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### **What Is A Master Plan?**

A Master Plan is a planning document that provides communities with a roadmap for where they're going and how they will get there. Most Master Plans cover at least a 20 year planning period. It is a "living document" that identifies problems and needs and then reviews and recommends alternatives for correction of the most significant problems. The three primary areas of water supply covered usually include:

- projecting future water demands, comparing these to current capabilities and evaluating how to meet inadequacies;
- deciding whether treatment facilities are needed, and planning these so that costs can be minimized to handle future requirements; and
- planning distribution system needs, including system expansions, to assure that fire flows can be met and pipe sizes and types are appropriate for adequate pressure and water quality.

Most of the Master Plan should focus on making sure that existing facilities can provide adequate quantities of good water at all times. It should also include methods of minimizing water losses and making sure production is optimized.

### **Benefits of Developing a Master Plan**

As water supply requirements have grown more complex in the last 10 years, so has the need for a "Master Plan" or roadmap that identifies future expenditures and needs. Some of the primary benefits include:

- Reduced losses. Plan will help minimize water losses and optimize production.
- Meet future demands. Plan helps assure demand can be met under future peak conditions.
- Meet fire flow needs. Plan helps assure provision of adequate fire flow capacity.
- Improved water quality. Plan will reduce future water quality problems from dead ends and stagnant areas of the system.
- Reduced costs. Plan will minimize long-term treatment and distribution costs.
- Improved public health protection. Plan will help reduce public health threats.
- Improved regulatory compliance. Plan will help meet increasingly stringent regulations.
- Better financial position. Plan provides financial projections to minimize rate shock and maintain borrowing capacity.

The plan provides a roadmap for communities that can be updated from time to time as conditions change. As a result, there is an increase in public health protection benefits by making sure long-term projects get done when they need to, and not in a crisis. In summary, a Master Plan is a long-term plan to optimize services while minimizing costs.

## MASTER PLANNING FOR WATER FACILITIES

A Master Plan is a planning document that provides communities with a roadmap into the future. The plan should outline where the community is going and how they will get there. Most Master Plans cover at least a 20 year planning period. There are specific periods in time which the community should look beyond the 20 year period and then others when the planning should concentrate on the near term future.

The plan should be considered a "living document" that outlines the goals of the community for the development of their capacities for technical, managerial and financial aspects. These goals should be followed by corrective actions or proposed additions to the systems. Alternative methods to achieve these goals should be reviewed and evaluated both from a monetary standpoint and a nonmonetary standpoint. Prioritization of these improvements outlined chronologically will establish the framework for the Master Plan. Outlined below are the basic steps of a Master Plan.

- I. GENERAL. A preliminary report should clearly describe the owner's present situation.
- II. PROJECT PLANNING AREA. Describe the area under consideration. The project planning area may be larger than the service area determined to be economically feasible. The description should include information on the following:
  - A. Location. Maps, photographs, and sketches. These materials should indicate legal and natural boundaries, major obstacles, elevations, etc.
  - B. Environmental Resources Present. Maps, photographs, studies and narrative. These materials should provide information on the location and significance of important land resources (farmland, rangeland, forestland, wetlands and 100/500 year floodplains, including stream crossings), historic sites, endangered species/critical habitats, etc., that must be considered in project planning.
  - C. Growth Areas and Population Trends. Specific areas of concentrated growth should be identified. Population projections for the project planning area and concentrated growth areas should be provided for the project design period. These projections should be based on historical records with justification from recognized sources. Trending which is significantly different from historical norms should be carefully evaluated.
- III. EXISTING FACILITIES. Describe the existing facilities including at least the following information:
  - A. Location Map. Provide a schematic layout and general service area map (may be identified on project planning area maps).
  - B. History.
  - C. Condition of Facilities. Describe present condition; suitability for continued use; adequacy of water supply; and, if any existing central facilities, the treatment, storage, and distribution capabilities. Also, describe compliance with Safe Drinking Water Act and applicable State requirements.
  - D. Financial Status of any operating central facilities. Provide information regarding rate schedules, annual operating and maintenance (O&M) cost, tabulation of users by monthly usage categories and revenue received for at least the last three fiscal years. Give status of existing debts and required reserve accounts.
- IV. NEED FOR PROJECT. Describe the needs in the following order of priority:

- A. Health and Safety. Describe concerns and include relevant regulations and correspondence from/to Federal, and State regulatory agencies.
  - B. System O&M. Describe the concerns and indicate those with the greatest impact. Investigate water loss, management adequacy, inefficient designs, and problem elimination prior to adding additional capacity.
  - C. Growth. Describe the reasonable growth capacity that is necessary to meet needs during the planning period. Facilities proposed to be constructed to meet future growth needs should generally be supported by additional revenues. Consideration should be given to designing for phased capacity increases. Provide number of new customers committed to this project.
  - D. Regulatory Changes. Identify the proposed changes in regulations and how these changes will effect the water system. Outlined proposed future regulations and provide for consideration of these changes in the planning and how the current proposed changes will effect compliance with the proposed regulations.
- V. ALTERNATIVES CONSIDERED. This section should contain a description of the reasonable alternatives that were considered in planning a solution to meet the identified need. The description should include the following information on each alternative:
- A. Description. Describe the facilities associated with the alternative. Describe all feasible water supply sources and provide comparison of such sources. Also, describe treatment, storage and distribution facilities.
  - B. Design Criteria. State the design parameters used for evaluation purposes.
  - C. Map. Schematic layout of the proposed system improvements.
  - D. Environmental Impacts. Do not duplicate the information in the section above. Describe unique direct and indirect impacts on floodplains, wetlands, other important land resources, endangered species, historical and archaeological properties, etc., as they relate to a specific alternative.
  - E. Land Requirements. Identify sites and easements required. Further specify whether these properties are currently owned, to be acquired or leased.
  - F. Construction Problems. Discuss concerns such as subsurface rock, high water table, limited access, or other conditions which may affect cost of construction or operation of facility.
  - G. Cost Estimates.
    - 1. Construction.
    - 2. Non-Construction and Other Projects.
    - 3. Annual Operation and Maintenance.
    - 4. Present Worth, based on Federal discount rates.
  - H. Advantages/Disadvantages. Describe the specific alternative's ability to meet the owner's needs within its financial and operational resources, comply with regulatory requirements, compatibility with existing comprehensive area-wide development plans, and satisfy public and environmental concerns. A matrix rating system could be useful in displaying the information.

VI. PROPOSED PROJECT (RECOMMENDED ALTERNATIVE). This section should contain a fully developed description of the proposed project based on the preliminary description under the evaluation of alternatives. At least the following information should be included:

A. Project Design.

1. Water Supply. Include requirements for quality and quantity. Describe recommended source, including site.
2. Treatment. Describe process in detail and identify location of plant and site of any process discharges.
3. Storage. Identify size, type and site location.
4. Pumping Stations. Identify size, type, site location and any special power requirements.
5. Distribution Layout. Identify general location of line improvements: lengths, sizes and key components.
6. Hydraulic Calculations. This information should provide sufficient detail in a tabular format. The submittal should include a map with a list of nodes and pipes and the associated characteristics, such as elevation of node, pipe diameter, pipe segment length, reservoir elevation, domestic and industrial water demands, fire flow, etc.

B. Cost Estimate. Provide an itemized estimate of the project cost based on the anticipated period of construction. Include development and construction, land and rights, legal, engineering, interest, equipment, contingencies, refinancing, and other costs associated with the proposed project. (For projects containing both water and waste disposal systems, provide a separate cost estimate for each system.)

C. Annual Operating Budget.

1. Income. Develop an appropriate estimate of the systems projected income. Use the tools provided in the TMF Toolbox to develop these costs and the necessary planning to implement the improvements.
2. Operations and Maintenance Costs. Project costs realistically. In the absence of other reliable data, base on actual costs of other existing facilities of similar size and complexity. Include facts in the report to substantiate operation and maintenance cost estimates. Include salaries, wages, taxes, accounting and auditing fees, legal fees, interest, utilities, gasoline, oil and fuel, insurance, repairs and maintenance, supplies, chemicals, office supplies and printing, and miscellaneous.
3. Capital Improvements. These are costs associated with the selected alternative(s) improvements.
4. Debt repayments. Describe existing and proposed project financing from all sources.
5. Reserve. Unless otherwise, required by State statute establish at one-tenth (1/10) of annual debt repayment requirement.

VII. CONCLUSIONS AND RECOMMENDATIONS. Provide any additional findings and recommendations that should be considered in development of the project. This may include recommendations for special studies, highlight the need for special coordination, a recommended plan of action to expedite project development, etc.