

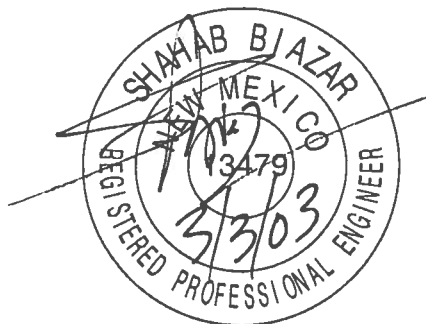
DRAINAGE REPORT  
FOR

LOT 29, BLOCK 5, TRACT A, UNIT B  
NORTH ALBUQUERQUE ACRES

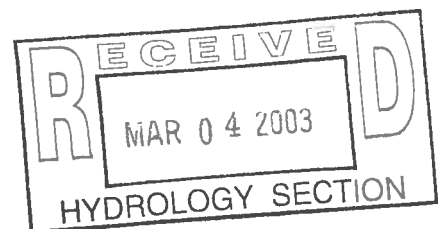
Prepared by:



10205 Snowflake Ct. NW  
Albuquerque, New Mexico 87114



Shahab Biazar  
PE NO. 13479



B-18/D10

## **Location**

LOT 29, BLOCK 5, TRACT A, UNIT B, NORTH ALBUQUERQUE ACRES is located on the north side of San Diego Avenue and East of San Mateo Boulevard. See attached Zone Atlas page number B-18 for exact location. The owners are proposing to construct an office/warehouse building.

## **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 approval.

## **Existing Drainage Conditions**

The site falls within Basin C, under the City Drainage number B18/D5. A copy of the basin map is attached as part of this report (as Figure 1). Based on the existing conditions the site drains to the northeast corner of San Mateo Boulevard and San Diego Avenue. Based on the FIRM map number 35001C0129 D the site falls under the Zone AO (depth 2). The flood hazard map has been prepared prior to the construction of an upstream diversion that effectively removed this area from the floodplain.

## **Proposed Conditions and On-Site Drainage Management Plan**

The site was analyzed under sub-basins C1-A and C1-B. Since the downstream storm sewer improvements are not in place the discharge will be at a flow rate equal to existing conditions 1.67 cfs (0.39+1.28) for sub-basins C1-A and C1-B. The runoff is detained (within ponding area C1-A and C1-B0) and then discharged at a total flow rate of 1.55 cfs which is less than the existing conditions of 1.67 cfs. See this report for ponding calculations.

### **Calculations**

City of Albuquerque, Development Process Manual, Section 22.2, Hydrology Section, revised January, 1993, was used for runoff calculations. See this report for Summary Table for runoff results, AHYMO input, and output files for runoff and ponding calculations.

## **RUNOFF DRAINAGE DATA**

The site is @ Zone 3

### **DEPTH (INCHES) @ 100-YEAR STORM**

$$P_{60} = 2.14 \text{ inches}$$

$$P_{360} = 2.60 \text{ inches}$$

$$P_{1440} = 3.10 \text{ inches}$$

### **DEPTH (INCHES) @ 10-YEAR STORM**

$$\begin{aligned} P_{60} &= 2.14 \times 0.667 \\ &= 1.43 \text{ inches} \end{aligned}$$

$$P_{360} = 1.73$$

$$P_{1440} = 2.07$$

See the summary output from AHYMO calculations.

Also see the following summary tables.

## RUNOFF CALCULATION RESULTS

BASIN	AREA (SF)	AREA (AC)	AREA (MI <sup>2</sup> )
ON-SITE / C1-A*	8939.67	0.2052	0.000321
ON-SITE / C1-B*	29710.39	0.6821	0.001066
C2*	124756.92	2.8640	0.004475
C3*	4314.64	0.0991	0.000155
B*	178160.40	4.0900	0.006391

### EXISTING

BASIN	Q-100 CFS	Q-10 CFS
ON-SITE / C1-A*	0.39	0.12
ON-SITE / C1-B*	1.28	0.39
C2*	5.37	1.61
C3*	0.19	0.06
B*	7.66	2.30

### PROPOSED / INTERIM

BASIN	Q-100 CFS	Q-10 CFS
ON-SITE / C1-A*	1.00	0.65
ON-SITE / C1-B*	3.28	2.13
C2*	5.37	1.61
C3*	0.31	0.16
B*	7.66	2.30

**\*FROM THE BASIN LAYOUT FROM CITY DRAINAGE NUMBER B18/D5**

# VOLUME CALCULATIONS

## DETENTION POND C1-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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

Ab = 0.00  
 At = 2,270.26  
 Dt = 1.00  
 C = 2270.26

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5161.00	0.00	0.00000	0.00
5161.10	0.10	0.00026	0.02
5161.20	0.20	0.00104	0.07
5161.30	0.30	0.00235	0.12
5161.40	0.40	0.00417	0.19
5161.50	0.50	0.00651	0.26
5161.60	0.60	0.00938	0.34
5161.70	0.70	0.01277	0.43
5161.80	0.80	0.01668	0.53
5161.90	0.90	0.02111	0.63
5162.00	1.00	0.02606	0.74

### Weir Equation

$$Q = \text{CLH}^{(3/2)}$$

C =	2.95	
L =	0.25	(WIDTH OF THE OPENING)
H (Ft) =	0.75	(MAX. DEPTH OF WATER AT THE OPENING)
Q (CFS)=	0.53	(FLOW)

# VOLUME CALCULATIONS

## DETENTION POND C1-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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

Ab = 0.00  
 At = 5,126.97  
 Dt = 1.10  
 C = 4660.88

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5160.04	0.00	0.00000	0.00
5160.14	0.10	0.00053	0.03
5160.24	0.20	0.00214	0.10
5160.34	0.30	0.00481	0.18
5160.44	0.40	0.00856	0.28
5160.54	0.50	0.01337	0.39
5160.64	0.60	0.01926	0.51
5160.74	0.70	0.02621	0.65
5160.84	0.80	0.03424	0.79
5160.94	0.90	0.04333	0.94
5161.04	1.00	0.05350	1.11
5161.14	1.10	0.06473	1.28

### Weir Equation

$$Q = \text{CLH}^{(3/2)}$$

C = 2.95  
 L = 0.375 (WIDTH OF THE OPENING)  
 H (Ft) = 0.78 (MAX. DEPTH OF WATER / AT THE OPENING)  
 Q (CFS) = 0.79 (FLOW)

```

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  USER NO.= AHYMO-I-9702c01000R31-AH

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  AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -
  INPUT FILE = 200121PD
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COMMAND	HYDROGRAPH IDENTIFICATION	FROM		TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS		PAGE = 1
		ID	NO.							PER	ACRE	
RAINFALL TYPE= 1												
COMPUTE NM HYD	100.10	-	1	.00032	1.00	.038	2.21184	1.500	4.859	PER IMP=	2.600	90.00
COMPUTE NM HYD	100.20	-	2	.00107	3.28	.126	2.21184	1.500	4.802	PER IMP=	90.00	90.00
ROUTE RESERVOIR	500.10	1	10	.00032	.44	.038	2.21107	1.700	2.147	AC-FT=	.013	.013
ROUTE RESERVOIR	500.20	2	20	.00107	1.12	.126	2.21157	1.833	1.637	AC-FT=	.054	.054
ADD HYD	100.30	10&20	30	.00139	1.55	.164	2.21106	1.766	1.746			
FINISH												