

## DRAINAGE INFORMATION SHEET

PROJECT TITLE: COMMUNICATIONS CENTER ZONE ATLAS/DRNG. FILE #: L-8/D11A1

DRB #: \_\_\_\_\_ EPC #: \_\_\_\_\_ WORK ORDER #: \_\_\_\_\_

LEGAL DESCRIPTION: LOTS 2 THRU 5, BLOCK 8 LANDS OF THE ATRISCO GRANT

CITY ADDRESS: NORTH OF EUCARIZ BETWEEN 114TH AND 118TH STREETS

ENGINEERING FIRM: TIERRA WEST DEV. MAGT. SER. CONTACT: RONALD R. BOHANNAN

ADDRESS: 4421 McCleod Rd. NE Suite D, 87109 PHONE: (505) 883-7592

OWNER: CITY OF ALBUQUERQUE CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

ARCHITECT: VAN GILBERT ARCHITECTS CONTACT: JIM GRAFF

ADDRESS: 319 CENTRAL AVE. NW PHONE: (505) 247-9955

SURVEYOR: Precision Surveys CONTACT: Larry Medrano

ADDRESS: 2929 Coors Blvd, N.W. Suite 105 PHONE: (505) 839-0569

CONTRACTOR: \_\_\_\_\_ 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 PROVIDED

## CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAN 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

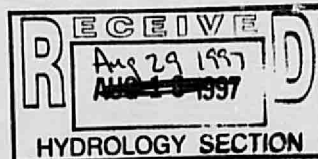
☒ GRADING PERMIT APPROVAL

☐ PAVING PERMIT APPROVAL

☐ S. A. D. DRAINAGE REPORT

☐ DRAINAGE REQUIREMENTS

☐ OTHER

DATE SUBMITTED: 08/28/97BY: SARA McCOLLAM



**Tierra West, LLC**

---

August 28, 1997

Mrs. Lisa Manwill  
City of Albuquerque  
P.O. Box 1293  
Albuquerque, NM 87103

Re: Communications Center (L8-D11A1)

Dear Mrs. Manwill:

We are resubmitting the Communications Center due to changes in the grades and the storm sewer system. The grades have been changed at the request of the architect. The grades have been lowered on the east side of the site. The doors on the north and south of the building were changed to second level doors. This required regrading and additional retaining walls. As a result of the grade changes, the storm drain system has been modified. We also included the foundation drainage system on the Grading and Drainage Plan. The drainage report and the Grading and Drainage Plan have been included for your review and approval.

If you have any questions regarding this matter, please do not hesitate to call me.

Sincerely,

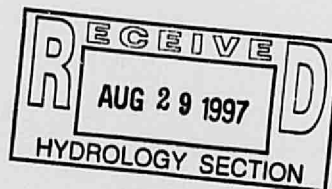
Sara McCollam

Enclosures

cc: Jim Graff

JN: 970004  
scm

970004: resubmit2 ltr



4421 McLeod Rd. NE, Suite D • Albuquerque, NM 87109 • (505) 883-7592  
fax (505) 883-7034 • e-mail: twdms@aol

**DRAINAGE REPORT**

for

**Communication Center**


Prepared by


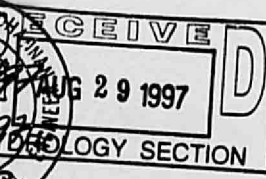
Tierra West Development Management Services  
4421 McLeod Road NE, Suite D  
Albuquerque, New Mexico 87109

Prepared for

Van Gilbert Architects  
319 Central Ave, NW  
Albuquerque, New Mexico 87102

June 1997

  
Ronald R. Bohannon P.E. No. 7888

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**Location**

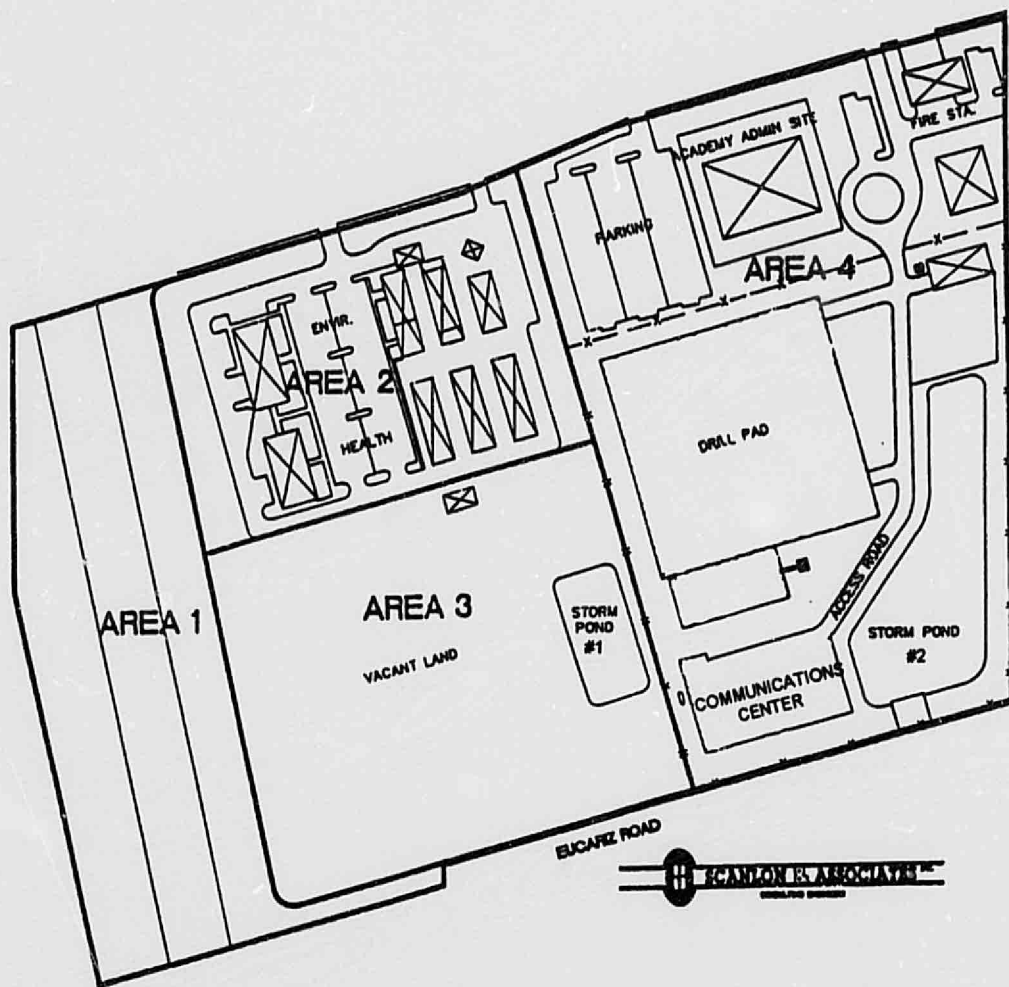
The site is located south of Sunset Gardens Road between 118<sup>th</sup> Street and 114<sup>th</sup> Street. The site is shown on the attached Zone Atlas Map L-8 and contains approximately 1.79 acres. The site is a portion of a larger City facility located on this tract. The City is proposing to build a 16,000 SF Communications Center located on the south side of the firefighter's drill pad. The purpose of this report is to provide the drainage analysis and management plan for the continued development of the City Yard.

**Existing Drainage Conditions**

The site is part of an approved master plan prepared by Scanlon & Associates (L8-D11). The master plan divides the site into four areas as shown on the attached exhibit. Area 1 is undeveloped and drains south with no restrictions. Areas 2 and 3 will drain to Storm Pond 1. Area 4, which includes the Communications Center, will drain to Storm Pond 2. Storm Pond 1 overflows into Storm Pond 2 through an existing 18" RCP pipe. Storm Pond 2 is a retention pond and does not discharge any runoff.

The master plan calls for the area where the Communications Center is located, to drain to a retention pond (Storm Pond 2) located directly east of our site. We will continue to follow the master plan with this site. Currently, the site drains east towards the retention pond with an undeveloped runoff flow of 3.69 cfs.

There are no offsite flows entering the site. The existing drainage ponds on the east and west of the site contain the flows from those directions. Flows from the south are captured by an existing swale and routed east to the retention pond. Flows to the north are intercepted by a firefighter training pond. Flows north of the site, in the entrance road, are conveyed via an



ONSITE DRAINAGE AREAS

existing valley gutter to the retention pond.

#### **FEMA Map and Soil Conditions**

The site is located on FEMA Map section 35001C0306 D as shown on the attached excerpt. The map shows that the site does not lie within any 100-year flood plains.

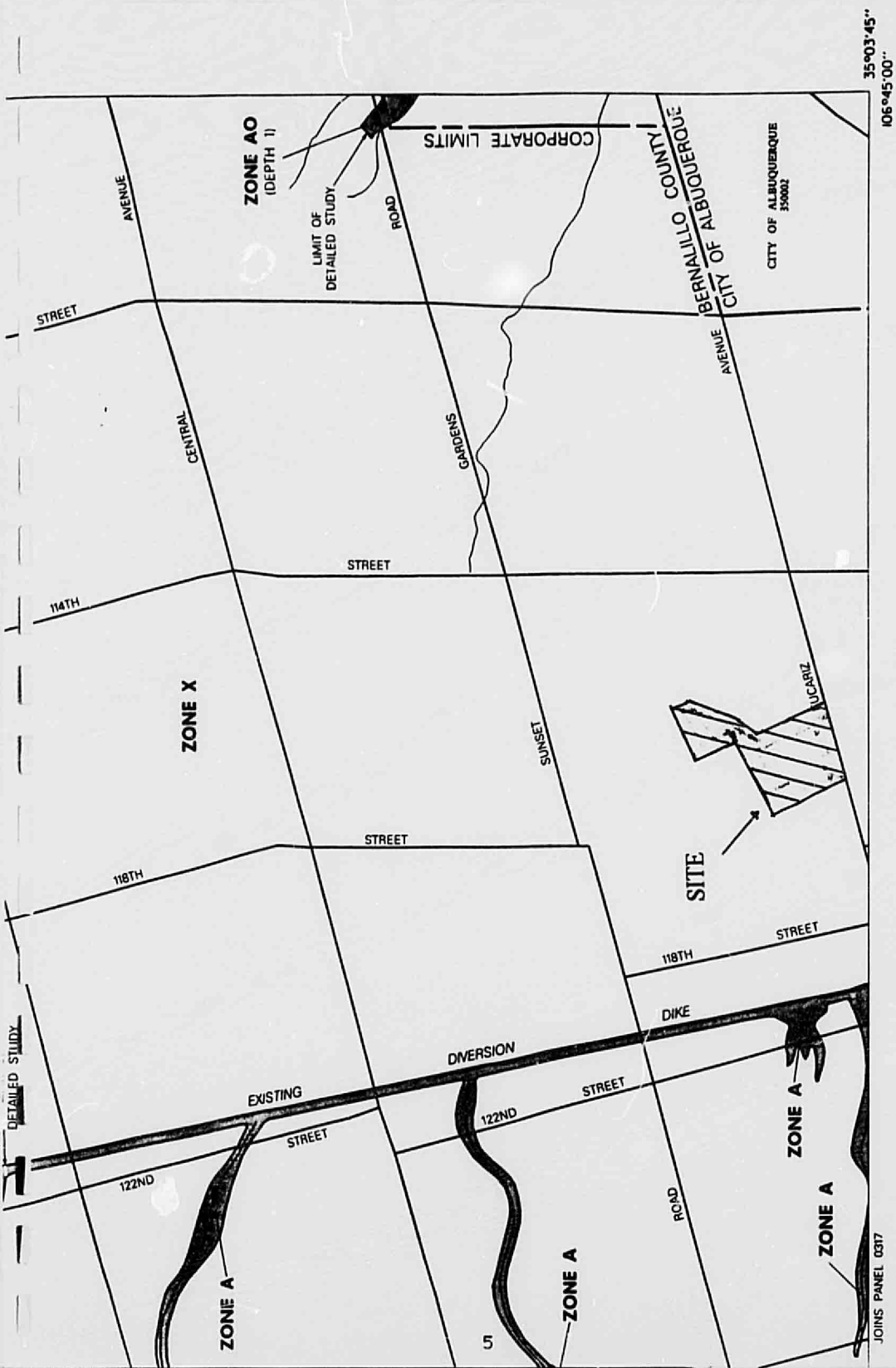
The site contains two different soil types from the Soil Conservation Service Soil Survey of Bernalillo County. One of the soils is a Madurez loamy fine sand. It has slow runoff and the hazard of soil blowing is severe. This soil also has moderate permeability. The second soil is a Bluepoint-Kokan association. These soils have slow runoff and the hazard of water erosion is moderate or severe. The Bluepoint-Kokan association has rapid permeability.

#### **On-Site Drainage Management Plan**

There are three proposed basins in Area 4, where the Communications Center is located. Basins 1 and 2 are on the Communications Center site. Basin 3 is north of the Communications Center and includes the balance of Area 4. The runoff from Basin 3 drains to a existing concrete channel and is routed into the retention pond. Runoff from Basin 3 does not impact the Communications Center.

Basin 1 has a runoff flow of 5.34 cfs and will drain to a single 'D' drop inlet. The flow will be carried from the proposed drop inlet to an existing catch basin in a 12" RCP pipe. The flow from Basin 1 will be limited to 4.57 cfs by a 10" orifice plate. Basin 2 has a developed runoff flow of 2.15 cfs and will also drain to a single 'D' drop inlet. This drop inlet will also drain to the existing catch basin via a 12" RCP pipe. The total developed flow entering the retention pond will be limited to 6.72 cfs which is less than the 7.35 cfs allowable. The existing catch basin

0000 0000 0178



FEMA MAP 35001C0309 D

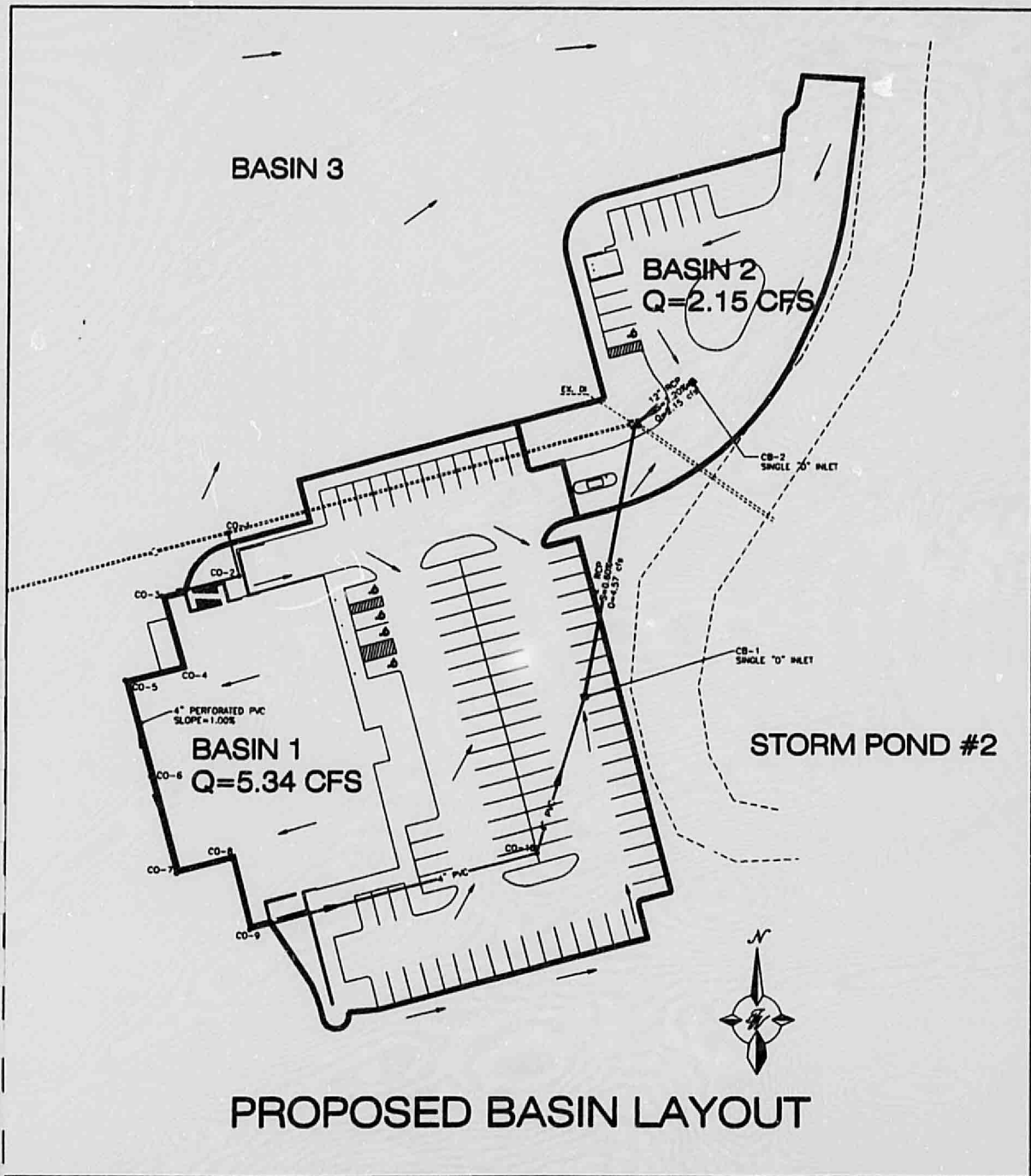


drains to the existing retention pond by an existing 24" RCP pipe. The existing 24" RCP pipe has capacity for 46.49 cfs. Currently only 29.91 cfs is being conveyed through the pipe. The developed conditions will increase the flow in the pipe to 36.63 cfs, which the pipe has capacity for.

#### Summary

The site follows the approved master plan for the area. There are two developed basins on the Communications Center site. These basins will drain to two proposed drop inlets located within each basin. The drop inlets will drain via two 12" RCP pipes to an existing catch basin. The total developed flow entering the retention pond will be limited to 6.72 cfs, which is less than the 7.35 cfs allowable. The developed runoff will then be conveyed by a 24" RCP pipe to the existing retention pond located to the east of the site. The existing 24" pipe has capacity for 46.49 cfs, but it will only be carrying 36.63 cfs with the developed flows.





**RUNOFF CALCULATIONS**

The site is @ Zone 1

**LAND TREATMENT**

*Proposed*

B = 10%

D = 90 %

*Existing*

B = 100%

**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**

$P_{60} = 1.87 \times 0.667$   
 $= 1.25$  inches

$P_{360} = 1.47$

$P_{1440} = 1.77$

See the summary output from AHYMO calculations.

Also see the following summary tables.

**Runoff  
Summary Tables  
for  
Proposed and Existing  
Drainage Basins**

**DRAINAGE BASINS**

BASIN	AREA (SF)	AREA (AC)	AREA (MI <sup>2</sup> )
1	55744.78	1.2797	0.002000
2	22348.07	0.5130	0.000802

**RUNOFF CALCULATION RESULTS***Existing*

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	2.63	0.99	0.071	0.024
2	1.06	0.4	0.029	0.01

*Proposed*

SUB-BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	5.34	3.46	0.196	0.121
2	2.15	1.39	0.079	0.049

## Pipe Capacity

### Manning's Equation:

$$Q = 1.49/n \cdot A \cdot R^{2/3} \cdot S^{1/2}$$

$A$  = Area  
 $R$  =  $D/4$   
 $S$  = Slope  
 $n$  = 0.013

### EXISTING PIPE CAPACITIES

Pipe	D (in)	Slope (%)	Area (ft <sup>2</sup> )	R	Q Provided (cfs)	Q Required (cfs)	Velocity (ft/s)
1	18	4.6	1.77	0.375	22.59	—	0.00
2	12	4.2	0.79	0.25	7.32	—	0.00
3	24	4.2	3.14	0.5	46.49	—	0.00

The existing Pipe 3 drains from the existing drop inlet to the existing retention pond. This pipe has capacity for 46.49 cfs. The pipe is currently only carrying 29.91 cfs. The proposed conditions will add 6.72 cfs to the existing pipe. This is a total of 36.63 cfs. The existing 24" has capacity for the additional flow.

**STORM DRAIN INLET**  
**EFFECTIVE AREA ASSUMING A 50% CLOGGING FACTOR**

**SINGLE 'D':**

Area at the grate:

$$\begin{aligned} L &= 38.375" - 7 (1/2" \text{ middle bars}) \\ &= 34.875" \\ &= 2.906' \end{aligned}$$

$$\begin{aligned} W &= 25.5" - 13 (1/2" \text{ middle bars}) \\ &= 19" \\ &= 1.583' \end{aligned}$$

$$\begin{aligned} \text{Area} &= 1.583' \times 2.906' \\ &= 4.601 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} \text{Effective Area} &= 4.601 - 0.5 (4.601) \\ &= 2.30 \text{ ft}^2 \end{aligned}$$

$$\text{Effective Area} = 2.30 \text{ ft}^2$$



**DROP INLET #1  
HEAD CAPACITY**

Orifice Equation:

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

Q = Flow (cfs)

C = 0.60

A = Area of drop inlet (ft<sup>2</sup>)

g = 32.2

H = Height of water above drop inlet (ft)

$$H = \frac{\left(\frac{Q}{C \cdot A}\right)^2}{2g}$$
$$H = \frac{\left(\frac{5.34}{0.6 \cdot 2.30}\right)^2}{2 \cdot 32.2}$$

H = 0.23 feet

Allowable depth = 0.50 feet

Required depth = 0.23 feet

0.23 feet &lt; 0.50 feet

## DROP INLET #2 HEAD CAPACITY

Orifice Equation:

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

Q = Flow (cfs)

C = 0.60

A = Area of drop inlet (ft<sup>2</sup>)

g = 32.2

H = Height of water above drop inlet (ft)

$$H = \frac{\left(\frac{Q}{C \cdot A}\right)^2}{2g}$$
$$H = \frac{\left(\frac{2.15}{0.6 \cdot 2.30}\right)^2}{2 \cdot 32.2}$$

H = 0.038 feet

Allowable depth = 0.50 feet

Required depth = 0.038 feet

0.038 feet < 0.50 feet

# VOLUME CALCULATIONS

## PARKING LOT POND

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 = 6.80 (@ Elevation 5325.71)

At = 1,125.53 (@ Elevation 5326.26)

Dt = 0.50

C = 2237.46

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
22.71	0	0	0.0000
25.71	3	0.0005	4.2210
25.81	3.1	0.0007	4.3019
25.91	3.2	0.0015	4.3813
26.01	3.3	0.0028	4.4593
26.11	3.4	0.0046	4.5360
26.21	3.5	0.0070	4.6114
26.26	3.55	0.0083	4.6486

### Orifice Equation

$$Q = \text{CA} \sqrt{2gH}$$

C = 0.6

Diameter (in) 10

Area (ft<sup>2</sup>)= 0.545415

g = 32.2

H (ft) = Depth of water above center of orifice

Q (cfs)= Flow

\*\*\*\*\*  
 \* COMMUNICATIONS CENTER \*  
 \*\*\*\*\*  
 \* 100-YEAR, 6-HR STORM (PONDING CALCULATIONS) \*  
 \*\*\*\*\*

START TIME=0.0

\* ROUTE 1

\* BASIN 1

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN  
 RAIN ONE=1.87 IN RAIN SIX=2.20 IN  
 RAIN DAY=2.66 IN DT=0.02253 HR  
 ID=1 HYD NO=101.1 AREA=0.002 SQ MI  
 PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00  
 TP=-0.1333 HR MASS RAINFALL=-1

\* BASIN 1 PONDING

ROUTE RESERVOIR

ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24  
 OUTFLOW(CFS) STORAGE(AC-FT) ELEVATION(FT)  
 0.0000 0.0000 22.71  
 4.2210 0.0005 25.71  
 4.3019 0.0007 25.81  
 4.3813 0.0015 25.91  
 4.4593 0.0028 26.01  
 4.5360 0.0046 26.11  
 4.6114 0.0070 26.21  
 4.6486 0.0083 26.26

FINISH

0000 0000 0193

ANYMO SUMMARY TABLE (ANYMO194) - AMAFCA Hydrologic Model - January, 1994  
 INPUT FILE = a:pond.dat

RUN DATE (MON/DAI/YR) =08/19/1997  
 USER NO. = R\_BOHANN.101

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	101.10	-	1	.00200	5.34	.196	1.83567	1.510	4.174	PER IMP= 90.00
ROUTE RESERVOIR	501.10	1	2	.00200	4.57	.196	1.83554	1.555	3.568	AC-F7= .006
FINISH										

0000 0000 0194

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

RUN DATE (MON/DAY/YR) = 08/27/1997

START TIME (HR:MIN:SEC) = 10:25:04 USER NO. = R\_BOHANN.101

INPUT FILE = A:POND.DAT

```
*****
* COMMUNICATIONS CENTER *
*****
* 100-YEAR, 6-HR STORM (PONDING CALCULATIONS) *
*****
```

START TIME=0.0

\* ROUTE 1

\* BASIN 1

\* RAINFALL

```
TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.87 IN RAIN SIX=2.20 IN
RAIN DAY=2.66 IN DT=0.02253 HR
```

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

DT =	.022530 HOURS			END TIME = 5.992981 HOURS		
.0000	.0011	.0022	.0033	.0045	.0056	.0068
.0080	.0092	.0105	.0117	.0130	.0143	.0156
.0169	.0183	.0197	.0211	.0225	.0240	.0255
.0270	.0286	.0301	.0318	.0334	.0351	.0368
.0386	.0404	.0423	.0442	.0461	.0481	.0502
.0523	.0545	.0567	.0590	.0614	.0639	.0664
.0691	.0718	.0747	.0779	.0814	.0852	.0890
.0931	.1009	.1168	.1389	.1682	.2060	.2533
.3113	.3814	.4648	.5627	.6765	.8073	.9567
1.1258	1.2045	1.2601	1.3098	1.3554	1.3977	1.4374
1.4748	1.5103	1.5441	1.5763	1.6070	1.6365	1.6648
1.6919	1.7180	1.7432	1.7673	1.7906	1.8131	1.8348
1.8557	1.8758	1.8953	1.9141	1.9322	1.9468	1.9509
1.9548	1.9586	1.9623	1.9659	1.9693	1.9727	1.9759
1.9791	1.9822	1.9852	1.9881	1.9910	1.9938	1.9965
1.9992	2.0018	2.0043	2.0068	2.0093	2.0117	2.0141
2.0164	2.0187	2.0209	2.0231	2.0253	2.0274	2.0295
2.0316	2.0336	2.0356	2.0376	2.0396	2.0415	2.0434
2.0453	2.0471	2.0489	2.0507	2.0525	2.0543	2.0560
2.0577	2.0594	2.0611	2.0627	2.0644	2.0660	2.0676
2.0692	2.0708	2.0723	2.0738	2.0754	2.0769	2.0784
2.0798	2.0813	2.0828	2.0842	2.0856	2.0870	2.0884
2.0898	2.0912	2.0925	2.0939	2.0952	2.0965	2.0979
2.0992	2.1005	2.1017	2.1030	2.1043	2.1055	2.1068
2.1080	2.1092	2.1104	2.1117	2.1129	2.1140	2.1152
2.1164	2.1176	2.1187	2.1199	2.1210	2.1221	2.1233
2.1244	2.1255	2.1266	2.1277	2.1288	2.1299	2.1310
2.1320	2.1331	2.1341	2.1352	2.1362	2.1373	2.1383
2.1393	2.1404	2.1414	2.1424	2.1434	2.1444	2.1454
2.1464	2.1473	2.1483	2.1493	2.1502	2.1512	2.1522
2.1531	2.1541	2.1550	2.1559	2.1569	2.1578	2.1587
2.1596	2.1605	2.1614	2.1623	2.1632	2.1641	2.1650
2.1659	2.1668	2.1677	2.1685	2.1694	2.1703	2.1711
2.1720	2.1728	2.1737	2.1745	2.1754	2.1762	2.1770
2.1779	2.1787	2.1795	2.1803	2.1812	2.1820	2.1828
2.1836	2.1844	2.1852	2.1860	2.1868	2.1876	2.1883
2.1891	2.1899	2.1907	2.1915	2.1922	2.1930	2.1938



2.1945 2.1953 2.1960 2.1968 2.1975 2.1983 2.1990  
2.1998

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.002 SQ MI  
PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00  
TP=-0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 7.1065 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 1.8700  
AREA = .001800 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .022530

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448  
UNIT PEAK = .49075 CFS UNIT VOLUME = .9721 B = 327.09 P60 = 1.8700  
AREA = .000200 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .022530

\* BASIN 1 PONDING  
\*

ROUTE RESERVOIR	ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	22.71
		4.2210	0.0005	25.71
		4.3019	0.0007	25.81
		4.3813	0.0015	25.91
		4.4593	0.0028	26.01
		4.5360	0.0046	26.11
		4.6114	0.0070	26.21
		4.6486	0.0083	26.26

\* \* \* \* \*

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	22.71	.000	.00
.54	.00	22.71	.000	.00
1.08	.00	22.71	.000	.00
1.62	3.34	26.00	.003	4.45
2.16	.62	23.15	.000	.62
2.70	.10	22.78	.000	.10
3.24	.04	22.74	.000	.04
3.79	.03	22.73	.000	.03
4.33	.03	22.73	.000	.03
4.87	.03	22.73	.000	.03
5.41	.03	22.73	.000	.03
5.95	.04	22.74	.000	.04
6.49	.00	22.71	.000	.00

PEAK DISCHARGE = 4.567 CFS - PEAK OCCURS AT HOUR 1.55  
MAXIMUM WATER SURFACE ELEVATION = 26.151  
MAXIMUM STORAGE = .0056 AC-FT INCREMENTAL TIME = .022530HRS

\*  
\*

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 10:25:05

**AHYMO  
Runoff Input  
and  
Summary Output  
for  
Proposed and Existing  
Drainage Basins**

\*\*\*\*\*  
 \* COMMUNICATION CENTER \*

\*\*\*\*\*  
 \* 100-YEAR, 6-HR STORM (UNDER PROPOSED CONDITIONS) \*

\*  
 START TIME=0.0

\*  
 \* BASIN 1

\*  
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN  
 RAIN ONE=1.87 IN RAIN SIX=2.20 IN  
 RAIN DAY=2.66 IN DT=0.02253 HR  
 COMPUTE NM HYD ID=1 HYD NO=100.1 AREA=0.002 SQ MI  
 PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00  
 TP=-0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=1 CODE=1

\*  
 \* BASIN 2

\*  
 COMPUTE NM HYD ID=1 HYD NO=100.2 AREA=0.000802 SQ MI  
 PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00  
 TP=-0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=1 CODE=1

\*\*\*\*\*  
 \* 10-YEAR, 6-HR STORM (UNDER PROPOSED CONDITIONS) \*

\*  
 START TIME=0.0

\*  
 \* BASIN 1

\*  
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN  
 RAIN ONE=1.25 IN RAIN SIX=1.47 IN  
 RAIN DAY=1.77 IN DT=0.02253 HR  
 COMPUTE NM HYD ID=1 HYD NO=110.1 AREA=0.002 SQ MI  
 PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00  
 TP=-0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=1 CODE=1

\*  
 \* BASIN 2

\*  
 COMPUTE NM HYD ID=1 HYD NO=110.2 AREA=0.000802 SQ MI  
 PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00  
 TP=-0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=1 CODE=1

\*  
 \*  
 FINISH

ANYMO SUMMARY TABLE (ANYMO194) - ANAFCA Hydrologic Model - January, 1994  
 INPUT FILE = A:P.DAT

RUN DATE (MON/DAY/YR) = 06/04/1997  
 USER NO. = R\_BOHANN.101

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 NH HYD	100.10	-	1	.00200	5.34	.196	1.83567	1.510	4.174	PER IMP= 90.00
COMPUTE NH HYD	100.20	-	1	.00080	2.15	.079	1.83567	1.510	4.193	PER IMP= 90.00
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
COMPUTE NH HYD	110.10	-	1	.00200	3.46	.121	1.13632	1.510	2.702	PER IMP= 90.00
COMPUTE NH HYD	110.20	-	1	.00080	1.39	.049	1.13631	1.510	2.712	PER IMP= 90.00
FINISH										

```
*****
* COMMUNICATION CENTER *
*****
* 100-YEAR, 6-HR STORM (UNDER EXISTING CONDITIONS) *
*****
```

```
*
START TIME=0.0
*
```

```
* BASIN 1
*
```

```
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.87 IN RAIN SIX=2.20 IN
RAIN DAY=2.66 IN DT=0.02253 HR
COMPUTE NM HYD ID=1 HYD NO=100.1 AREA=0.002 SQ MI
PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
TP=-0.1333 HR MASS RAINFALL=-1
```

```
PRINT HYD ID=1 CODE=1
*
```

```
* BASIN 2
*
```

```
COMPUTE NM HYD ID=1 HYD NO=100.2 AREA=0.000802 SQ MI
PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
TP=-0.1333 HR MASS RAINFALL=-1
```

```
PRINT HYD ID=1 CODE=1
*
```

```
*****
* 10-YEAR, 6-HR STORM (UNDER EXISTING CONDITIONS) *
*****
```

```
*
START TIME=0.0
*
```

```
* BASIN 1
*
```

```
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.25 IN RAIN SIX=1.47 IN
RAIN DAY=1.77 IN DT=0.02253 HR
COMPUTE NM HYD ID=1 HYD NO=110.1 AREA=0.002 SQ MI
PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
TP=-0.1333 HR MASS RAINFALL=-1
```

```
PRINT HYD ID=1 CODE=1
*
```

```
* BASIN 2
*
```

```
COMPUTE NM HYD ID=1 HYD NO=110.2 AREA=0.000802 SQ MI
PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
TP=-0.1333 HR MASS RAINFALL=-1
```

```
PRINT HYD ID=1 CODE=1
*
```

```
*
```

```
FINISH
```

0000 0000 0200

ANYMO SUMMARY TABLE (ANYMO194) - AMAFCA Hydrologic Model - January, 1994  
 INPUT FILE = A:E.DAT

RUN DATE (MON/DAY/YR) = 06/04/1997  
 USER NO. = R\_BOHANN.101

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										
RAINFALL TYPE= 1										TIME= .00
COMPUTE NM HYD	100.10	-	1	.00200	2.63	.071	.66800	1.532	2.055	RAIN6= 2.200
COMPUTE NM HYD	100.20	-	1	.00080	1.06	.029	.66800	1.532	2.064	PER IMP= .00
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
COMPUTE NM HYD	110.10	-	1	.00200	.99	.024	.22418	1.532	.770	PER IMP= .00
COMPUTE NM HYD	110.20	-	1	.00080	.40	.010	.22418	1.532	.773	PER IMP= .00
FINISH										





Martin J. Chávez, Mayor

October 9, 1997

Ronald Bohannon, P.E.  
Tierra West  
4421 McLeod NE  
Albuquerque, NM 87109

**RE: COMMUNICATIONS CENTER (L8-D11A1). GRADING AND DRAINAGE PLAN FOR  
SITE DEVELOPMENT AND BUILDING PERMIT APPROVALS. ENGINEER'S  
STAMP DATED SEPTEMBER 24, 1997.**

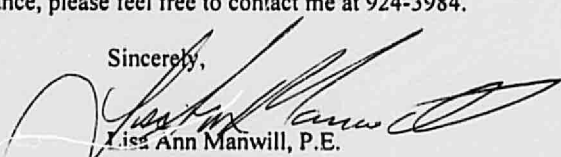
Dear Mr. Bohannon:

Based on the information provided on your September 24, 1997 submittal, the above referenced project is approved for Site Development and Building Permit.

An Engineer's Certification will be required prior to Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

  
Lisa Ann Manwill, P.E.  
Hydrology

c: Andrew Garcia  
File

Good for You, Albuquerque!





September 17, 1997

Martin J. Chávez, Mayor

Ronald Bohannon, P.E.  
Tierra West  
4421 McLeod NE  
Albuquerque, NM 87109

**RE: COMMUNICATIONS CENTER (L8-D11A1). UPDATED GRADING AND DRAINAGE  
PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED  
AUGUST 28, 1997.**

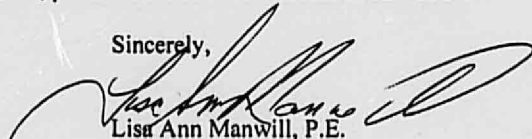
Dear Mr. Bohannon:

Based on the information provided on your August 29, 1997 submittal, City Hydrology has the following comments:

1. Label all storm drain pipe (new and existing).
2. Label all inlets, cleanouts, and manholes (new and existing).
3. Use a minimum of 6-inch storm drain pipe.
4. The master plan indicates that Pond #2 is actually a detention facility with a very small release rate.
5. This project is located out of City limits. The project should be reviewed and accepted by Bernalillo County.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,



Lisa Ann Manwill, P.E.  
Hydrology

c: Andrew Garcia  
File

Good for You, Albuquerque!





July 9, 1997

Martin J. Chávez, Mayor

Ronald Bohannon, P.E.  
Tierra West  
4421 McCleod Rd. NE  
Suite D  
Albuquerque, NM 87109

**RE: COMMUNICATIONS CENTER (L8-D11A1). DRAINAGE REPORT FOR SITE DEVELOPMENT PLAN (FOR BUILDING PERMIT), BUILDING PERMIT, AND GRADING PERMIT APPROVALS. ENGINEER'S STAMP DATED JULY 7, 1997.**

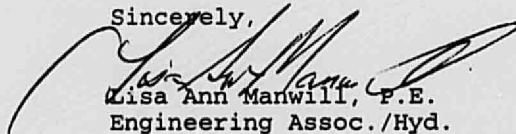
Dear Mr. Bohannon:

Based on the information provided on your July 8, 1997 submittal, the above referenced project is approved for Site Development Plan for Building Permit and Building Permit.

An Engineer's Certification will be required prior to Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,



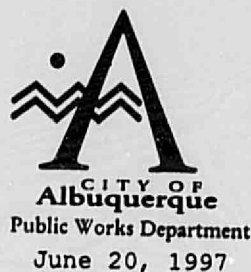
Lisa Ann Marwill, P.E.  
Engineering Assoc./Hyd.

c: Andrew Garcia  
File

Good for You, Albuquerque!

P.O. Box 1203, Albuquerque, New Mexico 87103





Martin J. Chávez, Mayor

Robert E. Gurulé, Director

Ronald Bohannon, P.E.  
Tierra West  
4421 McCleod Rd. NE  
Suite D  
Albuquerque, NM 87109

RE: COMMUNICATIONS CENTER (L8-D11A1). DRAINAGE REPORT FOR SITE DEVELOPMENT PLAN (FOR BUILDING PERMIT), BUILDING PERMIT, AND GRADING PERMIT APPROVALS. ENGINEER'S STAMP DATED JUNE 9, 1997.

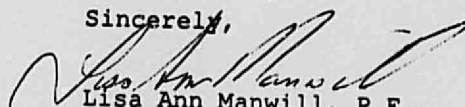
Dear Mr. Bohannon:

Based on the information provided on your June 16, 1997 submittal, City Hydrology has the following comments:

1. The master plan indicates that Pond #2 actually has a very small release rate of 0.75 cfs. The reason for the low release rate is due to no storm drain facility in the vicinity. In other words, this pond is supposed to be a "temporary" retention pond. Please discuss any proposed or existing storm drain facilities in this area since the master plan was published.
2. Discuss pond capacity. It appears to me, that you are slightly above the allowable discharge for this area.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

  
Lisa Ann Manwill, P.E.  
Engineering Assoc./Hyd.

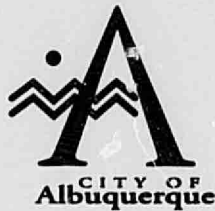
c: Andrew Garcia  
File

Good for You, Albuquerque!

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



0000 0000 0205



Martin J. Chávez, Mayor

December 1, 1997

Ronald Bohannon, P.E.  
Tierra West  
4421 McLeod NE  
Albuquerque, NM 87109

**RE: COMMUNICATIONS CENTER (L8-D11A1). UPDATED GRADING AND DRAINAGE  
PLAN FOR SITE DEVELOPMENT AND BUILDING PERMIT APPROVALS.  
ENGINEER'S STAMP DATED OCTOBER 31, 1997.**


Dear Mr. Bohannon:

Based on the updated information provided on your November 3, 1997 submittal, the above referenced project is approved for Site Development and Building Permit.

An Engineer's Certification will be required prior to Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,



Lisa Ann Manwill, P.E.  
Hydrology

c: Andrew Garcia  
File

Good for You, Albuquerque!



25 x 1

## DRAINAGE INFORMATION SHEET

PROJECT TITLE: COMMUNICATIONS CENTER ZONE ATLAS/DRNG. FILE #: L-8/D11A1  
 DRB #: \_\_\_\_\_ EPC #: \_\_\_\_\_ WORK ORDER #: \_\_\_\_\_  
 LEGAL DESCRIPTION: LOTS 2 THRU 5, BLOCK 6 LANDS OF THE ATRISCO GRANT  
 CITY ADDRESS: NORTH OF EUCARIZ BETWEEN 114TH AND 118TH STREETS  
 ENGINEERING FIRM: TIERRA WEST DEV. MAGT. SER. CONTACT: RONALD R. BOHANNAN  
 ADDRESS: 4421 McCleod Rd. NE Suite D, 87109 PHONE: (505) 883-7592  
 OWNER: CITY OF ALBUQUERQUE CONTACT: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_  
 ARCHITECT: VAN GILBERT ARCHITECTS CONTACT: JIM GRAFF  
 ADDRESS: 319 CENTRAL AVE. NW PHONE: (505) 247-9955  
 SURVEYOR: Precision Surveys CONTACT: Larry Medrano  
 ADDRESS: 2929 Coors Blvd, NW Suite 105 PHONE: (505) 839-0569  
 CONTRACTOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

## TYPE OF SUBMITTAL:

☒ DRAINAGE REPORT  
 \_\_\_\_\_ DRAINAGE PLAN  
 \_\_\_\_\_ CONCEPTUAL GRADING & DRAINAGE PLAN  
☒ GRADING PLAN  
 \_\_\_\_\_ EROSION CONTROL PLAN  
 \_\_\_\_\_ ENGINEER'S CERTIFICATION  
 \_\_\_\_\_ OTHER

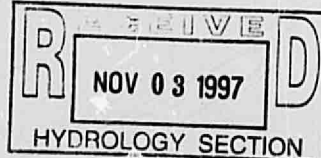
## PRE-DESIGN MEETING:

\_\_\_\_\_ YES  
☒ NO  
 \_\_\_\_\_ COPY PROVIDED

## CHECK TYPE OF APPROVAL SOUGHT:

\_\_\_\_\_ SKETCH PLAN 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  
☒ GRADING PERMIT APPROVAL  
 \_\_\_\_\_ PAVING PERMIT APPROVAL  
 \_\_\_\_\_ S. A. D. DRAINAGE REPORT  
 \_\_\_\_\_ DRAINAGE REQUIREMENTS

OTHER

DATE SUBMITTED: 11/03/97BY: SARA McCOLLAM





**Tierra West, LLC**

November 3, 1997

Mrs. Lisa Manwill  
City of Albuquerque  
P.O. Box 1293  
Albuquerque, NM 87103

Re: Communications Center (L8-D11A1)

Dear Mrs. Manwill:

We are resubmitting the grading and drainage plan for the Communications Center because of modifications that were requested by the architect, Van H. Gilbert, Inc. The slopes in the southwest corner were reduced to 5%. We also moved the retaining wall near the loading dock on the north end of the site. The foundation drainage line has been changed to 6" PVC and routed into an existing manhole. Per our discussion at the October 22, 1997, DRC meeting, the 12" RCP storm drain lines have been changed to 10" PVC. There were no changes to the drainage report.

If you have any questions regarding this matter, please do not hesitate to call me.

Sincerely,

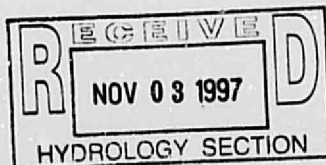
Sara McCollam

Enclosures

cc: Jim Graff

JN: 970004  
scm

970004: resuomt4.1b



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fax (505) 883-7034 • e-mail: twdms@aol



0000 0000 0208

## DRAINAGE INFORMATION SHEET

PROJECT TITLE: COMMUNICATIONS CENTER ZONE ATLAS/DRNG. FILE #: L-8/D11A1  
 DRB #: \_\_\_\_\_ EPC #: \_\_\_\_\_ WORK ORDER #: \_\_\_\_\_  
 LEGAL DESCRIPTION: LOTS 2 THRU 5, BLOCK 6 LANDS OF THE ATRISCO GRANT  
 CITY ADDRESS: NORTH OF EUCARIZ BETWEEN 114TH AND 118TH STREETS  
 ENGINEERING FIRM: TERRA WEST DEV. MAGT. SER. CONTACT: RONALD R. BOHANNAN  
 ADDRESS: 4421 McCleod Rd. NE Suite D, 87109 PHONE: (505) 883-7502  
 OWNER: CITY OF ALBUQUERQUE CONTACT: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_  
 ARCHITECT: VAN GILBERT ARCHITECTS CONTACT: JIM GRAFF  
 ADDRESS: 319 CENTRAL AVE. NW PHONE: (505) 247-9955  
 SURVEYOR: Precision Surveys CONTACT: Larry Medrano  
 ADDRESS: 2929 Coors Blvd, NW Suite 105 PHONE: (505) 839-0569  
 CONTRACTOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

## TYPE OF SUBMITTAL:

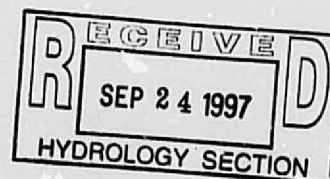
☒ DRAINAGE REPORT  
 \_\_\_\_\_ DRAINAGE PLAN  
 \_\_\_\_\_ CONCEPTUAL GRADING & DRAINAGE PLAN  
☒ GRADING PLAN  
 \_\_\_\_\_ EROSION CONTROL PLAN  
 \_\_\_\_\_ ENGINEER'S CERTIFICATION  
 \_\_\_\_\_ OTHER

## PRE-DESIGN MEETING:

\_\_\_\_\_ YES  
☒ NO  
 \_\_\_\_\_ COPY PROVIDED

## CHECK TYPE OF APPROVAL SOUGHT:

\_\_\_\_\_ SKETCH PLAN 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  
☒ GRADING PERMIT APPROVAL  
 \_\_\_\_\_ PAVING PERMIT APPROVAL  
 \_\_\_\_\_ S. A. D. DRAINAGE REPORT  
 \_\_\_\_\_ DRAINAGE REQUIREMENTS  
 \_\_\_\_\_ OTHER

DATE SUBMITTED: 09/24/97BY: SARA McCOLLAM



Tierra West, LLC

September 23, 1997

Mrs. Lisa Manwill  
City of Albuquerque  
P.O. Box 1293  
Albuquerque, NM 87103

Re: Communications Center (L8-D11A1)

Dear Mrs. Manwill:

This is a letter in response to your comments regarding the Grading and Drainage Plan for the above referenced project. At the request of the architect, Van H. Gilbert, the grading plan has been plotted on the architect's title block.

1. All the existing and new storm drains pipes have been labeled.
2. All the existing and new inlets, cleanouts, and manholes have been labeled.
3. The 4" storm drain pipe has been upgraded to 8" at the request of DRC.
4. Pond #2 is not a retention pond but a detention pond.
5. Although the project is out of the City limits, Bernalillo County has elected to have the City review the project due to the fact that the project will be owned and maintained by the City of Albuquerque.

If you have any questions regarding this matter, please do not hesitate to call me.

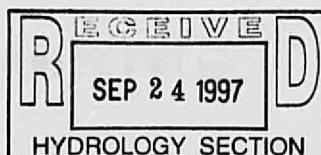
Sincerely,

  
Sara McCollam

Enclosures

cc: Jim Graff

JN: 970004  
scm



970004: resubmit3.1r

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fax (505) 883-7034 • e-mail: twdms@aol

## DRAINAGE INFORMATION SHEET

PROJECT TITLE: COMMUNICATIONS CENTER ZONE ATLAS/DRNG. FILE #: L-8/D11A1

DRB #: \_\_\_\_\_ EPC #: \_\_\_\_\_ WORK ORDER #: \_\_\_\_\_

LEGAL DESCRIPTION: LOTS 2 THRU 5, BLOCK 6 LANDS OF THE ATRISCO GRANT

CITY ADDRESS: NORTH OF EUCARIZ BETWEEN 114TH AND 118TH STREETS

ENGINEERING FIRM: TIERRA WEST DEV. MAGT. SER. CONTACT: RONALD R. BOHANNAN

ADDRESS: 4421 McCleod Rd. NE Suite D, 87109 PHONE: (505) 883-7582

OWNER: CITY OF ALBUQUERQUE CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

ARCHITECT: VAN GILBERT ARCHITECTS CONTACT: JIM GRAFF

ADDRESS: 319 CENTRAL AVE. NW PHONE: (505) 247-9955

SURVEYOR: Precision Surveys CONTACT: Larry Medrano

ADDRESS: 2929 Coors Blvd, NW Suite 105 PHONE: (505) 839-0569

CONTRACTOR: \_\_\_\_\_ 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 PLAN 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

☒ GRADING PERMIT APPROVAL

☐ PAVING PERMIT APPROVAL

☐ S. A. D. DRAINAGE REPORT

☐ DRAINAGE REQUIREMENTS

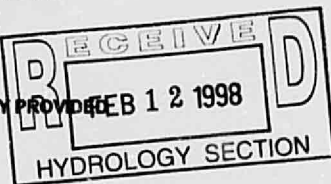
☐ OTHER

## PRE-DESIGN MEETING:

☐ YES

☒ NO

☐ COPY PROVIDED

DATE SUBMITTED: 02/13/98BY: SARA McCOLLAM

Engr. stamp date  
did not change from  
last letter: Proj  
dated 10/31/97 is still  
approved.  
CAM  
3-3-98



**Tierra West, LLC**

---

February 13, 1998

Mrs. Lisa Manwill  
City of Albuquerque  
P.O. Box 1293  
Albuquerque, NM 87103

Re: Communications Center (L8-D11A1)

Dear Mrs. Manwill:

We are resubmitting the grading and drainage plan for the Communications Center site. The only change was an update of the architect's title block. No changes were made to the previously approved plan and drainage report.

If you have any questions regarding this matter, please do not hesitate to call me.

Sincerely,



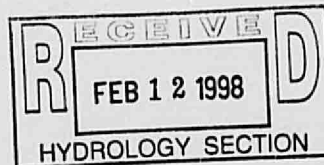
Sara McCollam

Enclosures

cc: Jim Graff

JN: 970004  
scm

970004: resubmit3.1r



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fax (505) 883-7034 • e-mail: twdms@aol



**Tierra West, LLC**

July 8, 1997

Mrs. Lisa Manwill  
City of Albuquerque  
P.O. Box 1293  
Albuquerque, NM 87103

Re: Communications Center (L8-D11A1)

Dear Mrs. Manwill:

This is a letter in response to your comments regarding the drainage report for the above referenced project.

1. There are no existing or proposed storm sewer improvements in this area since the master plan was completed. We are proposing to continue the existing drainage pattern with this project.
2. We have added an orifice plate to one of the drop inlets. This will limit the flow from the site to 7.23 cfs, which is less than the allowable of 7.35 cfs.

If you have any questions regarding this matter, please do not hesitate to call me.

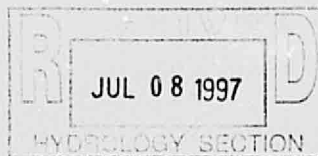
Sincerely,

Sara McCollam

Enclosures

cc: Jim Graff

JN: 970004  
scm



970004: resubmit.1r

4421 McLeod Rd. NE, Suite D • Albuquerque, NM 87109 • (505) 883-7592  
fax (505) 883-7034 • e-mail: twdms@aol