

## 2.0 MASTER RESPONSES TO COMMENTS

This section provides an overview of prevalent topics and issues that emerged from the body of comments received on the Draft EIR. These issues (Comment Summaries) were identified by a number of commenters and are summarized and shown in italics below by theme and topic. Following each issue summary is a response.

The order of the following Master Responses does not reflect the importance of any single issue in relation to all of the others.

### 2.1 COMMENTS ON ALTERNATIVES CONSIDERED IN THE DRAFT EIR

A number of comments requested additional information regarding alternatives to the proposed project. These comments either proposed or promoted certain alternatives, or asked questions about how the analysis of alternatives was performed. The following Master Responses address the various questions pertaining to the Draft EIR's analysis of alternatives. The comments addressed are: (1) the range of alternatives considered, and (2) an alternative consisting of expanding MMWD's existing reservoirs.

#### ALT-1 Range of Alternatives Considered

*Comment Summary: The Draft EIR should have considered a wider range of alternatives. The alternatives were not all analyzed to the same level of detail.*

**Master Response ALT-1:** The primary purpose of the EIR is to analyze the environmental effects of the proposed desalination facility. As required by CEQA, the Draft EIR also evaluates alternatives to the proposed project.

According to CEQA, an EIR must identify and analyze a sufficient number of alternatives to allow the lead agency to make a reasoned choice. Alternatives should feasibly attain most of the basic objectives of the project. Alternatives should also avoid or substantially lessen significant environmental effects of the project. An EIR need not consider every conceivable alternative to a project (CEQA Guidelines Section 15126.6(a)).

The proposed desalination project has been the subject of extensive technical study, the results of which are described in the Draft EIR. The other alternatives have been developed to a conceptual level at which environmental effects can be reasonably assessed. The discussion of environmental effects of alternatives may be less detailed than the discussion of impacts of the proposed project (CEQA Guidelines Section 15126.6(d)). The range and effects of alternatives analyzed are sufficient to allow for informed decision making and public participation.

In response to public comments, this Final EIR discusses an additional alternative—Alternative 8, the Sonoma-Marin Transmission Line with Conservation—that was not included in the Draft EIR. This additional alternative has been included because the alternative is potentially feasible and meets some of MMWD's objectives for the project. The Final EIR concludes that Alternative 8 is infeasible because it would not satisfy an important project objective, which is to provide a reliable water supply source during droughts. Nonetheless, this alternative has been added to the analysis to provide the public and decision-makers with information that will enable them to consider a wider range of alternatives.

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### **ALT-2 Reservoir Expansion**

*Comment Summary: Expanding MMWD's existing system of reservoirs could eliminate the need for the proposed desalination plant.*

**Master Response ALT-2:** MMWD's seven-reservoir water storage system already offers the maximum storage available. MMWD built its last reservoir, Soulajule, in 1979 and enlarged Kent Lake in 1982. These reservoirs are on the two largest watersheds in Marin County: the Lagunitas Creek and Walker Creek watersheds. Reservoir sites within the County have been studied extensively for over 100 years. No other sites in Marin County are suitable for municipal water supply reservoirs. The basis for this conclusion is documented in the October 1975 *Report on the Engineering and Economic Feasibility of Various Sites Investigated for the Development of a Natural Water Source Within Marin County* (MMWD 1975) and in the *Water Supply Master Plan* (MMWD 1989). Since those reports were completed, changes in environmental resource requirements have further limited MMWD's ability to expand its reservoir system. The coho salmon, steelhead, and California freshwater shrimp of Marin County are now listed as threatened or endangered species. The Endangered Species Act requires these populations to be protected and restored. Construction of new reservoirs or water diversion works would require the permission of federal and state environmental agencies. It would be difficult, if not impossible, to obtain such permission. Indeed, a current focus of the expansion of critical habitat for these species consists of considering whether to remove existing dams to restore historic spawning beds. For example, one current proposal is to remove a number of hydroelectric facilities from the Klamath River along the California/Oregon border. Against this backdrop, proposals to establish or expand existing reservoirs are considered infeasible, particularly where other water supply options are available.

Also, in 1996, the State Water Resources Control Board (SWRCB) required MMWD to release water to Lagunitas Creek to sustain and restore the fishery there. The releases required by the SWRCB consumed virtually all of the water supply associated with the Kent Lake enlargement project. More recently, a pending State policy mandated by Assembly Bill 2121 (the North Coast Instream Flow Policy) takes the position that Marin County streams are fully appropriated, remaining streamflows are not available for diversion, and no new on-stream reservoirs will be permitted.

Therefore, expansion of MMWD's reservoir system is unlikely to be allowed, and even if such a request were to be granted, the water releases required to support endangered fisheries would consume all of the water supply produced.

Regarding proposals to expand reservoir storage by dredging, during the droughts of the 1970s and 1990s, MMWD evaluated the potential increase in storage capacity that could be gained in the reservoirs by the removal of silt that had accumulated over the years. That review concluded that siltation had been minimal; therefore, removing silt from the reservoirs would not produce much added capacity. Furthermore, reservoir system yield is based on the storage calculated when the reservoir was constructed or enlarged; the yield does not take into account reduced capacity associated with the subsequent accumulation of silt. Therefore, dredging the reservoirs, even if it were practical, would not increase water supply and would only preserve the existing supply.

Removing enough material from around an existing reservoir to increase storage is also impractical. The length of time that would be required to navigate the federal and state

permitting processes, the potential effects to downstream aquatic resources, and the uncertainty of successful permitting make increasing storage at any of the existing reservoirs, either by dredging or by raising dam heights, at best speculative and not achievable within MMWD's required time frame for securing an additional water supply.

Expanded storage at any of MMWD's reservoirs would not be immune from drought, which is one component of the project objective as described in Section 3.2 of the EIR. MMWD's reservoirs depend on local rainfall. During periods of drought, MMWD's reservoirs do not fill to capacity. Dredging the reservoirs, and thus potentially increasing or maintaining their capacity, would not augment existing water supplies during periods of drought.

A number of commenters questioned the manner in which MMWD manages water from Soulajule Reservoir. MMWD uses this reservoir as a reserve water supply for MMWD. In a repeat of the drought of record, the reservoir would provide over 4,000 acre-feet of water to MMWD customers and over 5,000 acre-feet of water for the fishery of the Walker Creek basin. This reservoir thus enables MMWD to maintain water and fisheries supplies even during drought years. The reservoir drainage area is quite dry. If MMWD were to pump out this reservoir every year, as has been suggested, then the reservoir would be empty when the next drought occurs. In other words, the reserve supplies afforded by this reservoir would be unavailable during drought years, when such supplies are needed, and the water supply and fishery benefits would be lost.

### 2.2 COMMENTS ON CONSERVATION

#### CON-1 MMWD Conservation Programs

*Comment Summary:* MMWD should implement more conservation measures than just those listed in Section 6.4.2.1 of the EIR.

A number of commenters stated that MMWD should implement more conservation measures as a means of reducing the need for new water supplies. Under this view, more aggressive conservation would obviate the need for the proposed desalination project.

As discussed in Section 6.4.2.1 of the EIR, water conservation has been a priority of MMWD since the early 1970s. These efforts have reduced per capita water use in MMWD's service area to a level more than 15 percent below the peak use figure reached in the late 1980s. The following discussion summarizes MMWD's recent water conservation initiatives.

MMWD developed the *Water Conservation Master Plan (WCMP)* in 2007. In developing this master plan, MMWD contracted with an expert in water conservation programs, Maddaus Water Management, to analyze best management practices and their feasibility and cost for possible implementation in MMWD's service territory. Maddaus Water Management developed four alternative water conservation programs that could be implemented by MMWD to reduce future water demand. Each of the four alternatives includes selected technical saving and behavior saving conservation measures, which are designed to illustrate an increasing level of water savings for MMWD. Conservation measures considered include 10 Tier One measures, nine Tier Two measures, and 11 New Development measures.

Based on the recommendations from Maddaus Water Management, MMWD developed program alternatives for improvements to its conservation activities. The MMWD conservation programs include an Automated Meter Reading/Advanced Meter Infrastructure and Leak Detection

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Program, and Conservation Programs 1–3. **Table V2-1** lists program activities that would be accomplished during implementation.

In June 2007, the MMWD Board of Directors adopted the 2007 WCMP and instructed MMWD staff to implement Program 3 of the plan. Program 3 is the most aggressive and comprehensive of the programs set forth in the WCMP. The Board authorized funding for the WCMP at the maximum level for fiscal year 2008.

### **Current MMWD Program Status**

#### *Customer Response*

Weekly watering schedule e-mails are being sent to 550 landscape contractors and homeowners. MMWD regularly receives praise for this service as well as for its landscape rebate program and educational courses.

Feedback from customers who have participated in the High-Efficiency Toilet (HET) Rebate Program has been overwhelmingly positive. Customer satisfaction surveys are sent with HET rebate checks and, based on 355 returned surveys, the following was found:

- 94 percent of customers liked their new HET the same or more than their old toilet
- 96 percent answered that they were satisfied with their new HET
- 90 percent said they would recommend the HET they purchased to others

The only negative comments received were from customers who were denied rebates for replacing 1.6 gallon-per-flush (gpf) toilets. These complaints may be attributable to customers who either did not fully read the rebate program rules or who supplied information on the rebate application that indicated they had replaced a 1.6 gpf model (i.e., stated the age of their existing toilet as less than 12 years old, meaning it was purchased after 1.6 gpf models were mandated). Overall, customers found the HET Rebate Program easy to participate in and understand. The design of the rebate application has caused some confusion for MMWD customers, but this situation should be easily remedied with slight design modifications.

At the school sites retrofitted under the High-Efficiency Urinal Program, a recent survey of facility directors found they were very satisfied with the new urinals, rating the fixtures at a 9 on a scale of 1 to 10. Negative comments dealt with maintenance issues surrounding the replacement of the disposable cartridge that is used in the base of the urinal fixture. However, most negative comments concerning the cartridges are usually a result of janitorial staff not following the manufacturer's recommended cleaning procedures.

#### *Conservation Assistance Program*

Conservation Assistance Program surveys will continue to increase due to the addition of four new conservation staff members who joined the program in February. After intensive field and technical training for the new staff, MMWD began scheduling surveys on a daily basis beginning in April 2008.

In fiscal year 2008, 36 commercial, institutional, and industrial water use surveys were performed, with 23 of these since January 2008. The program has not been actively marketed by MMWD over the past several years; water use surveys have resulted from businesses seeking to qualify for Marin County's Green Business Program. However, new marketing brochures have

Table V2-1. MMWD Conservation Program Alternatives

Program	AMR/AMI & Leak Detection	Conservation Program #1	Conservation Program #2	Conservation Program #3
<b>Description</b>	Staff recommends that two positions be dedicated to leak detection. These positions would be classified as Utility Workers III, reporting to the Area Field Supervisor in the Facilities and Watershed Division. Based on past experience, it requires five years for one worker to survey all nine hundred miles of pipeline and sixty thousand meters in the District. With two Staff dedicated to leak detection, the task should be accomplished in three years. Automated Meter Reading (AMR) and Advanced Meter Infrastructure (AMI) technologies would replace existing meters and provide numerous technological opportunities for revenue recovery and conservation.	Program #1 is the “status quo” option – with program expenditures in FY ‘08/’09 similar to FY ‘07 levels. Program costs will change in response to inflation, staff salaries and benefits, and program implementation for all programs through 2030. New rebate programs initiated in FY ‘07 will be funded at partial levels, and customer saturation targets would remain at current levels. The Customer Assistance Program (CAP), water waste, and Time of Service programs will continue at minimum levels; and a new school education program will be initiated. Some website and database tools will be developed.	Program #2 includes increases in spending for rebates, staffing, and customer services beyond FY ‘07 levels. New rebate programs initiated in 2007 will be funded at higher levels, and CAP services will increase significantly for all customer types. Three new Conservation Specialist I positions would be added to perform field surveys and provide program support. One existing Conservation Specialist III position would be upgraded to an existing Conservation Coordinator position, and the Mid-Manager position will be upgraded to a Senior Manager position. A new School Education Program will be initiated and funded at increased levels. Improvements to public outreach and marketing, conservation databases, website development, contractor education, and regional development projects will also be accelerated.	Under Program #3 five new Conservation Specialist I positions will be added to perform field surveys and provide program support. One new Conservation Specialist II will be added to support School Education Programs. One existing Conservation Specialist III position will be upgraded to an existing Conservation Coordinator position, and the Mid-Manager position will be upgraded to a Senior Manager. Rebate programs will be funded at higher levels, and very significant improvements in the CAP programs will occur for all customer types. The new School Education Program will be funded at above average levels. Significant improvements will be made in public outreach and marketing, conservation database and website development, contractor education, research, and regional development projects.
<b>FY 2008/2009 MMWD Costs (per year)</b>	AMR/AMI – \$1,700,000 Leak Detection – \$272,000	\$1,800,000	\$2,700,000	\$3,300,000
<b>Staff Requirements</b>	AMR/AMI – to be determined Leak Detection – Add 2 positions	No new positions	Add 3 and upgrade 2 positions	Add 6 and upgrade 2 positions
<b>2015 Demand Reduction (AFY)</b>	AMR/AMI – to be determined Leak Detection – 400*	2,400**	2,800**	3,400**
<b>2030 Demand Reduction (AFY)</b>	AMR/AMI – to be determined Leak Detection – 800*	3,500**	3,900**	4,600**

\* Adapted from *Maddaus Water Management Conservation Technical Analysis* (Appendix A of MMWD’s 2007 *Water Conservation Master Plan*), Appendix A, Table 4, page 20. Savings are calculated as a “30-year Average.”

\*\* Adapted from *Maddaus Water Management Conservation Technical Analysis* (Appendix A of MMWD’s 2007 *Water Conservation Master Plan*), Appendix A, Table 8, page 35. Savings includes plumbing code minus Leak Detection Program savings.



recently been completed and targeted marketing of this program will begin in early May, with an expectation of completing roughly 20 water use surveys per month.

### *Education, Marketing, and Public Outreach*

Education, marketing, and public outreach efforts included hosting public events; K–12 and professional training classes; and direct mailing.

The School Education Program has reached more than 3,500 K–12 grade students since the start of the 2007–2008 school year through MMWD-sponsored activities conducted by Next Generation, Watershed Project, and Cancel-a-Car Programs. An additional 2,000 students participated in the Marin Farm Days event sponsored by U.C. Cooperative Extension and staffed by MMWD.

MMWD is offering assistance to local school gardens in the form of teacher training, technical support, and grants up to \$2,000. In March and April, teacher training workshops were held in San Rafael and attended by 30 Marin educators. Workshop attendees gave high marks to all workshop activities in their post-workshop evaluations.

MMWD worked with Cancel-a-Car Program staff to develop a hands-on activity for students to demonstrate the link between water and energy use. This pilot activity was featured in the Water Conservation Spotlight activity at Bacich Elementary School in March. Members from the school’s “Green Team” participated in a relay race, pitting a “water-wise” house against a “water-wasting” house. Information about water conservation and a flyer promoting MMWD’s water conservation programs was sent home with each of the 500 students at Bacich Elementary School. These activities are scheduled to be expanded in the near future to include other schools in Marin.

MMWD sponsored the first GreenPlumber® training workshop in the United States in January 2007. It sponsored two additional workshops in fiscal year 2008 (September 2007 and April 2008), with a total attendance of 28 plumbers. GreenPlumbers® was developed by the Master Plumbers’ and Mechanical Services Association of Australia. The enormously successful training and accreditation program is being introduced in the United States through an exclusive agreement between Mechanical Services Association of Australia and the Plumbing-Heating-Cooling Contractors of California. The program provides environmental training for journey-level plumbers on a no-fee basis, with program funding supplied through government, agency, utility, and manufacturer partnerships. A trained, conscientious GreenPlumber® becomes an advocate for the water and energy concerns of the community and can impact the water and energy consumption habits of up to 750 houses per year.

MMWD-sponsored landscape training programs reached more than 750 professional landscape contractors and gardeners. Classroom and public training events included a three-day Bay-Friendly Garden Walk course created by MMWD; 39 days of Bay-Friendly and Qualified Water-Efficient Landscape training offered in English and Spanish; participation in the California Landscape Contractors Association open forum; the first-ever Bay-Friendly Landscape Conference at U.C. Berkeley; Master Gardeners Apprentice Education Day; and two days of “Smart” controller training provided by Ewing Irrigation.

MMWD staff also participated in a variety of public events, answering customers’ questions and providing program information. These included events with Fire Safe Marin at local schools, the

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Peacock Gap Garden Club, Mill Valley Outdoor Art Club, Environmental Forum of Marin, and Earth Day at Kaiser Permanente.

A variety of marketing materials have been designed, produced, and distributed to MMWD customers since January:

- The special May/June edition of *On the Waterfront* was dedicated to conservation.
- In March, over 100 letters offering Conservation Assistance Program surveys were mailed to customers with dedicated irrigation meters using water at Tier 3 levels.
- An “all-in-one” program brochure is in the final stages of design and will be distributed as a bill insert.
- A Conservation Assistance Program postcard and a Commercial Program brochure are currently being printed.
- MMWD co-produced new HET applications with East Bay Municipal Utility District.
- MMWD co-produced new HET applications with Pacific Gas & Electric Company (PG&E).
- Press releases.
- Website updates.

### *Incentives*

The High-Efficiency Toilet and Urinal Programs continue to be favorites among customers, showing a steady increase in rebates. Retail outlets are now actively promoting the rebates and stocking a larger number of toilet models. Market transformation is occurring as plumbing contractors become more familiar with the new models and positive customer response drives demand.

There is a waiting list of approximately 100 units for the High-Efficiency Urinal program, which was temporarily suspended after exceeding the annual program targets by 97 units (39 percent). This program will be restarted as soon as additional funds are available.

The contract for the High-Efficiency, Direct-Install Toilet Program was finalized in March 2008. More than 300 HET retrofits have been completed or are in progress in multifamily and nonresidential sites, and sites with an additional 400 retrofits have been identified and are in negotiations. The contract has been delayed for a number of reasons. Most notable, the make and model of the program HETs have been changed twice as problems were discovered with product availability or performance. Staff is confident that the current HET to be used – Caroma “Sydney Smart” – will provide both dependable water savings and high customer satisfaction. Caroma, an Australian company, is the world leader in developing dual-flush toilet technology, and the “Sydney Smart” line, which flushes at 1.28 / 0.8 gallons, ensures that even if customers choose the “full flush” option 100 percent of the time, MMWD will still achieve dependable water savings.

After 10 years of operation, customer participation in the Residential Clothes Washer Rebate Program remains strong. Currently, 85 percent of rebates paid by MMWD are for the highest-efficiency clothes washers. Beginning January 1, 2008, MMWD, along with other Bay Area water agencies, joined forces with PG&E to offer a combined water and energy rebate program, streamlining the application process for customers.

The Bay-Friendly Landscape Rebate Program has seen a significant increase in activity leading into the irrigation season, with 27 new applications received in the last weeks of April alone. With the addition of the Bay-Friendly Garden Walk Program in May, MMWD expects rebate levels will continue to increase through fall 2008.

### *Staff Training*

Staff completed a total of 61 days of training including advanced Access programming, Bay-Friendly Landscape and Basic-Conservation principles, Live-Link, Green Builders, Green Plumbers, Auditor Certification, Bio-diversity, Employee Management, Customer Service, and MMWD-required courses.

### *Conservation Database*

The development of the conservation database is proceeding as planned. Currently over 90 percent of historical conservation data have been migrated to SAP, a user-friendly reporting screen has been designed, and a majority of the individual Access programs have been reprogrammed to be compatible with SAP.

The approval of the 2007 WCMP, and the funding and implementation of the programs set forth in the WCMP, demonstrates that MMWD remains committed to aggressive implementation of water conservation measures. This commitment is expected to continue in the future. An aggressive conservation program will continue to be implemented regardless of whether MMWD approves the desalination project.

As the EIR explains, the desalination project is designed to augment MMWD's existing supplies to meet existing and anticipated demands. Conservation is one means of meeting those demands. As described in Section 3.4 of the Draft EIR, MMWD is expecting to meet half of the projected supply shortfall in 2025 through implementation of the conservation program described in Section 6.4.2 of the EIR (also known as Program 3 of the 2007 Water Conservation Master Plan). Additional demand reduction beyond the 3,400 acre-feet per year of savings expected from Program 3 will require either additional deployment of water-saving technologies beyond the extensive level planned, or would require implementing other conservation measures that have not been widely demonstrated. Because Program 3 already necessitates the actions of a large number of MMWD customers to be successful, MMWD is taking on a significant level of risk that such actions will result in the anticipated savings. For this reason, additional savings from conservation programs beyond Program 3 are speculative. For this reason, additional conservation programs are not considered to meet the project objective.

## **CON-2 Rainwater Catchment**

*Comment Summary: The Draft EIR did not include water catchment in Alternative 2.*

**Master Response CON-2:** Rainwater catchment systems have been used in both urban and rural settings worldwide, including Marin, throughout human history. The design and cost of these systems varies depending on a variety of factors, including amount and frequency of rainfall, total system demand, and availability of alternative water sources. Due to the Mediterranean climate in Marin, where the dry season lasts for 7 to 9 months, a rainwater catchment system would need to be sized according to the desired percentage of seasonal irrigation or potable water demand the system would be expected to supply.

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Storage facilities range from inexpensive passive earthforms (rain gardens and drywells) to more expensive surface-installed rain barrels or in-ground cisterns. The average MMWD property owner would be most likely to invest in a system that would store enough rainwater to adequately irrigate landscaping for only part of the dry season. With this approach, many property owners would be able to reduce some portion of their annual demand for irrigation water.

Improving irrigation and landscape water use efficiency is the first step in designing a rainwater catchment system. Because of the costs required to purchase a catchment system, the water demand of the existing or new landscape should be reduced to the greatest possible extent before the system is sized. This includes improving soil tilth, reducing unused lawn areas and other high-water-using plants, removing outdated irrigation sprinklers and replacing them with high-efficiency systems, carefully monitoring irrigation applications, and contouring the landscape to capture as much rainfall as possible. Each of these actions reduces the long-term water demand at the property, regardless of the size of the rainwater catchment system.

Due to the topography and soil conditions in the MMWD service area, it is usually most economical to install rainwater catchment systems on the surface rather than as buried cisterns. High-density polyethylene containers (ranging in cost from \$0.50 to \$2.50 per gallon and in size from 55 to 1,000 gallons or larger) are most commonly employed in urban settings as they are lightweight and relatively easy to install. To install a system that would provide enough water to be of any significance in meeting the annual irrigation needs of a typical MMWD customer, the cost of the system would range from \$3,000 to \$5,000, which includes the storage systems, pumps, and backflow protection devices necessary to connect the rainwater collection equipment to a standard sprinkler system. The cost per acre-foot of these systems would be 4 to 5 times that of desalination, making them infeasible compared to other water supply and demand reduction alternatives. As a result, these systems are not considered feasible on a large-enough scale to provide meaningful supplies.

### CON-3      **Gray Water Use**

*Comment Summary: The Draft EIR did not include gray water use in Alternative 2.*

**Master Response CON-3:** Gray water is untreated, non-disinfected wastewater that has not come into contact with toilet waste. Gray water includes wastewater from residential showers, bathtubs, bathroom sinks, and washing machines. In 1997, California adopted Appendix G of the Uniform Plumbing Code as the only legal method of installing gray water systems. The code allows gray water to be used only for subsurface irrigation and requires installation of a mini-leachfield. These and numerous other safeguards have made legal gray water systems prohibitively expensive and impractical. As a result, few legal systems have been built in Marin County or elsewhere in California. Until California changes the code requirements for gray water systems, there is little potential for the increased use of these systems.

2.3 COMMENTS ON ENERGY USE

EN-1 Energy Use

*Comment Summary:* The desalination project would have significant energy impacts, but the Draft EIR states that energy impacts would be less than significant. A formal mitigation plan should be developed.

**Master Response EN-1:** As set forth in Section 15126.4 and Appendix F of the CEQA Guidelines, CEQA promotes the wise and efficient use of energy. The amount of energy that would be used by the proposed desalination plant is not, in itself, a significant impact. The question is whether the energy consumption is necessary and efficient, and whether the generation of energy required by the plant will cause significant environmental impacts.

*Justification for Energy Use*

Based on the planning studies summarized below, MMWD has determined that the proposed project is a reasonable way of providing high-quality, reliable potable water to help balance water supply and demand in MMWD's service area. Therefore, MMWD believes that the project is an appropriate use of energy.

As discussed in the EIR, water conservation efforts have reduced per capita water use in MMWD's service area to a level more than 15 percent below the peak use figure reached in the late 1980s. At present, it is estimated that MMWD's water recycling operation offsets over 950 AFY of potable water use. With successful implementation of MMWD's 2007 WCMP, water demand could be reduced by up to 3,400 AFY in 2025. This conservation plan is the same as Alternative 2 presented in the EIR. Even with the upper range of conservation set forth in the Master Plan and water recycling, the 2025 projected deficit in water supply would not be eliminated. The only practicable way that has been identified to eliminate this deficit is to increase water supply.

MMWD cannot obtain additional water yield from its watershed. In fact, that yield has decreased since 1995 when the State Water Resources Control Board ordered MMWD to increase the volume of water it releases from its reservoirs in dry years to support the fishery downstream of MMWD's dams. The SWRCB's order decreased the amount of water available to MMWD customers in dry years by about 2,500 AFY.

MMWD's other existing source of water is a contract with Sonoma County Water Agency (SCWA) for up to 14,300 AFY of water from the underflow of the Russian River. At present, full delivery of this volume of water is precluded by lack of pipeline capacity between Petaluma and Novato, as well as decreased surplus capacity in the pipelines that deliver water from the Russian River to SCWA customers.

In addition, there is uncertainty regarding the amount of water that SCWA will be able to withdraw from the Russian River drainage in the future. SCWA's water supply facilities and operations have the potential to adversely affect the federally threatened chinook salmon and steelhead and the endangered coho salmon. For this reason, SCWA entered into a Memorandum of Understanding (MOU) in December 1997 to participate in a consultation under Section 7 of the Endangered Species Act with NOAA Fisheries. On September 26, 2008, NOAA Fisheries

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issued a Biological Opinion under Section 7 and the MOU. The Biological Opinion evaluates the effects of SCWA activities on these listed species.

The Biological Opinion finds that some water supply and flood control activities jeopardize threatened fish. The Biological Opinion calls on SCWA and the U.S. Army Corps of Engineers to eliminate or reduce these impacts through a set of measures called “reasonable and prudent alternatives.” One such measure would require SCWA to request the State Water Resources Control Board to reduce summertime flows below Warm Springs Dam beginning in 2010. If implemented, this measure could affect SCWA’s ability to increase deliveries of water to its customers in the future. At this time, there is no way to know how the terms of the Biological Opinion will affect future deliveries to MMWD. The Biological Opinion creates uncertainty, however, regarding whether MMWD would be able to obtain full delivery from SCWA in the event pipelines between MMWD and SCWA are upgraded.

Because of population growth, there are no other water agencies in the San Francisco Bay Area that MMWD can contract with for a firm, committed water supply in drought conditions. Given the decrease in the supply from its own watershed and the uncertainty of receiving supplemental supplies in the future from SCWA, desalination is a reasonable alternative for augmenting MMWD’s existing water supply.

### *Desalination Energy Demand*

Removal of salt from San Francisco Bay water requires approximately 75 percent of the energy that would be used for the proposed desalination project. The balance of the energy would be for the same treatment and transmission steps that MMWD uses for all of its other water sources.

As discussed in Chapter 3.0 of the EIR, the proposed project would use reverse osmosis (RO) technology to remove salt from the Bay water. In RO, feedwater is pumped at high pressure through permeable membranes, separating salts from the water. Generating the necessary high pressure uses a large amount of energy as indicated in this comment. However, technological advancements in RO have reduced the energy demand to a level at which desalination has become a practical way of producing freshwater. These advances include: new membrane materials that operate at lower pressures; and the recovery of over 90 percent of the pressure energy in the brine waste stream created by the RO process that is then used to pressurize the feedwater. In 1980, it took approximately 30.7 kilowatt hours (kWh) to generate 1,000 gallons of freshwater using RO. For this project, the energy required to produce 1,000 gallons of freshwater and deliver it into MMWD’s distribution system would range from 10 kWh in normal weather years to 14 kWh in droughts.

The average MMWD household uses 270 gallons of water per day. At 10 to 14 kWh/1,000 gallons of water, the desalination plant would require approximately 2.7 to 3.8 kWh/day of power to produce 270 gallons/day of water. This is less than half of the energy used by a typical household refrigerator in a day (7.5 kWh/day).

As indicated above, the use of energy for the desalination project is necessary because the plant would provide a reliable supply of water for MMWD customers, particularly during drought conditions. Modern RO technology would also ensure that the energy would be used efficiently.

As discussed in Chapter 5.0 of the EIR, the amount of electricity that would be used for the desalination plant depends on the size of the plant and the hydrologic conditions in a given year. It is estimated that the electrical requirements for the project would range from 10,037,500

kilowatt-hours per year (kWh/yr) for a 5 MGD plant during average conditions to 76,650,000 kWh/yr for a 15 MGD plant during drought conditions. These energy demand estimates include all of the energy required for the project including water intake, pretreatment, RO, and transmission of the freshwater to MMWD's existing San Quentin Ridge tanks where it would be fed into MMWD's transmission system.

The proposed MMWD desalination plant would use the most advanced and efficient RO system technology, including energy recovery devices, high-efficiency pumps, variable-speed drives, and high-efficiency membrane elements. Future repairs, maintenance, and upgrades will be designed to further enhance energy efficiency of the plant.

### *Impacts on Regional Energy Supply*

The daily supply and demand for electrical power within PG&E's service area depends on many factors, the most common of which is weather. During hot summer months, peak electrical demand is typically at its highest. PG&E and other utilities maintain an operating reserve to account for unexpected peak electrical demands such as hot summer days. Dropping below this level of reserve triggers additional purchases of power and calls for demand response and voluntary interruptible programs to reduce load. The California Independent System Operator calls warning stages at 7 percent (Stage 1) and 5 percent (Stage 2). Stage 3 is called when reserves fall to a level between 3 and 1.5 percent, depending on the specific operating conditions. As discussed in Section 5.2 of the EIR, PG&E delivered 81,626 gigawatt-hours (GWh) of electricity in 2005. Of this total, customers consumed 72,727 GWh, or 89 percent of the total electricity delivered. Therefore, in 2005, PG&E had an average reserve margin of 11 percent. The highest power demand of the proposed project would be less than 1 percent of the average reserve margin. The California Energy Commission has estimated that the electricity margins for 2008 are approximately 22 percent for California under average summer weather conditions. Even under hotter-than-average conditions, the reserve margins are approximately 14 percent. Based on these data, no new power plants would be required to serve the proposed project even at maximum buildout of 15 MGD. In addition, existing power plants would not need to operate above permitted levels to serve the project.

### *Renewable Energy and Community Choice Aggregation*

MMWD is committed to expanding its use of renewable energy. At present, MMWD is designing three solar power projects that will produce a total of about 500,000 kWh/yr.

Another promising opportunity for the use of renewable energy is through community choice aggregation. Assembly Bill 117 authorizes the formation of community choice aggregators to aggregate the electrical load of interested electricity customers within its boundaries to reduce transaction costs to customers, provide consumer protections, and leverage the negotiation of contracts. Marin County is a participant in the Local Government Commission Community Choice Aggregation Demonstration Project, which was commissioned by the California Energy Commission and the United States Department of Energy to assist local governments in evaluating and implementing Community Choice Aggregation. MMWD has participated in the feasibility studies and business planning associated with the development of the Community Choice Aggregation program in Marin County.

A principal goal of a Marin Power Authority, or Marin Clean Energy, to be implemented under Community Choice Aggregation rules would be to increase the mix of renewable power supplied

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to Marin County to 50–100 percent. As a customer of Marin Clean Energy, MMWD would be able to select the mix of renewable power that it would need to eliminate any greenhouse gas emissions associated with any increase in energy use associated with a desalination facility.

MMWD is also exploring the purchase of green energy credits to offset the use of fossil fueled power for the proposed project.

See Master Response GHG-1 with regard to greenhouse gas emissions.

### *Conclusion*

As indicated above, the proposed project represents an appropriate use of energy and has been designed to use that energy efficiently. Therefore, the project would not result in a significant energy impact. Because the impact is less than significant, there is no requirement for mitigation measures under CEQA.

## 2.4 GENERAL COMMENTS ON THE DRAFT EIR

### **GEN-1 Public Vote on MMWD Desalination Plant**

*Comment Summary: The public should have the right to vote on desalination.*

**Master Response GEN-1:** There is no specific requirement that the proposed desalination project go before the electorate for a vote of approval. The MMWD Board of Directors could, at its discretion, place the proposed project on a ballot for an advisory vote. Depending on the final funding source or sources used to construct and operate the plant, State law may require MMWD to place the matter before the electorate with regard to the financing mechanism. At this time, it is unknown whether such a financing mechanism would be used. Absent a funding mechanism requiring a public vote, whether to place the project on the ballot for an advisory vote is a matter of policy. The requests for a vote are noted and will be considered by MMWD in the event that the project is approved.

## 2.5 COMMENTS ON GREENHOUSE GAS EMISSIONS

### **GHG-1 Project-Related Greenhouse Gas Emissions**

*Comment Summary: The Draft EIR fails to adequately analyze greenhouse gas (GHG) emissions of the project.*

**Master Response GHG-1:** A number of comments stated that the GHG analysis for the proposed project compared project-level GHGs with statewide, national, and world GHG emissions but did not evaluate local conditions. The following compares GHG emissions of the project with the per capita carbon footprint in Marin County.

MMWD has estimated that its operations generate approximately 12,206 tons of GHG emissions per year. A small portion of these emissions are associated with the operation of motor vehicles for MMWD business. Almost all of the emissions come from the electricity purchased by MMWD from PG&E. That is, MMWD's GHG emissions are indirect; GHGs are emitted by PG&E in the course of generating electricity that is subsequently used by MMWD.

This would also be the case for the proposed project. A small amount of GHG emissions would be generated from vehicles used by MMWD staff to travel to and from the plant. The majority of the facility’s GHG emissions would be indirect, resulting from the purchase of electricity to operate the plant.

Not all of PG&E’s power is generated from burning fossil fuels. PG&E is a relatively “green” source of energy. The company serves 5 percent of the country's population, yet it emits less than 1 percent of the total carbon dioxide (CO<sub>2</sub>) associated with the nation's electricity production. Due to its power mix, PG&E’s average CO<sub>2</sub><sup>1</sup> emissions per kilowatt-hour (kWh) of electricity are 0.524 pound of CO<sub>2</sub> per kWh. As shown in **Table V2-2**, PG&E’s CO<sub>2</sub> emissions from electricity are already well below both California and U.S. averages due to the utility’s aggressive program to use renewable and low-carbon fuels for electricity generation.

**Table V2-2  
Carbon Dioxide Emissions per Delivered Kilowatt-Hour**

	<b>PG&amp;E</b>	<b>California</b>	<b>United States</b>
Lbs CO <sub>2</sub> /kWh	0.524	0.879	1.363

Source: PG&E 2008, EPA 2007

The company is adding more renewables to its power mix under California’s renewable portfolio standard program and now has contractual commitments to have more than 20 percent of its future deliveries come from renewable energy sources.

As discussed in Section 6.3.11 of the EIR, Marin County is a participant in the Local Government Commission Community Choice Aggregation Demonstration Project, which was commissioned by the California Energy Commission and the U.S. Department of Energy to assist local governments in evaluating and implementing Community Choice Aggregation. A principal goal of a Marin Power Authority, or Marin Clean Energy, to be implemented under Community Choice Aggregation rules would be to increase the mix of renewable power supplied to Marin County to 50–100 percent. As a customer of a Marin Power Authority, MMWD would be able to select the mix of renewable power that it would need to eliminate any GHG emissions associated with any increase in energy use associated with a desalination facility.

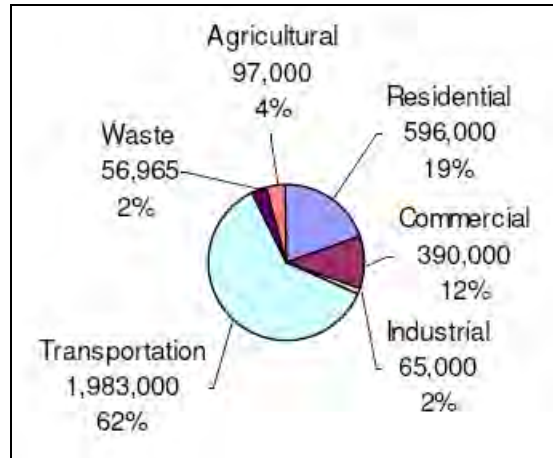
According to the Marin County Re-inventory of Greenhouse Gas Emissions (September 2007), total greenhouse gas emissions in Marin County were 3,188,522 tons of CO<sub>2</sub>e (CO<sub>2</sub> equivalents) in 2005. Although countywide emissions decreased from 2000 to 2005, they increased about 6 percent from 1990 levels. GHG emissions associated with MMWD represent approximately 0.38 percent of countywide emissions.

A breakdown of countywide GHG emissions is shown in **Figure V2-1**. The bulk of these emissions (62 percent) are from the transportation sector, followed by the residential sector (19 percent).

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<sup>1</sup> Although other greenhouse gases are emitted due to electricity generation, CO<sub>2</sub> is by far the most significant GHG emitted, accounting for about 99.8 percent of GHG emissions due to electricity generation. Thus, CO<sub>2</sub> emission factors are used for comparison in Table 2-2. See Table 7-2 in the EIR for detailed GHG emissions estimates due to electricity generation.

**Figure V2-1. Marin Countywide GHG Emissions (2005)**



**Source:** Marin County Community Development Agency 2007, p. 6

The California Department of Finance estimated the Marin County population at 252,988 in 2005, the most recent year for which countywide GHG emissions are available. Therefore, per capita GHG emissions for the county in 2005 were approximately 12.6 tons per year. GHG emissions from the proposed desalination plant would range from approximately 4,000 tons per year (for the 5 MGD plant) to approximately 30,000 tons per year (for the 15 MGD plant), increasing the per capita GHG emissions for Marin County by 0.016 to 0.12 ton per year. This represents a per capita increase of GHG ranging from 0.13 to 0.95 percent. The proposed desalination project would not make a significant contribution to the total or per capita GHG emissions in Marin County when compared with other GHG sources such as transportation and residential emissions. However, without offsets in GHG emissions, the project would not be consistent with the County's and MMWD Board of Director's goals of reducing GHG emissions. In keeping with policy adopted by the Board, MMWD plans to implement GHG emission reduction measures to offset the emissions associated with the proposed desalination plant.

The desalination plant would incorporate state-of-the-art energy-efficient appliances and fixtures to reduce the electricity needed to the lowest amount possible. MMWD is planning to install a solar array to power the water pumps at the Bon Tempe Reservoir. MMWD also plans to install solar panels on the roof of its headquarters. These projects will generate about 500,000 kWh per year, reducing MMWD's GHG emissions by about 150 tons per year. Other measures that MMWD is exploring to reduce energy use and its GHG emissions include the following.

**Increase energy efficiency in buildings and other equipment.** Increasing energy efficiency takes many forms, including retrofitting buildings' heating, ventilating, and air conditioning systems and replacing older water pumps with more efficient models. MMWD will conduct building energy audits and equipment audits to identify the most cost-effective opportunities with the greatest GHG emission reduction potential.

**Replace conventional vehicles and construction equipment with alternatively fueled vehicles and equipment.** A number of alternatively fueled vehicles and equipment are available, including those using biodiesel, ethanol, electricity, and natural gas as well as hybrid vehicles. All of these fuel options reduce GHG emissions in the fuel usage phase, or in the process of making the fuel, or both. For example, biodiesel reduces GHG emissions because the plants that

are used as feedstock for the biodiesel are assumed to take CO<sub>2</sub> (the most common GHG emission) from the atmosphere while they are growing. Although the biodiesel fuel that is made from these plants eventually emits CO<sub>2</sub> during combustion, these emissions are balanced by the intake of CO<sub>2</sub> that occurs during the growth of the feedstock plants. In another example, the electrical motor is more efficient than the standard internal combustion engine, and emissions are reduced in the fuel usage phase. Also, some of the electricity purchased from PG&E comes from renewable sources, also leading to lower GHG emissions in the process of making the fuel. MMWD will evaluate the potential for using alternative fuels in its vehicle fleet.

**Optimize MMWD fleet usage.** By studying the MMWD fleet and how it is used, MMWD may find opportunities to cut or reduce trips.

**Provide incentives for employees to commute using alternative modes of transportation.** The employee commute is a large component of the GHG emissions generated in Marin County. MMWD will examine providing incentives to employees to reduce individual commuting in cars, such as discounts on bus passes or parking spots reserved for carpools.

**Implement telecommuting for employees.** MMWD will evaluate opportunities for employees to work from home one or more days per week to avoid generating GHG emissions from commuting.

**Implement a bicycle or neighborhood electric vehicle program.** MMWD will consider providing bicycles or neighborhood electric vehicles for short-distance, work-related trips.

**Install Energy Star roofs.** MMWD will evaluate the installation of Energy Star labeled roofs on its buildings to reduce heat absorption.

MMWD has adopted a GHG emission reduction target comparable to that adopted by Marin County and by the State of California in Assembly Bill 32. MMWD is committed to reducing the GHG emissions associated with its operations, even those that are not directly emitted by MMWD. While the direct and indirect GHG emissions associated with a desalination plant are less than significant in comparison to existing GHG emissions from both Marin County and the State of California, MMWD plans to offset these emissions through the use of renewable power, renewable energy credits, or other mechanisms.

## 2.6 COMMENTS ON WATER QUALITY

### WQ-1 Oil Spills

*Comment Summary: What would happen if an oil spill occurred near the desalination plant intake?*

**Master Response WQ-1:** The proposed desalination plant would be equipped with petroleum product sensors that would both automatically shut down the facility and provide immediate notice to the facility operator, who could manually shut down the facility if the automated systems failed to respond. The automatic systems can shut down facilities nearly instantaneously. This is necessary because an oil spill or leak could damage the desalination plant's microfiltration/ultrafiltration (MF/UF) pretreatment membranes.

The desalination pilot study (Kennedy/Jenks Consultants 2007; see Appendix B) tested for hundreds of contaminants, including carcinogens, that could be released during an oil spill. The

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study demonstrated that RO removes regulated organics—organic chemicals for which regulatory limits exist—and ultra-low-level nonregulated constituents from source water. In the event of an oil spill, the desalination plant would return to operation after sufficient clean-up efforts were completed, and lingering contaminants in the source water would be removed by RO. The ability of RO to remove petroleum contaminants has been demonstrated at desalination plants in the Persian Gulf.

Water supplied by the desalination plant would not contain oil or toxic substances released during oil spills. As with MMWD's current water treatment system, water from the desalination plant would be regularly tested. If certain constituents are detected at unacceptable levels, MMWD will take corrective action, including ceasing delivery and notifying the public.

It should be noted that no oil from the November 2007 Cosco Busan spill came within the vicinity of the Marin Rod & Gun Club pier where the desalination plant intake would be located.