

## CHAPTER II

### DESCRIPTION OF THE PROJECT AND WATER SUPPLY OPTIONS, WATER DISTRIBUTION ALTERNATIVES, AND MONITORING/COMPLIANCE MECHANISMS

#### A. INTRODUCTION

The Monterey Peninsula Water Management District is responsible for managing the production and use of water by public and private water distribution systems in the Monterey Peninsula area. For the California-American Water Company (Cal-Am), the largest water distribution system within its jurisdiction, the District has adopted a Water Allocation Program establishing an annual water supply capacity limit and a formula for allocating water to jurisdictions within the Cal-Am service area. This Water Allocation Program is the framework within which the District issues water meter permits for new and expanded uses within the Cal-Am service area.

For purposes of this program EIR, the project is defined as the Monterey Peninsula Water Management District's Water Allocation Program for the Cal-Am system, which includes the following three components:

- A limit on how much total water may be produced annually from the Monterey Peninsula Water Resource System, and a limit on how much of this water can be produced by Cal-Am, given the need to protect instream fish and wildlife resources, protect riparian resources, provide for drought protection, and prevent seawater intrusion.
- A scheme for allocating Cal-Am water to each of the jurisdictions within the Cal-Am service area.
- A set of mechanisms for monitoring jurisdictional water use, ensuring jurisdictional compliance with the allocation scheme, and making adjustments to the allocation scheme over time.

For each of these components, the EIR analyzes several options or alternatives. This chapter describes these options and alternatives and the assumptions upon which they are based.

Following the introduction (Section A), Section B of this chapter describes the five options for an annual water supply capacity limit (i.e., annual production) for the Cal-Am system and corresponding options for total annual water production from the MPWRS. The five options for the Cal-Am System are:

- Water Supply Option I: 18,400 Acre-Feet
- Water Supply Option II: 20,000 Acre-Feet
- Water Supply Option III: 20,500 Acre-Feet
- Water Supply Option IV: 17,500 Acre-Feet
- Water Supply Option V: 16,700 Acre-Feet

Figure II-1 illustrates the five supply options for the Cal-Am system and the corresponding options for total annual water production from the MPWRS. "Non-Cal-Am production" shown in Figure II-1 includes water produced from the MPWRS by other water distribution systems subject to MPWMD regulation and by private wells, which the MPWMD does not regulate except during water supply emergencies.

For the purposes of assessing the impacts of various water supply options in this EIR, non-Cal-Am production is held constant at its pre-drought (1987) level. It is assumed that the nominal increased water consumption attributable to new development outside of the Cal-Am service area will be offset by water conservation in existing uses outside the Cal-Am service area, resulting in no net increase in non-Cal-Am water consumption or production.

It should be noted that the five water supply options are based on estimates of currently available supplies and do not include any additional water that may be made available by any proposed dam project or by the proposed Carmel Sanitary District-Pebble Beach Community Services District (CSD-PBCSD) wastewater reclamation project.

Section C describes six alternatives selected by the MPWMD Board for allocating water available under the various water supply options for the Cal-Am system among the eight jurisdictions within Cal-Am's service area. These six alternatives are:

- Water Distribution Alternative I: No Allocation
- Water Distribution Alternative II: Current Allocation
- Water Distribution Alternative III: Percentage of New Growth Allocation
- Water Distribution Alternative IV: Percentage of New Growth (with Adjusted Base) Allocation
- Water Distribution Alternative V: Percentage of Total Buildout Allocation
- Water Distribution Alternative VI: Current Consumption Plus Limited Expansion Allocation

Section D describes alternative mechanisms for the District to monitor water use by each jurisdiction and determine jurisdictional compliance with the Allocation Program.

Section E summarizes alternative approaches to allocating or conserving potential new water supplies and water freed up by conservation or reclamation.

Section F defines the statutorily required "no project" alternative.

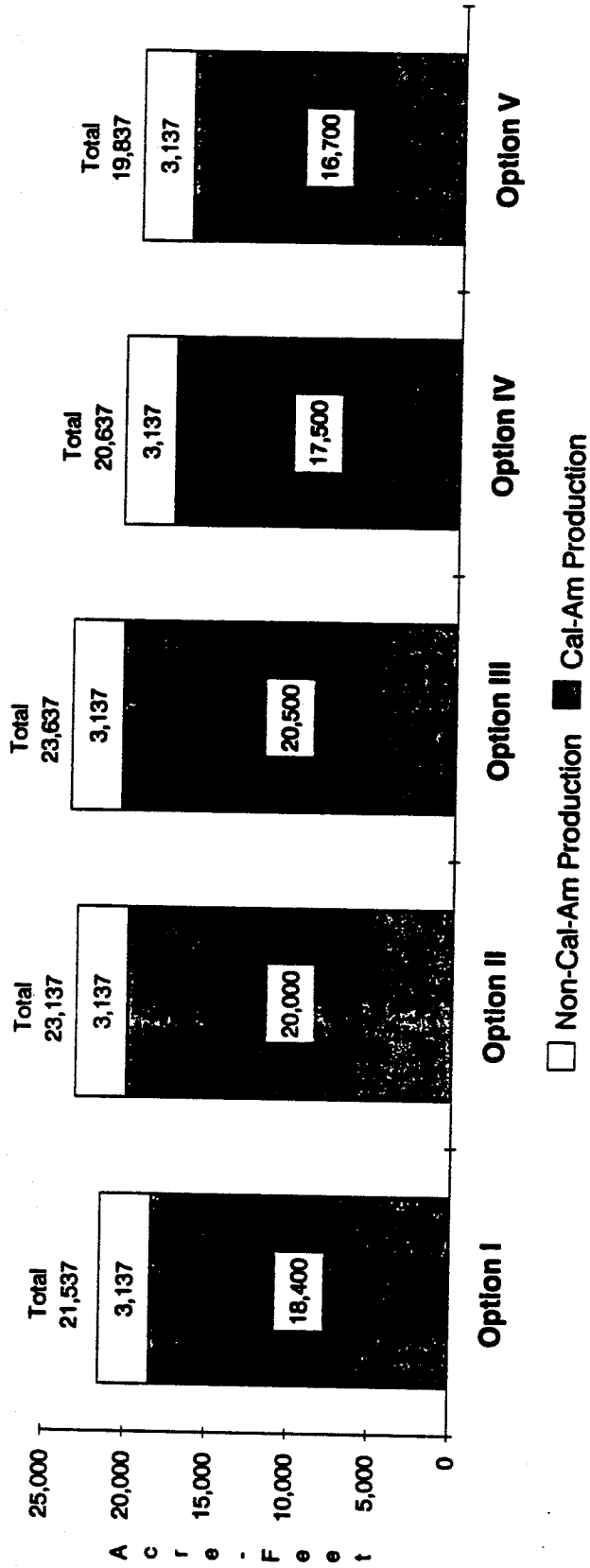
## **B. WATER SUPPLY OPTIONS**

The MPWMD estimates that as of June 30, 1987, total annual production from MPWRS amounted to 20,965 acre-feet. This included production of 17,828 acre-feet by the Cal-Am system, 778 acre-feet by other water distribution systems, and 2,359 acre-feet by private wells. For the purpose of this EIR, total annual production from MPWRS as of January 1, 1988, is estimated at 21,537 acre-feet. This includes estimated annual production of 18,400 acre-feet by the Cal-Am system as of January 1, 1988, 778 acre-feet by other water distribution systems as of June 30, 1987, and 2,359 acre-feet by private wells as of June 30, 1987.

### **1. Summary of Options**

The Board of Directors of the Monterey Peninsula Water Management District has selected the following five water supply options for the Cal-Am system and corresponding options for total annual water production from the MPWRS for analysis in this EIR:

**FIGURE II-1  
WATER SUPPLY OPTIONS  
In Acre-Feet Annually**



Water Supply Option I: 18,400 Acre-Feet (Current Production Level)

Under this option, total annual water production from MPWRS would be set at 21,537 acre-feet, and Cal-Am's water supply capacity limit would be set at the level required to maintain the estimated current (January 1, 1988) consumption level of 17,112 acre-feet (see discussion under Subsection B.2., "Assumptions and Methodology"). For water allocation purposes, the District assumes that, due to system losses and unmetered water consumption, actual water consumption represents only 93 percent of the water being produced by the Cal-Am system (see discussion under Subsection B.2., "Assumptions and Methodology"). With these losses factored in, the current production would equal about 18,400 acre-feet. For the purposes of this EIR, this serves as the "no project" option for water supply.

Water Supply Option II: 20,000 Acre-Feet (Current Water Supply Capacity)

Under this option, total annual water production from MPWRS would be set at 23,137 acre-feet and Cal-Am's annual water capacity limit would be set at 20,000 acre-feet. This is the District's current water supply capacity assumption for the Cal-Am system and has been used since 1981 as the basis for the District's Water Allocation Program. It is based on a rough estimate made by the California Public Utilities Commission in the early 1980s of the amount of water that could safely be produced by the Cal-Am system in a normal water year, given commitments to other water systems within MPWMD's jurisdiction. For water allocation purposes, the District assumes that only 18,600 of the 20,000 acre-feet produced annually by the Cal-Am system would actually be available to users within Cal-Am's service area due to system losses and unmetered consumption (estimated at seven percent). For the purposes of this EIR, the District has selected this option as the "proposed" water supply option.

Water Supply Option III: 20,500 Acre-Feet (Modified Water Supply Capacity Assumption)

Under this option, total water production from MPWRS would be set at 23,637 acre-feet and Cal-Am's annual water supply capacity limit would be set at 20,500 acre-feet. This reflects a modified estimate of the amount of water that could safely be produced by the Cal-Am system, given commitments to other water systems within MPWMD's jurisdiction. This option was selected by the District Board to analyze the effects of a capacity assumption slightly higher than the current capacity assumption. For water allocation purposes, the District assumes that only 19,065 of the 20,500 acre-feet produced annually by the Cal-Am System would actually be available to users within Cal-Am's service area due to system losses and unmetered consumption (estimated at seven percent).

Water Supply Option IV: 17,500 Acre-Feet (Minimum Acceptable Fish Protection Production Level)

Under this option, total annual water production from MPWRS would be set at 20,637 acre-feet and Cal-Am's annual water supply capacity limit would be set at 17,500 acre-feet. This supply option was identified in the Draft EIR as the highest water production level that would still maintain a viable steelhead run in the Carmel River and was based on analysis using the Carmel Valley Simulation Model (CVSIM) (see discussion under "Assumptions and Methodology"). For water allocation purposes, the District assumes that only 16,275 of the 17,500 acre-feet produced annually by the Cal-Am system would actually be available to users within Cal-Am's service area due to system losses and unmetered consumption (estimated at seven percent). It is assumed that this level of production could be achieved through conservation measures already being implemented by the District. This is the only water supply option that meets the dual objectives

of adequately maintaining the steelhead population and providing additional water for growth (assuming a baseline production level of 16,700 acre-feet).

**Water Supply Option V: 16,700 Acre-Feet (Least Environmentally Damaging Production Level)**

This is the lowest water supply option analyzed in this EIR. Under this option, total annual water production from MPWRS would be set at 19,837 acre-feet and Cal-Am's annual water supply capacity limit would be set at 16,700 acre-feet. This option assumes that the District is able to meet its goal of a nine-percent reduction in average per meter consumption in existing development by the end of 1990 (see discussion under Subsection B.2., "Assumptions and Methodology"). Thus, this option would set Cal-Am's annual water supply capacity limit at nine percent lower than Supply Option I (18,400 acre-feet). Actually, a nine percent reduction from the current production level (18,400 acre-feet) works out to 16,744 acre-feet; for the purpose of labelling Water Supply Option V and for the purposes of assessing production impacts (as opposed to consumption impacts), this has been rounded to 16,700 acre-feet. For the purposes of calculating jurisdictional water allocations under the various distribution alternatives in this chapter and analyzing the distribution impacts in Chapter V, the EIR uses the more precise figure of 16,744 acre-feet. For water allocation purposes, the District assumes that only 15,572 of 16,744 acre-feet produced annually by the Cal-Am system would actually be available to users within Cal-Am's service area due to system losses and unmetered consumption (estimated at seven percent).

These five water supply options provide the basis for analyzing the water production-related impacts on the MPWRS. However, to analyze the impacts of the consumption or use of this water (e.g., growth, traffic, air quality, fiscal effects) and to establish a basis for the allocation of Cal-Am water among the eight jurisdictions within Cal-Am's service area, the amount of net new water made available under each supply option must be quantified. To determine net new water available for growth, each of the five supply options is applied to the following two sets of assumptions concerning baseline production/consumption:

**Production/Consumption Level A (Current)**

Total Production from MPWRS: 21,537 acre-feet  
Total Cal-Am Production: 18,400 acre-feet  
Total Cal-Am Consumption: 17,112 acre-feet

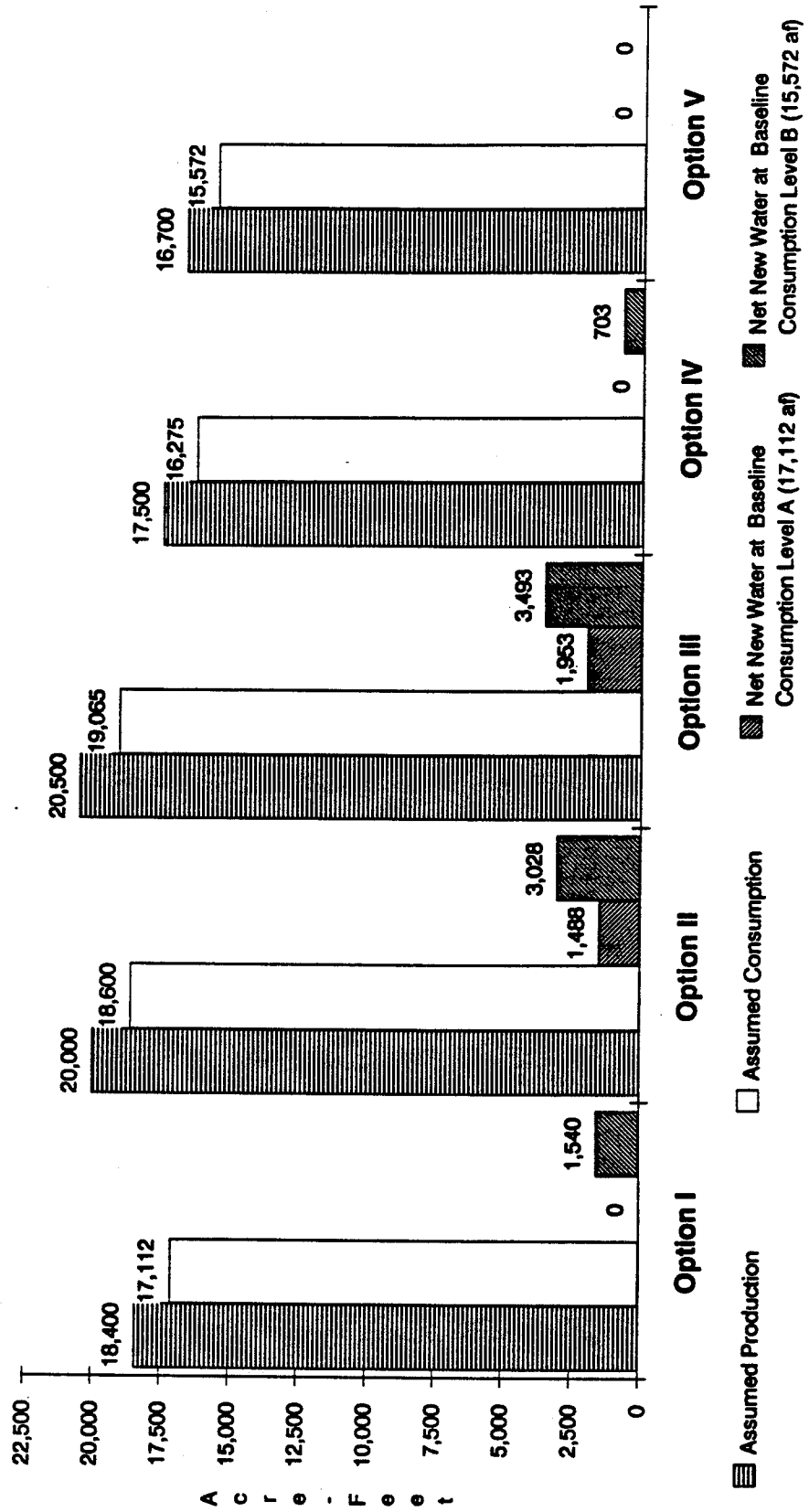
**Production/Consumption Level B (Current with Nine Percent Conservation Reduction)**

Total Production from MPWRS: 19,837 acre-feet  
Total Cal-Am Production: 16,700 acre-feet (16,744 acre-feet)  
Total Cal-Am Consumption: 15,572 acre-feet

The results are depicted in Figure II-2.

At assumed Baseline Production/Consumption Level A, there would be no additional water available for growth or allocation under Supply Options I (18,400 acre-feet), IV (17,500 acre-feet), or V (16,700 acre-feet). There would, however, be an additional 1,488 acre-feet of water available for growth and allocation under Supply Option II (20,000 acre-feet), and an additional 1,953 acre-feet available under Supply Option III (20,500 acre-feet).

**FIGURE II-2**  
**CAL-AM WATER SUPPLY OPTIONS**  
**AND NET NEW WATER AVAILABLE**  
**In Acre-Feet Annually**



At assumed Baseline Production/Consumption Level B, there would be no additional water available for growth or allocation under Supply Option V (16,700 acre-feet). However, there would be an additional 1,540 acre-feet of water available for growth and allocation under Supply Option I (18,400 acre-feet), an additional 3,028 acre-feet available under Supply Option II (20,000 acre-feet) an additional 3,493 acre-feet available under Supply Option III (20,500 acre-feet), and an additional 703 acre-feet available under Supply Option IV (17,500 acre-feet).

## **2. Assumptions and Methodology**

This section describes the assumptions and methodology used in developing the water supply options.

### **Current Production/Consumption**

Current production/consumption is one of the two assumed baseline production/consumption levels (i.e., Baseline Production/Consumption Level A), and current production is used as Water Supply Option I. The current total Cal-Am consumption (the water delivered to users) of 17,112 acre-feet has been estimated by adding water sales reported by Cal-Am for calendar year 1987 (16,947.40 acre-feet) and estimated water used by projects approved during calendar year 1987 (164.17 acre-feet) (see Table II-4). The current total Cal-Am production of 18,400 acre-feet was estimated by dividing total Cal-Am consumption by 93 percent to reflect system losses and unmetered consumption (see later discussion under "System Losses and Unmetered Consumption").

### **Current Production/Consumption with Nine Percent Conservation**

Current production/consumption with nine percent conservation is the second of two assumed baseline production/consumption levels (i.e., Baseline Production/Consumption Level B), and current production with nine percent conservation is used as Water Supply Option V. These have been calculated simply by multiplying current production (18,400 acre-feet) and current consumption (17,112 acre-feet) by 91 percent. Current production/consumption with nine percent conservation assumes that the District's goal of a nine percent reduction in average per meter consumption in existing development by the year 1990 will be achieved. This goal was adopted by the MPWMD Board on March 9, 1987, and is being implemented primarily through District Ordinance No. 30 (effective July 13, 1987), which has been incorporated into the District's *Rules and Regulations* as Regulation XIV. Regulation XIV required the retrofitting within 90 days of existing hotels and motels with low-water use plumbing fixtures, and requires the retrofitting of all existing residential, commercial, industrial, and public structures with low-water use plumbing fixtures at the time of change in ownership or use. In addition, remodeling of or additions to residential, commercial, industrial, and public structures that add or change bathroom plumbing fixtures and/or increase floor area by 20 percent or more trigger a requirement to use low-water use plumbing fixtures, including retrofitting existing plumbing fixtures. Further, the regulation requires that all commercial water users who do not already have low water-use plumbing fixtures and receive a water conservation kit from the District must install such kits within 30 days of receiving them. By the summer of 1988, the District had distributed a water conservation kit to virtually every water customer within the district. The regulation provides for limited exceptions to these requirements.

In addition to adopting and implementing these water conservation regulations, the District, along with other public agencies in Monterey County, is undertaking a broad range of conservation programs within the framework of the *1989 Water Conservation Plan for Monterey County*. These

programs can be generally grouped under the following headings: public education and awareness; water management; regulations; and urban water reclamation and reuse.

#### System Losses and Unmetered Consumption

"System losses and unmetered consumption" is the difference between the amount of water supplied to a system (i.e., water production) and the amount of water sold as metered consumption. The difference, which is attributable largely to leakage, fire flows, and meter error, is usually stated as a percentage of total water production. Estimated Cal-Am system losses between 1978 and 1988 averaged about eight percent per year (see Table III-12). But, because these losses have been declining over time due to replacement of faulty water meters and other system improvements, the District has selected a value of seven percent for planning purposes. For each water supply option, the District therefore assumes that only 93 percent of the estimated total system production will actually be available for consumption.

#### Water Supply Option IV (Minimum Acceptable Fish Protection Production Level)

In the Draft EIR, the "least environmentally damaging" water supply option was defined as the highest level of water production (with specific mitigation programs assumed) for the Cal-Am system which would maintain a viable steelhead run in the Carmel River. Because an even lower production level option (16,700 acre-feet (Water Supply Option V)) has been included in the Final EIR, Option IV has been relabeled the "Minimum Acceptable Fish Protection Production Level" and Option V has been identified as the "Least Environmentally Damaging Production Level."

To identify the production level for Water Supply Option IV, the District and its Consultants examined simulated monthly flows in the Carmel River between 1902 and 1987 and compared these simulated flows with estimates of the flows needed to support the steelhead life cycle in the Carmel River. The simulated flow information for this analysis was derived from the Carmel Valley Simulation Model (CVSIM), which is described in Appendix A. The District and its Consultants then analyzed the effect that Cal-Am production levels ranging from 10,000 to 20,500 acre-feet per year would have on the spawning of adults, the downstream spring emigration of smolts, and the rearing of juveniles during the summer. The initial conclusion was that Cal-Am production of more than 17,500 acre-feet per year would cause a dramatic increase in the number and extent of dry spells between Robles del Rio and the Narrows, thereby interrupting the steelhead life cycle so as to reduce the production of juvenile steelhead from the lower Carmel River to remnant levels.

This 17,500 acre-foot production level, however, assumes that the District is successfully implementing a program to collect and transport smolts (juvenile steelhead that have adapted to seawater) past areas of low flow. The District has made a commitment to such a program as part of the *Interim Relief Plan* adopted by the District Board in September 1988 to lessen the environmental impacts of water extraction from the Carmel River basin. The 17,500 acre-foot production level also assumes that the District would implement an additional program to prevent stranding of early fall and winter migrants.

Water Supply Option IV is the only one of the five supply options that meets the dual objectives of adequately maintaining the steelhead population and providing additional water for growth (assuming a baseline production level of 16,700 acre-feet).



## **C. WATER DISTRIBUTION ALTERNATIVES**

One of the District's principal management responsibilities with respect to the Cal-Am system is determining how water should be allocated among those jurisdictions within the Cal-Am service area that exercise control over land use. Under the District's current Allocation Program, the following seven jurisdictions currently have water allotments:

- City of Carmel-by-the-Sea
- City of Del Rey Oaks
- City of Monterey (excluding Monterey Research Park/Ryan Ranch)
- City of Pacific Grove
- City of Sand City
- City of Seaside (excluding Fort Ord and the area within the Seaside Municipal Water District)
- County of Monterey (including the unincorporated communities of Pebble Beach, Carmel Highlands, and Carmel Valley, but excluding Carmel Valley Village, Cachagua, Carmel Uplands, and the Highway 68 corridor)

For the purposes of this EIR and the revised Water Allocation Program which will be adopted following certification of this EIR, the District Board has chosen to add the Monterey Peninsula Airport District (MPAD) as a jurisdiction entitled to a discrete allocation. Like the Airport District, there are several other agencies within Cal-Am's service area that control land use within their boundaries which could also be granted separate water allocations. None of these, however, has asked for a separate allocation, and, therefore, they have been included in the allocation for the County or the city in which they are located.

This section first summarizes the water distribution alternatives to be analyzed and the rationale for their selection, then outlines the assumptions and methodology used in determining the allocations under the different alternatives, and finally explains how the various allocations were calculated.

### **1. Summary of Alternatives**

For analysis in this EIR, the District Board has selected the following six water distribution alternatives:

#### **Water Distribution Alternative I: No Allocation**

Under this alternative, water would be distributed to new development on a first-come, first-served basis or based on a priority system that favors particular types of development without regard to jurisdictional boundaries. This alternative differs from the other five in that no jurisdiction would have its own allotment. Instead, each jurisdiction could approve new development until total consumption reached the Cal-Am system capacity limit, at which point no additional water permits would be issued. The rationale for this alternative is to examine the impacts of not establishing specific allotments for each of the jurisdictions.

#### **Water Distribution Alternative II: Current District Allocation**

Each jurisdiction would be allocated water according to MPWMD's current distribution formula, except that the formula would be adjusted to reflect the creation of a separate allocation for the Monterey Peninsula Airport District. Each jurisdiction would be allocated water according to its percentage share of total buildout potential within the Cal-Am service area as calculated in 1981.

(i.e., adjusted 1979 consumption plus water for projected growth). This alternative establishes a specific allotment for each jurisdiction. It uses the same formula as Water Distribution Alternative V, but the assumptions as to "base year consumption" and "water for projected growth" are different from Alternative V. The rationale for this alternative is to examine the impacts of readopting the current allocation formula. The philosophy for the underlying formula is to allot water to each jurisdiction according to the relative share of future consumption that would be set by the market as if there was no water supply constraint. By including both "base consumption" and "water for projected growth" in the jurisdictional total prior to division by the system total, this water distribution alternative results in allotments that are proportional to future demand. This formula is dissimilar to Water Distribution Alternatives III and IV in that no priority is set for the base or components of water for projected growth. This formula differs from Water Distribution Alternative VI in that it divides a given system consumption among the jurisdictions instead of providing a specific amount of new water to each jurisdiction for select future needs.

#### Water Distribution Alternative III: Percentage of New Growth Allocation

Each jurisdiction would be allocated water according to its percentage share of the total new potential residential, commercial, and industrial growth in the Cal-Am service area. Growth potential estimates for each jurisdiction were prepared for MPWMD by EIP Associates in July 1988. This alternative establishes a specific allotment for each jurisdiction. It uses the same concept as Water Distribution Alternative IV, but water for "vacant lots of record" is included in water for growth, rather than in each jurisdiction's "base consumption." The rationale for this alternative is to examine the impacts of a formula which guarantees "base consumption" and provides a relative proportion of the water left over for projected growth as a function of each jurisdiction's share of total "water for projected growth." The philosophy for the underlying formula is to allot equal shortfalls in terms of new growth potential. This formula is dissimilar to Water Distribution Alternatives II and V in that a priority is set to guarantee "base consumption" for each jurisdiction. This formula differs from Water Distribution Alternative VI in that it divides a given system consumption among the jurisdictions instead of providing a specific amount to each jurisdiction for select future needs.

#### Water Distribution Alternative IV: Percentage of New Growth (With Adjusted Base) Allocation

This alternative is similar to Alternative III, except that water for projects approved/completed in 1987 and for vacant lots-of-record is included in each jurisdiction's base allocation. This alternative establishes a specific allotment for each jurisdiction. The rationale for this alternative is to examine the impacts of a formula which guarantees water for "base consumption" and "lots of record", with the residual disbursed as a function of the relative share "water for projected growth" minus water for "lots of record." The philosophy for the underlying formula is to allot equal shortfalls in terms of new non-lots of record growth potential. This formula is dissimilar to Water Allocation Alternatives II and V in that a priority is set to guarantee "base consumption" for each jurisdiction. This formula differs from Water Distribution Alternative VI in that it divides a given system consumption among the jurisdictions, instead of providing a specific amount to each jurisdiction for select future needs. For purposes of this EIR, the District Board has selected this alternative as the "proposed" water distribution alternative.

#### Water Distribution Alternative V: Percentage of Total Buildout Allocation

Each jurisdiction would be allocated water according to its percentage share of total buildout potential within the Cal-Am service area. (i.e., base year consumption plus water for approved/completed 1987 projects and for potential new growth). This alternative is similar to

Water Distribution Alternative II, except that current "base consumption" and "water for projected growth" are used instead of the 1981 assumptions. This alternative establishes a specific allotment for each jurisdiction. The rationale for this alternative is to examine the impacts of the historic allocation formula operated with current assumptions. The philosophy for the underlying formula is to allot water to each jurisdiction according to the relative share of future consumption that would be set by the market as if there was no water supply constraint. By including both "base consumption" and "water for projected growth" in the jurisdictional total prior to division by the system total, this water distribution alternative results in allotments that are proportional to future demand. This formula is dissimilar to Water Distribution Alternatives III and IV in that no priority is set for the base or components of water for projected growth. This formula differs from Water Distribution Alternative VI in that it divides a given system consumption among the jurisdictions instead of providing a specific amount of new water to each jurisdiction for select future needs.

#### Water Distribution Alternative VI: Current Consumption Plus Limited Expansion

Each jurisdiction would be allocated water based on its current level of consumption plus water for vacant lots of record and a limited amount of water for low and moderate income housing and public projects. Although this alternative establishes a specific allotment for each jurisdiction, it differs from Water Distribution Alternatives II through V in that it does not divide a given system consumption among the jurisdictions. Instead, this alternative provides a specific amount of water to each jurisdiction for select future needs. The philosophy for the underlying formula is that water should only be allotted for specific land uses of high societal value. The result is an absolute allotment for each jurisdiction, regardless of the amount of water available for allocation. Thus, in cases where the total allocation under Alternative VI is higher than the amount of water available, this alternative is effectively not viable.

To determine how much water would be made available to each jurisdiction within the Cal-Am service area, these six water distribution alternatives are applied to the five water supply options based on two different sets of assumptions concerning baseline production/consumption:

#### **A. Current Production/Consumption**

Total Cal-Am Production: 18,400 acre-feet  
Total Cal-Am Consumption: 17,112 acre-feet

#### **B. Current Production/Consumption with Nine Percent Conservation**

Total Cal-Am Production: 16,700 acre-feet (16,744 acre-feet)  
Total Cal-Am Consumption: 15,572 acre-feet

Because of the nature of some of the supply options and the distribution alternatives, only 26 of the total possible combinations of supply options, distribution alternatives, and assumed baseline production/consumption levels result in supply/distribution scenarios that would provide discrete and quantifiable amounts of additional water to the eight affected jurisdictions. These are shown in Table II-1. The table references in Table II-1 refer to the tables in Subsection C.3 of this chapter showing the water allocation calculations (i.e., Tables II-8 to II-12).

**TABLE II-1**

**SUPPLY/DISTRIBUTION SCENARIOS**

**Baseline Production/Consumption Level A  
(18,400 Acre-Feet/17,112 Acre-Feet)**

Distribution Alternative	Table Reference	Supply Option				
		I 18,400	II 20,000	III 20,500	IV 17,500	V 16,700
I	--	--	--	--	--	--
II	II-8	O	X	X	O	O
III	II-9	O	X	X	O	O
IV	II-10	O	X	X	O	O
V	II-11	O	X	X	O	O
VI*	II-12	O	X	X	O	O

**Baseline Production/Consumption Level B  
(16,700 Acre-Feet/15,572 Acre-Feet)**

Distribution Alternative	Table Reference	Supply Option				
		I 18,400	II 20,000	III 20,500	IV 17,500	V 16,700
I	--	--	--	--	--	--
II	II-8	X	X	X	X	O
III	II-9	X	X	X	X	O
IV	II-10	X	X	X	X	O
V	II-11	X	X	X	X	O
VI*	II-12	X	X	X	X	O

X= New water available for allocation

O= No new water

--= No jurisdictional water allocation

\*Because of the nature of Distribution Alternative VI, there is actually only one allocation scenario under each assumed baseline consumption/production level.

As shown in Table II-1, at the current production level of 18,400 acre-feet and consumption level of 17,112 acre-feet there would be no additional water to allocate under Supply Options I (18,400 acre-feet), IV (17,500 acre-feet), or V (16,700 acre-feet). At the production level of 16,700 acre-feet and consumption level of 15,572 acre-feet (which assume nine percent conservation) there would be no additional water to allocate under Supply Option V (16,700 acre-feet). Distribution Alternative I by definition would not establish a formula for allocating water to jurisdictions, but

would provide for water use on a first-come, first-served basis or based on a priority system that favors particular types of development without regard to jurisdictional boundaries. Distribution Alternative VI because of its nature results in only one allocation scenario under each baseline production/consumption level.

For each of the 26 supply/distribution scenarios noted in Table II-1, the District and its Consultants calculated the amount of water that would be made available to each jurisdiction. The tables in Subsection C.3 (Tables II-8 to II-12) of this chapter show the *total* amount of water that would be available to each jurisdiction and the amount of *net new water* that would be available to each jurisdiction under each of the 26 supply/distribution scenarios.

In developing these calculations, the District and its Consultants had to make numerous assumptions and rely on information supplied by the affected jurisdictions, as described in the following subsection.

## **2. Assumptions and Methodology**

This section presents the basic assumptions and methodology used in developing the water allocations for each distribution alternative.

### **Base Allocations**

Under Alternatives III, IV, and VI, each jurisdiction's water allocation includes a base allocation and an allocation for future growth. The size of the base allocation varies by alternative and by the assumed baseline production/consumption level as follows:

#### **Baseline Production/Consumption Level A (18,400 acre-feet/17,112 acre-feet)**

Under Alternative III, each jurisdiction's base allocation is equal to its *adjusted* 1987 metered sales (Table II-2). Under Alternative IV, each jurisdiction's base allocation is equal to its *adjusted* 1987 metered sales (Table II-2) plus water attributable to projects completed or approved in 1987 (Table II-4) and water for vacant lots-of-record (see Table II-5). Under Alternative V, each jurisdiction's base allocation is equal to its 1987 *adjusted* metered sales (see Table II-2) plus water attributable to projects completed or approved in 1987 (see Table II-4).

Alternatives I, II, and V provide for no base allocation. For Alternatives II and V, water is allocated to jurisdictions based on each jurisdiction's share of the *total* water available to all jurisdictions.

#### **Baseline Production/Consumption Level B (16,700 acre-feet/15,572 acre-feet)**

The base allocations for each alternative under assumed Baseline Production/Consumption Level B (16,700 acre-feet/15,572 acre-feet) are the same except that the components of the base allocation (i.e., unadjusted metered sales, adjusted metered sales, projects completed or approved in 1987) have been adjusted to reflect nine percent less water use based on assumed conservation.

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**TABLE II-2****1987 METERED SALES AND ADJUSTED METERED SALES  
(In Acre-Feet)**

Jurisdiction	1987 Sales		1987 Sales With 9% Conservation	
	Unadjusted <sup>1</sup>	Adjusted <sup>2</sup>	Unadjusted <sup>4</sup>	Adjusted <sup>4</sup>
Carmel-by-the-Sea	1,001.46	1,018.49	911.33	926.83
Del Rey Oaks	198.13	201.50	180.30	183.37
City of Monterey	5,556.30	5,650.81	5,056.23	5,142.24
Pacific Grove	2,154.59	2,191.24	1,960.68	1,994.03
Sand City	92.06	93.63	83.77	85.20
Seaside	2,252.04	2,290.35	2,049.36	2,084.22
Monterey County	5,674.05	5,770.57	5,163.39	5,251.21
MPAD <sup>3</sup>	18.77	19.09	17.08	17.37
<b>Total</b>	<b>16,947.40</b>	<b>17,235.68</b>	<b>15,422.13</b>	<b>15,684.46</b>

<sup>1</sup>Metered sales for calendar year 1987 as reported by the California American Water Company

<sup>2</sup>Estimate of increased water use by current customers due to intensification of existing uses; based on the following formula: 0.243 percent increase per year x 7 years (1988-1995)

<sup>3</sup>18.34 acre-feet have been deducted from Monterey County's gross metered sales, and 0.43 acre-feet have been deducted from the City of Monterey's gross metered sales.

<sup>4</sup>Assumes 9 percent conservation per meter by 1990.

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The first column in Table II-2 shows metered sales for calendar year 1987 as reported by Cal-Am. The second column shows an adjusted 1987 sales figure which has factored in a 0.243 percent annual increase. This adjustment reflects an assumption, based on historical data, that actual water use by current customers will increase slightly each year during the years 1988 through 1995 (when additional water supplies are expected to be available) due to expansions and intensification of existing uses. The figures in the second column were thus calculated by multiplying 1987 metered sales by 1.017 (i.e., 0.00243 x 7 years (1988-1995)). (See Appendix B for an analysis of this intensification factor.)

Columns three and four simply adjust the figures in columns one and two by nine percent to reflect assumed conservation.

#### Water Required for Potential New Growth

In developing the calculations for Alternatives III, IV, and V, the amount of water needed to support potential new growth in each jurisdiction within the Cal-Am service area had to be estimated by applying water use factors to estimates of new development potential for each jurisdiction. Estimates of new development potential are contained in a report titled *Estimates of Housing and Employment at Buildout Within the Monterey Peninsula Water Management District*, prepared by EIP Associates for the MPWMD in July 1988. EIP's estimates are

calculations of the total employment and housing development that could legally occur within the Cal-Am service area under current general plans, zoning, and other applicable land use policies, if (1) all current general plans, zoning, and applicable land use policies were to remain unchanged, and (2) water availability did not constrain development. These are estimates of maximum buildout potential as of January 1, 1988, under current policies, *not* forecasts of the most likely level of ultimate development. Alternative II is not affected by these 1988 estimates of new development potential since it is based on development projections for the Year 2000 produced in 1981 as part of the original Allocation Program.

The estimates of potential new growth prepared by EIP Associates were converted to water demand by applying water use factors provided by MPWMD staff. These factors are based on historical records of water use but have been adjusted down by nine percent to reflect assumed water conservation. These factors are as follows: 0.228 acre-feet per single-family unit in incorporated areas; 0.379 acre-feet per single-family unit in unincorporated areas (reflecting higher water use due to larger lots and warmer weather) 0.154 acre-feet for each multi-family unit; 0.106 acre-feet for each job created; 0.137 acre-feet per hotel room; and 2.566 acre-feet per golf course employee. Table II-3 shows the amount of water needed to satisfy each jurisdiction's potential new growth.

One of the methodological limitations in Table II-3 is the use of the same set of water use multipliers for new development in all jurisdictions (with the exception of unincorporated Monterey County, for which a different multiplier is used for single-family homes). In fact, water use in residential projects varies by jurisdiction depending on average housing unit size, amount of landscaping, population per household, the type and number of water-using fixtures and appliances, and water conservation features required in new development. Water use in non-residential forms of development also varies from jurisdiction to jurisdiction.

TABLE II-3

**WATER NEEDED TO SATISFY POTENTIAL NEW GROWTH  
WITHIN CAL-AM'S SERVICE AREA  
(in Acre-Feet)**

Jurisdiction	Single-Family <sup>3</sup>		Multi-Family <sup>4</sup>		Employment <sup>5</sup>		Hotel <sup>6</sup>		Golf Course <sup>7</sup>		Total	
	DUs <sup>2</sup>	Water	DUs <sup>2</sup>	Water	Jobs	Water	Rooms	Water	Employees	Water	Water	% of Total
Carmel-by-the-Sea	379	86.41	506	77.92	1,409	149.35	-	-	-	-	313.69	5.19%
Del Rey Oaks	3	0.68	151	23.25	135	14.31	164	22.47	-	-	60.72	1.00%
Monterey	(313)	(71.36)	5,089	783.71	11,754	1,245.92	689	95.76	-	-	2,054.03	33.97%
Pacific Grove	232	52.90	2,661	409.79	1,188	125.93	169	23.15	-	-	611.77	10.12%
Sand City	-	-	2,617	403.02	3,194	338.56	1,485	204.82	-	-	946.40	15.65%
Seaside	295	67.26	614	94.56	3,920	415.52	500	68.50	-	-	645.84	10.68%
Monterey County	2,717	1,029.74	279	42.97	398	42.19	490	67.13	45	115.47	1,237.50	21.46%
MPAD	-	-	-	-	1,100	116.60	-	-	-	-	116.60	1.93%
<b>Total</b>	<b>3,313</b>	<b>1,165.63</b>	<b>11,917</b>	<b>1835.22</b>	<b>23,088</b>	<b>2,448.39</b>	<b>3,517</b>	<b>481.39</b>	<b>45</b>	<b>115.47</b>	<b>6,046.54</b>	<b>100.00%</b>

<sup>1</sup> Reflects development potential within Cal-Am's service area as of January 1, 1988

<sup>2</sup> DUs = Dwelling units

<sup>3</sup> 0.228 acre-feet per unit in incorporated areas; 0.379 acre-feet per unit in unincorporated areas

<sup>4</sup> 0.154 acre-feet per unit

<sup>5</sup> 0.106 acre-feet per employee; excludes hotel and golf course employment

<sup>6</sup> 0.137 acre-feet per room

<sup>7</sup> 2.566 acre-feet per employee

Sources: EIP Associates, *Estimates of Housing and Employment at Buildout Within the Monterey Peninsula Water Management District*, July 1988; Monterey Peninsula Water Management District, September 1989



Water Use by Projects Approved/Completed in 1987

To estimate water use for projects approved and/or completed during the 1987 calendar year, which is used in the calculation of allocations under Water Distribution Alternatives IV, V, and VI, the District and its consultants compiled a list of water meter permits issued during the year. Each permit application was reviewed and water consumption for each project was calculated. For residential projects, fixture unit counts were converted into acre-foot water use equivalents and, for industrial and commercial projects, acre-foot water use estimates were taken directly from the applications. Table II-3 shows the acre-foot water use estimates for these projects by jurisdiction. The last column shows the same figures appearing in the second column adjusted to reflect assumed conservation of nine percent.

**TABLE II-4**

**ESTIMATED WATER REQUIREMENTS FOR PROJECTS COMPLETED/APPROVED IN 1987  
By Jurisdiction**

<b>Jurisdiction</b>	<b>Acre Feet</b>	<b>Acre Feet With 9% Conservation</b>
Carmel-by-the-Sea	2.51	2.28
Del Rey Oaks	0.68	0.62
City of Monterey	40.91	37.23
Pacific Grove	9.31	8.47
Sand City	0.27	0.25
Seaside	22.24	20.24
Monterey County	88.25	80.31
MPAD	--	--
<b>Total</b>	<b>164.17</b>	<b>149.39</b>

Source: Monterey Peninsula Water Management District; Mintier & Associates

One of the methodological limitations in Table II-4 concerns the date on which these projects were completed and began to use water. Some projects were completed early in the year and thus used some of the water accounted for in the 1987 metered sales figures in Table II-2. On the other hand, some were completed late in the year and used little, if any, of the water attributed to them in Table II-4. For simplicity's sake, Table II-4 assumes that all projects were completed by January 1, 1987, and thus used water for the entire calendar year 1987.

Vacant Lots-of-Record

The estimates of vacant lots-of-record are based on information provided by each jurisdiction in response to a letter request from Mintier & Associates, dated March 30, 1988, and a follow-up letter from MPWMD staff, dated June 15, 1988. Appendix C summarizes the information provided by each jurisdiction.

For the purposes of this EIR, a vacant lot/parcel has been defined as any legally created lot of any size that contains no habitable structure.

For a number of reasons, Mintier & Associates' initial request yielded widely disparate responses from the affected jurisdictions. One explanation for the disparity in the quality of responses was the level of information currently available to the respective agencies. Some simply had kept closer track of the land use within their boundaries than others and, therefore, had more precise information on developed and vacant lots.

There also was some confusion concerning the distinction between "lots-of-record" and "parcels." Initially, some agencies had tabulations according to one or the other, and some had them by both. This distinction is important since a parcel identified by a single assessor's parcel number in some cases includes more than one lot under a single ownership. After reviewing the results of Mintier & Associates' initial research, the District Board decided to use vacant *lots* (not parcels as defined by the County Assessor's Office) as the basis for determining buildout capacity of vacant land. At the direction of the Board, those jurisdictions which had initially submitted information only on vacant parcels were given the opportunity to submit supplemental information on vacant lots. Accordingly, MPWMD staff mailed a follow-up request on June 15, 1988, allowing those jurisdictions to further refine their estimates. MPWMD's follow-up request was specifically intended to put all jurisdictions on equal footing by allowing those jurisdictions initially unable to provide lot-based totals (Cities of Monterey and Seaside and Monterey County) to conduct further research to refine their data. Both cities responded to the follow-up request with refined data, but the County did not.

It should be noted that the information provided by the jurisdictions did not reflect any judgement as to the lots' potential for development. In some cases, the lots are unbuildable due to natural constraints (e.g., topography) or legal restrictions (e.g., substandard parcel size).

Table II-5 lists the totals used by the District and its Consultants as well as acre-foot water use equivalents, based on the assumption that each vacant lot can accommodate the equivalent of one dwelling unit with an assumed annual water demand of 0.228 acre-feet for lots in incorporated areas and 0.379 acre-feet for lots in unincorporated areas. (The water use factors assume that future water use in new development will be nine percent lower than historical averages due to conservation.) These water use assumptions have been used for base allocation purposes as a "minimum guarantee" of water for each vacant lot, even though lots may be planned or zoned for a more intense use (e.g., multi-family, commercial, industrial).

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**TABLE II-5**

**ESTIMATED WATER REQUIREMENTS FOR VACANT LOTS-OF-RECORD  
By Jurisdiction**

<b>Jurisdiction</b>	<b>Number of Lots<sup>1</sup></b>	<b>Acre-foot Equivalent<sup>2</sup></b>
Carmel-by-the-Sea	155	35.34
Del Rey Oaks	8	1.82
City of Monterey	724	165.07
Pacific Grove	268	61.10
Sand City	1,001	228.23
Seaside	765	174.42
Monterey County	925	350.58
MPAD	--	--
<b>Total</b>	<b>3,846</b>	<b>1,016.56</b>

<sup>1</sup>Mintier & Associates, based on information provided by each jurisdiction

<sup>2</sup>Assumes the equivalent of one dwelling unit per lot creating annual water demand of 0.228 acre-feet per lot in incorporated areas and 0.379 acre-feet per lot in unincorporated areas

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**Water for Low- and Moderate-Income Housing and Public Projects**

Under Alternative VI, water for future growth includes an allocation for low- and moderate-income housing and for public projects, as well as for vacant lots of record. Each jurisdiction's allocation for low- and moderate-income housing is equal to the water needed for five percent of the total potential residential growth for that jurisdiction (Table II-6). Each jurisdiction's allocation for public projects is equal to five percent of total Cal-Am sales to public authorities in that jurisdiction in 1987. Cal-Am sales to public authorities in 1987 are shown in Table II-7.

**TABLE II-6**

**WATER NEEDED FOR DEVELOPMENT OF LOW- AND MODERATE-INCOME HOUSING**

Jurisdiction	Total Units <sup>1</sup>	Total Water <sup>2</sup>	Low/Mod Units <sup>3</sup>	Low/Mod Water <sup>4</sup>
Carmel-by-the Sea	885	164.34	44	8.22
Del Rey Oaks	154	23.94	8	1.20
City of Monterey	4,776	712.34	239	35.62
Pacific Grove	2,893	462.69	145	23.13
Sand City	2,617	403.02	131	20.15
Seaside	909	161.82	45	8.09
Monterey County	2,996	1,072.71	150	53.64
MPAD	--	--	--	--
<b>Total</b>	<b>15,230</b>	<b>3,000.85</b>	<b>762</b>	<b>150.04</b>

<sup>1</sup>Total of Multi-Family and Single-Family units from Table II-3.

<sup>2</sup>Total of Multi-Family and Single-Family water from Table II-3.

<sup>3</sup>5 percent of Total Units.

<sup>4</sup>5 percent of Total Water.

Sources: EIP Associates, *Estimates of Housing and Employment at Buildout Within the Monterey Peninsula Water Management District*, July 1988; Monterey Peninsula Water Management District, September 1988; J. Laurence Mintier & Associates

**TABLE II-7**

**WATER FOR PUBLIC PROJECTS**

Jurisdiction	1987 Public Authority Sales	Public Projects*
Carmel-by-the-Sea	11.97	0.60
Del Rey Oaks	3.81	0.19
City of Monterey	1,268.48	63.42
Pacific Grove	88.87	4.44
Sand City	6.74	0.34
Seaside	157.82	7.89
Monterey County	92.86	4.64
MPAD	18.77	0.94
<b>Total</b>	<b>1,649.32</b>	<b>82.47</b>

\* 5 percent of total 1987 Cal-Am sales to public authorities

Source: California-American Water Company

### 3. Allocation Calculations

Based on the assumptions and methodology outlined in the previous section, the District and its Consultants prepared calculations for each of the 26 supply/distribution scenarios that would provide discrete and quantifiable amounts of additional water to the eight jurisdictions within Cal-Am's service area. These 26 supply/distribution scenarios are described by water distribution alternatives in the following paragraphs and the allocation calculations are shown in Table II-8 to II-12.

#### Water Distribution Alternative I: No Allocation

Under this alternative, water would be distributed to new development on a first-come, first-served basis or based upon a priority system that favors particular types of development without regard to jurisdictional boundaries. In other words, there would be no *jurisdictional* allocation or formula.

#### Water Distribution Alternative II: Current District Allocation (Adjusted for MPAD)

Under this alternative, water would be allocated to each jurisdiction according to the District's current percentage formula. The current formula has been adjusted for the inclusion of the Monterey Peninsula Airport District. MPAD's allocation has been subtracted from the allocations of Monterey County and the City of Monterey. Table II-8 shows the distribution which would result from continuing to allocate water according to the percentages in the District's current allocation formula.

#### Water Distribution Alternative III: Percentage of New Growth Allocation

Under this alternative, each jurisdiction would be guaranteed a base allocation equal to its adjusted 1987 metered sales (Table II-2). Each jurisdiction would be allocated additional water for future growth based on its percentage share of the total potential growth for all jurisdictions as estimated by EIP Associates (Table II-3). Table II-9 shows the distribution under Alternative III and how it was calculated.

#### Water Distribution Alternative IV: Percentage of New Growth (With Adjusted Base) Allocation.

Under this alternative, each jurisdiction would be guaranteed a base allocation equal to its adjusted 1987 metered sales (Table II-2) plus additional water required for projects completed/approved in 1987 (Table II-4) and for vacant lots-of-record (Table II-5). Each jurisdiction would be allocated water for future growth based on its percentage share of the total potential growth for all jurisdictions within the Cal-Am service area (Table II-3) after subtracting out water required for vacant lots-of-record (Table II-5). Table II-10 shows the distribution under Alternative IV and how it was calculated.

#### Water Distribution Alternative V: Percentage of Total Buildout Allocation

Under this alternative, each jurisdiction would be allocated water based on its percentage of total buildout of all jurisdictions within the Cal-Am service area (calculated by adding adjusted 1987 sales as shown in Table II-2, water required for 1987 approved/completed projects as shown in Table II-4, and potential growth as shown in Table II-3). Table II-11 shows the distribution under Alternative V and how it was calculated.

### Water Distribution Alternative VI: Current Consumption Plus Limited Expansion

Under this alternative, each jurisdiction would be guaranteed a base allocation equal to its adjusted 1987 metered sales (Table II-2) plus water required for projects approved/completed in 1987 (Table II-4). Each jurisdiction would be allocated water for future growth only for vacant lots of record (Table II-5), low- and-moderate-income housing (Table II-6), and public projects (Table II-7). Table II-12 shows the distribution under Alternative VI and how it was calculated. Unlike the other distribution alternatives, this alternative does not allocate all remaining water supplies.

**TABLE II-8  
ALTERNATIVE II: CURRENT DISTRICT ALLOCATION**

**Baseline Production Level A (18,400 Acre-Feet)**

Current Allocation Percent (1)	Jan. 1988 Baseline Consum. (5)		Option II		Option III	
	Allocation (3)	Net New Water (4)	Allocation (3)	Net New Water (4)	Allocation (3)	Net New Water (4)
5.543%	1,003.97	27.03	1,031.00	1,056.77	52.80	
1.326%	198.81	47.83	246.64	252.80	53.99	
32.930%	5,597.21	527.77	6,124.98	6,278.10	680.89	
12.685%	2,163.90	195.51	2,359.41	2,418.40	254.50	
1.800%	92.33	242.47	334.80	343.17	250.84	
12.858%	2,274.28	117.31	2,391.59	2,451.38	177.10	
32.757%	5,762.30	330.50	6,092.80	6,245.12	482.82	
0.101%	18.77	0.02	18.79	19.26	0.49	
<b>100.000%</b>	<b>17,111.57</b>	<b>1,488.43</b>	<b>18,600.00</b>	<b>19,065.00</b>	<b>1,953.43</b>	

Carmel-by-the-Sea  
Del Rey Oaks  
City of Monterey  
Pacific Grove  
Sand City  
Seaside  
Monterey County  
MPAD  
TOTAL

**Baseline Production Level B (16,700 Acre-Feet)**

Current Allocation Percent (1)	Jan. 1988 Baseline Consum. (5)		Option I		Option II		Option III		Option IV	
	Allocation (3)	Net New Water (4)	Allocation (3)	Net New Water (4)	Allocation (3)	Net New Water (4)	Allocation (3)	Net New Water (4)	Allocation (3)	Net New Water (4)
5.543%	913.61	34.91	948.52	117.39	1,031.00	143.16	1,056.77	143.16	902.12	-11.49
1.326%	180.92	45.99	226.91	65.72	246.64	71.88	252.80	71.88	215.81	34.89
32.930%	5,093.46	541.52	5,634.98	1,031.52	6,124.98	1,184.64	6,278.10	1,184.64	5,359.36	265.90
12.685%	1,969.15	201.51	2,170.66	300.26	2,359.41	449.25	2,418.40	449.25	2,064.48	95.33
1.800%	84.02	224.00	308.02	250.78	334.80	259.15	343.17	259.15	292.95	208.93
12.858%	2,069.59	130.67	2,200.26	321.99	2,391.59	381.78	2,451.38	381.78	2,092.64	23.04
32.757%	5,243.69	361.68	5,605.38	849.11	6,092.80	1,001.43	6,245.12	1,001.43	5,331.20	87.51
0.101%	17.08	0.20	17.28	1.71	18.79	2.17	19.26	2.17	16.44	-0.64
<b>100.000%</b>	<b>15,571.53</b>	<b>1,540.47</b>	<b>17,112.00</b>	<b>3,028.47</b>	<b>18,600.00</b>	<b>3,493.47</b>	<b>19,065.00</b>	<b>3,493.47</b>	<b>16,275.00</b>	<b>703.47</b>

Carmel-by-the-Sea  
Del Rey Oaks  
City of Monterey  
Pacific Grove  
Sand City  
Seaside  
Monterey County  
MPAD  
TOTAL

(1) District's current allocation percentage; MPAD allocation is based on its 1987 metered sales--its percentage has been deducted from the City of Monterey's (0.003%) and Monterey County's (0.098%) allocations.  
(2) January 1988 Baseline Consumption equals January 1987 sales (Table II-2) plus estimated water needed for projects completed/approved in 1987 (Table II-4).

(3) Total Allocation based on jurisdiction's percentage allocation multiplied by the total water available under the Supply Option.  
(4) Net New Water equals jurisdiction's Total Allocation minus January 1988 Baseline Consumption.

(5) January 1988 Baseline Consumption equals January 1987 sales with a 9 percent conservation reduction (Table II-2) plus estimated water needed for projects completed/approved in 1987 with a 9 percent conservation reduction (Table II-4).

**TABLE II-9  
ALTERNATIVE III: PERCENTAGE OF NEW GROWTH ALLOCATION**

Baseline Production Level A (18,400 Acre-Feet)				Option II		Option III	
Water for Potential Growth (1)	Percentage of Potential Growth (1)	Adjusted 1987 Sales (2)	Jan. 1988 Baseline Consum. (3)	Total Allocation (4)	Net New Water (5)	Total Allocation (4)	Net New Water (5)
313.69	5.19%	1,018.49	1,003.97	1,089.28	85.31	1,113.40	109.43
60.72	1.00%	201.50	198.81	215.20	16.39	219.87	21.06
2,054.03	33.97%	5,650.81	5,597.21	6,114.28	517.07	6,272.24	675.03
611.77	10.12%	2,191.24	2,163.90	2,329.28	165.38	2,376.33	212.43
946.40	15.65%	93.63	92.33	307.17	214.84	379.95	287.62
645.84	10.68%	2,290.35	2,274.28	2,436.07	161.79	2,485.74	211.46
1,297.50	21.46%	5,770.57	5,762.30	6,063.33	301.03	6,163.11	400.81
116.60	1.93%	19.09	18.77	45.40	26.63	54.37	35.60
<b>6,046.54</b>	<b>100.00%</b>	<b>17,235.68</b>	<b>17,111.57</b>	<b>18,600.00</b>	<b>1,488.43</b>	<b>19,065.00</b>	<b>1,953.43</b>

Carmel-by-the-Sea  
Del Rey Oaks  
City of Monterey  
Pacific Grove  
Sand City  
Seaside  
Monterey County  
MPAD  
TOTAL

**Baseline Production Level B (16,700 Acre-Feet)**

Baseline Production Level B (16,700 Acre-Feet)				Option I		Option II		Option III		Option IV	
Water for Potential Growth (1)	Percentage of Potential Growth (1)	Adjusted 1987 Sales (6)	Jan. 1988 Baseline Consum. (7)	Total Allocation (4)	Net New Water (5)	Total Allocation (4)	Net New Water (5)	Total Allocation (4)	Net New Water (5)	Total Allocation (4)	Net New Water (5)
313.69	5.19%	926.83	913.61	1,000.89	87.28	1,078.09	164.47	1,102.21	188.60	957.47	43.85
60.72	1.00%	183.37	180.92	197.70	16.78	212.64	31.72	217.31	36.39	189.30	8.38
2,054.03	33.97%	5,142.24	5,093.46	5,627.18	533.72	6,132.66	1,039.20	6,290.62	1,197.16	5,342.85	249.39
611.77	10.12%	1,994.03	1,969.15	2,138.46	169.31	2,289.01	319.86	2,336.06	366.91	2,053.78	84.63
946.40	15.65%	85.20	84.02	308.64	224.62	541.54	457.52	614.32	530.30	177.63	93.61
645.84	10.68%	2,084.22	2,069.59	2,236.69	167.10	2,395.63	326.03	2,445.29	375.70	2,147.29	77.70
1,297.50	21.46%	5,251.21	5,243.69	5,557.54	313.85	5,876.85	633.15	5,978.63	732.93	5,377.93	134.24
116.60	1.93%	17.37	17.08	44.90	27.82	73.59	56.51	82.56	65.48	26.76	11.68
<b>6,046.54</b>	<b>100.00%</b>	<b>15,684.46</b>	<b>15,571.53</b>	<b>17,112.00</b>	<b>1,540.47</b>	<b>18,600.00</b>	<b>3,028.47</b>	<b>19,065.00</b>	<b>3,493.47</b>	<b>16,275.00</b>	<b>703.47</b>

Carmel-by-the-Sea  
Del Rey Oaks  
City of Monterey  
Pacific Grove  
Sand City  
Seaside  
Monterey County  
MPAD  
TOTAL

(1) From Table II-3.

(2) January 1987 sales adjusted for future growth (Table II-2).

(3) January 1988 Baseline Consumption equals January 1987 sales (Table II-2) plus estimated water needed for projects completed/approved in 1987 (Table II-4).

(4) Total Allocation equals jurisdiction's percentage of new growth multiplied by the difference between the total water available under the Supply Option and Adjusted 1987 Net New Water equals jurisdiction's Total Allocation minus January 1988 Baseline Consumption.

(5) Net New Water equals jurisdiction's Total Allocation minus January 1988 Baseline Consumption.

(6) January 1987 sales adjusted for future growth with a 9 percent conservation reduction (Table II-2) plus estimated water needed for projects completed/approved in 1987 with a 9 percent conservation reduction (Table II-4).

(7) January 1988 Baseline Consumption equals January 1987 sales with a 9 percent conservation reduction (Table II-2) plus estimated water needed for projects completed/approved in 1987 with a 9 percent conservation reduction (Table II-4).



**TABLE II-10  
ALTERNATIVE IV: PERCENTAGE OF NEW GROWTH (WITH ADJUSTED BASE) ALLOCATION**

Baseline Production Level A (18,400 Acre-Feet)									
Water for Potential Growth (1)	Water for Vacant Lots of Record (2)	Water for New Potential Growth (3)	Percentage New Potential Growth (4)	Adjusted Base (5)	Jan. 1988 Baseline Consum. (6)	Option II		Option III	
						Total Allocation (7)	Net New Water (8)	Total Allocation (7)	Net New Water (8)
313.69	35.34	278.35	5.53%	1,056.34	1,003.97	1,066.50	62.53	1,092.24	88.27
60.72	1.82	58.89	1.17%	204.00	198.81	206.15	7.34	211.60	12.79
2,054.03	165.07	1,888.96	37.55%	5,856.79	5,597.21	5,925.74	328.53	6,100.37	503.16
611.77	81.10	550.67	10.95%	2,261.65	2,163.90	2,281.75	117.85	2,332.66	168.76
946.40	228.23	718.17	14.28%	322.12	92.33	348.34	256.01	414.73	322.40
645.84	174.42	471.42	9.37%	2,487.01	2,274.28	2,504.21	229.93	2,547.79	273.51
1,297.50	350.58	946.92	18.83%	6,209.39	5,762.30	6,243.95	481.65	6,331.49	569.19
116.60		116.60	2.32%	19.09	18.77	23.35	4.58	34.12	15.35
<b>6,046.54</b>	<b>1,016.56</b>	<b>5,029.97</b>	<b>100.00%</b>	<b>18,416.41</b>	<b>17,111.57</b>	<b>18,600.00</b>	<b>1,488.43</b>	<b>19,065.00</b>	<b>1,953.43</b>

Carmel-by-the-Sea  
Del Rey Oaks  
City of Monterey  
Pacific Grove  
Sand City  
Seaside  
Monterey County  
MPAD  
TOTAL

**Baseline Production Level B (16,700 Acre-Feet)**

Water for Potential Growth (1)	Water for Vacant Lots of Record (2)	Water for New Potential Growth (3)	Percentage New Potential Growth (4)	Adjusted Base (5)	Jan. 1988 Baseline Consum. (10)	Option I		Option II		Option III		Option IV	
						Total Allocation (7)	Net New Water (8)	Total Allocation (7)	Net New Water (8)	Total Allocation (7)	Net New Water (8)	Total Allocation (7)	Net New Water (8)
313.69	35.34	278.35	5.53%	964.45	913.61	978.93	65.32	1,061.27	147.66	1,087.01	173.39	932.61	19.00
60.72	1.82	58.89	1.17%	185.81	180.92	188.87	7.95	206.29	25.38	211.74	30.82	179.07	-1.85
2,054.03	165.07	1,888.96	37.55%	5,344.54	5,093.46	5,442.77	349.31	6,001.58	908.12	6,178.20	1,082.74	5,128.45	34.98
611.77	81.10	550.67	10.95%	2,063.60	1,969.15	2,092.24	123.09	2,255.14	285.99	2,306.05	336.90	2,000.61	31.46
946.40	228.23	718.17	14.28%	313.67	84.02	351.02	267.00	563.47	479.45	629.87	545.85	231.52	147.50
645.84	174.42	471.42	9.37%	2,278.87	2,069.59	2,303.39	233.79	2,442.85	373.25	2,486.43	416.83	2,224.94	155.35
1,297.50	350.58	946.92	18.83%	5,682.10	5,243.69	5,731.34	487.65	6,011.47	767.77	6,099.00	855.31	5,573.77	330.08
116.60		116.60	2.32%	17.37	17.08	23.43	6.35	57.93	40.85	68.71	51.63	4.03	-13.05
<b>6,046.54</b>	<b>1,016.56</b>	<b>5,029.97</b>	<b>100.00%</b>	<b>16,850.42</b>	<b>15,571.53</b>	<b>17,112.00</b>	<b>1,540.47</b>	<b>18,600.00</b>	<b>3,028.47</b>	<b>19,065.00</b>	<b>3,493.47</b>	<b>16,275.00</b>	<b>703.47</b>

Carmel-by-the-Sea  
Del Rey Oaks  
City of Monterey  
Pacific Grove  
Sand City  
Seaside  
Monterey County  
MPAD  
TOTAL

(1) From Table II-3.

(2) From Table II-5.

(3) Water for Adjusted Growth equals Potential Growth for each jurisdiction minus Water for Vacant Lots of Record.

(4) Percentage of Growth equals each jurisdiction's percentage share of Adjusted Growth.

(5) Adjusted Base equals adjusted 1987 sales (Table II-2) plus water for vacant lots of record (Table II-5) plus estimated water needed for projects completed/approved in 1987 (Table II-4).

(6) January 1988 Baseline Consumption equals January 1987 sales (Table II-2) plus estimated water needed for projects completed/approved in 1987 (Table II-4).

(7) Total Allocation equals the jurisdiction's Adjusted Base plus the jurisdiction's percentage of new growth multiplied by the difference between the total water available under the Supply Option and the total of the Adjusted Base column.

(8) Net New Water equals jurisdiction's Total Allocation minus January 1988 Baseline Consumption.

(9) Adjusted Base equals adjusted 1987 sales with a 9 percent conservation reduction (Table II-2) plus water for vacant lots of record (Table II-5) plus estimated water needed for projects completed/approved in 1987 with a 9 percent conservation reduction (Table II-4).

(10) January 1988 Baseline Consumption equals January 1987 sales with a 9 percent conservation reduction (Table II-4).

(11) Total Allocation equals the jurisdiction's Adjusted Base plus the jurisdiction's percentage of new growth multiplied by the difference between the total water available under the Supply Option and the total of the Adjusted Base column; Note that the Total Allocation is less than the adjusted base for all jurisdictions.

**TABLE II-11  
ALTERNATIVE V: PERCENTAGE OF TOTAL BUILDOUT ALLOCATION**

Baseline Production Level A (18,400 Acre-Feet)									
Water for Potential Growth (1)	Adjusted 1987 Sales (2)	Water for 1987 Projects (3)	Total Buildout Potential (4)	Percentage of Buildout Potential (5)	Jan. 1988 Baseline Consum. (6)	Option II		Option III	
						Total Allocation (7)	Net New Water (8)	Total Allocation (7)	Net New Water (8)
313.69	1,018.49	2.51	1,334.69	5.69%	1,003.97	1,058.81	54.84	1,085.28	81.31
60.72	201.50	0.68	262.90	1.12%	198.81	208.56	9.75	213.77	14.96
2,054.03	5,650.81	40.91	7,745.75	33.04%	5,597.21	6,144.70	547.49	6,298.32	701.11
611.77	2,191.24	9.31	2,812.32	11.99%	2,163.90	2,231.01	67.11	2,286.79	122.89
946.40	93.63	0.27	1,040.29	4.44%	92.33	825.26	732.93	845.90	753.57
645.84	2,250.35	22.24	2,958.42	12.62%	2,274.28	2,346.92	72.64	2,405.59	131.31
1,297.50	5,770.57	86.25	7,156.31	30.52%	5,762.30	5,677.10	-85.20	5,819.03	56.73
116.60	19.09		135.69	0.58%	18.77	107.64	88.87	110.33	91.56
6,046.54	17,235.68	164.17	23,446.38	100.00%	17,111.57	18,600.00	1,488.43	19,065.00	1,953.43

Carmel-by-the-Sea  
Del Rey Oaks  
City of Monterey  
Pacific Grove  
Sand City  
Seaside  
Monterey County  
MPAD  
TOTAL

**Baseline Production Level B (16,700 Acre-Feet)**

Baseline Production Level B (16,700 Acre-Feet)													
Water for Potential Growth (1)	Adjusted 1987 Sales (2)	Water for 1987 Projects (3)	Total Buildout Potential (10)	Percentage of Buildout Potential (5)	Jan. 1988 Baseline Consum. (11)	Option I		Option II		Option III		Option IV	
						Total Allocation (7)	Net New Water (8)	Total Allocation (7)	Net New Water (8)	Total Allocation (7)	Net New Water (8)	Total Allocation (7)	Net New Water (8)
313.69	926.83	2.28	1,242.80	5.68%	913.61	971.96	58.35	1,056.48	142.87	1,082.89	169.28	924.42	10.81
60.72	183.37	0.62	244.70	1.12%	180.92	191.37	10.46	208.01	27.10	213.21	32.30	182.01	1.09
2,054.03	5,142.24	37.23	7,233.50	33.06%	5,083.46	5,657.10	563.64	6,149.02	1,055.56	6,302.75	1,209.29	5,380.39	286.93
611.77	1,994.03	8.47	2,614.27	11.95%	1,969.15	2,044.54	75.39	2,222.33	253.18	2,277.89	308.74	1,944.54	-24.61
946.40	85.20	0.25	1,031.84	4.72%	84.02	806.97	722.95	877.14	793.12	899.07	815.05	767.50	683.48
645.84	2,084.22	20.24	2,750.29	12.57%	2,069.59	2,150.92	81.32	2,337.96	268.36	2,398.40	326.81	2,045.71	-23.68
1,297.50	5,251.21	80.31	6,629.02	30.30%	5,243.69	5,184.36	-58.34	5,635.17	391.48	5,776.05	532.36	4,930.77	-312.92
116.60	17.37		133.97	0.61%	17.08	104.77	87.69	113.89	96.81	116.73	99.65	99.65	82.57
6,046.54	15,684.46	149.39	21,080.40	100.00%	15,571.53	17,112.00	1,540.47	18,600.00	3,028.47	19,065.00	3,493.47	16,275.00	703.47

Carmel-by-the-Sea  
Del Rey Oaks  
City of Monterey  
Pacific Grove  
Sand City  
Seaside  
Monterey County  
MPAD  
TOTAL

- (1) From Table II-3.
- (2) From Table II-2.
- (3) From Table II-4.
- (4) Total Buildout Potential equals water needed to satisfy potential new growth plus adjusted 1987 sales (column 2) plus estimated water needed for projects completed/approved in 1987 (column 3).
- (5) Equals each jurisdiction's share of estimated total buildout potential.
- (6) January 1988 Baseline Consumption equals January 1987 sales (Table II-2) plus estimated water needed for projects completed/approved in 1987 (Table II-4).
- (7) Total Allocation equals jurisdiction's percentage of buildout potential multiplied by the total water available under the Supply Option.
- (8) Net New Water equals jurisdiction's Total Allocation minus January 1988 Baseline Consumption.
- (9) Adjusted Base equals 1987 sales with a 9 percent conservation reduction (Table II-2) plus water for vacant lots of record (Table II-5) plus estimated water needed for projects completed/approved in 1987 with a 9 percent conservation reduction (Table II-4).
- (10) Total Buildout Potential equals water needed to satisfy potential new growth plus adjusted 1987 sales with a 9 percent conservation reduction (Table II-2) plus estimated water needed for projects completed/approved in 1987 with a 9 percent conservation reduction.
- (11) January 1988 Baseline Consumption equals January 1987 sales with a 9 percent conservation reduction (Table II-2) plus estimated water needed for projects completed/approved in 1987 with a 9 percent conservation reduction (Table II-4).

**TABLE II-12  
ALTERNATIVE VI: CURRENT PRODUCTION WITH LIMITED EXPANSION**

**Baseline Production Level A (18,400 Acre-Feet)**

	Adjusted 1987 Sales (1)	Water for 1987 Projects (2)	Water for Vacant Lots of Record (3)	Water for Low-Mod Housing (4)	Water for Public Projects (5)	Total Allocation (6)	Jan. 1988 Baseline Consum. (7)	Net New Water (8)
Carmel-by-the-Sea	1,018.49	2.51	35.34	8.22	0.60	1,065.16	1,003.97	61.19
Del Rey Oaks	201.50	0.68	1.82	1.20	0.19	205.39	198.81	6.58
City of Monterey	5,650.81	40.91	165.07	35.62	63.42	5,955.84	5,597.21	358.63
Pacific Grove	2,191.24	9.31	61.10	23.13	4.44	2,289.23	2,163.90	125.33
Sand City	93.63	0.27	228.23	20.15	0.34	342.61	92.33	250.28
Seaside	2,290.35	22.24	174.42	8.09	7.89	2,502.99	2,274.28	228.71
Monterey County	5,770.57	88.25	350.58	53.64	4.63	6,267.65	5,762.30	505.35
MPAD	19.09				0.95	20.04	18.77	1.27
<b>TOTAL</b>	<b>17,235.68</b>	<b>164.17</b>	<b>1,016.56</b>	<b>150.04</b>	<b>82.47</b>	<b>18,648.92</b>	<b>17,111.57</b>	<b>1,537.35</b>

**Baseline Production Level B (16,700 Acre-Feet)**

	Adjusted 1987 Sales (1)	Water for 1987 Projects (2)	Water for Vacant Lots of Record (3)	Water for Low-Mod Housing (4)	Water for Public Projects (5)	Total Allocation (6)	Jan. 1988 Baseline Consum. (9)	Net New Water (8)
Carmel-by-the-Sea	926.83	2.28	35.34	8.22	0.60	973.27	913.61	59.66
Del Rey Oaks	183.37	0.62	1.82	1.20	0.19	187.20	180.92	6.28
City of Monterey	5,142.24	37.23	165.07	35.62	63.42	5,443.58	5,093.46	350.12
Pacific Grove	1,994.03	8.47	61.10	23.13	4.44	2,091.18	1,969.15	122.03
Sand City	85.20	0.25	228.23	20.15	0.34	334.16	84.02	250.14
Seaside	2,084.22	20.24	174.42	8.09	7.89	2,294.86	2,069.59	225.26
Monterey County	5,251.21	80.31	350.58	53.64	4.63	5,740.36	5,243.69	496.67
MPAD	17.37				0.95	18.33	17.08	1.25
<b>TOTAL</b>	<b>15,684.46</b>	<b>149.39</b>	<b>1,016.56</b>	<b>150.04</b>	<b>82.47</b>	<b>17,082.93</b>	<b>15,571.53</b>	<b>1,511.40</b>

(1) From Table II-2.

(2) From Table II-4.

(3) From Table II-5.

(4) From Table II-6.

(5) From Table II-7

(6) Total Allocation equals total of columns 1 through 5 (adjusted 1987 sales, estimated water needed for projects completed/approved in 1987, estimated water required for development of vacant lots of record, estimated water needed for low/moderate income housing, and estimated water needed for public projects).

(7) January 1988 Baseline Consumption equals January 1987 sales (Table II-2) plus estimated water needed for projects completed/approved in 1987 (Table II-4).

(8) Net New Water equals jurisdiction's Total Allocation minus January 1988 Baseline Consumption.

(9) January 1988 Baseline Consumption equals January 1987 sales with a 9 percent conservation reduction (Table II-2) plus estimated water needed for projects completed/approved in 1987 with a 9 percent conservation reduction (Table II-4).

#### **4. Summary of Allocation Results**

Tables II-13, II-14, and II-15 summarize the information contained in Tables II-8 through II-12 in Subsection C.3. Table II-13 shows the total allocation for each jurisdiction resulting from Distribution Alternatives II through VI. Table II-14 shows the amount of net new water available for each jurisdiction under the same distribution alternatives. Finally, Table II-15 compares the amount of net new water available to each jurisdiction based on Distribution Alternatives III through VI to the amount of water available to each jurisdiction based on the District's current allocation formula (Distribution Alternative II); in other words, the table shows how much water each jurisdiction would gain or lose if the District adopted a distribution alternative other than the current allocation scheme.

**TABLE II-13  
TOTAL ALLOCATIONS UNDER EACH SUPPLY/DISTRIBUTION SCENARIO**

	<b>Carmel by-the-Sea</b>	<b>Del Rey Oaks</b>	<b>City of Monterey</b>	<b>Pacific Grove</b>	<b>Sand City</b>	<b>Seaside</b>	<b>Monterey County</b>	<b>MPAD</b>	<b>Cal-Am Total</b>
<b>Baseline Production Level A (18,400 Acre-Feet)</b>									
<b>Supply Option II</b>									
Alternative II	1,031.00	246.64	6,124.98	2,359.41	334.80	2,391.59	6,092.80	18.79	18,600.00
Alternative III	1,089.28	215.20	6,114.28	2,329.28	307.17	2,436.07	6,063.33	45.40	18,600.00
Alternative IV	1,066.50	206.15	5,925.74	2,281.75	348.34	2,504.21	6,243.95	23.35	18,600.00
Alternative V	1,058.81	208.56	6,144.70	2,231.01	825.26	2,346.92	5,677.10	107.64	18,600.00
Alternative VI	1,065.16	205.39	5,955.84	2,289.23	342.61	2,502.99	6,267.65	20.04	18,648.92
<b>Supply Option III</b>									
Alternative II	1,056.77	252.80	6,278.10	2,418.40	343.17	2,451.38	6,245.12	19.26	19,065.00
Alternative III	1,113.40	219.87	6,272.24	2,376.33	379.95	2,485.74	6,163.11	54.37	19,065.00
Alternative IV	1,092.24	211.60	6,100.37	2,332.66	414.73	2,547.79	6,331.49	34.12	19,065.00
Alternative V	1,085.28	213.77	6,298.32	2,286.79	845.90	2,405.59	5,819.03	110.33	19,065.00
Alternative VI	1,065.16	205.39	5,955.84	2,289.23	342.61	2,502.99	6,267.65	20.04	18,648.92
<b>Baseline Production Level B (16,700 Acre-Feet)</b>									
<b>Supply Option I</b>									
Alternative II	948.52	226.91	5,634.98	2,170.66	308.02	2,200.26	5,605.38	17.28	17,112.00
Alternative III	1,000.89	197.70	5,627.18	2,138.46	308.64	2,236.69	5,557.54	44.90	17,112.00
Alternative IV	978.93	188.87	5,442.77	2,092.24	351.02	2,303.39	5,731.34	23.43	17,112.00
Alternative V	971.96	191.37	5,657.10	2,044.54	806.97	2,150.92	5,184.36	104.77	17,112.00
Alternative VI	973.27	187.20	5,443.58	2,091.18	334.16	2,294.86	5,740.36	18.33	17,082.93
<b>Supply Option II</b>									
Alternative II	1,031.00	246.64	6,124.98	2,359.41	334.80	2,391.59	6,092.80	18.79	18,600.00
Alternative III	1,078.09	212.64	6,132.66	2,289.01	541.54	2,395.63	5,876.85	73.59	18,600.00
Alternative IV	1,061.27	206.29	6,001.58	2,255.14	563.47	2,442.85	6,011.47	57.93	18,600.00
Alternative V	1,056.48	208.01	6,149.02	2,222.33	877.14	2,337.96	5,635.17	113.89	18,600.00
Alternative VI	973.27	187.20	5,443.58	2,091.18	334.16	2,294.86	5,740.36	18.33	17,082.93
<b>Supply Option III</b>									
Alternative II	1,056.77	252.80	6,278.10	2,418.40	343.17	2,451.38	6,245.12	19.26	19,065.00
Alternative III	1,102.21	217.31	6,290.62	2,336.06	614.32	2,445.29	5,976.63	82.56	19,065.00
Alternative IV	1,087.01	211.74	6,176.20	2,306.05	629.87	2,486.43	6,099.00	68.71	19,065.00
Alternative V	1,082.89	213.21	6,302.75	2,277.89	899.07	2,396.40	5,776.05	116.73	19,065.00
Alternative VI	973.27	187.20	5,443.58	2,091.18	334.16	2,294.86	5,740.36	18.33	17,082.93
<b>Supply Option IV</b>									
Alternative II	902.12	215.81	5,359.36	2,064.48	292.95	2,092.64	5,331.20	16.44	16,275.00
Alternative III	957.47	189.30	5,342.85	2,053.78	177.63	2,147.29	5,377.93	28.76	16,275.00
Alternative IV	932.61	179.07	5,128.45	2,000.61	231.52	2,224.94	5,573.77	4.03	16,275.00
Alternative V	924.42	182.01	5,380.39	1,944.54	767.50	2,045.71	4,930.77	99.65	16,275.00
Alternative VI	973.27	187.20	5,443.58	2,091.18	334.16	2,294.86	5,740.36	18.33	17,082.93

**TABLE II-14  
NET NEW WATER AVAILABLE  
With Assumed Intensification Level\***

	<b>Carmel by-the-Sea</b>	<b>Del Rey Oaks</b>	<b>City of Monterey</b>	<b>Pacific Grove</b>	<b>Sand City</b>	<b>Seaside</b>	<b>Monterey County</b>	<b>MPAD</b>	<b>Cal-Am Total</b>
<b>Baseline Production Level A (18,400 Acre-Feet)</b>									
<b>Supply Option II</b>									
Alternative II	27.03	47.83	527.77	195.51	242.47	117.31	330.50	0.02	1,488.43
Alternative III	85.31	16.39	517.07	165.38	214.84	161.79	301.03	26.63	1,488.43
Alternative IV	62.53	7.34	328.53	117.85	256.01	229.93	481.65	4.58	1,488.43
Alternative V	54.84	9.75	547.49	67.11	732.93	72.64	-85.20	88.87	1,488.43
Alternative VI	61.19	6.58	358.63	125.33	250.28	228.71	505.35	1.27	1,537.35
<b>Supply Option III</b>									
Alternative II	52.80	53.99	680.89	254.50	250.84	177.10	482.82	0.49	1,953.43
Alternative III	109.43	21.06	675.03	212.43	287.62	211.46	400.81	35.60	1,953.43
Alternative IV	88.27	12.79	503.16	168.76	322.40	273.51	569.19	15.35	1,953.43
Alternative V	81.31	14.96	701.11	122.89	753.57	131.31	56.73	91.56	1,953.43
Alternative VI	61.19	6.58	358.63	125.33	250.28	228.71	505.35	1.27	1,537.35
<b>Baseline Production Level B (16,700 Acre-Feet)</b>									
<b>Supply Option I</b>									
Alternative II	34.91	45.99	541.52	201.51	224.00	130.67	361.68	0.20	1,540.47
Alternative III	87.28	16.78	533.72	169.31	224.62	167.10	313.85	27.82	1,540.47
Alternative IV	65.32	7.95	349.31	123.09	267.00	233.79	487.65	6.35	1,540.47
Alternative V	58.35	10.46	563.64	75.39	722.95	81.32	-59.34	87.69	1,540.47
Alternative VI	59.66	6.28	350.12	122.03	250.14	225.26	496.67	1.25	1,511.40
<b>Supply Option II</b>									
Alternative II	117.39	65.72	1,031.52	390.26	250.78	321.99	849.11	1.71	3,028.47
Alternative III	164.47	31.72	1,039.20	319.86	457.52	326.03	633.15	56.51	3,028.47
Alternative IV	147.66	25.38	908.12	285.99	479.45	373.25	767.77	40.85	3,028.47
Alternative V	142.87	27.10	1,055.56	253.18	793.12	268.36	391.48	96.81	3,028.47
Alternative VI	59.66	6.28	350.12	122.03	250.14	225.26	496.67	1.25	1,511.40
<b>Supply Option III</b>									
Alternative II	143.16	71.88	1,184.64	449.25	259.15	381.78	1,001.43	2.17	3,493.47
Alternative III	188.60	36.39	1,197.16	366.91	530.30	375.70	732.93	65.48	3,493.47
Alternative IV	173.39	30.82	1,082.74	336.90	545.85	416.83	855.31	51.63	3,493.47
Alternative V	169.28	32.30	1,209.29	308.74	815.05	326.81	532.36	99.65	3,493.47
Alternative VI	59.66	6.28	350.12	122.03	250.14	225.26	496.67	1.25	1,511.40
<b>Supply Option IV</b>									
Alternative II	-11.49	34.89	265.90	95.33	208.93	23.04	87.51	-0.64	703.47
Alternative III	43.85	8.38	249.39	84.63	93.61	77.70	134.24	11.68	703.47
Alternative IV	19.00	-1.85	34.98	31.46	147.50	155.35	330.08	-13.05	703.47
Alternative V	10.81	1.09	286.93	-24.61	683.48	-23.88	-312.92	82.57	703.47
Alternative VI	59.66	6.28	350.12	122.03	250.14	225.26	496.67	1.25	1,511.40

\*Assumed to be 1.017 percent, which equals an annual increase of 0.243 percent through 1995, by which time additional water supplies are expected to be available.

**TABLE II-15  
COMPARISON OF NET NEW WATER AVAILABLE  
WITH CURRENT ALLOCATION (ALTERNATIVE II)  
In Acre-Feet**

	<b>Carmel by-the-Sea</b>	<b>Del Rey Oaks</b>	<b>City of Monterey</b>	<b>Pacific Grove</b>	<b>Sand City</b>	<b>Seaside</b>	<b>Monterey County</b>	<b>MPAD</b>
<b>Baseline Production Level A (18,400 Acre-Feet)</b>								
<b>Supply Option II</b>								
Alternative III	58.28	-31.44	-10.70	-30.13	-27.63	44.48	-29.47	26.81
Alternative IV	35.51	-40.48	-199.24	-77.66	13.54	112.63	151.15	4.58
Alternative V	27.81	-38.08	19.72	-128.40	490.46	-44.67	-415.70	88.86
Alternative VI	34.16	-41.24	-169.14	-70.18	7.81	111.40	174.85	1.26
<b>Supply Option III</b>								
Alternative III	56.63	-32.93	-5.86	-42.07	36.78	34.36	-82.01	35.11
Alternative IV	35.46	-41.20	-177.74	-85.74	71.56	96.42	86.37	14.87
Alternative V	28.51	-39.03	20.21	-131.61	502.73	-45.79	-426.10	91.08
Alternative VI	8.39	-47.41	-322.27	-129.16	-0.56	51.61	22.53	0.79
<b>Baseline Production Level B (16,700 Acre-Feet)</b>								
<b>Supply Option I</b>								
Alternative III	52.37	-29.21	-7.80	-32.20	0.62	36.43	-47.84	27.62
Alternative IV	30.41	-38.03	-192.21	-78.42	43.00	103.13	125.96	6.15
Alternative V	23.44	-35.53	22.12	-126.11	498.96	-49.34	-421.02	87.49
Alternative VI	24.75	-39.71	-191.40	-79.48	26.15	94.60	134.98	1.04
<b>Supply Option II</b>								
Alternative III	47.09	-33.99	7.88	-70.40	206.74	4.04	-215.96	54.81
Alternative IV	30.28	-40.34	-123.40	-104.27	228.67	51.26	-81.34	39.14
Alternative V	25.48	-38.62	24.04	-137.08	542.34	-53.63	-457.63	95.10
Alternative VI	-57.73	-59.44	-681.40	-268.23	-0.64	-96.73	-352.44	-0.46
<b>Supply Option III</b>								
Alternative III	45.44	-35.49	12.51	-82.33	271.15	-6.08	-268.49	63.31
Alternative IV	30.23	-41.07	-101.90	-112.35	286.70	35.05	-146.12	49.45
Alternative V	26.12	-39.59	24.64	-140.51	555.90	-54.97	-469.07	97.48
Alternative VI	-83.50	-65.61	-834.52	-327.21	-9.01	-156.52	-504.76	-0.93
<b>Supply Option IV</b>								
Alternative III	55.34	-26.51	-16.51	-10.71	-115.32	54.85	46.73	12.32
Alternative IV	30.49	-36.74	-230.91	-63.88	-61.43	132.31	242.57	-12.41
Alternative V	22.30	-33.79	21.04	-119.95	474.55	-46.93	-400.43	83.21
Alternative VI	71.15	-28.61	84.22	26.70	41.21	202.22	409.16	1.89

Note: Shaded cells indicate increase in water available to the jurisdiction compared with current allocation formula

## **D. MONITORING/COMPLIANCE MECHANISMS**

To administer the District's Water Allocation Program, the District has developed several policies and procedures, some of which have been modified over time. In addition, the District has determined that alternatives to current policies and procedures should be evaluated as part of this EIR.

### **1. Fixed-Year Versus Rolling-Year Monitoring and Compliance Determinations**

Under the District's Rule 30, the District Board annually adopts water allocations for each jurisdiction within the Cal-Am service area. These allocations can theoretically vary from year to year as the total amount of water available for allocation varies and based on changes in the formula, demand, jurisdictional boundaries, and other factors. These allocations must be set each year for the following water year (i.e., July 1st to June 30th). Ordinarily, these allocations are made in May of each year. In practice, the District Board has readopted the same percentage distribution formula for the jurisdictions each year since April 1981.

To determine whether water use in each jurisdiction is within the District's adopted allocation for the jurisdiction, the District Board each year in October compares water usage as reported by Cal-Am for each jurisdiction during the previous water year with the jurisdiction's allocated amount of water for that year. This procedure is set out in Rule 41 of the District's *Rules and Regulations* as follows:

#### *Annual Water Demand Report*

*The General Manager shall annually by on or about October 1 compile a report stating the amount of water delivered to users, the number of new connections, and an estimate of water demand from new connections in the preceding water year for each water distribution system in the Cities of Carmel-by-the-Sea, Del Rey Oaks, Pacific Grove, Monterey, Sand City, and Seaside and the portion of Fort Ord and the County of Monterey inside the District. The report will further state the municipal unit allotment for each water distribution system determined by the District for that year.*

#### *Findings*

*The Board of Directors shall hold a public hearing to review the Annual Water Demand Report and other evidence as necessary, and determine if the previous water year's water delivery to any municipal unit exceeds that municipal unit's allotment for any water distribution system. Where the water deliveries in the previous water year have been exceeded, or where the Board finds that a municipal unit's usage exceeds any municipal units allotment for any water distribution system, the Board of Directors shall suspend the authority of that unit to issue permits to expand or extend that water distribution system and direct the General Manager to deny any application for permit to expand or extend that water distribution system.*

#### *Notification*

*The General Manager shall, within thirty (30) days, notify all municipal units of the findings of the Board regarding municipal unit compliance with that municipal unit's allotment. Notice of the action shall be deemed to have been given when the written notification has*



*been deposited in the mail, postpaid, addressed to the municipal unit, or when personally delivered to the municipal unit.*

It should be noted that this EIR assumes that the Monterey Peninsula Airport District, which previously did not have a separate allocation, will be included among the jurisdictions to receive an allotment in future District Board allocations.

One of the problems with the current procedure is that a jurisdiction may exceed its annual water allocation (for any given 12-month period) many months before this fact is officially reported, thus delaying corrective action by the District Board or the jurisdiction. For example, a jurisdiction may exceed its water allocation (for a 12-month period) in July (i.e., in the first month of a water year), but this information would not be officially reported by Cal-Am under current procedures until the end of the water year (after the next July 1) and would not be officially reviewed by the Board until October, some 14 months after the allocation was exceeded. During this period, the District would be obliged to continue issuing water meter permits for new and expanded uses within the jurisdiction.

As an alternative to the current "fixed-year" monitoring process, the District has considered instituting a monitoring and compliance determination procedure based on a "rolling year." Under this procedure, jurisdictional water use for the previous 12-month period would be monitored by MPWMD each month based on Cal-Am monthly reports. This would allow the District to more frequently, and therefore more closely, monitor compliance with its allocations and would shorten the lag time between the point at which a jurisdiction exceeded its allocation and the point at which corrective action could be taken by the District.

## **2. Fixed Formula versus Discretionary Action**

Under Rule 30 of MPWMD's *Rules and Regulations*, the District Board retains total discretion in setting annual jurisdictional water allocations each year. Rule 30 only specifies the factors to be considered by the Board in setting the allocations. In practice, the Board has annually readopted, without modification, the same allocation formula it originally established in 1981.

The current practice has raised a number of questions. First, should the process of establishing the jurisdictional water allocations each year remain discretionary, or should the Board adopt a fixed formula, such as one of the six water distribution alternatives discussed in this EIR, including its current formula. In the former case, the process creates uncertainty for the affected jurisdictions, is subject to the influence of current political considerations, but provides flexibility for changed circumstances. A fixed formula would increase certainty for the affected jurisdictions, minimize the role of political considerations, but would inhibit modifications occasioned by changed circumstances.

The second set of questions concerns the need for periodic review of and adjustments to a fixed formula, should this approach be adopted. The District could, for example, schedule a periodic formal review and adjustment of the allocation formula. Such review and adjustment could take place every year, every other year, every third year, or at any other interval the District Board deemed appropriate. As another alternative, the District could review and adjust the allocation formula on an as-needed-basis.

A third set of questions concerns what information should be considered in these formal reviews and what information should be used as the basis of adjustments to the formula. The following are some of the possibilities:

- Availability of new information on the total amount of water available to the Cal-Am system based on recalibration of the Carmel Valley Simulation Model (CVSIM).
- Addition of new water sources to the Cal-Am system.
- Development of constraints on the water sources available to the Cal-Am system.
- Change in jurisdictional buildout potential or water demand based on the adoption of a revised general plan.
- Changes in assumptions concerning water use factors associated with various land uses.
- Reductions in demand for potable water based upon the substitution of subpotable water supplies for potable water supplies, such as for landscape irrigation.
- Annexation of new territory by an existing jurisdiction with a water allocation.
- A request by an existing or new federal, state, or local agency (other than one of those that currently has a separate water allocation) to receive a discrete allocation for Cal-Am water.
- Changes in the Cal-Am Service area resulting from Cal-Am acquiring an existing water distribution system.

### 3. Grace Amount

Water use varies within jurisdictions from year to year based on the amount of new development that has occurred, the effects of water conservation measures, and variations in climatic conditions. New development or increased water use by existing development may cause a jurisdiction to exceed its water allocation in any one year. This, however, may be offset by water conservation measures that would bring water consumption back into compliance with the jurisdiction's water allocation limit.

To date, no jurisdiction has exceeded its adopted water allocation. Carmel-by-the-Sea did, however, approach its limit in 1986. When this happened, the City of Carmel-by-the-Sea responded by adopting an aggressive water conservation program and by requesting that its allocation be increased. Carmel-by-the-Sea was granted an additional 100 acre-feet of water per year as part of an "interim allocation"; the District also adopted an interim "grace amount" provision allowing any jurisdiction exceeding its allocation to temporarily borrow up to 100 acre-feet.

This interim grace amount provision was adopted by the District Board as part of a settlement agreement in *Carmel-by-the-Sea v. Monterey Peninsula Water Management District*. The relevant provisions read in part as follows:

6. *In the event total Cal-Am consumptive water sales remain at or below 18,400 acre-feet per year, the Water Management District shall apply its Rule 41 to allow any municipal jurisdiction which has utilized its maximum interim allocation to temporarily use a portion of the total remaining Cal-Am water available for community consumptive water sales. Any one municipal jurisdiction may exceed its interim allocation only by a maximum of 100 acre-feet per year of consumptive water sales. All jurisdictions may, in the aggregate, exceed their interim allocations only by a maximum of 300 acre feet per year of consumptive water sales. Consumption exceeding 100 acre feet per year of a jurisdiction's interim allocation shall subject that jurisdiction to a water moratorium in accord with Water Management District Rule 41.*
7. *Where available data regarding existing water use and approved projects shows that any municipal jurisdiction will exceed the Water Management District interim allocation, and concurrent with the utilization of any portion of the 100 acre feet per*

*year which is available in excess of that jurisdiction's allocation, that jurisdiction shall agree to use its best efforts, with all due diligence, including all means reasonably available, to reduce water consumption or demand to a level below that jurisdiction's interim allocation within a reasonable period of time. A written plan to reduce water demand to a level below the jurisdictional interim allocation shall be submitted for approval to the Water Management District by the jurisdiction within sixty (60) days of the date it first was known that the jurisdiction exceeded its allocation. The provisions of Paragraphs 6 and 7 of this order shall apply only to the interim allocation, and shall have no force or effect with reference to the final water allocation plan adopted by the Water Management District.*

This policy has raised concerns about what would happen if a jurisdiction borrowed against this grace amount, but was unable to bring its water use back within its allocation limit before the water was needed by another jurisdiction that had not exceeded its allocation.

The question for analysis in this EIR is the effect of the District continuing the interim policy and procedures outlined above as part of the District's Allocation Program. The District may choose to continue this interim approach, or may choose to modify or eliminate it.

## **E. ALLOCATION/CONSERVATION OF NEW WATER SUPPLIES**

A major policy question for the District is how water saved through conservation, water freed-up for new use by reclamation projects, or potable water made available through development of new supplies should be treated in the context of the District's Allocation Program. The question of rededication of freed-up water to new permanent uses highlights the issue of the relationship among the District's three primary responsibilities (i.e., municipal supply, drought protection, and environmental protection). In responding to situations in which new water becomes available, the District Board must weigh the competing values underlying these three responsibilities and decide if and how much of this new water should be conserved or allocated to new uses.

In July 1988, the District Board adopted a new policy for the reallocation of saved water, but, at the request of Monterey County, the Board decided to rescind the policy and include it as a proposal for consideration in this EIR. The following paragraphs present the pertinent concepts proposed by the District Board for analysis in this EIR:

### Purpose

*The MPWMD desires to conserve potable water, reclaim subpotable and wastewater sources, and develop a new potable water supply so as to meet the needs of planned growth, protect the community against drought, and to enhance the environment of the Monterey Peninsula. The District has adopted a long-term goal of reducing demand by 15 percent by the year 2020 and a short-term goal of reducing demand by 9 percent by the year 1990. The District requires the cooperation of the six peninsula cities, the county, the water purveyors, and the community to reach these goals.*

### Conservation

*Conservation refers to mechanical or behavioral reductions in potable water demand resulting from a structured program. Programs such as distribution of kits and regulations*

*requiring retrofit of fixtures are examples of mechanical conservation efforts. Advertising and public service announcements are examples of behavioral conservation programs.*

*Cal-Am water saved through conservation shall not be subject to reallocation. Such savings will automatically remain in the land-use planning agencies allotment in the form of reduced total metered sales. The city/county retains discretion as to the rededication of this water. The District encourages the city/county to set up to 50 percent of this saved water aside as a reserve to balance fluctuations in demand between years, and in recognition of the fact that conservation measures reduce capacity to conserve further in time of drought.*

#### Reclamation

*Reclamation refers to the recovery of subpotable or wastewater sources so as to substitute this supply for irrigation applications currently using potable supply. As such, projects such as the CSD-PBCSD wastewater reclamation project reduce metered sales in one or more jurisdictions.*

*Water saved through reclamation, where the project reclaims less than 50 acre-feet, shall not be subject to reallocation. Reclaimed water savings in excess of 50 acre-feet shall be reallocated by the District Board following CEQA review.*

*The portion of the reclaimed water necessary to secure a project sponsor shall be dedicated to that fiscal sponsor. The balance of the saved water will be apportioned between environmental/drought reserve and growth at the discretion of the MPWMD Board. The water determined available for reinvestment for growth will then be allocated to each jurisdiction at the discretion of the MPWMD Board. . . .*

#### Development of New Potable Water Supply

*Projects that add new potable water supply may increase Cal-Am's system capacity limit and afford additional water for allocation. Such projects include the District's water supply efforts or efforts of private parties such as Cal-Am. Additionally, land-use development or non Cal-Am water distribution systems may propose dedication of production facilities to Cal-Am or the District such that firm yield would increase. Finally, current non Cal-Am water rights may be permanently extinguished such that firm Cal-Am yield would increase. Water afforded through these opportunities shall be processed by the District Board following CEQA review. The Board will determine the magnitude of the system capacity limit. The Board will then dedicate the portion of the developed water to the project sponsor. The balance of the saved water will be apportioned between environmental/drought reserve and growth at the discretion of the Board. The water determined available for reinvestment for growth will then be allocated to each jurisdiction at the discretion of the Board.*

The following sections outline the means by which water might become available and the alternative approaches being considered by the District for reallocating or conserving this "new" water.

## **1. Conservation**

According to the policy proposed by the District, Cal-Am water saved through conservation would not be subject to reallocation. Such savings would instead automatically remain in the conserving jurisdiction's allotment in the form of reduced total metered sales. The jurisdiction would retain discretion as to the rededication of this water. The District's proposed policy would encourage each jurisdiction to set aside up to 50 percent of its saved water as a reserve to balance fluctuations in demand between years, and in recognition of the fact that conservation measures reduce capacity to conserve further in times of drought.

Alternatives to the District's proposed policy could include variations on the same essential components. For instance, rather than having the conserved water remain in the conserving jurisdiction's allocation, it could either be reallocated by the District according to the District's chosen distribution formula (e.g., one of the six distribution alternatives discussed in this EIR), or it could be preserved by the District in the form of reduced Cal-Am production from MPWRS as drought or grace reserve for all jurisdictions within the Cal-Am service area.

## **2. Reclamation**

Another major policy question for the District is how potable water supplies freed-up by reclamation projects should be reallocated and/or conserved within the context of the District's Allocation Program. The Carmel Sanitary District-Pebble Beach Community Services District (CSD-PBCSD) is currently proposing such a wastewater reclamation project.

The District's proposed policy is that water saved through reclamation projects reclaiming less than 50 acre-feet would not be subject to reallocation. For projects larger than 50 acre-feet, reclaimed water savings in excess of 50 acre-feet would be reallocated and/or conserved by the District following CEQA review. The portion of the reclaimed water necessary to secure a project sponsor would be dedicated to that fiscal sponsor. The balance of the saved water would then be apportioned between environmental/drought reserve and growth at the discretion of the District Board. The water determined to be available for rededication to new development would then be allocated to each jurisdiction at the discretion of the District Board.

Variations on this proposed policy could include different methods of funding reclamation (e.g., no fiscal sponsor), different approaches to reallocating water to project sponsors, different standards for the size of projects over which water would be reallocated (instead of 50 acre-feet), and changed apportionment of water between drought reserve and new development.

## **3. Development of New Potable Water Supplies**

Projects that add new potable water supplies may increase Cal-Am's system capacity limit and afford additional water for allocation. Such projects include the District's water supply efforts or efforts of private parties such as Cal-Am. Additionally, land-use development or non-Cal-Am water distribution systems may propose dedication of production facilities to Cal-Am or the District, thus increasing firm yield. Finally, current non-Cal-Am water rights may be permanently extinguished, thus increasing the firm yield available to Cal-Am.

According to the proposed District policy, water made available through the development of new sources would be "processed" by the District Board following CEQA review. The Board would first determine the magnitude of the new system capacity limit. The Board would then dedicate a portion of the new water to the project sponsor. The balance of the saved water would then

be apportioned between environmental/drought reserve and new development at the discretion of the District Board. The water available for new development would then be allocated to each jurisdiction at the discretion of the District Board.

Alternatives to the District's proposed policy would be similar to those discussed under reclamation.

## **F. NO PROJECT ALTERNATIVE**

According to the *CEQA Guidelines*, "the specific alternative of 'no project' shall also be evaluated along with the impact" (§15126(d)(2)). For purposes of this EIR, a no project alternative has been defined for the District's overall role and for each of the three components of the District's Allocation Program. The three components of the program are as follows:

- A limit on how much total water may be produced annually from the Monterey Peninsula Water Resource System (MPWRS) and a limit on how much of this water may be produced by Cal-Am, given the need to protect instream fish and wildlife resources, protect riparian resources, provide for drought protection, and prevent saltwater intrusion.
- A scheme for allocating Cal-Am water to each of the jurisdictions within the Cal-Am service area.
- A set of mechanisms for monitoring jurisdictional water use, ensuring jurisdictional compliance with the allocation scheme, and making adjustments to the allocation scheme over time.

### **1. District's Role in Water Allocation**

For the District's role in water allocation for the Cal-Am system, the "no project" alternative is defined as the District continuing to issue water meter permits as long as such actions do not require any increase in production by the Cal-Am system.

### **2. Water Supply**

For water supply, the "no project" alternative is defined as the current production level (i.e., 18,400 acre-feet). This is Water Supply Option I.

### **3. Water Distribution**

For water distribution, the "no project" alternative is defined as the current water use level for each lot within each jurisdiction (i.e., metered sales for 1987 plus estimated water required for projects approved/completed in 1987). Under this alternative, the District would continue to issue water meter permits for new and expanded uses as long as the amount of water for the new or expanded use did not exceed the usage level for the affected lot for calendar year 1987 and/or the estimated usage for a project or projects approved/completed in 1987, as listed on the District's water meter permit for the project.

### **4. Monitoring/Compliance Mechanisms**

For monitoring/compliance mechanisms, the "no project" alternative is the elimination of the annual review procedure, the allocation system itself, and the interim grace amount policy, since no new water would be allocated to jurisdictions.

## **5. Allocation of New Water Supplies**

For allocation of new water supplies, the "no project" alternative is defined as a District policy of not allowing the use or reallocation of "new" water developed through conservation, reclamation, or development of new potable water supplies, unless the "new" water is reinvested on the same lot.