CITY OF ALBUQUERQUE

November 11, 2011

Daniel S. Aguirre, P.E.
Wilson & Company, Inc.
4900 Lang Ave. NE
Albuquerque, NM 87109

Re: Volcano Heights Drainage Compilation Report, Engineer's Stamp Dated 10-24-2011 (C10/D000)

Dear Mr. Aguirre,

Based upon the information provided in your submittal received 10-25-11, the above referenced report is approved based on the following comments:

- This report as you mentioned will serve only as a guide for allowable flows at a specific discharge points.
- Detailed grading and drainage plans along with the necessary hydrology calculations are to be submitted as each area develops.
- Provide design and details for any discharge to the Petroglyph National Monument to minimize erosion.
- Same Basin Numbers to be used for drainage analysis of future developments within the limits of Volcano Heights Drainage Compilation Report.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Shahab Biazar, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

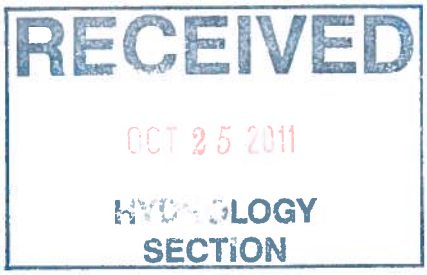
C: File

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

VOLCANO HEIGHTS
DRAINAGE COMPILATION REPORT

OCTOBER 2011

I, Daniel S. Aguirre, P.E., do hereby certify that this report was prepared by me or under my direction and that I am a duly registered Professional Engineer under the laws of the State of New Mexico



Daniel S. Aguirre, P.E.
NMPE No. 11955

10/24/11
Date

WILSON &COMPANY

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SECTION 1 – PURPOSE

The purpose of this drainage report is to provide a compilation of the storm drain infrastructure constructed and proposed to be constructed within the portions of the Lyon storm drain watershed, the Piedras Marcadas Dam watershed and the Mariposa Detention Basin watershed. The report identifies allowable flows from the sub-basins within these watersheds for the 100-year 6-hour event.

1.1 Introduction

This report summarizes proposed hydrologic conditions; provides the design for fully developed peak flows; provides recommendations; and identifies downstream drainage capacities.

1.2 Existing Reports

Existing drainage reports providing information used in this report include:

"Boca Negra – Mariposa Arroyo Drainage Management Plan", dated April 2005, by Resource Technology, Inc.
"La Cuentista Subdivision Drainage Report", dated November 2003, by Wilson & Company, Inc.
"Paseo del Norte Drainage Report", dated August 16, 2004, by Wilson & Company, Inc.
"Amendment to the Trails Unit II Drainage Master Plan", dated August 2007, by Wilson & Company, Inc.

Guidelines and recommendations from the above reports were incorporated into this drainage report where possible.

SECTION 2 - HYDROLOGIC ANALYSIS

There are three ultimate discharge points affected by the infrastructure described in this report. The first area discharges a portion to the Lyon Boulevard storm drain system with a 100-year 24-hour overflow to Petroglyph National Monument discharging to the Piedras Marcadas Dam. This area is bound by the Trails Unit IV and Unser Boulevard to the south and the Chamisa basin to the north. The allowable discharge for this area is described below and shown on Plate 1.

Discharge Point	Allowable Discharge	Ultimate Discharge Point
Chamisa Storm Drain	45 cfs	Lyon Boulevard Storm Drain
Unser Detention Basin	285 cfs	Low Flows diverted to Lyon Boulevard Storm Drain
	120 cfs	Maximum Overflow to Petroglyph National Monument

The second Area ultimately discharges to the Piedras Marcadas Dam. This area is bound by Paseo del Norte and the Trails Unit IV to the south, the aforementioned basin to the northwest, and the Chamisa basin line to the North. A portion of the watershed is collected in a storm drain system below Unser Blvd. and is directed to the Unser Detention Basin. We recommend the Unser Detention Basin and the Chamisa Detention basins be connected to allow low flows to discharge to the Lyon Storm Drain. This will limit the high frequency erosive discharge to the Petroglyph National Monument. The Unser Detention basin would include an overflow weir that would have a maximum capacity of 120 cfs discharge to the monument and ultimately to the Piedras Marcadas Arroyo. The remainder of the watershed drains to a storm drain system beneath Paseo del Norte and also discharges into the Piedras Marcadas Arroyo.

The third discharge point is the Mariposa Basin. The areas contributing to the Mariposa Basin includes storm water runoff west of Unser Boulevard and south of Paseo del Norte Including Basins N1 and N2 on the east side of Unser. These areas discharge to the Boca Negra Detention Dam through various infrastructure including the Unser storm drain, the Universe storm drain and the Boca Negra channel. Additional areas include La Cuentista Subdivision and SAD 228. The flow from these additional areas discharges at several locations to the Petroglyph National Monument where it is conveyed to the Mariposa basin through overland flow. The southeast portion of SAD 228 is drained by a storm drain in Unser Boulevard to join with the discharge from the Boca Negra Dam and conveyed to the Boca Negra Arroyo in the Atrisco storm drain as shown on Plate 1, in Appendix B. See Figure 1 for Vicinity map.

2.1 Methodology

Hydrologic modeling used for the existing infrastructure designs and calculations shown in this report are performed using the 1997 version of The Arid-Lands Hydrologic Model (AHYMO) in accordance with the City of Albuquerque Development process Manual (DPM), section 22.2, December 1999 for the given 100-year, 6-hour storm event. The AHYMO input, summary and output files for the developed conditions are included in Appendix A. Hydraflow Storm Sewers 2005 software by Intelisolve was used to size the underground storm systems for modeling purposes and are for information only project specific reports and calculations are required for actual design of future infrastructure. See Appendix A for calculations summary.

2.2 Design Storm Precipitation

AHYMO was used to calculate proposed runoff. The rainfall values used were for the 1 and 6 - hour precipitation for a 100-year storm event. Rainfall values were obtained from precipitation frequency data server NOAA Atlas 14.

Table 1: Precipitation Values

Return Period (yrs)	1 hr Rainfall (in)	6 hr Rainfall (in)
100	1.7	2.2

2.3 Land Treatments

Proposed land treatment percentages used in the AHYMO Computer model are based on the original Paseo del Norte drainage report dated August 2004. See Table 2 below for land treatment percentages.

Table 2: Land Treatment Percentages

Land Use	Type A	Type B	Type C	Type D
Residential/Town homes	0%	15%	35%	50%
Residential	0%	10%	40%	50%
Commercial	0%	10%	10%	80%
Open Space	100%	0%	0%	0%
Roadway	0%	10%	0%	90%

2.1 Existing and Proposed Conditions

2.4.1 Existing Conditions

The existing topography slopes generally from the northwest to the northeast, east, and southeast. The Chamisa Storm Drain and Chamisa Detention Basin are constructed, the Trails Subdivision west of Universe and portions of the La Cuentista subdivision are constructed, Vista Vieja is constructed and the downstream section of the storm drain system beneath Paseo del Norte is constructed. The remainder of the infrastructure is future although several projects in the area are currently in the design phase.

2.4.2 Proposed Conditions

Each of the ultimate discharge points identified have limited peak flow capacities driving the need to look at the activities in this area as a whole. This planning document recommends ponds located throughout the basin to restrict flows to meet downstream capacities. The analysis points shown on Plate 1 represent allowable flows to meet the infrastructure capacities.

Pond 11 detains flows originating in sub-basins K1, K2, K3, K4, ST11, and E2.1. These flows will be discharged into the Chamisa Basin and are to be limited to 45 cfs.

The Chamisa Detention Basin and the Unser Detention Basin act as a system and their design will be detailed in a future study. The Chamisa Detention Basin accepts flow from sub-basins 1, 2, 3, E1, E2, F, F1, U1, and U2 in addition to storm water originating outside of this report's scope. The Chamisa Detention Basin and Unser Detention Basin will be joined to allow flows in the smaller more frequent events to discharge (5 year event minimum) to the Lyon Boulevard storm drain. Then in larger events a portion of the discharge will overflow a weir structure to the Piedras Marcadas Arroyo in the Petroglyph National Monument with a maximum discharge of 120 cfs during the 100-year 6-hour event.

Pond 2 detains flows from the sub-basins north of Paseo del Norte and east of Unser Blvd. The outlet pipe from Pond 2 and runoff from Basin A and south half of Paseo Del Norte Blvd Basin are connected into the existing 72" pipe in Paseo Del Norte with an allowable discharge of 620 cfs. The 72" storm drain ultimately discharges into the existing concrete culvert boxes conveying flows to the Piedras Marcadas Dam.

Basins identified in this report as 4A and 4B located immediately south of Paseo del Norte and east of Unser Boulevard discharge to proposed Pond 10 Diverting these flows south to the La Cuentista Subdivision storm drain system.

The Universe Boulevard storm drain accepts flows generated from the roadway, the Trails Subdivision pond system and the area contained in basins labeled M1 and M2-B, ultimately discharging to the proposed Boca Negra Dam. The Unser storm drain system shall not receive flows from areas located below elevation 5339.

Flows generated from areas below elevation 5339 including areas a portion of the area designated as SAD 228 discharge to a new 54" storm drain parallel to Unser Boulevard with an 80 cfs capacity. This storm drain discharges to the Atrisco storm drain below at a confluence with the primary principal spillway from the proposed Boca Negra Dam. The storm drain system conveys these flows to the Boca Negra Arroyo with a ultimate discharge to the Mariposa Basin.

Ponds 6, 7, 8 and 9 detain flows before discharging allowable amounts through overland flow to the Mariposa Basin. Refer to Plate 1 in Appendix B for pond locations and allowable discharge rates. Exhibit 1 in Appendix B shows basin boundaries and major discharge points in color. See Table 3 for Basin Summary.

Table 3: Basin Summary								
BASIN	AREA (SQ MI)	AREA (ACRE)	LAND TREATMENT (%)				Q_{100} (CFS)	VOL_{100} (AC-FT)
			A	B	C	D		
BASINS DRAINING TO THE CHAMISA BASIN THROUGH POND 11[1]								
E2.1	0.0124	7.93	0	15	35	50	26	0.91
K1	0.0238	15.23	0	10	10	80	55	2.17
K2	0.0059	3.78	0	10	10	80	14	0.54
K3	0.0148	9.47	0	10	10	80	34	1.35
K4	0.0196	12.54	0	10	10	80	46	1.78
ST11	0.0068	4.33	0	10	0	90	14	0.65
BASINS DRAINING TO THE UNSER DETENTION BASIN								
1	0.0132	8.47	0	10	15	75	27	0.97
2	0.0113	7.23	0	10	15	75	26	1.00
3	0.0151	9.66	0	10	15	75	35	1.33
11A	0.0066	4.20	0	10	10	80	15	0.60
E1	0.0118	7.52	0	15	35	50	24	0.86
E2	0.0453	28.97	0	15	35	50	85	0.94
F	0.0043	2.77	0	15	35	50	9	0.26
PDN1	0.0196	12.51	0	10	0	90	37	1.89
U1	0.0158	10.11	0	10	0	90	38	1.53
U2	0.0259	16.60	0	10	0	90	49	2.34
BASINS DRAINING INTO POND 10								
4A	0.0388	24.83	0	10	10	80	90	3.53
4B	0.0080	5.12	0	10	10	80	19	0.73
PDN2	0.0148	9.50	0	10	0	90	36	1.43
BASINS DRAINING INTO POND 2								
5	0.0275	17.62	0	10	10	80	64	2.51
6	0.0355	22.70	0	10	10	80	83	3.23
7	0.0354	22.66	0	10	10	80	77	3.22
8	0.0198	12.67	0	10	10	80	46	1.80
9	0.0316	20.20	0	10	10	80	74	2.87
10	0.0567	36.29	0	10	10	80	122	5.16
13	0.0626	40.06	0	10	10	80	140	5.70
11B	0.0553	35.37	0	10	0	90	116	5.03
11C	0.0332	21.23	0	10	10	80	77	3.02
12A	0.0308	19.71	0	10	10	80	72	2.80
12B	0.0144	9.22	0	10	10	80	34	1.31
6A	0.0153	9.77	0	10	10	80	33	1.39
PDN3[4]	0.0151	9.66	0	10	0	90	30	1.46

Table 3-Continued: Basin Summary								
BASIN	AREA (SQ MI)	AREA (ACRE)	LAND TREATMENT (%)				Q_{100} (CFS)	VOL_{100} (AC-FT)
			A	B	C	D		
PDN4[4]	0.0111	7.13	0	10	0	90	25	1.08
ST1	0.0141	9.04	0	10	0	90	31	1.37
ST2	0.0109	7.00	0	10	0	90	24	1.06
ST3	0.0069	4.39	0	10	0	90	15	0.66
ST4	0.0077	4.94	0	10	0	90	17	0.75
BASINS DRAINING INTO PASEO DEL NORTE STORM DRIAN SYSTEM								
PDN3[4]	0.0151	9.66	0	10	0	90	30	1.46
PDN4[4]	0.0111	7.13	0	10	0	90	25	1.08
A	0.0351	22.46	0	15	35	50	61	2.58
BASINS DRAINING INTO PIEDRAS MARCADAS								
B	0.0211	13.53	100	0	0	0	16	0.46
F1	0.0204	13.08	0	60	40	0	28	0.78
G	0.1032	66.05	100	0	0	0	80	2.22
H	0.3826	244.84	100	0	0	0	288	8.24
PDN5	0.0198	12.66	0	10	0	90	48	1.91
PDN6	0.0185	11.82	0	10	0	90	45	1.79
BASINS DRAINING INTO BOCA NEGRA DAM								
UNIVERSE BLVD								
P1	0.0313	20.00	25	26	27	22	44	1.52
P2	0.1094	70.02	0	25	25	50	153	7.85
P3	0.0515	32.96	0	25	25	50	63	3.70
UNSER BLVD								
M1	0.1381	88.38	0	10	40	50	234	10.25
M2-B	0.0201	21.79	0	10	40	50	41	1.49
*N1[2]	0.0814	52.10	0	10	40	50	146	6.05
N2	0.0246	15.74	0	10	40	50	51	1.83
T1	0.0890	56.96	0	10	40	50	149	6.61
*U0[3]	0.0319	20.42	0	10	40	50	49	2.37
BASIN DRAINING INTO ATRISCO STORM DRAIN								
M2-A	0.1145	64.35	5	30	35	30	142	6.52
M3	0.1793	114.75	0	10	40	50	303	13.32
BASIN DRAINING INTO POND-6								
M3-1	0.0534	34.17	0	10	40	50	108	3.97
BASIN DRAINING INTO POND-7								
M4	0.0172	11.01	0	10	40	50	36	1.28
BASIN DRAINING INTO POND-8								
M5	0.0707	45.25	0	10	40	50	137	5.25

Table 3-Continued: Basin Summary								
BASIN	AREA (SQ MI)	AREA (ACRE)	LAND TREATMENT (%)				Q_{100} (CFS)	VOL_{100} (AC-FT)
			A	B	C	D		
BASIN M6 DRAINING INTO POND-9 AND ESCARPMENT								
M6-1[5]	0.0002	0.15	0	10	40	50	3	0.02
M6-2[6]	0.0063	4.01	0	10	40	50	11	0.47

NOTES:

* DIVIDED FLOW

1 - 45 CFS FROM BASIN E2 DRAINS INTO CHAMISA STORM DRAIN (5 CFS/LOT)

2- 90 CFS DRAINS INTO LA CUENTISTA SUBDIVISION

3 - 19 CFS DRAINS INTO THE 48" OUTLET FROM BOCA NEGRA DAM

4- BASIN INCLUDES HALF OF PASEO DEL NOTRE BLVD WIDTH.

5- FREE DISCAHRGE.

6- DRAINS INTO POND 9.

SECTION 3 – HYDRAULIC ANALYSIS

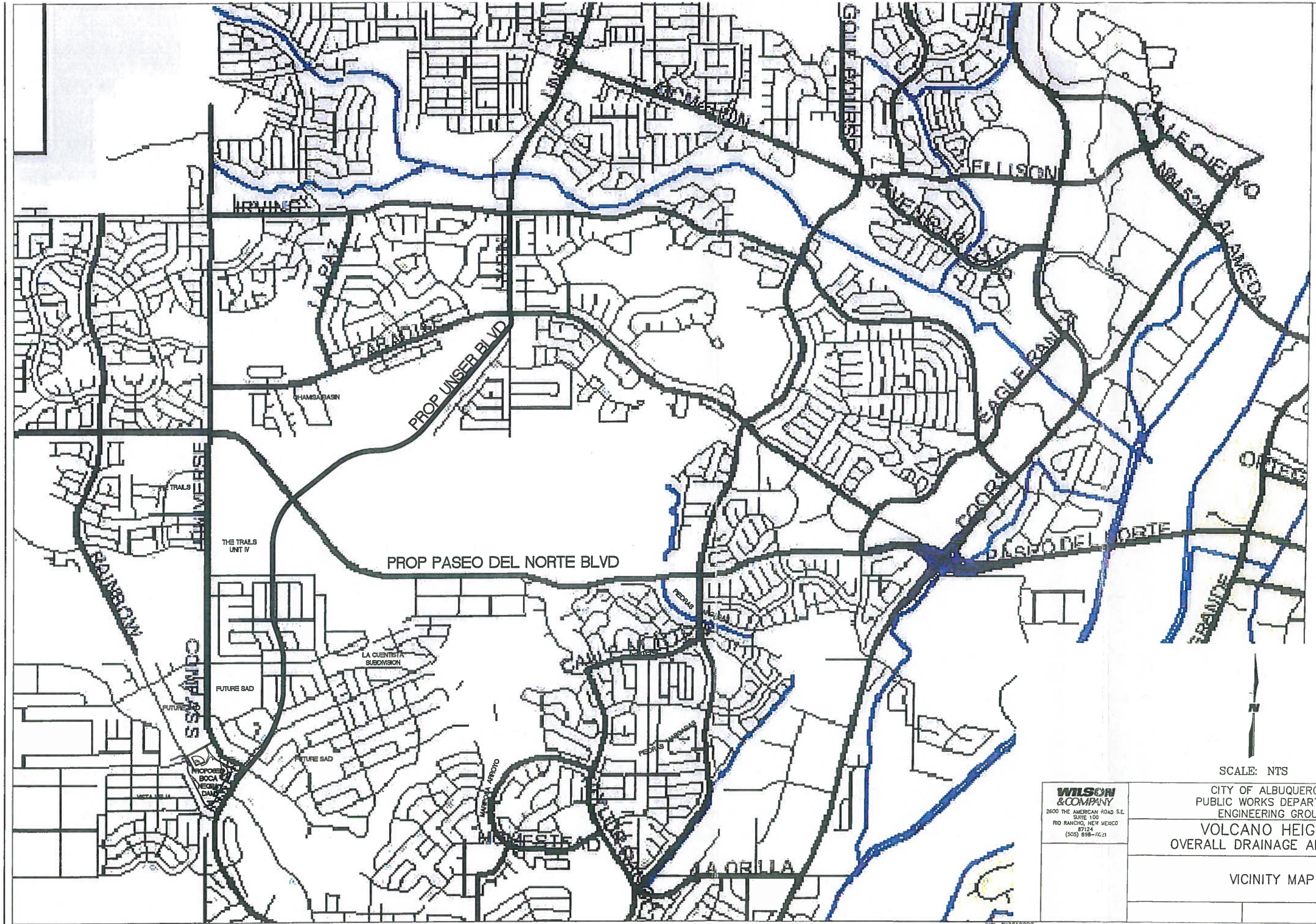
3.1 Storm Drain Analysis

Analyses for these systems were modeled using HydraFlow Storm Sewers 2005 by Intelisolve. The conceptual storm drain systems was modeled for planning and study purposes detailed design calculations are required for final infrastructure design. The proposed system may be found on Plate 1 in Appendix B.

SECTION 4 - CONCLUSION AND RECOMMENDATIONS

Proposed storm drain facilities have been evaluated and modeled to convey the developed runoff from the sub basins identified in this report. Plate 1 summarizes the proposed storm drain system for development of Volcano Heights as delineated in this report. The following table is a summary of the 100 year design flows recommended to be used for the design of infrastructure located within the boundaries identified on Plate 1.

Table 4 - Analysis Point Summary		
Analysis Point	Location	Q_{100} (cfs)
AP1	PdN at the Petoglyph national Monument	620
AP2	PdN at Sub-Basin B Entry	643
AP3	PdN Xing of Piedras Marcadas	288
AP4	Piedras Marcadas Arroyo below PdN	824
AP5	The Trails at Proposed Unser Blvd	227
AP6	Proposed Unser Blvd at Rosa Parks	330
AP7	Proposed Unser Blvd at SAD 228	439
AP8	Universe Blvd at Albuquerque Public School	176



WILSON & COMPANY 2600 THE AMERICAN ROAD S.E. SUITE 100 RIO RANCHO, NEW MEXICO 87124 (505) 898-7121	CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING GROUP
	VOLCANO HEIGHTS OVERALL DRAINAGE AREA MAP
	VICINITY MAP
	FIGURE 1

C:\PERSONAL\PDM\FIGURE 1.dwg 4/16/2010 9:37:59 AM MST

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APPENDIX A

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S**********										
*S										
*S	100 YEAR 6 HOUR STORM - PROPOSED RUNOFF ANALYSIS									
*S	RAINFALL DATA FROM NOAA ATLAS 14									
*S										
*S**********										
START										TIME= .00
LOCATION	BERNALILLO COUNTY									
RAINFALL TYPE= 1										RAIN6= 2.200
*S										
*S										
*S ----------										
*S SUB-BASINS NORTH AND WEST OF UNSER BLVD. TO POND 11,										
*S ULTIMATELY DISCHARGING TO CHAMISA BASIN										
*S ----------										
*S										
*S COMPUTE BASIN "E2.1" **********										
COMPUTE NM HYD	200.10	-	99	.01243	25.55	.913	1.37668	1.500	3.211	PER IMP= 50.00
*S										
*S THE TRAILS UNIT 4 - NORTH BASINS										
*S COMPUTE BASIN "K1" **********										
COMPUTE NM HYD	200.20	-	**	.02380	55.46	2.166	1.70664	1.500	3.641	PER IMP= 80.00
*S COMPUTE BASIN "K2" **********										
COMPUTE NM HYD	200.30	-	**	.00590	13.76	.537	1.70664	1.500	3.644	PER IMP= 80.00
*S										
*S COMPUTE BASIN "K3" **********										
COMPUTE NM HYD	200.40	-	**	.01480	34.49	1.347	1.70664	1.500	3.641	PER IMP= 80.00
*S										
*S COMPUTE BASIN "K4" **********										
COMPUTE NM HYD	200.50	-	**	.01959	45.65	1.783	1.70664	1.500	3.641	PER IMP= 80.00
*S										
*S										
*S COMPUTE BASIN "ST11" **********										
COMPUTE NM HYD	200.60	-	**	.00676	13.96	.654	1.81350	1.567	3.228	PER IMP= 90.00
*S										
*S ADD SUB-BASINS "K1" AND "K2" ++++++++++										
ADD HYD	200.70	**&**	**	.02970	69.22	2.703	1.70662	1.500	3.642	
*S										
*S ADD SUB-BASINS "K3" AND "K4" ++++++++++										
ADD HYD	200.80	**&**	**	.03439	80.14	3.130	1.70663	1.500	3.641	
*S										
*S ADD SUB-BASINS "K1", "K2" AND "E2.1" ++++++++++										
ADD HYD	200.90	99&**	**	.04213	94.76	3.616	1.60927	1.500	3.515	
*S										
*S ADD SUB-BASINS "K1", "K2", "E2.1" AND "K3", "K4" ++++++++++										
ADD HYD	200.10	**&**	**	.07652	174.91	6.746	1.65302	1.500	3.572	
*S										
*S										
*S ----------										
*S SUB-BASINS NORTH AND WEST OF UNSER BLVD W/ OVERFLOW OF STORMS (5 YR EVENT MIN										

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

```
*S TO THE CHAMISA DETENTION. THE UNSER DETENTION BASIN OUTFLOW IS LIMITED
*S TO 120 CFS.  FLOWS ULTIMATELY DISCHARGE TO AP3
*S ---------------------------------------------------------------------------
*S COMPUTE BASIN "1" ************************************************************
COMPUTE NM HYD          1.10   -     1        .01324        27.21        .972     1.37668    1.500    3.211 PER IMP=  50.00
*S
*S COMPUTE BASIN "2" ************************************************************
COMPUTE NM HYD          1.20   -     2        .01130        25.87        .997     1.65421    1.500    3.578 PER IMP=  75.00
*S
*S ADD SUB-BASINS "1" AND "2" ++++++++++++++++++++++++++++++++++++++++++++++++++
ADD HYD                 1.30  1& 2  11        .02454        53.09       1.969     1.50445    1.500    3.380
*S
*S COMPUTE BASIN "U1" (UNSER TO PDN)*********************************************
COMPUTE NM HYD          1.40   -     4        .01580        38.16       1.528     1.81350    1.500    3.774 PER IMP=  90.00
*S
*S ADD SUB-BASINS "1", "2" AND "U1"  ++++++++++++++++++++++++++++++++++++++++++++
ADD HYD                 1.50 11& 4  13        .04034        91.25       3.497     1.62549    1.500    3.534
*S
*S
*S COMPUTE BASIN "PDN1" *********************************************************
COMPUTE NM HYD          1.90   -    **        .01955        37.08       1.891     1.81350    1.600    2.964 PER IMP=  90.00
*S
*S ADD SUB-BASINS "1", "2", "U1" AND "PDN1"  ++++++++++++++++++++++++++++++++++++
ADD HYD               200.11 13&**  **        .05989       120.82       5.388     1.68686    1.533    3.152
*S
*S
*S COMPUTE BASIN "3" ************************************************************
COMPUTE NM HYD          2.60   -     3        .01510        34.57       1.332     1.65421    1.500    3.577 PER IMP=  75.00
*S
*S ADD SUB-BASINS "1", "2", "U1", "PDN1" AND "3"+++++++++++++++++
ADD HYD                 2.70 **& 3  14        .07499       154.62       6.720     1.68028    1.500    3.222
*S
*S COMPUTE BASIN "E1" ************************************************************
COMPUTE NM HYD          2.80   -    10        .01175        24.15        .863     1.37668    1.500    3.211 PER IMP=  50.00
*S
*S ADD SUB-BASINS "E1", "1", "2","3" AND "U1" ++++++++++++++++++++++++++++++++++
ADD HYD                 2.90 10&14  15        .08674       178.77       7.583     1.63915    1.500    3.220
*S
*S COMPUTE BASIN "E2" ************************************************************
COMPUTE NM HYD          3.00   -    11        .04526        85.32       3.323     1.37668    1.533    2.946 PER IMP=  50.00
*S
*S ADD SUB-BASINS "E2","E1", "1", "2","3" AND "U1" ++++++++++++++++++++++++++++++
ADD HYD                 3.20 15&11  16        .13200       262.23      10.906     1.54915    1.533    3.104
*S COMPUTE BASIN "U2" (UNSER NORTH OF PDN)***************************************
*S
COMPUTE NM HYD          3.30   -    20        .02593        48.61       2.508     1.81350    1.600    2.929 PER IMP=  90.00
*S
*S ADD SUB-BASINS "E1","E1", "1", "2","3","U1" AND "U2"  ++++++++++++++++++++++++
ADD HYD                 3.40 20&16  17        .15793       305.56      13.414     1.59256    1.533    3.023
*S
*S COMPUTE BASIN "F" ************************************************************
*S
```

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
COMPUTE NM HYD	3.50	-	21	.00433	8.91	.318	1.37668	1.500	3.215	PER IMP= 50.00

```
*S
*S ADD SUB-BASINS "E1","E1", "1", "2","3","U1", "U2" AND "F"++++++++++++++++++++
```

```
ADD HYD                 3.60 17&21  18        .16226       314.09       13.732      1.58679    1.533    3.025
*S
*S COMPUTE BASIN "11A" ************************************************************
*S
COMPUTE NM HYD          3.70   -    22        .00656        15.30         .597      1.70664    1.500    3.643 PER IMP=  80.00
*S
*S ADD SUB-BASINS "E1","E1", "1", "2","3","U1", "U2", "F" AND "11A" ++++++++++++
*S THIS IS THE FLOW THAT IS BEING CONTRIBUTED TO THE UNSER DETENTION BASIN
ADD HYD                 3.60 18&22  19        .16882       328.67       14.329      1.59145    1.533    3.042
*S
*S THE OVERFLOW FOR THE CHAMISA DETENTION BASIN SHALL BE DONE IN A FUTURE STUDY.
*S THE UNSER DETENTION BASIN LIMITS FLOW TO 120 CFS
*S ROUTE THROUGH UNSER DETENTION BASIN  >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
ROUTE RESERVOIR        POND1   19   **        .16882       115.34       14.324      1.59089    1.867    1.067 AC-FT=    7.267
*S ROUTE BASINS TO AP-3 THROUGH PNM BOUNDARY
*S
*S COMPUTE BASIN "F1" **************************************************************
*S
COMPUTE NM HYD          3.90   -    23        .02044        28.58         .779       .71481    1.500    2.185 PER IMP=   .00
*S ROUTE THROUGH SUB-BASIN "H" IN CHANNEL "H" TO AP-3
ROUTE MCUNGE            4.10   **   25        .16882       114.53       14.250      1.58269    2.567    1.060 CCODE =    .1
*S
*S COMPUTE BASIN "H" ****************************************************************
*S
COMPUTE NM HYD          4.20   -    26        .38256       288.36        8.238       .40375    1.533    1.178 PER IMP=   .00
*S
*S ADD SUB-BASINS "F1", DISCHARGE FROM POND-1 AND "H"+++++(AP-3)+++++++++++++++++
ADD HYD                 4.30 26&25  27        .55138       288.37       22.488       .76472    1.533     .817
*S
*S
*S ---------------------------------------------------------------------------
*S BASINS FLOWING SOUTH OF PASEO DEL NORTE BLVD
*S ---------------------------------------------------------------------------
*S
*S COMPUTE BASIN "4A" ***************************************************************
*S
COMPUTE NM HYD          5.00   -    40        .03880        90.40        3.532      1.70664    1.500    3.641 PER IMP=  80.00
*S COMPUTE BASIN "4B" ***************************************************************
*S
COMPUTE NM HYD          5.50   -    70        .00800        18.65         .728      1.70664    1.500    3.643 PER IMP=  80.00
*S
*S ADD SUB-BASINS "4A"AND "4B"++++++++++++++++++++++++++++++++++++++++++++++++++++
ADD HYD                 5.60 70&40  43        .04680       109.05        4.260      1.70663    1.500    3.641
*S
*S COMPUTE BASIN "PDN2" *************************************************************
*S
COMPUTE NM HYD          5.30   -    60        .01480        35.75        1.431      1.81351    1.500    3.774 PER IMP=  90.00
*S
```


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

```
*S ADD SUB-BASINS "4A", "4B" AND "PDN2"++++++++++++++++++++++++++++++++++++++++++
ADD HYD                42.10 60&43  42        .06160       144.80        5.691      1.73230    1.500    3.673
*S
*S ROUTE THROUGH POND-10  >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
ROUTE RESERVOIR        POND10   42   **        .06160        19.76        5.586      1.70028    2.133     .501 AC-FT=    4.074
*S
*S
```

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*S ------------------------------------------------------------------------
*S BASINS NORTH OF PASEO DEL NORTE BLVD TO POND 2
*S ------------------------------------------------------------------------
*S
*S COMPUTE BASIN "5" ************************************************************
*S
COMPUTE NM HYD          5.10   -    50        .02753        64.15        2.506      1.70664    1.500    3.641 PER IMP=  80.00
*S COMPUTE BASIN "7" ************************************************************
*S
COMPUTE NM HYD          5.70   -    80        .03540        77.49        3.222      1.70664    1.533    3.420 PER IMP=  80.00
*S
*S ADD SUB-BASINS "5" AND "7"++++++++++++++++++++++++++++++++++++++++++++
ADD HYD                 5.20 50&80  44        .06293       140.74        5.728      1.70663    1.500    3.494
*S
*S COMPUTE BASIN "12B" **********************************************************
*S
COMPUTE NM HYD          5.90   -    90        .01440        33.56        1.311      1.70664    1.500    3.642 PER IMP=  80.00
*S
*S ADD SUB-BASINS "5", "7" AND "12B"++++++++++++++++++++++++++++++++++++++++++
ADD HYD                 6.00 90&44  45        .07733       174.30        7.039      1.70663    1.500    3.522
*S
*S COMPUTE BASIN "PDN3" *********************************************************
*S
COMPUTE NM HYD          6.10   -    **        .01509        30.10        1.460      1.81351    1.567    3.117 PER IMP=  90.00
*S
*S COMPUTE BASIN "PDN4" *********************************************************
*S
COMPUTE NM HYD          6.30   -    **        .01114        24.99        1.077      1.81350    1.533    3.505 PER IMP=  90.00
*S
*S ADD SUB-BASINS "PDN3" AND "PDN4"++++++++++++++++++++++++++++++++++
ADD HYD                 6.20 **&**  46        .02623        53.75        2.537      1.81348    1.533    3.202
*S
*S ******************************************************************
*S DIVIDE PDN NORTH & SOUTH FLOWS
DIVIDE HYD             46.22   46   46        .01312        26.87        1.268      1.81346    1.533    3.202
                       46.22  and   46        .01312        26.87        1.268      1.81346    1.533    3.202
*S
*S COMPUTE BASIN "A" ************************************************************
*S
COMPUTE NM HYD          9.30   -    72        .03509        61.16        2.576      1.37668    1.533    2.723 PER IMP=  50.00
*S FLOWS INTO PDN STORM SYSTEM
*S ADD SUB-BASINS SOUTH OF PDN AND "A" ++++++++++++++++++++++++++++++++++++++++
*S
ADD HYD                 9.40 72&46  73        .04821        88.04        3.845      1.49550    1.533    2.854
*S
```


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

```
*S
*S FLOWS INTO POND 2************************************************************
*S ADD SUB-BASINS NORTH "PDN3","PDN4", "7"AND "12B"++++++++++++++++++++++++++++++
ADD HYD                 7.20 46&45  47        .09045       199.02        8.307      1.72212    1.500    3.438
*S
*S ADD INTERNAL STREET TO PDN SUB-BASINS
*S
*S COMPUTE BASIN "6A" ***********************************************************
*S
COMPUTE NM HYD          7.00   -    60        .01527        33.25        1.390      1.70664    1.533    3.402 PER IMP=  80.00
*S
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```
*S COMPUTE BASIN "6" ************************************************************
*S
COMPUTE NM HYD          7.10   -    61        .03547        82.64        3.229      1.70664    1.500    3.641 PER IMP=  80.00
*S
*S ADD SUB-BASINS "6" AND "6A"++++++++++++++++++++++++++++++++++++++++++++++++++
ADD HYD                 7.20 60&61  50        .05074       115.22        4.618      1.70663    1.500    3.548
*S
*S COMPUTE BASIN "8" ************************************************************
*S
COMPUTE NM HYD          7.30   -    62        .01980        46.14        1.802      1.70664    1.500    3.641 PER IMP=  80.00
*S
*S ADD SUB-BASINS "6","6A" AND "8"++++++++++++++++++++++++++++++++++++++++++++++
ADD HYD                 7.40 50&62  51        .07054       161.36        6.421      1.70663    1.500    3.574
*S
*S COMPUTE BASIN "9" ************************************************************
*S
COMPUTE NM HYD          7.50   -    63        .03156        73.54        2.873      1.70664    1.500    3.641 PER IMP=  80.00
*S
*S ADD SUB-BASINS "6","6A","8" AND "9"++++++++++++++++++++++++++++++++++++++++++
ADD HYD                 7.60 51&63  52        .10210       234.89        9.293      1.70663    1.500    3.595
*S
*S ROUTE SUB-BASINS THROUGH PIPE IN UPPER HALF "ST1">>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE MCUNGE            7.51   52    1        .10210       234.25        9.293      1.70664    1.533    3.585 CCODE =    .2
*S
*S COMPUTE BASIN "12A" ***********************************************************
*S
COMPUTE NM HYD          7.70   -    64        .03080        71.76        2.803      1.70664    1.500    3.641 PER IMP=  80.00
*S
*S ADD SUB-BASINS "6","6A","8","9" AND "12A"++++++++++++++++++++++++++++++++++++
ADD HYD                 7.80  1&64  53        .13290       302.63       12.097      1.70664    1.533    3.558
*S
*S COMPUTE BASIN "10" ************************************************************
*S
COMPUTE NM HYD          7.90   -    65        .05670       122.05        5.161      1.70664    1.533    3.363 PER IMP=  80.00
*S
*S ADD SUB-BASINS "6","6A","8","9","12A" AND "10"+++++++++++++++++++++++++++++++
ADD HYD                 8.00 53&65  54        .18960       424.68       17.258      1.70664    1.533    3.500
*S
*S
*S COMPUTE BASIN "ST1" ***********************************************************
```


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
*S										
COMPUTE NM HYD	8.10	-	66	.01413	30.89	1.367	1.81350	1.533	3.416 PER IMP=	90.00
*S										
*S ADD SUB-BASINS "6","6A","8","9","12A","10" AND "ST1"++++++++++++++++++++++++++										
ADD HYD	8.20	66&54	55	.20373	455.57	18.624	1.71405	1.533	3.494	
*S										
*S										
*S										
*S COMPUTE BASIN "ST2"**										
*S										
COMPUTE NM HYD	8.30	-	67	.01094	23.92	1.058	1.81350	1.533	3.417 PER IMP=	90.00
*S										
*S ADD SUB-BASINS "6","6A","8","9","12A","10","ST1" AND "ST2"++++++++++++++++++++										
ADD HYD	8.40	55&67	56	.21467	479.49	19.682	1.71911	1.533	3.490	
*S										

```
*S
*S
*S ADD FLOWS IN INTERNAL STREET & NORTH HALF PDN++++++++++++++++++++++++++++++++++
ADD HYD                 8.41 56&47  57        .30512       676.95       27.989      1.72001    1.533    3.467
*S
*S
*S ADD FLOWS INTO POND 2 FROM PDN
*S ROUTE SUB-BASINS THROUGH PIPE IN "PDN4">>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE MCUNGE            6.21   57    1        .30512       657.82       27.917      1.71559    1.567    3.369 CCODE =      .2
*S
*S ------------------------------------------------------------------------------
*S REMAINDER OF SUB-BASINS IN INTERNAL STREET TO POND 2
*S ------------------------------------------------------------------------------
*S
*S COMPUTE BASIN "13" ************************************************************
*S
COMPUTE NM HYD          6.50   -     **        .06260       139.56        5.698      1.70664    1.500    3.484 PER IMP=  80.00
*S
*S COMPUTE BASIN "11B" ************************************************************
*S
COMPUTE NM HYD          8.50   -     68        .05527       116.14        5.031      1.70664    1.533    3.283 PER IMP=  80.00
*S
*S ADD BASINS "11B" AND "13"++++++++++++++++++++++++++++++
ADD HYD                 6.60 **&68  **        .11787       254.39       10.729      1.70664    1.533    3.372
*S
*S
*S COMPUTE BASIN "ST3" ************************************************************
*S
COMPUTE NM HYD          8.70   -     69        .00686        15.01         .664      1.81350    1.533    3.418 PER IMP=  90.00
*S
*S ADD SUB-BASINS "11B" AND "ST3"++++++++++++++++++++++++++++++++
ADD HYD                 8.80 **&69  58        .12473       269.40       11.392      1.71251    1.533    3.375
*S
*S COMPUTE BASIN "ST4" ************************************************************
*S
```


COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
COMPUTE NM HYD	8.90	-	**	.00772	16.89	.747	1.81350	1.533	3.418	PER IMP= 90.00

```
*S
*S ADD SUB-BASINS "11B","ST3" AND "ST4"++++++++++++++++++++++++++++++++
ADD HYD                 9.00 58&**  59        .13245       286.28       12.139      1.71840    1.533    3.377
*S
*S COMPUTE BASIN "11C" ************************************************************
*S
COMPUTE NM HYD          9.10   -     71        .03317        77.29        3.019      1.70664    1.500    3.641 PER IMP=  80.00
*S
*S ADD SUB-BASINS "13", "11B","ST3","ST4" AND "11C"++++++++++++++++++++++++++++++
*S
ADD HYD                 9.20 71&59  60        .16562       359.92       15.158      1.71604    1.533    3.396
*S
*S
*S ALL DISCHARGE TO POND 2
*S ADD ALL SUB-BASINS NORTH OF PDN AND REMAINDER OF INTERNAL STREETS ++++++++++++
*S DISCHARGING TO POND 2
*S
ADD HYD                 9.50  1&60  74        .47074      1015.14       43.075      1.71575    1.533    3.370
*S
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*S ROUTE THROUGH POND-2  >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
ROUTE RESERVOIR        POND2  74   **        .47074      556.71      43.033      1.71406    1.700    1.848 AC-FT=   15.328
*S
*S ALL DISCHARGE FROM POND 2, BASIN A AND PDN SOUTH TO PDN STORM SYSTEM (AP-1)
*S
ADD HYD                 9.51 73&**  **        .51894      615.44      46.878      1.69376    1.667    1.853
*S
*S EXISTING PDN STORM SYSTEM
*S
*S ROUTE AP-1 THROUGH PIPE IN "PDN5" (AP-1 TO AP-2)>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE MCUNGE            9.60   **    1        .51894      615.50      46.866      1.69332    1.700    1.853 CCODE =      .2
*S COMPUTE BASIN "PDN5" ***********************************************************
*S
COMPUTE NM HYD          9.70   -    75        .01978       47.77       1.913      1.81350    1.500    3.774 PER IMP=  90.00
*S
*S ADD ALL SUB-BASINS NORTH OF PDN, SOUTH OF UNSER,"A" AND "PDN5"+++++++++++++++
ADD HYD                 9.80  1&75  76        .53872      636.88      48.779      1.69773    1.700    1.847
*S COMPUTE BASIN "B" **************************************************************
*S
COMPUTE NM HYD          9.90   -    77        .02114       15.98        .455       .40375    1.500    1.181 PER IMP=    .00
*S
*S ADD ALL SUB-BASINS N. OF PDN, S. UNSER,"A","PDN5"AND "B"++++++++(AP-2)+++++++
ADD HYD                10.00 76&77  78        .55986      644.05      49.234      1.64887    1.700    1.797
*S
*S ROUTE THROUGH "PDN6" IN PIPE (AP-2)>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE MCUNGE           10.10   78    1        .55986      640.84      49.220      1.64840    1.700    1.789 CCODE =      .2
*S
*S COMPUTE BASIN "G" (AP-3)*******************************************************
*S
COMPUTE NM HYD         10.11   -    28        .10320       79.53       2.222       .40375    1.500    1.204 PER IMP=    .00
*S

                                  FROM  TO                 PEAK        RUNOFF                 TIME TO    CFS      PAGE =   8
                     HYDROGRAPH    ID   ID       AREA    DISCHARGE     VOLUME      RUNOFF      PEAK      PER
COMMAND            IDENTIFICATION  NO.  NO.    (SQ MI)     (CFS)      (AC-FT)    (INCHES)   (HOURS)    ACRE      NOTATION

*S
*S ADD ALL SUB-BASINS NORTH OF PDN, SOUTH OF UNSER,"A","B","PDN5"AND "G"++++++++
*S
ADD HYD                10.12 28& 1  **        .66306      678.56      51.442      1.45468    1.667    1.599
*S
*S COMPUTE BASIN "PDN6" ***********************************************************
*S
COMPUTE NM HYD         10.20   -    79        .01847       44.61       1.786      1.81350    1.500    3.774 PER IMP=  90.00
*S
*S ADD ALL SUB-BASINS TO "PDN6"++++++++++++++++++++++++++++++++++++++++++++++++++
ADD HYD                10.30 **&79  80        .68153      701.06      53.229      1.46441    1.667    1.607
*S
*S
*S ADD FLOWS TO AP-4++++(PIEDRAS MARCADAS)+++++++++++++++++++++++++++++++++++++++
ADD HYD                10.40 27&80  81       1.23291      941.18      75.717      1.15149    1.567    1.193
*S
*S ------------------------------------------------------------------------------
*S UNIVERSE STORM DRAIN TO BOCA NEGRA DAM
*S ------------------------------------------------------------------------------
*S
*S  COMPUTE STATE LAND OFFICE BASIN, P1 (SPLIT FROM SCHOOL SITE)****************
COMPUTE NM HYD           P2B   -    50        .03125       44.34       1.515       .90878    1.533    2.217 PER IMP=  22.00
*S
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*S
*S ROUTE THROUGH PIPE IN UNIVERSE BLVD>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
ROUTE MCUNGE          TRSL01   50   71       .03125        43.94       1.510       .90626    1.567    2.197 CCODE =      .1
*S
*S  BASIN P2 (HIGH SCHOOL) FROM UNIVERSE STORM DRAIN STUDY**********************
COMPUTE NM HYD           P2A    -   72       .10940       152.78       7.852      1.34570    1.633    2.182 PER IMP=  50.00
*S ADD STATE LAND OFFICE & HIGH SCHOOL++++++++++++++++++++++++++++++++++++++++++
ADD HYD               TR.HS 71&72  73       .14065       194.24       9.362      1.24806    1.600    2.158
*S
*S ROUTE THROUGH PIPE IN UNIVERSE BLVD>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
ROUTE MCUNGE          TRHS     73   74       .14065       179.11       9.240      1.23175    1.700    1.990 CCODE =      .2
*S
*S BASIN P3 (FUTURE SAD) FROM UNIVERSE STORM DRAIN STUDY*****************
COMPUTE NM HYD           P3     -   75       .05150        63.39       3.696      1.34570    1.667    1.923 PER IMP=  50.00
*S
*S ADD UNIVERSE SUB-BASINS TO BOCA NEGRA DAM++++++++++++++++++++++++++++++++++++
ADD HYD               TR.HS 74&75  76       .19215       242.47      12.936      1.26229    1.700    1.972
*S
*S ---------------------------------------------------------------------------
*S UNSER BLVD SOUTH OF THE GRANT LINE TO BOCA NEGRA DAM
*S ---------------------------------------------------------------------------
*S
*S COMPUTE SUB-BASIN THE TRAILS UNIT 4**************************************
*S ASSUME AN AREA OF 10 ACRES FOR THE THREE PONDS IN THIS SUB-BASIN
*S
COMPUTE NM HYD        10.10     -   10       .08900       148.83       6.612      1.39293    1.567    2.613 PER IMP=  50.00
*S
*S RECALL POND K DISCHARGE FROM THE TRAILS SUBDIVISION*************************
*S

                                FROM  TO                  PEAK        RUNOFF                 TIME TO    CFS      PAGE =   9
                  HYDROGRAPH     ID   ID       AREA     DISCHARGE     VOLUME      RUNOFF      PEAK      PER
COMMAND         IDENTIFICATION   NO.  NO.    (SQ MI)      (CFS)       (AC-FT)    (INCHES)   (HOURS)    ACRE      NOTATION

RECALL HYD          TRAIL.POND   -    70    1.01791        80.03      52.693       .97061    2.050     .123
*S
*S ADD POND K DISCHARGE FROM THE TRAILS SUBDIVISION++++++++++++++++++++++++++
*S
ADD HYD               TR.HS 10&70  12     1.10691       228.85      58.849       .99684    1.567     .323
*S
*S SAD 228 WEST OF UNSER BLVD
*S
*S COMPUTE SUB-BASIN M1 - WEST OF UNSER***************************************
COMPUTE NM HYD        10.20     -   13       .13800       234.05      10.252      1.39293    1.567    2.650 PER IMP=  50.00
*S
*S ROUTE SUB-BASIN M1 THROUGH POND-3>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR       POND3    13   **       .13800        98.30      10.252      1.39292    1.833    1.113 AC-FT=    4.458
*S
*S
*S ADD BASINS M1 AND TRAILS UNIT IV++++++++++++++++++++++++++++++++++++++++++++
*S
ADD HYD               10.30 12&**  14     1.24491       286.03      69.100      1.04075    1.600     .359
*S
*S COMPUTE SUB-BASIN N1 - EAST OF UNSER***************************************
COMPUTE NM HYD        10.40     -   15       .08140       145.98       6.047      1.39293    1.533    2.802 PER IMP=  50.00
*S
*S
*S DIVIDE BASIN N1 FOR ALLOWABLE EXISTING FLOWS THROUGH LA CUENTISTA //////////
DIVIDE HYD            10.50    15    9       .07170        90.00       5.327      1.39292    1.467    1.961
                      10.60   and   16       .00970        55.98        .721      1.39292    1.533    9.018
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*S
*S ADD SUB-BASINS M1 AND N1(DIVIDED)++++++++++++++++++++++++++++++++++++++++++++
*S
ADD HYD                10.70 16&14  17       1.25461       334.42      69.821      1.04347    1.567      .416
*S
*S COMPUTE SUB-BASIN N2 - EAST OF UNSER*****************************************
COMPUTE NM HYD         10.80   -    18        .02460        51.19       1.828      1.39293    1.500     3.251 PER IMP=  50.00
*S
*S ADD SUB-BASINS "N1", "M1" AND N2+++++++++++++++++++++++++++++++++++++++++++++
*S
ADD HYD                10.90 18&17  19       1.27921       377.20      71.648      1.05019    1.567      .461
*S
*S
*S COMPUTE SUB-BASIN UNSER******************************************************
COMPUTE NM HYD         11.10   -    20        .03190        49.03       2.370      1.39293    1.600     2.401 PER IMP=  50.00
*S
*S
*S DIVIDE SUB BASIN UNSER- SEPARATE BYPASS FLOWS FROM BOCA NEGRA DAM////////////
*S
DIVIDE HYD             30.10   20   30        .02273        19.00       1.689      1.39291    1.433     1.306
                       30.20  and   31        .00917        30.03        .681      1.39291    1.600     5.118
*S
*S ADD SUB-BASINS EAST AND WEST OF UNSER++++++++++++++++++++++++++++++++++++++++
*S

                              FROM  TO                    PEAK        RUNOFF                  TIME TO   CFS       PAGE =  10
                   HYDROGRAPH  ID   ID        AREA      DISCHARGE     VOLUME      RUNOFF      PEAK     PER
COMMAND        IDENTIFICATION  NO.  NO.     (SQ MI)       (CFS)       (AC-FT)    (INCHES)   (HOURS)    ACRE      NOTATION

ADD HYD                11.20 31&19  21       1.28837       405.51      72.329      1.05263    1.567      .492
*S
*S
*S COMPUTE SUB-BASIN M2-A - WEST OF UNSER***************************************
COMPUTE NM HYD         11.30   -    22        .11450       141.66       6.515      1.06694    1.600     1.933 PER IMP=  28.57
*S
*S
*S ROUTE SUB-BASIN M2-A THROUGH POND-4A>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR        POND4   22   **        .11450        21.65       6.482      1.06152    2.233      .295 AC-FT=    4.367
*S
*S COMPUTE SUB-BASIN M2-B - WEST OF UNSER***************************************
COMPUTE NM HYD         11.40   -    24        .02010        41.36       1.493      1.39293    1.500     3.215 PER IMP=  50.00
*S
*S
*S ADD ALL UNSER BLVD SUB-BASINS TO BOCA NEGRA DAM
*S
ADD HYD                11.50 21&24  25       1.30847       440.72      73.823      1.05786    1.567      .526
*S
*S SAD 228 EAST OF UNSER BLVD
*S
*S COMPUTE SUB-BASIN M3 - EAST OF UNSER*****************************************
COMPUTE NM HYD         11.70   -    26        .17930       302.81      13.320      1.39293    1.567     2.639 PER IMP=  50.00
*S
*S
*S ROUTE SUB-BASIN M3 THROUGH POND-5>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR        POND5   26   **        .17930        49.73      13.320      1.39292    2.167      .433 AC-FT=    8.447
*S
*S
*S
*S ADD ROUTED FLOWS FROM PONDS 4 AND 5++++++++++++++++++++++++++++++++++++++++++
```

```
*S
ADD HYD                11.80 **&**  27        .29380        71.37       19.802      1.26377    2.200      .380
*S
*S
*S ADD ROUTED FLOWS FROM POND-4, POND-5 AND 19 CFS UNSER BLVD BYPASS++++++++++++
*S
ADD HYD                11.90 27&30  29        .31653        87.04       21.491      1.27304    1.967      .430
*S
*S
*S COMPUTE SUB-BASIN M4 - SOUTH OF LA CUENTISTA SUBD.**************************
COMPUTE NM HYD         12.20   -    **        .01720        35.80        1.278      1.39293    1.500    3.252 PER IMP=  50.00
*S
*S
*S ROUTE SUB-BASIN M4 THROUGH POND-7 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR        POND7   **   **        .01720         6.07        1.278      1.39290    2.033      .551 AC-FT=     .813
*S
*S
*S
*S COMPUTE SUB-BASIN M5 - SOUTH OF LA CUENTISTA SUBD.**************************
```

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	PAGE = 11
COMPUTE NM HYD	12.30	-	**	.07070	137.23	5.252	1.39293	1.533	3.033	PER IMP=	50.00

```
*S
*S
*S ROUTE SUB-BASIN M5 THROUGH POND-8 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR        POND8   **   **        .07070        29.64        5.252      1.39292    2.000      .655 AC-FT=    2.929
*S
*S
*S
COMPUTE NM HYD        100.40   -    **        .00020          .43         .015      1.39293    1.500    3.367 PER IMP=  50.00
*S
*S COMPUTE SUB-BASIN M6 - SOUTH OFBASIN M5*********************************
*S
COMPUTE NM HYD         12.40   -    **        .00650        13.54         .483      1.39293    1.500    3.254 PER IMP=  50.00
*S
*S ****************************************************************
*S DIVIDE FLOWS INTO POND9 FROM FREE DISCHARGE
DIVIDE HYD             51.10   **   51        .00627        11.00         .466      1.39289    1.467    2.741
                       52.10  and   52        .00023         2.54         .017      1.39289    1.500   17.257
*S
*S ****************************************************************
*S ROUTE SUB-BASIN M6 THROUGH POND-9 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR        POND9   51   **        .00627         6.89         .466      1.39289    1.667    1.717 AC-FT=     .186
*S
*S
*S COMPUTE SUB-BASIN M3-1 - EAST OF UNSER**************************************
COMPUTE NM HYD         13.30   -    **        .05339       107.62        3.966      1.39293    1.500    3.150 PER IMP=  50.00
*S
*S
*S ROUTE SUB-BASIN M3-1 THROUGH POND-6 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR        POND6   **   **        .05339        39.72        3.784      1.32897    1.767    1.163 AC-FT=    2.094
*S
*S
*S
```

```
FINISH
```

```
* PASEO DEL NORTE DRAINAGE ANALYSIS
* WILSON & COMPANY PROJECT X3210022
* DEVELOPED CONDITIONS MODEL
* 100 YR 6 HR STORM EVENT
* DATE: OCTOBER 2011
* FILE: X:\Public\PROJECTS\X3210022\Drainage Report\DOCS\AHYMO\PROP VH.TXT

*S**************************************************************************************
*S
*S      100 YEAR 6 HOUR STORM - PROPOSED RUNOFF ANALYSIS
*S      RAINFALL DATA FROM NOAA ATLAS 14
*S
*S**************************************************************************************

START           0.0 HOURS
LOCATION        BERNALILLO COUNTY
RAINFALL        TYPE=1  RAIN QUARTER=0.0 IN     RAIN ONE=1.70 IN
                RAIN SIX=2.20 IN        RAIN DAY=0 IN   DT=0.033333 HR
*S
*S
*S ---------------------------------------------------------------------------
*S SUB-BASINS NORTH AND WEST OF UNSER BLVD. TO POND 11,
*S ULTIMATELY DISCHARGING TO CHAMISA BASIN
*S ---------------------------------------------------------------------------
*
*S
*S COMPUTE BASIN "E2.1" ************************************************************

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=480 FT  SLOPE=0.020  K=2.0

COMPUTE NM HYD  ID=99   HYD NO=200.1    DA=0.01243 SQ MI
                PER A=0   PER B=15  PER C=35   PER D=50
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=99   CODE=1
*S
*S THE TRAILS UNIT 4 - NORTH BASINS
*S COMPUTE BASIN "K1" **************************************************************
*

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.02  K=0.7
                LENGTH=600 FT  SLOPE=0.02   K=2.0
                LENGTH=100 FT  SLOPE=0.02   K=3.0

COMPUTE NM HYD  ID=200  HYD NO=200.2    DA=0.0238 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=200  CODE=1

*S COMPUTE BASIN "K2" **************************************************************

COMPUTE LT TP   LCODE=1 NK=1 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7

COMPUTE NM HYD  ID=201  HYD NO=200.3    DA=0.0059 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=201  CODE=1

*S
*S COMPUTE BASIN "K3" **************************************************************

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=600 FT  SLOPE=0.020   K=2.0
                LENGTH=100 FT  SLOPE=0.020   K=3.0

COMPUTE NM HYD  ID=202  HYD NO=200.4    DA=0.0148 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=202  CODE=1

*S
```

```
*S COMPUTE BASIN "K4" ************************************************************************

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=590 FT  SLOPE=0.020   K=2.0

COMPUTE NM HYD  ID=203  HYD NO=200.5    DA=0.01959 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=203  CODE=1
*S
*S
*S COMPUTE BASIN "ST11" **************************************************************
*

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=1730 FT  SLOPE=0.020   K=2.0

COMPUTE NM HYD  ID=204  HYD NO=200.6    DA=0.006758 SQ MI
                PER A=0   PER B=10  PER C=0   PER D=90
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=204  CODE=1

*S
*S ADD SUB-BASINS "K1" AND "K2"  ++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=205  HYD NO=200.7    ID I=200        ID II=201
PRINT HYD       ID=205  CODE=1

*S
*S ADD SUB-BASINS "K3" AND "K4"   ++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=206  HYD NO=200.8    ID I=202        ID II=203
PRINT HYD       ID=206  CODE=1
*S
*S ADD SUB-BASINS "K1", "K2" AND "E2.1"  ++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=207  HYD NO=200.9    ID I=99         ID II=205
PRINT HYD       ID=207  CODE=1
*S
*S ADD SUB-BASINS "K1", "K2", "E2.1" AND "K3", "K4"  ++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=208  HYD NO=200.10   ID I=206        ID II=207
PRINT HYD       ID=208  CODE=1
*S
*S
*S ---------------------------------------------------------------------------
*S SUB-BASINS NORTH AND WEST OF UNSER BLVD W/ OVERFLOW OF STORMS (5 YR EVENT MIN)
*S TO THE CHAMISA DETENTION. THE UNSER DETENTION BASIN OUTFLOW IS LIMITED
*S TO 120 CFS.  FLOWS ULTIMATELY DISCHARGE TO AP3
*S ---------------------------------------------------------------------------

*S COMPUTE BASIN "1" ************************************************************************
*

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=275 FT  SLOPE=0.020   K=2.0

COMPUTE NM HYD  ID=1    HYD NO=1.1      DA=0.01324 SQ MI
                PER A=0   PER B=15  PER C=35   PER D=50
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=1    CODE=1
*S

*S COMPUTE BASIN "2" ************************************************************************
*
COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=280 FT  SLOPE=0.020   K=2.0

COMPUTE NM HYD  ID=2    HYD NO=1.2      DA=0.0113 SQ MI
                PER A=0   PER B=10  PER C=15   PER D=75
                TP=0.0  MASS RAIN=-1
```

```
PRINT HYD       ID=2    CODE=1

*S
*S ADD SUB-BASINS "1" AND "2" ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=11   HYD NO=1.3      ID I=1  ID II=2
PRINT HYD       ID=11   CODE=1
*S

*S COMPUTE BASIN "U1" (UNSER TO PDN)*************************************************
*
COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=280 FT  SLOPE=0.020   K=2.0

COMPUTE NM HYD  ID=4    HYD NO=1.4      DA=0.0158 SQ MI
                PER A=0   PER B=10  PER C=0   PER D=90
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=4    CODE=1

*S
*S ADD SUB-BASINS "1", "2" AND "U1"  ++++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=13   HYD NO=1.5      ID I=11 ID II=4
PRINT HYD       ID=13   CODE=1
*S

*S
*S COMPUTE BASIN "PDN1" ******************************************************
*

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=2510 FT  SLOPE=0.020   K=2.0

COMPUTE NM HYD  ID=209  HYD NO=1.9      DA=0.01955 SQ MI
                PER A=0   PER B=10  PER C=0   PER D=90
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=209  CODE=1
*S
*S ADD SUB-BASINS "1", "2", "U1" AND "PDN1"  ++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=210  HYD NO=200.11   ID I=13 ID II=209
PRINT HYD       ID=210  CODE=1
*S

*S
*S COMPUTE BASIN "3" *********************************************************************
*

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=470 FT  SLOPE=0.020   K=2.0

COMPUTE NM HYD  ID=3    HYD NO=2.6      DA=0.0151 SQ MI
                PER A=0   PER B=10  PER C=15   PER D=75
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=3    CODE=1

*S
*S ADD SUB-BASINS "1", "2", "U1", "PDN1" AND "3"+++++++++++++++++

ADD HYD         ID=14   HYD NO=2.7      ID I=210        ID II=3
PRINT HYD       ID=14   CODE=1

*S
*S COMPUTE BASIN "E1" *********************************************************************
*
COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.030  K=0.7
                LENGTH=1060 FT  SLOPE=0.030   K=2.0

COMPUTE NM HYD  ID=10   HYD NO=2.8      DA=0.01175 SQ MI
                PER A=0   PER B=15  PER C=35   PER D=50
                TP=0.0  MASS RAIN=-1
```

```
PRINT HYD       ID=10   CODE=1

*S
*S ADD SUB-BASINS "E1", "1", "2","3" AND "U1" +++++++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=15   HYD NO=2.9      ID I=10 ID II=14
PRINT HYD       ID=15   CODE=1

*S
*S COMPUTE BASIN "E2" ***********************************************************************
*
COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.030  K=0.7
                LENGTH=600 FT  SLOPE=0.030  K=2.0
                LENGTH=1800 FT  SLOPE=0.030   K=3.0

COMPUTE NM HYD  ID=11   HYD NO=3.0      DA=0.045259 SQ MI
                PER A=0   PER B=15  PER C=35   PER D=50
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=11   CODE=1

*S
*S ADD SUB-BASINS "E2","E1", "1", "2","3" AND "U1" ++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=16   HYD NO=3.2      ID I=15 ID II=11
PRINT HYD       ID=16   CODE=1

*S COMPUTE BASIN "U2" (UNSER NORTH OF PDN)*****************************************************
*S

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.02  K=0.7
                LENGTH=600 FT  SLOPE=0.02   K=2.0
                LENGTH=2550 FT  SLOPE=0.02   K=3.0

COMPUTE NM HYD  ID=20   HYD NO=3.3      DA=0.025933 SQ MI
                PER A=0   PER B=10  PER C=0   PER D=90
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=20   CODE=1

*S
PRINT HYD       ID=20   CODE=1

*S
*S ADD SUB-BASINS "E1","E1", "1", "2","3","U1" AND "U2"  ++++++++++++++++++++++++++

ADD HYD         ID=17   HYD NO=3.4      ID I=20 ID II=16
PRINT HYD               ID=17   CODE=1

*S
*S COMPUTE BASIN "F" *************************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=1 ISLOPE=-1
                LENGTH=320 FT  SLOPE=0.020  K=0.7

COMPUTE NM HYD  ID=21   HYD NO=3.5      DA=0.00433 SQ MI
                PER A=0   PER B=15  PER C=35   PER D=50
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=21   CODE=1

*S
*S ADD SUB-BASINS "E1","E1", "1", "2","3","U1", "U2" AND "F"++++++++++++++++++++++++++

ADD HYD         ID=18   HYD NO=3.6      ID I=17 ID II=21
PRINT HYD       ID=18   CODE=1

*S
*S COMPUTE BASIN "11A" ***********************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=80 FT  SLOPE=0.020  K=2.0

COMPUTE NM HYD  ID=22   HYD NO=3.7      DA=0.00656 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1
```

```
PRINT HYD       ID=22   CODE=1
*S
*S ADD SUB-BASINS "E1","E1", "1", "2","3","U1", "U2", "F" AND "11A" ++++++++++++++++++++++++++
*S THIS IS THE FLOW THAT IS BEING CONTRIBUTED TO THE UNSER DETENTION BASIN

ADD HYD         ID=19   HYD NO=3.6      ID I=18 ID II=22
PRINT HYD       ID=19   CODE=1

*S

*S THE OVERFLOW FOR THE CHAMISA DETENTION BASIN SHALL BE DONE IN A FUTURE STUDY.
*S THE UNSER DETENTION BASIN LIMITS FLOW TO 120 CFS
*S ROUTE THROUGH UNSER DETENTION BASIN
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

ROUTE RESERVOIR         ID=220  HYD=POND1       INFLOW ID=19 CODE=10
                        OUTFLOW(CFS)    STORAGE(AC-FT)  ELEV(FT)
                                0               0       0
                                10              2.0     1
                                20              3.5     2
                                50              5.0     3
                                80              6.0     4
                                110             7.0     5
                                130             8.0     6
                                150             9.5     7
                                170             11.0    8


PRINT HYD       ID=220  CODE=10

*S ROUTE BASINS TO AP-3 THROUGH PNM BOUNDARY
*S
*S COMPUTE BASIN "F1" ************************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=1 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7

COMPUTE NM HYD  ID=23   HYD NO=3.9      DA=0.02044 SQ MI
                PER A=0   PER B=60  PER C=40   PER D=0
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=23   CODE=1

*S ROUTE THROUGH SUB-BASIN "H" IN CHANNEL "H" TO AP-3

COMPUTE RATING CURVE    CID=1   VS NO=1 NO SEGS=1
                        MIN ELEV=0      MAX ELEV=4.50
                        CH SLOPE=0.020  FP SLOPE=0.020
                        N=0.038         DIST=52.0
                        DIST    ELEV    DIST    ELEV
                        0.0     5.0     6.0     0.0
                        46.0    0.0     52.0    5.0

ROUTE MCUNGE            ID=25   HYD NO=4.1      INFLOW ID=220
                        DT=0.0  L=6500 FT       NS=0    SLOPE=0.020
                        MATCODE=0       REGCODE=0       CCODE=0 MM CODE=0

PRINT HYD       ID=25   CODE=1

*S
*S COMPUTE BASIN "H" ************************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.040  K=0.7
                LENGTH=2100 FT  SLOPE=0.060  K=2.0
                LENGTH=4000 FT  SLOPE=0.060  K=3.0

COMPUTE NM HYD  ID=26   HYD NO=4.2      DA=0.38256 SQ MI
                PER A=100   PER B=0  PER C=0   PER D=0
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=26   CODE=1

*S
*S ADD SUB-BASINS "F1", DISCHARGE FROM POND-1 AND "H"+++++(AP-3)++++++++++++++++++++++

ADD HYD         ID=27   HYD NO=4.3      ID I=26 ID II=25
```

```
PRINT HYD       ID=27   CODE=1
*S
*S
*S ------------------------------------------------------------------------------
*S BASINS FLOWING SOUTH OF PASEO DEL NORTE BLVD
*S ------------------------------------------------------------------------------

*S
*S COMPUTE BASIN "4A" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=760 FT  SLOPE=0.020  K=2.0

COMPUTE NM HYD  ID=40   HYD NO=5.0      DA=0.0388 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=40   CODE=1

*S COMPUTE BASIN "4B" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=410 FT  SLOPE=0.020  K=2.0

COMPUTE NM HYD  ID=70   HYD NO=5.5      DA=0.0080 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=70   CODE=1

*S
*S ADD SUB-BASINS "4A"AND "4B"++++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=43   HYD NO=5.6      ID I=70 ID II=40
PRINT HYD       ID=43   CODE=1
*S
*S

*S COMPUTE BASIN "PDN2" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=750 FT  SLOPE=0.020  K=2.0

COMPUTE NM HYD  ID=60   HYD NO=5.3      DA=0.0148 SQ MI
                PER A=0   PER B=10  PER C=0   PER D=90
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=60   CODE=1


*S
*S ADD SUB-BASINS "4A", "4B" AND "PDN2"++++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=42   HYD NO=42.1     ID I=60 ID II=43
PRINT HYD       ID=42   CODE=1
*
*S
*S ROUTE THROUGH POND-10  >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

ROUTE RESERVOIR         ID=421  HYD=POND10      INFLOW ID=42 CODE=10
                        OUTFLOW(CFS)    STORAGE(AC-FT)  ELEV(FT)
                                0               0       0
                                5               2       2
                                10              3       4
                                20              4.1     6


PRINT HYD       ID=421  CODE=10
*S
*S
*S ------------------------------------------------------------------------------
*S BASINS NORTH OF PASEO DEL NORTE BLVD TO POND 2
*S ------------------------------------------------------------------------------
```

```
*S
*S COMPUTE BASIN "5" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=650 FT  SLOPE=0.020  K=2.0

COMPUTE NM HYD  ID=50   HYD NO=5.1      DA=0.02753 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=50   CODE=1


*S COMPUTE BASIN "7" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=1150 FT  SLOPE=0.020  K=2.0

COMPUTE NM HYD  ID=80   HYD NO=5.7      DA=0.0354 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=80   CODE=1

*S
*S ADD SUB-BASINS "5" AND "7"++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=44   HYD NO=5.2      ID I=50 ID II=80
PRINT HYD       ID=44   CODE=1
*S
*S COMPUTE BASIN "12B" ***********************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=800 FT  SLOPE=0.020  K=2.0

COMPUTE NM HYD  ID=90   HYD NO=5.9      DA=0.0144 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=90   CODE=1

*S
*S ADD SUB-BASINS "5", "7" AND "12B"++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=45   HYD NO=6.0      ID I=90 ID II=44
PRINT HYD       ID=45   CODE=1

*S
*S COMPUTE BASIN "PDN3" **********************************************************
*S

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=500 FT  SLOPE=0.020  K=2.0
                LENGTH=2130 FT  SLOPE=0.020  K=3.0

COMPUTE NM HYD  ID=100  HYD NO=6.1      DA=0.01509 SQ MI
                PER A=0   PER B=10  PER C=0   PER D=90
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=100  CODE=1
*S
*S COMPUTE BASIN "PDN4" **********************************************************
*S

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=500 FT  SLOPE=0.020  K=2.0
                LENGTH=1130 FT  SLOPE=0.020  K=3.0

COMPUTE NM HYD  ID=110  HYD NO=6.3      DA=0.01114 SQ MI
                PER A=0   PER B=10  PER C=0   PER D=90
                TP=0.0  MASS RAIN=-1
```

```
PRINT HYD       ID=110  CODE=1
*S
*S ADD SUB-BASINS "PDN3" AND "PDN4"++++++++++++++++++++++++++++++++

ADD HYD         ID=46   HYD NO=6.2      ID I=100        ID II=110
PRINT HYD       ID=46   CODE=1
*S
*S ****************************************************************
*S DIVIDE PDN NORTH & SOUTH FLOWS
DIVIDE HYD      ID=46   RATIO=-0.50     ID=46.1 HYD NO=46.11
                        ID=46.2 HYD NO=46.22

PRINT HYD       ID=46.1 CODE=1
PRINT HYD       ID=46.2 CODE=1
*
*S
*

*S COMPUTE BASIN "A" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.03  K=0.7
                LENGTH=2500 FT  SLOPE=0.03  K=2.0

COMPUTE NM HYD  ID=72   HYD NO=9.3      DA=0.03509 SQ MI
                PER A=0   PER B=15  PER C=35   PER D=50
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=72   CODE=1
*
*S FLOWS INTO PDN STORM SYSTEM
*S ADD SUB-BASINS SOUTH OF PDN AND "A" ++++++++++++++++++++++++++++++++++++++++++++++
*S
ADD HYD         ID=73   HYD NO=9.4      ID I=72 ID II=46.2
PRINT HYD       ID=73   CODE=1
*S
*S
*S FLOWS INTO POND 2************************************************************


*S ADD SUB-BASINS NORTH "PDN3","PDN4", "7"AND "12B"++++++++++++++++++++++++++++++++++

ADD HYD         ID=47   HYD NO=7.2      ID I=46.1       ID II=45
PRINT HYD       ID=47   CODE=1
*S
*S ADD INTERNAL STREET TO PDN SUB-BASINS
*S

*S COMPUTE BASIN "6A" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=500 FT  SLOPE=0.020  K=2.0
                LENGTH=1040 FT  SLOPE=0.020  K=3.0

COMPUTE NM HYD  ID=60   HYD NO=7.0      DA=0.01527 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=60   CODE=1

*S
*S COMPUTE BASIN "6" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.02  K=0.7
                LENGTH=600 FT  SLOPE=0.02  K=2.0
                LENGTH=150 FT  SLOPE=0.02  K=3.0

COMPUTE NM HYD  ID=61   HYD NO=7.1      DA=0.03547 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=61   CODE=1
```

```
*S
*S ADD SUB-BASINS "6" AND "6A"+++++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=50   HYD NO=7.2      ID I=60 ID II=61
PRINT HYD       ID=50   CODE=1

*S
*S COMPUTE BASIN "8" **********************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.02  K=0.7
                LENGTH=480 FT  SLOPE=0.02  K=2.0

COMPUTE NM HYD  ID=62   HYD NO=7.3      DA=0.0198 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=62   CODE=1

*S
*S ADD SUB-BASINS "6","6A" AND "8"++++++++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=51   HYD NO=7.4      ID I=50 ID II=62
PRINT HYD       ID=51   CODE=1
*S
*S COMPUTE BASIN "9" **********************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.02  K=0.7
                LENGTH=890 FT  SLOPE=0.02  K=2.0

COMPUTE NM HYD  ID=63   HYD NO=7.5      DA=0.03156 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=63   CODE=1

*S
*S ADD SUB-BASINS "6","6A","8" AND "9"++++++++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=52   HYD NO=7.6      ID I=51 ID II=63
PRINT HYD       ID=52   CODE=1

*S
*S ROUTE SUB-BASINS THROUGH PIPE IN UPPER HALF "ST1">>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
COMPUTE RATING CURVE    CID=1   VS NO=1 CODE=-1 SLP=0.022
                        DIA=5.0 FT      N=0.013

ROUTE MCUNGE    ID=1    HYD NO=7.51     INFLOW ID=52
                DT=0.0  L=1566  NS=0    SLP=0.022
                MATCODE=0       REGCODE=0       CCODE=0 MM CODE=0

PRINT HYD       ID=1    CODE=1
*S
*S COMPUTE BASIN "12A" **********************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.02  K=0.7
                LENGTH=820 FT  SLOPE=0.02  K=2.0

COMPUTE NM HYD  ID=64   HYD NO=7.7      DA=0.0308 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=64   CODE=1

*S
*S ADD SUB-BASINS "6","6A","8","9" AND "12A"+++++++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=53   HYD NO=7.8      ID I=1  ID II=64
PRINT HYD       ID=53   CODE=1

*S
*S COMPUTE BASIN "10" **********************************************************
*S
```

```
COMPUTE LT TP    LCODE=1 NK=2 ISLOPE=-1
                 LENGTH=400 FT  SLOPE=0.02  K=0.7
                 LENGTH=1270 FT  SLOPE=0.02  K=2.0

COMPUTE NM HYD   ID=65   HYD NO=7.9      DA=0.0567 SQ MI
                 PER A=0   PER B=10  PER C=10   PER D=80
                 TP=0.0  MASS RAIN=-1

PRINT HYD        ID=65   CODE=1

*S
*S ADD SUB-BASINS "6","6A","8","9","12A" AND "10"++++++++++++++++++++++++++++++++++++++++++

ADD HYD          ID=54   HYD NO=8.0      ID I=53 ID II=65
PRINT HYD        ID=54   CODE=1

*S
*S
*S COMPUTE BASIN "ST1" ************************************************************
*S

COMPUTE LT TP    LCODE=1 NK=2 ISLOPE=-1
                 LENGTH=400 FT  SLOPE=0.02  K=0.7
                 LENGTH=1400 FT  SLOPE=0.02  K=2.0

COMPUTE NM HYD   ID=66   HYD NO=8.1      DA=0.01413 SQ MI
                 PER A=0   PER B=10  PER C=0   PER D=90
                 TP=0.0  MASS RAIN=-1

PRINT HYD        ID=66   CODE=1

*S
*S ADD SUB-BASINS "6","6A","8","9","12A","10" AND "ST1"++++++++++++++++++++++++++++++++++++

ADD HYD          ID=55   HYD NO=8.2      ID I=66 ID II=54
PRINT HYD        ID=55   CODE=1
*S
*S

*S
*S COMPUTE BASIN "ST2"************************************************************
*S
COMPUTE LT TP    LCODE=1 NK=2 ISLOPE=-1
                 LENGTH=400 FT  SLOPE=0.02  K=0.7
                 LENGTH=1400 FT  SLOPE=0.02  K=2.0

COMPUTE NM HYD   ID=67   HYD NO=8.3      DA=0.01094 SQ MI
                 PER A=0   PER B=10  PER C=0   PER D=90
                 TP=0.0  MASS RAIN=-1

PRINT HYD        ID=67   CODE=1

*S
*S ADD SUB-BASINS "6","6A","8","9","12A","10","ST1" AND "ST2"++++++++++++++++++++++++++++++++

ADD HYD          ID=56   HYD NO=8.4      ID I=55 ID II=67
PRINT HYD        ID=56   CODE=1
*S
*S
*S
*S ADD FLOWS IN INTERNAL STREET & NORTH HALF PDN++++++++++++++++++++++++++++++++++++++++++++

ADD HYD          ID=57   HYD NO=8.41     ID I=56 ID II=47
PRINT HYD        ID=57   CODE=1
*S
*S
*S ADD FLOWS INTO POND 2 FROM PDN
*S ROUTE SUB-BASINS THROUGH PIPE IN "PDN4">>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
COMPUTE RATING CURVE     CID=1   VS NO=1 CODE=-1 SLP=0.01
                         DIA=7.0 FT      N=0.013

ROUTE MCUNGE     ID=1    HYD NO=6.21     INFLOW ID=57
                 DT=0.0  L=1500  NS=0    SLP=0.01
                 MATCODE=0       REGCODE=0       CCODE=0 MM CODE=0

PRINT HYD        ID=1    CODE=1
*S
```

```
*
*S ------------------------------------------------------------------------------
*S REMAINDER OF SUB-BASINS IN INTERNAL STREET TO POND 2
*S ------------------------------------------------------------------------------
*S
*S COMPUTE BASIN "13" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.020  K=0.7
                LENGTH=600 FT  SLOPE=0.020  K=2.0
                LENGTH=680 FT  SLOPE=0.020  K=3.0

COMPUTE NM HYD  ID=120  HYD NO=6.5      DA=0.0626 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=120  CODE=1

*S

*S COMPUTE BASIN "11B" ***********************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.02  K=0.7
                LENGTH=1400 FT  SLOPE=0.02  K=2.0

COMPUTE NM HYD  ID=68   HYD NO=8.5      DA=0.05527 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=68   CODE=1
*S
*S ADD BASINS "11B" AND "13"++++++++++++++++++++++++++++++

ADD HYD         ID=681  HYD NO=6.6      ID I=120        ID II=68
PRINT HYD       ID=681  CODE=1
*S

*S
*S COMPUTE BASIN "ST3" ***********************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.02  K=0.7
                LENGTH=1400 FT  SLOPE=0.02  K=2.0

COMPUTE NM HYD  ID=69   HYD NO=8.7      DA=0.00686 SQ MI
                PER A=0   PER B=10  PER C=0   PER D=90
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=69   CODE=1

*S
*S ADD SUB-BASINS "11B" AND "ST3"++++++++++++++++++++++++++++++

ADD HYD         ID=58   HYD NO=8.8      ID I=681        ID II=69
PRINT HYD       ID=58   CODE=1

*S
*S COMPUTE BASIN "ST4" ***********************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.02  K=0.7
                LENGTH=1400 FT  SLOPE=0.02  K=2.0

COMPUTE NM HYD  ID=588  HYD NO=8.9      DA=0.00772 SQ MI
                PER A=0   PER B=10  PER C=0   PER D=90
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=588  CODE=1

*S
*S ADD SUB-BASINS "11B","ST3" AND "ST4"++++++++++++++++++++++++++++++++

ADD HYD         ID=59   HYD NO=9.0      ID I=58 ID II=588
PRINT HYD       ID=59   CODE=1
```

```
*S
*S COMPUTE BASIN "11C" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=2 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.02  K=0.7
                LENGTH=50 FT  SLOPE=0.02  K=2.0

COMPUTE NM HYD  ID=71   HYD NO=9.1      DA=0.03317 SQ MI
                PER A=0   PER B=10  PER C=10   PER D=80
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=71   CODE=1

*S
*S ADD SUB-BASINS "13", "11B","ST3","ST4" AND "11C"++++++++++++++++++++++++++++++++++
*S
ADD HYD         ID=60   HYD NO=9.2      ID I=71 ID II=59
PRINT HYD       ID=60   CODE=1
*S
*S
*******************************************************************************************
*S ALL DISCHARGE TO POND 2
*******************************************************************************
*S ADD ALL SUB-BASINS NORTH OF PDN AND REMAINDER OF INTERNAL STREETS
++++++++++++++++++++++++++++++++++++++++
*S DISCHARGING TO POND 2
*S
ADD HYD         ID=74   HYD NO=9.5      ID I=1  ID II=60

PRINT HYD       ID=74   CODE=1

*S
*S ROUTE THROUGH POND-2  >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

ROUTE RESERVOIR         ID=601  HYD=POND2       INFLOW ID=74 CODE=10
                        OUTFLOW(CFS)    STORAGE(AC-FT)  ELEV(FT)
                                0               0       5290
                                20              5       5291
                                40              7       5292
                                300             9       5293
                                450             13      5295
                                560             15.4    5296

PRINT HYD       ID=601  CODE=10
*S
*
*******************************************************************************************
*S ALL DISCHARGE FROM POND 2, BASIN A AND PDN SOUTH TO PDN STORM SYSTEM (AP-1)
*******************************************************************************
*S
ADD HYD         ID=744  HYD NO=9.51     ID I=73 ID II=601

PRINT HYD       ID=744  CODE=1

*S
*************************************************************************
*S EXISTING PDN STORM SYSTEM
*******************************************************************************************
*S
*S ROUTE AP-1 THROUGH PIPE IN "PDN5" (AP-1 TO AP-2)>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
COMPUTE RATING CURVE    CID=1   VS NO=1 CODE=-1 SLP=0.01
                        DIA=7.0 FT      N=0.013

ROUTE MCUNGE    ID=1    HYD NO=9.6      INFLOW ID=744
                DT=0.0  L=1500  NS=0    SLP=0.01
                MATCODE=0       REGCODE=0       CCODE=0 MM CODE=0

PRINT HYD       ID=1    CODE=1

*S COMPUTE BASIN "PDN5" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=50 FT  SLOPE=0.02  K=0.7
                LENGTH=250 FT  SLOPE=0.02  K=2.0
                LENGTH=900 FT  SLOPE=0.02  K=3.0
```

```
COMPUTE NM HYD  ID=75   HYD NO=9.7      DA=0.01978 SQ MI
                PER A=0   PER B=10  PER C=0   PER D=90
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=75   CODE=1

*S
*S ADD ALL SUB-BASINS NORTH OF PDN, SOUTH OF UNSER,"A" AND
"PDN5"++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=76   HYD NO=9.8      ID I=1  ID II=75

PRINT HYD       ID=76   CODE=1

*S COMPUTE BASIN "B" ************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=200 FT  SLOPE=0.03  K=0.7
                LENGTH=200 FT  SLOPE=0.02  K=2.0
                LENGTH=1000 FT  SLOPE=0.03  K=3.0

COMPUTE NM HYD  ID=77   HYD NO=9.9      DA=0.02114 SQ MI
                PER A=100   PER B=0  PER C=0   PER D=0
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=77   CODE=1

*S
*S ADD ALL SUB-BASINS N. OF PDN, S. UNSER,"A","PDN5"AND
"B"++++++++(AP-2)++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=78   HYD NO=10.0     ID I=76 ID II=77

PRINT HYD       ID=78   CODE=1

*S
*S ROUTE THROUGH "PDN6" IN PIPE (AP-2)>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
COMPUTE RATING CURVE    CID=1   VS NO=1 CODE=-1 SLP=0.01
                        DIA=7.0 FT      N=0.013

ROUTE MCUNGE    ID=1    HYD NO=10.1     INFLOW ID=78
                DT=0.0  L=1000  NS=0    SLP=0.01
                MATCODE=0       REGCODE=0       CCODE=0 MM CODE=0

PRINT HYD       ID=1    CODE=1
*S
*S COMPUTE BASIN "G" (AP-3)**************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=400 FT  SLOPE=0.060  K=0.7
                LENGTH=350 FT  SLOPE=0.060  K=2.0
                LENGTH=1050 FT  SLOPE=0.060  K=3.0

COMPUTE NM HYD  ID=28   HYD NO=10.11    DA=0.1032 SQ MI
                PER A=100   PER B=0  PER C=0   PER D=0
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=28   CODE=1
*S
*S

*S ADD ALL SUB-BASINS NORTH OF PDN, SOUTH OF UNSER,"A","B","PDN5"AND
"G"++++++++++++++++++++++++++++++++++++++++

*S
ADD HYD         ID=281  HYD NO=10.12    ID I=28 ID II=1

PRINT HYD       ID=281  CODE=1
*S

*S COMPUTE BASIN "PDN6" ******************************************************************
*S

COMPUTE LT TP   LCODE=1 NK=3 ISLOPE=-1
                LENGTH=50 FT  SLOPE=0.02  K=0.7
```

```
                LENGTH=250 FT  SLOPE=0.02  K=2.0
                LENGTH=1200 FT  SLOPE=0.02  K=3.0

COMPUTE NM HYD  ID=79   HYD NO=10.2     DA=0.01847 SQ MI
                PER A=0   PER B=10  PER C=0   PER D=90
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=79   CODE=1

*S
*S ADD ALL SUB-BASINS TO "PDN6"++++++++++++++++++++++++++++++++++++++++++++++++++

ADD HYD         ID=80   HYD NO=10.3     ID I=281        ID II=79

PRINT HYD       ID=80   CODE=1
*S
*S
*S ADD FLOWS TO AP-4++++(PIEDRAS MARCADAS)++++++++++++++++++++++++++++++++++++

ADD HYD         ID=81   HYD NO=10.4     ID I=27 ID II=80

PRINT HYD       ID=81   CODE=1
*S
*S ---------------------------------------------------------------------------
*S UNIVERSE STORM DRAIN TO BOCA NEGRA DAM
*S ---------------------------------------------------------------------------
*S

*S  COMPUTE STATE LAND OFFICE BASIN, P1 (SPLIT FROM SCHOOL
SITE)**********************************************
*
COMPUTE LT TP         LCODE=1  NK=2  ISLOPE=-1
                      LENGTH=400  SLOPE=0.0148  K=1.0
                      LENGTH=1100  SLOPE=0.0148  K=2.0
*
COMPUTE NM HYD      ID=50  HYD=P2B  DA=0.03125 SQ MI
                      A=25  B=26 C=27  D=22
                      TP=0.0  MASSRAIN=-1
PRINT HYD             ID=50  CODE=5
*S
*S
*S ROUTE THROUGH PIPE IN UNIVERSE BLVD>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
COMPUTE RATING CURVE  CID=1  VS NO=1  CODE=-1  SLP=0.02
                      DIA=2.5  N=0.013
ROUTE MCUNGE          ID=71  HYD=TRSLO1  INFLOW ID=50
                      DT=0.0   L=1100  NS=0   SLOPE=0.022
                      MATCODE=0  REGCODE=0  CCODE=0  MM CODE=0
PRINT HYD             ID=71 CODE=5
*S
*S  BASIN P2 (HIGH SCHOOL) FROM UNIVERSE STORM DRAIN STUDY**********************
*
COMPUTE LT TP         LCODE=1  NK=3  ISLOPE=-1
                      LENGTH=400  SLOPE=0.0148  K=1.0
                      LENGTH=1600  SLOPE=0.0148  K=2.0
                      LENGTH=1300  SLOPE=0.0148  K=3.0
*
COMPUTE NM HYD      ID=72  HYD=P2A  DA=0.1094 SQ MI
                      A=0  B=25 C=25  D=50
                      TP=0.0  MASSRAIN=-1
PRINT HYD             ID=72  CODE=5
*S ADD STATE LAND OFFICE & HIGH SCHOOL++++++++++++++++++++++++++++++++++++++++++
ADD HYD             ID=73 HYD=TR.HS  ID I=71 II=72
PRINT HYD           ID=73 CODE=5
*S
*S ROUTE THROUGH PIPE IN UNIVERSE BLVD>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
COMPUTE RATING CURVE  CID=1  VS NO=1  CODE=-1  SLP=0.013
                      DIA=4  N=0.013
*
ROUTE MCUNGE          ID=74  HYD=TRHS  INFLOW ID=73
                      DT=0.0   L=1700  NS=0   SLOPE=0.013
                      MATCODE=0  REGCODE=0  CCODE=0  MM CODE=0
PRINT HYD             ID=74  CODE=5
*S
*S BASIN P3 (FUTURE SAD) FROM UNIVERSE STORM DRAIN STUDY*****************
*
COMPUTE LT TP         LCODE=1  NK=3  ISLOPE=-1
                      LENGTH=400  SLOPE=0.0084  K=0.7
                      LENGTH=1600  SLOPE=0.0084  K=2.0
                      LENGTH=400  SLOPE=0.0084  K=3.0
```

```
*
COMPUTE NM HYD      ID=75  HYD=P3  DA=0.0515 SQ MI
                           A=0  B=25  C=25  D=50
                           TP=0.0  MASSRAIN=-1
PRINT HYD
                    ID=75  CODE=5
*S
*S ADD UNIVERSE SUB-BASINS TO BOCA NEGRA DAM++++++++++++++++++++++++++++++++++++++
ADD HYD              ID=76 HYD=TR.HS  ID I=74 II=75
PRINT HYD            ID=76 CODE=5
*S
*S ---------------------------------------------------------------------------
*S UNSER BLVD SOUTH OF THE GRANT LINE TO BOCA NEGRA DAM
*S ---------------------------------------------------------------------------
*S
*S COMPUTE SUB-BASIN THE TRAILS UNIT 4 (SUB-BASIN T1)**************************************
*S ASSUME AN AREA OF 10 ACRES FOR THE THREE PONDS IN THIS SUB-BASIN
*S
COMPUTE LT TP         LCODE=1  NK=3  ISLOPE=-1
                           LENGTH=400  SLOPE=0.02  K=0.7
                           LENGTH=900  SLOPE=0.02  K=2.0
                           LENGTH=1500  SLOPE=0.02  K=3.0

COMPUTE NM HYD      ID=10  HYD=10.1  DA=0.089 SQ MI
                        A=0  B=10  C=40  D=50
                    TP=0.0  MASSRAIN=-1

PRINT HYD              ID=10  CODE=5
*S
*S RECALL POND K DISCHARGE FROM THE TRAILS SUBDIVISION**********************************
*S
RECALL HYD      ID=70   HYD=TRAIL.POND  DT=0.0
PRINT HYD       ID=70   CODE=5
*S

*S ADD POND K DISCHARGE FROM THE TRAILS SUBDIVISION++++++++++++++++++++++++++++
*S
ADD HYD              ID=12 HYD=TR.HS  ID I=10 II=70
PRINT HYD            ID=12 CODE=5
*
*S
*S SAD 228 WEST OF UNSER BLVD
*S
*S COMPUTE SUB-BASIN M1 - WEST OF UNSER*********************************************************
COMPUTE LT TP         LCODE=1  NK=3  ISLOPE=-1
                           LENGTH=400  SLOPE=0.02  K=0.7
                           LENGTH=800  SLOPE=0.02  K=2.0
                           LENGTH=1500  SLOPE=0.02  K=3.0

COMPUTE NM HYD     ID=13  HYD=10.2  DA=0.138 SQ MI
                A=0  B=10  C=40  D=50
                TP=0.0  MASSRAIN=-1

PRINT HYD       ID=13  CODE=5
*S
*S ROUTE SUB-BASIN M1 THROUGH POND-3>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR         ID=113  HYD=POND3       INFLOW ID=13 CODE=10
                        OUTFLOW (CFS)   STORAGE (AC-FT) ELEV (FT)
                                0               0       0
                                20              1.0     1
                                40              2.0     2
                                60              3.0     3
                                80              4.0     4.0
                                100             4.5     5.0

PRINT HYD       ID=113  CODE=10
*S
*S
*S ADD BASINS M1 AND TRAILS UNIT IV++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
*S
ADD HYD              ID=14 HYD=10.3  ID I=12 II=113
PRINT HYD            ID=14 CODE=5
*S

*S COMPUTE SUB-BASIN N1 - EAST OF UNSER*********************************************************
COMPUTE LT TP         LCODE=1  NK=3  ISLOPE=-1
                           LENGTH=400  SLOPE=0.02  K=0.7
                           LENGTH=600  SLOPE=0.02  K=2.0
```

```
                          LENGTH=1390  SLOPE=0.02  K=3.0

COMPUTE NM HYD     ID=15  HYD=10.4  DA=0.0814 SQ MI
               A=0  B=10  C=40  D=50
               TP=0.0  MASSRAIN=-1

PRINT HYD      ID=15  CODE=5
*S
*S
*S DIVIDE BASIN N1 FOR ALLOWABLE EXISTING FLOWS THROUGH LA CUENTISTA ////////////////////

DIVIDE HYD     ID=15   Q=90    ID I=9  HYD=10.5
                               ID II=16        HYD=10.6

PRINT HYD      ID=9    CODE=1
PRINT HYD      ID=16   CODE=1
*S
*S ADD SUB-BASINS M1 AND N1(DIVIDED)++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
*S
ADD HYD              ID=17 HYD=10.7  ID I=16 II=14
PRINT HYD            ID=17 CODE=5
*S
*
*S COMPUTE SUB-BASIN N2 - EAST OF UNSER*******************************************************
COMPUTE LT TP         LCODE=1  NK=2  ISLOPE=-1
                           LENGTH=400  SLOPE=0.02  K=0.7
                           LENGTH=700  SLOPE=0.02  K=2.0

COMPUTE NM HYD     ID=18  HYD=10.8  DA=0.0246 SQ MI
               A=0  B=10  C=40  D=50
               TP=0.0  MASSRAIN=-1

PRINT HYD      ID=18  CODE=5
*S
*S ADD SUB-BASINS "N1", "M1" AND N2++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
*S
ADD HYD              ID=19 HYD=10.9  ID I=18 II=17
PRINT HYD            ID=19 CODE=5
*S
*S
*S COMPUTE SUB-BASIN UNSER U0*****************************************************
COMPUTE LT TP         LCODE=1  NK=3  ISLOPE=-1
                           LENGTH=400  SLOPE=0.02  K=0.7
                           LENGTH=700  SLOPE=0.02  K=2.0
                           LENGTH=4125  SLOPE=0.02  K=3.0

COMPUTE NM HYD     ID=20  HYD=11.1  DA=0.0319 SQ MI
               A=0  B=10  C=40  D=50
               TP=0.0  MASSRAIN=-1

PRINT HYD      ID=20  CODE=5
*S
*S
*S DIVIDE SUB BASIN UNSER- SEPARATE BYPASS FLOWS FROM BOCA NEGRA DAM////////////////////
*S
DIVIDE HYD     ID=20   Q=19    ID I=30 HYD=30.1
                               ID II=31        HYD=30.2
PRINT HYD      ID=30   CODE=1
PRINT HYD      ID=31   CODE=1
*S
*S ADD SUB-BASINS EAST AND WEST OF UNSER++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
*S
ADD HYD              ID=21 HYD=11.2  ID I=31 II=19
PRINT HYD            ID=21 CODE=5
*S
*S
*S COMPUTE SUB-BASIN M2-A - WEST OF UNSER*****************************************************
COMPUTE LT TP         LCODE=1  NK=3  ISLOPE=-1
                           LENGTH=400  SLOPE=0.02  K=0.7
                           LENGTH=600  SLOPE=0.02  K=2.0
                           LENGTH=2600  SLOPE=0.02  K=3.0

COMPUTE NM HYD     ID=22  HYD=11.3  DA=0.1145 SQ MI
               A=5  B=35  C=35  D=30
               TP=0.0  MASSRAIN=-1

PRINT HYD      ID=22  CODE=5
*S
*S
```

```
*S ROUTE SUB-BASIN M2-A THROUGH POND-4A>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR         ID=124  HYD=POND4       INFLOW ID=22 CODE=10
                        OUTFLOW (CFS)    STORAGE (AC-FT) ELEV (FT)
                        0                       0               0
                        3                       1.0             1
                        16                      2.0             2
                        18                      3.0             3
                        22                      4.5             4

PRINT HYD       ID=124  CODE=10
*S
*S COMPUTE SUB-BASIN M2-B - WEST OF UNSER*****************************************************
COMPUTE LT TP         LCODE=1  NK=3  ISLOPE=-1
                           LENGTH=400  SLOPE=0.02  K=0.7
                           LENGTH=600  SLOPE=0.02  K=2.0
                           LENGTH=500  SLOPE=0.02  K=3.0

COMPUTE NM HYD     ID=24  HYD=11.4  DA=0.0201 SQ MI
                A=0  B=10  C=40  D=50
                TP=0.0  MASSRAIN=-1

PRINT HYD       ID=24  CODE=5
*S
*S
*S ADD ALL UNSER BLVD SUB-BASINS TO BOCA NEGRA DAM
*S
ADD HYD              ID=25 HYD=11.5  ID I=21 II=24
PRINT HYD            ID=25 CODE=5
*S


*S SAD 228 EAST OF UNSER BLVD
*S
*S COMPUTE SUB-BASIN M3 - EAST OF UNSER*******************************************
COMPUTE LT TP         LCODE=1  NK=3  ISLOPE=-1
                           LENGTH=400  SLOPE=0.02  K=0.7
                           LENGTH=800  SLOPE=0.02  K=2.0
                           LENGTH=1500  SLOPE=0.02  K=3.0

COMPUTE NM HYD     ID=26  HYD=11.7  DA=0.1793 SQ MI
                A=0  B=10  C=40  D=50
                TP=0.0  MASSRAIN=-1

PRINT HYD       ID=26  CODE=5
*S
*S
*S ROUTE SUB-BASIN M3 THROUGH POND-5>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR         ID=125  HYD=POND5       INFLOW ID=26 CODE=10
                        OUTFLOW (CFS)    STORAGE (AC-FT) ELEV (FT)
                        0                       0               0
                        20                      1.0             1.5
                        30                      1.8             2.5
                        40                      6.5             6.5
                        50                      8.5             7.5

*S
PRINT HYD       ID=125  CODE=10
*S
*S
*S ADD ROUTED FLOWS FROM PONDS 4 AND 5++++++++++++++++++++++++++++++++++++++++++++++
*S
ADD HYD              ID=27 HYD=11.8  ID I=124 II=125
PRINT HYD            ID=27 CODE=5
*S
*S

*S ADD ROUTED FLOWS FROM POND-4, POND-5 AND 19 CFS UNSER BLVD BYPASS++++++++++++++++++++++++
*S
ADD HYD              ID=29 HYD=11.9  ID I=27 II=30
PRINT HYD            ID=29 CODE=5
*S
*S

*S COMPUTE SUB-BASIN M4 - SOUTH OF LA CUENTISTA SUBD.*****************************************
COMPUTE LT TP         LCODE=1  NK=2  ISLOPE=-1
                           LENGTH=400  SLOPE=0.02  K=0.7
                           LENGTH=600  SLOPE=0.02  K=2.0
```

```
COMPUTE NM HYD     ID=241  HYD=12.2  DA=0.0172 SQ MI
                   A=0  B=10  C=40  D=50
                   TP=0.0  MASSRAIN=-1

PRINT HYD       ID=241  CODE=5
*S
*S
*S ROUTE SUB-BASIN M4 THROUGH POND-7 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR         ID=127  HYD=POND7       INFLOW ID=241 CODE=10
                        OUTFLOW (CFS)   STORAGE (AC-FT) ELEV (FT)
                        0                       0             0
                        5                       0.6           1
                        7                       1.0           2
                        10                      1.5           2.2

*S
PRINT HYD       ID=127  CODE=10
*S
*S
*S COMPUTE SUB-BASIN M5 - SOUTH OF LA CUENTISTA SUBD.*****************************************
COMPUTE LT TP         LCODE=1  NK=2  ISLOPE=-1
                           LENGTH=400 FT  SLOPE=0.0125  K=0.7
                       LENGTH=1230 FT  SLOPE=0.0410   K=2.0

COMPUTE NM HYD     ID=251  HYD=12.3  DA=0.0707 SQ MI
                   A=0  B=10  C=40  D=50
                   TP=0.0  MASSRAIN=-1

PRINT HYD        ID=251  CODE=5
*S
*S
*S ROUTE SUB-BASIN M5 THROUGH POND-8 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S

ROUTE RESERVOIR         ID=128  HYD=POND8       INFLOW ID=251 CODE=10
                        OUTFLOW (CFS)   STORAGE (AC-FT) ELEV (FT)
                        0                       0             0
                        20                      1             1
                        30                      3             4

*S
PRINT HYD       ID=128  CODE=10
*S
*S
*S COMPUTE SUB-BASIN M6 - SOUTH OFBASIN M5*******************************
*S

COMPUTE LT TP    LCODE=1 NK=2 ISLOPE=-1
                 LENGTH=400 FT  SLOPE=0.0287  K=0.7
                 LENGTH=750 FT  SLOPE=0.0138   K=2.0

COMPUTE NM HYD  ID=252  HYD NO=12.4     DA=0.0065 SQ MI
                PER A=0   PER B=10  PER C=40   PER D=50
                TP=0.0  MASS RAIN=-1

PRINT HYD       ID=252  CODE=1
*S
*S ****************************************************************

*S DIVIDE FLOWS INTO POND9 FROM FREE DISCHARGE
DIVIDE HYD      ID=252  Q=11    ID=51   HYD NO=51.1
                                ID=52   HYD NO=52.1

PRINT HYD       ID=51   CODE=1
PRINT HYD       ID=52   CODE=1
*S

*S ****************************************************************
*S ROUTE SUB-BASIN M6 THROUGH POND-9 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S

ROUTE RESERVOIR         ID=130  HYD=POND9       INFLOW ID=51 CODE=10
                        OUTFLOW (CFS)   STORAGE (AC-FT) ELEV (FT)
                        0                       0             5316.4
                        1                       0.113         5317
                        8                       0.200         5318
```

```
*S
PRINT HYD       ID=130  CODE=10
*S

*S COMPUTE SUB-BASIN M3-1 - EAST OF UNSER****************************************
COMPUTE LT TP         LCODE=1  NK=3  ISLOPE=-1
                           LENGTH=400  SLOPE=0.02  K=0.7
                           LENGTH=800  SLOPE=0.02  K=2.0
                           LENGTH=300  SLOPE=0.02  K=3.0

COMPUTE NM HYD     ID=254  HYD=13.3  DA=0.05339 SQ MI
                A=0  B=10  C=40  D=50
                TP=0.0  MASSRAIN=-1

PRINT HYD       ID=254  CODE=5
*S
*S
*S ROUTE SUB-BASIN M3-1 THROUGH POND-6 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR         ID=129  HYD=POND6       INFLOW ID=254 CODE=10
                        OUTFLOW (CFS)   STORAGE (AC-FT) ELEV (FT)
                        0                       0               0
                        2                       1.3             1
                        40                      2.1             1.5

*S
PRINT HYD       ID=129  CODE=10
*S


*S
FINISH

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

********************************************************************************
```

APPENDIX B