SECTION 4 – MODEL PLAN TEMPLATE AND WORKSHEETS

The Model Plan template and worksheets present a detailed example of the:

- ✓ Data collection and summarization;
- ✓ Data evaluation and interpretation; and
- ✓ Scenario development and analysis

that are needed to plan for and implement meaningful water conservation.

Theme – all of the water conservation planning effort should be conducted with an eye toward public involvement and scrutiny. Water supply and water conservation issues have been receiving an increasing level of scrutiny from the press and the public, such that water utilities and districts will want to create a process of water conservation planning that is open and accessible. This has benefits to both the planning entity and the public since it is the public that ultimately implements many of the selected water conservation measures.

Although the entity that is responsible for preparing the water conservation plan has the license, by statute, to decide upon how to prepare, develop, implement, monitor, review and revise the plan, meaningful water conservation that integrates conservation planning with supply planning requires planners to truly understand their systems, their customers and their resources. **Therefore, the Model Plan contained in this section represents the work tasks that are suggested for water managers and planners to gain the level of understanding required to identify, evaluate and ultimately select the combination of water conservation measures and programs that meets the needs of the water utility or district and its customers.**

With minor modification, the steps and tasks in the following Model Plan scope of work can be used as headings in a conservation plan document. That is, planners can remove or modify the action verbs that begin each step or task in order to create section headings. For instance, "Step 1 — Profile the Existing Water System" could be changed to "Existing Water System Profile" to make an appropriate heading for that section of the conservation plan. Task "1.3 Characterize Water Costs and Pricing" could be changed to "Water Costs and Pricing," and so on.

It is envisioned that planners will be able to pull much of the information needed for a water conservation plan from existing water supply plans and other documents. In this way, the water conservation planning effort can focus on Steps 4 through 8, where

conservation goals and measures and programs are identified, evaluated, and ultimately justified for implementation through benefit/cost analyses, and the consideration of other criteria, supported by the public.

For water utilities and districts that lack some of the "up front" water supply and demand information, preparing a water conservation plan following the approach presented in this guidance document may help to stimulate planning for other areas of overall water management. For jurisdictions that have not been able to develop some of the information needed in the first few steps of the Model Plan, the water conservation planning process can be initiated to help set goals, and select and implement conservation measures and programs (albeit those that fit with the resources available and the public need), realizing that updates to the plan may need to occur over a shorter period (say three years) as compared to those entities that have existing water supply and demand information. **A shorter period for scheduled plan revisions may be justified for those entities that lack some of the other water supply and demand planning efforts to help keep the process of water management moving while some accomplishments are achieved that both the public and the planning entity can identify and share.**

Tip

All worksheets referenced in the Model Plan template are included in the back of this section.

The processes and resources presented in this guidance document can be used to develop and establish short- and long-term integrated planning that will help to move any community toward more meaningful water conservation.

MODEL PLAN TEMPLATE

STEP 1 – PROFILE THE EXISTING WATER SYSTEM

1.1 Profile Physical Characteristics of the Existing Water Supply System – Provide a summary of the physical characteristics of the existing water system using Worksheet 1-1 as a guide. Identify and discuss the key characteristics of the system, such as the geographic area served, population and connections served, types of key water users, key existing facilities, and water demand by customer type. The purpose of this task is to capture the relevant information using readily available sources. More detailed analyses of water demand, for example, will be conducted as part of later planning steps.

The results of this task should be presented in tabular and graphic form to the extent practical. Maps of the water system, showing locations of all major infrastructure, service areas, and other key features relevant to the characterization of the existing water supply system, should be provided.

1.2 Identify All Sources of Water – Identify and describe all of the system's water supply sources, including all diversions, reservoirs, and groundwater production wells. List the attributes of each source, including information on the age of the facility, its seniority, and the conditions of its use, if applicable. Note key characteristics of those sources; e.g., availability of the sources (year-round or seasonal) and their historical reliability.

1.3 Identify System Limitations – Using Worksheet 1-2 as a guide, identify past and current limitations on the entity's water supply. Discuss any "yes" answers in sufficient detail for the general public to understand the nature of conditions and challenges the system managers must address in planning and operating the system.

1.4 Characterize Water Costs and Pricing – Describe the past and current history of water sales and revenue related to retail (and wholesale) sales of treated and raw water. Describe the current rate structure and billing method. Note any unusual billing or revenue issues experienced recently (e.g., nonpayment of water bills, fines for violations of water restrictions, revenue shortfalls, etc.)

1.5 Review Current Policies and Planning Initiatives – Discuss major policies that the entity currently has in place that affect water use under normal conditions and/or drought conditions. For instance, metering policies and any limitations on new connections should be noted. (Specific water conservation policies and programs should be noted in the next subsection.) Briefly describe major planning efforts that have been performed or are soon to be performed, such as water supply plans, capital improvement project plans, drought mitigation plans, etc.

1.6 Summarize Current Water Conservation Activities – Provide a summary of current conservation activities using Worksheet 1-3 as a guide. It is recommended that further narrative descriptions be provided so that customers and members of the general public can understand the scope of each conservation measure or program, how it is implemented, its results (if available), and key success factors or challenges experienced by the system.

Step 2 – Characterize Water Use and Forecast Demand

2.1 Characterize Current Water Use – Using sales records, diversion records, billings or other data that are readily available, the planner should define current water use by customer class (e.g., residential, commercial, industrial, parks and recreation, etc.). Water use should also be described by potable and non-potable uses, indoor versus outdoor use, seasonality of use and other temporal variations, to the extent appropriate data are available. Include historical trends in overall water use and use by customer class, and for other aspects of water use if appropriate. Also identify the top water purchasers and the amount of the water that they

purchased, on a total and percentage basis. The characterization of current water use is critical to focusing selection of water conservation measures and programs. Tables and figures may be very useful for presentation of this information.

2.2 Select Forecasting Method – Select a method to estimate future water demand, by customer class, use, location, season, and/or other appropriate categories of use. Planners may use the method provided in Worksheet 2-1. Other approaches may be used as well. If so, the method(s) should be described. Planners may use demand forecasts previously prepared (within a few years) for other planning efforts if the method was at least as detailed as the method used in Worksheet 2-1.

2.3 Prepare Demand Forecast – Worksheet 2-1 can suffice for presentation of the demand forecast(s). However, water planners are encouraged to include graphics showing the forecast(s) for overall and customer class demand, and for other aspects of demand if appropriate. Note in the narrative for this planning step that these forecasts do not include adjustment for water conservation activities identified in the plan that have not already been implemented, and that such adjustments will be addressed later in the plan. If the forecasts differ substantially from historical trends, reasons for the differences should be given in the narrative.

Some planners may wish to develop forecasts over likely ranges of parameters that impact predicted future water demand, such as population change and growth in commercial and industrial use. Statistical methods for managing parameter uncertainty are available to those entities that want to include probability and likelihood analyses into their forecasts.

The planner should also provide an adequate discussion of the limitations related to the forecast.

STEP 3 – PROFILE PROPOSED FACILITIES

3.1 Identify and Cost Potential Facility Needs – This task represents an involved process that may draw heavily on information developed through other planning exercises. The focus of this task should be on developing a planning level analysis – including engineering, permitting and construction costs as well as operations and non-routine maintenance costs – that can be used later for comparison purposes. To this point, the accuracy of the cost estimates need only be plus or minus 20%, as long as all the cost estimates use the same basic set of assumptions and limitations.

The planner should identify and describe options (including costs) available to improve and add capacity to the existing water system in order to meet the preliminary water demand forecast prepared in Step 2. Improvements or system expansions could include requirements for sources of supply (including raw water storage and water purchases), water treatment facilities, treated water storage, major transmission lines, distribution capacity, pumping station capacity, and other facilities as appropriate to meet the anticipated average and peak demands and other identified needs. Indicate the reserve margin (i.e., additional capacity) assumed and the time frame in which the facilities will be needed. Planners may pull information from a recent water supply plan or other documents that address

anticipated supply system needs. Summarize the needs using Worksheet 3-1 or another summary format. Include wastewater capacity increases if appropriate.

3.2 Prepare an Incremental Cost Analysis – Estimate the incremental cost-per-gallon of new capacity for the anticipated water supply facilities, and wastewater facilities if appropriate. At a minimum, use an analysis such as that employed in Worksheet 3-2. The planner is encouraged to substitute an analysis that accounts for the time value of money by including cost escalation and discounting, if appropriate, using Worksheet 3-3 or other analysis tools.

3.3 Develop Preliminary Capacity and Costs Forecasts – Provide a timeline estimating the capacity of the water supply system over the planning horizon, including facility retirements and additions. Worksheet 3-4 may be used. A graphical presentation of this information is also recommended. The planner may also find it instructive to develop a similar timeline related to expected capital costs with and without operating costs. The cost timeline may be used to evaluate the implications of capital projects on user fees, tap fees, water rates and surcharges.

Note that all the tasks included in Step 3 may be expanded to include similar information for wastewater system capacity.

Step 4 – Identify Conservation Goals

4.1 Develop Water Conservation Goals – Development of water conservation goals is an iterative process. It requires identifying needs for demand management, based on water supply limitations and other considerations, followed by a honest review of the available implementation resources and legal limitations that may exist and ultimately impact conservation implementation. Goals may need to be revised after completion of Planning Step 7 (Integrate Resources and Modify Forecasts). Finally, once the water conservation plan is implemented, the goals of the plan may be revised based on the monitoring, evaluation, and revision tasks that follow – in an adaptive management-type approach.

Identify the areas that the planning entity desires to manage through water conservation (e.g., per capita water use, industrial water use, peak season demand, etc.) based on the water use characterization and demand forecast(s) of Planning Step 2 and the capacity and cost forecasts of Planning Step 3. Develop goals based on the expected gaps in and/or costs of water supply, or other considerations such as those listed in Section 3 for this step. Establish preliminary goals that will be refined once Planning Step 7 is completed. Explain why these are appropriate goals; e.g., in relation to system conditions, anticipated water demand, anticipated needs for facilities and/or water purchases, or other considerations.

The goals must include a specific water savings target (in acre-feet or percentage terms) for the overall water conservation effort. Describe how the water savings will be measured.

4.2 Document the Goal Development Process – Once completed, document the process used to develop water conservation goals. If public participation was a part

of the goal development process, describe the nature of that participation and how it influenced the goals.

Step 5 – Identify Conservation Measures and Programs

5.1 Identify Conservation Measures and Programs – This task requires that the planning entity develop a list of potential conservation measures and programs. Tables such as those provided in Worksheets 5-1 and 5-2 should be developed that show the full list of conservation measures and programs considered by the planner. Many additional measures and programs are available. Any identified in the planning process should be added to the summary tables.

5.2 Develop and Define Screening Criteria – Discuss how screening criteria were developed and selected to eliminate certain measures and programs from further consideration. Screening criteria may include considerations such as costs, available technology, public acceptance, legal issues, and more.

5.3 Screen Conservation Measures and Programs – Apply the selected screening criteria to the "universe" of measures and programs developed in Task 5.1. Use the tables from Task 5.1 to indicate which measures and programs are to be evaluated in the next step of the planning process. Also indicate in the tables or the document narrative why measures or programs were eliminated from further evaluation. Additional comments may be incorporated as appropriate.

In addition, briefly describe each of the measures and programs that will be passed on to later planning steps for further consideration. Provide enough information so that members of the public who review the plan will understand what is being considered.

STEP 6 – EVALUATE AND SELECT CONSERVATION MEASURES AND PROGRAMS

6.1 Create Combinations of Measures and Programs – This task involves appropriately combining and grouping measures and programs to allow for a more integrated assessment of the potential benefits that may be derived from their implementation. This is done because measures and programs are often used in conjunction with one another, and to avoid double-counting of water savings or implementation costs. Describe each measure, measure/program, or group of measures/programs, including the anticipated number of installations or uses and the expected lifespan.

6.2 Estimate Costs and Water Savings of Conservation Options – Using Worksheet 6-1 or similar, estimate the likely costs of each water conservation measure/program combination from the previous task, and estimate the likely water savings. Assess the cost effectiveness and/or net benefit of each measure/program combination.

6.3 Compare Benefits and Costs – Summarize the costs, water savings, cost per unit of water saved, and net benefit of all measures/programs using a combination of

Worksheets 6-1 and 6-2 or a similar approach. Rank the measures/programs based on cost per unit saved and/or net benefits. Discuss the results; e.g., note which measures/programs are most cost-effective based on this analysis.

6.4 Define Evaluation Criteria – Identify and describe the criteria used to select conservation measures/programs for implementation. Describe the process by which the criteria were applied to evaluation and selection of the measures/programs. Note that criteria based on costs, short-term effectiveness, and long-term effectiveness may be appropriate, or other criteria such as those noted in Section 3 of this document.

6.5 Select Conservation Measures and Programs – Summarize the evaluation of each measure or measure/program combination. Indicate which were selected for implementation, and the primary criteria for selection or rejection. Indicate the estimated water savings of selected measures/programs and total anticipated savings. Worksheet 6-3 may be used to present this information. Discuss important issues and opportunities noted in the evaluation process. For instance, note conditions or actions that are required prior to implementation of a measure or measure/program combination, and implementation schedule considerations.

STEP 7 – INTEGRATE RESOURCES AND MODIFY FORECASTS

7.1 Revise Demand Forecast(s) – Revise the demand forecast(s) prepared in Planning Step 2 to account for the water savings of the measures/programs selected in Planning Step 6. Utilize Worksheet 7-1 or a similar approach that addresses average and peak demands.

7.2 Identify Project-Specific Savings – Identify the anticipated effects of conservation on proposed supply capacity and other demand-based requirements specified in Planning Step 3. Specifically, identify the extent to which conservation enables elimination, downsizing, or postponement of projects or water purchases during the planning period. Indicate anticipated savings in capital and operating costs. Utilize Worksheet 7-2 or a similar analysis for each project that is affected by implementation of the water conservation plan.

If planners are uncertain whether implementation of the plan will be sufficient to allow modification to supply projects or other projects, discuss when and how the results of implementing conservation will be assessed to determine if anticipated projects can be modified. This discussion can occur in the section for Planning Step 8, but should be referenced here.

7.3 Revise Supply-Capacity Forecast(s) – Revise the supply-capacity forecast prepared in Planning Step 3 to account for the modifications to supply projects that will be possible due to implementation of the plan. Provide the total estimated capital cost and operating cost savings. Include operating cost savings at existing facilities as well as any new or expanded facilities. Worksheet 7-3 may be used to summarize the modified capacity forecast and estimated savings.

7.4 Summarize Forecast Modifications and Benefits of Conservation – Provide and discuss a graph showing anticipated demand and anticipated supply with and

without implementation of the selected conservation measures and programs. Discuss how implementation of the conservation plan will help the system address the conditions and challenges identified in Planning Step 1. Refer to the goals established in Planning Step 3 as appropriate.

7.5 Consider Revenue Effects – Describe if and how implementation of the conservation plan will affect system revenues. Discuss strategies for addressing these revenue effects, if needed. Using a cash flow or capital costs versus time analysis, identify how water conservation may reduce the need for capital expenditures in the future; and how reduced sales may require increased water rates or surcharges.

STEP 8 – DEVELOP IMPLEMENTATION PLAN

8.1 Develop Implementation Schedule – Discuss significant implementation actions for each selected conservation measure or measure/program combination. Note significant factors or considerations that could delay or prevent implementation of specific measures or programs. Utilize Worksheet 8-1 or a similar table to summarize key actions and the implementation schedule.

8.2 Develop Plan for Public Participation in Implementation – Describe whether, when, and how the water utility or district intends to involve members of the community in the implementation, monitoring and evaluation of the selected conservation measures and programs.

8.3 Develop Plan for Monitoring and Evaluation Processes – Describe what water savings, costs, and other data will be collected, and how. Discuss when and how the water system plans to evaluate the effectiveness of the water conservation measures and programs selected in the plan.

8.4 Develop Plan for Updating and Revising the Conservation Plan – Indicate when the water system intends to update and revise the conservation plan. Provide a preliminary indication of how the update and revision will be accomplished.

8.5 Define Plan Adoption Date/Plan Completed Date/Plan Approved Date –Indicate the governing body that approved the plan. Include a copy of the approval resolution or other approval document as an appendix to the conservation plan.

STEP 9 – MONITOR, EVALUATE AND REVISE CONSERVATION ACTIVITIES AND THE CONSERVATION PLAN

9.1 Implement the Plan - Implement the plan including all those components listed in the plan schedule developed in Planning Step 8, such as monitoring system performance, customer satisfaction, water savings and cost; continuing public involvement activities; reviewing data and evaluating the need for making revisions to the plan and overall approach to water conservation; and developing regularly scheduled updates as specified in the plan and required by Statute.

MODEL PLAN WORKSHEETS