

MEMORANDUM

**TO: SUSAN CALOGNE
CITY OF ALBUQUERQUE**

**FROM: HOWARD STONE
BOHANNAN HUSTON**

DATE: NOVEMBER 7, 1997

RE: FINAL DRAINAGE REPORT FOR CORNER OF GOLF COURSE RD. AND IRVING BLVD.

As per your letter of November 4, 1997, I am re-submitting the reference project and incorporating your comments into this memorandum. Your letter is enclosed in Appendix C. This memo is in two parts: Part I - Final Drainage Report and Part II - Response to City Comments dated November 4, 1997

PART I - FINAL DRAINAGE REPORT

John Curtin, City Hydrology, in a letter dated October 7, 1996, reviewed the Conceptual Grading and Drainage Plan dated April 9, 1996 (See Figure 1). The letter allows for approval of the bulk land plat but requires issues that needed to be addressed in the Final Drainage Report.

This Final Drainage Report for both the corner of Golf Course Rd. and Irving Blvd. provides information and calculations for:

1. Flowrate in and capacity of Avocet Road.
2. Flowrate in and capacity of Kea Avenue.
3. Flowrate in and capacity of Irving Boulevard.
4. Flowrate in and capacity of Golf Course Road north and south of the intersection of Golf Course and Irving.

The project site is located on the northeast corner of Golf Course Rd. and Irving Blvd. In general, the project consists of grading for the two building pads and constructing Avocet Road and Kea Avenue as shown in Exhibit 1. The existing flowrates for the project area are shown in Table 1. The developed flowrates are shown in Table 2. The flowrates were calculated using section 22.2 of the Development Process Manual (DPM) and are included in Appendix A.

The on-site flows are conveyed in Avocet Rd. to Kea Ave. and then in Kea Ave. to three new inlets in Kea Ave. (See Table 1 & 2). The on-site flows are captured by these inlets and do not enter either Irving Blvd. or Golf Course Rd. The new inlets discharge to an existing storm drain system which outlets to the Calabacillas Arroyo. However, as shown on Exhibit 1, 0.7 cfs (100-yr.) enters Golf Course Rd. at Avocet Rd. and 1.7 cfs (100-yr.) enters Golf Course Rd. from the southern portion of Site Pad 2. The capacity of Avocet Rd and Kea Ave. are sufficient and all City criteria for

street hydraulics are satisfied. Included in Appendix B is a rating curve for Avocet Rd. and Kea Ave., section A-A and B-B respectively, taken at the location shown on Exhibit 1.

**TABLE 1
EXISTING FLOWRATES**

ROADWAY NAME	10-YR Q (cfs)	100-YR Q (cfs)
Avocet Rd.	2.4	3.7
Kea Ave.	7.9	12.3
Irving Blvd.	10.0	23.7
Golf Course Rd.	3.6	10.2
Golf Course Rd north of Intersection	13.6	33.9

**TABLE 2
DEVELOPED FLOWS**

ROADWAY NAME	10-YR Q (cfs)	100-YR Q (cfs)
Avocet Rd.	2.4	3.7
Kea Ave.	7.9	12.3
Irving Blvd.	16.6	27.3
Golf Course Rd.	13.5	21.6
Golf Course Rd north of Intersection	30.1	48.9

The existing flowrates in Irving Blvd. are shown in Table 1. The capacity of Irving Blvd. is sufficient to convey these flows to the intersection and all City criteria for street hydraulics are satisfied. Included in Appendix B is a rating curve for Irving Blvd., section C-C, taken at the location shown on Exhibit 1.

Susan Calogne Memorandum
Page 3
November 7, 1997

The existing flowrates in Golf Course Rd., north of the intersection of Irving Blvd., are shown in Table 1. The capacity of Golf Course Rd. is sufficient to convey the existing flow to the inlet north of the bridge. As shown in Section E-E, the 100-year existing flows are contained in the street section. However, the 10-year existing flows exceeds the one lane dry criteria and the criteria for no flows crossing an arterial street at an intersection. In addition, the 100-year and 10-year developed flows are contained in the street section but do not satisfy City criteria. However, the developed 100-year flows and 10-year flows will meet City criteria when the Golf Course Rd. improvements are constructed (with inlets at intersection). Improvements have been designed and City intends to build infrastructure.

PART II - RESPONSE TO CITY COMMENTS DATED NOVEMBER 4, 1997

As per our meeting on November 5, 1997, I am enclosing copies of the pertinent City design plans for the upgrade of Golf Course Rd. and Irving Blvd. Mr. Ed Adams is the City Project Manager and the construction is divided into City Project No.'s 5378.91 and 5378.90. As shown on the City construction plans, five inlets will be installed on the upstream side of the intersection of Golf Course Rd. and four inlets will be installed on the upstream side of Irving Blvd. at the intersection. The construction of these two projects are not yet funded by the City. Copies of the pertinent City design plans are contained in Appendix D.

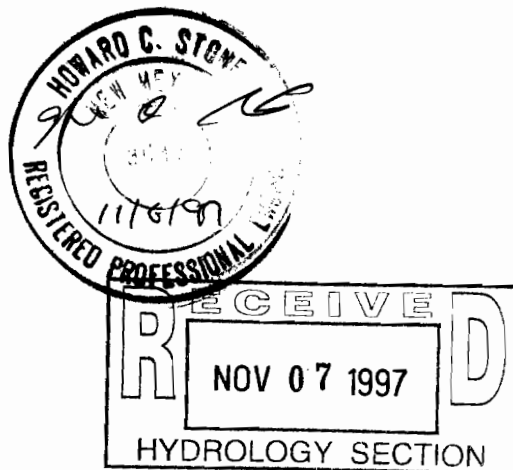
The following are responses to comments listed in your letter:

1. We have corrected the statement about flows onto Golf Course Rd. in the Drainage Report (Part I)
2. Drainage basin labels have been corrected.
3. Street grades for Golf Course and Irving are found in the information supplied by Smith Engineering for the development at the Osco Site (Basins A1, and A2).

/sh

Enclosures

cc: Cleve Matthews





PROJECT OSLO DRIVE SHEET NO. 1 OF
SUBJECT FLOW CALCS PROJECT NO. 197698
BY CSK DATE 10/6/97 CHECKED BY DATE 1/1

$$A_1 = 53,126 \text{ ft}^2 + 14,256 \text{ ft}^2 + 7405 \text{ ft}^2 \quad \text{ZONE 1}$$
$$= 74,787 \text{ ft}^2 = 1.72 \text{ acres}$$

71% D 29% C

$$A_2 = 13,059 \text{ ft}^2$$
$$= 0.30 \text{ acres } 100\% C$$

$$A_3 = 10,278 \text{ ft}^2 + 5587 \text{ ft}^2$$
$$= 15,865 \text{ ft}^2 = 0.36 \text{ acres}$$

65% D 35% C

$$Q_p - A_1 = (2.87 \text{ cfs/acre} \times 49.72 \text{ acres}) + (4.37 \text{ cfs/acre} \times 1.219 \text{ acres})$$

$$Q_{100} = \underline{\underline{6.8 \text{ cfs}}}$$

$$Q_{10} = \underline{\underline{4.3 \text{ cfs}}}$$

$$Q_p - A_2 = (2.87 \text{ cfs/acre} \times 0.30 \text{ acres})$$

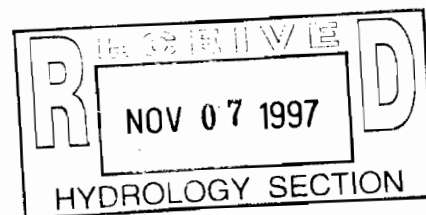
$$Q_{100} = \underline{\underline{0.9 \text{ cfs}}}$$

$$Q_{10} = \underline{\underline{0.4 \text{ cfs}}}$$

$$Q_p - A_3 = (2.87 \text{ cfs/acre} \times 1.128 \text{ acres}) + (4.37 \text{ cfs/acre} \times 0.236 \text{ acres})$$

$$Q_{100} = \underline{\underline{1.9 \text{ cfs}}}$$

$$Q_{10} = \underline{\underline{0.9 \text{ cfs}}}$$



Smith Engineering Company

6400 Uptown Boulevard, N.E. Suite 500E Albuquerque, New Mexico 87110 505/884-0700

Additional flow on Avocet Road:

$$(36')(645') = 23,220 \text{ ft}^2 = 0.5331 \text{ acre}$$

$$(4.73 \text{ cfs/acre})(0.5331 \text{ acre}) = 2.3 \text{ cfs } 100\text{-yr}$$

$$(2.89 \text{ cfs/acre})(0.5331 \text{ acre}) = 1.5 \text{ cfs } 10\text{-yr}$$

Additional flow on Kea Ave.:

$$(36')(487') = 17,532 \text{ ft}^2 = 0.4025 \text{ acre}$$

$$(4.73 \text{ cfs/acre})(0.4025 \text{ acre}) = 1.8 \text{ cfs } 100\text{-yr}$$

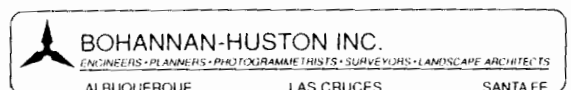
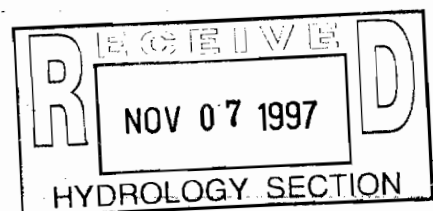
$$(2.89 \text{ cfs/acre})(0.4025 \text{ acre}) = 1.2 \text{ cfs } 10\text{-yr}$$

Remaining Area on Avocet Rd.:

$$(36')(201') = 7,236 \text{ ft}^2 = 0.1661 \text{ acre}$$

$$(4.73 \text{ cfs/acre})(0.1661 \text{ acre}) = 0.73 \text{ cfs } 100\text{-yr}$$

$$(2.89 \text{ cfs/acre})(0.1661 \text{ acre}) = 0.48 \text{ cfs } 10\text{-yr}$$



PROJECT NAME Osoo Drug SHEET 1 OF 2
PROJECT NO. _____ BY DEB DATE 10/8/97
SUBJECT Street Flows CH'D _____ DATE _____

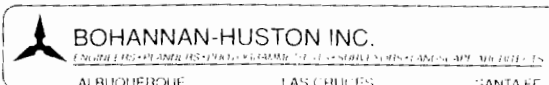
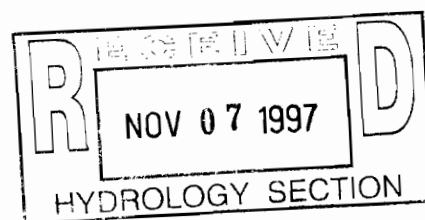
Pad Site 2:

Area = 1.19 acres

$$Q_{\text{ID}} = (4.37 \text{ cfs/acre})(0.80 \text{ acre}) + (2.87 \text{ cfs/acre})(.39 \text{ acre}) = 4.6 \text{ cfs}$$

Q to Storm Drain = 2.9 cfs

Q to Golf Course = 1.7 cfs



PROJECT NAME Oscro Drug SHEET 2 OF 2
PROJECT NO. DEB BY DEB DATE 10/30
SUBJECT Pad Site 2 CH'D DEB DATE 10/30

GIVEN: DPM TABLE A-9, PAGE A-9 - HYDROLOGIC ZONE 1

LAND TREAT.	10-YEAR CFS/AC	100-YEAR CFS/AC
A	0.24	1.29
B	0.76	2.03
C	1.49	2.87
D	2.89	4.37

EXISTING CONDITIONS

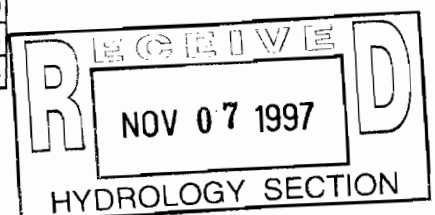
BASIN	AREA (ACRE)	LAND TREATMENTS				10-YEAR (CFS)	100-YEAR (CFS)
		A	B	C	D		
100	8.79	50	40	10	0	5.0	15.3
200	2.93	10	10	20	45	5.0	8.4
300	0.84	0	0	65	35	1.7	2.9
400	0.46	0	0	90	10	0.7	1.4
500	0.74	0	10	85	5	1.1	2.1
600	1.5	0	0	95	5	2.3	4.4
700	0.47	0	0	10	90	1.3	2.0
800	0.66	0	0	10	90	1.8	2.8
900	1.2	0	0	10	90	3.3	5.1

DEVELOPED CONDITIONS

BASIN	AREA (ACRE)	LAND TREATMENTS				10-YEAR (CFS)	100-YEAR (CFS)
		A	B	C	D		
100	4.71	0	30	0	70	10.6	17.3
200	2.93	0	40	0	60	6.0	10.1
300	0.84 4.2	0	5	0	100 95	2.3 (1.2)	3.6 (2.9) ASSUME ALL D
400	0.46	0	5	0	95	1.3	2.0
500	0.74	0	5	0	95	2.1	3.1
600	1.5	0	5	0	95	4.2	6.4
700	0.47	0	5	0	95	1.3	2.0
800	0.66	0	5	0	95	1.8	2.8
900	1.2	0	5	0	95	3.3	5.1

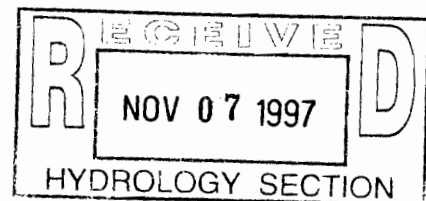
TOTAL FLOW AT IRVING BOULEVARD INTERSECTIONS

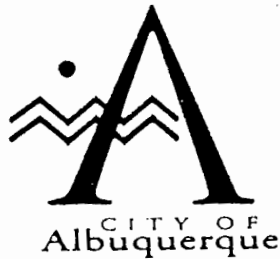
INTERSECTION LOCATION	EXISTING COND		DEVELOPED COND	
	10-YEAR (CFS)	100-YEAR (CFS)	10-YEAR (CFS)	100-YEAR (CFS)
GOLF COURSE RD	10.0	23.7	16.6	27.3
GREEN AVE	5.0	8.4	6.0	10.1
SNOWFLAKE DR	1.7	2.9	2.3	3.6
CADDIE ST	2.0	3.4	2.6	4.0
CARDINAL ST	5.0	8.3	6.5	9.9
CHANTILLY RD (N)	8.3	13.3	9.8	15.0
CHANTILLY RD (S)	2.3	4.4	4.2	6.4



Flows on Golf Course

Irving/Golf Course Intersection		2/20/97					
Zone 1							
Land Treatment		A	B	C	D		
Storm	10-Yr	0.24	0.76	1.49	2.89		
Storm	100-Yr	1.29	2.03	2.87	4.37		
Existing conditions							
Basin	Area, Ac	A	B	C	D	10-Yr	100-Yr
2 X 000	3.88	50	40	10	0	2.2	6.8
1 X 000	1.74	78	0	0	22	1.4	3.4
Developed conditions							
Basin	Area, Ac	A	B	C	D	10-Yr	100-Yr
2 X 000	3.88	0	30	0	70	8.7	14.2
1 X 000	1.74	0	5	0	95	4.8	7.4





November 4, 1997

Martin J. Chávez, Mayor

Howard Stone, P.E.
Bohannon Huston Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

RE: Master Drainage Plan and Report for Tract 3A (B12/D1A1), Submitted on October 9, 1997, Engineer's Stamp Dated 10/7/97.

Dear Mr. Stone:

The above referenced submittal is to be considered the Master Drainage Plan for Tract 3A. This Master Plan must be approved prior to release of the Building Permits for any of the developments within Tract 3A, and prior to approval for Work Order release.

The information you submitted indicates that storm drain inlets are needed in Golf Course Road. If these are to be constructed with a City project, please provide documentation that the inlets will be included in the project. Has the City project been funded? When will the road improvements be built? It appears that these inlets should have been included on the Infrastructure List for this site and that they must be installed with the first development within Tract 3A.

There are some inconsistencies between your Master Plan and the plan submitted for the Osco Drug site. These must be addressed prior to plan approval:

1. The Master Plan states that no flows enter the adjacent streets, however, the Osco site states that 0.9 cfs will be released onto Golf Course Road.
2. Drainage basins A1 and A2 were not labeled the same on both plans.
3. Please provide the street grades in both Golf Course and Irving. Both the existing and the ultimate street grades must be shown on the plan.

Good for You, Albuquerque!



Howard Stone, P.E.
page 2

November 4, 1997

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: Andrew Garcia, City Hydrology
Douglas L. Andrews, P. E., Smith Engineering
Cleve Matthews, Sandia Properties Ltd.
File

Tim Elchanberg - Chair
Danny Hernandez - Vice Chair
Daniel F. Lyon - Secretary - Treasurer
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John P. Kelly, P.E.
Executive Engineer



**Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority**

2600 Prospect N.E., Albuquerque, NM 87107
Phone: (505) 884-2215 Fax: (505) 884-0214

B12/DOO141

File

December 1, 2006

Mr. Samia and Mr. Sharif A. Rabadi
Star Trust, Inc.
120 Wyoming Blvd. S.E.
Albuquerque, NM 87123

Re: Channel Improvements on the Calabacillas Arroyo at Golf Course Road
(NW corner of Golf Course Road and Irving NW, Albuquerque, NM)
Letter of Acceptance

Dear Mr. Rabadi,

This letter serves as your letter of acceptance of the Channel Improvements on the Calabacillas Arroyo at Golf Course Road. AMAFCA accepts the project for maintenance on this date.

Pursuant to the contract please find attached an invoice in the amount of \$374.06 for Construction Inspection Services. All other conditions of the Agreement have been met.

Sincerely,
AMAFCA

John P. Kelly, PE
Executive Engineer

Fax copy to: Advanced Engineering and Consulting, LLC - 505-897-4996
Tierra West, LLC - 505-858-1118
Brad Bingham - COA - 505-924-3864