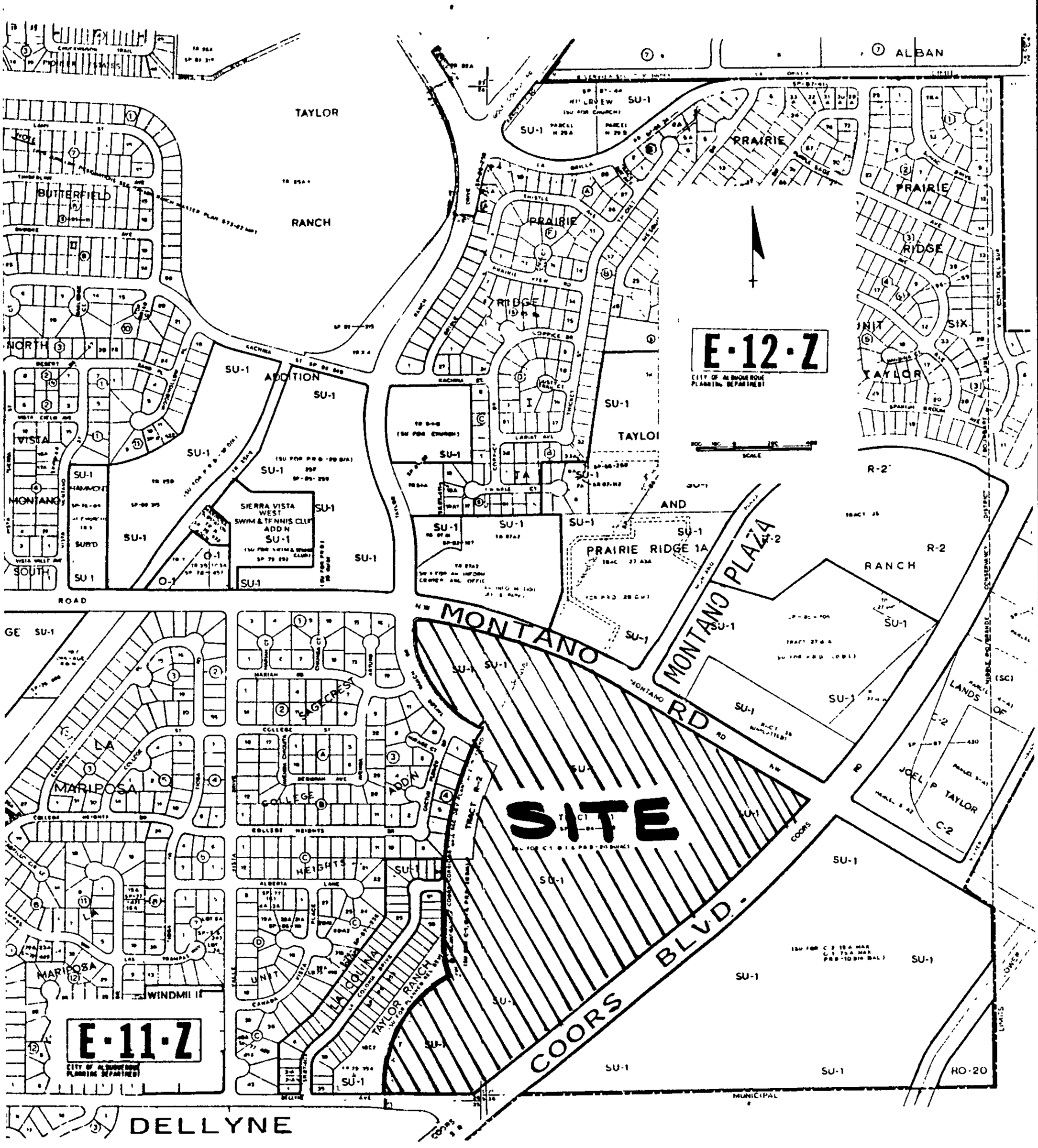


1" = 750'±

ISAACSON & ARFMAN, P.A.

SUBJECT TRACT R-1 VICINITY MAP JOB NO. 746

BY SMM DATE 3/93 SHEET NO. 1 OF

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 17, 1995

Scott McGee, PE
Isaacson & Arfman, PA
128 Monroe Street NE
Albuquerque, NM 87108

RE: ENGINEER'S CERTIFICATION FOR TRACT R-1 (E-11/D26)
RECEIVED NOVEMBER 13, 1995 FOR FINANCIAL GUARANTY RELEASE
ENGINEER'S STAMP DATED 11-9-95

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology accepts the Engineer's Certification of mass grading including a 2' wide private drainage channel to carry flow from off-site Tract R-2. Private retaining & perimeter walls were not required on the approved grading plan. Contact Billy Goolsby for the Financial Guaranty release of City Project Number 4918.90.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin, P.E.
Civil Engineer, Hydrology

c: Andrew Garcia
Billy Goolsby, CPN 4918.90

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 3, 1995

Scott McGee, PE
Isaacson & Arfman, PA
128 Monroe Street NE
Albuquerque, NM 87108

RE: ENGINEER'S CERTIFICATION FOR TRACT R-1 (E-11/D26)
RECEIVED OCTOBER 26, 1995 FOR FINANCIAL GUARANTY RELEASE
ENGINEER'S STAMP DATED 10-26-95

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology accepts the Engineer's Certification of mass grading. Contact Billy Goolsby for the Financial Guaranty release of City Project Number 4918.90.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin, P.E.
Civil Engineer, Hydrology

c: Andrew Garcia
Billy Goolsby, CPN 4918.90

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 1, 1994

Scott M. McGee, P.E.
Isaacson & Arfman, P.A.
128 Monroe Street NE
Albuquerque, N.M. 87108

RE: REVISED GRADING PLAN FOR TAYLOR RANCH, TRACT R-1 (E-11/D26)
RECEIVED OCTOBER 27, 1994 FOR ROUGH GRADING PERMIT APPROVAL
ENGINEER'S STAMP DATED 10-11-94

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology approves Tract D for Rough Grading Permit. In the future, please label each tract.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia

WPHYD/7752/jpc

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 17, 1994

Scott M. McGee, P.E.
Isaacson & Arfman, P.A.
128 Monroe Street NE
Albuquerque, N.M. 87108

RE: DRAINAGE REPORT FOR TAYLOR RANCH, TRACT R-1 (E-11/D26)
RECEIVED AUGUST 16, 1994 FOR GRADING PERMIT & WORK ORDER APPROVAL
ENGINEER'S STAMP DATED 8-16-94

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology approves this project for grading permit & Work Order.

Engineer's Certification of grading & drainage per DPM checklist must be approved before the Financial Guaranty will be released.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Billy Goolsby, WO#4918.90

WPHYD/7752/jpc

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2600 PROSPECT N E - ALBUQUERQUE N M 87107
TELEPHONE (505) 884-2215

March 28, 1994

Scott M. McGee, P.E.
Isaacson & Arfman, PA
128 Monroe Street, NE
Albuquerque, NM 87108

RE: Taylor Ridge Subdivision - Drainage Report for Taylor Ranch Tract R-1 Revised March, 1994 (E11)

Dear Mr. McGee:

AMAFCA has reviewed the above-referenced drainage report, including the resubmittal information dated March 2, 1994. It appears that this revised plan will provide pond velocities such that the sediment ponding criteria of the North Coors Drainage Management Plan can be met with the construction of this project.

Therefore, we do not object to the City's approval of the drainage plans for this site.

Sincerely,
AMAFCA

Clifford E. Anderson, P.E. & L.S.
Drainage Engineer

CEA:ij

copy: John Curtin, Engineer, City of Albuquerque, PWD

c:\wpwin\cliff\tayle11.ltr

John Curtin
City PWD

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 15, 1994

Scott M. McGee, P.E.
Isaacson & Arfman, P.A.
128 Monroe Street NE
Albuquerque, N.M. 87108

RE: DRAINAGE REPORT FOR TAYLOR RANCH, TRACT R-1 (E-11/D26)
RECEIVED MARCH 3, 1994 FOR FINAL PLAT APPROVAL
ENGINEER'S STAMP DATED 3-3-94

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology approves this project for Final Plat for Bulk Land Division.

The following comments must be addressed prior to Work Order approval:

1. Show drainage basin boundaries for Basins 10, 20, 30, 40, 50 & 60. Include off-site areas. Indicate areas proposed for parks or open space.

2. Update HYMO run to match current plan. Provide back up calculations for the land treatment percentages for each basin.

3. Include the street slope in the Street Hydraulics Summary. Provide back up calculations for the storm inlet capacity at sump condition. Both sorm drain systems must be designed for 2x100 year storm, If an overland emergency spillway is not provided. Provide HGL calculations based on the 10 year water surface elevation in the detention pond.

5. AMAFCA must approve the details of sediment control measures required for the detention pond.

If you have any questions about this project, you may contact me at 768-2727.

Sincerely

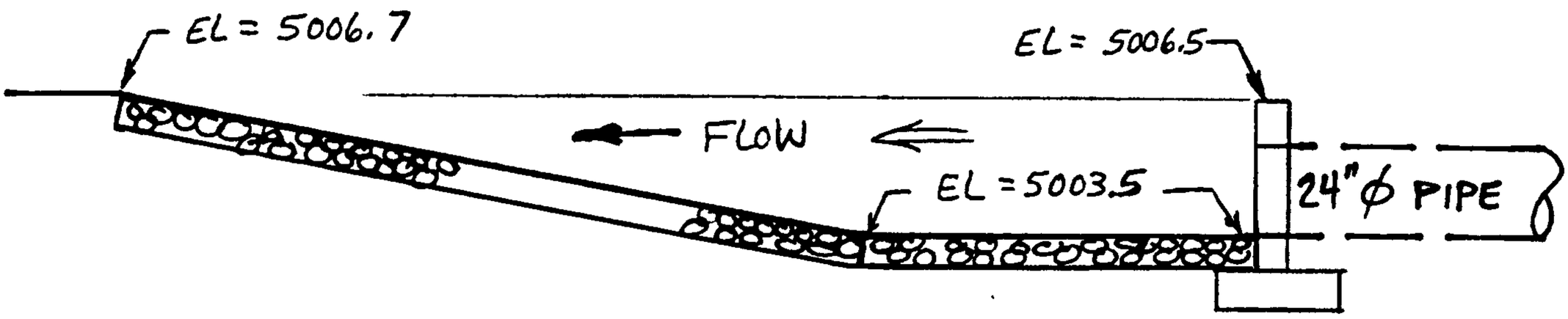
John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Fred Aguirre, DRB
Cliff Anderson, AMAFCA

WPHYD/7752/jpc

NORTH S/D : Q_{IN} = 119 CFS (Q_{MAX} FROM AHYMO)

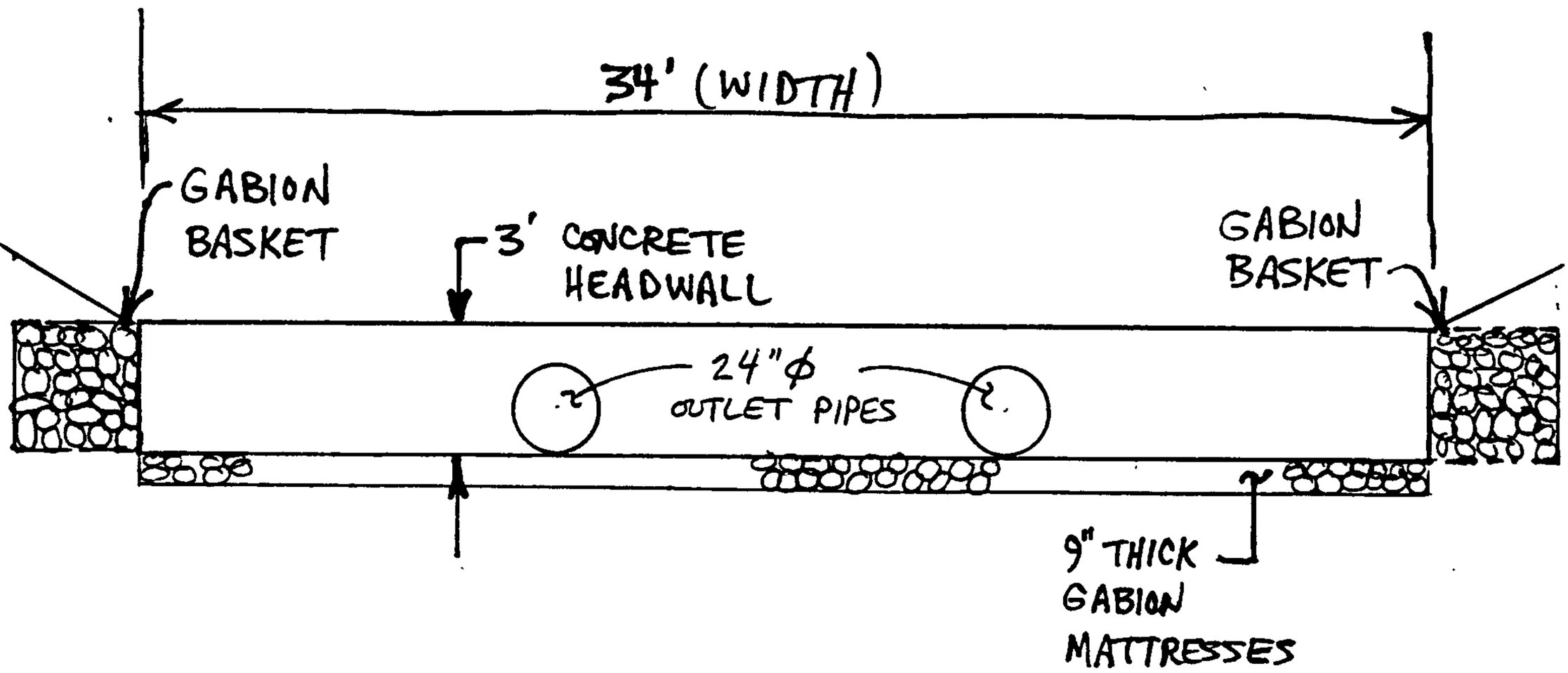
@ 50% Q_{100} : $V = Q/A = \frac{(0.50)(119)}{(34)(3.2)} = \underline{0.55 \text{ FPS}}$ (< 0.6 FPS)



SECTION A-A

1" = 5'

SOUTH S/D : Q_{IN} = 104 CFS → $V = \frac{(.50)(104)}{(34)(3.2)} = \underline{0.48 \text{ FPS}}$ (< 0.6 FPS)



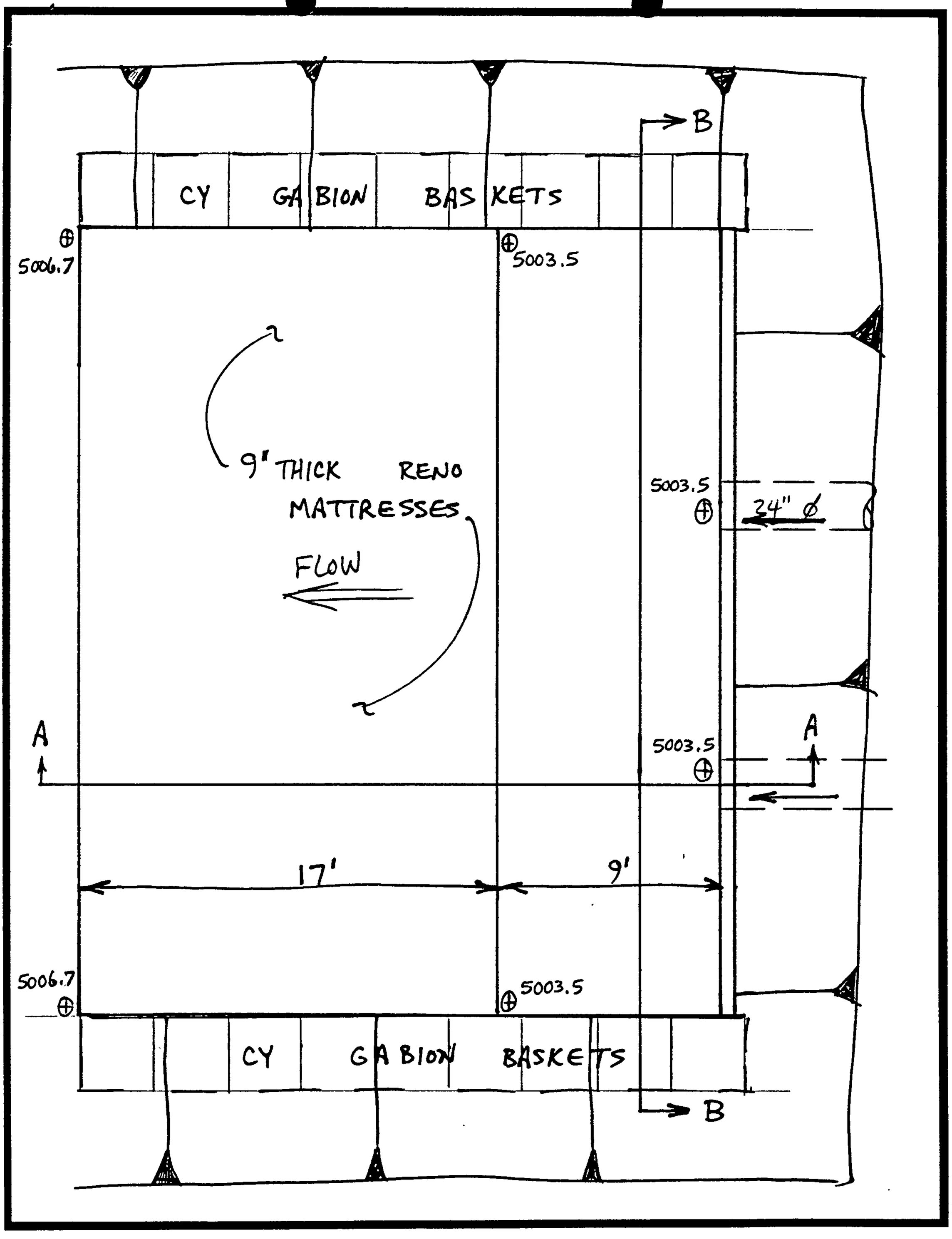
SECTION B-B

1" = 5'

ISAACSON & ARFMAN, P.A.

SUBJECT TAYLOR RIDGE DETENTION POND JOB NO.___

BY SAM DATE 2/94 SHEET NO.___ OF___



ISAACSON & ARFMAN, P.A.

SUBJECT Taylor Ridge JOB NO.___

BY SM DATE 2/94 SHEET NO.___ OF___

AS - BUILT DETENTION POND VOLUME

ELEVATION	(SF) AREA	(ACRES)	Σ VOLUME (AC-FT)
5007	32,190	0.7390	0 *
5008	36,500	0.8379	0.7884
5009	40,800	0.9366	1.6757
5010	45,100	1.0353	2.6616
5011	50,400	1.1570	3.7578
5012	53,650	1.2316	4.9521

AHYMO V_{MAX} = 4.9367 AC-FT @ EL = 5011.85

* VOLUME IN POND BELOW 5007.00 IS IGNORED IN THIS AS-BUILT VOLUME (DISCOUNTED FOR FUTURE POSSIBLE SEDIMENT).

DRAINAGE REPORT

FOR

TAYLOR RANCH
TRACT R-1

ALBUQUERQUE NEW MEXICO
JULY 1994

AUG 16 1994

Prepared by:

ISAACSON & ARFMAN, P.A.
128 Monroe Street, NE
Albuquerque, NM 87108

SCOTT M. McGEE
NEW MEXICO
10519
REGISTERED PROFESSIONAL ENGINEER

Scott M McGee 7-15-94

Scott M. McGee, P.E. Date

Revised 8-16-94

I. INTRODUCTION

Taylor Ranch Tract R-1 is located at the southwest corner of Coors Road NW (N.M. State Road 45) and Montano Road NW--see vicinity map in Appendix. Tract R-1 is 62.34 acres and abuts Coors Road for 2,300 feet from Montano Road NW south to Dellyne Avenue NW. Tract R-2 is a two-acre adjoining parcel that will be partially regraded, but is to remain as Open Space. Both tracts are presently undeveloped with terrain sloping from west to east at six to twenty percent.

A pre-design discussion was held with Mr. Gilbert Aldaz of the Hydrology section of the City of Albuquerque. The following design criteria were identified for the proposed division of Tract R-1 into six smaller tracts:

1. The proposed subdivision will require an approved Drainage Report.

2. An interim desiltation pond will be required on each proposed tract.

3. Drainage outfall, which can be managed in one of the following two ways, will need to be coordinated with AMAFCA:

A. One public facility for storm water detention will be required (on land dedicated to the City) at the low end of the site, OR

B. All storm drain infrastructure required for outfall with free discharge will be constructed at owner's expense.

4. Onsite storm drain design capacity will be based on 100-year developed conditions. See AHYMO output file in Appendix.

II. EXISTING SITE CONDITIONS

A. Flood Hazard--This site is not shown to be within an established flood hazard area as shown on the FIRM Panels 14 & 15 (see Appendix).

B. Soils--From the SCS Soil Survey of Bernalillo County, this site is 90 percent Bluepoint and Bluepoint-kokan association and 10 percent Madurez-Wink association. These soil associations are all loamy fine sands which are classified as Hydrologic Soil Group 'A' (90%) and 'B' (10%) soils (see Appendix).

C. Topography--Located on the west side of Albuquerque, this land slopes generally from west to east at 6 to 20 percent. Drainage courses are undefined and the site currently drains east to Coors Road NW as overland sheetflow.

D. Offsite Flows--The site is bounded on the upland (west) side by two developed subdivisions (La Colina subdivision to the south and the Sagecrest addition to the north) and two undeveloped parcels, Taylor Ranch Tracts 18-C-2 and R-2. The La Colina subdivision drains south on La Colina Drive NW to Dellyne Avenue NW. The Sagecrest addition drains north to Taylor Ranch Drive and then north to Montano Road NW. Existing solid garden walls along the east property lines of both developed subdivisions prevent any offsite backyard waters from entering the site.

Approximately 100 feet of Taylor Ranch Drive NW breaks back to the east and drains onto the subject site. This small area along with the undeveloped tracts 18-C-2 (3.08 acres) and R-2 (2.01 acres) contribute offsite waters, which the site will continue to accept. Historic drainage patterns will remain unchanged with the proposed development.

E. Governing Drainage Plan--The North Coors Drainage Management Plan (N.C.D.M.P.), prepared in 1984 by Scanlon & Associates, addresses both stormwater runoff and sediment production for a large area in which this site is included. The outfall facility constructed as a result of this plan is a 10' by 6' concrete box culvert that carries runoff over the Riverside Drain and discharges in the Rio Grande bosque. This box culvert was built by A.M.A.F.C.A., but it has since been turned over to the City of Albuquerque for their maintenance. This 10' by 6' C.B.C. has a very limited capacity due to 1) low outlet backwater elevations, 2) very flat slope, and 3) limited maintenance access. Concern about sediment build-up in the box culvert resulted in requirements for upstream, off-site sediment ponding. Restrictions on discharge rates also dictate off-site detention ponds providing controlled release rates that are lower than the undeveloped discharge rates.

III. ONSITE DRAINAGE MANAGEMENT

Runoff from the undeveloped site presently sheetflows to the east and is collected in the existing roadside ditch along the west side of Coors Road NW. Seven existing beehive inlets, connected by a 36-inch storm drain (City project No. 3163), collect and carry the storm waters to the southwest corner of Montano and

Coors Road NW. The 36-inch-diameter storm drain continues east about 1,000 feet where it discharges to the 10' by 6' concrete box culvert. The existing box culvert carries these flows east within the Montano Road alignment to the Rio Grande.

The above referenced 36-inch storm drain (City project No. 3163) was based on design flows given in the North Coors Drainage Management Plan. This storm drain also accepts flow from a 13-acre triangular-shaped tract located west of Coors Road and south of Dellyne Avenue NW. Six double 'C' catch basins in Dellyne Avenue, west of Coors Road, also discharge to this storm drain. The record drawings for this storm drain give a design flowrate of 52 cfs.

The proposed subdivision of Tract R-1 creates six smaller tracts with an interior road network as shown. Each of the six newly created parcels will require subsequent drainage reports or plans when specific development is proposed. The proposed subdivision involves mass grading of Tracts R-1 and R-2 and identifies storm drain facilities required for the eventual fully developed condition. Tract R-2 is to remain as Open Space and is proposed to be regraded, but not to be developed.

Proposed street grades range from two to eight percent. Public streets are proposed with 56 feet rights-of-way and 36 feet widths (measured flowline to

flowline). Standard 8-inch curb and gutter sections will be used. DPM Plate 22.3 D-2 gives street capacities for this section at various slopes (see Appendix).

The drainage scheme involves interim desilting ponds which will discharge to proposed catch basins and storm drain lines (sized for future developed conditions) within the interior road network. The desilting ponds will not hold water for more than six hours; therefore, required volumes are based on the 6-hour event. Twelve to eighteen months after the site is revegetated, the amount of sediment transported to the desilting ponds will be reduced by the new vegetation growth.

IV. ONSITE DETENTION FACILITY

A single storm water detention facility is proposed which will have controlled release rates ranging from 10 to 22 cfs. This dedicated pond will discharge to the existing storm drain running along the west side of Coors Road NW. Total storage capacity of the pond approaches 6 acre-feet and a minimum of 3 feet of freeboard shall be provided.

The proposed detention pond will accept flows from both the north and south ends -- interior storm drains divide the site into a north and south drainage

basin. The pond will be fenced and will include vehicular access ramps for maintenance and cleaning operations.

The AHYMO output shows the pond at its fullest at Time = 2.33 hours. The DPM requires all detention ponds to drain within 6 hours when designed for the 6-hour storm. The proposed detention pond has a volume of 0.086 acre-feet at Time = 8.33 hours (6 hours elapsed time beginning when pond is full), which is considered fully drained.

V. ONSITE SEDIMENTATION MANAGEMENT

The sediment removal concept includes one interim sediment pond on each tract as well as one public storage area located on Tract R-1-D. The analysis of sediment yield for a watershed undergoing urbanization introduces more complexities into an already difficult problem. Sediment yield varies greatly as land use changes. Removal of vegetation and disturbing the soil preparatory to development increases sediment runoff during the construction process. However, as the developed land is restabilized with the attention that property owners give to their land and the large increase in impervious areas (roads, structures, parking lots) combined with the resulting decrease in land surface area exposed to the erosive effects of rainfall and runoff, sediment yield from land surface erosion can reduce to smaller values than existed on the preurban land

use. The individual-tract storage areas will provide the larger sediment storage capacity required during the construction process and through the period necessary for the revegetation of the land. As each tract undergoes further development, the reduced sediment storage requirement will continue to be met with the single public facility.

The design of the interim sediment ponds provides stormwater detention, attenuation of peak flow rates, and allows for clear-water discharge to the proposed storm drain system. As mentioned previously, sediment yield is expected to be reduced as the revegetation becomes established.

The North Coors Drainage Management Plan (N.C.D.M.P.) identifies the following drainage basins, stormwater, and sediment volumes generated from Tract R-1 and some adjacent lands:

Drainage Basin ID	Area (AC)	Stormwater Volume (AC-FT)	Sediment Volume (AC-FT)
20.1 W	22.59	0.77	0.05
20.2 W(1)	45.12	1.41	0.11
20.3 W(2)	62.77	2.64	0.15

(1) Drainage basin area also includes Tract R-2 and approximately 25% of the La Colina subdivision.

(2) Drainage basin area also includes approximately 75% of the La Colina subdivision, 15± acres of developed land west of La Colinas, and 20± acres of 50% developed land south of Dellyne Avenue NW.

The proposed six-tract subdivision of Tract R-1 does not coincide with the above N.C.D.M.P. drainage basins and sediment calculations are included in the

Appendix for each individual tract. Sediment yield calculations are given for two scenarios, 1) mass-graded site after revegetation, and 2) ultimate development using typical land treatment percentages for residential and commercial land uses.

ISAACSON & ARFMAN, P.A.

SUBJECT TRACT R-1 - SCS PANEL 20 SOIL SURVEY JOB NO. 746

BY SMM DATE 3/93 SHEET NO. 3 OF

BASIN 50: TRACTS B (TAYLOR RIDGE), R-2, 18-C-2

TR. NO.	AREA (AC)	LAND A	TREATMENT B	C	D
B	3.16 $\frac{cfs}{Ac}$ 12.1151	38.3cfs	7	20	35	38
R-2	1.66 $\frac{cfs}{Ac}$ 2.01	3.34cfs	50	50	0	0
18-C-2	3.077	7.0cfs	0	15	28	57 *
3.60 $\frac{cfs}{Ac}$	(1.95 AC DRAIN NORTH INTO BASIN 50)					

COMPOSITE RUNOFF CHARACTERISTICS					
BASIN 50	(.02511 SQ MI) 16.07 AC	6	23	35	36

TRACT B : 39 lots on 11.30 AC (NET) → 3.45 D.U.'s/ACRE

* % D BASED ON 6 D.U's/AC (ESTIMATED)

BASIN	TRACTS	AREA (AC)	A	B	C	D		
	P-1, P-2, P-3	2.8071	0	100	0	0	5.7 cfs	
	A (4.9 d.u.'s/ac)	9.5174	0	30	21	49	31.9 cfs	
10		12.3245	0	46	16	38		37.7
20	Taylor Ranch & Montano Plaza R/W abutting Tract A	1.9835	0	0	21	79	8.0 cfs	4.06 cfs/Ac
	E	4.2457	0	20	20	60	15.29 cfs	3.60 cfs/Ac
	Oxnard Dr & Taylor Ranch Dr east of Montano Plaza	1.3085	0	0	21	79	5.31 cfs	4.06 cfs/Ac
30		5.5542	0	16	20	64		
	Commercial-zoned area	5.0000	0	10	0	90	20.4 cfs	4.14 cfs/Ac
	R-2 portion of D	8.9260	0	25	5	70	33.1 cfs	3.71 cfs/Ac
40		13.9260	0	20	3	77		
	R-2 (50% regraded)	2.0100	50	0	50	0	4.18 cfs	2.08 cfs/Ac
	B (3.1 d.u.'s/ac)	12.1301	0	30	35	35	38.1 cfs	3.14 cfs/Ac
	Montano Plaza R/W (Tract 18-C-2)	1.9284	0	0	21	79	7.8 cfs	4.06 cfs/Ac
50		16.0685	6	23	35	36		
	Tract C (5.2 d.u.'s/ac)	9.2839	0	30	19	51	31.4 cfs	3.38 cfs
	Tract D (southern portion)	2.1970	0	25	5	70	8.1 cfs	3.71 cfs/Ac
60		11.4809	0	29	16	55		

AHYMO SUMMARY TABLE (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MON/DAY/YR) =05/11/1994
INPUT FILE = TAYLORF.DAT USER NO.= S_MCGEE_.S92

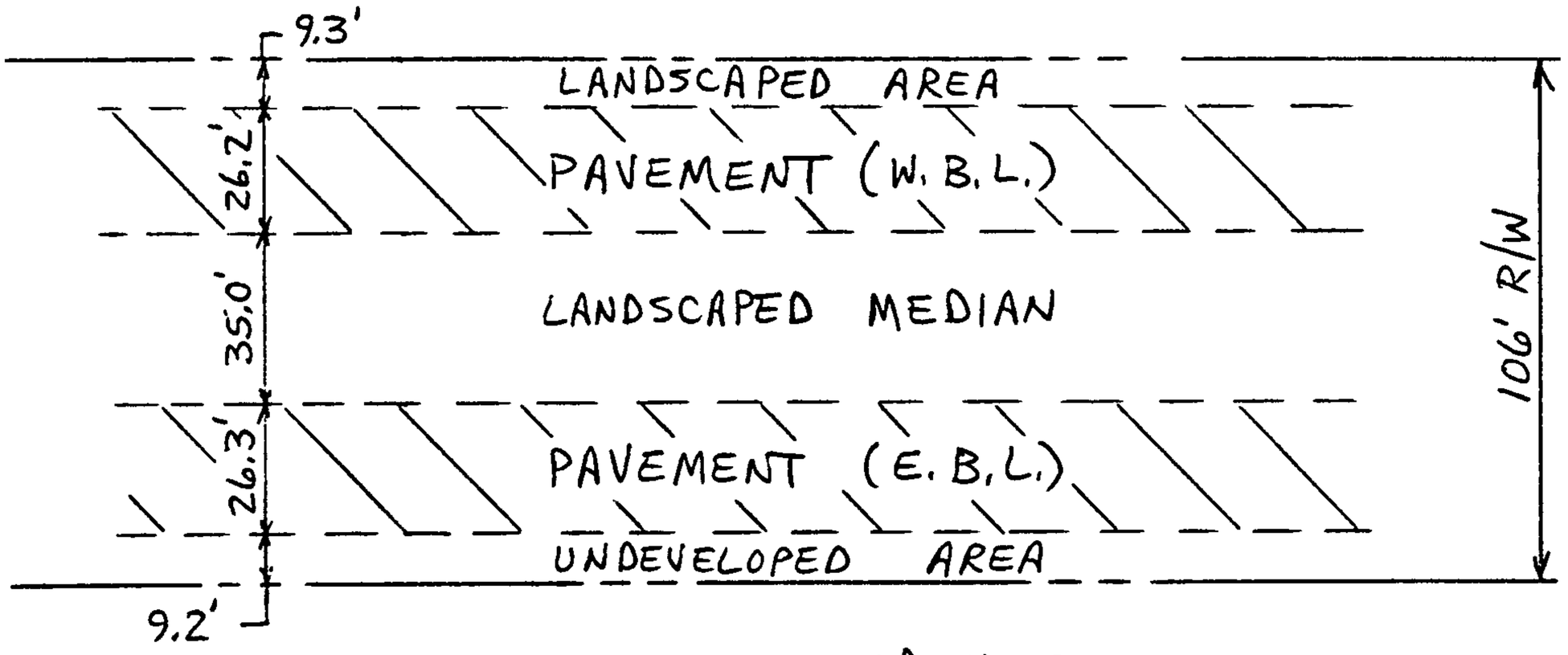
COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	10.00	-	1	.01926	37.54	1.239	1.20600	1.500	3.045	PER IMP=	38.00
COMPUTE NM HYD	20.00	-	2	.00310	8.06	.291	1.76154	1.500	4.064	PER IMP=	79.00
ADD HYD	20.10	1& 2	2	.02236	45.60	1.530	1.28300	1.500	3.187		
ROUTE	20.10	2	3	.02236	45.34	1.530	1.28302	1.500	3.168		
COMPUTE NM HYD	30.00	-	4	.00868	20.52	.721	1.55802	1.500	3.693	PER IMP=	64.00
ADD HYD	30.10	3& 4	4	.03104	65.86	2.251	1.35990	1.500	3.315		
ROUTE	30.20	4	5	.03104	65.49	2.251	1.35991	1.500	3.297		
COMPUTE NM HYD	40.00	-	6	.02176	53.67	1.944	1.67521	1.500	3.854	PER IMP=	77.00
ADD HYD	40.10	5& 6	7	.05280	119.16	4.195	1.48984	1.500	3.526		
COMPUTE NM HYD	50.00	-	8	.02511	49.88	1.634	1.22017	1.500	3.104	PER IMP=	36.00
ROUTE	50.10	8	9	.02511	49.79	1.634	1.22017	1.500	3.098		
COMPUTE NM HYD	55.00	-	10	.01794	39.58	1.366	1.42764	1.500	3.447	PER IMP=	55.00
ADD HYD	60.00	9&10	11	.04305	89.37	3.000	1.30662	1.500	3.244		
ROUTE	60.00	11	12	.04305	77.02	3.000	1.30664	1.533	2.796		
ROUTE	40.20	7	13	.05280	103.41	4.195	1.48985	1.533	3.060		
ADD HYD	60.30	13&12	14	.09585	180.43	7.195	1.40755	1.533	2.941		
ROUTE RESERVOIR	70.00	14	15	.09585	21.97	7.195	1.40755	2.267	.358	AC-FT=	4.937
FINISH											

MONTAÑO RD RUNOFF ZONE: 1

BASIN AREA: (2300LF)(106FT R/W)/43,560 SF/AC

A = 5.60 AC (FROM COORS RD WEST TO TAYLOR RANCH RD)

LAND TREATMENT: 8% A, 42% B, 0% C, 50% D



TYPICAL LAND-USE

$Q_{100} = (0.45)(1.29) + (2.35)(2.03) + (0) + (2.80)(4.37)$

$Q_{100} = 17.6$ CFS

TIME OF CONCENTRATION (t_c)

$t_c = L/V$ where $V = K(s)^{1/2}$

$K = 3$ (street flow) $s = 4.1\%$

$V = (3)(4.1)^{1/2} = 6.07$ FPS

$t_c = (2300/6.07)(1\text{ MIN}/60\text{s})$

$t_c = 6.3$ MINUTES

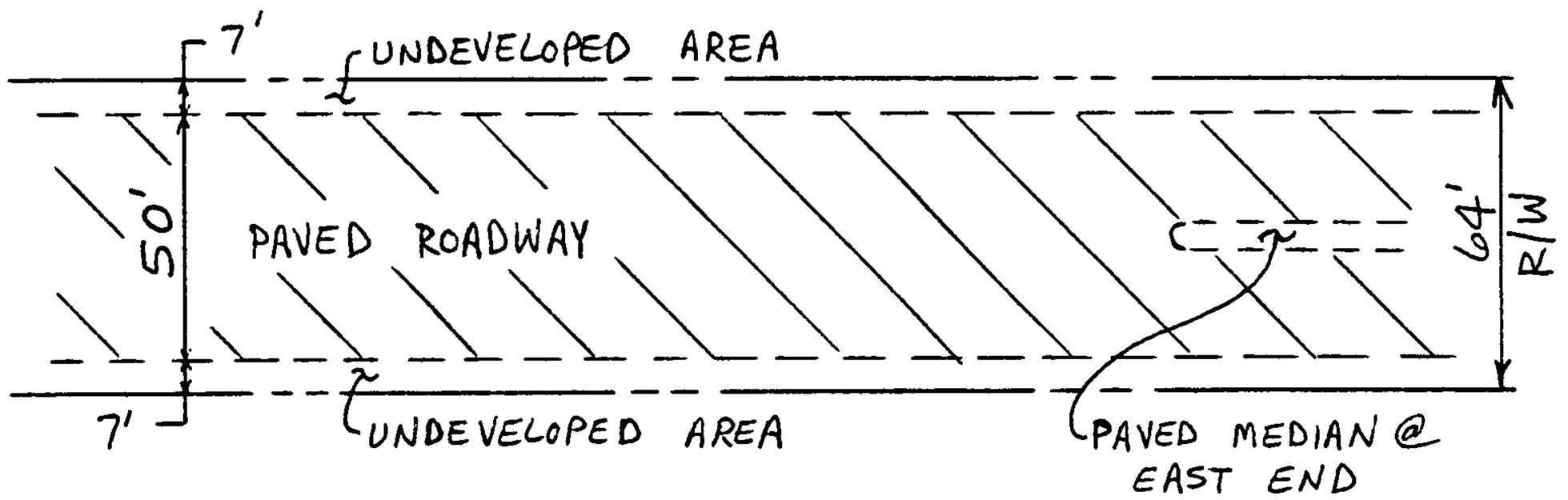
USE t_c = 12 MINUTES ←

DELLYNE RD RUNOFF ZONE: 1

BASIN AREA: (2900 LF)(64 FT R/W)/43560

A = 4.26 AC (FROM COORS RD WEST TO HIGH POINT)

LAND TREATMENT: 22% A, 0% B, 0% C, 78% D



TYPICAL LAND-USE

$Q_{100} = (0.94)(1.29) + (0) + (0) + (3.32)(4.37)$

$Q_{100} = 15.7$ CFS

USING I (COMPUTED BELOW)

$Q = CIA = (0.27)(4.34)(0.94) + (0.93)(4.34)(3.32)$

$Q = 14.5$ CFS

TIME OF CONCENTRATION (t_c)

$t_c = L/V \rightarrow V = K(s)^{1/2}$ K = 3 (street flow) s = 2.9%

$V = (3)(2.9)^{1/2} = 5.11$ FPS

$t_c = (2900/5.11)(1\ MIN/60s)$

$t_c = 9.5$ MINUTES (STREETFLOW)

+ $t_c = \frac{2400\ ft}{(60)7.8\ fps} = 5.1$ MINS. (PIPEFLOW)

$T_c = 14.6$ MINUTES $P_{60} = 1.87"$

$I = (0.726)\log_{10}[(0.41)(14.6)]\left(\frac{60}{14.6}\right)(1.87) = 4.34$ IN/HR

UNIVERSAL SOIL LOSS EQUATION

$$A = RKLSCP$$

where: A = soil loss / acre / year

R = rainfall & runoff factor

K = soil erodibility factor

L = slope - length factor

S = slope - steepness factor

C = land cover factor

P = support practice factor

The USLE was developed for agricultural erosion, but can also be applied to construction sites to estimate long term average erosion.

Some of the USLE factors are common to all tracts. The following values are from PREDICTING RAINFALL EROSION LOSSES, USDA Handbook No. 537.

R = 35 (Figure 1 - Albuquerque, NM)

K = 0.22 (Fig. 3 - 40% very fine sand)

LS* factor dependent on tract length & slope

C = 0.12 (Table 9 - Mulch rate @ 1½ tons/acre)

P = 0.50 (Table 14 - 5% slope, 500' max. length)

* LS values are given by Figure 4 (slope-effect chart)

The USLE, rewritten is: $A = RKCP(LS)$

where $R = 35$, $K = 0.22$, $C = 0.12$, & $P = 0.50$

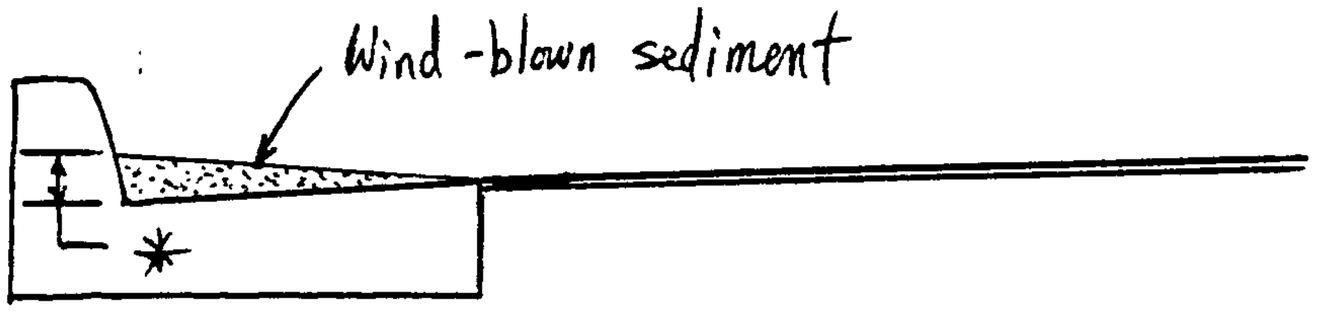
$A = (0.462)\,LS$

TRACT	LS	A	× AREA (AC)	ANNUAL SOIL LOSS (TONS/YR)
R-1-A (including the park)	1.2	0.5544	12.3220	6.83
R-1-B	2.0	0.9240	12.1151	11.20
R-1-C	1.3	0.6006	9.9760	6.00
R-1-D (including detention pond)	0.9	0.4158	12.3372	5.13
R-1-E	1.1	0.5082	4.2597	2.16
R-1-F	1.2	0.5544	5.0009	2.78
				34.10 TONS/YR

SOIL LOSS ESTIMATE FOR MASS-GRADED REVEGETATED SITE

SOIL LOSS ESTIMATE - Developed Conditions

Once development occurs the majority of the site's surface will be either impervious or landscaped. The anticipated sediment will be primarily wind blown from off-site. Estimated annual volumes are as follows:



* Depth @ curbface estimated to be 2" on east-west streets (both curb lines) and 4" on north-south streets (leeward curb only).

$$V_{e\text{-}w} = (2)\left(\frac{2}{12}\right)(2)\left(\frac{1}{2}\right)\left(\frac{1}{27}\right) = 0.0123 \text{ CY/LF}$$

$$V_{n\text{-}s} = \left(\frac{4}{12}\right)(2)\left(\frac{1}{2}\right)\left(\frac{1}{27}\right) = 0.0123 \text{ CY/LF}$$

Estimate 2400 lf interior street required for future subdivision of Tr. R-1-A (12.32 AC)

$$\therefore \text{VOLUME} = \left(0.0123 \frac{\text{CY}}{\text{LF}}\right)(2400 \text{ LF})(62.34/12.32) = \underline{150 \text{ CY}}$$

THIS VOLUME SHALL BE PROVIDED FOR IN THE PUBLIC DETENTION FACILITY AS INDIVIDUAL-TRACT DESILTATION PONDS WILL BE RECLAIMED WITH FUTURE DEVELOPMENT.

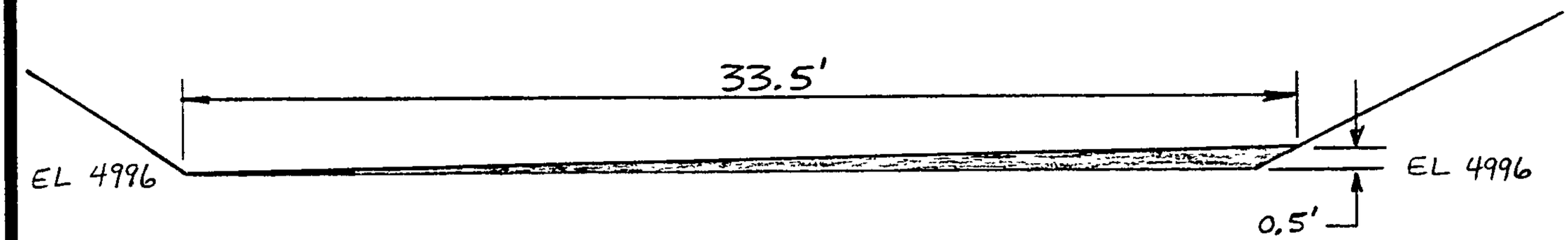
SEDIMENT CONTROL

MIN POND STORAGE = $0.0024 \frac{AC\text{-}FT}{ACRE}$

AREA = 64.1 ACRES

REQ'D VOLUME = $(64.1 AC)(.0024 \frac{AC\text{-}FT}{AC}) = 0.154 AC\text{-}FT = \underline{6,700 CF}$

STORAGE VOLUME PROVIDED (IN DEDICATED POND)



POND SECTION
NTS

PROVIDED VOLUME = $\frac{1}{2}(33.5)(0.5)(1000 LF)$

$V = 8,375 CF$ (> 6,700 CF OK)

SEDIMENT CONTROL

THE SINGLE DETENTION POND ACCEPTS STORMWATER DISCHARGE FROM TWO STORM DRAIN SYSTEMS. THE SOUTH S/D SYSTEM ENTERS THE SOUTH END OF THE POND & THE NORTH S/D SYSTEM ENTERS THE OPPOSITE END. THE FOLLOWING S/D SYSTEM DATA IS FROM THE AHYMO OUTPUT FILE:

S/D SYSTEM	Q IN MAX(CFS)	Q OUT MAX (CFS)	AVG Q_{100} (CFS)	AREA * (SQ FT)	VELOCITY (@ 50%Q_{AVG})	L (FT)
SOUTH	104	10.5	57.2	47.9	0.60	500
NORTH	119	12.0	65.5	52.0	0.63	550

* FROM RATING CURVE ON FOLLOWING SHEET

→ FOR THE SOUTH S/D SYSTEM:

@ Q_{100} → D = 4997.58 − 4996.0 = 1.58 FT (DEPTH)

$$\text{REQ'D DETENTION TIME} = \frac{\text{DEPTH (FT)}}{0.002\ \text{FT/SEC}} \leftarrow \text{(SETTLING VELOCITY)}$$

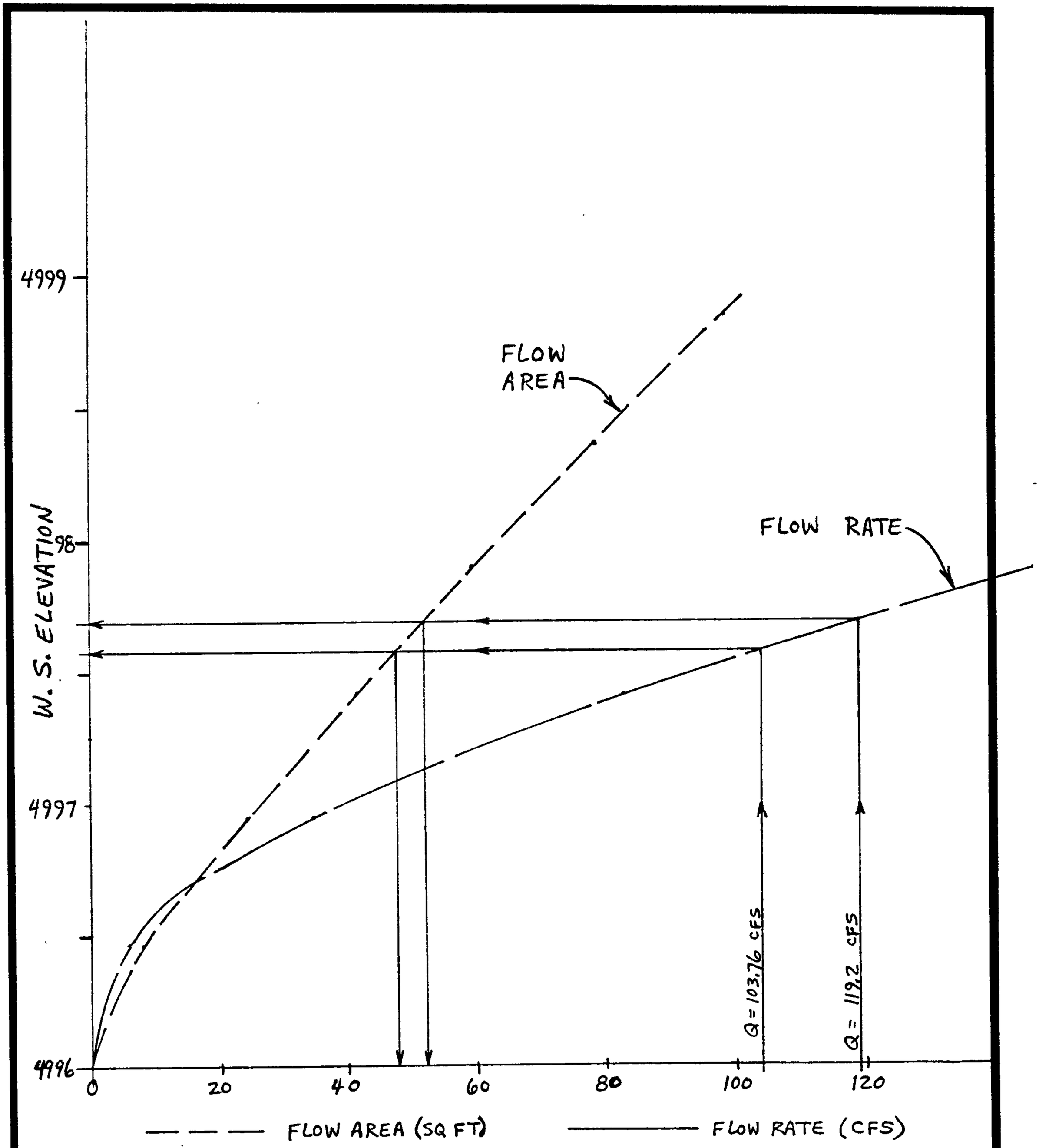
$$\text{REQ'D TIME} = \frac{1.58\ \text{FT}}{.002\ \text{FT/SEC}} = 790\ \text{SEC}\ (13.17\ \text{MINS})$$

$$\text{TIME PROVIDED} = \frac{\text{LENGTH}}{\text{VELOCITY}} = \frac{500}{0.60} = 833\ \text{SEC}\ (13.88\ \text{MINS})$$

→ NORTH S/D SYSTEM: D = 1. FT

$$\text{REQ'D TIME} = \frac{1.69\ \text{FT}}{.002\ \text{FT/S}} = 845\ \text{SEC}\ (14.08\ \text{MINS})$$

$$\text{TIME PROVIDED} = \frac{L}{V} = \frac{550}{0.63} = 873\ \text{SEC}\ (14.55\ \text{MINS})$$



RATING CURVE - VALLEY SECTION
(TRACT F - DEDICATED POND)

ISAACSON & ARFMAN, P.A.

SUBJECT TAYLOR RIDGE JOB NO.
BY SMM DATE 1/94 SHEET NO. 24 OF

STREET HYDRAULICS SUMMARY

ANALYSIS POINT	STREET WIDTH	STREET SLOPE(%)	WATER DEPTH	VELOCITY	Q(CFS)	EGL(FT)
A	36'	4.4	0.24'	3.6FPS	4.7	0.53
B *	"	2.1	0.23'	2.8	3.2	0.35
C	" (SUMP)	0.0	0.67'	0.0	20.5	0.67
D **	" (SUMP)	0.0	0.67'	0.0	12.2	0.67

NOTE: ALL PROPOSED CURB IS STANDARD CURB & GUTTER.

*** DEVELOPED FLOWS FROM TRACT A(*)/B(**) SHALL BE INTERCEPTED & CARRIED VIA FUTURE SD EXTENSION AS PROVIDED FOR WITH 24"SD STUB WEST OF MONTANO PLAZA DRIVE NW.

SUMMARY OF HYDRAULIC CALCULATIONS

CLOSED CONDUIT

BY: SMM
DATE: 5/10/94
SHEET: 25B OF

PROJECT: TAYLOR RIDGE S/D
LINE: NORTH SD SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
										JUNCTION		LOSSES									
STATION	STRUCT	D	Q	A	V	K	S_f	L	Δ	D	θ	h_f	h_b	h_j	h_{mh}	h_t	h_{misc}	Σ	E.G.	h_v	H.G.
NORTH	OUTLET									-	90°								5009.50		5009.50
		36"	65.5	7.07	9.3	667	0.01	186.6				1.87									
	MH7									6'	13.6°		.08								5018.4
		36"	65.5	3.50	18.7	330	0.04	216.7				8.7									5018.5
	MH6									6'	7.6°		.06								5032.10
		36"	65.5	3.50	18.7	330	0.04	33.9				1.4									5032.16
	MH4									6'	32.9°		.12								5035.10
		24"	45.6	3.14	14.5	226	0.04	380.4				15.2									5035.22
	MH3									4'	90°		.20								5060.13
		24"	40.8	3.14	13.0	226	0.03	107.4				3.2									5060.33
	MH2									4'	0°		0								5063.53
		24"	37.5	3.14	11.9	226	0.03	53.5				1.6									5062.63
	MH1									4'	90°		.20								5065.23
																					5065.43
OXNARD	BRANCH LINE:																				
	MH4									6'	90°		.20								5035.10
		30"	20.5	2.34	8.8	189	0.01	158.7				1.6									5035.30
	MH5									4'	-		.10								5037.00
																					5037.10

REMARKS: OUTLET SUBMERGED BASED ON 10-YR W.S. ELEVATION IN DETENTION POND (5009.50)

MANNING'S n: 0.013

SHEET 25B

SUMMARY OF HYDRAULIC CALCULATIONS

BY: SMM
DATE: 5/11/94
SHEET: 25C OF

CLOSED CONDUIT

PROJECT: TAYLOR RIDGE S/D

LINE: SOUTH SD SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
										JUNCTION		LOSSES									
STATION	STRUCT	D	Q	A	V	K	S_f	L	Δ	D	θ	h_f	h_b	h_j	h_{mh}	h_t	h_{misc}	Σ	E.G.	h_v	H.G.
																			5009.50		5009.50
	OUTLET									–	90°										
		36"	49.9	7.07	7.1	667	0.01	33.50				3.32									5023.30
	MH 12									6'	77°		0.19					3.51			5023.50
		30"	40.3	2.40	16.8	199	0.04	49.80				2.0									5025.50
	MH 11									4'	13°		0.08					2.08			5025.58
		24"	28.1	2.24	12.5	179	0.02	300.00				6.0									5032.70
	MH 10									4'	0°		0					6.00			5032.80
		24"	28.1	1.87	15.0	142	0.04	280.14				11.2									5051.21
	MH 9									4'	90°		0.20					17.00			5051.41

REMARKS: OUTLET SUBMERGED BASED ON 10-YR W.S. ELEV (= 5009.50) IN DETENTION POND

MANNING'S n: 0.013

SHEET 25C

Street Hydraulics (A)

Street: TAYLOR RANCH DR (WEST OF MONTANO PLAZA DRIVE)

100-yr. Q: 4.7 1/2 Street Flow: 2.35

Street slope: 4.4% *

Max. flow depth: 0.24 FT

Catch Basin Hydraulics

sht 16

Upstream inlet(s): SINGLE 'A' - PAIR

DPM grating capacity plate: 22.3 D-5

Intercepted Q: 2.6 CFS

Remaining surface flow: 0

Max. flow depth: 0

Downstream inlet(s): NA

DPM grating capacity plate:

Intercepted Q:

Total interception capacity: 5.2 CFS

As % of design Q: 110 %

* AT THIS SLOPE, FLOW IS IN SUPER CRITICAL REGIME. CATCH BASINS SHALL BE LOCATED UPSTREAM OF ANY HYDRAULIC JUMPS.

Street Hydraulics (B)

Street: MONTANO PLAZA DR (NORTH OF TAYLOR RANCH DR)
100-yr. Q: 3.2 * 1/2 Street Flow: 1.6
Street slope: 2.1%
Max. flow depth: 0.23 FT

Catch Basin Hydraulics

Upstream inlet(s): SINGLE 'A'
DPM grating capacity plate: 22.3 D-5
Intercepted Q: 2.0 CFS

Sht 13

Remaining surface flow: 0
Max. flow depth: 0
Downstream inlet(s): NA
DPM grating capacity plate:
Intercepted Q:

Total interception capacity: 4.0 CFS
As % of design Q: 125%

* 100-yr Q based on Future inlets within Tract A intercepting all flow (Basin 10 Q_{100} = 37.5). However, if Tract A inlets clog, surface flow in Montano Plaza could be 40 cfs (½ Street Flow = 20 cfs).

CORRESPONDS WITH BASIN 30

Street Hydraulics

Street: OXNARD DRIVE (C)
100-yr. Q: 20.5 CFS 1/2 Street Flow: 10.3
Street slope: SUMP (0%)
Max. flow depth: 0.67 FT

Catch Basin Hydraulics

Upstream inlet(s): 2 DBL 'A' & 2 SNGL 'A' (DOUBLE THROAT) INLETS
DPM grating capacity plate: SEE BELOW
Intercepted Q: (4) (20.7) = 82.8 CFS

Inlets #1-4 Sht 17

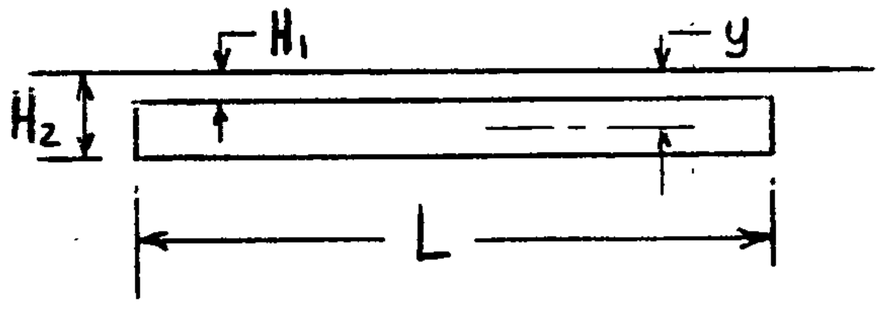
Remaining surface flow: 0
Max. flow depth: 0.67FT (TOP OF CURB)
Downstream inlet(s):
DPM grating capacity plate:
Intercepted Q:

Total interception capacity: 82.8 CFS
As % of design Q: 2 x Q_{100}

ASSUME GRATE 100% CLOGGED, $Q_{INTERCEPTED}$ BASED ON EQUATION FOR ORIFICE FLOW: $Q = C A \sqrt{2gH}$

$Q = (.62)(5.21)\sqrt{(2)(32.2)(.635)}$

$Q = 20.7$ CFS /INLET ←



$H_1 = 4.5" = .375'$
$H_2 = 10.75" = .896'$
$A = L(H_2 - H_1) = 10.0(.521) = 5.21$ ft²
$y = H_1 + \left(\frac{H_2 + H_1}{2}\right) = .635'$

CORRESPONDS WITH
BASIN 50

Street Hydraulics

Street: MONTANO PLAZA DRIVE (D)
100-yr. Q: * 1/2 Street Flow: _____
Street slope: 0.0 (SUMP CONDITION)
Max. flow depth: 0.67 FT

$2 \times Q_{100} = (2)(49.9) = 99.8$ CFS

~~2 Singles + 2 Doubles~~

#1-96
Sht 14

Catch Basin Hydraulics

Upstream inlet(s): 6 SINGLE 'A' INLETS
DPM grating capacity plate: SEE BELOW
Intercepted Q: (13.4)(6) = 80.4

Remaining surface flow: ~~_____~~
Max. flow depth: ~~_____~~
Downstream inlet(s): ~~_____~~
DPM grating capacity plate: ~~_____~~
Intercepted Q: ~~_____~~

Total interception capacity: 80.4 CFS
As % of design Q: 80.4 ÷ 99.8 = 80%
$2 \times Q_{100}$

Add Future Tract B inlets.
$(Q = 19.4)$ if $Q > 2 \times Q_{100}$

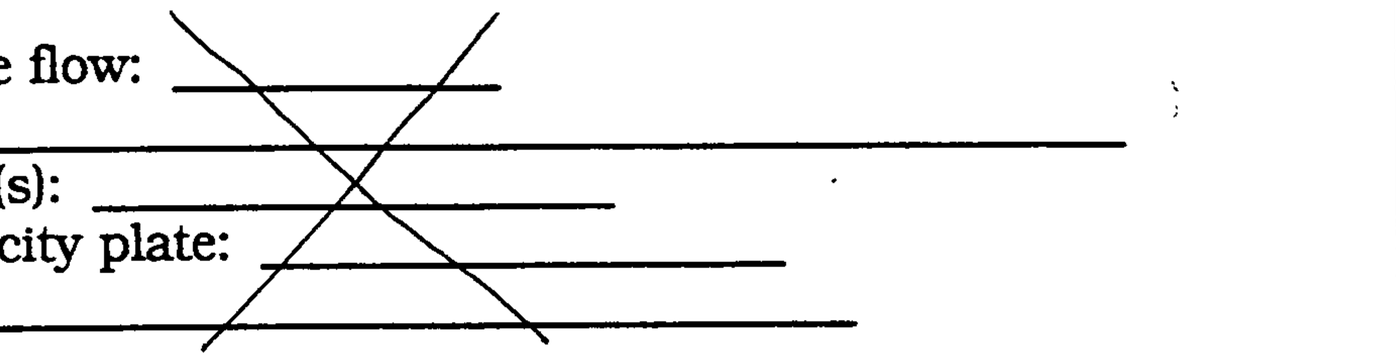
Q INTERCEPTED @ SUMP INLET IS BASED ON CLOGGED GRATE WITH OPEN THROAT ONLY ACCEPTING FLOW.

FOR ORIFICE:

$Q = Ca\sqrt{2gh}$

$Q = (0.62)(3.387)\left((2)(32.2)(.635)\right)^{1/2}$

$Q = 13.4$ CFS / INLET



$A = (L)(H_2 - H_1)$
$A = 6.5'(.896 - .375)$
$A = 3.387\phi$

$y = H_1 + \left(\frac{H_2 - H_1}{2}\right) = .375 + .260$
$y = 0.635$ FT

* 6.2 CFS IS REMAINING OVERLAND FLOW NOT INTERCEPTED AT (E)

NORTH STORM DRAIN SYSTEM

$2 \times Q_{100} = (2)(65.86) = \underline{131.7 \text{ CFS}}$

ANALYSIS POINT	LOCATION / DESCRIPTION	INTERCEPTED Q (CFS)
	TRACT A FUTURE SD EXTENSION (REQ'D INTERCEPTION CAPACITY)	37.5
(A)	TAYLOR RANCH DRIVE INLETS (WEST OF MONTANO PLAZA)	4.7
(B)	MONTANO PLAZA DRIVE INLETS (NORTH OF TAYLOR RANCH RD)	3.4
	TAYLOR RANCH DRIVE INLETS (ABOVE KNUCLE IN OXNARD DR)	3.4
(C)	OXNARD DRIVE SUMP INLETS 2 DBL 'A' & 2 SNGL 'A' WITH DOUBLE THROATS (4 @ 20.7 CFS)	82.8
		131.8 CFS

SOUTH STORM DRAIN SYSTEM

$2 \times Q_{100} = (2)(49.9) = \underline{99.8 \text{ CFS}}$

ANALYSIS POINT		INTERCEPTED Q (CFS)
(D)	Sump Inlets @ low point in Montano Plaza Drive NW	
	6 @ 13.4 CFS /EA	= 80.4

Future Tract B SD extension
required interception capacity = $\frac{19.4}{99.8 \text{ CFS}}$

ALLOWABLE TOTAL DISCHARGE, BASED ON PRORATED LAND AREA (AFTER DEDUCTING FOR FREE DISCHARGE OF PUBLIC R/W - DELLYNE & MONTANO) IS AS FOLLOWS:

from SCANLON PLAN: Design Discharge = 57.7 CFS

MONTANO: 17.6

DELLYNE: 14.5

* TOTAL 32.1 CFS

57.7
- 32.1
25.6 CFS (REMAINDER) ←

TOTAL CONTRIBUTING AREA

N.C.D.M.P. AREA	ACRES
20.1 W	22.59
20.2 W	45.12
20.3 W	62.77
20.4 W	21.02
20.6 E	33.00
TOTAL	184.5 ACRES

TRACT R-1 (& OFFSITE) AREAS

AREA	ACRES
TRACT R-1	62.34
OFFSITE	5.33
TOTAL	67.67 AC

INITIAL ALLOWABLE DISCHARGE: $25.6 CFS \left(\frac{67.67}{184.50}\right) = \underline{9.4 \text{ CFS}}$ ←

* STREET AREAS WILL DRAIN QUICKLY, WITHIN 0.3-0.5 HOURS, AS THE TIME OF CONCENTRATION FOR THESE AREAS IS THE MINIMUM. AFTER STREET R/W AREAS HAVE DISCHARGED, RELEASE RATE MAY INCREASE ACCORDINGLY TO:

MAX. ALLOWABLE DISCHARGE: $57.7 CFS \left(\frac{67.67}{184.50}\right) = \underline{21.2 \text{ CFS}}$ ←

DETENTION POND OUTLET STRUCTURE SHALL BE DESIGNED TO DISCHARGE BETWEEN 9.4 CFS & 21.2 CFS WITH INCREASING POND DEPTH (HEAD).

WHEN FLOW LEAVES DETENTION POND, IT IS CARRIED BY THE EXISTING 36" ϕ STORM DRAIN (LENGTH = 1000 FT & SLOPE = 0.004 FT/FT) TO THE ANALYSIS POINT USED FOR BOTH MONTANO & DELLYNE R/W DRAINAGE BASINS

ADD'L TRAVEL TIME: $t_c = L/V$ & $V = K\sqrt{S}$ where $K = 3$

$V = (3)(0.4)^{1/2} = 1.9$ FPS

$t_c = 1000/1.9 = 527$ SECS $= 8.8$ MINS. (0.15 HRS)

THIS TIME IS ADDITIVE TO THE TIME GIVEN IN THE ROUTE RESERVOIR TABLE OF THE AHYMO OUTPUT. THE FOLLOWING TABLE GIVES A COMPARISON OF FLOWS & PEAK TIMES.

BASIN	Q (CFS)	TIME (HRS)
MONTANO RD	17.6	1.50 *
DELLYNE	14.5	1.54 *
DETENTION POND	8.55	1.65 **
"	19.73	1.82 **

* USES A MIN. TIME TO PEAK OF 1.50 HRS

** INCLUDES THE ADDITIONAL TRAVEL TIME CALCULATED ABOVE (ADDED TO THE AHYMO ROUTE RESERVOIR VALUES)

INTERIM DESILTATION PONDS

THE FOLLOWING VALUES ARE BASED ON THE SITE BEING MASS-GRADED & REVEGETATED (LAND TREATMENT 'C'). AREAS OF PONDS HAVE BEEN PLANIMETED AND THE AVERAGE END AREA METHOD WAS USED WITH 1 FOOT INCREMENTAL DEPTHS TO DETERMINE VOLUMES.

TRACT	V_{100}	Pond Area	Max Depth	Volume Provided
A	44,200	40×200 ±	5.0'	40,300
B	43,500	30×390 ±	4.0'	44,000
C	35,800	45×200 ±	4.0'	34,000
D*	62,000	35×210 ±	4.0'	27,200
E	15,000	35×200 ±	3.0'	20,000

* THE VOLUME SHOWN FOR TRACT D (62,000 CF DETERMINED WITH 100% 'C' LAND TREATMENT) EXCEEDS THE INTERIM STORAGE CAPACITY. THE INTERIM POND IS SIZED FOR THE 5.0 ACRE COMMERCIAL-ZONED AREA AT THE NORTH END OF TRACT D. THE BALANCE OF THE TRACT IS RESIDENTIAL ZONING & THE LARGE DEDICATED POND WILL PROVIDE THE SEDIMENT & DETENTION VOLUME REQUIRED.

AHYMO SUMMARY TABLE (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MON/DAY/YR) =03/02/1994
INPUT FILE = TAYLORI.DAT USER NO.= S_MCGEE_.S92

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	10.00	-	1	.01935	37.47	1.126	1.09148	1.500	3.026	PER IMP=	10.00
COMPUTE NM HYD	20.00	-	2	.00317	6.15	.185	1.09148	1.500	3.033	PER IMP=	10.00
ADD HYD	20.10	1& 2	2	.02252	43.62	1.311	1.09146	1.500	3.027		
ROUTE	20.10	2	3	.02252	43.49	1.311	1.09148	1.500	3.017		
COMPUTE NM HYD	30.00	-	4	.00856	16.58	.498	1.09148	1.500	3.027	PER IMP=	10.00
ADD HYD	30.10	3& 4	4	.03108	60.07	1.809	1.09145	1.500	3.020		
ROUTE	30.20	4	5	.03108	59.83	1.809	1.09147	1.500	3.008		
COMPUTE NM HYD	40.00	-	6	.02176	42.13	1.267	1.09148	1.500	3.025	PER IMP=	10.00
ADD HYD	40.10	5& 6	7	.05284	101.96	3.076	1.09146	1.500	3.015		
COMPUTE NM HYD	50.00	-	8	.02532	47.10	1.407	1.04215	1.500	2.907	PER IMP=	9.43
ROUTE	50.10	8	9	.02532	47.00	1.407	1.04216	1.500	2.901		
COMPUTE NM HYD	55.00	-	10	.02206	42.71	1.284	1.09148	1.500	3.025	PER IMP=	10.00
ADD HYD	60.00	9&10	11	.04738	89.72	2.691	1.06511	1.500	2.959		
ROUTE	60.00	11	12	.04738	76.27	2.691	1.06512	1.533	2.515		
ROUTE	40.20	7	13	.05284	85.35	3.076	1.09148	1.567	2.524		
ADD HYD	60.30	13&12	14	.10022	161.34	5.767	1.07901	1.533	2.515		
ROUTE RESERVOIR	70.00	14	15	.10022	21.26	5.767	1.07901	2.200	.331	AC-FT=	4.031

FINISH

AHYMO SUMMARY TABLE (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MON/DAY/YR) =05/10/1994
INPUT FILE = TAYLORX.DAT USER NO.= S_MCGEE_.S92

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
COMPUTE NM HYD	10.00	-	1	.01926	20.47	.655	.63748	1.500	1.660	PER IMP= 38.00
COMPUTE NM HYD	20.00	-	2	.00310	5.16	.177	1.06962	1.500	2.603	PER IMP= 79.00
ADD HYD	20.10	1& 2	2	.02236	25.63	.832	.69737	1.500	1.791	
ROUTE	20.10	2	3	.02236	25.44	.832	.69739	1.500	1.778	
COMPUTE NM HYD	30.00	-	4	.00868	12.54	.422	.91095	1.500	2.258	PER IMP= 64.00
ADD HYD	30.10	3& 4	4	.03104	37.99	1.253	.75708	1.500	1.912	
ROUTE	30.20	4	5	.03104	37.95	1.253	.75710	1.533	1.910	
COMPUTE NM HYD	40.00	-	6	.02176	33.65	1.172	1.00987	1.500	2.417	PER IMP= 77.00
ADD HYD	40.10	5& 6	7	.05280	71.32	2.425	.86126	1.500	2.110	
COMPUTE NM HYD	50.00	-	8	.02511	27.47	.861	.64266	1.500	1.709	PER IMP= 36.00
ROUTE	50.10	8	9	.02511	27.35	.861	.64266	1.500	1.702	
COMPUTE NM HYD	55.00	-	10	.01794	23.30	.776	.81058	1.500	2.029	PER IMP= 55.00
ADD HYD	60.00	9&10	11	.04305	50.65	1.636	.71262	1.500	1.838	
ROUTE	60.00	11	12	.04305	41.02	1.636	.71264	1.567	1.489	
ROUTE	40.20	7	13	.05280	58.06	2.425	.86127	1.533	1.718	
ADD HYD	60.30	13&12	14	.09585	98.75	4.062	.79451	1.567	1.610	
ROUTE RESERVOIR	70.00	14	15	.09585	16.27	4.062	.79450	2.233	.265	AC-FT= 2.677
FINISH										