

MIS DULZ

Cherne, Curtis

From: Trujillo, Timothy R, NMDOT <TimothyR.Trujillo@state.nm.us>
Sent: Thursday, January 23, 2014 4:09 PM
To: 'Louie Keating'
Cc: lds@axisgroupinc.com; Kratochvil, Thomas P., NMDOT; Jaramillo, Antonio, NMDOT; Lugo, Edward, NMDOT; lds@axisgroupinc.com; jwb@axisgroupinc.com; Brantingham, Katy; Cherne, Curtis
Subject: RE: Summary of Meeting on October 17 to discuss flooding near Univar and GE properties

Mr. Keating,

Mr. Cherne of the COA has provided the Grading and Drainage plan for the area that I believe exacerbated the rain event we had in September. The Grading and Drainage Plan differs from the current conditions so this may play a part in the increased runoff into NMDOT ROW and subsequently onto the UNIVAR site. There is a large detention basin missing from the property along with several drop inlets. It is also unclear how this system ties into runoff generated from the airport. From Google Earth there is scour section visible which confirms my suspicion of runoff entering our ROW. I didn't see anything out of the ordinary with the rainfall totals from the nearest rain gauge but what that gauge is not giving me is the intensity of the storms that hit. This is a little unusual considering some of the other areas I'm dealing with had rain in excess of the 100-Year Storm Event. Another inconsistency is the damage done in the area doesn't match these rain totals.

I may have dropped the ball on this or I assumed both you and Ms. Brantingham were to get ahold of Don Briggs and Curtis Cherne separately. Now that I have a clearer understanding of the upstream infrastructure I can meet with Mr. Cherne and see what we can do about this. My understanding is that Mr. Briggs has taken a month of leave but Mr. Tiequan Chen (505-848-1517) is acting on his behalf. If the culvert under Woodward/Edmund were cleaned I believe this would prevent runoff from concentrating down to the Woodward/Rio Bravo intersection. Thank you for your patience on this.

Thanks,

Tim Trujillo, PE
NMDOT – D3 Drainage
505-798-6690

From: Louie Keating [mailto:lak@axisgroupinc.com]
Sent: Monday, January 20, 2014 2:24 PM
To: Trujillo, Timothy R, NMDOT
Cc: lds@axisgroupinc.com; Kratochvil, Thomas P., NMDOT; Jaramillo, Antonio, NMDOT; Lugo, Edward, NMDOT; lds@axisgroupinc.com; jwb@axisgroupinc.com; Brantingham, Katy
Subject: RE: Summary of Meeting on October 17 to discuss flooding near Univar and GE properties

Good Afternoon Mr. Trujillo

Did you ever receive any feedback from Mr. Cherne or Mr. Briggs (reference email below)?
Mr. Briggs is on indefinite leave (I can't get much help from the # provided), so can you give me the phone number for Mr. Cherne/Albuquerque - in his absence?

The county has no money and I hope that they can will help (from the Albuquerque City side of the issue).
It would be professional to tell him in advance of our call/meeting and the reasoning (from the September rains and damage in our area).

|

|

From: Louie Keating [mailto:lak@axisgroupinc.com]
Sent: Wednesday, November 20, 2013 11:54 AM
To: Trujillo, Timothy R, NMDOT
Cc: lds@axisgroupinc.com
Subject: FW: Summary of Meeting on October 17 to discuss flooding near Univar and GE properties

Good Morning Mr. Trujillo

Have you received any feedback from Curtis Cherne or Antonio Jaramillo about the water being diverted from the airport parking lot down woodward?

There were two storms (abnormal erosion down woodward) that significantly disrupted our operations and damaged our electrical/instrument lines to the South Valley Water Treatment plant. The city and the county had to move over 30 truckloads of dirt from Broadway/Woodward back up the hill. They had front end loaders and graders running for 2-4 days, each.

Sincerely, Louis Keating (Axis Group 247-3919).

From: Brantingham, Katy [mailto:Katy.Brantingham@arcadis-us.com]
Sent: Thursday, November 07, 2013 3:16 PM
To: John Biliard P.E. (jwb@axisgroupinc.com); Leonard Stockton (lds@axisgroupinc.com)
Subject: FW: Summary of Meeting on October 17 to discuss flooding near Univar and GE properties

FYI. You may want to go check all your wells in that area, specifically P83-31. I will let you know what happens next.....

From: Brantingham, Katy
Sent: Thursday, November 07, 2013 3:14 PM
To: 'Trujillo, Timothy R, NMDOT'
Cc: Kratochvil, Thomas P., NMDOT; Lugo, Edward, NMDOT; Jaramillo, Antonio, NMDOT; MICHAEL GAUDETTE; 'David Armstrong'
Subject: RE: Summary of Meeting on October 17 to discuss flooding near Univar and GE properties

Hi Tim,

Thank you for the update. I have attached a picture of the damaged well. It appears that it was damaged during the grading of the road. Additionally, there are some GE related wells that may have been damaged or buried. I am not sure the extent of the damage yet but we really need to figure out a way to work together to make sure no more wells are damaged. I am pulling additional information to make sure you have the locations of all the wells and underground lines in the area. Additionally, if we need to put up jersey barriers or something additional around the wells and put in above ground markers for the lines, we can do that. These wells cost between \$30,000 and \$50,000 a piece to install and surficial damage can cause the entire well to be damaged. I had someone take some pictures this week of the work that was done and will review and get back to you on the grading and see if we think this will keep the drainage to the south. We appreciate you working with us on this.

Sincerely,
Katy

From: Trujillo, Timothy R, NMDOT [mailto:TimothyR.Trujillo@state.nm.us]
Sent: Thursday, November 07, 2013 3:02 PM
To: Brantingham, Katy
Cc: Kratochvil, Thomas P., NMDOT; Lugo, Edward, NMDOT; Jaramillo, Antonio, NMDOT
Subject: RE: Summary of Meeting on October 17 to discuss flooding near Univar and GE properties

- Drainage of culverts at the rail road overpass – The railroad overpass was recently expanded. It appears that 3 of the 4 drainage culverts for the overpass discharge to the rail road tracks creating flooding and deposition of sediments on the rail road and the rail spur to the Univar property.
- Erosion near the corner of Woodward and Edmunds - There is a culvert that discharges near this corner that looks as though it should discharge to a pipe under Edmunds. The pipe appears to be buried on the east side of Edmunds which caused the discharge to flow north down the east side of Edmunds and then west down the north side of Woodward causing erosion of the side of the road.
- Erosion of Woodward at AMAFCA channel. It appears that a berm on the northeast corner of the AMAFCA channel and Woodward was breached causing erosion damage to Woodward.

After touring the affected areas, it was agreed that you would look into the drainage issues further and get back to us regarding possible solutions. You also stated you may contact the City, AMAFCA, and County as well to discuss an overall solution. Univar agreed to provide maps showing the location of their wells and underground piping.

Please let us know if you need any additional information. We appreciate the NMDOT's help to resolve these issues.

Sincerely,

Katy

Katy Brantingham | Associate Vice President/CPM2 | katy.brantingham@arcadis-us.com

ARCADIS U.S., Inc. | 410 North 44th Street, Suite 1000 | Phoenix, AZ 85008

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CITY OF ALBUQUERQUE
JIM RACA, MAYOR LAWRENCE RAEI, CAO JAY J. CZAR, DIRECTOR OF AVIATION



December 20, 1999

Ricardo Chaves
Airport Parking
1501 Aircraft Avenue
Albuquerque, NM 87106

Re: Rental Car Facility

Dear Mr. Chaves:

The City of Albuquerque Public Works Department, Hydrology Division, has informed the Aviation Department that it is responsible for the submission of the Letter of Map Revision to FEMA to remove the flood plain from your property located between University and I-25, adjacent to Sunport Blvd. This is due to the fact that the Aviation Department was the party responsible for putting in the new storm drain which diverts flows out of the arroyo which had caused the flood plain.

This process involves preparing an application on forms provided by FEMA with the necessary hydrologic and hydraulic analysis data showing that the flows are no longer causing the flood plain. This application will be submitted to FEMA for their review.

With regard to your obtaining a Certificate of Occupancy, the Aviation Department will not be responsible for that application. The engineer or architect preparing your development plans will need to request this approval. The Aviation Department is not responsible for the issuance of these documents

If you have any questions regarding this matter, please feel free to call.

Sincerely,

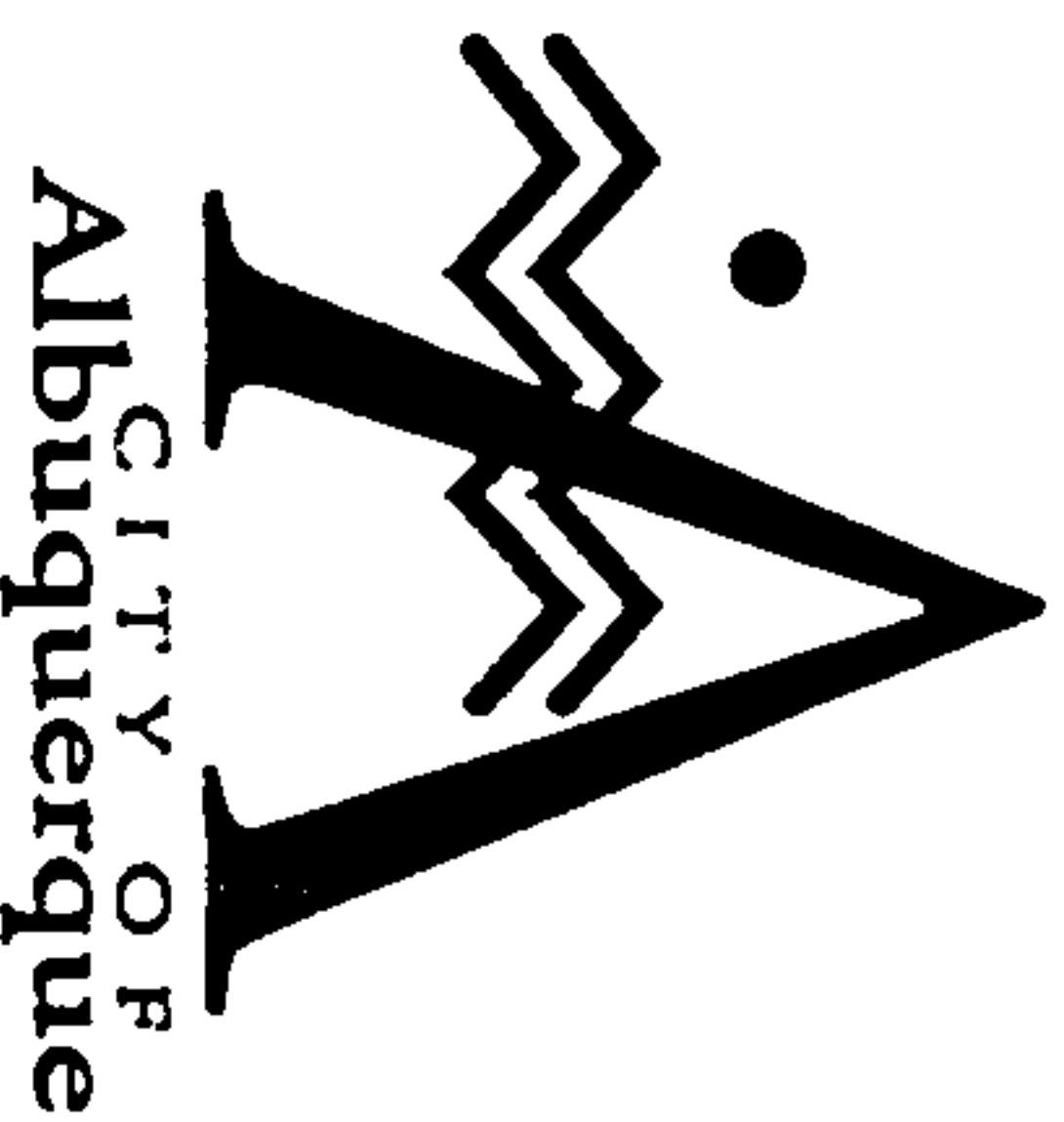

Jay J. Czar
Director of Aviation JJC

Enclosures

Cc: Kent S. Freier, PE
Vice President, Project Engineer

Jim Hinde, Facilities Engineering/Aviation





March 27, 1997

Martin J. Chávez, Mayor

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE, Building 1, Suite 210
Albuquerque, New Mexico 87110

RE: Drainage Report for Parcel 2A, Sunport Park (M15/D23) Submitted for Site Development Plan for Building Permit Approval, Engineer's Stamp Dated 3/6/97.

Dear Mr. Lorenz:

Prior to approval for Site Development Plan for Building Permit Approval the following comments must be addressed:

1. Show the limits of the existing FEMA floodplain on the plan. Also plot the erosion setback line. How does the floodplain impact Phase 1? Is the proposed parking lot located within the erosion setback? If so, how do you plan to mitigate this?
2. This development proposes to remove the existing FEMA floodplain and will require a Letter of Map Revision from FEMA.
3. The report is unclear about the allowable runoff entering the existing Sunport Boulevard storm drain system. What is the downstream capacity for this storm drain? Considering the upstream basin to be fully developed, what is the allowable Q from your site?
4. Does the I-25 box culvert at the existing arroyo have limited capacity?
5. Is Tract A-3 part of the proposed development? Is this parcel to be regraded? How do you plan to pick up the runoff from this tract? Easements will be required across this parcel for the proposed drainage improvements. A public drainage easement with an Agreement and Covenant will be required for the proposed pond. It appears that the pond should be relocated to the historic low spot on the parcel.
6. Are inlets provided to intercept the street flows in University and Sunport Boulevard? If not, these may need to be included on the Infrastructure List.

Good for You, Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103



Dennis A. Lorenz, P.E.
page 2

March 27, 1997

7. Your development must address the interim condition as well as the fully developed condition. The information provided from the Molzen-Corbin report is unclear about the runoff from the airport in the interim as opposed to the fully developed condition. Your developed Basins map shows that 256.3 cfs enters the two 60" culverts from the east of your site. The Molzen-Corbin report, however, states that the two 60" culverts under University have a capacity of 100 cfs and the existing flows are 370 cfs. Please clarify. Is another culvert required?

If you should have any questions regarding these comments, please call me at 924-3982.

Sincerely,



Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: SUNPORT PARK ZONE ATLAS/DRNG. FILE #: M-15 023

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: PARCEL 2A, SUNPORT PARK

CITY ADDRESS: UNIVERSITY BLVD, SE

ENGINEERING FIRM: Brasher & Lorenz, Inc. CONTACT: Dennis A. Lorenz

ADDRESS: 2201 San Pedro NE Bldg. 1 Suite 210 PHONE: 888-6088

ADDRESS: Albuquerque, New Mexico 87110

OWNER: JOYCE BATTAGLIA CONTACT: JOYCE BATTAGLIA

ADDRESS: P.O. BOX 32220 PHONE: 281-6004

EDGEWOOD, NM 87015

ARCHITECT: RICK BENNETT CONTACT: RICK BENNETT

ADDRESS: 1118 PARK AVE SW PHONE: 242-1859

87102

SURVEYOR: PRECISION SURVEYS CONTACT: LARRY MENDANO

ADDRESS: 2929 COOBS NW PHONE: 839-0569

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL: _____ CHECK TYPE OF APPROVAL SOUGHT: _____

☒ DRAINAGE REPORT _____ SKETCH PLAT APPROVAL

_____ DRAINAGE PLAN _____ PRELIMINARY PLAT APPROVAL

_____ CONCEPTUAL GRADING & DRAINAGE PLAN _____ S. DEV. PLAN FOR SUB'D. APPROVAL

_____ GRADING PLAN ☒ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

_____ EROSION CONTROL PLAN _____ SECTOR PLAN APPROVAL

_____ ENGINEER'S CERTIFICATION _____ FINAL PLAT APPROVAL

_____ OTHER _____ FOUNDATION PERMIT APPROVAL

_____ BUILDING PERMIT APPROVAL

PRE-DESIGN MEETING: _____ CERTIFICATE OF OCCUPANCY APPROVAL

☒ YES _____ GRADING PERMIT APPROVAL

_____ NO _____ PAVING PERMIT APPROVAL

_____ COPY PROVIDED _____ S.A.D. DRAINAGE REPORT

_____ DRAINAGE REQUIREMENTS

OTHER _____ (SPECIFY)

DATE SUBMITTED: 3-6-97

BY: Dennis A. Lorenz

*I think
this is in Lorenz's
field. I have
Charles
Double checked
the #s and
it's correct.*

EGP

MAR 07 1997

HYDROLOGY S...

MOLZEN-CORBIN

& Associates



ENGINEERS/ARCHITECTS/PLANNERS

2701 Miles Road Southeast
Albuquerque, New Mexico 87106
Telephone 505-242-5700
Fax 505-242-0673

March 28, 1997

Mr. Fred Aguirre, P.E.
City of Albuquerque
Public Works Department
P.O. Box 1293
Albuquerque, New Mexico 87103

RE: Sunport Park Drainage
DRB Case 97-119

ABQ41-11.C01

Dear Mr. Aguirre:

We have been requested by the Aviation Department to review and comment on the Sunport Park Drainage MasterPlan submitted to the City for review. We have reviewed sheet C-2 of the masterplan dated February 25, 1997, and offer the following comments on behalf of the Aviation Department:

1. The drainage boundaries illustrated on the Phase I portion of the proposed development do not agree with the masterplan prepared by Andrews, Asbury and Robert (AAR). The land treatment shown indicates a 100 percent impervious surface. The Sunport system was designed to accept the basin as shown on that masterplan. The AAR masterplan indicated a land treatment consistent with commercial development with a maximum of 90 percent impervious surface. Undetained flow from the system, shown on the current drawing, may exceed the system capacity.
2. The capacity and structural integrity of the 3-36" RCP crossing at I-25 are of concern due to age and condition. Calculations performed during the preparation of the Sunport Boulevard Drainage Report indicate that the capacity of this structure is approximately 300 cfs. This capacity should not be exceeded in order to protect the improvements constructed in the Sunport Boulevard projects.
3. There is not an easement identified for the 42" outfall pipe from the detention pond.
4. A public detention pond is proposed. Who will be responsible for maintenance?

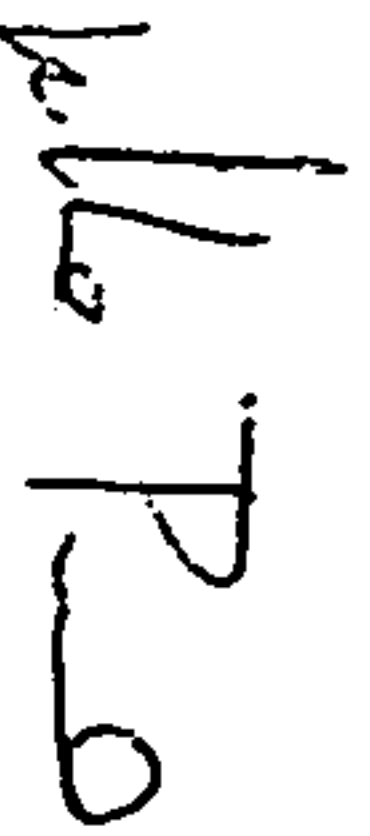
Mr. Fred Aguire, P.E.
March 28, 1997
Page 2

5. Drop inlets are indicated on the north boundary of Phase I. We assume these are intended to catch surface flows. The finished grading shown indicates a slope of approximately 5% with a cross slope. Will the drop inlets be effective in collecting the surface water prior to reaching the western boundary of the development with the cross slope indicated?
6. Will the proposed public detention pond require permitting through the State Engineer's Office?
7. What provisions will be made for an emergency spillway for the proposed pond?

Please accept these comments and questions for the hearing scheduled for Tuesday, April 1, 1997. If you have any questions concerning these comments, please contact the Mr. Dennis Parker, Assistant Director of Aviation, at 842-4366 or me at 242-5700.

Sincerely,

MOLZEN-CORBIN & ASSOCIATES



Mike Provine, P.E.

MP:cvh

cc: Mr. Dennis Parker, AAE, Assistant Director of Aviation

DRAINAGE MASTERPLAN

FOR

SUNPORT PARK, PARCEL 2A

Albuquerque, New Mexico

Prepared By:

BRASHER & LORENZ, INC.

Consulting Engineers

San Pedro NE Building 1, Suite 210
Albuquerque, New Mexico 87110

March 1997

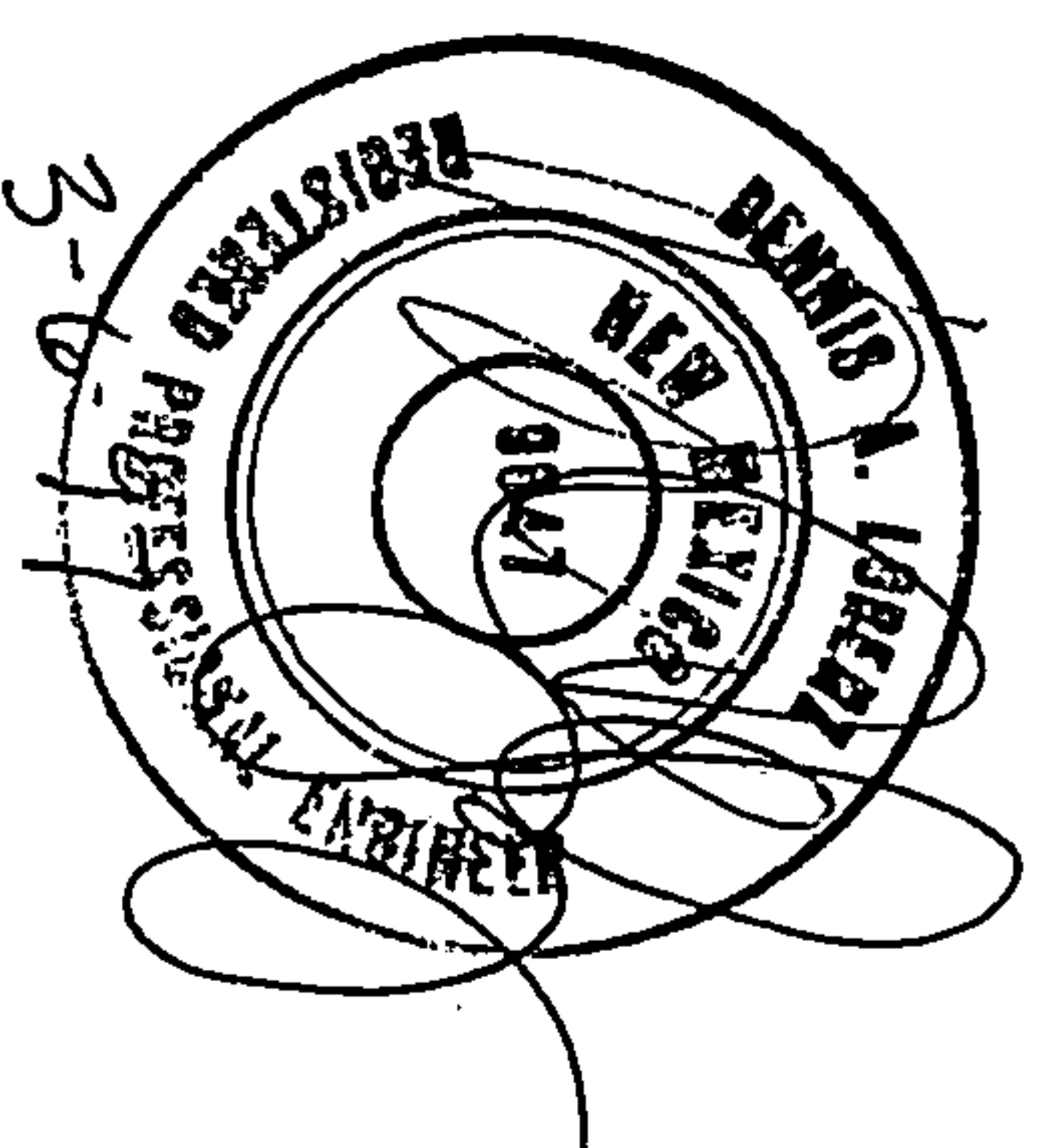
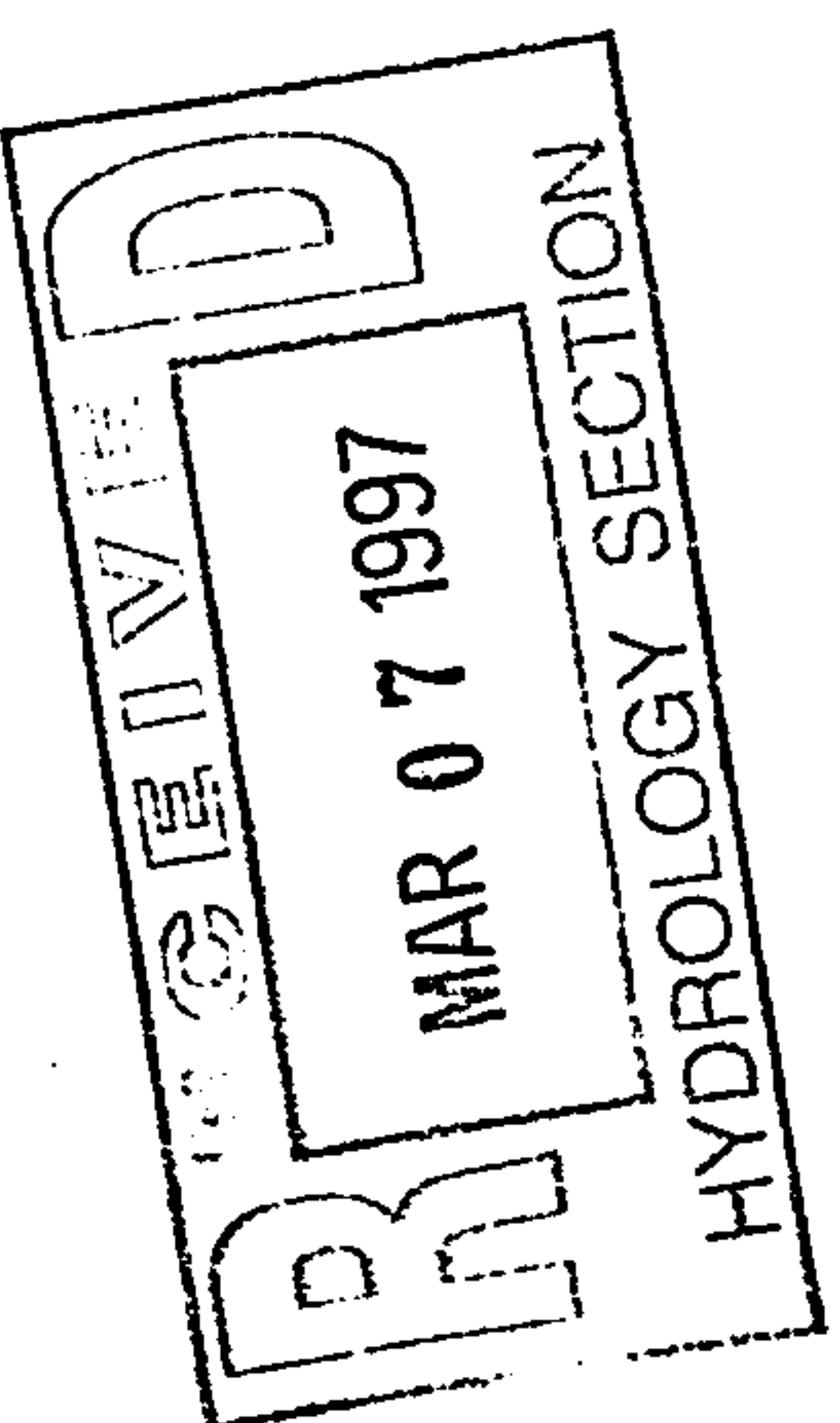


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PURPOSE AND SCOPE

Pursuant to the established Drainage Ordinance for the City of Albuquerque and the Development Process Manual, this Drainage Report outlines the drainage management criteria for controlling developed runoff from the project site. The property is to be developed as a parking complex for long term parking and car rentals. Paving, landscaping, utility, grading, and drainage improvements will be provided to support the project. The scope of this plan is to provide drainage criteria for the safe management of excess runoff, and design detail for the construction of the required grading, paving and drainage improvements.

SITE DESCRIPTION

The project site is approximately 48.67 acres in size and is located adjacent to Sunport Boulevard at University Boulevard SE. Presently the site is undeveloped. The site is vegetated with native grasses and shrubs. Site terrain is rugged, sloping east to west at approximately 5 percent. A natural ridge line is located through the midsection of the site which divides the site into 2 drainage basins. The site is described as Sunport Park, Parcel 2. The site is bounded on the north by Sunport Boulevard, on the east by University Boulevard, on the south by the University of New Mexico South Golf Course, and on the west by Interstate 25.

The site is located adjacent to the recently constructed Sunport Boulevard roadway project, which provided drainage and access improvements which benefit the site. A public detention pond is located adjacent to the site on the east, which accepts runoff from the George Road storm drain. The detention pond drains to the Sunport storm drain.

On-site soils consist mainly of Bluepoint series soils. This soil group is formed in sandy alluvial and eolian sediments on alluvial fans and terraces. Slopes range from 1 to 15 percent. Runoff is slow, and the hazard of wind erosion is moderate to severe. This soils is classified as hydrologic soils group "A".

As shown by the attached FIRM Panel, this site is impacted by a designated flood hazard zone resulting from off-site drainage contribution from the Albuquerque International Airport (see figure 3).

EXISTING DRAINAGE MASTERPLANS

The drainage criteria for this site is established by the following Drainage Masterplans:

1. **Albuquerque International Airport Storm Drainage Masterplan**, Project No.4255.01, prepared by Molzen-Corbin & Associates, May 1995.

This DMP studies AIA, contributing off-site drainage basins, and downstream facilities. Sunport Park, being downstream from AIA is identified as Basins 403,

404, 514 and 515. Both existing and future peak flowrates were determined for these basins. Capacity of existing downstream drainage improvements as also tested.

2. Sunport Boulevard Final Drainage Report, prepared by Molzen-Corbin & Associates, March 1996.

This report provided hydrologic analysis and drainage improvement recommendations for the Sunport Boulevard roadway project. Storm drainage improvements include storm drains in Sunport Boulevard and George Road, and a detention pond at University and Aircraft Avenue (Tract A-2, Replat of Municipal Addition No. 9).

EXISTING DRAINAGE CONDITIONS

As described above, the site is impacted by the Sunport Boulevard roadway project. The following improvements were provided by Sunport which benefit the site:

1. The Sunport Boulevard storm drains located along the north property line. This storm drain is sized to accept developed runoff from the upstream basins and on-site Basin "A". The storm drain is connected to 3-36 inch culverts which convey flows under I-25 to a 60 inch storm drain, then to the South Diversion Channel.
2. Tract A-2 detention pond is located immediately east of the site. The pond is designed to detain runoff from the George Road storm drain, thereby reducing peak flow rates allowing connection to the 3-36 inch culverts at I-25.

The site is divided into 2 distinct drainage basins by a natural ridge line running east to west. The north basin (Basin "A") flows to an area drain located at the northwest corner of the site, which is connected to the Sunport storm drain. The south basin (Basin "B") flows west to an existing 8' x 6' concrete box culvert, which drains under I-25 to the South Diversion Channel. Basin "B" contains an arroyo channel which is mapped as a 100 year floodplain (see Figure 2). The arroyo accepts runoff from AIA. AIA Basin W/E enters the site near the southeast corner after passing through 2-60 inch culverts located at University Boulevard. Per AIA DMP, the existing flow rate at the east property line is 256.3 cfs. No off-site flows impact Basin "A" other than minimal flows from the sides of detention pond located on Tract A-2.

Summary of Existing Flows

1. **University Blvd. Culverts:** These two 60" culverts convey an arroyo across University Boulevard onto the subject site. The arroyo then flows across the middle of the site from east to west. The flow through these culverts is projected to be 256.3 cfs during the 100 year/6 hour storm when the upstream basins are fully developed (per AIA DMP).

2. Sunport Boulevard Storm Drain: This storm drain flows from east to west along the north boundary of the site. 100 year/6 hour flows after development of all upstream basins is projected to be 278.2 cfs (per AIA DMP)

3. Basin A: This basin consists of the north 18.8 acres of the proposed site. It currently drains to the Sunport Blvd. Storm Drain at the northwest corner of the site. The 100 year/6 hour flow is 29.3 cfs.

4. Basin B: This basin consists of the south 29.9 acres of the proposed site. It is drained entirely by the arroyo that flows from east to west across the middle of the site. The 100 year/6 hour flow is 46.6 cfs.

5. Basin C: This offsite 8.5 vacant tract is south of Aircraft Avenue, west of University Boulevard and north of the proposed detention pond. It currently generates 13.3 cfs in the 100 year/6 hour storm. Developed conditions would generate 37.3 cfs. It drains onto the arroyo that runs from east to west through the middle of the site.

PROPOSED CONDITIONS

As shown by the Plan, the project consists of the development of the property into a parking complex for long term airport parking and car rentals.

The Plan shows the elevations required to properly grade and construct the recommended improvements. The direction of drainage flows are given by flow arrows and on-site drainage basins are identified. All drainage improvements recommended by the Plan are detailed on Drainage MasterPlan located in the back pocket of this report.

Stormwater will discharge from the site into two locations:

- 1) Sunport Boulevard Storm Drain (existing)
- 2) I-25 Box Culvert (via proposed on-site storm drain system)

Drainage Facilities

This project will be developed in two phases (see Drainage Master Plan, pocket). Phase 1 is the north half of the property (Developed Basins 1 and 2). Phase 2 is the south half of the property (Developed Basins 3 and 4).

1. Sunport Boulevard Storm Drain (Phase 1)

This existing storm drain flows in a westerly direction along the north site boundary. Four stub outs will be constructed to this storm drain. Each will drain a type "A" drop inlet. The *Albuquerque International Airport Storm Drainage Master Plan*,

allowable Q? downstream capacity

Molzen Corbin, 1995, states that the Sunport Boulevard Storm Drain was designed to handle developed flows from about 18.8 acres of the subject site. Because of site grading, flows from only about 5.4 acres of the subject site will be discharged to the storm drain.

2. I-25 Box Culvert (via proposed on-site storm drain system)

This existing 6'x8' box culvert currently handles stormwater from the arroyo that crosses the middle of the site from west to east. The water from the arroyo will be contained in a proposed storm drain that will drain west along the south tract line and then north along the west tract line until it outfalls at the box culvert.

A detention pond will be constructed near the outlets of the 2-60" University Boulevard culverts to reduce 100 year/6 hour flows into the proposed storm drain system. The pond will reduce flows from 256.3 cfs to 146.5 cfs (see AHYMO reservoir routing calculations in Appendix).

The site will be drained by two types of drop inlets. Four stubouts will drain type "A" drop inlets. Four custom designed continuous drop inlets will drain directly to the storm drain on the west end of the site.

Basins that will drain to Sunport Boulevard Storm Drain (Phase 1)

Basin 1: (Phase 1) Basin 1 is comprised of the 5.4 acres of the parking complex that will drain to the north curb. Water from this basin will be intercepted by Type A drop inlets along the north curb. Stub-outs will connect these drop inlets to the Sunport Boulevard Storm Drain. Basin 1 will generate 25.4 cfs during the 100 year/6 hour storm. Each drop inlet will handle approximately one-third of that flow.

Basins that will drain to I-25 Box Culvert (Phases 1 and 2)

Basin 2: (Phase 1) Basin 2 is 17.1 acres and consists of that part of the site that will drain to the north half of the west curb. Much of the area in Basin 2 currently drains northwest to the Sunport Boulevard Storm Drain. The project will be graded such that all of Basin 2 will drain southeast to the I-25 Box Culvert. Basin 2 will generate 80.4 cfs during the 100 year/6 hour storm. It will drain to custom designed continuous drop inlets on the west curb of the parking complex. Those drop inlets will drain to a storm drain that will flow south to an outfall at the I-25 Box Culvert.

Basin 3: (Phase 2) This basin is 21.3 acres and consists of that part of the site that will drain to the south half of the west curb. Like Basin 2, Basin 3 will drain from east to west into custom designed continuous drop inlets on the west curb of the parking complex. Basin 3 is projected to generate 100.1 cfs during the 100 year/6 hour storm.

Basin 4: (Phase 2) Basin 4 is 4.9 acres and consists of that part of the project that drains to the south curb. Type A drop inlets will intercept the flow and direct

it to the proposed storm drain. Basin 4 will generate 23.0 cfs during the 100 year/6 hour storm.

Basin C: This 8.5 acre vacant offsite tract currently drains to the arroyo that runs from east to west across the middle of the site. Phase 2 of the subject project will eliminate that arroyo. As such, stormwater from this tract will need to be drained by a stubout to the proposed storm drain network. Developed flows from Basin C are projected to be 37.3 cfs.

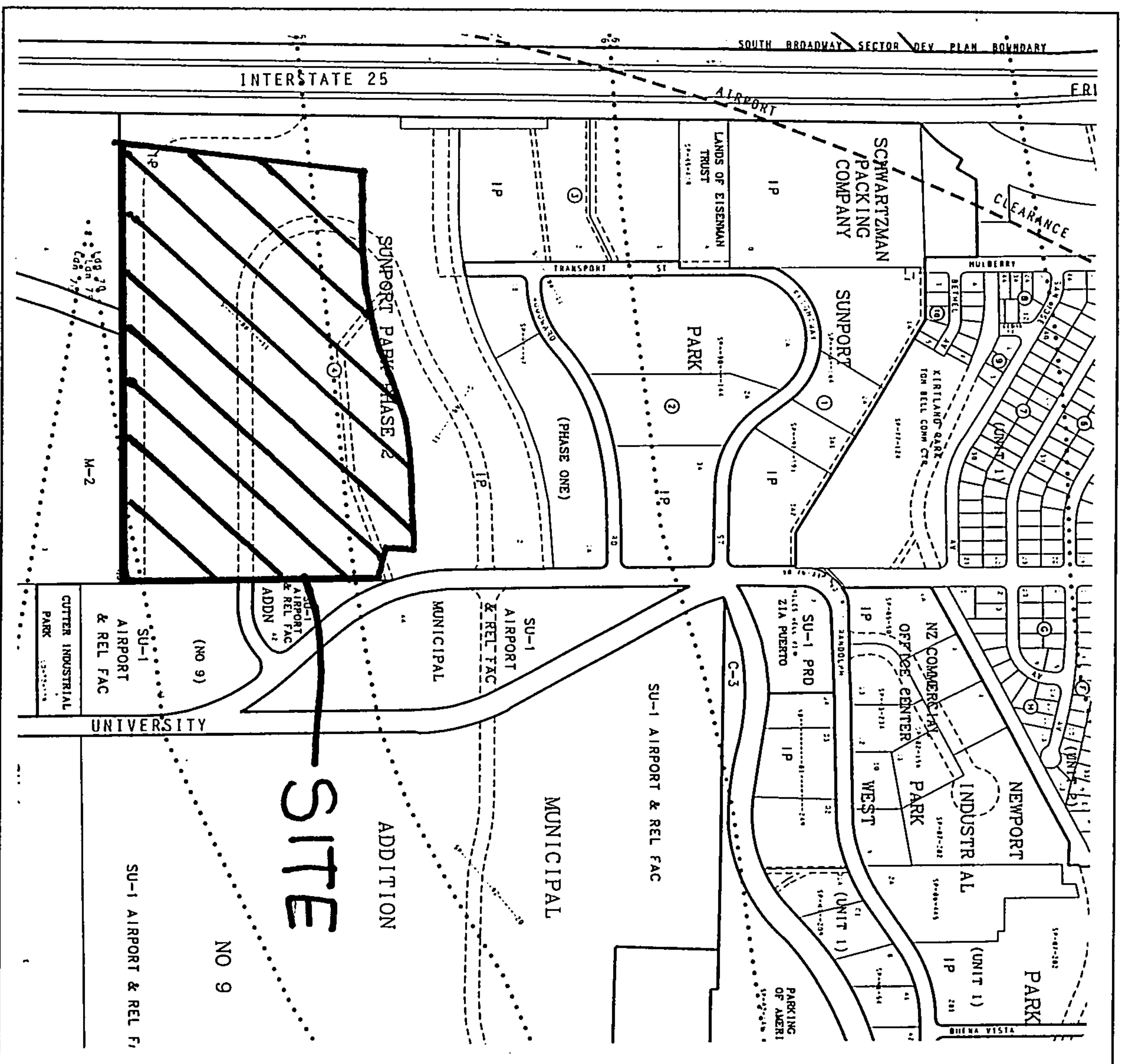
Summary of Flows

Basin	Description	100 yr/6 hr peak flow
1	5.4 acres of site to drain to Sunport storm drain	25.4 cfs
2	17.1 acres to drain to proposed storm drain	80.4 cfs
3	21.3 acres to drain to proposed storm drain	100.1 cfs
4	4.9 acres to drain to proposed storm drain	23.0 cfs
C	8.5 acre offsite basin to drain to proposed storm drain	37.3 cfs
pond	proposed detention pond to discharge to proposed storm drain	146.5 cfs
2-60"	2-60" culverts to discharge to detention pond	256.3 cfs
SD	existing Sunport Boulevard storm drain	278.2 cfs

TEMPORARY EROSION CONTROL PLAN

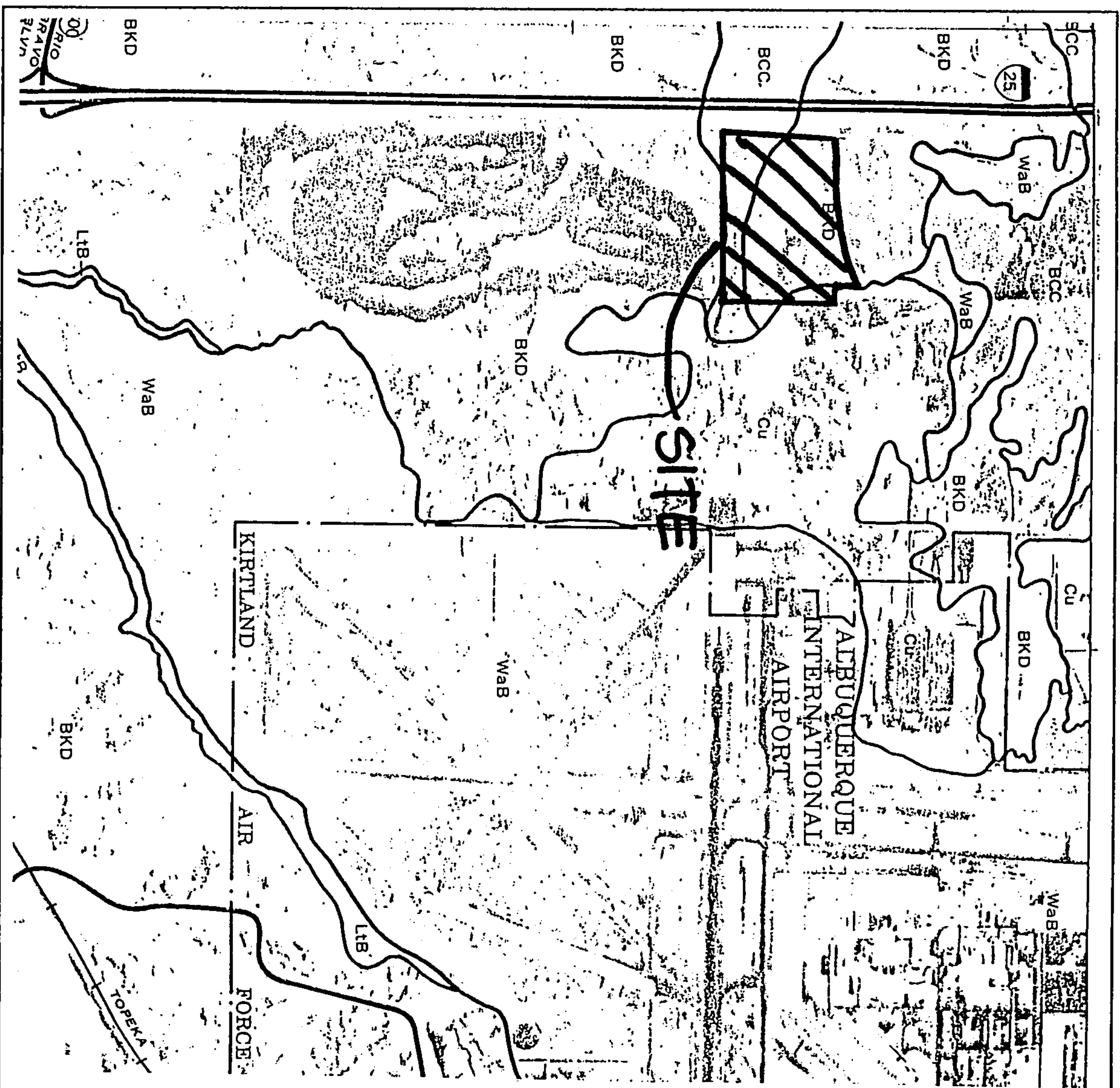
1. The intent of this temporary erosion control plan is to limit the discharge of sediment into the public street and/or storm drainage system and to protect adjacent properties from excess runoff during construction.
2. The Contractor shall obtain a Top Soil Disturbance Permit from Environmental Health prior to performing any earthwork related operations.
3. After the initial site clearing, the temporary erosion control facilities should be constructed per Detail C/3 to direct excess runoff and sediment the outfall locations.
4. It is the Contractor's responsibility to properly maintain all temporary erosion control facilities during the construction phase of the project.

MAPS

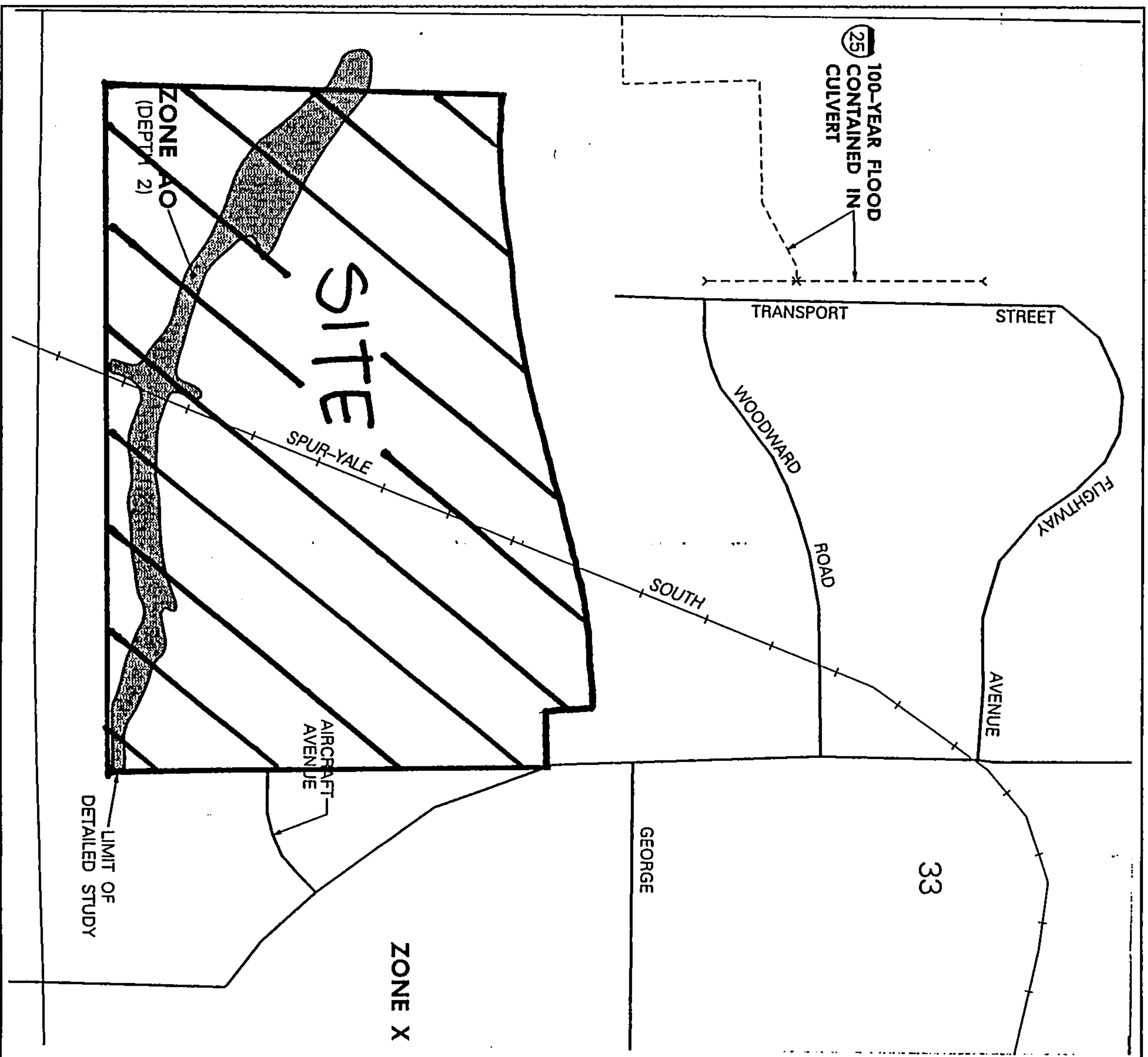


LOCATION MAP

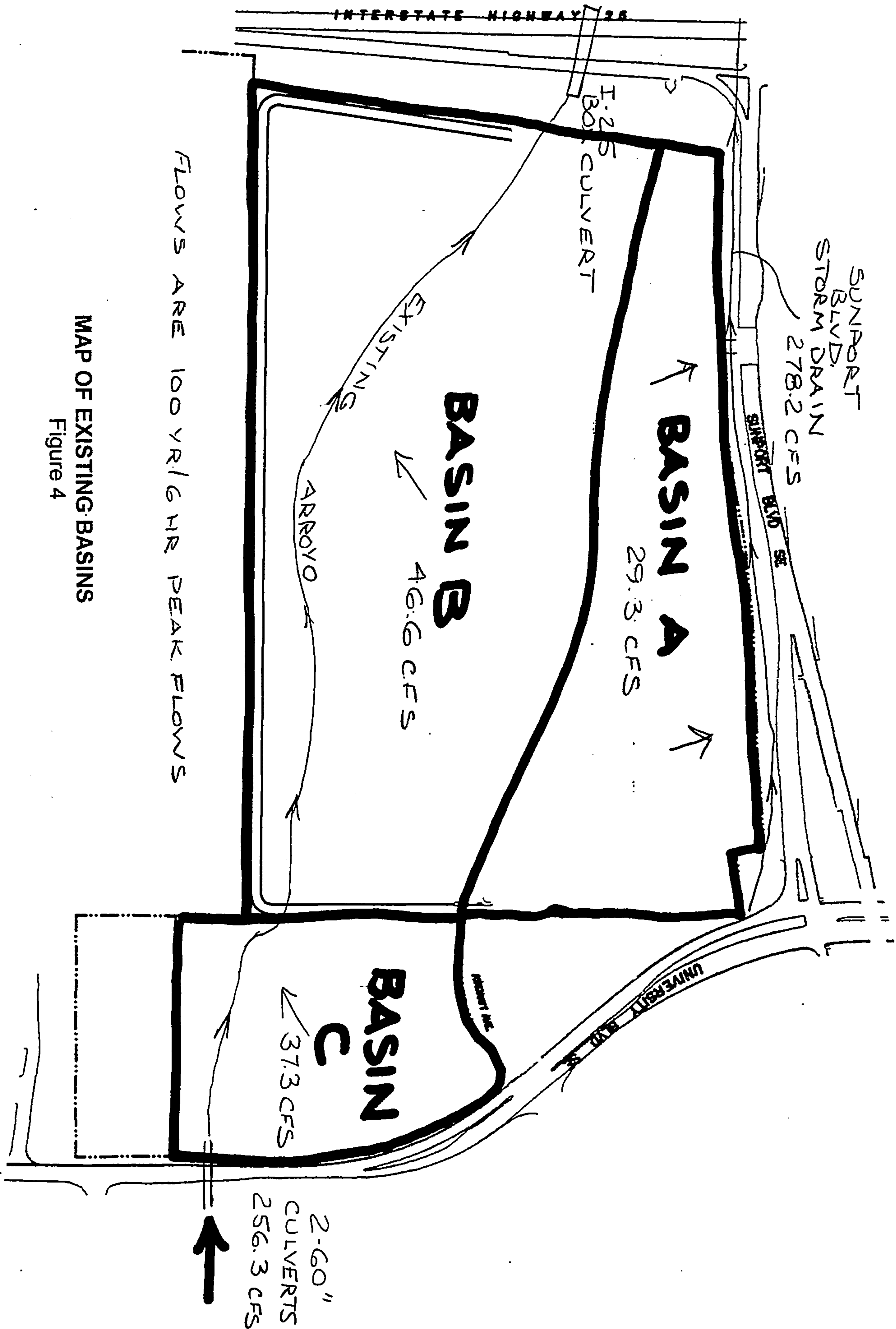
Figure 1



SOILS MAP
Figure 2



FLOOD INSURANCE RATE MAP
Figure 3



MAP OF EXISTING BASINS
Figure 4

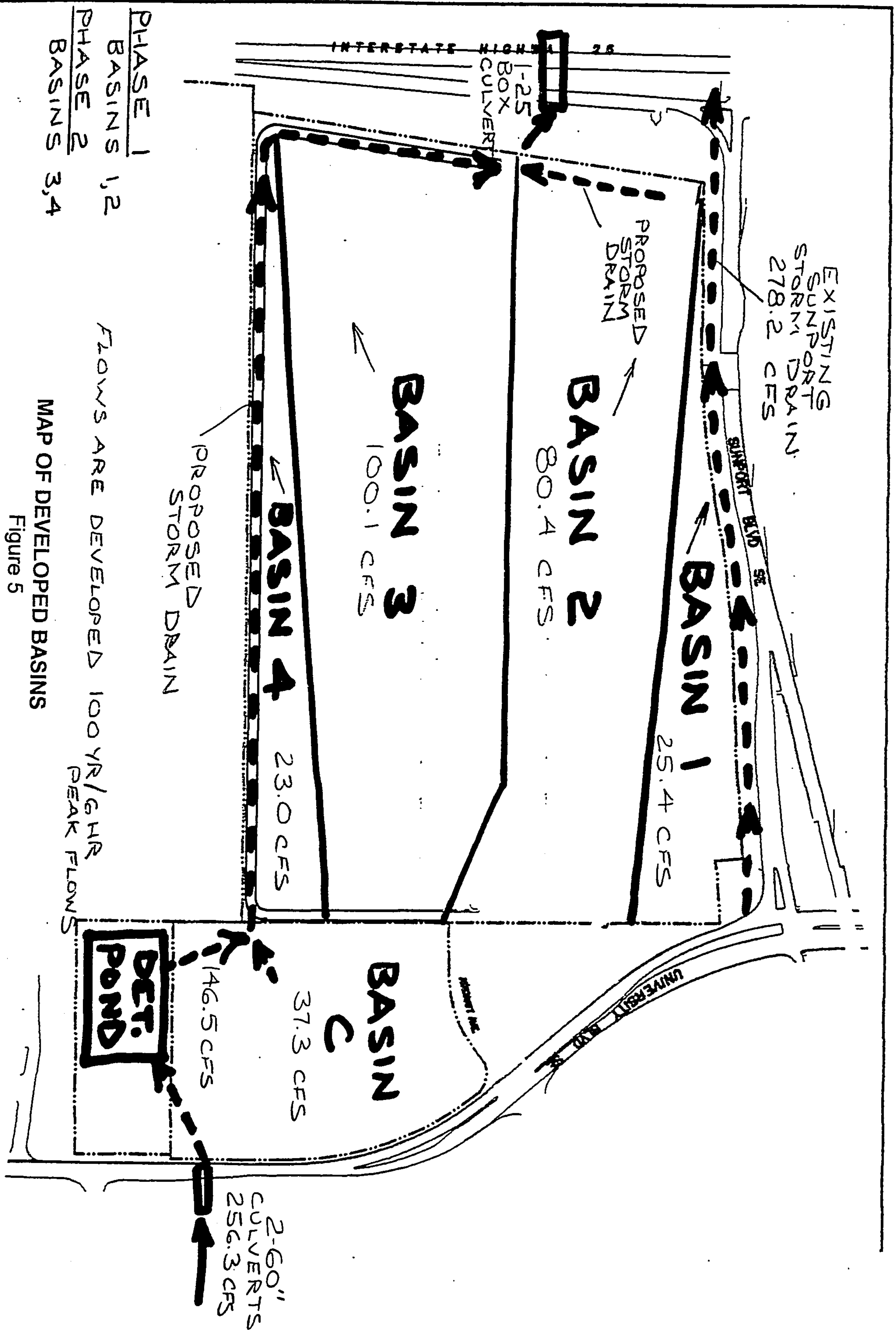
Flows are 100 yr/6 hr peak flows

PHASE 1
BASINS 1,2
PHASE 2
BASINS 3,4

Flows are developed 100 YR/6 HR
PEAK FLOWS

MAP OF DEVELOPED BASINS

Figure 5



CALCULATIONS

TABLE 1
CALCULATION OF 100 YR/6HR FLOWS (PER DPM)

HYDROLOGY									
(HYMO)									
Precipitation Zone 2					P360 = 2.35 in				
Basin	Basin	Land Treatment			Ew	V100	Q100		
	area (Ac)	A	B	C	D	(in)	(af)	(cfs)	
Existing Conditions									
A	18.8	18.8				0.53	0.83	29.33	
B	29.9	29.9				0.53	1.32	46.64	
C	8.5	8.5				0.53	0.38	13.26	
Develped Conditions									
1	5.4				5.4	2.12	0.95	25.38	
2	17.1				17.1	2.12	3.02	80.37	
3	21.3				21.30	2.12	3.76	100.11	
4	4.9				4.90	2.12	0.87	23.03	
C	8.5			1.70	6.80	1.92	1.36	37.30	

SEE FIG. 4 AND 5 FOR MAP
OF BASINS.

6039

STORM SEWER SUMMARY REPORT

RAINFALL FILE: C:\6039SD.rnd

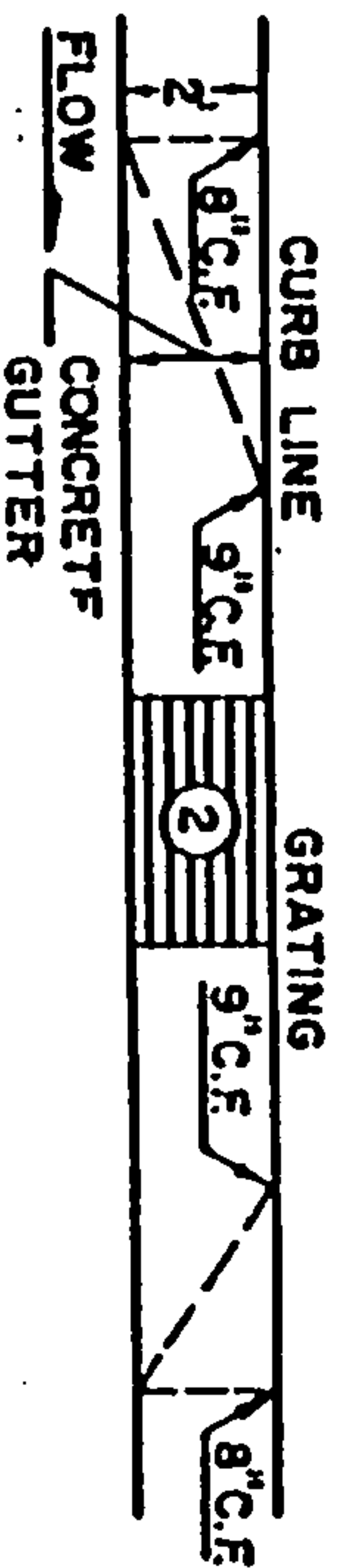
0 YEAR DESIGN STORM

I = 0.000 / (Tc + 0.000) = 0.000

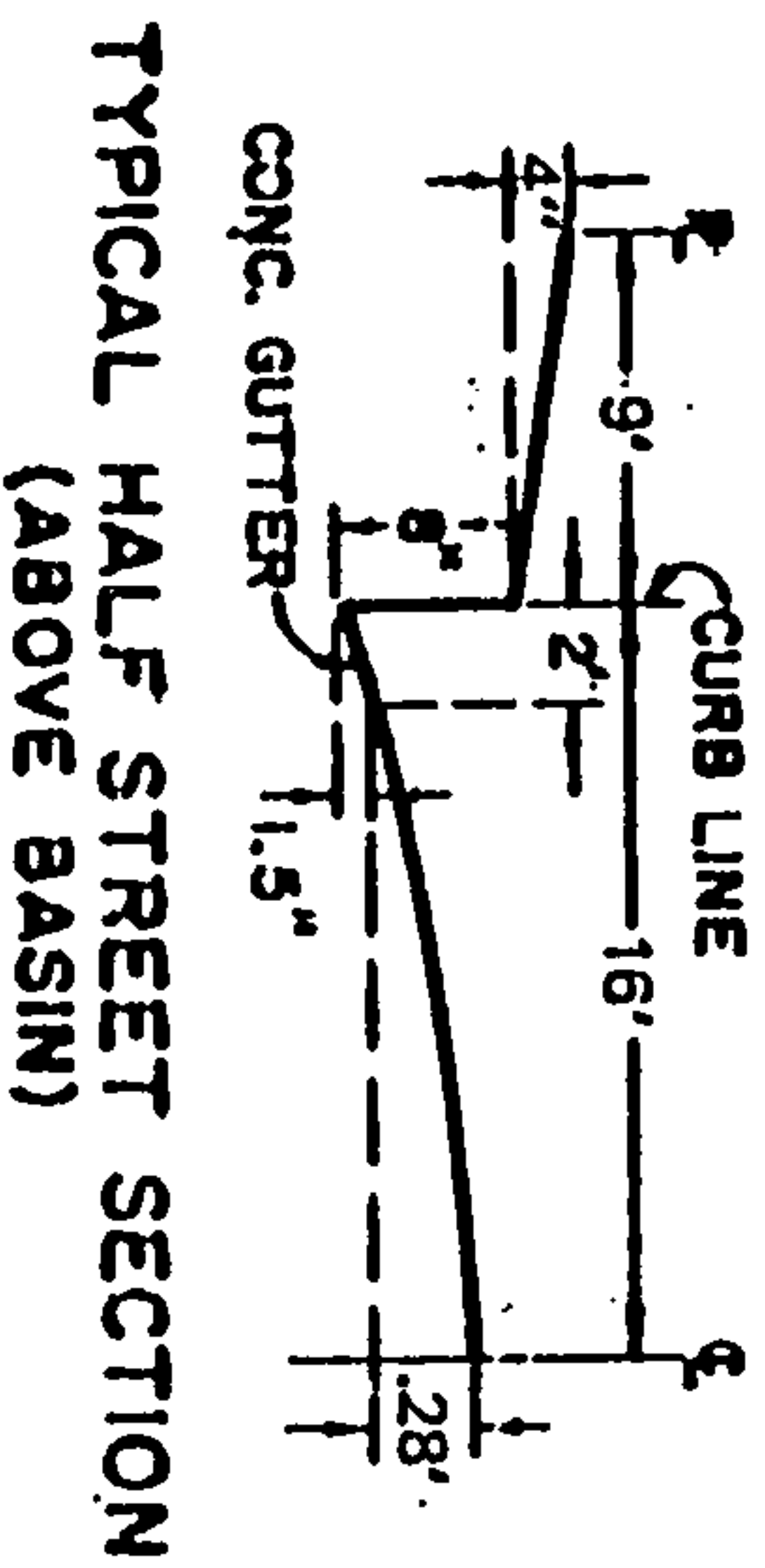
LINE ID		FLOW RATE INFO						PIPE INFO		HYDRAULIC INFO					
LINE#	DESCRIPTION DOWNLINE#	INC AR TOT AR (ac)	RUNOFF WEIGHTD C	INLET Tc (min)	INLET I TOTL I (in/h)	INC CIA TOT CIA (cfs)	INPUTQ TOTALQ (cfs)	UNIFORM FLOWCAP (cfs)	SIZE/ TYPE (in)	INVERT UP/DOWN (ft)	PIPE LEN (ft)	NVAL INVSLOP (ft/ft)	HGTSLOPE JIC (ft/ft)	HYD GRD UP/DOWN (ft)	VEL UP/DOWN (ft/s)
1	DNIN = 0	0.0	0.00	0.00	0.00	0.00	33.00	368.5	54D	57.27	158	0.013	0.035	60.37	25.86
2	DNIN = 1	0.0	0.00	0.00	0.00	0.00	33.00	269.1	48D	64.05	193	0.013	0.035	67.33	24.40
3	DNIN = 2	0.0	0.00	0.00	0.00	0.00	42.00	268.7	48D	70.81	193	0.013	0.035	73.71	24.14
4	DNIN = 3	0.0	0.00	0.00	0.00	0.00	0.00	269.0	48D	76.62	166	0.013	0.035	79.14	23.31
5	DNIN = 4	0.0	0.00	0.00	0.00	0.00	9.00	269.0	48D	98.17	614	0.013	0.035	100.69	23.31
6	DNIN = 5	0.0	0.00	0.00	0.00	0.00	38.00	188.4	42D	142.05	1250	0.013	0.035	144.86	22.35
7	DNIN = 6	0.0	0.00	0.00	0.00	0.00	147.00	188.4	42D	151.00	255	0.013	0.044	157.16	15.45

STORM DRAIN ANALYSIS
: (EAGLE POINT)

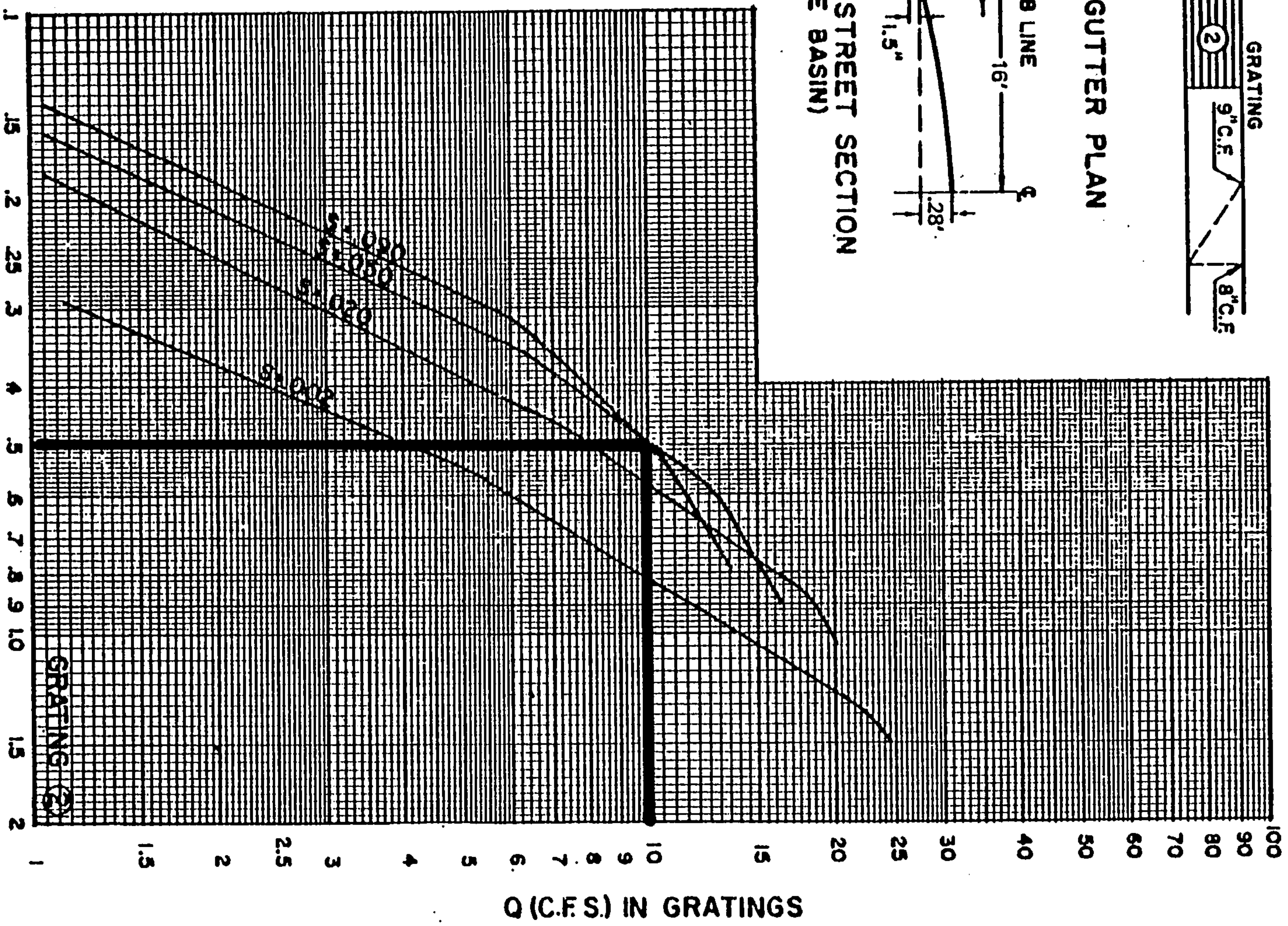
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



D=DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

5% SLOPE, 6" CURB, TYPE A INLET
CAPACITY = 10 C.F.S.

6039
POND NEAR SE CNR

Direct TIN Batchworks DCA DTM 386 Ver 11.0 Project: 6039POND	
Surface 1: A	Surface 2: B
Min. X: 17992.2573 Min. Y: 14046.4250 Max. X: 18338.8028 Max. Y: 14243.0869 Random Points: - Fault Points: - Contour Points: 63 Total: 63 Min. Elev.: 5159.0000 Max. Elev.: 5159.0000 Mean Elev.: 5159.0000	Min. X: 17992.2573 Min. Y: 14046.4250 Max. X: 18338.8028 Max. Y: 14243.0869 Random Points: - Fault Points: - Contour Points: 99 Total: 99 Min. Elev.: 5151.0000 Max. Elev.: 5159.0000 Mean Elev.: 5156.0909
Calculating Projected Volumes. Complete: 100% Cut: 12965.380215 cu.yds. Fill: 0.000000 cu.yds. Net: 12965.380215 cu.yds. (CUT)	
Volume calculations done. Press any key to continue... Copyright (c) 1991 by Softdesk, Inc.	

CAPACITY OF POND 8.04 AC FT.

ABOVE CALCULATIONS VERIFY
CAPACITY OF DETENTION POND
(SOFTDESK D.C.A.)

CALCULATIONS FOR SIZING DETENTION POND

AHYMO PROGRAM (AHYMO194) - AMAPCA Hydrologic Model - January, 1994
RDN DATE (MON/DAY/YR) = 01/29/1997
START TIME (HR:MIN:SEC) = 14:55:25
USER NO. = BRASHERR.101
(INPUT HYDROGRAPHS FROM MOLZEN-CORBIN AIA DMP)

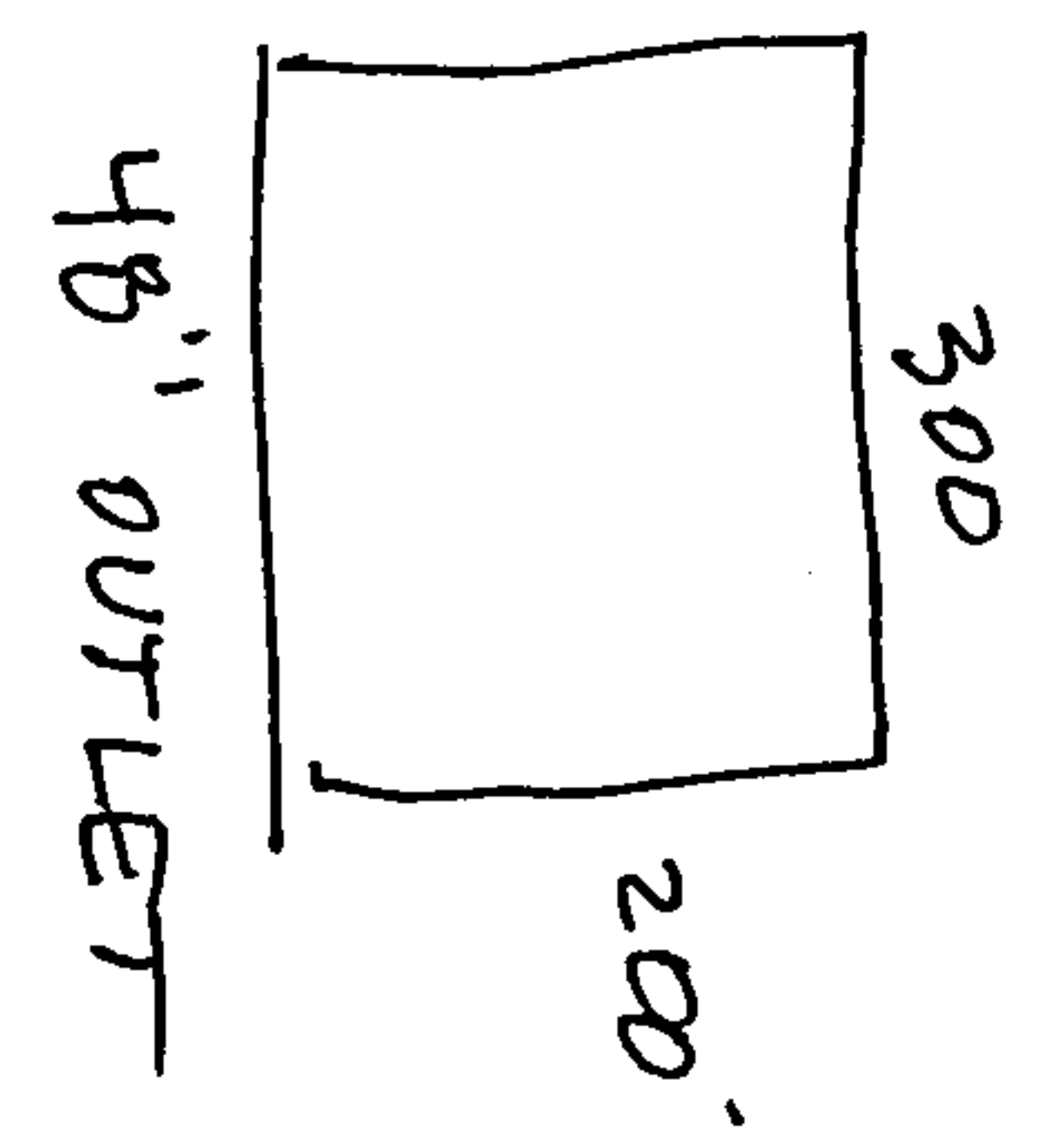
INPUT FILE = 6039-P2.DAT

SUNPORT PARK
PROJECT HYDROLOGY

START TIME=0.0 PUNCH CODE=0
TYPE=1 RAIN QUARTER=0.0 RAIN ONE=2.01
RAIN SIX=2.35 RAIN DAY=2.75 DT=0.03333 HRS

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	.0049	.0066	.0084	.0102
.0120	.0139	.0158	.0178	.0199	.0219	.0241
.0263	.0286	.0309	.0333	.0358	.0384	.0411
.0439	.0467	.0497	.0529	.0561	.0596	.0631
.0669	.0709	.0751	.0807	.0866	.0930	.1066
.1371	.1840	.2514	.3434	.4644	.6186	.8106
1.0449	1.2624	1.3533	1.4300	1.4982	1.5602	1.6174
1.6704	1.7200	1.7664	1.8102	1.8514	1.8904	1.9273
1.9622	1.9953	2.0268	2.0566	2.0850	2.0915	2.0976
2.1033	2.1088	2.1140	2.1191	2.1239	2.1285	2.1329
2.1373	2.1414	2.1454	2.1494	2.1531	2.1568	2.1604
2.1639	2.1673	2.1706	2.1739	2.1771	2.1802	2.1832
2.1862	2.1891	2.1919	2.1947	2.1975	2.2002	2.2028
2.2054	2.2080	2.2105	2.2130	2.2154	2.2178	2.2202
2.2225	2.2248	2.2270	2.2293	2.2315	2.2336	2.2358
2.2379	2.2399	2.2420	2.2440	2.2460	2.2480	2.2500
2.2519	2.2538	2.2557	2.2576	2.2594	2.2612	2.2631
2.2648	2.2666	2.2684	2.2701	2.2718	2.2735	2.2752
2.2769	2.2785	2.2802	2.2818	2.2834	2.2850	2.2866
2.2881	2.2897	2.2912	2.2928	2.2943	2.2958	2.2973
2.2987	2.3002	2.3017	2.3031	2.3045	2.3060	2.3074
2.3088	2.3102	2.3115	2.3129	2.3143	2.3156	2.3169
2.3183	2.3196	2.3209	2.3222	2.3235	2.3248	2.3261
2.3273	2.3286	2.3298	2.3311	2.3323	2.3335	2.3348
2.3360	2.3372	2.3384	2.3396	2.3408	2.3419	2.3431
2.3443	2.3454	2.3466	2.3477	2.3488	2.3500	



* UNDEVELOPED SITE
COMPUTE NM HYD ID=1 HYD NO=EX SITE DA=0.076039 SQ MI
PER A=100 PER B=0 PER C=0 PER D=0
TP=-0.1333 HR MASS RAIN=-1

K = .158514HR TP = .133300HR K/TP RATIO = 1.189152 SHAPE CONSTANT, N = 2.986035
UNIT PEAK = 160.11 CFS UNIT VOLUME = .9997 B = 280.68 P60 = 2.0100
AREA = .076039 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* DEVELOPED BASIN 'A'
COMPUTE NM HYD ID=2 HYD NO=DEV.A DA=0.025 SQ MI
PER A=0 PER B=7 PER C=8 PER D=85
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 83.896 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 2.0100

AREA = .021250 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 9.9427 CFS UNIT VOLUME = .9992 B = 353.43 P60 = 2.0100
AREA = .003750 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* DEVELOPED BASIN "B"

COMPUTE NM HYD ID=3 HYD NO=DEV.B DA=0.051039 SQ MI
PER A=0 PER B=7 PER C=8 PER D=85
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 171.28 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 2.0100
AREA = .043383 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 20.299 CFS UNIT VOLUME = .9998 B = 353.43 P60 = 2.0100
AREA = .007656 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* DEVELOPED BASIN "C"

COMPUTE NM HYD ID=4 HYD NO=DEV.C DA=0.003469 SQ MI
PER A=0 PER B=7 PER C=8 PER D=85
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 11.641 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 2.0100
AREA = .002949 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 1.3797 CFS UNIT VOLUME = .9904 B = 353.43 P60 = 2.0100
AREA = .000520 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* DEVELOPED BASIN "D"

COMPUTE NM HYD ID=5 HYD NO=DEV.D DA=0.013648 SQ MI
PER A=0 PER B=7 PER C=8 PER D=85
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .45.801 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 2.0100
AREA = .011601 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 5.4279 CFS UNIT VOLUME = .9980 B = 353.43 P60 = 2.0100
AREA = .002047 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* OFF-SITE BASIN "WE"

STORE HYD ID=6 HYD NO=WE.EX DT=0.333 HR DA=0.3602 SQ MI
FLOW RATES= 0 0 0 2.3 234.1 231 162.3 100.9

71.8 57.4 45.3 34.2 24.5 19.7 15.8 12.6 9.4 7.2
5.6 3.7 2.4 1.6 1.6 .4 .3 .2 .1 .1 .1 0

* ROUT BASIN "WE" THRU POND

ROUTE RESERVOIR ID=7 HYD NO=POND.OUT INFLOW ID=6 CODE=5

OUTFLOW (CFS)	STORAGE(AF)	ELEV (FT)
0	0	100
85.6	3.531	104
104.8	4.563	105
121.0	5.660	106
135.3	6.824	107
148.2	8.057	108
160.1	9.363	109
171.1	10.744	110

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	100.00	.000	.00
1.66	234.10	102.78	2.451	59.42
3.33	57.40	105.16	4.738	107.39
4.99	15.80	101.21	1.066	25.85
6.66	3.70	100.32	.285	6.90
8.32	.40	100.05	.043	1.05
9.99	.10	100.01	.006	.15
11.65	.00	100.00	.000	.01

PEAK DISCHARGE = 146.501 CFS - PEAK OCCURS AT HOUR 2.33
MAXIMUM WATER SURFACE ELEVATION = 107.868
MAXIMUM STORAGE = 7.8946 AC-FT
INCREMENTAL TIME= .333000HRS

PRINT HYD

ID=1 CODE=10

HYDROGRAPH FROM AREA EX.SITR

STORAGE REQUIRED BY DETENTION POND

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.0	2.666	1.7	4.000	.1
.333	.0	1.666	43.7	3.000	.9	4.333	.1
.667	.0	2.000	7.2	3.333	.4	4.666	.0
1.000	.0	2.333	3.5	3.666	.2	5.000	.0

RUNOFF VOLUME = .53121 INCHES = 2.1543 ACRES-DEPT
PEAK DISCHARGE RATE = 76.28 CFS AT 1.533 HOURS BASIN AREA = .0760 SQ. MI.

PRINT HYD

ID=2 CODE=10

HYDROGRAPH FROM AREA DEV.A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	35.9	3.333	.5	5.000	.4
.333	.0	2.000	16.6	3.666	.4	5.333	.4
.667	.0	2.333	3.6	4.000	.4	5.666	.4
1.000	.0	2.666	1.5	4.333	.4	5.999	.4
1.333	20.1	3.000	.8	4.666	.4	6.333	.1

RUNOFF VOLUME = 1.94031 INCHES = 2.5871 ACRES-DEPT

PEAK DISCHARGE RATE = 70.46 CFS AT 1.500 HOURS BASIN AREA = .0250 SQ. MI.

PRINT HYD ID=3 CODE=10

HYDROGRAPH FROM AREA DEV. B

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	73.3	3.333	1.1	5.000	.8	6.666	.0
.333	.0	2.000	34.0	3.666	.9	5.333	.8	6.999	.0
.667	.0	2.333	7.3	4.000	.8	5.666	.9		
1.000	.0	2.666	3.0	4.333	.7	5.999	.9		
1.333	41.1	3.000	1.6	4.666	.7	6.333	.1		

RUNOFF VOLUME = 1.94031 INCHES = 5.2816 ACRES-FEET
PEAK DISCHARGE RATE = 143.83 CFS AT 1.500 HOURS BASIN AREA = .0510 SQ. MI.

PRINT HYD ID=4 CODE=10

HYDROGRAPH FROM AREA DEV. C

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	5.0	3.333	.1	5.000	.1	6.666	.0
.333	.0	2.000	2.3	3.666	.1	5.333	.1		
.667	.0	2.333	.5	4.000	.1	5.666	.1		
1.000	.0	2.666	.2	4.333	.1	5.999	.1		
1.333	2.8	3.000	.1	4.666	.1	6.333	.0		

RUNOFF VOLUME = 1.94031 INCHES = .3590 ACRES-FEET
PEAK DISCHARGE RATE = 9.79 CFS AT 1.500 HOURS BASIN AREA = .0035 SQ. MI.

PRINT HYD ID=5 CODE=10

HYDROGRAPH FROM AREA DEV. D

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	19.6	3.333	.3	5.000	.2	6.666	.0
.333	.0	2.000	9.1	3.666	.2	5.333	.2	6.999	.0
.667	.0	2.333	1.9	4.000	.2	5.666	.2		
1.000	.0	2.666	.8	4.333	.2	5.999	.2		
1.333	11.0	3.000	.4	4.666	.2	6.333	.0		

RUNOFF VOLUME = 1.94031 INCHES = 1.4123 ACRES-FEET
PEAK DISCHARGE RATE = 38.47 CFS AT 1.500 HOURS BASIN AREA = .0136 SQ. MI.

PRINT HYD ID=6 CODE=2

HYDROGRAPH FROM AREA WE. EX

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.664	100.9	5.328	12.6	7.992	.6		
.666	.0	3.330	57.4	5.994	7.2	8.658	.3		
1.332	2.3	3.996	34.2	6.660	3.7	9.324	.1		
1.998	231.0	4.662	19.7	7.326	1.6	9.990	.1		

RUNOFF VOLUME = 1.49647 INCHES = 28.7479 ACRE-FEET
 PEAK DISCHARGE RATE = 234.10 CFS AT 1.665 HOURS BASIN AREA = .3602 SQ. MI.

PRINT HYD ID=7 CODE=2

HYDROGRAPH FROM AREA POND.OUT

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.664	142.8	5.328	20.0	7.992	1.6	10.656	.1
.666	.0	3.330	107.4	5.994	11.9	8.658	.7	11.322	.0
1.332	.6	3.996	62.3	6.660	6.9	9.324	.3	11.988	.0
1.998	128.4	4.662	34.0	7.326	3.5	9.990	.2		

RUNOFF VOLUME = 1.49647 INCHES = 28.7479 ACRE-FEET
 PEAK DISCHARGE RATE = 146.50 CFS AT 2.331 HOURS BASIN AREA = .3602 SQ. MI.

OUTFLOW FROM PROPOSED
 DETENTION POND TO PROPOSED
 STORM DRAIN

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 14:55:26

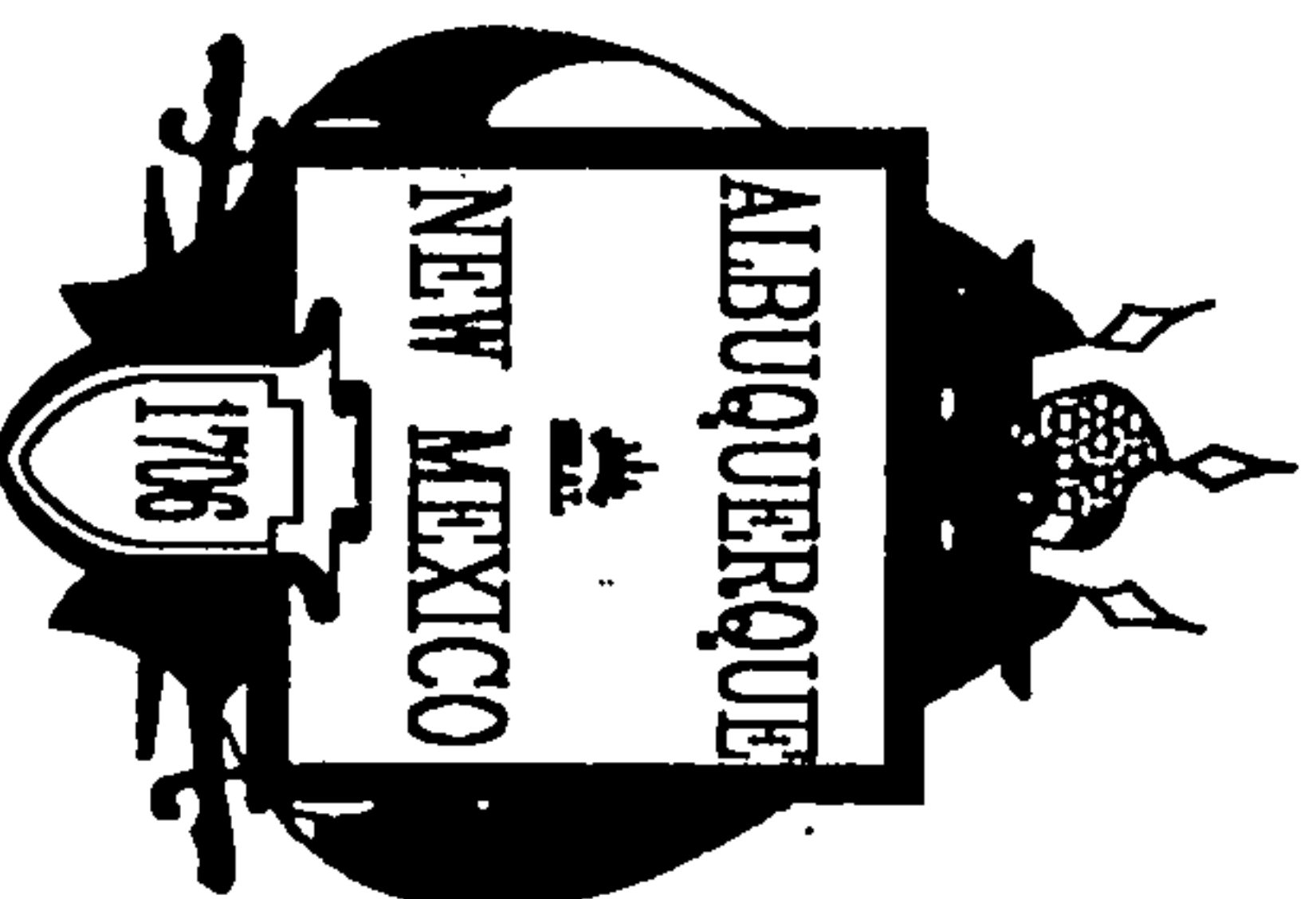
ALBUQUERQUE
INTERNATIONAL AIRPORT

**STORM DRAINAGE
MASTER PLAN**
Project No. 4255.01

City of Albuquerque, NM
Aviation Department

May 1995

(PERTINENT EXCERPTS)



SUB-BASIN NO.	AREA (sq mi)	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
512						2-60" CLV	University crossing
513						surface	E of Univ, S of 8-26 overrun
514						arroyo	W of Univ
515						3-36" CLV	E of I-25
516							I-25
517						3-36" CLV	W of I-25
518						SDC	
Σ	0.3602	149.3	256.3	15.88	28.510	Open Chan.	to South Diversion Channel

G. **35SE Basin.** This 0.24 square mile basin includes a small area just east of Runway 17-35. The existing drainage system drains the area only after considerable ponding occurs along Taxiway E and an extension will be constructed to provide additional inlet capacity. This extension (28 cfs capacity) was connected to the existing system. The additional runoff volume generated by the 100 year, 6 hour design storm will be contained in the existing island. The necessary improvements in this basin were made with the Taxiway E construction project.

TABLE III-6
Basin 35SE

SUB-BASIN NO.	AREA (sq mi)	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
601						36" SD	SE cor 17-35/8-26
602						24" SD	SW cor 17-35/8-26
603						18" SD	W of 602
604						42" SD	17-35/3-21/TW E
605						24" SD	W of 17-35
606						24" SD	E of 3-21
607						24" SD	SE end 12-30
608						42" SD	12-30
609						24" SD	S of 12-30, E of 17-35
610						48" SD	E of 17-35
611						48" SD	Escarpment

F. WE Basin. The WE Basin incorporates the area south and west of the existing terminal area with boundaries of Runway 12-30 to the south, Taxiway C to the east, the existing terminal building to the north and its discharge point to the South Diversion Channel to the west.

Changes to the facilities in this basin that are proposed under the Master Plan include the demolition of the old Air Freight Building located within subbasin 505. Extension of the existing storm drain system is recommended to follow the demolition of the building to relieve ponding occurring on the terminal apron between the B and C concourses. The extension of the drain (a 36-inch enlarged to a 42-inch connecting to the existing 60-inch) was planned during the Taxiway E Improvements project. A stub was installed at the 60-inch tee constructed near the northwest corner of Runway 8.

Downstream of the airfield, WE Basin discharges into a rip-rap lined channel and detention pond east of University Blvd. In order to maintain the future flows to near existing conditions, it is recommended that a restrictor plate be installed upstream. A 48-inch equivalent orifice installed at the 60" x 60" x 48" junction near the southwest corner of Runway 8 would help maintain existing conditions.

There is expected to be development west of University Blvd. in the Sunport Business Park, specifically in subbasins 514 and 515. Discussions between the developer and the City indicate that the natural arroyo that carries the basin discharge may be relocated to the south property boundary, approximately on the southern border of subbasins 514 and 515. The channel will run west until it nears Interstate 25 where it will be turned north to discharge through the Interstate at the 6' x 8' concrete box culvert. The future conditions modelling does not indicate the relocation of the arroyo and does not indicate that there will be any capacity problems at the Interstate crossing.

The Table IV-2 indicates the addition of the storm drain into subbasin 504 from the 60-inch drain. There are not any other improvements recommended as far as new drain systems in WE basin.

TABLE IV-2
Improvements to WE Basin

SUBBASIN NO.	PIPE DIAMETER	FLOW, 10 AND 100-YEAR, cfs	COMMENTS
504-505A	36-inch	39.2 (10) 43.4 (100)	Pipe to collect discharge from subbasin 504.
505A-60" tee	42-inch	57.6 (10) 59.0 (100)	Pipe collects NW corner of 505

G. GA Basin. The Master Plan identifies several parcels within the GA Basin which are recommended for development. With these parcels developed, the GA Basin should be

accommodate future, additional flows under the master plan, a portion of the system has been upsized to accept runoff from areas scheduled for future development. The 24" outfall has been replaced with a 60" outfall that is sized to meet master plan requirements. Until the downstream drainage system and the matter of the unplatted arroyo is settled, an orifice plate should be installed to restrict the flow to existing levels. The storage capacity in the islands will be utilized to hold the peak discharge rate that exceeds the capacity of the orifice plate with this stored volume being released after the discharge rate falls below the orifice capacity. This 60" pipe discharges to a rip-rap lined channel that eventually outfalls at the University Boulevard culvert crossing. Several small arroyos within the escarpment area are intercepted by this channel. As a result of this project, the design flow in the channel is 166 cfs. The master plan discharge to be carried by the channel to the crossing is 347 cfs. Under the master plan, the additional runoff volume generated by the 100 year, 6 hour design storm will be contained in the islands.

Currently, subbasin 504, located between concourse C and B, has ponding problems during typical storms. A shallow swale carries the stormwater southwest from this portion of the terminal apron to an inlet and 24" drain in Subbasin 505. The flat grade and resulting shallow depth of the swale do not allow adequate drainage. Concern expressed by the Aviation Department over the life of the pavement with substantial ponding occurring concrete bring this situation up for resolution.

A tee installed during the Taxiway E project near the west end of Runway 8 can be extended to this area. See Section IV for specific details on this improvement.

TABLE III-5
WE Basin

SUB-BASIN NO.	AREA (sq mi)	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
501	0.0430	77.56	121.58	2.679	4.384	24" SD	N side of 17-35/8-26
502	0.0810	61.20	94.09	4.833	8.001	54" SD	N side 8-26 W of 17-35
503	0.1020	78.32	115.51	6.312	10.348	30" SD	Terminal N ramp
504	0.0220	43.53	66.47	1.550	2.459	Surface	Terminal W ramp
505	0.1480	100.38	139.44	9.460	15.378	60" SD	8-26 W overrun
506	0.2692	159.48	246.62	14.497	24.721	60" SD	8-26 W overrun
507	0.0250	28.65	49.86	1.005	1.892	24" SD 18" SD	SW cor 17-35/8-26
508	0.0770	43.41	69.07	3.335	6.112	48" SD	S side 8-26
509	0.2372	139.91	202.20	13.537	22.713	48" SD	W end 12-30
510	0.2932	168.12	272.60	14.955	25.867	54" SD	S of 8-26 W overrun
511	0.3032	171.55	284.60	15.118	26.305	54" SD 24" SD	W 8-26 overrun, E of Univ

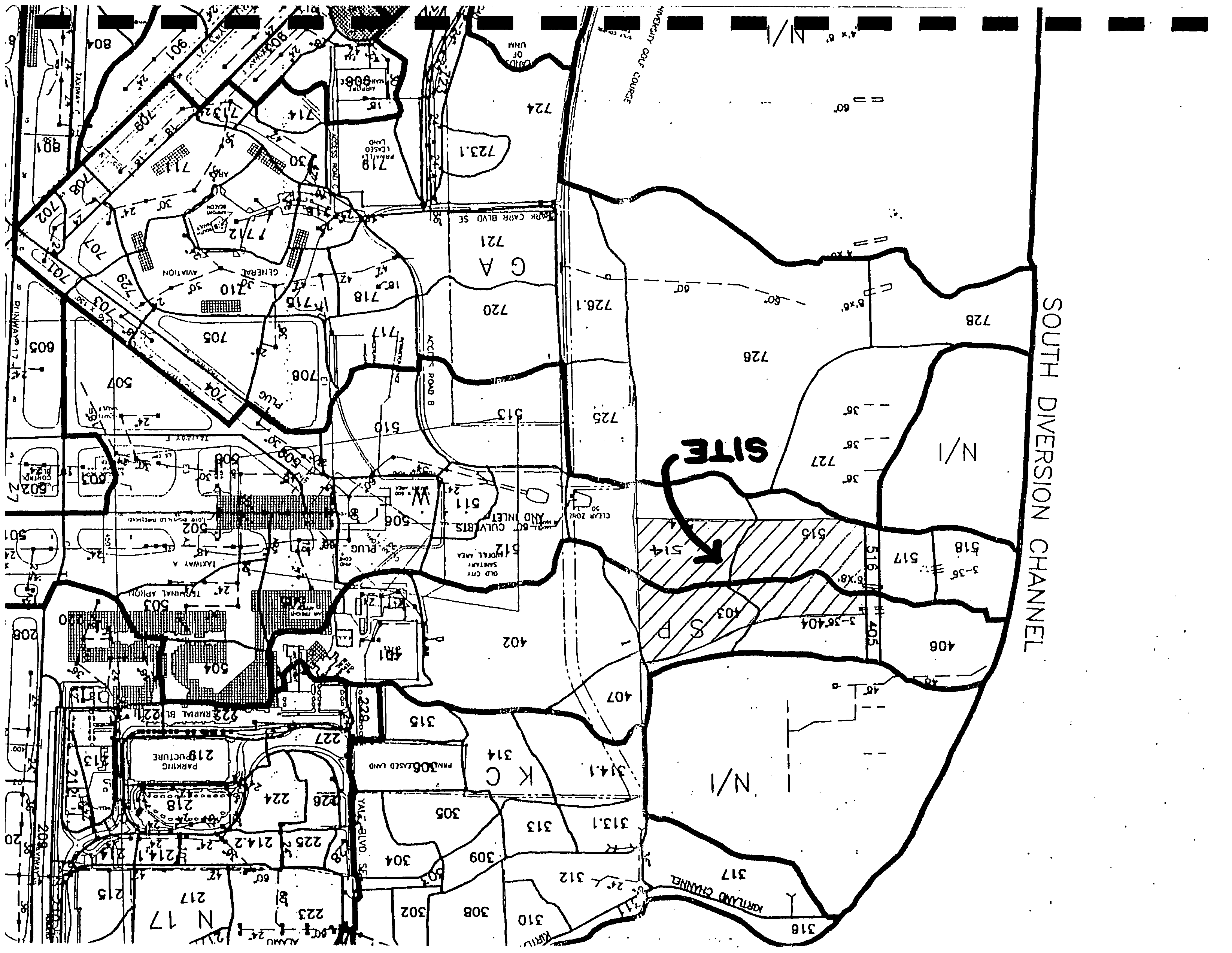
TABLE III-15
Far East Basin

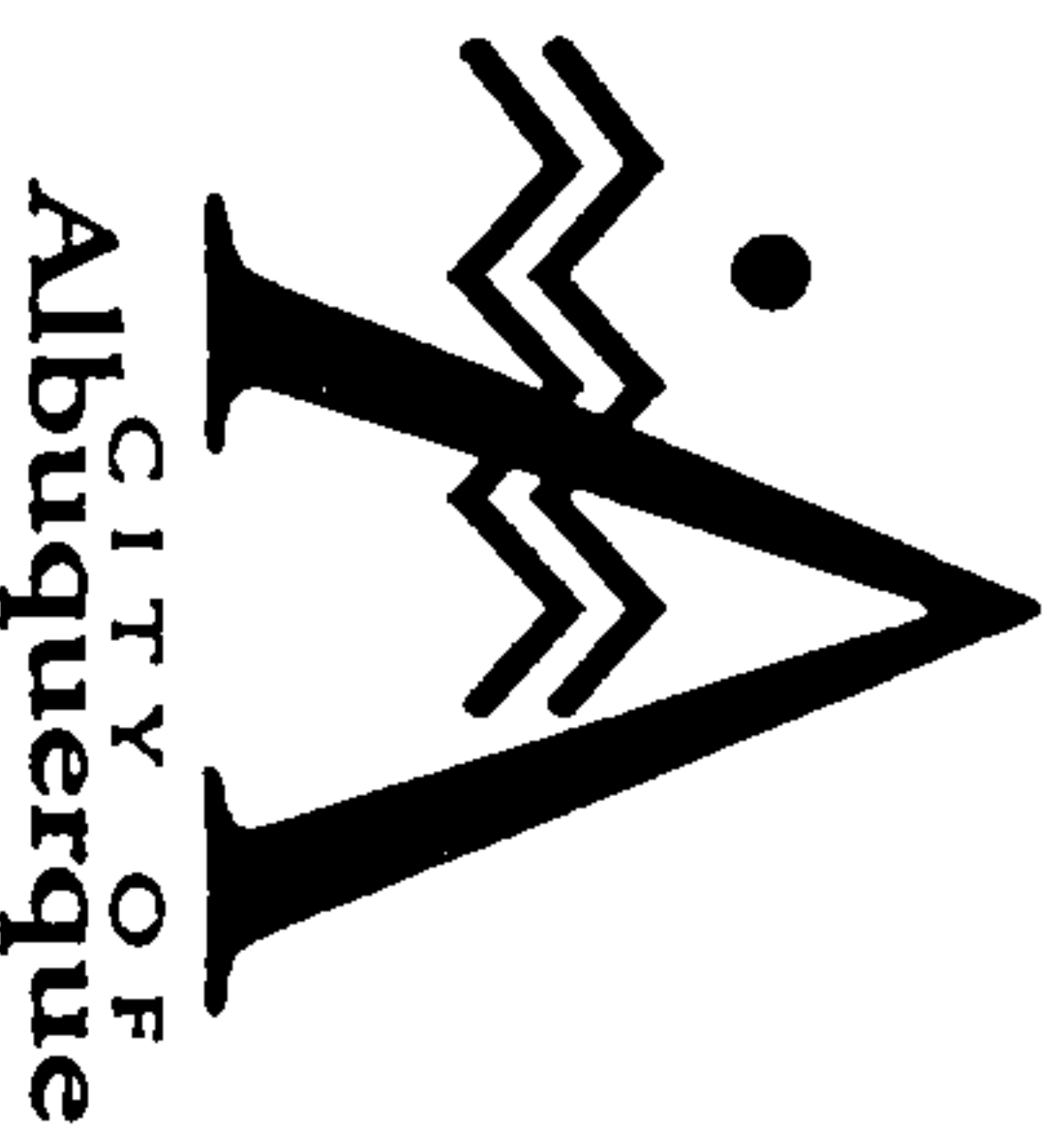
SUB-BASIN NO.	AREA (sq mi)	Q ₈₈ (cfs)	Q ₁₀₀ (cfs)	V ₁₀ (ac-ft)	V ₁₀₀ (ac-ft)	OUTFALL	DESCRIPTION
1700	0.2260	79.46	153.96	9.261	17.265	30" SD 48" SD	NE of R/W 8-26 end
1701	0.0160	24.24	40.13	0.772	1.363	54" SD	SE of R/W 8-26 end
Σ	0.2420	46.40	96.82	10.03	18.628	54" SD	to KAFB

R. Other Areas. There are numerous other drainage areas which are technically inside the airport property and drain offsite. These areas include those steep slopes along the side of Tijeras Arroyo between the airport and the railroad at the toe of this slope. These areas do not affect airport activities, and in most cases, are not impacted by airport activities. A summary of these drainage areas is shown in the following table.

S. Summary of Existing Area Problems. The following is a summary of the problems encountered in the existing system.

- Basin G17.** The storm sewer collecting runoff from the areas around the extreme north end of Runway 17-35 discharges into the storm sewer in Gibson Boulevard. Approximately half way between Yale and Girard and just south of Gibson this sewer makes a 90 degree bend to enter the Gibson system. At this severe bend, water leaves the manhole and floods the surface.
- Basin N17.** There are two principal problems in this basin. First, there is a restrictor plate installed in the storm sewer conveying around the terminal building. Second, there is some stormwater exiting the storm sewer just north of the lower parking lot and adjacent to the commercial development areas along Alamo Drive. The restrictor plate was installed to correct the flooding problem at this location.
- Basin WE.** The 2-60" culverts under University have a capacity of 100 cfs whereas the existing flows are 370 cfs.
- Basin WE.** Subbasin 504, between the B and C Concourses on the terminal apron ponds significantly during typical storms.
- Basin GA.** Crossing structures on University Boulevard have inadequate inlet capacities.





Public Works Department

April 21, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE, Building 1, Suite 210
Albuquerque, New Mexico 87110

RE: Drainage Report for Parcel 2A, Sunport Park (M15/D23) Submitted for Site Development Plan for Building Permit Approval, Engineer's Stamp Dated 4/3/97.

Dear Mr. Lorenz:

Prior to approval for Site Development, the drainage report must demonstrate that all of the drainage concepts are feasible. Therefore, prior to approval by the DRB, the following comments must be addressed:

1. Per the drainage ordinance, you must demonstrate the downstream capacity of the system connecting to the box culverts crossing I-25. Downstream of I-25, what is the treatment of this system? You must show that this system is stable and within public drainage easements all the way down.
2. Prior to approval of Phase I, provide a detail showing the outfall connection to the existing box culvert at I-25. This outfall connection must be bonded and constructed with Phase I.
3. At this time, Aircraft Avenue is a public right-of-way. The construction of this road will generate public runoff onto your site. Public waters must be conveyed within public right-of-way or easements, therefore please show how this road runoff will be addressed. You may consider vacating and dedicating this as a private road.
4. The easements required for the storm drain to cross through Tract A-3 must be obtained prior to site plan approval. Otherwise, since the existing arroyo must be intercepted on your property, the proposed detention pond may be moved onto Parcel 2A.
5. Comments from Molzen-Corbin indicate that the fully developed flow over University at the location of the 60" CMPs is 408 cfs, not 256 cfs.

Good for You, Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103



Dennis A. Lorenz, P.E.
page 2

April 21, 1997

6. The owners should be made aware that the proposed office building is located within the path of the overflow spillway from the pond on Tract A-2.
7. A temporary easement and a maintenance covenant will be required for the soil cement scour wall.
8. With the addition of the 25 cfs from Phase I into the Sunport storm drain, will the 300 cfs capacity of the 36" culverts at I-25 be exceeded? Demonstrate the routing of these flows prior to work order approval for Phase I. Also, prior to construction, please show that the 4 inlets are above the HGL, assuming the Sunport storm drain is running at the fully developed condition.
9. An analysis will be required for the 90 degree bend in the 42" storm drain and the connection to the detention pond on Tract A-3 prior to approval of Phase 2. Also show how the proposed spillway channel from the pond on Lot 1 will work.
10. A Conditional Letter of Map Revision must be obtained from the Federal Emergency Management Agency (FEMA) prior to approval of Phase 2. The Letter of Map Revision must be obtained prior to release of financial guarantees for this phase.

If you should have any questions regarding these comments, please call me at 924-3982.

Sincerely,



Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Joyce Battaglia, Owner
File'

DRAINAGE INFORMATION SHEET

ECT TITLE: SUNPOET PARK ZONE ATLAS/DRNG. FILE #: M-15/D23F
: 91.68 EPC #: _____ WORK ORDER #: _____

GAL DESCRIPTION: PARCEL 2A, SUNPOET PARK

ITY ADDRESS: UNIVERSITY BLVD SE

ENGINEERING FIRM: Brasher & Lorenz, Inc. CONTACT: Dennis A. Lorenz

2201 San Pedro NE Bldg. 1 Suite 210

ADDRESS: Albuquerque, New Mexico 87110 PHONE: 888-6088

OWNER: JOYCE BATTAGLIA CONTACT: JOYCE BATTAGLIA

ADDRESS: P.O. BOX 32220 PHONE: 281-6004
EDGEWOOD, NM 87015

ARCHITECT: RICK BENNETT CONTACT: RICK BENNETT

ADDRESS: 1118 PARK AVE SW PHONE: 242-1859
87102

SURVEYOR: PRECISION SURVEYS CONTACT: LARRY MENDANO

ADDRESS: 2929 COCES NW PHONE: 839-0569

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL: CHECK TYPE OF APPROVAL SOUGHT:

☒ DRAINAGE REPORT ☐ SKETCH PLAT APPROVAL

☐ DRAINAGE PLAN ☐ PRELIMINARY PLAT APPROVAL

☐ CONCEPTUAL GRADING & DRAINAGE PLAN ☐ S. DEV. PLAN FOR SUB'D. APPROVAL

☐ GRADING PLAN ☒ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

☐ EROSION CONTROL PLAN ☐ SECTOR PLAN APPROVAL

☐ ENGINEER'S CERTIFICATION ☐ FINAL PLAT APPROVAL

☐ OTHER _____ ☐ FOUNDATION PERMIT APPROVAL

☐ BUILDING PERMIT APPROVAL

PRE-DESIGN MEETING: ☐ CERTIFICATE OF OCCUPANCY APPROVAL

☒ YES ☐ GRADING PERMIT APPROVAL

☐ NO ☐ PAVING PERMIT APPROVAL

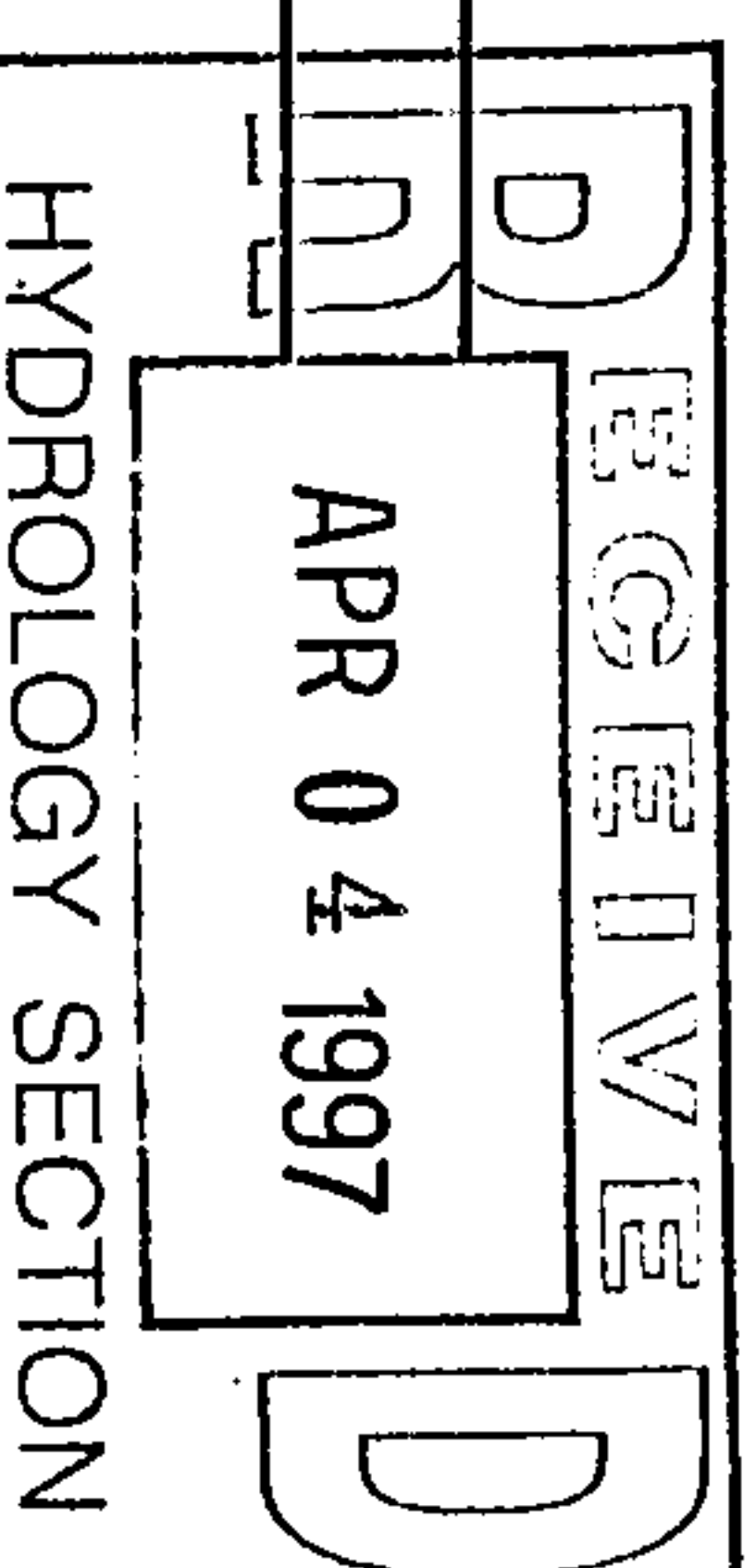
☐ COPY PROVIDED ☐ S.A.D. DRAINAGE REPORT

☐ DRAINAGE REQUIREMENTS

☐ OTHER _____ (SPECIFY)

DATE SUBMITTED: 4-2-97

BY: Dennis A. Lorenz



HYDROLOGY SECTION

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING 1 SUITE 210 ALBUQUERQUE, NM 87110 PHONE (505) 888-6088 FAX (505) 888-6188

April 3, 1997

Susan M. Calongne
City/County Floodplain Administrator
Development and Builders Services Center
Plaza Del Sol
Public Works Department
Albuquerque, NM 87103

SUBJECT: SUNPORT PARK
(M15/D23)

Dear Susan:

Submitted herewith for review and approval is copy of the revised Drainage Masterplan Plan for the subject project. The Plan has been revised to address the comments listed in your March 27, 1997 letter. Specifically your comments are addressed as follows:

1. The FEMA floodplain limits and erosion setback line are shown on all exhibits as requested. We have modified the parking lot geometry to avoid encroachments into the floodplain. The parking lot will be protected by a soil cement scour wall buried to calculated scour depth per City and AMAFCA criteria. Erosion setback and scour calculations are provided in the report.
2. The Masterplan recommends removal of the mapped floodplain. The project is to be constructed in 2 phases. Phase 1 will be constructed without modification of the floodplain. Upon development of Phase 2 the floodplain will be modified and a LOMR request will be made.
3. Per the Drainage Report for Sunport Boulevard an 18.8 acre basin contributing 85.4 cfs was planned to drain to the Sunport storm drain. This project is proposing a 5.4 developed basin contributing 25.4 cfs to the storm drain. Capacity of the storm drain should not be an issue since the project contributes less than anticipated.
4. Capacity of the I-25 box culvert is estimated at 1212 cfs. The Masterplan proposes a contribution of 387 cfs.
5. Tract A-3 is not a part of this development. The Masterplan recommends regrading of the parcel with Phase 2 construction to

provide a temporary sedimentation pond which is to drain to the Phase 2 storm drain. All easements, covenants and permits required for construction of the storm drains and ponding areas will be provided at the time of Phase 2 development.

We realize that the best position for the proposed Phase 2 detention pond is at the natural low spot on Tract A-3 within the existing floodplain arroyo. However, the developer does not own Tract A-3. The developer does own Lot 1, Cutter Industrial Park, and therefore the detention pond will be constructed there.

No regrading or improvements are proposed or necessary on Tract A-3 for Phase 1 development.

6. The project does not have frontage on University Boulevard and therefore we are not proposing to improve University either by providing street or drainage improvements.

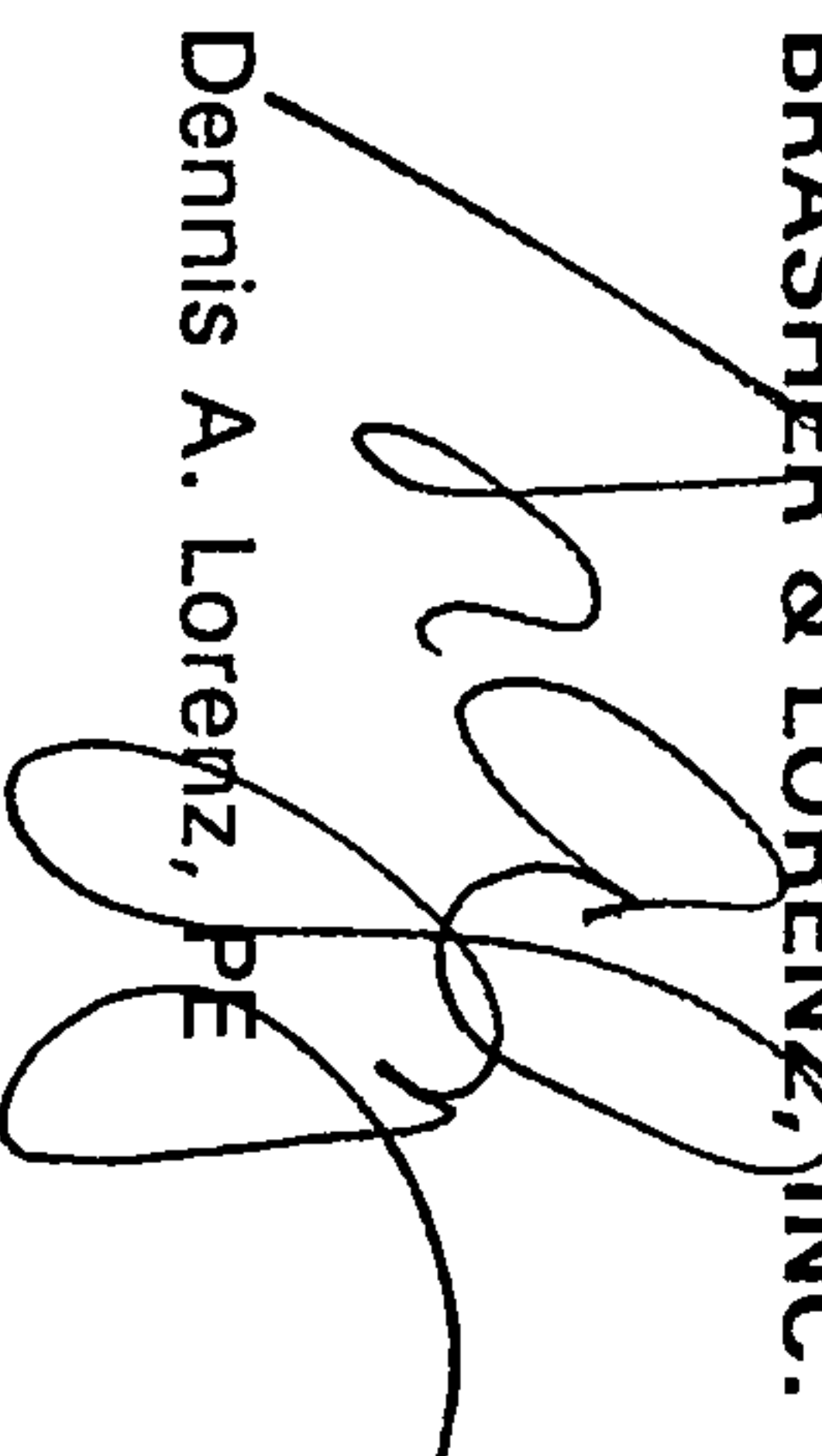
7. Per the Drainage Masterplan prepared by Molzen-Corbin the capacity of the 2-60 inch culverts at University is 256.3 cfs (see AHYMO output files). The 100 cfs capacity reported in the report text is incorrect.

The Masterplan proposes to manage the existing flows entering the site from the east through the existing culverts. Flows exceeding the capacity of the culverts presently pond in a detention area east of University. The developer is proposing to provide the 8 acre foot detention pond on Lot 1, Cutter Industrial Park and the downstream infrastructure required to remove the existing floodplain. Future development of upstream property may require detention ponding.

If you have any questions regarding the submittal package, please call me immediately so that we can address any remaining issues without a re-submittal.

Sincerely,

BRASHER & LORENZ, INC.



Dennis A. Lorenz, PE

/dl/6039
encl

DRAINAGE MASTERPLAN

FOR

SUNPORT PARK, PARCEL 2A

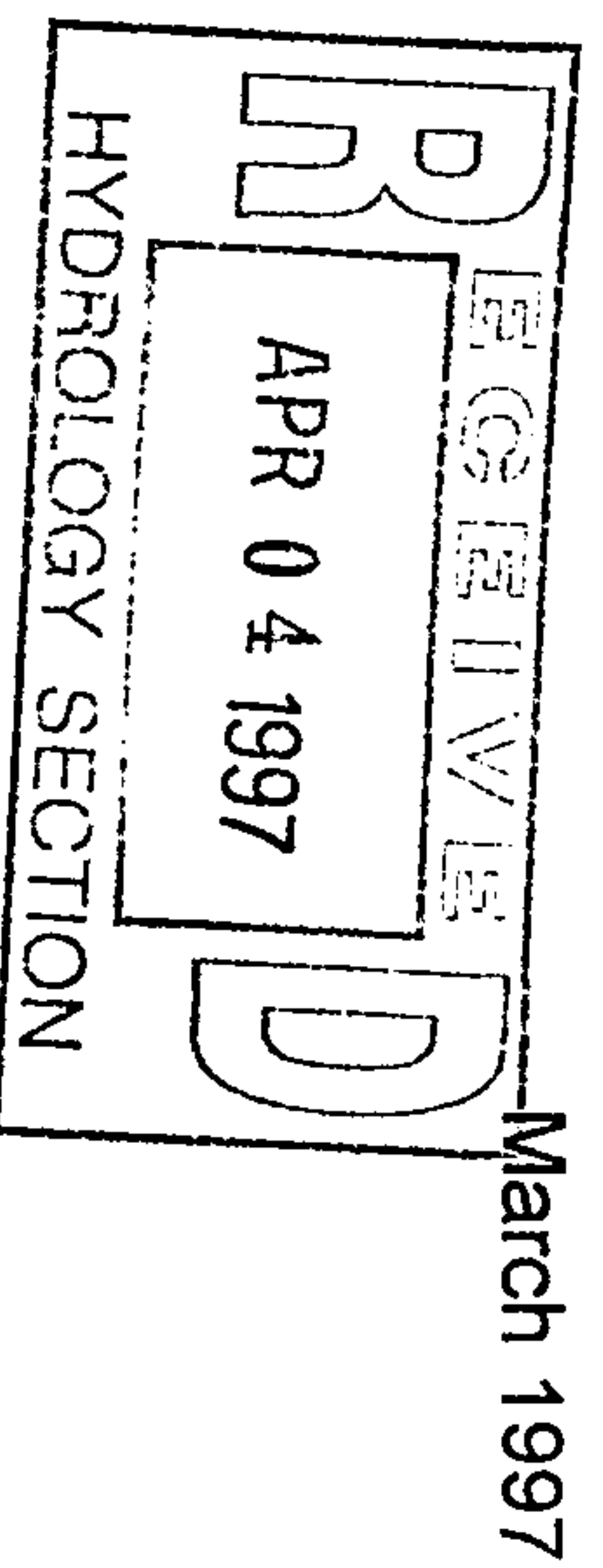
Albuquerque, New Mexico

Prepared By:

BRASHER & LORENZ, INC.

Consulting Engineers

San Pedro NE Building 1, Suite 210
Albuquerque, New Mexico 87110



March 1997

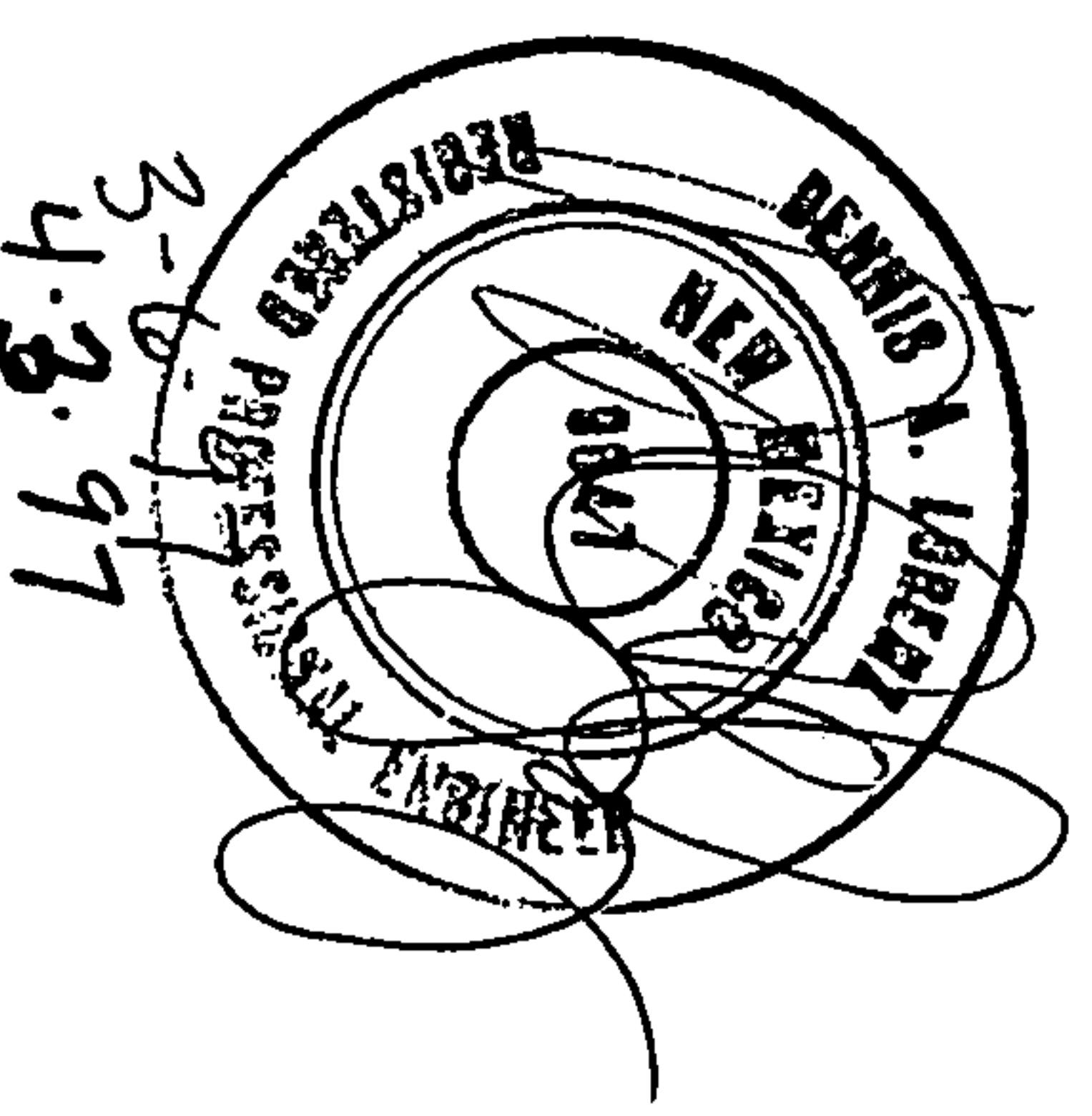


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DRAINAGE MASTERPLAN FOR SUNPORT PARK	POCKET

PURPOSE AND SCOPE

Pursuant to the established Drainage Ordinance for the City of Albuquerque and the Development Process Manual, this Drainage Report outlines the drainage management criteria for controlling developed runoff from the project site. The property is to be developed as a parking complex for long term parking and car rentals. Paving, landscaping, utility, grading, and drainage improvements will be provided to support the project. The scope of this plan is to provide drainage criteria for the safe management of excess runoff, and design detail for the construction of the required grading, paving and drainage improvements.

SITE DESCRIPTION

The project site is approximately 48.67 acres in size and is located adjacent to Sunport Boulevard at University Boulevard SE. Presently the site is undeveloped. The site is vegetated with native grasses and shrubs. Site terrain is rugged, sloping east to west at approximately 5 percent. A natural ridge line is located through the midsection of the site which divides the site into 2 drainage basins. The site is described as Sunport Park, Parcel 2. The site is bounded on the north by Sunport Boulevard, on the east by University Boulevard, on the south by the University of New Mexico South Golf Course, and on the west by Interstate 25.

The site is located adjacent to the recently constructed Sunport Boulevard roadway project, which provided drainage and access improvements which benefit the site. A public detention pond is located adjacent to the site on the east, which accepts runoff from the George Road storm drain. The detention pond drains to the Sunport storm drain.

On-site soils consist mainly of Bluepoint series soils. This soil group is formed in sandy alluvial and eolian sediments on alluvial fans and terraces. Slopes range from 1 to 15 percent. Runoff is slow, and the hazard of wind erosion is moderate to sever. This soils is classified as hydrologic soils group "A".

As shown by the attached FIRRM Panel, this site is impacted by a designated flood hazard zone resulting from off-site drainage contribution from the Albuquerque International Airport (see figure 3).

EXISTING DRAINAGE MASTERPLANS

The drainage criteria for this site is established by the following Drainage Masterplans:

1. **Albuquerque International Airport Storm Drainage Masterplan**, Project No.4255.01, prepared by Molzen-Corbin & Associates, May 1995.

This DMP studies AIA, contributing off-site drainage basins, and downstream facilities. Sunport Park, being downstream from AIA is identified as Basins 403,

404, 514 and 515. Both existing and future peak flowrates were determined for these basins. Capacity of existing downstream drainage improvements as also tested.

2. Sunport Boulevard Final Drainage Report, prepared by Molzen-Corbin & Associates, March 1996.

This report provided hydrologic analysis and drainage improvement recommendations for the Sunport Boulevard roadway project. Storm drainage improvements include storm drains in Sunport Boulevard and George Road, and a detention pond at University and Aircraft Avenue (Tract A-2, Replat of Municipal Addition No. 9).

EXISTING DRAINAGE CONDITIONS

As described above, the site is impacted by the Sunport Boulevard roadway project. The following improvements were provided by Sunport which benefit the site:

1. The Sunport Boulevard storm drains located along the north property line. This storm drain is sized to accept developed runoff from the upstream basins and on-site Basin "A". The storm drain is connected to 3-36 inch culverts which convey flows under I-25 to a 60 inch storm drain, then to the South Diversion Channel.
2. Tract A-2 detention pond is located immediately east of the site. The pond is designed to detain runoff from the George Road storm drain, thereby reducing peak flow rates allowing connection to the 3-36 inch culverts at I-25.

The site is divided into 2 distinct drainage basins by a natural ridge line running east to west. The north basin (Basin "A") flows to an area drain located at the northwest corner of the site, which is connected to the Sunport storm drain. The south basin (Basin "B") flows west to an existing 8' x 6' concrete box culvert, which drains under I-25 to the South Diversion Channel. Basin "B" contains an arroyo channel which is mapped as a 100 year floodplain (see Figure 2). The arroyo accepts runoff from AIA. AIA Basin WE enters the site near the southeast corner after passing through 2-60 inch culverts located at University Boulevard. Per AIA DMP, the existing flow rate at the east property line is 256.3 cfs. No off-site flows impact Basin "A" other than minimal flows from the sides of detention pond located on Tract A-2.

Summary of Existing Flows

- 1. University Blvd. Culverts:** These two 60" culverts convey an arroyo across University Boulevard onto the subject site. The arroyo then flows across the middle of the site from east to west. The flow through these culverts is projected to be 256.3 cfs during the 100 year/6 hour storm when the upstream basins are fully developed (per AIA DMP).

2. Sunport Boulevard Storm Drain: This storm drain flows from east to west along the north boundary of the site. 100 year/6 hour flows after development of all upstream basins is projected to be 278.2 cfs (per AIA DMP)

3. Basin A: This basin consists of the north 18.8 acres of the proposed site. It currently drains to the Sunport Blvd. Storm Drain at the northwest corner of the site. The 100 year/6 hour flow is 29.3 cfs.

4. Basin B: This basin consists of the south 29.9 acres of the proposed site. It is drained entirely by the arroyo that flows from east to west across the middle of the site. The 100 year/6 hour flow is 46.6 cfs.

5. Basin C: This offsite 8.5 vacant tract is south of Aircraft Avenue, west of University Boulevard and north of the proposed detention pond. It currently generates 13.3 cfs in the 100 year/6 hour storm. Developed conditions would generate 37.3 cfs. It drains onto the arroyo that runs from east to west through the middle of the site.

PROPOSED CONDITIONS

As shown by the Plan, the project consists of the development of the property into a parking complex for long term airport parking and car rentals.

The Plan shows the elevations required to properly grade and construct the recommended improvements. The direction of drainage flows are given by flow arrows and on-site drainage basins are identified. All drainage improvements recommended by the Plan are detailed on Drainage MasterPlan located in the back pocket of this report.

Stormwater will discharge from the site into two locations:

- 1) Sunport Boulevard Storm Drain (existing)
- 2) I-25 Box Culvert (via proposed on-site storm drain system)

Drainage Facilities

This project will be developed in two phases (see Drainage Master Plan, pocket). Phase 1 is the north half of the property (Developed Basins 1 and 2). Phase 2 is the south half of the property (Developed Basins 3 and 4).

1. Sunport Boulevard Storm Drain (Phase 1)

This existing storm drain flows in a westerly direction along the north site boundary. Four stub outs will be constructed to this storm drain. Each will drain a type "A" drop inlet. The *Albuquerque International Airport Storm Drainage Master Plan*,

Molzen Corbin, 1995, states that the Sunport Boulevard Storm Drain was designed to handle developed flows from about 18.8 acres of the subject site. Because of site grading, flows from only about 5.4 acres of the subject site will be discharged to the storm drain.

2. I-25 Box Culvert (via proposed on-site storm drain system)

This existing 6'x8' box culvert currently handles stormwater from the arroyo that crosses the middle of the site from west to east. The water from the arroyo will be contained in a proposed storm drain that will drain west along the south tract line and then north along the west tract line until it outfalls at the box culvert.

A detention pond will be constructed near the outlets of the 2-60" University Boulevard culverts to reduce 100 year/6 hour flows into the proposed storm drain system. The pond will reduce flows from 256.3 cfs to 146.5 cfs (see AHYMO reservoir routing calculations in Appendix).

The site will be drained by two types of drop inlets. Four stubouts will drain type "A" drop inlets. Four custom designed continuous drop inlets will drain directly to the storm drain on the west end of the site.

Basins that will drain to Sunport Boulevard Storm Drain (Phase 1)

Basin 1: (Phase 1) Basin 1 is comprised of the 5.4 acres of the parking complex that will drain to the north curb. Water from this basin will be intercepted by

Type A drop inlets along the north curb. Stub-outs will connect these drop inlets to the Sunport Boulevard Storm Drain. Basin 1 will generate 25.4 cfs during the 100 year/6 hour storm. Each drop inlet will handle approximately one-third of that flow.

Basins that will drain to I-25 Box Culvert (Phases 1 and 2)

Basin 2: (Phase 1) Basin 2 is 17.1 acres and consists of that part of the site that will drain to the north half of the west curb. Much of the area in Basin 2 currently drains northwest to the Sunport Boulevard Storm Drain. The project will be graded such that all of Basin 2 will drain southeast to the I-25 Box Culvert. Basin 2 will generate 80.4 cfs during the 100 year/6 hour storm. It will drain to custom designed continuous drop inlets on the west curb of the parking complex. Those drop inlets will drain to a storm drain that will flow south to an outfall at the I-25 Box Culvert.

Basin 3: (Phase 2) This basin is 21.3 acres and consists of that part of the site that will drain to the south half of the west curb. Like Basin 2, Basin 3 will drain from east to west into custom designed continuous drop inlets on the west curb of the parking complex. Basin 3 is projected to generate 100.1 cfs during the 100 year/6 hour storm.

Basin 4: (Phase 2) Basin 4 is 4.9 acres and consists of that part of the project that drains to the south curb. Type A drop inlets will intercept the flow and direct

it to the proposed storm drain. Basin 4 will generate 23.0 cfs during the 100 year/6 hour storm.

Basin C: This 8.5 acre vacant offsite tract currently drains to the arroyo that runs from east to west across the middle of the site. Phase 2 of the subject project will eliminate that arroyo. As such, stormwater from this tract will need to be drained by a stubout to the proposed storm drain network. Developed flows from Basin C are projected to be 37.3 cfs.

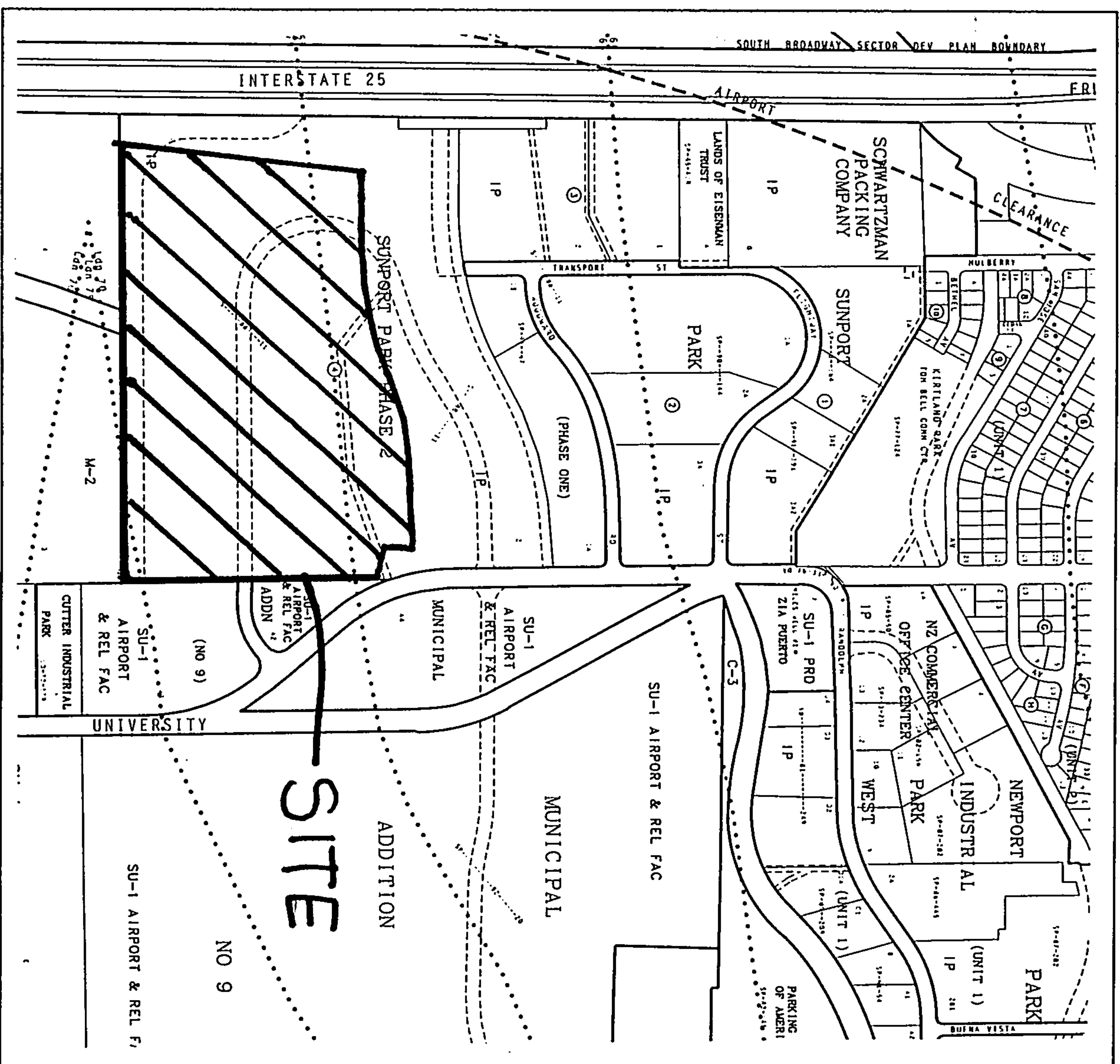
Summary of Flows

Basin	Description	100 yr/6 hr peak flow
1	5.4 acres of site to drain to Sunport storm drain	25.4 cfs
2	17.1 acres to drain to proposed storm drain	80.4 cfs
3	21.3 acres to drain to proposed storm drain	100.1 cfs
4	4.9 acres to drain to proposed storm drain	23.0 cfs
C	8.5 acre offsite basin to drain to proposed storm drain	37.3 cfs
pond	proposed detention pond to discharge to proposed storm drain	146.5 cfs
2-60"	2-60" culverts to discharge to detention pond	256.3 cfs
SD	existing Sunport Boulevard storm drain	278.2 cfs

TEMPORARY EROSION CONTROL PLAN

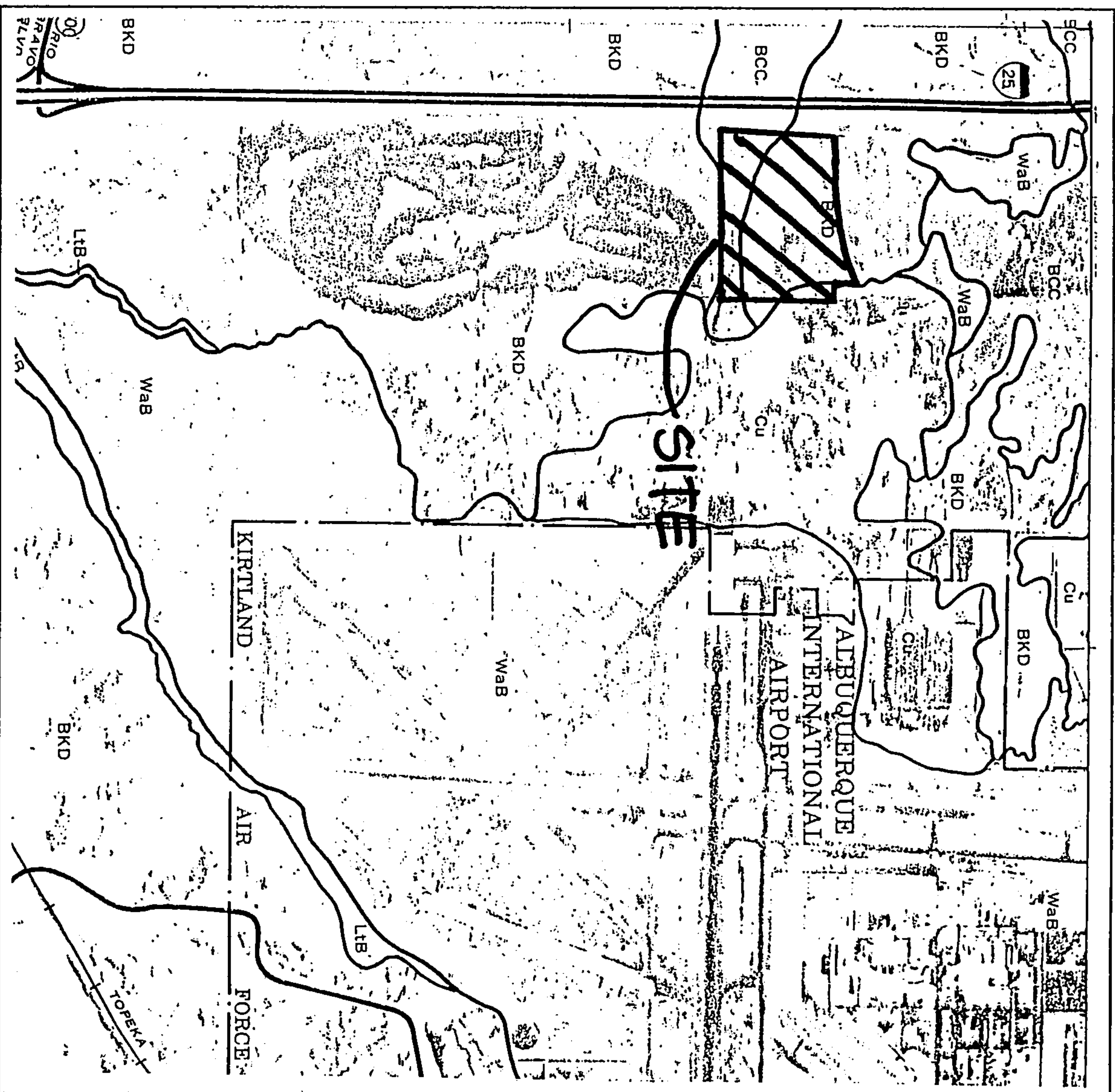
1. The intent of this temporary erosion control plan is to limit the discharge of sediment into the public street and/or storm drainage system and to protect adjacent properties from excess runoff during construction.
2. The Contractor shall obtain a Top Soil Disturbance Permit from Environmental Health prior to performing any earthwork related operations.
3. After the initial site clearing, the temporary erosion control facilities should be constructed per Detail C/3 to direct excess runoff and sediment the outfall locations.
4. It is the Contractor's responsibility to properly maintain all temporary erosion control facilities during the construction phase of the project.

MAPS

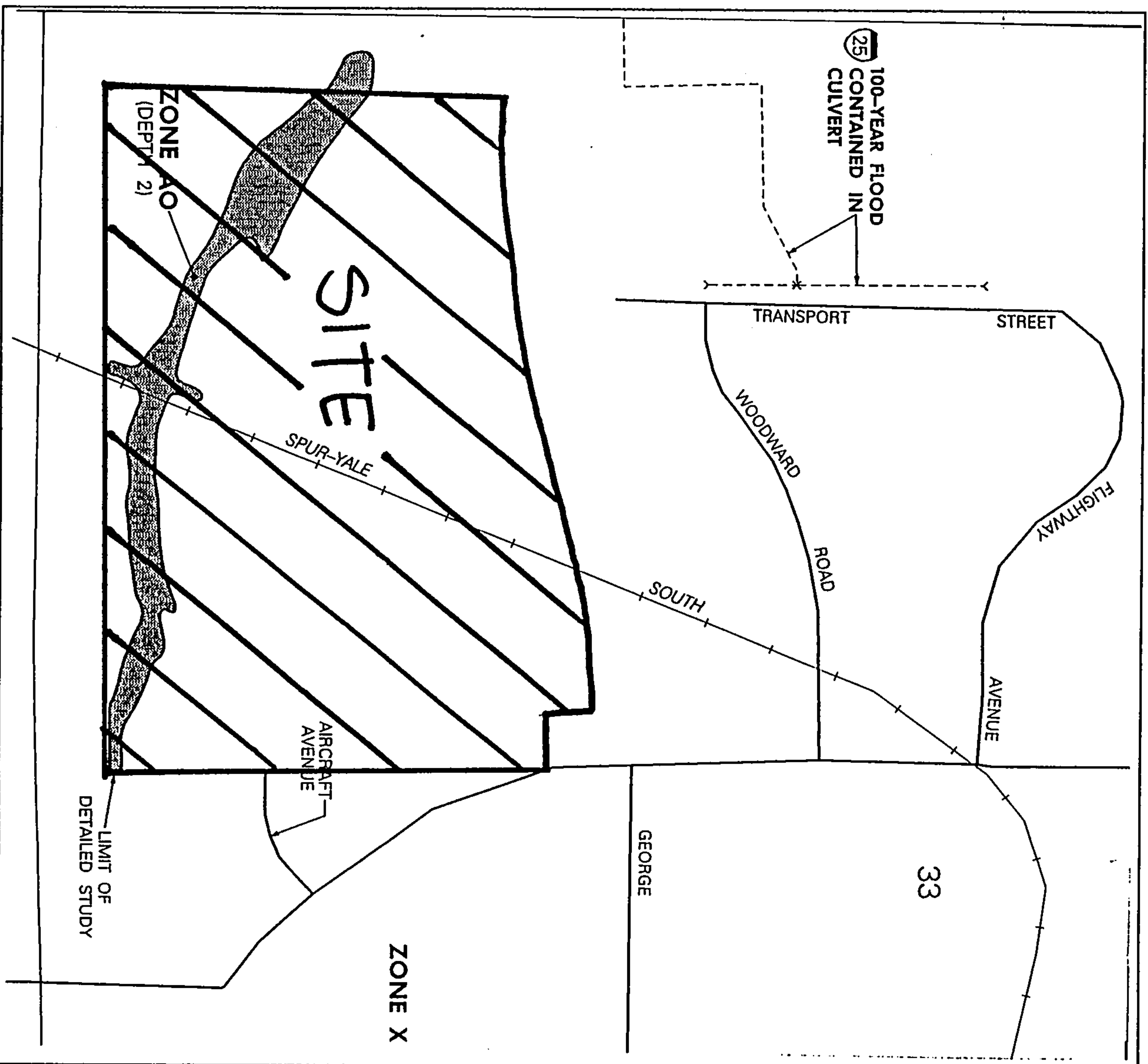


LOCATION MAP

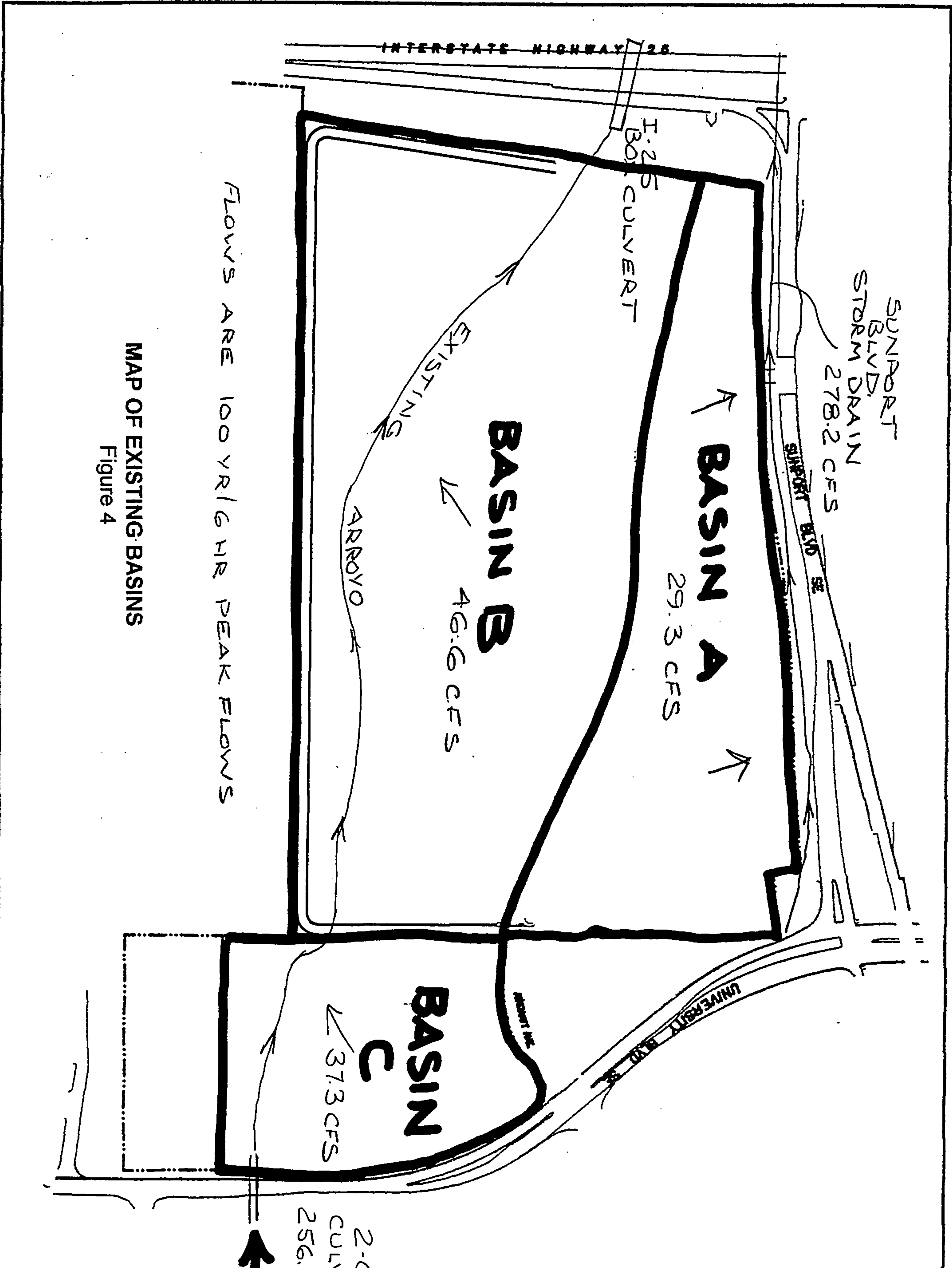
Figure 1



SOILS MAP
Figure 2

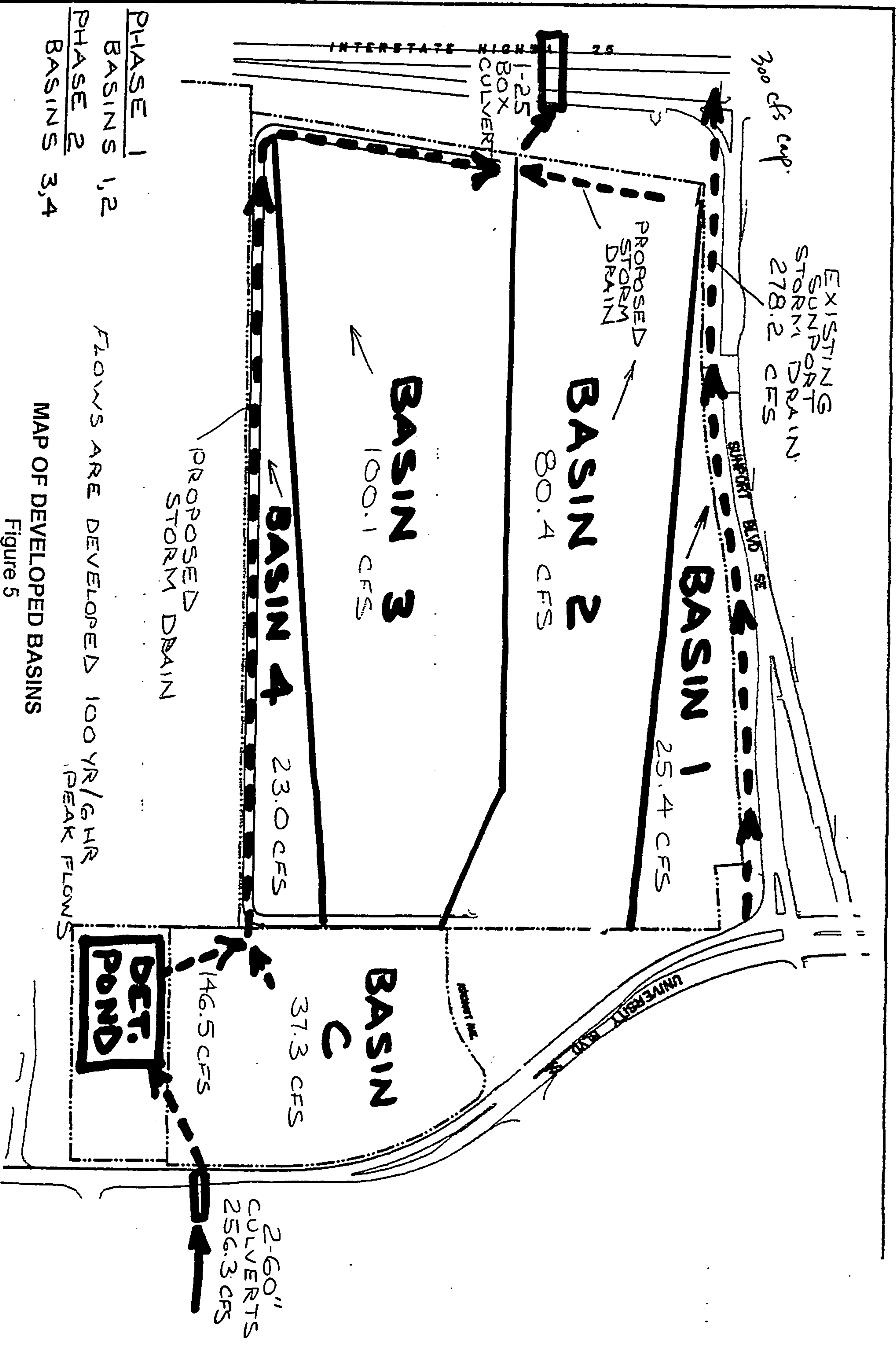


FLOOD INSURANCE RATE MAP
Figure 3



MAP OF EXISTING BASINS

Figure 4



CALCULATIONS

TABLE 1
CALCULATION OF 100 YR/6 HR FLOWS (PER DPM)

HYDROLOGY									
(HYMO)									
Precipitation Zone 2					P360 = 2.35 in				
Basin	Basin	Land Treatment			Ew	V100	Q100		
	area (Ac)	A	B	C	D	(in)	(af)	(cfs)	
Existing Conditions									
A	18.8	18.8				0.53	0.83	29.33	
B	29.9	29.9				0.53	1.32	46.64	
C	8.5	8.5				0.53	0.38	13.26	
Developed Conditions									
1	5.4					5.4	2.12	0.95	25.38
2	17.1					17.1	2.12	3.02	80.37
3	21.3					21.30	2.12	3.76	100.11
4	4.9					4.90	2.12	0.87	23.03
C	8.5			1.70	6.80	1.92	1.36	37.30	

SEE FIG. 4 AND 5 FOR MAP
OF BASINS.

6035

STORM SEWER SUMMARY REPORT

RAINFALL FILE: C:\6039SD.rnd

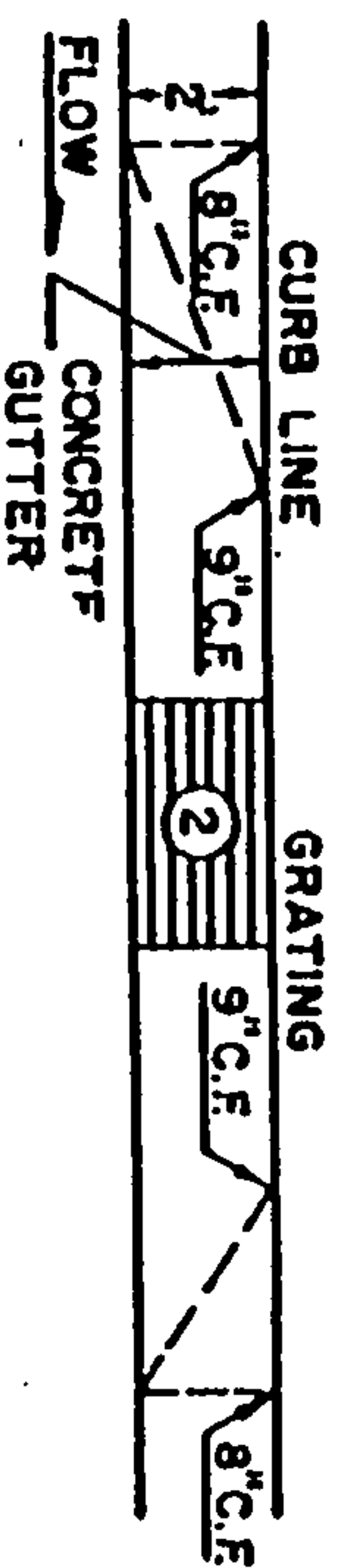
0 YEAR DESIGN STORM

I = 0.000/ (Tc + 0.000) - 0.000

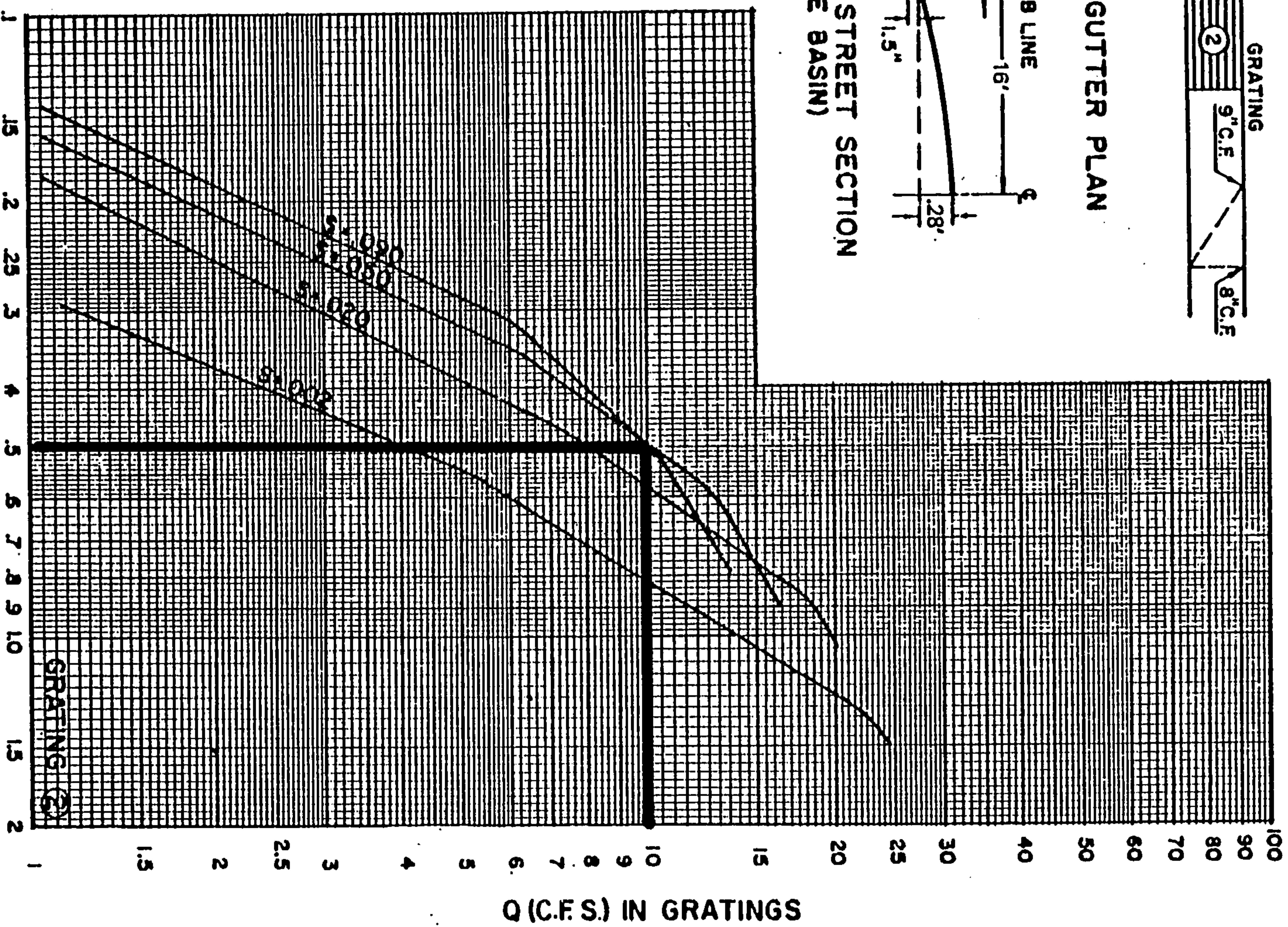
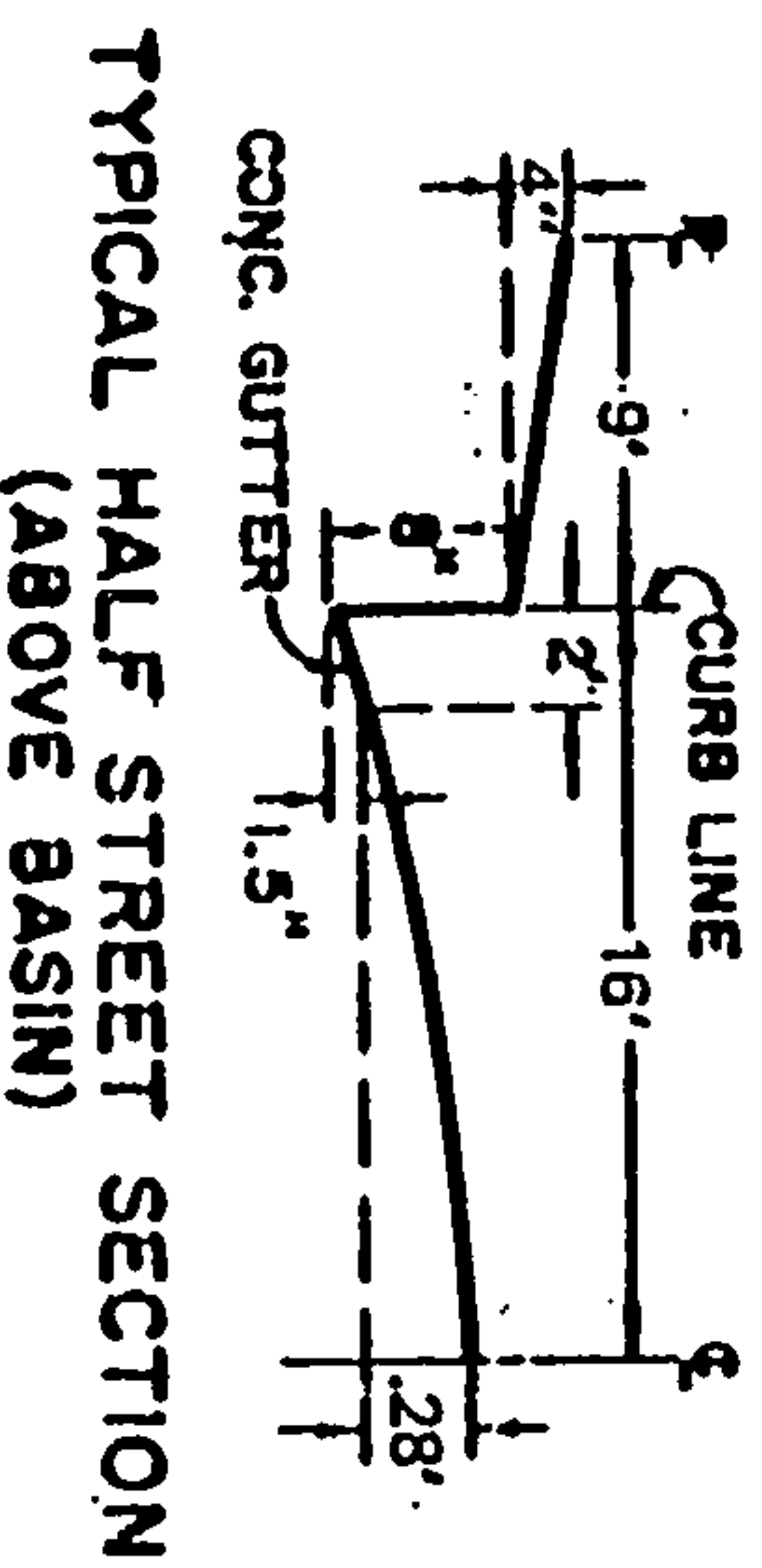
LINE ID		FLOW RATE INFO						PIPE INFO		HYDRAULIC INFO					
LINE#	DESCRIPTION DOWNLINE#	INC AR TOT AR (ac)	RUNOFF WEIGHT C	INLT TIME Tc (min)	INLT I TOT I (in/h)	INC CIA TOT CIA (cfs)	INPUTQ TOTALQ (cfs)	UNIFORM FLOWCAP (cfs)	SIZE/ TYPE (in)	INVERT UP/DOWN (ft)	PIPE LEN (ft)	NVAL INVSLOP (ft/ft)	HGSLOPE JIC (ft/ft)	HYD GRD UP/DOWN (ft)	VEL UP/DOWN (ft/s)
1	DMLN = 0	0.0	0.00	0.00	0.00	0.00	33.00	368.5	54D	51.70	158	0.013	0.035	60.37	25.86
2	DMLN = 1	0.0	0.00	0.00	0.00	0.00	33.00	269.1	48D	64.05	193	0.013	0.035	67.33	24.40
3	DMLN = 2	0.0	0.00	0.00	0.00	0.00	42.00	268.7	48D	70.81	193	0.013	0.035	73.71	24.14
4	DMLN = 3	0.0	0.00	0.00	0.00	0.00	0.00	269.0	48D	76.62	166	0.013	0.035	79.14	23.31
5	DMLN = 4	0.0	0.00	0.00	0.00	0.00	9.00	269.0	48D	98.17	614	0.013	0.035	100.69	23.31
6	DMLN = 5	0.0	0.00	0.00	0.00	0.00	38.00	188.4	42D	142.05	1250	0.013	0.035	144.86	22.35
7	DMLN = 6	0.0	0.00	0.00	0.00	0.00	147.00	188.4	42D	151.00	255	0.013	0.044	157.16	15.45
		0.0	0.00	0.00	0.00	0.00	147.00	188.4	42D	142.05		0.035	0.75	145.84	15.28

STORM DRAIN ANALYSIS
(EAGLE POINT)

GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



D=DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

5% SLOPE, 6" CURB, TYPE A INLET
CAPACITY = 10 C.F.S.

6039
POND NEAR SE CUR

Direct TIN Earthworks DCA DTM 386 Ver 11.0 Project: 6039POND	
Surface 1: A	Surface 2: B
Min. X: 17992.2573 Min. Y: 14046.4250 Max. X: 18338.8028 Max. Y: 14243.0869 Random Points: - Fault Points: - Contour Points: 63 Total: 63 Min. Elev.: 5159.0000 Max. Elev.: 5159.0000 Mean Elev.: 5159.0000	Min. X: 17992.2573 Min. Y: 14046.4250 Max. X: 18338.8028 Max. Y: 14243.0869 Random Points: - Fault Points: - Contour Points: 99 Total: 99 Min. Elev.: 5151.0000 Max. Elev.: 5159.0000 Mean Elev.: 5156.0309
Calculating Projected Volumes. Complete: 100% Cut: 12965.380215 cu.yds. Fill: 0.000000 cu.yds. Net: 12965.380215 cu.yds. (CUT)	
Volume calculations done. Press any key to continue... Copyright (c) 1991 by Softdesk, Inc.	

CAPACITY OF POND 8.04 AC FT.

ABOVE CALCULATIONS VERIFY
CAPACITY OF DETENTION POND
(SOFTDESK D.C.A.)

CALCULATIONS FOR SIZING DETENTION POND

AHYMO PROGRAM (AHYMO194) - AMAPCA Hydrologic Model - January, 1994

RUN DATE (MON/DAY/YR) = 01/29/1997

START TIME (HR:MIN:SEC) = 14:55:25

USER NO. = BRASHERR.101

INPUT FILE = 6039-P2.DAT

(INPUT HYDROGRAPHS
FROM MOLZEN-
CORBIN AIA DMP)*****
SUNPORT PARK
****** PROJECT HYDROLOGY

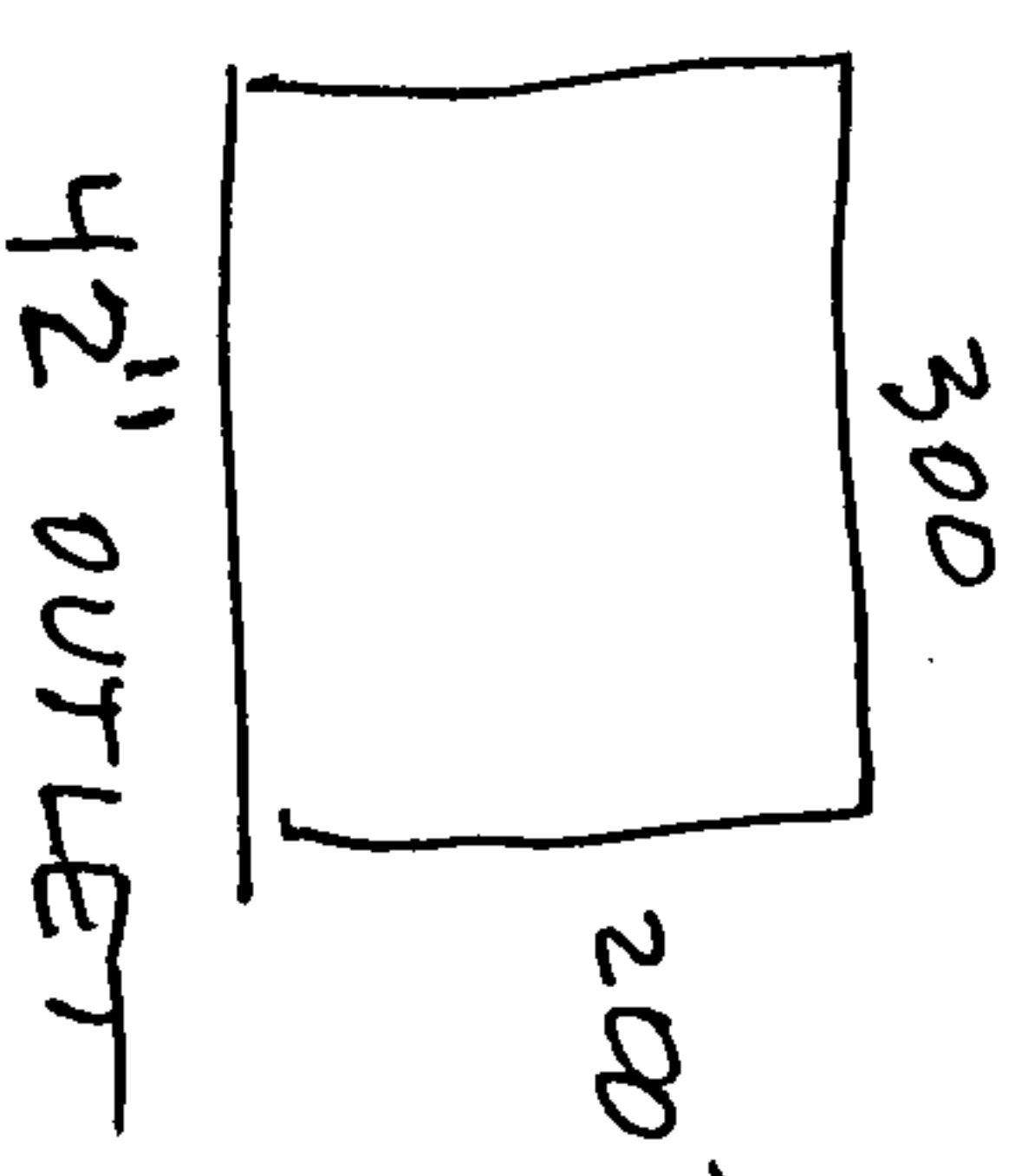
START TIME=0.0 PUNCH CODE=0

RAINFALL TYPE=1 RAIN QUARTER=0.0 RAIN ONE=2.01

RAIN SIX=2.35 RAIN DAY=2.75 DT=0.03333 HRS

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	.0049	.0066	.0084	.0102				
.0120	.0139	.0158	.0178	.0199	.0219	.0241				
.0263	.0286	.0309	.0333	.0358	.0384	.0411				
.0439	.0467	.0497	.0529	.0561	.0596	.0631				
.0669	.0709	.0751	.0807	.0866	.0930	.1066				
.1371	.1840	.2514	.3434	.4644	.6186	.8106				
1.0449	1.2624	1.3533	1.4300	1.4982	1.5602	1.6174				
1.6704	1.7200	1.7664	1.8102	1.8514	1.8904	1.9273				
1.9622	1.9953	2.0268	2.0566	2.0850	2.0915	2.0976				
2.1033	2.1088	2.1140	2.1191	2.1239	2.1285	2.1329				
2.1373	2.1414	2.1454	2.1494	2.1531	2.1568	2.1604				
2.1639	2.1673	2.1706	2.1739	2.1771	2.1802	2.1832				
2.1862	2.1891	2.1919	2.1947	2.1975	2.2002	2.2028				
2.2054	2.2080	2.2105	2.2130	2.2154	2.2178	2.2202				
2.2225	2.2248	2.2270	2.2293	2.2315	2.2336	2.2358				
2.2379	2.2399	2.2420	2.2440	2.2460	2.2480	2.2500				
2.2519	2.2538	2.2557	2.2576	2.2594	2.2612	2.2631				
2.2648	2.2666	2.2684	2.2701	2.2718	2.2735	2.2752				
2.2769	2.2785	2.2802	2.2818	2.2834	2.2850	2.2866				
2.2881	2.2897	2.2912	2.2928	2.2943	2.2958	2.2973				
2.2987	2.3002	2.3017	2.3031	2.3045	2.3060	2.3074				
2.3088	2.3102	2.3115	2.3129	2.3143	2.3156	2.3169				
2.3183	2.3196	2.3209	2.3222	2.3235	2.3248	2.3261				
2.3273	2.3286	2.3298	2.3311	2.3323	2.3335	2.3348				
2.3360	2.3372	2.3384	2.3396	2.3408	2.3419	2.3431				
2.3443	2.3454	2.3466	2.3477	2.3488	2.3500					



* UNDEVELOPED SITE

COMPUTE NM HYD ID=1 HYD NO=EX.SITE DA=0.076039 SQ MI

PER A=100 PER B=0 PER C=0 PER D=0

TP=-0.1333 HR MASS RAIN=-1

K = .158514HR TP = .133300HR K/TP RATIO = 1.189152 SHAPE CONSTANT, N = 2.986035
 UNIT PEAK = 160.11 CFS UNIT VOLUME = .9997 B = 280.68 P60 = 2.0100
 ARBA = .076039 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* DEVELOPED BASIN "A"

COMPUTE NM HYD ID=2 HYD NO=DEV.A DA=0.025 SQ MI

PER A=0 PER B=7 PER C=8 PER D=85

TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 83.896 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 2.0100

ARBA = .021250 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 9.9427 CFS UNIT VOLUME = .9992 B = 353.43 P60 = 2.0100
ARBA = .003750 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* DEVELOPED BASIN "B"

COMPUTE NM HYD ID=3 HYD NO=DEV.B DA=0.051039 SQ MI
PER A=0 PER B=7 PER C=8 PER D=85
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 171.28 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 2.0100
ARBA = .043383 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 20.299 CFS UNIT VOLUME = .9998 B = 353.43 P60 = 2.0100
ARBA = .007656 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* DEVELOPED BASIN "C"

COMPUTE NM HYD ID=4 HYD NO=DEV.C DA=0.003469 SQ MI
PER A=0 PER B=7 PER C=8 PER D=85
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 11.641 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 2.0100
ARBA = .002949 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 1.3797 CFS UNIT VOLUME = .9904 B = 353.43 P60 = 2.0100
ARBA = .000520 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* DEVELOPED BASIN "D"

COMPUTE NM HYD ID=5 HYD NO=DEV.D DA=0.013648 SQ MI
PER A=0 PER B=7 PER C=8 PER D=85
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 45.801 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 2.0100
ARBA = .011601 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 5.4279 CFS UNIT VOLUME = .9980 B = 353.43 P60 = 2.0100
ARBA = .002047 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* OFF-SITE BASIN "WE"

STORE HYD ID=6 HYD NO=WE.BX DT=0.333 HR DA=0.3602 SQ MI
FLOW RATES= 0 0 0 2.3 234.1 231 162.3 100.9

71.8 57.4 45.3 34.2 24.5 19.7 15.8 12.6 9.4 7.2
5.6 3.7 2.4 1.6 1.6 .4 .3 .2 .1 .1 0

* ROUT BASIN "WE" THRU POND

ROUTE RESERVOIR ID=7 HYD NO=POND.OUT INFLOW ID=6 CODE=5

OUTFLOW (CFS) STORAGE(AF) ELEV (FT)
0 0 100
85.6 3.531 104
104.8 4.563 105
121.0 5.660 106
135.3 6.824 107
148.2 8.057 108
160.1 9.363 109
171.1 10.744 110

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	100.00	.000	.00
1.66	234.10	102.78	2.451	59.42
3.33	57.40	105.16	4.738	107.39
4.99	15.80	101.21	1.066	25.85
6.66	3.70	100.32	.285	6.90
8.32	.40	100.05	.043	1.05
9.99	.10	100.01	.006	.15
11.65	.00	100.00	.000	.01

PEAK DISCHARGE = 146.501 CFS - PEAK OCCURS AT HOUR 2.33
MAXIMUM WATER SURFACE ELEVATION = 107.868
MAXIMUM STORAGE = 7.8946 AC-FT INCREMENTAL TIME= .333000HRS

PRINT HYD ID=1 CODE=10

HYDROGRAPH FROM AREA EX.SITR

STORAGE REQUIRED BY DETENTION POND

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.0	2.666	1.7	4.000	.1
.333	.0	1.666	43.7	3.000	.9	4.333	.1
.667	.0	2.000	7.2	3.333	.4	4.666	.0
1.000	.0	2.333	3.5	3.666	.2	5.000	.0

RUNOFF VOLUME = .53121 INCHES = 2.1543 ACRES-DEBT

PEAK DISCHARGE RATE = 76.28 CFS AT 1.533 HOURS BASIN AREA = .0760 SQ. MI.

PRINT HYD ID=2 CODE=10

HYDROGRAPH FROM AREA DEV.A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	35.9	3.333	.5	5.000	.4	6.666	.0
.333	.0	2.000	16.6	3.666	.4	5.333	.4	6.999	.0
.667	.0	2.333	3.6	4.000	.4	5.666	.4		
1.000	.0	2.666	1.5	4.333	.4	5.999	.4		
1.333	20.1	3.000	.8	4.666	.4	6.333	.1		

RUNOFF VOLUME = 1.94031 INCHES = 2.5871 ACRES-DEBT

PEAK DISCHARGE RATE = 70.46 CFS AT 1.500 HOURS BASIN AREA = .0250 SQ. MI.

PRINT HYD ID=3 CODE=10

HYDROGRAPH FROM AREA DEV.B

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	73.3	3.333	1.1	5.000	.8
.333	.0	2.000	34.0	3.666	.9	5.333	.8
.667	.0	2.333	7.3	4.000	.8	5.666	.9
1.000	.0	2.666	3.0	4.333	.7	5.999	.9
1.333	41.1	3.000	1.6	4.666	.7	6.333	.1

RUNOFF VOLUME = 1.94031 INCHES = 5.2816 ACRE-FEET
PEAK DISCHARGE RATE = 143.83 CFS AT 1.500 HOURS BASIN AREA = .0510 SQ. MI.

PRINT HYD ID=4 CODE=10

HYDROGRAPH FROM AREA DEV.C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	5.0	3.333	.1	5.000	.1
.333	.0	2.000	2.3	3.666	.1	5.333	.1
.667	.0	2.333	.5	4.000	.1	5.666	.1
1.000	.0	2.666	.2	4.333	.1	5.999	.1
1.333	2.8	3.000	.1	4.666	.1	6.333	.0

RUNOFF VOLUME = 1.94031 INCHES = .3590 ACRE-FEET
PEAK DISCHARGE RATE = 9.79 CFS AT 1.500 HOURS BASIN AREA = .0035 SQ. MI.

PRINT HYD ID=5 CODE=10

HYDROGRAPH FROM AREA DEV.D

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	19.6	3.333	.3	5.000	.2
.333	.0	2.000	9.1	3.666	.2	5.333	.2
.667	.0	2.333	1.9	4.000	.2	5.666	.2
1.000	.0	2.666	.8	4.333	.2	5.999	.2
1.333	11.0	3.000	.4	4.666	.2	6.333	.0

RUNOFF VOLUME = 1.94031 INCHES = 1.4123 ACRE-FEET
PEAK DISCHARGE RATE = 38.47 CFS AT 1.500 HOURS BASIN AREA = .0136 SQ. MI.

PRINT HYD ID=6 CODE=2

HYDROGRAPH FROM AREA WR.EX

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
------	------	------	------	------	------	------	------

HR	CFS	HR	CFS	HR	CFS	HR	CFS	HR	CFS
.000	.0	2.664	100.9	5.328	12.6	7.992	.6		
.666	.0	3.330	57.4	5.994	7.2	8.658	.3		
1.332	2.3	3.996	34.2	6.660	3.7	9.324	.1		
1.998	231.0	4.662	19.7	7.326	1.6	9.990	.1		

RUNOFF VOLUME = 1.49647 INCHES = 28.7479 ACRE-FEET
 PEAK DISCHARGE RATE = 234.10 CFS AT 1.665 HOURS BASIN AREA = .3602 SQ. MI.

PRINT HYD ID=7 CODE=2

HYDROGRAPH FROM AREA POND. OUT

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.664	142.8	5.328	20.0	7.992	1.6	10.656	.1
.666	.0	3.330	107.4	5.994	11.9	8.658	.7	11.322	.0
1.332	.6	3.996	62.3	6.660	6.9	9.324	.3	11.988	.0
1.998	128.4	4.662	34.0	7.326	3.5	9.990	.2		

RUNOFF VOLUME = 1.49647 INCHES = 28.7479 ACRE-FEET
 PEAK DISCHARGE RATE = 146.50 CFS AT 2.331 HOURS BASIN AREA = .3602 SQ. MI.

OUTFLOW FROM PROPOSED
 DETENTION POND TO PROPOSED
 STORM DRAIN

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 14:55:26

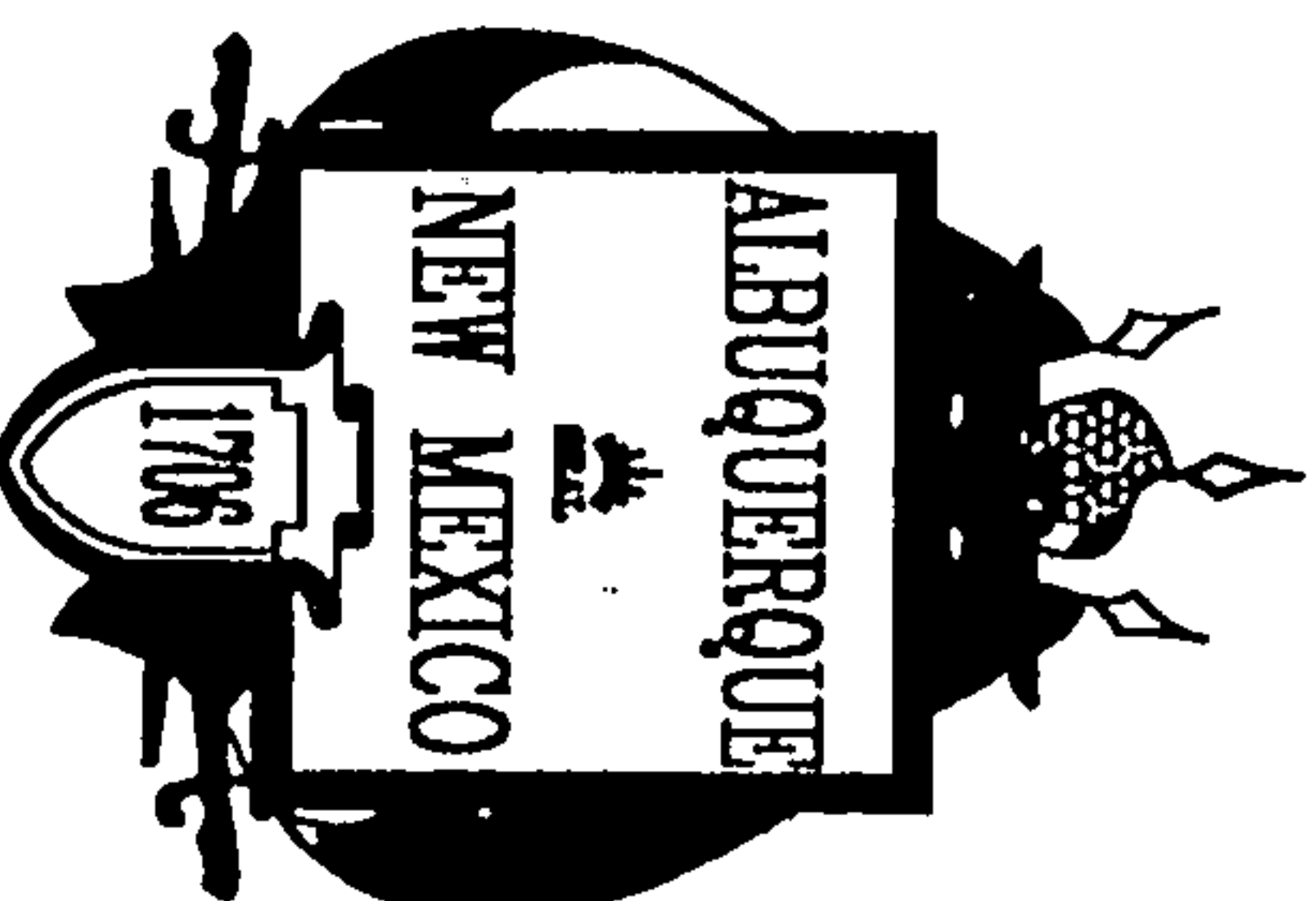
ALBUQUERQUE
INTERNATIONAL AIRPORT

**STORM DRAINAGE
MASTER PLAN**
Project No. 4255.01

City of Albuquerque, NM
Aviation Department

May 1995

(PERTINENT EXCERPTS)



SUB-BASIN NO.	AREA (sq mi)	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
512						2-60" CLV	University crossing
513						surface	E of Univ, S of 8-26 overrun
514						arroyo	W of Univ
515						3-36" CLV	E of I-25
516							I-25
517						3-36" CLV	W of I-25
518						SDC	
Σ	0.3602	149.3	256.3	15.88	28.510	Open Chan.	to South Diversion Channel

G. 35SE Basin. This 0.24 square mile basin includes a small area just east of Runway 17-35. The existing drainage system drains the area only after considerable ponding occurs along Taxiway E and an extension will be constructed to provide additional inlet capacity. This extension (28 cfs capacity) was connected to the existing system. The additional runoff volume generated by the 100 year, 6 hour design storm will be contained in the existing island. The necessary improvements in this basin were made with the Taxiway E construction project.

TABLE III-6
Basin 35SE

SUB-BASIN NO.	AREA (sq mi)	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
601						36" SD	SE cor 17-35/8-26
602						24" SD	SW cor 17-35/8-26
603						18" SD	W of 602
604						42" SD	17-35/3-21/TW E
605						24" SD	W of 17-35
606						24" SD	E of 3-21
607						24" SD	SE end 12-30
608						42" SD	12-30
609						24" SD	S of 12-30, E of 17-35
610						48" SD	E of 17-35
611						48" SD	Escarpment

F. WE Basin. The WE Basin incorporates the area south and west of the existing terminal area with boundaries of Runway 12-30 to the south, Taxiway C to the east, the existing terminal building to the north and its discharge point to the South Diversion Channel to the west.

Changes to the facilities in this basin that are proposed under the Master Plan include the demolition of the old Air Freight Building located within subbasin 505. Extension of the existing storm drain system is recommended to follow the demolition of the building to relieve ponding occurring on the terminal apron between the B and C concourses. The extension of the drain (a 36-inch enlarged to a 42-inch connecting to the existing 60-inch) was planned during the Taxiway E Improvements project. A stub was installed at the 60-inch tee constructed near the northwest corner of Runway 8.

Downstream of the airfield, WE Basin discharges into a rip-rap lined channel and detention pond east of University Blvd. In order to maintain the future flows to near existing conditions, it is recommended that a restrictor plate be installed upstream. A 48-inch equivalent orifice installed at the 60" x 60" x 48" junction near the southwest corner of Runway 8 would help maintain existing conditions.

There is expected to be development west of University Blvd. in the Sunport Business Park, specifically in subbasins 514 and 515. Discussions between the developer and the City indicate that the natural arroyo that carries the basin discharge may be relocated to the south property boundary, approximately on the southern border of subbasins 514 and 515. The channel will run west until it nears Interstate 25 where it will be turned north to discharge through the Interstate at the 6' x 8' concrete box culvert. The future conditions modelling does not indicate the relocation of the arroyo and does not indicate that there will be any capacity problems at the Interstate crossing.

The Table IV-2 indicates the addition of the storm drain into subbasin 504 from the 60-inch drain. There are not any other improvements recommended as far as new drain systems in WE basin.

TABLE IV-2
Improvements to WE Basin

SUBBASIN NO.	PIPE DIAMETER	FLOW, 10 and 100-year, cfs	COMMENTS
504-505A	36-inch	39.2 (10) 43.4 (100)	Pipe to collect discharge from subbasin 504.
505A-60" tee	42-inch	57.6 (10) 59.0 (100)	Pipe collects NW corner of 505

G. GA Basin. The Master Plan identifies several parcels within the GA Basin which are recommended for development. With these parcels developed, the GA Basin should be

accommodate future, additional flows under the master plan, a portion of the system has been upsized to accept runoff from areas scheduled for future development. The 24" outfall has been replaced with a 60" outfall that is sized to meet master plan requirements. Until the downstream drainage system and the matter of the unplatted arroyo is settled, an orifice plate should be installed to restrict the flow to existing levels. The storage capacity in the islands will be utilized to hold the peak discharge rate that exceeds the capacity of the orifice plate with this stored volume being released after the discharge rate falls below the orifice capacity. This 60" pipe discharges to a rip-rap lined channel that eventually outfalls at the University Boulevard culvert crossing. Several small arroyos within the escarpment area are intercepted by this channel. As a result of this project, the design flow in the channel is 166 cfs. The master plan discharge to be carried by the channel to the crossing is 347 cfs. Under the master plan, the additional runoff volume generated by the 100 year, 6 hour design storm will be contained in the islands.

Currently, subbasin 504, located between concourse C and B, has ponding problems during typical storms. A shallow swale carries the stormwater southwest from this portion of the terminal apron to an inlet and 24" drain in Subbasin 505. The flat grade and resulting shallow depth of the swale do not allow adequate drainage. Concern expressed by the Aviation Department over the life of the pavement with substantial ponding occurring concrete bring this situation up for resolution.

A tee installed during the Taxiway E project near the west end of Runway 8 can be extended to this area. See Section IV for specific details on this improvement.

TABLE III-5
WE Basin

SUB- BASIN NO.	AREA (sq mi)	Q10 (cfs)	Q100 (cfs)	Y10 (ac-ft)	Y100 (ac-ft)	OUTFALL	DESCRIPTION
501	0.0430	77.56	121.58	2.679	4.384	24" SD	N side of 17-35/8-26
502	0.0810	61.20	94.09	4.833	8.001	54" SD	N side 8-26 W of 17-35
503	0.1020	78.32	115.51	6.312	10.348	30" SD	Terminal N ramp
504	0.0220	43.53	66.47	1.550	2.459	Surface	Terminal W ramp
505	0.1480	100.38	139.44	9.460	15.378	60" SD	8-26 W overrun
506	0.2692	159.48	246.62	14.497	24.721	60" SD	8-26 W overrun
507	0.0250	28.65	49.86	1.005	1.892	24" SD 18" SD	SW cor 17-35/8-26
508	0.0770	43.41	69.07	3.335	6.112	48" SD	S side 8-26
509	0.2372	139.91	202.20	13.537	22.713	48" SD	W end 12-30
510	0.2932	168.12	272.60	14.955	25.867	54" SD	S of 8-26 W overrun
511	0.3032	171.55	284.60	15.118	26.305	54" SD 24" SD	W 8-26 overrun, E of Univ

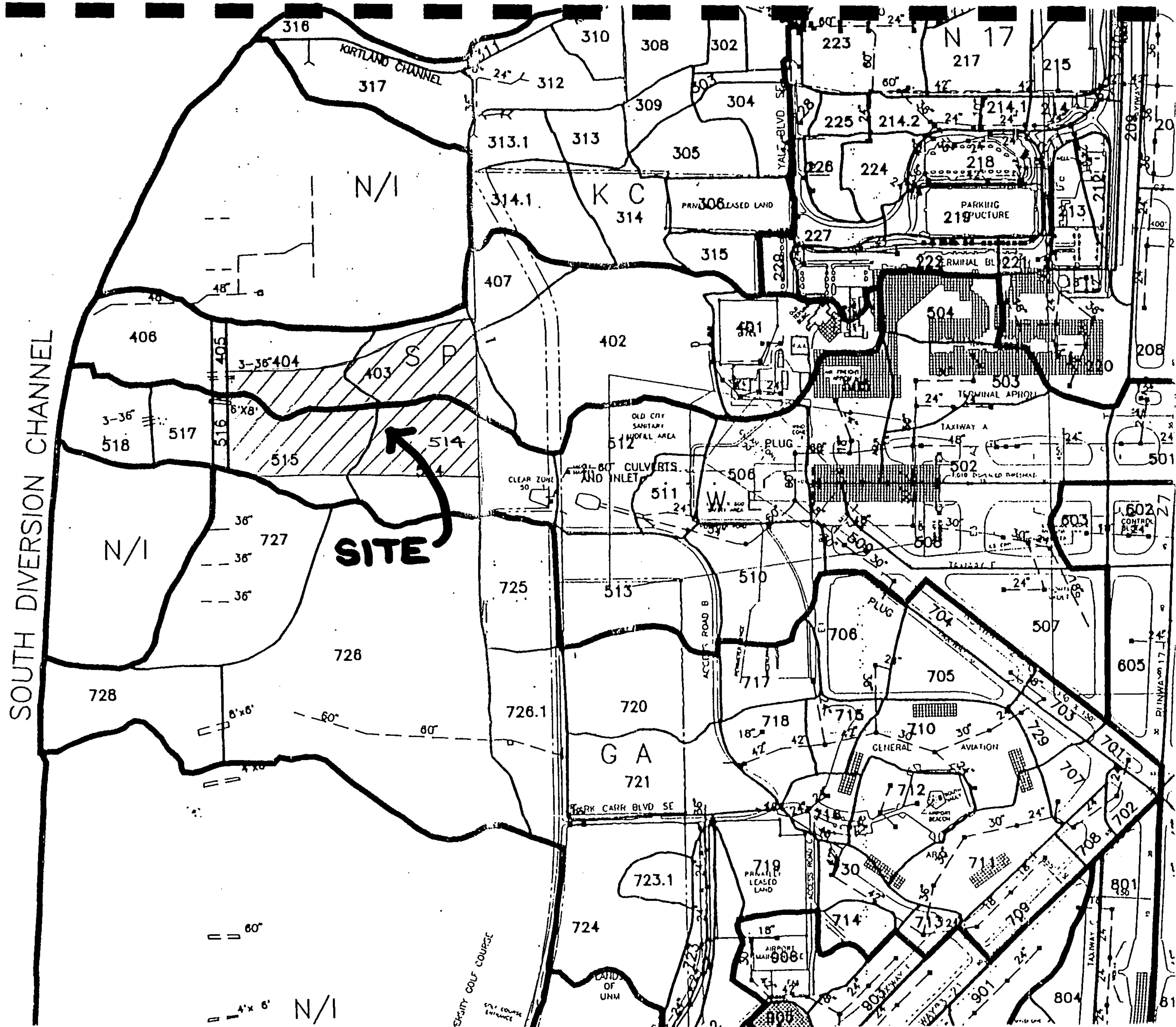
TABLE III-15
Far East Basin

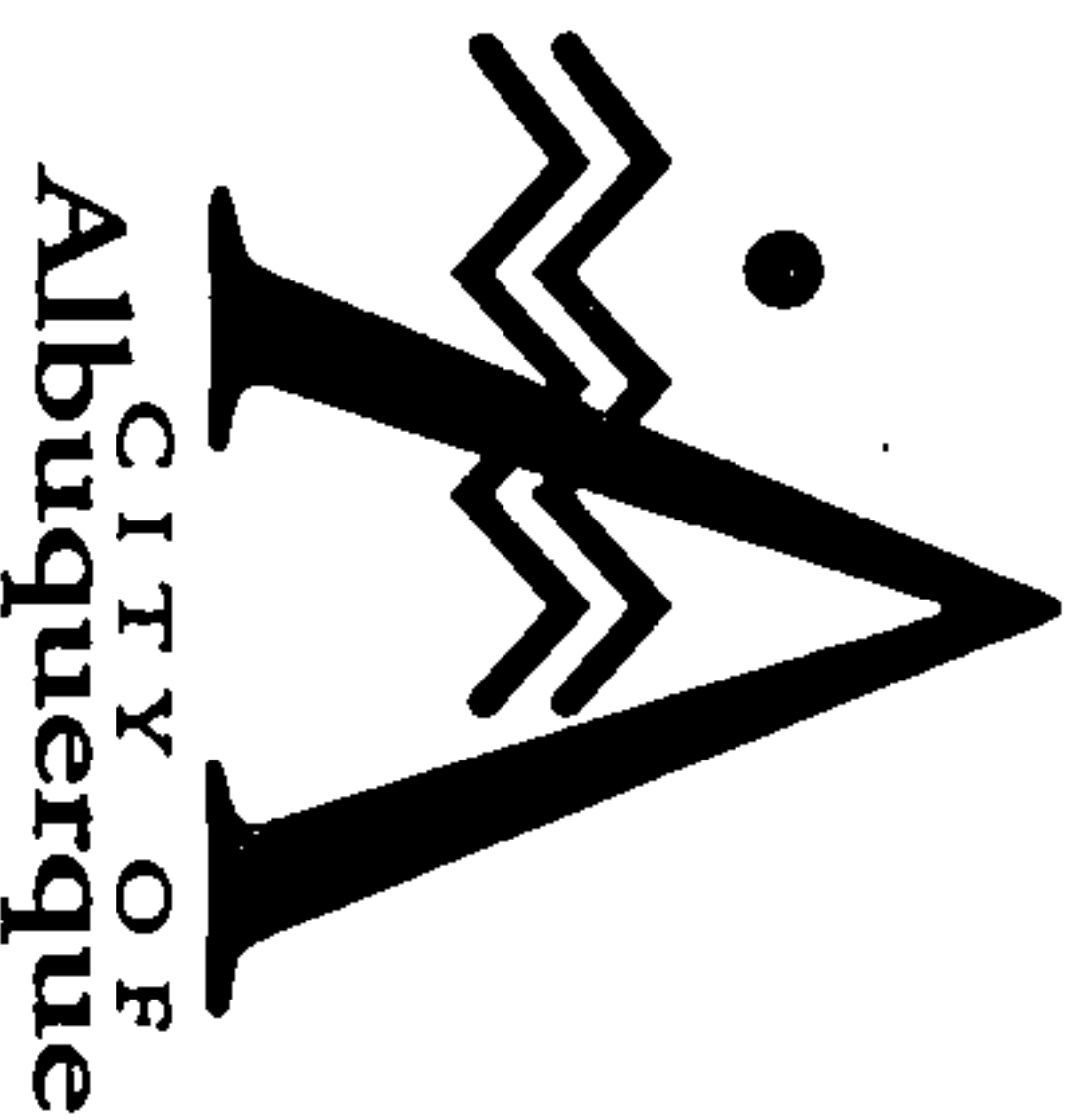
SEWER BASIN NO.	AREA (sq ft)	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
1700	0.2260	79.46	153.96	9.261	17.265	30" SD 48" SD	NE of R/W 8-26 end
1701	0.0160	24.24	40.13	0.772	1.363	54" SD	SE of R/W 8-26 end
Σ	0.2420	46.40	96.82	10.03	18.628	54" SD	to KAFB

R. Other Areas. There are numerous other drainage areas which are technically inside the airport property and drain offsite. These areas include those steep slopes along the side of Tijeras Arroyo between the airport and the railroad at the toe of this slope. These areas do not affect airport activities, and in most cases, are not impacted by airport activities. A summary of these drainage areas is shown in the following table.

S. Summary of Existing Area Problems. The following is a summary of the problems encountered in the existing system.

1. **Basin G17.** The storm sewer collecting runoff from the areas around the extreme north end of Runway 17-35 discharges into the storm sewer in Gibson Boulevard. Approximately half way between Yale and Girard and just south of Gibson this sewer makes a 90 degree bend to enter the Gibson system. At this severe bend, water leaves the manhole and floods the surface.
2. **Basin N17.** There are two principal problems in this basin. First, there is a restrictor plate installed in the storm sewer conveying around the terminal building. Second, there is some stormwater exiting the storm sewer just north of the lower parking lot and adjacent to the commercial development areas along Alamo Drive. The restrictor plate was installed to correct the flooding problem at this location.
3. **Basin WE.** The 2-60" culverts under University have a capacity of 100 cfs whereas the existing flows are 370 cfs.
4. **Basin WE.** Subbasin 504, between the B and C Concourses on the terminal apron ponds significantly during typical storms.
5. **Basin GA.** Crossing structures on University Boulevard have inadequate inlet capacities.





6039

March 27, 1997

Martin J. Chávez, Mayor

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE, Building 1, Suite 210
Albuquerque, New Mexico 87110

RE: Drainage Report for Parcel 2A, Sunport Park (M15/D23) Submitted for Site Development Plan for Building Permit Approval, Engineer's Stamp Dated 3/6/97.

Dear Mr. Lorenz:

Prior to approval for Site Development Plan for Building Permit Approval the following comments must be addressed:

1. Show the limits of the existing FEMA floodplain on the plan. Also plot the erosion setback line. How does the floodplain impact Phase 1? Is the proposed parking lot located within the erosion setback? If so, how do you plan to mitigate this?
2. This development proposes to remove the existing FEMA floodplain and will require a Letter of Map Revision from FEMA.
3. The report is unclear about the allowable runoff entering the existing Sunport Boulevard storm drain system. What is the downstream capacity for this storm drain? Considering the upstream basin to be fully developed, what is the allowable Q from your site?
4. Does the I-25 box culvert at the existing arroyo have limited capacity?
5. Is Tract A-3 part of the proposed development? Is this parcel to be regraded? How do you plan to pick up the runoff from this tract? Easements will be required across this parcel for the proposed drainage improvements. A public drainage easement with an Agreement and Covenant will be required for the proposed pond. It appears that the pond should be relocated to the historic low spot on the parcel.
6. Are inlets provided to intercept the street flows in University and Sunport Boulevard? If not, these may need to be included on the Infrastructure List.

Good for you, Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103



Dennis A. Lorenz, P.E.

March 27, 1997

page 2

7. Your development must address the interim condition as well as the fully developed condition. The information provided from the Molzen-Corbin report is unclear about the runoff from the airport in the interim as opposed to the fully developed condition. Your developed Basins map shows that 256.3 cfs enters the two 60" culverts from the east of your site. The Molzen-Corbin report, however, states that the two 60" culverts under University have a capacity of 100 cfs and the existing flows are 370 cfs. Please clarify. Is another culvert required?

If you should have any questions regarding these comments, please call me at 924-3982.

Sincerely,



Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: File

MOLZEN-CORBIN

& Associates



ENGINEERS/ARCHITECTS/PLANNERS

2701 Miles Road Southeast
Albuquerque, New Mexico 87106
Telephone 505-242-5700
Fax 505-242-0673

March 28, 1997

Mr. Fred Aguirre, P.E.
City of Albuquerque
Public Works Department
P.O. Box 1293
Albuquerque, New Mexico 87103

RE: Sunport Park Drainage
DRB Case 97-119

ABQ41-11.C01

Dear Mr. Aguirre:

We have been requested by the Aviation Department to review and comment on the Sunport Park Drainage MasterPlan submitted to the City for review. We have reviewed sheet C-2 of the masterplan dated February 25, 1997, and offer the following comments on behalf of the Aviation Department:

1. The drainage boundaries illustrated on the Phase I portion of the proposed development do not agree with the masterplan prepared by Andrews, Asbury and Robert (AAR). The land treatment shown indicates a 100 percent impervious surface. The Sunport system was designed to accept the basin as shown on that masterplan. The AAR masterplan indicated a land treatment consistent with commercial development with a maximum of 90 percent impervious surface. Undetained flow from the system, shown on the current drawing, may exceed the system capacity.
2. The capacity and structural integrity of the 3-36" RCP crossing at I-25 are of concern due to age and condition. Calculations performed during the preparation of the Sunport Boulevard Drainage Report indicate that the capacity of this structure is approximately 300 cfs. This capacity should not be exceeded in order to protect the improvements constructed in the Sunport Boulevard projects.
3. There is not an easement identified for the 42" outfall pipe from the detention pond.
4. A public detention pond is proposed. Who will be responsible for maintenance?

Mr. Fred Aguire, P.E.

March 28, 1997

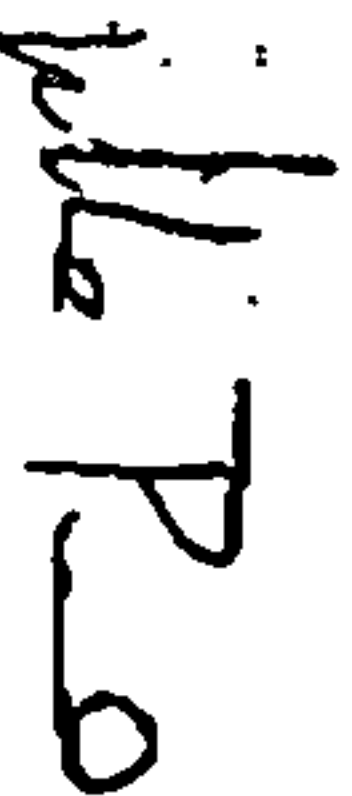
Page 2

5. Drop inlets are indicated on the north boundary of Phase I. We assume these are intended to catch surface flows. The finished grading shown indicates a slope of approximately 5% with a cross slope. Will the drop inlets be effective in collecting the surface water prior to reaching the western boundary of the development with the cross slope indicated?
6. Will the proposed public detention pond require permitting through the State Engineer's Office?
7. What provisions will be made for an emergency spillway for the proposed pond?

Please accept these comments and questions for the hearing scheduled for Tuesday, April 1, 1997. If you have any questions concerning these comments, please contact the Mr. Dennis Parker, Assistant Director of Aviation, at 842-4366 or me at 242-5700.

Sincerely,

MOIZEN-CORBIN & ASSOCIATES



Mike Provine, P.E.

MP:cvh

cc: Mr. Dennis Parker, AAE, Assistant Director of Aviation

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING 1 SUITE 210 ALBUQUERQUE, NM 87110 PHONE (505) 888-6088 FAX (505) 888-6188

April 3, 1997

Susan M. Calongne
City/County Floodplain Administrator
Development and Builders Services Center
Plaza Del Sol
Public Works Department
Albuquerque, NM 87103

SUBJECT: SUNPORT PARK
(M15/D23)

Dear Susan:

Submitted herewith for review and approval is copy of the revised Drainage Masterplan Plan for the subject project. The Plan has been revised to address the comments listed in your March 27, 1997 letter. Specifically your comments are addressed as follows:

1. The FEMA floodplain limits and erosion setback line are shown on all exhibits as requested. We have modified the parking lot geometry to avoid encroachments into the floodplain. The parking lot will be protected by a soil cement scour wall buried to calculated scour depth per City and AMAFCA criteria. Erosion setback and scour calculations are provided in the report.
2. The Masterplan recommends removal of the mapped floodplain. The project is to be constructed in 2 phases. Phase 1 will be constructed without modification of the floodplain. Upon development of Phase 2 the floodplain will be modified and a LOMR request will be made.
3. Per the Drainage Report for Sunport Boulevard an 18.8 acre basin contributing 85.4 cfs was planned to drain to the Sunport storm drain. This project is proposing a 5.4 developed basin contributing 25.4 cfs to the storm drain. Capacity of the storm drain should not be an issue since the project contributes less than anticipated.
4. Capacity of the I-25 box culvert is estimated at 1212 cfs. The Masterplan proposes a contribution of 387 cfs.
5. Tract A-3 is not a part of this development. The Masterplan recommends regrading of the parcel with Phase 2 construction to

provide a temporary sedimentation pond which is to drain to the Phase 2 storm drain. All easements, covenants and permits required for construction of the storm drains and ponding areas will be provided at the time of Phase 2 development.

We realize that the best position for the proposed Phase 2 detention pond is at the natural low spot on Tract A-3 within the existing floodplain arroyo. However, the developer does not own Tract A-3. The developer does own Lot 1, Cutter Industrial Park, and therefore the detention pond will be constructed there.

No regrading or improvements are proposed or necessary on Tract A-3 for Phase 1 development.

6. The project does not have frontage on University Boulevard and therefore we are not proposing to improve University either by providing street or drainage improvements.

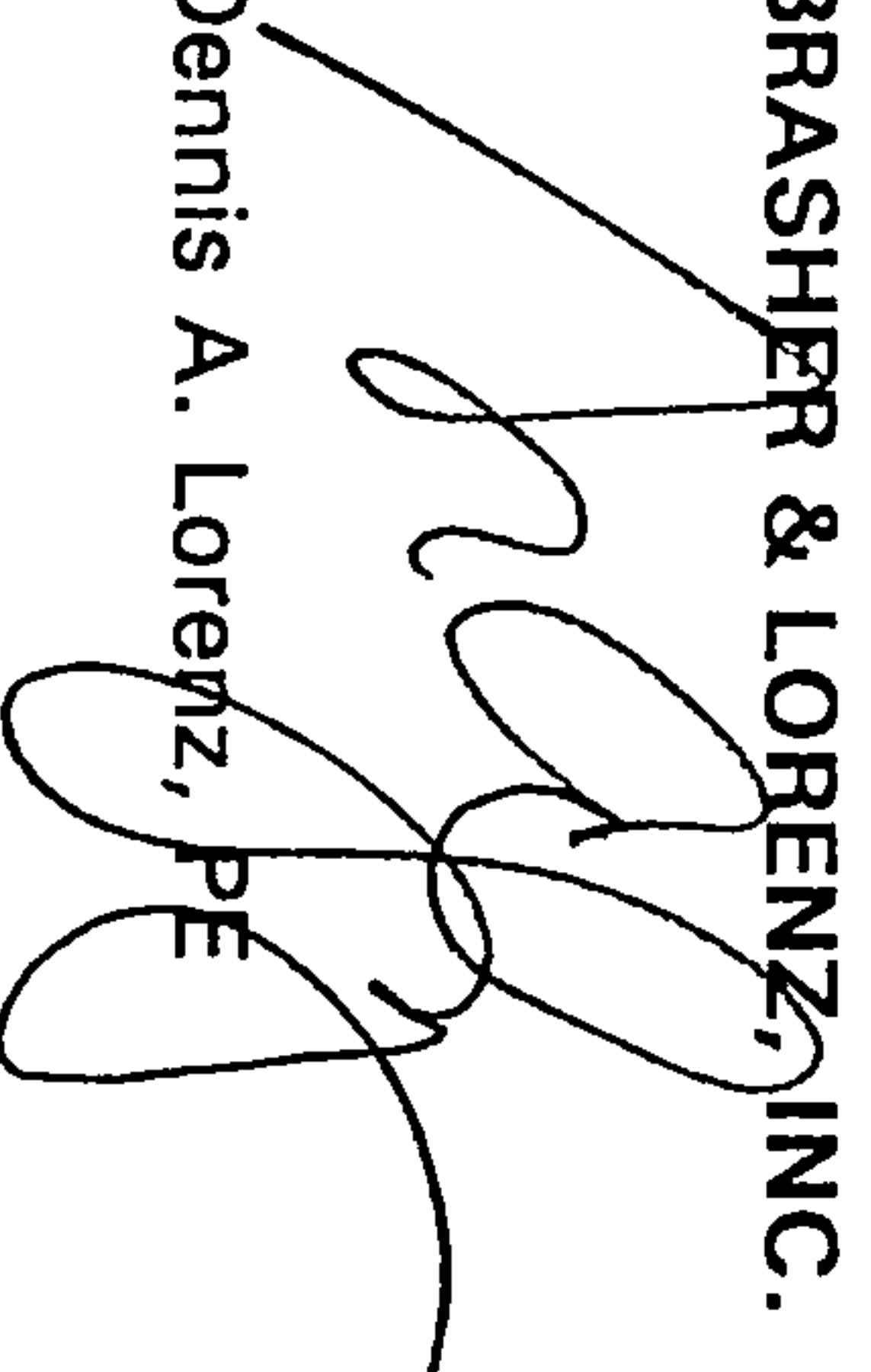
7. Per the Drainage Masterplan prepared by Molzen-Corbin the capacity of the 2-60 inch culverts at University is 256.3 cfs (see AHYMO output files). The 100 cfs capacity reported in the report text is incorrect.

The Masterplan proposes to manage the existing flows entering the site from the east through the existing culverts. Flows exceeding the capacity of the culverts presently pond in a detention area east of University. The developer is proposing to provide the 8 acre foot detention pond on Lot 1, Cutter Industrial Park and the downstream infrastructure required to remove the existing floodplain. Future development of upstream property may require detention ponding.

If you have any questions regarding the submittal package, please call me immediately so that we can address any remaining issues without a re-submittal.

Sincerely,

BRASHER & LORENZ, INC.



Dennis A. Lorenz, PE

/dl/6039
encl

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING 1 SUITE 210 ALBUQUERQUE, NM 87110 PHONE (505) 888-6088 FAX (505) 888-6188

April 3, 1997

Mike Provine
Molzen-Corbin & Associates
2701 Miles Road SE
Albuquerque, NM 87106

SUBJECT: SUNPORT PARK
(M15/D23)

Dear Mr. Provine:

We have received your March 28, 1997 letter via facsimile from Fred Aguirre regarding the subject project. It is my impression that your comments are based on review of sheet C-2 in the Site Development Plan submittal made by Rick Bennett, project Architect. A comprehensive Drainage Masterplan Report was submitted separately to City Hydrology, which is enclosed for your review. The DMP should contain adequate information to address your concerns. Specifically you comments are addressed as follows:

1. Per the Drainage Report for Sunport Boulevard prepared by molzen-Corbin an 18.8 acre basin contributing 85.4 cfs was planned to be intercepted by the Sunport storm drain. This project is proposing a 5.4 acre basin contributing 25.4 cfs. Capacity of the storm drain is not exceeded by this project.
2. All necessary easements will be provided for the storm drains and ponding areas prior to permitting.
3. We are proposing a public detention pond to be maintained by the City of Albuquerque. A public drainage easement and maintenance covenant will be provided per City criteria.
4. As shown by the plan the proposed drop inlet collect flows from a small drainage basin located along the north property line. The bulk of the project acreage is to be collected along the west project boundary and conveyed to the existing 8' x 6' concrete box culvert which drains through I-25 to the South Diversion Channel.
6. The proposed public detention pond is designed to have a maximum

storage of approximately 8 acre feet. The State Engineer will only review runoff impoundments exceeding 10 acre feet.

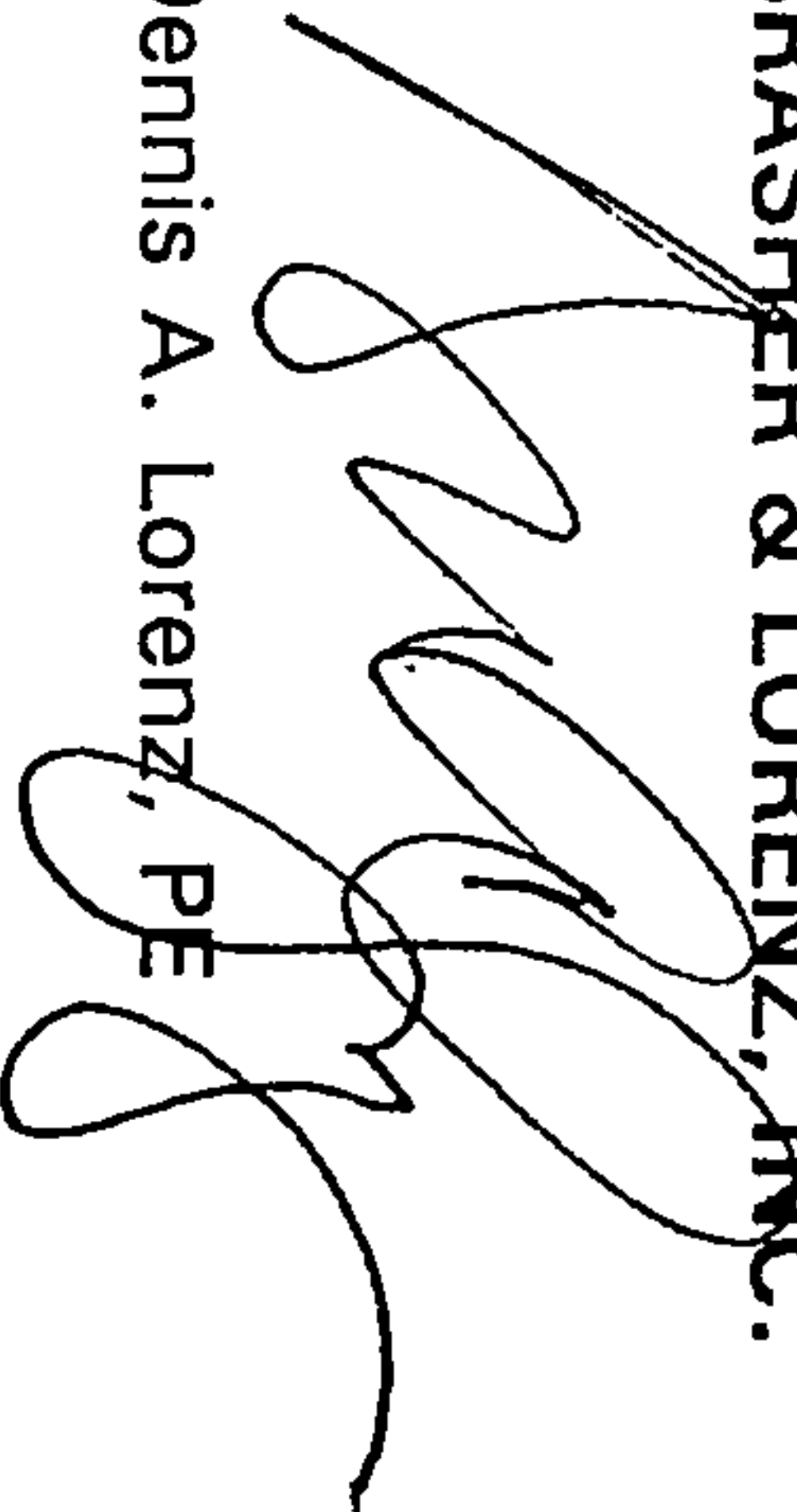
7. An emergency spillway will be provided from the proposed from the north side of the detention pond. Downstream easements and conveyances will be provided per City criteria.

We have made a re-submittal to City Hydrology addressing your comments as well as the City's. At this time we are requesting Site Development Plan approval for the entire project. The project is planned to be constructed in 2 phases. Phase 1 will construct the northern one-half of the project which includes the drop inlets along the north curblin and a short storm drain along the west curblin. The proposed detention pond and downstream storm drain will be constructed with Phase 2. Phase 2 construction will also trigger a LOMR submittal to FEMA removing the arroyo floodplain.

If you have any questions regarding the submittal package, please call.

Sincerely,

BRASHER & LORENZ, INC.



Dennis A. Lorenz, PE

/dl/6039
encl

NORTH RETENTION POND

HYDROLOGY									
(HYMO)									
Precipitation Zone 2					P360 = 2.35 in				
Basin	Basin	Land Treatment (acre)				Ew	V100	Q100	
	area (Ac)	A	B	C	D	(in)	(af)	(cfs)	
Existing Conditions									
C	8.5	8.5				0.13	0.0921	3.23	
RETENTION POND REQUIREMENT 4012 CF									
RETENTION POND PROVIDED 5319 CF									

SCOUR DEPTH CALCULATIONS

$$Y_s = [0.73 + 0.14n F_r^2] Y \quad (\text{EQN 3.89})$$

SECTION	V	Y	F _r	Y _s	h _a	TOTAL SCOUR (FROM FE)
9	5.0	0.89	0.93	1.0	0.7	1.7 FT
10	5.7	1.17	0.93	1.3	0.9	2.2 FT
11	5.3	1.41	0.79	1.4	0.8	2.2 FT
12	5.7	1.37	0.86	1.5	0.9	2.4 FT
13	5.9	1.10	0.99	1.3	0.9	2.2 FT
14	4.7	1.39	0.70	1.3	0.6	1.9 FT

Froude #:

$$F_r = \frac{V}{\sqrt{gY}}$$

ANTI-DUNE SCOUR: (FROM EQN. 3-68, ANAFCA)

SEDIMENT AND EROSION
DESIGN GUIDE)

$$h_a = 0.28 m Y F_r^2$$

AHYMO PROGRAM (AHYMO491) - AMARCA VERSION OF HYMO - APRIL, 1991

RUN DATE (MON/DAY/YR) = 04/14/1995

START TIME (HR:MIN:SEC) = 08:43:10

USER NO. = MOLZCONM.101

INPUT FILE = weex100.dat

***** MOLZEN-CORBIN AND ASSOCIATES *****
***** MAY 1993 *****
***** ALBUQUERQUE INTERNATIONAL AIRPORT DRAINAGE MASTER PLAN*****
***** 100 YEAR STORM *****
***** WEST END BASIN - 500'S *****
***** SUB-BASIN 6 NOT INCLUDED*****
***** FLOW TO BASIN WEST OF 8 RUNWAY; ARROYO TO SOUTH DIVERSION CHANNEL*****

START 0.00

RAINFALL

TYPE=1 RAIN QUARTER=0.0 RAIN ONE=2.01

RAIN SIX=2.35 RAIN DAY=0.0 DT=0.03333

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

DT = .033330 HOURS END TIME = 5.999400 HOURS

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.0120	.0139	.0158	.0178	.0199	.0219	.0241
.0263	.0286	.0309	.0333	.0358	.0384	.0411
.0439	.0467	.0497	.0529	.0561	.0596	.0631
.0669	.0709	.0751	.0807	.0866	.0930	.1066
.1371	.1840	.2514	.3434	.4644	.6186	.8106
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1.6704	1.7200	1.7664	1.8102	1.8514	1.8904	1.9273
1.9622	1.9953	2.0268	2.0566	2.0850	2.0915	2.0976
2.1033	2.1088	2.1140	2.1191	2.1239	2.1285	2.1329
2.1373	2.1414	2.1454	2.1494	2.1531	2.1568	2.1604
2.1639	2.1673	2.1706	2.1739	2.1771	2.1802	2.1832
2.1862	2.1891	2.1919	2.1947	2.1975	2.2002	2.2028
2.2054	2.2080	2.2105	2.2130	2.2154	2.2178	2.2202
2.2225	2.2248	2.2270	2.2293	2.2315	2.2336	2.2358
2.2379	2.2399	2.2420	2.2440	2.2460	2.2480	2.2500
2.2519	2.2538	2.2557	2.2576	2.2594	2.2612	2.2631
2.2648	2.2666	2.2684	2.2701	2.2718	2.2735	2.2752
2.2769	2.2785	2.2802	2.2818	2.2834	2.2850	2.2866
2.2881	2.2897	2.2912	2.2928	2.2943	2.2958	2.2973
2.2987	2.3002	2.3017	2.3031	2.3045	2.3060	2.3074
2.3088	2.3102	2.3115	2.3129	2.3143	2.3156	2.3169
2.3183	2.3196	2.3209	2.3222	2.3235	2.3248	2.3261
2.3273	2.3286	2.3298	2.3311	2.3323	2.3335	2.3348
2.3360	2.3372	2.3384	2.3396	2.3408	2.3419	2.3431
2.3443	2.3454	2.3466	2.3477	2.3488	2.3500	

CALCULATE FLOW FROM BASIN 501

** BASIN B501 - A= .043 SQ MI

COMPUTE NM HYD

ID=3 HYD NO=501 DA= .043 SQ MI

PER A=2 PER B=0 PER C=17.0 PER D=81.0

TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 141.00 CFS UNIT VOLUME = 1.000 B = 526.28 P60 = 2.0100
ARBA = .034830 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .110197HR TP = .130000HR K/TP RATIO = .847669 SHARP CONSTANT, N = 4.200377
UNIT PEAK = 23.147 CFS UNIT VOLUME = .9999 B = 368.32 P60 = 2.0100
AREA = .008170 SQ MI IA = .38158 INCHES INF = .91842 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 501.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	60.4	3.333	.9	5.000	.6
.333	.0	2.000	27.8	3.666	.7	5.333	.6
.667	.0	2.333	5.8	4.000	.6	5.666	.7
1.000	.0	2.666	2.4	4.333	.6	5.999	.7
1.333	34.8	3.000	1.3	4.666	.6	6.333	.1

RUNOFF VOLUME = 1.91155 INCHES = 4.3838 ACRES-FEET
PEAK DISCHARGE RATE = 121.58 CFS AT 1.500 HOURS BASIN AREA = .0430 SQ. MI.

**** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN ****
***** OUTFLOW IS APPROXIMATE CAPACITY OF 24" PIPE *****
ROUTE RESERVOIR ID=4 HYD=105.01 INFLOW ID=3 CODE=20

OUTFLOW STORAGE DEPTH
0 0 0
9 .5 .5
13.21 1.1 .75
13.22 5.0 1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	34.81	.16	.161	2.91
2.00	27.76	.87	2.975	13.21
2.67	2.39	.86	2.752	13.21
3.33	.86	.81	2.101	13.21
4.00	.62	.77	1.412	13.21
4.67	.60	.61	.755	10.79
5.33	.64	.32	.318	5.72
6.00	.73	.14	.142	2.56
6.67	.02	.06	.058	1.04
7.33	.00	.02	.022	.39
8.00	.00	.01	.008	.14
8.67	.00	.00	.003	.05
9.33	.00	.00	.001	.02
10.00	.00	.00	.000	.01
10.67	.00	.00	.000	.00

PEAK DISCHARGE = 13.215 CFS - PEAK OCCURS AT HOUR 2.17
MAXIMUM WATER SURFACE ELEVATION = .877
MAXIMUM STORAGE = 3.0809 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.333	13.2	4.666	10.8	6.999	.6	9.332	.0
.333	.0	2.666	13.2	5.000	9.0	7.333	.4	9.666	.0
.667	.0	3.000	13.2	5.333	5.7	7.666	.2	9.999	.0
1.000	.0	3.333	13.2	5.666	3.7	7.999	.1	10.332	.0
1.333	2.9	3.666	13.2	5.999	2.6	8.333	.1	10.666	.0
1.666	13.2	4.000	13.2	6.333	1.7	8.666	.1	10.999	.0
2.000	13.2	4.333	13.0	6.666	1.0	8.999	.0	11.332	.0

RUNOFF VOLUME = 1.91154 INCHRS = 4.3838 ACRES-FeET
 PEAK DISCHARGE RATE = 13.22 CFS AT 2.166 HOURS BASIN AREA = .0430 SQ. MI.

ROUTE CAP. THROUGH 24" RCP

COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.003

DIA=2.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.10	.1	.1
.21	.2	.3
.31	.3	.7
.42	.5	1.2
.52	.7	1.8
.63	.8	2.6
.73	1.0	3.5
.83	1.2	4.5
.94	1.4	5.5
1.04	1.7	6.6
1.15	1.9	7.8
1.25	2.1	8.9
1.35	2.3	9.9
1.46	2.5	10.9
1.56	2.6	11.8
1.67	2.8	12.6
1.77	2.9	13.1
1.88	3.1	13.3
2.00	3.1	13.3

COMPUTE TRAVEL TIME ID=7 REACH=15 VS NO=1 L=1270 SLP=0.003

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH FeET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.104	.062	.06	.3389
.208	.174	.28	.2172
.313	.314	.66	.1687
.417	.475	1.18	.1419
.521	.651	1.84	.1247
.625	.839	2.63	.1127
.730	1.037	3.52	.1039

.834	1.240	4.50	.0972
.938	1.447	5.55	.0920
1.042	1.655	6.64	.0879
1.146	1.863	7.75	.0847
1.251	2.067	8.86	.0823
1.355	2.265	9.93	.0805
1.459	2.456	10.93	.0792
1.563	2.635	11.83	.0786
1.668	2.799	12.58	.0785
1.772	2.943	13.11	.0792
1.876	3.061	13.33	.0810
2.000	3.142	13.33	.0831

ROUTE ID=7 HYD=105.1 INFLOW ID=4 DT=0.03333 HR
 PRINT HYD ID=7 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	13.2	5.333	6.3	7.999	.2
.333	.0	3.000	13.2	5.666	4.1	8.333	.1
.667	.0	3.333	13.2	5.999	2.8	8.666	.1
1.000	.0	3.666	13.2	6.333	1.9	8.999	.1
1.333	.7	4.000	13.2	6.666	1.2	9.332	.0
1.666	12.7	4.333	13.2	6.999	.8	9.666	.0
2.000	13.2	4.666	11.3	7.333	.5	9.999	.0
2.333	13.2	5.000	9.3	7.666	.3	10.332	.0

RUNOFF VOLUME = 1.91153 INCHES = 4.3837 ACRE-FEET
 PEAK DISCHARGE RATE = 13.21 CFS AT 2.900 HOURS BASIN AREA = .0430 SQ. MI.

CALCULATE FLOW FROM BASIN 502**

***BASIN B502 - A=.038 SQ MI ***

COMPUTE NM HYD ID=3 HYD NO=502 DA=.038 SQ MI

PER A=3.0 PER B=0.0 PER C=28.0 PER D=69.0

TP=-.20 RAIN=-1

K = .109000HR TP = .200000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 68.995 CFS UNIT VOLUME = .9997 B = 526.28 P60 = 2.0100
 ARBA = .026220 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .168862HR TP = .200000HR K/TP RATIO = .844312 SHAPE CONSTANT, N = 4.218638
 UNIT PEAK = 21.763 CFS UNIT VOLUME = .9995 B = 369.49 P60 = 2.0100
 ARBA = .011780 SQ MI IA = .37903 INCHES INF = .91129 INCHES PER HOUR

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

PRINT HYD ID=3 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 502.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	67.2	3.333	1.1	5.000	.5
.333	.0	2.000	26.8	3.666	.7	5.333	.5
.667	.0	2.333	8.3	4.000	.6	5.666	.5
1.000	.0	2.666	3.6	4.333	.5	5.999	.5
						7.666	.0

1.333 11.2 3.000 1.8 4.666 .5 6.333 .1

RUNOFF VOLUME = 1.78487 INCHRS = 3.6173 ACRES-FEET
PEAK DISCHARGE RATE = 82.37 CFS AT 1.567 HOURS BASIN AREA = .0380 SQ. MI.

*** ADD B502 TO B501 ROUTE ***
ADD HYD ID=2 HYD=234.5 ID I=3 II=7
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.666	16.8	5.333	6.8	7.999	.2	10.666	.0
.333	.0	3.000	15.1	5.666	4.6	8.333	.1	10.999	.0
.667	.0	3.333	14.3	5.999	3.3	8.666	.1	11.332	.0
1.000	.0	3.666	13.9	6.333	2.0	8.999	.1	11.665	.0
1.333	11.9	4.000	13.8	6.666	1.2	9.332	.0		
1.666	79.9	4.333	13.7	6.999	.8	9.666	.0		
2.000	39.9	4.666	11.7	7.333	.5	9.999	.0		
2.333	21.5	5.000	9.8	7.666	.3	10.332	.0		

RUNOFF VOLUME = 1.85210 INCHRS = 8.0010 ACRES-FEET
PEAK DISCHARGE RATE = 94.09 CFS AT 1.567 HOURS BASIN AREA = .0810 SQ. MI.

ROUTE CAP. THROUGH 48" RCP**
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.0066
DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER	FLOW	FLOW	FLOW
SURFACE	AREA	RATE	
SLRV	SQ FT	CFS	
.00	.0	.0	
.21	.2	.6	
.42	.7	2.7	
.63	1.3	6.2	
.83	1.9	11.1	
1.04	2.6	17.3	
1.25	3.4	24.8	
1.46	4.1	33.2	
1.67	5.0	42.4	
1.88	5.8	52.3	
2.08	6.6	62.6	
2.29	7.5	73.0	
2.50	8.3	83.4	
2.71	9.1	93.5	
2.92	9.8	103.0	
3.13	10.5	111.4	
3.34	11.2	118.4	
3.54	11.8	123.5	
3.75	12.2	125.5	
4.00	12.6	125.5	

COMPUTE TRAVEL TIME ID=7 REACH=15 VS NO=1 L=550 SLP=0.0066

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH FEET	AVERAGE ARBA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	.61	.0623
.417	.695	2.66	.0400
.625	1.255	6.18	.0310
.834	1.898	11.11	.0261
1.042	2.604	17.35	.0229
1.251	3.358	24.75	.0207
1.459	4.146	33.16	.0191
1.668	4.960	42.40	.0179
1.876	5.788	52.27	.0169
2.084	6.621	62.55	.0162
2.293	7.451	73.03	.0156
2.501	8.267	83.44	.0151
2.710	9.062	93.52	.0148
2.918	9.823	102.96	.0146
3.127	10.539	111.41	.0145
3.335	11.195	118.44	.0144
3.544	11.773	123.46	.0146
3.752	12.243	125.53	.0149
4.000	12.566	125.53	.0153

ROUTE ID=7 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
PRINT HYD ID=7 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	16.9	5.333	6.9	7.999	.2	10.666	.0
.333	.0	3.000	15.1	5.666	4.7	8.333	.1	10.999	.0
.667	.0	3.333	14.3	5.999	3.4	8.666	.1	11.332	.0
1.000	.0	3.666	13.9	6.333	2.1	8.999	.1	11.665	.0
1.333	8.3	4.000	13.8	6.666	1.3	9.332	.0		
1.666	82.6	4.333	13.7	6.999	.8	9.666	.0		
2.000	40.6	4.666	11.8	7.333	.5	9.999	.0		
2.333	21.9	5.000	9.9	7.666	.3	10.332	.0		

RUNOFF VOLUME = 1.85210 INCHES = 8.0010 ACRE-Feet
PEAK DISCHARGE RATE = 93.44 CFS AT 1.600 HOURS BASIN ARBA = .0810 SQ. MI.

***CALC BASIN 503 ***

B503 A=.021 SQ MI *

COMPUTE NM HYD ID=5 HYD NO=503 DA=.021 SQ MI
PBR A=0.0 PBR B=0.0 PBR C=2.0 PBR D=98.0
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 83.313 CFS UNIT VOLUME = .9999 B = 526.28 P60 = 2.0100
ARBA = .020580 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .104786HR TP = .130000HR K/TP RATIO = .806046 SHAPE CONSTANT, N = 4.440701
UNIT PEAK = 1.2392 CFS UNIT VOLUME = .9901 B = 383.55 P60 = 2.0100

AREA = .000420 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 503.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	31.2	3.333	.5	5.000	.4
.333	.0	2.000	15.4	3.666	.4	5.333	.4
.667	.0	2.333	3.2	4.000	.4	5.666	.4
1.000	.0	2.666	1.3	4.333	.4	5.999	.4
1.333	19.9	3.000	.7	4.666	.4	6.333	.0

RUNOFF VOLUME = 2.09562 INCHES = 2.3471 ACRE-FOOT
PEAK DISCHARGE RATE = 63.45 CFS AT 1.500 HOURS BASIN AREA = .0210 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN ****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=4 HYD=105.01 INFLOW ID=5 CODE=20

OUTFLOW STORAGE DEPTH
0
17 .5 .5
27 1.1 .75
27.90 2.2 1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELBV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	19.94	.09	.089	3.02
2.00	15.40	.64	.842	22.71
2.67	1.30	.23	.233	7.92
3.33	.49	.05	.052	1.78
4.00	.36	.02	.018	.61
4.67	.35	.01	.011	.39
5.33	.38	.01	.011	.37
6.00	.43	.01	.012	.41
6.67	.01	.00	.003	.12
7.33	.00	.00	.001	.02
8.00	.00	.00	.000	.00

PEAK DISCHARGE = 24.108 CFS - PEAK OCCURS AT HOUR 1.77
MAXIMUM WATER SURFACE ELEVATION = .678
MAXIMUM STORAGE = .9265 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	22.7	4.000	.6	5.999	.4
.333	.0	2.333	17.1	4.333	.5	6.333	.3
.667	.0	2.666	7.9	4.666	.4	6.666	.1

1.000	.0	3.000	3.7	5.000	.4	6.999	.0
1.333	3.0	3.333	1.8	5.333	.4	7.333	.0
1.666	23.7	3.666	1.0	5.666	.4	7.666	.0

RUNOFF VOLUME = 2.09560 INCHES = 2.3471 ACRE-FEET
PEAK DISCHARGE RATE = 24.11 CFS AT 1.766 HOURS BASIN AREA = .0210 SQ. MI.

ROUTE CAP. THROUGH 30" RCP
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.004
DIA=2.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0					
WATER SURFACE ELBV	FLOW AREA SQ FT	FLOW RATE CFS			
.00	.0	.0			
.13	.1	.1			
.26	.3	.6			
.39	.5	1.4			
.52	.7	2.5			
.65	1.0	3.9			
.78	1.3	5.5			
.91	1.6	7.4			
1.04	1.9	9.4			
1.17	2.3	11.6			
1.30	2.6	13.9			
1.43	2.9	16.2			
1.56	3.2	18.5			
1.69	3.5	20.8			
1.82	3.8	22.9			
1.95	4.1	24.8			
2.08	4.4	26.3			
2.21	4.6	27.4			
2.35	4.8	27.9			
2.50	4.9	27.9			

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=320 SLP=0.004

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.130	.098	.14	.0637
.261	.271	.59	.0408
.391	.490	1.37	.0317
.521	.741	2.47	.0267
.651	1.017	3.86	.0234
.782	1.312	5.50	.0212
.912	1.620	7.37	.0195
1.042	1.937	9.42	.0183
1.173	2.261	11.62	.0173
1.303	2.586	13.91	.0165
1.433	2.910	16.23	.0159
1.563	3.229	18.55	.0155
1.694	3.540	20.79	.0151
1.824	3.837	22.89	.0149
1.954	4.117	24.77	.0148

2.084	4.373	26.33	.0148
2.215	4.599	27.45	.0149
2.345	4.783	27.91	.0152
2.500	4.909	27.91	.0156

ROUTE ID=3 HYD=105.1 INFLOW ID=4 DT=0.03333 HR
PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	22.8	4.000	.6	5.999	.4
.333	.0	2.333	17.4	4.333	.5	6.333	.3
.667	.0	2.666	8.2	4.666	.4	6.666	.1
1.000	.0	3.000	3.8	5.000	.4	6.999	.1
1.333	2.2	3.333	1.9	5.333	.4	7.333	.0
1.666	23.5	3.666	1.0	5.666	.4	7.666	.0

RUNOFF VOLUME = 2.09560 INCHES = 2.3471 ACRE-FEET
PEAK DISCHARGE RATE = 24.09 CFS AT 1.766 HOURS BASIN AREA = .0210 SQ. MI.

*** ADD B503 ROUTE TO B501/B502 AT MIDDLE ISLAND*****
ADD HYD ID=2 HYD=234.5 ID I=3 II=7
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.666	25.1	5.333	7.3	7.999	.2
.333	.0	3.000	18.9	5.666	5.1	8.333	.1
.667	.0	3.333	16.2	5.999	3.8	8.666	.1
1.000	.0	3.666	14.9	6.333	2.4	8.999	.1
1.333	10.5	4.000	14.4	6.666	1.5	9.332	.0
1.666	106.1	4.333	14.1	6.999	.9	9.666	.0
2.000	63.5	4.666	12.2	7.333	.5	9.999	.0
2.333	39.3	5.000	10.3	7.666	.3	10.332	.0

RUNOFF VOLUME = 1.90223 INCHES = 10.3480 ACRE-FEET
PEAK DISCHARGE RATE = 115.51 CFS AT 1.600 HOURS BASIN AREA = .1020 SQ. MI.

*** ROUTE THRU NEW 54" TO NEXT ISLAND*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.008
DIA=4.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER	FLOW	FLOW
SURFACE	AREA	RATE
ELBV	SQ FT	CFS
.00	.0	.0
.23	.3	.9
.47	.9	4.0
.70	1.6	9.3
.94	2.4	16.7
1.17	3.3	26.1
1.41	4.2	37.3

1.64	5.2	50.0
1.88	6.3	63.9
2.11	7.3	78.8
2.35	8.4	94.3
2.58	9.4	110.1
2.81	10.5	125.8
3.05	11.5	141.0
3.28	12.4	155.2
3.52	13.3	167.9
3.75	14.2	178.5
3.99	14.9	186.1
4.22	15.5	189.2
4.50	15.9	189.2

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=500 SLP=0.008

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH FEET	AVERAGE ARBA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.235	.316	.92	.0476
.469	.880	4.01	.0305
.704	1.588	9.31	.0237
.938	2.402	16.75	.0199
1.173	3.296	26.15	.0175
1.407	4.249	37.31	.0158
1.641	5.248	49.98	.0146
1.876	6.277	63.90	.0136
2.111	7.325	78.78	.0129
2.345	8.380	94.28	.0123
2.579	9.430	110.07	.0119
2.814	10.463	125.76	.0116
3.049	11.468	140.95	.0113
3.283	12.432	155.18	.0111
3.518	13.338	167.92	.0110
3.752	14.169	178.51	.0110
3.987	14.900	186.09	.0111
4.221	15.495	189.20	.0114
4.500	15.904	189.20	.0117

ROUTE ID=3 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	25.5	5.333	7.5	7.999	.2	10.666	.0
.333	.0	3.000	19.1	5.666	5.2	8.333	.1	10.999	.0
.667	.0	3.333	16.2	5.999	3.9	8.666	.1	11.332	.0
1.000	.0	3.666	15.0	6.333	2.5	8.999	.1	11.665	.0
1.333	6.5	4.000	14.4	6.666	1.5	9.332	.0		
1.666	108.0	4.333	14.2	6.999	1.0	9.666	.0		
2.000	64.2	4.666	12.3	7.333	.6	9.999	.0		
2.333	39.9	5.000	10.3	7.666	.4	10.332	.0		

RUNOFF VOLUME = 1.90223 INCHES = 10.3481 ACRE-Feet
PEAK DISCHARGE RATE = 115.46 CFS AT 1.600 HOURS BASIN ARBA = .1020 SQ. MI.

** NOW COMPUTE BASIN B504 **
 ***BASIN B504 A=.022 SQ MI ***
 COMPUTE NM HYD ID=1 HYD NO=504.0 DA=.022 SQ MI
 PBR A=0.0 PBR B=0.0 PBR C=2.0 PBR D=98.0
 TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 87.281 CFS UNIT VOLUME = .9999 B = 526.28 P60 = 2.0100
 ARBA = .021560 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .104786HR TP = .130000HR K/TP RATIO = .806046 SHAPE CONSTANT, N = 4.440701
 UNIT PEAK = 1.2982 CFS UNIT VOLUME = .9901 B = 383.55 P60 = 2.0100
 ARBA = .000440 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 504.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	32.7	3.333	.5	5.000	.4
.333	.0	2.000	16.1	3.666	.4	5.333	.4
.667	.0	2.333	3.3	4.000	.4	5.666	.4
1.000	.0	2.666	1.4	4.333	.4	5.999	.5
1.333	20.9	3.000	.8	4.666	.4	6.333	.0

RUNOFF VOLUME = 2.09562 INCHES = 2.4588 ACRES-DEFT
 PEAK DISCHARGE RATE = 66.47 CFS AT 1.500 HOURS BASIN AREA = .0220 SQ. MI.

***** ROUTE THROUGH SWALE TO INLET NEAR WEST ISLAND *****
 COMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=1.0
 CH SLP=.004 PP SLP=.004 N=.017 DIST=20
 DIST ELBY DIST ELBY DIST ELBY
 0 1 8 0 12 0
 20 1

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW ARBA SQ FT	FLOW RATE CFS
.00	.0	.0
.05	.2	.2
.11	.5	.6
.16	.8	1.2
.21	1.2	2.0
.26	1.6	3.0
.32	2.1	4.2
.37	2.6	5.7
.42	3.1	7.5
.47	3.7	9.5
.53	4.3	11.8
.58	5.0	14.4
.63	5.7	17.2
.68	6.5	20.5

.74	7.3	24.0
.79	8.1	27.9
.84	9.0	32.1
.89	10.0	36.7
.95	11.0	41.6
1.00	12.0	47.0

COMPUTE TRAVEL TIME ID=4 REACH=1 VS NO=1 L=1700 SLP=.004

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.053	.233	.17	.6468
.105	.510	.56	.4270
.158	.831	1.16	.3382
.211	1.197	1.96	.2876
.263	1.607	2.99	.2541
.316	2.061	4.24	.2298
.368	2.560	5.73	.2110
.421	3.102	7.47	.1961
.474	3.690	9.48	.1837
.526	4.321	11.78	.1733
.579	4.997	14.36	.1643
.632	5.717	17.25	.1565
.684	6.482	20.45	.1497
.737	7.291	23.99	.1435
.789	8.144	27.86	.1380
.842	9.042	32.09	.1331
.895	9.983	36.68	.1285
.947	10.970	41.65	.1244
1.000	12.000	47.00	.1206

ROUTE ID=4 HYD NO=110.3 INFLOW ID=1 DT=.03333 HR

TRAVEL TIME TABLE EXCEEDED

*** CHANNEL DISCHARGE TO INLET NEAR MUELLER*****

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 110.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	20.7	4.000	.5	5.999	.4	7.999	.0
.333	.0	2.333	6.9	4.333	.4	6.333	.3	8.333	.0
.667	.0	2.666	2.7	4.666	.4	6.666	.2	8.666	.0
1.000	.0	3.000	1.4	5.000	.4	6.999	.1	8.999	.0
1.333	5.5	3.333	.8	5.333	.4	7.333	.1	9.332	.0
1.666	46.4	3.666	.6	5.666	.4	7.666	.0	9.666	.0

RUNOFF VOLUME = 2.09563 INCHES = 2.4589 ACRE-Feet

PEAK DISCHARGE RATE = 51.28 CFS AT 1.633 HOURS BASIN AREA = .0220 SQ. MI.

** NOW COMPUTE BASIN B505 ***

***BASIN B505 A=.024 SQ MI ***

COMPUTE NM HYD

ID=1 HYD NO=505.0 DA=.024 SQ MI

PBR A=1.0 PBR B=0.0 PBR C=9.0 PBR D=90.0

TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 87.443 CFS UNIT VOLUME = .9999 B = 526.28 P60 = 2.0100
AREA = .021600 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

K = .109926HR TP = .130000HR K/TP RATIO = .845587 SHAPE CONSTANT, N = 4.211669
UNIT PEAK = 6.8131 CFS UNIT VOLUME = .9985 B = 369.04 P60 = 2.0100
AREA = .002400 SQ MI IA = .38000 INCHES INF = .91400 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

PRINT HYD ID=1 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 505.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	34.8	3.333	.5	5.000	.4
.333	.0	2.000	16.6	3.666	.4	5.333	.4
.667	.0	2.333	3.4	4.000	.4	5.666	.4
1.000	.0	2.666	1.4	4.333	.4	5.999	.5
1.333	21.2	3.000	.8	4.666	.4	6.333	.0

RUNOFF VOLUME = 2.00850 INCHES = 2.5709 ACRE-FeET
PEAK DISCHARGE RATE = 70.31 CFS AT 1.500 HOURS BASIN AREA = .0240 SQ. MI.

*** ADD B504 ROUTE TO B505 *****

ADD HYD ID=1 HYD=234.5 ID I=1 II=4
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	37.3	4.000	.8	5.999	.9
.333	.0	2.333	10.4	4.333	.8	6.333	.3
.667	.0	2.666	4.1	4.666	.8	6.666	.2
1.000	.0	3.000	2.1	5.000	.8	6.999	.1
1.333	26.7	3.333	1.3	5.333	.8	7.333	.1
1.666	81.2	3.666	1.0	5.666	.8	7.666	.0

RUNOFF VOLUME = 2.05014 INCHES = 5.0297 ACRE-FeET
PEAK DISCHARGE RATE = 107.77 CFS AT 1.533 HOURS BASIN AREA = .0460 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN *****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=4 HYD=105.01 INFLOW ID=1 CODE=20
OUTFLOW STORAGE DEPTH

0	0	0
14	.5	.4
24	1.1	.7
24.30	2.2	1.0

STORAGE-DISCHARGE TABLE EXCEEDED.

* * * * *

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

.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	26.67	.09	.112	3.14

WARNING - OUTFLOW EXCEEDS RESERVOIR CAPACITY

2.00	37.26	6.13	20.993	29.43
2.67	4.13	.94	1.962	24.24
3.33	1.33	.55	.802	19.04
4.00	.84	.17	.207	5.80
4.67	.75	.05	.066	1.84
5.33	.78	.03	.036	1.00
6.00	.89	.03	.031	.88
6.67	.17	.01	.016	.44
7.33	.06	.00	.006	.17
8.00	.02	.00	.002	.06
8.67	.01	.00	.001	.02
9.33	.00	.00	.000	.01
10.00	.00	.00	.000	.00

WARNING - OUTFLOW EXCEEDS RESERVOIR CAPACITY

PEAK DISCHARGE = 29.761 CFS - PEAK OCCURS AT HOUR 2.10

MAXIMUM WATER SURFACE ELEVATION = 6.461

MAXIMUM STORAGE = 22.2249 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.333	27.3	4.666	1.8	6.999	.3	9.332	.0
.333	.0	2.666	24.2	5.000	1.3	7.333	.2	9.666	.0
.667	.0	3.000	24.1	5.333	1.0	7.666	.1	9.999	.0
1.000	.0	3.333	19.0	5.666	.9	7.999	.1	10.332	.0
1.333	3.1	3.666	11.5	5.999	.9	8.333	.0		
1.666	24.2	4.000	5.8	6.333	.7	8.666	.0		
2.000	29.4	4.333	3.1	6.666	.4	8.999	.0		

RUNOFF VOLUME = 2.05014 INCHES = 5.0296 ACRE-FEET

PEAK DISCHARGE RATE = 29.76 CFS AT 2.100 HOURS BASIN AREA = .0460 SQ. MI.

*** ROUTE THRU 24" FROM APRON TO WEST ISLAND*****

COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.010

DIA=2.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.10	.1	.1
.21	.2	.5
.31	.3	1.2
.42	.5	2.2
.52	.7	3.4
.63	.8	4.8
.73	1.0	6.4

.83	1.2	8.2
.94	1.4	10.1
1.04	1.7	12.1
1.15	1.9	14.2
1.25	2.1	16.2
1.35	2.3	18.1
1.46	2.5	20.0
1.56	2.6	21.6
1.67	2.8	23.0
1.77	2.9	23.9
1.88	3.1	24.3
2.00	3.1	24.3

COMPUTE TRAVEL TIME ID=5 REACH=15 VS NO=1 L=346 SLP=0.010

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH FEET	AVERAGE ARBA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.104	.062	.12	.0506
.208	.174	.52	.0324
.313	.314	1.20	.0252
.417	.475	2.15	.0212
.521	.651	3.36	.0186
.625	.839	4.80	.0168
.730	1.037	6.43	.0155
.834	1.240	8.22	.0145
.938	1.447	10.13	.0137
1.042	1.655	12.13	.0131
1.146	1.863	14.16	.0126
1.251	2.067	16.18	.0123
1.355	2.265	18.13	.0120
1.459	2.456	19.96	.0118
1.563	2.635	21.60	.0117
1.668	2.799	22.96	.0117
1.772	2.943	23.93	.0118
1.876	3.061	24.34	.0121
2.000	3.142	24.34	.0124

ROUTE ID=5 HYD=105.1 INFLOW ID=4 DT=0.03333 HR
TRAVEL TIME TABLE EXCEEDED
PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.333	27.5	4.666	1.9	6.999	.3	9.332	.0
.333	.0	2.666	24.3	5.000	1.3	7.333	.2	9.666	.0
.667	.0	3.000	24.1	5.333	1.0	7.666	.1	9.999	.0
1.000	.0	3.333	19.3	5.666	.9	7.999	.1	10.332	.0
1.333	2.4	3.666	11.7	5.999	.9	8.333	.0		
1.666	24.1	4.000	5.9	6.333	.7	8.666	.0		
2.000	29.3	4.333	3.2	6.666	.5	8.999	.0		

RUNOFF VOLUME = 2.05014 INCHES = 5.0296 ACRES-DEPT
PEAK DISCHARGE RATE = 29.76 CFS AT 2.100 HOURS BASIN ARBA = .0460 SQ. MI.

*** ADD BASIN 505 RT TO B501/B502 AT WEST ISLAND*****
ADD HYD ID=2 HYD=234.5 ID I=3 II=5
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	49.7	5.333	8.5	7.999	.3	10.666	.0
.333	.0	3.000	43.2	5.666	6.1	8.333	.2	10.999	.0
.667	.0	3.333	35.5	5.999	4.8	8.666	.1	11.332	.0
1.000	.0	3.666	26.7	6.333	3.2	8.999	.1	11.665	.0
1.333	8.9	4.000	20.3	6.666	2.0	9.332	.1		
1.666	132.1	4.333	17.3	6.999	1.2	9.666	.0		
2.000	93.5	4.666	14.2	7.333	.8	9.999	.0		
2.333	67.4	5.000	11.6	7.666	.5	10.332	.0		

RUNOFF VOLUME = 1.94819 INCHES = 15.3776 ACRE-FeET
PEAK DISCHARGE RATE = 139.44 CFS AT 1.600 HOURS BASIN AREA = .1480 SQ. MI.

*** ROUTE THRU 60" TO TEE AT END OF RUNWAY*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.004
DIA=5.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.26	.4	.9
.52	1.1	3.8
.78	2.0	8.7
1.04	3.0	15.7
1.30	4.1	24.5
1.56	5.2	34.9
1.82	6.5	46.8
2.08	7.7	59.8
2.35	9.0	73.8
2.61	10.3	88.3
2.87	11.6	103.1
3.13	12.9	117.8
3.39	14.2	132.0
3.65	15.3	145.3
3.91	16.5	157.3
4.17	17.5	167.2
4.43	18.4	174.3
4.69	19.1	177.2
5.00	19.6	177.2

COMPUTE TRAVEL TIME ID=5 REACH=15 VS NO=1 L=440 SLP=0.004

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH FeET	AVERAGE AREA SQ.Ft.	FLOW RATE CFS	TRAVEL TIME HRS
.261	.390	.86	.0552
.521	1.086	3.75	.0354

.782	1.961	8.72	.0275
1.042	2.966	15.68	.0231
1.303	4.069	24.49	.0203
1.563	5.246	34.94	.0184
1.824	6.479	46.81	.0169
2.084	7.749	59.84	.0158
2.345	9.043	73.77	.0150
2.606	10.345	88.29	.0143
2.866	11.641	103.08	.0138
3.127	12.918	117.78	.0134
3.387	14.159	132.00	.0131
3.648	15.348	145.33	.0129
3.908	16.467	157.25	.0128
4.169	17.492	167.17	.0128
4.429	18.395	174.27	.0129
4.690	19.130	177.19	.0132
5.000	19.635	177.19	.0135

ROUTE ID=5 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
 PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	50.1	5.333	8.6	7.999	.3	10.666	.0
.333	.0	3.000	43.4	5.666	6.2	8.333	.2	10.999	.0
.667	.0	3.333	35.9	5.999	4.9	8.666	.1	11.332	.0
1.000	.0	3.666	27.1	6.333	3.3	8.999	.1	11.665	.0
1.333	4.5	4.000	20.5	6.666	2.1	9.332	.1		
1.666	133.8	4.333	17.4	6.999	1.3	9.666	.0		
2.000	94.1	4.666	14.4	7.333	.8	9.999	.0		
2.333	68.2	5.000	11.7	7.666	.5	10.332	.0		

RUNOFF VOLUME = 1.94820 INCHES = 15.3777 ACRE-FEET
 PEAK DISCHARGE RATE = 138.34 CFS AT 1.600 HOURS BASIN AREA = .1480 SQ. MI.

*** ROUTE THRU 60" TO JUNCTION AT SW CORNER @ END RUNWAY*****
 COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.008
 DIA=5.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.26	.4	1.2
.52	1.1	5.3
.78	2.0	12.3
1.04	3.0	22.2
1.30	4.1	34.6
1.56	5.2	49.4
1.82	6.5	66.2
2.08	7.7	84.6
2.35	9.0	104.3
2.61	10.3	124.9
2.87	11.6	145.8
3.13	12.9	166.6
3.39	14.2	186.7

3.65	15.3	205.5
3.91	16.5	222.4
4.17	17.5	236.4
4.43	18.4	246.5
4.69	19.1	250.6
5.00	19.6	250.6

COMPUTE TRAVEL TIME ID=10 REACH=15 VS NO=1 L=400 SLP=0.008

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH FEET	AVERAGE ARBA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.261	.390	1.22	.0355
.521	1.086	5.30	.0227
.782	1.961	12.33	.0177
1.042	2.966	22.18	.0149
1.303	4.069	34.63	.0131
1.563	5.246	49.41	.0118
1.824	6.479	66.20	.0109
2.084	7.749	84.63	.0102
2.345	9.043	104.33	.0096
2.606	10.345	124.86	.0092
2.866	11.641	145.77	.0089
3.127	12.918	166.56	.0086
3.387	14.159	186.68	.0084
3.648	15.348	205.52	.0083
3.908	16.467	222.39	.0082
4.169	17.492	236.42	.0082
4.429	18.395	246.46	.0083
4.690	19.130	250.58	.0085
5.000	19.635	250.58	.0087

ROUTE ID=10 HYD=105.1 INFLOW ID=5 DT=0.03333 HR
***** HYDROGRAPH ENTERING JUNCTION FROM NORTH BRANCH*****
PRINT HYD ID=10 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	50.4	5.333	8.8	7.999	.3	10.666	.0
.333	.0	3.000	43.5	5.666	6.3	8.333	.2	10.999	.0
.667	.0	3.333	36.2	5.999	4.9	8.666	.1	11.332	.0
1.000	.0	3.666	27.4	6.333	3.4	8.999	.1	11.665	.0
1.333	2.2	4.000	20.7	6.666	2.2	9.332	.1		
1.666	135.0	4.333	17.5	6.999	1.4	9.666	.0		
2.000	94.6	4.666	14.5	7.333	.9	9.999	.0		
2.333	68.8	5.000	11.8	7.666	.5	10.332	.0		

RUNOFF VOLUME = 1.94820 INCHES = 15.3777 ACRES-DEEPT
PEAK DISCHARGE RATE = 138.47 CFS AT 1.633 HOURS BASIN ARBA = .1480 SQ. MI.

*** CALC FLOW FROM BASIN B507***
*** B507 A=.025 SQMI***
COMPUTE NM HYD ID=4 HYD NO=507 DA=0.025 SQ MI
PER A=3.0 PER B=0.0 PER C=65.0 PER D=32.0
TP=-.17 RAIN=-1

K = .092650HR TP = .170000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 24.766 CFS UNIT VOLUME = .9997 B = 526.28 P60 = 2.0100
AREA = .008000 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .139993HR TP = .170000HR K/TP RATIO = .823491 SHAPE CONSTANT, N = 4.3336063
UNIT PEAK = 37.699 CFS UNIT VOLUME = .9998 B = 376.99 P60 = 2.0100
AREA = .017000 SQ MI IA = .36324 INCHES INF = .86706 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 507.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	35.5	3.333	.4	5.000	.1	6.666	.0
.333	.0	2.000	12.0	3.666	.2	5.333	.1	6.999	.0
.667	.0	2.333	3.4	4.000	.2	5.666	.2		
1.000	.0	2.666	1.5	4.333	.2	5.999	.2		
1.333	6.1	3.000	.7	4.666	.1	6.333	.0		

RUNOFF VOLUME = 1.41895 INCHES = 1.8919 ACRES-FEET
PEAK DISCHARGE RATE = 49.86 CFS AT 1.533 HOURS BASIN AREA = .0250 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN *****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=1 HYD=105.01 INFLOW ID=4 CODE=20
OUTFLOW STORAGE DEPTH

0	0	0
6	.5	.5
10	1.1	1
10.1	2.2	2

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	6.06	.02	.023	.27
2.00	12.04	1.06	1.170	10.01
2.67	1.46	.83	.895	8.63
3.33	.37	.53	.531	6.21
4.00	.18	.28	.284	3.41
4.67	.14	.15	.153	1.83
5.33	.15	.08	.084	1.01
6.00	.17	.05	.050	.60
6.67	.01	.03	.028	.33
7.33	.00	.01	.014	.17
8.00	.00	.01	.007	.09
8.67	.00	.00	.004	.05
9.33	.00	.00	.002	.02
10.00	.00	.00	.001	.01
10.67	.00	.00	.001	.01

11.33 .00 .00 .00
PEAK DISCHARGE = 10.007 CFS - PEAK OCCURS AT HOUR 2.07
MAXIMUM WATER SURFACE ELEVATION = 1.069
MAXIMUM STORAGE = 1.1756 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	8.6	5.333	1.0	7.999	.1	10.666	.0
.333	.0	3.000	7.4	5.666	.8	8.333	.1	10.999	.0
.667	.0	3.333	6.2	5.999	.6	8.666	.0	11.332	.0
1.000	.0	3.666	4.7	6.333	.5	8.999	.0	11.665	.0
1.333	.3	4.000	3.4	6.666	.3	9.332	.0	11.999	.0
1.666	8.4	4.333	2.5	6.999	.2	9.666	.0	12.332	.0
2.000	10.0	4.666	1.8	7.333	.2	9.999	.0		
2.333	9.9	5.000	1.4	7.666	.1	10.332	.0		

RUNOFF VOLUME = 1.41893 INCHES = 1.8919 ACRES-DEEFT
PEAK DISCHARGE RATE = 10.01 CFS AT 2.066 HOURS BASIN AREA = .0250 SQ. MI.

*** ROUTE THRU 24* INTO BASIN 3***
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.002
DIA=2.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.10	.1	.1
.21	.2	.2
.31	.3	.5
.42	.5	1.0
.52	.7	1.5
.63	.8	2.1
.73	1.0	2.9
.83	1.2	3.7
.94	1.4	4.5
1.04	1.7	5.4
1.15	1.9	6.3
1.25	2.1	7.2
1.35	2.3	8.1
1.46	2.5	8.9
1.56	2.6	9.7
1.67	2.8	10.3
1.77	2.9	10.7
1.88	3.1	10.9
2.00	3.1	10.9

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=550 SLP=0.002

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH	AVERAGE AREA	FLOW RATE	TRAVEL TIME
----------------	-----------------	--------------	----------------

FBFT	SQ.FT.	CFS	HRS
.104	.062	.05	.1798
.208	.174	.23	.1152
.313	.314	.54	.0895
.417	.475	.96	.0753
.521	.651	1.50	.0661
.625	.839	2.15	.0598
.730	1.037	2.87	.0551
.834	1.240	3.68	.0515
.938	1.447	4.53	.0488
1.042	1.655	5.42	.0466
1.146	1.863	6.33	.0449
1.251	2.067	7.23	.0437
1.355	2.265	8.11	.0427
1.459	2.456	8.93	.0420
1.563	2.635	9.66	.0417
1.668	2.799	10.27	.0416
1.772	2.943	10.70	.0420
1.876	3.061	10.88	.0430
2.000	3.142	10.88	.0441

ROUTE ID=3 HYD=105.1 INFLOW ID=1 DT=0.03333 HR
 PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	8.8	5.333	1.1	7.999	.1
.333	.0	3.000	7.5	5.666	.8	8.333	.1
.667	.0	3.333	6.3	5.999	.6	8.666	.1
1.000	.0	3.666	4.8	6.333	.5	8.999	.0
1.333	.1	4.000	3.5	6.666	.4	9.332	.0
1.666	7.8	4.333	2.6	6.999	.3	9.666	.0
2.000	10.0	4.666	1.9	7.333	.2	9.999	.0
2.333	10.0	5.000	1.4	7.666	.1	10.332	.0

RUNOFF VOLUME = 1.41889 INCHES = 1.8918 ACRES-FBFT
 PEAK DISCHARGE RATE = 10.00 CFS AT 2.233 HOURS BASIN AREA = .0250 SQ. MI.

*** B508 A=.052 SQMI***

COMPUTE NM HYD ID=4 HYD NO=508 DA=0.052 SQ MI
 PER A=0.0 PER B=5.0 PER C=53.0 PER D=42.0
 TP=-.28 RAIN=-1

K = .152600HR TP = .280000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 41.049 CFS UNIT VOLUME = .9996 B = 526.28 P60 = 2.0100
 AREA = .021840 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

K = .230155HR TP = .280000HR K/TP RATIO = .821982 SHAPE CONSTANT, N = 4.344866
 UNIT PEAK = 40.667 CFS UNIT VOLUME = .9997 B = 377.54 P60 = 2.0100
 AREA = .030160 SQ MI IA = .36293 INCHES INF = .86621 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

PRINT HYD ID=4 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 508.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	38.7	4.000	.9	5.999	.5
.333	.0	2.333	14.2	4.333	.7	6.333	.2
.667	.0	2.666	6.2	4.666	.5	6.666	.1
1.000	.0	3.000	3.6	5.000	.5	6.999	.0
1.333	3.6	3.333	2.2	5.333	.4	7.333	.0
1.666	80.7	3.666	1.4	5.666	.4	7.666	.0

RUNOFF VOLUME = 1.52184 INCHRS = 4.2205 ACRE-FeET
PEAK DISCHARGE RATE = 80.74 CFS AT 1.667 HOURS BASIN AREA = .0520 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN *****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=1 HYD=105.01 INFLOW ID=4 CODE=20
OUTFLOW STORAGE DEPTH
0 0 0
39 .5 .4
69. 1.1 .75
69.10 2.2 1.0

* * * * *

TIME	INFLOW	ELEV	VOLUME	OUTFLOW
(HRS)	(CFS)	(FeET)	(AC-FT)	(CFS)
.00	.00	.00	.00	.00
.67	.00	.00	.00	.00
1.33	3.59	.01	.010	.76
2.00	38.66	.57	.787	53.37
2.67	6.22	.11	.131	10.25
3.33	2.16	.03	.037	2.87
4.00	.93	.01	.015	1.14
4.67	.55	.01	.008	.61
5.33	.45	.00	.006	.46
6.00	.46	.00	.006	.45
6.67	.06	.00	.002	.12
7.33	.01	.00	.000	.02
8.00	.00	.00	.000	.00

PEAK DISCHARGE = 59.364 CFS - PEAK OCCURS AT HOUR 1.83
MAXIMUM WATER SURFACE ELEVATION = .638
MAXIMUM STORAGE = .9073 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	53.4	4.000	1.1	5.999	.5
.333	.0	2.333	27.1	4.333	.8	6.333	.4
.667	.0	2.666	10.3	4.666	.6	6.666	.1
1.000	.0	3.000	5.0	5.000	.5	6.999	.0
1.333	.8	3.333	2.9	5.333	.5	7.333	.0
1.666	48.0	3.666	1.7	5.666	.4	7.666	.0

RUNOFF VOLUME = 1.52183 INCHRS = 4.2205 ACRE-FeET

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	38.7	4.000	.9	5.999	.5
.333	.0	2.333	14.2	4.333	.7	6.333	.2
.667	.0	2.666	6.2	4.666	.5	6.666	.1
1.000	.0	3.000	3.6	5.000	.5	6.999	.0
1.333	3.6	3.333	2.2	5.333	.4	7.333	.0
1.666	80.7	3.666	1.4	5.666	.4	7.666	.0

RUNOFF VOLUME = 1.52184 INCHES = 4.2205 ACRES-FEET
PEAK DISCHARGE RATE = 80.74 CFS AT 1.667 HOURS BASIN AREA = .0520 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN *****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=1 HYD=105.01 INFLOW ID=4 CODE=20
OUTFLOW STORAGE DEPTH
0 0 0
39 .5 .4
69. 1.1 .75
69.10 2.2 1.0

* * * * *

TIME	INFLOW	ELEV	VOLUME	OUTFLOW
(HRS)	(CFS)	(FEET)	(AC-FT)	(CFS)
.00	.00	.00	.00	.00
.67	.00	.00	.00	.00
1.33	3.59	.01	.010	.76
2.00	38.66	.57	.787	53.37
2.67	6.22	.11	.131	10.25
3.33	2.16	.03	.037	2.87
4.00	.93	.01	.015	1.14
4.67	.55	.01	.008	.61
5.33	.45	.00	.006	.46
6.00	.46	.00	.006	.45
6.67	.06	.00	.002	.12
7.33	.01	.00	.000	.02
8.00	.00	.00	.000	.00

PEAK DISCHARGE = 59.364 CFS - PEAK OCCURS AT HOUR 1.83
MAXIMUM WATER SURFACE ELEVATION = .638
MAXIMUM STORAGE = .9073 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	53.4	4.000	1.1	5.999	.5
.333	.0	2.333	27.1	4.333	.8	6.333	.4
.667	.0	2.666	10.3	4.666	.6	6.666	.1
1.000	.0	3.000	5.0	5.000	.5	6.999	.0
1.333	.8	3.333	2.9	5.333	.5	7.333	.0
1.666	48.0	3.666	1.7	5.666	.4	7.666	.0

RUNOFF VOLUME = 1.52183 INCHES = 4.2205 ACRES-FEET

PEAK DISCHARGE RATE = 59.36 CFS AT 1.833 HOURS BASIN AREA = .0520 SQ. MI.

*S ADD BASIN 507 AND 508 TO GET TOTAL**

ADD HYD ID=1 HYD=234.5 ID I=3 II=1
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	19.0	5.333	1.5	7.999	.1	10.666	.0
.333	.0	3.000	12.5	5.666	1.3	8.333	.1	10.999	.0
.667	.0	3.333	9.2	5.999	1.1	8.666	.1	11.332	.0
1.000	.0	3.666	6.6	6.333	.8	8.999	.0	11.665	.0
1.333	.8	4.000	4.7	6.666	.5	9.332	.0	11.999	.0
1.666	55.8	4.333	3.4	6.999	.3	9.666	.0	12.332	.0
2.000	63.3	4.666	2.5	7.333	.2	9.999	.0		
2.333	37.1	5.000	1.9	7.666	.1	10.332	.0		

RUNOFF VOLUME = 1.48840 INCHES = 6.1123 ACRE-FeET
PEAK DISCHARGE RATE = 69.07 CFS AT 1.833 HOURS BASIN AREA = .0770 SQ. MI.

*** ROUTE THRU LAST 48* SECTION IN WEST BASIN 508

*** TO BRANCH AT BASIN 509*****

COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.002

DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELBV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	.2	.3
.42	.7	1.5
.63	1.3	3.4
.83	1.9	6.1
1.04	2.6	9.5
1.25	3.4	13.6
1.46	4.1	18.3
1.67	5.0	23.3
1.88	5.8	28.8
2.08	6.6	34.4
2.29	7.5	40.2
2.50	8.3	45.9
2.71	9.1	51.5
2.92	9.8	56.7
3.13	10.5	61.3
3.34	11.2	65.2
3.54	11.8	68.0
3.75	12.2	69.1
4.00	12.6	69.1

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=700 SLP=0.002

TRAVEL TIME TABLE

REACH= 15.0

PEAK DISCHARGE RATE = 59.36 CFS AT 1.833 HOURS BASIN AREA = .0520 SQ. MI.

*S ADD BASIN 507 AND 508 TO GET TOTAL**
ADD HYD ID=1 HYD=234.5 ID I=3 II=1
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	19.0	5.333	1.5	7.999	.1	10.666	.0
.333	.0	3.000	12.5	5.666	1.3	8.333	.1	10.999	.0
.667	.0	3.333	9.2	5.999	1.1	8.666	.1	11.332	.0
1.000	.0	3.666	6.6	6.333	.8	8.999	.0	11.665	.0
1.333	.8	4.000	4.7	6.666	.5	9.332	.0	11.999	.0
1.666	55.8	4.333	3.4	6.999	.3	9.666	.0	12.332	.0
2.000	63.3	4.666	2.5	7.333	.2	9.999	.0		
2.333	37.1	5.000	1.9	7.666	.1	10.332	.0		

RUNOFF VOLUME = 1.48840 INCHES = 6.1123 ACRES-DEBT
PEAK DISCHARGE RATE = 69.07 CFS AT 1.833 HOURS BASIN AREA = .0770 SQ. MI.

*** ROUTE THRU LAST 48" SECTION IN WEST BASIN 508
*** TO BRANCH AT BASIN 509*****

COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.002
DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION - 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	.2	.3
.42	.7	1.5
.63	1.3	3.4
.83	1.9	6.1
1.04	2.6	9.5
1.25	3.4	13.6
1.46	4.1	18.3
1.67	5.0	23.3
1.88	5.8	28.8
2.08	6.6	34.4
2.29	7.5	40.2
2.50	8.3	45.9
2.71	9.1	51.5
2.92	9.8	56.7
3.13	10.5	61.3
3.34	11.2	65.2
3.54	11.8	68.0
3.75	12.2	69.1
4.00	12.6	69.1

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=700 SLP=0.002

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	.34	.1441
.417	.695	1.46	.0924
.625	1.255	3.40	.0718
.834	1.898	6.12	.0603
1.042	2.604	9.55	.0530
1.251	3.358	13.63	.0479
1.459	4.146	18.25	.0442
1.668	4.960	23.34	.0413
1.876	5.788	28.77	.0391
2.084	6.621	34.43	.0374
2.293	7.451	40.20	.0360
2.501	8.267	45.93	.0350
2.710	9.062	51.48	.0342
2.918	9.823	56.68	.0337
3.127	10.539	61.33	.0334
3.335	11.195	65.20	.0334
3.544	11.773	67.96	.0337
3.752	12.243	69.10	.0345
4.000	12.566	69.10	.0354

ROUTE ID=3 HYD=105.1 INFLOW ID=1 DT=0.03333 HR
PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	20.1	5.333	1.6	7.999	.1	10.666	.0
.333	.0	3.000	13.0	5.666	1.3	8.333	.1	10.999	.0
.667	.0	3.333	9.5	5.999	1.1	8.666	.1	11.332	.0
1.000	.0	3.666	6.9	6.333	.9	8.999	.0	11.665	.0
1.333	.2	4.000	4.9	6.666	.6	9.332	.0	11.999	.0
1.666	51.0	4.333	3.6	6.999	.4	9.666	.0	12.332	.0
2.000	64.4	4.666	2.6	7.333	.2	9.999	.0	12.665	.0
2.333	39.7	5.000	2.0	7.666	.2	10.332	.0		

RUNOFF VOLUME = 1.48840 INCHES = 6.1123 ACRES-DEEFT
PEAK DISCHARGE RATE = 68.12 CFS AT 1.866 HOURS BASIN AREA = .0770 SQ. MI.

*** CALCULATE B509 ***
** BASIN B509 A=0.0122 SQMI ***
COMPUTE NM HYD ID=2 HYD NO=509 DA=0.0122 SQ MI
PBR A=1.0 PBR B=0.0 PBR C=22.0 PBR D=77.0
TP=-.13 RAIN=-1

K = .070650HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 38.029 CFS UNIT VOLUME = .9998 B = 526.28 P60 = 2.0100
AREA = .009394 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .107021HR TP = .130000HR K/TP RATIO = .823238 SHAPE CONSTANT, N = 4.337543
UNIT PEAK = 8.1391 CFS UNIT VOLUME = .9989 B = 377.08 P60 = 2.0100
AREA = .002806 SQ MI IA = .36304 INCHES INF = .86652 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=2 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 509.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	17.0	3.333	.2	5.000	.2	6.666	.0
.333	.0	2.000	7.7	3.666	.2	5.333	.2		
.667	.0	2.333	1.6	4.000	.2	5.666	.2		
1.000	.0	2.666	.7	4.333	.2	5.999	.2		
1.333	9.5	3.000	.3	4.666	.2	6.333	.0		

RUNOFF VOLUME = 1.87993 INCHES = 1.2232 ACRE-FeET

PEAK DISCHARGE RATE = 34.17 CFS AT 1.500 HOURS BASIN AREA = .0122 SQ. MI.

*** ADD BASIN 508/507 RT TO B509 AT NW ISLAND BASIN 509*****

ADD HYD

ID=1 HYD=234.5 ID I=2 II=3

PRINT HYD

ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	20.8	5.333	1.8	7.999	.1	10.666	.0
.333	.0	3.000	13.4	5.666	1.5	8.333	.1	10.999	.0
.667	.0	3.333	9.7	5.999	1.3	8.666	.1	11.332	.0
1.000	.0	3.666	7.1	6.333	.9	8.999	.0	11.665	.0
1.333	9.7	4.000	5.1	6.666	.6	9.332	.0	11.999	.0
1.666	68.0	4.333	3.7	6.999	.4	9.666	.0	12.332	.0
2.000	72.1	4.666	2.8	7.333	.2	9.999	.0	12.665	.0
2.333	41.3	5.000	2.2	7.666	.2	10.332	.0		

RUNOFF VOLUME = 1.54194 INCHES = 7.3355 ACRE-FeET

PEAK DISCHARGE RATE = 78.70 CFS AT 1.833 HOURS BASIN AREA = .0892 SQ. MI.

***** ROUTE RBS SO ALL WATER IS DISCHARGED FR B509 AND PONDING IS KNOWN *****

***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****

ROUTE RESERVOIR ID=2 HYD=105.01 INFLOW ID=1 CODE=20

OUTFLOW STORAGE DEPTH	
0	0
146.57	.01
146.58	1.1
146.59	2.2
	1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FeET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	9.72	.00	.001	9.62
2.00	72.09	.00	.005	72.14
2.67	20.79	.00	.001	20.82
3.33	9.73	.00	.001	9.74
4.00	5.05	.00	.000	5.06

4.67	2.79	.00	.000	2.80
5.33	1.77	.00	.000	1.77
6.00	1.30	.00	.000	1.30
6.67	.57	.00	.000	.58
7.33	.25	.00	.000	.25
8.00	.12	.00	.000	.12
8.67	.06	.00	.000	.06
9.33	.03	.00	.000	.03
10.00	.02	.00	.000	.02
10.67	.01	.00	.000	.01
11.33	.00	.00	.000	.00

PEAK DISCHARGE = 78.685 CFS - PEAK OCCURS AT HOUR 1.83

MAXIMUM WATER SURFACE ELEVATION = .005

MAXIMUM STORAGE = .0054 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	20.8	5.333	1.8	7.999	.1
.333	.0	3.000	13.4	5.666	1.5	8.333	.1
.667	.0	3.333	9.7	5.999	1.3	8.666	.1
1.000	.0	3.666	7.1	6.333	.9	8.999	.0
1.333	9.6	4.000	5.1	6.666	.6	9.332	.0
1.666	67.9	4.333	3.7	6.999	.4	9.666	.0
2.000	72.1	4.666	2.8	7.333	.2	9.999	.0
2.333	41.4	5.000	2.2	7.666	.2	10.332	.0
						10.666	.0
						10.999	.0
						11.332	.0
						11.665	.0
						11.999	.0
						12.332	.0
						12.665	.0

RUNOFF VOLUME = 1.54194 INCHES = 7.3355 ACRES-FEET

PEAK DISCHARGE RATE = 78.69 CFS AT 1.833 HOURS BASIN AREA = .0892 SQ. MI.

*** ROUTE THRU LAST 48* SECTION TO JUNCTION AT SW CORNER OF RUNWAY*****
 COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.009
 DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW ARBA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	.2	.7
.42	.7	3.1
.63	1.3	7.2
.83	1.9	13.0
1.04	2.6	20.3
1.25	3.4	28.9
1.46	4.1	38.7
1.67	5.0	49.5
1.88	5.8	61.0
2.08	6.6	73.0
2.29	7.5	85.3
2.50	8.3	97.4
2.71	9.1	109.2
2.92	9.8	120.2
3.13	10.5	130.1
3.34	11.2	138.3

3.54	11.8	144.2
3.75	12.2	146.6
4.00	12.6	146.6

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=350 SLP=0.009

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	.71	.0340
.417	.695	3.10	.0218
.625	1.255	7.21	.0169
.834	1.898	12.97	.0142
1.042	2.604	20.26	.0125
1.251	3.358	28.90	.0113
1.459	4.146	38.72	.0104
1.668	4.960	49.51	.0097
1.876	5.788	61.03	.0092
2.084	6.621	73.04	.0088
2.293	7.451	85.28	.0085
2.501	8.267	97.44	.0082
2.710	9.062	109.21	.0081
2.918	9.823	120.23	.0079
3.127	10.539	130.10	.0079
3.335	11.195	138.30	.0079
3.544	11.773	144.18	.0079
3.752	12.243	146.59	.0081
4.000	12.566	146.59	.0083

ROUTE ID=3 HYD=105.1 INFLOW ID=2 DT=0.03333 HR

***** HYDROGRAPH FROM SOUTH BRANCH AT JUNCTION*****

PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	21.1	5.333	1.8	7.999	.1	10.666	.0
.333	.0	3.000	13.5	5.666	1.5	8.333	.1	10.999	.0
.667	.0	3.333	9.8	5.999	1.3	8.666	.1	11.332	.0
1.000	.0	3.666	7.2	6.333	1.0	8.999	.0	11.665	.0
1.333	8.3	4.000	5.1	6.666	.6	9.332	.0	11.999	.0
1.666	67.2	4.333	3.8	6.999	.4	9.666	.0	12.332	.0
2.000	72.5	4.666	2.8	7.333	.3	9.999	.0	12.665	.0
2.333	42.1	5.000	2.2	7.666	.2	10.332	.0		

RUNOFF VOLUME = 1.54195 INCHES = 7.3355 ACRES-DEFT

PEAK DISCHARGE RATE = 78.61 CFS AT 1.833 HOURS BASIN AREA = .0892 SQ. MI.

*** ADD SOUTH AND NORTH BRANCH HYDROGRAPHS AT JUNCTION*****

ADD HYD ID=1 HYD=234.5 ID I=10 II=3

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------

.000	.0	2.666	71.5	5.333	10.6	7.999	.5	10.666	.0
.333	.0	3.000	57.0	5.666	7.8	8.333	.3	10.999	.0
.667	.0	3.333	46.1	5.999	6.2	8.666	.2	11.332	.0
1.000	.0	3.666	34.6	6.333	4.4	8.999	.1	11.665	.0
1.333	10.6	4.000	25.8	6.666	2.8	9.332	.1	11.999	.0
1.666	202.2	4.333	21.3	6.999	1.8	9.666	.1	12.332	.0
2.000	167.1	4.666	17.3	7.333	1.1	9.999	.0	12.665	.0
2.333	110.9	5.000	14.0	7.666	.7	10.332	.0		

RUNOFF VOLUME = 1.79542 INCHES = 22.7131 ACRES-DEEPT
PEAK DISCHARGE RATE = 202.20 CFS AT 1.667 HOURS BASIN AREA = .2372 SQ. MI.

*** ROUTE THRU 66" SECTION TO ACCESS RD B AREA*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.01
DIA=5.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0					
WATER		FLOW		FLOW	
SURFACE	AREA	AREA	RATE		
BLV	SQ FT	CFS			
.00	.0	.0	.0		
.29	.5	1.8			
.57	1.3	7.6			
.86	2.4	17.8			
1.15	3.6	32.0			
1.43	4.9	49.9			
1.72	6.3	71.2			
2.01	7.8	95.4			
2.29	9.4	122.0			
2.58	10.9	150.4			
2.87	12.5	180.0			
3.15	14.1	210.1			
3.44	15.6	240.1			
3.73	17.1	269.1			
4.01	18.6	296.3			
4.30	19.9	320.6			
4.59	21.2	340.8			
4.87	22.3	355.3			
5.16	23.1	361.2			
5.50	23.8	361.2			

COMPUTE TRAVEL TIME ID=2 REACH=15 VS NO=1 L=1000 SLP=0.01

TRAVEL TIME TABLE					
REACH= 15.0					
WATER	AVERAGE	FLOW	TRAVEL		
DEPTH	AREA	RATE	TIME		
DEPT	SQ.FT.	CFS	HRS		
.287	.472	1.76	.0745		
.573	1.314	7.65	.0477		
.860	2.373	17.78	.0371		
1.146	3.589	31.97	.0312		
1.433	4.923	49.92	.0274		
1.720	6.348	71.23	.0248		
2.006	7.839	95.43	.0228		
2.293	9.377	122.00	.0213		
2.579	10.942	150.40	.0202		
2.866	12.518	180.00	.0193		

3.153	14.086	210.14	.0186
3.439	15.630	240.11	.0181
3.726	17.132	269.11	.0177
4.013	18.571	296.28	.0174
4.299	19.925	320.59	.0173
4.586	21.166	340.81	.0173
4.872	22.258	355.29	.0174
5.159	23.147	361.23	.0178
5.500	23.758	361.23	.0183

ROUTE ID=2 HYD=105.1 INFLOW ID=1 DT=0.03333 HR
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	72.8	5.333	10.9	7.999	.5	10.666	.0
.333	.0	3.000	57.6	5.666	8.0	8.333	.3	10.999	.0
.667	.0	3.333	46.8	5.999	6.3	8.666	.2	11.332	.0
1.000	.0	3.666	35.4	6.333	4.7	8.999	.1	11.665	.0
1.333	5.0	4.000	26.2	6.666	3.0	9.332	.1	11.999	.0
1.666	202.3	4.333	21.6	6.999	1.9	9.666	.1	12.332	.0
2.000	168.7	4.666	17.6	7.333	1.3	9.999	.0	12.665	.0
2.333	113.6	5.000	14.2	7.666	.8	10.332	.0		

RUNOFF VOLUME = 1.79542 INCHES = 22.7132 ACRE-FOOT
PEAK DISCHARGE RATE = 202.31 CFS AT 1.667 HOURS BASIN AREA = .2372 SQ. MI.

*** ROUTE THRU LAST 54" SECTION CHANNEL AT BASE*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.07
DIA=4.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.23	.3	2.7
.47	.9	11.8
.70	1.6	27.5
.94	2.4	49.5
1.17	3.3	77.3
1.41	4.2	110.4
1.64	5.2	147.8
1.88	6.3	189.0
2.11	7.3	233.0
2.35	8.4	278.9
2.58	9.4	325.6
2.81	10.5	372.0
3.05	11.5	416.9
3.28	12.4	459.0
3.52	13.3	496.7
3.75	14.2	528.0
3.99	14.9	550.5
4.22	15.5	559.7
4.50	15.9	559.7

COMPUTE TRAVEL TIME ID=11 REACH=15 VS NO=1 L=600 SLP=0.07

TRAVEL TIME TABLE
RBACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.235	.316	2.73	.0193
.469	.880	11.85	.0124
.704	1.588	27.54	.0096
.938	2.402	49.54	.0081
1.173	3.296	77.34	.0071
1.407	4.249	110.35	.0064
1.641	5.248	147.85	.0059
1.876	6.277	189.03	.0055
2.111	7.325	233.02	.0052
2.345	8.380	278.88	.0050
2.579	9.430	325.58	.0048
2.814	10.463	372.01	.0047
3.049	11.468	416.95	.0046
3.283	12.432	459.04	.0045
3.518	13.338	496.70	.0045
3.752	14.169	528.04	.0045
3.987	14.900	550.46	.0045
4.221	15.495	559.67	.0046
4.500	15.904	559.67	.0047

ROUTE ID=11 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
PRINT HYD ID=11 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	73.1	5.333	10.9	7.999	.5	10.666	.0
.333	.0	3.000	57.7	5.666	8.1	8.333	.3	10.999	.0
.667	.0	3.333	47.0	5.999	6.3	8.666	.2	11.332	.0
1.000	.0	3.666	35.6	6.333	4.8	8.999	.2	11.665	.0
1.333	3.5	4.000	26.3	6.666	3.0	9.332	.1	11.999	.0
1.666	202.3	4.333	21.7	6.999	2.0	9.666	.1	12.332	.0
2.000	169.2	4.666	17.7	7.333	1.3	9.999	.0	12.665	.0
2.333	114.4	5.000	14.3	7.666	.8	10.332	.0		

RUNOFF VOLUME = 1.79542 INCHES = 22.7132 ACRE-Feet
PEAK DISCHARGE RATE = 202.29 CFS AT 1.667 HOURS BASIN AREA = .2372 SQ. MI.

****CALC BASIN 506 ***
B506 A=.032 SQ MI **
COMPUTE NM HYD ID=5 HYD NO=506 DA=.032 SQ MI
PRR A=10.0 PRR B=5.0 PRR C =70.0 PRR D=15.0
TP=-.18 RAIN=-1

K = .098100HR TP = .180000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 14.034 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 2.0100
ARBA = .004800 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .155419HR TP = .180000HR K/TP RATIO = .863439 SHAPE CONSTANT, N = 4.117025
UNIT PEAK = 54.838 CFS UNIT VOLUME = .9999 B = 362.90 P60 = 2.0100

AREA = .027200 SQ MI IA = .39412 INCHES INF = .95353 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE =10

OUTFLOW HYDROGRAPH RESERVOIR 506.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	41.6	3.333	.4	5.000	.1
.333	.0	2.000	11.9	3.666	.3	5.333	.1
.667	.0	2.333	3.7	4.000	.2	5.666	.1
1.000	.0	2.666	1.7	4.333	.1	5.999	.1
1.333	3.9	3.000	.9	4.666	.1	6.333	.0

RUNOFF VOLUME = 1.17637 INCHES = 2.0077 ACRE-FT
PEAK DISCHARGE RATE = 53.36 CFS AT 1.567 HOURS BASIN AREA = .0320 SQ. MI.

*** ROUTE THRU 24* SECTION TO CHANNEL*****

COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.168
DIA=2.0 FT N=0.024

RATING CURVE PIPE SECTION 1.0

WATER	FLOW	FLOW	FLOW
SURFACE	AREA	RATE	
BLBY	SQ FT	CFS	
.00	.0	.0	.0
.10	.1	.3	.3
.21	.2	1.1	.1
.31	.3	2.7	.1
.42	.5	4.8	.1
.52	.7	7.5	.1
.63	.8	10.7	.1
.73	1.0	14.3	.1
.83	1.2	18.2	.1
.94	1.4	22.5	.1
1.04	1.7	26.9	.1
1.15	1.9	31.4	.1
1.25	2.1	35.9	.1
1.35	2.3	40.3	.1
1.46	2.5	44.3	.1
1.56	2.6	47.9	.1
1.67	2.8	51.0	.1
1.77	2.9	53.1	.1
1.88	3.1	54.0	.1
2.00	3.1	54.0	.1

COMPUTE TRAVEL TIME ID=2 REACH=15 VS NO=1 L=220 SLP=0.168

TRAVEL TIME TABLE

REACH= 15.0

WATER	AVERAGE	FLOW	TRAVEL
DEPTH	AREA	RATE	TIME
FBFT	SQ.FT.	CFS	HRS
.104	.062	.26	.0145
.208	.174	1.14	.0093
.313	.314	2.66	.0072
.417	.475	4.78	.0061

.521	.651	7.47	.0053
.625	.839	10.65	.0048
.730	1.037	14.27	.0044
.834	1.240	18.25	.0042
.938	1.447	22.49	.0039
1.042	1.655	26.92	.0038
1.146	1.863	31.43	.0036
1.251	2.067	35.91	.0035
1.355	2.265	40.25	.0034
1.459	2.456	44.31	.0034
1.563	2.635	47.95	.0034
1.668	2.799	50.97	.0034
1.772	2.943	53.14	.0034
1.876	3.061	54.03	.0035
2.000	3.142	54.03	.0036

ROUTE
ID=2 HYD=105.1 INFLOW ID=5 DT=0.03333 HR
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	42.1	3.333	.5	5.000	.1
.333	.0	2.000	12.0	3.666	.3	5.333	.1
.667	.0	2.333	3.8	4.000	.2	5.666	.1
1.000	.0	2.666	1.8	4.333	.1	5.999	.1
1.333	3.5	3.000	.9	4.666	.1	6.333	.0

RUNOFF VOLUME = 1.17637 INCHES = 2.0077 ACRE-FT
PEAK DISCHARGE RATE = 53.36 CFS AT 1.567 HOURS BASIN AREA = .0320 SQ. MI.

*** ADD BASIN 506 AND WESTEND FLOWS AT TOP OF CHANNEL FOR SUBTOTAL*****
ADD HYD ID=10 HYD=234.5 ID I=11 II=2
PRINT HYD ID=10 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	74.8	5.333	11.0	7.999	.5	10.666	.0
.333	.0	3.000	58.6	5.666	8.2	8.333	.3	10.999	.0
.667	.0	3.333	47.5	5.999	6.4	8.666	.2	11.332	.0
1.000	.0	3.666	35.9	6.333	4.8	8.999	.2	11.665	.0
1.333	6.9	4.000	26.5	6.666	3.1	9.332	.1	11.999	.0
1.666	244.4	4.333	21.8	6.999	2.0	9.666	.1	12.332	.0
2.000	181.2	4.666	17.8	7.333	1.3	9.999	.0	12.665	.0
2.333	118.2	5.000	14.4	7.666	.8	10.332	.0		

RUNOFF VOLUME = 1.72183 INCHES = 24.7208 ACRE-FT
PEAK DISCHARGE RATE = 246.62 CFS AT 1.633 HOURS BASIN AREA = .2692 SQ. MI.

*** CALC FLOW FROM BASIN B510 ***
COMPUTE NM HYD ID=4 HYD NO=510 DA=0.024 SQ MI
PER A=25.0 PER B=25.0 PER C=46.0 PER D=4.0
TP=-.13 RAIN=-1

K = .128614HR TP = .130000HR K/TP RATIO = .989339 SHAPE CONSTANT, N = 3.568858
UNIT PEAK = 24.524 CFS UNIT VOLUME = .9997 B = 325.32 P60 = 2.0100
AREA = .009800 SQ MI IA = .49235 INCHES INF = 1.22857 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=15 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 511.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.7	2.666	.2	4.000	.0
.333	.0	1.666	8.5	3.000	.1	4.333	.0
.667	.0	2.000	1.5	3.333	.0	4.666	.0
1.000	.0	2.333	.6	3.666	.0	5.000	.0

RUNOFF VOLUME = .81964 INCHES = .4371 ACRE-FeET
PEAK DISCHARGE RATE = 15.42 CFS AT 1.500 HOURS BASIN AREA = .0100 SQ. MI.

*** ADD BASIN 511 AND SUBTOTAL TO CHANNEL FROM ABOVE*****
ADD HYD ID=2 HYD=234.5 ID I=15 II=1
***** HYDROGRAPH INTO CHANNEL*****
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	75.7	5.333	11.0	7.999	.5
.333	.0	3.000	59.0	5.666	8.2	8.333	.3
.667	.0	3.333	47.6	5.999	6.5	8.666	.2
1.000	.0	3.666	36.0	6.333	4.8	8.999	.2
1.333	9.8	4.000	26.5	6.666	3.1	9.332	.1
1.666	274.7	4.333	21.8	6.999	2.0	9.666	.1
2.000	187.0	4.666	17.8	7.333	1.3	9.999	.0
2.333	120.3	5.000	14.4	7.666	.8	10.332	.0

RUNOFF VOLUME = 1.62668 INCHES = 26.3044 ACRE-FeET
PEAK DISCHARGE RATE = 284.60 CFS AT 1.600 HOURS BASIN AREA = .3032 SQ. MI.

***** ROUTE THROUGH CHANNEL TO UNIVERSITY *****
COMPUTE RATING CURVE CID=1 VS NO=1 SRG=1 MIN EL=0 MAX EL=8
CH SLP=.0632 RP SLP=.0632 N=.033 DIST=36
DIST ELBV DIST ELBV DIST ELBV
0 8 8 0 28 0
36 8

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELBV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.42	8.6	53.3
.84	17.6	169.0
1.26	26.9	331.7
1.68	36.5	535.7

2.11	46.5	777.5
2.53	56.9	1055.3
2.95	67.6	1367.5
3.37	78.7	1713.2
3.79	90.1	2091.9
4.21	101.9	2503.2
4.63	114.1	2946.8
5.05	126.6	3422.7
5.47	139.4	3930.8
5.89	152.6	4471.3
6.32	166.2	5044.2
6.74	180.1	5649.7
7.16	194.4	6288.1
7.58	209.0	6959.7
8.00	224.0	7664.5

COMPUTE TRAVEL TIME ID=4 REACH=1 VS NO=1 L=475 SLP=.0632

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.421	8.598	53.35	.0213
.842	17.551	168.96	.0137
1.263	26.859	331.69	.0107
1.684	36.521	535.66	.0090
2.105	46.537	777.54	.0079
2.526	56.909	1055.27	.0071
2.947	67.634	1367.46	.0065
3.368	78.715	1713.20	.0061
3.789	90.150	2091.90	.0057
4.211	101.939	2503.16	.0054
4.632	114.083	2946.78	.0051
5.053	126.582	3422.66	.0049
5.474	139.435	3930.79	.0047
5.895	152.643	4471.25	.0045
6.316	166.205	5044.17	.0043
6.737	180.122	5649.73	.0042
7.158	194.393	6288.14	.0041
7.579	209.019	6959.66	.0040
8.000	224.000	7664.54	.0039

ROUTE ID=4 HYD NO=110.3 INFLOW ID=2 DT=.03333 HR
*** CHANNEL DISCHARGE***
PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 110.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	76.8	5.333	11.3	7.999	.5	10.666	.0
.333	.0	3.000	59.5	5.666	8.4	8.333	.3	10.999	.0
.667	.0	3.333	48.6	5.999	6.5	8.666	.2	11.332	.0
1.000	.0	3.666	36.7	6.333	4.9	8.999	.2	11.665	.0
1.333	6.2	4.000	27.0	6.666	3.1	9.332	.1	11.999	.0
1.666	276.8	4.333	22.0	6.999	2.0	9.666	.1	12.332	.0
2.000	188.7	4.666	18.1	7.333	1.3	9.999	.0	12.665	.0
2.333	121.9	5.000	14.6	7.666	.8	10.332	.0		

RUNOFF VOLUME = 1.62669 INCHES = 26.3044 ACRE-FOOT

PEAK DISCHARGE RATE = 284.81 CFS AT 1.600 HOURS BASIN AREA = .3032 SQ. MI.

*** CALCULATE B513 ***

COMPUTE NM HYD

ID=2 HYD NO=513 DA=0.027 SQ MI
PER A=60.0 PER B=20.0 PER C=17.0 PER D=3.0
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.2791 CFS UNIT VOLUME = .9966 B = 526.28 P60 = 2.0100
ARBA = .000810 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .141537HR TP = .130000HR K/TP RATIO = 1.088747 SHAPE CONSTANT, N = 3.245538
UNIT PEAK = 60.693 CFS UNIT VOLUME = .9997 B = 301.26 P60 = 2.0100
ARBA = .026190 SQ MI IA = .56649 INCHES INF = 1.43619 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=2 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 513.00

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	.7	4.000	.0	5.333	.0
.333	.0	1.666	19.8	3.000	.3	4.333	.0	5.666	.0
.667	.0	2.000	3.6	3.333	.1	4.666	.0	5.999	.0
1.000	.0	2.333	1.5	3.666	.1	5.000	.0	6.333	.0

RUNOFF VOLUME = .70235 INCHES = 1.0114 ACRES-FEET
PEAK DISCHARGE RATE = 35.38 CFS AT 1.500 HOURS BASIN AREA = .0270 SQ. MI.

*** ADD B513 AND CHANNEL DISCHARGE***

ADD HYD ID=6 HYD=234.5 ID I=4 II=2

PRINT HYD ID=6 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	77.5	5.333	11.3	7.999	.5	10.666	.0
.333	.0	3.000	59.8	5.666	8.4	8.333	.3	10.999	.0
.667	.0	3.333	48.8	5.999	6.6	8.666	.2	11.332	.0
1.000	.0	3.666	36.8	6.333	4.9	8.999	.2	11.665	.0
1.333	7.5	4.000	27.0	6.666	3.1	9.332	.1	11.999	.0
1.666	296.6	4.333	22.0	6.999	2.0	9.666	.1	12.332	.0
2.000	192.3	4.666	18.1	7.333	1.3	9.999	.0	12.665	.0
2.333	123.4	5.000	14.6	7.666	.8	10.332	.0		

RUNOFF VOLUME = 1.55110 INCHES = 27.3158 ACRES-FEET
PEAK DISCHARGE RATE = 312.85 CFS AT 1.600 HOURS BASIN AREA = .3302 SQ. MI.

** NOW COMPUTE BASIN B512 **

***BASIN 512 A=.03 SQ MI ***
COMPUTE NM HYD ID=15 HYD NO=512 DA=.030 SQ MI
PBR A=47 PBR B=33 PBR C=16 PBR D=4
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.8579 CFS UNIT VOLUME = .9975 B = 526.28 P60 = 2.0100
ARBA = .001200 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .138213HR TP = .130000HR K/TP RATIO = 1.063179 SHAPE CONSTANT, N = 3.321495
UNIT PEAK = 68.026 CFS UNIT VOLUME = 1.000 B = 307.06 P60 = 2.0100
ARBA = .028800 SQ MI IA = .54844 INCHES INF = 1.38563 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=15 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 512.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	2.0	2.666	.7	4.000	.0
.333	.0	1.666	23.1	3.000	.3	4.333	.0
.667	.0	2.000	4.4	3.333	.2	4.666	.0
1.000	.0	2.333	1.7	3.666	.1	5.000	.0
						6.333	.0

RUNOFF VOLUME = .74599 INCHES = 1.1936 ACRE-FOOT
PEAK DISCHARGE RATE = 41.55 CFS AT 1.500 HOURS BASIN AREA = .0300 SQ. MI.

*** ADD B512 AND SUBTOTAL TO CHANNEL *****
ADD HYD ID=20 HYD=111.0 ID I=15 II=6
PRINT HYD ID=20 CODE=10

PARTIAL HYDROGRAPH 111.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.666	78.2	5.333	11.3	7.999	.5
.333	.0	3.000	60.2	5.666	8.4	8.333	.3
.667	.0	3.333	48.9	5.999	6.6	8.666	.2
1.000	.0	3.666	36.9	6.333	4.9	8.999	.2
1.333	9.4	4.000	27.0	6.666	3.1	9.332	.1
1.666	319.7	4.333	22.1	6.999	2.0	9.666	.1
2.000	196.7	4.666	18.1	7.333	1.3	9.999	.0
2.333	125.1	5.000	14.6	7.666	.8	10.332	.0
						12.665	.0

RUNOFF VOLUME = 1.48405 INCHES = 28.5094 ACRE-FOOT
PEAK DISCHARGE RATE = 345.52 CFS AT 1.600 HOURS BASIN AREA = .3602 SQ. MI.

FLOW INTO DETENTION AREA
EAST OF 2 GO" CULVERTS ON UNIVERSITY

**** ROUTE INTO POND AT HEADS OF CULVERTS****

***** OUTFLOW IS APPROXIMATE CAPACITY OF 60" CULVERTS *****

ROUTE RESERVOIR ID=1 HYD=111.1 INFLOW ID=20 CODE=20

OUTFLOW STORAGE DEPTH
0
30 .30 1.0

60 .90 2.0
110 1.7 3.0
180 2.602 4.0
250 3.69 5.0
304 4.77 6.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	9.45	.08	.023	2.31
2.00	196.66	4.73	3.395	231.05
2.67	78.20	2.82	1.554	100.87
3.33	48.94	1.91	.848	57.38
4.00	27.04	1.14	.383	34.16
4.67	18.15	.66	.197	19.73
5.33	11.31	.42	.126	12.62
6.00	6.58	.24	.072	7.19
6.67	3.14	.12	.037	3.72
7.33	1.32	.05	.016	1.57
8.00	.54	.02	.006	.65
8.67	.23	.01	.003	.27
9.33	.11	.00	.001	.12
10.00	.05	.00	.001	.06
10.67	.02	.00	.000	.02
11.33	.01	.00	.000	.01
12.00	.00	.00	.000	.00

PEAK DISCHARGE = 256.339 CFS - PEAK OCCURS AT HOUR 1.80
MAXIMUM WATER SURFACE ELEVATION = 5.117
MAXIMUM STORAGE = 3.8168 AC-FT INCREMENTAL TIME= .033330HRS

***** DISCHARGE TO UNPLATED ARROYO *****
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 111.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	100.9	5.333	12.6	7.999	.6	10.666	.0
.333	.0	3.000	71.8	5.666	9.4	8.333	.4	10.999	.0
.667	.0	3.333	57.4	5.999	7.2	8.666	.3	11.332	.0
1.000	.0	3.666	45.3	6.333	5.6	8.999	.2	11.665	.0
1.333	2.3	4.000	34.2	6.666	3.7	9.332	.1	11.999	.0
1.666	234.1	4.333	24.5	6.999	2.4	9.666	.1	12.332	.0
2.000	231.0	4.666	19.7	7.333	1.6	9.999	.1	12.665	.0
2.333	162.3	5.000	15.8	7.666	1.0	10.332	.0		

RUNOFF VOLUME = 1.48405 INCHES = 28.5093 ACRE-Feet
PEAK DISCHARGE RATE = 256.34 CFS AT 1.800 HOURS BASIN AREA = .3602 SQ. MI.

FLOW OUT OF 60" CULVERTS ON UNIVERSITY

FINISH

END TIME (HR:MIN:SEC) = 08:43:48

* WATER SURFACE PROFILES
* VERSION OF SEPTEMBER 1988
* ERROR: 01,02
* UPDATED: 4 APRIL 1989
* RUN DATE 4/ 3/97 TIME 13:56: 1

* U.S. ARMY CORPS OF ENGINEERS
* THE HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET, SUITE D
* DAVIS, CALIFORNIA 95616-4687
* (916) 756-1104, (916) 551-1748

X X X XXXXXX XXXX
X X X X X X
XXXXXX XXXX
X X X X X
X X X XXXXXX XXXX
X X XXXXXX XXXX

END OF BANNER

SUPERCRITICAL

4/ 3/97 13:56: 1

PAGE 1

 HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

THIS RUN EXECUTED 4/ 3/97 13:56: 1

 ERROR CORR - 01,02
 MODIFICATION -

THIS RUN EXECUTED 4/ 3/97 13:56: 1

T1	SUNPORT PARK
T2	HEC 2 for arroyo Supercritical (6039.dat)
T3	BASIN A

J1	ICHECK	INO	NINW	IDIR	STRT	METRIC	HVINS	Q	WSEL	FO
	0	2	0	1	-1	0	2	340.2	80.61	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALUDC	IBW	CHNTR	ITRACE
	1	1	0	0	0	0	-1			

J3 VARIABLE CODES FOR SUMMARY PRINTOUT
150

```
THIS RUN EXECUTED 4/ 3/97      13:56: 1
WSEL      PQ
80.61
CENTIM      ITRACE
```

```
THIS RUN EXECUTED 4/ 3/97      13:56: 1
```

NC	.035	.035	.035						
QT	1	340.2							
X1	1	10	-72	67	55	52	52		
GR	85	-72	80	-58	79.6	-55	79.6	-40	80
GR	80	0	80	40	81	57	81	61	85
									-25
									67
X1	2	9	-61	62	55	52	50	-40	78
GR	82	-61	79	-60	78	-57	77.3	62	
GR	78	32	79	55	81	56	82		0

X1	3	14	-57	176	37	60	145	0	77	50
GR	80	-57	76	-48	75.3	-40	76	120	75	123
GR	77.7	75	77	90	76.5	105	76	176		
GR	74	138	75	147	78	157	80			

X1		-186	28	37	42	43			
GR	4	21	-185	74	-182	75	-130	75.2	-125
GR	76	-166	-97	75	-87	74	-55	73	-34
GR	74.8	-113	75.2	75	-4	69.9	0	70	4
GR	72	-25	71	70	-4	74	22	75	27
GR	71	12	72	73	21				
GR	76	28	16						

THIS RUN EXECUTED	4/ 3/97	13:56: 1
MSBL	FO	
80.61		
CENTIM	ITRACE	
-40	80	-25
61	85	67
-40	78	0
62		
0	77	50
120	75	123
176		
-130	75.2	-125
-55	73	-34
0	70	4
22	75	27

X1	5	17	-191	34	44	61	50	-148	73	-147
GR	75	-191	73	-189	72.3	-188	72.5	-30	69	-12
GR	73	-80	72	-56	71	-36	70	-30	72	26
GR	68.5	0	69	15	70	20	71	23		
GR	73	29	75	34						
X1	6	15	-200	67	18	65	51	-38	69	-15
GR	75	-200	72	-197	71	-71	70	-38	70	17
GR	68	-5	67.2	0	68	11	69	15	70	67
GR	71	21	72	25	73	32	74	46	75	
X1	7	13	-187	85	80	44	50	-183	70	-130
GR	73	-187	72	-186	71	-185	70	41	70	46
GR	69	-47	68	0	69	26	69			
GR	71	53	72	63	73	85				
X1	8	12	-190	49	85	45	48	-135	67	-64
GR	70	-190	69	-186	68	4	67	9	68	13
GR	66	-5	65.7	0	66		67			
GR	69	41	70	49						
X1	9	16	-194	34	58	49	50	-190	65	-165
GR	68	-194	67	-193	65	-192	65	-35	64	-25
GR	64	-100	64	-75	64.7	-60	64	19	67	26
GR	63.7	0	64	9	65	14	66			
GR	68	34								
X1	10	18	-201	17	30	54	50	-198	63	-138
GR	66	-201	65	-200	64	-199	63	-54	62	-40
GR	62	-110	62	-77	62.8	-65	62	12	63	14
GR	61.2	-28	62	-20	61.4	0	62			
GR	64	15	65	16	66	17				
X1	11	15	-203	31	40	55	51	-193	61	-113
GR	65	-203	64	-202	63	-198	62	0	60	4
GR	60	-71	61	-58	60	-38	59.3	21	65	31
GR	61	8	62	12	63	16	64			
X1	12	17	-200	44	60	56	50	-165	60	-100
GR	64	-200	63	-196	62	-193	61	-18	57.8	0
GR	59	-70	58.7	-55	59	-40	58	15	62	31
GR	58	7	59	12	60	14	61			
GR	63	40	64	44						

X1	13	13	-227	10	120	174	50	-138	57	-90
GR	60	-227	59	-210	59	-156	58	0	57	1
GR	56.2	-50	57	-23	57	-9	56.7			
GR	58	6	59	8	60	10				
X1	14	12	-135	150	210	108	62	-40	54.6	-30
GR	58	-135	57	-110	56	-75	55	37	57	40
GR	55	-24	55.5	-10	55	0				
GR	57	133	58	150						
X1	15	5	-4.1	4.1	235	235	235	4	57.7	4
GR	57.7	-4.1	51.7	-4	51.7	0	51.7			
X1	16	5	-4.1	4.1	44.4	0	44.4	4	50.4	4.1
GR	50.4	-4.1	44.4	-4						

4/ 3/97 13:56: 1

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SECCNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

*SECCNO 1.000
3720 CRITICAL DEPTH ASSUMED
1.00 1.01 80.61 80.61 80.61 80.95 80.95 .34 .00 .00 85.00
340. 0. 340. 0. 0. 73. 0. 0. 0. 85.00
.00 .00 4.66 .00 .000 .035 .000 .000 79.60 -59.71
.020873 0. 0. 0. 0 4 .000 .00 110.07 50.36

*SECCNO 2.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.88

2.00	1.00	78.30	78.53	.00	79.10	.80	1.85	.00	82.00
340.	0.	340.	0.	0.	47.	0.	0.	0.	82.00
.00	.00	7.17	.00	.000	.035	.000	.000	77.30	-57.89
.078840	55.	52.	52.	3	11	0	.00	96.70	38.81

*SECCNO 3.000

3265 DIVIDED FLOW

3.00	1.96	75.96	76.15	.00	76.59	.63	2.51	.00	80.00
340.	0.	340.	0.	0.	53.	0.	0.	0.	80.00
.00	.00	6.38	.00	.000	.035	.000	.000	74.00	-47.61
.036294	55.	50.	52.	10	17	0	.00	75.79	150.22

*SECCNO 4.000

4.00	2.06	71.96	72.05	.00	72.70	.74	3.89	.00	76.00
340.	0.	340.	0.	0.	49.	0.	0.	0.	76.00
.01	.00	6.92	.00	.000	.035	.000	.000	69.90	-24.53
.020612	37.	145.	60.	4	8	0	.00	40.36	15.83

*SECCNO 5.000

4/ 3/97 13:56: 1

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SECCNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
-------	-------	------	-------	--------	-----	-------	-------	--------	-------

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.84

5.00	1.30	69.80	70.22	.00	71.21	1.41	1.49	.00	75.00
340.	0.	340.	0.	0.	36.	0.	0.	0.	75.00
.01	.00	9.53	.00	.000	.035	.000	.000	68.50	-26.39
.069738	37.	43.	42.	6	15	0	.00	45.39	19.00

*SECCNO 6.000

3685 20 TRIALS ATTEMPTED WSEL, CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
6.00 2.46 69.66 69.66 .00 70.26 .60 1.56 .86 75.00
340. 0. 340. 0. 0. 55. 0. 0. 1. 75.00
.01 .00 6.24 .00 .000 .035 .000 .000 67.20 -30.14
.017625 44. 50. 61. 20 17 0 .00 46.45 16.32

*SECCNO 7.000

3685 20 TRIALS ATTEMPTED WSEL, CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
7.00 1.37 69.37 69.37 .00 69.69 .32 .98 .67 73.00
340. 0. 340. 0. 0. 75. 0. 0. 1. 73.00
.02 .00 4.51 .00 .000 .035 .000 .000 68.00 -77.90
.021218 18. 51. 65. 20 11 0 .00 120.76 42.86

*SECCNO 8.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.12

8.00	1.36	67.06	67.25	.00	67.73	.67	1.96	.00	70.00
340.	0.	340.	0.	0.	52.	0.	1.	1.	70.00
.02	.00	6.55	.00	.000	.035	.000	.000	65.70	-138.10
.095625	80.	50.	44.	2	11	0	.00	147.36	9.26

*SECCNO 9.000

3265 DIVIDED FLOW

SECCO	DEPTH	CMSEL	CRWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .63

9.00	.89	64.59	64.68	.00	64.98	.39	2.75	.00	68.00
340.	0.	340.	0.	0.	68.	0.	1.	1.	68.00
.02	.00	5.01	.00	.000	.035	.000	.000	63.70	-138.31
.038051	85.	48.	45.	4	19	0	.00	143.93	11.95

*SECCO 10.000

3265 DIVIDED FLOW

10.00	1.17	62.37	62.52	.00	62.88	.51	2.10	.00	66.00
340.	0.	340.	0.	0.	60.	0.	1.	1.	66.00
.02	.00	5.70	.00	.000	.035	.000	.000	61.20	-120.68
.046681	58.	50.	49.	9	14	0	.00	121.41	12.76

*SECCO 11.000

3265 DIVIDED FLOW

11.00	1.41	60.71	60.78	.00	61.14	.43	1.74	.00	65.00
340.	0.	340.	0.	0.	65.	0.	1.	1.	65.00
.03	.00	5.26	.00	.000	.035	.000	.000	59.30	-100.93
.026878	30.	50.	54.	8	11	0	.00	98.30	6.85

*SECCO 12.000

12.00	1.37	59.17	59.26	.00	59.68	.51	1.46	.00	64.00
340.	0.	340.	0.	0.	59.	0.	1.	1.	64.00
.03	.00	5.74	.00	.000	.035	.000	.000	57.80	-74.89
.030649	40.	51.	55.	3	8	0	.00	87.21	12.33

*SECCO 13.000

13.00	1.10	57.30	57.44	.00	57.84	.55	1.83	.00	60.00
340.	0.	340.	0.	0.	57.	0.	1.	1.	60.00
.03	.00	5.93	.00	.000	.035	.000	.000	56.20	-104.11
.044708	60.	50.	56.	4	15	0	.00	106.58	2.47

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PAGE 7

SECCO	DEPTH	CMSEL	CRWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECCO 14.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .70

14.00	1.39	55.99	56.00	.00	56.34	.34	1.51	.00	58.00
340.	0.	340.	0.	0.	72.	0.	1.	2.	58.00
.03	.00	4.69	.00	.000	.035	.000	.000	54.60	-74.77
.021744	120.	50.	174.	9	11	0	.00	111.53	36.76

*SECCO 15.000

3685 20 TRIALS ATTEMPTED WSEL,CMSEL,
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

15.00	3.82	55.52	55.52	.00	57.43	1.91	1.52	.30	57.70
340.	0.	340.	0.	0.	31.	0.	1.	2.	57.70
.04	.00	11.08	.00	.000	.035	.000	.000	51.70	-4.06
.027738	210.	62.	108.	20	17	0	.00	8.06	4.00

*SECCO 16.000

16.00	3.51	47.91	48.21	.00	50.17	2.25	7.26	.00	50.40
340.	0.	340.	0.	0.	28.	0.	1.	2.	50.40
.04	.00	12.05	.00	.000	.035	.000	.000	44.40	-4.06
.034659	235.	235.	235.	3	5	0	.00	8.12	4.06

CROSS SECTION 1.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV	79.6	80.1	80.6	81.1	81.6	82.1	82.6	83.1	83.6	84.1	84.6
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STN-FLEET

[illegible]

NRD= 0 ELTC= 99999999.00 ELTRD= 99999999.00

EL(I),STA(I)							
85.00	-72.00	80.00	-58.00	79.60	-55.00	79.60	-40.00
80.00	.00	80.00	40.00	81.00	57.00	81.00	61.00
							80.00
							85.00
							-25.00
							67.00

CROSS SECTION 2.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV	77.3	77.8	78.3	78.8	79.3	79.8	80.3	80.8	81.3	81.8	82.3
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STA-FEET

[illegible]

NRD# 0 ELTC= 99999999.00 ELTRD= 99999999.00

EL(1),STA(1)							
82.00	-61.00	79.00	-50.00	78.00	-57.00	77.30	-40.00
78.00	32.00	79.00	55.00	81.00	56.00	82.00	62.00
							78.00
							.00

CROSS SECTION 3.00
STREAM BASIN A
DISCHARGE= 340.

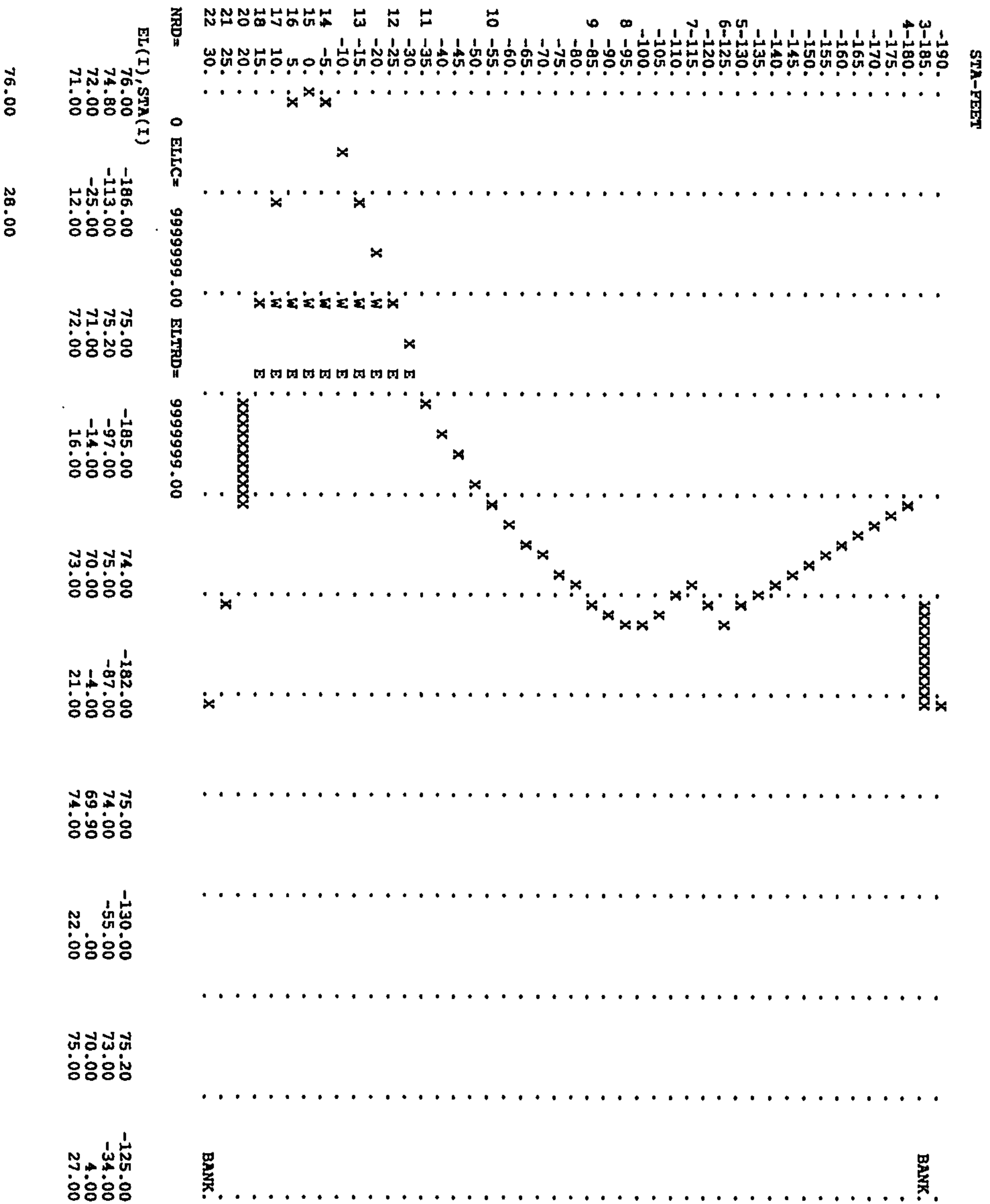
PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE, T=TOP BRIDGE, X=GROUND, W=WATER SUR, E=ENERGY GRADIENT, C=CRITICAL WSEL

ELEV	74.0	75.0	76.0	77.0	78.0	79.0	80.0	81.0	82.0	83.0	84.0
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STA-FEST[illegible][illegible]

CROSS SECTION 4.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL
ELEV 69.9 70.9 71.9 72.9 73.9 74.9 75.9 76.9 77.9 78.9 79.9



CROSS SECTION	5.00
STREAM BASIN A	
DISCHARGE=	340. .

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE, T=TOP BRIDGE, X=GROUND, W=WATER SUR, E=ENERGY GRADIENT, C=CRITICAL WSEL

ELSV	68.5	69.5	70.5	71.5	72.5	73.5	74.5	75.5	76.5	77.5	78.5
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STA-FIRST

Account Number	Account Name	Account Type	Account Balance	Account Status
195	BANK	Checking	100.00	Active
190	BANK	Checking	50.00	Active
185	BANK	Checking	25.00	Active
180	BANK	Checking	15.00	Active
175	BANK	Checking	10.00	Active
170	BANK	Checking	5.00	Active
165	BANK	Checking	0.00	Active
160	BANK	Checking	0.00	Active
155	BANK	Checking	0.00	Active
150	BANK	Checking	0.00	Active
145	BANK	Checking	0.00	Active
140	BANK	Checking	0.00	Active
135	BANK	Checking	0.00	Active
130	BANK	Checking	0.00	Active
125	BANK	Checking	0.00	Active
120	BANK	Checking	0.00	Active
115	BANK	Checking	0.00	Active
110	BANK	Checking	0.00	Active
105	BANK	Checking	0.00	Active
100	BANK	Checking	0.00	Active
95	BANK	Checking	0.00	Active
90	BANK	Checking	0.00	Active
85	BANK	Checking	0.00	Active
80	BANK	Checking	0.00	Active
75	BANK	Checking	0.00	Active
70	BANK	Checking	0.00	Active
65	BANK	Checking	0.00	Active
60	BANK	Checking	0.00	Active
55	BANK	Checking	0.00	Active
50	BANK	Checking	0.00	Active
45	BANK	Checking	0.00	Active
40	BANK	Checking	0.00	Active
35	BANK	Checking	0.00	Active
30	BANK	Checking	0.00	Active
25	BANK	Checking	0.00	Active
20	BANK	Checking	0.00	Active
15	BANK	Checking	0.00	Active
10	BANK	Checking	0.00	Active
5	BANK	Checking	0.00	Active
0	BANK	Checking	0.00	Active
195	BANK	Checking	100.00	Active
190	BANK	Checking	50.00	Active
185	BANK	Checking	25.00	Active
180	BANK	Checking	15.00	Active
175	BANK	Checking	10.00	Active
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155	BANK	Checking	0.00	Active
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145	BANK	Checking	0.00	Active
140	BANK	Checking	0.00	Active
135	BANK	Checking	0.00	Active
130	BANK	Checking	0.00	Active
125	BANK	Checking	0.00	Active
120	BANK	Checking	0.00	Active
115	BANK	Checking	0.00	Active
110	BANK	Checking	0.00	Active
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100	BANK	Checking	0.00	Active
95	BANK	Checking	0.00	Active
90	BANK	Checking	0.00	Active
85	BANK	Checking	0.00	Active
80	BANK	Checking	0.00	Active
75	BANK	Checking	0.00	Active
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65	BANK	Checking	0.00	Active
60	BANK	Checking	0.00	Active
55	BANK	Checking	0.00	Active
50	BANK	Checking	0.00	Active
45	BANK	Checking	0.00	Active
40	BANK	Checking	0.00	Active
35	BANK	Checking	0.00	Active
30	BANK	Checking	0.00	Active
25	BANK	Checking	0.00	Active
20	BANK	Checking	0.00	Active
15	BANK	Checking	0.00	Active
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5	BANK	Checking	0.00	Active
0	BANK	Checking	0.00	Active

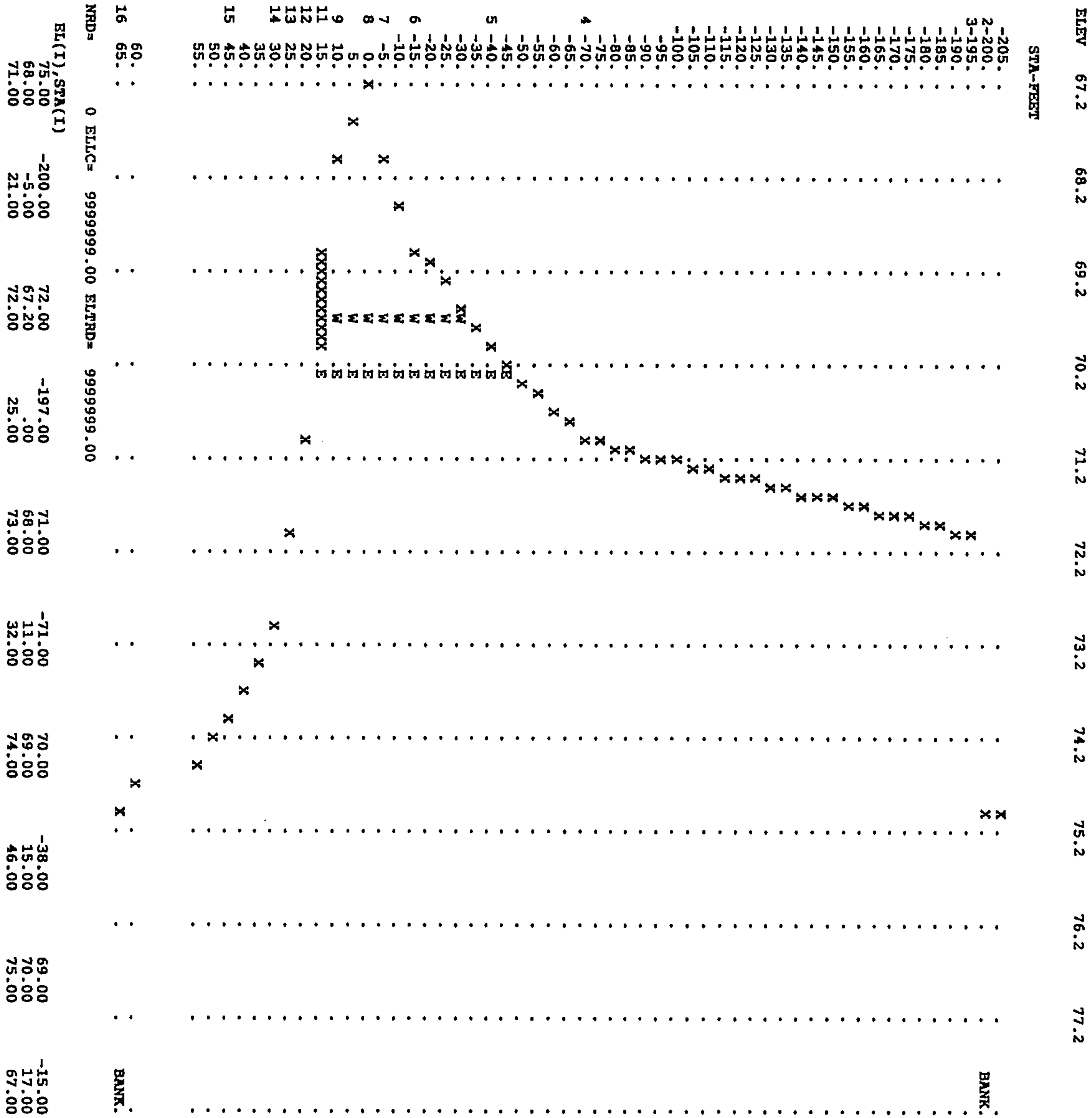
NRD= 0 ELLC= 99999999.00 ELTRD= 99999999.00

BL(I),STA(I)

75.00	-191.00	73.00	-189.00	72.30	-188.00	72.50	-148.00	73.00	-147.00
73.00	-80.00	72.00	-56.00	71.00	-36.00	70.00	-30.00	69.00	-12.00
68.50	-00	69.00	15.00	70.00	20.00	71.00	23.00	72.00	26.00
73.00	29.00	75.00	34.00						

CROSS SECTION 6.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

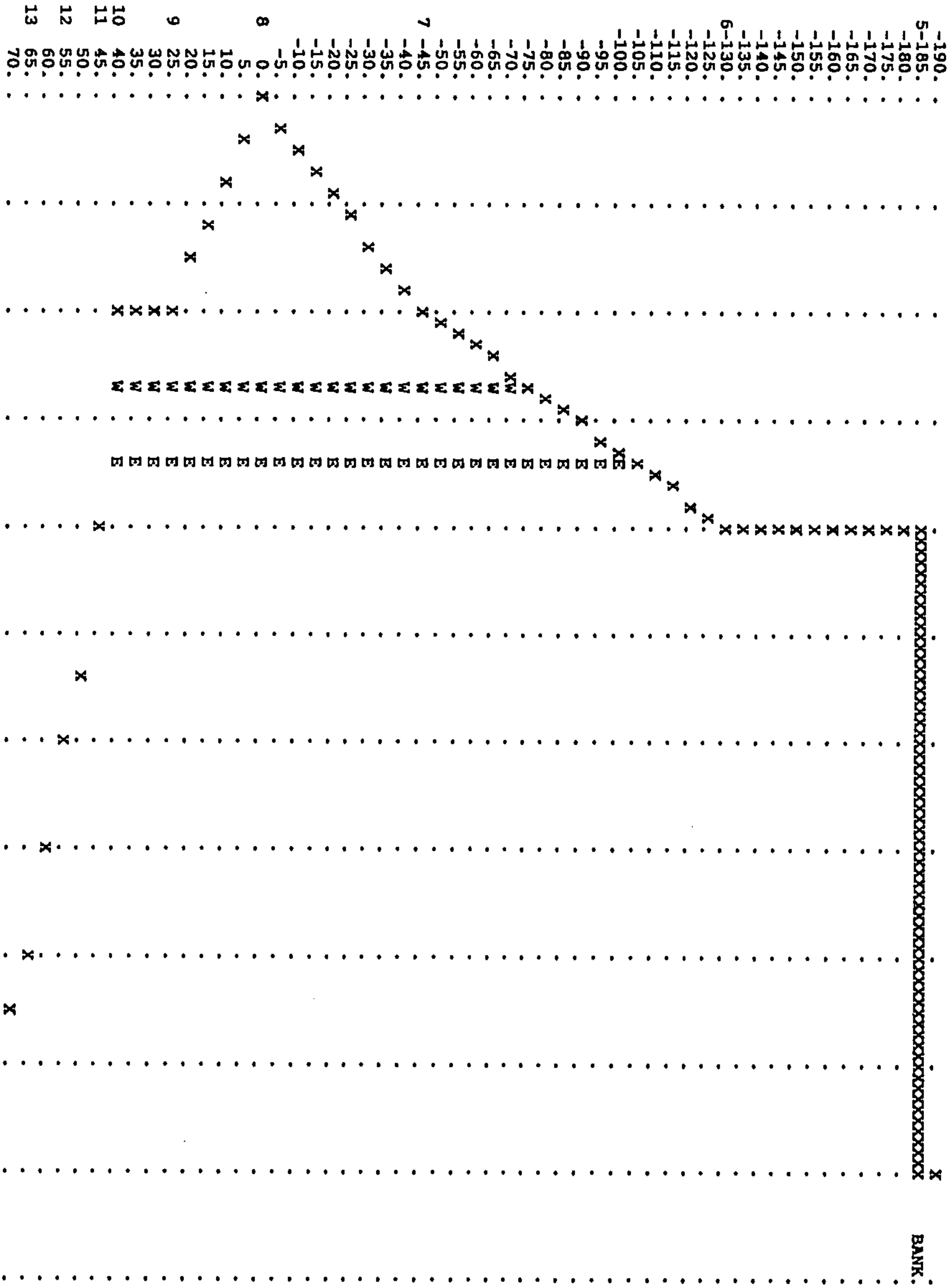


CROSS SECTION 7.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 68.0 68.5 69.0 69.5 70.0 70.5 71.0 71.5 72.0 72.5 73.0

STA=FEET



75. X .
80.
14 85. BANK.

NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

EL(I),STA(I)
73.00 -187.00 72.00 -186.00 71.00
69.00 -47.00 68.00 63.00 69.00
71.00 53.00 72.00 73.00 -185.00 70.00 -183.00 70.00 -130.00
46.00

CROSS SECTION	8.00
STREAM BASIN A	
DISCHARGE=	340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV	65.7	66.2	66.7	67.2	67.7	68.2	68.7	69.2	69.7	70.2	70.7
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STA-FLEET

[illegible]

EL(I),STA(I)							
-130.00	69.00	-186.00	68.00	-182.00	67.00	-135.00	67.00
70.00	65.70	.00	66.00	4.00	67.00	9.00	68.00
-5.00							
69.00	70.00	49.00					13.00
41.00							

CROSS SECTION 9.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV	63.7	64.2	64.7	65.2	65.7	66.2	66.7	67.2	67.7	68.2	68.7
------	------	------	------	------	------	------	------	------	------	------	------

STAFF-FLEET

[illegible]

NRD= 0 ELCC= 99999999.00 ELTRD= 99999999.00

BL(I),STA(I)

68.00	-194.00
64.00	-100.00

67.00
64.00

-193.00
-75.00

64.70
65.00

-192.00
-60.00

64-00

-190.00
-35.00

64.00

-165.00
-25.00

63.70	.00
68.00	34.00

64.00

9.00

65.00

14.00

55-00

19.00

67.00

26.00

CROSS SECTION 10.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL
ELEV 61.2 61.7 62.2 62.7 63.2 63.7 64.2 64.7 65.2 65.7 66.2

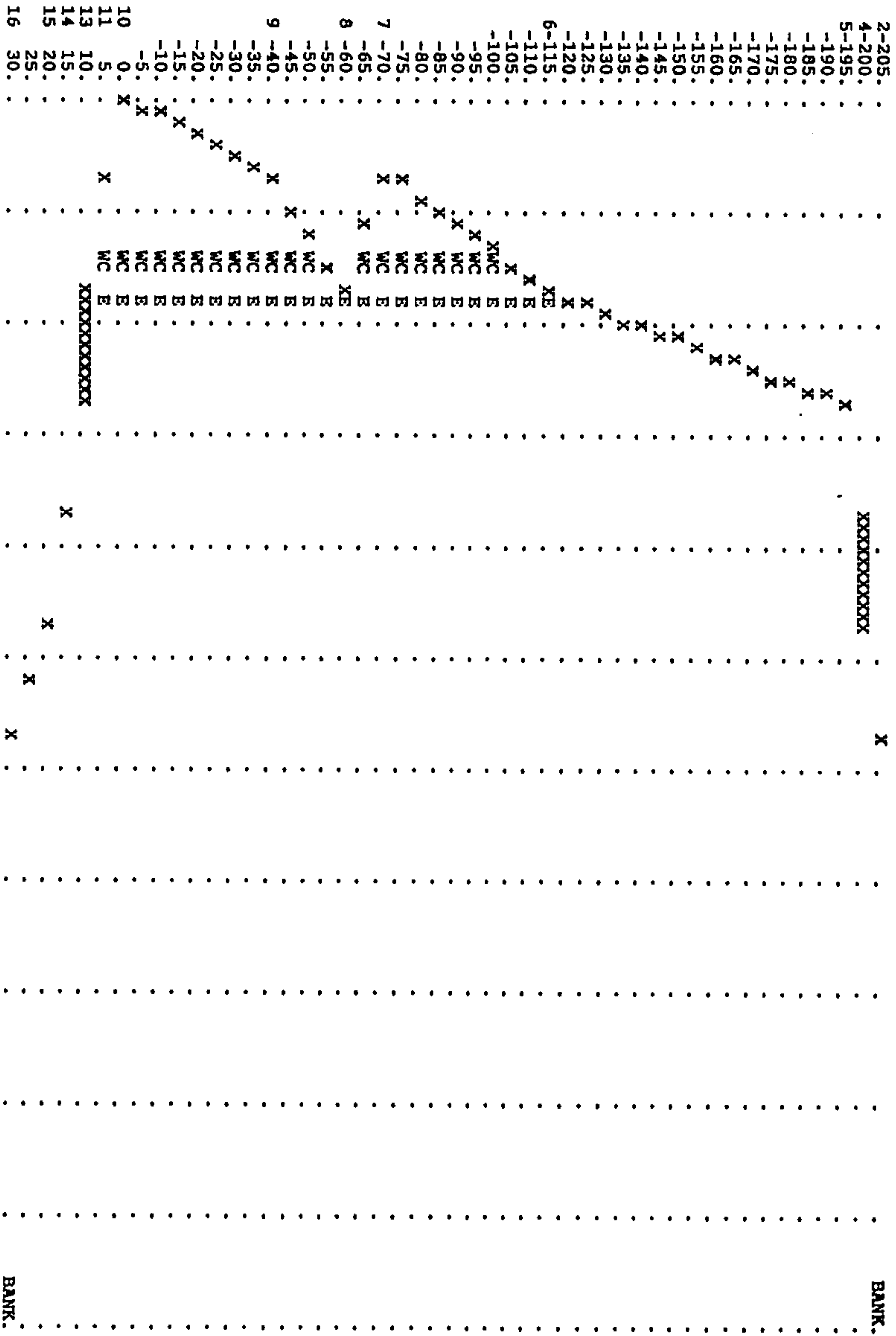
STA-FEET										
-205. .	.	.	.	.	.	.	.	.	.	X
5-200. .	.	.	.	.	.	.	.	.	.	BANK.
-195. .	.	.	.	.	.	.	.	.	.	.
-190. .	.	.	.	.	.	.	.	.	.	.
-185. .	.	.	.	.	.	.	.	.	.	.
-180. .	.	.	.	.	.	.	.	.	.	.
-175. .	.	.	.	.	.	.	.	.	.	.
-170. .	.	.	.	.	.	.	.	.	.	.
-165. .	.	.	.	.	.	.	.	.	.	.
-160. .	.	.	.	.	.	.	.	.	.	.
-155. .	.	.	.	.	.	.	.	.	.	.
-150. .	.	.	.	.	.	.	.	.	.	.
-145. .	.	.	.	.	.	.	.	.	.	.
6-140. .	.	.	.	.	.	.	.	.	.	.
-135. .	.	.	.	.	.	.	.	.	.	.
-130. .	.	.	.	.	.	.	.	.	.	.
-125. .	.	.	.	.	.	.	.	.	.	.
-120. .	.	.	.	.	.	.	.	.	.	.
-115. .	.	.	.	.	.	.	.	.	.	.
7-110. .	.	.	.	.	.	.	.	.	.	.
-105. .	.	.	.	.	.	.	.	.	.	.
-100. .	.	.	.	.	.	.	.	.	.	.
-95. .	.	.	.	.	.	.	.	.	.	.
-90. .	.	.	.	.	.	.	.	.	.	.
-85. .	.	.	.	.	.	.	.	.	.	.
-80. .	.	.	.	.	.	.	.	.	.	.
8-75. .	.	.	.	.	.	.	.	.	.	.
-70. .	.	.	.	.	.	.	.	.	.	.
9-65. .	.	.	.	.	.	.	.	.	.	.
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10-55. .	.	.	.	.	.	.	.	.	.	.
-50. .	.	.	.	.	.	.	.	.	.	.
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11-40. .	.	.	.	.	.	.	.	.	.	.
-35. .	.	.	.	.	.	.	.	.	.	.
12-30. X	.	.	.	.	.	.	.	.	.	.
-25. .	.	.	.	.	.	.	.	.	.	.
13-20. .	.	.	.	.	.	.	.	.	.	.
-15. .	.	.	.	.	.	.	.	.	.	.
-10. .	.	.	.	.	.	.	.	.	.	.
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15 10. .	.	.	.	.	.	.	.	.	.	.
19 15. .	.	.	.	.	.	.	.	.	.	.
NRD= 0 EMLC= 9999999.00 ELTRD= 9999999.00										
BL(I),STA(I)										
66.00	-201.00	65.00	-200.00	64.00	-199.00	63.00	-198.00	63.00	-198.00	
62.00	-110.00	62.00	-77.00	62.80	-65.00	62.00	-54.00	62.00	-40.00	
61.20	-26.00	62.00	-20.00	61.40	.00		12.00		14.00	
64.00	15.00	65.00	16.00	66.00	17.00					

CROSS SECTION 11.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUP,E=ENERGY GRADIENT,C=CRITICAL WSEL

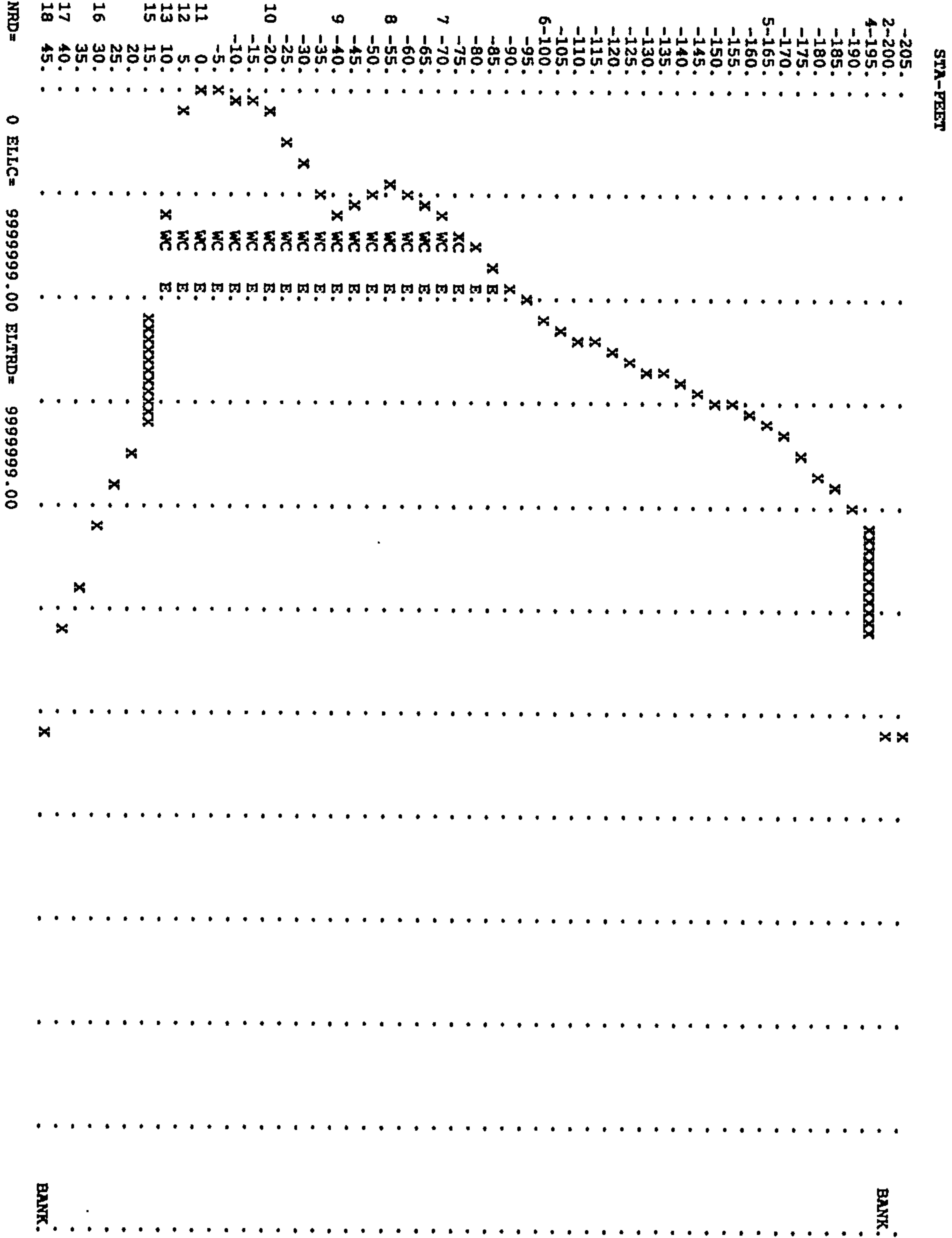
ELEV 59.3 60.3 61.3 62.3 63.3 64.3 65.3 66.3 67.3 68.3 69.3

STA-FEET



CROSS SECTION 12.00
STREAM BASIN A
DISCHARGE= 340.

PIOTTED POINTS (BY PRIORITY)-B=BOTTON BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL
ELEV 57.8 58.8 59.8 60.8 61.8 62.8 63.8 64.8 65.8 66.8 67.8



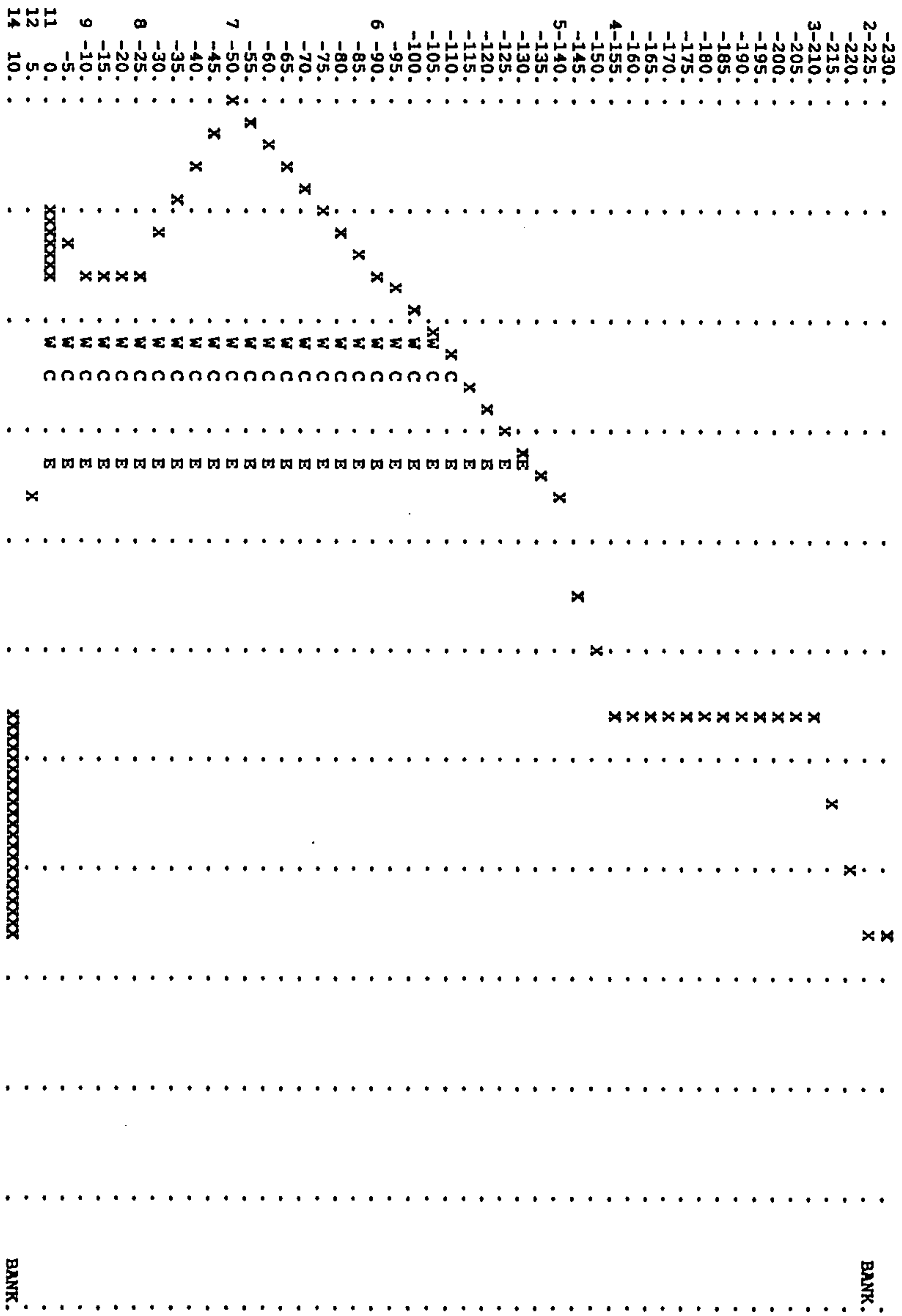
EL(I),STA(I) -200.00 63.00 -196.00 62.00 -193.00 61.00 -165.00 60.00 -100.00
59.00 -70.00 58.70 -55.00 59.00 -40.00 58.00 -18.00 57.80
58.00 7.00 59.00 12.00 14.00 61.00 15.00 62.00 31.00
63.00 40.00 64.00 44.00

CROSS SECTION 13.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 56.2 56.7 57.2 57.7 58.2 58.7 59.2 59.7 60.2 60.7 61.2

STA-FEET



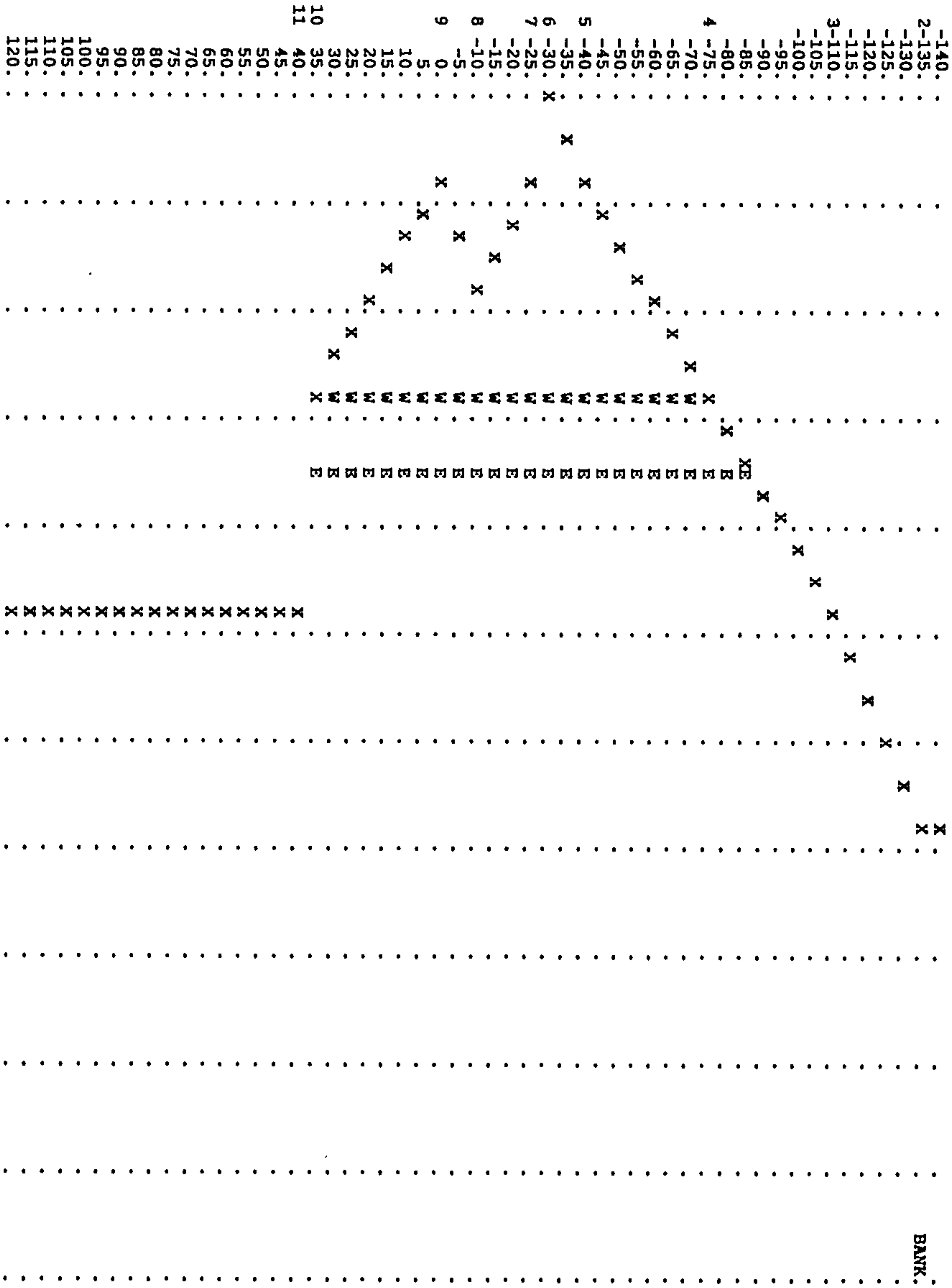
NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00
EL(I),STA(I)
60.00 -227.00 59.00 -210.00 59.00 -156.00 58.00 -138.00 57.00 -90.00
56.20 -50.00 57.00 -23.00 57.00 -9.00 56.70 .00 57.00 1.00
58.00 6.00 59.00 8.00 60.00 10.00

CROSS SECTION 14.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV 54.6 55.1 55.6 56.1 56.6 57.1 57.6 58.1 58.6 59.1 59.6

STA- FEET



NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00
EL(I),STA(I) -135.00 57.00 -110.00 56.00 -75.00 55.00 -40.00 54.60 -30.00
58.00 -24.00 55.50 -10.00 55.00 56.00 37.00 57.00 40.00
57.00 133.00 58.00 150.00

CROSS SECTION 15.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL											
ELEV	51.7	52.7	53.7	54.7	55.7	56.7	57.7	58.7	59.7	60.7	61.7

STAIR-LEFT

[illegible]

NRD=	0	ELLC=	9999999.00	ELTRD=	9999999.00
EL(I),STA(I)					
57.70	-4.10	51.70	-4.00	51.70	.00
				51.70	4.00
				57.70	4.00

CROSS SECTION 16.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL											
ELEV	44.4	45.4	46.4	47.4	48.4	49.4	50.4	51.4	52.4	53.4	54.4

STA-FEET

[illegible]

EL(I), STA(I)						
50.40	-4.10	44.40	-4.00	44.40	.00	44.40
					4.00	50.40
						4.10

PROFILE FOR STREAM BASIN A

PLOTTED POINTS (BY PRIORITY) E-ENERGY, W-WATER SURFACE, I-INVERT, C-CRITICAL W.S., L-LEFT BANK, R-RIGHT BANK, M-LOWER END STA

[illegible]

470. I WCB L
480. I WE L
490. I WE L
500. I WE L
510. I E. L
520. I WE. L
530. I WE. L
540. I WE. L
550. I WE. L
560. I WE. L
570. I WE. L
580. I WE. L
590. I WE. L
600. I WE. L
610. I WE. L
620. I WE. L
630. I WE. L
640. I WE. L
650. I WE. L
660. I WE. L
670. I WE. L
680. I WE. L
690. I WE. L
700. I WE. L
710. I WE. L
720. I WE. L
730. I WE. L
740. I WE. L
750. I WE. L
760. I WE. L
770. I WE. L
780. I WE. L
790. I WE. L
800. I WE. L
810. I WE. L
820. I WE. L
830. I WE. L
840. I WE. L
850. I WE. L
860. I WE. L
870. I WE. L
880. I WE. L
890. I WE. L
900. I WE. L
910. I WE. L
920. I WE. L
930. I WE. L
940. I WE. L
950. I WE. L
960. I WE. L
970. I WE. L
980. I WE. L
990. I WE. L
1000. I WE. L
1010. I WE. L
1020. I WE. L
1030. I WE. L
1040. I WE. L
15.00 I WE. L
16.00 I WE. L

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THIS RUN EXECUTED 4/ 3/97 13:56: 3

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02
MODIFICATION -

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

BASIN A

SUMMARY PRINTOUT TABLE 150

SECCNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*RS	VCH	AREA	.01K
* 1.000	.00	.00	.00	79.60	340.20	80.61	80.61	80.95	208.73	4.66	73.00	23.55
* 2.000	52.00	.00	.00	77.30	340.20	78.30	78.53	79.10	738.40	7.17	47.43	12.52
3.000	50.00	.00	.00	74.00	340.20	75.96	76.15	76.59	362.94	6.38	53.35	17.86
4.000	145.00	.00	.00	69.90	340.20	71.96	72.05	72.70	206.12	6.92	49.16	23.70
* 5.000	43.00	.00	.00	68.50	340.20	69.80	70.22	71.21	697.38	9.53	35.68	12.88
* 6.000	50.00	.00	.00	67.20	340.20	69.66	69.66	70.26	176.25	6.24	54.56	25.63
* 7.000	51.00	.00	.00	68.00	340.20	69.37	69.37	69.69	212.18	4.51	75.36	23.36
* 8.000	50.00	.00	.00	65.70	340.20	67.06	67.25	67.73	956.25	6.55	51.95	11.00
* 9.000	48.00	.00	.00	63.70	340.20	64.59	64.68	64.98	380.51	5.01	67.85	17.44
10.000	50.00	.00	.00	61.20	340.20	62.37	62.52	62.88	466.81	5.70	59.64	15.75
11.000	50.00	.00	.00	59.30	340.20	60.71	60.78	61.14	268.78	5.26	64.69	20.75
12.000	51.00	.00	.00	57.80	340.20	59.17	59.26	59.68	306.49	5.74	59.28	19.43
13.000	50.00	.00	.00	56.20	340.20	57.30	57.44	57.84	447.08	5.93	57.33	16.09
* 14.000	50.00	.00	.00	54.60	340.20	55.99	56.00	56.34	217.44	4.69	72.47	23.07
* 15.000	62.00	.00	.00	51.70	340.20	55.52	55.52	57.43	277.38	11.08	30.70	20.43
16.000	235.00	.00	.00	44.40	340.20	47.91	48.21	50.17	346.59	12.05	28.24	18.27

BASIN A

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFWMS	TOPWID	XICH
* 1.000	340.20	80.61	.00	.00	.00	110.07	.00
* 2.000	340.20	78.30	.00	-2.31	.00	96.70	52.00
3.000	340.20	75.96	.00	-2.34	.00	75.79	50.00
4.000	340.20	71.96	.00	-4.00	.00	40.36	145.00
* 5.000	340.20	69.80	.00	-2.16	.00	45.39	43.00
* 6.000	340.20	69.66	.00	-.14	.00	46.45	50.00
* 7.000	340.20	69.37	.00	-.29	.00	120.76	51.00
* 8.000	340.20	67.06	.00	-2.31	.00	147.36	50.00
* 9.000	340.20	64.59	.00	-2.47	.00	143.93	48.00
10.000	340.20	62.37	.00	-2.22	.00	121.41	50.00
11.000	340.20	60.71	.00	-1.66	.00	98.30	50.00
12.000	340.20	59.17	.00	-1.54	.00	87.21	51.00
13.000	340.20	57.30	.00	-1.87	.00	106.58	50.00
* 14.000	340.20	55.99	.00	-1.30	.00	111.53	50.00
* 15.000	340.20	55.52	.00	-.47	.00	8.06	62.00
16.000	340.20	47.91	.00	-7.61	.00	8.12	235.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO=	1.000	PROFILE= 1	CRITICAL DEPTH ASSUMED
WARNING SECNO=	2.000	PROFILE= 1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	5.000	PROFILE= 1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	6.000	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	6.000	PROFILE= 1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	6.000	PROFILE= 1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	7.000	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	7.000	PROFILE= 1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	7.000	PROFILE= 1	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=	8.000	PROFILE= 1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	9.000	PROFILE= 1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	14.000	PROFILE= 1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	15.000	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	15.000	PROFILE= 1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	15.000	PROFILE= 1	20 TRIALS ATTEMPTED TO BALANCE WSEL

 * U.S. ARMY CORPS OF ENGINEERS
 * THE HYDROLOGIC ENGINEERING CENTER
 * 609 SECOND STREET, SUITE D
 * DAVIS, CALIFORNIA 95616-4687
 * (916) 756-1104, (916) 551-1748
 * *****

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

THIS RUN EXECUTED 4/ 3/97 11: 8:20

ERROR CORR - 01,02
MODIFICATION -

T1 SUNPORT PARK
T2 HEC 2 for arroyo Subcritical (6039sub.dat)
T3 BASIN A

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	0	-1	0	2	340.2	44.4	
J2	NPROP	IPILOT	PREVS	XSECV	XSRCH	FN	ALDLC	IBW	CANVM	ITRACE
	1	1	0	0	0	0	-1			

J3 VARIABLE CODES FOR SUMMARY PRINTOUT
150

NC	.035	.035	.035							
QT	1	340.2								
X1	16	5	-4.1	4.1	235	235	0	235	4	50.4
GR	50.4	-4.1	44.4	-4	44.4			44.4		4.1
X1	15	5	-4.1	4.1	145	210	62	51.7	4	57.7
GR	57.7	-4.1	51.7	-4	51.7	0				4.1
X1	14	12	-150	135	142	105	50	56	-37	55
GR	58	-150	57	-133	57	-40	56	55	40	0
GR	55.5	10	55	24	54.6	30	55			75
GR	57	110	58	135						
X1	13	13	-10	227	56	60	50	57	-1	56.7
GR	60	-10	59	-8	58	-6	57			0
GR	57	9	57	23	56.2	50	57		90	58
GR	59	156	59	210	60	227				138
X1	12	17	-144	200	55	40	51	-15		60
GR	64	-44	63	-40	62	-31	61	18		59
GR		-12	58	-7	57.8	0	58	165		62
GR	58.7	55	59	70	60	100	61			193
GR	63	196	64	200						

X1	11	15	-31	203	54	30	50	-12	61	-8
GR	65	-31	64	-21	63	-16	62	58	60	71
GR	60	-4	59.3	0	60	38	61	202	65	203
GR	61	113	62	193	63	198	64			
X1	10	18	-17	201	49	58	50	-14	62	-12
GR	66	-17	65	-16	64	-15	63	40	62	54
GR	61.4	0	62	20	61.2	28	62	138	62	198
GR	62.8	65	62	77	62	110	63		63	
GR	64	199	65	200	66	201				
X1	9	16	-34	194	45	85	48	-14	64	-9
GR	68	-34	67	-26	66	-19	65	60	64	75
GR	63.7	0	64	25	64	35	64.7	192	67	193
GR	64	100	65	165	65	190	66			
GR	68	194								
X1	8	12	-49	190	44	80	50	-9	66	-4
GR	70	-49	69	-41	68	-13	67	135	68	182
GR	65.7	0	66	5	67	64	67			
GR	69	186	70	190						
X1	7	13	-85	187	65	18	51	-46	69	-41
GR	73	-85	72	-63	71	-53	70	130	70	183
GR	69	-26	68	0	69	47	70			
GR	71	185	72	186	73	187				
X1	6	15	-67	200	61	44	50	-25	71	-21
GR	75	-67	74	-46	73	-32	72	0	68	5
GR	70	-17	69	-15	68	-11	72	197	75	200
GR	69	15	70	38	71	71				
X1	5	17	-34	191	42	37	43	-23	70	-20
GR	75	-34	73	-29	72	-26	71	30	71	36
GR	69	-15	68.5	0	69	12	70	148	72.3	188
GR	72	56	73	80	73	147	72.5			
GR	73	189	75	191						
X1	4	21	-28	186	60	37	145	-21	72	-16
GR	76	-28	75	-27	74	-22	73	4	71	14
GR	71	-12	70	-4	69.9	0	70	87	75.2	97
GR	72	25	73	34	74	55	75			
GR	74.8	113	75.2	125	75	130				
GR	76	186								185

X1	3	14	-176	57	52	55	50	-138	75	-123
GR	80	-176	78	-157	75	-147	74	-75	77	-50
GR	76	-120	76.5	-105	77	-90	77.7	57		
GR	76	0	75.3	40	76	48	80			
X1	2	9	-62	61	52	55	52	-32	78	0
GR	82	-62	81	-56	79	-55	78	61		
GR	77.3	40	78	57		60	82			
X1	1	10	-67	72	81	-57	80	-40	80	0
GR	85	-67	81	-61	79.6	55	80	58	85	72
GR	80	25	79.6	40						

4/ 3/97 11: 8:20

SECCNO	DEPTH	Q	QLOB	QCH	QCH	CRIMS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
TIME	VLOB	VLOB	VCH	VCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	SSTA
SLOPE	XLOBL	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST		

*PROF 1
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

*SECNO 16.000
3720 CRITICAL DEPTH ASSUMED
16.00 3.82 48.22 44.40 50.11 1.90 .00 .00 50.40
340. 0. 340. 0. 31. 0. 0. 50.40
.00 .00 11.05 .00 .035 .000 .000 44.40 -4.06
.027434 235. 235. 235. 235. 11 0 .00 8.13 4.06

*SECNO 15.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
15.00 3.81 55.51 55.51 .00 57.41 1.91 1.71 .00 57.70
340. 0. 340. 0. 31. 0. 0. 57.70
.00 .00 11.08 .00 .035 .000 .000 51.70 -4.06
.027674 145. 62. 210. 0 5 0 .00 8.13 4.06

*SECNO 14.000
3302 WARNING: CONVEYANCE CHANGES OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 7.70
14.00 2.87 57.47 56.00 .00 57.49 .02 .07 .00 58.00
340. 0. 340. 0. 323. 0. 0. 58.00
.01 .00 1.05 .00 .000 .035 .000 .000 54.60 -141.01
.000466 142. 50. 105. 3 22 0 .00 262.79 121.76

*SECNO 13.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
13.00 1.24 57.44 57.44 .00 57.77 .33 .07 .00 60.00
340. 0. 340. 0. 74. 0. 0. 60.00
.02 .00 4.63 .00 .035 .000 .000 56.20 -3.20
.021445 56. 50. 60. 0 18 0 .00 114.34 111.14

*SECNO 12.000
7185 MINIMUM SPECIFIC ENERGY

4/ 3/97 11: 8:20

SECCNO	DEPTH	Q	QLOB	QCH	QCH	CRIMS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
TIME	VLOB	VLOB	VCH	VCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	SSTA
SLOPE	XLOBL	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST		

3720 CRITICAL DEPTH ASSUMED
12.00 1.46 59.26 59.26 .00 59.65 .39 1.07 .00 64.00
340. 0. 340. 0. 68. 0. 0. 64.00
.02 .00 5.01 .00 .035 .000 .000 57.80 -12.52
.020416 55. 51. 40. 0 11 0 .00 90.33 77.81

*SECNO 11.000
3265 DIVIDED FLOW
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
11.00 1.48 60.78 60.78 .00 61.13 .35 1.02 .00 65.00
340. 0. 340. 0. 72. 0. 0. 65.00
.02 .00 4.73 .00 .035 .000 .000 59.30 -7.14
.020326 54. 50. 30. 0 5 0 .00 103.96 103.94

*SECNO 10.000
3265 DIVIDED FLOW
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
10.00 1.31 62.51 62.51 .00 62.82 .31 1.07 .00 66.00
340. 0. 340. 0. 76. 0. 0. 66.00
.03 .00 4.46 .00 .035 .000 .000 61.20 -13.03
.022374 49. 50. 58. 0 15 0 .00 129.20 124.39

*SECNO 9.000
3265 DIVIDED FLOW
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
9.00 .98 64.68 64.68 .00 64.95 .27 1.08 .00 68.00
340. 0. 340. 0. 82. 0. 0. 68.00
.03 .00 4.16 .00 .035 .000 .000 63.70 -12.41
.022724 45. 48. 85. 0 19 0 .00 155.71 144.33

SECDNO	DEPTH	QLOB	QLOB	QCH	QCH	CRIMS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
TIME	VLOB	VLOB	VCH	VCH	VRQB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	SSTA
SLOPE	XLOBL	XLOBL	XICH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST		

*SECNO 8.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
8.00 1.55 67.25 67.25 0.00 67.53 .29 1.20 .00 70.00
340. 0. 340. 0. 0. 79. 0. 1. 1. 70.00
.03 .00 4.28 .00 .035 .000 0.00 65.70 -9.99
.025222 44. 50. 80. 15 0 .00 156.57 146.59

*SECNO 7.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
7.00 1.37 69.37 69.37 0.00 69.69 .32 1.19 .00 73.00
340. 0. 340. 0. 0. 75. 0. 1. 1. 73.00
.04 .00 4.56 .00 .035 .000 0.00 68.00 -42.83
.021757 65. 51. 18. 0 0 .00 120.26 77.42

*SECNO 6.000
3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.58

6.00 2.80 70.00 69.67 .00 70.34 .34 .65 .00 75.00
340. 0. 340. 0. 0. 72. 0. 1. 1. 75.00
.04 .00 4.71 .00 .035 .000 0.00 67.20 -17.02
.008713 61. 50. 44. 2 14 0 .00 55.22 38.20

*SECNO 5.000
5.00 1.84 70.34 70.22 .00 70.79 .45 .45 .00 75.00
340. 0. 340. 0. 0. 63. 0. 1. 1. 75.00
.04 .00 5.38 .00 .035 .000 0.00 68.50 -21.04
.012837 42. 43. 37. 3 14 0 .00 53.13 32.09

*SECNO 4.000
4.00 2.25 72.15 72.06 .00 72.70 .55 1.91 .00 76.00
340. 0. 340. 0. 0. 57. 0. 1. 1. 76.00
.05 .00 5.93 .00 .035 .000 0.00 69.90 -16.77
.013474 60. 145. 37. 2 8 0 .00 43.15 26.38

SECDNO	DEPTH	QLOB	QLOB	QCH	QCH	CRIMS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
TIME	VLOB	VLOB	VCH	VCH	VRQB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	SSTA
SLOPE	XLOBL	XLOBL	XICH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST		

*SECNO 3.000
3265 DIVIDED FLOW
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
3.00 2.14 76.14 76.14 0.00 76.53 .39 .83 .00 80.00
340. 0. 340. 0. 0. 68. 0. 1. 1. 80.00
.05 .00 5.03 .00 .035 .000 0.00 74.00 -150.79
.020795 52. 50. 55. 0 11 0 .00 90.12 48.31

*SECNO 2.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
2.00 1.23 78.53 78.53 0.00 78.89 .36 1.08 .00 82.00
340. 0. 340. 0. 0. 71. 0. 1. 1. 82.00
.05 .00 4.79 .00 .035 .000 0.00 77.30 -44.25
.020852 52. 52. 55. 0 14 0 .00 102.85 58.60

*SECNO 1.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
1.00 1.01 80.61 80.61 0.00 80.95 .34 .00 .00 85.00
340. 0. 340. 0. 0. 73. 0. 1. 1. 85.00
.05 .00 4.67 .00 .035 .000 0.00 79.60 -50.33
.021052 0. 0. 0. 0 15 0 .00 110.03 59.70

CROSS SECTION 16.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)--B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,M=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL
 ELEV 44.4 45.4 46.4 47.4 48.4 49.4 50.4 51.4 52.4 53.4 54.4

STA-FLEET

3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50		51		52		53		54		55		56		57		58		59		60		61		62		63		64		65		66		67		68		69		70		71		72		73		74		75		76		77		78		79		80		81		82		83		84		85		86		87		88		89		90		91		92		93		94		95		96		97		98		99		100	
3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50		51		52		53		54		55		56		57		58		59		60		61		62		63		64		65		66		67		68		69		70		71		72		73		74		75		76		77		78		79		80		81		82		83		84		85		86		87		88		89		90		91		92		93		94		95		96		97		98		99		100	
3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50		51		52		53		54		55		56		57		58		59		60		61		62		63		64		65		66		67		68		69		70		71		72		73		74		75		76		77		78		79		80		81		82		83		84		85		86		87		88		89		90		91		92		93		94		95		96		97		98		99		100	
3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50		51		52		53		54		55		56		57		58		59		60		61		62		63		64		65		66		67		68		69		70		71		72		73		74		75		76		77		78		79																																											

CROSS SECTION 15.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTON BRIDGES,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV	51.7	52.7	53.7	54.7	55.7	56.7	57.7	58.7	59.7	60.7	61.7
------	------	------	------	------	------	------	------	------	------	------	------

STA-FBI

[illegible]

NRD= 0 ELLC= 99999999.00 ELTRD= 99999999.00

EL(I),STA(I) 57.70	-4.10	51.70	-4.00	51.70	.00	51.70	4.00	57.70	4.10
-----------------------	-------	-------	-------	-------	-----	-------	------	-------	------

CROSS SECTION 14.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

ELEV	54.6	55.1	55.6	56.1	56.6	57.1	57.6	58.1	58.6	59.1	59.6
------	------	------	------	------	------	------	------	------	------	------	------

STA-FEET

[illegible]

LINE	AMOUNT	DATE	DESCRIPTION	DEBIT	CREDIT	BALANCE
65.						
70.						
75.						
80.						
85.						
90.						
95.						
100.						
105.						
110.						
115.						
120.						
125.						
130.						
135.						

NRD= 0 ELIC= 99999999.00 ELTRD= 99999999.00

EL(I),STA(I)

58.00	-150.00	57.00	-133.00	57.00	-40.00	56.00	-37.00	55.00
55.50	10.00	55.00	24.00	54.60	30.00	55.00	40.00	56.00
57.00	110.00	58.00	135.00					75.00

CROSS SECTION 13.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL											
ELEV	56.2	56.7	57.2	57.7	58.2	58.7	59.2	59.7	60.2	60.7	61.2

STA-FLEET

Rank	Score	Player	Country
1	205	...	...
2	200	...	...
3	195	...	...
4	190	...	...
5	185	...	...
6	180	...	...
7	175	...	...
8	170	...	...
9	165	...	...
10	160	...	...
11	155	...	...
12	150	...	...
13	145	...	...
14	140	...	...
15	135	...	...
16	130	...	...
17	125	...	...
18	120	...	...
19	115	...	...
20	110	...	...
21	105	...	...
22	100	...	...
23	95	...	...
24	90	...	...
25	85	...	...
26	80	...	...
27	75	...	...
28	70	...	...
29	65	...	...
30	60	...	...
31	55	...	...
32	50	...	...
33	45	...	...
34	40	...	...
35	35	...	...
36	30	...	...
37	25	...	...
38	20	...	...
39	15	...	...
40	10	...	...
41	5	...	...
42	0	...	...
43	-5	...	...
44	-10	...	...
45	-15	...	...

BANK.

00.00

340

De

61.8

STN-FLEET

BANK.

[illegible]

180.	.	.	X	.	.	.	.	.
185.	.	.	X.	.	.	.	.	.
190.	.	.	.X	.	.	.	.	.
17 195.	.	.	XXXXXXXXXX	.	.	.	.	.
18 200.	.	.	.	X	.	.	.	BANK.

NRD= 0 ELLC= 9999999.00 ELTRD= 9999999.00

$$EL(I), STA(I)$$

64.00	-44.00	63.00	-40.00	62.00	-31.00	61.00	-15.00	60.00	-14.00
59.00	-12.00	58.00	-7.00	57.80	.00	58.00	18.00	59.00	40.00
58.70	55.00	59.00	70.00	60.00	100.00	61.00	165.00	62.00	193.00
63.00	196.00	64.00	200.00						

[illegible]

STA-FBIET

		BANK.	
-35.	.	.	.
2 -30.	.	.	.
-25.	.	.	.
3 -20.	.	.	.
4 -15.	.	.	.
6 -10.	.	.	.
7 -5.	.	.	.
8 0.	X	W	E
5.	X	W	E
10.	X	W	E
15.	X	W	E
20.	X	W	E
25.	X	W	E
30.	X	W	E
35.	X	W	E
9 40.	X	W	E
45.	X	W	E
50.	X	W	E
55.	X	W	E
10 60.	X	W	E
65.	X	W	E
11 70.	X	W	E
75.	X	W	E
80.	X	W	E
85.	X	W	E
90.	X	W	E
95.	X	W	E
100.	X	W	E
105.	X	W	E
110.	X	W	E
12 115.	X	W	E
120.	X	W	E
125.	X	W	E
130.	X	W	E
135.	X	W	E
140.	X	W	E
145.	X	W	E
150.	X	W	E
155.	X	W	E
160.	X	W	E
165.	X	W	E
170.	X	W	E
175.	X	W	E
180.	X	W	E
185.	X	W	E

BANK.

203-00

BLANK.

EL(I),STA(I)									
66.00	-17.00	65.00	-16.00	64.00	-15.00	63.00	-14.00	62.00	-12.00
61.40	.00	62.00	20.00	61.20	28.00	62.00	40.00	62.00	54.00
62.80		62.00	77.00	62.00	110.00	63.00	138.00	63.00	198.00
64.00	199.00	65.00	200.00	66.00	201.00				

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL											
ELEV	63.7	64.2	64.7	65.2	65.7	66.2	66.7	67.2	67.7	68.2	68.7

[illegible]

15 190.
17 195.
NRD= 0 ELIC= 9999999.00 ELTRD= 9999999.00
EL(I)/STA(I)
68.00 -34.00 67.00 -26.00 66.00 -19.00 65.00 -14.00 64.00 -9.00
63.70 64.00 65.00 25.00 64.00 35.00 64.70 60.00 64.00 75.00
64.00 100.00 165.00 65.00 190.00 66.00 192.00 67.00 193.00
68.00 194.00

CROSS SECTION 8.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL
ELEV 65.7 66.2 66.7 67.2 67.7 68.2 68.7 69.2 69.7 70.2 70.7

STA-FEET
2 -50. BANK.
-45.
3 -40.
-35.
-30.
-25.
-20.
4 -15.
5 -10.
6 -5.
7 0. X
8 5.
10.
15.
20.
25.
30.
35.
40.
45.
50.
55.
60.
65.
70.
75.
80.
85.
90.
95.
100.
105.
110.
115.
120.
125.
130.
135.
140.
145.
150.
155.
160.
165.
170.

175.	.
11	180.
12	185.
13	190.
	.

NRD= 0 ELIC= 99999999.00 ELTRD= 99999999.00

EL(I),STA(I)	
-49.00	69.00
70.00	-41.00
-00	68.00
65.70	67.00
186.00	-13.00
70.00	67.00
	64.00
	67.00
	-9.00
	66.00
	68.00
	-4.00
	182.00

CROSS SECTION 7.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL											
ELEV	68.0	68.5	69.0	69.5	70.0	70.5	71.0	71.5	72.0	72.5	73.0

STA-FREBT

[illegible]

[illegible]

NRD=	0	ELC=	9999999.00	ELTRD=	9999999.00
EL(I),STA(I)					
73.00	-85.00	72.00	-63.00	71.00	-53.00
69.00	-26.00	68.00	.00	65.00	47.00
71.00	185.00	72.00	186.00	73.00	187.00
					70.00
					70.00
					-46.00
					130.00
					69.00
					70.00
					-41.00
					183.00

CROSS SECTION 6.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL											
ELEV	67.2	68.2	69.2	70.2	71.2	72.2	73.2	74.2	75.2	76.2	77.2

STA-FLEET

BANK.		BANK.	
2	-65.	.	.
2	-60.	.	.
-55.	.	.	.
-50.	.	.	.
3	-45.	.	.
-40.	.	.	.
-35.	.	.	.
4	-30.	.	.
5	-25.	.	.
6	-20.	.	.
8	-15.	.	.
9	-10.	.	.
-5.	.	.	.
10	0.	X	.
11	5.	.	.
11	5.	X	.
10	10.	.	.
12	15.	X	.
20.	.	.	.
25.	.	X	.
30.	.	C	W.E
35.	.	X	W.E
40.	.	X	W.E
45.	.	X	W.E
50.	.	X	W.E
55.	.	X	W.E
60.	.	X	W.E
65.	.	X	W.E
70.	.	X	W.E
75.	.	X	W.E
80.	.	X	W.E
85.	.	X	W.E
90.	.	X	W.E
95.	.	X	W.E
100.	.	X	W.E
105.	.	X	W.E
110.	.	X	W.E
115.	.	X	W.E
120.	.	X	W.E
125.	.	X	W.E
130.	.	X	W.E
135.	.	X	W.E
140.	.	X	W.E
145.	.	X	W.E
150.	.	X	W.E

NKD=	0	ELLC=	9999999.00	ELTRD=	9999999.00
EL(1),STA(1)					
75.00	-67.00	74.00	-46.00	73.00	-32.00
70.00	-17.00	69.00	-15.00	68.00	-11.00
69.00	15.00	70.00	38.00	71.00	71.00
				72.00	72.00
				67.20	67.20
				72.00	72.00
				-25.00	-25.00
				.00	.00
				75.00	75.00
				68.00	68.00
				-21.00	-21.00
				5.00	5.00
				200.00	200.00

$$EL(I), STA(I)$$

4.00

BLEV 69.9

STA-FLEET

BLANK.

[illegible]

BANK.

EL(I),STA(I)									
76.00	-28.00	75.00	-27.00	74.00	-22.00	73.00	-21.00	72.00	-16.00
71.00	-12.00	70.00	-4.00	69.90	.00	70.00	4.00	71.00	14.00
72.00	25.00	73.00	34.00	74.00	55.00	75.00	87.00	73.20	97.00
74.80	113.00		125.00	75.00	130.00	74.00	182.00	75.00	185.00
76.00	186.00								

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL

		BANK.	
-180.	.	.	X
-175.	.	.	X
-170.	.	.	.
-165.	.	.	.
-160.	.	.	.
-155.	.	.	.
-150.	.	.	.
-145.	.	.	.
-140.	X	.	.
-135.	.	.	.
-130.	X	.	.
-125.	.	.	.
-120.	X	.	.
-115.	.	.	.
-110.	.	.	.
-105.	.	.	.
-100.	.	.	.
-95.	.	.	.
-90.	X	.	.
-85.	.	.	.
-80.	.	.	.
-75.	.	.	.
-70.	.	.	.
-65.	.	.	.
-60.	.	.	.
-55.	.	.	.
-50.	.	.	.
-45.	.	.	.
-40.	.	.	.
-35.	.	.	.
-30.	.	.	.
-25.	.	.	.
-20.	.	.	.
-15.	.	.	.
-10.	.	.	.
-5.	.	.	.
0.	.	.	.
5.	.	.	.
10.	.	.	.
15.	.	.	.
20.	.	.	.
25.	.	.	.
30.	.	.	.
35.	.	.	.
40.	.	.	.

BANKS:

999999.00

340.

82.3

STA-FLEET

CROSS SECTION 1.00
STREAM BASIN A
DISCHARGE= 340.

PLOTTED POINTS (BY PRIORITY)-B=BOTTOM BRIDGE,T=TOP BRIDGE,X=GROUND,W=WATER SUR,E=ENERGY GRADIENT,C=CRITICAL WSEL
ELEV 79.6 80.1 80.6 81.1 81.6 82.1 82.6 83.1 83.6 84.1 84.6

STA-FEET										
2	-70.0	.	.	.	.	.	.	.	.	X
3	-65.0	.	.	.	.	.	.	.	.	BANK.
4	-60.0	.	.	.	.	.	.	.	.	.
5	-55.0	.	.	.	.	.	.	.	.	.
6	-50.0	.	.	.	.	.	.	.	.	.
7	-45.0	.	.	.	.	.	.	.	.	.
8	-40.0	.	.	.	.	.	.	.	.	.
9	-35.0	.	.	.	.	.	.	.	.	.
10	-30.0	.	.	.	.	.	.	.	.	.
11	-25.0	.	.	.	.	.	.	.	.	.
12	-20.0	.	.	.	.	.	.	.	.	.
13	-15.0	.	.	.	.	.	.	.	.	.
14	-10.0	.	.	.	.	.	.	.	.	.
15	-5.0	.	.	.	.	.	.	.	.	.
16	0.0	.	.	.	.	.	.	.	.	.
17	5.0	.	.	.	.	.	.	.	.	.
18	10.0	.	.	.	.	.	.	.	.	.
19	15.0	.	.	.	.	.	.	.	.	.
20	20.0	.	.	.	.	.	.	.	.	.
21	25.0	.	.	.	.	.	.	.	.	.
22	30.0	.	.	.	.	.	.	.	.	.
23	35.0	.	.	.	.	.	.	.	.	.
24	40.0	.	.	.	.	.	.	.	.	.
25	45.0	.	.	.	.	.	.	.	.	.
26	50.0	.	.	.	.	.	.	.	.	.
27	55.0	.	.	.	.	.	.	.	.	.
28	60.0	.	.	.	.	.	.	.	.	.
29	65.0	.	.	.	.	.	.	.	.	.
30	70.0	.	.	.	.	.	.	.	.	.
31	75.0	.	.	.	.	.	.	.	.	.
32	80.0	.	.	.	.	.	.	.	.	.
33	85.0	.	.	.	.	.	.	.	.	.
34	90.0	.	.	.	.	.	.	.	.	.
35	95.0	.	.	.	.	.	.	.	.	.
36	100.0	.	.	.	.	.	.	.	.	.
37	105.0	.	.	.	.	.	.	.	.	.
38	110.0	.	.	.	.	.	.	.	.	.
39	115.0	.	.	.	.	.	.	.	.	.
40	120.0	.	.	.	.	.	.	.	.	.
41	125.0	.	.	.	.	.	.	.	.	.
42	130.0	.	.	.	.	.	.	.	.	.
43	135.0	.	.	.	.	.	.	.	.	.
44	140.0	.	.	.	.	.	.	.	.	.
45	145.0	.	.	.	.	.	.	.	.	.
46	150.0	.	.	.	.	.	.	.	.	.
47	155.0	.	.	.	.	.	.	.	.	.
48	160.0	.	.	.	.	.	.	.	.	.
49	165.0	.	.	.	.	.	.	.	.	.
50	170.0	.	.	.	.	.	.	.	.	.
51	175.0	.	.	.	.	.	.	.	.	.
52	180.0	.	.	.	.	.	.	.	.	.
53	185.0	.	.	.	.	.	.	.	.	.
54	190.0	.	.	.	.	.	.	.	.	.
55	195.0	.	.	.	.	.	.	.	.	.
56	200.0	.	.	.	.	.	.	.	.	.
57	205.0	.	.	.	.	.	.	.	.	.
58	210.0	.	.	.	.	.	.	.	.	.
59	215.0	.	.	.	.	.	.	.	.	.
60	220.0	.	.	.	.	.	.	.	.	.
61	225.0	.	.	.	.	.	.	.	.	.
62	230.0	.	.	.	.	.	.	.	.	.
63	235.0	.	.	.	.	.	.	.	.	.
64	240.0	.	.	.	.	.	.	.	.	.
65	245.0	.	.	.	.	.	.	.	.	.
66	250.0	.	.	.	.	.	.	.	.	.
67	255.0	.	.	.	.	.	.	.	.	.
68	260.0	.	.	.	.	.	.	.	.	.
69	265.0	.	.	.	.	.	.	.	.	.
70	270.0	.	.	.	.	.	.	.	.	.
71	275.0	.	.	.	.	.	.	.	.	.
72	280.0	.	.	.	.	.	.	.	.	.
73	285.0	.	.	.	.	.	.	.	.	.
74	290.0	.	.	.	.	.	.	.	.	.
75	295.0	.	.	.	.	.	.	.	.	.
76	300.0	.	.	.	.	.	.	.	.	.
77	305.0	.	.	.	.	.	.	.	.	.
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PROFILE FOR STREAM BASIN A

PLOTTED POINTS (BY PRIORITY) E=ENERGY,W=WATER SURFACE,I=INVERT,C=CRITICAL W.S.,L=LEFT BANK,R=RIGHT BANK,N=LOWER END STA

ELEVATION	SECTNO	CUMDIS	44.	49.	54.	59.	64.	69.	74.	79.	84.	89.
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6.00	100.	I	W	EL	.	.	.	.	.	.	.	.
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-23.00	390.	I	W	EL	.	.	.	.	.	.	.	.
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-25.00	410.	I	W	EL	.	.	.	.	.	.	.	.
-26.00	420.	I	W	EL	.	.	.	.	.	.	.	.
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4/ 3/97 11: 8:20

PAGE 9

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

THIS RUN EXECUTED 4/ 3/97 11: 8:22

ERROR CORR - 01,02
MODIFICATION -

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

BASIN A

SUMMARY PRINTOUT TABLE 150

SECTNO	XICR	ELTRD	ELLG	ELMIN	Q	CWSEL	CRINS	EG	10+KS	VCH	AREA	.01K
* 16.000	.00	.00	.00	44.40	340.20	48.22	48.22	50.11	274.34	11.05	30.79	20.54
* 15.000	62.00	.00	.00	51.70	340.20	55.51	55.51	57.41	276.74	11.08	30.69	20.45
* 14.000	50.00	.00	.00	54.60	340.20	57.47	56.00	57.49	4.66	1.05	323.38	157.56
* 13.000	50.00	.00	.00	56.20	340.20	57.44	57.44	57.77	214.45	4.63	73.51	23.23
* 12.000	51.00	.00	.00	57.80	340.20	59.26	59.26	59.65	204.16	5.01	67.92	23.81
* 11.000	50.00	.00	.00	59.30	340.20	60.78	60.78	61.13	203.26	4.73	71.94	23.86
* 10.000	50.00	.00	.00	61.20	340.20	62.51	62.51	62.82	223.74	4.46	76.24	22.74
* 9.000	48.00	.00	.00	63.70	340.20	64.68	64.68	64.95	227.24	4.16	81.73	22.57
* 8.000	50.00	.00	.00	65.70	340.20	67.25	67.25	67.53	252.22	4.28	79.40	21.42
* 7.000	51.00	.00	.00	68.00	340.20	69.37	69.37	69.69	217.57	4.56	74.67	23.06
* 6.000	50.00	.00	.00	67.20	340.20	70.00	69.67	70.34	87.13	4.71	72.23	36.45
5.000	43.00	.00	.00	68.50	340.20	70.34	70.22	70.79	128.37	5.38	63.19	30.03
4.000	145.00	.00	.00	69.90	340.20	72.15	72.06	72.70	134.74	5.93	57.36	29.31
* 3.000	50.00	.00	.00	74.00	340.20	76.14	76.14	76.53	207.95	5.03	67.57	23.59
* 2.000	52.00	.00	.00	77.30	340.20	78.53	78.53	78.89	208.52	4.79	71.06	23.56
* 1.000	.00	.00	.00	79.60	340.20	80.61	80.61	80.95	210.52	4.67	72.80	23.45

BASIN A

SUMMARY PRINTOUT TABLE 150

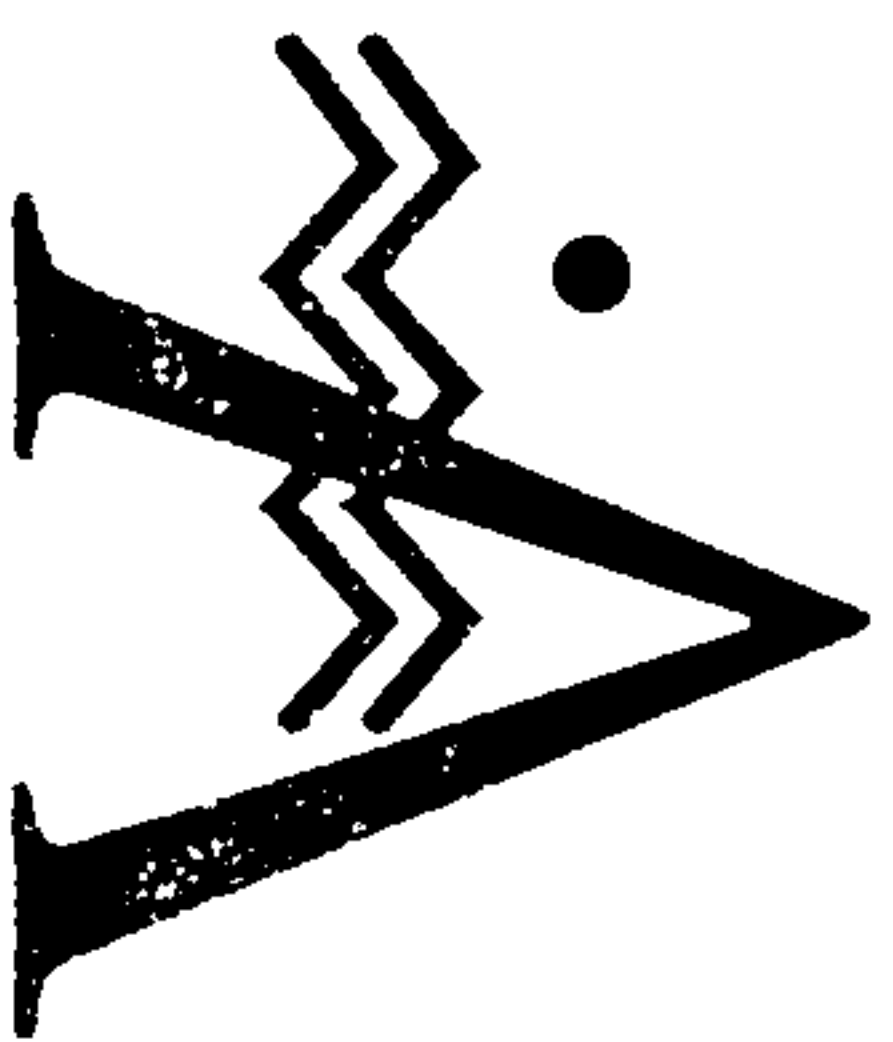
SECCNO	Q	CWSEL	DIFWSP	DIFWSX	DIFWNS	TOPWID	XLCE
* 16.000	340.20	48.22	.00	.00	3.82	8.13	.00
* 15.000	340.20	55.51	.00	7.29	.00	8.13	62.00
* 14.000	340.20	57.47	.00	1.96	.00	262.79	50.00
* 13.000	340.20	57.44	.00	-.03	.00	114.34	50.00
* 12.000	340.20	59.26	.00	1.82	.00	90.33	51.00
* 11.000	340.20	60.78	.00	1.52	.00	103.96	50.00
* 10.000	340.20	62.51	.00	1.73	.00	129.20	50.00
* 9.000	340.20	64.68	.00	2.17	.00	155.71	48.00
* 8.000	340.20	67.25	.00	2.56	.00	156.57	50.00
* 7.000	340.20	69.37	.00	2.12	.00	120.26	51.00
* 6.000	340.20	70.00	.00	.63	.00	55.22	50.00
5.000	340.20	70.34	.00	.34	.00	53.13	43.00
4.000	340.20	72.15	.00	1.81	.00	43.15	145.00
* 3.000	340.20	76.14	.00	3.98	.00	90.12	50.00
* 2.000	340.20	78.53	.00	2.40	.00	102.85	52.00
* 1.000	340.20	80.61	.00	2.07	.00	110.03	.00

4/ 3/97 11: 8:20

PAGE 10

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO=	16.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	15.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	15.000	PROFILE=	1	MINIMUM SPECIFIC ENERGY
WARNING SECNO=	14.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	13.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	13.000	PROFILE=	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	12.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
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CAUTION SECNO=	7.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
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WARNING SECNO=	6.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	3.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
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CAUTION SECNO=	1.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	1.000	PROFILE=	1	MINIMUM SPECIFIC ENERGY



CITY OF
Albuquerque

Public Works Department

Martin J. Chávez, Mayor

June 10, 1997

Robert E. Gurulé, Director

John Andrews

Andrews, Asbury, & Roberts Inc.
149 Jackson Street NE
Albuquerque, New Mexico 87108

RE: Grading Plan for Sunport Park Block 4-A & 4-B (M-15/D23E) Received May 27 1997

Dear Mr. Andrews:

I have reviewed the referenced plan stamp dated May 23, 1997 for Rough Grading Permit and forward the following comments:

1. Please address erosion and sediment control for the fill area.
2. Have you contacted City Environmental Health for a Site Disturbance Permit?

If you have any questions please call me at 924-3984.

Sincerely,

Carlos A. Montoya
Project Manager

c: Andrew Garcia
File

Good for You. Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103



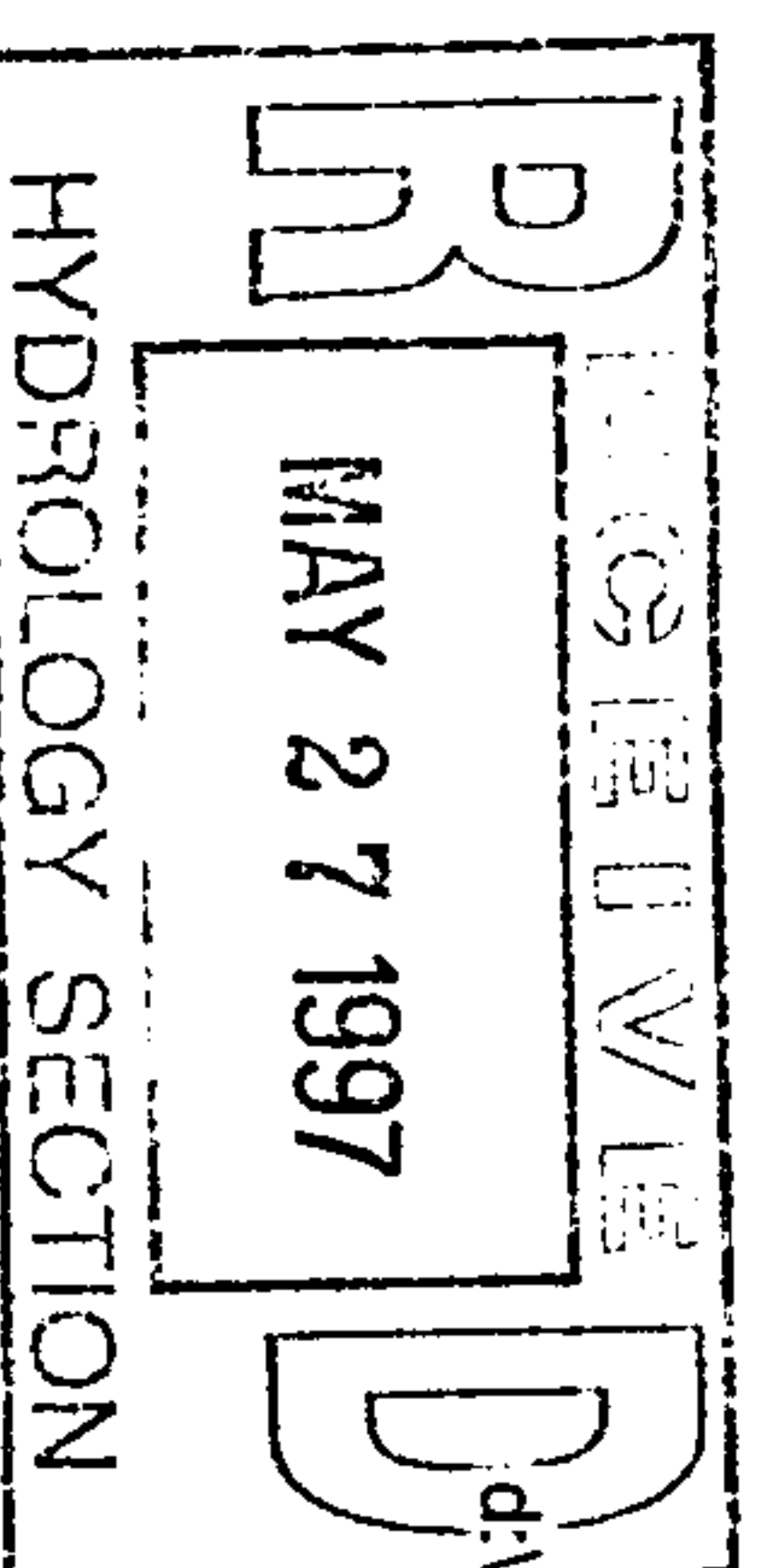
DRAINAGE INFORMATION SHEET

PROJECT TITLE: Sunport Park ZONE ATLAS/DRNG. FILE #: M-15/D23DRB #: 96-131 EPC #: N/A WORK ORDER #: N/ALEGAL DESCRIPTION: Block 4-A & 4-B, SUNPORT PARK SUBDIVISIONCITY ADDRESS: South side of Woodward Road S.E., West of University Blvd. S.E.ENGINEERING FIRM: Andrews, Asbury & Robert, Inc. CONTACT: John AndrewsADDRESS: 149 Jackson St. N.E., Albuquerque, NM 87108 PHONE: 265-6631OWNER: Sunport Joint Venture CONTACT: Howard MockADDRESS: P.O. Box 26841, Albuquerque, NM 87125 PHONE: 345-8591ARCHITECT: Consensus Planning CONTACT: Chris GreenADDRESS: 718 Central S.W., Albuquerque, NM 87102 PHONE: 764-9801SURVEYOR: Andrews, Asbury & Robert, Inc. CONTACT: Gayle D. JewellADDRESS: 149 Jackson St. N.E., Albuquerque, NM 87108 PHONE: 265-6631CONTRACTOR: New Concepts, Inc. CONTACT: Tom LakemanADDRESS: P.O. Box 6128, Albuquerque, NM 87197 PHONE: 821-9504

TYPE OF SUBMITTAL: CHECK TYPE OF APPROVAL SOUGHT:

☐ DRAINAGE REPORT ☐ SKETCH PLAT APPROVAL☐ DRAINAGE PLAN ☐ PRELIMINARY PLAT APPROVAL☐ CONCEPTUAL GRADING & DRAINAGE PLAN ☐ SITE DEVELOP. PLAN FOR SUBD. APPROVAL☒ GRADING PLAN ☐ SITE DEVELOP. PLAN FOR BLDG. PERMIT☐ EROSION CONTROL PLAN ☐ SECTOR PLAN APPROVAL☐ ENGINEER'S CERTIFICATION ☐ FINAL PLAT APPROVAL☐ OTHER ☐ FOUNDATION PERMIT APPROVAL☐ ☐ BUILDING PERMIT APPROVALPRE-DESIGN MEETING: ☐ CERTIFICATE OF OCCUPANCY APPROVAL☐ YES ☐ GRADING PERMIT APPROVAL☒ NO ☐ PAVING PERMIT APPROVAL☐ COPY OF CONFERENCE RECAP SHEET
PROVIDED ☐ S.A.D. DRAINAGE REPORT☐ DRAINAGE REQUIREMENTS☒ ROUGH GRADING PERMIT APPROVAL☐ OTHER _____ (SPECIFY)DATE SUBMITTED: May 23, 1997BY: John A. Andrews

John A. Andrews, P.E.



d:\Proj752\DrainInfo.sht



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

CONSULTING ENGINEERS

149 JACKSON STREET NE., ALBUQUERQUE, NEW MEXICO 87108

505-265-6631

FAX 505-266-8112

e-mail: aarnm@ix.netcom.com

May 23, 1997

Mr. Fred Aguirre
Hydrology Division
Public Works Department
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Subject: Sunport Park Block 4-A & 4-B

Dear Mr. Aguirre:

Transmitted herewith is a grading plan for subject project.

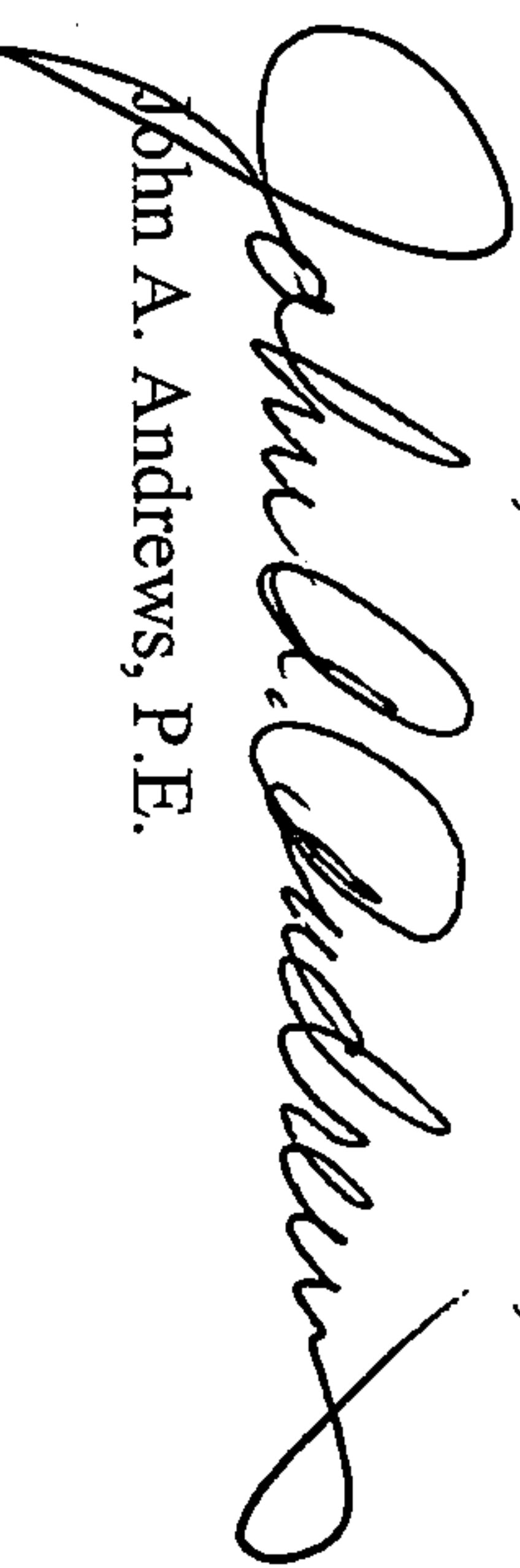
This grading plan has been prepared to basically show the location of the waste fill area from the excess excavation from grading Sunport Place.

Lisa Manwill of your office has previously approved the drainage report for this area on January 15, 1997, as Drainage File No M15-D23.

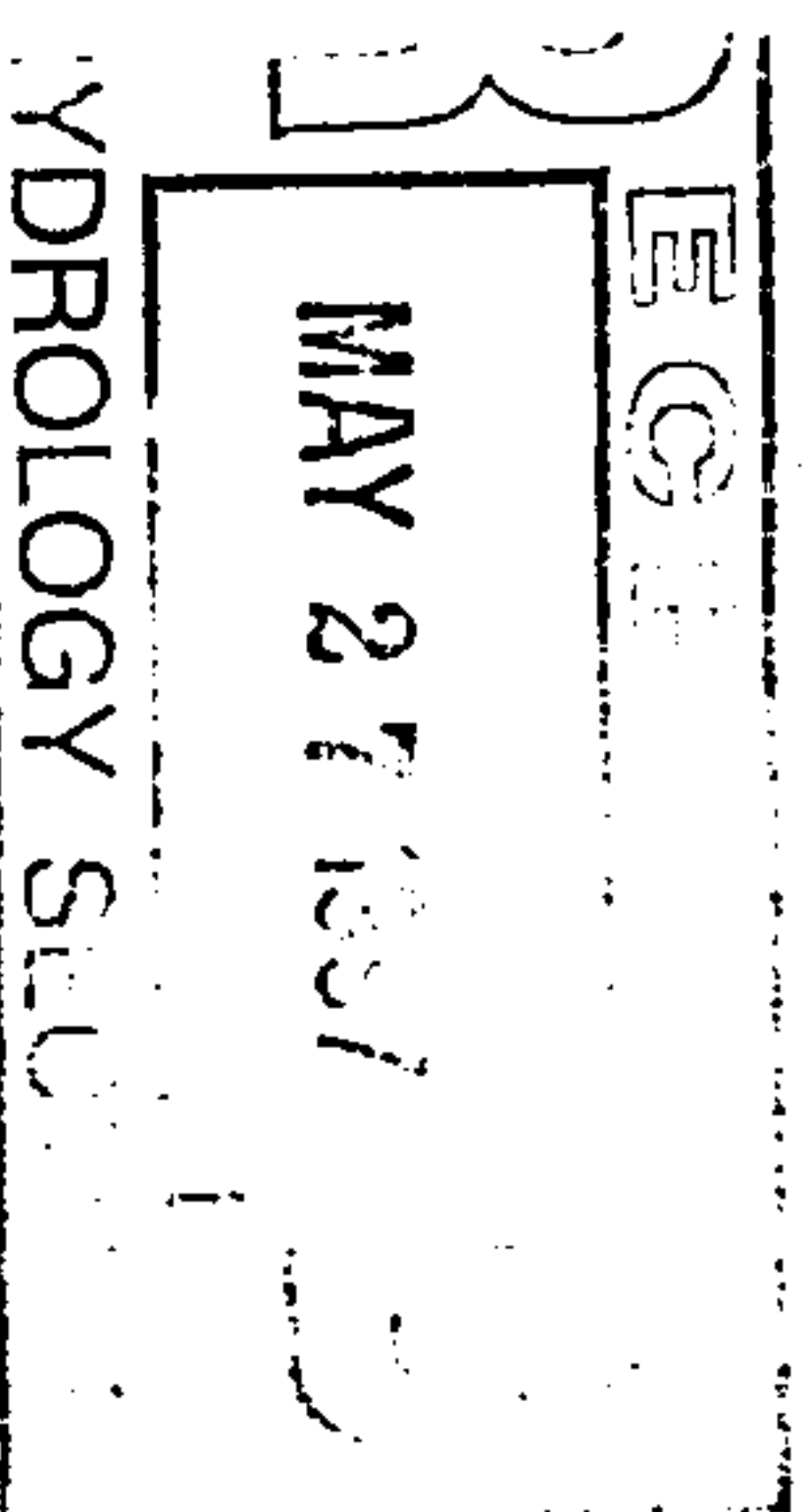
Your early approval is requested.

Very truly yours,

ANDREWS, ASBURY & ROBERT, INC.



John A. Andrews, P.E.



JAA:edm

d:\projects\752A08\GradPlan.ltr

OFFICES: ALBUQUERQUE, NEW MEXICO
LAS CRUCES, NEW MEXICO

A LARKIN GROUP COMPANY
RUSSELLVILLE, ARKANSAS

KANSAS CITY, MISSOURI
SPRINGFIELD, MISSOURI



ANDREWS, ASBURY & ROBERT, INC.
Consulting Engineers

149 Jackson NE, Albuquerque, New Mexico 87108
Tel: (505) 265-6631 • Fax: (505) 266-8112

John B. Robert, P.E. & L.S. (1915-1984)
John A. Andrews, P.E.
Charles T. Asbury, P.E.
Gayle D. Jewell, L.S. - V.P.

November 22, 1996

Mr. Fred Aguirre
Hydrology Division
Public Works Department
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Subject: Conceptual Drainage Plan
Block 4-A and 4-B of Sunport Park Subdivision

Dear Mr. Aguirre:

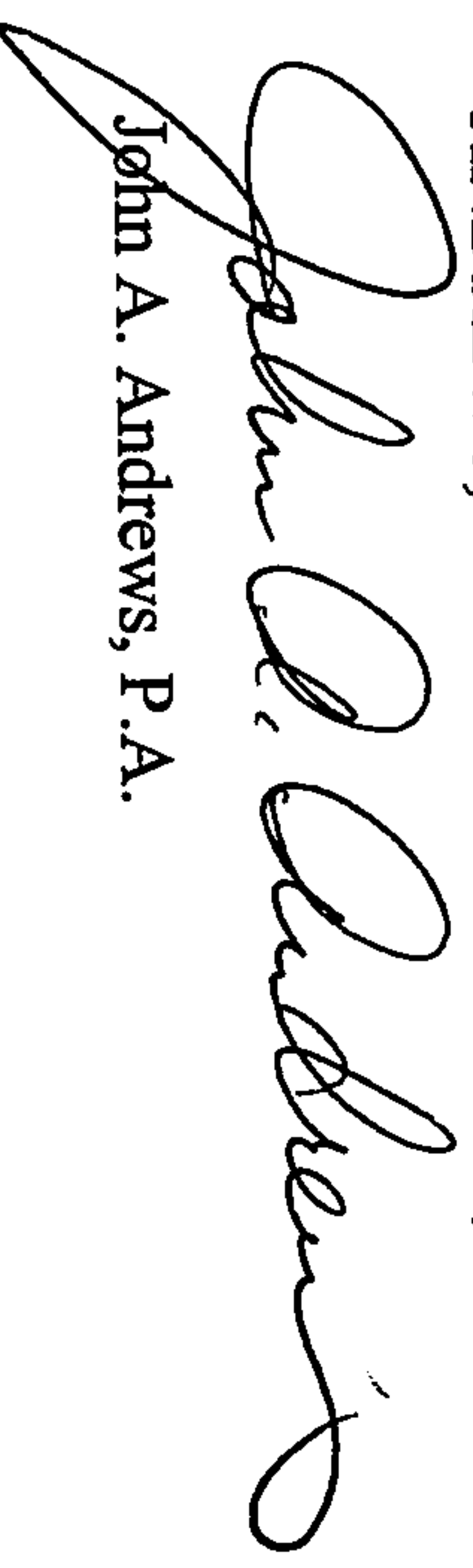
Transmitted herewith is the conceptual drainage plan for subject project.

This plan was submitted to DRB as a portion of the Site Development Plan on November 8, 1996, DRB-96-131. It conforms with the drainage facilities constructed with the Phase I portion of Sunport Park and the facilities constructed with the Sunport Boulevard Project.

Your early approval is requested.

Very truly yours,

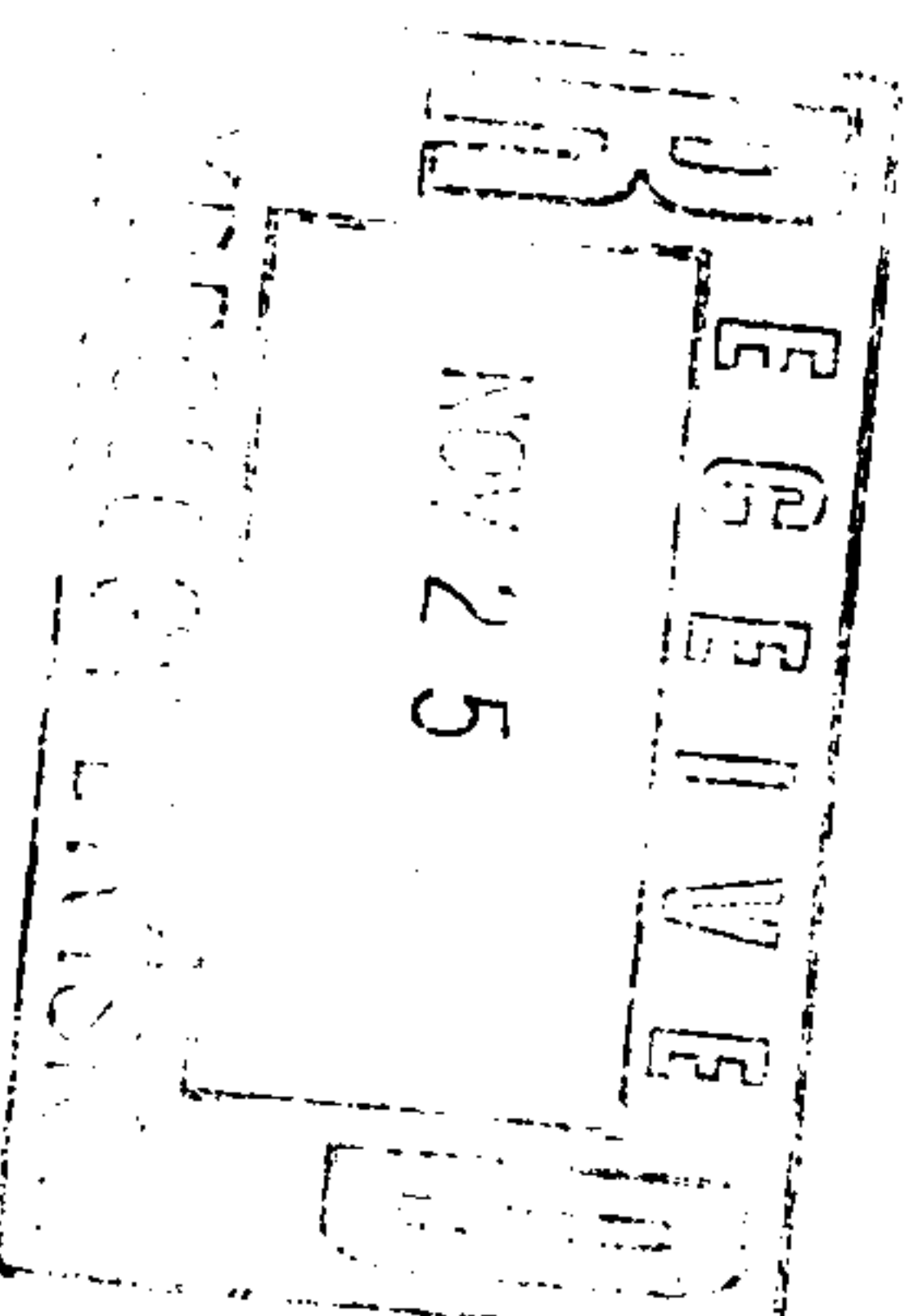
ANDREWS, ASBURY & ROBERT, INC.



John A. Andrews, P.A.

JAA:edm

d:\projects\752A\ConceptDrPln



DRAINAGE INFORMATION SHEET

PROJECT TITLE: Sunport Park ZONE ATLAS/DRNG. FILE #: M-15 ^{#1} / 423
DRB #: 96-131 EPC #: N/A WORK ORDER #: N/A

LEGAL DESCRIPTION: Block 4-A & 4-B, SUNPORT PARK SUBDIVISION

CITY ADDRESS: South side of Woodward Road S.E., West of University Blvd. S.E.

ENGINEERING FIRM: Andrews, Asbury & Robert, Inc. CONTACT: John Andrews

ADDRESS: 149 Jackson St. N.E., Albuquerque, NM 87108 PHONE: 265-6631

OWNER: Sunport Joint Venture CONTACT: Howard Mock

ADDRESS: P.O. Box 26841, Albuquerque, NM 87125 PHONE: 345-8591

ARCHITECT: Consensus Planning CONTACT: Chris Green

ADDRESS: 718 Central S.W., Albuquerque, NM 87102 PHONE: 764-9801

SURVEYOR: Andrews, Asbury & Robert, Inc. CONTACT: Gayle D. Jewell

ADDRESS: 149 Jackson St. N.E., Albuquerque, NM 87108 PHONE: 265-6631

CONTRACTOR: N/A 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 OF CONFERENCE RECAP SHEET PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SKETCH PLAT APPROVAL
☒ PRELIMINARY PLAT APPROVAL
☒ SITE DEVELOP. PLAN FOR SUB'D. APPROVAL
☐ SITE DEVELOP. PLAN FOR BLDG. PERMIT
☐ 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
☐ ROUGH GRADING PERMIT APPROVAL
☐ OTHER _____ (SPECIFY)

DATE SUBMITTED: November 22, 1996

BY: John A. Andrews

John A. Andrews, P.E.



JEFF MORTENSEN & ASSOCIATES, INC.
☐ 6010-B MIDWAY PARK BLVD. N.E.
☐ ALBUQUERQUE ☐ NEW MEXICO 87109
☐ ENGINEERS ☐ SURVEYORS (505) 345-4250

FAX (505) 345-4254

FAX TRANSMITTAL

TO: BRAD B.

FIRM: HYDROLOGY

FACSIMILE NUMBER: 924-3864

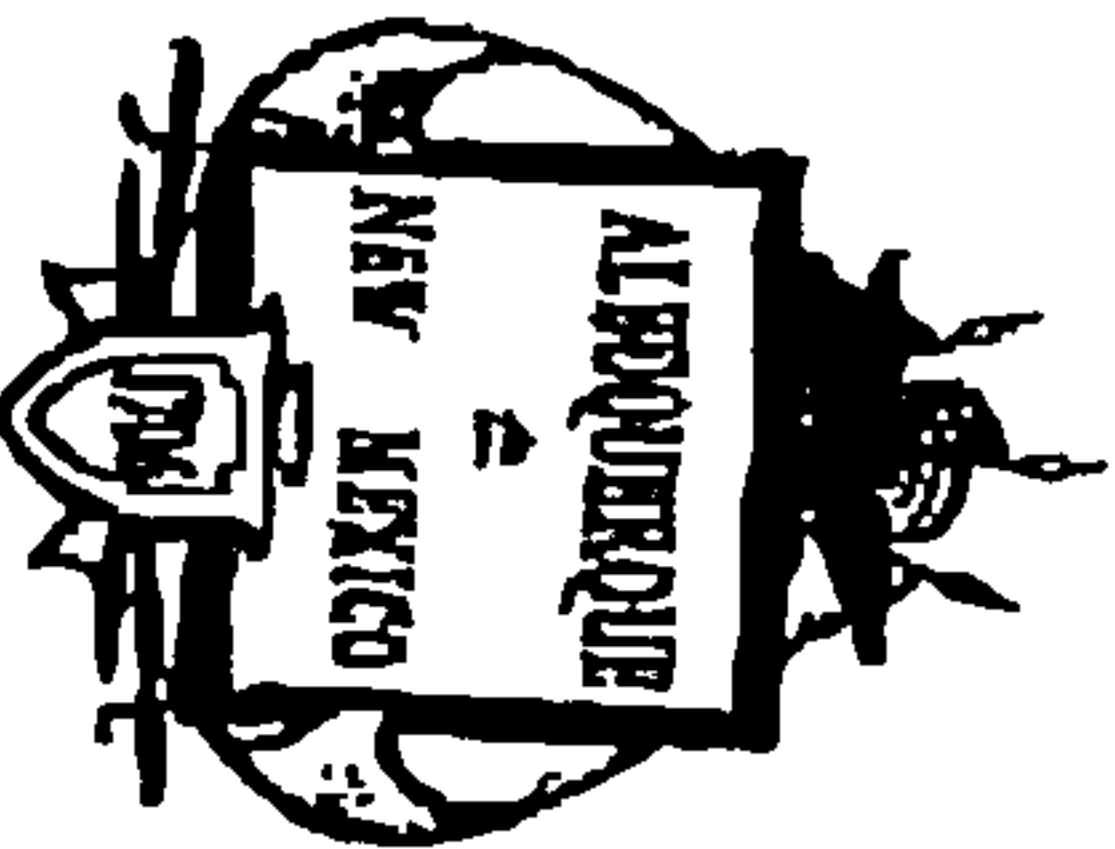
FROM: Greene Means

SUBJECT: Support Parling

MESSAGE: Here is the only info I have which
Says Aviation Dept. is supposed to do work.
(1) Letter from Carlos
(2) Statement in Drainage Report.

NUMBER OF PAGES: 4 (Including this page)

If the transmission is incomplete or unclear,
please notify us at once at (505) 345-4250.



City of Albuquerque
P.O. BOX 1283 ALBUQUERQUE, NEW MEXICO 87103

July 9, 1999

Kent S. Freier
Molzen-Corbin & Associates
2701 Miles Rd. SE
Albuquerque, New Mexico 87106

RE: Flood Plain Revision for the Alrport Car Rental Project

Dear Mr. Freier:

I wanted to document and give you more information on my verbal request for a flood plain revision. I have attached two maps showing the area and the referenced flood plain. I have also attached a few pages from the FEMA regulations detailing the flood plain rules for revisions (65.3).

As I discussed with you the party who physically changes the flood plain is also the party who is responsible to change the maps. The proposed Car Rental Facility discharges to the downstream property and was responsible to safely convey these flows. Aviation Department proposed a storm drain to control their flows and change the downstream flood plain. Therefore, since Aviation proposed and made the improvements which changed the flood plains they are also responsible for changing the maps.

The flood plain revision should be processed through Susan Calongne who is the City's Flood Plain Administrator. If you have any questions please call me at 768-2654.

Sincerely,
Carlos A. Montoya
Carlos A. Montoya

C: Susan Calongne, Flood Plain Adm.
Fred Aguirre, City Engineer
Dan Hogan, Division Manager

DRAINAGE INFORMATION SHEET

990591

PROJECT TITLE: SUNBOUT PARK ROUGH GRADING ZONE ATLAS/DRNG. FILE #: m-15/1023F

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: PARCEL 2A, SUNBOUT PARKCITY ADDRESS: UNIVERSITY BLVD S.E.ENGINEERING FIRM: JWA CONTACT: GALENE MEANSADDRESS: 6010-R MIDWAY PARK BLVD N.E. PHONE: 345-4256OWNER: R & B, LLC. CONTACT: KATHLEEN CHANESADDRESS: _____ PHONE: 299-0115ARCHITECT: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: JWA CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: CONTACT OWNER CONTACT: _____

ADDRESS: _____ PHONE: _____

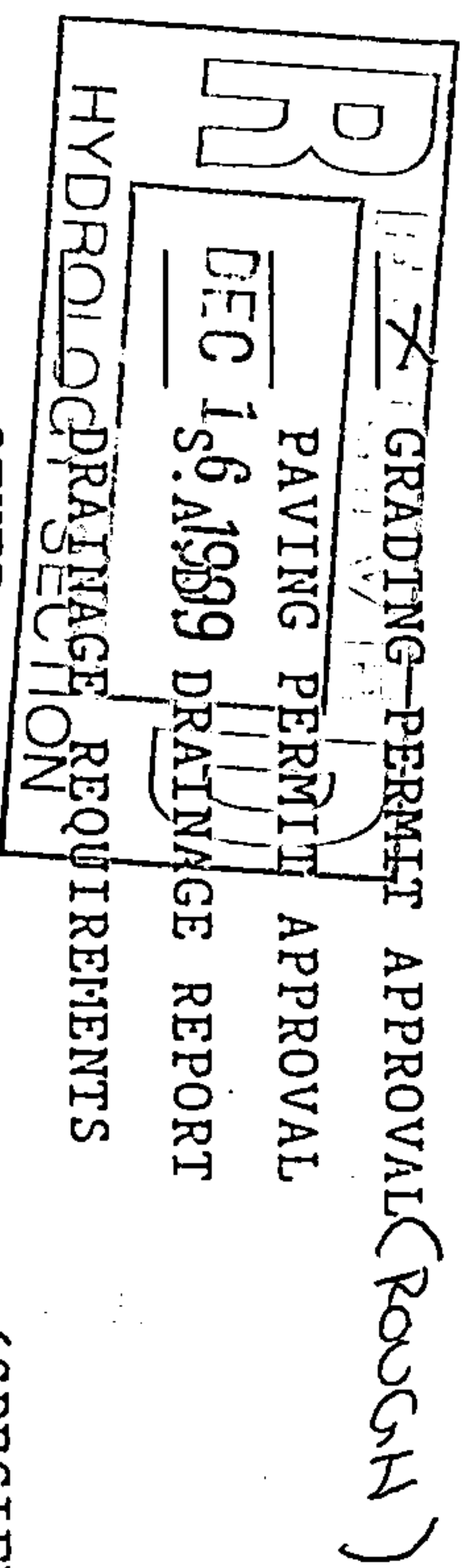
TYPE OF SUBMITTAL:

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

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

PRE-DESIGN MEETING:

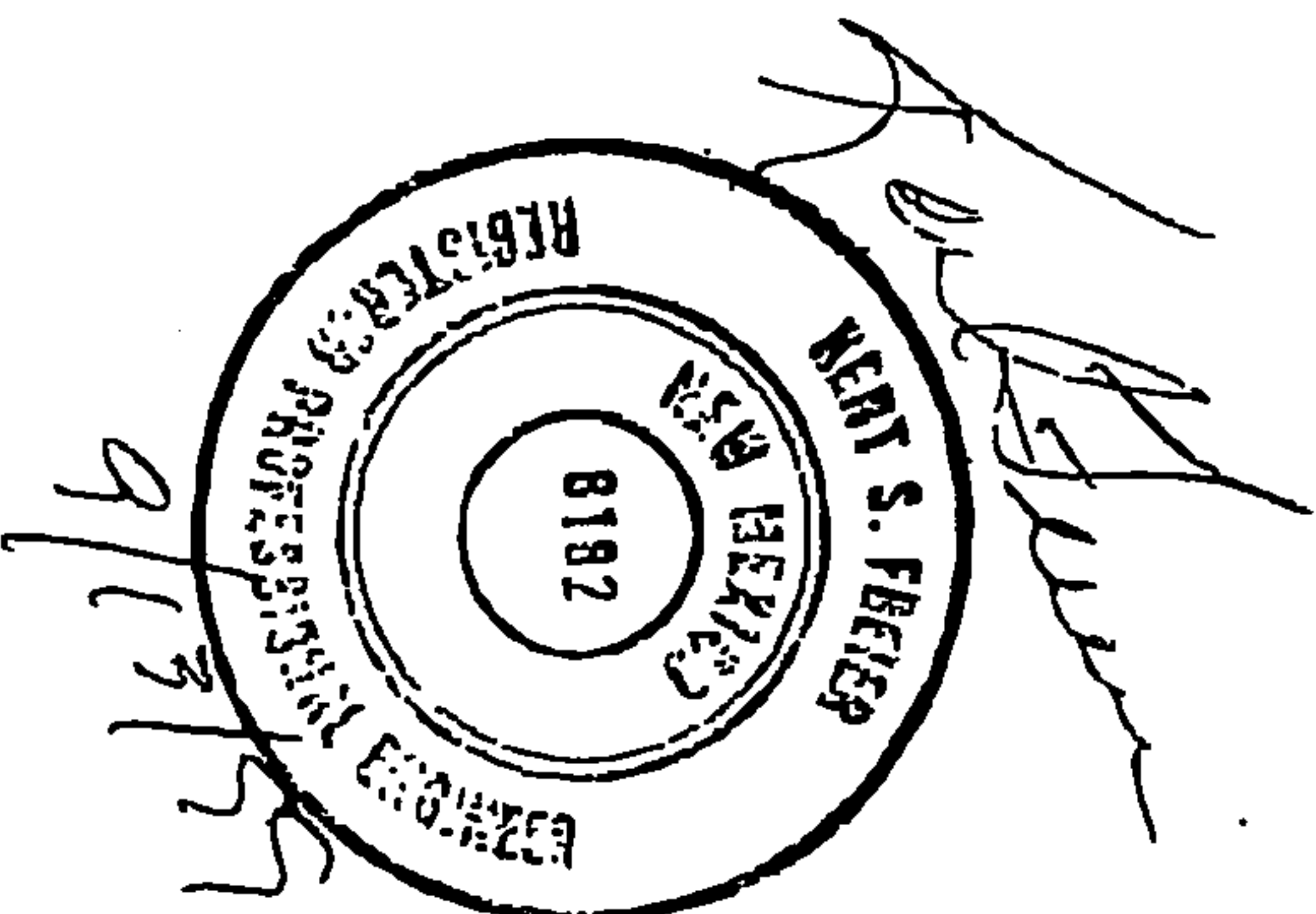
☐ YES☒ NO☐ COPY PROVIDED☐ OTHER _____ (SPECIFY)DATE SUBMITTED: 12-16-99BY: J. Galeme Means

CITY OF ALBUQUERQUE
NEW MEXICO

ALBUQUERQUE INTERNATIONAL SUNPORT
RENT-A-CAR FACILITY

DRAINAGE REPORT

September, 1999



MOLZEN-CORBIN
& Associates 

Line A at the RAC will need to be supplemented with an additional pipe or replaced with a larger pipe. The 30 inch diameter storm drain between manholes M2 and M3, where Line G enters, needs to be sized to a 42" equivalent in order to keep the HGL in the pipe.

The Aviation Division will be responsible for filing the CLOMR with FEMA for the purpose of removing the 100 year flood plain from the Chavez property. The new north outfall storm drain pipe effectively removes flows from the natural arroyo between University and I-25. Since the airport construction is the action that caused the flood plain to be removed, the airport will be responsible for the removal of the easement.

The south outfall will be designed to include riprap lining the channel where the 60 inch storm drain discharges to the arroyo on the UNM Golf Course. The arroyo will need to be visually checked in the next few years to ensure that erosion does not persist. If erosion persists, the airport will need to install more permanent solutions in the future.

A drainage easement will be required for the south outfall channel between I-25 and the AMAFCA South Diversion. Negotiations with the landowner on this matter have begun and final plats are still needed for filing.

Oct-05-99 10:35A Airport Parking

505 224 9304

024 9304

MO. ZEN-CORBIN & Associates



ENGINEERING ARCHITECTS PLANNERS

2701 Miles Road Southwest
Albuquerque, New Mexico 87104
Telephone 505-242-5701
Fax 505-242-0573

October 4, 1999

Mr. Ricardo Chaves
Airport Parking
1501 Aircraft Avenue
Albuquerque, New Mexico 87106

RE: Rental Car Facility

BPL91-11.D03

Dear Mr. Chaves:

The City of Albuquerque Public Works Department, Hydrology Division, has informed the Aviation Department they are responsible for the submission of the Letter of Map Revision to FEMA. The letter submitted is to request removal of the flood plain from your property located between University and I-25, adjacent to Sumpston Bl. E. The Aviation Department was responsible for putting in the new storm drain, which diverts flows out of the arroyo originally causing the flood plain.

This process involves preparing an application on for is provided by FEMA, including the necessary hydrologic and hydraulic analysis data, showing that the flows are no longer causing the flood plain. This application will be submitted to FEMA for their review.

With regard to your obtaining a Certificate of Occupancy, the Aviation Department will not be responsible for that application. The engineer or architect preparing your development plans will need to request this approval. The Aviation Department is not responsible for the issuance of these documents.

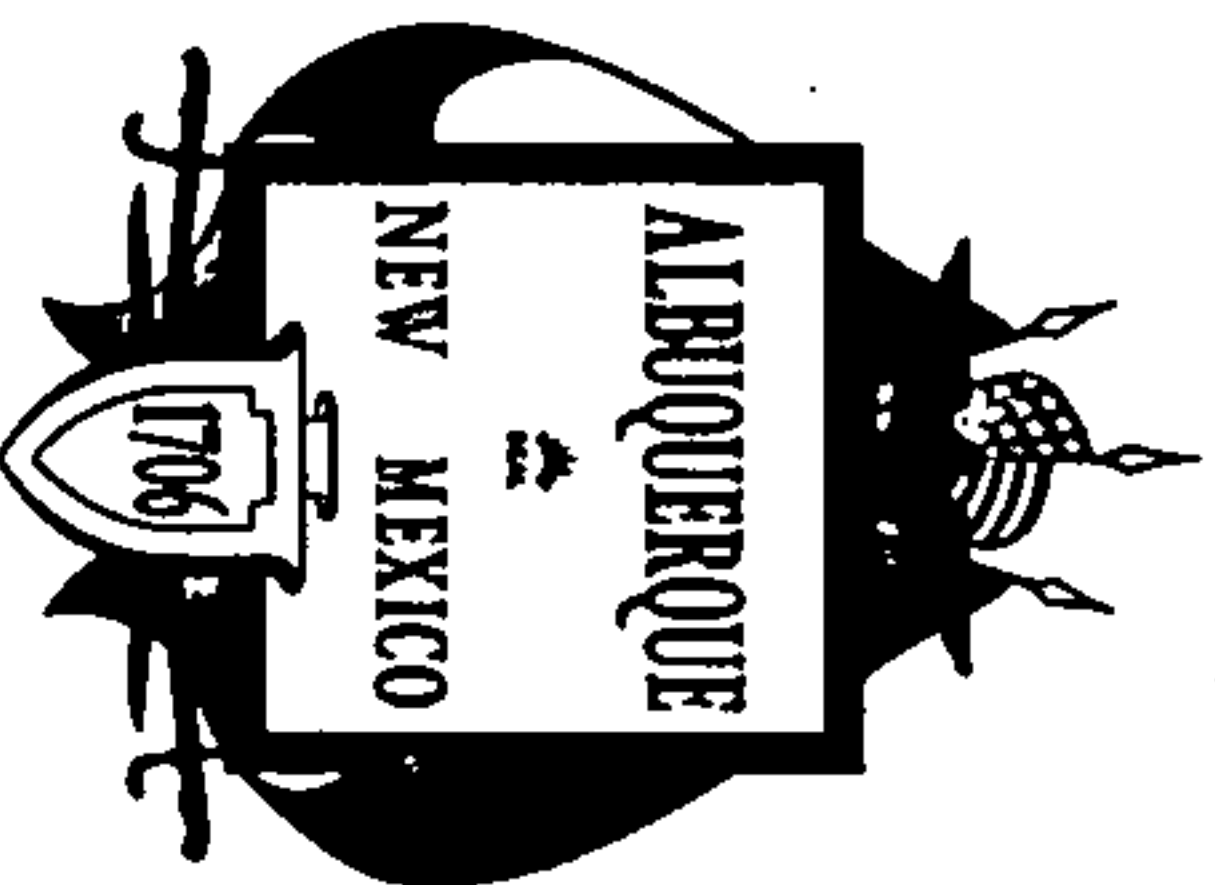
If you have any questions regarding this matter, please feel free to call me at (505) 242-5700.
Sincerely,

MOLZEN-CORBIN & ASSOCIATES

Ken S. Frasier, P.E.
Vice President, Project Engineer

KSF:ll
Enclosure

cc: Mr. Jay Cesar, City Aviation Director
Ms. Andreea K. Stoller, P.C.
Mr. Greene Means, Jeff Mortenson & Associates



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 6, 2000

Jeffrey G. Mortensen, P.E.
Jeff Mortensen & Associates
6010-B Midway Park Blvd. NE
Albuquerque, New Mexico 87109

RE: *Grading Plan for Parcel 2A, Sunport Park (M15/D23F) Submitted for Grading Permit
Approval, Engineer's Stamp Dated 12/16/99.*

Dear Mr. Mortensen:

The above referenced site is subject to Site Development plan approval by the DRB. At that time, all outstanding issues will be resolved, and the DRB will approve the Grading and Drainage Plan for rough grading. Until you have DRB approval, no grading may occur on this site.

With respect to the FEMA Letter of Map Revision (LOMR), I have no indication that the LOMR request is being prepared, or will be prepared, by the City. Please provide me with written confirmation that the City Aviation Department will prepare and obtain this LOMR to remove the floodplain. Otherwise, the LOMR requirement must be included on your Infrastructure List and must be obtained prior to release of Financial Guarantees.

Prior to approval for Rough Grading for the Interim condition, please address these additional comments regarding the new storm drain system on this site:

1. Has this storm drain system been completed and accepted by the City?
2. Please show how the runoff from the graded area will be intercepted into the storm drain.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

Susan M. Calongue, P.E.
City/County Floodplain Administrator

c: Kathleen Chaves, Owner
File