Chapter 4 Resource Management Strategies

IRWM Plan Standard 3
The IRWM Plan must document the range of [Resource Management Strategies (RMS)] considered to meet the IRWM objectives and identify which RMS were incorporated into the IRWM Plan. The effects of climate change on the IRWM region must factor into the consideration of RMS. RMS to be considered must include, but are not limited to, the RMS found in Volume 2 of the [California Water Plan (CWP)] Update 2009.

Following the development of IRWM Plan Objectives, the next step in the integrated planning process was to choose the appropriate resource management strategies[1] to meet the IRWM planning objectives. As required by the Guidelines, all strategies recommended in the State IRWM guidelines were initially considered for inclusion in the plan, but not all strategies were found to be feasible or applicable to this region. Once the strategies were considered, they were evaluated based on how they could, in combination or individually, align with the planning objectives. This section describes the strategies contained in this IRWMP.

Volume 2 of the CWP Update 2009 defines a resource management strategy as a project, program, or policy that helps local agencies and governments manage their water and related resources. For example, urban water use efficiency and pricing policies with incentives for customers to reduce water use are strategies. New water storage to improve water supply, reliability, and quality is another strategy.

4.1 Water Management Strategy Consideration

4.1.1 Strategy Consideration Process

As shown in **Table 4-1**, all required strategies were considered to meet IRWM plan standards. Appropriate water management strategies for this Plan were identified based on a review of strategies, actions and opportunities identified in local plans and in discussions at stakeholder workshops. The strategies listed in **Table 4-1** were each considered based on their applicability to the planning Region and their ability to fulfill the planning objectives. Integrated planning must include several resource management strategies to achieve regional objectives. However, it was also understood that not all of the strategies considered would necessarily be included in the plan. Chapter 4 summarizes the consideration and integration of the resource management strategies.

[1] In the 2007 MP IRWM Plan, the term "water management strategies" was used, rather than the term "resource management strategies" that is used herein. This plan update changed terminology for consistency with 2012 Proposition 84 &1E IRWM Guidelines (DWR, 2012)

Table 4-1 : Resource Management Strategies

Resource Management Strategies by CWP Management Outcome	Included in 2007 Plan	Included in this Plan	Considered as Req. to Meet Min. Plan Standards
Reduced Water Demand			
Agriculture Water Use Efficiency			X
Urban Water Use Efficiency	X	X	X
Crop Idling for Water Transfers			X
Irrigated Land Retirement			X
Rainfed Agriculture			X
Improve Operational Efficiency and Transfers			
Conveyance – Delta	X	X	X
Conveyance – Regional/Local	X	X	X
System Reoperation			X
Water Transfers	X	X	X
Waterbag Transport/Storage Technology	X	X	X
Increase Water Supply			
Conjunctive Management & Groundwater Storage	X	X	X
Desalination	X	X	X
Precipitation Enhancement			X
Recycled Municipal Water	X	X	X
Surface Storage –CALFED			X
Surface Storage – Regional/local	X	X	X
Dewvaportation or Atmospheric Pressure Desalination			X
Fog Collection			X
Improve Water Quality			
Drinking Water Treatment and Distribution	X	X	X
Groundwater Remediation/Aquifer Remediation			X
Matching Quality to Use			X
Pollution Prevention	X	X	X
Salt and Salinity Management			X
Urban Runoff Management	X	X	X
Improve Flood Management			
Flood Risk Management	X	X	X
Practice Resources Stewardship			
Agriculture Lands Stewardship			X
Economic Incentives			X
Ecosystem Restoration	X	X	X
Forest Management	X	X	X
Recharge Area Protection			X
Water-Dependent Recreation	X	X	X
Watershed Management	X	X	X

4.2 Strategies Considered and Chosen from the *California Water Plan Update 2009*

4.2.1 Reduced Water Demand

The RMS listed below are intended to reach the CWP management outcome of reducing water demand. Reducing the demand for water through use efficiency or changes in land usage is intended to reduce the quantity of supply required to sustain the IRWM planning region. The following RMS to reduce water demand were considered:

- Agricultural Water Use Efficiency
- Urban Water Use Efficiency
- Crop Idling for Water Transfers
- Irrigated Land Retirement
- Rainfed Agriculture

Agriculture Water Use Efficiency

Water use efficiency and conservation measures serve to reduce water use, reduce energy consumption and therefore emissions of pollutants and greenhouse gasses, reduce wastewater and potentially polluted runoff, and reduce the economic and environmental costs associated with water use and water treatment. While Monterey County is dominated by open space and agriculture uses, this IRWM planning region agricultural uses are limited to a few small pockets of privately owned vineyards located primarily in the Cachagua Valley and small scale farming operations located along the Carmel River main stem. Water use efficiency and conservation measures strategies are already common practice in agricultural areas. Common water conservation best management practices (BMPs) implemented in the region include, for example, use of a time clock/pressure switch, water flowmeters, leakage reduction, sprinkler improvements, pre-irrigation reduction, reduced sprinkler spacing, micro irrigation systems, land leveling/grading, and soil moisture sensors. Small farming operations occupy a small fraction of land in Carmel Valley and rely almost exclusively on the Carmel River alluvial aquifer for irrigation water; however, this accounts for a minor amount of water use in the IRWM planning region. Thus, promoting agricultural water use efficiency is not critical for helping the region meet its goal of improved water supply reliability.

Urban Water Use Efficiency (Conservation)

Given the legal and physical constraints to water supply in the Region and the demonstrated effectiveness of conservation, urban water use efficiency is considered an important ongoing strategy for the region, especially in the area of landscape and outdoor irrigation uses and is a proven strategy in reducing reliance on limited local water supplies. The Monterey Peninsula area has one of the lowest per capita water consumption levels of any urban area in California and is aggressively pursuing a water conservation program that includes education and conservation incentives.

Urban water use efficiency measures have been widely implemented throughout much of the region, including, for example, plumbing retrofits, surveys of large landscape areas, development of water efficient landscape guidelines, high-efficiency washing machine rebates, public information campaigns, school programs, residential ultra-low-flow flush toilet replacement programs, commercial, industrial, and institutional audits to identify water conservation opportunities, and internal water distribution system audits. Although many planning regions around the state should achieve substantial benefits from implementing urban water use efficiency and conservation programs in the future, the benefits of an aggressive conservation program for the Monterey Peninsula region will be incremental in comparison to other regions around the state, rather than substantial. It is expected that the region can achieve an annual

reduction of at least 25 AFY for the foreseeable future. This strategy is considered an important means for helping the region meet its water supply objectives.

4.2.2 Improve Operational Efficiency and Transfers

The following RMS are considered herein to achieve the CWP management outcome of improved operational efficiency and transfers. This management outcome aims to create a new water sources, and supplement, increase allocations of, or better utilize, existing water sources within the region. The following RMS to improve operational efficiency and transfers were considered:

- Conveyance – Delta
- Conveyance – Regional/local
- System Reoperation
- Water Transfers
- Waterbag Transport/Storage Technology

Conveyance – Regional/Local

Conveyance includes both natural watercourses (including groundwater aquifers) and constructed facilities. The agencies managing the water supply in the Region have considered and implement this strategy on an ongoing basis in the Carmel River and Seaside Basins. After considering many options to replace and augment water supplies within the Region, it is clear that the existing water supplies in the Region must be augmented with desalinated water in order to provide a reliable and sustainable supply of water. A small amount of desalinated water is currently produced in Sand City for distribution to the Region. Larger facilities are proposed in Marina and at Moss Landing to supply the Region and are in the review process.

System Re-operation

System re-operation entails changing existing operation and management procedures for reservoirs and conveyance facilities in order to increase benefits from these facilities and optimize operations. An example of system re-operations was when CAW ceased diversions at the Sleepy Hollow/Carmel Valley Filter Plant site and instead began diverting more water via wells in the lower portions of Carmel Valley (i.e., the northwestern most portion); thereby allowing more water to remain in the Carmel River for habitat. The ongoing Aquifer Storage and Recovery (ASR) Program is another re-operation project (also a conjunctive use project) wherein winter flows from the Carmel River (subterranean stream) are diverted when flows exceed a specific quantity and these excess waters are conveyed through the existing potable water supply system for injection into the Seaside Groundwater Basin. Additional optimization of existing infrastructure will require significant upgrades in production, treatment, and pipeline capacity at certain points in the system. Although some of these improvements are in the design stage, the CPUC must review and approve such projects. Other projects, such as an expansion of ASR and reservoir dredging, are under consideration, but no new feasible projects have emerged to date.

Water Transfers

A water transfer is defined in the Water Code as a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer or exchange of water or water rights. Water transfers typically occur in five ways (though not all of these are practiced in this region): 1) transferring water from storage that would otherwise have been carried over to the following year; 2) pumping groundwater instead of using surface water delivery and transferring the surface water rights; 3) transferring previously banked groundwater either by directly pumping and transferring groundwater or by pumping groundwater for local use and transferring surface water rights; 4) making water available by reducing the existing consumptive use through crop idling or crop shifting or by implementing water use

efficiency measures; or 5) making water available by reducing return flows or seepage from conveyance systems that would otherwise be irrecoverable.

Intra-regional transfer of potable water is already a proven strategy between the Carmel River Basin and the Seaside Groundwater Basin and is expected to be a significant component in resolving both Regional supply and water quality issues in the Seaside Groundwater Basin. One-way inter-regional transfer of wastewater currently occurs from the Monterey Peninsula to the Salinas Valley MRWPCA plant along the Salinas River. Importation of highly treated wastewater (recycled water) back into the Region from this plant is proposed to provide additional water for injection and recovery in the Seaside Groundwater Basin aquifers (the Groundwater Replenishment Project). Intra-regional transfer of recycled water currently occurs between the mouth of the Carmel River (from the CAWD treatment plant) to irrigate golf course areas in Pebble Beach.

4.2.3 Increase Water Supply

The CWP Management Outcome to increase water supply can be achieved through programs and projects that provide a new water supply that would, first and foremost, replace a portion of existing water diversions in the Carmel River Basin and meet the requirement to ramp down production in the Seaside Groundwater Basin (SGB) in order to improve the hydrologic balance and water quality of the basin. Additional supplies would be required for new water entitlements. The dependence on rainfall to replenish water-bearing aquifers and lack of surface storage puts the Region at risk of severe cutbacks in water use during drought periods lasting two or more years. Increased recycling and reuse of municipal wastewater and conjunctive use of storm water and/or other surface water may help to diversify the water supply sources. Securing a reliable water supply is one of the highest priorities in the Region and is critical to reducing impacts to the environment such as seawater intrusion and low surface flows for environmental needs.

Several water supply projects are currently being pursued by local agencies and California American Water Company to directly improve water supply reliability, eliminate unlawful diversions from the Carmel River, and reduce the potential for seawater intrusion in the SGB. In these projects, surplus surface and recycled water (Carmel River winter flows, advanced treated wastewater, and dry weather flows and storm water, potentially) can be used to recharge the SGB. Water injected into the SGB during winter can be extracted at a later time and reduce diversions from the Carmel River Basin during the dry season.

Conjunctive Management & Groundwater Storage

Optimizing conjunctive use of the Carmel River Basin and the Seaside Groundwater Basin is critical for the region's water supply as well as for the quality of both the surface and groundwater in the region. The region lacks sustainable surface water storage and use of the Carmel River Aquifer to extract water is currently restricted. The Seaside Groundwater Basin is an effective storage and extraction mechanism within the region. However, production of native water from this basin is subject to use restrictions as a result of a recent adjudication in the basin. Therefore, while conjunctive use is an important aspect of water supply planning, there are limitations to using this strategy.

Because the Region relies on groundwater production and subterranean alluvial streamflow for virtually all of its water supplies, a sound groundwater management strategy is both critical and necessary. In the Carmel River Basin, the State Water Resources Control Board (SWRCB) determined that it has jurisdiction over the water flowing in the Carmel River Aquifer, which supplies about 70% of potable water for the Region. SWRCB has set a requirement of reducing diversions from that aquifer by approximately 75% over the historical usage (SWRCB Order No. WR 95-10 and WRO 2009-0060).

In the Seaside Groundwater Basin, which supplies about 20% of the potable water in the Region, the Superior Court of California adjudicated rights in the basin in 2006 and instituted a schedule for bringing the groundwater budget into balance by 2021. The Court's decision plays a key role in how this strategy is implemented overall in the Region.

Groundwater management is a key strategy in the ongoing Aquifer Storage and Recovery Project, and other regional projects included in this plan. Projects to reduce stormwater discharges to ASBS may also incorporate groundwater recharge, or reuse, if capture and treatment is feasible.

Desalination

Desalination has been used in the Region and surrounding area at a small scale, with plants located at the Monterey Bay Aquarium, in Sand City, and in the City of Marina. While a large scale plant has yet to be built and operated, desalination continues to be investigated as a water supply to satisfy requirements for replacement water supplies and to help protect the region from drought. This strategy is being actively pursued by both public and private entities in the Region. However, recent proposals have focused on locating facilities outside of the Region. Land-based desalinating facilities would require locating treatment, pumping, and pipeline facilities outside of the Region to deliver water to the area and would require modifications to existing infrastructure within the Region. Sea-based facilities, which would be located several miles offshore and would require significant infrastructure upgrades at the coast and within the Monterey Bay National Marine Sanctuary, have been investigated but have not moved forward. Desalination could be combined with other water supply projects within the Region, such as aquifer storage and recovery and groundwater replenishment in the Seaside Groundwater Basin, to meet the Region's potable water supply needs.

Precipitation Enhancement

Precipitation enhancement, commonly called "cloud seeding," artificially stimulates clouds to produce more rainfall than they would naturally. Cloud seeding injects special substances, typically silver iodide, into the clouds to enable the raindrops to form more easily. Cloud seeding has been practiced in California since the1950s. The MCWRA used precipitation enhancement as a resource management strategy from 1990-1995 and again in 2004. MCWRA retains this strategy in its portfolio as an option for future implementation. Precipitation enhancement has not been used historically within the planning Region, but remains an option for the region to consider in providing additional water on a cost-effective basis.

Recycled Water for Municipal or Environmental Benefits

Recycling of 800 AFY of wastewater from the CAWD plant for Pebble Beach golf course irrigation has proven to be effective in reducing potable water demand. Releasing up to 300,000 gallons/day of tertiary-treated water to the Carmel River Lagoon that would otherwise be discharged to Carmel Bay is also being considered as a method to augment the lagoon during the summer to enhance aquatic environments. However, recycled water from the CAWD plant on the Carmel River may not meet all of the stringent water quality requirements under the Clean Water Act for discharges to the Lagoon, which is considered waters of the United States. Efforts are currently underway to explore ways to use this water at the lagoon and comply with all requirements for surface water discharges. MPWMD and MRWPCA have jointly proposed developing a project to use 3,500 AFY of highly treated recycled water from the Regional Treatment Plan in the Seaside Groundwater Basin as part of a proposal to meet replacement water supply needs.

Surface Storage – Regional/local

Enlarging the capacity of Los Padres Reservoir (e.g. by dredging or building a higher spillway) or construction of a new reservoir is limited by economic, safety, and environmental constraints and is not considered to be feasible at this time. Maintenance dredging of the Los Padres Reservoir to retain

existing storage capacity has been considered as an option, but no definitive analysis or proposal has been carried out. Removal of Los Padres Dam was identified in an October 2012 Draft Recovery Plan for steelhead by NMFS as a critical action for recovery of the species in the Carmel River. In general, other areas in the Region are either environmentally sensitive or are urban areas that are not suitable for surface storage.

Dewvaporation or Atmospheric Pressure Desalination

Dewvaporation is a specific process of humidification-dehumidification desalination. Brackish water is evaporated by heated air, which deposits fresh water as dew on the opposite side of a heat transfer wall. The energy needed for evaporation is supplied by the energy released from dew formation. Heat sources can be combustible fuel, solar or waste heat. The technology of dewvaporation is still being developed, and thus far the basic laboratory test unit is capable of producing up to 150 gallons per day. The technology for dewvaporation is still too new to be of significant value for the IRWM Plan region

Fog Collection

There has been some interest in fog collection for domestic water supply in some of the dry areas of the world near the ocean where fog is frequent. Some experimental projects have been built in Chile, including the El Tofo project which yielded about 10,600 liters per day from about 3,500 square meters of collection net (i.e., about 3 liters per day per square meter of net). Because of its relatively small production, fog collection is limited to producing domestic water where little other viable water sources are available. Monterey County's coastal location is ideally suited for fog collection; however, as long as other viable water sources exist, fog collection will be considered a low-priority strategy for the region. However, like dewvaporation, the RWMG remains open to its potential use as a resource management tool in the future.

4.2.4 Improve Water Quality

The CWP management outcome to improve water quality is very important for inclusion in integrated planning. Projects that include these aspects of water management are anticipated to be high priority for the region and include the following RMS:

- Drinking Water Treatment and Distribution
- Groundwater Remediation/Aquifer Remediation
- Matching Quality to Use
- Pollution Prevention
- Salt and Salinity Management
- Urban Runoff Management

Drinking Water Treatment and Distribution

Providing a reliable supply of safe drinking water is the primary goal of municipal water supply systems in the region. Critical to achieving that goal is ensuring a safe raw water supply and well-maintained water treatment facilities. Beyond the treatment plant, a high level of water quality must be maintained as the water passes through the distribution system to customer taps. Contaminants can enter the distribution system, or water quality may deteriorate within the distribution system, for example, as a result of microbial growth and biofilm, nitrification, corrosion, water age, effects of treatment on nutrient availability (contributing to microbial growth and biofilm), and sediments and scale within the distribution system. Improvements to water treatment and distribution facilities are continually needed as infrastructure ages, populations grow, water quality stressors increase (such as seawater intrusion and chemical contaminants), and water quality standards become more stringent. This is considered an ongoing and critical resource management strategy for the region.

As water supplies change in the Region - including the potential for developing new water supplies for urban use - water and recycled water (wastewater) treatment plants may need to be built depending on the quality and source of water supplies.

Groundwater Remediation/Aquifer Remediation

Groundwater remediation removes contaminants that affect beneficial uses of groundwater. Passive groundwater remediation allows contaminants to biologically or chemically degrade or disperse in situ over time, while active groundwater remediation involves either treating contaminated groundwater in situ or extracting contaminated groundwater from the aquifer and treating it. Since groundwater is the primary water supply source for most of the region, and since the groundwater basin is stressed by both natural and human-caused contaminants, including nitrates, seawater, and arsenic, groundwater remediation is an important resource management strategy for the region.

Matching Quality to Use

An example of matching water quality to use is a water supplier choosing to use a deeper, cleaner aquifer for municipal water, which requires less treatment before delivery, over a more shallow, more contaminated aquifer or over a surface supply. Benefits would include a reduced need for treatment and potentially fewer disinfection byproducts for the water user. Recycled water can also be treated to a wide range of purities that can be matched to different uses. In the Monterey Peninsula IRWM region, water is currently reclaimed and treated for golf course irrigation purposes. The potential exists to treat water to enable indirect potable reuse as a drinking water standard if the need should arise in the future.

Pollution Prevention

NPS pollution control is important for maintaining surface and groundwater quality in this biologically sensitive region. Several entities within the Region are implementing a storm water management program in the urban portions of the Region in compliance with Phase II requirements of the National Pollution Discharge Elimination System for storm water.

Salt and Salinity Management

Salts are materials that originate from dissolution or weathering of the rocks and soil, including dissolution of lime, gypsum and other slowly dissolved soil minerals. “Salinity” describes a condition where dissolved minerals of either natural or anthropogenic origin and carrying an electrical charge (ions) are present. In February 2009, the State Water Resources Control Board (SWRCB) adopted a Recycled Water Policy which aims to promote and increase the use of recycled water. The policy requires local stakeholders, such as local water and wastewater entities and members of the public develop, to develop salt and nutrient management plans for groundwater basins. The purpose of the plans is to protect groundwater from accumulating concentrations of salt and nutrients that would degrade the quality of groundwater and limit its use. Historical strategies for mitigating the impacts of excess salinity include desalination as well as salt dilution and displacement. For example, agricultural operations typically displace soil salts by applying more irrigation water than the crop is able to take up to flush salts out of the root zone and relocate them in a lower part of the soil profile. The salt and nutrient management plans are intended to go beyond these historical strategies (which essentially address impacts) by evaluating the initial sources and loading of salts and nutrients in a groundwater basin, and working to manage excessive loading on a regional scale. Salt and salinity management has taken on greater prominence among the region’s resource management strategies and the Monterey Peninsula IRWM region has begun preparation of a salt and nutrient management plan for the Seaside Groundwater Basin as required by the SWRCB’s Recycled Water Policy.

Urban Runoff Management

Storm water runoff is described by the Environmental Protection Agency as “That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, underflow, or

channels or is piped into a defined surface water channel or a constructed infiltration facility (Washington Department of Ecology, 1992)." These types of flows can be contaminated with pollutants that are generated through a multitude of sources, but are typically lumped into two categories—urban and agricultural runoff.

Typical pollutants detected in urban and suburban runoff include trash, metals, detergents, pesticides, sediment, nutrients and pathogens. Agricultural activities, including animal grazing, can produce nitrates, other nutrients, pathogens, and unnatural turbidity levels in nearby water bodies. The effects of storm water runoff can be seen when beaches are closed or in the case of foam coffee cups and plastic bags that wash into storm drains and mounds of trash that pile onto local beaches during storm events. Or they can be less noticeable, such as when runoff creates toxic conditions for wildlife.

According to the Monterey Bay National Marine Sanctuary, volunteer monitoring in several Monterey Bay area cities has shown that urban runoff contains some of these pollutants and may be contributing to increased mortality among marine mammals. The effects are not restricted to the environment, and can affect public health and cause economic losses from repeated beach closings and water quality warnings resulting from pathogens leaked from failing infrastructure or from human or animal wastes in the watersheds.

The RWQCB approved the Monterey Regional Storm Water Management Plan (MRSWMP) and issued a Phase II NPDES permit for storm water discharges within the Region in Sept 2006. Best Management Practices contained in MRSWMP should lead to an improvement in the future of near-shore water quality along the coast and in streamside areas affected by storm water discharges.

At present, requirements concerning discharges to the Carmel Bay and Pacific Grove ASBS are under discussion and study. Pacific Grove has completed two phases of a project to divert a portion of dry season flows away from the Pacific Grove ASBS, and the City of Monterey completed an alternatives analysis in 2006 for ceasing discharges in ASBS from Monterey, Pacific Grove, and Pebble Beach. The City of Monterey received a Planning Grant to further refine this alternatives analysis, which is expected to be completed by the end of 2013.

This IRWM Plan contains several projects in the planning stages for determining the feasibility of capturing and/or managing storm water. Project scopes include investigating enhanced infiltration of runoff in local watersheds combined with diversion of discharges to the sanitary sewer system for treatment and recycling. When fully implemented, these projects may supply water for irrigation at local parks and open space areas or treated water would be injected or allowed to percolate into local aquifers to improve water quality and increase water quantity. See Chapter 7 for detailed project descriptions.

4.2.5 Improve Flood Management

The CWP management outcome to improve flood management is stated in the RMS below.

Flood Risk Management

The Monterey County Water Resources Agency is responsible for flood management throughout the unincorporated portions of Monterey County. Flood protection along the Carmel River and in the Canyon Del Rey watershed is a significant challenge and an important aspect of surface water related planning in those areas. Portions of the Carmel Valley floodplain have the highest repetitive loss rate in the County (defined as two or more flood insurance claims in a ten-year period). The March 10, 1995 flood (estimated peak magnitude of 16,000 cubic feet per second or about a 70-year return flood) damaged 700 residences and 68 businesses and caused the evacuation of most people in the floodplain. In addition, two 80-foot spans of the Highway 1 Bridge across the Carmel River were washed away. Projects to reduce flooding in Carmel Valley are expected to be a high priority in the Region.

The Lower Carmel River Restoration and Floodplain Enhancement and the Ecosystem Protection Barrier project incorporate flood management improvements. There may also be flood management benefits from projects in the Seaside Basin to reduce stormwater flows to Monterey Bay and from projects in the Cities of Pacific Grove and Monterey to reduce stormwater flows to ASBS.

In the six Monterey Peninsula Cities and in Pebble Beach, flooding problems appear to be localized and typically affect far fewer residents and structures than in most of the unincorporated areas. However, storm drain systems in these areas discharging to ASBS are often overwhelmed by high flows, presenting a significant challenge in reducing or ceasing wet weather discharges to ASBS.

4.2.6 Practice Resources Stewardship

Practice Resources Stewardship is an important aspect of water related planning and the following related RMS are included in this plan:

- Agricultural Lands Stewardship
- Economic Incentives (Loans, Grants and Water Pricing)
- Ecosystem Restoration
- Forest Management
- Recharge Area Protection
- Water-Dependent Recreation
- Watershed Management

Agriculture Lands Stewardship

Agricultural lands stewardship broadly means the conservation of natural resources and protection of the environment on agricultural lands. Examples of agricultural lands stewardship include windbreaks, irrigation tailwater recovery, filter strips, grassed waterways, contour buffer strips, conservation tillage, noxious weed control, riparian buffers, streambank protection, and the use of cover crops and other soil-building and stabilization practices.

The primary agricultural land uses within the planning region are range lands (in addition, a handful of small-scale viticulture and farm lands) and thus the IRWM Plan may have limited benefits for including this RMS. One example of an ongoing program that implements this RMS is the Environment Quality Incentives Program (EQIP) that is currently being implemented by the Natural Resources Conservation Service.

EQIP provides financial and technical assistance to agricultural producers in the State of California (NRCS 2012). In the Carmel River Watershed, the NRCS works primarily with rangelands. Through this yearly program, the NRCS assists landowners with the implementation of best management practices tailored to address each site's concerns. The NRCS assists with practices that improve soil, water, plant, animal, air and related resources on agricultural land and non-industrial private forestland (NRCS 2012). Examples of activities in the Carmel River Watershed that are implemented through the EQUIP include fencing off riparian areas, installing troughs out of the streams, and pasture and hay planting.

Economic Incentives

Economic incentives include financial assistance, water pricing, and water market policies intended to influence water management. Examples of economic incentives include water rates and rate structures, free services, rebates, and the use of tax revenues to partially fund water services. As opposed to incentives, fines are a type of economic disincentive that can be used to discourage undesirable water user behavior. Economic incentives, such as plumbing retrofits, washing machine rebates, and residential

ultra-low flow flush toilet replacement programs, have been used and continue to be used at different times by water suppliers in the region. This strategy is a particularly good option for encouraging urban water use efficiency and for assisting disadvantaged communities in attaining water services, facilities, and appurtenances. CAW and MPWMD have implemented this RMS for many years in the region to reduce urban water use. CAW, which supplies about 95% of potable water use, uses a tiered water rate structure that has significant financial incentives to minimize water use.

Ecosystem Restoration

The Lower Carmel River Restoration and Floodplain Enhancement project is one project that directly incorporates ecosystem restoration by allowing river flows to occupy areas of the floodplain that are currently in agricultural use and protected from most floods by a levee. Other projects effect ecosystem restoration indirectly, such as the projects in the Seaside Basin to increase percolation into the aquifers and reduce dependence on Carmel River sources.

State and Federal species recovery plans for steelhead and the California red-legged frog describe several important resource areas to enhance and conserve including habitat along the Carmel River, its tributaries, and at the Carmel River Lagoon. Several projects in this IRWMP are proposed that will assist in restoring streamside habitats in the Carmel River watershed and will include monitoring in these areas for improvements in the populations of sensitive species.

Protection of the Monterey Bay National Marine Sanctuary (MBNMS) and State designated Areas of Special Biological Significance (ASBS) are also of key importance. As described in the Water Quality Objectives, the six Minimum Control Measures being implemented as part of the MRSWMP will improve near-shore water quality. However, the level and type of protection for ASBS is currently under discussion between RWQCB 3 and the ASBS dischargers in the planning Region.

Forest Management

Part of the Carmel River Watershed is located within the Los Padres National Forest and Ventana Wilderness. Other forest areas within the IRWM planning area include Del Monte Forest. Protecting forests that support the watershed within the IRWM planning areas is an important aspect of water related planning. Projects associated with this IRWM Plan may not directly contribute to changes in forest management or land uses. Currently, Federal, State, and local policies for management of forestlands are considered effective for the purpose of protecting water resources. Climate change is expected to directly affect forests through increased drought stress, making trees more vulnerable to insect attack; wildfires are also likely to increase in frequency, size, and severity as climate warms. These stresses on forests will affect their capacity to naturally regulate streamflow and buffer water quality. Portions of streams that are now perennial may become intermittent with the resulting loss of riparian zones, aquatic habitats, and other beneficial uses of water that depend on perennial flows.

Some forest areas are habitat for threatened and endangered species of plants and animals in the Region. Several projects in this IRWMP are proposed that will assist in restoring habitats associated with the Carmel River watershed and will include monitoring in these areas for improvements in the populations of sensitive species.

Recharge Area Protection

The goals of recharge area protection are to: 1) ensure that areas suitable for recharge continue to be capable of adequate recharge rather than covered by urban infrastructure, such as buildings and roads; and 2) prevent pollutants from entering groundwater in order to avoid expensive treatment that may be needed prior to potable, agricultural, or industrial beneficial uses. There are currently no areas within the IRWM planning region that are specifically designated as “recharge protection areas,” though there are many areas of open space and wetland that could be considered areas of natural recharge. In particular, the

areas overlying the Seaside Groundwater Basin have sandy qualities that enable efficient percolation of stormwater. Much of the Region is either somewhat arid rolling hills in the rain shadow of the Santa Lucia range or very rugged terrain with sedimentary deposits in canyon bottoms or low-gradient areas. There may be areas along Carmel River that would allow for the development, restoration, or enhancement of wetlands (i.e., in public lands adjacent to the lower Carmel River), in the Canyon Del Rey watershed, and in small streams within the Del Monte Forest. Projects, such as the Carmel River Lagoon and Lower Carmel River Floodplain Restoration and Enhancement project to provide excess flood capacity and increase wetland areas, thus increasing water recharge.

Water-Dependent Recreation

Clearly, the Region has wide appeal to those who enjoy sport fishing, kayaking, sailing, hiking, camping, surfing, cycling, photography, or other water-related activities. Recreation and public access are important aspects of water resource planning and are integral to the economic base of the Region, particularly as related to access in the Carmel River watershed and to the coast. While public access to the San Clemente Reservoir is currently prohibited, access to the Los Padres National Forest and the Ventana Wilderness is allowed at Los Padres Dam and Reservoir, offering some of the most breathtaking settings for outdoor recreation in the State. Maintaining and expanding access to beaches, as required by the California Coastal Act, and to other recreational areas will continue to be an important consideration in future water resources projects.

Watershed Management

The Carmel River Watershed can be managed for recreation, water supply, water quality, and environmental habitat considerations. Watersheds within the Seaside Basin can be managed for water supply, water quality, and may have some environmental habitat and recreation components. Other watersheds that drain directly to the Pacific Ocean (e.g., within Pebble Beach and the Cities of Carmel-by-the-Sea, Pacific Grove and Monterey) can be managed for recreation, water quality, and environmental habitat. All of these watershed planning strategies should be included in the planning process as it relates to surface and groundwater supply.

4.3 Strategies Considered as required by the *California Water Plan Update 2009* but NOT chosen to be included in the IRWM Plan

The following RMS from the CWP 2009 were considered, but are not recommended for inclusion in the MP IRWM Plan for the reason provided below. This section will be based on stakeholder feedback the October 24, 2012 stakeholder meeting.

Conveyance – Delta

Since the California Delta does not extend to the IRWM Planning region, Delta conveyance improvements is not an option. Importation of water from the Delta is not viable as evidenced by previous alternative screening analyses conducted between 1996 and 2009.[2] Therefore, this resource management strategy is not applicable and will not be included in the IRWM Plan.

[2] Previous alternatives analyses evaluating various water supply options include: MPWMD, Draft Supplemental EIR on the New Los Padres Dam and Reservoir Project, 1998; CPUC/EDAW, Plan B Component Screening Report, August 2000; the CPUC/RMC Carmel River Dam Contingency Plan Final Report, July 2002; MCWD/FORA, Regional Urban Water Augmentation Project Alternatives Analysis, March 2003; MPWMD, Monterey Peninsula Water Supply Project, Draft EIR, December 2003; and CPUC/ESA, Coastal Water Project EIR, December 2009.

Crop Idling for Water Transfers

Due to the small amount of agricultural land uses within the planning region, there are no significant opportunities for this resource management strategy to be pursued. Also, there is no financial incentive for growers to employ this strategy in the planning Region. Therefore, this resource management strategy will not be included in the IRWM Plan.

Irrigated Land Retirement

For the reason stated in the preceding strategy, there are no significant opportunities for this resource management strategy to be pursued. Therefore, this resource management strategy will not be included in the IRWM Plan.

Rainfed Agriculture

For the reason stated in the preceding strategies and low and inconsistent seasonal rainfall, there are no significant benefits or opportunities to pursue this resource management strategy in the region. Therefore, this resource management strategy will not be included in the IRWM Plan.

Surface Storage –CALFED

Since the California Delta does not extend to the IRWM Planning region, the CALFED Bay-Delta Program is not an option. Therefore, this resource management strategy is not applicable and will not be included in the IRWM Plan.

Waterbag Transport/Storage Technology

Due to the lack of practicability of using Waterbag Transport/Storage Technology as a sustainable water source in the IRWM planning region, the IRWM Plan did not consider this resource management strategy as a viable option. Importation of water using waterbag or similar storage is not viable as evidenced by previous alternative screening analyses conducted between 1996 and 2009.[3]

4.4 How RMS are Implemented in the Plan

[To be prepared after project solicitation.]

[3] Previous alternatives analyses evaluating various water supply options include: MPWMD, Draft Supplemental EIR on the New Los Padres Dam and Reservoir Project, 1998; CPUC/EDAW, Plan B Component Screening Report, August 2000; the CPUC/RMC Carmel River Dam Contingency Plan Final Report, July 2002; MCWD/FORA, Regional Urban Water Augmentation Project Alternatives Analysis, March 2003; MPWMD, Monterey Peninsula Water Supply Project, Draft EIR, December 2003; and CPUC/ESA, Coastal Water Project EIR, December 2009.