

**RIVERSIDE COUNTY FLOOD CONTROL AND
WATER CONSERVATION DISTRICT
RIVERSIDE, CALIFORNIA**

**REPORT ON
MASTER DRAINAGE PLAN
FOR
THE HEMET AREA
(ADDENDUM)
ZONE FOUR**

**July 1969
(Rev. July, 1977)**

**JOHN W. BRYANT
CHIEF ENGINEER**

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ADDENDUM FOR HEMET MASTER DRAINAGE PLAN - 1977

INTRODUCTION

This study to review and update the Hemet Master Drainage Plan was undertaken due to new hydrologic information which has become available since the plan was published in 1969.

A previous revision had been considered but initiation of the study was delayed until 1975, awaiting the publication of the Short-Duration Precipitation Frequency data for Riverside County, June 1975, by the California Department of Water Resources (DWR). This report, coupled with the District's own review of recording rain gauge records in the area and the 1972 USWB publication on rainfall values, provided data justifying the lowering of the intensity-duration curves and the 100 year frequency rainfall. Soils map changes published in the 1971 SCS Soil Survey were also used with a revised runoff-coefficient curve which was selected. Additionally newer topo maps (1972) have been completed. These three significant factors provided the justification for the study to revise the Hemet Master Drainage Plan.

Changes in Hydrology

Figure 1 depicts in tabular form the recommended revised intensity-duration curves. These curves compare favorably with an analysis of the automatic rain gauges at Winchester and the San Jacinto Ranger Station. The curve used in the 1969 Plan was based on U.S. Weather Bureau Technical Papers 24 & 28. The Winchester and the San Jacinto Ranger Station curves were plotted from data published in the 1975 DWR report. The Winchester 10 year frequency curve was adopted as most representative for the Hemet area, and is believed to be conservative. It is based on over 31 years of record for the 1 hour duration (and greater) data, with a minimum of 22 years of record for the shorter duration data. The effect of this change is to slightly reduce runoff due to the lower rainfall intensities.

New rainfall values needed for the 100 year frequency, 6 hour storm analysis were taken from the 1972 USWB paper. They were also confirmed by data published in the 1975 DWR report and other analysis done by the District on gages in the area. The newer data is generally about 25% lower than published values used in 1969.

The SCS Soil Survey Map (1971) shows that all of the area tributary to the underground reaches of Lines A, B, C and D is the "B" type soil. The 1969 Hemet Master Plan had used preliminary unpublished information from the Soil Conservation Service which concluded that about 2/3 of this same area was "B" type soil and 1/3 was "C" type soil.

The runoff coefficient curve presented herein as Figure 2 is believed to be representative of "B" type soils found in this area.

The curves used in the 1969 Plan were L.A. County soil curves selected by a SCS soil scientist based on his judgement of the comparison of the Hemet soils with those identified on the L.A. soil curves. In summary, the effect of the revised soil map and the selected corresponding soil curve was to reduce the runoff anticipated on Lines A, B, and C, but this factor acted to slightly increase the runoff on Line D.

The final changes in the hydrology were due to adjusting the boundary of the drainage areas to conform with information now available on the 1972 topo maps. These maps augmented by subdivisions approved since this date, reflect the effects of development since the original topo maps (approximately 1958) which were used for the 1969 Master Plan. Field checks complemented the new topo in determining the drainage boundaries. The effect of these changes was some redistribution of drainage area between Lines A, B, C and D. The new boundaries are shown on the composite drainage map in the rear of this report.

Revised System Alignments

In the process of revising the hydrology, some less costly alternate alignments for Lines B and C became evident. While the length of the mainlines remained constant, the length of lateral lines was reduced by more than a mile.

Review of Existing Channels

A check was made to determine if the capacity of the existing Hemet Channel would be exceeded when the revised alignments were accounted for. In general, the estimated Q100 discharges were reduced due mainly to the 25-30% lower rainfall values, (from the 1972 U.S. Weather Bureau Paper and supported by District rainfall records) compared with those used in the 1969 plan. As a result, the capacity of all existing channels was determined to be adequate.

Review of Outlet Adequacy

Due to the rapid development in the last several years in and around the city of Hemet the problems associated with discharging storm runoff have steadily increased. Storm drains and storm channels that once fulfilled the task of removing runoff from populated areas to remote agricultural flood plain areas are no longer considered adequate without a facility to carry these flows to a safe discharge point. An interim channel has therefore been proposed in this Master Plan Revision within the broad undefined Salt Creek Floodplain, along with some upgrading of the Hemet Channel (Line "A"). These proposed facilities which are recommended to be designed for approximately 1500 cfs would

provide an escape route for the frequent storm water runoff (from Hemet to Highway 395 near Sun City) thereby minimizing the impact on the downstream area. Runoff can readily be carried in existing facilities beyond this point to Railroad Canyon Lake. The ultimate channel configuration as shown on the Line "A" plates and in the cost breakdown tables could be constructed at a later date as funds become available.

Summary

The recommended revised system is shown on Plates 82 and 83 (Hemet/Salt Creek Interim Channel) and on Plate 84 (Composite Drainage Map) in the rear of this report. The estimated project costs are shown on Tables 1 and 2. Preliminary plan and profile plates are attached.

RAINFALL INTENSITY vs. DURATION

<u>Duration</u> (min.)	<u>2 Yr.</u> <u>Frequency</u> (in./hr.)	<u>5 Yr.</u> <u>Frequency</u> (in./hr.)	<u>10 Yr.</u> <u>Frequency</u> (in./hr.)	<u>100 Yr.</u> <u>Frequency</u> (in./hr.)
10 - - - -	1.05 - - - -	1.55 - - - -	1.95 - - - -	3.10
11 - - - -	1.00 - - - -	1.47 - - - -	1.85 - - - -	2.94
12 - - - -	.95 - - - -	1.41 - - - -	1.76 - - - -	2.80
13 - - - -	.91 - - - -	1.35 - - - -	1.69 - - - -	2.68
14 - - - -	.87 - - - -	1.30 - - - -	1.63 - - - -	2.57
15 - - - -	.84 - - - -	1.25 - - - -	1.57 - - - -	2.49
16 - - - -	.81 - - - -	1.21 - - - -	1.52 - - - -	2.40
17 - - - -	.79 - - - -	1.17 - - - -	1.47 - - - -	2.32
18 - - - -	.76 - - - -	1.14 - - - -	1.43 - - - -	2.25
19 - - - -	.74 - - - -	1.11 - - - -	1.39 - - - -	2.18
20 - - - -	.72 - - - -	1.08 - - - -	1.35 - - - -	2.13
22 - - - -	.69 - - - -	1.03 - - - -	1.28 - - - -	2.05
24 - - - -	.65 - - - -	.98 - - - -	1.23 - - - -	1.93
26 - - - -	.63 - - - -	.94 - - - -	1.18 - - - -	1.85
28 - - - -	.60 - - - -	.90 - - - -	1.13 - - - -	1.78
30 - - - -	.58 - - - -	.87 - - - -	1.10 - - - -	1.72
32 - - - -	.56 - - - -	.84 - - - -	1.06 - - - -	1.66
34 - - - -	.54 - - - -	.81 - - - -	1.02 - - - -	1.61
36 - - - -	.53 - - - -	.79 - - - -	.99 - - - -	1.56
38 - - - -	.51 - - - -	.76 - - - -	.96 - - - -	1.51
40 - - - -	.50 - - - -	.74 - - - -	.94 - - - -	1.47
44 - - - -	.47 - - - -	.71 - - - -	.89 - - - -	1.40
48 - - - -	.45 - - - -	.68 - - - -	.85 - - - -	1.33
52 - - - -	.43 - - - -	.65 - - - -	.82 - - - -	1.28
56 - - - -	.42 - - - -	.62 - - - -	.79 - - - -	1.23
60 - - - -	.40 - - - -	.60 - - - -	.76 - - - -	1.18
65 - - - -	.39 - - - -	.58 - - - -	.73 - - - -	1.14
70 - - - -	.37 - - - -	.55 - - - -	.70 - - - -	1.10
75 - - - -	.35 - - - -	.53 - - - -	.67 - - - -	1.05

HEMET AREA
INTENSITY DURATION CURVES

Riverside County Flood Control & Water Conservation District

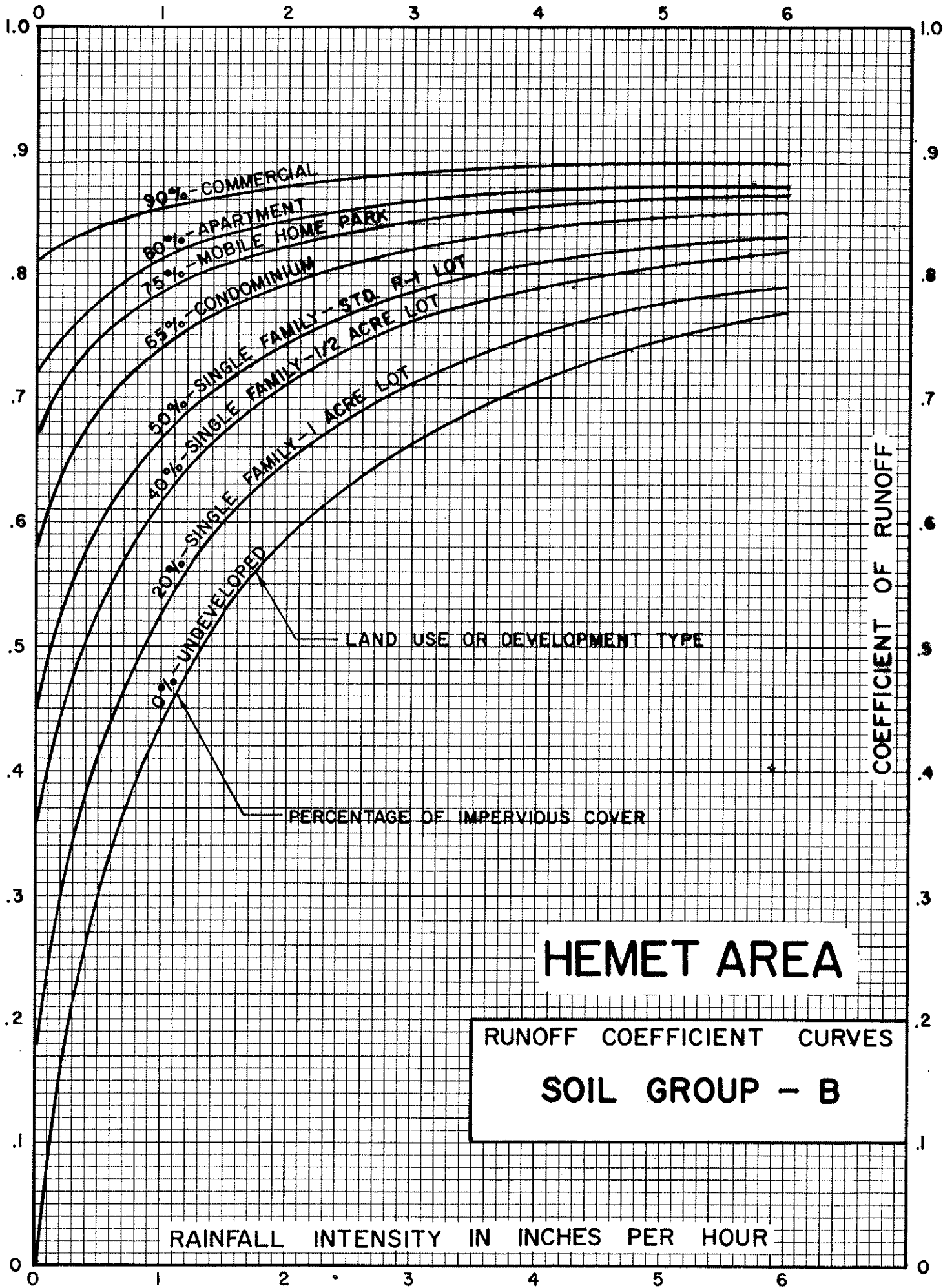


FIGURE 2

C O S T S U M M A R Y

<u>SYSTEM SEGMENT</u>	<u>LOCATION</u>	<u>INTERIM 1977 Cost</u>	<u>ULTIMATE 1977 Cost*</u>
<u>LINE "A" INTERIM HEMET CHANNEL</u>			
Reach 1	Patterson to Simpson	\$277,000	\$ 1,039,100
Reach 2	Simpson to Aqueduct Road	106,600	1,421,900
Reach 3	Aqueduct Road to Sanderson	23,600	1,148,200
	Mainline Subtotal	\$407,200	\$ 3,609,000
Line A	San Jacinto to Yale		\$ 269,500
Line A-2	At Cawston		269,100
Line A-3	At Sanderson		1,294,000
Line A-6	At Lyon		215,900
Line A-7	At Palm		58,500
	Subtotal		\$ 2,107,000
	Line "A" System Total		<u>\$ 5,716,000</u>
<u>LINE "B" - ACACIA AVENUE</u>			
Reach 1	Palm to Buena Vista		\$ 517,000
Reach 2	Buena Vista to San Jacinto		290,800
Reach 3	San Jacinto to Yale		264,600
Reach 4	Yale to Dartmouth		371,200
Reach 5	Acacia to Mayberry		141,600
	Mainline Subtotal		\$ 1,585,000
Line B-1	At Buena Vista		\$ 121,000
Line B-2	At San Jacinto		184,500
	Subtotal		\$ 306,000
	Line "B" System Total		<u>\$ 1,891,000</u>
<u>LINE "C" - WHITTIER AVENUE</u>			
Reach 1	Lyon to Palm		\$ 514,900
Reach 2	Palm to Santa Fe		788,200
Reach 3	Santa Fe to Yale		535,700
Reach 4	Yale to Cornell		298,900
	Mainline Subtotal		\$ 2,138,000
Line C-1	At Palm and Mayberry		\$ 230,000
Line C-2	At Columbia		146,400
Line C-3	At Yale		121,600
	Subtotal		\$ 498,000
	Line "C" System Total		<u>\$ 2,636,000</u>
<u>LINE "D" - STETSON AVENUE</u>			
Reach 1	Line A to Cawston		\$ 114,700
Reach 2	Palm to Buena Vista		981,000
Reach 3	Buena Vista to Yale		958,500
Reach 4	Yale to Cornell		483,900
Reach 5	Cornell to Stanford		412,400
Reach 6	Stanford to Hemet		303,400
	Mainline Subtotal		\$ 3,254,000
Line D-1	At Buena Vista and Johnston		\$ 601,300
Line D-2	At Yale Street		61,100
Line D-3	At Cornell Street		78,100
Line D-4	At Stanford Street		111,500
Line D-5	At Stanford Street		132,900
Line D-6	At Gilbert Street		128,400
Line D-9	At State Street		89,200
	Subtotal		\$ 1,203,000
	Line "D" System Total		<u>\$ 4,457,000</u>
<u>SALT CREEK INTERIM CHANNEL</u>			
Reach 1	Highway 395 to Olive	226,200	
Reach 2	Olive to Lindenberger	85,600	
Reach 3	Lindenberger to Leon	178,200	
Reach 4	Leon to Rice	165,300	
Reach 5	Rice to Winchester	56,500	
Reach 6	Winchester to Patterson	25,100	
	Salt Creek System Total	\$737,000	
	<u>Hemet Master Drainage Plan Total</u>	<u>\$12,240,000</u>	<u>\$ 15,440,000</u>

* All costs include right of way, contingencies, and engineering.

Table 1

TABLE 2

PRELIMINARY CONSTRUCTION COST ESTIMATE

<u>Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total</u>
<u>Line A, Reach 1 (Ultimate)</u>				
Channel Concrete	C.Y.	6,942	\$65.00	\$ 451,230
Excavation	C.Y.	105,506	1.50	158,260
Cutoff Wall	L.F.	8,100	2.40	19,440
Subdrain	L.F.	4,050	5.00	20,250
Fencing	L.F.	8,100	3.75	30,380
Bridges	S.F.	6,400	35.00	224,000
		Subtotal		<u>903,600</u>
		9% Engineering and Administration + 6% Contingencies		135,500
		Total Ultimate Reach 1		<u>\$1,039,100</u>
<u>Line A, Reach 1 (Interim)</u>				
Excavation	C.Y.	33,790	\$ 0.50	\$ 16,890
Bridges	S.F.	6,400	35.00	224,000
		Subtotal		<u>240,900</u>
		9% Engineering and Administration + 6% Contingencies		36,100
		Total Interim Reach 1		<u>\$ 277,000</u>
<u>Line A, Reach 2 (Ultimate)</u>				
Channel Concrete	C.Y.	11,648	\$65.00	\$ 757,120
Excavation	C.Y.	169,961	1.50	254,940
Cutoff Wall	L.F.	18,165	2.40	43,600
Subdrain	L.F.	9,083	5.00	45,420
Fencing	L.F.	18,165	3.75	68,120
Bridge	S.F.		35.00	67,200
		Subtotal		<u>1,236,400</u>
		9% Engineering and Administration + 6% Contingencies		185,500
		Total Reach 2 Ultimate		<u>\$1,421,900</u>
<u>Line A, Reach 2 (Interim)</u>				
Excavation	C.Y.	51,060	\$ 0.50	\$ 25,530
Bridge	S.F.	1,920	35.00	67,200
		Subtotal		<u>92,700</u>
		9% Engineering and Administration + 6% Contingencies		13,900
		Total Reach 2 Interim		<u>\$ 106,600</u>

TABLE 2 (contd.)

Description	Unit	Quantity	Unit Price	Total
<u>Line A, Reach 3 (Ultimate)</u>				
Channel Concrete	C.Y.	9,644	\$65.00	\$ 626,860
Excavation	C.Y.	132,679	1.50	199,020
Cutoff Wall	L.F.	19,811	2.40	47,550
Subdrain	L.F.	9,905	5.00	49,530
Fencing	L.F.	19,810	3.75	74,290
Utility Protection	C.Y.	7.4	150.00	1,110
			Subtotal	998,400
			9% Engineering and Administration + 6% Contingencies	149,800
			Total Ultimate Reach 3	\$1,148,200
<u>Line A Reach 3 (Interim)</u>				
Excavation	C.Y.	38,820	\$ 0.50	\$ 19,410
Utility Protection	C.Y.	7.4	150.00	1,110
			Subtotal	20,500
			9% Engineering and Administration + 6% Contingencies	3,100
			Total Interim Reach 3	\$ 23,600
<u>Line A, Sta 360+40 to 390+30 (Florida Avenue)</u>				
39" RCP	L.F.	1,270	\$58.00	\$ 73,660
36" RCP	L.F.	730	54.00	39,420
33" RCP	L.F.	950	52.00	49,400
Manholes	Ea.	7	1,600.00	11,200
Catch Basins	L.F.	140	240.00	33,600
			Subtotal	207,300
			18% Engineering and Administration + 12% Contingencies	62,200
			Total Line A Extension	\$ 269,500
<u>Line A-2</u>				
57" RCP	L.F.	1,200	\$79.00	\$ 94,800
51" RCP	L.F.	500	71.00	35,500
42" RCP	L.F.	300	61.00	18,300
Manholes	Ea.	5	1,600.00	8,000
Catch Basins	L.F.	210	240.00	50,400
			Subtotal	207,000
			18% Engineering and Administration + 12% Contingencies	62,100
			Total Line A-2	\$ 269,100

TABLE 2 (contd.)

Description	Unit	Quantity	Unit Price	Total
<u>Line A-3, Reach 1</u>				
Channel Concrete	S.F.	112,000	\$ 0.90	\$ 100,800
Excavation	C.Y.	27,050	2.40	64,920
Cutoff Wall	L.F.	6,400	2.40	15,360
Fencing	L.F.	6,400	3.75	24,000
Subdrain	L.F.	3,200	5.00	16,000
RCB Concrete	C.Y.	690	125.00	86,250
RCB Excavation	C.Y.	2,450	5.00	12,250
RCB Backfill	C.Y.	1,090	5.00	5,450
Bridges	S.F.	2,400	18.00	43,200
		Subtotal		368,200
18% Engineering and Administration + 12% Contingencies				110,500
R/W	Acres	3.306	10,000	33,060
Easement	Acres	0.211	5,000	1,060
		Total Reach 1		\$ 512,800
<u>Line A-3, Reach 2</u>				
60" RCP	L.F.	2,700	\$ 84.00	\$ 226,800
Manholes	Ea.	7	1,600.00	11,200
Catch Basins	L.F.	90	240.00	21,600
		Subtotal		259,600
18% Engineering and Administration + 12% Contingencies				77,900
		Total Reach 2		\$ 337,500
<u>Line A-3, Reach 3</u>				
54" RCP	L.F.	1,310	\$ 74.00	\$ 96,940
42" RCP	L.F.	670	61.00	40,870
Manholes	Ea.	5	1,600.00	8,000
Catch Basins	L.F.	100	240.00	24,000
		Subtotal		169,800
18% Engineering and Administration + 12% Contingencies				50,900
		Total Reach 3		\$ 220,700
<u>Line A-3a</u>				
39" RCP	L.F.	700	\$ 58.00	\$ 40,600
Manholes	Ea.	2	1,600.00	3,200
Catch Basins	L.F.	70	240.00	16,800
		Subtotal		60,600
18% Engineering and Administration + 12% Contingencies				18,200
		Total Line A-3a		\$ 78,800

TABLE 2 (contd.)

Description	Unit	Quantity	Unit Price	Total
<u>Line A-3b</u>				
42" RCP	L.F.	650	\$ 61.00	\$ 39,650
36" RCP	L.F.	650	54.00	35,100
Manholes	Ea.	3	1,600.00	4,800
Catch Basins	L.F.	130	240.00	31,200
			Subtotal	110,800
			18% Engineering and Administration	
			+ 12% Contingencies	33,200
			Total Line A-3b	\$ 144,000
<u>Line A-6</u>				
45" RCP	L.F.	1,000	\$ 65.00	\$ 65,000
39" RCP	L.F.	750	58.00	43,500
33" RCP	L.F.	170	52.00	8,840
Manholes	Ea.	5	1,600.00	8,000
Catch Basins	L.F.	170	240.00	40,800
			Subtotal	166,100
			18% Engineering and Administration	
			+ 12% Contingencies	49,800
			Total Line A-6	\$ 215,900
<u>Line A-7</u>				
36" RCP	L.F.	200	\$ 54.00	\$ 10,800
33" RCP	L.F.	320	52.00	16,640
Manholes	Ea.	2	1,600.00	3,200
Catch Basins	L.F.	60	240.00	14,400
			Subtotal	45,000
			18% Engineering and Administration	
			+ 12% Contingencies	13,500
			Total Line A-7	\$ 58,500
<u>Line B, Reach 1</u>				
69" RCP	L.F.	900	\$ 98.00	\$ 88,200
66" RCP	L.F.	1,080	93.00	100,440
63" RCP	L.F.	1,980	89.00	176,220
Manholes	Ea.	10	1,600.00	16,000
Catch Basins	L.F.	70	240.00	16,800
			Subtotal	397,700
			18% Engineering and Administration	
			+ 12% Contingencies	119,300
			Total Reach 1	\$ 517,000

TABLE 2 (contd.)

Description	Unit	Quantity	Unit Price	Total
<u>Line B, Reach 2</u>				
57" RCP	L.F.	1,980	\$ 79.00	\$ 156,420
54" RCP	L.F.	660	74.00	48,840
Manholes	Ea.	7	1,600.00	11,200
Catch Basins	L.F.	30	240.00	<u>7,200</u>
			Subtotal	223,700
			18% Engineering and Administration + 12% Contingencies	<u>67,100</u>
			Total Reach 2	\$ 290,800
<u>Line B, Reach 3</u>				
48" RCP	L.F.	2,640	\$ 68.00	\$ 179,520
Manholes	Ea.	6	1,600.00	9,600
Catch Basins	L.F.	60	240.00	<u>14,400</u>
			Subtotal	203,500
			18% Engineering & Administration + 12% Contingencies	<u>61,100</u>
			Total Reach 3	\$ 264,600
<u>Line B, Reach 4</u>				
45" RCP	L.F.	2,640	\$ 65.00	\$ 171,600
39" RCP	L.F.	660	58.00	38,280
36" RCP	L.F.	660	54.00	35,640
Manholes	Ea.	10	1,600.00	16,000
Catch Basins	L.F.	100	240.00	<u>24,000</u>
			Subtotal	285,500
			18% Engineering and Administration + 12% Contingencies	<u>85,700</u>
			Total Reach 4	\$ 371,200
<u>Line B, Reach 5</u>				
39" RCP	L.F.	1,000	\$ 58.00	\$ 58,000
36" RCP	L.F.	320	54.00	17,280
Manholes	Ea.	3	1,600.00	4,800
Catch Basins	L.F.	120	24,000	<u>28,800</u>
			Subtotal	108,900
			18% Engineering and Administration + 12% Contingencies	<u>32,700</u>
			Total Reach 5	\$ 141,600

TABLE 2 (contd.)

Description	Unit	Quantity	Unit Price	Total
<u>Line B-1</u>				
36" RCP	L.F.	660	\$ 54.00	\$ 35,640
27" RCP	L.F.	660	47.00	31,020
Manholes	Ea.	3	1,600.00	4,800
Catch Basins	L.F.	90	240.00	21,600
			Subtotal	<u>93,100</u>
			18% Engineering and Administration	
			+ 12% Contingencies	27,900
			Total Line B-1	<u>\$ 121,000</u>
<u>Line B-2</u>				
42" RCP	L.F.	1,320	\$ 61.00	\$ 80,520
30" RCP	L.F.	550	49.00	26,950
Manholes	Ea.	5	1,600.00	8,000
Catch Basins	L.F.	110	240.00	26,400
			Subtotal	<u>141,900</u>
			18% Engineering and Administration	
			+ 12% Contingencies	42,600
			Total Line B-2	<u>\$ 184,500</u>
<u>Line C, Reach 1</u>				
87" RCP	L.F.	1,320	\$ 145.00	\$ 191,400
84" RCP	L.F.	660	140.00	92,400
81" RCP	L.F.	660	135.00	89,100
Manholes	Ea.	7	1,600.00	11,200
Catch Basins	L.F.	50	240.00	12,000
			Subtotal	<u>396,100</u>
			18% Engineering and Administration	
			+ 12% Contingencies	118,800
			Total Reach 1	<u>\$ 514,900</u>
<u>Line C, Reach 2</u>				
72" RCP	L.F.	1,320	\$ 103.00	\$ 135,960
69" RCP	L.F.	3,300	98.00	323,400
66" RCP	L.F.	660	93.00	61,380
Manholes	Ea.	13	1,600.00	20,800
Catch Basins	L.F.	270	240.00	64,800
			Subtotal	<u>606,300</u>
			18% Engineering and Administration	
			+ 12% Contingencies	181,900
			Total Reach 2	<u>\$ 788,200</u>

TABLE 2 (contd.)

Description	Unit	Quantity	Unit Price	Total
<u>Line C, Reach 3</u>				
66" RCP	L.F.	1,320	\$ 93.00	\$ 122,760
63" RCP	L.F.	2,640	89.00	234,960
Manholes	Ea.	10	1,600.00	16,000
Catch Basins	L.F.	160	240.00	38,400
		Subtotal		412,100
		18% Engineering and Administration		
		+ 12% Contingencies		123,600
		Total Reach 3		\$ 535,700
<u>Line C, Reach 4</u>				
51" RCP	L.F.	660	\$ 71.00	\$ 46,860
48" RCP	L.F.	660	68.00	44,880
42" RCP	L.F.	800	61.00	48,800
39" RCP	L.F.	520	58.00	30,160
Manholes	Ea.	7	1,600.00	11,200
Catch Basins	L.F.	200	240.00	48,000
		Subtotal		229,900
		18% Engineering and Administration		
		+ 12% Contingencies		69,000
		Total Reach 4		\$ 298,900
<u>Line C-1</u>				
39" RCP	L.F.	1,320	\$ 58.00	\$ 76,560
30" RCP	L.F.	340	49.00	16,660
27" RCP	L.F.	980	47.00	46,060
Manholes	Ea.	7	1,600.00	11,200
Catch Basins	L.F.	110	240.00	26,400
		Subtotal		176,900
		18% Engineering and Administration		
		+ 12% Contingencies		53,100
		Total Line C-1		\$ 230,000
<u>Line C-2</u>				
45" RCP	L.F.	800	\$ 65.00	\$ 52,000
33" RCP	L.F.	520	52.00	27,040
Manholes	Ea.	3	1,600.00	4,800
Catch Basins	L.F.	120	240.00	28,800
		Subtotal		112,600
		18% Engineering and Administration		
		+ 12% Contingencies		33,800
		Total Line C-2		\$ 146,400

TABLE 2 (contd.)

Description	Unit	Quantity	Unit Price	Total
<u>Line C-3</u>				
39" RCP	L.F.	320	\$ 58.00	\$ 18,560
30" RCP	L.F.	700	49.00	34,300
24" RCP	L.F.	270	44.00	11,880
Manholes	Ea.	3	1,600.00	4,800
Catch Basins	L.F.	100	240.00	24,000
			Subtotal	93,500
			18% Engineering and Administration + 12% Contingencies	28,100
			Total Line C-3	\$ 121,600
<u>Line D, Reach 1</u>				
Channel Concrete	C.Y.	752	\$ 65.00	\$ 48,880
Excavation	C.Y.	7,147	2.20	15,720
Cutoff Wall	L.F.	2,730	2.40	6,550
Subdrain	L.F.	1,365	5.00	6,830
Fencing	L.F.	2,730	3.75	10,240
			Subtotal	88,200
			18% Engineering and Administration + 12% Contingencies	26,500
			Total Reach 1	\$ 114,700
<u>Line D, Reach 2</u>				
108" RCP	L.F.	1,320	\$ 215.00	\$ 283,800
96" RCP	L.F.	2,640	165.00	435,600
Manholes	Ea.	10	1,600.00	16,000
Catch Basins	L.F.	80	240.00	19,200
			Subtotal	754,600
			18% Engineering and Administration + 12% Contingencies	226,400
			Total Reach 2	\$ 981,000
<u>Line D, Reach 3</u>				
84" RCP	L.F.	660	\$ 135.00	\$ 89,100
81" RCP	L.F.	4,620	128.00	591,360
Manholes	Ea.	13	1,600.00	20,800
Catch Basins	L.F.	150	240.00	36,000
			Subtotal	737,300
			18% Engineering and Administration + 12% Contingencies	221,200
			Total Reach 3	\$ 958,500

TABLE 2 (contd.)

Description	Unit	Quantity	Unit Price	Total
<u>Line D, Reach 4</u>				
81" RCP	L.F.	1,320	\$ 128.00	\$ 168,960
78" RCP	L.F.	1,320	120.00	158,400
Manholes	Ea.	7	1,600.00	11,200
Catch Basins	L.F.	140	240.00	33,600
		Subtotal		372,200
		18% Engineering and Administration		
		+ 12% Contingencies		111,700
		Total Reach 4		\$ 483,900
<u>Line D, Reach 5</u>				
72" RCP	L.F.	1,320	\$ 103.00	\$ 135,960
69" RCP	L.F.	660	98.00	64,680
66" RCP	L.F.	660	93.00	61,380
Manholes	Ea.	6	1,600.00	9,600
Catch Basins	L.F.	190	240.00	45,600
		Subtotal		317,200
		18% Engineering and Administration		
		+ 12% Contingencies		95,200
		Total Reach 5		\$ 412,400
<u>Line D, Reach 6</u>				
45" RCP	L.F.	660	\$ 65.00	\$ 42,900
42" RCP	L.F.	1,480	61.00	90,280
39" RCP	L.F.	500	58.00	29,000
Manholes	Ea.	7	1,600.00	11,200
Catch Basins	L.F.	250	240.00	60,000
		Subtotal		233,400
		18% Engineering and Administration		
		+ 12% Contingencies		70,000
		Total Reach 6		\$ 303,400
<u>Line D-1</u>				
63" RCP	L.F.	660	\$ 89.00	\$ 58,740
60" RCP	L.F.	660	84.00	55,440
51" RCP	L.F.	1,320	71.00	93,720
45" RCP	L.F.	660	65.00	42,900
42" RCP	L.F.	660	61.00	40,260
33" RCP	L.F.	660	52.00	34,320
30" RCP	L.F.	660	49.00	32,340
Manholes	Ea.	13	1,600.00	20,800
Catch Basins	L.F.	350	240.00	84,000
		Subtotal		462,500
		18% Engineering and Administration		
		+ 12% Contingencies		138,800
		Total Line D-1		\$ 601,300

TABLE 2 (contd.)

Description	Unit	Quantity	Unit Price	Total
<u>Line D-2</u>				
36" RCP	L.F.	500	\$ 54.00	\$ 27,000
Manholes	Ea.	2	1,600.00	3,200
Catch Basins	L.F.	70	240.00	16,800
			Subtotal	\$ 47,000
			18% Engineering and Administration + 12% Contingencies	14,100
			Total Line D-2	\$ 61,100
<u>Line D-3</u>				
42" RCP	L.F.	500	\$ 61.00	\$ 30,500
Manholes	Ea.	2	1,600.00	3,200
Catch Basins	L.F.	110	240.00	26,400
			Subtotal	60,100
			18% Engineering and Administration + 12% Contingencies	18,000
			Total Line D-3	\$ 78,100
<u>Line D-4</u>				
54" RCP	L.F.	500	\$ 74.00	\$ 37,000
Manholes	Ea.	2	1,600.00	3,200
Catch Basins	L.F.	190	240.00	45,600
			Subtotal	85,800
			18% Engineering and Administration + 12% Contingencies	25,700
			Total Line D-4	\$ 111,500
<u>Line D-5</u>				
33" RCP	L.F.	1,320	\$ 52.00	\$ 68,640
Manholes	Ea.	3	1,600.00	4,800
Catch Basins	L.F.	120	240.00	28,800
			Subtotal	102,200
			18% Engineering and Administration + 12% Contingencies	30,700
			Total Line D-5	\$ 132,900
<u>Line D-6</u>				
36" RCP	L.F.	660	\$ 54.00	\$ 35,640
33" RCP	L.F.	660	52.00	34,320
Manholes	Ea.	3	1,600.00	4,800
Catch Basins	L.F.	100	240.00	24,000
			Subtotal	98,800
			18% Engineering and Administration + 12% Contingencies	29,600
			Total Line D-6	\$ 128,400

TABLE 2 (contd.)

Description	Unit	Quantity	Unit Price	Total
<u>Line D-9</u>				
33" RCP	L.F.	950	\$ 52.00	\$ 49,400
Manholes	Ea.	3	1,600.00	4,800
Catch Basins	L.F.	60	240.00	14,400
		Subtotal		68,600
		18% Engineering and Administration		
		+ 12% Contingencies		20,600
		Total Line D-9		\$ 89,200
<u>Salt Creek Interim Channel, Reach 1</u>				
Excavation	C.Y.	221,820	\$ 0.40	\$ 88,730
Dip Crossing	C.Y.	72	150.00	10,800
		Subtotal		99,500
		9% Engineering and Administration		
		+ 6% Contingencies		14,900
R.O.W.	Acre	44.67	2,500.00	111,700
		Total Reach 1		\$ 226,100
<u>Salt Creek Interim Channel, Reach 2</u>				
Excavation	C.Y.	22,330	\$ 0.40	\$ 8,930
Utility Relocation	L.S.			48,110
Dip Crossing	C.Y.	36	150.00	5,400
		Subtotal		62,400
		9% Engineering and Administration		
		+ 6% Contingencies		9,400
R.O.W.	Acre	5.49	2,500.00	13,700
		Total Reach 2		\$ 85,500
<u>Salt Creek Interim Channel, Reach 3</u>				
Excavation	C.Y.	139,740	\$ 0.40	\$ 55,900
Dip Crossing	C.Y.	36	150.00	5,400
		Subtotal		61,300
		9% Engineering and Administration		
		+ 6% Contingencies		9,200
R.O.W.	Acre	43.08	2,500.00	107,700
		Total Reach 3		\$ 178,200
<u>Salt Creek Interim Channel, Reach 4</u>				
Excavation	C.Y.	116,175	\$ 0.40	\$ 46,470
Dip Crossing	C.Y.	36	150.00	5,400
		Subtotal		51,900
		9% Engineering and Administration		
		+ 6% Contingencies		7,800
R.O.W.	Acre	42.24	2,500.00	105,600
		Total Reach 4		\$ 165,300

TABLE 2 (contd.)

Description	Unit	Quantity	Unit Price	Total
<u>Salt Creek Interim Channel, Reach 5</u>				
Excavation	C.Y.	33,705	\$ 0.40	\$ 13,480
Dip Crossing	C.Y.	36	150.00	<u>5,400</u>
		Subtotal		18,900
9% Engineering and Administration + 6% Contingencies				2,800
R.O.W.	Acre	13.9	2,500.00	<u>34,800</u>
		Total Reach 5		\$ 56,500
<u>Salt Creek Interim Channel, Reach 6</u>				
Excavation	C.Y.	20,690	\$ 0.40	\$ 8,280
9% Engineering and Administration + 6% Contingencies				1,240
R.O.W.	Acre	6.23	2,500.00	<u>15,580</u>
		Total Reach 6		\$ 25,100