

m10/
Rolling Hills

PERMANENT EASEMENT

Grant of Permanent Easement, between Empire Southwest LTD. Co. ("Grantor"), whose address is 6121 Indian School Rd. Suite 200, Albuquerque, NM 87110 and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is PO Box 1293, Albuquerque, New Mexico, 87103:

Grantor grants to the City an exclusive, permanent easement ("Easement") in, over, upon and across the real property described on Exhibit "A" attached hereto ("Property") for the construction, installation, maintenance, repair, modification, replacement and operation of **PERMANENT PUBLIC STORM DRAINAGE IMPROVEMENTS, CITY PROJECT # 620781**, together with the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of this Easement.

In the event Grantor constructs any improvements within the easement, the City has the right to enter upon Grantors property at any time and perform whatever inspection, installation, maintenance, repair modification or removal ("Work") it deems appropriate without liability to the City. If the work effects any improvements of Encroachments made by the Grantor, the City will not be financially or otherwise responsible for rebuilding or repairing of improvements or Encroachments. If in the opinion of the City, the Work to be performed by the City could endanger the structural integrity or otherwise damage the improvements of Encroachments, the Grantor shall, at its own expense, take whatever protective measures are required to safeguard the improvements or Encroachments.

Grantor covenants and warrants that Grantor is the owner in fee simple of the Property, that Grantor has a good lawful right to convey the Property or any part thereof and that Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

The grant and other provisions of this Easement constitute covenants running with the land for the benefit of the City and its successors and assigns until terminated.

WITNESS my hand and seal this 9th day of September, 1999.

GRANTOR:

(Individual)

GRANTOR: EMPIRE Southwest LTD Co.

BY: Phillip Lim

ITS: Designated Agent
(Corporation or Partnership)



Judy D. Woodward

Bern. Co. EASE

R 11.00

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Page: 1 of 3

09/13/1999 01:41P

Bk-9912 Pg-7800

TOWN OF ATRISCO GRANT
ESTATE OF JOSE F. GARCIA
(8/11/79, B11-170)

PORTION OF
TRACT 415

PORTION OF TRACT 413

PORTION OF TRACT 414

DELTA=43°45'00"
R=78.00'
L=59.56'
T=31.32'
CH=N 54°30'31" E
58.12'

20' PUBLIC DRAINAGE
EASEMENT

TRACT B

N 13°37'04" W
20.00'

N 76°23'01" E
S 76°23'01" W

239.57'
239.56'

DELTA=44°32'19"
R=98.00'
L=76.18'
T=40.13'
CH=N 54°06'52" E
74.28'

S 61°13'37" E
20.04'

FOUND REBAR W/
CAP "LS 6837"

TIE
N 84°38'29" W
2609.65'

Amole Del Norte Diversion Channel
(9/11/80, C17-66)

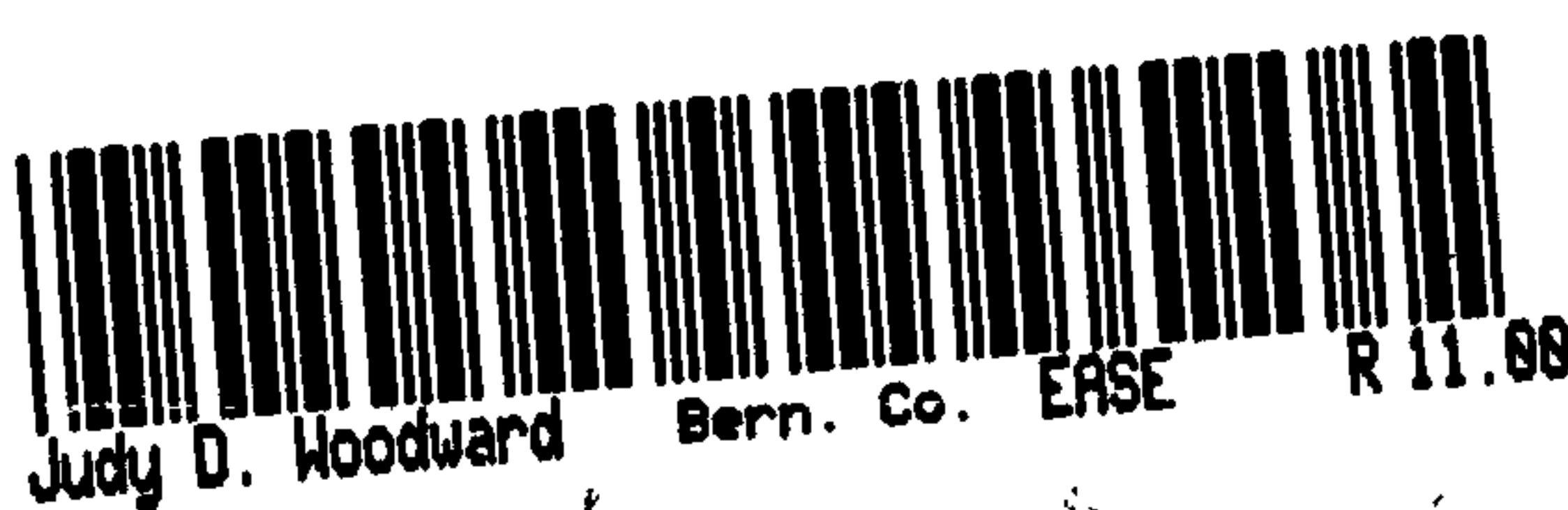
ROLLING HILLS SUBDIVISION
UNIT 1
(5/29/96, 96C-222)

TOWN OF ATRISCO GRANT
UNIT 3
(UNRECORDED)

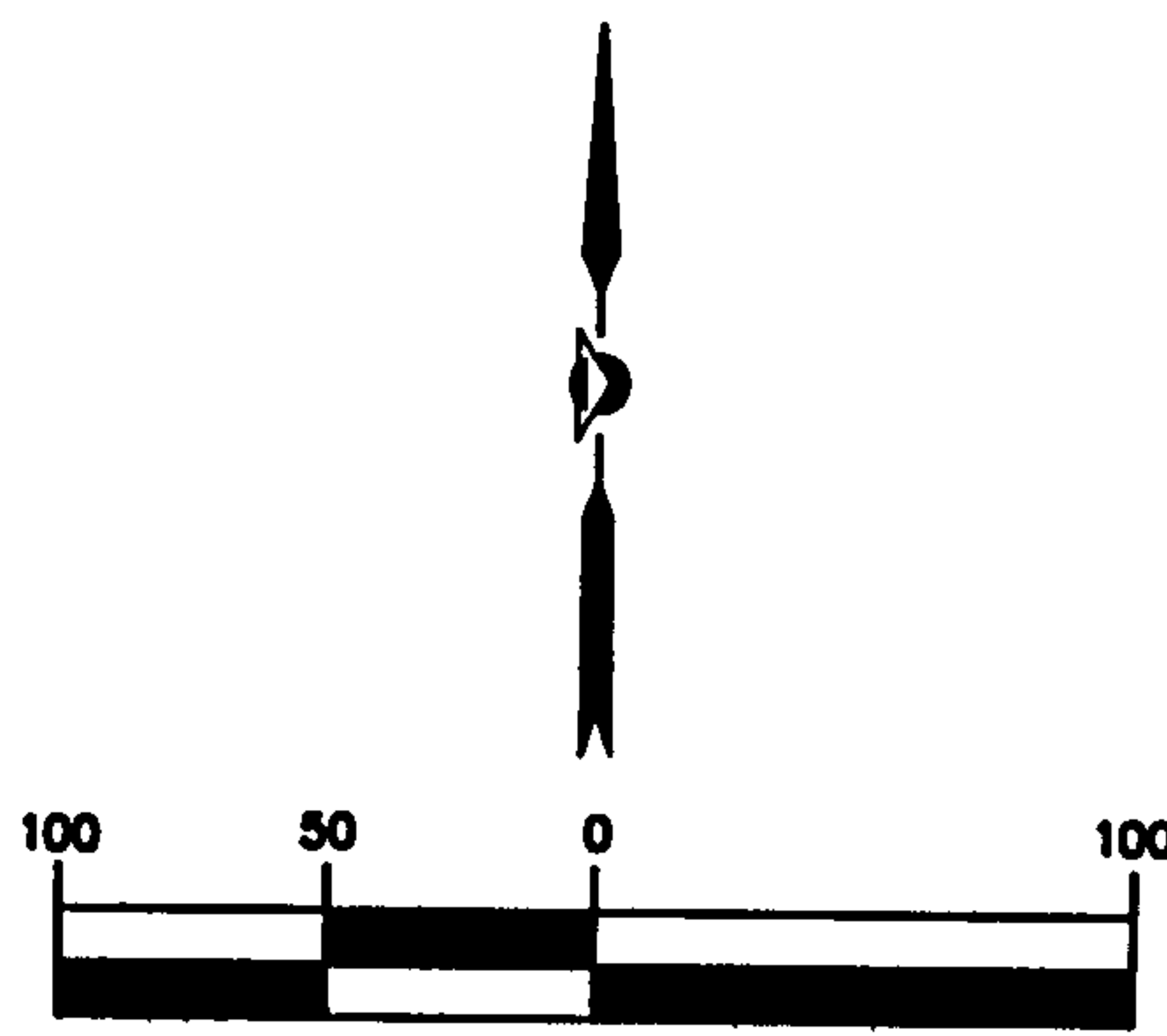
FOUND 3"
IRON PIPE

PARK
MOUNTAIN VIEW ESTATES
UNIT TWO
(3/03/98, 98C-59)

A.C.S. MONUMENT "7-M11"
STANDARD A.C.S. ALUMINUM CAP
(FOUND IN PLACE)
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE-N.A.D. 1927)
X= 363,847.24
Y=1,475,980.04
GRID TO GROUND FACTOR=0.99968378
DELTA ALPHA ANGLE=-0°15'41"



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5279864
Page: 3 of 3
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(IN FEET)
1 inch = 100 ft.

SURVEYOR'S CERTIFICATE

I, LARRY W. MEDRANO LICENSED UNDER THE LAWS OF THE STATE OF NEW MEXICO, DO
HEREBY CERTIFY THAT THIS EASEMENT SURVEY WAS PREPARED BY ME OR UNDER MY
DIRECTION FROM NOTES OF AN ACTUAL FIELD SURVEY, AND THE SURVEY MEETS THE
MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.



Larry W. Medrano
LARRY W. MEDRANO
N.M.L.S. NO. 11993

8/27/99
DATE



PRECISION SURVEYS

8414-D JEFFERSON STREET NE PHONE 505 856 5700
ALBUQUERQUE, NEW MEXICO 87113 FAX 505 856 7900

INDIVIDUAL

STATE OF _____)
) SS.
COUNTY OF _____)

This instrument was acknowledged before me on _____ day of _____,
19____, by _____.

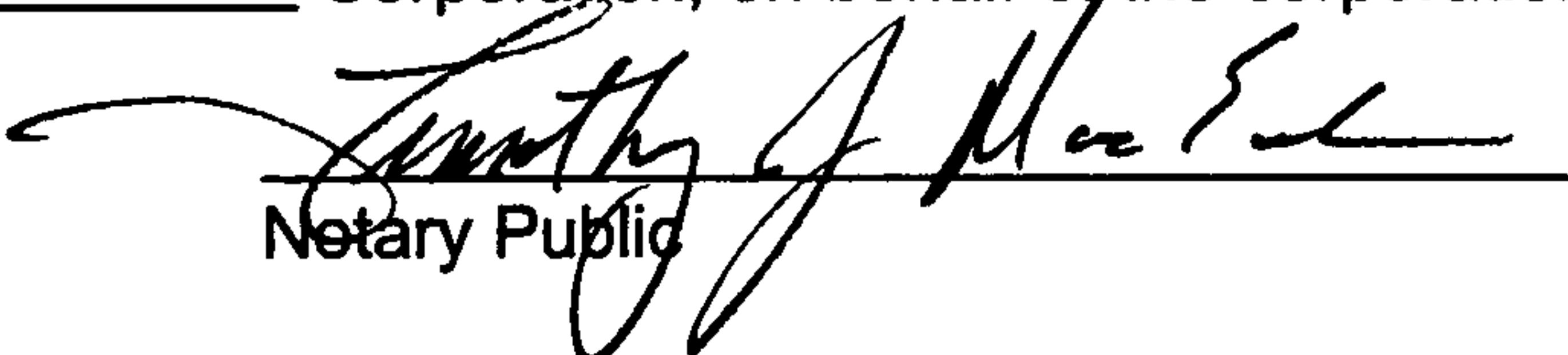
Notary Public

My Commission Expires:

CORPORATION

STATE OF NEW MEXICO)
) SS.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on 9th day of SEPT,
1999, by Phillip C. WARD, of EMPIRE SOUTHWEST LTD.,
a NEW MEXICO LLC Corporation, on behalf of the corporation.



Notary Public

My Commission Expires:
8/12/00

PARTNERSHIP

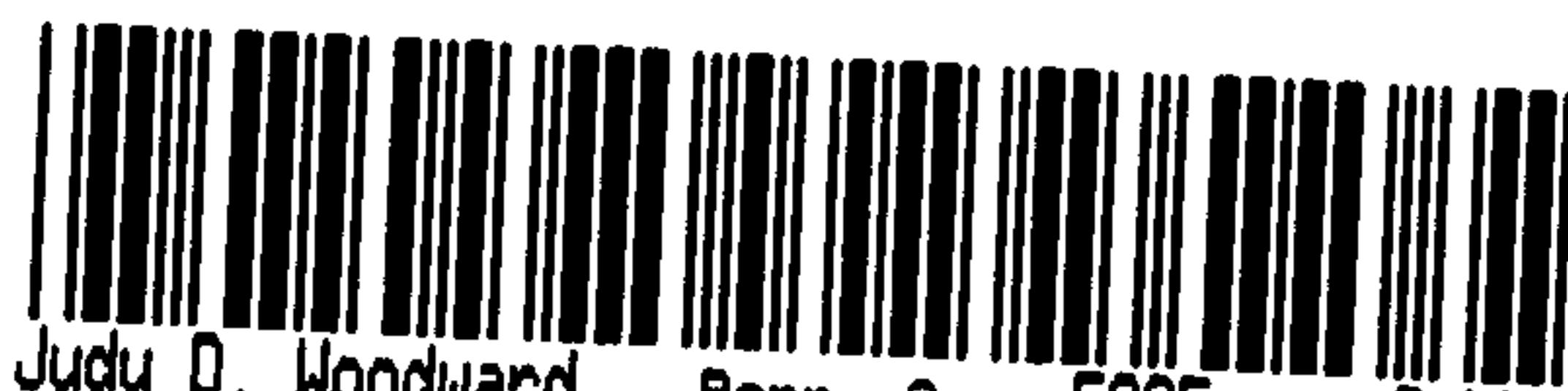
STATE OF _____)
) SS.
COUNTY OF _____)

This instrument was acknowledged before me on _____ day of _____,
19____, by _____, partner(s), on behalf of _____,
a partnership.

Notary Public

My Commission Expires:

(EXHIBIT "A" ATTACHED)



Judy D. Woodward

Bern. Co. EASE

R 11.00

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Page: 3 of 3

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COPY

**STATE OF NEW MEXICO
COUNTY OF BERNALILLO
SECOND JUDICIAL DISTRICT COURT**

LONGFORD at ALBUQUERQUE 1, LTD.,
a Limited Partnership; ET AL.,

Plaintiffs,

v.

No. CV 2005-09439

JULIETTE ALARCON; ET AL.,

Defendants.

JULIETTE ALARCON; ET AL.,

Counter-Plaintiffs,

v.

LONGFORD at ALBUQUERQUE 1, LTD.,
a Limited Partnership, ET AL.

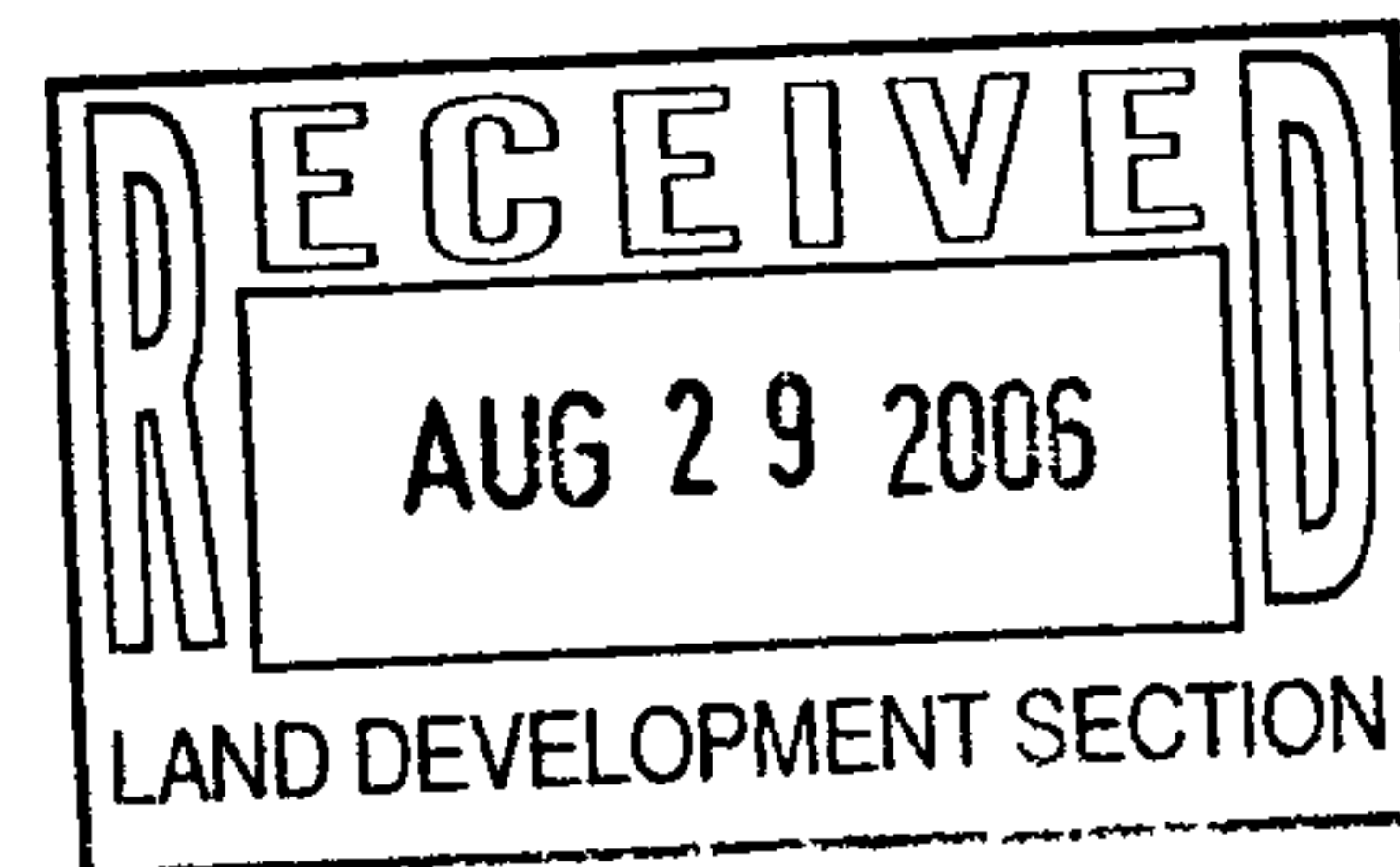
Counter-Defendants.

SUBPOENA FOR:

☐ APPEARANCE OF PERSON FOR ☐ DEPOSITION ☐ TRIAL ☐ HEARING
☒ FOR PRODUCTION OF DOCUMENTS
☐ INSPECTION OF PREMISES

TO: Mr. Richard Dinnen, Director or Custodian of Records
City of Albuquerque, Planning Department, Development Services Division
Plaza Del Sol Building, 600 Second Street NW
Albuquerque, New Mexico 87125-6746

YOU ARE HEREBY COMMANDED TO PRODUCE by United States Mail, postage prepaid to the Defendants-Counter Plaintiffs and their attorneys, John P. Rhinehart, Robertson & Vick, 9505 Arvilla Avenue NE, Albuquerque, New Mexico 87111-4736, within fifteen (15) days form the date of the service of this subpoena, all documents, books, papers, maps, plans,



plates, photographs, reports and all other documentary materials, regardless of physical form or characteristics, pertaining to the planning, development and construction of the subdivisions commonly known as Rolling Hills and Mountain View Estates (The geographic boundaries of the subdivisions are: north of Arenal Road; south of Sage Road; east of Unser Boulevard, and west of the Amole Del Norte Diversion Channel in southwest section of Albuquerque, New Mexico).

IF YOU DO NOT COMPLY WITH THIS SUBPOENA you may be held in contempt of Court and punished by fine or imprisonment.

DATED: August 28, 2006.

ORIGINAL SIGNED BY JOHN P. RHINEHART

JOHN P. RHINEHART, Esquire

ROBERTSON & VICK

9505 Arvilla Avenue NE

Albuquerque, New Mexico 87111-4736

(505) 296-8144

RETURN FOR COMPLETION BY SHERIFF OR DEPUTY

STATE OF NEW MEXICO)
) ss.
COUNTY OF _____)

I certify that on the ____ day of _____, 2006, in _____ County, I served this subpoena on _____ by delivering to the person named a copy of the subpoena, a witness fee in the amount of \$_____ and mileage in the amount of \$_____.

Deputy Sheriff

RETURN FOR COMPLETION BY OTHER PERSON MAKING SERVICE

I, being duly sworn on oath, state that I am over the age of eighteen (18) years and not a party to the lawsuit, and that on the ____ day of _____, 2006, in _____ County, I served this subpoena on _____ by delivering to the person named a copy of the subpoena, a witness fee in the amount of \$_____ and mileage in the amount of \$_____.

Person Making Service

CERTIFICATE OF SERVICE

I hereby certify that I caused a copy of the subpoena to be served on the following persons or entities on this 29th day of August.

Plaintiff's-Counter Defendants' attorney of record, Gerald G. Dison, Esquire, DIXON, SCHOLL & BAILEY, P.A., Post Office Box 26746, Albuquerque, New Mexico 87125-6746 on August 28, 2006.

ORIGINAL SIGNED BY JOHN P. RHINEHART

JOHN P. RHINEHART, Esquire
ROBERTSON & VICK
9505 Arvilla Avenue NE
Albuquerque, New Mexico 87111-4736
(505) 296-8144

1. *A command to produce evidence or to permit inspection may be joined with a command to appear for deposition or trial.*

2. *A person commanded to produce and permit inspection and copying of designated books, papers, documents or tangible things, or inspection of premises need not appear in person at the place of production or inspection unless commanded to appear for deposition, hearing or trial.*

3. *If a person's attendance is commanded one full day's per diem must be tendered with the subpoena, unless the subpoena is issued on behalf of the state or an officer or agency thereof. Mileage must also be tendered at the time of service of the subpoena as provided by the Per Diem and Mileage Act. Payment of per diem and mileage for subpoenas issued by the state is made pursuant to the regulations of the Administrative Office of the Courts.*

4. *To be completed only if the subpoena is commanding production of documents and things or inspection of premises before trial. If the subpoena is commanding production of documents and things or inspection of premises before trial, it must be served on each party in the manner provided by Rule 1-005. If service is by a party, an affidavit of service must be used instead of a certificate of service.*

PRODUCTION OF PERSONS SUBJECT TO SUBPOENAS

A party or an attorney responsible for the issuance and service of a subpoena shall take reasonable step to avoid imposing an undue burden or expense on a person subject to that subpoena. The court on behalf of which the subpoena was issued shall enforce this duty and impose upon the party of attorney in breach of this duty an appropriate sanction, which may include, but is not limited to, lost earnings and a reasonable attorney's fee.

A person commanded to produce and permit inspection and copying of designated books, papers, documents or tangible things, or inspection of premises need not appear in person at the place of production or inspection, unless commanded to appear for deposition, hearing or trial.

Subject to Subparagraph (2) of Paragraph D below, a person commanded to appear and permit inspection and copying may, within fourteen (14) days after service of the subpoena or before the time specified for compliance if such time is less than fourteen (14) days after service, serve upon the party or attorney designated to the subpoena written objection to inspection or copying of any or all of the designated materials or of the premises. If objection is made, the party serving the subpoena shall not be entitled to inspect and copy the materials or inspect the premises except pursuant to an order of the court by which the subpoena was issued. If objection has been made, the party serving the subpoena may, upon notice to the person commanded to produce, move at any time for an order to compel production. Such an order to compel production shall protect any person who is not a party or an officer of a party from significant expense resulting from the inspection and copying commanded.

On timely motion the court by which a subpoena was issued shall quash or modify the subpoena if it:

- (1) fails to allow reasonable time for compliance,

(2) requires a person who is not a party or an office of a party to travel to a place more than one hundred (100) miles from the place where that person resided, is employed or regularly transacts business in person, except as provided below, such a person may in order to attend trial be commanded to travel from any such place within the state in which the trial is held, or

(3) requires disclosure of privileged or other protected matter and no exception or waiver applies, or

(4) subjects a person to an undue burden.

If a subpoena:

(1) requires disclosure of a trade secret or other confidential research, development or commercial information, or

(2) requires disclosure of an unretained expert's opinion or information not describing specific events or occurrences in dispute and resulting from the expert's study made not at the request of any party, or

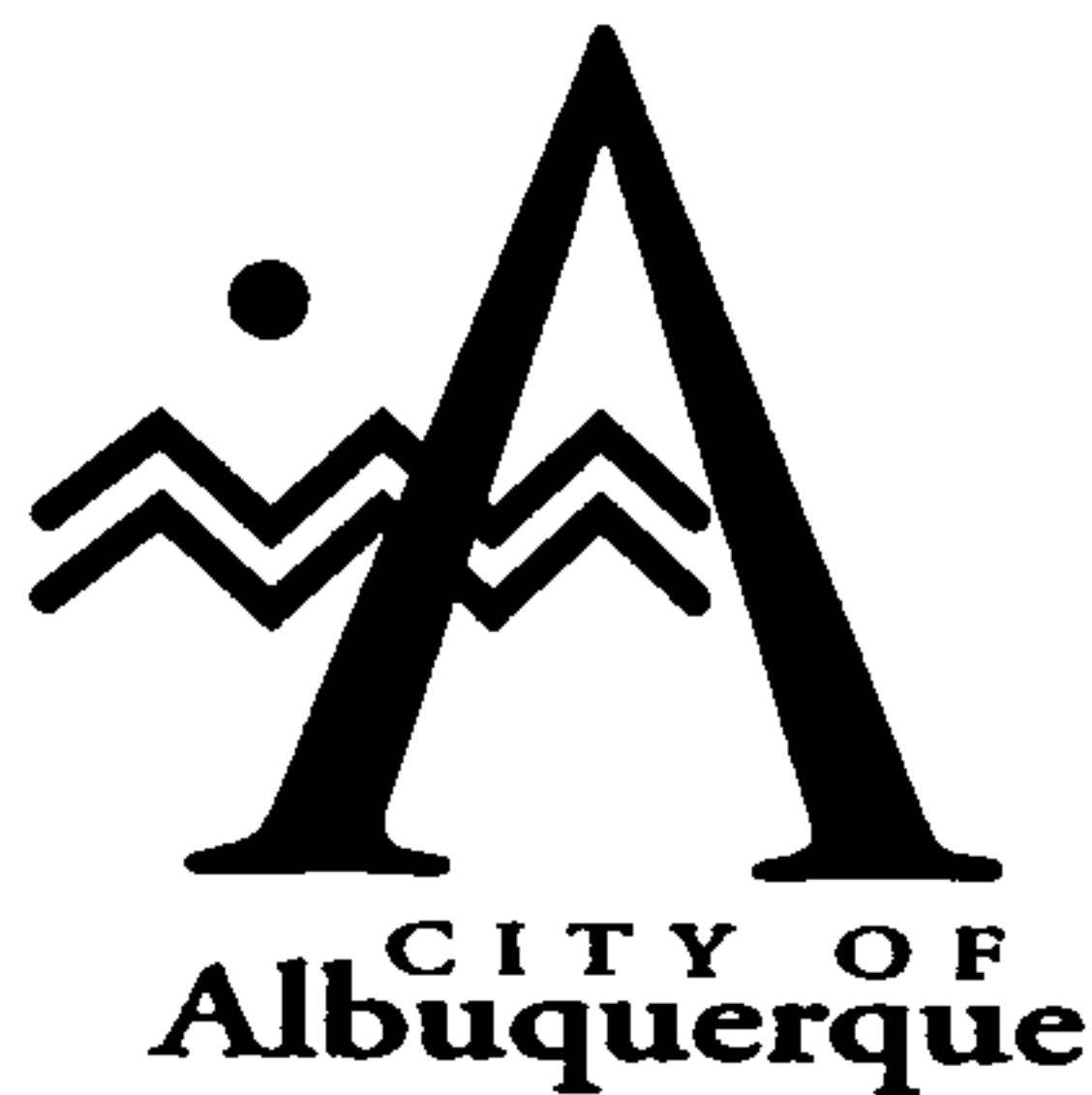
(3) requires a person who is not a party or an office of a party to incur substantial expense to travel,

the court may, to protect a person subject to or affected by the subpoena, quash or modify the subpoena or, if the party in whose behalf the subpoena was issued shows a substantial need for the testimony or material that cannot be otherwise met without an undue hardship and assures that the person to whom the subpoena is addressed will be reasonably compensated, the court may order appearance or production only upon specified conditions.

DUTIES IN RESPONDING TO SUBPOENA

(1) A person responding to a subpoena to produce documents shall produce them as they are kept in the usual course of business or shall organize and label them to correspond with the categories in the demand.

(2) When information subject to a subpoena is withheld on a claim that it is privileged or subject to protection trial preparation materials, the claim shall be made expressly and shall be supported by a description of the nature of the documents, communications or things not produced that is sufficient to enable the demanding party to contest the claim.



November 20, 1996

Martin J. Chávez, Mayor

Jud Lee
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM

**RE: ROLLING HILLS SUBDIVISION (M10-D7). ENGINEER'S CERTIFICATION FOR
SUBDIVISION CERTIFICATION. ENGINEER'S CERTIFICATION STAMPED
NOVEMBER 12, 1996.**

Dear Mr. Lee:

Based on the information provided on your November 18, 1996 submittal, City Hydrology accepts the Engineer's Certification of grading and drainage.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Terri Martin
Andrew Garcia
File



DRAINAGE MASTERPLAN

FOR

**THE ROLLING HILLS SUBDIVISION
UNIT ONE & FUTURE PHASES**

**ALBUQUERQUE NEW MEXICO
JANUARY 1996**

**Prepared by:
ISAACSON & ARFMAN, P.A.**

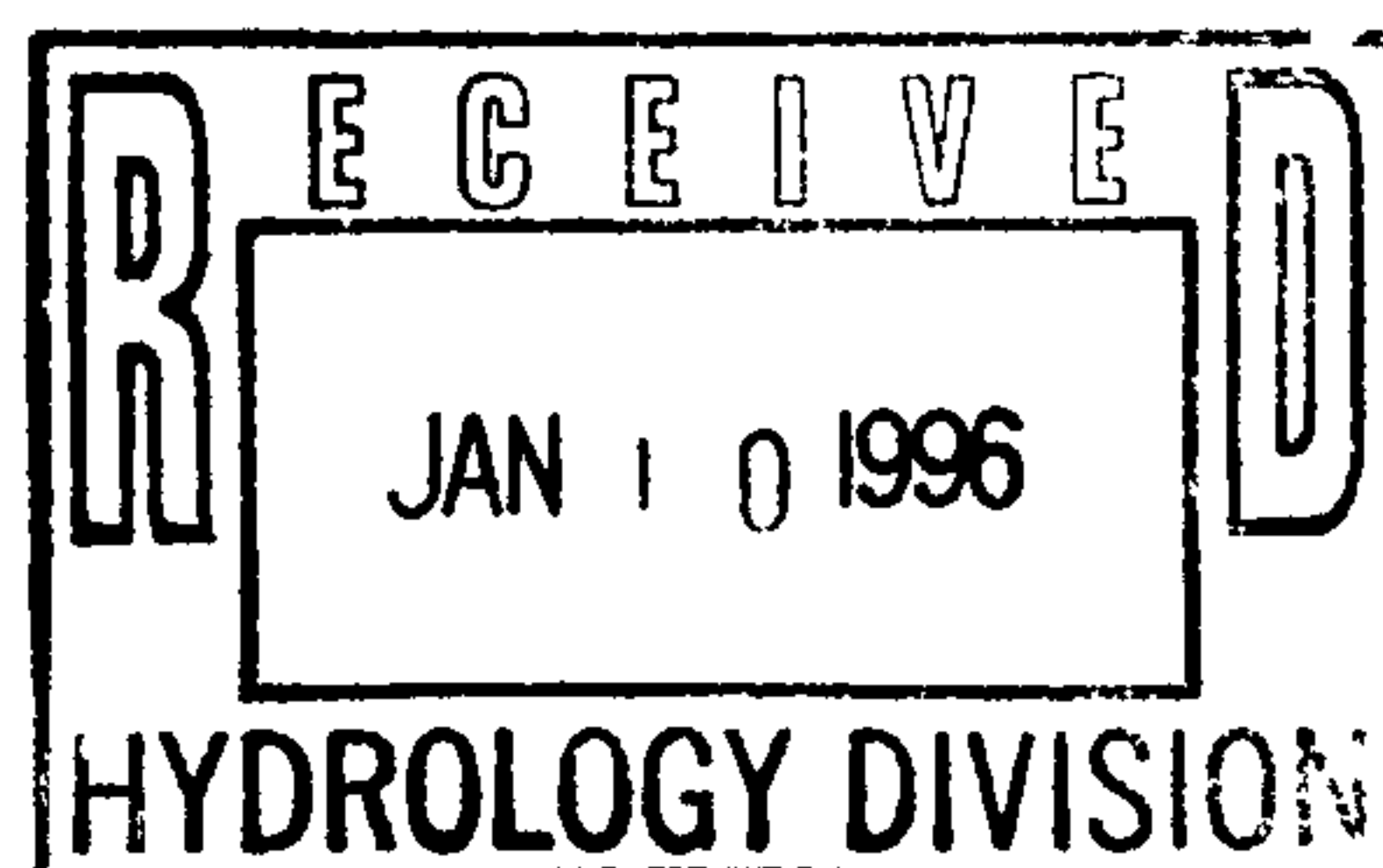
**LONGFORD HOMES OF NEW MEXICO
6400 SO. EASTERN AVENUE, SUITE 18
LAS VEGAS, NV 89119-3149**

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- FLOWMASTER WORKSHEETS
- AHYMO SUMMARY & OUTPUT FILES
- PLATES FROM TOWER/SAGE DRAINAGE MASTERPLAN



I. PURPOSE AND SCOPE

Albuquerque South General Partnership (Seller's) and Longford Homes of New Mexico (Buyer's and Developer) are currently planning for the development of a 67 acre parcel. The proposed development shall be subdivided into 330 single family lots contained in four or five phases. The ultimate drainage solution shall recognize the existing area-wide improvements and drainage masterplans. This report presents an overall Conceptual Drainage Management and Grading Plan for approval by the City of Albuquerque so that subsequent subdivisions and development may commence.

II. SITE LOCATION, TOPOGRAPHY AND SOIL TYPES

The Rolling Hills Subdivisions are located on a gradual hillside in the southwest mesa area of Albuquerque. This totally undeveloped parcel is bounded by the following:

North: Sage Road (86' R.O.W.), existing 28 foot wide rural paving section, no curb and gutter or utilities.

West: Unser Blvd. (156' R.O.W.), existing 28 foot wide rural paving section, no curb and gutter, existing SAS interceptor.

South: Arenal Road (156' R.O.W. Proposed), existing 28 foot wide rural paving section, no curb and gutter, existing SAS interceptor, existing 36" diameter water transmission line.

East: 1) Stinson Street (60' R.O.W.), to be vacated and one-half of the right-of-way to be incorporated into Phase One of the development.

2) Amole del Norte Diversion Channel, existing ^{? or AMAFCH?} City facility (concrete lined) currently accepting the undeveloped storm waters via overland sheetflows. A chain link fence is situated along the westerly right-of-way line of the channel.

The site is void of any established drainage courses and has an average of a -3.5% slope from the northwest to the southeast.

A Geotechnical Investigation (September 1976) was prepared by Geo-Test, Inc. for the entire 67 acre parcel. As encountered in the exploratory borings, soils underlying the site are erratic and vary with depth, but generally consist of clean to silty sand. Some of the surface soils are loose, however, the majority of the soils are medium dense to dense with some interbedded clay or silt layers encountered in the subsurface.

The "Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico", June 1977, classifies the northerly portion of the site as Bluepoint (BKD), Hydrological Soil Group A; while the southerly portion of the site is classified as Maduraz (MWA), Hydrological Soil Group B.

The Bluepoint soils have a permeability index of 6.0-20.0 inches per hour while the Maduraz soil have a lowest rate of 0.6-2.0 inches per hour. Both soils are suitable for the type of development proposed.

III. DESIGN CRITERIA

A. Flood Control Regulations:

The drainage masterplan presented in this report has been designed to comply with AMAFCA Resolution 80-15 which requires that the proposed land development projects be designed such that no flooding of private properties will occur during any storm up to and including the 100-year frequency event.

Additionally, this drainage has been designed to comply with current City of Albuquerque Drainage Ordinance (Enactment No. 63-1982), specifically Section 7, which dictates the following:

- 1) 100-Year Storm Event: Storm water not to exceed a depth of 0.87' in any street. (Newly adopted depth of flow now limits the depth at the curb line to 0.67' where standard curb and gutter is planned.
- 2) Local Streets: The product of depth times velocity shall not exceed 6.5 at any location in any street in the event of the 10-year design storm.
- 3) Discourage the discharge of nuisance waters to public street. Arterial and collector streets shall be protected from nuisance waters.

B. **Hydrologic Criteria:**

Drainage analysis of the subject parcel was performed in accordance with the City of Albuquerque's Development Process Manual (DPM), Volume 2, Design Criteria, specifically Section 22.2, Hydrology, January 1993.

C. **Existing Area-Wide Drainage Masterplans:**

- 1) Amole del Norte Diversion Channel: AMAFCA has contracted with Leedshill-Herkenhoff to analyze the improved channel and its' contributing drainage basins. This study is not scheduled for completion in the near future and no progress drafts are available.

- 2) Tower/Sage Drainage Masteplan: This plan is being prepared by Andrews, Asbury & Robert, Inc. as part of their hydrology analysis of contributing and benefiting basins of the Special Assessment District No. 222. The portion of the plan adjacent to the subject development is not scheduled for improvements as part of the S.A.D. The property is outside of the existing municipal limits and is shown as preliminary information only.

This preliminary masterplan indicates a proposed 48-inch diameter storm drain in Sage Road. The contributing basins are primarily located to the north of Sage Road up to San Ygnacio Road, approximately 1,100 feet to the north.

A relatively small contributing area is shown at the southeast corner of Unser Blvd. and Sage Road. This area consists of approximately 6 acres of which only 5,000± square feet is situated in Unit One of the Rolling Hills Subdivision. The majority of the contributing basin is contained in the offsite tract, Tract A of the Land of Albuquerque South, Unit Two (9.5555 Ac.).

*Zone
ultimate
condition
now*

*offsite
Basin
Provisions*

From closer inspection of the area topography, it should be concluded that this 6 acre basin will sheetflow its undeveloped storm water flows to the south and onto a future phase of the proposed subject subdivision. Depending on how this commercial site is

ultimately developed, the developed storm water flows could be routed either to the north (Sage Road) or to the South (Rolling Hills Subdivision).

- 3) Arenal/Unser Drainage Masterplan: This plan is currently under final development for that area contributing storm water runoff to the drainage basin east of the existing Westgate Heights neighborhood and primarily south of Arenal Road. The plan sponsors are Presley Southwest, developers of Sunrise Estates Unit One (existing) and Unit Two (under design); Longford Homes of New Mexico, developers of the Rolling Hills Subdivision to the north of Arenal Road and east of Unser Blvd.; and the Albuquerque South General Partnership, land owners of the majority of land not currently being developed west of the Amole del Norte Diversion Channel.

This study accounts for those developed storm water flows generated from the Westgate Heights, Unit Three and Four neighborhoods and Sunrise Estates, Unit One. This masterplan calls for the collection and conveyance of 100% of the projected storm water flows from a fully developed watershed. Storm waters are collected at both Kimela Drive and Sapphire Street and conveyed via storm drain to Unser Blvd.

The Unser Blvd. storm drain routes all storm waters to the beginning of the Arenal Road storm drainage system at the southeast corner of Unser Blvd.

and Arenal Road. This system primarily exists of twin 66" and 72" inch diameter RCP to the point of discharge into the Amole del Norte Diversion Facility.

The summary flow pattern plate of this study is found in the Appendix of this report.

D. **AHYMO Parameters and Computation Procedures:**

In accordance with the DPM: Section 22.2 - Hydrology (January 1993), Part C - Procedure for Small and Large Watersheds, modeling criteria has been established for residential areas. Based on Land Treatments and densities representative of the development and precipitation amounts per the NOAA Atlas 2 for New Mexico (as found in Part C mentioned above).

In accordance with the established criteria, all hydrological analysis is based on the 100-year frequency - 6-hour duration storm. For Zone 1, the 100-year 6-hour precipitation is found to be 2.20 inches. For 10-year 6-hour results, a 0.667 reduction factor should be used on all 100-year 6-hour results.

The analysis approach utilized follows standard engineering practices. Key points of confluence were selected, and subsequently the associated individual and aggregate contributing basins were defined.

Hydrological computations were accomplished by means of the mentioned AHYMO computer model. The model has the capacity to route hydrographs through reservoirs, channels and storm drains.

Times of concentrations were estimated by using a combination of approximated street flow velocities and overland flow velocities (as applicable) from the upper subcatchment reaches to the confluence points (AP).

Street velocities were derived by use of the Manning Equation for uniform flow. For some watersheds, the hydrologic jump was analyzed where street flows proved to compromise the 0.67 ft. maximum flow depth requirement. This investigation was the determining factor in location of the catch basin of the planned two storm drains.

All the characteristic hydrological parameters for each subcatchment are contained in the Appendix as part of the computer mode output, and a summary of parameter and peak storm water flow rates are given in Table 1.

Flow characteristics for conveyance swales and streets were analyzed based on the Manning Equation for uniform flow. Streets are assumed to have a 2% cross-slope from curb to crown and either a standard curb depth of 8 inches or a mountable (roll-type) depth of 4 inches. DPM Plate 22.3 D-1:

Street Capacity (32' FF) was utilized for preliminary street flow capacity checks where applicable.

Storm sewers were sized using the FLOWMASTER Hydrologic software from Haestad Methods, Inc. This software uses Mannings Equation for circular pipe flow to size the storm drain. The number and sizes of storm sewer catch basins were estimated by using DPM nomographs.

IV. OFFSITE DRAINAGE

The Rolling Hills development does not accept any storm waters from the offsite adjacent land areas with the exception of the 9.5555 acre parcel at the southeast corner of Unser Blvd. and Sage Road SW. This parcel, platted as Tract B, Lands of Albuquerque South, has been previously described as having its undeveloped flows split between discharging onto Sage Road to the northeast and the remainder onto the Land of the Rolling Hills development.

The projected developed runoff from the commercial site has been computed to be 19.9 cfs (100-year 6-hour) generated from 4.76 acres. A single acceptance point shall be designed into the future phase of the residential development to accommodate these storm waters.

Sage Road: Sage Road adjacent and north of Phase One has a masterplan (preliminary) 48 inch diameter RCP storm drain identified to convey those storm waters generated from the land between Sage Road and San Ygnacio Road. This future facility does not convey any flows from the Area's Special Assessment District.

The proposed storm drain is capable of accepting a portion of the existing and developed storm waters from Tract A, Lands of Albuquerque South and those flows generated from Sage Road, but will not accept any storm waters generated from the proposed development.

As stated earlier, this future storm drain has been identified as a masterplan line in a preliminary drainage masterplan for that portion of County (non-municipal) land situated east of the S.A.D. limits. The S.A.D. engineer, Andrews, Asbury & Robert, Inc. has stated that the contributing benefit is limited to that area capable of gravity access to the storm drain; an area approximated to be 5,000± square feet.

All storm water (100-year 6-hour) currently routed easterly in Sage Road are identified as being in a floodway per the FEMA Floodway Maps. Those flows leave the Sage Road right-of-way and discharge into a natural playa to the north of Sage Road, east of Unser Blvd. and south of San Ygnacio Road. By inspection of the grades and contours within the Sage Road

right-of-way, storm water flows do not encroach onto lands of the Rolling Hills development.

Unser Blvd. intercepts all of the existing overland and minor channelized storm waters generated from those parcels to the west.

V. ONSITE DRAINAGE

- A. **Existing Conditions:** All undeveloped storm water flows are routed overland to the Amole del Norte Diversion Channel or to the north bar ditch of Arenal Road. These flows are then accepted by the Channel.
- B. **Developed Conditions:** The total site is divided into two distinct drainage basins based on which storm drain system their contributing storm waters enter into the north or south storm drain systems. Each basin has been further subdivided into smaller basins for detailed storm drain/street flow analysis. Key Analysis Point (AP) are noted on the enclosed Masterplan Drainage Exhibit. The two storm drainage systems form the backbone of the drainage masterplan. Storm sewer systems are planned where street storm water carrying capacities are inadequate to meet DPM and Drainage Ordinance Flow Requirements.

Streets were analyzed for flow depths and conveyance capacities at Analysis Points. The aforementioned FlowMaster worksheets show the flow hydraulics for both the storm drain and the streets.

Conceptual storm drain sizes were selected on the basis of gravity pipe flow capacity. Size determinations are summarized in Table 1. Sizes were determined on the basis of the ^{why not 100 yr?} 10-year frequency storm except in cases where additional street flow interception was needed or where 10-year interception did not reduce flow rates below street capacities.


DPM storm drain design dictates pressure pipe flow regimes rather than gravity flow conditions. Final construction plans must base designs and storm drain size selection on pressure flow which will result in a slight down sizing of pipe diameters or the placement of additional drop inlets.

- C. **Amole del Norte Diversion Channel Connections:** The connections to the Channel will be designed to have as much flow as possible delivered to the channel overland through rundowns rather than direct penetrations to the channel with the storm drain. The exact logistics of the connections will be determined at final design.

TABLE 1

FLOWS AT ANALYSIS POINTS

AP	Q ₁₀₀ (CFS)	OUTFALL
1	11.7	24"RCP @ S=1.5%
2	41.1	30"RCP @ S=2.5% & STREET FLOW
3	49.9	24"RCP @ S=1.5% & STREET FLOW
4	128.0	30"RCP DISCHARGES TO RUNDOWN TO AMOLE
5	30.0	24"RCP @ S=2%
6	64.3	30"RCP @ S=2.2% & STREET FLOW
7	91.8	36"RCP @ S=2.7% & STREET FLOW
8	121.8	36"RCP @ S=3.0% DISCHARGES TO RUNDOWN TO AMOLE

BASIN AREAS & FLOWS

BASIN ID	AREA (AC)	Q ₁₀₀ (CFS)
1A	3.31	10.7
1B	1.86	6.1
1C	2.69	8.7
1D	1.66	5.4
1E	2.28	7.4
1F	2.28	7.4
1G	1.86	6.1
2A	9.11	29.6
2B	9.11	29.6
2C	5.18	16.8
2D	3.73	12.1
2E	1.45	4.7
2F	2.28	7.4
2G	3.93	12.8
2H	4.14	13.5
2I	3.52	11.4
2J	1.86	6.1
2K	6.62	21.5
2L	2.69	8.7

APPENDIX

FLOWMASTER WORKSHEETS

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: master

Description: North Storm Drain, First Reach

Solve For Full Flow Capacity

Given Constant Data;

Diameter.....	2.00
Slope.....	0.0150
Mannings n.....	0.013
Discharge.....	27.71

Variable Input Data			Minimum	Maximum	Increment By	
=====			=====	=====	=====	
			COMPUTED COMPUTED COMPUTED COMPUTED			
			=====			
Diameter	Channel	Mannings	Discharge	Depth	Velocity	Capacity
ft	Slope	'n'	cfs	ft	fps	Full
	ft/ft					cfs
=====						
2.00	0.0150	0.013	27.71	2.00	8.82	27.71

North First Reach = > Total Q = 49.9 cfs
24" SD Capacity = 27.7 cfs, Δ = 22.2 cfs

Assume street is 32' FF with standard C&G, S = 1.5%
Flow Depth = 0.20', V = 3.63 fps
EGL = 0.20 + (3.63)²/2(32.3) = 0.41'

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: master

Description: North Storm Drain, Second Reach

Solve For Full Flow Capacity

Given Constant Data;

Diameter.....	2.00
Slope.....	0.0320
Mannings n.....	0.013
Discharge.....	40.47

Variable Input Data	Minimum	Maximum	Increment By
=====	=====	=====	=====

			COMPUTED	COMPUTED	COMPUTED	COMPUTED
			=====	=====	=====	=====
Diameter	Channel	Mannings	Discharge	Depth	Velocity	Capacity
ft	Slope	'n'	cfs	ft	fps	Full
	ft/ft					cfs
=====	=====	=====	=====	=====	=====	=====
2.00	0.0320	0.013	40.47	2.00	12.88	40.47

North Second Reach = > Total Q = 69 cfs of which 7.5 cfs is contributed in Basin 2F
24" SD Capacity = 40.5 cfs, Δ = 28.5 cfs

Assume street is 32' FF with standard C&G, S = 3.2%

Flow Depth = 0.18', V = 4.95 fps

EGL = 0.18 + $(4.95)^2 / 2(32.2)$ = 0.56'

Open Channel Flow Module, Version 3.43 (c)
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: master

Description: North Storm Drain, Third Reach

Solve For Full Flow Capacity

Given Constant Data;

Diameter.....	2.50
Slope.....	0.0400
Mannings n.....	0.013
Discharge.....	82.03

Variable Input Data			Minimum	Maximum	Increment By	
=====			=====	=====	=====	
			COMPUTED	COMPUTED	COMPUTED	COMPUTED
			=====	=====	=====	=====
Diameter	Channel	Mannings	Discharge	Depth	Velocity	Capacity
ft	Slope	'n'	cfs	ft	fps	Full
	ft/ft					cfs
=====						
2.50	0.0400	0.013	82.03	2.50	16.71	82.03

North Third Reach = > Total Q = 120.9 cfs of which 11.7 cfs is contributed in Basin 2I
30" SD Capacity = 82.0 cfs, Δ = 38.9 cfs

Assume street is 32' FF with standard C&G, S = 4.0%

Flow Depth = 0.21', V = 6.12 fps

EGL = 0.21 + $(6.12)^2 / 2(32.2)$ = 0.79' < 0.85', OK

Open Channel Flow Module, Version 3.43 (c)
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: master

Description: South Storm Drain, First Reach

Solve For Full Flow Capacity

Given Constant Data;

Diameter.....	2.00
Slope.....	0.0200
Mannings n.....	0.013
Discharge.....	31.99

Variable Input Data			Minimum	Maximum	Increment By	
=====			=====	=====	=====	
			COMPUTED	COMPUTED	COMPUTED	COMPUTED
			=====	=====	=====	=====
Diameter	Channel	Mannings	Discharge	Depth	Velocity	Capacity
ft	Slope	'n'	cfs	ft	fps	Full
	ft/ft					cfs
=====						
2.00	0.0200	0.013	31.99	2.00	10.18	31.99

South First Reach = > Total Q = 64.3 cfs
24" SD Capacity = 32.0 cfs, Δ = 32.3 cfs

Assume street is 32' FF with standard C&G, S = 2%
Flow Depth = 0.22', V = 4.46 fps
EGL = 0.22 + (4.46)²/2(32.2) = 0.53'

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: master

Description: South Storm Drain, Second Reach

Solve For Full Flow Capacity

Given Constant Data;

Diameter.....	2.50
Slope.....	0.0220
Mannings n.....	0.013
Discharge.....	60.84

Variable Input Data			Minimum	Maximum	Increment By	
=====			=====	=====	=====	
			COMPUTED	COMPUTED	COMPUTED	COMPUTED
			=====	=====	=====	=====
Diameter	Channel	Mannings	Discharge	Depth	Velocity	Capacity
ft	Slope	'n'	cfs	ft	fps	Full
	ft/ft					cfs
=====						
2.50	0.0220	0.013	60.84	2.50	12.39	60.84

South Second Reach = > Total Q = 77.2 cfs
 30" SD Capacity = 73.4 cfs, Δ = 3.8 cfs, OK

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: master

Description: South Storm Drain, Third Reach

Solve For Full Flow Capacity

Given Constant Data;

Diameter..... 3.00
Slope..... 0.0270
Mannings n..... 0.013
Discharge..... 109.60

Variable Input Data			Minimum	Maximum	Increment By	
=====			=====	=====	=====	
			COMPUTED	COMPUTED	COMPUTED	COMPUTED
			=====	=====	=====	=====
Diameter	Channel	Mannings	Discharge	Depth	Velocity	Capacity
ft	Slope	'n'	cfs	ft	fps	Full
	ft/ft					cfs
=====						
3.00	0.0270	0.013	109.60	3.00	15.50	109.60

South Third Reach = > Total Q = 121.8 cfs
36" SD Capacity = 109.6 cfs, Δ = 12.2 cfs, OK

AHYMO SUMMARY & OUTPUT FILES

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = RHMP.DAT

RUN DATE (MON/DAY/YR) =01/17/1996
 USER NO.= ISCARFNM.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.200
*S **BASIN A										
COMPUTE NM HYD	100.00	-	1	.00517	10.94	.373	1.35334	1.500	3.306	PER IMP= 50.00
*S **BASIN B										
COMPUTE NM HYD	200.00	-	2	.00291	6.16	.210	1.35334	1.500	3.310	PER IMP= 50.00
*S **BASIN C										
COMPUTE NM HYD	300.00	-	3	.00420	8.89	.303	1.35334	1.500	3.307	PER IMP= 50.00
ADD HYD	300.10	1& 3	4	.00937	19.83	.676	1.35328	1.500	3.306	
*S **BASIN D										
COMPUTE NM HYD	400.00	-	5	.00259	5.49	.187	1.35334	1.500	3.310	PER IMP= 50.00
ADD HYD	400.10	2& 5	6	.00550	11.65	.397	1.35324	1.500	3.310	
*S TOTAL FLOW AP1										
*S **BASIN E										
COMPUTE NM HYD	500.00	-	7	.00356	7.54	.257	1.35334	1.500	3.308	PER IMP= 50.00
ADD HYD	500.10	4& 7	8	.01293	27.37	.933	1.35327	1.500	3.307	
*S **BASIN F										
COMPUTE NM HYD	600.00	-	9	.00356	7.54	.257	1.35334	1.500	3.308	PER IMP= 50.00
ADD HYD	600.10	8& 9	10	.01649	34.90	1.190	1.35327	1.500	3.307	
*S **BASIN G										
COMPUTE NM HYD	700.00	-	11	.00291	6.16	.210	1.35334	1.500	3.310	PER IMP= 50.00
ADD HYD	700.10	10&11	12	.01940	41.07	1.400	1.35327	1.500	3.308	
*S TOTAL FLOW @ AP2										
*S **BASIN 2A										
COMPUTE NM HYD	200.A	-	13	.01420	30.02	1.025	1.35334	1.500	3.303	PER IMP= 50.00
*S TOTAL FLOW @ AP5										
*S **OFFSITE BASIN TO THE NORTH (COMMERCIAL)										
COMPUTE NM HYD	300.00	-	14	.00750	19.86	.734	1.83567	1.500	4.138	PER IMP= 90.00
*S **BASIN 2B										
COMPUTE NM HYD	200.B	-	15	.01420	30.02	1.025	1.35334	1.500	3.303	PER IMP= 50.00
ADD HYD	200.B1	14&15	16	.02170	49.88	1.759	1.52002	1.500	3.591	
*S ADD FLOW FROM BASINS 1B & 1C										
ADD HYD	200.B2	6&16	16	.02720	61.53	2.156	1.48629	1.500	3.535	
*S TOTAL FLOW @ AP3										
*S **BASIN 2C										
COMPUTE NM HYD	200.C	-	17	.00810	17.13	.585	1.35334	1.500	3.304	PER IMP= 50.00
ADD HYD	200.C1	13&17	18	.02230	47.15	1.610	1.35332	1.500	3.303	
*S **BASIN 2D										
COMPUTE NM HYD	200.D	-	19	.00580	12.27	.419	1.35334	1.500	3.305	PER IMP= 50.00
ADD HYD	200.D1	18&19	20	.02810	59.42	2.028	1.35331	1.500	3.304	
*S **BASIN 2E										
COMPUTE NM HYD	200.E	-	1	.00230	4.87	.166	1.35334	1.500	3.312	PER IMP= 50.00

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 2 NOTATION
ADD HYD	200.E1	20	1	2	.03040	64.29	2.194	1.35330	1.500	3.304
*S **TOTAL FLOW @ AP6										
*S **BASIN 2F										
COMPUTE NM HYD	200.F	-	3	.00360	7.62	.260	1.35334	1.500	3.308	PER IMP= 50.00
ADD HYD	200.F1	16	3	4	.03080	69.15	2.416	1.47075	1.500	3.508
*S ADD FLOW FROM BASINS 1A,1C,1E,1F,&1G										
ADD HYD	200.F2	12	4	5	.05020	110.22	3.816	1.42534	1.500	3.431
*S **BASIN 2G										
COMPUTE NM HYD	200.G	-	6	.00610	12.90	.440	1.35334	1.500	3.305	PER IMP= 50.00
ADD HYD	200.G1	2	6	7	.03650	77.19	2.634	1.35330	1.500	3.305
*S **BASIN 2H										
COMPUTE NM HYD	200.H	-	8	.00690	14.59	.498	1.35334	1.500	3.305	PER IMP= 50.00
ADD HYD	200.H1	7	8	9	.04340	91.79	3.132	1.35330	1.500	3.305
*S TOTAL FLOW @ AP7										
*S **BASIN 2I										
COMPUTE NM HYD	200.I	-	10	.00550	11.64	.397	1.35334	1.500	3.306	PER IMP= 50.00
ADD HYD	200.I1	5	10	11	.05570	121.85	4.213	1.41823	1.500	3.418
*S **BASIN 2J										
COMPUTE NM HYD	200.J	-	12	.00290	6.14	.209	1.35334	1.500	3.310	PER IMP= 50.00
ADD HYD	200.J1	11	12	13	.05860	128.00	4.422	1.41501	1.500	3.413
*S TOTAL FLOW @ AP4 (ENTRANCE TO AMOLE DEL NORTE CHANNEL)										
*S **BASIN 2K										
COMPUTE NM HYD	200.K	-	14	.01000	21.14	.722	1.35334	1.500	3.304	PER IMP= 50.00
ADD HYD	200.K1	9	14	15	.05340	112.93	3.854	1.35331	1.500	3.304
*S **BASIN 2L										
COMPUTE NM HYD	200.L	-	16	.00420	8.89	.303	1.35334	1.500	3.307	PER IMP= 50.00
ADD HYD	200.L1	15	16	17	.05760	121.82	4.157	1.35330	1.500	3.305
*S TOTAL FLOW @ AP8 (ENTRANCE TO AMOLE DEL NORTE CHANNEL)										
FINISH										

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 01/17/1996
START TIME (HR:MIN:SEC) = 14:37:10 USER NO.= ISCARFNM.I01
INPUT FILE = RHMP.DAT

**** ROLLING HILLS UNIT ONE SUBDIVISION****

**** JANUARY 4, 1996 ****

START RAINFALL BEGINS AT 0.0 HRS

RAINFALL TYPE=1 RAIN QUARTER=0 RAIN ONE=1.87

RAIN SIX=2.20 RAIN DAY=0 DT=0.03333HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.

DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0016	.0033	.0050	.0067	.0085	.0103
.0122	.0141	.0160	.0180	.0201	.0222	.0243
.0266	.0289	.0312	.0337	.0362	.0388	.0415
.0443	.0472	.0502	.0534	.0567	.0601	.0637
.0675	.0715	.0758	.0809	.0865	.0924	.1050
.1334	.1771	.2398	.3254	.4379	.5814	.7600
.9780	1.1804	1.2649	1.3363	1.3997	1.4575	1.5106
1.5600	1.6061	1.6493	1.6900	1.7284	1.7646	1.7989
1.8314	1.8623	1.8915	1.9193	1.9456	1.9518	1.9576
1.9630	1.9682	1.9732	1.9780	1.9825	1.9869	1.9912
1.9953	1.9993	2.0031	2.0068	2.0104	2.0140	2.0174
2.0207	2.0240	2.0272	2.0303	2.0333	2.0363	2.0392
2.0420	2.0448	2.0475	2.0502	2.0528	2.0554	2.0580
2.0605	2.0629	2.0653	2.0677	2.0700	2.0723	2.0746
2.0768	2.0790	2.0812	2.0833	2.0855	2.0875	2.0896
2.0916	2.0936	2.0956	2.0976	2.0995	2.1014	2.1033
2.1051	2.1070	2.1088	2.1106	2.1124	2.1141	2.1159
2.1176	2.1193	2.1210	2.1227	2.1244	2.1260	2.1276
2.1292	2.1308	2.1324	2.1340	2.1355	2.1371	2.1386
2.1401	2.1416	2.1431	2.1446	2.1460	2.1475	2.1489
2.1504	2.1518	2.1532	2.1546	2.1560	2.1573	2.1587
2.1600	2.1614	2.1627	2.1640	2.1654	2.1667	2.1680
2.1692	2.1705	2.1718	2.1731	2.1743	2.1756	2.1768
2.1780	2.1792	2.1804	2.1817	2.1829	2.1840	2.1852
2.1864	2.1876	2.1887	2.1899	2.1910	2.1922	2.1933
2.1944	2.1956	2.1967	2.1978	2.1989	2.2000	

*S **BASIN A
COMPUTE NM HYD

ID=1 HYD NO=100.00 AREA=0.00517 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 10.206 CFS UNIT VOLUME = .9982 B = 526.28 P60 = 1.8700
AREA = .002585 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 6.6089 CFS UNIT VOLUME = .9983 B = 340.80 P60 = 1.8700
 AREA = .002585 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=5

PARTIAL HYDROGRAPH 100.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	10.9	3.000	.1	4.500	.0	5.999	.1
.167	.0	1.667	5.7	3.166	.1	4.666	.0	6.166	.0
.333	.0	1.833	3.2	3.333	.1	4.833	.0	6.333	.0
.500	.0	2.000	2.1	3.500	.1	4.999	.0	6.499	.0
.667	.0	2.166	1.0	3.666	.0	5.166	.0	6.666	.0
.833	.0	2.333	.5	3.833	.0	5.333	.0		
1.000	.0	2.500	.3	4.000	.0	5.499	.0		
1.167	.0	2.666	.2	4.166	.0	5.666	.0		
1.333	2.3	2.833	.1	4.333	.0	5.833	.1		

RUNOFF VOLUME = 1.35334 INCHES = .3732 ACRE-FEET
 PEAK DISCHARGE RATE = 10.94 CFS AT 1.500 HOURS BASIN AREA = .0052 SQ. MI.

*S **BASIN B
 COMPUTE NM HYD

ID=2 HYD NO=200.00 AREA=0.00291 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 5.7444 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
 AREA = .001455 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 3.7199 CFS UNIT VOLUME = .9966 B = 340.80 P60 = 1.8700
 AREA = .001455 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=2 CODE=5

PARTIAL HYDROGRAPH 200.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.3	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	6.2	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.2	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	1.8	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.2	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.6	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2100 ACRE-FEET
 PEAK DISCHARGE RATE = 6.16 CFS AT 1.500 HOURS BASIN AREA = .0029 SQ. MI.

*S **BASIN C
 COMPUTE NM HYD ID=3 HYD NO=300.00 AREA=0.00420 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 8.2909 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 1.8700
 AREA = .002100 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 5.3689 CFS UNIT VOLUME = .9977 B = 340.80 P60 = 1.8700
 AREA = .002100 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=5

HYDROGRAPH FROM AREA 300.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.9	2.666	.2	4.000	.0	5.333	.0
.167	.0	1.500	8.9	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	4.6	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.6	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.7	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.8	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.4	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.3	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .3031 ACRE-FEET
 PEAK DISCHARGE RATE = 8.89 CFS AT 1.500 HOURS BASIN AREA = .0042 SQ. MI.

ADD HYD ID=4 HYD NO=300.1 ID=1 ID=3
PRINT HYD ID=4 CODE=5

HYDROGRAPH FROM AREA 300.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	19.8	3.000	.2	4.500	.1	5.999	.1
.167	.0	1.667	10.3	3.166	.1	4.666	.1	6.166	.0
.333	.0	1.833	5.7	3.333	.1	4.833	.1	6.333	.0
.500	.0	2.000	3.9	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	1.8	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	.9	3.833	.1	5.333	.1		
1.000	.0	2.500	.6	4.000	.1	5.499	.1		
1.167	.0	2.666	.4	4.166	.1	5.666	.1		
1.333	4.2	2.833	.3	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35328 INCHES = .6763 ACRE-FEET
PEAK DISCHARGE RATE = 19.83 CFS AT 1.500 HOURS BASIN AREA = .0094 SQ. MI.

*S **BASIN D
COMPUTE NM HYD ID=5 HYD NO=400.00 AREA=0.00259 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.1127 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
AREA = .001295 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 3.3108 CFS UNIT VOLUME = .9962 B = 340.80 P60 = 1.8700
AREA = .001295 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=5

HYDROGRAPH FROM AREA 400.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.2	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	5.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	2.9	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	1.6	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.1	3.333	.0	4.666	.0	5.999	.0

.833	.0	2.166	.5	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .1869 ACRE-FEET
 PEAK DISCHARGE RATE = 5.49 CFS AT 1.500 HOURS BASIN AREA = .0026 SQ. MI.

ADD HYD ID=6 HYD NO=400.1 ID=2 ID=5
 *S TOTAL FLOW AP1
 PRINT HYD ID=6 CODE=5

HYDROGRAPH FROM AREA 400.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	2.5	2.666	.2	4.000	.0	5.333	.0
.167	.0	1.500	11.7	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	6.1	3.000	.1	4.333	.0	5.666	.1
.500	.0	1.833	3.4	3.166	.1	4.500	.0	5.833	.1
.667	.0	2.000	2.3	3.333	.1	4.666	.0	5.999	.1
.833	.0	2.166	1.1	3.500	.1	4.833	.0	6.166	.0
1.000	.0	2.333	.5	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.3	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35324 INCHES = .3969 ACRE-FEET
 PEAK DISCHARGE RATE = 11.65 CFS AT 1.500 HOURS BASIN AREA = .0055 SQ. MI.

*S **BASIN E
 COMPUTE NM HYD ID=7 HYD NO=500.00 AREA=0.00356 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 7.0275 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.8700
 AREA = .001780 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 4.5508 CFS UNIT VOLUME = .9972 B = 340.80 P60 = 1.8700
 AREA = .001780 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=7 CODE=5

OUTFLOW HYDROGRAPH RESERVOIR 500.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.6	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	7.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.9	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.2	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.5	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.7	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2570 ACRE-FEET
 PEAK DISCHARGE RATE = 7.54 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

ADD HYD ID=8 HYD NO=500.1 ID=4 ID=7
 PRINT HYD ID=8 CODE=5

OUTFLOW HYDROGRAPH RESERVOIR 500.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	27.4	3.000	.3	4.500	.1	5.999	.1
.167	.0	1.667	14.3	3.166	.2	4.666	.1	6.166	.1
.333	.0	1.833	7.9	3.333	.2	4.833	.1	6.333	.0
.500	.0	2.000	5.3	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	2.5	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	1.3	3.833	.1	5.333	.1		
1.000	.0	2.500	.8	4.000	.1	5.499	.1		
1.167	.0	2.666	.5	4.166	.1	5.666	.1		
1.333	5.8	2.833	.4	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35327 INCHES = .9332 ACRE-FEET
 PEAK DISCHARGE RATE = 27.37 CFS AT 1.500 HOURS BASIN AREA = .0129 SQ. MI.

*S **BASIN F
 COMPUTE NM HYD ID=9 HYD NO=600.00 AREA=0.00356 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 7.0275 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.8700
 AREA = .001780 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 4.5508 CFS UNIT VOLUME = .9972 B = 340.80 P60 = 1.8700
 AREA = .001780 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=9 CODE=5

HYDROGRAPH FROM AREA 600.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.6	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	7.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.9	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.2	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.5	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.7	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2570 ACRE-FEET
 PEAK DISCHARGE RATE = 7.54 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

ADD HYD ID=10 HYD NO=600.1 ID=8 ID=9
 PRINT HYD ID=10 CODE=5

HYDROGRAPH FROM AREA 600.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	34.9	3.000	.3	4.500	.1	5.999	.2
.167	.0	1.667	18.2	3.166	.2	4.666	.1	6.166	.1
.333	.0	1.833	10.1	3.333	.2	4.833	.1	6.333	.0
.500	.0	2.000	6.8	3.500	.2	4.999	.1	6.499	.0
.667	.0	2.166	3.2	3.666	.2	5.166	.1	6.666	.0
.833	.0	2.333	1.6	3.833	.1	5.333	.1		
1.000	.0	2.500	1.0	4.000	.1	5.499	.1		
1.167	.1	2.666	.7	4.166	.1	5.666	.2		
1.333	7.4	2.833	.4	4.333	.1	5.833	.2		

RUNOFF VOLUME = 1.35327 INCHES = 1.1901 ACRE-FEET
 PEAK DISCHARGE RATE = 34.90 CFS AT 1.500 HOURS BASIN AREA = .0165 SQ. MI.

*S **BASIN G
COMPUTE NM HYD

ID=11 HYD NO=700.00 AREA=0.00291 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.7444 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
AREA = .001455 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 3.7199 CFS UNIT VOLUME = .9966 B = 340.80 P60 = 1.8700
AREA = .001455 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=11 CODE=5

HYDROGRAPH FROM AREA 700.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.3	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	6.2	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.2	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	1.8	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.2	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.6	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2100 ACRE-FEET
PEAK DISCHARGE RATE = 6.16 CFS AT 1.500 HOURS BASIN AREA = .0029 SQ. MI.

ADD HYD ID=12 HYD NO=700.1 ID=10 ID=11
*S TOTAL FLOW @ AP2
PRINT HYD ID=12 CODE=5

HYDROGRAPH FROM AREA 700.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	41.1	3.000	.4	4.500	.2	5.999	.2
.167	.0	1.667	21.4	3.166	.3	4.666	.2	6.166	.1
.333	.0	1.833	11.9	3.333	.2	4.833	.2	6.333	.0
.500	.0	2.000	8.0	3.500	.2	4.999	.2	6.499	.0
.667	.0	2.166	3.8	3.666	.2	5.166	.2	6.666	.0

.833	.0	2.333	1.9	3.833	.2	5.333	.2
1.000	.0	2.500	1.2	4.000	.2	5.499	.2
1.167	.1	2.666	.8	4.166	.2	5.666	.2
1.333	8.7	2.833	.5	4.333	.2	5.833	.2

RUNOFF VOLUME = 1.35327 INCHES = 1.4002 ACRE-FEET
 PEAK DISCHARGE RATE = 41.07 CFS AT 1.500 HOURS BASIN AREA = .0194 SQ. MI.

FUTURE PHASES*

*S **BASIN 2A

COMPUTE NM HYD ID=13 HYD NO=200.A AREA=0.0142 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 28.031 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 1.8700
 AREA = .007100 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 18.152 CFS UNIT VOLUME = .9995 B = 340.80 P60 = 1.8700
 AREA = .007100 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

*S TOTAL FLOW @ AP5

PRINT HYD ID=13 CODE=5

HYDROGRAPH FROM AREA 200.A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	30.0	3.000	.3	4.500	.1	5.999	.1
.167	.0	1.667	15.6	3.166	.2	4.666	.1	6.166	.1
.333	.0	1.833	8.7	3.333	.2	4.833	.1	6.333	.0
.500	.0	2.000	5.9	3.500	.2	4.999	.1	6.499	.0
.667	.0	2.166	2.8	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	1.4	3.833	.1	5.333	.1	6.833	.0
1.000	.0	2.500	.9	4.000	.1	5.499	.1		
1.167	.1	2.666	.6	4.166	.1	5.666	.1		
1.333	6.4	2.833	.4	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35334 INCHES = 1.0249 ACRE-FEET
 PEAK DISCHARGE RATE = 30.02 CFS AT 1.500 HOURS BASIN AREA = .0142 SQ. MI.

*S **OFFSITE BASIN TO THE NORTH (COMMERCIAL)
 COMPUTE NM HYD ID=14 HYD NO=300.00 AREA=0.0075 SQ MI
 PER A=0 PER B=10 PER C=0 PER D=90
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 26.649 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.8700
 AREA = .006750 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
 UNIT PEAK = 1.8403 CFS UNIT VOLUME = .9932 B = 327.09 P60 = 1.8700
 AREA = .000750 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=14 CODE=5

HYDROGRAPH FROM AREA 300.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	19.9	3.000	.2	4.500	.1	5.999	.1
.167	.0	1.667	10.1	3.166	.2	4.666	.1	6.166	.1
.333	.0	1.833	6.5	3.333	.1	4.833	.1	6.333	.0
.500	.0	2.000	4.8	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	2.2	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	1.0	3.833	.1	5.333	.1	6.833	.0
1.000	.0	2.500	.6	4.000	.1	5.499	.1		
1.167	.1	2.666	.4	4.166	.1	5.666	.1		
1.333	5.8	2.833	.3	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.83567 INCHES = .7343 ACRE-FEET
 PEAK DISCHARGE RATE = 19.86 CFS AT 1.500 HOURS BASIN AREA = .0075 SQ. MI.

*S **BASIN 2B
 COMPUTE NM HYD ID=15 HYD NO=200.B AREA=0.0142 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 28.031 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 1.8700
 AREA = .007100 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 18.152 CFS UNIT VOLUME = .9995 B = 340.80 P60 = 1.8700
AREA = .007100 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=15 CODE=5

HYDROGRAPH FROM AREA 200.B

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	30.0	3.000	.3	4.500	.1	5.999	.1
.167	.0	1.667	15.6	3.166	.2	4.666	.1	6.166	.1
.333	.0	1.833	8.7	3.333	.2	4.833	.1	6.333	.0
.500	.0	2.000	5.9	3.500	.2	4.999	.1	6.499	.0
.667	.0	2.166	2.8	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	1.4	3.833	.1	5.333	.1	6.833	.0
1.000	.0	2.500	.9	4.000	.1	5.499	.1		
1.167	.1	2.666	.6	4.166	.1	5.666	.1		
1.333	6.4	2.833	.4	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35334 INCHES = 1.0249 ACRE-FEET
PEAK DISCHARGE RATE = 30.02 CFS AT 1.500 HOURS BASIN AREA = .0142 SQ. MI.

ADD HYD ID=16 HYD NO=200.B1 ID=14 ID=15
PRINT HYD ID=16 CODE=5

HYDROGRAPH FROM AREA 200.B1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	49.9	3.000	.5	4.500	.2	5.999	.3
.167	.0	1.667	25.7	3.166	.4	4.666	.2	6.166	.1
.333	.0	1.833	15.2	3.333	.3	4.833	.2	6.333	.0
.500	.0	2.000	10.6	3.500	.3	4.999	.2	6.499	.0
.667	.0	2.166	5.0	3.666	.3	5.166	.2	6.666	.0
.833	.0	2.333	2.4	3.833	.2	5.333	.2	6.833	.0
1.000	.0	2.500	1.5	4.000	.2	5.499	.3		
1.167	.1	2.666	1.0	4.166	.2	5.666	.3		
1.333	12.2	2.833	.7	4.333	.2	5.833	.3		

RUNOFF VOLUME = 1.52002 INCHES = 1.7592 ACRE-FEET
PEAK DISCHARGE RATE = 49.88 CFS AT 1.500 HOURS BASIN AREA = .0217 SQ. MI.

*S ADD FLOW FROM BASINS 1B & 1C
 ADD HYD ID=16 HYD NO=200.B2 ID=6 ID=16
 *S TOTAL FLOW @ AP3
 PRINT HYD ID=16 CODE=5

HYDROGRAPH FROM AREA 200.B2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	61.5	3.000	.6	4.500	.3	5.999	.3
.167	.0	1.667	31.8	3.166	.5	4.666	.3	6.166	.1
.333	.0	1.833	18.6	3.333	.4	4.833	.3	6.333	.0
.500	.0	2.000	12.9	3.500	.3	4.999	.3	6.499	.0
.667	.0	2.166	6.1	3.666	.3	5.166	.3	6.666	.0
.833	.0	2.333	2.9	3.833	.3	5.333	.3	6.833	.0
1.000	.0	2.500	1.8	4.000	.3	5.499	.3		
1.167	.1	2.666	1.2	4.166	.3	5.666	.3		
1.333	14.7	2.833	.8	4.333	.3	5.833	.3		

RUNOFF VOLUME = 1.48629 INCHES = 2.1561 ACRE-FEET
 PEAK DISCHARGE RATE = 61.53 CFS AT 1.500 HOURS BASIN AREA = .0272 SQ. MI.

*S **BASIN 2C
 COMPUTE NM HYD ID=17 HYD NO=200.C AREA=0.0081 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 15.990 CFS UNIT VOLUME = .9987 B = 526.28 P60 = 1.8700
 AREA = .004050 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 10.354 CFS UNIT VOLUME = .9990 B = 340.80 P60 = 1.8700
 AREA = .004050 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=17 CODE=5

HYDROGRAPH FROM AREA 200.C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	17.1	3.000	.2	4.500	.1	5.999	.1
.167	.0	1.667	8.9	3.166	.1	4.666	.1	6.166	.0
.333	.0	1.833	5.0	3.333	.1	4.833	.1	6.333	.0

.500	.0	2.000	3.3	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	1.6	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	.8	3.833	.1	5.333	.1		
1.000	.0	2.500	.5	4.000	.1	5.499	.1		
1.167	.0	2.666	.3	4.166	.1	5.666	.1		
1.333	3.7	2.833	.2	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35334 INCHES = .5846 ACRE-FEET
 PEAK DISCHARGE RATE = 17.13 CFS AT 1.500 HOURS BASIN AREA = .0081 SQ. MI.

ADD HYD ID=18 HYD NO=200.C1 ID=13 ID=17
 PRINT HYD ID=18 CODE=5

HYDROGRAPH FROM AREA 200.C1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	47.1	3.000	.4	4.500	.2	5.999	.2
.167	.0	1.667	24.6	3.166	.3	4.666	.2	6.166	.1
.333	.0	1.833	13.6	3.333	.3	4.833	.2	6.333	.0
.500	.0	2.000	9.2	3.500	.2	4.999	.2	6.499	.0
.667	.0	2.166	4.4	3.666	.2	5.166	.2	6.666	.0
.833	.0	2.333	2.2	3.833	.2	5.333	.2	6.833	.0
1.000	.0	2.500	1.4	4.000	.2	5.499	.2		
1.167	.1	2.666	.9	4.166	.2	5.666	.2		
1.333	10.0	2.833	.6	4.333	.2	5.833	.2		

RUNOFF VOLUME = 1.35332 INCHES = 1.6095 ACRE-FEET
 PEAK DISCHARGE RATE = 47.15 CFS AT 1.500 HOURS BASIN AREA = .0223 SQ. MI.

*S **BASIN 2D
 COMPUTE NM HYD ID=19 HYD NO=200.D AREA=0.0058 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 11.449 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 1.8700
 AREA = .002900 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 7.4142 CFS UNIT VOLUME = .9985 B = 340.80 P60 = 1.8700
 AREA = .002900 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=19 CODE=5

HYDROGRAPH FROM AREA 200.D

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	12.3	3.000	.1	4.500	.0	5.999	.1
.167	.0	1.667	6.4	3.166	.1	4.666	.0	6.166	.0
.333	.0	1.833	3.5	3.333	.1	4.833	.0	6.333	.0
.500	.0	2.000	2.4	3.500	.1	4.999	.0	6.499	.0
.667	.0	2.166	1.1	3.666	.1	5.166	.0	6.666	.0
.833	.0	2.333	.6	3.833	.0	5.333	.1		
1.000	.0	2.500	.4	4.000	.0	5.499	.1		
1.167	.0	2.666	.2	4.166	.0	5.666	.1		
1.333	2.6	2.833	.2	4.333	.0	5.833	.1		

RUNOFF VOLUME = 1.35334 INCHES = .4186 ACRE-FEET
PEAK DISCHARGE RATE = 12.27 CFS AT 1.500 HOURS BASIN AREA = .0058 SQ. MI.

ADD HYD ID=20 HYD NO=200.D1 ID=18 ID=19
PRINT HYD ID=20 CODE=5

HYDROGRAPH FROM AREA 200.D1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	59.4	3.000	.6	4.500	.2	5.999	.3
.167	.0	1.667	31.0	3.166	.4	4.666	.2	6.166	.1
.333	.0	1.833	17.2	3.333	.4	4.833	.2	6.333	.0
.500	.0	2.000	11.6	3.500	.3	4.999	.2	6.499	.0
.667	.0	2.166	5.5	3.666	.3	5.166	.2	6.666	.0
.833	.0	2.333	2.8	3.833	.2	5.333	.2	6.833	.0
1.000	.0	2.500	1.7	4.000	.2	5.499	.3		
1.167	.1	2.666	1.1	4.166	.2	5.666	.3		
1.333	12.7	2.833	.8	4.333	.2	5.833	.3		

RUNOFF VOLUME = 1.35331 INCHES = 2.0282 ACRE-FEET
PEAK DISCHARGE RATE = 59.42 CFS AT 1.500 HOURS BASIN AREA = .0281 SQ. MI.

*S **BASIN 2E
COMPUTE NM HYD

ID=1 HYD NO=200.E AREA=0.0023 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 4.5403 CFS UNIT VOLUME = .9969 B = 526.28 P60 = 1.8700
 AREA = .001150 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 2.9401 CFS UNIT VOLUME = .9959 B = 340.80 P60 = 1.8700
 AREA = .001150 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=5

HYDROGRAPH FROM AREA 200.E

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.0	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	4.9	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	2.5	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	1.4	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.0	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.5	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.2	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.1	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .1660 ACRE-FEET
 PEAK DISCHARGE RATE = 4.87 CFS AT 1.500 HOURS BASIN AREA = .0023 SQ. MI.

ADD HYD ID=2 HYD NO=200.E1 ID=20 ID=1
 *S **TOTAL FLOW @ AP6
 PRINT HYD ID=2 CODE=5

HYDROGRAPH FROM AREA 200.E1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	64.3	3.000	.6	4.500	.2	5.999	.3
.167	.0	1.667	33.5	3.166	.5	4.666	.2	6.166	.1
.333	.0	1.833	18.6	3.333	.4	4.833	.2	6.333	.0
.500	.0	2.000	12.6	3.500	.3	4.999	.3	6.499	.0
.667	.0	2.166	6.0	3.666	.3	5.166	.3	6.666	.0
.833	.0	2.333	3.0	3.833	.3	5.333	.3	6.833	.0
1.000	.0	2.500	1.9	4.000	.2	5.499	.3		
1.167	.1	2.666	1.2	4.166	.2	5.666	.3		
1.333	13.7	2.833	.8	4.333	.2	5.833	.3		

RUNOFF VOLUME = 1.35330 INCHES = 2.1941 ACRE-FEET
PEAK DISCHARGE RATE = 64.29 CFS AT 1.500 HOURS BASIN AREA = .0304 SQ. MI.

*S **BASIN 2F
COMPUTE NM HYD

ID=3 HYD NO=200.F AREA=0.0036 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.1065 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.8700
AREA = .001800 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 4.6019 CFS UNIT VOLUME = .9975 B = 340.80 P60 = 1.8700
AREA = .001800 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=5

HYDROGRAPH FROM AREA 200.F

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.6	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	7.6	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	4.0	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.2	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.5	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.7	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.4	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2598 ACRE-FEET
PEAK DISCHARGE RATE = 7.62 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

ADD HYD
PRINT HYD

ID=4 HYD NO=200.F1 ID=16 ID=3
ID=4 CODE=5

HYDROGRAPH FROM AREA 200.F1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	69.1	3.000	.7	4.500	.3	5.999	.4
.167	.0	1.667	35.8	3.166	.5	4.666	.3	6.166	.1
.333	.0	1.833	20.8	3.333	.4	4.833	.3	6.333	.0
.500	.0	2.000	14.4	3.500	.4	4.999	.3	6.499	.0
.667	.0	2.166	6.8	3.666	.3	5.166	.3	6.666	.0
.833	.0	2.333	3.3	3.833	.3	5.333	.3	6.833	.0
1.000	.0	2.500	2.1	4.000	.3	5.499	.3		
1.167	.1	2.666	1.4	4.166	.3	5.666	.3		
1.333	16.3	2.833	.9	4.333	.3	5.833	.4		

RUNOFF VOLUME = 1.47075 INCHES = 2.4159 ACRE-FEET
 PEAK DISCHARGE RATE = 69.15 CFS AT 1.500 HOURS BASIN AREA = .0308 SQ. MI.

*S ADD FLOW FROM BASINS 1A,1C,1E,1F,&1G
 ADD HYD ID=5 HYD NO=200.F2 ID=12 ID=4
 PRINT HYD ID=5 CODE=5

HYDROGRAPH FROM AREA 200.F2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	110.2	3.000	1.1	4.500	.4	5.999	.6
.167	.0	1.667	57.2	3.166	.8	4.666	.4	6.166	.2
.333	.0	1.833	32.7	3.333	.7	4.833	.5	6.333	.1
.500	.0	2.000	22.4	3.500	.6	4.999	.5	6.499	.0
.667	.0	2.166	10.6	3.666	.5	5.166	.5	6.666	.0
.833	.0	2.333	5.2	3.833	.5	5.333	.5	6.833	.0
1.000	.0	2.500	3.2	4.000	.5	5.499	.5		
1.167	.2	2.666	2.1	4.166	.5	5.666	.5		
1.333	25.1	2.833	1.5	4.333	.4	5.833	.6		

RUNOFF VOLUME = 1.42534 INCHES = 3.8161 ACRE-FEET
 PEAK DISCHARGE RATE = 110.22 CFS AT 1.500 HOURS BASIN AREA = .0502 SQ. MI.

*S **BASIN 2G
 COMPUTE NM HYD ID=6 HYD NO=200.G AREA=0.0061 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 12.042 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 1.8700
 AREA = .003050 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 7.7977 CFS UNIT VOLUME = .9986 B = 340.80 P60 = 1.8700
 AREA = .003050 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=6 CODE=5

HYDROGRAPH FROM AREA 200.G

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	12.9	3.000	.1	4.500	.0	5.999	.1
.167	.0	1.667	6.7	3.166	.1	4.666	.0	6.166	.0
.333	.0	1.833	3.7	3.333	.1	4.833	.0	6.333	.0
.500	.0	2.000	2.5	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	1.2	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	.6	3.833	.1	5.333	.1		
1.000	.0	2.500	.4	4.000	.0	5.499	.1		
1.167	.0	2.666	.2	4.166	.0	5.666	.1		
1.333	2.7	2.833	.2	4.333	.0	5.833	.1		

RUNOFF VOLUME = 1.35334 INCHES = .4403 ACRE-FEET
 PEAK DISCHARGE RATE = 12.90 CFS AT 1.500 HOURS BASIN AREA = .0061 SQ. MI.

ADD HYD ID=7 HYD NO=200.G1 ID=2 ID=6
 PRINT HYD ID=7 CODE=5

HYDROGRAPH FROM AREA 200.G1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	77.2	3.000	.7	4.500	.3	5.999	.4
.167	.0	1.667	40.2	3.166	.6	4.666	.3	6.166	.1
.333	.0	1.833	22.3	3.333	.5	4.833	.3	6.333	.0
.500	.0	2.000	15.1	3.500	.4	4.999	.3	6.499	.0
.667	.0	2.166	7.2	3.666	.3	5.166	.3	6.666	.0
.833	.0	2.333	3.6	3.833	.3	5.333	.3	6.833	.0
1.000	.0	2.500	2.2	4.000	.3	5.499	.3		
1.167	.1	2.666	1.5	4.166	.3	5.666	.3		
1.333	16.5	2.833	1.0	4.333	.3	5.833	.4		

RUNOFF VOLUME = 1.35330 INCHES = 2.6344 ACRE-FEET
PEAK DISCHARGE RATE = 77.19 CFS AT 1.500 HOURS BASIN AREA = .0365 SQ. MI.

*S **BASIN 2H
COMPUTE NM HYD

ID=8 HYD NO=200.H AREA=0.0069 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 13.621 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 1.8700
AREA = .003450 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 8.8204 CFS UNIT VOLUME = .9988 B = 340.80 P60 = 1.8700
AREA = .003450 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=8 CODE=5

HYDROGRAPH FROM AREA 200.H

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	14.6	3.000	.1	4.500	.1	5.999	.1
.167	.0	1.667	7.6	3.166	.1	4.666	.1	6.166	.0
.333	.0	1.833	4.2	3.333	.1	4.833	.1	6.333	.0
.500	.0	2.000	2.9	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	1.4	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	.7	3.833	.1	5.333	.1		
1.000	.0	2.500	.4	4.000	.1	5.499	.1		
1.167	.0	2.666	.3	4.166	.1	5.666	.1		
1.333	3.1	2.833	.2	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35334 INCHES = .4980 ACRE-FEET
PEAK DISCHARGE RATE = 14.59 CFS AT 1.500 HOURS BASIN AREA = .0069 SQ. MI.

ADD HYD ID=9 HYD NO=200.H1 ID=7 ID=8
*S TOTAL FLOW @ AP7
PRINT HYD ID=9 CODE=5

HYDROGRAPH FROM AREA 200.H1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	91.8	3.000	.9	4.500	.3	5.999	.4
.167	.0	1.667	47.8	3.166	.7	4.666	.3	6.166	.2
.333	.0	1.833	26.5	3.333	.5	4.833	.4	6.333	.0
.500	.0	2.000	17.9	3.500	.5	4.999	.4	6.499	.0
.667	.0	2.166	8.5	3.666	.4	5.166	.4	6.666	.0
.833	.0	2.333	4.3	3.833	.4	5.333	.4	6.833	.0
1.000	.0	2.500	2.7	4.000	.4	5.499	.4		
1.167	.2	2.666	1.8	4.166	.4	5.666	.4		
1.333	19.6	2.833	1.2	4.333	.3	5.833	.4		

RUNOFF VOLUME = 1.35330 INCHES = 3.1324 ACRE-FEET
 PEAK DISCHARGE RATE = 91.79 CFS AT 1.500 HOURS BASIN AREA = .0434 SQ. MI.

*S **BASIN 2I
 COMPUTE NM HYD

ID=10 HYD NO=200.I AREA=0.0055 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 10.857 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 1.8700
 AREA = .002750 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 7.0307 CFS UNIT VOLUME = .9983 B = 340.80 P60 = 1.8700
 AREA = .002750 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=10 CODE=5

HYDROGRAPH FROM AREA 200.I

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	11.6	3.000	.1	4.500	.0	5.999	.1
.167	.0	1.667	6.1	3.166	.1	4.666	.0	6.166	.0
.333	.0	1.833	3.4	3.333	.1	4.833	.0	6.333	.0
.500	.0	2.000	2.3	3.500	.1	4.999	.0	6.499	.0
.667	.0	2.166	1.1	3.666	.1	5.166	.0	6.666	.0
.833	.0	2.333	.5	3.833	.0	5.333	.0		
1.000	.0	2.500	.3	4.000	.0	5.499	.0		
1.167	.0	2.666	.2	4.166	.0	5.666	.1		

1.333 2.5 2.833 .2 4.333 .0 5.833 .1

RUNOFF VOLUME = 1.35334 INCHES = .3970 ACRE-FEET
PEAK DISCHARGE RATE = 11.64 CFS AT 1.500 HOURS BASIN AREA = .0055 SQ. MI.

ADD HYD ID=11 HYD NO=200.I1 ID=5 ID=10
PRINT HYD ID=11 CODE=5

HYDROGRAPH FROM AREA 200.I1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	121.9	3.000	1.2	4.500	.5	5.999	.6
.167	.0	1.667	63.2	3.166	.9	4.666	.5	6.166	.3
.333	.0	1.833	36.0	3.333	.7	4.833	.5	6.333	.1
.500	.0	2.000	24.7	3.500	.6	4.999	.5	6.499	.0
.667	.0	2.166	11.7	3.666	.6	5.166	.5	6.666	.0
.833	.0	2.333	5.7	3.833	.5	5.333	.5	6.833	.0
1.000	.0	2.500	3.6	4.000	.5	5.499	.6		
1.167	.2	2.666	2.3	4.166	.5	5.666	.6		
1.333	27.6	2.833	1.6	4.333	.5	5.833	.6		

RUNOFF VOLUME = 1.41823 INCHES = 4.2131 ACRE-FEET
PEAK DISCHARGE RATE = 121.85 CFS AT 1.500 HOURS BASIN AREA = .0557 SQ. MI.

*S **BASIN 2J
COMPUTE NM HYD ID=12 HYD NO=200.J AREA=0.0029 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.7247 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
AREA = .001450 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 3.7071 CFS UNIT VOLUME = .9966 B = 340.80 P60 = 1.8700
AREA = .001450 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=12 CODE=5

HYDROGRAPH FROM AREA 200.J

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.3	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	6.1	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.2	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	1.8	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.2	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.6	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2093 ACRE-FEET
 PEAK DISCHARGE RATE = 6.14 CFS AT 1.500 HOURS BASIN AREA = .0029 SQ. MI.

ADD HYD ID=13 HYD NO=200.J1 ID=11 ID=12
 *S TOTAL FLOW @ AP4 (ENTRANCE TO AMOLE DEL NORTE CHANNEL)
 PRINT HYD ID=13 CODE=5

HYDROGRAPH FROM AREA 200.J1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	128.0	3.000	1.2	4.500	.5	5.999	.7
.167	.0	1.667	66.4	3.166	.9	4.666	.5	6.166	.3
.333	.0	1.833	37.8	3.333	.8	4.833	.5	6.333	.1
.500	.0	2.000	25.9	3.500	.7	4.999	.5	6.499	.0
.667	.0	2.166	12.2	3.666	.6	5.166	.6	6.666	.0
.833	.0	2.333	6.0	3.833	.6	5.333	.6	6.833	.0
1.000	.0	2.500	3.8	4.000	.5	5.499	.6		
1.167	.2	2.666	2.5	4.166	.5	5.666	.6		
1.333	28.9	2.833	1.7	4.333	.5	5.833	.6		

RUNOFF VOLUME = 1.41501 INCHES = 4.4224 ACRE-FEET
 PEAK DISCHARGE RATE = 128.00 CFS AT 1.500 HOURS BASIN AREA = .0586 SQ. MI.

*S **BASIN 2K
 COMPUTE NM HYD ID=14 HYD NO=200.K AREA=0.010 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 19.740 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.8700
 AREA = .005000 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 12.783 CFS UNIT VOLUME = .9992 B = 340.80 P60 = 1.8700
AREA = .005000 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=14 CODE=5

HYDROGRAPH FROM AREA 200.K

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	21.1	3.000	.2	4.500	.1	5.999	.1
.167	.0	1.667	11.0	3.166	.2	4.666	.1	6.166	.0
.333	.0	1.833	6.1	3.333	.1	4.833	.1	6.333	.0
.500	.0	2.000	4.1	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	2.0	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	1.0	3.833	.1	5.333	.1	6.833	.0
1.000	.0	2.500	.6	4.000	.1	5.499	.1		
1.167	.0	2.666	.4	4.166	.1	5.666	.1		
1.333	4.5	2.833	.3	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35334 INCHES = .7218 ACRE-FEET
PEAK DISCHARGE RATE = 21.14 CFS AT 1.500 HOURS BASIN AREA = .0100 SQ. MI.

ADD HYD ID=15 HYD NO=200.K1 ID=9 ID=14
PRINT HYD ID=15 CODE=5

HYDROGRAPH FROM AREA 200.K1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	112.9	3.000	1.1	4.500	.4	5.999	.5
.167	.0	1.667	58.9	3.166	.8	4.666	.4	6.166	.2
.333	.0	1.833	32.7	3.333	.7	4.833	.4	6.333	.1
.500	.0	2.000	22.1	3.500	.6	4.999	.4	6.499	.0
.667	.0	2.166	10.5	3.666	.5	5.166	.5	6.666	.0
.833	.0	2.333	5.2	3.833	.5	5.333	.5	6.833	.0
1.000	.0	2.500	3.3	4.000	.4	5.499	.5		
1.167	.2	2.666	2.2	4.166	.4	5.666	.5		
1.333	24.1	2.833	1.5	4.333	.4	5.833	.5		

RUNOFF VOLUME = 1.35331 INCHES = 3.8542 ACRE-FEET
PEAK DISCHARGE RATE = 112.93 CFS AT 1.500 HOURS BASIN AREA = .0534 SQ. MI.

*S **BASIN 2L
COMPUTE NM HYD

ID=16 HYD NO=200.L AREA=0.0042 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 8.2909 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 1.8700
AREA = .002100 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 5.3689 CFS UNIT VOLUME = .9977 B = 340.80 P60 = 1.8700
AREA = .002100 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=16 CODE=5

HYDROGRAPH FROM AREA 200.L

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.9	2.666	.2	4.000	.0	5.333	.0
.167	.0	1.500	8.9	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	4.6	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.6	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.7	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.8	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.4	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.3	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .3031 ACRE-FEET
PEAK DISCHARGE RATE = 8.89 CFS AT 1.500 HOURS BASIN AREA = .0042 SQ. MI.

ADD HYD ID=17 HYD NO=200.L1 ID=15 ID=16
*S TOTAL FLOW @ AP8 (ENTRANCE TO AMOLE DEL NORTE CHANNEL)
PRINT HYD ID=17 CODE=5

HYDROGRAPH FROM AREA 200.L1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	121.8	3.000	1.1	4.500	.5	5.999	.6
.167	.0	1.667	63.5	3.166	.9	4.666	.5	6.166	.2
.333	.0	1.833	35.2	3.333	.7	4.833	.5	6.333	.1
.500	.0	2.000	23.8	3.500	.6	4.999	.5	6.499	.0
.667	.0	2.166	11.3	3.666	.5	5.166	.5	6.666	.0

RUNOFF VOLUME = 1.35330 INCHES = 4.1573 ACRE-FEET
PEAK DISCHARGE RATE = 121.82 CFS AT 1.500 HOURS BASIN AREA = .0576 SQ. MI.

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 14:37:14

**APPLICABLE PLATES FROM
TOWER/SAGE DRAINAGE MASTER PLAN**

**AUTHORIZED BY
ANDREWS, ASBURY & ROBERT, INC.**

APRIL 1995





A6-D 28.9 AC.
A12-D 23.0 AC.
A11-D 5.5 AC.

A7-D 13.2 AC.
B4-D 14.7 AC.

B5-D 25.0 AC.
TOWER PARK/POD

B6-D 29.4 AC.

B7-D 37.8 AC.

S4-D 27.9 AC.

S5-D 15.2 AC.
S6-D 24.2 AC.

S7-D 36.5 AC.

S8-D 43.7 AC.

S9-D 47.9 AC.

SITE

TABLE 2
TOWER/SAGE DRAINAGE MASTER PLAN
AHYMO BASIN PARAMETER WORKSHEET
PEAK BASIN FLOWS AND VOLUMES

April 95

(ALL FLOWS & VOLUMES INCLUDE A 5% BULKING FACTOR)

														10 YEAR		100 YEAR	
BASIN	AREA		LENGTH (ft.)	ELEV. DIFF. (ft.)	SLOPE (%)	K	VEL (fps)	T(c) (hr.)	T(p) (hr.)	LAND TREATMENT (%)				PEAK FLOW (6hr.) (cfs)	RUNOFF VOLUME (24hr.) (ac.ft.)	PEAK FLOW (6hr.) (cfs)	RUNOFF VOLUME (24hr.) (ac.ft.)
	(ac.)	(sq.mi.)								A	B	C	D				
S5-D	15.2	0.0238	400	6.0	1.50	3.0	3.67	0.03	0.02								
			1000	4.0	0.40	3.0	1.90	<u>0.15</u>	<u>0.10</u>								
								<u>0.18</u>	<u>0.12</u>		41		59	33	1.3	56	2.3
		TOTAL =															
S6-D	24.2	0.0378	400	1.0	0.25	1.0	0.50	0.22	0.15								
			400	1.0	0.25	3.0	1.50	0.07	0.05								
			200	2.0	1.00	3.0	3.00	0.02	0.01								
			1100	5.0	0.45	3.0	2.02	<u>0.15</u>	<u>0.10</u>								
			TOTAL =						<u>0.47</u>	<u>0.31</u>		40		60	32	2.2	55
S7-D	36.5	0.0570	400	2.0	0.50	1.0	0.71	0.16	0.10								
			950	1.0	0.11	2.0	0.65	0.41	0.27								
			650	3.0	0.46	2.0	1.36	<u>0.13</u>	<u>0.09</u>								
			TOTAL =						<u>0.70</u>	<u>0.46</u>		29		71	43	3.7	70
<u>S8-D</u>	<u>43.7</u>	0.0683	400	2.0	0.50	1.0	0.71	0.16	0.10								
			1000	1.0	0.10	3.0	0.95	0.29	0.20								
			1100	6.0	0.55	3.0	2.22	<u>0.14</u>	<u>0.09</u>								
			TOTAL =						<u>0.59</u>	<u>0.39</u>		37		63	52	4.1	87
S9-D	47.9	0.0748	300	10.0	3.33	1.0	1.83	0.05	0.03								
			950	9.0	0.95	3.0	2.92	0.09	0.06								
			1150	33.0	2.87	3.0	5.08	<u>0.06</u>	<u>0.04</u>								
			TOTAL =						<u>0.20</u>	<u>0.13</u>		50		50	94	3.7	166

SEE MAP NO. 2 FOR BASIN IDENTIFICATION

TABLE 3
TOWER/SAGE DRAINAGE MASTER PLAN
SUMMARY OF PEAK DISCHARGES
AND PEAK VOLUMES

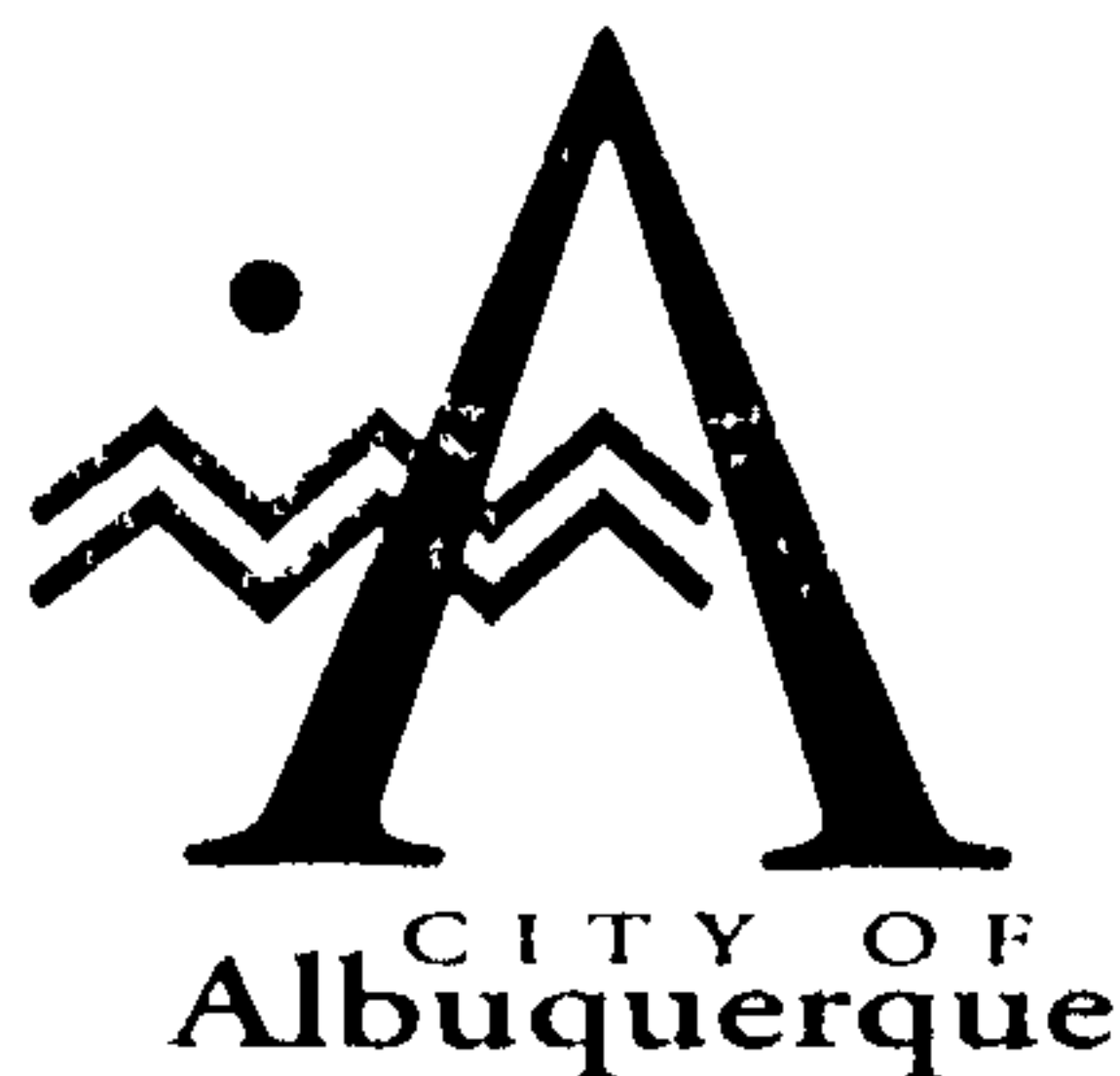
(ALL FLOWS INCLUDE A 5% BULKING FACTOR)

ANALYSIS POINT	Q(10) (6hr.) (cfs)	V(10) (24hr.) (ac.ft.)	Q(100) (6hr.) (cfs)	V(100) (24hr.) (ac.ft.)
1	70	3.2	112	5.2
2	126	5.7	204	9.4
3	179	8.3	292	13.7
4	244	11.4	397	18.8
5	298	14.0	490	23.2
6	73	3.7	119	6.1
7	78	4.2	132	7.0
8	86	4.7	147	7.9
9	445	22.0	748	36.8
10	457	22.6	766	37.8
11	35	1.5	58	2.4
12	77	3.5	132	5.8
13	118	5.6	211	9.6
14	142	6.8	252	11.6
15	46	1.9	77	3.2
16	65	2.7	109	4.6
17	132	5.5	228	9.6
18	185	8.0	318	13.8
19	202	9.4	348	16.4
20	345	16.5	599	27.7
21	820	39.3	1414	67.2
22	23	39.3	25	67.2
23	59	42.1	90	71.9
24	111	45.8	178	78.1
25	151	50.2	250	85.9
26	56	2.5	91	4.1
27	104	5.2	170	8.7
28	127	8.2	207	13.5
29	14	0.5	24	0.9
30	22	1.1	39	1.9
31	24	1.7	46	3.0
32	30	2.1	57	3.7
33	180	11.7	303	19.6
34	217	14.9	368	25.2
35	32	2.2	55	3.7
36	71	5.9	118	9.8
37	120	9.9	201	16.7
38	149	13.7	251	23.2
39	58	2.4	96	4.0
40	83	3.6	138	5.9
41	124	5.4	199	8.9
42	48	2.1	77	3.4
43	171	7.5	276	12.3
44	175	8.0	283	13.2
45	36	1.5	55	2.5

490 + 24% A6-D + A7D

217 cfs
260 cfs

NOTE: SEE MAP NO. 2 FOR LOCATION OF ANALYSIS POINTS



September 17, 1997

Martin J. Chávez, Mayor

CERTIFICATE OF COMPLETION AND ACCEPTANCE

John K. Murtagh
President
Longford at Albuquerque I
3200 Carlisle NE
Albuquerque, NM 87110

RE: ROLLING HILLS SUB'D. UNIT 2; CITY PROJECT NO. 5379.91; MAP NO. M-10

Dear Mr. Murtagh:

This is to certify that the City of Albuquerque accepts the construction of the infrastructure provided in the Work Order Construction Plans, City Project No. 5379.91 as compliance with completing the required public infrastructure listed in the Subdivision Improvements Agreement (SIA) between Longford at Albuquerque I and the City of Albuquerque executed on January 27, 1997.

Having satisfied the requirements referenced above, the SIA and any associated Financial Guaranty, held by the City, can now be released. The Contractors one-year warranty period started at the date of acceptance by the Chief Construction Engineer, dated September 15, 1997.

Please be advised this Certificate of Completion and Acceptance shall only become effective upon final plat approval and filing in the office of the Bernalillo County Clerk's Office.

Should you have any questions or issues regarding this project, please contact me.

Sincerely,

Ricardo B. Roybal, P.E.
City Engineer
Dev. & Bld. Services Div.
Public Works Department

Good for You, Albuquerque!

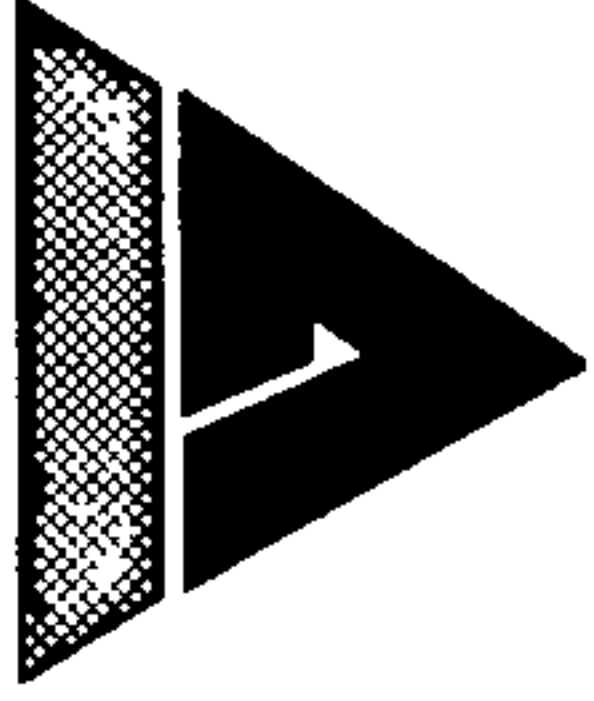


Rolling Hills Sub'd. Unit 2, Proj. #5379.91

Page 2

September 17, 1997

- c. Fred Araman, Isaacson & Arfman, P.A.
Virginia Louman, AIF, Developers Surety and Indemnity Company
Teresa Martin, Project Administrator, Project Review
Theresa Lucero, Assistant Project Administrator , PWD
Fred Aguirre, Hydrology, PWD
Richard Dourte, Transportation Development, PWD
Roger Green, Utility Development, PWD
Ed Stang, Planning Section, CIP
f/Project file



PROJECT MEMORANDUM

10/8/96

TO: Hydrology Division, City of Albuquerque,
Public Works Department

*Is Unser/Arenal R/W
included in Basin 34D?*

FROM: Jud Lee, Isaacson & Arfman, P.A. *JL*

REF: Rolling Hills Unit II Subdivision **PROJ NO:** I&A 917

SUBJ: Clarification of Hydrology Issues for Preliminary Plat Approval

137.5 - 76 = 61.5 Ac

74.34 x 2.225 = 165.4 cfs

1. The Master Drainage Report for Rolling Hills Unit One and Future Phases, dated January 1996 analyzed the hydrology for a 76 acre parcel of land between Sage Road and Arenal Road on the north and south, and Unser Blvd. and the Amole del Norte Channel on the west and east. The AHYMO model generated flows totalling 250 cfs at two entrances to the channel. This flow includes 20 cfs of developed waters from the commercial Tract A at the southeast corner of the Sage/Unser intersection. It does not include approximately 20 acres between Rolling Hills and the Channel at the northeast corner of the tract. The Boyle Engineering Corporation Design Development Report for the Amole del Norte Storm Diversion Facility of June 1984 identified the area as Basin 34D with a 100-year discharge of 306 cfs. The 250 cfs discharge from the Rolling Hills project is well below the 306 cfs allowing for the undeveloped area to discharge up to 56 cfs. Copies of the drainage basin map and the corresponding table of flows are enclosed with this submittal.

What about the 41.5 Ac?

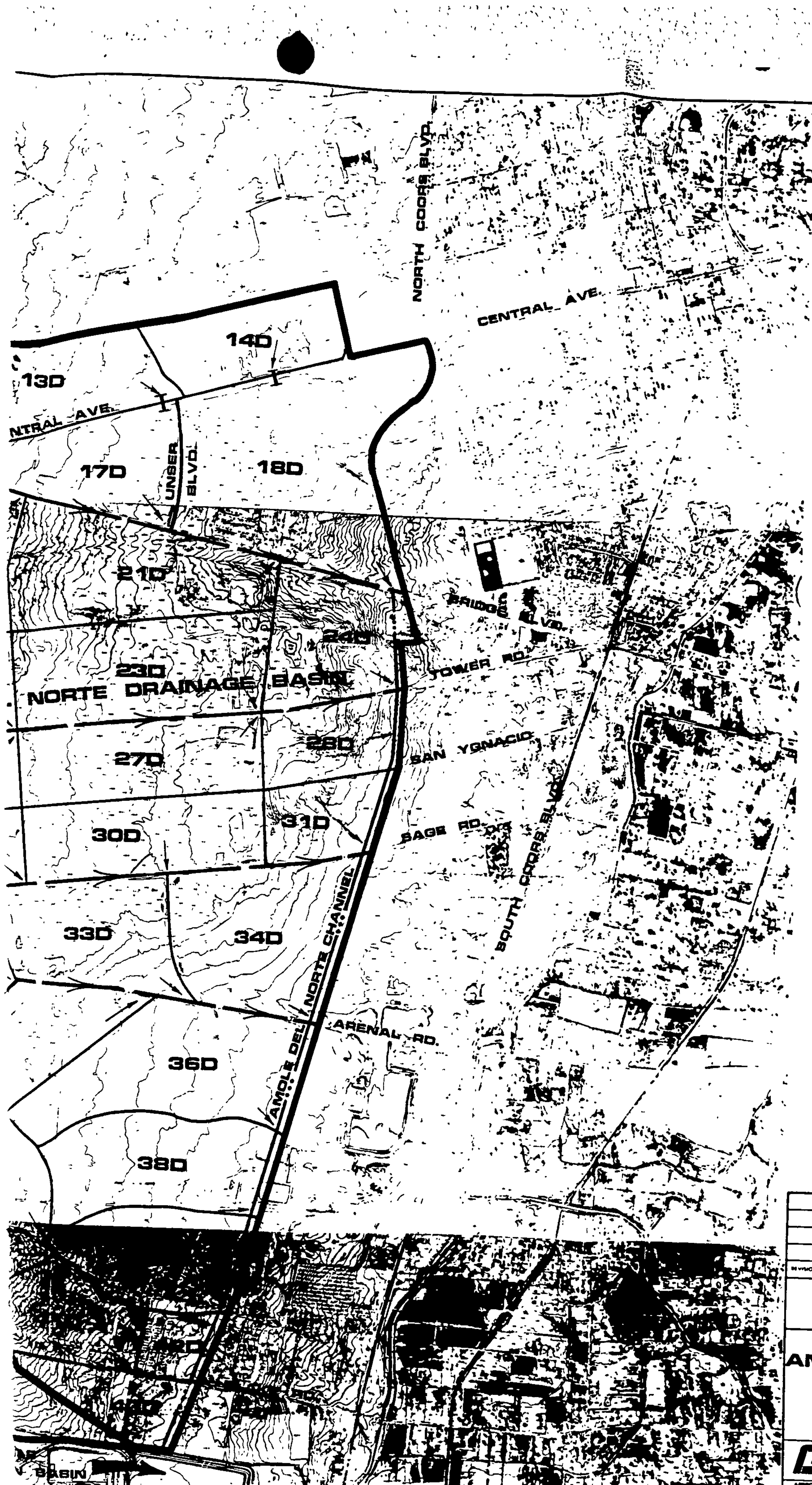
2. There will be a small detention area graded out at the interim terminus of Secret Valley Drive. This detention pond will accept the street flows from Secret Valley Drive and drain them to the Amole del Norte Channel via a 4" (minimum) PE drain line. (See attached Pond Grading Plan).
3. Longford Homes is a participant in the Arenal/Unser Drainage Management Plan. This plan calls for large diameter RCP storm drains in Sapphire Street, Unser Blvd., and Kimela Drive, a regional storm water detention facility at the southeast corner of Unser and Arenal, and a 1997 CIP funded 72" RCP in Arenal Road from the pond to the Amole del Norte Channel.

TABLE 4

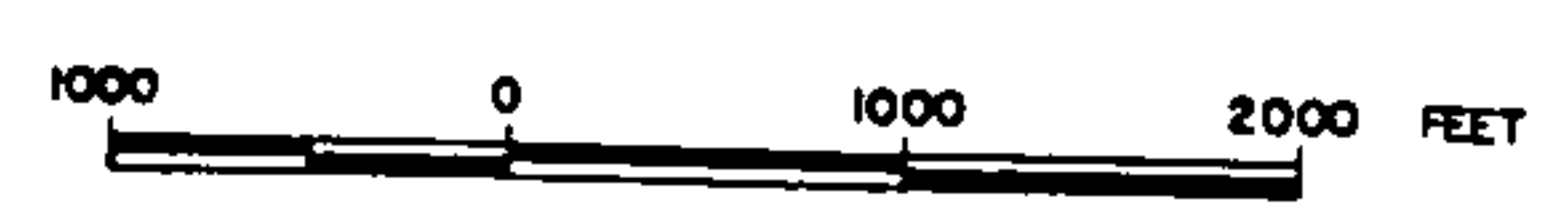
DATA SUMMARY

100-YEAR STORM DEVELOPED CONDITIONS

Area No.	Basin Length (Feet)	Elev. Drop (Feet)	Slope	Area (Acres)	CN	T _p (Min.)	Direct Runoff (Inches)	Runoff Volume (Acre-ft.)	Peak Flow (cfs)
21D	4015	52	0.0130	128.8	82	24	0.78	8.33	191
22D	3550	82	0.0231	119.6	83	18	0.84	8.25	252
23D	3910	36	0.0092	137.0	83	28	0.84	9.45	186
24D	2010	57	0.0284	89.0	77	10	0.56	4.11	226
25D	2600	40	0.0154	36.0	77	16	0.56	1.66	57
26D	3450	72	0.0209	90.5	80	18	0.69	5.14	157
27D	3840	23	0.0060	99.2	85	32	0.94	7.74	133
28D	2030	57	0.0281	57.0	79	10	0.64	3.03	166
29D	3630	68	0.0187	98.1	79	20	0.64	5.21	143
30D	2430	26	0.0107	97.1	85	18	0.94	7.58	231
31D	1900	62	0.0326	52.0	77	10	0.56	2.40	132
32D	4140	83	0.0200	126.9	79	22	0.64	6.74	168
33D	3650	74	0.0203	93.9	79	20	0.64	4.99	137
~~34D~~	~~3180~~	~~76~~	~~0.0239~~	~~137.5~~	~~82~~	~~16~~	~~0.78~~	~~8.90~~	~~306~~
35D	5200	100	0.0192	127.3	77	26	0.56	5.88	124
36D	4300	70	0.0163	140.8	77	24	0.56	6.50	149
37D	3850	86	0.0223	102.5	77	20	0.56	4.74	130
38D	3100	58	0.0187	131.5	77	18	0.56	6.07	186
39D	2670	50	0.0187	52.2	77	16	0.56	2.41	83
40D	2750	50	0.0182	64.5	77	16	0.56	2.98	102



SCALE: 1"=1000'



LEGEND

- DRAINAGE BOUNDARY
- SUBBASIN BOUNDARY
- SUBBASIN NUMBER
- EXIST. CULVERTS
- FUTURE STORM SEWER
- OUTFLOW LOCATIONS
- COMBINED SUBBASIN BOUNDARY

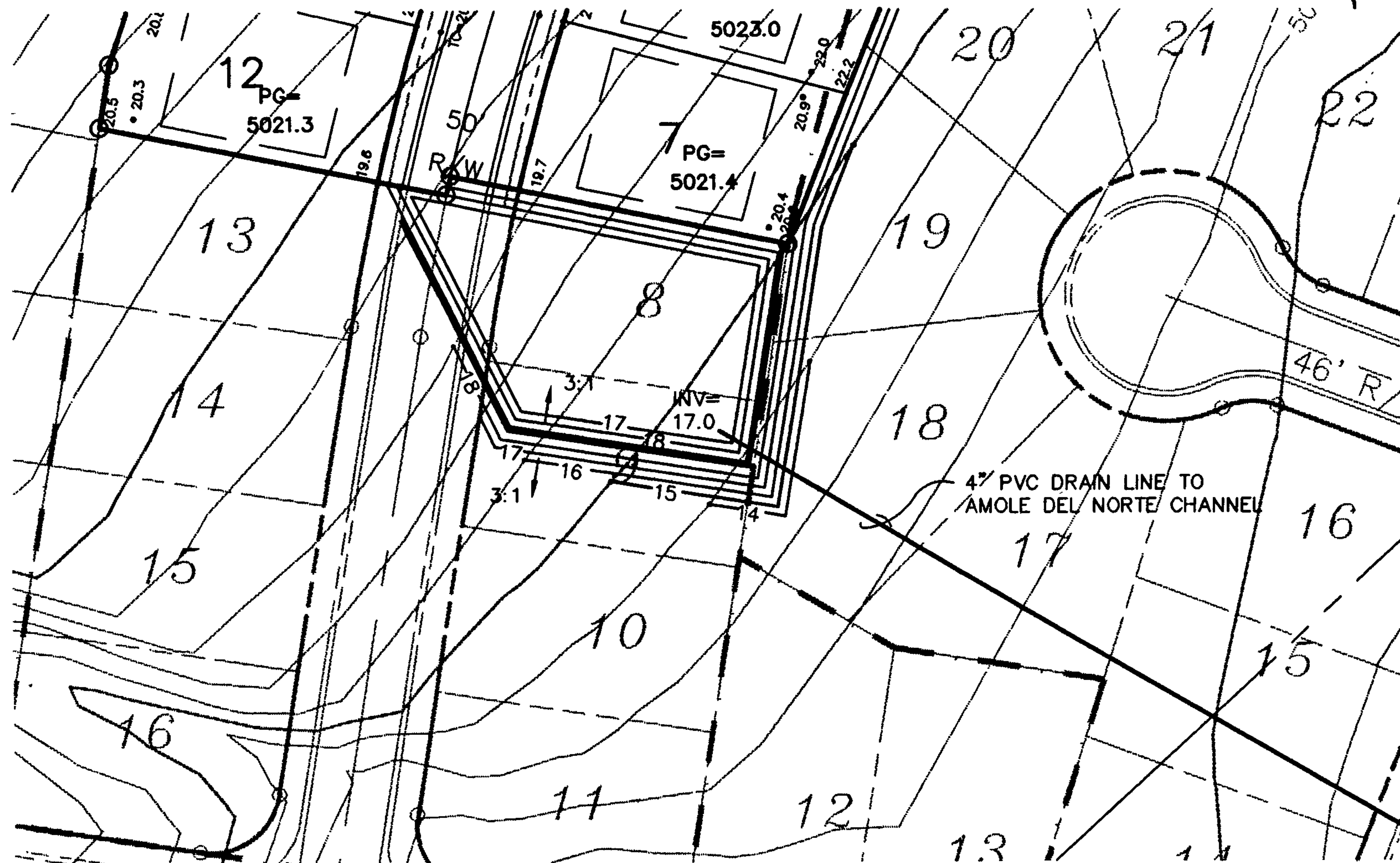
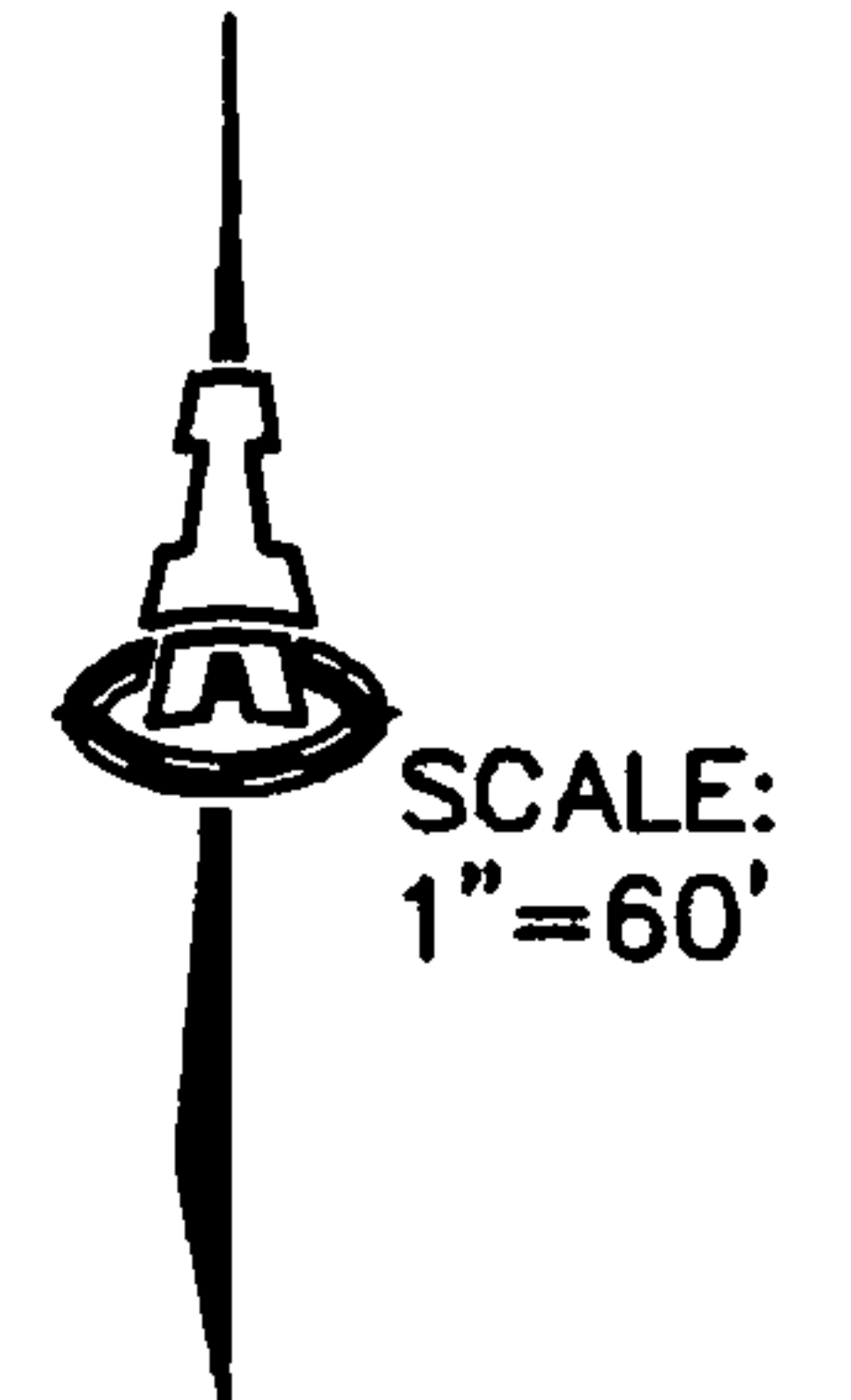
DIVISION	DATE	DESCRIPTION	APPROVED

PLATE I

AMOLE DETENTION BASIN UPLAND DRAINAGE AREAS

EL.	AREA (FT ²)	STORAGE (FT ²)
17	5363	0
18	7700	6531
19	9635	15200

FROM MASTER REPORT, THE RUNOFF VOLUME
 FROM 20 LOTS = 0.50 AF, SO 12 LOTS
 FROM UNIT 2 = 0.3 AF
 $15200/43560 = 0.35 \text{ AF} > 0.3 \text{ AF}$, OK



10-07

TEMPORARY EASEMENT

This grant of Temporary Easement, between [state the name of the present real property owner exactly as shown on the real estate document conveying title to the present owner and state the legal status of the owner, for example, "single person," "husband and wife," "corporation of the State of X," "partnership":] Albuquerque South, a New Mexico General Partnership

("Grantor"), whose address is P.O. Box 27047, Albuq., NM 87125 and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Grantor signs this Temporary Easement.

1. Recital. Grantor is the owner of certain real property located at [give general description, for instance, subdivision, lot and block or street address:] The northeast corner of Arenal Road & Unser Blvd. SW in Bernalillo County, New Mexico (the "Property").

2. Grant of Easement. The Grantor grants to the City a temporary easement ("Temporary Easement") in, over, upon and across the Property for [state the kind of easement, for example, "public street and highway purposes (including all utilities)," "water line," "sewer line," etc.:] The conveyance of storm water flows

The Temporary Easement is more particularly described in the attached Exhibit A. [State on the exhibit either the metes and bounds description of the Temporary Easement or state the exact dimensions and location in a manner which would enable a surveyor to locate the Temporary Easement on the ground.]

The grant of the Temporary Easement includes the right of the City to enter upon the Temporary Easement at any time for inspection, installation, maintenance, repair or modification and the right to remove trees, bushes, undergrowth and any other obstacles if the City determines they interfere with the appropriate use of the Temporary Easement. This grant includes the right of access to the easement across the Grantor's adjoining property.

Grantor agrees for itself and its successors in interest that it has been paid in valuable consideration and that the grant of this Temporary Easement is not a gift or donation.

This Temporary Easement is worded pursuant to the provisions of §§47-1-27 to 47-1-44, NMSA 1978 or successor statutes.

3. Ownership Offer. Grantor states that it is the owner in fee simple of the Property and that it has a good lawful right to convey the Property or any part thereof.

(Approved by Legal Dept.
as to form only-6/15/86)

4. Binding on Grantor's Property. The grant and other provisions of this Temporary Easement constitute covenants running with the land for the benefit of the City and its successors and assigns until terminated.

5. Termination of Temporary Easement. This Temporary Easement shall remain in effect until [state date of termination or event which will cause Temporary Easement to end:] The Parcel is further defined by permanent easements or public right-of-way by future subdividing of the subject parcel (Termination"). Upon Termination and demand by the Grantor the City will execute and deliver to Grantor a release of this Temporary Easement.

6. Indemnification. As a part of the consideration for this grant, subject to the provisions of the New Mexico Tort Claims Act and all other applicable New Mexico laws, the City agrees to save Grantor harmless from any and all liability arising from the City's negligent use of the Temporary Easement for the purposes set forth herein. The City does not agree to save Grantor harmless from any liability which may arise from Grantor's use of the Temporary Easement and the Property.

7. Form Not Changed. Grantor agrees that changes to this form are not binding upon the City unless initiated by the Grantor and approved and signed by the City Legal Department in writing on this form.

CITY OF ALBUQUERQUE

Approved:

By:

Title:

Dated:

Albuquerque South, A New Mexico
GRANTOR: General Partnership,
By Arjay, Inc., Co-Managing Partner
By: Joseph L. Werntz
Its: President
Dated: 5-24-96

STATE OF New Mexico)
) ss.
COUNTY OF Bernalillo)

This instrument was acknowledged before me on the 24th day of May, 19 96, by [name of person signing:] Joseph L. Werntz "President" or "Owner": President of [name of the entity which owns the Property if other than the individual signing, for instance, the name of the corporation, partnership, or joint venture:] Arjay, Inc., the Co-Managing Partner of Albuquerque South, a New Mexico General Partnership.

Roberta Romero
Notary Public

My Commission Expires

ROBERTA ROMERO

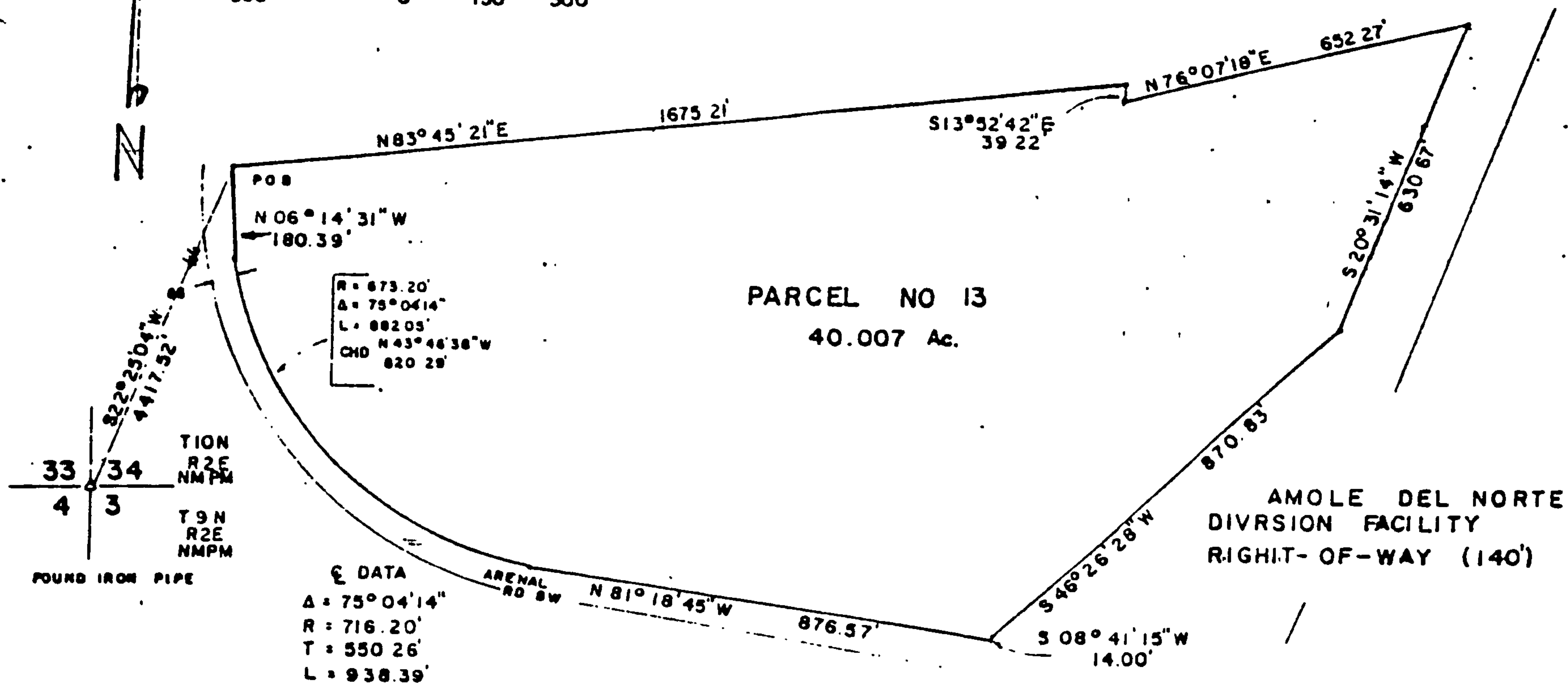
NOTARY PUBLIC STATE OF NEW MEXICO
Notary Bond Filed with Secretary of State

My Commission Expires 7/24/97

(Approved by Legal Dept.
as to form only-6/15/86)

SCALE

300 0 150 300



1. This Plat is based on the following:
 - (A). New Mexico Statutory Form Special Warranty Deed, recorded 8/9/73, Bk. D947, Pg.898-901.
 - (B). Amole Del Norte Diversion Facility Warranty Deed, recorded 2/23/81, Bk.D137A, Pg. 331-841, Document # 81 9538.
 - (C). Plat showing a portion of Tracts allotted from the Town of Atrisco Grant, filed 12/5/44, Bk. D, Pg. 117-118.

EXHIBIT "A-1"

LEGAL DESCRIPTION

A certain Parcel of Land situate in Section 34, T. 10 N., R. 2 E., N.M.P.M., Bernalillo County, New Mexico, being a Portion of Tract "KK" as described on New Mexico Statutory Form Special Warranty Deed, recorded August 9, 1973 in Book D-947, Page 898-901, being more particularly described as follows:

BEGINNING at the Northwest Corner of the Parcel herein described, being the point of intersection of the North boundary of said Tract "KK" and the East right-of-way line of Unser Blvd. SW, whence the Section Corner common to Sections 3 and 4, T. 9 N., R. 2 E., N.M.P.M. and Sections 33 and 34, T. 10 N., R. 2 E., N.M.P.M., bears S. 22 deg. 25' 04" W., 4417.52 feet distant, and running THENCE, N. 83 deg. 45' 21" E., 1675.21 feet, along said North boundary of Tract "KK" to an angle point; THENCE, S. 13 deg. 52' 42" E., 39.22 feet to an angle point; THENCE, N. 76 deg. 07' 18" E., 652.27 feet along said North boundary of Tract "KK" to a point on the West right-of-way line of the Amole Del Norte Diversion Facility, recorded February 23, 1981 in Book D-137-A, Page 831-841; THENCE, S. 20 deg. 31' 14" W., 630.67 feet along said West right-of-way line to an angle point; THENCE, S. 46 deg. 26' 28" W., 870.83 feet along said West right-of-way line to an angle point; THENCE, S. 08 deg 41' 15" W., 14.00 feet along said West right-of-way line to a point on the North right-of-way line of Arenal Rd. SW; THENCE, N. 81 deg. 18' 45" W., 876.57 feet along said North right-of-way line of Arenal Rd. SW to a point of curve; THENCE, on a curve to the right, having a radius of 673.20 feet, delta = 75 deg. 04' 14", chord = N. 43 deg. 46' 38" W., 820.29 feet thru an arc of 882.05 feet to the point of tangent on the East right-of-way line of Unser Blvd. SW; THENCE, N. 06 deg. 14' 31" W., 180.39 feet along said East right-of-way line of Unser Blvd. SW to the Point of Beginning, and Containing 40.007 Acres, more or less.

I, Verlon E. Hall, New Mexico Registered Land Surveyor No. 3241, do hereby certify that this Plat was prepared by me or under my direction, from notes of an actual field survey and other data as listed hereon and that this Plat and description shown hereon is true and correct to the best of my belief and knowledge.

IN WITNESS WHEREOF, I have hereunto set my hand and seal, on this 10th day of October, 1985.

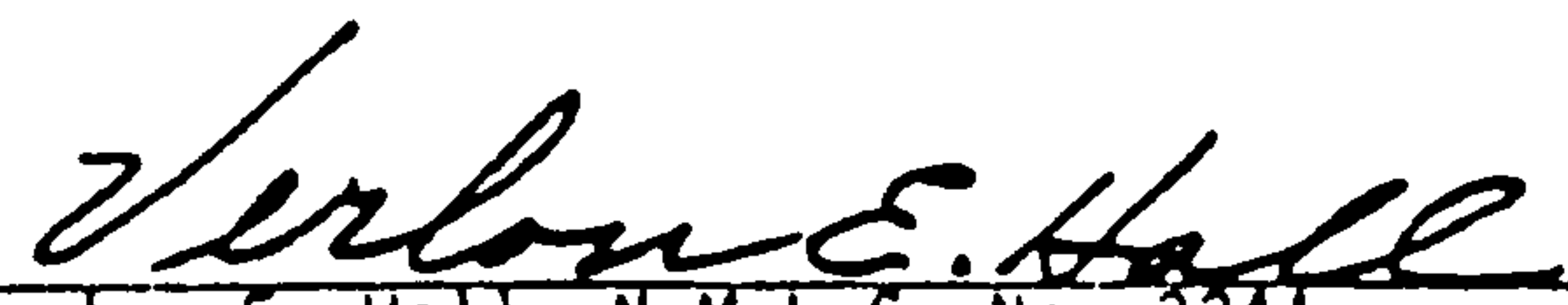
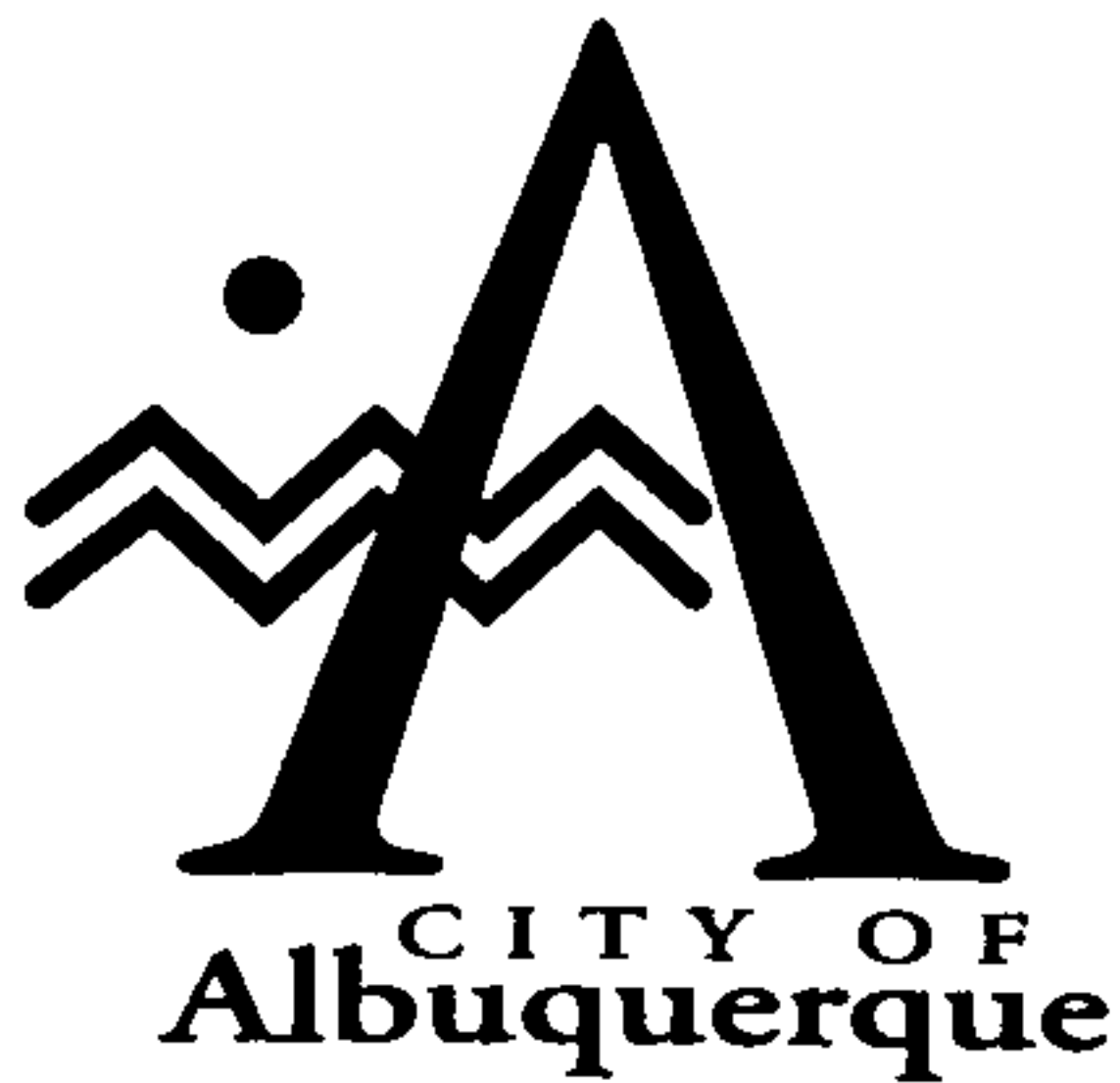

Verlon E. Hall, N.M.L.S. No. 3241

EXHIBIT "A-2"



May 15, 1996

Martin J. Chávez, Mayor

Jud Lee
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM

**RE: ROLLING HILLS SUBDIVISION (M10-D7) GRADING PLAN FOR FINAL PLAT,
GRADING PERMIT, AND WORK ORDER PERMIT APPROVAL. ENGINEER'S
STAMP DATED 3-19-96.**

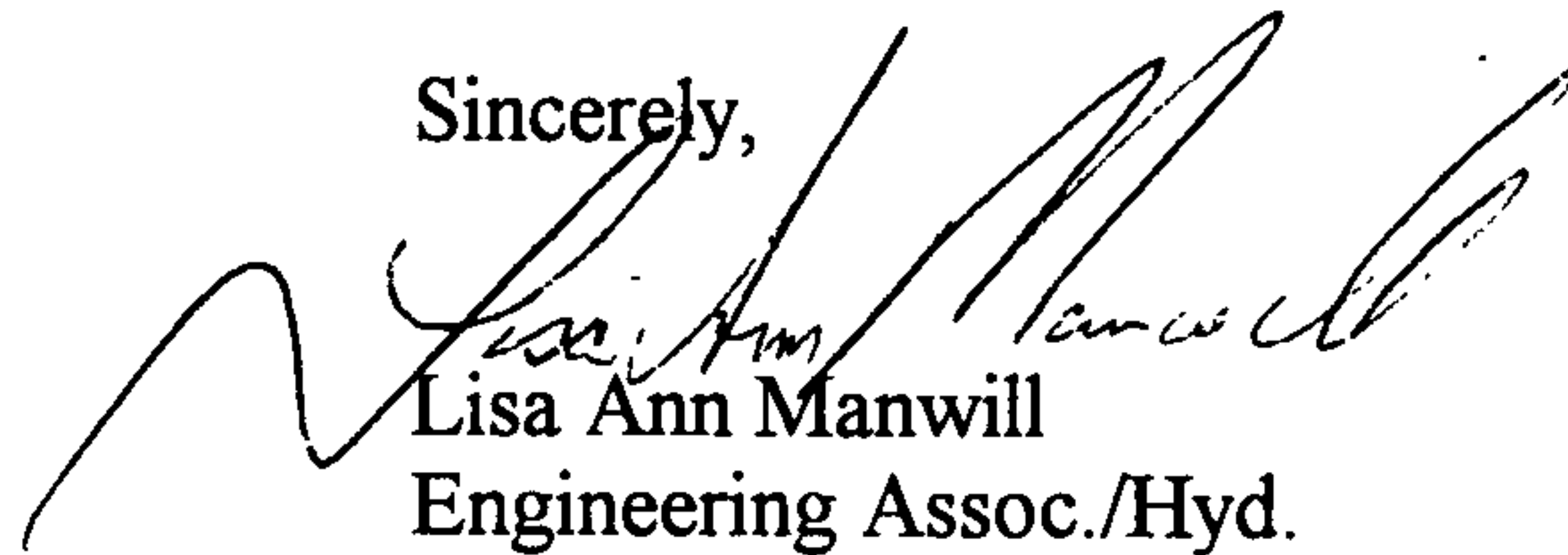
Dear Mr. Lee:

Based on the information provided on your 5-7-96 submittal, the above referenced project is approved for Final Plat, Grading Permit, and Work Order Permit.

An Engineer's Certification will be required for Grading Certification.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,



Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia

File

Good for You, Albuquerque!



DRAINAGE INFORMATION SHEET

PROJECT TITLE: Rolling Hills SD ZONE ATLAS/DRNG. FILE #: 1410
DRB #: 95-442 EPC #: _____ WORK ORDER #: _____
LEGAL DESCRIPTION: Tract B Unit 1-B Lands of Albuquerque South
CITY ADDRESS: _____
ENGINEERING FIRM: Isaacson & Artman PA CONTACT: Jud Lee
ADDRESS: 128 Monroe NE PHONE: 268-8828
OWNER: Longford Homes of New Mexico CONTACT: Brian Walsh
ADDRESS: 6400 S. Eastern Ave. Ste 18 PHONE: 702-736-1770
ARCHITECT: NA CONTACT: _____
ADDRESS: _____ PHONE: _____
SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich
ADDRESS: _____ PHONE: 884-1990
CONTRACTOR: NA CONTACT: _____
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

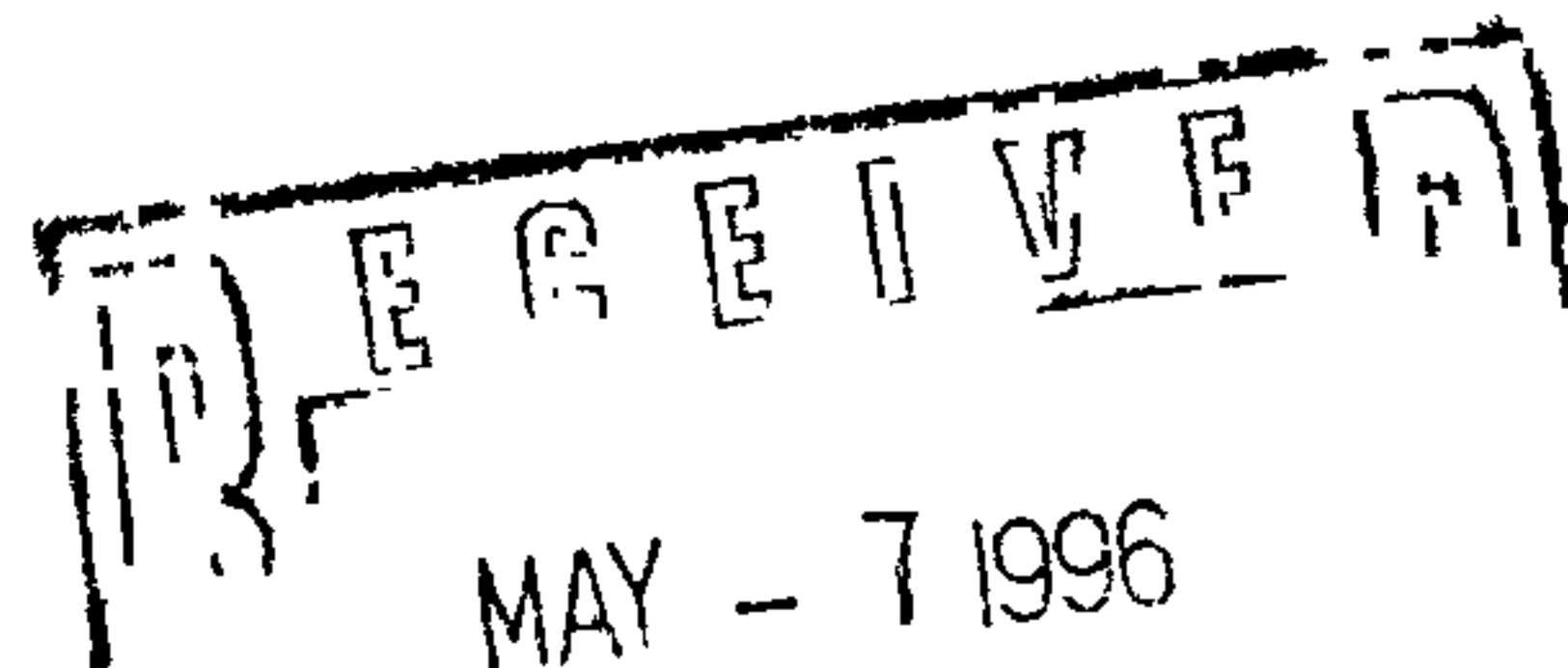
- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER

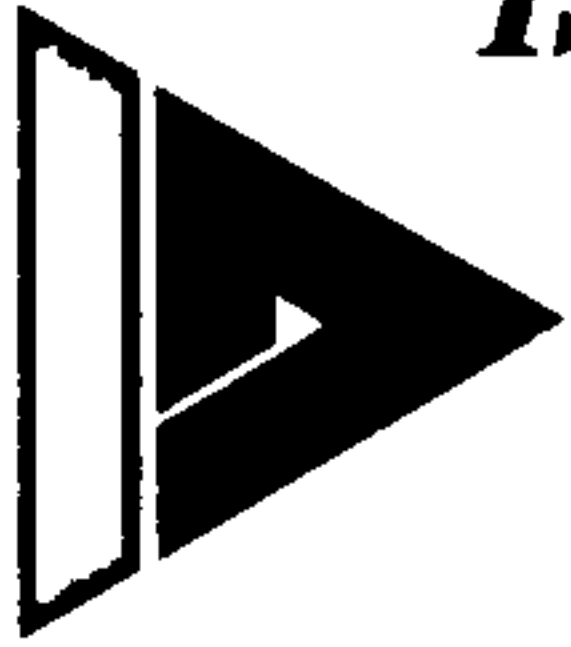
PRE-DESIGN MEETING:

- ☒ YES
☐ NO
☐ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SKETCH PLAT APPROVAL
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D. APPROVAL
☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☒ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY APPROVAL
☒ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☒ OTHER Work Order (SPECIFY)

DATE SUBMITTED: 5/3/96BY: Jud Lee



ISAACSON & ARFMAN, P.A.

Consulting Engineering Associates

*Thomas O. Isaacson, PE & LS • Fred C. Arfman, PE
Scott M. McGee, PE*

May 14, 1996

Ms. Lisa Ann Manwill
Hydrology Division
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: Rolling Hills Subdivision, Unit One (M10/D7)

Dear Ms. Manwill:

We offer this letter to clarify two drainage/grading issues relating to the final hydrology approval of the above referenced subdivision. Per our discussion, the following written narrative should clear up the vagueness of the offsite storm water flows being accepted onto the future phase of this project off of Tract A, Albuquerque South, Unit 1-B, being adjacent and to the west of the referenced subdivision. In addition, we will request your consideration of not requiring the temporary asphaltic rundown between the proposed temporary pond and the Amole del Norte Diversion Channel. Accordingly, please accept and/or consider the following explanations concerning the above:

- Q. How will the offsite storm water flow coming off of the adjacent Tract A to the west be handled by this development?*
- A. The previously submitted DMP for the entire 67 acre parcel took the offsite storm water from Tract A into consideration. The DMP indicated accepting 19.9 cfs through a future P.C.C. rundown onto a street within Unit Two of Rolling Hills. The storm waters are routed southerly approximately 400 feet where a battery of catch basins accept them into a storm drain. This storm drain is financially guaranteed under a modified Procedure 'B' - non-work order S.I.A. for Unit One.

Ms. Lisa Ann Manwill
May 14, 1996
Page 2

Q. What is your explanation of the Sage Road storm waters that have appeared to flow across the commercial tract and enter onto the proposed subdivision?

A. By review of the existing contour maps available for this area, there appears to be what could be interpreted as a drainage pattern from Sage Road, starting approximately half way along the commercial tract frontage and then running to the southeast.

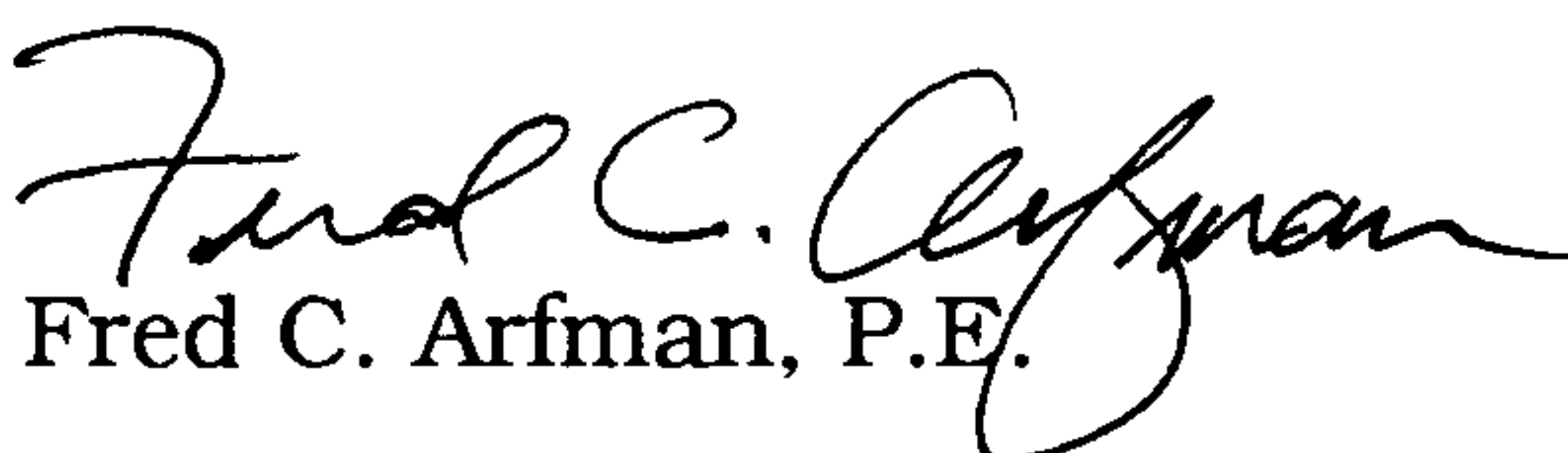
From our field investigation, we have confirmed the existence of an abandoned manmade trench with old spoil piles lining the westerly edge and completely revegetated with native grasses and shrubs. The entrance to this trench is at the southerly right-of-way of Sage Road and is plugged. It is obvious that this trench is abandoned and was probably excavated to drain off standing water within Sage Road and the floodplain area to the north.

The fact that no agreement or easement can be found only points to the conclusion that this trench was a trespass on the commercial tract parcel and, therefore, should not be considered as having any legal status for conveyance of storm waters.

Finally, Longford Homes of New Mexico, Inc. has submitted a S.I.A. with an accompanying financial guarantee in the amount of \$132,000.00 for the Unit Two storm drain discussed above. It is our opinion that this guarantee of a public storm drain will provide the City with required surety and should replace the need for the temporary asphaltting of the overflow temporary channel from the pond to the Amole del Norte Diversion Channel. Therefore, it is our request that the City not require the temporary asphalt as part of our Unit One improvement plans.

Very truly yours,

ISAACSON & ARFMAN, P.A.


Fred C. Arfman, P.E.

FCA/rtl



ISAACSON & ARFMAN, P.A.

Consulting Engineering Associates

*Thomas O. Isaacson, PE & LS • Fred C. Arfman, PE
Scott M. McGee, PE*

May 2, 1996

Ms. Lisa Manwill
Hydrology Division
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: Rolling Hills Unit One Subdivision (M10/D7)

Dear Ms. Manwill:

This letter is written in response to a request for additional information from you in your May 1, 1996 telephone conversation with Fred Arfman. Below is an item by item discussion on the issues brought forward in that conversation.

1. *The outfall for the pond at the south end of Secret Valley Drive should be lined.*

The outfall V-ditch will be lined with 1½" of temporary asphalt.

2. *Please include the latest construction drawings.*

The latest grading plans and paving plans for Sage Road have been included.

3. *Please address the existing flows in Sage Road. Will you be increasing the flow in Sage with the new improvements? What happens to the flow at the east terminus of Sage?*

It is our plan to not interfere with the existing flow in the Sage R/W which flows in an existing bar ditch along Sage Road. The existing width of Sage Road is approximately 30'. Our proposed cross-section for Sage includes 25' of arterial paving and a 6' sidewalk along the frontage of our project. Therefore, no significant increase in flow should be expected.

MAY - 7 1996

Ms. Lisa Manwill
May 2, 1996
Page 2

The flows will then continue in the existing bar ditch east of our project at the proposed end of the arterial section of Sage Road. This scenario replaces the original plan of ponding the waters from Sage in an offsite temporary pond.

4. *Please provide copies of the DRB approved infrastructure List and the AHYMO model output that is mentioned in the original submittal.*

Both items are attached.

5. *It appears a swale is present about 450' west of your project that intercepts flows in the Sage R/W and delivers them to your project approximately 500' south along the west boundary of your project. Please address how you intend to handle these flows.*

This apparent swale is a graded ditch that was constructed some time ago to drain the playa area to the north. The construction of Sage Road and the bar ditch have cut off any flow from reaching the swale. The flows heading east from Unser continue east in the bar ditch.

6. *Please execute an agreement with the property owner to the south for the offsite grading.*

This agreement is in the process of being developed and will be forwarded to City Hydrology soon.

If you should have any further questions, please call me at 268-8828.

Very truly yours,

ISAACSON & ARFMAN, P.A.



Jud Lee, P.E.

JL/rtl



ISAACSON & ARFMAN, P.A.

Consulting Engineering Associates

Thomas O. Isaacson, PE & LS • Fred C. Arfman, PE
Scott M. McGee, PE

May 7, 1996

Mr. Joseph Werntz
Managing General Co-Partner
Albuquerque South General Partnership
P.O. Box 27047
Albuquerque, NM 87125-7047

RE: Rolling Hills Subdivision, Unit One

Dear Mr. Werntz:

On behalf of the Longford Homes of New Mexico, Inc., developers of the 15 acre single family subdivision referenced above, they are requesting your Partnership concurrence to perform minor offsite grading within Tract A of Albuquerque South, Unit 1-B.

The offsite area in question is that 0-20' wide strip of land within the easterly portion of Tract A adjacent to Rolling Hills Subdivision, south of Sage Road SW, (see attached exhibit showing the proposed limits of grading). Longford intends to cut the subject ground elevation from 0' at Sage Road south right-of-way line to approximately 2 feet at a point approximately 400 feet to the north, then uniformly back down to existing grade approximately 500 feet south of Sage.

It is my opinion that the added embankment material on Albuquerque South's land holding will not adversely impact the property. In effect, this offsite earthwork partially fills a low point within Tract A.

If your Partnership concurs with this request for grading within the easterly 20 feet of Tract A, please indicate your concurrence by signing in the space provided for below and returning a signed copy to our office. Thanks again for your consideration in this matter.

Very truly yours,

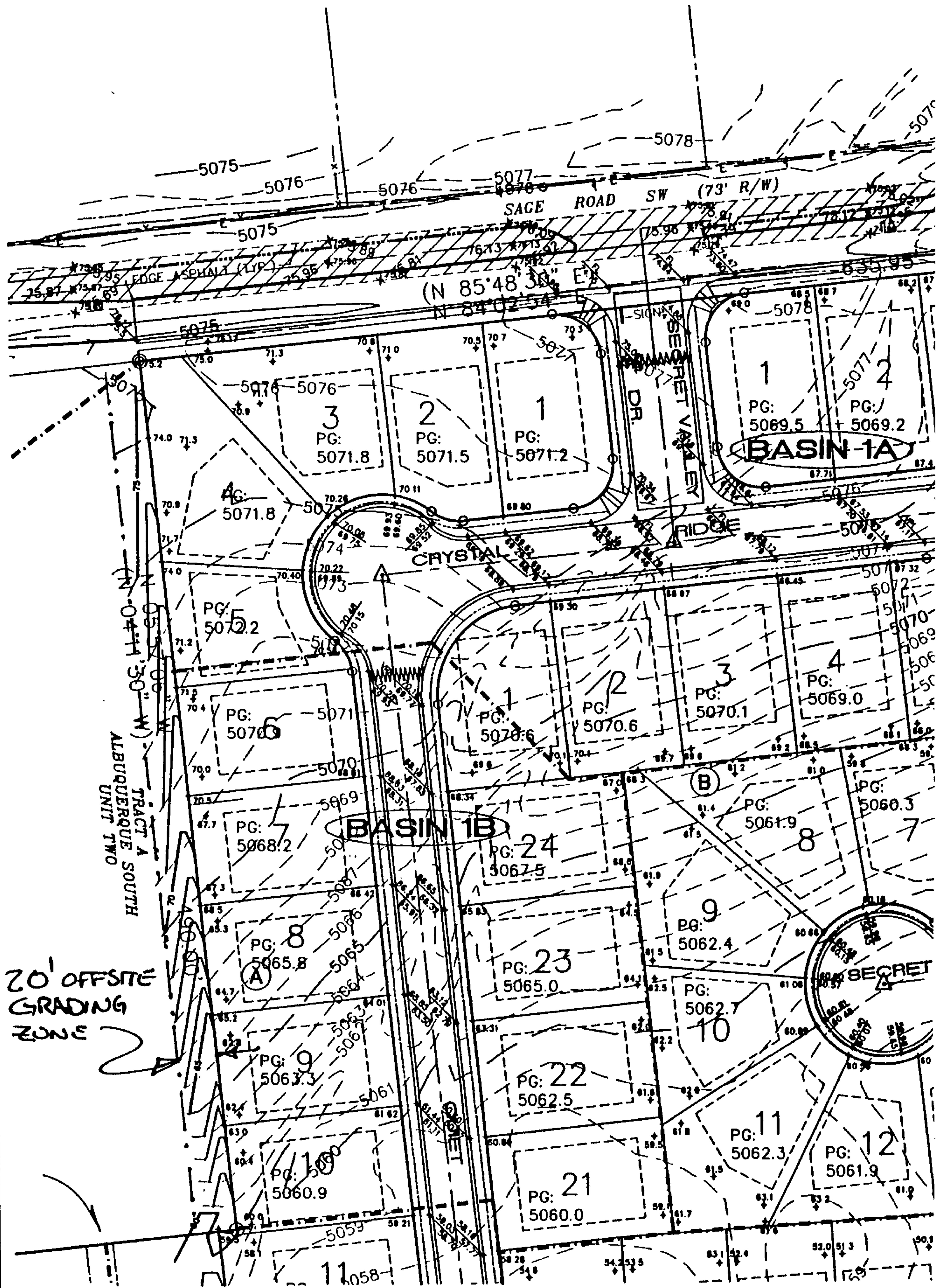
ISAACSON & ARFMAN, P.A.

Fred C. Arfman, P.E.
FCA/rtl

CONCURRENCE ~~ALTA~~ INC.

By: Joseph L. Werntz, President
Albuquerque South General Partnership

5-8-96
Date



DRB Case No. 95-442
DRC Project No.:
Date Submitted: 11-14-95
Date Revised: 1-23-96
Prelim. Plat Approved:
Prelim. Plat Expires:

FIGURE 12
EXHIBIT "A"
TO SUBDIVISION IMPROVEMENT AGREEMENT
DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
DRB 95-442
A PORTION OF TRACT B, UNIT 1B, LANDS OF ALBUQUERQUE SOUTH
BEING REPLATED AS

ROLLING HILLS SUBDIVISION, UNIT ONE

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

<u>SIZE</u>	<u>IMPROVEMENT</u>	<u>LOCATION</u>	<u>FROM</u>	<u>TO</u>
25' FF ***	Arterial Paving with Median	Sage Road	EAST PROPERTY Stinson Avenue	West Boundary PROPERTY LINE
STD	Curb & Gutter (South)	"	"	"
6'	PCC Sidewalk (South)	"	"	"
48" **	Storm Drain	"	"	"
48"	Storm Drain	"	"	"
10"	Waterline	"	"	"
12"	Waterline	"	Unser Blvd.	Unser Blvd. Existing 12" stub
36' F.F.	Res. Paving	Secret Valley Dr.	Sage Road	Crystal Ridge Rd.
4'	*PCC Sidewalk (both sides)	"	"	"
STD	Curb & Gutter (both sides)	"	"	"
8"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
MED	Curb & Gutter (entry island)	"	"	"

RECEIVED
MAY - 7 1996

*** MAY BE DEFERRED AS DETERMINED BY THE DRC.
MUST HAVE AGREEMENT (S.I.A. & FIN. GUARANTEED).

<u>SIZE</u>	<u>IMPROVEMENT</u>	<u>LOCATION</u>	<u>FROM</u>	<u>TO</u>
32'	Res. Paving	Secret Valley Dr.	Crystal Ridge Rd.	South Terminus Approx. 60' South of Autumn Canyon Road
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
8"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
32'	Res. Paving	Crystal Ridge Rd.	Quiet Desert Dr.	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	"
8"	Waterline	"	Secret Valley Dr.	"
8"	Sanitary Sewer	"	"	"
28'	Res. Paving	Quiet Desert Dr.	Crystal Ridge Rd.	South Terminus approx. 60' South of Autumn Canyon Road
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
28'	Res. Paving	Secret Valley Ct.	Cul-de-Sac	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
4"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
28'	Res. Paving	Windsong Road	Quiet Desert Dr.	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	Vacated Stinson Avenue
8"	Sanitary Sewer	"	"	"

<u>SIZE</u>	<u>IMPROVEMENT</u>	<u>LOCATION</u>	<u>FROM</u>	<u>TO</u>
28'	Res. Paving	Autumn Canyon Road	Quiet Desert Dr.	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
8"	Sanitary Sewer	Across Parcel 13 Albuquerque South P.U.E.	South Unit 1 Boundary	Arenal Road

MISCELLANEOUS

Street lighting per DPM.

Grading & Drainage: Certification per DPM (prior to release of financial guarantees). To include private perimeter and retaining walls as required on the approved Grading Plan.

Storm drain at outlet end (south) of subdivision ^{Quiet Desert Dr} ~~Secret Valley~~ to the Arroyo del Norte Div. Channel separate agreement and separate financial guarantee. ~~Percentage of cost to be determined by future S.A.D. assessments as determined by the S.A.D. facilitator.~~

* Sidewalks to be deferred (both sides)

** Storm drain (if required) to be sized at DRC ^{SAD} ~~can be released with the future assessment/payment~~ ^{FINANCIAL GUARANTEES}

All water to include fire hydrants, valves, and appurtenances per DPM.

Temporary ^{PUBLIC} storm water detention ponds adjacent to south boundary at street terminus (Secret Valley Drive).

Prepared by: Fred C. Arfman
Fred C. Arfman, P.E.
Isaacson & Arfman, P.A.

01-23-96
Date:

Development Review Board Member Approval

Michael J. Smith
Transportation Development

1-23-96
Date:

Robert W. Kane
Utility Development

1-23-96
Date:

Robert J. Smith
Parks & General Services

1-23-96
Date:

Fred J. Cigam
City Engineer / AMAFCA

1-23-96
Date:

Kevin L. Davis
DRB Chairman

1-23-96
Date:

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = rhills1.dat

RUN DATE (MON/DAY/YR) =02/22/1996
USER NO.= ISCARFNM.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME=.00
RAINFALL TYPE= 1										RAIN6= 2.200
*S **BASIN A										
COMPUTE NM HYD	100.00	-	1	.00517	10.94	.373	1.35334	1.500	3.306	PER IMP= 50.00
*S **BASIN B										
COMPUTE NM HYD	200.00	-	2	.00291	6.16	.210	1.35334	1.500	3.310	PER IMP= 50.00
*S **BASIN C										
COMPUTE NM HYD	300.00	-	3	.00420	8.89	.303	1.35334	1.500	3.307	PER IMP= 50.00
ADD HYD	300.10	1& 3	4	.00937	19.83	.676	1.35328	1.500	3.306	
*S **BASIN D										
COMPUTE NM HYD	400.00	-	5	.00259	5.49	.187	1.35334	1.500	3.310	PER IMP= 50.00
ADD HYD	400.10	2& 5	6	.00550	11.65	.397	1.35324	1.500	3.310	
*S **BASIN E										
COMPUTE NM HYD	500.00	-	7	.00356	7.54	.257	1.35334	1.500	3.308	PER IMP= 50.00
ADD HYD	500.10	4& 7	8	.01293	27.37	.933	1.35327	1.500	3.307	
*S **BASIN F										
COMPUTE NM HYD	600.00	-	9	.00356	7.54	.257	1.35334	1.500	3.308	PER IMP= 50.00
ADD HYD	600.10	8& 9	10	.01649	34.90	1.190	1.35327	1.500	3.307	
*S **BASIN G										
COMPUTE NM HYD	700.00	-	11	.00291	6.16	.210	1.35334	1.500	3.310	PER IMP= 50.00
ADD HYD	700.10	10&11	12	.01940	41.07	1.400	1.35327	1.500	3.308	
ADD HYD	700.20	6&12	13	.02490	52.72	1.797	1.35326	1.500	3.308	
ROUTE RESERVOIR	700.30	13	14	.02490	21.48	1.762	1.32657	1.733	1.348	AC-FT= .871
FINISH										

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MAY - 7 1996

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 02/22/1996
START TIME (HR:MIN:SEC) = 13:49:29 USER NO.= ISCARFNM.I01
INPUT FILE = rhills1.dat

**** ROLLING HILLS UNIT ONE SUBDIVISION****

**** JANUARY 4, 1996 ****

START RAINFALL BEGINS AT 0.0 HRS
RAINFALL TYPE=1 RAIN QUARTER=0 RAIN ONE=1.87
RAIN SIX=2.20 RAIN DAY=0 DT=0.03333HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.

DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0016	.0033	.0050	.0067	.0085	.0103
.0122	.0141	.0160	.0180	.0201	.0222	.0243
.0266	.0289	.0312	.0337	.0362	.0388	.0415
.0443	.0472	.0502	.0534	.0567	.0601	.0637
.0675	.0715	.0758	.0809	.0865	.0924	.1050
.1334	.1771	.2398	.3254	.4379	.5814	.7600
.9780	1.1804	1.2649	1.3363	1.3997	1.4575	1.5106
1.5600	1.6061	1.6493	1.6900	1.7284	1.7646	1.7989
1.8314	1.8623	1.8915	1.9193	1.9456	1.9518	1.9576
1.9630	1.9682	1.9732	1.9780	1.9825	1.9869	1.9912
1.9953	1.9993	2.0031	2.0068	2.0104	2.0140	2.0174
2.0207	2.0240	2.0272	2.0303	2.0333	2.0363	2.0392
2.0420	2.0448	2.0475	2.0502	2.0528	2.0554	2.0580
2.0605	2.0629	2.0653	2.0677	2.0700	2.0723	2.0746
2.0768	2.0790	2.0812	2.0833	2.0855	2.0875	2.0896
2.0916	2.0936	2.0956	2.0976	2.0995	2.1014	2.1033
2.1051	2.1070	2.1088	2.1106	2.1124	2.1141	2.1159
2.1176	2.1193	2.1210	2.1227	2.1244	2.1260	2.1276
2.1292	2.1308	2.1324	2.1340	2.1355	2.1371	2.1386
2.1401	2.1416	2.1431	2.1446	2.1460	2.1475	2.1489
2.1504	2.1518	2.1532	2.1546	2.1560	2.1573	2.1587
2.1600	2.1614	2.1627	2.1640	2.1654	2.1667	2.1680
2.1692	2.1705	2.1718	2.1731	2.1743	2.1756	2.1768
2.1780	2.1792	2.1804	2.1817	2.1829	2.1840	2.1852
2.1864	2.1876	2.1887	2.1899	2.1910	2.1922	2.1933
2.1944	2.1956	2.1967	2.1978	2.1989	2.2000	

*S **BASIN A

COMPUTE NM HYD

ID=1 HYD NO=100.00 AREA=0.00517 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 10.206 CFS UNIT VOLUME = .9982 B = 526.28 P60 = 1.8700
AREA = .002585 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 6.6089 CFS UNIT VOLUME = .9983 B = 340.80 P60 = 1.8700
AREA = .002585 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=1 CODE=5

PARTIAL HYDROGRAPH 100.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	10.9	3.000	.1	4.500	.0	5.999	.1
.167	.0	1.667	5.7	3.166	.1	4.666	.0	6.166	.0
.333	.0	1.833	3.2	3.333	.1	4.833	.0	6.333	.0
.500	.0	2.000	2.1	3.500	.1	4.999	.0	6.499	.0
.667	.0	2.166	1.0	3.666	.0	5.166	.0	6.666	.0
.833	.0	2.333	.5	3.833	.0	5.333	.0		
1.000	.0	2.500	.3	4.000	.0	5.499	.0		
1.167	.0	2.666	.2	4.166	.0	5.666	.0		
1.333	2.3	2.833	.1	4.333	.0	5.833	.1		

RUNOFF VOLUME = 1.35334 INCHES = .3732 ACRE-FEET
PEAK DISCHARGE RATE = 10.94 CFS AT 1.500 HOURS BASIN AREA = .0052 SQ. MI.

*S **BASIN B

COMPUTE NM HYD

ID=2 HYD NO=200.00 AREA=0.00291 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.7444 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
AREA = .001455 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 3.7199 CFS UNIT VOLUME = .9966 B = 340.80 P60 = 1.8700
AREA = .001455 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=2 CODE=5

PARTIAL HYDROGRAPH 200.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.3	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	6.2	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.2	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	1.8	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.2	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.6	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2100 ACRE-FEET

PEAK DISCHARGE RATE = 6.16 CFS AT 1.500 HOURS BASIN AREA = .0029 SQ. MI.

*S **BASIN C
COMPUTE NM HYD

ID=3 HYD NO=300.00 AREA=0.00420 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 8.2909 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 1.8700
AREA = .002100 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 5.3689 CFS UNIT VOLUME = .9977 B = 340.80 P60 = 1.8700
AREA = .002100 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=5

HYDROGRAPH FROM AREA 300.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.9	2.666	.2	4.000	.0	5.333	.0
.167	.0	1.500	8.9	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	4.6	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.6	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.7	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.8	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.4	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.3	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .3031 ACRE-FEET
PEAK DISCHARGE RATE = 8.89 CFS AT 1.500 HOURS BASIN AREA = .0042 SQ. MI.

ADD HYD ID=4 HYD NO=300.1 ID=1 ID=3
PRINT HYD ID=4 CODE=5

HYDROGRAPH FROM AREA 300.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	19.8	3.000	.2	4.500	.1	5.999	.1
.167	.0	1.667	10.3	3.166	.1	4.666	.1	6.166	.0
.333	.0	1.833	5.7	3.333	.1	4.833	.1	6.333	.0
.500	.0	2.000	3.9	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	1.8	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	.9	3.833	.1	5.333	.1		
1.000	.0	2.500	.6	4.000	.1	5.499	.1		
1.167	.0	2.666	.4	4.166	.1	5.666	.1		
1.333	4.2	2.833	.3	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35328 INCHES = .6763 ACRE-FEET
PEAK DISCHARGE RATE = 19.83 CFS AT 1.500 HOURS BASIN AREA = .0094 SQ. MI.

*S **BASIN D
COMPUTE NM HYD

ID=5 HYD NO=400.00 AREA=0.00259 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.1127 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
AREA = .001295 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 3.3108 CFS UNIT VOLUME = .9962 B = 340.80 P60 = 1.8700
AREA = .001295 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=5

HYDROGRAPH FROM AREA 400.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.2	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	5.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	2.9	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	1.6	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.1	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.5	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .1869 ACRE-FEET
PEAK DISCHARGE RATE = 5.49 CFS AT 1.500 HOURS BASIN AREA = .0026 SQ. MI.

ADD HYD ID=6 HYD NO=400.1 ID=2 ID=5
PRINT HYD ID=6 CODE=5

HYDROGRAPH FROM AREA 400.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	2.5	2.666	.2	4.000	.0	5.333	.0
.167	.0	1.500	11.7	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	6.1	3.000	.1	4.333	.0	5.666	.1
.500	.0	1.833	3.4	3.166	.1	4.500	.0	5.833	.1
.667	.0	2.000	2.3	3.333	.1	4.666	.0	5.999	.1
.833	.0	2.166	1.1	3.500	.1	4.833	.0	6.166	.0
1.000	.0	2.333	.5	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.3	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35324 INCHES = .3969 ACRE-FEET
PEAK DISCHARGE RATE = 11.65 CFS AT 1.500 HOURS BASIN AREA = .0055 SQ. MI.

*S **BASIN E
COMPUTE NM HYD ID=7 HYD NO=500.00 AREA=0.00356 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.0275 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.8700
AREA = .001780 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 4.5508 CFS UNIT VOLUME = .9972 B = 340.80 P60 = 1.8700
AREA = .001780 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=7 CODE=5

OUTFLOW HYDROGRAPH RESERVOIR 500.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.6	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	7.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.9	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.2	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.5	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.7	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2570 ACRE-FEET
PEAK DISCHARGE RATE = 7.54 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

ADD HYD ID=8 HYD NO=500.1 ID=4 ID=7
PRINT HYD ID=8 CODE=5

OUTFLOW HYDROGRAPH RESERVOIR 500.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	27.4	3.000	.3	4.500	.1	5.999	.1
.167	.0	1.667	14.3	3.166	.2	4.666	.1	6.166	.1
.333	.0	1.833	7.9	3.333	.2	4.833	.1	6.333	.0
.500	.0	2.000	5.3	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	2.5	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	1.3	3.833	.1	5.333	.1		
1.000	.0	2.500	.8	4.000	.1	5.499	.1		
1.167	.0	2.666	.5	4.166	.1	5.666	.1		
1.333	5.8	2.833	.4	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35327 INCHES = .9332 ACRE-FEET
PEAK DISCHARGE RATE = 27.37 CFS AT 1.500 HOURS BASIN AREA = .0129 SQ. MI.

*S **BASIN F
COMPUTE NM HYD

ID=9 HYD NO=600.00 AREA=0.00356 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.0275 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.8700
AREA = .001780 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 4.5508 CFS UNIT VOLUME = .9972 B = 340.80 P60 = 1.8700
AREA = .001780 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=9 CODE=5

HYDROGRAPH FROM AREA 600.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.6	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	7.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.9	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.2	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.5	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.7	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2570 ACRE-FEET
PEAK DISCHARGE RATE = 7.54 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

ADD HYD ID=10 HYD NO=600.1 ID=8 ID=9
PRINT HYD ID=10 CODE=5

HYDROGRAPH FROM AREA 600.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	34.9	3.000	.3	4.500	.1	5.999	.2
.167	.0	1.667	18.2	3.166	.2	4.666	.1	6.166	.1
.333	.0	1.833	10.1	3.333	.2	4.833	.1	6.333	.0
.500	.0	2.000	6.8	3.500	.2	4.999	.1	6.499	.0
.667	.0	2.166	3.2	3.666	.2	5.166	.1	6.666	.0
.833	.0	2.333	1.6	3.833	.1	5.333	.1		
1.000	.0	2.500	1.0	4.000	.1	5.499	.1		
1.167	.1	2.666	.7	4.166	.1	5.666	.2		
1.333	7.4	2.833	.4	4.333	.1	5.833	.2		

RUNOFF VOLUME = 1.35327 INCHES = 1.1901 ACRE-FEET
PEAK DISCHARGE RATE = 34.90 CFS AT 1.500 HOURS BASIN AREA = .0165 SQ. MI.

*S **BASIN G
COMPUTE NM HYD

ID=11 HYD NO=700.00 AREA=0.00291 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.7444 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
AREA = .001455 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 3.7199 CFS UNIT VOLUME = .9966 B = 340.80 P60 = 1.8700
AREA = .001455 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=11 CODE=5

HYDROGRAPH FROM AREA 700.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.3	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	6.2	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.2	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	1.8	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.2	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.6	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2100 ACRE-FEET
PEAK DISCHARGE RATE = 6.16 CFS AT 1.500 HOURS BASIN AREA = .0029 SQ. MI.

ADD HYD ID=12 HYD NO=700.1 ID=10 ID=11
PRINT HYD ID=12 CODE=5

HYDROGRAPH FROM AREA 700.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	41.1	3.000	.4	4.500	.2	5.999	.2
.167	.0	1.667	21.4	3.166	.3	4.666	.2	6.166	.1
.333	.0	1.833	11.9	3.333	.2	4.833	.2	6.333	.0
.500	.0	2.000	8.0	3.500	.2	4.999	.2	6.499	.0
.667	.0	2.166	3.8	3.666	.2	5.166	.2	6.666	.0
.833	.0	2.333	1.9	3.833	.2	5.333	.2		
1.000	.0	2.500	1.2	4.000	.2	5.499	.2		
1.167	.1	2.666	.8	4.166	.2	5.666	.2		
1.333	8.7	2.833	.5	4.333	.2	5.833	.2		

RUNOFF VOLUME = 1.35327 INCHES = 1.4002 ACRE-FEET
 PEAK DISCHARGE RATE = 41.07 CFS AT 1.500 HOURS BASIN AREA = .0194 SQ. MI.

ADD HYD ID=13 HYD NO=700.2 ID=6 ID=12
 PRINT HYD ID=13 CODE=5

HYDROGRAPH FROM AREA 700.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	52.7	3.000	.5	4.500	.2	5.999	.3
.167	.0	1.667	27.5	3.166	.4	4.666	.2	6.166	.1
.333	.0	1.833	15.2	3.333	.3	4.833	.2	6.333	.0
.500	.0	2.000	10.3	3.500	.2	4.999	.2	6.499	.0
.667	.0	2.166	4.9	3.666	.2	5.166	.2	6.666	.0
.833	.0	2.333	2.4	3.833	.2	5.333	.2		
1.000	.0	2.500	1.5	4.000	.2	5.499	.2		
1.167	.1	2.666	1.0	4.166	.2	5.666	.2		
1.333	11.2	2.833	.7	4.333	.2	5.833	.2		

RUNOFF VOLUME = 1.35326 INCHES = 1.7971 ACRE-FEET
 PEAK DISCHARGE RATE = 52.72 CFS AT 1.500 HOURS BASIN AREA = .0249 SQ. MI.

ROUTE RESERVOIR ID=14 HYD NO=700.3 INFLOW ID=13 CODE=5

OUTFLOW(CFS)	STORAGE (AF)	ELEV(FT)
0	0	0
0.2	0.106	1
0.5	0.244	2
0.7	0.418	3
10	0.630	4
22	0.882	5

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.17	.00	.00	.000	.00
.33	.00	.00	.000	.00
.50	.00	.00	.000	.00
.67	.00	.00	.000	.00
.83	.00	.00	.000	.00
1.00	.00	.00	.000	.00
1.17	.10	.00	.000	.00
1.33	11.23	.51	.054	.10
1.50	52.72	3.32	.487	3.72
1.67	27.48	4.89	.855	20.73
1.83	15.24	4.86	.846	20.27
2.00	10.30	4.53	.764	16.40
2.17	4.90	4.18	.675	12.16

2.33	2.44	3.79	.585	8.02
2.50	1.52	3.49	.522	5.24
2.67	.98	3.29	.480	3.41
2.83	.67	3.16	.453	2.22
3.00	.49	3.08	.436	1.47
3.17	.37	3.03	.425	.99
3.33	.28	3.00	.418	.70
3.50	.25	2.96	.412	.69
3.67	.23	2.93	.405	.69
3.83	.21	2.89	.399	.68
4.00	.20	2.85	.393	.67
4.17	.20	2.82	.386	.66
4.33	.20	2.78	.380	.66
4.50	.20	2.74	.374	.65
4.67	.20	2.71	.367	.64
4.83	.20	2.67	.361	.63
5.00	.21	2.64	.355	.63
5.17	.21	2.61	.350	.62
5.33	.22	2.58	.344	.62
5.50	.23	2.55	.339	.61
5.67	.23	2.52	.334	.60
5.83	.24	2.49	.329	.60
6.00	.26	2.46	.324	.59
6.17	.10	2.43	.319	.59
6.33	.03	2.39	.311	.58
6.50	.01	2.34	.304	.57
6.67	.00	2.30	.296	.56
6.83	.00	2.26	.288	.55
7.00	.00	2.21	.281	.54
7.17	.00	2.17	.273	.53
7.33	.00	2.13	.266	.53
7.50	.00	2.09	.259	.52
7.67	.00	2.05	.252	.51
7.83	.00	2.01	.245	.50
8.00	.00	1.96	.238	.49
8.17	.00	1.91	.232	.47
8.33	.00	1.86	.225	.46
8.50	.00	1.82	.219	.45
8.67	.00	1.77	.213	.43
8.83	.00	1.73	.207	.42
9.00	.00	1.69	.201	.41
9.17	.00	1.65	.196	.40

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
9.33	.00	1.61	.190	.38
9.50	.00	1.57	.185	.37
9.67	.00	1.54	.180	.36
9.83	.00	1.50	.175	.35
10.00	.00	1.47	.171	.34
10.17	.00	1.43	.166	.33
10.33	.00	1.40	.161	.32
10.50	.00	1.37	.157	.31
10.67	.00	1.34	.153	.30

10.83	.00	1.31	.149	.29
11.00	.00	1.28	.145	.28
11.17	.00	1.25	.141	.28
11.33	.00	1.23	.137	.27
11.50	.00	1.20	.134	.26
11.67	.00	1.17	.130	.25
11.83	.00	1.15	.127	.24
12.00	.00	1.13	.123	.24
12.17	.00	1.10	.120	.23
12.33	.00	1.08	.117	.22
12.50	.00	1.06	.114	.22
12.67	.00	1.04	.111	.21
12.83	.00	1.02	.108	.20
13.00	.00	.99	.105	.20
13.17	.00	.97	.103	.19
13.33	.00	.94	.100	.19
13.50	.00	.92	.097	.18
13.67	.00	.90	.095	.18
13.83	.00	.87	.092	.17
14.00	.00	.85	.090	.17
14.17	.00	.83	.088	.17
14.33	.00	.81	.086	.16
14.50	.00	.79	.083	.16
14.67	.00	.77	.081	.15
14.83	.00	.75	.079	.15
15.00	.00	.73	.077	.15
15.17	.00	.71	.075	.14
15.33	.00	.69	.073	.14
15.50	.00	.67	.071	.13
15.67	.00	.66	.069	.13
15.83	.00	.64	.068	.13
16.00	.00	.62	.066	.12
16.17	.00	.61	.064	.12
16.33	.00	.59	.063	.12
16.50	.00	.58	.061	.12
16.67	.00	.56	.059	.11
16.83	.00	.55	.058	.11
17.00	.00	.53	.056	.11
17.16	.00	.52	.055	.10
17.33	.00	.51	.054	.10
17.50	.00	.49	.052	.10
17.66	.00	.48	.051	.10
17.83	.00	.47	.050	.09
18.00	.00	.46	.048	.09
18.16	.00	.44	.047	.09
18.33	.00	.43	.046	.09
18.50	.00	.42	.045	.08

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
---------------	-----------------	----------------	-------------------	------------------

18.66	.00	.41	.044	.08
18.83	.00	.40	.042	.08
19.00	.00	.39	.041	.08
19.16	.00	.38	.040	.08

19.33 .00 .37 .039 .07
 19.50 .00 .36 .038 .07
 19.66 .00 .35 .037 .07
 19.83 .00 .34 .036 .07
 PEAK DISCHARGE = 21.482 CFS - PEAK OCCURS AT HOUR 1.73
 MAXIMUM WATER SURFACE ELEVATION = 4.957
 MAXIMUM STORAGE = .8711 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD

ID=14 CODE=5

HYDROGRAPH FROM AREA 700.30

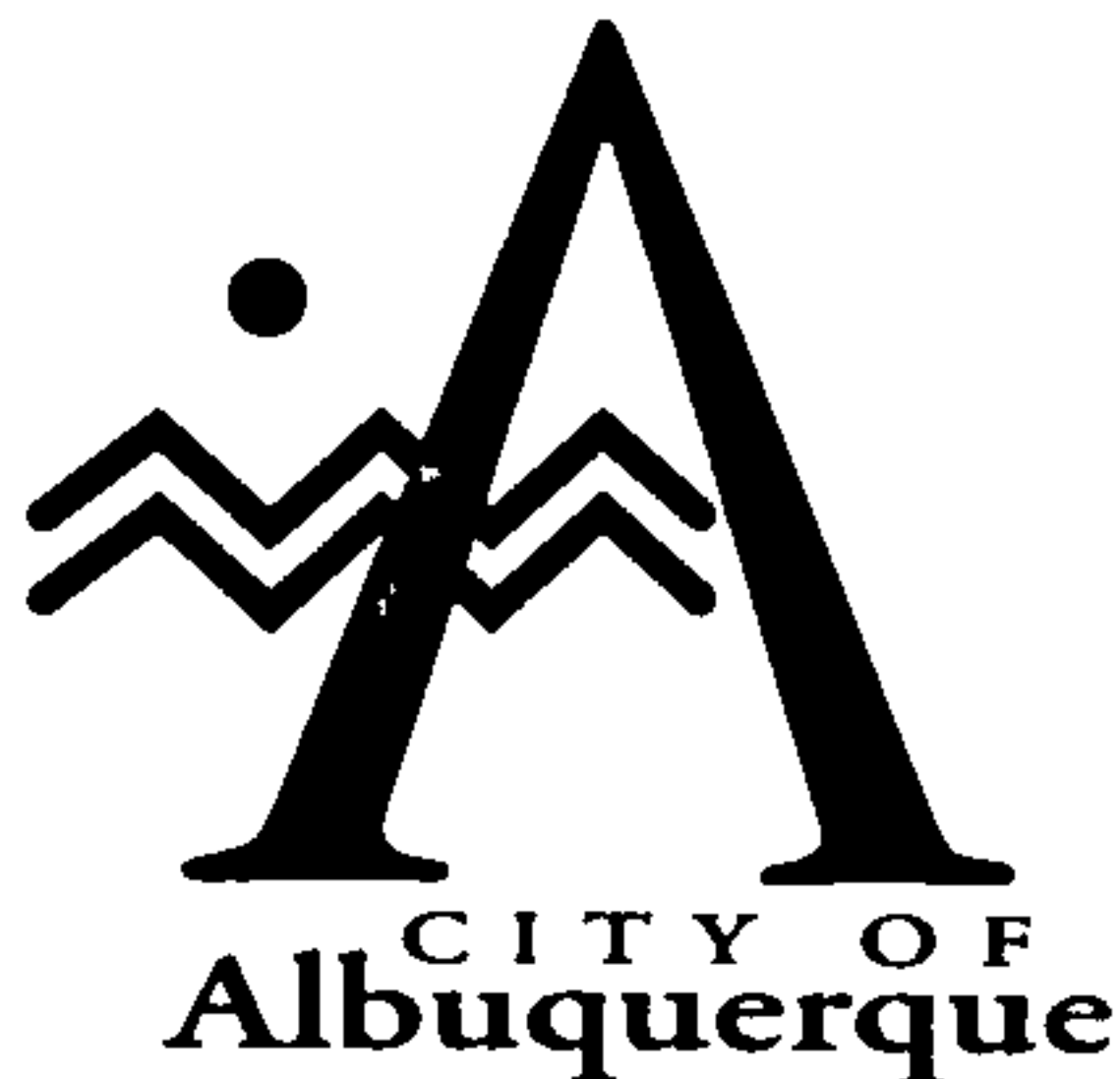
TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	W S
.000	.0	4.000	.7	7.999	.5	11.999	.2	15.998	.1
.167	.0	4.166	.7	8.166	.5	12.165	.2	16.165	.1
.333	.0	4.333	.7	8.332	.5	12.332	.2	16.332	.1
.500	.0	4.500	.6	8.499	.4	12.499	.2	16.498	.1
.667	.0	4.666	.6	8.666	.4	12.665	.2	16.665	.1
.833	.0	4.833	.6	8.832	.4	12.832	.2	16.832	.1
1.000	.0	4.999	.6	8.999	.4	12.999	.2	16.998	.1
1.167	.0	5.166	.6	9.166	.4	13.165	.2	17.165	.1
1.333	.1	5.333	.6	9.332	.4	13.332	.2	17.332	.1
1.500	3.7	5.499	.6	9.499	.4	13.499	.2	17.498	.1
1.667	20.7	5.666	.6	9.666	.4	13.665	.2	17.665	.1
1.833	20.3	5.833	.6	9.832	.4	13.832	.2	17.832	.1
2.000	16.4	5.999	.6	9.999	.3	13.999	.2	17.998	.1
2.166	12.2	6.166	.6	10.166	.3	14.165	.2	18.165	.1
2.333	8.0	6.333	.6	10.332	.3	14.332	.2	18.331	.1
2.500	5.2	6.499	.6	10.499	.3	14.499	.2	18.498	.1
2.666	3.4	6.666	.6	10.666	.3	14.665	.2	18.665	.1
2.833	2.2	6.833	.6	10.832	.3	14.832	.1	18.831	.1
3.000	1.5	6.999	.5	10.999	.3	14.998	.1	18.998	.1
3.166	1.0	7.166	.5	11.166	.3	15.165	.1	19.165	.1
3.333	.7	7.333	.5	11.332	.3	15.332	.1	19.331	.1
3.500	.7	7.499	.5	11.499	.3	15.498	.1	19.498	.1
3.666	.7	7.666	.5	11.665	.3	15.665	.1	19.665	.1
3.833	.7	7.833	.5	11.832	.2	15.832	.1	19.831	.1

RUNOFF VOLUME = 1.32657 INCHES = 1.7617 ACRE-FEET
 PEAK DISCHARGE RATE = 21.48 CFS AT 1.733 HOURS BASIN AREA = .0249 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 13:49:31



May 1, 1996

Martin J. Chávez, Mayor

Jud Lee
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM

RE: ROLLING HILLS SUBDIVISION (M10-D7) CONCEPTUAL GRADING AND DRAINAGE PLAN FOR FINAL PLAT, GRADING PERMIT, AND WORK ORDER PERMIT APPROVAL. ENGINEER'S STAMP DATED 1-26-96.

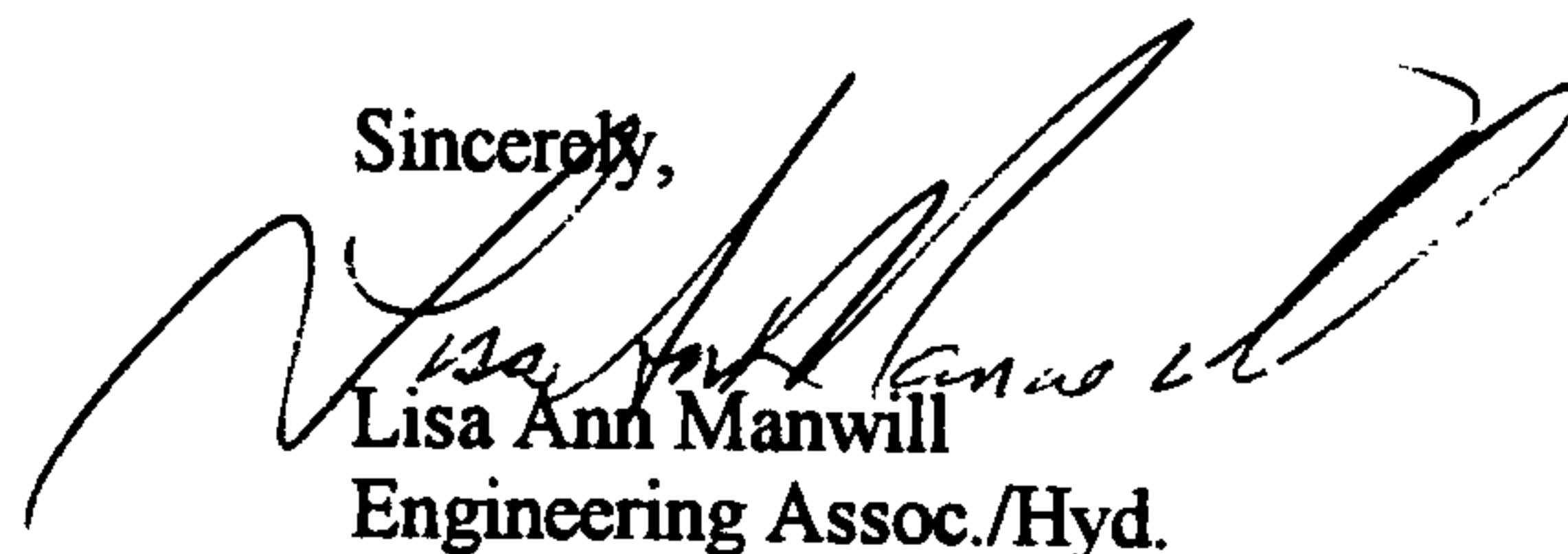
Dear Mr. Lee:

Based on the information provided on your 2-27-96 submittal, please address the following comments:

1. Conceptual grading and drainage plans are not sufficient for the approvals you are seeking. It appears that the wrong box was checked on the Drainage Information Sheet.
2. Please provide more information regarding offsite flow from the west of your site. It appears that flow from the west currently enters your site.
3. A drainage covenant will be required for the swale along your west property line.
4. I could not find the AHYMO output with the ROUTE RES through the pond referred to in your letter dated 2-22-96.
5. The V-ditch between the detention pond and the Amole Channel must be lined. Also, I was unable to find the Amole Channel entrance detail you referred to in your letter.
6. In your letter, you mentioned a temporary offsite detention area. Where is this detention pond? Do you have permission to pond off site. I suggest you try and take care of all detention on your site.
7. Please provide a copy of the most up to date infrastructure list.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,


Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Fred Aguirre
Andrew Garcia


Good for You, Albuquerque!



DRAINAGE INFORMATION SHEET

PROJECT TITLE: Rolling Hills SD ZONE ATLAS/DRNG. FILE #: ~~10~~ M 10 / D7

DRB #: 95-442 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Tract B Unit 1-B Lands of Albuquerque South

CITY ADDRESS: _____

ENGINEERING FIRM: Isaacson & Artman PA CONTACT: Jud Lee

ADDRESS: 128 Monroe NE PHONE: 268-8828

OWNER: Longford Homes of New Mexico CONTACT: Brian Walsh

ADDRESS: 6400 S. Eastern Ave. Ste 18 PHONE: 702-736-1770

ARCHITECT: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich

ADDRESS: _____ PHONE: 884-1990

CONTRACTOR: NA CONTACT: _____

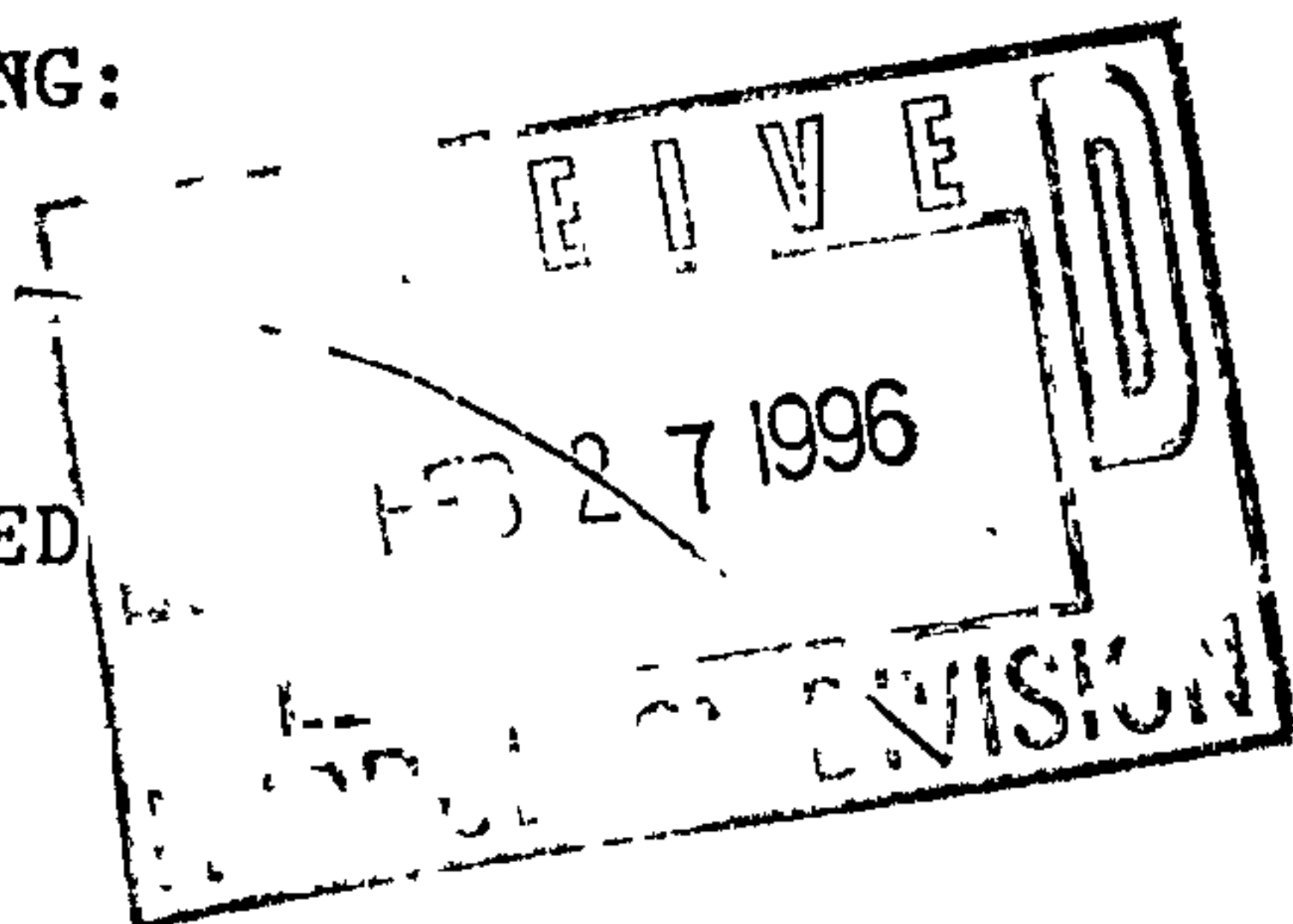
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN
- ☒ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION
- ☐ OTHER

PRE-DESIGN MEETING:

- ☒ YES
- ☐ NO
- ☐ COPY PROVIDED



CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SKETCH PLAT APPROVAL
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D. APPROVAL
- ☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☒ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY APPROVAL
- ☒ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ S.A.D. DRAINAGE REPORT
- ☐ DRAINAGE REQUIREMENTS
- ☒ OTHER Work Order (SPECIFY)

DATE SUBMITTED:

BY:

2/26/96Jud LeeDwg. Approval4/10/96OK TO
PROCESS[Signature]



ISAACSON & ARFMAN, P.A.

Consulting Engineering Associates

*Thomas O. Isaacson, PE & LS • Fred C. Arfman, PE
Scott M. McGee, PE*

February 22, 1996

Ms. Lisa Manwill
Hydrology Division
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: Rolling Hills Unit One Subdivision (M10/D7)

Dear Ms. Manwill:

This letter is written in response to comments made by City Hydrology in your 1/26/96 letter concerning the above referenced project. Below is an item by item answer to your questions and/or concerns.

1. *Please indicate the grades at the water block parallel to Sage Road, along Secret Valley Drive. A one foot water block is required.*

The grades are now indicated on the Grading Plan. A water block of 8" (height of standard curb) on the high side and 10½" on the downstream side is provided.

2. *According to your calculations, Section A-A is slightly undersized for the 11.5 cfs that enters from Quiet Desert Drive.*

The Q_{max} of 11.7 cfs is shown as an actual flow rather than the capacity of the channel cross-section. A six-foot wide V-ditch with a depth of 1½' at a slope of 3% actually has a capacity of 27 cfs.

3. *Please show a cross-section for the V-ditch between the proposed detention pond and Secret Valley Drive.*

A V-ditch has been added to show the route from Secret Valley Drive to the pond. A capacity calculation is also shown on the Grading Plan.

4. *What section of the ditch carries the offsite flow to the pond?*

Section B-B as shown on Sheet 2 of the Grading Plan carries the flows to the Amole del Norte Channel.

5. *Provide pond volume calculations. Pond should be sized for developed onsite and offsite flows.*

Volume calculations are now shown on the Grading Plan. In addition, an AHYMO output with a ROUTE RES through the pond is included.

↑?

6. *How did you come up with a discharge rate to the Amole of 22 cfs? Is this a historic flow from this site?*

The 22 cfs discharge rate was arrived at by assuming an existing 90% Land Treatment A and 10% Land Treatment B. Based on this assumption, $0.90(15.94)(1.29 \text{ cfs/ac}) + 0.10(15.94)(2.03 \text{ cfs/ac}) = 18.5 + 3.3 \text{ cfs} = 21.8 \text{ cfs}$.

7. *Until the DMP is complete, the allowable discharge rate to the Amole will not be known. Please note, ponding may be a permanent feature on this site.*

We are aware that ponding, in some form, might be a permanent feature of this development.

8. *Is the V-ditch between the detention pond and the Amole Channel paved? If not, how will you control sediment to the Amole? How long is this V-ditch? Please show how this V-ditch connects into the Amole Channel.*

It is not anticipated to pave the ditch. By having the V-ditch begin at 3' above the invert of the pond, a large majority of the sediment will settle out in the pond. The ditch is approximately 700' long. An entrance detail to the Amole Channel has been added to the Grading Plan.

↑ where

9. *Please provide a covenant for the pond. The maintenance for the pond will be the owners responsibility.*

A maintenance covenant for the pond will be processed through the City with the work order drawings.

ask Fred

Ms. Lisa Marwill
February 22, 1996
Page 3

10. Sage Road street improvements will require the design and construction of the 48 inch storm drain identified in the SAD 222 report. Additionally, temporary drainage improvements must be provided for Sage road until all the downstream drainage improvements are constructed.

Where?
Whos property?

The 48" storm drain has at this time only been conceptually designed by Andrews, Asbury & Roberts and has not been included in SAD 222. We are aware of the possible requirement of constructing the line. A temporary offsite detention area has been added to the Grading Plan to handle the surface flows in Sage Road.

11. You will be responsible to bond the 24" storm drain line from Quiet Desert to the Amole Channel. This line is shown on the Master Drainage Plan that you included in this submittal. Please incorporate this storm drain on the infrastructure list dated 1/5/96.

Need a
copy

The 24" line was added to the infrastructure list that was approved for preliminary plat on 1/16/96.

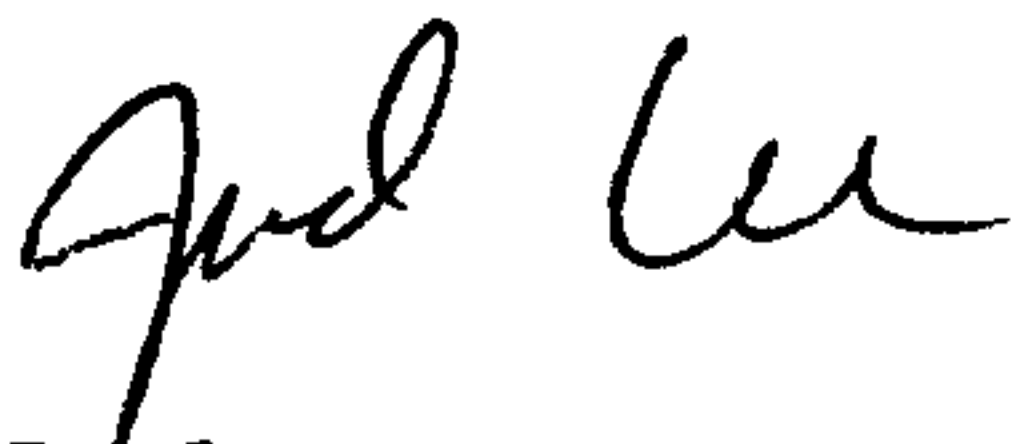
12. Please provide easements for all bonded storm drain lines and pond.

Easements will be granted on the final plat.

If you have any further questions, please contact me at 268-8828.

Very truly yours,

ISAACSON & ARFMAN, P.A.



Jud Lee, P.E.

JL/rtl

DRAINAGE REPORT

FOR

ROLLING HILLS SUBDIVISION

**A 77 LOT (UNIT ONE) SINGLE
FAMILY LOT RESIDENTIAL SUBDIVISION**

SUPPLEMENTAL HYDROLOGICAL INFORMATION

JANUARY, 1996

**PREPARED BY:
ISAACSON & ARFMAN, P.A.
128 MONROE STREET NE
ALBUQUERQUE, NEW MEXICO
(505) 268-8828
ATTN: JUD LEE, P.E.**

3010

LEGAL DESCRIPTION: TRACT B, UNIT 1-B, LANDS OF ALBUQUERQUE SOUTH
ALONG WITH A PORTION OF THE PUBLIC RIGHT-OF-WAY FOR STINSON
AVENUE SW.

ENGINEER: ISAACSON & ARFMAN, P.A.
128 MONROE STREET NE
ALBUQUERQUE, NM 87108

SURVEYOR: ALDRICH LAND SURVEYING
C/O TIM ALDRICH, NMPLS NO. 7719
(505) 884-1990

BENCHMARK: ALBUQUERQUE CONTROL SURVEY MONUMENT "1-M10".
ELEVATION: 5079.88

ZONING: RD & R1.

PROPOSED: 77 SINGLE FAMILY RESIDENTIAL LOTS.

AREA: 28.11 ACRES.

FLOOD HAZARD: NO PART OF THIS DEVELOPMENT IS AFFECTED BY ANY
FLOOD HAZARD DESIGNATIONS AS DETERMINED BY PANEL NO. 350002-0033
OF THE OCTOBER 14, 1983 EDITION OF THE F.E.M.A. MAPS.

EXISTING CONDITIONS: THE SITE IS CURRENTLY UNDEVELOPED AND
UNDISTURBED WITH GROUND COVER THAT IS TYPICAL OF THE CITY'S WEST
SIDE. THE SITE SLOPES TO THE EAST AT 3.5 TO 5%. SAGE ROAD
BORDERING ON THE NORTH SIDE OF THE DEVELOPMENT WILL BE
EXTENDED AS PART OF THIS PROJECT. NO OFFSITE FLOWS ARE ACCEPTED
THROUGH THE SITE IN EITHER THE EXISTING OR PROPOSED CONDITION.

PROPOSED CONDITIONS: THE ROLLING HILLS SUBDIVISION, UNIT ONE WILL
DRAIN SOUTH VIA THE TWO INTERIOR NORTH-SOUTH STREETS. THE
ULTIMATE OUTFALL WILL BE THE AMOLE DEL NORTE CHANNEL
APPROXIMATELY 1,200' TO THE EAST. SAGE ROAD, TO THE NORTH, HAS A
48" STORM DRAIN PROPOSED AS PART OF THE TOWER/SAGE DRAINAGE
MASTER PLAN (COMPLETED BY ANDREWS, ASBURY & ROBERTS, APRIL 1995).
THIS IMPROVEMENT ALONG THE NORTHERN FRONTAGE WILL BE
FINANCIALLY GUARANTEED WITH THIS PROJECT, ALTHOUGH THE AREA WILL
BE UNABLE TO BENEFIT FROM THE STORM DRAIN DUE TO EXISTING
TOPOGRAPHY.

THE ONSITE AREA IS DIVIDED INTO 7 DRAINAGE SUBBASINS (A-G). THE TABLE BELOW SUMMARIZES THE HYDROLOGICAL CALCULATIONS FOR THE SUBBASINS.

<u>SUBBASIN</u>	<u>AREA (AC)</u>	<u>% LAND TREATMENT</u>				<u>Q (CFS)</u>
		<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	
A	3.31	0	37	13	50	10.7
B	1.86	0	37	13	50	6.1
C	2.69	0	37	13	50	8.7
D	1.66	0	37	13	50	5.4
E	2.28	0	37	13	50	7.4
F	2.28	0	37	13	50	7.4
G	1.86	0	37	13	50	6.1
	15.94 AC					51.8 CFS

BASINS B AND D DRAIN SOUTH ALONG QUIET DESERT DRIVE TO THE TERMINUS OF THE STREET. THE 11.5 CFS THEN FLOWS EASTWARD IN A DITCH (SEE SECTION ON THE GRADING PLAN).

THE REMAINING SUBBASINS ALL DRAIN TO SECRET VALLEY DRIVE. THE 40.3 CFS COMBINED WITH THE 11.5 CFS FROM THE WEST ENTER A SMALL DETENTION AREA AS SHOWN ON THE GRADING PLAN. THE POND IS DRAINED VIA A DITCH THAT EXTENDS TO THE AMOLE CHANNEL AT $Q_{MAX} = 15$ CFS.

THE FOLLOWING TABLE SUMMARIZES THE INTERIOR STREET HYDRAULICS.

STREET FLOW HYDRAULICS

<u>STREET NAME</u>	<u>WIDTH</u>	<u>CURB</u>	<u>SLOPE</u>	<u>Q_{MAX} (CFS)</u>	<u>DEPTH</u>	<u>VELOCITY (FPS)</u>	<u>EGL</u>
CRYSTAL RIDGE RD.	32'	MOUNT	1.7%	10.7	0.13'	2.91	0.26'
QUIET DESERT DR.	28'	MOUNT	3.9%	11.5	0.11'	3.94	0.35'
SECRET VALLEY CT.	28'	MOUNT	2.9%	6.1	0.08'	2.75	0.20'
WINDSONG ROAD	28'	MOUNT	1.9%	7.4	0.11'	2.75	0.23'
AUTUMN CANYON RD.	28'	MOUNT	2.1%	6.1	0.09'	2.53	0.19'
SECRET VALLEY DR.	32'	STD.	4.6%	40.3	0.20'	6.36	0.83'

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 02/22/1996
START TIME (HR:MIN:SEC) = 13:49:29 USER NO.= ISCARFNM.I01
INPUT FILE = rhills1.dat

**** ROLLING HILLS UNIT ONE SUBDIVISION****

**** JANUARY 4, 1996 ****

START RAINFALL BEGINS AT 0.0 HRS

RAINFALL TYPE=1 RAIN QUARTER=0 RAIN ONE=1.87

RAIN SIX=2.20 RAIN DAY=0 DT=0.03333HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.

DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0016	.0033	.0050	.0067	.0085	.0103
.0122	.0141	.0160	.0180	.0201	.0222	.0243
.0266	.0289	.0312	.0337	.0362	.0388	.0415
.0443	.0472	.0502	.0534	.0567	.0601	.0637
.0675	.0715	.0758	.0809	.0865	.0924	.1050
.1334	.1771	.2398	.3254	.4379	.5814	.7600
.9780	1.1804	1.2649	1.3363	1.3997	1.4575	1.5106
1.5600	1.6061	1.6493	1.6900	1.7284	1.7646	1.7989
1.8314	1.8623	1.8915	1.9193	1.9456	1.9518	1.9576
1.9630	1.9682	1.9732	1.9780	1.9825	1.9869	1.9912
1.9953	1.9993	2.0031	2.0068	2.0104	2.0140	2.0174
2.0207	2.0240	2.0272	2.0303	2.0333	2.0363	2.0392
2.0420	2.0448	2.0475	2.0502	2.0528	2.0554	2.0580
2.0605	2.0629	2.0653	2.0677	2.0700	2.0723	2.0746
2.0768	2.0790	2.0812	2.0833	2.0855	2.0875	2.0896
2.0916	2.0936	2.0956	2.0976	2.0995	2.1014	2.1033
2.1051	2.1070	2.1088	2.1106	2.1124	2.1141	2.1159
2.1176	2.1193	2.1210	2.1227	2.1244	2.1260	2.1276
2.1292	2.1308	2.1324	2.1340	2.1355	2.1371	2.1386
2.1401	2.1416	2.1431	2.1446	2.1460	2.1475	2.1489
2.1504	2.1518	2.1532	2.1546	2.1560	2.1573	2.1587
2.1600	2.1614	2.1627	2.1640	2.1654	2.1667	2.1680
2.1692	2.1705	2.1718	2.1731	2.1743	2.1756	2.1768
2.1780	2.1792	2.1804	2.1817	2.1829	2.1840	2.1852
2.1864	2.1876	2.1887	2.1899	2.1910	2.1922	2.1933
2.1944	2.1956	2.1967	2.1978	2.1989	2.2000	

*S **BASIN A
COMPUTE NM HYD

ID=1 HYD NO=100.00 AREA=0.00517 SQ MI

PER A=0 PER B=37 PER C=13 PER D=50

TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 10.206 CFS UNIT VOLUME = .9982 B = 526.28 P60 = 1.8700
AREA = .002585 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 6.6089 CFS UNIT VOLUME = .9983 B = 340.80 P60 = 1.8700
AREA = .002585 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=5

PARTIAL HYDROGRAPH 100.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	10.9	3.000	.1	4.500	.0	5.999	.1
.167	.0	1.667	5.7	3.166	.1	4.666	.0	6.166	.0
.333	.0	1.833	3.2	3.333	.1	4.833	.0	6.333	.0
.500	.0	2.000	2.1	3.500	.1	4.999	.0	6.499	.0
.667	.0	2.166	1.0	3.666	.0	5.166	.0	6.666	.0
.833	.0	2.333	.5	3.833	.0	5.333	.0		
1.000	.0	2.500	.3	4.000	.0	5.499	.0		
1.167	.0	2.666	.2	4.166	.0	5.666	.0		
1.333	2.3	2.833	.1	4.333	.0	5.833	.1		

RUNOFF VOLUME = 1.35334 INCHES = .3732 ACRE-FEET
PEAK DISCHARGE RATE = 10.94 CFS AT 1.500 HOURS BASIN AREA = .0052 SQ. MI.

*S **BASIN B

COMPUTE NM HYD ID=2 HYD NO=200.00 AREA=0.00291 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.7444 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
AREA = .001455 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 3.7199 CFS UNIT VOLUME = .9966 B = 340.80 P60 = 1.8700
AREA = .001455 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=2 CODE=5

PARTIAL HYDROGRAPH 200.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.3	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	6.2	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.2	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	1.8	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.2	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.6	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2100 ACRE-FEET

PEAK DISCHARGE RATE = 6.16 CFS AT 1.500 HOURS BASIN AREA = .0029 SQ. MI.

*S **BASIN C
COMPUTE NM HYD

ID=3 HYD NO=300.00 AREA=0.00420 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 8.2909 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 1.8700
AREA = .002100 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 5.3689 CFS UNIT VOLUME = .9977 B = 340.80 P60 = 1.8700
AREA = .002100 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=5

HYDROGRAPH FROM AREA 300.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.9	2.666	.2	4.000	.0	5.333	.0
.167	.0	1.500	8.9	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	4.6	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.6	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.7	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.8	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.4	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.3	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .3031 ACRE-FEET
PEAK DISCHARGE RATE = 8.89 CFS AT 1.500 HOURS BASIN AREA = .0042 SQ. MI.

ADD HYD ID=4 HYD NO=300.1 ID=1 ID=3
PRINT HYD ID=4 CODE=5

HYDROGRAPH FROM AREA 300.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	19.8	3.000	.2	4.500	.1	5.999	.1
.167	.0	1.667	10.3	3.166	.1	4.666	.1	6.166	.0
.333	.0	1.833	5.7	3.333	.1	4.833	.1	6.333	.0
.500	.0	2.000	3.9	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	1.8	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	.9	3.833	.1	5.333	.1		
1.000	.0	2.500	.6	4.000	.1	5.499	.1		
1.167	.0	2.666	.4	4.166	.1	5.666	.1		
1.333	4.2	2.833	.3	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35328 INCHES = .6763 ACRE-FEET
 PEAK DISCHARGE RATE = 19.83 CFS AT 1.500 HOURS BASIN AREA = .0094 SQ. MI.

*S **BASIN D
 COMPUTE NM HYD

ID=5 HYD NO=400.00 AREA=0.00259 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 5.1127 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
 AREA = .001295 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 3.3108 CFS UNIT VOLUME = .9962 B = 340.80 P60 = 1.8700
 AREA = .001295 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=5

HYDROGRAPH FROM AREA 400.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.2	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	5.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	2.9	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	1.6	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.1	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.5	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .1869 ACRE-FEET
 PEAK DISCHARGE RATE = 5.49 CFS AT 1.500 HOURS BASIN AREA = .0026 SQ. MI.

ADD HYD ID=6 HYD NO=400.1 ID=2 ID=5
 PRINT HYD ID=6 CODE=5

HYDROGRAPH FROM AREA 400.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	2.5	2.666	.2	4.000	.0	5.333	.0
.167	.0	1.500	11.7	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	6.1	3.000	.1	4.333	.0	5.666	.1
.500	.0	1.833	3.4	3.166	.1	4.500	.0	5.833	.1
.667	.0	2.000	2.3	3.333	.1	4.666	.0	5.999	.1
.833	.0	2.166	1.1	3.500	.1	4.833	.0	6.166	.0
1.000	.0	2.333	.5	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.3	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35324 INCHES = .3969 ACRE-FEET
 PEAK DISCHARGE RATE = 11.65 CFS AT 1.500 HOURS BASIN AREA = .0055 SQ. MI.

*S **BASIN E

COMPUTE NM HYD ID=7 HYD NO=500.00 AREA=0.00356 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 7.0275 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.8700
 AREA = .001780 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 4.5508 CFS UNIT VOLUME = .9972 B = 340.80 P60 = 1.8700
 AREA = .001780 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=7 CODE=5

OUTFLOW HYDROGRAPH RESERVOIR 500.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.6	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	7.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.9	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.2	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.5	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.7	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2570 ACRE-FEET
 PEAK DISCHARGE RATE = 7.54 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

ADD HYD ID=8 HYD NO=500.1 ID=4 ID=7
 PRINT HYD ID=8 CODE=5

OUTFLOW HYDROGRAPH RESERVOIR 500.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	27.4	3.000	.3	4.500	.1	5.999	.1
.167	.0	1.667	14.3	3.166	.2	4.666	.1	6.166	.1
.333	.0	1.833	7.9	3.333	.2	4.833	.1	6.333	.0
.500	.0	2.000	5.3	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	2.5	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	1.3	3.833	.1	5.333	.1		
1.000	.0	2.500	.8	4.000	.1	5.499	.1		
1.167	.0	2.666	.5	4.166	.1	5.666	.1		
1.333	5.8	2.833	.4	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35327 INCHES = .9332 ACRE-FEET
 PEAK DISCHARGE RATE = 27.37 CFS AT 1.500 HOURS BASIN AREA = .0129 SQ. MI.

*S **BASIN F
 COMPUTE NM HYD

ID=9 HYD NO=600.00 AREA=0.00356 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 7.0275 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.8700
 AREA = .001780 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 4.5508 CFS UNIT VOLUME = .9972 B = 340.80 P60 = 1.8700
 AREA = .001780 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=9 CODE=5

HYDROGRAPH FROM AREA 600.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.6	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	7.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.9	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.2	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.5	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.7	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2570 ACRE-FEET
 PEAK DISCHARGE RATE = 7.54 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

ADD HYD ID=10 HYD NO=600.1 ID=8 ID=9
 PRINT HYD ID=10 CODE=5

HYDROGRAPH FROM AREA 600.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	34.9	3.000	.3	4.500	.1	5.999	.2
.167	.0	1.667	18.2	3.166	.2	4.666	.1	6.166	.1
.333	.0	1.833	10.1	3.333	.2	4.833	.1	6.333	.0
.500	.0	2.000	6.8	3.500	.2	4.999	.1	6.499	.0
.667	.0	2.166	3.2	3.666	.2	5.166	.1	6.666	.0
.833	.0	2.333	1.6	3.833	.1	5.333	.1		
1.000	.0	2.500	1.0	4.000	.1	5.499	.1		
1.167	.1	2.666	.7	4.166	.1	5.666	.2		
1.333	7.4	2.833	.4	4.333	.1	5.833	.2		

RUNOFF VOLUME = 1.35327 INCHES = 1.1901 ACRE-FEET
 PEAK DISCHARGE RATE = 34.90 CFS AT 1.500 HOURS BASIN AREA = .0165 SQ. MI.

*S **BASIN G
 COMPUTE NM HYD

ID=11 HYD NO=700.00 AREA=0.00291 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 5.7444 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
 AREA = .001455 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 3.7199 CFS UNIT VOLUME = .9966 B = 340.80 P60 = 1.8700
 AREA = .001455 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=11 CODE=5

HYDROGRAPH FROM AREA 700.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.3	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	6.2	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.2	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	1.8	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.2	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.6	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2100 ACRE-FEET
 PEAK DISCHARGE RATE = 6.16 CFS AT 1.500 HOURS BASIN AREA = .0029 SQ. MI.

ADD HYD ID=12 HYD NO=700.1 ID=10 ID=11
 PRINT HYD ID=12 CODE=5

HYDROGRAPH FROM AREA 700.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	41.1	3.000	.4	4.500	.2	5.999	.2
.167	.0	1.667	21.4	3.166	.3	4.666	.2	6.166	.1
.333	.0	1.833	11.9	3.333	.2	4.833	.2	6.333	.0
.500	.0	2.000	8.0	3.500	.2	4.999	.2	6.499	.0
.667	.0	2.166	3.8	3.666	.2	5.166	.2	6.666	.0
.833	.0	2.333	1.9	3.833	.2	5.333	.2		
1.000	.0	2.500	1.2	4.000	.2	5.499	.2		
1.167	.1	2.666	.8	4.166	.2	5.666	.2		
1.333	8.7	2.833	.5	4.333	.2	5.833	.2		

RUNOFF VOLUME = 1.35327 INCHES = 1.4002 ACRE-FEET
 PEAK DISCHARGE RATE = 41.07 CFS AT 1.500 HOURS BASIN AREA = .0194 SQ. MI.

ADD HYD ID=13 HYD NO=700.2 ID=6 ID=12
 PRINT HYD ID=13 CODE=5

HYDROGRAPH FROM AREA 700.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	52.7	3.000	.5	4.500	.2	5.999	.3
.167	.0	1.667	27.5	3.166	.4	4.666	.2	6.166	.1
.333	.0	1.833	15.2	3.333	.3	4.833	.2	6.333	.0
.500	.0	2.000	10.3	3.500	.2	4.999	.2	6.499	.0
.667	.0	2.166	4.9	3.666	.2	5.166	.2	6.666	.0
.833	.0	2.333	2.4	3.833	.2	5.333	.2		
1.000	.0	2.500	1.5	4.000	.2	5.499	.2		
1.167	.1	2.666	1.0	4.166	.2	5.666	.2		
1.333	11.2	2.833	.7	4.333	.2	5.833	.2		

RUNOFF VOLUME = 1.35326 INCHES = 1.7971 ACRE-FEET
 PEAK DISCHARGE RATE = 52.72 CFS AT 1.500 HOURS BASIN AREA = .0249 SQ. MI.

ROUTE RESERVOIR ID=14 HYD NO=700.3 INFLOW ID=13 CODE=5

OUTFLOW(CFS)	STORAGE (AF)	ELEV (FT)
0	0	0
0.2	0.106	1
0.5	0.244	2
0.7	0.418	3
10	0.630	4
22	0.882	5

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.17	.00	.00	.000	.00
.33	.00	.00	.000	.00
.50	.00	.00	.000	.00
.67	.00	.00	.000	.00
.83	.00	.00	.000	.00
1.00	.00	.00	.000	.00
1.17	.10	.00	.000	.00
1.33	11.23	.51	.054	.10
1.50	52.72	3.32	.487	3.72
1.67	27.48	4.89	.855	20.73
1.83	15.24	4.86	.846	20.27
2.00	10.30	4.53	.764	16.40
2.17	4.90	4.18	.675	12.16

2.33	2.44	3.79	.585	8.02
2.50	1.52	3.49	.522	5.24
2.67	.98	3.29	.480	3.41
2.83	.67	3.16	.453	2.22
3.00	.49	3.08	.436	1.47
3.17	.37	3.03	.425	.99
3.33	.28	3.00	.418	.70
3.50	.25	2.96	.412	.69
3.67	.23	2.93	.405	.69
3.83	.21	2.89	.399	.68
4.00	.20	2.85	.393	.67
4.17	.20	2.82	.386	.66
4.33	.20	2.78	.380	.66
4.50	.20	2.74	.374	.65
4.67	.20	2.71	.367	.64
4.83	.20	2.67	.361	.63
5.00	.21	2.64	.355	.63
5.17	.21	2.61	.350	.62
5.33	.22	2.58	.344	.62
5.50	.23	2.55	.339	.61
5.67	.23	2.52	.334	.60
5.83	.24	2.49	.329	.60
6.00	.26	2.46	.324	.59
6.17	.10	2.43	.319	.59
6.33	.03	2.39	.311	.58
6.50	.01	2.34	.304	.57
6.67	.00	2.30	.296	.56
6.83	.00	2.26	.288	.55
7.00	.00	2.21	.281	.54
7.17	.00	2.17	.273	.53
7.33	.00	2.13	.266	.53
7.50	.00	2.09	.259	.52
7.67	.00	2.05	.252	.51
7.83	.00	2.01	.245	.50
8.00	.00	1.96	.238	.49
8.17	.00	1.91	.232	.47
8.33	.00	1.86	.225	.46
8.50	.00	1.82	.219	.45
8.67	.00	1.77	.213	.43
8.83	.00	1.73	.207	.42
9.00	.00	1.69	.201	.41
9.17	.00	1.65	.196	.40

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
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9.33	.00	1.61	.190	.38
9.50	.00	1.57	.185	.37
9.67	.00	1.54	.180	.36
9.83	.00	1.50	.175	.35
10.00	.00	1.47	.171	.34
10.17	.00	1.43	.166	.33
10.33	.00	1.40	.161	.32
10.50	.00	1.37	.157	.31
10.67	.00	1.34	.153	.30

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 INPUT FILE = rhills1.dat

RUN DATE (MON/DAY/YR) =02/22/1996
 USER NO.= ISCARFNM.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.200
*S **BASIN A										
COMPUTE NM HYD	100.00	-	1	.00517	10.94	.373	1.35334	1.500	3.306	PER IMP= 50.00
*S **BASIN B										
COMPUTE NM HYD	200.00	-	2	.00291	6.16	.210	1.35334	1.500	3.310	PER IMP= 50.00
*S **BASIN C										
COMPUTE NM HYD	300.00	-	3	.00420	8.89	.303	1.35334	1.500	3.307	PER IMP= 50.00
ADD HYD	300.10	1& 3	4	.00937	19.83	.676	1.35328	1.500	3.306	
*S **BASIN D										
COMPUTE NM HYD	400.00	-	5	.00259	5.49	.187	1.35334	1.500	3.310	PER IMP= 50.00
ADD HYD	400.10	2& 5	6	.00550	11.65	.397	1.35324	1.500	3.310	
*S **BASIN E										
COMPUTE NM HYD	500.00	-	7	.00356	7.54	.257	1.35334	1.500	3.308	PER IMP= 50.00
ADD HYD	500.10	4& 7	8	.01293	27.37	.933	1.35327	1.500	3.307	
*S **BASIN F										
COMPUTE NM HYD	600.00	-	9	.00356	7.54	.257	1.35334	1.500	3.308	PER IMP= 50.00
ADD HYD	600.10	8& 9	10	.01649	34.90	1.190	1.35327	1.500	3.307	
*S **BASIN G										
COMPUTE NM HYD	700.00	-	11	.00291	6.16	.210	1.35334	1.500	3.310	PER IMP= 50.00
ADD HYD	700.10	10&11	12	.01940	41.07	1.400	1.35327	1.500	3.308	
ADD HYD	700.20	6&12	13	.02490	52.72	1.797	1.35326	1.500	3.308	
ROUTE RESERVOIR	700.30	13	14	.02490	21.48	1.762	1.32657	1.733	1.348	AC-FT= .871
FINISH										

FILED
 FEB 27 1996
 11:00 AM
 11:00 AM

10.83	.00	1.31	.149	.29
11.00	.00	1.28	.145	.28
11.17	.00	1.25	.141	.28
11.33	.00	1.23	.137	.27
11.50	.00	1.20	.134	.26
11.67	.00	1.17	.130	.25
11.83	.00	1.15	.127	.24
12.00	.00	1.13	.123	.24
12.17	.00	1.10	.120	.23
12.33	.00	1.08	.117	.22
12.50	.00	1.06	.114	.22
12.67	.00	1.04	.111	.21
12.83	.00	1.02	.108	.20
13.00	.00	.99	.105	.20
13.17	.00	.97	.103	.19
13.33	.00	.94	.100	.19
13.50	.00	.92	.097	.18
13.67	.00	.90	.095	.18
13.83	.00	.87	.092	.17
14.00	.00	.85	.090	.17
14.17	.00	.83	.088	.17
14.33	.00	.81	.086	.16
14.50	.00	.79	.083	.16
14.67	.00	.77	.081	.15
14.83	.00	.75	.079	.15
15.00	.00	.73	.077	.15
15.17	.00	.71	.075	.14
15.33	.00	.69	.073	.14
15.50	.00	.67	.071	.13
15.67	.00	.66	.069	.13
15.83	.00	.64	.068	.13
16.00	.00	.62	.066	.12
16.17	.00	.61	.064	.12
16.33	.00	.59	.063	.12
16.50	.00	.58	.061	.12
16.67	.00	.56	.059	.11
16.83	.00	.55	.058	.11
17.00	.00	.53	.056	.11
17.16	.00	.52	.055	.10
17.33	.00	.51	.054	.10
17.50	.00	.49	.052	.10
17.66	.00	.48	.051	.10
17.83	.00	.47	.050	.09
18.00	.00	.46	.048	.09
18.16	.00	.44	.047	.09
18.33	.00	.43	.046	.09
18.50	.00	.42	.045	.08

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
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18.66	.00	.41	.044	.08
18.83	.00	.40	.042	.08
19.00	.00	.39	.041	.08
19.16	.00	.38	.040	.08

19.33	.00	.37	.039	.07
19.50	.00	.36	.038	.07
19.66	.00	.35	.037	.07
19.83	.00	.34	.036	.07

PEAK DISCHARGE = 21.482 CFS - PEAK OCCURS AT HOUR 1.73
 MAXIMUM WATER SURFACE ELEVATION = 4.957
 MAXIMUM STORAGE = .8711 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=14 CODE=5

HYDROGRAPH FROM AREA 700.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	4.000	.7	7.999	.5	11.999	.2	15.998	.1
.167	.0	4.166	.7	8.166	.5	12.165	.2	16.165	.1
.333	.0	4.333	.7	8.332	.5	12.332	.2	16.332	.1
.500	.0	4.500	.6	8.499	.4	12.499	.2	16.498	.1
.667	.0	4.666	.6	8.666	.4	12.665	.2	16.665	.1
.833	.0	4.833	.6	8.832	.4	12.832	.2	16.832	.1
1.000	.0	4.999	.6	8.999	.4	12.999	.2	16.998	.1
1.167	.0	5.166	.6	9.166	.4	13.165	.2	17.165	.1
1.333	.1	5.333	.6	9.332	.4	13.332	.2	17.332	.1
1.500	3.7	5.499	.6	9.499	.4	13.499	.2	17.498	.1
1.667	20.7	5.666	.6	9.666	.4	13.665	.2	17.665	.1
1.833	20.3	5.833	.6	9.832	.4	13.832	.2	17.832	.1
2.000	16.4	5.999	.6	9.999	.3	13.999	.2	17.998	.1
2.166	12.2	6.166	.6	10.166	.3	14.165	.2	18.165	.1
2.333	8.0	6.333	.6	10.332	.3	14.332	.2	18.331	.1
2.500	5.2	6.499	.6	10.499	.3	14.499	.2	18.498	.1
2.666	3.4	6.666	.6	10.666	.3	14.665	.2	18.665	.1
2.833	2.2	6.833	.6	10.832	.3	14.832	.1	18.831	.1
3.000	1.5	6.999	.5	10.999	.3	14.998	.1	18.998	.1
3.166	1.0	7.166	.5	11.166	.3	15.165	.1	19.165	.1
3.333	.7	7.333	.5	11.332	.3	15.332	.1	19.331	.1
3.500	.7	7.499	.5	11.499	.3	15.498	.1	19.498	.1
3.666	.7	7.666	.5	11.665	.3	15.665	.1	19.665	.1
3.833	.7	7.833	.5	11.832	.2	15.832	.1	19.831	.1

RUNOFF VOLUME = 1.32657 INCHES = 1.7617 ACRE-FEET
 PEAK DISCHARGE RATE = 21.48 CFS AT 1.733 HOURS BASIN AREA = .0249 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 13:49:31

DRB Case No. 95-442
DRC Project No.:
Date Submitted: 11-14-95
Date Revised: 1-23-96
Prelim. Plat Approved:
Prelim. Plat Expires:

FIGURE 12
EXHIBIT "A"
TO SUBDIVISION IMPROVEMENT AGREEMENT
DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
DRB 95-442
A PORTION OF TRACT B, UNIT 1B, LANDS OF ALBUQUERQUE SOUTH
BEING REPLATED AS

ROLLING HILLS SUBDIVISION, UNIT ONE

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

<u>SIZE</u>	<u>IMPROVEMENT</u>	<u>LOCATION</u>	<u>FROM</u>	<u>TO</u>
25' FF ***	Arterial Paving with Median	Sage Road	EAST PROPERTY LINE ~~Stinson Avenue~~	West Boundary <i>PROPERTY LINE</i>
STD	Curb & Gutter (South)	"	"	"
6'	PCC Sidewalk (South)	"	"	"
48"***	Storm Drain	"	"	"
48"	Storm Drain	"	"	"
10"	Waterline	"	"	Unser Blvd.
12"	Waterline	"	Unser Blvd.	Existing 12" stub
36' F.F.	Res. Paving	Secret Valley Dr.	Sage Road	Crystal Ridge Rd.
4'	*PCC Sidewalk (both sides)	"	"	"
STD	Curb & Gutter (both sides)	"	"	"
8"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
MED	Curb & Gutter (entry island)	"	"	"

~~*MAI BE DEFERRED AS DETERMINED BY THE DRC~~
~~MUST HAVE AGREEMENT (S.D.A. & FIN. GUARANTEED)~~

<u>SIZE</u>	<u>IMPROVEMENT</u>	<u>LOCATION</u>	<u>FROM</u>	<u>TO</u>
32'	Res. Paving	Secret Valley Dr.	Crystal Ridge Rd.	South Terminus Approx. 60' South of Autumn Canyon Road
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
8"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
32'	Res. Paving	Crystal Ridge Rd.	Quiet Desert Dr.	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	"
8"	Waterline	"	Secret Valley Dr.	"
8"	Sanitary Sewer	"	"	"
28'	Res. Paving	Quiet Desert Dr.	Crystal Ridge Rd.	South Terminus approx. 60' South of Autumn Canyon Road
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
28'	Res. Paving	Secret Valley Ct.	Cul-de-Sac	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
4"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
28'	Res. Paving	Windsong Road	Quiet Desert Dr.	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	Vacated Stinson Avenue
8"	Sanitary Sewer	"	"	"

<u>SIZE</u>	<u>IMPROVEMENT</u>	<u>LOCATION</u>	<u>FROM</u>	<u>TO</u>
28'	Res. Paving	Autumn Canyon Road	Quiet Desert Dr.	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
8"	Sanitary Sewer	Across Parcel 13 Albuquerque South P.U.E.	South Unit 1 Boundary	Arenal Road

MISCELLANEOUS

Street lighting per DPM.

Grading & Drainage: Certification per DPM (prior to release of financial guarantees). To include private perimeter and retaining walls as required on the approved Grading Plan.

~~Storm drain at outlet end (south) of subdivision to be financial guaranteed under a separate agreement and separate financial guarantee. Percentage of cost to be determined by future S.A.D. assessments as determined by the S.A.D. faeilitator.~~
^{QUIET DESERT DR}
~~SECRET VALLEY~~ TO THE AMOLE DEL NORTE DIV. CHANNEL

* Sidewalks to be deferred (both sides)

** Storm drain (if required) to be sized at DRC ^{SAD} ~~can be released with the future assessment / payment~~ ^{FINANCIAL GUARANTEES}

All water to include fire hydrants, valves, and appurtenances per DPM.

^{PUBLIC}
~~Temporary storm-water detention ponds adjacent to south boundary at street terminus (Secret Valley Drive).~~

Prepared by: Fred C. Arfman
Fred C. Arfman, P.E.
Isaacson & Arfman, P.A.

01-23-96
Date:

Development Review Board Member Approval

Mukul Patel
Transportation Development

1-23-96
Date:

Robert W. Kane
Utility Development

1-23-96
Date:

Robert
Parks & General Services

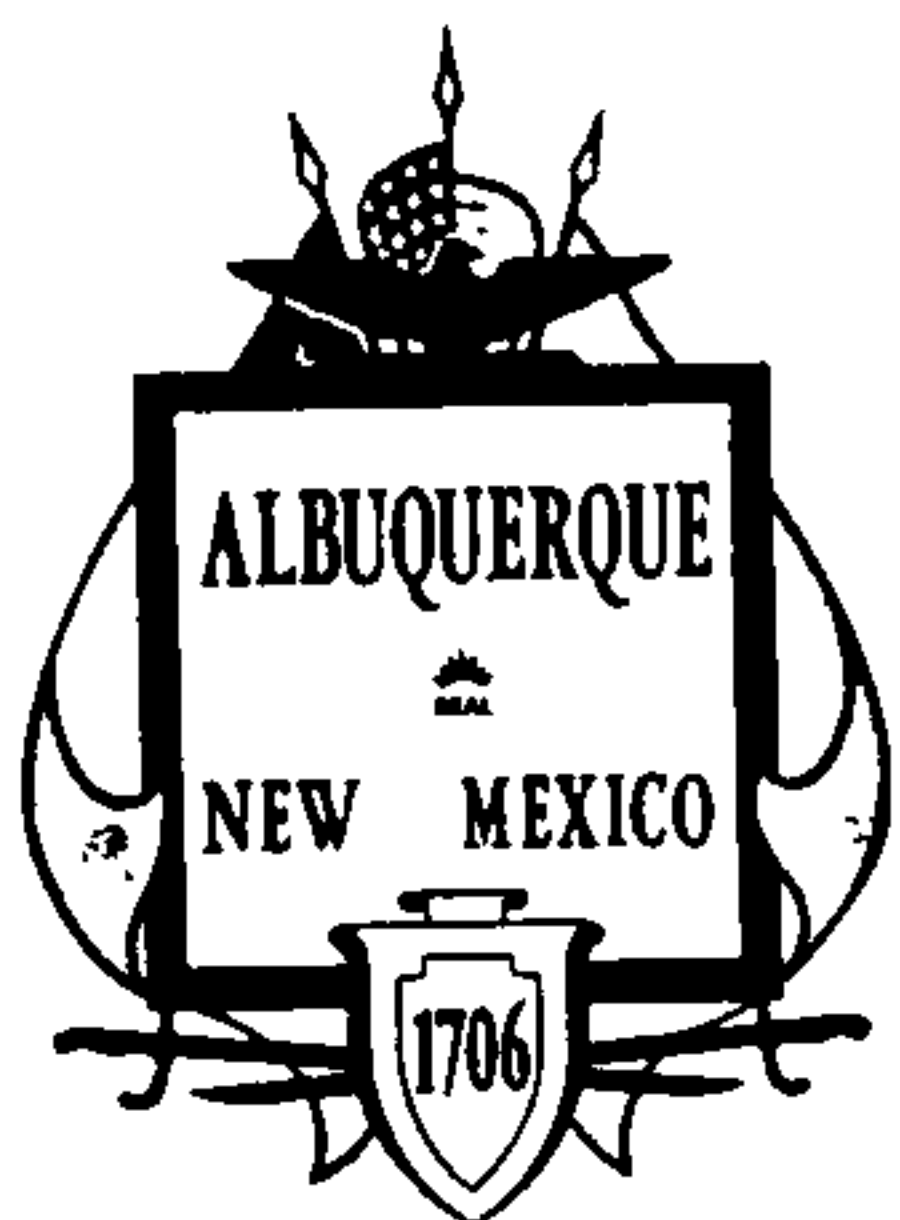
1-23-96
Date:

Fred J. Aguirre
City Engineer / AMAFCA

1-23-96
Date:

Kevin L. Price
DRB Chairman

1-23-96
Date:



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 26, 1996

Jud Lee
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM

**RE: ROLLING HILLS SUBDIVISION (M10-D7) DRAINAGE REPORT FOR
PRELIMINARY PLAT AND GRADING PERMIT APPROVAL. ENGINEER'S
STAMP DATED 1-10-96.**

Dear Mr. Lee:

Based on the information provided on your January 10, 1996
submittal, City Hydrology asks that you address the following
comments:

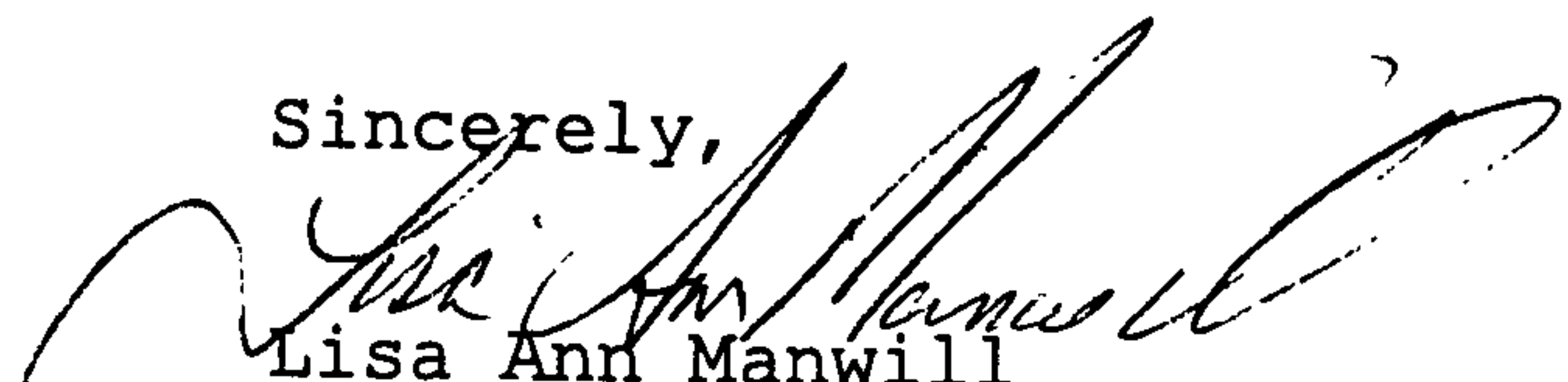
1. Please indicate the grades at the water block parallel to Sage Road, along Secret Valley Drive. A one foot water block is required.
2. According to your calculations, Section A-A is slightly undersized for the 11.5 cfs that enters from Quiet Dessert Drive.
3. Please show a cross section for the V-ditch between the proposed detention pond and Secret Valley Drive.
4. What section of the ditch carries the offsite flow to the pond?
5. Provide pond volume calculations. Pond should be sized for developed on-site and off-site flows.
6. How did you come up with a discharge rate to the Amole of 22 cfs? Is this a historic flow from this site?
7. Until the DMP is complete, the allowable discharge rate to the Amole will not be know. Please note, ponding may be a permanent feature on this site.
8. Is the V-ditch between the detention pond and the Amole Channel paved? If not, how will you control sediment to the Amole? How long is this V-ditch? Please show how this V-ditch connects into the Amole channel.
9. Please provide a covenant for the pond. The maintenance for the pond will be the owners responsibility.

Jud Lee
1-26-96

10. Sage Road street improvements will require the design and construction of the 48 inch storm drain identified in the SAD 222 report. Additionally, temporary drainage improvements must be provided for Sage Road until all the downstream drainage improvements are constructed.
11. You will be responsible to bond the 24" storm drain line from Quiet Dessert to the Amole Channel. This line is shown on the Master Drainage Plan that you included in this submittal. Please incorporate this storm drain on the infrastructure list dated 1-5-96.
12. Please provide easements for all bonded storm drain lines and pond.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,



Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Fred Aguirre
Andrew Garcia
File

DRAINAGE INFORMATION SHEET

m 07

PROJECT TITLE: Rolling Hills SD ZONE ATLAS/DRNG. FILE #: ~~L-14~~ 10DRB #: 95-442 EPC #: _____ WORK ORDER #: _____LEGAL DESCRIPTION: Tract B Unit 1-B Lands of Albuquerque South

CITY ADDRESS: _____

ENGINEERING FIRM: Isaacson & Artman PA CONTACT: Jud LeeADDRESS: 128 Monroe NE PHONE: 268-8828OWNER: Longford Homes of New Mexico CONTACT: Brian WalshADDRESS: 6400 S. Eastern Ave. Ste 18 PHONE: 702-736-1770ARCHITECT: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: Aldrich Land Surveying CONTACT: Tim AldrichADDRESS: _____ PHONE: 884-1990CONTRACTOR: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER

PRE-DESIGN MEETING:

- ☒ YES
☐ NO
☐ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SKETCH PLAT APPROVAL
☒ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D. APPROVAL
☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY APPROVAL
☒ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☐ OTHER _____ (SPECIFY)

DATE SUBMITTED: Jan 10, 1996BY: Jud Lee

JAN 10 1996

6

DRB Case No: ~~95-442~~
DRC Project No.:
Date Submitted: 11-14-95
Date Revised: 1-5-96
Prelim. Plat Approved:
Prelim. Plat Expires:

FIGURE 12
EXHIBIT "A"
TO SUBDIVISION IMPROVEMENT AGREEMENT
DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
DRB 95-442
A PORTION OF TRACT B, UNIT 1B, LANDS OF ALBUQUERQUE SOUTH
BEING REPLATED AS

ROLLING HILLS SUBDIVISION, UNIT ONE

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

<u>SIZE</u>	<u>IMPROVEMENT</u>	<u>LOCATION</u>	<u>FROM</u>	<u>TO</u>
25' FF	Arterial Paving with Median	Sage Road	Stinson Avenue	West Boundary
STD	Curb & Gutter (South)	"	"	"
6'	PCC Sidewalk (South)	"	"	"
48"	Storm Drain	"	"	"
10"	Waterline	"	"	Unser Blvd.
12"	Waterline	"	Unser Blvd.	Approx. 50' West to existing 12" stub
36'	Res. Paving	Secret Valley Dr.	Sage Road	Crystal Ridge Rd.
4'	*PCC Sidewalk (both sides)	"	"	"
STD	Curb & Gutter (both sides)	"	"	"
8"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
MED	Curb & Gutter (entry island)	"	"	"

24" SD

Post
South
Boundary of
Unit 1
Future Street.

Quiet
Resort

Amale.

<u>SIZE</u>	<u>IMPROVEMENT</u>	<u>LOCATION</u>	<u>FROM</u>	<u>TO</u>
32'	Res. Paving	Secret Valley Dr.	Crystal Ridge Rd.	South Terminus Approx. 60' South of Autumn Canyon Road
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MOUNT	Curb & Gutter (both sides)	"	"	"
8"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
32'	Res. Paving	Crystal Ridge Rd.	Quiet Desert Dr.	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	"
8"	Waterline	"	Secret Valley Dr.	"
8"	Sanitary Sewer	"	"	"
28'	Res. Paving	Quiet Desert Dr.	Crystal Ridge Rd.	South Terminus approx. 60' South of Autumn Canyon Road
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
28'	Res. Paving	Secret Valley Ct.	Cul-de-Sac	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
4"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
28'	Res. Paving	Windsong Road	Quiet Desert Dr.	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	Vacated Stinson Avenue
8"	Sanitary Sewer	"	"	Secret Valley Dr.

<u>SIZE</u>	<u>IMPROVEMENT</u>	<u>LOCATION</u>	<u>FROM</u>	<u>TO</u>
28'	Res. Paving	Autumn Canyon Road	Quiet Desert Dr.	Secret Valley Dr.
4'	*PCC Sidewalk (both sides)	"	"	"
MOUNT	Curb & Gutter (both sides)	"	"	"
6"	Waterline	"	"	"
8"	Sanitary Sewer	"	"	"
8"	Sanitary Sewer	Across Parcel 13 Albuquerque South	South Unit 1 Boundary	Arenal Road

MISCELLANEOUS

Street lighting per DPM.

Grading & Drainage: Certification per DPM (prior to release of financial guarantees). To include private perimeter and retaining walls as required on the approved Grading Plan.

*Sidewalks to be deferred (both sides)

**Storm drain (if required) to be designed at DRC

All water to include fire hydrants, valves, and appurtenances per DPM.

Temporary storm water retention ponds adjacent to south boundary at street terminus (Quiet Desert Dr. and Secret Valley Dr.)

Prepared by: Fred C. Arfman
Fred C. Arfman, P.E.
Isaacson & Arfman, P.A.

01-09-95
Date:

Development Review Board Member Approval

Transportation Development

Date:

Utility Development

Date:

Parks & General Services

Date:

City Engineer/AMAFCA

Date:

DRB Chairman

Date:

CITY OF ALBUQUERQUE
PLANNING DEPARTMENT
DEVELOPMENT SERVICES DIVISION

DEVELOPMENT REVIEW BOARD
January 18, 1996
S-95-42/DRB-95-442

S-95-42
DRB-95-442

Isaacson & Arfman, P.A., agents for Longford Homes of New Mexico, request a Bulk Land Variance for a portion of Tract B, Unit 1-B, Lands of Albuquerque South, zoned RD/ R-1 (City) and located on the south side of Sage Rd SW between Arenal Rd SW and the Amole del Norte Diversion Channel, containing approximately 28.11 acres. (L-10, M-10) [ORIGINAL SUBDIVISION REQUEST ADVERTISED FOR DECEMBER 12, 1995]

Zoning Enforcement

"No adverse comment."

COG

"No adverse comment." For information, the Long Range Major Street Plan designates Unser Boulevard as a limited access principal arterial and Sage Road as a minor arterial. The Bikeways Master Plan designates a proposed bike trail along Unser Boulevard.

 ~~AMAFCA~~

The drainage facilities in this area are operated and maintained by the City of Albuquerque. This area will drain to the Amole del Norte Channel which has limited capacity. Please see COA/PWD Hydrology comments. An outfall or possible ponding should be coordinated.

Real Estate

"No adverse comment."

Neighborhood Coord.

No registered Neighborhood Association.

Office of Econ. Develop.

Stinson Ave SW street vacation will cause certain lots of Tracts D and F no longer viable.

Police Department

"No adverse comment."

PNM Gas

Approves.

PNM Electric

No adverse comments, but plat is subject to easements of record.

APS

The 78 homes in the Rolling Hills Subdivision, Unit 1, will affect Mary Ann Binford Elementary School, Truman Middle School, and West Mesa High School. The APS facilities in the area are already large and growing rapidly. The current APS Facilities Master Plan includes no new schools for the southwest mesa in the short term. Nevertheless, the timing, scale, and space of development will likely keep schools large and overcrowded in the near future. As schools become overcrowded, boundary changes, alternative schedules, transportation to less crowded schools, and/or combinations of the above strategies may be employed to relieve schools with large numbers of students.

Jones Intercable

"No adverse comment."

Environmental Health

Prior to any earthmoving activities involving a parcel of 3/4 of an acre or more, a Topsoil Disturbance Permit must be obtained from the City's Environmental Health Department pursuant to Albuquerque/Bernalillo County Air Quality Control Board, Part 20. Revegetation or stabilization of disturbed areas can be coordinated as part of the permitting process. Contact Larry Caudill (768-2600).

As the proposal proceeds toward the implementation of residential units, EHD encourages the applicant to consider alternatives to the use of woodburning fireplaces. Possibilities include gas logs and Environmental Protection Agency approved woodburning devices. Operating a fireplace for 4 hours can produce as much carbon monoxide as 2 days worth of driving to and from work. In contrast, gas logs produce about 35 times less carbon monoxide than a woodburning fireplace.

Parks and General Services

Parks has no adverse comment o the request for Bulk Land Variance for Tract A. However, further subdivision of this tract will require filing of a Park Dedication Agreement for roughly a 1.3 acre park proposed to be dedicated with a later phase.

Utilities Development

"No adverse comment."

City Engineer

•No objection to the bulk land variance. See DRB minutes/speed memo dated December 12, 1995 for comments.

Transportation Develop.

1. Parcels need to qualify for bulk land. 2. Intersection of Sage and Unser need to meet DPM - right-of-way requirements. 3. Adjacent improvements for Tract "A" appear to be excessive for the parcel size.

Planning Department

Refer to affected Public Works Divisions regarding bulk land variance.

IT IS REQUESTED THAT THE APPLICANT AND/OR AGENT BE PRESENT AT THE HEARING

cc:Longford Homes of New Mexico, 6400 S. Eastern Ave., Las Vegas, NV 89119
Isaacson & Arfman PA, 128 Monroe St NE, 87108