CITY OF ALBUQUERQUE

Planning Department
Transportation Development Services Section

December 23, 2005

Shahab Biazar, P.E.
ADVANCED ENGINEERING & CONSULTING LLC
4416 Anaheim Avenue NE
Albuquerque, NM 87113

Re: Certification Submittal for Final Building Certificate of Occupancy for
ATRISCO BUSINES PARK, UNIT 3, TRACT F-7-A, [J-10 / D2D3]
475 Coors NW
Engineer's Stamp Dated 12/20/2005

Dear Mr. Biazar:

The TCL / Letter of Certification submitted on December 23, 2005 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,

Nilo E. Salgado-Fernandez, P.E.
Senior Traffic Engineer
Development and Building Services
Planning Department

c: Engineer
Hydrology file
CO Clerk

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

DRAINAGE INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: TRACT F-7-A ATRISCO BUSINESS PARK ZONE ATLAS/DRG. FILE #: J10 / D2D3

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

LEGAL DESCRIPTION: TRACT F-7-A ATRISCO BUSINESS PARK

CITY ADDRESS: 475 COORS BLVD.

ENGINEERING FIRM: *Advanced Engineering and Consulting, LLC* CONTACT: Shahab Biazar

ADDRESS: 4416 Anaheim Ave., NE PHONE: (505) 899-5570

CITY, STATE: Albuquerque, New Mexico ZIP CODE: 87113

OWNER: CONTACT:

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

ARCHITECT: CONTACT:

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

SURVEYOR: CONTACT:

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

CHECK TYPE OF SUBMITTAL:

	DRAINAGE REPORT
	DRAINAGE PLAN 1ST SUBMITTAL, REQUIRES TCL OR EQUAL
	CONCEPTUAL GRADING & DRAINAGE PLAN
	GRADING PLAN
	EROSION CONTROL PLAN
	ENGINEER'S CERTIFICATION (HYDROLOGY)
	CLOMR / LOMR
	TRAFFIC CIRCULATION LAYOUT (TCL)
X	ENGINEER'S CERTIFICATION (TCL)
	ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
	OTHER

CHECK TYPE OF APPROVAL SOUGHT:

	SIA / FINANCIAL GUARANTEE RELEASE
	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
X	CERTIFICATE OF OCCUPANCY (PERM.)
	CERTIFICATE OF OCCUPANCY (TEMP.)
	GRADING PERMIT APPROVAL
	PAVING PERMIT APPROVAL
	WORK ORDER APPROVAL
	OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

	YES
X	NO
	COPY PROVIDED

RECEIVED
DEC 22 2005
HYDROLOGY SECTION

DATE SUBMITTED: 12 / 20 / 2005 BY: Shahab Biazar, P.E.

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittals may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5)
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5)
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or containing five (5) acres or more

ADVANCED ENGINEERING and CONSULTING, LLC

Consulting
Design
Development
Management
Inspection
Surveying

December 20, 2005

Mr. Nilo Salgado, P.E.
City Transportation Department
600 Second Street NW
Albuquerque, New Mexico 87102

Re: SITE PLAN CERTIFICATION FOR FINAL CERTIFICATION OF OCCUPANCY FOR TRACT F-7-A ATRISCO BUSINESS PARK (J10/D2D3)

Dear Mr. Salgado:

We are requesting Final Certification of Occupancy with this submittal. Enclosed please find copy of the as-built Site Plan for the above mentioned site. The site plan for this project was approved with approval date of 09/29/2004. The project was inspected by Advanced Engineering and Consulting, LLC on December 15, 2005. I certify that the project was built in substantial compliance to the approved site plan.

Should you have any questions, please do not hesitate to contact our office.

Sincerely,

Shahab Biazar, P.E.

SHAHAB BIAZAR NEW MEXICO 13473 REGISTERED PROFESSIONAL ENGINEER 12/20/05

RECEIVED
DEC 22 2005
HYDROLOGY SECTION

4416 Anaheim Ave., N.E., Albuquerque, NM 87113 PH (505) 899-5570 FAX (505) 897-4996 EMAIL AECLLC@aol.com

CITY OF ALBUQUERQUE

December 22, 2005

Mr. Shahab Biazar, P.E.
ADVANCED ENGINEERING AND CONSULTING, LLC
4416 Anaheim Ave. NE
Albuquerque, NM 87113

Re: ATRISCO BUSINESS PARK, UNIT 3, TRACT F-7-A
475 Coors Blvd. NW
Approval of Permanent Certificate of Occupancy (C.O.)
Engineer's Stamp dated 09/07/2004 (J-10/D2D3)
Certification dated 12/20/2005

Dear Shahab:

Based upon the information provided in your submittal received 12/22/2005, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology.

If you have any questions, you can contact me at 924-3982.

Sincerely,

Arlene V. Portillo

Arlene V. Portillo
Plan Checker, Planning Dept. - Hydrology
Development and Building Services

C: CO Clerk
File

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

DRAINAGE INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: TRACT F-7-A ATRISCO BUSINESS PARK ZONE ATLAS/DRG. FILE #: J10 / D2D3

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

LEGAL DESCRIPTION: TRACT F-7-A ATRISCO BUSINESS PARK

CITY ADDRESS: 475 COORS BLVD.

ENGINEERING FIRM: *Advanced Engineering and Consulting, LLC* CONTACT: Shahab Biazar

ADDRESS: 4416 Anaheim Ave., NE PHONE: (505) 899-5570

CITY, STATE: Albuquerque, New Mexico ZIP CODE: 87113

OWNER: CONTACT: _____

ADDRESS: PHONE: _____

CITY, STATE: ZIP CODE: _____

ARCHITECT: CONTACT: _____

ADDRESS: PHONE: _____

CITY, STATE: ZIP CODE: _____

SURVEYOR: CONTACT: _____

ADDRESS: PHONE: _____

CITY, STATE: ZIP CODE: _____

CONTRACTOR: CONTACT: _____

ADDRESS: PHONE: _____

CITY, STATE: ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

____	DRAINAGE REPORT
____	DRAINAGE PLAN 1ST SUBMITTAL, REQUIRES TCL OR EQUAL
____	CONCEPTUAL GRADING & DRAINAGE PLAN
____	GRADING PLAN
____	EROSION CONTROL PLAN
X	ENGINEER'S CERTIFICATION (HYDROLOGY)
____	CLOMR / LOMR
____	TRAFFIC CIRCULATION LAYOUT (TCL)
____	ENGINEER'S CERTIFICATION (TCL)
____	ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
____	OTHER

CHECK TYPE OF APPROVAL SOUGHT:

____	SIA / FINANCIAL GUARANTEE RELEASE
____	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
X	CERTIFICATE OF OCCUPANCY (PERM.)
____	CERTIFICATE OF OCCUPANCY (TEMP.)
____	GRADING PERMIT APPROVAL
____	PAVING PERMIT APPROVAL
____	WORK ORDER APPROVAL
____	OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

____	YES
X	NO
____	COPY PROVIDED

RECEIVED
DEC 22 20[illegible]
HYDROLOGY SECTION

DATE SUBMITTED: 12 / 20 / 2005 BY: Shahab Biazar, P.E.

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittals may be required based on the following:

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3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or containing five (5) acres or more

ADVANCED ENGINEERING and CONSULTING, LLC

Consulting
Design
Development
Management
Inspection
Surveying

December 20, 2005

Mr. Bradley L. Bingham, P.E.
Sr. Engineer, Planing Dept.
Development and Building Services
600 Second Street NW
Albuquerque, New Mexico 87102

RE: FINAL CERTIFICATION OF OCCUPANCY FOR TRACT F-7-A ATRISCO BUSINESS PARK (J10/D2D3)

Dear Mr. Bingham:

This letter is in request of Final Certification of Occupancy for the above mentioned project. I Shahab Biazar, NMPE, of the Advanced Engineering, LLC hereby certify that this project has been graded and will drain in substantial compliance with and design intent of the approved plan dated 09/07/2004. All the pavement and storm sewer pipes are in place.

Please contact me if there are any questions or concerns regarding this submittal.

Sincerely yours,

Shahab Biazar, P.E.

RECEIVED
DEC 22 2005
HYDROLOGY SECTION

4416 Anaheim Ave., N.E., Albuquerque, NM 87113 PH (505) 899-5570 FAX (505) 897-4996 EMAIL AECLLC@aol.com

CITY OF ALBUQUERQUE

October 15, 2004

Shahab Biazar PE
Advanced Engineering and Consulting
4416 Anaheim Ave. NE
Albuquerque, NM 87113

Re: Tract F-7-A Atrisco Business Park Drainage Report
Engineer's Stamp dated 9-7-04 (J10/D2D3)

Dear Mr. Biazar,

Based upon the information provided in your submittal dated 9-9-04, the above referenced report is approved for Site Plan for Building Permit and Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. Refer to the attachment that is provided with this letter for details. If you have any questions please feel free to call the Municipal Development Department, Hydrology section at 768-3654 (Charles Caruso).

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: Chuck Caruso, DMD
file

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

DRAINAGE INFORMATION SHEET

(REV. 1/28/2003rd)

J-10/D203

PROJECT TITLE: TRACT F-7-A, ATRISCO BUSINESS PARK, UNIT 3 ZONE ATLAS/DRG. FILE #: _____

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

LEGAL DESCRIPTION: TRACT F-7-A, ATRISCO BUSINESS PARK, UNIT 3

CITY ADDRESS: _____

ENGINEERING FIRM: *Advanced Engineering and Consulting, LLC* CONTACT: Shahab Biazar
ADDRESS: 4416 Anaheim Ave., NE PHONE: (505) 899-5570
CITY, STATE: Albuquerque, New Mexico ZIP CODE: 87113

OWNER: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

ARCHITECT: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

SURVEYOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

CONTRACTOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

CHECK TYPE OF SUBMITTAL:

X	DRAINAGE REPORT
	DRAINAGE PLAN 1ST SUBMITTAL, REQUIRES TCL OR EQUAL
	CONCEPTUAL GRADING & DRAINAGE PLAN
X	GRADING PLAN
	EROSION CONTROL PLAN
	ENGINEER'S CERTIFICATION (HYDROLOGY)
	CLOMR / LOMR
	TRAFFIC CIRCULATION LAYOUT (TCL)
	ENGINEER'S CERTIFICATION (TCL)
	ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
	OTHER

CHECK TYPE OF APPROVAL SOUGHT:

	SIA / FINANCIAL GUARANTEE RELEASE
	PRELIMINARY PLAT APPROVAL
	S. DEV. PLAN FOR SUB'D. APPROVAL
X	S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
	SECTOR PLAN APPROVAL
	FINAL PLAT APPROVAL
	FOUNDATION PERMIT APPROVAL
X	BUILDING PERMIT APPROVAL
	CERTIFICATE OF OCCUPANCY (PERM.)
	CERTIFICATE OF OCCUPANCY (TEMP.)
	GRADING PERMIT APPROVAL
	PAVING PERMIT APPROVAL
	WORK ORDER APPROVAL
	OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

	YES
X	NO
	COPY PROVIDED

RECEIVED
SEP 09 2004
HYDROLOGY SECTION

DATE SUBMITTED: 09 / 07 / 2004 BY: Shahab Biazar, P.E.

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittals may be required based on the following:

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J-10/D203

DRAINAGE REPORT
FOR

TRACT F-7-A
ATRISCO BUSINESS PARK
UNIT 3

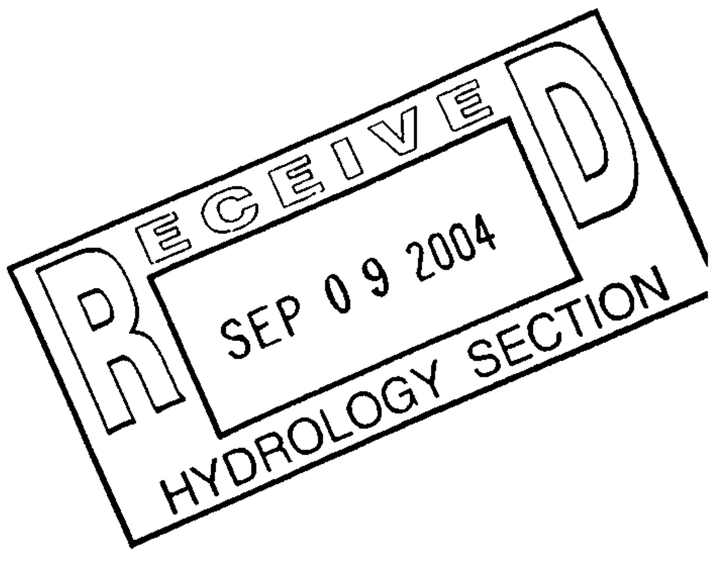
Prepared by:

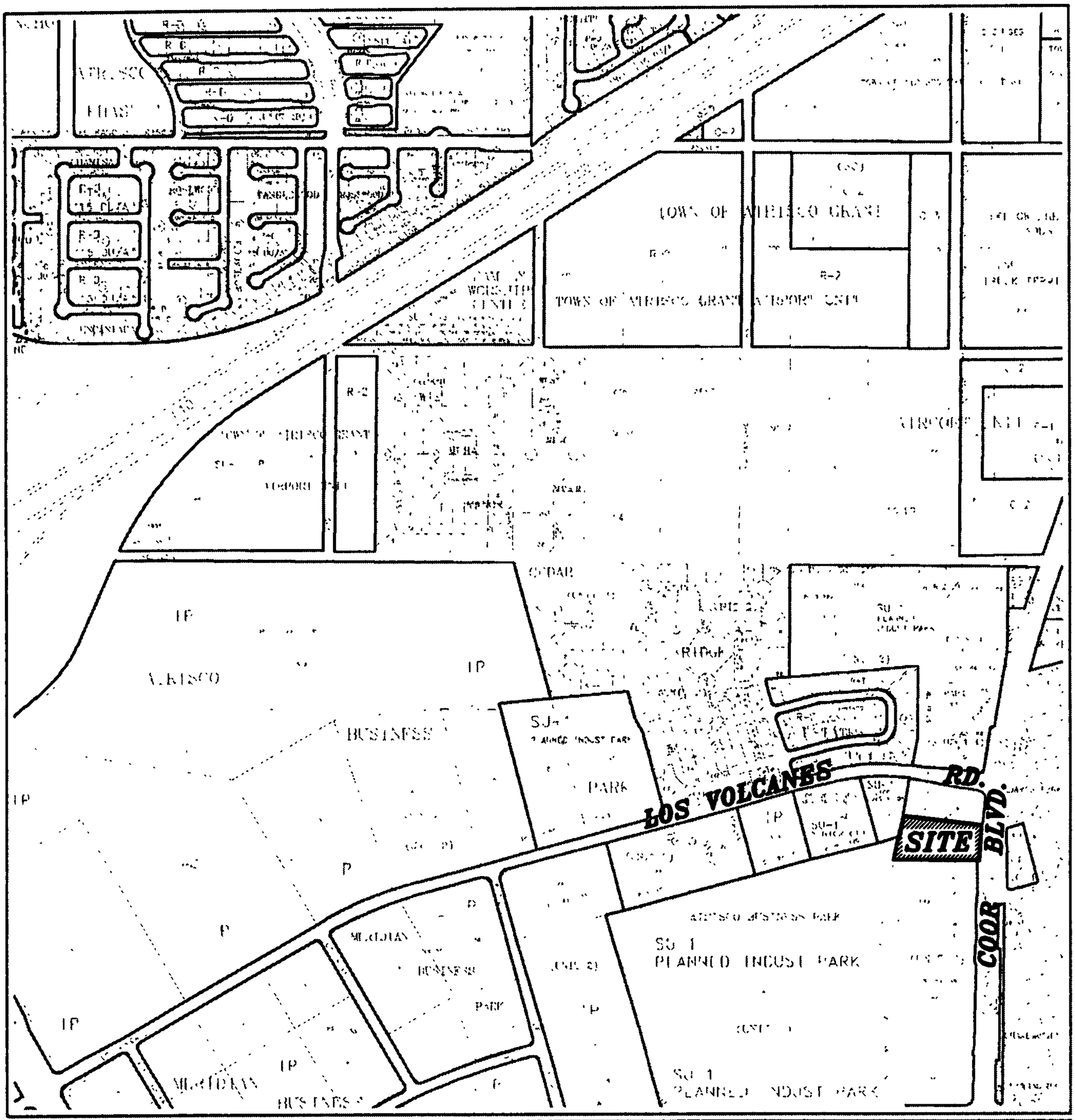
ADVANCED
ENGINEERING
and CONSULTING, LLC

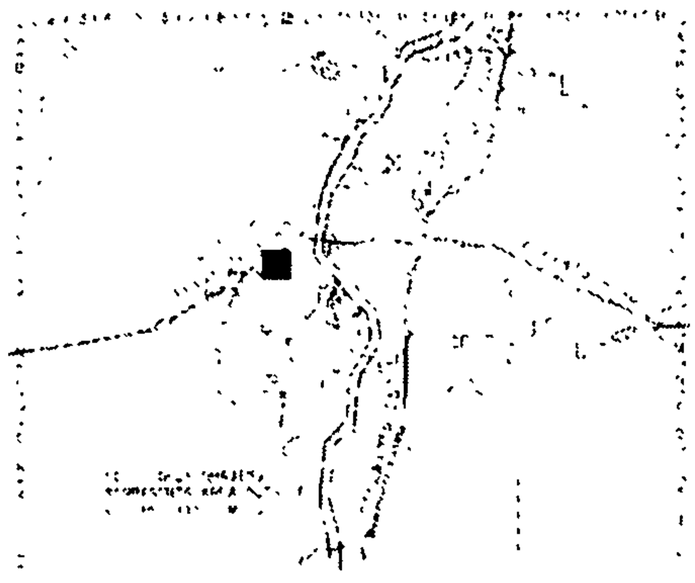
4416 Anaheim Ave., NE
Albuquerque, New Mexico 87113

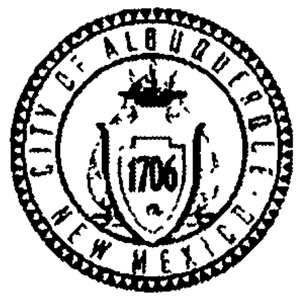
September, 2004

Shahab Biazar
PE NO. 13479









AGIS
PLANNING DEPARTMENT

GRAPHIC SCALE IN FEET
250 0 250 500

Zone Atlas Page

J-10-Z

Map Amended through May 04, 2004

Location

Tract F-7-A, Atrisco Business Park, Unit 3, is one tract south of Los Volcanos Road on the west side of Coors Boulevard. See Attached Zone Atlas page number J-10 for exact location.

Purpose

The purpose of this drainage report is to present a grading and drainage solution for the proposed sites. We are requesting rough grading approval, site development plan for building permit, and building permit.

Existing Drainage Conditions

The site is fairly flat, and the runoff ponds on site. The site to the north is an existing site which drains west to a temporary retention pond. The runoff to the east is intercepted by Coors Boulevard. The site to the south is an existing development, and the runoff, from the this site, does not enter this tract. The site to the south is flat, and the runoff ponds on site and does enter this project.

There is an existing easement on the west side of this tract where the future storm drain pipe (66" RCP) with the West Mesa Diversion Project Phase II will be built. This project will allow free discharge into the 66" storm sewer system. The site does not fall within a 100-year Floodplain.

Proposed Conditions and On-Site Drainage Management Plan

Since the site falls within the future extension of the storm sewer pipe (66" RCP) of the West Mesa Diversion Project Phase II, all the runoff will drain to the west. The site will be designed to retain the runoff within a temporary retention pond (based on the 100-year, 10-day storm under developed conditions). The runoff on site will be collected trough a series inlets and then discharged into the retention pond via storm pipes. The two storm pipes draining to the retention pond, in the future, will drain to a Double D inlet, and then the inlet will be connected to the future 66" RCP via 18" pipe. See grading and drainage plan for details. Slopes and inverts (for the future 66" RCP) were obtained from the grading plan for the Rio Grade Credit Union Site (City Drainage Number J10/D37) in order to calculate the slopes and inverts of the 66" RCP within our project. See enclosed copy of the grading plan for the Credit Union. Once the storm sewer pipe is built, the retention pond will be removed.

Calculations

City of Albuquerque, Development Process Manuel, Section 22.2, Hydrology Section was used for runoff calculations. See section this report for Summary Table for runoff results. See also this report for AHYMO input and output files for runoff calculations.

RUNOFF CALCULATIONS

(INPUT DATA FOR AHYMO CALCULATIONS)

The site is @ Zone 1

DEPTH (INCHES) @ 100-YEAR STORM

P_{60} = 1.87 inches

P_{360} = 2.20 inches

P_{1440} = 2.66 inches

DEPTH (INCHES) @ 10-YEAR STORM

P_{60} = 1.87 x 0.667
= 1.25 inches

P_{360} = 1.47

P_{1440} = 1.77

See the summary output from AHYMO calculations.

Also see the following summary tables.

RUNOFF CALCULATION RESULTS
(ON-SITE OVERALL)

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
ON-SITE	92,620.70	2.1263	0.003322

EXISTING

BASIN	Q-100 CFS	Q-10 CFS
ON-SITE	2.76	0.52

PROPOSED

BASIN	Q-100 CFS	Q-10 CFS
ON-SITE	8.61	5.52

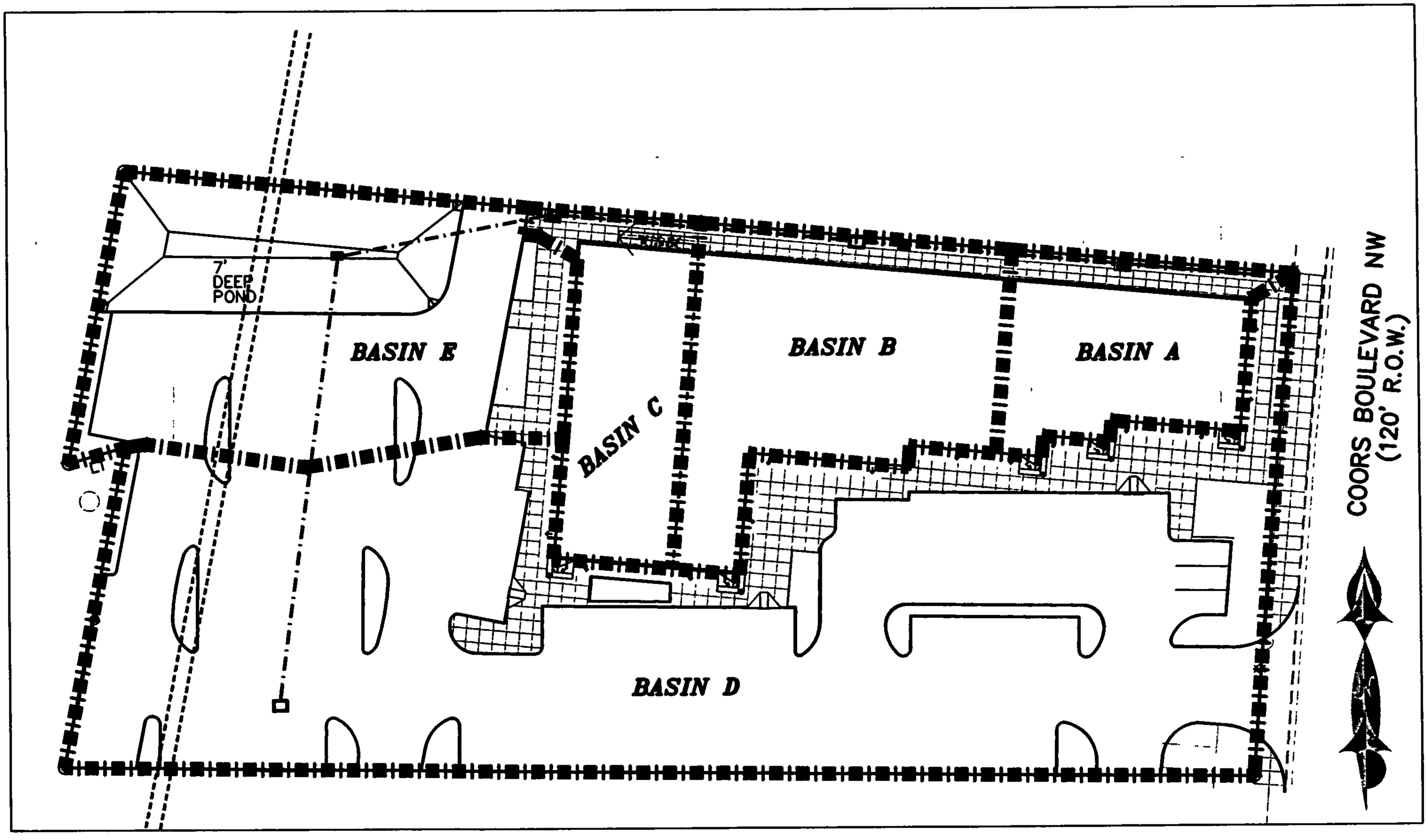
AHYMO INPUT FILE

```
* ZONE 1
**********************************************************************
*          100-YEAR,  6-HR STORM (UNDER EXISTING CONDITIONS)         *
**********************************************************************
START                  TIME=0.0
RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                       RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                       RAIN DAY=2.66 IN DT=0.03333 HR
* ON-SITE
COMPUTE NM HYD         ID=1 HYD NO=100.0 AREA=0.003322 SQ MI
                       PER A=100.00 PER B=0.00 PER C=0.00 PER D=0.00
                       TP=0.1333 HR MASS RAINFALL=-1
**********************************************************************
*          10-YEAR,  6-HR STORM (UNDER EXISTING CONDITIONS)          *
**********************************************************************
START                  TIME=0.0
RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                       RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                       RAIN DAY=1.77 IN DT=0.03333 HR
* ON-SITE
COMPUTE NM HYD         ID=1 HYD NO=110.0 AREA=0.003322 SQ MI
                       PER A=100.00 PER B=0.00 PER C=0.00 PER D=0.00
                       TP=0.1333 HR MASS RAINFALL=-1
**********************************************************************
*          100-YEAR,  6-HR STORM (UNDER PROPOSED CONDITIONS)         *
**********************************************************************
START                  TIME=0.0
RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                       RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                       RAIN DAY=2.66 IN DT=0.03333 HR
* ON-SITE
COMPUTE NM HYD         ID=1 HYD NO=101.0 AREA=0.003322 SQ MI
                       PER A=0.00 PER B=14.00 PER C=0.00 PER D=86.00
                       TP=0.1333 HR MASS RAINFALL=-1
**********************************************************************
*          10-YEAR,  6-HR STORM (UNDER PROPOSED CONDITIONS)          *
**********************************************************************
START                  TIME=0.0
RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                       RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                       RAIN DAY=1.77 IN DT=0.03333 HR
* ON-SITE
COMPUTE NM HYD         ID=1 HYD NO=111.0 AREA=0.003322 SQ MI
                       PER A=0.00 PER B=14.00 PER C=0.00 PER D=86.00
                       TP=0.1333 HR MASS RAINFALL=-1
**********************************************************************
FINISH
```

SUMMARY OUTPUT FILE

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =09/01/2004
INPUT FILE = 200406 USER NO.= AHYMO-I-9702c01000R31-AH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	100.00	-	1	.00332	2.76	.078	.43925	1.533	1.300	PER IMP=	.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	1.470
COMPUTE NM HYD	110.00	-	1	.00332	.52	.015	.08264	1.533	.247	PER IMP=	.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	101.00	-	1	.00332	8.61	.316	1.78375	1.500	4.047	PER IMP=	86.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	1.470
COMPUTE NM HYD	111.00	-	1	.00332	5.52	.194	1.09597	1.500	2.595	PER IMP=	86.00
FINISH											



NTS

ON-SITE SUB-BASIN LAYOUT

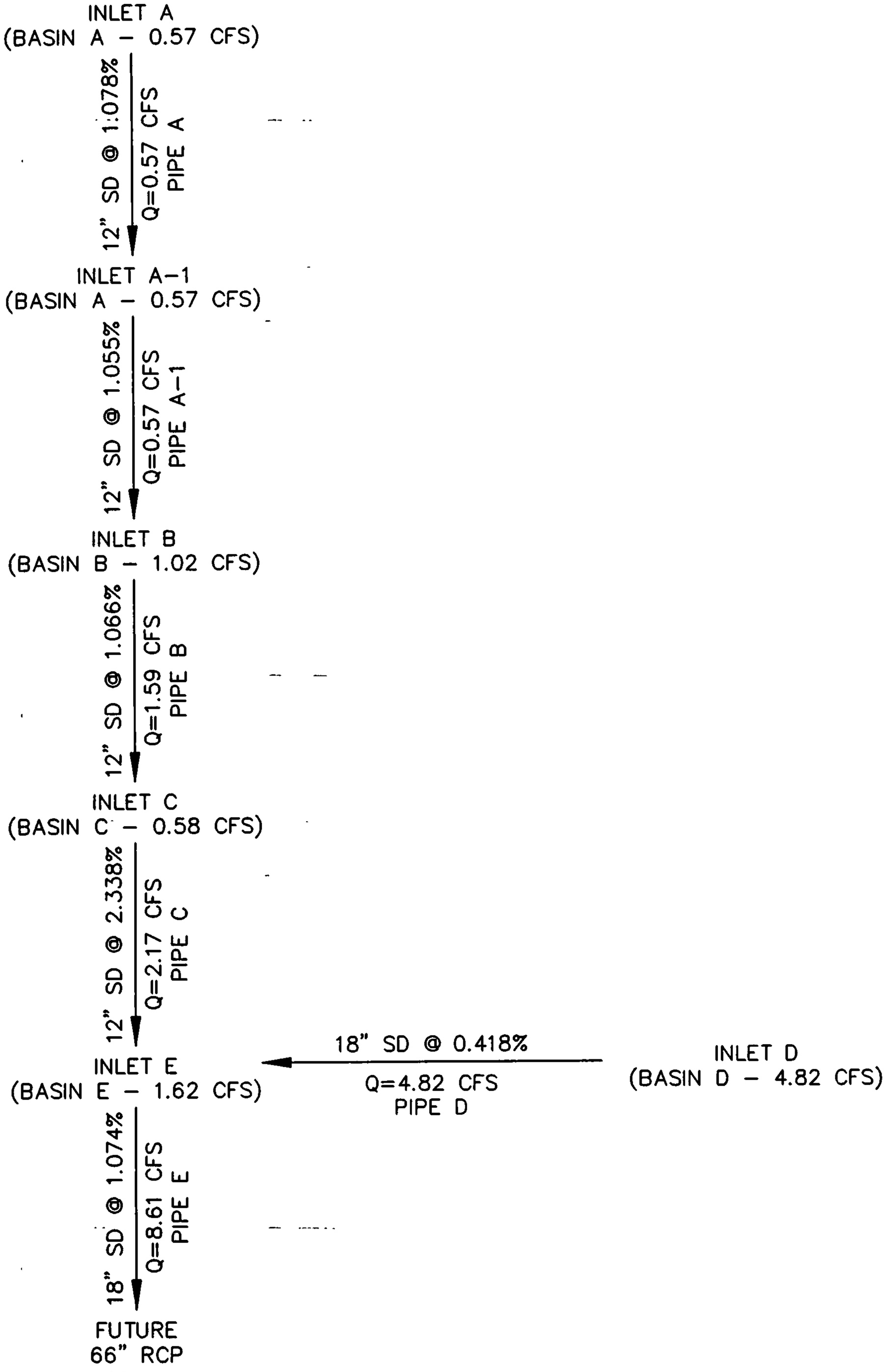
ON-SITE SUB-BASIN RUNOFF

SUB-BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
BASIN A	6,121.00	0.1405	0.000220
BASIN B	10,961.80	0.2516	0.000393
BASIN C	6,183.94	0.1420	0.000222
BASIN D	51,882.70	1.1911	0.001861
BASIN E	17,471.26	0.4011	0.000627
OVERALL	92,620.70	2.1263	0.003322

PROPOSED

(FLOWS ARE BASED ON THE % OF THE AREA TIMES THE OVERALL RUNOFF OF 8.61 CFS)

BASIN	Q-100 CFS
BASIN A	0.57
BASIN B	1.02
BASIN C	0.58
BASIN D	4.82
BASIN E	1.62
OVERALL	8.61



INLET / SD PIPE FLOW CHART

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: 200406

Comment: Pipe A ⟶ From Inlet A to Inlet A1

Solve For Actual Depth

Given Input Data:

Diameter.....	1.00 ft
Slope.....	0.0108 ft/ft
Manning's n.....	0.012
Discharge.....	0.57 cfs

Computed Results:

Depth.....	0.25 ft
Velocity.....	3.62 fps
Flow Area.....	0.16 sf
Critical Depth....	0.31 ft
Critical Slope....	0.0048 ft/ft
Percent Full.....	25.47 %
Full Capacity.....	4.01 cfs
QMAX @.94D.....	4.31 cfs
Froude Number.....	1.50 (flow is Supercritical)

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: 200406A

Comment: Pipe A-1 ⟶ From Inlet A1 to Inlet B

Solve For Actual Depth

Given Input Data:

Diameter.....	1.00 ft
Slope.....	0.0155 ft/ft
Manning's n.....	0.012
Discharge.....	0.57 cfs

Computed Results:

Depth.....	0.23 ft
Velocity.....	4.11 fps
Flow Area.....	0.14 sf
Critical Depth....	0.31 ft
Critical Slope....	0.0048 ft/ft
Percent Full.....	23.26 %
Full Capacity.....	4.81 cfs
QMAX @.94D.....	5.17 cfs
Froude Number.....	1.79 (flow is Supercritical)

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: 200406B

Comment: Pipe B ⟶ From Inlet B To Inlet C

Solve For Actual Depth

Given Input Data:

Diameter.....	1.00 ft
Slope.....	0.0107 ft/ft
Manning's n.....	0.012
Discharge.....	1.59 cfs

Computed Results:

Depth.....	0.44 ft
Velocity.....	4.79 fps
Flow Area.....	0.33 sf
Critical Depth....	0.54 ft
Critical Slope....	0.0054 ft/ft
Percent Full.....	43.88 %
Full Capacity.....	3.99 cfs
QMAX @.94D.....	4.29 cfs
Froude Number.....	1.46 (flow is Supercritical)

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: 200406C

Comment: Pipe C ⟶ From Inlet C to Inlet E

Solve For Actual Depth

Given Input Data:

Diameter.....	1.00 ft
Slope.....	0.0234 ft/ft
Manning's n.....	0.012
Discharge.....	2.17 cfs

Computed Results:

Depth.....	0.42 ft
Velocity.....	6.94 fps
Flow Area.....	0.31 sf
Critical Depth....	0.63 ft
Critical Slope....	0.0061 ft/ft
Percent Full.....	41.96 %
Full Capacity.....	5.90 cfs
QMAX @.94D.....	6.35 cfs
Froude Number.....	2.17 (flow is Supercritical)

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: 200406D

Comment: Pipe D → From Inlet D to Inlet E

Solve For Actual Depth

Given Input Data:

Diameter.....	1.50 ft
Slope.....	0.0042 ft/ft
Manning's n.....	0.012
Discharge.....	4.82 cfs

Computed Results:

Depth.....	0.88 ft
Velocity.....	4.45 fps
Flow Area.....	1.08 sf
Critical Depth....	0.84 ft
Critical Slope....	0.0049 ft/ft
Percent Full.....	58.94 %
Full Capacity.....	7.37 cfs
QMAX @.94D.....	7.93 cfs
Froude Number.....	0.91 (flow is Subcritical)

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Future

Worksheet Name: 200406E

Comment: Pipe E → From Inlet E To 66" RCP

Solve For Actual Depth

Given Input Data:

Diameter.....	1.50 ft
Slope.....	0.0107 ft/ft
Manning's n.....	0.012
Discharge.....	8.61 cfs

Computed Results:

Depth.....	0.95 ft
Velocity.....	7.27 fps
Flow Area.....	1.18 sf
Critical Depth....	1.14 ft
Critical Slope....	0.0067 ft/ft
Percent Full.....	63.51 %
Full Capacity.....	11.77 cfs
QMAX @.94D.....	12.66 cfs
Froude Number.....	1.42 (flow is Supercritical)

VOLUME CALCULATIONS FOR 10-DAY STORM

(UNDER PROPOSED CONDITIONS)

DRAINAGE BASINS

SUB-BASIN	AREA (SF)	AREA (AC-FT)	AREA (MI^2)
LOT 3-A	92,620.70	2.12628	0.003322

$$E = \frac{EA(AA) + EB(AB) + EC(AC) + ED(AD)}{AA + AB + AC + AD}$$

V-360 = E (AA + AB + AC + AD)

V-10 Day = V-360 + AD (P-10 Day - P-360) / 12 in/ft

EA = 0.44
EB = 0.67
EC = 0.99
ED = 1.97

AA = 0.00%
AB = 14.00%
AC = 0.00%
AD = 86.00%

P-60 = 1.87
P-360 = 2.20
P-1440 = 2.66
P-10 Day = 3.67

E =	**1.7880**	**IN**
V-360 =	**0.3168**	**AC-FT**
AD =	**1.8286**	**AC**
V-10 Day =	**0.5408**	**AC-FT**
V-10 DAY =	**23,558.08**	**CF**

POND CALCULATONS
PROPOSED RETENTION POND

TOP SURFACE ARE OF THE POND =	10,642.61	SF	@ ELEVATION		5,100.00	FT			
SURFACE ARE OF THE POND =	5,151.37	SF	@ ELEVATION		5,099.00	FT			
DEPTH OF THE POND =	1.00	FT							
VOLUME =	(10,642.61	+	5,151.37) /	2.00	*	1.00	=	7,896.99	CF
			(BETWEEN			5,100.00	&	5,099.00	)
SURFACE ARE OF THE POND =	5,151.37	SF	@ ELEVATION			5,099.00	FT		
BOTTOM SURFACE ARE OF THE POND =	923.16	SF	@ ELEVATION			5,093.75	FT		
DEPTH OF THE POND =	5.25	FT							
SLOPE OF THE POND =	3:1		(BETWEEN			5,099.00	&	5,093.75	)
VOLUME =	(5,151.37	+	923.16) /	2.00	*	5.25	=	15,945.64	CF
			(BETWEEN			5,099.00	&	5,093.75	)

TOTAL VOLUME (PROVIDED)= 7,896.99 + 15,945.64 = 23,842.63 CF
(BETWEEN 5,100.00 & 5,093.75)

VOLUME REQUIED = 23,558.08 CF