

DEPTH (INCHES) @ 100-YEAR STORM

P_{60} = 2.23 inches

P_{360} = 2.90 inches

P_{1440} = 3.65 inches

DEPTH (INCHES) @ 10-YEAR STORM

P_{60} = 2.23 x 0.667
= 1.49 inches

P_{360} = 1.93

P_{1440} = 2.43

See the summary output from AHYMO calculations.

Also see the following summary tables.

OVERALL DRAINAGE BASINS

DRAINAGE BASINS

SUB-BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
A	481078.20	11.0440	0.017256
B	355581.67	8.1630	0.012755
C	301310.54	6.9171	0.010808
D	203208.17	4.6650	0.007289
E	459221.34	10.5423	0.016472
F	182411.13	4.1876	0.006543
G	58063.74	1.3330	0.002083
H	128845.17	2.9579	0.004622
I	183922.89	4.2223	0.006597
J	51199.46	1.1754	0.001837

BASINS RUNOFF CALCULATION RESULTS (UNDER PROPOSED CONDITIONS)

BASIN	Q-100 CFS	Q-10 CFS
A	40.86	23.65
B	30.20	17.48
C	25.60	14.82
D	17.27	10.00
E	39.00	22.58
F	15.50	8.97
G	4.95	2.87
H	10.96	6.34
I	18.89	11.89
J	5.27	3.32

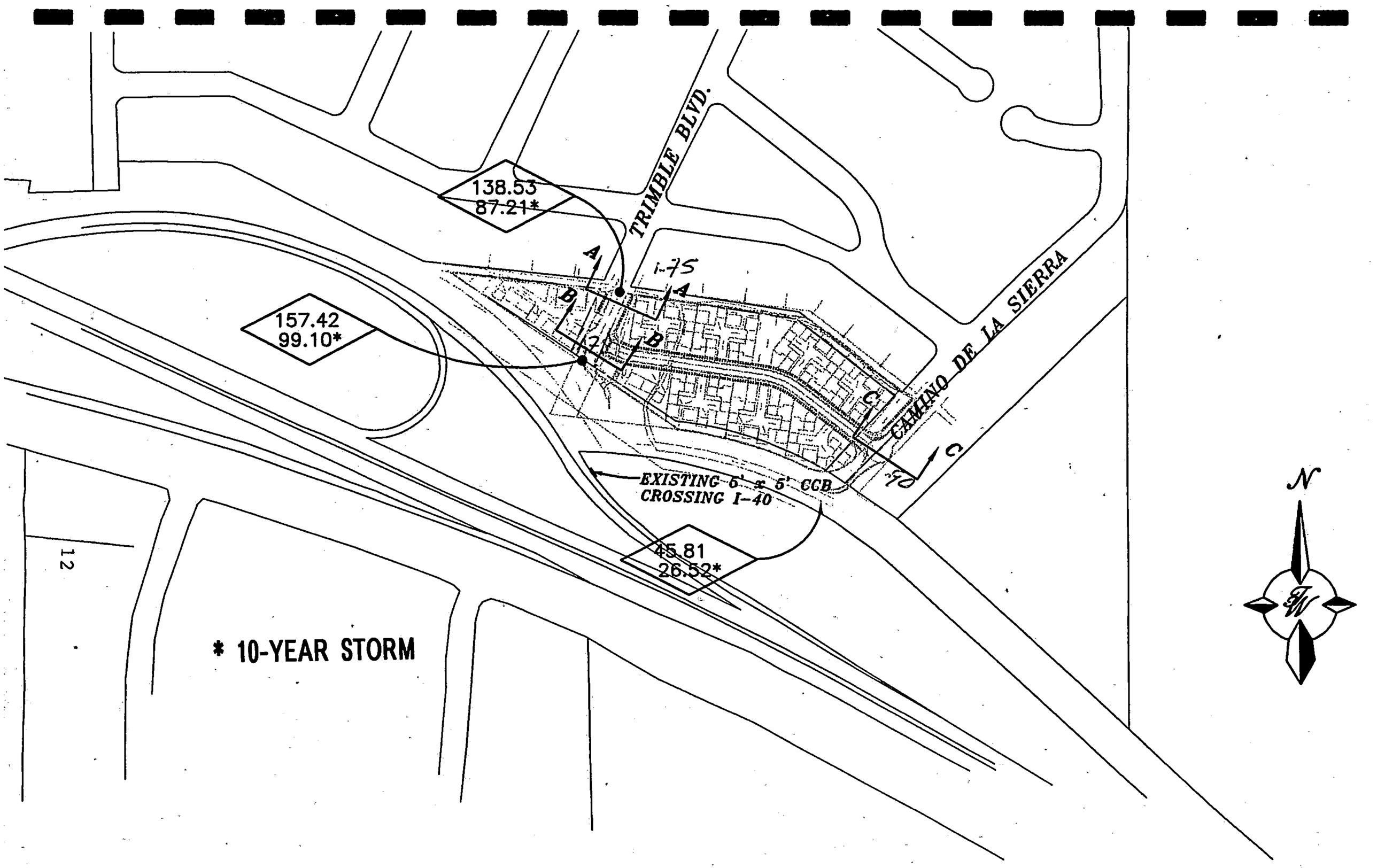
BASINS RUNOFF CALCULATION RESULTS (UNDER EXISTING CONDITIONS)

BASIN	Q-100 CFS	Q-10 CFS
A	40.86	23.65
B	30.20	17.48
C	25.60	14.82
D	17.27	10.00
E	39.00	22.58
F	15.50	8.97
G	4.95	2.87
H	10.96	6.34
I	13.81	7.36
J	3.86	2.06

SEE THE FOLLOWING SHEET FOR SAMPLE CALCULATION ON THE BASINS RUNOFF

Section II

Street Capacity Calculations



STREET CAPACITY ANALYSIS LOCATIONS

FINDING STREET CAPACITY – 32 F–F CROSS–SECTION FOR 8" CURB

$Q = 1.49/n\ A\ R\hat{}(2/3)\ S\hat{}\frac{1}{2}$
$n = 0.017$
SLOPE = STREET SLOPE
$R\hat{}2/3 = (A/P)\hat{}2/3$
D2 = WATER DEPTH AFTER HYDRAULIC JUMP = $D1/2\ [SQRT\ (1 + 8Fr^2) - 1]$
$E = V^2 / 2g$

HALF STREET CALCULATIONS

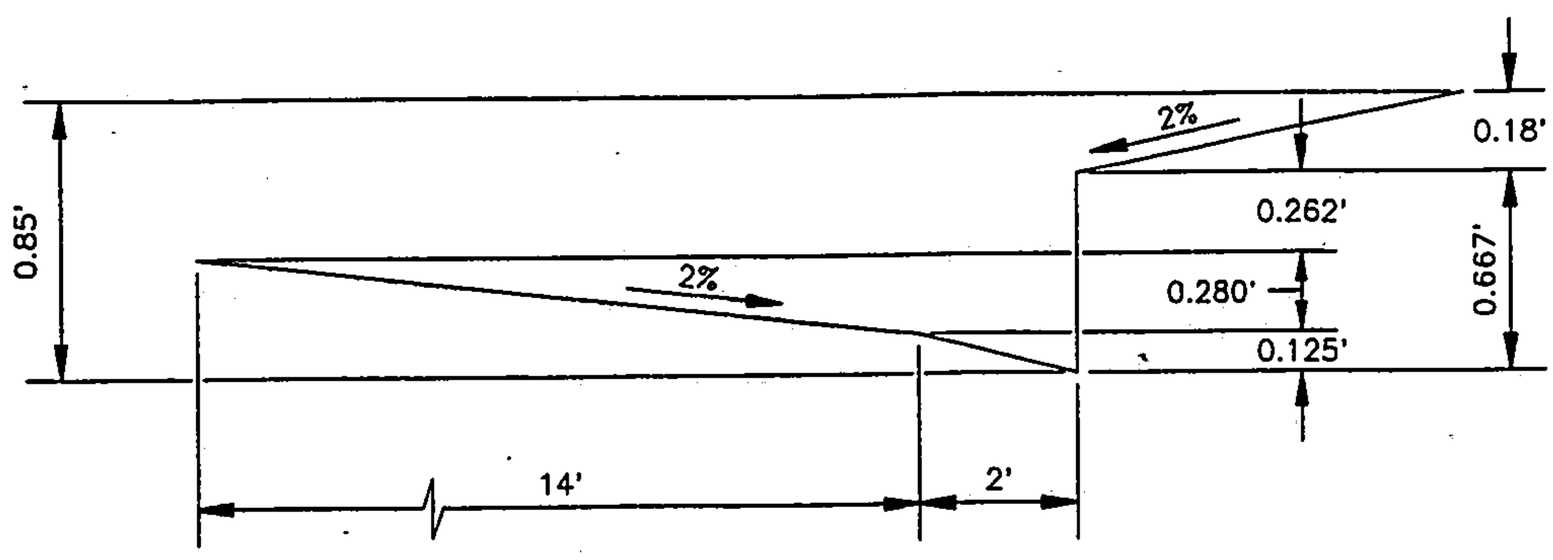
$@Y \leq 0.125$
$A1 = \frac{1}{2} Y\ (Y/0.0625) = 8Y^2$
$P1 = SQRT[Y^2 + (Y/0.0625)^2] + Y = SQRT(257\ Y^2) + Y$

$@\ 0.125 < Y \leq 0.405\ \ \&\ \ Y1 = Y - 0.125$
$A2 = A1 + \frac{1}{2}Y1\ (Y1/0.02) + 2Y1 = A1 + 25Y1^2 + 2Y1$
$P2 = P1 + SQRT[Y1^2 + (Y1/0.02)^2] + Y1 = P1 + SQRT(2501\ Y1^2) + Y1$

$@\ 0.405 < Y \leq 0.667\ \ \&\ \ Y2 = Y - 0.405$
$A3 = A2 + 16Y2 + \frac{1}{2}Y2[Y2/(0.02)] = A2 + 16\ Y2$
$P3 = P2 + SQRT(Y2^2 + [Y2/(0.02)]^2) = P2 + Y2$

$@\ 0.667 < Y \leq 0.847\ \ \&\ \ Y3 = Y - 0.667$
$A4 = A3 + 16Y3 + \frac{1}{2}Y3[Y3/(0.02)] = A3 + 16\ Y3 + 25\ Y3^2$
$P4 = P3 + SQRT(Y3^2 + [Y3/(0.02)]^2) = P3 + SQRT(2501\ Y3^2)$

SEE THE FOLLOWING SHEET FOR INPUT AND OUTPUT FILE FOR CALCULAITON RESULTS FROM COMPUTER PROGRAM USING THE EQUATION SHWON ABOVE



32' F–F
8" CURB

NOT TO SCALE

---------- INPUT FILE ----------

```
* SECTION A-A
** 100-YEAR STORM
100 138.53 0.04373
*   10-YEAR STORM
10 87.21 0.04373

* SECTION B-B
** 100-YEAR STORM
100 157.42 0.04373
*   10-YEAR STORM
10 99.10 0.04373

* SECTION C-C
** 100-YEAR STORM
100 45.81 0.04373
*   10-YEAR STORM
10 26.52 0.04373

999 0.00 0.00
```

---------- OUTPUT FILE ----------

---------- 32-FT F-F, 8" CURB STREET SECTION ----------

---------- STREET CAPACITY BASED ON 10-YR STORM ----------

FLOW CFS	SLOPE FT/FT	Dn FT	Vn FT/S	D*V FT»/S	Fr	E FT	D2 FT
87.21	.04373	.563	8.433	4.747	1.981	1.667	1.320
99.10	.04373	.589	8.869	5.223	2.037	1.810	1.427
26.52	.04373	.395	5.324	2.104	1.492	.835	.660

---------- END OF THE OUTPUT FILE ----------

---------- 32-FT F-F, 8" CURB STREET SECTION ----------

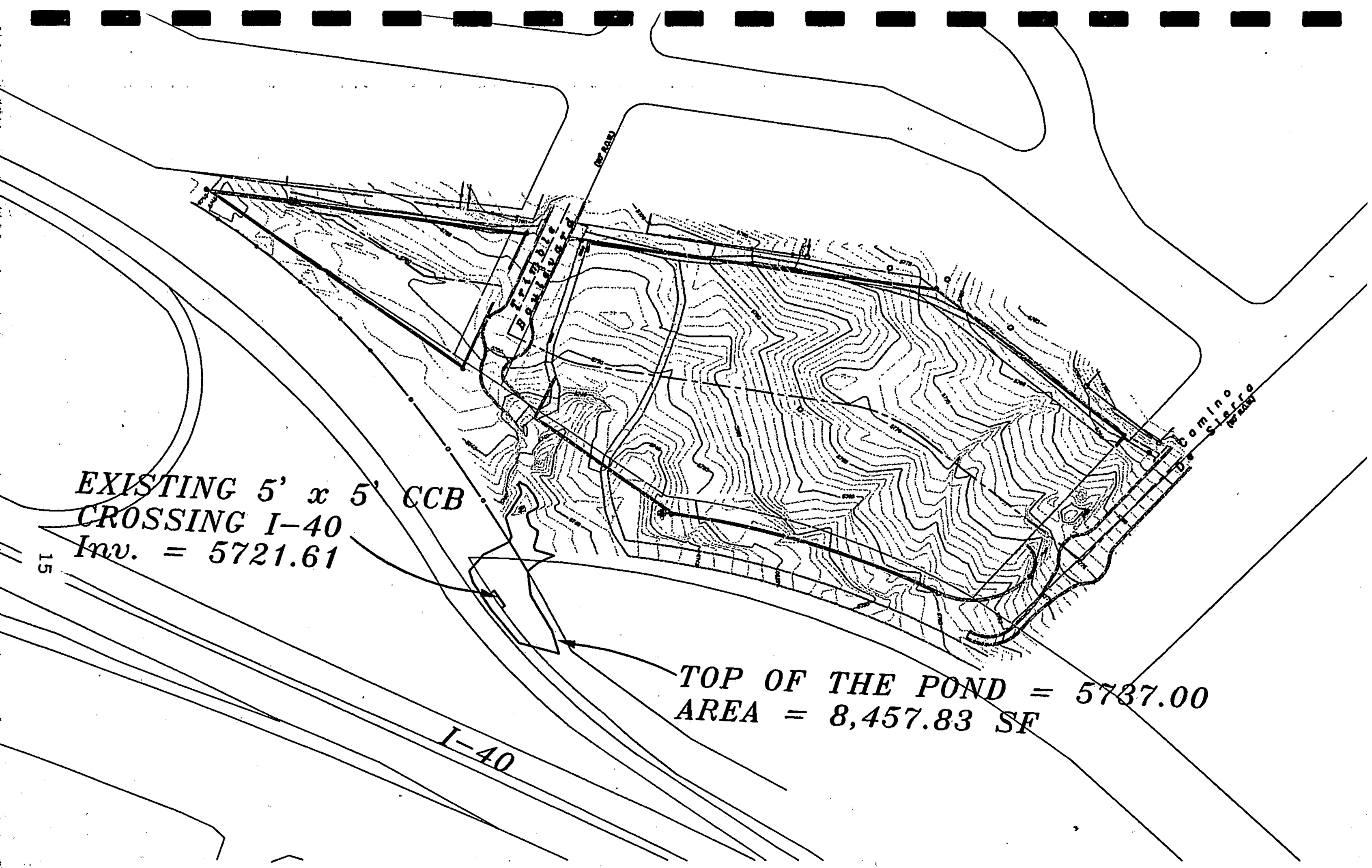
---------- STREET CAPACITY BASED ON 100-YR STORM ----------

FLOW CFS	SLOPE FT/FT	Dn FT	Vn FT/S	D*V FT»/S	Fr	E FT	D2 FT
138.53	.04373	.668	*****	6.754	2.178	2.254	1.752
157.42	.04373	.728	9.960	7.252	2.057	2.268	1.785
45.81	.04373	.459	6.535	2.998	1.700	1.122	.897

---------- END OF THE OUTPUT FILE ----------

Section III

Ponding Calculations



PONDING LOCATION

POND VOLUME CALCULATIONS

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

$$\text{Volume} = Ab * D + 0.5 * C * D^2$$

$$C = (At - Ab) / Dt$$

Ab =	0.00	SF	@ elev. 5721.61
At =	8457.83	SF	@ elev. 5737.00
Dt =	15.39	FT	
Area =	25.00	SF	(5' x 5' Concrete Culvert Box)
Middle of the culvert =	2.50	FT	
C =	549.57	FT / LF-DEPTH	

	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5721.61	0.00	0.00000	0.00
5724.61	3.00	0.05677	85.12
5725.61	4.00	0.10093	147.43
5726.61	5.00	0.15770	190.33
5727.61	6.00	0.22709	225.20
5728.61	7.00	0.30910	255.35
5729.61	8.00	0.40372	282.30
5730.61	9.00	0.51096	306.90
5731.61	10.00	0.63082	329.66
5732.61	11.00	0.76329	350.95
5733.61	12.00	0.90837	371.02
5734.61	13.00	1.06608	390.06
5735.61	14.00	1.23640	408.21
5737.00	15.39	1.49410	432.18

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

C = 0.60
A = (5' x 5') Concrete Culvert Box
g = 32.2
H = water depht, measured from the center of the culvert

PONDCALC.WK4

Section IV

AHYMO
Input/Output Files
(Under Proposed and Existing Conditions, 100-Year 10-Year, 6-Hour Storm)

```
*****************************************************************
*                  BERRY TOWN   (OVERALL BASINS)                *
*****************************************************************
*       100-YEAR,  6-HR STORM  (UNDER PROPOSED CONDITIONS)      *
*****************************************************************
*
START                TIME=0.0
*
* BASIN A
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.23 IN RAIN SIX=2.90 IN
                     RAIN DAY=3.65 IN DT=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.01725670 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN B
*
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.012755 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN C
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.010808 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN D
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.007289 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN E
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.016472 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN F
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.006543 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN G
*
COMPUTE NM HYD       ID=7 HYD NO=100.7 AREA=0.002083 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN H
*
COMPUTE NM HYD       ID=8 HYD NO=100.8 AREA=0.004622 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN I
```

```
COMPUTE NM HYD        ID=9 HYD NO=100.9 AREA=0.006597 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 J

COMPUTE NM HYD        ID=10 HYD NO=100.10 AREA=0.001837 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

ADD HYD               ID=11 HYD NO=111.10 ID=2 ID=3
*
ADD HYD               ID=12 HYD NO=112.10 ID=4 ID=11

ADD HYD               ID=13 HYD NO=113.10 ID=5 ID=6

ADD HYD               ID=14 HYD NO=114.10 ID=12 ID=13
*
ADD HYD               ID=15 HYD NO=115.10 ID=8 ID=9

ADD HYD               ID=16 HYD NO=116.10 ID=14 ID=15
*
ADD HYD               ID=17 HYD NO=117.10 ID=10 ID=16

ADD HYD               ID=18 HYD NO=118.10 ID=1 ID=7

ADD HYD               ID=19 HYD NO=119.10 ID=17 ID=18
*
*
 PONDING
*
ROUTE RESERVOIR       ID=20 HYD NO=501.1 INFLOW ID=19 CODE=24
                      OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                          0.00             0.00000        5021.61
                         85.12             0.05677        5024.61
                        147.43             0.10093        5025.61
                        190.33             0.15770        5026.61
                        225.20             0.22709        5027.61
                        255.35             0.30910        5028.61
                        282.30             0.40372        5029.61
                        306.90             0.51096        5030.61
                        329.66             0.63082        5031.61
                        350.95             0.76329        5032.61
                        371.02             0.90837        5033.61
                        390.06             1.06608        5034.61
                        408.21             1.23640        5035.61
                        432.18             1.49410        5037.00
*
*****************************************************************
       10-YEAR,  6-HR STORM   (UNDER PROPOSED CONDITIONS)      *
*****************************************************************
*
START                 TIME=0.0

* BASIN A

RAINFALL              TYPE=1 RAIN QUARTER=0.0 IN
                      RAIN ONE=1.49 IN RAIN SIX=1.93 IN
                      RAIN DAY=2.43 IN DT=0.03333 HR
```

```
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.01725670 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1

* BASIN B
*
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.012755 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1

* BASIN C
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.010808 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN D

COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.007289 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN E

COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.016472 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1

* BASIN F
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.006543 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1

* BASIN G
*
COMPUTE NM HYD       ID=7 HYD NO=100.7 AREA=0.002083 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1

* BASIN H
*
COMPUTE NM HYD       ID=8 HYD NO=100.8 AREA=0.004622 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN I

COMPUTE NM HYD       ID=9 HYD NO=100.9 AREA=0.006597 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 J

COMPUTE NM HYD       ID=10 HYD NO=100.10 AREA=0.001837 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

ADD HYD              ID=11 HYD NO=111.10 ID=2 ID=3
```

```
ADD HYD              ID=12 HYD NO=112.10 ID=4 ID=11
*
ADD HYD              ID=13 HYD NO=113.10 ID=5 ID=6
*
ADD HYD              ID=14 HYD NO=114.10 ID=12 ID=13
*
ADD HYD              ID=15 HYD NO=115.10 ID=8 ID=9
*
ADD HYD              ID=16 HYD NO=116.10 ID=14 ID=15
*
ADD HYD              ID=17 HYD NO=117.10 ID=10 ID=16
*
ADD HYD              ID=18 HYD NO=118.10 ID=1 ID=7
*
ADD HYD              ID=19 HYD NO=119.10 ID=17 ID=18
*
*
*****************************************************************
*       100-YEAR,  6-HR STORM  (UNDER EXISTING CONDITIONS)      *
*****************************************************************
*
START                TIME=0.0
*
* BASIN A
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.23 IN RAIN SIX=2.90 IN
                     RAIN DAY=3.65 IN DT=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.01725670 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN B
*
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.012755 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN C
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.010808 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN D
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.007289 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN E
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.016472 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN F
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.006543 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
```

```
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN G
*
COMPUTE NM HYD      ID=7 HYD NO=100.7 AREA=0.002083 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN H
*
COMPUTE NM HYD      ID=8 HYD NO=100.8 AREA=0.004622 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN I
*
COMPUTE NM HYD      ID=9 HYD NO=100.9 AREA=0.006597 SQ MI
                    PER A=0.00 PER B=75.00 PER C=15.00 PER D=10.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN J
*
COMPUTE NM HYD      ID=10 HYD NO=100.10 AREA=0.001837 SQ MI
                    PER A=0.00 PER B=75.00 PER C=15.00 PER D=10.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
ADD HYD             ID=11 HYD NO=111.10 ID=2 ID=3
*
ADD HYD             ID=12 HYD NO=112.10 ID=4 ID=11
*
ADD HYD             ID=13 HYD NO=113.10 ID=5 ID=6
*
ADD HYD             ID=14 HYD NO=114.10 ID=12 ID=13
*
ADD HYD             ID=15 HYD NO=115.10 ID=8 ID=9
*
ADD HYD             ID=16 HYD NO=116.10 ID=14 ID=15
*
ADD HYD             ID=17 HYD NO=117.10 ID=10 ID=16
*
ADD HYD             ID=18 HYD NO=118.10 ID=1 ID=7
*
ADD HYD             ID=19 HYD NO=119.10 ID=17 ID=18
*
*****************************************************************
*       10-YEAR,  6-HR STORM   (UNDER EXISTING CONDITIONS)      *
*****************************************************************
*
START               TIME=0.0
*
* BASIN A
*
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.49 IN RAIN SIX=1.93 IN
                    RAIN DAY=2.43 IN DT=0.03333 HR
COMPUTE NM HYD      ID=1 HYD NO=100.1 AREA=0.01725670 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN B
```

```
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.012755 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN C
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.010808 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN D
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.007289 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN E
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.016472 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN F
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.006543 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN G
*
COMPUTE NM HYD       ID=7 HYD NO=100.7 AREA=0.002083 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN H
*
COMPUTE NM HYD       ID=8 HYD NO=100.8 AREA=0.004622 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN I
*
COMPUTE NM HYD       ID=9 HYD NO=100.9 AREA=0.006597 SQ MI
                     PER A=0.00 PER B=75.00 PER C=15.00 PER D=10.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN J
*
COMPUTE NM HYD       ID=10 HYD NO=100.10 AREA=0.001837 SQ MI
                     PER A=0.00 PER B=75.00 PER C=15.00 PER D=10.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
ADD HYD              ID=11 HYD NO=111.10 ID=2 ID=3
*
ADD HYD              ID=12 HYD NO=112.10 ID=4 ID=11
*
ADD HYD              ID=13 HYD NO=113.10 ID=5 ID=6
*
ADD HYD              ID=14 HYD NO=114.10 ID=12 ID=13
```

```
*
ADD HYD              ID=15 HYD NO=115.10 ID=8 ID=9
*
ADD HYD              ID=16 HYD NO=116.10 ID=14 ID=15
*
ADD HYD              ID=17 HYD NO=117.10 ID=10 ID=16
*
ADD HYD              ID=18 HYD NO=118.10 ID=1 ID=7
*
ADD HYD              ID=19 HYD NO=119.10 ID=17 ID=18
*
*********************************************************************
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =03/07/1997
INPUT FILE = D 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	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.900
COMPUTE NM HYD	100.10	-	1	.01726	40.86	1.407	1.52921	1.500	3.699	PER IMP= 20.00
COMPUTE NM HYD	100.20	-	2	.01276	30.20	1.040	1.52921	1.500	3.700	PER IMP= 20.00
COMPUTE NM HYD	100.30	-	3	.01081	25.60	.881	1.52921	1.500	3.700	PER IMP= 20.00
COMPUTE NM HYD	100.40	-	4	.00729	17.27	.594	1.52921	1.500	3.702	PER IMP= 20.00
COMPUTE NM HYD	100.50	-	5	.01647	39.00	1.343	1.52921	1.500	3.699	PER IMP= 20.00
COMPUTE NM HYD	100.60	-	6	.00654	15.50	.534	1.52921	1.500	3.702	PER IMP= 20.00
COMPUTE NM HYD	100.70	-	7	.00208	4.95	.170	1.52921	1.500	3.713	PER IMP= 20.00
COMPUTE NM HYD	100.80	-	8	.00462	10.96	.377	1.52921	1.500	3.705	PER IMP= 20.00
COMPUTE NM HYD	100.90	-	9	.00660	18.89	.734	2.08531	1.500	4.474	PER IMP= 60.00
COMPUTE NM HYD	100.10	-	10	.00184	5.27	.204	2.08531	1.500	4.486	PER IMP= 60.00
ADD HYD	111.10	2& 3	11	.02356	55.80	1.922	1.52919	1.500	3.700	
ADD HYD	112.10	4&11	12	.03085	73.07	2.516	1.52919	1.500	3.701	
ADD HYD	113.10	5& 6	13	.02302	54.50	1.877	1.52919	1.500	3.700	
ADD HYD	114.10	12&13	14	.05387	127.57	4.393	1.52919	1.500	3.700	
ADD HYD	115.10	8& 9	15	.01122	29.85	1.111	1.85617	1.500	4.157	
ADD HYD	116.10	14&15	16	.06509	157.42	5.504	1.58555	1.500	3.779	
ADD HYD	117.10	10&16	17	.06692	162.69	5.708	1.59927	1.500	3.798	
ADD HYD	118.10	1& 7	18	.01934	45.81	1.577	1.52919	1.500	3.701	
ADD HYD	119.10	17&18	19	.08626	208.50	7.285	1.58355	1.500	3.777	
ROUTE RESERVOIR	501.10	19	20	.08626	203.80	7.285	1.58355	1.533	3.691	AC-FT= .184
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.930
COMPUTE NM HYD	100.10	-	1	.01726	23.65	.724	.78702	1.500	2.141	PER IMP= 20.00
COMPUTE NM HYD	100.20	-	2	.01276	17.48	.535	.78702	1.500	2.142	PER IMP= 20.00
COMPUTE NM HYD	100.30	-	3	.01081	14.82	.454	.78702	1.500	2.142	PER IMP= 20.00
COMPUTE NM HYD	100.40	-	4	.00729	10.00	.306	.78702	1.500	2.143	PER IMP= 20.00
COMPUTE NM HYD	100.50	-	5	.01647	22.58	.691	.78702	1.500	2.141	PER IMP= 20.00
COMPUTE NM HYD	100.60	-	6	.00654	8.97	.275	.78702	1.500	2.143	PER IMP= 20.00
COMPUTE NM HYD	100.70	-	7	.00208	2.87	.087	.78702	1.500	2.150	PER IMP= 20.00
COMPUTE NM HYD	100.80	-	8	.00462	6.34	.194	.78702	1.500	2.145	PER IMP= 20.00
COMPUTE NM HYD	100.90	-	9	.00660	11.89	.434	1.23345	1.500	2.816	PER IMP= 60.00
COMPUTE NM HYD	100.10	-	10	.00184	3.32	.121	1.23345	1.500	2.823	PER IMP= 60.00
ADD HYD	111.10	2& 3	11	.02356	32.30	.989	.78699	1.500	2.142	
ADD HYD	112.10	4&11	12	.03085	42.30	1.295	.78699	1.500	2.142	
ADD HYD	113.10	5& 6	13	.02302	31.55	.966	.78699	1.500	2.142	
ADD HYD	114.10	12&13	14	.05387	73.85	2.261	.78699	1.500	2.142	
ADD HYD	115.10	8& 9	15	.01122	18.23	.628	1.04948	1.500	2.539	
ADD HYD	116.10	14&15	16	.06509	92.08	2.889	.83224	1.500	2.211	
ADD HYD	117.10	10&16	17	.06692	95.40	3.010	.84325	1.500	2.227	
ADD HYD	118.10	1& 7	18	.01934	26.52	.812	.78699	1.500	2.142	
ADD HYD	119.10	17&18	19	.08626	121.92	3.821	.83063	1.500	2.208	
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.900
COMPUTE NM HYD	100.10	-	1	.01726	40.86	1.407	1.52921	1.500	3.699	PER IMP= 20.00
COMPUTE NM HYD	100.20	-	2	.01276	30.20	1.040	1.52921	1.500	3.700	PER IMP= 20.00
COMPUTE NM HYD	100.30	-	3	.01081	25.60	.881	1.52921	1.500	3.700	PER IMP= 20.00
COMPUTE NM HYD	100.40	-	4	.00729	17.27	.594	1.52921	1.500	3.702	PER IMP= 20.00

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
COMPUTE NM HYD	100.50	-	5	.01647	39.00	1.343	1.52921	1.500	3.699	PER IMP= 20.00
COMPUTE NM HYD	100.60	-	6	.00654	15.50	.534	1.52921	1.500	3.702	PER IMP= 20.00
COMPUTE NM HYD	100.70	-	7	.00208	4.95	.170	1.52921	1.500	3.713	PER IMP= 20.00
COMPUTE NM HYD	100.80	-	8	.00462	10.96	.377	1.52921	1.500	3.705	PER IMP= 20.00
COMPUTE NM HYD	100.90	-	9	.00660	13.81	.451	1.28239	1.500	3.271	PER IMP= 10.00
COMPUTE NM HYD	100.10	-	10	.00184	3.86	.126	1.28239	1.500	3.283	PER IMP= 10.00
ADD HYD	111.10	2& 3	11	.02356	55.80	1.922	1.52919	1.500	3.700	
ADD HYD	112.10	4&11	12	.03085	73.07	2.516	1.52919	1.500	3.701	
ADD HYD	113.10	5& 6	13	.02302	54.50	1.877	1.52919	1.500	3.700	
ADD HYD	114.10	12&13	14	.05387	127.57	4.393	1.52919	1.500	3.700	
ADD HYD	115.10	8& 9	15	.01122	24.77	.828	1.38403	1.500	3.449	
ADD HYD	116.10	14&15	16	.06509	152.34	5.221	1.50417	1.500	3.657	
ADD HYD	117.10	10&16	17	.06692	156.20	5.347	1.49808	1.500	3.647	
ADD HYD	118.10	1& 7	18	.01934	45.81	1.577	1.52919	1.500	3.701	
ADD HYD	119.10	17&18	19	.08626	202.00	6.924	1.50505	1.500	3.659	
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.930
COMPUTE NM HYD	100.10	-	1	.01726	23.65	.724	.78702	1.500	2.141	PER IMP= 20.00
COMPUTE NM HYD	100.20	-	2	.01276	17.48	.535	.78702	1.500	2.142	PER IMP= 20.00
COMPUTE NM HYD	100.30	-	3	.01081	14.82	.454	.78702	1.500	2.142	PER IMP= 20.00
COMPUTE NM HYD	100.40	-	4	.00729	10.00	.306	.78702	1.500	2.143	PER IMP= 20.00
COMPUTE NM HYD	100.50	-	5	.01647	22.58	.691	.78702	1.500	2.141	PER IMP= 20.00
COMPUTE NM HYD	100.60	-	6	.00654	8.97	.275	.78702	1.500	2.143	PER IMP= 20.00
COMPUTE NM HYD	100.70	-	7	.00208	2.87	.087	.78702	1.500	2.150	PER IMP= 20.00
COMPUTE NM HYD	100.80	-	8	.00462	6.34	.194	.78702	1.500	2.145	PER IMP= 20.00
COMPUTE NM HYD	100.90	-	9	.00660	7.36	.212	.60289	1.500	1.744	PER IMP= 10.00
COMPUTE NM HYD	100.10	-	10	.00184	2.06	.059	.60289	1.500	1.751	PER IMP= 10.00
ADD HYD	111.10	2& 3	11	.02356	32.30	.989	.78699	1.500	2.142	
ADD HYD	112.10	4&11	12	.03085	42.30	1.295	.78699	1.500	2.142	
ADD HYD	113.10	5& 6	13	.02302	31.55	.966	.78699	1.500	2.142	
ADD HYD	114.10	12&13	14	.05387	73.85	2.261	.78699	1.500	2.142	
ADD HYD	115.10	8& 9	15	.01122	13.71	.406	.67870	1.500	1.909	
ADD HYD	116.10	14&15	16	.06509	87.55	2.667	.76833	1.500	2.102	
ADD HYD	117.10	10&16	17	.06692	89.61	2.726	.76378	1.500	2.092	
ADD HYD	118.10	1& 7	18	.01934	26.52	.812	.78699	1.500	2.142	
ADD HYD	119.10	17&18	19	.08626	116.13	3.538	.76898	1.500	2.103	
FINISH										

```
*****************************************************************
*                  BERRY TOWN   (OVERALL BASINS)                *
*****************************************************************
*       100-YEAR,  6-HR STORM  (UNDER PROPOSED CONDITIONS)      *
*****************************************************************
*
START                TIME=0.0
*
* BASIN A
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.23 IN RAIN SIX=2.90 IN
                     RAIN DAY=3.65 IN DT=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.01725670 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=100.2 AREA=0.012755 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=3 HYD NO=100.3 AREA=0.010808 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=4 HYD NO=100.4 AREA=0.007289 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 E
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.016472 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 F
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.006543 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 G
*
COMPUTE NM HYD       ID=7 HYD NO=100.7 AREA=0.002083 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 H
*
COMPUTE NM HYD       ID=8 HYD NO=100.8 AREA=0.004622 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 I
```

```
*
COMPUTE NM HYD        ID=9 HYD NO=100.9 AREA=0.006597 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 J
*
COMPUTE NM HYD        ID=10 HYD NO=100.10 AREA=0.001837 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
*
ADD HYD               ID=11 HYD NO=111.10 ID=2 ID=3
*
ADD HYD               ID=12 HYD NO=112.10 ID=4 ID=11
*
ADD HYD               ID=13 HYD NO=113.10 ID=5 ID=6
*
ADD HYD               ID=14 HYD NO=114.10 ID=12 ID=13
*
ADD HYD               ID=15 HYD NO=115.10 ID=8 ID=9
*
ADD HYD               ID=16 HYD NO=116.10 ID=14 ID=15
*
ADD HYD               ID=17 HYD NO=117.10 ID=10 ID=16
*
ADD HYD               ID=18 HYD NO=118.10 ID=1 ID=7
*
ADD HYD               ID=19 HYD NO=119.10 ID=17 ID=18
ROUTE RESERVOIR       ID=20 HYD NO=501.1 INFLOW ID=19 CODE=24
```

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.00	0.00000	5021.61
85.12	0.05677	5024.61
147.43	0.10093	5025.61
190.33	0.15770	5026.61
225.20	0.22709	5027.61
255.35	0.30910	5028.61
282.30	0.40372	5029.61
306.90	0.51096	5030.61
329.66	0.63082	5031.61
350.95	0.76329	5032.61
371.02	0.90837	5033.61
390.06	1.06608	5034.61
408.21	1.23640	5035.61
432.18	1.49410	5037.00

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**********************************************************************
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =04/14/1997

INPUT FILE = ppd.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	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.900
COMPUTE NM HYD	100.10	-	1	.01726	49.37	1.919	2.08531	1.500	4.471	PER IMP= 60.00
COMPUTE NM HYD	100.20	-	2	.01276	36.50	1.419	2.08531	1.500	4.471	PER IMP= 60.00
COMPUTE NM HYD	100.30	-	3	.01081	30.93	1.202	2.08531	1.500	4.472	PER IMP= 60.00
COMPUTE NM HYD	100.40	-	4	.00729	20.87	.811	2.08531	1.500	4.473	PER IMP= 60.00
COMPUTE NM HYD	100.50	-	5	.01647	47.13	1.832	2.08531	1.500	4.471	PER IMP= 60.00
COMPUTE NM HYD	100.60	-	6	.00654	18.73	.728	2.08531	1.500	4.474	PER IMP= 60.00
COMPUTE NM HYD	100.70	-	7	.00208	5.98	.232	2.08531	1.500	4.485	PER IMP= 60.00
COMPUTE NM HYD	100.80	-	8	.00462	13.24	.514	2.08531	1.500	4.476	PER IMP= 60.00
COMPUTE NM HYD	100.90	-	9	.00660	18.89	.734	2.08531	1.500	4.474	PER IMP= 60.00
COMPUTE NM HYD	100.10	-	10	.00184	5.27	.204	2.08531	1.500	4.486	PER IMP= 60.00
ADD HYD	111.10	2& 3	11	.02356	67.43	2.621	2.08529	1.500	4.471	
ADD HYD	112.10	4&11	12	.03085	88.30	3.431	2.08529	1.500	4.472	
ADD HYD	113.10	5& 6	13	.02302	65.86	2.560	2.08529	1.500	4.472	
ADD HYD	114.10	12&13	14	.05387	154.16	5.991	2.08529	1.500	4.472	
ADD HYD	115.10	8& 9	15	.01122	32.13	1.248	2.08527	1.500	4.474	
ADD HYD	116.10	14&15	16	.06509	186.29	7.239	2.08528	1.500	4.472	
ADD HYD	117.10	10&16	17	.06692	191.56	7.443	2.08528	1.500	4.473	
ADD HYD	118.10	1& 7	18	.01934	55.35	2.151	2.08528	1.500	4.472	
ADD HYD	119.10	17&18	19	.08626	246.92	9.594	2.08528	1.500	4.472	
ROUTE RESERVOIR	501.10	19	20	.08626	237.78	9.594	2.08528	1.533	4.307	AC-FT= .261
FINISH										

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AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 04/14/1997
     START TIME (HR:MIN:SEC) = 17:05:44     USER NO.= R_BOHANN.I01
     INPUT FILE = ppd.dat

*****************************************************************
*                BERRY TOWN   (OVERALL BASINS)                  *
*****************************************************************
*      100-YEAR,  6-HR STORM  (UNDER PROPOSED CONDITIONS)       *
*****************************************************************
*
START                TIME=0.0
*
* BASIN A
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.23 IN RAIN SIX=2.90 IN
                     RAIN DAY=3.65 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   .0055   .0110   .0167   .0225   .0284   .0345
                   .0406   .0469   .0534   .0600   .0668   .0738   .0809
                   .0882   .0958   .1035   .1115   .1197   .1282   .1370
                   .1461   .1555   .1653   .1754   .1860   .1971   .2086
                   .2207   .2334   .2469   .2530   .2596   .2667   .2818
                   .3156   .3677   .4425   .5446   .6787   .8498  1.0629
                  1.3228  1.5642  1.6650  1.7500  1.8257  1.8946  1.9579
                  2.0168  2.0718  2.1233  2.1719  2.2176  2.2608  2.3018
                  2.3405  2.3773  2.4122  2.4453  2.4767  2.4850  2.4927
                  2.5002  2.5074  2.5143  2.5210  2.5275  2.5338  2.5400
                  2.5459  2.5518  2.5575  2.5630  2.5685  2.5738  2.5790
                  2.5841  2.5891  2.5940  2.5988  2.6036  2.6082  2.6128
                  2.6173  2.6218  2.6262  2.6305  2.6347  2.6389  2.6431
                  2.6471  2.6512  2.6552  2.6591  2.6630  2.6668  2.6706
                  2.6743  2.6780  2.6817  2.6853  2.6889  2.6925  2.6960
                  2.6995  2.7029  2.7063  2.7097  2.7131  2.7164  2.7197
                  2.7229  2.7262  2.7294  2.7325  2.7357  2.7388  2.7419
                  2.7450  2.7480  2.7511  2.7541  2.7570  2.7600  2.7629
                  2.7658  2.7687  2.7716  2.7745  2.7773  2.7801  2.7829
                  2.7857  2.7885  2.7912  2.7939  2.7966  2.7993  2.8020
                  2.8046  2.8073  2.8099  2.8125  2.8151  2.8177  2.8202
                  2.8228  2.8253  2.8279  2.8304  2.8329  2.8353  2.8378
                  2.8402  2.8427  2.8451  2.8475  2.8499  2.8523  2.8547
                  2.8571  2.8594  2.8618  2.8641  2.8664  2.8687  2.8710
                  2.8733  2.8756  2.8779  2.8801  2.8824  2.8846  2.8868
                  2.8890  2.8912  2.8934  2.8956  2.8978  2.9000

COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.01725670 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 =   40.878    CFS   UNIT VOLUME =    .9991       B =   526.28      P60 = 2.2300
    AREA =       .010354 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

    K =    .122335HR    TP =    .133300HR    K/TP RATIO =    .917739    SHAPE CONSTANT, N =  3.857355
```

```
    UNIT PEAK =   17.893    CFS   UNIT VOLUME =    .9997       B =   345.54      P60 = 2.2300
    AREA =       .006903 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=100.2 AREA=0.012755 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 =   30.214    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 2.2300
    AREA =       .007653 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

    K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
    UNIT PEAK =   13.226    CFS   UNIT VOLUME =    .9994       B =   345.54      P60 = 2.2300
    AREA =       .005102 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

*
* BASIN C
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.010808 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 =   25.602    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 2.2300
    AREA =       .006485 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

    K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
    UNIT PEAK =   11.207    CFS   UNIT VOLUME =    .9993       B =   345.54      P60 = 2.2300
    AREA =       .004323 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

*
* BASIN D
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.007289 SQ MI
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                     TP=-0.1333 HR MASS RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   17.266    CFS   UNIT VOLUME =    .9988       B =   526.28      P60 = 2.2300
    AREA =       .004373 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

    K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
    UNIT PEAK =   7.5579    CFS   UNIT VOLUME =    .9986       B =   345.54      P60 = 2.2300
    AREA =       .002916 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

*
* BASIN E
```

```
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.016472 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 =   39.019    CFS   UNIT VOLUME =    .9991       B =   526.28      P60 = 2.2300
    AREA =      .009883 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
    UNIT PEAK =   17.080    CFS   UNIT VOLUME =    .9996       B =   345.54      P60 = 2.2300
    AREA =      .006589 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

*
* BASIN F
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.006543 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 =   15.499    CFS   UNIT VOLUME =    .9987       B =   526.28      P60 = 2.2300
    AREA =      .003926 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
    UNIT PEAK =   6.7844    CFS   UNIT VOLUME =    .9984       B =   345.54      P60 = 2.2300
    AREA =      .002617 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

*
* BASIN G
*
COMPUTE NM HYD       ID=7 HYD NO=100.7 AREA=0.002083 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 =   4.9343    CFS   UNIT VOLUME =    .9969       B =   526.28      P60 = 2.2300
    AREA =      .001250 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
    UNIT PEAK =   2.1598    CFS   UNIT VOLUME =    .9940       B =   345.54      P60 = 2.2300
    AREA =      .000833 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

*
* BASIN H
*
COMPUTE NM HYD       ID=8 HYD NO=100.8 AREA=0.004622 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 =   10.949    CFS   UNIT VOLUME =    .9984       B =   526.28      P60 = 2.2300
AREA =      .002773 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
UNIT PEAK =   4.7925    CFS   UNIT VOLUME =    .9976       B =   345.54      P60 = 2.2300
AREA =      .001849 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

*
* BASIN I
*
COMPUTE NM HYD      ID=9 HYD NO=100.9 AREA=0.006597 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 =   15.627    CFS   UNIT VOLUME =    .9987       B =   526.28      P60 = 2.2300
AREA =      .003958 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
UNIT PEAK =   6.8404    CFS   UNIT VOLUME =    .9984       B =   345.54      P60 = 2.2300
AREA =      .002639 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

*
* BASIN J
*
COMPUTE NM HYD      ID=10 HYD NO=100.10 AREA=0.001837 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 =   4.3515    CFS   UNIT VOLUME =    .9969       B =   526.28      P60 = 2.2300
AREA =      .001102 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

K =   .122335HR    TP =   .133300HR    K/TP RATIO =   .917739     SHAPE CONSTANT, N =  3.857355
UNIT PEAK =   1.9048    CFS   UNIT VOLUME =    .9933       B =   345.54      P60 = 2.2300
AREA =      .000735 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

*
ADD HYD             ID=11 HYD NO=111.10 ID=2 ID=3
*
ADD HYD             ID=12 HYD NO=112.10 ID=4 ID=11
*
ADD HYD             ID=13 HYD NO=113.10 ID=5 ID=6
*
ADD HYD             ID=14 HYD NO=114.10 ID=12 ID=13
*
ADD HYD             ID=15 HYD NO=115.10 ID=8 ID=9
*
ADD HYD             ID=16 HYD NO=116.10 ID=14 ID=15
*
ADD HYD             ID=17 HYD NO=117.10 ID=10 ID=16
```

```
*
ADD HYD              ID=18 HYD NO=118.10 ID=1 ID=7
*
ADD HYD              ID=19 HYD NO=119.10 ID=17 ID=18
ROUTE RESERVOIR      ID=20 HYD NO=501.1 INFLOW ID=19 CODE=24
                     OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                         0.00              0.00000       5021.61
                        85.12              0.05677       5024.61
                       147.43              0.10093       5025.61
                       190.33              0.15770       5026.61
                       225.20              0.22709       5027.61
                       255.35              0.30910       5028.61
                       282.30              0.40372       5029.61
                       306.90              0.51096       5030.61
                       329.66              0.63082       5031.61
                       350.95              0.76329       5032.61
                       371.02              0.90837       5033.61
                       390.06              1.06608       5034.61
                       408.21              1.23640       5035.61
                       432.18              1.49410       5037.00

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

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

   .00        .00   5021.61      .000       .00
   .80       6.49   5021.83      .004      6.37
  1.60     175.13   5026.83      .173    197.98
  2.40      11.08   5022.01      .008     11.31
  3.20       3.15   5021.72      .002      3.17
  4.00       2.23   5021.69      .001      2.23
  4.80       2.07   5021.68      .001      2.08
  5.60       2.09   5021.68      .001      2.09
  6.40        .18   5021.62      .000       .18
 PEAK DISCHARGE =      237.784 CFS - PEAK OCCURS AT HOUR    1.53
 MAXIMUM WATER SURFACE ELEVATION =     5028.027
 MAXIMUM STORAGE =          .2613 AC-FT      INCREMENTAL TIME=     .033330HRS

*
*****************************************************************
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 17:05:44
```

CITY OF
Albuquerque
Public Works Department

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

April 4, 1997

Ronald Bohannan
Tierra West Development
4421 McLeod Rd. NE Suite D
Albuquerque, New Mexico 87109

RE: DRAINAGE PLAN FOR BERRY TOWN (L23-D24) ENGINEER'S STAMP DATED 3/19/97

Dear Mr. Bohannan:

Based on the information provided on your March 20,1997 submittal, listed are some concerns that will need to be addressed prior to final approval:

1. Check your street capacity using the figures from the DPM.

2. What mechanism allows you to pond your developed run-off within the Public R/W?

3. You are proposing to grade outside the property limits, you must obtain permission from the proper agency.

4. Unclear as to how you propose to drain the southerly Townhouses over the slope and onto the R/W.

5. How do you propose to convey the runoff towards the 5x5 CCB?

If I can be of further assistance, please feel free to contact me 924-3986.

C: Andrew Garcia
File

Sincerely

Bernie J. Montoya CE
Engineering Associate

DRAINAGE INFORMATION SHEET

New

PROJECT TITLE: *Berry Town* **ZONE ATLAS/DRNG. FILE #:** L-23 D24

DRB #: _____ **EPC #:** *Z-96-25* **WORK ORDER #:** _____

LEGAL DESCRIPTION: Tract B, Block 2 & Tract C Block 7 of Wells Sandia Manor

CITY ADDRESS: _____

ENGINEERING FIRM: TIERRA WEST DEV. MAGT. SER. **CONTACT:** RONALD R. BOHANNAN OR SHAHAB BIAZAR

ADDRESS: 4421 McLeod Rd. NE Suite D, 87109 **PHONE:** (505) 883-7592

OWNER: Heights Reality Ltd. **CONTACT:** Tim Eichenberg

ADDRESS: 1305 San Pedro, NE, Alb., NM 87110 **PHONE:** (505) 265-7555

ARCHITECT: _____ **CONTACT:** _____

ADDRESS: _____ **PHONE:** _____

SURVEYOR: Precision Surveys **CONTACT:** Larry Medrano

ADDRESS: 2929 Coors Blvd. Suite 105 NW, 87120 **PHONE:** (505) 839-0569

CONTRACTOR: _____ **CONTACT:** _____

ADDRESS: _____ **PHONE:** _____

TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- X GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION
- ___ OTHER

PRE-DESIGN MEETING:

- ___ YES
- ___ NO
- ___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SKETCH PLAN APPROVAL
- X PRELIMINARY PLAT APPROVAL
- X 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
- X GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S. A. D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ *OTHER*

RECEIVED
MAR 20 1997
HYDROLOGY SECTION

DATE SUBMITTED: *03/19/97*

BY: *SHAHAB BIAZAR*

DRAINAGE REPORT
FOR

Berry Town

Prepared by:

RECEIVED
MAR 20 1997
HYDROLOGY SECTION

Tierra West Development Management Services
4421 McLeod Rd., NE, Suite D
Albuquerque, New Mexico 87109

Prepared for:

Tim Eichenberg
Heights Reality Ltd.
1305 San Pedro, NE
Albuquerque, New Mexico 87110

March 19, 1997

I certify that this report was prepared under my supervision, and I am a registered professional engineer in the state of New Mexico in good standing.

RONALD RAY BOHANNAN
NEW MEXICO
7868
REGISTERED PROFESSIONAL ENGINEER

Ronald R. Bohannan
PE No. 7868

Job No 960011

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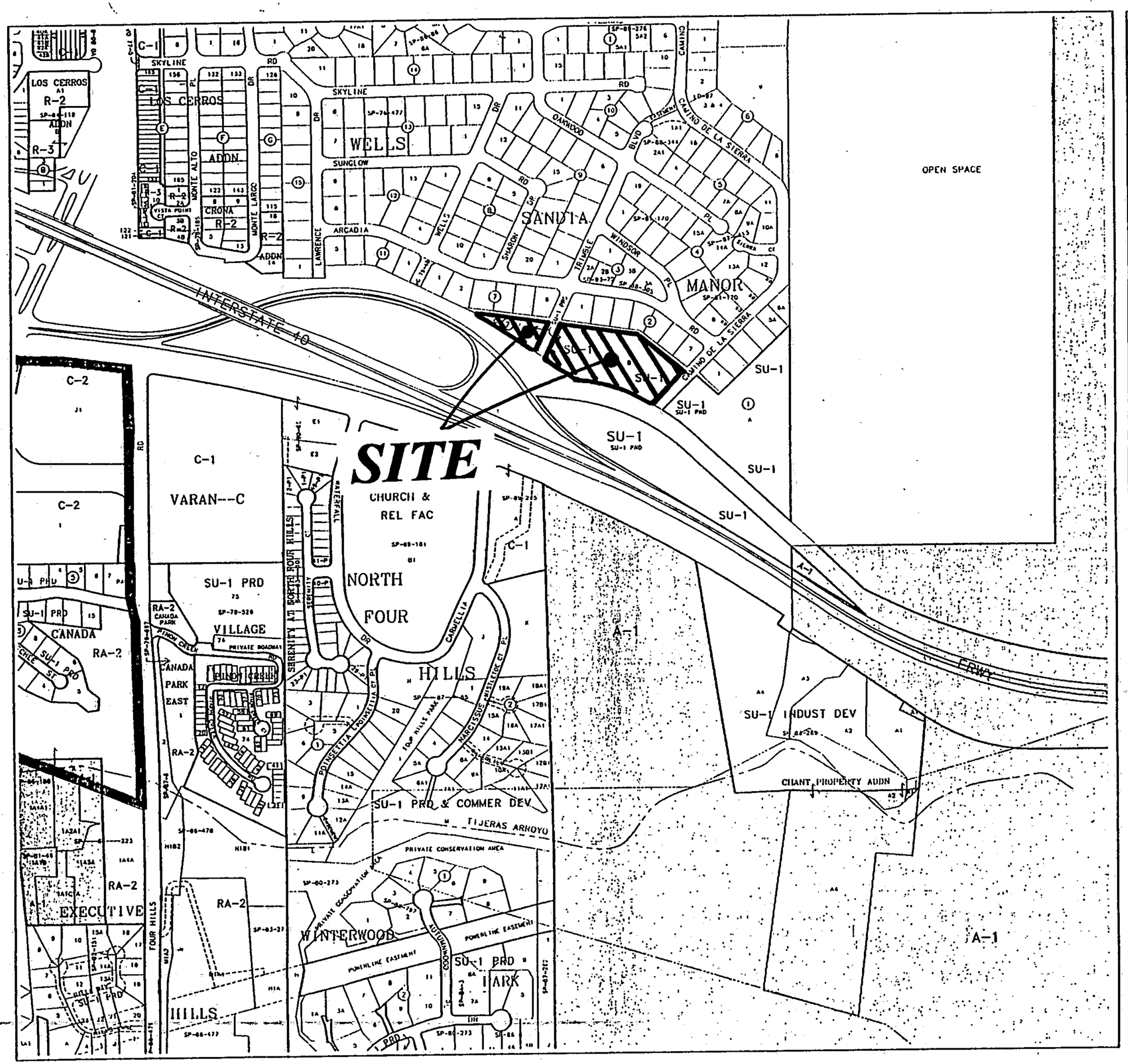
MAP POCKET

Grading And Drainage Plan
Overall Basin Layout



SCALE IN FEET

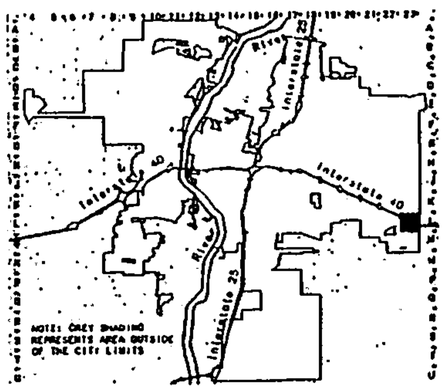
250 0 500 1000

PHOTOCOPY--NOT TO SCALE

North

A Albuquerque G Geographic I Information S System
AGIS of Albuquerque

© Planning Department
Map Amended through September 13, 1994



LEGAL DESCRIPTION

T10N

R4E

SEC 20

UNIFORM PROPERTY CODE

1-023-066

L-23-Z

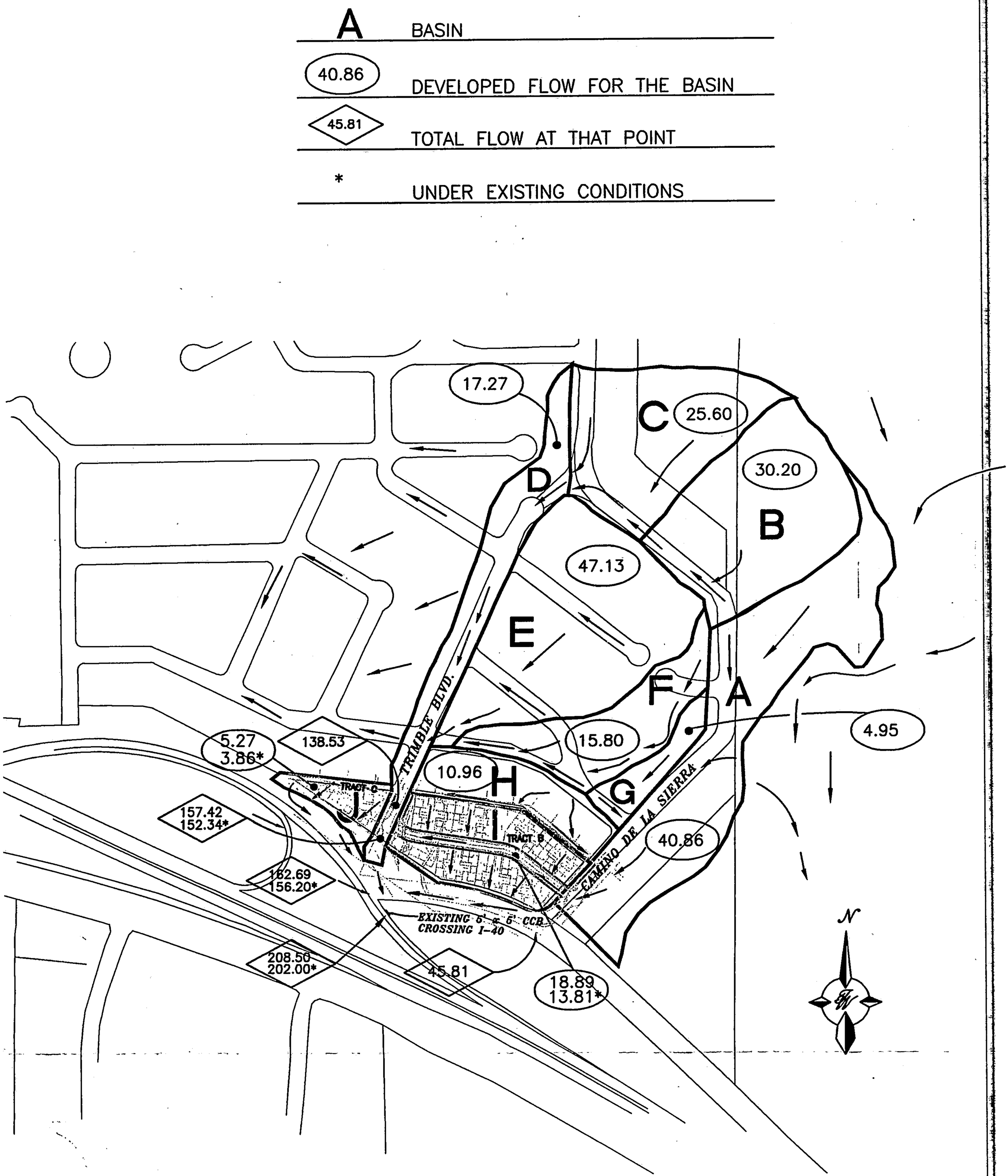
INTRODUCTION/LOCATION

Tierra West Development Management Services on behalf of Heights Realty Ltd. has prepared this drainage report for the purpose of analyzing a proposed 42 unit townhouse development. We are requesting that this report be reviewed for Preliminary Plat, Site Plan, and Grading and Drainage Plan approval. The legal description is Tract B, Block 2 and Tract C, Block 7 of Wells Sandia Manor. The project is entitled Berry Town, and is located half a block south of Arcadia Road and on the west side of Camino de La Sierra. See attached Vicinity Map (L-23) for exact site location. The total area consists of 4.23 acres, with Tract B containing 2.68 acres and Tract C containing 1.55 acres. The purpose of this report is to prepare a drainage management plan and grading plan to build the 42 town homes.

EXISTING CONDITIONS

The site is currently undeveloped sloping from north to south between grades 1 to 10 percent slope. All of the immediate offsite areas drain to the two existing streets. The upland flow has been shown on the following exhibit (Overall Basin Layout). The offsite flows drain south through both Trimble Boulevard and Camino de La Sierra. The flows are contained within the street and do not impact the project. The following describe the existing on-site and offsite runoff.

- A portion of Basin H (from the rear yards of the existing houses) drains to the alley along the north side of Tract B. The alley then drains west and east to Trimble Boulevard and Camino de La Sierra.
- Basin A and G drain along the east edge of the property. Runoff due east of the site,



OVERALL BASIN LAYOUT

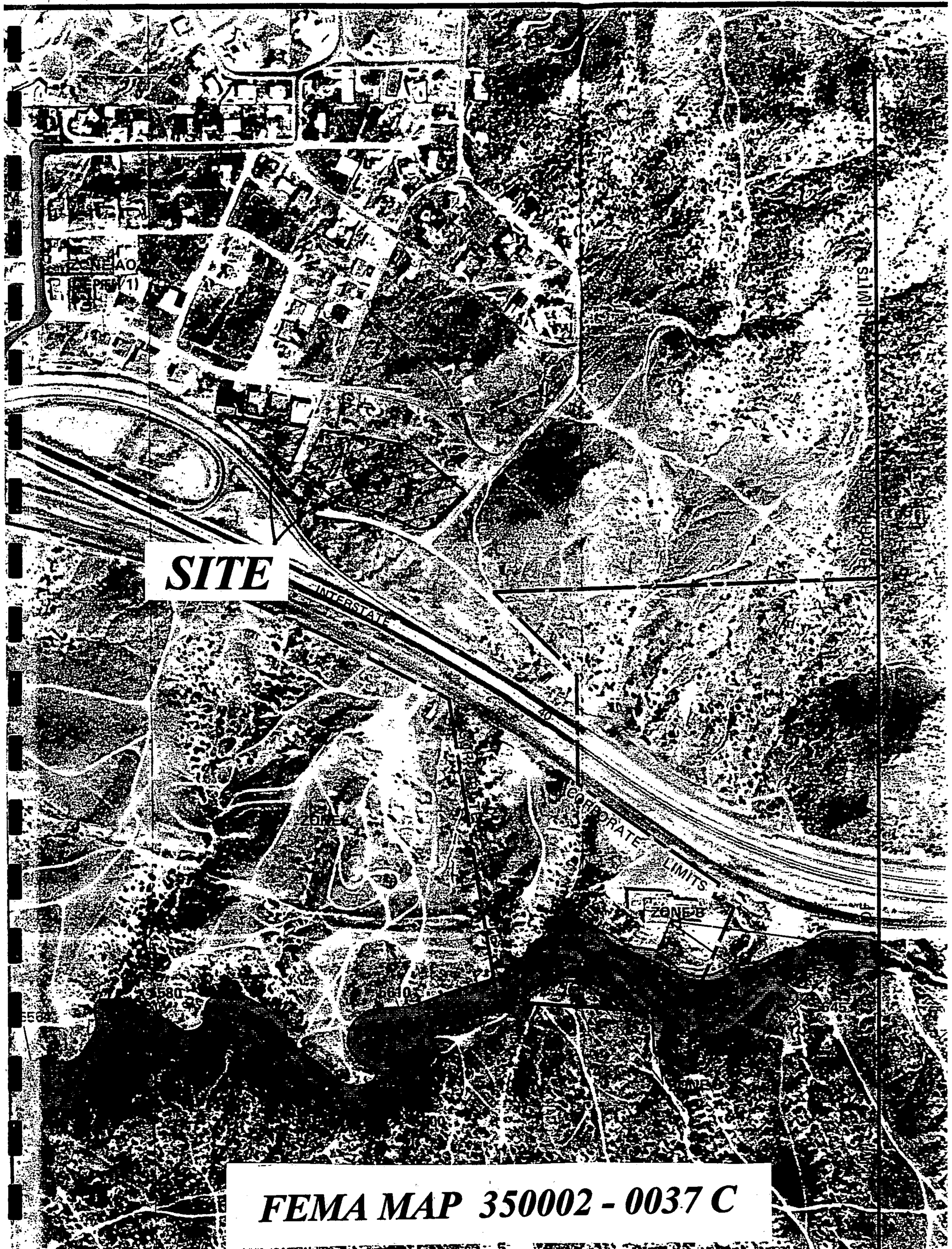
shown as Basin A (with runoff of 40.86 cfs), drains south to Camino de La Sierra. Basin G (with runoff of 4.95 cfs) contributes to basin A. Both Basins A and G, via Camino de La Sierra, drain to an existing concrete channel. From that point the runoff drains, via an earthen drainage swale along the south end of Tract B, to an existing culvert which routes the runoff across Interstate 40.

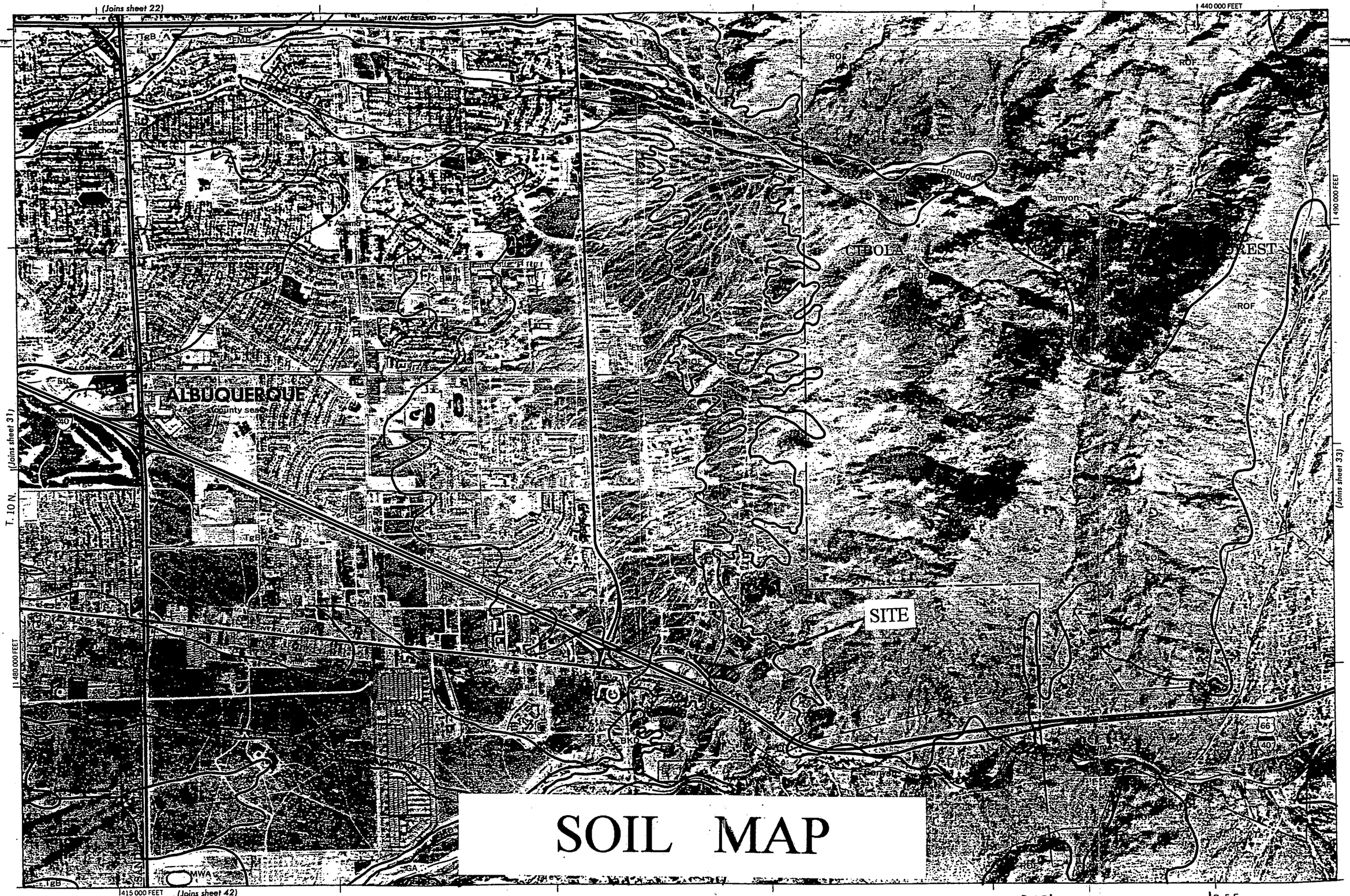
- Tract B falls within Basin I and drains to Trimble Boulevard at a flow rate of 13.81 cfs.
- Tract C falls within Basin J. This basin drains south and east at a flow rate of 3.86 cfs to an existing concrete culvert, and from there drains across Interstate 40 along with the rest of the runoff from the offsite basins.
- Offsite Basins B, C, D, E, F, and H drain to Trimble Boulevard. Trimble Boulevard conveys the water south through the subdivision, at a rate of 138.53 cfs, connecting to the existing culvert crossing I-40. These flows along with the flows from Basins A, G, I, and J meet at this culvert and cross I-40 with a combined flow rate of 156.20 cfs.

Please find the "Overall Basin Layout" located in the map pocket for the basin locations and existing conditions.

FEMA Map and Soil Conditions

The site is located within FEMA MAP panel # 350002-00037 C as shown on the attached excerpt. The map indicates that the site does not lie within a 100-year flood plain. Based on sheet number 32 of the Soil Conservation Service Soil Survey of Bernalillo County (see attached exhibit),


ZONE AO
(1)
SITE
INTERSTATE
40
CORPORATE LIMITS
ZONE B
580
640
645
FEMA MAP 350002 - 0037 C


(Joins sheet 22)
440 000 FEET
Eubank School
Embudo
Canyon
CIBOLA
ALBUQUERQUE
County seat
SITE
(Joins sheet 31)
(Joins sheet 33)
T. 10 N.
1 480 000 FEET
1 490 000 FEET
415 000 FEET
(Joins sheet 42)
R. 4 E.
R. 4½ E.
R. 5 E.
66
40

SOIL MAP

the site contains two types of soil classifications. Tract C contains the soil classification of Embudo-Tijeras complex (EtC). The Embudo soil shows up in drainage ways and depressions, which is present on low ridges in narrow undulations. The runoff is medium, and the hazard of water erosion is moderate for the soil series. Tract B falls within Tesajo-Millett stony sandy loams (Te). The Millett soil presents on ridges of alluvial fans. The Tesajo soil is located in swales adjacent or parallel to the intermittent streams and is subject to flooding. Runoff is medium, and the hazard of water erosion is moderate for the soil series.

ON-SITE DRAINAGE MANAGEMENT PLAN

The drainage patterns for Tract B and C will remain the same. Tract B (Basin I), will produce a developed runoff rate of 18.89 cfs, which will drain south and west to the existing culvert on the southwest side of the project. Tract C (Basin J), will produce a developed runoff rate of 5.27 cfs, which will drain south and east to the same existing culvert. The site is located at the bottom of the overall basin, and the runoff from this site will drain in and out of the storm sewer culvert before the upstream runoff reaches the existing culvert at the bottom. This development will increase the overall runoff by 6.49 cfs from 202.00 cfs to 208.50 cfs. Since the increase in the runoff for the overall basin is minimal, there will not be an impact on the storm sewer structures downstream.

The existing culvert is a 5' x 5' concrete box culvert which reduces half way through the crossing (under the Interstate) to a 4' x 3' concrete box culvert (prior to discharge to the other side of Interstate 40). The culvert has been analyzed under AHYMO for ponding condition at the entrance. The ponding depth at the inlet does not reach to the top of the culvert and illustrates that the culvert has much greater capacity than 208.50 cfs.

Trimble Boulevard and Camino de La Sierra have been analyzed for street runoff capacity. Do to the steepness and magnitude of the runoff in both of the streets, the water will go through a hydraulic jump in both streets. The grades are designed in such way so that the runoff will not encroach into the pads. The pad elevations near Trimble Boulevard and Camino de La Sierra are setup at ±2' above street elevations. A drainage swale will be built at the east end of Tract B (along Camino de La Sierra) to divert the runoff (which might jump the curb) back to the street. For the same reason a wall will be built along Trimble Boulevard (at the east end of the Tract C) to maintain the water within the street. The roads for the subdivision connecting to Trimble Boulevard and Camino de La Sierra are built high enough and will keep the runoff from entering the site. The runoff through the internal streets is very minimal and the streets have more than enough capacity to handle the runoff. See enclosed Grading and Drainage Plan (in the map pocket).

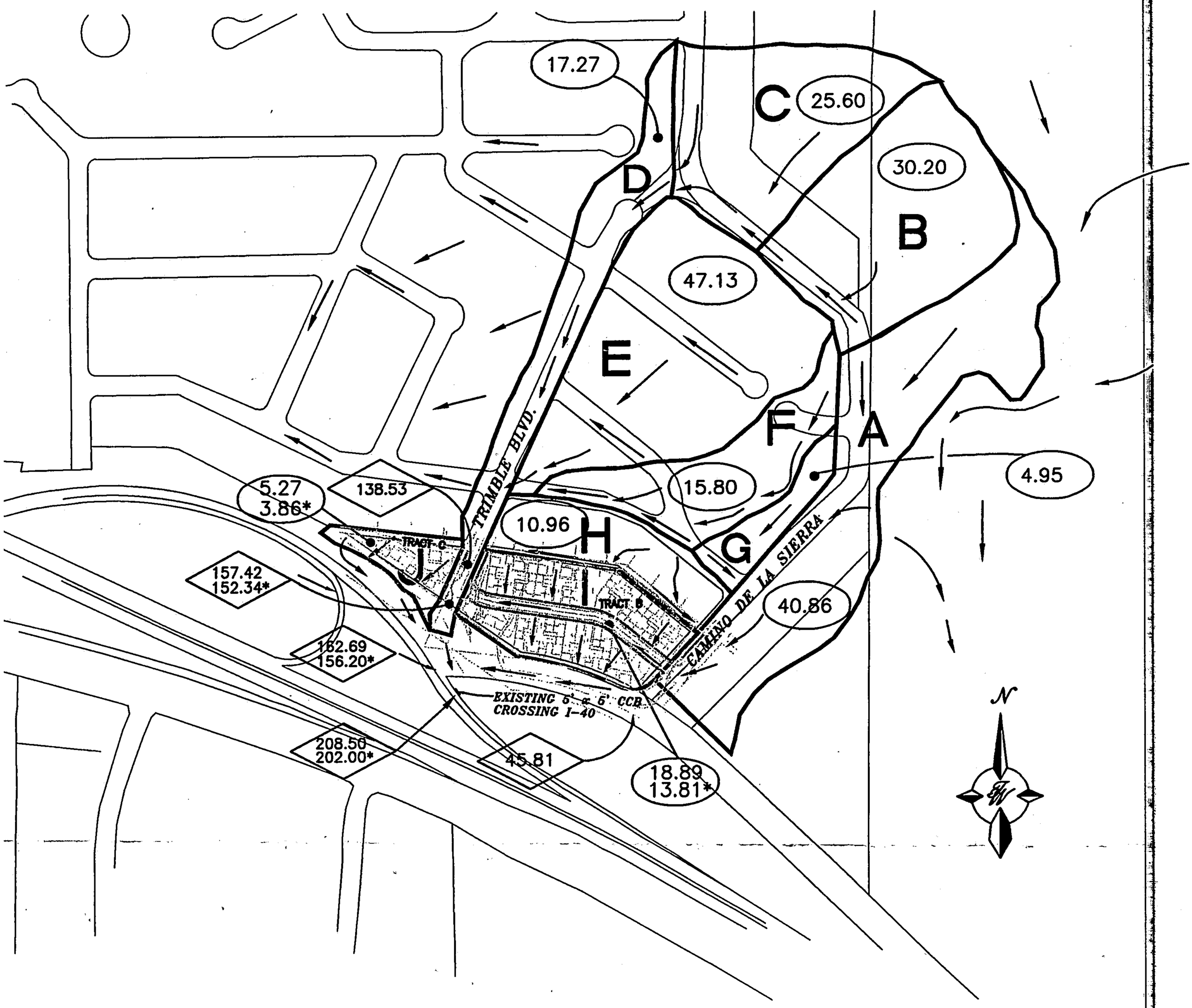
RUNOFF CALCULATIONS

Runoff calculations were performed using Albuquerque Metropolitan Arroyo Flood Control Authority's Hydrological Modeling and Drainage Criteria (AHYMO). See the following sheet for drainage input information and summary runoff tables for the 100-year and 10-year (6-hour) storm under proposed and existing conditions. Also see the AHYMO input files and summary output, as well as output file for runoff routing and ponding calculations.

Section I

Runoff Calculations

A	BASIN
40.86	DEVELOPED FLOW FOR THE BASIN
45.81	TOTAL FLOW AT THAT POINT
*	UNDER EXISTING CONDITIONS



OVERALL BASIN LAYOUT

RUNOFF CALCULATIONS

The site is @ Zone 4

LAND TREATMENT

D = 60 %, B = 20 %, C = 20 %

DEPTH (INCHES) @ 100-YEAR STORM

P_{60} = 2.23 inches

P_{360} = 2.90 inches

P_{1440} = 3.65 inches

DEPTH (INCHES) @ 10-YEAR STORM

P_{60} = 2.23 x 0.667
= 1.49 inches

P_{360} = 1.93

P_{1440} = 2.43

See the summary output from AHYMO calculations.

Also see the following summary tables.

OVERALL DRAINAGE BASINS

DRAINAGE BASINS

SUB-BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
A	481078.20	11.0440	0.017256
B	355581.67	8.1630	0.012755
C	301310.54	6.9171	0.010808
D	203208.17	4.6650	0.007289
E	459221.34	10.5423	0.016472
F	182411.13	4.1876	0.006543
G	58063.74	1.3330	0.002083
H	128845.17	2.9579	0.004622
I	183922.89	4.2223	0.006597
J	51199.46	1.1754	0.001837

BASINS RUNOFF CALCULATION RESULTS (UNDER PROPOSED CONDITIONS)

BASIN	Q-100 CFS	Q-10 CFS
A	40.86	23.65
B	30.20	17.48
C	25.60	14.82
D	17.27	10.00
E	39.00	22.58
F	15.50	8.97
G	4.95	2.87
H	10.96	6.34
I	18.89	11.89
J	5.27	3.32

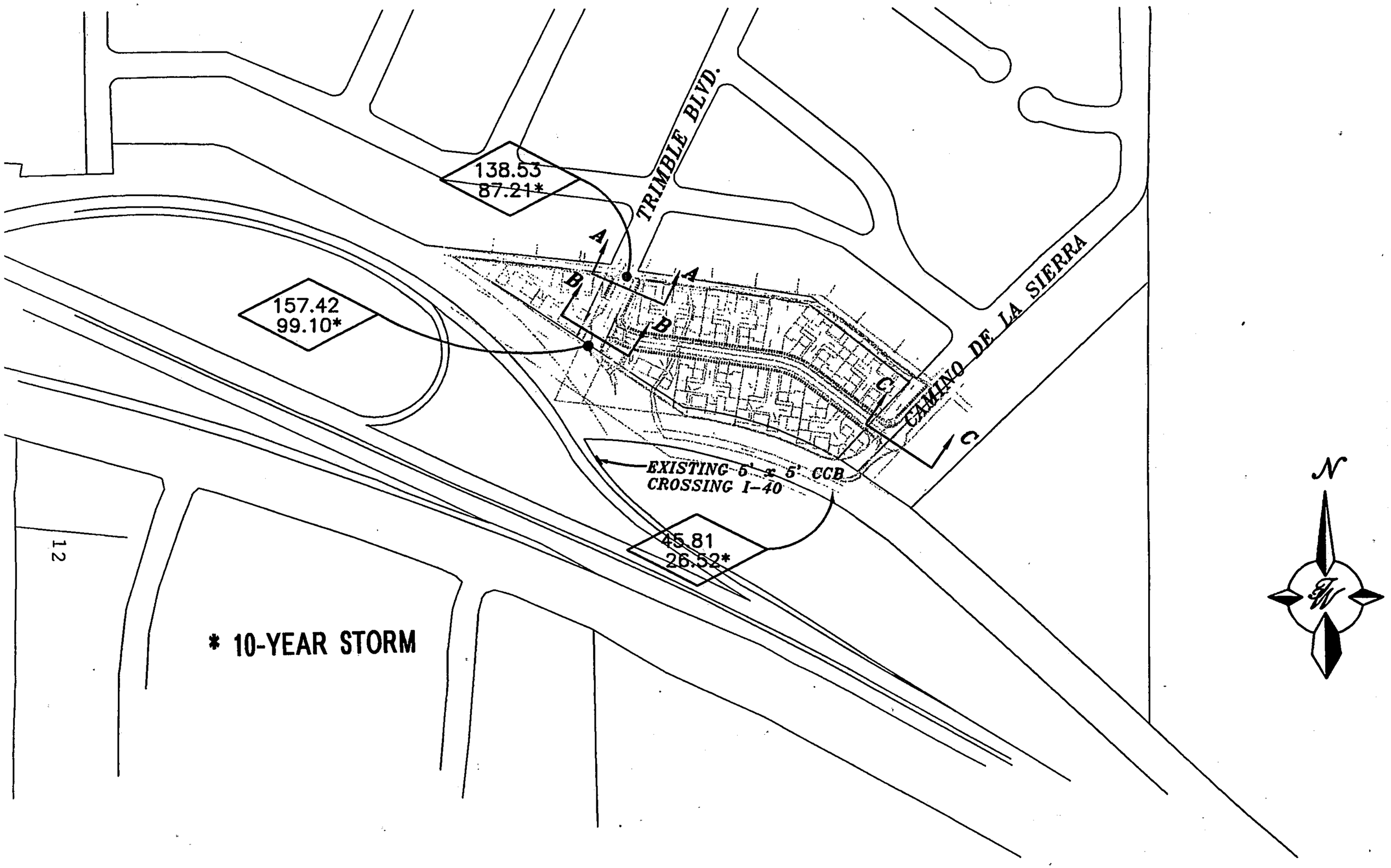
BASINS RUNOFF CALCULATION RESULTS (UNDER EXISTING CONDITIONS)

BASIN	Q-100 CFS	Q-10 CFS
A	40.86	23.65
B	30.20	17.48
C	25.60	14.82
D	17.27	10.00
E	39.00	22.58
F	15.50	8.97
G	4.95	2.87
H	10.96	6.34
I	13.81	7.36
J	3.86	2.06

SEE THE FOLLOWING SHEET FOR SAMPLE CALCULATION ON THE BASINS RUNOFF

Section II

Street Capacity Calculations



STREET CAPACITY ANALYSIS LOCATIONS

FINDING STREET CAPACITY – 32 F–F CROSS–SECTION FOR 8" CURB

$Q = 1.49/n\ A\ R\text{^}(2/3)\ S\text{^}½$
n = 0.017
SLOPE = STREET SLOPE
$R\text{^}2/3 = (A/P)\text{^}2/3$
D2 = WATER DEPTH AFTER HYDRAULIC JUMP = $D1/2\ [SQRT\ (1 + 8Fr^2) - 1]$
$E = V^2 / 2g$

HALF STREET CALCULATIONS

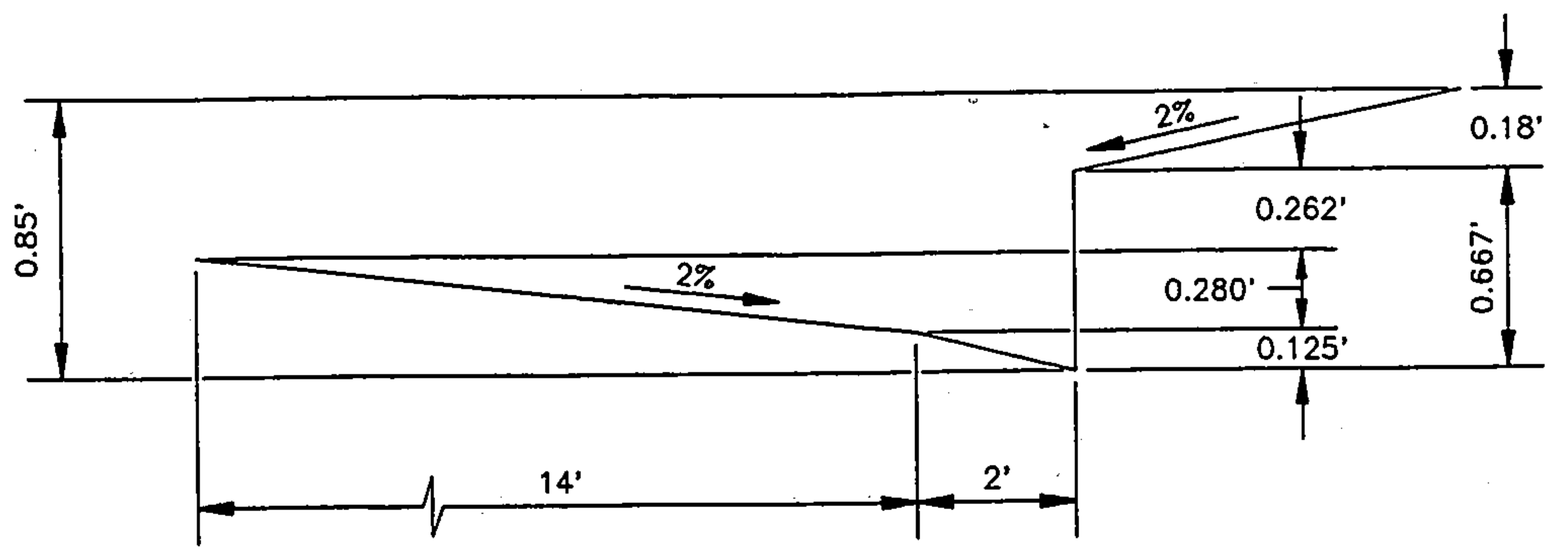
$@Y \leq 0.125$
$A1 = ½\ Y\ (Y/0.0625) = 8Y^2$
$P1 = SQRT[Y^2 + (Y/0.0625)^2] + Y = SQRT(257\ Y^2) + Y$

$@\ 0.125 < Y \leq 0.405$ & $Y1 = Y - 0.125$
$A2 = A1 + ½Y1\ (Y1/0.02) + 2Y1 = A1 + 25Y1^2 + 2Y1$
$P2 = P1 + SQRT[Y1^2 + (Y1/0.02)^2] + Y1 = P1 + SQRT(2501\ Y1^2) + Y1$

$@\ 0.405 < Y \leq 0.667$ & $Y2 = Y - 0.405$
$A3 = A2 + 16Y2 + ½Y2[Y2/(0.02)] = A2 + 16\ Y2$
$P3 = P2 + SQRT(Y2^2 + [Y2/(0.02)]^2) = P2 + Y2$

$@\ 0.667 < Y \leq 0.847$ & $Y3 = Y - 0.667$
$A4 = A3 + 16Y3 + ½Y3[Y3/(0.02)] = A3 + 16\ Y3 + 25\ Y3^2$
$P4 = P3 + SQRT(Y3^2 + [Y3/(0.02)]^2) = P3 + SQRT(2501\ Y3^2)$

SEE THE FOLLOWING SHEET FOR INPUT AND OUTPUT FILE FOR CALCULAITON RESULTS FROM COMPUTER PROGRAM USING THE EQUATION SHWON ABOVE



32' F–F
8" CURB

NOT TO SCALE

---------- INPUT FILE ----------

```
* SECTION A-A
** 100-YEAR STORM
100 138.53 0.04373
*   10-YEAR STORM
10 87.21 0.04373

* SECTION B-B
** 100-YEAR STORM
100 157.42 0.04373
*   10-YEAR STORM
10 99.10 0.04373

* SECTION C-C
** 100-YEAR STORM
100 45.81 0.04373
*   10-YEAR STORM
10 26.52 0.04373

999 0.00 0.00
```

---------- OUTPUT FILE ----------

---------- 32-FT F-F, 8" CURB STREET SECTION ----------

---------- STREET CAPACITY BASED ON 10-YR STORM ----------

FLOW CFS	SLOPE FT/FT	Dn FT	Vn FT/S	D*V FT»/S	Fr	E FT	D2 FT
87.21	.04373	.563	8.433	4.747	1.981	1.667	1.320
99.10	.04373	.589	8.869	5.223	2.037	1.810	1.427
26.52	.04373	.395	5.324	2.104	1.492	.835	.660

---------- END OF THE OUTPUT FILE ----------

---------- 32-FT F-F, 8" CURB STREET SECTION ----------

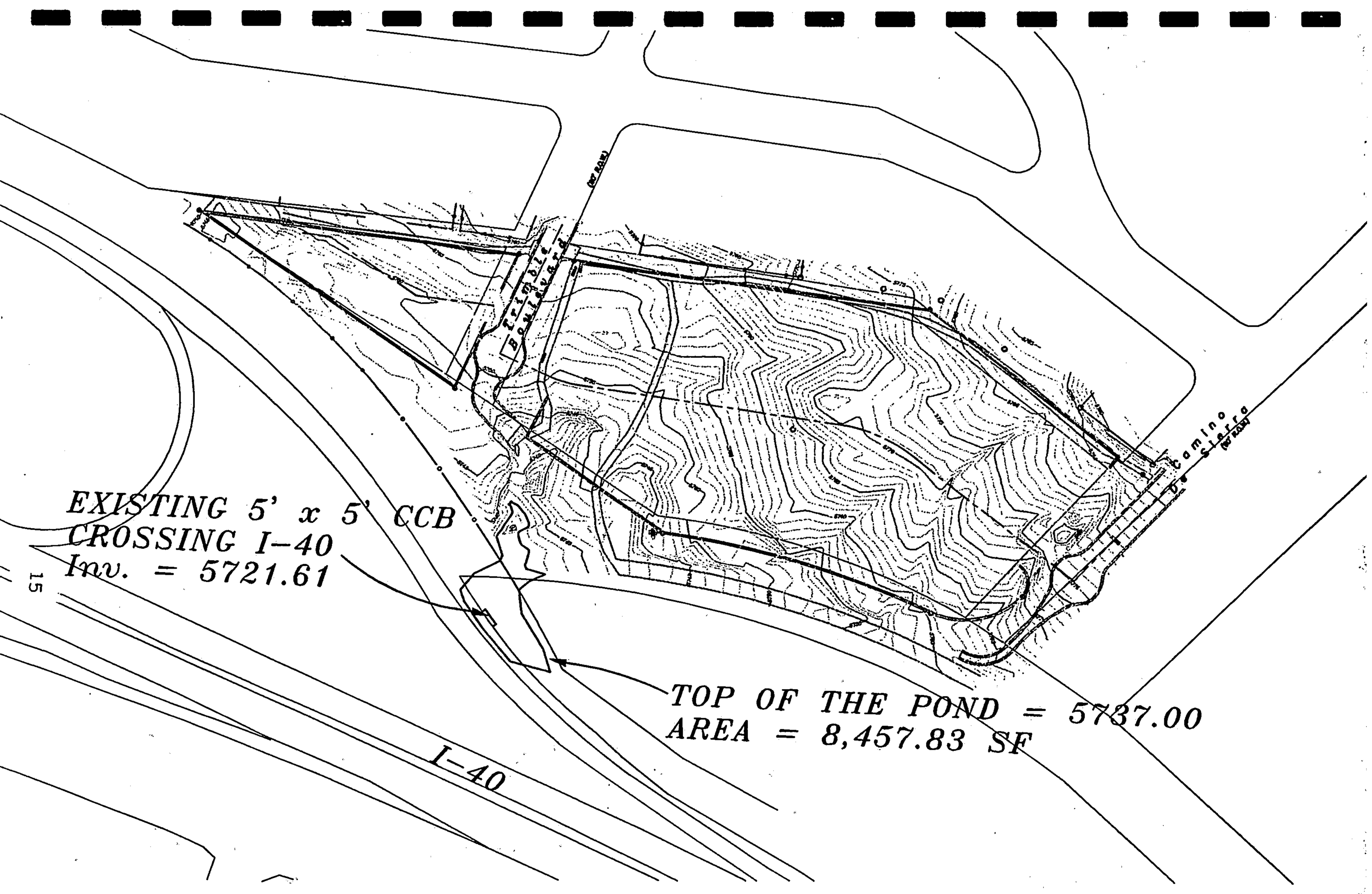
---------- STREET CAPACITY BASED ON 100-YR STORM ----------

FLOW CFS	SLOPE FT/FT	Dn FT	Vn FT/S	D*V FT»/S	Fr	E FT	D2 FT
138.53	.04373	.668	*****	6.754	2.178	2.254	1.752
157.42	.04373	.728	9.960	7.252	2.057	2.268	1.785
45.81	.04373	.459	6.535	2.998	1.700	1.122	.897

---------- END OF THE OUTPUT FILE ----------

Section III

Ponding Calculations



PONDING LOCATION

POND VOLUME CALCULATIONS

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

$$\text{Volume} = Ab * D + 0.5 * C * D^2$$

$$C = (At - Ab) / Dt$$

Ab =	0.00	SF	@ elev. 5721.61
At =	8457.83	SF	@ elev. 5737.00
Dt =	15.39	FT	
Area =	25.00	SF	(5' x 5' Concrete Culvert Box)
Middle of the culvert =	2.50	FT	
C =	549.57	FT / LF-DEPTH	

	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5721.61	0.00	0.00000	0.00
5724.61	3.00	0.05677	85.12
5725.61	4.00	0.10093	147.43
5726.61	5.00	0.15770	190.33
5727.61	6.00	0.22709	225.20
5728.61	7.00	0.30910	255.35
5729.61	8.00	0.40372	282.30
5730.61	9.00	0.51096	306.90
5731.61	10.00	0.63082	329.66
5732.61	11.00	0.76329	350.95
5733.61	12.00	0.90837	371.02
5734.61	13.00	1.06608	390.06
5735.61	14.00	1.23640	408.21
5737.00	15.39	1.49410	432.18

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

C = 0.60
A = (5' x 5') Concrete Culvert Box
g = 32.2
H = water depht, measured from the center of the culvert

PONDCALC.WK4

Section IV

AHYMO
Input/Output Files
(Under Proposed and Existing Conditions, 100-Year 10-Year, 6-Hour Storm)

```
*****************************************************************
*                BERRY TOWN   (OVERALL BASINS)                  *
*****************************************************************
*       100-YEAR,  6-HR STORM  (UNDER PROPOSED CONDITIONS)      *
*****************************************************************
*
START                TIME=0.0
*
* BASIN A
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.23 IN RAIN SIX=2.90 IN
                     RAIN DAY=3.65 IN DT=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.01725670 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN B
*
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.012755 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN C
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.010808 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN D
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.007289 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN E
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.016472 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN F
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.006543 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN G
*
COMPUTE NM HYD       ID=7 HYD NO=100.7 AREA=0.002083 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN H
*
COMPUTE NM HYD       ID=8 HYD NO=100.8 AREA=0.004622 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN I
```

```
*
COMPUTE NM HYD        ID=9 HYD NO=100.9 AREA=0.006597 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 J
*
COMPUTE NM HYD        ID=10 HYD NO=100.10 AREA=0.001837 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
*
ADD HYD               ID=11 HYD NO=111.10 ID=2 ID=3
*
ADD HYD               ID=12 HYD NO=112.10 ID=4 ID=11
*
ADD HYD               ID=13 HYD NO=113.10 ID=5 ID=6
*
ADD HYD               ID=14 HYD NO=114.10 ID=12 ID=13
*
ADD HYD               ID=15 HYD NO=115.10 ID=8 ID=9
*
ADD HYD               ID=16 HYD NO=116.10 ID=14 ID=15
*
ADD HYD               ID=17 HYD NO=117.10 ID=10 ID=16
*
ADD HYD               ID=18 HYD NO=118.10 ID=1 ID=7
*
ADD HYD               ID=19 HYD NO=119.10 ID=17 ID=18
*
*
* PONDING
*
ROUTE RESERVOIR       ID=20 HYD NO=501.1 INFLOW ID=19 CODE=24
                      OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                          0.00            0.00000         5021.61
                         85.12            0.05677         5024.61
                        147.43            0.10093         5025.61
                        190.33            0.15770         5026.61
                        225.20            0.22709         5027.61
                        255.35            0.30910         5028.61
                        282.30            0.40372         5029.61
                        306.90            0.51096         5030.61
                        329.66            0.63082         5031.61
                        350.95            0.76329         5032.61
                        371.02            0.90837         5033.61
                        390.06            1.06608         5034.61
                        408.21            1.23640         5035.61
                        432.18            1.49410         5037.00
*
*****************************************************************
*       10-YEAR,  6-HR STORM   (UNDER PROPOSED CONDITIONS)      *
*****************************************************************
*
START                 TIME=0.0
*
* BASIN A
*
RAINFALL              TYPE=1 RAIN QUARTER=0.0 IN
                      RAIN ONE=1.49 IN RAIN SIX=1.93 IN
                      RAIN DAY=2.43 IN DT=0.03333 HR
```

```
COMPUTE NM HYD      ID=1 HYD NO=100.1 AREA=0.01725670 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN B
*
COMPUTE NM HYD      ID=2 HYD NO=100.2 AREA=0.012755 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN C
*
COMPUTE NM HYD      ID=3 HYD NO=100.3 AREA=0.010808 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN D
*
COMPUTE NM HYD      ID=4 HYD NO=100.4 AREA=0.007289 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN E
*
COMPUTE NM HYD      ID=5 HYD NO=100.5 AREA=0.016472 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN F
*
COMPUTE NM HYD      ID=6 HYD NO=100.6 AREA=0.006543 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN G
*
COMPUTE NM HYD      ID=7 HYD NO=100.7 AREA=0.002083 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN H
*
COMPUTE NM HYD      ID=8 HYD NO=100.8 AREA=0.004622 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN I
*
COMPUTE NM HYD      ID=9 HYD NO=100.9 AREA=0.006597 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 J
*
COMPUTE NM HYD      ID=10 HYD NO=100.10 AREA=0.001837 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
*
ADD HYD             ID=11 HYD NO=111.10 ID=2 ID=3
*
```

```
ADD HYD              ID=12 HYD NO=112.10 ID=4 ID=11
*
ADD HYD              ID=13 HYD NO=113.10 ID=5 ID=6
*
ADD HYD              ID=14 HYD NO=114.10 ID=12 ID=13
*
ADD HYD              ID=15 HYD NO=115.10 ID=8 ID=9
*
ADD HYD              ID=16 HYD NO=116.10 ID=14 ID=15
*
ADD HYD              ID=17 HYD NO=117.10 ID=10 ID=16
*
ADD HYD              ID=18 HYD NO=118.10 ID=1 ID=7
*
ADD HYD              ID=19 HYD NO=119.10 ID=17 ID=18
*
*
*****************************************************************
*       100-YEAR,  6-HR STORM  (UNDER EXISTING CONDITIONS)      *
*****************************************************************
*
START                TIME=0.0
*
* BASIN A
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.23 IN RAIN SIX=2.90 IN
                     RAIN DAY=3.65 IN DT=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.01725670 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN B
*
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.012755 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN C
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.010808 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN D
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.007289 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN E
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.016472 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                     TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN F
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.006543 SQ MI
                     PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
```

```
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN G
*
COMPUTE NM HYD      ID=7 HYD NO=100.7 AREA=0.002083 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN H
*
COMPUTE NM HYD      ID=8 HYD NO=100.8 AREA=0.004622 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN I
*
COMPUTE NM HYD      ID=9 HYD NO=100.9 AREA=0.006597 SQ MI
                    PER A=0.00 PER B=75.00 PER C=15.00 PER D=10.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN J
*
COMPUTE NM HYD      ID=10 HYD NO=100.10 AREA=0.001837 SQ MI
                    PER A=0.00 PER B=75.00 PER C=15.00 PER D=10.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
ADD HYD             ID=11 HYD NO=111.10 ID=2 ID=3
*
ADD HYD             ID=12 HYD NO=112.10 ID=4 ID=11
*
ADD HYD             ID=13 HYD NO=113.10 ID=5 ID=6
*
ADD HYD             ID=14 HYD NO=114.10 ID=12 ID=13
*
ADD HYD             ID=15 HYD NO=115.10 ID=8 ID=9
*
ADD HYD             ID=16 HYD NO=116.10 ID=14 ID=15
*
ADD HYD             ID=17 HYD NO=117.10 ID=10 ID=16
*
ADD HYD             ID=18 HYD NO=118.10 ID=1 ID=7
*
ADD HYD             ID=19 HYD NO=119.10 ID=17 ID=18
*
*****************************************************************
*       10-YEAR,  6-HR STORM   (UNDER EXISTING CONDITIONS)      *
*****************************************************************
*
START               TIME=0.0
*
* BASIN A
*
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.49 IN RAIN SIX=1.93 IN
                    RAIN DAY=2.43 IN DT=0.03333 HR
COMPUTE NM HYD      ID=1 HYD NO=100.1 AREA=0.01725670 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN B
```

FORM DRWS: DRAINAGE REPORT / WATER & SEWER AVAILABILITY

THIS FORM IS REQUIRED WITH THE DEVELOPMENT REVIEW BOARD APPLICATION FOR MAJOR SUBDIVISIONS AND SITE DEVELOPMENT PLANS.

PROJECT NAME Berry Town

AGIS MAP # L-23

LEGAL DESCRIPTION Tract B, Block 2 & Tract C Block 7 of Wells Sandia Manor

X DRAINAGE REPORT

A drainage report, as per the Drainage Ordinance, was submitted to the City of Albuquerque Public Works Department, Hydrology Division (2nd floor Plaza del Sol) on 3-20-97 [date].

Tierra West Development Management Services — 3-20-97

Applicant / Agent — Date

Hydrology Division Representative — 3-20-97

Date

____ WATER AND SEWER AVAILABILITY STATEMENT

A Water and Sewer Availability Statement for this project was requested from the City of Albuquerque Utilities Development Division (2nd floor Plaza del Sol) on _____ [date].

Applicant / Agent — Date

Utilities Division Representative — Date

DRB# ____ - _____

```
*
COMPUTE NM HYD      ID=2 HYD NO=100.2 AREA=0.012755 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN C
*
COMPUTE NM HYD      ID=3 HYD NO=100.3 AREA=0.010808 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN D
*
COMPUTE NM HYD      ID=4 HYD NO=100.4 AREA=0.007289 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN E
*
COMPUTE NM HYD      ID=5 HYD NO=100.5 AREA=0.016472 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN F
*
COMPUTE NM HYD      ID=6 HYD NO=100.6 AREA=0.006543 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN G
*
COMPUTE NM HYD      ID=7 HYD NO=100.7 AREA=0.002083 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN H
*
COMPUTE NM HYD      ID=8 HYD NO=100.8 AREA=0.004622 SQ MI
                    PER A=0.00 PER B=40.00 PER C=40.00 PER D=20.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN I
*
COMPUTE NM HYD      ID=9 HYD NO=100.9 AREA=0.006597 SQ MI
                    PER A=0.00 PER B=75.00 PER C=15.00 PER D=10.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
* BASIN J
*
COMPUTE NM HYD      ID=10 HYD NO=100.10 AREA=0.001837 SQ MI
                    PER A=0.00 PER B=75.00 PER C=15.00 PER D=10.00
                    TP=-0.1333 HR MASS RAINFALL=-1
*
ADD HYD             ID=11 HYD NO=111.10 ID=2 ID=3
*
ADD HYD             ID=12 HYD NO=112.10 ID=4 ID=11
*
ADD HYD             ID=13 HYD NO=113.10 ID=5 ID=6
*
ADD HYD             ID=14 HYD NO=114.10 ID=12 ID=13
```

```
*
ADD HYD              ID=15 HYD NO=115.10 ID=8 ID=9
*
ADD HYD              ID=16 HYD NO=116.10 ID=14 ID=15
*
ADD HYD              ID=17 HYD NO=117.10 ID=10 ID=16
*
ADD HYD              ID=18 HYD NO=118.10 ID=1 ID=7
*
ADD HYD              ID=19 HYD NO=119.10 ID=17 ID=18
*
*****************************************************************
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =03/07/1997

INPUT FILE = D 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	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.900
COMPUTE NM HYD	100.10	-	1	.01726	40.86	1.407	1.52921	1.500	3.699	PER IMP= 20.00
COMPUTE NM HYD	100.20	-	2	.01276	30.20	1.040	1.52921	1.500	3.700	PER IMP= 20.00
COMPUTE NM HYD	100.30	-	3	.01081	25.60	.881	1.52921	1.500	3.700	PER IMP= 20.00
COMPUTE NM HYD	100.40	-	4	.00729	17.27	.594	1.52921	1.500	3.702	PER IMP= 20.00
COMPUTE NM HYD	100.50	-	5	.01647	39.00	1.343	1.52921	1.500	3.699	PER IMP= 20.00
COMPUTE NM HYD	100.60	-	6	.00654	15.50	.534	1.52921	1.500	3.702	PER IMP= 20.00
COMPUTE NM HYD	100.70	-	7	.00208	4.95	.170	1.52921	1.500	3.713	PER IMP= 20.00
COMPUTE NM HYD	100.80	-	8	.00462	10.96	.377	1.52921	1.500	3.705	PER IMP= 20.00
COMPUTE NM HYD	100.90	-	9	.00660	18.89	.734	2.08531	1.500	4.474	PER IMP= 60.00
COMPUTE NM HYD	100.10	-	10	.00184	5.27	.204	2.08531	1.500	4.486	PER IMP= 60.00
ADD HYD	111.10	2& 3	11	.02356	55.80	1.922	1.52919	1.500	3.700	
ADD HYD	112.10	4&11	12	.03085	73.07	2.516	1.52919	1.500	3.701	
ADD HYD	113.10	5& 6	13	.02302	54.50	1.877	1.52919	1.500	3.700	
ADD HYD	114.10	12&13	14	.05387	127.57	4.393	1.52919	1.500	3.700	
ADD HYD	115.10	8& 9	15	.01122	29.85	1.111	1.85617	1.500	4.157	
ADD HYD	116.10	14&15	16	.06509	157.42	5.504	1.58555	1.500	3.779	
ADD HYD	117.10	10&16	17	.06692	162.69	5.708	1.59927	1.500	3.798	
ADD HYD	118.10	1& 7	18	.01934	45.81	1.577	1.52919	1.500	3.701	
ADD HYD	119.10	17&18	19	.08626	208.50	7.285	1.58355	1.500	3.777	
ROUTE RESERVOIR	501.10	19	20	.08626	203.80	7.285	1.58355	1.533	3.691	AC-FT= .184
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.930
COMPUTE NM HYD	100.10	-	1	.01726	23.65	.724	.78702	1.500	2.141	PER IMP= 20.00
COMPUTE NM HYD	100.20	-	2	.01276	17.48	.535	.78702	1.500	2.142	PER IMP= 20.00
COMPUTE NM HYD	100.30	-	3	.01081	14.82	.454	.78702	1.500	2.142	PER IMP= 20.00
COMPUTE NM HYD	100.40	-	4	.00729	10.00	.306	.78702	1.500	2.143	PER IMP= 20.00
COMPUTE NM HYD	100.50	-	5	.01647	22.58	.691	.78702	1.500	2.141	PER IMP= 20.00
COMPUTE NM HYD	100.60	-	6	.00654	8.97	.275	.78702	1.500	2.143	PER IMP= 20.00
COMPUTE NM HYD	100.70	-	7	.00208	2.87	.087	.78702	1.500	2.150	PER IMP= 20.00
COMPUTE NM HYD	100.80	-	8	.00462	6.34	.194	.78702	1.500	2.145	PER IMP= 20.00
COMPUTE NM HYD	100.90	-	9	.00660	11.89	.434	1.23345	1.500	2.816	PER IMP= 60.00
COMPUTE NM HYD	100.10	-	10	.00184	3.32	.121	1.23345	1.500	2.823	PER IMP= 60.00
ADD HYD	111.10	2& 3	11	.02356	32.30	.989	.78699	1.500	2.142	
ADD HYD	112.10	4&11	12	.03085	42.30	1.295	.78699	1.500	2.142	
ADD HYD	113.10	5& 6	13	.02302	31.55	.966	.78699	1.500	2.142	
ADD HYD	114.10	12&13	14	.05387	73.85	2.261	.78699	1.500	2.142	
ADD HYD	115.10	8& 9	15	.01122	18.23	.628	1.04948	1.500	2.539	
ADD HYD	116.10	14&15	16	.06509	92.08	2.889	.83224	1.500	2.211	
ADD HYD	117.10	10&16	17	.06692	95.40	3.010	.84325	1.500	2.227	
ADD HYD	118.10	1& 7	18	.01934	26.52	.812	.78699	1.500	2.142	
ADD HYD	119.10	17&18	19	.08626	121.92	3.821	.83063	1.500	2.208	
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.900
COMPUTE NM HYD	100.10	-	1	.01726	40.86	1.407	1.52921	1.500	3.699	PER IMP= 20.00
COMPUTE NM HYD	100.20	-	2	.01276	30.20	1.040	1.52921	1.500	3.700	PER IMP= 20.00
COMPUTE NM HYD	100.30	-	3	.01081	25.60	.881	1.52921	1.500	3.700	PER IMP= 20.00
COMPUTE NM HYD	100.40	-	4	.00729	17.27	.594	1.52921	1.500	3.702	PER IMP= 20.00

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
COMPUTE NM HYD	100.50	-	5	.01647	39.00	1.343	1.52921	1.500	3.699	PER IMP= 20.00
COMPUTE NM HYD	100.60	-	6	.00654	15.50	.534	1.52921	1.500	3.702	PER IMP= 20.00
COMPUTE NM HYD	100.70	-	7	.00208	4.95	.170	1.52921	1.500	3.713	PER IMP= 20.00
COMPUTE NM HYD	100.80	-	8	.00462	10.96	.377	1.52921	1.500	3.705	PER IMP= 20.00
COMPUTE NM HYD	100.90	-	9	.00660	13.81	.451	1.28239	1.500	3.271	PER IMP= 10.00
COMPUTE NM HYD	100.10	-	10	.00184	3.86	.126	1.28239	1.500	3.283	PER IMP= 10.00
ADD HYD	111.10	2& 3	11	.02356	55.80	1.922	1.52919	1.500	3.700	
ADD HYD	112.10	4&11	12	.03085	73.07	2.516	1.52919	1.500	3.701	
ADD HYD	113.10	5& 6	13	.02302	54.50	1.877	1.52919	1.500	3.700	
ADD HYD	114.10	12&13	14	.05387	127.57	4.393	1.52919	1.500	3.700	
ADD HYD	115.10	8& 9	15	.01122	24.77	.828	1.38403	1.500	3.449	
ADD HYD	116.10	14&15	16	.06509	152.34	5.221	1.50417	1.500	3.657	
ADD HYD	117.10	10&16	17	.06692	156.20	5.347	1.49808	1.500	3.647	
ADD HYD	118.10	1& 7	18	.01934	45.81	1.577	1.52919	1.500	3.701	
ADD HYD	119.10	17&18	19	.08626	202.00	6.924	1.50505	1.500	3.659	
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.930
COMPUTE NM HYD	100.10	-	1	.01726	23.65	.724	.78702	1.500	2.141	PER IMP= 20.00
COMPUTE NM HYD	100.20	-	2	.01276	17.48	.535	.78702	1.500	2.142	PER IMP= 20.00
COMPUTE NM HYD	100.30	-	3	.01081	14.82	.454	.78702	1.500	2.142	PER IMP= 20.00
COMPUTE NM HYD	100.40	-	4	.00729	10.00	.306	.78702	1.500	2.143	PER IMP= 20.00
COMPUTE NM HYD	100.50	-	5	.01647	22.58	.691	.78702	1.500	2.141	PER IMP= 20.00
COMPUTE NM HYD	100.60	-	6	.00654	8.97	.275	.78702	1.500	2.143	PER IMP= 20.00
COMPUTE NM HYD	100.70	-	7	.00208	2.87	.087	.78702	1.500	2.150	PER IMP= 20.00
COMPUTE NM HYD	100.80	-	8	.00462	6.34	.194	.78702	1.500	2.145	PER IMP= 20.00
COMPUTE NM HYD	100.90	-	9	.00660	7.36	.212	.60289	1.500	1.744	PER IMP= 10.00
COMPUTE NM HYD	100.10	-	10	.00184	2.06	.059	.60289	1.500	1.751	PER IMP= 10.00
ADD HYD	111.10	2& 3	11	.02356	32.30	.989	.78699	1.500	2.142	
ADD HYD	112.10	4&11	12	.03085	42.30	1.295	.78699	1.500	2.142	
ADD HYD	113.10	5& 6	13	.02302	31.55	.966	.78699	1.500	2.142	
ADD HYD	114.10	12&13	14	.05387	73.85	2.261	.78699	1.500	2.142	
ADD HYD	115.10	8& 9	15	.01122	13.71	.406	.67870	1.500	1.909	
ADD HYD	116.10	14&15	16	.06509	87.55	2.667	.76833	1.500	2.102	
ADD HYD	117.10	10&16	17	.06692	89.61	2.726	.76378	1.500	2.092	
ADD HYD	118.10	1& 7	18	.01934	26.52	.812	.78699	1.500	2.142	
ADD HYD	119.10	17&18	19	.08626	116.13	3.538	.76898	1.500	2.103	
FINISH										