# MUIR BEACH COMMUNITY SERVICES DISTRICT

# ADAPTIVE MANAGEMENT PLAN FOR WELL OPERATIONS AND WATER CONSERVATION

PREPARED WITH THE COOPERATION OF THE
TECHNICAL ADVISORY COMMITTEE
DECEMBER 2001 THROUGH DECEMBER 2003

**As Adopted by the Board of Directors**
**July 2005**

# MUIR BEACH COMMUNITY SERVICES DISTRICT
# ADAPTIVE MANAGEMENT PLAN
# FOR
# MANAGEMENT OF ITS WELL AND CONSERVATION ACTIVITIES

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## ACRONYMS AND DEFINITIONS

The discussions and negotiations concerning the District's water rights have been ongoing for almost fifteen (15) years. During that time, many terms and words have taken on special meaning and/or been changed to acronyms that the negotiators used with mutual understanding. The A.M.P. is a document that will continue over an extended time period. This list of Acronyms and Definitions is intended to assist the understanding of future persons not currently familiar with the terms.

| Acronym, words | Definitions |
|---|---|
| A.M.P. | Adaptive Management Plan |
| c.f. | Cubic Feet |
| c.f.d. | Cubic feet per day |
| c.f.m. | Cubic feet per minute |
| c.f.s. | Cubic feet per second |
| D. W. R. | California State Water Resources Control Board, Division of Water Rights |
| District | Muir Beach Community Services District |
| Dry season | The months between May 1 through Oct. 31st of each calendar year, in the Redwood Creek Watershed |
| g.p.d. | Gallons per day |
| g.p.m. | Gallons per minute |
| g. p. s. | Gallons per second |
| M. B. C. S. D. | Muir Beach Community Services District |
| M. M. W. D. | Marin Municipal Water District |
| NOAA Fisheries | National Marine Fisheries Service, within the National Oceanic and Atmospheric Administration |
| N. P. S. | National Park Service |
| Permit | The District's Permit for Diversion and Use of Water. Permit #21085 |
| Rain season | The months between November 1st and April 30 of the following calendar year, in the Redwood Creek Watershed |
| Seasonal Year | A year based on the dry and rain seasons that begins May 1 of one year and ends on April 30 of the following year. |
| D. F. G. | California Department of Fish and Game |
| D. P. R. | California Department of Parks and Recreation |

## INTRODUCTION

The negotiations for M. B. C. S. D.'s obtaining a water right's permit have been ongoing for more than a decade. During this time period, many of the persons involved were transferred to other locations and replaced by new representatives. The A.M.P. is a document that will continue over an extended time period and the annual updates will eventually involve people that did not participate in the original negotiations, studies and decisions. The purpose of this Introduction is to briefly record the more important considerations entertained during the many years of negotiations, so the people involved in the future updates of the A.M.P. may have some understanding of the history of the District and the factors considered during the lengthy negotiations for the Permit.

## BRIEF HISTORICAL SUMMARY OF THE M. B. C. S. D.

The M. B. C. S. D. was originally formed in 1958, to take over the Muir Beach Water Company that served the Bello Subdivision residents with water. The well used to supply water was drilled sometime in 1898 or 1899, following Mr. Bello's purchase of the acreage. A portion of the acreage was subdivided as the Bello Subdivision in 1928, and water from the well was used to supply the lots with water. However, over time, the production rate of the well and the quality of the water from the well declined to a condition that was not able to furnish the residents with a reliable source of potable water.

In 1963, development of the Seacape Subdivision began with vacant lot sales. By 1966, the successful lot sales required a reliable supply of potable water, and the Seacape Mutual Water Company was formed to develop the Seacape water supply and distribution system. A well permit was obtained and a well drilled on a small parcel located on Frank Valley Road, which is now referred to as the District's well site. At the time the well was drilled, the belief was that the well pumped ground water, which was defined as water pumped from beneath the ground.

In 1970, the M. B. C. S. D. completed negotiations to purchase the Seacape Water Company and added the Seacape Subdivision to its water system. The District then interconnected the Seacape water system to the District's water system, closing the use of its old well and taking over the reliable wells located on the Frank Valley Road well site. Since taking over the Frank Valley well site, the original wells, drilled in very close proximity to Redwood Creek, eventually failed and new wells have been drilled located as far from the creek water flow as the limited well site area permits.

## BRIEF HISTORICAL SUMMARY OF THE M. B. C. S. D. WATER RIGHTS PERMIT:

In 1984, following the denial of a water rights permit request by State Department of Parks and Recreation., D. W. R. notified the District that they were "unable to determine the nature of water right under which the District diverts its water" and referred to the District's use of three shallow wells, used by the District, that pump from the underflow of Redwood Creek. This was the beginning of the current water rights permit process that is now in its final stages of completion.

Following various correspondence and communications, the District administrator filed an Application to Appropriate Water in August of 1988. However, the District continued to hold its position that its wells were taking ground water and did not require a diversion permit. Correspondence, and communications were continued, with the District preparing various studies by hydrologist in an effort to prove the District's position.

In Response to the District's Application, N. P. S., D.P.R. and D.F.G. filed protesting the District's Application and infrequent meetings and correspondence between the District, D. W. R. and the protestants transpired through July 1994, when N. P. S. General Superintendent Brian O'Neill filed a "Redwood Creeks Water Rights Assessment" prepared by the N. P. S.. He also noted that he intended to work with the District and protestants to protect the endangered coho. This began a period of more frequent meetings and communications between the District the protestants and D. W. R.. which eventually resulted in the issue of the District's Permit for Diversion and Use of Water, Permit #21085 in December 2001. As a condition of the permit (Section 9) the District was required to develop the A.M.P. with the assistance of the T. A. C. which was comprised of representatives from the protestants, D. W. R. and the District.

Following the issue of the permit, the T. A. C. was formed to develop the A.M.P. and to consider the various factors to be included in the plan as required by the permit. The T. A. C. began with monthly meetings, which continued through 2002 . Some meeting dates were canceled and/or rescheduled due to member schedule conflicts and occasional needs for extended time to complete studies required to discuss the various feasability studies required by the permit. A brief summary of these studies and their conclusions follows.

I. **Streamflow monitoring program:** Section 7 of the permit stipulates that the District shall install a device which is capable of measuring the bypass flows of Redwood Creek as it goes through the District well site and Section 9 - B of the permit requires the District to propose a stream monitoring program to measure the water flow in Redwood Creek. This requirement was considered by the T. A. C. as the most essential permit element for establishing the basis to activate enforced water conservation measures. As a result considerable effort was put forth to determine the most reliable and cost efficient method for measuring the creek water flow:

   A. **Weir monitoring devices:** The most common device used for measuring stream flow is a weir, constructed in a position within the creek water flow so as to provide a gauge capable of measuring the volume of water flow. The District and N. P. S. interviewed qualified experts in weir design and installation. Following a field inspection with these experts, the T. A. C. learned that the volume of water flow considered as the critical flow level for maintaining aquatic life was too little to be accurately measured by a weir. Further, the experts indicated that there is no currently existing device capable of measuring the minimal flow specified with reliable accuracy. This resulted in considerable effort to establish an alternative monitoring system.

   B. **Alternative monitoring system:** Following several surveys and possible monitoring standards, qualified N. P. S. personnel installed a flow depth gauge in the water flow of Redwood Creek as it flows through the District well site. Flow levels were monitored and recorded, and then followed by physical surveys of the creek bed to observe the water flow as the monitoring gauge levels declined. At the approximate gauge level (not an elevation datum reference) of 13.20 feet, the creek bed surveys indicated a tendency for the water flow to go subterranean, causing separation of the flow into isolated ponds. When this occurred, measurements were taken to establish the oxygen levels in the ponds. As the water levels continued to decrease some oxygen levels were found to decline to a level inadequate to support aquatic life. This was finally determined to be an effective method for monitoring the stream flow levels to establish the need for enforced conservation. The A.M.P. includes monitoring requirements based upon the results of these studies and requires enforced conservation prior to the decline in oxygen to a level inadequate to support aquatic life.

II. **Alternative water sources:** Section 10 of the permit requires the District to submit a report to the T. A. C. members considering various possible alternatives water sources, as follows:

A. **Relocation of the District's wells:** During the meetings and negotiations prior to the issue of the permit, the consensus of the District's hydrology consultant Bill Bazlen, and the hydrologists from N. P. S. was that locating the District's wells closer (downstream from the current well site) to the mouth of Redwood Creek would significantly reduce and possibly fully mitigate the potential impact of the wells on the creek water flow. A study was performed which considered alternative well sites including a location on N. P. S. land at the intersection of Frank Valley Road and Shoreline Highway, and two private sites on the west side of Shoreline Highway situated between the Frank Valley Road and Pacific Way intersections with the highway. The owner of one of the private lands declined any interest in considering a land exchange or sale, and the other private property proved to be located too close to existing septic tanks to comply with the health codes. Further, the possible movement of the well site was strongly opposed by many Muir Beach residents, due to their experience with the poor water quality of the old Bello well, the earlier existence of a gasoline facility near the suggested N. P. S. area, and the question of long term reliability in a relocated well. The conclusion of the study was that relocation of the wells was not feasible at this time.

B. **Importation of Water from M. M. W. D. :** The supervisors of M. M. W. D. were contacted to consider the possibility of importing water from their water lines serving Muir Woods. While this water source was indicated as possible, several conditions rendered it as impractical and cost inefficient, including:

1. A $3,000,000 fee to provide service, plus the cost of constructing a water line from Muir Woods to the District's well site.

2. Various water resources problems that M. M. W. D. was having in meeting its own water needs, and the possibility that the process might be considered as environmentally harming one area to benefit another area.

3. The possible environmental problems and approvals involved in constructing a water line from Muir Woods to the District's well site.

4. The substantial increase in the final cost of water to the District's consumers.

5. A requirement that the District would be subordinate to the M. M. W. D. primary service areas during times of severe dry, which might leave the District without adequate water to meet its needs.

C. **Water Reclamation:** The use of "grey water" and reuse systems was also studied. However, the health and environmental regulations for this essentially requires the same provisions for treatment as a residential septic system. The District does not have a central sewage collection point, and all grey water systems would be by individual residents. The current cost of a residential septic system in the District is approximately $40,000 rendering the cost

prohibitive. In addition, analysis of the residential properties in the District showed that few if any of the properties had adequate land area to provide for the additional treatment facilities.

D. **Desalination:** As a possible alternative water source this offers the most feasible and cost efficient possibility which at some time in the future may be reconsidered if conditions should require it. The study of this possibility indicated that the District's needs ( 45,000 g.p.d.) are comparable to a very small cruise ship. Since the 2nd World War, significant improvements in desalination facilities have been approved which substantially reduce the cost of producing potable water while increasing the production capacity, maintenance, area size requirements and overall reliability. While the District does not currently have access to a possible site location for this alternative, the potential for desalination will continue to be evaluated.

III. **Increased off-stream water storage facilities:** Section 11 of the permit requires the District to submit a report that evaluates the feasibility of constructing additional off-stream water storage facilities with capacities up to 1,000,000 gallons of water. The report considered:

A. **The volume of storage water needed:** There were varied opinions as to the need for additional storage water and the volumes required., such as:

1. The District, from the very beginning, had agreed to increase its water storage capacity from the existing 250,000 gallons to 300,000 gallons.

2. N. P. S. desired the District to increase its storage capacity to a volume adequate to eliminate the need for well operations during the dry season, or at least adequately to substantially eliminate the well operations during severe dry conditions.

B. **Volume of water required by the N. P. S. preferences:**

1. **Storage required to eliminate well operations during the dry season.** The dry season begins May 1 and ends October 31 of each year. To stop all well pumping for this 184 day period, based on a conservation maximum daily use of water of 35,000 g..p.d. requires a total storage volume of almost 6.5 million gallons, or an increase in the District's storage capacity of 6.25 million gallons. After some consideration, the T. A. C. generally agreed that this volume of storage was unrealistic due to the problems of excess storage reserves, the probable cost of 7.5 million dollars, and the lack of available District land to provide for the storage structures.

2. **Storage required to minimize well operations during severe dry conditions (e.g. Noticed Conservation Periods).** During the years subsequent to the issue of the Permit, N. P. S. and the District coordinated on various studies to determine when the flow conditions in Redwood Creek would decline to a level inadequate to support aquatic life forms. The study periods included the 3rd driest seasonal year of record for the previous 50 years. It was determined that the critical dry conditions were limited to the closing days of the dry season, beginning around September 15 and ending by the end of October, equaling a 45 day period. To eliminate well pumping

for this period would require a storage volume of at least 1.825,000 gallons (to leave 250,000 gallons of fire storage at the end of the period). The estimated cost for constructing storage facilities with this volume is about $2,000,000. However, analysis of the District's available land areas for providing storage facilities resulted in a determination that the maximum reasonable storage on the upper and lower storage tank areas is less than 1,000,000 gallons and the remaining District lands on Frank Valley road would require several hundred thousand dollars of piping to be added to the system for serving additional storage facilities on the Frank Valley properties. The District will continue to pursue land exchange opportunities.

3. **Storage versus alternative water sources:** The costs of providing the additional volume of storage required to eliminate well operations during severe dry conditions (2 above), exceed the estimated costs for installing a desalination facility. Further, aside from the lack of available District land to provide for the storage facilities and the problems of excessive storage for normal use, such as stale water requiring additional treatment, indicate that the desalination facility is a more practical alternative, when and if it might be funded and environmentally approved.

4. **Increasing storage volume to 300,000 gallons:** During all the negotiations with the T. A. C. and with D. W. R. prior to the issue of the permit, the District indicated that it intended to increase its water storage capacity from the existing 250,000 gallons to 300,000 gallons. Based on this commitment, D. W. R. confirmed that it would not require the District to increase its storage facilities to more than this unless alternative funding sources (funds from outside the District such as grants, etc.) became available. The District is preparing to increase its storage capacity to 300,000 gallons, by either providing storage for its well site and water treatment improvements, or at such time as the high zone storage tank is to be reconstructed.

C. **Funding for alternative water sources and/or increased water storage facilities:** Throughout the discussions and negotiations, it has been acknowledged by all parties that the District's small size (less than 160 water services) and income potential limits its ability to fund significant costs for providing alternative water facilities and increase water storage. For this reason, it has been generally agreed that if and when such improvements are to be done, the funding will be from sources outside the District, including but not limited to various grant sources. In all considerations and in the permit terms, the underlying caveat is " feasible and cost-effective facilities".

IV. **Item 9 of the District's water rights permit** requires the District to develop an A. M. P. that will govern the District's diversion of water from Redwood Creek, and as discussed in the Introduction, to develop the plan with the assistance of a Technical Advisory Committee (T. A. C.). In addition, the permit sets forth five basic requirements that must be considered in the plan, briefly stated as follows (for complete details refer to the copy of the "Permit For Diversion and Use of Water" contained in the Appendix):

A. **A Water Conservation Plan** which will include ten (10) specified elements for consideration.

B. **A Streamflow Monitoring Program.**

C. **A Pumping Schedule.**

D. **A Reporting Schedule.**

E. **A Plan for Updating the Plan.**

Each of these five conditions are considered in the details to follow, which results in this document entitled "The Muir Beach Community Services District Adaptive Management Plan." The A.W.M.P. establishes the policies and procedures for the District's operation of its wells and water conservation efforts, versus the District's policies and procedures manual for water operations which governs the maintenance operations for the District's distribution system. The District will take and adaptive management approach in conjunction with the T. A. C. . this will include an annual review, during which the T. A. C. will discuss operations, conservation, supply, and storage alternatives, new technologies, funding opportunities and modifications to this plan as appropriate

V. **The Water Conservation Plan:** The following ten (10) elements comprise the details for the District's Water Conservation Plan to encourage and enforce the efficient and prudent use of water by District residents during normal, dry and noticed conservation periods.

A. **Tiered Water Rates:** The District has used tiered water rates for more than a decade. The rates were discussed in detail during the many meetings of the T. A. C. In late fiscal year 2002-03, following several general community meetings and an advertized "Public Hearing", the water rates were revised to yield an average water service cost increase of approximately 30%. Further, following adoption of the new rate schedule, the Board of Directors established a policy to annually review the rate schedule for its provision of adequate funds for general water operations and in encouraging the efficient use of water. The new rate schedule is tabulated below, as compared to the older rate schedule:

| Monthly Water Rate Schedule Effective 06/16/03 | | |
|---|---|---|
| Volume of water consumed | Water service rate | Maximum Service Charge |
| 0 to 300 c.f. | This is the minimum water service charge = $15.00 | |
| 301 to 600 c.f. | $15.00 plus $0.0475 per c.f. over 300 c.f. | $29.50 |
| 601 to 1,200 c.f. | $29.50 plus $0.0575 per c.f. over 600 c.f. | $63.75 |
| 1,201 to 2,000 c.f. | $63.75 plus $0.0675 per c.f. over 1,200 c.f. | $104.25 |
| 2,001c.f. and above | $104.25 plus $0.0775 per c.f above 2,000 c.f. | Unlimited |

| Monthly Water Rate Schedule Prior to 06/16/03 | | |
|---|---|---|
| Volume of water consumed | Water service rate | Maximum Service Charge |
| 0 to 300 c.f. | This is the minimum water service charge = $10.50 | |
| 301 to 1,000 c.f. | $10.50 plus $0.04 per c.f. over 300 c.f. | $38.50 |
| 1,001 to 2,000 c.f. | $38.50 plus $0.05 per c.f. over 1,000 c.f. | $88.50 |
| 2,001 c.f. and above | $88.50 plus $0.065 per c.f. over 2,000 c.f. | Unlimited |

In addition, the above tabulated basic monthly water service charges are subject to a Capital Improvements Special Assessment Consumption Surcharge of 25%. e g. The minimum service charge of $15.00 in the current rate schedule will be increased by $3.75 (reserved for Water Capital Improvements), plus an annual Capital Improvements Special Assessment Tax of $300 per residential dwelling unit or vacant lot intended for future residential development, and $2,500 for commercial uses.

**B.** **Leak Detection Programs:** Most of the existing piping in the District's water distribution system was installed during the late 1960's and early 1970's. Essentially, the system is divided into two different sections, referred to as the upper system serving the Seacape Subdivision area, and the lower system serving the older Bello Subdivision area. The upper system was constructed to generally conform to the standards of the Marin Municipal Water District, including cement lined cast iron pipe lines with substantial ground cover to protect against surface hazards. The lower system was constructed to a lower standard using PVC piping with at best minimum ground cover and in some areas piping is actually visible from the surface.

In the 1980's and early 1990's the District's distribution system experienced considerable unaccounted for water losses, which occasionally exceeded 50% of the total water production. During this time, the District's primary wells were located near the water flow in Redwood Creek, enabling a higher pumping rate of as much as 100+ gallons per minute. The high percentage of unaccounted for water loss was undoubtably the result of

leakage in the distribution system and there was a continuous watch for possible distribution system leaks. However, the high loss ratio combined with deficiencies in equipment, valving and the distribution system severely exacerbates the problems in developing a reliable leak monitoring program to determine possible new leaks.

In 1992, the District activated a more intense leak determination program and in the subsequent years both located and repaired numerous system leaks. In the last half of the 1990's, the repairs and various system upgrades (e.g. complete replacement of the distribution line serving the west end of Pacific Way) resulted in reducing the unaccounted for water losses to less than 10%. This lower loss ratio is considered as a minimal loss ratio for a system as old as the District's system which also includes far more lineal feet of pipeline per service than a typical residential development's system.

The District continues a constant watch for possible distribution system leaks, and the lower loss ratio has enabled a more effective monitoring method for indicting possible system leaks, including to but not limited to the following leak detection programs:

1. **Leak Indication Method One:** The District maintains a daily well production log to monitor the gross well production. During the dry season, average production is normally just below 40,000 gallons per day (it should be noted that while the normal average is at this level, various conditions during the dry season occasionally require pumping at higher daily volumes to provide for essential maintenance operations and to maintain fire reserves), versus during the rain seasons average of somewhat less than 35,000 gallons per day. Again, while the normal average is at this level, various conditions during the rain season frequently require pumping at higher daily volumes to provide for maintenance operations prohibited during the dry season. Monitoring these daily averages enables a 1st level indication for possible system leaks, for if the water storage level declines, while the well production log indicates normal or above average daily production, a system leak is indicated and a more detailed leak detection program is activated.

2. **Leak Indication Method Two:** The District maintains a monthly water billing system and has declined to implement a more cost effective bi-monthly billing system. The monthly billing system enables the District to compare the actual metered consumer consumption to the gross well production, to yield an unaccounted for water loss ratio. Whenever this ratio exceeds the normal less than ten percent (10%) ratio, the District activates a more detailed leak detection program.

3. **Detailed Leak Detection Program:** The leak detection program involves three (3) basic steps, as follows:

    a. **Step One.:** The two areas of the distribution system, while normally interconnected, can be separated to function independently with the Upper System being serviced from the Upper Zone Storage Tank while the Lower System is serviced from the Lower Zone Storage Tank. Separating the systems enables the maintenance personnel to determine if the leak is more likely to be in the lower or upper system.

b. **Step Two:** Once the upper or lower system is determined as the most likely area for the leak, a systematic three (3) stage check is activated for the distribution lines in the indicated system, as follows:

(1) **Step One:** The District fire hydrants are generally spaced in accord with the Fire Underwriters Standards with hydrants located no more than 400 feet apart. The hydrants are generally valved in such a manner as to permit the isolation of the interconnecting distribution lines, which enables the determination of possible pressure losses in the isolated distribution line that indicate a system leak. It should be noted that the during the past several years, the District has implemented a valve improvement and replacement program that significantly improves the implementation of this leak detection method. Further, the District continues upgrade the minimal valving system that was provided by the initial distribution system construction.

(2) **Step Two:** Once a segment of distribution line has been determined to have a possible leak by Step One, a detailed inspection of the ground area above the suspect line is performed. If the leak area is not visually determined, a sonic inspection is made using water flow detection sound equipment.

(3) **Step Three:** Once a more finite location of the possible leak is determined, the area is excavated in an effort to finally locate and repair the system leak.

It should be noted that while the above leak detection program has been very effective in locating system leaks and minimized the unaccounted for water losses, the program is not infallible. Many leaks may involve such a small initial flow of water that they are essentially undetectable. Leaks may be indicated by the early detection methods, when there is more than one small leak making the final detection very difficult. e.g.. One percent (1%) of the District's dry season average well production of 40,000 g. p. d. is just 400 gallons, which converts to less than 0.278 g.p.m., which is approximately a few drops of water per second. Such a small quantity of water will not be heard through the ground cover, and will seldom be indicated by the pressure test. Even a five percent (5%) loss is just 1.39 g.p.m. and is very difficult to hear through the ground cover with a sounding device. Also, a 400 feet length of 4" pipe contains approximately 261 gallons of water and the 5% loss (if the leak is entirely in the section being checked) is just a volume loss of 0.53% in volume per minute. If the indicated leak is the result of more than one small leak, the location of the leaks are essentially beyond precise detection.

C. **Public Information Programs:** During the development of the A. M. P. the District began and now continues a more detailed Public Information Plan, including but not limited to the following:

1. **System Leak Notification:** Whenever a substantial distribution system leak is indicated, circulars are distributed to each consumer, requesting increased efforts to

minimize water consumption. This has always resulted in general resident cooperation and a substantial reduction in water consumption enabling the District to maintain normal water production rates while maintaining the needed fire storage reserves.

2. **Customer leak notification:** By continuing the monthly reading of the service meters, the District is able to alert consumers of possible water leaks on the consumer side of the meter. Similar to the District's aging system, most of the dwellings in the District are several decades old and the water line from the meter to the dwelling is subject to various forces that can create leaks in the piping. When the meter invoices are prepared, all consumers with consumption more than 50% above the previous month's consumption are alerted that they may have a water leak on their side of the service meter, if their consumption requirements have not changed. Assistance is offered, if they confirm that a possible leak exists, and steps are taken to assist them in making the final leak determination.

3. **Dry Season Notification:** At the beginning of each dry season, notices of the beginning of the dry season and suggestions for prudent water use and conservation are included with the month of April water services invoices, which are mailed to the consumers prior to the beginning of May. As stream conditions dictate, additional notices will be distributed.

4. **High Water Consumption Alerts:** At the beginning and continuing through the dry season (even though dry conditions may not exist), notices of possible excess water consumption are included with the high water consumer's monthly invoice. Also, where applicable, if the consumer would be subject to a fine during a noticed conservation period, a notice is included to indicate the size of the fine that would be applicable.

5. **General Water Use and Confirmation Information**: From time to time the District distributes informational articles on efficient water use and water conservation methods. Further, when the District learns of special discounts on efficient water appliances and/or facilities it distributes the information to the consumers.

D. **Low Flow Facilities:** Since the early 1990's the District has sponsored the use of low flow facilities and when available, distributed low flow facilities at minimal costs or free of cost when possible It is estimated that all residences in the District currently use low flow facilities.

E. **Seasonal Limitations on Maintenance Flushing of Water Lines:** The District implemented a seasonal schedule for the maintenance flushing of the distribution lines in 1995, and continues to follow the seasonal restrictions. System maintenance flushing stops following the first Monday of May and does not begin again until November, assuming there has been rainfall and the creek water level is not critically low.

F. **Seasonal Limitations on Outside Irrigation:** During the numerous T. A. C. meetings, this subject was discussed in some detail. While the District encourages the use of dry resistant landscaping and minimal use of irrigation, the District does not have the personnel or

facilities to police the area for possible violations. Further, is such a small community there is a strong public avoidance of having neighbors police neighbors. Also, it has been determined that many of the residents prefer to haul in water or make other provisions for their potable water use so they can reserve the use of District water for the preservation of their landscaping and house plants. Following extensive T. A. C. discussions a joint conclusion was reached that the District's Water Conservation Enforcement Policy would not restrict the methods of using water, but would concentrate on limiting the volume of water consumed during a "Noticed Conservation Period" which is explained in more detail in the following section of the A. M. P..

G. **Inspection/enforcement Provision:** Following several general open meetings and a public hearing, the District adopted Resolution 2002-12-11-01, which sets forth the procedures for establishing an "Official Notice of Water Conservation." The Resolution, in its entirety is included as "Appendix B." to the A. M. P., In brief, the Resolution sets forth the following:

1. That during dry conditions (defined and methods for determination set forth in Section VI-B of this A. M. P.) the District must reduce its gross daily water production from an average maximum of 45,000 g. p. d. to no more than 35,000 gallons per day. Further, the District will issue an official "Notice of Water Conservation to its customers.

2. Within three (3) days after issue of the "Notice", the District will take and record readings of the water service meters. As a matter of policy, if the subsequent daily recordings of the District's master meter recording the gross water production does not indicate that water conservation efforts are being implemented by the residents, a subsequent reading of the service meters will be recorded and compared to the initial noticed conservation meter readings to determine which meters indicate probable excessive water use. These customers will then be individually contacted for conservation consultation.

3. The Resolution specifies penalties to be assessed water consumers that use more than 2,000 c.f. of water (a different commercial use level is also specified) during a billing cycle (after an official "Notice of Water Conservation" has been issued). The Resolution further provides for additional penalty measures and changes in consumption levels if deemed necessary for the District to maintain the maximum daily gross water production limit of 35,000 gallons per day. This may require that the penalty threshold of 2,000 c.f. be changed to a lower level.

H. **Plan Review and Update Frequency:** The District has adopted a policy to review the A. M. P., in its entirety, on an annual basis at the end of each dry season. Particular emphasis will be given to the "Tiered Water Rates", "Leak Detection Methods", and "Water Conservation Enforcement". Following the annual review, the A. M. P. will be updated as deemed necessary.

I. **Implementation of the Best Management Practices:** The District has a long standing general policy to maintain its management standards, pursue continued education for its personnel, and to incorporate proven improvements in its management practices.

J. **Restrictive "stepped" conservation measures:** During the numerous meetings of the T. A. C., water conservation measures and methods were discussed in extensive detail. The final consensus was that the District would, at the beginning of each dry season, issue reminders to encourage water conservation along with information on conservation methods. In addition, at the beginning of the dry season, the District automatically converts to the more restrictive standards provided by the well pumping schedule contained in Section IV of this plan. During the T. A. C. discussions, an important element was that the District is the only reliable source of water for fire protection in the Muir Beach - Frank Valley area, and maintenance of the District's fire reserves is a vital factor in protecting both the District and the wild lands adjacent to Redwood Creek. It should be noted that wild lands fire prevention and protection has become an important goal in the National Park System.

VI. **Streamflow Monitoring Program:** It should be noted that this element of the A. M. P. was considered by the T. A. C. as one of the most dominant subjects of the water permit requirements and was carefully discussed and studied in extensive detail. Considerable effort and time was devoted to test various methods for monitoring the stream flow, resulting in a general consensus that the following stream monitoring methodology would yield the most effective results with the most reasonable efforts for implementing:

A. **Stream water depth gauge:** During the N. P. S. hydraulic studies, a stream water depth gauge was installed in the Redwood Creek water flow as it passes through the District's well site. During numerous observations taken over a multiple year time frame, it was determined that when the creek water flow is above the gauge level of 13.20 the creek was connected downstream. This level has been determined as a critical flow level where the creek water flow is adequate to support aquatic life forms. However, when the creek water flow declines to less than this level it is an indication that the water flow is approaching a level that may not adequately support the aquatic life. During the hydraulic surveys it was noted that at various water flow conditions (the stream bed conditions change from year to year) below critical flow level, the stream flow may begin to separate (go subsurface) to create independent pools. When this occurs, it has been determined that the oxygen levels in the pools may decline to a level insufficient to support aquatic life.

B. **Streamflow Monitoring Procedure for Determining the Need for an Official Water Conservation Notice:** Based on the information learned during the N. P. S. stream hydraulic studies, the following procedures have been adopted for monitoring the stream flow and for establishing the need to issue an "Official Water Conservation Notice":

1. **Annual Bed Evaluation and Gauge Calibration:** At the beginning of each dry season, the District will coordinate with N. P. S. staff to evaluate the streambed conditions for changes that could affect critical flow levels.

2. **Depth Gauge Readings:** With the beginning of the dry season, the District will begin taking readings of the water flow depth gauge. If the water flow is substantially above the critical flow level, the readings/recordings will be taken on a weekly basis. As long as the water flow is remains above the critical flow level, no further action is required.

3. **Declining Depth Readings:** When the water flow level begins to decline and reaches

a level of 0.10 feet above the critical flow level, the District will begin taking daily water flow level readings/recordings. As long as the water flow is above the critical flow level, no further action is required.

4. **Critical Water Flow Level Recorded:** At such time as the water flow in the creek declines to the critical flow level, the District will begin a daily physical survey (walk) of the streambed below the District's well site. When any separation of the pools occurs, the District will implement its enforced conservation methods as follows:

   a. **An "Official Water Conservation Notice"** will be mailed to all water consumers and posted on the eight (8) District bulletin boards. This will officially activate the conditions specified in Resolution 2002-12-11-01 outlined above and detailed in Appendix B.

   b. **Reduction of Gross Water Production:** Once the "Official Notice of Water Conservation" has been issued, the District will reduce its maximum daily gross water production to no more than 35,000 gallons per day, and maintain the reduced production limit until the dry conditions no longer exist.

   c. **Activate Section B of the Fisheries Monitoring Plan**:

**NOTE:** The stream monitoring methodology, as detailed above, replaces the conditions and methods specified in Section 12 of Permit 21085, which the hydraulic studies performed during the numerous T. A. C. meetings found to be ineffective for reliably determining the stream flow conditions necessary to support of aquatic life.

## VII. Fisheries Monitoring and Management Actions

The purpose of fisheries monitoring is to detect potential adverse effects to Salmonoids and habitat that may be associated with the District's water diversions in lower Redwood Creek. The intent is to detect affects before they become acute, and take preventative steps to avoid adverse affects to listed salmonid species in Redwood Creek.

The creek reach in the vicinity of the M. B. C. S. D. wells will be surveyed twice each year, once in early summer and again in late summer or early fall. Surveys will estimate relative abundance of coho salmon and steelhead, and document their use habitat in Redwood Creek

A. **Determine Salmonoid distribution** and baseline habitat conditions in lower Redwood Creek survey reach.

   1. M. B. C. S. D. will survey the Redwood Creek monitoring reach for fish and fish distribution twice a year, once in mid-June and once in mid-October. Snorkel surveys will be used to estimate coho salmon and steelhead abundance, distribution and habitat quality. Beginning at the downstream end of the survey reach and working upstream, a qualified biologist will make one pass with mask and snorkel to survey each pool and run to the upstream end of the survey reach; a second pass will be completed the same day.

2. M. B. C. S. D. will document aquatic habitat baseline characteristics of the Redwood Creek survey reach to inventory the habitat units of lower Redwood Creek in the summer and fall, simultaneously with fish surveys, to identify areas where habitat quality has been degraded. Habitat unit types (e.g., plunge pool, riffle, et cetera) will be documented.

   a. Determine habitat utilization of juvenile Salmonoids in lower Redwood Creek. Document width, length, and depth at three index sites; these measurements provide meaningful information about stream size and habitat characteristics.

   b. Record observations of sediment type for assessment of habitat suitability and sediment transport.

   c. Record observations of shade cover type and relative abundance.

   d. Identify factors impeding juvenile fish passage in lower Redwood Creek.

   e. Twice a year for three years, identify specific stream reaches where habitat quality has been degraded and identify potential opportunities for restoration. (This task will be reevaluated at end of three years to determine efficacy of continuing beyond three years. It may be discontinued with the concurrence of NOAA Fisheries.)

**B.** **Monitor the effects of low flows** to minimize adverse affects from low water levels when implementation of water conservation is triggered per **VI. B. 3.**

1. When the water surface in the monitoring reach of Redwood Creek becomes intermittent, M. B. C. S. D. will implement water quality monitoring.

   a. Temperature: when water temperature has reached 18 degrees C or higher it will trigger M. B. C. S. D. to notify NOAA Fisheries of conditions.

   b. Dissolved oxygen; when levels reach 6.0 mg/l or less it will trigger M. B. C. S. D. to notify NOAA Fisheries of conditions.

2. Submit an annual report to the Muir Beach Community Services District, with a copy to NOAA Fisheries, describing all water quality monitoring activities.

C. **Rescue or Salvage of Fish**: Take prohibitions for both CCC coho salmon and CCC steelhead contain a limit to take prohibition for rescue and salvage actions which "relieves certain agency and official personnel or their designees from the take prohibition when they are acting to aid an injured or stranded salmonid..." Therefore, NOAA Fisheries may designate others to rescue coho salmon or steelhead from portions of Redwood Creek that are drying. After notification NOAA fisheries will oversee rescue operations with M. B. C. S. D. support.

**VIII. Well Pumping Schedule and Rates of Diversion:** The following well pumping schedule and rates of diversion have been established:

**A. Rates of Diversion:** The following rates of diversion are established by the Permit for Diversion and Use of Water, and modifications established during the development of the A. M. P.:

**1. Permit limitations:** "The water appropriated shall not exceed 0.07 c.f.s. from January 1 to December 31 of each year and the maximum shall not exceed 50.6 acre feet per year. The maximum rate of diversion shall not exceed 0.07 c.f.s. based on a 30 day average".

**2. Adaptive Management Plan Limitations:** The A. M. P. further restricts the diversion rates as follows:

**a. Rain Season Limitations:** During the rain season, there are no specific diversion rate limitations, except as provided by the Permit. Further, as a prevailing desire for the District to seek funding and methods for increasing its overall water storage capacity, if the storage capacity is significantly increased, the District may temporarily increase its daily diversion rate as needed to provide water for the additional storage capacity. However, this does not wave the annual limit of 50.6 acre feet.

**b. Dry Season Limitations:** During the dry season, the District will not exceed a gross water production rate of 45,000 g. p. d. based on a 30 day average. Further, the District will restrict its well pumping hours as follows:

**(1)** **As a general schedule** during the dry season, well pumping will be limited to the hours of 6 p. m. and 8 am each day, providing the well pumping rate is adequate to provide the needed gross water production within the 45,000 g. p. d. limitation, or:

**(2)** **A reduced well production rate** that cannot maintain the fire water storage levels within the 45,000 g. p. d. and the 14 hour per day limitations (pumping rates of less than 53 g.p.m.) may require occasional extended pumping hours. This is permissive, within reasonable limitations.

**c. Noticed Water Conservation Period:** During a "Noticed Water Conservation Period", the District will limit its gross water production to no more than 35,000 g. p. d.. Further, if well production rates permit, the District will narrow its daily pumping hours as much as possible while maintaining it fire protection storage reserves.

**B. Emergency Water Production Conditions:** In the event of a severe water system condition such as a major loss of storage water resulting from a distribution line break, storage tank failure, fire or other natural disaster it may be necessary for the above limitations to be temporarily waived. While the provision of potable water is essential for the residents, the preservation of fire water storage reserves is critical. The dry season is also the fire season, and a wild land fire can be a very destructive event to the Creek environmental conditions. The District will notify all members of the T. A. C., by e-mail, and to contact the D. W. R. if it is necessary request emergency relief from the limits.

**IX. A Reporting Schedule:** The District maintains a daily log for well production and other primary events

important to maintaining the District water distribution system.

A. **The Monthly Well Log sheets** include the daily well production, recordings of the water flow levels in Redwood Creek taken in accord with the above Stream Monitoring Program, information recorded from the physical surveys of the stream flow following a decline to the critical flow level, Upper Zone tank storage levels, and brief descriptions of other system conditions requiring special maintenance such as system leaks, etc. Copies of these records are distributed upon request on an as needed basis.

B. **Official Notices of Water Conservation.** All members of the T. A. C. shall be notified, by e-mail, when the Notices are issued. Following the issue of the Notice, an e-mail request to receive copies of the Well Log will activate a monthly mailing of the Log to the requesting agencies, until the conservation period ends.

C. **Informal Conservation Information:** If desired, members of the T. A. C. may request copies of the general conservation newsletters, and other relative information that is distributed.

D. **Public Records:** Most of the District's records are classified as public records and are available for inspection/review by arranging for an appropriate time for District personnel to be present during the inspection/review period, or to make copies for delivery to the requesting party.

X. **Revising and Updating the Plan:** The A. M. P. will be reviewed annually, following the end of the dry season. Particular emphasis will placed upon the effectiveness of both volunteer and noticed conservation effectiveness. In the event substantial changes are indicated as necessary all members of the T. A. C. will be notified by e-mail to arrange a consultation meeting.

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

# PERMIT FOR DIVERSION AND USE OF WATER

## PERMIT 21085

Application 29331 of Muir Beach Community Services District
19 Seacape Drive, Star Box 221
Muir Beach, CA 94965-9701

filed on **August 31, 1988**, has been approved by the State Water Resources Control Board (SWRCB) SUBJECT TO PRIOR RIGHTS and to the limitations and conditions of this permit.

**Permittee is hereby authorized to divert and use water as follows:**

1. Source of water

Source: **Redwood Creek underflow**

Tributary to: **Pacific Ocean**

within the County of **Marin**

2. Location of point of diversion

| By California Coordinate System in Zone 3 | 40-acre subdivision of public land survey or projection thereof | Section (Projected)* | Township | Range | Base and Meridian |
|---|---|---|---|---|---|
| **MBCSD Supply Well; North 506,650 feet and *East 1,398,850 feet*** | **SW¼ of NE¼** | **01*** | **1S** | **7W** | **MD** |

| 3. Purpose of use | 4. Place of use | Section (Projected)* | Township | Range | Base and Meridian | Acres |
|---|---|---|---|---|---|---|
| **Domestic** | **NW¼ of NW¼** | **07*** | **1S** | **6W** | **MD** | |
| | **SW¼ of NW¼** | **07*** | **1S** | **6W** | **MD** | |
| | **NE¼ of NE¼** | **12*** | **1S** | **7W** | **MD** | |
| | **SE¼ of NE¼** | **12*** | **1S** | **7W** | **MD** | |

The place of use is shown on map on file with the SWRCB.

5. The water appropriated shall be limited to the quantity which can be beneficially used and shall not exceed 0.07 cubic feet per second to be diverted from January 1 to December 31 of each year. The maximum amount diverted under this permit shall not exceed 50.6 acre-feet per year. The maximum rate of direct diversion shall not exceed 0.07 cubic feet per second based on a 30-day average.

(0000005A)

6. Complete application of the water to the authorized use shall be made by December 31, 2011.

(0000009)

7. Permittee shall install a device, satisfactory to the Chief of the Division of Water Rights, which is capable of measuring the bypass flows required by the conditions of this permit. Said measuring device shall be properly maintained.

(0060062b)

8. Permittee shall install and maintain devices satisfactory to the Chief of the Division of Water Rights to measure the instantaneous rate of diversion diverted under this permit in cubic feet per second, the daily quantity of water diverted under this permit in gallons per day. A record of such measurements shall be maintained by the permittee, and made available to interested parties upon reasonable request. A copy of the records shall be submitted to the State Water Resources Control Board with the annual "Progress Report by Permittee".

Permittee shall allow the National Park Service or a designated representative, reasonable access to measuring devices for the purpose of verifying measurement readings.

(000000R)

9. The Muir Beach Community Services District (District) shall prepare an Adaptive Management Plan (Plan), acceptable to the Chief of the Division of Water Rights (Division), that will govern the District's diversion of water from Redwood Creek.

The objective of the Plan is to provide the District with a dependable water supply for municipal use while preserving instream flows necessary to protect threatened and endangered fisheries and other public trust resources in Redwood Creek. The Plan shall be submitted to the Division within six months of the issuance of this permit, or a date that is agreeable to the Technical Advisory Committee and acceptable to the Division. The Plan shall describe specific activities to be completed by the District and the time schedule for implementing those activities. Following approval of the Plan by the Division, the District shall implement the measures included in the Plan, in accordance with the defined time schedule.

To assist in the development of the Plan, the District shall immediately establish a Technical Advisory Committee (TAC) consisting of representatives from the District, the National Park Service (NPS), the California Department of Fish and Game (DFG), the California Department of Parks and Recreation (DPR). Within one month of the issuance of this permit, the TAC shall develop a workplan for the Plan that describes the specific activities to be completed and the time schedule for completing each activity. Until the TAC adopts such a workplan, the draft workplan enclosed in the Division's letter dated May 23, 2000 (interim workplan), shall govern the TAC. The final workplan shall be similar in scope to the interim workplan.

The Plan shall include, at a minimum, the following components:

A) A Water Conservation Plan A water conservation plan shall be developed by the District taking into consideration the flow and the condition of the fishery resources in Redwood Creek and the minimum instream flows (i.e., flow "thresholds") that will trigger appropriate water conservation measures by the District. The water conservation plan shall include the following elements:

1. Tiered rate structures;
2. Leak detection and repair programs;
3. Public information programs;
4. Low flow facilities;
5. Seasonal limitations on flushing water lines;
6. Seasonal limitations on outside irrigation;
7. Inspection/enforcement provision;
8. Plan review and update frequency;
9. Implementation of best management practices;
10. Restrictive "stepped" conservation measures.

B) A Streamflow Monitoring Program The Plan shall propose a streamflow monitoring program to be implemented by the District. The Plan shall describe the type of gage/s, the location of the gage/s, the frequency of streamflow measurements and the method to record and distribute data. In conjunction with this activity, the TAC shall investigate alternative sources of funds and/or determine whether other agencies want to participate in a streamflow monitoring program of Redwood Creek.

C) A Pumping Schedule The Plan shall establish a pumping schedule that will define the maximum allowable rate of diversion on a yearly, seasonal, daily and hourly basis.

D) A Reporting Schedule The Plan shall establish requirements for reporting and distributing of data, to include streamflow data, rates of diversion, water use and water conservation measures implemented by the District.

E) A Plan for Revising/Updating the Plan The Plan shall include a component that establishes procedures for periodic review, evaluation, and revision/updating of the Plan.

(0410500)

10. Within six months of the issuance of this permit, the District shall submit a feasibility study report to the Chief of the Division of Water Rights that evaluates other alternative sources of water that may be available to the District, including the relocation of the District's well to a downstream location, importation of water from the Marin Municipal Water District, desalination, and reclamation (i.e., gray water and reuse systems). The District shall solicit comments and recommendations from the TAC and shall submit a draft copy of the feasibility study report to the TAC for review and comment. The District shall continue to investigate feasible, cost-effective alternative sources of water identified in the feasibility study report, to the extent possible, to reduce the impact of diversions on the public trust resources in Redwood Creek.

(0260300)

11. Within six months of the issuance of this permit, the District shall submit a report to the Chief of the Division of Water Rights that evaluates the feasibility of constructing additional off-stream water storage facilities with capacities of up to one million gallons. The District shall solicit comments and recommendations from the TAC and shall submit a draft copy of the report to the TAC for review and comment. As soon as practical, the District shall construct additional feasible, cost-effective, off-stream storage facilities.

(0490300)

12. Until the Division approves the District's Adaptive Management Plan, the District shall comply with the following interim measures, in order to protect the public trust resources of Redwood Creek:

> During May through November or when streamflow as measured at the Highway 1 Bridge is less than 0.5 cubic feet per second (cfs), but greater than 0.3 cfs, the District shall limit diversions to a maximum of 45,000 gallons per day (gpd) and shall limit diversions to the time period between 8 p.m. and 8 a.m.
>
> When streamflow as measured at the Highway 1 Bridge is equal to or less than 0.3 cfs, the District shall (1) limit diversions to a maximum of 40,000 gpd, (2) limit diversions from 8 p.m. to 8 a.m. and (3) not allow use of water for irrigation or other outside use, except for fire protection or other municipal uses of water that are necessary for public health and safety.

During the interim period of operation, the District shall review the adequacy of these interim measures with the TAC. The TAC shall evaluate whether these measures are necessary and/or whether additional measures are needed during the interim period of operation in order to protect public trust resources. The interim measures described above can be modified, provided the proposed modifications to the interim measures are acceptable to all members of the TAC and the Chief of the Division of Water Rights.

Following approval of the Adaptive Management Plan by the Division, the District shall comply with the terms described in that Plan.

(0400500)

**ALL PERMITS ISSUED BY THE STATE WATER RESOURCES CONTROL BOARD ARE SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:**

A. Permittee shall maintain records of the amount of water diverted and used to enable SWRCB to determine the amount of water that has been applied to beneficial use pursuant to Water Code section 1605.

B. The amount authorized for appropriation may be reduced in the license if investigation warrants.

C. Progress reports shall be submitted promptly by permittee when requested by the SWRCB until a license is issued.

D. Permittee shall allow representatives of the SWRCB and other parties, as may be authorized from time to time by said SWRCB, reasonable access to project works to determine compliance with the terms of this permit.

E. Pursuant to California Water Code sections 100 and 275, and the common law public trust doctrine, all rights and privileges under this permit and under any license issued pursuant thereto, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of SWRCB in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the SWRCB may be exercised by imposing specific requirements over and above those contained in this permit with a view to eliminating waste of water and to meeting the reasonable water requirements of permittee without unreasonable draft on the source. Permittee may be required to implement a water conservation plan, features of which may include but not necessarily be limited to (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this permit and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the SWRCB determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the SWRCB also may be exercised by imposing further limitations on the diversion and use of water by the permittee in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the SWRCB determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution Article X, Section 2; is consistent with the public interest; and is necessary to preserve or restore the uses protected by the public trust.

F. The quantity of water diverted under this permit and under any license issued pursuant thereto is subject to modification by the SWRCB if, after notice to the permittee and an opportunity for hearing, the SWRCB finds that such modification is necessary to meet water quality objectives in water quality control plans which have been or hereafter may be established or modified pursuant to Division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the SWRCB finds that (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges.

## RESOLUTION 2002-12-11-01

**A resolution by the Board of Directors of the Muir Beach Community Services District Proposing an Enforcement Policy for the Conservation of Water During Officially Noticed Water Conservation Periods.**

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**WHEREAS,** the District's water rights permit requires a reduction in the District's daily water production for public use during the drought season; and

**WHEREAS,** the District's water rights permit requires the District to establish a policy for enforcing water conservation during drought periods; and

**WHEREAS,** the District acknowledges the limited water resources and the public values of protecting the essential and natural environmental conditions of the District area; and

**WHEREAS,** it is the determination of the Board of Directors that it is to the benefit of the District, its residents, and the general public to have a reasonable and uniform policy for enforcing water conservation during drought periods.

**NOW, THEREFORE, BE IT RESOLVED** by the Board of Directors of the Muir Beach Community Services District as follows:

**Section 1:** That during drought conditions when the District determines that it must reduce its daily water production, it shall issue a Notice of Water Conservation to its customers.

**Section 2:** That no less 3 days after the issue of the Official Notice of Water Conservation, the District will record the meter readings of its customers.

**Section 3:** That the penalties, incentives and provisions as contained in Exhibit A, attached hereto and made a part of this resolution, shall be applied to the water billings occurring thereafter until the District issues a Notice That the Drought Conditions have ended.

**Section 4:** This resolution shall take effect immediately following passage by a majority vote of the Board of Directors Of the Muir Beach Community Services District, posting on the Community bulletin boards, and mailing to the District water customers.

**PASSED, APPROVED AND ADOPTED** at a regular meeting of the Board of Directors of the Muir Beach Community Services District on _____.

Ayes:

Noes:

Absent:

_____ _____

Steven Shaffer, President of the Board Donovan Macfarlane, Secretary

## EXHIBIT A

### Penalty for Residential Water Usage of More than 2,000[1] Cubic Feet per Month

| Cubic feet of use | Penalty Charge[2] Per 100 cubic feet | Total |
|---|---|---|
| 2,000 to 2,100 | $100 | $100 |
| 2,101 to 2,200 | $400 | $500 |
| 2,201 to 2,300 | $500 | $1,000 |
| 2,301 to 2,400 | $100 | $1,100 |
| 2,401 and above | $100 for each additional 100 cubic feet increment | |

[1] **Family Size:** The penalty threshold ( 2,000 cubic feet per household) is provided for households having 1 to 6 occupants. If a household has more than 6 occupants, a proportional threshold adjustment for the additional occupants can be obtained by contacting the District General Manager.

In the event the 2,000 cubic feet threshold does not reduce the total District water consumption adequately to meet the required reduced water production, the District may change the threshold, by resolution and notice to its customers, as necessary.

[2] **Reduced Initial Penalty:** The penalty will be reduced by 50% the first time the penalty is incurred. However, if the penalty-level consumption continues unabated, the reduction will be cancelled and the full penalty amount reinstated for the prior and future billing periods.

### Water Conservation for Commercial Customers

1. Commercial customers will not have an allowance for family size.

2. The penalty threshold for commercial customers will be set as : 90% of the commercial customer's average recorded water usage for the previous billing periods ending in December, January, and February prior to the issuance of the Notice of Water Conservation (rounded to the nearest 100 cubic feet). The penalty for failing to conserve, as required, will be in accord with the above Table for residential customers.