

**MUNI/WESTERN EXHIBIT 10-9**  
**CITY OF SAN BERNARDINO WATER DEPARTMENT, 2005**  
**URBAN WATER MANAGEMENT PLAN, COVER AND**  
**CONSERVATION TEXT**

# CITY OF SAN BERNARDINO MUNICIPAL WATER DEPARTMENT

## 2005 URBAN WATER MANAGEMENT PLAN



**SAN BERNARDINO MUNICIPAL WATER DEPARTMENT  
Post Office Box 710  
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# Section 4

## Conservation

### 4.1 Introduction

Effective water conservation practices are necessary to be able to provide adequate supplies to meet growing demands in SBMWD’s service area. Through its own initiatives SBMWD is committed to increasing water conservation through the implementation of Best Management Practices, also commonly referred to as Demand Management Measures.

### 4.2 BMP Implementation

SBMWD has implemented a portion of the BMPs listed in Table 4-1. Table 4-1 lists each BMP and summarizes SBMWD’s status in implementing the BMPs. BMP 10 is not applicable to SBMWD as SBMWD is not a wholesale agency. No additional BMPs were proposed in the 2000 UWMP beyond those that were already implemented. In the time period since the 2000 UWMP, existing BMPs have continued to be implemented.

BMP #	Practices	Status
1	Water surveys programs for single-family residential and multi-family residential customers	Implemented
2	Residential plumbing retrofit	Not Implemented
3	System water audits, leak detection and repair	Implemented
4	Metering with commodity rates for all new connections, and retrofit of existing connections	Implemented
5	Large landscape conservation programs and incentives	Not Implemented
6	High efficiency washing machine rebate program	Not Implemented
7	Public information programs	Implemented
8	School education programs	Implemented
9	Commercial/Industrial/Institutional water conservation	Not Implemented
10	Wholesale agency assistance program	Not applicable
11	Conservation pricing	Under Evaluation
12	Water conservation coordinator	Not Implemented
13	Water waste prohibition	Implemented
14	Residential ULFT replacement program	Not Implemented

#### 4.2.1 BMP 1: Water Survey Programs for Single-Family and Multi-Family Residential Customers

SBMWD is currently conducting water survey audits for residential customers on a customer requested basis at no cost to the customer. During these surveys a meter service supervisor checks the appearance of landscaping, looks for signs of irrigation system leaks, and interviews the customer to determine if the inside piping or plumbing fixtures are leaking. If SBMWD field personnel notice apparent leaks or

unusually high metered water consumption, they will leave a door tag alerting the customer to check for leaks. These system audits are a cost-effective means of reducing water loss from undetected leaks.

Upon request, SBMWD will conduct complete landscaping audits. Additionally, the City of San Bernardino Building Code requires the installation of water efficient landscaping for any new expansion over 25% of existing floor space and requires the usage of water saving landscaping for all new developments.

The California Urban Water Conservation Council (CUWCC) estimates a ten percent reduction in outdoor use will result from outdoor surveys. Savings resulting from this program were estimated to have a life of three years. Sufficient budget is and will continue to be allocated for these audits and outdoor surveys.

SBMWD does not currently conduct indoor residential surveys. Potential savings assumptions as established by the CUWCC are presented in Table 4-2. CUWCC's methodology for calculating savings resulting from indoor water surveys assumes savings for showerhead retrofits, ULFT retrofits, and leak repairs. It is not reasonable to assume each survey will result in all or any of these changes. Further, this methodology introduces potential double counting of toilet and showerhead retrofits because these fixtures are offered as part of other BMPs (BMP 2 and 14).

	<b>Pre-1980 Construction</b>	<b>Post-1980 Construction</b>
<b>Low-Flow Showerhead Retrofit</b>	7.2 gcd	2.9 gcd
<b>Toilet Retrofit (five year life)</b>	1.3 gcd	0.0 gcd
<b>Leak Repair</b>	0.5 gcd	0.5 gcd

Source: CUWCC  
[http://www.cuwcc.org/m\\_bmp1.lasso](http://www.cuwcc.org/m_bmp1.lasso)

#### **4.2.2 BMP 2: Residential Plumbing Retrofit**

SBMWD is not implementing this BMP. Currently there is not a local enforceable ordinance in effect in the SBMWD service area requiring the replacement of high-flow showerheads and other water using fixtures with low flow counterparts. California State law since 1992 prohibits the sale or installation of non-conserving showerheads. However, it is important to note that CUWCC estimates that showerheads have a ten year life, thus it is likely that all pre-1980 homes have been retrofitted with new showerheads purchased by residents. Further, it could be argued that homes constructed pre-1994 also have retrofitted showerheads, or will in the very near future.

### **4.2.3 BMP 3: System Water Audits, Leak Detection, and Repair**

To determine the extent of and potential for system leaks, SBMWD conducts regular metered water production versus metered water sales mass balance audits to detect unusual changes in the water operation. The goal is to minimize water losses and increase overall system efficiencies. Periodic reports concerning this are prepared and presented to the General Manager and Board of Water Commissioners. The cost-effectiveness is determined by the Department's ability to plan for and implement programs and/or water system component replacement that provide an efficient means of reducing water loss.

Past water audits conducted by the Department have indicated that approximately 7% of the total water produced is unaccounted for with a total of 2% estimated as attributable to leaks within the system. The remaining 5% is attributed to nonmetered uses (see below) and metering error. The non metered sources of unaccounted for water production that can consume water include:

- Flushing of new water lines - new construction.
- A routine flushing program of the existing in service pipelines.
- Fire use including training.
- Street sweeping.
- Illegal use of water by construction contractors. The Department requires meters for all water provided to construction sites, but cannot enforce all unauthorized uses of the water.
- Unmetered Water Department plant process water.

The Department responds immediately to repair leaks that occur. Field personnel (e.g. meter readers, water production and treatment operators, construction and maintenance technicians) are trained to recognize potential service and main line leaks. Pipelines with chronic leak problems are replaced. The Department maintains an active main replacement program. This is a cost-effective means of reducing water loss due to leakage.

The Department has an ongoing meter calibration, repair, and replacement program. When failed meters are discovered, lost revenue from underbillings are regained by estimating water usage as compared to historical billing data. Likewise, the Department may credit customers for over read or high meter readings. The Department replaces nonoperating meters as identified. Customer water meters larger than 1½-inch in size are tested on a bi-annual basis. Source of supply water meters are tested annually and domestic meters 1-inch in size or smaller are replaced on a 19-year rotation basis. The average water loss or unaccountable water as

reported in the Department's annual audit averages 7% per year. This replacement program is a cost-effective means of reducing water loss as well as erroneous billings.

Sufficient budget is and will continue to be allocated for conducting system water audits, leak detection, and repairs.

#### **4.2.4 BMP 4: Metering with Commodity Rates for all new Connections and Retrofit of Existing Connections**

All of SBMWD's customers are metered and charged a commodity rate for water service (see Appendix B for the water rate schedule). The only unmetered water use permitted is for residential construction use in which a flat monthly fee is charged for a maximum period of 120 days or until the lot landscaping is started or the dwelling is completed.

#### **4.2.5 BMP 5: Large Landscape Conservation Programs and Incentives**

SBMWD does not currently provide a large landscape water audit program to its customers. However, SBMWD does provide separate dedicated landscape meters for customers with large landscapes.

#### **4.2.6 BMP 6: High-Efficiency Washing Machine Rebate Program**

SBMWD encourages its customers to purchase high-efficiency washing machines on its website, but does not provide a rebate program.

#### **4.2.7 BMP 7: Public Information Programs**

Public information regarding water conservation is disseminated to the public through various means. Through its public awareness programs, SBMWD believes that during times of drought a 10 to 20 percent reduction in water use can be achieved. During past droughts SBMWD has undertaken public awareness programs that included informing the public about water conservations through various advertising mediums.

Current public information programs include:

- Participation with other local water agencies in Water Awareness Month activities, including distribution of education materials at conferences and radio advertising
- Presentations to local community groups and service clubs through the City's speakers bureau
- Tours of SBMWD facilities to educate the public regarding the importance of the water supply, facilities required to provide potable water, and regulatory influences on the cost of providing water

- Inclusion of water conservation and water use information in SBMWD's Annual Water Quality Report
- Use of an internet website with a conservation section highlighting methods to conserve water both indoors and outdoors.

SBMWD's public information program is a cost-effective means of providing long-term beneficial impacts to the local water supply by educating customers. Sufficient budget is and will continue to be allocated for these programs.

#### **4.2.8 BMP 8: School Education Programs**

SBMWD participates in school education programs when requested by local school administrators and educators. Requests have increased in the past during periods of drought. During Water Awareness Month SBMWD participates in community school programs designed to increase awareness of water. Tours of water facilities throughout the year are also provided to educational groups.

SBMWD's education program is a cost-effective means to provide early education of young water users in order to provide long-term beneficial impacts to the local water supply. Sufficient budget is and will continue to be allocated for these programs.

#### **4.2.9 BMP 9: Commercial/Industrial/Institutional Conservation Programs**

SBMWD does not currently provide surveys as part of a conservation program for commercial/industrial/institutional users.

#### **4.2.10 BMP 11: Conservation Pricing**

SBMWD does not currently utilize a pricing structure that is conservation driven for any of its billing classifications. Water customers pay per hundred cubic feet (HCF) used, an energy surcharge per HCF used, and a monthly service charge based upon meter size. Residential users have an allowance that must be exceeded before HCF charges are applied.

Wastewater customers pay a regional facility and treatment charge and a collection system charge in the form of either a flat rate per unit or a flat rate plus a charge for HCF dependent upon the classification of the customer.

Appendix B contains a copy of the water and sewer rate structures.

#### **4.2.11 BMP 12: Conservation Coordinator**

The duties of a Water Conservation Coordinator fall within the scope of the SBMWD community liaison position job duties.

#### 4.2.12 BMP 13: Water Waste Prohibition

SBMWD has a water conservation policy adopted on February 5, 1991 that encourages water users to not waste water. However, SBMWD does not have a water waste prohibition ordinance nor a water softener ordinance. SBMWD's water conservation policy (Resolution 418, Drought Contingency Plan) is included in Appendix C.

#### 4.2.13 BMP 14: Residential ULFT Replacement Programs

SBMWD does not provide a toilet replacement incentive program; however, as part of the Department's Water Awareness Program, water displacement bags for high water usage toilets are made available. Ultra-low water usage toilets are now a requirement by the State of California per Title 24 in all new construction. Building permits issued by all planning jurisdictions within the Department's service area require conformance with Title 24. Additionally, all toilets sold in the State of California are required to be ultra-low flush toilets.

### 4.3 Analyses of BMPs

#### 4.3.1 Economic Considerations

The unit cost of conservation was compared to the unit cost of new water supply development to determine the most cost-effective means of acquiring additional water supplies. First, the unit cost (dollars per AF) of installing and operating a new 2,000 gpm (3,226 AF/Y) well was determined. Assuming a total capital cost of \$972,000 annualized over twenty-five years with a 5% interest rate results in a capital cost of \$21/AF. Annual operation and maintenance costs (operation, maintenance, power, and replacement) for a well this size tends to vary between \$75/AF and \$100/AF for water extracted. Therefore, the total unit costs of extracted groundwater would range between \$96/AF and \$121/AF.

Table 4-3 provides a range of conservation costs (\$/AF) for four categories of conservation. Costs include the conservation devices, administration costs associated with the program, and labor.

<b>Program</b>	<b>Cost Range per AF</b>
Residential Plumbing Retrofits <sup>1</sup>	\$180-\$350
Residential and Commercial Water Use Surveys	\$300-\$500
Landscape Conservation	\$200-\$700
High Efficiency Washing Machine Rebates	\$200-\$300

<sup>1</sup>: Includes showers, faucets, and toilets

Sources: CUWCC, BMP Cost and Savings Study, July 2000;  
Los Angeles Department of Water and Power 2005  
UWMP; Rancho California Water District 2005 UWMP



Development of new groundwater supply is a more cost effective means of obtaining additional water supplies than implementing additional BMPs or conservation measures at this time. Using the most expensive operations and maintenance expense for a new well combined with the annualized capital costs versus the lowest cost for residential plumbing retrofits results in a difference of \$59/ AF. Therefore, conservation measures have not been emphasized during non-drought periods.

For the most part the Department's water supply will match demands throughout the next 20-year planning period as further explained in Section 8. However, the Department will continue to promote wise water usage for the benefit of public awareness and increasing the efficiency of operations.

### **4.3.2 Environmental Considerations**

A review of the above identified programs was conducted to determine any direct or indirect environmental consequences. There were no significant adverse environmental consequences determined to be associated with the Department's conservation program. Implementation of these water conservation programs will have no significant negative environmental effect.