BEFORE THE STATE WATER RESOURCES CONTROL BOARD

In the Matter of the State Water Resources Control Board (State Water Board) Hearing to consider Monterey Peninsula Water Management District's (MPWMD) Petitions to Change Permits 7130B and 20808 (Applications 11674B and 27614)	Hearing Date: September 24, 2007 Carmel River in Monterey County

EXHIBIT DF-9

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

WATER AVAILABILITY ANALYSIS FOR PETITION REQUESTING CHANGES TO WATER RIGHT PERMITS 7130B AND 20808 OF THE MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

Water Availability Analysis
For Petition Requesting Changes to
Water Right Permits 7130B and 20808 of the
Monterey Peninsula Water Management District

Carmel River and Carmel River Subterranean Stream

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CARMEL RIVER WATER AVAILABILITY ANALYSIS

1.0 INTRODUCTION

This report summarizes the results of the water availability analysis conducted in support of the *Petition for Change to Water Right Permits 7130B and 20808 (Applications 11674B and 27614)* submitted by the Monterey Peninsula Water Management District (District or MPWMD) on April 19, 2002. The petition applies to diversions from the Carmel River and Carmel River subterranean stream (collectively referred to as the Carmel River) that are tributary to the Pacific Ocean and located within the Carmel River watershed in Monterey County. The analysis is designed to determine whether or not water is available for appropriation in accordance with California Water Code section 1275 (d).

Figure 1 shows the location of the Carmel River watershed and nearby Seaside Ground Water Basin. The location of the points of diversion, District boundary, and other features related to the petition in the area are shown on Sheet 1 of a different District application, *Revised Petition for Change for Diversion and Use of Water from the Carmel River for the Seaside Groundwater Basin Full-Scale Injection/Recovery Project*, that was submitted by the District on September 15, 2003 and is on file at the SWRCB office. Note that the September 15, 2003 application is for a separate matter and that Sheet 1 includes some information that is not pertinent, e.g., points of injection to underground storage and rediversion in the Seaside Ground Water Basin, to the subject petition.

This report was prepared in response to direction by the State Water Resources Control Board's (SWRCB) Division of Water Rights for an analysis of water availability for a direct diversion project. As directed, the analysis takes into account the bypass flow criteria for the District's permits and the flows recommended by the National Marine Fisheries Service (NOAA Fisheries) in their report, *Instream Flow Needs for Steelhead in the Carmel River*, dated June 3, 2002.

The analysis is similar to the water availability analysis conducted by SWRCB's Division of Water Rights in July 1995 as part of Decision No. 1632 on applications 11674B and 27614. The 1995 SWRCB analysis is described in Section 4.0 of Decision No. 1632, *Availability of Unappropriated Water*. This water availability analysis, like the 1995 SWRCB analysis, relies on streamflow values simulated by the District's Carmel Valley Simulation Model (CVSIM). This report is formatted according to the guidelines for preparing a water availability analysis suggested by the SWRCB's Division of Water Rights on their website at *waterrights.ca.gov/WaterAvailabilty/default.html*.

The purpose of the water availability analysis is to determine whether or not additional Carmel River water is available for lawful diversion, based on current water rights held by Cal-Am and non Cal-Am diverters in the Carmel River Basin. In this context, the analysis focuses on the flows in the Carmel River that would have occurred if Cal-Am's

annual diversions from the Carmel River had been limited to no more than 3,376 acre-feet (af) and non Cal-Am annual diversions from the Carmel River were no more than 2,940 af. By limiting simulated diversions to these levels, the analysis can quantify the amount of water that would be available for diversion in excess of legal rights and instream flows needed to protect the environment.

2.0 PROJECT DESCRIPTION

As proposed, the petition would allow existing unlawful direct diversions to be made lawfully under certain conditions. This action represents the project and is referred to as the *Carmel River Existing Diversion Project*. The project is located in the Monterey Peninsula area of Monterey County near the cities of Carmel-by-the-Sea and Monterey. The petition requests changes to existing water right permits held by the District (Permits 7130B and 20808) for diversion to storage and direct diversions from the Carmel River. Specifically, the petition seeks to directly divert up to 42 cubic feet per second (cfs) or a maximum of 7,909 acre-feet (af) during the season of November 1 to June 30 when Carmel River flows exceed the instream flow requirements recommended by NOAA Fisheries. The petition requests direct diversion for domestic, industrial, municipal, irrigation, and fish and wildlife purposes. The petition also proposes a number of amendments to the existing permit conditions for Permits 7130B and 20808. These proposed amendments are listed in Attachment 3 of the District's petition and are included as **Appendix A**.

The petition is proposed to provide a legal basis of right for diversions by the California-American Water Company (Cal-Am) that are presently allowed by SWRCB Order No. WR 95-10. In Order 95-10, the SWRCB concluded that Cal-Am had legal rights to 3,376 acre-feet annually (afa) from the Carmel River and, based on Cal-Am's average annual diversions from the Carmel River between 1979 and 1988 (i.e., 14,106 afa), did not have legal rights for 10,730 afa that the company had been diverting from the Carmel River. As a consequence, Cal-Am was ordered to obtain rights to cover its existing diversions and, in the interim, reduce its diversions from the Carmel River by 15 percent in Water Year 1996 and 20 percent in each subsequent water year. These reductions, when applied to Cal-Am's average historical diversion from the Carmel River, allowed Cal-Am to divert up to 11,990 af from the Carmel River in Water Year 1996 and up to 11,285 af in each subsequent water year (i.e., Water Years 1997 – 2003). In order to protect public health and safety in the Monterey Peninsula area, SWRCB has allowed Cal-Am to divert up to 7,909 afa from the Carmel River (i.e., 11,285 afa – 3,376 afa) without a valid basis of right since October 1996.

The petition is proposed to provide a legal basis for all or some of the existing unlawful diversions from the Carmel River during the high-flow season, when flow in the Carmel River exceeds recommended instream flow requirements. Specifically, the analysis is designed to quantify the amount of water that would be available for direct diversion from the Carmel River subterranean stream (i.e., Carmel Valley alluvial aquifer) between November 1 and June 30 when flow in the Carmel River exceeds the instream flow requirements recommended by NOAA Fisheries in June 2002.

In this regard, this water availability analysis is limited to the changes requested to Permit 20808 for direct diversions from the lower reach of the Carmel River subterranean stream (i.e., below River Mile [RM] 5.5) during the November 1 – June 30 period, before the proposed New Los Padres Reservoir project is fully operational, and when flow in the Carmel River is physically available over and above the fish flow requirements recommended by NOAA Fisheries for this reach. The decision to focus on direct diversions from the lower reach of the Carmel River subterranean stream (i.e., RM 5.5 to the Carmel River lagoon) was made to simplify the analysis and is consistent with the current management practices and conservation agreements to shift Cal-Am's diversions as far downstream as possible. By shifting diversions downstream, upstream flows are preserved and instream habitat is protected. As a consequence, this analysis does not address the change from storage rights to direct diversion rights proposed in the petition for Permits 20808 and 7130B.

The *Carmel River Existing Diversion Project* would allow Cal-Am to divert up to 42 cfs or 7,909 afa from existing and new production wells in the Carmel Valley alluvial aquifer downstream of RM 5.5 (i.e., near Cal-Am's Cypress production well, approximately 2.3 miles upstream of the United States Geological Survey [USGS] Carmel River near Carmel streamflow gage) between November 1 and June 30 when Carmel River flow at the District's Highway 1 Bridge gage exceeds the instream flow requirements recommended by NOAA Fisheries. This analysis is designed to quantify the amount of water available for diversion and the frequency that this water would be available.

3.0 FLOW ESTIMATION METHODS

A variety of methods was used to estimate mean daily streamflow values for six locations along the Carmel River mainstem and eight tributaries below the Los Padres Dam site for a 45-year period of analysis. The mainstem locations include flow at:

(1) Los Padres Dam site (RM 24.8),
(2) San Clemente Dam site (RM 18.6),
(3) USGS Robles del Rio gage site (RM 14.4),
(4) Scarlett Narrows site (RM 9.6),
(5) USGS Near Carmel gage site (RM 3.2), and
(6) MPWMD Highway 1 Bridge gage site (RM 1.1).

The tributary flows represent inflow at the confluence between each tributary and the Carmel River and include flows from:

(1) Cachagua Creek
(2) Pine Creek
(3) San Clemente Creek
(4) Tularcitos Creek
(5) Hitchcock Canyon Creek
(6) Garzas Creek

(7) Robinson Canyon Creek, and
(8) Potrero Creek.

The period of analysis was based on historical records for the period from October 1, 1957 through September 30, 2002 (i.e., Water Years 1958–2002). The primary historical flow record during this period was compiled by the USGS and consisted of mean daily flows of the Carmel River at the Robles del Rio gaging station (Station No. 11143200). Estimates of mean daily flows for each tributary were made by correlation with the flow at the Robles del Rio site. Simple linear regression equations for each tributary were developed based on periodic tributary flow measurements made by District staff during the 1981-1986 period and corresponding flows recorded at the Robles del Rio site. The regressed tributary values for the WY 1958-1991 period are complemented with recorded mean daily flow values for each tributary[1] for the WY 1992-2002 period.

The mean daily flows at the Los Padres dam site, which represents the top of the simulated system, were reconstructed by "back-calculating" from the recorded mean daily flows at the Robles del Rio site. In this reconstruction, the mean daily flows at the Robles del Rio site were systemically adjusted for upstream gains and losses. The gains consisted of tributary inflows and releases of reservoir storage and the losses consisted of direct diversions, diversions to storage, and reservoir evaporation. In back-calculating, the mean daily flow at the Robles del Rio site was reduced for tributary inflows and releases of reservoir storage and increased for direct diversions, diversions to storage, and reservoir evaporation.

The mean daily flows for the five mainstem locations below the Los Padres dam site were simulated by routing the reconstructed mean daily flows at the Los Padres dam site downstream through the system. In this routing, the mean daily flows at the Los Padres dam site were systemically adjusted for downstream gains and losses. For "unimpaired" conditions, which represent the flows that would have occurred over time without any surface water diversions, ground water pumping, or reservoir effects (i.e., flow regulation or evaporation), the mean daily flow at the Los Padres dam site was increased for tributary inflows and decreased for percolation losses to the underlying alluvial aquifer. For "impaired" conditions, which represent the flows that would occur over time under assumed surface water diversions, ground water pumping, and reservoir effects, the mean daily flow at the Los Padres dam site was also increased for tributary inflows and decreased for percolation losses to the underlying alluvial aquifer. Under impaired conditions, percolation losses were greater due to the Cal-Am and non Cal-Am ground water pumping that was assumed.

4.0 UNIMPAIRED FLOWS

Unimpaired flow is the volume of water that would flow past a particular point of interest if no diversions (i.e., impairments) were taking place in the watershed above that point.

[1] The flow record for Potrero Creek began in WY 1992.

Based on CVSIM simulations, the District estimated that an average of 54,288 afa of unimpaired flow would occur at the Los Padres dam site during the 45-year period of analysis. Similarly, the District estimated that an average of 81,713 afa would occur as unimpaired inflow to the Carmel River Lagoon during the period of analysis. Monthly and annual unimpaired flow estimates for each of these sites for the period of analysis are shown in **Tables 1 and 2**, respectively. Each table includes selected exceedence frequencies. An exceedence frequency is the percentage of time that a particular flow value is equaled or exceeded during a period of analysis. For example, the 87.5% exceedence frequency is the streamflow value that is equaled or exceeded 87.5% of the time. In Table 2, the 87.5% exceedence frequency for simulated unimpaired streamflow at the Carmel River lagoon in February is 2,001 af, which means that the unimpaired flow in February is equal to or greater than 2,001 af 87.5% of the time.

In general, there is an inverse relationship between exceedence frequencies and streamflow. That is, high exceedence frequencies are associated with low flow and low exceedence frequencies are associated with high flows. This relationship follows from the fact that low flows are frequently exceeded and high flows are infrequently exceeded. The 50.0% exceedence frequency is the value that is equaled or exceeded 50% of the time and represents the median value for the period of analysis. On an annual basis, the District estimated median values of 37,495 afa of unimpaired flow at the Los Padres dam site and 57,324 afa at the Carmel River Lagoon during the period of analysis. Note that for each site the **mean annual** value is greater than the **median annual** value, which suggests a skewed distribution. During the season of diversion (i.e., November 1 – June 30), an average of 79,714 af of unimpaired flow occurred as inflow into the Carmel River Lagoon during the period of analysis.

5.0 IMPAIRED FLOWS

Impaired flow is the volume of water that would flow past a particular point of interest if assumed diversions and operations were taking place in the watershed above that point. Based on CVSIM simulations, the District estimated that an average of 76,583 afa of impaired inflow would occur at the Carmel River Lagoon during the period of analysis. Monthly and annual impaired flow estimates for the Lagoon site for the period of analysis with selected exceedence frequencies are shown in **Table 3.** On an annual basis, the District estimated a median value of 51,213 afa of impaired flow at Carmel River Lagoon during the period of analysis. During the season of diversion (i.e., November 1 – June 30), an average of 75,817 af of impaired flow occurred as inflow into the Carmel River Lagoon during the period of analysis.

For the impaired flow simulation, it was assumed that the maximum annual Cal-Am production was less than or equal to 7,376 af, with no more than 3,376 af available from Cal-Am's diversions from the Carmel River and an average of approximately 4,000 af available from Cal-Am's diversions from the coastal subareas in the Seaside Ground Water Basin. This simulation represents full enforcement of Order 95-10 and only allows Cal-Am to divert up to its recognized rights from the Carmel River, i.e., 3,376 afa. **Table 4** shows the simulated Cal-Am diversions from the Carmel Valley alluvial aquifer for the

period of analysis. As shown, Cal-Am's diversions from the Carmel River would average 2,816 afa, with a maximum diversion of 3,411 af in Water Year 1977 and a minimum diversion of 1,163 af in Water Year 1958. In the simulation, Cal-Am's maximum annual diversion rate of 3,376 af was allowed to be exceeded once during the 45-year period of analysis. In all other years, Cal-Am's diversions from the Carmel River were less than the 3,376 af presently allowed under its recognized rights.

It should be noted that the assumed maximum diversion quantity for Cal-Am from the coastal subareas of the Seaside Ground Water Basin, i.e., 4,000 afa, is under review by the District and may need to be reduced to ensure that the combination of Cal-Am and non Cal-Am pumping does not exceed the estimated "safe yield" of the coastal subareas.

In addition to the Cal-Am water production in the impaired flow simulation, District staff assumed that the maximum annual non Cal-Am production from the Carmel River would be 2,936 afa. This amount is based on the ground water pumping that was reported in WY 2002 as part of District's Well Registration and Reporting Program. The reported diversions for those non Cal-Am pumpers for which specific quantities have been reserved by the SWRCB for future appropriation (i.e., Table 13, *Carmel River Watershed – SWRCB Determination of Priority and Quantities Obtained From Stipulations, Applications, of Protests*, SWRCB Decision No. 1632) were adjusted to reflect these reservations. **Table 5** lists the pumpers who have SWRCB Table 13 reservations and compares the quantities of water reserved for future appropriation with the quantities reported to the District for WY 2002. For this water availability analysis, the annual non Cal-Am diversions from subunits 2, 3, and 4 of the Carmel Valley alluvial aquifer were increased by 39.7, 223.6, and 332.1 af, respectively, to reflect the differences between the diversions that were reported in Water Year 2002 and the quantities reserved for future appropriation in Table 13.

As discussed earlier, the unimpaired and impaired flows were simulated with the District's CVSIM models. CVSIM refers to a family of operations models that were developed by the District to evaluate various water supply alternatives and their impact on the water resources in the Monterey Peninsula area. Two of the models discussed here, i.e., CVSIM2 for unimpaired conditions and CVSIM3 for impaired conditions, were designed to simulate the performance of the water resources system under varying physical, structural, and management conditions. This system, the Monterey Peninsula Water Resources System (MPWRS), includes surface water in the Carmel River and its tributaries and ground water in the Carmel Valley alluvial aquifer and coastal subareas of the Seaside Ground Water Basin. The models operate on a daily time-step and incorporate both surface and ground water responses and interactions. The models are dynamic accounting models based on the continuity equation (i.e., inflow – outflow = change in storage).

For the impaired flow simulation, the CVSIM3 model accounts for inflows, outflows, and storage changes in two surface water reservoirs and five ground water subareas. These include:

(1) Los Padres Reservoir
(2) San Clemente Reservoir
(3) Subunit 1 of the Carmel Valley Alluvial Aquifer (RM 18.6 – 14.4)
(4) Subunit 2 of the Carmel Valley Alluvial Aquifer (RM 14.4 – 9.6)
(5) Subunit 3 of the Carmel Valley Alluvial Aquifer (RM 9.6 – 3.2)
(6) Subunit 4 of the Carmel Valley Alluvial Aquifer (RM 3.2 – 0.0)
(7) Coastal subareas of the Seaside Ground Water Basin.

A schematic of the MPWRS, as modeled for the impaired flow simulation, is shown in **Figure 2**. Please note that, although there is no hydrologic connection between the Carmel River Basin and Seaside Ground Water Basin, the two basins are connected hydraulically by the Cal-Am distribution system (i.e., water produced by Cal-Am from the Carmel River is delivered to users overlying the Seaside Ground Water Basin and water produced by Cal-Am from the Seaside Ground Water Basin is delivered to Cal-Am users on the Monterey Peninsula).

In addition to simulating the basic hydrologic processes, CVSIM3 also includes options for simulating various operations, demand management programs, and instream flow requirements. For the impaired flow simulation, Cal-Am operations were simulated according to SWRCB Order Nos. 95-10, 98-04, and 2002-0002 and the Memorandum of Understanding (MOU) negotiated each year by District, Cal-Am, California Department of Fish and Game (CDFG), and NOAA Fisheries staff. For this water availability analysis, it was assumed that Cal-Am could divert water from its sources in the coastal subareas of the Seaside Ground Water Basin in March and April when flow in the Carmel River at the Highway 1 Bridge exceeded 40 cfs. It was necessary to relax this existing constraint on Cal-Am diversions from the Seaside Ground Water Basin during March and April so that Cal-Am diversions from the Carmel River during above-normal and wet years would not exceed the 3,376 afa maximum allowed by SWRCB Order 95-10.

With respect to specific Cal-Am facilities, District staff assumed that the current storage capacity at San Clemente Reservoir (i.e., 131 af total storage, 66 af usable storage) would be maintained, but that no surface water diversions from San Clemente Reservoir would occur during the period of analysis. Further, based on direction from Cal-Am, District staff assumed that the current storage capacity at Los Padres Reservoir (i.e., 1,569 af total storage, 1,478 af usable storage) would be allowed to silt in at an average rate of 29.9 afa. Under this assumption, total storage in Los Padres Reservoir would be reduced from 1,569 af to 254 af during the simulated 45-year period of analysis. Lastly, District staff assumed that Cal-Am's current pumping capacity from the Carmel Valley Alluvial Aquifer would remain in place. Accordingly, it was assumed that Cal-Am could divert up to 61.31 af daily (afd) from the Carmel Valley Alluvial Aquifer, with 1.85 afd from subunit 1, 9.83 afd from subunit 2, 39.03 afd from subunit 3, and 10.60 afd from subunit 4. A summary of modeling assumptions for the CVSIM simulations is provided in **Appendix B**.

6.0 BYPASS FLOWS

As requested by Water Rights Division staff, this analysis takes into account the bypass flow criteria for the District's permits and the flows recommended by the National Marine Fisheries Service (NOAA Fisheries) in their report, *Instream Flow Needs for Steelhead in the Carmel River*, dated June 3, 2002. As discussed earlier, this analysis is limited to the instream flow requirements recommended for the lower reach of the Carmel River (i.e., between RM 5.5 and the Carmel River Lagoon). These requirements, which include minimum instream bypass requirements and a maximum diversion rate, are summarized in **Table 6**, which is taken from the NOAA Fisheries 2002 report. As noted in the NOAA Fisheries report, the recommended requirements are based on extensive Carmel River fisheries and hydrologic data, including the instream flow requirements developed and recommended by the Interagency Fishery Work Group (FWG) for the Carmel River in 1994 and adopted as permit conditions by the SWRCB in Decision No. 1632. The NOAA Fisheries flow recommendations are similar to the FWG flow requirements in that they are partitioned by season and water year type. The NOAA Fisheries recommendations specify daily flow requirements that range from 200 cfs at the Lagoon during the December 16 – April 15 period for adult attraction to 5 cfs at the Lagoon during the June 1 – December 15 period for juvenile rearing. The recommendations also include daily requirements for migration and spawning following an attraction event and smolt emigration during the April 16 – May 31 period.

Table 7 shows the estimated monthly minimum bypass requirements at the Carmel River Lagoon for the period of analysis. As shown, an average of 35,326 afa of flow must bypass the Highway 1 Bridge gage during the period of analysis before any "excess" water is available for direct diversion. On a median basis, 33,999 afa must be allowed to bypass the Highway 1 Bridge site. During the season of diversion (i.e., November 1 – June 30), an average of 34,107 af must be bypassed. Note that the values in this table do not include the constraints imposed by the NOAA Fisheries maximum diversion rate on Cal-Am and non Cal-Am pumpers (i.e., 80 cfs or 159 afd) or the SWRCB maximum diversion rate on Cal-Am pumping (42 cfs or 83 afd) that would be in effect if the District's petition for change to Permit 20808 was approved. These constraints are reflected in the excess flow estimates that are described below.

7.0 EXCESS FLOWS

For purposes of this water availability analysis, excess flow refers to the ground water that could be directly diverted from the lower reach of the Carmel River subterranean stream (i.e., between RM 5.5 and 0.0) during the November 1 – June 30 period when flow in the Carmel River is available over and above the instream flow needs recommended by NOAA Fisheries for this reach. The analysis does not address whether or not Cal-Am has sufficient capacity to divert, treat, and distribute these excess flows. The analysis focuses on whether or not there are excess flows in this reach available for diversion and, if so, how much water is available and how frequently the water is available.

Table 8 shows the monthly and annual estimates of excess flow available in the lower reach of the Carmel Valley alluvial aquifer, based on simulated streamflow at the Highway 1 Bridge for the period of analysis. The excess flow estimates in **Table 8** are based solely on the minimum bypass flows recommended by NOAA Fisheries and do not include the constraints imposed by the NOAA Fisheries maximum diversion rate on Cal-Am and non Cal-Am pumpers (i.e., 80 cfs or 159 afd) or the SWRCB maximum diversion rate on Cal-Am pumping (42 cfs or 83 afd) that would be in effect if the District's petition for change to Permit 20808 was approved. As shown, based only on minimum bypass requirements, there is an average of 48,632 afa of excess flow available for diversion in the lower reach of the Carmel Valley alluvial aquifer during the November 1 – June 30 period. The amount of excess flow in the lower reach ranges from a maximum of 291,763 af in simulated Water Year 1983 to a minimum of 0 af in simulated Water Year 1977. Typically or on a median basis, 24,027 afa of excess flow are available in the lower reach during the November 1 – June 30 period.

Table 9 shows the monthly and annual estimates of excess flow available in the lower reach of the Carmel Valley alluvial aquifer during the November 1 – June 30 period adjusted for the maximum diversion rate on Cal-Am and non Cal-Am pumpers from the Carmel River (i.e., 80 cfs or 159 afd) recommended by NOAA Fisheries and the maximum diversion rate on Cal-Am pumping from the Carmel River (42 cfs or 83 afd) set by the SWRCB in Permit 20808. With these maximum diversion rates in place, there is an average of 7,185 afa of excess flow available for diversion in the lower reach of the Carmel Valley alluvial aquifer during the November 1 – June 30 period. The amount of excess flow in the lower reach ranges from a maximum of 18,898 af in simulated Water Year 1983 to a minimum of 0 af in simulated Water Year 1977. Typically, based on the period of analysis, 6,734 afa of excess flow are expected to be available for direct diversion from the lower reach of the Carmel Valley alluvial aquifer during the November 1 – June 30 period, with the maximum diversion rates imposed.

It should be noted that the maximum diversion rates set by NOAA Fisheries and the SWRCB in Permit 20808 are subject to change. For example, the maximum cumulative diversion rate for Cal-Am and non Cal-Am pumpers from the Carmel River (80 cfs) recommended by NOAA Fisheries is intended to provide adequate "flushing" flows for channel maintenance and, in the absence of site-specific information, is based on limiting diversions to no more than 5 percent of the 2-year flow event. Arguably, this cumulative diversion limit should be a function of water-year type, i.e., higher diversion rates should be allowed during above-normal and wet years. In its report, NOAA Fisheries noted that, "Additional field study of the river's geomorphology and sediment transport characteristics may demonstrate that somewhat higher levels of diversion can be accommodated without undue adverse impact". Similarly, the maximum rate for direct diversions by Cal-Am from the Carmel River set via Permit 20808 (42 cfs) could be amended by future SWRCB action. In either case, a higher maximum diversion rate would result in increased excess flows available for direct diversion. Notwithstanding future modifications, for purposes of this analysis, the specified NOAA Fisheries and SWRCB maximum diversion rates were used.

8.0 DISCUSSION

As simulated, on an average annual basis during the permitted season of diversion (November 1 – June 30), there are approximately 7,185 af available for direct diversion in the lower reach of the Carmel Valley alluvial aquifer (below RM 5.5). Similarly, on a median annual basis, there are approximately 6,734 af available for direct diversion in the lower reach of the Carmel Valley alluvial aquifer. The amount of water available for direct diversion in the lower reach of the Carmel Valley alluvial aquifer during the eight-month season of diversion would range from zero af during a drought year like simulated Water Year 1977 to 18,898 af during an "El Niño" year like simulated Water Year 1983. During dry years (75% exceedence), approximately 1,712 af would be available. During wet years (25% exceedance), approximately 11,297 af would be available for direct diversion.

Figure 3 shows a monthly breakdown of simulated excess flows in the lower Carmel Valley alluvial aquifer for the period of analysis. **Figure 3** shows the range of flows that would be available during the season of diversion for each month, including wet-, normal-, and dry-year types. As shown, the amount of water that would be available each month during a wet year would range from about 750 in December to 2,430 af in March. During a normal year, the amount of water that would be available each month would range from zero af in May to 2,090 af in March. During a dry year, the amount of water that would be available each month would range from zero af in November through December and April through June to between 100 and almost 300 af in January through March. Clearly, there are periods when significant amounts of water would be available for direct diversion from the lower Carmel Valley alluvial aquifer without causing adverse impacts to the steelhead resource. Equally clear, there would be periods when little or no water would be available for direct diversion. The District's petition is proposed to provide a legal basis of right for diversions by Cal-Am that are presently allowed by SWRCB Order 95-10 when there are physical flows in the Carmel River over and above the fish flow requirements recommended by NOAA Fisheries.

Before construction of the District's proposed 7.5 million gallon per day (mgd) seawater desalination plant in the Sand City area, any diversions of the excess flows during the November – June period of diversion would be applied to Cal-Am's current unlawful diversions. For example, during a below-normal year like simulated Water Year 2002, 3,401 af would be available for direct diversion in the lower reach of the Carmel Valley alluvial aquifer. If Cal-Am had sufficient capacity in this area to divert, treat, and deliver this amount during the season of diversion and the District's petition was approved, Cal-Am's unlawful diversions could be reduced from 7,909 af to 4,508 af. Similarly, during a wet year like simulated Water Year 1993, 10,292 af would be available for direct diversion. In this instance, Cal-Am would be limited to no more than 7,909 af of direct diversion as allowed in Permit 20808 and its unlawful diversions would be reduced to zero af. Finally, during a dry year like simulated Water Year 1994, only 731 af would be available for direct diversion and Cal-Am would be required to divert 7,178 af without a valid basis of right.

As noted in the District's responses to protestants, the District's change petition was submitted to provide a legal basis for existing Cal-Am diversions from the Carmel River when and to the extent water is available without adversely affecting prior vested rights or the environment. If Cal-Am's recognized rights in the Carmel River and Seaside Ground Water Basins are insufficient to meet its customers' needs and excess water is not available for diversion, then Cal-Am must either reduce or cease its Carmel River diversions or continue to divert water without a valid basis of right in accordance with Condition 3(b) of SWRCB Order 95-10. In this regard, without an alternative source of supply, the District's petition represents only a partial legal solution to Cal-Am's continuing need to divert water from the Carmel River.

After construction of the District's proposed seawater desalination plant in Sand City, any diversions of excess flows during the November – June period could be used to reduce production from the desalination plant and lower Cal-Am's operating costs. For example, during a below-normal year like simulated Water Year 2002, 3,401 af would be available for direct diversion in the lower reach of the Carmel Valley alluvial aquifer. If Cal-Am had sufficient capacity in this area to divert, treat, and deliver this amount during the season of diversion and the District's petition was approved, production from the desalination plant could be reduced from 8,400 af to 5,000 af. Similarly, as described above, production from the proposed desalination plant could be reduced to near zero af in certain wet years and would operate at or near maximum capacity (8,400 afa) during dry and critically-dry years.

As noted in the District's response to SWRCB staff following a July 29, 2003 meeting regarding the change petition, the water rights requested in the petition would be used in concert with a water supply project or projects (such as a desalination project) designed to address SWRCB Order 95-10. The desalination plant could be turned off during periods when Carmel River flow exceeds the instream flow requirements recommended by NOAA Fisheries. Reducing production from the desalination plant would extend the life of the project and reduce costs to ratepayers.

The results of the water availability analysis indicate that significant amounts of water would be available for direct diversion from the lower Carmel Valley alluvial aquifer during the November – June season without causing adverse impacts to the steelhead resource. The ability to divert these excess flows depends, however, on Cal-Am's capacity to produce and treat water from this lower reach. Presently, Cal-Am has three production wells in the lower reach of the Carmel Valley alluvial aquifer: Cypress well at RM 5.4, San Carlos well at RM 3.7, and Rancho Cañada well at RM 3.3. As of August 2003, the reported production capacities for Cal-Am's Cypress and Rancho Cañada wells were 6.01 and 10.60 afd, respectively. The production capacity for Cal-Am's San Carlos well, which had been listed as 4.45 afd in August 2002, was reported as zero afd in August 2003 because the well was taken out of service in November 2002 at the direction of the California Department of Health Services (DHS). In October 2002, DHS notified Cal-Am that monitoring results for the San Carlos well showed distinct trends indicative of surface water influence over the well and that Cal-Am was required to submit a plan of

action ensuring that all water entering Cal-Am's distribution system from the San Carlos well met the Surface Water Treatment Rule (SWTR). At that time, Cal-Am was allowed to continue use of the San Carlos well until December 2002. After December 2002, Cal-Am could not continue to use its San Carlos well until it had implemented an approved plan of action and DHS had given permission to discharge water from the San Carlos well into Cal-Am's distribution system. It is the District's understanding that Cal-Am has decided not to develop additional treatment so that water from the San Carlos well meets the SWTR and has decided to take the well indefinitely out of service. A copy of the October 2002 DHS letter to Cal-Am is included in **Appendix C.**

Given this decision, Cal-Am's current capacity for active production wells in the lower reach of the Carmel Valley alluvial aquifer (below RM 5.5) is 16.61 afd or 8.38 cfs. In addition, Cal-Am's current capacity for active production wells in aquifer subunit 3 upstream of RM 5.5 that require treatment at Cal-Am's Begonia Iron Removal Plant (BIRP) is 27.09 afd or 13.66 cfs, and Cal-Am's current capacity for active production wells in aquifer subunits 1 and 2 upstream of RM 5.5 that do not require treatment at the BIRP is 17.62 afd or 8.89 cfs. Under these conditions, the maximum quantity of excess flows that Cal-Am could divert from the lower reach of the Carmel Valley alluvial aquifer during the November 1 through June 30 period is approximately 4,020 af (i.e., 242 days x 16.61 afd = 4,120 af). In order for Cal-Am to divert more than 4,020 af of excess flows during this season of diversion, additional production capacity in the lower reach would need to be developed. In addition, it is likely that DHS would require that any water from new wells in the lower Carmel Valley be treated appropriately to satisfy all surface water treatment regulations before being discharged into Cal-Am's distribution system. To satisfy this requirement, Cal-Am would need to construct a new water treatment plant in the lower Carmel Valley that is capable of treating water withdrawn from the alluvial aquifer so that it meets the SWTR.

9.0 SUMMARY AND CONCLUSION

A water availability analysis was conducted in support of the District's Petition for Change to Water Right Permits 7130B and 20808. In the petition, the District requested changes to its existing permits for diversion to storage and direct diversion from the Carmel River and Carmel River subterranean stream. Specifically, the petition sought to directly divert up to 42 cfs or a maximum of 7,909 af during the November 1 through June 30 diversion season. The petition was proposed to provide a legal basis of right for existing unlawful diversions by Cal-Am that are presently allowed by SWRCB Order 95-10 when and to the extent water is available without adversely affecting the environment. The analysis focused on changes requested to Permit 20808 for direct diversions from the lower reach of the Carmel Valley subterranean stream (below RM 5.5) during the November 1-June 30 period when flow in the Carmel River at the District's Highway 1 Bridge gage exceeds the instream flow requirements recommended by NOAA Fisheries in June 2002. The analysis accounted for the minimum bypass flows and maximum cumulative diversion rate recommended by NOAA Fisheries. The analysis was designed to quantify the amount of water available for diversion and the frequency that this water would be available.

The analysis was based on historical records from the October 1, 1957 through September 30, 2002 period. Mean daily flow values for six locations along the Carmel River mainstem were simulated using the District's Carmel Valley Simulation Model (CVSIM). Both unimpaired and impaired flow values were simulated. The impaired flow values represent the volume of water that would flow past a particular point of interest if assumed diversions and operations were taking place in the watershed above that point. For the impaired flow simulation, it was assumed that the maximum annual Cal-Am diversion would be less than or equal to 7,376 af, with no more than 3,376 af diverted from Cal-Am sources in the Carmel River Basin and no more than an average of 4,000 af diverted from Cal-Am sources in the coastal subareas of the Seaside Ground Water Basin. In addition, it was assumed that the maximum annual diversion by non Cal-Am pumpers in the Carmel Valley would be 2,936 af. Cal-Am operations were simulated according to SWRCB Order Nos. 95-10, 98-04, and 2002-0002 and the Memorandum of Understanding negotiated each year by District, Cal-Am and CDFG staff. All Cal-Am facilities were assumed to remain in operation during the period of analysis.

On an average annual basis, 35,326 af of flow must bypass the Highway 1 Bridge gage before any "excess" water is available for direct diversion. Of this total, an average of 34,107 af must be bypassed at the Highway 1 gage during the eight-month season of diversion. Based on simulated conditions for the period of record, there is an average of 7,185 af of water available each year during the season of diversion for direct diversion from the lower reach of the Carmel River subterranean stream. This excess water is over and above the minimum bypass flows recommended by NOAA Fisheries for the lower Carmel River and is adjusted for the maximum diversion rates set by NOAA Fisheries and the SWRCB. The amount of water available for direct diversion in the lower reach of the Carmel Valley alluvial aquifer would range from no water during a drought year like simulated Water Year 1977 to more than 18,000 af during an "El Niño" year like simulated Water Year 1983. During dry years (75% exceedence), approximately 1,710 af would be available. During wet years (25% exceedence), approximately 11,300 af would be available for direct diversion.

As simulated, there is sufficient water available for direct diversion by Cal-Am in the lower reach of the Carmel River subterranean stream to provide a legal basis of right for some or all of Cal-Am's existing diversions during the November – June period of normal and wet years. In addition, once a water supply project such as a desalination plant is constructed, diversion of these excess flows during normal and wet years would allow the desalination plant to be turned off, which would extend the life of the plant and reduce costs to Cal-Am ratepayers. During dry years when little or no excess flows would be available, the desalination plant would operate at maximum capacity to ensure that no unlawful diversions would be required.

Carmel River Water Availability Analysis – Table 1

6

SIMULATED UNIMPAIRED CARMEL RIVER FLOW AT LOS PADRES DAM SITE (ACRE-FEET)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1958	290.6	421.2	2,443.8	5,022.3	24,426.8	29,745.9	49,372.9	5,426.9	2,488.7	1,167.5	353.1	254.5	121,414.1
1959	217.9	449.9	532.0	4,543.2	11,050.4	3,084.3	1,530.8	1,070.8	379.5	65.9	61.5	657.0	23,643.2
1960	294.6	313.8	335.4	2,826.4	6,923.0	2,307.9	1,679.8	1,376.4	597.8	75.3	62.5	74.4	16,867.2
1961	87.5	544.9	1,787.5	1,065.5	1,606.6	1,867.3	979.8	567.9	382.6	125.7	63.5	59.7	9,138.6
1962	81.3	260.7	2,339.9	1,341.3	19,481.6	10,925.3	3,492.8	1,580.7	788.4	285.3	128.6	69.3	40,775.2
1963	2,226.9	595.8	1,446.7	8,185.2	18,434.1	7,584.2	16,818.0	6,963.9	2,786.9	1,118.4	810.9	395.0	67,366.0
1964	946.9	3,666.4	1,319.7	5,185.2	2,890.5	2,193.1	2,309.4	1,365.6	764.0	399.0	101.8	127.3	21,269.0
1965	141.9	1,835.1	6,024.9	12,704.7	2,837.5	2,489.4	7,330.5	3,084.4	1,256.8	786.4	152.9	194.1	38,838.9
1966	144.1	3,832.2	3,752.4	4,630.3	4,360.8	2,486.7	1,408.0	820.7	632.6	109.4	62.7	67.8	22,307.8
1967	139.9	988.2	12,685.8	12,127.4	8,208.7	17,280.0	23,213.0	9,016.7	2,769.4	1,424.5	388.8	227.3	88,469.7
1968	345.2	416.7	1,000.8	2,059.8	2,472.2	2,592.8	1,332.5	827.1	256.0	61.9	61.4	61.3	11,487.7
1969	142.1	365.8	1,626.3	38,436.4	51,670.2	27,119.6	10,241.0	3,806.1	2,406.1	1,152.4	198.7	142.3	137,307.2
1970	350.1	547.8	2,572.7	14,532.4	4,377.2	12,382.6	2,990.2	1,901.1	916.8	222.4	128.5	67.6	40,989.4
1971	73.0	3,636.5	7,742.5	4,809.3	1,943.7	2,452.0	2,078.7	1,244.7	677.2	204.4	68.2	63.6	24,993.9
1972	72.8	274.6	4,644.4	1,757.8	2,565.9	1,316.7	987.9	553.1	92.7	63.8	61.4	61.2	12,452.4
1973	384.7	4,441.7	1,811.2	13,584.5	32,100.2	22,273.6	7,223.0	3,187.1	1,736.0	428.4	135.0	95.8	87,401.3
1974	390.4	2,413.2	5,226.1	11,402.6	3,136.1	22,315.5	13,909.9	3,674.9	1,981.5	823.9	246.2	140.8	65,661.1
1975	288.3	642.2	2,508.0	1,405.5	19,577.4	26,939.1	8,699.6	3,813.5	1,887.6	924.7	480.5	133.5	67,299.9
1976	458.4	676.0	686.4	693.7	749.2	1,479.6	979.9	410.6	127.1	70.2	61.4	76.1	6,468.6
1977	129.4	127.2	241.3	908.0	383.4	641.3	408.6	285.6	83.4	61.4	61.4	60.8	3,392.0
1978	90.9	118.9	3,846.5	26,641.8	31,914.3	30,147.0	12,444.8	6,331.1	2,325.2	1,778.7	837.5	672.3	117,149.0
1979	552.7	1,085.0	1,037.1	3,695.2	8,505.1	9,044.5	7,086.3	2,899.8	1,880.5	868.9	444.9	368.8	37,468.9
1980	619.1	1,147.0	4,069.1	24,374.6	43,373.1	19,399.4	7,885.0	4,625.8	2,445.6	1,954.5	950.4	661.6	111,505.3
1981	354.5	631.7	1,151.5	7,530.6	3,714.4	9,902.0	4,509.4	2,175.0	1,046.2	395.4	122.3	92.8	31,625.9
1982	353.8	5,319.1	3,561.8	19,273.0	8,917.4	13,191.7	37,976.1	5,936.0	2,986.4	1,673.0	614.5	483.5	100,286.3
1983	870.4	4,089.8	18,723.0	35,707.2	39,371.6	88,785.4	32,033.1	19,120.6	5,850.5	2,871.6	1,802.7	1,056.8	250,282.6
1984	1,273.6	6,348.4	22,621.4	8,342.4	4,049.2	3,497.5	2,724.6	1,660.9	991.8	278.4	102.3	210.1	52,100.8
1985	534.8	2,637.5	2,744.0	1,641.0	2,840.8	4,765.6	2,884.6	1,434.6	580.2	73.5	61.4	64.1	20,262.0
1986	117.2	1,141.3	2,665.8	2,604.4	46,012.8	33,561.3	6,656.0	3,112.1	1,552.2	662.8	227.5	175.1	98,488.4
1987	237.7	328.4	632.2	929.0	3,749.1	3,349.2	1,445.1	611.9	379.6	69.8	63.4	59.4	11,854.9
1988	78.4	189.8	1,683.9	3,044.6	923.1	686.0	771.5	542.1	177.4	61.4	61.4	59.4	8,279.0
1989	61.4	143.2	941.9	1,358.0	1,070.5	2,572.4	1,208.1	505.4	161.6	62.1	61.7	59.4	8,205.8
1990	168.8	223.5	234.4	1,159.7	2,662.2	1,155.3	540.7	217.5	87.2	63.7	61.4	59.4	6,633.9
1991	66.7	60.8	86.9	81.5	132.9	14,330.8	3,320.3	1,138.7	356.4	100.2	61.4	59.4	19,796.1
1992	135.6	261.6	703.1	1,882.3	16,852.3	7,362.7	2,481.4	1,036.0	415.0	113.5	97.5	100.6	31,441.5
1993	98.4	92.5	2,340.6	28,878.6	21,950.1	12,493.2	4,934.3	2,375.2	1,615.3	638.0	267.3	149.6	75,833.3
1994	175.2	373.3	924.1	908.0	3,987.8	1,737.5	907.5	773.1	286.2	68.2	61.4	67.0	10,269.4
1995	72.4	232.9	699.1	40,946.9	6,486.8	37,916.5	7,232.8	5,817.6	3,394.3	1,783.4	613.3	458.0	105,654.2
1996	328.9	348.1	1,964.6	3,444.7	22,848.2	15,520.4	6,046.2	3,190.7	1,414.6	647.7	302.5	185.1	56,241.6
1997	311.0	1,476.8	11,035.2	38,890.8	11,062.1	4,056.3	2,162.7	1,140.3	721.8	512.3	251.6	84.1	71,705.1
1998	170.7	804.4	4,906.2	20,894.7	78,620.7	17,631.9	14,238.1	8,555.3	4,578.7	2,188.0	1,260.1	803.4	154,652.3
1999	897.6	1,665.9	2,572.3	3,713.2	8,859.1	6,434.7	8,725.8	2,704.9	1,186.6	476.9	177.3	80.3	37,494.7
2000	113.0	420.0	448.9	8,551.8	23,471.4	14,487.4	5,238.9	2,343.4	1,058.5	574.0	249.2	223.8	57,180.2
2001	664.7	694.9	547.9	4,314.2	7,369.4	14,559.7	3,400.0	2,252.2	1,040.3	358.2	121.9	82.4	35,405.9
2002	143.2	1,056.2	7,612.8	6,107.7	2,537.4	3,422.6	2,368.0	1,390.4	668.0	182.5	61.5	63.2	25,613.5
MINIMUM	61.4	60.8	86.9	81.5	132.9	641.3	408.6	217.5	83.4	61.4	61.4	59.4	3,392.0
MAXIMUM	2,226.9	6,348.4	22,621.4	40,946.9	78,620.7	88,785.4	49,372.9	19,120.6	5,850.5	2,871.6	1,802.7	1,056.8	250,282.6
MEAN	348.8	1,274.3	3,521.8	9,825.3	13,788.4	12,655.3	7,471.3	2,952.6	1,338.0	622.8	280.6	209.1	54,288.3

EXCEEDENCE FREQUENCY VALUES

PERCENTILE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
5.0	946.9	4,441.7	12,685.8	38,436.4	46,012.8	33,561.3	32,033.1	8,555.3	3,394.3	1,954.5	950.4	672.3	137,307.2
12.5	664.7	3,666.4	7,612.8	26,641.8	32,100.2	27,119.6	14,238.1	5,936.0	2,769.4	1,673.0	614.5	483.5	111,505.3
25.0	384.7	1,476.8	3,846.5	12,704.7	19,577.4	17,280.0	7,885.0	3,674.9	1,887.6	868.9	302.5	223.8	75,833.3
50.0	217.9	595.8	1,964.6	4,630.3	6,923.0	7,584.2	3,400.0	1,901.1	991.8	395.4	128.5	95.8	37,494.7
75.0	117.2	313.8	924.1	1,757.8	2,837.5	2,489.4	1,530.8	1,036.0	382.6	75.3	61.7	64.1	19,796.1
87.5	78.4	189.8	532.0	1,065.5	1,606.6	1,737.5	979.9	553.1	177.4	63.8	61.4	59.7	9,138.6
95.0	72.4	118.9	241.3	908.0	749.2	1,155.3	771.5	410.6	92.7	61.9	61.4	59.4	6,633.9

Carmel River Water Availability Analysis – Table 2

SIMULATED UNIMPAIRED CARMEL RIVER FLOW AT THE LAGOON (ACRE-FEET)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1958	389.1	600.0	3,138.5	7,317.5	35,466.7	42,933.4	69,093.4	8,120.1	3,723.6	1,555.9	474.5	350.5	173,163.3
1959	391.5	757.8	815.9	6,432.7	16,461.9	4,858.3	2,139.1	1,233.0	390.3	54.8	61.4	587.6	34,184.4
1960	359.2	427.3	468.0	3,277.9	11,057.4	3,650.8	2,343.6	1,835.1	606.9	54.2	61.4	62.8	24,204.6
1961	80.1	640.2	2,262.0	1,455.5	2,001.1	2,007.8	1,120.8	531.4	348.7	54.2	61.4	61.8	10,625.0
1962	78.7	371.2	2,477.4	1,488.4	27,416.1	16,629.7	5,198.1	2,302.7	931.5	278.1	90.3	61.8	57,323.9
1963	2,476.0	879.5	1,980.0	11,244.7	27,133.3	11,695.1	24,969.7	10,786.1	3,749.5	1,478.0	851.3	497.9	97,741.3
1964	1,164.6	5,211.8	2,274.5	8,023.6	4,752.0	3,316.2	3,394.8	1,882.5	874.7	367.8	69.5	116.4	31,448.4
1965	187.1	1,948.0	8,383.9	18,963.0	4,715.0	4,135.4	11,365.4	4,362.4	1,750.9	808.7	148.3	192.3	56,960.4
1966	194.9	4,403.3	5,924.8	7,495.2	7,069.6	3,719.6	1,758.9	800.5	598.6	69.6	61.4	61.8	32,158.3
1967	129.4	1,101.1	17,426.6	17,671.9	12,654.0	25,335.7	33,924.7	13,756.3	4,368.7	1,489.1	431.8	234.0	128,523.2
1968	408.9	529.3	1,204.4	2,399.4	4,048.3	3,729.1	1,929.6	824.8	211.9	54.2	61.4	61.8	15,463.1
1969	87.9	477.4	1,762.8	52,880.5	72,694.9	39,222.6	15,586.8	6,010.7	3,307.2	1,635.1	240.7	128.1	194,034.8
1970	418.8	728.5	3,377.8	21,621.1	7,145.2	18,548.3	4,474.1	2,797.1	1,170.2	217.6	103.7	62.6	60,665.0
1971	111.5	4,061.4	12,290.5	8,001.3	3,305.1	3,760.7	3,285.2	1,992.5	979.6	217.5	61.4	61.8	38,128.6
1972	77.3	382.4	5,742.4	3,187.7	4,126.5	1,607.6	1,336.2	478.4	66.5	54.2	61.4	61.8	17,182.5
1973	334.9	5,700.1	3,281.7	20,263.8	45,906.3	32,912.1	11,212.2	5,021.1	2,102.1	510.3	139.1	73.8	127,457.4
1974	521.9	3,173.8	8,153.3	17,568.4	5,301.3	32,593.6	20,740.0	5,791.9	2,517.6	1,007.9	295.3	174.4	97,839.5
1975	412.2	871.4	3,425.5	2,491.2	28,571.5	39,033.7	13,414.2	6,033.2	2,521.7	1,190.0	543.2	189.8	98,697.8
1976	595.9	902.4	941.8	924.8	935.3	1,724.5	1,061.0	350.2	81.2	54.2	61.4	64.4	7,697.2
1977	104.6	230.7	374.9	1,045.8	457.4	694.9	392.9	195.4	54.9	54.2	61.4	61.8	3,729.0
1978	76.5	173.4	5,086.9	38,494.3	45,617.2	43,491.1	18,960.1	10,036.0	3,799.7	2,206.3	1,080.5	827.5	169,849.5
1979	842.2	1,662.2	1,961.1	6,175.1	13,191.1	13,983.2	11,128.3	4,692.2	2,317.4	1,121.9	549.2	409.9	58,033.9
1980	756.6	1,747.5	6,120.2	35,175.5	60,542.6	28,720.9	12,232.6	7,307.7	3,910.0	2,518.8	1,156.7	889.5	161,078.8
1981	675.1	873.8	1,903.1	10,824.5	5,985.6	15,219.6	7,148.7	3,262.7	1,268.5	476.2	188.2	151.8	47,977.9
1982	641.4	7,418.8	5,953.7	28,367.8	13,732.1	19,783.2	53,971.3	9,251.0	4,540.4	2,157.0	748.6	633.7	147,199.0
1983	1,086.7	6,206.8	27,169.1	50,191.1	55,996.0	122,928.1	46,021.8	28,113.7	9,187.2	4,459.2	2,372.5	1,533.0	355,265.3
1984	2,222.4	9,753.1	32,911.5	12,957.1	6,593.9	5,642.6	4,268.1	2,523.3	1,400.5	526.1	307.4	323.8	79,429.8
1985	769.4	3,651.7	4,518.1	2,668.1	4,526.0	7,292.9	4,584.4	2,010.5	866.3	287.8	137.6	198.7	31,511.4
1986	266.4	1,413.7	3,832.4	4,095.6	64,154.1	48,125.7	10,546.2	4,839.4	2,063.5	998.3	551.9	525.6	141,412.9
1987	624.4	774.7	1,153.9	1,463.2	5,736.3	5,457.6	2,111.2	753.0	546.7	130.6	124.1	138.0	19,013.7
1988	242.8	456.2	2,068.7	4,752.4	1,568.0	1,100.5	923.6	656.7	301.0	147.7	167.4	158.9	12,543.9
1989	254.0	414.9	1,389.8	1,798.6	1,609.9	4,291.7	1,705.1	811.9	195.3	78.8	114.2	150.0	12,814.2
1990	388.6	513.2	530.6	1,554.8	4,365.8	2,093.0	751.7	316.9	172.1	117.1	158.7	176.2	11,138.6
1991	289.9	272.2	237.9	232.0	254.8	20,711.8	5,410.2	1,754.6	721.6	259.2	220.1	233.4	30,597.6
1992	217.7	387.2	1,005.9	2,808.8	26,696.2	11,272.1	3,861.5	1,507.1	513.5	114.7	81.1	93.1	48,559.0
1993	147.1	205.0	2,948.4	49,633.9	39,214.8	21,104.2	8,344.6	4,034.4	2,469.5	823.4	340.8	188.2	129,454.5
1994	271.8	575.9	1,308.0	1,325.6	6,439.0	2,605.2	1,390.0	1,136.2	347.6	55.3	61.4	62.3	15,578.4
1995	76.3	378.7	962.5	60,279.4	10,756.3	70,925.5	14,031.3	10,060.6	5,458.4	2,661.2	865.8	596.5	177,052.5
1996	515.6	614.3	2,688.1	5,626.4	34,038.7	23,500.9	9,061.3	4,875.1	2,156.5	834.0	352.2	211.9	84,475.1
1997	425.4	2,268.6	17,869.5	62,431.1	17,795.9	6,377.6	3,324.1	1,560.7	873.5	543.9	270.9	94.0	113,835.4
1998	277.8	1,461.7	7,926.6	35,189.6	150,478.4	33,199.8	31,048.3	15,683.9	8,347.7	4,128.0	2,065.2	1,264.1	291,071.2
1999	1,521.4	2,612.0	3,958.0	5,638.3	14,782.8	11,225.5	14,505.3	4,868.4	2,149.6	746.1	357.0	208.1	62,572.5
2000	298.0	758.6	846.2	10,853.5	34,050.3	23,575.0	7,476.1	3,447.8	1,522.4	749.1	326.0	289.0	84,192.1
2001	911.2	1,096.1	948.0	6,295.4	10,917.5	20,998.1	5,291.1	3,050.3	1,228.3	399.0	133.9	108.1	51,377.1
2002	237.8	1,355.9	9,485.4	7,791.7	3,707.1	4,894.8	3,355.5	1,847.3	822.1	179.1	61.4	61.8	33,799.8
MINIMUM	76.3	173.4	237.9	232.0	254.8	694.9	392.9	195.4	54.9	54.2	61.4	61.8	3,729.0
MAXIMUM	2,476.0	9,753.1	32,911.5	62,431.1	150,478.4	122,928.1	69,093.4	28,113.7	9,187.2	4,459.2	2,372.5	1,533.0	355,265.3
MEAN	501.4	1,787.6	5,122.0	14,675.1	21,199.3	19,125.1	11,337.6	4,522.4	1,945.2	842.8	371.9	282.1	81,712.5

EXCEEDENCE FREQUENCY VALUES

PERCENTILE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
5.0	1,521.4	6,206.8	17,869.5	52,880.5	64,154.1	48,125.7	46,021.8	13,756.3	5,458.4	2,661.2	1,156.7	889.5	194,034.8
12.5	911.2	4,403.3	9,485.4	38,494.3	45,906.3	39,222.6	24,969.7	10,036.0	3,910.0	2,157.0	851.3	596.5	169,849.5
25.0	624.4	1,948.0	5,924.8	18,963.0	28,571.5	25,335.7	13,414.2	5,791.9	2,517.6	1,121.9	431.8	323.8	127,457.4
50.0	359.2	871.4	2,688.1	7,317.5	10,917.5	11,695.1	5,291.1	2,797.1	1,228.3	476.2	167.4	174.4	57,323.9
75.0	194.9	477.4	1,204.4	2,668.1	4,526.0	3,760.7	2,139.1	1,233.0	546.7	117.1	69.5	64.4	30,597.6
87.5	87.9	378.7	846.2	1,463.2	2,001.1	2,093.0	1,336.2	656.7	211.9	54.2	61.4	61.8	12,814.2
95.0	77.3	230.7	468.0	1,045.8	935.3	1,607.6	923.6	350.2	81.2	54.2	61.4	61.8	10,625.0

Carmel River Water Availability Analysis – Table 3

SIMULATED IMPAIRED CARMEL RIVER FLOW AT THE LAGOON (ACRE-FEET)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1958	0.0	0.0	648.5	5,143.0	35,018.8	42,885.8	68,939.0	7,858.3	3,260.8	1,033.1	73.8	35.0	164,896.1
1959	254.7	548.3	605.7	5,978.6	16,237.2	4,810.9	1,864.7	757.9	48.4	0.0	0.0	0.0	31,106.4
1960	5.6	110.5	204.7	2,430.4	10,632.6	3,587.4	2,046.1	1,360.4	248.0	0.0	0.0	0.0	20,625.7
1961	0.0	0.0	593.4	1,170.3	1,866.4	1,762.1	621.2	9.3	7.2	0.0	0.0	0.0	6,029.8
1962	0.0	0.0	125.3	734.5	27,007.8	16,569.5	4,872.3	1,658.1	242.4	3.3	0.0	0.0	51,213.2
1963	656.4	187.9	1,751.8	11,139.5	26,746.2	11,634.9	24,815.3	10,455.9	3,085.7	732.3	80.5	41.1	91,327.5
1964	493.0	4,818.9	2,144.7	7,915.6	4,327.1	3,241.2	3,127.8	1,395.0	247.8	24.4	0.0	0.0	27,735.5
1965	0.0	168.7	7,640.8	18,530.0	4,289.4	4,065.0	11,211.0	3,880.2	1,170.8	235.2	0.0	0.0	51,191.2
1966	0.0	2,735.3	5,707.6	7,038.0	6,644.0	3,650.8	1,454.6	295.3	67.6	0.0	0.0	0.0	27,593.3
1967	0.0	0.0	15,684.1	17,418.6	12,228.4	25,288.2	33,770.3	13,461.7	3,851.3	911.4	8.9	0.0	122,622.7
1968	0.0	38.3	685.5	2,247.6	3,716.7	3,649.6	1,565.9	187.0	0.0	0.0	0.0	0.0	12,090.6
1969	0.0	0.0	79.1	51,326.9	72,313.7	39,175.0	15,432.4	5,711.6	2,785.5	1,030.3	0.0	0.0	187,854.5
1970	0.0	0.0	2,472.4	21,188.2	6,719.6	18,488.1	4,211.6	2,314.3	589.6	3.3	0.0	0.0	55,987.0
1971	0.0	2,131.3	11,478.6	7,544.2	2,833.9	3,694.0	3,026.1	1,513.2	409.5	0.1	0.0	0.0	32,630.9
1972	0.0	0.0	3,872.5	2,826.6	3,698.3	1,505.8	975.7	41.2	0.0	0.0	0.0	0.0	12,920.0
1973	0.0	2,853.0	2,510.4	19,830.8	45,525.1	32,864.5	10,953.9	4,728.0	1,525.7	37.6	0.0	0.0	120,829.1
1974	0.0	1,854.1	7,745.9	17,111.3	4,875.8	32,546.0	20,585.6	5,500.6	2,003.4	450.7	0.0	0.0	92,673.4
1975	2.6	117.7	3,184.8	2,240.4	28,255.0	38,986.1	13,259.8	5,732.3	1,998.3	486.9	55.3	0.0	94,319.1
1976	0.0	151.4	626.1	751.3	800.3	1,478.7	561.4	1.1	0.0	0.0	0.0	0.0	4,370.3
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	1,790.8	35,627.7	45,236.0	43,443.6	18,805.7	9,738.9	3,279.9	1,626.2	383.6	164.0	160,096.5
1979	386.5	1,407.8	1,833.5	5,865.5	12,765.5	13,923.0	10,862.5	4,206.0	1,793.8	398.9	0.0	0.0	53,443.0
1980	88.4	1,207.2	5,975.2	34,742.6	60,162.1	28,673.3	12,078.2	7,012.4	3,392.0	1,940.5	545.6	248.4	156,065.9
1981	230.7	609.6	1,775.5	10,719.3	5,560.0	15,159.4	6,879.8	2,723.8	538.2	14.9	0.0	0.0	44,211.1
1982	11.7	5,727.2	5,474.3	27,934.8	13,306.5	19,722.9	53,816.9	8,961.2	4,027.5	1,583.9	151.7	108.3	140,827.0
1983	783.7	5,905.8	26,704.7	49,758.2	55,614.9	122,880.5	45,867.4	27,824.9	8,675.4	3,887.2	1,767.6	1,017.6	350,687.8
1984	1,920.4	9,384.9	32,447.0	12,499.9	6,169.1	5,582.4	4,013.3	2,048.3	827.4	91.1	0.0	0.0	74,983.7
1985	74.2	3,061.4	4,067.7	2,391.0	4,296.1	7,232.6	4,320.8	1,526.5	329.3	9.7	0.0	0.0	27,309.4
1986	0.0	125.4	2,924.2	3,944.0	63,811.7	48,078.1	10,279.8	4,538.1	1,460.6	255.8	11.9	10.3	135,439.8
1987	109.6	475.7	676.6	1,289.6	5,528.5	5,397.3	1,682.7	87.6	35.9	0.0	0.0	0.0	15,283.6
1988	0.0	0.0	305.6	3,929.1	1,482.8	918.5	424.1	63.0	0.0	0.0	0.0	0.0	7,123.1
1989	0.0	0.0	50.4	603.9	1,236.0	4,076.1	1,205.5	179.3	0.0	0.0	0.0	0.0	7,351.2
1990	0.0	0.0	0.0	80.6	3,363.7	1,949.1	253.3	0.0	0.0	0.0	0.0	0.0	5,646.6
1991	0.0	0.0	0.0	0.0	0.0	17,720.5	5,013.7	1,110.0	101.0	0.0	0.0	0.0	23,945.2
1992	0.0	0.0	40.0	1,740.9	26,444.5	11,211.9	3,525.1	862.5	12.1	0.0	0.0	0.0	43,837.1
1993	0.0	0.0	910.2	48,491.4	38,833.7	21,044.0	8,080.9	3,550.2	1,948.0	247.3	0.0	0.0	123,105.5
1994	0.0	0.0	469.6	1,024.7	6,154.3	2,498.9	968.8	466.8	0.0	0.0	0.0	0.0	11,583.1
1995	0.0	0.0	0.0	57,975.0	10,330.7	70,878.0	13,876.9	9,763.3	4,938.4	2,080.8	182.5	3.6	170,029.2
1996	17.6	270.4	2,492.2	5,460.2	33,658.2	23,440.6	8,794.4	4,573.3	1,524.4	150.2	0.0	0.0	80,381.5
1997	0.0	1,172.3	17,410.4	61,998.2	17,370.3	6,317.4	3,063.8	1,080.0	301.4	3.5	0.0	0.0	108,717.3
1998	0.0	433.3	7,128.7	34,756.6	150,097.2	33,152.2	30,893.9	15,392.1	7,832.9	3,553.0	1,457.4	745.9	285,443.3
1999	1,147.2	2,357.6	3,489.9	5,297.5	14,357.3	11,165.3	14,350.9	4,388.7	1,572.0	158.7	0.0	0.0	58,285.0
2000	0.0	2.2	267.1	10,646.1	33,669.9	23,514.8	7,208.8	2,960.0	846.5	73.6	0.0	0.0	79,189.0
2001	146.9	328.6	660.0	5,997.2	10,491.9	20,937.9	5,025.1	2,563.9	636.8	0.0	0.0	0.0	46,788.3
2002	0.0	201.9	8,111.1	7,334.6	3,235.9	4,834.5	3,096.3	1,367.7	249.1	0.0	0.0	0.0	28,431.2
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM	1,920.4	9,384.9	32,447.0	61,998.2	150,097.2	122,880.5	68,939.0	27,824.9	8,675.4	3,887.2	1,767.6	1,017.6	350,687.8
MEAN	140.6	1,075.3	4,283.7	14,059.4	20,820.3	18,969.7	11,059.6	4,085.6	1,463.7	467.2	104.9	52.8	76,582.7

EXCEEDENCE FREQUENCY VALUES

PERCENTILE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
5.0	783.7	5,727.2	17,410.4	51,326.9	63,811.7	48,078.1	45,867.4	13,461.7	4,938.4	2,080.8	545.6	248.4	187,854.5
12.5	386.5	2,853.0	8,111.1	35,627.7	45,525.1	39,175.0	24,815.3	9,738.9	3,392.0	1,583.9	151.7	41.1	160,096.5
25.0	74.2	1,207.2	5,474.3	18,530.0	28,255.0	25,288.2	13,259.8	5,500.6	1,998.3	450.7	0.0	0.0	120,829.1
50.0	0.0	151.4	1,790.8	5,997.2	10,491.9	11,634.9	5,013.7	2,314.3	589.6	14.9	0.0	0.0	51,213.2
75.0	0.0	0.0	469.6	2,247.6	4,289.4	3,694.0	1,864.7	757.9	48.4	0.0	0.0	0.0	23,945.2
87.5	0.0	0.0	50.4	751.3	1,866.4	1,949.1	968.8	63.0	0.0	0.0	0.0	0.0	7,351.2
95.0	0.0	0.0	0.0	80.6	800.3	1,478.7	424.1	1.1	0.0	0.0	0.0	0.0	5,646.6

Carmel River Water Availability Analysis – Table 4

SIMULATED CAL-AM DIVERSIONS FROM CARMEL RIVER BASIN (ACRE-FEET)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1958	70.5	0.0	0.0	43.6	361.6	0.0	0.0	0.0	125.5	174.7	217.4	169.7	1,163.1
1959	100.8	0.0	0.0	261.9	200.9	0.0	75.0	154.3	216.5	255.6	268.0	195.7	1,728.8
1960	126.7	19.5	0.0	58.2	401.8	0.0	98.2	157.9	224.2	277.3	289.0	236.3	1,889.1
1961	152.9	107.3	99.9	134.9	79.7	179.2	288.1	387.1	398.0	457.3	467.3	386.8	3,138.4
1962	307.1	157.3	99.9	114.4	193.7	0.0	136.8	327.9	382.1	440.3	467.3	386.8	3,013.4
1963	285.7	145.9	99.9	99.1	363.4	0.0	0.0	68.4	326.4	397.6	441.2	363.0	2,590.5
1964	285.7	284.4	102.0	101.8	401.8	11.6	78.0	170.8	307.3	440.3	467.3	386.8	3,037.8
1965	307.1	145.9	164.3	428.5	401.8	7.0	0.0	165.5	231.4	232.0	372.6	363.0	2,819.0
1966	307.1	238.2	189.4	451.0	401.8	5.4	104.9	184.4	230.8	284.1	351.7	386.8	3,135.6
1967	307.1	145.9	346.9	248.8	401.8	0.0	0.0	32.7	180.1	229.6	270.7	299.8	2,463.3
1968	300.0	157.3	99.9	114.4	278.0	16.1	164.3	350.1	398.0	457.3	467.3	386.8	3,189.4
1969	307.1	157.3	99.9	222.3	361.6	0.0	0.0	37.2	184.3	270.5	458.6	386.8	2,485.7
1970	300.0	145.9	168.0	428.5	401.8	0.0	73.5	166.1	232.0	270.2	426.8	386.8	2,999.5
1971	307.1	145.9	403.9	451.0	417.9	3.2	70.1	162.7	228.7	266.9	293.5	311.2	3,062.0
1972	307.1	157.3	118.7	261.9	374.7	35.2	149.1	223.1	366.6	457.3	467.3	386.8	3,304.9
1973	300.0	195.4	276.9	428.5	361.6	0.0	69.3	31.2	227.7	265.9	292.5	249.2	2,698.2
1974	300.0	145.9	381.1	451.0	401.8	0.0	0.0	29.4	176.9	226.3	267.5	216.8	2,596.6
1975	185.1	145.9	99.9	213.5	297.1	0.0	0.0	39.1	186.1	381.3	441.2	363.0	2,352.0
1976	285.7	145.9	110.1	134.9	79.7	179.2	288.1	387.1	429.8	457.3	467.3	386.8	3,351.9
1977	307.1	168.7	125.5	134.9	79.7	179.2	288.1	387.1	429.8	457.3	467.3	386.8	3,411.4
1978	307.1	168.7	99.9	348.3	361.6	0.0	0.0	35.2	182.4	232.0	357.6	363.0	2,455.9
1979	285.7	145.9	99.9	303.4	401.8	0.0	76.8	169.6	186.2	389.2	441.2	363.0	2,862.7
1980	285.7	145.9	118.7	428.5	361.6	0.0	0.0	33.4	180.7	230.3	271.3	340.2	2,396.3
1981	285.7	145.9	99.9	99.1	401.8	0.0	80.0	222.1	382.1	440.3	458.6	386.8	3,002.1
1982	285.7	284.4	451.7	428.5	401.8	0.0	0.0	28.0	175.5	225.0	266.1	215.5	2,762.2
1983	134.1	192.5	438.2	428.5	361.6	0.0	0.0	26.9	174.5	223.9	265.1	214.5	2,459.8
1984	133.1	259.7	438.2	451.0	401.8	0.0	65.7	158.3	224.5	262.6	281.6	215.6	2,892.1
1985	134.2	195.5	422.6	239.8	215.3	0.0	74.6	167.3	233.1	299.9	467.3	386.8	2,836.4
1986	300.0	145.9	144.0	145.5	322.9	0.0	77.4	39.5	254.2	397.6	441.2	363.0	2,631.2
1987	300.0	157.3	110.1	134.9	184.1	0.0	229.2	387.1	398.0	457.3	467.3	386.8	3,212.0
1988	307.1	157.3	99.9	212.6	29.9	115.4	288.1	387.1	398.0	457.3	467.3	386.8	3,306.8
1989	307.1	168.7	99.9	114.4	79.7	152.3	288.1	387.1	429.8	457.3	467.3	386.8	3,338.4
1990	300.0	157.3	125.5	114.4	163.3	77.3	288.1	387.1	429.8	457.3	467.3	386.8	3,354.2
1991	300.0	168.7	125.5	134.9	79.7	125.4	207.5	327.9	382.1	440.3	458.6	363.0	3,113.4
1992	300.0	157.3	110.1	99.1	228.7	0.0	147.4	327.9	398.0	440.3	467.3	386.8	3,062.7
1993	307.1	168.7	99.9	405.6	361.6	0.0	74.8	167.5	184.2	262.2	441.2	363.0	2,835.7
1994	300.0	157.3	99.9	134.9	261.0	39.8	209.8	350.1	398.0	457.3	467.3	386.8	3,262.0
1995	307.1	157.3	110.1	336.8	401.8	0.0	0.0	35.5	182.7	232.3	373.7	363.0	2,500.3
1996	300.0	157.3	168.1	160.0	361.6	0.0	77.9	40.0	283.5	397.6	441.2	363.0	2,750.2
1997	300.0	145.9	289.8	428.5	401.8	0.0	71.4	164.0	230.0	268.2	271.8	386.8	2,958.0
1998	300.0	145.9	335.5	428.5	361.6	0.0	0.0	30.0	177.4	226.9	268.1	217.3	2,491.1
1999	205.2	145.9	440.4	334.6	401.8	0.0	0.0	162.9	228.9	267.1	270.7	322.7	2,780.1
2000	307.1	157.3	125.5	201.2	361.6	0.0	78.3	171.1	327.2	440.3	441.2	363.0	2,973.8
2001	285.7	145.9	110.1	292.1	401.8	0.0	77.0	169.7	244.4	440.3	467.3	386.8	3,021.1
2002	307.1	145.9	369.7	451.0	417.9	0.0	70.2	162.8	228.9	267.0	293.6	320.9	3,035.1
MINIMUM	70.5	0.0	0.0	43.6	29.9	0.0	0.0	0.0	125.5	174.7	217.4	169.7	1,163.1
MAXIMUM	307.1	284.4	451.7	451.0	417.9	179.2	288.1	387.1	429.8	457.3	467.3	386.8	3,411.4
MEAN	267.4	155.3	180.4	258.6	310.9	25.0	97.0	177.8	275.5	341.5	387.6	339.0	2,816.1

EXCEEDENCE FREQUENCY VALUES

PERCENTILE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
5.0	307.1	259.7	438.2	451.0	401.8	179.2	288.1	387.1	429.8	457.3	467.3	386.8	3,351.9
12.5	307.1	195.4	403.9	428.5	401.8	115.4	288.1	387.1	398.0	457.3	467.3	386.8	3,304.9
25.0	307.1	168.7	276.9	428.5	401.8	7.0	147.4	327.9	382.1	440.3	467.3	386.8	3,113.4
50.0	300.0	157.3	118.7	239.8	361.6	0.0	75.0	165.5	231.4	299.9	441.2	363.0	2,892.1
75.0	285.7	145.9	99.9	134.9	228.7	0.0	0.0	39.1	186.1	262.2	289.0	320.9	2,590.5
87.5	134.2	145.9	99.9	101.8	79.7	0.0	0.0	31.2	180.1	229.6	268.1	216.8	2,455.9
95.0	126.7	19.5	0.0	99.1	79.7	0.0	0.0	28.0	175.5	225.0	266.1	214.5	1,889.1

Comparison of SWRCB Table 13 "Reservations" with Reported Diversions in Water Year 2002
(All Values in Acre-feet)

SWRCB Water Rights Applications		SWRCB Decision 1632 Table 13 Reservations				MPWMD Well Reporting Water Year 2002		
Application Number	Applicant Name	Original 06-Jul-95	Revision 1 21-Mar-97	Revision 2 02-May-03	Revision 3 18-Jun-03	Reported Diversions	Reporting Method	Source Area
30093	Asoleado	11.3	11.3	11.3	11.3	NA	NA	NA
29193	Bernardi	2.3	2.3	2.3	2.3	2.3	LU	AQ3
30442	Berube	41.2	41.2	41.2	41.2	12.6	WM	AQ3
30215	Cal-Am	2964.0	2964.0	2964.0	2964.0	175.5	WM	SCR
30106	Carmel Valley Ranch	340.0	340.0	340.0	340.0	220.9	WM	AQ3
30145	Chappell	3.5	3.5	3.5	3.5	1.6	LU	CAC
30034	Chugach	7.6	7.6	7.6	25.2	1.3	LU	AQ2
30065	G & J Crow	1.4	1.4	1.4	1.4	2.7	WM	AQ3
30066	T Crow	12.7	12.7	12.7	12.7	15.5	WM	AQ3
29659	Evans	15.0	15.0	15.0	17.5	NA	NA	NA
30045	Greco	6.1	6.1	6.1	6.1	NR	LU	AQ2
30112	Hacienda Carmel	50.0	50.0	50.0	50.0	30.9	WM	AQ3
30544	~~Holt~~	0.0	10.6	10.6	0.0	NA	NA	NA
	Homestead	0.0	0.0	0.0	18.0	8.1	WM	AQ3
30067/30068	Kaufman/Williams	160.0	160.0	118.4	118.4	129.9	WM	AQ3
30057	Koontz	0.7	0.7	0.7	14.4	0.4	LU	AQ2
30510	Lutes	0.0	50.3	50.3	50.3	37.6	WM	AQ3
X000152	~~Markkula~~	0.0	88.5	88.5	0.0	NA	NA	NA
30047	Moses	2.3	2.3	2.3	2.3	3.5	LU	AQ2
30046	Nicholson	2.2	2.2	2.2	5.1	0.2	LU	AQ3
30497	Odello (Eastwood)	195.9	195.9	195.9	195.9	130.7	WM	AQ4
30447	Patterson	0.0	1.9	1.9	1.9	3.0	WM	AQ3
30075	Porter-Hoover	82.0	82.0	82.0	82.0	NA	NA	NA
30117	Quail Lodge	254.0	254.0	254.0	254.0	233.1	WM	AQ3
30111	Rancho Canada	700.0	700.0	700.0	700.0	522.0	WM	AQ4
30149	Rancho San Carlos	268.0	115.0	115.0	115.0	26.1	WM	AQ4
30150	Rancho San Carlos	0.0	60.0	60.0	60.0	41.7	WM	AQ3

Comparison of SWRCB Table 13 "Reservations" with Reported Diversions in Water Year 2002
(All Values in Acre-feet)

SWRCB Water Rights Applications		SWRCB Decision 1632 Table 13 Reservations				MPWMD Well Reporting Water Year 2002		
Application Number	Applicant Name	Original 06-Jul-95	Revision 1 21-Mar-97	Revision 2 02-May-03	Revision 3 18-Jun-03	Reported Diversions	Reporting Method	Source Area
30420	Rancho San Carlos	0.0	13.0	13.0	13.0	---	---	---
30281	Randazzo	18.0	18.0	18.0	18.0	33.9	WM	AQ2
	Sambosa Temple	0.0	0.0	0.0	8.0	0.3	WM	AQ3
30110/30351	Samson/Beckerman	79.1	79.1	79.1	79.1	NA	NA	NA
30060	Scardinia	0.4	0.4	0.4	0.4	0.6	LU	AQ2
30070	Sterten	5.1	5.1	5.1	11.2	4.8	LU	AQ3
29648	Templeman (Hamlin)	0.7	0.7	0.7	0.7	2.3	WM	AQ3
30446	Vetter (Smith)	0.0	1.9	1.9	1.9	3.0	WM	AQ3
30058	Williams Trust	1.5	1.5	1.5	1.5	2.7	WM	AQ3
27633	Wistrich	0.9	0.9	0.9	0.9	1.0	LU	AQ3
30040	Wolfe	8.3	8.3	8.3	8.3	NA	NA	NA
30511	Wolter	0.0	37.4	37.4	96.0	99.5	WM	AQ3

Notes:

1. The Water Year begins on October 1 and ends on September 30 of the following calendar year.
2. Reporting method refers to the method used to estimate water production and includes Land Use (LU), and Water Meter (WM).
3. Source area refers to the source of the water produced and includes surface water from San Clemente Reservoir (SCR) and ground water from the four subunits in the Carmel Valley Alluvial Aquifer (AQ1, AQ2, AQ3, and AQ4), and the Cachagua area (CAC).
4. "NA" refers to data that are not available. These water users are outside the District and are not required to report to the District.
5. "NR" refers to data that were not reported during Water Year 2002.
6. The original "Quantities Reserved by SWRCB for Future Appropriation" , i.e., "Reservations" , were made on July 5, 1995, as part of SWRCB Decision 1632 and are listed on Table 13, *Carmel River Watershed -- SWRCB Determination of Priorities and Quantities Obtained from Stipulations, Applications, or Protests (AFA),* in the decision.
7. Revisions to the Reservations were made on March 21, 1997 by WRO 97-03, on May 2, 2003 by an Order Approving Changes in Place of Use and Point of Diversion and Amending Permits 20831 and 20832 (Roy Kaufman), and on June 18, 2003 by WRO 2003-0014.

Table 9. Recommended minimum instream surface flows and cumulative maximum rates of withdrawal for new water diversions on the Carmel River.

Winter Dec. 15 - April 15	Spring April 15 - May 31	Summer - Fall June 1 - December 15
Wet, Normal, Below Normal Water Years Prior to 1st Attraction event continue December bypass flows. Attraction event: estimated unimpaired flow to the Lagoon of 200 cfs. During Attraction events bypass sufficient to maintain 200 cfs to Lagoon. Following Attraction events, provide minimum bypass flow of 100 cfs between LPD[1] and SCD; a minimum bypass flow of 90 cfs between SCD and RM 5.5; a minimum bypass flow of 60 cfs between RM 5.5 and the Lagoon. Limit cumulative maximum average daily diversion rate to 80 cfs.	Wet, Normal, Below Normal Water Years New projects must bypass 80 cfs between SCD and the Lagoon; above SCD, new projects must provide prorated flows yielding 80 cfs or inflow at SCD. Limit the cumulative maximum average daily diversion rate to 80 cfs.	Wet, Normal, Below Normal Water Years No new diversions are warranted June 1 to October 31. If feasible, June 1 to October 31, authorized diversions upstream of the Narrows should divert only when flow at the Narrows exceeds 20 cfs; authorized diversions downstream of the Narrows should divert only when inflow to the lagoon exceeds 5 cfs. November: New projects can divert with minimum bypass of 20 cfs at Narrows and 5 cfs at Lagoon. December 1-15: New projects can divert with minimum bypass of 40 cfs.
Dry and Critically Dry Water Years Attraction event: estimated unimpaired flow to Lagoon = 200 cfs in January; 100 cfs in February; 75 cfs in March. During Attraction events bypass sufficient to maintain 150 cfs to Lagoon. Following Attraction events, provide minimum bypass flow of 100 cfs between LPD[1] and SCD; a minimum bypass flow of 90 cfs between SCD and RM 5.5; a minimum bypass flow of 60 cfs between RM 5.5 and the Lagoon. Limit the cumulative maximum average daily diversion rate to 80 cfs.	Dry and Critically Dry Water Years same as for normal and below normal water years	Dry and Critically Dry Water Years same as for normal and below normal water years

[1]LPD = Los Padres Dam; SCD = San Clemente Dam

Carmel River Water Availability Analysis – Table 7

SIMULATED NOAA FISHERIES MINIMUM BYPASS FLOW REQUIREMENTS AT THE LAGOON (ACRE-FEET)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1958	307.4	297.4	2,458.9	4,382.4	10,906.5	11,798.8	8,328.6	4,917.8	297.4	307.4	307.4	297.4	44,607.6
1959	307.4	297.4	2,458.9	4,858.3	7,684.1	3,936.3	4,164.3	4,917.8	297.4	307.4	307.4	297.4	29,834.2
1960	307.4	297.4	2,458.9	3,628.9	6,553.8	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	27,226.6
1961	307.4	297.4	2,458.9	2,458.9	2,221.0	2,458.9	3,569.4	4,917.8	297.4	307.4	307.4	297.4	19,899.4
1962	307.4	297.4	2,458.9	2,458.9	8,269.1	9,796.0	4,164.3	4,917.8	297.4	307.4	307.4	297.4	33,879.6
1963	307.4	297.4	2,458.9	3,093.5	10,460.3	7,158.6	8,328.6	4,917.8	297.4	307.4	307.4	297.4	38,232.2
1964	307.4	297.4	2,458.9	5,651.5	3,569.4	3,688.4	5,611.9	4,917.8	297.4	307.4	307.4	297.4	27,712.4
1965	307.4	297.4	5,631.7	8,507.1	3,331.4	3,688.4	6,107.6	4,917.8	297.4	307.4	307.4	297.4	33,998.5
1966	307.4	297.4	3,410.8	5,681.3	4,689.8	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	28,366.8
1967	307.4	297.4	2,458.9	5,631.7	6,762.0	9,518.4	8,328.6	4,917.8	297.4	307.4	307.4	297.4	39,432.0
1968	307.4	297.4	2,458.9	3,043.9	4,838.5	5,393.8	4,164.3	4,917.8	297.4	307.4	307.4	297.4	26,631.7
1969	307.4	297.4	2,458.9	8,021.2	11,104.8	12,294.6	8,328.6	4,917.8	297.4	307.4	307.4	297.4	48,940.4
1970	307.4	297.4	3,628.9	9,597.7	4,511.3	8,229.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	36,864.0
1971	307.4	297.4	5,304.5	3,728.0	3,331.4	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	26,949.0
1972	307.4	297.4	4,967.4	3,807.4	4,590.6	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	27,950.4
1973	307.4	297.4	2,458.9	8,764.9	10,956.1	12,294.6	7,594.9	4,917.8	297.4	307.4	307.4	297.4	48,801.6
1974	307.4	297.4	3,430.6	10,291.8	3,331.4	11,798.8	8,328.6	4,917.8	297.4	307.4	307.4	297.4	43,913.5
1975	307.4	297.4	2,458.9	2,458.9	9,716.7	10,628.9	8,328.6	4,917.8	297.4	307.4	307.4	297.4	40,324.3
1976	307.4	297.4	2,458.9	2,458.9	2,300.3	2,458.9	3,569.4	4,917.8	297.4	307.4	307.4	297.4	19,978.7
1977	307.4	297.4	2,458.9	2,458.9	2,221.0	2,458.9	3,569.4	4,917.8	297.4	307.4	307.4	297.4	19,899.4
1978	307.4	297.4	3,747.9	10,668.5	10,242.2	12,294.6	8,328.6	4,917.8	297.4	307.4	307.4	297.4	52,014.1
1979	307.4	297.4	2,458.9	4,342.8	7,624.6	6,841.3	7,317.3	4,917.8	297.4	307.4	307.4	297.4	35,317.2
1980	307.4	297.4	4,699.7	10,271.9	7,614.7	12,294.6	7,684.1	4,917.8	297.4	307.4	307.4	297.4	49,297.4
1981	307.4	297.4	2,458.9	4,045.3	4,541.1	8,229.4	5,373.9	4,917.8	297.4	307.4	307.4	297.4	31,381.0
1982	307.4	297.4	3,093.5	11,997.1	9,260.6	11,005.6	8,328.6	4,917.8	297.4	307.4	307.4	297.4	50,417.8
1983	307.4	297.4	5,631.7	8,636.0	11,104.8	12,294.6	8,328.6	4,917.8	297.4	307.4	307.4	297.4	52,728.0
1984	307.4	297.4	6,801.7	7,674.2	3,450.4	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	32,511.3
1985	307.4	297.4	2,458.9	2,458.9	3,837.1	7,803.1	5,839.9	4,917.8	297.4	307.4	307.4	297.4	29,130.3
1986	307.4	297.4	2,458.9	4,739.4	9,449.0	12,294.6	7,317.3	4,917.8	297.4	307.4	307.4	297.4	42,991.4
1987	307.4	297.4	2,458.9	2,458.9	3,817.3	8,070.8	4,164.3	4,917.8	297.4	307.4	307.4	297.4	27,702.5
1988	307.4	297.4	2,458.9	3,946.2	3,450.4	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	24,440.5
1989	307.4	297.4	2,458.9	2,458.9	2,221.0	5,572.2	4,164.3	4,917.8	297.4	307.4	307.4	297.4	23,607.6
1990	307.4	297.4	2,458.9	2,458.9	3,698.3	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	23,201.1
1991	307.4	297.4	2,458.9	2,458.9	2,221.0	7,565.1	6,553.8	4,917.8	297.4	307.4	307.4	297.4	27,990.0
1992	307.4	297.4	2,458.9	4,303.1	7,872.5	6,940.5	4,164.3	4,917.8	297.4	307.4	307.4	297.4	32,471.6
1993	307.4	297.4	2,458.9	11,481.6	11,104.8	12,145.9	5,096.3	4,917.8	297.4	307.4	307.4	297.4	49,019.8
1994	307.4	297.4	2,458.9	2,458.9	5,512.7	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	25,015.5
1995	307.4	297.4	2,458.9	11,025.5	7,376.8	10,073.6	8,328.6	4,917.8	297.4	307.4	307.4	297.4	45,995.7
1996	307.4	297.4	2,458.9	2,776.2	10,371.1	12,145.9	5,929.2	4,917.8	297.4	307.4	307.4	297.4	40,413.5
1997	307.4	297.4	5,800.3	12,294.6	9,260.6	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	41,940.4
1998	307.4	297.4	2,458.9	11,342.8	11,104.8	12,294.6	8,328.6	4,917.8	297.4	307.4	307.4	297.4	52,262.0
1999	307.4	297.4	2,458.9	4,144.5	8,179.9	5,631.7	8,031.1	4,917.8	297.4	307.4	307.4	297.4	35,178.4
2000	307.4	297.4	2,458.9	4,818.7	8,764.9	10,728.0	4,164.3	4,917.8	297.4	307.4	307.4	297.4	37,667.1
2001	307.4	297.4	2,458.9	5,433.4	7,713.9	8,457.5	4,164.3	4,917.8	297.4	307.4	307.4	297.4	34,960.3
2002	307.4	297.4	4,660.0	6,008.5	3,331.4	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	28,584.9
MINIMUM	307.4	297.4	2,458.9	2,458.9	2,221.0	2,458.9	3,569.4	4,917.8	297.4	307.4	307.4	297.4	19,899.4
MAXIMUM	307.4	297.4	6,801.7	12,294.6	11,104.8	12,294.6	8,328.6	4,917.8	297.4	307.4	307.4	297.4	52,728.0
MEAN	307.4	297.4	3,099.9	5,682.0	6,543.9	7,492.7	5,775.6	4,917.8	297.4	307.4	307.4	297.4	35,326.3

EXCEEDENCE FREQUENCY VALUES

PERCENTILE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
5.0	307.4	297.4	5,631.7	11,481.6	11,104.8	12,294.6	8,328.6	4,917.8	297.4	307.4	307.4	297.4	52,014.1
12.5	307.4	297.4	4,967.4	10,668.5	10,906.5	12,294.6	8,328.6	4,917.8	297.4	307.4	307.4	297.4	49,019.8
25.0	307.4	297.4	3,410.8	8,507.1	9,260.6	11,005.6	8,031.1	4,917.8	297.4	307.4	307.4	297.4	42,991.4
50.0	307.4	297.4	2,458.9	4,382.4	6,762.0	7,565.1	5,096.3	4,917.8	297.4	307.4	307.4	297.4	33,998.5
75.0	307.4	297.4	2,458.9	2,776.2	3,569.4	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	27,712.4
87.5	307.4	297.4	2,458.9	2,458.9	3,331.4	3,688.4	4,164.3	4,917.8	297.4	307.4	307.4	297.4	24,440.5
95.0	307.4	297.4	2,458.9	2,458.9	2,221.0	2,458.9	3,569.4	4,917.8	297.4	307.4	307.4	297.4	19,978.7

Carmel River Water Availability Analysis – Table 8

SIMULATED EXCESS FLOW AT THE LAGOON BASED ON NOAA FISHERIES MINIMUM BYPASS FLOW REQUIREMENTS (ACRE-FEET)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1958	0.0	0.0	258.8	2,351.7	24,196.8	31,087.0	60,610.4	2,940.4	2,963.4	0.0	0.0	0.0	124,408.6
1959	0.0	250.8	0.0	2,146.4	9,118.4	1,073.4	0.0	0.0	1.5	0.0	0.0	0.0	12,590.6
1960	0.0	0.0	0.0	430.0	4,259.4	142.1	6.0	0.0	143.6	0.0	0.0	0.0	4,981.1
1961	0.0	0.0	0.0	126.8	86.9	167.3	0.0	0.0	0.0	0.0	0.0	0.0	381.0
1962	0.0	0.0	0.0	25.9	19,124.8	6,773.5	1,415.2	0.0	65.9	0.0	0.0	0.0	27,405.4
1963	0.0	6.9	433.1	9,365.7	16,290.0	4,513.8	16,486.7	5,538.0	2,788.3	0.0	0.0	0.0	55,422.7
1964	0.0	4,521.4	31.7	2,575.2	1,040.6	324.1	0.0	0.0	58.9	0.0	0.0	0.0	8,551.8
1965	0.0	59.0	3,345.3	10,035.7	1,189.8	603.6	5,103.4	179.7	873.4	0.0	0.0	0.0	21,389.8
1966	0.0	2,599.0	2,445.2	1,528.6	1,973.0	352.1	0.0	0.0	0.0	0.0	0.0	0.0	8,898.0
1967	0.0	0.0	13,462.3	11,894.3	5,471.8	15,769.8	25,441.7	8,543.8	3,553.8	0.0	0.0	0.0	84,137.5
1968	0.0	0.0	0.0	453.0	174.5	34.1	0.0	0.0	0.0	0.0	0.0	0.0	661.6
1969	0.0	0.0	0.0	44,556.0	61,208.9	26,880.4	7,103.8	1,106.4	2,488.1	0.0	0.0	0.0	143,343.7
1970	0.0	0.0	563.9	11,623.8	2,269.7	10,258.6	431.8	0.0	323.3	0.0	0.0	0.0	25,471.1
1971	0.0	2,105.8	6,174.1	3,816.1	77.8	402.6	75.1	0.0	227.5	0.0	0.0	0.0	12,879.0
1972	0.0	0.0	1,479.8	12.9	147.2	0.0	9.5	0.0	0.0	0.0	0.0	0.0	1,649.3
1973	0.0	2,684.5	290.3	11,104.9	34,569.0	20,569.9	3,359.0	326.5	1,228.6	0.0	0.0	0.0	74,132.6
1974	0.0	1,642.3	4,318.3	6,819.5	1,544.3	20,747.2	12,257.0	865.1	1,706.0	0.0	0.0	0.0	49,899.7
1975	0.0	2.8	1,388.3	48.6	18,538.3	28,357.2	4,931.2	1,131.5	1,700.9	0.0	0.0	0.0	56,098.9
1976	0.0	39.3	0.0	0.0	0.0	149.3	0.0	0.0	0.0	0.0	0.0	0.0	188.6
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	996.9	25,331.3	34,993.8	31,149.0	10,477.1	4,821.1	2,982.5	0.0	0.0	0.0	110,751.6
1979	0.0	1,110.3	60.7	1,737.7	5,140.9	7,081.6	3,545.2	126.6	1,496.4	0.0	0.0	0.0	20,299.4
1980	0.0	935.5	2,277.7	24,540.3	52,547.4	16,378.7	4,394.1	2,094.6	3,094.5	0.0	0.0	0.0	106,262.9
1981	0.0	312.1	281.8	7,570.4	1,130.3	6,929.9	1,580.5	0.0	299.6	0.0	0.0	0.0	18,104.6
1982	0.0	5,548.7	2,380.8	15,937.6	4,046.1	8,717.3	45,488.3	4,043.3	3,730.1	0.0	0.0	0.0	89,892.2
1983	0.0	5,608.3	21,073.0	41,162.1	44,510.1	110,585.9	37,538.8	22,907.1	8,377.9	0.0	0.0	0.0	291,763.2
1984	0.0	9,087.5	25,645.4	4,825.7	2,718.6	1,894.0	414.4	0.0	529.9	0.0	0.0	0.0	45,115.4
1985	0.0	2,772.2	1,608.8	78.0	903.7	923.5	88.6	0.0	148.8	0.0	0.0	0.0	6,523.5
1986	0.0	105.6	1,197.0	541.2	54,574.4	35,783.5	2,962.5	365.0	1,163.2	0.0	0.0	0.0	96,692.4
1987	0.0	178.3	0.0	3.2	2,489.6	124.9	1.2	0.0	1.3	0.0	0.0	0.0	2,798.5
1988	0.0	0.0	0.0	644.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	644.6
1989	0.0	0.0	0.0	0.0	3.5	273.7	0.0	0.0	0.0	0.0	0.0	0.0	277.2
1990	0.0	0.0	0.0	0.0	987.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	987.1
1991	0.0	0.0	0.0	0.0	0.0	11,426.6	258.5	0.0	15.7	0.0	0.0	0.0	11,700.7
1992	0.0	0.0	0.0	217.8	19,253.7	4,318.1	547.2	0.0	0.0	0.0	0.0	0.0	24,336.8
1993	0.0	0.0	600.5	37,418.3	27,731.5	8,898.1	2,984.6	0.9	1,650.5	0.0	0.0	0.0	79,284.4
1994	0.0	0.0	0.0	109.7	1,596.0	43.6	0.0	0.0	0.0	0.0	0.0	0.0	1,749.3
1995	0.0	0.0	0.0	47,182.9	2,978.7	60,804.3	5,548.3	4,845.4	4,640.9	0.0	0.0	0.0	126,000.6
1996	0.0	18.4	793.4	3,065.3	23,287.1	11,294.8	2,865.2	466.0	1,226.9	0.0	0.0	0.0	43,017.1
1997	0.0	1,032.7	11,918.8	49,703.6	8,110.2	2,629.0	53.8	0.0	112.8	0.0	0.0	0.0	73,561.0
1998	0.0	383.8	4,726.0	23,413.9	138,992.4	20,857.6	22,565.3	10,474.3	7,535.5	0.0	0.0	0.0	228,948.7
1999	0.0	2,060.1	1,033.2	1,252.1	6,193.4	5,533.5	6,319.7	359.9	1,274.5	0.0	0.0	0.0	24,026.5
2000	0.0	0.0	0.0	6,681.1	24,905.0	12,786.8	3,044.5	0.0	558.6	0.0	0.0	0.0	47,976.0
2001	0.0	58.8	0.0	1,472.1	3,010.6	12,480.4	1,001.2	0.0	376.2	0.0	0.0	0.0	18,399.3
2002	0.0	142.0	3,563.2	1,448.7	272.0	1,189.6	159.1	0.0	53.3	0.0	0.0	0.0	6,827.8
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM	0.0	9,087.5	25,645.4	49,703.6	138,992.4	110,585.9	60,610.4	22,907.1	8,377.9	0.0	0.0	0.0	291,763.2
MEAN	0.0	961.5	2,496.6	9,183.4	14,703.5	12,006.9	6,423.7	1,580.8	1,275.4	0.0	0.0	0.0	48,631.8

EXCEEDENCE FREQUENCY VALUES

PERCENTILE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
5.0	0.0	5,548.7	13,462.3	44,556.0	54,574.4	35,783.5	37,538.8	8,543.8	4,640.9	0.0	0.0	0.0	143,343.7
12.5	0.0	2,684.5	4,726.0	25,331.3	34,993.8	28,357.2	16,486.7	4,821.1	3,094.5	0.0	0.0	0.0	110,751.6
25.0	0.0	1,032.7	2,277.7	11,104.9	19,253.7	15,769.8	5,103.4	865.1	1,700.9	0.0	0.0	0.0	74,132.6
50.0	0.0	18.4	290.3	2,146.4	3,010.6	5,533.5	1,001.2	0.0	323.3	0.0	0.0	0.0	24,026.5
75.0	0.0	0.0	0.0	126.8	987.1	324.1	1.2	0.0	1.3	0.0	0.0	0.0	6,523.5
87.5	0.0	0.0	0.0	3.2	77.8	43.6	0.0	0.0	0.0	0.0	0.0	0.0	661.6
95.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	277.2

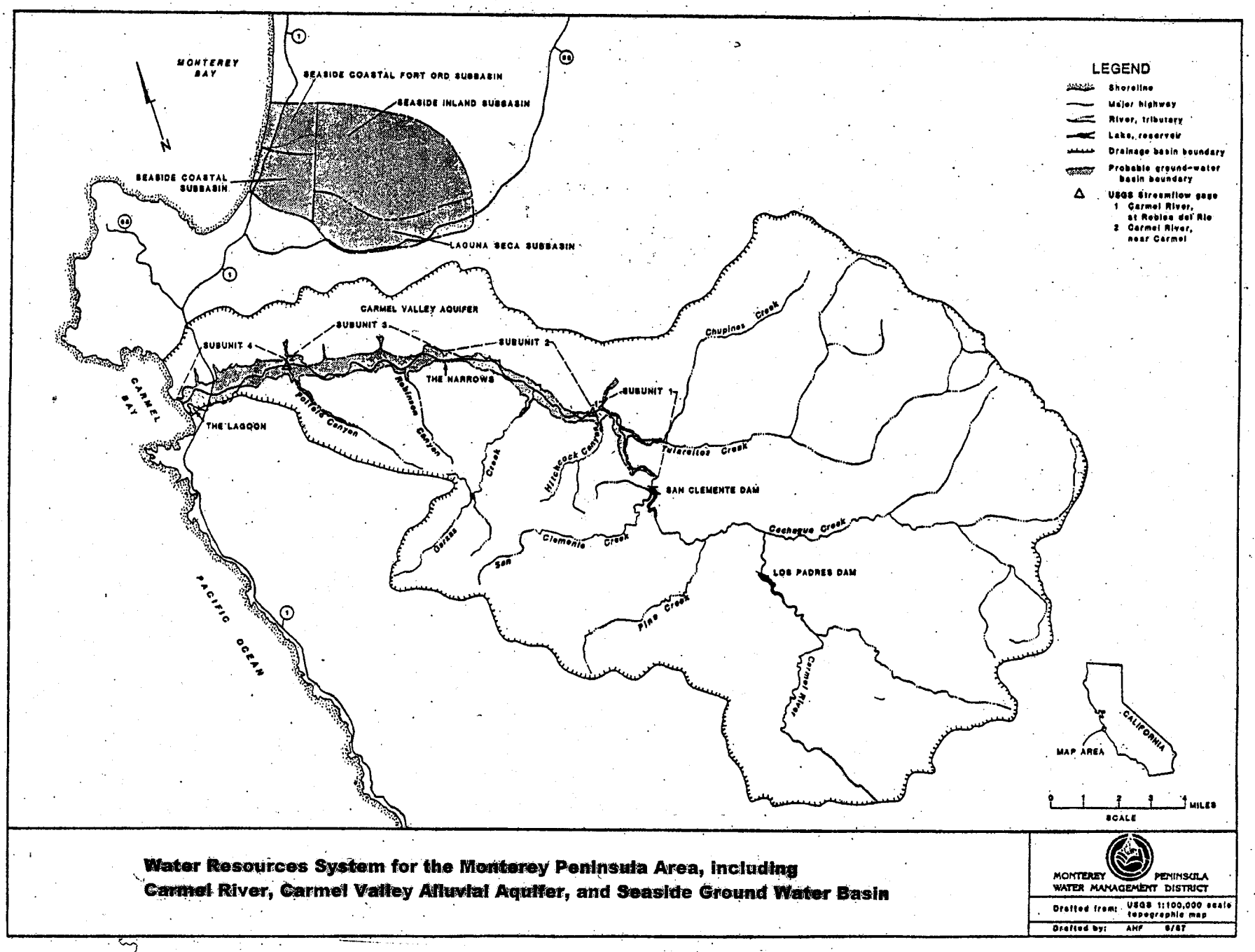
Carmel River Water Availability Analysis – Table 9

SIMULATED EXCESS FLOW AT THE LAGOON ADJUSTED FOR NOAA FISHERIES AND SWRCB MAXIMUM DIVERSION RATES (ACRE-FEET)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1958	0.0	0.0	157.7	355.3	2,145.7	2,466.2	2,498.6	1,798.0	2,266.1	0.0	0.0	0.0	11,687.5
1959	0.0	250.8	0.0	455.6	1,130.5	976.1	0.0	0.0	1.5	0.0	0.0	0.0	2,814.5
1960	0.0	0.0	0.0	194.2	1,225.7	142.1	6.0	0.0	143.6	0.0	0.0	0.0	1,711.5
1961	0.0	0.0	0.0	126.8	86.9	167.3	0.0	0.0	0.0	0.0	0.0	0.0	381.0
1962	0.0	0.0	0.0	25.9	1,523.9	2,081.8	1,208.4	0.0	65.9	0.0	0.0	0.0	4,905.9
1963	0.0	6.9	310.0	166.6	1,894.8	2,086.7	2,311.3	2,350.1	2,088.3	0.0	0.0	0.0	11,214.6
1964	0.0	1,993.9	31.7	642.9	892.4	282.2	0.0	0.0	58.9	0.0	0.0	0.0	3,902.1
1965	0.0	59.0	999.4	2,263.6	1,069.5	574.8	2,249.3	179.7	851.9	0.0	0.0	0.0	8,247.3
1966	0.0	1,071.1	753.6	1,008.7	1,599.6	352.1	0.0	0.0	0.0	0.0	0.0	0.0	4,785.1
1967	0.0	0.0	1,596.3	903.1	2,054.9	2,147.3	2,498.6	2,522.1	2,043.3	0.0	0.0	0.0	13,765.5
1968	0.0	0.0	0.0	130.1	112.4	34.1	0.0	0.0	0.0	0.0	0.0	0.0	276.6
1969	0.0	0.0	0.0	1,218.6	2,332.0	2,556.9	2,498.6	1,016.0	2,253.1	0.0	0.0	0.0	11,875.2
1970	0.0	0.0	243.1	1,594.9	1,837.4	2,303.8	431.8	0.0	323.3	0.0	0.0	0.0	6,734.2
1971	0.0	166.6	1,992.9	2,376.3	77.8	395.9	75.1	0.0	227.5	0.0	0.0	0.0	5,312.0
1972	0.0	0.0	331.1	12.9	106.1	0.0	9.5	0.0	0.0	0.0	0.0	0.0	459.6
1973	0.0	881.3	290.3	1,403.4	2,196.1	2,581.9	2,235.8	326.5	1,169.5	0.0	0.0	0.0	11,084.8
1974	0.0	891.8	1,463.3	2,330.2	1,440.5	2,426.9	2,486.5	790.8	1,651.1	0.0	0.0	0.0	13,481.0
1975	0.0	2.8	547.1	48.6	2,084.6	2,581.9	2,331.5	1,055.3	1,658.2	0.0	0.0	0.0	10,310.0
1976	0.0	39.3	0.0	0.0	0.0	149.3	0.0	0.0	0.0	0.0	0.0	0.0	188.6
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	83.3	1,781.2	2,332.0	2,581.9	2,497.1	2,464.7	2,281.4	0.0	0.0	0.0	14,021.5
1979	0.0	863.6	60.7	902.8	1,385.7	2,394.8	2,130.8	126.6	1,496.3	0.0	0.0	0.0	9,361.3
1980	0.0	935.5	415.9	1,880.7	2,415.3	2,499.6	2,182.8	1,811.0	2,420.3	0.0	0.0	0.0	14,561.1
1981	0.0	312.1	168.4	510.7	881.7	2,249.6	1,212.2	0.0	299.6	0.0	0.0	0.0	5,634.4
1982	0.0	1,430.0	1,686.9	2,393.5	1,805.0	2,358.4	2,498.6	2,256.8	2,496.8	0.0	0.0	0.0	16,925.9
1983	0.0	1,755.0	2,452.9	2,197.2	2,332.0	2,581.9	2,498.6	2,581.9	2,498.6	0.0	0.0	0.0	18,898.0
1984	0.0	2,169.1	2,247.0	2,377.2	2,118.9	1,641.1	414.4	0.0	529.9	0.0	0.0	0.0	11,497.6
1985	0.0	1,435.2	1,495.3	78.0	362.5	492.7	88.6	0.0	148.8	0.0	0.0	0.0	4,101.0
1986	0.0	85.4	390.0	289.2	1,760.1	2,581.9	2,213.5	365.0	1,163.2	0.0	0.0	0.0	8,848.2
1987	0.0	178.3	0.0	3.2	249.9	83.3	1.2	0.0	1.3	0.0	0.0	0.0	517.1
1988	0.0	0.0	0.0	368.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	368.2
1989	0.0	0.0	0.0	0.0	3.5	166.6	0.0	0.0	0.0	0.0	0.0	0.0	170.1
1990	0.0	0.0	0.0	0.0	166.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.6
1991	0.0	0.0	0.0	0.0	0.0	1,395.1	218.1	0.0	15.7	0.0	0.0	0.0	1,628.9
1992	0.0	0.0	0.0	216.6	1,502.1	2,102.0	546.3	0.0	0.0	0.0	0.0	0.0	4,367.0
1993	0.0	0.0	249.9	2,220.8	2,007.6	2,254.0	1,984.4	0.9	1,574.4	0.0	0.0	0.0	10,291.9
1994	0.0	0.0	0.0	109.7	577.7	43.6	0.0	0.0	0.0	0.0	0.0	0.0	731.0
1995	0.0	0.0	0.0	2,228.8	1,836.4	2,581.9	2,413.5	2,493.1	2,498.6	0.0	0.0	0.0	14,052.3
1996	0.0	18.4	383.9	1,289.1	2,182.8	2,352.8	1,985.8	256.2	1,224.2	0.0	0.0	0.0	9,693.2
1997	0.0	799.4	1,647.7	2,581.9	2,070.7	2,022.7	53.8	0.0	112.8	0.0	0.0	0.0	9,289.0
1998	0.0	356.4	1,576.0	2,478.1	2,332.0	2,581.9	2,498.6	2,581.9	2,498.6	0.0	0.0	0.0	16,903.4
1999	0.0	1,898.3	710.6	854.3	1,342.1	2,559.4	2,300.9	359.9	1,271.7	0.0	0.0	0.0	11,297.3
2000	0.0	0.0	0.0	879.4	2,415.3	2,387.4	2,056.8	0.0	558.6	0.0	0.0	0.0	8,297.4
2001	0.0	58.8	0.0	461.8	1,185.3	2,222.7	874.5	0.0	376.2	0.0	0.0	0.0	5,179.3
2002	0.0	142.0	1,021.0	743.7	272.0	1,009.5	159.1	0.0	53.3	0.0	0.0	0.0	3,400.5
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM	0.0	2,169.1	2,452.9	2,581.9	2,415.3	2,581.9	2,498.6	2,581.9	2,498.6	0.0	0.0	0.0	18,898.0
MEAN	0.0	395.6	517.9	935.6	1,274.4	1,498.9	1,148.2	563.0	851.6	0.0	0.0	0.0	7,185.3

EXCEEDENCE FREQUENCY VALUES

PERCENTILE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
5.0	0.0	1,898.3	1,992.9	2,393.5	2,332.0	2,581.9	2,498.6	2,522.1	2,498.6	0.0	0.0	0.0	16,903.4
12.5	0.0	1,430.0	1,596.3	2,330.2	2,332.0	2,581.9	2,498.6	2,350.1	2,281.4	0.0	0.0	0.0	14,021.5
25.0	0.0	799.4	753.6	1,781.2	2,070.7	2,426.9	2,300.9	790.8	1,651.1	0.0	0.0	0.0	11,297.3
50.0	0.0	18.4	168.4	642.9	1,440.5	2,086.7	874.5	0.0	323.3	0.0	0.0	0.0	6,734.2
75.0	0.0	0.0	0.0	126.8	272.0	282.2	1.2	0.0	1.3	0.0	0.0	0.0	1,711.5
87.5	0.0	0.0	0.0	3.2	77.8	43.6	0.0	0.0	0.0	0.0	0.0	0.0	368.2
95.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.1



Water Resources System for the Monterey Peninsula Area, including Carmel River, Carmel Valley Alluvial Aquifer, and Seaside Ground Water Basin

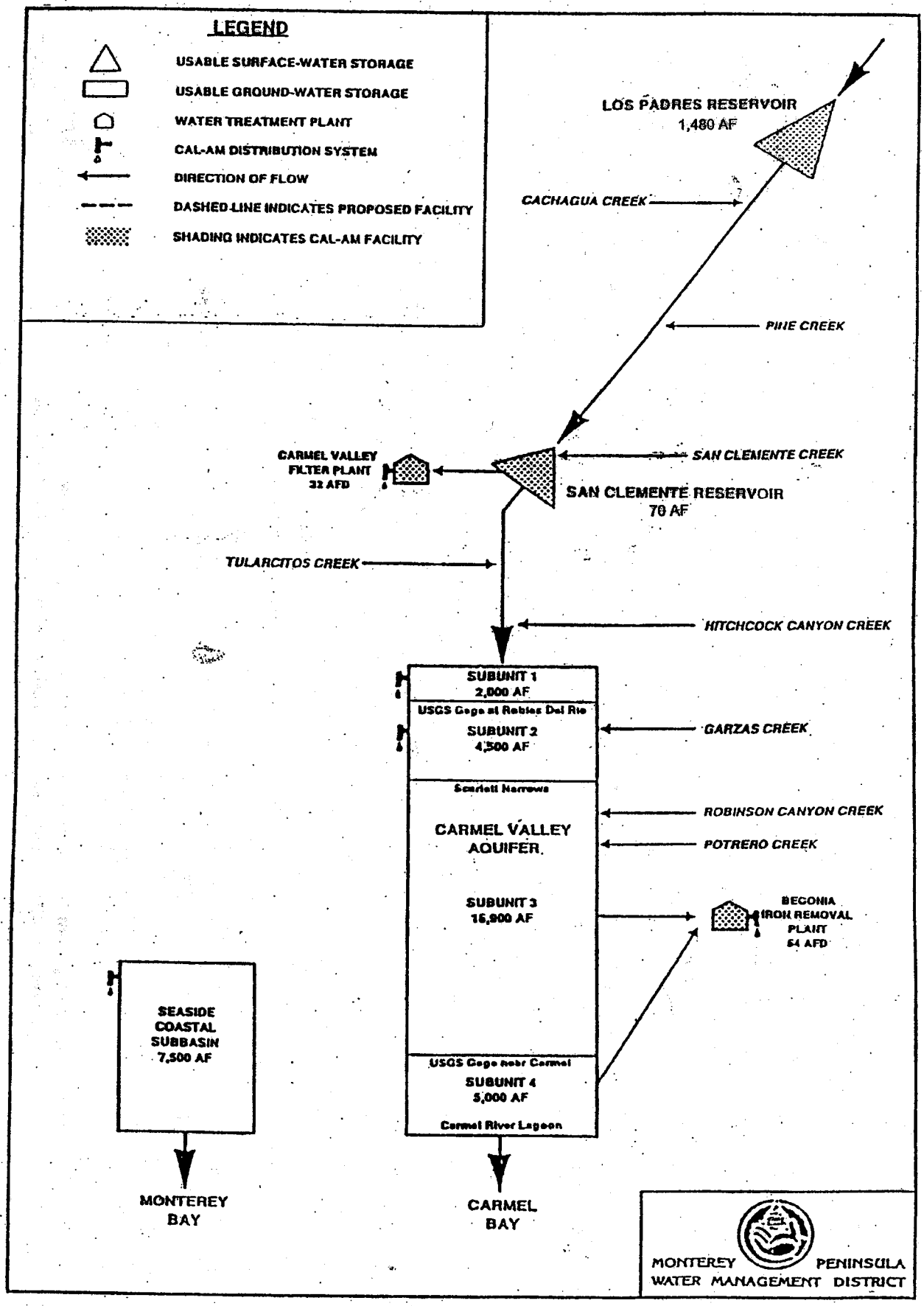
MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

Drafted from: USGS 1:100,000 scale topographic map

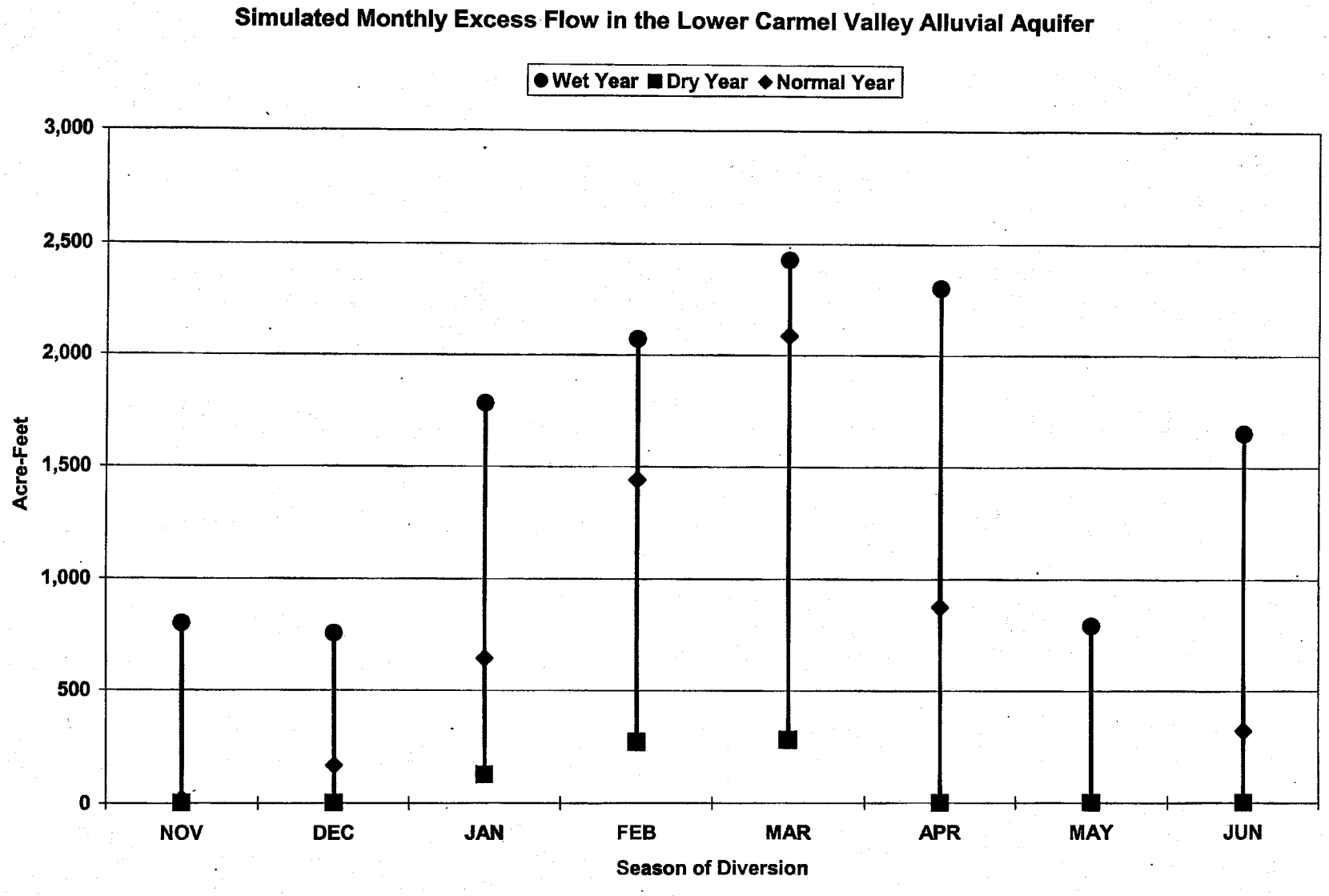
Drafted by: AHF 6/87

Carmel River Water Availability Analysis – Figure 1

OPERATIONAL SCHEMATIC
EXISTING CONDITIONS: OCTOBER 2003



Carmel River Water Availability Analysis – Figure 2



Carmel River Water Availability Analysis - Figure 3

ATTACHMENT 3

PETITION FOR CHANGE TO

APPLICATION 11674 (PERMIT 7130B)
AND
APPLICATION 27614 (PERMIT 20808)

CHANGE FROM STORAGE RIGHT AT NEW LOS PADRES RESERVOIR TO DIRECT DIVERSION AT SAN CLEMENTE DAM AND CARMEL VALLEY AQUIFER

PROPOSED AMENDMENTS TO PERMIT CONDITIONS

PERMIT CONDITION (7130B and 20808)	AMENDMENT PROPOSED	NOTES
1. States source of water as Carmel River	NO	
2. Lists points of diversion and rediversion	NO	
3. States purpose of use	NO	
4. States place of use	NO	
5. Sets storage and diversion limits	NO	
6. Possible reduction in appropriation is possible in future	NO	
7. Construction shall begin within 4 years of certification of Supplemental EIR for Carmel River Dam Project	NO	
8. Construction shall be completed by December 31, 2005	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
9. All authorized water shall be used by December 31, 2020	NO	
10. Progress reports shall be submitted upon request of SWRCB until license issued	NO	
11. Access to project for SWRCB must be allowed	NO	No requests for access received to date.
12. Permit subject to continuing authority of SWRCB	NO	
13. Quantity of water allowed in permit	NO	

PERMIT CONDITION (7130B and 20808)	AMENDMENT PROPOSED	NOTES
subject to modification		
14. Permit doesn't confer right of access to point of diversion	NO	
15. Permittee's rights are junior to senior right holders	NO	Senior water rights subject to filing deadline, Dec. 29, 1995.
16. Priority of rights shown on Table 13 of Decision #1632	NO	
17. No water diversion until Cal-Am has legal rights, which could include contract for NLP permit	YES	MPWMD proposes to lease or license use of rights under these proposed changes to Cal-Am.
18. DWR-Dam Safety must approve plans for dam	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
19. Provide water conservation plan within one year of permit (or longer); provide progress reports upon request	NO	Conservation plan has been submitted to SWRCB. Other conservation-related actions are reported to SWRCB in MPWMD Annual Report and Carmel River Mitigation Program Annual Report.
20. Permittee shall prepare Erosion Control Plan (no deadline mentioned)	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
21. No work started or diversions until CDFG 1601-03 permit	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
22. Prior to construction, develop channel, riparian monitoring program with CDFG; 20 year term; prepare annual reports; correct situation if adverse trends observed	YES	Suspend condition. This condition is not applicable to the proposed permit changes. However, riparian monitoring occurs presently as part of MPWMD Carmel River Mitigation Program. Annual Reports are sent to SWRCB.
23. Prior to construction, comply with RWQCB requirements; final report per CWC 13260; implement during construction	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
24. Install multilevel intake for dam outlet works; temp control; aeration; CDFG approval required	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
25. Acquire rights to 380 acres in dam vicinity for mixed hardwood/woodland	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
26. Implement Valley Oak Mitigation Plan	YES	Suspend condition. This condition is not

PERMIT CONDITION (7130B and 20808)	AMENDMENT PROPOSED	NOTES
in EIR/EIS		applicable to the proposed permit changes.
27. Implement Construction Staging Area Mitigation Plan in EIR/EIS	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
28. Finalize Riparian/Wetland Plan; obtain approval; commence within one year prior to beginning of construction	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
29. Prior to construction, collect flower seeds, store, and apply upon completion of construction	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
30. Keep riparian irrigation equipment in good working order; ready when needed	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
31. Implement Wildlife Habitat Monitoring Program until license; submit reports annually; possible future action needed	NO	Ongoing; study results are summarized in MPWMD Mitigation Program Annual Reports sent to SWRCB.
32. Prior to construction, finalize Spawning Habitat Mitigation Plan; implement upon approval by agencies	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
33. During final design, prior to bids, finalize Steelhead Fisheries Mitigation Plan and set numerical goal; implement plan	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
34. Maintain flows in Tables A-C of permit	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
35. Once project is operational, maintain limits to Cal-Am filter plant diversions	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
36. Install and operate continuous gages at five locations	YES	Suspend condition. This condition is not applicable to the proposed permit changes. However, three of these gages have been installed and are in operation. The other two are to be located at fish screening facilities for New Los Padres Dam and Reservoir, if that project is constructed.
37. Submit annual reports on mean daily flows at the five locations	YES	Suspend condition. This condition is not applicable to the proposed permit changes. However, see notes for Condition 36 regarding current activities.
38. Ramping requirement per Table A	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
39. Until project operational, continue	NO	Ongoing. MOA process is in place.

PERMIT CONDITION (7130B and 20808)	AMENDMENT PROPOSED	NOTES
MOA process with Cal-Am, CDFG		
40. Implement fisheries measures in Five-Year Mitigation Plan	NO	Ongoing. MPWMD Mitigation Program continues to be carried out. Annual Reports are provided to SWRCB.
41. Design fish passage facilities with CDFG; SWRCB to approve prior to construction; permittee funds; develop and execute MOU for operation; records; annual report to SWRCB	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
42. Develop Remedial Action Plan with CDFG and NMFS re: passage; more flow reqt possible if remedies don't work	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
43. Need formal Biological Opinion for steelhead if listed (prior to construction)	YES	Suspend condition. This condition is not applicable to the proposed permit changes. However, MPWMD will incorporate status into the EIR/EIS currently being prepared for the MPWMD Water Supply Project.
44. Prior to construction, perform more instream flow studies with CDFG guidance; flow requirements could change	NO	Additional habitat modeling , analysis of data for Pine Creek critical riffle, and additional habitat modeling downstream of Carmel River Dam is ongoing.
45. During final design, prior to bids, document adequate funding; committed	YES	Suspend condition. This condition is not applicable to the proposed permit changes.
46. With CDFG, study success of fish rescues; submit results (no time given)	NO	Effectiveness of 1996 rescues monitored; reported in 1991-1995 Mitigation Program Evaluation provided to SWRCB.
47. Annually monitor volume of lagoon and actual sand transport; annual reports to SWRCB, CDFG, CDPR; 20 year monitoring; possible actions needed (start date unclear, assume need for pre/post-construction data)	NO	Annual monitoring is ongoing. Data are reported in Annual Report for MPWMD Mitigation Program, provided to SWRCB.
48. Adhere to Programmatic Agreement (PA) dated May 2, 1995 for section 106 of NHPA; any modifications to PA need SWRCB approval	YES	Suspend condition. See PA for requirements; all HPTP and HPMP must be done prior to construction. However, this condition is not applicable to the proposed permit changes.
49. Implement mitigation measures that result from PA/106 process	YES	Suspend condition. However, this condition is not applicable to the proposed permit changes. Refer to PA; final design through operation.

PERMIT CONDITION (7130B and 20808)	AMENDMENT PROPOSED	NOTES
50. Submit annual progress report on cultural resources activities until work completed or permit licensed	YES	Suspend condition. However, this condition is not applicable to the proposed permit changes.
51. SWRCB reserve jurisdiction on cultural resources; could require more mitigation measures beyond PA/106 process	YES	Suspend condition. However, this condition is not applicable to the proposed permit changes.
52. Include Native Americans as participants in 106 process as specified in PA	YES	Suspend condition. However, this condition is not applicable to the proposed permit changes.
53. Any mitigation measures for 106 process subject to SWRCB approval	YES	Suspend condition. However, this condition is not applicable to the proposed permit changes.

Carmel Valley Simulation Model (CVSIM)
Modeling Assumptions for Monterey Peninsula Water Management District
Carmel River Water Availability Analysis
November 2003

Simulation Runs:

Run # 1: Unimpaired conditions
Run # 2: Impaired conditions with maximum annual Cal-Am Demand = 7,376 af

Production Required to Meet Dry-Year Demand:

Cal-Am = 7,376 af, with no more than 3,376 af from Carmel River and an average of 4,000 af from coastal subareas of the Seaside Ground Water Basin (SGWB)

Non Cal-Am = 3,931 af, with 92 af from subunit 1 of Carmel Valley Alluvial Aquifer (AQ1), 216 af from AQ2, 1,454 af from AQ3, 1,174 af from AQ4, and 995 af from coastal subareas of the SGWB, based on Water Year 2002 reported production adjusted for Table 13 water right reservations.

Monthly Cal-Am Demand Distribution: Updated mean monthly distribution of Cal-Am annual demand to reflect 1992-2001 conditions.

Period of Analysis: October 1, 1957 through September 30, 2002

Operating Rules: State Water Resources Control Board (SWRCB) Order Nos. 95-10, 98-04, and 2002-0002. Test to determine "low-flow" periods in Carmel River to minimize Cal-Am production from San Clemente Reservoir and Upper Carmel Valley wells. Used Carmel River flow at Narrows to approximate flow at Don Juan Bridge, i.e., five consecutive days with flow less than 20 cubic feet per second (cfs). Test to determine "high-flow" conditions in Carmel River to minimize Cal-Am production from the coastal subareas of the SGB.

San Clemente Reservoir: Updated elevation-capacity values based on Water Year 2002 measurements; 137 af at spillway elevation of 525 feet. Assumed storage capacity values are maintained over time. Did not include Division of Safety of Dams (DSOD) interim reservoir drawdown requirements. Assumed no diversions from San Clemente Reservoir to Carmel Valley Filter Plant.

Los Padres Reservoir: Used 1998 elevation-capacity estimates, with 1,569 af at spillway elevation 1,040 feet. Assumed no maintenance dredging per Cal-Am's direction. Used average historical loss due to sedimentation of 29.88 afa at elevation 1,040 feet.

Cal-Am Production Capacities: Updated Cal-Am's well production capacities in Carmel River Basin and coastal subareas of SGWB based on August 2003 estimates. Adjusted capacities to reflect California Department of Health Services (DHS) restrictions on the use of the San Carlos well due to the influence of surface water. Overall, Cal-Am's well production capacity is rated at 80.64 af per day (afd), with 1.85 afd from AQ1, 9.83 afd from AQ2, 39.03 afd from AQ3, 10.60 afd from AQ4, and 19.33 afd from the coastal subareas of the SGWB. A breakdown of Cal-Am's production capacity by well is attached.

Cal-Am Seaside Production: Constrained Cal-Am long-term mean pumping from the coastal subareas of the SGB to approximately 4,000 afa. For the 45-year period of analysis, Cal-Am's simulated production from the coastal subareas of the SGWB averaged 4,110 afa, and ranged from a maximum of 5,370 af to a minimum of 3,860 af.

NOAA Fisheries Bypass Recommendations: Installed the bypass flow requirements recommended by NOAA Fisheries (June 3, 2002) for the reach between river mile 5.5 and the lagoon. These requirements will be used to quantify the amount of excess flow available in this lower reach during the period of analysis.

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Compiled: November 17, 2003

CALIFORNIA-AMERICAN WATER COMPANY
PRODUCTION WELLS AND PUMPING CAPACITIES
AUGUST 2003

CARMEL VALLEY ALLUVIAL AQUIFER SOURCE/WELL	GPM	CFS	AFD
Subunit 1			
Russell #2	280	0.62	1.24
Russell #4	138	0.31	0.61
Subtotal	418	0.93	1.85
Subunit 2			
Robles #3	463	1.03	2.05
Panetta #1	269	0.60	1.19
Panetta #2	300	0.67	1.33
Garzas #3	268	0.60	1.18
Garzas #4	219	0.49	0.97
Los Laureles #6	454	1.01	2.01
Los Laureles #5	252	0.56	1.11
Subtotal	2,225	4.96	9.83
Subunit 3			
Scarlett #8	1,343	2.99	5.93
Berwick #8	653	1.45	2.89
Begonia #2	1,634	3.64	7.22
Manor #2	269	0.60	1.19
Schulte	1,405	3.13	6.21
Pearce	2,168	4.83	9.58
Cypress	1,361	3.03	6.01
Subtotal	**8,833**	**19.68**	**39.03**
Subunit 4			
Canada	2,400	5.35	10.60
Subtotal	2,400	5.35	10.60
Carmel Valley Total	13,876	30.92	61.31

SEASIDE GROUNDWATER BASIN SOURCE/WELL	GPM	CFS	AFD
Northern Subbasin			
Darwin	91	0.20	0.40
Lasalle #2	125	0.28	0.55
Luzern	477	1.06	2.11
Military	74	0.16	0.33
Ord Grove #2	1,402	3.12	6.19
Playa #3	279	0.62	1.23
Paralta	1,678	3.74	7.41
Subtotal	4,126	9.19	18.23
Southern Subbasin			
Plumas #4	248	0.55	1.10
Subtotal	248	0.55	1.10
Seaside Total	4,374	9.75	19.33
GRAND TOTAL	**18,250**	**40.66**	**80.64**

Notes:
1. GPM refers to gallons per minute; CFS to cubic feet per second, and AFD to acre-feet per day.
2. Capacities shown were estimated in August 2002 using Panametrics Transit-Time Ultrasonic Flowmeter, unless noted otherwise. Capacity for Schulte well is based on SCADA value on August 11, 2003. Capacity for Manor #2 is based on Panametrics estimate made in August 2003. Capacity for Canada well is based on Quarterly Monitoring Report for Increased Pumping Rate at Lower Carmel Valley (Feeney, July 30, 2003).

Source: California-American Water Company, August 11, 2003.

State of California—Health and Human Services Agency
Department of Health Services

California Department of Health Services

IANA M. BONTÁ, R.N., Dr. P.H.
Director

GRAY DAVIS
Governor

October 15, 2002

Mr. Steve Leonard
California American Water Company
50 Ragsdale Drive, Suite 100
Monterey, CA 93940

Determination of Surface Water Influence on the San Carlos 2 Well
CalAm Monterey District – System 2710004

Dear Mr. Leonard:

A permit provision for the San Carlos 2 Well (PSCode 2710004-054) issued on September 3, 1999 required California American Water Company (CalAm) to monitor the well and the Carmel River to determine whether the river had a direct surface water influence over the well. CalAm submitted the resultant data to the Department in March 2002 for our evaluation. The data for the well and the river was submitted in both tabular form and graphed over time, and included monitoring results for pH, temperature, conductivity, alkalinity, and plankton, for the period March 21, 2001 through January 22, 2002. Presence/absence results for both total coliform and E. Coli were also submitted in tabular form.

A review of the monitoring results show distinct trends indicative of surface water influence over the well. As such, CalAm is now required to submit a plan of action including a schedule, for ensuring that all water entering the distribution system from San Carlos 2 Well meets the Surface Water Treatment Rule. Please submit the Plan to this office by **December 15, 2002.**

We recognize that CalAm is currently operating under source capacity issues as a result of regulatory actions initiated by other State and local agencies. The monitoring data shows that surface influence on the well is significantly decreased during the summer and fall months prior to the first rainfall event of the wet season as indicated by the reduction of plankton in the well to zero during the months that the river experiences its lowest flows. CalAm is allowed to continue to use the San Carlos 2 Well until either (a) December 1, 2002 or (b) any circumstance occurs that would cause an increase in the flow of the river at the well site, whichever comes first. Such circumstances would include a rainfall event in Carmel Valley or increased releases from San Clemente Dam. At that time, all use of San Carlos 2 Well must be discontinued until CalAm has implemented an approved plan of action and DHS has given permission to discharge water from San Carlos 2 Well into the distribution system.

CalAm may submit a request to extend the deadline(s) to discontinue the use of the well. Such a request must include a technical evaluation by CalAm, with supporting documentation that identifies the hydraulic and/or hydrologic triggers that signify surface water influence is imminent, and a monitoring plan that will be implemented to ensure that untreated groundwater under the influence of surface water will not be discharged

into the distribution system at any time. If CalAm chooses to submit a request for deadline extension, it must be received in our office no later than November 15 to allow the Department adequate review time.

If you have any questions concerning this matter, please contact myself or Jan Sweigert at (831) 655-6939.

Sincerely,

Betsy S. Lichti, P.E.
District Engineer, Monterey District
DRINKING WATER FIELD OPERATIONS BRANCH

cc: Monterey County Health Department
California PUC
Robin Casale – CalAm, 303 H Street, Suite 250, Chula Vista, CA 91910

bcc: C. Ma, B. Lichti, chron, system file

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