CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director

Mayor Timothy M. Keller

November 29, 2018

David Soule, P.E.
Rio Grande Engineering
PO Box 93924
Albuquerque, NM 87199

RE: **Sunset Gardens Apartments**
86th and Sunset Gardens SW
Grading Plan Stamp Date: 11/25/18
Drainage Report Stamp Date: 11/25/18
Hydrology File: L10D032

Dear Mr. Soule,

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Based on the submittal received on 11/26/18, the Grading Plan and Drainage Report are approved for Site Plan for Building Permit.

Prior to Grading/Building Permit (For Information):

1. This project requires an ESC Plan, submitted to the Stormwater Quality Engineer (Curtis Cherne PE, ccherne@cabq.gov or 924-3420).
2. Remove any “Conceptual” markings.
3. Provide sumps around the nyloplast inlets (Basin A & C) to generate the head required in Appendix C (Hydraulics).
4. Pipe capacity and profiles for public and private storm drain, calculated along the EGL, will be required prior to building permit or work order, whichever comes first.
5. Payment of the Fee in Lieu of managing the stormwater quality volume (Amount = 1608CF x $8/CF = $12,864, drainage report, Basin E-2) for the bypass volume must be made. Include a copy of the paid receipt when resubmitting.
6. Because the response to the initial application for this project indicated that Fee-in-Lieu of managing the stormwater quality volume can be accepted, the City will allow this option as presented. If you elect to make this application under the new ordinance (Council Bill C/S O-18-2) it must comply with § 14-5-2-6 (H). Applications made after 10/2/18 are otherwise required to comply with the new ordinance.

7. Additional comments may be provided at Building Permit, based on the outcome of the above remarks and level of detail shown on plans.

Prior to Certificate of Occupancy (For Information):

8. Engineer's Certification, per the DPM Chapter 22.7: *Engineer's Certification Checklist For Non-Subdivision* is required.

9. A Bernalillo County Recorded Private Facility Drainage Covenant is required for the stormwater quality pond. The original notarized form, exhibit A (legible on 8.5x11 paper), and recording fee ($25, payable to Bernalillo County) must be turned into DRC (4th, Plaza del Sol) for routing. Please contact Charlotte LaBadie (clabadie@cabq.gov, 924-3996) or Madeline Carruthers (mtafoya@cabq.gov, 924-3997) regarding the routing and recording process for covenants. The routing and recording process for covenants can take a month or longer; Hydrology recommends beginning this process as soon as possible as to not delay approval for certificate of occupancy.

10. City acceptance and close-out of the public Work Order will be required, unless financial guarantee has been posted.

If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

Dana Peterson, P.E.
Senior Engineer, Planning Dept.
Development Review Services

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Project Title: SUNSET GARDENS APTS Building Permit #: _____ Hydrology File #: L10D032

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: TRACT 52, UNIT 2 TOWN OF ATRISCO GRANT

City Address: SOUTH SIDE OF SUNSETGARDENS BETWEEN 82 AND 86

Applicant: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Other Contact: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924 ALB NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: david@riograndeengineering.com

TYPE OF DEVELOPMENT: ___ PLAT ___ RESIDENCE X DRB SITE ___ ADMIN SITE

Check all that Apply:

DEPARTMENT:

X HYDROLOGY/ DRAINAGE

___ TRAFFIC/ TRANSPORTATION

TYPE OF SUBMITTAL:

___ ENGINEER/ARCHITECT CERTIFICATION

___ PAD CERTIFICATION

X CONCEPTUAL G & D PLAN

___ GRADING PLAN

___ DRAINAGE REPORT

___ DRAINAGE MASTER PLAN

___ FLOODPLAIN DEVELOPMENT PERMIT APPLIC

___ ELEVATION CERTIFICATE

___ CLOMR/LOMR

___ TRAFFIC CIRCULATION LAYOUT (TCL)

___ TRAFFIC IMPACT STUDY (TIS)

___ STREET LIGHT LAYOUT

___ OTHER (SPECIFY) _____

___ PRE-DESIGN MEETING?

IS THIS A RESUBMITTAL?: X Yes ___ No

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

___ BUILDING PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY

___ PRELIMINARY PLAT APPROVAL

___ SITE PLAN FOR SUB'D APPROVAL

X SITE PLAN FOR BLDG. PERMIT APPROVAL

___ FINAL PLAT APPROVAL

___ SIA/ RELEASE OF FINANCIAL GUARANTEE

___ FOUNDATION PERMIT APPROVAL

___ GRADING PERMIT APPROVAL

___ SO-19 APPROVAL

___ PAVING PERMIT APPROVAL

___ GRADING/ PAD CERTIFICATION

___ WORK ORDER APPROVAL

___ CLOMR/LOMR

___ FLOODPLAIN DEVELOPMENT PERMIT

___ OTHER (SPECIFY) _____

DATE SUBMITTED: _____ By: _____

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director

Mayor Timothy M. Keller

November 16, 2018

David Soule, P.E.
Rio Grande Engineering
PO Box 93924
Albuquerque, NM 87199

RE: **Sunset Gardens Apartments**
86th and Sunset Gardens SW
Grading Plan Stamp Date: 11/1/18
Drainage Report Stamp Date: 11/12/18
Hydrology File: L10D032

Dear Mr. Soule,

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Based on the submittal received on 11/13/18, the Grading Plan and Drainage Report cannot be approved until the following are corrected:

Prior to Site Plan for Building Permit and Grading Permit:

1. Correct the following errors and typos in the Drainage Report:
   a. Purpose, Introduction, and Proposed Conditions. 82nd St is the correct boundary street, not 84th St. Get rid of any 84th St references. CORRECTED
   b. Proposed Conditions. Basin E1 and E2 are captured by a Double-D inlet, not Double-A. CORRECTED
2. Provide cross sections, one for each road/property line and at the points of maximum retainage. Include retaining walls and footers, property/ROW lines, existing and proposed grades, horizontal and vertical dimensions, and proposed ROW improvements such as: sidewalk, curb and gutter, and paving. The section provided is insufficient. ADDED, SECTIONS, THERE ARE NO RETAINAGE
3. For Hydrology, the cross sections must demonstrate that grading and wall construction near the property line will not endanger adjacent property or constrain its use (DPM Ch.22, section 5 part B). Any such encroachment by the retaining wall (including footer) or stable slope will be subject to the following: THERE IS NO ENCROACHMENTS
   a. Any private encroachment into the public ROW will require a revocable permit.
   b. Any private encroachment into a public easement will require an encroachment agreement.
   c. Any private encroachment into neighboring private property will require written and signed permission from both property owners.
4. For information. The cross sections should be included in the Site Plan as well. AKNOWLEDGED

Prior to Grading/Building Permit (For Information):

5. This project requires an ESC Plan, submitted to the Stormwater Quality Engineer (Curtis Cherne PE, ccherne@cabq.gov or 924-3420).

6. Remove any "Conceptual" markings.

7. Provide sumps around the nyloplast inlets (Basin A & C) to generate the head required in Appendix C (Hydraulics).

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14. City acceptance and close-out of the public Work Order will be required, unless financial guarantee has been posted.

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If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

Dana Peterson, P.E.
Senior Engineer, Planning Dept.
Development Review Services

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

DRAINAGE REPORT

For

SUNSET GARDENS APARTMENTS

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

SEPTEMBER 2018

11/25/18

David Soule P.E. No. 14522

TABLE OF CONTENTS

Appendix

Map

PURPOSE

The purpose of this report is to provide the Drainage Management Plan for the development of a 5.8 acre multi family project located on Sunset Gardens Road SW between 86th Street and 82nd Street SW. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines, and HYDROCAD. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

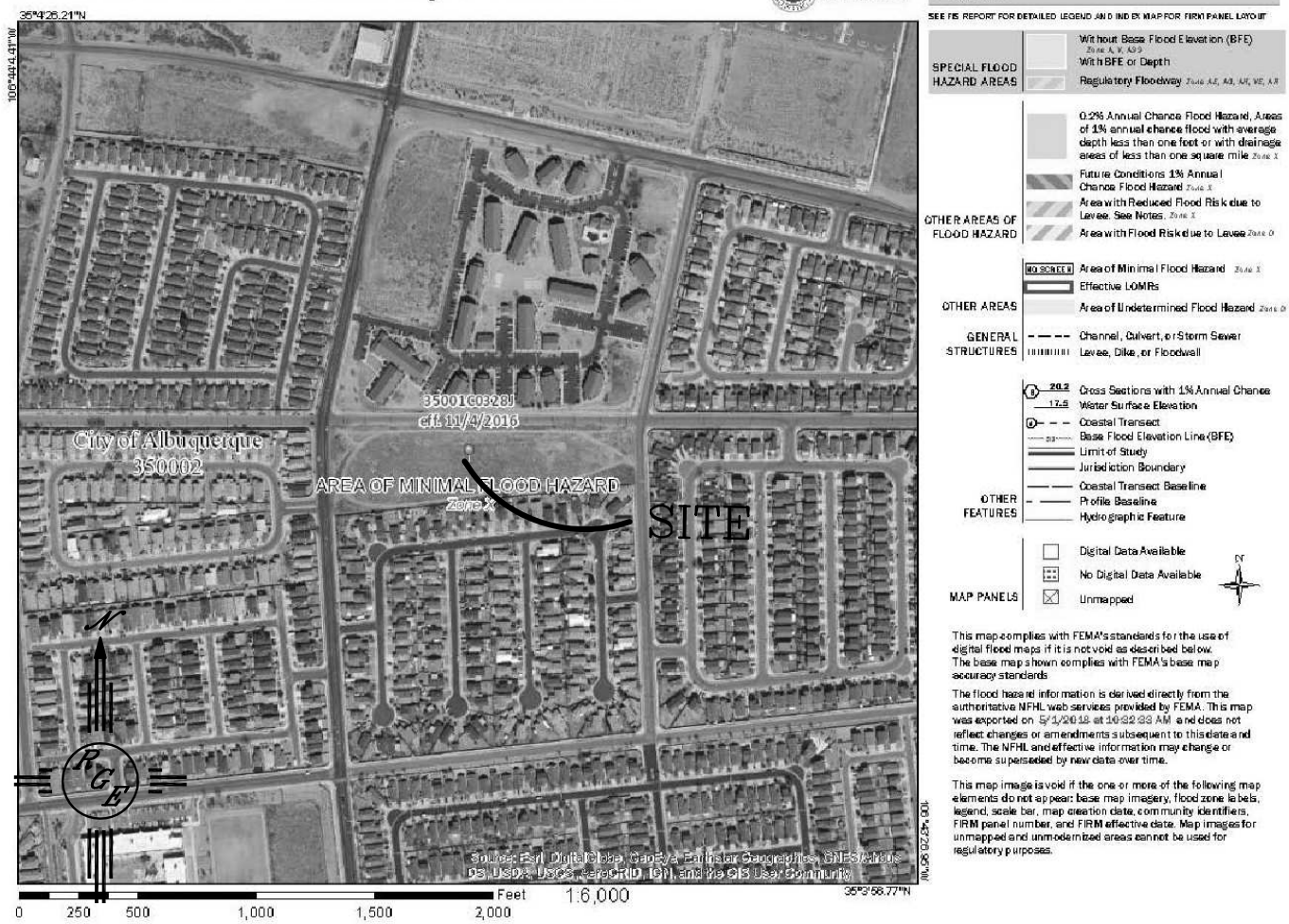
INTRODUCTION

The subject of this report, as shown on the Exhibit A, is a 5.8-acre parcel of land located on the south side of Sunset Gardens Road between 86th and 82nd streets SW. The legal description of this site is Tract 52, unit 2 Town of Atrisco Grant. As shown on FIRM map35001C0328J, the entire site is located within Flood Zone X. The site has not been developed but is surrounded by fully developed land. The site is in native condition. Due to the upstream construction, the site is not affected by any upland flow other than minor roadway flows adjacent to the site. The site free discharges to the east. The site is located within the Amole Del Norte drainage basin. The site is adjacent to a fully improved storm drain that accounted for the development of this site. The development of the site will require the site to discharge at a rate equal to or less than the fully developed conditions assumed (Basin U-24.63 cfs)for this site in the governing Valhalla drainage report L9/D19,which relevant excerpts can be found in appendix A.

EXISTING CONDITIONS

The site currently does not have structures on it but has been impacted by minor human foot and off road vehicle traffic over the years. The site is not impacted by major upland flows. The surrounding roadway shoulders to drain onto the site. The site currently discharges all of its flow to the East.

VICINITY MAP: L-09-Z



FIRM MAP:

PROPOSED CONDITIONS

The proposed improvements consist of a new multi family apartment complex with associated open space and paved parking areas. The lots shall drain from west to east and will be captured by inlets and conveyed to the existing 54" storm drain in Sunset Gardens.

The site consists of 5 onsite basins and one offsite. Basin A contains the southern portion of the site. This basin encompasses 1.02 acres and drains thru several first flush ponds and ultimately discharges 3.72 cfs to a 24" inlet and 18" storm drain that will connect to the existing drain in sunset gardens. Basin B consists of the south eastern .22 acres of the site. This portion of this site contains the rear portion of some buildings and landscape areas. This basin is below the proposed storm drain connection and will free discharge to 82th street. The construction of the western half of the street will include a singe A inlet that will capture this flow of 0.73 cfs in addition to the roadway flow. Basin C contains .41 acres consisting of the rear portion of several buildings and the landscape area. The flow of 1.33 cfs is captured by a single 24" inlet connected to the new storm drain that will be connected to the existing Sunset Gardens storm drain. Basin D contains .3 acres consisting of the rear portion of several buildings and the landscaping this basin will discharge 0.89 cfs to Sunset Gardens via a sidewalk culvert. The construction of a single A inlet near the intersection of 82th street will capture this flow as well as the flow from the south half of the road that will be constructed. Basin E1 and E2 contains the main portion of the site that encompasses the majority of the buildings and parking lot. This basin generates 15.11 cfs. The flow is captured by a Double D inlet located on the eastern portion of the parking lot. This inlet shall be connected to the existing storm drain in Sunset gardens by a new 24" storm drain. Basin E2 is the basin below the first flush pond.

Basin F contains the southern portion of sunset gardens and the western portion of 86ths that drains to Sunset Gardens. This basin generates 2.70 cfs. This flow is captured by a new single a inlet that drains to the existing storm drain. The site grading contains multiple 1' deep water

quality ponds that capture the required volume for all the basins except basin E2. Basin E2 will discharge 1608 cf which will require a $12,864 fee in lieu

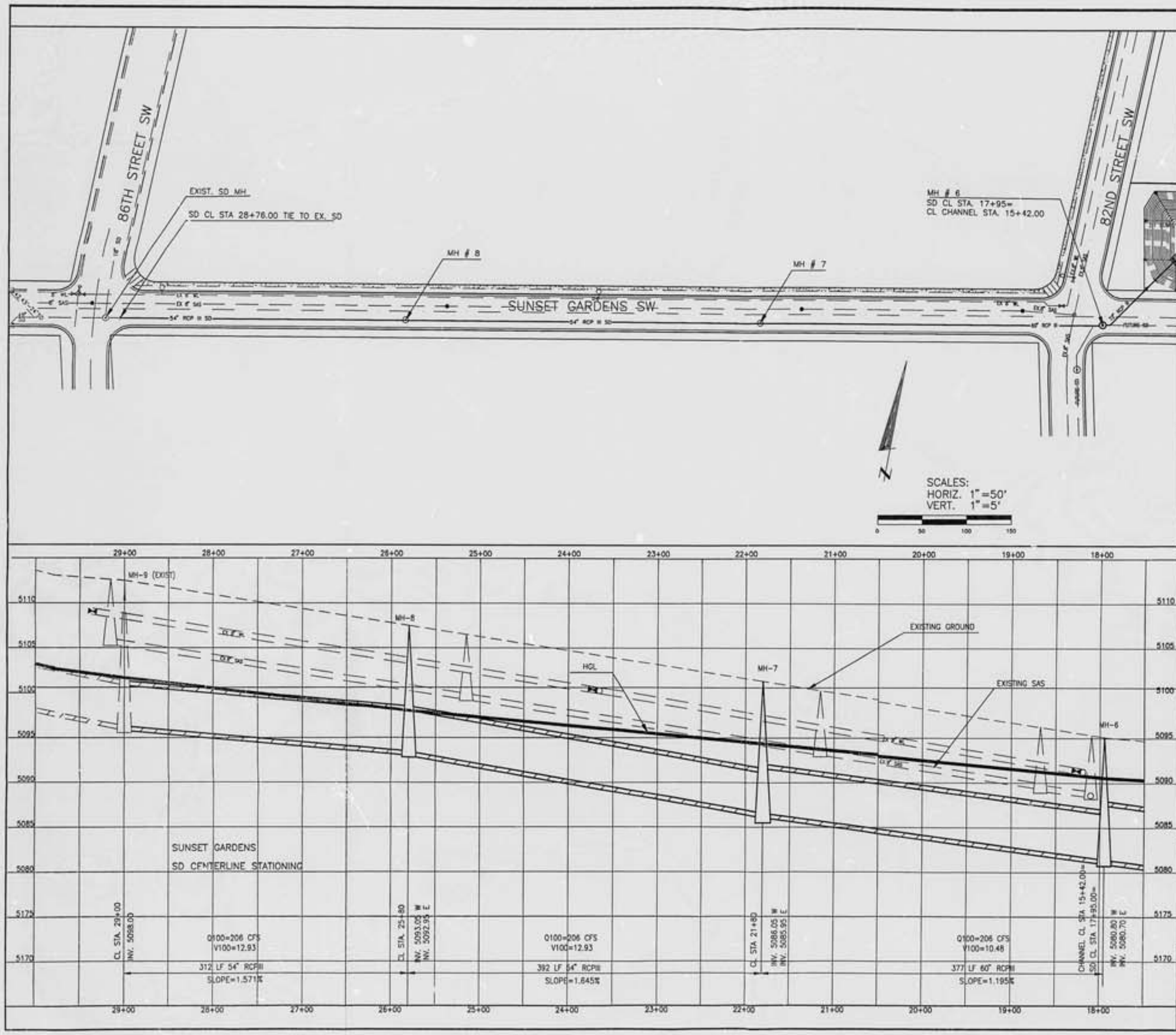
The Basin map and hydraulic calculations is located in appendix A. The pipe and inlet capacities are locate with appendix C. The total flow generated by this development will be 24.46 cfs, which is less than the fully developed assumption of 24.63 cfs for the storm drain.

SUMMARY AND RECOMMENDATIONS

This project is a development of multi family on the Southwest Mesa. The site is within the Amole Del Norte drainage basin. The site is adjacent to an existing 54” storm drain. The storm drain was designed to accept 24.63 cfs from this site. This site will discharge 24.46 cfs which is less than allowed. The site will manage its first flush requirement by shallow landscape ponds located around the site. The majority of first flush volume is retained onsite. A fee in lieu payment of $12,864 is required prior to building permit. This drainage plan and report conforms to the governing drainage regulations of the City. Since the effected area site encompasses more than 1 acre, a NPDES permit will be required prior to any construction activity. An Erosion and Sediment Control plan is required prior to grading permit.

APPENDIX A

Excerpts from relevant plans



LEGEND

DESCRIPTION
WATER VALVE
FIRE HYDRANT
SINGLE WATER SERVICE
DOUBLE WATER SERVICE
STREET LIGHT
STORM DRAIN MANHOLE
CATCH BASIN
SAS MANHOLE
SEWER SERVICE
WATER LINE
SEWER LINE
STORM DRAIN
PERMANENT PAVEMENT
TEMPORARY PAVEMENT
CB & GTR.
SIDEWALK

RYALS engineering & construction services
5301 Central, N.E. (505) 256-4701
Albuquerque, NM 87108 239-4726 mobile telephone

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE: VALHALLA ESTATES
STORM DRAIN PLAN AND PROFILE
CL STA.15+50-29+00

Design Review Committee | City Engineer Approval

City Project No. 584181 | Zone Map No. I-9/L-10 | Sheet 23 of 24

ENGINEER'S SEAL

NO. | DATE | REMARKS | BY
REVISIONS
DESIGN
DESIGNED BY RBR, HFB, CC | DATE
DRAWN BY HFB, CC | DATE
CHECKED BY | DATE

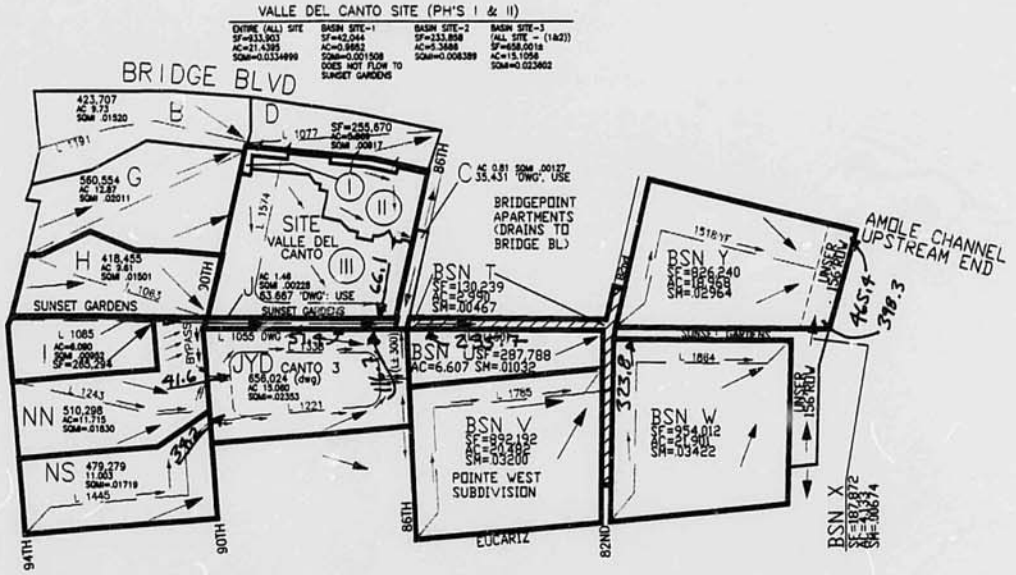
SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

BENCH MARKS
CITY OF ALBUQUERQUE SURVEY MONUMENT
ACS CAP "7-K9"
ELEV. = 5137.36

AS BUILT INFORMATION
CONTRACTOR
WORK STAKED BY
INSPECTOR'S ACCEPTANCE BY
FIELD VERIFICATION BY
DRAWINGS CORRECTED BY
DATE

MICRO-FILM INFORMATION
RECORDED BY
NO.
DATE

D 24 C 20 B 16 A 12 CITY OF ALBUQUERQUE C D



"FUTURE" BASINS FOR SUNSET/UNSER STORM SEWER

ALL BASINS IN FUTURE DEVELOPMENT CONDITION, INCLUDING Y. SG (SUNSET GARDENS) SD (STORM DRAIN) COMPLETE TO UNSER THEN NORTH TO AMOLE. NO FLOW FROM WEST OF 94th ST. SOUTH OF SG, 94th DRAINS SOUTH PER DESIGN BY ANDREWS, ASBURY, AND ROBERT. NORTH OF SG, 94TH DRAINS TO CENTRAL/BRIDGE (TIERRA BAYITA) SD PER GRADES APPROVED WITH MOBILE HOME PARK. SG SD COMPLETE TO UNSER THEN TO AMOLE. HIGH POINT IN 90th 1 LOT N OF EUCARIZ ASSUMED PER SAD 222 & TOWER/UNSER DMP. FLOW INTO WEST END OF ALLEY AT 90th TO BE HELD TO EXISTING CONDITIONS OR LESS. PROBABLY BY STORM DRAIN TO BRIDGE BLVD. FLOW FROM BASINS B, G, & D SHOWN FOR INFO ONLY: NO FLOW TO SG SD.

SELECTED 100 yr 6hr PEAK FLOWS SHOWN THUS XX.Y →

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 — RUN DATE (MON/DAY/YR) =11/05/1997

INPUT FILE = CSGIF00B.DAT — USER NO.= PERSEENG.194

PAGE = 1

100-YR 11-5-97
revised %'s NN & NS

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 FILE CSGIF00A.DAT: Canto / Sunset Gardens, Interim & Future conditions,										
*S (1)00-yr 6-hr storm, version A										
*S										
*S FOR INTERIM CONDITIONS, THE SUNSET GARDENS STORM DRAIN STOPS AT 82nd ST										
*S AND FLOW IS ROUTED IN AN EARTH CHANNEL THROUGH AN UNDEVELOPED BASIN Y										
*S TO THE HEAD OF THE AMOLE CHANNEL. SEE RECALLED HYD 314 AND HYD ____										
*S FOR FUTURE, THE SUNSET GARDENS STORM DRAIN CONTINUES TO UNSER THEN										
*S NORTH TO THE HEAD OF THE AMOLE CHANNEL. A FULLY DEVELOPED BASIN Y										
*S CONTRIBUTES TO THIS FLOW, AS DO BASINS V (POINTE WEST), W, & X.										
*S										
*S ALL BASINS --EXCEPT BASIN Y AS NOTED ABOVE-- ARE IN FUTURE FULLY-DEVELOPED										
*S CONDITONS BASED ON CURRENT ZONING & DEVELOPMENT, CURRENT DEVELOPMENT PLANS,										
*S AND ON ENGINEERING JUDGMENT.										
*S										
RAINFALL TYPE= 1										RAIN6= 2.220
COMPUTE NM HYD	I	-	1	.00952	18.64	.617	1.21467	1.500	3.059	PER IMP= 38.00
COMPUTE NM HYD	H	-	2	.01501	36.62	1.301	1.62555	1.500	3.812	PER IMP= 70.00
*S E PLUS H PLUS I AT SUNSET GARDENS & 90TH FOLLOWS										
ADD HYD	208.00	1& 2	3	.02453	55.25	1.918	1.46607	1.500	3.519	
*S DIVIDE SO 1ST 8.6 CFS (ID=6) S ON 90TH (ON HOLD): ID=4 E ON SUNSET GARDENS										
DIVIDE HYD	90.S.PAST.SG	3	6	.01052	8.60	.822	1.46607	1.333	1.278	
	SG.E.OF.90	AND	4	.01401	46.65	1.096	1.46607	1.500	5.202	
*S ROUTE MAIN FLOW EAST DOWN SG FROM 90TH, FOLLOW IT TO 86TH ST										
ROUTE MCUNGE	209.00	4	5	.01401	46.50	1.093	1.46262	1.567	5.185	CCODE = .2
COMPUTE NM HYD	J	-	1	.00228	5.97	.218	1.79112	1.500	4.093	PER IMP= 65.00
(1) ADD HYD SG AMOLE COMP	210.00	1& 5	3	.01629	51.44	1.311	1.50855	1.567	4.934	
*S CALC CONTRIBUTING PART OF CANTO SITE; THEN ADD TO HYD 210										
COMPUTE NM HYD	SITE.II	-	1	.00839	19.39	.685	1.53130	1.500	3.611	PER IMP= 65.00
*S PARTIAL WATERBLOCK ==> FLOW > 11.6cfs TO 86TH (ID=7, HOLD FOR LATER)										
DIVIDE HYD	S2.TO.S3	1	2	.00738	11.60	.602	1.53126	1.433	2.457	
	S2.TO.86TH	AND	7	.00101	7.79	.083	1.53126	1.500	12.008	
COMPUTE NM HYD	SITE.III	-	1	.02360	54.51	1.927	1.53130	1.500	3.609	PER IMP= 65.00
*S TOTAL FLOW LEAVING CANTO NORTH OF SUNSET GARDENS										
ADD HYD	SITE.OUT	1& 2	16	.03098	66.11	2.530	1.53128	1.500	3.335	
*S TOTAL FLOW SUNSET GARDENS WEST OF 86TH										
ADD HYD	SG.W.OF.86	3&16	5	.04727	115.19	3.841	1.52344	1.533	3.808	
COMPUTE NM HYD	C	-	1	.00127	3.43	.126	1.85607	1.500	4.219	PER IMP= 90.00
ADD HYD	218.00	1& 7	3	.00228	11.22	.208	1.71179	1.500	7.676	
*S COMBINED FLOW TO 86TH & SUNSET GARDENS FROM NORTH & WEST; HOLD FOR LATER										
ADD HYD	86&SG.N&W	3& 5	7	.04955	125.49	4.049	1.53212	1.533	3.957	
*S										
COMPUTE NM HYD	NN	-	1	.01830	32.97	1.099	1.12653	1.500	2.815	PER IMP= 36.40
*S ADD IN HYD 90.S.PAST.SG, ('HELD' SPILL SOUTH OF SUNSET GDNS INTERSECTION)										
ADD HYD	INTO.JYDN	1& 6	3	.02882	41.57	1.922	1.25044	1.500	2.254	
*S ROUTE NORTH PART OF OFFSITE THROUGH NORTH STREET IN JYD										
ROUTE MCUNGE	300.00	3	5	.02882	39.88	1.911	1.24326	1.600	2.162	CCODE = .1
COMPUTE NM HYD	NS	-	1	.01719	34.17	1.167	1.27301	1.500	3.106	~~PER IMP~~= 46.60
*S ROUTE SOUTH PART OF OFFSITE THROUGH SOUTH STREET IN JYD										
ROUTE MCUNGE	302.00	1	2	.01719	33.65	1.167	1.27335	1.567	3.059	CCODE = .2

BTR into JYD @ 90th = 41.57 + 34.17 = 75.74 was to 73.58 7/23/97
A = .03549 NN+NS (%D = 40.0, A = .03277)
%D = 41.34 N as a whole.

(1) Dry as 10 yr = 25.41 ± (see CSGIF10B.sum)
100 yr SPILL OVER THEN → 51.44 - 25.41 = 26.03

11-5-74 100 11-

'NEILE=CSGIFDOB.DAT

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 = 2
ADD HYD	304.00	2& 5	3	.04601	72.69	3.078	1.25449	1.600	2.469	
COMPUTE NM HYD	JYD	-	17	.02353	54.35	1.922	1.53130	1.500	3.609	PER IMP= 65.00
*S TOTAL FLOW LEAVING JYD (CANYO III), INCLUDING 86TH ST ROW EAST OF JYD										
ADD HYD	JYD.E.AT.86	3&17	4	.06954	116.71	5.000	1.34815	1.533	2.622	
*S ROUTE TO 86TH & SG INTERSECTION, ASSUME 48" PIPE W/ 1% FRICTION SLOPE										
ROUTE MCUNGE	86.S.OF.SG	4	5	.06954	116.55	4.998	1.34764	1.567	2.619	CCODE = .1
*S *AS IF* COMBINED FLOWS AT 86TH & SUNSET GARDENS: RETRIEVE 'ON-HOLD' ID=7										
ADD HYD	TOT.SG&86	5& 7	6	.11909	235.70	9.067	1.42440	1.533	3.092	
*S										
*S FUTURE/FULL DEVELOPMENT FUTURE/FULL DEVELOPMENT										
*S ROUTE 86TH TO 82ND IN SUNSET GARDENS: CONC PIPE; Sf=.01 APX										
ROUTE	308.00	6	5	.11909	234.12	9.047	1.42440	1.567	3.072	
COMPUTE NM HYD	T	-	1	.00467	12.22	.446	1.79111	1.500	4.087	PER IMP= 85.00
ADD HYD	310.00	1& 5	3	.12376	244.23	9.493	1.43823	1.567	3.083	
COMPUTE NM HYD	U	-	1	.01032	24.63	.879	1.59625	1.500	3.729	PER IMP= 70.00
ADD HYD	312.00	1& 3	19	.13408	264.83	10.372	1.45039	1.567	3.086	
COMPUTE NM HYD	V	-	11	.03200	66.62	2.281	1.33643	1.500	3.253	PER IMP= 50.00
ADD HYD	SG.AT.82ND	11&19	3	.16608	323.76	12.653	1.42843	1.533	3.046	
ROUTE	314.00	3	5	.16608	322.21	12.653	1.42844	1.567	3.031	
COMPUTE NM HYD	W	-	12	.03422	64.02	2.439	1.33643	1.533	2.923	PER IMP= 50.00
ADD HYD	316.00	12& 5	3	.20030	384.09	15.092	1.41271	1.567	2.996	
COMPUTE NM HYD	X	-	13	.00674	17.11	.620	1.72616	1.500	3.967	PER IMP= 80.00
ADD HYD	SG.AT.UNSER	13& 3	4	.20704	398.29	15.712	1.42292	1.567	3.006	
ROUTE	318.00	4	5	.20704	399.01	15.712	1.42292	1.567	3.011	
COMPUTE NM HYD	YD	-	14	.02964	78.24	2.855	1.80576	1.500	4.125	PER IMP= 85.00
*S TOTAL UNSER APX 300' S OF AMOLE CHANNEL AT BRIDGE: FUTURE/FULLY DEVELOPED										
ADD HYD	FUT.TO.AMOLE	14& 5	7	.23668	465.36	18.567	1.47086	1.533	3.072	
*S										
*S										
*S INTERIM INTERIM INTERIM										
*S INTERIM: RE-USE HYD 312 W/ ID=19, ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST										
ROUTE MCUNGE	502.00	19	5	.13408	260.04	10.374	1.45076	1.600	3.030	CCODE = .2
COMPUTE NM HYD	YE	-	15	.02964	26.19	.738	.46670	1.533	1.380	PER IMP= .00
*S										
ADD HYD	INT.2.AMOLE	15& 5	8	.16372	281.49	11.112	1.27260	1.600	2.686	
*S										
*S INTERIM W/ V (POINTE WEST) INTERIM W/ V (POINTE WEST)										
*S RE-USE HYD 312 W/ ID=19, HYD V W/ ID=11, & HYD YE W/ ID=15										
*S ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST										
ADD HYD	602.00	19&11	3	.16608	323.76	12.653	1.42843	1.533	3.046	
ROUTE MCUNGE	604.00	3	5	.16608	320.37	12.643	1.42737	1.600	3.014	CCODE = .2
ADD HYD	INT.V.2AMOLE	15& 3	98	.19572	349.94	13.390	1.28279	1.533	2.794	
*S										
*S										
*S ALLEY ALLEY ALLEY										
*S BASINS B, G, & SITE-I TO ALLEY. BASIN A NOT CONTRIBUTE INTERIM/FUTURE										
*S FUTURE/INTERIM ALLEY FLOWS FOR INFO ONLY; HOLD TO EXISTING CONDITIONS										
COMPUTE NM HYD	B	-	1	.01520	38.30	1.376	1.69764	1.500	3.937	PER IMP= 76.00
COMPUTE NM HYD	G	-	2	.01501	36.62	1.301	1.62555	1.500	3.812	PER IMP= 70.00
ADD HYD	TO.TOP.ALLEY	1& 2	3	.03021	74.92	2.677	1.66180	1.500	3.875	
COMPUTE NM HYD	SITE.I	-	1	.00151	3.50	.123	1.53130	1.500	3.624	PER IMP= 65.00
ADD HYD	BOT.ALLEY	1& 3	4	.03172	78.42	2.801	1.65558	1.500	3.863	
FINISH										

25×10 32×10

0000 0000 0803

ARVMO SUMMARY TABLE (ARVMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =11/05/1997
INPUT FILE = CSGIF10B.DAT USER NO.= PERSEENG.194

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 FILE CSGIF10A.DAT: Canto / Sunset Gardens, Interim & Future conditions,										PAGE = 1
*S 10-yr 6-hr storm, version A										
*S										
*S FOR INTERIM CONDITIONS, THE SUNSET GARDENS STORM DRAIN STOPS AT 82nd ST										
*S AND FLOW IS ROUTED IN AN EARTH CHANNEL THROUGH AN UNDEVELOPED BASIN Y										
*S TO THE HEAD OF THE AMOLE CHANNEL. SEE RECALLED HYD 314 AND HYD ____										
*S FOR FUTURE, THE SUNSET GARDENS STORM DRAIN CONTINUES TO UNSER THEN										
*S NORTH TO THE HEAD OF THE AMOLE CHANNEL. A FULLY DEVELOPED BASIN Y										
*S CONTRIBUTES TO THIS FLOW, AS DO BASINS V (POINTE WEST), W, & X.										
*S										
*S ALL BASINS --EXCEPT BASIN Y AS NOTED ABOVE-- ARE IN FUTURE FULLY-DEVELOPED										
*S CONDITONS BASED ON CURRENT ZONING & DEVELOPMENT, CURRENT DEVELOPMENT PLANS,										
*S AND ON ENGINEERING JUDGMENT.										
*S										
RAINFALL TYPE= 1										RAIN6= 1.480
COMPUTE NM HYD	I	-	1	.00952	9.84	.321	.63243	1.500	1.615	PER IMP= 38.00
COMPUTE NM HYD	H	-	2	.01501	21.94	.766	.95742	1.500	2.284	PER IMP= 70.00
*S E PLUS H PLUS I AT SUNSET GARDENS & 90TH FOLLOWS										
ADD HYD	208.00	1& 2	3	.02453	31.78	1.088	.83127	1.500	2.024	
*S DIVIDE SO 1ST 8.6 CFS (ID=6) S ON 90TH (ON HOLD): ID=4 E ON SUNSET GARDENS										
DIVIDE HYD	90.S.PAST.SG	3	6	.01508	8.60	.669	.83127	1.367	.891	
	SG.E.OF.90	AND	4	.00945	23.18	.419	.83127	1.500	3.835	
*S ROUTE MAIN FLOW EAST DOWN SG FROM 90TH, FOLLOW IT TO 86TH ST										
ROUTE MCUNGE	209.00	4	5	.00945	22.36	.419	.83156	1.567	3.698	CCODE = .2
COMPUTE NM HYD	J	-	1	.00228	3.71	.133	1.09340	1.500	2.541	PER IMP= 85.00
① ADD HYD SG ABOVE CANTO	210.00	1& 5	3	.01173	25.41	.552	.88241	1.567	3.386	
*S CALC CONTRIBUTING PART OF CANTO SITE; THEN ADD TO HYD 210										
COMPUTE NM HYD	SITE.II	-	1	.00839	11.35	.398	.88845	1.500	2.113	PER IMP= 65.00
*S PARTIAL WATERBLOCK ==> FLOW > 11.6cfs TO 86TH (ID=7, HOLD FOR LATER)										
DIVIDE HYD	S2.TO.S3	1	2	.00839	11.35	.398	.88841	1.500	2.113	
	S2.TO.86TH	AND	7	.00000	.00	.000	.00000	-.033	.000	
COMPUTE NM HYD	SITE.III	-	1	.02360	31.91	1.118	.88845	1.500	2.112	PER IMP= 65.00
*S TOTAL FLOW LEAVING CANTO NORTH OF SUNSET GARDENS										
ADD HYD	SITE.OUT	1& 2	16	.03199	43.26	1.516	.88843	1.500	2.113	
*S TOTAL FLOW SUNSET GARDENS WEST OF 86TH										
ADD HYD	SG.W.OF.86	3&16	5	.04372	66.30	2.068	.88681	1.533	2.370	
COMPUTE NM HYD	C	-	1	.00127	2.15	.078	1.14463	1.500	2.651	PER IMP= 90.00
ADD HYD	218.00	1& 7	3	.00127	2.15	.078	1.14442	1.500	2.651	
*S COMBINED FLOW TO 86TH & SUNSET GARDENS FROM NORTH & WEST; HOLD FOR LATER										
ADD HYD	86&SG.N&W	3& 5	7	.04499	68.35	2.145	.89409	1.533	2.374	
*S										
COMPUTE NM HYD	NN	-	1	.01830	19.79	.655	.67082	1.500	1.690	PER IMP= 42.00
*S ADD IN HYD 90.S.PAST.SG, ('HELD' SPILL SOUTH OF SUNSET GDNS INTERSECTION)										
ADD HYD	INTO.JYD	1& 6	3	.03338	28.39	1.323	.74331	1.500	1.329	
*S ROUTE NORTH PART OF OFFSITE THROUGH NORTH STREET IN JYD										
ROUTE MCUNGE	300.00	3	5	.03338	27.42	1.315	.73832	1.600	1.284	CCODE = .1
COMPUTE NM HYD	NS	-	1	.01719	20.10	.681	.74294	1.500	1.827	PER IMP= 49.80
*S ROUTE SOUTH PART OF OFFSITE THROUGH SOUTH STREET IN JYD										
ROUTE MCUNGE	302.00	1	2	.01719	19.12	.675	.73590	1.600	1.738	CCODE = .1

10 YR 11-5-97
REV. BAS 9's LAND
TREATS @ NN, NS

① APX PEAK HYD 10-YR @ ANY SPILLOVER FROM JYD

25×10 32×10

11-5-97 10-YR

INFILE= CSG-IP10B.DAT

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 = 2
ADD HYD	304.00	2& 5	3	.05057	46.55	1.989	.73748	1.600	1.438	
COMPUTE NM HYD	JYD	-	17	.02353	31.81	1.115	.88845	1.500	2.112	PER IMP= 65.00
*S TOTAL FLOW LEAVING JYD (CANYO III), INCLUDING 86TH ST ROW EAST OF JYD										
ADD HYD	JYD.E.AT.86	3&17	4	.07410	69.68	3.104	.78541	1.567	1.469	
*S ROUTE TO 86TH & SG INTERSECTION, ASSUME 48" PIPE W/ 1% FRICTION SLOPE										
ROUTE MCUNGE	86.S.OF.SG	4	5	.07410	69.40	3.104	.78533	1.600	1.463	CCODE = .2
*S *AS IF* COMBINED FLOWS AT 86TH & SUNSET GARDENS: RETRIEVE 'ON-HOLD' ID=7										
ADD HYD	TOT.SG&86	5& 7	6	.11909	135.38	5.249	.82641	1.533	1.776	
*S										
*S FUTURE/FULL DEVELOPMENT		FUTURE/FULL DEVELOPMENT								
*S ROUTE 86TH TO 82ND IN SUNSET GARDENS: CONC PIPE; Sf=.01 APX										
ROUTE	308.00	6	5	.11909	134.17	5.249	.82641	1.567	1.760	
COMPUTE NM HYD	T	-	1	.00467	7.59	.272	1.09340	1.500	2.538	PER IMP= 85.00
ADD HYD	310.00	1& 5	3	.12376	140.42	5.521	.83648	1.567	1.773	
COMPUTE NM HYD	U	-	1	.01032	14.66	.517	.93969	1.500	2.219	PER IMP= 70.00
ADD HYD	312.00	1& 3	19	.13408	152.60	6.038	.84442	1.567	1.778	
COMPUTE NM HYD	V	-	11	.03200	36.76	1.254	.73474	1.500	1.795	PER IMP= 50.00
ADD HYD	SG.AT.82ND	11&19	3	.16608	187.38	7.292	.82329	1.533	1.763	
ROUTE	314.00	3	5	.16608	186.17	7.292	.82329	1.567	1.752	
COMPUTE NM HYD	W	-	12	.03422	35.41	1.341	.73474	1.533	1.617	PER IMP= 50.00
ADD HYD	316.00	12& 5	3	.20030	220.23	8.633	.80816	1.567	1.718	
COMPUTE NM HYD	X	-	13	.00674	10.49	.375	1.04216	1.500	2.431	PER IMP= 80.00
ADD HYD	SG.AT.UNSER	13& 3	4	.20704	228.90	9.008	.81577	1.567	1.727	
ROUTE	318.00	4	5	.20704	230.04	9.008	.81577	1.567	1.736	
COMPUTE NM HYD	YD	-	14	.02964	48.72	1.742	1.10226	1.500	2.569	PER IMP= 85.00
*S TOTAL UNSER APX 300' S OF AMOLE CHANNEL AT BRIDGE: FUTURE/FULLY DEVELOPED										
ADD HYD	FUT.TO.AMOLE	14& 5	7	.23668	270.23	10.750	.85165	1.567	1.784	
*S										
*S										
*S INTERIM		INTERIM				INTERIM				
*S INTERIM: RE-USE HYD 312 W/ ID=19, ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST										
ROUTE MCUNGE	502.00	19	5	.13408	150.48	6.033	.84373	1.600	1.754	CCODE = .2
COMPUTE NM HYD	YE	-	15	.02964	5.10	.142	.08996	1.533	.269	PER IMP= .00
*S										
ADD HYD	INT.2.AMOLE	15& 5	8	.16372	154.77	6.175	.70726	1.600	1.477	
*S										
*S INTERIM W/ V (POINTE WEST)		INTERIM W/ V (POINTE WEST)								
*S RE-USE HYD 312 W/ ID=19, HYD V W/ ID=11, & HYD YE W/ ID=15										
*S ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST										
ADD HYD	602.00	19&11	3	.16608	187.38	7.292	.82329	1.533	1.763	
ROUTE MCUNGE	604.00	3	5	.16608	183.87	7.282	.82214	1.600	1.730	CCODE = .2
ADD HYD	INT.V.2AMOLE	15& 3	98	.19572	192.48	7.435	.71223	1.533	1.537	
*S										
*S										
*S ALLEY		ALLEY				ALLEY				
*S BASINS B, G, & SITE-I TO ALLEY. BASIN A NOT CONTRIBUTE INTERIM/FUTURE										
*S FUTURE/INTERIM ALLEY FLOWS FOR INFO ONLY; HOLD TO EXISTING CONDITIONS										
COMPUTE NM HYD	B	-	1	.01520	23.33	.823	1.01536	1.500	2.398	PER IMP= 76.00
COMPUTE NM HYD	G	-	2	.01501	21.94	.766	.95742	1.500	2.284	PER IMP= 70.00
ADD HYD	TO.TOP.ALLEY	1& 2	3	.03021	45.27	1.590	.98656	1.500	2.341	
COMPUTE NM HYD	SITE.I	-	1	.00151	2.05	.072	.88845	1.500	2.120	PER IMP= 65.00
ADD HYD	BOT.ALLEY	1& 3	4	.03172	47.32	1.661	.98188	1.500	2.331	
FINISH										

25×10 32×10

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   ARYMO PROGRAM (ARYMO194) - AMAFCA Hydrologic Model - January, 1994
        RUN DATE (MON/DAY/YR) = 11/05/1997
        START TIME (HR:MIN:SEC) = 12:36:46     USER NO.= PERSEENG.194
        INPUT FILE = CSGIF00B.DAT

* file (tg386) csgif00a.dat   10-15-96
*               FINISH CODES AT START = 027 038 107 050 083
*               0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
*               CONTROL CODES AT END = 0 0 0 0 0
*               0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* CONTROL CODES ABOVE FOR HP DESKJET 540 INKJET PRINTER, START IN COL 21
*
*C PRINT CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; 3,5,10,20 SIMILAR
*C RATING CURVE ID NEGATIVE => COMPUTE BUT NOT PRINT RATING CURVE
*C RATING CURVE n NEGATIVE => FLOODPLAIN SLOPE, n POSITIVE => CHANNEL SLOPE
*S FILE CSGIF00A.DAT: Canto / Sunset Gardens, Interim & Future conditions,
*S (1)00-yr 6-hr storm, version A
*S
*S FOR INTERIM CONDITIONS, THE SUNSET GARDENS STORM DRAIN STOPS AT 82nd ST
*S AND FLOW IS ROUTED IN AN EARTH CHANNEL THROUGH AN UNDEVELOPED BASIN Y
*S TO THE HEAD OF THE AMOLE CHANNEL. SEE RECALLED HYD 314 AND HYD ____
*C
*C FOR INTERIM, FLOW AT 82nd & SUNSET GARDENS --PRIOR TO THE ADDITION OF FLOW
*C BASIN V (POINTE WEST SUBDV)-- IS SAVED FOR LATER RECALL AND ROUTING.
*C THE HYDS DIRECTLY FOLLOWING THE UNSAVED HYD 314 DON'T APPLY TO INTERIM
*C
*S FOR FUTURE, THE SUNSET GARDENS STORM DRAIN CONTINUES TO UNSER THEH
*S NORTH TO THE HEAD OF THE AMOLE CHANNEL. A FULLY DEVELOPED BASIN Y
*S CONTRIBUTES TO THIS FLOW, AS DO BASINS V (POINTE WEST), W, & X.
*S
*S ALL BASINS --EXCEPT BASIN Y AS NOTED ABOVE-- ARE IN FUTURE FULLY-DEVELOPED
*S CONDITONS BASED ON CURRENT ZONING & DEVELOPMENT, CURRENT DEVELOPMENT PLANS,
*S AND ON ENGINEERING JUDGMENT.
*S
*C BASIN & CHANNEL ROUTING PARAMETERS REFLECT THE JUDGMENT OF THE ENGINEER,
*C AND MAY DIFFER FROM OTHER STUDIES IN THE AREA.
*C
*C REVISION NOTES: BASED ON FILES WCF4100 & SGU100.DAT BY TUCKER GREEN P.E.
*C               REVISED 10-15-97 TO REFLECT NEW BASIN BOUNDARIES BASED ON
*C               DISCUSSION WITH THE CITY, THE ENGINEERS FOR SAD 222, AND
*C               DEVELOPERS OF NEARBY PROPERTIES, ESPECIALLY BASINS V & W.
*C               IN PARTICULAR: (1) BASIN M (S OF SUNSET GARDENS, BETWEEN
*C               94TH & 98TH) IS REMOVED FROM INTERIM & FUTURE CONDTION CASES
*C               BY PROPOSED CONSTRUCTION OF 94TH ST; AND (2) THE HIGH POINT
*C               IN 86 ST IS MOVED NORTH TO THE SOUTH PROPERTY LINE OF THE
*C               CANTO III SITE (BASIN JYD).
*C
*************************************************************************
* RAINFALLS PER ALBUQUERQUE NM DPM - COMMENT OUT THOSE THAT DON'T APPLY
* TYPE 1 IS 6-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C5)
*    FOR 6-HR USE DT = 0.033333 HR = 2 MINUTES
* TYPE 2 IS 24-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C6)
*    FOR 24-HR USE DT = 0.0500 HR = 5 MINUTES
* RAIN QUARTER = 0.0 EXCEPT FOR TYPE 3 (6-HR PMP: SEE ARYMO MANUAL)
*
*************************************************************************
*                    RAINFALL AMOUNTS, INCHES
* RAINFALL          HUNDRED  TYPE= 2  RAIN QUARTER= 0.0   RAIN ONE= 2.23
*                   RAIN SIX= 2.95   RAIN DAY= 3.76   DT= .033333 HR
RAINFALL           HUNDRED  TYPE= 1    0.0   1.90   2.22   2.67   0.033333

            COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
            DT =   .033333 HOURS       END TIME =     5.999940 HOURS
               .0000   .0015   .0030   .0046   .0062   .0079   .0096
               .0113   .0130   .0149   .0167   .0186   .0206   .0226
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25×10 32×10

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                .0246  .0268  .0290  .0312  .0336  .0360  .0385
                .0411  .0438  .0466  .0496  .0526  .0558  .0592
                .0627  .0665  .0704  .0757  .0813  .0873  .1002
                .1291  .1735  .2373  .3244  .4388  .5847  .7664
                .9881 1.1931 1.2789 1.3514 1.4159 1.4745 1.5285
               1.5786 1.6255 1.6694 1.7107 1.7497 1.7865 1.8214
               1.8544 1.8857 1.9154 1.9436 1.9704 1.9765 1.9822
               1.9876 1.9928 1.9977 2.0025 2.0070 2.0114 2.0156
               2.0196 2.0235 2.0273 2.0310 2.0346 2.0381 2.0415
               2.0448 2.0480 2.0511 2.0542 2.0571 2.0601 2.0629
               2.0657 2.0685 2.0712 2.0738 2.0764 2.0789 2.0814
               2.0839 2.0863 2.0887 2.0910 2.0933 2.0955 2.0978
               2.0999 2.1021 2.1042 2.1063 2.1084 2.1104 2.1124
               2.1144 2.1164 2.1183 2.1202 2.1221 2.1240 2.1258
               2.1277 2.1295 2.1312 2.1330 2.1347 2.1365 2.1382
               2.1399 2.1415 2.1432 2.1448 2.1464 2.1480 2.1496
               2.1512 2.1527 2.1543 2.1558 2.1573 2.1588 2.1603
               2.1618 2.1633 2.1647 2.1661 2.1676 2.1690 2.1704
               2.1718 2.1732 2.1745 2.1759 2.1772 2.1786 2.1799
               2.1812 2.1825 2.1838 2.1851 2.1864 2.1876 2.1889
               2.1902 2.1914 2.1926 2.1939 2.1951 2.1963 2.1975
               2.1987 2.1999 2.2010 2.2022 2.2034 2.2045 2.2057
               2.2068 2.2080 2.2091 2.2102 2.2113 2.2124 2.2135
               2.2146 2.2157 2.2168 2.2179 2.2189 2.2200

* RAINFALL          TENYEAR  TYPE= 1   0.0   1.23   1.48   1.78   0.033333
*
**************************************************************************
**************************************************************************
COMPUTE NM HYD      ID= 1    HYD= 1            DA=0.00952  SQ MI
                    PER A= 12     B= 26     C= 24     D= 38
                    TP= -0.13333 HRS   RAIN= -1

   K =  .072665HR    TP =  .133330HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =  14.279    CFS   UNIT VOLUME =  .9985       B =  526.28      P60 = 1.9000
   AREA =     .003618 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333


   K =  .127510HR    TP =  .133330HR    K/TP RATIO =  .956348     SHAPE CONSTANT, N =  3.695043
   UNIT PEAK =  14.799    CFS   UNIT VOLUME =  .9993       B =  334.30      P60 = 1.9000
   AREA =     .005902 SQ MI    IA =    .47097 INCHES    INF =   1.16871 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

PRINT HYD           ID= 1   CODE= 1

                                  HYDROGRAPH FROM AREA 1


   RUNOFF VOLUME =     1.21467 INCHES     =       .6167 ACRE-FEET
   PEAK DISCHARGE RATE =     18.64 CFS  AT   1.500 HOURS   BASIN AREA =   .0095 SQ. MI.


*
**************************************************************************
COMPUTE NM HYD      ID= 2    HYD= 2            DA=0.01501  SQ MI
                    PER A= 0      B= 20     C= 10     D= 70
                    TP= -0.13333 HRS   RAIN= -1

   K =  .072665HR    TP =  .133330HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =  41.473    CFS   UNIT VOLUME =  .9991       B =  526.28      P60 = 1.9000
   AREA =     .010507 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333
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```
    K =  .122603HR    TP =  .133330HR    K/TP RATIO =  .919546    SHAPE CONSTANT, N =  3.849372
    UNIT PEAK =  11.652    CFS   UNIT VOLUME =  .9992      B =  345.00      P60 = 1.9000
    AREA =      .004503 SQ MI    IA =  .45000 INCHES    INF =  1.11000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

PRINT HYD          ID= 2   CODE= 1

                                   HYDROGRAPH FROM AREA H

    RUNOFF VOLUME =    1.62555 INCHES     =       1.3013 ACRE-FEET
    PEAK DISCHARGE RATE =      36.62 CFS  AT   1.500 HOURS   BASIN AREA =   .0150 SQ. MI.


*
*************************************************************************
*S E PLUS H PLUS I AT SUNSET GARDENS & 90TH FOLLOWS
ADD HYD            ID OUT= 3   HYD= 208          IDIN I= 1   IDIN II= 2
PRINT HYD          ID= 3   CODE= 1

                                PARTIAL HYDROGRAPH   208.00

    RUNOFF VOLUME =    1.46607 INCHES     =       1.9180 ACRE-FEET
    PEAK DISCHARGE RATE =      55.25 CFS  AT   1.500 HOURS   BASIN AREA =   .0245 SQ. MI.


*
*************************************************************************
*S DIVIDE SO 1ST 8.6 CFS (ID=6) S ON 90TH (ON HOLD): ID=4 E ON SUNSET GARDENS
DIVIDE HYD         ID=3  Q=8.6 ID=6 HYD= 90.S.PAST.SG  ID=4 HYD= SG.E.OF.90
PRINT HYD          ID= 4   CODE= 1

                                   HYDROGRAPH FROM AREA SG.E.OF.90

    RUNOFF VOLUME =    1.46607 INCHES     =       1.0956 ACRE-FEET
    PEAK DISCHARGE RATE =      46.65 CFS  AT   1.500 HOURS   BASIN AREA =   .0140 SQ. MI.


PRINT HYD          ID= 6   CODE= 1

                                   HYDROGRAPH FROM AREA 90.S.PAST.SG

    RUNOFF VOLUME =    1.46607 INCHES     =        .8224 ACRE-FEET
    PEAK DISCHARGE RATE =       8.60 CFS  AT   1.333 HOURS   BASIN AREA =   .0105 SQ. MI.


*
*************************************************************************
*S ROUTE MAIN FLOW EAST DOWN SG FROM 90TH, FOLLOW IT TO 86TH ST
*C APPROX AS 40' F-F STREET, ASSUME APX 2.35% SLOPE
*C ASSUME AS IF BOTH SIDES PAVED, EST n AS .017
COMPUTE RATING CURVE CID= -1   VS NO= 1    NO SEGS FOR MANNING n= 1
                   ELMIN= 0 ELMAX= 4  FT  CRSLP= .0235  FPSLP= .0235  FT/FT
                   n .017  DIST 40
                   DIST  ELEV     DIST  ELEV    DIST  ELEV    DIST  ELEV
                   0      4       .01   0      20     .40    39.99    0
                   40     4
ROUTE MCUNGE       ID= 5   HYD= 209         INFLOW HYD ID= 4   DT= 0.0 HR
                   LENGTH= 1055     NSUBRCH= 0     SLOPE= .0235
```

```
                MATCODE= 0      REGCODE= 0     CCODE= 0
     Inflow ID end= 63   Max Number=600

     dt = .0333 hr   q0 =    23.33 cfs   ck0 =  5.46 fps
     nlen =  4   dlen =  263.75

     Depth  Area      Q     Qbar   ck     b     C    D     c1    c2   vel   fr    tt
       ft    sf     cfs     cfs   fps     ft                          fps         hr
      .00     .0      .0     3.3  2.95  10.5 1.34  .02   .99   .15  2.95 1.60  .099
      .21    2.2     6.5    24.6  5.46  30.5 2.48  .02   .99   .43  4.45 1.84  .066
      .42    8.8    42.7    86.0 10.29  40.0 4.68  .03   .99   .65  6.59 2.03  .044
      .63   17.3   129.3   189.2 14.23  40.0 6.47  .05   .99   .73  8.81 2.12  .033
      .84   25.7   249.1   323.0 17.56  40.0 7.99  .07   .98   .78 10.81 2.20  .027
     1.05   34.1   396.9   483.2 20.51  40.0 9.33  .10   .98   .81 12.62 2.27  .023
     1.26   42.5   569.6   667.1 23.18  40.010.54  .12   .98   .83 14.28 2.33  .021
     1.47   50.9   764.7   872.5 25.62  40.011.66  .14   .98   .84 15.82 2.37  .019
     1.68   59.3   980.4  1097.7 27.88  40.012.69  .16   .98   .86 17.27 2.41  .017
     1.89   67.8  1215.1  1341.3 29.99  40.013.64  .18   .98   .87 18.64 2.45  .016
     2.11   76.2  1467.6  1602.1 31.97  40.014.54  .20   .97   .87 19.93 2.48  .015
     2.32   84.6  1736.7  1879.1 33.83  40.015.39  .22   .97   .88 21.16 2.50  .014
     2.53   93.0  2021.5  2171.3 35.59  40.016.19  .25   .97   .89 22.33 2.52  .013
     2.74  101.4  2321.1  2478.0 37.25  40.016.95  .27   .97   .89 23.45 2.54  .012
     2.95  109.9  2634.8  2798.3 38.84  40.017.67  .29   .97   .89 24.53 2.56  .012
     3.16  118.3  2961.8  3131.6 40.34  40.018.36  .31   .97   .90 25.57 2.57  .011
     3.37  126.7  3301.5  3477.4 41.78  40.019.01  .34   .97   .90 26.56 2.59  .011
     3.58  135.1  3653.3  3835.0 43.16  40.019.63  .36   .97   .90 27.52 2.60  .011
     3.79  143.5  4016.7  4204.0 44.47  40.020.23  .38   .96   .91 28.45 2.61  .010
     4.00  152.0  4391.2     .0   .00    .0  .00  .00   .00   .00   .00  .00  .000
    nlen= 4   Outflow ID end=  0
   Route using Ponce procedure:  C1 > 0
PRINT HYD           ID= 5   CODE= 1

                              PARTIAL HYDROGRAPH   209.00

   RUNOFF VOLUME =    1.46262 INCHES     =      1.0931 ACRE-FEET
   PEAK DISCHARGE RATE =     46.50 CFS  AT   1.567 HOURS   BASIN AREA =   .0140 SQ. MI.


*
**********************************************************************
COMPUTE NM HYD      ID= 1    HYD= J              DA=0.00228 SQ MI
                    PER A= 0      B= 15      C= 0       D= 85
                    TP= -0.13333 HRS   RAIN= -1

   K =  .072665HR    TP =  .133330HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =  7.6496    CFS   UNIT VOLUME =    .9978       B =   526.28      P60 = 1.9000
   AREA =     .001938 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =  .130790HR    TP =  .133330HR    K/TP RATIO =  .980950     SHAPE CONSTANT, N =  3.599935
   UNIT PEAK =  .84019    CFS   UNIT VOLUME =    .9837       B =   327.55      P60 = 1.9000
   AREA =     .000342 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 1   CODE= 1

                              HYDROGRAPH FROM AREA J

   RUNOFF VOLUME =    1.79112 INCHES     =       .2178 ACRE-FEET
   PEAK DISCHARGE RATE =      5.97 CFS  AT   1.500 HOURS   BASIN AREA =   .0023 SQ. MI.
```

```
*
*****************************************************************
ADD HYD             ID OUT= 3  HYD= 210          IDIN I= 1   IDIN II= 5
PRINT HYD           ID= 3   CODE= 1

                              PARTIAL HYDROGRAPH   210.00

    RUNOFF VOLUME =     1.50855 INCHES     =       1.3108 ACRE-FEET
    PEAK DISCHARGE RATE =      51.44 CFS  AT   1.567 HOURS   BASIN AREA =   .0163 SQ. MI.


*
*****************************************************************
*S CALC CONTRIBUTING PART OF CANTO SITE; THEN ADD TO HYD 210
COMPUTE NM HYD      ID= 1   HYD=SITE.II        DA=0.00839 SQ MI
                    PER A= 0      B= 35      C= 0       D= 65
                    TP= -0.13333 HRS   RAIN= -1

    K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106620
    UNIT PEAK =   21.526    CFS   UNIT VOLUME =    .9988       B =   526.28      P60 = 1.9000
    AREA =      .005454 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130790HR    TP =   .133330HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599935
    UNIT PEAK =   7.2141    CFS   UNIT VOLUME =    .9985       B =   327.55      P60 = 1.9000
    AREA =      .002937 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 1   CODE= 5

                              HYDROGRAPH FROM AREA SITE.II

   TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW
    HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS
   .000       .0       1.500     19.4       3.000       .2       4.500       .1       6.000       .1
   .167       .0       1.667     10.0       3.167       .2       4.667       .1       6.167       .0
   .333       .0       1.833      5.9       3.333       .1       4.833       .1       6.333       .0
   .500       .0       2.000      4.2       3.500       .1       5.000       .1       6.500       .0
   .667       .0       2.167      2.0       3.667       .1       5.167       .1       6.667       .0
   .833       .0       2.333       .9       3.833       .1       5.333       .1       6.833       .0
  1.000       .0       2.500       .6       4.000       .1       5.500       .1
  1.167       .0       2.667       .4       4.167       .1       5.667       .1
  1.333      4.8       2.833       .3       4.333       .1       5.833       .1

    RUNOFF VOLUME =     1.53130 INCHES     =       .6852 ACRE-FEET
    PEAK DISCHARGE RATE =      19.39 CFS  AT   1.500 HOURS   BASIN AREA =   .0084 SQ. MI.


*
*****************************************************************
*S PARTIAL WATERBLOCK ==> FLOW > 11.6cfs TO 86TH (ID=7, HOLD FOR LATER)
DIVIDE HYD          ID=1  Q=11.6  ID=2 HYD=S2.TO.S3   ID=7 HYD=S2.TO.86TH
PRINT HYD           ID= 2   CODE= 5

                              HYDROGRAPH FROM AREA S2.TO.S3

   TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW
    HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS
   .000       .0       1.500     11.6       3.000       .2       4.500       .1       6.000       .1
   .167       .0       1.667     10.0       3.167       .2       4.667       .1       6.167       .0
   .333       .0       1.833      5.9       3.333       .1       4.833       .1       6.333       .0
```

.500	.0	2.000	4.2	3.500	.1	5.000	.1	6.500	.0
.667	.0	2.167	2.0	3.667	.1	5.167	.1	6.667	.0
.833	.0	2.333	.9	3.833	.1	5.333	.1	6.833	.0
1.000	.0	2.500	.6	4.000	.1	5.500	.1		
1.167	.0	2.667	.4	4.167	.1	5.667	.1		
1.333	4.8	2.833	.3	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.53126 INCHES = .6024 ACRE-FEET
PEAK DISCHARGE RATE = 11.60 CFS AT 1.433 HOURS BASIN AREA = .0074 SQ. MI.

PRINT HYD ID= 7 CODE= 5

HYDROGRAPH FROM AREA S2.TO.86TH

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	.333	.0	.667	.0	1.000	.0	1.333	.0
.167	.0	.500	.0	.833	.0	1.167	.0	1.500	7.8

RUNOFF VOLUME = 1.53126 INCHES = .0828 ACRE-FEET
PEAK DISCHARGE RATE = 7.79 CFS AT 1.500 HOURS BASIN AREA = .0010 SQ. MI.

*
****
COMPUTE NM HYD ID= 1 HYD=SITE.III DA=0.02360 SQ MI
PER A= 0 B= 35 C= 0 D= 65
TP= -0.13333 HRS RAIN= -1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 60.549 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.9000
AREA = .015340 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - Dt = .033333

K = .130790HR TP = .133330HR K/TP RATIO = .980950 SHAPE CONSTANT, N = 3.599935
UNIT PEAK = 20.292 CFS UNIT VOLUME = .9997 B = 327.55 P60 = 1.9000
AREA = .008260 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - Dt = .033333

PRINT HYD ID= 1 CODE= 2

HYDROGRAPH FROM AREA SITE.III

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.467	49.5	2.933	.6	4.400	.2	5.867	.3
.067	.0	1.533	52.4	3.000	.6	4.467	.2	5.933	.3
.133	.0	1.600	38.6	3.067	.5	4.533	.2	6.000	.3
.200	.0	1.667	28.1	3.133	.5	4.600	.2	6.067	.3
.267	.0	1.733	22.1	3.200	.4	4.667	.2	6.133	.2
.333	.0	1.800	18.2	3.267	.4	4.733	.2	6.200	.1
.400	.0	1.867	15.5	3.333	.4	4.800	.2	6.267	.0
.467	.0	1.933	13.4	3.400	.3	4.867	.2	6.333	.0
.533	.0	2.000	11.8	3.467	.3	4.933	.2	6.400	.0
.600	.0	2.067	10.1	3.533	.3	5.000	.2	6.467	.0
.667	.0	2.133	6.9	3.600	.3	5.067	.2	6.533	.0
.733	.0	2.200	4.5	3.667	.3	5.133	.2	6.600	.0
.800	.0	2.267	3.3	3.733	.3	5.200	.3	6.667	.0
.867	.0	2.333	2.7	3.800	.3	5.267	.3	6.733	.0
.933	.0	2.400	2.2	3.867	.3	5.333	.3	6.800	.0
1.000	.0	2.467	1.8	3.933	.2	5.400	.3	6.867	.0
1.067	.0	2.533	1.5	4.000	.2	5.467	.3	6.933	.0

1.133	.0	2.600	1.3	4.067	.2	5.533	.3	7.000	.0
1.200	.6	2.667	1.1	4.133	.2	5.600	.3	7.067	.0
1.267	5.0	2.733	.9	4.200	.2	5.667	.3		
1.333	13.6	2.800	.8	4.267	.2	5.733	.3		
1.400	28.8	2.867	.7	4.333	.2	5.800	.3		

RUNOFF VOLUME = 1.53130 INCHES = 1.9274 ACRE-FEET
PEAK DISCHARGE RATE = 54.51 CFS AT 1.500 HOURS BASIN AREA = .0236 SQ. MI.

```
*
**********************************************************************
*S TOTAL FLOW LEAVING CANYO NORTH OF SUNSET GARDENS
ADD HYD            ID OUT= 16  HYD=SITE.OUT      IDIN I= 1   IDIN II= 2
PRINT HYD          ID= 16   CODE= 1
```

HYDROGRAPH FROM AREA SITE.OUT

RUNOFF VOLUME = 1.53128 INCHES = 2.5298 ACRE-FEET
PEAK DISCHARGE RATE = 66.11 CFS AT 1.500 HOURS BASIN AREA = .0310 SQ. MI.

```
*
**********************************************************************
*S TOTAL FLOW SUNSET GARDENS WEST OF 86TH
ADD HYD            ID OUT= 5  HYD= SG.W.OF.86     IDIN I= 3   IDIN II= 16
PRINT HYD          ID= 5   CODE= 1
```

HYDROGRAPH FROM AREA SG.W.OF.86

RUNOFF VOLUME = 1.52344 INCHES = 3.8406 ACRE-FEET
PEAK DISCHARGE RATE = 115.19 CFS AT 1.533 HOURS BASIN AREA = .0473 SQ. MI.

```
*
**********************************************************************
COMPUTE NM HYD      ID= 1    HYD= C              DA=0.00127 SQ MI
                    PER A= 0      B= 10      C= 0       D= 90
                    TP= -0.13333 HRS   RAIN= -1
```

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.5116 CFS UNIT VOLUME = .9969 B = 526.28 P60 = 1.9000
AREA = .001143 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130790HR TP = .133330HR K/TP RATIO = .980950 SHAPE CONSTANT, N = 3.599935
UNIT PEAK = .31200 CFS UNIT VOLUME = .9579 B = 327.55 P60 = 1.9000
AREA = .000127 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

```
PRINT HYD          ID= 1   CODE= 1
```

HYDROGRAPH FROM AREA C

RUNOFF VOLUME = 1.85607 INCHES = .1257 ACRE-FEET
PEAK DISCHARGE RATE = 3.43 CFS AT 1.500 HOURS BASIN AREA = .0013 SQ. MI.

```
*
*****************************************************************
*C ADD SPILL FROM S2 TO ROAD FLOW IN 86TH N OF SUNSET GARDENS
ADD HYD            ID OUT= 3  HYD=  218         IDIN I= 1   IDIN II= 7
PRINT HYD          ID= 3   CODE= 1

                              PARTIAL HYDROGRAPH   218.00

   RUNOFF VOLUME =     1.71179 INCHES     =        .2085 ACRE-FEET
   PEAK DISCHARGE RATE =      11.22 CFS  AT   1.500 HOURS   BASIN AREA =   .0023 SQ. MI.


*
*****************************************************************
*S COMBINED FLOW TO 86TH & SUNSET GARDENS FROM NORTH & WEST; HOLD FOR LATER
ADD HYD            ID OUT= 7  HYD= 866SG.N&W      IDIN I= 3   IDIN II= 5
PRINT HYD          ID= 7   CODE= 1

                              HYDROGRAPH FROM AREA 866SG.N&W

   RUNOFF VOLUME =     1.53212 INCHES     =       4.0491 ACRE-FEET
   PEAK DISCHARGE RATE =     125.49 CFS  AT   1.533 HOURS   BASIN AREA =   .0496 SQ. MI.


*****************************************************************
*****************************************************************
*S
*C BASIN NN (N North): CURRENTLY PARTLY DEVELOPED
COMPUTE NN HYD       ID= 1    HYD= NN             DA=0.01830  SQ MI
                     PER A= 28.0   B= 20.2    C= 15.4    D= 36.4
                     TP= -0.13333 HRS   RAIN= -1

   K =  .072665HR    TP =  .133330HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   26.293    CFS   UNIT VOLUME =   .9989       B =   526.28      P60 = 1.9000
   AREA =      .006661 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =  .139008HR    TP =  .133330HR    K/TP RATIO =  1.042583     SHAPE CONSTANT, N =  3.386093
   UNIT PEAK =   27.229    CFS   UNIT VOLUME =   .9996       B =   311.92      P60 = 1.9000
   AREA =      .011639 SQ MI    IA =    .52972 INCHES    INF =   1.33321 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD          ID= 1   CODE= 0

                              HYDROGRAPH FROM AREA NN

  TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW
   HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS
  .000      .0        1.400     15.4       2.800      .5        4.200      .1        5.600      .1
  .033      .0        1.433     22.7       2.833      .5        4.233      .1        5.633      .1
  .067      .0        1.467     29.5       2.867      .4        4.267      .1        5.667      .1
  .100      .0        1.500     33.0       2.900      .4        4.300      .1        5.700      .1
  .133      .0        1.533     32.2       2.933      .4        4.333      .1        5.733      .1
  .167      .0        1.567     28.6       2.967      .3        4.367      .1        5.767      .1
  .200      .0        1.600     24.4       3.000      .3        4.400      .1        5.800      .1
  .233      .0        1.633     20.7       3.033      .3        4.433      .1        5.833      .1
  .267      .0        1.667     17.6       3.067      .3        4.467      .1        5.867      .1
  .300      .0        1.700     15.1       3.100      .3        4.500      .1        5.900      .1
  .333      .0        1.733     13.1       3.133      .3        4.533      .1        5.933      .1
  .367      .0        1.767     11.5       3.167      .2        4.567      .1        5.967      .1
  .400      .0        1.800     10.2       3.200      .2        4.600      .1        6.000      .1
```

.433	.0	1.833	9.0	3.233	.2	4.633	.1	6.033	.1
.467	.0	1.867	8.2	3.267	.2	4.667	.1	6.067	.1
.500	.0	1.900	7.5	3.300	.2	4.700	.1	6.100	.1
.533	.0	1.933	6.9	3.333	.2	4.733	.1	6.133	.1
.567	.0	1.967	6.4	3.367	.2	4.767	.1	6.167	.1
.600	.0	2.000	6.0	3.400	.2	4.800	.1	6.200	.0
.633	.0	2.033	5.6	3.433	.2	4.833	.1	6.233	.0
.667	.0	2.067	5.1	3.467	.2	4.867	.1	6.267	.0
.700	.0	2.100	4.4	3.500	.2	4.900	.1	6.300	.0
.733	.0	2.133	3.6	3.533	.2	4.933	.1	6.333	.0
.767	.0	2.167	3.0	3.567	.1	4.967	.1	6.367	.0
.800	.0	2.200	2.5	3.600	.1	5.000	.1	6.400	.0
.833	.0	2.233	2.1	3.633	.1	5.033	.1	6.433	.0
.867	.0	2.267	1.9	3.667	.1	5.067	.1	6.467	.0
.900	.0	2.300	1.7	3.700	.1	5.100	.1	6.500	.0
.933	.0	2.333	1.5	3.733	.1	5.133	.1	6.533	.0
.967	.0	2.367	1.4	3.767	.1	5.167	.1	6.567	.0
1.000	.0	2.400	1.3	3.800	.1	5.200	.1	6.600	.0
1.033	.0	2.433	1.2	3.833	.1	5.233	.1	6.633	.0
1.067	.0	2.467	1.1	3.867	.1	5.267	.1	6.667	.0
1.100	.0	2.500	1.0	3.900	.1	5.300	.1	6.700	.0
1.133	.0	2.533	.9	3.933	.1	5.333	.1	6.733	.0
1.167	.0	2.567	.8	3.967	.1	5.367	.1	6.767	.0
1.200	.3	2.600	.8	4.000	.1	5.400	.1	6.800	.0
1.233	1.0	2.633	.7	4.033	.1	5.433	.1	6.833	.0
1.267	2.2	2.667	.7	4.067	.1	5.467	.1	6.867	.0
1.300	3.8	2.700	.6	4.100	.1	5.500	.1	6.900	.0
1.333	6.0	2.733	.6	4.133	.1	5.533	.1		
1.367	9.7	2.767	.5	4.167	.1	5.567	.1		

RUNOFF VOLUME = 1.12653 INCHES = 1.0995 ACRE-FEET
PEAK DISCHARGE RATE = 32.97 CFS AT 1.500 HOURS BASIN AREA = .0183 SQ. MI.

```
*
*************************************************************************
*S ADD IN HYD 90.S.PAST.SG, ('HELD' SPILL SOUTH OF SUNSET GDNS INTERSECTION)
ADD HYD            ID OUT= 3  HYD= INTO.JYDN   IDIN I= 1   IDIN II= 6
PRINT HYD          ID= 3   CODE= 1
```

HYDROGRAPH FROM AREA INTO.JYDN

RUNOFF VOLUME = 1.25044 INCHES = 1.9218 ACRE-FEET
PEAK DISCHARGE RATE = 41.57 CFS AT 1.500 HOURS BASIN AREA = .0288 SQ. MI.

```
*
*************************************************************************
*S ROUTE NORTH PART OF OFFSITE THROUGH NORTH STREET IN JYD
*C APPROX AS 28' F-F STREET, ASSUME APX 1.8% SLOPE
*C ASSUME PAVED ROAD, EST n AS .017
COMPUTE RATING CURVE CID= -1   VS NO= 1    NO SEGS FOR MANNING n= 1
                   ELMIN= 0 ELMAX= 4  FT   CHSLP= .018   FPSLP= .018  FT/FT
                   n .017  DIST 28
                   DIST  ELEV     DIST  ELEV    DIST  ELEV    DIST  ELEV
                   0     4        .01   0       14    .28     27.99   0
                   28    4
ROUTE MCUNGE       ID= 5   HYD= 300          INFLOW HYD ID= 3   DT= 0.0 HR
                   LENGTH= 1338     NSUBRCH= 0     SLOPE= .018
                   MATCODE= 0       REGCODE= 0     CCODE= 0
     Inflow ID end=211   Max Number=600

     dt = .0333 hr   q0 =   20.78 cfs   ch0 =  5.86 fps
```

```
      nlen =  4   dlen =  334.50

      Depth  Area      Q     Qbar   ck    b     C    D     c1    c2   vel   fr    tt
        ft    sf     cfs     cfs   fps   ft                          fps         hr
       .00     .0      .0     2.9  2.58  10.5  .93  .02   .98  -.03  2.58 1.40  .144
       .21     2.2     5.7    22.3  5.86  24.5 2.10  .03   .98   .36  4.42 1.72  .084
       .42     7.9    38.8    68.2  9.97  28.0 3.58  .04   .98   .57  6.31 1.79  .059
       .63    13.8    97.6   136.3 13.15  28.0 4.72  .06   .98   .65  8.16 1.86  .046
       .84    19.6   175.0   221.8 15.86  28.0 5.69  .08   .98   .70  9.82 1.93  .038
      1.05    25.5   268.5   322.2 18.24  28.0 6.54  .10   .97   .74 11.31 1.98  .033
      1.26    31.4   376.0   436.0 20.38  28.0 7.31  .13   .97   .76 12.68 2.02  .029
      1.47    37.3   496.1   561.9 22.33  28.0 8.01  .15   .97   .78 13.95 2.05  .027
      1.68    43.2   627.7   698.7 24.12  28.0 8.65  .17   .97   .80 15.14 2.08  .025
      1.89    49.1   769.8   845.8 25.78  28.0 9.25  .19   .96   .81 16.25 2.10  .023
      2.11    55.0   921.7  1002.2 27.32  28.0 9.80  .22   .96   .82 17.30 2.12  .021
      2.32    60.9  1082.7  1167.4 28.76  28.010.32  .24   .96   .83 18.29 2.13  .020
      2.53    66.8  1252.2  1340.9 30.10  28.010.80  .26   .96   .83 19.23 2.15  .019
      2.74    72.7  1429.6  1522.0 31.37  28.011.25  .29   .95   .84 20.13 2.16  .018
      2.95    78.6  1614.4  1710.4 32.56  28.011.68  .31   .95   .85 20.98 2.17  .018
      3.16    84.5  1806.3  1905.6 33.69  28.012.09  .34   .95   .85 21.80 2.17  .017
      3.37    90.4  2004.9  2107.3 34.75  28.012.47  .36   .95   .86 22.58 2.18  .016
      3.58    96.3  2209.7  2315.1 35.76  28.012.83  .38   .95   .86 23.34 2.18  .016
      3.79   102.1  2420.5  2528.8 36.73  28.013.17  .41   .94   .86 24.06 2.19  .015
      4.00   108.0  2637.0     .0   .00    .0  .00   .00   .00   .00   .00  .00  .000
     nlen= 4   Outflow ID end=213
    Route using Ponce procedure:  C1 > 0
     nlen= 4   Outflow ID end=215
    Route using Maidment procedure:  C0, C1 & C2 > 0
PRINT HYD           ID= 5 CODE= 1

                                    HYDROGRAPH FROM AREA   300.00


    RUNOFF VOLUME =     1.24326 INCHES     =       1.9108 ACRE-FEET
    PEAK DISCHARGE RATE =      39.88 CFS  AT   1.600 HOURS   BASIN AREA =   .0288 SQ. MI.



*
*************************************************************************
*C BASIN NS (N South): CURRENTLY PARTLY DEVELOPED
COMPUTE NM HYD       ID= 1    HYD= NS              DA=0.01719  SQ MI
                     PER A= 16.0    B= 28.6    C= 8.8    D= 46.6
                     TP= -0.13333 HRS   RAIN= -1

    K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   31.619    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 1.9000
    AREA =      .008011 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .136383HR    TP =   .133330HR    K/TP RATIO =  1.022896     SHAPE CONSTANT, N =  3.450895
    UNIT PEAK =   21.806    CFS   UNIT VOLUME =    .9996       B =   316.73      P60 = 1.9000
    AREA =      .009179 SQ MI    IA =    .52022 INCHES    INF =   1.30663 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 1   CODE= 1

                                    HYDROGRAPH FROM AREA NS


    RUNOFF VOLUME =     1.27301 INCHES     =       1.1671 ACRE-FEET
    PEAK DISCHARGE RATE =      34.17 CFS  AT   1.500 HOURS   BASIN AREA =   .0172 SQ. MI.
```

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*
*************************************************************************
*S ROUTE SOUTH PART OF OFFSITE THROUGH SOUTH STREET IN JYD
*C APPROX AS 28' F-F STREET, ASSUME APX 2.0% SLOPE (STEEPER THAN NORTH)
*C ASSUME PAVED ROAD, EST n AS .017
COMPUTE RATING CURVE CID= -1   VS NO= 1    NO SEGS FOR MANNING n= 1
                  ELMIN= 0 ELMAX= 4  FT   CHSLP= .020   FPSLP= .020  FT/FT
                  n .017  DIST 28
                  DIST  ELEV     DIST  ELEV    DIST  ELEV    DIST  ELEV
                  0     4        .01   0       14    .28     27.99   0
                  28    4
ROUTE MCUNGE      ID= 2   HYD= 302         INFLOW HYD ID= 1   DT= 0.0 HR
                  LENGTH= 1221     NSUBRCH= 0     SLOPE= .020
                  MATCODE= 0       REGCODE= 0     CCODE= 0
     Inflow ID end=209   Max Number=600

     dt = .0333 hr   q0 =    17.08 cfs   ck0 =  6.17 fps
     nlen =  4   dlen =  305.25

     Depth  Area      Q     Qbar   ck    b     C    D     c1    c2   vel   fr    tt
       ft    sf     cfs    cfs    fps   ft                          fps         hr
       .00     .0     .0     3.0  2.72  10.5 1.07  .02   .98   .04  2.72 1.48  .125
       .21    2.2    6.0    23.5  6.17  24.5 2.43  .03   .99   .42  4.65 1.81  .073
       .42    7.9   40.9    71.9 10.51  28.0 4.13  .04   .98   .61  6.65 1.88  .051
       .63   13.8  102.8   143.7 13.86  28.0 5.45  .06   .98   .69  8.60 1.96  .039
       .84   19.6  184.5   233.8 16.72  28.0 6.57  .08   .98   .74 10.35 2.03  .033
      1.05   25.5  283.0   339.6 19.23  28.0 7.56  .10   .98   .77 11.92 2.08  .028
      1.26   31.4  396.3   459.6 21.49  28.0 8.45  .13   .97   .79 13.37 2.13  .025
      1.47   37.3  522.9   592.2 23.54  28.0 9.25  .15   .97   .81 14.71 2.16  .023
      1.68   43.2  661.6   736.5 25.43  28.010.00  .17   .97   .82 15.96 2.19  .021
      1.89   49.1  811.4   891.5 27.17  28.010.68  .19   .97   .83 17.13 2.21  .020
      2.11   55.0  971.6  1056.4 28.80  28.011.32  .21   .97   .84 18.23 2.23  .019
      2.32   60.9 1141.3  1230.6 30.31  28.011.92  .24   .96   .85 19.28 2.25  .018
      2.53   66.8 1319.9  1413.4 31.73  28.012.47  .26   .96   .85 20.27 2.26  .017
      2.74   72.7 1506.9  1604.3 33.06  28.013.00  .28   .96   .86 21.21 2.27  .016
      2.95   78.6 1701.8  1802.9 34.32  28.013.49  .31   .96   .86 22.12 2.28  .015
      3.16   84.5 1904.0  2008.7 35.51  28.013.96  .33   .96   .87 22.98 2.29  .015
      3.37   90.4 2113.3  2221.3 36.63  28.014.40  .35   .95   .87 23.81 2.30  .014
      3.58   96.3 2329.3  2440.4 37.70  28.014.82  .38   .95   .88 24.60 2.30  .014
      3.79  102.1 2551.5  2665.6 38.71  28.015.22  .40   .95   .88 25.36 2.31  .013
      4.00  108.0 2779.7     .0   .00    .0  .00   .00   .00   .00   .00  .00  .000
     nlen= 4   Outflow ID end=206
   Route using Ponce procedure:  C1 > 0
PRINT HYD         ID= 2 CODE= 1

                                  HYDROGRAPH FROM AREA   302.00


   RUNOFF VOLUME =    1.27335 INCHES     =      1.1674 ACRE-FEET
   PEAK DISCHARGE RATE =     33.65 CFS  AT   1.567 HOURS   BASIN AREA =   .0172 SQ. MI.



*
*************************************************************************
*C ADD NORTH & SOUTH ROUTED OFFSITE, THEN COMPUTE & ADD JYD
ADD HYD           ID OUT= 3  HYD= 304          IDIN I= 2   IDIN II= 5
PRINT HYD         ID= 3   CODE= 1

                                  HYDROGRAPH FROM AREA   304.00


   RUNOFF VOLUME =    1.25449 INCHES     =      3.0782 ACRE-FEET
   PEAK DISCHARGE RATE =     72.69 CFS  AT   1.600 HOURS   BASIN AREA =   .0460 SQ. MI.
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*
**********************************************************************
COMPUTE NM HYD       ID= 17   HYD= JYD            DA=0.02353 SQ MI
                     PER A= 0      B= 35      C= 0       D= 65
                     TP= -0.13333 HRS   RAIN= -1

   K =  .072665HR    TP =  .133330HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =  60.370    CFS   UNIT VOLUME =  .9952       B =  526.28      P60 = 1.9000
   AREA =      .015295 SQ MI    IA =  .10000 INCHES    INF =  .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333


   K =  .130790HR    TP =  .133330HR    K/TP RATIO =  .980950     SHAPE CONSTANT, N =  3.599935
   UNIT PEAK =  20.232    CFS   UNIT VOLUME =  .9997       B =  327.55      P60 = 1.9000
   AREA =      .008236 SQ MI    IA =  .50000 INCHES    INF =  1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

PRINT HYD            ID= 17   CODE= 2

                                HYDROGRAPH FROM AREA JYD

   TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW
    HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS
   .000       .0       1.467     49.3       2.933       .6       4.400       .2       5.867       .3
   .067       .0       1.533     52.2       3.000       .6       4.467       .2       5.933       .3
   .133       .0       1.600     38.5       3.067       .5       4.533       .2       6.000       .3
   .200       .0       1.667     28.0       3.133       .5       4.600       .2       6.067       .3
   .267       .0       1.733     22.0       3.200       .4       4.667       .2       6.133       .2
   .333       .0       1.800     18.2       3.267       .4       4.733       .2       6.200       .1
   .400       .0       1.867     15.4       3.333       .4       4.800       .2       6.267       .0
   .467       .0       1.933     13.4       3.400       .3       4.867       .2       6.333       .0
   .533       .0       2.000     11.8       3.467       .3       4.933       .2       6.400       .0
   .600       .0       2.067     10.1       3.533       .3       5.000       .2       6.467       .0
   .667       .0       2.133      6.9       3.600       .3       5.067       .2       6.533       .0
   .733       .0       2.200      4.5       3.667       .3       5.133       .2       6.600       .0
   .800       .0       2.267      3.3       3.733       .3       5.200       .3       6.667       .0
   .867       .0       2.333      2.6       3.800       .3       5.267       .3       6.733       .0
   .933       .0       2.400      2.2       3.867       .3       5.333       .3       6.800       .0
  1.000       .0       2.467      1.8       3.933       .2       5.400       .3       6.867       .0
  1.067       .0       2.533      1.5       4.000       .2       5.467       .3       6.933       .0
  1.133       .0       2.600      1.3       4.067       .2       5.533       .3       7.000       .0
  1.200       .6       2.667      1.1       4.133       .2       5.600       .3       7.067       .0
  1.267      5.0       2.733       .9       4.200       .2       5.667       .3
  1.333     13.6       2.800       .8       4.267       .2       5.733       .3
  1.400     28.8       2.867       .7       4.333       .2       5.800       .3

   RUNOFF VOLUME =     1.53130 INCHES     =       1.9217 ACRE-FEET
   PEAK DISCHARGE RATE =      54.35 CFS  AT   1.500 HOURS   BASIN AREA =   .0235 SQ. MI.


*
**********************************************************************
*S TOTAL FLOW LEAVING JYD (CANTO III), INCLUDING 86TH ST ROW EAST OF JYD
ADD HYD              ID OUT= 4  HYD= JYD.E.AT.86   IDIN I= 3   IDIN II= 17
PRINT HYD            ID= 4   CODE= 1

                                HYDROGRAPH FROM AREA JYD.E.AT.86


   RUNOFF VOLUME =     1.34815 INCHES     =       4.9998 ACRE-FEET
   PEAK DISCHARGE RATE =     116.71 CFS  AT   1.533 HOURS   BASIN AREA =   .0695 SQ. MI.
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*
*************************************************************************
*S ROUTE TO 86TH & SG INTERSECTION, ASSUME 48" PIPE W/ 1% FRICTION SLOPE
COMPUTE RATING CURVE CID= -1 VSK= 1  CODE= -1  S= .010   D= 4 FT   n= 0.013
ROUTE MCUNGE         ID= 5   HYD= 86.S.OF.SG   INFLOW HYD ID= 4   DT= 0.0 HR
                     LENGTH= 300      NSUBRCH= 0     SLOPE= .010
                     MATCODE= 0       REGCODE= 0     CCODE= 0
      Inflow ID end=215   Max Number=600

      dt = .0333 hr   q0 =    58.35 cfs   ck0 = 14.67 fps
      nlen =  1   dlen =  300.00

      Depth  Area      Q     Qbar   ck    b     C    D     c1    c2   vel   fr    tt
        ft    sf     cfs     cfs    fps   ft                          fps         hr
        .00     .0      .0      .4  3.02    .9 1.21  .05   .96   .11  3.02 1.42  .028
        .21     .2      .8     2.0  5.66   2.1 2.26  .06   .97   .40  4.26 1.59  .020
        .42     .7     3.3     5.4  7.74   2.7 3.09  .09   .96   .52  5.58 1.63  .015
        .63    1.3     7.6    10.6  9.44   3.1 3.78  .12   .95   .59  6.75 1.66  .012
        .83    1.9    13.7    17.5 10.88   3.4 4.35  .16   .94   .64  7.78 1.68  .011
       1.04    2.6    21.4    25.9 12.09   3.6 4.84  .20   .93   .67  8.69 1.69  .010
       1.25    3.4    30.5    35.6 13.12   3.8 5.25  .24   .93   .69  9.50 1.68  .009
       1.46    4.1    40.8    46.5 13.98   3.9 5.59  .28   .92   .71 10.21 1.67  .008
       1.67    5.0    52.2    58.3 14.67   4.0 5.87  .33   .91   .72 10.84 1.64  .008
       1.88    5.8    64.3    70.7 15.19   4.0 6.08  .39   .90   .73 11.39 1.61  .007
       2.08    6.6    77.0    83.4 15.54   4.0 6.22  .45   .88   .74 11.86 1.58  .007
       2.29    7.5    89.9    96.3 15.69   4.0 6.28  .51   .87   .74 12.25 1.54  .007
       2.50    8.3   102.7   108.9 15.62   4.0 6.25  .58   .85   .74 12.57 1.51  .007
       2.71    9.1   115.1   120.9 15.27   4.0 6.11  .66   .83   .74 12.81 1.47  .007
       2.92    9.8   126.7   131.9 14.52   4.0 5.81  .76   .80   .74 12.96 1.43  .006
       3.13   10.5   137.1   141.5 13.18   4.0 5.27  .89   .75   .72 13.02 1.39  .006
       3.34   11.2   145.8   148.9 10.71   4.0 4.29 1.16   .64   .69 12.96 1.35  .006
       3.54   11.8   152.0   153.2  5.41   4.0 2.16 2.36   .14   .64 12.76 1.30  .007
       3.75   12.2   154.5   154.5   .00   4.0  .00***** -1.00  1.00 12.46 1.25  .007
       4.00   12.6   154.5     .0   .00    .0  .00  .00   .00   .00  .00  .00  .000
      nlen= 1   Outflow ID end=215
    Route using Ponce procedure:  C1 > 0
      nlen= 1   Outflow ID end=216
    Route using Maidment procedure:  C0, C1 & C2 > 0
PRINT HYD            ID= 5 CODE= 1

                                HYDROGRAPH FROM AREA 86.S.OF.SG


    RUNOFF VOLUME =     1.34764 INCHES     =       4.9979 ACRE-FEET
    PEAK DISCHARGE RATE =     116.55 CFS  AT   1.567 HOURS   BASIN AREA =   .0695 SQ. MI.


*
*************************************************************************
*S *AS IF* COMBINED FLOWS AT 86TH & SUNSET GARDENS: RETRIEVE 'ON-HOLD' ID=7
ADD HYD              ID OUT= 6  HYD= TOT.SG&86     IDIN I= 5   IDIN II= 7
PRINT HYD            ID= 6   CODE= 2

                                HYDROGRAPH FROM AREA TOT.SG&86

    TIME     FLOW         TIME     FLOW         TIME     FLOW         TIME     FLOW         TIME     FLOW
     HRS      CFS          HRS      CFS          HRS      CFS          HRS      CFS          HRS      CFS
    .000       .0        1.467    180.7        2.933      3.5        4.400      1.0        5.867      1.3
    .067       .0        1.533    235.7        3.000      3.1        4.467      1.0        5.933      1.3
    .133       .0        1.600    211.8        3.067      2.7        4.533      1.0        6.000      1.3
    .200       .0        1.667    165.8        3.133      2.4        4.600      1.0        6.067      1.3
    .267       .0        1.733    125.4        3.200      2.2        4.667      1.0        6.133      1.1
    .333       .0        1.800     98.8        3.267      2.0        4.733      1.0        6.200       .8
    .400       .0        1.867     80.9        3.333      1.8        4.800      1.0        6.267       .6
    .467       .0        1.933     68.5        3.400      1.7        4.867      1.0        6.333       .3
```

.533	.0	2.000	60.5	3.467	1.6	4.933	1.1	6.400	.2
.600	.0	2.067	51.9	3.533	1.5	5.000	1.1	6.467	.1
.667	.0	2.133	40.9	3.600	1.4	5.067	1.1	6.533	.1
.733	.0	2.200	30.8	3.667	1.3	5.133	1.1	6.600	.1
.800	.0	2.267	22.5	3.733	1.3	5.200	1.1	6.667	.0
.867	.0	2.333	16.4	3.800	1.2	5.267	1.1	6.733	.0
.933	.0	2.400	13.2	3.867	1.2	5.333	1.1	6.800	.0
1.000	.0	2.467	10.9	3.933	1.1	5.400	1.1	6.867	.0
1.067	.0	2.533	9.0	4.000	1.1	5.467	1.2	6.933	.0
1.133	.0	2.600	7.5	4.067	1.1	5.533	1.2	7.000	.0
1.200	1.0	2.667	6.4	4.133	1.1	5.600	1.2	7.067	.0
1.267	10.8	2.733	5.4	4.200	1.1	5.667	1.2	7.133	.0
1.333	32.2	2.800	4.6	4.267	1.0	5.733	1.2		
1.400	77.4	2.867	4.0	4.333	1.0	5.800	1.3		

RUNOFF VOLUME = 1.42440 INCHES = 9.0470 ACRE-FEET
PEAK DISCHARGE RATE = 235.70 CFS AT 1.533 HOURS BASIN AREA = .1191 SQ. MI.

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*
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**********************************************************************
*S
*S FUTURE/FULL DEVELOPMENT          FUTURE/FULL DEVELOPMENT
*S ROUTE 86TH TO 82ND IN SUNSET GARDENS: CONC PIPE; Sf=.01 APX
*C IF EST DIAM SMALL => TRAVEL FASTER => DNSTR PEAK HIGHER => CONSERVATIVE
*C VALLEY SEGMENT & REACH NUMBERS ARE USER ID'S NOT USED BY PROG; DUMMIES HERE
COMPUTE RATING CURVE CID= -1   VS NO= 11   NO SEGS FOR MANNING n= -1
                     SLOPE= .01   DIAM= 5.0 FT   n= .013
COMPUTE TRAVEL TIME  ID= 5   REACH= 11   NO VS= 1   L= 1100 FT   S= .01
```

TRAVEL TIME TABLE
REACH= 11.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.261	.390	1.37	.0873
.521	1.086	5.93	.0559
.782	1.961	13.79	.0435
1.042	2.966	24.80	.0365
1.303	4.069	38.72	.0321
1.563	5.246	55.24	.0290
1.824	6.479	74.01	.0267
2.084	7.749	94.62	.0250
2.345	9.043	116.65	.0237
2.606	10.345	139.60	.0226
2.866	11.641	162.98	.0218
3.127	12.918	186.22	.0212
3.387	14.159	208.72	.0207
3.648	15.348	229.78	.0204
3.908	16.467	248.64	.0202
4.169	17.492	264.32	.0202
4.429	18.395	275.55	.0204
4.690	19.130	280.16	.0209
5.000	19.635	280.16	.0214

```
ROUTE              ID= 5   HYD= 308    IN ID= 6   DT= 0.0
PRINT HYD          ID= 5   CODE= 1
```

HYDROGRAPH FROM AREA 308.00

RUNOFF VOLUME = 1.42440 INCHES = 9.0470 ACRE-FEET
PEAK DISCHARGE RATE = 234.12 CFS AT 1.567 HOURS BASIN AREA = .1191 SQ. MI.

```
**********************************************************************
* BASIN T
COMPUTE NM HYD       ID= 1    HYD= T             DA= .00467 SQ MI
                     PER A= 0      B= 15      C=  0      D= 85
                     TP= -0.13333 HRS   RAIN= -1

   K =  .072665HR    TP =  .133330HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =  15.668    CFS   UNIT VOLUME =  .9987       B =  526.28      P60 = 1.9000
   AREA =      .003970 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333


   K =  .130790HR    TP =  .133330HR    K/TP RATIO =  .980950     SHAPE CONSTANT, N =  3.599935
   UNIT PEAK =  1.7209    CFS   UNIT VOLUME =  .9926       B =  327.55      P60 = 1.9000
   AREA =      .000701 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

PRINT HYD            ID= 1   CODE= 1

                                  HYDROGRAPH FROM AREA T


   RUNOFF VOLUME =    1.79111 INCHES     =       .4461 ACRE-FEET
   PEAK DISCHARGE RATE =     12.22 CFS  AT   1.500 HOURS   BASIN AREA =   .0047 SQ. MI.


*
**********************************************************************
ADD HYD              ID OUT= 3  HYD= 310     IDIN I= 1   IDIN II= 5
PRINT HYD            ID= 3   CODE= 1

                                  HYDROGRAPH FROM AREA  310.00


   RUNOFF VOLUME =    1.43823 INCHES     =      9.4931 ACRE-FEET
   PEAK DISCHARGE RATE =    244.23 CFS  AT   1.567 HOURS   BASIN AREA =   .1238 SQ. MI.


*
**********************************************************************
* BASIN U
COMPUTE NM HYD       ID= 1    HYD= U             DA= .01032 SQ MI
                     PER A= 0      B= 30      C=  0      D= 70
                     TP= -0.13333 HRS   RAIN= -1

   K =  .072665HR    TP =  .133330HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =  28.514    CFS   UNIT VOLUME =  .9990       B =  526.28      P60 = 1.9000
   AREA =      .007224 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333


   K =  .130790HR    TP =  .133330HR    K/TP RATIO =  .980950     SHAPE CONSTANT, N =  3.599935
   UNIT PEAK =  7.6059    CFS   UNIT VOLUME =  .9985       B =  327.55      P60 = 1.9000
   AREA =      .003096 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

PRINT HYD            ID= 1   CODE= 1

                                  HYDROGRAPH FROM AREA U


   RUNOFF VOLUME =    1.59625 INCHES     =       .8786 ACRE-FEET
```

25×10 32×10

```
   PEAK DISCHARGE RATE =     24.63 CFS  AT   1.500 HOURS   BASIN AREA =   .0103 SQ. MI.


*
**********************************************************************
*C NOTE LARGE ID# - WILL RE-USE THIS HYD LATER
ADD HYD            ID OUT= 19   HYD= 312     IDIN I= 1   IDIN II= 3
PRINT HYD          ID= 19  CODE= 1

                                   HYDROGRAPH FROM AREA   312.00

    RUNOFF VOLUME =     1.45039 INCHES     =      10.3716 ACRE-FEET
    PEAK DISCHARGE RATE =     264.83 CFS  AT   1.567 HOURS   BASIN AREA =   .1341 SQ. MI.


*
**********************************************************************
* BASIN V: % IMPERV A LA POINTE WEST DESIGN & DENSITY
COMPUTE NM HYD       ID= 11    HYD= V              DA= .03200 SQ MI
                     PER A= 0      B= 50      C=  0      D= 50
                     TP= -0.13333 HRS   RAIN= -1

    K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   63.155    CFS   UNIT VOLUME =    .9992      B =   526.28      P60 = 1.9000
    AREA =      .016000 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130790HR    TP =   .133330HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599935
    UNIT PEAK =   39.307    CFS   UNIT VOLUME =    1.000      B =   327.55      P60 = 1.9000
    AREA =      .016000 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD          ID= 11   CODE= 1

                                   HYDROGRAPH FROM AREA V

    RUNOFF VOLUME =     1.33643 INCHES     =       2.2808 ACRE-FEET
    PEAK DISCHARGE RATE =      66.62 CFS  AT   1.500 HOURS   BASIN AREA =   .0320 SQ. MI.


*
**********************************************************************
ADD HYD            ID OUT= 3  HYD= SG.AT.82ND    IDIN I= 11   IDIN II= 19
PRINT HYD          ID= 3   CODE= 1

                                   HYDROGRAPH FROM AREA SG.AT.82ND

    RUNOFF VOLUME =     1.42843 INCHES     =      12.6524 ACRE-FEET
    PEAK DISCHARGE RATE =     323.76 CFS  AT   1.533 HOURS   BASIN AREA =   .1661 SQ. MI.


*
**********************************************************************
*C ROUTE TO UNSER IN CONC PIPE; Sf=.01 APX AVG
*C IF EST DIAM SMALL => TRAVEL FASTER => DNSTR PEAK HIGHER => CONSERVATIVE
*C VALLEY SEGMENT & REACH NUMBERS ARE USER ID'S ONLY; DUMMIES HERE
*C AVAIL SLOPE BTW UNSER/AMOLE & SG/82 APX .01 AVG.
COMPUTE RATING CURVE CID= -1   VS NO= 11   NO SEGS FOR MANNING n= -1
```

SLOPE= .01 DIAM= 5.5 FT n= .013
COMPUTE TRAVEL TIME ID= 5 REACH= 11 NO VS= 1 L= 1100 FT S= .01

TRAVEL TIME TABLE
REACH= 11.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.287	.472	1.76	.0819
.573	1.314	7.65	.0525
.860	2.373	17.78	.0408
1.146	3.589	31.97	.0343
1.433	4.923	49.92	.0301
1.720	6.348	71.23	.0272
2.006	7.839	95.43	.0251
2.293	9.377	122.00	.0235
2.579	10.942	150.40	.0222
2.866	12.518	180.00	.0212
3.153	14.086	210.14	.0205
3.439	15.630	240.11	.0199
3.726	17.132	269.11	.0195
4.013	18.571	296.28	.0192
4.299	19.925	320.59	.0190
4.586	21.166	340.81	.0190
4.872	22.258	355.29	.0191
5.159	23.147	361.23	.0196
5.500	23.758	361.23	.0201

ROUTE ID= 5 HYD= 314 IN ID= 3 DT= 0.0
PRINT HYD ID= 5 CODE= 1

HYDROGRAPH FROM AREA 314.00

RUNOFF VOLUME = 1.42844 INCHES = 12.6524 ACRE-FEET
PEAK DISCHARGE RATE = 322.21 CFS AT 1.567 HOURS BASIN AREA = .1661 SQ. MI.

****
*C BASIN W: % IMPERV A LA POINTE WEST DESIGN & DENSITY: SAME OWNER & ENGR
*C BASIN W IS ONLY BASIN W Tp (&Tc) > REGULATORY MINIMUM
COMPUTE NM HYD ID= 12 HYD= W DA= .03422 SQ MI
PER A= 0 B= 50 C= 0 D= 50
TP= -0.16325 HRS RAIN= -1

K = .088971HR TP = .163250HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 55.158 CFS UNIT VOLUME = .9997 B = 526.28 P60 = 1.9000
AREA = .017110 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .160140HR TP = .163250HR K/TP RATIO = .980950 SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 34.330 CFS UNIT VOLUME = .9998 B = 327.55 P60 = 1.9000
AREA = .017110 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID= 12 CODE= 1

HYDROGRAPH FROM AREA W

RUNOFF VOLUME = 1.33643 INCHES = 2.4391 ACRE-FEET
PEAK DISCHARGE RATE = 64.02 CFS AT 1.533 HOURS BASIN AREA = .0342 SQ. MI.

```
*
*************************************************************************
ADD HYD            ID OUT= 3  HYD= 316     IDIN I= 12   IDIN II= 5
PRINT HYD          ID= 3   CODE= 1

                                   HYDROGRAPH FROM AREA   316.00

    RUNOFF VOLUME =     1.41271 INCHES     =      15.0915 ACRE-FEET
    PEAK DISCHARGE RATE =     384.09 CFS  AT   1.567 HOURS   BASIN AREA =   .2003 SQ. MI.


*
*************************************************************************
* BASIN X: R.O.W. FOR SUNSET GARDENS AND (LIMITED ACCESS) UNSER
COMPUTE NM HYD       ID= 13    HYD= X              DA= .00674 SQ MI
                     PER A= 0      B= 20      C=  0      D= 80
                     TP= -0.13333 HRS   RAIN= -1

    K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   21.283    CFS   UNIT VOLUME =    .9988       B =   526.28      P60 = 1.9000
    AREA =      .005392 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130790HR    TP =   .133330HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599935
    UNIT PEAK =   3.3116    CFS   UNIT VOLUME =    .9961       B =   327.55      P60 = 1.9000
    AREA =      .001348 .Q MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD          ID= 13   CODE= 1

                                   HYDROGRAPH FROM AREA X


    RUNOFF VOLUME =     1.72616 INCHES     =       .6205 ACRE-FEET
    PEAK DISCHARGE RATE =      17.11 CFS  AT   1.500 HOURS   BASIN AREA =   .0067 SQ. MI.


*
*************************************************************************
ADD HYD            ID OUT= 4  HYD= SG.AT.UNSER   IDIN I= 13   IDIN II= 3
PRINT HYD          ID= 4   CODE= 1

                                   HYDROGRAPH FROM AREA SG.AT.UNSER


    RUNOFF VOLUME =     1.42292 INCHES     =      15.7120 ACRE-FEET
    PEAK DISCHARGE RATE =     398.29 CFS  AT   1.567 HOURS   BASIN AREA =   .2070 SQ. MI.


*
*************************************************************************
*C ROUTE TO UNSER 340 FT N OF SG (APX HALF DIST TO AMOLE CHAN); Sf=.01 APX
*C EST DIAM SMALL => TRAVEL FASTER => DNSTR PEAK HIGHER => CONSERVATIVE
*C V'LLEY SEGMENT & REACH NUMBERS ARE USER ID'S ONLY; DUMMIES HERE
COMPUTE RATING CURVE CID= -1   VS NO= 11   NO SEGS FOR MASKING n= -1
                     SLOPE= .01   DIAM= 6.0 FT   n= .013
COMPUTE TRAVEL TIME  ID= 5   REACH= 11   NO VS= 1   L= 340  FT   S= .01

                              TRAVEL TIME TABLE
                                        REACH= 11.0
```

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.313	.562	2.22	.0239
.625	1.564	9.64	.0153
.938	2.824	22.42	.0119
1.251	4.271	40.32	.0100
1.563	5.859	62.96	.0088
1.876	7.554	89.83	.0079
2.189	9.329	120.35	.0073
2.501	11.159	153.87	.0068
2.814	13.022	189.68	.0065
3.127	14.897	227.01	.0062
3.439	16.764	265.02	.0060
3.752	18.601	302.81	.0058
4.065	20.388	339.39	.0057
4.377	22.101	373.65	.0056
4.690	23.712	404.31	.0055
5.003	25.189	429.82	.0055
5.315	26.489	448.07	.0056
5.628	27.547	455.57	.0057
6.000	28.274	455.57	.0059

```
ROUTE              ID= 5   HYD= 318    IN ID= 4   DT= 0.0
PRINT HYD          ID= 5  CODE= 1
```

HYDROGRAPH FROM AREA 318.00

RUNOFF VOLUME = 1.42292 INCHES = 15.7120 ACRE-FEET
PEAK DISCHARGE RATE = 399.01 CFS AT 1.567 HOURS BASIN AREA = .2070 SQ. MI.

```
**************************************************************************
* BASIN Y DEVELOPED: EST ENTIRE SITE; ZONING = O-1; USE % IMPERV AS FOR C-2
* WHEN BUILT, N APX 200' POSS DRAIN TO BRIDGE PER GREINER FOR BRIDGE BLVD SD
COMPUTE NM HYD       ID= 14    HYD= YD              DA= .02964 SQ MI
                     PER A= 0      B= 10      C= 5      D= 85
                     TP= -0.13333 HRS   RAIN= -1
```

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 99.445 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 1.9000
AREA = .025194 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .122603HR TP = .133330HR K/TP RATIO = .919546 SHAPE CONSTANT, N = 3.849372
UNIT PEAK = 11.504 CFS UNIT VOLUME = .9992 B = 345.00 P60 = 1.9000
AREA = .004446 SQ MI IA = .45000 INCHES INF = 1.11000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

```
PRINT HYD          ID= 14   CODE= 1
```

HYDROGRAPH FROM AREA YD

RUNOFF VOLUME = 1.80576 INCHES = 2.8545 ACRE-FEET
PEAK DISCHARGE RATE = 78.24 CFS AT 1.500 HOURS BASIN AREA = .0296 SQ. MI.

```
*
**************************************************************************
*S TOTAL UNSER APX 300' S OF AMOLE CHANNEL AT BRIDGE: FUTURE/FULLY DEVELOPED
ADD HYD            ID OUT= 7  HYD= FUT.TO.AMOLE   IDIN I= 14   IDIN II= 5
```

25×10 32×10

```
PRINT HYD          ID= 7   CODE= 1

                                HYDROGRAPH FROM AREA FUT.TO.AMOLE

   RUNOFF VOLUME =     1.47086 INCHES     =      18.5665 ACRE-FEET
   PEAK DISCHARGE RATE =     465.36 CFS  AT   1.533 HOURS   BASIN AREA =   .2367 SQ. MI.


*
**********************************************************************
**********************************************************************
*S
*S
*S INTERIM                    INTERIM                      INTERIM
*S INTERIM: RE-USE HYD 312 W/ ID=19, ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST
*C APPROX AS 12' BOTTOM, 3H:1V SIDESLOPES, n=.030, L APX 1250, S=.005
COMPUTE RATING CURVE CID= -1   VS NO= 1    NO SEGS FOR MANNING n= 1
                     ELMIN= 0 ELMAX= 8  FT  CHSLP= .005   FPSLP= .005   FT/FT
                     n .030  DIST 60
                     DIST  ELEV     DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     8        24    0       36    0       60    8
ROUTE MCUNGE         ID= 5   HYD= 502       INFLOW HYD ID= 19  DT= 0.0 HR
                     LENGTH= 1250     NSUBRCH= 0     SLOPE= .005
                     MATCODE= 0       REGCODE= 0     CCODE= 0
     Inflow ID end=22?   Max Number=600

     dt = .0333 hr   q0 =   132.42 cfs   ck0 =  6.19 fps
     nlen =  3   dlen =  416.67

     Depth  Area     Q     Qbar   ck    b     C    D     c1    c2   vel   fr    tt
       ft    sf     cfs    cfs    fps   ft                          fps         hr
       .00     .0     .0     5.1  1.84   7.3  .53  .18   .78  -.17  1.84  .52  .189
       .42    5.6   10.3    22.1  3.56  15.8 1.03  .19   .83   .10  2.48  .58  .140
       .84   12.2   34.0    51.° 4.64  18.3 1.34  .29   .78   .24  3.22  .61  .108
      1.26   19.9   69.8    93.8  5.48  20.8 1.58  .39   .73   .33  3.85  .63  .090
      1.68   28.7  117.8   148.3  6.19  23.4 1.78  .49   .70   .39  4.41  .65  .079
      2.11   38.6  178.8   216.0  6.83  25.9 1.97  .59   .67   .44  4.91  .66  .071
      2.53   49.5  253.3   297.7  7.42  28.4 2.14  .68   .64   .48  5.37  .68  .065
      2.95   61.4  342.1   394.0  7.97  30.9 2.29  .77   .62   .51  5.80  .69  .060
      3.37   74.5  445.9   505.7  8.49  33.5 2.44  .85   .60   .53  6.20  .70  .056
      3.79   88.6  565.5   633.6  8.98  36.0 2.59  .94   .58   .56  6.59  .71  .053
      4.21  103.7  701.7   778.4  9.46  38.5 2.72 1.03   .57   .58  6.96  .72  .050
      4.63  119.9  855.1   940.9  9.92  41.1 2.86 1.11   .55   .60  7.32  .73  .047
      5.05  137.2 1026.6  1121.7 10.36  43.6 2.99 1.19   .54   .61  7.66  .74  .045
      5.47  155.6 1216.8  1321.6 10.80  46.1 3.11 1.27   .53   .63  8.00  .74  .043
      5.89  175.0 1426.4  1541.3 11.22  48.6 3.23 1.36   .51   .64  8.32  .75  .042
      6.32  195.5 1656.2  1781.5 11.63  51.2 3.35 1.44   .50   .65  8.64  .76  .040
      6.74  217.0 1906.8  2042.9 12.04  53.7 3.47 1.52   .49   .67  8.95  .76  .039
      7.16  239.6 2178.9  2326.1 12.44  56.2 3.58 1.60   .48   .68  9.25  .77  .038
      7.58  263.3 2473.3  2631.9 12.82  58.7 3.69 1.68   .47   .69  9.55  .78  .036
      8.00  288.0 2790.4     .0   .00    .0  .00  .00   .00   .00   .00  .00  .000
     nlen= 3   Outflow ID end=228
   Route using Ponce procedure:  C1 > 0
PRINT HYD          ID= 5   CODE= 1

                               OUTFLOW HYDROGRAPH RESERVOIR   502.00

   RUNOFF VOLUME =     1.45076 INCHES     =      10.3742 ACRE-FEET
   PEAK DISCHARGE RATE =     260.04 CFS  AT   1.600 HOURS   BASIN AREA =   .1341 SQ. MI.

*
```

```
**************************************************************************
* BASIN YE
COMPUTE NM HYD       ID= 15    HYD= YE             DA=0.02964 SQ MI
                     PER A= 97     B= 0      C= 3       D= 0
                     TP= -0.13333 HRS   RAIN= -1

   K =  .161262HR    TP =  .133330HR    K/TP RATIO =  1.209496     SHAPE CONSTANT, N =  2.939924
   UNIT PEAK =  61.553    CFS   UNIT VOLUME =    .9995       B =   276.89      P60 = 1.9000
   AREA =      .029640 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID= 15  CODE= 1

                                    HYDROGRAPH FROM AREA YE


   RUNOFF VOLUME =      .46670 INCHES     =        .7378 ACRE-FEET
   PEAK DISCHARGE RATE =      26.19 CFS  AT   1.533 HOURS   BASIN AREA =   .0296 SQ. MI.


*
**************************************************************************
*S
ADD HYD              ID OUT= 8  HYD= INT.2.AMOLE   IDIN I= 15   IDIN II= 5
PRINT HYD            ID= 8   CODE= 1

                                    HYDROGRAPH FROM AREA INT.2.AMOLE


   RUNOFF VOLUME =     1.27260 INCHES     =      11.1120 ACRE-FEET
   PEAK DISCHARGE RATE =     281.49 CFS  AT   1.600 HOURS   BASIN AREA =   .1637 SQ. MI.


*
**************************************************************************
**************************************************************************
*S
*S INTERIM W/ V (POINTE WEST)              INTERIM W/ V (POINTE WEST)
*S RE-USE HYD 312 W/ ID=19, HYD V W/ ID=11, & HYD YE W/ ID=15
*S ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST
ADD HYD              ID OUT= 3  HYD= 602       IDIN I= 19   IDIN II= 11
PRINT HYD            ID= 3   CODE= 1

                                    HYDROGRAPH FROM AREA   602.00


   RUNOFF VOLUME =     1.42843 INCHES     =      12.6524 ACRE-FEET
   PEAK DISCHARGE RATE =     323.76 CFS  AT   1.533 HOURS   BASIN AREA =   .1661 SQ. MI.


*
**************************************************************************
*C APPROX AS 12' BOTTOM, 3H:1V SIDESLOPES, n=.030, L APX 1250, S=.005
COMPUTE RATING CURVE CID= -1   VS NO= 1    NO SEGS FOR MANNING n= 1
                     ELMIN= 0 ELMAX= 8  FT  CHSLP= .005   FPSLP= .005   FT/FT
                     n .030  DIST 60
                     DIST  ELEV     DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0      8       24    0      36    0      60    8
ROUTE MCUNGE         ID= 5   HYD= 604       INFLOW HYD ID= 3  DT= 0.0 HR
                     LENGTH= 1250     NSUBRCH= 0     SLOPE= .005
                     MAYCODE= 0       REGCODE= 0     CCODE= 0
     Inflow ID end=222   Max Number=600
```

dt = .0333 hr q0 = 161.88 cfs ck0 = 6.19 fps
nlen = 3 dlen = 416.67

Depth ft	Area sf	Q cfs	Qbar cfs	ck fps	b ft	C	D	c1	c2	vel fps	fr	tt hr
.00	.0	.0	5.1	1.84	7.3	.53	.18	.78	-.17	1.84	.52	.189
.42	5.6	10.3	22.1	3.56	15.8	1.03	.19	.83	.10	2.48	.58	.140
.84	12.2	34.0	51.9	4.64	18.3	1.34	.29	.78	.24	3.22	.61	.108
1.26	19.9	69.8	93.8	5.48	20.8	1.58	.39	.73	.33	3.85	.63	.090
1.68	28.7	117.8	148.3	6.19	23.4	1.78	.49	.70	.39	4.41	.65	.079
2.11	38.6	178.8	216.0	6.83	25.9	1.97	.59	.67	.44	4.91	.66	.071
2.53	49.5	253.3	297.7	7.42	28.4	2.14	.68	.64	.48	5.37	.68	.065
2.95	61.4	342.1	394.0	7.97	30.9	2.29	.77	.62	.51	5.80	.69	.060
3.37	74.5	445.9	505.7	8.49	33.5	2.44	.85	.60	.53	6.20	.70	.056
3.79	88.6	565.5	633.6	8.98	36.0	2.59	.94	.58	.56	6.59	.71	.053
4.21	103.7	701.7	778.4	9.46	38.5	2.72	1.03	.57	.58	6.96	.72	.050
4.63	119.9	855.1	940.9	9.92	41.1	2.86	1.11	.55	.60	7.32	.73	.047
5.05	137.2	1026.6	1121.7	10.36	43.6	2.99	1.19	.54	.61	7.66	.74	.045
5.47	155.6	1216.8	1321.6	10.80	46.1	3.11	1.27	.53	.63	8.00	.74	.043
5.89	175.0	1426.4	1541.3	11.22	48.6	3.23	1.36	.51	.64	8.32	.75	.042
6.32	195.5	1656.2	1781.5	11.63	51.2	3.35	1.44	.50	.65	8.64	.76	.040
6.74	217.0	1906.8	2042.9	12.04	53.7	3.47	1.52	.49	.67	8.95	.76	.039
7.16	239.6	2178.9	2326.1	12.44	56.2	3.58	1.60	.48	.68	9.25	.77	.038
7.58	263.3	2473.3	2631.9	12.82	58.7	3.69	1.68	.47	.69	9.55	.78	.036
8.00	288.0	2790.4	.0	.00	.0	.00	.00	.00	.00	.00	.00	.000

nlen= 3 Outflow ID end=227
Route using Ponce procedure: C1 > 0
PRINT HYD ID= 5 CODE= 1

HYDROGRAPH FROM AREA 604.00

RUNOFF VOLUME = 1.42737 INCHES = 12.6430 ACRE-FEET
PEAK DISCHARGE RATE = 320.37 CFS AT 1.600 HOURS BASIN AREA = .1661 SQ. MI.

*
****
*C RE-USE HYD YE W/ ID=15, ADD TO ROUTED FLOW
ADD HYD ID OUT= 98 HYD= INT.V.2AMOLE IDIN I= 15 IDIN II= 3
PRINT HYD ID= 9 CODE= 1

OUTFLOW HYDROGRAPH REACH .00

RUNOFF VOLUME = .00000 INCHES = .0000 ACRE-FEET
PEAK DISCHARGE RATE = .00 CFS AT .000 HOURS BASIN AREA = .0000 SQ. MI.

*
****
****
*S
*S
*S ALLEY ALLEY ALLEY
*S BASINS B, G, & SITE-1 TO ALLEY. BASIN A NOT CONTRIBUTE INTERIM/FUTURE
*S FUTURE/INTERIM ALLEY FLOWS FOR INFO ONLY; HOLD TO EXISTING CONDITIONS
****
* BASIN B
COMPUTE NM HYD ID= 1 HYD= B DA=0.01520 SQ MI
PER A= 0 B= 16 C= 8 D= 76
TP= -0.13333 HRS RAIN= -1

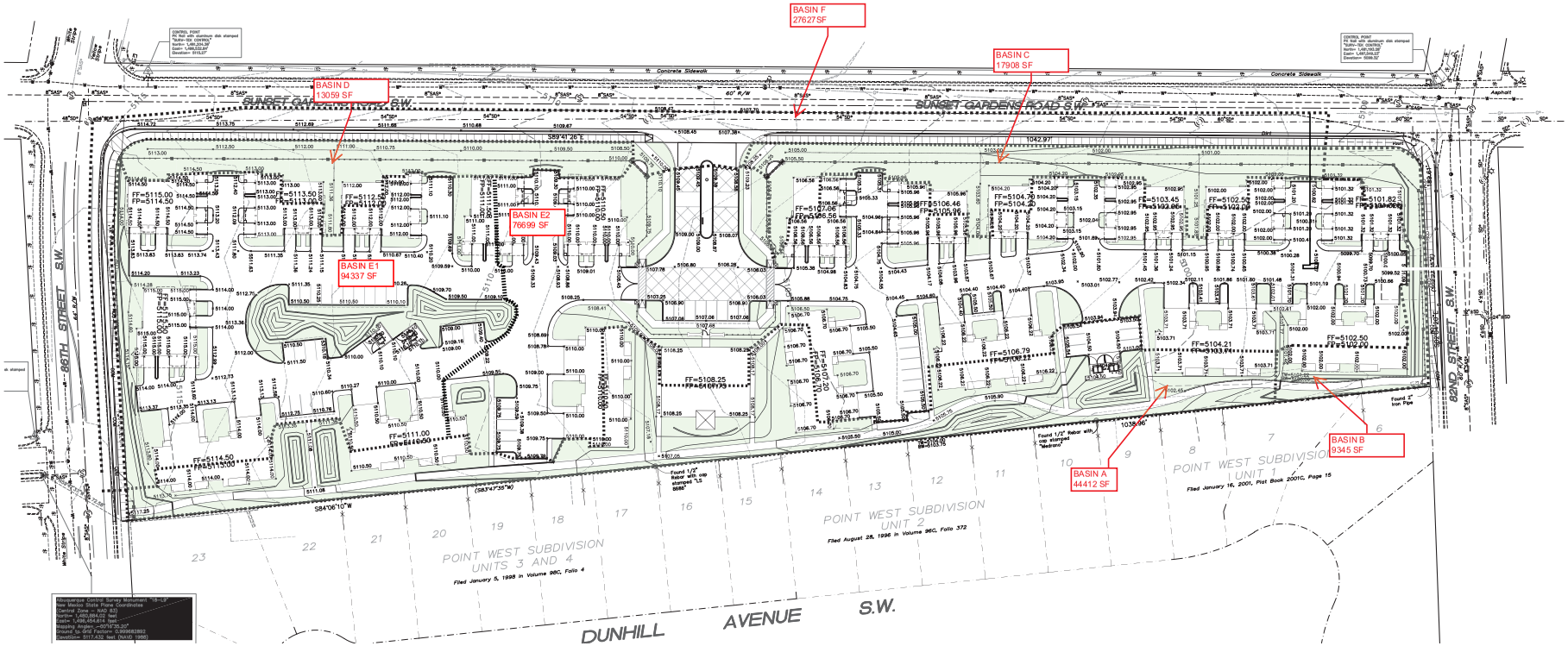
K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

```
   UNIT PEAK =   45.598    CFS   UNIT VOLUME =    .9991      B =   526.28      P60 = 1.9000
   AREA =      .011552 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .122603HR    TP =   .133330HR    K/TP RATIO =   .919546     SHAPE CONSTANT, N =  3.849372
   UNIT PEAK =   9.4394    CFS   UNIT VOLUME =    .9990      B =   345.00      P60 = 1.9000
   AREA =      .003648 SQ MI    IA =    .45000 INCHES    INF =   1.11000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 1   CODE= 1

                                HYDROGRAPH FROM AREA B


   RUNOFF VOLUME =     1.69764 INCHES     =      1.3762 ACRE-FEET
   PEAK DISCHARGE RATE =      38.30 CFS  AT   1.500 HOURS   BASIN AREA =   .0152 SQ. MI.


*
*************************************************************************
* BASIN G
COMPUTE NM HYD      ID= 2    HYD= G             DA=0.01501 SQ MI
                    PER A= 0      B= 20      C= 10      D= 70
                    TP= -0.13333 HRS   RAIN= -1

   K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   41.473    CFS   UNIT VOLUME =    .9991      B =   526.28      P60 = 1.9000
   AREA =      .010507 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .122603HR    TP =   .133330HR    K/TP RATIO =   .919546     SHAPE CONSTANT, N =  3.849372
   UNIT PEAK =   11.652    CFS   UNIT VOLUME =    .9992      B =   345.00      P60 = 1.9000
   AREA =      .004503 SQ MI    IA =    .45000 INCHES    INF =   1.11000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 2   CODE= 1

                                HYDROGRAPH FROM AREA G


   RUNOFF VOLUME =     1.62555 INCHES     =      1.3013 ACRE-FEET
   PEAK DISCHARGE RATE =      36.52 CFS  AT   1.500 HOURS   BASIN AREA =   .0150 SQ. MI.


*
*************************************************************************
ADD HYD             ID OUT= 3  HYD= TO.TOP.ALLEY     IDIN I= 1   IDIN II= 2
PRINT HYD           ID= 3   CODE= 1

                                HYDROGRAPH FROM AREA TO.TOP.ALLEY


   RUNOFF VOLUME =     1.66180 INCHES     =      2.6775 ACRE-FEET
   PEAK DISCHARGE RATE =      74.92 CFS  AT   1.500 HOURS   BASIN AREA =   .0302 SQ. MI.


*
*************************************************************************
* BASIN SITE.I
COMPUTE NM HYD      ID= 1    HYD= SITE.I        DA=0.00151 SQ MI
                    PER A= 0      B= 35      C= 0       D= 65
```

```
                TP= -0.13333 HRS   RAIN= -1

   K =  .072665HR    TP =  .133330HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =  3.8741    CFS  UNIT VOLUME =  .9965       B =  526.28       P60 = 1.9000
   AREA =      .000982 SQ MI    IA =  .10000 INCHES    INF =  .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333


   K =  .130790HR    TP =  .133330HR    K/TP RATIO =  .980950     SHAPE CONSTANT, N =  3.599935
   UNIT PEAK =  1.2984    CFS  UNIT VOLUME =  .9894       B =  327.55       P60 = 1.9000
   AREA =      .000529 SQ MI    IA =  .50000 INCHES    INF =  1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

PRINT HYD          ID= 1   CODE= 1

                                HYDROGRAPH FROM AREA SITE.I


   RUNOFF VOLUME =     1.53130 INCHES     =        .1233 ACRE-FEET
   PEAK DISCHARGE RATE =       3.50 CFS  AT   1.500 HOURS   BASIN AREA =   .0015 SQ. MI.


*
**********************************************************************
ADD HYD            ID OUT= 4  HYD= BOT.ALLEY     IDIN I= 1   IDIN II= 3
PRINT HYD          ID= 4   CODE= 1

                                HYDROGRAPH FROM AREA BOT.ALLEY


   RUNOFF VOLUME =     1.65558 INCHES     =       2.8008 ACRE-FEET
   PEAK DISCHARGE RATE =      78.42 CFS  AT   1.500 HOURS   BASIN AREA =   .0317 SQ. MI.


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

   NORMAL PROGRAM FINISH         END TIME (HR:MIN:SEC) = 12:37:11
```

APPENDIX C

HYDRAULIC CALCULATIONS


BASIN F
27627SF
BASIN C
17908 SF
BASIN D
13059 SF
BASIN E2
76699 SF
BASIN E1
94337 SF
BASIN B
9345 SF
BASIN A
44412 SF
SUNSET GARDENS ROAD S.W.
86TH STREET S.W.
82ND STREET S.W.
DUNHILL AVENUE S.W.
POINT WEST SUBDIVISION UNITS 3 AND 4
Filed January 5, 1998 in Volume 96C, Folio 4
POINT WEST SUBDIVISION UNIT 2
Filed August 28, 1996 in Volume 96C, Folio 372
POINT WEST SUBDIVISION UNIT 1
Filed January 16, 2001, Plat Book 2001C, Page 15

BASIN MAP

Weighted E Method

											100-Year, 6-hr.		
Basin	Area	Area	Treatment A		Treatment B		Treatment C		Treatment D		Weighted E	Volume	Flow
	(sf)	(acres)	%	(acres)	%	(acres)	%	(acres)	%	(acres)	(ac-ft)	(ac-ft)	cfs
ALLOWED													24.63
PROPOSED A	44412.00	1.020	0%	0	18%	0.184	20%	0.2039	62%	0.632	1.540	0.131	3.72
PROPOSED B	9345.00	0.215	0%	0	20%	0.043	34%	0.0729	46%	0.099	1.377	0.025	0.73
PROPOSED C	17908.00	0.411	0%	0	16%	0.066	51%	0.2097	33%	0.136	1.262	0.043	1.33
PROPOSED D	13059.00	0.300	0%	0	20%	0.060	62%	0.1859	18%	0.054	1.102	0.028	0.89
PROPOSED E-1	94337.00	2.166	0%	0	11%	0.238	20%	0.4331	69%	1.494	0.503	0.091	8.26
PROPOSED E2	76699.00	1.761	0%	0	11%	0.194	15%	0.2641	74%	1.303	0.404	0.059	6.85
PROPOSED F	27627.00	0.634	0%	0	0%	0.000	8%	0.0507	92%	0.583	0.158	0.008	2.70

TOTAL 24.46

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Where for 100-year, 6-hour storm- zone 1

Ea= 0.44	Qa= 1.29
Eb= 0.67	Qb= 2.03
Ec= 0.99	Qc= 2.87
Ed= 1.97	Qd= 4.37

ONSITE Conditons
FIRST FLUSH WATER QUALITY VOLUME

	REQUIRED (CF)	PROVIDED (CF)
BASIN A	780	3375
BASIN B	122	0
BASIN C	167	377
BASIN D	67	242
BASIN E-1	1844	2409
BASIN E-2	1608	0
BASIN F	NA	NA

Narrative

This site is within the boundary of the Amole del norte drainage basin. The site is identified as basin U within the Val Halla drainage report. this site drains to an existing storm drain within sunset gardens. This site is allowed to drain 24.63 cfs. We are draining 24.46cfs to this storm drain there is no upland flow. This plan provided for onsite ponding of the water quality volume
This plan is in conformance to the master drainage plan

APPENDIX C

HYDRAULIC CALCULATIONS

DROP INLET CALCULATIONS

INLET	TYPE OF INLET	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
INLET A	DOUBLE	7.68	30.22	0.6678	1

ORIFICE EQUATION

Q = CA sqrt(2gH)

C = 0.6

g = 32.2

* FLOW DOUBLED DUE TO SUMP CONDITION

Pipe Capacity

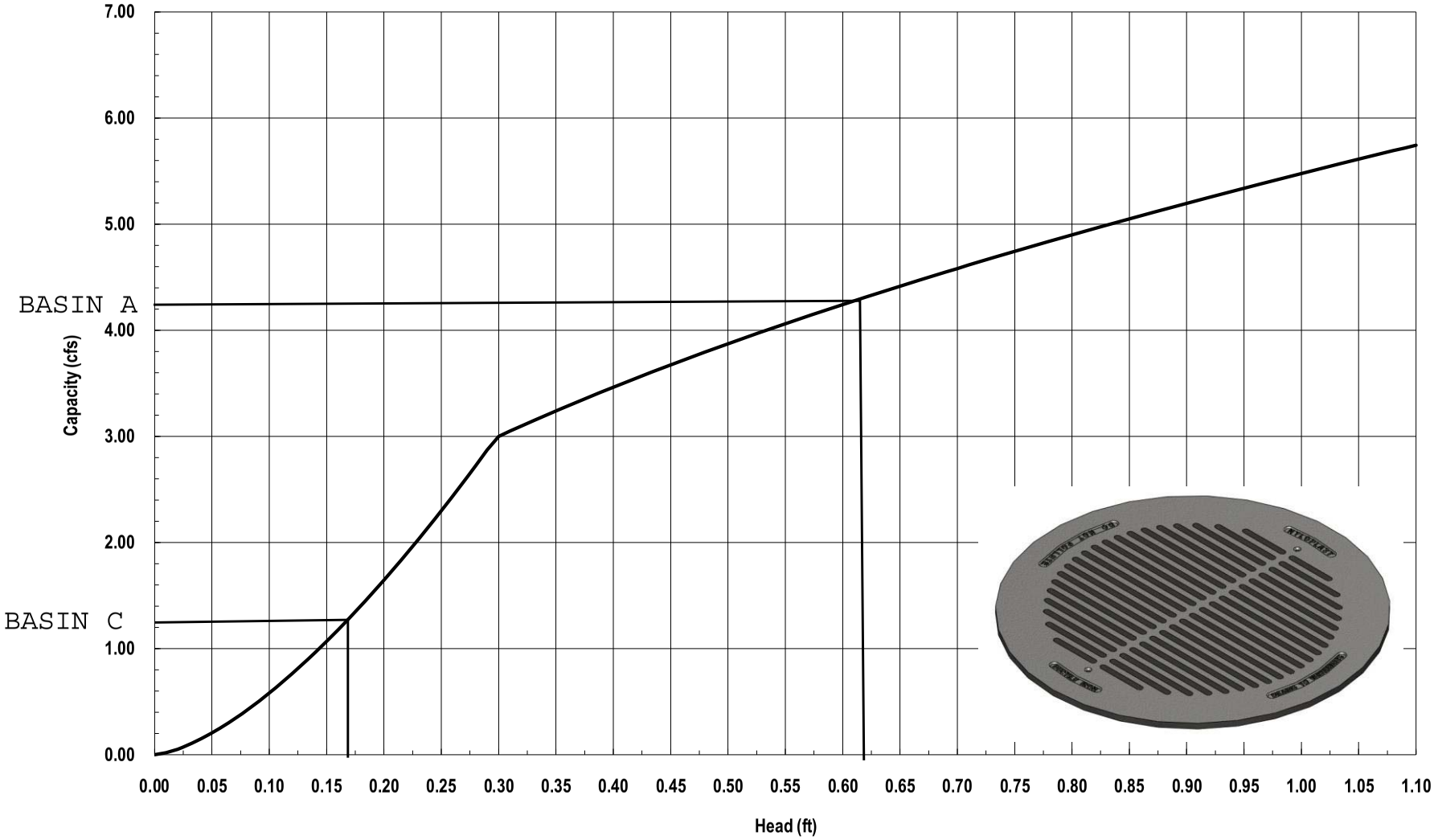
Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
EXISISTING	24	3	3.14	0.5	34.05	15.84	5.04

Manning's Equation:

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.015

Nyloplast 24" Drop In Grate Inlet Capacity Chart



Nyloplast®

3130 Verona Avenue • Buford, GA 30518

(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490

NO WORK SHALL BE ALLOWED WITHIN PUBLIC RIGHT OF WAY
WITHOUT AN APPROVED WORK ORDER OF EXCAVATION PERMIT

CONTROL POINT
PK Nail with
aluminum disk
stamped "SURV-TEK
CONTROL"
North=
1,481,204.38'
East= 1,496,532.84'
Elevation= 5115.27'

DEPRESS LANDSCAPE AREA
1' FOR WATER HARVETING

BUILD WATER HARVESTING POND
TOP=5111.36
BOTTOM=5110.00
PROPOSED VOLUME=242 CU FT

BUILD 1-2' SW CULVERT
PER COA STD DWG #2236
TACKWELD BOLTS
EXTEND 2' PAST BACK OF SW
INV IN=5109.85
FL @ CURB=5109.75

MATCHLINE

SUNSET GARDENS ROAD S.W.
60' R/W

110' DRIVECUT
PER COA STD DWG #2426

86TH STREET S.W.

DUNHILL AVENUE S.W.

2' CURB CUT

FF=5115.00
FP=5114.50

FF=5113.50
FP=5113.00

FF=5112.50
FP=5112.00

FF=5111.50
FP=5111.00

FF=5107.06
FP=5106.56

FF=5107.20
FP=5106.70

FF=5108.25
FP=5107.75

FF=5114.50
FP=5113.00

FF=5111.00
FP=5110.50

FF=5110.50
FP=5110.00

BUILD WATER HARVESTING POND
TOP=5109.00
BOTTOM=5108.00
PROPOSED VOLUME=963 CU FT

BUILD WATER HARVESTING POND
TOP=5110.00
BOTTOM=5109.00
PROPOSED VOLUME=1446 CU FT

BUILD WATER HARVESTING POND
TOP=5110.00
BOTTOM=5109.00
PROPOSED VOLUME=479 CU FT

BUILD WATER HARVESTING POND
TOP=5111.00
BOTTOM=5110.00
PROPOSED VOLUME=479 CU FT

BEGIN 1'-2' RW
DESIGN BY OTHERS
TIE TO EX. WALL

PROPERTY LINE

PROJECT SIDE

RIGHT OF WAY
OR
ADJOINING PROPERTY

WALL AND FOOTING
SHALL NOT ENCROACH

PERIMETER WALL DETAIL (TYPICAL)_

CAUTION:

EXISTING UTILITIES ARE NOT SHOWN. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS.

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.

2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.

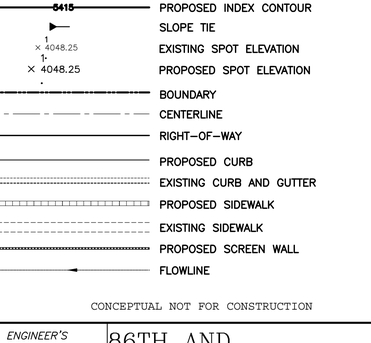
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.

4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.

VICINITY MAP: L-09-Z

National Flood Hazard Layer FIRMette



FIRM MAP:

LEGAL DESCRIPTION:

TRACT 52, UNIT 2, TOWN OF ATRISCO GRANT

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.

2. ALL CURB AND GUTTER TO 6" HEADER UNLESS OTHERWISE NOTED.

3. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

4. ALL NEW PAVING SHALL BE 6" PCC OVER 8" SUBGRADE PREPARATION IN CONFORMANCE TO ACI 330R-08. UNLESS OTHERWISE NOTED.

5. ANY CURBS OR PAVEMENT NEGATIVELY IMPACTED BY CONSTRUCTION ACTIVITY SHALL BE REPLACED TO MATCH EXISTING CONDITIONS.

6. ALL SITE WORK SHALL CONFORM TO CITY OF ALBUQUERQUE STANDARDS FOR PUBLIC WORKS CONSTRUCTION EDITION 9

LEGEND

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- SLOPE TIE
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED CURB
- EXISTING CURB AND GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- PROPOSED SCREEN WALL
- FLOWLINE

CONCEPTUAL NOT FOR CONSTRUCTION

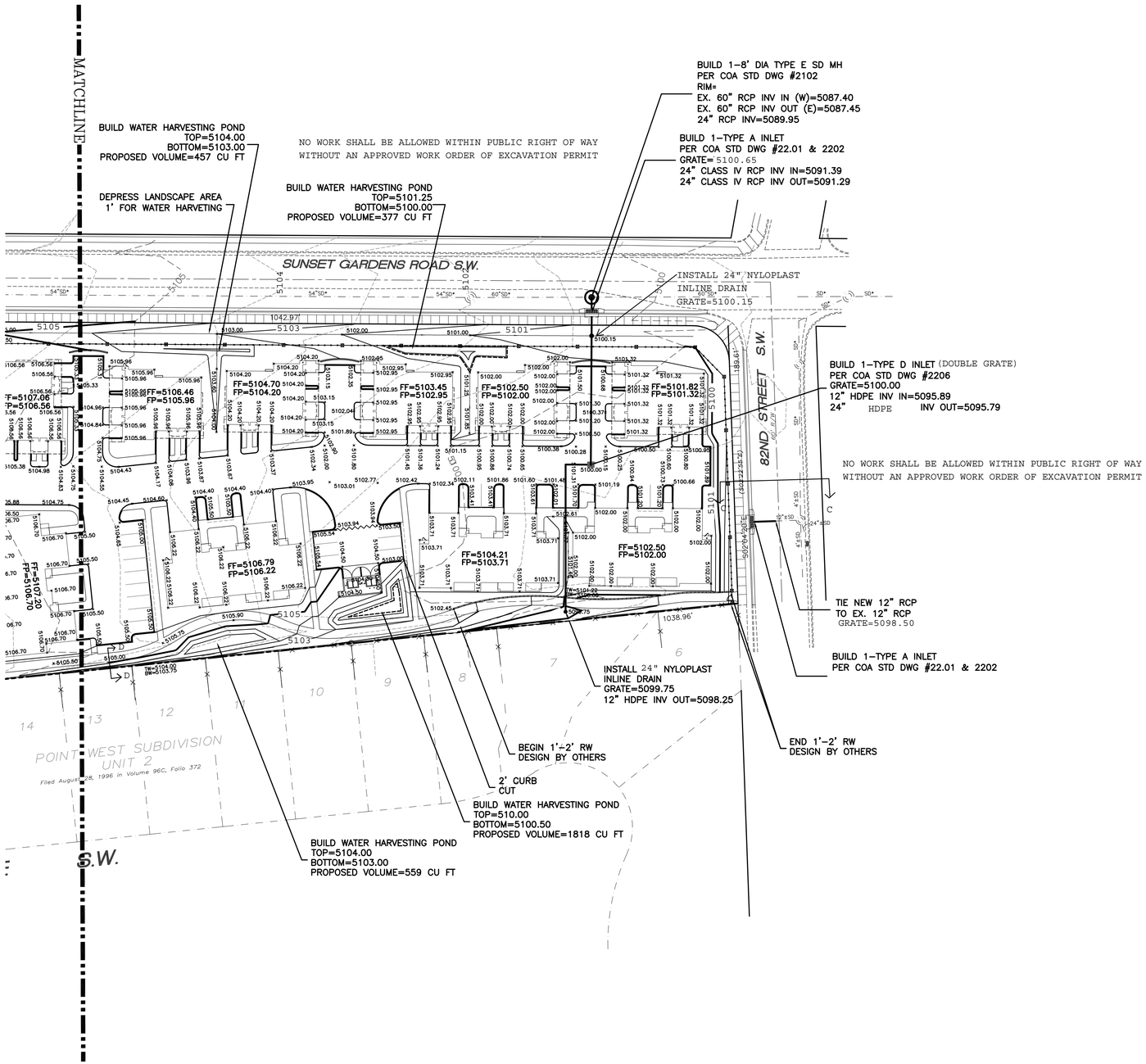
N

GRAPHIC SCALE

40 20 0 20 40

SCALE: 1"=40'

ENGINEER'S SEAL DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER 11/1/18 11/25/18 DAVID SOULE P.E. #14522	86TH AND SUNSET GARDENS GRADING AND DRAINAGE PLAN Rio Grande Engineering 1606 CENTRAL AVENUE SE SUITE 201 ALBUQUERQUE, NM 87106 (505) 872-0999
DRAWN BY WCWJ DATE 7-17-18 21894-LAYOUT-5-01-18 SHEET # 1 JOB # 21894	



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5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.

VICINITY MAP: L–09–Z

FIRM MAP:

LEGAL DESCRIPTION:

TRACT 52, UNIT 2, TOWN OF ATRISCO GRANT

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.

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6. ALL SITE WORK SHALL CONFORM TO CITY OF ALBUQUERQUE STANDARDS FOR PUBLIC WORKS CONSTRUCTION EDITION 9

LEGEND

5414	EXISTING CONTOUR
5415	EXISTING INDEX CONTOUR
5414	PROPOSED CONTOUR
5415	PROPOSED INDEX CONTOUR
	SLOPE TIE
× 4048.25	EXISTING SPOT ELEVATION
× 4048.25	PROPOSED SPOT ELEVATION
	BOUNDARY
	CENTERLINE
	RIGHT–OF–WAY
	PROPOSED CURB
	EXISTING CURB AND GUTTER
	PROPOSED SIDEWALK
	EXISTING SIDEWALK
	PROPOSED SCREEN WALL
	FLOWLINE

CAUTION:

EXISTING UTILITIES ARE NOT SHOWN. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS.

GRAPHIC SCALE

SCALE: 1"=40'

CONCEPTUAL NOT FOR CONSTRUCTION

ENGINEER'S SEAL

DAVID SOULE
NEW MEXICO
14522
REGISTERED PROFESSIONAL ENGINEER

11/1/18

11/25/18

DAVID SOULE
P.E. #14522

86TH AND SUNSET GARDENS

GRADING AND DRAINAGE PLAN

Rio Grande Engineering
1606 CENTRAL AVENUE SE
SUITE 201
ALBUQUERQUE, NM 87106
(505) 872–0999

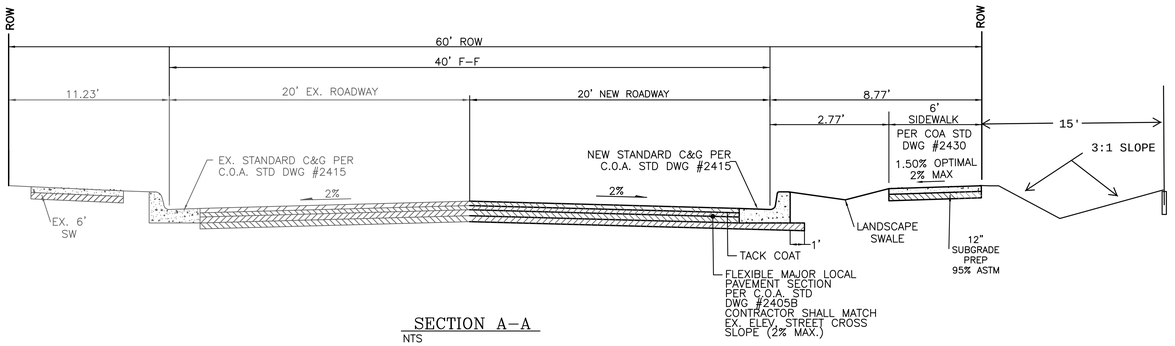
DRAWN BY WCWJ

DATE
7–17–18

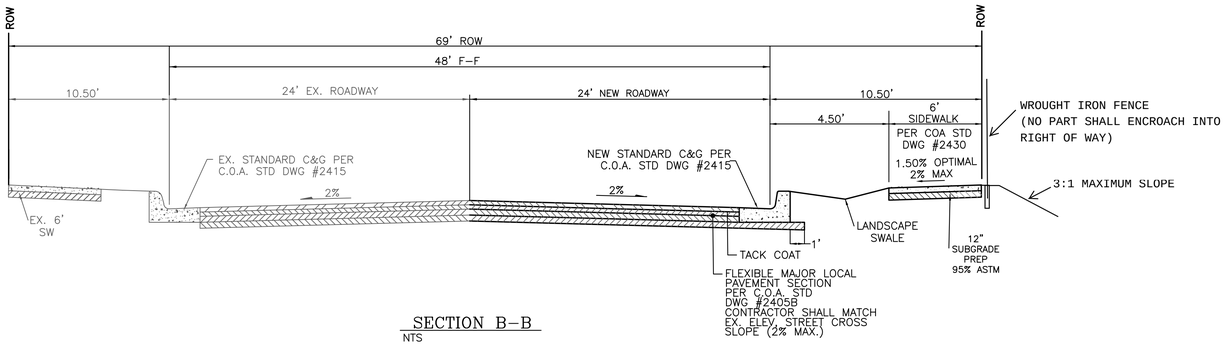
21894–LAYOUT–5–01–18

SHEET #
2

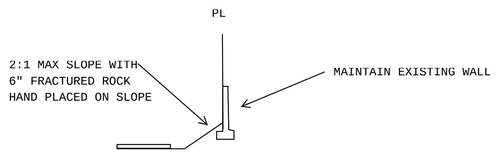
JOB #
21894



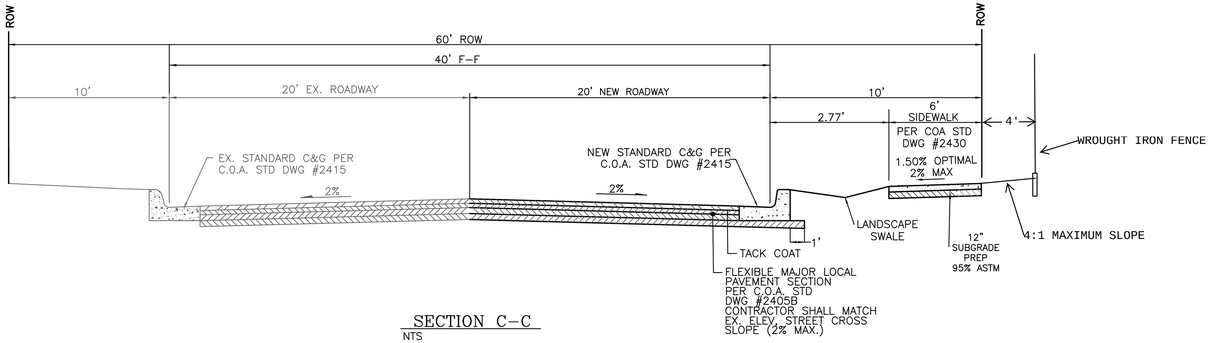
SECTION A-A
NTS



SECTION B-B
NTS



SECTION D-D



SECTION C-C
NTS

ENGINEER'S SEAL

DAVID SOULE
NEW MEXICO
14522
REGISTERED PROFESSIONAL ENGINEER

11/25/18

DAVID SOULE
P.E. #14522

86TH AND SUNSET GARDENS

SECTIONS

Rio Grande Engineering
1606 CENTRAL AVENUE SE
SUITE 201
ALBUQUERQUE, NM 87106
(505) 872-0999

DRAWN BY WCWJ

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