BEFORE THE STATE WATER RESOURCES CONTROL BOARD

In the Matter of the State Water Resources Control Board (State Water Board) Hearing to Determine whether to Adopt a Draft Cease & Desist Order against California American Water Regarding its Diversion of Water from the Carmel River in Monterey County under Order WR 95-10	Hearing Date: July 23 - 25, 2008 Carmel River in Monterey County

EXHIBIT MPWMD-JO1

TESTIMONY OF JOSEPH W. OLIVER

WATER RESOURCES MANAGER

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

TESTIMONY OF JOSEPH W. OLIVER

I, Joseph W. Oliver, provide the following prepared testimony (**Exhibit MPWMD-JO1**) under penalty of perjury, under the laws of the State of California, in relation to the State Water Resources Control Board (State Water Board or SWRCB) hearing to determine whether to adopt a draft Cease and Desist Order (CDO) against California American Water (CAW or Cal-Am) regarding its diversion of water from the Carmel River in Monterey County under SWRCB Order WR 95-10.

Q1. PLEASE STATE YOUR NAME AND QUALIFICATIONS

1. My name is Joseph W. Oliver. My education includes a bachelor's degree in geology, and master's degree in geology, specializing in hydrogeology, from Indiana University. I am a registered Professional Geologist (No. 4604) and Certified Hydrogeologist (No. 164) in California, and a Certified Professional Hydrogeologist (No. 964) with the American Institute of Hydrology. My professional membership includes the National Ground Water Association and the California Groundwater Association. I have 29 years of professional experience in the field of ground water hydrology, working for government agencies and private industry. I have been working at the Monterey Peninsula Water Management District (MPWMD or District) for the past 23 years, where I am presently employed as the Water Resources Manager. My resume is provided as **Exhibit MPWMD-JO2.**

2. During my employment with the MPWMD, I have been involved in analysis and development of the ground-water resources within the District, with particular emphasis on the Monterey Peninsula Water Resources System (MPWRS). The MPWRS includes the Carmel River Alluvial Aquifer and the coastal portion of the Seaside Ground Water Basin. A map

depicting areas included in the MPWRS is included as **Exhibit MPWMD-JO3**. I have authored or co-authored numerous technical documents related to the ground-water resources of the District, and have served as project manager on all hydrogeologic investigations conducted for the District since 1985. Currently, a significant focus of my work is on implementation of the Phase 1 Aquifer Storage and Recovery (ASR) Project in the Seaside Basin. This project is the culmination of a 10-year ASR feasibility analysis and testing program in the basin conducted by the District.

Q2. PLEASE PROVIDE AN OVERVIEW OF THE AQUIFER STORAGE AND RECOVERY TESTING PROGRAM LEADING TO DEVELOPMENT OF THE PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT.

3. Over the past 10 years, the MPWMD, in cooperation with California American Water (CAW), has been evaluating the feasibility of ASR in the basin, which in the simplest terms, relies on diversion of seasonally excess winter flows from the Carmel River Basin to artificially recharge the Seaside Basin. The project concept promotes the conjunctive use of the area's water resources, and has the potential to significantly reduce impacts associated with low-flow season production from the CAW Carmel River Basin sources.

4. In 1996, the District Board of Directors adopted a Water Augmentation Plan that relied on development of new water supplies that did not include a new mainstem dam on the Carmel River. This plan directly resulted from the District-wide ballot measure in November 1995, which did not authorize the District to move forward to secure funding for the New Los Padres Reservoir Project. Accordingly, I recommended to the Board that the District should begin exploring the ASR concept in the Seaside Basin in a stepwise fashion, to ensure the feasibility of the ASR technology in the local hydrogeologic setting. When the MPWMD Board directed staff to focus on non-dam water supply alternatives, it also indicated that staff should take actions, as needed, to preserve and protect the federal, state, and local permits that had been

obtained for the New Los Padres Reservoir Project, including Permits 7130B and 20808. These actions ultimately facilitated State Water Resources Control Board (SWRCB) water rights authorization for the Phase 1 ASR Project.

5. In late 1996, the District and its consultant team initiated an ASR-testing program in the Seaside Basin, beginning with a demonstration test at an existing inactive CAW well in the coastal area of the basin. This testing was conducted at the CAW Playa #4 well, and consisted of a short-term injection test to better assess the hydraulic response to injection in this area of the basin. Based on the successful results from this demonstration test, the District next began searching for a location to conduct more rigorous injection testing in the shallower of the two principal aquifers in the basin, the Paso Robles Formation. If ASR was determined to be feasible using the Paso Robles Formation as the target aquifer for injection, then capital and operation costs of a full-scale project would theoretically be less than a similar project using the deeper of the two principal aquifers, the Santa Margarita Sandstone.

6. In 1997, I facilitated land-use negotiations to secure approval to install a test well in an unused portion of the Mission Memorial Park cemetery in Seaside. This site was strategically suitable due to its location between two of CAW's two largest production wells in the basin, the Ord Grove #2 and Paralta wells, where over time a large ground-water trough had developed due to the concentrated pumping in this area of the basin. The Paso Robles Test Injection Well (PRTIW) was constructed in 1998, and rigorous injection testing was conducted at the well over the next two injection seasons. The PRTIW is 12 inches in diameter and 460 feet deep. As a result of this testing, it was determined that while ground-water injection into the Paso Robles aquifer was feasible in the basin, the limiting hydrogeologic characteristics of this aquifer were not favorable for full-scale ASR project development. This was primarily due to the inability to "backflush" the well (i.e., pump in recovery mode) at the desired rates for efficient ASR operations. Backflushing of ASR wells is crucial to a successful program in order to prevent well and aquifer "clogging" due to build-up of fine particulate matter that can be

swept into the well during injection. Under recommended ASR operations, wells should be backflushed at twice the rate of injection, to reduce the potential for loss of long-term well performance due to clogging. Based on the results of injection testing at the PRTIW, it was determined that the maximum capacity of backflushing for Paso Robles aquifer wells in this area would likely not exceed 350 gallons per minute (GPM), thereby limiting injection rates at individual wells to approximately 175 GPM. A full-scale ASR project would, therefore, require a large number of Paso Robles aquifer ASR wells, in an area where potential new well locations are few and challenging to acquire. Accordingly, I recommended to the District Board that a full-scale ASR project relying on the shallower Paso Robles aquifer not be pursued further, and that subsequent feasibility testing should be focused on the deeper Santa Margarita aquifer.

7. As the next step, beginning in 1999, I facilitated District negotiations to secure a site on former Fort Ord property to construct a test well into the Santa Margarita aquifer, which at that time had not been explored for ASR testing purposes. The Santa Margarita aquifer has more favorable hydrogeologic characteristics for ASR well performance, but ASR wells would be more expensive to construct and operate than the Paso Robles aquifer wells. In 2000, the District secured final approval for an available site within a former ammunition firing range that had undergone early investigation for clearance of munitions and explosives of concern (MEC), i.e., military ordnance. This site was also strategically located on the up-gradient side of the large ground-water trough near the two largest-producing CAW production wells in the basin. The Santa Margarita Test Injection Well #1 (SMTIW #1) was constructed in 2001; it is 18 inches in diameter and 720 feet deep. Extensive injection testing operations were conducted by the District and its consultant team at the well from Water Year (WY) 2002 to WY 2008. The location of the SMTIW #1 in relation to the PRTIW well is shown on the map in **Exhibit MPWMD-JO4**. This testing demonstrated that injection and recovery rates of 1,000 GPM and 2,000 GPM, respectively, were attainable at the SMTIW #1 facility. During this period, a total of 1,340 acre-feet (AF) of treated water was diverted from the CAW's sources in Carmel Valley

for injection at the SMTIW #1 well. The combined injection diversions for both the PRTIW and SMTIW #1 (now referred to as ASR-1) wells have totaled 1,936 AF to date (**Exhibit MPWMD-JO5**). These diversions for injection were conducted under temporary permits issued by the SWRCB on an annual basis (through WY 2007) to support the injection testing program in the basin. All of the water that was injected into the Seaside Basin was treated water and was provided by CAW to MPWMD at no cost. A listing of the individual temporary permits issued by the SWRCB from WY 1998 to 2007 is shown in **Exhibit MPWMD-JO6**. A summary of expenditures by the District on the Seaside Basin ASR program through Fiscal Year 2006-2007 is provided in **Exhibit MPWMD JO7**. Note that this total expenditure of $2.96 million is for costs associated with the testing, engineering design, and construction of facilities, but does not include staff labor or permitting and environmental review costs.

8. In 2004, the District began the process of expanding the ASR testing program to include a second well at the Santa Margarita Test Well site. Necessary land acquisition and land use approvals were completed in 2005 and 2006, respectively, and the new ASR well, now referred to as ASR-2, was constructed in early 2007. This new well is larger and deeper (i.e., 22 inches in diameter and 790 feet deep) than ASR-1, and preliminary testing results indicate that injection and recovery capacity goals of 1,500 GPM and 3,000 GPM, respectively, will be attainable at this new well. The permanent appurtenant facilities for this new ASR well are currently being constructed by the District, and are scheduled for completion in 2009. The total cost for the ASR-2 well and appurtenant facilities is estimated at $3.26 million (**Exhibit MPWMD-JO8**).

Q3. PLEASE PROVIDE A BRIEF DESCRIPTION OF THE PHASE 1 ASR PROJECT FACILITIES.

9. The Phase 1 ASR Project consists of two injection/recovery wells, ASR-1 and -2, and appurtenant pipelines, electrical, backflushing and water treatment facilities. At this time, the ASR-1 well is fully-equipped and ready for project operation. All underground piping and electrical conduits were installed at the new ASR-2 well in early 2008; installation of the permanent pump, motor and ASR downhole "flow control valve" is planned for later this year, to enable injection at this well during the upcoming WY 2008 season. Permanent electrical and treatment system improvements at the Phase 1 ASR site are scheduled to be completed for operation during WY 2009. In addition to these on-site "ASR Facilities", CAW plans to install additional off-site "Associated ASR Facilities" that will support the Phase 1 ASR Project. MPWMD is coordinating with CAW on the planning, design, and permitting for these facilities. These Associated ASR Facilities include extension of an existing pipeline for delivery to the Phase 1 ASR site, plus new pipelines and pressure release valves within the CAW system to facilitate planned extraction rates from the Phase 1 ASR site. These CAW Associated ASR Facilities are planned for completion in late 2009, in time for use during WY 2010 operations.

10. A permanent water right permit allowing Carmel River system diversions for the Phase 1 ASR Project was issued by the SWRCB on December 3, 2007 (Amended Permit 20808A). The Phase 1 ASR Project is limited to a maximum annual diversion of 2,426 AF, and a maximum instantaneous diversion limit of 3,000 GPM (6.7 cfs). Based on the proposed operations plan, the maximum annual recovery would be limited to 1,500 AF. There is no water supply increment identified for new construction or intensified water use. The Phase 1 ASR Project is geared toward near-term environmental protection and more efficient operations using existing infrastructure resources. Based on simulation studies conducted by the District, the incremental firm yield of the Phase 1 ASR Project is approximately 920 AFY. This rounds to approximately 10% of the 10,730 AFY determined to be unlawfully diverted from the Carmel River by CAW in SWRCB Order WR 95-10.

Q4. PLEASE PROVIDE AN OVERVIEW OF THE HYDROGEOLOGY OF THE SEASIDE GROUNDWATER BASIN.

11. **Setting:** The Seaside Groundwater Basin underlies an approximately 19-square mile area at the northwest corner of the Salinas Valley, adjacent to Monterey Bay. The general location of the Seaside Basin and its four subareas are shown in **Exhibit MPWMD-JO9**. This map is from a recent update report on the condition of the basin prepared for the MPWMD by Yates, Feeney and Rosenberg in 2005. The Seaside Basin underlies a hilly coastal plain that slopes northward toward the Salinas Valley and westward toward Monterey Bay. The physiography is characterized by young active dunes near the coast and more mature dunes to the east of Seaside on former Fort Ord. Land surface elevations range from sea level at the beach to approximately 900 feet near the eastern boundary of the basin.

12. **Geology:** The geologic structure of the Seaside Basin is characterized by structural deformation that has resulted in varying thickness and depths of the various stratigraphic units across the basin. Basin structure is relatively well understood in the Laguna Seca and Coastal Subareas, where wells are numerous. Subsurface information in those areas reveals a complex arrangement of faults, anticlines, and synclines. Basin structure is poorly understood in the northern and interior parts of the basin occupied by the former Fort Ord military reservation. The southern boundary of the Seaside Basin is marked by the trace of the Chupines fault, where relatively impermeable Monterey Formation is uplifted to near or above sea level. The western boundary of the basin has typically been designated as the interface between the aquifer system and Monterey Bay. This designation has been one of convenience, because little direct information is available regarding the offshore extent of the onshore aquifers or the nature of their connection with the ocean. The northern and eastern boundaries of the Seaside Basin are less clearly defined. The understanding is that the northern and eastern boundaries follow a ground-water flow divide that

separates ground water flowing toward the Salinas Valley from ground water flowing toward the Coastal Subareas of the Seaside Basin.

13. **Subdivisions of the Basin:** Traditionally, the Seaside Basin has been subdivided into several subbasins and subareas for hydrologic analysis. These divisions reflect a combination of hydrogeologic and jurisdictional boundaries, and the configuration of the subarea boundaries has evolved slightly over time. The currently-used subarea names and locations are shown on **Exhibit MPWMD-JO9**. A hydrogeologic boundary created by the Laguna Seca anticline divides the basin into northern and southern subbasins. Each of the two subbasins is further divided into Coastal and Inland Subareas. The dividing line between the Coastal and Inland Subareas generally follows General Jim Moore Boulevard (previously North-South Road), which was the jurisdictional boundary between the former Fort Ord military base and the communities of Seaside and Del Rey Oaks. The Southern Inland Subarea is also known as the Laguna Seca Subarea. The Phase 1 ASR Project site is located in the Northern Inland Subarea, just east of the boundary with the Northern Coastal Subarea.

14. **Hydrogeologic Units:** The Seaside Basin consists of a sedimentary sequence of permeable, water-bearing materials that overlie the relatively low-permeability shales of the Monterey Formation, which is considered the effective base of fresh water in the basin. The geologic unit directly overlying the Monterey Formation is the Santa Margarita Sandstone and it corresponds to the Santa Margarita aquifer. This sedimentary unit is a loose to weakly cemented sandstone with a stratigraphic thickness of approximately 200 feet. The Santa Margarita aquifer is the target aquifer for the Phase 1 ASR Project. Overlying the Santa Margarita aquifer is a geologic unit referred to as Tertiary and Quaternary "continental deposits". This formation consists of a complex sequence of interbedded sand, gravel, and clay deposits. These deposits are more than 600 feet thick in some portions of the basin. The water-bearing portions of this formation are thick lenses of sand and gravel of limited areal extent and as a group are commonly referred to as the Paso Robles aquifer. The uppermost geologic units in the basin are the Aromas Sand and Older

Dunes. These surficial deposits are of minor importance to ground-water resources in the basin as they are unconfined, in direct hydraulic communication with the ocean, and are only saturated in the extreme coastal portion of the basin.

15. **Ground-Water Levels:** **Exhibits MPWMD-JO10 and -JO11** show contours of groundwater elevation in the Paso Robles and Santa Margarita aquifers in Fall 2002, respectively. As shown, the elevation contours for the Paso Robles and Santa Margarita aquifers near CAW's Paralta and Ord Grove production wells are approximately 20 and 40 feet below sea level, respectively. In addition, water level elevations near the shoreline in the Santa Margarita aquifer are approximately 15 feet below sea level, indicating this aquifer is particularly vulnerable to sea-water intrusion.

Q5. PLEASE DESCRIBE IMPACTS TO THE SEASIDE GROUND-WATER BASIN ASSOCIATED WITH THE PHASE 1 ASR PROJECT.

16. The impacts to the Seaside Ground-Water Basin from the construction and operation of the proposed Phase 1 ASR Project are described in the Draft and Final Environmental Impact Report/Environmental Assessment (EIR/EA) that were published in March and August 2006, respectively. Specifically, Chapter 8 of the EIR/EA, *Surface and Groundwater Hydrology and Water Quality*, describes the Seaside Basin, discusses potential impacts from the proposed Phase 1 ASR Project, and identifies appropriate mitigation measures. Potential impacts include changes in ground-water storage, levels, and quality, as wells as possible hydrofracturing and effects on other ground-water users in the Seaside Basin. As indicated in the EIR/EA, all of the potential impacts from the construction and operation of the proposed Phase 1 ASR Project on the ground-water resources in the Seaside Basin are considered beneficial or less than significant. The key long-term impacts are described below.

17. **Long-Term Changes in Seaside Basin Ground-Water Storage:** As described in the EIR/EA, MPWMD and CAW would extract, over time, the same amount of ground water that is injected, i.e., approximately 920 AFY. During consecutive wet years, however, the injected water will accumulate in storage. This accumulated storage, which is an incidental benefit of the proposed Phase 1 ASR Project, is depicted in **Exhibit MPWMD-JO12**, which shows the simulated end-of-year usable storage in the Coastal Subareas of the Seaside Basin under No-Project and Phase 1 ASR Project conditions. As simulated, end-of-year usable storage with the Phase 1 ASR Project is an average of approximately 1,300 AF greater than with the No-Project alternative, with the difference ranging from as little as 360 AF in WY 1991 to as much as 2,710 AF in WY 1983.

18. **Long-Term Changes in Seaside Basin Ground-water Quality:** As proposed, treated potable water from CAW's Carmel River sources, i.e., wells, would be provided for injection and storage in the Seaside Basin. To determine the effects of ASR operations on water quality in the Seaside Basin, a series of geochemical modeling tasks were performed using historical data from CAW's treated water distribution system and recent aquifer test results from the SMTIW #1. The results of the analyses indicated that no adverse chemical reactions were likely to occur during injection, storage, or intermixing within the Santa Margarita Sandstone aquifer. In addition, the analyses suggested that the observed redox reactions will benefit native ground-water quality through the oxidation of reduced species. As noted in the EIR/EA, the proposed Phase 1 ASR Project will be operated in compliance with SWRCB's anti-degradation policy (Resolution 68-16) and applicable regulations regarding drinking water quality.

19. **Effects on Other Seaside Basin Ground-water Users:** It is anticipated that long-tem injection of supplies will benefit existing ground-water users within the basin through reduced pumping lifts and associated costs.

Q6. PLEASE DESCRIBE THE MEMORANDUM OF AGREEMENT WITH CAW FOR ASR OPERATIONS AND MAINTENANCE.

20. In order to define and clarify the means by which MPWMD and CAW will cooperate and operate existing and proposed ASR facilities to augment the supply of water to the Monterey Peninsula area for the benefit of CAW ratepayers and MPWMD constituents, MPWMD and CAW executed an ASR Management and Operations Agreement in March 2006 (**Exhibit MPWMD-DF7**). This agreement was developed to satisfy permitting requirements of the California Department of Health Services (**Exhibit MPWMD-JO13**), expand and clarify the operations of the existing ASR facilities, and accelerate implementation of future ASR facilities. The agreement includes sections on pending and future water rights for the ASR Project that will be jointly held by MPWMD and CAW.

Q7. PLEASE DESCRIBE THE BACKGROUND LEADING TO ADJUDICATION OF THE SEASIDE BASIN.

21. As discussed in SWRCB Order WR 95-10, CAW's historical production from the Coastal Subareas of the Seaside Ground-water Basin during the 10-year period from 1979 through 1988 period averaged approximately 2,700 AFY, ranging from a minimum of 1,333 AF in WY 1979 to a maximum of 3,465 in WY 1987. During the 10-year period from 1996 through 2005, following adoption of SWRCB Order WR 95-10 that directed CAW to "maximize production from the Seaside aquifer for the purpose of serving existing connections, honoring existing commitments (allocations), and to reduce diversions from the Carmel river to the greatest practicable extent", CAW's average annual production from the Coastal Subareas of the Seaside Basin increased to approximately 3,700 AFY, ranging from a minimum of 3,003 AF in WY 2005 to a maximum of 4,319 in WY 1996. This approximate 70% increase in CAW pumping from the Coastal Subareas (1,500 AFY), coupled with increased non-CAW ground-water production in the Coastal and

Laguna Seca Subareas, led to depleted ground-water storage, lower water levels, and concerns regarding seawater intrusion.

22. **Exhibit MPWMD-JO14** shows long-term water levels from two of MPWMD's coastal monitoring wells in the Seaside Basin. The plots show water levels in the Paso Robles Formation (upper line) and Santa Margarita Sandstone (lower line) for MPWMD's FO-07 and PCA-East monitoring wells for the period between July 1994 and July 2007. FO-07 is upgradient from CAW's Paralta production well and PCA-East is downgradient of CAW's Paralta well. The plots show the dominant effect that production from CAW's Paralta well has had on water levels in the Santa Margarita Sandstone aquifer and illustrate the overall downward trend in water levels over time.

23. In August 2003, concerned about possible overdraft conditions and the status of its appropriative rights in the Seaside Groundwater Basin, CAW filed a compliant against the other pumpers in the basin and requested an adjudication of the basin. Specifically, CAW requested a determination of the basin's safe yield, a declaration of each party's respective production right, a declaration, as part of a physical solution, of each party's respective storage rights, and appointment of a Watermaster to administer the Court's judgment.

24. In December 2005, the matter went to hearing and a final Decision was issued in March 2006, as amended in February 2007 (**Exhibit MPWMD-JO15**). The Decision determined that the Seaside Basin was in overdraft, with current basin production (approximately 5,600 AFY) exceeding the estimated safe yield of the basin (3,000 AFY) by approximately 2,600 AFY. The Decision also established a Watermaster Board and specified a "ramp down" schedule to bring the current "Operating Yield" for the basin (5,600 AFY) into balance with the estimated "Natural Safe Yield" of the basin (3,000 AFY) over time. Each of the parties was allocated a share of the Operating Yield. For example, for the first three-year period, CAW was allocated 3,504 AFY of production rights from the Coastal Subareas and 345 AFY of production rights from the Laguna Seca Subarea.

25. The Decision also found that the public interest is served by augmenting the total yield of the Seaside Basin through artificial ground-water recharge, storage, and recovery. In this regard, the Decision determined that the right to store and recover water from the Seaside Basin should remain a public resource and should be governed by the Seaside Basin Watermaster, subject to specific provisions. The Watermaster is required to determine the Total Usable Storage Space in the basin and assign individual producers' storage allocations. Notably, the Decision found that MPWMD's statutory right to store water is preserved and is not in conflict with the Physical Solution or appointment of a Watermaster. The power of the Watermaster to enjoin unauthorized storage is limited to storage by producers, and does not extend to storage by MPWMD. The Decision provides that MPWMD may store water in the Seaside Basin for the benefit of the District. For management purposes, the District will advise the Watermaster as to the nature and scope of its storage activities.

Q8. PLEASE DESCRIBE THE DISTRICT'S ROLE WITH THE SEASIDE BASIN WATERMASTER MONITORING AND MANAGEMENT PROGRAM.

26. As part of the Seaside Basin Court Decision, the Watermaster was directed to prepare a comprehensive Monitoring and Management Plan (MMP) for the Seaside Ground-water Basin. As directed, the MMP would include a number of actions, including an exploratory borehole drilling program, geophysical surveys, new monitoring wells, design and implementation of a piezometric and water-quality monitoring program, development and implementation of a management plan, and development of criteria for use by the Watermaster in determining any modification of the Operating Yield. The District's role in the Phase I implementation of the Seaside Basin MMP is described in **Exhibit MPWMD-JO16**. Currently, the MPWMD is under contract with the Watermaster to assist in the Phase II implementation of the MMP.

Q9. PLEASE DESCRIBE THE PROPOSED SEASIDE BASIN ASR EXPANSION BEYOND THE PHASE 1 ASR PROJECT.

27. I have been a participating member in most ASR coordination meetings that MPWMD, CAW, and their technical consultants have held since the ASR testing program started over 10 years ago. These coordination meetings have generally been held on at least a quarterly basis in recent years, and have included discussions on ASR expansion beyond the Phase 1 ASR Project during approximately the last two years. The focus of these discussions has centered on how ASR expansion in the Seaside Basin can be implemented to be compatible with CAW's Coastal Water Project (CWP) planning. I participated in the multi-agency pre-construction meeting convened by CAW on June 22, 2007 to discuss details regarding the then-planned ASR monitor well construction at the "Bayonet Drive" site near the northern boundary of the Seaside Basin (**Exhibit MPWMD-JO17**). This site was targeted for exploration as a possible "northern anchor" for a future expanded ASR well field in the basin. However, the availability of this site is uncertain due to the complexities of recent land-ownership transfer, land-use jurisdiction and potential conflicts with future land-use plans. To date, this monitor well has not been constructed, and it is my understanding that CAW does not have a schedule for completion of this work at this time. While the possible use of the Bayonet site continues to be assessed by CAW, MPWMD has also been assessing other potential locations for an expanded ASR project (i.e., Phase 2) that may be feasible with less institutional, jurisdictional and land-use complexities. MPWMD met on May 14, 2008 with SWRCB staff to discuss water rights concepts for a possible ASR expansion project, and has submitted a water rights change petition filing with the SWRCB for this purpose.

Q10. WHAT IS THE FEASIBLE TIMEFRAME TO IMPLEMENT A PHASE 2 ASR PROJECT IN THE SEASIDE BASIN? WHAT YIELD MIGHT BE EXPECTED FROM A PHASE 2 ASR PROJECT?

28. An expanded ASR project consisting of two additional ASR wells (similar in size to the ASR-2 well of the Phase 1 ASR Project) and appurtenant facilities, could be designed, permitted, constructed and operational approximately three years from now. Much of the feasibility analysis, design work, and permitting experience have already been established over the 10+ years of investigation leading to the Phase 1 ASR Project, and this foundational work will allow for a more streamlined schedule for implementing a Phase 2 ASR Project. Although the detailed simulation studies have not yet been undertaken for a Phase 2 ASR Project of the size described above, a conservatively-estimated incremental firm yield of approximately 1,000 AFY could be achievable.

I, Joseph W. Oliver, declare under penalty of perjury that I have read the foregoing "Testimony of Joseph W. Oliver" and know its contents. The matters stated in it are true of my knowledge except as to those matters which are stated on information and belief, and as to those matters I believe them to be true.

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Executed on July 2, 2008, at Monterey, California.

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

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