

VOLCANO HEIGHTS MASTER DRAINAGE REPORT

GOLF COURSE ROAD TO KIMMICK DRIVE

APRIL 2010

Prepared For

City of Albuquerque
Albuquerque, NM

Prepared By

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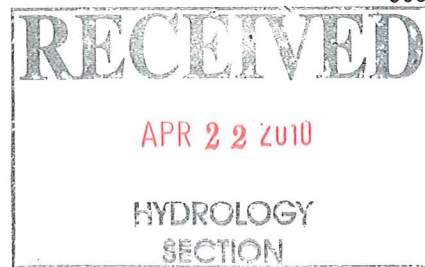


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SECTION 1 – PURPOSE

The purpose of this drainage report is to establish the drainage flows for two drainage watersheds. First is the Paseo del Norte (PdN) Corridor between Golf Course Road and Kimmick Road. The second is the Universe Blvd south of the Grant line and Unser Blvd NW from The Trails Unit IV to the Proposed Boca Negra Dam. This report will analyze the ultimate flows from Paseo del Norte and Unser Blvds into Piedras Mercadas Arroyo and Unser and Universe Blvds into Boca Negra Dam.

1.1 Introduction

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

1.2 Existing Reports

Existing drainage reports providing information used in this report include:

“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

The area includes two watersheds: The first watershed accepts storm water runoff between north of proposed Paseo del Norte and west of proposed Unser Blvd into the Piedras Marcadas Arroyo. The second watershed accepts storm water runoff from east and west of Universe Blvd. and east of Unser Blvd. south of Paseo del Norte Blvd. into the proposed Boca Negra Dam. See Figure 1 for Vicinity map.

2.1 Methodology

Hydrologic modeling for this report is 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. See Appendix B 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)	6 hr Rainfall (in)	1 hr Rainfall (in)
100	2.2	1.7

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 west to south and southeast. The downstream section of the storm drain system in Paseo del Norte is currently built. The existing storm drain system includes 2700 LF of 72" RCP which joins approximately 530 LF of 84" RCP. This system connects to an 84" RCP which discharges into an RCP box along with a pipe parallel to it. Flows then ultimately drain into the Piedras Marcadas Arroyo.

2.4.2 Proposed Conditions

The Unser and Paseo del Norte Blvds sub-basins have been modeled with 3 detention ponds. Pond 1 detains flows from sub-basins west of proposed Unser Blvd while Pond 2 detains flows from sub-basins between north of proposed Paseo del Norte and east of Unser Blvds. The outlet pipe from Pond 2 is connected into the existing 72" pipe. Flows detained from Ponds 1, 2 and 9 is added to the runoff from open space and other sub-basins north of Paseo del Norte which ultimately drain into the existing concrete culvert boxes discharging into the Piedras Marcadas

Arroyo. A small basin immediately north of proposed Paseo del Norte Blvd. and west of proposed Unser Blvd. drains into Pond 10 which is ultimately directed south and therefore separated from flows into Proposed Paseo del Norte Blvd.

Universe and Unser Blvds. sub-basins include 3 detention ponds with Pond 3 connected to the Unser Blvd. storm drain system and ultimately discharging into the proposed Boca Negra Dam. Flows generated east and west of Unser Blvd. below elevation 5339 are not part of proposed Unser Blvd. storm drain system. Flows generated in Ponds 4 and 5 which are located in SAD 228 connect to the storm drain system carrying the overflow from the Boca Negra Dam which is discharged into the Mariposa Arroyo.

Pond 6 is a shallow pond detaining flows generated in the sub-basin north of it which is then discharged south. Ponds 7 and 8 detain flows before discharging allowable flows into the Mariposa Arroyo. Refer to Plate 1 in Appendix B for pond locations. 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 INTO POND-1 130 Ac								
K1	0.0238	15.23	0	10	10	80	55	2.17
K3	0.0148	9.47	0	10	10	80	34	1.35
PDN1	0.0196	12.51	0	10	0	90	37	1.89
K4	0.0196	12.54	0	10	10	80	45	1.79
ST11	0.0091	5.81	0	10	0	90	19	0.88
1	0.0132	8.47	0	10	15	75	27	0.97
2	0.0113	7.23	0	10	15	75	25	1.00
U1	0.0158	10.14	0	10	0	90	38	1.53
K2	0.0059	3.78	0	10	10	80	13	0.54
3	0.0151	9.66	0	10	15	75	34	1.33
E1	0.0118	7.52	0	15	35	50	24	0.86
*E2 ¹	0.0128	8.21	0	15	35	50	57	0.94
U2	0.0242	15.49	0	10	0	90	45	2.34
F	0.0035	2.23	0	15	35	50	7	0.26
11A	0.0066	4.20	0	10	10	80	15	0.60
BASINS DRAINING INTO POND 9 35 AC								
4A	0.0388	24.83	0	10	10	80	89	3.54
4B	0.0080	5.12	0	10	10	80	18	0.73
PDN2	0.0148	9.50	0	10	0	90	35	1.43

BASIN	AREA (SQ MI)	AREA (ACRE)	LAND TREATMENT (%)				Q ₁₀₀ (CFS)	VOL ₁₀₀ (AC-FT)
			A	B	C	D		
BASINS DRAINING INTO POND-2 310 Ac								
5	0.0275	17.62	0	10	10	80	63	2.51
7	0.0354	22.66	0	10	10	80	77	3.23
12B	0.0144	9.22	0	10	10	80	33	1.31
PDN3	0.0187	11.97	0	10	0	90	30	1.46
PDN4	0.0111	7.13	0	10	0	90	24	1.08
13	0.0626	40.06	0	10	10	80	139	5.70
6	0.0355	22.70	0	10	10	80	81	3.23
6A	0.0153	9.77	0	10	10	80	33	1.39
8	0.0198	12.67	0	10	10	80	45	1.80
9	0.0316	20.20	0	10	10	80	72	2.88
12A	0.0308	19.71	0	10	10	80	71	2.81
10	0.0567	36.29	0	10	10	80	118	5.17
ST1	0.0141	9.04	0	10	0	90	30	1.37
ST2	0.0109	7.00	0	10	0	90	23	1.06
11B	0.0553	35.37	0	10	0	90	113	5.04
ST3	0.0069	4.39	0	10	0	90	15	0.66
ST4	0.0077	4.94	0	10	0	90	16	0.75
11C	0.0332	21.23	0	10	10	80	76	3.02
BASINS DRAINING INTO PIEDRAS MARCADAS								
A	0.0351	22.46	0	15	35	50	61	2.58
PDN5	0.0198	12.66	0	10	0	90	47	1.92
B	0.0211	13.53	100	0	0	0	16	0.45
G	0.1032	66.05	100	0	0	0	79	2.20
PDN6	0.0185	11.82	0	10	0	90	44	1.79
F1	0.0204	13.08	0	60	40	0	28	0.78
H	0.3826	244.84	100	0	0	0	280	8.16

BASIN	AREA (SQ MI)	AREA (ACRE)	LAND TREATMENT (%)				Q ₁₀₀ (CFS)	VOL ₁₀₀ (AC-FT)
			A	B	C	D		
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	151	7.85
P3	0.0515	32.96	0	25	25	50	63	3.70
UNSER BLVD								
T1	0.0890	56.96	0	10	40	50	147	6.62
M1	0.1381	88.38	0	10	40	50	232	10.26
*N1 ²	0.0097	6.19	0	10	40	50	145	6.05
N2	0.0246	15.74	0	10	40	50	50	1.83
*U0 ³	0.0233	14.91	0	10	40	50	49	2.37
M2-B	0.0201	21.79	0	10	40	50	41	1.49
BASIN DRAINING INTO BOCA NEGRA DAM OVERFLOW								
M2-A	0.1145	64.35	5	30	35	30	141	6.51
M3	0.1793	114.75	0	10	40	50	300	13.33
BASIN DRAINING INTO POND-6								
M3-1	0.0534	34.17	0	10	40	50	107	3.97
BASIN DRAINING INTO POND-7								
M4	0.0172	11.01	0	10	40	50	35	1.28
BASIN DRAINING INTO POND-8								
M5	0.1793	114.75	0	10	40	50	305	13.33
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								

SECTION 3 – HYDRAULIC ANALYSIS

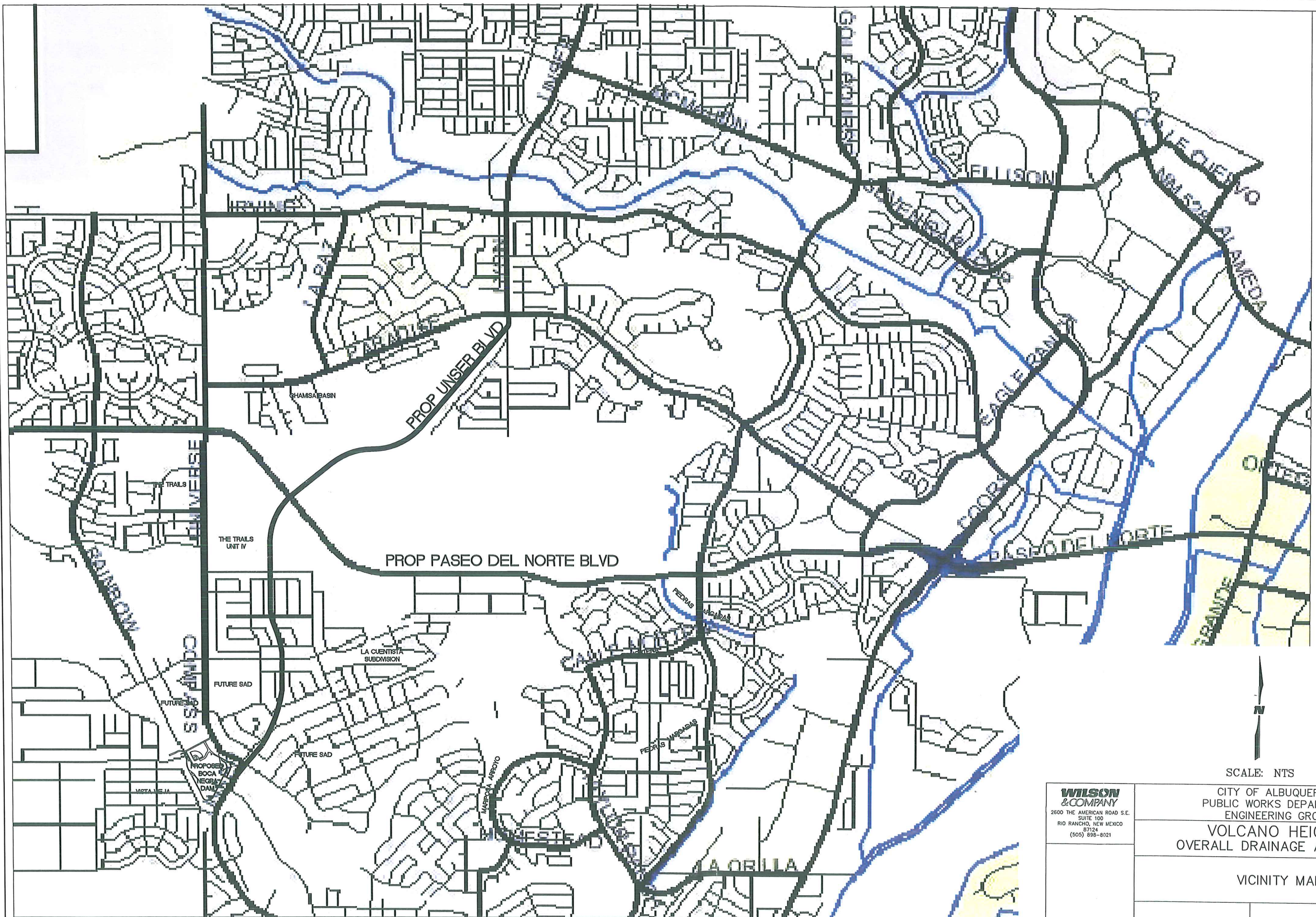
3.1 Storm Drain Analysis

Analyses for these systems were modeled using HydraFlow Storm Sewers 2005 by Intelisolve. The conceptual storm drain systems may be found on Plate 1 in Appendix B.

SECTION 4 - CONCLUSION AND RECOMMENDATIONS

Proposed storm drain facilities are designed to convey developed runoff. Pipe sizes are noted on Plate 1. Although the Paseo del Norte storm drain system works with the number of ponds shown on Plate 1, it is recommended that a detention pond upstream of Pond 2 be added to decrease flow amount draining into Pond 2 and reducing pipe sizes. The following is a summary of the 100 year design flows recommended to be used for the design of proposed Paseo del Norte and Unser Blvds.

Table 4 - Analysis Point Summary		
Analysis Point	Location	Q ₁₀₀ (cfs)
AP1	PdN at the Petroglyph national Monument	625
AP2	PdN at Sub-Basin B Entry	647
AP3	PdN Xing of Piedras Marcadas	280
AP4	Piedras Marcadas Arroyo below PdN	821
AP5	The Trails at Proposed Unser Blvd	227
AP6	Proposed Unser Blvd at Rosa Parks	330
AP7	Universe Blvd at proposed Boca Negra Dam	239
AP8	Proposed Unser Blvd at SAD 228	439
AP9	Universe Blvd at Aluquerque Public School	176
AP10	Proposed Unser Blvd at Boca Negra Dam Overflow	80



SCALE: NTS

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PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP
**VOLCANO HEIGHTS
OVERALL DRAINAGE AREA MAP**

VICINITY MAP

FIGURE 1

APPENDIX A

HYMO.SUM

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 =	NOTATION
COMPUTE NM HYD	2.20	-	**	.01959	44.92	1.785	1.70813	1.500	3.583	PER IMP=	80.00
*S COMPUTE BASIN "ST11"	*****										
COMPUTE NM HYD	2.30	-	**	.00908	18.70	.879	1.81559	1.550	3.218	PER IMP=	90.00
*S ADD SUB-BASINS "K4" AND "ST11"	*****										
ADD HYD	2.40	**&*	**	.02867	62.09	2.664	1.74214	1.500	3.384		
*S COMPUTE BASIN "K2"	*****										
COMPUTE NM HYD	2.41	-	**	.00590	13.54	.537	1.70813	1.500	3.585	PER IMP=	80.00
*S ADD SUB-BASINS "K4", "ST11" AND "K2"	*****										
ADD HYD	2.42	**&*	**	.03457	75.63	3.201	1.73633	1.500	3.418		
*S ADD SUB-BASINS "1", "2", "U1" AND "K1", "K3", "PDN1", "K4", "ST11" AND "K2" +	*****										
ADD HYD	2.50	**&*	**	.13306	283.98	12.111	1.70659	1.500	3.335		
*S COMPUTE BASIN "3"	*****										
COMPUTE NM HYD	2.60	-	3	.01510	34.02	1.333	1.65533	1.500	3.520	PER IMP=	75.00
*S ADD SUB-BASINS "1", "2", "U1" AND "K1", "K3", "PDN1", "K4", "ST11" AND "3" +	*****										
ADD HYD	2.70	**& 3 14		.14816	318.00	13.444	1.70137	1.500	3.354		
*S COMPUTE BASIN "E1"	*****										
COMPUTE NM HYD	2.80	-	10	.01175	23.79	.863	1.37733	1.500	3.164	PER IMP=	50.00
*S ADD SUB-BASINS "E1", "1", "2", "3" AND "U1"	*****										
ADD HYD	2.90	10&14 15		.15991	341.79	14.307	1.67756	1.500	3.340		
*S COMPUTE BASIN "E2"	*****										
COMPUTE NM HYD	3.00	-	11	.05560	101.65	4.084	1.37733	1.500	2.857	PER IMP=	50.00
*S DIVIDE BASIN E2 TO ALLOW 5 CFS PER LOT TO THE CHAMISA STORM DRAIN //	*****										
DIVIDE HYD	999.00	11 99		.04277	45.00	3.142	1.37733	1.400	1.644		
	3.10	and 2		.01283	56.65	.943	1.37733	1.500	6.898		
*S ADD SUB-BASINS "E2", "E1", "1", "2", "3" AND "U1" +	*****										
ADD HYD	3.20	15& 2 16		.17274	398.44	15.250	1.65525	1.500	3.604		
*S COMPUTE BASIN "U2" (UNSER NORTH OF PDN)	*****										
COMPUTE NM HYD	3.30	-	20	.02420	44.99	2.343	1.81558	1.600	2.905	PER IMP=	90.00
*S ADD SUB-BASINS "E1", "E1", "1", "2", "3", "U1" AND "U2" +	*****										
ADD HYD	3.40	20&16 17		.19694	434.13	17.593	1.67495	1.500	3.444		
*S COMPUTE BASIN "F"	*****										
COMPUTE NM HYD	3.50	-	21	.00433	8.78	.318	1.37733	1.500	3.167	PER IMP=	50.00
*S ADD SUB-BASINS "E1", "E1", "1", "2", "3", "U1", "U2" AND "F" +	*****										
COMMAND											
ADD HYD	3.60	17&21 18		.20127	442.91	17.911	1.66855	1.500	3.438		
*S COMPUTE BASIN "11A"	*****										

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S	-----						
*S	*****						
*S	*****						
*S	COMPUTE BASIN "5"	*	*	*	*	*	*****
*S	COMPUTE NM HYD	5.10	-	50	.02753	63.12	2.508
*S	*****						
*S	COMPUTE BASIN "7"	*	*	*	*	*	*****
*S	COMPUTE NM HYD	5.70	-	80	.03540	76.53	3.225
*S	*****						
*S	ADD SUB-BASINS "5" AND "7"					*****	
*S	ADD HYD	5.80	80&50	44	.06293	139.65	5.733
*S	*****						
*S	COMPUTE BASIN "12B"	*	*	*	*	*	*****
*S	COMPUTE NM HYD	5.90	-	90	.01440	33.03	1.312
*S	*****						
*S	ADD SUB-BASINS "5", "7" AND "12B"					*****	
*S	ADD HYD	6.00	90&44	45	.07733	172.68	7.045
*S	*****						
*S	COMPUTE BASIN "PDN3"	*	*	*	*	*	*****
*S	COMPUTE NM HYD	6.10	-	**	.01509	29.75	1.461
*S	*****						
*S	ADD SUB-BASINS "5", "7", "12B" AND "PDN3"					*****	
*S	ADD HYD	6.20	**&45	46	.09242	198.77	8.506
*S	*****						
*S	ADD INTERNAL STREET TO PDN SUB-BASINS						
*S	COMPUTE BASIN "6A"	*	*	*	*	*	*****
*S	COMPUTE NM HYD	7.00	-	60	.01527	32.63	1.391
*S	*****						
*S	COMPUTE BASIN "6"	*	*	*	*	*	*****
*S	COMPUTE NM HYD	7.10	-	61	.03547	81.33	3.231
*S	*****						
*S	ADD SUB-BASINS "6" AND "6A"					*****	
*S	ADD HYD	7.20	60&61	50	.05074	113.96	4.622
*S	*****						
*S	COMPUTE BASIN "8"	*	*	*	*	*	*****
*S	COMPUTE NM HYD	7.30	-	62	.01980	45.40	1.804
*S	*****						
*S	ADD SUB-BASINS "6", "6A" AND "8"					*****	
*S	COMMAND	HYDROGRAPH ID NO.	FROM TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	CFS PER ACRE
*S	ADD HYD	7.40	50&62	51	.07054	159.36	6.426
*S	*****						
*S	COMPUTE BASIN "9"	*	*	*	*	*	*****
*S	COMPUTE NM HYD	7.50	-	63	.03156	72.36	2.875
*S	*****						
*S	ADD SUB-BASINS "6", "6A", "8" AND "9"					*****	
*S	ADD HYD	7.60	51&63	52	.10210	231.72	9.301
*S	*****						
*S	>>>						
*S	ROUTE SUB-BASINS THROUGH PIPE IN UPPER HALF	"STL">	>>>				
*S	ROUTE MCUNGE	7.51	52	1	.10210	227.67	9.302
*S	Page 4						
*S	CCODE = .2						

[illegible]

AHYMO.SUM										
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 = 7
*S	COMPUTE NM HYD	6.50	-	**	.06260	138.75	5.703	1.70813	1.500	3.463 PER IMP= 80.00
*S	ADD SUB-BASINS FROM PDN AND INTERNAL STREETS ++++++									
*S	STORM DRAIN SYSTEM IN PDN TO POND2 ++++++									
*S	ADD HYD	6.60	**&47	48	.22948	648.46	21.135	1.72684	1.550	4.415
*S	-----									
*S	REMAINDER OF SUB-BASINS IN INTERNAL STREET TO POND 2									
*S	COMPUTE BASIN "11B"	*****								
*S	COMPUTE NM HYD	8.50	-	68	.05527	112.99	5.035	1.70813	1.550	3.194 PER IMP= 80.00
*S	ADD REST OF DIVIDED FLOWS FROM INTERNAL STREETS TO 11B ++++++									
*S	ADD HYD	6.60	99&68	**	.20662	282.99	18.884	1.71362	1.550	2.140
*S	*****									
*S	COMPUTE BASIN "ST3"	*****								
*S	COMPUTE NM HYD	8.70	-	69	.00686	14.59	.664	1.81559	1.550	3.323 PER IMP= 90.00
*S	ADD SUB-BASINS "11B" AND "ST3" ++++++									
*S	ADD HYD	8.80	**&69	58	.21348	297.58	19.548	1.71689	1.550	2.178
*S	*****									
*S	COMPUTE BASIN "ST4"	*****								
*S	COMPUTE NM HYD	8.90	-	**	.00772	16.42	.748	1.81559	1.550	3.323 PER IMP= 90.00
*S	ADD SUB-BASINS "11B", "ST3" AND "ST4" ++++++									
*S	ADD HYD	9.00	58&59	**	.22120	314.00	20.295	1.72034	1.550	2.218
*S	*****									
*S	COMPUTE BASIN "11C"	*****								
*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	PAGE = 7
*S	COMPUTE NM HYD	9.10	-	71	.03317	76.05	3.022	1.70813	1.500	3.583 PER IMP= 80.00
*S	ADD SUB-BASINS "11B", "ST3", "ST4" AND "11C" ++++++									
*S	ADD HYD	9.20	71&59	60	.25437	387.34	23.317	1.71874	1.500	2.379
*S	*****									
*S	COMPUTE BASIN "A"	*****								
*S	COMPUTE NM HYD	9.30	-	72	.03509	61.13	2.578	1.37733	1.550	2.722 PER IMP= 50.00
*S	ADD SUB-BASINS NORTH OF PDN AND "A" ++++++									
*S	ADD HYD	9.40	72&48	73	.26457	709.60	23.712	1.68048	1.550	4.191
*S	*****									
*S	ADD ALL SUB-BASINS NORTH OF PDN, "A" AND SOUTH OF UNSER ++++++									
*S	DISCHARGING TO POND 2									
*S	ADD HYD	9.50	73&60	74	.51894	1090.17	47.029	1.69924	1.550	3.282
*S	*****									

[illegible]

COMPUTE NM HYD						P2A - 72	.10940		AHYMO.SUM	1.34596	1.600	2.163 PER IMP=	50.00
ADD STATE LAND OFFICE & HIGH SCHOOL						TR.HS 71&72 73	.14065		151.48	1.600	2.102		
ADD HYD									189.19				
**S ROUTE THROUGH PIPE IN UNIVERSE BLVD>>>>>>>>>>>>>>>>>>>>>>													
ROUTE MCUNGE						TRHS 73 74	.14065		176.34	1.23819	1.650	1.959 CCODE =	.2
S BASIN P3 (FUTURE SAD) FROM UNIVERSE STORM DRAIN STUDY***						P3 - 75	.05150		62.88	1.34596	1.700	1.908 PER IMP=	50.00
COMPUTE NM HYD													
**S ADD UNIVERSE SUB-BASINS TO BOCA NEGRA DAM>>>>>>>>>>>>>>>>>>>>>>						TR.HS 74&75 76	.19215		239.12	1.26707	1.650	1.944	
ADD HYD													
**S -----													
**S UNSER BLVD SOUTH OF THE GRANT LINE TO BOCA NEGRA DAM													
**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	147.15	6.617	1.39400	1.550	2.583 PER IMP=	50.00
S RECALL POND K DISCHARGE FROM THE TRAILS SUBDIVISION***													
**S RECALL HYD						TRAIL.POND - 70	1.01791	80.03	52.693	.97061	2.050	.123	
**S ADD POND K DISCHARGE FROM THE TRAILS SUBDIVISION>>>>>>>>>>>>>>>>>>>>>>													
COMMAND						FROM TO HYDROGRAPH ID ID IDENTIFICATION NO. NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = NOTATION
ADD HYD						TR.HS 10&70 12	1.10691	227.17	59.310	1.00465	1.550	.321	
**S SAD 228 WEST OF UNSER BLVD													
S COMPUTE SUB-BASIN M1 - WEST OF UNSER***													
COMPUTE NM HYD						10.20 - 13	.13800	232.23	10.260	1.39400	1.550	2.629 PER IMP=	50.00
**S ROUTE SUB-BASIN M1 THROUGH POND-3>>>>>>>>>>>>>>>>>>>>>>													
**S ROUTE RESERVOIR						POND3 13 **	.13800	98.25	10.260	1.39399	1.850	1.112 AC-FT=	4.456
**S													
**S ADD BASINS M1 AND TRAILS UNIT IV>>>>>>>>>>>>>>>>>>>>>>													
S ADD HYD						10.30 12& 14	1.24491	285.40	69.570	1.04781	1.600	.358	
S COMPUTE SUB-BASIN N1 - EAST OF UNSER***													
COMPUTE NM HYD						10.40 - 15	.08140	144.92	6.052	1.39400	1.550	2.782 PER IMP=	50.00
**S													
**S DIVIDE BASIN N1 FOR ALLOWABLE EXISTING FLOWS THROUGH LA CUENTISTA ////////////////													
DIVIDE HYD						10.50 15 9	.07173	90.00	5.333	1.39399	1.450	1.960	
						10.60 and 16	.00967	54.92	.719	1.39399	1.550	8.878	
**S ADD SUB-BASINS M1 AND N1(DIVIDED)>>>>>>>>>>>>>>>>>>>>>>													
**S ADD HYD						10.70 16&14 17	1.25457	330.48	70.288	1.05048	1.550	.412	

COMMAND	HYDROGRAPH IDENTIFICATION NO.	FROM ID	TO ID	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 10	NOTATION
*S COMPUTE SUB-BASIN N2 - EAST OF UNSER	10.80 - 18			.02460	50.47	1.829	1.39400	1.500	3.206	PER IMP=	50.00
COMPUTE NM HYD											
*S ADD SUB-BASINS "N1", "M1" AND N2	10.90 18&17 19			1.27917	375.01	72.117	1.05709	1.550	.458		
ADD HYD											
*S COMPUTE SUB-BASIN UNSER	11.10 - 20			.03190	48.80	2.372	1.39400	1.600	2.390	PER IMP=	50.00
COMPUTE NM HYD											
*S DIVIDE SUB BASIN UNSER- SEPARATE BYPASS FLOWS FROM BOCA NEGRA DAM	30.10 20 30			.02273	19.00	1.690	1.39398	1.450	1.306		
DIVIDE HYD	30.20 and 31			.00917	29.80	.681	1.39398	1.600	5.080		
*S ADD SUB-BASIN'S EAST AND WEST OF UNSER	11.20 31&19 21			1.28834	402.10	72.799	1.05948	1.550	.488		
ADD HYD											
*S COMPUTE SUB-BASIN M2-A - WEST OF UNSER	11.30 - 22			.11450	140.83	6.511	1.06618	1.600	1.922	PER IMP=	28.57
COMPUTE NM HYD											
*S ROUTE SUB-BASIN M2-A THROUGH POND-4											
ROUTE RESERVOIR	POND4 22 **			.11450	24.80	6.508	1.06573	2.200	.338	AC-FT=	4.263
*S COMPUTE SUB-BASIN M2-B - WEST OF UNSER	11.40 - 24			.02010	40.89	1.494	1.39400	1.500	3.179	PER IMP=	50.00
COMPUTE NM HYD											
*S ADD ALL UNSER BLVD SUB-BASINS TO BOCA NEGRA DAM	11.50 21&24 25			1.30844	438.65	74.293	1.06462	1.550	.524		
ADD HYD											
*S SAD 228 EAST OF UNSER BLVD											
*S COMPUTE SUB-BASIN M3 - EAST OF UNSER	11.70 - 26			.17930	300.48	13.330	1.39400	1.550	2.618	PER IMP=	50.00
COMPUTE NM HYD											
*S ROUTE SUB-BASIN M3 THROUGH POND-5											
ROUTE RESERVOIR	POND5 26 **			.17930	49.70	13.330	1.39399	2.150	.433	AC-FT=	8.441
*S ADD ROUTED FLOWS FROM PONDS 4 AND 5											
ADD HYD	11.80 **& 27			.29380	74.50	19.838	1.26606	2.200	.396		
*S ADD ROUTED FLOWS FROM POND-4, POND-5 AND 19											
UNSER BLVD BYPASS											

* PASEO DEL NORTE DRAINAGE ANALYSIS
 * WILSON & COMPANY PROJECT 08-400-104-00
 * DEVELOPED CONDITIONS MODEL
 * 100 YR 6 HR STORM EVENT
 * DATE: April 2010
 * FILE: X:\Public\PROJECTS\X3210022\Drainage Report\DOCS\AHYMO\PDN.WPD

*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=0.05 HR

*S
 *S
 *S -----
 *S SUB-BASINS NORTH AND WEST OF UNSER BLVD. TO POND 1,
 *S ULTIMATELY DISCHARGING 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 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=1.6 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
*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=201 HYD NO=1.7 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=201 CODE=1

*S
*S ADD SUB-BASINS "K1" AND "K3" ++++++

ADD HYD ID=202 HYD NO=1.8 ID I=200 ID II=201
PRINT HYD ID=202 CODE=1

*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=203 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=203 CODE=1

*S
*S ADD SUB-BASINS "K1", "K3" AND "PDN1" ++++++

ADD HYD ID=204 HYD NO=2.0 ID I=202 ID II=203
PRINT HYD ID=204 CODE=1

*S
*S ADD SUB-BASINS "1", "2", "U1" AND "K1", "K3" AND "PDN1" ++++++

ADD HYD ID=205 HYD NO=2.1 ID I=13 ID II=204
PRINT HYD ID=205 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=206 HYD NO=2.2 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=206 CODE=1

*S
*S COMPUTE BASIN "ST11" *****
*

COMPUTE LT TP LCODE=1 NK=2 ISLOPE=-1

```

                                PDN.WPD
LENGTH=400 FT  SLOPE=0.020  K=0.7
LENGTH=1730 FT  SLOPE=0.020  K=2.0

COMPUTE NM HYD  ID=207  HYD NO=2.3      DA=0.00908 SQ MI
PER A=0  PER B=10  PER C=0  PER D=90
TP=0.0  MASS RAIN=-1

PRINT HYD      ID=207  CODE=1

*S
*S ADD SUB-BASINS "K4" AND "ST11" ++++++

ADD HYD      ID=208  HYD NO=2.4      ID I=206      ID II=207
PRINT HYD    ID=208  CODE=1
*S
*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=209  HYD NO=2.41    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=209  CODE=1

*S
*S
*S ADD SUB-BASINS "K4","ST11" AND "K2" ++++++

ADD HYD      ID=210  HYD NO=2.42      ID I=208      ID II=209
PRINT HYD    ID=210  CODE=1
*S
*S
*S ADD SUB-BASINS "1", "2", "U1" AND "K1", "K3", "PDN1","K4","ST11" AND "K2" ++++++

ADD HYD      ID=211  HYD NO=2.5      ID I=210      ID II=205
PRINT HYD    ID=211  CODE=1

*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" AND "K1", "K3", "PDN1","K4", "ST11" AND "3"+++++

ADD HYD      ID=14  HYD NO=2.7      ID I=211      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=0.0556 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 DIVIDE BASIN E2 TO ALLOW 5 CFS PER LOT TO THE CHAMISA STORM DRAIN //////////////////////////////////
DIVIDE HYD      ID=11  Q=45      ID I=99 HYD=999
                ID II=2 HYD=3.1

PRINT HYD      ID=99  CODE=1
PRINT HYD      ID=2   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=2
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=0.0242 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
*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

```
ADD HYD      ID=19  HYD NO=3.8      ID I=18 ID II=22
PRINT HYD    ID=19  CODE=1
```

ROUTE	RESERVOIR	ID=220	HYD=POND1	INFLOW	ID=19	CODE=10
		OUTFLOW(CFS)	STORAGE	(AC-FT)	ELEV(FT)	
		0		0	5314	
		40		2.0	5316	
		60		4.0	5318	
		80		6.0	5320	
		100		8.0	5322	
		120		10.0	5324	

```
*S ROUTE BASINS TO API'S THROUGH THE LOOKUP TABLE
*S COMPUTE BASIN "F1" *****
*S
```

```

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

```

```
ADD HYD          ID=24    HYD NO=4.0      ID I=220      ID II=23
PRINT HYD        ID=24    CODE=1
```

```
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=24
DT=0.0 L=6500 FT NS=0 SLOPE=0.020
MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

```
*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

```

```
*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 BASINS FLOWING SOUTH OF PASEO DEL NORTE BLVD

*§

§ 3

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

*§

```

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 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

```
ADD HYD ID=15 HYD NO
PRINT HYD ID=43 CODE=1
```

5

*§

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

*S

```

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=5.4 ID I=60 ID II=43

```
ADD HYD ID=42 HYD RS
PRINT HYD ID=42 CODE=1
```

*S

*S

[illegible]

ROUTE	RESERVOIR	ID=421	HYD=POND9	INFLOW	ID=42	CODE=10
		OUTFLOW(CFS)	STORAGE(AC-FT)		ELEV(FT)	
		0		0	0	
		5		1	1	
		10		2	2	
		64		2.7	5	

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
*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=5.8      ID I=80 ID II=50
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 ADD SUB-BASINS "5", "7", "12B" AND "PDN3"+++++++
ADD HYD        ID=46  HYD NO=6.2      ID I=100      ID II=45
PRINT HYD      ID=46  CODE=1

```

*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 DIVERT 276 CFS TO PDN//////////////////////////////////////
DIVIDE HYD                 ID=55     Q=170       ID I=99 HYD=99.9
                              ID II=661         HYD=661.1

PRINT HYD                  ID=99     CODE=1
PRINT HYD                  ID=661    CODE=1
```

```
*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=661         ID II=67
PRINT HYD          ID=56   CODE=1

*S
*S
*S
*S ADD INTERNAL STREET SUB-BASINS TO PDN+++++++
ADD HYD            ID=57   HYD NO=8.41      ID I=56 ID II=46
PRINT HYD          ID=57   CODE=1

*S
*S
*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 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 "4A","5","PDN2","4B","7","12B","PDN3" AND "PDN4"+++++++
ADD HYD            ID=47   HYD NO=6.4       ID I=110        ID II=1
PRINT HYD          ID=47   CODE=1

*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 ADD SUB-BASINS FROM PDN AND INTERNAL STREETS ++++++
*S STORM DRAIN SYSTEM IN PDN TO POND2 ++++++
```

```

*S
ADD HYD          ID=48   HYD NO=6.6   ID I=120   ID II=47
PRINT HYD        ID=48   CODE=1
*S
*S -----
*S REMAINDER OF SUB-BASINS IN INTERNAL STREET TO POND 2
*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 REST OF DIVIDED FLOWS FROM INTERNAL STREETS TO 11B+++++++

ADD HYD          ID=681  HYD NO=6.6   ID I=99 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

```



```
ADD HYD          ID=76  HYD NO=9.8      ID I=1  ID II=75
PRINT HYD        ID=76  CODE=1
```

```

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

```

PRINT HYD ID=77 CODE=1

```
ADD HYD          ID=78  HYD NO=10.0    ID I=76 ID II=77
PRINT HYD        ID=78  CODE=1
```

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

```
*S
*S COMPUTE BASIN "G" *****
*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

PRINT HYD ID=28 CODE=1

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

```
PRINT HYD          ID=281  CODE=1
*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

PRINT HYD ID=79 CODE=1

```

PDN.WPD
*S ADD ALL SUB-BASINS TO "PDN6"++++++(AP-4)++++++
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 FROM AP-3 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
                   ID=50 CODE=5
PRINT HYD
*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=TRSL01 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
                   ID=72 CODE=5
PRINT HYD
*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 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 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
                                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 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*****
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

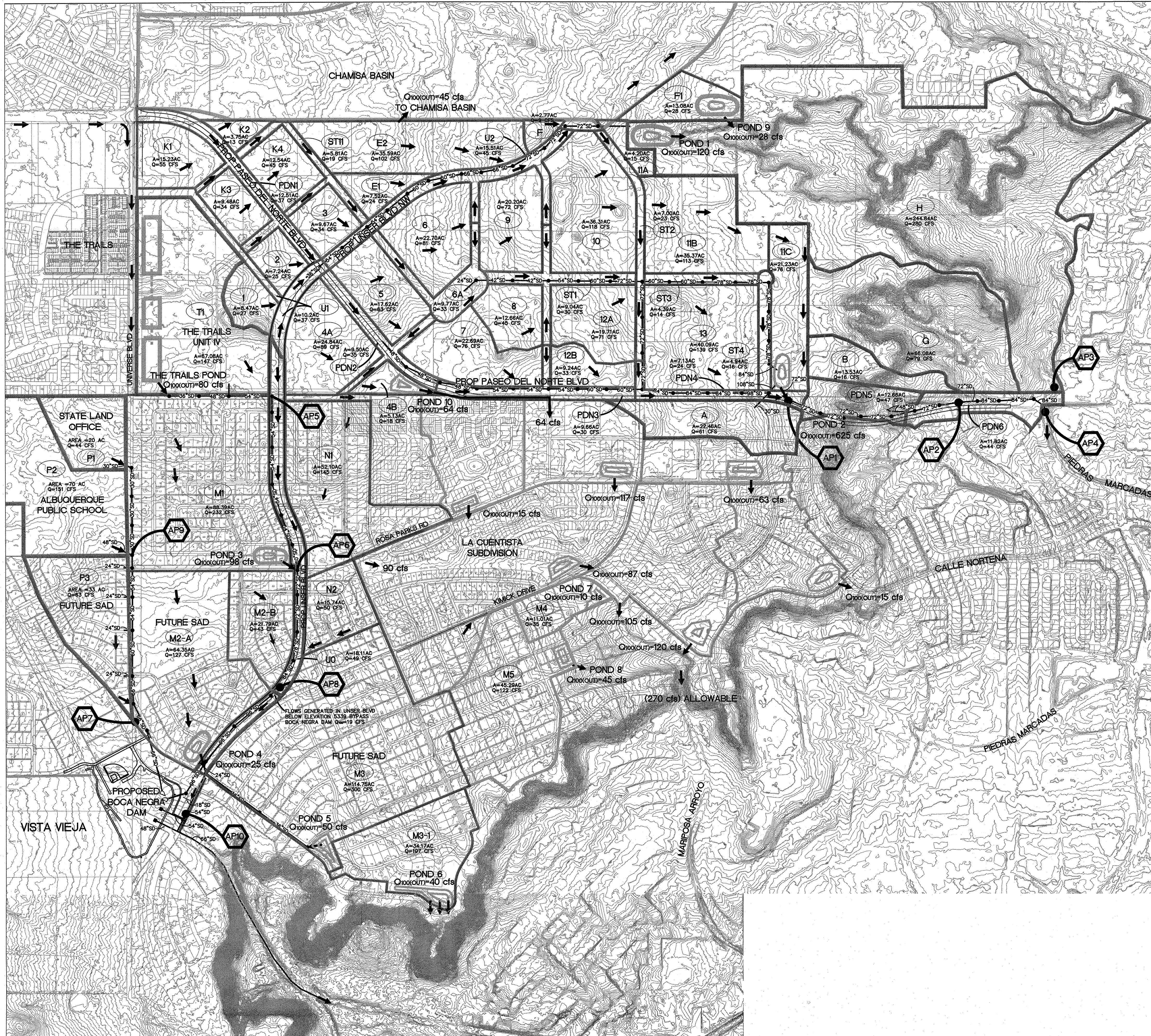
PRINT HYD            ID=30    CODE=1
PRINT HYD            ID=31    CODE=1
*S
*S ADD SUB-BASINS EAST AND WEST OF UNSER+++++
*S
ADD HYD              ID=21   HYD=11.2   ID I=31 II=19
PRINT HYD            ID=21   CODE=5
*S
*S
*S COMPUTE SUB-BASIN M2-A - WEST OF UNSER*****
COMPUTE LT TP        LCODE=1  NK=3   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-4>>>>>>>>>>>>>>>>>>>>>>>>>
*S
ROUTE RESERVOIR      ID=124   HYD=POND4      INFLOW ID=22 CODE=10
                     OUTFLOW (CFS) STORAGE (AC-FT) ELEV (FT)
                     0         0             0
                     3         1             1
                     16        2             2
                     18        3             3
                     25        4             4

```


APPENDIX B

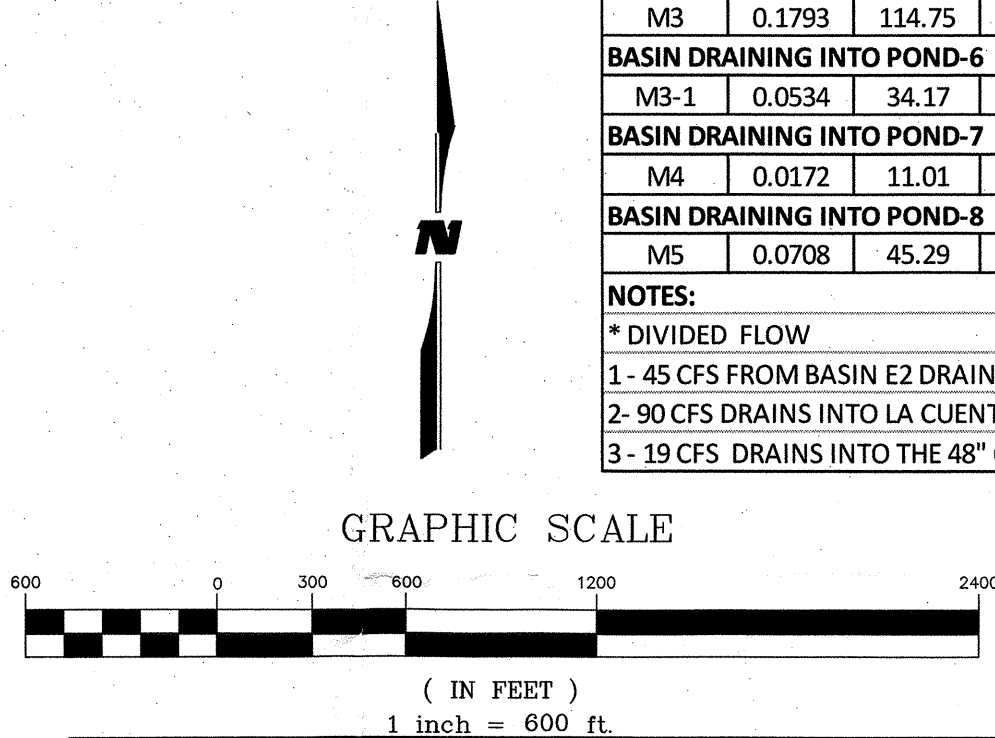


BASIN	AREA (SQ MI)	AREA (ACRE)	LAND TREATMENT (%)				Q ₁₀₀ (CFS)	VOL ₁₀₀ (AC-FT)
			A	B	C	D		
BASINS DRAINING INTO POND-1								
K1	0.0238	15.23	0	10	10	80	55	2.17
K3	0.0148	9.47	0	10	10	80	34	1.35
PDN1	0.0196	12.51	0	10	0	90	37	1.89
K4	0.0196	12.54	0	10	10	80	45	1.79
ST11	0.0091	5.81	0	10	0	90	19	0.88
1	0.0132	8.47	0	10	15	75	27	0.97
2	0.0113	7.23	0	10	15	75	25	1.00
U1	0.0158	10.14	0	10	0	90	38	1.53
K2	0.0059	3.78	0	10	10	80	13	0.54
3	0.0151	9.66	0	10	15	75	34	1.33
E1	0.0118	7.52	0	15	35	50	24	0.86
E2	0.0128	8.21	0	15	35	50	57	0.94
U2	0.0242	15.49	0	10	0	90	45	2.34
F	0.0035	2.23	0	15	35	50	7	0.26
11A	0.0066	4.20	0	10	10	80	15	0.60
BASINS DRAINING INTO POND-9								
4A	0.0388	24.83	0	10	10	80	89	3.54
4B	0.0080	5.12	0	10	10	80	18	0.73
PDN2	0.0148	9.50	0	10	0	90	35	1.43
BASINS DRAINING INTO POND-2								
5	0.0275	17.62	0	10	10	80	63	2.51
7	0.0354	22.66	0	10	10	80	77	3.23
12B	0.0144	9.22	0	10	10	80	33	1.31
PDN3	0.0187	11.97	0	10	0	90	30	1.46
PDN4	0.0111	7.13	0	10	0	90	24	1.08
13	0.0626	40.06	0	10	10	80	139	5.70
6	0.0355	22.70	0	10	10	80	81	3.23
6A	0.0153	9.77	0	10	10	80	33	1.39
8	0.0198	12.67	0	10	10	80	45	1.80
9	0.0316	20.20	0	10	10	80	72	2.88
12A	0.0308	19.71	0	10	10	80	71	2.81
10	0.0567	36.29	0	10	10	80	118	5.17
ST1	0.0141	9.04	0	10	0	90	30	1.37
ST2	0.0109	7.00	0	10	0	90	23	1.06
11B	0.0553	35.37	0	10	0	90	113	5.04
ST3	0.0069	4.39	0	10	0	90	15	0.66
ST4	0.0077	4.94	0	10	0	90	16	0.75
11C	0.0332	21.23	0	10	10	80	76	3.02
BASINS DRAINING INTO PIEDRAS MARCADAS								
A	0.0351	22.46	0	15	35	50	61	2.58
PDN5	0.0198	12.66	0	10	0	90	47	1.92
B	0.0211	13.53	100	0	0	0	16	0.45
G	0.1032	66.05	100	0	0	0	79	2.20
PDN6	0.0185	11.82	0	10	0	90	44	1.79
F1	0.0204	13.08	0	60	40	0	28	0.78
H	0.3826	244.84	100	0	0	0	280	8.16
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	151	7.85
P3	0.0515	32.96	0	25	25	50	63	3.70
UNSER BLVD								
T1	0.0890	56.96	0	10	40	50	147	6.62
M1	0.1381	88.38	0	10	40	50	232	10.26
N1	0.0097	6.19	0	10	40	50	145	6.05
N2	0.0246	15.74	0	10	40	50	50	1.83
U0	0.0233	14.91	0	10	40	50	49	2.37
M2-B	0.0201	21.79	0	10	40	50	41	1.49
BASIN DRAINING INTO BOCA NEGRA DAM OVERFLOW								
M2-A	0.1145	64.35	5	30	35	30	141	6.51
M3	0.1793	114.75	0	10	40	50	300	13.33
BASIN DRAINING INTO POND-6								
M3-1	0.0534	34.17	0	10	40	50	107	3.97
BASIN DRAINING INTO POND-7								
M4	0.0172	11.01	0	10	40	50	35	1.28
BASIN DRAINING INTO POND-8								
M5	0.0708	45.29	0	10	40	50	122	5.26
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								

ANALYSIS POINT	FLOW (CFS)
AP1	625
AP2	647
AP3	280
AP4	821
AP5	227
AP6	330
AP7	239
AP8	439
AP9	176
AP10	80

LEGEND

- BASIN ID
- BASIN BOUNDARY
- STORM DRAIN
- FLOW DIRECTION
- ANALYSIS POINT ID



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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

VOLCANO HEIGHTS
OVERALL DRAINAGE/CONCEPTUAL
STORM DRAIN LAYOUT PLAN

PLATE 1

