SUPPLEMENTARY INFORMATION

FOR

MILES ROAD S.E./KIRTLAND ADDITION

MASTER DRAINAGE PLAN

(REVISED MARCH, 1997)

Revised to Account for New Alignment of M. Les Road w/ Cul-de-Sac #2

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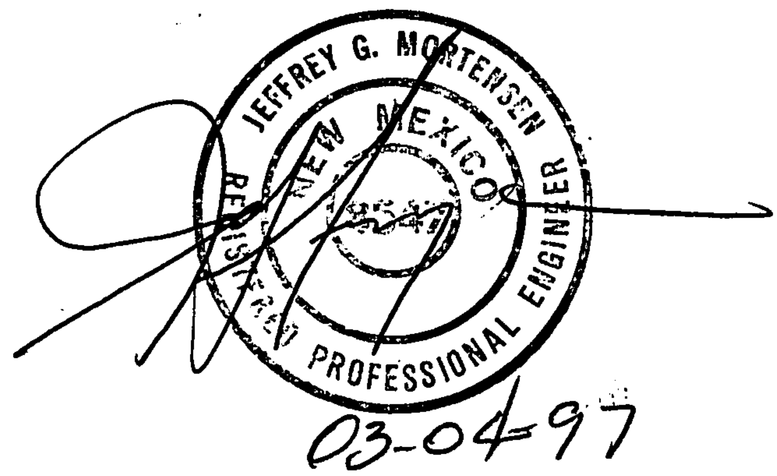


03-04-97

JMA No. 950925

BASIN A-1 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 39,835/0.91
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	39,835/0.91	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	11,555/0.26	29
D	28,280/0.65	71

Existing Condition

1. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$
E_W = 1.13 in.
$V_{100} = (E_W/12) A_T$
$V_{100} = (1.13/12)(39,835) = 3,750$ cf

2. Peak Discharge

$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$
$Q_p = Q_{100} = (3.14)(0.91) =$ 2.9 cfs

Developed Condition

1. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$
$E_W = [(0.78)(0.26) + (2.12)(0.65)]/(0.91) = 1.74$ in.
$V_{100} = (E_W/12) A_T$
$V_{100} = (1.74/12)(39,835) = 5,780$ cf

2. Peak Discharge

$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$
$Q_p = Q_{100} = (2.28)(0.26) + (4.70)(0.65) =$ 3.6 cfs

FREE to G.I.S.C.O.

Comparison

1. $\Delta V_{100} = 5,780 - 3,750 = 2,030$ cf (increase)
2. $\Delta Q_{100} = 3.6 - 2.9 = 0.7$ cfs (increase)

A-1

BASIN A-2 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 37,500/0.86
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	37,500/0.86	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	10,875/0.25	29
D	26,625/0.61	71

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.13/12)(37,500) = 3,530 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.86) = 2.7 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(0.78)(0.25) + (2.12)(0.61)]/(0.86) = 1.73 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.73/12)(37,500) = 5,410 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (2.28)(0.25) + (4.70)(0.61) = 3.4 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 5,410 - 3,530 = 1,880$ cf (increase)
2. $\Delta Q_{100} = 3.4 - 2.7 = 0.7$ cfs (increase)

A-2

BASIN B CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 59,410/1.42
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	59,410/1.42	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	16,040/0.38	27
D	43,370/1.04	73

Existing Condition

1. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$
E_W = 1.13 in.
$V_{100} = (E_W/12) A_T$
$V_{100} = (1.13/12)(59,410) = 5,590$ cf

2. Peak Discharge

$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$
$Q_p = Q_{100} = (3.14)(1.42) = 4.5$ cfs

Developed Condition

1. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$
$E_W = [(0.78)(0.38) + (2.12)(1.04)]/(1.42) = 1.76$ in.
$V_{100} = (E_W/12) A_T$
$V_{100} = (1.76/12)(59,410) = 8,710$ cf

2. Peak Discharge

$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$
$Q_p = Q_{100} = (2.28)(0.38) + (4.70)(1.04) = 5.8$ cfs

Comparison

1. $\Delta V_{100} = 8,710 - 5,590 = 3,120$ cf (increase)
2. $\Delta Q_{100} = 5.8 - 4.5 = 1.3$ cfs (increase)

B

BASIN C CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 59,100/1.36
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	57,330/1.32	97
D	1,770/0.04	03

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	7,680/0.18	13
C	9,460/0.22	16
D	41,960/0.96	71

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(1.13)(1.32) + (2.12)(0.04)]/(1.36) = 1.16 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.16/12)(59,100) = 5,710 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(1.32) + (4.70)(0.04) = 4.3 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(0.78)(0.18) + (1.13)(0.22) + (2.12)(0.96)]/(1.36) = 1.78 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.78/12)(59,100) = 8,770 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (2.28)(0.18) + (3.14)(0.22) + (4.70)(0.96) = 5.6 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 8,770 - 5,710 = 3,060$ cf (increase)
2. $\Delta Q_{100} = 5.6 - 4.3 = 1.3$ cfs (increase)

BASIN DE-1 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 52,950/1.21
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	52,950/1.21	100

5. Developed Land Treatment (Assume will develop like Tract C)

Treatment	Area (sf/ac)	%
B	7,420/0.16	14
C	9,530/0.22	18
D	36,000/0.83	68

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12)A_T$$
$$V_{100} = (1.13/12)(52,950) = 4,990 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(1.21) = 3.8 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(0.78)(0.16) + (1.13)(0.22) + (2.12)(0.83)]/(1.21) = 1.76 \text{ in.}$$
$$V_{100} = (E_W/12)A_T$$
$$V_{100} = (1.76/12)(52,950) = 7,770 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (2.28)(0.16) + (3.14)(0.22) + (4.70)(0.83) = 5.0 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 7,770 - 4,990 = 2,780$ cf (increase)
2. $\Delta Q_{100} = 5.0 - 3.8 = 1.2$ cfs (increase)

BASIN DE-2 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 5,000/0.11
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	5,000/0.11	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
D	5,000/0.11	100

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.13/12)(5,000) = 470 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.11) = 0.3 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 2.12 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (2.12/12)(5,000) = 880 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (4.70)(0.11) = 0.5 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 880 - 470 = 410$ cf (increase)
2. $\Delta Q_{100} = 0.5 - 0.3 = 0.2$ cfs (increase)

BASIN F-1 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 39,550/0.91
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	39,550/0.91	100

5. Developed Land Treatment (Same land treatments as M15/D22, IP Use)

Treatment	Area (sf/ac)	%
B	9,100/0.21	23
D	30,450/0.70	77

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.13/12)(39,550) = 3,720 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.91) = 2.9 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(0.78)(0.21) + (2.12)(0.70)]/(0.91) = 1.81 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.81/12)(39,550) = 5,970 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (2.28)(0.21) + (4.70)(0.70) = 3.8 \text{ cfs}$$

Comparison

1. ΔV_{100} = 5,97 - 3,720 = 2,250 cf (increase)
2. ΔQ_{100} = 3.8 - 2.9 = 0.9 cfs (increase)

BASIN F-2 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 29,250/0.67
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	29,250/0.67	100

5. Developed Land Treatment (Same land treatments as M15/D22, IP Use)

Treatment	Area (sf/ac)	%
B	6,730/0.15	23
D	22,520/0.52	77

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12)A_T$$
$$V_{100} = (1.13/12)(29,250) = 2,750 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.67) = 2.1 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(0.78)(0.15) + (2.12)(0.52)]/(0.67) = 1.82 \text{ in.}$$
$$V_{100} = (E_W/12)A_T$$
$$V_{100} = (1.82/12)(29,250) = 4,440 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (2.28)(0.15) + (4.70)(0.52) = 2.8 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 4,440 - 2,750 = 1,690$ cf (increase)
2. $\Delta Q_{100} = 2.8 - 2.1 = 0.7$ cfs (increase)

BASIN M CALCULATIONS

miles Road

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 58,550/1.34
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	58,550/1.34	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	7,025/0.16	12
D	51,525/1.18	88

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12)A_T$$
$$V_{100} = (1.13/12)(58,550) = 5,510 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(1.34) = 4.2 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(1.13)(0.16) + (2.12)(1.18)]/(1.34) = 2.00 \text{ in.}$$
$$V_{100} = (E_W/12)A_T$$
$$V_{100} = (2.00/12)(58,550) = 9,760 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.16) + (4.70)(1.18) = 6.0 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 9,760 - 5,510 = 4,250$ cf (increase)
2. $\Delta Q_{100} = 6.0 - 4.2 = 1.8$ cfs (increase)

ALLEY CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 3,850/0.09
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	3,850/0.09	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
D	3,850/0.09	100

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.13/12)(3,850) = 360 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.09) = 0.3 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 2.12 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (2.12/12)(3,850) = 680 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (4.70)(0.09) = 0.4 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 680 - 360 = 320$ cf (increase)
2. $\Delta Q_{100} = 0.4 - 0.3 = 0.1$ cfs (increase)

OFFSITE BASIN CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 27,300/0.63
4. Developed Land Treatment

Treatment	Area (sf/ac)	%
C	6,800/0.16	25
D	20,500/0.47	75

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(1.13)(0.16) + (2.12)(0.47)]/(0.63) = 1.87 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.87/12)(27,300) = 4,250 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.16) + (4.70)(0.47) = 2.7 \text{ cfs}$$

HYDRAULIC CALCULATIONS
TEMPORARY RUN-DOWN

Off Miles Rd Cul de Sac Inlets Built in 2005 LD

1. Curb Opening Width

   $Q = CLH^{3/2}$

   Let:
   C = 2.7
   Q = 20.4 cfs
   H = 0.67 ft (8" curb height)

   Therefore: L = 13.77 ft.
   Use 16.0 foot design width for future inlet construction

2. Minimum Channel Width
   Using Manning's Equation

   Let:
   n = 0.013
   Q = 20.4 cfs
   s = 0.0850 ft/ft
   d = 0.67 ft (8" curb height)

   Therefore: W = 1.74 ft.
   Use 10' design width to satisfy C.O.A. requirements

3. Velocity Multiplied by Depth Calculation
   Use Manning's Equation

   A. 10-Year Storm Event

      Let: $Q_{10} = 0.67\ Q_{100} = 0.67(20.4) = 13.7$ cfs

      W = 10.0 ft.
      S = 0.0850 ft/ft
      n = 0.013

      Therefore:
      d = 0.15 ft
      V = 9.1 ft/s
      Vd = 1.36 < 6.5 (per D.P.M.)

   B. 100-Year Storm Event

      Let: $Q = Q_{100} = 20.4$ cfs

      W = 10.0 ft.
      S = 0.0850 ft/ft
      n = 0.013

      Therefore:
      d = 0.19 ft
      V = 10.7 ft/s
      Vd = 2.03 < 6.5 (per D.P.M.)

DRAINAGE INFORMATION SHEET

PROJECT TITLE: MILES ROAD S.E./KIRTLAND ADDITION (FORMERLY TRACTS A-G AIRPORT CENTER) ZONE ATLAS/DRNG. FILE #: M15/D12

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

LEGAL DESCRIPTION: LOTS 1 & 9, BLOCK A, KIRTLAND ADDITION; TRACT 4-A-1 NEWPORT INDUSTRIAL PARK-WEST UNIT 2; UNPLATTED PARCELS; WALKER & MILES ROAD R.O.W.'S

CITY ADDRESS: _____

ENGINEERING FIRM: Jeff Mortensen & Assoc., Inc. CONTACT: Gary Bittner

ADDRESS: 6010-B Midway Park Blvd. N.E. PHONE: 345-4250

OWNER: VARIES CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: N/A CONTACT: _____

~~SURVEYOR: ADDRESS:~~ Jeff Mortensen & Assoc. ~~CONTACT: PHONE:~~ Chuck Cala

~~ADDRESS: SURVEYOR:~~ 6010-B Midway Park Blvd. N.E. ~~PHONE: CONTACT:~~ 345-4250

ADDRESS: _____ PHONE: _____

CONTRACTOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT

✓ DRAINAGE PLAN (MASTER)

____ CONCEPTUAL GRADING & DRAINAGE PLAN

____ GRADING PLAN

____ EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

____ OTHER

PRE-DESIGN MEETING:

____ YES

✓ NO

____ COPY PROVIDED

RECEIVED
MAR 06 1997
HYDROLOGY SECTION

CHECK TYPE OF APPROVAL SOUGHT:

✓ SKETCH PLAT APPROVAL (ANTICIPATED - FUTURE)

✓ PRELIMINARY PLAT APPROVAL (ANTICIPATED - FUTURE)

____ S. DEV. PLAN FOR SUB'D. APPROVAL

____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

____ SECTOR PLAN APPROVAL

✓ FINAL PLAT APPROVAL (ANTICIPATED - FUTURE)

____ FOUNDATION PERMIT APPROVAL

____ BUILDING PERMIT APPROVAL

____ CERTIFICATE OF OCCUPANCY APPROVAL

____ GRADING PERMIT APPROVAL

____ PAVING PERMIT APPROVAL

____ S.A.D. DRAINAGE REPORT

____ DRAINAGE REQUIREMENTS

✓ OTHER * M.D.P. UPDATE (SPECIFY)
* VACATION REQUEST

DATE SUBMITTED: 03/04/97

BY: Gary R. Bittner GRB

City of Albuquerque

July 19, 2000

Jeff Mortensen, P.E.
Mr. Graeme Means
Jeff Mortensen & Associates, Inc.
6010 B Midway Park Blvd., NE
Albuquerque, NM 87109

RE: GRADING & DRAINAGE PLAN FOR TRACTS B-2 AND C-1 AIRPORT CENTER (M-15/D012), ENGINEER'S STAMP DATED 07/18/2000, SUBMITTED FOR PAVING PERMIT APPROVAL

Dear Mr. Mortensen,

Based upon the information provided in your July 19, 2000, submittal, the project referred to above is approved for paving permit.

Once the construction is complete, an Engineer Certification, per the DPM checklist, will be required.

If you have any questions, please call me at 924-3988.

Sincerely,

Stuart Reeder, P.E.

Stuart Reeder, P.E.
Hydrology Division

xc: Whitney Reierson
File

JMA # 96.024.3
97.050.5

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Tracts B-2 and C-1, Airport Center **ZONE ATLAS/DRNG. FILE #:** M-15/D12

DRB #: **EPC #:** **WORK ORDER #:**

LEGAL DESCRIPTION: Tracts B-2 and C-1, Airport Center

CITY ADDRESS: Miles Road S.E

ENGINEERING FIRM:	Jeff Mortensen & Associates, Inc.	**CONTACT:**	J. Graeme Means
ADDRESS:	6010-B Midway Pk. N.E., Albuquerque, NM 87109	**PHONE:**	(505)345-4250
OWNER:	Southwest Realty Investment	**CONTACT:**	John L.
ADDRESS:	2909 Yale S.E	**PHONE:**	843-7633
ARCHITECT:	N/A	**CONTACT:**	
ADDRESS:		**PHONE:**	
SURVEYOR:	Jeff Mortensen & Associates, Inc.	**CONTACT:**	Charles Cala
ADDRESS:	6010-B Midway Pk. N.E., Albuquerque, NM 87109	**PHONE:**	(505) 345-4250
CONTRACTOR:	Contact Owner	**CONTACT:**	
ADDRESS:		**PHONE:**	

TYPE OF SUBMITTAL:

- DRAINAGE REPORT
- X DRAINAGE PLAN
- CONCEPTUAL GRADING & DRAINAGE PLAN
- X GRADING PLAN
- EROSION CONTROL PLAN
- ENGINEER'S CERTIFICATION
- OTHER (LOMR)

CHECK TYPE OF APPROVAL(S) SOUGHT:

- SKETCH PLAT 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
- X PAVING PERMIT APPROVAL
- S.A.D. DRAINAGE REPORT
- DRAINAGE REQUIREMENTS
- OTHER LOMR (SPECIFY)

PRE-DESIGN MEETING:

- YES
- X NO
- COPY PROVIDED

RECEIVED
JUL 19 2000
HYDROLOGY SECTION

DATE SUBMITTED: July 19, 2000

BY: J. Graeme Means, P.E.

CITY OF
Albuquerque

April 29, 1996

Martin J. Chávez, Mayor

Jeff Mortensen
Jeff Mortensen & Assoc.
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

RE: TRACTS A-G OF AIRPORT CENTER (M15-D12) SUPPLEMENTARY INFORMATION SUBMITTED ON 4-26-96. ENGINEER'S STAMP DATED 4-25-96.

Dear Mr. Mortensen:

Based on the above referenced submittal, it is understood that if the vacation and realignment of Miles Road SE is not completed, the grading plan dated 4-25-96 will take the place of the originally approved grading plan for Preliminary Plat dated 2-15-96.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Fred Aguirre
Kevin Curran
John Lorentzen
Andrew Garcia
File

A MEMBER OF CONSULTING
ENGINEERS COUNCIL OF NEW MEXICO

JEFF MORTENSEN & ASSOCIATES, INC. ☐ ENGINEERS & SURVEYORS ☐ (505) 345-4250
6010-B MIDWAY PARK BLVD. N.E. ☐ ALBUQUERQUE ☐ NEW MEXICO 87109 ☐ FAX (505) 345-4254

950924
April 25, 1996

Master Plan
for PP
M15-D12

This will require realignment + vacation is never completed.

Ms. Lisa Manwill
Hydrology Section
Public Works Department
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

Re: Airport Center Master Drainage Plan

Dear Lisa:

As a follow-up to our meeting of April 23, 1996, we submit this letter of understanding.

It is recognized that the vacation of Miles Road S.E. and the realignment thereof, as shown on the preliminary plat, DRB 94-504, may not be completed. As a consequence, Miles Road S.E. may not connect to University Boulevard S.E. In such an event, a possible scenario is the construction of a cul-de-sac similar to that shown on the attached Exhibit "B". The construction of the cul-de-sac would not adversely impact the drainage concepts set forth by the approved Master Drainage Plan. Runoff would continue to discharge from proposed Tract C to Gibson Boulevard S.E. A valley gutter would need to be constructed across the cul-de-sac. Mr. Richard Dourte, Transportation Development, who was present at our meeting, indicated that this would not be a problem. A public drainage rundown/channel would then be constructed to link the north edge of the cul-de-sac to the south edge of Gibson Boulevard S.E.

If you should have any questions or comments concerning this correspondence, or any other aspect of this project, please do not hesitate to call. Your cooperation and assistance in this matter are greatly appreciated.

Sincerely,

JEFF MORTENSEN & ASSOCIATES, INC.

Jeffrey G. Mortensen, P.E.
President

APR 2 6 1996

JGM:dsj
Enclosures
xc: John Lorentzen w/enclosures
Jim Shepherd w/enclosures

CITY OF
Albuquerque

April 29, 1996

Martin J. Chávez, Mayor

Jeff Mortensen
Jeff Mortensen & Assoc.
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

RE: TRACTS A-G OF AIRPORT CENTER (M15-D12) SUPPLEMENTARY INFORMATION SUBMITTED ON 4-26-96. ENGINEER'S STAMP DATED 4-25-96.

Dear Mr. Mortensen:

Based on the above referenced submittal, it is understood that if the vacation and realignment of Miles Road SE is not completed, the grading plan dated 4-25-96 will take the place of the originally approved grading plan for Preliminary Plat dated 2-15-96.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Fred Aguirre
Kevin Curran
John Lorentzen
Andrew Garcia
File

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 26, 1996

Greame Means
Jeff Mortensen & Assoc.
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

RE: TRACTS A-G OF AIRPORT CENTER (M15-D12) DRAINAGE PLAN FOR PRELIMINARY PLAT APPROVAL. ENGINEER'S STAMP DATED 2-15-96.

Dear Mr. Means:

Based on the information provided on your February 16, 1996 submittal, the above referenced project is approved for Preliminary Plat.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

DRAINAGE INFORMATION SHEET

950924

PROJECT TITLE: TRACTS A-G, AIRPORT CENTER ZONE ATLAS/DRNG. FILE #: M15-D12

DRB #: 94-501 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: TRACTS A-G, AIRPORT CENTER

CITY ADDRESS: MILES RD S.E.

ENGINEERING FIRM: JMA CONTACT: T. GRAEME MEANS

ADDRESS: 6010-B MIDWAY PARK BLVD S.E. PHONE: 345-4250

OWNER: PSG LIMITED PARTNERSHIP / JOHN & LOIS ANN LORENTZEN CONTACT: ENGINEER

ADDRESS: _____ PHONE: _____

ARCHITECT: — CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: JMA CONTACT: CHUCK CALA

ADDRESS: _____ PHONE: 345-4250

CONTRACTOR: — CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
X DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION
____ OTHER

PRE-DESIGN MEETING:

____ YES
X NO
____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
X 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
X OTHER VACATION (SPECIFY)

DATE SUBMITTED: 02/16/96

BY: T. GRAEME MEANS

RECEIVED
FEB 16 1996
HYDROLOGY SECTION

SUPPLEMENTARY INFORMATION

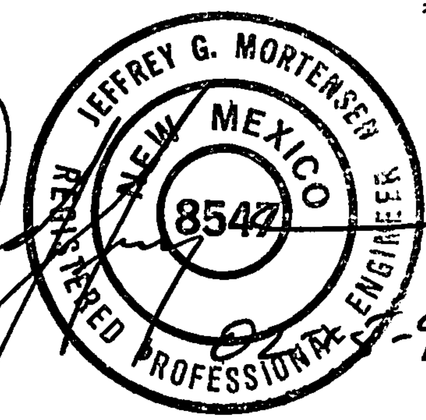
FOR

TRACTS A-G, AIRPORT CENTER

MASTER DRAINAGE PLAN

(Revised 2/15/96)

TABLE OF CONTENTS



JMA No. 950924

JMA No. 940868
D.R.B. Case No. 94-501
D.R.C. Project No.
Date Submitted 02-20-96
Prelim. Plat Approved
Prelim. Plat Expires

EXHIBIT "A"
to Subdivision Improvements Agreement

DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LISTING
for Tracts A through G, Airport Center

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Location	Size		Type Improvement	From	To
Gibson Blvd SE	N/A		Temporary Busbay		
	12'		Temporary Decel Lane		
	24'	*	Roadway (Exit onto Miles)	Gibson Blvd SE	Miles Rd S.E.
Miles Road SE	12'	*	Roadway (Exit onto Gibson)	Miles Rd. SE	Gibson Blvd SE
	N/A		Std. C & G (Both Sides)	University Blvd. S.E.	N.E. Corner Tract F
	40'FF		Arterial Paving	University Blvd. S.E.	N.E. Corner Tract F
	6'		Sidewalk (Both Sides)	University Blvd. S.E.	N.E. Corner Tract F
Tract E	N/A		Relocate existing fire hydrant to common lot line of Tracts D & E at Miles Road S.E.		

DEFERRED CONSTRUCTION:

Gibson Blvd SE	6'		Sidewalk (S. Side)	University Blvd. S.E.	N.E. Corner Tract A
	12'		Permanent Decel Lane		

* Subject to approval by UTPPB

Prepared by:
Print Name: J. Graeme Means, E.I.T.
Firm: Jeff Mortensen & Associates, Inc.

****

Development Review Board Member Approval

Transportation Dev. Date

Utility Dev. Date

Parks & General Services Date

City Engineer/AMAFCA Date

DRB Chairman Date

RECEIV
FEB 16 1996

Rev. 10/85
ID3901D

JEFF MORTENSEN & ASSOCIATES, INC.
6010-B MIDWAY PARK BLVD. N.E.
ALBUQUERQUE NEW MEXICO 87109
ENGINEERS SURVEYORS (505) 345-4250

FAX (505) 345-1251

FAX TRANSMITTAL

TO: LISA MANWILL (ext. 3622)

FIRM: C.O.A PWD HYDROLOGY SECTION

FACSIMILE NUMBER: 768-3629

FROM: GRAEME MEANS

SUBJECT: RE M15/D17 -

MESSAGE:

NUMBER OF PAGES: 7 (Including this page)

If the transmission is incomplete or unclear, please notify us at once at (505) 345-4250.

JEFF MORTENSEN & ASSOCIATES, INC.
6010-B Midway Park Blvd. NE
ALBUQUERQUE, NEW MEXICO 87109
(505) 345-4250 FAX (505) 345-4254

JOB M15-D12
SHEET NO. ______ OF ______
CALCULATED BY G.M. DATE ______
CHECKED BY ______ DATE ______
SCALE ______

LISA,

ASSUMING AN INLET GRATE ELEVATION OF 94.5 FOR BASIN A-2, 2 feet of COVER, AND A 12" LINE, OUR INVERT WOULD BE 91.5 IN THE POND.

ASSUMING THE 12" LINE IS SLOPED AT 1.0%, AND IT IS 200 Ft LONG, OUR INVERT AT GIBSON IS 89.5

WE HAVE CAPACITY IN THE PIPE:
(12" PVC @ S=0.01, n=0.013, $Q = 3.6 \text{ cfs} > Q_{100}$)
($Q_{100} = 1.5$ cfs)

THE EXISTING TOP OF ASPHALT GRADE IN GIBSON WHERE THE LATERAL WOULD BE IS 93.5±. ASSUMING THREE FEET OF COVER AND A 48" PIPE, THE MAIN WILL HAVE AN INVERT OF 86.5.

I DON'T SEE ANY PROBLEMS GETTING BASIN A-2 INTO THE STORM DRAIN.

ALSO: WITH MY INLET AT 94.5, AND THE STREET GRADE AT 93.5, THE HYDRAULIC GRADE LINE OF THE STORM DRAIN WILL BE BELOW MY GRATE (ASSUMING ITS BELOW THE STREET, WHICH IS A SAFE ASSUMPTION)

JEFF MORTENSEN & ASSOCIATES, INC.
6010-D Midway Park Blvd. NE
ALBUQUERQUE, NEW MEXICO 87109
(505) 345-4250 FAX (505) 345-4254

JOB M15 - D12.
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

As shown by the Tables, There will be an Interim Increase of 310 cubic feet Draining to University. The Albuquerque Master Drainage Study, Volume II, By BHT Defines the Point of Concentration of the University / Gerald Basin as AP 4501. As shown on page 2C-4 of the Study, The over-land (Street) flow during the 10-year Storm is 62.0 cfs. This Demonstrates that there is adequate Storm Drain capacity for the 10-year event. AND, therefore, the TWO-YEAR EVENT. As shown in the tables I have provided, There is a decrease in Q_2, Q_{100} AND V_{100}. As demonstrated in the AMDS VOL II, THERE IS Excess Capacity in The 10-year event. ∴ I DON'T THINK RETENTION IS NECESSARY FOR BASIN A-2

-GRAEME

EASIN SUMMARY (OBSERVED AT UNIVERSITY AND GERALD)

BASIN	AREA (ac)	V_2 (Exist.) (cf)	V_2 (Developed) (cf)	ΔV_2 (cf)	Q_2 (Exist) (cfs)	C_2 (Developed) (cfs)	ΔQ_2 (cfs)
A-1	1.30	710	0	(710)[C]	0.8	0.0	(0.8)[C]
A-2	0.34	180	830[A]	650	0.2	0.5[AB]	0.3
B	0.99	540	2,460	1920	0.6	0.8[B]	0.2
C	1.36	840	0	(840)[C]	0.9	0.0	(0.9)[C]
DE-1	1.04	570	0	(570)[C]	0.6	0.0	(0.6)[C]
DE-2	0.11	60	330	270	0.1	0.2	0.1
F-1	1.14	620	0	(620)[C]	0.9	0.0	(0.9)[C]
F-2	0.67	370	1,510	1,140	0.4	0.8[B]	0.4
M-1	1.38	750	0	(750)[C]	0.8	0.0	(0.8)[C]
M-2	0.56	300	1,430	1,130	0.3	0.9	0.6
Alley	0.05	30	150	120	0.0	0.1	0.1
Offsite	0.63	1,430	0	(1,430)[C]	0.0	0.0	(1.0)[C]
TOTAL:	9.57	6,400	6710	310	6.6	3.3	(3.3)[C]

THIS TABLE ASSUMES THE DIVERSION OF BASIN A-2 HAS NOT YET HAPPENED

(INTERIM CONDITION)

BASIN SUMMARY (OBSERVED AT UNIVERSITY AND GERALD)

BASIN	AREA (ac)	V_2 (Exist.) (cf)	V_2 (Developed) (cf)	ΔV_2 (cf)	Q_2 (Exist.) (cfs)	C_2 (developed) (cfs)	ΔQ_2 (cfs)
A-1	1.30	710	0	(710)[C]	0.8	0.0	(0.8)[C]
A-2	0.34	180	0	(180)[C]	0.2	0.0 [E]	(0.2)[C]
B	0.99	540	2,460	1,920	0.6	0.8 [B]	0.2
C	1.36	840	0	(840)[C]	0.9	0.0	(0.9)[C]
DE-1	1.04	570	0	(570)[C]	0.6	0.0	(0.6)[C]
DE-2	0.11	60	330	270	0.1	0.2	0.1
F-1	1.14	620	0	(620)[C]	0.9	0.0	(0.9)[C]
F-2	0.67	370	1,510	1,140	0.4	0.8 [B]	0.4
M-1	1.38	750	0	(750)[C]	0.8	0.0	(0.8)[C]
M-2	0.56	300	1,430	1,130	0.3	0.9	0.6
Alley	0.05	30	150	120	0.0	0.1	0.1
Offsite	0.63	1,430	0	(1,430)[C]	1.0	0.0	(1.0)[C]
TOTAL:	9.57	6,400	5880	(520)[C]	6.6	2.8	(3.8)[C]

THIS TABLE ASSUMES THE DIVERSION OF BASIN A-2 IS IN PLACE (ULTIMATE SCENARIO)

BASIN SUMMARY (OBSERVED AT GIBSON)

BASIN	AREA (ac)	V_{100} (Exist.) (cf)	V_{100} (Developed) (cf)	ΔV_{100} (cf)	Q_{100} (Exist) (cfs)	Q_{100} (developed) (cfs)	ΔQ_{100} (cfs)
A-1	1.30	0	320	320	0	2.1	2.1
A-2	0.34	0	830 [A]	830 [A]	0	0.5	0.5
B	0.99	0	0	0	0	0	0
C	1.36	0	2860	2860	0	1.9	1.9
DE-1	1.04	0	2,270	2,270	0	1.4	1.4
DE-2	0.11	0	0	0	0	0	0
F-1	1.14	0	2,520	2,520	0	1.7	1.7
F-2	0.67	0	0	0	0	0	0
M-1	1.38	0	3540	3,540	0	2.4	2.4
M-2	0.56	0	0	0	0	0	0
Alley	0.05	0	0	0	0	0	0
Offsite	0.63	0	1,430	1,430	0	1.0	1.0
TOTAL:	9.57	0	16,660	16,660	0	11.0	11.0

TOTAL DEVELOPED AREA DRAINING TO GIBSON (BEFORE C.O.A. PROJ. NO. 4850.90): 6.85 ac (72%)
TOTAL DEVELOPED AREA DRAINING TO GIBSON (AFTER C.O.A. PROJ. NO. 4850.90): 7.19 ac (75%)

A. FLOW TO BE DIVERTED TO GIBSON STORM DRAIN UPON COMPLETION OF C.I.P. (930 CF, 0.5 CFS)
B. FLOW RATE ACHIEVED THROUGH DETENTION (MAXIMUM OF 0.8 cfs)
C. NUMBERS IN PARENTHESES ARE NEGATIVE THEREBY REPRESENTING A DECREASE.

$d_n = 0.40' < 1.0'$
$Q_{10\,ST} = 0\,cfs$
$d_n = 0$
$V \times d_n < 0$
$Q_{100\,SD} = 260$

$Q_{100\,ST} = 101\,cfs$
$d_n = 0.53' < 1.0'$
$Q_{10\,ST} = 58\,cfs$
$d_n = 0.42 < 0.5$
$V \times d_n = 2.8 < 6.5$
$Q_{100\,SD} = 200\,cfs$

48"SD

UNIVERSITY BLVD

1+000

2+500

3+000

48"

42"

NOT HAPPENING

GIBSON

BASIN A

HGL

55

50

42" SD
$Q_{100} = 200\,cfs$
$(5.7\,m^3/s)$

48" SD (1200mm)
$Q_{100} = 260\,cfs$
$(7.4\,m^3/s)$

HGL

1200 mm)

48" SD
$Q_{100} = 260\,cfs$
$(7.4\,m^3/s)$

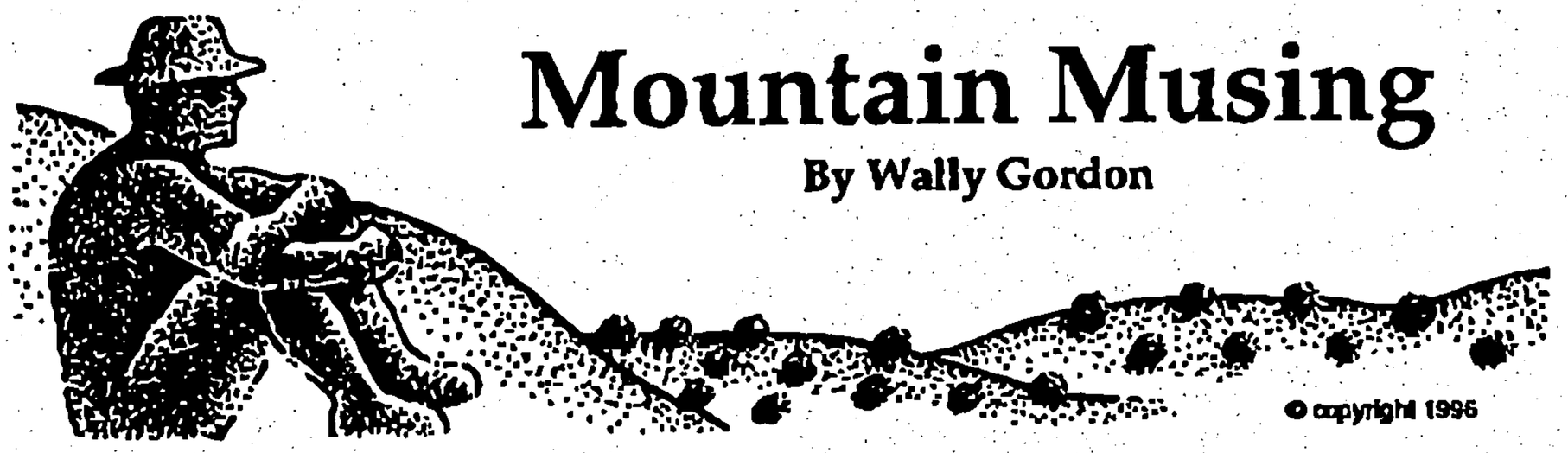
THIS IS FROM APPENDIX 4 IN AVIS PRELIMINARY REPORT DATED AUGUST 1995

TYPE IIIB MANHOLE

New Mexico's God of Water sunk in quicksand

Mountain Musing

By Wally Gordon



Anyone affected by issues of growth and development — which means just about everybody who lives in the East Mountain area — is concerned with water. Water is not only the sine qua non of life but the principal factor limiting — for good or ill — the growth of the region.

On water matters, the State Engineer is about as close to God as most earthlings are likely to get. Developers, environmentalists and landowners may propose, but the State Engineer disposes.

In recent decades three contrasting men have held the job. Steve Reynolds ran the office virtually single handedly for a generation. Invariably described as a czar, he used his enormous power to get water projects built and to make unlimited water available for growth. His successor in 1990, Eluid Martinez, made the office more open and began balancing the needs of growth and conservation.

Gov. Gary Johnson fired Martinez (who subsequently became head of the federal Bureau of Reclamation) and replaced him with 45-year-old Thomas Turney, an engineer who had spent his life working on water issues for private clients. His father, also a water engineer, designed almost every large water treatment plant in New Mexico. His grandfather was a pioneer rancher in southern New Mexico.

A low-key, amiable man, Turney gives the impression of someone confused and overburdened by a task of unforeseen difficulty. "I thought when I came here I knew quite a bit about water," he remarked during several hours of relaxed conversation in his Santa Fe office, "but every day I open up another door and find out things that have been going on in this state. It's extremely complex."

Last March the governor gave Turney two assignments: "to take action" on the agency's massive backlog and "to begin identifying and measuring the state's water resources." Neither effort has progressed very far.

Johnson has described water as "the No. 1 priority for the state." During a speech in Las Cruces last fall, he also said he will create a cabinet council on water and wants a statewide water assessment. "We have gone to all three congressional districts and asked the question of hundreds of business people," he added, "and their No. 1 issue with regard to infrastructure is water."

With a $10.5 million budget and 180 employees, the engineer's office makes decisions that affect the entire state's economy. Increasingly, however, everyone from environmentalists to developers is assailing the office for incompetence. For example, the water rights staff of about 70 has not increased in 20 years although the annual number of applications has grown from 80 to 19,000. The application of the City of Las Cruces has been pending for 15 years. Thousands of water cases — Turney cannot even estimate how many — are backlogged, and 2,000 appeals are pending. Work is done by hand rather than on computers.

How much trouble our water god is in was illustrated by this exchange:

Turney: I want to institute a system so we know what applications are out there and who they've been assigned to.

Question: You don't know that now?

Turney: We don't know that. Anyone should be able to come in and check what the status of their case is.

Q: They can't now?

Turney: Not usually. They might be able to track it down.

Q: How are cases processed?

Turney: We don't really have a formalized procedure for handling a case.

Q: You don't?

Turney: Well, we do have a process, but it varies from one district to the next, or if a case comes into Santa Fe.

Q: Are you overwhelmed?

Turney: I don't want to say that we're overwhelmed because that would make the people here too demoralized.

Q: It sounds like you need a major modernization.

Turney: BINGO!

Wally Gordon is editor and publisher of the quarterly statewide magazine New Frontiers.

FAX to Norm Gaume 505 768-3629 G. E. Titus 841-9480

ditor

Electric

ling your

fully win a prize. And it would give we members the feeling that your "so-called" member representatives were actually chosen by us and not just held over in office due to lack of membership votes as has been the fact in recent elections.

I realize that our "so-called" representatives will not want

Hinkle) is attempting to push through a high-density sub-division. There's talk of paving many of our roads, a golf course is on the drawing board, and some are pushing for a high school. Collectively, these issues suggest that the East Mountain area is in serious and imminent danger of losing its unique qual-

on the community to build fast food restaurants, video parlors, etc. And let's not forget that high schools tend to breed gangs. We should be very careful what we wish for—we just may get it. Incidentally, I hope no one believes that Paa-ko's offer to donate land for a school is altruistic—it's an unveiled attempt to

and community input. I would urge anyone interested in these issues to voice your concerns to our local representative, Les Houston.

Kathy McCoy
Cedar Crest

BASIN A-1 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 56,730/1.30
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	56,730/1.30	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	8,510/0.20	15
D	48,220/1.11	85

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.13/12)(56,730) = 5,340 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(1.30) = 4.1 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(0.78)(0.20) + (2.12)(1.11)]/(1.30) = 1.93 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.93/12)(56,730) = 9,120 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (2.28)(0.20) + (4.70)(1.11) = 5.7 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 9,120 - 5,340 = 3,780$ cf (increase)
2. $\Delta Q_{100} = 5.7 - 4.1 = 1.6$ cfs (increase)

BASIN A-2 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 14,700/0.34
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	14,700/0.34	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	2,200/0.05	15
D	12,500/0.29	85

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12)A_T$$
$$V_{100} = (1.13/12)(14,700) = 1,380 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.34) = 1.1 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(0.78)(0.05) + (2.12)(0.29)]/(0.34) = 1.92 \text{ in.}$$
$$V_{100} = (E_W/12)A_T$$
$$V_{100} = (1.92/12)(14,700) = 2,350 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (2.28)(0.05) + (4.70)(0.29) = 1.5 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 2,350 - 1,380 = 970$ cf (increase)
2. $\Delta Q_{100} = 1.5 - 1.1 = 0.4$ cfs (increase)

BASIN B CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 43,330/0.99
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	43,330/0.99	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	6,500/0.15	15
D	36,830/0.85	85

Existing Condition

1. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$
$E_W = 1.13$ in.
$V_{100} = (E_W/12)A_T$
$V_{100} = (1.13/12)(43,330) = 4,080$ cf

2. Peak Discharge

$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$
$Q_p = Q_{100} = (3.14)(0.99) = 3.1$ cfs

Developed Condition

1. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$
$E_W = [(0.78)(0.15) + (2.12)(0.85)]/(0.99) = 1.94$ in.
$V_{100} = (E_W/12)A_T$
$V_{100} = (1.94/12)(43,330) = 7,010$ cf

2. Peak Discharge

$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$
$Q_p = Q_{100} = (2.28)(0.15) + (4.70)(0.85) = 4.3$ cfs

Comparison

1. $\Delta V_{100} = 7,010 - 4,080 = 2,930$ cf (increase)
2. $\Delta Q_{100} = 4.3 - 3.1 = 1.2$ cfs (increase)

BASIN C CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 59,100/1.36
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	57,330/1.32	97
D	1,770/0.04	03

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	7,680/0.18	13
C	9,460/0.22	16
D	41,960/0.96	71

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(1.13)(1.32) + (2.12)(0.04)]/(1.36) = 1.16 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.16/12)(59,100) = 5,710 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(1.32) + (4.70)(0.04) = 4.3 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(0.78)(0.18) + (1.13)(0.22) + (2.12)(0.96)]/(1.36) = 1.78 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.78/12)(59,100) = 8,770 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (2.28)(0.18) + (3.14)(0.22) + (4.70)(0.96) = 5.6 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 8,770 - 5,710 = 3,060$ cf (increase)
2. $\Delta Q_{100} = 5.6 - 4.3 = 1.3$ cfs (increase)

BASIN DE-1 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 45,420/1.04
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	45,420/1.04	100

5. Developed Land Treatment (Assume will develop like Tract C)

Treatment	Area (sf/ac)	%
B	6,500/0.15	14
C	8,070/0.19	18
D	30,800/0.71	68

Existing Condition

1. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$
$E_W = 1.13$ in.
$V_{100} = (E_W/12) A_T$
$V_{100} = (1.13/12)(45,420) = 4,280$ cf

2. Peak Discharge

$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$
$Q_p = Q_{100} = (3.14)(1.04) = 3.3$ cfs

Developed Condition

1. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$
$E_W = [(0.78)(0.15) + (1.13)(0.19) + (2.12)(0.71)]/(1.04) = 1.77$ in.
$V_{100} = (E_W/12) A_T$
$V_{100} = (1.77/12)(45,420) = 6,700$ cf

2. Peak Discharge

$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$
$Q_p = Q_{100} = (2.28)(0.15) + (3.14)(0.19) + (4.70)(0.71) = 4.3$ cfs

Comparison

1. $\Delta V_{100} = 6,700 - 4,280 = 2,420$ cf (increase)
2. $\Delta Q_{100} = 4.3 - 3.3 = 1.0$ cfs (increase)

BASIN DE-2 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 5,000/0.11
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	5,000/0.11	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
D	5,000/0.11	100

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.13/12)(5,000) = 470 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.11) = 0.3 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 2.12 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (2.12/12)(5,000) = 880 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (4.70)(0.11) = 0.5 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 880 - 470 = 410$ cf (increase)
2. $\Delta Q_{100} = 0.5 - 0.3 = 0.2$ cfs (increase)

BASIN F-1 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 49,600/1.14
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	49,600/1.14	100

5. Developed Land Treatment (Same land treatments as M15/D22, IP Use)

Treatment	Area (sf/ac)	%
B	11,410/0.26	23
D	38,190/0.88	77

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.13/12)(49,600) = 4,670 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(1.14) = 3.6 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(0.78)(0.26) + (2.12)(0.88)]/(1.14) = 1.81 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.81/12)(49,600) = 7,480 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (2.28)(0.26) + (4.70)(0.88) = 4.7 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 7,480 - 4,670 = 2,810$ cf (increase)
2. $\Delta Q_{100} = 4.7 - 3.6 = 1.1$ cfs (increase)

BASIN F-2 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 29,250/0.67
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	29,250/0.67	100

5. Developed Land Treatment (Same land treatments as M15/D22, IP Use)

Treatment	Area (sf/ac)	%
B	6,730/0.15	23
D	22,520/0.52	77

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.13/12)(29,250) = 2,750 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.67) = 2.1 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(0.78)(0.15) + (2.12)(0.52)]/(0.67) = 1.82 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.82/12)(29,250) = 4,440 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (2.28)(0.15) + (4.70)(0.52) = 2.8 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 4,440 - 2,750 = 1,690$ cf (increase)
2. $\Delta Q_{100} = 2.8 - 2.1 = 0.7$ cfs (increase)

BASIN M-1 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 59,910/1.38
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	59,910/1.38	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	7,280/0.17	12
D	52,630/1.21	88

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.13/12)(59,910) = 5,640 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(1.38) = 4.3 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(1.13)(0.17) + (2.12)(1.21)]/(1.38) = 2.00 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (2.00/12)(59,910) = 9,990 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.17) + (4.70)(1.21) = 6.2 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 9,990 - 5,640 = 4,350$ cf (increase)
2. $\Delta Q_{100} = 6.2 - 4.3 = 1.9$ cfs (increase)

BASIN M-2 CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 24,190/0.56
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	24,190/0.56	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
C	2,720/0.06	11
D	21,470/0.49	89

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.13/12)(24,190) = 2,280 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.56) = 1.8 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(1.13)(0.06) + (2.12)(0.49)]/(0.56) = 1.98 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.98/12)(24,190) = 3,990 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.06) + (4.70)(0.49) = 2.5 \text{ cfs}$$

Comparison

1. $\Delta V_{100} = 3,990 - 2,280 = 1,710$ cf (increase)
2. $\Delta Q_{100} = 2.5 - 1.8 = 0.7$ cfs (increase)

ALLEY CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 2,230/0.05
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	2,230/0.05	100

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
D	2,230/0.05	100

Existing Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 1.13 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (1.13/12)(2,230) = 210 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.05) = 0.2 \text{ cfs}$$

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = 2.12 \text{ in.}$$
$$V_{100} = (E_W/12) A_T$$
$$V_{100} = (2.12/12)(2,230) = 390 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (4.70)(0.05) = 0.2 \text{ cfs}$$

Comparison

1. ΔV_{100} = 390 - 210 = 180 cf (increase)
2. ΔQ_{100} = No Change

OFFSITE BASIN CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6,100} = P_{360}$ = 2.35 in.
3. Total Area (A_T) 27,300/0.63
4. Developed Land Treatment

Treatment	Area (sf/ac)	%
C	6,800/0.16	25
D	20,500/0.47	75

Developed Condition

1. Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$$
$$E_W = [(1.13)(0.16)+(2.12)(0.47)]/(0.63) = 1.87 \text{ in.}$$
$$V_{100} = (E_W/12)A_T$$
$$V_{100} = (1.87/12)(27,300) = 4,250 \text{ cf}$$

2. Peak Discharge

$$Q_p = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$$
$$Q_p = Q_{100} = (3.14)(0.16)+(4.70)(0.47) = 2.7 \text{ cfs}$$

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 9, 1996

Greame Means
Jeff Mortensen & Assoc.
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

RE: TRACTS A-G OF AIRPORT CENTER (M15-D12) DRAINAGE PLAN FOR PRELIMINARY PLAT APPROVAL. ENGINEER'S STAMP DATED 1-26-96.

Dear Mr. Means:

Based on the information provided on your January 29, 1996 submittal, the above referenced project is not approved for Preliminary Plat.

Per our meeting on 2-9-96, please provide information on downstream capacity.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

DRAINAGE INFORMATION SHEET

950924

PROJECT TITLE: TRACTS A-G, AIRPORT CENTER ZONE ATLAS/DRNG. FILE #: M-15 / M12

DRB #: 94-501 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: TRACTS A-G, AIRPORT CENTER

CITY ADDRESS: MILES ROAD S.E.

ENGINEERING FIRM: JEFF MORTENSEN & ASSOC. CONTACT: GRAEME MEANS

ADDRESS: 6010-B MIDWAY PARK BLVD NE PHONE: 505-345-4250

OWNER: PSG LIMITED PARTNERSHIP / JOHN & LOIS ANN LORENTZEN CONTACT: ENGINEER

ADDRESS: _____ PHONE: _____

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: JMA CONTACT: _____

ADDRESS: 6010-B MIDWAY PK. BLVD NE PHONE: CHUCK CALA

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
X DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION
____ OTHER

PRE-DESIGN MEETING:

____ YES
X NO
____ COPY PROVIDED

RECEIVED
JAN 29 1996
HYDROLOGY DIVISION

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
X 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
X OTHER VACATION (SPECIFY)

DATE SUBMITTED: 01/29/96

BY: J. GRAEME MEANS

A MEMBER OF CONSULTING
ENGINEERS COUNCIL OF NEW MEXICO

JEFF MORTENSEN & ASSOCIATES, INC. ☐ ENGINEERS & SURVEYORS ☐ (505) 345-4250
6010-B MIDWAY PARK BLVD. N.E. ☐ ALBUQUERQUE ☐ NEW MEXICO 87109 ☐ FAX (505) 345-4254

950925
December 13, 1996

Lisa Ann Manwill
Hydrology Section
Public Works Department
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

Re: Miles Road S.E. Extension
C.O.A. Project No. 5319.90

Dear Lisa:

Pursuant to our telephone conversation of December 10, 1996, I am providing a letter that outlines the justification of the engineering decisions used to convey runoff from Miles Road S.E. to Gibson Boulevard. This letter will justify all the engineering decisions made that were of concern to Scott Davis, at our November 21, 1996 meeting, on the impact of Gibson Blvd. S.E. improvement project.

Mr. Davis was concerned with the rundown velocity and depth as it daylights from the proposed rundown into Gibson Blvd. S.E. We reminded Mr. Davis at the meeting that this is only a temporary solution until his Gibson Blvd. improvement project is under construction in five to ten years from now. As shown by the attached Calculations, the runoff velocity multiplied by depth calculation is less than 6.5, as required in the DPM. Please note that we have also widened the rundown width to ten feet, as required by Mr. Fred Aguirre. In addition to widening the channel, we have placed bollards where the rundown intersects Gibson Blvd. S.E.

Mr. Scott Davis was also concerned that the Gibson Blvd. S.E. improvements project would necessitate construction of storm drain inlets once the rundown is removed as part of this project. We pointed out that this additional work and part of the improvement project would not be outside of the Gibson Blvd. right-of-way. At this point, the current Miles Road S.E. right-of-way intersects Gibson Blvd. S.E. Mr. Davis questioned whether we could construct the inlets as part of our project. We opted to not construct the inlets for the following reasons:

1. Inlets constructed as part of our project would need to be type "D" storm inlets. A triple "D" inlet would be required to handle the flows anticipated with the full development upstream of Miles Road S.E. This type of construction would require monolithic pours at the top of the inlets separate from the channel. These inlets would then in turn need to be filled with sand bags or some other fill material such that minimal amount of runoff from Miles Road would enter these inlets during the interim condition where the runoff flows down the rundown. Any water stagnating inside the inlet would then serve as a possible health hazard.

2. A type "C" inlet constructed as part of the Gibson Blvd. improvements would be sufficient to handle the anticipated runoff upstream of Miles Road S.E., as shown by the Calculations.

3. Our office could arbitrarily set an invert elevation of the "D" inlets for future extension to the Gibson Blvd. improvements. However, in the five to ten year window anticipated for the Gibson Blvd. improvement project, field conditions may change. Field conditions for the Gibson storm drain installation may encounter obstacles which may require field design changes. If this were to occur, the resulting change in the invert elevation of the storm inlets may have to be raised or lowered. Raising or lowering of the invert elevation of the inlets would require reconstruction of the inlets. Consequently, construction of the "D" inlets now would not be beneficial.

4. Because the rundown would need to be removed as part of the Gibson Blvd. improvement project, the type "C" inlet could be formed within the 16' curb opening in the Miles Road cul-de-sac. This would remove the necessity to construct curb and gutter or header curb to close the curb opening. The curb opening could be closed simply with the type "C" inlet and transition construction.

If you have any questions or comments regarding this information, or if we can be of further service to you, please do not hesitate to call.

Sincerely,

JEFF MORTENSEN & ASSOCIATES, INC.

Gary R. Bittner, E.I.T.

GRB:dsj
Enclosures

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ALBUQUERQUE, NEW MEXICO 87109
(505) 345-4250 FAX (505) 345-4254

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

1. INLET CAPACITY (TYPE 'D')

$Q = CA(2gh)^{1/2}$

LET: $C = 0.6$

$A = A_{eff} = A_{grate}(50\%) = 2.3$ SF

$g = 32.2$ ft/s^2

$h = 0.67$ ft (ULTIMATE CURB HT.)

THEREFORE: 9.1 CFS / GRATE

2. TYPE 'D' INLET REQUIREMENTS

Q_{MDP} / Q_{GRATE} = No. OF INLETS REQUIRED

23.5 cfs / 9.1 cfs = 2.6 GRATES

THEREFORE 3 INLETS ARE REQUIRED (TYPE 'D')

3. TYPE 'C' INLET CAPACITY

A. DOUBLE 'C' GRATE CAPACITY

2 (9.1 CFS) = 18.2 CFS

B. DOUBLE 'C' WIER CAPACITY. (PER CDA. STD. DWG. 2205)

$Q = CLH$

LET: $C = 6.45$ FT

$H = 0.5$ FT

$C = 2.62$

THEREFORE: $Q = 8.4$ CFS

C. TOTAL CAPACITY

$\Sigma Q_{CAP} = 18.2 + 8.4 = 26.6$ CFS $>$ 23.5 CFS PER M.D.P.

4. RUNDOWN CALCULATIONS

USING MANNING'S EQUATION

$Q_{10} = 0.67 Q_{100} = 15.7$ CFS

$n = 0.013$

$S = 0.0750$ ft/ft

$W = 10.0$ ft.

THEREFORE: $d = 0.17$ FT

$V = 9.3$ FT/S

$Vd = 1.6 \ll 6.5$ PER DPM