

**MONTEREY PENINSULA WATER MANAGEMENT DISTRICT
TECHNICAL MEMORANDUM 2006-02**

APPENDIX A

**Staff Note from MPWMD Special Meeting/Board Workshop
On March 23, 2006: *Water Needs Analysis: Existing Setting and Demand***

Year 2005, the average annual demand by all Cal-Am customers was 0.32 acre-feet per year (AFY) or 287 gallons per day. Average annual demand by Cal-Am's residential customers in Water Year 2005 was 0.21 AFY or 183 gallons per day. Assuming an average of three persons in each single-family residence, this equates to an average annual residential demand of approximately 60 gallons per person per day.

Existing Water Supply (Metered Production)

As indicated above, Cal-Am produced 13,678 AF from wells in the Carmel Valley and Seaside coastal area to meet customer water demand² in Water Year 2005. In addition, Cal-Am produced 351 AF from wells in the Carmel Valley for injection and storage in the Seaside Groundwater Basin via the District's Santa Margarita Test Injection Well and 10 AF for backwash purposes. Therefore, Cal-Am's total production from sources that serve its main system in Water Year 2005 was 14,039 AF. The difference between the sum of metered sales, production for injection, and backwash (12,356 AF) and metered production (14,039 AF) in Water Year 2005 was 1,683 AF and is considered unaccounted-for-water use. In Water Year 2005, unaccounted-for-water use, which includes leakage, fire flows, and meter error, was 12% of Cal-Am's total water production.

Of the 14,039 AF of total production, 11,037 AF were produced from wells in the Carmel Valley and 3,002 AF were produced from wells in the coastal subareas of the Seaside Groundwater Basin. Exhibit 1-D shows a breakdown of this production by source, which include surface water diversions from the Carmel River at San Clemente Dam, groundwater extractions from the Upper Carmel Valley Alluvial Aquifer, groundwater extractions from the Lower Carmel Valley Alluvial Aquifer, and groundwater extractions from the coastal subareas of the Seaside Groundwater Basin. For reference, Exhibit 1-E shows a breakdown of annual production by Cal-Am or its predecessor companies by source over time, i.e., from 1916 through 2005.

Existing Water Needs

Existing water needs are determined by available water supply and existing water demand. Available water supply depends on the physical and legal availability of water and storage capacity. Existing water demand is controlled by the number and type of customers served and weather conditions. Currently, the key constraints on available water supplies in the Monterey Peninsula are legal and relate to State Water Resources Control Board (SWRCB) Order No. WR 95-10 that limits Cal-Am's production from the Carmel River and underlying alluvial aquifer and the Tentative Decision³ in the Seaside Groundwater Basin adjudication that limits Cal-Am's production from the coastal subareas of the Seaside Basin. Each of these constraints is described below.

² This total includes production for riparian irrigation near selected production wells in the vicinity of the Carmel River (2.7 AF), non-revenue metered use (16 AF), and water provided to Cal-Am's Ryan Ranch Unit (2.4 AF).

³ A Tentative Decision was filed by the Court on January 12, 2006, and several requests for clarification were subsequently submitted by the parties. A Modified Tentative Decision was prepared by Cal-Am and filed on February 15, 2006. On February 16, 2006, the Court indicated that it would rule on any objections during the week of March 20, 2006, or order a hearing regarding the objections, if appropriate.

SWRCB Order 95-10: Order 95-10 was issued in July 1995 in response to four complaints filed against Cal-Am and its diversions from the Carmel River and underlying alluvial aquifer. In Order 95-10, it was determined that the water in the Carmel Valley Alluvial Aquifer is water flowing in a "subterranean stream" and subject to the jurisdiction of the SWRCB. Based on its review of Cal-Am's water right claims, the SWRCB determined that Cal-Am was diverting 10,730 AFY of water from the Carmel River and underlying alluvial aquifer without a valid basis of right and that these diversions were having an adverse affect on the riparian corridor along the river below San Clemente Dam, wildlife that depend on instream flow and riparian habitat, and steelhead that spawn in the Carmel River. Significantly, Cal-Am was ordered to reduce its average production from the Carmel River and underlying alluvial aquifer by 15% in Water Year 1996 and 20% in each subsequent water year. The "base" for this reduction was set at 14,106 AFY, which represents the average of Cal-Am's annual diversions from the Carmel River and underlying alluvial aquifer during the ten-year period from 1979 through 1988.

Using this base, Order 95-10 limited Cal-Am's production from the Carmel River and underlying alluvial aquifer to 11,990 AF in Water Year 1996 ($14,106 \times [1 - 0.15] = 11,990$) and 11,285 AF in each subsequent water year ($14,106 \times [1 - 0.20] = 11,285$). This is the current legal limit on Cal-Am's annual production from the Carmel River and underlying alluvial aquifer.

The SWRCB also used this base (14,106 AFY) to approximate the extent of Cal-Am's illegal diversions from the Carmel River. By comparing Cal-Am's recognized maximum rights to water in the Carmel River and underlying alluvial aquifer (3,376 AFY⁴) with Cal-Am's average production from the Carmel River and underlying alluvial aquifer during the 1979-1988 period (14,106 AFY), the SWRCB found that Cal-Am was unlawfully diverting 10,730 AFY ($14,106 - 3,376 = 10,730$).

Importantly, the amount Cal-Am diverts in excess of its legal rights varies each year depending on actual production. For example, in Water Year 2005, Cal-Am produced 10,686 AF from the Carmel River and underlying alluvial aquifer for customer use⁵. This quantity was 599 AF or 5.3% below the 11,285 AF production limit set by Order 95-10. More to the point, during Water Year 2005, Cal-Am's unlawful diversions for customer service totaled 7,310 AF ($10,686 - 3,376 = 7,310$). **Exhibit 1-F** shows a comparison of Cal-Am's actual production from Carmel River sources for customer service with the diversion limits set by Order 95-10 for Water Years 1996 through 2005. **Exhibit 1-F** also indicates the water year class, e.g.: wet versus normal, and shows the amount of water that Cal-Am actually diverted from its Carmel River sources in excess of its recognized rights. This amount of "unlawful diversions" has averaged 7,690 AFY during the past ten years and ranged from a low of 6,778 AF in Water Year 1998 to a high of 9,471 AF in Water Year 1997. Note that Cal-Am has complied with the Order 95-10 diversion limits in all years, except for Water Year 1997⁶.

⁴ This total includes 1,137 AFY of pre-1914 appropriative rights, 60 AFY of riparian rights, and 2,179 AFY of post-1914 appropriative rights.

⁵ This total does not include the 351 AF that were diverted by Cal-Am for injection into the Seaside Basin.

⁶ Although Water Year 1997 was classified as a "Above Normal" year, it was characterized by an extremely wet period from October 1996 through February 1997 (87,040 AF) and an extremely dry period from March 1997 through September 1997 (11,520 AF).

Seaside Groundwater Basin Adjudication: The judgment in the Seaside Groundwater Basin adjudication is expected to be entered in March or April 2006. Based on the Tentative Decision issued in January 2006, it is anticipated that this judgment will determine that the basin is in a state of overdraft and, as part of a “physical solution” establish an “operating yield” for producers in the coastal subareas of the Seaside Basin. Specifically, it is expected that the Court will set the operating yield for the coastal subareas at 4,611 AFY, with 743 AFY assigned to “Alternative Production Allocations” and 3,868 AFY assigned to “Standard Production Allocations”. Cal-Am, as a “Standard Producer” will be allocated rights to produce up to 3,504 AFY from the coastal subareas. Note that this allocation is 496 AFY less than the annual yield previously assumed for Cal-Am from the coastal subareas (4,000 AFY) and used in recent District planning efforts, e.g., *Quarterly Water Supply Strategy and Budget* and *Expanded Water Conservation and Standby Rationing Plan*.

The judgment will also include several mechanisms that will enable Cal-Am to produce more than 3,504 AF of groundwater from the coastal subareas in a year. For example, Cal-Am could (1) acquire the rights to produce more water from other producers in the basin, (2) produce more than its allocated amount and pay a replenishment assessment, (3) forego pumping in one year to establish “carryover credits” and utilize these credits in a subsequent year, and (4) obtain supplemental sources of water to establish “stored water credits” for use. Each of these mechanisms will be administered by the Seaside Basin Watermaster according to a set of rules and regulations to be developed by the Watermaster.

Lastly, the judgment will require that the operating yield for coastal subareas (4,611 AFY) be decreased by 10% every three years starting in year four, e.g. 10% decrease at the start of the fourth year for years four, five, and six, and an additional 10% decrease at the start of the seventh year for years seven, eight and nine; etc. These decreases will continue until production reaches the “natural safe yield” set by the Court for the coastal subareas (2,392 AFY⁷) unless the Watermaster (1) has secured an equivalent amount of “non-native” replacement water and added it to the basin, or (2) the Watermaster has secured an equivalent amount of recycled water and contracted with one or more of the producers in the basin to use this quantity of recycled water in lieu of their production allocation with the producers agreeing to forego their right to claim a storage credit for their forbearance, or (3) any combination of replacement or recycled water results in the required decrease in production of “native water” in the basin, or (4) water levels in the aquifers are sufficient to ensure a positive offshore gradient to prevent seawater intrusion.

If replacement or recycled water supplies are not obtained or groundwater levels are not sufficient to prevent seawater intrusion, Cal-Am’s production allocation in the coastal subareas could ultimately be reduced to 1,494 AFY. This amount equals the natural safe yield for the coastal subareas (2,392 AFY) minus the sum of the Alternative Production Allocations (743 AFY) times Cal-Am’s share of the remaining Standard Production Allocation (90.6%).

⁷ In the Tentative Decision, the “Natural Safe Yield” for the basin is initially assumed to be 3,000 AFY, with 608 AFY assigned to the inland Laguna Seca subarea. The remainder of the initially assumed natural safe yield is assumed to be assigned to the coastal subareas (3,000 – 608 = 2,392).

Replacement Water Required to Meet Existing Water Needs: The amount of replacement water⁸ required to meet existing water needs depends on a number of assumptions, as described below.

1. As a maximum, if one assumes that Cal-Am must replace 10,730 AFY of its production from Carmel River sources (based on Order 95-10) and must replace 2,506 AFY of its production from sources in the Seaside coastal area (based on the Seaside Basin adjudication⁹), then Cal-Am must develop a total of 13,236 AFY of replacement water to meet "existing" water needs in its main water distribution system in the Monterey Peninsula area.
2. As a minimum, if one assumes that Cal-Am must replace 7,690 AFY of its production from Carmel River sources (based on the difference between average actual annual Cal-Am production during the 1996-2005 period [11,066 AFY] and Cal-Am's recognized rights to Carmel River sources [3,376 AFY]) and must replace 496 AFY of its production from sources in Seaside coastal area (based on the difference between Cal-Am's average share of the safe yield of the coastal portion of the Seaside Basin that was previously assumed [4,000 AFY] and Cal-Am's share of the initially assumed operating yield for the coastal portion of the Seaside Basin [3,504 AFY]), then Cal-Am must develop a total of 8,186 AFY of replacement water to meet "existing" water needs in its main water distribution system in the Monterey Peninsula area.

Different assumptions regarding existing water demand and whether or not existing demand is artificially low because of regulatory constraints and which water replacement efforts will be implemented in the Seaside Basin by which producers will result in different estimates of the amount of water required to reliably and legally meet existing water demand in the main Cal-Am system in the Monterey Peninsula area. In general, this amount will range from approximately 8,200 to 13,200 AFY.

EXHIBITS

- 1-A Distribution of Cal-Am Water Demand by Jurisdiction in Water Year 2005
- 1-B Distribution of Cal-Am Water Demand by Customer Type in Water Year 2005
- 1-C Average Annual Cal-Am Demand by Customer for Water Years 1986 - 2005
- 1-D Distribution of Cal-Am Water Production by Source in Water Year 2005
- 1-E Cal-Am Water Production by Source: 1916 - 2005
- 1-F California American Water Annual Production from Carmel River Sources Compared to Diversion Limits Set by State Water Resources Control Board Order 95-10 for Water Years 1996 through 2005

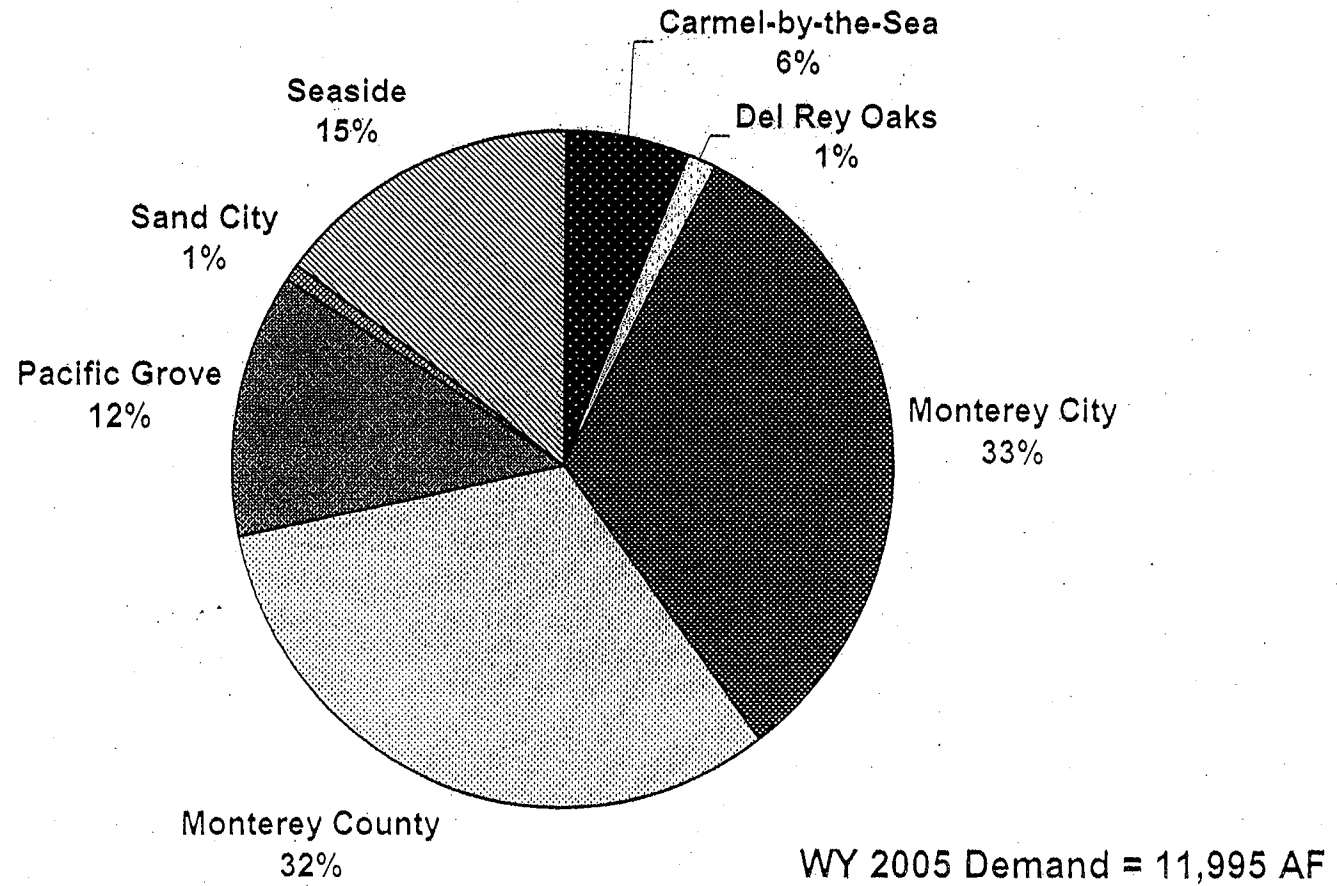
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⁸ In this discussion, "replacement water" includes recycled water and refers to new water supplies that will replace Cal-Am's existing supplies that are produced without a valid basis of right in the Carmel River Basin or are in excess of Cal-Am's standard producer's allocation in the coastal subareas of the Seaside Groundwater Basin.

⁹ This calculation represents the difference between Cal-Am's share of the safe yield of the coastal portion of the Seaside Basin that was previously assumed (4,000 AFY) and Cal-Am's share of the natural safe yield indicated in the Tentative Decision (1,494 AFY).

EXHIBIT 1-A

Distribution of Cal-Am Water Demand by Jurisdiction in Water Year 2005
(Values in Acre-Feet)



**Distribution of Cal-Am Water Demand by Customer Type in Water Year 2005
(Values in Acre-Feet)**

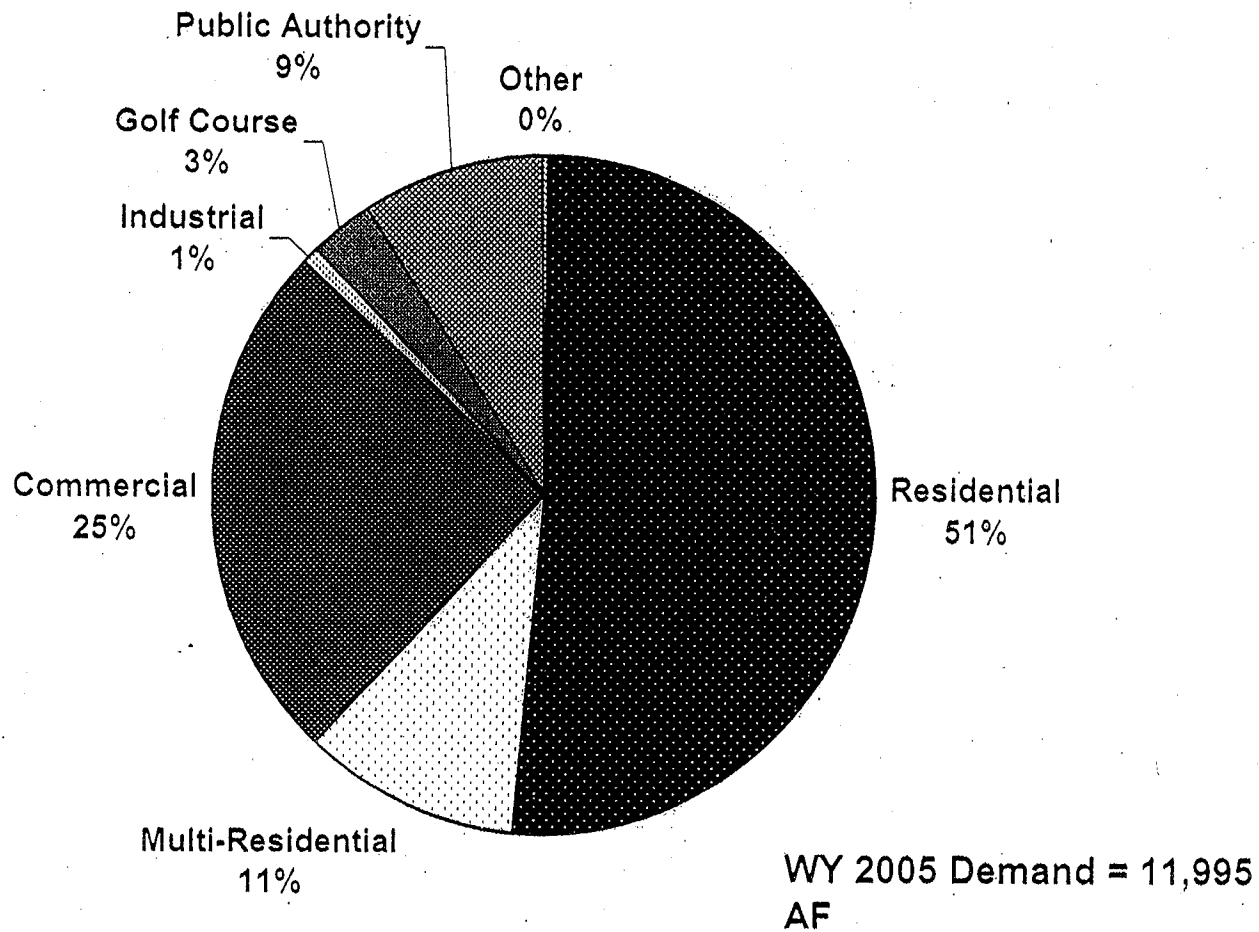
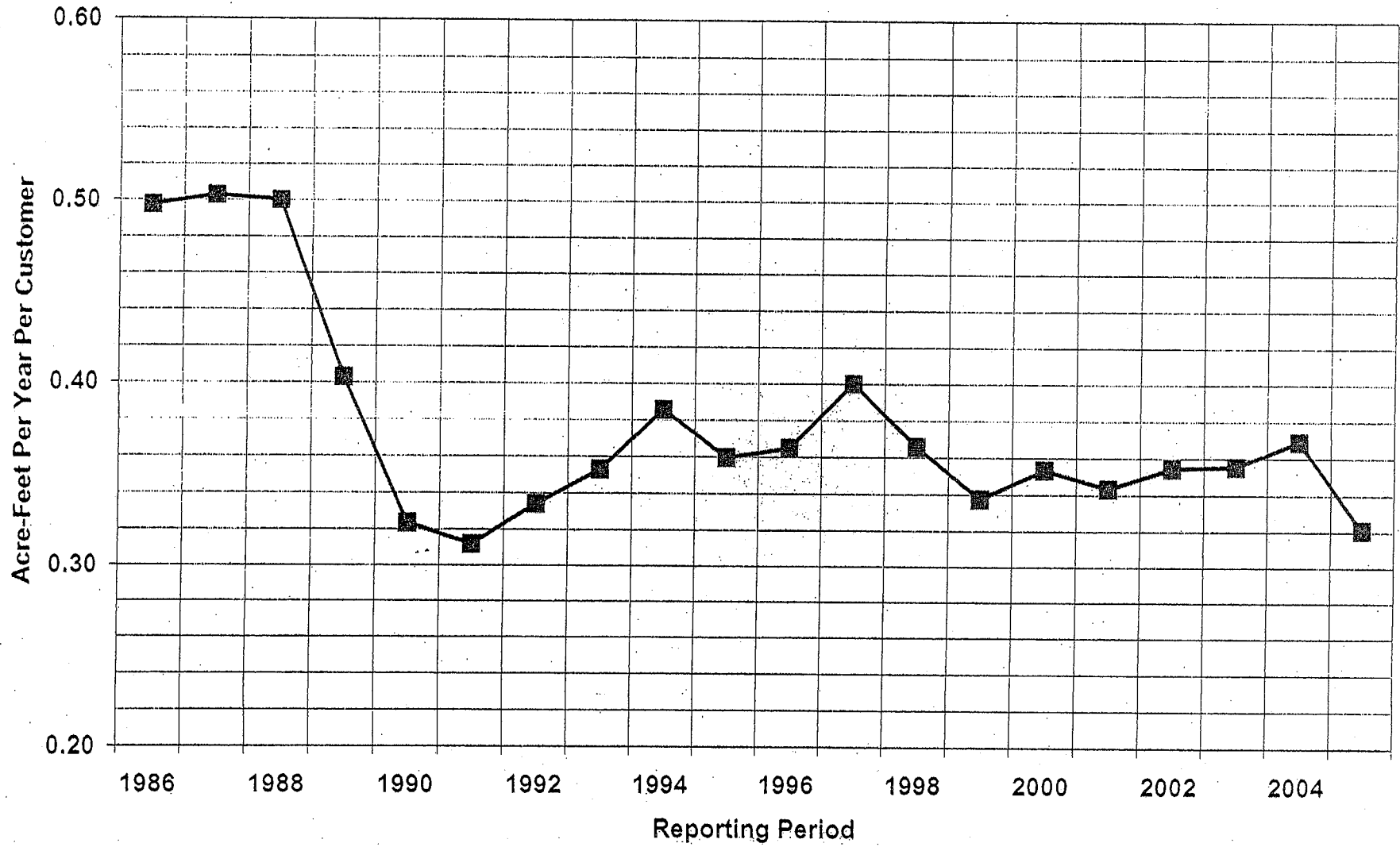
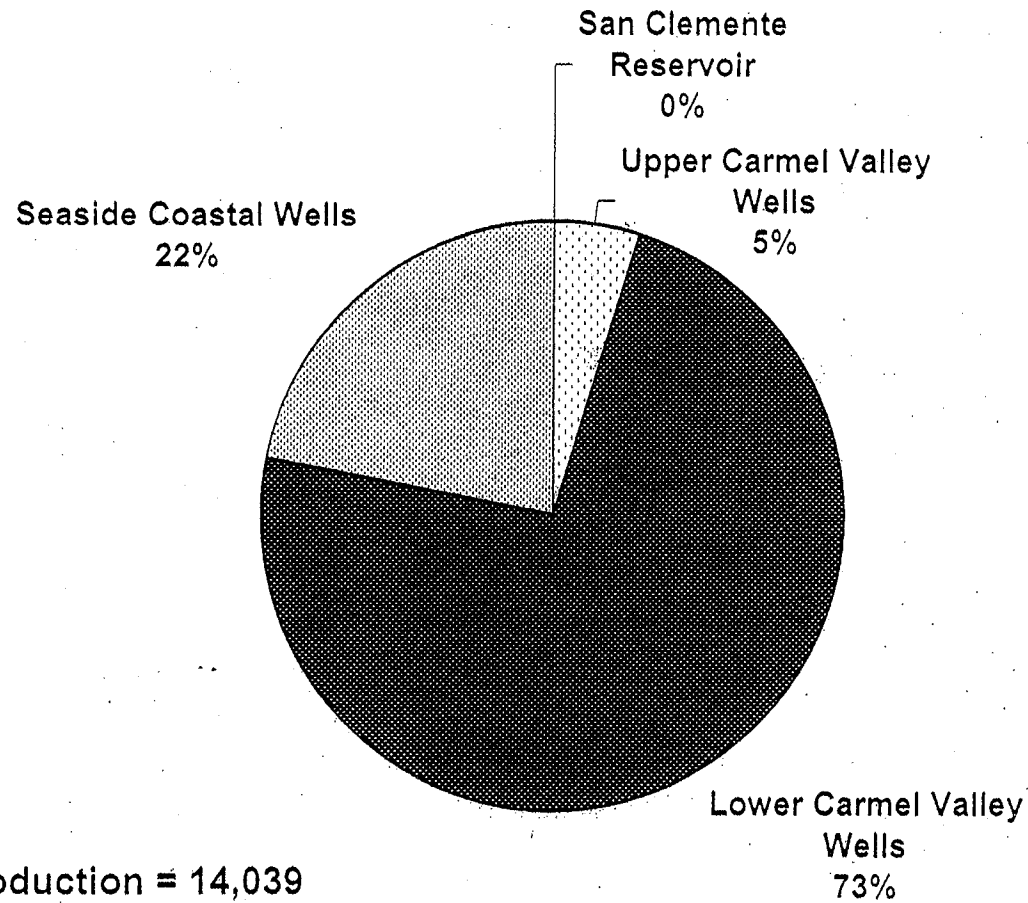


EXHIBIT 1-C

Average Annual Cal-Am Demand by Customer for Water Years 1986 - 2005



**Distribution of Cal-Am Water Production by Source in Water Year 2005
(Values in Acre-Feet)**



WY 2005 Production = 14,039

EXHIBIT 1-E

Cal-Am Water Production by Source: 1916-2005

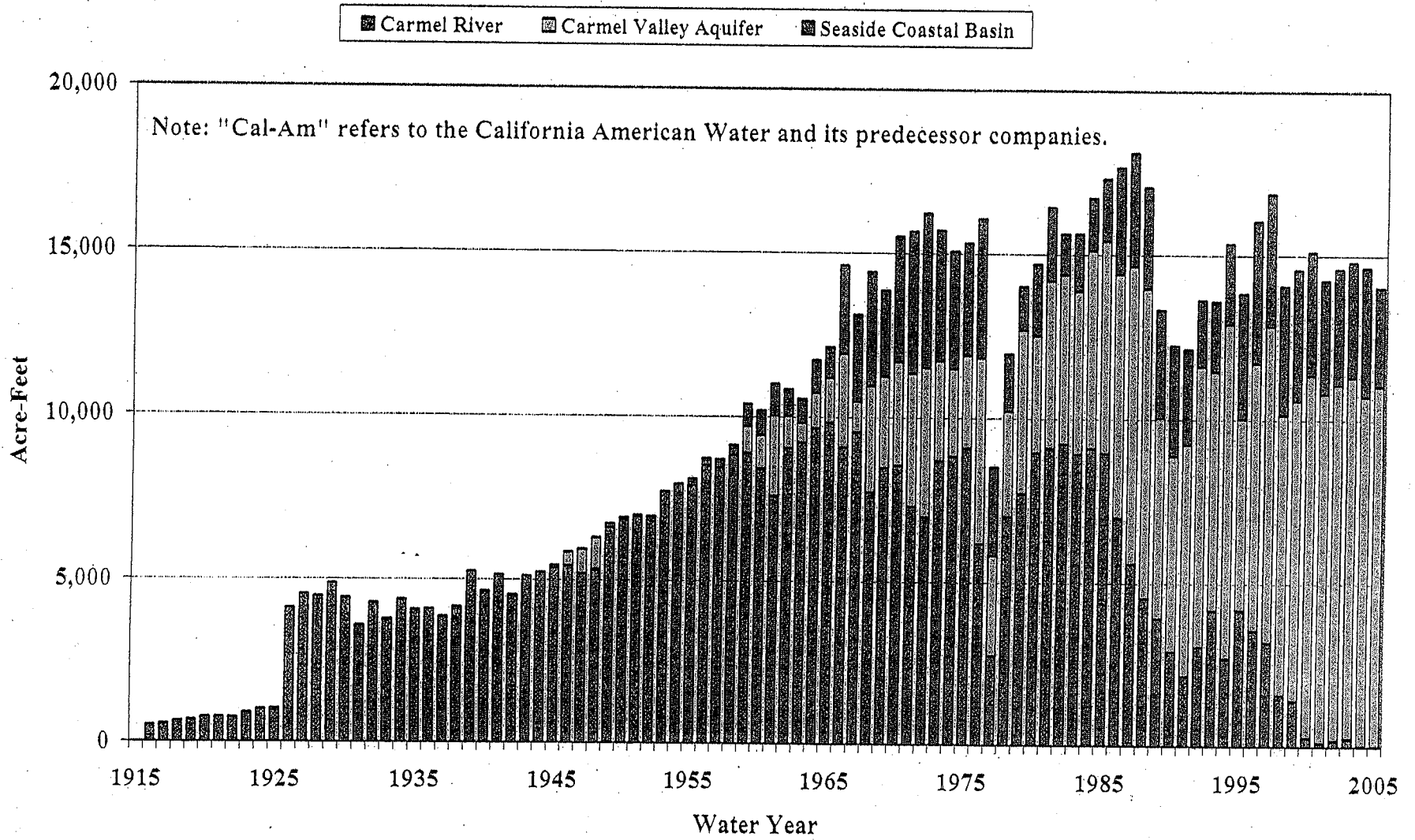


EXHIBIT 1-F

Monterey Peninsula Water Management District

**California American Water Annual Production from Carmel River Sources
Compared to Diversion Limits Set By State Water Resources Control Board
Order 95-10 for Water Years 1996 through 2005**

Water Year	SWRCB Limit (AF)	Cal-Am Production (AF)	Difference		Water Year Class	Unlawful Diversions (AF)
			(AF)	(%)		
1996	11,990	11,701	-289	-2.4%	Above Normal	8,325
1997	11,285	12,847	1,562	13.8%	Above Normal	9,471
1998	11,285	10,154	-1,131	-10.0%	Extremely Wet	6,778
1999	11,285	10,384	-901	-8.0%	Normal	7,008
2000	11,285	11,179	-106	-0.9%	Normal	7,803
2001	11,285	10,721	-564	-5.0%	Normal	7,345
2002	11,285	10,759	-526	-4.7%	Below Normal	7,383
2003	11,285	11,131	-154	-1.4%	Normal	7,755
2004	11,285	11,094	-191	-1.7%	Below Normal	7,718
2005	11,285	10,686	-599	-5.3%	Wet	7,310
Average:		11,066	-290	-2.6%		7,690

Source: California American Water, Monthly Production Reports

Notes:

1. Production values have been adjusted to exclude diversions that were made for injection into the coastal subareas of the Seaside Groundwater Basin.
2. Cal-Am's annual "unlawful diversions" are calculated as Cal-Am's actual annual diversions from Carmel River sources minus Cal-Am's "recognized" rights to divert from the Carmel River system, i.e., 3,376 acre-feet per year.