FINAL
DRAINAGE STUDY

YUCATAN DEL ESTE
AT CABEZON TRACT 6A

Rio Rancho Estates Unit 16
Rio Rancho, New Mexico

for

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

February 7, 2006

Prepared By:

HUITT-ZOLLARS, Inc.
333 RIO RANCHO DRIVE NE, SUITE 101, RIO RANCHO, NEW MEXICO
(505) 892-5141

FINAL
DRAINAGE STUDY

YUCATAN DEL ESTE
AT CABEZON TRACT 6A

I, Jarrod D. Likar being first duly sworn, upon my oath state that I am a registered professional engineer, qualified in Civil engineering, and that the accompanying report was prepared by me or under my supervision and is true and correct to the best of my knowledge and belief.

Jarrod Likar 2/7/06

Registered Professional Engineer

DRAINAGE STUDY
FOR
YUCATAN DEL ESTE TRACT 6A SUBDIVISION

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EXHIBITS

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DRAINAGE STUDY
FOR
YUCATAN DEL ESTE
AT CABEZON TRACT 6A

PURPOSE

This drainage report addresses the storm water runoff and proposed infrastructure needed to convey the runoff from the Yucatan Del Este at Cabezon Tract 6A Subdivision of the Cabezon Redevelopment. This report will also demonstrate that the development of this project complies with the approved **Cabezon Communities Phase II Drainage Management Plan** and the **Cabezon Communities Drainage Implementation Plan**.

PROJECT LOCATION AND DESCRIPTION

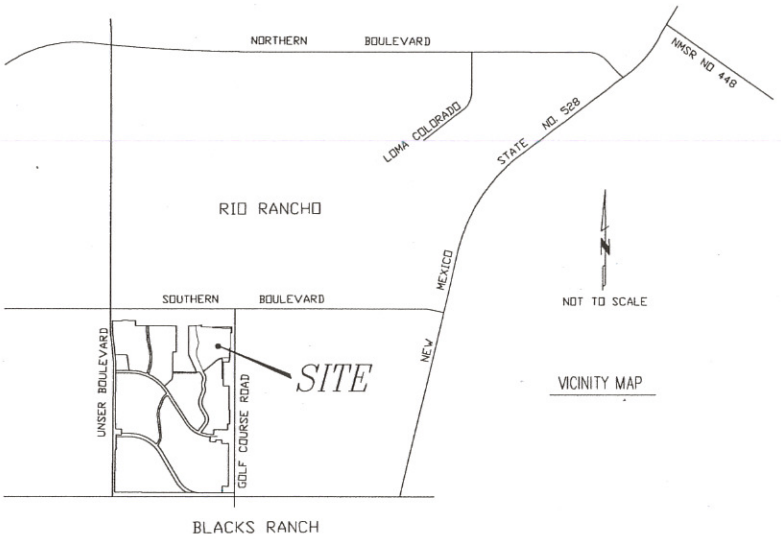


Exhibit 1 – Vicinity Map

The project is located at the northwest corner of the intersection of Chianti Road (13th Avenue) and Golf Course Road within Unit 16 of Rio Rancho Estates, City of Rio Rancho; see **Exhibit 1**. The site is currently undeveloped and in its natural condition. The east branch of the Blacks Arroyo is currently being hard lined to the west of the development. Southern Boulevard is paved to the north of the development. The development is bound by; Chianti Road to the south and Golf Course Road to the east, where it is separated by existing ½ acre lots.

ZONING AND PLATTING STATUS

The zoning for this project is R-4, Single Family Residential, of approximately 57.3 acres. The project is located in Tract 6A within Rio Rancho Estates Unit 16. This report is an attachment to the Final Plat Submittal for this project.

FLOOD HAZARD ZONES

Per FEMA's Flood Insurance Rate Map (FIRM) 35043C0894 C, dated July 16, 1996, a portion of the project site is located within a FEMA 100-year Flood Hazard Zone. See **Appendix A-1**. Wilson & Co. is under contract with the developer for the corresponding CLOMR and LOMR needed to reconfigure the existing flood zone. The CLOMR has been submitted to FEMA by Wilson & Co. per discussions with the City of Rio Rancho, the developer has agreed to restrict building permit requests for the lots that are located within the current FEMA Floodplain. Once the CLOMR/LOMR process has revised the Floodplain, the developer can proceed with building permits for the affected lots. Refer to **Appendix A-2** for an exhibit indicating the affected lots.

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 II Drainage Management Plan (CCDMP)*** prepared by Wilson & Company, Engineers & Architects and dated August 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 Tract 6A Subdivision.

The ***Cabezon Communities Drainage Implementation Plan (CCDIP)*** prepared by Wilson & Company, Engineers & Architects and dated February 19, 2004, provides permissible discharge rates for individual tracts as well as offsite flow rates entering individual tracts.

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 underground pipe systems that will discharge into the East Branch of the Blacks Arroyo at three separate locations. 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 ***CCDMP*** 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 (N=284units/57.77=4.92). The remaining was split between Treatment B and C. Therefore the Land Treatments for this site are as follows: **%A = 0, %B = 25.6, %C = 25.6, and %D = 48.8**.

The Land Treatments for the Off-Site **Basins 601**, **602**, **605** and **606** were taken directly from ***CCDMP*** and are as follows: **Basins 601 and 605; %A = 0, %B = 0, %C = 15, and %D = 85. Basins 602 and 606; %A = 10, %B = 33, %C = 30, %D = 27.**

STREET AND INLET CAPACITY CALCULATIONS

Both street and inlet capacities were calculated using the plates in the ***City of Albuquerque DPM***. Tract 6A Subdivision 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 D**. 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 northeast to the southwest across the site. The East Branch of the Blacks Arroyo to the west and ½ Acre Lots and Southern Boulevard to the north bound the property. Southern Blvd is paved with curb and gutter while the East Branch of the Blacks Arroyo is concrete lined. On-site runoff sheet flows across the site and concentrates into the East Branch of the Black Arroyo. The runoff discharges through Unit 16 of Rio Rancho Estates, crosses into Bernalillo County and into the Blacks Arroyo Dam.

There are four small off-site basins (**Basins 601, 602, 605, 606**) between the Tract 6A Boundary and Southern Boulevard, that discharge onto the subject property. These Basins represent the offsite basin **OFF_4** and a portion of **OFF_5** as shown on Figure 2 of the ***CCDMP***. Field investigations and surveys indicate that the remainder of **OFF_5**, at the southwest corner of Southern and Golf Course, will drain east directly to Golf Course Road. **Basins 601** and **605** consist of ½ Acre Commercial Lots. **Basins 602** and **606** consist of ½ Acre Residential Lots. **Basins 601 and 602** discharge onto Tract 6A via Walsh Street. **Basins 605 and 606** discharge onto Tract 6A via 28th Street. The East Branch of the Blacks Arroyo located along the western boundary of Tract 6A, intercepts off-site runoff from the west. Please refer to the ***CCDMP*** and ***CCDIP*** for further information and analysis of the pre-developed condition.

ULTIMATE DEVELOPED CONDITIONS

According to the Figure 2 of the ***CCDIP***, the site is required to accept 57 cfs from the off-site basins to the north and 50 cfs from the Golf Course Storm Drain System to the east. As indicated in the previous section, the off-site basins to the north have been modified based on field investigation. Based on discussions with Wilson & Company, the 50 cfs from the Golf Course Storm Drain System will be picked up by the construction of Chianti Road, south of the development. Therefore the off-site flow rates have been adjusted accordingly.

Also according to the CCDIP, Tract 19 is a park area that will generate 12 cfs and combine with the on-site flows at the southwest corner of the development. This area has been incorporated into the development and is included in the on-site analysis as part of the subdivision.

Drainage Patterns

As indicated in **Exhibit 2**, the developed drainage design consists of six (6) on-site and four (4) off-site drainage basins. **Basins 601, 602, 605,** and **606** are the off-site flows that discharge into Tract 6A from the north. The developed conditions modeling, of the off-site basins (**Basins 601, 602, 605** and **606**) was taken directly from the approved ***CCDMP*** and was not altered.

Basins 601 and **602** combine to create **Analysis Point #1**, which will enter the subdivision along Walsh Street and join **Basin 603**. The combined flow will enter Storm Drain **System 100** at **Analysis Point #2**. **Analysis Point #2** is the start of **System 100**, which is connected to **System 200**. **Basin 604** will sheet flow directly into the concrete lined channel. **Analysis Point #3** combines flows from **Basins 605** and **606**, where they will enter **Basin 607**. This combined flow is collected at **Analysis Point #4**, where it will enter **System 200**. **System 200** enters the concrete lined channel through Parcel D. **Basin 608** will drain into **System 300** at **Analysis Point #5**. **Analysis Point #5** is the start of **System 300**, which is connected to **System 400**. **Basin 609** will drain into **System 400** at **Analysis Point #6**. System 400 enters the concrete lined channel through Parcel B. Lastly **Basin 610** will drain directly to the concrete channel through storm drain **System 500**.

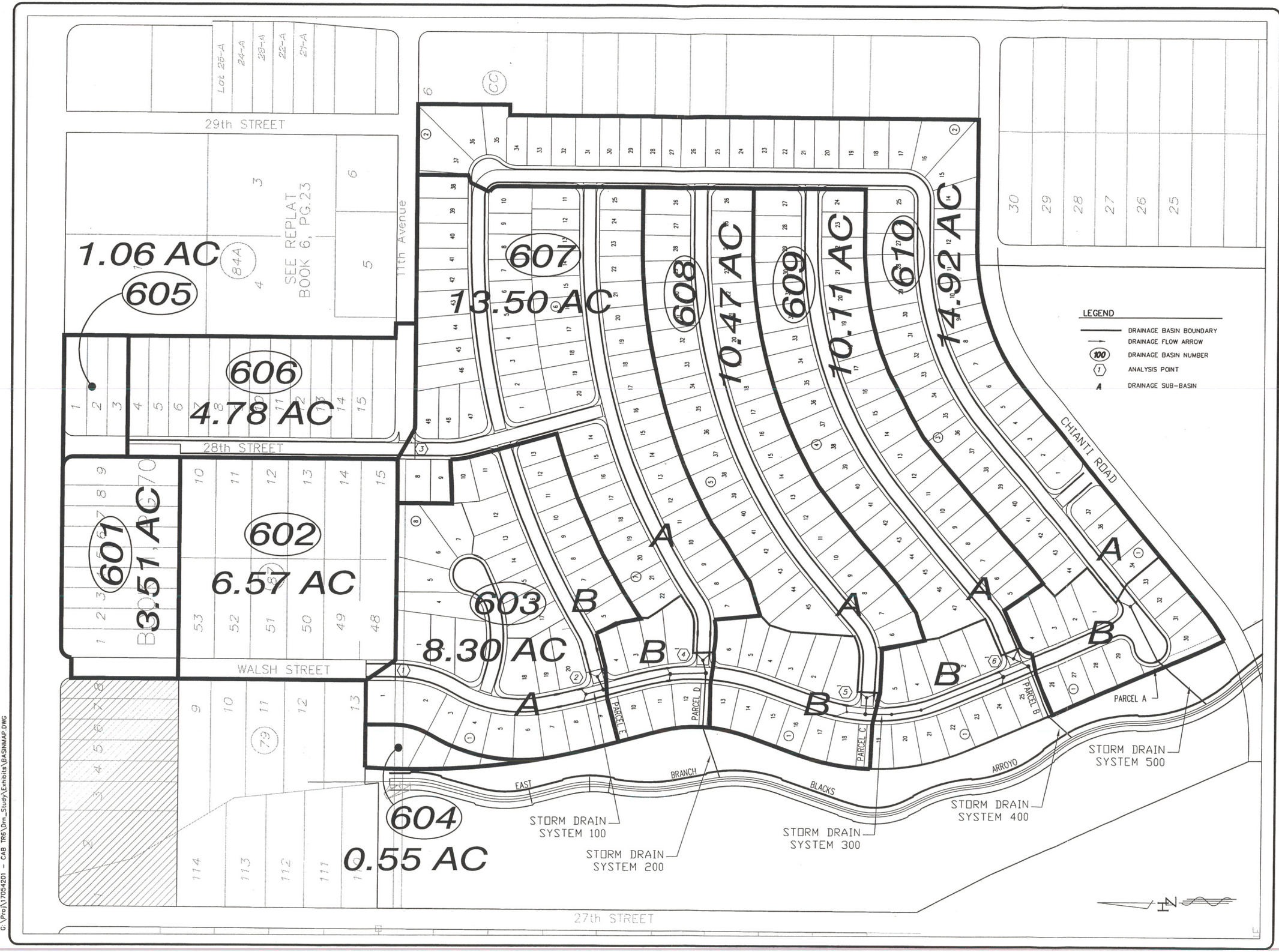
CONCLUSION

Table 3 compares the findings of the analysis of the Tract 6A Subdivision with the results of the approved ***Cabezon Communities Drainage Implementation Plan***.

Table 3
Runoff Comparison for Tract 6A

Description	Basin Area (Mi^2)	Time to Peak (hr)	100-Yr Runoff Volume (Ac-ft)	100-Yr Peak Discharge (Ft^3/s)
CCDIP	0.122	1.50	11.50	276
CCDMP	0.122	1.50	11.50	276
HZI Plan	0.115	1.50	10.27	248.6

The Wilson & Co. DIP allows for 276 cfs to discharge from Tract 6A. This includes offsite flows, which would flow through the site. The total discharge for this project is 248.6 cfs. Therefore this project complies with the ***Cabezon Communities Phase II Drainage Management Plan*** and the ***Cabezon Communities Drainage Implementation Plan***.



NO.	REVISION	DATE
1	- -	- -
2	- -	- -

Designed By:
HUITT-ZOLLARS
Huitt-Zollars, Inc.
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Designed For:
CURB NORTH, INC.

BASIN MAP

CABEZON REDEVELOPMENT
TRACT 6A SUBDIVISION

PRELIMINARY
NOT FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES. FOR REVIEW ONLY.
JARROD D. LIKAR
18010
Date:_____
HUITT-ZOLLARS, INC.
Consulting Engineers

DATE: JAN. 30, 2006
DRAWN: RJS
DESIGNED: RJS
CHECKED: JDL
PROJ. NO.: 17-0542-01

SHEET: EX-2

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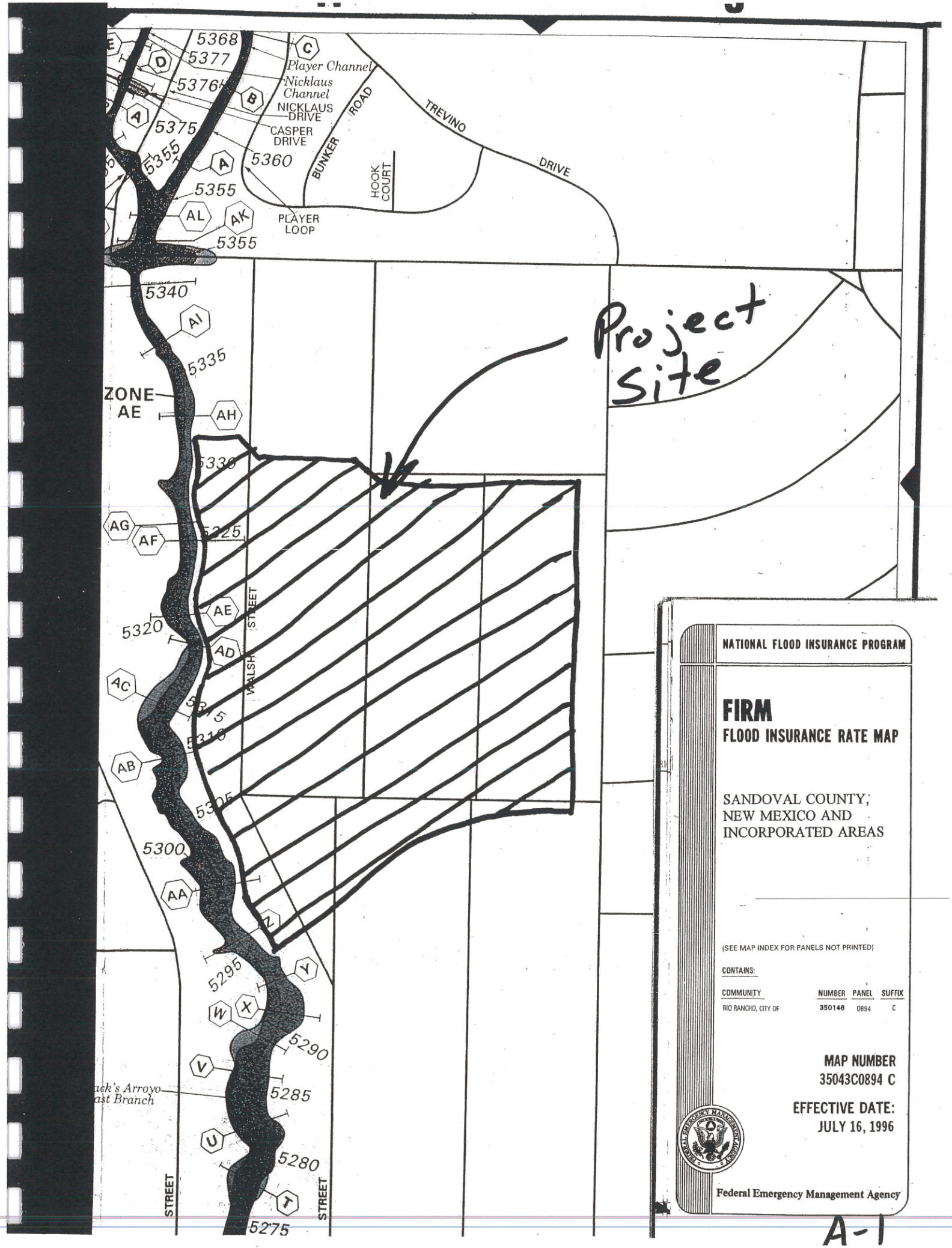
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5300
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5285
5280
5275
Player Channel
Nicklaus Channel
NICKLAUS DRIVE
CASPER DRIVE
BUNKER ROAD
TREVINO DRIVE
HOOK COURT
PLAYER LOOP
ZONE AE
WALSH STREET
STREET
STREET
Project Site
NATIONAL FLOOD INSURANCE 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

A-1

7JUN04 (LT)
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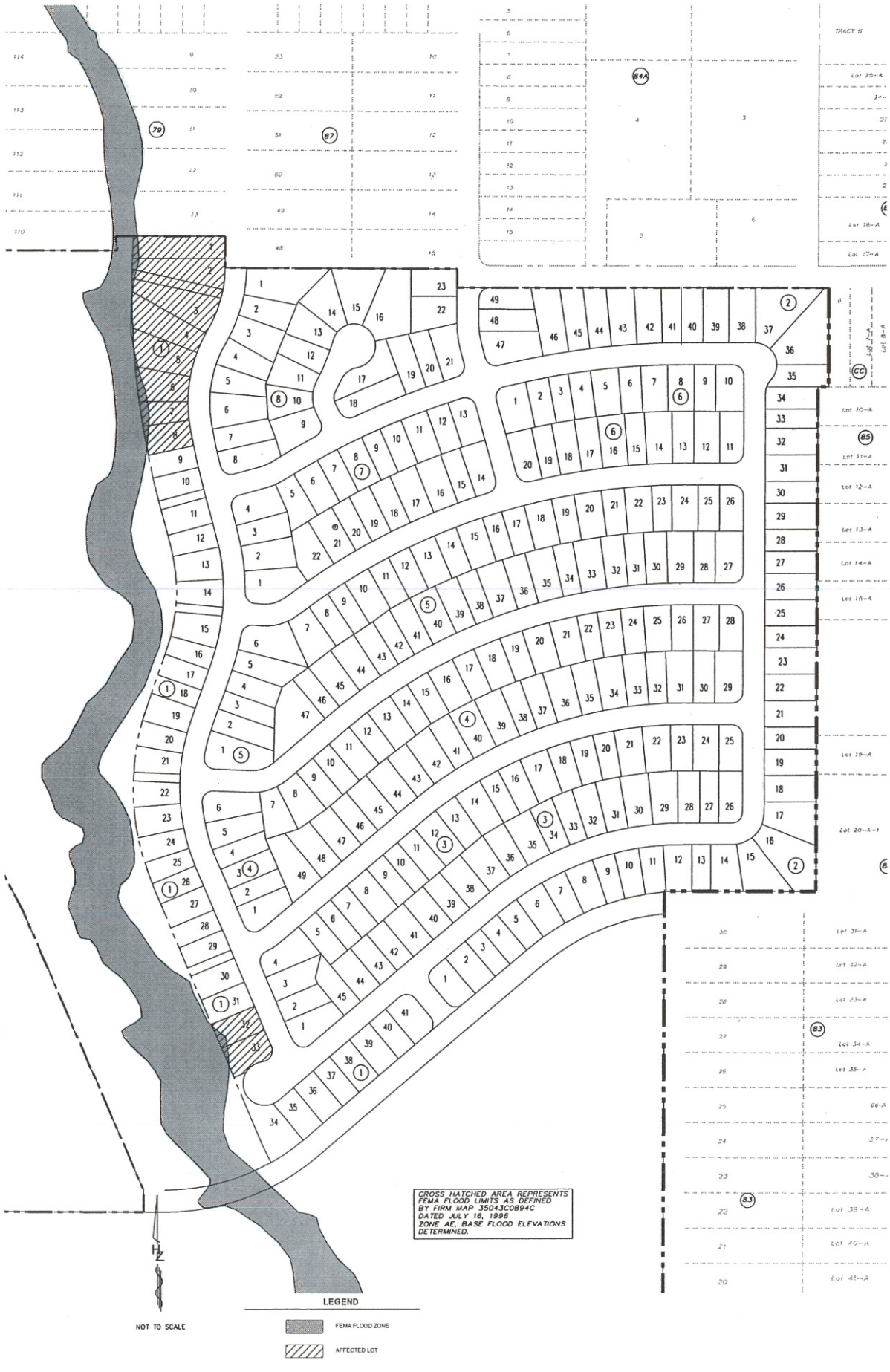

Designed For:

CURB NORTH, LLC

EXISTING FEMA FLOOD ZONE

YUCATAN DEL ESTE AT CABEZON TRACT 6A

FEBRUARY 2006

Designed By:

HUITT-ZOLLARS

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A-2

Cabezon Tract 6A
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

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   *S    CABEZON TRACT 6A
   *S
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   *S
   *S
   *S
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   COMPUTE NM HYD       601.OFF   -     1        .00548      14.52       .686     2.34567   1.500    4.141 PER IMP=  85.00
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   *S COMPUTE OFFSITE BASIN 602 (RESIDENTIAL)
   COMPUTE NM HYD       602.OFF   -     2        .01027      18.68       .682     1.24535   1.500    2.842 PER IMP=  27.00
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   *S ADD 601 TO 602
   ADD HYD                AP.1  1& 2   3        .01575      33.20      1.368     1.62815   1.500    3.294
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   *S COMPUTE ONSITE BASIN 603
   COMPUTE NM HYD       603.ON    -     4        .01297      28.33      1.177     1.70151   1.500    3.413 PER IMP=  50.00
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   ADD HYD                AP.2  3& 4   5        .02872      61.53      2.545     1.66127   1.500    3.348
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   *S ID=6 IS 55.00 CFS INTO INLETS
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   DIVIDE HYD         SYSTEM.100    5    6        .02842      55.00      2.518     1.66127   1.500    3.024
                     AP.2.BYPASS  and    7        .00030       6.53       .027     1.66128   1.500   33.502
   *S---------------------------------------------------------------
   *S COMPUTE ONSITE BASIN 604
   COMPUTE NM HYD       604.ON    -     8        .00086       1.89       .078     1.70151   1.500    3.440 PER IMP=  50.00
   *S---------------------------------------------------------------
   *S COMPUTE OFFSITE BASIN 605 (COMMERCIAL)
   COMPUTE NM HYD       605.OFF   -     9        .00166       4.41       .208     2.34567   1.500    4.151 PER IMP=  85.00
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   *S COMPUTE OFFSITE BASIN 606 (RESIDENTIAL)
   COMPUTE NM HYD       606.OFF   -    10        .00747      13.59       .496     1.24535   1.500    2.842 PER IMP=  27.00
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   *S ADD 605.OFF TO 606.OFF
   ADD HYD                AP.3  9&10  11        .00913      18.00       .704     1.44535   1.500    3.080
   *S---------------------------------------------------------------
   *S COMPUTE ONSITE BASIN 607
   COMPUTE NM HYD       607.ON    -    12        .02109      46.06      1.914     1.70151   1.500    3.412 PER IMP=  50.00
   *S---------------------------------------------------------------
   *S ADD AP.2.BYPASS TO 607.ON
   ADD HYD             607.TOTAL  7&12 13        .02139      52.59      1.941     1.70093   1.500    3.841
   *S---------------------------------------------------------------
   *S ADD AP.3 TO 607.TOTAL
   ADD HYD                AP.4 11&13  14        .03052      70.59      2.645     1.62448   1.500    3.613
   *S---------------------------------------------------------------
   *S DIVIDE AP.4
   *S ID=15 IS 64.50 CFS INTO INLETS
   *S ID=16 IS 6.09 CFS BYPASSING INLET TO BASIN103
   DIVIDE HYD         SYSTEM.200   14   15        .03023      64.50      2.619     1.62448   1.500    3.333
                     AP.4.BYPASS  and   16        .00029       6.09       .025     1.62449   1.500   32.760
   *S---------------------------------------------------------------
   *S ADD SYSTEM.100 TO SYSTEM.200
   ADD HYD            200.OUTFALL 6&15 17        .05865     119.50      5.137     1.64231   1.500    3.184
   *S---------------------------------------------------------------
   *S COMPUTE ONSITE BASIN 608
   COMPUTE NM HYD       608.ON    -    18        .01636      35.73      1.485     1.70151   1.500    3.413 PER IMP=  50.00
   *S---------------------------------------------------------------
   *S ADD AP.4.BYPASS TO 608.ON
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Cabezon Tract 6A
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	NOTATION
ADD HYD	AP.5	16&18	19	.01665	41.83	1.510	1.70015	1.500	3.925	
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*S DIVIDE AP.5										
*S ID=20 IS 34.50 CFS INTO INLETS										
*S ID=21 IS 7.33 CFS BYPASSING INLET TO BASIN103										
DIVIDE HYD	SYSTEM.300	19	20	.01632	34.50	1.480	1.70015	1.500	3.304	
	AP.5.BYPASS	and	21	.00033	7.33	.030	1.70015	1.500	34.286	
*S----------										
*S COMPUTE ONSITE BASIN 609										
COMPUTE NM HYD	609.ON	-	22	.01580	34.51	1.434	1.70151	1.500	3.413	PER IMP= 50.00
*S----------										
*S ADD AP.5.BYPASS TO 609.ON										
ADD HYD	AP.6	21&22	23	.01613	41.84	1.464	1.70147	1.500	4.052	
*S----------										
*S DIVIDE AP.6										
*S ID=24 IS 34.60 CFS INTO INLETS										
*S ID=25 IS 7.24 CFS BYPASSING INLET TO BASIN103										
DIVIDE HYD	SYSTEM.400	23	24	.01580	34.60	1.434	1.70147	1.500	3.421	
	AP.6.BYPASS	and	25	.00033	7.24	.030	1.70147	1.500	34.313	
*S----------										
*S ADD SYSTEM.300 TO SYSTEM.400										
ADD HYD	400.OUTFALL	20&24	26	.03212	69.10	2.914	1.70080	1.500	3.361	
*S----------										
*S COMPUTE ONSITE BASIN 610										
COMPUTE NM HYD	610.ON	-	27	.02331	50.91	2.115	1.70151	1.500	3.412	PER IMP= 50.00
*S----------										
*S ADD AP.6.BYPASS TO 610.ON										
ADD HYD	AP.7	25&27	28	.02364	58.14	2.145	1.70150	1.500	3.843	
*S----------										
*S DIVIDE AP.7										
*S ID=29 IS 36.50 CFS INTO INLETS										
*S ID=30 IS 23.54 CFS BYPASSING INLET TO SUMP										
DIVIDE HYD	SYSTEM.500A	28	29	.02161	34.60	1.961	1.70150	1.450	2.501	
	SUMP	and	30	.00203	23.54	.184	1.70150	1.500	18.165	
*S----------										
*S ADD SYSTEM.500A TO SUMP										
ADD HYD	500.OUTFALL	29&30	31	.02364	58.14	2.145	1.70150	1.500	3.843	
*S----------										
*S ADD 200.OUTFALL TO 400.OUTFALL										
ADD HYD	SUBTOTAL.A	17&26	32	.09077	188.60	8.051	1.66301	1.500	3.247	
*S----------										
*S ADD SUBTOTAL.A TO 500.OUTFALL										
ADD HYD	SUBTOTAL.B	32&31	33	.11441	246.74	10.196	1.67096	1.500	3.370	
*S----------										
*S ADD SUBTOTAL.B TO BASIN 604										
ADD HYD	TOTAL	33& 8	34	.11527	248.64	10.274	1.67118	1.500	3.370	
*S----------										
FINISH										

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Cabezon Tract 6A
100-Year 24-Hour Duration Storm-Developed
AHYMO Output File

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               B             0.50                  1.25
               C             0.35                  0.83
               D             0.10                  0.04

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     *S
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     *S
     *S
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                       .0664   .0730   .0799   .0873   .0953   .1038   .1131
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                      2.0466  2.0506  2.0544  2.0582  2.0619  2.0655  2.0690
                      2.0725  2.0759  2.0793  2.0826  2.0859  2.0891  2.0923
                      2.0954  2.0984  2.1015  2.1044  2.1074  2.1103  2.1132
                      2.1160  2.1188  2.1215  2.1242  2.1269  2.1296  2.1322
                      2.1348  2.1374  2.1399  2.1424  2.1449  2.1474  2.1498
                      2.1522  2.1546  2.1570  2.1593  2.1616  2.1639  2.1662
                      2.1684  2.1707  2.1729  2.1751  2.1772  2.1794  2.1815
                      2.1837  2.1858  2.1878  2.1899  2.1920  2.1940  2.1960
                      2.1980  2.2000  2.2021  2.2042  2.2063  2.2084  2.2105
                      2.2126  2.2147  2.2167  2.2188  2.2209  2.2229  2.2250
                      2.2270  2.2290  2.2310  2.2330  2.2351  2.2371  2.2390
                      2.2410  2.2430  2.2450  2.2470  2.2489  2.2509  2.2528
                      2.2548  2.2567  2.2586  2.2605  2.2625  2.2644  2.2663
                      2.2682  2.2701  2.2720  2.2738  2.2757  2.2776  2.2795
                      2.2813  2.2832  2.2850  2.2869  2.2887  2.2905  2.2923
                      2.2942  2.2960  2.2978  2.2996  2.3014  2.3032  2.3050
                      2.3068  2.3085  2.3103  2.3121  2.3138  2.3156  2.3174
                      2.3191  2.3208  2.3226  2.3243  2.3260  2.3278  2.3295
                      2.3312  2.3329  2.3346  2.3363  2.3380  2.3397  2.3414
                      2.3431  2.3448  2.3464  2.3481  2.3498  2.3514  2.3531
                      2.3547  2.3564  2.3580  2.3596  2.3613  2.3629  2.3645
                      2.3662  2.3678  2.3694  2.3710  2.3726  2.3742  2.3758
                      2.3774  2.3790  2.3806  2.3821  2.3837  2.3853  2.3869
                      2.3884  2.3900  2.3915  2.3931  2.3946  2.3962  2.3977
                      2.3993  2.4008  2.4023  2.4038  2.4054  2.4069  2.4084
                      2.4099  2.4114  2.4129  2.4144  2.4159  2.4174  2.4189
                      2.4204  2.4219  2.4234  2.4248  2.4263  2.4278  2.4293
                      2.4307  2.4322  2.4336  2.4351  2.4365  2.4380  2.4394
                      2.4409  2.4423  2.4437  2.4452  2.4466  2.4480  2.4494
                      2.4509  2.4523  2.4537  2.4551  2.4565  2.4579  2.4593
                      2.4607  2.4621  2.4635  2.4649  2.4662  2.4676  2.4690
                      2.4704  2.4718  2.4731  2.4745  2.4759  2.4772  2.4786
                      2.4799  2.4813  2.4826  2.4840  2.4853  2.4867  2.4880
                      2.4893  2.4907  2.4920  2.4933  2.4946  2.4960  2.4973
                      2.4986  2.4999  2.5012  2.5025  2.5038  2.5051  2.5064
                      2.5077  2.5090  2.5103  2.5116  2.5129  2.5142  2.5155
                      2.5168  2.5180  2.5193  2.5206  2.5219  2.5231  2.5244
                      2.5257  2.5269  2.5282  2.5294  2.5307  2.5319  2.5332
                      2.5344  2.5357  2.5369  2.5382  2.5394  2.5406  2.5419
                      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  2.5636  2.5648  2.5660  2.5672
                      2.5684  2.5696  2.5708  2.5719  2.5731  2.5743  2.5754
                      2.5766  2.5778  2.5790  2.5801  2.5813  2.5824  2.5836
                      2.5847  2.5859  2.5870  2.5882  2.5893  2.5905  2.5916
                      2.5928  2.5939  2.5950  2.5962  2.5973  2.5984  2.5996
                      2.6007  2.6018  2.6029  2.6041  2.6052  2.6063  2.6074
                      2.6085  2.6097  2.6108  2.6119  2.6130  2.6141  2.6152
                      2.6163  2.6174  2.6185  2.6196  2.6207  2.6218  2.6229
                      2.6239  2.6250  2.6261  2.6272  2.6283  2.6294  2.6304
                      2.6315  2.6326  2.6337  2.6347  2.6358  2.6369  2.6379
                      2.6390  2.6401  2.6411  2.6422  2.6432  2.6443  2.6454
                      2.6464  2.6475  2.6485  2.6496  2.6506  2.6516  2.6527
                      2.6537  2.6548  2.6558  2.6569  2.6579  2.6589  2.6600
                      2.6610  2.6620  2.6630  2.6641  2.6651  2.6661  2.6671
                      2.6682  2.6692  2.6702  2.6712  2.6722  2.6732  2.6742
                      2.6752  2.6763  2.6773  2.6783  2.6793  2.6803  2.6813
```

```
              2.6823  2.6833  2.6843  2.6853  2.6862  2.6872  2.6882
              2.6892  2.6902  2.6912  2.6922  2.6932  2.6941  2.6951
              2.6961  2.6971  2.6981  2.6990  2.7000

*
*S**************************************************************
*S BULK FOR SEDIMENT - DEVELOPED
SEDIMENT BULK            CODE=1    BULK FACTOR=1.05
*S--------------------------------------------------------------
*S COMPUTE OFFSITE BASIN 601 (COMMERCIAL)
COMPUTE NM HYD         ID=1 HYD=601.OFF AREA=0.00548 SQ MI
                       %A=0 %B=0 %C=15 %D=85 TP=0.133 HR
                       MASS RAINFALL=-1

     K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   18.432    CFS   UNIT VOLUME =    .9985       B =   526.28      P60 = 1.8000
     AREA =       .004658 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .104841HR    TP =   .133000HR    K/TP RATIO =   .788276     SHAPE CONSTANT, N =  4.552994
     UNIT PEAK =   2.4134    CFS   UNIT VOLUME =    .9963       B =   390.49      P60 = 1.8000
     AREA =       .000822 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 =  1.05000 AT PEAK FLOW.

PRINT HYD              ID=1 CODE=10

                                    HYDROGRAPH FROM AREA 601.OFF

     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      14.5         6.500       .1         11.500       .1         16.500       .1         21.500       .1
     2.000       3.4         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       .1
     4.500        .1         9.500       .1         14.500       .1         19.500       .1         24.500       .0

    RUNOFF VOLUME =     2.34567 INCHES     =        .6856 ACRE-FEET
    PEAK DISCHARGE RATE =      14.52 CFS  AT   1.500 HOURS   BASIN AREA =   .0055 SQ. MI.


*S--------------------------------------------------------------
*S COMPUTE OFFSITE BASIN 602 (RESIDENTIAL)
COMPUTE NM HYD         ID=2 HYD=602.OFF AREA=0.01027 SQ MI
                       %A=10 %B=33 %C=30 %D=27 TP=0.133 HR
                       MASS RAINFALL=-1

     K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   10.972    CFS   UNIT VOLUME =    .9981       B =   526.28      P60 = 1.8000
     AREA =       .002773 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .125336HR    TP =   .133000HR    K/TP RATIO =   .942377     SHAPE CONSTANT, N =  3.751846
     UNIT PEAK =   19.068    CFS   UNIT VOLUME =    1.001       B =   338.27      P60 = 1.8000
     AREA =       .007497 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 =  1.05000 AT PEAK FLOW.

PRINT HYD              ID=2 CODE=10

                                    HYDROGRAPH FROM AREA 602.OFF

     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       .0
      .500       .0          5.500       .1         10.500       .1         15.500       .0         20.500       .0
     1.000       .0          6.000       .1         11.000       .1         16.000       .0         21.000       .0
     1.500      18.7         6.500       .1         11.500       .1         16.500       .0         21.500       .0
     2.000       2.9         7.000       .1         12.000       .1         17.000       .0         22.000       .0
     2.500        .5         7.500       .1         12.500       .1         17.500       .0         22.500       .0
     3.000        .2         8.000       .1         13.000       .1         18.000       .0         23.000       .0
     3.500        .1         8.500       .1         13.500       .1         18.500       .0         23.500       .0
     4.000        .1         9.000       .1         14.000       .1         19.000       .0         24.000       .0
     4.500        .1         9.500       .1         14.500       .1         19.500       .0         24.500       .0

    RUNOFF VOLUME =     1.24535 INCHES     =        .6821 ACRE-FEET
    PEAK DISCHARGE RATE =      18.68 CFS  AT   1.500 HOURS   BASIN AREA =   .0103 SQ. MI.


*S--------------------------------------------------------------
*S ADD 601 TO 602
ADD HYD                ID=3 HYD=AP.1 IDi=1 IDii=2
PRINT HYD              ID=3 CODE=10
```

Cabezon Tract 6A
100-Year 24-Hour Duration Storm-Developed
AHYMO Output File

HYDROGRAPH FROM AREA AP.1

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	.1	6.000	.2	11.000	.2	16.000	.1	21.000	.1
1.500	33.2	6.500	.2	11.500	.2	16.500	.1	21.500	.1
2.000	6.3	7.000	.2	12.000	.2	17.000	.1	22.000	.1
2.500	1.0	7.500	.2	12.500	.1	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 = 1.62815 INCHES = 1.3676 ACRE-FEET
PEAK DISCHARGE RATE = 33.20 CFS AT 1.500 HOURS BASIN AREA = .0158 SQ. MI.

```
*S--------------------------------------------------------------------
*S COMPUTE ONSITE BASIN 603
COMPUTE NM HYD          ID=4 HYD=603.ON AREA=0.01297 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 = 25.661 CFS UNIT VOLUME = .9987 B = 526.28 P60 = 1.8000
AREA = .006485 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118383HR TP = .133000HR K/TP RATIO = .890100 SHAPE CONSTANT, N = 3.984532
UNIT PEAK = 17.268 CFS UNIT VOLUME = 1.001 B = 354.14 P60 = 1.8000
AREA = .006485 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 = 1.05000 AT PEAK FLOW.

```
PRINT HYD               ID=4 CODE=10
```

HYDROGRAPH FROM AREA 603.ON

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	.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	28.3	6.500	.2	11.500	.1	16.500	.1	21.500	.1
2.000	5.4	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	.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 = 1.70151 INCHES = 1.1770 ACRE-FEET
PEAK DISCHARGE RATE = 28.33 CFS AT 1.500 HOURS BASIN AREA = .0130 SQ. MI.

```
*S--------------------------------------------------------------------
*S ADD AP.1 TO 603
ADD HYD                 ID=5 HYD=AP.2 IDi=3 IDii=4
PRINT HYD               ID=5 CODE=10
```

HYDROGRAPH FROM AREA AP.2

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	.3	15.000	.3	20.000	.2
.500	.0	5.500	.3	10.500	.3	15.500	.2	20.500	.2
1.000	.2	6.000	.4	11.000	.3	16.000	.2	21.000	.2
1.500	61.5	6.500	.4	11.500	.3	16.500	.2	21.500	.2
2.000	11.7	7.000	.4	12.000	.3	17.000	.2	22.000	.2
2.500	1.8	7.500	.4	12.500	.3	17.500	.2	22.500	.2
3.000	.7	8.000	.4	13.000	.3	18.000	.2	23.000	.2
3.500	.4	8.500	.3	13.500	.3	18.500	.2	23.500	.2
4.000	.3	9.000	.3	14.000	.3	19.000	.2	24.000	.2
4.500	.3	9.500	.3	14.500	.3	19.500	.2	24.500	.0

RUNOFF VOLUME = 1.66127 INCHES = 2.5446 ACRE-FEET
PEAK DISCHARGE RATE = 61.53 CFS AT 1.500 HOURS BASIN AREA = .0287 SQ. MI.

```
*S--------------------------------------------------------------------
*S DIVIDE AP.2
*S ID=6 IS 55.00 CFS INTO INLETS
*S ID=7 IS 6.35 CFS BYPASSING INLET TO BASIN103
DIVIDE HYD              ID=5 Q=55.0 IDi=6 HYD=SYSTEM.100
                                    IDii=7 HYD=AP.2.BYPASS
*S--------------------------------------------------------------------
```

Cabezon Tract 6A
100-Year 24-Hour Duration Storm-Developed
AHYMO Output File

```
*S COMPUTE ONSITE BASIN 604
COMPUTE NM HYD         ID=8 HYD=604.ON AREA=0.00086 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 =   1.7015    CFS   UNIT VOLUME =    .9928       B =   526.28      P60 = 1.8000
     AREA =       .000430 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .118383HR    TP =   .133000HR    K/TP RATIO =   .890100     SHAPE CONSTANT, N =  3.984532
     UNIT PEAK =   1.1450    CFS   UNIT VOLUME =    .9896       B =   354.14      P60 = 1.8000
     AREA =       .000430 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 =  1.05000 AT PEAK FLOW.

PRINT HYD              ID=8 CODE=10

                                    HYDROGRAPH FROM AREA 604.ON

     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       .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      1.9          6.500       .0         11.500       .0         16.500       .0         21.500       .0
     2.000       .4          7.000       .0         12.000       .0         17.000       .0         22.000       .0
     2.500       .1          7.500       .0         12.500       .0         17.500       .0         22.500       .0
     3.000       .0          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 =     1.70151 INCHES     =         .0780 ACRE-FEET
    PEAK DISCHARGE RATE =       1.89 CFS  AT   1.500 HOURS   BASIN AREA =   .0009 SQ. MI.


*S--------------------------------------------------------------------
*S COMPUTE OFFSITE BASIN 605 (COMMERCIAL)
COMPUTE NM HYD         ID=9 HYD=605.OFF AREA=0.00166 SQ MI
                       %A=0 %B=0 %C=15 %D=85 TP=0.133 HR
                       MASS RAINFALL=-1

     K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   5.5833    CFS   UNIT VOLUME =    .9971       B =   526.28      P60 = 1.8000
     AREA =       .001411 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .104841HR    TP =   .133000HR    K/TP RATIO =   .788276     SHAPE CONSTANT, N =  4.552994
     UNIT PEAK =   .73106    CFS   UNIT VOLUME =    .9854       B =   390.49      P60 = 1.8000
     AREA =       .000249 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 =  1.05000 AT PEAK FLOW.

PRINT HYD              ID=9 CODE=10

                                    HYDROGRAPH FROM AREA 605.OFF

     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       .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      4.4          6.500       .0         11.500       .0         16.500       .0         21.500       .0
     2.000      1.0          7.000       .0         12.000       .0         17.000       .0         22.000       .0
     2.500       .1          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 =     2.34567 INCHES     =         .2077 ACRE-FEET
    PEAK DISCHARGE RATE =       4.41 CFS  AT   1.500 HOURS   BASIN AREA =   .0017 SQ. MI.


*S--------------------------------------------------------------------
*S COMPUTE OFFSITE BASIN 606 (RESIDENTIAL)
COMPUTE NM HYD         ID=10 HYD=606.OFF AREA=0.00747 SQ MI
                       %A=10 %B=33 %C=30 %D=27 TP=0.133 HR
                       MASS RAINFALL=-1

     K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   7.9808    CFS   UNIT VOLUME =    .9979       B =   526.28      P60 = 1.8000
     AREA =       .002017 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .125336HR    TP =   .133000HR    K/TP RATIO =   .942377     SHAPE CONSTANT, N =  3.751846
```

```
      UNIT PEAK =   13.869    CFS   UNIT VOLUME =    1.000       B =   338.27      P60 = 1.8000
      AREA =       .005453 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 =  1.05000 AT PEAK FLOW.

PRINT HYD             ID=10 CODE=10

                                        HYDROGRAPH FROM AREA 606.OFF

      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        .0        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       13.6        6.500        .1        11.500        .0        16.500        .0        21.500        .0
     2.000        2.1        7.000        .1        12.000        .0        17.000        .0        22.000        .0
     2.500         .4        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 =     1.24535 INCHES     =        .4961 ACRE-FEET
     PEAK DISCHARGE RATE =      13.59 CFS  AT   1.500 HOURS   BASIN AREA =    .0075 SQ. MI.


*S--------------------------------------------------------------------
*S ADD 605.OFF TO 606.OFF
ADD HYD               ID=11 HYD=AP.3 IDi=9 IDii=10
PRINT HYD             ID=11 CODE=10

                                        HYDROGRAPH FROM AREA AP.3

      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        .0         6.000        .1        11.000        .1        16.000        .1        21.000        .0
     1.500       18.0        6.500        .1        11.500        .1        16.500        .1        21.500        .0
     2.000        3.1        7.000        .1        12.000        .1        17.000        .1        22.000        .0
     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 =     1.44535 INCHES     =        .7038 ACRE-FEET
     PEAK DISCHARGE RATE =      18.00 CFS  AT   1.500 HOURS   BASIN AREA =    .0091 SQ. MI.


*S--------------------------------------------------------------------
*S COMPUTE ONSITE BASIN 607
COMPUTE NM HYD        ID=12 HYD=607.ON AREA=0.02109 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 =   41.726    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 1.8000
     AREA =       .010545 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .118383HR    TP =   .133000HR    K/TP RATIO =   .890100     SHAPE CONSTANT, N =  3.984532
     UNIT PEAK =   28.078    CFS   UNIT VOLUME =    1.001       B =   354.14      P60 = 1.8000
     AREA =       .010545 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 =  1.05000 AT PEAK FLOW.

PRINT HYD             ID=12 CODE=10

                                        HYDROGRAPH FROM AREA 607.ON

      TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
       HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
      .000        .0         5.000        .2        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        .1         6.000        .3        11.000        .2        16.000        .2        21.000        .2
     1.500       46.1        6.500        .3        11.500        .2        16.500        .2        21.500        .2
     2.000        8.8        7.000        .3        12.000        .2        17.000        .2        22.000        .1
     2.500        1.4        7.500        .3        12.500        .2        17.500        .2        22.500        .1
     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         .2        9.000        .3        14.000        .2        19.000        .2        24.000        .1
     4.500         .2        9.500        .2        14.500        .2        19.500        .2        24.500        .0

     RUNOFF VOLUME =     1.70151 INCHES     =       1.9138 ACRE-FEET
     PEAK DISCHARGE RATE =      46.06 CFS  AT   1.500 HOURS   BASIN AREA =    .0211 SQ. MI.
```

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```
*S--------------------------------------------------------------------
*S ADD AP.2.BYPASS TO 607.ON
ADD HYD              ID=13 HYD=607.TOTAL IDi=7 IDii=12
PRINT HYD            ID=13 CODE=10
```

HYDROGRAPH FROM AREA 607.TOTAL

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	.2	20.000	.2
.500	.0	5.500	.3	10.500	.2	15.500	.2	20.500	.2
1.000	.1	6.000	.3	11.000	.2	16.000	.2	21.000	.2
1.500	52.6	6.500	.3	11.500	.2	16.500	.2	21.500	.2
2.000	8.8	7.000	.3	12.000	.2	17.000	.2	22.000	.1
2.500	1.4	7.500	.3	12.500	.2	17.500	.2	22.500	.1
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	.2	9.000	.3	14.000	.2	19.000	.2	24.000	.1
4.500	.2	9.500	.2	14.500	.2	19.500	.2	24.500	.0

```
    RUNOFF VOLUME =     1.70093 INCHES     =       1.9408 ACRE-FEET
    PEAK DISCHARGE RATE =      52.59 CFS  AT   1.500 HOURS   BASIN AREA =   .0214 SQ. MI.


*S--------------------------------------------------------------------
*S ADD AP.3 TO 607.TOTAL
ADD HYD              ID=14 HYD=AP.4 IDi=11 IDii=13
PRINT HYD            ID=14 CODE=10
```

HYDROGRAPH FROM AREA AP.4

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	.3	15.000	.3	20.000	.2
.500	.0	5.500	.3	10.500	.3	15.500	.2	20.500	.2
1.000	.2	6.000	.4	11.000	.3	16.000	.2	21.000	.2
1.500	70.6	6.500	.4	11.500	.3	16.500	.2	21.500	.2
2.000	11.9	7.000	.4	12.000	.3	17.000	.2	22.000	.2
2.500	1.9	7.500	.4	12.500	.3	17.500	.2	22.500	.2
3.000	.7	8.000	.4	13.000	.3	18.000	.2	23.000	.2
3.500	.4	8.500	.3	13.500	.3	18.500	.2	23.500	.2
4.000	.3	9.000	.3	14.000	.3	19.000	.2	24.000	.2
4.500	.3	9.500	.3	14.500	.3	19.500	.2	24.500	.0

```
    RUNOFF VOLUME =     1.62448 INCHES     =       2.6446 ACRE-FEET
    PEAK DISCHARGE RATE =      70.59 CFS  AT   1.500 HOURS   BASIN AREA =   .0305 SQ. MI.


*S--------------------------------------------------------------------
*S DIVIDE AP.4
*S ID=15 IS 64.50 CFS INTO INLETS
*S ID=16 IS 6.09 CFS BYPASSING INLET TO BASIN103
DIVIDE HYD              ID=14 Q=64.5 IDi=15 HYD=SYSTEM.200
                                     IDii=16 HYD=AP.4.BYPASS
*S--------------------------------------------------------------------
*S ADD SYSTEM.100 TO SYSTEM.200
ADD HYD              ID=17 HYD=200.OUTFALL IDi=6 IDii=15
PRINT HYD            ID=17 CODE=10
```

HYDROGRAPH FROM AREA 200.OUTFALL

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.6	10.000	.6	15.000	.5	20.000	.4
.500	.0	5.500	.7	10.500	.6	15.500	.5	20.500	.4
1.000	.4	6.000	.7	11.000	.6	16.000	.5	21.000	.4
1.500	119.5	6.500	.8	11.500	.6	16.500	.5	21.500	.4
2.000	23.5	7.000	.8	12.000	.6	17.000	.5	22.000	.4
2.500	3.7	7.500	.7	12.500	.6	17.500	.5	22.500	.4
3.000	1.3	8.000	.7	13.000	.5	18.000	.5	23.000	.4
3.500	.8	8.500	.7	13.500	.5	18.500	.4	23.500	.4
4.000	.7	9.000	.7	14.000	.5	19.000	.4	24.000	.4
4.500	.6	9.500	.7	14.500	.5	19.500	.4	24.500	.0

```
    RUNOFF VOLUME =     1.64231 INCHES     =       5.1371 ACRE-FEET
    PEAK DISCHARGE RATE =     119.50 CFS  AT   1.500 HOURS   BASIN AREA =   .0586 SQ. MI.


*S--------------------------------------------------------------------
*S COMPUTE ONSITE BASIN 608
COMPUTE NM HYD       ID=18 HYD=608.ON AREA=0.01636 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 =   32.368    CFS   UNIT VOLUME =    .9988       B =   526.28      P60 = 1.8000
     AREA =      .008180 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


     K =   .118383HR    TP =   .133000HR    K/TP RATIO =   .890100     SHAPE CONSTANT, N =  3.984532
```

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```
     UNIT PEAK =   21.781    CFS   UNIT VOLUME =    1.001       B =   354.14      P60 = 1.8000
     AREA =       .008180 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 =  1.05000 AT PEAK FLOW.

PRINT HYD             ID=18 CODE=10

                                        HYDROGRAPH FROM AREA 608.ON

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       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        .1         6.000        .2        11.000        .2        16.000        .1        21.000        .1
    1.500       35.7        6.500        .2        11.500        .2        16.500        .1        21.500        .1
    2.000        6.8        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        .1        19.500        .1        24.500        .0

    RUNOFF VOLUME =     1.70151 INCHES     =       1.4846 ACRE-FEET
    PEAK DISCHARGE RATE =      35.73 CFS  AT   1.500 HOURS   BASIN AREA =   .0164 SQ. MI.


*S--------------------------------------------------------------------
*S ADD AP.4.BYPASS TO 608.ON
ADD HYD               ID=19 HYD=AP.5 IDi=16 IDii=18
PRINT HYD             ID=19 CODE=10

                                        HYDROGRAPH FROM AREA AP.5

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       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        .1         6.000        .2        11.000        .2        16.000        .1        21.000        .1
    1.500       41.8        6.500        .2        11.500        .2        16.500        .1        21.500        .1
    2.000        6.8        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        .1        19.500        .1        24.500        .0

    RUNOFF VOLUME =     1.70015 INCHES     =       1.5098 ACRE-FEET
    PEAK DISCHARGE RATE =      41.83 CFS  AT   1.500 HOURS   BASIN AREA =   .0167 SQ. MI.


*S--------------------------------------------------------------------
*S DIVIDE AP.5
*S ID=20 IS 34.50 CFS INTO INLETS
*S ID=21 IS 7.33 CFS BYPASSING INLET TO BASIN103
DIVIDE HYD               ID=19 Q=34.5 IDi=20 HYD=SYSTEM.300
                                      IDii=21 HYD=AP.5.BYPASS
*S--------------------------------------------------------------------
*S COMPUTE ONSITE BASIN 609
COMPUTE NM HYD        ID=22 HYD=609.ON AREA=0.01580 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 =   31.260    CFS   UNIT VOLUME =    .9988       B =   526.28      P60 = 1.8000
     AREA =       .007900 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000


     K =   .118383HR    TP =   .133000HR    K/TP RATIO =   .890100     SHAPE CONSTANT, N =  3.984532
     UNIT PEAK =   21.035    CFS   UNIT VOLUME =    1.001       B =   354.14      P60 = 1.8000
     AREA =       .007900 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 =  1.05000 AT PEAK FLOW.

PRINT HYD             ID=22 CODE=10

                                        HYDROGRAPH FROM AREA 609.ON

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       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        .1         6.000        .2        11.000        .2        16.000        .1        21.000        .1
    1.500       34.5        6.500        .2        11.500        .2        16.500        .1        21.500        .1
    2.000        6.6        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        .1        19.000        .1        24.000        .1
    4.500        .2         9.500        .2        14.500        .1        19.500        .1        24.500        .0
```

```
    RUNOFF VOLUME =      1.70151 INCHES      =        1.4338 ACRE-FEET
    PEAK DISCHARGE RATE =       34.51 CFS  AT    1.500 HOURS    BASIN AREA =    .0158 SQ. MI.


*S--------------------------------------------------------------------
*S ADD AP.5.BYPASS TO 609.ON
ADD HYD              ID=23 HYD=AP.6 IDi=21 IDii=22
PRINT HYD            ID=23 CODE=10

                                    HYDROGRAPH FROM AREA AP.6

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       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       .1         6.000        .2        11.000        .2        16.000        .1        21.000        .1
     1.500      41.8        6.500        .2        11.500        .2        16.500        .1        21.500        .1
     2.000       6.6        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        .1        19.000        .1        24.000        .1
     4.500        .2        9.500        .2        14.500        .1        19.500        .1        24.500        .0

    RUNOFF VOLUME =      1.70147 INCHES      =        1.4641 ACRE-FEET
    PEAK DISCHARGE RATE =       41.84 CFS  AT    1.500 HOURS    BASIN AREA =    .0161 SQ. MI.


*S--------------------------------------------------------------------
*S DIVIDE AP.6
*S ID=24 IS 34.60 CFS INTO INLETS
*S ID=25 IS 7.24 CFS BYPASSING INLET TO BASIN103
DIVIDE HYD               ID=23 Q=34.6 IDi=24 HYD=SYSTEM.400
                                      IDii=25 HYD=AP.6.BYPASS
*S--------------------------------------------------------------------
*S ADD SYSTEM.300 TO SYSTEM.400
ADD HYD              ID=26 HYD=400.OUTFALL IDi=20 IDii=24
PRINT HYD            ID=26 CODE=10

                                    HYDROGRAPH FROM AREA 400.OUTFALL

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       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       .2         6.000        .4        11.000        .3        16.000        .3        21.000        .2
     1.500      69.1        6.500        .4        11.500        .3        16.500        .3        21.500        .2
     2.000      13.4        7.000        .4        12.000        .3        17.000        .3        22.000        .2
     2.500       2.1        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        .2        24.000        .2
     4.500        .4        9.500        .4        14.500        .3        19.500        .2        24.500        .0

    RUNOFF VOLUME =      1.70080 INCHES      =        2.9137 ACRE-FEET
    PEAK DISCHARGE RATE =       69.10 CFS  AT    1.500 HOURS    BASIN AREA =    .0321 SQ. MI.


*S--------------------------------------------------------------------
*S COMPUTE ONSITE BASIN 610
COMPUTE NM HYD           ID=27 HYD=610.ON AREA=0.02331 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 =    46.118    CFS   UNIT VOLUME =     .9989       B =    526.28      P60 = 1.8000
     AREA =       .011655 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .050000


     K =    .118383HR    TP =    .133000HR    K/TP RATIO =    .890100     SHAPE CONSTANT, N =  3.984532
     UNIT PEAK =    31.034    CFS   UNIT VOLUME =    1.001       B =    354.14      P60 = 1.8000
     AREA =       .011655 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 =  1.05000 AT PEAK FLOW.

PRINT HYD            ID=27 CODE=10

                                    HYDROGRAPH FROM AREA 610.ON

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
      .000       .0         5.000        .3        10.000        .3        15.000        .2        20.000        .2
      .500       .0         5.500        .3        10.500        .3        15.500        .2        20.500        .2
     1.000       .2         6.000        .3        11.000        .3        16.000        .2        21.000        .2
     1.500      50.9        6.500        .3        11.500        .2        16.500        .2        21.500        .2
     2.000       9.7        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        .6        8.000        .3        13.000        .2        18.000        .2        23.000        .2
```

3.500	.3	8.500	.3	13.500	.2	18.500	.2	23.500	.2
4.000	.3	9.000	.3	14.000	.2	19.000	.2	24.000	.2
4.500	.3	9.500	.3	14.500	.2	19.500	.2	24.500	.0

RUNOFF VOLUME = 1.70151 INCHES = 2.1153 ACRE-FEET
PEAK DISCHARGE RATE = 50.91 CFS AT 1.500 HOURS BASIN AREA = .0233 SQ. MI.

```
*S--------------------------------------------------------------------
*S ADD AP.6.BYPASS TO 610.ON
ADD HYD              ID=28 HYD=AP.7 IDi=25 IDii=27
PRINT HYD            ID=28 CODE=10
```

HYDROGRAPH FROM AREA AP.7

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	.3	15.000	.2	20.000	.2
.500	.0	5.500	.3	10.500	.3	15.500	.2	20.500	.2
1.000	.2	6.000	.3	11.000	.3	16.000	.2	21.000	.2
1.500	58.1	6.500	.3	11.500	.2	16.500	.2	21.500	.2
2.000	9.7	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	.6	8.000	.3	13.000	.2	18.000	.2	23.000	.2
3.500	.3	8.500	.3	13.500	.2	18.500	.2	23.500	.2
4.000	.3	9.000	.3	14.000	.2	19.000	.2	24.000	.2
4.500	.3	9.500	.3	14.500	.2	19.500	.2	24.500	.0

RUNOFF VOLUME = 1.70150 INCHES = 2.1452 ACRE-FEET
PEAK DISCHARGE RATE = 58.14 CFS AT 1.500 HOURS BASIN AREA = .0236 SQ. MI.

```
*S--------------------------------------------------------------------
*S DIVIDE AP.7
*S ID=29 IS 36.50 CFS INTO INLETS
*S ID=30 IS 23.54 CFS BYPASSING INLET TO SUMP
DIVIDE HYD              ID=28 Q=34.6 IDi=29 HYD=SYSTEM.500A
                                     IDii=30 HYD=SUMP
*S--------------------------------------------------------------------
*S ADD SYSTEM.500A TO SUMP
ADD HYD              ID=31 HYD=500.OUTFALL IDi=29 IDii=30
PRINT HYD            ID=31 CODE=10
```

HYDROGRAPH FROM AREA 500.OUTFALL

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	.3	15.000	.2	20.000	.2
.500	.0	5.500	.3	10.500	.3	15.500	.2	20.500	.2
1.000	.2	6.000	.3	11.000	.3	16.000	.2	21.000	.2
1.500	58.1	6.500	.3	11.500	.2	16.500	.2	21.500	.2
2.000	9.7	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	.6	8.000	.3	13.000	.2	18.000	.2	23.000	.2
3.500	.3	8.500	.3	13.500	.2	18.500	.2	23.500	.2
4.000	.3	9.000	.3	14.000	.2	19.000	.2	24.000	.2
4.500	.3	9.500	.3	14.500	.2	19.500	.2	24.500	.0

RUNOFF VOLUME = 1.70150 INCHES = 2.1452 ACRE-FEET
PEAK DISCHARGE RATE = 58.14 CFS AT 1.500 HOURS BASIN AREA = .0236 SQ. MI.

```
*S--------------------------------------------------------------------
*S ADD 200.OUTFALL TO 400.OUTFALL
ADD HYD              ID=32 HYD=SUBTOTAL.A IDi=17 IDii=26
PRINT HYD            ID=32 CODE=10
```

HYDROGRAPH FROM AREA SUBTOTAL.A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	1.0	10.000	1.0	15.000	.8	20.000	.7
.500	.0	5.500	1.1	10.500	1.0	15.500	.8	20.500	.6
1.000	.6	6.000	1.2	11.000	1.0	16.000	.8	21.000	.6
1.500	188.6	6.500	1.2	11.500	.9	16.500	.7	21.500	.6
2.000	36.9	7.000	1.2	12.000	.9	17.000	.7	22.000	.6
2.500	5.8	7.500	1.2	12.500	.9	17.500	.7	22.500	.6
3.000	2.1	8.000	1.1	13.000	.9	18.000	.7	23.000	.6
3.500	1.3	8.500	1.1	13.500	.8	18.500	.7	23.500	.6
4.000	1.0	9.000	1.1	14.000	.8	19.000	.7	24.000	.6
4.500	1.0	9.500	1.0	14.500	.8	19.500	.7	24.500	.0

RUNOFF VOLUME = 1.66301 INCHES = 8.0507 ACRE-FEET
PEAK DISCHARGE RATE = 188.60 CFS AT 1.500 HOURS BASIN AREA = .0908 SQ. MI.

```
*S--------------------------------------------------------------------
*S ADD SUBTOTAL.A TO 500.OUTFALL
ADD HYD              ID=33 HYD=SUBTOTAL.B IDi=32 IDii=31
PRINT HYD            ID=33 CODE=10
```

Cabezon Tract 6A
100-Year 24-Hour Duration Storm-Developed
AHYMO Output File

HYDROGRAPH FROM AREA SUBTOTAL.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	1.3	10.000	1.3	15.000	1.0	20.000	.8
.500	.0	5.500	1.4	10.500	1.2	15.500	1.0	20.500	.8
1.000	.7	6.000	1.5	11.000	1.2	16.000	1.0	21.000	.8
1.500	246.7	6.500	1.6	11.500	1.2	16.500	.9	21.500	.8
2.000	46.6	7.000	1.5	12.000	1.1	17.000	.9	22.000	.8
2.500	7.3	7.500	1.5	12.500	1.1	17.500	.9	22.500	.8
3.000	2.7	8.000	1.4	13.000	1.1	18.000	.9	23.000	.8
3.500	1.6	8.500	1.4	13.500	1.1	18.500	.9	23.500	.7
4.000	1.3	9.000	1.3	14.000	1.0	19.000	.9	24.000	.7
4.500	1.3	9.500	1.3	14.500	1.0	19.500	.9	24.500	.0

RUNOFF VOLUME = 1.67096 INCHES = 10.1959 ACRE-FEET
PEAK DISCHARGE RATE = 246.74 CFS AT 1.500 HOURS BASIN AREA = .1144 SQ. MI.

```
*S--------------------------------------------------------------------
*S ADD SUBTOTAL.B TO BASIN 604
ADD HYD              ID=34 HYD=TOTAL IDi=33 IDii=8
PRINT HYD            ID=34 CODE=10
```

HYDROGRAPH FROM AREA TOTAL

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	1.3	10.000	1.3	15.000	1.0	20.000	.8
.500	.0	5.500	1.4	10.500	1.2	15.500	1.0	20.500	.8
1.000	.7	6.000	1.5	11.000	1.2	16.000	1.0	21.000	.8
1.500	248.6	6.500	1.6	11.500	1.2	16.500	.9	21.500	.8
2.000	47.0	7.000	1.5	12.000	1.1	17.000	.9	22.000	.8
2.500	7.3	7.500	1.5	12.500	1.1	17.500	.9	22.500	.8
3.000	2.7	8.000	1.4	13.000	1.1	18.000	.9	23.000	.8
3.500	1.6	8.500	1.4	13.500	1.1	18.500	.9	23.500	.8
4.000	1.3	9.000	1.3	14.000	1.1	19.000	.9	24.000	.7
4.500	1.3	9.500	1.3	14.500	1.0	19.500	.9	24.500	.0

RUNOFF VOLUME = 1.67118 INCHES = 10.2739 ACRE-FEET
PEAK DISCHARGE RATE = 248.64 CFS AT 1.500 HOURS BASIN AREA = .1153 SQ. MI.

```
*S--------------------------------------------------------------------
FINISH

     NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 12:01:07
_(s0p10h4099T_&l6D__
```

Yucatan Del Este at Cabezon Tract 6A
Street Flow and Inlet Calculations Analysis

				Inlet #1						Inlet #2				
Description	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
Basin 603A	50.65	1.60%	25.33	0.56	5	2.8	Triple C	15.00	10.33	Double C	0.45	6.8	3.53	Use - 1 Triple + 1 Double C Inlet Battery #1; Bypass to Basin 607B
Basin 603B	10.69	4.04%	5.35	0.38	4.9	1.9	Single C	3.50	1.85	Single C	0.22	2.2	-0.36	Use - 2 Single C Inlet Battery #2; No Bypass
Basin 607A	58.27	2.97%	29.14	0.54	7.1	3.8	Triple C	18.75	10.39	Double C	0.42	7.0	3.39	Use - 3 Double C Inlet Battery #3; Bypass to Basin 608B
Basin 607B	12.55	1.60%	6.28	0.45	3.7	1.7	Double C	6.50	-0.23	None	0.00	0.0	-0.23	Use - 1 Double C Inlet Battery #4; No Bypass
Basin 608A	26.59	1.96%	13.30	0.45	3.8	1.7	Triple C	12.00	1.30	None	0.22	0.0	1.30	Use - 1 Triple C Inlet Battery #5; Bypass to Basin 609B
Basin 608B	15.69	1.60%	7.85	0.39	3.1	1.2	Double C	5.25	2.60	None	0.28	0.0	2.60	Use - 1 Double C Inlet Battery #6; Bypass to Basin 609B
Basin 609A	25.85	3.06%	12.93	0.41	4.5	1.8	Double C	7.80	5.13	Double C	0.31	4.5	0.63	Use - 2 Double C Inlet Battery #7; Bypass to Basin 610B
Basin 609B	16.23	1.60%	8.12	0.39	3.1	1.2	Double C	5.00	3.12	None	0.25	0.0	3.12	Use - 1 Double C Inlet Battery #8; Bypass to Basin 610B
Basin 610A	41.47	3.99%	20.74	0.45	6	2.7	Triple C	14.25	6.49	Double C	0.32	4.0	2.49	Use - 1 Triple C + 1 Double C Inlet Battery #9; Bypass to Basin 610 B
Basin 610B	21.34	3.99%	10.67	0.36	4.8	1.7	Sump	9.93	0					Use Sump Inlet Battery #10

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

Yucatan Del Este At Cabezon Tract 6A Subdivision Headloss Calculations

Description	Q1	V1	Q2	V2	X1	X3	Q3	V3	A1	A2	dia1	dia2	Q4	x4	A3	A4	D3	D4
J-101	5.7	14.1	11.4	14.32	90	45	5.7	14.38	1.766	3.140	18	24			1.766	0.000	18	
J-102	21.8	6.94	43.6	20.17	45	45	21.8	6.94	3.140	7.065	24	36			3.140	0.000	24	
J-103	43.6	20.17	55	11.2	90	45	11.4	14.32	7.065	7.065	36	36			3.140	0.000	24	
J-201	25.75	22.72	51.5	17.03	30	45	25.75	22.72	3.140	7.065	24	36			3.140	0.000	24	
J-202	55	11.2	68	9.62	0	45	6.5	3.68	7.065	7.065	36	36	6.5	45	1.766	1.766	18	18
J-203	68	9.62	119.5	16.91	90	15	51.5	17.03	7.065	7.065	36	36			7.065	0.000	36	
J-301	12	6.79	24	6.24	45	45	12	15.69	1.766	4.906	18	30			1.766	0.000	18	
J-302	5.25	2.97	10.5	11.26	30	60	5.25	2.97	1.766	1.766	18	18			1.766	0.000	18	
J-303	24	6.24	34.5	10.87	90	10	10.5	11.26	4.906	4.906	30	30			1.766	0.000	18	
J-401	5	2.83	10	5.66	45	45	5	2.83	1.766	1.766	18	18			1.766	0.000	18	
J-402	12.3	6.96	24.6	10.23	90	0	5	6.96	1.766	3.140	18	24			1.766	0.000	18	
J-403	24.6	10.23	34.6	10.34	40	90	10	5.66	3.140	4.906	24	30			1.766	0.000	18	
J-501	18.25	5.81	36.5	15.76	57	90	18.25	5.81	3.140	7.065	24	36			3.140	0.000	24	

EQUATION FROM MODERN SEWER DESIGN, THIRD EDITION, 1995

	Headloss, FT	# PIPES
J-101	0.86	3
J-102	1.33	3
J-103	1.75	3
J-201	1.26	3
J-202	0.92	4
J-203	7.28	3
J-301	1.02	3
J-302	0.72	3
J-303	1.14	3
J-401	0.64	3
J-402	2.76	3
J-403	1.24	3
J-501	1.79	3

CALCULATED K VALUES

Descrip	Angle	coeff	K
I-103	45	0.0033	**0.15**
I-104	45	0.0033	**0.15**
I-105	45	0.0033	**0.15**
I-106	45	0.0033	**0.15**
I-203	45	0.0033	**0.15**
I-204	45	0.0033	**0.15**
J-204	24	0.0033	**0.08**
J-304	15	0.0033	**0.05**
J-305	30	0.0033	**0.10**
I-403	45	0.0033	**0.15**
I-404	45	0.0033	**0.15**
J-404	28	0.0033	**0.09**
I-503	45	0.0033	**0.15**
I-504	90	0.0033	**0.30**
I-505	30	0.0033	**0.10**

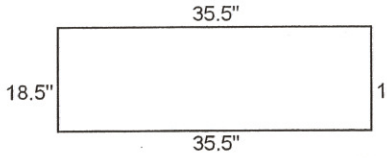
Huitt~Zollars, Inc.

Inlet Worksheet (Sump Condition) for Basin 610B

Objective : Design a Double C Inlet in Sump Condition for a 100-year flow of: 23.54 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 - Double 'C' = 2x18.5" + 4x35.5" = 14.92 ft
Area of Orifice - Double 'C' =18.5" x (2x(35.5") = 9.12 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 =	9.120	sq. ft.	P=	14.920	ft
g =	32.2	ft ^2/sec	H=	0.9	ft
h =	0.9	ft			
Therefore			Therefore		
Q =	41.65913778	cfs	Q =	38	cfs

Weir Equation controls
Double "C" Inlet flow @ TBC = 38 cfs

4 Apply 25% Clogging Factor to determine allowable design flow into inlet

38 x 0.75 **28 cfs**

Therefore Capacity of Double C Inlet in Sump Condition = 28 cfs.

Scenario: Base

Combined Pipe\Node Report

Label	Length (ft)	Section Size	Total Flow (cfs)	Full Capacity (cfs)	Average Velocity (ft/s)	Upstream Node	Downstream Node	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Constructed Slope (ft/ft)	Hydraulic Grade Line In (ft)	Upstream Ground Elevation (ft)	Hydraulic Grade Line Out (ft)	Downstream Ground Elevation (ft)
P-101	60.00	18 inch	15.00	19.08	11.96	I-101	I-103	5,331.81	5,329.83	0.033000	5,333.22	5,334.64	5,331.86	5,333.66
P-102	60.00	18 inch	15.00	19.08	11.96	I-102	I-104	5,331.81	5,329.83	0.033000	5,333.22	5,334.64	5,331.85	5,333.66
P-103	18.00	24 inch	21.80	55.92	6.94	I-104	J-102	5,329.83	5,328.73	0.061111	5,331.85	5,333.66	5,331.68	5,333.73
P-104	19.00	24 inch	21.80	54.43	6.94	I-103	J-102	5,329.83	5,328.73	0.057895	5,331.86	5,333.66	5,331.68	5,333.73
P-105	53.00	18 inch	3.50	24.27	9.77	I-107	I-106	5,332.83	5,330.00	0.053396	5,333.54	5,335.37	5,330.92	5,333.67
P-106	53.00	18 inch	3.50	24.27	9.77	I-108	I-105	5,332.83	5,330.00	0.053396	5,333.54	5,335.37	5,330.92	5,333.41
P-107	19.00	18 inch	5.70	33.39	14.10	I-106	J-101	5,330.00	5,328.08	0.101053	5,330.92	5,333.67	5,329.60	5,333.08
P-108	18.00	18 inch	5.70	34.31	14.38	I-105	J-101	5,330.00	5,328.08	0.106667	5,330.92	5,333.41	5,329.60	5,333.08
P-109	35.00	24 inch	11.40	57.86	14.32	J-101	J-103	5,328.08	5,325.79	0.065429	5,329.29	5,333.08	5,329.21	5,332.79
P-110	45.00	36 inch	43.60	170.47	20.17	J-102	J-103	5,328.73	5,325.79	0.065333	5,330.88	5,333.73	5,329.21	5,332.79
P-111	168.00	36 inch	55.00	71.85	11.20	J-103	J-202	5,325.79	5,323.84	0.011607	5,328.20	5,332.79	5,327.21	5,330.40
P-201	48.00	24 inch	18.75	37.23	11.87	I-201	I-203	5,328.26	5,326.96	0.027083	5,329.82	5,330.80	5,328.64	5,329.40
P-202	48.00	24 inch	18.75	37.23	11.87	I-202	I-204	5,328.26	5,326.96	0.027083	5,329.82	5,330.80	5,328.64	5,329.40
P-203	22.00	24 inch	25.75	80.12	22.72	I-203	J-201	5,326.86	5,324.10	0.125455	5,328.64	5,329.40	5,326.33	5,329.06
P-204	22.00	24 inch	25.75	80.12	22.72	I-204	J-201	5,326.86	5,324.10	0.125455	5,328.64	5,329.40	5,326.33	5,329.06
P-205	16.00	18 inch	6.50	8.71	3.68	I-205	J-202	5,323.75	5,323.64	0.006875	5,327.27	5,330.19	5,327.21	5,330.40
P-206	17.00	18 inch	6.50	15.29	3.68	I-206	J-202	5,324.00	5,323.64	0.021176	5,327.28	5,330.19	5,327.21	5,330.40
P-207	89.00	36 inch	68.00	67.07	9.62	J-202	J-203	5,323.74	5,322.84	0.010112	5,327.21	5,330.40	5,326.29	5,328.97
P-208	32.00	36 inch	51.50	126.98	17.03	J-201	J-203	5,324.00	5,322.84	0.036250	5,326.33	5,329.06	5,326.29	5,328.97
P-209	132.00	36 inch	119.50	111.06	16.91	J-203	J-204	5,322.74	5,319.08	0.027727	5,326.29	5,328.97	5,322.03	5,327.40
P-210	128.00	36 inch	119.50	144.16	22.80	J-204	O-200	5,318.98	5,313.00	0.046719	5,321.93	5,327.40	5,315.25	5,320.00

1-D

Scenario: Base

D-2

Title: CABEZON TRACT 6A
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Huitt-Zollars, Inc.
 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Project Engineer: hzi
StormCAD v5.5 [5.5003]

Scenario: Base

Combined Pipe\Node Report

Label	Length (ft)	Section Size	Total Flow (cfs)	Full Capacity (cfs)	Average Velocity (ft/s)	Upstream Node	Downstream Node	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Constructed Slope (ft/ft)	Hydraulic Grade Line In (ft)	Upstream Ground Elevation (ft)	Hydraulic Grade Line Out (ft)	Downstream Ground Elevation (ft)
P-301	17.00	18 inch	12.00	29.05	6.79	I-301	J-301	5,318.14	5,316.84	0.076471	5,319.79	5,322.64	5,319.57	5,322.34
P-302	20.00	18 inch	12.00	29.15	15.69	I-302	J-301	5,318.38	5,316.84	0.077000	5,319.80	5,322.88	5,319.57	5,322.34
P-303	29.00	18 inch	5.25	5.52	2.97	I-303	J-302	5,318.34	5,318.26	0.002759	5,320.20	5,322.84	5,320.13	5,322.97
P-304	16.00	18 inch	5.25	9.83	2.97	I-304	J-302	5,318.40	5,318.26	0.008750	5,320.17	5,322.90	5,320.13	5,322.97
P-305	46.00	18 inch	10.50	19.56	11.26	J-302	J-303	5,318.26	5,316.67	0.034674	5,319.51	5,322.97	5,319.15	5,322.42
P-306	40.00	30 inch	24.00	27.13	6.24	J-301	J-303	5,316.84	5,316.67	0.004375	5,319.27	5,322.34	5,319.15	5,322.42
P-307	64.00	36 inch	34.50	79.75	10.87	J-303	J-304	5,316.67	5,315.75	0.014297	5,318.57	5,322.42	5,318.05	5,321.38
P-308	75.00	36 inch	34.50	111.34	13.89	J-304	J-305	5,315.65	5,313.56	0.027867	5,317.56	5,321.38	5,316.73	5,320.16
P-309	217.00	36 inch	34.50	54.33	8.14	J-305	J-401	5,313.46	5,312.02	0.006636	5,316.23	5,320.16	5,315.68	5,316.60
P-400	50.00	15 inch	7.80	11.70	6.36	I-401	I-403	5,313.51	5,311.87	0.032800	5,316.99	5,317.76	5,316.26	5,316.37
P-401	50.00	15 inch	7.80	12.49	6.36	I-402	I-404	5,313.51	5,311.64	0.037400	5,316.87	5,317.76	5,316.14	5,316.14
P-402	22.00	18 inch	12.30	18.19	6.96	I-403	J-402	5,311.87	5,311.21	0.030000	5,316.26	5,316.37	5,315.96	5,315.96
P-403	23.00	18 inch	12.30	14.36	6.96	I-404	J-402	5,311.64	5,311.21	0.018696	5,316.28	5,316.14	5,315.96	5,315.96
P-405	40.00	21 inch	24.60	25.42	10.23	J-402	J-403	5,311.21	5,310.18	0.025750	5,315.74	5,315.96	5,314.77	5,315.68
P-406	19.00	18 inch	5.00	8.17	2.83	I-405	J-401	5,312.03	5,311.92	0.006053	5,315.73	5,316.53	5,315.68	5,316.60
P-407	17.00	18 inch	5.00	8.64	2.83	I-406	J-401	5,312.03	5,311.92	0.006765	5,315.72	5,316.53	5,315.68	5,316.60
P-408	66.00	36 inch	44.50	108.14	6.30	J-401	J-403	5,311.92	5,310.18	0.026288	5,315.07	5,316.60	5,314.77	5,315.68
P-409	132.00	36 inch	69.10	75.24	9.78	J-403	J-404	5,310.18	5,308.50	0.012727	5,313.58	5,315.68	5,312.17	5,314.00
P-410	77.00	36 inch	69.10	212.14	26.83	J-404	O-400	5,308.50	5,300.71	0.101169	5,311.15	5,314.00	5,302.06	5,310.00
P-501	48.00	18 inch	14.25	26.26	15.16	I-501	I-503	5,310.09	5,307.09	0.062500	5,311.48	5,314.59	5,309.66	5,312.59
P-502	50.00	18 inch	14.25	25.86	14.99	I-502	I-504	5,309.52	5,306.49	0.060600	5,310.91	5,314.02	5,309.58	5,311.99
P-503	30.00	24 inch	18.25	33.93	5.81	I-503	J-501	5,307.09	5,306.42	0.022500	5,309.66	5,312.59	5,309.47	5,312.18
P-504	17.00	24 inch	18.25	15.03	5.81	I-504	J-501	5,306.49	5,306.42	0.004412	5,309.58	5,311.99	5,309.47	5,312.18
P-505	148.00	30 inch	36.50	80.24	15.96	J-501	I-505	5,306.42	5,300.75	0.038277	5,308.46	5,312.18	5,303.11	5,306.15
P-506	160.00	36 inch	57.84	109.46	15.70	I-505	O-500	5,300.65	5,296.34	0.026937	5,303.11	5,306.15	5,297.94	5,305.00

D-3

 Huitt-Zollars, Inc.
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Scenario: Base

Title: CABEZON TRACT 6A
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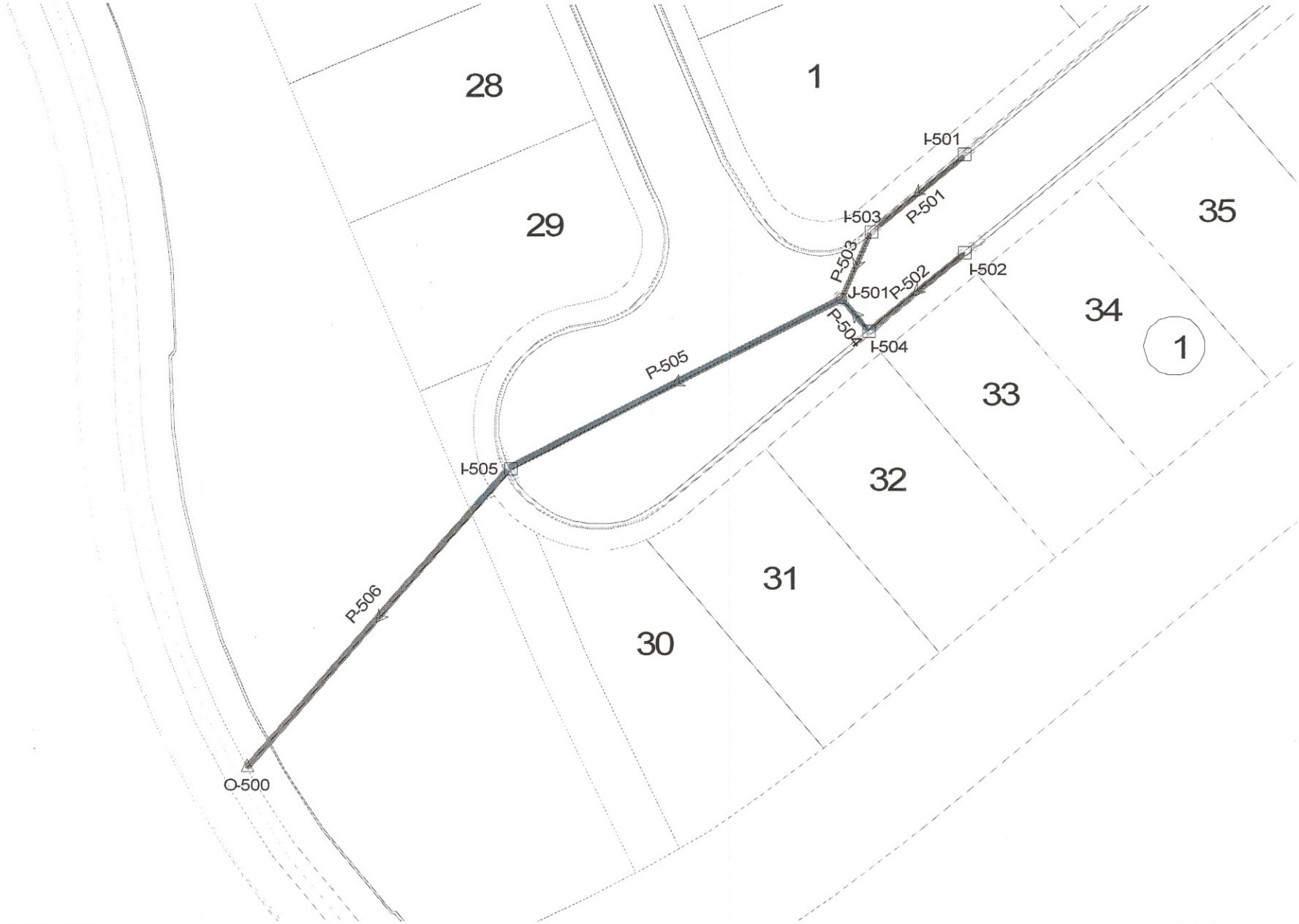
Huitt-Zollars, Inc.

37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Project Engineer: hzi
StormCAD v5.5 [5.5003]

D-4

Scenario: Base



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