



- LEGEND:**
- BEDROCK OUTCROP
 - HYDROLOGIC BOUNDARY AND ALLUVIAL BASIN BOUNDARY
 - SURFACE DRAINAGE
 - RI AREA
 - CONTAMINATION ZONE BOUNDARY
 - VOC CONTAMINATION POTENTIALLY EXCEEDING 1000X MCLS
 - VOC CONTAMINATION POTENTIALLY RANGING FROM 100X TO 1000X MCLS
 - VOC CONTAMINATION POTENTIALLY RANGING FROM 20X TO 100X MCLS
 - VOC CONTAMINATION POTENTIALLY RANGING FROM 10X TO 20X MCLS
 - VOC CONTAMINATION POTENTIALLY RANGING FROM MCLS TO 10X MCLS
 - VOC CONTAMINATION POTENTIALLY RANGING FROM LABORATORY DETECTION LIMITS TO MCLS
 - SURFACE WATER REMEDIATION OPERABLE UNIT OUSJC
 - OPERABLE UNIT 2J
 - OPERABLE UNIT 4K
 - NEW OU EXTRACTION WELL
 - NEW MONITORING WELL
 - DEPTH SPECIFIC SAMPLING OF EXISTING WELL (01901055)

THE AREAS OF CONTAMINATION SHOWN IN THIS FIGURE REPRESENT GENERALIZED TWO-DIMENSIONAL APPROXIMATIONS BASED ON THE WATER QUALITY ANALYSES FROM PRODUCTION WELLS THAT VARY IN DEPTH AND PERFORMED INTERVALS.

DUE TO POSSIBLE VERTICAL ZONATION OF CONTAMINATION, A WELL LOCATED WITHIN AN IDENTIFIED AREA OF CONTAMINATION MAY PRODUCE WATER WITH CONTAMINANT CONCENTRATIONS DIFFERENT THAN THAT INDICATED ON THIS MAP.

AREAS OF CONTAMINATION ARE BASED ON AVAILABLE DATA FOR THE TIME PERIOD OF AUGUST 15, 1987 THROUGH MARCH 15, 1989, OR THE LAST RECORD FOR WELLS NOT SAMPLED IN THAT TIME PERIOD.

FIGURE F-1
SUMMARY OF ALTERNATE
STAGE III ACTIONS

Draft Basinwide Technical Plan
 San Gabriel Basin

north and south of the present inferred location of the downgradient boundary. These wells would be constructed to great depth to determine if the absence of detected contamination in the central and northern portions of the contaminated zone was consistent with conditions at the downgradient boundary. If deep contamination is found (and all data to this point indicate otherwise), OU 2J wells could be installed to the appropriate depths. An additional monitoring well would be installed close to the OU 2J wells to provide further definition of subsurface conditions and monitor the progress of the operable unit after its implementation. The estimated costs of efforts directly related to the implementation of OU 2J are summarized in Table F-2.

Table F-2
SUMMARY OF ESTIMATED COSTS FOR OPERABLE UNIT 2J
(\$ x 1,000)

<u>Item</u>	<u>Alternative 1</u>	<u>Alternative 2</u>
Remedial Investigation	305	305
Feasibility Study	542	542
Construction	15,688	17,891
Services During Construction and Land Acquisition	1,869	2,089
Design, Legal, and Administrative	3,862	4,396
<u>Total</u>	<u>22,266</u>	<u>25,222</u>
Median Operable Unit Cost	23,744	
Annual Operation and Maintenance (O&M) Cost	589	644
Median O&M Cost	617	

F.4.0 OPERABLE UNIT 4K

As with OU 2J, OU 4K becomes a sensible action if it is determined that groundwater contamination in Areas 5 and 6 is not continuous at any depth into Area 4. The OU 4K wells, located in a straight line in the northeastern corner of Area 4 (Appendix A), are designed to control contamination approaching Area 4 from the north (Area 5) and east (Area 6). Information required to design these wells is assumed to have been obtained from Stage II investigations (monitoring wells in Areas 4, 5, and 6).

The results of the numerical simulations indicate that, despite the vertical generalizations of the model, contamination might be effectively controlled by an operable unit of this type. Pumping of the OU 4K wells for 10 years produces a decrease in contamination downgradient of the operable unit. The increase upgradient of the operable unit wells observed in the numerical simulations is probably the result of wells removed from service in Area 5 to compensate for the increased water production. As with OU 2J, feasibility studies will evaluate various alternatives to the assumptions made in the Appendix C analysis. Additionally, implementation of OU 5W wells in Stage II might offset this upgradient increase in contaminant concentrations to some degree.

A summary of the estimated costs, detailed in Appendix D, of OU 4K is presented in Table F-3.

Table F-3
SUMMARY OF ESTIMATED COSTS FOR OPERABLE UNIT 4K
(\$ x 1,000)

<u>Item</u>	<u>Alternative 1</u>	<u>Alternative 2</u>
Feasibility Study	542	542
Construction	11,052	15,307
Services During Construction and Land Acquisition	1,705	2,131
Design, Legal, and Administrative	2,807	3,836
<u>Total</u>	16,105	21,816
Median Operable Unit Cost	18,961	
Annual Operation and Maintenance (O&M) Cost	495	558
Median Annual O&M Cost	527	

F.5.0 OPERABLE UNIT SJC

The design of an operable unit along the San Jose Creek (SJC) to prevent the potential for contact of the public with surface water contamination would be wholly dependent on the nature of the threat. Actions might be limited to small portions of the creek, or, alternatively, to its entire length. To a large extent, data required to define an effective action capable of improving the quality of surface water to prevent accidental exposure and migration of contamination down the creek towards Whittier Narrows would have been

collected in the course of Stage II investigations in Area 6. Additional data regarding the design characteristics of the lined portions of the creek, as well as the gravel subdrain system, would be reviewed. Potential actions might include a variety of surface water migration-control techniques including surface water diversion, collection, or blockage of the channel or subdrain just downgradient of the points of contaminant introduction. The estimated costs listed in Table F-4 are extremely approximate and assume a moderate effort along about half of the entire length of the San Jose Creek.

Table F-4
SUMMARY OF ESTIMATED COSTS FOR OPERABLE UNIT SJC
(\$ X 1,000)

<u>Item</u>	<u>Cost</u>
Remedial Investigation	30
Feasibility Study	542
Construction	5,136
Services During Construction	244
Design, Legal, and Administrative	184
Total	6,136

F.6.0 REMEDIAL INVESTIGATION

With two exceptions, remedial investigations included as part of the Alternative Stage III actions, not directly associated with specific Stage III operable units, are identical to those described in Section 7.0. Exceptions include the installation of a monitoring well to better define contamination in Area 4 (described in Section 7.0), and the installation of two monitoring wells in Area 2 in this alternate scenario.

The monitoring well in northern Area 4 was required in the Stage III described in Section 7.0 to further the exploration discovered in Stage II wells. In this alternate scenario, it is assumed that no significant contamination was found in the Stage II Area 4 wells. In Area 2, the additional wells are required to characterize the nature and location of the downgradient boundary of the large contaminated zone in Area 2 to support the feasibility study of OU 2J. The summary of costs presented in Table F-5 is identical to that described in Section 7.0 for Stage III investigations, except for the modifications described above.

Table F-5
 SUMMARY OF ESTIMATED COSTS FOR REMEDIAL INVESTIGATION
 (\$ X 1,000)

<u>Item</u>	<u>Cost</u>
Area 2 Well Installation and Sampling	520
Area 3 Well Installation and Sampling	520
Basinwide RI	5,080
Total	6,120

E.7.0 SUMMARY OF ESTIMATED STAGE III COSTS

A summary of the estimated costs of the actions described in the preceding sections for implementation during Stage III is presented in Table F-6.

Table F-6
 SUMMARY OF ESTIMATED COST FOR (ALTERNATE) STAGE III
 REMEDIAL AND INVESTIGATIVE ACTIONS
 (\$ X 1,000)

<u>Item</u>	<u>Cost</u>
Operable Unit 2J	23,740
Operable Unit 4K	18,960
Operable Unit SJC	6,140
Additional Remedial and Cost Recovery Investigations	6,120
Operable Unit Performance Monitoring	792
Total Cost of Implementation	55,752