

**MONTEREY PENINSULA  
WATER MANAGEMENT DISTRICT**

**2007-2008 ANNUAL REPORT  
(July 1, 2007 - June 30, 2008)**

**for the**

**MPWMD MITIGATION PROGRAM**

**A report in compliance with the**

**MPWMD WATER ALLOCATION PROGRAM  
FINAL ENVIRONMENTAL IMPACT REPORT  
(originally certified in November 1990)**

**Prepared by MPWMD Staff  
September 2009**

**2007-2008 ANNUAL REPORT  
MPWMD MITIGATION PROGRAM  
WATER ALLOCATION PROGRAM EIR**

**September 2009**

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**2007-2008 ANNUAL REPORT EXECUTIVE SUMMARY**  
**(July 1, 2007 - June 30, 2008)**

**MPWMD MITIGATION PROGRAM**  
**WATER ALLOCATION PROGRAM ENVIRONMENTAL IMPACT REPORT**

**MONTEREY PENINSULA WATER MANAGEMENT DISTRICT**  
**September 2009**

**I. INTRODUCTION AND BACKGROUND:**

In April 1990, the Water Allocation Program Final Environmental Impact Report (EIR) was prepared for the Monterey Peninsula Water Management District (MPWMD or District) by Mintier and Associates. The Final EIR analyzed the effects of five levels of annual California American Water (CAW) production, ranging from 16,744 acre-feet per year (AFY) to 20,500 AFY. On November 5, 1990, the MPWMD Board certified the Final EIR, adopted findings, and passed a resolution that set Option V as the new water allocation limit. Option V resulted in an annual limit of 16,744 AFY for CAW production, and 3,137 AFY for non-CAW production, with a total allocation of 19,881 AFY for the Monterey Peninsula Water Resource System (MPWRS).

Even though Option V was the least damaging alternative of the five options analyzed in the Water Allocation Program EIR, production at this level still resulted in significant, adverse environmental impacts that must be mitigated. Thus, the findings adopted by the Board included a "Five-Year Mitigation Program for Option V" and several general mitigation measures.

In June 1993, Ordinance No. 70 was passed, which amended the annual CAW production limit from 16,744 AF to 17,619 AF, and the non-CAW limit from 3,137 AF to 3,054 AF; the total production limit was increased from 19,881 AF to 20,673 AF per year due to new supply from the Paralta Well in Seaside. In April 1996, Ordinance No. 83 slightly changed the CAW and non-CAW annual limits to 17,621 AF and 3,046 AF, respectively, resulting in a total limit of 20,667 AFY. In February 1997, Ordinance No. 87 was adopted to provide a special water allocation for the planned expansion of the Community Hospital of the Monterey Peninsula, resulting in a new CAW production limit of 17,641 AFY; the non-CAW limit of 3,046 AFY was not changed. These actions did not affect the implementation of mitigation measures adopted by the Board in 1990.

The Five-Year Mitigation Program formally began in July 1991 with the new fiscal year (FY) and was slated to run until June 30, 1996. Following public hearings in May 1996 and District Board review of draft reports through September 1996, the Five-Year Evaluation Report for the 1991-1996 comprehensive program, as well as an Implementation Plan for FY 1997 through FY 2001, were finalized in October 1996. In its July 1995 Order WR 95-10, the State Water Resources Control Board (SWRCB) directed CAW to carry out any aspect of the Five-Year Mitigation Program that the District does not continue after June 1996. To date, as part of the annual budget approval process, the District Board has voted to continue the program. The

Mitigation Program presently accounts for a significant portion of the District budget in terms of revenue (derived primarily from a portion of the MPWMD user fee on the CAW bill) and expenditures.

The California Environmental Quality Act (CEQA) (Pub. Res. Code 21081.6) requires that the MPWMD adopt a reporting or monitoring program to insure compliance with mitigation measures when implementing the Water Allocation Program. Findings Nos. 387 through 404 adopted by the Board on November 5, 1990 describe mitigation measures associated with the Water Allocation Program; many entail preparation of annual monitoring reports. This 2007-2008 Annual Report for the MPWMD Mitigation Program responds to these requirements, and is the seventeenth in a series. It covers the fiscal year period of July 1 through June 30 of the following year. It is notable that hydrologic data and well reporting data are tabulated using the water year, defined as October 1 through September 30, in order to be consistent with the accounting period used by the SWRCB.

This 2007-2008 Annual Report will first address general mitigation measures relating to water supply and demand (Sections II through VIII), followed by mitigations relating to specific environmental resources (Sections IX through XII). Section XIII provides a summary of costs for the biological mitigation programs as well as related hydrologic monitoring, water augmentation and administrative costs. Section XIV presents selected references by topic.

**Table I-1** summarizes the mitigation measures described in this report. In subsequent chapters, for each topic, the mitigation measure adopted as part of the Final EIR is briefly described, followed by a summary of activities relating to the topic in FY 2007-08 (July 1, 2007 through June 30, 2008 unless otherwise noted). Monitoring results, where applicable, are also presented. Tables and figures that support the text are found at the end of each section in the order they are mentioned in the text. Finally, a summary of observed trends, conclusions and/or recommendations is provided, where pertinent.

#### **ACCOMPLISHMENTS:**

Many activities are carried out as part of the MPWMD Mitigation Program to address the environmental effects that community water use has upon the Carmel River and Seaside Groundwater Basins. Highlights of the accomplishments in FY 2007-08 for each major category are shown in **Table I-2**.

#### **OBSERVED TRENDS, CONCLUSIONS AND/OR RECOMMENDATIONS:**

The following paragraphs describe observed trends (primarily qualitative), conclusions and/or recommendations for the mitigation program. General conclusions are followed by a summary of selected categories.

### **General Overview**

In general, the Carmel River environment is in better condition today than it was in 1990. This improvement is evidenced by biological/hydrologic indicators such as consistent steelhead adult spawner counts of several hundred fish in recent years as compared to zero to five fish per year when the Mitigation Program began in 1991; improved densities of juvenile steelhead in quantities that reflect a healthy seeded stream; consistently increased bird diversity in MPWMD restoration project areas compared to control areas; fewer miles of dry river in summer and fall than in the past; and higher water tables in the Carmel Valley alluvial aquifer at the end of the water year.

The comprehensive MPWMD Mitigation Program is an important factor responsible for this improvement. Direct actions such as fish rescues and rearing, and riparian habitat restoration literally enable species to survive and reproduce. Indirect action such as conservation programs, water augmentation, ordinances/regulations and cooperative development of CAW operation strategies result in less environmental impact from human water needs than would occur otherwise. The District's comprehensive monitoring program provides a solid scientific data baseline, and enables better understanding of the relationships between weather, hydrology, human activities and the environment. Better understanding of the MPWRS enables informed decision-making that achieves the District's mission of benefiting the community and the environment.

It is acknowledged that there are other important factors responsible for this improved situation. For example, since Water Year (WY) 1991, the Carmel River has received normal or better runoff in 13 out of 17 years. Actions by federal resource agencies under the Endangered Species Act (ESA) or the SWRCB under its Order WR 95-10 have provided strong incentive for CAW and other local water producers to examine and amend water production practices to the degree feasible, and for the community to reduce water use. Except for one year in 1997, the community has complied with the production limits imposed on CAW by the SWRCB since Order 95-10 became effective in July 1995.

Despite these improvements, challenges still remain due to human influence on the river. The steelhead and red-legged frog remain listed as threatened species under the ESA. Several miles of the river still dry up each year, harming habitat for fish and frogs. The presence of the two existing dams, flood plain development and water diversions to meet community needs continue to alter the natural dynamics of the river. Stream bank restoration projects may be significantly damaged in large winter storm events, and some people continue to illegally dump refuse into the river or alter their property without the proper permits. Thus, the Mitigation Program (or a comprehensive effort similar to it) will be needed as long as significant quantities of water are diverted from the Carmel River and people live in close proximity to it.

### **Water Resources Monitoring Program (Section II)**

Streamflow and precipitation data continue to provide a scientific basis for management of the water resources within the District. These data continue to be useful in Carmel River Basin planning studies, reservoir management operations, water supply forecast and budgeting, and defining the baseline hydrologic conditions of the Carmel River Basin. Also, the District's

streamflow monitoring program continues to produce high quality and cost-effective data. Section II contains detailed information and analysis of a wide range of water resource data.

There is limited storage of surface water by dams on the Carmel River. Los Padres Reservoir, completed in 1948, holds 1,478 AF of usable storage, based on an estimate by CAW in 1998. Usable storage in San Clemente Reservoir, completed in 1921, has been essentially eliminated by order of the Department of Water Resources (DWR) due to seismic safety concerns. As an interim safety measure, which remained in effect through WY 2008, DWR has required CAW to lower the water level in San Clemente Reservoir from 525 feet to 514 feet elevation, which is too low for water supply use. CAW has proposed a dam seismic strengthening program that is currently undergoing state and federal environmental review.

Groundwater levels, and consequently groundwater storage conditions, in the Carmel Valley Alluvial Aquifer have maintained a relatively normal pattern in recent years, in contrast to the dramatic storage declines that were observed during the prolonged 1987-1991 drought period. The relatively stable storage in the Carmel Valley alluvial aquifer in recent years is attributable to a combination of more favorable hydrologic conditions and the adoption of improved water management practices that have tended to preserve high storage conditions in the aquifer.

In contrast, storage conditions in the coastal portion of the Seaside Groundwater Basin have not been stable in recent years, in particular with respect to the deeper Santa Margarita aquifer, from which over 80 percent of the CAW production in the Seaside Basin is derived. This downward trend in water levels reflects the changed production operations in the Seaside Basin stemming primarily from SWRCB Order 95-10. The increased annual reliance on production from CAW's major production wells in Seaside, along with significant increases in non-CAW use, have dramatically lowered water levels in this aquifer, and seasonal recoveries have not been sufficient to reverse this trend.

To address this storage depletion trend, the District initiated efforts in the 2000-2001 timeframe to prepare a Seaside Basin Groundwater Management Plan in compliance with protocols set by the State of California (AB 3030, as amended by SB 1938). This process was superseded by litigation filed by CAW on August 14, 2003, requesting a court adjudication of water production and storage rights in the Seaside Basin. The District participated in all litigation proceedings as an intervening "interested party". The Superior Court held hearings in December 2005 and issued a final adjudication decision in March 2006. The final decision established a new, lower "natural safe yield" for the Basin of 3,000 AFY, and an initial Basin "operating safe yield" of 5,600 AFY. Under the decision, the operating safe yield would be reduced by 10% every three years until the operating safe yield matches the natural safe yield of the Basin. The Court also created a nine-member Watermaster Board (of which the District is a member) to implement the Court's decision.

One of the means that could potentially mitigate this observed storage depletion trend is a program that the District has been actively pursuing since 1996 -- the Seaside Basin groundwater injection program (also known as aquifer storage and recovery, or ASR).

ASR entails diverting excess water flows (typically in Winter/Spring) from the Carmel Valley Alluvial Aquifer through existing CAW facilities and injecting the water into the Seaside Groundwater Basin for later recovery in dry periods.

The primary goal of the MPWMD Phase 1 ASR Project is better management of existing water resources to help reduce current impacts to the Carmel River, especially during the dry season. The project is viewed as being complementary to other larger, long-term water augmentation projects that are currently being explored by various entities. The project entails a maximum diversion of 2,426 AFY from the Carmel River for injection, a maximum extraction of 1,500 AFY from the ASR wells in the Seaside Basin, and an average yield of about 920 AFY. The proposed operation of the Phase 1 ASR Project would result in reduced unauthorized pumping of the Carmel River in Summer/Fall and increased storage in the Seaside Basin, which are both considered to be environmentally beneficial.

The ASR water supply efforts in 2007-2008 included: (1) Pursue the permanent Phase 1 ASR Project at the Santa Margarita test site as well as future expanded ASR projects; (2) Continued testing of the existing full-scale Santa Margarita Test Injection Well; and (3) obtained water rights from the SWRCB for Phase 1 of the Aquifer Storage and Recovery (ASR) project; (4) conducted a dual-well injection test for ASR wells #1 and #2 and coordinated with Cal-Am, federal and state entities to construct the necessary infrastructure for the ASR project; (5) Coordinated with CAW on necessary action and facilities to enable expanded ASR; (6) Finalized an MOA with Cal-Am to operate the ASR facilities; and (7) Petitioned the SWRCB to change the MPWMD's water rights permit to serve Phase 2 of the ASR project. See Section VI-B for detailed information and a full listing of ASR activities.

Groundwater quality conditions in both the Carmel Valley Alluvial Aquifer and Seaside Basin have remained acceptable in terms of potential indicators of contamination from shallow sources such as septic systems. There have been no identifiable trends indicative of seawater intrusion in the coastal areas of these two aquifer systems to date.

#### **Steelhead Fishery Program (Section IX)**

Monitoring conducted by the District shows that the Carmel River steelhead population recovered from remnant levels that prevailed as a result of the last drought and past water supply practices. Since 1992, the spawning population has recovered from a handful of fish to levels approaching 900 adults per year as counted at San Clemente Dam. In the past eight years, the spawning population has trended downward from 804 fish in 2001 to a recent low of 222 fish in 2007, and back up to 483 in 2008. Monitoring of the juvenile population at several sites along the mainstem Carmel River below Los Padres Dam shows that the population is recovering from low densities during the 1987-91 drought period (ranging below 0.50 fish per foot [fpf] of stream) to levels frequently ranging above 1.00 fpf, values that are typical of well-stocked steelhead streams. However, in the 2007-2008 reporting period, the average population density was far below the long-term average for the Carmel River due primarily to the low adult returns in 2007, the late opening of the lagoon, and the poor fry survival due to the critically dry river conditions. District staff believes the recovery and fluctuation of steelhead in the Carmel River Basin is directly related to the following factors:

- Improvements in streamflow patterns, due to favorable natural fluctuations, exemplified by relatively high base flow conditions since 1995;
- District and the SWRCB rules to actively manage the rate and distribution of groundwater extractions and direct surface diversions within the basin;
- Changes to CAW's operations at San Clemente and Los Padres Dams, providing increased streamflow below San Clemente Dam;
- Improved conditions for fish passage at Los Padres and San Clemente Dams due to physical improvements;
- Recovery of riparian habitats, tree cover along the stream, and increases in woody debris, especially in the reach upstream of Robinson Canyon;
- Extensive rescues (and rearing) by MPWMD of juvenile steelhead over 19 years, now totaling 262,482 through 2007 rescue season; and by the transplantation of the younger juveniles to viable habitat below Los Padres Dam, and of older smolts to the lagoon or ocean; and
- Implementation of a captive broodstock program by Carmel River Steelhead Association (CRSA) and California Department of Fish and Game (CDFG), and planting of 186,882 juvenile fish, including 73,786 fry, 84,679 fingerlings, and 28,417 smolts during the period from 1991 to 1994.

Though overall populations are improved since the inception of the Mitigation Program in 1990, District staff has noticed a period of overall decline in the adult run from 2001 to 2008, even though the juvenile population density have increased or fluctuated within a "normal" range. However, the 2008 adult run was the highest count since the 2003 run of 483 fish and nearly double the low 2007 count of 222 fish. As previously reported, the reasons for the period of decline in adult returns remain unclear, but may be related to a combination of controlling and limiting factors including:

- Better spawning conditions in the lower Carmel River (i.e., fish spawn before they reach the counter at the dam);
- Chronic poor water quality in the lagoon that causes annual fish die-offs or high predation, especially in low-flow years, thus resulting in fewer returning adults;
- Low numbers of juvenile fish in 1999, 2001, and 2004 affecting subsequent adult populations;
- Migration barriers such as the Old Carmel River Dam;

- Chronic, and occasionally acute fall temperature and hydrogen sulfide levels below Los Padres Dam;
- Potential for enhanced predation on smolts migrating through the sediment fields of Los Padres and San Clemente Reservoirs;
- Poor ocean conditions; and
- Ongoing but limited impacts of fishing (i.e., approximately 1.5% incidental mortality associated with catch-and-release fishing for adults in the winter season, and catch-and-release fishing for juvenile steelhead from in the upper watershed during the Spring/Summer trout season that may slightly reduce the number of fish that reach the ocean).

A recent challenge that may remain for some years is the potential effects of substantive physical and operational changes to San Clemente Dam required by the California Department of Water Resources, Division of Safety of Dams (DWR/DSOD), including possible removal of the dam. The most significant issue is the effect of released sediment from the reservoir on downstream river habitat, proper functioning of MPWMD's Sleepy Hollow Steelhead Rearing Facility, and downstream property owners (flood elevations). Major changes include:

- Lowering of the reservoir water level to address seismic safety concerns;
- Significant changes in the sediment regime in the Carmel River downstream of San Clemente as the dam fills with sediment; and
- Loss of reservoir storage, which, in the past, has helped maintain adequate river flows and cooler water in the lower Carmel River.

In addition, improvements in State and Federal permit conditions in 2006 have extended by two weeks, until at least May 1 of each year, the time that the reservoir will remain full and that the fish ladder can operate to pass adult steelhead upstream. This improvement over past standards may result in allowing up to a dozen or more adult steelhead each year to pass San Clemente Dam under the new draw-down regimen.

District staff continues to provide technical expertise and scientific data to CAW engineers and environmental consultants, DWR/DSOD, CDFG, National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service, and others involved in addressing the resource management issues associated with seismic retrofit of San Clemente Dam. District staff also continues to provide technical expertise and scientific data to the California Department of Parks and Recreation, Monterey County Water Resources Agency, Monterey County Public Works Department, California Coastal Commission, U. S. Army Corps of Engineers, and Carmel Area Wastewater District, other regulatory agencies and stakeholders involved in the management of the Carmel River Lagoon and barrier beach.

### **Riparian Habitat Mitigation (Section X)**

The Carmel River is showing many signs of recovery after the drought and flood events during the 1990s that impacted property owners, threatened species, and riparian habitat. Fine material (silt and sand) that entered the main stem during floods in 1995 and 1998 has, for the most part, been washed downstream of River Mile 2 (measured from the ocean) leaving behind a more complex channel with diverse habitat and a richer riparian community. Areas with perennial flow (upstream of Schulte Bridge) or a high groundwater table, such as downstream of Highway 1, have experienced vigorous natural recruitment in the channel bottom, which has helped to stabilize streambanks and diversify aquatic habitat.

In these areas, natural recruitment has led to vigorous vegetation encroachment that, in some areas, may constrict high flows and threaten bank stability. MPWMD continues to monitor these areas closely and to develop a management strategy to balance protection of native habitat with the need to reduce erosion potential. Environmental review of proposed projects and the process of securing permits is quite complex and requires an exhaustive review of potential impacts. In contrast to areas with perennial flow, the recovery of the streamside area between Rancho Cañada and Quail Lodge has been impacted by increased groundwater extraction. In this reach, only irrigated areas are able to sustain a diversity of plant species. Plant stress in the late summer and fall is evident in non-irrigated portions of the river. In these areas, streambanks exhibit unstable characteristics during high flows, such as sudden bank collapse, because of the lack of healthy vegetation that would ordinarily provide stability.

Restoration project areas sponsored by MPWMD since 1984 continue to mature and exhibit more features of relatively undisturbed reaches, such as plant diversity and vigor, complex floodplain topography, and a variety of in-channel features such as large wood, extensive vegetative cover, pools, riffles, and cut banks. Areas that were repaired after the 1995 and 1998 floods are still developing these natural features. In part, the location and geometry of the projects constrain the rate of progress toward a fully restored stream channel (i.e., several are located in highly developed, narrow sections of the river impacted by groundwater extraction). Also, many of these projects relied heavily on the use of bank hardening (e.g., rip-rap) to stabilize banks, which can discourage plant vigor and diversity.

As cited in previous reports, the most significant trends continue to include the following:

- Increased oversight of channel maintenance and restoration activities by Federal agencies,
- Increased groundwater extraction downstream of Schulte Road,
- Significant vegetation encroachment into the channel bottom,
- Increased avian species diversity, and
- Maturing of previous restoration projects.

The District is also pursuing special studies to better assess Carmel River Lagoon habitat. In response to a request from the interagency Carmel River Lagoon TAC, the District helped design and support a mark-recapture study in 2006-2007 to estimate the steelhead population in the lagoon at the end of the fall rearing season and before the lagoon might be breached for the year. This study was led by biologists from the District and a number of federal, state agencies and

local volunteers. The intent was to continue this cooperative study each year to try to assess the abundance of steelhead in the lagoon as soon as possible after closure in the spring/summer, and again just before breaching in the winter. These two numbers could be used to calculate net survival over the summer and fall to assess how well the lagoon habitat was being sustained to enhance steelhead production. However, since the CDPR's ESA Section 10 consultation for steelhead monitoring of the lagoon restoration project had expired, no government agency had the proper authority under the ESA to conduct the studies and they were not pursued. MPWMD will be applying for ESA Section 10-coverage for the future, as part of its semi-annual renewal of staff Scientific Collecting Permits from CDFG.

### ***Carmel River Erosion Protection and Restoration***

With the exception of the channel area between Via Mallorca Road and Rancho San Carlos Road, streambanks in the Carmel River main stem presently appear to be relatively stable during average water years.

As cited in previous reports, it is likely that the following trends will continue or develop in the near future:

- Permit applications by MPWMD for river maintenance and restoration work will come under greater scrutiny at all levels of government. More stringent avoidance and mitigation requirements will be placed on activities that could have negative impacts on sensitive aquatic species or their habitats.
- Activities that interrupt or curtail natural stream functions, such as lining streambanks with riprap, will be discouraged or denied permits. Activities that increase the amount of habitat or restore natural stream functions are more likely to be approved.
- Additional work to add instream features (such as large logs for steelhead refuge or backwater channel areas for frogs) will be necessary to restore and diversify aquatic habitat.
- Major restoration projects completed between 1992 and 1999 will require additional work to diversify plantings and to maintain irrigation systems during the establishment period (varies from 5 to 10 years depending on environmental conditions and the availability of staff resources). Streambank repairs may be necessary after high flows as previously installed structural protection works go through an initial adjustment period.
- Downstream of the Robinson Canyon Road Bridge, the river continues to cut into the channel bottom and form a more complex system of pools, riffles and gravel bars.

A noticeable change to the channel bottom is the obvious continued degradation (i.e., the river channel is incising into floodplain deposits). Downcutting into channel deposits has both positive and negative aspects. On the plus side, it is clear that sand and fine material has been winnowed out in the past few years, exposing gravel and cobble layers that provide spawning habitat for steelhead and suitable substrate for the food web that steelhead depend on. However, a lack of a natural supply of sediment from the upper watershed (due to the presence of main stem dams) means that the river must remove material from the channel bottom and streambanks to make up for this deficit. The river system downstream of Los Padres Reservoir is considered "sediment starved."

Because approximately 35% of the streambanks downstream of Carmel Valley Village have been altered or hardened over the past 40 years, most of the current sediment supply comes from scouring of the channel bottom, which results in exposing the base of streambanks, bridge piers and abutments. Eventually, without corrective measures to balance the sediment load with the flow of water, streambanks will begin to collapse and the integrity of bridges will be threatened.

A comprehensive long-term solution to overall environmental degradation requires a significant increase in dry season water flows in the lower river, a reversal of the incision process, and reestablishment of a natural meander pattern. Of these, MPWMD has made progress with increasing summer low flows and in identifying areas where a natural meander pattern could be considered. Reversal, or at least halting of channel incision, may be possible if the supply of sediment is brought into balance with the transport capacity of the river. Although the supply of sediment to the lower portion of the river is likely to increase as San Clemente Reservoir fills with sediment and sediment starts to flow down the river, it is likely that the supply of sediment downstream of the San Clemente Dam will increase slowly in the very near future and may not halt the incision process.

The DWR and the U.S. Army Corps of Engineers finalized a combined EIR/EIS in January 2008 concerning alternatives to remediate the safety deficiencies that have been identified at San Clemente Dam. CAW supports an alternative in which the dam would be buttressed to address the safety issues. The California Coastal Conservancy and other State and Federal agencies, along with citizens groups, support the Dam Removal and Reroute Alternative which consists of: storing sediment in the Carmel River portion of the reservoir; removal of the dam, and rerouting the Carmel River into San Clemente Creek. Funding for this alternative is uncertain. In the interim, DWR has continued to direct CAW to draw San Clemente Reservoir down and maintain it 10 feet lower than the spillway, except between February 1 and April 30 (to allow for downstream migration of steelhead).

Over the long term, an increase in sediment supply could help reduce streambank instability and erosion threats to public and private infrastructure. However, reestablishing a natural supply of sediment and meander pattern presents significant political, environmental, and fiscal challenges, and is not currently being considered as part of the Mitigation Program.

### ***Vegetation Restoration and Irrigation***

To the maximum extent possible, MPWMD-sponsored river restoration projects incorporate a functional floodplain that would be inundated in relatively frequent storm events (those expected every 1-2 years). For example, low benches at the Red Rock and All Saints Projects have served as natural recruitment areas and are currently being colonized by black cottonwoods, sycamores and willows. In addition, willow and cottonwood pole plantings in these areas were installed with a backhoe, which allows them to tap into the water table. These techniques have been successful and have reduced the need for supplemental irrigation. However, as pumping has increased in the lower Carmel Valley (pursuant to direction by the SWRCB and a Conservation Agreement between CAW and NMFS) supplemental irrigation has been installed on engineered floodplains and on vulnerable banks.

### ***Channel Vegetation Management***

Another notable trend relating to the District's vegetation management program was the widening of the channel after the floods in 1995 and 1998. With relatively normal years following these floods the channel has narrowed as vegetation recruits on the streambanks and gravel bars. Current Federal regulations such as the Endangered Species Act (ESA) "Section 4(d)" rules promulgated by NMFS to protect steelhead significantly restrict vegetation management activities. Currently, there are relatively few physical channel restrictions and erosion hazards in the lower 15 miles of the river. In the absence of high winter flows capable of scouring vegetation out of the channel bottom, encroaching vegetation may significantly restrict the channel. As vegetation in the river channel recovers from the high flows of 1995 and 1998 and matures in the channel bottom, more conflicts are likely to arise between preserving habitat and reducing the potential for property damage during high flows. MPWMD will continue to balance the need to treat erosion hazards in the river yet maintain features that contribute to aquatic habitat quality.

### ***Permits for Channel Restoration and Vegetation Management***

To cope with the rising level of environmental analysis and documentation necessary to obtain permits, MPWMD sought and obtained a long-term permit from the Corps and the California Regional Water Quality Control Board. In January 2001, the District applied to CDFG to renew a long term Routine Maintenance Agreement (RMA) to conduct regular maintenance and restoration activities. The District received a signed RMA in October 2005. The District may also seek long-term permits or agreements with other regulatory agencies including the Monterey County Water Resources Agency and Monterey County Planning and Building Inspection Department.

### ***Monitoring Program***

Vegetative moisture stress fluctuates depending on the rainfall, proximate stream flow, and average daily temperatures, and tends to be much lower in above-normal rainfall years. Typical trends for a single season start with little to no vegetative moisture stress in the spring, when the soil is moist and the river is flowing. As the river begins to dry up in lower Carmel Valley (around June) and temperatures begin to increase, an overall increase in vegetative moisture stress occurs. For much of the riparian corridor this stress has been mitigated by supplemental irrigation, thereby preventing the die off of large areas of riparian habitat. However, many recruiting trees experience high levels of stress or mortality in areas difficult to irrigate. Riparian vegetation exposed to rapid or substantial lowering of groundwater levels (i.e., below the root zones of the plants) will continue to require monitoring and irrigation during the dry season.

With respect to riparian songbird diversity, populations dropped after major floods in 1995 and 1998 because of the loss of streamside habitat. However, they have rebounded in the last few years and have shown some of the highest diversity since monitoring began in 1992, indicating that the District mitigation program is preserving and improving riparian habitat.

## **Integrated Regional Water Management Plan**

Though not part of the adopted Mitigation Program, relatively new cooperative efforts such as the Integrated Regional Water Management Plan (IRWM Plan) will help result in increased state and federal grant funding for solutions to augment the Mitigation Program efforts. The District is serving as the lead to prepare the IRWM Plan for a region encompassing Monterey Peninsula areas within the District boundary, the area in the Carmel River watershed outside of the MPWMD boundary, Carmel Bay and the Southern Monterey Bay. MPWMD was reimbursed up \$496,957 to prepare the Plan, which cost a total of about \$1,258,000 to prepare. Funds for reimbursement will come from the IRWM grant program funded by State Proposition 50. The plan will combine strategies to improve and manage potable water supply, water conservation, stormwater runoff, floodwaters, wastewater, water recycling, habitat for wildlife, and public recreation.

During 2006, MPWMD identified numerous stakeholders in the planning area and invited these stakeholders to participate in development of a draft IRWM Plan, which was completed in November 2006. To facilitate these efforts, a Technical Advisory Committee (TAC) was established comprised of representatives of the stakeholder group. The TAC refined the priorities within the planning region and established a project prioritization process that objectively ranks proposed projects (a requirement of IRWM planning). When finalized, the IRWM Plan will aid in applying to State grant programs for implementing projects such as those funded by Proposition 50, 84, and 1E and in applying to Federal grant programs such as those funded through the Army Corps of Engineers and NOAA Fisheries. MPWMD was the lead agency in facilitating the development of the IRWM Plan.

In addition, MPWMD facilitated the formation of a Regional Water Management Group (RWMG) to guide the continued development and implementation of the IRWM Plan. The RWMG is comprised of representatives of the Big Sur Land Trust, City of Monterey, Monterey County Water Resources Agency, Monterey Regional Water Pollution Control Agency and MPWMD.

### **Carmel River Lagoon Habitat (Section XI)**

The District continues to support and encourage the ongoing habitat restoration efforts in the wetlands and riparian areas surrounding the Carmel River Lagoon. These efforts are consistent with goals that were identified in the Carmel River Lagoon Enhancement Plan, which was partially funded by the District. The District continues to work with various agencies and landowners to implement restoration of the Odello West property and the Odello East property across Highway 1. Because of the restoration activities on the south side of the lagoon, the District has concentrated its monitoring efforts on the relatively undisturbed north side. District staff have also continued to attend meetings and hold discussions with other agencies regarding the use of an old agricultural well and treated water from the Carmel Area Wastewater District to augment the lagoon during periods of low water.

The District expanded its long-term monitoring around the lagoon in 1995 in an attempt to determine if the reduction in freshwater flows due to ground water pumping upstream might be changing the size or ecological character of the wetlands. Demonstrable changes have not been

identified. Because of the complexity of the estuarine system, a variety of parameters are monitored, including vegetative cover in transects and quadrats, water conductivity, and hydrology. It is notable that due to the number of factors affecting this system, it would be premature to attribute any observed changes solely to groundwater pumping. During this period, for example, there have been two extremely wet water years (1995 and 1998), three wet water years (1993, 2005, and 2006), and three above-normal water years (1996, 1997 and 2000), in terms of runoff. Other natural factors that affect the wetlands include introduction of salt water into the system as waves overtop the sandbar in autumn and winter, tidal fluctuations, and long-term global climatic change. When the District initiated the long-term lagoon monitoring component of the Mitigation Program, it was with the understanding that it would be necessary to gather data for an extended period in order to draw conclusions about well draw-down effects on wetland dynamics. It is recommended that the annual vegetation, conductivity, topographical and wildlife monitoring be continued in order to provide a robust data set for continued analysis of potential changes around the lagoon.

In April 2008, the Monterey County Water Resources Agency (MCWRA) confirmed that it had suspended its work with California State Department of Parks and Recreation (CDPR) to develop a draft *Interim Adaptive Management Plan* for the annual flood-prevention management of the beach's sandbar at the Carmel River Lagoon, pending the outcome of potential litigation by the Carmel River Steelhead Association and the Sierra Club under the Federal Endangered Species Act. The MCWRA continues to seek the funding necessary to develop the information needed to pursue permit application and review. CDPR continued work on its own towards acquiring permits for the closure of the lagoon in the spring to maximize habitat volume, by producing a second draft of an *Initial Study – Mitigated Negative Declaration for the Carmel River Lagoon Water Elevation Adaptive Management Project* in April 2008 for interagency review by the CRL-TAC. CDPR circulated a final draft for public review and comment on July 16, 2008. CDPR intends to finalize the document and apply for permits in the next reporting year.

Lagoon bathymetric cross sectional surveys, initially conducted in 1988, have been completed annually during the dry season since 1994. These data are useful in assessing changes in the sand supply within the main body of the lagoon. As indicated in the survey plots, the sandy bed of the lagoon can vary significantly from year to year. Significant scour of sand at the four lagoon cross sections (XS) was documented during the September 2006 surveys. In the most recent years (2007 and 2008), substrate elevations at the XS did not change significantly due to the "critically dry" river flow conditions in WY 2007 and below average flow conditions in 2008. The August 2007 lagoon substrate elevations that were surveyed are among the lowest in the multi-year data set, indicating a relative increase in lagoon volume at the XS compared to past years. In general, no major trends indicating sand accumulation or depletion at the lagoon cross sections have been identified based on available data. These data are necessary to answer to questions concerning whether or not the lagoon is filling up with sand, thus losing valuable habitat.

**Program Costs**

Mitigation Program costs for FY 2007-08 totaled approximately \$3.67 million including direct personnel expenses, operating costs, project expenditures and capital equipment and fixed asset purchases. The annual cost of mitigation efforts varies because several mitigation measures are weather dependent. Expenditures in fiscal year 2007-08 were approximately \$386,526 more than the prior fiscal year. A trend analysis shows that the overall costs remained fairly constant (about \$1.3-\$1.7 million) for many years, except for FY 2000, when an additional \$981,786 was added to the capital expense program to fund one half of the acquisition cost of the District's new office building, bringing the expenditure total to over \$2.6 million that year. More recently, expenditures continue to trend upward: FY 2005-06 expenditures were \$3.17 million; and FY 2006-07 expenditures were \$3.29 million. The expenditures exceeded revenues in FY 2005-06 by \$423,292; the expenditures exceeded revenues in FY 2006-07 by \$93,399, and for this fiscal year revenues exceeded expenditures by \$568,280.

During fiscal year 2007-08, revenues totaled \$4.24 million including user fee revenues, tax revenues, reimbursements, interest, grants and minor miscellaneous revenues. The Mitigation Program Fund Balance as of June 30, 2008 was \$999,898.

**Table I-1**

**SUMMARY OF COMPONENTS OF MPWMD MITIGATION PROGRAM**

**July 1, 2007 – June 30, 2008**

**WATER MANAGEMENT**

- Monitor Water Resources
- Manage Water Production
- Manage Water Demand
- Monitor Water Usage
- Augment Water Supply
- Allocation of New Supply
- Determine Drought Reserve

**STEELHEAD FISHERY**

- Capture/Transport Emigrating Smolts in Spring
  - Smolt rescues
  - Build acclimation facility/tagging study
- Prevent Stranding of Fall/Winter Juvenile Migrants
  - Juvenile rescues
  - Build mid-Valley holding facility
- Rescue Juveniles Downstream of Robles del Rio in Summer
- Build Sleepy Hollow holding/rearing facility
- Modify Spillway/Transport Smolts Around Los Padres Dam
- Monitoring Activities for Mitigation Plan
  - Adult counts at San Clemente Dam
  - Juvenile population surveys
- Other Activities not required by Mitigation Plan
  - Spawning habitat restoration
  - Fish planting (steelhead broodstock program)
  - Coastal Salmon Recovery Program grant (began mid-2001)
  - Modify critical riffles

**RIPARIAN VEGETATION AND WILDLIFE**

- Conservation and Water Distribution Management
- Prepare/Oversee Riparian Corridor Management Plan
- Implement Riparian Corridor Management Program
  - CAW well irrigation (4 wells)
  - Channel clearing
  - Vegetation monitoring
  - Track and pursue violations
  - River Care Guide booklet
  - CRMP Erosion Protection Program

**LAGOON VEGETATION AND WILDLIFE**

- Assist with Lagoon Enhancement Plan Investigations (See Note 1)
- Expand Long-Term Lagoon Monitoring Program
  - Water quality/quantity
  - Vegetation/soils
- Identify Alternatives to Maintain Lagoon Volume

**AESTHETICS**

- Restore Riparian Vegetation (see above)

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Note 1: Mitigation measures are dependent on implementation of the Lagoon Enhancement Plan by the California Department of Parks and Recreation, the land owner and CEQA lead agency. Portions of the Enhancement Plan are being implemented by CalTrans as part of a "mitigation banking" project.