City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 11, 2003

Shahab Biazar, P.E.
Advanced Engineering
10205 Snowflake Court NW
Albuquerque, New Mexico 87114

RE: BILL BIFFLE'S BUILDING (C-17/D114)
(8240 Wahsington NE)
CERTIFICATE OF OCCUPANCY APPROVAL-*Temporary*
ENGINEERS CERTIFICATION DATED 7/16/2003

Dear Shahab:

Based on the information provided in your submittal dated 7/17/2003, the above referenced project is approved for a **TEMPORARY** Certificate of Occupancy.

A Temporary Certificate of Occupancy has been issued for 30 days, allowing the remaining drainage issues to be completed within this time scope.

- Evidence of an SO19 is required with your Engineers Certification including the City's storm drainage maintenance inspector's signature prior to approval of the Permanent Certificate of Occupancy as per the Design Process Manual (DPM) Chapter 17 "Private Storm Drain Facilities within a City Right-of-Way and/or Easement"

If I can be of further assistance, please feel free to contact me at 924-3981.

Sincerely,

Teresa A. Martin
Hydrology Plan Checker
Development and Building Services Division

BLB

c: Certificate of Occupancy Clerk, COA
Drainage file
Approval file

DRAINAGE REPORT
FOR

BILL BIFFLE'S BUILDING

8240 WASHINGTON ST. NE

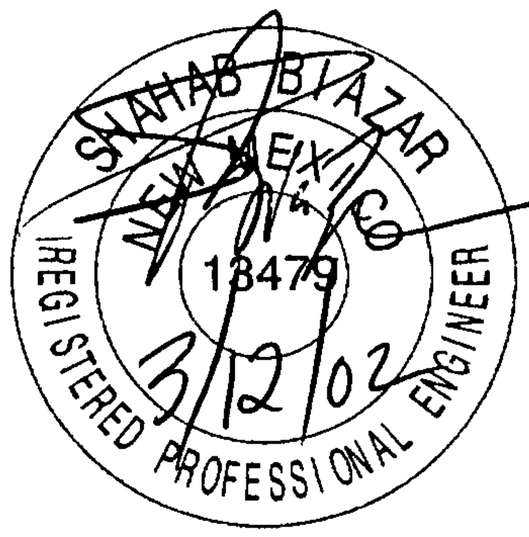
(Lots E-1 and 1-A, Lands of Los Angeles Investors)

Prepared by:

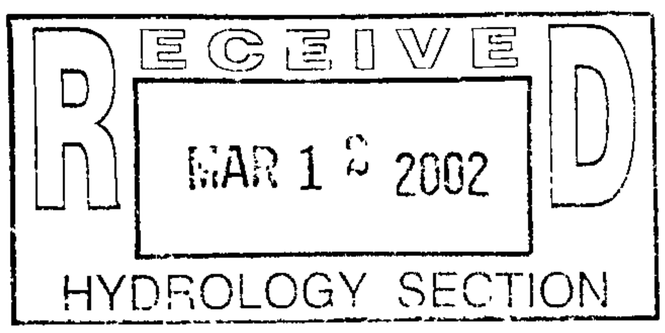
ADVANCED
ENGINEERING
and CONSULTING, LLC

10205 Snowflake Ct. NW
Albuquerque, New Mexico 87114

March, 2002



Shahab Biazar
PE NO. 13479



Location

Lots E-1 and 1-A, Lands of Los Angeles Investors is a ±1.8757 acre site which is located ta 8240 Washington Street NE. See attached Zone Atlas Page C-17-Z for exact location of the property.

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 subdivision purposes, site development plan for building permit, preliminary and final plat approval.

Existing Drainage Conditions

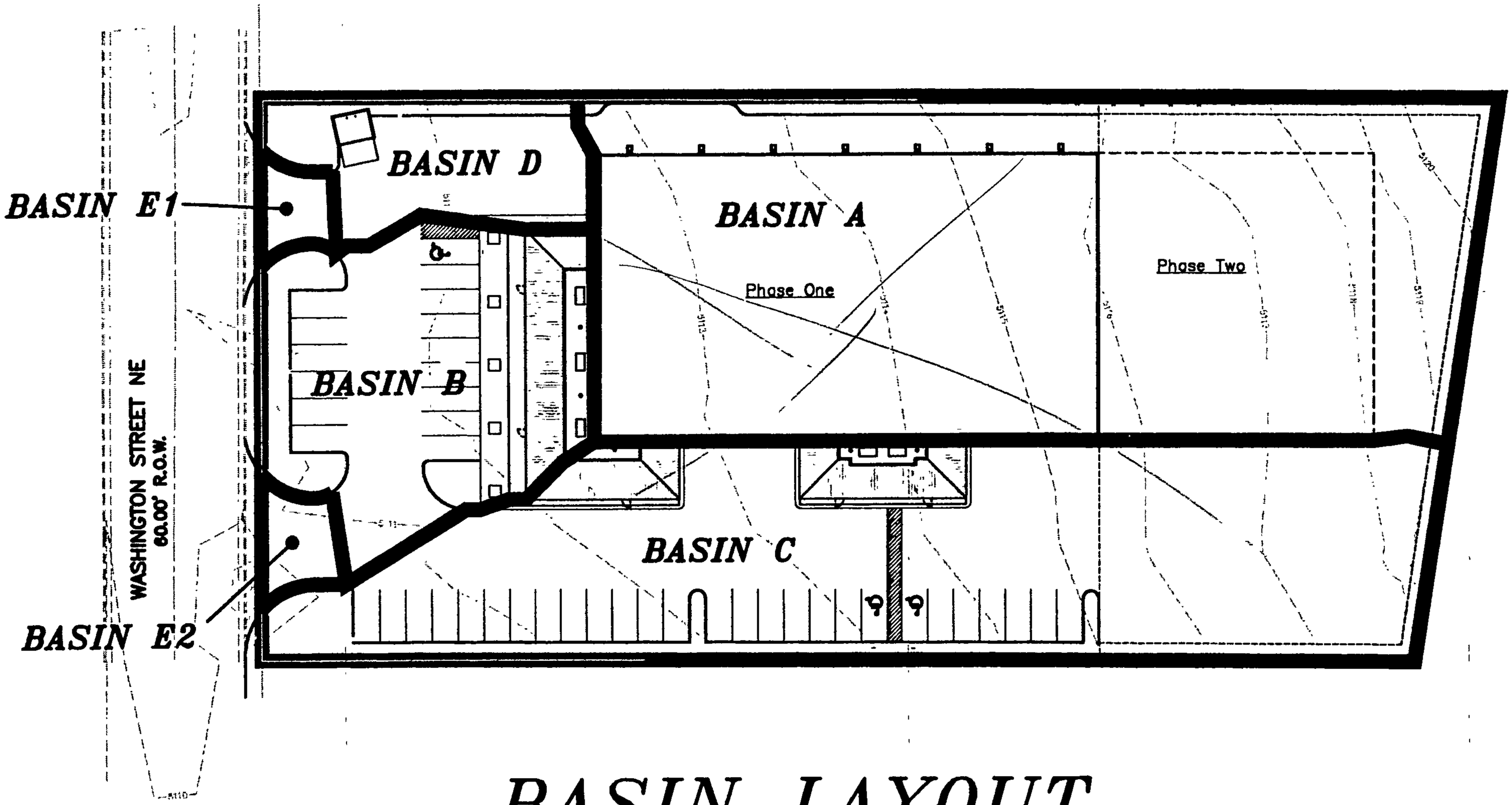
The runoff on-site, at a flow rate of 2.93 cfs, drains west to Washington and then South to a series of inlets. Then from there the runoff is routed to AMAFCA North Diversion Channel. No offsite runoff enters the site. The runoff to the north and south drain west to Washington Street and the runoff to the west drains to an existing earthen ditch located along the northerly property line and then drains south to North Diversion Channel. The site does not fall within a 100-Year Floodplain

Proposed Conditions and On-Site Drainage Management Plan

The offsite and on-site runoff patterns will remain the same. The runoff on site will be detained and then drained at existing runoff rate of 2.93 cfs. The site is analyzed under basins A through E. The runoff from Basin A is intercepted through a series of inlets (Type "D") and then detained and routed to Basin B at flow rate of 2.71 cfs via a 6" pipe. Basin B along with basins A and D drain to Basin C, via an eight inch pipe, at detained flow rate of 2.07 cfs. Basin D drains to Basin B at a flow rate of 0.48 cfs via an eight inch pipe. Basin C, along with basins A, B, and D drains to back of a sidewalk culvert via 2-6.75" diameter openings at a confined flow rate of 2.90 cfs. Basin E1 and E2 free discharge into Washington Street. The total discharge from the site is 2.94 cfs which is only 0.01 cfs over the historical runoff rate.

Calculations

City of Albuquerque, Development Process Manuel, Section 22.2, Hydrology Section, revised January, 1993, was used for runoff calculations. See this report for all the calculations.



BASIN LAYOUT

RUNOFF CALCULATION RESULTS
OVERALL BASIN

BASIN AREA

ON-SITE	AREA (SF)	AREA (AC)	AREA (MI^2)
OVERALL	81,705.67	1.8757	0.002931

HISTORICAL

ON-SITE	Q-100 CFS	Q-10 CFS
OVERALL	2.93	0.70

PROPOSED

ON-SITE	Q-100 CFS	Q-10 CFS
OVERALL	8.08	5.15

RUNOFF CALCULATIONS

The site is @ Zone 2

DEPTH (INCHES) @ 100-YEAR STORM

P_{60} = 2.01 inches

P_{360} = 2.35 inches

P_{1440} = 2.75 inches

DEPTH (INCHES) @ 10-YEAR STORM

P_{60} = 2.01 x 0.667
= 1.34 inches

P_{360} = 1.57

P_{1440} = 1.83

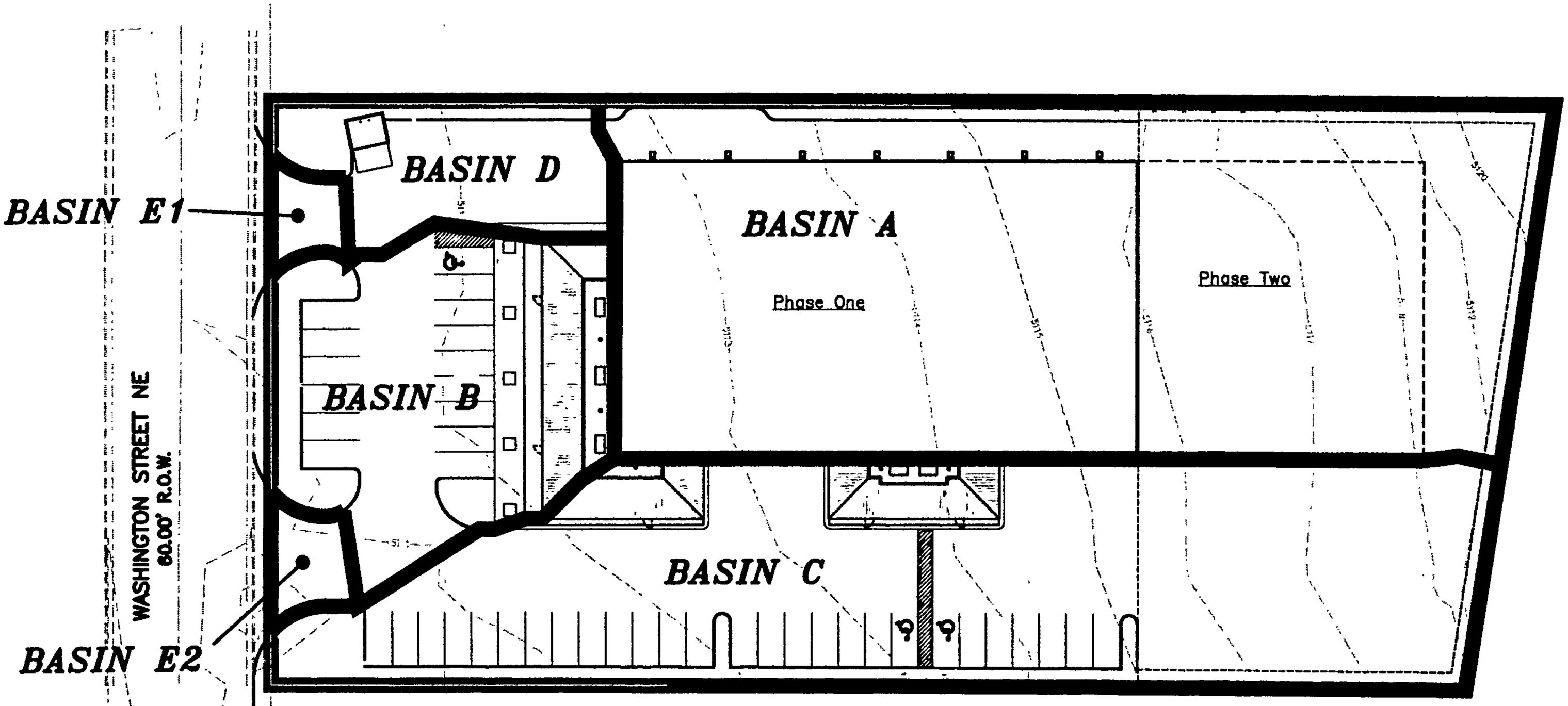
See the summary output from AHYMO calculations.

Also see the following summary tables.

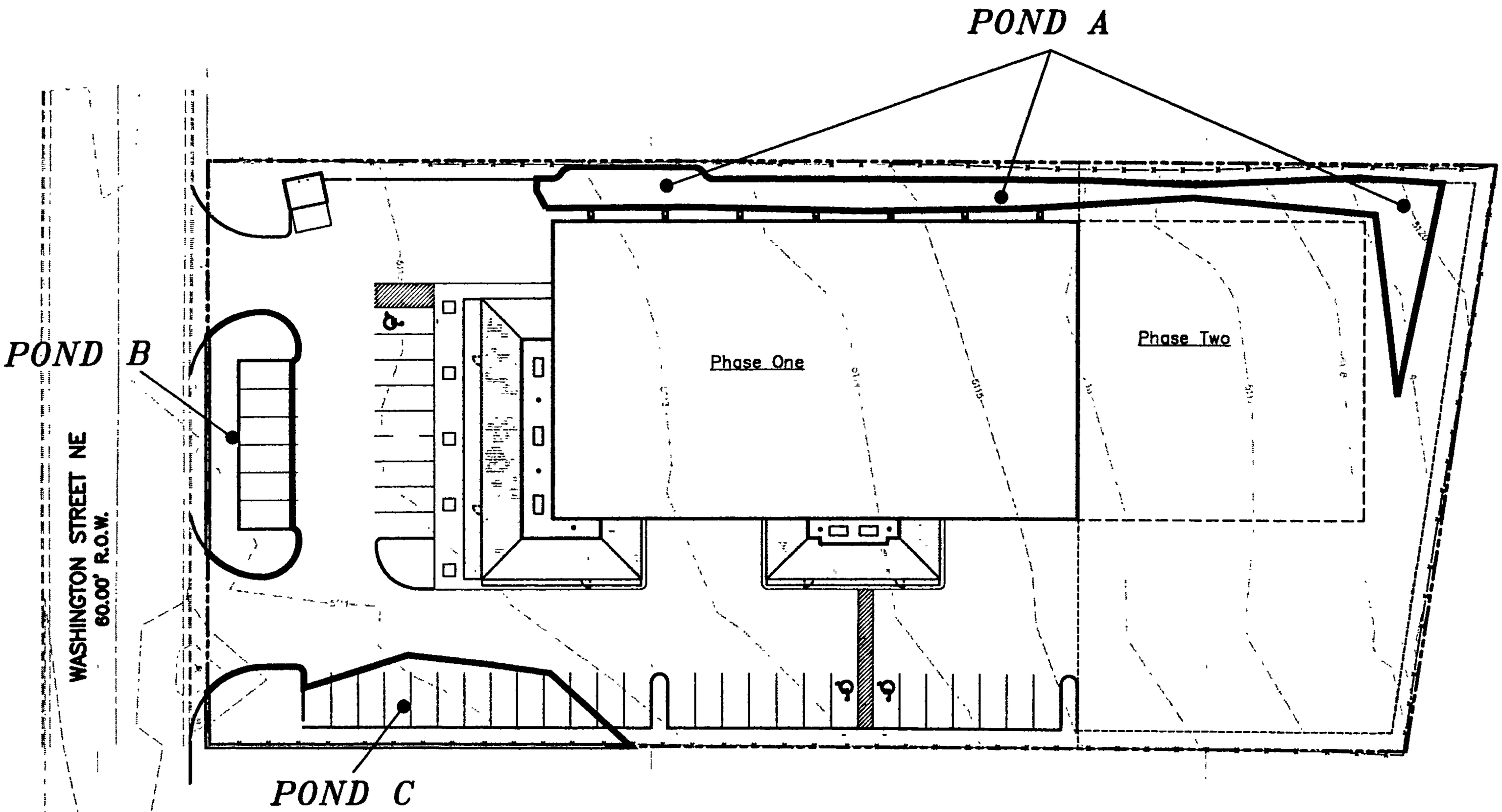
SUMMARY OUTPUT FILE
(OVERALL)

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =03/10/2002
INPUT FILE = 200206 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	NOTATION	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.350
COMPUTE NM HYD	101.00	-	1	.00293	2.93	.083	.53121	1.533	1.560	PER IMP=	.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.350
COMPUTE NM HYD	101.00	-	1	.00293	8.08	.294	1.87962	1.500	4.308	PER IMP=	80.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	1.570
COMPUTE NM HYD	101.00	-	1	.00293	.70	.020	.12517	1.533	.373	PER IMP=	.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	1.570
COMPUTE NM HYD	101.00	-	1	.00293	5.15	.179	1.14633	1.500	2.745	PER IMP=	80.00
FINISH											



BASIN LAYOUT



PONDING LOCATIONS

VOLUME CALCULATIONS

DETENTION POND A

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = Ab * D + 0.5 * C * D^2

C = (At - Ab) / Dt

Ab =	36.00
At =	2,577.66
Dt =	0.75
C =	3388.88

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5111.50	0	0	0.00
5114.00	2.5	0.00207	1.42
5114.10	2.6	0.00254	1.45
5114.20	2.7	0.00379	1.48
5114.30	2.8	0.00581	1.51
5114.40	2.9	0.00862	1.54
5114.50	3.0	0.01220	1.57
5114.60	3.1	0.01657	1.60
5114.70	3.2	0.02171	1.62
5114.75	3.3	0.02457	1.64

<u>Orifice Equation</u>
Q = CA SQRT(2gH)

C =	0.6
Diameter (in)	6
Area (ft^2)=	0.19635
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

VOLUME CALCULATIONS

DETENTION POND B

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = Ab * D + 0.5 * C * D^2

C = (At - Ab) / Dt

Ab =	1,425.40
At =	2,414.14
Dt =	2.00
C =	494.37

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5110.20	0	0	0.00
5110.45	0.25	0.00818	0.27
5110.70	0.5	0.01672	0.69
5110.95	0.75	0.02596	1.08
5111.20	1	0.03591	1.37
5111.45	1.25	0.04658	1.61
5111.70	1.5	0.05795	1.82
5111.95	1.75	0.07003	2.00
5112.20	2	0.08282	2.17

<u>Orifice Equation</u>
Q = CA SQRT(2gH)

C =	0.6
Diameter (in)=	8
Area (ft^2)=	0.349066
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

VOLUME CALCULATIONS

DETENTION POND C

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = Ab * D + 0.5 * C * D^2

C = (At - Ab) / Dt

Ab =	779.92
At =	3,338.22
Dt =	1.78
C =	1437.25

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5009.72	0	0	0.00
5009.97	0.25	0.00448	0.54
5010.22	0.5	0.00998	1.12
5010.47	0.75	0.01755	1.64
5010.72	1	0.02718	2.03
5010.97	1.25	0.03888	2.36
5011.22	1.5	0.05263	2.64
5011.50	1.78	0.07049	2.93

<u>Orifice Equation</u>
Q = CA SQRT(2gH)

C =	0.6	
Diameter (in)=	6.75	(2-6.75)
Area (ft^2)=	0.248505	
g =	32.2	
H (Ft) =	Depth of water above center of orifice	
Q (CFS)=	Flow	

SUMMARY OUTPUT FILE
(PONDING AREAS)

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =03/10/2002
INPUT FILE = 200206pd USER NO.= AHYMO-I-9702c01000R31-AH

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START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.350
COMPUTE NM HYD	101.00	-	1	.00132	3.64	.132	1.87962	1.500	4.320	PER IMP= 80.00
COMPUTE NM HYD	102.00	-	2	.00040	1.13	.040	1.87962	1.500	4.373	PER IMP= 80.00
COMPUTE NM HYD	103.00	-	3	.00099	2.73	.099	1.87962	1.500	4.327	PER IMP= 80.00
COMPUTE NM HYD	104.00	-	4	.00017	.48	.017	1.87962	1.500	4.456	PER IMP= 80.00
COMPUTE NM HYD	105.00	-	5	.00006	.17	.006	1.87962	1.500	4.619	PER IMP= 80.00
ROUTE RESERVOIR	500.00	1	10	.00132	2.71	.132	1.87941	1.600	3.215	AC-FT= .010
ADD HYD	106.00	10& 2	20	.00172	3.77	.172	1.87930	1.500	3.423	
ADD HYD	107.00	20& 4	30	.00189	4.24	.189	1.87924	1.500	3.515	
ROUTE RESERVOIR	501.00	30	40	.00189	2.07	.189	1.87924	1.766	1.717	AC-FT= .076
ADD HYD	108.00	40& 1	50	.00320	5.05	.321	1.87913	1.533	2.460	
ROUTE RESERVOIR	502.00	50	60	.00320	2.90	.321	1.87913	1.966	1.415	AC-FT= .069
ADD HYD	109.00	60& 5	70	.00326	2.94	.327	1.87797	1.933	1.407	
FINISH										

ADVANCED ENGINEERING and CONSULTING, LLC

Consulting
Design
Development
Management
Inspection

March 13, 2002

Mr. Carlos Montoya
City Floodplain Administrator
Plaza Del Sol-2nd Floor West
600 2nd Street NW
Albuquerque, NM 87102

RE: Revised Grading Plan For Bill Biffle's Building Located at 8240 Washington NE (C-17-Z)

Dear Mr. Montoya:

This letter is in regards to our conversion about the above mentioned project. Per our conversation it was decided to analyze the existing inlets in Washington Street. We have determined the overall offsite basin which contributes to these inlets. Based on the contributing basin runoff of 35.55 cfs will drain to these inlets under the free discharge and fully developed conditions. The first four inlets to the south side of the project are located within street slope of ±0.50% and first two will intercept a total runoff of 14.40 cfs and the following two 10.20 cfs. There are two more inlets further south which are located in a swamp conditions. We have calculated that these two inlets are capable of intercepting a total runoff of 39.84 cfs. Therefore, the total runoff that can be intercepted by the existing inlets is (14.40+10.20+39.84) 64.44 cfs and the developed runoff which drains to these inlets is only 35.50 cfs. It should not be any problem free discharging the site into Washington Street.

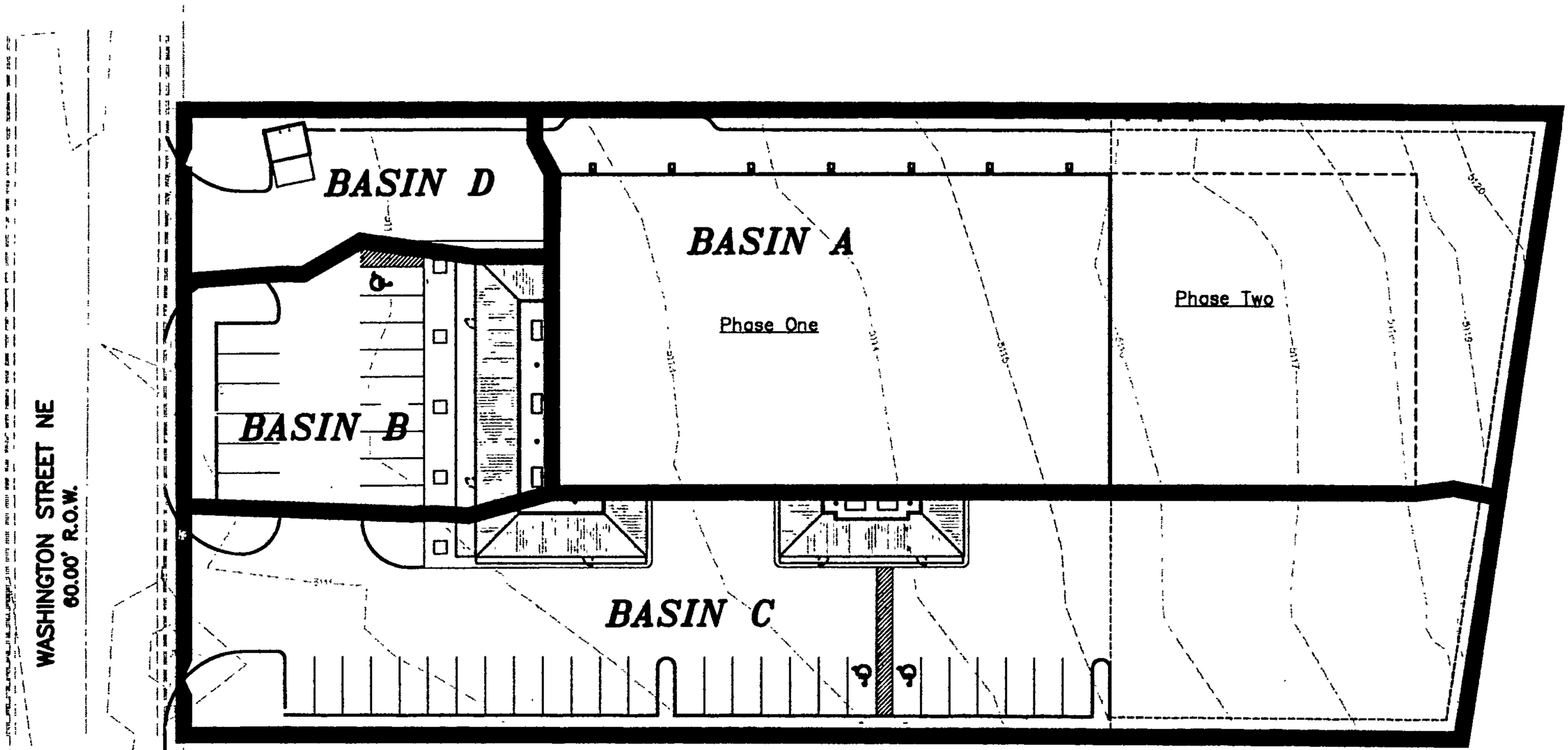
Please contact me if there are any questions or concerns regarding this submittal.

Sincerely yours,

Shahab Biazar, P.E.

RECEIVED
MAR 13 2002
HYDROLOGY SECTION

10205 Snowflake Court N.W., Albuquerque, N.M. 87114 PH (505) 899-5570 FAX (505) 897-4996 EMAIL AECLLC@aol.com



BASIN LAYOUT

RUNOFF CALCULATION RESULTS
OVERALL BASINS

BASIN AREA

ON-SITE	AREA (SF)	AREA (AC)	AREA (MI^2)
BASIN A	36,714.99	0.8429	0.001317
BASIN B	9,014.09	0.2069	0.000323
BASIN C	30,567.14	0.7017	0.001096
BASIN D	5,409.45	0.1242	0.000194

PROPOSED

ON-SITE	Q-100 CFS
BASIN A	3.64
BASIN B	0.91
BASIN C	3.03
BASIN D	0.55

SUMMARY OUTPUT FILE
(ON-SITE BASINS)

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =03/13/2002
INPUT FILE = 20206NEW USER NO.= AHYMO-I-9702c01000R31-AH

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										PAGE =	1
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.350
COMPUTE NM HYD	101.00	-	1	.00132	3.64	.132	1.87962	1.500	4.320	PER IMP=	80.00
COMPUTE NM HYD	102.00	-	2	.00032	.91	.032	1.87962	1.500	4.387	PER IMP=	80.00
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COMPUTE NM HYD	104.00	-	4	.00019	.55	.019	1.87962	1.500	4.444	PER IMP=	80.00
FINISH											

Sidewalk Culvert Flow Calculations

Orifice Equation: $Q=CA\sqrt{(2gh)}$

Q = 2.31 cfs (maximum runoff)

C = 0.6

g = 32.20

h = 0.90'

Curb Opening = 2.00'

A= 2.00 x 0.90 = 1.80 sf

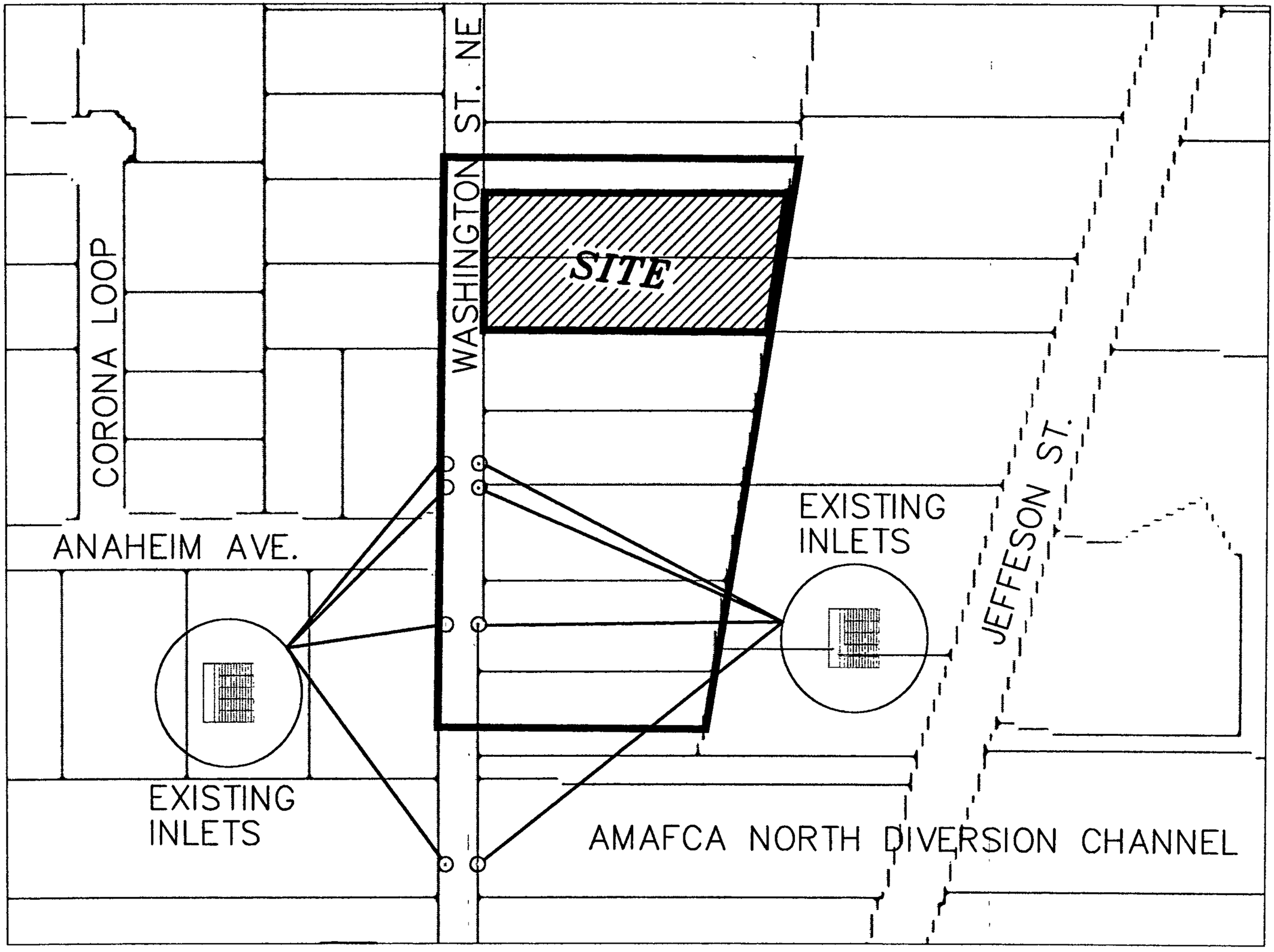
$Q = 0.60 \times 1.80\sqrt{(2 \times 32.2 \times 0.9)}$

Q = 8.22 cfs > 4.55 cfs

Therefore, use a Curb Opening of 2.00' and a 2.00' sidewalk culvert.

Basin A + Basin B

3.64 + 0.91 = 4.55 cfs



OFFSITE OVERALL BASIN

RUNOFF CALCULATION RESULTS
OFFSITE OVERALL BASINS

BASIN AREA

OFFSITE	AREA (SF)	AREA (AC)	AREA (MI^2)
OVERALL	359,588.52	8.2550	0.012898

HISTORICAL

ON-SITE	Q-100 CFS	Q-10 CFS
OVERALL	12.85	3.07

PROPOSED

ON-SITE	Q-100 CFS	Q-10 CFS
OVERALL	35.50	22.63

STORM DROP INLET–EFFECTIVE AREA

SWAMP CONDITIONS

Area at the grate:

L = 38.375" - 7(½" $_{\text{middle bars}}$)
= 34.875"
= 2.906'

W = 25.5" - 13(½" $_{\text{middle bars}}$)
= 19"
= 1.583'

Area = 1.583' x 2.906'
= 4.601 ft^2

Effective Area = 4.601- 4.601 (0.5 $_{\text{clogging factor}}$)
= 2.30 ft^2 at the grate

Area at the throat:

L = 47.375"
= 3.95'

H = 10¾" - 4½"
= 6¼"
= 0.5208'

Area = 3.95' x 0.5208' = 2.06 ft^2 at the throat

Total Area:

Area = $2.30_{grate} + 2.06_{throat} = 4.36$ ft^2

ORIFICE EQUATION (CHECKING THE WATER DEPTH AT THE INLET)

$Q = CA\sqrt{(2gH)}$

C = 0.6
A = 4.36 SF
g = 32.2
H = 0.90'
SOLVE FOR Q = 19.92 CFS PER INLET (TOTAL FLOW CAPACITY 39.84 CFS)