FINAL
NORTH ALBUQUERQUE ACRES
MASTER DRAINAGE PLAN

Prepared For:

City of Albuquerque

Prepared By:

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Resource Technology, Inc.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. INTRODUCTION

A. Location

The **North Albuquerque Acres Master Drainage Plan** project area is located in the far northeast quadrant of Albuquerque. It is roughly bounded by I-25 on the west, Paseo del Norte on the south and the city limits on the east and north side. It also includes one small adjacent area, extending west of I-25 to include Coronado Mobile Home Village. See Figure 1.

A portion of this area was recently annexed by the City of Albuquerque and is the subject of a related **Sector Development Plan** project. The annexation action along with extensive development activity in recent years has led to renewed interest in drainage problems in this area.

B. Purpose

The purpose of the **North Albuquerque Acres Drainage Management Plan** is to prepare a coherent plan that will serve as the design analysis for future storm drainage improvements within the project area. Utilizing existing studies where possible, supplemented with additional hydrologic and hydraulic analysis when required, and coordinated with the activities of other governmental agencies and private parties, the goal of the project is to provide a conceptual framework for future storm water management activities. Furthermore, proposed solutions are to be integrated with existing facilities to the greatest extent possible and make maximum utilization of existing right-of-way and drainage easements. Where additional right-of-way or drainage easements are required these will be identified and possible acquisition strategies discussed.

C. Background

The project area is part of the North Albuquerque Acres Subdivision, originally platted in the 1930's on a uniform grid made up of nominal one acre lots. Topographic features and drainage patterns were ignored. Prior to the 1980's the only areas that saw significant development were the Sandia foothills and some areas immediately adjacent to the I-25 corridor. The area south of Paseo del Norte, then known as Los Angeles Boulevard, began to develop in the late 1970's. In the early 1980's this development started to extend to the area north of Paseo del Norte with the Nor Este Subdivisions and the construction of La Cueva High School. Adjacent unincorporated areas started to experience limited single lot housing construction as well. This was followed in the late 1980's by the initial Vineyard Subdivision on Barstow. Since 1992, the pace has quickened with the development of numerous small to medium subdivisions within the municipal limits. Each of these subdivisions involved the tedious process of consolidating existing one acre lots and replatting at higher densities.

With the increased level of development has come increased concern with drainage issues. Beginning in 1974 with the Leonard Rice **"Northeast Heights Drainage Management Plan" (AMAFCA, 1974)**, a series of drainage studies have been conducted that have resulted in the construction of flood control facilities to serve some of the needs in the area. These consist primarily of three AMAFCA flood control detention dams and related appurtenances and transportation-related hydraulic structures and storm drains along I-25, Paseo del Norte and Tramway Boulevard. Most of the remaining storm water management facilities have been constructed as part of the subdivision process.

In 1996 the City annexed most of the unincorporated areas west of Ventura and south of Florence. As a result of that action, the City Planning Department has initiated a Sector Development Plan to guide future development in this area. The **North Albuquerque Acres Master Drainage Plan** is intended to address the drainage component of this planning effort and attempt to coordinate land use, transportation and drainage issues.

II. HYDROLOGY

A. Previous Studies

The current study has made extensive use of previous study efforts in the North Albuquerque Acres area. These consisted of the **"Hydrology Report: La Cueva, El Camino and North Camino Arroyos Drainage Management Plan,"** September, 1996, and the **"North and South Domingo Baca Arroyos and Paseo del Norte Corridor Drainage Management Plan,"** December, 1991, both prepared for the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) by Resource Technology, Inc. (RTI).

The North Domingo Baca Arroyo basin has seen extensive development since the completion of the AMAFCA study which necessitated major modifications to the hydrology model which are discussed below. The more recent work on the La Cueva, El Camino and North Camino Arroyo basins has been incorporated into this study with only minor modifications. These modifications consisted primarily of changes made to future condition La Cueva Arroyo sub-basin areas to account for the shift to the north of the proposed Alameda extension from Barstow to Eubank. These changes are reflected in the Summary Tables in this report and the modified input and output files are in the Appendix.

B. Assumptions and Methodology

1. General

All of the hydrological analysis contained in this report, including the above referenced AMAFCA studies, are based on the City of Albuquerque's **Development Process Manual, Volume 2, Design Criteria, Section 22.2, Hydrology,** January, 1993. The exceptions taken to this methodology were as follows:

- The AMAFCA convention of treating rock outcrops in mountain areas as land treatment type C rather than as type D was utilized. AMAFCA felt that the initial abstraction and

uniform loss rates associated with type C land treatments more closely approximated conditions found in these areas. This methodology has been accepted by FEMA for a major re-study for the North and South Domingo Baca Arroyos. The same convention was followed in this study.

- The previous hydrology utilized by the AMAFCA studies used the 24-hour storm rather than the 6-hour storm. This results in slightly lower peak flow rates but higher volumes.

2. Routing and Sediment Bulking

The Muskingcum-Cunge method was used for all channel routings and the Variable Storage Coefficient method was used for closed conduit flow.

Sediment and erosion issues are of a major concern in the study area since all of the major arroyos originate in the steep slopes and alluvial fans of the Sandia mountains and foothills. This results in a relatively high sediment load in the main branches of the natural arroyos, primarily bed material being transported downstream. The effect of this additional load being transported by storm water runoff can be reflected by increasing the "clean" water runoff rate by a fraction determined by detailed sediment and erosion analysis. The **Hydrology Report: La Cueva, El Camino and North Camino Drainage Management Plan (1996)** (hereinafter referred to as the **1996 AMAFCA DMP Hydrology Report**) undertook such an analysis for the La Cueva, El Camino and North Camino Arroyos. These results have been extended in this study to the North Domingo Baca Arroyo. FEMA has accepted this methodology in several recently approved LOMR's and CLOMR's.

Bulking factors were not added to the basic hydrology model but are reflected in all tabular values for the major arroyos according to the rates shown in Table 1 (see the **1996 AMAFCA DMP Hydrology Report** for a discussion of the origins of this table). Runoff from urbanized areas was not bulked for sediment since these areas generate little additional sediment prior to entering streets and storm drain systems.

TABLE 1 BULKING FACTORS FOR SEDIMENT AS A FUNCTION OF FLOW RATE*	
Clean Water Flow Rate, Q (cfs)	**Bulking Factor (%)**
0 - 500	4
501 - 1000	5
1001 - 1600	6
1601 - 2100	7
2101 - 2600	8
2601 - 3200	9
3201 - 3700	10
3701 - 4200	11
*Valid for NAA and Sandia Heights natural channels west of USFS Boundary only, D_{50} 1.5 mm - 3.0 mm	

3. Land Use

Existing condition land uses and sub-basin boundaries were taken from aerial photography flown for AMAFCA and/or Bernalillo County in 1991, 1994 and 1995 and by extensive field investigation. Subdivisions that had proceeded to the rough grading phase by October, 1997 were considered as existing.

Future conditions land treatments are consistent with land uses being considered by the **La Cueva Sector Plan** (as of February, 1998) and are shown on Figures 2A and 2B. They are based on the following assumptions concerning future development in specific areas.

- Sandia Heights/Tramway Boulevard (SH/TB): This area would be built out in patterns reflecting existing development.
- North Albuquerque Acres (NAA): The area between Ventura Street and Tennyson Street as well as the area east of Coronado Airport and north of Florence Avenue would continue to develop along the lines of the existing one acre lot platting.
- Residential (R): Most existing subdivisions and areas identified in the **Sector Development Plan** as developing up to 5 DU's per acre.
- Low Density Residential (LR): The area north of Modesto and east of Wyoming is being identified as a transition area in the **Sector Development Plan** with densities ranging from 1 to 3 DU's per acre.
- High Density Residential (HR): The areas immediately north of Paseo del Norte and between Wyoming and Louisiana are being identified in the **Sector Development Plan** as developing at up to 7 DU's per acre.

- Commercial/Industrial (C/I): The area west of Louisiana Boulevard, north of Modesto Avenue and east of I-25 would develop as high density commercial and industrial. Also used for Paseo del Norte Corridor.
- Medium Density Industrial (MI): Campus type commercial/office facilities and APS schools sites.
- Sandia Tribal Lands (ST): Sandia tribal lands south of Tramway Road and north of the Sandia Pueblo Grant Boundary were allocated land treatments consistent with moderate levels of development even though there are no current plans to develop this area.

The relative weight of each type of Land Treatment is shown in Table 2.

TABLE 2

FUTURE FULL DEVELOPMENT HYDROLOGIC CONDITION ASSUMPTIONS

	Land Treatments (%)			
	A	**B**	**C**	**D**
Sandia Heights/Tramway (SH/TB)	20	40	5	35
North Albuquerque Acres (NAA)	22	23	38	17
Low Density Residential (LR)	20	20	34	26
Residential (R)	0	34	16	50
High Density Residential (HR)	0	25	15	60
Commercial/Industrial (C/I)	0	20	10	70
Medium Density Industrial (MI)	0	20	30	50
Sandia Tribal Lands (ST)	20	20	40	20
Primrose Pointe (PP)	0	40	20	40

There are some major differences in the future full development land use assumptions between the this report and those used in the **North and South Domingo Baca Arroyos and Paseo del Norte Corridor Drainage Management Plan (1991)**. In the 1991 **AMAFCA Drainage Management Plan** portions of this basin east of Ventura were assumed to have development densities of either 1 to 3 or 3 to 5 DU's per acre for the future full development condition. But these densities have not materialized over the last six years. Instead of a consolidation of existing one acre lots for replatting at higher densities there has been extensive residential construction utilizing the existing platting. This checkerboard nature of housing construction has made the future assemblage of undeveloped lots for replatting at higher densities very difficult. Therefore, a re-evaluation of the earlier assumptions was in order. This resulted in adopting the land treatment values used by AMAFCA in the **1996 AMAFCA DMP Hydrology Report** for the unincorporated areas of the La Cueva and Camino basins for the unincorporated portions of the North Domingo Baca basin. This work was facilitated by a concurrent Bernalillo County project covering upstream unincorporated areas in North Albuquerque Acres and Sandia Heights.

4. Drainage Basins

The major drainage basins were divided up by arroyo system watersheds. These were further subdivided in order to obtain calculated flows at Analysis Points or points of interest. In undeveloped areas sub-basins generally reflect topographical features. Existing condition basins are shown on Figures 3A and 3B.

In developed areas terrain has been significantly modified and sub-basins often reflect the subdivision development process. For areas within the municipal limits and served by storm drain facilities, future condition sub-basin boundaries were modified to reflect existing platting patterns rather than strictly following topography. This was done in an attempt to reflect the practice within the city of grading sites to drain to city streets rather than discharging runoff to historic flow paths. As street capacity is reached, as defined by the COA Development Process Manual, storm drains are installed that discharge to improved conveyance facilities. Future fully developed condition basins are shown on Figures 4A and 4B.

Sub-basin hydrologic characteristics are summarized in tables in the Appendix.

C. Avulsions

An avulsion can be defined as a location where the flow path of an arroyo may change course, either totally, or partially. This change in course may be the result of natural forces, such as wind or water, or due to some human activity such as road building or site grading. An avulsion may occur over time as the historic arroyo bed is altered by natural processes or may occur quickly if caused by human activity. All of the arroyo systems in the North Albuquerque Acres area are subject to the effects of potential avulsions. Most of the major avulsions which cause concern in the study area were identified in AMAFCA's **Right-of-way, El Camino and North Camino Drainage Management Plan (1996)** and subsequently discussed in a **Report on North Albuquerque Acres Arroyo Avulsion Problems (March 1997)**. Avulsion locations are shown on Figures 3A and 3B.

The effect of each of the avulsions can be summarized as follows:

a. Avulsion Number 1 occurs approximately one-half mile east of Tramway Road on U.S. Forest Service (USFS) and Sandia Reservation land and would result in North Camino Arroyo flows joining El Camino Arroyo flows. The net result is that 100-year flows in the El Camino system where it enters the city limits at Ventura could increase from 710 cfs to 1826 cfs.

b. Avulsion Numbers 2 and 3 occur on the La Cueva Arroyo tributaries east of Lowell. These flows, diverted to the North Domingo Baca Dam at Browning, would end up in the main La Cueva system. The resulting 100-year flow rates at Ventura could potentially increase from 3048 cfs to as high as 3709 cfs. While this would cause substantial problems in the unincorporated areas east of the city limits, this increase in flow rates would be contained within the freeboard on any hardlined channel sections within the city. Avulsion Number 3 has been temporarily addressed by a paved dip section constructed on Eagle Rock by Bernalillo County. While this is not a permanent solution, it does reduce the probability of an avulsion taking place.

c. Avulsion Number 4 consists of several related problem areas between Browning and Eubank on the main branch of the La Cueva Arroyo that could result in all or part of the La Cueva flows finding their way to the El Camino system. This would increase 100-year flow rates in the El Camino system at Ventura from 710 cfs to over 3200 cfs.

d. Avulsion Number 5 would result in all or part of the El Camino Arroyo leaving its historic flow path and joining a tributary of the North Camino Arroyo west of Holbrook. This would have little impact within the city limits until there is redevelopment of Coronado Airport. At that time the potential increase of the 100-year flows from 820 cfs at the runway to 1290 cfs would have to be taken into account if the avulsion was not controlled.

e. Avulsion Number 6, located at Glendale between Louisiana and San Pedro on the La Cueva Arroyo, would result in the flooding of the I-25 frontage roads and some of the adjacent businesses. This problem has been temporarily addressed by a paved dip section constructed by the City of Albuquerque. While this is not a permanent solution, it does reduce the probability of an avulsion taking place.

f. Avulsions Number 7 and 8 involve the North Camino Tributary and the main branch of the North Camino Arroyo, respectively. Until there is a redevelopment of Coronado Airport they have no major impact within the city limits.

The **1997 AMAFCA Avulsion Report** presented conceptual avulsion control measures for each of the above avulsion locations. With the exception of some preliminary negotiations with the USFS and Sandia Pueblo on constructing a training dike on USFS and Sandia Pueblo land, no action on an avulsion control program has been adopted by the AMAFCA Board.

As can be seen from the above discussion there are several major consequences for areas within the city limits if upstream avulsions are not controlled.

- If natural channels are chosen as an option for arroyo management then the higher "worst case" flow rates would result in much larger erosion setbacks.
- If channel lining is chosen as an option for arroyo management then there would be higher construction costs for the "worst case" flow rates.
- In cases where it is possible to consider a closed conduit (pipe) as an alternative to an open channel, this option would be precluded because, unlike open channels, closed conduit design does not have extra capacity within the freeboard design.

The hydrology presented in this report assumes that all upstream avulsions have been controlled. Therefore, control of all of the major avulsions that impact the study area (numbers 1, 4, 5, 6, 7, and 8) have been included as part of the infrastructure requirements. If downstream infrastructure is designed prior to controlling potential upstream avulsions that could impact a particular project, the "worst case" flows presented in the **1997 AMAFCA Avulsion Report** should be considered. However, in some cases it could prove more economical to design for the higher flow rates than to address upstream avulsion problems. "Worst case" flows from the AMAFCA report are included in Table 7 with a comparison of hydrology results, and additional data is contained in the Appendix.

D. Existing Storm Drainage Facilities

1. North Domingo Baca Basin

Since its adoption by the AMAFCA Board of Directors in 1992, the **North and South Domingo Baca Arroyos and Paseo del Norte Corridor Drainage Management Plan** has served as a general guideline for drainage facilities in the southern portion of the current study area. This planning document covered the area south of Wilshire Avenue.

As part of the implementation of that plan, public entities have designed and constructed the following facilities:

- The Lower North Domingo Baca Dam at Louisiana with a connecting outfall pipe in Anaheim to the NMSHTD I-25 crossing structure. (AMAFCA)
- A local drainage system between San Pedro and I-25, north of Anaheim, as part of SAD 221 utilizing the Anaheim outfall pipe for the LNDB Dam as a local storm drain. (COA) No additional discharge can made to the Anaheim outfall pipe without analysis of the discharge from the LNDB Dam.
- A storm drain in Wyoming from Wilshire south to the North Domingo Baca Arroyo at Corona. (AMAFCA)
- A major storm drain collection system, nearing completion, for the Paseo del Norte roadway project from Wyoming to I-25 that collects considerable local drainage at each north-south connecting street. (COA)

In addition, the following major storm drainage facilities have been constructed as part of the subdivision process by private parties:

- A 30" to 48" Corona Avenue storm drain from Louisiana to San Pedro, currently discharging to a retention pond.
- A 54" to 66" Murrelet storm drain from Wilshire to the Lower North Domingo Baca Dam.
- A 24" to 42" Barstow Street storm drain from Wilshire to Carmel that discharges to a detention dam draining to the North Domingo Baca Arroyo.
- A 36" to 54" Ventura storm drain from Corona to Carmel that discharges to a detention dam draining to the North Domingo Baca Arroyo.
- A soil cement-lined reach of the North Domingo Baca arroyo from Barstow to Wyoming (with AMAFCA participation).
- A 24" to 42" Carmel storm drain from San Gavlon to San Pedro that discharges to a retention pond. This storm drain will connect to a 48" San Pedro storm drain connecting to the PDN storm drain, both of which are under construction.
- West of I-25 the North Domingo Baca Arroyo is conveyed through the Coronado Mobile Home Village by two poorly maintained earth-lined channels of variable depth and width with numerous culvert crossings built in the late 1960's.

As can be seen, most of these facilities utilize interim ponds to control developed area runoff until future downstream improvements to the North Domingo Baca Arroyo or other facilities are made. With the exception of flows picked up by the Paseo del Norte storm drains, all storm water runoff ultimately ends up draining through the two earth-lined channels of dubious capacity west of I-25.

2. La Cueva Basin

The La Cueva Basin east of I-25 is less developed than the North Domingo Baca Basin and consequently the drainage infrastructure is less well developed. In addition to the I-25 crossing structures, the major public drainage investment in this area consists of the following:

- A soil cement training dike at Wyoming and Eagle Rock to confine the La Cueva Arroyo to one of several possible flow paths built in the mid-1980's. (AMAFCA)
- A 48" to 54" San Pedro storm drain from Signal to Modesto to I-25 built in the mid-1980's. (NMSHTD)
- A 30" storm drain in Eagle Rock connecting to the San Pedro storm drain. (COA)
- The La Cueva/Signal Avenue dike to prevent La Cueva from avulsing to the North Domingo Baca Arroyo between Barstow and Ventura. (AMAFCA)

As part of the subdivision process additional drainage facilities have been constructed. These are as follows:

- The concrete lined La Cueva Channel from Barstow to Wyoming.
- A 48" to 54" Wyoming storm drain from Alameda to Eagle Rock with connecting storm drain laterals to the Nor Este Subdivision.

- A 24" Barstow storm drain from Oakland to the La Cueva Channel inlet.
- A 42" to 60" Louisiana storm drain from Oakland to Modesto that currently drains to retention ponds with connecting storm drains in Oakland and Eagle Rock Avenues.
- A 30" Signal Avenue storm drain connecting to the San Pedro storm drain.

Except for several undersized CMP runway crossing structures at Coronado Airport, the above are the only drainage facilities on the La Cueva Arroyo east of I-25. At I-25 there is a major concrete box structure for the main branch of the La Cueva and two batteries of CMP crossing structures for minor tributaries. West of I-25 both the main branch and tributaries of the La Cueva are confined in concrete lined facilities to the North Diversion Channel.

3. El Camino and North Camino Basins

Immediately west of I-25 the El Camino Arroyo is diverted into the concrete lined La Cueva Arroyo. With the exception of the I-25 crossing structures and the undersized Coronado Airport runway culverts there are no other major facilities on either arroyo within the municipal limits.

4. Summary of Existing Facilities

Existing storm drainage facilities are shown on Figures 5A through 5F and summarized in Tables 3A, 3B and 3C. Storm drain capacities were calculated as the maximum non-pressure flow and street flow capacities are based on COA DPM 10-year and 100-year criteria. It should be noted that the flow rates shown on the Figures 3A and 3B for the existing condition reflect the attenuation effects of the numerous interim detention ponds shown. The flow rates shown on Tables 3A, 3B and 3C are future condition flow rates without any of the interim ponds in place. All flow rates assume avulsion control measures have been taken as required at upstream locations.

E. Existing Condition Hydrology Results

The results of the hydrologic analysis are summarized in Table 4. Additional data on individual basins is contained in the Appendix.

The North Domingo Baca Basin existing condition model incorporates several Paseo del Norte storm drain projects that are either under construction or will soon be under constructions. These are as follows:

- The Wyoming to I-25 segment is currently under construction and the Eubank to Wyoming segment is under design and scheduled for construction in 1998. These storm drains will outfall to the South Domingo Baca Channel. Therefore, any contributing basins will be taken out of the North Domingo Baca system.
- The Eubank to Tennyson segment will be constructed later and these storm drains will outfall either to the North or South Domingo Baca Dams. All of these facilities were incorporated into the existing condition model.

TABLE 3a

EXISTING STORM DRAIN CAPACITY

	10-YR STREET CAP (CFS)	100-YR STREET CAP (CFS)	SD SIZE "	SDS %	SD CAP (CFS)	TOTAL 10-YR CAP	TOTAL 100-YR CAP	Q-10 YEAR (CFS)	Q-100 YEAR (CFS)	10-YR OK?	100-YR OK?
MODESTO STORM DRAIN											**ZONE MAP B-18**
SAN PEDRO TO I-25	0	0	54"	1.6	216	216	216	251	352	YES*	NO
SAN PEDRO STORM DRAIN											**ZONE MAP C-18**
SIGNAL TO ALAMEDA	15	95	48"	.5	88	103	183	92	165	YES	YES
ALAMEDA TO OAKLAND	0	0	54"	.5	121	121	121	231	398	NO	NO
OAKLAND TO EAGLE ROCK	16	98	54"	.5	121	138	219	293	506	NO	NO
EAGLE ROCK TO MODESTO	15	95	54"	.7	147	162	242	238	336	NO	NO
ANAHEIM STORM DRAIN											**ZONE MAP C-18**
LNDB DAM TO SAN PEDRO	24	45	48"	3.1	220	244	265	170	204	YES	YES
SAN PEDRO TO UTE	24	44	48"	1.8	190	214	234	174	234	YES	YES
UTE TO I-25	21	49	54"	2.3	259	280	308	208	288	YES	YES
EAGLE ROCK STORM DRAIN											**ZONE MAP C-18**
CONV CENTER TO SAN PEDRO	36	50	24"	2.2	34	70	84	104	175	NO	NO

YES*: HGL IS ABOVE TOP OF PIPE BUT DOES NOT RISE ABOVE GROUND

TABLE 3b

EXISTING STORM DRAIN CAPACITY

	10-YR STREET CAP (CFS)	100-YR STREET CAP (CFS)	SD SIZE "	SD S %	SD CAP (CFS)	TOTAL 10-YR CAP	TOTAL 100-YR CAP	Q-10 YR (CFS)	Q-100 YR (CFS)	10-YR OK?	100-YR OK?
SIGNAL STORM DRAIN											**ZONE MAP C-18**
SONORA SUBDIV. TO SAN P.	31	54	30"	3.0	62	93	116	76	129	YES	YES*
CORONA STORM DRAIN											**ZONE MAP C-18**
LA. TO RANCHO D. CERRO	24	44	30"	3.0	62	86	106	45	76	YES	YES
RANCHO D. CERRO TO SAN	22	47	48"	1.7	163	185	210	136	229	YES	YES*
MURRELET STORM DRAIN											**ZONE MAP C-19**
WILSHIRE TO TRICIA	0	0	54"	.6	132	132	132	106	179	YES	YES*
TRICIA TO PEREGRINE	14	65	60"	.6	175	189	257	129	218	YES	YES
PEREGRINE TO CORONA	0	0	66"	.6	226	226	226	152	257	YES	YES*
LOUISIANA STORM DRAIN											**ZONE MAP C-19**
OAKLAND TO EAGLE ROCK	0	0	42"	1.0	87	87	87	74	122	YES	YES*
EAGLE ROCK TO MODESTO	21	76	60"	1.0	226	245	302	153	253	YES	YES
WYOMING STORM DRAINS											**ZONE MAP C-19**
WILSHIRE TO CORONA	28	91	54"	.6	132	160	223	103	170	YES	YES
CORONA TO NDB	28	91	60"	.8	202	230	293	157	258	YES	YES
ALAMEDA TO OAKLAND	0	0	36"	.7	48	48	48	65	110	YES*	NO
OAKLAND TO LA CUEVA	33	93	54"	.2	76	109	202	125	210	YES*	YES*

YES*: HGL IS ABOVE TOP OF PIPE BUT DOES NOT RISE ABOVE GROUND SURFACE

TABLE 3c

EXISTING STORM DRAIN CAPACITY

	10-YR STREET CAP (CFS)	100-YR STREET CAP (CFS)	SD SIZE "	SD S %	SD CAP (CFS)	TOTAL 10-YR CAP	TOTAL 100-YR CAP	Q-10 YR (CFS)	Q-100 YR (CFS)	10-YR OK?	100-YR OK?
BARSTOW STORM DRAINS											**ZONE MAP C-19**
FROM NORTH TO WILSHIRE	15	101	24"	.7	16	31	117	26	43	YES	YES
WILSHIRE TO GREEN ARBOR	8	47	24"	.8	17	25	64	67	112	NO	NO
GREEN ARBOR TO ANAHEIM	21	76	24"	.8	17	38	93	83	138	NO	NO
OAKLAND TO LA CUEVA	19	81	24"	.7	17	36	98	46	76	NO	YES
VENTURA STORM DRAINS											**ZONE MAP C-20**
WILSHIRE TO CORONA	19	81	36"	2.0	82	101	163	49	91	YES	YES
CORONA TO ANAHEIM	20	77	48"	1.2	144	164	221	111	202	YES	YES
ANAHEIM TO NDB	27	62	54"	1.5	207	234	269	166	293	YES	YES*
CORONA STORM DRAIN AT VENTURA											**ZONE MAP C-20**
VENTURA TO EAST	20	50	36"	2.5	92	112	142	64	112	YES	YES
ESTATES TO VINTNER	22	47	30"	2.5	53	75	109	43	79	YES	YES
VINTNER TO COUNTY LINE	15	60	30"	1.0	36	51	96	43	79	YES	YES
VINA DEL SOL STORM DRAIN (VINYARD IV)											**ZONE MAP C-20**
DR EASEMENT TO POND	0	0	48"	2.2	185	185	185	32	60	YES	YES

YES*: HGL IS ABOVE TOP OF PIPE BUT DOES NOT RISE ABOVE GROUND

TABLE 4a EXISTING CONDITIONS HYDROLOGY SUMMARY				
	AREA (sq mi)	**AP #**	**Vol-100-yr (ac-ft)**	**Qp-100-yr (cfs)**
NORTH DOMINGO BACA ARROYO				
Holbrook	2.892	919.19	194.8	216
Ventura	3.440	921.99	221.7	466
Barstow	3.706	926.99	243.1	650
Wyoming	3.848	930.99	257.6	782
Inflow to LNDB Dam	4.170	930.86	281.6	865
Outflow from LNDB Dam	4.170	930.87	281.6	181
I-25 (combined tributaries)	4.414	943.99	304.3	407
LA CUEVA ARROYO				
Ventura	3.766	110.90	243.9	2939
Barstow	3.953	111.99	251.7	2953
Wyoming	4.125	112.90	267.7	2986
Louisiana	4.239	113.90	272.5	2989
I-25	4.373	115.90	278.0	2994
North Diversion Channel	6.753	128.90	414.6	3898

TABLE 4b EXISTING CONDITIONS HYDROLOGY SUMMARY				
	AREA (sq mi)	**AP #**	**Vol-100-yr (ac-ft)**	**Qp-100-yr (cfs)**
EL CAMINO ARROYO				
Holbrook	.650	202.29	33.0	638
Ventura	.718	202.39	37.1	638
Barstow	.950	203.399	48.7	726
Wyoming	1.160	204.90	58.8	790
I-25	1.490	205.90	75.8	908
NORTH CAMINO ARROYO				
Holbrook	2.064	303.90	140.7	1717
Ventura	2.233	305.19	150.8	1736
Barstow	2.386	305.29	157.6	1739
Louisiana	2.452	312.90	160.2	1743
I-25	3.306	313.99	199.6	1846

III. PROPOSED FACILITIES

A. Facility Planning

While the existing facilities in the study area meet the City storm drainage criteria reasonably well, future full developed conditions will require substantial additional storm drainage facilities. For the future condition hydrology model an attempt was made to incorporate the following storm drainage criteria in developing a reasonable strategy:

- Maximum use was made of previously planned extensions of existing facilities.
- Previous drainage master plans were evaluated.
- Facilities required to meet current City drainage standards.
- Facilities required to enable interim privately maintained detention/retention ponds to be abandoned.
- Facilities were sized to meet City street hydraulics criteria with the exception of locations where there were adverse grades in the streets which prevented their use in routing storm water runoff to the desired location. In these instances the storm drain was sized for the full 100-year runoff event.

Proposed facilities are shown on Figures 5A through 5F with designated with a "C" for channel, "SD" for storm drain, and "AV" for avulsion control measure. Plan and profile sheets with conceptual storm drain designs for the major north-south storm drains are included as Figures 6A through 6J. Conceptual channel vertical alignments are included as Figures 7A through 7C for the La Cueva Channel from Holbrook to I-25, the Camino Channel from Ventura to I-25, and the North Camino Arroyo from the City limits to I-25.

The proposed facilities shown and described below are intended to provide a conceptual framework for future storm drainage requirements in the area. In cases where existing individual lots are consolidated and replatted more economical or efficient solutions may become apparent. However, alternate solutions must allocate storm water in a manner consistent with down stream capacities of existing structures at I-25 and beyond. Diversion of runoff from one basin to another should not be undertaken without analyzing the down stream impact.

B. Major Drainage Elements

1. North Domingo Baca Arroyo

a. The **North and South Domingo Baca Arroyos and Paseo del Norte Corridor Drainage Master Plan (AMAFCA, 1991)** recommended the following drainage improvements which have been incorporated into this master drainage plan:

- Channel lining for the North Domingo Baca Arroyo from Ventura to the Lower North Domingo Baca Dam.

- Confining the North Domingo Baca Arroyo in a storm drain from the Domingo Baca Dam outfall to Ventura.
- A 78" storm drain in Holbrook discharging flow from the north to the North Domingo Baca closed conduit at Carmel. This has been included in this master drainage plan as SD-33.

b. The initial phases of this recommended plan have already been implemented. A soil cement channel from Barstow to Wyoming has recently been constructed. Channel lining plans are currently in progress for the reach west of Wyoming to the Lower North Domingo Baca Dam, as part of development plans for a City park, and for the reach east of Barstow as part of subdivision development plans for that area. As additional reaches of the arroyo are lined adjacent interim detention ponds can be abandoned when storm drain connections are made to the future lined channel. Therefore, it is proposed that the North Domingo Baca Arroyo be lined from the City limits west to the Lower North Domingo Baca Dam and all adjacent ponds were eliminated. The reach from Holbrook to the City limits, where the flow rate increases from 629 cfs to 700 cfs, the arroyo could be conveyed either by a closed conduit (78"RCP) or an open channel.

c. Another proposed element is the diversion at Holly (SD-22) of a sub-basin east of Barstow and north of Paseo del Norte from the future Paseo del Norte storm drain to the North Domingo Baca channel now under construction. Due to the revised land treatments in the unincorporated areas of the North Domingo Baca basin there is now some excess capacity in the Lower North Domingo Baca Dam that could be utilized. Depending on how this sub-basin is developed it may well be possible to route local flows directly to the channel and this facility (SD-22)could be down-sized or omitted.

However, if the PDN storm drain is constructed prior to the development of the area east of Barstow below the Middle School, the surface flows at Holly should be picked up by the PDN facilities as originally proposed by the 1991 AMAFCA Drainage Master Plan.

d. Also proposed are the extension of existing facilities at the following locations:

- Extending the Murrelet storm drain, which discharges to the Lower North Domingo Baca Dam, north to Alameda (SD-19). While this option involves additional right-of-way or drainage easements where none now exist, it maximizes use of the existing dam and offers the only available drainage outlet for future developed conditions in this area.
- Replacing approximately 875-feet of 24" storm drain in Barstow with 42" RCP (SD-23), as the existing facility is undersized.
- Extending the Barstow storm drain to Signal (SD-24).
- Extending the Ventura storm drain to midway between Wilshire and Signal and 1300 feet east in Wilshire (SD-29 and SD-31).
- Extending the Corona storm drain to I-25 (SD-16). Because of constraints posed by existing structures, the reach from Ute to I-25 may have to be conveyed

partially via a surface drainage facility. There is an existing drainage easement between the two developments (Motel 6 and a pre-fabricated building manufacturer). A 54" storm drain is proposed from Ute west to I-25 that will convey all of the 10-year flow. An asphalt swale can carry the remainder of the 100-year flows from the end of the cul-de-sac to the I-25 culverts.

e. A Coronado Village storm drain (SD-14) has been sized (84") to convey the 731 cfs from the combined existing Anaheim and proposed Corona storm drains through the mobile home park.

f. A minor diversion of 113 cfs (100-year) from the North Domingo Baca system to the La Cueva system (SD-27) will be required between Barstow and Ventura. This will either connect to a future Alameda storm drain or to the future La Cueva Channel. The only alternative to this diversion would be to either build 2000 feet of parallel storm drain in Barstow to connect to the North Domingo Baca Channel or replace the existing 24"to 42" storm drain with a 60 " pipe. An easement will be required from AMAFCA where this facility crosses their property.

2. La Cueva Arroyo

a. An alignment study for the extension of Alameda from Barstow to Eubank as a major arterial is currently underway. The options have been narrowed down to one of three that are all within the current Signal/Alameda corridor. These alignments would all intersect the La Cueva Arroyo at Holbrook. From this point on the arroyo is assumed to be confined to an improved conveyance to the point of connection with the existing concrete lined reach from Barstow to Wyoming. The conceptual design for this improved conveyance indicates soil cement bank protection with an open bottom for a channel confined by the new Alameda facility on the south and the old Alameda alignment on the north.

b. For the reach of the La Cueva Arroyo west of Wyoming to I-25 where relatively high density commercial and residential development is proposed by the **Sector Development Plan**, beside the need to meet City drainage criteria for arterial crossings and previously proposed plans for a Louisiana Boulevard storm drain outfall to the arroyo near Glendale, there are also the problems associated with a potential avulsion (Number 6) at Glendale between San Pedro and Louisiana. In addition, the half mile of arroyo upstream from this reach is concrete lined as is the one and three quarter mile reach downstream to the North Diversion Channel. For these reasons this reach was also assumed to be lined (C-3) for future conditions. For very little additional expense this reach could be designed to convey a future diversion of the El Camino Arroyo to the La Cueva Channel at Wyoming. See the discussion of this proposal in Section 3.e.

c. As the arroyo is lined from Holbrook to I-25 it is proposed that connecting storm drains be constructed at all major north-south street crossings. These connecting systems at Ventura (SD-30), Barstow (SD-25), Louisiana (SD-5) and San Pedro (SD-3) have been incorporated into the future condition model.

d. The existing condition analysis indicated problems with the capacity of the existing storm drain facility at Alameda and Wyoming. There were two options, either replace the existing 36"-54" storm drain flowing north to the La Cueva Channel at Eagle Rock or to take part of the flow at this intersection south in a 42" pipe to the recently constructed storm drain at Wyoming and Wilshire that outfalls to the North Domingo Baca Arroyo. Since the length of pipe was close to the same with either option the southern option (SD-21) was chosen for economic reasons. Under pressure the Wyoming storm drain to the North Domingo Baca Arroyo has the capacity for an additional 48 cfs.

e. From the existing condition hydrology model it was apparent that there was a problem with the Alameda/I-25 intersection. Between Signal and Modesto flows from the east are currently intercepted by the San Pedro storm drain, sized by NMSHTD for the existing condition 50-year storm, in the mid 1980's. The current existing condition 100-year hydrology model, which includes several upstream detention ponds, results in over 300 cfs reaching the Alameda/I-25 intersection. At the same time there are two NMSHTD I-25 crossing structures at Modesto and Eagle Rock just north of the intersection which have considerable excess capacity. There is also additional capacity available in the North Domingo Baca Arroyo crossing structure at Corona but there are conveyance problems west of I-25 where an unlined ditch crosses through the Coronado Mobile Home Village. Several options were examined but they either involved an expensive parallel storm drain in Alameda from I-25 to the North Diversion Channel or the acquisition of additional right-of-way, therefore, a parallel storm drain in San Pedro (SD-9), with a new storm drain connection (SD-10) to the Eagle Rock I-25 structure, is proposed. This proposed system will have the capacity to divert all the 100-year flows from east of San Pedro to one or the other of the two NMSHTD crossing structures. In conjunction with this system, an Alameda storm drain (SD-13) is proposed that extends to Louisiana. These combined systems reduces the 100-year flow to the Alameda/I-25 intersection to 150 cfs by increasing the combined flow to the structures to the north from 302 cfs to 781 cfs.

3. El Camino Arroyo

a. To date development in the El Camino basin east of I-25 has not yet proceeded as far as that for the La Cueva and North Domingo Baca basins and the area east of Wyoming to the municipal limits is being planned for low density residential development. These facts led to some consideration being given to leaving the arroyo in its natural state. With this scenario limited road crossing structures would be provided and north-south streets would have grade set so that they discharged roadway runoff into the arroyo with only limited use made of storm drains. Residential construction would be permitted on existing platted lots only if the building foot print was outside the designated Federal Emergency Management Agency (FEMA) floodplain and the calculated erosion setback. Construction within the designated erosion setback area would only be permitted with appropriate arroyo stabilization measures (bank protection, berms, grade control structures, spur dikes, etc.) subject to City of Albuquerque approval.

The advantages of this approach are:

- Preservation of natural aesthetic qualities of the area.
- Low capital cost from a public agency point of view since most arroyo stabilization measures would be the responsibility of individual home owners.

The disadvantage of this approach are as follows:

- There is really no such thing as a stable "natural arroyo" within a developing area. Increased runoff, both the frequency of low flow events and the magnitude of peak flows, leads to either increased sediment transported to the arroyo or increased erosion from clean water. Either will result in arroyo disequilibrium leading to incision and/or widening of the "natural" channel.
- The FEMA floodplain would not be revised so it would not be practical to develop numerous lots.
- The erosion setback requirements will be on the order of 120-feet on either side of the arroyo flow line (double that if the upstream avulsions are not controlled) which will cause many other property owners considerable additional expense for bank stabilization measures to develop their lots, ranging from $10,000 to $30,000 per lot.
- The installation of disconnected and intermittent bank stabilization measures could result in threats to private home owners from long term arroyo migration out flanking their attempts at erosion control. Maintenance of these privately owned facilities even if they are in drainage easements could be problematic.
- Discharging road/street runoff into "natural" arroyos could lead to public liability for damage caused by erosion.
- Where the existing road/street right-of-way is within the FEMA floodplain either relocating the "natural" arroyo or the roadway may be required to comply with City ordinances. Either approach will require the acquisition of additional right-of-way and possibly obtaining a LOMR (Letter of Map Revision) from FEMA. The additional expense will provide very little net benefit for the public other than maintaining 100-year access to some property owners.
- Bridge construction is complicated by the fact that either long span structures over the natural arroyo or extensive training dikes for shorter span structures are required. Additional footing and/or pier protection may be required.

In summary, leaving the arroyo in its natural state is not a viable option. It would result in higher development costs for most property owners due to extensive erosion setback restrictions and high long term public and private maintenance costs associated with arroyo evolution over time as the natural channel reacted to increased runoff.

b. An improved channel, constructed of concrete, soil cement or riprap, would reduce the extent of the floodplain and eliminate the need for erosions setbacks. It would also reduce the cost associated with providing transportation infrastructure to the area as well as long term maintenance costs. To minimize the amount of land required for channel construction the facility could be located adjacent to the existing 60-foot Glendale right-of-way, where possible. Since the minimum residential street right-of-way is 42-feet, the remaining 18-feet could be

combined with an additional 60-feet of drainage easement to create a 78-foot channel easement. The chief disadvantages of an improved channel are

- High initial constructions cost.
- Aesthetic considerations
- Given the limited potential for major subdivision development in the El Camino Basin if the La Cueva Sector Plan is adopted, either private property owners would be required to provide a 60-foot drainage easement or the City would be required to buy the 60-foot wide right-of-way adjacent to Glendale.

c. If Avulsions 1 and 4 are controlled and the 100-year flow rate can be kept at 1000 cfs or less, a closed conduit (large diameter pipe) is a viable option. A facility that included a sediment basin at Ventura, where the arroyo would be captured, can be routed down the Glendale right-of-way and diverted to the proposed La Cueva Channel west of Wyoming Avenue. The pipe diameter would range from 84 " to 96" and require special consideration in the design and construction of other underground utilities. It would also be advisable to maintain the full 60-foot right-of-way along this alignment. Additional storm drains west of Wyoming would collect local drainage and convey it to the existing El Camino crossing at I-25 where it would join the La Cueva Channel at the existing diversion.

d. A summary of the estimated cost of the channel and closed conduit options is as follows:

- Concrete Channel from Ventura to I-25 (without avulsion control): $7,298,468
- Concrete Channel from Ventura to I-25 (with avulsion control): $5,432,688
- Pipe from Ventura to La Cueva Channel, west of Wyoming: $3,014.415

Even with the $1.9 million for the cost of controlling Avulsions Number 1 and 4, discussed in more detail in the Avulsion Control section, the economic advantages of the pipe option are obvious.

e. Based on the above discussion it is proposed that the El Camino Arroyo be intercepted near Glendale and Ventura and routed down Glendale in a 84" storm drain (SD-6) to Wyoming. At Wyoming a 96" storm drain can convey the runoff to the future La Cueva Channel (C-3). The downstream I-25 box culvert and the existing channel facilities west of I-25 currently have the capacity for the anticipated 100-year flow rates.

f. At each of the existing major north-south streets local storm drain interceptors will bring runoff to the proposed pipe in Glendale. These connecting systems are at Ventura (SD-8) and Barstow (SD-7). West of the proposed diversion a major storm drain in Florence (SD-4) will pick up local drainage and take it to the existing I-25 El Camino crossing structure. A tributary of the El Camino will be conveyed by another storm drain (SD-1) from Louisiana and Venice to SD-4 near the current Coronado Airport runway and additional local drainage will be intercepted at San Pedro (SD-2).

4. North Camino Arroyo

a. The main branch of the North Camino Arroyo does not cross any currently dedicated streets within the municipal limits east of I-25. Since the owners of Coronado Airport, Sandia Pueblo, may choose to make alterations to the natural channel at some point in the future to reclaim land from floodplain, a lined channel (C-1) is proposed from I-25 to the City limits. A training dike is proposed to extend farther to the east to control Avulsion Number 8. While the existing I-25 crossing structure is inadequate a replacement structure is currently under design (3 - 12' x 8' CBC with a 3500 cfs capacity).

b. A major tributary of the North Camino Arroyo crosses Louisiana Boulevard between Elena Drive and Beverly Hills. The 100-year flow in this tributary of 803 cfs could be conveyed to the main North Camino Channel in either a closed conduit (84" RCP) or an open channel. The open channel option is proposed and this is shown on Figure 5B as C-1a.

5. Avulsion Control Measures East of City Limits

a. Controlling upstream avulsions has a major impact on flow rates on most of the arroyos crossing the planning area. While it is possible to design facilities for the "worst case" flow rates the increased construction costs within the city limits alone would be several million dollars higher than the cost of controlling the avulsions. A comparison of the total cost for drainage facilities required for "worst case" flow rates with that for avulsion control resulted in a benefit to cost ratio of 2.0 for facilities within the City limits alone. There are additional savings resulting from avulsion control in the unincorporated areas. Therefore, conceptual plans for the control of avulsions having a major impact within the City are discussed below.

b. Avulsion Number 1, which results in the North Camino Arroyo joining the El Camino Arroyo east of Tramway Road, can be controlled by the construction of a dike on USFS and Sandia Pueblo land. A conceptual design for this project, developed for AMAFCA, is shown in the Appendix. AMAFCA has been engaged in discussions with Sandia Pueblo and the USFS concerning this matter but no action has been taken to date.

c. Avulsion Number 4, which consists of a series of problem areas between Eubank and Browning which could result in all or part of the La Cueva Arroyo joining the El Camino Arroyo, can be controlled in a number of ways. These potential solutions, ranging from a detention dam at Browning, full channelization of the La Cueva from Browning to Eubank, to a series of dip sections, bridges and dikes at critical points, have been developed for AMAFCA but not yet acted on by that agency. From the perspective of drainage control within the City Limits controlling this avulsion at the critical points would eliminate the problem and be the most economical. A conceptual layout of this solution is contained in the Appendix.

d. Avulsion Number 5, which could result in the El Camino Arroyo leaving its historic flow path and joining a tributary of the North Camino Arroyo, can be controlled by a ditch and dike along

the north side of Glendale, just west of Holbrook, and a dip-section on Glendale. A conceptual layout is shown in the Appendix .

e. Avulsion Number 6 is addressed by channelizing the La Cueva Arroyo from Wyoming to I-25 as previously discussed in the La Cueva section.

f. Avulsion Number 7, located on a tributary to the North Camino Arroyo which would result in this tributary joining the El Camino Arroyo at Coronado Airport, can be addressed by a paved dip section or bridge on Venice, east of Louisiana, and a relatively short section dike on the north side of Venice. A conceptual layout for this proposal is shown in the Appendix.

g. Avulsion Number 8, located east of Louisiana along Elena Drive which would result in the North Camino Arroyo joining the North Camino Tributary at Louisiana, can be controlled either by raising the grade on Elena or by the design of the inlet for the North Camino Channel, (C-1). Since there may be some future interest in redeveloping the southern portion of the Coronado Airport site prior to construction of the North Camino Channel, a conceptual Elena vertical alignment is shown in the Appendix.

h. Avulsions 2 and 3, both located on a tributary of the La Cueva Arroyo east of Lowell, have little impact within the city limits. However, both of these avulsions do cause considerable local concern and control measures have been proposed by Bernalillo County Public Works Division for inclusion on the 1998 CIP bond election.

C. Proposed Condition Capacity Analysis

The capacity analysis for the proposed condition storm drain facilities are shown in Tables 5a-5h. Storm drain capacity was calculated as maximum non-pressure flow while street capacities are based on COA DPM 10-year and 100-year criteria. Future street slopes for as yet unimproved streets were assumed to be the average slope from one platted street to the next. Where the slope was adverse to the direction of flow in the proposed storm drain facility the capacity for that reach was reported a zero (0).

TABLE 5a

FUTURE STORM DRAIN CAPACITY

	10-YR STREET CAP (CFS)	100-YR STREET CAP (CFS)	SD SIZE "	S %	SD CAP (CFS)	TOTAL 10-YR CAP	TOTAL 100-YR CAP	Q-10-YR (CFS)	Q-100-YR (CFS)	10-YR OK?	100-YR OK?
SD-1(VENICE)											**ZONE MAP B-18**
LOUISIANA TO EL CAMINO CHANNEL	0	0	54"	2.3	259	259	259	137	249	YES	YES
SD-2 (SAN PEDRO)											**ZONE MAP B-18**
BEVERLY HILLS TO EL CAMINO CHANNEL	0	0	42"	.8	78	78	78	46	73	YES	YES
SD-3 (SAN PEDRO)											**ZONE MAP B-18**
GLENDALE TO LA CUEVA CHANNEL	15	95	36"	.8	52	67	147	62	103	YES	YES
SAN DIEGO TO LA CUEVA CHANNEL	0	0	48"	.8	112	112	112	62	103	YES	YES
SD-4 (FLORENCE/SAN DIEGO)											**ZONE MAP B-18**
WYOMING TO LOUISIANA	24	45	36"	3.0	100	124	145	59	112	YES	YES
FLORENCE TO SAN DIEGO IN LOUISIANA	42	96	54"	1.0	171	213	267	131	235	YES	YES
LOUISIANA TO RUNWAY	0	0	60"	2.5	358	358	358	173	312	YES	YES
RUNWAY TO I-25	0	0	78"	2.5	721	721	721	398	705	YES	YES

YES*: HGL IS ABOVE TOP OF GROUND BUT DOES NOT RISE ABOVE GROUND

TABLE 5b

FUTURE STORM DRAIN CAPACITY

	10-YR STREET CAP (CFS)	100-YR STREET CAP (CFS)	SD SIZE "	SD S %	SD CAP (CFS)	TOTAL 10-YR CAP	TOTAL 100-YR CAP	Q-10-YR (CFS)	Q-100 YR (CFS)	10-YR OK?	100-YR OK?
SD-5 (LOUISIANA)											**ZONE MAP B-19**
MODESTO TO LA CUEVA CHANNEL	19	81	60"	1.0	226	245	307	164	270	YES	YES
GLENDALE TO LA CUEVA CHANNEL	0	0	36"	1.5	71	71	71	40	66	YES	YES
SD-6 (GLENDALE-CAMINO ARROYO PIPE)											**ZONE MAP B-19**
VENTURA TO BARSTOW	NA	NA	84"	3.0	963	963	963	216	798	YES	YES
BARSTOW TO WYOMING	NA	NA	84"	3.0	963	963	963	384	880	YES	YES
WYOMING TO LA CUEVA CHANNEL	NA	NA	96"	1.3	906	906	906	402	921	YES	YES*
SD-7 (BARSTOW)											**ZONE MAP B-19**
MODESTO TO GLENDALE	12	84	36"	1.5	71	83	167	60	110	YES	YES
FLORENCE TO GLENDALE	0	0	42"	.5	61	61	61	30	55	YES	YES
SD-8 (VENTURA)											**ZONE MAP B-20**
MODESTO TO GLENDALE	19	81	60"	.84	207	226	288	151	302	YES	YES*

YES*: HGL IS ABOVE TOP OF PIPE BUT DOES NOT RISE ABOVE GROUND

TABLE 5c

FUTURE STORM DRAIN CAPACITY

	10-YR STREET CAP (CFS)	100-YR STREET CAP (CFS)	SD SIZE "	SD S %	SD CAP (CFS)	TOTAL 10-YR CAP	TOTAL 100-YR CAP	Q-10 YR (CFS)	Q-100 YR (CFS)	10-YR OK?	100-YR OK?
SD-9 (SAN PEDRO)											**ZONE MAP C-18**
SIGNAL TO ALAMEDA	15	95	48" 42"	.5	88 62	165	245	92	165	YES	YES
ALAMEDA TO OAKLAND	0	0	54" 72"	.5	121 261	382	382	231	398	YES	YES
OAKLAND TO EAGLE ROCK	16	98	54" 78"	.5	121 323	460	542	293	506	YES	YES
EAGLE ROCK TO MODESTO	15	95	54" 60"	.7	147 190	352	432	251	354	YES	YES
SAN PEDRO TO I-25	0	0	66"	2.0	413	413	413	251	354	YES	YES
SD-10 (EAGLE ROCK)										**ZONE MAP C-18**	
SAN PEDRO TO I-25	36	50	60"	2.0	320	356	370	150	325	YES	YES
SD-11 (EAGLE ROCK)										**ZONE MAP C-18**	
CONVENIENCE CENTER TO SAN PEDRO	36	50	42"	2.5	138	174	188	104	175	YES	YES
SD-12 (OAKLAND)										**ZONE MAP C-18**	
MID-BLOCK TO SAN PEDRO	22	47	36"	2.5	92	114	139	72	122	YES	YES

YES*: HGL IS ABOVE TOP OF PIPE BUT DOES NOT RISE ABOVE GROUND

TABLE 5d

FUTURE STORM DRAIN CAPACITY

	10-YR STREET CAP (CFS)	100-YR STREET CAP (CFS)	SD SIZE "	SD S %	SD CAP (CFS)	TOTAL 10-YR CAP	TOTAL 100-YR CAP	Q-10 YR (CFS)	Q-100 YR (CFS)	10-YR OK?	100-YR OK?
SD-13 (ALAMEDA)											**ZONE MAP C-18**
SIGNAL TO ALAMEDA	10	74	30"	.5	25	35	99	33	56	YES	YES
LOUISIANA TO SAN PEDRO	69	83	30"	3.0	62	131	145	74	125	YES	YES
SD-14 (CORONADO VILLAGE)											**ZONE MAP C-18**
I-25 TO SOUTH DOMINGO BACA CHANNEL	0	0	84"	1.8	746	746	746	485	738	YES	**YES**
SD-15 (HOLLY AT I-25)											**ZONE MAP C-18**
HOLLY TO I-25 CULVERTS	0	0	36"	.9	55	55	55	38	60	YES	YES*
SD-16 (CORONA)											**ZONE MAP C-18**
SAN PEDRO TO UTE	22	47	48"	2.4	193	215	240	136	229	YES	YES
UTE TO I-25	0	0	54"	1.0	171	171	171	150	271	YES	NO**
SD-17 (LOUISIANA)											**ZONE MAP C-18**
WILSHIRE TO CORONA	0	0	30"	.5	25	25	25	13	21	YES	YES

YES*: HGL IS ABOVE TOP OF PIPE BUT DOES NOT RISE ABOVE GROUND
NO**: EXCESS FLOW TO I-25 BY EXISTING SURFACE DRAINAGE EASEMENT

TABLE 5e

FUTURE STORM DRAIN CAPACITY

	10-YR STREET CAP (CFS)	100-YR STREET CAP (CFS)	SD SIZE "	SD S %	SD CAP (CFS)	TOTAL 10-YR CAP	TOTAL 100-YR CAP	Q-10 YR (CFS)	Q-100 YR (CFS)	10-YR OK?	100-YR OK?
SD-18 (HOLLY)											**ZONE MAP C-19**
MID BLOCK HOLLY TO AMAFCA POND	22	47	30"	3.0	62	84	107	73	119	YES	YES*
SD-19 (MURRELET SD EXTENSION)											**ZONE MAP C-19**
WILSHIRE TO SIGNAL	0	0	54"	.6	132	132	132	75	124	YES	YES
SIGNAL TO ALAMEDA	0	0	36"	1.4	68	68	68	35	58	YES	YES
SD-20 (CORONA)											**ZONE MAP C-20**
MID-BLOCK CORONA TO WYOMING	22	47	36"	2.0	82	104	129	49	81	YES	YES
SD-21 (WYOMING)											**ZONE MAP C-20**
ALAMEDA TO WILSHIRE	0	0	42"	.3	48	48	48	48	48	YES	YES
SD-22 (BARSTOW)											**ZONE MAP C-20**
HOLLY TO NDB	14	100	42"	.5	62	76	162	71	118	YES	YES

YES*: HGL IS ABOVE TOP OF PIPE BUT DOES NOT RISE ABOVE SURFACE

TABLE 5f

FUTURE STORM DRAIN CAPACITY

	10-YR STREET CAP (CFS)	100-YR STREET CAP (CFS)	SD SIZE "	SD S %	SD CAP (CFS)	TOTAL 10-YR CAP	TOTAL 100-YR CAP	Q-10 YR (CFS)	Q-100 YR (CFS)	10-YR OK?	100-YR OK?
SD-23 (BARSTOW)											**ZONE MAP C-20**
VINYARD RIDGE TO GREEN ARBOR	8	47	42"	.8	78	86	125	67	112	YES	YES
GREEN ARBOR TO ANAHEIM	21	76	42"	.8	78	99	154	83	138	YES	YES
APS POND TO NDB CHANNEL	14	100	42"	.8	78	92	178	83	138	YES	YES
SD-24 (BARSTOW)											**ZONE MAP C-20**
SIGNAL TO EXISTING SD	18	101	24"	.6	14	32	115	26	43	YES	YES
SD-25 (BARSTOW)											**ZONE MAP C-20**
ALAMEDA TO OAKLAND	16	93	30"	.7	30	46	123	21	35	YES	YES
OAKLAND TO LA CUEVA	19	81	30"	.7	30	49	111	46	76	YES	YES
SD-26 (APS MID SCHOOL)											**ZONE MAP C-20**
APS POND TO NDB CHANNEL	0	0	54"	2.3	259	259	259	151	257	YES	YES
SD-27 (ALMADEN VALLEY TO LA CUEVA CHANNEL)											
CARRINGTON POND TO SIGNAL	0	0	42"	.5	62	62	62	38	64	YES	YES*
SIGNAL TO ALAMEDA	0	0	48"	.7	104	104	104	68	113	YES	YES*

YES*: HGL IS ABOVE TOP OF PIPE BUT DOES NOT RISE ABOVE GROUND

TABLE 5g

FUTURE STORM DRAIN CAPACITY

	10-YR STREET CAP (CFS)	100-YR STREET CAP (CFS)	SD SIZE "	SD S %	SD CAP (CFS)	TOTAL 10-YR CAP	TOTAL 100-YR CAP	Q-10 YR (CFS)	Q-100 YR (CFS)	10-YR OK?	100-YR OK?
SD-28 (OAKLAND)											**ZONE MAP C-20**
ALAMEDA TO OAKLAND	18	85	24"	3.2	35	43	120	15	29	YES	YES
EAGLE ROCK TO OAKLAND	0	0	54"	.5	121	121	121	57	110	YES	YES
VENTURA TO LA CUEVA CHANNEL	22	47	48"	2.5	197	219	244	75	143	YES	YES
SD-29 (VENTURA)											**ZONE MAP C-20**
SIGNAL TO WILSHIRE	0	0	36"	.5	41	41	41	17	34	YES	YES
WILSHIRE TO CORONA	19	71	36"	.5	41	60	112	49	91	YES	YES
SD-30 (VENTURA)											**ZONE MAP C-20**
SIGNAL TO LA CUEVA	0	0	36"	.6	45	45	45	21	42	YES	YES
SD-31 (WILSHIRE)											**ZONE MAP C-20**
EXIST POND TO VENTURA	0	0	30"	1.0	36	36	36	36	42	YES	YES*
SD-32 (VINYARD IV POND)											**ZONE MAP C-20**
EXIST POND TO NDB	0	0	54"	1.0	171	171	171	56	105	YES	YES

YES*: HGL IS ABOVE TOP OF PIPE BUT DOES NOT RISE ABOVE GROUND

TABLE 5h

FUTURE STORM DRAIN CAPACITY

	10-YR STREET CAP (CFS)	100-YR STREET CAP (CFS)	SD SIZE "	SD S %	SD CAP (CFS)	TOTAL 10-YR CAP	TOTAL 100-YR CAP	Q-10 YR (CFS)	Q-100 YR (CFS)	10-YR OK?	100-YR OK?
SD-33 (HOLBROOK)											**ZONE MAP C-20**
SIGNAL TO WILSHIRE	0	0	42"	2.0	124	124	124	46	129	YES	YES*
WILSHIRE TO CORONA	0	0	42"	2.2	130	130	130	50	138	YES	YES*
CORONA TO NDB (AT CARMEL)	0	0	78"	.5	323	323	323	145	317	YES	YES

YES*: HGL IS ABOVE TOP OF PIPE BUT DOES NOT RISE ABOVE GROUND

D. Proposed Condition Hydrology Results

Proposed condition flow rates for future fully developed conditions from the hydrology models incorporating the above facilities are reported in Table 6. All of the interim detention ponds have been eliminated. A comparison with the hydrology results from the **1996 AMAFCA Hydrology Report** for future fully developed conditions without storm drainage or channel improvements for selected points on the main arroyos is made in Tables 7a and 7b. Except where specifically labeled as "worst case" all flow rates reported assume avulsion control.

TABLE 6a

FUTURE CONDITIONS HYDROLOGY SUMMARY (BULKED FLOW RATES)

	AREA (Sq mi)	AP #	VOL-10-YR (ac-ft)	Qp 10-YR (cfs)	VOL-100-YR (ac-ft)	Qp 100-YR (cfs)
NORTH DOMINGO BACA ARROYO						
Holbrook	3.166	919.99	129.0	305	231.1	616
Ventura	3.446	921.99	142.4	609	255.7	1171
Barstow	3.562	926.99	149.2	758	267.5	1813
Wyoming	3.870	930.99	167.4	1096	298.8	1984
Inflow to LNDB Dam	4.259	930.86	189.5	1313	337.0	2442
Out flow from LNDB Dam	4.259	930.87	189.5	170	337.0	200
I-25	4.526	943.99	205.7	400	364.7	731
LA CUEVA ARROYO[1]						
Ventura	3.766	110.90	130.0	1359	265.8	3048
Barstow	4.017	111.99	140.5	1374	284.5	3094
Wyoming	4.189	112.90	150.3	1383	301.0	3128
Louisiana	5.462	113.90	194.5	1632	390.1	3908
I-25	5.582	115.9	202.1	1640	402.6	3923
North Diversion Channel	6.871	128.90	270.8	2901	519.8	5551

[1]La Cueva and El Camino Arroyo Flow Rates reflect diversion of El Camino to the La Cueva west of Wyoming.

TABLE 6b

FUTURE CONDITIONS HYDROLOGY SUMMARY (BULKED FLOW RATES)

	AREA (Sq mi)	AP #	VOL-10-YR (ac-ft)	Qp 10-YR (cfs)	VOL-100-YR (ac-ft)	Qp 100-YR (cfs)
EL CAMINO ARROYO[1]						
Holbrook	.650	202.29	15.9	210	37.5	685
Ventura	.702	202.39	18.3	224	41.9	707
Barstow	.993	203.39	29.6	400	67.1	924
Wyoming	1.070	204.90	32.6	418	69.9	967
Louisiana	.142	204.91	6.6	180	12.2	324
I-25	.393	205.90	20.5	471	36.4	873
NORTH CAMINO ARROYO						
Holbrook	2.064	303.90	73.6	764	149.1	1767
Ventura	2.233	305.19	80.2	769	286.6	1798
Barstow	2.386	305.29	86.0	770	303.1	1829
Louisiana	2.452	312.90	88.4	772	319.9	1820
I-25	3.298	313.99	120.6	839	332.5	2043

[1]La Cueva and El Camino Flow Rates reflect diversion of El Camino to the La Cueva west of Wyoming.

TABLE 7a

COMPARISON OF 100-YEAR HYDROLOGIC RESULTS

STUDY LOCATION	THIS STUDY (CSF)	AMAFCA 1996 DMP (CFS)	NDB/SDB DMP 1991 (CFS)	FEMA 1983 (CFS)	AMAFCA WORST CASE 1997 (CFS)
NORTH DOMINGO BACA					
Ventura Existing **Future**	518 **1189**	*NA*	228 **1420**	1002	*NA*
Barstow Existing **Future**	631 **1748**	*NA*	360 **2030**	*NR*	*NA*
Wyoming Existing **Future**	674 **1869**	*NA*	535 **2646**	*NR*	*NA*
Louisiana Existing **(at Dam) Future**	802 **2340**	*NA*	535 **3113**	*NR*	*NA*
I-25 Existing **Future**	423 **738**	*NA*	1049 **781**	903	*NA*
LA CUEVA					
Ventura Existing **Future**	2938 **3048**	2939 **3048**	*NA*	3494	3537 **3693**
Barstow Existing **Future**	2954 **3094**	2953 **3066**	*NA*	*NR*	3530 **3727**
Wyoming Existing **Future**	2984 **3128**	2986 **3094**	*NA*	*NR*	3562 **3774**
Louisiana Existing **Future**	2988 **3908**	2989 **3106**	*NA*	*NR*	3548 **3799**
I-25 Existing **Future**	2992 **3923**	2994 **3108**	*NA*	3302	3546 **3809**

NA: Not part of study area or not impacted by major avulsion.
NR: No flow data reported for this location or condition.

TABLE 7b

COMPARISON OF 100-YEAR HYDROLOGIC RESULTS

STUDY LOCATION	THIS STUDY (CSF)	AMAFCA 1996 DMP (CFS)	NDB/SDB DMP 1991 (CFS)	FEMA 1983 (CFS)	AMAFCA WORST CASE 1997 (CFS)
EL CAMINO					
Ventura Existing	637	638	*NA*	3301	3165
Future	**707**	**710**			**3237**
Barstow Existing	726	726	*NA*	*NR*	3213
Future	**924**	**920**			**3310**
Wyoming Existing	790	790	*NA*	*NR*	3243
Future	**967**	**1130**			**3380**
Louisiana Existing		*NR*	*NA*	*NR*	*NR*
Future	**312**				
I-25 Existing	908	908	*NA*	3033	3286
Future	**873**	**1335**			**3438**
NORTH CAMINO					
Ventura Existing	1739	1736	*NA*	640	*NA*
Future	**1800**	**1798**			
Barstow Existing	1753	1739	*NA*	*NR*	*NA*
Future	**1829**	**1829**			
Wyoming Existing	1743	*NR*	*NA*	*NR*	*NA*
Future	**1822**				
Louisiana Existing	*NR*	*NR*	*NA*	*NR*	*NA*
Future					
I-25 Existing	1846	1846	*NA*	1760	2127
Future	**2043**	**1982**			**2399**

NA: Not part of study or not impacted by major avulsion.
NR: No flow data reported for this location or condition.

IV. PRIORITIZATION

A. Weighting Factors

In order to approach the above proposed projects in an orderly fashion the following weighting factors, adapted from the **1981 Albuquerque Master Drainage Study (AMDS)**, have been utilized to score the projects according to relative importance with regards to potential for flooding of existing structures, flooding of undeveloped land, and impact on streets and intersections. To this was added a weighted score for each of the avulsions that affect areas within the City limits. These weighting factors are listed below:

a	Street Intersections	5 each
b	Miles of Street	5/mile
c	Residential Buildings	10 each
d	Commercial Buildings	10 each
e	Public Buildings	7 each
f	Undeveloped Land	1/Acre
g	Major Avulsion	100 each
h	Moderate Avulsion	50 each
i	Minor Avulsion	20 each

B. Scoring

Each project was evaluated with regards to the above criteria and weighting factors and a raw priority score determined. In general the higher the total score the higher the project priority. These scores are shown and tabulated in Table 8.

TABLE 8
PROJECT SCORE
BASED ON WEIGHTING FACTORS

PROJECT	INTERSECTIONS	STREET MILES	RESIDENTIAL	COMMERCIAL	PUBLIC	ACRES	AVULSION	TOTAL
	X 5	X 5	BLDGS X 10	BLDGS X 10	BLDGS X 7	X 1	EA	POINTS
SD-1	1	0.25	0	0	0	10	0	16.25
SD-2	2	0.25	0	0	0	0	0	11.25
SD-3	2	0.25	0	0	0	0	0	11.25
SD-4	4	0.5	0	0	0	40	0	62.50
SD-5	3	1	0	0	0	0	0	20.00
SD-6	4	1.8	0	2	0	64	0	113.00
SD-7	3	1.7	0	0	0	0	0	23.50
SD-8	2	0.25	0	0	0	0	0	11.25
SD-9	6	0.75	0	4	0	0	0	73.75
SD-10	1	0.25	0	2	0	0	0	26.25
SD-11	1	0.25	0	0	0	0	0	6.25
SD-12	1	0.5	0	0	0	0	0	7.50
SD-13	3	0.75	0	0	0	0	0	18.75
SD-14	2	0.5	20	0	0	0	0	212.50
SD-15	1	0.1	0	0	0	4	0	9.50
SD-16	2	0.4	0	0	0	2	0	14.00
SD-17	2	0.1	0	0	0	0	0	10.50
SD-18	1	0.1	0	0	0	1	0	6.50
SD-19	1	0.5	0	0	0	0	0	7.50
SD-20	0	0	0	0	0	2	0	2.00
SD-21	4	0.6	0	0	0	0	0	23.00
SD-22	1	0.1	0	0	0	0	0	5.50
SD-23	3	0.3	0	0	0	0	0	16.50
SD-24	1	0.1	0	0	0	0	0	5.50
SD-25	0	0.65	0	0	0	0	0	3.25
SD-26	0	0	0	0	0	2	0	2.00
SD-27	0	0.1	0	0	0	2	0	2.50
SD-28	1	0.6	0	0	0	0	0	8.00
SD-29	1	0.1	0	0	0	0	0	5.50
SD-30	2	0.1	0	0	0	0	0	10.50
SD-31	0	0	0	0	0	2	0	2.00
SD-32	0	0	0	0	0	2	0	2.00
SD-33	4	0.5	0	0	0	3	0	25.50
C-1	1	0.25	0	1	0	22	20	58.25
C-1a	0	0.1	0	0	0	10	0	10.50
C-3	4	0.6	0	5	0	64	0	137.00
C-4	1	0.5	0	0	0	61	0	68.50
C-5	0	0.5	0	0	1	28	0	37.50
C-6	1	0.6	0	0	0	22	0	30.00
AV-1	0	0	0	0	0	0	100	100.00
AV-4	0	0	0	0	0	0	100	100.00
AV-5	0	0	0	0	0	0	50	50.00
AV-7	0	0	0	0	0	0	20	20.00

V. COST ESTIMATES

A. Plan Quantities

Plan quantities were estimated from Figures 5 and 6. Storm drain trunk lines were either scaled from Figure 5 or taken from the profiles in Figure 6. Storm drain inlets and the amount of lateral connecting pipe required were estimated from the flow to be intercepted by the facility and the number of manholes from the over all length and number of connecting storm drains. Paving quantities for improved streets assumed a 24-foot wide paving removal and replacement. Where existing street are not currently constructed to City standards, a 12-foot wide removal and replacement was generally assumed. For Alameda, however, it was assumed that the proposed storm drain would not be installed until the road was widened and improved and no additional paving cost was considered other than removal and replacement in the existing section of Louisiana Boulevard.

B. Construction Cost Estimates

Unit costs relied on the **City Engineer's Estimated Unit Prices for Contract Items 1997** for most items. A 20% contingency was added to the total of all construction items Work sheets are contained in the Appendix. Cost estimates for bridges, exclusive of roadway work, were based on the following lump sum costs:

- Major Arterial, Minor Arterial and Collector Streets: $250,000 each
- Residential Streets: $200,000 each

Channel cost estimates are based on surface area of concrete lining and volume of earthwork with a 15% allowance for incidental construction items. A 20% contingency was added to the total of all construction items. Work Sheets are in the Appendix.

Cost estimates for Avulsions 1 and 4 were taken from information provided at AMAFCA Board briefings. Cost estimates for Avulsions 5, 7 and 8 are contained in the Appendix.

C. Right-of-Way Costs

Right-of-way costs within the City Limits were estimated at $2.50/SF. Virtually all of the required right-of-way is currently in floodplain. Where storm drains are shown outside of the existing right-of-way 50-foot wide easements or right-of-way acquisition was assumed. Channels were assumed to be built in dedicated easements or right-of-way unless the alignment left unusable remnants. The unusable remnants were valued at $2.50/SF and the affected lots are shown in the Appendix. For avulsion control projects outside of the City Limits, the land was valued at $80,000/acre in order to be consistent with the valuation being used currently by AMAFCA for the **La Cueva, El Camino and North Camino Arroyos Drainage Management Plan**.

Table 9 lists the estimated cost for each of the forty-three recommended projects.

TABLE 9
COST ESTIMATES

PROJECT NO.	PROJECT DESCRIPTION	CONSTRUCTION COST	R\W COST	TOTAL COST
SD-1	VENICE TO EL CAMINO CHANNEL	$303,833.00	$2,500.00	$306,333.00
SD-2	SAN PEDRO TO EL CAMINO CHANNEL	$130,648.00	$0.00	$130,648.00
SD-3	SAN PEDRO TO LA CUEVA CHANNEL	$200,273.00	$0.00	$200,273.00
SD-4	FLORENCE-LOUISIANA-SAN DIEGO	$1,084,378.00	$0.00	$1,084,378.00
SD-5	LOUISIANA TO LA CUEVA CHANNEL	$158,935.00	$0.00	$158,935.00
SD-6	GLENDALE-EL CAMINO ARROYO PIPE	$2,100,622.00	$80,000.00	$2,180,622.00
SD-7	BARSTOW TO EL CAMINO CHANNEL	$286,452.00	$0.00	$286,452.00
SD-8	VENTURA TO EL CAMINO CHANNEL	$173,826.00	$2,500.00	$176,326.00
SD-9	UP-GRADE SAN PEDRO STORM DRAIN	$692,295.00	$0.00	$692,295.00
SD-10	EAGLE ROCK/WILDFLOWER SD	$189,344.00	$15,000.00	$204,344.00
SD-11	EAGLE ROCK-SAN PEDRO SD	$390,431.00	$47,000.00	$437,431.00
SD-12	OAKLAND-SAN PEDRO SD	$189,407.00	$0.00	$189,407.00
SD-13	ALAMEDA-SAN PEDRO SD	$310,266.00	$0.00	$310,266.00
SD-14	CORONADO MH PARK SD	$621,028.00	$0.00	$621,028.00
SD-15	HOLLY-I-25 SD	$114,228.00	$45,000.00	$159,228.00
SD-16	CORONA-I-25 SD	$269,623.00	$0.00	$269,623.00
SD-17	LOUISIANA-CORONA SD	$97,083.00	$0.00	$97,083.00
SD-18	HOLLY TO AMAFCA POND SD	$69,064.00	$0.00	$69,064.00
SD-19	MURRELET SD EXTENSION	$236,678.00	$94,000.00	$330,678.00
SD-20	CORONA-WYOMING SD	$66,347.00	$0.00	$66,347.00
SD-21	ALAMEDA-WYOMING SD	$210,026.00	$0.00	$210,026.00
SD-22	BARTOW-NDB SD (SOUTH)	$129,633.00	$0.00	$129,633.00
SD-23	UP-GRADE BARSTOW SD (NORTH)	$279,985.00	$0.00	$279,985.00
SD-24	BARSTOW SD EXTENSION TO SIGNAL	$56,314.00	$0.00	$56,314.00
SD-25	BARSTOW TO LA CUEVA CHANNEL	$226,558.00	$0.00	$226,558.00
SD-26	MID SCHOOL POND to NDB	$53,881.00	$0.00	$53,881.00
SD-27	ALMADEN VALLEY TO LA CUEVA CHAN	$200,695.00	$23,500.00	$224,195.00
SD-28	OAKLAND TO LA CUEVA CHANNEL	$425,575.00	$5,000.00	$430,575.00
SD-29	VENTURA SD EXTENSION TO WILSHIRE	$89,138.00	$2,500.00	$91,638.00
SD-30	VENTURA TO LA CUEVA CHANNEL	$99,594.00	$2,500.00	$102,094.00
SD-31	WILSHIRE-VENTURA SD	$104,879.00	$2,500.00	$107,379.00
SD-32	VINYARD IV POND	$55,279.00	$0.00	$55,279.00
SD-33	HOLBROOK TO NDB CHANNEL	$543,081.00	$7,500.00	$550,581.00
C-1, AV-8	NORTH CAMINO CHANNEL & DIKE	$1,583,325.00	$150,000.00	$1,733,325.00
C-1A	NO. CAMINO TRIB CHANNEL	$392,097.00	$0.00	$392,097.00
C-3, AV-6	LA CUEVA CHANNEL (WYO TO I-25)	$3,775,168.00	$155,100.00	$3,930,268.00
C-4	LA CUEVA CHAN (VENTURA TO BARST)	$1,705,335.00	$155,100.00	$1,860,435.00
C-5	NDB CHANNEL AT LNDB DAM	$746,104.00	$0.00	$746,104.00
C-6	NDB CHANNEL(HOLBRK TO BARST)	$2,073,353.00	$0.00	$2,073,353.00
AV-1	JUAN TABO PICNIC RD DIKE	$447,287.00	$0.00	$447,287.00
AV-4	EUBANK-GLENDALE DIKES & BRDG	$740,039.00	$720,000.00	$1,460,039.00
AV-5	GLENDALE CHANNEL & ROAD	$256,666.00	$168,750.00	$425,416.00
AV-7	VENICE DIP-SECT AND DIKE	$78,479.00	$48,469.00	$126,948.00
TOTAL		**$21,957,252.00**	**$1,726,919.00**	**$23,684,171.00**

SD - Storm Drain Project; C - Channel Project; AV - Avulsion Control Project

VI. RECOMMENDATIONS

It is recommended that this Master Drainage Plan be adopted and be used for future planning of storm drainage facilities in this area. Furthermore it is recommended that the projects listed in the summary below be added to the City's Capital Improvement Projects list. The forty-three projects listed in the summary constitute an integrated storm water management system. Interim improvements may be necessary because these projects may be implemented on an "as needed" basis. In order to reduce the inconvenience and expense of these interim improvements the following projects should be considered first: AV-1, AV-4, C-3, SD-9 and SD-14. It will be desirable to pursue joint implementation of projects with AMAFCA and/or Bernalillo County Public Works.

Preserving channel storm drain corridors where proposed facilities are outside of existing street right-of-ways should be a relatively straight forward matter in areas where consolidation and replatting are being encouraged by the **La Cueva Sector Plan**. However, in areas where single one acre lots or small consolidations are to be allowed special consideration for preserving corridors for future facilities may be required.

Table 10 lists the proposed projects by priority.

TABLE 10
PROJECTS PRIORITIZED BY WEIGHTED SCORE

PRIORITY	PROJECT NUMBER	SCORE	CONST. COST	R/W COST	TOTAL COST
1	SD-14	212.5	$621,028.00	$0.00	**$621,028.00**
2	C-3, AV-6	137	$3,775,168.00	$155,100.00	**$3,930,268.00**
3	SD-6	113	$2,100,622.00	$80,000.00	**$2,180,622.00**
4	AV-4	100	$740,039.00	$720,000.00	**$1,460,039.00**
5	AV-1	100	$447,287.00	$0.00	**$447,287.00**
6	SD-9	73.75	$692,295.00	$0.00	**$692,295.00**
7	C-4	68.5	$1,705,335.00	$155,100.00	**$1,860,435.00**
8	SD-4	62.5	$1,084,378.00	$0.00	**$1,084,378.00**
9	C-1, AV-8	58.25	$1,583,325.00	$150,000.00	**$1,733,325.00**
10	AV-5	50	$256,666.00	$168,750.00	**$425,416.00**
11	C-5	37.5	$746,104.00	$0.00	**$746,104.00**
12	C-6	30	$2,073,353.00	$0.00	**$2,073,353.00**
13	SD-10	26.25	$189,344.00	$15,000.00	**$204,344.00**
14	SD-33	25.5	$543,081.00	$7,500.00	**$550,581.00**
15	SD-7	23.5	$286,452.00	$0.00	**$286,452.00**
16	SD-21	23	$210,026.00	$0.00	**$210,026.00**
17	AV-7	20	$78,479.00	$48,469.00	**$126,948.00**
18	SD-5	20	$158,935.00	$0.00	**$158,935.00**
19	SD-13	18.75	$310,266.00	$0.00	**$310,266.00**
20	SD-23	16.5	$279,985.00	$0.00	**$279,985.00**
21	SD-1	16.25	$303,833.00	$2,500.00	**$306,333.00**
22	SD-16	14	$269,623.00	$0.00	**$269,623.00**
23	SD-8	11.25	$173,826.00	$2,500.00	**$176,326.00**
24	SD-3	11.25	$200,273.00	$0.00	**$200,273.00**
25	SD-2	11.25	$130,648.00	$0.00	**$130,648.00**
26	C-1A	10.5	$392,097.00	$0.00	**$392,097.00**
27	SD-30	10.5	$99,594.00	$2,500.00	**$102,094.00**
28	SD-17	10.5	$97,083.00	$0.00	**$97,083.00**
29	SD-15	9.5	$114,228.00	$45,000.00	**$159,228.00**
30	SD-28	8	$425,575.00	$5,000.00	**$430,575.00**
31	SD-19	7.5	$236,678.00	$94,000.00	**$330,678.00**
32	SD-12	7.5	$189,407.00	$0.00	**$189,407.00**
33	SD-18	6.5	$69,064.00	$0.00	**$69,064.00**
34	SD-11	6.25	$390,431.00	$47,000.00	**$437,431.00**
35	SD-29	5.5	$89,138.00	$2,500.00	**$91,638.00**
36	SD-24	5.5	$56,314.00	$0.00	**$56,314.00**
37	SD-22	5.5	$129,633.00	$0.00	**$129,633.00**
38	SD-25	3.25	$226,558.00	$0.00	**$226,558.00**
39	SD-27	2.5	$200,695.00	$23,500.00	**$224,195.00**
40	SD-32	2	$55,279.00	$0.00	**$55,279.00**
41	SD-31	2	$104,879.00	$2,500.00	**$107,379.00**
42	SD-26	2	$53,881.00	$0.00	**$53,881.00**
43	SD-20	2	$66,347.00	$0.00	**$66,347.00**
	TOTAL		**$21,957,252.00**	**$1,726,919.00**	**$23,684,171.00**

VII. SUMMARY OF PROPOSED DRAINAGE FACILITIES

SD-1 (Venice) Zone Map B-18

☐ Construct 54" RCP in Venice extension to Jct with SD-4

Comments: System required to intercept minor El Camino tributary arroyo plus local drainage.
Estimated Cost: $306,333

SD-2 (San Pedro) Zone Map B-18

☐ Construct 30" RCP in San Pedro from Venice to SD-4

Comments: System required to intercept local drainage per Drainage Ordinance.
Estimated Cost: $130,648

SD-3 (San Pedro) Zone Map B-18

☐ Construct 36" RCP in San Pedro from Glendale to La Cueva Channel

☐ Construct 48" RCP in San Pedro from San Diego to La Cueva Channel

Comments: System required to intercept local drainage per Drainage Ordinance.
Estimated Cost: $200,273

SD-4 (Florence/San Diego) Zone Map B-18/19

☐ Construct 36" RCP in Florence from Wyoming to Louisiana

☐ Construct 54" RCP in Louisiana from Florence to San Diego

☐ Construct 30" RCP in Louisiana from Beverly Hills to San Diego

☐ Construct 60" RCP in San Diego from Louisiana to Jct with SD-1

☐ Construct 78" RCP from Jct with SD-1 to I-25 culverts

Comments: System required to intercept local drainage from El Camino basin below Wyoming Diversion.

Estimated Cost: $$1,084,378

SD-5 (Louisiana) Zone Map B-19

☐ Construct 60" RCP in Louisiana from Modesto to La Cueva Channel

☐ Construct 36" RCP in Louisiana from Glendale to La Cueva Channel

Comments: System required to intercept local drainage and convey to the La Cueva Channel (C-3) at Louisiana.

Estimated Cost: $158,935

SD-6 (Glendale) Zone Map B-19/20

☐ Construct Desilting Basin at Ventura and Glendale

☐ Construct 84" RCP in Glendale from Ventura to Wyoming

☐ Construct 96" RCP from Glendale/Wyoming to La Cueva Channel west of Eagle Rock Dike

☐ Construct 30" RCP in Modesto from Wyoming to Jct with 96" RCP

Comments: System required to intercept the El Camino Arroyo and convey underground to the La Cueva Channel (C-3) west of Wyoming.

Estimated Cost: $2,180,622

SD-7 (Barstow) Zone Map B-20

☐ Construct 36" RCP in Barstow from Modesto to Jct with SD-6

☐ Construct 42" RCP in Barstow from Florence to Jct with SD-6

Comments: System required to collect local drainage and convey to the El Camino pipe in Glendale (SD-6).

Estimated Cost: $286,452

SD-8 (Ventura) Zone Map B-20

☐ Construct 60" RCP in Ventura from Modesto to Glendale Jct with SD-6

Comments: System required to intercept El Camino tributary arroyo and convey to the El Camino pipe at Glendale (SD-6).
Estimated Cost: $176,326

SD-9 (San Pedro) Zone Map C-18

☐ Parallel existing 48" with 42" RCP in San Pedro from Signal to Alameda

☐ Parallel existing 54" with 72" RCP in San Pedro from Alameda to Oakland

☐ Parallel existing 54" with 78" RCP in San Pedro from Oakland to Eagle Rock

☐ Parallel existing 54" with 60" RCP in San Pedro from Eagle Rock to Modesto

☐ Replace existing 54" with 66" RCP from Modesto/San Pedro to I-25 culvert

Comments: System required to provide adequate capacity for the existing storm drain and to proportion flow (in conjunction with SD-10) between the Wildflower/I-25 Crossing and the South La Cueva/I-25 crossing at Modesto.
Estimated Cost: $692,295

SD-10 (Eagle Rock) Zone Map C-18

☐ Construct 60" RCP relief storm drain in Eagle Rock from San Pedro to I-25 culvert

Comments: System required to proportion flow (in conjunction with SD-9) between the Wildflower/I-25 crossing and the South La Cueva/I-25 crossing at Modesto.
Estimated Cost: $204,344

SD-11 (Eagle Rock) Zone Map C-18

☐ Construct 42" RCP storm drain in Eagle Rock connecting to San Pedro storm drain SD-9.

☐ Construct 42" RCP storm drain from Eagle Rock to Modesto in COA Convenience Center drainage easement.

☐ Construct 30" RCP storm drain in Eagle Rock from Convenience Center to the east to intercept street flow.

Comments: System required to intercept local drainage per Drainage Ordinance. Part of west end of Modesto R/W vacated which prevents some street flow from reaching San Pedro storm drain except by storm drain.

Estimated Cost: $437,431

SD-12 (Oakland) Zone Map C-18

☐ Construct 36" RCP storm drain in Oakland approximately 670-feet east from San Pedro connection to SD-9.

☐ Construct 24" RCP storm drain in Oakland approximately 450-feet east from connection to 36" storm drain to intercept street flow.

Comments: System required to intercept local drainage per Drainage Ordinance.

Estimated Cost: $189,407

SD-13 (Alameda) Zone Map C-18

☐ Construct 30" RCP storm drain in Alameda from San Pedro connection to SD-9 to Louisiana.

☐ Construct 30" RCP storm drain in Louisiana from Alameda to Signal Avenue.

Comments: System required to drain area east of Louisiana that cannot drain to AMAFCA detention dam and to intercept flow from future Alameda road widening project.

Estimated Cost: $310,266

SD-14 (Coronado Village) Zone Map C-17/18

☐ Construct 84" RCP storm drain from I-25 to South Domingo Baca tributary channel west of mobile home park.

☐ Construct 72" RCP storm drain from north crossing of the North Domingo Baca arroyo at Corona to connect to 84" storm drain.

Comments: Both branches of the North Domingo Baca arroyo currently cross Coronado Village in two earth lined ditches. The branches can be combined near I-25 and conveyed through the mobile home park in one pipe using southern ditch alignment.

Estimated Cost: $621,028 (not including R/W)

SD-15 (Holly to I-25) Zone Map C-18

☐ Construct 36" storm drain from 4-48" CMP at I-25 frontage road north east 600-feet to Holly.

Comments: Storm drain required to intercept Holly street flow and route to I-25 crossing structures before reaching frontage road where local flooding is a problem. R/W or easement required.

Estimated Cost: $159,228

SD-16 (Corona) Zone Map C-18

☐ Construct 54" RCP storm drain in Corona from I-25 culverts to Ute.

☐ Construct 48" RCP storm drain in Corona from Ute to San Pedro to connect to existing 48" Corona storm drain.

Comments: Storm drain is required to complete Corona system. Because of grade restrictions near I-25 and existing parking lots some of the 100-year flow will have to flow on the surface in existing drainage easement from end of Corona cul-de-sac to I-25 culvert.

Estimated Cost: $269,623

SD-17 (Louisiana) Zone Map C-18

☐ Construct 30" RCP storm drain from Wilshire to existing 30" Corona storm drain.

Comments: Storm drain is required to complete the Corona storm drain system.

Estimated Cost: $97,083

SD-18 (Holly) Zone Map C-19

☐ Construct 30" RCP storm drain in Holly from existing inlets south of AMAFCA sediment pond to Holly dip-section, approximately 175 feet east.

Comments: Storm drain required to drain dip-section and pick up local drainage.
Estimated Cost: $69,064

SD-19 (Murrelet Storm Drain Extension) Zone Map C-19

☐ Construct 54" RCP storm drain from Wilshire to Signal.

☐ Construct 36" RCP storm drain from Signal to Alameda.

Comments: Storm drain required to pick up flow from Alameda to divert flow to Lower North Domingo Baca Dam to relieve overflow to Alameda/I-25 intersection and to provide outfall for local drainage of property east of Murrelet between Corona and Alameda. R/W or easement required.
Estimated Cost: $330,678.

SD-20 (Corona) Zone Map C-20

☐ Construct 36" RCP storm drain from existing inlets at Wyoming and Corona 300-feet east to existing inlets in Corona.

Comments: Storm drain required to intercept flow currently going to privately maintained detention pond.
Estimated Cost: $66,347

SD-21 (Wyoming) Zone Map C-20

☐ Construct 42" RCP storm drain in Wyoming from existing inlets on south side of Alameda to existing storm drain at Wilshire and Wyoming.

Comments: Storm drain required to relieve the existing undersized Wyoming storm drain from Alameda to the Eagle Rock Dike.

Estimated Cost: $210,026

SD-22 (Barstow) Zone Map C-20

☐ Construct 42" storm drain in Barstow from Holly to the North Doming Baca Channel.

Comments: Storm drain required for local drainage between Barstow and Ventura, south of the North Domingo Baca Arroyo. This facility could be scaled down or eliminated if flows are routed to the proposed North Domingo Baca channel at other points east of Barstow.

Estimated Cost: $129,633

SD-23 (Barstow) Zone Map C-20

☐ Remove existing 24" RCP in Barstow and replace with 42" RCP from Vinyard Ridge to Green Arbor.

☐ Remove existing 24" RCP in Barstow and replace with 42" RCP from Green Arbor to Anaheim.

☐ Construct 42" RCP storm drain in Barstow from APS Pond to North Domingo Baca Channel.

Comments: Existing storm drain is undersized from Anaheim to Vinyard Ridge. With completion of the proposed North Domingo Baca Channel a segment of 42" storm drain needs to be installed to allow the APS detention pond to be abandoned.

Estimated Cost: $279,985

SD-24 (Barstow) Zone Map C-20

☐ Construct 24" RCP connection from Signal to existing Barstow storm drain.

Comments: Storm drain connection required for local drainage per Drainage Ordinance.

Estimated Cost: $56,314

SD-25 **(Barstow)** **Zone Map C-20**

☐ Construct 30" RCP storm drain in Barstow from Alameda to Oakland.

☐ Remove existing 24" RCP and replace with 30" RCP storm drain in Barstow from Oakland to La Cueva Channel inlet.

Comments: New storm drain required for future Alameda road widening and local drainage. Existing 24" segment is undersized.
Estimated Cost: $226,558

SD-26 **(APS Mid-School)** **Zone Map C-20**

☐ Construct 54" RCP storm drain from existing APS detention pond inlet to North Domingo Baca Channel.

Comments: Storm drain required to allow existing detention pond to be abandoned.
Estimated Cost: $53,881

SD-27 **(Almaden Valley to La Cueva Channel)** **Zone Map C-20**

☐ Construct 42" RCP storm drain in Almaden Valley from existing Carrington Subdivision detention pond to Signal Avenue.

☐ Construct 48" RCP storm drain from Signal Avenue north to proposed La Cueva Channel crossing the property now utilized as an AMAFCA training dike.

Comments: Detention pond and other downstream facilities were apparently not sized for future fully developed flow. In order to avoid replacing all of the downstream Barstow system this proposed diversion to the La Cueva Channel is required. Some R/W may be required if Almaden Valley is not extended in the future.
Estimated Cost: $224,195

SD-28 **(Oakland)** **Zone Map C-20**

☐ Construct 24" RCP storm drain in Ventura from Alameda to proposed storm drain in Oakland.

☐ Construct 54" RCP storm drain in Ventura from Eagle Rock to proposed storm drain in Oakland.

☐ Construct 48" RCP storm drain in Oakland from Ventura west to the proposed La Cueva Channel.

Comments: Storm drain required to intercept surface flows from unincorporated areas as well as local drainage and route to the proposed La Cueva Channel.

Estimated Cost: $430,575

SD-29 (Ventura) Zone Map C-20

☐ Construct 36" RCP storm drain in Ventura from 200-feet north of Wilshire south to intersection of Wilshire and Ventura.

☐ Construct 36" RCP storm drain in Ventura from Wilshire intersection 225-feet south to existing 36" storm drain.

Comments: Extension of existing Ventura storm drain is required to intercept flows from unincorporated areas.

Estimated Cost: $91,638

SD-30 (Ventura) Zone Map C-20

☐ Construct 36" RCP storm drain in Ventura from Signal Avenue to the proposed La Cueva Channel.

Comments: Storm drain system to intercept flow from unincorporated areas and to meet local drainage requirements per the Drainage Ordinance.

Estimated Cost: $102,094

SD-31 (Wilshire) Zone Map C-20

☐ Construct 30" RCP storm drain from 1050-feet east of Wilshire/Ventura intersection to connect to proposed Ventura storm drain extension (SD-29).

Comments: System is required to intercept flows from unincorporated areas and convey to Ventura storm drain. This will allow privately maintained detention pond to be abandoned.

Estimated Cost: $107,379

SD-32 (Vinyard VI Pond) Zone Map C-20

☐ Construct 54" RCP storm drain from pond inlet to proposed North Domingo Baca Channel (or pipe).

Comments: System is required to privately maintained detention pond to be abandoned.
Estimated Cost: $55,279

SD-33 (Holbrook) Zone Map C-20

☐ Construct 42" RCP storm drain in Holbrook from Signal to Wilshire.

☐ Construct 42" RCP storm drain in Holbrook from Wilshire to Corona.

☐ Construct 78" RCP storm drain in Holbrook from Corona to proposed North Domingo Baca Channel (or pipe).

Comments: This storm drain system is required to intercept flows from unincorporated areas and route them to the proposed North Domingo Baca Channel. Downstream systems within municipal limits were not designed for developed flows from County areas. This interceptor was first proposed in the AMAFCA North and South Domingo Baca Arroyos and Paseo del Norte Corridor Drainage Management Plan.
Estimated Cost: $550,581

C-1/AV-8 (North Camino Channel) Zone Map B-18

☐ Construct concrete lined channel from I-25 crossing structure to municipal limits west of Louisiana. 10-foot bottom width, depth varies from 5.6-feet at upstream end to 6.1-feet at downstream end.

☐ Construct earth and riprap training dike from channel inlet approximately 1200-feet east to insure the capture of the arroyo. Average height of dike to be approximately three feet.

Comments: Channel will allow a large portion of Coronado Airport to be reclaimed from floodplain and the upstream dike will prevent

Avulsion 8. Channel R/W to be provided by developers of airport but dike R/W may need to be purchased.

Estimated Cost: $1,733,325

C-1a (North Camino Tributary Channel) Zone Map B-18

☐ Construct concrete lined channel from confluence of the main branch of the arroyo and the tributary to the municipal limits at Louisiana, approximately 600-feet southeast.

Comments: Channel will allow a large portion of Coronado Airport to be reclaimed from floodplain. Channel R/W to be provided by developers of airpost.

Estimated Cost: $392,097

C-3, AV-6 (La Cueva Channel) Zone Map B-18/C-18

☐ Construct concrete lined channel from I-25 crossing structure to existing terminus of the Eagle Rock Dike at Wyoming. 10-foot bottom width, depth varies from 6.8 to 7.4-feet. Bridges are required at San Pedro, Louisiana , Modesto and Glendale.

Comments: Channel is required to connect two existing hard lined reaches to the La Cueva arroyo and to control Avulsion 6 at Glendale. The channel must also accommodate diversion of the El Camino west of Wyoming.

Estimated Cost: $3,930,268

C-4 (La Cueva Channel, west of Barstow) Zone Map C-20

☐ Construct concrete lined channel from existing channel at Barstow to Ventura following an alignment from the existing channel inlet south and east to the Alameda corridor. In the Alameda corridor the channel will follow the Alameda alignment to the municipal limits at Ventura.

Comments: The channel is required to convey flows in the La Cueva arroyo from the Alameda corridor to the existing channel inlet. The La Cueva Channel will also be the outfall for several major storm drains. The project will remove extensive areas from floodplain. Bridges will be required at Barstow and Ventura.

Estimated Cost: $1,860,435

C-5 (North Domingo Baca Channel west of Wyoming) Zone Map C-19

☐ Construct stepped soil cement or concrete lined channel from existing soil cement channel at Wyoming to the Lower North Domingo Baca Dam. Bottom width 10-feet, depth approximately 5.8-feet.

Comments: Area is currently being developed as a park by the City of Albuquerque. Alignment and channel materials to be determined as part of development process.
Estimated Cost: $746,104

C-6 (North Domingo Baca Channel east of Barstow) Zone Map C-20

☐ Construct concrete or soil cement lined channel from existing soil cement channel at Barstow to Holbrook along the Carmel R/W. Bridges required at Ventura and Barstow. Bottom width 10-feet, depth varies from 4.0 to 4.9-feet.

Comments: East of Ventura a closed conduit (pipe) could be an option. Cost estimates are based on a concrete lined channel.
Estimated Cost: $2,073,353

AV-1 (Juan Tabo Picnic Area Access Road Dike) Zone Map A-23

☐ Construct earth and riprap dike on south bank of the North Camino Arroyo from Tramway to the Juan Tabo Picnic Area Access Road. Height varies from 3.0 to 8.0 feet.

Comments: The proposed dike is necessary to prevent the North Camino arroyo from avulsing to the El Camino arroyo. The proposed project is on U.S.F.S. and Sandia Pueblo Land and requires their permission and cooperation.
Estimated Cost: $447,287

AV-4 (La Cueva Arroyo Avulsion Control) Zone Map B-22

☐ Construct bridge at Modesto with up and downstream earth and riprap training dikes.

☐ Construct 2 cul-de-sacs on Glendale approximately 250-feet west of Browning (with street R/W vacated in between) with up and downstream earth and riprap training dikes.

Comments: Training dikes must extend far enough up and downstream to close off all potential alternate flow paths leaving the main northern branch of the La Cueva arroyo between Browning and Eubank. Extensive R/W (approximately 9 acres) is required.

Estimated Cost: $1,460,039

AV-5 (El Camino Arroyo Avulsion Control) Zone Map B-20

☐ Construct raised county paved road section, off-set to the south of the Glendale R/W, from Holbrook approximately 1100-feet west.

☐ Construct earth and riprap channel north of road section. North side maintenance road on top of bank to be used as local access road. 25-foot channel bottom width. Minimum height of north bank is 5-feet.

☐ Construct paved dip-section on Glendale 1200-feet west of Holbrook.

Comments: By off-setting road to the enough of the north tier of lots can be preserved to avoid purchase of entire lot. Approximately 60-feet from each lot is required for R/W.

Estimated Cost: $425,416

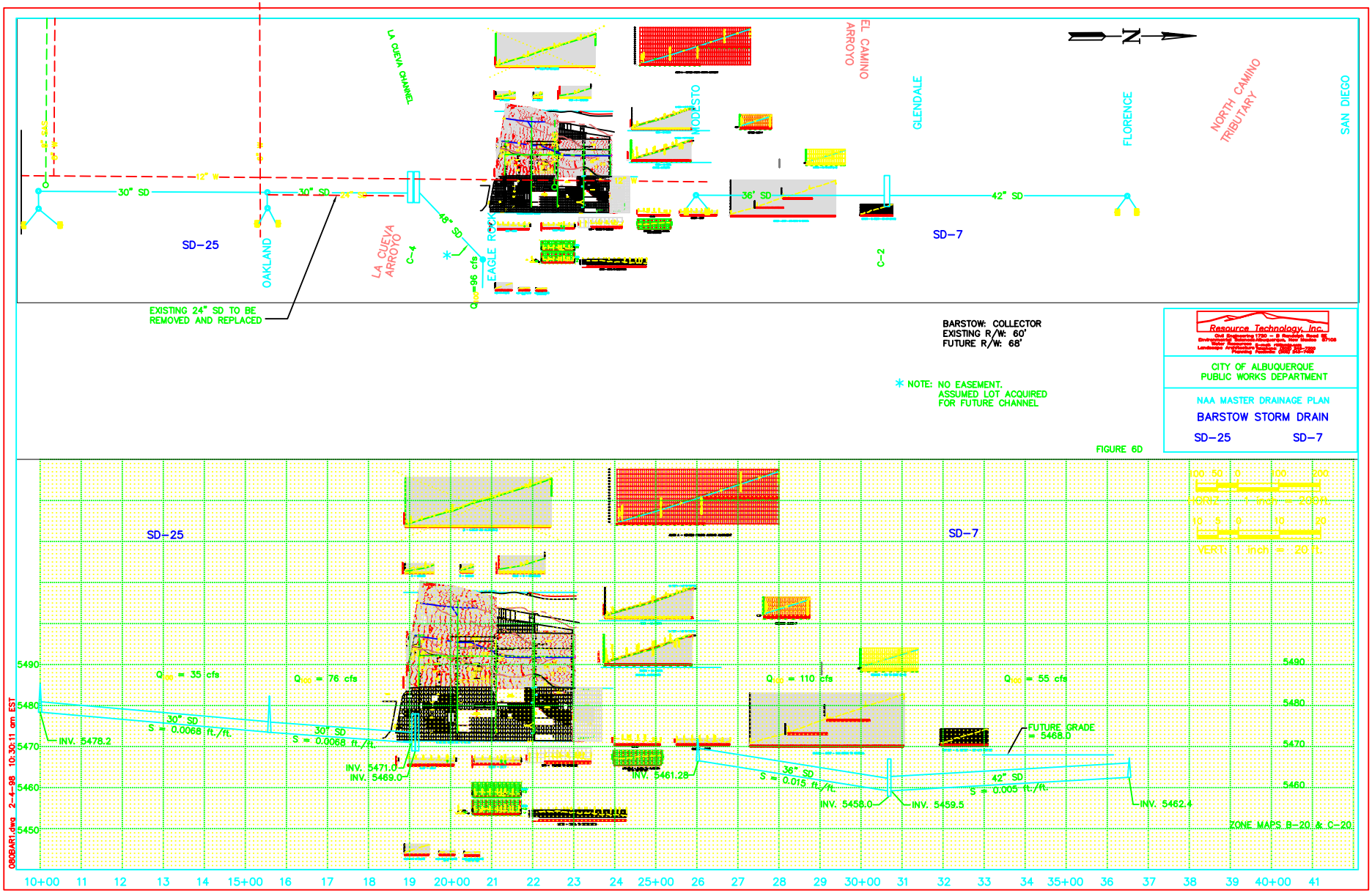
AV-7 (Avulsion Control on North Camino Tributary) Zone Map B-19

☐ Construct paved dip-section on Venice approximately 1500-feet east of Louisiana.

☐ Construct earth and riprap dike north of dip-section to block off potential flow line to the west.

Comments: Avulsion 7 needs to be controlled to prevent the North Camino Tributary from flowing to the El Camino system and by-passing facilities to be built at Louisiana to confine it to a lined channel. Control of this avulsion will help remove floodplain at Coronado airport.

Estimated Cost: $126,948


LA CUEVA CHANNEL
EL CAMINO ARROYO
MODESTO
GLENDALE
FLORENCE
NORTH CAMINO TRIBUTARY
SAN DIEGO
12" W
30" SD
30" SD
48" SD
36" SD
42" SD
SD-25
SD-7
OAKLAND
LA CUEVA ARROYO
C-4
EAGLE ROCK
C-2
EXISTING 24" SD TO BE REMOVED AND REPLACED
BARSTOW: COLLECTOR
EXISTING R/W: 60'
FUTURE R/W: 68'
* NOTE: NO EASEMENT. ASSUMED LOT ACQUIRED FOR FUTURE CHANNEL
Resource Technology, Inc.
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
NAA MASTER DRAINAGE PLAN
BARSTOW STORM DRAIN
SD-25 SD-7
FIGURE 6D
HORIZ. 1 inch = 200 ft.
VERT. 1 inch = 20 ft.
Q100 = 35 cfs
Q100 = 76 cfs
Q100 = 110 cfs
Q100 = 55 cfs
30" SD S = 0.0068 ft./ft.
30" SD S = 0.0068 ft./ft.
INV. 5478.2
INV. 5471.0
INV. 5469.0
INV. 5461.28
36" SD S = 0.015 ft./ft.
42" SD S = 0.005 ft./ft.
INV. 5458.0
INV. 5459.5
INV. 5462.4
FUTURE GRADE = 5468.0
5490
5480
5470
5460
5450
10+00 11 12 13 14 15+00 16 17 18 19 20+00 21 22 23 24 25+00 26 27 28 29 30+00 31 32 33 34 35+00 36 37 38 39 40+00 41
ZONE MAPS B-20 & C-20
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N
NO. DOMINGO BACA CHANNEL
EXISTING DIKE
EXISTING DIKE
ANAHEIM
CARMEL
GREEN ARBOR
42" SD
24" SD
SD-22
SD-23
SD-24
BARSTOW: COLLECTOR
EXISTING R/W: 60' – 68'
FUTURE R/W: 68'
Resource Technology, Inc.
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
NAA MASTER DRAINAGE PLAN
BARSTOW STORM DRAIN
SD-22 SD-23 SD-24
FIGURE 6 I
NOTE: PROFILE BASED ON SURVEY BY RTI 10-97
Q = 118 cfs
Q = 112 cfs
Q = 43 cfs
138 cfs
FUTURE GRADE = 5467.50
42" SD S= 0.005 ft/ft
42" SD S= 0.008 ft/ft
REPLACE EXIST. MH WITH 42" SD
24" SD S= 0.006 ft/ft
INV. 5462.0
INV. 5459.5
INV. 5459.5
INV. 5458.0
INV. 5460.5
INV. 5465.90
INV. 5468.0
INV. 5469.60
INV. 5473.42
INV. 5476.1
INV. 5475.12
5490
5480
5470
5460
ZONE MAP D-20
10+00 11 12 13 14 15+00 16 17 18 19 20+00 21 22 23 24 25+00 26 27 28 29 30+00 31 32 33 34 35+00 36 37 38 39 40+00 41
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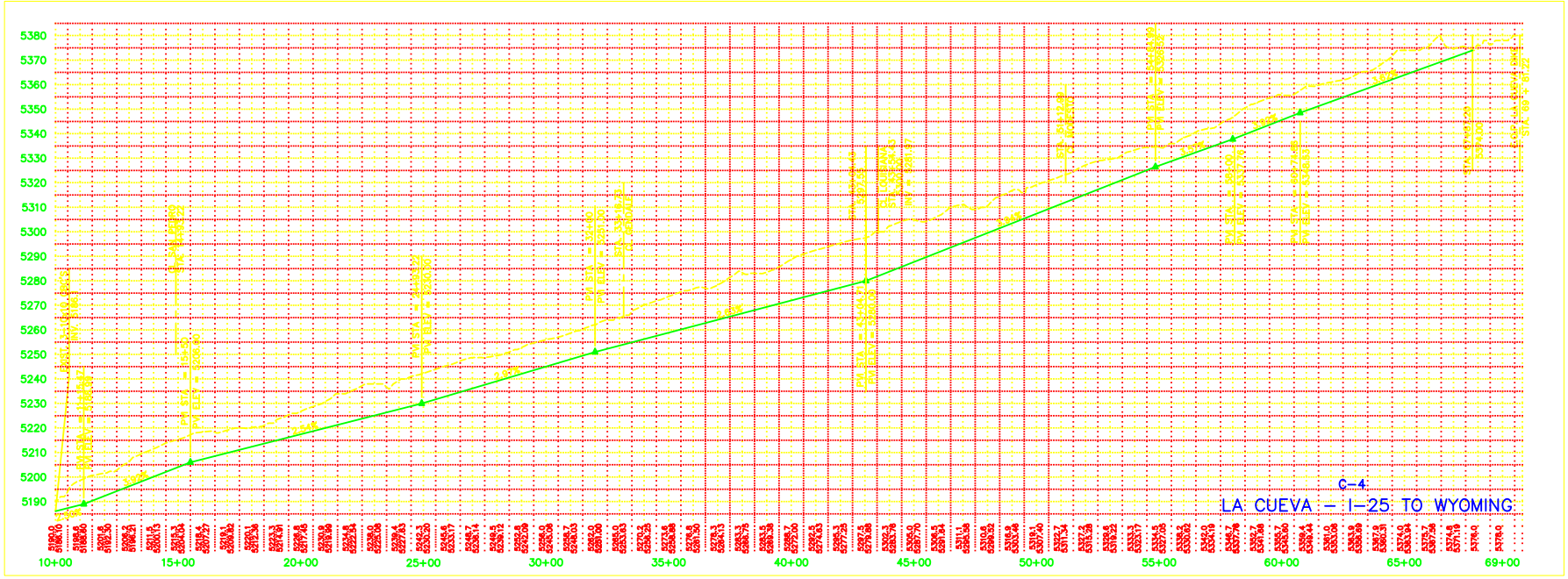

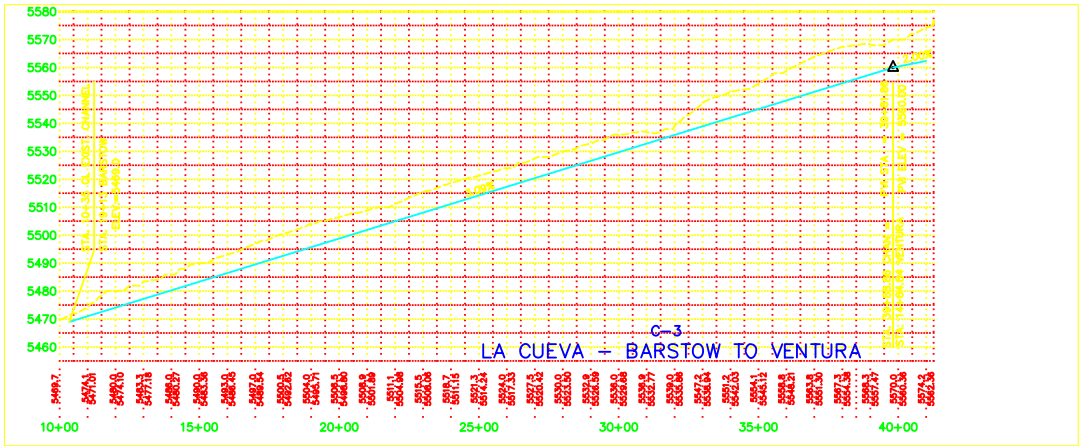

HORIZ : 1 inch = 400 ft.

VERT: 1 inch = 40 ft.

FIGURE 7C

NORTH ALBUQUERQUE ACRES
MASTER DRAINAGE PLAN

LA CUEVA CHANNEL PROFILES
C-3
C-4

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

Resource Technology, Inc.

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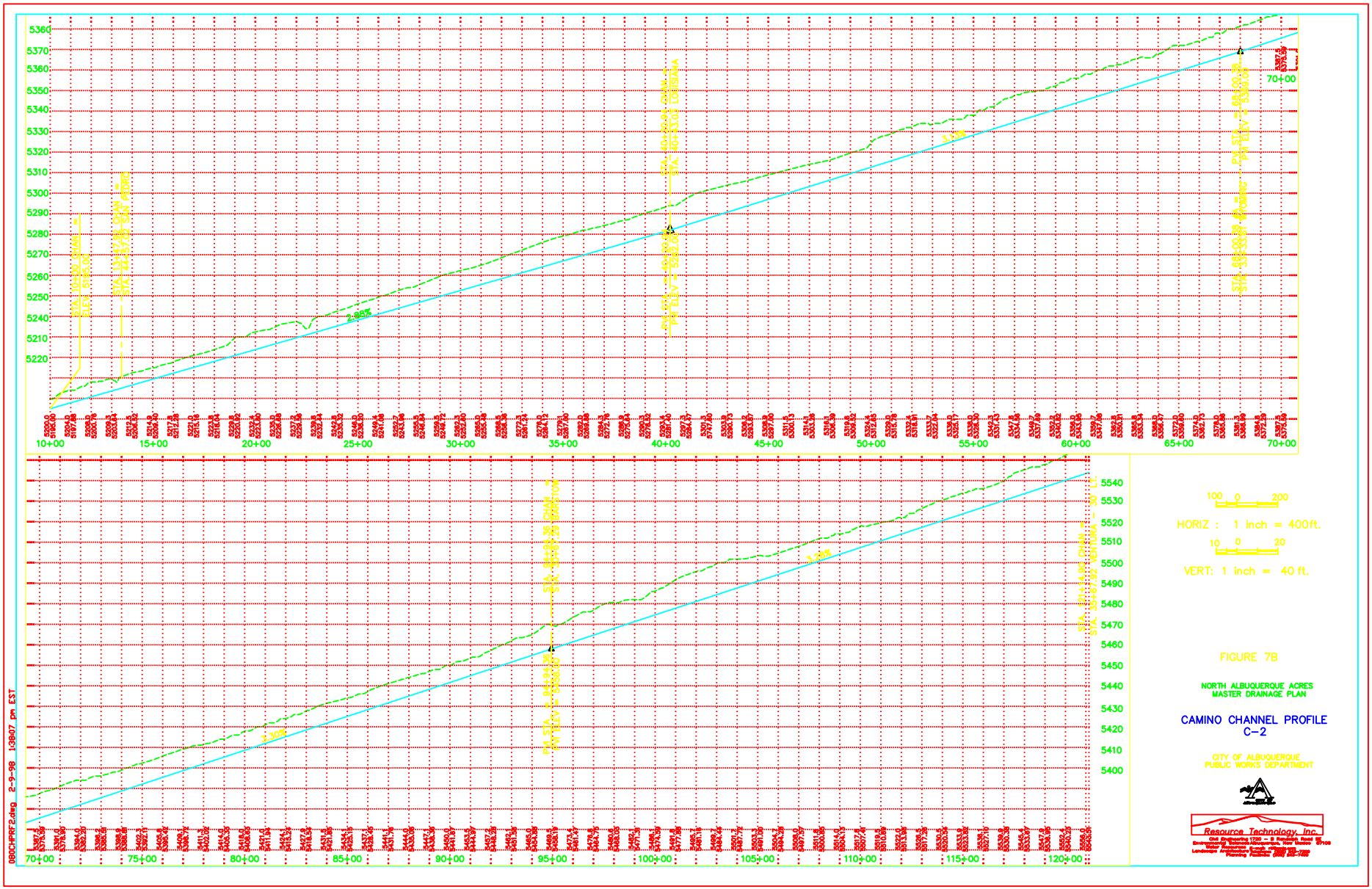
HORIZ : 1 inch = 400ft.
VERT: 1 inch = 40 ft.
FIGURE 7B
NORTH ALBUQUERQUE ACRES
MASTER DRAINAGE PLAN
CAMINO CHANNEL PROFILE
C-2
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
Resource Technology, Inc.
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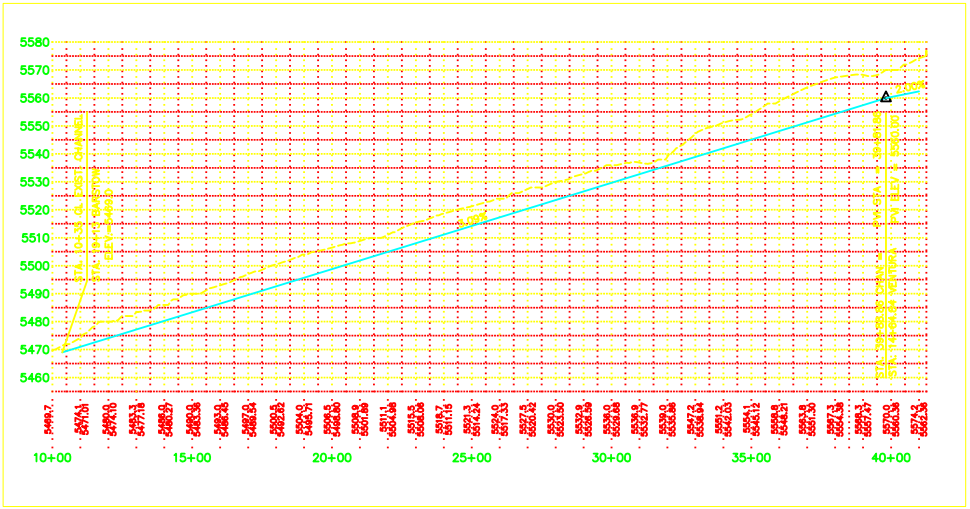


NORTH CAMINO – I25 TO EAST

100 0 200

HORIZ : 1 inch = 400ft.

10 0 20

VERT: 1 inch = 40 ft.

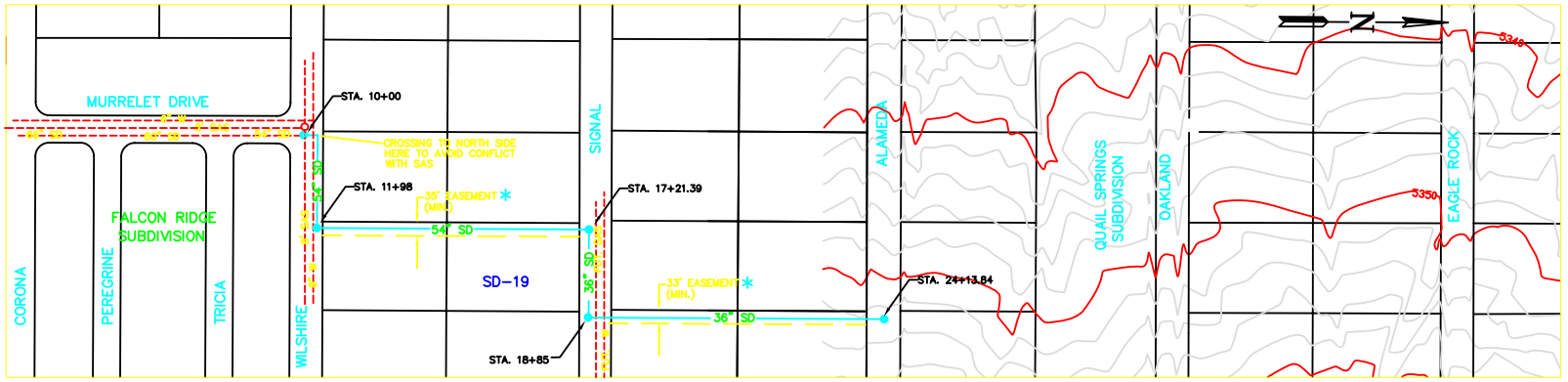
FIGURE 7A

NORTH ALBUQUERQUE ACRES
MASTER DRAINAGE PLAN

NORTH CAMINO CHANNEL PROFILE
C–1

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

Resource Technology, Inc.



* NOTE: STORM DRAIN LOCATION IS APPROXIMATE. IT CAN BE PLACED ON EITHER SIDE OF PROPERTY LINE OR SHIFTED TO MEET PLATTING REQUIREMENTS.

Resource Technology, Inc.

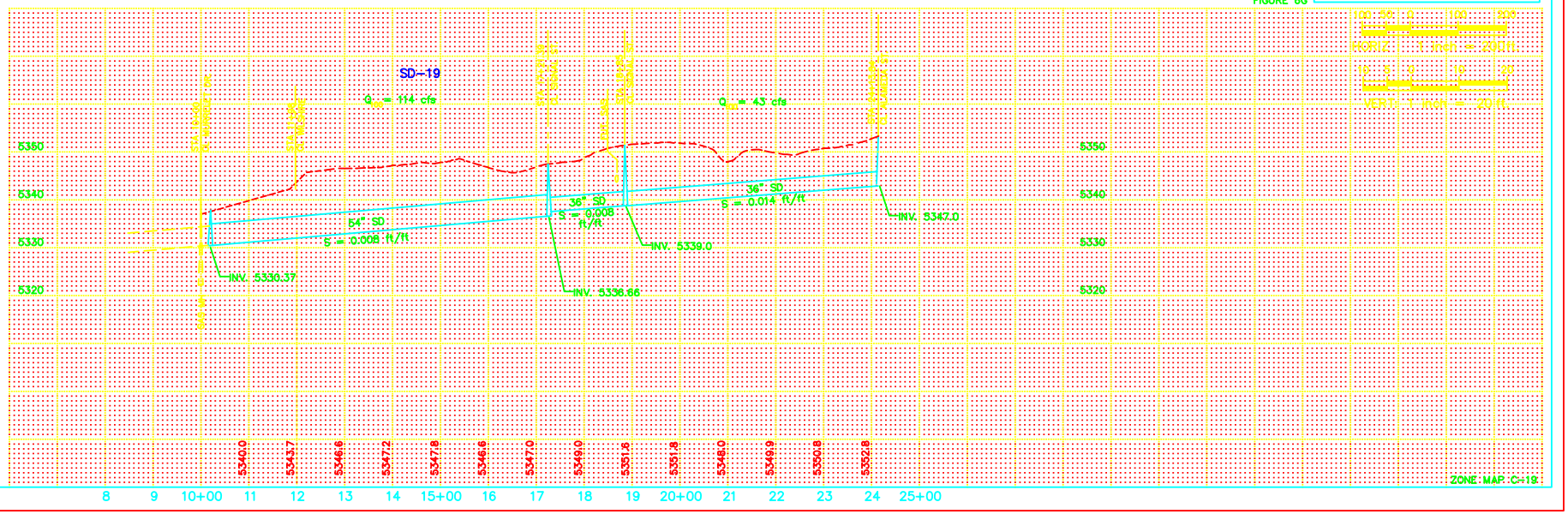
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

NAA MASTER DRAINAGE PLAN

MURRELET
SD EXTENSION
SD-19

BETWEEN LOUISIANA & WYOMING FROM CORONA TO ALAMEDA

FIGURE 6G



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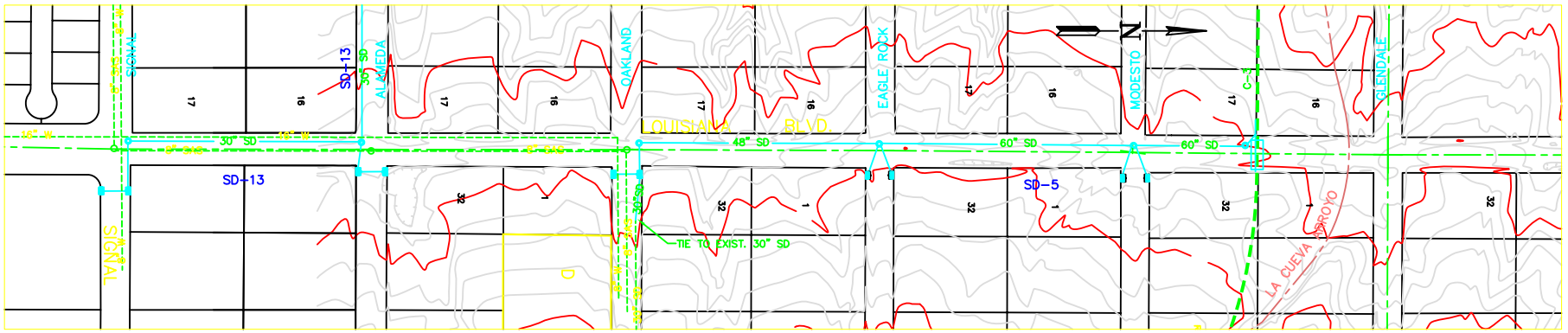


LOUISIANA: MINOR ARTERIAL
EXISTING R/W: 60'
FUTURE R/W: 86'

Resource Technology, Inc.

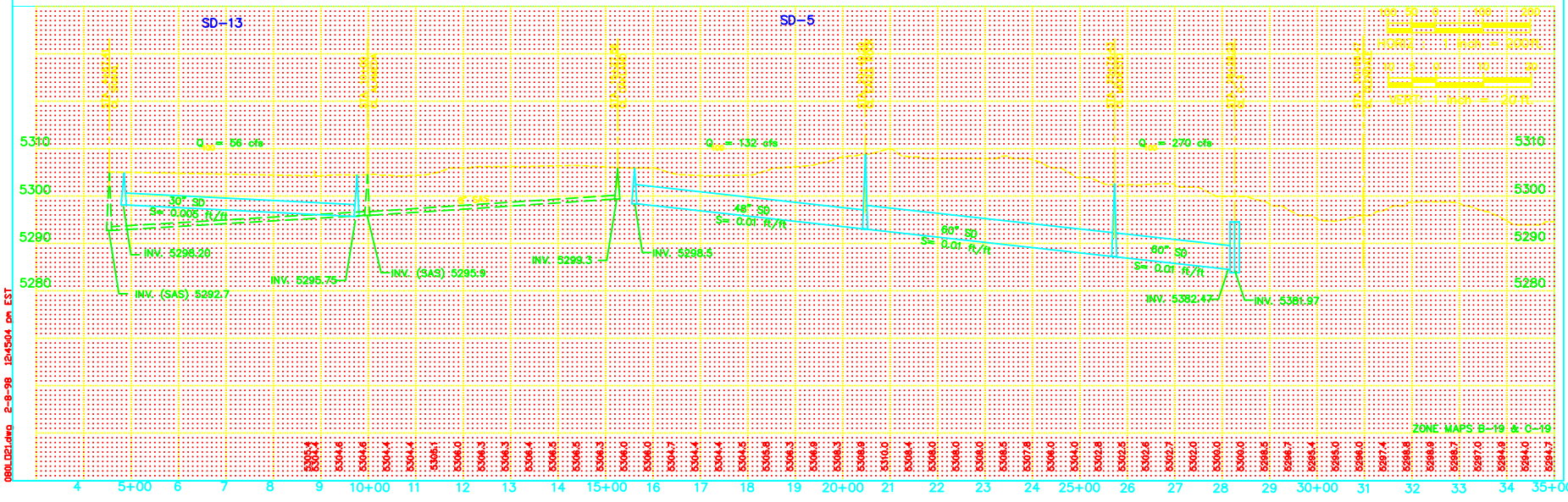
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

NAA MASTER DRAINAGE PLAN

LOUISIANA STORM DRAIN

SD-13 SD-5

FIGURE 6B



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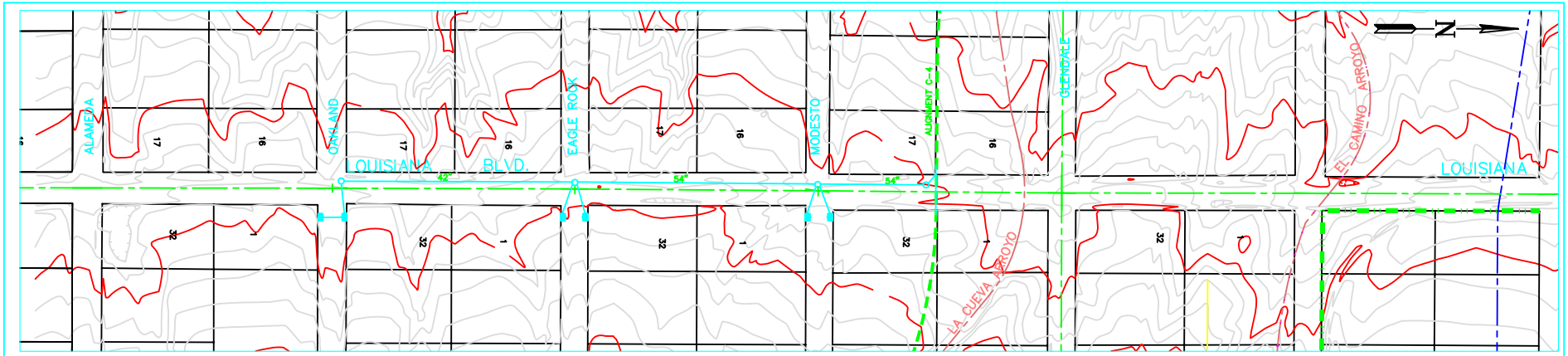
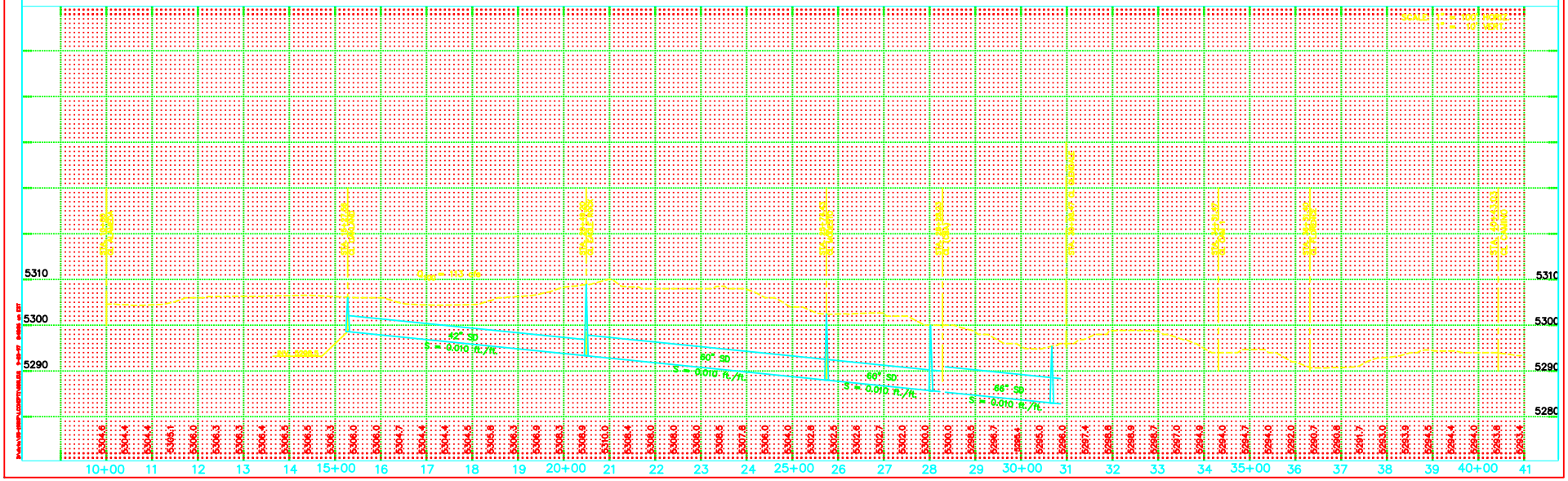


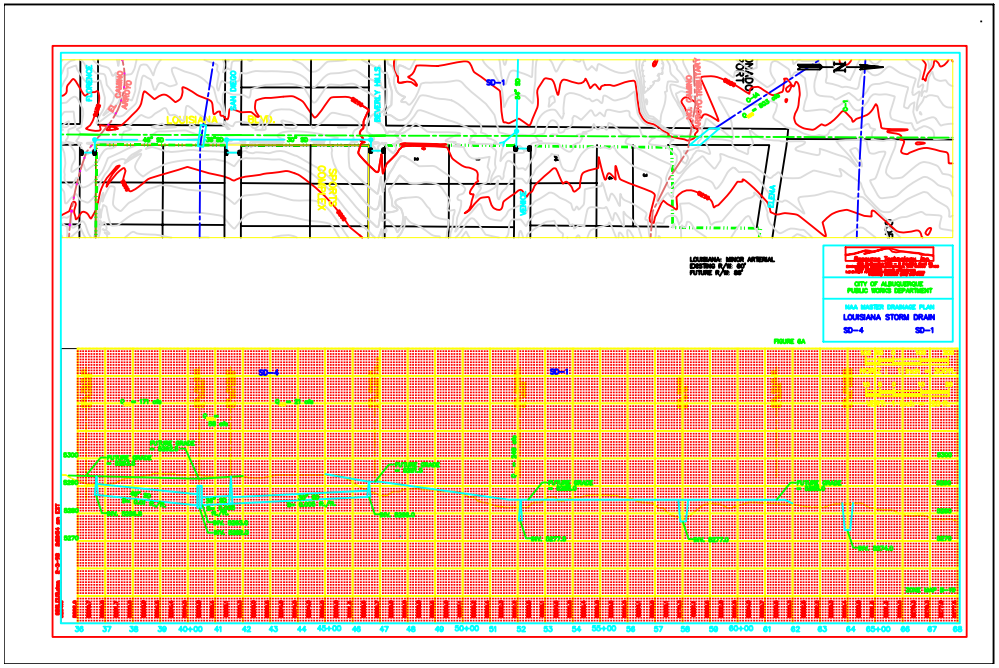
Resource Technology, Inc.
ENGINEERS AND ENVIRONMENTAL SCIENTISTS
CIVIL – ENVIRONMENTAL – WATER RESOURCES – RECREATION – PLANNING

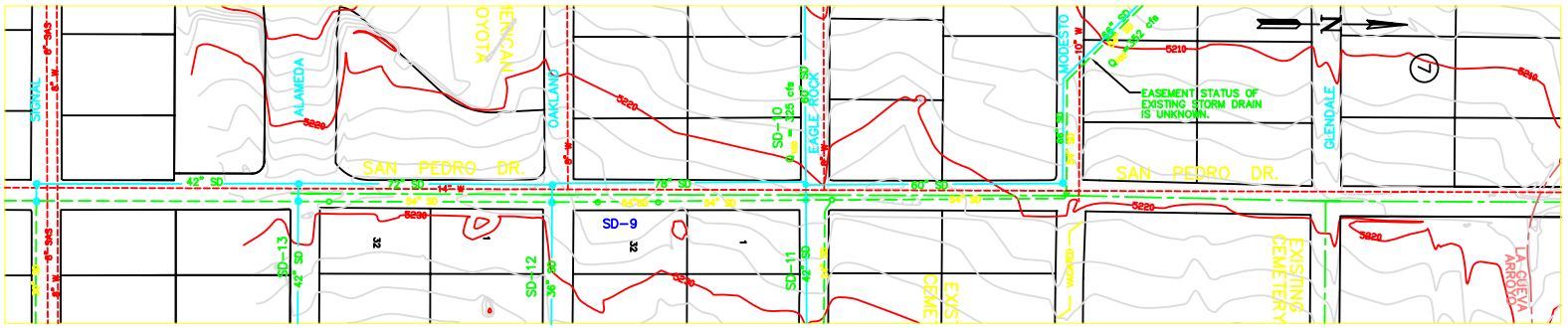
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

NAA MASTER DRAINAGE PLAN

LOUISIANA STORM DRAIN




LOUISIANA MINOR ARTERIAL
EXISTING R/W 60'
FUTURE R/W 80'
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
NAA MASTER DRAINAGE PLAN
LOUISIANA STORM DRAIN
SD-4
SD-1
FIGURE 6A



SD-9 CONSISTS OF PARALLEL STORM DRAIN FROM SIGNAL TO MODESTO AND REMOVING EXISTING 54" SD FROM SAN PEDRO/MODESTO INTERSECTION TO I-25 AND REPLACING WITH 66" SD. FUTURE AND EXISTING STORM DRAINS ARE TO BE INTERCONNECTED AT EACH INTERSECTION SO THAT FLOW WILL BE PROPORTIONED BETWEEN EAGLE ROCK AND MODESTO OUTFALLS.

SAN PEDRO: COLLECTOR
EXISTING R/W: 60'
FUTURE R/W: 80'

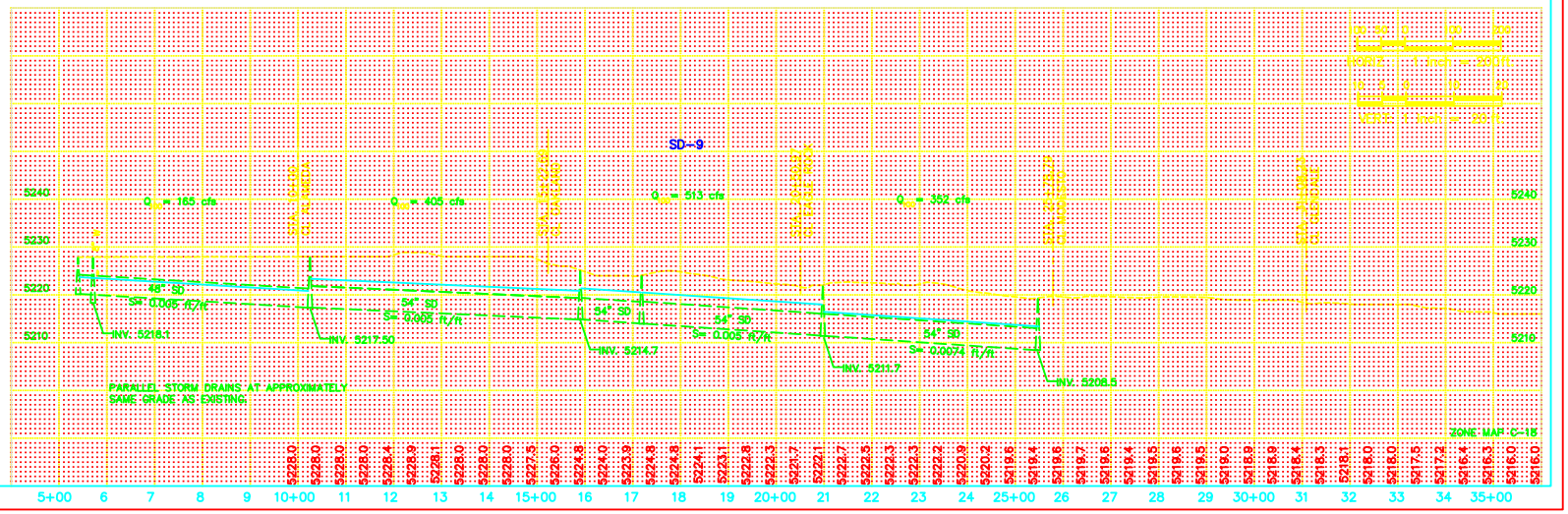
Resource Technology, Inc.

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

NAA MASTER DRAINAGE PLAN

SAN PEDRO STORM DRAIN
SD-9

FIGURE 6F



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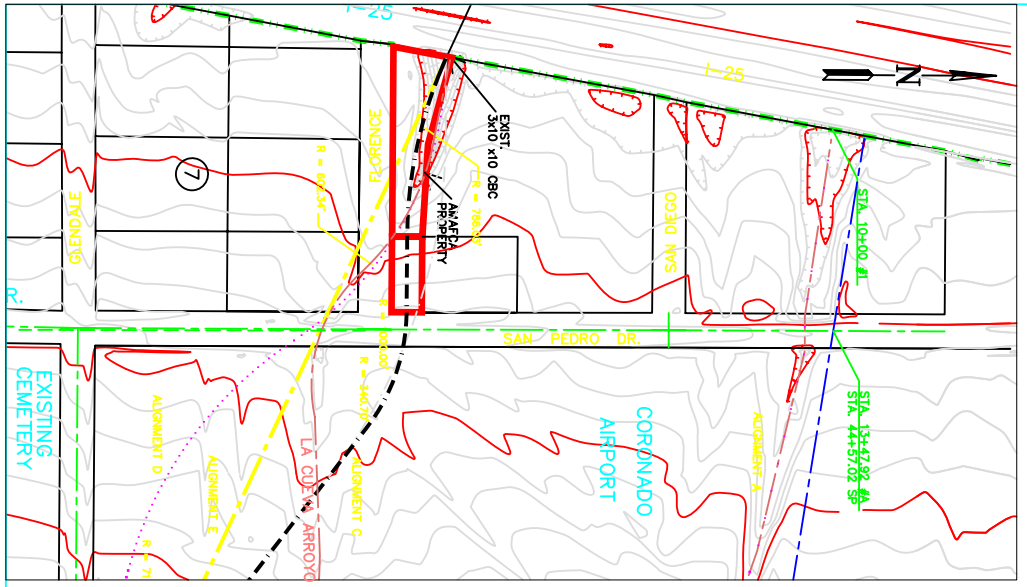
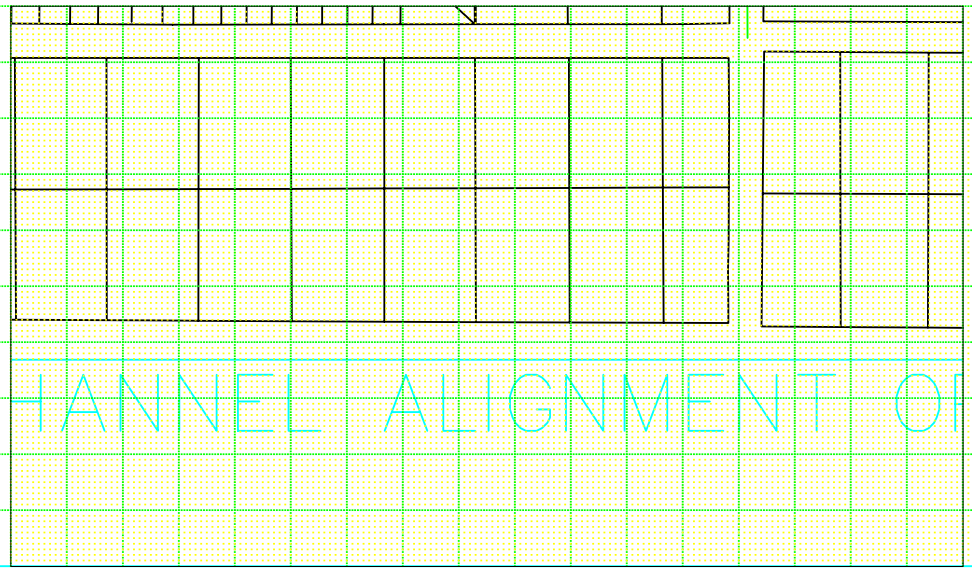




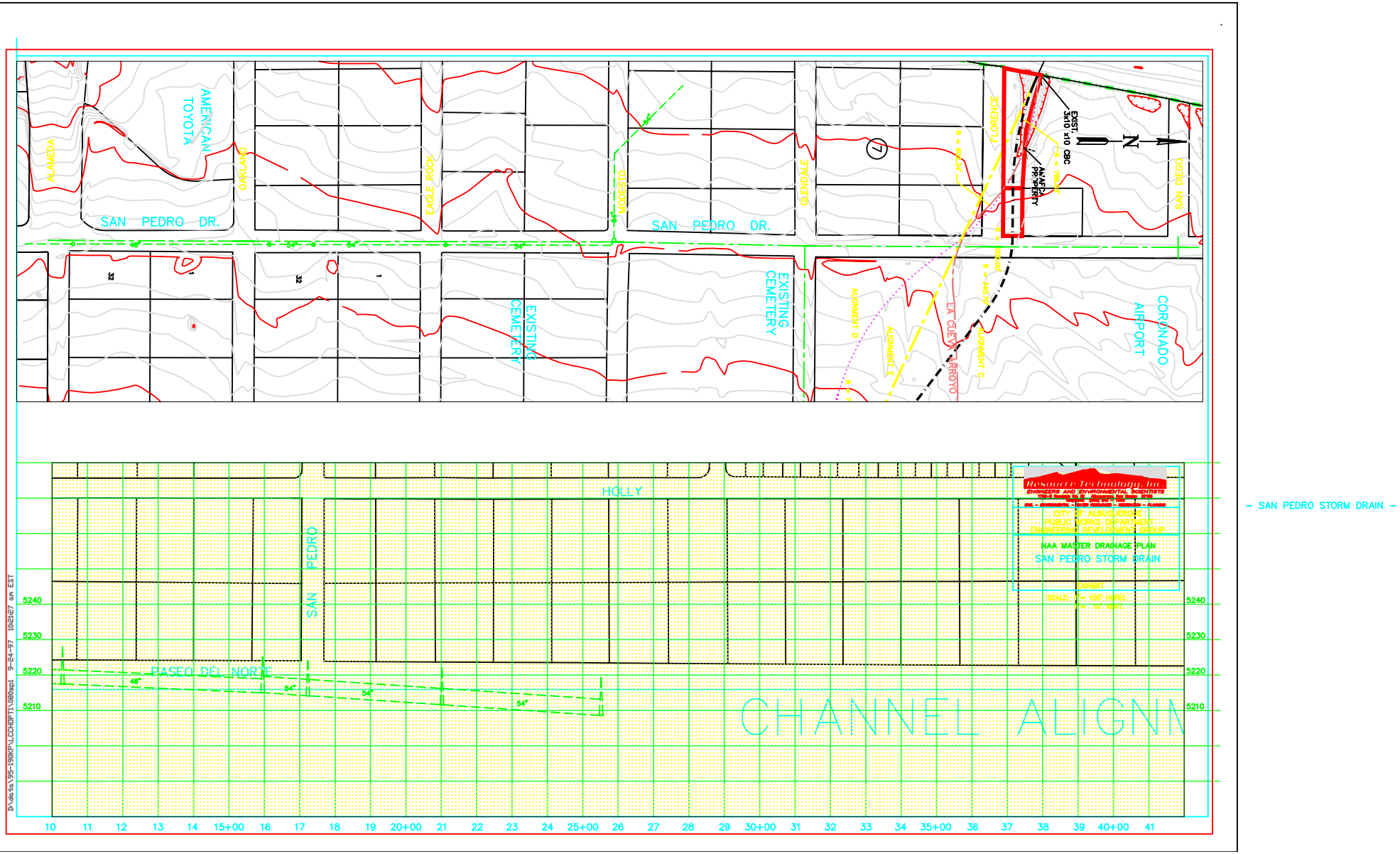
SAN PEDRO STORM DRAIN

SCALE: 1"= 100' HORIZ.
1"= 10' VERT.

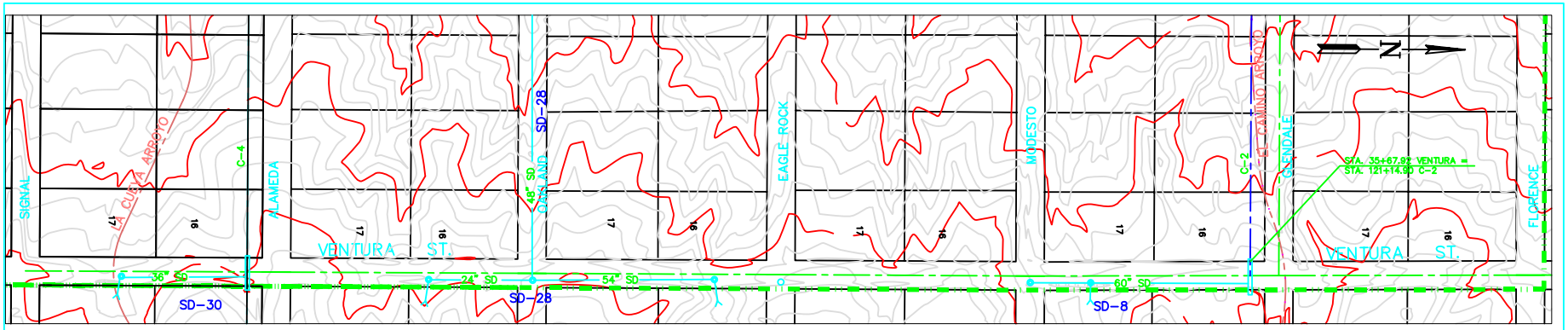
5240
5230
5220
5210

31 32 33 34 35+00 36 37 38 39 40+00 41 42 43

D:\data\95-190KP\LCCHDPTI\080sp2 9-24-97 90104 am EST



– SAN PEDRO STORM DRAIN –



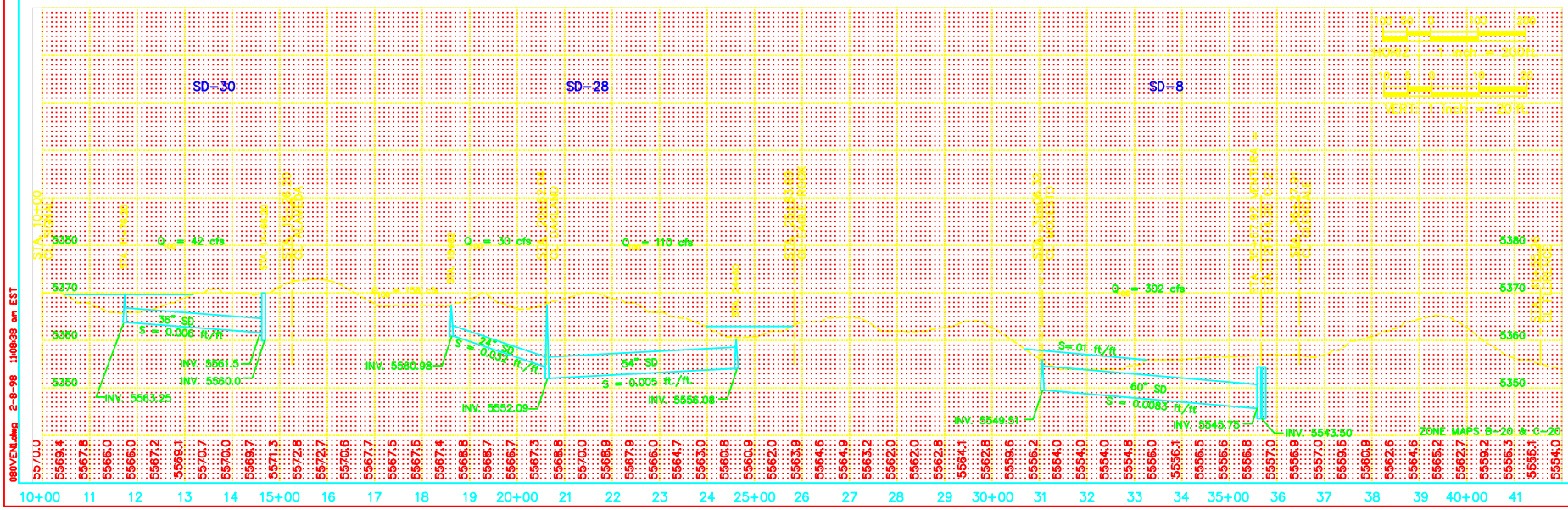
VENTURA: MINOR ARTERIAL
EXISTING R/W: 60'
FUTURE R/W: 86'

Resource Technology, Inc.

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

NAA MASTER DRAINAGE PLAN
VENTURA STORM DRAIN
SD-30 SD-28 SD-8

FIGURE 6E



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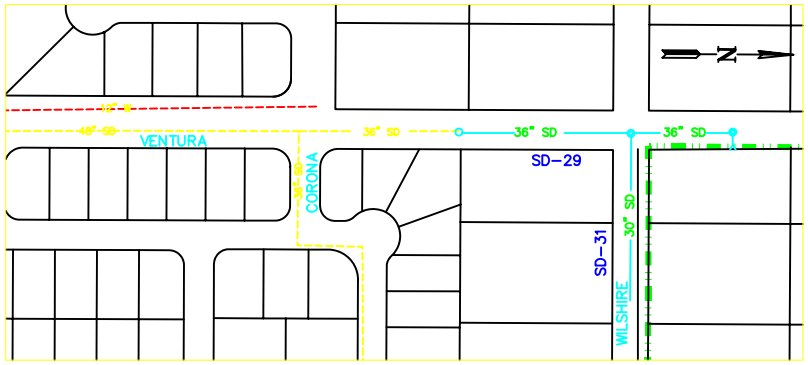
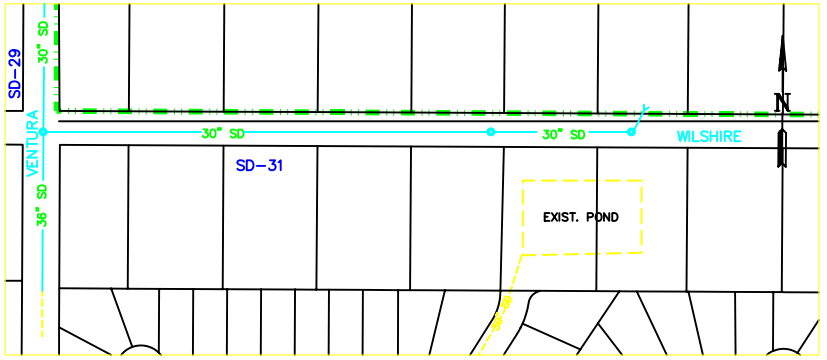


VENTURA: MINOR ARTERIAL
EXISTING R/W: 60'
FUTURE R/W: 86'



WILSHIRE: RESIDENTIAL
EXISTING R/W: 60'
FUTURE R/W: 38'

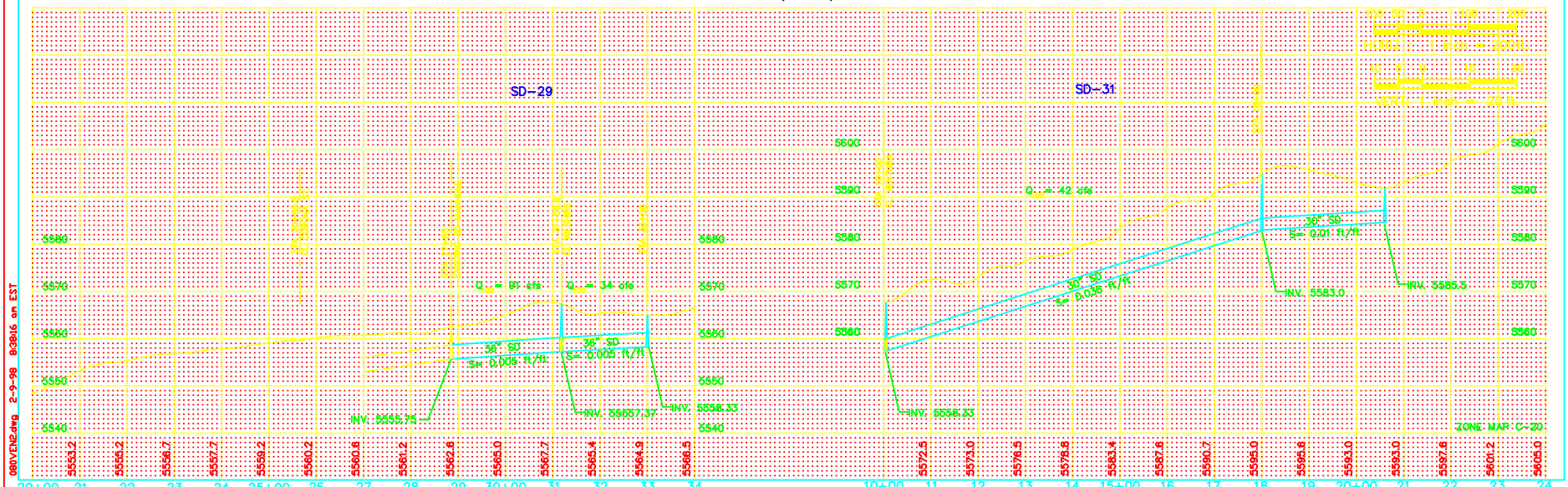
Resource Technology, Inc.

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

NAA MASTER DRAINAGE PLAN
VENTURA STORM DRAIN
SD-29 SD-31

FIGURE 6J

BENCHMARK: 5-C20 A 1.75" DISK LOCATED AT THE INTERSECTION OF VENTURA AVE. AND ANAHEIM ON A DROP INLET IN THE NNE QUADRANT OF THAT INTERSECTION
ELEV. = 5552.709 (RTI 10-97)



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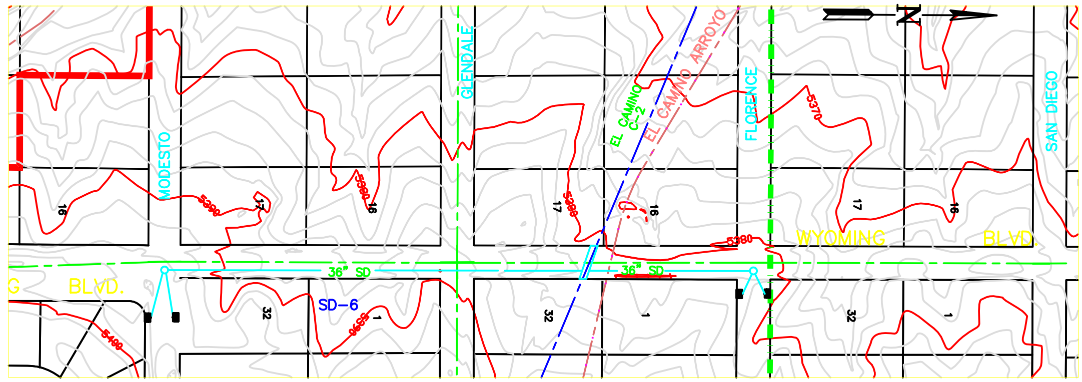


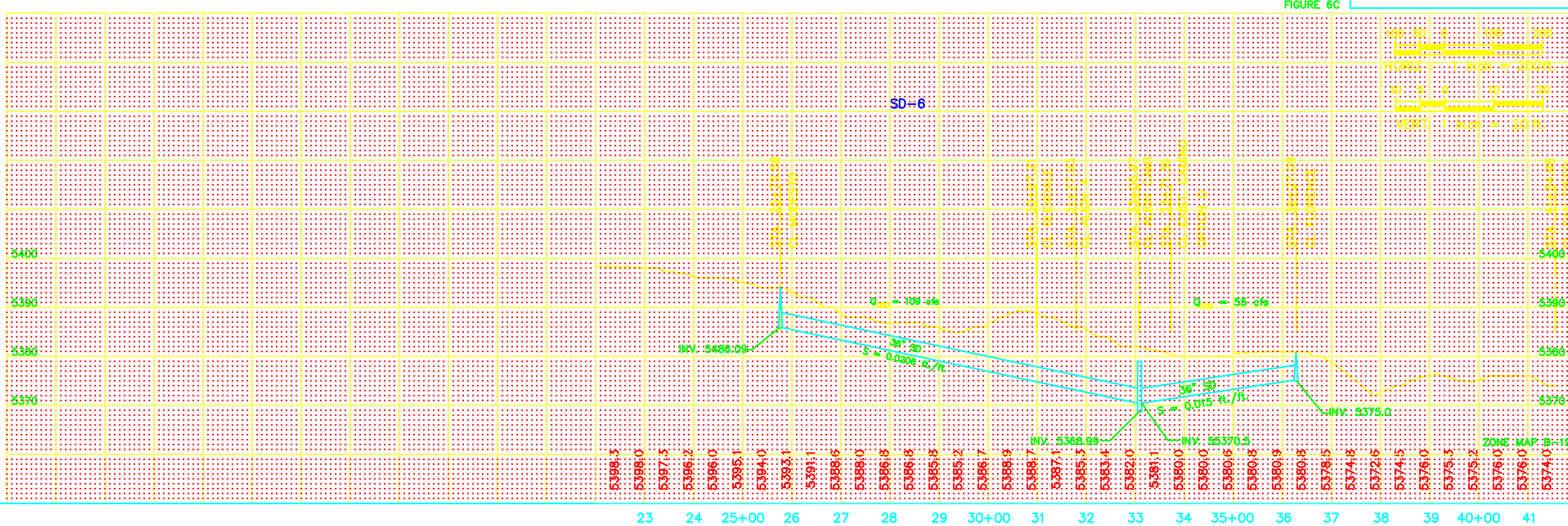
WYOMING: PRINCIPAL ATRERIAL
EXISTING R/W: 60'
FUTURE R/W: 156"

Resource Technology, Inc.

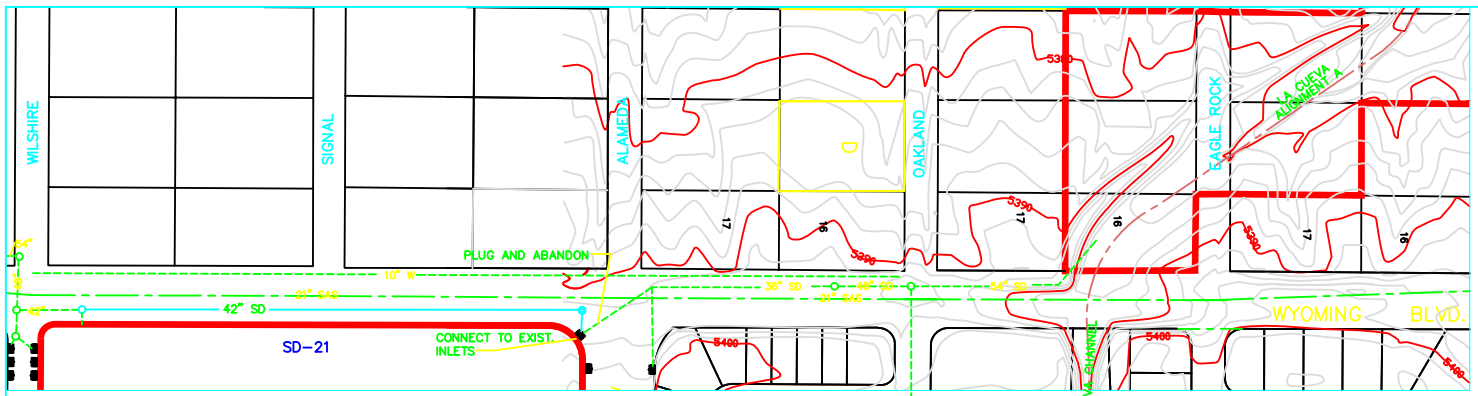
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

NAA MASTER DRAINAGE PLAN
WYOMING STORM DRAIN
SD-6

FIGURE 6C



080VYO1.dwg 2-6-98 10:51:27 am EST



WYOMING: PRINCIPAL ARTERIAL
EXISTING R/W: VARIES
FUTURE R/W: 156'

Resource Technology, Inc.

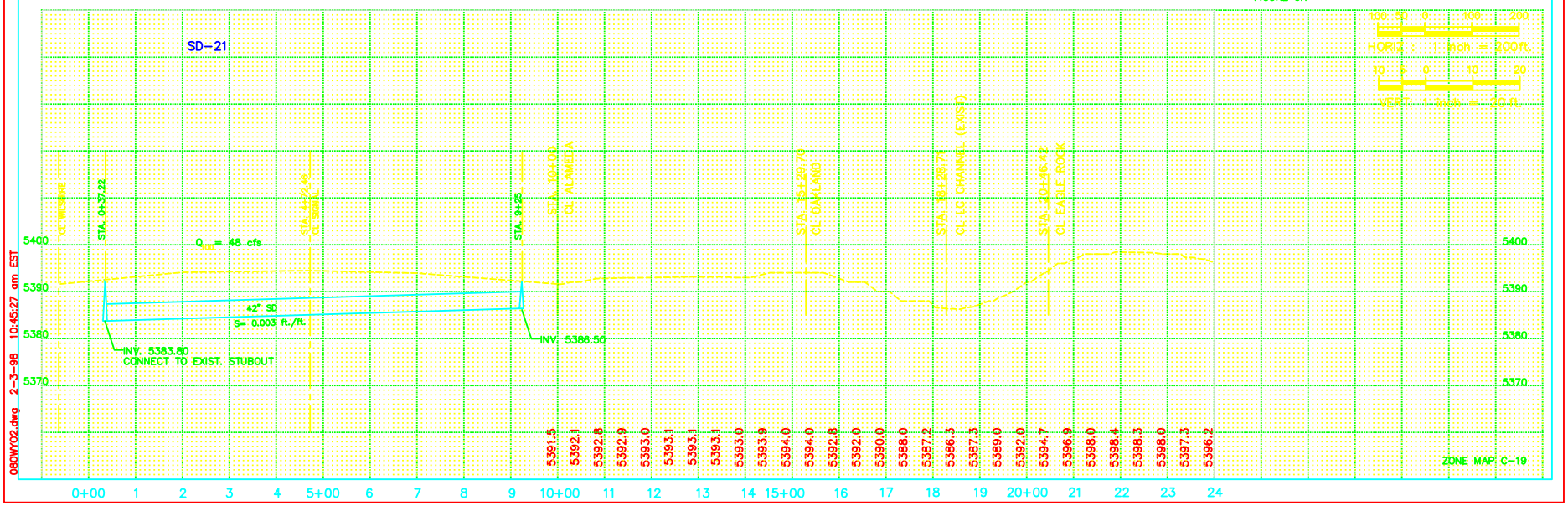
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

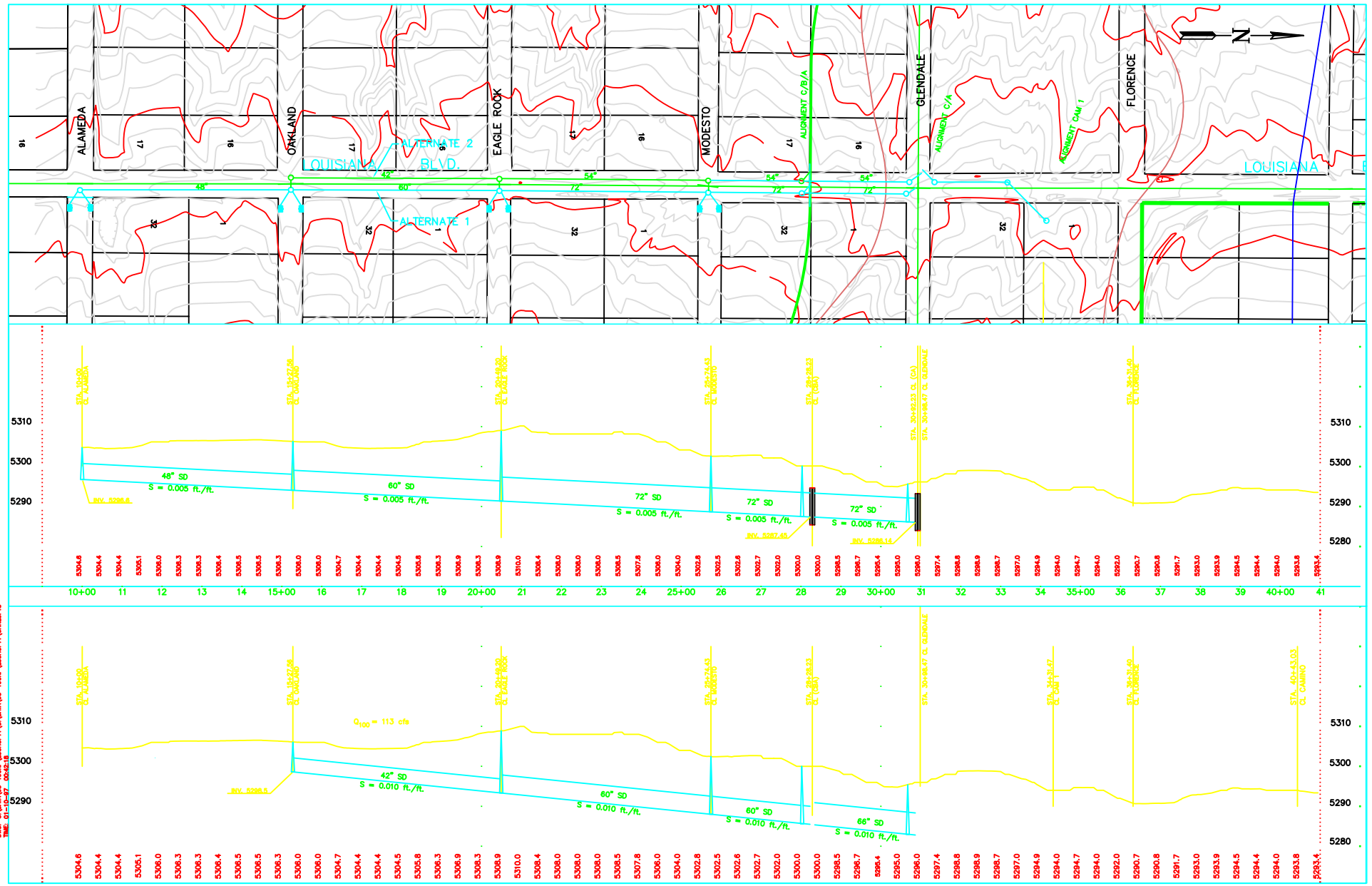
NAA MASTER DRAINAGE PLAN

WYOMING STORM DRAIN

SD-21

FIGURE 6H




ALAMEDA
OAKLAND
EAGLE ROCK
MODESTO
GLENDALE
FLORENCE
LOUISIANA
ALTERNATE 2
ALTERNATE 1
BLVD.
ALIGNMENT C/B/A
ALIGNMENT C/A
ALIGNMENT CAM 1
N
48"
60"
42"
54"
72"
48" SD
S = 0.005 ft./ft.
60" SD
S = 0.005 ft./ft.
72" SD
S = 0.005 ft./ft.
72" SD
S = 0.005 ft./ft.
72" SD
S = 0.005 ft./ft.
INV. 5298.6
INV. 5287.45
INV. 5286.14
Q_{100} = 113 cfs
42" SD
S = 0.010 ft./ft.
60" SD
S = 0.010 ft./ft.
60" SD
S = 0.010 ft./ft.
66" SD
S = 0.010 ft./ft.
INV. 5298.5
10+00
11
12
13
14
15+00
16
17
18
19
20+00
21
22
23
24
25+00
26
27
28
29
30+00
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33
34
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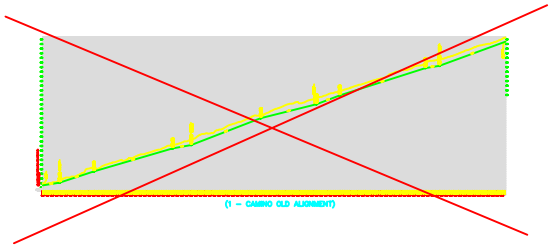
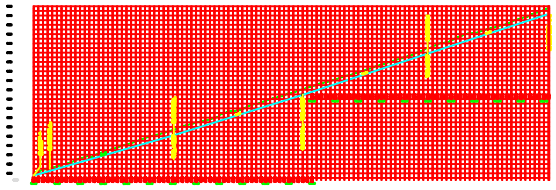
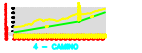
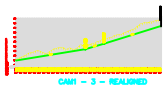
36
37
38
39
40+00
41
5310
5300
5290
5280

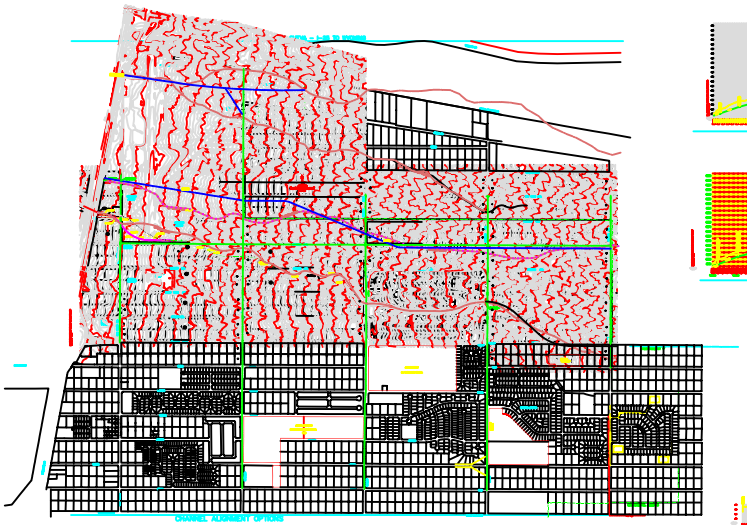


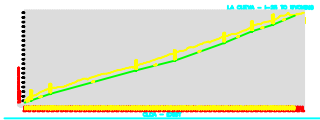


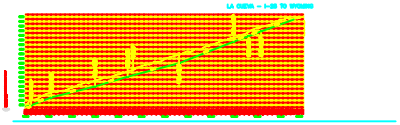
ALIGN A – REVISED CAMINO ARROYO ALIGNMENT

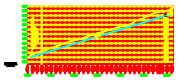




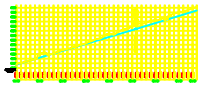


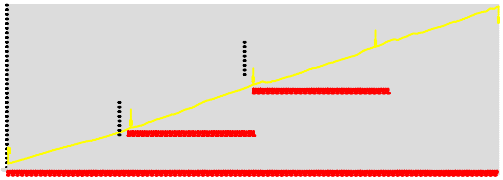


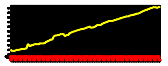


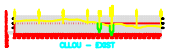


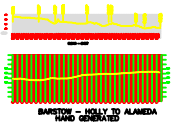
REVISED ALIGN F

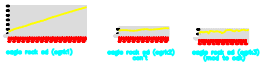


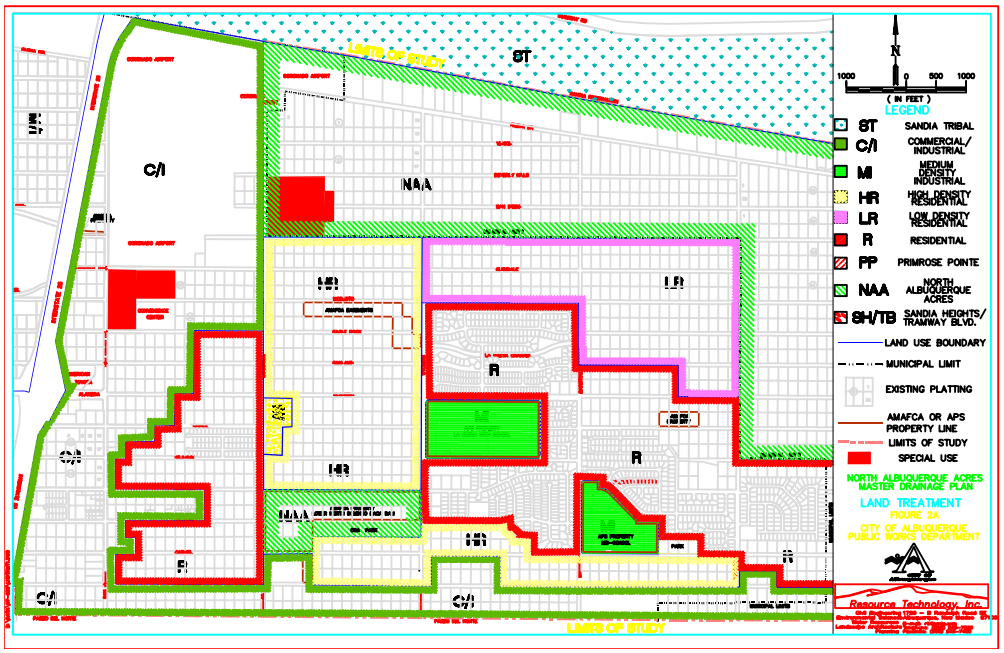


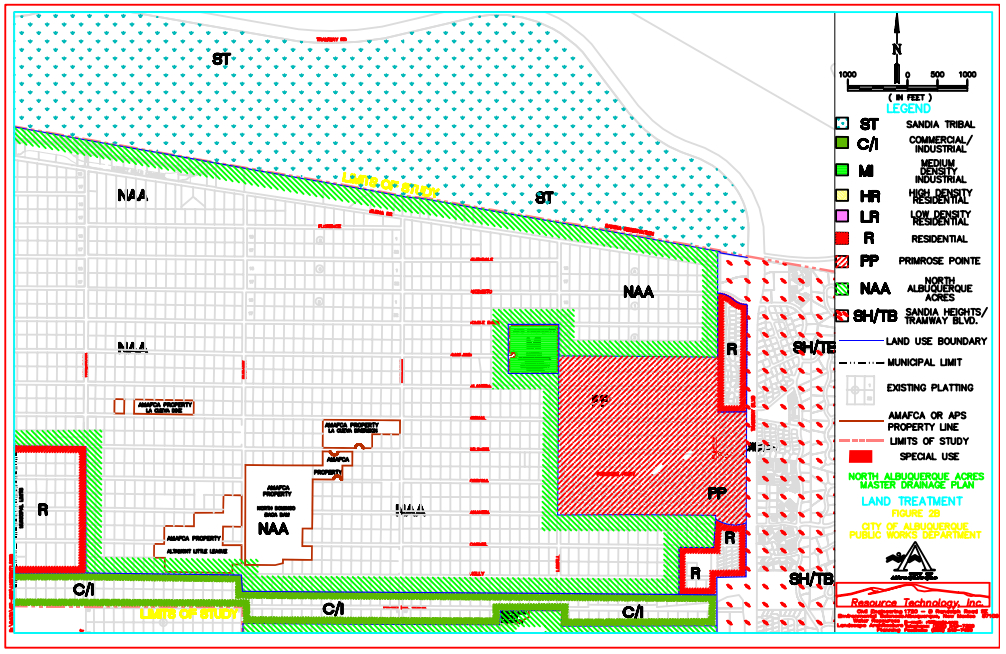


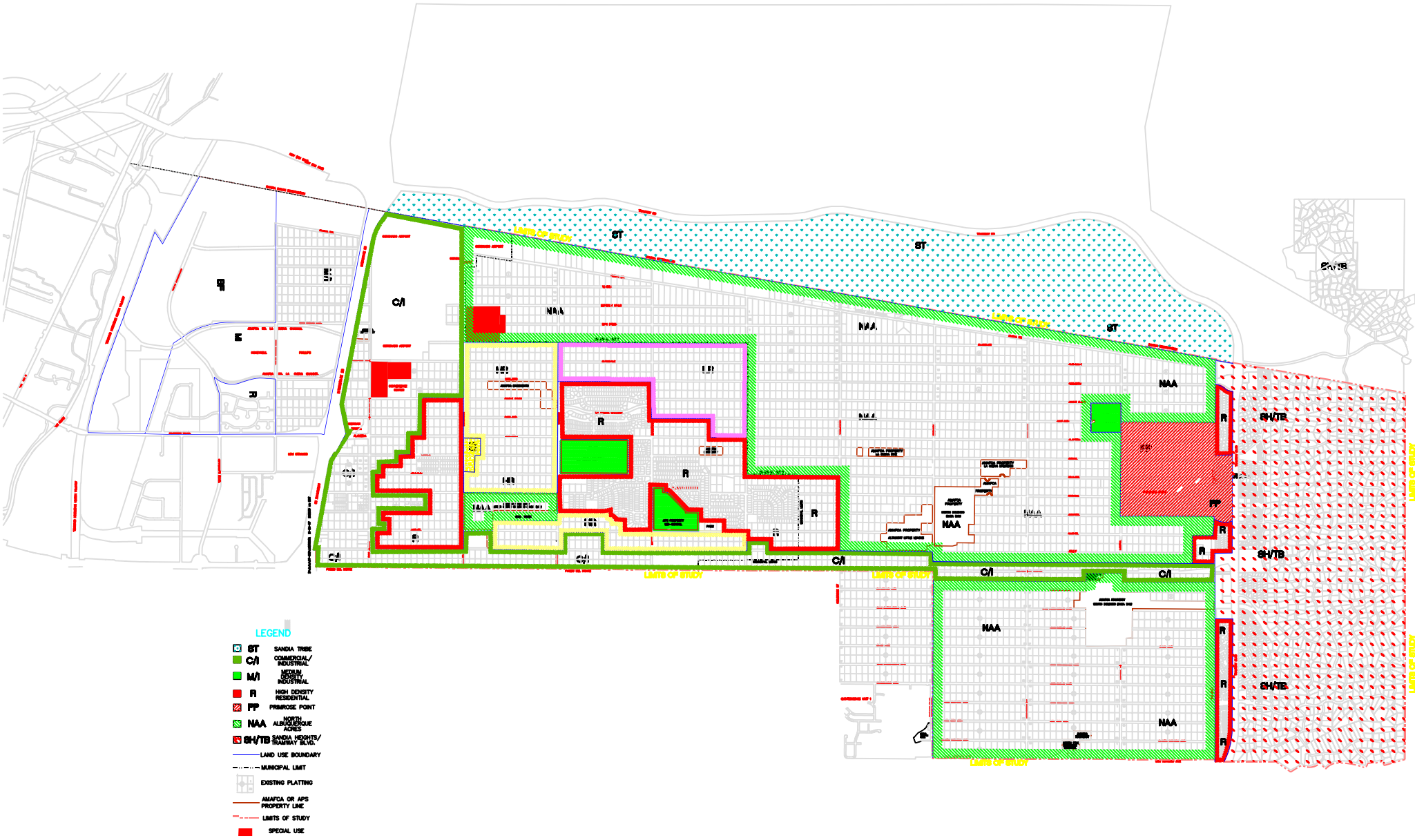







LIMITS OF STUDY
ST
C/I
NAA
MI
HR
LR
R
PP
SH/TB
N
1000 0 500 1000
(IN FEET)
LEGEND
ST SANDIA TRIBAL
C/I COMMERCIAL/ INDUSTRIAL
MI MEDIUM DENSITY INDUSTRIAL
HR HIGH DENSITY RESIDENTIAL
LR LOW DENSITY RESIDENTIAL
R RESIDENTIAL
PP PRIMROSE POINTE
NAA NORTH ALBUQUERQUE ACRES
SH/TB SANDIA HEIGHTS/ TRAMWAY BLVD.
LAND USE BOUNDARY
MUNICIPAL LIMIT
EXISTING PLATTING
AMAFCA OR APS PROPERTY LINE
LIMITS OF STUDY
SPECIAL USE
NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN
LAND TREATMENT
FIGURE 2A
CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT
Resource Technology, Inc.


LIMITS OF STUDY
ST
NAA
C/I
R
PP
SH/TB
N
1000 0 500 1000
(IN FEET)
LEGEND
ST SANDIA TRIBAL
C/I COMMERCIAL/ INDUSTRIAL
MI MEDIUM DENSITY INDUSTRIAL
HR HIGH DENSITY RESIDENTIAL
LR LOW DENSITY RESIDENTIAL
R RESIDENTIAL
PP PRIMROSE POINTE
NAA NORTH ALBUQUERQUE ACRES
SH/TB SANDIA HEIGHTS/ TRAMWAY BLVD.
LAND USE BOUNDARY
MUNICIPAL LIMIT
EXISTING PLATTING
AMAFCA OR APS PROPERTY LINE
LIMITS OF STUDY
SPECIAL USE
NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN
LAND TREATMENT
FIGURE 2B
CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT
Resource Technology, Inc.


LIMITS OF STUDY
ST
C/I
NAA
R
PP
SH/TB
LEGEND
ST SANDIA TRIBE
C/I COMMERCIAL/ INDUSTRIAL
M/I MEDIUM DENSITY INDUSTRIAL
R HIGH DENSITY RESIDENTIAL
PP PRIMROSE POINT
NAA NORTH ALBUQUERQUE ACRES
SH/TB SANDIA HEIGHTS/ TRAMWAY BLVD.
LAND USE BOUNDARY
MUNICIPAL LIMIT
EXISTING PLATTING
AMAFCA OR APS PROPERTY LINE
LIMITS OF STUDY
SPECIAL USE

APPENDIX

TABLE OF CONTENTS

TABLE A-1

NORTH DOMINGO BACA SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
900	Existing	.441	0	0	100	0	.303
	Future	.441	0	0	100	0	.303
901	Existing	.118	0	0	100	0	.133
	Future	.118	0	0	100	0	.133
902.1	Existing	.0887	35	25	30	10	.248
	Future	.0887	30	30	10	30	.248
902.2	Existing	.1220	35	25	30	10	.248
	Future	.1220	30	30	10	30	.248
902.3	Existing	.073	20	20	30	30	.133
	Future	.073	20	40	5	35	.133
903	Existing	.06405	0	35	35	30	.133
	Future	.08968	0	35	35	30	.133
904	Existing	.0413	0	35	35	30	.133
	Future	.0413	0	35	35	30	.133
905	Existing	.0092	0	35	35	30	.133
	Future	.0092	0	35	35	30	.133
906	Existing	.02368	10	25	30	35	.133
	Future	.02368	0	25	30	45	.133
910.21	Existing	.0137	80	5	10	5	.133
	Future	.0137	22	23	38	17	.133
910.31	Existing	.1563	45	15	20	20	.133
	Future	.1563	20	20	35	25	.133
911	Existing	.058	75	5	5	15	.171
	Future	.058	22	23	38	17	.171
912.11	Existing	.059	80	5	5	10	.133
	Future	.059	22	23	38	17	.133
912.21	Existing	.184	65	5	20	10	.154
	Future	.196	22	23	38	17	.154

TABLE A-1 (cont.)

NORTH DOMINGO BACA SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
913.1	Existing	.0360	88	2	5	5	.133
	Future	.0360	22	23	38	17	.133
913.2	Existing	.017	78	2	10	10	.133
	Future	.017	20	20	30	30	.133
914.2	Existing	.035	48	2	40	10	.133
	Future	.035	20	20	30	30	.133
915	Existing	.0343	85	0	5	10	.149
915.2	Future	.0370	0	20	10	70	.133
402.5	Existing	.0280	0	20	10	70	0.1333
	Future	.0280	0	20	10	70	0.1333
402.6	Existing	.0243	0	20	10	70	0.133
	Future	.0243	0	20	10	70	0.133
408.1	Existing	.019	83	2	10	5	.15
917	Existing	.0406	88	2	5	5	.133
	Future	.0406	22	23	38	17	.133
919.1	Existing	.079	50	5	40	5	.133
	Future	.079	22	23	38	17	.133
919.2	Existing	.0610	65	5	25	5	.133
	Future	.0427	22	23	38	17	.133
921.3	Existing	.0284	83	2	5	10	.133
	Future	.0140	22	23	38	17	.133
921.4	Future	0.0144	22	23	38	17	0.133
918	Existing	.114	78	2	10	10	.26
	Future	.114	22	23	38	17	.26
921.1	Existing	.0292	83	2	5	10	.133
	Future	.0292	22	23	38	17	.133
921.2	Existing	.0874	80	0	10	10	.133
	Future	.0874	0	25	15	60	.133

TABLE A-1 (cont.)

NORTH DOMINGO BACA SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
920.1	Existing	.0202	70	10	10	10	.133
	Future	.0202	22	23	38	17	.133
920	Existing	.0431	83	2	5	10	.147
	Future	.0431	22	23	38	17	.147
922	Existing	.021	30	15	40	15	.19
	Future	.021	22	23	38	17	.19
922.1	Existing	.007	66	17	0	17	.133
	Future	.007	0	34	16	50	.133
922.2	Existing	.0148	0	30	30	40	.133
	Future	.0148	0	30	30	40	.133
922.3	Existing	.0415	0	30	30	40	.133
	Future	.0415	0	30	30	40	.133
923	Existing	.007	60	10	20	10	.133
	Future	.007	0	20	10	70	.133
926.2	Future	.0470	0	40	20	40	.133
926.1	Existing	.012	22	23	38	17	.133
	Future	.012	0	34	16	50	.133
926	Existing	.0375	50	0	25	25	.133
	Future	.0578	0	25	15	60	.133
925.2	Existing	.014	96	0	2	2	.133
	Future	.0094	0	34	16	50	.133
925.1	Existing	.064	0	34	16	50	.133
	Future	.064	0	34	16	50	.133
925.3	Existing	.0105	0	34	16	50	.133
	Future	.0105	0	34	16	50	.133
925.4	Existing	.0370	0	20	30	50	.133
	Future	.0370	0	20	30	50	.133
924.1	Existing	.019	95	0	3	2	.133
	Future	.019	0	34	16	50	.133

TABLE A-1 (cont.)

NORTH DOMINGO BACA SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
924.2	Existing	.007	80	5	5	10	.133
	Future	.025	0	34	16	50	.133
924.3	Existing	.027	0	30	20	50	.133
	Future	.027	0	30	20	50	.133
924.4	Existing	.0172	75	0	15	10	.133
	Future	.0172	0	34	16	50	.133
929	Existing	.024	0	15	20	65	.133
	Future	.024	0	15	20	65	.133
930	Existing	.085	0	34	16	50	.133
	Future	.085	0	25	15	60	133
935	Existing	.110	85	0	10	5	.133
	Future	.110	11	29	20	40	.133
931	Existing	.0605	0	40	5	55	.260
	Future	.0605	0	30	10	60	.260
932.1	Existing	.0073	0	25	20	55	.133
	Future	.0073	0	25	20	55	.133
932.2	Existing	.0073	0	25	20	55	.133
	Future	.0073	0	25	20	55	.133
932.3	Existing	.0313	0	25	20	55	.133
	Future	.0313	0	25	20	55	.133
932.4	Existing	.0574	0	25	20	55	.133
	Future	.0574	0	25	20	55	.133
934.1	Existing	.0468	10	30	20	40	.133
	Future	.1031	0	25	15	60	.133
421.4	Existing	.012	80	0	10	10	.133
937	Existing	.0352	80	0	10	10	.133
	Future	.0452	0	25	15	60	.133
960	Existing	.0075	0	25	25	50	.133
	Future	.0075	0	25	25	50	.133

TABLE A-1 (cont.)

NORTH DOMINGO BACA SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
940.2	Existing	.0156	0	34	16	50	.133
	Future	.0156	0	34	16	50	.133
939.16	Existing	.0128	0	34	16	50	.133
	Future	.0128	0	34	16	50	.133
939.14	Existing	.0112	0	10	30	60	.133
	Future	.0112	0	10	30	60	.133
940.0	Existing	.0141	0	34	16	50	.133
	Future	.0141	0	34	16	50	.133
940.1	Existing	.007	0	20	10	70	.133
	Future	.007	0	20	10	70	.133
942.1	Existing	.0469	20	5	30	45	.133
	Future	.0469	0	10	20	70	.133
942.2	Existing	.1031	15	15	25	45	.160
	Future	.1031	0	30	15	55	.160
943.1	Existing	.012	0	15	20	65	.133
	Future	.012	0	15	20	65	.133
943.2	Existing	.013	80	0	10	10	.133
	Future	.0375	0	20	10	70	.133
443.2	Existing	.0703	30	10	10	50	.133
	Future	,0703	0	10	20	70	.133

TABLE A-2

LA CUEVA ARROYO SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
100	Existing	1.2140	0	0	100	0	.475
	Future	1.2140	0	0	100	0	.475
101	Existing	.6070	0	0	100	0	.267
	Future	.6070	0	0	100	0	.267
102	Existing	.8750	20	40	40	0	.320
	Future	.8750	20	40	40	0	.320
102.1	Existing	.0930	82	0	18	0	.133
	Future	.0930	80	0	20	0	.133
106	Existing	.0436	78	0	5	17	.133
	Future	.0436	22	23	38	17	.133
106.1	Existing	.1116	75	0	15	10	.14
	Future	.1116	22	23	38	17	.14
107.1	Existing	.1808	92	0	3	5	.14
	Future	.1808	22	23	38	17	.14
107.2	Existing	.1720	86	0	5	9	.18
	Future	.1720	22	23	38	17	.18
108	Existing	.2055	80	0	10	10	.16
	Future	.2055	22	23	38	17	.16
109	Existing	.1006	80	0	10	10	.133
	Future	.1006	22	23	38	17	.133
110	Existing	.1634	80	0	10	10	.19
	Future	.1634	22	23	38	17	.19
111	Existing	.0674	90	0	5	5	.14
	Future	.0533	16	26	33	25	.14
111.1*	Existing	.1194	80	0	10	10	.133
	Future	.0969	20	20	34	26	.133
111.3*	Future	.0420	0	34	16	50	.133
111.4*	Future	.0141	22	23	38	17	.133
112.1*	Existing	.0894	0	34	16	50	.140
	Future	.0894	0	34	16	50	.140
112.2*	Existing	.0826	11	29	15	45	.140
	Future	.0826	0	34	16	50	.140

*Modified for COA NAA MDP 9/97

TABLE A-2 (cont.)

LA CUEVA ARROYO SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
113*	Existing	.1136	80	0	15	5	.133
	Future	.1000	0	25	15	60	.133
115*	Existing	.1337	80	0	15	5	.133
	Future	.1202	0	26	12	62	.133
116*	Existing	.1309	80	0	5	15	.133
116.1	Future	.1000	0	25	15	50	.133
116.2	Future	.0719	0	25	15	50	.133
116.21	Future	.0344	0	40	20	40	.133
117.2*	Existing	.1391	73	0	7	20	.22
	Future	.0500	0	34	16	50	.133
117.21*	Existing	.0234	0	34	16	50	.133
117.22*	Future	.0156	0	20	10	70	.133
117.3*	Existing	.0863	65	5	15	15	.133
	Future	.1172	0	34	16	50	.133
117.31*	Existing	.0250	0	34	16	50	.133
117.32*	Existing	.0090	0	34	16	50	.133
117.4*	Existing	.0750	85	0	5	10	.133
	Future	.0512	0	25	15	60	.133
117.5*	Existing	.0550	0	10	20	70	.133
	Future	.0550	0	10	20	70	.133
118	Existing	.0649	0	20	10	70	.133
	Future	.0649	0	20	10	70	.133
118.1	Existing	.0306	75	5	10	10	.133
	Future	.0306	0	20	30	50	.133
119	Existing	.0549	0	20	10	70	.133
	Future	.0549	0	20	10	70	.133
120	Existing	.0268	50	0	0	50	.133
	Future	.0268	0	20	10	70	.133
121	Existing	.0489	80	0	15	5	.133
	Future	.0489	0	20	10	70	.133

*Modified for COA NAA MDP 9/97

TABLE A-2 (cont.)

LA CUEVA ARROYO SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
122	Existing	.0225	0	34	16	50	.133
	Future	.0225	0	34	16	50	.133
123	Existing	.0185	0	48	12	40	.133
	Future	.0185	0	34	16	50	.133
124	Existing	.0251	0	34	16	50	.133
	Future	.0251	0	34	16	50	.133
125	Existing	.0508	0	20	10	70	.133
	Future	.0508	0	20	10	70	.133
126	Existing	.0737	0	20	10	70	.133
	Future	.0737	0	20	10	70	.133
127	Existing	.0633	0	0	90	10	.133
	Future	.0633	0	20	10	70	.133
128	Existing	.1373	0	0	90	10	.17
	Future	.1373	0	20	10	70	.17

*Modified for COA NAA MDP 9/97

TABLE A-3

LA CUEVA DIVERSION TO NDB DAM SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment %				TP (hrs)
			A	B	C	D	
103	Existing	.212	6	41	53	0	.198
	Future	.212	6	41	53	0	.198
103.1	Existing	.2299	27	33	40	0	.234
	Future	.2299	27	33	40	0	.234
103.2	Existing	.0616	25	30	31	14	.139
	Future	.0616	20	5	46	29	.139
103.4	Existing	.0953	55	0	35	10	.136
	Future	.0953	20	5	40	35	.136
103.5	Existing	.0625	20	5	40	35	.133
	Future	.0625	20	5	40	35	.133
103.6	Existing	.0684	58	8	8	26	.137
	Future	.0684	20	5	40	35	.137
104.1	Existing	.1200	50	10	15	25	.133
	Future	.1367	16	26	33	25	.133
104.2	Existing	.0804	84	0	8	8	.16
	Future	.0471	22	23	38	17	.16
105.1	Existing	.1382	70	0	15	15	.133
	Future	.1305	16	26	33	25	.133
105.2	Existing	.1058	84	0	8	8	.133
	Future	.1045	22	23	38	17	.133

TABLE A-4

EL CAMINO ARROYO SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment %				TP (hrs)
			A	B	C	D	
201	Existing	.1339	95	0	0	5	.133
	Future	.1339	95	0	0	5	.133
200	Existing	.3030	65	20	15	0	.167
	Future	.3030	65	20	15	0	.167
202.1	Existing	.1031	84	0	8	8	.133
	Future	.1031	22	23	38	17	.133
202.2	Existing	.1099	70	5	15	10	.14
	Future	.1099	22	23	38	17	.14
202.3	Existing	.0684	60	10	15	15	.133
	Future	.0518	11	26	33	30	.133
203.1	Existing	.1258	80	0	10	10	.14
	Future	.1258	22	23	38	17	.14
203.2	Existing	.0485	80	0	10	10	.133
	Future	.0394	11	26	33	30	.133
203.3	Existing	.0558	80	0	10	10	.133
	Future	.1259	20	20	34	26	.133
204	Existing	.2119	80	0	10	10	.21
	Future	.0773	20	20	34	26	.133
204.2	Existing	.1333	80	0	10	10	.14
	Future	.0687	8	22	25	45	.14
204.1	Existing	.1484	80	0	10	10	.18
	Future	.1288	17	22	31	30	.18
204.3	Future	.0870	10	15	30	45	.133
204.4	Future	.0546	21	21	36	22	.133
205	Existing	.0459	10	0	20	70	.133
	Future	.0543	0	10	20	70	.133
206.1	Existing	.1221	75	5	10	10	.150
	Future	.1221	0	20	30	50	.150
206.2	Existing	.0561	75	5	10	10	.133
	Future	.0561	0	20	30	50	.133
206.3	Existing	.0480	0	7	7	86	.133
	Future	.0480	0	7	7	86	.133
206.4	Existing	.0327	40	25	5	30	.133
	Future	.0327	0	20	30	50	.133

TABLE A-5

NORTH CAMINO ARROYO SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
300	Existing	.8840	0	0	100	0	.432
	Future	.8840	0	0	100	0	.432
301	Existing	.8520	10	50	40	0	.402
	Future	.8520	10	50	40	0	.402
302	Existing	.1576	90	0	5	5	.133
	Future	.1576	20	20	30	30	.133
303	Existing	.1706	60	0	25	15	.16
	Future	.1706	20	20	40	20	.16
304	Existing	.0840	70	5	10	15	.14
	Future	.0840	22	23	38	17	.14
305.1	Existing	.1691	70	0	15	15	.19
	Future	.1691	20	20	40	20	.19
305.2	Existing	.1529	90	0	5	5	.23
	Future	.1529	20	20	40	20	.23
306	Existing	.1051	50	15	20	15	.133
	Future	.1051	22	23	38	17	.133
307	Existing	.0663	78	3	11	8	.133
	Future	.0582	20	22	38	20	.133
308	Existing	.0535	88	0	7	5	.133
	Future	.0535	22	23	38	17	.133
309	Existing	.0796	87	0	8	5	.16
	Future	.0796	22	23	38	17	.16
310	Existing	.1033	87	0	8	5	.21
	Future	.1033	22	23	38	17	.21
311	Existing	.1528	90	0	5	5	.21
	Future	.1528	22	23	38	17	.21
312	Existing	.0660	90	0	5	5	.18
	Future	.0660	20	20	40	20	.18
313	Existing	.2092	78	0	7	15	.18
	Future	.2092	9	21	21	49	.18
314	Existing	.0960	87	0	5	8	.133
	Future	.0960	0	20	30	50	.133

TABLE A-5 (cont.)

NORTH CAMINO ARROYO BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
315	Existing	.0426	92	0	3	5	.133
	Future	.0426	0	20	30	50	.133
401	Existing	.0556	0	0	100	0	.133
	Future	.0556	0	20	30	50	.133
402	Existing	.2918	0	0	90	10	.17
	Future	.2918	0	20	30	50	.17

TABLE A-6 NORTH DOMINGO BACA EXISTING CONDITION					
Sub-basin	**Area (acres)**	**10-yr Vol (ac-ft)**	**10-yr Qp (cfs)**	**100-yr Vol (ac-ft)**	**100-yr Qp (cfs)**
922	.0210	0.665	16.25	1.398	32.59
922.1	.0070	0.180	4.91	.394	11.18
922.2	.0148	0.781	21.04	1.396	35.69
922.3	.0415	2.190	58.97	3.913	100.3
923.0	.0070	0.158	4.92	.370	11.32
924.1	.0190	0.233	7.75	.733	24.11
924.2	.0070	0.136	3.99	.335	10.16
924.3	.0270	1.593	41.20	2.753	68.50
924.4	.0172	0.358	10.81	.862	26.21
925.1	.0640	3.766	96.60	6.547	162.20
925.2	.0140	0.169	5.62	.536	17.65
925.3	.0105	0.614	15.82	1.063	26.43
925.4	.0370	2.246	58.52	3.887	96.45
926.0	.0375	1.326	36.64	2.624	72.25
926.1	.0120	0.408	12.54	.836	24.21
929.0	.0240	1.658	41.00	2.752	65.77
930.0	.0850	4.874	125.30	8.468	211.88
931.0	.0605	3.619	62.04	6.185	104.39
932.1	.0073	0.450	11.58	.766	19.08
932.2	.0073	0.450	11.46	.766	18.89
932.3	.0313	1.928	49.09	3.284	80.93
932.4	.0574	3.605	91.59	6.135	150.03
934.1	.0468	2.303	61.41	4.148	107.84

TABLE A-6 (cont.) NORTH DOMINGO BACA EXISTING CONDITION					
Sub-basin	**Area (acres)**	**10-yr Vol (ac-ft)**	**10-yr Qp (cfs)**	**100-yr Vol (ac-ft)**	**100-yr Qp (cfs)**
935.0	.1100	1.668	53.54	4.640	151.68
937.0	.0352	0.680	20.09	1.680	51.06
939.14	.0112	0.714	18.32	1.203	29.58
939.16	.0128	0.700	18.24	1.219	30.89
940.0	.0141	0.771	20.09	1.343	34.02
940.1	.0070	0.479	11.73	.791	18.82
940.2	.0156	0.853	22.23	1.486	37.64
942.1	.0469	2.362	62.18	4.197	108.16
942.2	.1031	5.193	121.03	9.227	212.49
943.1	.0120	0.793	19.85	1.322	31.97
943.2	.0130	0.230	6.74	.582	17.86
960.0	.0075	0.418	11.02	.727	18.46

TABLE A-7 (cont.) NORTH DOMINGO BACA FUTURE CONDITION					
Sub-basin	**Area (sq. mi.)**	**10-yr Vol (ac-ft)**	**10-yr Qp (cfs)**	**100-yr Vol (ac-ft)**	**100-yr Qp (cfs)**
922.0	.0210	.713	17.26	1.462	33.77
922.1	.0070	.412	10.43	1.443	41.55
922.2	.0148	.784	21.04	1.396	35.69
922.3	.0415	2.199	58.97	3.913	100.03
923.0	.0070	.515	12.15	.844	19.32
924.2	.0250	1.487	38.43	2.588	64.23
924.1	.0190	1.130	29.21	1.967	48.82
924.3	.0270	1.593	41.20	2.753	68.50
924.4	.0172	1.006	25.91	1.741	43.28
925.3	.0105	.6140	15.82	1.063	26.43
925.4	.0370	2.255	58.52	3.887	96.45
926.0	.0578	3.381	87.05	5.850	145.40
926.1	.0120	.709	18.12	1.228	30.38
929.0	.0240	1.658	41.00	2.752	65.77
930.0	.0850	4.874	125.30	8.468	211.88
931.0	.0605	3.878	66.31	6.529	109.47
932.1	.0073	.450	11.58	.766	19.08
932.2	.0073	.450	11.46	.766	18.89
932.3	.0313	1.928	49.09	3.284	80.93
932.4	.0574	3.605	91.59	6.135	150.03
934.1	.1031	5.911	151.58	10.243	257.43
935.0	.1100	5.401	143.08	9.731	254.57
937.0	.0452	2.592	66.86	4.491	112.45

TABLE A-7 (cont.) NORTH DOMINGO BACA FUTURE CONDITION					
Sub-basin	**Area (sq. mi.)**	**10-yr Vol (ac-ft)**	**10-yr Qp (cfs)**	**100-yr Vol (ac-ft)**	**100-yr Qp (cfs)**
939.14	.0112	.714	18.32	1.203	29.58
939.16	.0128	.700	18.24	1.219	30.89
925.2	.0094	.556	14.20	.962	23.81
925.1	.0064	3.783	96.60	6.547	162.00
926.2	.0470	2.75	70.79	4.757	118.23
940.0	.0141	0.771	20.09	1.343	34.02
940.1	.0070	0.479	11.73	0.791	18.82
940.2	.0156	0.853	22.23	1.486	37.64
942.1	.0469	3.270	80.87	1.219	30.89
942.2	.1031	5.996	136.08	10.288	229.08
943.1	.0120	0.793	19.85	1.322	31.97
943.2	.0375	2.567	62.80	4.239	100.77
960.0	.0075	0.418	11.02	0.727	18.46
443.2	.0703	4.901	121.03	8.081	192.62

TABLE A-8 LA CUEVA ARROYO EXISTING CONDITIONS					
Sub-basin	**Area (sq. mi.)**	**10-yr Vol (ac-ft)**	**10-yr Qp (cfs)**	**100-yr Vol (ac-ft)**	**100-yr Qp (cfs)**
110	.1634	3.502	79.91	8.385	202.35
111.0	.0674	1.044	31.33	2.940	88.80
111.1	.1194	2.453	73.86	5.962	184.36
112.1	.0894	5.152	129.98	8.942	219.11
112.2	.0826	4.342	110.08	7.690	191.10
113.0	.1136	1.793	58.65	4.875	160.25
115.0	.1337	1.981	64.79	5.503	183.65
116.0	.1309	2.783	77.34	6.460	193.62
117.2	.1391	3.624	69.79	7.778	160.02
117.21	.0234	1.305	33.81	2.263	56.92
117.3	.0863	2.044	58.74	4.588	136.26
117.4	.0750	1.292	37.59	3.335	102.09
117.5	.0550	3.907	95.92	6.417	151.76
117.31	.250	1.394	36.12	2.418	60.81
117.32	.0090	0.502	13.01	.871	21.90

TABLE A-9 LA CUEVA ARROYO FUTURE CONDITIONS					
Sub-basin	**Area (sq. mi.)**	**10-yr Vol (ac-ft)**	**10-yr Qp (cfs)**	**100-yr Vol (ac-ft)**	**100-yr Qp (cfs)**
110.0	.1634	5.774	138.24	11.738	275.61
111.0	.0533	1.823	57.02	3.739	108.83
111.1	.0500	2.054	57.41	7.699	195.97
111.3	.0420	2.498	64.56	4.348	107.90
111.4	.0141	0.482	15.09	0.989	28.80
112.1	.0894	5.152	129.98	8.942	219.11
112.2	.0826	4.760	120.22	8.262	202.31
113.0	.1000	6.393	159.65	10.797	262.65
115.0	.1202	7.581	189.15	12.750	312.21
116.1	.1028	6.570	164.05	11.100	270.05
116.2	.0719	4.529	113.32	7.629	185.54
116.21	.0344	1.682	45.58	3.024	79.13
117.2	.0500	2.788	72.23	4.836	121.61
117.22	.0156	1.108	27.22	1.820	43.06
117.3	.1172	6.536	167.85	11.336	286.33
117.4	.0512	3.225	80.83	5.432	132.07
117.5	.0550	3.907	95.92	6.417	151.76

TABLE A-10 EL CAMINO EXISTING CONDITIONS					
Sub-basin	**Area (sq. mi.)**	**10-yr Vol (ac-ft)**	**10-yr Qp (cfs)**	**100-yr Vol (ac-ft)**	**100-yr Qp (cfs)**
202.3	.0684	1.887	55.75	4.064	118.36
203.2	.0485	1.043	31.32	2.466	74.17
203.3	.0558	1.152	34.52	2.757	83.29
204.0	.2119	4.166	89.98	10.122	235.18
204.1	.1484	2.914	71.63	7.086	181.03
204.2	.1333	2.508	71.82	6.169	185.49
205.0	.0459	3.150	77.96	5.191	123.43

TABLE A-11 EL CAMINO FUTURE CONDITIONS					
Sub-basin	**Area (sq. mi.)**	**10-yr Vol (ac-ft)**	**10-yr Qp (cfs)**	**100-yr Vol (ac-ft)**	**100-yr Qp (cfs)**
202.3	.0519	2.399	68.69	4.423	118.89
203.2	.0395	1.826	52.27	3.366	90.47
203.3	.1259	7.465	193.61	12.845	320.68
204.0	.0773	3.034	87.70	5.872	163.56
204.1	.1288	5.455	131.42	10.225	239.10
204.2	.0687	4.812	118.86	7.907	187.81
204.3	.0870	4.657	125.10	8.230	213.67
204.4	.0546	1.987	59.25	3.946	112.13
205.0	.0543	3.726	92.31	6.140	146.01

TABLE A-12 NORTH CAMINO EXISTING CONDITION					
Sub-basin	**Area (sq. mi.)**	**10-yr Vol (ac-ft)**	**10-yr Qp (cfs)**	**100-yr Vol (ac-ft)**	**100-yr Qp (cfs)**
305.1	.1691	4.665	106.64	10.106	237.45
305.2	.1529	2.543	52.98	6.756	146.57
306.0	.1051	3.072	93.29	6.528	193.49
307.0	.0663	1.296	40.21	3.196	98.65
308.0	.0535	0.856	27.40	2.296	72.95
309.0	.0796	1.276	35.55	3.439	96.16
310.0	.1033	1.609	35.86	4.361	100.32
311.0	.1528	2.264	50.41	6.278	147.74
312.0	.0660	0.995	24.85	2.761	70.11
313.0	.2092	4.628	107.68	10.599	266.92

TABLE A-13 NORTH CAMINO FUTURE CONDITION					
Sub-basin	**Area (sq. mi.)**	**10-yr Vol (ac-ft)**	**10-yr Qp (cfs)**	**100-yr Vol (ac-ft)**	**100-yr Qp (cfs)**
305.1	.1691	6.681	159.69	13.014	302.07
305.2	.1529	5.912	125.07	11.517	236.60
306.0	.1051	3.751	117.15	7.537	220.14
307.0	.0582	2.165	66.17	4.267	121.68
308.0	.0535	1.845	58.24	3.706	108.45
309.0	.0796	2.731	75.82	5.522	143.06
310.0	.1033	3.483	80.12	7.037	154.99
311.0	.1528	5.107	116.78	10.352	230.86
312.0	.0660	2.401	61.07	4.765	114.08
313.0	.2092	11.376	250.33	19.847	437.50

El Camino - 100-yr Existing Cond.

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/30/1997
INPUT FILE = ec100b.ext USER NO.= RSTECHNM.STE

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= 2										RAIN24=	3.370
COMPUTE NM HYD	201.00	-	1	.13390	207.70	6.497	.90979	1.500	2.424	PER IMP=	5.00
RAINFALL TYPE= 2										RAIN24=	3.500
COMPUTE NM HYD	200.00	-	3	.30300	487.60	15.384	.95201	1.550	2.514	PER IMP=	.00
*S EL CAMINO ARROYO AT TRAMWAY BLVD (200.0)											
ROUTE MCUNGE	200.80	3	4	.30300	453.59	15.176	.93914	1.700	2.339	CCODE =	.1
ADD HYD	201.90	4& 1	5	.43690	559.37	21.674	.93014	1.650	2.000		
*S EL CAMINO ARROYO (MAIN) AT BROWNING (201.9)											
ROUTE MCUNGE	201.80	5	2	.43690	534.38	21.592	.92664	1.800	1.911	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	3.250
COMPUTE NM HYD	202.10	-	1	.10310	164.12	5.334	.97014	1.500	2.487	PER IMP=	8.00
ADD HYD	202.19	1& 2	5	.54000	589.48	26.926	.93495	1.750	1.706		
*S EL CAMINO ARROYO (MAIN) AT EUBANK (202.19)											
ROUTE MCUNGE	202.18	5	2	.54000	565.85	26.878	.93327	1.850	1.637	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	3.190
COMPUTE NM HYD	202.20	-	1	.10990	180.49	6.162	1.05124	1.500	2.566	PER IMP=	10.00
ADD HYD	202.29	1& 2	5	.64990	607.66	33.040	.95322	1.850	1.461		
*S EL CAMINO ARROYO (MAIN) AT HOLBROOK (202.29)											
ROUTE MCUNGE	202.28	5	2	.64990	588.10	33.013	.95244	1.950	1.414	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	3.070
COMPUTE NM HYD	202.30	-	1	.06840	118.36	4.064	1.11411	1.500	2.704	PER IMP=	15.00
ADD HYD	202.39	1& 2	6	.71830	607.11	37.077	.96783	1.950	1.321		
*S EL CAMINO ARROYO (MAIN) AT VENTURA (202.39)											
RAINFALL TYPE= 2										RAIN24=	3.140
COMPUTE NM HYD	203.10	-	1	.12580	192.92	6.547	.97587	1.500	2.396	PER IMP=	10.00
*S EL CAMINO ARROYO (TRIBUTARY) AT HOLBROOK (203.1)											
ROUTE MCUNGE	203.18	1	2	.12580	176.32	6.466	.96366	1.700	2.190	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	3.070
COMPUTE NM HYD	203.20	-	1	.04850	74.17	2.466	.95343	1.500	2.389	PER IMP=	10.00
ADD HYD	203.29	1& 2	5	.17430	211.27	8.932	.96081	1.700	1.894		
ADD HYD	202.90	5& 6	5	.89260	685.83	46.009	.96646	1.950	1.201		
ROUTE MCUNGE	202.80	5	2	.89260	680.66	45.950	.96522	1.990	1.192	CCODE =	.2
RAINFALL TYPE= 2										RAIN24=	3.020
COMPUTE NM HYD	203.30	-	1	.05580	83.29	2.757	.92642	1.500	2.332	PER IMP=	10.00
ADD HYD	203.39	1& 2	5	.94840	691.83	48.707	.96294	1.990	1.140		
*S EL CAMINO ARROYO (MAIN) AT BARSTOW (203.39)											
ROUTE MCUNGE	203.98	5	2	.94840	689.37	48.718	.96315	2.050	1.136	CCODE =	.2
RAINFALL TYPE= 2										RAIN24=	2.960
COMPUTE NM HYD	204.00	-	1	.21190	235.18	10.122	.89562	1.600	1.734	PER IMP=	10.00
ADD HYD	204.90	1& 2	5	1.16030	752.02	58.839	.95082	1.800	1.013		
*S EL CAMINO ARROYO AT WYOMING (204.9)											
ROUTE MCUNGE	204.80	5	2	1.16030	737.66	58.784	.94992	1.900	.993	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	2.890
COMPUTE NM HYD	204.20	-	1	.13330	185.49	6.169	.86774	1.500	2.174	PER IMP=	10.00
ADD HYD	204.29	1& 2	5	1.29360	770.82	64.953	.94145	1.900	.931		
RAINFALL TYPE= 2										RAIN24=	2.910
COMPUTE NM HYD	204.10	-	1	.14840	181.03	7.086	.89528	1.550	1.906	PER IMP=	10.00
ROUTE MCUNGE	204.18	1	2	.14840	177.98	7.092	.89603	1.599	1.874	CCODE =	.2

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
ADD HYD	204.19	2& 5	5	1.44200	832.88	72.022	.93648	1.899	.902	
*S EL CAMINO ARROYO AT CORONADO AIRPORT (204.29)										
ROUTE MCUNGE	204.28	5	2	1.44200	831.34	70.867	.92147	1.901	.901	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.850
COMPUTE NM HYD	205.00	-	1	.04590	123.43	5.191	2.12030	1.500	4.202	PER IMP= 70.00
ADD HYD	205.90	1& 2	5	1.48790	864.92	75.765	.95476	1.901	.908	
*S EL CAMINO ARROYO AT I-25 (205.90)										
RAINFALL TYPE= 2										RAIN24= 2.830
COMPUTE NM HYD	206.10	-	1	.12210	154.08	5.425	.83315	1.550	1.972	PER IMP= 10.00
RAINFALL TYPE= 2										RAIN24= 2.830
COMPUTE NM HYD	206.20	-	2	.05610	76.53	2.493	.83315	1.500	2.132	PER IMP= 10.00
ADD HYD	206.29	1& 2	5	.17820	228.80	7.918	.83315	1.500	2.006	
ROUTE	206.28	5	3	.17820	232.98	7.918	.83315	1.550	2.043	
RAINFALL TYPE= 2										RAIN24= 2.760
COMPUTE NM HYD	206.40	-	1	.03270	59.24	2.164	1.24111	1.500	2.831	PER IMP= 30.00
ROUTE	206.48	1	2	.03270	58.63	2.165	1.24112	1.500	2.802	
ADD HYD	206.49	2& 3	5	.21090	289.80	10.083	.89640	1.550	2.147	
RAINFALL TYPE= 2										RAIN24= 2.760
COMPUTE NM HYD	206.30	-	1	.04800	138.49	5.921	2.31273	1.500	4.508	PER IMP= 86.00
ADD HYD	206.39	1& 5	6	.25890	415.02	16.003	1.15899	1.500	2.505	
FINISH										

El Camino 10-YR Existing Cond.

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/30/1997
INPUT FILE = ec10b.ext USER NO.= RSTECHNM.STE

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= 2										RAIN24= 2.250
COMPUTE NM HYD	201.00	-	1	.13390	81.06	2.525	.35355	1.500	.946	PER IMP= 5.00
RAINFALL TYPE= 2										RAIN24= 2.330
COMPUTE NM HYD	200.00	-	3	.30300	197.06	5.927	.36680	1.550	1.016	PER IMP= .00
*S EL CAMINO ARROYO AT TRAMWAY BLVD (200.0)										
ROUTE MCUNGE	200.80	3	4	.30300	174.00	5.666	.35063	1.750	.897	CCODE = .1
ADD HYD	201.90	4& 1	5	.43690	201.09	8.191	.35152	1.750	.719	
*S EL CAMINO ARROYO (MAIN) AT BROWNING (201.9)										
ROUTE MCUNGE	201.80	5	2	.43690	186.22	8.142	.34941	1.950	.666	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.170
COMPUTE NM HYD	202.10	-	1	.10310	68.80	2.226	.40486	1.500	1.043	PER IMP= 8.00
ADD HYD	202.19	1& 2	5	.54000	196.34	10.368	.36000	1.950	.568	
*S EL CAMINO ARROYO (MAIN) AT EUBANK (202.19)										
ROUTE MCUNGE	202.18	5	2	.54000	194.42	10.406	.36132	2.000	.563	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.130
COMPUTE NM HYD	202.20	-	1	.10990	79.79	2.692	.45922	1.500	1.134	PER IMP= 10.00
ADD HYD	202.29	1& 2	5	.64990	205.88	13.098	.37788	2.000	.495	
*S EL CAMINO ARROYO (MAIN) AT HOLBROOK (202.29)										
ROUTE MCUNGE	202.28	5	2	.64990	193.86	13.046	.37639	2.200	.466	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.050
COMPUTE NM HYD	202.30	-	1	.06840	55.75	1.887	.51719	1.500	1.274	PER IMP= 15.00
ADD HYD	202.39	1& 2	6	.71830	197.66	14.933	.38980	2.200	.430	
*S EL CAMINO ARROYO (MAIN) AT VENTURA (202.39)										
RAINFALL TYPE= 2										RAIN24= 2.090
COMPUTE NM HYD	203.10	-	1	.12580	81.09	2.799	.41718	1.500	1.007	PER IMP= 10.00
*S EL CAMINO ARROYO (TRIBUTARY) AT HOLBROOK (203.1)										
ROUTE MCUNGE	203.18	1	2	.12580	71.96	2.717	.40496	1.750	.894	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.050
COMPUTE NM HYD	203.20	-	1	.04850	31.32	1.043	.40304	1.500	1.009	PER IMP= 10.00
ADD HYD	203.29	1& 2	5	.17430	82.94	3.759	.40442	1.750	.744	
ADD HYD	202.90	5& 6	5	.89260	216.21	18.692	.39265	2.200	.378	
ROUTE MCUNGE	202.80	5	2	.89260	213.98	18.682	.39243	2.250	.375	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.010
COMPUTE NM HYD	203.30	-	1	.05580	34.52	1.152	.38696	1.500	.967	PER IMP= 10.00
ADD HYD	203.39	1& 2	5	.94840	216.00	19.833	.39211	2.250	.356	
*S EL CAMINO ARROYO (MAIN) AT BARSTOW (203.39)										
ROUTE MCUNGE	203.98	5	2	.94840	206.24	19.779	.39104	2.450	.340	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.970
COMPUTE NM HYD	204.00	-	1	.21190	89.98	4.166	.36862	1.600	.664	PER IMP= 10.00
ADD HYD	204.90	1& 2	5	1.16030	230.99	23.945	.38694	2.000	.311	
*S EL CAMINO ARROYO AT WYOMING (204.9)										
ROUTE MCUNGE	204.80	5	2	1.16030	223.54	23.884	.38595	2.200	.301	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.930
COMPUTE NM HYD	204.20	-	1	.13330	71.82	2.508	.35273	1.500	.842	PER IMP= 10.00
ADD HYD	204.29	1& 2	5	1.29360	229.07	26.392	.38253	2.200	.277	
RAINFALL TYPE= 2										RAIN24= 1.940
COMPUTE NM HYD	204.10	-	1	.14840	71.63	2.914	.36813	1.550	.754	PER IMP= 10.00
ROUTE MCUNGE	204.18	1	2	.14840	69.91	2.905	.36706	1.600	.736	CCODE = .2

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
ADD HYD	204.19	2& 5	5	1.44200	240.19	29.297	.38094	2.200	.260	
*S EL CAMINO ARROYO AT CORONADO AIRPORT (204.29)										
ROUTE MCUNGE	204.28	5	2	1.44200	239.03	29.197	.37965	2.209	.259	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 1.900
COMPUTE NM HYD	205.00	-	1	.04590	77.96	3.150	1.28671	1.500	2.654	PER IMP= 70.00
ADD HYD	205.90	1& 2	5	1.48790	244.86	32.330	.40742	2.209	.257	
*S EL CAMINO ARROYO AT I-25 (205.90)										
RAINFALL TYPE= 2										RAIN24= 1.890
COMPUTE NM HYD	206.10	-	1	.12210	57.36	2.154	.33078	1.550	.734	PER IMP= 10.00
RAINFALL TYPE= 2										RAIN24= 1.890
COMPUTE NM HYD	206.20	-	2	.05610	29.10	.990	.33078	1.500	.810	PER IMP= 10.00
ADD HYD	206.29	1& 2	5	.17820	85.76	3.144	.33078	1.500	.752	
ROUTE	206.28	5	3	.17820	87.56	3.144	.33078	1.550	.768	
RAINFALL TYPE= 2										RAIN24= 1.840
COMPUTE NM HYD	206.40	-	1	.03270	29.76	1.107	.63495	1.500	1.422	PER IMP= 30.00
ROUTE	206.48	1	2	.03270	29.08	1.107	.63496	1.500	1.389	
ADD HYD	206.49	2& 3	5	.21090	116.20	4.251	.37794	1.550	.861	
RAINFALL TYPE= 2										RAIN24= 1.840
COMPUTE NM HYD	206.30	-	1	.04800	89.62	3.691	1.44188	1.500	2.917	PER IMP= 86.00
ADD HYD	206.39	1& 5	6	.25890	196.30	7.942	.57519	1.500	1.185	
FINISH										

El Camino 100-YR FUTURE

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AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =06/30/1998
INPUT FILE = a:ecwyo100.fut USER NO.= RSTECHNM.STE

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 3.370
COMPUTE NM HYD	201.00	-	1	.13390	207.70	6.497	.90979	1.500	2.424	PER IMP= 5.00
RAINFALL TYPE= 2										RAIN24= 3.500
COMPUTE NM HYD	200.00	-	3	.30300	487.60	15.384	.95201	1.550	2.514	PER IMP= .00
*S EL CAMINO ARROYO AT TRAMWAY BLVD (200.0)										
ROUTE MCUNGE	200.80	3	4	.30300	453.59	15.176	.93914	1.700	2.339	CCODE = .1
ADD HYD	201.90	4& 1	5	.43690	559.37	21.674	.93014	1.650	2.000	
*S EL CAMINO ARROYO (MAIN) AT BROWNING (201.9)										
ROUTE MCUNGE	201.80	5	2	.43690	534.38	21.592	.92664	1.800	1.911	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.250
COMPUTE NM HYD	202.10	-	1	.10310	223.44	7.813	1.42091	1.500	3.386	PER IMP= 17.00
ADD HYD	202.19	1& 2	5	.54000	615.10	29.405	1.02101	1.750	1.780	
*S EL CAMINO ARROYO (MAIN) AT EUBANK (202.19)										
ROUTE MCUNGE	202.18	5	2	.54000	591.52	29.266	1.01619	1.850	1.712	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.190
COMPUTE NM HYD	202.20	-	1	.10990	229.39	8.219	1.40216	1.500	3.261	PER IMP= 17.00
ADD HYD	202.29	1& 2	5	.64990	652.42	37.485	1.08146	1.850	1.569	
*S EL CAMINO ARROYO (MAIN) AT HOLBROOK (202.29)										
ROUTE MCUNGE	202.28	5	2	.64990	647.14	37.484	1.08143	1.950	1.556	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 3.070
COMPUTE NM HYD	202.30	-	1	.05186	118.89	4.423	1.59917	1.500	3.582	PER IMP= 30.00
ADD HYD	202.39	1& 2	6	.70176	673.28	41.907	1.11969	1.900	1.499	
*S EL CAMINO ARROYO (MAIN) AT VENTURA (202.39)										
RAINFALL TYPE= 2										RAIN24= 3.140
COMPUTE NM HYD	203.10	-	1	.12580	257.46	9.143	1.36267	1.500	3.198	PER IMP= 17.00
*S EL CAMINO ARROYO (TRIBUTARY) AT HOLBROOK (203.1)										
ROUTE MCUNGE	203.18	1	2	.12580	237.85	9.047	1.34848	1.650	2.954	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.070
COMPUTE NM HYD	203.20	-	1	.03946	90.47	3.366	1.59917	1.500	3.582	PER IMP= 30.00
ADD HYD	203.29	1& 2	5	.16526	289.97	12.413	1.40833	1.650	2.742	
ADD HYD	202.90	5& 6	5	.86702	797.80	54.320	1.17471	1.900	1.438	
ROUTE MCUNGE	202.80	5	2	.86702	786.15	54.278	1.17380	1.950	1.417	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.020
COMPUTE NM HYD	203.30	-	1	.12590	274.41	9.823	1.46298	1.500	3.406	PER IMP= 26.00
ADD HYD	203.39	1& 2	5	.99292	879.98	64.101	1.21047	1.700	1.385	
*S EL CAMINO ARROYO (MAIN) AT BARSTOW (203.39)										
ROUTE MCUNGE	203.98	5	2	.99292	870.59	64.054	1.20958	1.800	1.370	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.960
COMPUTE NM HYD	204.00	-	1	.07730	163.56	5.872	1.42443	1.500	3.306	PER IMP= 26.00
*S EL CAMINO ARROYO AT WYOMING (204.9)										
ADD HYD	204.90	1& 2	5	1.07022	920.69	69.927	1.22510	1.800	1.344	
COMPUTE NM HYD	204.40	-	1	.05460	112.13	3.946	1.35499	1.500	3.209	PER IMP= 22.00
*S PIPE ROUTING										
ROUTE	204.81	1	5	.05460	106.79	3.946	1.35500	1.550	3.056	
RAINFALL TYPE= 2										RAIN24= 2.910
COMPUTE NM HYD	204.30	-	1	.08700	213.67	8.230	1.77363	1.500	3.837	PER IMP= 45.00
*S COMBINE 204.81 AND 204.3 AS 204.91 AT LOUISIANA										
ADD HYD	204.91	1& 5	10	.14160	312.14	12.175	1.61220	1.500	3.444	
*S PIPE ROUTING										

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
ROUTE	204.82	10	5	.14160	303.09	12.175	1.61221	1.550	3.344	
RAINFALL TYPE= 2										RAIN24= 2.890
COMPUTE NM HYD	204.20	-	1	.06875	187.81	7.907	2.15643	1.500	4.268	PER IMP= 70.00
ADD HYD	204.29	1& 5	5	.21035	468.69	20.082	1.79007	1.550	3.481	
RAINFALL TYPE= 2										RAIN24= 2.910
COMPUTE NM HYD	204.10	-	1	.12880	239.10	10.225	1.48848	1.550	2.901	PER IMP= 30.00
ROUTE MCUNGE	204.18	1	2	.12880	236.02	10.215	1.48706	1.550	2.863	CCODE = .2
ADD HYD	204.19	2& 5	5	.33915	704.71	30.297	1.67499	1.550	3.247	
*S EL CAMINO ARROYO AT CORONADO AIRPORT (204.19)										
ROUTE MCUNGE	204.28	5	2	.33915	702.87	30.285	1.67432	1.550	3.238	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.850
COMPUTE NM HYD	205.00	-	1	.05430	146.01	6.140	2.12030	1.500	4.202	PER IMP= 70.00
*S EL CAMINO ARROYO AT I-25 (205.90)										
ADD HYD	205.90	1& 2	5	.39345	831.61	36.425	1.73586	1.550	3.303	
RAINFALL TYPE= 2										RAIN24= 2.830
COMPUTE NM HYD	206.10	-	1	.12210	279.20	11.808	1.81320	1.500	3.573	PER IMP= 50.00
RAINFALL TYPE= 2										RAIN24= 2.830
COMPUTE NM HYD	206.20	-	2	.05610	137.40	5.425	1.81320	1.500	3.827	PER IMP= 50.00
ADD HYD	206.29	1& 2	5	.17820	416.60	17.233	1.81319	1.500	3.653	
ROUTE	206.28	5	3	.17820	407.60	17.233	1.81320	1.550	3.574	
RAINFALL TYPE= 2										RAIN24= 2.760
COMPUTE NM HYD	206.40	-	1	.03270	80.27	3.102	1.77859	1.500	3.836	PER IMP= 50.00
ROUTE	206.48	1	2	.03270	79.75	3.102	1.77860	1.500	3.811	
ADD HYD	206.49	2& 3	5	.21090	482.92	20.334	1.80783	1.550	3.578	
RAINFALL TYPE= 2										RAIN24= 2.760
COMPUTE NM HYD	206.30	-	1	.04800	138.49	5.921	2.31273	1.500	4.508	PER IMP= 86.00
ADD HYD	206.39	1& 5	6	.25890	619.79	26.255	1.90144	1.500	3.741	
FINISH										

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EL CAMINO 10-YR FUTURE

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AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =06/30/1998
INPUT FILE = a:ecwyo10.fut USER NO.= RSTECHNM.STE

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= 2										RAIN24= 2.250
COMPUTE NM HYD	201.00	-	1	.13390	78.41	2.466	.34528	1.500	.915	PER IMP= 5.00
RAINFALL TYPE= 2										RAIN24= 2.330
COMPUTE NM HYD	200.00	-	3	.30300	190.61	5.782	.35782	1.550	.983	PER IMP= .00
*S EL CAMINO ARROYO AT TRAMWAY BLVD (200.0)										
ROUTE MCUNGE	200.80	3	4	.30300	168.82	5.526	.34193	1.750	.871	CCODE = .1
ADD HYD	201.90	4& 1	5	.43690	194.96	7.991	.34296	1.750	.697	
*S EL CAMINO ARROYO (MAIN) AT BROWNING (201.9)										
ROUTE MCUNGE	201.80	5	2	.43690	180.44	7.967	.34190	1.950	.645	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.170
COMPUTE NM HYD	202.10	-	1	.10310	118.83	3.893	.70798	1.500	1.801	PER IMP= 17.00
ADD HYD	202.19	1& 2	5	.54000	198.24	11.860	.41179	1.950	.574	
*S EL CAMINO ARROYO (MAIN) AT EUBANK (202.19)										
ROUTE MCUNGE	202.18	5	2	.54000	196.99	11.904	.41334	2.050	.570	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.130
COMPUTE NM HYD	202.20	-	1	.10990	120.44	4.077	.69565	1.500	1.712	PER IMP= 17.00
ADD HYD	202.29	1& 2	5	.64990	223.65	15.981	.46107	1.600	.538	
*S EL CAMINO ARROYO (MAIN) AT HOLBROOK (202.29)										
ROUTE MCUNGE	202.28	5	2	.64990	201.46	15.892	.45849	2.200	.484	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.050
COMPUTE NM HYD	202.30	-	1	.05186	66.92	2.368	.85630	1.500	2.016	PER IMP= 30.00
ADD HYD	202.39	1& 2	6	.70176	215.57	18.260	.48789	1.750	.480	
*S EL CAMINO ARROYO (MAIN) AT VENTURA (202.39)										
RAINFALL TYPE= 2										RAIN24= 2.090
COMPUTE NM HYD	203.10	-	1	.12580	133.16	4.511	.67239	1.500	1.654	PER IMP= 17.00
*S EL CAMINO ARROYO (TRIBUTARY) AT HOLBROOK (203.1)										
ROUTE MCUNGE	203.18	1	2	.12580	120.21	4.470	.66622	1.700	1.493	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.050
COMPUTE NM HYD	203.20	-	1	.03946	50.92	1.802	.85630	1.500	2.016	PER IMP= 30.00
ADD HYD	203.29	1& 2	5	.16526	141.56	6.272	.71160	1.700	1.338	
ADD HYD	202.90	5& 6	5	.86702	344.80	24.532	.53053	1.750	.621	
ROUTE MCUNGE	202.80	5	2	.86702	342.13	24.527	.53041	1.800	.617	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.010
COMPUTE NM HYD	203.30	-	1	.12590	146.14	5.090	.75809	1.500	1.814	PER IMP= 26.00
ADD HYD	203.39	1& 2	5	.99292	384.21	29.617	.55928	1.750	.605	
*S EL CAMINO ARROYO (MAIN) AT BARSTOW (203.39)										
ROUTE MCUNGE	203.98	5	2	.99292	378.10	29.594	.55885	1.800	.595	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.970
COMPUTE NM HYD	204.00	-	1	.07730	87.70	3.034	.73589	1.500	1.773	PER IMP= 26.00
*S EL CAMINO ARROYO AT WYOMING (204.9)										
ADD HYD	204.90	1& 2	5	1.07022	401.60	32.628	.57164	1.800	.586	
COMPUTE NM HYD	204.40	-	1	.05460	59.25	1.987	.68219	1.500	1.695	PER IMP= 22.00
*S PIPE ROUTING										
ROUTE	204.81	1	5	.05460	55.52	1.987	.68220	1.550	1.589	
RAINFALL TYPE= 2										RAIN24= 1.940
COMPUTE NM HYD	204.30	-	1	.08700	125.10	4.657	1.00376	1.500	2.247	PER IMP= 45.00
*S COMBINE 204.81 AND 204.3 AS 204.91 AT LOUISIANA										
ADD HYD	204.91	1& 5	10	.14160	172.78	6.644	.87976	1.500	1.907	
*S PIPE ROUTING										

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
ROUTE	204.82	10	5	.14160	170.06	6.644	.87977	1.550	1.877	
RAINFALL TYPE= 2										RAIN24= 1.930
COMPUTE NM HYD	204.20	-	1	.06875	117.48	4.806	1.31064	1.500	2.670	PER IMP= 70.00
ADD HYD	204.29	1& 5	5	.21035	273.60	11.450	1.02059	1.550	2.032	
RAINFALL TYPE= 2										RAIN24= 1.940
COMPUTE NM HYD	204.10	-	1	.12880	128.41	5.398	.78576	1.550	1.558	PER IMP= 30.00
ROUTE MCUNGE	204.18	1	2	.12880	126.83	5.391	.78476	1.600	1.539	CCODE = .2
ADD HYD	204.19	2& 5	5	.33915	397.59	16.840	.93103	1.550	1.832	
*S EL CAMINO ARROYO AT CORONADO AIRPORT (204.19)										
ROUTE MCUNGE	204.28	5	2	.33915	383.91	16.826	.93025	1.600	1.769	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.900
COMPUTE NM HYD	205.00	-	1	.05430	91.07	3.719	1.28421	1.500	2.621	PER IMP= 70.00
*S EL CAMINO ARROYO AT I-25 (205.90)										
ADD HYD	205.90	1& 2	5	.39345	453.03	20.545	.97910	1.550	1.799	
RAINFALL TYPE= 2										RAIN24= 1.890
COMPUTE NM HYD	206.10	-	1	.12210	163.76	6.815	1.04658	1.500	2.096	PER IMP= 50.00
RAINFALL TYPE= 2										RAIN24= 1.890
COMPUTE NM HYD	206.20	-	2	.05610	82.41	3.131	1.04658	1.500	2.295	PER IMP= 50.00
ADD HYD	206.29	1& 2	5	.17820	246.16	9.947	1.04658	1.500	2.158	
ROUTE	206.28	5	3	.17820	243.53	9.947	1.04658	1.550	2.135	
RAINFALL TYPE= 2										RAIN24= 1.840
COMPUTE NM HYD	206.40	-	1	.03270	48.25	1.783	1.02237	1.500	2.306	PER IMP= 50.00
ROUTE	206.48	1	2	.03270	47.53	1.783	1.02238	1.500	2.271	
ADD HYD	206.49	2& 3	5	.21090	289.27	11.730	1.04282	1.550	2.143	
RAINFALL TYPE= 2										RAIN24= 1.840
COMPUTE NM HYD	206.30	-	1	.04800	89.62	3.691	1.44188	1.500	2.917	PER IMP= 86.00
ADD HYD	206.39	1& 5	6	.25890	372.16	15.421	1.11681	1.500	2.246	
FINISH										

North Camino 100-YR Existing Cond.

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/30/1997
INPUT FILE = nc100b.ext USER NO.= RSTECHNM.STE

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= 2										RAIN24= 3.990
COMPUTE NM HYD	300.00	-	1	.88400	1001.07	68.141	1.44530	1.800	1.769	PER IMP= .00
ROUTE MCUNGE	300.80	1	2	.88400	976.60	67.873	1.43962	2.050	1.726	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.590
COMPUTE NM HYD	301.00	-	1	.85200	862.46	54.493	1.19922	1.800	1.582	PER IMP= .00
ADD HYD	301.90	1& 2	11	1.73600	1605.38	122.366	1.32164	1.950	1.445	
*S NORTH EL CAMINO ARROYO AT TRAMWAY ROAD (301.90)										
ROUTE MCUNGE	301.82	11	2	1.73600	1587.76	122.145	1.31925	2.100	1.429	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.340
COMPUTE NM HYD	302.00	-	1	.15760	250.67	7.701	.91624	1.500	2.485	PER IMP= 5.00
ADD HYD	302.90	1& 2	5	1.89360	1608.31	129.846	1.28570	2.100	1.327	
ROUTE MCUNGE	302.81	5	1	1.89360	1604.35	129.690	1.28417	2.107	1.324	CCODE = .2
ROUTE MCUNGE	302.82	1	2	1.89360	1583.35	129.725	1.28451	2.250	1.307	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.220
COMPUTE NM HYD	303.00	-	1	.17060	288.51	10.990	1.20788	1.550	2.642	PER IMP= 15.00
ADD HYD	303.90	1& 2	5	2.06420	1604.95	140.715	1.27818	2.250	1.215	
*S NORTH EL CAMINO ARROYO AT HOLBROOK (303.90)										
ROUTE MCUNGE	303.80	5	2	2.06420	1604.39	140.662	1.27770	2.300	1.214	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 3.130
COMPUTE NM HYD	305.10	-	1	.16910	237.45	10.106	1.12056	1.550	2.194	PER IMP= 15.00
ADD HYD	305.19	1& 2	5	2.23330	1625.07	150.768	1.26580	2.300	1.137	
*S NORTH EL CAMINO ARROYO AT VENTURA (305.19)										
ROUTE MCUNGE	305.18	5	2	2.23330	1622.13	150.810	1.26615	2.350	1.135	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 3.070
COMPUTE NM HYD	305.20	-	1	.15290	146.57	6.756	.82850	1.600	1.498	PER IMP= 5.00
ADD HYD	305.29	1& 2	5	2.38620	1638.02	157.566	1.23810	2.300	1.073	
*S NORTH EL CAMINO ARROYO AT BARSTOW (305.29)										
ROUTE MCUNGE	305.28	5	2	2.38620	1624.82	157.418	1.23694	2.450	1.064	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.960
COMPUTE NM HYD	312.00	-	1	.06600	70.11	2.761	.78428	1.550	1.660	PER IMP= 5.00
ADD HYD	312.90	1& 2	5	2.45220	1629.17	160.179	1.22476	2.450	1.038	
*S NORTH EL CAMINO ARROYO AT WYOMING (312.90)										
ROUTE MCUNGE	312.80	5	2	2.45220	1617.14	159.972	1.22317	2.550	1.030	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.870
COMPUTE NM HYD	313.00	-	1	.20920	266.92	10.599	.94995	1.550	1.994	PER IMP= 15.00
ADD HYD	313.90	1& 2	7	2.66140	1629.15	170.571	1.20170	2.550	.956	
RAINFALL TYPE= 2										RAIN24= 3.160
COMPUTE NM HYD	304.00	-	1	.08400	138.67	4.992	1.11436	1.500	2.579	PER IMP= 15.00
ROUTE MCUNGE	304.80	1	2	.08400	127.81	4.955	1.10611	1.700	2.377	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.030
COMPUTE NM HYD	307.00	-	1	.06630	98.65	3.196	.90371	1.500	2.325	PER IMP= 8.00
ADD HYD	307.90	1& 2	5	.15030	174.12	8.151	1.01683	1.700	1.810	
*S NORTH CAMINO ARROYO (TRIB) AT BARSTOW (307.90)										
ROUTE MCUNGE	307.81	5	1	.15030	164.37	8.121	1.01304	1.850	1.709	CCODE = .1
ROUTE MCUNGE	307.82	1	2	.15030	158.65	8.051	1.00441	1.950	1.649	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.950
COMPUTE NM HYD	310.00	-	1	.10330	100.32	4.361	.79158	1.600	1.517	PER IMP= 5.00
ADD HYD	310.90	1& 2	6	.25360	191.03	12.412	.91771	1.950	1.177	

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 2 NOTATION	
RAINFALL TYPE= 2										RAIN24=	3.080
COMPUTE NM HYD	306.00	-	1	.10510	193.49	6.528	1.16463	1.500	2.877	PER IMP=	15.00
ROUTE MCUNGE	306.80	1	2	.10510	175.36	6.480	1.15606	1.700	2.607	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	2.980
COMPUTE NM HYD	308.00	-	1	.05350	72.95	2.296	.80462	1.500	2.131	PER IMP=	5.00
ADD HYD	308.90	1& 2	5	.15860	209.86	8.776	1.03751	1.700	2.067		
RAINFALL TYPE= 2										RAIN24=	2.990
COMPUTE NM HYD	309.00	-	1	.07960	96.16	3.439	.80999	1.550	1.888	PER IMP=	5.00
ADD HYD	309.90	1& 5	5	.23820	278.03	12.215	.96148	1.650	1.824		
ROUTE MCUNGE	309.80	5	2	.23820	261.19	12.109	.95318	1.850	1.713	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	2.950
COMPUTE NM HYD	311.00	-	1	.15280	147.74	6.278	.77037	1.600	1.511	PER IMP=	5.00
ADD HYD	311.90	1& 2	5	.39100	335.66	18.387	.88174	1.800	1.341		
ADD HYD	311.99	5& 6	5	.64460	501.68	30.799	.89589	1.850	1.216		
*S NORTH CAMINO ARROYO (TRIB) AT CORONADO RUNWAY (311.99)											
ROUTE MCUNGE	311.81	5	1	.64460	496.75	30.745	.89430	1.900	1.204	CCODE =	.1
ROUTE MCUNGE	311.82	1	2	.64460	494.22	30.142	.87677	1.913	1.198	CCODE =	.2
*S NORTH EL CAMINO ARROYO AT I-25 (AP 313.99)											
ADD HYD	313.99	2& 7	5	3.30600	1725.31	199.649	1.13231	2.520	.815		
ROUTE MCUNGE	313.88	5	2	3.30600	1710.28	199.463	1.13126	2.600	.808	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	2.830
COMPUTE NM HYD	314.00	-	1	.09600	125.48	3.960	.77351	1.500	2.042	PER IMP=	8.00
ADD HYD	314.99	1& 2	5	3.40200	1713.33	203.423	1.12116	2.600	.787		
RAINFALL TYPE= 2										RAIN24=	2.830
COMPUTE NM HYD	315.00	-	1	.04260	50.88	1.578	.69449	1.500	1.866	PER IMP=	5.00
ADD HYD	315.99	1& 5	5	3.44460	1714.65	205.001	1.11588	2.600	.778		
RECALL HYD	206.39	-	19	.25890	415.02	16.003	1.15898	1.500	2.505		
ADD HYD	206.99	5&19	5	3.70350	1726.61	221.004	1.11890	2.600	.728		
ROUTE MCUNGE	206.88	5	2	3.70350	1725.43	221.017	1.11896	2.650	.728	CCODE =	.2
RAINFALL TYPE= 2										RAIN24=	2.760
COMPUTE NM HYD	401.00	-	1	.05560	114.46	3.498	1.17962	1.500	3.217	PER IMP=	.00
ADD HYD	401.90	1& 2	5	3.75910	1726.99	224.515	1.11986	2.650	.718		
RAINFALL TYPE= 2										RAIN24=	2.730
COMPUTE NM HYD	402.00	-	1	.29180	557.26	20.367	1.30869	1.550	2.984	PER IMP=	10.00
ADD HYD	402.90	1& 5	6	4.05090	1741.11	244.882	1.13346	2.650	.672		
*S FLOW TO N. DIVERSION CHANNEL FROM NORTH EL CAMINO ARROYO											
FINISH											

North Camino 10-yr Existing Cond's.

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/30/1997
INPUT FILE = nc10b.ext USER NO.= RSTECHNM.STE

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= 2										RAIN24= 2.660
COMPUTE NM HYD	300.00	-	1	.88400	509.61	34.987	.74209	1.800	.901	PER IMP= .00
ROUTE MCUNGE	300.80	1	2	.88400	491.66	34.807	.73826	2.150	.869	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.390
COMPUTE NM HYD	301.00	-	1	.85200	374.23	24.387	.53669	1.800	.686	PER IMP= .00
ADD HYD	301.90	1& 2	11	1.73600	719.02	59.194	.63933	2.050	.647	
*S NORTH EL CAMINO ARROYO AT TRAMWAY ROAD (301.90)										
ROUTE MCUNGE	301.82	11	2	1.73600	710.39	59.155	.63892	2.200	.639	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.230
COMPUTE NM HYD	302.00	-	1	.15760	98.52	3.014	.35859	1.500	.977	PER IMP= 5.00
ADD HYD	302.90	1& 2	5	1.89360	716.62	62.169	.61559	2.200	.591	
ROUTE MCUNGE	302.81	5	1	1.89360	715.07	62.083	.61473	2.207	.590	CCODE = .2
ROUTE MCUNGE	302.82	1	2	1.89360	714.79	62.328	.61716	2.350	.590	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.150
COMPUTE NM HYD	303.00	-	1	.17060	138.60	5.250	.57705	1.550	1.269	PER IMP= 15.00
ADD HYD	303.90	1& 2	5	2.06420	725.37	67.579	.61385	2.250	.549	
*S NORTH EL CAMINO ARROYO AT HOLBROOK (303.90)										
ROUTE MCUNGE	303.80	5	2	2.06420	718.36	67.496	.61309	2.400	.544	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.090
COMPUTE NM HYD	305.10	-	1	.16910	106.64	4.665	.51729	1.550	.985	PER IMP= 15.00
ADD HYD	305.19	1& 2	5	2.23330	725.99	72.161	.60584	2.400	.508	
*S NORTH EL CAMINO ARROYO AT VENTURA (305.19)										
ROUTE MCUNGE	305.18	5	2	2.23330	719.49	72.114	.60544	2.500	.503	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.050
COMPUTE NM HYD	305.20	-	1	.15290	52.98	2.543	.31188	1.600	.541	PER IMP= 5.00
ADD HYD	305.29	1& 2	5	2.38620	723.74	74.657	.58663	2.500	.474	
*S NORTH EL CAMINO ARROYO AT BARSTOW (305.29)										
ROUTE MCUNGE	305.28	5	2	2.38620	715.20	74.558	.58585	2.650	.468	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.970
COMPUTE NM HYD	312.00	-	1	.06600	24.85	.995	.28279	1.550	.588	PER IMP= 5.00
ADD HYD	312.90	1& 2	5	2.45220	716.31	75.554	.57770	2.650	.456	
*S NORTH EL CAMINO ARROYO AT WYOMING (312.90)										
ROUTE MCUNGE	312.80	5	2	2.45220	715.53	75.502	.57731	2.750	.456	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 1.910
COMPUTE NM HYD	313.00	-	1	.20920	107.68	4.628	.41481	1.550	.804	PER IMP= 15.00
ADD HYD	313.90	1& 2	7	2.66140	719.04	80.130	.56453	2.750	.422	
RAINFALL TYPE= 2										RAIN24= 2.110
COMPUTE NM HYD	304.00	-	1	.08400	63.70	2.306	.51474	1.500	1.185	PER IMP= 15.00
ROUTE MCUNGE	304.80	1	2	.08400	56.24	2.224	.49647	1.800	1.046	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.020
COMPUTE NM HYD	307.00	-	1	.06630	40.21	1.296	.36660	1.500	.948	PER IMP= 8.00
ADD HYD	307.90	1& 2	5	.15030	67.19	3.520	.43918	1.800	.699	
*S NORTH CAMINO ARROYO (TRIB) AT BARSTOW (307.90)										
ROUTE MCUNGE	307.81	5	1	.15030	61.42	3.451	.43053	2.050	.638	CCODE = .1
ROUTE MCUNGE	307.82	1	2	.15030	58.30	3.431	.42799	2.200	.606	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.970
COMPUTE NM HYD	310.00	-	1	.10330	35.86	1.609	.29205	1.600	.542	PER IMP= 5.00
ADD HYD	310.90	1& 2	6	.25360	63.51	5.040	.37261	2.200	.391	

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
RAINFALL TYPE= 2										RAIN24= 2.050
COMPUTE NM HYD	306.00	-	1	.10510	93.29	3.072	.54801	1.500	1.387	PER IMP= 15.00
ROUTE MCUNGE	306.80	1	2	.10510	79.75	2.971	.52998	1.800	1.186	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.990
COMPUTE NM HYD	308.00	-	1	.05350	27.40	.856	.29998	1.500	.800	PER IMP= 5.00
ADD HYD	308.90	1& 2	5	.15860	87.71	3.827	.45239	1.750	.864	
RAINFALL TYPE= 2										RAIN24= 1.990
COMPUTE NM HYD	309.00	-	1	.07960	35.55	1.276	.30060	1.550	.698	PER IMP= 5.00
ADD HYD	309.90	1& 5	5	.23820	104.30	5.103	.40166	1.750	.684	
ROUTE MCUNGE	309.80	5	2	.23820	92.92	5.033	.39618	2.050	.610	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.970
COMPUTE NM HYD	311.00	-	1	.15280	50.41	2.264	.27775	1.600	.515	PER IMP= 5.00
ADD HYD	311.90	1& 2	5	.39100	105.56	7.297	.34990	2.050	.422	
ADD HYD	311.99	5& 6	5	.64460	156.12	12.336	.35884	2.050	.378	
*S NORTH CAMINO ARROYO (TRIB) AT CORONADO RUNWAY (311.99)										
ROUTE MCUNGE	311.81	5	1	.64460	153.93	12.295	.35763	2.150	.373	CCODE = .1
ROUTE MCUNGE	311.82	1	2	.64460	153.74	12.137	.35305	2.176	.373	CCODE = .2
*S NORTH EL CAMINO ARROYO AT I-25 (AP 313.99)										
ADD HYD	313.99	2& 7	5	3.30600	767.73	91.988	.52171	2.712	.363	
ROUTE MCUNGE	313.88	5	2	3.30600	767.00	92.027	.52193	2.750	.363	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 1.890
COMPUTE NM HYD	314.00	-	1	.09600	44.42	1.482	.28950	1.500	.723	PER IMP= 8.00
ADD HYD	314.99	1& 2	5	3.40200	767.81	93.509	.51537	2.750	.353	
RAINFALL TYPE= 2										RAIN24= 1.890
COMPUTE NM HYD	315.00	-	1	.04260	16.59	.536	.23596	1.500	.609	PER IMP= 5.00
ADD HYD	315.99	1& 5	5	3.44460	768.14	94.045	.51192	2.750	.348	
RECALL HYD	206.39	-	19	.25890	196.30	7.942	.57519	1.500	1.185	
ADD HYD	206.99	5&19	5	3.70350	772.07	101.988	.51634	2.750	.326	
ROUTE MCUNGE	206.88	5	2	3.70350	765.39	101.972	.51626	2.900	.323	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.840
COMPUTE NM HYD	401.00	-	1	.05560	63.78	1.623	.54738	1.500	1.792	PER IMP= .00
ADD HYD	401.90	1& 2	5	3.75910	765.66	103.595	.51672	2.900	.318	
RAINFALL TYPE= 2										RAIN24= 1.820
COMPUTE NM HYD	402.00	-	1	.29180	288.97	10.105	.64929	1.550	1.547	PER IMP= 10.00
ADD HYD	402.90	1& 5	6	4.05090	770.06	113.700	.52627	2.900	.297	
*S FLOW TO N. DIVERSION CHANNEL FROM NORTH EL CAMINO ARROYO										
FINISH										

North Camino 100-yr Future Cond.

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = ctnc100.fut

RUN DATE (MON/DAY/YR) =10/30/1997
USER NO.= RSTECHNM.STE

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= 2										RAIN24= 3.990
COMPUTE NM HYD	300.00	-	1	.88400	1001.07	68.141	1.44530	1.800	1.769	PER IMP= .00
ROUTE MCUNGE	300.80	1	2	.88400	976.60	67.873	1.43962	2.050	1.726	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.590
COMPUTE NM HYD	301.00	-	1	.85200	862.46	54.493	1.19922	1.800	1.582	PER IMP= .00
ADD HYD	301.90	1& 2	11	1.73600	1605.38	122.366	1.32164	1.950	1.445	
*S NORTH EL CAMINO ARROYO AT TRAMWAY ROAD (301.90)										
ROUTE MCUNGE	301.82	11	2	1.73600	1587.76	122.145	1.31925	2.100	1.429	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.340
COMPUTE NM HYD	302.00	-	1	.15760	377.68	14.313	1.70288	1.500	3.744	PER IMP= 30.00
ADD HYD	302.90	1& 2	5	1.89360	1631.74	136.458	1.35117	2.100	1.346	
ROUTE MCUNGE	302.81	5	1	1.89360	1628.16	135.566	1.34235	2.107	1.343	CCODE = .2
ROUTE MCUNGE	302.82	1	2	1.89360	1623.95	135.667	1.34335	2.200	1.340	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 3.220
COMPUTE NM HYD	303.00	-	1	.17060	340.12	13.452	1.47844	1.550	3.115	PER IMP= 20.00
ADD HYD	303.90	1& 2	5	2.06420	1655.63	149.119	1.35451	2.150	1.253	
*S NORTH EL CAMINO ARROYO AT HOLBROOK (303.90)										
ROUTE MCUNGE	303.80	5	2	2.06420	1651.58	149.012	1.35354	2.250	1.250	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.130
COMPUTE NM HYD	305.10	-	1	.16910	302.07	13.014	1.44303	1.550	2.791	PER IMP= 20.00
ADD HYD	305.19	1& 2	5	2.23330	1682.34	162.026	1.36032	2.250	1.177	
*S NORTH EL CAMINO ARROYO AT VENTURA (305.19)										
ROUTE MCUNGE	305.18	5	2	2.23330	1680.41	162.092	1.36087	2.300	1.176	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 3.070
COMPUTE NM HYD	305.20	-	1	.15290	236.60	11.517	1.41235	1.600	2.418	PER IMP= 20.00
ADD HYD	305.29	1& 2	5	2.38620	1709.09	173.609	1.36417	2.300	1.119	
*S NORTH EL CAMINO ARROYO AT BARSTOW (305.29)										
ROUTE MCUNGE	305.28	5	2	2.38620	1695.57	173.479	1.36314	2.400	1.110	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.960
COMPUTE NM HYD	312.00	-	1	.06600	114.08	4.765	1.35364	1.550	2.701	PER IMP= 20.00
ADD HYD	312.90	1& 2	5	2.45220	1702.84	178.243	1.36288	2.400	1.085	
*S NORTH EL CAMINO ARROYO AT WYOMING (312.90)										
ROUTE MCUNGE	312.80	5	2	2.45220	1700.61	178.267	1.36306	2.423	1.084	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.870
COMPUTE NM HYD	313.00	-	1	.20920	437.50	19.847	1.77880	1.550	3.268	PER IMP= 49.00
ADD HYD	313.90	1& 2	7	2.66140	1727.38	198.075	1.39547	2.423	1.014	
RAINFALL TYPE= 2										RAIN24= 3.160
COMPUTE NM HYD	304.00	-	1	.08400	171.88	6.183	1.38016	1.500	3.197	PER IMP= 17.00
ROUTE MCUNGE	304.80	1	2	.08400	157.05	6.140	1.37048	1.700	2.921	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.030
COMPUTE NM HYD	307.00	-	1	.05820	121.68	4.267	1.37458	1.500	3.267	PER IMP= 20.00
ADD HYD	307.90	1& 2	5	.14220	213.89	10.406	1.37215	1.700	2.350	
*S NORTH CAMINO ARROYO (TRIB) AT BARSTOW (307.90)										
ROUTE MCUNGE	307.81	5	1	.14220	203.98	10.321	1.36091	1.850	2.241	CCODE = .1
ROUTE MCUNGE	307.82	1	2	.14220	202.08	10.318	1.36053	1.900	2.220	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.950
COMPUTE NM HYD	310.00	-	1	.10330	154.99	7.037	1.27736	1.600	2.344	PER IMP= 17.00
ADD HYD	310.90	1& 2	6	.24550	271.70	17.356	1.32553	1.850	1.729	

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
RAINFALL TYPE= 2										
COMPUTE NM HYD	306.00	-	1	.10510	220.14	7.537	1.34456	1.500	3.273	RAIN24= 3.080
ROUTE MCUNGE	306.80	1	2	.10510	197.50	7.491	1.33639	1.700	2.936	PER IMP= 17.00
RAINFALL TYPE= 2										CCODE = .1
COMPUTE NM HYD	308.00	-	1	.05350	108.45	3.706	1.29894	1.500	3.167	RAIN24= 2.980
ADD HYD	308.90	1& 2	5	.15860	248.41	11.197	1.32375	1.700	2.447	PER IMP= 17.00
RAINFALL TYPE= 2										
COMPUTE NM HYD	309.00	-	1	.07960	143.06	5.522	1.30064	1.550	2.808	RAIN24= 2.990
ADD HYD	309.90	1& 5	5	.23820	353.40	16.719	1.31603	1.650	2.318	PER IMP= 17.00
ROUTE MCUNGE	309.80	5	2	.23820	353.09	16.763	1.31953	1.750	2.316	
RAINFALL TYPE= 2										CCODE = .2
COMPUTE NM HYD	311.00	-	1	.15280	230.86	10.352	1.27025	1.600	2.361	RAIN24= 2.950
ADD HYD	311.90	1& 2	5	.39100	530.42	27.115	1.30027	1.700	2.120	PER IMP= 17.00
ADD HYD	311.99	5& 6	5	.63650	765.49	44.471	1.31001	1.750	1.879	
*S NORTH CAMINO ARROYO (TRIB) AT CORONADO RUNWAY (311.99)										
ROUTE MCUNGE	311.81	5	1	.63650	764.71	44.450	1.30941	1.800	1.877	CCODE = .2
ROUTE MCUNGE	311.82	1	2	.63650	762.27	43.031	1.26760	1.772	1.871	CCODE = .2
*S NORTH EL CAMINO ARROYO AT I-25 (AP 313.99)										
ADD HYD	313.99	2& 7	5	3.29790	1909.25	238.385	1.35532	1.793	.905	
ROUTE MCUNGE	313.88	5	2	3.29790	1869.26	238.121	1.35382	1.900	.886	CCODE = .1
RAINFALL TYPE= 2										
COMPUTE NM HYD	314.00	-	1	.09600	239.07	9.345	1.82515	1.500	3.891	RAIN24= 2.830
ADD HYD	314.99	1& 2	5	3.39390	1930.42	247.466	1.36716	1.900	.889	PER IMP= 50.00
RAINFALL TYPE= 2										
COMPUTE NM HYD	315.00	-	1	.04260	104.88	4.130	1.81763	1.500	3.847	RAIN24= 2.830
ADD HYD	315.99	1& 5	5	3.43650	1957.19	251.596	1.37274	1.900	.890	PER IMP= 50.00
RECALL HYD	206.39	-	19	.25890	619.79	26.255	1.90144	1.500	3.741	
ADD HYD	206.99	5&19	5	3.69540	2138.80	277.851	1.40978	1.900	.904	
ROUTE MCUNGE	206.88	5	2	3.69540	2137.06	277.937	1.41022	1.950	.904	CCODE = .2
RAINFALL TYPE= 2										
COMPUTE NM HYD	401.00	-	1	.05560	135.75	5.261	1.77417	1.500	3.815	RAIN24= 2.760
ADD HYD	401.90	1& 2	5	3.75100	2167.63	283.198	1.41561	1.950	.903	PER IMP= 50.00
RAINFALL TYPE= 2										
COMPUTE NM HYD	402.00	-	1	.29180	631.89	27.357	1.75788	1.550	3.384	RAIN24= 2.730
ADD HYD	402.90	1& 5	6	4.04280	2351.65	310.555	1.44031	1.900	.909	PER IMP= 50.00
*S FLOW TO N. DIVERSION CHANNEL FROM NORTH EL CAMINO ARROYO										
FINISH										

North Camino 10-yr Future Cond.

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/30/1997
INPUT FILE = ctnc10.fut USER NO.= RSTECHNM.STE

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= 2										RAIN24= 2.660
COMPUTE NM HYD	300.00	-	1	.88400	509.61	34.987	.74209	1.800	.901	PER IMP= .00
ROUTE MCUNGE	300.80	1	2	.88400	491.66	34.807	.73826	2.150	.869	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.390
COMPUTE NM HYD	301.00	-	1	.85200	374.23	24.387	.53669	1.800	.686	PER IMP= .00
ADD HYD	301.90	1& 2	11	1.73600	719.02	59.194	.63933	2.050	.647	
*S NORTH EL CAMINO ARROYO AT TRAMWAY ROAD (301.90)										
ROUTE MCUNGE	301.82	11	2	1.73600	710.39	59.155	.63892	2.200	.639	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.230
COMPUTE NM HYD	302.00	-	1	.15760	213.57	7.816	.92984	1.500	2.117	PER IMP= 30.00
ADD HYD	302.90	1& 2	5	1.89360	725.20	66.971	.66313	2.200	.598	
ROUTE MCUNGE	302.81	5	1	1.89360	724.01	66.514	.65861	2.207	.597	CCODE = .1
ROUTE MCUNGE	302.82	1	2	1.89360	722.36	66.661	.66006	2.350	.596	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.150
COMPUTE NM HYD	303.00	-	1	.17060	184.83	6.966	.76565	1.550	1.693	PER IMP= 20.00
ADD HYD	303.90	1& 2	5	2.06420	732.53	73.627	.66878	2.350	.554	
*S NORTH EL CAMINO ARROYO AT HOLBROOK (303.90)										
ROUTE MCUNGE	303.80	5	2	2.06420	728.11	73.609	.66863	2.400	.551	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.090
COMPUTE NM HYD	305.10	-	1	.16910	159.69	6.681	.74082	1.550	1.476	PER IMP= 20.00
ADD HYD	305.19	1& 2	5	2.23330	738.56	80.291	.67409	2.400	.517	
*S NORTH EL CAMINO ARROYO AT VENTURA (305.19)										
ROUTE MCUNGE	305.18	5	2	2.23330	731.91	80.183	.67319	2.500	.512	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.050
COMPUTE NM HYD	305.20	-	1	.15290	125.07	5.912	.72493	1.600	1.278	PER IMP= 20.00
ADD HYD	305.29	1& 2	5	2.38620	740.94	86.095	.67651	2.500	.485	
*S NORTH EL CAMINO ARROYO AT BARSTOW (305.29)										
ROUTE MCUNGE	305.28	5	2	2.38620	732.79	86.015	.67588	2.650	.480	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.970
COMPUTE NM HYD	312.00	-	1	.06600	61.07	2.401	.68219	1.550	1.446	PER IMP= 20.00
ADD HYD	312.90	1& 2	5	2.45220	734.79	88.416	.67605	2.650	.468	
*S NORTH EL CAMINO ARROYO AT WYOMING (312.90)										
ROUTE MCUNGE	312.80	5	2	2.45220	728.86	88.364	.67565	2.750	.464	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.910
COMPUTE NM HYD	313.00	-	1	.20920	250.33	11.376	1.01961	1.550	1.870	PER IMP= 49.00
ADD HYD	313.90	1& 2	7	2.66140	735.95	99.740	.70269	2.750	.432	
RAINFALL TYPE= 2										RAIN24= 2.110
COMPUTE NM HYD	304.00	-	1	.08400	92.34	3.106	.69341	1.500	1.718	PER IMP= 17.00
ROUTE MCUNGE	304.80	1	2	.08400	78.37	3.012	.67222	1.800	1.458	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.020
COMPUTE NM HYD	307.00	-	1	.05820	66.17	2.165	.69744	1.500	1.776	PER IMP= 20.00
ADD HYD	307.90	1& 2	5	.14220	99.20	5.176	.68254	1.750	1.090	
*S NORTH CAMINO ARROYO (TRIB) AT BARSTOW (307.90)										
ROUTE MCUNGE	307.81	5	1	.14220	88.26	5.063	.66764	2.000	.970	CCODE = .1
ROUTE MCUNGE	307.82	1	2	.14220	85.25	5.016	.66138	2.150	.937	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.970
COMPUTE NM HYD	310.00	-	1	.10330	80.12	3.483	.63215	1.600	1.212	PER IMP= 17.00
ADD HYD	310.90	1& 2	6	.24550	98.33	8.499	.64908	2.150	.626	

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	
RAINFALL TYPE= 2										RAIN24=	2.050
COMPUTE NM HYD	306.00	-	1	.10510	117.15	3.751	.66916	1.500	1.742	PER IMP=	17.00
ROUTE MCUNGE	306.80	1	2	.10510	98.22	3.614	.64474	1.750	1.460	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	1.990
COMPUTE NM HYD	308.00	-	1	.05350	58.24	1.845	.64646	1.500	1.701	PER IMP=	17.00
ADD HYD	308.90	1& 2	5	.15860	116.73	5.459	.64532	1.750	1.150		
RAINFALL TYPE= 2										RAIN24=	1.990
COMPUTE NM HYD	309.00	-	1	.07960	75.82	2.731	.64323	1.550	1.488	PER IMP=	17.00
ADD HYD	309.90	1& 5	5	.23820	149.47	8.189	.64462	1.750	.980		
ROUTE MCUNGE	309.80	5	2	.23820	139.37	8.158	.64219	1.950	.914	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	1.970
COMPUTE NM HYD	311.00	-	1	.15280	116.78	5.107	.62669	1.600	1.194	PER IMP=	17.00
ADD HYD	311.90	1& 2	5	.39100	198.87	13.265	.63613	1.750	.795		
ADD HYD	311.99	5& 6	5	.63650	261.16	21.764	.64113	1.700	.641		
*S NORTH CAMINO ARROYO (TRIB) AT CORONADO RUNWAY (311.99)											
ROUTE MCUNGE	311.81	5	1	.63650	255.38	21.718	.63977	2.050	.627	CCODE =	.1
ROUTE MCUNGE	311.82	1	2	.63650	253.91	21.418	.63092	2.042	.623	CCODE =	.2
*S NORTH EL CAMINO ARROYO AT I-25 (AP 313.99)											
ADD HYD	313.99	2& 7	5	3.29790	796.87	120.575	.68552	2.712	.378		
ROUTE MCUNGE	313.88	5	2	3.29790	795.23	120.610	.68572	2.750	.377	CCODE =	.2
RAINFALL TYPE= 2										RAIN24=	1.890
COMPUTE NM HYD	314.00	-	1	.09600	144.47	5.411	1.05679	1.500	2.351	PER IMP=	50.00
ADD HYD	314.99	1& 2	5	3.39390	796.95	126.021	.69622	2.750	.367		
RAINFALL TYPE= 2										RAIN24=	1.890
COMPUTE NM HYD	315.00	-	1	.04260	64.05	2.396	1.05449	1.500	2.349	PER IMP=	50.00
ADD HYD	315.99	1& 5	5	3.43650	797.72	128.417	.70066	2.750	.363		
RECALL HYD	206.39	-	19	.25890	376.50	15.625	1.13156	1.500	2.272		
ADD HYD	206.99	5&19	5	3.69540	847.98	144.041	.73085	1.950	.359		
ROUTE MCUNGE	206.88	5	2	3.69540	840.62	143.957	.73042	2.100	.355	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	1.840
COMPUTE NM HYD	401.00	-	1	.05560	82.44	3.035	1.02340	1.500	2.317	PER IMP=	50.00
ADD HYD	401.90	1& 2	5	3.75100	852.31	146.992	.73476	2.050	.355		
RAINFALL TYPE= 2										RAIN24=	1.820
COMPUTE NM HYD	402.00	-	1	.29180	360.39	15.753	1.01221	1.550	1.930	PER IMP=	50.00
ADD HYD	402.90	1& 5	6	4.04280	1033.27	162.744	.75479	1.650	.399		
*S FLOW TO N. DIVERSION CHANNEL FROM NORTH EL CAMINO ARROYO											
FINISH											

LA Cueva 100-yr Existing Cond.

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =11/01/1997
INPUT FILE = A:LC100BM.EXT USER NO.= RSTECHNM.STE

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= 2										RAIN24= 4.050
COMPUTE NM HYD	101.00	-	1	.60700	953.84	45.841	1.41600	1.650	2.455	PER IMP= .00
ROUTE MCUNGE	101.80	1	2	.60700	912.90	45.469	1.40451	1.850	2.350	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 4.200
COMPUTE NM HYD	100.00	-	1	1.21400	1201.70	87.881	1.35730	1.850	1.547	PER IMP= .00
ROUTE MCUNGE	100.80	1	3	1.21400	1177.21	87.700	1.35451	2.100	1.515	CCODE = .1
ADD HYD	101.88	3& 2	5	1.82100	1882.13	133.168	1.37117	1.950	1.615	
RAINFALL TYPE= 2										RAIN24= 3.650
COMPUTE NM HYD	102.00	-	1	.87500	1033.60	54.313	1.16386	1.700	1.846	PER IMP= .00
ADD HYD	102.90	1& 5	5	2.69600	2554.30	187.482	1.30389	1.900	1.480	
*S LA CUEVA TRIBUTARY ARROYO @ TRAMWAY BLVD. (102.9)										
ROUTE MCUNGE	102.80	5	2	2.69600	2515.07	187.100	1.30123	2.050	1.458	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.370
COMPUTE NM HYD	107.20	-	1	.17200	237.40	9.430	1.02797	1.550	2.157	PER IMP= 9.00
ADD HYD	107.29	1& 2	4	2.86800	2552.53	196.529	1.28484	2.050	1.391	
*S NORTH LA CUEVA AT GLENDALE AND BROWNING (107.29)										
RAINFALL TYPE= 2										RAIN24= 3.500
COMPUTE NM HYD	102.10	-	1	.09300	147.55	4.405	.88811	1.500	2.479	PER IMP= .00
*S LA CUEVA TRIBUTARY @ TRAMWAY BLVD.										
ROUTE MCUNGE	102.18	1	2	.09300	134.74	4.349	.87687	1.700	2.264	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.380
COMPUTE NM HYD	107.10	-	1	.18080	280.74	8.922	.92528	1.500	2.426	PER IMP= 5.00
ADD HYD	107.19	1& 2	5	.27380	303.70	13.271	.90883	1.600	1.733	
*S NORTH LA CUEVA (TRIB) AT FLORENCE AND BROWNING (107.19)										
ADD HYD	107.90	5& 4	3	3.14180	2611.52	209.801	1.25207	2.000	1.299	
RAINFALL TYPE= 2										RAIN24= 3.400
COMPUTE NM HYD	106.00	-	1	.04360	77.44	2.829	1.21672	1.500	2.775	PER IMP= 17.00
ROUTE MCUNGE	106.80	1	2	.04360	69.78	2.777	1.19435	1.700	2.501	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.340
COMPUTE NM HYD	106.10	-	1	.11160	187.37	6.465	1.08624	1.500	2.623	PER IMP= 10.00
ADD HYD	106.19	1& 2	6	.15520	196.76	9.243	1.11660	1.600	1.981	
*S LA CUEVA TRIBUTARY ARROYO @ BROWNING (106.19)										
ADD HYD	107.99	3& 6	5	3.29700	2658.92	219.043	1.24570	2.000	1.260	
ROUTE MCUNGE	107.80	5	2	3.29700	2647.18	218.906	1.24491	2.100	1.255	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.230
COMPUTE NM HYD	109.00	-	1	.10060	164.16	5.441	1.01402	1.500	2.550	PER IMP= 10.00
ADD HYD	109.90	1& 2	5	3.39760	2662.81	224.346	1.23808	2.100	1.225	
RAINFALL TYPE= 2										RAIN24= 3.250
COMPUTE NM HYD	108.00	-	7	.20550	311.04	11.246	1.02605	1.550	2.365	PER IMP= 10.00
ADD HYD	109.99	5& 7	5	3.60310	2698.71	235.592	1.22598	2.100	1.170	
*S LA CUEVA ARROYO @ EUBANK (MAIN) (109.99)										
ROUTE MCUNGE	109.88	5	2	3.60310	2673.21	235.416	1.22507	2.200	1.159	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.130
COMPUTE NM HYD	110.00	-	1	.16340	202.35	8.385	.96218	1.550	1.935	PER IMP= 10.00
ADD HYD	110.90	1& 2	5	3.76650	2695.65	243.801	1.21366	2.200	1.118	
*S LA CUEVA ARROYO @ VENTURA (MAIN) (110.90)										
ROUTE MCUNGE	110.80	5	2	3.76650	2692.04	243.873	1.21402	2.200	1.117	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 3.020
COMPUTE NM HYD	111.10	-	1	.11940	184.36	5.962	.93630	1.500	2.413	PER IMP= 10.00
ADD HYD	111.19	1& 2	5	3.88590	2703.93	249.835	1.20549	2.200	1.087	
RAINFALL TYPE= 2										RAIN24= 3.050
COMPUTE NM HYD	111.00	-	1	.06740	88.80	2.940	.81779	1.500	2.059	PER IMP= 5.00
ADD HYD	111.99	1& 5	5	3.95330	2710.28	252.775	1.19888	2.200	1.071	
*S LA CUEVA ARROYO @ BARSTOW (111.99)										
ROUTE MCUNGE	111.80	5	2	3.95330	2706.82	251.708	1.19382	2.229	1.070	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.960
COMPUTE NM HYD	112.10	-	1	.08940	219.11	8.942	1.87543	1.500	3.829	PER IMP= 50.00
COMPUTE NM HYD	112.20	-	3	.08260	191.10	7.690	1.74561	1.500	3.615	PER IMP= 45.00
*S COMBINE HYD.'S 112.1 AND 112.2 AS 112.8										
ADD HYD	112.80	1& 3	1	.17200	410.21	16.632	1.81308	1.500	3.726	
ADD HYD	112.90	1& 2	5	4.12530	2737.52	267.687	1.21667	2.229	1.037	
*S LA CUEVA ARROYO @ WYOMING (112.90)										
ROUTE MCUNGE	112.80	5	2	4.12530	2732.89	267.664	1.21657	2.273	1.035	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.930
COMPUTE NM HYD	113.00	-	1	.11360	160.25	4.875	.80462	1.500	2.204	PER IMP= 5.00
ADD HYD	113.90	1& 2	5	4.23890	2740.90	272.538	1.20552	2.273	1.010	
*S LA CUEVA MAIN ARROYO @ LOUISIANA (113.90)										
ROUTE MCUNGE	113.80	5	4	4.23890	2736.89	272.527	1.20547	2.300	1.009	CCODE = .2

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
RAINFALL TYPE= 2										RAIN24= 2.850
COMPUTE NM HYD	115.00	-	3	.13370	183.65	5.503	.77170	1.500	2.146	PER IMP= 5.00
ADD HYD	115.90	4& 3	5	4.37260	2745.20	278.030	1.19221	2.300	.981	
*S LA CUEVA NORTH (MAIN) ARROYO @ I-25 (115.90)										
RECALL HYD	205.90	-	9	1.48790	864.92	75.764	.95475	1.901	.908	
ADD HYD	115.99	5& 9	5	5.86050	3388.92	353.273	1.13026	2.266	.904	
ROUTE MCUNGE	115.80	5	2	5.86050	3384.43	352.332	1.12725	2.303	.902	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.830
COMPUTE NM HYD	118.00	-	1	.06490	172.75	7.273	2.10117	1.500	4.159	PER IMP= 70.00
ADD HYD	118.90	1& 2	5	5.92540	3393.77	359.096	1.13630	2.303	.895	
RAINFALL TYPE= 2										RAIN24= 2.830
COMPUTE NM HYD	118.10	-	1	.03060	42.12	1.370	.83948	1.500	2.150	PER IMP= 10.00
ADD HYD	118.99	1& 5	5	5.95600	3395.86	360.432	1.13467	2.303	.891	
*S LA CUEVA NORTH (MAIN) ARROYO @ SAN MATEO										
ROUTE MCUNGE	118.80	5	2	5.95600	3393.69	359.673	1.13228	2.316	.890	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.760
COMPUTE NM HYD	126.00	-	1	.07370	195.81	8.059	2.05022	1.500	4.151	PER IMP= 70.00
ADD HYD	126.90	1& 2	5	6.02970	3403.69	367.139	1.14166	2.316	.882	
ROUTE MCUNGE	126.80	5	2	6.02970	3401.46	367.136	1.14165	2.335	.881	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.700
COMPUTE NM HYD	127.00	-	1	.06330	134.62	4.342	1.28604	1.500	3.323	PER IMP= 10.00
ADD HYD	127.90	1& 2	8	6.09300	3406.55	371.409	1.14294	2.335	.874	
*S NORTH LA CUEVA ARROYO AT APPROXIMATELY JEFFERSON ST.										
*S NOW BEGIN THE SOUTH LA CUEVA ARROYO EAST OF I-25										
RAINFALL TYPE= 2										RAIN24= 2.850
COMPUTE NM HYD	116.00	-	5	.13090	193.62	6.460	.92539	1.500	2.311	PER IMP= 15.00
*S DIVIDE HYD WITH 50 % TO CONVENIENCE CENTER POND										
DIVIDE HYD	116.10	5	10	.06545	96.81	3.230	.92539	1.500	2.311	
	116.20	AND	11	.06545	96.81	3.230	.92539	1.500	2.311	
*S SIGNAL HILL POND										
ROUTE RESERVOIR	116.18	10	7	.06545	30.65	3.230	.92539	1.750	.732	AC-FT= 1.508
*S ROUTE TO SAN PEDRO										
ROUTE	116.19	7	9	.06545	30.64	3.230	.92539	1.800	.731	
RAINFALL TYPE= 2										RAIN24= 2.890
COMPUTE NM HYD	117.40	-	1	.07500	102.09	3.335	.83378	1.500	2.127	PER IMP= 10.00
ROUTE MCUNGE	117.45	1	2	.07500	94.34	3.293	.82330	1.600	1.965	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.890
COMPUTE NM HYD	117.31	-	17	.02500	60.81	2.418	1.81357	1.500	3.801	PER IMP= 50.00
*S ROUTE THRU SONORA POND										
ROUTE RESERVOIR	117.35	17	20	.02500	21.16	2.423	1.81746	1.800	1.323	AC-FT= .919
COMPUTE NM HYD	117.32	-	18	.00900	21.90	.871	1.81357	1.500	3.803	PER IMP= 50.00
*S SIGNAL HILL POND										
ROUTE RESERVOIR	117.36	18	17	.00900	6.23	.870	1.81354	1.850	1.082	AC-FT= .359
*S ADD 2 POND DISCHARGES										
ADD HYD	117.37	20&17	17	.03400	27.39	3.294	1.81641	1.800	1.259	
*S ROUTE TO SAN PEDRO 30" PIPE										
ROUTE	117.39	17	20	.03400	27.40	3.294	1.81643	1.800	1.259	
COMPUTE NM HYD	117.30	-	3	.08630	136.26	4.588	.99691	1.500	2.467	PER IMP= 15.00
*S TOTAL Q TO SAN PEDRO& SIGNAL SD + STREET (117.33)										
ADD HYD	117.33	20& 3	6	.12030	153.48	7.882	1.22852	1.500	1.993	
*S ADD IN 117.45 AT ALAMEDA 117.41 TO SD 117.42 TO ALAMEDA INTERSECTION										
DIVIDE HYD	117.41	2	7	.03888	20.00	1.707	.82330	1.500	.804	
	117.42	AND	4	.03612	74.34	1.586	.82330	1.600	3.215	
*S ADD IN Q TO SD AT ALAMEDA 117.44										
ADD HYD	117.44	7&20	20	.07288	47.40	5.001	1.28664	1.800	1.016	
COMPUTE NM HYD	117.50	-	1	.05500	151.76	6.417	2.18755	1.500	4.311	PER IMP= 70.00
*S ADD IN Q TO ALAMEDA FROM 117.42 AS 117.55										
ADD HYD	117.44	1& 4	1	.09112	187.75	8.003	1.64671	1.550	3.219	
*S COMBINE HYDS 117.3 AND 117.55 AS TOTAL ALAMEDA INT Q (117.59)										
ADD HYD	117.59	3& 1	2	.17742	314.46	12.591	1.33064	1.550	2.769	
RAINFALL TYPE= 2										RAIN24= 2.890
*S BASIN 117.21 TO RETENTION BASIN										
COMPUTE NM HYD	117.21	-	1	.02340	56.92	2.263	1.81357	1.500	3.801	PER IMP= 50.00
COMPUTE NM HYD	117.20	-	1	.13910	160.02	7.778	1.04839	1.600	1.797	PER IMP= 20.00
DIVIDE HYD	117.92	1	6	.10519	70.00	5.881	1.04838	1.450	1.040	
	117.27	AND	10	.03391	90.02	1.896	1.04838	1.600	4.147	
*S ADD IN Q AT OAKLEND/EAGLE ROCK (117.93)										
ADD HYD	117.93	20& 6	1	.17806	117.40	10.882	1.14589	1.800	1.030	
*S ADD CONVENIENCE CENTER FLOW (117.94)										
ADD HYD	117.94	1& 9	1	.24351	148.04	14.112	1.08662	1.800	.950	
*S TOTAL RUNOFF TO SAN PEDRO STORM DRAIN										
ROUTE	117.98	1	2	.24351	147.87	14.112	1.08663	1.850	.949	
*S COMBINE HYDS	117.98	AND	116.2 (116.99)							

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
ADD HYD	116.99	11& 2	5	.30896	211.66	17.343	1.05247	1.550	1.070	
*S SOUTH LACUEVA ARROYO AT CONFLUENCE JUST WEST OF I-25 CROSSING										
ADD HYD	117.29	10& 5	5	.34288	296.16	19.239	1.05206	1.600	1.350	
ROUTE MCUNGE	117.28	5	2	.34288	296.02	18.933	1.03535	1.601	1.349	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.830
COMPUTE NM HYD	119.00	-	1	.05490	146.12	6.152	2.10117	1.500	4.159	PER IMP= 70.00
ADD HYD	119.90	1& 2	5	.39778	407.62	24.933	1.17526	1.568	1.601	
RAINFALL TYPE= 2										RAIN24= 2.820
COMPUTE NM HYD	120.00	-	1	.02680	55.08	2.259	1.58045	1.500	3.211	PER IMP= 50.00
ADD HYD	120.90	1& 5	5	.42458	454.55	27.138	1.19847	1.535	1.673	
ROUTE MCUNGE	120.80	5	2	.42458	449.48	26.684	1.17842	1.582	1.654	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.760
COMPUTE NM HYD	125.00	-	1	.05080	134.25	5.548	2.04765	1.500	4.129	PER IMP= 70.00
ADD HYD	125.90	1& 2	6	.47538	551.24	31.991	1.26182	1.582	1.812	
*S LA CUEVA ARROYO SOUTH BEFORE WILDFLOWER FLOWS JUST UPSTREAM OF 96" RCP										
RAINFALL TYPE= 2										
COMPUTE NM HYD	121.00	-	1	.04890	63.24	1.947	.74674	1.500	2.021	RAIN24= 2.810
*S WILDFLOWER ARROYO AT SAN MATEO BLVD.										PER IMP= 5.00
DIVIDE HYD	121.83	1	11	.02445	31.62	.974	.74673	1.500	2.021	
	121.84	AND	12	.02445	31.62	.974	.74673	1.500	2.021	
ROUTE MCUNGE	121.81	11	2	.02445	29.40	.952	.73022	1.650	1.879	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.750
COMPUTE NM HYD	123.00	-	1	.01850	40.84	1.521	1.54168	1.500	3.449	PER IMP= 40.00
ADD HYD	123.90	1& 2	5	.04295	59.16	2.473	1.07972	1.550	2.152	
ROUTE MCUNGE	121.82	12	2	.02445	28.91	.957	.73427	1.650	1.847	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.750
COMPUTE NM HYD	122.00	-	1	.02250	53.55	2.068	1.72356	1.500	3.719	PER IMP= 50.00
ADD HYD	122.90	1& 2	3	.04695	62.44	3.026	1.20836	1.600	2.078	
RAINFALL TYPE= 2										RAIN24= 2.740
COMPUTE NM HYD	124.00	-	1	.02510	59.74	2.301	1.71856	1.500	3.719	PER IMP= 50.00
ADD HYD	124.91	3& 1	4	.07205	115.71	5.326	1.38609	1.500	2.509	
DIVIDE HYD	122.85	4	1	.06779	90.00	5.012	1.38609	1.450	2.074	
	124.92	AND	2	.00426	25.71	.315	1.38609	1.500	9.437	
*S TOTAL OUTFLOW TO ALAMEDA FROM JEFFERSON VIA 36" STORM DRAIN.										
ROUTE MCUNGE	124.83	2	3	.00426	23.96	.294	1.29335	1.600	8.795	CCODE = .1
ADD HYD	124.91	5& 3	4	.04721	82.22	2.767	1.09897	1.600	2.722	
*S SUBTRACT FLOW INTERCEPTED BY 36" PIPE TO WATERCRESS CHANNEL										
DIVIDE HYD	123.81	4	1	.04584	70.00	2.687	1.09897	1.550	2.386	
	123.99	AND	2	.00136	12.22	.080	1.09897	1.600	14.016	
ADD HYD	125.99	6& 1	3	.52122	621.24	34.619	1.24535	1.582	1 862	
*S TOTAL FLOW AT ENTRANCE TO 96" PIPE										
ROUTE	125.88	3	1	.52122	620.76	34.625	1.24559	1.600	1.861	
ADD HYD	127.91	1& 8	8	6.61422	3518.59	405.173	1.14858	2.316	.831	
ADD HYD	127.92	2& 8	5	6.61558	3518.59	405.251	1.14857	2.316	.831	
RAINFALL TYPE= 2										
COMPUTE NM HYD	128.00	-	1	.13730	254.82	9.454	1.29103	1.550	2.900	RAIN24= 2.690
ADD HYD	128.90	1& 5	5	6.75288	3535.11	414.559	1.15106	2.316	.818	PER IMP= 10.00
*S LA CUEVA ARROYO TOTAL @ THE NORTH DIVERSION CHANNEL										
FINISH										

LA Cueva 100-YR FUTURE

-(s16.67h8.5v0T-&18D
AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =06/30/1998
INPUT FILE = a:lcwyo100.fut USER NO.= RSTECHNM.STE

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 4.050
COMPUTE NM HYD	101.00	-	1	.60700	953.84	45.841	1.41600	1.650	2.455	PER IMP= .00
ROUTE MCUNGE	101.80	1	2	.60700	912.90	45.469	1.40451	1.850	2.350	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 4.200
COMPUTE NM HYD	100.00	-	1	1.21400	1201.70	87.881	1.35730	1.850	1.547	PER IMP= .00
ROUTE MCUNGE	100.80	1	3	1.21400	1177.21	87.700	1.35451	2.100	1.515	CCODE = .1
ADD HYD	101.88	3& 2	5	1.82100	1882.13	133.168	1.37117	1.950	1.615	
RAINFALL TYPE= 2										RAIN24= 3.650
COMPUTE NM HYD	102.00	-	1	.87500	1033.60	54.313	1.16386	1.700	1.846	PER IMP= .00
ADD HYD	102.90	1& 5	5	2.69600	2554.30	187.482	1.30389	1.900	1.480	
*S LA CUEVA TRIBUTARY ARROYO @ TRAMWAY BLVD. (102.9)										
ROUTE MCUNGE	102.80	5	2	2.69600	2515.07	187.100	1.30123	2.050	1.458	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.370
COMPUTE NM HYD	107.20	-	1	.17200	325.87	13.591	1.48157	1.550	2.960	PER IMP= 17.00
ADD HYD	107.29	1& 2	4	2.86800	2575.01	200.690	1.31205	2.050	1.403	
*S NORTH LA CUEVA AT GLENDALE AND BROWNING (107.29)										
RAINFALL TYPE= 2										RAIN24= 3.500
COMPUTE NM HYD	102.10	-	1	.09300	149.17	4.457	.89867	1.500	2.506	PER IMP= .00
*S LA CUEVA TRIBUTARY @ TRAMWAY BLVD.										
ROUTE MCUNGE	102.18	1	2	.09300	136.20	4.395	.88600	1.700	2.288	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.380
COMPUTE NM HYD	107.10	-	1	.18080	399.38	14.303	1.48327	1.500	3.452	PER IMP= 17.00
ADD HYD	107.19	1& 2	5	.27380	399.38	18.697	1.28040	1.500	2.279	
*S NORTH LA CUEVA (TRIB) AT FLORENCE AND BROWNING (107.19)										
ADD HYD	107.90	5& 4	3	3.14180	2666.73	219.388	1.30929	2.000	1.326	
RAINFALL TYPE= 2										RAIN24= 3.400
COMPUTE NM HYD	106.00	-	1	.04360	95.85	3.448	1.48281	1.500	3.435	PER IMP= 17.00
ROUTE MCUNGE	106.80	1	2	.04360	86.06	3.396	1.46043	1.700	3.084	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.340
COMPUTE NM HYD	106.10	-	1	.11160	238.47	8.685	1.45925	1.500	3.339	PER IMP= 17.00
ADD HYD	106.19	1& 2	6	.15520	257.25	12.081	1.45958	1.550	2.590	
*S LA CUEVA TRIBUTARY ARROYO @ BROWNING (106.19)										
ADD HYD	107.99	3& 6	5	3.29700	2733.21	231.469	1.31636	2.000	1.295	
ROUTE MCUNGE	107.80	5	2	3.29700	2713.95	231.319	1.31551	2.100	1.286	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.230
COMPUTE NM HYD	109.00	-	1	.10060	216.30	7.552	1.40751	1.500	3.359	PER IMP= 17.00
ADD HYD	109.90	1& 2	5	3.39760	2736.13	238.871	1.31823	2.100	1.258	
RAINFALL TYPE= 2										RAIN24= 3.250
COMPUTE NM HYD	108.00	-	7	.20550	404.63	15.573	1.42091	1.550	3.077	PER IMP= 17.00
ADD HYD	109.99	5& 7	5	3.60310	2789.17	254.444	1.32409	2.100	1.210	
*S LA CUEVA ARROYO @ EUBANK (MAIN) (109.99)										
ROUTE MCUNGE	109.88	5	2	3.60310	2763.62	254.113	1.32237	2.200	1.198	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.130
COMPUTE NM HYD	110.00	-	1	.16340	275.61	11.738	1.34689	1.550	2.636	PER IMP= 17.00
ADD HYD	110.90	1& 2	5	3.76650	2796.05	265.851	1.32343	2.200	1.160	
*S LA CUEVA ARROYO @ VENTURA (MAIN) (110.90)- FINAL										
*S ROUTE TO BARSTOW										
ROUTE MCUNGE	110.88	5	2	3.76650	2792.08	263.889	1.31366	2.219	1.158	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.020
COMPUTE NM HYD	111.00	-	1	.05330	108.83	3.739	1.31526	1.500	3.190	PER IMP= 17.00
COMPUTE NM HYD	111.40	-	4	.01410	28.80	.989	1.31527	1.500	3.192	PER IMP= 17.00
*S COMBINE HYD.'S	111.0	AND	111.4	AS 111.49						
ADD HYD	111.49	1& 4	4	.06740	137.63	4.728	1.31525	1.500	3.191	
*S ROUTE TO LA CUEVA CHANEL @ OAKLAND										
*S PIPE ROUTING										
ROUTE	111.48	4	5	.06740	133.79	4.728	1.31527	1.550	3.102	
RAINFALL TYPE= 2										RAIN24= 3.050
COMPUTE NM HYD	111.10	-	1	.09690	195.97	7.699	1.48968	1.500	3.160	PER IMP= 26.00
RAINFALL TYPE= 2										RAIN24= 3.050
COMPUTE NM HYD	111.30	-	6	.04200	107.90	4.348	1.94094	1.500	4.014	PER IMP= 50.00
ADD HYD	111.39	1& 6	1	.13890	303.87	12.046	1.62612	1.500	3.418	
*S COMBINE HYD.'S	111.48	AND	111.39	AS 111.88						
ADD HYD	111.88	1& 5	1	.20630	436.39	16.774	1.52456	1.500	3.305	
*S LA CUEVA CHANNEL AT BARSTOW (111.89)-NOT FINAL										
ADD HYD	111.89	1& 2	5	3.97280	2827.78	280.143	1.32216	2.194	1.112	
*S DIVERSION FROM NDB ABOVE CARRINGTON										
COMPUTE NM HYD	924.10	-	6	.02500	64.23	2.588	1.94094	1.500	4.015	PER IMP= 50.00
COMPUTE NM HYD	924.20	-	7	.01900	48.82	1.967	1.94094	1.500	4.015	PER IMP= 50.00
*S COMBINE HYD.'S	924.10	AND	924.20	AS 924.22						

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
ADD HYD	924.22	6& 7	6	.04400	113.05	4.555	1.94093	1.500	4.015	
*S ROUTE TO BARSTOW IN ALAMEDA AS 924.28										
ROUTE	924.28	6	2	.04400	109.83	4.555	1.94094	1.500	3.900	
ADD HYD	111.99	5& 2	5	4.01680	2838.79	284.498	1.32801	2.194	1.104	
*S LA CUEVA MAIN AT BARSTOW 111.99 FINAL										
ROUTE MCUNGE	111.80	5	2	4.01680	2835.32	284.453	1.32780	2.229	1.103	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.960
COMPUTE NM HYD	112.10	-	1	.08940	219.11	8.942	1.87543	1.500	3.829	PER IMP= 50.00
COMPUTE NM HYD	112.20	-	3	.08260	202.31	8.262	1.87543	1.500	3.827	PER IMP= 50.00
*S COMBINE HYD.'S 112.1 AND 112.2 AS 112.8										
ADD HYD	112.80	1& 3	1	.17200	421.41	17.204	1.87543	1.500	3.828	
ADD HYD	112.90	1& 2	5	4.18880	2869.92	300.975	1.34723	2.202	1.071	
*S LA CUEVA ARROYO @ WYOMING (112.90)										
*S ADD IN EL CAMINO DIVERSION AT WYOMING										
RECALL HYD	204.90	-	15	1.07020	920.69	69.927	1.22512	1.800	1.344	
ADD HYD	112.91	5&15	5	5.25900	3504.47	369.597	1.31773	2.149	1.041	
ROUTE MCUNGE	112.80	5	2	5.25900	3500.68	369.327	1.31677	2.178	1.040	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.930
COMPUTE NM HYD	113.00	-	1	.10000	262.19	10.755	2.01658	1.500	4.097	PER IMP= 59.41
COMPUTE NM HYD	116.10	-	7	.10280	270.05	11.099	2.02440	1.500	4.105	PER IMP= 60.00
ADD HYD	113.80	1& 7	1	.20280	532.23	21.854	2.02054	1.500	4.101	
ADD HYD	113.90	1& 2	5	5.46180	3552.55	390.147	1.33935	2.153	1.016	
*S LA CUEVA MAIN ARROYO @ LOUISIANA (113.90)										
ROUTE MCUNGE	113.80	5	4	5.46180	3542.66	390.085	1.33914	2.212	1.013	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.850
COMPUTE NM HYD	115.00	-	3	.12020	312.21	12.750	1.98890	1.500	4.058	PER IMP= 62.00
ADD HYD	115.90	4& 3	5	5.58200	3566.18	402.672	1.35258	2.212	.998	
*S LA CUEVA NORTH (MAIN) ARROYO @ I-25 (115.90)										
RECALL HYD	205.90	-	9	.39350	831.61	36.425	1.73564	1.550	3.302	
ADD HYD	115.99	5& 9	5	5.97550	3684.03	438.692	1.37653	1.784	.963	
ROUTE MCUNGE	115.80	5	2	5.97550	3678.28	434.373	1.36298	1.796	.962	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.830
COMPUTE NM HYD	118.00	-	1	.06490	172.75	7.273	2.10117	1.500	4.159	PER IMP= 70.00
ADD HYD	118.90	1& 2	5	6.04040	3738.08	441.136	1.36933	1.796	.967	
RAINFALL TYPE= 2										RAIN24= 2.830
COMPUTE NM HYD	118.10	-	1	.03060	75.34	2.966	1.81763	1.500	3.847	PER IMP= 50.00
ADD HYD	118.99	1& 5	5	6.07100	3763.32	443.931	1.37106	1.796	.969	
*S LA CUEVA NORTH (MAIN) ARROYO @ SAN MATEO										
ROUTE MCUNGE	118.80	5	2	6.07100	3761.75	442.243	1.36585	1.803	.968	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.760
COMPUTE NM HYD	126.00	-	1	.07370	195.81	8.059	2.05022	1.500	4.151	PER IMP= 70.00
ADD HYD	126.90	1& 2	5	6.14470	3828.29	449.708	1.37224	1.803	.973	
ROUTE MCUNGE	126.80	5	2	6.14470	3826.97	449.751	1.37238	1.810	.973	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.700
COMPUTE NM HYD	127.00	-	1	.06330	165.35	6.750	1.99932	1.500	4.081	PER IMP= 70.00
ADD HYD	127.90	1& 2	8	6.20800	3882.19	456.020	1.37731	1.810	.977	
*S NORTH LA CUEVA ARROYO AT APPROXIMATELY JEFFERSON ST.										
*S NOW BEGIN THE SOUTH LA CUEVA ARROYO EAST OF I-25										
RAINFALL TYPE= 2										RAIN24= 2.890
COMPUTE NM HYD	117.40	-	1	.05120	132.07	5.432	1.98937	1.500	4.030	PER IMP= 60.00
*S ROUTE in alameda to san pedro										
ROUTE	117.49	1	2	.05120	124.38	5.432	1.98938	1.550	3.796	
RAINFALL TYPE= 2										RAIN24= 2.890
COMPUTE NM HYD	117.30	-	1	.11720	286.33	11.336	1.81357	1.500	3.817	PER IMP= 50.00
ADD HYD	117.39	2& 1	3	.16840	405.11	16.768	1.86702	1.500	3.759	
*S TOTAL Q AT ALAMEDA & SAN PEDRO (117.39) WITHOUT PONDS										
COMPUTE NM HYD	117.50	-	1	.05500	151.76	6.417	2.18755	1.500	4.311	PER IMP= 70.00
*S TOTAL Q AT ALAMEDA INT (117.5)										
*S ROUTE IN SAN PEDRO FROM ALAMEDA TO OAKLAND (117.38)										
ROUTE	117.38	3	2	.16840	392.75	16.768	1.86702	1.550	3.644	
COMPUTE NM HYD	117.20	-	1	.05000	121.61	4.836	1.81357	1.500	3.800	PER IMP= 50.00
*S COMBINE HYDS 117.38 AND 117.2 AT OAKLAND (117.69)										
ADD HYD	117.39	2& 1	3	.21840	512.70	21.604	1.85478	1.500	3.668	
*S ROUTE FROM OAKLAND TO EAGLE ROCK (117.68)										
ROUTE	117.68	3	2	.21840	512.47	21.605	1.85478	1.550	3.666	
COMPUTE NM HYD	116.20	-	4	.07190	185.54	7.629	1.98937	1.500	4.032	PER IMP= 60.00
*S COMBINE HYDS 117.68 AND 116.2 AT EAGLE ROCK (116.29)										
ADD HYD	116.39	2& 4	3	.29030	676.91	29.233	1.88811	1.550	3.643	
DIVIDE HYD	117.25	3	6	.23564	325.00	23.729	1.88811	1.400	2.155	
	116.49	AND	7	.05466	351.91	5.504	1.88811	1.550	10.060	
COMPUTE NM HYD	117.22	-	5	.01560	43.06	1.820	2.18755	1.500	4.313	PER IMP= 70.00
*S TOTAL Q TO WILDFLOWER DIVERSION AT I-25 (117.27)										

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
ADD HYD	117.27	5& 6	10	.25124	368.06	25.549	1.90670	1.500	2.289	
ROUTE	117.98	7	2	.05466	346.60	5.504	1.88826	1.550	9.908	
COMPUTE NM HYD	116.21	-	4	.03440	79.13	3.024	1.64799	1.500	3.594	PER IMP= 40.00
ADD HYD	116.99	4& 2	5	.08906	417.68	8.528	1.79544	1.550	7.328	
*S TOTAL Q AT I-25 & MODESTO (116.99)										
*S SOUTH LACUEVA ARROYO AT CONFLUENCE JUST WEST OF I-25 CROSSING										
ADD HYD	117.29	10& 5	5	.34030	780.59	34.077	1.87758	1.550	3.584	
ROUTE MCUNGE	117.28	5	2	.34030	774.07	32.451	1.78799	1.531	3.554	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.830
COMPUTE NM HYD	119.00	-	1	.05490	146.12	6.152	2.10117	1.500	4.159	PER IMP= 70.00
ADD HYD	119.90	1& 2	5	.39520	909.43	38.277	1.81603	1.531	3.596	
RAINFALL TYPE= 2										RAIN24= 2.820
COMPUTE NM HYD	120.00	-	1	.02680	70.98	2.990	2.09159	1.500	4.139	PER IMP= 70.00
ADD HYD	120.90	1& 5	5	.42200	975.18	41.108	1.82646	1.531	3.611	
ROUTE MCUNGE	120.80	5	2	.42200	965.62	40.506	1.79973	1.561	3.575	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.760
COMPUTE NM HYD	125.00	-	1	.05080	134.25	5.548	2.04765	1.500	4.129	PER IMP= 70.00
ADD HYD	125.90	1& 2	6	.47280	1084.17	45.692	1.81204	1.539	3.583	
*S LA CUEVA ARROYO SOUTH BEFORE WILDFLOWER FLOWS JUST UPSTREAM OF 96" RCP										
RAINFALL TYPE= 2										RAIN24= 2.810
COMPUTE NM HYD	121.00	-	1	.04890	130.08	5.442	2.08650	1.500	4.156	PER IMP= 70.00
*S WILDFLOWER ARROYO AT SAN MATEO BLVD.										
DIVIDE HYD	121.83	1	11	.02445	65.04	2.721	2.08649	1.500	4.156	
	121.84	AND	12	.02445	65.04	2.721	2.08649	1.500	4.156	
ROUTE MCUNGE	121.81	11	2	.02445	60.11	2.697	2.06844	1.600	3.841	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.750
COMPUTE NM HYD	123.00	-	1	.01850	44.03	1.701	1.72356	1.500	3.719	PER IMP= 50.00
ADD HYD	123.90	1& 2	5	.04295	93.48	4.398	1.91987	1.550	3.401	
ROUTE MCUNGE	121.82	12	2	.02445	60.16	2.690	2.06322	1.600	3.845	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.750
COMPUTE NM HYD	122.00	-	1	.02250	53.55	2.068	1.72356	1.500	3.719	PER IMP= 50.00
ADD HYD	122.90	1& 2	3	.04695	100.95	4.759	1.90043	1.550	3.360	
RAINFALL TYPE= 2										RAIN24= 2.740
COMPUTE NM HYD	124.00	-	1	.02510	59.74	2.301	1.71856	1.500	3.719	PER IMP= 50.00
ADD HYD	124.91	3& 1	4	.07205	154.29	7.059	1.83707	1.550	3.346	
DIVIDE HYD	122.85	4	1	.06183	90.00	6.058	1.83707	1.450	2.274	
	124.92	AND	2	.01022	64.29	1.001	1.83707	1.550	9.833	
*S TOTAL OUTFLOW TO ALAMEDA FROM JEFFERSON VIA 36" STORM DRAIN.										
ROUTE MCUNGE	124.83	2	3	.01022	58.69	.966	1.77240	1.585	8.976	CCODE = .1
ADD HYD	124.91	5& 3	4	.05317	150.58	5.359	1.88982	1.585	4.425	
*S SUBTRACT FLOW INTERCEPTED BY 36" PIPE TO WATERCRESS CHANNEL										
DIVIDE HYD	123.81	4	1	.04179	70.00	4.212	1.88982	1.489	2.617	
	123.99	AND	2	.01138	80.58	1.147	1.88982	1.585	11.068	
ADD HYD	125.99	6& 1	3	.51459	1154.17	49.630	1.80834	1.539	3.505	
*S TOTAL FLOW AT ENTRANCE TO 96" PIPE										
ROUTE	125.88	3	1	.51459	1132.56	49.585	1.80670	1.550	3.439	
ADD HYD	127.91	1& 8	8	6.72259	4662.00	505.090	1.40875	1.615	1.084	
ADD HYD	127.92	2& 8	5	6.73397	4735.14	506.209	1.40949	1.615	1.099	
RAINFALL TYPE= 2										RAIN24= 2.690
COMPUTE NM HYD	128.00	-	1	.13730	318.30	14.604	1.99431	1.550	3.622	PER IMP= 70.00
ADD HYD	128.90	1& 5	5	6.87127	5000.52	519.794	1.41839	1.615	1.137	
*S LA CUEVA ARROYO TOTAL @ THE NORTH DIVERSION CHANNEL										
FINISH										

-(s0p10h4099T-&16D

LA CUEVA 10-YR FUTURE

←(s16.67h8.5v0T-&l8D
AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =06/30/1998
INPUT FILE = a:lcwyo10.fut USER NO.= RSTECHNM.STE

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.700
COMPUTE NM HYD	101.00	-	1	.60700	498.34	23.352	.72133	1.650	1.283	PER IMP= .00
ROUTE MCUNGE	101.80	1	2	.60700	465.97	23.106	.71372	1.950	1.199	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.800
COMPUTE NM HYD	100.00	-	1	1.21400	598.79	45.333	.70016	1.850	.771	PER IMP= .00
ROUTE MCUNGE	100.80	1	3	1.21400	582.68	45.134	.69708	2.150	.750	CCODE = .1
ADD HYD	101.88	3& 2	5	1.82100	963.69	68.239	.70263	2.000	.827	
RAINFALL TYPE= 2										RAIN24= 2.430
COMPUTE NM HYD	102.00	-	1	.87500	439.84	23.497	.50350	1.700	.785	PER IMP= .00
ADD HYD	102.90	1& 5	5	2.69600	1187.21	91.736	.63800	1.950	.688	
*S LA CUEVA TRIBUTARY ARROYO @ TRAMWAY BLVD. (102.9)										
ROUTE MCUNGE	102.80	5	2	2.69600	1173.65	91.522	.63651	2.100	.680	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.250
COMPUTE NM HYD	107.20	-	1	.17200	168.43	6.803	.74160	1.550	1.530	PER IMP= 17.00
ADD HYD	107.29	1& 2	4	2.86800	1198.71	98.325	.64281	2.100	.653	
*S NORTH LA CUEVA AT GLENDALE AND BROWNING (107.29)										
RAINFALL TYPE= 2										RAIN24= 2.330
COMPUTE NM HYD	102.10	-	1	.09300	60.53	1.622	.32704	1.500	1.017	PER IMP= .00
*S LA CUEVA TRIBUTARY @ TRAMWAY BLVD.										
ROUTE MCUNGE	102.18	1	2	.09300	51.38	1.502	.30282	1.800	.863	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.250
COMPUTE NM HYD	107.10	-	1	.18080	208.11	7.151	.74160	1.500	1.798	PER IMP= 17.00
ADD HYD	107.19	1& 2	5	.27380	208.11	8.653	.59256	1.500	1.188	
*S NORTH LA CUEVA (TRIB) AT FLORENCE AND BROWNING (107.19)										
ADD HYD	107.90	5& 4	3	3.14180	1235.84	106.978	.63843	2.100	.615	
RAINFALL TYPE= 2										RAIN24= 2.270
COMPUTE NM HYD	106.00	-	1	.04360	52.14	1.732	.74501	1.500	1.869	PER IMP= 17.00
ROUTE MCUNGE	106.80	1	2	.04360	45.40	1.684	.72416	1.750	1.627	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.230
COMPUTE NM HYD	106.10	-	1	.11160	126.34	4.342	.72952	1.500	1.769	PER IMP= 17.00
ADD HYD	106.19	1& 2	6	.15520	127.67	6.026	.72801	1.500	1.285	
*S LA CUEVA TRIBUTARY ARROYO @ BROWNING (106.19)										
ADD HYD	107.99	3& 6	5	3.29700	1261.04	113.004	.64265	2.100	.598	
ROUTE MCUNGE	107.80	5	2	3.29700	1259.79	113.072	.64304	2.150	.597	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.150
COMPUTE NM HYD	109.00	-	1	.10060	114.66	3.750	.69888	1.500	1.781	PER IMP= 17.00
ADD HYD	109.90	1& 2	5	3.39760	1268.50	116.822	.64469	2.150	.583	
RAINFALL TYPE= 2										RAIN24= 2.170
COMPUTE NM HYD	108.00	-	7	.20550	207.96	7.759	.70798	1.550	1.581	PER IMP= 17.00
ADD HYD	109.99	5& 7	5	3.60310	1290.69	124.581	.64830	2.150	.560	
*S LA CUEVA ARROYO @ EUBANK (MAIN) (109.99)										
ROUTE MCUNGE	109.88	5	2	3.60310	1270.89	124.213	.64639	2.300	.551	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.090
COMPUTE NM HYD	110.00	-	1	.16340	138.24	5.789	.66427	1.550	1.322	PER IMP= 17.00
ADD HYD	110.90	1& 2	5	3.76650	1282.60	130.002	.64716	2.300	.532	
*S LA CUEVA ARROYO @ VENTURA (MAIN) (110.90)- FINAL										
*S ROUTE TO BARSTOW										
ROUTE MCUNGE	110.88	5	2	3.76650	1280.09	129.323	.64378	2.321	.531	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.010
COMPUTE NM HYD	111.00	-	1	.05330	57.02	1.827	.64288	1.500	1.672	PER IMP= 17.00
COMPUTE NM HYD	111.40	-	4	.01410	15.09	.483	.64288	1.500	1.672	PER IMP= 17.00
*S COMBINE HYD.'S	111.0	AND	111.4	AS 111.49						
ADD HYD	111.49	1& 4	4	.06740	72.12	2.311	.64287	1.500	1.672	
*S ROUTE TO LA CUEVA CHANEL @ OAKLAND										
*S PIPE ROUTING										
ROUTE	111.48	4	5	.06740	70.85	2.311	.64288	1.550	1.642	
RAINFALL TYPE= 2										RAIN24= 2.020
COMPUTE NM HYD	111.10	-	1	.09690	104.64	3.981	.77030	1.500	1.687	PER IMP= 26.00
COMPUTE NM HYD	111.30	-	6	.04200	64.56	2.498	1.11532	1.500	2.402	PER IMP= 50.00
ADD HYD	111.39	1& 6	1	.13890	169.19	6.479	.87462	1.500	1.903	
*S COMBINE HYD.'S	111.48	AND	111.39	AS 111.88						
ADD HYD	111.88	1& 5	1	.20630	235.32	8.790	.79891	1.500	1.782	
*S LA CUEVA CHANNEL AT BARSTOW (111.89)-NOT FINAL										
ADD HYD	111.89	1& 2	5	3.97280	1292.41	137.966	.65114	2.321	.508	
*S DIVERSION FROM NDB ABOVE CARRINGTON										
COMPUTE NM HYD	924.10	-	6	.02500	38.43	1.487	1.11533	1.500	2.402	PER IMP= 50.00
COMPUTE NM HYD	924.20	-	7	.01900	29.21	1.130	1.11532	1.500	2.402	PER IMP= 50.00
*S COMBINE HYD.'S	924.10	AND	924.20	AS 924.22						

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
ADD HYD	924.22	6& 7	6	.04400	67.64	2.617	1.11531	1.500	2.402	
*S ROUTE TO BARSTOW IN ALAMEDA AS 924.28										
ROUTE	924.28	6	2	.04400	64.86	2.617	1.11533	1.550	2.303	
ADD HYD	111.99	5& 2	5	4.01680	1296.04	140.526	.65596	2.321	.504	
*S LA CUEVA MAIN AT BARSTOW 111.99 FINAL										
ROUTE MCUNGE	111.80	5	2	4.01680	1292.87	140.566	.65615	2.345	.503	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 1.970
COMPUTE NM HYD	112.10	-	1	.08940	129.98	5.152	1.08050	1.500	2.272	PER IMP= 50.00
COMPUTE NM HYD	112.20	-	3	.08260	120.22	4.760	1.08050	1.500	2.274	PER IMP= 50.00
*S COMBINE HYD.'S 112.1 AND 112.2 AS 112.8										
ADD HYD	112.80	1& 3	1	.17200	250.20	9.912	1.08050	1.500	2.273	
ADD HYD	112.90	1& 2	5	4.18880	1304.76	150.313	.67283	2.345	.487	
*S LA CUEVA ARROYO @ WYOMING (112.90)										
*S ADD IN EL CAMINO DIVERSION AT WYOMING										
RECALL HYD	204.90	-	15	1.07020	401.60	32.628	.57165	1.800	.586	
ADD HYD	112.91	5&15	5	5.25900	1534.52	182.579	.65095	2.311	.456	
ROUTE MCUNGE	112.80	5	2	5.25900	1526.79	181.979	.64881	2.378	.454	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.950
COMPUTE NM HYD	113.00	-	1	.10000	159.54	6.366	1.19357	1.500	2.493	PER IMP= 59.41
COMPUTE NM HYD	116.10	-	7	.10280	164.36	6.578	1.19981	1.500	2.498	PER IMP= 60.00
ADD HYD	113.80	1& 7	1	.20280	323.91	12.944	1.19673	1.500	2.496	
ADD HYD	113.90	1& 2	5	5.46180	1539.93	194.547	.66787	2.378	.441	
*S LA CUEVA MAIN ARROYO @ LOUISIANA (113.90)										
ROUTE MCUNGE	113.80	5	4	5.46180	1539.26	194.587	.66800	2.381	.440	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 1.900
COMPUTE NM HYD	115.00	-	3	.12020	189.15	7.581	1.18257	1.500	2.459	PER IMP= 62.00
ADD HYD	115.90	4& 3	5	5.58200	1546.90	202.189	.67915	2.381	.433	
*S LA CUEVA NORTH (MAIN) ARROYO @ I-25 (115.90)										
RECALL HYD	205.90	-	9	.39350	453.03	20.545	.97898	1.550	1.799	
ADD HYD	115.99	5& 9	5	5.97550	1715.52	222.751	.69895	1.852	.449	
ROUTE MCUNGE	115.80	5	2	5.97550	1713.16	220.441	.69170	1.858	.448	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 1.890
COMPUTE NM HYD	118.00	-	1	.06490	107.89	4.414	1.27523	1.500	2.598	PER IMP= 70.00
ADD HYD	118.90	1& 2	5	6.04040	1754.40	224.627	.69727	1.612	.454	
COMPUTE NM HYD	118.10	-	1	.03060	45.38	1.714	1.05011	1.500	2.317	PER IMP= 50.00
ADD HYD	118.99	1& 5	5	6.07100	1784.17	226.270	.69882	1.612	.459	
*S LA CUEVA NORTH (MAIN) ARROYO @ SAN MATEO										
ROUTE MCUNGE	118.80	5	2	6.07100	1780.57	224.506	.69338	1.611	.458	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 1.840
COMPUTE NM HYD	126.00	-	1	.07370	121.76	4.867	1.23815	1.500	2.581	PER IMP= 70.00
ADD HYD	126.90	1& 2	5	6.14470	1859.88	229.050	.69893	1.611	.473	
ROUTE MCUNGE	126.80	5	2	6.14470	1848.45	229.005	.69879	1.661	.470	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.800
COMPUTE NM HYD	127.00	-	1	.06330	102.87	4.070	1.20560	1.500	2.539	PER IMP= 70.00
ADD HYD	127.90	1& 2	8	6.20800	1901.18	232.856	.70329	1.661	.479	
*S NORTH LA CUEVA ARROYO AT APPROXIMATELY JEFFERSON ST.										
*S NOW BEGIN THE SOUTH LA CUEVA ARROYO EAST OF I-25										
RAINFALL TYPE= 2										
COMPUTE NM HYD	117.40	-	1	.05120	80.83	3.225	1.18115	1.500	2.467	RAIN24= 1.930
*S ROUTE in alameda to san pedro										PER IMP= 60.00
ROUTE	117.49	1	2	.05120	75.83	3.225	1.18116	1.550	2.314	
RAINFALL TYPE= 2										
COMPUTE NM HYD	117.30	-	1	.11720	167.85	6.536	1.04565	1.500	2.238	RAIN24= 1.930
ADD HYD	117.39	2& 1	3	.16840	238.31	9.761	1.08685	1.500	2.211	PER IMP= 50.00
*S TOTAL Q AT ALAMEDA & SAN PEDRO (117.39) WITHOUT PONDS										
COMPUTE NM HYD	117.50	-	1	.05500	95.92	3.907	1.33209	1.500	2.725	PER IMP= 70.00
*S TOTAL Q AT ALAMEDA INT (117.5)										
*S ROUTE IN SAN PEDRO FROM ALAMEDA TO OAKLAND (117.38)										
ROUTE	117.38	3	2	.16840	234.01	9.761	1.08685	1.550	2.171	
COMPUTE NM HYD	117.20	-	1	.05000	72.23	2.788	1.04565	1.500	2.257	PER IMP= 50.00
*S COMBINE HYDS 117.38 AND 117.2 AT OAKLAND (117.69)										
ADD HYD	117.39	2& 1	3	.21840	298.51	12.550	1.07741	1.550	2.136	
*S ROUTE FROM OAKLAND TO EAGLE ROCK (117.68)										
ROUTE	117.68	3	2	.21840	300.78	12.550	1.07742	1.550	2.152	
COMPUTE NM HYD	116.20	-	4	.07190	113.32	4.529	1.18116	1.500	2.463	PER IMP= 60.00
*S COMBINE HYDS 117.68 AND 116.2 AT EAGLE ROCK (116.29)										
ADD HYD	116.39	2& 4	3	.29030	401.44	17.079	1.10311	1.500	2.161	
DIVIDE HYD	117.25	3	6	.27849	325.00	16.384	1.10311	1.500	1.823	
	116.49	AND	7	.01181	76.44	.695	1.10311	1.500	10.111	
COMPUTE NM HYD	117.22	-	5	.01560	27.22	1.108	1.33209	1.500	2.726	PER IMP= 70.00
*S TOTAL Q TO WILDFLOWER DIVERSION AT I-25 (117.27)										
ADD HYD	117.27	5& 6	10	.29409	352.22	17.492	1.11525	1.500	1.871	

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	
ROUTE	117.98	7	2	.01181	76.30	.695	1.10376	1.550	10.093		
COMPUTE NM HYD	116.21	-	4	.03440	45.58	1.682	.91666	1.500	2.070	PER IMP=	40.00
ADD HYD	116.99	4& 2	5	.04621	117.34	2.377	.96446	1.550	3.967		
*S TOTAL Q AT I-25 & MODESTO (116.99)											
*S SOUTH LACUEVA ARROYO AT CONFLUENCE JUST WEST OF I-25 CROSSING											
ADD HYD	117.29	10& 5	5	.34030	466.30	19.869	1.09478	1.550	2.141		
ROUTE MCUNGE	117.28	5	2	.34030	458.71	19.020	1.04795	1.579	2.106	CCODE =	.2
RAINFALL TYPE= 2										RAIN24=	1.890
COMPUTE NM HYD	119.00	-	1	.05490	91.31	3.734	1.27523	1.500	2.599	PER IMP=	70.00
ADD HYD	119.90	1& 2	5	.39520	534.26	22.583	1.07146	1.551	2.112		
RAINFALL TYPE= 2										RAIN24=	1.880
COMPUTE NM HYD	120.00	-	1	.02680	44.20	1.810	1.26628	1.500	2.577	PER IMP=	70.00
ADD HYD	120.90	1& 5	5	.42200	573.01	24.311	1.08019	1.551	2.122		
ROUTE MCUNGE	120.80	5	2	.42200	567.51	24.160	1.07345	1.582	2.101	CCODE =	.2
RAINFALL TYPE= 2										RAIN24=	1.840
COMPUTE NM HYD	125.00	-	1	.05080	83.53	3.351	1.23688	1.500	2.569	PER IMP=	70.00
ADD HYD	125.90	1& 2	6	.47280	633.20	27.348	1.08456	1.555	2.093		
*S LA CUEVA ARROYO SOUTH BEFORE WILDFLOWER FLOWS JUST UPSTREAM OF 96" RCP											
COMPUTE NM HYD	121.00	-	1	.04890	80.40	3.226	1.23688	1.500	2.569	PER IMP=	70.00
*S WILDFLOWER ARROYO AT SAN MATEO BLVD.											
DIVIDE HYD	121.83	1	11	.02445	40.20	1.613	1.23688	1.500	2.569		
	121.84	AND	12	.02445	40.20	1.613	1.23688	1.500	2.569		
ROUTE MCUNGE	121.81	11	2	.02445	38.72	1.616	1.23920	1.600	2.474	CCODE =	.2
COMPUTE NM HYD	123.00	-	1	.01850	25.80	.974	.98695	1.500	2.179	PER IMP=	50.00
ADD HYD	123.90	1& 2	5	.04295	61.14	2.590	1.13052	1.550	2.224		
ROUTE MCUNGE	121.82	12	2	.02445	39.20	1.624	1.24538	1.600	2.505	CCODE =	.2
COMPUTE NM HYD	122.00	-	1	.02250	31.38	1.184	.98695	1.500	2.179	PER IMP=	50.00
ADD HYD	122.90	1& 2	3	.04695	66.47	2.808	1.12152	1.550	2.212		
COMPUTE NM HYD	124.00	-	1	.02510	35.00	1.321	.98695	1.500	2.179	PER IMP=	50.00
ADD HYD	124.91	3& 1	4	.07205	99.42	4.129	1.07463	1.500	2.156		
DIVIDE HYD	122.85	4	1	.07081	90.00	4.058	1.07463	1.500	1.986		
	124.92	AND	2	.00124	9.42	.071	1.07463	1.500	11.879		
*S TOTAL OUTFLOW TO ALAMEDA FROM JEFFERSON VIA 36" STORM DRAIN.											
ROUTE MCUNGE	124.83	2	3	.00124	5.69	.069	1.04706	1.650	7.175	CCODE =	.1
ADD HYD	124.91	5& 3	4	.04419	61.89	2.659	1.12817	1.550	2.188		
*S SUBTRACT FLOW INTERCEPTED BY 36" PIPE TO WATERCRESS CHANNEL											
DIVIDE HYD	123.81	4	1	.04419	61.89	2.659	1.12817	1.550	2.188		
	123.99	AND	2	.00000	.00	.000	.00000	-.050	.000		
ADD HYD	125.99	6& 1	3	.51699	694.84	29.887	1.08394	1.555	2.100		
*S TOTAL FLOW AT ENTRANCE TO 96" PIPE											
ROUTE	125.88	3	1	.51699	701.51	29.865	1.08312	1.550	2.120		
ADD HYD	127.91	1& 8	8	6.72499	2507.95	262.498	.73187	1.636	.583		
ADD HYD	127.92	2& 8	5	6.72499	2507.95	262.498	.73187	1.636	.583		
RAINFALL TYPE= 2										RAIN24=	1.790
COMPUTE NM HYD	128.00	-	1	.13730	193.62	8.777	1.19860	1.550	2.203	PER IMP=	70.00
ADD HYD	128.90	1& 5	5	6.86229	2661.73	270.815	.73996	1.611	.606		
*S LA CUEVA ARROYO TOTAL @ THE NORTH DIVERSION CHANNEL											
FINISH											

-(s0p10h4099T-&16D

North Domingo BACA 100-YR Existing

←(s16.67h8.5v0T-&l8D
AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =02/10/1998
INPUT FILE = a:nbac100.ext USER NO.= RSTECHNM.STE

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S 100-YR RETURN PERIOD, 24-HR STORM, FUTURE CONDITIONS										
*S MUSKINGUM-CUNGE CHANNEL ROUTING										
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 4.000
COMPUTE NM HYD	900.00	-	1	.44100	640.16	33.763	1.43550	1.700	2.268	PER IMP= .00
*S ROUTE HYD. 900 THROUGH 902.1 (900.8)										
ROUTE MCUNGE	900.80	1	2	.44100	625.07	33.593	1.42827	1.800	2.215	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.580
COMPUTE NM HYD	902.10	-	5	.08870	116.14	6.141	1.29815	1.600	2.046	PER IMP= 10.00
*S (902.91=NORTH BRANCH OF ARROYO AT JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.91	2& 5	2	.52970	709.60	39.734	1.40648	1.800	2.093	
RAINFALL TYPE= 2										RAIN24= 3.860
COMPUTE NM HYD	901.00	-	1	.11800	281.25	9.218	1.46480	1.500	3.724	PER IMP= .00
*S 20% AVULSION FROM SOUTH DOMINGO BACA WATERSHED SUB-BASIN 400.3										
RECALL HYD	400.30	-	15	.25500	620.57	19.788	1.45500	1.500	3.802	
DIVIDE HYD	400.61	15	15	.05100	124.11	3.958	1.45500	1.500	3.802	
	400.6SDB	AND	19	.20400	496.45	15.830	1.45500	1.500	3.802	
*S COMBINE 901 AND 20% AVULSION AS 901.1										
ADD HYD	901.10	1&15	1	.16900	405.36	13.176	1.46184	1.500	3.748	
*S ROUTE HYD. 901.1 THROUGH 902.2 (901.8)										
ROUTE MCUNGE	901.80	1	3	.16900	364.15	13.055	1.44840	1.700	3.367	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.580
COMPUTE NM HYD	902.20	-	5	.12200	161.86	8.447	1.29815	1.600	2.073	PER IMP= 10.00
*S (902.92=SOUTH BRANCH OF ARROYO AT JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.92	3& 5	3	.29100	514.87	21.502	1.38541	1.700	2.765	
*S (902.93=SUM OF FLOWS AT ARROYO JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.93	2& 3	1	.82070	1144.97	61.235	1.39901	1.750	2.180	
ROUTE MCUNGE	902.80	1	2	.82070	1141.81	61.208	1.39837	1.750	2.174	CCODE = .2
COMPUTE NM HYD	902.30	-	3	.07300	173.70	6.993	1.79608	1.500	3.718	PER IMP= 30.00
*S (902.99=TOTAL FLOW @ TRAMWAY FROM 902 SUBBASINS, 901, 900)										
ADD HYD	902.99	2& 3	1	.89370	1207.42	68.200	1.43086	1.750	2.111	
*S**********										
*S BEGIN: PRIMROSE POINTE DEVELOPMENT										
*S**********										
ROUTE MCUNGE	902.90	1	17	.89370	1199.05	68.190	1.43064	1.800	2.096	CCODE = .1
*S ROUTE 902.9 TO PRIMROSE POINTE CONCRETE CHANNEL AS 902.99										
ROUTE MCUNGE	902.99	17	16	.89370	1181.91	68.174	1.43030	1.800	2.066	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.650
COMPUTE NM HYD	906.00	-	12	.02368	58.73	2.476	1.96050	1.500	3.875	PER IMP= 35.00
ADD HYD	906.10	16&12	2	.91738	1200.71	70.650	1.44398	1.800	2.045	
*S ROUTE THRU THROUGH PRIMROSE POINTE TO LOWELL										
ROUTE MCUNGE	906.19	2	16	.91738	1174.76	70.507	1.44107	1.900	2.001	CCODE = .1
COMPUTE NM HYD	904.00	-	1	.04130	102.46	4.183	1.89923	1.500	3.876	PER IMP= 30.00
*S ROUTE HYDOGRAPH THRU POND NDB1										
ROUTE RESERVOIR	904.90	1	17	.04130	35.03	3.899	1.77023	1.800	1.325	AC-FT= 1.773
COMPUTE NM HYD	905.00	-	10	.00920	22.84	.932	1.89922	1.500	3.879	PER IMP= 30.00
*S ROUTE 905 HYDOGRAPH THRU POND NDB2										
ROUTE RESERVOIR	905.90	10	18	.00920	15.30	.839	1.71009	1.600	2.599	AC-FT= .296
*S BASIN 903.0										
COMPUTE NM HYD	903.00	-	2	.06405	158.75	6.488	1.89922	1.500	3.873	PER IMP= 30.00
*S POND 3 DISCHARGE TO THE NORTH DOMINGO BACA ARROYO										
ROUTE RESERVOIR	903.90	2	24	.06405	43.76	5.232	1.53165	1.850	1.068	AC-FT= 3.918
ADD HYD	906.29	24&18	26	.07325	52.56	6.071	1.55407	1.850	1.121	
ADD HYD	906.39	17&26	1	.11455	87.40	9.970	1.63201	1.850	1.192	
*S ********** TOTAL NORTH DOMINGO BACA FLOW AT LOWELL STREET **********										
ADD HYD	906.99	1&16	1	1.03193	1259.05	80.477	1.46226	1.900	1.906	
*S**********										
*S END: PRIMROSE POINTE DEVELOPMENT										
*S**********										
ROUTE MCUNGE	906.88	1	2	1.03193	1244.63	80.472	1.46216	2.000	1.885	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.350
COMPUTE NM HYD	910.21	-	1	.01370	21.87	.704	.96392	1.500	2.494	PER IMP= 5.00
ADD HYD	910.29	2& 1	5	1.04563	1247.20	81.176	1.45563	2.000	1.864	
RAINFALL TYPE= 2										RAIN24= 3.380
COMPUTE NM HYD	910.31	-	2	.15630	326.81	11.680	1.40110	1.500	3.267	PER IMP= 20.00
ADD HYD	910.90	5& 2	1	1.20193	1294.74	92.855	1.44854	2.000	1.683	
ROUTE MCUNGE	910.88	1	2	1.20193	1289.81	92.988	1.45060	2.000	1.677	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 3.330
COMPUTE NM HYD	912.11	-	3	.05900	94.77	3.224	1.02468	1.500	2.510	PER IMP= 10.00
*S N D B ARROYO BETWEEN BROWNING AND EUBANK (AP 912.95) - UNBULKED										

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
ADD HYD	912.95	3& 2	1	1.26093	1302.18	96.212	1.43067	2.000	1.614	
RAINFALL TYPE= 2										RAIN24= 3.330
COMPUTE NM HYD	912.21	-	2	.19600	321.78	11.549	1.10477	1.550	2.565	PER IMP= 10.00
ADD HYD	912.98	1& 2	15	1.45693	1348.83	107.761	1.38683	2.000	1.447	
RAINFALL TYPE= 2										RAIN24= 3.350
COMPUTE NM HYD	402.50	-	4	.02800	82.16	3.763	2.51978	1.500	4.585	PER IMP= 70.00
RAINFALL TYPE= 2										RAIN24= 3.330
COMPUTE NM HYD	402.60	-	5	.02430	70.94	3.243	2.50242	1.500	4.561	PER IMP= 70.00
*S COMBINE 402.5 AND 402.6 AS 402.9 (AT BROWNING)										
ADD HYD	402.90	4& 5	11	.05230	153.10	7.006	2.51170	1.500	4.574	
*S ROUTE 402.9 AS 402.8 IN 42-INCH SD TO END OF 915.2										
ROUTE	402.80	11	6	.05230	150.80	7.006	2.51171	1.500	4.505	
RAINFALL TYPE= 2										RAIN24= 3.250
COMPUTE NM HYD	915.20	-	2	.03700	57.51	1.949	.98762	1.500	2.429	PER IMP= 10.00
COMPUTE NM HYD	915.10	-	29	.03430	53.31	1.807	.98763	1.500	2.429	PER IMP= 10.00
ADD HYD	915.90	6& 2	11	.08930	208.31	8.955	1.88022	1.500	3.645	
*S ROUTE 915.9 AS 915.8 TO NDB DAM IN 54-INCH PIPE										
ROUTE	915.80	11	7	.08930	200.74	8.955	1.88023	1.550	3.512	
*S COMBINE HYD'S 912.98 AND 915.8 AS 912.99 (FLOW TO NDB DAM FROM PDN DRAIN)										
ADD HYD	912.99	15& 7	15	1.54623	1394.43	116.716	1.41533	2.000	1.409	
*S**********										
*S AP 105.9 IS FROM "LA CUEVA, EL CAMINO & NORTH CAMINO ARROYOS - DRAINAGE										
*S MANAGEMENT PLAN" (RESOURCE TECHNOLOGY, INC., 1996).										
*S FILENAME: LCDV100B.EXT										
*S**********										
*S AP 105.9 IS FROM LA CUEVA TRIBUTARY (DIVERTED TO UPPER N. D. B. DAM										
*S THROUGH LA CUEVA DIVERSION CHANNEL)										
RECALL HYD	105.90	-	17	1.17410	1245.48	79.791	1.27423	1.750	1.657	
ROUTE MCUNGE	105.80	17	2	1.17410	1244.13	79.796	1.27431	1.750	1.656	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 3.330
COMPUTE NM HYD	911.00	-	3	.05800	83.52	3.530	1.14108	1.550	2.250	PER IMP= 15.00
*S TOTAL INFLOW HYDROGRAPH INTO UPPER N.D.B. DAM. FROM LA CUEVA DIVERSION										
*S CHANNEL (HYD NO. 911.99) - UNBULKED										
ADD HYD	911.99	2& 3	1	1.23210	1288.13	83.325	1.26804	1.750	1.634	
*S TOTAL INFLOW HYDROGRAPH INTO UPPER N.D.B. DAM. (HYD NO. 914.79)										
*S (BULKED)										
ADD HYD	914.79	15& 1	1	2.77833	2426.66	200.042	1.35001	1.950	1.365	
*S ROUTING THROUGH UPPER NORTH DOMINGO BACA DAM										
*S										
*S THIS STORAGE OUTFLOW DATA WAS BASED ON TOPOGRAPHY IN JUNE 1994.										
*S OUTFLOW IS TAKEN FROM "DESIGN ANALYSIS REPORT FOR LA CUEVA DIVERSION										
*S CHANNEL" (RESOURCE TECHNOLOGY, INC., 1994). STORAGE INFORMATION WAS										
*S CALCULATED AT RTI. THE ELEVATION OF EMERGENCY SPILLWAY										
*S IS AT 5749.										
ROUTE RESERVOIR	914.99	1	2	2.77833	157.07	199.905	1.34909	3.150	.088	AC-FT= 155.992
*S UPPER N.D.B. DAM OUTFLOW HYDROGRAPH AT EUBANK. (HYD NO. 914.99)										
*S AP 914.99 IS THROUGH THE PRINCIPAL SPILLWAY										
*S AP NDB.SPILL IS THROUGH THE EMERGENCY SPILLWAY										
DIVIDE HYD	914.99	2	2	2.77833	157.07	199.905	1.34909	3.150	.088	
	NDB.SPILL	AND	20	.00000	.00	.000	.00000	-.050	.000	
ROUTE MCUNGE	914.68	2	3	2.77833	157.07	199.896	1.34903	3.200	.088	CCODE = .2
ROUTE	SPILL.ROU	20	19	.00000	.00	.000	.00000	-.050	.000	
RAINFALL TYPE= 2										RAIN24= 3.200
COMPUTE NM HYD	914.20	-	1	.03500	66.39	2.212	1.18478	1.500	2.964	PER IMP= 10.00
*S UNDBD DAM SPILL AT EUBANK (AP 914.29)										
ADD HYD	914.29	1&19	1	.03500	66.39	2.212	1.18477	1.500	2.964	
ROUTE MCUNGE	914.28	1	2	.03500	61.20	2.212	1.18479	1.650	2.732	CCODE = .1
*S N D B ARROYO BETWEEN EUBANK AND HOLBROOK										
*S (AP 914.78)										
ADD HYD	914.78	2& 3	2	2.81333	172.03	202.107	1.34698	1.700	.096	
ROUTE MCUNGE	914.88	2	3	2.81333	167.64	202.082	1.34681	1.850	.093	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.150
COMPUTE NM HYD	919.10	-	1	.07900	142.38	4.487	1.06496	1.500	2.816	PER IMP= 5.00
*S N D B ARROYO HOLBROOK (HYD NO. 919.19) - FINAL										
ADD HYD	919.19	1& 3	1	2.89233	203.64	206.569	1.33912	1.800	.110	
*S BETWEEN HOLBROOK AND VENTURA (AP 919.18) - NOT FINAL										
ROUTE MCUNGE	919.18	1	5	2.89233	202.09	206.543	1.33895	1.850	.109	CCODE = .2
*S ROUTE 915.1 TO HOLBROOK THRU 919.2 AS 915.18										
ROUTE MCUNGE	915.18	29	7	.03430	47.82	1.807	.98763	1.750	2.178	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.150
COMPUTE NM HYD	919.20	-	1	.06100	100.60	3.178	.97669	1.500	2.577	PER IMP= 5.00
ADD HYD	919.28	7& 1	1	.09530	105.36	4.984	.98062	1.550	1.727	
*S HOLBROOK (HYD NO. 919.28)-FINAL										
*S ROUTE AP 919.2 TO RP 919.27										

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	
ROUTE MCUNGE	919.27	1	3	.09530	104.88	4.984	.98063	1.600	1.720	CCODE =	.1
ROUTE MCUNGE	919.28	3	2	.09530	102.24	4.984	.98063	1.750	1.676	CCODE =	.1
*S N D B ARROYO BETWEEN HOLBROOK AND VENTURA. (AP 919.38) - NOT FINAL											
ADD HYD	919.38	2& 5	6	2.98763	297.04	211.527	1.32752	1.800	.155		
RAINFALL TYPE= 2										RAIN24=	3.100
COMPUTE NM HYD	921.30	-	7	.02840	42.42	1.418	.93639	1.500	2.334	PER IMP=	10.00
RAINFALL TYPE= 2										RAIN24=	3.200
COMPUTE NM HYD	913.20	-	1	.01700	27.83	.919	1.01321	1.500	2.558	PER IMP=	10.00
ROUTE MCUNGE	913.18	1	2	.01700	23.51	.911	1.00464	1.800	2.160	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	3.150
COMPUTE NM HYD	918.00	-	1	.11400	113.10	6.050	.99514	1.650	1.550	PER IMP=	10.00
*S HOLBROOK (AP 918.99) - FINAL											
ADD HYD	918.99	1& 2	1	.13100	122.15	6.961	.99636	1.700	1.457		
ROUTE MCUNGE	918.88	1	2	.13100	119.88	6.940	.99337	1.800	1.430	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	3.100
COMPUTE NM HYD	921.10	-	1	.02920	43.61	1.458	.93639	1.500	2.334	PER IMP=	10.00
*S UPSTREAM OF END OF VINYARD ESTATES SUBDIVISION UNIT IV BETWEEN											
*S HOLBROOK & VENTURA											
*S ANAHEIM (AP 921.19) - FINAL											
ADD HYD	921.19	1& 2	1	.16020	131.96	8.399	.98298	1.800	1.287		
*S **********											
*S BEGIN: VINYARD ESTATES - UNIT IV											
*S **********											
*S ROUTE 921.19											
*S (48-INCH RCP)											
ROUTE	921.80	1	12	.16020	132.16	8.399	.98298	1.800	1.289		
*S (54-INCH RCP)											
ROUTE	921.89	12	16	.16020	132.32	8.399	.98298	1.800	1.291		
*S COMBINE 921.89 & 921.3 AS 921.98											
ADD HYD	921.98	16& 7	14	.18860	146.39	9.817	.97596	1.750	1.213		
ROUTE RESERVOIR	921.99	14	15	.18860	118.11	6.724	.66844	1.950	.979	AC-FT=	4.011
*S **********											
*S END: VINYARD ESTATES - UNIT IV											
*S **********											
*S N D B ARROYO BETWEEN HOLBROOK & VENTURA (AP 921.78) - FINAL											
ADD HYD	921.78	6&15	1	3.17623	402.87	218.250	1.28838	1.900	.198		
ROUTE MCUNGE	921.80	1	2	3.17623	399.35	218.244	1.28834	1.950	.196	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	3.070
COMPUTE NM HYD	921.20	-	1	.08740	134.09	4.415	.94707	1.500	2.397	PER IMP=	10.00
*S N D B ARROYO AT VENTURA (AP 921.9) - NOT FINAL											
ADD HYD	921.90	1& 2	26	3.26363	418.92	222.658	1.27920	1.950	.201		
RAINFALL TYPE= 2										RAIN24=	3.250
COMPUTE NM HYD	913.10	-	1	.03600	52.68	1.688	.87916	1.500	2.287	PER IMP=	5.00
ROUTE MCUNGE	913.88	1	2	.03600	46.53	1.688	.87916	1.800	2.020	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	3.150
COMPUTE NM HYD	917.00	-	1	.04060	58.42	1.863	.86049	1.500	2.248	PER IMP=	5.00
*S HOLBROOK (AP 917.99) - FINAL											
ADD HYD	917.99	1& 2	1	.07660	66.30	3.551	.86926	1.750	1.352		
ROUTE MCUNGE	917.88	1	2	.07660	65.96	3.551	.86927	1.850	1.345	CCODE =	.2
RAINFALL TYPE= 2										RAIN24=	3.100
COMPUTE NM HYD	920.10	-	1	.02020	31.87	1.058	.98186	1.500	2.465	PER IMP=	10.00
*S INTO VINEYARD ESTATES SUBDIVISION UNIT IV AT NORTH END											
*S BETWEEN HOLBROOK AND VENTURA (AP 920.19) - FINAL (UNBULKED)											
ADD HYD	920.19	2& 1	1	.09680	86.13	4.609	.89275	1.600	1.390		
RAINFALL TYPE= 2										RAIN24=	3.100
COMPUTE NM HYD	920.00	-	5	.04310	58.97	2.152	.93639	1.500	2.138	PER IMP=	10.00
*S INTO VINEYARD ESTATES SUBDIVISION UNIT IV AT EAST (NORTH END)											
*S BETWEEN HOLBROOK AND VENTURA (AP 920) - FINAL (UNBULKED)											
*S **********											
*S BEGIN: VINYARD ESTATES - UNIT IV											
*S **********											
RAINFALL TYPE= 2										RAIN24=	3.030
COMPUTE NM HYD	922.10	-	2	.00700	11.18	.394	1.05631	1.500	2.496	PER IMP=	17.00
COMPUTE NM HYD	923.00	-	12	.00700	11.32	.370	.99230	1.500	2.526	PER IMP=	10.00
COMPUTE NM HYD	922.20	-	9	.01480	35.69	1.396	1.76805	1.500	3.767	PER IMP=	40.00
COMPUTE NM HYD	922.30	-	16	.04150	100.03	3.913	1.76805	1.500	3.766	PER IMP=	40.00
*S COMBINE 920.1 + 922.1 AS 922.19											
ADD HYD	922.19	1& 2	3	.10380	94.57	5.003	.90378	1.600	1.424		
*S ROUTE 920 TO POND AS 920.8											
ROUTE MCUNGE	920.80	5	4	.04310	58.82	2.150	.93541	1.550	2.133	CCODE =	.1
*S ROUTE 922.19 THRU POND AS 920.88											
ROUTE RESERVOIR	920.88	3	7	.10380	42.57	5.003	.90378	2.050	.641	AC-FT=	2.296
*S ADD 920.88 920.8 AS 920.9 (POND Q + 920)											

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	
ADD HYD	920.90	4& 7	7	.14690	78.57	7.153	.91305	1.600	.836		
*S ROUTE POND DISCHARGE & 920 THRU 30" PIPE AS 920.98											
ROUTE	920.98	7	8	.14690	77.82	7.153	.91305	1.600	.828		
*S ADD 922.2 + 920.98 AS 922.28											
ADD HYD	922.28	8& 9	10	.16170	103.26	8.549	.99130	1.600	.998		
*S Route 922.28 flows to Ventura Interceptor AS 922.29											
ROUTE	922.29	10	11	.16170	103.02	8.549	.99130	1.600	.995		
*S Route 923 flows to 48" Ventura Line AS 923.8											
ROUTE	923.80	12	13	.00700	11.29	.370	.99238	1.500	2.519		
*S ADD 923.8 + 922.29 AS 923.9											
ADD HYD	923.90	11&13	14	.16870	111.89	8.919	.99134	1.600	1.036		
*S ROUTE 923.9 TO MAIN POND AS 923.91											
ROUTE	923.91	14	15	.16870	112.43	8.919	.99134	1.600	1.041		
*S Total flows entering main pond											
*S ADD 923.91 + 923.3 AS 923.92											
ADD HYD	923.92	16&15	17	.21020	200.77	12.833	1.14469	1.550	1.492		
*S ROUT 923.92 THRU POND AS 923.99											
ROUTE RESERVOIR	923.99	17	18	.21020	79.80	12.613	1.12509	2.000	.593	AC-FT=	4.312
*S**********											
*S END: VINYARD ESTATES - UNIT IV											
*S**********											
*S N D B ARROYO AT VENTURA (AP 921.99) - FINAL											
ADD HYD	921.99	18&26	1	3.47383	498.57	235.271	1.26988	1.950	.224		
DIVIDE HYD	950.00	1	18	1.14636	164.53	77.639	1.26988	1.950	.224		
	951.00	AND	26	2.32747	334.04	157.632	1.26988	1.950	.224		
RAINFALL TYPE= 2										RAIN24=	3.030
COMPUTE NM HYD	926.10	-	3	.01200	24.21	.836	1.30669	1.500	3.153	PER IMP=	17.71
*S LA CUEVA SUBDIVISION (AP 926.1) - FINAL											
ROUTE RESERVOIR	926.18	3	2	.01200	6.92	.681	1.06334	1.800	.901	AC-FT=	.473
*S N D B ARROYO AT ~400 FT WEST OF VENTURA. (HYD NO. 926.19) - FINAL											
ADD HYD	926.19	1& 2	1	3.48583	505.07	235.952	1.26917	1.950	.226		
ROUTE MCUNGE	926.17	1	2	3.48583	494.99	235.934	1.26907	2.150	.222	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	3.000
COMPUTE NM HYD	926.00	-	1	.03750	72.25	2.624	1.31188	1.500	3.011	PER IMP=	25.00
*S N D B ARROYO AT BARSTOW. (AP 926.79) - NOT FINAL											
ADD HYD	926.79	1& 2	11	3.52333	501.43	238.558	1.26953	2.150	.222		
RAINFALL TYPE= 2										RAIN24=	3.030
COMPUTE NM HYD	925.20	-	1	.01400	17.65	.536	.71846	1.500	1.970	PER IMP=	2.00
ROUTE MCUNGE	925.27	1	3	.01400	16.37	.531	.71141	1.600	1.827	CCODE =	.1
COMPUTE NM HYD	925.10	-	1	.06400	162.00	6.547	1.91802	1.500	3.955	PER IMP=	50.00
*S COMBINE 925.1 & 925.27 AS 925.18 (VINYARD FLOW TO APS SITE)											
ADD HYD	925.18	1& 3	1	.07800	168.77	7.078	1.70144	1.500	3.381		
*S (925.19=4-FOOT STORM SEWER ROUTING)											
ROUTE	925.19	1	2	.07800	164.62	7.078	1.70145	1.500	3.298		
COMPUTE NM HYD	925.40	-	4	.03700	96.45	3.887	1.96954	1.500	4.073	PER IMP=	50.00
*S INFLOW INTO DETENTION POND AT BARSTOW IN VINEYARD ESTATES											
*S (AP 925.48) - FINAL											
ADD HYD	925.48	2& 4	15	.11500	261.07	10.965	1.78769	1.500	3.547		
RAINFALL TYPE= 2										RAIN24=	3.030
COMPUTE NM HYD	922.00	-	1	.02100	32.59	1.398	1.24859	1.550	2.425	PER IMP=	15.00
ROUTE MCUNGE	922.80	1	2	.02100	31.14	1.391	1.24223	1.650	2.317	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	3.030
COMPUTE NM HYD	924.10	-	1	.01900	24.11	.733	.72328	1.500	1.983	PER IMP=	2.00
*S INTO DETENTION POND JUST UPSTREAM OF CARRINGTON SUBDIVISION											
*S (AP 924.19) - (UNBULKED)											
ADD HYD	924.19	1& 2	1	.04000	46.43	2.124	.99571	1.600	1.814		
*S THE FOLLOWING DETENTION POND INFORMATION WAS CALCULATED BY RTI USING THE											
*S DESIGN DATA IN GRADING & DRAINAGE PLAN FOR CARRINGTON SUBDIVISION											
*S (COMMUNITY SCIENCES CORPORATION, 1992)											
ROUTE RESERVOIR	924.18	1	3	.04000	3.73	2.124	.99564	2.450	.146	AC-FT=	1.851
ROUTE MCUNGE	924.17	3	2	.04000	3.72	2.124	.99544	2.700	.145	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	2.980
COMPUTE NM HYD	924.20	-	1	.00700	10.16	.335	.89814	1.500	2.267	PER IMP=	10.00
ROUTE MCUNGE	924.28	1	4	.00700	9.33	.330	.88389	1.650	2.082	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	3.000
COMPUTE NM HYD	924.30	-	1	.02700	68.50	2.753	1.91154	1.500	3.964	PER IMP=	50.00
*S CARRINGTON SUBDIVISION (AP 924.3)											
COMPUTE NM HYD	924.40	-	7	.01720	26.21	.862	.93974	1.500	2.381	PER IMP=	10.00
*S TOTAL CARRINGTON DISCHARGE (AP 924.38) - FINAL											
ADD HYD	924.38	1& 2	3	.06700	68.50	4.876	1.36461	1.500	1.598		
*S TOTAL BARSTOW Q NORTH OF CARRINGTON (AP 924.48) - FINAL											
ADD HYD	924.48	7& 4	4	.02420	29.41	1.192	.92355	1.550	1.899		
*S TOTAL BARSTOW @ CARRINGTON (AP 924.99) - FINAL											

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	
ADD HYD	924.99	4& 3	5	.09120	95.81	6.068	1.24758	1.500	1.642		
*S AP 924.91 INTO STORM SEWER											
*S AP 924.92 INTO BARSTOW											
DIVIDE HYD	924.91	5	3	.06333	20.00	4.214	1.24758	1.350	.493		
	924.92	AND	4	.02787	75.81	1.854	1.24758	1.500	4.251		
*S (924.81=24-INCH STORM SEWER ROUTING)											
ROUTE	924.81	3	2	.06333	21.11	4.214	1.24757	2.100	.521		
COMPUTE NM HYD	925.30	-	1	.01050	26.43	1.063	1.89760	1.500	3.933	PER IMP=	50.00
*S COMBINE CARRINGTON FLOW WITH VINYARD FLOW 925.3 + 924.81 AS 925.38											
ADD HYD	925.38	1& 2	5	.07383	46.00	5.277	1.34001	1.500	.973		
ROUTE	924.81	5	2	.07383	45.19	5.277	1.34001	1.500	.956		
*S BARSTOW SD WITH VINYARD SD FLOW AT POND											
ADD HYD	925.38	15& 2	5	.18883	306.26	16.241	1.61265	1.500	2.534		
ADD HYD	925.39	5& 4	5	.21670	382.07	18.095	1.56570	1.500	2.755		
*S (DETENTION POND AT BARSTOW AT APS MS)											
ROUTE RESERVOIR	925.85	5	2	.21670	176.89	18.095	1.56567	1.750	1.275	AC-FT=	6.631
ADD HYD	926.99	2&11	5	3.74003	601.12	256.653	1.28669	2.100	.251		
*S N D B ARROYO AT BARTSOW (AP 926.99) - FINAL											
ROUTE MCUNGE	926.70	5	3	3.74003	599.24	256.647	1.28666	2.150	.250	CCODE =	.2
ROUTE MCUNGE	926.80	3	5	3.74003	598.97	256.680	1.28682	2.150	.250	CCODE =	.2
COMPUTE NM HYD	932.40	-	3	.05740	150.03	6.135	2.00401	1.500	4.084	PER IMP=	55.00
RAINFALL TYPE= 2										RAIN24=	2.960
COMPUTE NM HYD	930.00	-	1	.08500	211.88	8.468	1.86790	1.500	3.895	PER IMP=	50.00
*S N D B ARROYO AT WYOMING (AP 930.59) -											
ADD HYD	930.59	1& 3	1	.14240	361.91	14.603	1.92276	1.500	3.971		
*S N D B ARROYO AT WYOMING (AP 930.99) - FINAL											
ADD HYD	930.99	1& 5	1	3.88243	635.92	271.283	1.31015	2.150	.256		
ROUTE MCUNGE	930.80	1	12	3.88243	631.33	271.094	1.30924	2.200	.254	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	2.950
COMPUTE NM HYD	935.00	-	14	.11000	151.68	4.640	.79087	1.500	2.154	PER IMP=	5.00
ADD HYD	930.85	14&12	13	3.99243	641.74	275.734	1.29495	2.150	.251		
*S**********											
*S BEGIN: WYOMING STORM DRAIN											
*S**********											
COMPUTE NM HYD	929.00	-	4	.02400	65.77	2.752	2.14971	1.500	4.282	PER IMP=	65.00
COMPUTE NM HYD	931.00	-	1	.06050	104.39	6.185	1.91693	1.650	2.696	PER IMP=	55.00
*S NO POND AT LA CUEVA HIGH SCHOOL											
ADD HYD	931.80	4& 1	1	.08450	149.28	8.937	1.98303	1.550	2.760		
COMPUTE NM HYD	932.10	-	4	.00730	19.08	.766	1.96752	1.500	4.083	PER IMP=	55.00
*S CHURCH (AP 932.1)											
*S WYOMING AND WILSHIRE (AP 931.99)											
ADD HYD	931.99	4& 1	1	.09180	165.98	9.703	1.98179	1.550	2.825		
*S (931.98=5-FOOT PIPE ROUTING)											
ROUTE	931.98	1	3	.09180	165.26	9.703	1.98180	1.550	2.813		
COMPUTE NM HYD	932.20	-	1	.00730	18.89	.766	1.96752	1.500	4.043	PER IMP=	55.00
ADD HYD	932.80	3& 1	1	.09910	182.05	10.469	1.98074	1.550	2.870		
*S AT CORONA W/O CORONA Q											
COMPUTE NM HYD	932.30	-	2	.03130	80.93	3.284	1.96752	1.500	4.040	PER IMP=	55.00
*S EXISTING POND AT NORESTE BETWEEN CORONA AND ANAHEIM											
ROUTE RESERVOIR	932.84	2	5	.03130	8.98	3.276	1.96261	2.150	.448	AC-FT=	2.156
*S COMBINED POND AND WYOMING STORM DRAIN FLOW (AP 932.99)											
ADD HYD	932.99	1& 5	10	.13040	187.75	13.745	1.97639	1.550	2.250		
*S**********											
*S END: WYOMING STORM DRAIN											
*S**********											
ROUTE MCUNGE	932.81	10	2	.13040	181.03	13.745	1.97633	1.700	2.169	CCODE =	.1
COMPUTE NM HYD	934.10	-	1	.04680	107.84	4.148	1.66192	1.500	3.600	PER IMP=	40.00
ADD HYD	934.99	1& 2	3	.17720	230.58	17.893	1.89329	1.700	2.033		
*S LNDBDD INFLOW HYDROGRAPH (AP 930.84) - NOT FINAL											
ADD HYD	930.84	3&13	11	4.16963	750.67	293.627	1.32038	2.050	.281		
COMPUTE NM HYD	937.00	-	1	.03520	51.06	1.680	.89462	1.500	2.267	PER IMP=	10.00
*S TOTAL DAM INFLOW HYDROGRAPH (AP 930.86)-FINAL											
ADD HYD	930.86	1&11	11	4.20483	756.57	295.307	1.31682	2.050	.281		

*S

*S LOWER NORTH DOMINGO BACA DETENTION DAM
*S LOW FLOW OUTLET (PRINCIPLE SPILLWAY). THIS PRINCIPLE SPILLWAY JOINS
*S ONE OF THE FOUR BOX CULVERTS AT THE I-25. IT ALSO PICKS UP FLOWS FROM
*S SUB-BASINS 940.2, 939.16, 939.14 & 943.1. THE FLOWS FROM SUB-BASINS
*S 939.14 AND 943.1 ARE INCLUDED BY SAD221 PROJECT WHICH IS ALREADY
*S IN PLACE. THE FOLLOWING RATING CURVE IS FOR A 40-INCH ORIFICE PLATE.
*S EMERGENCY SPILLWAY IS NOT USED IN THE FOLLOWING RATING CURVE.
*S

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
ROUTE RESERVOIR	930.87	11	12	4.20483	181.28	295.307	1.31682	5.400	.067	AC-FT= 66.227
*S LNDBAD DAM OUTFLOW HYDROGRAPH (AP 930.87)										
RAINFALL TYPE= 2										RAIN24= 2.850
COMPUTE NM HYD	960.00	-	1	.00750	18.46	.727	1.81681	1.500	3.845	PER IMP= 50.00
*S STORM DRAIN OUT OF LNDBD DAM AT LOUISIANA BLVD. (AP 930.89)										
ADD HYD	930.89	1&12	12	4.21233	181.36	296.034	1.31771	5.400	.067	
COMPUTE NM HYD	940.20	-	1	.01560	37.64	1.486	1.78583	1.500	3.770	PER IMP= 50.00
COMPUTE NM HYD	939.16	-	3	.01280	30.89	1.219	1.78582	1.500	3.770	PER IMP= 50.00
ADD HYD	940.26	1& 3	3	.02840	68.53	2.705	1.78580	1.500	3.770	
*S AT THE END OF LA CUEVA OESTE PHASE 1, IN STORM DRAIN PIPE (AP 939.88)										
*S (UNBULKED)										
ADD HYD	939.88	12& 3	12	4.24073	187.85	298.739	1.32085	1.500	.069	
*S STORM DRAIN PIPE FROM THE END OF LA CUEVA OESTE PHASE 1 TILL SAN PEDRO										
*S BENEATH ANAHEIM AVE -- TWO REACHES										
*S RCP DIA=4 FT TO 940.0 OUTFALL										
*S (939.78=4-FOOT PIPE ROUTING)										
ROUTE	939.78	12	15	4.24073	188.38	298.730	1.32081	1.550	.069	
COMPUTE NM HYD	940.00	-	1	.01410	34.02	1.343	1.78583	1.500	3.770	PER IMP= 50.00
ADD HYD	939.68	15& 1	15	4.25483	218.75	300.073	1.32235	1.550	.080	
*S RCP DIA=4 FT TO SAN PEDRO										
ROUTE	939.58	15	16	4.25483	220.40	300.069	1.32233	1.550	.081	
*S STORM DRAIN PIPE FROM SAN PEDRO TO UTE DR. BENEATH ANAHEIM AVE.										
*S (939.48=RCP DIA=4 FT)										
ROUTE	939.48	16	14	4.25483	219.00	300.065	1.32231	1.550	.080	
COMPUTE NM HYD	939.14	-	1	.01120	29.58	1.203	2.01454	1.500	4.127	PER IMP= 60.00
COMPUTE NM HYD	943.10	-	3	.01200	31.97	1.322	2.06603	1.500	4.162	PER IMP= 65.00
*S STORM DRAIN BENEATH ANAHEIM AT UTE (AP 943.18)										
ADD HYD	943.18	1& 3	3	.02320	61.55	2.526	2.04114	1.500	4.145	
*S STORM DRAIN FLOW AT I-25 (AP 943.19)										
ADD HYD	943.19	3&14	3	4.27803	273.42	302.590	1.32621	1.550	.100	
COMPUTE NM HYD	940.10	-	1	.00700	18.82	.791	2.11965	1.500	4.202	PER IMP= 70.00
ROUTE MCUNGE	940.80	1	6	.00700	18.75	.791	2.11970	1.600	4.185	CCODE = .2
COMPUTE NM HYD	943.20	-	1	.01300	17.86	.582	.83952	1.500	2.147	PER IMP= 10.00
*S OVERLAND FLOW AT I-25 (AP 943.29)										
ADD HYD	943.29	1& 6	5	.02000	33.52	1.373	1.28754	1.550	2.619	
*S TOTAL NDB Q AT I-25 BOX CULVERT (943.98)										
ADD HYD	943.98	5& 3	9	4.29803	306.94	303.963	1.32603	1.550	.112	
*S CORONA SD SYSTEM										
COMPUTE NM HYD	942.20	-	1	.10310	212.49	9.227	1.67810	1.550	3.220	PER IMP= 45.00
*S (ROUTE IN SD DIA=4 FT)										
ROUTE	942.29	1	5	.10310	213.70	9.227	1.67810	1.550	3.239	
COMPUTE NM HYD	942.10	-	2	.04690	108.16	4.197	1.67810	1.500	3.603	PER IMP= 45.00
*S TOTAL Q AT CORONADO MH PARK (943.99)										
ADD HYD	943.99	2& 9	3	4.34493	407.26	308.161	1.32983	1.500	.146	
FINISH										

←(s0p10h4099T←&16D

North Domingo Baca 10-yr Existing

←(s16.67h8.5v0T←&18D
AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =02/11/1998
INPUT FILE = a:nbac10.ext USER NO.= RSTECHNM.STE

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S 10-YR RETURN PERIOD, 24-HR STORM, EXISTING CONDITIONS										
*S MUSKINGUM-CUNGE CHANNEL ROUTING										
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.670
COMPUTE NM HYD	900.00	-	1	.44100	328.97	17.063	.72545	1.700	1.166	PER IMP= .00
*S ROUTE HYD. 900 THROUGH 902.1 (900.8)										
ROUTE MCUNGE	900.80	1	2	.44100	320.94	16.998	.72271	1.850	1.137	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.390
COMPUTE NM HYD	902.10	-	5	.08870	56.10	2.878	.60832	1.600	.988	PER IMP= 10.00
*S (902.91=NORTH BRANCH OF ARROYO AT JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.91	2& 5	2	.52970	352.97	19.876	.70356	1.850	1.041	
RAINFALL TYPE= 2										RAIN24= 2.570
COMPUTE NM HYD	901.00	-	1	.11800	165.92	4.570	.72623	1.500	2.197	PER IMP= .00
*S 20% AVULSION FROM SOUTH DOMINGO BACA WATERSHED SUB-BASIN 400.3										
RECALL HYD	400.30	-	15	.25500	348.72	9.922	.72958	1.500	2.137	
DIVIDE HYD	400.61	15	15	.05100	69.74	1.984	.72957	1.500	2.137	
	400.6SDB	AND	19	.20400	278.98	7.938	.72957	1.500	2.137	
*S COMBINE 901 AND 20% AVULSION AS 901.1										
ADD HYD	901.10	1&15	1	.16900	235.66	6.555	.72724	1.500	2.179	
*S ROUTE HYD. 901.1 THROUGH 902.2 (901.8)										
ROUTE MCUNGE	901.80	1	3	.16900	203.55	6.482	.71913	1.700	1.882	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.390
COMPUTE NM HYD	902.20	-	5	.12200	77.32	3.958	.60832	1.600	.990	PER IMP= 10.00
*S (902.92=SOUTH BRANCH OF ARROYO AT JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.92	3& 5	3	.29100	274.14	10.440	.67267	1.700	1.472	
*S (902.93=SUM OF FLOWS AT ARROYO JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.93	2& 3	1	.82070	579.31	30.316	.69260	1.750	1.103	
ROUTE MCUNGE	902.80	1	2	.82070	575.74	30.305	.69235	1.850	1.096	CCODE = .2
COMPUTE NM HYD	902.30	-	3	.07300	98.65	3.816	.98008	1.500	2.111	PER IMP= 30.00
*S (902.99=TOTAL FLOW @ TRAMWAY FROM 902 SUBBASINS, 901, 900)										
ADD HYD	902.99	2& 3	1	.89370	601.47	34.120	.71585	1.800	1.052	
*S**********										
*S BEGIN: PRIMROSE POINTE DEVELOPMENT										
*S**********										
ROUTE MCUNGE	902.90	1	17	.89370	599.92	34.113	.71569	1.850	1.049	CCODE = .1
*S ROUTE 902.9 TO PRIMROSE POINTE CONCRETE CHANNEL AS 902.99										
ROUTE MCUNGE	902.99	17	16	.89370	597.11	34.100	.71542	1.850	1.044	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.430
COMPUTE NM HYD	906.00	-	12	.02368	34.64	1.391	1.10124	1.500	2.286	PER IMP= 35.00
ADD HYD	906.10	16&12	2	.91738	605.20	35.491	.72538	1.850	1.031	
*S ROUTE THRU THROUGH PRIMROSE POINTE TO LOWELL										
ROUTE MCUNGE	906.19	2	16	.91738	592.23	35.438	.72431	1.950	1.009	CCODE = .1
COMPUTE NM HYD	904.00	-	1	.04130	60.83	2.315	1.05117	1.500	2.301	PER IMP= 30.00
*S ROUTE HYDOGRAPH THRU POND NDB1										
ROUTE RESERVOIR	904.90	1	17	.04130	24.10	2.113	.95949	1.700	.912	AC-FT= .953
COMPUTE NM HYD	905.00	-	10	.00920	13.56	.516	1.05117	1.500	2.303	PER IMP= 30.00
*S ROUTE 905 HYDOGRAPH THRU POND NDB2										
ROUTE RESERVOIR	905.90	10	18	.00920	6.89	.467	.95141	1.650	1.171	AC-FT= .226
*S BASIN 903.0										
COMPUTE NM HYD	903.00	-	2	.06405	94.20	3.591	1.05117	1.500	2.298	PER IMP= 30.00
*S POND 3 DISCHARGE TO THE NORTH DOMINGO BACA ARROYO										
ROUTE RESERVOIR	903.90	2	24	.06405	2.00	2.613	.76483	2.600	.049	AC-FT= 2.731
ADD HYD	906.29	24&18	26	.07325	8.10	3.079	.78826	1.650	.173	
ADD HYD	906.39	17&26	1	.11455	32.19	5.193	.84999	1.700	.439	
*S ********** TOTAL NORTH DOMINGO BACA FLOW AT LOWELL STREET **********										
ADD HYD	906.99	1&16	1	1.03193	617.89	40.631	.73826	1.950	.936	
*S**********										
*S END: PRIMROSE POINTE DEVELOPMENT										
*S**********										
ROUTE MCUNGE	906.88	1	2	1.03193	617.56	40.635	.73833	2.000	.935	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.230
COMPUTE NM HYD	910.21	-	1	.01370	9.05	.279	.38120	1.500	1.033	PER IMP= 5.00
ADD HYD	910.29	2& 1	5	1.04563	618.61	40.913	.73365	2.000	.924	
RAINFALL TYPE= 2										RAIN24= 2.250
COMPUTE NM HYD	910.31	-	2	.15630	164.33	5.839	.70050	1.500	1.643	PER IMP= 20.00
ADD HYD	910.90	5& 2	1	1.20193	643.76	46.753	.72934	2.000	.837	
ROUTE MCUNGE	910.88	1	2	1.20193	630.94	46.703	.72857	2.100	.820	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.220
COMPUTE NM HYD	912.11	-	3	.05900	39.99	1.374	.43659	1.500	1.059	PER IMP= 10.00
*S N D B ARROYO BETWEEN BROWNING AND EUBANK (AP 912.95) - UNBULKED										

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
ADD HYD	912.95	3& 2	1	1.26093	635.18	48.077	.71490	2.100	.787	
COMPUTE NM HYD	912.21	-	2	.19600	141.21	5.094	.48730	1.550	1.126	PER IMP= 10.00
ADD HYD	912.98	1& 2	15	1.45693	652.01	53.171	.68428	2.100	.699	
RAINFALL TYPE= 2										RAIN24= 2.230
COMPUTE NM HYD	402.50	-	4	.02800	52.16	2.306	1.54415	1.500	2.911	PER IMP= 70.00
COMPUTE NM HYD	402.60	-	5	.02430	45.27	2.001	1.54415	1.500	2.911	PER IMP= 70.00
*S COMBINE 402.5 AND 402.6 AS 402.9 (AT BROWNING)										
ADD HYD	402.90	4& 5	11	.05230	97.43	4.307	1.54414	1.500	2.911	
*S ROUTE 402.9 AS 402.8 IN 42-INCH SD TO END OF 915.2										
ROUTE	402.80	11	6	.05230	95.66	4.307	1.54415	1.500	2.858	
RAINFALL TYPE= 2										RAIN24= 2.170
COMPUTE NM HYD	915.20	-	2	.03700	23.76	.820	.41567	1.500	1.003	PER IMP= 10.00
COMPUTE NM HYD	915.10	-	29	.03430	22.02	.760	.41567	1.500	1.003	PER IMP= 10.00
ADD HYD	915.90	6& 2	11	.08930	119.41	5.127	1.07657	1.500	2.089	
*S ROUTE 915.9 AS 915.8 TO NDB DAM IN 54-INCH PIPE										
ROUTE	915.80	11	7	.08930	116.82	5.127	1.07658	1.550	2.044	
*S COMBINE HYD'S 912.98 AND 915.8 AS 912.99 (FLOW TO NDB DAM FROM PDN DRAIN)										
ADD HYD	912.99	15& 7	15	1.54623	673.72	58.298	.70694	2.100	.681	
*S**********										
*S AP 105.9 IS FROM "LA CUEVA, EL CAMINO & NORTH CAMINO ARROYOS - DRAINAGE										
*S MANAGEMENT PLAN" (RESOURCE TECHNOLOGY, INC., 1996).										
*S FILENAME: LCDV100B.EXT										
*S**********										
*S AP 105.9 IS FROM LA CUEVA TRIBUTARY (DIVERTED TO UPPER N. D. B. DAM										
*S THROUGH LA CUEVA DIVERSION CHANNEL)										
RECALL HYD	105.90	-	17	1.17410	604.74	37.888	.60506	1.850	.805	
ROUTE MCUNGE	105.80	17	2	1.17410	603.64	37.853	.60450	1.900	.803	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.220
COMPUTE NM HYD	911.00	-	3	.05800	37.27	1.620	.52379	1.550	1.004	PER IMP= 15.00
*S TOTAL INFLOW HYDROGRAPH INTO UPPER N.D.B. DAM. FROM LA CUEVA DIVERSION										
*S CHANNEL (HYD NO. 911.99) - UNBULKED										
ADD HYD	911.99	2& 3	1	1.23210	614.93	39.473	.60070	1.900	.780	
*S TOTAL INFLOW HYDROGRAPH INTO UPPER N.D.B. DAM. (HYD NO. 914.79)										
*S (BULKED)										
ADD HYD	914.79	15& 1	1	2.77833	1132.30	97.772	.65983	2.050	.637	
*S ROUTING THROUGH UPPER NORTH DOMINGO BACA DAM										
*S										
*S THIS STORAGE OUTFLOW DATA WAS BASED ON TOPOGRAPHY IN JUNE 1994.										
*S OUTFLOW IS TAKEN FROM "DESIGN ANALYSIS REPORT FOR LA CUEVA DIVERSION										
*S CHANNEL" (RESOURCE TECHNOLOGY, INC., 1994). STORAGE INFORMATION WAS										
*S CALCULATED AT RTI. THE ELEVATION OF EMERGENCY SPILLWAY										
*S IS AT 5749.										
ROUTE RESERVOIR	914.99	1	2	2.77833	136.43	97.639	.65893	2.900	.077	AC-FT= 66.369
*S UPPER N.D.B. DAM OUTFLOW HYDROGRAPH AT EUBANK. (HYD NO. 914.99)										
*S AP 914.99 IS THROUGH THE PRINCIPAL SPILLWAY										
*S AP NDB.SPILL IS THROUGH THE EMERGENCY SPILLWAY										
DIVIDE HYD	914.99	2	2	2.77833	136.43	97.639	.65893	2.900	.077	
	NDB.SPILL	AND	20	.00000	.00	.000	.00000	-.050	.000	
ROUTE MCUNGE	914.68	2	3	2.77833	136.41	97.621	.65881	3.000	.077	CCODE = .1
ROUTE	SPILL.ROU	20	19	.00000	.00	.000	.00000	-.050	.000	
RAINFALL TYPE= 2										RAIN24= 2.130
COMPUTE NM HYD	914.20	-	1	.03500	32.46	1.003	.53739	1.500	1.449	PER IMP= 10.00
*S UNDBD DAM SPILL AT EUBANK (AP 914.29)										
ADD HYD	914.29	1&19	1	.03500	32.46	1.003	.53738	1.500	1.449	
ROUTE MCUNGE	914.28	1	2	.03500	29.50	1.003	.53740	1.650	1.317	CCODE = .1
*S N D B ARROYO BETWEEN EUBANK AND HOLBROOK										
*S (AP 914.78)										
ADD HYD	914.78	2& 3	2	2.81333	136.81	98.624	.65730	2.950	.076	
ROUTE MCUNGE	914.88	2	3	2.81333	136.80	98.618	.65726	3.000	.076	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.100
COMPUTE NM HYD	919.10	-	1	.07900	65.91	1.888	.44803	1.500	1.304	PER IMP= 5.00
*S N D B ARROYO HOLBROOK (HYD NO. 919.19) - FINAL										
ADD HYD	919.19	1& 3	1	2.89233	137.38	100.506	.65154	2.900	.074	
*S BETWEEN HOLBROOK AND VENTURA (AP 919.18) - NOT FINAL										
ROUTE MCUNGE	919.18	1	5	2.89233	137.38	100.497	.65149	3.050	.074	CCODE = .2
*S ROUTE 915.1 TO HOLBROOK THRU 919.2 AS 915.18										
ROUTE MCUNGE	915.18	29	7	.03430	19.73	.760	.41567	1.700	.899	CCODE = .1
COMPUTE NM HYD	919.20	-	1	.06100	43.32	1.279	.39312	1.500	1.110	PER IMP= 5.00
ADD HYD	919.28	7& 1	1	.09530	48.28	2.039	.40123	1.550	.792	
*S HOLBROOK (HYD NO. 919.28)-FINAL										
*S ROUTE AP 919.28 TO RP 919.27										
ROUTE MCUNGE	919.27	1	3	.09530	47.35	2.039	.40123	1.600	.776	CCODE = .1

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
ROUTE MCUNGE	919.28	3	2	.09530	46.02	2.039	.40123	1.750	.754	CCODE = .1
*S N D B ARROYO BETWEEN HOLBROOK AND VENTURA. (AP 919.38) - NOT FINAL										
ADD HYD	919.38	2& 5	6	2.98763	141.75	102.536	.64351	1.850	.074	
RAINFALL TYPE= 2										RAIN24= 2.070
COMPUTE NM HYD	921.30	-	7	.02840	17.12	.587	.38728	1.500	.942	PER IMP= 10.00
RAINFALL TYPE= 2										RAIN24= 2.130
COMPUTE NM HYD	913.20	-	1	.01700	11.75	.387	.42635	1.500	1.080	PER IMP= 10.00
ROUTE MCUNGE	913.18	1	2	.01700	11.72	.387	.42637	1.700	1.077	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.100
COMPUTE NM HYD	918.00	-	1	.11400	45.61	2.545	.41856	1.650	.625	PER IMP= 10.00
*S HOLBROOK (AP 918.99) - FINAL										
ADD HYD	918.99	1& 2	1	.13100	54.81	2.931	.41956	1.700	.654	
ROUTE MCUNGE	918.88	1	2	.13100	54.45	2.931	.41957	1.750	.649	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.070
COMPUTE NM HYD	921.10	-	1	.02920	17.60	.603	.38728	1.500	.942	PER IMP= 10.00
*S UPSTREAM OF END OF VINYARD ESTATES SUBDIVISION UNIT IV BETWEEN										
*S HOLBROOK & VENTURA										
*S ANAHEIM (AP 921.19) - FINAL										
ADD HYD	921.19	1& 2	1	.16020	60.69	3.534	.41368	1.750	.592	
*S **********										
*S BEGIN: VINYARD ESTATES - UNIT IV										
*S **********										
*S ROUTE 921.19										
*S (48-INCH RCP)										
ROUTE	921.80	1	12	.16020	60.70	3.534	.41368	1.750	.592	
*S (54-INCH RCP)										
ROUTE	921.89	12	16	.16020	60.66	3.534	.41368	1.750	.592	
*S COMBINE 921.89 & 921.3 AS 921.98										
ADD HYD	921.98	16& 7	14	.18860	66.73	4.121	.40970	1.750	.553	
ROUTE RESERVOIR	921.99	14	15	.18860	10.53	1.028	.10223	2.400	.087	AC-FT= 3.190
*S **********										
*S END: VINYARD ESTATES - UNIT IV										
*S **********										
*S N D B ARROYO BETWEEN HOLBROOK & VENTURA (AP 921.78) - FINAL										
ADD HYD	921.78	6&15	1	3.17623	146.51	103.565	.61137	2.450	.072	
ROUTE MCUNGE	921.80	1	2	3.17623	146.36	103.558	.61133	2.550	.072	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.050
COMPUTE NM HYD	921.20	-	1	.08740	54.31	1.827	.39203	1.500	.971	PER IMP= 10.00
*S N D B ARROYO AT VENTURA (AP 921.9) - NOT FINAL										
ADD HYD	921.90	1& 2	26	3.26363	149.84	105.386	.60546	1.900	.072	
RAINFALL TYPE= 2										RAIN24= 2.170
COMPUTE NM HYD	913.10	-	1	.03600	19.96	.634	.33028	1.500	.866	PER IMP= 5.00
ROUTE MCUNGE	913.88	1	2	.03600	17.36	.634	.33028	1.800	.754	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.100
COMPUTE NM HYD	917.00	-	1	.04060	21.97	.693	.32022	1.500	.845	PER IMP= 5.00
*S HOLBROOK (AP 917.99) - FINAL										
ADD HYD	917.99	1& 2	1	.07660	24.10	1.327	.32494	1.750	.492	
ROUTE MCUNGE	917.88	1	2	.07660	23.96	1.328	.32495	1.850	.489	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.070
COMPUTE NM HYD	920.10	-	1	.02020	13.52	.448	.41586	1.500	1.045	PER IMP= 10.00
*S INTO VINEYARD ESTATES SUBDIVISION UNIT IV AT NORTH END										
*S BETWEEN HOLBROOK AND VENTURA (AP 920.19) - FINAL (UNBULKED)										
ADD HYD	920.19	2& 1	1	.09680	33.38	1.775	.34391	1.600	.539	
COMPUTE NM HYD	920.00	-	5	.04310	23.68	.890	.38728	1.500	.858	PER IMP= 10.00
*S INTO VINEYARD ESTATES SUBDIVISION UNIT IV AT EAST (NORTH END)										
*S BETWEEN HOLBROOK AND VENTURA (AP 920) - FINAL (UNBULKED)										
*S **********										
*S BEGIN: VINYARD ESTATES - UNIT IV										
*S **********										
RAINFALL TYPE= 2										RAIN24= 2.010
COMPUTE NM HYD	922.10	-	2	.00700	4.91	.180	.48193	1.500	1.096	PER IMP= 17.00
COMPUTE NM HYD	923.00	-	12	.00700	4.92	.158	.42326	1.500	1.098	PER IMP= 10.00
COMPUTE NM HYD	922.20	-	9	.01480	21.04	.781	.98968	1.500	2.221	PER IMP= 40.00
COMPUTE NM HYD	922.30	-	16	.04150	58.97	2.190	.98968	1.500	2.220	PER IMP= 40.00
*S COMBINE 920.1 + 922.1 AS 922.19										
ADD HYD	922.19	1& 2	3	.10380	36.97	1.955	.35321	1.600	.556	
*S ROUTE 920 TO POND AS 920.8										
ROUTE MCUNGE	920.80	5	4	.04310	23.61	.890	.38725	1.550	.856	CCODE = .1
*S ROUTE 922.19 THRU POND AS 920.88										
ROUTE RESERVOIR	920.88	3	7	.10380	18.83	1.955	.35321	2.000	.283	AC-FT= .850
*S ADD 920.88 920.8 AS 920.9 (POND Q + 920)										
ADD HYD	920.90	4& 7	7	.14690	28.11	2.845	.36319	1.600	.299	
*S ROUTE POND DISCHARGE & 920 THRU 30" PIPE AS 920.98										

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	
ROUTE	920.98	7	8	.14690	28.53	2.845	.36319	1.600	.304		
*S ADD 922.2 + 920.98 AS 922.28											
ADD HYD	922.28	8& 9	10	.16170	45.84	3.627	.42053	1.550	.443		
*S Route 922.28 flows to Ventura Interceptor AS 922.29											
ROUTE	922.29	10	11	.16170	45.99	3.627	.42053	1.550	.444		
*S Route 923 flows to 48" Ventura Line AS 923.8											
ROUTE	923.80	12	13	.00700	5.00	.158	.42335	1.500	1.115		
*S ADD 923.8 + 922.29 AS 923.9											
ADD HYD	923.90	11&13	14	.16870	50.69	3.785	.42064	1.550	.469		
*S ROUTE 923.9 TO MAIN POND AS 923.91											
ROUTE	923.91	14	15	.16870	50.54	3.785	.42064	1.550	.468		
*S Total flows entering main pond											
*S ADD 923.91 + 923.3 AS 923.92											
ADD HYD	923.92	16&15	17	.21020	103.47	5.975	.53298	1.550	.769		
*S ROUT 923.92 THRU POND AS 923.99											
ROUTE RESERVOIR	923.99	17	18	.21020	40.43	5.756	.51343	1.950	.301	AC-FT=	2.154
*S**********											
*S END: VINYARD ESTATES - UNIT IV											
*S**********											
*S N D B ARROYO AT VENTURA (AP 921.99) - FINAL											
ADD HYD	921.99	18&26	1	3.47383	190.08	111.142	.59989	1.900	.085		
DIVIDE HYD	950.00	1	18	1.14636	62.73	36.677	.59989	1.900	.085		
	951.00	AND	26	2.32747	127.35	74.465	.59989	1.900	.085		
RAINFALL TYPE= 2										RAIN24=	2.010
COMPUTE NM HYD	926.10	-	3	.01200	12.54	.408	.63728	1.500	1.633	PER IMP=	17.71
*S LA CUEVA SUBDIVISION (AP 926.1) - FINAL											
ROUTE RESERVOIR	926.18	3	2	.01200	2.00	.252	.39430	1.950	.260	AC-FT=	.269
*S N D B ARROYO AT ~400 FT WEST OF VENTURA. (HYD NO. 926.19) - FINAL											
ADD HYD	926.19	1& 2	1	3.48583	192.07	111.394	.59918	1.900	.086		
ROUTE MCUNGE	926.17	1	2	3.48583	191.94	111.383	.59912	2.050	.086	CCODE =	.2
RAINFALL TYPE= 2										RAIN24=	2.000
COMPUTE NM HYD	926.00	-	1	.03750	36.64	1.326	.66301	1.500	1.527	PER IMP=	25.00
*S N D B ARROYO AT BARSTOW. (AP 926.79) - NOT FINAL											
ADD HYD	926.79	1& 2	11	3.52333	197.63	112.709	.59980	2.050	.088		
RAINFALL TYPE= 2										RAIN24=	2.010
COMPUTE NM HYD	925.20	-	1	.01400	5.62	.169	.22680	1.500	.628	PER IMP=	2.00
ROUTE MCUNGE	925.27	1	3	.01400	4.77	.165	.22122	1.750	.532	CCODE =	.1
COMPUTE NM HYD	925.10	-	1	.06400	96.60	3.766	1.10339	1.500	2.359	PER IMP=	50.00
*S COMBINE 925.1 & 925.27 AS 925.18 (VINYARD FLOW TO APS SITE)											
ADD HYD	925.18	1& 3	1	.07800	96.78	3.931	.94504	1.500	1.939		
*S (925.19=4-FOOT STORM SEWER ROUTING)											
ROUTE	925.19	1	2	.07800	95.34	3.931	.94505	1.500	1.910		
COMPUTE NM HYD	925.40	-	4	.03700	58.52	2.246	1.13797	1.500	2.471	PER IMP=	50.00
*S INFLOW INTO DETENTION POND AT BARSTOW IN VINEYARD ESTATES											
*S (AP 925.48) - FINAL											
ADD HYD	925.48	2& 4	15	.11500	153.87	6.177	1.00711	1.500	2.091		
COMPUTE NM HYD	922.00	-	1	.02100	16.25	.665	.59360	1.550	1.209	PER IMP=	15.00
ROUTE MCUNGE	922.80	1	2	.02100	15.52	.652	.58174	1.700	1.155	CCODE =	.1
COMPUTE NM HYD	924.10	-	1	.01900	7.75	.233	.22984	1.500	.638	PER IMP=	2.00
*S INTO DETENTION POND JUST UPSTREAM OF CARRINGTON SUBDIVISION											
*S (AP 924.19) - (UNBULKED)											
ADD HYD	924.19	1& 2	1	.04000	19.95	.884	.41457	1.650	.779		
*S THE FOLLOWING DETENTION POND INFORMATION WAS CALCULATED BY RTI USING THE											
*S DESIGN DATA IN GRADING & DRAINAGE PLAN FOR CARRINGTON SUBDIVISION											
*S (COMMUNITY SCIENCES CORPORATION, 1992)											
ROUTE RESERVOIR	924.18	1	3	.04000	2.29	.884	.41452	2.350	.089	AC-FT=	.603
ROUTE MCUNGE	924.17	3	2	.04000	2.29	.884	.41451	2.550	.089	CCODE =	.2
RAINFALL TYPE= 2										RAIN24=	1.990
COMPUTE NM HYD	924.20	-	1	.00700	3.99	.136	.36334	1.500	.891	PER IMP=	10.00
ROUTE MCUNGE	924.28	1	4	.00700	3.29	.133	.35641	1.750	.734	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	2.000
COMPUTE NM HYD	924.30	-	1	.02700	41.20	1.593	1.10648	1.500	2.384	PER IMP=	50.00
*S CARRINGTON SUBDIVISION (AP 924.3)											
COMPUTE NM HYD	924.40	-	7	.01720	10.81	.358	.39054	1.500	.982	PER IMP=	10.00
*S TOTAL CARRINGTON DISCHARGE (AP 924.38) - FINAL											
ADD HYD	924.38	1& 2	3	.06700	41.21	2.478	.69336	1.500	.961		
*S TOTAL BARSTOW Q NORTH OF CARRINGTON (AP 924.48) - FINAL											
ADD HYD	924.48	7& 4	4	.02420	10.97	.491	.38063	1.500	.708		
*S TOTAL BARSTOW @ CARRINGTON (AP 924.99) - FINAL											
ADD HYD	924.99	4& 3	5	.09120	52.18	2.969	.61038	1.500	.894		
*S AP 924.91 INTO STORM SEWER											
*S AP 924.92 INTO BARSTOW											

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
DIVIDE HYD	924.91	5	3	.07530	20.00	2.451	.61038	1.400	.415	
	924.92	AND	4	.01590	32.18	.518	.61038	1.500	3.162	
*S (924.81=24-INCH STORM SEWER ROUTING)										
ROUTE	924.81	3	2	.07530	21.26	2.451	.61038	1.850	.441	
COMPUTE NM HYD	925.30	-	1	.01050	15.82	.614	1.09694	1.500	2.354	PER IMP= 50.00
*S COMBINE CARRINGTON FLOW WITH VINYARD FLOW 925.3 + 924.81 AS 925.38										
ADD HYD	925.38	1& 2	5	.08580	34.87	3.066	.66991	1.500	.635	
ROUTE	924.81	5	2	.08580	34.69	3.066	.66992	1.550	.632	
*S BARSTOW SD WITH VINYARD SD FLOW AT POND										
ADD HYD	925.38	15& 2	5	.20080	187.86	9.243	.86303	1.500	1.462	
ADD HYD	925.39	5& 4	5	.21670	220.04	9.760	.84449	1.500	1.587	
*S (DETENTION POND AT BARSTOW AT APS MS)										
ROUTE RESERVOIR	925.85	5	2	.21670	54.00	9.760	.84447	1.950	.389	AC-FT= 4.618
ADD HYD	926.99	2&11	5	3.74003	250.82	122.469	.61398	2.050	.105	
*S N D B ARROYO AT BARTSOW (AP 926.99) - FINAL										
ROUTE MCUNGE	926.70	5	3	3.74003	250.10	122.462	.61394	2.100	.104	CCODE = .2
ROUTE MCUNGE	926.80	3	5	3.74003	249.18	122.421	.61374	2.150	.104	CCODE = .1
COMPUTE NM HYD	932.40	-	3	.05740	91.59	3.605	1.17753	1.500	2.493	PER IMP= 55.00
RAINFALL TYPE= 2										RAIN24= 1.970
COMPUTE NM HYD	930.00	-	1	.08500	125.30	4.874	1.07504	1.500	2.303	PER IMP= 50.00
*S N D B ARROYO AT WYOMING (AP 930.59) -										
ADD HYD	930.59	1& 3	1	.14240	216.89	8.478	1.11635	1.500	2.380	
*S N D B ARROYO AT WYOMING (AP 930.99) - FINAL										
ADD HYD	930.99	1& 5	1	3.88243	281.65	130.899	.63217	2.050	.113	
ROUTE MCUNGE	930.80	1	12	3.88243	275.92	130.798	.63168	2.250	.111	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 1.970
COMPUTE NM HYD	935.00	-	14	.11000	53.54	1.668	.28428	1.500	.761	PER IMP= 5.00
ADD HYD	930.85	14&12	13	3.99243	278.98	132.465	.62211	2.250	.109	
*S**********										
*S BEGIN: WYOMING STORM DRAIN										
*S**********										
COMPUTE NM HYD	929.00	-	4	.02400	41.00	1.658	1.29529	1.500	2.669	PER IMP= 65.00
COMPUTE NM HYD	931.00	-	1	.06050	62.04	3.619	1.12156	1.650	1.602	PER IMP= 55.00
*S NO POND AT LA CUEVA HIGH SCHOOL										
ADD HYD	931.80	4& 1	1	.08450	90.06	5.277	1.17089	1.550	1.665	
COMPUTE NM HYD	932.10	-	4	.00730	11.58	.450	1.15472	1.500	2.479	PER IMP= 55.00
*S CHURCH (AP 932.1)										
*S WYOMING AND WILSHIRE (AP 931.99)										
ADD HYD	931.99	4& 1	1	.09180	100.19	5.726	1.16960	1.550	1.705	
*S (931.98=5-FOOT PIPE ROUTING)										
ROUTE	931.98	1	3	.09180	99.99	5.726	1.16961	1.550	1.702	
COMPUTE NM HYD	932.20	-	1	.00730	11.46	.450	1.15472	1.500	2.452	PER IMP= 55.00
ADD HYD	932.80	3& 1	1	.09910	110.17	6.176	1.16850	1.550	1.737	
*S AT CORONA W/O CORONA Q										
COMPUTE NM HYD	932.30	-	2	.03130	49.09	1.928	1.15472	1.500	2.450	PER IMP= 55.00
*S EXISTING POND AT NORESTE BETWEEN CORONA AND ANAHEIM										
ROUTE RESERVOIR	932.84	2	5	.03130	6.01	1.922	1.15141	2.100	.300	AC-FT= 1.229
*S COMBINED POND AND WYOMING STORM DRAIN FLOW (AP 932.99)										
ADD HYD	932.99	1& 5	10	.13040	113.12	8.098	1.16440	1.550	1.355	
*S**********										
*S END: WYOMING STORM DRAIN										
*S**********										
ROUTE MCUNGE	932.81	10	2	.13040	108.65	8.098	1.16436	1.700	1.302	CCODE = .1
COMPUTE NM HYD	934.10	-	1	.04680	61.41	2.303	.92278	1.500	2.050	PER IMP= 40.00
ADD HYD	934.99	1& 2	3	.17720	134.80	10.401	1.10056	1.700	1.189	
*S LNDBDD INFLOW HYDROGRAPH (AP 930.84) - NOT FINAL										
ADD HYD	930.84	3&13	11	4.16963	359.91	142.866	.64244	1.700	.135	
COMPUTE NM HYD	937.00	-	1	.03520	20.09	.680	.36246	1.500	.892	PER IMP= 10.00
*S TOTAL DAM INFLOW HYDROGRAPH (AP 930.86)-FINAL										
ADD HYD	930.86	1&11	11	4.20483	368.87	143.547	.64010	1.700	.137	
*S										
*S LOWER NORTH DOMINGO BACA DETENTION DAM										
*S LOW FLOW OUTLET (PRINCIPLE SPILLWAY). THIS PRINCIPLE SPILLWAY JOINS										
*S ONE OF THE FOUR BOX CULVERTS AT THE I-25. IT ALSO PICKS UP FLOWS FROM										
*S SUB-BASINS 940.2, 939.16, 939.14 & 943.1. THE FLOWS FROM SUB-BASINS										
*S 939.14 AND 943.1 ARE INCLUDED BY SAD221 PROJECT WHICH IS ALREADY										
*S IN PLACE. THE FOLLOWING RATING CURVE IS FOR A 40-INCH ORIFICE PLATE.										
*S EMERGENCY SPILLWAY IS NOT USED IN THE FOLLOWING RATING CURVE.										
*S										
ROUTE RESERVOIR	930.87	11	12	4.20483	146.10	143.665	.64063	5.350	.054	AC-FT= 25.496
*S LNDBAD DAM OUTFLOW HYDROGRAPH (AP 930.87)										
RAINFALL TYPE= 2										RAIN24= 1.900

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
COMPUTE NM HYD	960.00	-	1	.00750	11.02	.418	1.04522	1.500	2.295	PER IMP= 50.00
*S STORM DRAIN OUT OF LNDBD DAM AT LOUISIANA BLVD. (AP 930.89)										
ADD HYD	930.89	1&12	12	4.21233	146.14	144.083	.64135	5.350	.054	
COMPUTE NM HYD	940.20	-	1	.01560	22.23	.853	1.02474	1.500	2.226	PER IMP= 50.00
COMPUTE NM HYD	939.16	-	3	.01280	18.24	.700	1.02474	1.500	2.227	PER IMP= 50.00
ADD HYD	940.26	1& 3	3	.02840	40.47	1.552	1.02472	1.500	2.226	
*S AT THE END OF LA CUEVA OESTE PHASE 1, IN STORM DRAIN PIPE (AP 939.88)										
*S (UNBULKED)										
ADD HYD	939.88	12& 3	12	4.24073	146.30	145.635	.64391	5.450	.054	
*S STORM DRAIN PIPE FROM THE END OF LA CUEVA OESTE PHASE 1 TILL SAN PEDRO										
*S BENEATH ANAHEIM AVE -- TWO REACHES										
*S RCP DIA=4 FT TO 940.0 OUTFALL										
*S (939.78=4-FOOT PIPE ROUTING)										
ROUTE	939.78	12	15	4.24073	146.30	145.626	.64387	5.450	.054	
COMPUTE NM HYD	940.00	-	1	.01410	20.09	.771	1.02474	1.500	2.227	PER IMP= 50.00
ADD HYD	939.68	15& 1	15	4.25483	163.49	146.396	.64513	1.500	.060	
*S RCP DIA=4 FT TO SAN PEDRO										
ROUTE	939.58	15	16	4.25483	164.10	146.393	.64512	1.500	.060	
*S STORM DRAIN PIPE FROM SAN PEDRO TO UTE DR. BENEATH ANAHEIM AVE.										
*S (939.48=RCP DIA=4 FT)										
ROUTE	939.48	16	14	4.25483	163.79	146.388	.64510	1.550	.060	
COMPUTE NM HYD	939.14	-	1	.01120	18.32	.714	1.19546	1.500	2.556	PER IMP= 60.00
COMPUTE NM HYD	943.10	-	3	.01200	19.85	.793	1.23850	1.500	2.585	PER IMP= 65.00
*S STORM DRAIN BENEATH ANAHEIM AT UTE (AP 943.18)										
ADD HYD	943.18	1& 3	3	.02320	38.17	1.507	1.21770	1.500	2.571	
*S STORM DRAIN FLOW AT I-25 (AP 943.19)										
ADD HYD	943.19	3&14	3	4.27803	199.00	147.895	.64820	1.500	.073	
COMPUTE NM HYD	940.10	-	1	.00700	11.73	.479	1.28349	1.500	2.618	PER IMP= 70.00
ROUTE MCUNGE	940.80	1	6	.00700	11.70	.479	1.28353	1.600	2.611	CCODE = .2
COMPUTE NM HYD	943.20	-	1	.01300	6.74	.230	.33102	1.500	.810	PER IMP= 10.00
*S OVERLAND FLOW AT I-25 (AP 943.29)										
ADD HYD	943.29	1& 6	5	.02000	16.77	.709	.66435	1.600	1.310	
*S TOTAL NDB Q AT I-25 BOX CULVERT (943.98)										
ADD HYD	943.98	5& 3	9	4.29803	214.08	148.603	.64828	1.550	.078	
*S CORONA SD SYSTEM										
COMPUTE NM HYD	942.20	-	1	.10310	121.03	5.193	.94442	1.550	1.834	PER IMP= 45.00
*S (ROUTE IN SD DIA=4 FT)										
ROUTE	942.29	1	5	.10310	122.98	5.193	.94443	1.550	1.864	
COMPUTE NM HYD	942.10	-	2	.04690	62.18	2.362	.94442	1.500	2.072	PER IMP= 45.00
*S TOTAL Q AT CORONADO MH PARK (943.99)										
ADD HYD	943.99	2& 9	3	4.34493	275.16	150.965	.65147	1.500	.099	
FINISH										

←(s0p10h4099T←&16D

North Domingo BACA 100-YR Future

-(s16.67h8.5v0T-&18D

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/28/1998
INPUT FILE = a:nbac100.fut USER NO.= RSTECHNM.STE

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S 100-YR RETURN PERIOD, 24-HR STORM, FUTURE CONDITIONS										
*S MUSKINGUM-CUNGE CHANNEL ROUTING										
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 4.000
COMPUTE NM HYD	900.00	-	1	.44100	640.16	33.763	1.43550	1.700	2.268	PER IMP= .00
*S ROUTE HYD. 900 THROUGH 902.1 (900.8)										
ROUTE MCUNGE	900.80	1	2	.44100	625.07	33.593	1.42827	1.800	2.215	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.580
COMPUTE NM HYD	902.10	-	5	.08870	134.65	8.032	1.69784	1.600	2.372	PER IMP= 30.00
*S (902.91=NORTH BRANCH OF ARROYO AT JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.91	2& 5	2	.52970	719.50	41.625	1.47341	1.800	2.122	
RAINFALL TYPE= 2										RAIN24= 3.860
COMPUTE NM HYD	901.00	-	1	.11800	281.25	9.218	1.46480	1.500	3.724	PER IMP= .00
*S 20% AVULSION FROM SOUTH DOMINGO BACA WATERSHED SUB-BASIN 400.3										
RECALL HYD	400.30	-	15	.25500	620.57	19.788	1.45500	1.500	3.802	
DIVIDE HYD	400.61	15	15	.05100	124.11	3.958	1.45500	1.500	3.802	
	400.6SDB	AND	19	.20400	496.45	15.830	1.45500	1.500	3.802	
*S COMBINE 901 AND 20% AVULSION AS 901.1										
ADD HYD	901.10	1&15	1	.16900	405.36	13.176	1.46184	1.500	3.748	
*S ROUTE HYD. 901.1 THROUGH 902.2 (901.8)										
ROUTE MCUNGE	901.80	1	3	.16900	364.15	13.055	1.44840	1.700	3.367	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.580
COMPUTE NM HYD	902.20	-	5	.12200	186.80	11.047	1.69784	1.600	2.392	PER IMP= 30.00
*S (902.92=SOUTH BRANCH OF ARROYO AT JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.92	3& 5	3	.29100	536.71	24.102	1.55297	1.650	2.882	
*S (902.93=SUM OF FLOWS AT ARROYO JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.93	2& 3	1	.82070	1172.79	65.727	1.50162	1.750	2.233	
ROUTE MCUNGE	902.80	1	2	.82070	1158.45	65.601	1.49874	1.800	2.206	CCODE = .1
COMPUTE NM HYD	902.30	-	3	.07300	169.92	7.105	1.82479	1.500	3.637	PER IMP= 35.00
*S (902.99=TOTAL FLOW @ TRAMWAY FROM 902 SUBBASINS, 901, 900)										
ADD HYD	902.99	2& 3	1	.89370	1211.61	72.705	1.52537	1.800	2.118	
*S**********										
*S BEGIN: PRIMROSE POINTE DEVELOPMENT										
*S**********										
ROUTE MCUNGE	902.90	1	17	.89370	1208.11	72.707	1.52542	1.800	2.112	CCODE = .2
*S ROUTE 902.9 TO PRIMROSE POINTE CONCRETE CHANNEL AS 902.99										
ROUTE MCUNGE	902.99	17	16	.89370	1195.81	72.696	1.52518	1.850	2.091	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.650
COMPUTE NM HYD	906.00	-	12	.02368	63.36	2.816	2.22941	1.500	4.181	PER IMP= 45.00
ADD HYD	906.10	16&12	2	.91738	1214.08	75.512	1.54336	1.850	2.068	
*S ROUTE THRU THROUGH PRIMROSE POINTE TO LOWELL										
ROUTE MCUNGE	906.19	2	16	.91738	1189.60	75.371	1.54048	1.950	2.026	CCODE = .1
COMPUTE NM HYD	904.00	-	1	.04130	102.46	4.183	1.89923	1.500	3.876	PER IMP= 30.00
*S ROUTE HYDOGRAPH THRU POND NDB1										
ROUTE RESERVOIR	904.90	1	17	.04130	35.03	3.899	1.77023	1.800	1.325	AC-FT= 1.773
COMPUTE NM HYD	905.00	-	10	.00920	22.84	.932	1.89922	1.500	3.879	PER IMP= 30.00
*S ROUTE 905 HYDOGRAPH THRU POND NDB2										
ROUTE RESERVOIR	905.90	10	18	.00920	15.30	.839	1.71009	1.600	2.599	AC-FT= .296
*S BASIN 903.0										
COMPUTE NM HYD	903.00	-	2	.08968	223.26	9.084	1.89923	1.500	3.890	PER IMP= 30.00
*S POND 3 DISCHARGE TO THE NORTH DOMINGO BACA ARROYO										
ROUTE RESERVOIR	903.90	2	24	.08968	107.77	7.719	1.61393	1.700	1.878	AC-FT= 4.303
ADD HYD	906.29	24&18	26	.09888	121.85	8.558	1.62288	1.700	1.926	
ADD HYD	906.39	17&26	1	.14018	156.53	12.458	1.66629	1.700	1.745	
*S ********** TOTAL NORTH DOMINGO BACA FLOW AT LOWELL STREET **********										
ADD HYD	906.99	1&16	1	1.05756	1291.88	87.829	1.55716	1.900	1.909	
*S**********										
*S END: PRIMROSE POINTE DEVELOPMENT										
*S**********										
ROUTE MCUNGE	906.88	1	2	1.05756	1281.79	87.795	1.55657	2.000	1.894	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.350
COMPUTE NM HYD	910.21	-	1	.01370	30.01	1.073	1.46801	1.500	3.423	PER IMP= 17.00
ADD HYD	910.29	2& 1	5	1.07126	1286.34	88.868	1.55543	2.000	1.876	
RAINFALL TYPE= 2										RAIN24= 3.380
COMPUTE NM HYD	910.31	-	2	.15630	368.32	13.622	1.63413	1.500	3.682	PER IMP= 25.00
ADD HYD	910.90	5& 2	1	1.22756	1344.84	102.490	1.56545	2.000	1.712	
ROUTE MCUNGE	910.88	1	2	1.22756	1334.29	102.279	1.56224	2.050	1.698	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.330
COMPUTE NM HYD	912.11	-	3	.05900	126.55	4.520	1.43652	1.500	3.351	PER IMP= 17.00
*S N D B ARROYO BETWEEN BROWNING AND EUBANK (AP 912.95) - UNBULKED										

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
ADD HYD	912.95	3& 2	1	1.28656	1350.52	106.800	1.55647	2.050	1.640	
RAINFALL TYPE= 2										
COMPUTE NM HYD	912.21	-	2	.19600	391.52	15.016	1.43652	1.500	3.121	RAIN24= 3.330 PER IMP= 17.00
ADD HYD	912.98	1& 2	15	1.48256	1408.79	121.816	1.54061	2.050	1.485	
RAINFALL TYPE= 2										
COMPUTE NM HYD	402.50	-	4	.02800	82.16	3.763	2.51978	1.500	4.585	RAIN24= 3.350 PER IMP= 70.00
RAINFALL TYPE= 2										
COMPUTE NM HYD	402.60	-	5	.02430	70.94	3.243	2.50242	1.500	4.561	RAIN24= 3.330 PER IMP= 70.00
*S COMBINE 402.5 AND 402.6 AS 402.9 (AT BROWNING)										
ADD HYD	402.90	4& 5	11	.05230	153.10	7.006	2.51170	1.500	4.574	
*S ROUTE 402.9 AS 402.8 IN 42-INCH SD TO END OF 915.2										
ROUTE	402.80	11	6	.05230	150.80	7.006	2.51171	1.500	4.505	
RAINFALL TYPE= 2										
COMPUTE NM HYD	915.20	-	2	.03700	107.40	4.819	2.44196	1.500	4.535	RAIN24= 3.250 PER IMP= 70.00
ADD HYD	915.90	6& 2	11	.08930	258.20	11.825	2.48280	1.500	4.518	
*S ROUTE 915.9 AS 915.8 TO NDB DAM IN 54-INCH PIPE										
ROUTE	915.80	11	7	.08930	247.33	11.825	2.48281	1.550	4.328	
*S COMBINE HYD'S 912.98 AND 915.8 AS 912.99 (FLOW TO NDB DAM FROM PDN DRAIN)										
ADD HYD	912.99	15& 7	15	1.57186	1465.10	133.641	1.59414	2.050	1.456	
*S**********										
*S AP 105.9 IS FROM "LA CUEVA, EL CAMINO & NORTH CAMINO ARROYOS - DRAINAGE										
*S MANAGEMENT PLAN" (RESOURCE TECHNOLOGY, INC., 1996).										
*S FILENAME: LCDV100X.FUT										
*S**********										
*S AP 105.9 IS FROM LA CUEVA TRIBUTARY (DIVERTED TO UPPER N. D. B. DAM										
*S THROUGH LA CUEVA DIVERSION CHANNEL)										
RECALL HYD	105.90	-	17	1.14850	1487.55	94.222	1.53823	1.650	2.024	
ROUTE MCUNGE	105.80	17	2	1.14850	1480.99	94.104	1.53631	1.650	2.015	CCODE = .1
RAINFALL TYPE= 2										
COMPUTE NM HYD	911.00	-	3	.05800	106.44	4.444	1.43652	1.550	2.868	RAIN24= 3.330 PER IMP= 17.00
*S TOTAL INFLOW HYDROGRAPH INTO UPPER N.D.B. DAM. FROM LA CUEVA DIVERSION										
*S CHANNEL (HYD NO. 911.99) - UNBULKED										
ADD HYD	911.99	2& 3	1	1.20650	1563.93	98.548	1.53151	1.650	2.025	
*S TOTAL INFLOW HYDROGRAPH INTO UPPER N.D.B. DAM. (HYD NO. 914.79)										
*S (BULKED)										
ADD HYD	914.79	15& 1	1	2.77836	2563.31	232.188	1.56694	1.650	1.442	
*S ROUTING THROUGH UPPER NORTH DOMINGO BACA DAM										
*S										
*S THIS STORAGE OUTFLOW DATA WAS BASED ON TOPOGRAPHY IN JUNE 1994.										
*S OUTFLOW IS TAKEN FROM "DESIGN ANALYSIS REPORT FOR LA CUEVA DIVERSION										
*S CHANNEL" (RESOURCE TECHNOLOGY, INC., 1994). STORAGE INFORMATION WAS										
*S CALCULATED AT RTI - PROPOSED FUTURE CONDITION EXCAVATION.										
*S THE ELEVATION OF EMERGENCY SPILLWAY IS AT 5749.										
ROUTE RESERVOIR	914.99	1	2	2.77836	150.76	232.067	1.56612	3.200	.085	AC-FT= 181.374
*S UPPER N.D.B. DAM OUTFLOW HYDROGRAPH AT EUBANK. (HYD NO. 914.99)										
*S AP 914.99 IS THROUGH THE PRINCIPAL SPILLWAY										
*S AP NDB.SPILL IS THROUGH THE EMERGENCY SPILLWAY										
DIVIDE HYD	914.99	2	2	2.77836	150.76	232.067	1.56612	3.200	.085	
	NDB.SPILL	AND	20	.00000	.00	.000	.00000	-.050	.000	
ROUTE MCUNGE	914.68	2	3	2.77836	150.76	232.061	1.56608	3.250	.085	CCODE = .2
ROUTE	SPILL.ROU	20	19	.00000	.00	.000	.00000	-.050	.000	
RAINFALL TYPE= 2										
COMPUTE NM HYD	914.20	-	1	.03500	80.30	3.045	1.63137	1.500	3.585	RAIN24= 3.200 PER IMP= 30.00
*S UNDBD DAM SPILL AT EUBANK (AP 914.29)										
ADD HYD	914.29	1&19	1	.03500	80.30	3.045	1.63137	1.500	3.585	
ROUTE MCUNGE	914.28	1	2	.03500	79.85	3.045	1.63139	1.600	3.565	CCODE = .2
*S N D B ARROYO BETWEEN EUBANK AND HOLBROOK										
*S (AP 914.78)										
ADD HYD	914.78	2& 3	2	2.81336	160.68	235.106	1.56690	1.700	.089	
ROUTE MCUNGE	914.88	2	3	2.81336	157.48	235.094	1.56681	1.750	.087	CCODE = .1
RAINFALL TYPE= 2										
COMPUTE NM HYD	919.10	-	1	.07900	167.03	5.808	1.37846	1.500	3.304	RAIN24= 3.150 PER IMP= 17.00
*S N D B ARROYO HOLBROOK (HYD NO. 919.19) - FINAL										
ADD HYD	919.19	1& 3	4	2.89236	230.72	240.902	1.56167	1.650	.125	
RAINFALL TYPE= 2										
COMPUTE NM HYD	919.20	-	1	.04270	89.89	3.139	1.37846	1.500	3.289	RAIN24= 3.150 PER IMP= 17.00
*S HOLBROOK (HYD NO. 919.29) NOT FINAL										
ADD HYD	919.29	1& 4	22	2.93506	305.75	244.041	1.55900	1.550	.163	
RAINFALL TYPE= 2										
COMPUTE NM HYD	920.20	-	3	.00850	17.50	.607	1.33902	1.500	3.216	RAIN24= 3.100 PER IMP= 17.00
RAINFALL TYPE= 2										
COMPUTE NM HYD	913.10	-	1	.03600	76.37	2.701	1.40683	1.500	3.314	RAIN24= 3.250 PER IMP= 17.00

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
ROUTE MCUNGE	913.88	1	2	.03600	75.95	2.701	1.40683	1.700	3.297	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 3.150
COMPUTE NM HYD	917.00	-	1	.04060	85.47	2.985	1.37846	1.500	3.289	PER IMP= 17.00
*S HOLBROOK (AP 917.99) - FINAL										
ADD HYD	917.99	1& 2	21	.07660	123.74	5.686	1.39178	1.650	2.524	
*S (AP 920.29)										
ADD HYD	920.29	21& 3	4	.08510	134.05	6.293	1.38651	1.650	2.461	
*S ROUTE IN HOLBROOK TO CORONA IN 48" SD										
ROUTE	920.28	4	9	.08510	132.55	6.293	1.38652	1.650	2.434	
RAINFALL TYPE= 2										RAIN24= 3.200
COMPUTE NM HYD	913.20	-	1	.01700	39.50	1.479	1.63137	1.500	3.630	PER IMP= 30.00
ROUTE MCUNGE	913.18	1	2	.01700	32.68	1.456	1.60540	1.800	3.004	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.150
COMPUTE NM HYD	918.00	-	1	.11400	156.75	8.381	1.37846	1.650	2.148	PER IMP= 17.00
*S HOLBROOK (AP 918.88) - FINAL										
ADD HYD	918.88	1& 2	1	.13100	173.88	9.837	1.40790	1.700	2.074	
*S ADD 920.28 AND 918.89 AND ROUTE TO NDB										
ADD HYD	918.89	1& 9	1	.21610	304.68	16.129	1.39948	1.650	2.203	
*S ROUTE IN HOLBROOK TO CARMEL IN 66"SD										
ROUTE	918.99	1	8	.21610	304.20	16.129	1.39948	1.700	2.200	
RAINFALL TYPE= 2										RAIN24= 3.100
COMPUTE NM HYD	921.40	-	6	.01440	29.63	1.028	1.33902	1.500	3.215	PER IMP= 17.00
COMPUTE NM HYD	921.30	-	7	.01400	28.81	1.000	1.33902	1.500	3.215	PER IMP= 17.00
*S COMBINER ALL HOLBROOK AND NDB FLOWS AT HOLBROOK CROSSING										
*S ADD 918.99 AND 920.4 AS 920.49										
ADD HYD	920.49	8& 6	6	.23050	318.07	17.158	1.39570	1.700	2.156	
*S ADD 920.49 TO 919.29 AS 919.99										
ADD HYD	919.99	6&22	20	3.16556	599.30	261.198	1.54711	1.650	.296	
*S BETWEEN HOLBROOK AND VENTURA (AP 919.18) - NOT FINAL										
ROUTE MCUNGE	919.18	20	5	3.16556	596.68	261.191	1.54706	1.650	.295	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 3.100
COMPUTE NM HYD	921.10	-	1	.02920	60.06	2.085	1.33902	1.500	3.214	PER IMP= 17.00
*S UPSTREAM OF END OF VINYARD ESTATES SUBDIVISION UNIT IV BETWEEN										
*S HOLBROOK & VENTURA										
*S **********										
*S BEGIN: VINYARD ESTATES - UNIT IV SE CORNER										
*S **********										
*S ROUTE 921.19										
*S (48-INCH RCP)										
ROUTE	921.80	1	12	.02920	60.11	2.085	1.33904	1.500	3.217	
*S (54-INCH RCP)										
ROUTE	921.89	12	16	.02920	60.14	2.085	1.33904	1.500	3.218	
*S COMBINE 921.89 & 921.3 AS 921.98										
ADD HYD	921.98	16& 7	15	.04320	88.95	3.085	1.33901	1.500	3.217	
*S **********										
*S END: VINYARD ESTATES - UNIT IV										
*S **********										
*S N D B ARROYO BETWEEN HOLBROOK & VENTURA (AP 921.78) - FINAL										
ADD HYD	921.78	5&15	1	3.20876	654.91	264.276	1.54426	1.600	.319	
ROUTE MCUNGE	921.80	1	2	3.20876	652.95	264.238	1.54404	1.600	.318	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.070
COMPUTE NM HYD	921.20	-	1	.08740	237.09	9.939	2.13220	1.500	4.239	PER IMP= 60.00
*S N D B ARROYO AT VENTURA (AP 921.9) - NOT FINAL										
ADD HYD	921.90	1& 2	26	3.29616	818.24	274.177	1.55964	1.600	.388	
RAINFALL TYPE= 2										RAIN24= 3.100
COMPUTE NM HYD	920.10	-	17	.02020	41.55	1.443	1.33902	1.500	3.214	PER IMP= 17.00
RAINFALL TYPE= 2										RAIN24= 3.100
COMPUTE NM HYD	920.00	-	5	.03000	61.70	2.142	1.33902	1.500	3.214	PER IMP= 17.00
*S **********										
*S BEGIN: VINYARD ESTATES - UNIT IV										
*S **********										
RAINFALL TYPE= 2										RAIN24= 3.030
COMPUTE NM HYD	922.10	-	2	.00700	17.43	.711	1.90576	1.500	3.890	PER IMP= 50.00
COMPUTE NM HYD	923.00	-	12	.00700	19.32	.844	2.25972	1.500	4.312	PER IMP= 70.00
COMPUTE NM HYD	922.20	-	9	.01480	35.69	1.396	1.76805	1.500	3.767	PER IMP= 40.00
COMPUTE NM HYD	922.30	-	16	.04150	100.03	3.913	1.76805	1.500	3.766	PER IMP= 40.00
*S COMBINE 920 + 922.1 AS 922.19										
ADD HYD	922.19	5& 2	4	.03700	79.13	2.854	1.44623	1.500	3.342	
*S ROUTE 922.19 THRU 30" PIPE AS 920.98										
ROUTE	920.98	4	8	.03700	76.37	2.854	1.44625	1.500	3.225	
*S ADD 922.2 + 920.98 AS 922.28										
ADD HYD	922.28	8& 9	10	.05180	112.05	4.249	1.53817	1.500	3.380	
*S Route 922.28 flows to Ventura Interceptor AS 922.29										

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
ROUTE	922.29	10	11	.05180	110.00	4.249	1.53818	1.550	3.318	
RAINFALL TYPE= 2										RAIN24= 3.030
COMPUTE NM HYD	922.00	-	1	.02100	33.77	1.462	1.30533	1.550	2.512	PER IMP= 17.00
*S COMBINE 922 AND 923 AS 923.99										
ADD HYD	920.98	1&12	1	.02800	50.81	2.306	1.54390	1.550	2.835	
*S ROUTE 920.1 DOWN WILSHIRE TO VENTURA										
ROUTE	920.18	17	12	.02020	40.28	1.443	1.33905	1.550	3.116	
*S COMBINE 920.18 AND 920.98 AS 920.99										
ADD HYD	920.99	1&12	1	.04820	91.09	3.748	1.45803	1.550	2.953	
*S Route 923.99 FLOW FROM NO OF VINYARD IV TO 48" Ventura Line AS 923.8										
ROUTE	923.80	1	13	.04820	91.54	3.748	1.45805	1.550	2.967	
*S ADD 923.8 + 922.29 AS 923.9										
ADD HYD	923.90	11&13	14	.10000	201.54	7.998	1.49955	1.550	3.149	
*S ROUTE 923.9 TO NDB (NOT FINAL)										
ROUTE	923.91	14	15	.10000	203.51	7.998	1.49956	1.550	3.180	
*S ADD 923.91 + 923.3 AS 923.92										
ADD HYD	923.92	16&15	18	.14150	293.19	11.911	1.57830	1.550	3.238	
*S NO POND AT VENTURA										
*S**********										
*S END: VINYARD ESTATES - UNIT IV										
*S**********										
*S N D B ARROYO AT VENTURA (AP 921.99) - FINAL										
ADD HYD	921.99	18&26	1	3.43766	1105.56	286.088	1.56041	1.550	.503	
RAINFALL TYPE= 2										RAIN24= 3.030
COMPUTE NM HYD	926.10	-	2	.01200	30.38	1.228	1.91802	1.500	3.956	PER IMP= 50.00
*S LA CUEVA SUBDIVISION (AP 926.1) - NO POND FINAL										
*S N D B ARROYO AT ~400 FT WEST OF VENTURA. (HYD NO. 926.19) - FINAL										
ADD HYD	926.19	1& 2	1	3.44966	1132.67	287.316	1.56165	1.550	.513	
ROUTE MCUNGE	926.17	1	2	3.44966	1096.41	287.169	1.56086	1.650	.497	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 3.000
COMPUTE NM HYD	926.00	-	1	.05780	154.00	6.406	2.07818	1.500	4.163	PER IMP= 60.00
*S N D B ARROYO AT BARSTOW. (AP 926.79) - NOT FINAL										
ADD HYD	926.79	1& 2	11	3.50746	1192.76	293.576	1.56938	1.600	.531	
RAINFALL TYPE= 2										RAIN24= 3.030
COMPUTE NM HYD	925.20	-	1	.00940	23.81	.962	1.91802	1.500	3.957	PER IMP= 50.00
ROUTE MCUNGE	925.27	1	3	.00940	22.10	.958	1.91061	1.550	3.674	CCODE = .1
COMPUTE NM HYD	925.10	-	1	.06400	162.00	6.547	1.91802	1.500	3.955	PER IMP= 50.00
*S COMBINE 925.1 & 925.27 AS 925.18 (VINYARD FLOW TO APS SITE)										
ADD HYD	925.18	1& 3	1	.07340	179.25	7.505	1.91706	1.500	3.816	
*S (925.19=4.5-FOOT STORM SEWER ROUTING)										
ROUTE	925.19	1	2	.07340	170.72	7.505	1.91707	1.550	3.634	
COMPUTE NM HYD	925.40	-	4	.03700	96.45	3.887	1.96954	1.500	4.073	PER IMP= 50.00
*S INFLOW NDB FROM VINYARD SD AND APS MID SCHOOL 925.48										
*S (AP 925.48) - FINAL										
ADD HYD	925.48	2& 4	15	.11040	256.58	11.391	1.93465	1.550	3.631	
RAINFALL TYPE= 2										RAIN24= 3.000
COMPUTE NM HYD	924.30	-	1	.02700	68.50	2.753	1.91154	1.500	3.964	PER IMP= 50.00
*S CARRINGTON SUBDIVISION (AP 924.3)										
COMPUTE NM HYD	924.40	-	7	.01720	43.28	1.741	1.89760	1.500	3.932	PER IMP= 50.00
*S TOTAL BARSTOW @ CARRINGTON (AP 924.99) - FINAL										
ADD HYD	924.99	1& 7	5	.04420	111.78	4.493	1.90611	1.500	3.951	
COMPUTE NM HYD	925.30	-	1	.01050	26.43	1.063	1.89760	1.500	3.933	PER IMP= 50.00
*S COMBINE CARRINGTON FLOW WITH VINYARD FLOW 925.3 + 924.99 AS 925.38										
ADD HYD	925.38	1& 5	5	.05470	138.20	5.556	1.90447	1.500	3.948	
*S (STORM SEWER FROM GREEN ARBOR TO NDB)										
ROUTE	924.81	5	2	.05470	133.00	5.556	1.90448	1.550	3.799	
*S BARSTOW SD WITH VINYARD SD FLOW AT NDB										
ADD HYD	925.38	15& 2	6	.16510	389.58	16.947	1.92465	1.550	3.687	
*S BARSTOW DIVERSION										
COMPUTE NM HYD	926.20	-	1	.04700	111.97	4.330	1.72735	1.500	3.722	PER IMP= 40.00
ROUTE	926.28	1	2	.04700	106.30	4.330	1.72736	1.550	3.534	
*S N D B ARROYO AT BARTSOW (AP 926.99) - FINAL										
ADD HYD	926.89	11& 2	2	3.55446	1284.98	297.906	1.57147	1.600	.565	
ADD HYD	926.99	2& 6	5	3.71956	1618.82	314.853	1.58715	1.600	.680	
ROUTE MCUNGE	926.70	5	3	3.71956	1585.94	314.748	1.58662	1.600	.666	CCODE = .1
ROUTE MCUNGE	926.80	3	5	3.71956	1562.13	314.538	1.58556	1.700	.656	CCODE = .1
COMPUTE NM HYD	932.40	-	3	.05740	150.03	6.135	2.00401	1.500	4.084	PER IMP= 55.00
RAINFALL TYPE= 2										RAIN24= 2.960
COMPUTE NM HYD	930.00	-	1	.08500	224.35	9.278	2.04656	1.500	4.124	PER IMP= 60.00
*S N D B ARROYO AT WYOMING (AP 930.59) -										
ADD HYD	930.59	1& 3	1	.14240	374.39	15.413	2.02940	1.500	4.108	
*S N D B ARROYO AT WYOMING (AP 930.99) - FINAL										

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
ADD HYD	930.99	1& 5	1	3.86196	1732.40	329.950	1.60192	1.700	.701	
ROUTE MCUNGE	930.80	1	12	3.86196	1692.74	329.639	1.60041	1.800	.685	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.950
COMPUTE NM HYD	935.00	-	14	.11000	254.57	9.731	1.65876	1.500	3.616	PER IMP= 40.00
ADD HYD	930.85	14&12	13	3.97196	1773.42	339.371	1.60203	1.800	.698	
*S**********										
*S	BEGIN: WYOMING STORM DRAIN									
*S**********										
COMPUTE NM HYD	929.00	-	4	.02400	65.77	2.752	2.14971	1.500	4.282	PER IMP= 65.00
COMPUTE NM HYD	931.00	-	1	.06050	109.47	6.529	2.02346	1.650	2.827	PER IMP= 60.00
*S NO POND AT LA CUEVA HIGH SCHOOL FOR FUTURE CONDITION										
ADD HYD	931.80	4& 1	1	.08450	153.96	9.281	2.05931	1.600	2.847	
COMPUTE NM HYD	932.10	-	4	.00730	19.08	.766	1.96752	1.500	4.083	PER IMP= 55.00
*S CHURCH (AP 932.1)										
*S WYOMING AND WILSHIRE (AP 931.99)										
ADD HYD	931.99	4& 1	1	.09180	170.54	10.047	2.05201	1.550	2.903	
*S (931.98=5-FOOT PIPE ROUTING)										
ROUTE	931.98	1	3	.09180	169.55	10.047	2.05201	1.550	2.886	
COMPUTE NM HYD	932.20	-	1	.00730	18.89	.766	1.96752	1.500	4.043	PER IMP= 55.00
ADD HYD	932.80	3& 1	1	.09910	186.34	10.813	2.04578	1.550	2.938	
COMPUTE NM HYD	932.30	-	2	.03130	80.93	3.284	1.96752	1.500	4.040	PER IMP= 55.00
ADD HYD	932.00	2& 1	10	.13040	258.27	14.097	2.02699	1.550	3.095	
*S NO POND AT NORESTE BETWEEN CORONA AND ANAHEIM										
*S**********										
*S	END: WYOMING STORM DRAIN									
*S**********										
ROUTE MCUNGE	932.81	10	2	.13040	248.40	14.097	2.02700	1.700	2.976	CCODE = .1
COMPUTE NM HYD	934.10	-	1	.10310	272.43	11.220	2.04056	1.500	4.129	PER IMP= 60.00
ADD HYD	934.99	1& 2	3	.23350	388.07	25.317	2.03298	1.650	2.597	
*S LNDBDD INFLOW HYDROGRAPH (AP 930.84) - NOT FINAL										
ADD HYD	930.84	3&13	11	4.20546	2107.61	364.688	1.62596	1.750	.783	
COMPUTE NM HYD	937.00	-	1	.04520	119.15	4.919	2.04056	1.500	4.119	PER IMP= 60.00
*S TOTAL DAM INFLOW HYDROGRAPH (930.86)-FINAL										
ADD HYD	930.86	1&11	11	4.25066	2153.83	369.607	1.63037	1.750	.792	
*S										
*S	LOWER NORTH DOMINGO BACA DETENTION DAM									
*S LOW FLOW OUTLET (PRINCIPLE SPILLWAY). THIS PRINCIPLE SPILLWAY JOINS										
*S ONE OF THE FOUR BOX CULVERTS AT THE I-25. IT ALSO PICKS UP FLOWS FROM										
*S SUB-BASINS 940.2, 939.16, 939.14 & 943.1. THE FLOWS FROM SUB-BASINS										
*S 939.14 AND 943.1 ARE INCLUDED BY SAD221 PROJECT WHICH IS ALREADY										
*S IN PLACE. THE FOLLOWING RATING CURVE IS FOR A 40-INCH ORIFICE PLATE.										
*S EMERGENCY SPILLWAY IS NOT USED IN THE FOLLOWING RATING CURVE.										
*S										
ROUTE RESERVOIR	930.87	11	12	4.25066	200.70	369.646	1.63054	3.250	.074	AC-FT= 102.949
*S LNDBAD DAM OUTFLOW HYDROGRAPH (AP 930.87)										
RAINFALL TYPE= 2										RAIN24= 2.850
COMPUTE NM HYD	960.00	-	1	.00750	18.46	.727	1.81681	1.500	3.845	PER IMP= 50.00
*S STORM DRAIN OUT OF LNDBD DAM AT LOUISIANA BLVD. (AP 930.89)										
ADD HYD	930.89	1&12	12	4.25816	200.83	370.372	1.63086	3.200	.074	
COMPUTE NM HYD	940.20	-	1	.01560	37.64	1.486	1.78583	1.500	3.770	PER IMP= 50.00
COMPUTE NM HYD	939.16	-	3	.01280	30.89	1.219	1.78582	1.500	3.770	PER IMP= 50.00
ADD HYD	940.26	1& 3	3	.02840	68.53	2.705	1.78580	1.500	3.770	
*S AT THE END OF LA CUEVA OESTE PHASE 1, IN STORM DRAIN PIPE (AP 939.88)										
*S (UNBULKED)										
ADD HYD	939.88	12& 3	12	4.28656	203.16	373.077	1.63189	2.050	.074	
*S STORM DRAIN PIPE FROM THE END OF LA CUEVA OESTE PHASE 1 TILL SAN PEDRO										
*S BENEATH ANAHEIM AVE -- TWO REACHES										
*S RCP DIA=4 FT TO 940.0 OUTFALL										
*S (939.78=4-FOOT PIPE ROUTING)										
ROUTE	939.78	12	15	4.28656	202.85	373.068	1.63185	2.050	.074	
COMPUTE NM HYD	940.00	-	1	.01410	34.02	1.343	1.78583	1.500	3.770	PER IMP= 50.00
ADD HYD	939.68	15& 1	15	4.30066	232.55	374.411	1.63235	1.550	.084	
*S RCP DIA=4 FT TO SAN PEDRO										
ROUTE	939.58	15	16	4.30066	234.18	374.407	1.63234	1.550	.085	
*S STORM DRAIN PIPE FROM SAN PEDRO TO UTE DR. BENEATH ANAHEIM AVE.										
*S (939.48=RCP DIA=4 FT)										
ROUTE	939.48	16	14	4.30066	234.08	374.402	1.63232	1.550	.085	
COMPUTE NM HYD	939.14	-	1	.01120	29.58	1.203	2.01454	1.500	4.127	PER IMP= 60.00
COMPUTE NM HYD	943.10	-	3	.01200	31.97	1.322	2.06603	1.500	4.162	PER IMP= 65.00
*S STORM DRAIN BENEATH ANAHEIM AT UTE (AP 943.18)										
ADD HYD	943.18	1& 3	3	.02320	61.55	2.526	2.04114	1.500	4.145	
*S STORM DRAIN FLOW AT I-25 (AP 943.19)										

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 6 NOTATION
ADD HYD	943.19	3&14	3	4.32386	288.50	376.928	1.63451	1.550	.104	
COMPUTE NM HYD	940.10	-	1	.00700	18.82	.791	2.11965	1.500	4.202	PER IMP= 70.00
ROUTE MCUNGE	940.80	1	6	.00700	18.75	.791	2.11970	1.600	4.185	CCODE = .2
COMPUTE NM HYD	943.20	-	1	.03750	100.77	4.239	2.11965	1.500	4.199	PER IMP= 70.00
*S OVERLAND FLOW AT I-25 (AP 943.29)										
ADD HYD	943.29	1& 6	5	.04450	112.79	5.031	2.11964	1.500	3.960	
*S TOTAL NDB Q AT I-25 BOX CULVERT (943.89)										
ADD HYD	943.98	5& 3	9	4.36836	394.04	381.959	1.63945	1.550	.141	
*S CORONA SD SYSTEM										
COMPUTE NM HYD	942.20	-	1	.10310	229.08	10.288	1.87097	1.550	3.472	PER IMP= 55.00
*S (ROUTE IN SD DIA=4 FT)										
ROUTE	942.29	1	5	.10310	231.01	10.288	1.87097	1.550	3.501	
COMPUTE NM HYD	942.10	-	2	.04690	128.50	5.391	2.15532	1.500	4.281	PER IMP= 70.00
*S CORONA SD AT I-25										
ADD HYD	942.59	2& 5	3	.15000	344.19	15.679	1.95987	1.550	3.585	
*S TOTAL Q AT CORONADO MH PARK (AP 943.99)										
ADD HYD	943.99	3& 9	3	4.51836	738.23	397.637	1.65009	1.550	.255	
COMPUTE NM HYD	443.20	-	2	.07030	192.62	8.081	2.15532	1.500	4.281	PER IMP= 70.00
FINISH										

-(s0p10h4099T-&16D

North Domingo BACA - 10-YR Future

-(s16.67h8.5v0T-&l8D

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/29/1998
INPUT FILE = a:nbac10.fut USER NO.= RSTECHNM.STE

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S 100-YR RETURN PERIOD, 24-HR STORM, FUTURE CONDITIONS										
*S MUSKINGUM-CUNGE CHANNEL ROUTING										
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.670
COMPUTE NM HYD	900.00	-	1	.44100	328.97	17.063	.72545	1.700	1.166	PER IMP= .00
*S ROUTE HYD. 900 THROUGH 902.1 (900.8)										
ROUTE MCUNGE	900.80	1	2	.44100	320.94	16.998	.72271	1.850	1.137	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.390
COMPUTE NM HYD	902.10	-	5	.08870	72.14	4.340	.91736	1.600	1.271	PER IMP= 30.00
*S (902.91=NORTH BRANCH OF ARROYO AT JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.91	2& 5	2	.52970	362.68	21.338	.75530	1.850	1.070	
RAINFALL TYPE= 2										RAIN24= 2.570
COMPUTE NM HYD	901.00	-	1	.11800	165.92	4.570	.72623	1.500	2.197	PER IMP= .00
*S 20% AVULSION FROM SOUTH DOMINGO BACA WATERSHED SUB-BASIN 400.3										
RECALL HYD	400.30	-	15	.25500	348.72	9.922	.72958	1.500	2.137	
DIVIDE HYD	400.61	15	15	.05100	69.74	1.984	.72957	1.500	2.137	
	400.6SDB	AND	19	.20400	278.98	7.938	.72957	1.500	2.137	
*S COMBINE 901 AND 20% AVULSION AS 901.1										
ADD HYD	901.10	1&15	1	.16900	235.66	6.555	.72724	1.500	2.179	
*S ROUTE HYD. 901.1 THROUGH 902.2 (901.8)										
ROUTE MCUNGE	901.80	1	3	.16900	203.55	6.482	.71913	1.700	1.882	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.390
COMPUTE NM HYD	902.20	-	5	.12200	99.04	5.969	.91736	1.600	1.268	PER IMP= 30.00
*S (902.92=SOUTH BRANCH OF ARROYO AT JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.92	3& 5	3	.29100	292.63	12.451	.80223	1.700	1.571	
*S (902.93=SUM OF FLOWS AT ARROYO JUNCTION EAST OF TRAMWAY LANE)										
ADD HYD	902.93	2& 3	1	.82070	607.34	33.788	.77194	1.750	1.156	
ROUTE MCUNGE	902.80	1	2	.82070	606.01	33.755	.77119	1.800	1.154	CCODE = .2
COMPUTE NM HYD	902.30	-	3	.07300	95.14	3.939	1.01170	1.500	2.036	PER IMP= 35.00
*S (902.99=TOTAL FLOW @ TRAMWAY FROM 902 SUBBASINS, 901, 900)										
ADD HYD	902.99	2& 3	1	.89370	633.76	37.694	.79083	1.800	1.108	
*S**********										
*S BEGIN: PRIMROSE POINTE DEVELOPMENT										
*S**********										
ROUTE MCUNGE	902.90	1	17	.89370	633.05	31.648	.66398	1.806	1.107	CCODE = .2
*S ROUTE 902.9 TO PRIMROSE POINTE CONCRETE CHANNEL AS 902.99										
ROUTE MCUNGE	902.99	17	16	.89370	632.53	31.635	.66370	1.804	1.106	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.430
COMPUTE NM HYD	906.00	-	12	.02368	38.91	1.642	1.30021	1.500	2.567	PER IMP= 45.00
ADD HYD	906.10	16&12	2	.91738	643.63	32.966	.67379	1.804	1.096	
*S ROUTE THRU THROUGH PRIMROSE POINTE TO LOWELL										
ROUTE MCUNGE	906.19	2	16	.91738	630.57	32.874	.67189	1.900	1.074	CCODE = .1
COMPUTE NM HYD	904.00	-	1	.04130	60.83	2.315	1.05117	1.500	2.301	PER IMP= 30.00
*S ROUTE HYDOGRAPH THRU POND NDB1										
ROUTE RESERVOIR	904.90	1	17	.04130	24.10	2.113	.95949	1.700	.912	AC-FT= .953
COMPUTE NM HYD	905.00	-	10	.00920	13.56	.516	1.05117	1.500	2.303	PER IMP= 30.00
*S ROUTE 905 HYDOGRAPH THRU POND NDB2										
ROUTE RESERVOIR	905.90	10	18	.00920	6.89	.467	.95141	1.650	1.171	AC-FT= .226
*S BASIN 903.0										
COMPUTE NM HYD	903.00	-	2	.08968	131.56	5.028	1.05117	1.500	2.292	PER IMP= 30.00
*S POND 3 DISCHARGE TO THE NORTH DOMINGO BACA ARROYO										
ROUTE RESERVOIR	903.90	2	24	.08968	11.58	3.801	.79467	2.150	.202	AC-FT= 3.637
ADD HYD	906.29	24&18	26	.09888	13.28	4.268	.80925	2.150	.210	
ADD HYD	906.39	17&26	1	.14018	32.79	6.381	.85352	1.700	.365	
*S ********** TOTAL NORTH DOMINGO BACA FLOW AT LOWELL STREET **********										
ADD HYD	906.99	1&16	1	1.05756	658.26	39.255	.69596	1.900	.973	
*S**********										
*S END: PRIMROSE POINTE DEVELOPMENT										
*S**********										
ROUTE MCUNGE	906.88	1	2	1.05756	649.88	38.789	.68771	1.963	.960	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.230
COMPUTE NM HYD	910.21	-	1	.01370	16.31	.537	.73520	1.500	1.860	PER IMP= 17.00
ADD HYD	910.29	2& 1	5	1.07126	652.25	39.323	.68827	1.963	.951	
RAINFALL TYPE= 2										RAIN24= 2.250
COMPUTE NM HYD	910.31	-	2	.15630	201.64	7.192	.86272	1.500	2.016	PER IMP= 25.00
ADD HYD	910.90	5& 2	1	1.22756	688.70	46.525	.71064	1.921	.877	
ROUTE MCUNGE	910.88	1	2	1.22756	673.72	46.430	.70919	2.050	.858	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.220
COMPUTE NM HYD	912.11	-	3	.05900	67.97	2.254	.71642	1.500	1.800	PER IMP= 17.00
*S N D B ARROYO BETWEEN BROWNING AND EUBANK (AP 912.95) - UNBULKED										
ADD HYD	912.95	3& 2	1	1.28656	681.80	48.685	.70952	2.050	.828	
RAINFALL TYPE= 2										RAIN24= 2.220
COMPUTE NM HYD	912.21	-	2	.19600	201.16	7.489	.71642	1.550	1.604	PER IMP= 17.00
ADD HYD	912.98	1& 2	15	1.48256	712.14	56.174	.71043	2.000	.751	
RAINFALL TYPE= 2										RAIN24= 2.230
COMPUTE NM HYD	402.50	-	4	.02800	52.16	2.306	1.54415	1.500	2.911	PER IMP= 70.00
COMPUTE NM HYD	402.60	-	5	.02430	45.27	2.001	1.54415	1.500	2.911	PER IMP= 70.00
*S COMBINE 402.5 AND 402.6 AS 402.9 (AT BROWNING)										
ADD HYD	402.90	4& 5	11	.05230	97.43	4.307	1.54414	1.500	2.911	

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	
*S ROUTE 402.9 AS 402.8 IN 42-INCH SD TO END OF 915.2											
ROUTE	402.80	11	6	.05230	95.66	4.307	1.54415	1.500	2.858		
COMPUTE NM HYD	915.20	-	2	.03700	68.99	3.047	1.54415	1.500	2.913	PER IMP=	70.00
ADD HYD	915.90	6& 2	11	.08930	164.64	7.354	1.54414	1.500	2.881		
*S ROUTE 915.9 AS 915.8 TO NDB DAM IN 54-INCH PIPE											
ROUTE	915.80	11	7	.08930	157.85	7.354	1.54415	1.550	2.762		
*S COMBINE HYD'S 912.98 AND 915.8 AS 912.99 (FLOW TO NDB DAM FROM PDN DRAIN)											
ADD HYD	912.99	15& 7	15	1.57186	751.34	63.528	.75779	2.000	.747		
*S**********											
*S AP 105.9 IS FROM "LA CUEVA, EL CAMINO & NORTH CAMINO ARROYOS - DRAINAGE											
*S MANAGEMENT PLAN" (RESOURCE TECHNOLOGY, INC., 1996).											
*S FILENAME: LCDV100X.FUT											
*S**********											
*S AP 105.9 IS FROM LA CUEVA TRIBUTARY (DIVERTED TO UPPER N. D. B. DAM											
*S THROUGH LA CUEVA DIVERSION CHANNEL)											
*S 10-YR FUTURE CND HYD											
RECALL HYD	105.90	-	17	1.17410	766.40	48.832	.77982	1.750	1.020		
ROUTE MCUNGE	105.80	17	2	1.17410	764.04	48.883	.78065	1.742	1.017	CCODE =	.2
COMPUTE NM HYD	911.00	-	3	.05800	57.52	2.248	.72671	1.550	1.550	PER IMP=	17.00
*S TOTAL INFLOW HYDROGRAPH INTO UPPER N.D.B. DAM. FROM LA CUEVA DIVERSION											
*S CHANNEL (HYD NO. 911.99) - UNBULKED											
ADD HYD	911.99	2& 3	1	1.23210	792.16	51.129	.77807	1.742	1.005		
*S TOTAL INFLOW HYDROGRAPH INTO UPPER N.D.B. DAM. (HYD NO. 914.79)											
*S (BULKED)											
ADD HYD	914.79	15& 1	1	2.80396	1299.18	114.646	.76664	1.698	.724		
*S ROUTING THROUGH UPPER NORTH DOMINGO BACA DAM											
*S											
*S THIS STORAGE OUTFLOW DATA WAS BASED ON TOPOGRAPHY IN JUNE 1994.											
*S OUTFLOW IS TAKEN FROM "DESIGN ANALYSIS REPORT FOR LA CUEVA DIVERSION											
*S CHANNEL" (RESOURCE TECHNOLOGY, INC., 1994). STORAGE INFORMATION WAS											
*S CALCULATED AT RTI - PROPOSED FUTURE CONDITION EXCAVATION.											
*S THE ELEVATION OF EMERGENCY SPILLWAY IS AT 5749.											
ROUTE RESERVOIR	914.99	1	2	2.80396	129.27	114.554	.76602	2.904	.072	AC-FT=	84.852
*S UPPER N.D.B. DAM OUTFLOW HYDROGRAPH AT EUBANK. (HYD NO. 914.99)											
*S AP 914.99 IS THROUGH THE PRINCIPAL SPILLWAY											
*S AP NDB.SPILL IS THROUGH THE EMERGENCY SPILLWAY											
DIVIDE HYD	914.99	2	2	2.80396	129.27	114.554	.76602	2.904	.072		
	NDB.SPILL	AND	20	.00000	.00	.000	.00000	-.045	.000		
ROUTE MCUNGE	914.68	2	3	2.80396	129.28	114.552	.76601	2.950	.072	CCODE =	.2
ROUTE	SPILL.ROU	20	19	.00000	.00	.000	.00000	-.050	.000		
RAINFALL TYPE= 2										RAIN24=	2.130
COMPUTE NM HYD	914.20	-	1	.03500	44.99	1.631	.87376	1.500	2.009	PER IMP=	30.00
*S UNDBD DAM SPILL AT EUBANK (AP 914.29)											
ADD HYD	914.29	1&19	1	.03500	44.99	1.631	.87375	1.500	2.009		
ROUTE MCUNGE	914.28	1	2	.03500	40.82	1.631	.87377	1.650	1.822	CCODE =	.1
*S N D B ARROYO BETWEEN EUBANK AND HOLBROOK											
*S (AP 914.78)											
ADD HYD	914.78	2& 3	2	2.83896	129.99	116.183	.76733	2.750	.072		
ROUTE MCUNGE	914.88	2	3	2.83896	129.96	116.183	.76733	2.900	.072	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	2.100
COMPUTE NM HYD	919.10	-	1	.07900	88.16	2.863	.67950	1.500	1.744	PER IMP=	17.00
*S N D B ARROYO HOLBROOK (HYD NO. 919.19) - FINAL											
ADD HYD	919.19	1& 3	4	2.91796	136.13	119.046	.76496	1.800	.073		
COMPUTE NM HYD	919.20	-	1	.04270	47.67	1.547	.67950	1.500	1.744	PER IMP=	17.00
*S HOLBROOK (HYD NO. 919.29) NOT FINAL											
ADD HYD	919.29	1& 4	22	2.96066	153.96	120.593	.76372	1.550	.081		
RAINFALL TYPE= 2										RAIN24=	2.070
COMPUTE NM HYD	920.20	-	3	.00850	9.24	.300	.66087	1.500	1.698	PER IMP=	17.00
RAINFALL TYPE= 2										RAIN24=	2.170
COMPUTE NM HYD	913.10	-	1	.03600	40.82	1.343	.69964	1.500	1.772	PER IMP=	17.00
ROUTE MCUNGE	913.88	1	2	.03600	34.88	1.343	.69965	1.800	1.514	CCODE =	.1
RAINFALL TYPE= 2										RAIN24=	2.100
COMPUTE NM HYD	917.00	-	1	.04060	36.32	1.325	.61202	1.500	1.398	PER IMP=	17.00
*S HOLBROOK (AP 917.99) - FINAL											
ADD HYD	917.99	1& 2	21	.07660	44.45	2.669	.65319	1.750	.907		
*S (AP 920.29)											
ADD HYD	920.29	21& 3	4	.08510	47.83	2.968	.65395	1.500	.878		
*S ROUTE IN HOLBROOK TO CORONA IN 48" SD											
ROUTE	920.28	4	9	.08510	46.73	2.968	.65396	1.550	.858		
RAINFALL TYPE= 2										RAIN24=	2.130
COMPUTE NM HYD	913.20	-	1	.01700	22.16	.792	.87376	1.500	2.037	PER IMP=	30.00
ROUTE MCUNGE	913.18	1	2	.01700	21.98	.792	.87378	1.700	2.021	CCODE =	.2
RAINFALL TYPE= 2										RAIN24=	2.100
COMPUTE NM HYD	918.00	-	1	.11400	79.28	4.131	.67950	1.650	1.087	PER IMP=	17.00
*S HOLBROOK (AP 918.88) - FINAL											
ADD HYD	918.88	1& 2	1	.13100	96.73	4.924	.70471	1.650	1.154		
*S ADD 920.28 AND 918.89 AND ROUTE TO NDB											
ADD HYD	918.89	1& 9	1	.21610	139.37	7.892	.68472	1.700	1.008		
*S ROUTE IN HOLBROOK TO CARMEL IN 66"SD											
ROUTE	918.99	1	8	.21610	139.05	7.892	.68472	1.700	1.005		
RAINFALL TYPE= 2										RAIN24=	2.070
COMPUTE NM HYD	921.40	-	6	.01440	15.64	.508	.66087	1.500	1.697	PER IMP=	17.00
COMPUTE NM HYD	921.30	-	7	.01400	15.21	.493	.66087	1.500	1.697	PER IMP=	17.00

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
*S COMBINER ALL HOLBROOK AND NDB FLOWS AT HOLBROOK CROSSING										
*S ADD 918.99 AND 920.4 AS 920.49										
ADD HYD	920.49	8& 6	6	.23050	145.46	8.399	.68323	1.700	.986	
*S ADD 920.49 TO 919.29 AS 919.99										
ADD HYD	919.99	6&22	20	3.19116	293.11	128.992	.75791	1.700	.144	
*S BETWEEN HOLBROOK AND VENTURA (AP 919.18) - NOT FINAL										
ROUTE MCUNGE	919.18	20	5	3.19116	292.55	128.993	.75791	1.750	.143	CCODE = .2
RAINFALL TYPE= 2										RAIN24= 2.070
COMPUTE NM HYD	921.10	-	1	.02920	31.71	1.029	.66087	1.500	1.697	PER IMP= 17.00
*S UPSTREAM OF END OF VINYARD ESTATES SUBDIVISION UNIT IV BETWEEN										
*S HOLBROOK & VENTURA										
*S **********										
*S BEGIN: VINYARD ESTATES - UNIT IV SE CORNER										
*S **********										
*S ROUTE 921.19										
*S (48-INCH RCP)										
ROUTE	921.80	1	12	.02920	31.76	1.029	.66088	1.500	1.700	
*S (54-INCH RCP)										
ROUTE	921.89	12	16	.02920	31.84	1.029	.66088	1.500	1.704	
*S COMBINE 921.89 & 921.3 AS 921.98										
ADD HYD	921.98	16& 7	15	.04320	47.05	1.523	.66085	1.500	1.702	
*S **********										
*S END: VINYARD ESTATES - UNIT IV										
*S **********										
*S N D B ARROYO BETWEEN HOLBROOK & VENTURA (AP 921.78) - FINAL										
ADD HYD	921.78	5&15	1	3.23436	321.26	130.515	.75661	1.600	.155	
ROUTE MCUNGE	921.80	1	2	3.23436	318.91	130.504	.75655	1.600	.154	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.050
COMPUTE NM HYD	921.20	-	1	.08740	145.56	5.935	1.27323	1.500	2.602	PER IMP= 60.00
*S N D B ARROYO AT VENTURA (AP 921.9) - NOT FINAL										
ADD HYD	921.90	1& 2	26	3.32176	419.49	136.439	.77014	1.600	.197	
RAINFALL TYPE= 2										RAIN24= 2.070
COMPUTE NM HYD	920.10	-	17	.02020	21.94	.712	.66087	1.500	1.697	PER IMP= 17.00
COMPUTE NM HYD	920.00	-	5	.03000	32.58	1.057	.66087	1.500	1.697	PER IMP= 17.00
*S **********										
*S BEGIN: VINYARD ESTATES - UNIT IV										
*S **********										
RAINFALL TYPE= 2										RAIN24= 2.020
COMPUTE NM HYD	922.10	-	2	.00700	10.43	.412	1.10436	1.500	2.328	PER IMP= 50.00
COMPUTE NM HYD	923.00	-	12	.00700	12.15	.515	1.37845	1.500	2.711	PER IMP= 70.00
COMPUTE NM HYD	922.20	-	9	.01480	21.04	.784	.99368	1.500	2.221	PER IMP= 40.00
COMPUTE NM HYD	922.30	-	16	.04150	58.97	2.199	.99368	1.500	2.220	PER IMP= 40.00
*S COMBINE 920 + 922.1 AS 922.19										
ADD HYD	922.19	5& 2	4	.03700	43.00	1.470	.74475	1.500	1.816	
*S ROUTE 922.19 THRU 30" PIPE AS 920.98										
ROUTE	920.98	4	8	.03700	42.40	1.470	.74477	1.500	1.791	
*S ADD 922.2 + 920.98 AS 922.28										
ADD HYD	922.28	8& 9	10	.05180	63.43	2.254	.81587	1.500	1.913	
*S Route 922.28 flows to Ventura Interceptor AS 922.29										
ROUTE	922.29	10	11	.05180	63.13	2.254	.81589	1.500	1.904	
RAINFALL TYPE= 2										RAIN24= 2.020
COMPUTE NM HYD	922.00	-	1	.02100	17.26	.713	.63633	1.550	1.284	PER IMP= 17.00
*S COMBINE 922 AND 923 AS 923.99										
ADD HYD	920.98	1&12	1	.02800	27.97	1.227	.82183	1.550	1.561	
*S ROUTE 920.1 DOWN WILSHIRE TO VENTURA										
ROUTE	920.18	17	12	.02020	21.34	.712	.66089	1.550	1.651	
*S COMBINE 920.18 AND 920.98 AS 920.99										
ADD HYD	920.99	1&12	1	.04820	49.31	1.939	.75437	1.550	1.599	
*S Route 923.99 FLOW FROM NO OF VINYARD IV TO 48" Ventura Line AS 923.8										
ROUTE	923.80	1	13	.04820	49.65	1.939	.75439	1.550	1.609	
*S ADD 923.8 + 922.29 AS 923.9										
ADD HYD	923.90	11&13	14	.10000	110.91	4.193	.78623	1.550	1.733	
*S ROUTE 923.9 TO NDB (NOT FINAL)										
ROUTE	923.91	14	15	.10000	113.48	4.193	.78624	1.550	1.773	
*S ADD 923.91 + 923.3 AS 923.92										
ADD HYD	923.92	16&15	18	.14150	166.41	6.393	.84707	1.550	1.838	
*S NO POND AT VENTURA										
*S**********										
*S END: VINYARD ESTATES - UNIT IV										
*S**********										
*S N D B ARROYO AT VENTURA (AP 921.99) - FINAL										
ADD HYD	921.99	18&26	1	3.46326	581.05	142.831	.77328	1.550	.262	
RAINFALL TYPE= 2										RAIN24= 2.020
COMPUTE NM HYD	926.10	-	2	.01200	18.12	.709	1.10839	1.500	2.360	PER IMP= 50.00
*S LA CUEVA SUBDIVISION (AP 926.1) - NO POND FINAL										
*S N D B ARROYO AT ~400 FT WEST OF VENTURA. (HYD NO. 926.19) - FINAL										
ADD HYD	926.19	1& 2	1	3.47526	597.21	143.541	.77444	1.550	.269	

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
ROUTE MCUNGE	926.17	1	2	3.47526	574.30	143.524	.77435	1.650	.258	CCODE = .1
RAINFALL TYPE= 2										RAIN24= 2.000
COMPUTE NM HYD	926.00	-	1	.05780	91.71	3.630	1.17740	1.500	2.479	PER IMP= 55.56
*S N D B ARROYO AT BARSTOW. (AP 926.79) - NOT FINAL										
ADD HYD	926.79	1& 2	11	3.53306	628.88	147.154	.78095	1.600	.278	
RAINFALL TYPE= 2										RAIN24= 2.020
COMPUTE NM HYD	925.20	-	1	.00940	14.20	.556	1.10839	1.500	2.361	PER IMP= 50.00
ROUTE MCUNGE	925.27	1	3	.00940	13.07	.551	1.09910	1.600	2.172	CCODE = .1
COMPUTE NM HYD	925.10	-	1	.06400	96.60	3.783	1.10839	1.500	2.359	PER IMP= 50.00
*S COMBINE 925.1 & 925.27 AS 925.18 (VINYARD FLOW TO APS SITE)										
ADD HYD	925.18	1& 3	1	.07340	103.87	4.334	1.10719	1.500	2.211	
*S (925.19=4.5-FOOT STORM SEWER ROUTING)										
ROUTE	925.19	1	2	.07340	99.09	4.334	1.10720	1.550	2.109	
COMPUTE NM HYD	925.40	-	4	.03700	58.52	2.255	1.14297	1.500	2.471	PER IMP= 50.00
*S INFLOW NDB FROM VINYARD SD AND APS MID SCHOOL 925.48										
*S (AP 925.48) - FINAL										
ADD HYD	925.48	2& 4	15	.11040	151.18	6.590	1.11918	1.550	2.140	
RAINFALL TYPE= 2										RAIN24= 2.000
COMPUTE NM HYD	924.30	-	1	.02700	41.20	1.593	1.10648	1.500	2.384	PER IMP= 50.00
*S CARRINGTON SUBDIVISION (AP 924.3)										
COMPUTE NM HYD	924.40	-	7	.01720	25.91	1.006	1.09694	1.500	2.354	PER IMP= 50.00
*S TOTAL BARSTOW @ CARRINGTON (AP 924.99) - FINAL										
ADD HYD	924.99	1& 7	5	.04420	67.11	2.600	1.10275	1.500	2.372	
COMPUTE NM HYD	925.30	-	1	.01050	15.82	.614	1.09694	1.500	2.354	PER IMP= 50.00
*S COMBINE CARRINGTON FLOW WITH VINYARD FLOW 925.3 + 924.99 AS 925.38										
ADD HYD	925.38	1& 5	5	.05470	82.93	3.214	1.10163	1.500	2.369	
*S (STORM SEWER FROM GREEN ARBOR TO NDB)										
ROUTE	924.81	5	2	.05470	79.28	3.214	1.10165	1.550	2.265	
*S BARSTOW SD WITH VINYARD SD FLOW AT NDB										
ADD HYD	925.38	15& 2	6	.16510	230.46	9.804	1.11337	1.550	2.181	
*S BARSTOW DIVERSION										
COMPUTE NM HYD	926.20	-	1	.04700	65.15	2.418	.96448	1.500	2.166	PER IMP= 40.00
ROUTE	926.28	1	2	.04700	62.70	2.418	.96448	1.500	2.084	
*S N D B ARROYO AT BARTSOW (AP 926.99) - FINAL										
ADD HYD	926.89	11& 2	2	3.58006	679.27	149.572	.78336	1.600	.296	
ADD HYD	926.99	2& 6	5	3.74516	875.93	159.375	.79790	1.600	.365	
ROUTE MCUNGE	926.70	5	3	3.74516	856.27	159.323	.79765	1.650	.357	CCODE = .1
ROUTE MCUNGE	926.80	3	5	3.74516	845.31	159.217	.79712	1.700	.353	CCODE = .1
COMPUTE NM HYD	932.40	-	3	.05740	91.59	3.605	1.17753	1.500	2.493	PER IMP= 55.00
RAINFALL TYPE= 2										RAIN24= 1.970
COMPUTE NM HYD	930.00	-	1	.08500	136.59	5.499	1.21296	1.500	2.511	PER IMP= 60.00
*S N D B ARROYO AT WYOMING (AP 930.59) -										
ADD HYD	930.59	1& 3	1	.14240	228.18	9.104	1.19867	1.500	2.504	
*S N D B ARROYO AT WYOMING (AP 930.99) - FINAL										
ADD HYD	930.99	1& 5	1	3.88756	944.36	168.321	.81183	1.700	.380	
ROUTE MCUNGE	930.80	1	12	3.88756	935.63	168.408	.81224	1.750	.376	CCODE = .2
COMPUTE NM HYD	935.00	-	14	.11000	143.07	5.401	.92069	1.500	2.032	PER IMP= 40.00
ADD HYD	930.85	14&12	13	3.99756	987.12	173.809	.81523	1.700	.386	
*S**********										
*S BEGIN: WYOMING STORM DRAIN										
*S**********										
COMPUTE NM HYD	929.00	-	4	.02400	41.00	1.658	1.29529	1.500	2.669	PER IMP= 65.00
COMPUTE NM HYD	931.00	-	1	.06050	66.31	3.878	1.20180	1.650	1.713	PER IMP= 60.00
*S NO POND AT LA CUEVA HIGH SCHOOL FOR FUTURE CONDITION										
ADD HYD	931.80	4& 1	1	.08450	93.78	5.536	1.22834	1.550	1.734	
COMPUTE NM HYD	932.10	-	4	.00730	11.58	.450	1.15472	1.500	2.479	PER IMP= 55.00
*S CHURCH (AP 932.1)										
*S WYOMING AND WILSHIRE (AP 931.99)										
ADD HYD	931.99	4& 1	1	.09180	103.90	5.985	1.22248	1.550	1.768	
*S (931.98=5-FOOT PIPE ROUTING)										
ROUTE	931.98	1	3	.09180	103.49	5.985	1.22249	1.550	1.762	
COMPUTE NM HYD	932.20	-	1	.00730	11.46	.450	1.15472	1.500	2.452	PER IMP= 55.00
ADD HYD	932.80	3& 1	1	.09910	113.67	6.435	1.21749	1.550	1.792	
COMPUTE NM HYD	932.30	-	2	.03130	49.09	1.928	1.15472	1.500	2.450	PER IMP= 55.00
ADD HYD	932.00	2& 1	10	.13040	157.29	8.362	1.20242	1.550	1.885	
*S NO POND AT NORESTE BETWEEN CORONA AND ANAHEIM										
*S**********										
*S END: WYOMING STORM DRAIN										
*S**********										
ROUTE MCUNGE	932.81	10	2	.13040	150.60	8.362	1.20242	1.700	1.805	CCODE = .1
COMPUTE NM HYD	934.10	-	1	.10310	165.19	6.670	1.21296	1.500	2.503	PER IMP= 60.00
ADD HYD	934.99	1& 2	3	.23350	232.14	15.032	1.20707	1.650	1.553	
*S LNDBDD INFLOW HYDROGRAPH (AP 930.84) - NOT FINAL										
ADD HYD	930.84	3&13	11	4.23106	1209.93	188.841	.83685	1.700	.447	
COMPUTE NM HYD	937.00	-	1	.04520	72.91	2.924	1.21296	1.500	2.520	PER IMP= 60.00
*S TOTAL DAM INFLOW HYDROGRAPH (930.86)-FINAL										
ADD HYD	930.86	1&11	11	4.27626	1241.53	191.765	.84083	1.700	.454	

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
*S										
*S	LOWER NORTH DOMINGO BACA DETENTION DAM									
*S	LOW FLOW OUTLET (PRINCIPLE SPILLWAY). THIS PRINCIPLE SPILLWAY JOINS									
*S	ONE OF THE FOUR BOX CULVERTS AT THE I-25. IT ALSO PICKS UP FLOWS FROM									
*S	SUB-BASINS 940.2, 939.16, 939.14 & 943.1. THE FLOWS FROM SUB-BASINS									
*S	939.14 AND 943.1 ARE INCLUDED BY SAD221 PROJECT WHICH IS ALREADY									
*S	IN PLACE. THE FOLLOWING RATING CURVE IS FOR A 40-INCH ORIFICE PLATE.									
*S	EMERGENCY SPILLWAY IS NOT USED IN THE FOLLOWING RATING CURVE.									
*S										
ROUTE RESERVOIR	930.87	11	12	4.27626	171.36	191.870	.84129	2.900	.063	AC-FT= 51.290
*S LNDBAD DAM OUTFLOW HYDROGRAPH (AP 930.87)										
RAINFALL TYPE= 2										RAIN24= 1.900
COMPUTE NM HYD	960.00	-	1	.00750	11.02	.418	1.04522	1.500	2.295	PER IMP= 50.00
*S STORM DRAIN OUT OF LNDBD DAM AT LOUISIANA BLVD. (AP 930.89)										
ADD HYD	930.89	1&12	12	4.28376	171.46	192.288	.84164	2.850	.063	
COMPUTE NM HYD	940.20	-	1	.01560	22.23	.853	1.02474	1.500	2.226	PER IMP= 50.00
COMPUTE NM HYD	939.16	-	3	.01280	18.24	.700	1.02474	1.500	2.227	PER IMP= 50.00
ADD HYD	940.26	1& 3	3	.02840	40.47	1.552	1.02472	1.500	2.226	
*S AT THE END OF LA CUEVA OESTE PHASE 1, IN STORM DRAIN PIPE (AP 939.88)										
*S (UNBULKED)										
ADD HYD	939.88	12& 3	12	4.31216	172.58	193.840	.84285	2.050	.063	
*S STORM DRAIN PIPE FROM THE END OF LA CUEVA OESTE PHASE 1 TILL SAN PEDRO										
*S BENEATH ANAHEIM AVE -- TWO REACHES										
*S RCP DIA=4 FT TO 940.0 OUTFALL										
*S (939.78=4-FOOT PIPE ROUTING)										
ROUTE	939.78	12	15	4.31216	172.54	193.840	.84285	2.050	.063	
COMPUTE NM HYD	940.00	-	1	.01410	20.09	.771	1.02474	1.500	2.227	PER IMP= 50.00
ADD HYD	939.68	15& 1	15	4.32626	176.38	194.611	.84344	1.550	.064	
*S RCP DIA=4 FT TO SAN PEDRO										
ROUTE	939.58	15	16	4.32626	177.23	194.611	.84344	1.550	.064	
*S STORM DRAIN PIPE FROM SAN PEDRO TO UTE DR. BENEATH ANAHEIM AVE.										
*S (939.48=RCP DIA=4 FT)										
ROUTE	939.48	16	14	4.32626	176.28	194.611	.84344	1.550	.064	
COMPUTE NM HYD	939.14	-	1	.01120	18.32	.714	1.19546	1.500	2.556	PER IMP= 60.00
COMPUTE NM HYD	943.10	-	3	.01200	19.85	.793	1.23850	1.500	2.585	PER IMP= 65.00
*S STORM DRAIN BENEATH ANAHEIM AT UTE (AP 943.18)										
ADD HYD	943.18	1& 3	3	.02320	38.17	1.507	1.21770	1.500	2.571	
*S STORM DRAIN FLOW AT I-25 (AP 943.19)										
ADD HYD	943.19	3&14	3	4.34946	210.06	196.118	.84544	1.550	.075	
COMPUTE NM HYD	940.10	-	1	.00700	11.73	.479	1.28349	1.500	2.618	PER IMP= 70.00
ROUTE MCUNGE	940.80	1	6	.00700	11.70	.479	1.28353	1.600	2.611	CCODE = .2
COMPUTE NM HYD	943.20	-	1	.03750	62.80	2.567	1.28348	1.500	2.617	PER IMP= 70.00
*S OVERLAND FLOW AT I-25 (AP 943.29)										
ADD HYD	943.29	1& 6	5	.04450	70.05	3.046	1.28347	1.500	2.459	
*S TOTAL NDB Q AT I-25 BOX CULVERT (943.98)										
ADD HYD	943.98	5& 3	9	4.39396	275.64	199.164	.84988	1.550	.098	
*S CORONA SD SYSTEM										
COMPUTE NM HYD	942.20	-	1	.10310	136.08	5.996	1.09048	1.550	2.062	PER IMP= 55.00
*S (ROUTE IN SD DIA=4 FT)										
ROUTE	942.29	1	5	.10310	138.34	5.996	1.09048	1.550	2.097	
COMPUTE NM HYD	942.10	-	2	.04690	80.87	3.270	1.30728	1.500	2.694	PER IMP= 70.00
*S CORONA SD AT I-25										
ADD HYD	942.59	2& 5	3	.15000	209.60	9.266	1.15826	1.550	2.183	
*S TOTAL Q AT CORONADO MH PARK (943.99)										
ADD HYD	943.99	3& 9	3	4.54396	485.23	208.430	.86005	1.550	.167	
COMPUTE NM HYD	443.20	-	2	.07030	121.03	4.901	1.30728	1.500	2.690	PER IMP= 70.00
FINISH										

-(s0p10h4099T-&16D

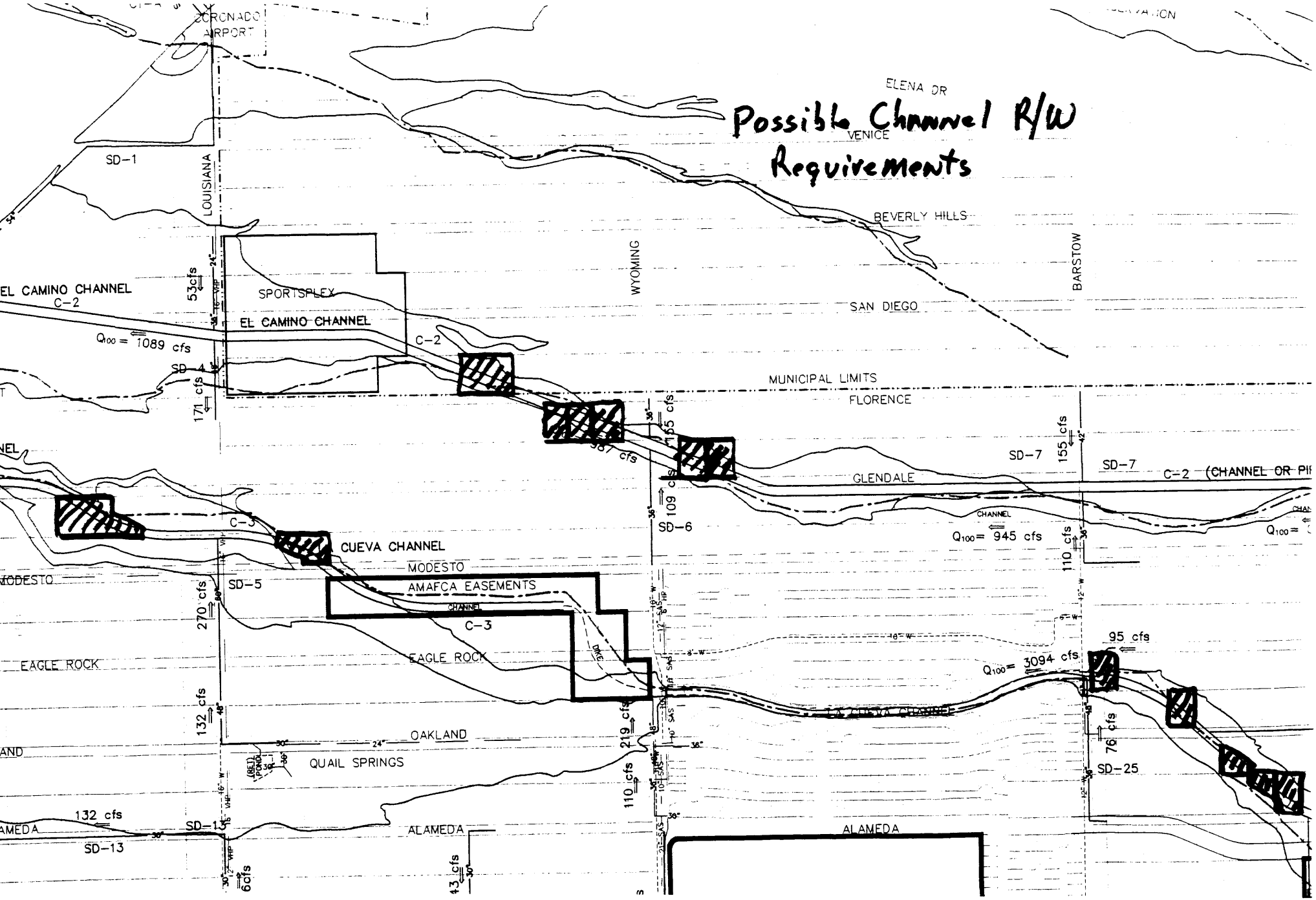
TABLE 2

I-25 CROSSING STRUCTURES
HYDRAULIC FLOW CAPACITY

Watershed Name/ Structure ID	Type & Size	Drainage Basin ID	Flow at Top of Pipe	Maximum Flow (cfs)	50-Year Existing (cfs)	100-Year Existing (cfs)	100-Year Developed (cfs)
N1	7-48" RCP	N1	455	N/A	245	319	
N2	1-30" RCP	N2	20	N/A	116	150	
North El Camino							
27	1-24" RCP	L2	---	10	*	*	
1, 2	1-48" RCP	L2	---	61	49	64	
3, 4	1-24" RCP/CMP	L4	13	23	3	4	
5	12-48" CMP	N. El Camino	780	1020	1924	2877 [7,9]	3500 [9]
7	1-36" CMP	L7	35	75	70	78	
South El Camino							
8	12-48" CMP	S. El Camino	936	1536	1890	2366 [8,9]	2600 [9]
9	1-24" RCP/CMP	L9	14	23	9	11	
10	1-24" RCP	L10	14	22	6	8	
North La Cueva							
11A	1-24" CMP	L11A	13	25	17	21	
11	3-10'x10' CBC	N. La Cueva	2700	4500	3306	4133 [9]	5100 [9]
South La Cueva							
12	8-36" RCP	L12 + L12A	280	552	213	269	
13	5-36" RCP	L13	185	410	88	109	
LALA					41	46	
L19A					45	51	
North Domingo Baca							
19	1-30" RCP	L19	22	33	61	75	
20	8-48" RCP	L20	624	872	109	129	420 [12]
21	4-9'x4' CBC [10]	N.Domingo Baca [5]	---	684 [11]	294	319	360 [12]
L24	4-48" CMP	LPASA	244	440	105	132	330 [12]

* Total Flow in Basin - Structures 1 and 27 combined receive flow from Basin L2.

1. 100-year developed only computed for North and South El Camino and North La Cueva arroyos.
2. AMAFCA has future plans to improve box entrance conditions to accommodate developed flows. Improving entrance conditions increases flow capacity to 6820 cfs.
3. San Pedro Diversion storm drain diverts basin L12A to Structure No. 12.
4. Maximum represents maximum allowable headwater depth at entrance to structure.
5. Flow includes contributing basins L21 and outflow from Lower North Domingo Baca Dam.
6. 80% of 100-yr existing condition flow.
7. Assumes no avulsion of flow to South El Camino.
8. Includes potential avulsed flows from Upper North El Camino basin.
9. Flows from RTI (Appendix D), worst case scenarios including avulsions.
10. Dam outfall pipe connects to only one box.
11. Capacity for 3-9' x 4' CBC (1-9'x4' CBC dedicated to storm drain/dam outfall pipe)
12. NSDBDMP, RTI, 1991


Possible Channel R/W Requirements
CORONADO AIRPORT
ELENA DR
VENICE
SD-1
LOUISIANA
BEVERLY HILLS
WYOMING
BARSTOW
SAN DIEGO
EL CAMINO CHANNEL
C-2
53cfs
SPORTSPLEX
EL CAMINO CHANNEL
C-2
Q_{100} = 1089 cfs
SD-4
171 cfs
MUNICIPAL LIMITS
FLORENCE
155 cfs
367 cfs
155 cfs
SD-7
SD-7
C-2 (CHANNEL OR PI
GLENDALE
109 cfs
SD-6
CHANNEL
Q_{100} = 945 cfs
110 cfs
C-3
CUEVA CHANNEL
MODESTO
AMAFCA EASEMENTS
CHANNEL
C-3
SD-5
270 cfs
EAGLE ROCK
EAGLE ROCK
DIKE
95 cfs
Q_{100} = 3094 cfs
LA CANADA CHANNEL
132 cfs
OAKLAND
219 cfs
76 cfs
SD-25
QUAIL SPRINGS
110 cfs
132 cfs
SD-13
SD-13
ALAMEDA
ALAMEDA
43 cfs
6cfs

CHANNEL COST ESTMATES

ASSUSMPTIONS:

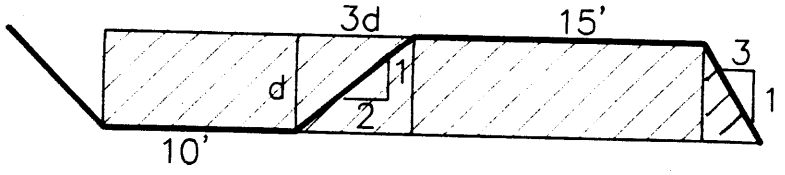
Bottom Width: 10'

Channel Depth: Normal depth plus 2'

Surface Area of Channel x 1997 Unit Price for
602.020 – 7" RPCC ($7.30/SF)

Plus Earthwork Volume x 1997 Unit Price for
601.010 – Excav./BF/Comp for Channels
($4.30/CY)

Earthwork Volume Esimated as:



LA CUEVA ARROYO W/AVULSION CONT							
ARROYO REACH	FLOW	SLOPE	CHAN DEPTH	SURF AREA	VOL (C/F)	COST/LF	COST
VENTURA-BARSTOW C-4							
	3048	0.0309	6.60	39.52	11.76	$346.61	$1,021,112.24
SUBTOTAL CHANNEL							**$1,021,112.24**
VENTURA BRIDGE							$200,000.00
BARSTOW BRIDGE							$200,000.00
SUBTOTAL BRIDGE							**$400,000.00**
TOTAL C-4							$1,421,112.24
PLUS 20% E&C							**$1,705,334.69** ✓
WYOMING-LOUISIANA C-3							
	3122	0.0357	6.50	39.07	11.50	$342.05	$898,558.67
LOUISIANA-SANPEDRO C-3							
	3154	0.0265	6.90	40.86	12.56	$360.37	$1,031,028.40
SAN PEDRO-I-25 C-3							
	3172	0.0392	6.40	38.62	11.24	$337.50	$166,386.52
CHANNEL SUBTOTAL							**$2,095,973.59**
WYOMING BRIDGE							$250,000.00
MODESTO BRIDGE							$200,000.00
LOUISIANA BRIDGE							$200,000.00
GLENDALE BRIDGE							$200,000.00
SAN PEDRO BRIDGE							$200,000.00
BRIDGE SUBTOTAL							**$1,050,000.00**
TOTAL C-3							**$3,145,973.59**
PLUS 20% E&C							**$3,775,168.31** ✓
WORST CASE							
VENTURA-BARSTOW C-4							
	3709	0.0309	7.00	41.30	12.83	$364.99	$1,075,251.64
SUBTOTAL CHANNEL							**$1,075,251.64**
VENTURA BRIDGE							$220,000.00
BARSTOW BRIDGE							$220,000.00
SUBTOTAL BRIDGE							**$440,000.00**

TOTAL C-4							**$1,515,251.64**
PLUS 20% E&C							**$1,818,301.97**
WORST CASE							
WYOMING-LOUISIANA C-3							
	3795	0.0357	6.90	40.86	12.56	$360.37	$946,701.01
LOUISIANA-SANPEDRO C-3							
	3820	0.0265	7.40	43.09	13.95	$383.57	$1,097,391.96
SAN PEDRO-I-25 C-3							
	3830	0.0392	6.80	40.41	12.29	$355.77	$175,395.95
CHANNEL SUBTOTAL							**$2,219,488.92**
WYOMING BRIDGE							$275,000.00
MODESTO BRIDGE							$220,000.00
LOUISIANA BRIDGE							$220,000.00
GLENDALE BRIDGE							$220,000.00
SAN PEDRO BRIDGE							$220,000.00
BRIDGE SUBTOTAL							**$1,155,000.00**
TOTAL C-3							**$3,374,488.92**
PLUS 20% E&C							**$4,049,386.70**

EL CAMINO ARROYO							
W/AVULSION CONT							
ARROYO REACH	FLOW	SLOPE	CHAN DEP	SURF ARE	VOL (C/F)	COST/LF	COST
VENTURA-BARSTOW C-2							
	838	0.0328	4.30	29.23	6.38	$244.92	$641,938.48
BARSTOW-WYOMING C-2							
	945	0.033	4.50	30.12	6.79	$253.49	$682,914.07
WYOMING-LOUISIANA C-2							
	987	0.0313	4.60	30.57	7.00	$257.80	$710,755.47
LOUISIANA-SAN PEDRO C-2							
	1089	0.0288	4.80	31.47	7.43	$266.45	$712,222.16
SAN PEDRO-I-25 C-2							
	1372	0.0288	5.10	32.81	8.09	$279.52	$97,273.62
CHANNEL SUBTOTAL							**$2,747,830.17**
VENTURA BRIDGE							$200,000.00
BARSTOW BRIDGE							$200,000.00
WYOMING BRIDGE							$250,000.00
LOUISIANA BRIDGE							$200,000.00
SAN PEDRO BRIDGE							$200,000.00
BRIDGE SUB TOT							**$1,050,000.00**
TOTAL C-2							**$3,797,830.17**
PLUS 20% E&C							**$4,557,396.21** ✓
WORST CASE							
VENTURA-BARSTOW C-2							
	3247	0.0328	6.70	39.96	12.02	$351.18	$946,091.87
BARSTOW-WYOMING C-2							
	3310	0.033	6.70	39.96	12.02	$351.18	$946,091.87
WYOMING-LOUISIANA C-2							
	3380	0.0313	6.80	40.41	12.29	$355.77	$980,865.36
LOUISIANA-SAN PEDRO C-2							
	3400	0.0288	6.90	40.86	12.56	$360.37	$963,278.19
SAN PEDRO-I-25 C-2							
	3438	0.0288	6.90	40.86	12.56	$360.37	$125,409.96
CHANNEL SUBTOTAL							**$3,836,327.29**
VENTURA BRIDGE							$220,000.00
BARSTOW BRIDGE							$220,000.00
WYOMING BRIDGE							$275,000.00
LOUISIANA BRIDGE							$220,000.00
SAN PEDRO BRIDGE							$220,000.00
BRIDGE SUB TOT							**$1,155,000.00**
TOTAL C-2							**$4,991,327.29**
PLUS 20% E&C							**$5,989,592.75**

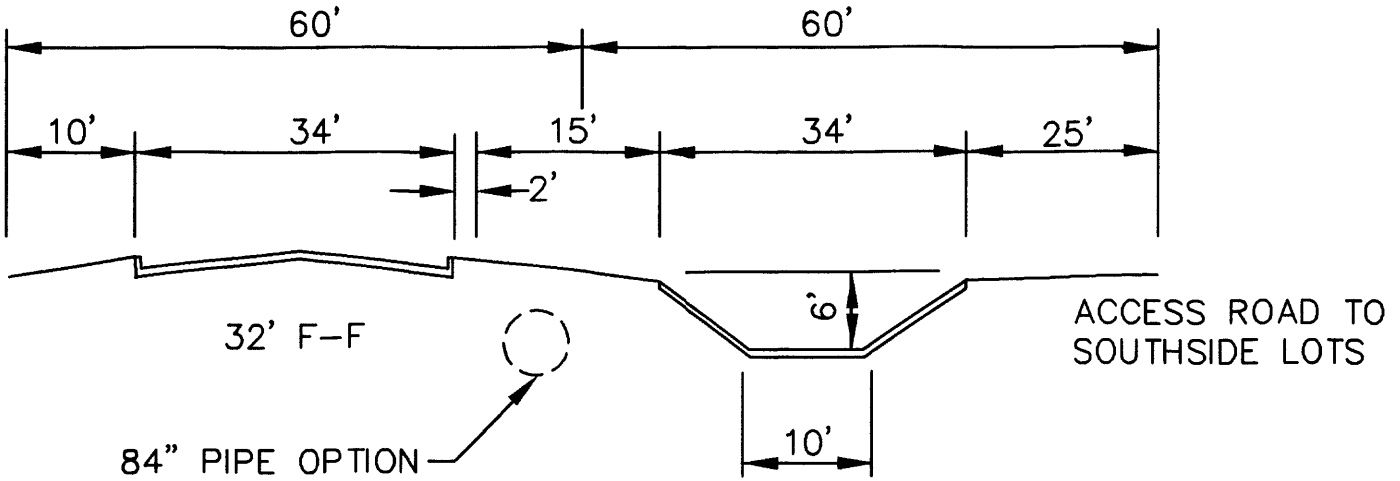
NORTH DOMINGO BACA CHANNEL							
W/AVULSION CONT							
ARROYO REACH	FLOW	SLOPE	CHAN DEP	SURF ARE	VOL (C/F)	COST/LF	COST
HOLBROOK-VENTURA C-6							
	629	0.03	4.00	27.89	5.78	$232.16	$612,895.75
VENTURA BARSTOW C-6							
	1188	0.03	4.90	31.91	7.65	$270.79	$714,898.29
SUBTOTAL CHANNEL							**$1,327,794.04**
VENTURA BRIDGE							$200,000.00
BARSTOW BRIDGE							$200,000.00
SUBTOTAL BRIDGE							**$400,000.00**
TOTAL C-6							**$1,727,794.04**
PLUS 20% E&C							
							$2,073,352.84 ✓
WYOMING-LNDB DAM C-5							
	1869	0.025	5.80	35.94	9.73	$310.47	$496,752.93
CHANNEL SUBTOTAL							**$496,752.93**
WYO BRIDGE (1/2)							$125,000.00
BRIDGE SUBTOTAL							**$125,000.00**
TOTAL C-5							**$621,752.93**
PLUS 20% E& C							**$746,103.52** ✓

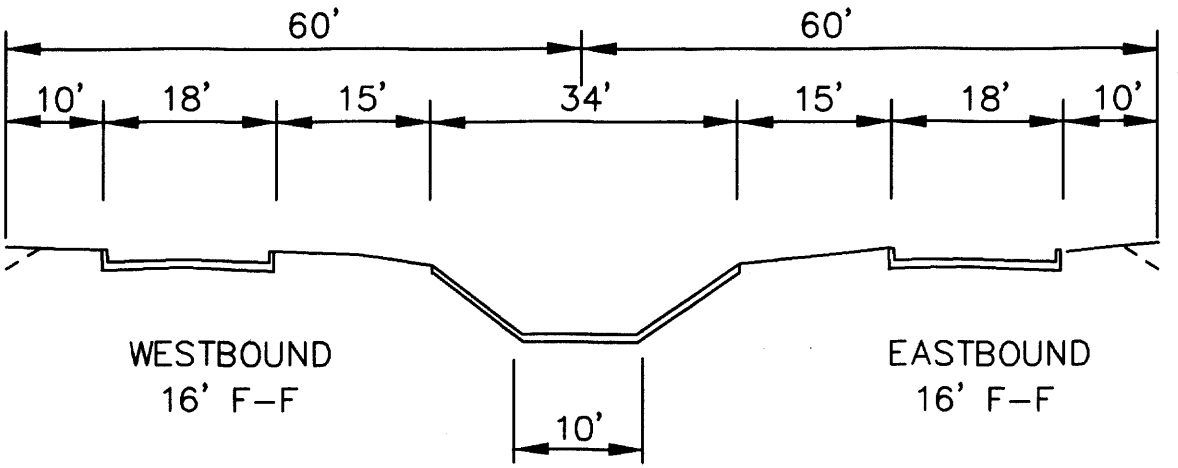
NORTH CAMINO ARROYO C-1							
W/AVULSION CONT ARROYO REACH	FLOW	SLOPE	CHAN DEP	SURF ARE	VOL (C/F)	COST/LF	COST
CITY LIMIT-CONFLUENCE							
	1829	0.03	5.60	35.04	9.25	$301.56	$512,658.80
CONFLUENCE-I-25							
	2043	0.03	6.10	37.28	10.47	$323.93	$745,031.19
TOTAL C-1							**$1,257,689.99**
PLUS 20% E&C							**$1,509,227.99** + Dike Seep. 80
NO.CAM TRIB C-1a							
LOUISIANA -CONFLUENCE							
	803	0.02	4.50	30.12	6.79	$253.49	$126,747.23
LOUISIANA BRIDGE							$200,000.00
TOTAL C-1a							**$326,747.23**
PLUS 20% E&C							**$392,096.67** ✓
WORST CASE C-1							
CITY LIMIT -CONFLUENCE							
	2399	0.0328	6.10	37.28	10.47	$323.93	$550,675.23
CONFLUENCE-I-25							
	2883	0.0330	6.50	39.07	11.50	$342.05	$786,709.15
TOTAL C-1							**$1,337,384.38**
PLUS 20% E&C							**$1,604,861.26**
NO. COM. TRIB C-1a							
LOUISIANA -CONFLUENCE							
	1290	0.0313	5.10	32.81	8.09	$279.52	$139,760.95
LOUISIANA BRIDGE							$200,000.00
TOTAL C-1a							**$339,760.95**
PLUS 20% E&C							**$407,713.14**

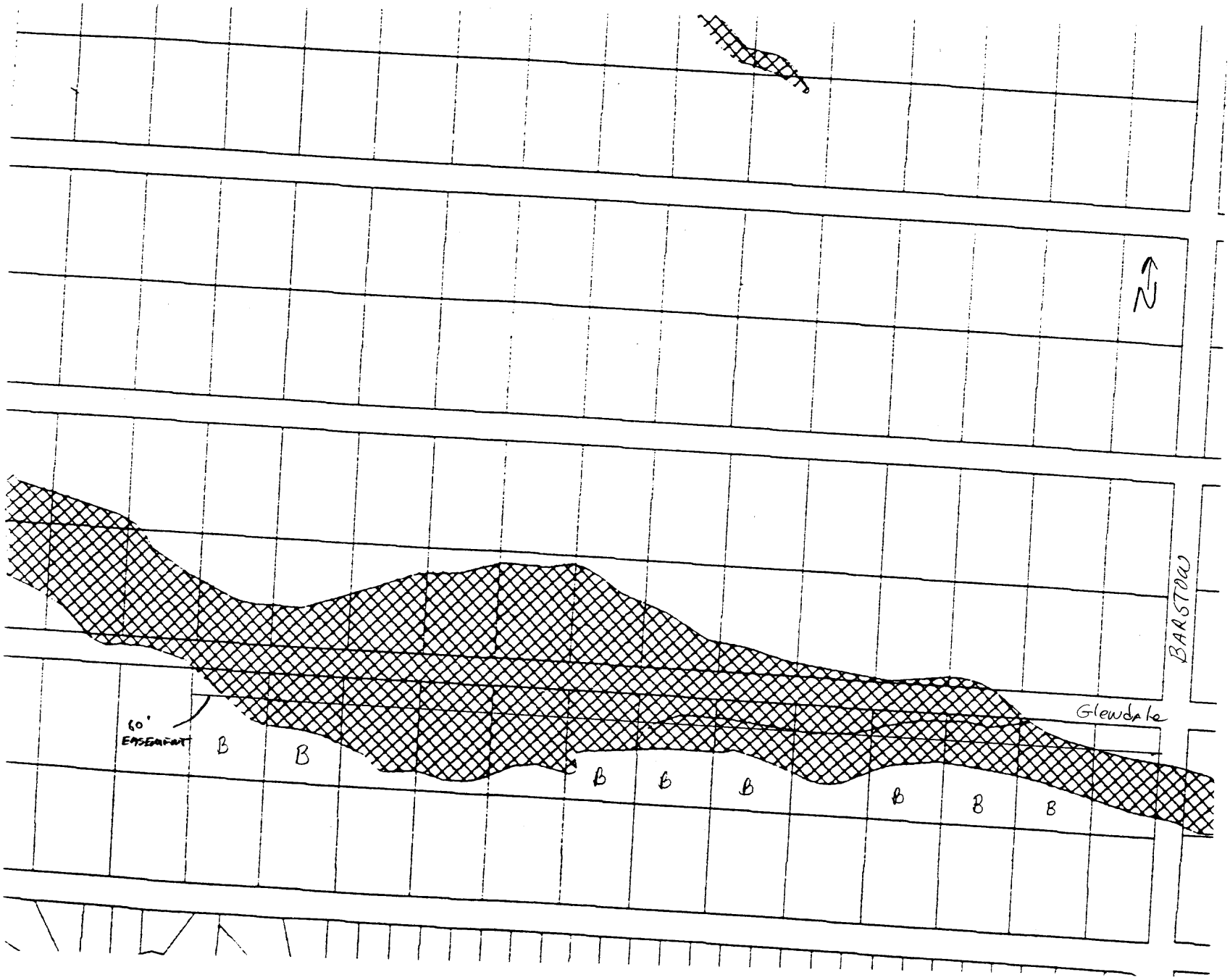
PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
7/10/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		AVULSION 8, CHAN C-1 UPSTREAM DIKE				
		3-FOOT DIKE				
1	205.010	FILL, BORROW, HAUL & COMP	CY	3000	5.10	15,290.46
2	301.010	GRADING, <2'	SY	6600	1.25	8,241.37
3	603.030	PLAIN RIPRAP	CY	650	55.82	36,285.94
4	1011.010	SEEDING A	AC	1.5	1,286.71	1,930.06
	Subtotal	3-FOOT DIKE ABOVE				$61,747.83
		PLUS 20% E&C				$74,097.39

RTI ESTIMATE

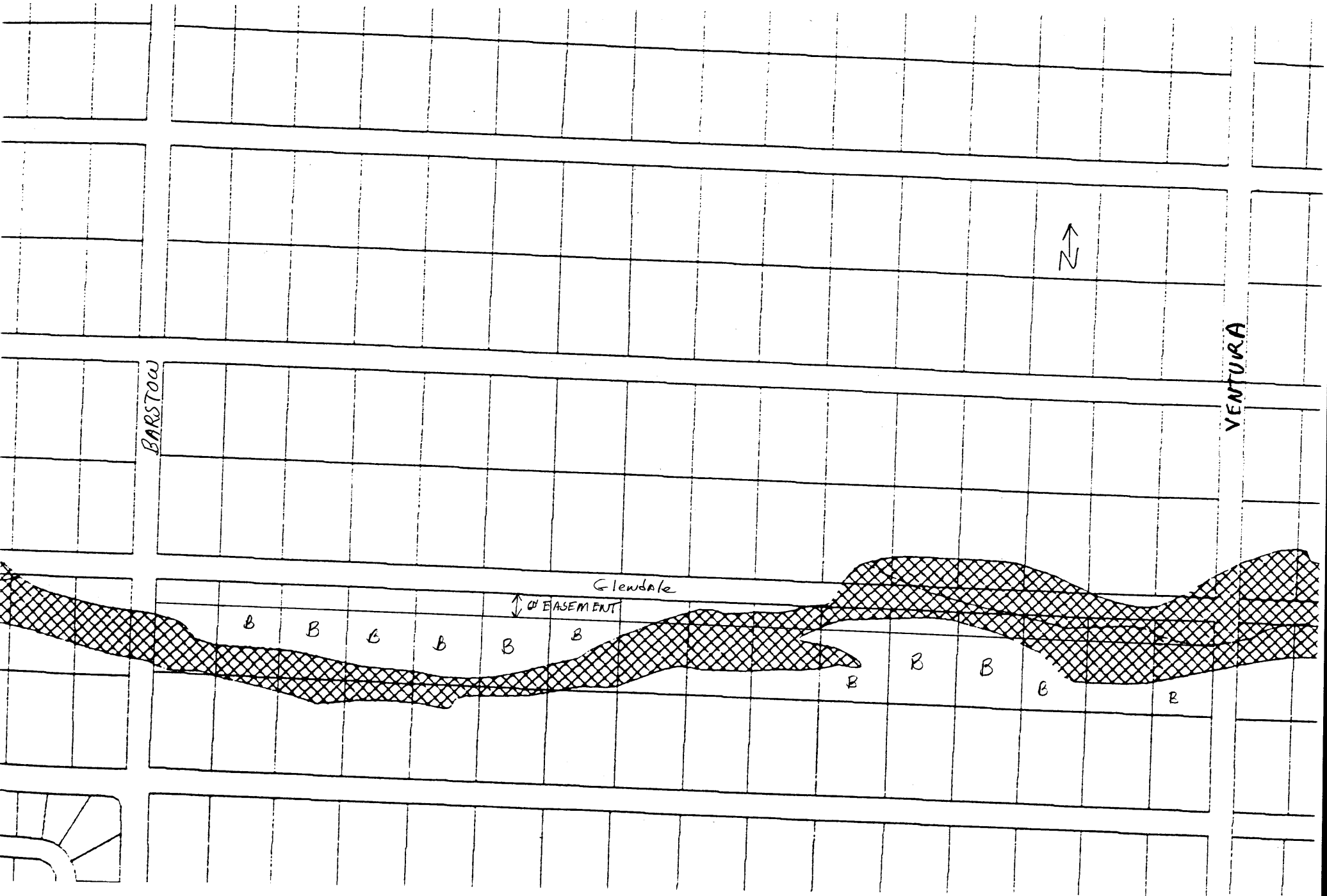
EL CAMINO OPTIONS







B = Buildable Lots prior To Channel Const.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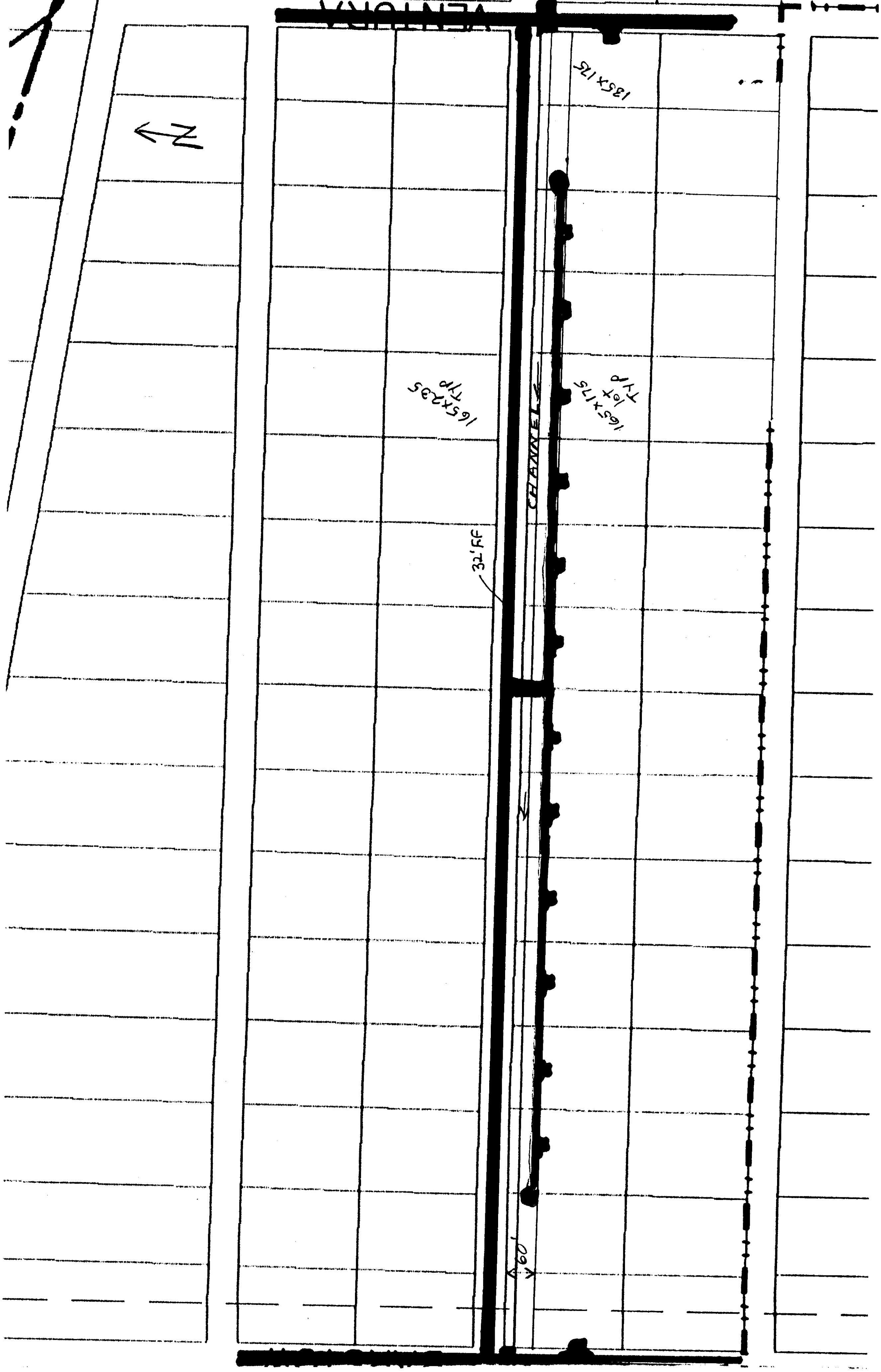
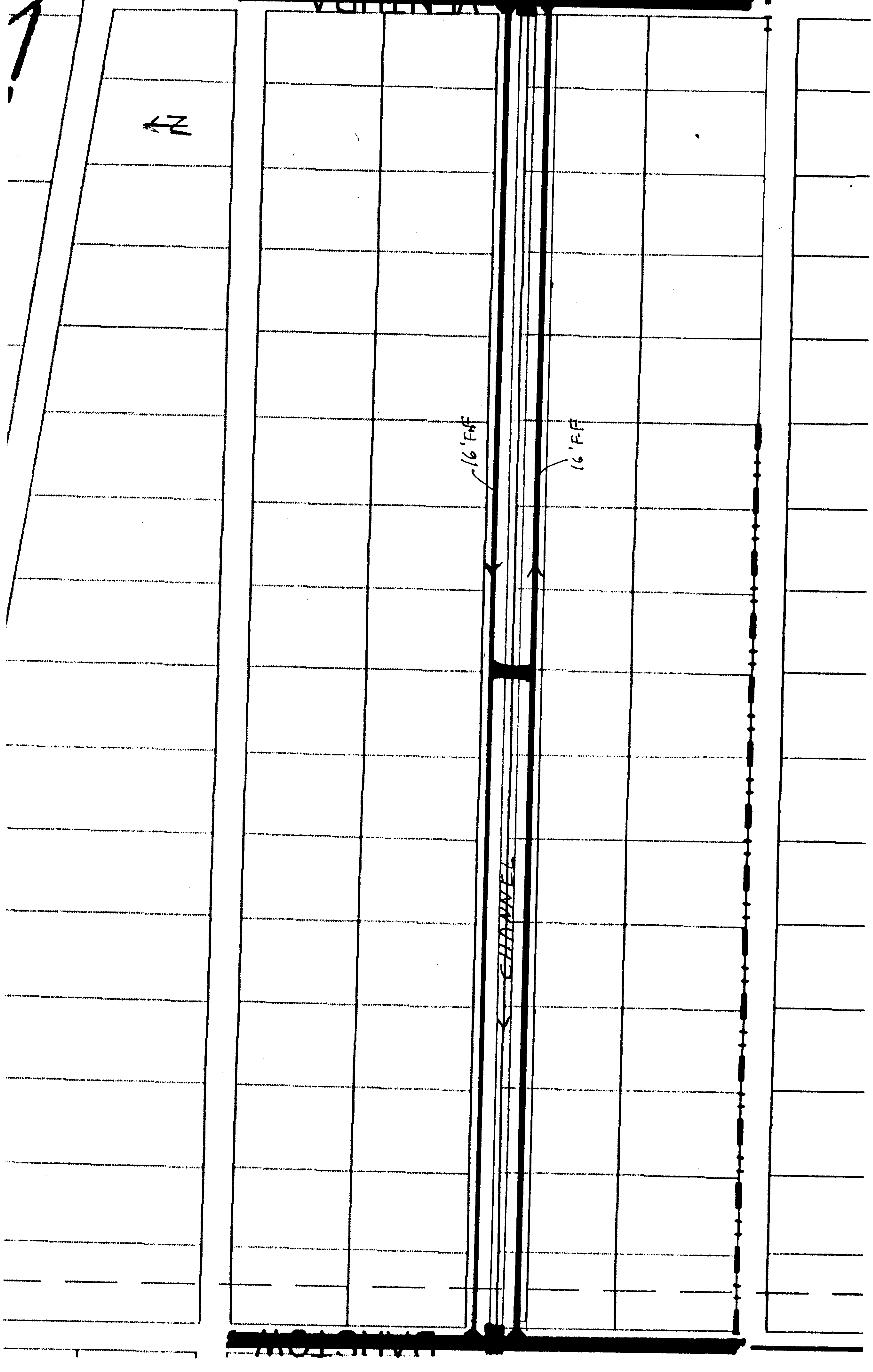


82C



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PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/5/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-1 LOUISIANA/VENICE				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	50	13.14	657.23
2	510.110	STR CONC. 4000 RPCC, FORM	CY	20	369.98	7,399.63
3	701.100	TRCHG BF, 18-36" SWR, <8'	LF	120	13.37	1,604.00
4	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	1810	29.15	52,761.54
5	910.009	24" RCP, III	LF	120	26.07	3,128.17
6	910.023	54" RCP, III	LF	1810	77.48	140,229.79
7	915.010	CTH BSN, A, SG	EA	8	2,151.59	17,212.75
8	920.210	MH, 8'DIA, C or E, 6'-10' D	EA	5	4,495.19	22,475.95
	Subtotal	**SD-1 LOUISIANA/VENICE ABOVE**				**$245,469.07**
		RESIDENTIAL PAVING				
1	343.113	RES PVMT,R&R,W/M,W/SUB	SY	400	19.31	7,725.28
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$7,725.28**
		SUBTOTAL				$253,194.35
		PLUS 20% E&C				**$303,833.22**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT PAY ESTIMATE SUMMARY

7/10/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN - STREET COSTS				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-2 SAN PEDRO @ CAMINO				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	540	13.13	7,091.27
2	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	240	33.66	8,078.34
3	910.009	24" RCP, III	LF	240	25.72	6,171.89
3	910.013	30" RCP, III	LF	500	35.30	17,650.05
4	910.019	42" RCP, III	LF	240	54.06	12,975.22
5	915.010	CTH BSN, A, SG	EA	12	2,151.59	25,819.13
6	920.140	MH, 6' DIA, C or E, 6-10' D	EA	6	2,649.11	15,894.65
	Subtotal	**SD-2 SAN PEDRO @ CAMINO ABOVE**				**$93,680.53**
		RESIDENTIAL PAVING				
1	343.113	RES PVMT,R&R,W/M,W/SUB	SY	1000	15.19	**15,193.09**
	Subtotal	**RESIDENTIAL PAVING ABOVE**				$15,193.09
		SUBTOTAL				$108,873.61
		PLUS 20% E&C				**$130,648.33**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT PAY ESTIMATE SUMMARY						
3/5/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN - STREET COSTS				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-2 SAN PEDRO @ CAMINO				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	240	13.13	3,151.67
2	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	240	33.66	8,078.34
3	910.009	24" RCP, III	LF	240	25.72	6,171.89
4	910.019	42" RCP, III	LF	240	54.06	12,975.22
5	915.010	CTH BSN, A, SG	EA	12	2,151.59	25,819.13
6	920.140	MH, 6' DIA, C or E, 6-10' D	EA	6	2,649.11	15,894.65
	Subtotal	**SD-2 SAN PEDRO @ CAMINO ABOVE**				**$72,090.89**
		RESIDENTIAL PAVING				
1	343.113	RES PVMT,R&R,W/M,W/SUB	SY	335	19.31	**6,469.92**
	Subtotal	**RESIDENTIAL PAVING ABOVE**				$6,469.92
		SUBTOTAL				$78,560.81
		PLUS 20% E&C				**$94,272.97**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/5/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-3 SAN PEDRO @ LA CUEVA				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	920	13.13	12,081.42
2	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	400	33.66	13,463.89
3	910.009	24" RCP, III	LF	340	25.72	8,743.51
4	910.017	36" RCP, III	LF	580	43.48	25,215.96
5	910.021	48" RCP, III	LF	400	67.67	27,067.43
6	915.010	CTH BSN, A, SG	EA	17	2,151.59	36,577.09
7	920.140	MH, 6' DIA, C or E, 6-10' D	EA	9	2,649.11	23,841.97
	Subtotal	**SD-3 SAN PEDRO @ LA CUEVA ABOVE**				**$146,991.28**
		RESIDENTIAL PAVING				
1	343.113	RES PVMT,R&R,W/M,W/SUB	SY	1310	15.19	$19,902.94
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$19,902.94**
		SUBTOTAL				$166,894.22
		PLUS 20% E&C				**$200,273.06**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
7/10/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-4 FLORENCE-LOUISIANA-SAN DIEGO				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	100	13.14	1,314.47
2	510.110	STR CONC. 4000 RPCC, FORM	CY	35	369.98	12,949.35
3	701.100	TRCHG BF, 18-36" SWR, <8'	LF	500	13.13	6,565.99
4	701.110	TRCH, BF,18-36" SWR,8-12'	LF	3150	14.75	46,476.87
5	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	2300	29.15	67,045.05
6	701.200	TRCH, BF, > 60" SWR, 8'-12'	LF	1300	32.68	42,489.67
7	910.009	24" RCP, III	LF	500	25.72	12,858.10
8	910.013	30" RCP, III	LF	500	35.30	17,650.05
9	910.017	36" RCP, III	LF	2650	42.68	113,106.81
10	910.023	54" RCP, III	LF	550	82.82	45,550.77
11	910.025	60" RCP, III	LF	1750	95.68	167,448.17
12	910.XXX	78" RCP, III	LF	1300	155.00	201,500.00
13	915.010	CTH BSN, A, SG	EA	30	2,100.99	63,029.81
14	920.140	MH, 6' DIA, C or E, 6-10' D	EA	12	2,605.20	31,262.34
15	920.220	MH, 8'DIA, C or E, 10'-14' D	EA	6	5,342.27	32,053.63
	Subtotal	**SD-4 FLORENCE-LOUISIANA-SAN DIEGO ABOVE**				**$861,301.07**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	15,000.00	$15,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	1800	15.19	$27,347.55
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$42,347.55**
		SUBTOTAL				$903,648.63
		PLUS 20% E&C				**$1,084,378.35**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
7/10/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Jul-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-5 LOUISIANA				
1	701.110	TRCH, BF,18-36" SWR,8-12'	LF	470	15.02	7,060.28
2	701.170	TRCH, BF, 42"-60" SWR, 12'-16'	LF	254	39.88	10,129.87
3	910.009	24" RCP, III	LF	220	25.72	5,657.57
4	910.017	36" RCP, III	LF	250	43.48	10,868.95
5	910.025	60" RCP, III	LF	254	100.84	25,613.56
6	915.020	CTH BSN, B, DG	EA	6	3,021.47	18,128.81
7	920.140	MH, 6' DIA, C or E, 6-10' D	EA	3	2,649.11	7,947.32
8	920.210	MH, 8'DIA, C or E, 6'-10' D	EA	1	4,965.86	4,965.86
	Subtotal	**SD-5 LOUISIANA ABOVE**				**$90,372.23**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	10,000.00	$10,000.00
2	343.132	ART PVMT,R&R,W/M	SY	1200	26.73	$32,073.41
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$42,073.41**
		SUBTOTAL				$132,445.64
		PLUS 20% E&C				**$158,934.77**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
7/10/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-6 GLENDALE-CAMINO ARROYO PIPE				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	140	13.14	1,840.25
2	601.030	EXCAV/BF/COMP, DET BASIN	CY	6500	2.55	16,548.30
3	510.110	STR CONC. 4000 RPCC, FORM	CY	70	369.98	25,898.70
4	701.100	TRCHG BF, 18-36" SWR, <8'	LF	600	13.13	7,879.18
5	701.210	TRCH, BF, > 60" SWR, 12'-16'	LF	5600	39.12	219,073.80
6	701.230	TRCH, BF, > 60" SWR, > 20'	LF	990	159.40	157,807.96
7	910.009	24" RCP, III	LF	400	25.72	10,286.48
8	910.017	36" RCP, III	LF	200	43.48	8,695.16
9	910.032	84" RCP, III	LF	5350	161.44	863,706.70
10	910.037	96" RCP, III	LF	1240	210.89	261,504.72
11	915.010	CTH BSN, A, SG	EA	14	2,151.59	30,122.31
12	920.140	MH, 6' DIA, C or E, 6-10' D	EA	4	2,649.11	10,596.43
13	920.220	MH, 8'DIA, C or E, 10'-14' D	EA	12	4,382.10	52,585.18
14	920.230	MH, 8'DIA, XTRA D, 14'-18' D	VF	12	494.86	5,938.33
15	920.240	MH, 8'DIA, XTRA D, >18' D	VF	12	584.47	7,013.69
	Subtotal	**SD-6 GLENDALE-CAMINO ARROYO PIPE ABOVE**				**$1,679,497.19**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	30,000.00	$30,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	2700	15.19	$41,021.33
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$71,021.33**
		SUBTOTAL				$1,750,518.52
		PLUS 20% E&C				**$2,100,622.23**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
7/10/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	**SPEC ITEM NO.**	**SHORT DESCRIPTION**	**UNIT**	**QTY**	***PWD UNIT COST***	***PWD COST ESTIMATE***
		SD-7 BARSTOW				
1	701.110	TRCH, BF,18-36" SWR,8-12'	LF	950	15.02	14,270.78
2	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	520	33.66	17,503.06
3	910.009	24" RCP, III	LF	420	25.72	10,800.81
4	910.017	36" RCP, III	LF	530	43.48	23,042.17
5	910.019	42" RCP, III	LF	520	53.11	27,615.49
6	915.010	CTH BSN, A, SG	EA	28	2,100.99	58,827.82
7	920.140	MH, 6' DIA, C or E, 6-10' D	EA	8	2,649.11	21,192.86
	Subtotal	**SD-7 BARSTOW ABOVE**				**$173,253.00**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	15,000.00	$15,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	735	15.19	$11,166.92
3	343.132	ART PVMT,R&R,W/M	SY	1470	26.73	$39,289.93
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$65,456.85**
		SUBTOTAL				$238,709.85
		PLUS 20% E&C				**$286,451.82**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
7/10/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-8 VENTURA				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	50	13.14	657.23
2	510.110	STR CONC. 4000 RPCC, FORM	CY	20	369.98	7,399.63
3	701.100	TRCHG BF, 18-36" SWR, <8'	LF	120	13.37	1,604.00
4	701.150	TRCH, BF, 42"-60" SWR, <8'	LF	130	27.80	3,614.41
5	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	390	33.66	13,127.30
6	910.009	24" RCP, III	LF	120	26.07	3,128.17
7	910.021	48" RCP, III	LF	130	67.67	8,796.92
7	910.025	60" RCP, III	LF	390	100.84	39,327.91
8	915.010	CTH BSN, A, SG	EA	8	2,151.59	17,212.75
9	920.140	MH, 6' DIA, C or E, 6-10' D	EA	4	2,649.11	10,596.43
10	920.210	MH, 8'DIA, C or E, 6'-10' D	EA	2	4,965.86	9,931.73
	Subtotal	**SD-8 VENTURA ABOVE**				**$115,396.48**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	15,000.00	$15,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	800	15.19	$12,154.47
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$27,154.47**
		SUBTOTAL				$142,550.94
		PLUS 20% E&C				**$171,061.13**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/11/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-9 SAN PEDRO				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	80	13.14	1,051.57
2	510.110	STR CONC. 4000 RPCC, FORM	CY	40	369.98	14,799.25
3	701.100	TRCHG BF, 18-36" SWR, <8'	LF	240	13.13	3,151.67
4	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	935	33.66	31,471.85
5	701.200	TRCH, BF, > 60" SWR, 8'-12'	LF	1835	32.68	59,975.80
6	910.009	24" RCP, III	LF	240	25.72	6,171.89
7	910.019	42" RCP, III	LF	485	53.11	25,756.76
8	910.025	60" RCP, III	LF	450	100.84	45,378.36
9	910.027	66" RCP, III	LF	760	137.21	104,281.55
10	910.029	72" RCP, III	LF	565	126.85	71,673.01
11	910.XXX	78" RCP, IV	LF	510	150.00	76,500.00
12	915.010	CTH BSN, A, SG	EA	12	2,151.59	25,819.13
13	920.140	MH, 6' DIA, C or E, 6-10' D	EA	6	2,649.11	15,894.65
14	920.220	MH, 8'DIA, C or E, 10'-14' D	EA	4	5,342.27	21,369.09
	Subtotal	**SD-9 SAN PEDRO ABOVE**				**$503,294.57**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	25,000.00	$25,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	3200	15.19	$48,617.87
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$73,617.87**
		SUBTOTAL				$576,912.45
		PLUS 20% E&C				**$692,294.94**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/5/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-10 EAGLE ROCK				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	80	13.14	1,051.57
2	510.110	STR CONC. 4000 RPCC, FORM	CY	40	369.98	14,799.25
3	701.100	TRCHG BF, 18-36" SWR, <8'	LF	80	13.37	1,069.34
4	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	780	33.66	26,254.59
5	910.009	24" RCP, III	LF	80	26.07	2,085.45
6	910.025	60" RCP, III	LF	780	95.68	74,634.04
7	915.010	CTH BSN, A, SG	EA	4	2,151.59	8,606.38
8	920.210	MH, 8'DIA, C or E, 6'-10' D	EA	3	4,495.19	13,485.57
	Subtotal	**SD-10 EAGLE ROCK ABOVE**				**$141,986.19**
		RESIDENTIAL PAVING				
1	343.113	RES PVMT,R&R,W/M,W/SUB	SY	1040	15.19	$15,800.81
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$15,800.81**
		SUBTOTAL				$157,787.00
		PLUS 20% E&C				**$189,344.40**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/11/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-11 EAGLE ROCK				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	740	13.13	9,717.66
2	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	1700	29.15	49,555.04
3	910.009	24" RCP, III	LF	420	25.72	10,800.81
4	910.013	30" RCP, III	LF	320	35.30	11,296.03
5	910.019	42" RCP, III	LF	1700	53.11	90,281.42
6	915.010	CTH BSN, A, SG	EA	28	2,100.99	58,827.82
7	920.140	MH, 6' DIA, C or E, 6-10' D	EA	12	2,605.20	31,262.34
	Subtotal	**SD-11 EAGLE ROCK ABOVE**				**$261,741.12**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	15,000.00	$15,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	3200	15.19	$48,617.87
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$63,617.87**
		SUBTOTAL				$325,358.99
		PLUS 20% E&C				**$390,430.79**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT PAY ESTIMATE SUMMARY						
3/4/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-12 OAKLAND				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	1985	12.90	25,601.03
2	910.009	24" RCP, III	LF	1315	25.72	33,816.81
3	910.017	36" RCP, III	LF	670	43.48	29,128.79
4	915.010	CTH BSN, A, SG	EA	16	2,151.59	34,425.50
5	920.140	MH, 6' DIA, C or E, 6-10' D	EA	8	2,649.11	21,192.86
	Subtotal	**SD-12 OAKLAND ABOVE**				**$144,164.99**
		RESIDENTIAL PAVING				
1	343.113	RES PVMT,R&R,W/M,W/SUB	SY	900	15.19	$13,673.78
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$13,673.78**
		SUBTOTAL				$157,838.77
		PLUS 20% E&C				**$189,406.52**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT PAY ESTIMATE SUMMARY						
3/9/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-13 ALAMEDA-LOUISIANA				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	360	13.13	4,727.51
2	701.110	TRCH, BF,18-36" SWR,8-12'	LF	3170	14.75	46,771.96
3	910.009	24" RCP, III	LF	360	25.72	9,257.83
4	910.013	30" RCP, III	LF	3170	34.12	108,161.47
5	915.010	CTH BSN, A, SG	EA	18	2,151.59	38,728.69
6	920.140	MH, 6' DIA, C or E, 6-10' D	EA	12	2,605.20	31,262.34
	Subtotal	**SD-13 ALAMEDA-LOUISIANA ABOVE**				**$238,909.81**
		RESIDENTIAL PAVING				
1	343.132	ART PVMT,R&R,W/M	SY	735	26.73	$19,644.97
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$19,644.97**
		SUBTOTAL				$258,554.78
		PLUS 20% E&C				**$310,265.73**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/11/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	PWD UNIT COST	PWD COST ESTIMATE
		SD-14 CORONADO MH (WEST OF I-25)				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	100	13.14	1,314.47
2	510.110	STR CONC. 4000 RPCC, FORM	CY	50	369.98	18,499.07
3	701.100	TRCHG BF, 18-36" SWR, <8'	LF	160	13.13	2,101.12
4	701.200	TRCH, BF, > 60" SWR, 8'-12'	LF	2190	32.68	71,578.75
5	910.009	24" RCP, III	LF	160	26.07	4,170.89
6	910.029	72" RCP, III	LF	750	126.85	95,141.16
7	910.032	84" RCP, III	LF	1440	161.44	232,474.33
8	915.010	CTH BSN, A, SG	EA	8	2,151.59	17,212.75
9	920.140	MH, 6' DIA, C or E, 6-10' D	EA	5	2,649.11	13,245.54
10	920.210	MH, 8'DIA, C or E, 6'-10' D	EA	5	4,495.19	22,475.95
	Subtotal	**SD-14 CORONADO MH (WEST OF I-25) ABOVE**				**$478,214.03**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	15,000.00	$15,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	1600	15.19	$24,308.94
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$39,308.94**
		SUBTOTAL				$517,522.96
		PLUS 20% E&C				**$621,027.56**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/23/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-15 HOLLY TO I-25				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	30	13.14	394.34
2	510.110	STR CONC. 4000 RPCC, FORM	CY	15	369.98	5,549.72
3	701.100	TRCHG BF, 18-36" SWR, <8'	LF	700	13.13	9,192.38
4	910.009	24" RCP, III	LF	100	26.07	2,606.81
5	910.017	36" RCP, III	LF	600	43.48	26,085.48
6	915.010	CTH BSN, A, SG	EA	10	2,151.59	21,515.94
7	920.140	MH, 6' DIA, C or E, 6-10' D	EA	4	2,649.11	10,596.43
	Subtotal	**SD-15 HOLLY TO I-25 ABOVE**				**$75,941.10**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	15,000.00	$15,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	220	19.31	$4,248.90
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$19,248.90**
		SUBTOTAL				$95,190.00
		PLUS 20% E&C				**$114,228.00**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/23/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-16 CORONA				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	80	13.14	1,051.57
2	510.110	STR CONC. 4000 RPCC, FORM	CY	40	369.98	14,799.25
3	701.100	TRCHG BF, 18-36" SWR, <8'	LF	120	13.37	1,604.00
4	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	1300	29.15	37,895.03
5	910.009	24" RCP, III	LF	120	26.07	3,128.17
6	910.021	48" RCP, III	LF	650	67.67	43,984.58
7	910.023	54" RCP, III	LF	650	82.82	53,832.73
8	915.010	CTH BSN, A, SG	EA	8	2,151.59	17,212.75
9	920.140	MH, 6' DIA, C or E, 6-10' D	EA	6	2,649.11	15,894.65
	Subtotal	**SD-16 CORONA ABOVE**				**$189,402.73**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	15,000.00	$15,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	1335	15.19	$20,282.77
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$35,282.77**
		SUBTOTAL				$224,685.50
		PLUS 20% E&C				**$269,622.60**

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/11/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-17 LOUISIANA				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	640	13.13	8,404.46
2	910.009	24" RCP, III	LF	140	26.07	3,649.53
3	910.013	30" RCP, III	LF	500	35.30	17,650.05
4	915.010	CTH BSN, A, SG	EA	4	2,151.59	8,606.38
5	920.140	MH, 6' DIA, C or E, 6-10' D	EA	3	2,649.11	7,947.32
	Subtotal	**SD-17 LOUISIANA ABOVE**				**$46,257.74**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	15,000.00	$15,000.00
2	343.132	ART PVMT,R&R,W/M	SY	735	26.73	$19,644.97
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$34,644.97**
		SUBTOTAL				$80,902.70
		PLUS 20% E&C				**$97,083.24**

PUBLIC WORKS DEPARTMENT PAY ESTIMATE SUMMARY						
3/23/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO.5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-18 HOLLY				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	350	13.13	4,596.19
2	910.009	24" RCP, III	LF	180	25.72	4,628.92
3	910.013	30" RCP, III	LF	170	35.30	6,001.02
4	915.010	CTH BSN, A, SG	EA	10	2,151.59	21,515.94
5	920.140	MH, 6' DIA, C or E, 6-10' D	EA	4	2,649.11	10,596.43
	Subtotal	**SD-18 HOLLY ABOVE**				**$47,338.49**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	5,000.00	$5,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	270	19.31	$5,214.56
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$10,214.56**
		SUBTOTAL				$57,553.06
		PLUS 20% E&C				**$69,063.67**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT PAY ESTIMATE SUMMARY						
3/23/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-19 MURRELET EXTENSION				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	325	13.13	4,267.89
2	701.120	TRCH,BF, 18-36" SWR>12-16'	LF	605	21.35	12,916.99
3	701.150	TRCH, BF, 42"-60" SWR, <8'	LF	45	27.80	1,251.14
4	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	660	33.66	22,215.42
5	910.009	24" RCP, III	LF	240	25.72	6,171.89
6	910.017	36" RCP, III	LF	690	43.48	29,998.30
7	910.023	54" RCP, III	LF	705	82.82	58,387.80
8	915.010	CTH BSN, A, SG	EA	12	2,151.59	25,819.13
9	920.140	MH, 6' DIA, C or E, 6-10' D	EA	6	2,649.11	15,894.65
10	920.150	MH, 6' DIA, C or E, 10-14' D	EA	2	3,029.79	6,059.58
	Subtotal	**SD-19 MURRELET EXTENSION ABOVE**				**$182,982.79**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	10,000.00	$10,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	220	19.31	$4,248.90
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$14,248.90**
		SUBTOTAL				$197,231.70
		PLUS 20% E&C				**$236,678.03**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/11/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-20 CORONA				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	390	13.13	5,121.47
2	910.009	24" RCP, III	LF	40	26.07	1,042.72
3	910.017	36" RCP, III	LF	350	43.48	15,216.53
4	915.010	CTH BSN, A, SG	EA	2	2,202.19	4,404.39
5	920.140	MH, 6' DIA, C or E, 6-10' D	EA	2	2,649.11	5,298.22
	Subtotal	**SD-20 CORONA ABOVE**				**$31,083.32**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	10,000.00	$10,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	935	15.19	$14,205.53
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$24,205.53**
		SUBTOTAL				$55,288.86
		PLUS 20% E&C				**$66,346.63**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/11/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-21 WYOMING				
1	701.150	TRCH, BF, 42"-60" SWR, <8'	LF	295	23.91	7,052.70
2	701.170	TRCH, BF, 42"-60" SWR, 12'-16'	LF	673	39.88	26,840.16
3	910.009	24" RCP, III	LF	80	26.07	2,085.45
4	910.019	42" RCP, III	LF	888	53.11	47,158.76
5	915.010	CTH BSN, A, SG	EA	6	2,151.59	12,909.56
6	920.140	MH, 6' DIA, C or E, 6-10' D	EA	4	2,649.11	10,596.43
	Subtotal	**SD-21 WYOMING ABOVE**				**$106,643.07**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	15,000.00	$15,000.00
2	343.132	ART PVMT,R&R,W/M	SY	2370	22.52	$53,378.24
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$68,378.24**
		SUBTOTAL				$175,021.31
		PLUS 20% E&C				**$210,025.57**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/23/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-22 BARSTOW				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	180	13.13	2,363.76
2	701.150	TRCH, BF, 42"-60" SWR, <8'	LF	510	23.91	12,192.81
3	910.009	24" RCP, III	LF	180	25.72	4,628.92
4	910.019	42" RCP, III	LF	510	53.11	27,084.43
5	915.010	CTH BSN, A, SG	EA	10	2,151.59	21,515.94
6	920.140	MH, 6' DIA, C or E, 6-10' D	EA	4	2,649.11	10,596.43
	Subtotal	**SD-22 BARSTOW ABOVE**				**$78,382.28**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	10,000.00	$10,000.00
2	343.132	ART PVMT,R&R,W/M	SY	735	26.73	$19,644.97
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$29,644.97**
		SUBTOTAL				$108,027.24
		PLUS 20% E&C				**$129,632.69**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/11/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	PWD UNIT COST	PWD COST ESTIMATE
		SD-23 BARSTOW				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	120	13.37	1,604.00
2	701.150	TRCH, BF, 42"-60" SWR, <8'	LF	540	23.91	12,910.03
3	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	540	33.66	18,176.25
4	910.009	24" RCP, III	LF	120	26.07	3,128.17
5	910.019	42" RCP, III	LF	1080	53.11	57,355.25
6	915.010	CTH BSN, A, SG	EA	8	2,151.59	17,212.75
7	920.140	MH, 6' DIA, C or E, 6-10' D	EA	6	2,649.11	15,894.65
8	910.xxx	REMOVE 24" RCP	LF	870	20.00	17,400.00
	Subtotal	**SD-23 BARSTOW ABOVE**				**$143,681.11**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	25,000.00	$25,000.00
2	343.132	ART PVMT,R&R,W/M	SY	2870	22.52	$64,639.47
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$89,639.47**
		SUBTOTAL				$233,320.58
		PLUS 20% E&C				**$279,984.70**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/11/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-24 BARSTOW				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	350	13.13	4,596.19
2	910.009	24" RCP, III	LF	350	25.72	9,000.67
3	915.010	CTH BSN, A, SG	EA	6	2,151.59	12,909.56
4	920.070	MH, 4' DIA, C or E	EA	3	1,443.24	4,329.73
	Subtotal	**SD-24 BARSTOW ABOVE**				**$30,836.15**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	5,000.00	$5,000.00
2	343.132	ART PVMT,R&R,W/M	SY	415	26.73	$11,092.06
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$16,092.06**
		SUBTOTAL				$46,928.21
		PLUS 20% E&C				**$56,313.85**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/11/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	PWD UNIT COST	PWD COST ESTIMATE
		SD-25 BARSTOW				
1	701.100	TRCHG BF, 18-36" SWR, <8'	LF	1215	12.90	15,670.15
2	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	305	33.66	10,266.22
3	910.009	24" RCP, III	LF	300	25.72	7,714.86
4	910.013	30" RCP, III	LF	915	34.12	31,220.11
5	910.021	48" RCP, III	LF	305	67.67	20,638.92
6	915.010	CTH BSN, A, SG	EA	12	2,151.59	25,819.13
7	920.070	MH, 4' DIA, C or E	EA	5	1,443.24	7,216.21
8	920.140	MH, 6' DIA, C or E, 6-10' D	EA	2	2,649.11	5,298.22
	Subtotal	**SD-25 BARSTOW ABOVE**				**$123,843.81**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	10,000.00	$10,000.00
2	343.132	ART PVMT,R&R,W/M	SY	2440	22.52	$54,954.81
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$64,954.81**
		SUBTOTAL				$188,798.62
		PLUS 20% E&C				**$226,558.35**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/5/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-26 CARMEL @ MID-SCHOOL				
1	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	340	33.66	11,444.31
2	910.023	54" RCP, III	LF	340	82.82	28,158.66
3	920.140	MH, 6' DIA, C or E, 6-10' D	EA	2	2,649.11	5,298.22
	Subtotal	**SD-26 CARMEL @ MID-SCHOOL ABOVE**				**$44,901.18**
		NO RESIDENTIAL PAVING				
	Subtotal	**NO RESIDENTIAL PAVING ABOVE**				**$0.00**
		SUBTOTAL				$44,901.18
		PLUS 20% E&C				**$53,881.42**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/23/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-27 VINYARD EST. TO LA CUEVA				
1	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	900	33.66	30,293.76
2	701.100	TRCHG BF, 18-36" SWR, <8'	LF	300	13.13	3,939.59
3	910.009	24" RCP, III	LF	300	25.72	7,714.86
4	910.019	42" RCP, III	LF	400	54.06	21,625.36
5	910.021	48" RCP, III	LF	500	67.67	33,834.29
6	915.010	CTH BSN, A, SG	EA	18	2,151.59	38,728.69
7	920.140	MH, 6' DIA, C or E, 6-10' D	EA	6	2,649.11	15,894.65
	Subtotal	**SD-27 VINYARD EST. TO LA CUEVA ABOVE**				**$152,031.20**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	10,000.00	$10,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	270	19.31	$5,214.56
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$15,214.56**
		SUBTOTAL				$167,245.76
		PLUS 20% E&C				**$200,694.91**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/23/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	PWD UNIT COST	PWD COST ESTIMATE
		SD-28 VENTURA/OAKLAND				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	100	13.14	1,314.47
2	510.110	STR CONC. 4000 RPCC, FORM	CY	60	369.98	22,198.88
3	701.100	TRCHG BF, 18-36" SWR, <8'	LF	135	13.13	1,772.82
4	701.110	TRCH, BF,18-36" SWR,8-12'	LF	155	15.29	2,369.82
5	701.150	TRCH, BF, 42"-60" SWR, <8'	LF	85	27.80	2,363.27
6	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	1805	29.15	52,615.79
7	701.170	TRCH, BF, 42"-60" SWR, 12'-16'	LF	460	39.88	18,345.43
8	910.009	24" RCP, III	LF	300	25.72	7,714.86
9	910.021	48" RCP, III	LF	1900	65.66	124,746.92
10	910.023	54" RCP, III	LF	440	82.82	36,440.61
11	915.010	CTH BSN, A, SG	EA	6	2,151.59	12,909.56
12	920.140	MH, 6' DIA, C or E, 6-10' D	EA	6	2,649.11	15,894.65
13	920.220	MH, 8'DIA, C or E, 10'-14' D	EA	4	5,342.27	21,369.09
	Subtotal	SD-28 VENTURA/OAKLAND ABOVE				**$320,056.18**
		RESIDENTIAL PAVING				
1	19.101	TRAFF CONT & BARR	LS	1	10,000.00	$10,000.00
2	343.132	ART PVMT,R&R,W/M	SY	920	26.73	$24,589.62
	Subtotal	RESIDENTIAL PAVING ABOVE				**$34,589.62**
		SUBTOTAL				$354,645.79
		PLUS 20% E&C				**$425,574.95**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/11/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	**SPEC ITEM NO.**	**SHORT DESCRIPTION**	**UNIT**	**QTY**	***PWD UNIT COST***	***PWD COST ESTIMATE***
		SD-29 VENTURA				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	40	13.14	525.79
2	510.110	STR CONC. 4000 RPCC, FORM	CY	20	369.98	7,399.63
3	701.110	TRCH, BF,18-36" SWR,8-12'	LF	225	15.02	3,379.92
4	701.110	TRCH, BF,18-36" SWR,8-12'	LF	265	15.02	3,980.80
5	910.009	24" RCP, III	LF	40	26.07	1,042.72
6	910.017	36" RCP, III	LF	450	43.48	19,564.11
7	915.010	CTH BSN, A, SG	EA	2	2,202.19	4,404.39
8	920.140	MH, 6' DIA, C or E, 6-10' D	EA	3	2,649.11	7,947.32
	Subtotal	**SD-29 VENTURA ABOVE**				**$48,244.68**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	10,000.00	$10,000.00
2	343.132	ART PVMT,R&R,W/M	SY	600	26.73	$16,036.71
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$26,036.71**
		SUBTOTAL				$74,281.38
		PLUS 20% E&C				**$89,137.66**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/23/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-30 VENTURA				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	40	13.14	525.79
2	510.110	STR CONC. 4000 RPCC, FORM	CY	20	369.98	7,399.63
3	701.100	TRCHG BF, 18-36" SWR, <8'	LF	540	13.13	7,091.27
4	910.009	24" RCP, III	LF	120	26.07	3,128.17
5	910.017	36" RCP, III	LF	420	43.48	18,259.84
6	915.010	CTH BSN, A, SG	EA	6	2,151.59	12,909.56
7	920.070	MH, 4' DIA, C or E	EA	4	1,443.24	5,772.97
	Subtotal	**SD-30 VENTURA ABOVE**				**$55,087.21**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	LS	1	10,000.00	$10,000.00
2	343.132	ART PVMT,R&R,W/M	SY	670	26.73	$17,907.66
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$27,907.66**
						$82,994.87
						$99,593.84

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/23/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-31 WILSHIRE				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	40	13.14	525.79
2	510.110	STR CONC. 4000 RPCC, FORM	CY	20	369.98	7,399.63
3	701.100	TRCHG BF, 18-36" SWR, <8'	LF	120	13.37	1,604.00
4	701.110	TRCH, BF,18-36" SWR,8-12'	LF	1020	15.02	15,322.31
5	910.009	24" RCP, III	LF	40	26.07	1,042.72
6	910.013	30" RCP, III	LF	1100	34.12	37,532.37
7	915.010	CTH BSN, A, SG	EA	4	2,151.59	8,606.38
8	920.140	MH, 6' DIA, C or E, 6-10' D	EA	3	2,649.11	7,947.32
9	920.150	MH, 6' DIA, C or E, 10-14' D	EA	1	3,242.58	3,242.58
	Subtotal	**SD-31 WILSHIRE ABOVE**				**$83,223.11**
		RESIDENTIAL PAVING				
1	343.132	ART PVMT,R&R,W/M	SY	135	30.93	$4,175.99
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$4,175.99**
		SUBTOTAL				$87,399.09
		PLUS 20% E&C				**$104,878.91**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/5/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-32 CARMEL				
1	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	350	33.66	11,780.91
2	910.023	54" RCP, III	LF	350	82.82	28,986.85
3	920.140	MH, 6' DIA, C or E, 6-10' D	EA	2	2,649.11	5,298.22
	Subtotal	**SD-32 CARMEL ABOVE**				**$46,065.97**
		NO RESIDENTIAL PAVING				
	Subtotal	**NO RESIDENTIAL PAVING ABOVE**				**$0.00**
		SUBTOTAL				$46,065.97
		PLUS 20% E&C				**$55,279.17**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/11/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		SD-33 HOLBROOK				
1	501.010	STRUCT, EXCAV/BF & COMP	CY	120	13.14	1,577.36
2	510.110	STR CONC. 4000 RPCC, FORM	CY	60	369.98	22,198.88
3	701.160	TRCH, BF, 42"-60" SWR, 8'-12'	LF	1020	33.66	34,332.93
4	701.200	TRCH, BF, > 60" SWR, 8'-12'	LF	1140	41.47	47,274.07
5	910.009	24" RCP, III	LF	240	25.72	6,171.89
6	910.019	42" RCP, III	LF	780	53.11	41,423.24
7	910.XXX	78" RCP	LF	1140	150.00	171,000.00
8	915.010	CTH BSN, A, SG	EA	12	2,151.59	25,819.13
9	920.140	MH, 6' DIA, C or E, 6-10' D	EA	6	2,649.11	15,894.65
10	920.210	MH, 8'DIA, C or E, 6'-10' D	EA	4	4,495.19	17,980.76
	Subtotal	**SD-33 HOLBROOK ABOVE**				**$383,672.90**
		RESIDENTIAL PAVING				
1	19.010	TRAFF CONT & BARR	ls	1	30,000.00	$30,000.00
2	343.113	RES PVMT,R&R,W/M,W/SUB	SY	2560	15.19	$38,894.30
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$68,894.30**
		SUBTOTAL				$452,567.20
		PLUS 20% E&C				**$543,080.64**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/6/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	**SPEC ITEM NO.**	**SHORT DESCRIPTION**	**UNIT**	**QTY**	***PWD UNIT COST***	***PWD COST ESTIMATE***
		AVULSION 5 - DITCH/DIKE				
		DIKE CONST				
1	301.020	SUBGRADE PREP, 12"	SY	7500	1.41	10,552.13
2	601.010	EXCAV/BF/COMP, CHNLS	CY	3800	4.30	16,353.44
3	601.020	EXCAV & DISP, CHNLS	CY	4100	2.82	11,577.43
4	603.030	PLAIN RIPRAP	CY	2200	55.82	122,813.94
5	603.040	GVL FILTER MATL	CY	220	27.57	6,064.49
6	301.010	GRADING, <2'	SY	4000	1.44	5,743.75
7	1011.010	SEEDING A	AC	3	1,286.71	3,860.13
	Subtotal	**DIKE CONST ABOVE**				**$176,965.31**
		RESIDENTIAL PAVING				
1	204.010	FILL, EXCAV, BF & COMP, U, >2'	CY	835	3.75	3,128.95
2	301.010	GRADING, <2'	SY	2000	1.44	2,871.87
3	343.XXX	PVMT-BCPW STDS	SY	1750	16.00	28,000.00
4	301.020	SUBGRADE PREP, 12"	SY	1750	1.47	2,568.61
5	1011.010	SEEDING A	AC	0.25	1,411.29	352.82
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$36,922.25**
		SUBTOTAL				$213,887.56
		PLUS 20% E&C				**$256,665.07**

RTI ESTIMATE

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/23/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		AVULSION 7 - DIKE				
		DIKE CONST				
1	202.011	EXCAV & DISP, UNSUT MAT	CY	100	3.64	364.46
2	205.010	FILL, BORROW, HAUL & COMP	CY	700	5.24	3,667.91
3	301.010	GRADING, <2'	SY	700	1.62	1,136.23
4	301.020	SUBGRADE PREP, 12"	SY	700	1.47	1,027.44
5	603.030	PLAIN RIPRAP	CY	150	59.41	8,911.10
6	603.040	GVL FILTER MATL	CY	25	29.90	747.58
7	1011.010	SEEDING A	AC	0.5	1,411.29	705.64
	Subtotal	**DIKE CONST ABOVE**				**$16,560.36**
		RESIDENTIAL PAVING				
1	204.010	FILL, EXCAV, BF & COMP, U, >2'	CY	835	3.75	3,128.95
2	301.010	GRADING, <2'	SY	2000	1.44	2,871.87
3	343.113	RES PVMT,R&R,W/M,W/SUB	SY	2550	15.19	38,742.37
4	301.020	SUBGRADE PREP, 12"	SY	2550	1.47	3,742.83
5	1011.010	SEEDING A	AC	0.25	1,411.29	352.82
	Subtotal	**RESIDENTIAL PAVING ABOVE**				**$48,838.84**
		SUBTOTAL				$65,399.19
		PLUS 20% E&C				**$78,479.03**

PUBLIC WORKS DEPARTMENT ESTIMATE SUMMARY						
3/6/98						
PROJECT NAME:		NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN				
PAY ESTIMATE NO.		Feb-98				
CITY PROJECT NO.		COA PROJ NO. 5662				
BID ITEM NO.	SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY	*PWD UNIT COST*	*PWD COST ESTIMATE*
		AVULSION 8 ROAD GRADE				
		COA ROAD WORK				
1	205.010	FILL, BORROW, HAUL & COMP	CY	3000	5.10	15,290.46
2	301.010	GRADING, <2'	SY	3000	1.44	4,307.81
3	340.050	C & G, STD, PCC	LF	1800	11.14	20,050.71
4	343.YYY	COA STD RES PVMT	SY	3800	16.89	64,182.00
7	1011.010	SEEDING A	AC	0.5	1,411.29	705.64
	Subtotal	**COA ROAD WORK ABOVE**				**$104,536.63**
		BCPW ROAD WORK				
1	205.010	FILL, BORROW, HAUL & COMP	CY	6000	5.10	30,580.92
2	301.010	GRADING, <2'	SY	3000	1.44	4,307.81
3	343.XXX	PVMT-BCPW STDS	SY	3180	16.00	50,880.00
4	301.020	SUBGRADE PREP, 12"	SY	3180	1.41	4,474.10
5	1011.010	SEEDING A	AC	0.625	1,411.29	882.05
	Subtotal	**BCPW ROAD WORK ABOVE**				**$91,124.88**
		SUBTOTAL				$195,661.51
		PLUS 20% E&C				**$234,793.81**

RTI ESTIMATE

THE FOLLOWING STREET SLOPES WERE USED IN CALCULATIONS OF STREET FLOW CAPACITY

Alameda:	.03
Anaheim:	
east end to Ute	.028
San Pedro to Ute	.03
Ute to I-25	.022
Barstow:	
Alameda to Oakland	.007
Oakland to LC Arroyo	.01
LC Arroyo to Glendale	.005
Modesto to Glendale	.0038
Exist. SD to Signal	.006
Anaheim to Green Arbor	.012
Green Arbor to Wilshire	.0018
Wilshire to Signal	.006
Holly to Carmel	.0054
Anaheim to NDB	.0054
Corona;	
Ventura East	.029
Corona to Vintner	.025
Vintner East	.012
Eagle Rock:	.03
Louisiana:	
Oakland to Eagle Rock	0.0
Eagle Rock to Modesto	.012
Modesto to LC arroyo	.01
EC arroyo to Florence	0.0
Florence to San Diego	.005
Signal to Alameda	.003
Murrelet:	.010
Oakland:	.025

San Pedro:

Signal to Alameda	.005
Alameda to Oakland	0.0
oakland to Eagle Rock	.0057
Eagle Rock to Modesto	.005
Beverly Hills to EC arroyo	0.0
San Deigo to LC Arroyo	0.0
Glendale to LC Arroyo	.005

Signal: .0214

Ventura:

NDB to Anaheim	.02
Anaheim to Corona	.012
Corona ½ to Wilshire	.01
Signal to Channel	0.0
Alameda to Oakland	.009
Eagle Rock to Oakland	0.0
Eagle Rock to Modesto	.008
Modesto to El Camino	.01
Exist SD to Wilshire	.01

Wyoming:

Modesto to Glendale	.0182
Glendale to EC Arroyo	.0075
EC arroyo to Florence	0.0
Wilshire to Corona	.005
Corona to NDB	.005
Oakland to Alameda	.006
Oakland to LC arroyo .007	

Corona:

San Pedro to Rancho del Cerro	.025
Louisiana to Rancho del Cerro	.030

RESOURCE TECHNOLOGY, INC.
ENGINEERS & ENVIRONMENTAL SCIENTISTS
1720-B Randolph Road, SE
Albuquerque, NM 87106
Phone: (505) 243-7300
Fax: (505) 243-7400

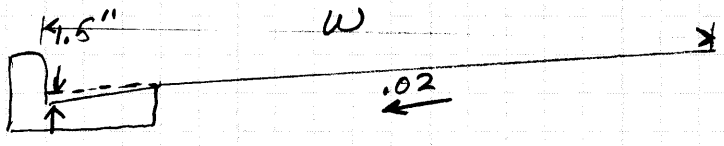
PROJECT NO._____ SHEET_____OF_____

PROJECT NAME_____ APPROVED_____DATE_____

TITLE_____ BY_____DATE_____

10-YR STREET CAPACITY CALCULATIONS

Depth at Flow line calculated from COA std Drawing 2415.

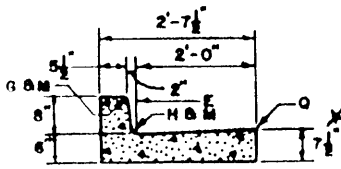


W = Maximum allowable Top width of street flow
d = flow line depth

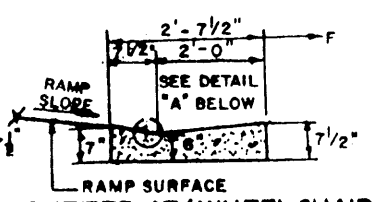
$$d = .02W + \frac{1.5}{12}$$

Principal Arterials: One lane clear each way and $Vd < 6.5$
Minor Arterials: " " " " " " " "
Collector: $d_{MAX} \leq .5'$ and $Vd < 6.5$
Residential: d_{MAX} at crown flow and $Vd < 6.5$

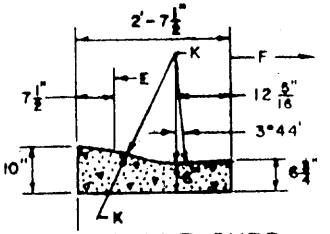
Calculation were done on following spreadsheet



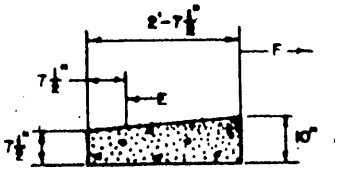
STANDARD C.& G.



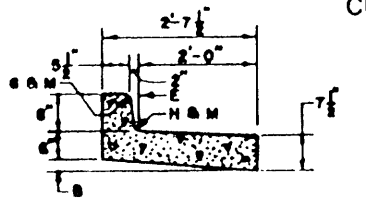
GUTTER AT (WHEELCHAIR) CURB ACCESS RAMP



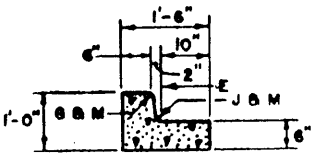
MOUNTABLE CURB ROLL TYPE



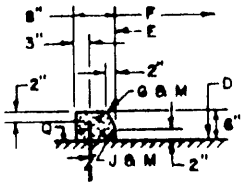
MOUNTABLE CURB ESTATE TYPE



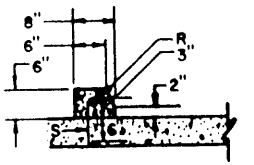
DEPRESSED GUTTER



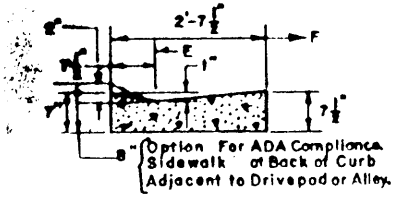
MEDIAN C.& G.



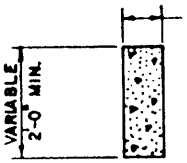
PINNED CURB TYPE I



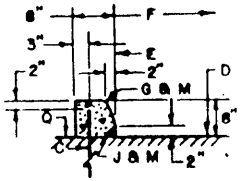
PINNED CURB TYPE III MEDIAN PCC PAVEMENT



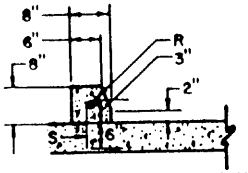
GUTTER AT DRIVEPAD OR ALLEY



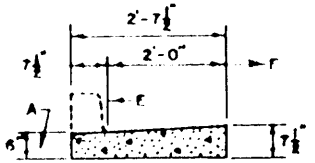
CUT-OFF WALL



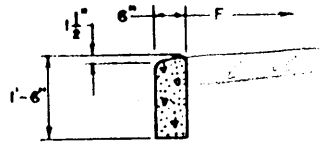
PINNED CURB TYPE II



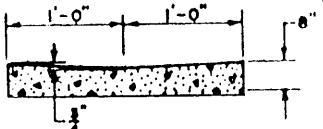
PINNED CURB TYPE IV OUTSIDE PCC PAVEMENT



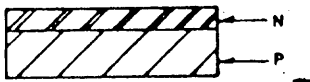
RUNDOWN CURB



HEADER CURB

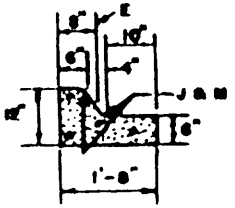


ALLEY GUTTER

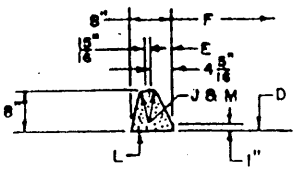


USE ONLY PER DIRECTION OR APPROVAL OF THE CITY ENGINEER

TEMPORARY OR BICYCLE PATH SECTION

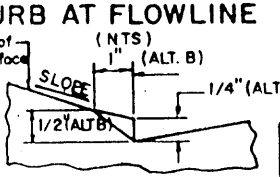


MOUNTABLE MEDIAN CURB



ASPHALT CURB

CURB AT FLOWLINE (NTS)



DETAIL "A"

NOTE:
ALT. A - 1/4" VERT. RISE THEN SLOPE UP TO BACK OF CURB. (SEE STD DWG 2440)
ALT. B - 1/2" RISE 1" HORIZ THEN SLOPE UP TO BACK OF CURB. (SEE STD DWG 2440)

GENERAL NOTES

1. CURBS, GUTTERS AND CUT-OFF WALL WILL BE CONSTRUCTED OF PORTLAND CEMENT CONCRETE.
2. FOR STANDARD AND MEDIAN C & G ADJACENT TO ASPHALT CONCRETE PAVEMENT, PROVIDE CONTRACTION JTS. 12' MAX., SPACING, 1/2" EXP. JTS. AT CURB RETURNS & AT A MAXIMUM SPACING OF 120' BETWEEN CURB RETURNS & EACH SIDE OF SEPARATELY CONSTRUCTED DRIVEWAYS. CONTRACTION JTS., SHALL BE EITHER SAWED OR TOOLED A MINIMUM OF 1" DEEP AT FINISHED FACES.
3. FOR ALL OTHER C & G & CUT-OFF WALL PROVIDE CONTRACTION JTS. AT 10' MAX., SPACING, 1/2" EXP. JTS. AT CURB RETURNS & AT A MAXIMUM SPACING OF 100' BETWEEN CURB RETURNS & EACH SIDE OF SEPARATELY CONSTRUCTED DRIVEWAYS. CONTRACTION JTS. SHALL BE EITHER SAWED OR TOOLED A MINIMUM OF 1" DEEP AT ALL FINISHED FACES. REINFORCEMENT SHALL NOT BE USED IN CUT-OFF WALLS.
4. FOR C & G CONSTRUCTED WITH PORTLAND CEMENT CONCRETE PAVEMENT, CONTRACTION JTS. AND EXPANSION JTS. SHALL BE THE SAME AS THE PAVEMENT JOINTS.
5. ALL EDGES SHALL BE EDGED WITH A 3/8" RADIUS EDGING TOOL.
6. STANDARD C & G SHALL BE USED FOR NEW CONSTRUCTION UNLESS OTHERWISE AUTHORIZED BY THE CITY ENGINEER.
7. REMOVE & REPLACE PAVEMENT 1' WIDE ADJACENT TO LIP OF GUTTER WHEN CONSTRUCTING C&G ADJACENT TO EXISTING ASPHALT CONCRETE PAVEMENT.
8. 1/4" ISOLATION JOINT SHALL BE PLACED BETWEEN SIDEWALK AND C&G WHEN CAST ADJACENT TO EACH OTHER.
9. ADA = AMERICAN WITH DISABILITIES ACT.

CONSTRUCTION NOTES

A. REQ. CONC. CHANNEL LINING, OR CUT-OFF WALL. PROVIDE 1/4" EXP. JT. BETWEEN BACK OF CURB & CHANNEL LINING AND/OR WALL.
B. VARIABLE, DEPRESS AS NEEDED.
C. DRIVE NO. 4 BARS 18" DEEP IN HOLES DRILLED 2' O.C. IN EXIST., PAVEMENT, SEAL WITH EPOXY.
D. EXIST. A.C. OR P.C.C. PAVEMENT.
E. THEORETICAL FACE OF CURB OR FLOWLINE.
F. TRAFFIC SIDE.
G. 3/4" RADIUS.
H. 1-1/2" RADIUS.
J. 2" RADIUS.
K. 24" RADIUS.
L. TACK COAT.
M. DIMENSIONS AT ROUNDED CORNERS MEASURED TO INTERSECTION OF STRAIGHT LINES.
N. 4" A.C., 75BLOW/1800 LBS. STABILITY ON TEMPORARY PAVEMENT. 2" A.C., 50BLOW/1500 LBS. STABILITY ON BICYCLE PATHS.
P. 8" SCARIFIED AND COMPACTED SUB-GRADE. 95% MINIMUM COMPACTION AT OPTIMUM MOISTURE +/- 2%, ASTM D1557, OR OPTIMUM MOISTURE TO +4% ASTM D698, FOR SOILS WITH 35% OR GREATER MATERIAL PASSING THE No. 200 SIEVE.
Q. ASPHALT CONCRETE PAVEMENT.
R. #4 X CONT. BETWEEN JOINTS 3" COVER AT JOINTS.
S. #3 PIN AT 3'-0" O.C. W/STD. HOOK.

CITY OF ALBUQUERQUE

REVISIONS
1/91
11/14/91
12/15/92
3/30/94

PAVING
CURB AND GUTTER & TEMPORARY PAVING SECTION
DWG. 2415 AUG. 1986

TEN YEAR STREET FLOW CALCULATIONS							
MINOR ARTERIAL							
BARSTOW							
ALAMED TO OAKLAND							
Depth	Slope	W max	Sx				
0.485	0.007	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	15.8428	2.354056	1.141717
OAKLAND TO LA CUEVA							
Depth	Slope	W max	Sx				
0.485	0.01	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	18.93577	2.813635	1.364613
EL CAMINO ARROYO TO GLENDALE							
Depth	Slope	W max	Sx				
0.485	0.005	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	13.38961	1.989541	0.964927
GREEN ARBOR TO WILSHIRE							
Depth	Slope	W max	Sx				
0.485	0.0018	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	8.033765	1.193724	0.578956
EL CAMINO ARROYO TO MODESTO							
Depth	Slope	W max	Sx				
0.485	0.0038	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	11.67279	1.734441	0.841204
EXISTING SD TO SIGNAL							
Depth	Slope	W max	Sx				
0.485	0.006	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	14.66758	2.179433	1.057025
ANAHEIM TO GREEN ARBOR							
Depth	Slope	W max	Sx				
0.485	0.012	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	20.74309	3.082183	1.494859
WILSHIRE TO SIGNAL							
Depth	Slope	W max	Sx				
0.485	0.006	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	14.66758	2.179433	1.057025
HOLLY TO CARMEL, ANAHEIM TO CARMEL							
Depth	Slope	W max	Sx				
0.485	0.0054	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	13.91489	2.067591	1.002782

RESIDENTIAL							
ANAHEIM- 32' F-F							
EAST END TO SAN PEDRO							
Depth	Slope	W max	Sx				
0.445	0.028	16	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.725	1.96	2.685	16.445	0.163272	23.51267	4.378523	1.948443
SAN PEDRO TO UTE							
Depth	Slope	W max	Sx				
0.445	0.03	16	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.725	1.96	2.685	16.445	0.163272	24.33792	4.532202	2.01683
UTE TO I-25							
Depth	Slope	W max	Sx				
0.445	0.022	16	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.725	1.96	2.685	16.445	0.163272	20.84175	3.881146	1.72711
RESIDENTIAL							
CORONA - 32' F-F							
VENTURA EAST							
Depth	Slope	W max	Sx				
0.445	0.02	16	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.725	1.96	2.685	16.445	0.163272	19.87183	3.700527	1.646735
CORONA TO VITNER							
Depth	Slope	W max	Sx				
0.445	0.025	16	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.725	1.96	2.685	16.445	0.163272	22.21738	4.137315	1.841105
VINTNER EAST, UTE TO I-25							
Depth	Slope	W max	Sx				
0.445	0.012	16	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.725	1.96	2.685	16.445	0.163272	15.39265	2.866416	1.275555
RESIDENTIAL - 32' F-F							
MURRELET							
TRICA TO PEREGRINE							
Depth	Slope	W max	Sx				
0.445	0.01	16	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.725	1.96	2.685	16.445	0.163272	14.05151	2.616668	1.164417
COLLECTOR							
EAGLE ROCK							
CONV. CENTER TO I-25							
Depth	Slope	W max	Sx				
0.5	0.03	18.75	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.835	2.805625	3.640625	19.25	0.189123	36.3993	4.999045	2.499522

MINOR ARTERIAL							
LOUISIANA, 60' F-F							
EAGLE ROCK TO MODESTO							
Depth	Slope	W max	Sx				
0.485	0.012	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	20.74309	3.082183	1.494859
MODESTO TO LA CUEVA ARROYO							
Depth	Slope	W max	Sx				
0.485	0.01	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	18.93577	2.813635	1.364613
FLORENCE TO EL CAMINO							
Depth	Slope	W max	Sx				
0.485	0.002	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	8.468332	1.258296	0.610274
SIGNAL TO ALAMEDA							
Depth	Slope	W max	Sx				
0.485	0.003	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	10.37155	1.541092	0.747429
SAN DIEGO TO EL CAMINO							
Depth	Slope	W max	Sx				
0.485	0.01	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	18.93577	2.813635	1.364613
RESIDENTIAL							
OAKLAND, 32' F-F							
SAN PEDRO TO LOUISIANA							
Depth	Slope	W max	Sx				
0.445	0.025	16	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.725	1.96	2.685	16.445	0.163272	22.21738	4.137315	1.841105
SIGNAL, 38' F-F							
SAN PEDRO TO LOUISIANA							
Depth	Slope	W max	Sx				
0.505	0.0214	19	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.845	2.89	3.735	19.505	0.191489	31.80206	4.257305	2.149939
COLLECTOR							
SAN PEDRO, 48' F-F							
GLENDALE TO LA CUEVA CHANNEL							
Depth	Slope	W max	Sx				
0.5	0.005	18.75	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.835	2.805625	3.640625	19.25	0.189123	14.85995	2.040852	1.020426

COLLECTOR							
SAN PEDRO, 48' F-F							
SIGNAL TO ALAMEDA, EAGLE ROCK TO MODESTO							
Depth	Slope	W max	Sx				
0.5	0.005	18.75	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.835	2.805625	3.640625	19.25	0.189123	14.85995	2.040852	1.020426
OAKLAND TO EAGLE ROCK							
Depth	Slope	W max	Sx				
0.5	0.0057	18.75	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.835	2.805625	3.640625	19.25	0.189123	15.86608	2.179033	1.089517
PRINCIPAL ARTERIAL							
WYOMING, 72' F-F							
MODESTO TO GLENDALE							
Depth	Slope	W max	Sx				
0.605	0.0182	24	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
1.045	4.84	5.885	24.605	0.239179	53.59914	4.553878	2.755096
GLENDALE TO EL CAMINO							
Depth	Slope	W max	Sx				
0.605	0.0075	24	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
1.045	4.84	5.885	24.605	0.239179	34.40747	2.92332	1.768608
EL CAMINO TO FLORENCE, WILSHIRE TO CORONA, CORONA TO NDB							
Depth	Slope	W max	Sx				
0.605	0.005	24	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
1.045	4.84	5.885	24.605	0.239179	28.09358	2.38688	1.444063
OAKLAND TO ALAMEDA							
Depth	Slope	W max	Sx				
0.605	0.006	24	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
1.045	4.84	5.885	24.605	0.239179	30.77498	2.614696	1.581891
OAKLAND TO LA CUEVA CHANNEL							
Depth	Slope	W max	Sx				
0.605	0.007	24	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
1.045	4.84	5.885	24.605	0.239179	33.24077	2.824195	1.708638
MINOR ARTERIAL							
VENTURA, 60' F-F							
NDB TO ANAHEIM							
Depth	Slope	W max	Sx				
0.485	0.02	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	26.77922	3.979081	1.929854
CORONA TO WILSHIRE, MODESTO TO EL CAMINO, WILSHIRE TO EXIST. SD							
Depth	Slope	W max	Sx				
0.485	0.01	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	18.93577	2.813635	1.364613

MINOR ARTERIAL							
VENTURA, 60' F-F							
ALAMEDA TO OAKLAND							
Depth	Slope	W max	Sx				
0.485	0.009	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	17.96404	2.669249	1.294586
EAGLE ROCK TO MODESTO							
Depth	Slope	W max	Sx				
0.485	0.008	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	16.93666	2.516592	1.220547
ALAMEDA TO CORONA							
Depth	Slope	W max	Sx				
0.485	0.0116	18	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.805	2.56	3.365	18.485	0.182039	20.39444	3.030378	1.469733
RESIDENTIAL							
CORONA, 32' F-F							
LOUISIANA TO RANCHO DEL CERRO							
Depth	Slope	W max	Sx				
0.445	0.03	16	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.725	1.96	2.685	16.445	0.163272	24.33792	4.532202	2.01683
RANCHO DEL CERRO TO SAN PEDRO, SAN PEDRO TO UTE, MID BLK CORONA TO WYOMING							
Depth	Slope	W max	Sx				
0.445	0.025	16	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
0.725	1.96	2.685	16.445	0.163272	22.21738	4.137315	1.841105
PRINCIPAL ARTERIAL							
ALAMEDA							
Depth	Slope	W max	Sx				
0.605	0.03	24	0.02				
A1	A2	A-TOT	P	R	Q-FULL	V	V x D
1.045	4.84	5.885	24.605	0.239179	68.81494	5.846639	3.537217

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PROJECT NO._____ SHEET_____OF_____

PROJECT NAME_____ APPROVED_____DATE_____

TITLE 100-YR STREET CAPACITY CALCULATIONS BY_____DATE_____

100-YR STREET FLOW calculations were AN iterative process, also using Drwg 2415.

1st step: Calculate Q, d + F AT Crown flow.

2nd step { if F>1 AND sequent depth (Dseq) >.87' then reduce d until Dseq = .87'
if F>1 AND Dseq <.87' or F<1 AND Dseq <.87' then calculate flow with submerged crown flow.

3rd step Submerged crown flow, set d = .87' + CALculate F

2nd if F<1, then Q = CAPACITY AT d=.87'
if F>1 reduce d until Dseq = .87'
Q AT that d is CAPACITY

The following spread sheet was used to calculate CAPACITY.

The following equation was used to calculate sequent Depth (Dseq):

$$Dseq = d + .5\frac{A}{w}\left(\left(\left(1+8F^2\right)^{\frac{1}{2}}\right)-3\right)$$

$n = .017$

MINOR ARTERIAL DEPTH > CROWN								
BARSTOW								
ANAHEIM TO GREEN ARBOR								
Depth	Slope	WT	Sx	F-F				
0.72	0.012	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.275	7.7	8.975	30.72	0.292155	75.85015	4.225635	1.361468	0.866373
MINOR ARTERIAL DEPTH > CROWN								
BARSTOW								
WILSHIRE TO SIGNAL								
Depth	Slope	WT	Sx	F-F				
0.86	0.006	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.555	11.62	13.175	30.86	0.426928	101.4005	3.848217	1.023333	0.87368
MINOR ARTERIAL DEPTH > CROWN								
BARSTOW								
HOLLY TO CARMEL								
Depth	Slope	WT	Sx	F-F				
0.87	0.0054	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.575	11.9	13.475	30.87	0.436508	99.85453	3.705177	0.974265	0.85461

WYOMING, PRINCIPAL ARTERIAL, 72' F-F								
MODESTO TO GLENDALE								
D<CROWN								
Depth	Slope	WT	Sx	F-F				
0.64	0.0182	25.75	0.02	72				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.115	5.640625	6.755625	26.39	0.255992	64.38066	4.764967	1.639411	0.868715
GLENDALE TO EL CAMINO ARROYO								
D<CROWN								
Depth	Slope	WT	Sx	F-F				
0.82	0.0075	34.75	0.02	72				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.475	10.72562	12.20062	35.57	0.343003	90.72437	3.718021	1.105784	0.869787

CORONA.								
LOUISIANA TO RANCHO DEL CERRO								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.518	0.03	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.871	2.982	3.853	16.518	0.233261	44.3075	5.749741	2.064814	0.870209
RANCHO DEL CERRO TO SAN PEDRO								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.54	0.025	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.915	3.29	4.205	16.54	0.254232	46.75113	5.558993	1.910932	0.868077

CORONA, RESIDENTIAL, 32' F-F								
VENTURA EAST								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.57	0.02	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.975	3.71	4.685	16.57	0.28274	50.01118	5.337373	1.73822	0.865316
CORONA TO VINTNER								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.54	0.025	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.915	3.29	4.205	16.54	0.254232	46.75113	5.558993	1.910932	0.868077
VINTNER EAST, UTE TO I-25								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.66	0.012	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.155	4.97	6.125	16.66	0.367647	60.34018	4.925729	1.402974	0.869067
LOUISIANA, MINOR ARTERIAL, 60' F-F								
SIGNAL TO ALAMEDA								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.87	0.003	30	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.575	11.9	13.475	30.87	0.436508	74.42717	2.761676	0.726175	0.709296
MURRELET, RESIDENTIAL, 32' F-F								
TRICA TO PEREGRINE								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.7	0.01	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.235	5.53	6.765	16.7	0.40509	64.90406	4.797048	1.300086	0.871397
ALAMEDA, PRINCIPAL ARTERIAL, 72' F-F								
WYOMING TO SAN PEDRO								
D<CROWN								
Depth	Slope	WT	Sx	F-F				
0.76	0.01	31.75	0.03	72				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.355	8.850625	10.20563	32.51	0.313923	82.60145	4.046859	1.257889	0.871813
SIGNAL, RESIDENTIAL, 38' F-F								
SAN PEDRO TO LOUISIANA								
DEPTH > CROWN								
Depth	Slope	WT	Sx	F-F				
0.58	0.0214	19	0.02	38				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.995	4.165	5.16	19.58	0.263534	54.36535	5.267961	1.781421	0.870168

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OAKLAND, RESIDENTIAL, 32' F-F								
SAN PEDRO TO LOUISIANA								
DEPTH > CROWN								
Depth	Slope	WT	Sx	F-F				
0.54	0.025	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.915	3.29	4.205	16.54	0.254232	46.75113	5.558993	1.910932	0.868077
VENTURA, MINOR ARTERIAL, 60' F-F								
NDB TO ANAHEIM								
D<CROWN								
Depth	Slope	WT	Sx	F-F				
0.625	0.02	25	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.085	5.29	6.375	25.625	0.24878	62.48446	4.900742	1.710267	0.872305
ANAHEIM TO CORONA								
D<CROWN								
Depth	Slope	WT	Sx	F-F				
0.725	0.0116	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.285	7.84	9.125	30.725	0.296989	76.65623	4.200341	1.342149	0.86578
CORONA 1/2 WAY TO WILSHIRE								
DEPTH > CROWN								
Depth	Slope	WT	Sx	F-F				
0.75	0.01	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.335	8.54	9.875	30.75	0.321138	81.14617	4.108667	1.262017	0.866352

OAKLAND TO ALAMEDA
DEPTH > CROWN

Depth	Slope	WT	Sx	F-F				
0.77	0.009	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.375	9.1	10.475	30.77	0.340429	84.89934	4.052475	1.208582	0.868055

VENTURA, MINOR ARTERIAL, 60' F-F
EAGLE ROCK TO MODESTO
DEPTH > CROWN

Depth	Slope	WT	Sx	F-F				
0.795	0.008	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.425	9.8	11.225	30.795	0.364507	89.77526	3.998898	1.152073	0.871432

MODESTO TO EL CAMINO ARROYO, EXISTING SD TO WILSHIRE
DEPTH > CROWN

Depth	Slope	WT	Sx	F-F				
0.75	0.01	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.335	8.54	9.875	30.75	0.321138	81.14617	4.108667	1.262017	0.866352

ANAHEIM, RESIDENTIAL, 32' F-F								
EAST END TO SAN PEDRO								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.525	0.028	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.885	3.08	3.965	16.525	0.239939	44.88667	5.660362	2.003801	0.86638
CORONA.								
LOUISIANA TO RANCHO DEL CERRO								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.518	0.03	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.871	2.982	3.853	16.518	0.233261	44.3075	5.749741	2.064814	0.870209
RANCHO DEL CERRO TO SAN PEDRO, MID BLK CORONA TO WYO, SAN PEDRO TO UTE								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.54	0.025	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.915	3.29	4.205	16.54	0.254232	46.75113	5.558993	1.910932	0.868077

WYOMING, PRINCIPAL ARTERIAL, 72' F-F
WILSHIRE TO CORONA, CORONA TO NDB
DEPTH > CROWN

Depth	Slope	WT	Sx	F-F				
0.87	0.005	36	0.02	72				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.575	12.41	13.985	36.87	0.379306	90.80311	3.246446	0.91791	0.82769

OAKLAND TO ALAMEDA
DEPTH > CROWN

Depth	Slope	WT	Sx	F-F				
0.87	0.006	36	0.02	72				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.575	12.41	13.985	36.87	0.379306	99.46982	3.556304	1.005521	0.87286

OAKLAND TO LA CUEVA CHANNEL
D<CROWN

Depth	Slope	WT	Sx	F-F				
0.835	0.007	35.5	0.02	72				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.505	11.2225	12.7275	36.335	0.350282	92.72274	3.642614	1.072082	0.869587

ANAHEIM, RESIDENTIAL, 32' F-F								
EAST END TO SAN PEDRO								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.525	0.028	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.885	3.08	3.965	16.525	0.239939	44.88667	5.660362	2.003801	0.86638
SAN PEDRO TO UTE								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.517	0.03	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.869	2.968	3.837	16.517	0.232306	44.00299	5.734036	2.063462	0.867295
UTE TO I-25								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.558	0.022	16	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.951	3.542	4.493	16.558	0.271349	48.94165	5.446434	1.81124	0.869653
BARSTOW, MINOR ARTERIAL 60' F-F								
GREEN ARBOR TO WILSHIRE								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.87	0.0012	30	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.575	11.9	13.475	30.87	0.436508	47.07188	1.746637	0.459273	0.56442
MODESTO TO EL CAMINO								
D>CROWN								
Depth	Slope	WT	Sx	F-F				
0.87	0.0038	30	0.02	32				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.575	11.9	13.475	30.87	0.436508	83.76502	3.108164	0.817283	0.761897

BARSTOW, MINOR ARTERIAL, 60' F-F								
ALAMEDA TO OAKLAND								
		D>CROWN						
Depth	Slope	WT	Sx	F-F				
0.82	0.007	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.475	10.5	11.975	30.82	0.388546	93.4868	3.903415	1.088779	0.867466
OAKLAND TO LA CUEVA ARROYO								
		D>CROWN						
Depth	Slope	WT	Sx	F-F				
0.75	0.01	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.335	8.54	9.875	30.75	0.321138	81.14617	4.108667	1.262017	0.866352
EL CAMINO ARROYO TO GLENDALE								
		D>CROWN						
Depth	Slope	WT	Sx	F-F				
0.87	0.005	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.575	11.9	13.475	30.87	0.436508	96.08506	3.565308	0.937487	0.8327
EXISTING S.D. TO SIGNAL								
		D>CROWN						
Depth	Slope	WT	Sx	F-F				
0.86	0.006	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.555	11.62	13.175	30.86	0.426928	101.4005	3.848217	1.023333	0.87368
ANAHEIM TO GREEN ARBOR, D<CROWN								
Depth	Slope	WT	Sx	F-F				
0.72	0.012	29.75	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.275	7.700625	8.975625	30.47	0.294573	76.27354	4.248926	1.363209	0.868332
WILSHIRE TO SIGNAL								
		D>CROWN						
Depth	Slope	WT	Sx	F-F				
0.86	0.006	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.555	11.62	13.175	30.86	0.426928	101.4005	3.848217	1.023333	0.87368
HOLLY TO CARMEL, CARMEL TO ANAHEIM								
		D>CROWN						
Depth	Slope	WT	Sx	F-F				
0.87	0.0054	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.575	11.9	13.475	30.87	0.436508	99.85453	3.705177	0.974265	0.85461

		LOUISIANA, MINOR ARTERIAL, 60' F-F, D<CROWN						
EAGLE ROCK TO MODESTO								
Depth	Slope	WT	Sx	F-F				
0.72	0.012	29.75	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.275	7.700625	8.975625	30.47	0.294573	76.27354	4.248926	1.363209	0.868332
MODESTO TO LA CUEVA ARROYO								
			D>CROWN					
Depth	Slope	WT	Sx	F-F				
0.75	0.01	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.335	8.54	9.875	30.75	0.321138	81.14617	4.108667	1.262017	0.866352
FLORENCE TO SAN DIEGO								
			D>CROWN					
Depth	Slope	WT	Sx	F-F				
0.87	0.005	30	0.02	60				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.575	11.9	13.475	30.87	0.436508	96.08506	3.565308	0.937487	0.8327
		EAGLE ROCK, COLLECTOR 48' F-F, D<CROWN						
CONVENIENCE CENTER TO I-25								
Depth	Slope	WT	Sx	F-F				
0.55	0.03	21.25	0.02	48				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
0.935	3.705625	4.640625	21.8	0.212873	50.20656	5.409461	2.03994	0.861832
SAN PEDRO, COLLECTOR 48' F-F								
SIGNAL TO ALAMEDA, EAGLE ROCK TO MODESTO								
			D>CROWN					
Depth	Slope	WT	Sx	F-F				
0.87	0.005	24	0.02	48				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.575	10.67	12.245	24.87	0.49236	94.61585	3.863448	0.953177	0.838234
OAKLAND TO EAGLE ROCK								
			D>CROWN					
Depth	Slope	WT	Sx	F-F				
0.86	0.0057	24	0.02	48				
A1	A2	A-TOT	P	R	Q-FULL	V	Fr #	D-SEQ
1.555	10.45	12.005	24.86	0.482904	97.76924	4.072022	1.014628	0.869764

TABLE OF CONTENTS

NORTH ALBUQUERQUE ACRES ARROYO AVULSION PROBLEMS

I. INTRODUCTION

A. To date the following tasks for the La Cueva, El Camino and North Camino Arroyos Drainage Management Plan have been completed:

-The La Cueva Tributary Diversion LOMR submittal (FEMA action pending)
-Photogrametric Mapping
-Literature Review
-Hydrology Report with Sediment and Erosion analysis

The Hydrology Report identified the major avulsion locations. At this point an evaluation of avulsion control options is in progress and this report is an attempt to clarify the issues involved.

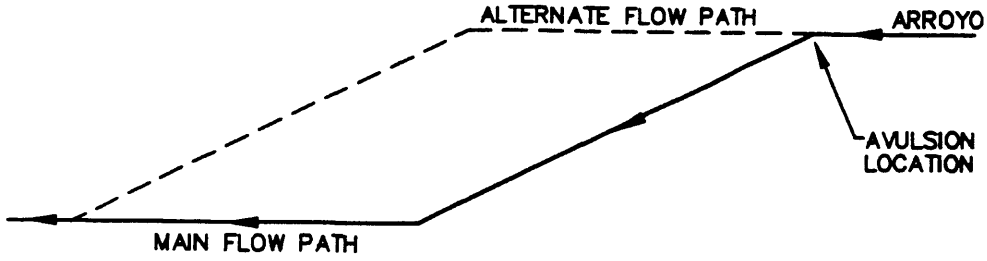
B. An arroyo avulsion can be defined as a location where the flow path of an arroyo may change course, either totally, or partially. An avulsion may be the result of natural forces, such as wind or water or due to some human activity such as road building or site grading. An avulsion may occur over time as the historic arroyo bed is altered by natural sediment and erosion processes, or quickly, if caused by human activity.

C. Indications of natural avulsions are apparent in an examination of historic aerial photographs of the North Camino, El Camino and La Cueva arroyo drainage basins, especially in the area from the base of the Sandia Mountains through North Albuquerque Acres. Additional potential avulsion sites, some caused by human activity, can be identified through a careful examination of existing topographic maps. The eight most significant avulsion sites, as judged by their impact on this study, are identified in Figures 1A and 1B as sites #1 through #8. (It should be noted that similar potential avulsions elsewhere in North Albuquerque Acres have been controlled or eliminated by manmade structures such as the AMAFCA dikes on Signal and Wilshire Avenues which prevent the La Cueva Arroyo from avulsing south to the North Domingo Baca Arroyo. Other avulsions have been controlled by arroyo crossing structures on Tramway Boulevard). Certain avulsions have been recognized since 1983(AMAFCA Board Resolution 1983-11), but have not yet been controlled.

D. The major consequences of these uncontrolled avulsions are as follows:

1. Engineers, planners, and developers are faced with a high degree of uncertainty as to the peak flow rates at critical locations throughout the area. Because of the uncertainty a worst case situation has to be evaluated and

infrastructure designed accordingly. This will result in multiple parallel structures designed to convey the same storm water as shown below.



BOTH MAIN FLOW PATH AND ALTERNATE FLOW PATH DRAINAGE FACILITIES MUST BE DESIGNED FOR FULL FLOW IN THE ARROYO.

2. The effective FEMA Flood Insurance Study, dating from 1983, displays the main arroyo floodplains. As a consequence of revised methodology, FEMA now recognizes the avulsion potential in areas like North Albuquerque Acres. Frequently, attempts to revise the floodplain to reflect the impact of flood control structures become entangled in questions concerning peak flow rates because of potential avulsions in distant upstream areas.

E. A task of the North Camino, El Camino and La Cueva Arroyo Drainage Management Plan is to evaluate various avulsion control measures and strategies, prepare cost estimates for their possible implementation, compare these with the estimated cost of a "no control" option and present this information to all interested parties including the City of Albuquerque and Bernalillo County. Based on these findings recommendations may be made for future action by AMAFCA or other concerned parties.

II. AVULSION CONTROL

A. The Hydrology Report for the La Cueva, North Camino and El Camino Drainage Management Plan, (September, 1996) is based on the assumption that all of the avulsions were controlled under both existing and future developed conditions. Various preliminary design avulsion control measures had been conceptually developed and were assumed to be in place. The results of this analysis are summarized in Table 1, "Existing and Future Flow Rates".

B. The avulsion control measures proposed a variety of site specific elements including armored dikes, training dikes, dip sections, bridges and raised roadways. The proposed measures at each specific location were as follows:

Avulsion #1, near the Juan Tabo Picnic Area access road, is located on both U.S. Forest Service and Sandia Pueblo land. Proposed solution is a 1000-foot long dike to maintain the separation of the El Camino and North Camino Arroyo flows.

Avulsion #2 is located on Modesto, 1200-feet west of Tennyson. Proposed solution includes a bridge type structure with training dikes to carry this existing paved road over the arroyo.

Avulsion #3 is located on Eagle Rock, 600-feet east of Lowell. Proposed solution consists of terminating the roadway on either side of the arroyo crossing with a cul-de-sac, and improving the arroyo conveyance across the Eagle Rock Right-of-Way.

Avulsion #4 is located between Eubank and Browning and includes arroyo crossings of both Modesto and Glendale. This is actually a series of interrelated avulsion areas on a braided portion of the La Cueva Arroyo. The proposed solution consists of dikes and roadway crossing structures at the most downstream location to prevent flows from escaping the La Cueva system. The Glendale location consists of terminating the roadway in a cull-de-sac on either side of the arroyo crossing near Browning along with an improved arroyo conveyance and dikes. The Modesto location consists of a bridge type structure with training dikes to carry the paved roadway over the arroyo flow line near Eubank. An alternative solution would be a lined channel from Browning to Barstow.

Avulsion #5 is located on Glendale 600-feet west of Holbrook. The proposed solution consists of a dike parallel to Glendale to prevent the arroyo from migrating to the north, plus terminating Glendale on either side of the arroyo crossing with a cul-de-sac and improving the arroyo conveyance across the Glendale Right-of-Way.

Avulsion #6 is located on Glendale 1000-feet west of Louisiana. The proposed solution consists of bridge crossing and training dikes for the main La Cueva Arroyo on Glendale, the exact location contingent on any future plans for this portion of the La Cueva Arroyo.

Avulsion #7 is located on Venice between Wyoming and Louisiana. The proposed solution is to terminate Venice with a cul-de-sac on either side of the arroyo crossing and to provide a small training dike on the south side of Venice.

Avulsion #8 is located on Elena near Louisiana. The proposed solution is to raise the Elena roadbed to create a dike to prevent the North Camino Arroyo from crossing Elena and flowing to the south to the Camino Arroyo.

C. The matrix at Table 2 establishes the relative priority of controlling the eight significant avulsions.

D. Figures 2A and 2B depict the measures necessary to control the eight significant avulsions and Table 3 summarizes the preliminary cost estimates for these measures.

III. NO CONTROL OPTION

A If avulsions are not controlled, a "worst case hydrology" must be examined for two reasons:

1. Using the "worst case" flow rates would enable developers or the municipal authorities to remove areas from floodplain upon completion of a project.

2. So that development could proceed during the interim period before upstream avulsion control measures are in place provided design was for the "worst case" flow rate.

B. The "worst case hydrology" is based on the following assumptions:

1. Each potential avulsion will involve 100% of the flow following the new path unless there is clear, quantifiable justification for a flow split.

2. Only one avulsion will occur at a time so that the "worst case" will reflect the results of a single avulsion that will cause the highest flow rates for a particular reach and not a combination of events.

C. The results of this revised evaluation are summarized in Tables 5-1, 5-2, and 5-3 and shown on Figures 3A and 3B. Where there is more than one significant avulsion that can cause a problem, a secondary avulsion and flow rate is also indicated. From a review of the summary tables it appears that avulsions 1 through 5 are the primary problem areas. However, this is somewhat misleading. Avulsion #6 results in major flooding on the northbound lanes and frontage road of I-25. Avulsions 7 and 8 result in all or part of the North Camino flowing along the east side of Coronado Airport runway to the El Camino Arroyo. Due to the fact that these avulsions involve the same water as Avulsion #1, they are not shown on Table 5-2 separately.

D. Cost estimates were prepared for the "no control" option. These are reported in Table 4. The basis for the cost estimates are contained in the Appendix. The cost estimates include Right-of-Way costs assuming existing platting and land values without any adjustment for the negative impact of floodplain designation.

IV. CONCLUSION

A. As can be seen from Tables 3 and 4, the long term cost of "no control" is estimated to be approximately twice that of implementing the control measures. This is primarily due to the cost of building additional or larger capacity arroyo road crossing structures.

B. There are also larger floodplain issues involved. The avulsion "control" option would remove more than fifty lots or parcels from floodplain while the "no control"

option would leave over 180 lots exposed to possible flooding even though they are not currently shown on FEMA maps as being in floodplain. No attempt was made to establish the relative community costs or benefits associated with these floodplain issues.

TABLE 1

EXISTING AND FUTURE FLOW RATES
(Assume All Avulsions Controlled)

	North Camino Arroyo (cfs)	El Camino Arroyo (cfs)	La Cueva Arroyo (cfs)
Tramway	AP 301.90	AP 200.0	AP 102.90
Existing	1718	472	2758
Future	1718	472	2758
Browning		AP 201.90	AP 107.29
Existing	-	587	2756
Future	-	587	2782
Eubank		AP 202.19	AP 109.99
Existing	-	619	2942
Future	-	646	3040
Holbrook	AP 303.90	AP 202.29	
Existing	1717	638	-
Future	1767	685	-
Ventura	AP 305.19	AP 202.39	AP 110.9
Existing	1736	638	2939
Future	1798	710	3048
Barstow	AP 305.29	AP 203.39	AP 111.99
Existing	1739	726	2953
Future	1829	920	3066
Wyoming		AP 204.9	AP 112.90
Existing	-	790	2986
Future	-	1130	3094
Louisiana			AP 113.90
Existing	-	-	2989
Future	-	-	3106
I-25	AP 313.99	AP 205.90	AP 115.90
Existing	1846	908	2994
Future	1982	1335	3108
North Diversion Channel	AP 402.90		AP 128.90
Existing	1863	-	3898
Future	2422	-	4591

Rev. 6/12/96

TABLE 2

AVULSION MATRIX

AVULSION / CONSEQUENCES	1. North Camino Arroyo at Juan Tabo	2. Middle La Cueva Trib. at Modesto, East of Lowell	3. Middle La Cueva Trib. at Eagle Rock, East of Lowell	4. North La Cueva Between Modesto and Eagle Rock East of Eubank	5. Camino Arroyo at Glendale Between Holbrook and Ventura	6. North La Cueva at Glendale, West of Louisiana	7. North Camino Trib. at Venice, West of Wyoming	8. North Camino at Wyoming, North of Elena
Is it a Major Threat to Life & Property?	YES	YES	YES	YES	YES	YES	NO	NO
Does it Result in Interbasin Diversion?	YES	YES	YES	YES	YES	YES	YES	YES
Does it Result in Bypass or Overload of Major Flood Control Structures?	YES	YES	YES	YES	YES	YES	YES	YES
What is Probability Occurrence?	HIGH	HIGH	HIGH	HIGH	LOW*	HIGH	LOW	MODERATE
What is 100-Year Flow Rate?	1718 cfs	765 cfs	765 cfs	2756 cfs	638 cfs	2994 cfs	297 cfs	1846 cfs
Score	9	8	8	9	6*	9	4	7
Location	S	B	B	B	B	A	B	B

YES = 1
NO = 0

HIGH = 3
MODERATE = 2
LOW = 1

Q ≥ 1000 cfs = 3
Q = 500 to 1000 cfs = 2
Q ≤ 500 cfs = 1

*Probability is low only if Avulsion No. 1 is controlled; otherwise the probability is HIGH and the Score is 8

S= Sandia Reservation
B= Bernalillo County
A= Within Cith Limits

TABLE 3

COST ESTIMATE
AVULSION CONTROL

Option 1	**Cost Estimate**
Juan Tabo Dike	$450,000.00
Various Control Measures at Locations 2-8*	$4,370,000.00
Total, Avulsion Control with Dike	$4,820,000.00
Option 2	
Eubank Dam - 65 ac-ft on 12 lots	$1,700,000.00
Various Avulsion Control at Locations 2-8*	$4,370,000.00
Total, Avulsion Control with Dam	$6,070,000.00

*Locations 2-8 will require 3 bridges, 4 dip-sections, miscellaneous dikes and berms, and 30 lots

TABLE 4

COST ESTIMATE
NO AVULSION CONTROL

Option 3	
Increased size of 20 future structures	$2,000,000.00
2 miles of **increased** capacity on future channels	$650,000.00
13 **additional** major structures, includes 39 lots (Q > 1000 cfs)	$6,250,000.00
7 **additional** minor structures, includes 14 lots (Q < 1000 cfs)	$1,440,000.00
Total, No Avulsion Control	$10,340,000.00

(All of the above estimates assume R-O-W costs of $80,000/NAA lot)

Note: These costs are only for increased size or additional structures for the "worst case" hydrology flow rates east of I-25.

TABLE 5-1

NORTH CAMINO ARROYO

	Avulsion Control Q_{100} (cfs)	No Avulsion Control, Primary Avulsion Q_{100} (cfs)		No Avulsion Control, Secondary Avulsion Q_{100} (cfs)
I-25 (AP 313.99)				
Existing	1846	#5	2127	NA
Future	1982	#5	2399	NA
North Diversion Channel (AP 402.9)				
Existing	1863	#5	2167	NA
Future	2422	#5	2883	NA

NORTH CAMINO TRIBUTARY ARROYO

Barstow (AP 307.9)				
Existing	181	#5	660	NA
Future	232	#5	744	NA
Wyoming (AP310.9)				
Existing	199	#5	672	NA
Future	296	#5	766	NA
Coronado Airport (AP311.99)				
Existing	527	#5	875	NA
Future	820	#5	1290	NA

(Rev. 11/97)

TABLE 5-2

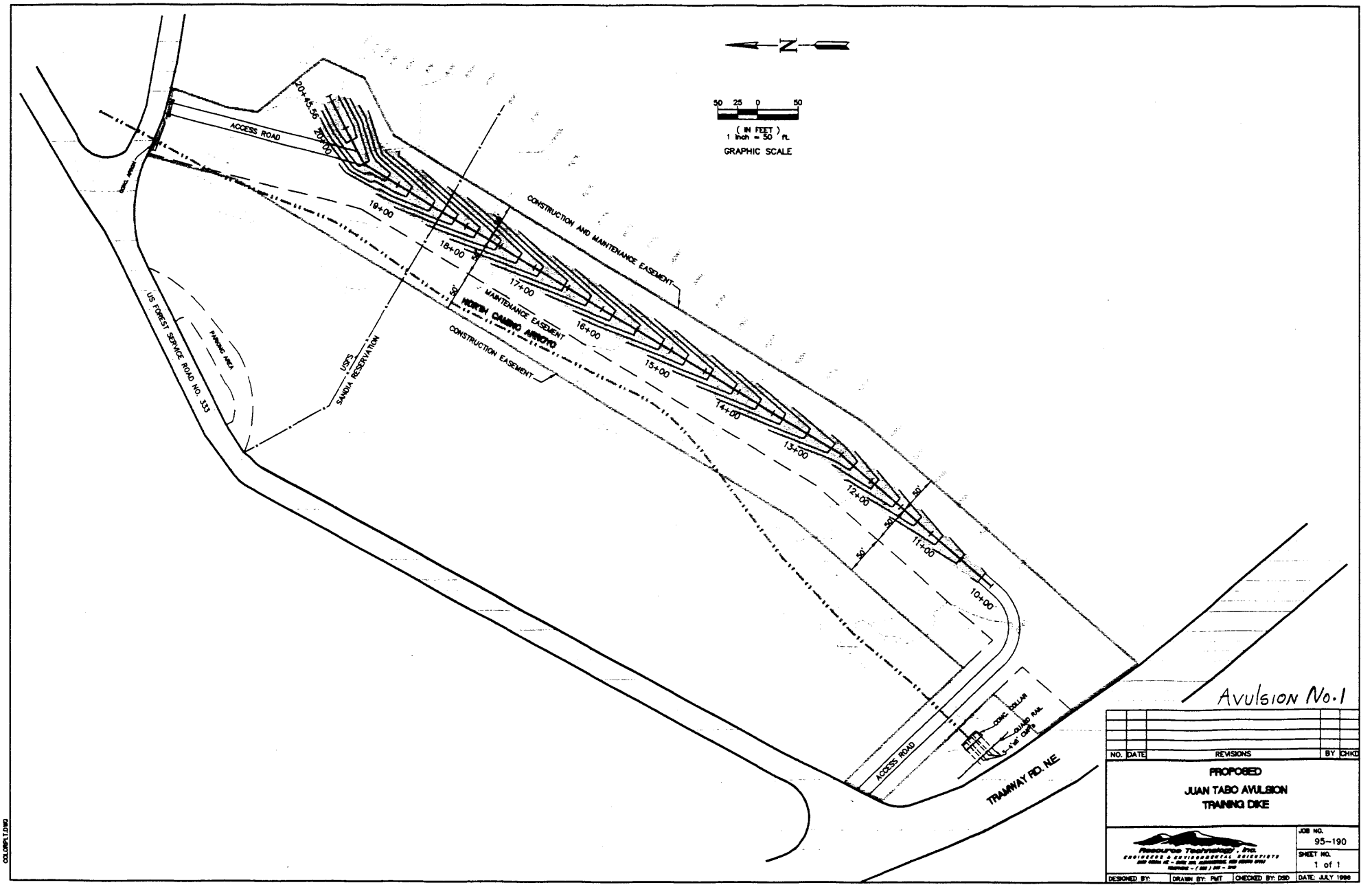
EL CAMINO ARROYO

	Avulsion Control Q_{100} (cfs)	No Avulsion Control, Primary Avulsion Q_{100} (cfs)		No Avulsion Control, Secondary Avulsion Q_{100} (cfs)	
Tramway (AP 200.0)					
Existing	472	#1	1791		NA
Future	472	#1	1791		NA
Browning (AP 201.9)					
Existing	587	#1	1782		NA
Future	587	#1	1796		NA
Eubank (AP 202.19)					
Existing	619	#1	1790		NA
Future	646	#1	1806		NA
Holbrook (AP 202.29)					
Existing	638	#4	3161	#1	1803
Future	685	#4	3243	#1	1816
Ventura (AP 202.39)					
Existing	638	#4	3165	#1	1810
Future	710	#4	3247	#1	1826
Barstow (AP 203.39)					
Existing	726	#4	3213	#1	1841
Future	920	#4	3310	#1	1883
Wyoming (AP 204.9)					
Existing	790	#4	3243	#1	1852
Future	1130	#4	3380	#1	1926
I-25 (AP 205.9)					
Existing	908	#4	3286	#1	1876
Future	1335	#4	3438	#1	1975

TABLE 5-3

LA CUEVA ARROYO

	Avulsion Control Q_{100} (cfs)	No Avulsion Control, Primary Avulsion Q_{100} (cfs)		No Avulsion Control, Secondary Avulsion Q_{100} (cfs)	
Eubank (AP 109.99)					
Existing	2942	#2	3535		NA
Future	3040	#2	3647		NA
Ventura (AP 110.90)					
Existing	2939	#3	3545	#2	3537
Future	3048	#3	3709	#2	3693
Barstow (AP 111.99)					
Existing	2953	#3	3560	#2	3530
Future	3066	#3	3744	#2	3727
Wyoming (AP 112.90)					
Existing	2986	#3	3597	#2	3562
Future	3094	#3	3795	#2	3774
Louisiana (AP 113.90)					
Existing	2989	#3	3589	#2	3548
Future	3106	#3	3820	#2	3799
I-25 (AP 115.90)					
Existing	2994	#3	3587	#2	3546
Future	3108	#3	3830	#2	3809
North Diversion Channel					
Existing	3898	#3	4545	#2	4440
Future	4591	#3	5290	#2	5251



AVULSION NO.1

NO.	DATE	REVISIONS	BY	CHKD

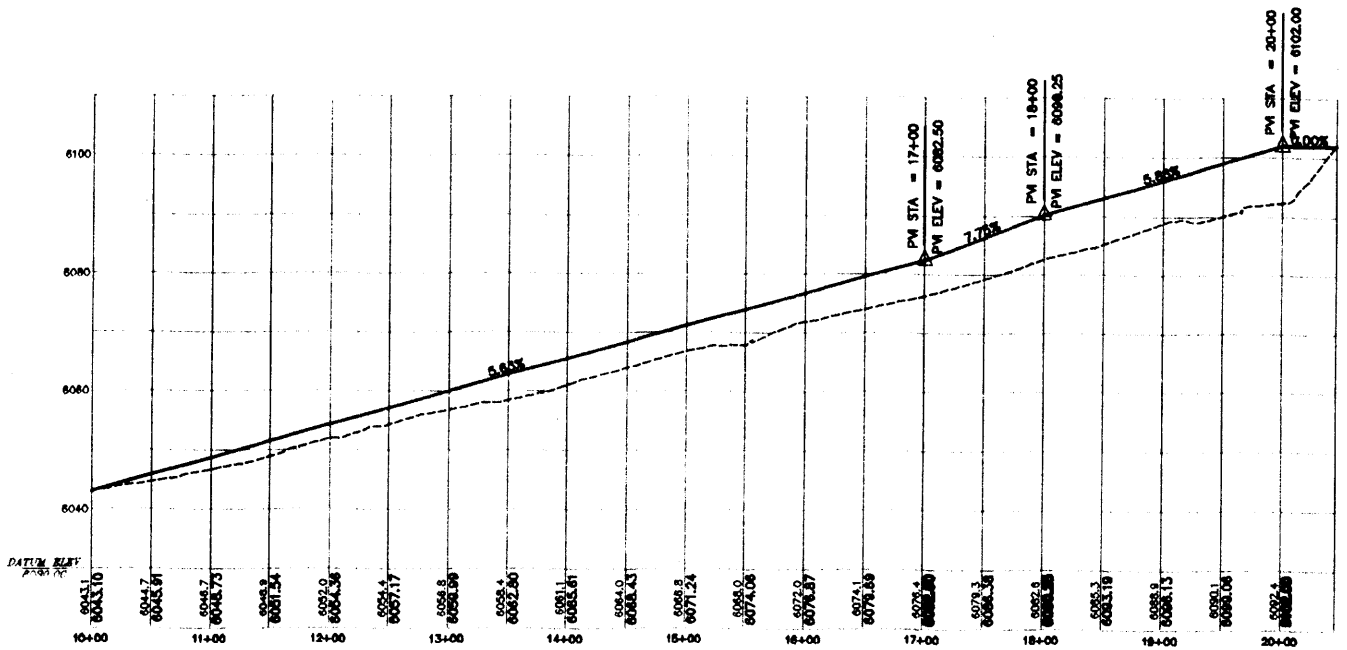
PROPOSED
JUAN TABO AVULSION
TRAINING DIKE

Resource Technology, Inc.

JOB NO. 95-190
SHEET NO. 1 of 1
DESIGNED BY: | DRAWN BY: PMT | CHECKED BY: DSD | DATE: JULY 1996

COLORPLT.DWG

195



OPTION 2 – DIKE2

50 0 50

GRAPHIC SCALE

NO.	DATE	REVISIONS	BY	CHK

JUAN TABO AVULSION PROFILE

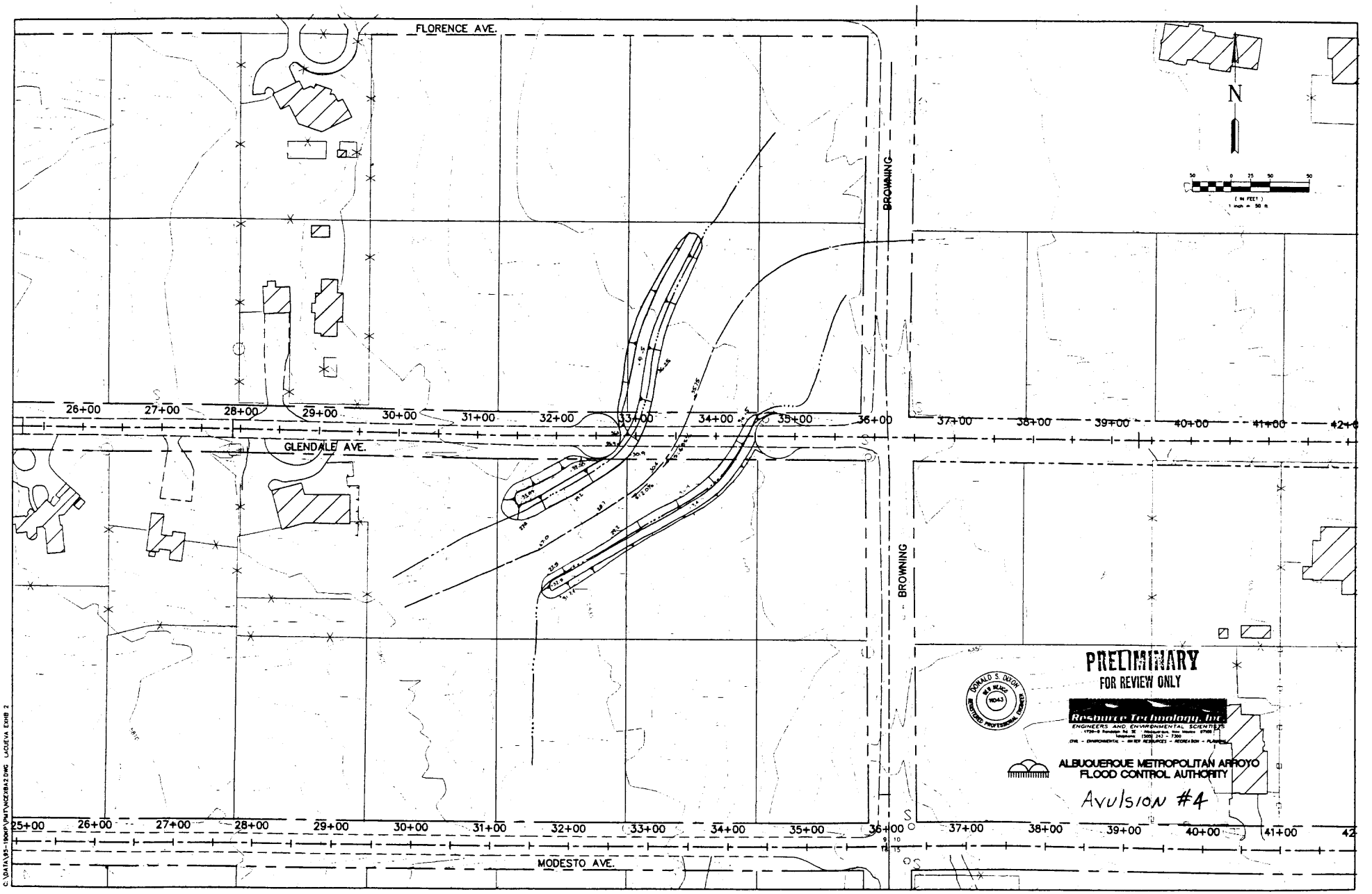
Avulsion #1

JOB NO. 95-190

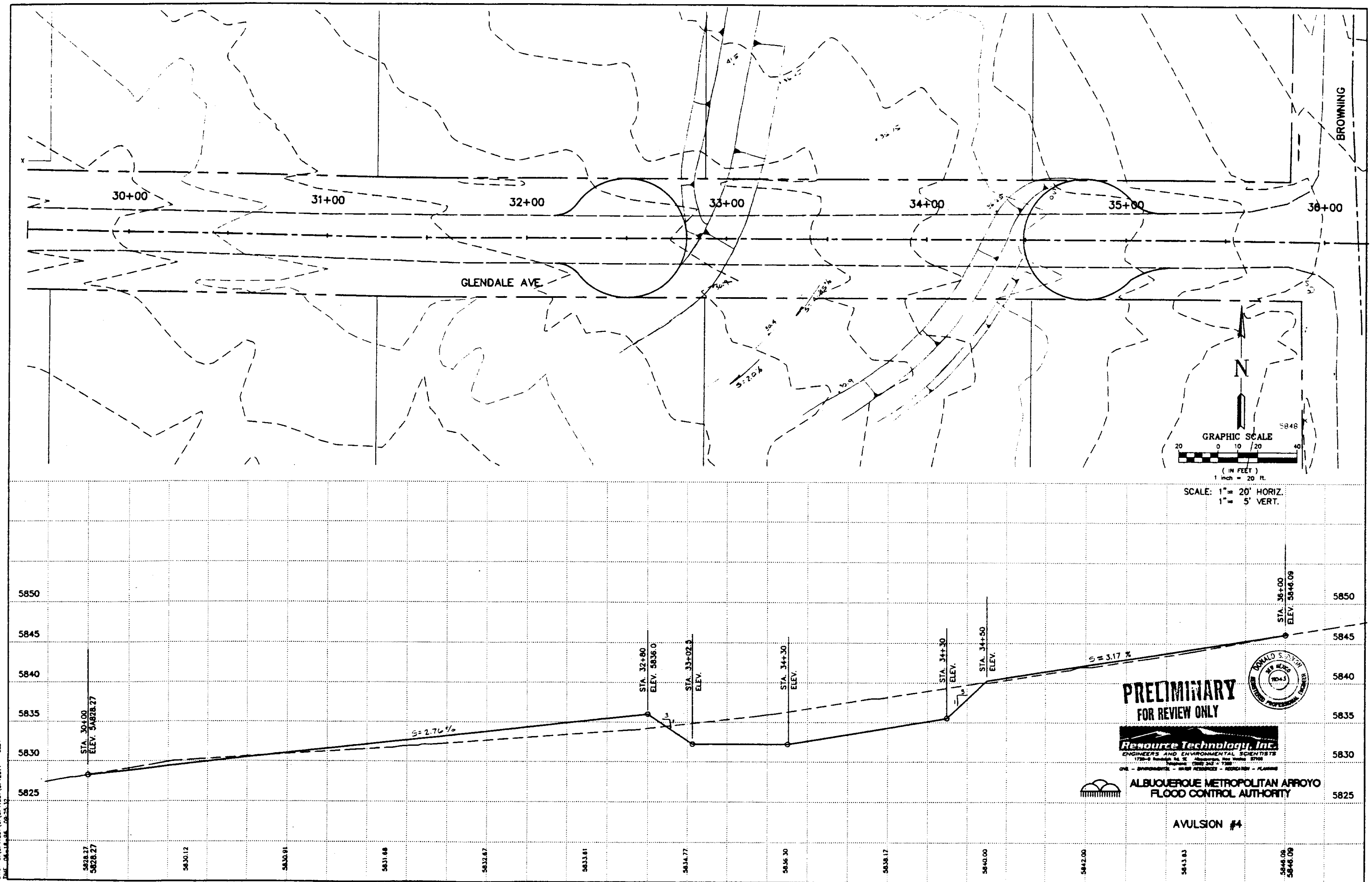
SHEET NO.

DESIGNED BY | DRAWN BY: PMT | CHECKED BY: DRD | DATE: JULY 1996

159



C:\DATA\95-190\PLAT\NCEB42.DWG LACUEVA EXHB 2


BROWNING
30+00
31+00
32+00
33+00
34+00
35+00
36+00
GLENDALE AVE
N
GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 20 ft.
SCALE: 1"= 20' HORIZ.
1"= 5' VERT.
5850
5845
5840
5835
5830
5825
STA. 30+00
ELEV. 5828.27
STA. 32+80
ELEV. 5836.0
STA. 33+02.5
ELEV.
STA. 34+30
ELEV.
STA. 34+30
ELEV.
STA. 34+50
ELEV.
STA. 36+00
ELEV. 5846.09
S=2.76%
S=3.17%
PRELIMINARY
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ALBUQUERQUE METROPOLITAN ARROYO
FLOOD CONTROL AUTHORITY
AVULSION #4
5828.27
5830.12
5830.91
5831.68
5832.67
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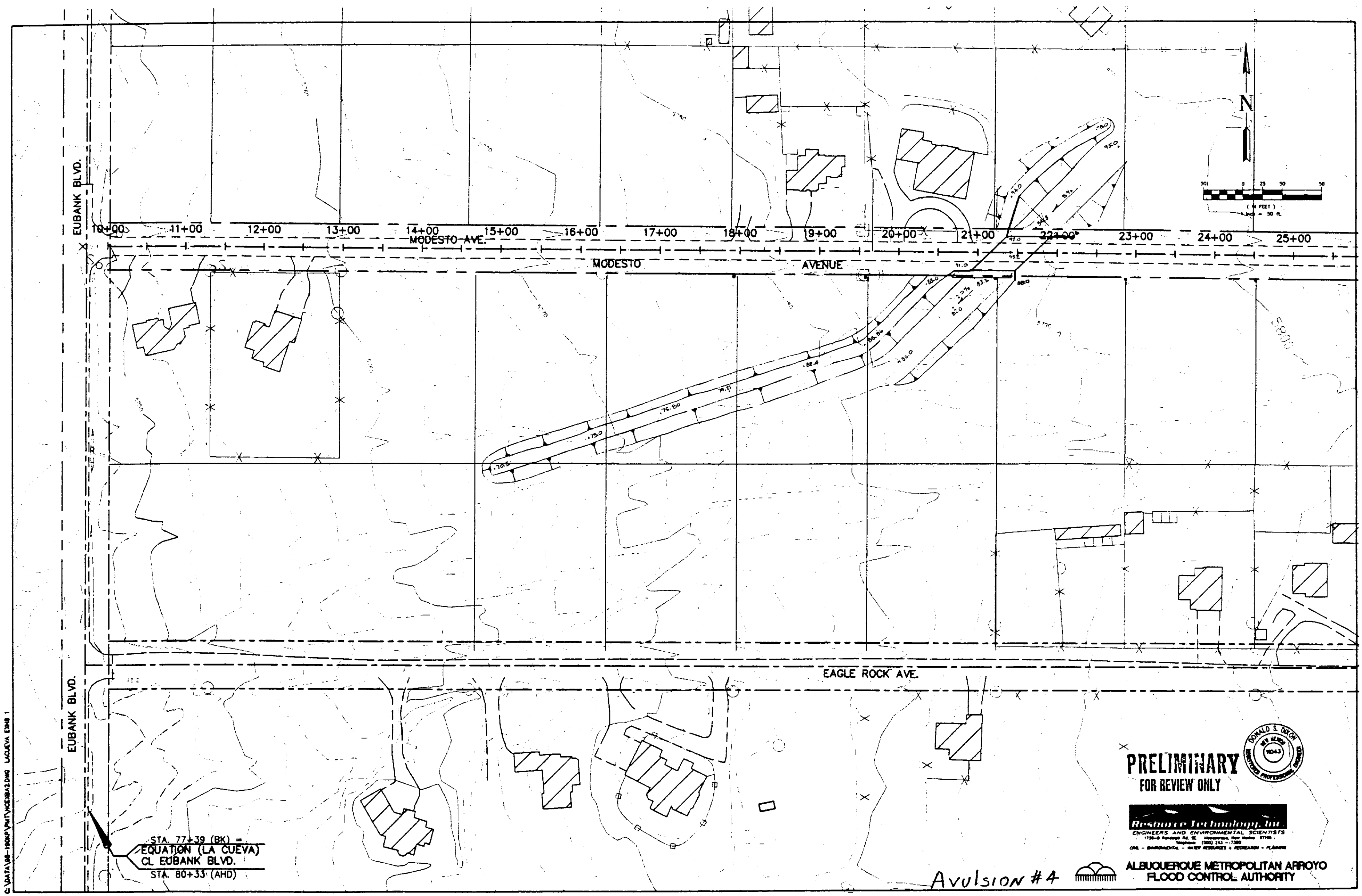
158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(IN FEET)
1 inch = 50 ft.
EUBANK BLVD.
MODESTO AVE.
MODESTO
AVENUE
EAGLE ROCK AVE.
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
STA. 77+39 (BK) =
EQUATION (LA CUEVA)
CL EUBANK BLVD.
STA. 80+33 (AHD)
PRELIMINARY
FOR REVIEW ONLY
DONALD S. DIXON
NEW MEXICO
11043
REGISTERED PROFESSIONAL ENGINEER
Resource Technology, Inc.
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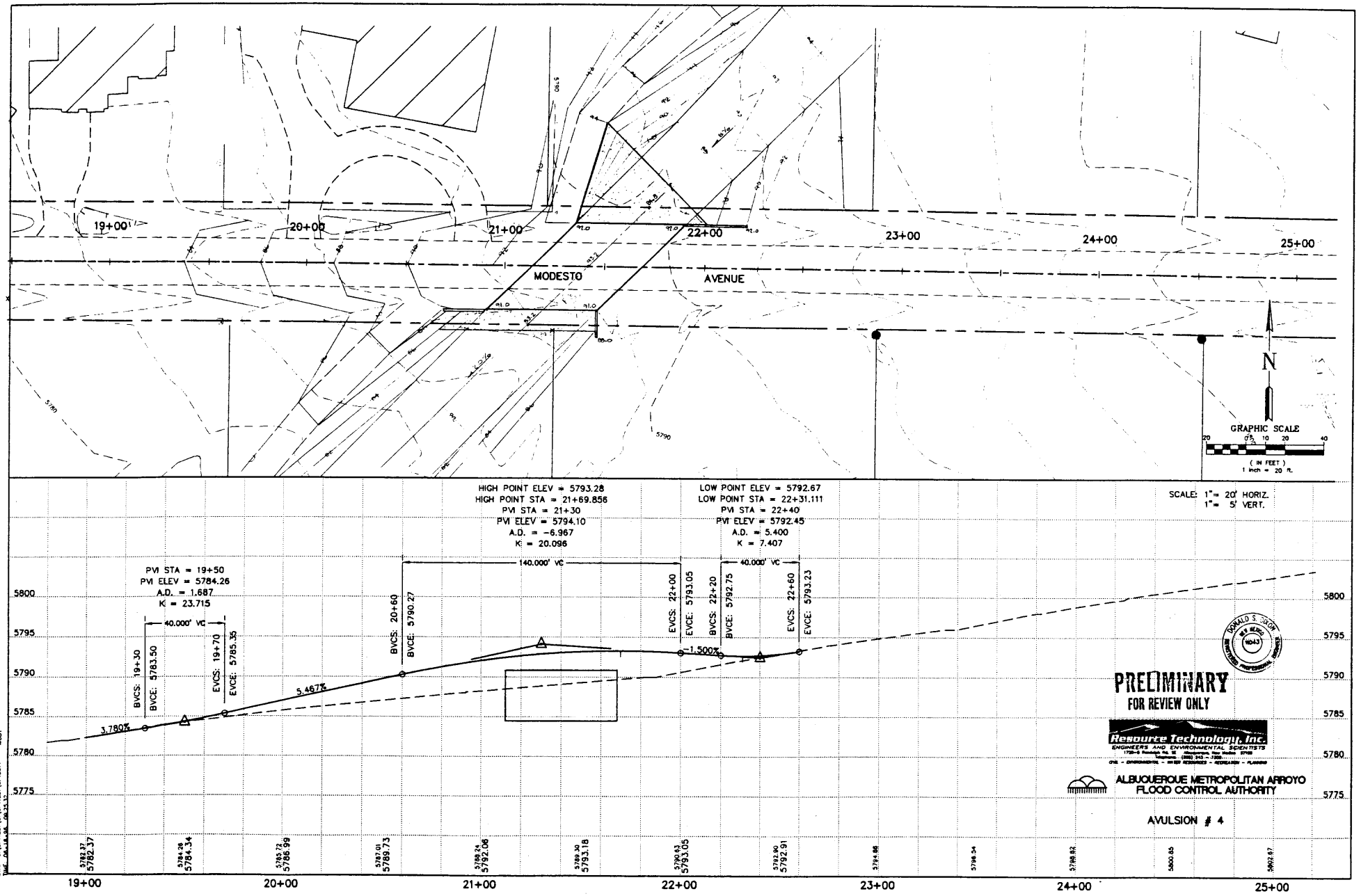
FLOOD CONTROL AUTHORITY
Avulsion #4


19+00
20+00
21+00
22+00
23+00
24+00
25+00
MODESTO
AVENUE
N
GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 20 ft.
HIGH POINT ELEV = 5793.28
HIGH POINT STA = 21+69.856
PVI STA = 21+30
PVI ELEV = 5794.10
A.D. = -6.967
K = 20.096
LOW POINT ELEV = 5792.67
LOW POINT STA = 22+31.111
PVI STA = 22+40
PVI ELEV = 5792.45
A.D. = 5.400
K = 7.407
SCALE: 1"= 20' HORIZ.
1"= 5' VERT.
PVI STA = 19+50
PVI ELEV = 5784.26
A.D. = 1.687
K = 23.715
40.000' VC
140.000' VC
40.000' VC
BVCS: 19+30
BVCE: 5783.50
EVCS: 19+70
EVCE: 5785.35
BVCS: 20+60
BVCE: 5790.27
EVCS: 22+00
EVCE: 5793.05
BVCS: 22+20
BVCE: 5792.75
EVCS: 22+60
EVCE: 5793.23
3.780%
5.467%
-1.500%
5800
5795
5790
5785
5780
5775
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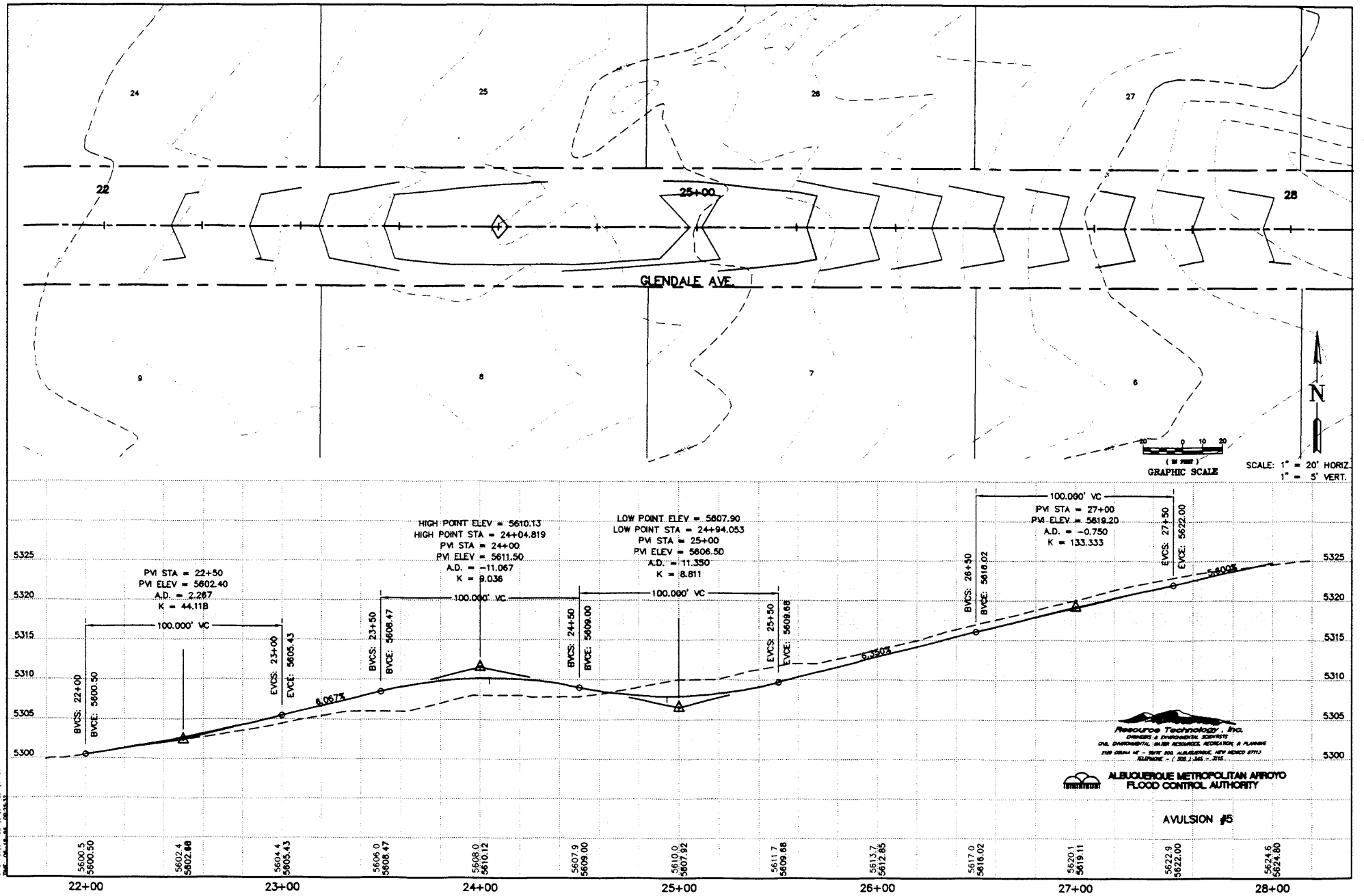
AVULSION # 4
19+00
20+00
21+00
22+00
23+00
24+00
25+00

160


24
25
26
27
22
25+00
28
GLENDALE AVE.
9
8
7
6
N
20 0 10 20
GRAPHIC SCALE
SCALE: 1" = 20' HORIZ.
1" = 5' VERT.
PVI STA = 22+50
PVI ELEV = 5602.40
A.D. = 2.267
K = 44.118
100.000' VC
BVCS: 22+00
BVCE: 5600.50
EVCS: 23+00
EVCE: 5605.43
6.067%
HIGH POINT ELEV = 5610.13
HIGH POINT STA = 24+04.819
PVI STA = 24+00
PVI ELEV = 5611.50
A.D. = -11.067
K = 9.036
100.000' VC
BVCS: 23+50
BVCE: 5608.47
LOW POINT ELEV = 5607.90
LOW POINT STA = 24+94.053
PVI STA = 25+00
PVI ELEV = 5606.50
A.D. = 11.350
K = 8.811
100.000' VC
BVCS: 24+50
BVCE: 5609.00
EVCS: 25+50
EVCE: 5609.68
6.350%
100.000' VC
PVI STA = 27+00
PVI ELEV = 5619.20
A.D. = -0.750
K = 133.333
BVCS: 26+50
BVCE: 5616.02
EVCS: 27+50
EVCE: 5622.00
5.600%
5325
5320
5315
5310
5305
5300
5600.5 5600.50
5602.4 5602.88
5604.4 5605.43
5606.0 5608.47
5608.0 5610.12
5607.9 5609.00
5610.0 5607.92
5611.7 5609.68
5613.7 5612.85
5617.0 5616.02
5620.1 5619.11
5622.9 5622.00
5624.6 5624.80
22+00
23+00
24+00
25+00
26+00
27+00
28+00
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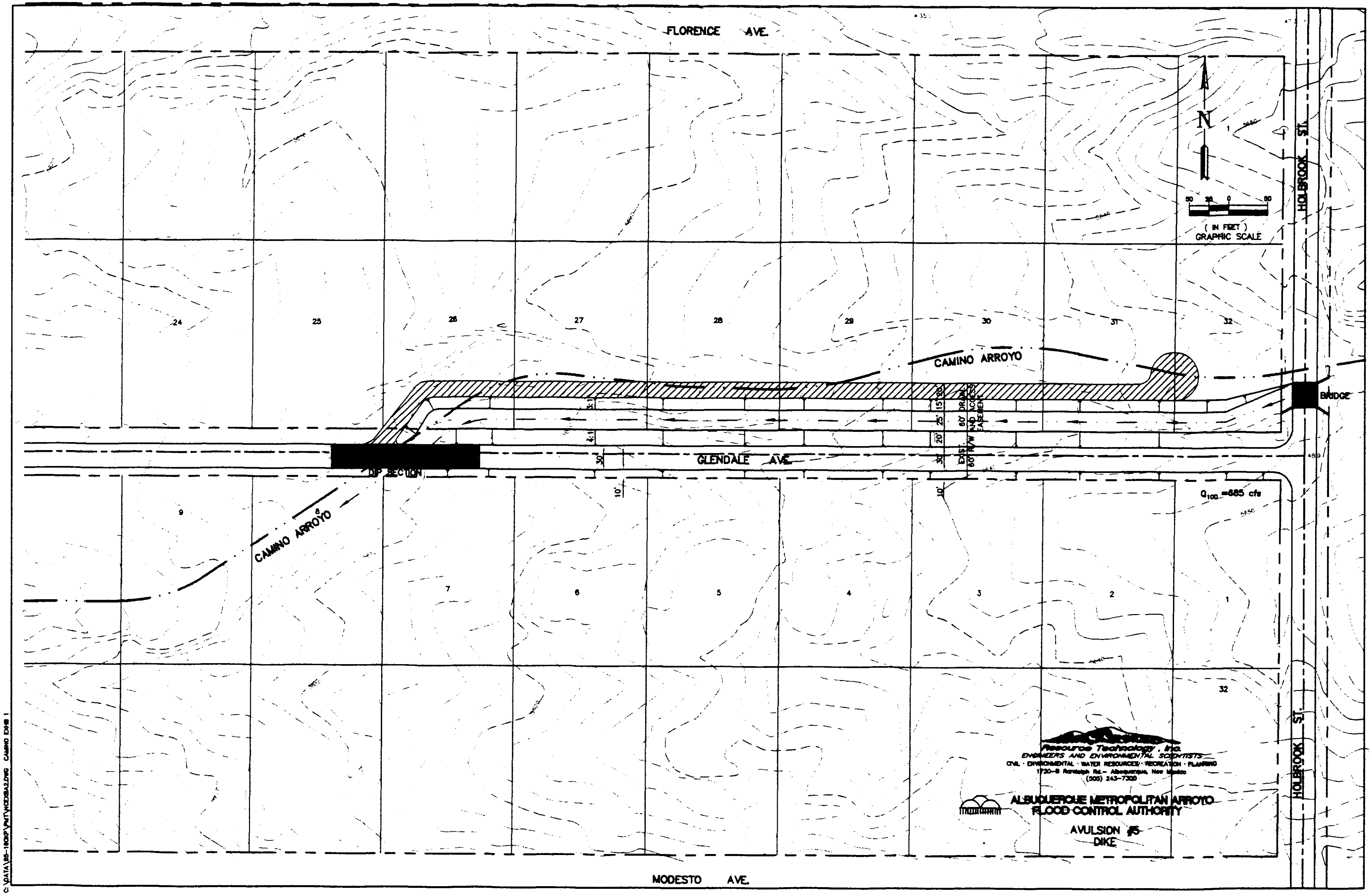
AVULSION #5

191


FLORENCE AVE.
MODESTO AVE.
HOLBROOK ST.
GLENDALE AVE.
CAMINO ARROYO
CAMINO ARROYO
BRIDGE
DIP SECTION
N
50 25 0 50
(IN FEET)
GRAPHIC SCALE
EXIST. 60' R/W
60' DRAIN. AND ACCESS EASEMENT
Q_{100} =685 cfs
Resource Technology, Inc.
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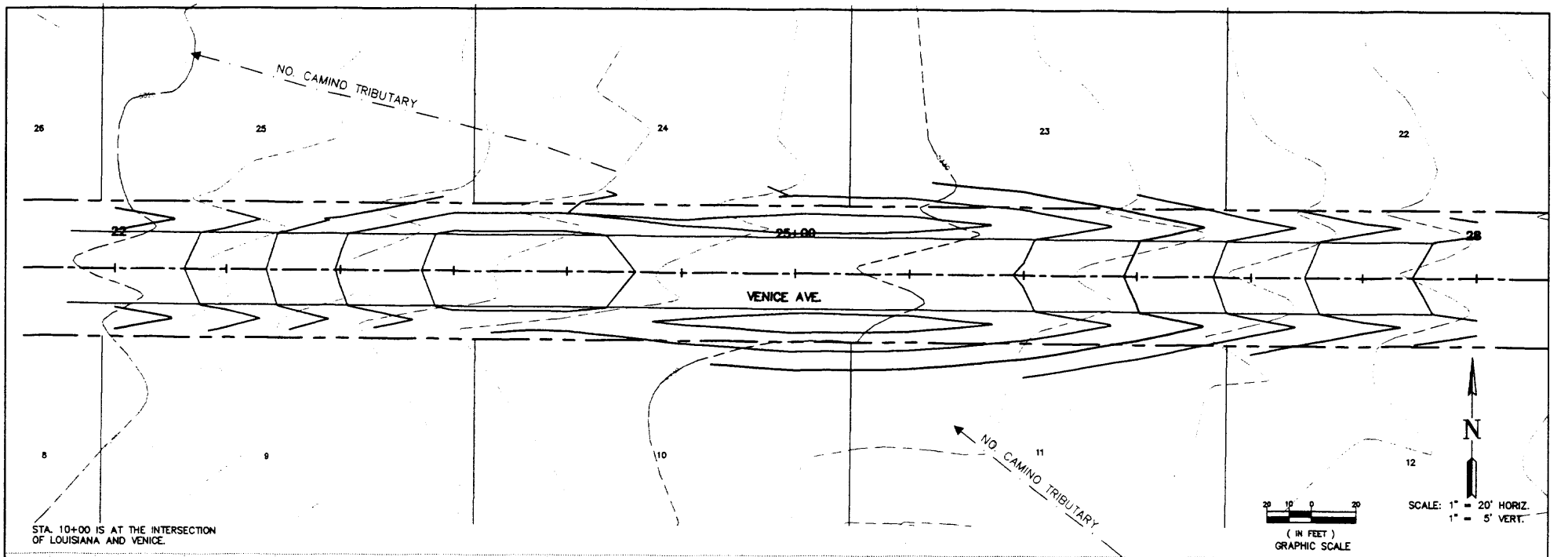
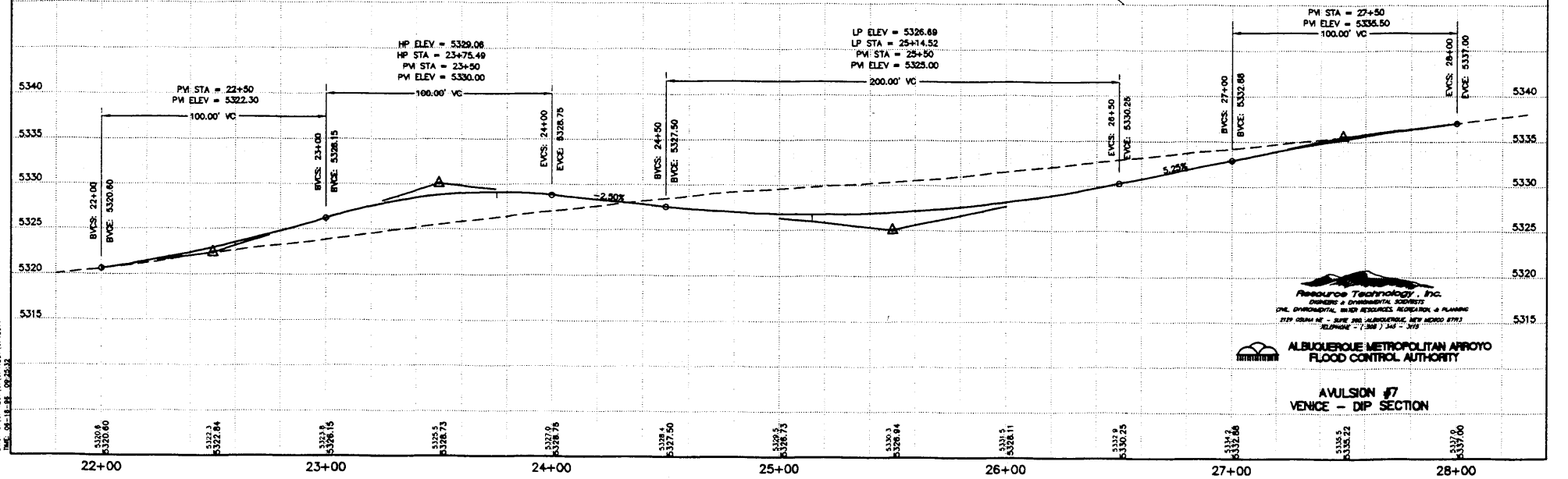
AVULSION #5 DIKE





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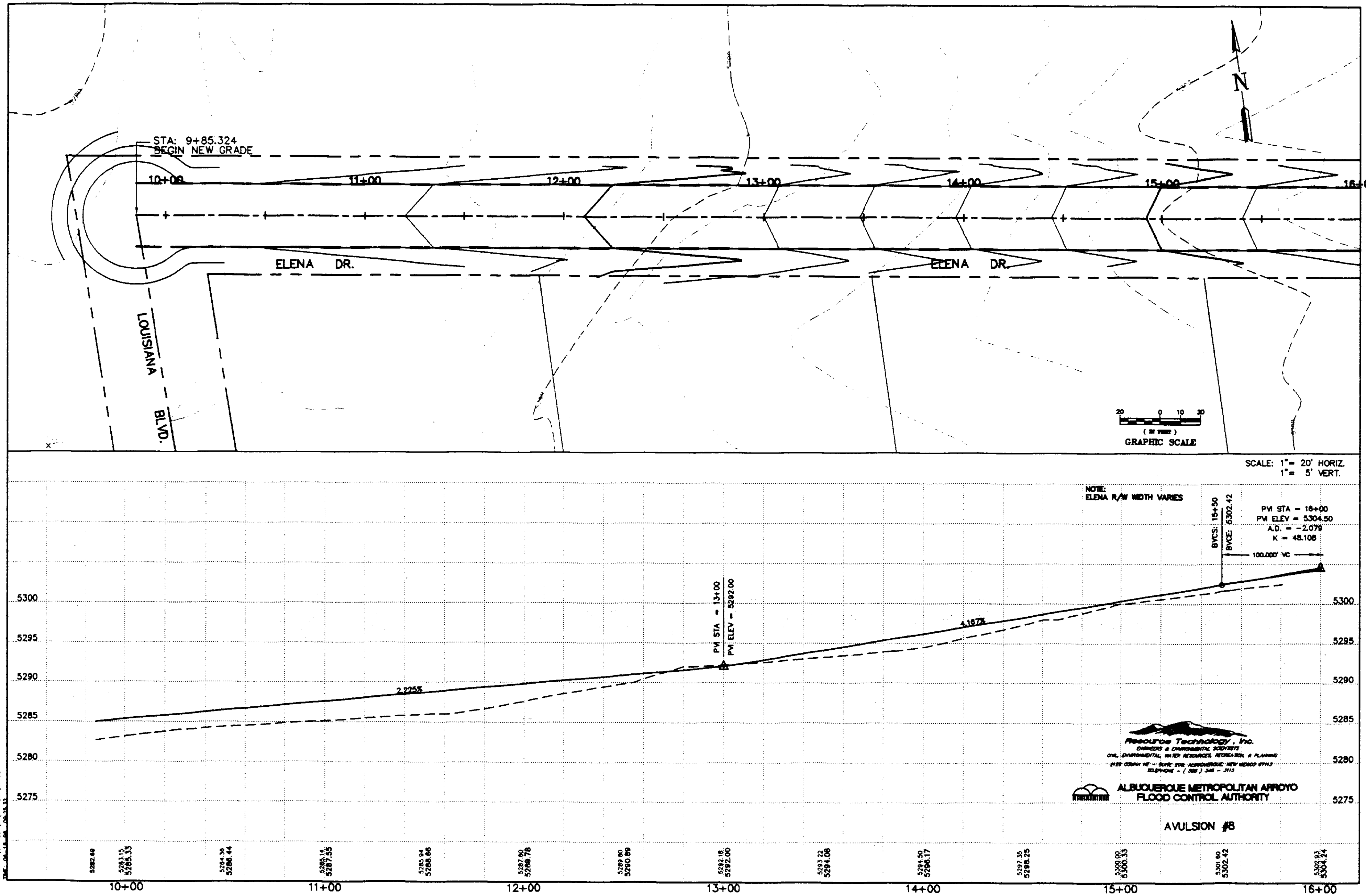
3139 OSUNA NE - SUITE 200, ALBUQUERQUE, NEW MEXICO 87111
TELEPHONE - (505) 345 - 3673

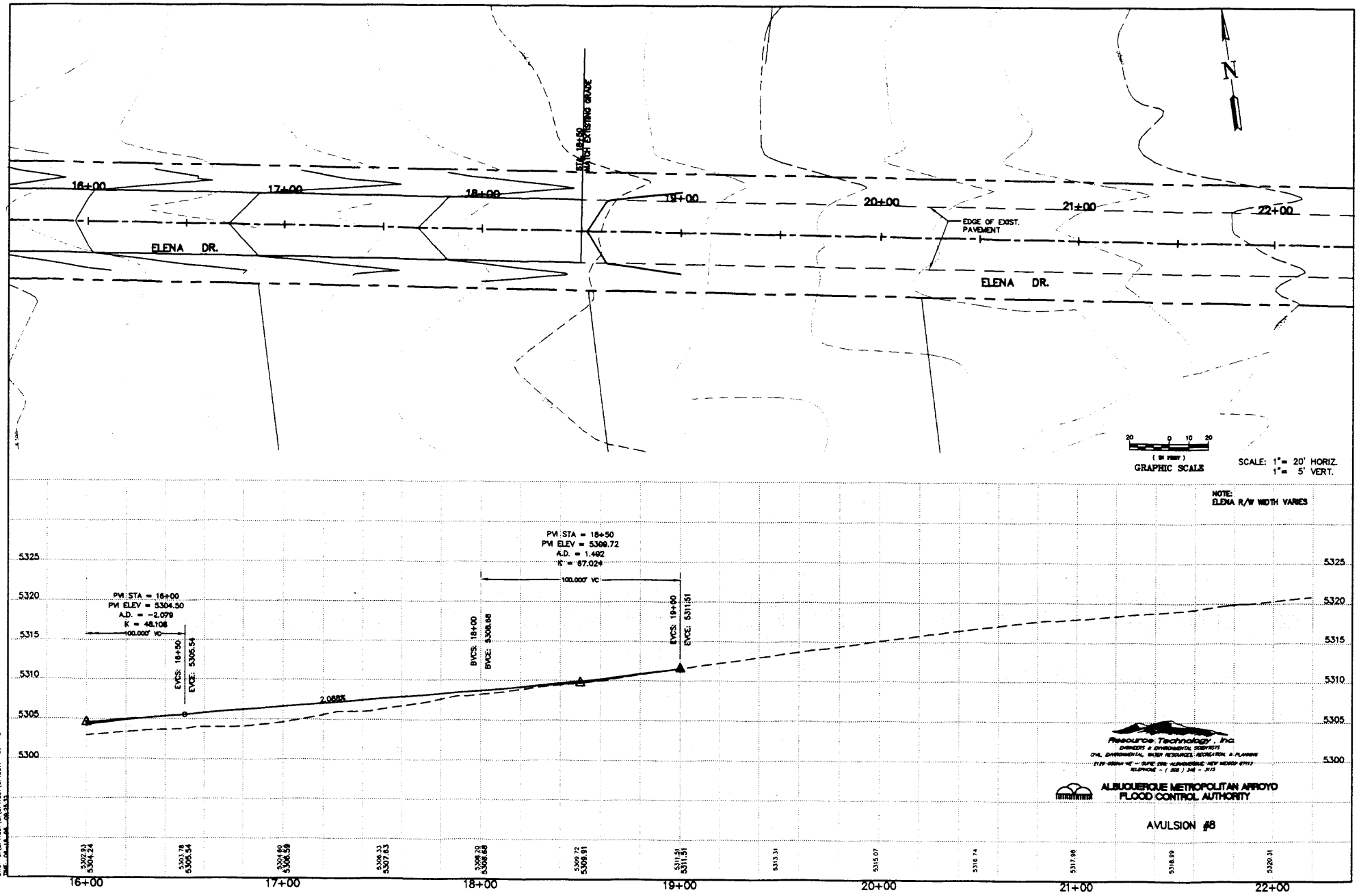
ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY

AVULSION #7
VENICE - DIP SECTION



STA: 9+85.324
BEGIN NEW GRADE
10+00
11+00
12+00
13+00
14+00
15+00
16+00
ELENA DR.
ELENA DR.
LOUISIANA BLVD.
N
GRAPHIC SCALE
SCALE: 1"= 20' HORIZ.
1"= 5' VERT.
NOTE:
ELENA R/W WIDTH VARIES
PVI STA = 16+00
PVI ELEV = 5304.50
A.D. = -2.079
K = 48.108
BVCS: 15+50
BVCE: 5302.42
100.000' VC
PVI STA = 13+00
PVI ELEV = 5292.00
4.167%
2.225%
Resource Technology, Inc.
ALBUQUERQUE METROPOLITAN ARROYO
FLOOD CONTROL AUTHORITY
AVULSION #8
5300
5295
5290
5285
5280
5275
5285.33
5286.44
5287.55
5288.66
5289.78
5290.89
5292.00
5294.08
5296.17
5298.25
5300.33
5302.42
5304.24

164



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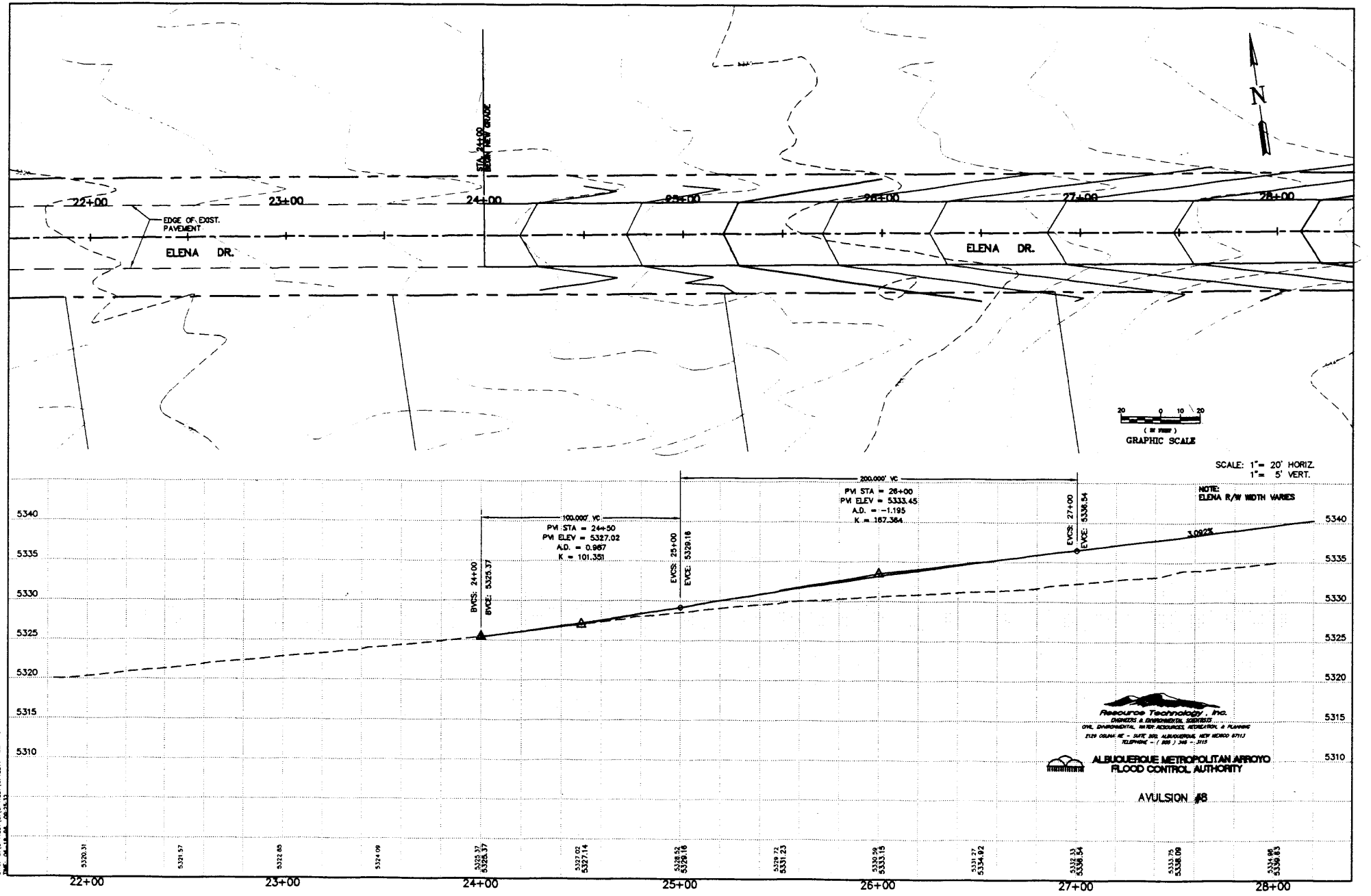
91



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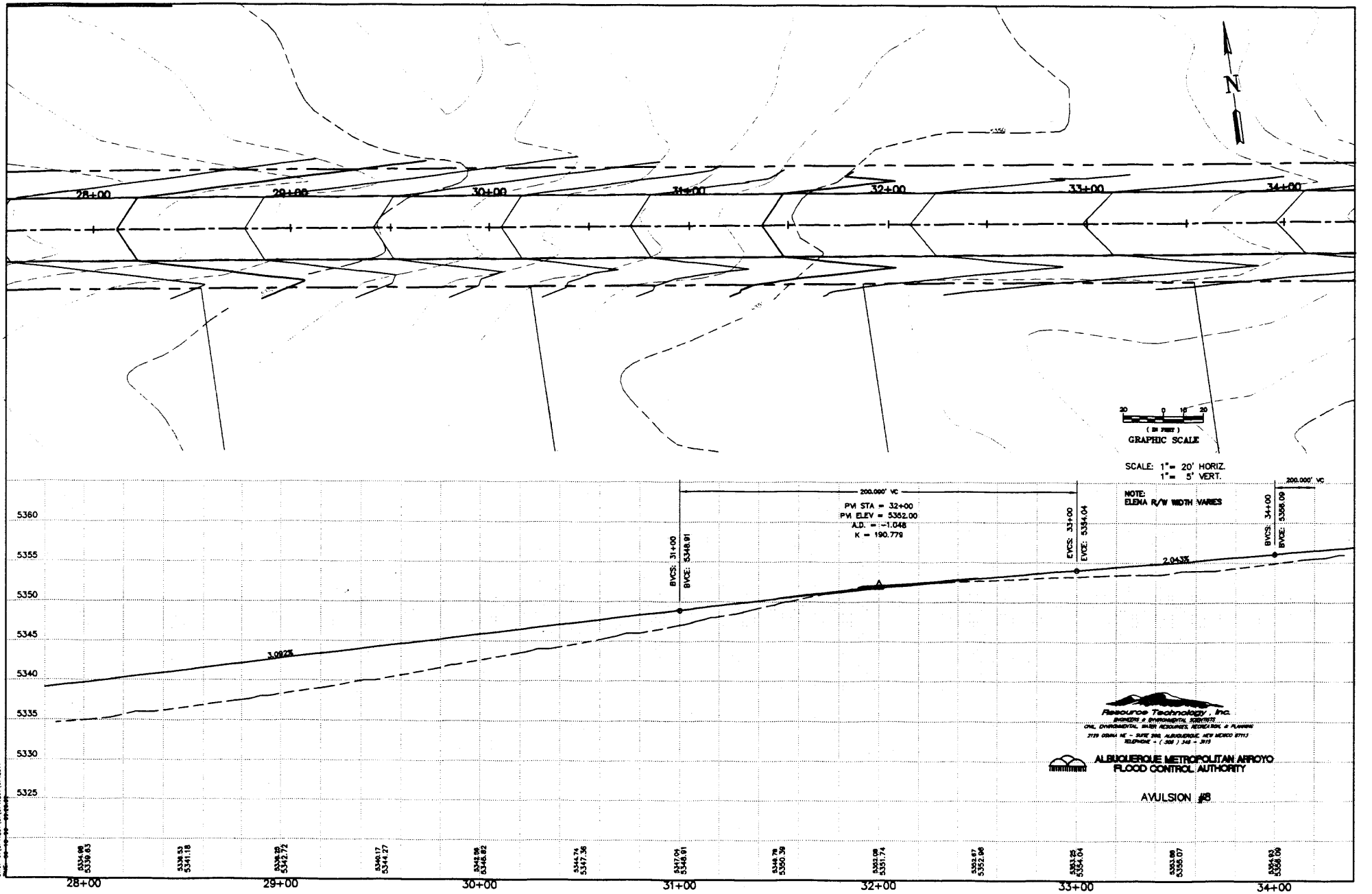
N
28+00
29+00
30+00
31+00
32+00
33+00
34+00
20 0 10 20
GRAPHIC SCALE
SCALE: 1"= 20' HORIZ.
1"= 5' VERT.
NOTE:
ELENA R/W WIDTH VARIES
200.000' VC
PVI STA = 32+00
PVI ELEV = 5352.00
A.D. = -1.048
K = 190.779
BVCS: 31+00
BVCE: 5348.81
EVCS: 33+00
EVCE: 5354.04
BVCS: 34+00
BVCE: 5358.09
3.092%
2.043%
5360
5355
5350
5345
5340
5335
5330
5325
5334.98 5336.83
5338.53 5341.18
5342.72
5340.17 5344.27
5345.82
5344.74 5347.36
5347.09 5348.91
5348.78 5350.39
5352.09 5351.74
5352.67 5352.96
5353.25 5354.04
5353.89 5355.07
5354.53 5358.09
28+00
29+00
30+00
31+00
32+00
33+00
34+00
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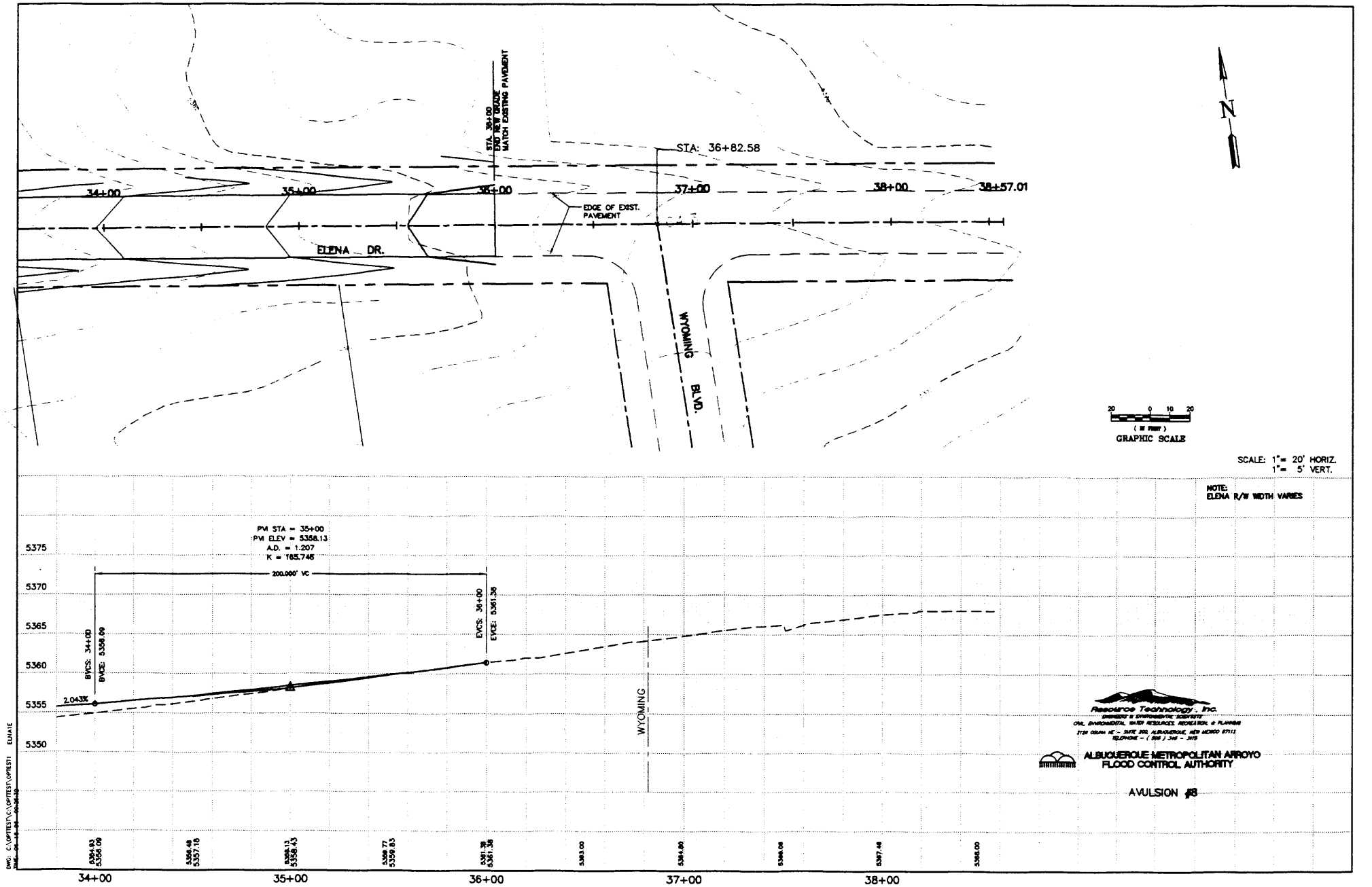
AVULSION #8
DWG: C:\UPTEST\C:\UPTEST\UPTEST1 ELM41D

L91


STA. 38+00
END NEW GRADE
MATCH EXISTING PAVEMENT
STA: 36+82.58
34+00
35+00
36+00
37+00
38+00
38+57.01
EDGE OF EXIST. PAVEMENT
ELENA DR.
WYOMING BLVD.
N
20 0 10 20
(IN FEET)
GRAPHIC SCALE
SCALE: 1"= 20' HORIZ.
1"= 5' VERT.
NOTE:
ELENA R/W WIDTH VARIES
PVI STA = 35+00
PVI ELEV = 5358.13
A.D. = 1.207
K = 165.745
200.000' VC
BVCS: 34+00
BVCE: 5356.09
EVCS: 36+00
EVCE: 5361.36
2.043%
WYOMING
5375
5370
5365
5360
5355
5350
5354.93
5356.09
5356.48
5357.16
5358.13
5358.43
5359.77
5359.83
5361.38
5361.36
5363.00
5364.00
5366.06
5367.48
5368.00
34+00
35+00
36+00
37+00
38+00
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891

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PROJECT NO. _____ SHEET _____ OF _____

PROJECT NAME _____ APPROVED _____ DATE _____

TITLE Cost-Benefit Analysis BY _____ DATE 7/8/98

WORST CASE - No Avulsion Control (except AV-8 + AV-6) $26,170,099

from Table 9 (W-C)

Avulsion Control + Pref. Options $23,684,171

includes AV-1, 4, 5 + 7 at $2,459,690
from Table 9

Cost = $2,459,690 Benefit = 26,170,099 − (23,684,171 − 2459,690)

= 4,945,618

$$\frac{BF}{COST} = \frac{4945618}{2459690} = 2.01$$

Additional Cost SAVINGS in County (Benefit)

± 10 Bridges @ $200,000 = $2,000,000

$$\frac{BF}{Cost} = \frac{7,000,000}{2,500,000} = 2.8$$

Private Benefit (FP removal)

1 + 4 only: ± 32 Acres

@ 10,000/Ac = $ 320,000

$$BF = \frac{7\,320\,000}{2,500,000} = 2.93$$

does not include downstream areas improved by W.C. projects.

TABLE 9 (Worst Case) COST ESTIMATES			
PROJECT NUMBER	**CONSTRUCTION COST**	**R\W COST**	**TOTAL COST**
SD-1	$303,833.00	$2,500.00	$306,333.00
SD-2	$130,648.00	$0.00	$130,648.00
SD-3	$200,273.00	$0.00	$200,273.00
SD-4	$258,611.00	$0.00	$258,611.00
SD-5	$86,075.00	$0.00	$86,075.00
SD-6	$236,449.00	$0.00	$236,449.00
SD-7	$288,657.00	$0.00	$288,657.00
SD-8	$162,957.00	$2,500.00	$165,457.00
SD-9	$692,295.00	$0.00	$692,295.00
SD-10	$189,344.00	$15,000.00	$204,344.00
SD-11	$390,431.00	$47,000.00	$437,431.00
SD-12	$189,407.00	$0.00	$189,407.00
SD-13	$310,266.00	$0.00	$310,266.00
SD-14	$621,028.00	$0.00	$621,028.00
SD-15	$114,228.00	$45,000.00	$159,228.00
SD-16	$269,623.00	$0.00	$269,623.00
SD-17	$97,083.00	$0.00	$97,083.00
SD-18	$69,064.00	$0.00	$69,064.00
SD-19	$236,678.00	$94,000.00	$330,678.00
SD-20	$66,347.00	$0.00	$66,347.00
SD-21	$210,026.00	$0.00	$210,026.00
SD-22	$129,633.00	$0.00	$129,633.00
SD-23	$279,985.00	$0.00	$279,985.00
SD-24	$56,314.00	$0.00	$56,314.00
SD-25	$226,558.00	$0.00	$226,558.00
SD-26	$53,881.00	$0.00	$53,881.00
SD-27	$200,695.00	$23,500.00	$224,195.00
SD-28	$425,575.00	$5,000.00	$430,575.00
SD-29	$89,138.00	$2,500.00	$91,638.00
SD-30	$99,594.00	$2,500.00	$102,094.00
SD-31	$104,879.00	$2,500.00	$107,379.00
SD-32	$55,279.00	$0.00	$55,279.00
SD-33	$543,081.00	$7,500.00	$550,581.00
C-1, AV-8	$1,678,958.00	$150,000.00	$1,828,958.00
C-1A	$407,713.00	$0.00	$407,713.00
C-2	$6,540,085.00	$758,562.00	$7,298,647.00
C-3,AV-6	$4,049,387.00	$155,100.00	$4,204,487.00
C-4	$1,818,302.00	$155,100.00	$1,973,402.00
C-5	$746,104.00	$0.00	$746,104.00
C-6	$2,073,353.00	$0.00	$2,073,353.00
TOTAL	**$24,701,837.00**	**$1,468,262.00**	**$26,170,099.00**

TABLE 9
COST ESTIMATES

PROJECT NO.	PROJECT DESCRIPTION	CONSTRUCTION COST	R\W COST	TOTAL COST
SD-1	VENICE TO EL CAMINO CHANNEL	$303,833.00	$2,500.00	$306,333.00
SD-2	SAN PEDRO TO EL CAMINO CHANNEL	$130,648.00	$0.00	$130,648.00
SD-3	SAN PEDRO TO LA CUEVA CHANNEL	$200,273.00	$0.00	$200,273.00
SD-4	FLORENCE-LOUISIANA-SAN DIEGO	$1,084,378.00	$0.00	$1,084,378.00
SD-5	LOUISIANA TO LA CUEVA CHANNEL	$158,935.00	$0.00	$158,935.00
SD-6	GLENDALE-EL CAMINO ARROYO PIPE	$2,100,622.00	$80,000.00	$2,180,622.00
SD-7	BARSTOW TO EL CAMINO CHANNEL	$286,452.00	$0.00	$286,452.00
SD-8	VENTURA TO EL CAMINO CHANNEL	$173,826.00	$2,500.00	$176,326.00
SD-9	UP-GRADE SAN PEDRO STORM DRAIN	$692,295.00	$0.00	$692,295.00
SD-10	EAGLE ROCK/WILDFLOWER SD	$189,344.00	$15,000.00	$204,344.00
SD-11	EAGLE ROCK-SAN PEDRO SD	$390,431.00	$47,000.00	$437,431.00
SD-12	OAKLAND-SAN PEDRO SD	$189,407.00	$0.00	$189,407.00
SD-13	ALAMEDA-SAN PEDRO SD	$310,266.00	$0.00	$310,266.00
SD-14	CORONADO MH PARK SD	$621,028.00	$0.00	$621,028.00
SD-15	HOLLY-I-25 SD	$114,228.00	$45,000.00	$159,228.00
SD-16	CORONA-I-25 SD	$269,623.00	$0.00	$269,623.00
SD-17	LOUISIANA-CORONA SD	$97,083.00	$0.00	$97,083.00
SD-18	HOLLY TO AMAFCA POND SD	$69,064.00	$0.00	$69,064.00
SD-19	MURRELET SD EXTENSION	$236,678.00	$94,000.00	$330,678.00
SD-20	CORONA-WYOMING SD	$66,347.00	$0.00	$66,347.00
SD-21	ALAMEDA-WYOMING SD	$210,026.00	$0.00	$210,026.00
SD-22	BARTOW-NDB SD (SOUTH)	$129,633.00	$0.00	$129,633.00
SD-23	UP-GRADE BARSTOW SD (NORTH)	$279,985.00	$0.00	$279,985.00
SD-24	BARSTOW SD EXTENSION TO SIGNAL	$56,314.00	$0.00	$56,314.00
SD-25	BARSTOW TO LA CUEVA CHANNEL	$226,558.00	$0.00	$226,558.00
SD-26	MID SCHOOL POND	$53,881.00	$0.00	$53,881.00
SD-27	ALMADEN VALLEY TO LA CUEVA CHAN	$200,695.00	$23,500.00	$224,195.00
SD-28	OAKLAND TO LA CUEVA CHANNEL	$425,575.00	$5,000.00	$430,575.00
SD-29	VENTURA SD EXTENSION TO WILSHIRE	$89,138.00	$2,500.00	$91,638.00
SD-30	VENTURA TO LA CUEVA CHANNEL	$99,594.00	$2,500.00	$102,094.00
SD-31	WILSHIRE-VENTURA SD	$104,879.00	$2,500.00	$107,379.00
SD-32	VINYARD IV POND	$55,279.00	$0.00	$55,279.00
SD-33	HOLBROOK TO NDB CHANNEL	$543,081.00	$7,500.00	$550,581.00
C-1, AV-8	NORTH CAMINO CHANNEL & DIKE	$1,583,325.00	$150,000.00	$1,733,325.00
C-1A	NO. CAMINO TRIB CHANNEL	$392,097.00	$0.00	$392,097.00
C-3, AV-6	LA CUEVA CHANNEL (WYO TO I-25)	$3,775,168.00	$155,100.00	$3,930,268.00
C-4	LA CUEVA CHAN (VENTURA TO BARST)	$1,705,335.00	$155,100.00	$1,860,435.00
C-5	NDB CHANNEL AT LNDB DAM	$746,104.00	$0.00	$746,104.00
C-6	NDB CHANNEL(HOLBRK TO BARST)	$2,073,353.00	$0.00	$2,073,353.00
AV-1	JUAN TABO PICNIC RD DIKE	$447,287.00	$0.00	$447,287.00
AV-4	EUBANK-GLENDALE DIKES & BRDG	$740,039.00	$720,000.00	$1,460,039.00
AV-5	GLENDALE CHANNEL & ROAD	$256,666.00	$168,750.00	$425,416.00
AV-7	VENICE DIP-SECT AND DIKE	$78,479.00	$48,469.00	$126,948.00
TOTAL		**$21,957,252.00**	**$1,726,919.00**	**$23,684,171.00**

SD - Storm Drain Project; C - Channel Project; AV - Avulsion Control Project

5. HYDRAULIC ANALYSIS OF EXISTING ARROYO FACILITIES

A. General

The La Cueva Arroyo system is partially channelized west of Barstow Street. The major elements consist of the Nor Este Channel on the main branch from Barstow to Wyoming, the North La Cueva Channel from I-25 to the North Diversion Channel, and the South La Cueva Channel from I-25 to the confluence with the North La Cueva west of Jefferson. The North Camino Arroyo is channelized at Sunset Hills from 1600 feet east of Holbrook to 1000 feet west of Holbrook. Channelizing the North Camino west of I-25 is currently under study. In addition, there are five major I-25 crossing structures conveying the main branches of the North Camino, El Camino and La Cueva Arroyos under I-25, including two tributaries of the La Cueva Arroyo. All structures are shown on Figure 1. Each will be discussed more fully below.

B. Nor Este Channel

The Nor Este Channel was constructed by Presley Homes in 1987 as part of the Nor Este subdivision infrastructure. The AMAFCA maintained structure consists of a 10-foot bottom width, concrete lined channel with a minimum depth of 8.25-feet (with up to an additional 3.67-feet of additional freeboard in super elevated sections). It has a soil cement inlet structure and discharges to a dip-section and dike at Eagle Rock and Wyoming. The soil cement dike was constructed by AMAFCA in 1985. The design flow rate was reported to be 4870 cfs. Based on our analysis, using a Manning's "n" value of 0.015, we determined the limiting reach to have a capacity of 5829 cfs. See Figure 5.1 for typical section details.

C. North La Cueva Channel

The North La Cueva Channel was constructed in phases between 1983 and 1989 with 75% private and 25% AMAFCA funds. The AMAFCA maintained channel extends from I-25 to the North Diversion Channel. The El Camino Arroyo has been diverted by a subsequent AMAFCA project to the channel just west of I-25 and the South La Cueva Channel is intercepted just west of Jefferson. The typical section has a 15-foot bottom width and a minimum depth of 9.5-feet. The design flow rate was reported to vary from 5500 cfs at the upstream end (at I-25) to 7000 cfs at the downstream North Diversion Channel inlet. Based on our analysis, using a Manning's "n" of 0.015, we determined the limiting reach to be immediately west of Jefferson Boulevard with a hydraulic capacity of 6329 cfs. The proposed condition flow rate is 5551 cfs. See Figure 5.1 for typical section details.

D. South La Cueva Channel

The South La Cueva Channel was constructed in phases concurrent with the North La Cueva Channel with 75% private and 25% AMAFCA funding. The AMAFCA maintained facility consists of a 600-foot earth and riprap section immediately west of I-25 that receives the discharge from two I-25 crossing structures; one located at I-25 north of Modesto and the other located at I-25 and Eagle Rock (sometimes called the Wildflower Diversion). A concrete lined

section begins 1000-feet east of San Mateo and continues to Jefferson Boulevard, where the channel is intercepted by a 96-inch RCP that conveys the arroyo to the confluence with the North La Cueva Channel. The concrete lined South La Cueva Channel is located in a park area and the typical section consists of a 10-foot bottom width channel 3-feet deep that utilizes grassy bank areas for freeboard. The design flow rate was 1100 cfs. Our analysis indicated that bank full capacity for the limiting concrete lined section was 1000 cfs, using a Manning's "n" of 0.015. The transition to the 96-inch RCP was designed to prevent inlet control at a flow rate of 1100 cfs. As a "worst case" scenario we calculated the capacity of this transition with inlet control for the 96-inch pipe and determined it to be approximately 940 cfs.

The limiting situation on the Wildflower Diversion just west of I-25 was determined to be the 88" x 54" RCP at Modesto (old Alameda). Here the hydraulics are clearly inlet control which gives the culvert a capacity of 260 cfs before the minimum road elevation is reached. Currently this culvert is partially blocked with sediment. The I-25 structure has a capacity almost twice that of the downstream culvert at Modesto and the "proposed condition" flow rate of 368 cfs exceeds the culvert capacity by approximately 100 cfs.

E. North Camino Channel at Sunset Hills

The North Camino Arroyo was channelized by Taylor-Graham Development through the Sunset Hills subdivision in 1996-97 and turned over to AMAFCA for maintenance upon completion. It is concrete-lined with supplemental gabion spur dikes. It was designed by RTI for 2500 cfs. The capacity was recently verified by FEMA when a LOMR was approved in January of 1998. See Figure 5.2 for typical section details.

F. I-25 Crossing Structures

Concurrent with this study the New Mexico State Highway and Transportation Department is evaluating the I-25 crossing structures as part of an I-25 improvement program. Their consultant, Bohannan-Huston, Inc. has determined the crossing capacities for the specific structures to be as shown in Table 5.1.

Upon completion of a proposed 3 - 14' x 8' concrete box culvert at the North Camino Arroyo/I-25 crossing structure all of the major arroyo crossings at I-25 will have 100-year capacity, assuming avulsion control upstream. Without avulsion control upstream the El Camino crossing will have the capacity for less than half of the 100-year "worst case" flow rates discussed in Section 6.

TABLE 5.1

I-25 STRUCTURE CROSSING CAPACITIES

Structure Name	Size	Existing Flow Rate	Proposed** Flow Rate	Maximum Capacity	*Worst Case Flow Rates*
North Camino*	12-48" CMP	1846 cfs	2043 cfs	1020 cfs	*2399 cfs*
El Camino	12-48" CMP	908 cfs	1306 cfs	1536 cfs	*3438 cfs*
La Cueva	3-10'x10' CBC	2994 cfs	3170 cfs	4500 cfs	*3830 cfs*
South La Cueva	8-36" CMP	222 cfs	418cfs	552 cfs	-
Wildflower	5-36" CMP	94 cfs	368 cfs	410 cfs	-

*NMSHTD proposes to build 3 - 12' x 8' CBC's as part of future I-25 project. New capacity will be 3500 cfs.

**Proposed future condition 100-year flow rates with Avulsion Control.

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PROJECT NO._____ SHEET_____OF_____

PROJECT NAME_____ APPROVED_____DATE_____

TITLE Hydraulic Analysis - San Pedro/I-25 BY_____DATE_____

Objective: Proportion Flow between South La Cueva I-25 crossing and Wildflower Crossings.

South La Cueva Q_{MAX}= 552 cfs (BHI)

Wildflower Q_{MAX}= 410 cfs (BHI)

Total Q_{100} (future) to both crossings 786 cfs

See Attached Stage Discharge Curves

Basic Approach: An interconnected parallel SD will be laid in San Pedro to provide adequate 100-yr capacity per MDP. If a relief SD is placed in Eagle Rock To I-25/Wildflower then headloss (h_e) + ΔZ from Eagle Rock/San P. to Wildflower must equal $h_e + \Delta Z$ from Eagle Rock/San P To So. La Cueva Crossing.

For conceptual Analysis the following Assumptions are made:

- n = .015
- ignore minor losses
- Assume inlet control at both I-25 crossings

See attached sketch for proposed system

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PROJECT NAME_____ APPROVED_____DATE_____

TITLE_____ BY_____DATE_____

The following is result of several iterations.

Q_{100} @ Wildflower = 368 cfs

Q_{100} @ So LA Cuvua = 418 cfs

Head Water Elev

So. La Cuvua = 98.0

Wildflower = 99.2

h_e from San Pedro to Wildflower

$$K = \frac{4.66\,n^2}{d^{5.33}} \qquad h_e = K \ell Q^2$$

$d = 60''$ $\ell = 800'$ Q(in pipe) = 320

$K = 1.9727\,(10)^{-7}$

$h_\ell = 16.16'$

→ Elev at San P + Eagle Rock = 99.2 + 16.2 = <u>115.4'</u>

h_e from Eagle Rock to Modesto, 1-60" 1-54"

$Q_{60''} = 200$ $Q_{54''} = 152$ $\ell = 550'$ $K_{54} = 3.459(10)^{-7}$

$K_{60} = 1.9727(10)^{-7}$

$h_{\ell\,54''} = 4.40' \simeq h_{\ell\,60''} = 4.34'$

h_e from Modesto To I-25 $Q = 380$ $\ell = 750$ $d = 66''$ $K = 1.187(10^{-7})$

$h_{\ell\,66''} = 12.86'$

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PROJECT NO._____ SHEET_____OF_____

PROJECT NAME_____ APPROVED_____DATE_____

TITLE_____ BY_____DATE_____

TOTAL h_e San Pedro + Eagle Rock to I-25 via Madosto:

$12.86' + 4.34' = 17.20'$

→ Elev = San Pedro = $98.0 + 17.20 = \underline{115.20'} \cong \underline{115.4'}$

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PROJECT NO._____ SHEET_____OF_____

PROJECT NAME_____ APPROVED_____DATE_____

TITLE_____ BY_____DATE_____

8-36" INV = 93.41 MAX elev = 99.30 South LA Culvert

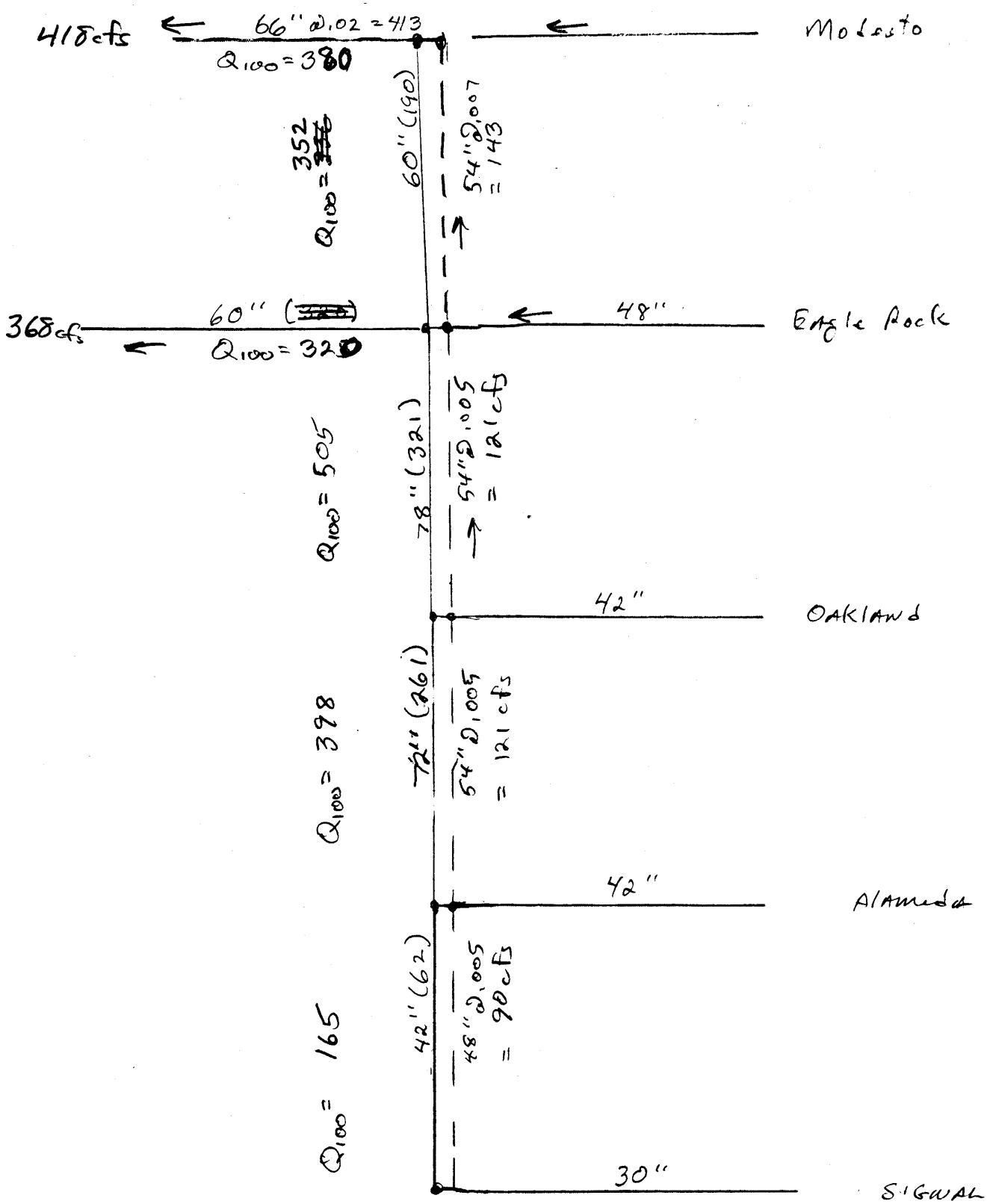
5-36" INV = 92.33 MAX elev = 99.00 Wild Flower

HW/D	d	Q	36"x5	elev.	36"x8	elev.
0	0	0		92.33		93.41
.5	1.5'	11	55	93.83	88	94.91
.75	2.25	22	110	94.58	176	95.66
1.0	3.00	35	175	95.33	280	96.41
1.25	3.75	44	220	96.08	352	97.16
1.50	4.50	50	250	96.83	400	97.91
1.75	5.25	56	280	97.58	448	98.66
2.00	6.00	62	310	98.33	496	99.41
2.25	6.75	70	350	99.08	560	100.16

↑ Wild Flower

↑ So. LA Culvert

081



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Fax: (505) 345-4132

CHECKED _____ DATE _____
APPROVED _____ DATE _____
TITLE _____
PROJECT NO. _____
SHEET _____ OF _____
BY _____ DATE _____