FINAL FIVE-YEAR MITIGATION PROGRAM FOR RIPARIAN VEGETATION AND ASSOCIATED WILDLIFE -- OPTION V

SUMMARY: The Water Allocation Program Final EIR found that all water supply options, including 16,700 AF Cal-Am production (Option V), would have significant adverse impacts to the lower Carmel River (AQ3 and AQ4) riparian resource without mitigations. Option V would result in potentially significant effects in AQ2 in dry years, but adverse effects would be expected only near the Los Laureles wells. It should be noted that wildlife dependent on riparian vegetation would be similarly affected without mitigations. Discussion of the mitigation program is found on pages IV-52 through IV-54 of the Final EIR. The following mitigations were recommended by the consultant:

1. Implement a conservation program that retains water in the river and increases ground-water storage available to riparian vegetation. Entails inspection of yearly allocation amounts.

2. Identify existing riparian areas of greatest extent, and control drawdown to minimize the onset of water stress. Guarantee that no more than 10% would be lost due to drawdown. If plants die, replace with 300 trees/acre and ensure 70% survival. If 70% standard not met after 3 years, replant again. Identify and inspect sites at least two times per year.

3. Prioritize existing stands to be irrigated; continue and expand the present irrigation program. Guarantee no loss greater than 10%; replant if standard not met with standards in #2. Identify and preserve areas that may be destroyed or disturbed by urban or agricultural development.

4. Implement revegetation plan by creating new riparian habitat to replace lost habitat in lower terraces. Use 70% survivorship standard in 3 years; replant as necessary; monitor results as needed, and continue quarterly inspections after first three years; use qualified personnel for all these tasks.

5. As part of revegetation plan, purchase conservation easements on upper floodplain terraces for riparian revegetation of sycamores and valley oaks. Planting densities of 200 trees/acre with 70% survival. Inspections as noted above.

6. Identify sites where non-riparian/non-natives can be removed without threatening bank stability, and replant with riparian species as part of the above plans.

7. In droughts, increase irrigation to meet plant demands. Deep irrigation would be an objective. Where feasible, increase irrigated area in droughts. Replace vegetation that dies in a drought.

The EIR consultant stated that it was unknown whether these mitigations would reduce impacts to a less than signficant level. Based on this uncertainty, the consultant concluded that the mitigations would result in a potentially significant impact to riparian vegetation and dependent wildlife.

Existing District Programs: Ongoing District programs already address the environmental impacts of existing water supply practices on the riparian resource of the Carmel River. The District engages in the following activities:

1. Installs, operates and maintains drip irrigation systems to irrigate all major stands of riparian vegetation along nearly 6 miles of river between Via Mallorca Bridge and Cal-Am's Scarlett well. To date, about 450,000 lineal feet of drip irrigation line have been installed under the auspices of the Interim Relief Program and Irrigation Program, totalling about 75 acres of riparian land under irrigation.

2. Expands and renovates previously installed riparian irrigation systems.

3. Implements the Carmel River Management Program, which entails extensive vegetative plantings and irrigation of willows associated with erosion control projects.

4. Has retained a consulting agronomist to test the effectiveness of the District's irrigation system, assess application rates and refine irrigation schedules.

5. Installs permanent standpipes to monitor soil moisture profiles in several areas.

6. Has expanded the Emergency Irrigation Program to cover much of the 2-mile reach from near the Carmel River lagoon to Rancho Canada. Another 130,000 lineal feet of drip line are anticipated to irrigate vegetation in this reach. Four additional seasonal employees were hired in 1990 to implement the expansion.

7. Regularly monitors water levels, riparian plant stress, and soil moisture.

8. Implements comprehensive conservation program to reduce per capita use by 15% by the year 2020; develops annual MOA with Cal-Am and CDFG, and conducts the Water Supply Strategy and Budget process to retain water in the river as much as possible.

9. Works diligently towards development of a long-term water supply project that would provide improved streamflow conditions.

As shown in Exhibit 4, the existing riparian programs are substantial in terms of cost. About $295,000 is expended annually by the District to fund the Carmel River Management Program, the Interim Relief Program (emergency irrigation), the annual MOA and Water Supply Strategy and Budget process, and irrigation around four Cal-Am wells in lower Carmel Valley. The latter program, which costs about $50,000 per year, is partially funded by Cal-Am (up to $7,000 annual contribution) as part of the permit conditions for the four wells. Four members of District staff are involved in existing programs, including the District Engineer, two river maintenance workers, and an Associate Hydrologist.

Amendments to Consultant's Riparian Mitigation Program: District staff assessed the recommended mitigations for technical accuracy and feasibility. Based on this work, the seven mitigations recommended by the consultant have been altered as follows:

The consultant's mitigation #1 is already in effect as part of the District's comprehensive water conservation program. The recommendation to carry out "inspections of yearly allocation amounts" was unclear. Staff interprets this to mean "monitor yearly production amounts," which is already done by the District.

The consultant's mitigation #2 entails control of drawdown near sensitive riparian areas. MPWMD cannot control drawdown from wells. It can, however, work with Cal-Am to develop pumping schedules that better regulate the rate of drawdown, which is the critical factor for riparian health. This is done through the Water Supply Budget and Strategy process, in addition to well rotation of the four lower Carmel Valley wells.

The consultant's mitigation #3 includes a provision for MPWMD to identify and preserve riparian areas that may be destroyed or disturbed by urban development. Staff disagrees with the consultant for two reasons: (1) land preservation is an appropriate function for a park district, city or county -- not the MPWMD, and (2) given county zoning regulations and FEMA insurance constraints, it is very unlikely that future development would occur along the riparian corridor.

The consultant's mitigation #4 entails creation of new riparian habitat (by revegetation and irrigation) to replace vegetation losses in lower terraces along the Carmel River. The consultant does not identify a revegetation rate (acres per year) or total acreage that should be revegetated. Staff believes that creation of new riparian habitat is not as desirable as preservation of existing stands for two reasons. First, riparian habitat loss in Carmel Valley has occurred primarily due to farming and existing development, rather than withdrawal of ground water and diversion

of surface flows. Second, survival of new riparian plantings in the lower terraces cannot be assured. Vegetation would be planted on the unconsolidated alluvium that makes up the lower terraces. This material is subject to erosion and removal during even moderate stormflows. Due to the high potential of loss in major storms, revegetation of denuded areas will not be an integral part of the riparian mitigation program approved by the District Board. The District efforts will focus on protection and enhancement of existing riparian habitat.

The consultant's mitigation #5, which entails purchase of conservation easements on upper floodplain terraces for riparian revegetation, is not warranted. The Water Allocation Program Final EIR does not identify damage to riparian vegetation on upper terraces due to any water supply option, nor any connection between vegetation on the upper terraces and lower terraces along the river.

The consultant's mitigation #6 entails removal of non-riparian and non-native species along the river unless bank stability would be threatened by the removal. Given that many private property owners have planted and maintain such species on their land, this mitigation should include replacement/removal of non-riparian and non-native species only if their presence threatens bank stability.

The consultant's mitigation #7 entails increased irrigation of riparian vegetation during droughts, which is already done by the District. Thus, this mitigation is not considered as a separate measure in the Board-approved final mitigation program.

Elements of the District's Riparian Mitigation Program: The above alterations and deletions to the consultant's riparian mitigation concepts by the District staff and Board result in the following specific measures that would be carried out along with existing District programs:

1. Conservation and water distribution management to retain water in the river.

2. Prepare and oversee Riparian Corridor Management Plan; design projects; obtain access agreements.

3. Implement Riparian Corridor Management Programs; expand irrigation and planting programs; drill wells

4. Expand monitoring program for soil moisture and vegetative stress.

The following pages provide a brief description of each mitigation measure and its purpose, implementation and facilities needed, the frequency of use, monitoring and reporting program, permits needed, and preliminary cost estimates. New programs resulting from the Allocation EIR would total $10,000 in capital costs and $121,000 in annual costs. The total estimated capital cost of the Board-

approved riparian mitigation program would be about $10,000. The total annual costs (including continuation of existing programs at a cost of $295,000 per year) would be about $416,000. Exhibit 4 summarizes the riparian mitigation cost data. The riparian mitigation program would entail hiring one additional full-time staffperson (program manager) and several additional seasonal river maintenance workers.

The four Board-approved mitigations, in addition to existing riparian programs, would reduce impacts of Supply Option V to riparian vegetation, but it is unknown whether impacts would be reduced to a less than significant level. Thus, the District program would result in potentially significant impacts to riparian vegetation and dependent wildlife.

Exhibit 4

COST ESTIMATES FOR FINAL RIPARIAN MITIGATION PROGRAM -- OPTION V
November 1990

(Values are fully funded by MPWMD for five years)

MITIGATION PROGRAM		CAPITAL COST			ANNUAL COSTS		
		Existing	New	Total	Existing	New	Total
1.	Conservation and water distribution management to retain water in river	$ 0	0	0	$ 3,000 (1)	0	3,000
2.	Prepare and oversee Riparian Corridor Management Plan; design projects; obtain access agreements	$ 0	0	0	$ 0	60,000	60,000
3.	Implement Riparian Corridor Management Program; expand irrigation and planting programs; secure irrigation water	$ 0	0	0	$287,000 (2)	60,000 (3)	347,000
4.	Expand monitoring program for soil moisture and vegetative stress	$ 0	10,000	10,000	$ 5,000	1,000	6,000
	TOTAL COST	$ 0	10,000	10,000	$295,000	121,000	416,000
ESTIMATED TOTAL COST WITH BOARD-APPROVED PROGRAM			**$10,000**				**$416,000**

NOTE 1: The District conservation program entails annual costs on the order of $300,000. Given that its purpose is broader than riparian vegetation mitigation, only activities associated with retaining water in the river are itemized here.

NOTE 2: Existing programs include the Carmel River Management Program, irrigation around four Cal-Am wells, and Interim Relief Program irrigation activities (emergency irrigation).

NOTE 3: Costs for implementation of the Riparian Corridor Management Program are anticipated to start in the second or third year, after the plan has been developed.

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RIPARIAN MITIGATION #1: CONSERVATION AND WATER DISTRIBUTION MANAGEMENT TO RETAIN WATER IN RIVER

Existing District Program

The District has carried out a comprehensive, long-term conservation program successfully for several years. The goal of this $300,000 per year program is 15% reduction in per capita water use by the year 2020. Long-term savings of about 9% have already been achieved. Aspects of the program include extensive public education, water saving kit distribution, drought tolerant landscape seminars and other activities. In order to retain water in the river, the District forges a Memorandum of Agreement (MOA) with Cal-Am and CDFG and develops a Water Supply Strategy and Budget for the Cal-Am system. In addition, Ordinances #19 and #41 limit diversions from San Clemente Dam to allow more water to flow downstream. The MOA and Budget processes cost about $3,000 per year in staff time and entail the work of several staffmembers for a few days each quarter in dry years (only once a year in normal years).

Description and Purpose

This mitigation would focus on aquifer subunit 2 (AQ2), where relatively small production from wells may have an impact on riparian vegetation during dry periods. The District would continue its conservation program, and its work with Cal-Am via the MOA and Water Supply Strategy and Budget processes to reduce production and/or the rate of drawdown in AQ2. This region would also be considered when developing a protocol for rationing in droughts. The purpose of this mitigation would be to maximize ground-water levels and river flows in the AQ2 region. CVSIM analysis has shown that conservation would not yield similar benefits in other aquifer subunits.

Implementation and Facilities

General conservation would be implemented via the Water Conservation Plan. Production reduction in AQ2 would be implemented as part of the annual MOA process with Cal-Am and CDFG. One component would be quarterly audits of Cal-Am operations, and management strategies that reduce pumping or the rate of drawdown in AQ2. The District would develop a specific rationing protocol that describes the mechanisms for when rationing would be initiated. An integral component or criterion would be the potential impact of water use on AQ2. Another would be a specific drought reserve that would be necessary to preclude rationing. The need for rationing would be assessed annually or quarterly in the District's Water Supply Strategy and Budget review, and monthly during droughts via a Water Supply Status Report.

Frequency of Use

General conservation and protection of the AQ2 area would be continual, with most attention during dry periods. Rationing would occur only during extended dry periods. Detailed statistics are not available.

Monitoring and Reporting

Monitoring would consist of annual reporting of water conservation activities and results, and monthly review of water production data from AQ2.

Permits Needed

No permits would be required to implement this program.

Preliminary Cost Estimate

This mitigation would not result in significant additional costs because elements are already part of ongoing programs. Thus, the total cost would remain at $3000 per year. Staff time would be necessary to develop the rationing criteria and mechanism.

RIPARIAN MITIGATION #2: PREPARE AND OVERSEE RIPARIAN CORRIDOR MANAGEMENT PLAN

Existing District Program

Several District programs that address the riparian corridor of the Carmel River are described in the following section (Riparian Mitigation #3). There is presently no Riparian Corridor Management Plan, although the Carmel River Management Plan (CRMP) addresses several riparian concerns.

Description and Purpose

Most of the mitigations proposed in the Allocation EIR (as described and amended above) would form the basis of a Riparian Corridor Management Plan along the Carmel River. The purpose of the plan would be to coordinate the many mitigation activities that are required so that they can be implemented in an orderly, cost-effective manner. An additional District staffperson with a background in botany/revegetation/irrigation would be hired to write and implement the plan.

Subcomponents of the Riparian Corridor Management Plan would include the existing erosion control program (CRMP), the new riparian mitigation projects described in the Water Allocation Program Final EIR (as amended herein) and continued irrigation around four Cal-Am wells and in other areas. Only the costs for the new mitigation activities are shown below.

Implementation and Facilities

The Riparian Corridor Management Plan would (1) identify and prioritize the existing vegetation that must be protected, (2) determine the location and design of irrigation systems, and (3) identify areas in which to selectively remove vegetation from the active channel bottom to reduce the risk of bank erosion, as well as water loss due to evapotranspiration. Agreements with property owners would be obtained to allow mitigation projects on their land. The District staff would be responsible for the completion of the plan and the necessary agreements to begin implementation.

Frequency of Use

Development of the plan is anticipated to require 1-2 years, depending on the level of cooperation by property owners and regulatory agencies.

Monitoring and Reporting

During development of the plan, progress would be reported annually. Once the plan is developed, monitoring would be carried out as described under Riparian Mitigation #3.

Permits Required

Permits would not be required for development of the plan. Permits from Monterey County, CDFG and/or the U.S. Army Corps of Engineers (USACE) may be required for specific activities recommended in the plan.

Preliminary Cost Estimates

No capital cost is listed for this mitigation. The annual cost is estimated to be $60,000 per year for an additional District staff person (program manager), including salary and benefits. The new program manager would work closely with existing District staff who are responsible for Carmel River management activities. Other costs for plan development would be included in ongoing District programs.

RIPARIAN MITIGATION #3: IMPLEMENT RIPARIAN CORRIDOR MANAGEMENT PROGRAM

Existing District Programs

As noted in the introduction of the riparian mitigation section, there are several ongoing District programs that address the environmental impacts of existing water supply practices on the riparian resource of the Carmel River. The District has installed and maintains drip irrigation systems for all major stands of riparian vegetation along nearly 6 miles of river between Via Mallorca Bridge and Cal-Am's Scarlett well. To date, about 450,000 lineal feet of drip irrigation line have been installed under the auspices of the Interim Relief Program and Irrigation Program, totalling about 75 acres of riparian land under irrigation. Previously installed riparian irrigation systems have also been expanded and renovated.

The Carmel River Management Program, which began in 1984, entails extensive vegetative plantings and irrigation of willows associated with erosion control projects in several areas along the river. These projects prevent loss of riparian habitat due to erosion.

Due to the severity of the current drought, the Emergency Irrigation Program was expanded to cover much of the 2-mile reach from near the Carmel River lagoon to Rancho Canada. Another 130,000 feet of drip line are anticipated to irrigate vegetation in this reach in 1990, and four additional seasonal employees were hired to implement the expansion. A consulting agronomist was also hired in 1990 to assess the effectiveness of the District's riparian vegetation programs to date, as well as refine irrigation rates and application schedules.

These existing programs total about $287,000 annually, and entail 6-8 staffmembers (4 full-time, and 2-4 parttime or on an intermittent basis).

Description and Purpose

Once a Riparian Corridor Management Plan (RCMP) is developed, the next step is implementation of the plan to carry out the recommended projects in order of priority. Note that existing programs will become subcomponents of the RCMP.

Implementation and Facilities

The Riparian Corridor Management Program will consolidate and expand upon existing MPWMD programs. The principal new activities being proposed initially are to increase the areas of riparian vegetation under irrigation, especially during droughts, and to maintain adequate channel capacity by selective removal of vegetation from the channel bottom. Given the extent of this program, combined with existing vegetation and irrigation programs,