FINAL
DRAINAGE STUDY

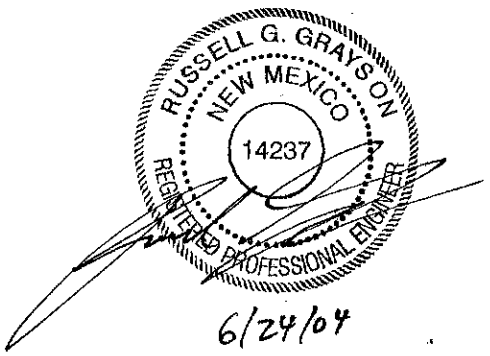
CABEZON REDEVLOPMENT
ASTANTE AT CABEZON SUBDIVISION

Rio Rancho Estates Unit 16
Rio Rancho, New Mexico

for

CURB NORTH, INC
5160 SAN FRANCISCO NE
ALBUQUERQUE, NEW MEXICO 87109

June 24, 2004



Approved DPW 8/20/04 -pmm

Prepared By:

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DRAINAGE STUDY
FOR
ASTANTE AT CABEZON SUBDIVISION

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DRAINAGE STUDY
FOR
ASTANTE AT CABEZON SUBDIVISION

PURPOSE

This drainage report addresses the storm water runoff and proposed infrastructure needed to convey the runoff from the Astante at Cabezon Subdivision of the Cabezon Redevelopment. This report will also demonstrate that the development of this project complies with the approved Master Drainage Plan for the Cabezon Redevelopment.

PROJECT LOCATION AND DESCRIPTION

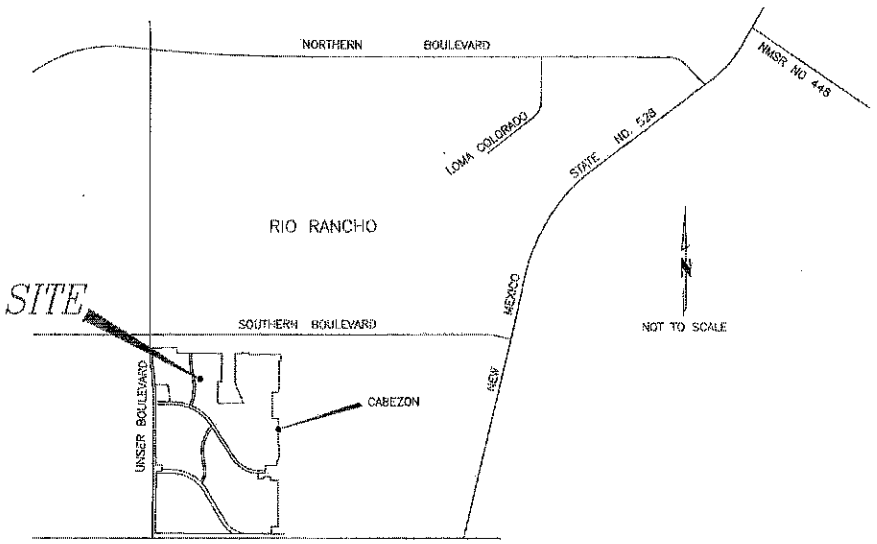


Exhibit 1 – Vicinity Map

The project is located at the southeast corner of the intersection of Unser Boulevard and Southern Boulevard within Unit 16 of Rio Rancho Estates, City of Rio Rancho; see **Exhibit** 1. The site is currently undeveloped and in its natural condition. Unser Boulevard is paved to the west of the development. Southern Boulevard is paved to the north of the development. The development to bound by Western Hills Street to the west and Cabezon Road to the south that are both currently under construction.

ZONING AND PLATTING STATUS

The zoning for this project is R-4, Single Family Residential, of approximately 68 acres. The project is located in Tract 4 within Rio Rancho Estates Unit 16. The Preliminary Plat for this project was approved at the June 8, 2004 City of Rio Rancho Planning and Zoning Board Meeting.

This report is an attachment to the Final Plat and Infrastructure Plan Submittal for this project.

FLOOD HAZARD ZONES

Per FEMA's Flood Insurance Rate Map (FIRM) 35043C0894 C, dated July 16, 1996, no portion of the project site is located within a FEMA 100-year Flood Hazard Zone. See **Appendix A-1 and A-2.** Wilson & Co. is under contract with the developer for the corresponding CLOMR and LOMR needed to eliminate the existing flood zone. The CLOMR has been submitted to FEMA by Wilson & Co.

JURISDICTIONS OF PUBLIC AGENCIES

Local
This project is located entirely within the City of Rio Rancho (CoRR) Municipal Limits and is therefore within their jurisdiction and must comply with the City's development requirements.

Regional
This project is located within the jurisdiction of the Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA) and is therefore subject to their review.

RELATED REPORTS

The ***Cabezon Communities Phase I Drainage Management Plan*** prepared by Wilson & Company, Engineers & Architects and dated April 2004, provides an overall master plan for this area. This report has been approved by the City and SSCAFCA. It determined the pre-developed drainage patterns of this development and the design parameters for the buildout of the subdivision. However, that study only gave a conceptual design for the Astante at Cabezon Subdivision.

METHODOLOGY

This drainage study is based on the procedures outlined in the CoRR's "Grading and Drainage Design Requirements and Policies for Land Development in Rio Rancho (Revised 3-18-93)." That policy states, "The minimum criteria for hydrology and hydraulic calculations and design shall be as described in the Development Process Manual Section 22.2, City of Albuquerque (CoA DPM), latest revision, or the AHYMO version of the ARS HYMO Computer Program." This drainage study follows the

procedures outlined in both the CoA DPM Section 22.2 and the AHYMO Computer Program.

PRECIPITATION

This project will not utilize an on-site detention pond. Storm water will be conveyed through an underground pipe system to main trunk lines in Western Hills Road and Cabezon Road to off-site detention ponds. The 100-yr 24-hr design storm was used for this analysis. The AHYMO Computer Program requires the 1, 6 and 24-hour precipitation values. These values were obtained from the ***Cabezon Communities Phase I Drainage Management Plan*** and are shown on **Table 1**.

Table 1
Precipitation Values

Return Period (yrs)	24 hr Rainfall (in)	6 hr Rainfall (in)	1 hr Rainfall (in)
100	2.7	2.2	1.8

LAND TREATMENTS

The land treatments used in the AHYMO Computer model are as described by Table A-4 of the CoA DPM Section 22.2, 1993 revision, and are summarized in **Table 2**.

Table 2
Land Treatment Classifications

Treatment	Land Condition
A	Soil uncompacted by human activity with 0 to 10 percent slopes. Native grasses, weeds and shrubs in typical densities with minimal disturbance to grading, groundcover and infiltration capacity. Croplands. Unlined Arroyos.
B	Irrigated lawns, parks and golf courses with 0 to 10 percent slopes. Soil uncompacted by human activity with slopes greater than 10 percent and less than 20 percent.
C	Soil compacted by human activity. Unpaved parking, roads and trail. Most vacant lots. Gravel or rock on plastic (desert landscaping)
D	Impervious areas, pavement and roofs.

Table A-5 of the CoA DPM Section 22.2, 1993 revision summarizes the Percent of Treatment D with a corresponding land use. Since this project site is a Single Family Residential Subdivision, the corresponding Percent of Treatment D is determined by the equation: 7*((N*N)+(5*N))^0.5 where, N=units/acre. The project is divided into two development areas; Astante at Cabezon and Astante Estates at Cabezon. Land treatments were calculated for each area as follows:

Astante at Cabezon (Unit 4A):

(N=200units/39.38acres=5.07), therefore %D=50. The remaining was split between Treatment B and C. Therefore the developed conditions Land Treatments for this site are as follows: **%A = 0, %B = 25, %C = 25, and %D = 50.**

Astante Estates at Cabezon (Unit 4B):

(N=127units/28.44acres=4.5), therefore %D=46. The remaining was split between Treatment B and C. Therefore the developed conditions Land Treatments for this site are as follows: **%A = 0, %B = 27, %C = 27, and %D = 46.**

Table 3
Land Treatments

Dev Basin On-Site	AREA (sq. ft.)	AREA AC.	AREA SQ MI	TYPE LAND USAGE	DEVELOPED CONDITIONS %A	%B	%C	%D
401	199427	4.58	0.00715	LOW DENSITY RESIDENTIAL	0.0	25.0	25.0	50.0
402	71373	1.64	0.00256	LOW DENSITY RESIDENTIAL	0.0	25.0	25.0	50.0
403	425020	9.76	0.01525	LOW DENSITY RESIDENTIAL	0.0	25.0	25.0	50.0
404	446335	10.25	0.01601	LOW DENSITY RESIDENTIAL	0.0	25.0	25.0	50.0
405	458633	10.53	0.01645	LOW DENSITY RESIDENTIAL	0.0	25.0	25.0	50.0
406	114807	2.64	0.00412	LOW DENSITY RESIDENTIAL	0.0	25.0	25.0	50.0
407	1219345	27.99	0.04374	LOW DENSITY RESIDENTIAL	0.0	27.0	27.0	46.0
410	355893	8.17	0.01277	LOW DENSITY RESIDENTIAL	0.0	27.0	27.0	46.0
411	264924	6.08	0.00950	LOW DENSITY RESIDENTIAL	0.0	27.0	27.0	46.0
412	393717	9.04	0.01412	LOW DENSITY RESIDENTIAL	0.0	27.0	27.0	46.0
413	224753	5.16	0.00806	LOW DENSITY RESIDENTIAL	0.0	27.0	27.0	46.0

The Land Treatments for the Off-Site Basins Off_3A, 3B, 3C and 3D were taken directly from ***Cabezon Communities Phase I Drainage Management Plan.***

STREET AND INLET CAPACITY CALCULATIONS

Both street and inlet capacities were calculated using the plates in the *City of Albuquerque DPM.* Astante Subdivision at Cabezon incorporated flow splits into the creation of each actual drainage basin. See Appendix C for additional information.

STORM DRAIN HYDRAULICS

Storm Drains were modeled using Haestad Method's "StormCad" software (see Appendix C). Headlosses were calculated using the procedures outlined in the *City of Albuquerque DPM.* The main line of the storm drain was designed based on the routed peak discharges as indicated in the AHYMO model and the storm drain design is

included in Appendix C. The lateral lines into the main system were designed for the peak flow for each particular line without reference to any routing in the main line.

PRE-DEVELOPMENT CONDITIONS

This project site is in its pre-development condition with existing natural vegetation throughout the site. The project site naturally slopes from northwest to the southeast across the site. The site is bordered by Western Hills Road to the west and Southern Boulevard to the north. Southern Blvd. is paved with curb and gutter. The storm water sheet flows across the site and concentrates into the unnamed arroyo at the southwest portion of 4B. The runoff discharges through Unit 16 of Rio Rancho Estates, crosses into Bernalillo County and into the Black Dam.

There is no significant off-site storm water that discharge onto the subject property. The Unser Channel intercepts off-site runoff from the west, and the runoff from Tract 3 is partially intercepted by Western Hills Road. The only off-site storm water that comes onto Tract 4 is from the ½ Acre Commercial and Residential lots to the north of the subdivision between Southern Blvd. and the northern boundary of Tract 4.

Please refer to the ***Cabezon Communities Phase I Drainage Management Plan*** for further information and analysis of the pre-developed condition.

ULTIMATE DEVELOPED CONDITIONS

Drainage Patterns

As indicated in **Exhibit 2**, the onsite drainage design consists of thirteen drainage basins (Basins 401-413). Basins Off_3A–3D are modeled from the ***Cabezon Communities Phase I Drainage Management Plan*** prepared by Wilson & Company, Engineers & Architects.

TRACT 4 – ASTANTE AT CABEZON:

Basin 401 accepts street flows from the offsite basins immediately north. This basin is designed to convey fully developed street flows into a storm drain system proposed in Basin 402. The storm drain system in Basin 402 will collect and convey all street flows to the main trunk line along Western Hills Road.

Offsite Basins 3-B and 3-D drain along 25th Street into Basin 405. A storm drain system in Basin 405 collects these street flows. This storm drain system combines with systems in Basins 403 and 404, and routes flows to the main trunk line in Western Hills Road.

TRACT 4 – ASTANTE ESTATES AT CABEZON:

The proposed drainage patterns in this area prohibit any offsite flows from entering this area. Basins 410, 411, 412, & 413 all drain via curb & gutter to a storm drain system at the southern portion of the tract. This storm drain system routes flows to the main trunk line in Cabezon Road.

PROJECT PHASING

The development of Cabezon Tract 4 is proposed in three phases of construction (see **Exhibit 3**). The area in Phase 3 is proposed to be rough graded during construction of Phases 1 and 2, but no infrastructure is proposed for these areas until Phase 3 operations begin.

As a result of this phasing plan, sediment retention ponds are proposed for these areas in Phase 3. The ponds are sized for fully developed conditions volume, ensuring that they are of adequate size to remain in place during both Phase 1 and Phase 2 operations. By providing the ponds with volumes to provide full retention of the 100-Yr developed flows, this site will provide safe storm water control, and satisfy Storm Water Pollution Prevention requirements. See **Exhibit #3** for locations of the temporary retention ponds.

Table 4 depicts the required 100-Yr Runoff Volume for each retention pond.

Table 4
Retention Pond Runoff Volume

Description	100-Yr Runoff Volume (Ac-ft)
Retention Pond #1	2.2
Retention Pond #2	0.2
Retention Pond #3	0.8
Retention Pond #4	0.7
Retention Pond #5	0.5

CONCLUSION

Table 5 compares the findings of the analysis of the northern portion of Asante Subdivision discharging to Western Hills Road with the results of the approved ***Cabezon Communities Phase I Drainage Management Plan***.

Table 5
Runoff Comparison for Western Hills Discharge Points (North Portion)
Analysis Point O1 and O2

Description	Hydrograph ID	Basin Area (Mi^2)	Time to Peak (hr)	100-Yr Runoff Volume (Ac-ft)	100-Yr Peak Discharge (Ft^3/s)
Wilson & Co. Phase 1 DMP	4A.1	0.092	1.50	9.2	182
HZI Plan	Anlypt01.02	0.094	1.50	8.9	156

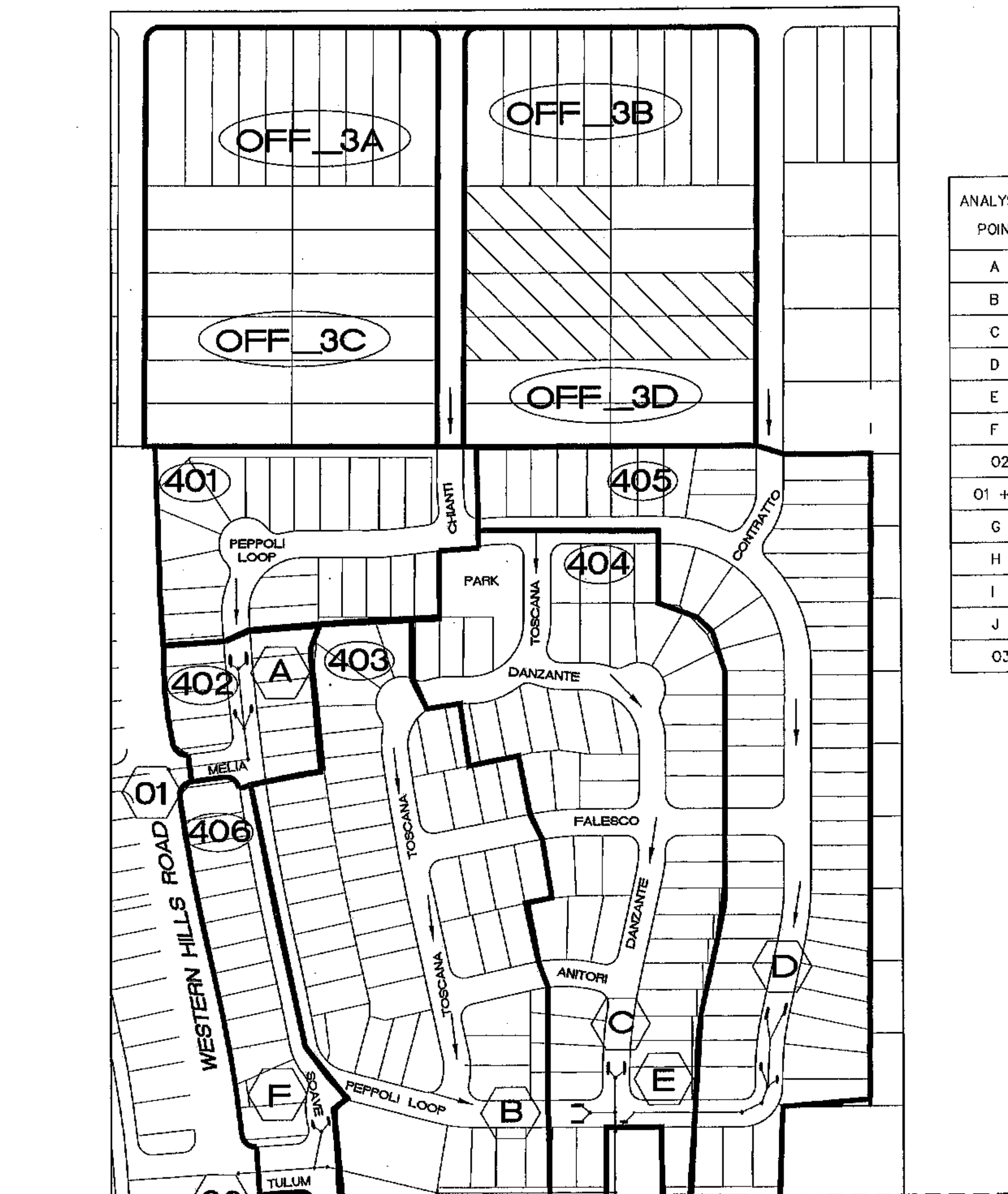
Table 6 compares the findings of the analysis of the southern portion of Astante Subdivision discharging to Cabezon Blvd. with the results of the approved ***Cabezon Communities Phase I Drainage Management Plan***.

Table 6
Runoff Comparison for Cabezon Blvd Discharge Points (South Portion)
Analysis Point O3

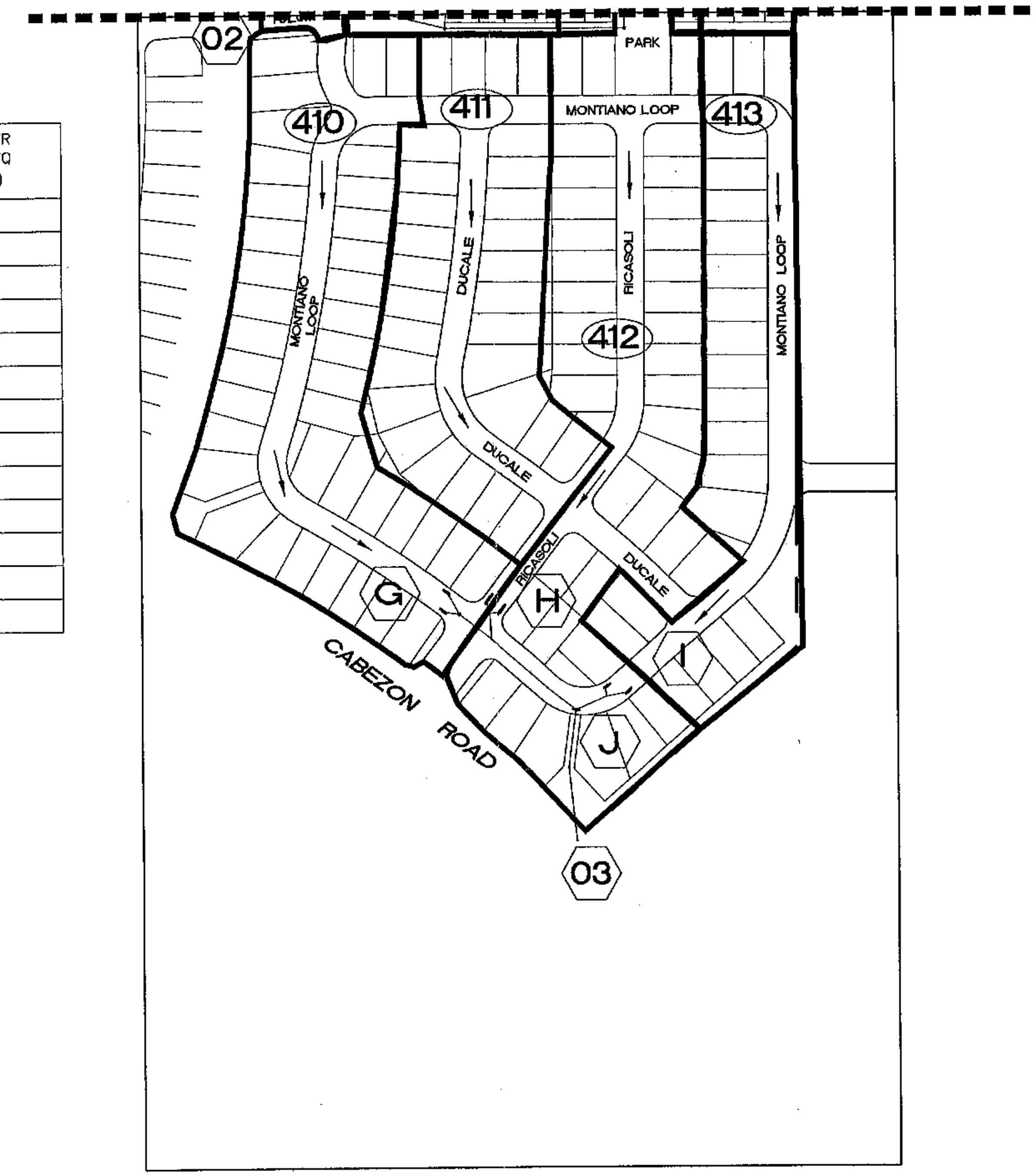
Description	Hydrograph ID (Mi^2)	Basin Area (Mi^2)	Time to Peak (hr)	100-Yr Runoff Volume (Ac-ft)	100-Yr Peak Discharge (Ft^3/s)
Wilson & Co. Phase 1 DMP	4B	0.048	1.50	4.6	108
HZI Plan	Anlypt.03	0.044	1.50	3.9	96

As indicated by these tables, the flows from the Astante Subdivision (Tract 4) are below the Master Plan values. Therefore, the analysis presented in this report is in compliance with the approved ***Cabezon Communities Phase I Drainage Management Plan***.

Tract 4 - Astante at Cabezon



Tract 4 - Astante Estates at Cabezon



ANALYSIS POINT	AHYMO ID	CONTRIBUTING AREA (SQ. MI.)	100-YR VOLUME (AC-FT)	100-YR PEAK Q (CFS)
A (01)	ANLYPT.A	0.026	2.6	48
B	ANLYPT.B	0.015	1.4	34
C	ANLYPT.C	0.016	1.5	35
D	ANLYPT.D	0.033	3.4	75
E	--	SUMP	--	28
F	ANLYPT.F	0.004	0.4	9
02	ANLYPT.02	0.068	6.4	117
01 + 02	ANLYPT01.02	0.094	9.0	156
G	ANLYPT.G	0.013	1.1	28
H	ANLYPT.H	0.024	2.1	51
I	ANLYPT.I	0.008	0.7	17
J	--	SUMP	3.9	27
03	ANLYPT.03	0.044	3.9	96

LEGEND

- DRAINAGE BASIN BOUNDARY
- DRAINAGE FLOW ARROW
- (100) DRAINAGE BASIN NUMBER
- (A) ANALYSIS POINT

Designed For:
CURB NORTH, LLC.

EXHIBIT 2 - ONSITE DRAINAGE BASIN MAP

TRACT 4
CABEZON REDEVELOPMENT

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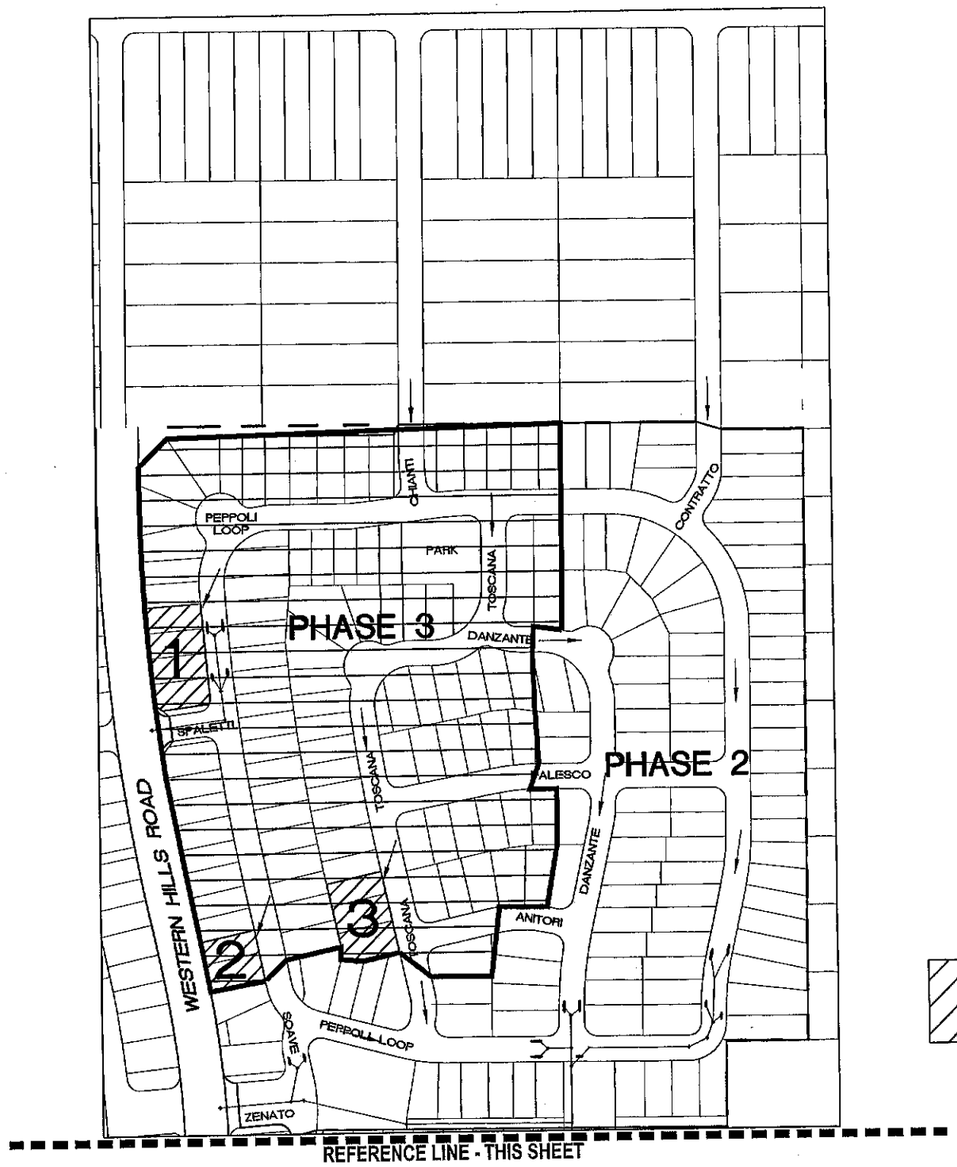
Tract 4 - Astante at Cabezon

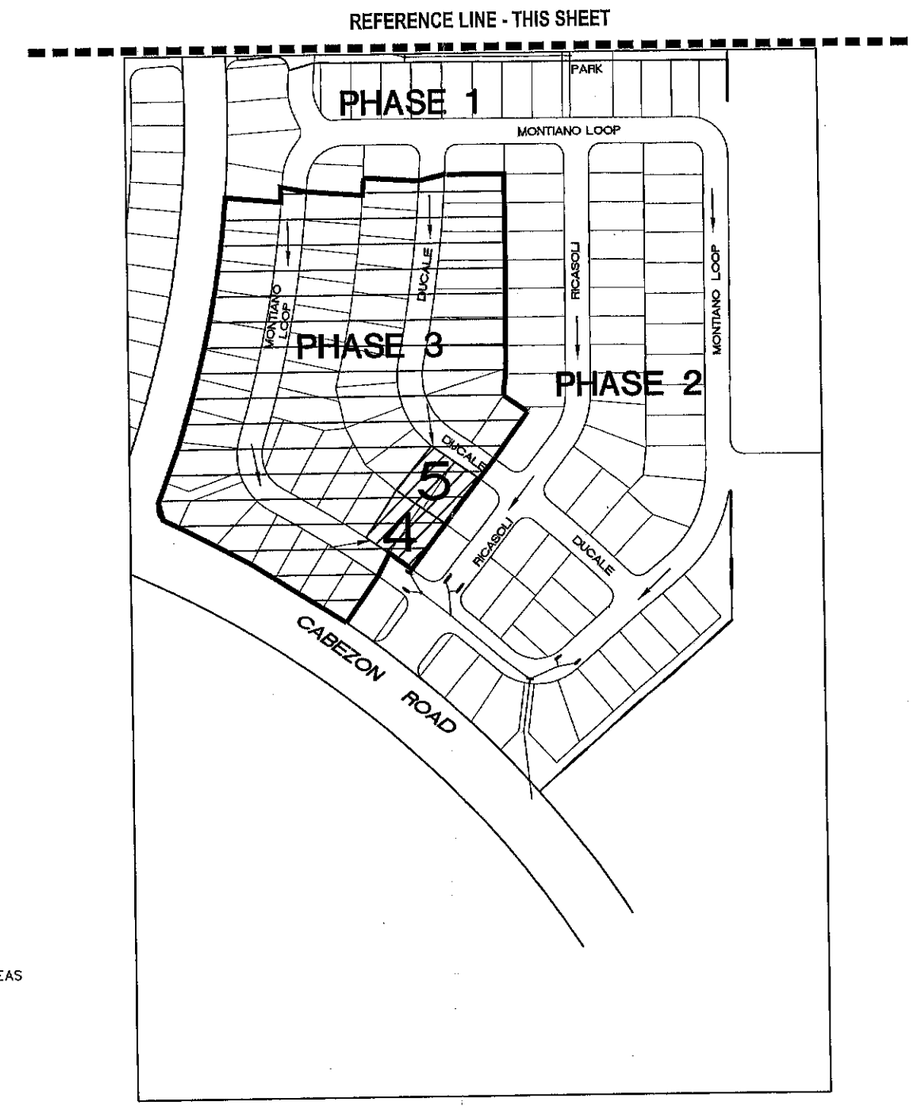


POND ID	DEVELOPED RETENTION (ac-ft)
1	2.2
2	0.2
3	0.8
4	0.7
5	0.5

LEGEND

PROPOSED RETENTION PONDS FOR PHASE 2 AREAS

Tract 4 - Astante Estates at Cabezon



Designed For

CURB NORTH, LLC.

EXHIBIT 3 - PROJECT PHASING & DRAINAGE

TRACT 4
CABEZON REDEVELOPMENT

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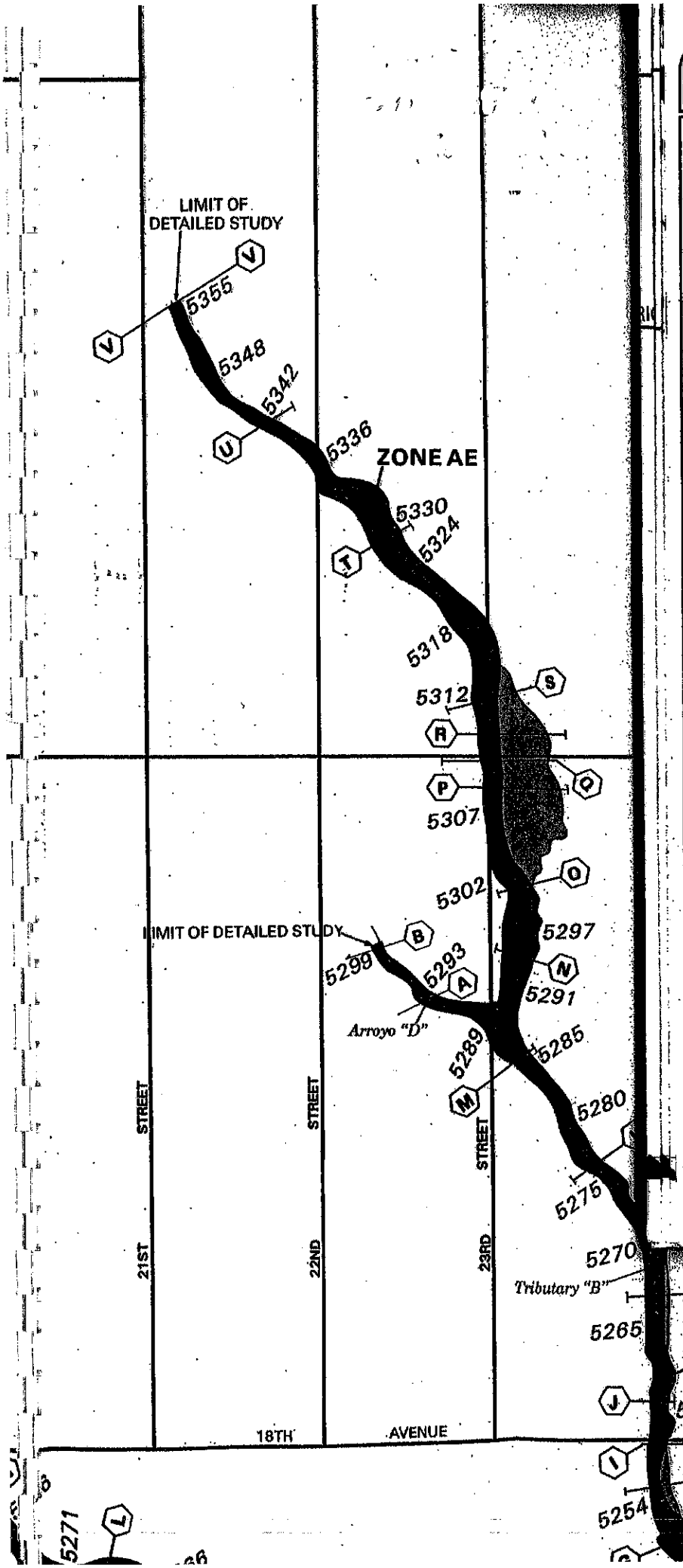


NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

SANDOVAL COUNTY, NEW MEXICO AND INCORPORATED AREAS

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
RIO RANCHO, CITY OF	350146	0894	C

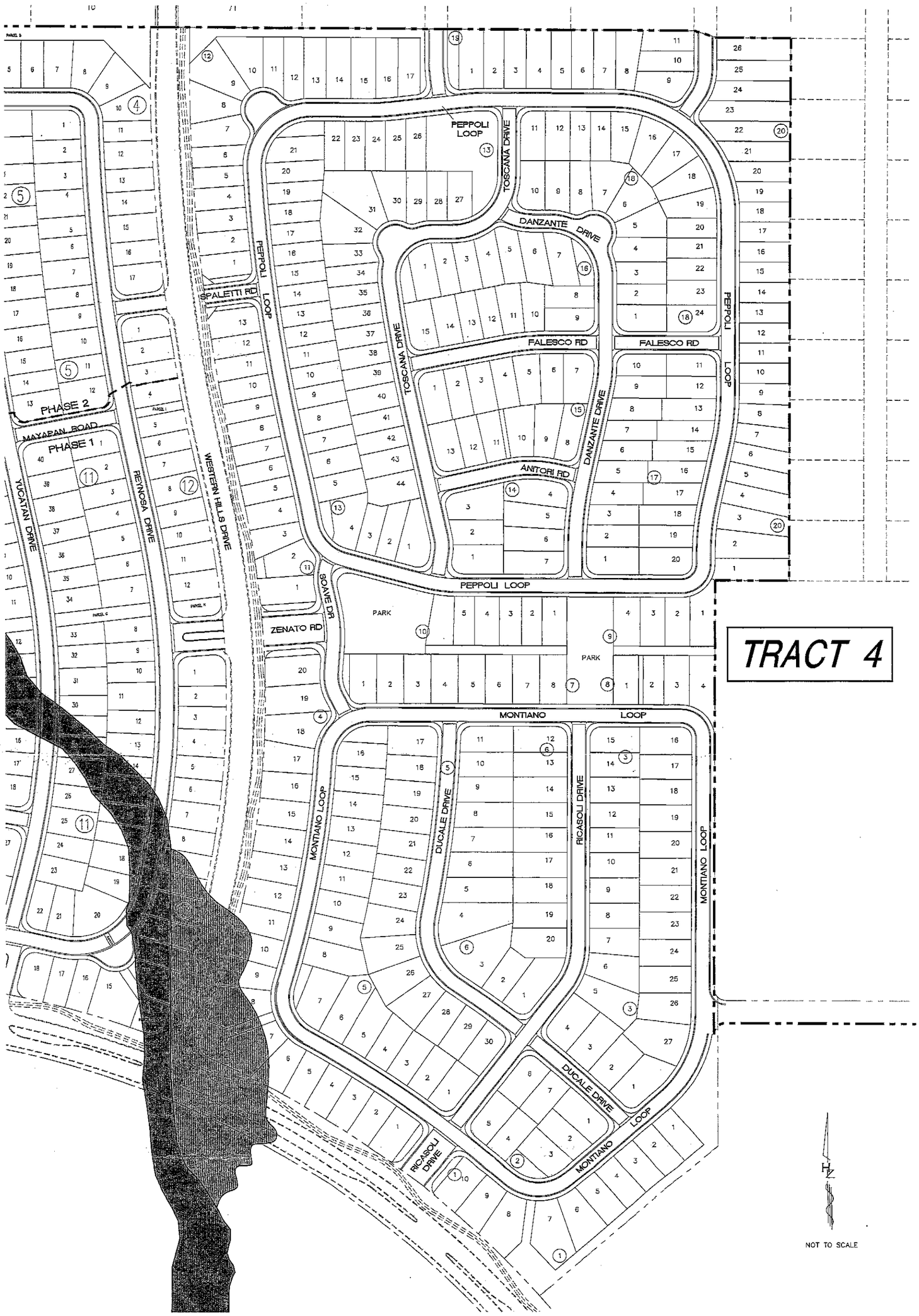
MAP NUMBER
35043C0894 C

EFFECTIVE DATE:
JULY 16, 1996

Federal Emergency Management Agency

A1

27JAN04 (LI)
G:\Proj\1704380034-Cabezon\Drn_Study\FLOODZONETR4.dwg



Designed For:

CURB NORTH, LLC

EXISTING FEMA FLOOD ZONE

ASTANTE AT CABAZON

APRIL 2004

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A2

Tract 4 Subdivision-Cabezon Redevelopment
100-Year 24-Hour Duration Storm-Developed
AHYMO Summary File

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   COMMAND        IDENTIFICATION  NO.  NO.      (SQ MI)     (CFS)      (AC-FT)   (INCHES)   (HOURS)  ACRE     NOTATION

   START                                                                                                  TIME=       .00
   LOCATION                       RIO RANCHO
   *S
   *S    TRACT 4 CABEZON
   *S
   *S    FN:TRACT4100.DAT  -  HYMO PER JAN 1997 DPM REVISIONS
   *S
   *S
   *S
   RAINFALL  TYPE= 2                                                                                      RAIN24=    2.703
   SEDIMENT BULK                                                                                          PK BF =    1.06
   *S**************************************************************
   *S THE FOLLOWING IS WILSON AND CO AHYMO FILE FOR OFF_3A,3B,3C AND 3D
   *S FROM THE PHASE 1 DMP.  ESTABLISHES OFF-SITE FLOW RATES FOR 24TH AND 25TH
   *S**************************************************************
   *S
   *S  Area coming down 24th to project
   COMPUTE NM HYD       Off_3A   -    1       .00880      23.71      1.112     2.37034   1.500   4.210 PER IMP=  85.00
   *S  Use roadway cross-section to route Off_3A thru Off_3C although there is
   *S  not one presently there
   ROUTE MCUNGE        OFF3A.9    1    2       .00880      23.55      1.112     2.36943   1.550   4.182 CCODE =      .1
   COMPUTE NM HYD       Off_3C   -    1       .00630      11.73       .423     1.25884   1.500   2.909 PER IMP=  27.00
   ADD HYD             Off3C.1  1& 2   2       .01510      33.98      1.535     1.90601   1.550   3.517
   COMPUTE NM HYD         24th   -    1       .00140       3.85       .183     2.45015   1.500   4.297 PER IMP=  90.00
   ADD HYD              24TH.1  1& 2   2       .01650      37.29      1.718     1.95216   1.550   3.531
   ROUTE MCUNGE         24TH.9    2    5       .01650      36.94      1.715     1.94857   1.650   3.498 CCODE =      .1
   COMPUTE NM HYD       Off_3B   -    1       .01190      32.06      1.504     2.37034   1.500   4.209 PER IMP=  85.00
   ROUTE MCUNGE        Off_3B.9    1    2       .01190      31.99      1.505     2.37056   1.500   4.201 CCODE =      .2
   COMPUTE NM HYD       Off_3D   -    1       .00310       5.78       .208     1.25884   1.500   2.913 PER IMP=  27.00
   ADD HYD             OFF3D.1  1& 2   2       .01500      37.77      1.713     2.14074   1.500   3.935
   COMPUTE NM HYD         25th   -    1       .00140       3.85       .183     2.45015   1.500   4.297 PER IMP=  90.00
   ADD HYD              25TH.1  1& 2   2       .01640      41.62      1.896     2.16713   1.500   3.966
   ROUTE MCUNGE         25TH.9    2    1       .01640      41.28      1.896     2.16814   1.550   3.933 CCODE =      .2
   *S**************************************************************
   *s**************************************************************
   *S HZI ANALYSIS FOR ON-SITE YUCATAN AT CABEZON TRACT 4
   *S**************************************************************
   *S COMPUTE DEVELOPED BASIN 401
   COMPUTE NM HYD         401.D   -   14       .00715      15.78       .656     1.71966   1.500   3.448 PER IMP=  50.00
   *S--------------------------------------------------------------
   *S ADD Off-Site to 24TH STREET TO 401
   ADD HYD              TOT.401  5&14  15       .02365      45.52      2.370     1.87932   1.650   3.007
   *S--------------------------------------------------------------
   *S COMPUTE DEVELOPED BASIN 402
   COMPUTE NM HYD         402.D   -   16       .00256       5.66       .235     1.71966   1.500   3.453 PER IMP=  50.00
   *S--------------------------------------------------------------
   *S ADD 3A/3C/24TH STREET/401 TO 402
   ADD HYD              ANLYPT.A 15&16  17       .02621      48.59      2.605     1.86371   1.650   2.897
   *S--------------------------------------------------------------
   *S COMPUTE DEVELOPED BASIN 404
   COMPUTE NM HYD       ANLYPT.C   -   18       .01601      35.31      1.468     1.71966   1.500   3.446 PER IMP=  50.00
   *S--------------------------------------------------------------
   *S COMPUTE DEVELOPED BASIN 405
   COMPUTE NM HYD         405.D   -   24       .01645      36.28      1.509     1.71966   1.500   3.446 PER IMP=  50.00
   *S--------------------------------------------------------------
   *S ADD OFF-SITE TO 25TH STREET TO 405
   ADD HYD              ANLYPT.D  1&24  25       .03285      74.57      3.405     1.94353   1.500   3.547
   *S--------------------------------------------------------------
   *S ROUTE COMBINED FLOWS THROUGH STORM SEWER SYSTEM
   *S
   ROUTE MCUNGE               R   25   99       .03285      74.10      3.396     1.93813   1.550   3.524 CCODE =      .1
   *S--------------------------------------------------------------
   *S ADD 3B/3D/25TH STREET/405 TO 404
   ADD HYD              TOT.404 18&99  26       .04886     105.43      4.864     1.86652   1.550   3.371
   *S--------------------------------------------------------------
   *S COMPUTE DEVELOPED BASIN 403
   COMPUTE NM HYD       ANLYPT.B   -   27       .01525      33.63      1.399     1.71966   1.500   3.446 PER IMP=  50.00
   *S--------------------------------------------------------------
   *S ADD 3B/3D/25TH STREET/405/404
```

Tract 4 Subdivision-Cabezon Redevelopment
100-Year 24-Hour Duration Storm-Developed
AHYMO Summary File

□□□

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 = 2 NOTATION
ADD HYD	TOT.INLET	26&27	28	.06411	135.27	6.263	1.83158	1.550	3.297	
*S										
*S ROUTE COMBINED FLOWS THROUGH STORM SEWER SYSTEM										
*S										
ROUTE MCUNGE		R	28	99	.06411	109.14	5.989	1.75158	1.550	2.660 CCODE = .2
*S										
*S COMPUTE DEVELOPED BASIN 406										
COMPUTE NM HYD	ANLYPT.F	-	29	.00412	9.10	.378	1.71966	1.500	3.450	PER IMP= 50.00
*S										
*S ADD 3B/3D/25TH STREET/405/404 TO 406										
ADD HYD	ANLYPT.O2	99&29	30	.06823	117.21	6.367	1.74964	1.550	2.684	
*S										
*S ADD FLOW AT ANLYPT A TO TOTAL FLOW AT MAIN ENT										
ADD HYD	ANLYPT01.O2	30&17	31	.09444	155.65	8.972	1.78130	1.550	2.575	
*S										
*S										
*S										
*S COMPUTE DEVELOPED SOUTHERN TRACT 4										
*S										
*S										
*S										
*S COMPUTE DEVELOPED BASIN 410										
COMPUTE NM HYD	ANLYPT.G	-	50	.01277	27.55	1.123	1.64845	1.500	3.370	PER IMP= 46.00
*S										
*S COMPUTE DEVELOPED BASIN 411										
COMPUTE NM HYD	TOT.DS	-	51	.00950	20.50	.835	1.64845	1.500	3.371	PER IMP= 46.00
*S										
*S COMPUTE DEVELOPED BASIN 412										
COMPUTE NM HYD	TOT.DS	-	52	.01412	30.46	1.241	1.64845	1.500	3.370	PER IMP= 46.00
*S										
*S COMPUTE DEVELOPED BASIN 413										
COMPUTE NM HYD	ANLYPT.I	-	53	.00806	17.39	.709	1.64845	1.500	3.372	PER IMP= 46.00
*S										
*S ADD 411 To 412										
ADD HYD	ANLYPT.H	51&52	54	.02362	50.95	2.077	1.64842	1.500	3.371	
*S										
*S ADD 411/412 TO 410										
ADD HYD	SUM	50&54	55	.03639	78.50	3.199	1.64842	1.500	3.370	
*S										
*S ADD 410/411/412 TO 413										
ADD HYD	ANLYPT.O3	53&55	55	.04445	95.89	3.908	1.64842	1.500	3.371	
*S										
*S**********										
*S**********										
*S********** INTERIM CONDITIONS - TEMP RETENTION PONDS **********										
*S**********										
*S COMPUTE INTERIM BASIN 401										
COMPUTE NM HYD	401.D	-	14	.00715	13.47	.386	1.01341	1.500	2.943	PER IMP= .00
*S										
*S ADD Off-Site to 24TH STREET TO 401										
ADD HYD	TOT.401	5&14	15	.02365	44.29	2.101	1.66581	1.650	2.926	
*S										
*S COMPUTE INTERIM BASIN 402										
COMPUTE NM HYD	402.D	-	16	.00256	4.83	.138	1.01341	1.500	2.947	PER IMP= .00
*S										
*S ADD 3A/3C/24TH STREET/401 TO 402										
ADD HYD	RETPOND.1	15&16	17	.02621	46.92	2.239	1.60208	1.650	2.797	
*S										
*S COMPUTE INTERIM BASIN 406										
COMPUTE NM HYD	RETPOND.2	-	29	.00412	7.77	.223	1.01341	1.500	2.945	PER IMP= .00
*S										
*S COMPUTE INTERIM BASIN 403										
COMPUTE NM HYD	RETPOND.3	-	27	.01525	28.72	.824	1.01341	1.500	2.943	PER IMP= .00
*S										
*S COMPUTE INTERIM BASIN 410										
COMPUTE NM HYD	RETPOND.4	-	50	.01277	24.05	.690	1.01341	1.500	2.943	PER IMP= .00
*S										
*S COMPUTE INTERIM BASIN 411										
COMPUTE NM HYD	RETPOND.5	-	51	.00950	17.89	.513	1.01341	1.500	2.943	PER IMP= .00
FINISH										

□(s0p10h4099T□&16D□□

Tract 4 Subdivision-Cabezon Redevelopment
100-Year 24-Hour Duration Storm-Developed
AHYMO Output File

```
□(s16.67h8.5v0T□&l8D

      AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02c
           RUN DATE (MON/DAY/YR) = 06/24/2004
           START TIME (HR:MIN:SEC) = 10:04:02     USER NO.= AHYMO-I-9702a01000150-SH
           INPUT FILE = G:\Proj\170438-2\DRN_ST-1\AHYMO\Tract4.dat

    START                TIME=0.0 CODE 0 LINES -6
    LOCATION             RIO RANCHO
         City of Rio Rancho soil infiltration values (LAND FACTORS) used for computations.
         Land Treatment      Initial Abstr.(in)     Unif. Infilt.(in/hour)
               A             0.65                   1.67
               B             0.50                   1.25
               C             0.35                   0.83
               D             0.10                   0.04

    *S
    *S    TRACT 4 CABEZON
    *S
    *S    FN:TRACT4100.DAT  -  HYMO PER JAN 1997 DPM REVISIONS
    *S
    *S
    *S
□□□
    ********************************************************************************
    * LH   ALL SEDIMENT BULKING WAS MODIFIED TO USE THE SEDIMENT BULK COMMAND AND
    *  NOT THE DIVIDE HYD COMMANDS IN THE PREVIOUS FEMA RESTUDY MODELS.
    *  SEE RUNCHRONOLOGY FOR AN EXPLANATION OF THE BULKING FACTORS.
    *
    *

    RAINFALL             TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.799
                         RAIN SIX=2.205      RAIN DAY=2.703      DT=.05

                  COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                  DT =     .050000 HOURS       END TIME =    24.000000 HOURS
                     .0000   .0038   .0077   .0118   .0160   .0203   .0248
                     .0295   .0343   .0394   .0447   .0502   .0559   .0620
                     .0684   .0751   .0823   .0899   .0981   .1069   .1164
                     .1240   .1324   .1567   .2140   .3127   .4653   .6849
                     .9854  1.2223  1.3293  1.4187  1.4970  1.5670  1.6304
                    1.6882  1.7413  1.7901  1.8352  1.8769  1.9154  1.9248
                    1.9335  1.9417  1.9493  1.9566  1.9635  1.9701  1.9764
                    1.9825  1.9883  1.9939  1.9994  2.0046  2.0097  2.0146
                    2.0194  2.0241  2.0286  2.0331  2.0374  2.0416  2.0458
                    2.0498  2.0538  2.0576  2.0614  2.0651  2.0688  2.0724
                    2.0759  2.0794  2.0828  2.0861  2.0894  2.0927  2.0959
                    2.0990  2.1021  2.1052  2.1082  2.1112  2.1141  2.1170
                    2.1199  2.1227  2.1255  2.1282  2.1310  2.1336  2.1363
                    2.1389  2.1415  2.1441  2.1466  2.1492  2.1517  2.1541
                    2.1566  2.1590  2.1614  2.1637  2.1661  2.1684  2.1707
                    2.1730  2.1753  2.1775  2.1797  2.1819  2.1841  2.1863
                    2.1884  2.1906  2.1927  2.1948  2.1968  2.1989  2.2010
                    2.2030  2.2050  2.2071  2.2092  2.2113  2.2134  2.2155
                    2.2176  2.2196  2.2217  2.2237  2.2258  2.2278  2.2299
                    2.2319  2.2339  2.2359  2.2379  2.2399  2.2419  2.2439
                    2.2459  2.2479  2.2498  2.2518  2.2537  2.2557  2.2576
                    2.2596  2.2615  2.2634  2.2653  2.2672  2.2691  2.2710
                    2.2729  2.2748  2.2767  2.2786  2.2804  2.2823  2.2842
                    2.2860  2.2879  2.2897  2.2915  2.2934  2.2952  2.2970
                    2.2988  2.3006  2.3024  2.3042  2.3060  2.3078  2.3096
                    2.3114  2.3131  2.3149  2.3167  2.3184  2.3202  2.3219
                    2.3237  2.3254  2.3271  2.3289  2.3306  2.3323  2.3340
                    2.3357  2.3374  2.3391  2.3408  2.3425  2.3442  2.3459
                    2.3475  2.3492  2.3509  2.3525  2.3542  2.3559  2.3575
                    2.3591  2.3608  2.3624  2.3641  2.3657  2.3673  2.3689
                    2.3705  2.3721  2.3737  2.3754  2.3769  2.3785  2.3801
                    2.3817  2.3833  2.3849  2.3865  2.3880  2.3896  2.3911
                    2.3927  2.3943  2.3958  2.3974  2.3989  2.4004  2.4020
                    2.4035  2.4050  2.4066  2.4081  2.4096  2.4111  2.4126
                    2.4141  2.4156  2.4171  2.4186  2.4201  2.4216  2.4231
                    2.4246  2.4260  2.4275  2.4290  2.4305  2.4319  2.4334
                    2.4348  2.4363  2.4377  2.4392  2.4406  2.4421  2.4435
                    2.4449  2.4464  2.4478  2.4492  2.4507  2.4521  2.4535
                    2.4549  2.4563  2.4577  2.4591  2.4605  2.4619  2.4633
                    2.4647  2.4661  2.4675  2.4688  2.4702  2.4716  2.4730
                    2.4743  2.4757  2.4771  2.4784  2.4798  2.4812  2.4825
                    2.4839  2.4852  2.4865  2.4879  2.4892  2.4906  2.4919
                    2.4932  2.4945  2.4959  2.4972  2.4985  2.4998  2.5011
                    2.5025  2.5038  2.5051  2.5064  2.5077  2.5090  2.5103
                    2.5116  2.5129  2.5141  2.5154  2.5167  2.5180  2.5193
```

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2.5205  2.5218  2.5231  2.5243  2.5256  2.5269  2.5281
2.5294  2.5306  2.5319  2.5332  2.5344  2.5356  2.5369
2.5381  2.5394  2.5406  2.5418  2.5431  2.5443  2.5455
2.5468  2.5480  2.5492  2.5504  2.5516  2.5528  2.5541
2.5553  2.5565  2.5577  2.5589  2.5601  2.5613  2.5625
2.5637  2.5649  2.5660  2.5672  2.5684  2.5696  2.5708
2.5720  2.5731  2.5743  2.5755  2.5766  2.5778  2.5790
2.5801  2.5813  2.5825  2.5836  2.5848  2.5859  2.5871
2.5882  2.5894  2.5905  2.5917  2.5928  2.5940  2.5951
2.5962  2.5974  2.5985  2.5996  2.6008  2.6019  2.6030
2.6041  2.6052  2.6064  2.6075  2.6086  2.6097  2.6108
2.6119  2.6130  2.6141  2.6152  2.6164  2.6175  2.6186
2.6196  2.6207  2.6218  2.6229  2.6240  2.6251  2.6262
2.6273  2.6284  2.6294  2.6305  2.6316  2.6327  2.6337
2.6348  2.6359  2.6370  2.6380  2.6391  2.6401  2.6412
2.6423  2.6433  2.6444  2.6454  2.6465  2.6475  2.6486
2.6496  2.6507  2.6517  2.6528  2.6538  2.6549  2.6559
2.6569  2.6580  2.6590  2.6600  2.6611  2.6621  2.6631
2.6642  2.6652  2.6662  2.6672  2.6682  2.6693  2.6703
2.6713  2.6723  2.6733  2.6743  2.6753  2.6763  2.6774
2.6784  2.6794  2.6804  2.6814  2.6824  2.6834  2.6844
2.6853  2.6863  2.6873  2.6883  2.6893  2.6903  2.6913
2.6923  2.6932  2.6942  2.6952  2.6962  2.6972  2.6981
2.6991  2.7001  2.7011  2.7020  2.7030

*
*
*************************************************************************
* BULK FOR SEDIMENT
*
SEDIMENT BULK        CODE=1   BULK FACTOR=1.06
*
*
************************************************************
*S***********************************************************
*S THE FOLLOWING IS WILSON AND CO AHYMO FILE FOR OFF_3A,3B,3C AND 3D
*S FROM THE PHASE 1 DMP.  ESTABLISHES OFF-SITE FLOW RATES FOR 24TH AND 25TH
*S***********************************************************
************************************************************
*S
*S  Area coming down 24th to project
*
COMPUTE NM HYD       ID=1    HYD=Off_3A    DA=0.0088    SQ MI
                     PER A=0     B=0     C=15     D=85
                     TP=0.13 HRS          RAIN=-1

     K =   .070850HR    TP =   .130000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   30.281    CFS   UNIT VOLUME =    .9990       B =   526.28       P60 = 1.7990
     AREA =       .007480 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .102465HR    TP =   .130000HR    K/TP RATIO =   .788191     SHAPE CONSTANT, N =  4.553549
     UNIT PEAK =   3.9653    CFS   UNIT VOLUME =    .9982       B =   390.52       P60 = 1.7990
     AREA =       .001320 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

*
PRINT HYD            ID=1    CODE=1

                                    HYDROGRAPH FROM AREA Off_3A


    RUNOFF VOLUME =     2.37034 INCHES     =       1.1125 ACRE-FEET
    PEAK DISCHARGE RATE =      23.71 CFS  AT   1.500 HOURS   BASIN AREA =   .0088 SQ. MI.



*
PUNCH HYD            ID=1
*
*S  Use roadway cross-section to route Off_3A thru Off_3C although there is
*S  not one presently there
*
*
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=3
                    MINIMUM ELEV=99.13 FT  MAXIMUM ELEV=100 FT
                    CHANNEL SLOPE=0.02  FLOOD PLAIN SLOPE=0.02
                    N=0.030  DIST=9  N=-0.017  DIST=41 N=0.030 DIST=50
```

Tract 4 Subdivision-Cabezon Redevelopment
100-Year 24-Hour Duration Storm-Developed
AHYMO Output File

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	100.0	9.0	99.82	9.2	99.13	11	99.26
25.0	99.54	39.0	99.26	41.0	99.13	41.2	99.82
50.0	100.0						

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
99.13	.00	.00	.00
99.18	.03	.03	1.37
99.22	.13	.19	2.73
99.27	.28	.53	4.62
99.31	.60	1.18	9.22
99.36	1.13	2.58	13.83
99.40	1.87	4.95	18.43
99.45	2.82	8.47	23.04
99.50	3.98	13.35	27.65
99.54	5.35	19.83	32.04
99.59	6.82	29.68	32.07
99.63	8.28	41.05	32.09
99.68	9.75	53.83	32.12
99.73	11.23	67.96	32.15
99.77	12.70	83.36	32.17
99.82	14.17	99.98	32.20
99.86	15.74	117.88	36.42
99.91	17.51	137.25	40.95
99.95	19.49	158.15	45.48
100.00	21.67	180.68	50.00

```
*
ROUTE MCUNGE        ID=2   HYD=OFF3A.9  INFLOW ID=1  DT=0.00
                      L=350   NO VS=1   SLP=0.02

     INFLOW END= 497            TABLE PTS= 20
     DT=  .050000               QMED=       11.86  CKMED=      4.1993
     WIDTH MED=       26.24     NREACH=  1         DX=       350.00
```

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.137	.0	1.94	.45	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.05	.0	.0	.100	1.4	1.94	.97	.998	.002	.998	.000	.002	.0	1.000	.000	.000
.09	.1	.2	.063	2.7	2.03	1.54	1.044	.005	.995	.024	-.019	.1	.997	.009	-.006
.14	.3	.5	.052	4.6	2.23	1.88	1.146	.007	.993	.071	-.065	.3	.993	.011	-.004
.18	.6	1.2	.049	9.2	2.39	1.96	1.229	.008	.993	.106	-.099	.8	.992	.016	-.007
.23	1.1	2.6	.042	13.8	2.96	2.29	1.524	.009	.993	.210	-.203	1.8	.993	.154	-.147
.27	1.9	4.9	.037	18.4	3.48	2.65	1.792	.011	.992	.287	-.279	3.7	.992	.244	-.237
.32	2.8	8.5	.032	23.0	3.98	3.01	2.047	.013	.991	.346	-.338	6.6	.992	.314	-.305
.37	4.0	13.3	.029	27.6	4.48	3.36	2.305	.015	.991	.398	-.388	10.8	.991	.369	-.360
.41	5.3	19.8	.026	32.0	5.48	3.71	2.817	.016	.992	.478	-.470	16.5	.990	.421	-.411
.46	6.8	29.7	.022	32.1	7.24	4.35	3.723	.018	.992	.578	-.570	24.6	.993	.553	-.545
.50	8.3	41.0	.020	32.1	8.23	4.95	4.232	.022	.992	.619	-.611	35.2	.992	.600	-.592
.55	9.8	53.8	.018	32.1	9.16	5.52	4.709	.026	.991	.651	-.642	47.3	.991	.636	-.627
.60	11.2	68.0	.016	32.1	10.04	6.05	5.161	.030	.990	.677	-.667	60.7	.991	.665	-.655
.64	12.7	83.4	.015	32.2	10.87	6.56	5.592	.034	.990	.698	-.688	75.5	.990	.688	-.678
.69	14.2	100.0	.014	32.2	11.68	7.05	6.006	.038	.989	.716	-.705	91.5	.989	.707	-.697
.73	15.7	117.9	.013	36.4	11.21	7.49	5.767	.041	.988	.706	-.694	108.7	.988	.710	-.699
.78	17.5	137.3	.012	40.9	10.77	7.84	5.540	.044	.986	.696	-.683	127.4	.987	.700	-.687
.82	19.5	158.2	.012	45.5	10.45	8.12	5.377	.048	.985	.689	-.674	147.6	.986	.691	-.677
.87	21.7	180.7	.012	50.0	10.09	8.34	5.188	.051	.984	.679	-.663	169.3	.984	.685	-.669

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 3 OCCURRED 7 TIMES. AVERAGE NUMBER ITERATIONS = 1.0602

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.137	.0	1.94	.45	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.05	.0	.0	.100	1.4	1.94	.97	.998	.002	.998	.000	.002	.0	1.000	.000	.000
.09	.1	.2	.063	2.7	1.95	1.54	1.005	.005	.995	.005	.000	.1	.997	.003	.000
.14	.3	.5	.052	4.6	1.96	1.88	1.008	.008	.992	.008	.000	.3	.993	.007	.000
.18	.6	1.2	.049	9.2	1.96	1.96	1.009	.009	.991	.009	.000	.8	.992	.008	.000
.23	1.1	2.6	.042	13.8	1.97	2.29	1.014	.014	.987	.013	.000	1.8	.989	.011	.000
.27	1.9	4.9	.037	18.4	1.98	2.65	1.019	.019	.981	.019	.000	3.7	.984	.016	.000
.32	2.8	8.5	.032	23.0	2.00	3.01	1.026	.026	.974	.026	.000	6.6	.978	.022	.000
.37	4.0	13.3	.029	27.6	2.01	3.36	1.034	.034	.967	.033	.000	10.8	.971	.029	.000
.41	5.3	19.8	.026	32.0	2.03	3.71	1.044	.044	.958	.042	.000	16.5	.962	.038	.000
.46	6.8	29.7	.022	32.1	2.07	4.35	1.064	.064	.940	.060	.000	24.6	.949	.051	.000
.50	8.3	41.0	.020	32.1	2.11	4.95	1.086	.086	.920	.080	.000	35.2	.930	.070	.000
.55	9.8	53.8	.018	32.1	2.16	5.52	1.111	.111	.900	.100	.000	47.3	.910	.090	.000
.60	11.2	68.0	.016	32.1	2.21	6.05	1.137	.137	.880	.120	.000	60.7	.890	.110	.000
.64	12.7	83.4	.015	32.2	2.26	6.56	1.164	.164	.859	.141	.000	75.5	.870	.130	.000
.69	14.2	100.0	.014	32.2	2.32	7.05	1.191	.191	.839	.161	.000	91.5	.849	.151	.000
.73	15.7	117.9	.013	36.4	2.33	7.49	1.198	.198	.834	.166	.000	108.7	.837	.163	.000
.78	17.5	137.3	.012	40.9	2.34	7.84	1.204	.204	.830	.170	.000	127.4	.832	.168	.000
.82	19.5	158.2	.012	45.5	2.35	8.12	1.211	.211	.826	.174	.000	147.6	.828	.172	.000

```
     .87   21.7    180.7    .012   50.0     2.37   8.34    1.218   .218   .821   .179   .000    169.3    .823   .177   .000
MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) =   2 OCCURRED      27 TIMES.  AVERAGE NUMBER ITERATIONS =  1.0465
Equations solved with two passes: first using the Ponce correction to C1, second using the Fread correction to C1, C2 and C3
PRINT HYD           ID=2    CODE=1

                                        HYDROGRAPH FROM AREA OFF3A.9


    RUNOFF VOLUME =      2.36943 INCHES      =        1.1120 ACRE-FEET
    PEAK DISCHARGE RATE =      23.55 CFS  AT   1.550 HOURS   BASIN AREA =    .0088 SQ. MI.



*
*
COMPUTE NM HYD      ID=1    HYD=Off_3C    DA=0.0063   SQ MI
                    PER A=10    B=33    C=30    D=27
                    TP=0.13 HRS         RAIN=-1

     K =   .070850HR    TP =   .130000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   6.8861    CFS   UNIT VOLUME =    .9980       B =   526.28       P60 = 1.7990
     AREA =       .001701 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .122516HR    TP =   .130000HR    K/TP RATIO =   .942428     SHAPE CONSTANT, N =  3.751639
     UNIT PEAK =   11.966    CFS   UNIT VOLUME =    1.000       B =   338.26       P60 = 1.7990
     AREA =       .004599 SQ MI    IA =    .45890 INCHES    INF =   1.13493 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

*
PRINT HYD           ID=1    CODE=1

                                        HYDROGRAPH FROM AREA Off_3C


    RUNOFF VOLUME =      1.25884 INCHES      =        .4230 ACRE-FEET
    PEAK DISCHARGE RATE =      11.73 CFS  AT   1.500 HOURS   BASIN AREA =    .0063 SQ. MI.



*
*
ADD HYD             ID=2   HYD=Off3C.1   ID I=1      ID II=2
*
PRINT HYD           ID=2    CODE=1

                                        HYDROGRAPH FROM AREA Off3C.1


    RUNOFF VOLUME =      1.90601 INCHES      =        1.5350 ACRE-FEET
    PEAK DISCHARGE RATE =      33.98 CFS  AT   1.550 HOURS   BASIN AREA =    .0151 SQ. MI.



*
*
COMPUTE NM HYD      ID=1    HYD=24th    DA=0.0014   SQ MI
                    PER A=0    B=0    C=10    D=90
                    TP=0.13 HRS         RAIN=-1

     K =   .070850HR    TP =   .130000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   5.1008    CFS   UNIT VOLUME =    .9971       B =   526.28       P60 = 1.7990
     AREA =       .001260 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .102465HR    TP =   .130000HR    K/TP RATIO =   .788191     SHAPE CONSTANT, N =  4.553549
     UNIT PEAK =   .42056    CFS   UNIT VOLUME =    .9724       B =   390.52       P60 = 1.7990
     AREA =       .000140 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

*
PRINT HYD           ID=1    CODE=1

                                        HYDROGRAPH FROM AREA 24th
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Tract 4 Subdivision-Cabezon Redevelopment
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```
    RUNOFF VOLUME =      2.45015 INCHES      =         .1829 ACRE-FEET
    PEAK DISCHARGE RATE =        3.85 CFS  AT    1.500 HOURS    BASIN AREA =    .0014 SQ. MI.


*
*
ADD HYD             ID=2   HYD=24TH.1   ID I=1      ID II=2
*
PRINT HYD           ID=2    CODE=1

                                    HYDROGRAPH FROM AREA 24TH.1


    RUNOFF VOLUME =      1.95216 INCHES      =        1.7179 ACRE-FEET
    PEAK DISCHARGE RATE =       37.29 CFS  AT    1.550 HOURS    BASIN AREA =    .0165 SQ. MI.


*
*
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=3
                    MINIMUM ELEV=99.13 FT  MAXIMUM ELEV=100 FT
                    CHANNEL SLOPE=0.02  FLOOD PLAIN SLOPE=0.02
                    N=0.030  DIST=9  N=-0.017  DIST=41 N=0.030 DIST=50
                    DIST  ELEV    DIST   ELEV    DIST   ELEV    DIST   ELEV
                    0.0   100.0    9.0   99.82    9.2   99.13    11   99.26
                    25.0   99.54  39.0   99.26   41.0   99.13   41.2  99.82
                    50.0  100.0

                                RATING CURVE VALLEY SECTION  1.0
                                   WATER        FLOW         FLOW         TOP
                                  SURFACE       AREA         RATE        WIDTH
                                   ELEV        SQ FT         CFS          FT
                                   99.13          .00          .00          .00
                                   99.18          .03          .03         1.37
                                   99.22          .13          .19         2.73
                                   99.27          .28          .53         4.62
                                   99.31          .60         1.18         9.22
                                   99.36         1.13         2.58        13.83
                                   99.40         1.87         4.95        18.43
                                   99.45         2.82         8.47        23.04
                                   99.50         3.98        13.35        27.65
                                   99.54         5.35        19.83        32.04
                                   99.59         6.82        29.68        32.07
                                   99.63         8.28        41.05        32.09
                                   99.68         9.75        53.83        32.12
                                   99.73        11.23        67.96        32.15
                                   99.77        12.70        83.36        32.17
                                   99.82        14.17        99.98        32.20
                                   99.86        15.74       117.88        36.42
                                   99.91        17.51       137.25        40.95
                                   99.95        19.49       158.15        45.48
                                  100.00        21.67       180.68        50.00
*
ROUTE MCUNGE        ID=5   HYD=24TH.9  INFLOW ID=2  DT=0.00
                         L=1200   NO VS=1  SLP=0.02

    INFLOW END= 499            TABLE PTS= 20
    DT=  .050000               QMED=       18.64  CKMED=      4.7281
    WIDTH MED=       31.24     NREACH=  3         DX=       400.00

 DEPTH   AREA      Q    TRAVEL  WIDTH      ck      VEL      C       D       C1      C2      C3     Q-M      C1-M    C2-M    C3-M
  (FT)  (SQ FT)  (CFS)  TIME(HR) (FT)     (FPS)   (FPS)                                                  (CFS)
   .00     .0      .0     .470     .0      2.22     .45   1.000   .000   1.000   .000   .000      .0    1.000   .000    .000
   .05     .0      .0     .343    1.4      2.22     .97    .999   .001    .999   .000   .001      .0    1.000   .000    .000
   .09     .1      .2     .216    2.7      2.21    1.54    .996   .004    .996   .000   .004      .1    .998    .000    .002
   .14     .3      .5     .178    4.6      2.23    1.88   1.003   .006    .994   .005   .002      .3    .995    .002    .003
   .18     .6     1.2     .170    9.2      2.39    1.96   1.075   .007    .994   .039  -.033      .8    .994    .019   -.013
   .23    1.1     2.6     .146   13.8      2.96    2.29   1.333   .008    .993   .146  -.139     1.8    .993    .088   -.081
   .27    1.9     4.9     .126   18.4      3.48    2.65   1.568   .010    .993   .224  -.217     3.7    .993    .181   -.173
   .32    2.8     8.5     .111   23.0      3.98    3.01   1.791   .012    .992   .286  -.278     6.6    .992    .252   -.244
   .37    4.0    13.3     .099   27.6      4.48    3.36   2.017   .013    .991   .340  -.331    10.8    .991    .310   -.301
   .41    5.3    19.8     .090   32.0      5.48    3.71   2.464   .014    .992   .425  -.417    16.5    .991    .364   -.355
   .46    6.8    29.7     .077   32.1      7.24    4.35   3.257   .016    .993   .532  -.524    24.6    .993    .504   -.497
   .50    8.3    41.0     .067   32.1      8.23    4.95   3.703   .019    .992   .576  -.568    35.2    .992    .556   -.548
   .55    9.8    53.8     .060   32.1      9.16    5.52   4.120   .023    .991   .611  -.602    47.3    .991    .595   -.586
   .60   11.2    68.0     .055   32.1     10.04    6.05   4.516   .026    .990   .639  -.630    60.7    .991    .626   -.617
   .64   12.7    83.4     .051   32.2     10.87    6.56   4.893   .030    .990   .662  -.652    75.5    .990    .651   -.641
   .69   14.2   100.0     .047   32.2     11.68    7.05   5.255   .033    .989   .682  -.671    91.5    .990    .672   -.662
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    .73   15.7    117.9    .044   36.4    11.21   7.49    5.046   .036   .988   .671   -.659    108.7    .989   .675   -.664
    .78   17.5    137.3    .043   40.9    10.77   7.84    4.848   .039   .987   .660   -.647    127.4    .987   .664   -.651
    .82   19.5    158.2    .041   45.5    10.45   8.12    4.705   .042   .986   .652   -.637    147.6    .986   .655   -.641
    .87   21.7    180.7    .040   50.0    10.09   8.34    4.539   .045   .984   .642   -.626    169.3    .985   .648   -.632
MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) =    4 OCCURRED        2 TIMES.  AVERAGE NUMBER ITERATIONS =  1.0706
  DEPTH    AREA      Q     TRAVEL  WIDTH      ck       VEL       C       D       C1      C2      C3      Q-M      C1-M    C2-M    C3-M
   (FT)  (SQ FT)  (CFS)   TIME(HR)  (FT)     (FPS)    (FPS)                                                  (CFS)
    .00      .0      .0    .470      .0      2.22      .45   1.000    .000   1.000    .000    .000       .0   1.000    .000    .000
    .05      .0      .0    .343     1.4      2.22      .97    .999    .001    .999    .000    .001       .0   1.000    .000    .000
    .09      .1      .2    .216     2.7      2.21     1.54    .996    .004    .996    .000    .004       .1    .998    .000    .002
    .14      .3      .5    .178     4.6      2.23     1.88   1.003    .006    .994    .005    .002       .3    .995    .002    .003
    .18      .6     1.2    .170     9.2      2.24     1.96   1.007    .007    .993    .007    .000       .8    .994    .006    .000
    .23     1.1     2.6    .146    13.8      2.25     2.29   1.010    .010    .990    .010    .000      1.8    .991    .009    .000
    .27     1.9     4.9    .126    18.4      2.26     2.65   1.015    .015    .985    .015    .000      3.7    .987    .013    .000
    .32     2.8     8.5    .111    23.0      2.27     3.01   1.020    .020    .980    .020    .000      6.6    .983    .017    .000
    .37     4.0    13.3    .099    27.6      2.28     3.36   1.026    .026    .974    .026    .000     10.8    .977    .023    .000
    .41     5.3    19.8    .090    32.0      2.30     3.71   1.034    .034    .967    .033    .000     16.5    .971    .029    .000
    .46     6.8    29.7    .077    32.1      2.33     4.35   1.050    .050    .953    .047    .000     24.6    .960    .040    .000
    .50     8.3    41.0    .067    32.1      2.37     4.95   1.067    .067    .937    .063    .000     35.2    .945    .055    .000
    .55     9.8    53.8    .060    32.1      2.42     5.52   1.087    .087    .920    .080    .000     47.3    .929    .071    .000
    .60    11.2    68.0    .055    32.1      2.46     6.05   1.107    .107    .903    .097    .000     60.7    .912    .088    .000
    .64    12.7    83.4    .051    32.2      2.51     6.56   1.129    .129    .886    .114    .000     75.5    .894    .106    .000
    .69    14.2   100.0    .047    32.2      2.56     7.05   1.152    .152    .868    .132    .000     91.5    .877    .123    .000
    .73    15.7   117.9    .044    36.4      2.57     7.49   1.157    .157    .864    .136    .000    108.7    .866    .134    .000
    .78    17.5   137.3    .043    40.9      2.58     7.84   1.162    .162    .860    .140    .000    127.4    .862    .138    .000
    .82    19.5   158.2    .041    45.5      2.59     8.12   1.168    .168    .856    .144    .000    147.6    .858    .142    .000
    .87    21.7   180.7    .040    50.0      2.61     8.34   1.173    .173    .852    .148    .000    169.3    .854    .146    .000
MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) =    2 OCCURRED       92 TIMES.  AVERAGE NUMBER ITERATIONS =  1.0528
Equations solved with two passes: first using the Ponce correction to C1, second using the Fread correction to C1, C2 and C3
PRINT HYD             ID=5     CODE=1

                                        HYDROGRAPH FROM AREA 24TH.9


    RUNOFF VOLUME =     1.94857 INCHES      =       1.7147 ACRE-FEET
    PEAK DISCHARGE RATE =      36.94 CFS  AT   1.650 HOURS   BASIN AREA =    .0165 SQ. MI.



*
*
COMPUTE NM HYD        ID=1     HYD=Off_3B    DA=0.0119    SQ MI
                      PER A=0     B=0     C=15     D=85
                      TP=0.13 HRS          RAIN=-1

     K =    .070850HR    TP =    .130000HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   40.948    CFS   UNIT VOLUME =     .9991       B =   526.28       P60 = 1.7990
     AREA =       .010115 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000


     K =    .102465HR    TP =    .130000HR    K/TP RATIO =    .788191     SHAPE CONSTANT, N =  4.553549
     UNIT PEAK =   5.3622    CFS   UNIT VOLUME =     .9990       B =   390.52       P60 = 1.7990
     AREA =       .001785 SQ MI    IA =     .35000 INCHES    INF =     .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

*
PRINT HYD             ID=1     CODE=1

                                        HYDROGRAPH FROM AREA Off_3B


    RUNOFF VOLUME =     2.37034 INCHES      =       1.5044 ACRE-FEET
    PEAK DISCHARGE RATE =      32.06 CFS  AT   1.500 HOURS   BASIN AREA =    .0119 SQ. MI.



*
PUNCH HYD             ID=1
*
*
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=3
                     MINIMUM ELEV=99.13 FT  MAXIMUM ELEV=100 FT
                     CHANNEL SLOPE=0.02  FLOOD PLAIN SLOPE=0.02
                     N=0.030  DIST=9  N=-0.017  DIST=41 N=0.030 DIST=50
                     DIST  ELEV    DIST   ELEV    DIST   ELEV   DIST   ELEV
                     0.0   100.0    9.0   99.82    9.2   99.13    11   99.26
                     25.0   99.54  39.0   99.26   41.0   99.13   41.2  99.82
                     50.0  100.0
```

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```
RATING CURVE VALLEY SECTION  1.0
    WATER        FLOW         FLOW         TOP
  SURFACE        AREA         RATE        WIDTH
    ELEV        SQ FT          CFS          FT
   99.13          .00          .00          .00
   99.18          .03          .03         1.37
   99.22          .13          .19         2.73
   99.27          .28          .53         4.62
   99.31          .60         1.18         9.22
   99.36         1.13         2.58        13.83
   99.40         1.87         4.95        18.43
   99.45         2.82         8.47        23.04
   99.50         3.98        13.35        27.65
   99.54         5.35        19.83        32.04
   99.59         6.82        29.68        32.07
   99.63         8.28        41.05        32.09
   99.68         9.75        53.83        32.12
   99.73        11.23        67.96        32.15
   99.77        12.70        83.36        32.17
   99.82        14.17        99.98        32.20
   99.86        15.74       117.88        36.42
   99.91        17.51       137.25        40.95
   99.95        19.49       158.15        45.48
  100.00        21.67       180.68        50.00
*
ROUTE MCUNGE          ID=2   HYD=Off_3B.9  INFLOW ID=1  DT=0.00
                        L=160   NO VS=1  SLP=0.02

     INFLOW END= 498             TABLE PTS= 20
     DT=  .050000                QMED=       16.03  CKMED=      4.7281
     WIDTH MED=       29.46      NREACH=  1         DX=       160.00

  DEPTH    AREA      Q     TRAVEL  WIDTH      ck       VEL      C       D      C1      C2      C3      Q-M      C1-M    C2-M    C3-M
   (FT)   (SQ FT)  (CFS)  TIME(HR) (FT)     (FPS)    (FPS)                                              (CFS)
    .00      .0      .0     .063     .0       .89      .45    1.000   .000   1.000   .000    .000        .0    1.000   .000    .000
    .05      .0      .0     .046    1.4      1.36      .97    1.524   .005   .996    .209    -.205       .0    .999    .033    -.033
    .09      .1      .2     .029    2.7      2.03     1.54    2.285   .011   .993    .393    -.386       .1    .994    .310    -.304
    .14      .3      .5     .024    4.6      2.23     1.88    2.508   .016   .991    .432    -.423       .3    .991    .382    -.373
    .18      .6     1.2     .023    9.2      2.39     1.96    2.688   .017   .991    .460    -.451       .8    .989    .386    -.375
    .23     1.1     2.6     .019   13.8      2.96     2.29    3.333   .020   .991    .541    -.531      1.8    .991    .498    -.489
    .27     1.9     4.9     .017   18.4      3.48     2.65    3.920   .024   .990    .596    -.586      3.7    .990    .566    -.556
    .32     2.8     8.5     .015   23.0      3.98     3.01    4.478   .029   .990    .637    -.626      6.6    .990    .614    -.604
    .37     4.0    13.3     .013   27.6      4.48     3.36    5.043   .034   .989    .671    -.660     10.8    .989    .652    -.641
    .41     5.3    19.8     .012   32.0      5.48     3.71    6.161   .035   .990    .722    -.712     16.5    .989    .686    -.674
    .46     6.8    29.7     .010   32.1      7.24     4.35    8.143   .040   .991    .782    -.774     24.6    .992    .767    -.759
    .50     8.3    41.0     .009   32.1      8.23     4.95    9.257   .049   .991    .806    -.796     35.2    .991    .795    -.786
    .55     9.8    53.8     .008   32.1      9.16     5.52   10.301   .057   .990    .824    -.814     47.3    .990    .815    -.806
    .60    11.2    68.0     .007   32.1     10.04     6.05   11.290   .066   .989    .838    -.827     60.7    .990    .831    -.821
    .64    12.7    83.4     .007   32.2     10.87     6.56   12.232   .074   .989    .850    -.839     75.5    .989    .844    -.833
    .69    14.2   100.0     .006   32.2     11.68     7.05   13.139   .083   .988    .859    -.848     91.5    .989    .855    -.843
    .73    15.7   117.9     .006   36.4     11.21     7.49   12.616   .090   .987    .854    -.841    108.7    .987    .856    -.844
    .78    17.5   137.3     .006   40.9     10.77     7.84   12.119   .097   .985    .849    -.834    127.4    .986    .851    -.836
    .82    19.5   158.2     .005   45.5     10.45     8.12   11.761   .104   .984    .845    -.828    147.6    .984    .846    -.830
    .87    21.7   180.7     .005   50.0     10.09     8.34   11.349   .112   .982    .839    -.822    169.3    .983    .842    -.825
MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) =   3 OCCURRED       7 TIMES.  AVERAGE NUMBER ITERATIONS =  1.0878
Equations solved using the Ponce correction to C2
PRINT HYD             ID=2    CODE=1

                                HYDROGRAPH FROM AREA Off_3B.9


    RUNOFF VOLUME =     2.37056 INCHES      =       1.5045 ACRE-FEET
    PEAK DISCHARGE RATE =      31.99 CFS  AT   1.500 HOURS   BASIN AREA =    .0119 SQ. MI.



*
*
COMPUTE NM HYD        ID=1    HYD=Off_3D    DA=0.0031   SQ MI
                      PER A=10    B=33    C=30    D=27
                      TP=0.13 HRS         RAIN=-1

     K =   .070850HR    TP =   .130000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   3.3884    CFS   UNIT VOLUME =    .9965       B =   526.28      P60 = 1.7990
     AREA =      .000837 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000


     K =   .122516HR    TP =   .130000HR    K/TP RATIO =   .942428     SHAPE CONSTANT, N =  3.751639
     UNIT PEAK =   5.8883    CFS   UNIT VOLUME =    .9989       B =   338.26      P60 = 1.7990
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```
     AREA =       .002263 SQ MI    IA =    .45890 INCHES    INF =   1.13493 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

*
PRINT HYD             ID=1    CODE=1

                                        HYDROGRAPH FROM AREA Off_3D


    RUNOFF VOLUME =     1.25884 INCHES      =         .2081 ACRE-FEET
    PEAK DISCHARGE RATE =       5.78 CFS  AT   1.500 HOURS   BASIN AREA =    .0031 SQ. MI.



*
*
ADD HYD               ID=2   HYD=OFF3D.1   ID I=1      ID II=2
*
PRINT HYD             ID=2    CODE=1

                                        HYDROGRAPH FROM AREA OFF3D.1


    RUNOFF VOLUME =     2.14074 INCHES      =        1.7126 ACRE-FEET
    PEAK DISCHARGE RATE =      37.77 CFS  AT   1.500 HOURS   BASIN AREA =    .0150 SQ. MI.



*
*
COMPUTE NM HYD        ID=1    HYD=25th    DA=0.0014   SQ MI
                      PER A=0    B=0    C=10    D=90
                      TP=0.13 HRS       RAIN=-1

     K =   .070850HR    TP =   .130000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   5.1008    CFS   UNIT VOLUME =    .9971       B =   526.28       P60 = 1.7990
     AREA =       .001260 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000


     K =   .102465HR    TP =   .130000HR    K/TP RATIO =   .788191     SHAPE CONSTANT, N =  4.553549
     UNIT PEAK =   .42056    CFS   UNIT VOLUME =    .9724       B =   390.52       P60 = 1.7990
     AREA =       .000140 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

*
PRINT HYD             ID=1    CODE=1

                                        HYDROGRAPH FROM AREA 25th


    RUNOFF VOLUME =     2.45015 INCHES      =         .1829 ACRE-FEET
    PEAK DISCHARGE RATE =       3.85 CFS  AT   1.500 HOURS   BASIN AREA =    .0014 SQ. MI.



*
*
ADD HYD               ID=2   HYD=25TH.1   ID I=1      ID II=2
*
PRINT HYD             ID=2    CODE=1

                                        HYDROGRAPH FROM AREA 25TH.1


    RUNOFF VOLUME =     2.16713 INCHES      =        1.8955 ACRE-FEET
    PEAK DISCHARGE RATE =      41.62 CFS  AT   1.500 HOURS   BASIN AREA =    .0164 SQ. MI.



*
*
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=3
                      MINIMUM ELEV=99.13 FT  MAXIMUM ELEV=100 FT
                      CHANNEL SLOPE=0.02  FLOOD PLAIN SLOPE=0.02
                      N=0.030  DIST=9  N=-0.017  DIST=41 N=0.030 DIST=50
                      DIST   ELEV     DIST    ELEV     DIST    ELEV    DIST    ELEV
```

```
  0.0   100.0    9.0   99.82    9.2   99.13    11   99.26
 25.0    99.54  39.0   99.26   41.0   99.13   41.2  99.82
 50.0   100.0
```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
99.13	.00	.00	.00
99.18	.03	.03	1.37
99.22	.13	.19	2.73
99.27	.28	.53	4.62
99.31	.60	1.18	9.22
99.36	1.13	2.58	13.83
99.40	1.87	4.95	18.43
99.45	2.82	8.47	23.04
99.50	3.98	13.35	27.65
99.54	5.35	19.83	32.04
99.59	6.82	29.68	32.07
99.63	8.28	41.05	32.09
99.68	9.75	53.83	32.12
99.73	11.23	67.96	32.15
99.77	12.70	83.36	32.17
99.82	14.17	99.98	32.20
99.86	15.74	117.88	36.42
99.91	17.51	137.25	40.95
99.95	19.49	158.15	45.48
100.00	21.67	180.68	50.00

```
*
ROUTE MCUNGE          ID=1   HYD=25TH.9  INFLOW ID=2  DT=0.00
                        L=1200   NO VS=1  SLP=0.02

     INFLOW END= 500              TABLE PTS= 20
     DT=  .050000                 QMED=       20.81  CKMED=      6.7112
     WIDTH MED=       32.04       NREACH=  2         DX=       600.00
```

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.470	.0	3.33	.45	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.05	.0	.0	.343	1.4	3.33	.97	.999	.001	.999	.000	.001	.0	1.000	.000	.000
.09	.1	.2	.216	2.7	3.33	1.54	.998	.002	.998	.000	.002	.1	.999	.000	.001
.14	.3	.5	.178	4.6	3.32	1.88	.997	.003	.997	.000	.003	.3	.998	.000	.002
.18	.6	1.2	.170	9.2	3.32	1.96	.997	.003	.997	.000	.003	.8	.997	.000	.003
.23	1.1	2.6	.146	13.8	3.32	2.29	.995	.005	.995	.000	.005	1.8	.996	.000	.004
.27	1.9	4.9	.126	18.4	3.48	2.65	1.045	.006	.994	.025	-.019	3.7	.995	.012	-.006
.32	2.8	8.5	.111	23.0	3.98	3.01	1.194	.008	.993	.092	-.085	6.6	.993	.055	-.048
.37	4.0	13.3	.099	27.6	4.48	3.36	1.345	.009	.992	.150	-.143	10.8	.993	.117	-.110
.41	5.3	19.8	.090	32.0	5.48	3.71	1.643	.009	.993	.246	-.239	16.5	.992	.177	-.169
.46	6.8	29.7	.077	32.1	7.24	4.35	2.171	.011	.993	.371	-.365	24.6	.994	.339	-.332
.50	8.3	41.0	.067	32.1	8.23	4.95	2.468	.013	.993	.426	-.418	35.2	.993	.400	-.393
.55	9.8	53.8	.060	32.1	9.16	5.52	2.747	.015	.992	.468	-.460	47.3	.992	.448	-.440
.60	11.2	68.0	.055	32.1	10.04	6.05	3.011	.018	.991	.504	-.495	60.7	.992	.487	-.478
.64	12.7	83.4	.051	32.2	10.87	6.56	3.262	.020	.991	.533	-.524	75.5	.991	.519	-.510
.69	14.2	100.0	.047	32.2	11.68	7.05	3.504	.022	.990	.558	-.548	91.5	.990	.546	-.536
.73	15.7	117.9	.044	36.4	11.21	7.49	3.364	.024	.989	.544	-.533	108.7	.990	.550	-.539
.78	17.5	137.3	.043	40.9	10.77	7.84	3.232	.026	.988	.530	-.518	127.4	.988	.535	-.523
.82	19.5	158.2	.041	45.5	10.45	8.12	3.136	.028	.987	.520	-.506	147.6	.987	.523	-.510
.87	21.7	180.7	.040	50.0	10.09	8.34	3.026	.030	.985	.507	-.492	169.3	.986	.514	-.500

```
MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) =   4 OCCURRED       1 TIMES.  AVERAGE NUMBER ITERATIONS =  1.0663
Equations solved using the Ponce correction to C2
PRINT HYD             ID=1    CODE=1

                                HYDROGRAPH FROM AREA 25TH.9

    RUNOFF VOLUME =     2.16814 INCHES     =       1.8964 ACRE-FEET
    PEAK DISCHARGE RATE =      41.28 CFS  AT   1.550 HOURS   BASIN AREA =    .0164 SQ. MI.


*
*$**********************************************************************
*$**********************************************************************
*$ HZI ANALYSIS FOR ON-SITE YUCATAN AT CABEZON TRACT 4
*$**********************************************************************
*$ COMPUTE DEVELOPED BASIN 401
COMPUTE NM HYD        ID=14 HYD=401.D AREA=0.00715 SQ MI
                      %A=0 %B=25 %C=25 %D=50 TP=-0.133 HR
                      MASS RAINFALL=-1

    K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
```

```
     UNIT PEAK =   14.146    CFS   UNIT VOLUME =     .9983       B =   526.28       P60 = 1.7990
     AREA =       .003575 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000


     K =   .118387HR    TP =   .133000HR    K/TP RATIO =   .890124      SHAPE CONSTANT, N =  3.984413
     UNIT PEAK =   9.5189    CFS   UNIT VOLUME =     .9998       B =   354.13       P60 = 1.7990
     AREA =       .003575 SQ MI    IA =     .42500 INCHES    INF =    1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD             ID=14 CODE=10

                                        HYDROGRAPH FROM AREA 401.D

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000        .0          5.000        .1         10.000        .1         15.000        .1         20.000        .1
     .500        .0          5.500        .1         10.500        .1         15.500        .1         20.500        .1
    1.000        .1          6.000        .1         11.000        .1         16.000        .1         21.000        .1
    1.500      15.8          6.500        .1         11.500        .1         16.500        .1         21.500        .1
    2.000       3.0          7.000        .1         12.000        .1         17.000        .1         22.000        .1
    2.500        .5          7.500        .1         12.500        .1         17.500        .1         22.500        .0
    3.000        .2          8.000        .1         13.000        .1         18.000        .1         23.000        .0
    3.500        .1          8.500        .1         13.500        .1         18.500        .1         23.500        .0
    4.000        .1          9.000        .1         14.000        .1         19.000        .1         24.000        .0
    4.500        .1          9.500        .1         14.500        .1         19.500        .1         24.500        .0

    RUNOFF VOLUME =     1.71966 INCHES     =        .6558 ACRE-FEET
    PEAK DISCHARGE RATE =      15.78 CFS  AT   1.500 HOURS   BASIN AREA =    .0072 SQ. MI.



*S--------------------------------------------------------------------
*S ADD Off-Site to 24TH STREET TO 401
ADD HYD               ID=15 HYD=TOT.401 IDi=5 IDii=14
PRINT HYD             ID=15 CODE=10

                                        HYDROGRAPH FROM AREA TOT.401

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000        .0          5.500        .3         11.000        .3         16.500        .2         22.000        .2
     .500        .0          6.000        .4         11.500        .3         17.000        .2         22.500        .2
    1.000        .1          6.500        .4         12.000        .3         17.500        .2         23.000        .2
    1.500      26.3          7.000        .4         12.500        .3         18.000        .2         23.500        .2
    2.000      14.8          7.500        .4         13.000        .3         18.500        .2         24.000        .2
    2.500       2.4          8.000        .4         13.500        .3         19.000        .2         24.500        .0
    3.000        .8          8.500        .4         14.000        .3         19.500        .2         25.000        .0
    3.500        .4          9.000        .3         14.500        .3         20.000        .2
    4.000        .3          9.500        .3         15.000        .3         20.500        .2
    4.500        .3         10.000        .3         15.500        .2         21.000        .2
    5.000        .3         10.500        .3         16.000        .2         21.500        .2

    RUNOFF VOLUME =     1.87932 INCHES     =       2.3704 ACRE-FEET
    PEAK DISCHARGE RATE =      45.52 CFS  AT   1.650 HOURS   BASIN AREA =    .0237 SQ. MI.



*S--------------------------------------------------------------------
*S COMPUTE DEVELOPED BASIN 402
COMPUTE NM HYD        ID=16 HYD=402.D AREA=0.00256 SQ MI
                      %A=0 %B=25 %C=25 %D=50 TP=-0.133 HR
                      MASS RAINFALL=-1

     K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000      SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   5.0649    CFS   UNIT VOLUME =     .9971       B =   526.28       P60 = 1.7990
     AREA =       .001280 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000


     K =   .118387HR    TP =   .133000HR    K/TP RATIO =   .890124      SHAPE CONSTANT, N =  3.984413
     UNIT PEAK =   3.4082    CFS   UNIT VOLUME =     .9975       B =   354.13       P60 = 1.7990
     AREA =       .001280 SQ MI    IA =     .42500 INCHES    INF =    1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD             ID=16 CODE=10
```

Tract 4 Subdivision-Cabezon Redevelopment
100-Year 24-Hour Duration Storm-Developed
AHYMO Output File

HYDROGRAPH FROM AREA 402.D

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.0	10.000	.0	15.000	.0	20.000	.0
.500	.0	5.500	.0	10.500	.0	15.500	.0	20.500	.0
1.000	.0	6.000	.0	11.000	.0	16.000	.0	21.000	.0
1.500	5.7	6.500	.0	11.500	.0	16.500	.0	21.500	.0
2.000	1.1	7.000	.0	12.000	.0	17.000	.0	22.000	.0
2.500	.2	7.500	.0	12.500	.0	17.500	.0	22.500	.0
3.000	.1	8.000	.0	13.000	.0	18.000	.0	23.000	.0
3.500	.0	8.500	.0	13.500	.0	18.500	.0	23.500	.0
4.000	.0	9.000	.0	14.000	.0	19.000	.0	24.000	.0
4.500	.0	9.500	.0	14.500	.0	19.500	.0		

RUNOFF VOLUME = 1.71966 INCHES = .2348 ACRE-FEET
PEAK DISCHARGE RATE = 5.66 CFS AT 1.500 HOURS BASIN AREA = .0026 SQ. MI.

```
*S--------------------------------------------------------------------
*S ADD 3A/3C/24TH STREET/401 TO 402
ADD HYD              ID=17 HYD=ANLYPT.A IDi=15 IDii=16
PRINT HYD            ID=17 CODE=10
```

HYDROGRAPH FROM AREA ANLYPT.A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.500	.4	11.000	.3	16.500	.3	22.000	.2
.500	.0	6.000	.4	11.500	.3	17.000	.3	22.500	.2
1.000	.1	6.500	.4	12.000	.3	17.500	.3	23.000	.2
1.500	32.0	7.000	.4	12.500	.3	18.000	.2	23.500	.2
2.000	15.9	7.500	.4	13.000	.3	18.500	.2	24.000	.2
2.500	2.6	8.000	.4	13.500	.3	19.000	.2	24.500	.0
3.000	.8	8.500	.4	14.000	.3	19.500	.2	25.000	.0
3.500	.5	9.000	.4	14.500	.3	20.000	.2		
4.000	.4	9.500	.4	15.000	.3	20.500	.2		
4.500	.4	10.000	.4	15.500	.3	21.000	.2		
5.000	.4	10.500	.3	16.000	.3	21.500	.2		

RUNOFF VOLUME = 1.86371 INCHES = 2.6052 ACRE-FEET
PEAK DISCHARGE RATE = 48.59 CFS AT 1.650 HOURS BASIN AREA = .0262 SQ. MI.

```
*S--------------------------------------------------------------------
*S COMPUTE DEVELOPED BASIN 404
COMPUTE NM HYD       ID=18 HYD=ANLYPT.C AREA=0.01601 SQ MI
                     %A=0 %B=25 %C=25 %D=50 TP=-0.133 HR
                     MASS RAINFALL=-1
```

K = .072485HR TP = .133000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 31.675 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.7990
AREA = .008005 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118387HR TP = .133000HR K/TP RATIO = .890124 SHAPE CONSTANT, N = 3.984413
UNIT PEAK = 21.314 CFS UNIT VOLUME = 1.001 B = 354.13 P60 = 1.7990
AREA = .008005 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

BULKING FACTOR APPLIED TO HYDROGRAPH. FACTOR = 1.06000 AT PEAK FLOW.

```
PRINT HYD            ID=18 CODE=10
```

HYDROGRAPH FROM AREA ANLYPT.C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.2	10.000	.2	15.000	.1	20.000	.1
.500	.0	5.500	.2	10.500	.2	15.500	.1	20.500	.1
1.000	.2	6.000	.2	11.000	.2	16.000	.1	21.000	.1
1.500	35.3	6.500	.2	11.500	.2	16.500	.1	21.500	.1
2.000	6.7	7.000	.2	12.000	.2	17.000	.1	22.000	.1
2.500	1.0	7.500	.2	12.500	.2	17.500	.1	22.500	.1
3.000	.4	8.000	.2	13.000	.2	18.000	.1	23.000	.1
3.500	.2	8.500	.2	13.500	.2	18.500	.1	23.500	.1
4.000	.2	9.000	.2	14.000	.2	19.000	.1	24.000	.1

4.500	.2	9.500	.2	14.500	.1	19.500	.1	24.500	.0

RUNOFF VOLUME = 1.71966 INCHES = 1.4684 ACRE-FEET
PEAK DISCHARGE RATE = 35.31 CFS AT 1.500 HOURS BASIN AREA = .0160 SQ. MI.

```
*S--------------------------------------------------------------------------
*S COMPUTE DEVELOPED BASIN 405
COMPUTE NM HYD          ID=24 HYD=405.D AREA=0.01645 SQ MI
                        %A=0 %B=25 %C=25 %D=50 TP=-0.133 HR
                        MASS RAINFALL=-1
```

K = .072485HR TP = .133000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 32.546 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.7990
AREA = .008225 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118387HR TP = .133000HR K/TP RATIO = .890124 SHAPE CONSTANT, N = 3.984413
UNIT PEAK = 21.900 CFS UNIT VOLUME = 1.001 B = 354.13 P60 = 1.7990
AREA = .008225 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

BULKING FACTOR APPLIED TO HYDROGRAPH. FACTOR = 1.06000 AT PEAK FLOW.

```
PRINT HYD               ID=24 CODE=10
```

HYDROGRAPH FROM AREA 405.D

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.2	10.000	.2	15.000	.1	20.000	.1
.500	.0	5.500	.2	10.500	.2	15.500	.1	20.500	.1
1.000	.2	6.000	.2	11.000	.2	16.000	.1	21.000	.1
1.500	36.3	6.500	.2	11.500	.2	16.500	.1	21.500	.1
2.000	6.9	7.000	.2	12.000	.2	17.000	.1	22.000	.1
2.500	1.1	7.500	.2	12.500	.2	17.500	.1	22.500	.1
3.000	.4	8.000	.2	13.000	.2	18.000	.1	23.000	.1
3.500	.2	8.500	.2	13.500	.2	18.500	.1	23.500	.1
4.000	.2	9.000	.2	14.000	.2	19.000	.1	24.000	.1
4.500	.2	9.500	.2	14.500	.2	19.500	.1	24.500	.0

RUNOFF VOLUME = 1.71966 INCHES = 1.5087 ACRE-FEET
PEAK DISCHARGE RATE = 36.28 CFS AT 1.500 HOURS BASIN AREA = .0165 SQ. MI.

```
*S--------------------------------------------------------------------------
*S ADD OFF-SITE TO 25TH STREET TO 405
ADD HYD                 ID=25 HYD=ANLYPT.D IDi=1 IDii=24
PRINT HYD               ID=25 CODE=10
```

HYDROGRAPH FROM AREA ANLYPT.D

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.500	.5	11.000	.4	16.500	.3	22.000	.3
.500	.0	6.000	.5	11.500	.4	17.000	.3	22.500	.3
1.000	.2	6.500	.6	12.000	.4	17.500	.3	23.000	.3
1.500	74.6	7.000	.6	12.500	.4	18.000	.3	23.500	.3
2.000	17.8	7.500	.5	13.000	.4	18.500	.3	24.000	.3
2.500	2.8	8.000	.5	13.500	.4	19.000	.3	24.500	.0
3.000	1.0	8.500	.5	14.000	.4	19.500	.3	25.000	.0
3.500	.6	9.000	.5	14.500	.4	20.000	.3		
4.000	.5	9.500	.5	15.000	.4	20.500	.3		
4.500	.5	10.000	.5	15.500	.4	21.000	.3		
5.000	.5	10.500	.5	16.000	.4	21.500	.3		

RUNOFF VOLUME = 1.94353 INCHES = 3.4050 ACRE-FEET
PEAK DISCHARGE RATE = 74.57 CFS AT 1.500 HOURS BASIN AREA = .0329 SQ. MI.

```
*S--------------------------------------------------------------------------
*S ROUTE COMBINED FLOWS THROUGH STORM SEWER SYSTEM
*S
COMPUTE RATING CURVE    RC=1 VS NO=1 CODE=-1  SLP=0.005
                        DIA=4.5  N=0.018
```

RATING CURVE PIPE SECTION 1.0

Tract 4 Subdivision-Cabezon Redevelopment
100-Year 24-Hour Duration Storm-Developed
AHYMO Output File

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	MAX WIDTH FT
.00	.00	.00	.00
.23	.32	.53	2.00
.47	.88	2.29	2.75
.70	1.59	5.32	3.27
.94	2.40	9.56	3.66
1.17	3.30	14.93	3.95
1.41	4.25	21.30	4.17
1.64	5.25	28.54	4.33
1.88	6.28	36.49	4.44
2.11	7.32	44.98	4.49
2.35	8.38	53.83	4.50
2.58	9.43	62.84	4.50
2.81	10.46	71.81	4.50
3.05	11.47	80.48	4.50
3.28	12.43	88.60	4.50
3.52	13.34	95.87	4.50
3.75	14.17	101.92	4.50
3.99	14.90	106.25	4.50
4.22	15.50	108.03	4.50
4.50	15.90	108.03	4.50

```
ROUTE MCUNGE            ID=99    HYD=R INFLOW ID=25
                                 DT=0.0  LENGTH=650.0
                                 NS=0    SLOPE=0.005  MATCODE=0
                                 REGCODE=0  CCODE=0

     INFLOW END= 502             TABLE PTS= 19
     DT=  .050000                QMED=       37.29  CKMED=      8.1039
     WIDTH MED=        4.44      NREACH=  1         DX=       650.00
```

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.147	.0	3.61	.79	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.23	.3	.5	.108	2.0	3.53	1.67	.977	.023	.977	.000	.023	.1	.996	.000	.004
.47	.9	2.3	.069	2.7	3.78	2.60	1.048	.068	.936	.055	.009	1.3	.960	.023	.017
.70	1.6	5.3	.054	3.3	4.79	3.35	1.327	.104	.914	.177	-.091	3.7	.923	.121	-.043
.94	2.4	9.6	.045	3.7	5.64	3.98	1.562	.143	.894	.260	-.155	7.3	.903	.222	-.125
1.17	3.3	14.9	.040	4.0	6.36	4.53	1.762	.183	.876	.321	-.197	12.1	.885	.293	-.178
1.41	4.2	21.3	.036	4.2	6.98	5.01	1.932	.225	.857	.367	-.224	18.0	.866	.346	-.212
1.64	5.2	28.5	.033	4.3	7.49	5.44	2.075	.270	.838	.402	-.240	24.8	.848	.386	-.234
1.88	6.3	36.5	.031	4.4	7.92	5.81	2.192	.320	.818	.431	-.249	32.4	.829	.418	-.246
2.11	7.3	45.0	.029	4.5	8.25	6.14	2.284	.374	.796	.453	-.249	40.7	.808	.443	-.251
2.35	8.4	53.8	.028	4.5	8.48	6.42	2.348	.434	.770	.471	-.242	49.4	.784	.463	-.248
2.58	9.4	62.8	.027	4.5	8.53	6.66	2.363	.503	.740	.483	-.222	58.3	.757	.478	-.235
2.81	10.5	71.8	.026	4.5	8.38	6.86	2.319	.586	.700	.488	-.188	67.3	.722	.486	-.208
3.05	11.5	80.5	.026	4.5	7.98	7.02	2.209	.690	.646	.487	-.133	76.1	.676	.488	-.165
3.28	12.4	88.6	.025	4.5	7.31	7.13	2.025	.828	.570	.481	-.051	84.5	.613	.485	-.098
3.52	13.3	95.9	.025	4.5	6.33	7.19	1.752	1.036	.453	.472	.075	92.2	.521	.477	.002
3.75	14.2	101.9	.025	4.5	4.93	7.19	1.364	1.415	.251	.471	.278	98.9	.374	.469	.157
3.99	14.9	106.3	.025	4.5	2.89	7.13	.799	2.518	-.166	.537	.630	104.1	.103	.483	.413
4.22	15.5	108.0	.026	4.5	1.64	6.97	.455	4.492	-.511	.664	.847	107.2	-.341	.601	.740

```
MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) =   3 OCCURRED       6 TIMES.  AVERAGE NUMBER ITERATIONS =  1.0706
```

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.147	.0	3.61	.79	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.23	.3	.5	.108	2.0	3.53	1.67	.977	.023	.977	.000	.023	.1	.996	.000	.004
.47	.9	2.3	.069	2.7	3.78	2.60	1.048	.068	.936	.055	.009	1.3	.960	.023	.017
.70	1.6	5.3	.054	3.3	4.06	3.35	1.123	.123	.890	.110	.000	3.7	.913	.087	.000
.94	2.4	9.6	.045	3.7	4.29	3.98	1.188	.188	.842	.158	.000	7.3	.865	.135	.000
1.17	3.3	14.9	.040	4.0	4.54	4.53	1.256	.256	.796	.204	.000	12.1	.818	.182	.000
1.41	4.2	21.3	.036	4.2	4.79	5.01	1.328	.328	.753	.247	.000	18.0	.774	.226	.000
1.64	5.2	28.5	.033	4.3	5.06	5.44	1.401	.401	.714	.286	.000	24.8	.733	.267	.000
1.88	6.3	36.5	.031	4.4	5.33	5.81	1.475	.475	.678	.322	.000	32.4	.695	.305	.000
2.11	7.3	45.0	.029	4.5	5.60	6.14	1.550	.550	.645	.355	.000	40.7	.661	.339	.000
2.35	8.4	53.8	.028	4.5	5.87	6.42	1.627	.627	.615	.385	.000	49.4	.629	.371	.000
2.58	9.4	62.8	.027	4.5	6.14	6.66	1.700	.700	.588	.412	.000	58.3	.601	.399	.000
2.81	10.5	71.8	.026	4.5	6.39	6.86	1.769	.769	.565	.435	.000	67.3	.577	.423	.000
3.05	11.5	80.5	.026	4.5	6.62	7.02	1.832	.832	.546	.454	.000	76.1	.555	.445	.000
3.28	12.4	88.6	.025	4.5	6.82	7.13	1.888	.888	.530	.470	.000	84.5	.538	.462	.000
3.52	13.3	95.9	.025	4.5	6.33	7.19	1.752	1.036	.453	.472	.075	92.2	.521	.477	.002
3.75	14.2	101.9	.025	4.5	4.93	7.19	1.364	1.415	.251	.471	.278	98.9	.374	.469	.157
3.99	14.9	106.3	.025	4.5	3.63	7.13	1.004	2.004	.000	.501	.499	104.1	.103	.483	.413
4.22	15.5	108.0	.026	4.5	3.67	6.97	1.015	2.015	.000	.504	.496	107.2	.000	.502	.498

```
MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) =   3 OCCURRED       6 TIMES.  AVERAGE NUMBER ITERATIONS =  1.0723
Equations solved with two passes: first using the Ponce correction to C1, second using the Fread correction to C1, C2 and C3
*S--------------------------------------------------------------------
*S ADD 3B/3D/25TH STREET/405 TO 404
ADD HYD                 ID=26 HYD=TOT.404 IDi=18 IDii=99
PRINT HYD               ID=26 CODE=10
```

Tract 4 Subdivision-Cabezon Redevelopment
100-Year 24-Hour Duration Storm-Developed
AHYMO Output File

HYDROGRAPH FROM AREA TOT.404

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.500	.7	11.000	.6	16.500	.5	22.000	.4
.500	.0	6.000	.8	11.500	.6	17.000	.5	22.500	.4
1.000	.2	6.500	.8	12.000	.6	17.500	.5	23.000	.4
1.500	97.5	7.000	.8	12.500	.6	18.000	.5	23.500	.4
2.000	26.0	7.500	.8	13.000	.6	18.500	.5	24.000	.4
2.500	4.2	8.000	.7	13.500	.5	19.000	.4	24.500	.0
3.000	1.5	8.500	.7	14.000	.5	19.500	.4	25.000	.0
3.500	.9	9.000	.7	14.500	.5	20.000	.4		
4.000	.7	9.500	.7	15.000	.5	20.500	.4		
4.500	.7	10.000	.7	15.500	.5	21.000	.4		
5.000	.7	10.500	.6	16.000	.5	21.500	.4		

RUNOFF VOLUME = 1.86652 INCHES = 4.8639 ACRE-FEET
PEAK DISCHARGE RATE = 105.43 CFS AT 1.550 HOURS BASIN AREA = .0489 SQ. MI.

```
*S--------------------------------------------------------------------------
*S COMPUTE DEVELOPED BASIN 403
COMPUTE NM HYD          ID=27 HYD=ANLYPT.B AREA=0.01525 SQ MI
                        %A=0 %B=25 %C=25 %D=50 TP=-0.133 HR
                        MASS RAINFALL=-1
```

K = .072485HR TP = .133000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 30.172 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.7990
AREA = .007625 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118387HR TP = .133000HR K/TP RATIO = .890124 SHAPE CONSTANT, N = 3.984413
UNIT PEAK = 20.303 CFS UNIT VOLUME = 1.001 B = 354.13 P60 = 1.7990
AREA = .007625 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

BULKING FACTOR APPLIED TO HYDROGRAPH. FACTOR = 1.06000 AT PEAK FLOW.

```
PRINT HYD               ID=27 CODE=10
```

HYDROGRAPH FROM AREA ANLYPT.B

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.2	10.000	.2	15.000	.1	20.000	.1
.500	.0	5.500	.2	10.500	.2	15.500	.1	20.500	.1
1.000	.2	6.000	.2	11.000	.2	16.000	.1	21.000	.1
1.500	33.6	6.500	.2	11.500	.2	16.500	.1	21.500	.1
2.000	6.4	7.000	.2	12.000	.2	17.000	.1	22.000	.1
2.500	1.0	7.500	.2	12.500	.2	17.500	.1	22.500	.1
3.000	.4	8.000	.2	13.000	.1	18.000	.1	23.000	.1
3.500	.2	8.500	.2	13.500	.1	18.500	.1	23.500	.1
4.000	.2	9.000	.2	14.000	.1	19.000	.1	24.000	.1
4.500	.2	9.500	.2	14.500	.1	19.500	.1	24.500	.0

RUNOFF VOLUME = 1.71966 INCHES = 1.3986 ACRE-FEET
PEAK DISCHARGE RATE = 33.63 CFS AT 1.500 HOURS BASIN AREA = .0153 SQ. MI.

```
*S--------------------------------------------------------------------------
*S ADD 3B/3D/25TH STREET/405/404
ADD HYD                 ID=28 HYD=TOT.INLET IDi=26 IDii=27
PRINT HYD               ID=28 CODE=10
```

HYDROGRAPH FROM AREA TOT.INLET

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.500	.9	11.000	.8	16.500	.6	22.000	.5
.500	.0	6.000	1.0	11.500	.8	17.000	.6	22.500	.5
1.000	.4	6.500	1.0	12.000	.7	17.500	.6	23.000	.5
1.500	131.2	7.000	1.0	12.500	.7	18.000	.6	23.500	.5
2.000	32.4	7.500	1.0	13.000	.7	18.500	.6	24.000	.5
2.500	5.2	8.000	.9	13.500	.7	19.000	.6	24.500	.0
3.000	1.8	8.500	.9	14.000	.7	19.500	.6	25.000	.0
3.500	1.1	9.000	.9	14.500	.7	20.000	.5		
4.000	.9	9.500	.8	15.000	.7	20.500	.5		

```
    4.500      .8       10.000      .8       15.500      .6       21.000      .5
    5.000      .9       10.500      .8       16.000      .6       21.500      .5

   RUNOFF VOLUME =     1.83158 INCHES     =       6.2625 ACRE-FEET
   PEAK DISCHARGE RATE =     135.27 CFS  AT   1.550 HOURS   BASIN AREA =    .0641 SQ. MI.



*S--------------------------------------------------------------------
*S ROUTE COMBINED FLOWS THROUGH STORM SEWER SYSTEM
*S
COMPUTE RATING CURVE   RC=1 VS NO=1 CODE=-1  SLP=0.005
                       DIA=4.5  N=0.018

                                  RATING CURVE PIPE SECTION  1.0
                                     WATER       FLOW        FLOW        MAX
                                    SURFACE      AREA        RATE       WIDTH
                                     ELEV       SQ FT        CFS         FT
                                       .00         .00         .00         .00
                                       .23         .32         .53        2.00
                                       .47         .88        2.29        2.75
                                       .70        1.59        5.32        3.27
                                       .94        2.40        9.56        3.66
                                      1.17        3.30       14.93        3.95
                                      1.41        4.25       21.30        4.17
                                      1.64        5.25       28.54        4.33
                                      1.88        6.28       36.49        4.44
                                      2.11        7.32       44.98        4.49
                                      2.35        8.38       53.83        4.50
                                      2.58        9.43       62.84        4.50
                                      2.81       10.46       71.81        4.50
                                      3.05       11.47       80.48        4.50
                                      3.28       12.43       88.60        4.50
                                      3.52       13.34       95.87        4.50
                                      3.75       14.17      101.92        4.50
                                      3.99       14.90      106.25        4.50
                                      4.22       15.50      108.03        4.50
                                      4.50       15.90      108.03        4.50
ROUTE MCUNGE           ID=99   HYD=R INFLOW ID=28
                               DT=0.0  LENGTH=850.0
                               NS=0    SLOPE=0.005  MATCODE=0
                               REGCODE=0  CCODE=0

     INFLOW END= 503           TABLE PTS= 19
     DT=  .050000              QMED=       67.64  CKMED=       8.6693
     WIDTH MED=        4.50 .  NREACH=  1         DX=       850.00

  DEPTH    AREA      Q     TRAVEL  WIDTH      ck       VEL      C       D      C1      C2      C3     Q-M     C1-M    C2-M    C3-M
   (FT)   (SQ FT)  (CFS)  TIME(HR) (FT)     (FPS)    (FPS)                                          (CFS)
    .00      .0      .0     .193      .0     4.72      .79   1.000    .000  1.000    .000    .000      .0   1.000    .000    .000
    .23      .3      .5     .142     2.0     4.66     1.67    .987    .013   .987    .000    .013      .1    .998    .000    .002
    .47      .9     2.3     .091     2.7     4.52     2.60    .957    .043   .957    .000    .043     1.3    .974    .000    .026
    .70     1.6     5.3     .071     3.3     4.79     3.35   1.014    .080   .924    .045    .031     3.7    .942    .021    .038
    .94     2.4     9.6     .059     3.7     5.64     3.98   1.194    .109   .905    .132   -.037     7.3    .913    .092   -.005
   1.17     3.3    14.9     .052     4.0     6.36     4.53   1.347    .140   .888    .196   -.083    12.1    .896    .166   -.062
   1.41     4.2    21.3     .047     4.2     6.98     5.01   1.477    .172   .870    .245   -.115    18.0    .879    .223   -.101
   1.64     5.2    28.5     .043     4.3     7.49     5.44   1.587    .207   .852    .284   -.136    24.8    .861    .266   -.128
   1.88     6.3    36.5     .041     4.4     7.92     5.81   1.676    .244   .833    .315   -.148    32.4    .843    .301   -.144
   2.11     7.3    45.0     .038     4.5     8.25     6.14   1.747    .286   .812    .340   -.152    40.7    .823    .329   -.152
   2.35     8.4    53.8     .037     4.5     8.48     6.42   1.796    .332   .788    .361   -.148    49.4    .801    .352   -.153
   2.58     9.4    62.8     .035     4.5     8.53     6.66   1.807    .385   .759    .373   -.132    58.3    .775    .368   -.143
   2.81    10.5    71.8     .034     4.5     8.38     6.86   1.774    .448   .722    .379   -.101    67.3    .742    .378   -.120
   3.05    11.5    80.5     .034     4.5     7.98     7.02   1.690    .527   .672    .378   -.050    76.1    .700    .380   -.080
   3.28    12.4    88.6     .033     4.5     7.31     7.13   1.549    .634   .602    .371    .027    84.5    .642    .376   -.018
   3.52    13.3    95.9     .033     4.5     6.33     7.19   1.340    .792   .494    .361    .144    92.2    .557    .367    .076
   3.75    14.2   101.9     .033     4.5     4.93     7.19   1.043   1.082   .308    .360    .332    98.9    .421    .358    .221
   3.99    14.9   106.3     .033     4.5     2.89     7.13    .611   1.925  -.089    .434    .654   104.1    .169    .374    .457
   4.22    15.5   108.0     .034     4.5     1.64     6.97    .348   3.435  -.436    .582    .854   107.2   -.265    .509    .756
MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) =   6 OCCURRED       1 TIMES.  AVERAGE NUMBER ITERATIONS =  1.0878
Equations solved using the Ponce correction to C2
*S--------------------------------------------------------------------
*S COMPUTE DEVELOPED BASIN 406
COMPUTE NM HYD         ID=29 HYD=ANLYPT.F AREA=0.00412 SQ MI
                       %A=0 %B=25 %C=25 %D=50 TP=-0.133 HR
                       MASS RAINFALL=-1

     K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   8.1513    CFS   UNIT VOLUME =    .9979       B =   526.28       P60 = 1.7990
     AREA =       .002060 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000
```

Tract 4 Subdivision-Cabezon Redevelopment
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AHYMO Output File

```
K =   .118387HR    TP =   .133000HR    K/TP RATIO =   .890124     SHAPE CONSTANT, N =  3.984413
UNIT PEAK =   5.4850    CFS   UNIT VOLUME =    .9988       B =   354.13       P60 = 1.7990
AREA =       .002060 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

  BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD             ID=29 CODE=10

                                    HYDROGRAPH FROM AREA ANLYPT.F

 TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
  HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
 .000        .0          5.000       .0         10.000       .0         15.000       .0         20.000       .0
 .500        .0          5.500       .1         10.500       .0         15.500       .0         20.500       .0
1.000        .0          6.000       .1         11.000       .0         16.000       .0         21.000       .0
1.500       9.1          6.500       .1         11.500       .0         16.500       .0         21.500       .0
2.000       1.7          7.000       .1         12.000       .0         17.000       .0         22.000       .0
2.500        .3          7.500       .1         12.500       .0         17.500       .0         22.500       .0
3.000        .1          8.000       .1         13.000       .0         18.000       .0         23.000       .0
3.500        .1          8.500       .1         13.500       .0         18.500       .0         23.500       .0
4.000        .0          9.000       .0         14.000       .0         19.000       .0         24.000       .0
4.500        .0          9.500       .0         14.500       .0         19.500       .0         24.500       .0

  RUNOFF VOLUME =     1.71966 INCHES      =        .3779 ACRE-FEET
  PEAK DISCHARGE RATE =       9.10 CFS  AT   1.500 HOURS   BASIN AREA =   .0041 SQ. MI.


*S--------------------------------------------------------------------
*S ADD 3B/3D/25TH STREET/405/404 TO 406
ADD HYD               ID=30 HYD=ANLYPT.O2 IDi=99 IDii=29
PRINT HYD             ID=30 CODE=10

                                    HYDROGRAPH FROM AREA ANLYPT.O2

 TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
  HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
 .000        .0          5.500       .9         11.000       .8         16.500       .7         22.000       .5
 .500        .0          6.000      1.0         11.500       .8         17.000       .6         22.500       .5
1.000        .1          6.500      1.1         12.000       .8         17.500       .6         23.000       .5
1.500      111.7         7.000      1.0         12.500       .8         18.000       .6         23.500       .5
2.000       36.2         7.500      1.0         13.000       .8         18.500       .6         24.000       .5
2.500        6.2         8.000      1.0         13.500       .7         19.000       .6         24.500       .0
3.000        2.1         8.500      1.0         14.000       .7         19.500       .6         25.000       .0
3.500        1.2         9.000       .9         14.500       .7         20.000       .6
4.000        .9          9.500       .9         15.000       .7         20.500       .6
4.500        .9         10.000       .9         15.500       .7         21.000       .6
5.000        .9         10.500       .9         16.000       .7         21.500       .5

  RUNOFF VOLUME =     1.74964 INCHES      =       6.3668 ACRE-FEET
  PEAK DISCHARGE RATE =     117.21 CFS  AT   1.550 HOURS   BASIN AREA =   .0682 SQ. MI.


*S--------------------------------------------------------------------
*S ADD FLOW AT ANLYPT A TO TOTAL FLOW AT MAIN ENT
ADD HYD               ID=31 HYD=ANLYPT01.O2 IDi=30 IDii=17
PRINT HYD             ID=31 CODE=10

                                    HYDROGRAPH FROM AREA ANLYPT01.O2

 TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
  HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
 .000        .0          5.500      1.3         11.000      1.2         16.500       .9         22.000       .8
 .500        .0          6.000      1.4         11.500      1.1         17.000       .9         22.500       .7
1.000        .2          6.500      1.5         12.000      1.1         17.500       .9         23.000       .7
1.500     143.7          7.000      1.5         12.500      1.1         18.000       .9         23.500       .7
2.000      52.1          7.500      1.4         13.000      1.1         18.500       .8         24.000       .7
2.500       8.8          8.000      1.4         13.500      1.0         19.000       .8         24.500       .1
3.000       2.9          8.500      1.3         14.000      1.0         19.500       .8         25.000       .0
3.500       1.7          9.000      1.3         14.500      1.0         20.000       .8
4.000       1.3          9.500      1.3         15.000      1.0         20.500       .8
4.500       1.2         10.000      1.2         15.500      1.0         21.000       .8
5.000       1.3         10.500      1.2         16.000       .9         21.500       .8

  RUNOFF VOLUME =     1.78130 INCHES      =       8.9720 ACRE-FEET
  PEAK DISCHARGE RATE =     155.65 CFS  AT   1.550 HOURS   BASIN AREA =   .0944 SQ. MI.
```

Tract 4 Subdivision-Cabezon Redevelopment
100-Year 24-Hour Duration Storm-Developed
AHYMO Output File

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*
*
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S COMPUTE DEVELOPED SOUTHERN TRACT 4
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S COMPUTE DEVELOPED BASIN 410
COMPUTE NM HYD          ID=50 HYD=ANLYPT.G AREA=0.01277 SQ MI
                        %A=0 %B=27 %C=27 %D=46 TP=-0.133 HR
                        MASS RAINFALL=-1

     K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   23.244    CFS   UNIT VOLUME =    .9986       B =   526.28      P60 = 1.7990
     AREA =      .005874 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .118387HR    TP =   .133000HR    K/TP RATIO =   .890124     SHAPE CONSTANT, N =  3.984413
     UNIT PEAK =   18.361    CFS   UNIT VOLUME =    1.001       B =   354.13      P60 = 1.7990
     AREA =      .006896 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD               ID=50 CODE=10

                                    HYDROGRAPH FROM AREA ANLYPT.G

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
      .000       .0          5.000       .1         10.000       .1         15.000       .1         20.000       .1
      .500       .0          5.500       .1         10.500       .1         15.500       .1         20.500       .1
     1.000       .1          6.000       .2         11.000       .1         16.000       .1         21.000       .1
     1.500     27.5          6.500       .2         11.500       .1         16.500       .1         21.500       .1
     2.000      5.1          7.000       .2         12.000       .1         17.000       .1         22.000       .1
     2.500       .8          7.500       .2         12.500       .1         17.500       .1         22.500       .1
     3.000       .3          8.000       .2         13.000       .1         18.000       .1         23.000       .1
     3.500       .2          8.500       .1         13.500       .1         18.500       .1         23.500       .1
     4.000       .1          9.000       .1         14.000       .1         19.000       .1         24.000       .1
     4.500       .1          9.500       .1         14.500       .1         19.500       .1         24.500       .0

    RUNOFF VOLUME =     1.64845 INCHES     =       1.1227 ACRE-FEET
    PEAK DISCHARGE RATE =      27.55 CFS  AT   1.500 HOURS   BASIN AREA =   .0128 SQ. MI.


*S--------------------------------------------------------------------
*S COMPUTE DEVELOPED BASIN 411
COMPUTE NM HYD          ID=51 HYD=TOT.DS AREA=0.00950 SQ MI
                        %A=0 %B=27 %C=27 %D=46 TP=-0.133 HR
                        MASS RAINFALL=-1

     K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   17.292    CFS   UNIT VOLUME =    .9985       B =   526.28      P60 = 1.7990
     AREA =      .004370 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .118387HR    TP =   .133000HR    K/TP RATIO =   .890124     SHAPE CONSTANT, N =  3.984413
     UNIT PEAK =   13.659    CFS   UNIT VOLUME =    1.000       B =   354.13      P60 = 1.7990
     AREA =      .005130 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD               ID=51 CODE=10

                                    HYDROGRAPH FROM AREA TOT.DS

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
      .000       .0          5.000       .1         10.000       .1         15.000       .1         20.000       .1
      .500       .0          5.500       .1         10.500       .1         15.500       .1         20.500       .1
     1.000       .1          6.000       .1         11.000       .1         16.000       .1         21.000       .1
     1.500     20.5          6.500       .1         11.500       .1         16.500       .1         21.500       .1
     2.000      3.8          7.000       .1         12.000       .1         17.000       .1         22.000       .1
     2.500       .6          7.500       .1         12.500       .1         17.500       .1         22.500       .1
```

3.000	.2	8.000	.1	13.000	.1	18.000	.1	23.000	.1
3.500	.1	8.500	.1	13.500	.1	18.500	.1	23.500	.1
4.000	.1	9.000	.1	14.000	.1	19.000	.1	24.000	.1
4.500	.1	9.500	.1	14.500	.1	19.500	.1	24.500	.0

RUNOFF VOLUME = 1.64845 INCHES = .8352 ACRE-FEET
PEAK DISCHARGE RATE = 20.50 CFS AT 1.500 HOURS BASIN AREA = .0095 SQ. MI.

```
*S--------------------------------------------------------------------
*S COMPUTE DEVELOPED BASIN 412
COMPUTE NM HYD          ID=52 HYD=TOT.DS AREA=0.01412 SQ MI
                        %A=0 %B=27 %C=27 %D=46 TP=-0.133 HR
                        MASS RAINFALL=-1
```

K = .072485HR TP = .133000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 25.701 CFS UNIT VOLUME = .9987 B = 526.28 P60 = 1.7990
AREA = .006495 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118387HR TP = .133000HR K/TP RATIO = .890124 SHAPE CONSTANT, N = 3.984413
UNIT PEAK = 20.302 CFS UNIT VOLUME = 1.001 B = 354.13 P60 = 1.7990
AREA = .007625 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

BULKING FACTOR APPLIED TO HYDROGRAPH. FACTOR = 1.06000 AT PEAK FLOW.

```
PRINT HYD               ID=52 CODE=10
```

HYDROGRAPH FROM AREA TOT.DS

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.2	10.000	.1	15.000	.1	20.000	.1
.500	.0	5.500	.2	10.500	.1	15.500	.1	20.500	.1
1.000	.1	6.000	.2	11.000	.1	16.000	.1	21.000	.1
1.500	30.5	6.500	.2	11.500	.1	16.500	.1	21.500	.1
2.000	5.6	7.000	.2	12.000	.1	17.000	.1	22.000	.1
2.500	.9	7.500	.2	12.500	.1	17.500	.1	22.500	.1
3.000	.3	8.000	.2	13.000	.1	18.000	.1	23.000	.1
3.500	.2	8.500	.2	13.500	.1	18.500	.1	23.500	.1
4.000	.2	9.000	.2	14.000	.1	19.000	.1	24.000	.1
4.500	.1	9.500	.2	14.500	.1	19.500	.1	24.500	.0

RUNOFF VOLUME = 1.64845 INCHES = 1.2414 ACRE-FEET
PEAK DISCHARGE RATE = 30.46 CFS AT 1.500 HOURS BASIN AREA = .0141 SQ. MI.

```
*S--------------------------------------------------------------------
*S COMPUTE DEVELOPED BASIN 413
COMPUTE NM HYD          ID=53 HYD=ANLYPT.I AREA=0.00806 SQ MI
                        %A=0 %B=27 %C=27 %D=46 TP=-0.133 HR
                        MASS RAINFALL=-1
```

K = .072485HR TP = .133000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 14.671 CFS UNIT VOLUME = .9983 B = 526.28 P60 = 1.7990
AREA = .003708 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118387HR TP = .133000HR K/TP RATIO = .890124 SHAPE CONSTANT, N = 3.984413
UNIT PEAK = 11.589 CFS UNIT VOLUME = 1.000 B = 354.13 P60 = 1.7990
AREA = .004352 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

BULKING FACTOR APPLIED TO HYDROGRAPH. FACTOR = 1.06000 AT PEAK FLOW.

```
PRINT HYD               ID=53 CODE=10
```

HYDROGRAPH FROM AREA ANLYPT.I

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.1	10.000	.1	15.000	.1	20.000	.1
.500	.0	5.500	.1	10.500	.1	15.500	.1	20.500	.1
1.000	.1	6.000	.1	11.000	.1	16.000	.1	21.000	.1
1.500	17.4	6.500	.1	11.500	.1	16.500	.1	21.500	.1
2.000	3.2	7.000	.1	12.000	.1	17.000	.1	22.000	.1

2.500	.5	7.500	.1	12.500	.1	17.500	.1	22.500	.1
3.000	.2	8.000	.1	13.000	.1	18.000	.1	23.000	.1
3.500	.1	8.500	.1	13.500	.1	18.500	.1	23.500	.1
4.000	.1	9.000	.1	14.000	.1	19.000	.1	24.000	.0
4.500	.1	9.500	.1	14.500	.1	19.500	.1	24.500	.0

RUNOFF VOLUME = 1.64845 INCHES = .7086 ACRE-FEET
PEAK DISCHARGE RATE = 17.39 CFS AT 1.500 HOURS BASIN AREA = .0081 SQ. MI.

```
*S--------------------------------------------------------------------
*S ADD 411 To 412
ADD HYD              ID=54 HYD=ANLYPT.H IDi=51 IDii=52
PRINT HYD            ID=54 CODE=10
```

HYDROGRAPH FROM AREA ANLYPT.H

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.3	10.000	.2	15.000	.2	20.000	.2
.500	.0	5.500	.3	10.500	.2	15.500	.2	20.500	.2
1.000	.2	6.000	.3	11.000	.2	16.000	.2	21.000	.2
1.500	51.0	6.500	.3	11.500	.2	16.500	.2	21.500	.2
2.000	9.4	7.000	.3	12.000	.2	17.000	.2	22.000	.2
2.500	1.5	7.500	.3	12.500	.2	17.500	.2	22.500	.2
3.000	.5	8.000	.3	13.000	.2	18.000	.2	23.000	.1
3.500	.3	8.500	.3	13.500	.2	18.500	.2	23.500	.1
4.000	.3	9.000	.3	14.000	.2	19.000	.2	24.000	.1
4.500	.3	9.500	.3	14.500	.2	19.500	.2	24.500	.0

RUNOFF VOLUME = 1.64842 INCHES = 2.0766 ACRE-FEET
PEAK DISCHARGE RATE = 50.95 CFS AT 1.500 HOURS BASIN AREA = .0236 SQ. MI.

```
*S--------------------------------------------------------------------
*S ADD 411/412 TO 410
ADD HYD              ID=55 HYD=SUM IDi=50 IDii=54
PRINT HYD            ID=55 CODE=10
```

HYDROGRAPH FROM AREA SUM

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.4	10.000	.4	15.000	.3	20.000	.2
.500	.0	5.500	.4	10.500	.4	15.500	.3	20.500	.2
1.000	.4	6.000	.5	11.000	.4	16.000	.3	21.000	.2
1.500	78.5	6.500	.5	11.500	.4	16.500	.3	21.500	.2
2.000	14.5	7.000	.5	12.000	.3	17.000	.3	22.000	.2
2.500	2.3	7.500	.4	12.500	.3	17.500	.3	22.500	.2
3.000	.8	8.000	.4	13.000	.3	18.000	.3	23.000	.2
3.500	.5	8.500	.4	13.500	.3	18.500	.3	23.500	.2
4.000	.4	9.000	.4	14.000	.3	19.000	.3	24.000	.2
4.500	.4	9.500	.4	14.500	.3	19.500	.3	24.500	.0

RUNOFF VOLUME = 1.64842 INCHES = 3.1992 ACRE-FEET
PEAK DISCHARGE RATE = 78.50 CFS AT 1.500 HOURS BASIN AREA = .0364 SQ. MI.

```
*S--------------------------------------------------------------------
*S ADD 410/411/412 TO 413
ADD HYD              ID=55 HYD=ANLYPT.O3 IDi=53 IDii=55
PRINT HYD            ID=55 CODE=10
```

HYDROGRAPH FROM AREA ANLYPT.O3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.5	10.000	.5	15.000	.4	20.000	.3
.500	.0	5.500	.5	10.500	.5	15.500	.4	20.500	.3
1.000	.4	6.000	.6	11.000	.4	16.000	.4	21.000	.3
1.500	95.9	6.500	.6	11.500	.4	16.500	.3	21.500	.3
2.000	17.7	7.000	.6	12.000	.4	17.000	.3	22.000	.3
2.500	2.8	7.500	.5	12.500	.4	17.500	.3	22.500	.3
3.000	1.0	8.000	.5	13.000	.4	18.000	.3	23.000	.3
3.500	.6	8.500	.5	13.500	.4	18.500	.3	23.500	.3
4.000	.5	9.000	.5	14.000	.4	19.000	.3	24.000	.3
4.500	.5	9.500	.5	14.500	.4	19.500	.3	24.500	.0

```
    RUNOFF VOLUME =      1.64842 INCHES      =        3.9078 ACRE-FEET
    PEAK DISCHARGE RATE =       95.89 CFS  AT    1.500 HOURS    BASIN AREA =    .0445 SQ. MI.


*S--------------------------------------------------------------------
*S********************************************************************
*S********************************************************************
*S************ INTERIM CONDITIONS - TEMP RETENTION PONDS ***************
*S********************************************************************
*S COMPUTE INTERIM BASIN 401
COMPUTE NM HYD          ID=14 HYD=401.D AREA=0.00715 SQ MI
                        %A=0 %B=0 %C=100 %D=0 TP=-0.133 HR
                        MASS RAINFALL=-1

     K =    .104829HR     TP =    .133000HR     K/TP RATIO =    .788191      SHAPE CONSTANT, N =  4.553549
     UNIT PEAK =    20.994     CFS   UNIT VOLUME =     1.001       B =    390.52       P60 = 1.7990
     AREA =       .007150 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD               ID=14 CODE=10

                                        HYDROGRAPH FROM AREA 401.D

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000       .0          1.000       .0          2.000      1.5          3.000       .0
     .500       .0          1.500      13.5         2.500       .2          3.500       .0

    RUNOFF VOLUME =      1.01341 INCHES      =         .3864 ACRE-FEET
    PEAK DISCHARGE RATE =       13.47 CFS  AT    1.500 HOURS    BASIN AREA =    .0072 SQ. MI.



*S--------------------------------------------------------------------
*S ADD Off-Site to 24TH STREET TO 401
ADD HYD                 ID=15 HYD=TOT.401 IDi=5 IDii=14
PRINT HYD               ID=15 CODE=10

                                        HYDROGRAPH FROM AREA TOT.401

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000       .0          5.500       .3         11.000       .2         16.500       .2         22.000       .1
     .500       .0          6.000       .3         11.500       .2         17.000       .2         22.500       .1
    1.000       .0          6.500       .3         12.000       .2         17.500       .2         23.000       .1
    1.500     24.0          7.000       .3         12.500       .2         18.000       .2         23.500       .1
    2.000     13.3          7.500       .3         13.000       .2         18.500       .2         24.000       .1
    2.500      2.2          8.000       .3         13.500       .2         19.000       .2         24.500       .0
    3.000       .7          8.500       .3         14.000       .2         19.500       .2         25.000       .0
    3.500       .3          9.000       .3         14.500       .2         20.000       .2
    4.000       .3          9.500       .2         15.000       .2         20.500       .2
    4.500       .2         10.000       .2         15.500       .2         21.000       .2
    5.000       .2         10.500       .2         16.000       .2         21.500       .2

    RUNOFF VOLUME =      1.66581 INCHES      =        2.1011 ACRE-FEET
    PEAK DISCHARGE RATE =       44.29 CFS  AT    1.650 HOURS    BASIN AREA =    .0237 SQ. MI.


*S--------------------------------------------------------------------
*S COMPUTE INTERIM BASIN 402
COMPUTE NM HYD          ID=16 HYD=402.D AREA=0.00256 SQ MI
                        %A=0 %B=00 %C=100 %D=0 TP=-0.133 HR
                        MASS RAINFALL=-1

     K =    .104829HR     TP =    .133000HR     K/TP RATIO =    .788191      SHAPE CONSTANT, N =  4.553549
     UNIT PEAK =     7.5168     CFS   UNIT VOLUME =      .9999       B =    390.52       P60 = 1.7990
     AREA =       .002560 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD               ID=16 CODE=10

                                        HYDROGRAPH FROM AREA 402.D

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
```

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.000	.0	2.000	.5	3.000	.0		
.500	.0	1.500	4.8	2.500	.1				

RUNOFF VOLUME = 1.01341 INCHES = .1384 ACRE-FEET
PEAK DISCHARGE RATE = 4.83 CFS AT 1.500 HOURS BASIN AREA = .0026 SQ. MI.

```
*S--------------------------------------------------------------------
*S ADD 3A/3C/24TH STREET/401 TO 402
ADD HYD              ID=17 HYD=RETPOND.1 IDi=15 IDii=16
PRINT HYD            ID=17 CODE=10
```

HYDROGRAPH FROM AREA RETPOND.1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.500	.3	11.000	.2	16.500	.2	22.000	.1
.500	.0	6.000	.3	11.500	.2	17.000	.2	22.500	.1
1.000	.0	6.500	.3	12.000	.2	17.500	.2	23.000	.1
1.500	28.9	7.000	.3	12.500	.2	18.000	.2	23.500	.1
2.000	13.8	7.500	.3	13.000	.2	18.500	.2	24.000	.1
2.500	2.3	8.000	.3	13.500	.2	19.000	.2	24.500	.0
3.000	.7	8.500	.3	14.000	.2	19.500	.2	25.000	.0
3.500	.3	9.000	.3	14.500	.2	20.000	.2		
4.000	.3	9.500	.2	15.000	.2	20.500	.2		
4.500	.2	10.000	.2	15.500	.2	21.000	.2		
5.000	.2	10.500	.2	16.000	.2	21.500	.2		

RUNOFF VOLUME = 1.60208 INCHES = 2.2395 ACRE-FEET
PEAK DISCHARGE RATE = 46.92 CFS AT 1.650 HOURS BASIN AREA = .0262 SQ. MI.

```
*S--------------------------------------------------------------------
*S COMPUTE INTERIM BASIN 406
COMPUTE NM HYD       ID=29 HYD=RETPOND.2 AREA=0.00412 SQ MI
                     %A=0 %B=0 %C=100 %D=0 TP=-0.133 HR
                     MASS RAINFALL=-1
```

K = .104829HR TP = .133000HR K/TP RATIO = .788191 SHAPE CONSTANT, N = 4.553549
UNIT PEAK = 12.097 CFS UNIT VOLUME = 1.001 B = 390.52 P60 = 1.7990
AREA = .004120 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

BULKING FACTOR APPLIED TO HYDROGRAPH. FACTOR = 1.06000 AT PEAK FLOW.

```
PRINT HYD            ID=29 CODE=10
```

HYDROGRAPH FROM AREA RETPOND.2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.000	.0	2.000	.9	3.000	.0		
.500	.0	1.500	7.8	2.500	.1	3.500	.0		

RUNOFF VOLUME = 1.01341 INCHES = .2227 ACRE-FEET
PEAK DISCHARGE RATE = 7.77 CFS AT 1.500 HOURS BASIN AREA = .0041 SQ. MI.

```
*S--------------------------------------------------------------------
*S COMPUTE INTERIM BASIN 403
COMPUTE NM HYD       ID=27 HYD=RETPOND.3 AREA=0.01525 SQ MI
                     %A=0 %B=00 %C=100 %D=0 TP=-0.133 HR
                     MASS RAINFALL=-1
```

K = .104829HR TP = .133000HR K/TP RATIO = .788191 SHAPE CONSTANT, N = 4.553549
UNIT PEAK = 44.778 CFS UNIT VOLUME = 1.001 B = 390.52 P60 = 1.7990
AREA = .015250 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

BULKING FACTOR APPLIED TO HYDROGRAPH. FACTOR = 1.06000 AT PEAK FLOW.

```
PRINT HYD            ID=27 CODE=10
```

HYDROGRAPH FROM AREA RETPOND.3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS

```
      .000        .0          1.000        .0          2.000        3.1          3.000        .1
      .500        .0          1.500      28.7          2.500         .5          3.500        .0

    RUNOFF VOLUME =      1.01341 INCHES      =          .8242 ACRE-FEET
    PEAK DISCHARGE RATE =       28.72 CFS  AT    1.500 HOURS    BASIN AREA =    .0153 SQ. MI.



*S--------------------------------------------------------------------
*S COMPUTE INTERIM BASIN 410
COMPUTE NM HYD          ID=50 HYD=RETPOND.4 AREA=0.01277 SQ MI
                        %A=0 %B=0 %C=100 %D=0 TP=-0.133 HR
                        MASS RAINFALL=-1

     K =    .104829HR     TP =    .133000HR     K/TP RATIO =    .788191      SHAPE CONSTANT, N =  4.553549
     UNIT PEAK =    37.496     CFS    UNIT VOLUME =     1.001        B =    390.52       P60 = 1.7990
     AREA =         .012770 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD               ID=50 CODE=10

                                        HYDROGRAPH FROM AREA RETPOND.4

     TIME       FLOW          TIME       FLOW          TIME       FLOW          TIME       FLOW          TIME       FLOW
      HRS        CFS           HRS        CFS           HRS        CFS           HRS        CFS           HRS        CFS
      .000        .0          1.000        .0          2.000        2.6          3.000        .1
      .500        .0          1.500       24.0         2.500         .4          3.500        .0

    RUNOFF VOLUME =      1.01341 INCHES      =          .6902 ACRE-FEET
    PEAK DISCHARGE RATE =       24.05 CFS  AT    1.500 HOURS    BASIN AREA =    .0128 SQ. MI.



*S--------------------------------------------------------------------
*S COMPUTE INTERIM BASIN 411
COMPUTE NM HYD          ID=51 HYD=RETPOND.5 AREA=0.00950 SQ MI
                        %A=0 %B=0 %C=100 %D=0 TP=-0.133 HR
                        MASS RAINFALL=-1

     K =    .104829HR     TP =    .133000HR     K/TP RATIO =    .788191      SHAPE CONSTANT, N =  4.553549
     UNIT PEAK =    27.894     CFS    UNIT VOLUME =     1.001        B =    390.52       P60 = 1.7990
     AREA =         .009500 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD               ID=51 CODE=10

                                        HYDROGRAPH FROM AREA RETPOND.5

     TIME       FLOW          TIME       FLOW          TIME       FLOW          TIME       FLOW          TIME       FLOW
      HRS        CFS           HRS        CFS           HRS        CFS           HRS        CFS           HRS        CFS
      .000        .0          1.000        .0          2.000        2.0          3.000        .1
      .500        .0          1.500      17.9          2.500         .3          3.500        .0

    RUNOFF VOLUME =      1.01341 INCHES      =          .5135 ACRE-FEET
    PEAK DISCHARGE RATE =       17.89 CFS  AT    1.500 HOURS    BASIN AREA =    .0095 SQ. MI.



FINISH

     NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 10:04:03
□(s0p10h4099T□&16D□□
```

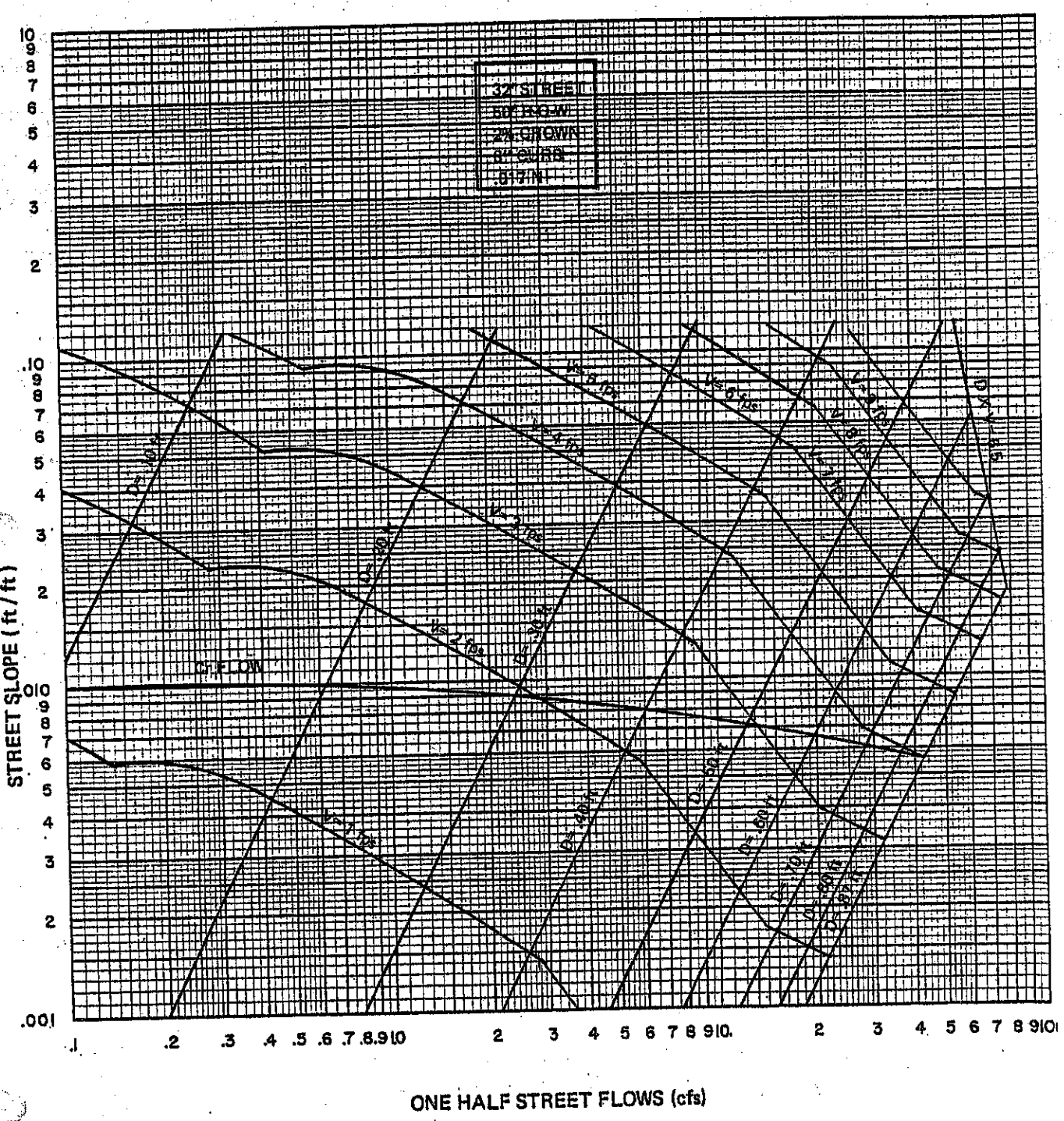
Astante at Cabezon - Tract 4 Final Drainage Study
Street Flow Analysis

					Inlet #1						Inlet #2				
Analysis Point	Hyrdogrpah ID	Q (cfs)	Road Slope	Q Half Street (cfs)	Flow Depth (ft)	Velocity (ft/s)	Depth x Velocity	Inlet Type	Q Inlet (cfs)	Q Bypass (cfs)	Inlet Type	Flow Depth (ft)	Q Inlet (cfs)	Q Bypass (cfs)	Notes
A	ANYLPT.A	48	1.8%	24	0.5	5	2.5	Trip C	13	11	Trip C	0.43	11	0	*Double C collects 10 cfs - Use Triple C at 13 cfs3 Assume no bypass
B	ANYLPT.B	34	0.5%	17	0.54	2.5	1.4	Trip C	14	3					*Double C collects 11 cfs - Use Triple C at 14 cfs.
C	ANYLPT.C	35	1.7%	18	0.49	4.3	2.1	Trip C	12	6					*Double C collects 9.5 cfs - Use Triple C at 12 cfs
D	ANYLPT.D	75	2.1%	38	0.62	7.5	4.7	Trip C	19	19					*Double C collects 14 cfs - Use Triple C at 19
	D con't		0.5%	19	0.6	3.2	1.9	Trip C	19	-					*Double C collects 14 cfs - Use Triple C at 19 cfs Assume no bypass
E	ANYLPT.E	28	Sump					Quad C							Bypass from B, C & D multiplied by 2
F	ANYLPT.F	9	2.4%	4.5	0.34	3.2	1.1	Double C	4.5	-					
G	ANYLPT.G	28	0.5%	14.0	0.56	2.8	1.6	Double C	11	3					
H	ANYLPT.H	51	2.2%	25.5	0.53	5.5	2.9	Quad C	19	7					*Double C collects 11 cfs - Use QUAD C at 19
I	ANYLPT.I	17	3.8%	8.5	0.35	4.6	1.6	Double C	4.5	4					
J		27	Sump					Quad C							Bypass from G, H & I multiplied by 2

Assumptions
1. Street Flow Depths and Velocities taken from City of Albuquerque Plate 22.3 D-1
2. Double C Grate Capacities taken from City of Albuquerque Plate 22.3 D-6
3. Triple C Grate Capacities were extrapolated from the Double C Capacities.
4. All Grate Capacities do not account for curb opening inflow. Therefore, inlet inflows shown are conservative and provide a safety factor for items such as inlet clogging

C-1

STREET CAPACITY

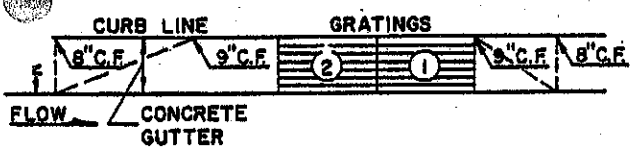


REV. 3-83

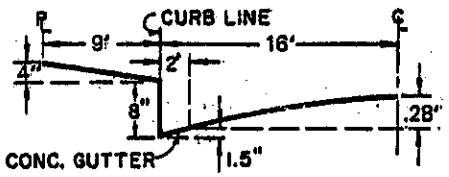
PLATE 22.3 D-1

C-2

GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

C-3

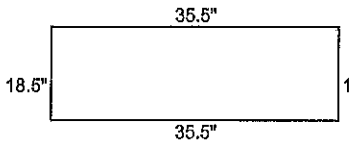
Hultt~Zollars, Inc.

Inlet Worksheet (Sump Condition) Analysis Point E & J

Objective: Design a Quad C Inlet in Sump Condition for a 100-year flow of: 28 cfs

1 Inlet to collect discharge before overtopping curb.
Standard 8" curb and gutter.
Dmax=10.75 In (0.9 ft) - Not 8" because standard inlet has 10.75" depression.

2 Grate Dimensions



**Net dimensions of open area of a single grate. (Total Area less Area of Bars)

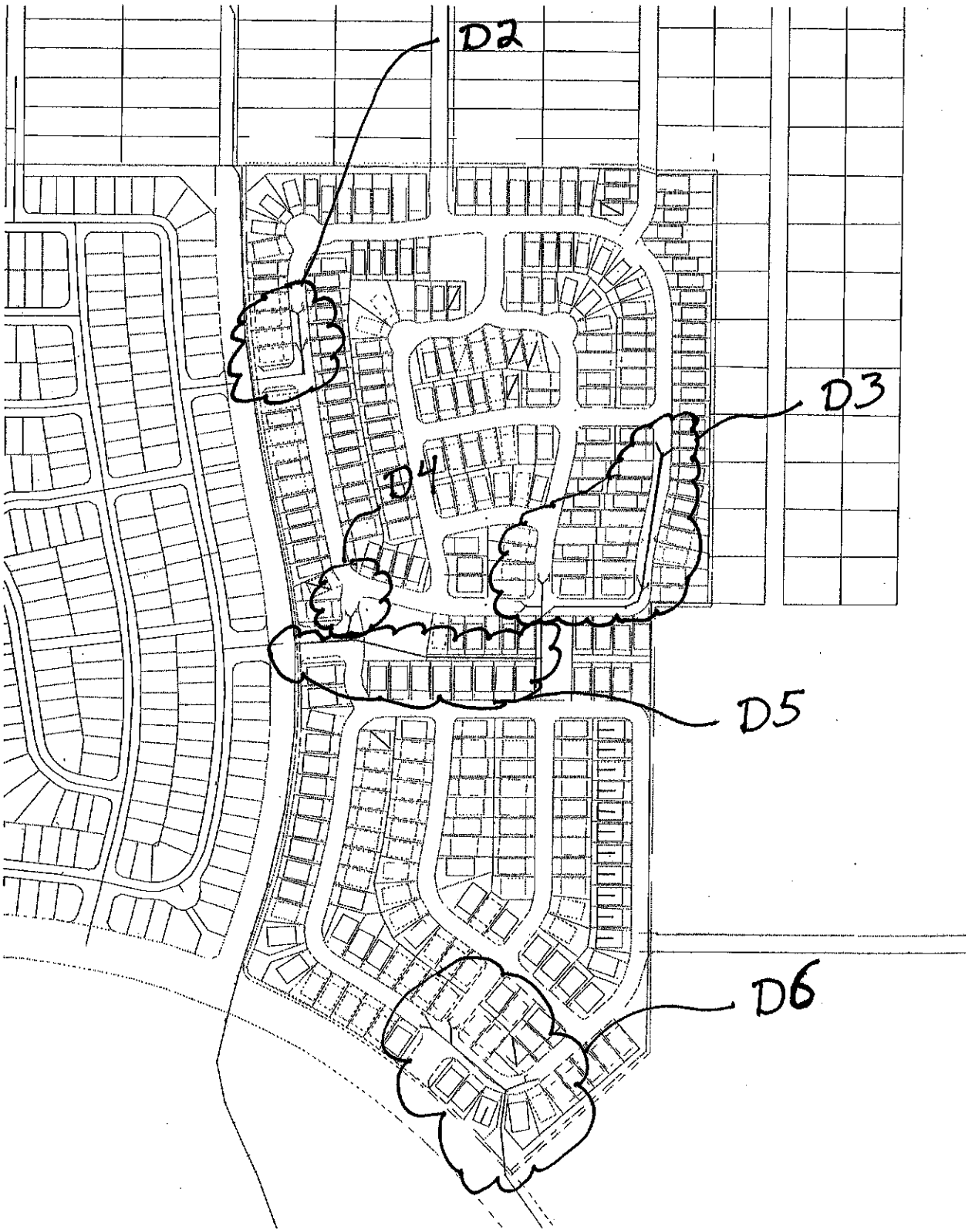
Weir Perimeter - Quad 'C' = 2x18.5" + 4x35.5" = 14.92 ft
Area of Orifice - Quad 'C' =18.5" x (4x35.5") = 18.24 sq ft

3 Calculate Orifice and Weir Flow into Grate at Design Depth (0.9 ft)

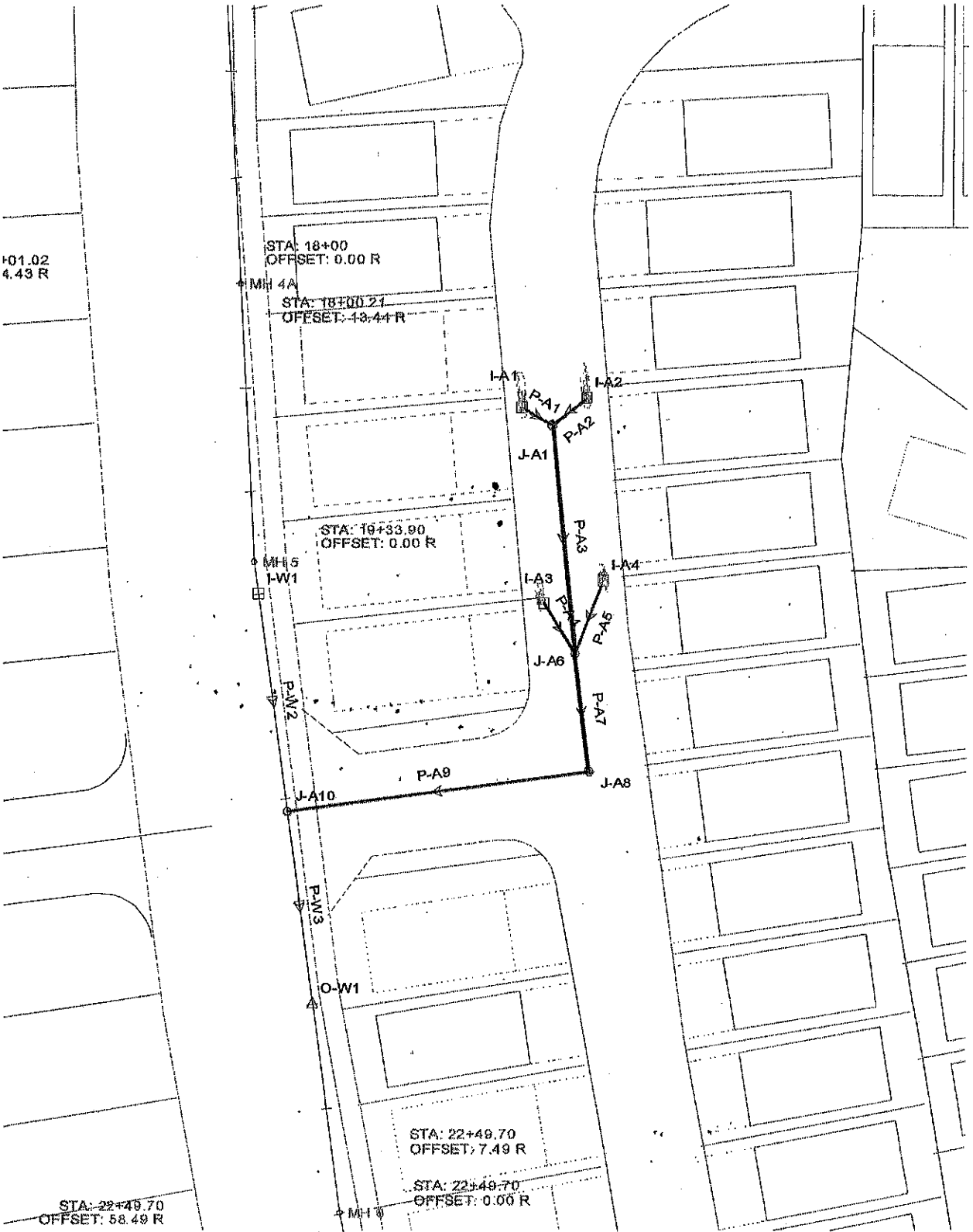
Orifice Equation			Weir Equation		
	Q = 0.6 x A x (2 x g x h)^1/2			Q=2.65 x P x H^1/2	
	Where			Where	
	A =	18.240 sq. ft.		P=	14.920 ft
	g =	32.2 ft ^2/sec		H=	0.9 ft
	h =	0.9 ft			
Therefore				Therefore	
	Q =	83.31827556 cfs		Q =	38 cfs

Weir Equation controls

Quad "C" Inlet flow @ TBC =	38 cfs

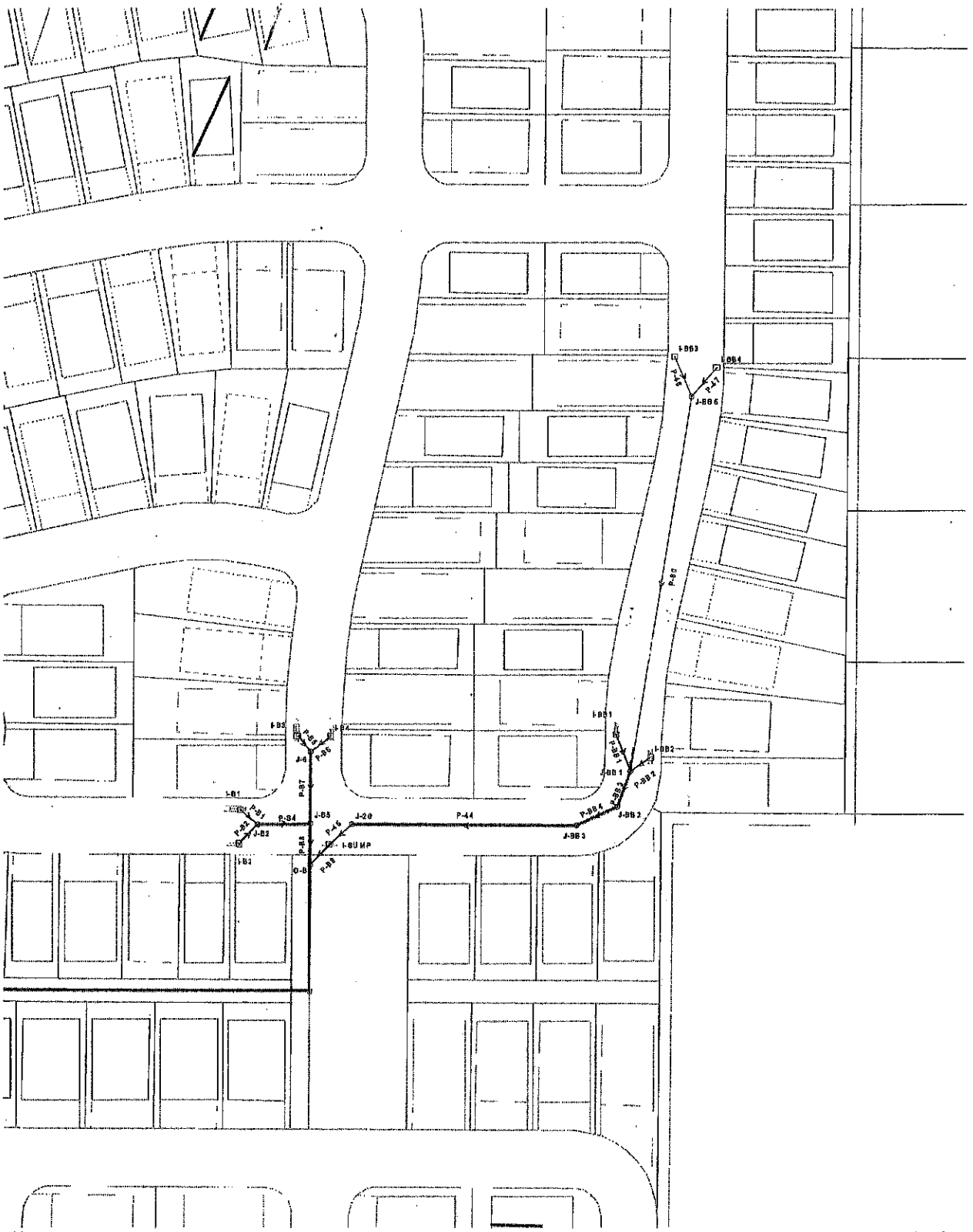

D2
D3
D4
D5
D6

Scenario: Base



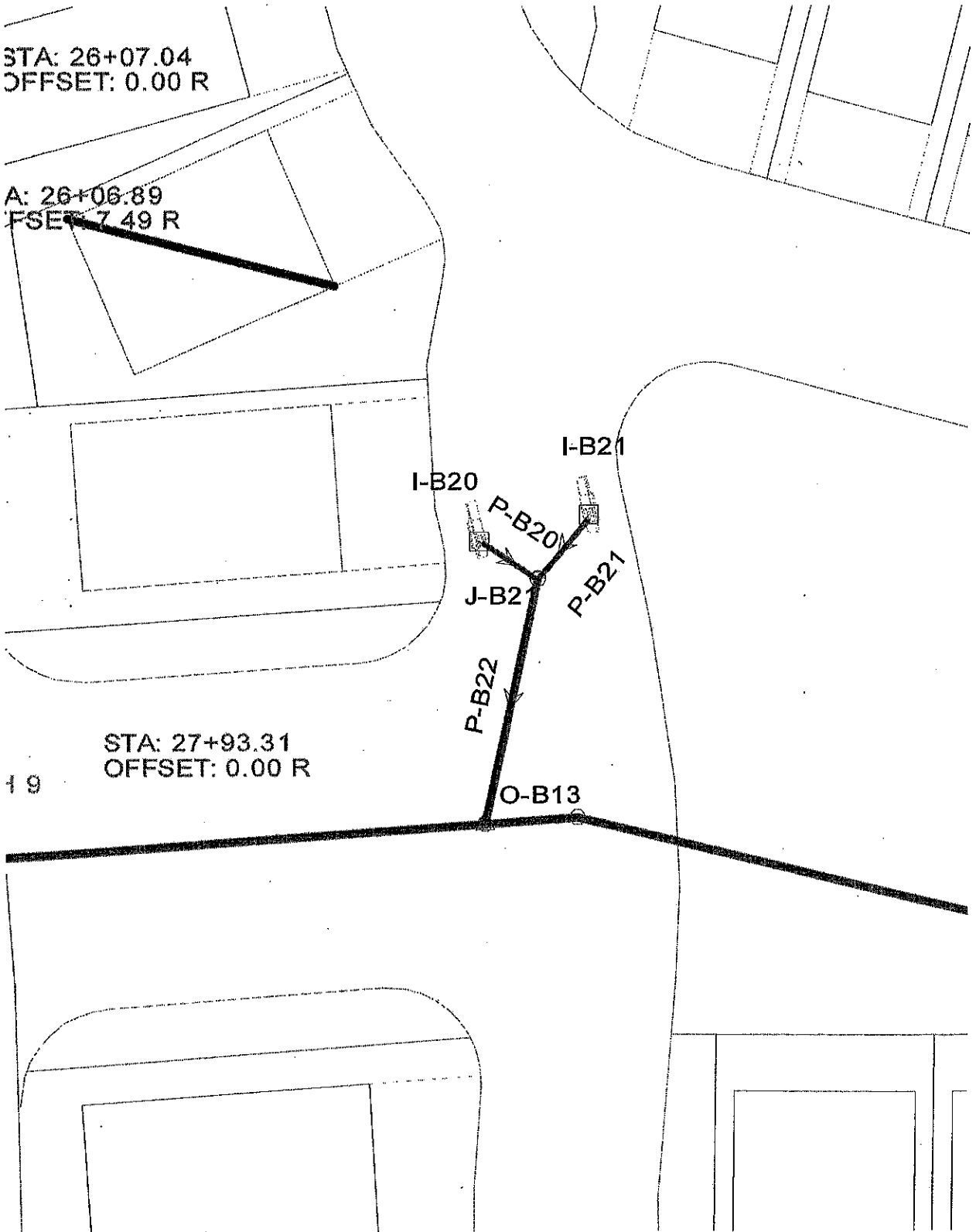
D2

Scenario: Base



D3

Scenario: Base

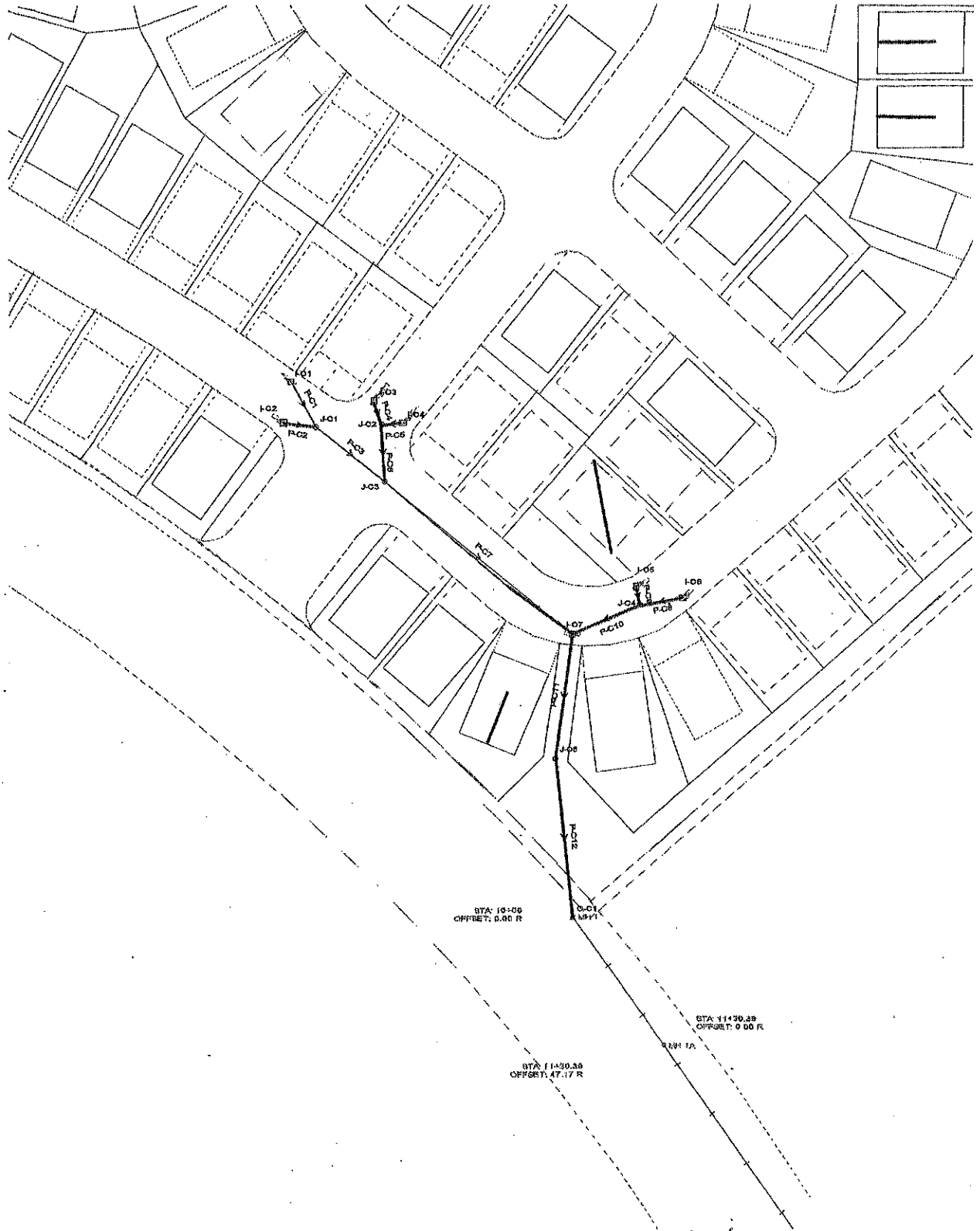


D4

Scenario: Base

D5

Scenario: Base



D6

Scenario: Base

Combined Pipe\Node Report

Label	Total Flow (cfs)	Average Velocity (ft/s)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Hydraulic Grade Line In (ft)	Hydraulic Grade Line Out (ft)	Length (ft)	Total System Flow (cfs)	Downstream Ground Elevation (ft)	Downstream Node	Upstream Ground Elevation (ft)	Upstream Node	Section Size
P-B5	12.00	1.70	0.010000	5,323.86	5,323.67	5,327.53	5,327.53	19.00	12.00	5,328.70	J-6	5,328.70	I-B3	36 inch
P-B6	12.00	1.70	0.008261	5,323.86	5,323.67	5,327.53	5,327.53	23.00	12.00	5,328.70	J-6	5,328.70	I-B4	36 inch
P-B7	24.00	3.40	0.043492	5,323.67	5,320.93	5,327.11	5,327.03	63.00	24.00	5,327.45	J-B5	5,328.70	J-6	36 inch
P-B1	14.00	1.98	0.012000	5,323.13	5,322.89	5,327.76	5,327.75	20.00	14.00	5,327.83	J-B2	5,327.96	I-B1	36 inch
P-B2	14.00	1.98	0.010000	5,323.13	5,322.89	5,327.76	5,327.75	24.00	14.00	5,327.83	J-B2	5,327.96	I-B2	36 inch
P-B4	28.00	2.23	0.042609	5,322.89	5,320.93	5,327.04	5,327.03	46.00	28.00	5,327.45	J-B5	5,327.83	J-B2	48 inch
P-B8	52.00	3.27	0.005833	5,320.93	5,320.72	5,326.03	5,326.00	36.00	52.00	5,329.00	O-B6	5,327.45	J-B5	54 inch
P-B9	103.00	8.20	0.019600	5,321.21	5,320.72	5,326.13	5,326.00	25.00	103.00	5,329.00	O-B6	5,327.04	I-SUMP	48 inch
P-BB1	18.50	5.89	0.002286	5,324.29	5,324.21	5,328.50	5,328.26	35.00	18.50	5,329.38	J-BB1	5,329.13	I-BB1	24 inch
P-BB2	18.50	5.89	0.003810	5,324.29	5,324.21	5,328.40	5,328.26	21.00	18.50	5,329.38	J-BB1	5,329.13	I-BB2	24 inch
P-BB3	75.00	8.84	0.005000	5,324.21	5,324.04	5,326.83	5,326.82	34.00	75.00	5,328.95	J-BB2	5,329.38	J-BB1	48 inch
P-BB4	75.00	8.84	0.005000	5,324.04	5,323.84	5,326.66	5,326.55	40.00	75.00	5,328.67	J-BB3	5,328.95	J-BB2	48 inch
P-44	75.00	8.91	0.005100	5,323.84	5,322.82	5,326.46	5,326.17	200.00	75.00	5,327.45	J-20	5,328.67	J-BB3	48 inch
P-45	75.00	22.51	0.061923	5,322.82	5,321.21	5,326.07	5,326.18	26.00	75.00	5,327.04	I-SUMP	5,327.45	J-20	48 inch
P-46	19.00	10.58	0.020769	5,327.04	5,326.23	5,329.37	5,329.39	39.00	19.00	5,331.48	J-BB5	5,331.87	I-BB3	36 inch
P-47	19.00	11.11	0.023824	5,327.04	5,326.23	5,329.37	5,329.39	34.00	19.00	5,331.48	J-BB5	5,331.87	I-BB4	36 inch
P-60	38.00	5.38	0.006048	5,326.23	5,324.21	5,329.35	5,328.26	334.00	38.00	5,329.38	J-BB1	5,331.48	J-BB5	36 inch
P-B21	4.50	10.54	0.054091	5,325.29	5,324.10	5,326.10	5,325.48	22.00	4.50	5,329.45	J-B21	5,329.13	I-B21	18 inch
P-B20	4.50	5.71	0.010000	5,324.29	5,324.10	5,325.48	5,325.48	19.00	4.50	5,329.45	J-B21	5,329.13	I-B20	18 inch
P-B22	9.00	10.59	0.111045	5,324.10	5,316.66	5,325.26	5,317.39	67.00	9.00	5,327.00	O-B13	5,329.45	J-B21	18 inch

07

Scenario: Base

Combined Pipe\Node Report

Label	Total Flow (cfs)	Average Velocity (ft/s)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Hydraulic Grade Line In (ft)	Hydraulic Grade Line Out (ft)	Length (ft)	Total System Flow (cfs)	Downstream Ground Elevation (ft)	Downstream Node	Upstream Ground Elevation (ft)	Upstream Node	Section Size
P-off1	423.00	14.96	0.019062	5,316.20	5,315.59	5,323.18	5,322.86	32.00	423.00	5,326.17	J-B14	5,326.88	I-15	72 inch
P-OFF2	532.00	23.37	0.018948	5,315.59	5,311.15	5,321.33	5,315.95	234.32	532.00	5,321.21	O-1	5,326.17	J-B14	72 inch
P-B11	109.00	6.85	0.006000	5,320.05	5,318.08	5,325.46	5,324.45	329.00	109.00	5,327.00	J-B11	5,329.00	J-B10	54 inch
P-B12	109.00	6.85	0.006000	5,318.08	5,316.81	5,324.45	5,323.80	211.00	109.00	5,327.33	J-B12	5,327.00	J-B11	54 inch
P-B10	109.00	6.85	0.006036	5,320.72	5,320.05	5,326.00	5,325.66	111.00	109.00	5,329.00	J-B10	5,329.00	I-20	54 inch
P-B13	109.00	6.85	0.006000	5,316.81	5,316.66	5,323.76	5,323.69	25.00	109.00	5,327.00	J-B13	5,327.33	J-B12	54 inch
P-B14	109.00	6.85	0.007563	5,316.66	5,315.59	5,323.30	5,322.86	142.00	109.00	5,326.17	J-B14	5,327.00	J-B13	54 inch

Scenario: Base

Combined Pipe\Node Report

Label	Total Flow (cfs)	Average Velocity (ft/s)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Hydraulic Grade Line In (ft)	Hydraulic Grade Line Out (ft)	Length (ft)	Total System Flow (cfs)	Downstream Ground Elevation (ft)	Downstream Node	Upstream Ground Elevation (ft)	Upstream Node	Section Size
P-A1	13.00	4.14	0.018125	5,340.45	5,340.16	5,344.27	5,344.21	16.00	13.00	5,346.20	J-A1	5,345.29	I-A1	24 inch
P-A2	13.00	4.14	0.013810	5,340.45	5,340.16	5,344.28	5,344.21	21.00	13.00	5,346.20	J-A1	5,345.29	I-A2	24 inch
P-A3	26.00	10.93	0.017838	5,340.16	5,338.18	5,343.04	5,342.88	111.00	26.00	5,343.12	J-A6	5,346.20	J-A1	36 inch
P-A5	11.00	3.50	0.000263	5,338.29	5,338.28	5,342.97	5,342.88	38.00	11.00	5,343.12	J-A6	5,343.13	I-A4	24 inch
P-A4	11.00	3.50	0.000357	5,338.29	5,338.28	5,342.96	5,342.88	28.00	11.00	5,343.12	J-A6	5,343.13	I-A3	24 inch
P-A7	48.00	6.79	0.017895	5,338.28	5,337.26	5,341.47	5,341.18	57.00	48.00	5,341.76	J-A8	5,343.12	J-A6	36 inch
P-A9	48.00	6.79	0.026871	5,337.26	5,333.31	5,340.98	5,340.22	147.00	48.00	5,342.62	J-A10	5,341.76	J-A8	36 inch
P-W2	336.00	32.18	0.057400	5,339.05	5,333.31	5,343.48	5,340.22	100.00	336.00	5,342.62	J-A10	5,345.00	I-W1	54 inch
P-W3	384.00	33.02	0.057400	5,333.31	5,327.57	5,337.77	5,331.21	100.00	384.00	5,335.00	O-W1	5,342.62	J-A10	54 inch
P-C7	60.00	11.71	0.012438	5,300.37	5,297.87	5,302.87	5,300.75	201.00	60.00	5,303.71	I-C7	5,305.35	J-C3	36 inch
P-C9	4.50	6.93	0.010000	5,300.31	5,300.16	5,301.12	5,301.23	15.00	4.50	5,305.00	J-C4	5,305.15	I-C5	18 inch
P-C8	4.50	5.71	0.010000	5,300.53	5,300.16	5,301.34	5,301.23	37.00	4.50	5,305.00	J-C4	5,304.91	I-C6	18 inch
P-C10	9.00	10.91	0.036935	5,300.16	5,297.87	5,301.23	5,300.75	62.00	9.00	5,303.71	I-C7	5,305.00	J-C4	24 inch
P-C4	19.00	8.13	0.010000	5,300.80	5,300.60	5,302.95	5,302.97	20.00	19.00	5,305.48	J-C2	5,305.64	I-C3	36 inch
P-C5	19.00	8.45	0.011111	5,300.80	5,300.60	5,302.95	5,302.97	18.00	19.00	5,305.48	J-C2	5,305.64	I-C4	36 inch
P-C6	38.00	7.36	0.004894	5,300.60	5,300.37	5,302.97	5,302.87	47.00	38.00	5,305.35	J-C3	5,305.48	J-C2	36 inch
P-C1	11.00	10.79	0.030698	5,302.06	5,300.74	5,303.99	5,303.90	43.00	11.00	5,305.77	J-C1	5,305.89	I-C1	24 inch
P-C2	11.00	12.60	0.047143	5,302.06	5,300.74	5,303.95	5,303.90	28.00	11.00	5,305.77	J-C1	5,305.89	I-C2	24 inch
P-C3	22.00	6.59	0.005068	5,300.74	5,300.37	5,302.90	5,302.87	73.00	22.00	5,305.35	J-C3	5,305.77	J-C1	36 inch
P-C11	96.00	14.99	0.019519	5,297.87	5,295.84	5,300.75	5,298.47	104.00	96.00	5,305.00	J-C5	5,303.71	I-C7	36 inch
P-C12	96.00	14.94	0.019398	5,295.84	5,293.26	5,298.72	5,295.88	133.00	96.00	5,301.29	O-C1	5,305.00	J-C5	36 inch

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