Texas Water Development Board
Water Conservation Best Management Practices

Introduction

Experience in water conservation program implementation over the decades has resulted in a body of knowledge in Texas, across the United States and around the world. Practitioners have shared these experiences and adopted the approach of the BMP. A BMP is structured for delivering a conservation measure or series of measures that is useful, proven, cost-effective, and generally accepted among conservation experts.

In Texas, water conservation BMPs are designed to fit into the State's water resource planning process as one alternative to meet future water needs. As a result, each BMP must be clearly defined in its schedule of implementation, expected water savings, and costs of implementation (based on Exhibit B Guidelines for Regional Water Plan Development). Each BMP structure has several elements that describe the efficiency measures, implementation techniques, schedule of implementation, scope, water savings estimating procedures, cost effectiveness considerations, and references to assist end-users in implementation.

The original 55 BMPs were issued in November 2004 as part of the report prepared by the Texas Water Conservation Implementation Task Force, a volunteer group of Texas citizens with experience in and commitment to using Texas water more efficiently. The Task Force was created by the 78th Texas Legislature under Senate Bill 1094. The legislature charged the Task Force with reviewing, evaluating, and recommending optimum levels of water use efficiency and conservation for the state. These Best Management Practices were prepared in partial fulfillment of this charge. The Task Force recommended that these BMPs be reviewed and updated and that additional BMPs be added to provide an ongoing resource of successful water conservation practices that can be shared with all WUGs.

The Task Force also recommended establishment of a Water Management Resource Library for Texas. This library would be mainly an electronic resource managed by TCEQ or TWDB and would catalog and provide a link to public policy summaries and specific legislation and regulation, BMPs, case studies, water-use technologies, and other planning resources. The library would include an interactive, Internet-based database system ~~developed to facilitate storage and review of information related to water conservation plans and their implementation. The database system will store information on all water conservation plans in a format consistent with the BMP structure in the BMP Guide. Any additional information required by TWDB to comply with administrative reporting requirements should be included as well. The system would be used by, and available to, all entities subject to water conservation plan requirements and state agencies responsible for overseeing compliance with these requirements.~~

Best-management practices are **voluntary** efficiency measures that save a quantifiable amount of water, either directly or indirectly, and can be implemented within a specified timeframe. The BMPs are not exclusive of other meaningful conservation techniques that an entity might use in formulating a water conservation plan. It was the expressed vision of the Task Force that the BMPs be tools that can be used at the discretion of each user,

BMPs may be implemented individually, in whole or in part, or be combined with other BMPs or other water conservation techniques to form a comprehensive water conservation program. The adoption of any BMP is entirely voluntary, although it is recognized that once adopted, certain BMPs may have some regulatory aspects to them (e.g., implementation of a local city ordinance).

The Task Force unanimously agreed that the Texas water conservation BMPs must be in accordance with the state's philosophy of region-based water planning. The Task Force firmly asserted that applying a mandatory set of BMPs throughout Texas would **not** be appropriate. One size does not fit all in a state characterized by wide variations in climate, geography, municipal demographics, water utility and service profiles, and agricultural and industrial needs. State policies adopted to guide the implementation of water conservation, including water reuse, in Texas must acknowledge the fundamental decision-making primacy and prerogative of Planning Groups, municipalities, industrial and agricultural water users, and water providers.

Format of Best Management Practices

The BMPs are organized into three sections, for municipal, industrial and agricultural water user groups ("WUG"). Each BMP is organized to be of assistance in conservation planning, program development, implementation, and evaluation. The BMPs are tools that can be used in designing specific water conservation programs and are designed to be stand alone programs. The BMPs can be evaluated for potential water savings and the cost effectiveness for consideration in the regional water planning process. Within each planning region, sufficient variation exists at the local water user level that more specific analysis should be done by a prospective end-user prior to adopting the BMP. The BMPs are not exclusive of other meaningful conservation techniques that an entity might use in formulating a water conservation plan. At the discretion of each user, BMPs may be implemented individually, in whole or in part, or be combined with other BMPs or other water conservation techniques to form a comprehensive water conservation program.

Each BMP is organized into nine standardized sections (A-I), which are described in general terms below.

A. Applicability
The specific type of water user group that could potentially benefit from the BMP is described, as are the general goals for water efficiency that the BMP addresses.

B. Description
This section provides an explanation of the specifics of the conservation measure(s) included in the BMP. The best available technology that is proven and cost effective is recommended. Often a best available technology may not yet be cost effective to be implemented by all water users. Highly efficient water conservation measures that will produce cost-effective results are mentioned.

> **Example**: The current standard for water efficient toilets is 1.6 gallon per flush ("gpf") models. Lower flush volume toilets exist such as dual flush toilets which flush 1.6 gpf for solid waste and 0.8 gpf for liquid waste, but their availability is not yet widespread in the United States. Since this

technology is new and few models are available, costs are currently high but are expected to fall as additional models become available. As prices fall, this technology will become more cost effective.

C. Implementation
The basic steps to accomplish the BMP are described. If the description section includes more than one measure to complete the BMP, the implementation section will suggest necessary steps for achieving the water savings.

D. Schedule
In BMPs which have multiple implementation steps, a recommended schedule for implementation is included. In general, planning, data gathering and evaluation steps should be accomplished within 12 months of adoption of a specific BMP.

E. Scope
For simpler BMPs, the scope is complete when the steps described in the implementation section have been achieved. For more complicated BMPs, the scope indicates the level of implementation necessary to consider the BMP complete. Where different levels of implementation or constraints are present, these are described.

F. Documentation
To track the progress of a BMP, the water user should collect certain data to document progress implementing the BMP and evaluating actual water savings. This section identifies the recommended data.

G. Determination of Water Savings
This section specifies information necessary to calculate water savings from implementation of the BMP and may include statistical or mathematical formulas when appropriate.

H. Cost-Effectiveness Considerations
Basic costs of implementing the specific BMP are explained. Due to the wide variety in actual costs based upon size of program and location, ranges of costs are given where appropriate. In many cases, costs and expenses can be reduced or spread out when multiple BMPs are implemented by an entity. This section primarily serves to remind the users of costs to consider when performing a cost effectiveness analysis.

I. References for Additional Information
The BMP concludes with a listing of resources that can assist a water user in implementing the BMP.

New BMPs

For planning purposes water conservation best management practices are not limited to those listed in this guide.

The Task Force acknowledged that the efficient use of water as a natural resource is an important planning objective and an economical means of operation and recommends that water user groups of all types evaluate the BMPs for use in their area.

Each of the original 55 BMPs was prepared through research of literature and with the insight and experience of Task Force members, Board staff, and technical consultants to provide information based upon real world results of conservation program implementation. Conservation program managers wishing to use the BMPs in program delivery should pay close attention to the Implementation, Schedule, Scope, and Documentation sections. Each of these sections contains information which can assist existing conservation programs as well as new conservation efforts to increase their effectiveness. Each BMP also includes a reference section with additional resources to assist conservation practitioners in delivering high quality programs with real water savings.

The Task Force presents the original Guide as a tool for advancing the practice and effectiveness of water conservation in Texas. The insights distilled in the enclosed BMPs came from years of conservation practice. That same experience led the Task Force to view it as a living document, with the recognition that further implementation of conservation practices will bring new insight, more study will provide new information, and new technology will improve savings. The Task Force members encouraged conservation managers, planners, practitioners and policy makers to give feedback to the Texas Water Development Board about the BMP Guide in the hopes that it will be updated regularly over the years ahead.

Adding New BMPs

Just as the original 55 BMPs were prepared through research of literature and with the insight and experience of Task Force members, Board staff, and technical consultants to provide information based upon real world results of conservation program implementation, any BMP being proposed should be considered for inclusion by a similar process as follows:

1. Anyone proposing to add a Texas Water Conservation BMP should submit an abstract of the proposed BMP or an actual draft of the BMP to the TWDB staff.
2. The proposed BMP will be distributed to the WCAC and any technical consultants the TWDB finds appropriate for review and recommendation to include in the Texas Water Conservation Resource Library.
3. All recommendations will be considered by the TWDB staff. The final decision to add the BMP will be made by the TWDB.
4. If the TWDB agrees to add the new BMP, comments on the proposal will be returned to the party making the request indicating that the prescribed format (outlined earlier in this document) be followed and requesting a final draft by submitted.
5. All parties that participated in the review of the proposal (step 2 above) will be given an opportunity to comment on the final draft.
6. Once all comments are considered and any appropriate changes agreed by the TWDB staff and the party preparing the BMP, the BMP will be added/

Revising Existing BMPs

It is very likely that future experience could produce new insights and valuable information re existing BMPs. With the goal of having each BMP be the best resource possible to water users, new information and key learnings must be added to achieve the greatest possible benefit. Revisions to any BMP should be reviewed and considered as follows:

1. Anyone proposing to revise a Texas Water Conservation BMP should submit an edited copy of the BMP clearly highlighting the proposed changes to the TWDB staff.
2. The proposed BMP will be reviewed by TWDB staff. Obvious corrections to BMPs require very limited review. Changes which the TWDB staff consider to be substantive will be distributed to the WCAC and any technical consultants the TWDB finds appropriate for review and comment.
3. All review comments will be considered by the TWDB staff. The final decision to revise the BMP will be made by the TWDB.
4. If the TWDB agrees to revise the BMP, comments on the proposal will be returned to the party making the request and requesting a final draft by submitted.
5. All parties that participated in the review of the proposal (step 2 above) will be given an opportunity to comment on the final draft.
6. Once all comments are considered and any appropriate changes agreed by the TWDB staff and the party preparing the BMP, the BMP will be revised.

The process of revising or adding BMPs must weigh the value of getting useful and timely information into the hands of water planners and policy makers against the need for extreme accuracy. Recognizing that water conservation technologies are constantly evolving, getting information in the hands of the user in a timely manner is in fact the method that will cause the evolution to take place and in fact will serve to accelerate that evolution. It is therefore the recommendations of the WCAC that distribution of timely information which is considered to be correct based on our current level of understanding be encouraged. BMPs should be living documents and as such can be improved over time but will provide a valuable resource during that time. We must always remember the very first recommendation of the Task Force:

Recommendation #1—BMPs are Voluntary
Best-management practices contained in the BMP Guide are voluntary efficiency measures that save a quantifiable amount of water, either directly or indirectly, and can be implemented within a specified timeframe. The BMPs are not exclusive of other meaningful conservation techniques that an entity might use in formulating a state-required water conservation plan. At the discretion of each user, BMPs may be implemented individually, in whole or in part, or be combined with other BMPs or other water conservation techniques to form a comprehensive water conservation program. The adoption of any BMP is entirely voluntary, although it is recognized that once adopted, certain BMPs may have some regulatory aspects to them (e.g., implementation of a local city ordinance).