



MEETING OF THE CITY OF RIDGECREST INFRASTRUCTURE COMMITTEE
1ST FLOOR CITY COUNCIL CONFERENCE ROOM AREA B
Thursday April 28, 2016 at 5:00 pm

Committee Members: Chair Mike Mower, Vice Chair Matt Baudhuin
Vice Mayor James Sanders Planning Commissions Warren Cox
Staff: Dennis Speer, Loren Culp
Recording Secretary: Karen Harker

AGENDA
Meeting – 5:00 p.m.

This meeting room is wheelchair accessible. Accommodations and access to City meetings for people with other handicaps may be requested of the City Clerk (499-5002) five working days in advance of the meeting.

CALL TO ORDER

ROLL CALL

APPROVAL OF AGENDA

APPROVAL OF MINUTES

- March 25, 2016

PUBLIC COMMENT OF ITEMS NOT ON THE AGENDA

DISCUSSION AND OTHER ACTION ITEMS

- Striping on Downs Street
- Landscaping on Oriole Homes (formally DR Horton Tract)
- Bulb Outs on West Ridgecrest Boulevard
- Street Sweeping
- Trenching Ordinance
 - Discussion of Enabling Resolution for a Fee Schedule
- A Walk Through Of The Master Drainage Plan
- Presentation of Reusable Water

COMMITTEE COMMENTS

SUPPORT STAFF COMMENTS

FUTURE AGENDA ITEMS

NEXT MEETING:

- May 26, 2016

ADJOURNMENT:



MEETING OF THE CITY OF RIDGECREST INFRASTRUCTURE COMMITTEE
1ST FLOOR CITY COUNCIL CONFERENCE ROOM AREA B
Thursday March 24, 2016 at 5:00 pm

Committee Members: Chair Mike Mower, Vice Chair Matt Baudhuin
Vice Mayor James Sanders Planning Commissions Warren Cox
Staff: Dennis Speer, Loren Culp
Recording Secretary: Karen Harker

Draft Minutes
Meeting – 5:00 p.m.

This meeting room is wheelchair accessible. Accommodations and access to City meetings for people with other handicaps may be requested of the City Clerk (499-5002) five working days in advance of the meeting.

CALL TO ORDER: Meeting was called to order at 5:05

ROLL CALL Chair Mike Mower, Planning Commissioners Warren Cox, Vice Chair Matt Baudhuin
Absent: Mayor Pro Tem James Sanders
Staff: Dennis Speer, Public Works Director; Loren Culp, City Engineer
Recording Secretary: Karen Harker

APPROVAL OF AGENDA

*Motion To Approve the Agenda Was Made By Commissioner Mr. Cox, Seconded by Mr. Bauhuin
Motion Carried By Voice Vote of 3 Ayes (Mower, Baudhuin, Cox,) 0 Nays, 1 Absent (Sanders) 0
Abstain*

APPROVAL OF MINUTES

- *Motion To Approve the Minutes of **January 21, 2016** was Made By Commissioner Baudhuin Seconded by Mr. Cox Motion Carried By Voice Vote of 3 Ayes (Cox, Mower, Baudhuin) 0 Nays, 1 Absent (Sanders) 0 Abstain*
- *Motion To Approve the Minutes of **February 25, 2016** was Made By Commissioner Baudhuin, Seconded by Mr. Cox. Motion Carried By Voice Vote of 3 Ayes (Cox, Mower, Baudhuin) 0 Nays, 1 Absent (Sanders) 0 Abstain*

PUBLIC COMMENT OF ITEMS NOT ON THE AGENDA

No Public Comment

DISCUSSION AND OTHER ACTION ITEMS

Discussion of the Retention Basin at Norma Street and Felspar Avenue (West China Lake Retention Basin)

Discussion from Previous Page

Loren Culp, City Engineer, made a presentation regarding the preliminary investigation of the sump area in and around the Retention Basin. He distributed a map showing the site area for the committee to have a clear picture of what they would be discussing. During the investigation Mr. Culp indicated on the northeast corner there is a sump across from Home Depot. This is owned and maintained by the City. There was a discussion of the sugar sand that is in the sump area and that is why it drains so well.

The committee discussed the drainage around the sump area and how water drains into the streets and areas to the north along Felspar Street. In the investigation FEMA has identified the entire area as a flood area.

Mr. Culp discussed the Master Drainage Plan and the two alternatives in the Plan regarding the West China Lake Retention Basin. In 1989 The City Council approved alternative two.

Mr. Culp explained to the committee that at this time, funds are not being used and/or the City doesn't fund for maintaining sump areas. This can be a concern as the overgrowth in and around the sump areas can become a natural habitat and a developer would not be able to do anything with them but leave them in their current state. The question becomes, can the City contract this task out or do we use City Staff. Our roads crews could clean out the culverts and sump areas during the off peak times and there would need to be a consideration for funds

Discussed a flood control district and how that is funded, they would administer the funds, and the flood control district would search out for the grants and other sources of funding to offset costs to the district.

If the City wants to develop the property for a potential buyer, a sump could be constructed for a 25-year event. This sump would need to be roughly 7 acres and then have the potential to market the 25 acres around the area or sump. We could also participate with the developer as the City would see fit if we wanted to sell the property as is.

COMMITTEE COMMENTS

Committee members spoke about the Trenching Ordinance that is in place. It was noticed that two patches in front of the DART which is a brand new road. Is this a temporary patch or are we going to have to have to fix it ourselves? It was discussed how there was a utility emergency at this area and that the Indian Well Valley Water District would be replacing that patch with a permanent patch. There was discussion about the projects that we have coming up for our paving season and that the Water District didn't have the funding to repair the known leaks in these areas. Staff is working with the District to come up with a resolution.

SUPPORT STAFF COMMENTS FUTURE AGENDA ITEMS

A Walk Through Of The Master Drainage Plan
Trenching Ordinance
➤ Review Enabling Resolution for a Fee Schedule
Presentation of Reusable Water

NEXT MEETING:

- **April 28, 2016**

ADJOURNMENT: Meeting was adjourned at 6:20 pm

City of Ridgecrest - Trench Cutting Fees Version 1

Trench Cut, Pot Hole, Bore/Receiving Pit, Bell Hole Fee Schedule

Arterial and Secondary streets within five years of construction or PCI value	PCI ² between 100 and 70	\$7.00 per S.F.
Arterial and Secondary streets	PCI between 69 and 26	\$3.78 per S.F.
Arterial and Secondary streets	PCI between 25 and 0	No fee
Collector and Local streets within five years of construction or PCI value	PCI between 100 and 70	\$4.50 per S.F.
Collector and Local streets	PCI between 69 and 26	\$3.48 per S.F.
Collector and Local streets	PCI between 25 and 0	No fee

¹Arterial and Secondary streets = arterial and secondary streets as defined by the latest adopted City General Plan Circulation Element.

²PCI = Pavement condition index per the latest approved version of the City Pavement Management System.

Fees do not apply to area outside of the vertical projection of the trench/pot hole/bore & receiving pit/bell hole in a "T" cut restoration as required in the latest policy for Street Trench Restoration Requirements.

CHAPTER 7
RECOMMENDED PLAN

7.1 INTRODUCTION

This chapter presents a summary of the recommended improvements for the City of Ridgecrest drainage system. The selection of the recommended alternative or set of improvements for each drainage basin planning area relates to the alternative descriptions contained in Chapter 5 and the cost estimates for those alternatives contained in Chapter 6. This chapter also presents a phased implementation schedule developed by assigning priorities to each recommended project element.

The recommended alternative was selected based on the following general criteria.

- a. Lowest capital construction cost
- b. Lowest operation and maintenance (O&M) cost
- c. Least design and construction obstacles
- d. Least institutional barriers
- e. Greatest potential to avoid liability

Different criteria were more important in different cases, depending on specific conditions in each watershed. In addition, there are tradeoffs between the criteria (e.g., alternatives with the lowest capital construction cost often have the highest O&M costs).

Cost comparisons between alternatives are strongly affected by the assumed unit costs. Relatively small changes in unit cost values can greatly impact the overall project costs. Because these values are estimates only (as opposed to actual bids), they have a significant degree of potential error (+50 percent, -30 percent). Thus care must be taken in selecting a preferred alternative only on the basis of construction cost. This is particularly true when substantial land acquisition is involved, because land costs have been generalized and no site-specific investigations have been made. Thus subsequent predesign studies should investigate all alternatives, not just the recommended alternative, in order to select the most cost-effective approach based on site-specific cost data.

The impact on O&M costs of comparing different facilities in different alternatives was evaluated based on commonly accepted O&M unit costs expressed as a function of initial construction costs. These are given below.

- | | |
|-----------------------------------|------|
| o Reinforced concrete pipe | 0.5% |
| o Reinforced concrete box culvert | 0.5% |
| o Channels (lined and unlined) | 1.5% |

o	Dikes/levees	2.0%
o	Detention basin/debris basins	1.0%
o	Pump stations	3.0%
o	Floodings	1.0%

These costs are appropriate for comparing various alternatives, but should not necessarily be used to develop projected O&M budgets.

7.2 RECOMMENDED ALTERNATIVE

A recommended alternative is selected for each drainage basin planning area. In general, these areas are independent of each other. Thus, the City-wide recommended alternative is the collection of recommended alternatives for each individual drainage basin. Reference is made to Tables 5-1 through 5-8 in Chapter 5 for facility descriptions, and to Tables 6-2 through 6-9 in Chapter 6 for facility cost estimates.

The key criterion in determining the recommended alternative is project cost. Table 7-1 was prepared to summarize total project costs for alternatives in each drainage basin. Other selection criteria are somewhat more subjective at this level of analysis.

Ridgecrest Wash Drainage Basin

The Detention Alternative (Alternative 2) is the recommended alternative for the Ridgecrest Wash Drainage Basin. Detention basins in this area are effective in reducing the overall cost of drainage improvements by \$1,150,000. In addition, the cost of each individual major system component - the Downs Storm Drain, the Mahan Channel and the Brady Channel - is reduced by the use of detention basins. Although the four detention basins included in this plan will increase the O&M responsibilities of the City in this area, the reduced capital costs and the ability to use the detention sites for other purposes (e.g., parks) should offset the additional O&M expenses.

Several aspects of the recommended alternative for Ridgecrest Wash may present implementation problems. First, there are considerable land acquisition requirements associated with the Mahan Channel, the Brady Channel, the Mahan Detention Basin, and the two Brady Detention Basins. The channel alignments may be easier to acquire if a portion of existing street right-of-way can be used; this may also reduce the cost estimates for these project elements. However, the detention sites may only be developed if considerable private property can be acquired. The City should begin pursuing these sites immediately.

Second, the Brady Channel alignment lies entirely outside the City of Ridgecrest. Thus, the City will have to coordinate this critical project with Kern County Public Works and Planning Departments. In addition, right-of-way will have to be acquired outside of the City and Ridgecrest crews will have to maintain the facility beyond the city limits.

TABLE 7-1

SUMMARY OF PROJECT COST ESTIMATES

<u>Drainage Basin/ Project Description</u>	<u>Facility Numbers</u>	<u>Project Costs (\$1,000)</u>	
		<u>Alternative 1</u>	<u>Alternative 2</u>
Ridgecrest Wash			
Downs Drain	RCW-01 to 07,40	2,242	2,013
Mahan Channel	RCW-08 to 20,39	1,829	1,722
Brady Channel	RCW-21 to 38	6,908	6,093
		<u>10,979</u>	<u>9,828</u>
West China Lake			
All Facilities	WCL-01 to 13	3,412	3,271
Drummond/Inyokern			
Drummond Drainage Basin			
Drains	DAW-01 to 04	621	1,093
Inyokern Drainage Basin			
Drains	IK-01 to 06	1,389	760
		<u>2,010</u>	<u>1,853</u>
Church Ave/Upjohn Ave			
Church Ave Drains	CH-01 to 15	6,010	5,221
Upjohn Ave Drains	UJ-01 to 14	3,903	4,064
		<u>9,913</u>	<u>9,285</u>
College Heights Wash			
West Side Channels	CHW-01 to 07,17,18	3,028	4,861
College Heights Channel	CHW-08 to 13, 20 to 26	4,236	2,784
China Lake Channel	CHW-14 to 16	2,476	1,198
		<u>9,740</u>	<u>8,843</u>
East China Lake Wash			
Franklin/Sunland Channels	ECL-01 to 06,12	2,257	2,606
Rader/Richmond Channels	ECL-07 to 11	1,314	1,314
		<u>3,571</u>	<u>3,920</u>
Bowman Wash			
Bowman Rd Channel	BW-01 to 23	12,331	8,997
Side Drains	BW-30 to 37	1,460	1,460
		<u>13,791</u>	<u>10,457</u>
El Paso Wash			
Levees	EPW-01 to 03	2,224	2,224
City-wide Total		<u>55,640</u>	<u>49,681</u>

Third, the plan includes three major drains crossing Inyokern Rd, which is a State-maintained roadway. The drain crossings are a 6.5'w x 5'd RCB in Downs St, a 5'w x 4'd RCB in Mahan St, and a 6-6'w x 4'd RCB in Brady St. There may be utility conflicts associated with these crossings, and traffic conflicts will have to be resolved. In addition, the projects will have to be closely coordinated with CALTRANS. However, it is also possible that CALTRANS could participate in funding these projects. The recommended alternative (Alternative 2) has significantly smaller facilities crossing Inyokern Rd than Alternative 1.

West China Lake Drainage Basin

The recommended alternative for West China Lake Drainage Basin is Alternative 2, the Detention Alternative. This option utilizes a 55 acre-ft retention basin in the present sump area near Norma St and Felspar Ave, to collect runoff from most of the West China Lake watershed area. In addition, runoff from subareas RCW270 and RCW280 is diverted into the retention basin by a drain in Las Flores Avenue.

The detention alternative is about \$140,000 less expensive than the all conveyance alternative. However, much of the recommended alternative cost is associated with land acquisition for the retention sump (\$675,000). It is likely that this particular site can be acquired more cheaply because the City already owns a small sump basin in this location; in addition, the entire 5-acre parcel is under a single ownership and the City has been in contact with the owner about acquiring it.

It is expected that most of the drain and channel facilities in the recommended alternative can be constructed without major difficulties. However, specific utility conflicts have not been investigated.

Drummond Avenue Wash/Inyokern Drainage Basins

The recommended alternative for the Drummond Avenue Wash Drainage Basin and Inyokern Drainage Basin is Alternative 2. This is a conveyance alternative in which runoff from the upper portion of the Inyokern Drainage Basin is diverted easterly along Ward Ave. This option is about \$160,000 less expensive than Alternative 1 in which flows are conveyed northerly along Norma St. No detention sites were identified in these two urban drainage basins.

The two recommended projects which may face major obstacles to construction are the drain crossings of Inyokern Rd in Norma St (66" RCP) and China Lake Blvd. in Ward Ave (66" RCP). It is expected that utility and traffic conflicts associated with these two crossings may be more difficult than usual. In addition, the Inyokern Rd crossing must be coordinated with CALTRANS, and the daylight channel for the Ward Ave drain must be coordinated with China Lake NWC. Alternative 1, which is not the recommended scenario, has a larger crossing of Inyokern Rd and a smaller crossing of China Lake Blvd.

Other project elements should be reasonably straightforward.

Church Avenue/Upjohn Avenue Drainage Basins

The recommended alternative for the Church Ave and Upjohn Ave Drainage Basins is Alternative 2. This is the Detention Alternative for this area. The recommended alternative includes diversion of flows from the upper Upjohn Ave watershed into the Bowman Rd Channel; diversion of flows from the upper Church Ave watershed into the French Ave Channel; and development of an off-channel detention basin in a proposed City park site at Upjohn Ave and Sunland St.

The Detention Alternative is \$790,000 less expensive than the All Conveyance Alternative, primarily due to the reduced storm drain diameters resulting from the hydrologic benefits of the proposed detention basin. The cost of acquiring, developing and maintaining the detention site could be less than expected (or at least distributed among more than one City department) because of its dual-use designation as a City park site. No recreation plans have been proposed for the park, but the basin should be compatible with any uses which consist primarily of open spaces (e.g., park, playground, ball fields).

The major obstacles to implementing the recommended alternative are expected to be associated with the storm drain along French Ave in the downtown area, including a 9.5'w x 6'd RCB under China Lake Blvd. The utility and traffic conflicts involved with this project are expected to be significant, but have not yet been identified.

College Heights Wash Drainage Basin

The recommended alternative for this watershed is Alternative 2, the Detention Alternative. This alternative includes two large detention basins on BLM land in the upper portion of the watershed, as well as channels along College Heights Blvd, China Lake Blvd and the extension of Norma St. The Detention Alternative is \$900,000 less expensive than the All Conveyance Alternative, a capital savings which will more than offset the additional O&M requirements of the relatively remote detention sites.

Implementation of this alternative will require negotiation with BLM for the two large detention sites (13 acres and 12 acres). More importantly, many of the recommended facilities required to protect the City of Ridgecrest are in unincorporated Kern County. This includes a portion of the College Heights Blvd Channel, the Norma Channel, and the two detention basin outlet channels. The outlet channels are particularly problematic because they require long drainage easements to be established. It is important to note that some approach to fixing a dependable drainage pattern through these areas is required in order to assure that the downstream conveyance facilities in the City will be effective.

Channels are recommended for alignments parallel to College Heights Blvd and China Lake Blvd. It is possible that land acquisition costs, and potential surface interferences, could be reduced from the estimates in Chapter 6 if existing street right-of-way could be utilized for portions of the channels. These land acquisition issues should be investigated and resolved by the City as soon as possible, as they are critical to the implementation of the

recommended alternative. In addition, land acquisition for the Norma Channel should be evaluated more closely due to potential private property and surface improvement conflicts.

East China Lake Drainage Basin

The Detention Alternative (Alternative 2) is about \$350,000 more expensive than the All Conveyance Alternative (Alternative 1), and will also have higher O&M expenses. However, the detention basin in Alternative 2 at Franklin Ave and Sunland St is partially responsible for the large reduction in lower Bowman Wash facilities. Thus, the Detention Alternative has benefits beyond the East China Lake Drainage Basin which should be considered in selecting the recommended alternative.

In this Master Plan, the All Conveyance Alternative will be presented as the recommended alternative. This option includes major channels along Franklin Ave and Sunland St. Both of these facilities are primarily in unincorporated Kern County and are located upstream of the City in order to provide protection to presently incorporated areas. Thus, land acquisition, construction and O&M issues must be resolved with the County, and must be addressed as soon as possible.

Further study of this watershed area should be conducted to attempt to find a cost-effective detention alternative. It is possible that site-specific land acquisition costs for a basin in a slightly different location could make the detention alternative viable. With the master plan basin orientation, the 100-year peak flow was not reduced sufficiently to make a dramatic difference in downstream channel dimensions.

Bowman Wash Drainage Basin

The recommended alternative for the Bowman Wash Drainage Basin is Alternative 2, the Detention Alternative. This alternative is consistent with the recommended alternatives in the tributary watersheds (College Heights Wash and East China Lake Wash), with the exception that facilities have been sized for lower Bowman Rd Channel assuming the Sunland Detention Basin is in place. This is not expected to present a capacity problem given the channel freeboard allowance and the conservativeness of the master plan design assumptions.

The recommended alternative includes an off-channel detention basin in a proposed City park site near the intersection of Brady St and Bowman Rd. This basin was sized so as to accommodate multiple uses.

The key element of the recommended alternative is the Bowman Rd Channel, which extends from Brady St to Ridgecrest Blvd. The channel is unlined with drop structures in the upper reaches, rip rap lined in the middle reaches, and leveed with rip rap sides in the lower reaches. West of Richmond Blvd, the channel is confined to the 100-ft right-of-way reserved for it in the 200-ft Bowman Rd easement. East of Richmond Blvd, the channel and levees encompass the full 200-ft right-of-way, because the roadway will be realigned down Richmond Blvd.

Major problems with implementing this alternative include the critical road crossings of China Lake Blvd and Ridgecrest Blvd. The recommended detention alternative significantly reduces the size of these crossings as compared to the All Conveyance Alternative.

El Paso Wash Drainage Basin

Alternative 1 is the recommended alternative for this watershed. This is the only alternative which was seriously presented in the Master Plan. It consists of a levee along the east side of the El Paso Wash floodplain to prevent overflows from impacting the City. No detention alternatives were presented, due to the large size of the tributary watershed (resulting in the need for very large detention basins) and to the remoteness from the City of feasible storage sites.

7.3 IMPLEMENTATION PROGRAM

The recommended Master Drainage Plan for the City of Ridgecrest has been formulated to address all existing and future drainage problems in the community. Due to the lack of existing drainage improvements, the plan calls for construction of numerous open channels, storm drains, culverts, and detention basins. Because of the high cost of the entire master plan program, all of the facilities will not be constructed in one year or even one decade. Thus it is important that priorities be assigned to each recommended facility, so drainage improvement expenditures can effectively alleviate the most critical drainage problems first.

Several general guidelines were established for assigning facility priorities. These are summarized below.

1. Existing problem areas should be handled before areas subject to flooding only under ultimate development.
2. Flooding problems associated with major washes carrying offsite flows should be given high priority. In general these create the most significant public safety hazards.
3. Upstream facilities should not be constructed without an adequate outfall.
4. High priority projects should address areas of legitimate public concern.
5. Project priority may be affected by the availability of funds (e.g., from developers or other cost-sharing agencies) for specific facility elements.
6. Relatively uniform protection should be provided for all areas of the community. Thus funds should be distributed geographically.

Based on the above criteria, a phased implementation program has been established for the Ridgecrest Master Drainage Plan. This program is presented in Table 7-2, and is based on the present perception of existing

TABLE 7-2

RECOMMENDED PROJECT PRIORITIES

<u>Priority</u>	<u>Project Description</u>	<u>Facility Numbers</u>	<u>Project Cost (\$1,000)</u>
Priority 1	1.1 Bowman Rd Channel from Downs St to Outfall	BW-07 to BW-23	7,174
	1.2 Brady Channel from Felspar Ave to Outfall	RCW-21 to RCW-27	<u>3,530</u>
	Priority 1 Subtotal		10,714
Priority 2	2.1 Site Acquisition for Norma/Felspar Retention Basin	WCL-01	1,010
	2.2 Site Acquisition for Brady/Felspar Detention Basin	RCW-37	492
	2.3 Site Acquisition for Mahan/Sydnor Detention Basin	RCW-39	125
	2.4 Site Acquisition for Brady/Ridgecrest Detention Basin	RCW-38	360
	2.5 Right-of-Way Acquisition for Mahan Channel	RCW-10, RCW-14, RCW-17, RCW-20	496
	2.6 Right-of-Way Acquisition for Brady Channel from Felspar to Upjohn	RCW-28, RCW-31, RCW-32, RCW-34, RCW-35	231
	2.7 Site Acquisition for two College Heights Detention Basins	CHW-17, CHW-18	<u>0</u>
Priority 2 Subtotal		2,717	
Priority 3	3.1 Downs Storm Drain and Pearson Park Detention Basin	RCW-01 to RCW-06, RCW-40	2,010
	3.2 French Ave Storm Drain	CH-10 to CH-13	1,720
	3.3 Church Ave Storm Drain	CH-01 to CH-04, CH-15	<u>2,224</u>
Priority 3 Subtotal		5,965	

Table 7-2 (Cont'd)

<u>Priority</u>	<u>Project Description</u>	<u>Facility Numbers</u>	<u>Project Cost (\$1,000)</u>
Priority 4	4.1 Bowman Rd Channel from Brady St to Downs St	BW-01 to BW-06	616
	4.2 Bowman Detention Basin and Brady Inlet Channel	BW-25, BW-24	1,209
	4.3 Brady Channel from Felspar to Upjohn	RCW-28 to RCW-35	546
	4.4 Brady Detention Basins	RCW-37, RCW-38	926
	4.5 Right-of-Way Acquisition for College Heights Channel	CHW-08, CHW-10, CHW-12	637
	4.6 Right-of-Way Acquisition for China Lake Channel	CHW-14	446
	4.7 Right-of-Way Acquisition for Norma Channel	CHW-05, CHW-06	<u>24</u>
Priority 4 Subtotal			4,404
Priority 5	5.1 Norma/Felspar Retention Basin and all tributary drains	WCL-01 to WCL-09	2,259
	5.2 Ward Ave Storm Drain	DAW-01 to DAW-04	1,093
	5.3 Norma St Storm Drain	IK-01, IK-04 to IK-06	760
	5.4 Drains Tributary to French Ave Storm Drain	CH-09, CH-14	1,269
	5.5 Drains Tributary to Church Ave Storm Drain	UJ-01 to UJ-04	1,507
	5.6 Upjohn Detention Basin	UJ-14	<u>171</u>
Priority 5 Subtotal			7,059
Priority 6	6.1 College Heights Detention Basin Site 1	CHW-17	1,476
	6.2 College Heights Detention Basin Site 2	CHW-18, CHW-23	2,078
	6.3 Franklin and Sunland Channels	ECL-01 to ECL-06	<u>2,257</u>
Priority 6 Subtotal			5,811

Table 7-2 (Cont'd)

<u>Priority</u>	<u>Project Description</u>	<u>Facility Numbers</u>	<u>Project Cost (\$1,000)</u>
Priority 7	7.1 Mahan Channel	RCW-08 to RCW-20	985
	7.2 Mahan Detention Basin	RCW-39	117
	7.3 Upjohn Diversion Drains to Bowman Rd Channel	UJ-07 to UJ-13	2,386
	7.4 Southern Drains to Bowman Rd Channel	BW-30 to BW-37	<u>1,460</u>
	Priority 7 Subtotal		4,948
Priority 8	8.1 College Heights Channel	CHW-08 to CHW-13	1,026
	8.2 China Lake Channel	CHW-14 to CHW-16	752
	8.3 Norma Channel	CHW-04 to CHW-07	520
	8.4 College Heights Detention Basin Outlet Channels	CHW-01 to CHW-02	1,134
	8.5 Radar/Richmond Channels	ECL-07 to ECL-11	1,314
	8.6 El Paso Wash Levees	EPW-01 to EPW-03	2,224
	8.7 College Heights Drains	CHW-20 to CHW-22	<u>749</u>
	Priority 8 Subtotal		7,719
		GRAND TOTAL	49,335

flood problems, pending development, and cost-sharing opportunities. The phased implementation schedule should be viewed as a flexible program, subject to change as development strategies, community priorities, and funding levels change.

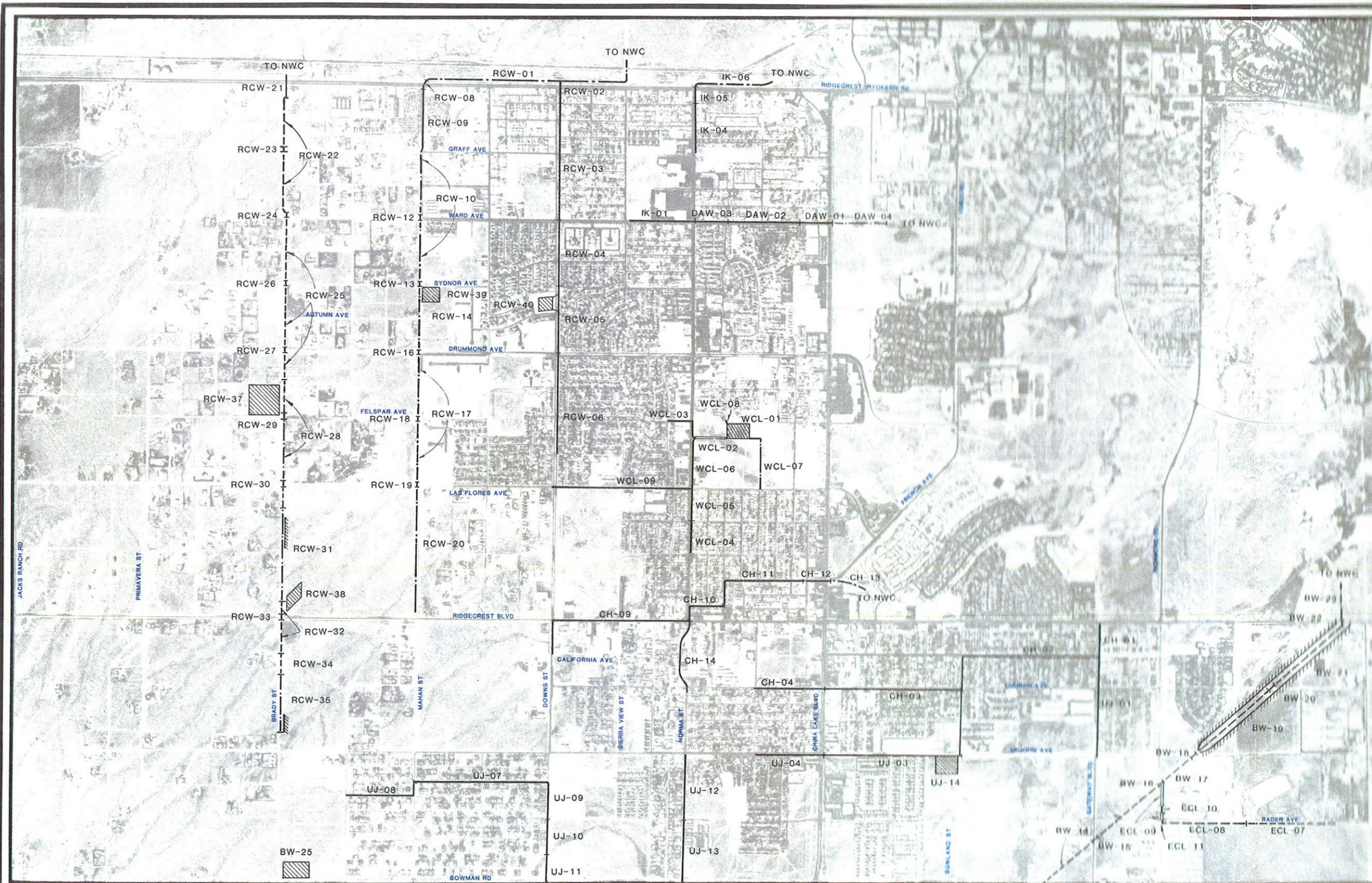
As shown in Table 7-2, the implementation schedule consists of eight different priority levels. Each priority level contains several different drainage projects. The total cost of projects assigned to various priority levels varies from \$2.7 million to \$10.7 million.

The priority levels are defined and summarized as follows:

- Priority 1: Solutions to immediate flooding problems where risks to health and safety are involved. Establishment of the backbone of a system to isolate the City from damaging offsite flows from major watersheds.
- Priority 2: Acquisition of land and right-of-way for key detention basin sites and channel alignments in and near the present urban area.
- Priority 3: Construction of trunk storm drains in the urban core.
- Priority 4: Completion of the channels to isolate the City from tributary flows, and acquisition of right-of-way for facilities south of Bowman Rd.
- Priority 5: Completion of the urban core drainage system.
- Priority 6: Construction of the "first level of defense" (detention basins, training dikes and channels) against flows from the upper College Heights watershed.
- Priority 7: Construction of facilities in the urban fringe area.
- Priority 8: Construction of facilities in outlying areas.

The overall strategy of this plan is to first provide a certain level of protection (less than 100-year initially) in critical high hazard areas, then pursue acquisition of needed right-of-way before desirable sites and alignments are lost to development. After the necessary land has been acquired, urban drainage problems are addressed in a systematic manner.

It is noted that the project cost estimates in Tables 7-1 and 7-2 include all elements of every recommended project. Thus, these estimates include costs for facilities and right-of-way outside the City of Ridgecrest which could be assumed by other agencies. In addition, they make no allowance for potential cost sharing, donation of land or facilities by developers, use of equivalent but less expensive construction methods and materials, or other factors which could considerably reduce the cost to the City of implementing the recommended plan. The cost values in Tables 7-1 and 7-2 are considered to be conservative estimates which are valid for use in capital improvement budgeting, until more detailed predesign planning has been performed for specific projects.



LEGEND

- BURIED CONDUIT (PIPE/BOX)
- UNLINED CHANNEL
- RIP RAP LINED CHANNEL
- CONCRETE LINED CHANNEL
- DIKE/LEVEE
- DETENTION/RETENTION BASIN
- DEBRIS BASIN
- CULVERT/BRIDGE
- BW-08 FACILITY NUMBER

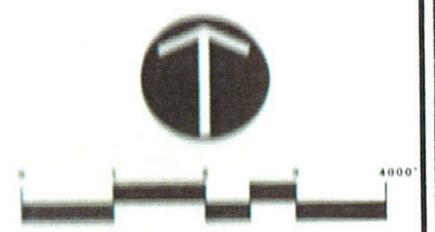


PHOTO DATE: 12-03-07

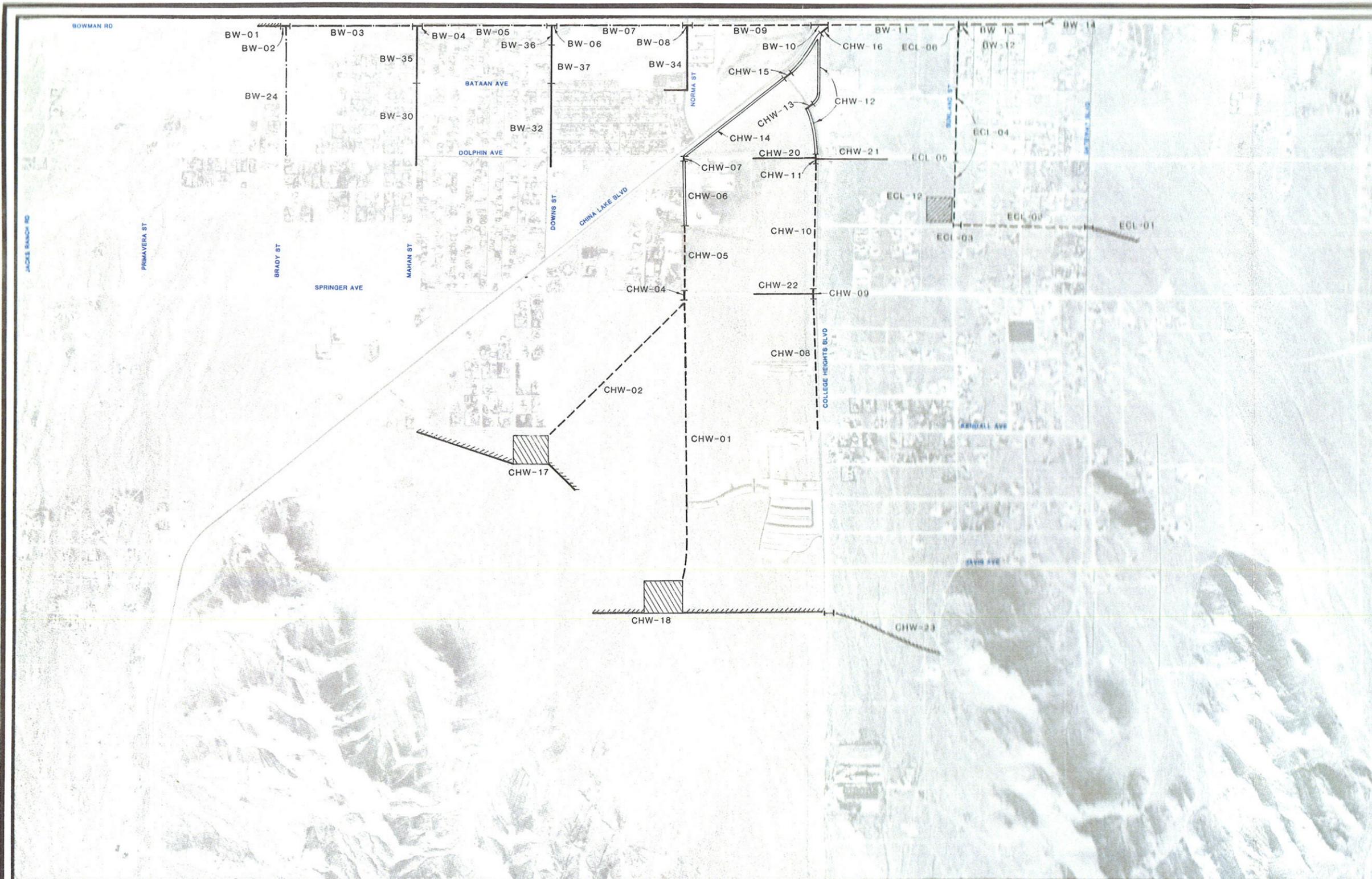
JMM James M. Montgomery
Consulting Engineers Inc.

30 Corporate Park Suite 310 Irvine, California 92714

**CITY OF RIDGECREST
MASTER DRAINAGE PLAN**

**DRAINAGE IMPROVEMENTS
ALTERNATIVE 2 - DETENTION**

FIGURE 5-2A



- LEGEND**
- BURIED CONDUIT (PIPE/BOX)
 - UNLINED CHANNEL
 - RIP RAP LINED CHANNEL
 - CONCRETE LINED CHANNEL
 - DIKE/LEVEE
 - DETENTION/RETENTION BASIN
 - DEBRIS BASIN
 - GULVERT/BRIDGE
 - BW-08** FACILITY NUMBER

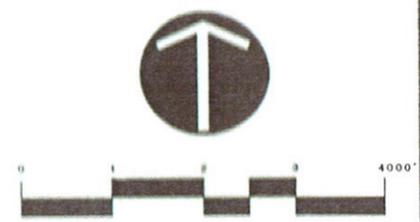


PHOTO DATE: 12-03-87

JMM James M. Montgomery
 Consulting Engineers Inc.

 30 Corporate Park Suite 310 Irvine, California 92714

**CITY OF RIDGECREST
 MASTER DRAINAGE PLAN**

**DRAINAGE IMPROVEMENTS
 ALTERNATIVE 2 - DETENTION**

FIGURE 5-2B