DOCUMENT RESUME

ED 153 794 SE 023 948

TITLE Guidance for Preparing a Facility Plan. Revised Edition.
INSTITUTION Environmental Protection Agency, Washington, D.C. Office of Water Programs.
PUB DATE May 75
NOTE 41p.; Contains occasional light type; Appendix E - Construction Grant Regulation - has been removed prior to being shipped to EDRS due to marginal legibility

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Environmental Influences; *Facility Planning; *Grants; Municipalities; Pollution; *Water Pollution Control

ABSTRACT

This document provides information to assist with preparing a preliminary facility plan for construction of municipal sewage treatment works. The text describes the requirements in the applicable laws and regulations and suggests a planning process by which they can be met. (CS)

GUIDANCE FOR

PREPARING A FACILITY PLAN

MUNICIPAL WASTEWATER TREATMENT WORKS CONSTRUCTION GRANTS PROGRAM

REVISED - MAY 1975

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

GUIDANCE FOR PREPARING

A FACILITY PLAN

Municipal Construction Division
Office of Water Program Operations
Environmental Protection Agency
Washington, D. C. 20460

Revised - May 1975

FOREWORD

This guidance is to assist with preparing a preliminary facility plan for construction of municipal sewage treatment works. The facility plan is the first step in a three step process required to complete treatment works with Federal grants from the Environmental Protection Agency. The second step is preparation of detailed design plans and specifications. The third and fina step is construction of the treatment works. EPA will generally provide 75 percent of the eligible costs of the three steps in the grants program.

This grants program is now the largest public works program in the United States. The purpose of the facility plan is to assure that the treatment works built under this program are environmentally sound and cost-effective.

The complexity of the process of preparing facility plans will vary with local circumstances, the size and nature of needed facilities and the extent of previous planning efforts. EPA is preparing model facility plans, one for a community of about 5,000, and one for a very small community of only a few hundred persons. These model plans, which are scheduled to be available in mid-1975, will give an indication of the amount of detail appropriate for communities of these sizes.

Effective July 1, 1975, this guidance supersedes "Guidance for Facilities Planning" issued in January 1974. It presents a more streamlined and up-to-date description of the basic requirements and ways of meeting them. We welcome your suggestions for changes, additions or deletions which would help achieve the Agency's objective of timely preparation of facility plans of quality.

James L. Agee, Assistant Administrator
for Water and Hazardous Materials

GUIDANCE FOR PREPARING A FACILITY PLAN

FOREWORD

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1. INTRODUCTION

1.1 Purpose

This guidance suggests procedures for preparing a facility plan for publicly-owned treatment works. The plan is required before a municipality may obtain a Federal grant under the Federal Water Pollution Control Amendments of 1972 to prepare detailed design plans and specifications, and to construct the treatment works itself.

The approach used here is to describe the requirements in the applicable laws and regulations and suggest a planning process by which they can be met. The principal laws are the Federal Water Pollution Control Amendments of 1972 (FWPCA) and the National Environmental Policy Act (NEPA). Federal documents which provide guidance and assistance with preparing a facility plan are listed in Appendix A. These documents are referenced in the portion of this guidance to which they apply. They may be obtained from the Regional Offices listed in Appendix C. The principal regulation dealing with the facility planning process is enclosed with this guidance as Appendix B, "Water Pollution Control, Construction Grants for Waste Treatment Works" (see particularly Section 35.917).

The level of detail required in a facility plan will vary according to the nature, scale and location of the undertaking. Local municipalities and consultants should discuss the extent of planning required by their community with officials of the State and the Federal Environmental Protection Agency. Preapplication conferences of Federal, State and local officials to discuss how to proceed will be held to the extent resources permit.

1.2 Relationship of Facility Plans to Other Water Planning and Management Programs

1.2.1 State Continuing Planning Process and Basin Plans

Facility plans will conform to applicable approved basin plans prepared under Section 303 of FWPCA (references h, i, and u).

Under the State continuing planning process, "segments" of the nation's waterways have been classified initially as "water quality limited" or "effluent limited". "Water quality limited" segments are those which cannot be expected to meet established water quality standards even if all point sources achieve the effluent limitations required by Section 301 of FWPCA. "Effluent limited" segments are those where water quality standards can be achieved after all point sources meet the effluent limitations required by Section 301.

All publicly-owned treatment works which are constructed with Federal grant funds authorized after June 30, 1974, must achieve "best practicable waste treatment technology", as defined in reference o. Publicly-owned treatment works discharging to "effluent limited"

segments must, as a minimum, provide secondary treatment as defined in reference j. Such works shall provide additional treatment or include the use of other waste management techniques, when factors such as water quality standards for the affected waterway or availability of cost-effective technology warrant standards more stringent than secondary treatment. The precise discharge limitation for facilities on "water quality limited" segments will be determined in the basin planning process or, where this is not complete, in conjunction with the permit program.

1.2.2 Areawide Waste Treatment Management Plans

Areawide plans, authorized under section 208 of FWPCA, are to set forth a comprehensive management program for collection and treatment of wastes, and for controlling pollution from all point and non-point sources. Controls for abating these sources are to utilize a mix of land-use measures, management and regulatory programs, as well as structural methods. The portion of the areawide plan devoted to construction of publicly-owned treatment works in the future should select and describe planning and service areas and treatment systems, and provide supporting analysis for the selection.

Areawide planning requirements, therefore, overlap with facility planning requirements. The Agency's policy on relationships between the two programs during the period before final completion and approval of an areawide plan is as follows:

a. New facility plans will be started and carried out as provided in the State priority list.

b. The scope and funding of facility planning will be sufficient to collect all data and conduct all analyses necessary for expeditious completion of the facility plan.

c. Facility and areawide planning will coordinate closely and share their data and analytical work, but completion of facility plans should not be dependent on the areawide planning process.

d. After a facility plan is completed, the project should continue through the remaining steps of the grants process after opportunity for timely review and comment by the 208 planning Agency.

e. After interim outputs have been developed and approved by the State and EPA for the areawide planning area, new facility plans must be consistent with the approved interim 208 outputs. The scope and funding of new facility planning should not extend to preparing a justification for the interim 208 outputs. This justification already will be available from the areawide planning process.

The following will be the policy after the areawide plan has been completed and approved, and the agency or agencies identified to construct, operate and maintain the municipal treatment facilities required by the plan:

a. All facility plans underway at the time of approval will be completed by the agency which received the grant for the facility planning. The planning effort will continue as before approval unless the analysis in the approved 208 plan clearly justifies a change in required treatment levels or alternative approach on the basis of lower costs or major changes in environmental impacts.

b. The scope and funding of new facility plans started after approval of the areawide plan will be sufficient to supplement the data and analysis in the areawide plan to the extent necessary to provide a complete facility plan as required by Section 35.917 of the construction grants regulation (Appendix B).

c. New grants for facility plans will be made to the management agencies designated in the approved areawide plans. New facility planning will be consistent with the approved areawide plan.

1.2.3 Municipal Permits

Facility plans must, as a minimum, conform with all applicable permit requirements, and include a copy of the permit. Where a permit has not been issued, the facility plan should describe the applicable Federal and State effluent limitations. These limitations, if not known, should be obtained from State officials and the Environmental Protection Agency.

1.2.4 State Responsibilities

States play a central role in management of facility planning. The States' responsibilities are as follows:

a. To prepare a State priority list for construction grants based on a determination of where and when treatment works will be required (see reference b).

b. To determine, through the basin planning process, the effluent limitations which must be met by publicly-owned treatment works to comply with applicable requirements of Federal, State and local law.

c. To delineate, on a preliminary basis, the boundaries of the facility planning area. These boundaries may be adjusted as a result of information obtained during the facility planning process.

d. To review the plan of study to ensure that (1) the geographic planning area is adequate, (2) the nature and scope of the planning tasks are properly defined and cover only essential works, and (3) planning costs are reasonable.

e. To review facility plans and certify that (1) the plans conform with the requirements of the construction grants regulation (Appendix B); (2) the plan conforms with any existing final basin plans approved under section 303(e) of the Act; (3) any concerned areawide planning agency has been afforded the opportunity to comment on the plan; and (4) the plan conforms with any areawide treatment management plan completed and approved in accordance with section 208 of FWPCA.

2. FACILITY PLANNING AREA

The facility planning area for new wastewater treatment systems should be large enough to analyze the cost-effective alternative methods of waste transport, treatment, handling and disposal of sludge and disposal of treated effluent. It also should be large enough to analyze the environmental effects of alternatives, as required by the regulation, "Preparation of Environmental Impact Statements" (reference a). This regulation requires an environmental assessment as an integral part of a facility plan.

Note, however, that facility planning shall be conducted only to the extent that the Regional Administrator determines to be necessary to meet these requirements and to permit reasonable evaluation of grant applications and subsequent preparation of design construction drawings and specifications (see Section 35.917-4 of the Construction Grants Regulation in Appendix B).

An applicant for a facility planning grant need not hold current legal authority to implement all aspects of a facility plan as it may eventually develop. He must, however, have both the legal ability and the practical expection of acquiring such authority at the proper point in the grants process. The proper time, in many cases, will be after the final waste management alternative has been chosen near the conclusion of the facility plan.

3. PLAN OF STUDY (POS)

The Plan of Study (POS) must be prepared and approved by the State and EPA before a facility plan is begun, and before a Federal grant may be approved for a facility plan (see Section 35.920-3 in Appendix B). The POS should briefly (generally in ten pages or less) describe the scope, schedule and costs of the proposed facility plan. The POS should:

a. Provide a map or maps showing the planning area; the SMSA; the boundaries of political jurisdictions; boundaries of streams, lakes, water impoundments and water basins; and the service areas of existing waste treatment systems.

b. List the responsible planning organizations and agreements or resolutions for conducting joint planning, if any.

c. Provide the 1970 population in the planning area.

d. Describe briefly why a grant for facility construction is necessary, including water quality problems and applicable effluent limitations if this information is readily available.

e. Summarize briefly the unit processes in the existing system, if any, and communities and major industries served.

f. Describe data, plans and other information available to assist with facility planning.

g. Say if the State is expected to certify that "excessive infiltration/inflow" does not exist (see part 4.2.4 below); or that additional data collection may be necessary. If the applicant believes that "excessive infiltration/inflow" exists and a detailed sewer evaluation will be necessary, the Plan of Study should so state.

h. Provide a schedule for completion of the specific tasks necessary to prepare the facility plan.

i. Estimate the cost for each task and the total costs for the facility plan.

4. FACILITY PLAN

A facility plan can be prepared in seven major steps. Each step is discussed in a separate section below, along with recommendations on how it can be completed. The applicability of these recommendations will vary with local circumstances.

Environmental considerations should be addressed during facility planning to meet the requirement for an environmental assessment of each project (see reference a). For example, information on existing and future environmental conditions should be gathered and assessed along with the information on other aspects of the existing and future situation (see section 4.2 and 4.3). Alternatives should be evaluated for environmental impact at the same time they are evaluated for costs and other impacts (see section 4.4). A separate section of the facility plan, however, should summarize the environmental considerations to demonstrate that they have been adequately covered and provide a single point of reference for a person interested in reviewing the environmental analysis. (See Part 7 of this Guidance.)

4.1 Step 1: Effluent Limitations

The facility plan should list the effluent limitations applicable to the facility being planned. These effluent limitations normally may be found in a municipal permit issued under the National Pollutant Discharge Elimination System. A copy of the municipal permit should be attached to the plan.

If the facility is on a "water quality limited" waterway (see section 1.2.1 above), the applicable water quality standards should be obtained from the State and briefly summarized in the plan, in addition to the effluent limitations necessary to meet the applicable water quality standards.

4.2 Step 2: Assess Current Situation

4.2.1 Introduction

The facility plan should briefly describe the existing conditions to be considered when weighing alternatives during the facility planning process.

4.2.2 Existing Conditions in the Planning Area Without the Project

The following existing conditions should be described to the extent necessary to analyze alternatives and determine the environmental impacts of the proposed actions. Only conditions which are applicable to the project should be discussed.

a. Planning area description. planning area boundaries, political jurisdictions and physical characteristics, including climate, geology, soils, topography and hydrology.

b. Organizational context. the role of all organizations involved in planning, financing and operating publicly-owned waste treatment works in the planning area.

c. Demographic data. the 1970 census population, land-use patterns, and major employment generating activities.

d. Water quality. existing quality, quantity, and uses of surface and ground water.

e. Other existing environmental conditions. air quality, noise levels, energy production and consumption, wetlands, flood plains, coastal zones and other environmentally sensitive areas, historic and archaeological sites, other related Federal or State projects in the area, and plant and animal communities which may be affected, especially those containing threatened or endangered species.

Sources of information used to describe the existing environment and to assess future environmental impacts should be cited.

4.2.3 Existing Wastewater Flows and Treatment Systems

An inventory of existing wastewater treatment systems should be provided, including services, treatment plants, effluent disposal or reuse methods, sludge disposal methods, and flow and waste reduction measures currently being used, if any.

The discussion of flows should include average and peak wastewater flows, wastewater characteristics and wasteloads at key points in the system, dry and wet-weather flows, combined sewer overflows, and the location of bypasses. Available data on industrial and commercial flows should be summarized.

4.2.4 Infiltration and Inflow

The construction grants regulation (Appendix B) provides that the State may certify that excessive infiltration/inflow does not exist. The certification may be based on studies or other information available on the sewer system before facility planning begins, or gathered in the course of the facility planning process.

When the certification cannot be made because information is inadequate, an infiltration/inflow analysis should be conducted in accordance with EPA "Guidance for Sewer System Evaluation" (reference t). The purpose of the analysis is to estimate infiltration/inflow into the system; to approximate, on a preliminary basis, the costs of treating the infiltration/inflow versus the costs of rehabilitating the sewer system to eliminate the problem; and finally, to determine if the infiltration/inflow is excessive, as defined in reference t.

If the infiltration/inflow analysis demonstrates the existence or possible existence of excessive infiltration/inflow, a sewer system evaluation survey should be conducted, in accordance with reference t, to analyze the problems in more detail and determine needed corrective actions and their costs.

4.2.5 Performance of Existing System

The performance of existing wastewater treatment facilities should be evaluated to determine their operational efficiency. The evaluation should compare existing performance with optimum performance obtainable in terms of effluent quality and treatment capacity. The effect of the following factors on performance should be considered.

a. Adequacy of plan design.

b. Quality of operation and control.

c. Caliber and number of operating personnel.

d. Adequacy of sampling and testing program.

e. Adequacy of laboratory facilities, and

f. Quality of maintenance program.

4.3 Step 3: Assess Future Situation

4.3.1 Planning Period

The planning period is the time span over which wastewater management needs are forecast, facilities are planned to meet such needs, and costs are amortized. The facility planning period should extend 20 years beyond the date when the planned facility is scheduled to begin operation. The most cost-effective plan may provide for phasing construction of operable parts of the facility to meet changing conditions over the planning period.

Phased construction of treatment plants, in particular, will often be the most cost-effective approach. Consideration should be given to initial construction of a plant with a capacity to handle the wastewater flows projected for only a part of the 20 years planning period. The plan should provide in this case for adding more capacity later to treat the remaining increase in wastewater flows projected for the rest of the planning period.

Wastewater flows may be projected for years beyond the 20 year planning period when determining the most cost-effective design for interceptor sewers. Design flows must be fully justified in the facility plan.

4.3.2 Land Use

The facility plan should be carefully coordinated with applicable State, local and regional land-use management regulations, policies and plans. Projected land-use patterns and densities should be used as one basis for determining the optimum capacity and location of facilities.

Where land use plans have not been prepared for all or part of the planning area, an estimate of future land use patterns and densities should be prepared in consultation with existing planning agencies, zoning commissions and public officials.

Careful consideration should be given before providing sewerage for areas subject to flood hazards. The facility plan should be compatible with State and local programs for flood plain management.

4.3.3 Demographic and Economic Projections

Projections of economic and population growth should be used as one basis for estimating future wasteloads and flows.

For SMSAs, economic and population projections should follow the work of the Bureau of Economic Analysis incorporating the "Series E" projections of the Census Bureau. Reasons for departures should be fully documented.

Projections of economic and population growth for non-SMSA communities may be based on extension of current (1960 or 1965 to present) growth trends. Economic projections of industrial employment may assist with projections of population growth.

All projections should be consistent with those used for control of air quality, water resources management, and other environmental programs unless new information and analysis justify departures. Reasons for any departures should be documented.

Projections should be adjusted to reflect constraints on growth imposed by air quality implementation plans and land-use and development controls.

4.3.4 Forecasts of Flow and Wasteloads

The following factors should be considered when estimating wasteloads and flows for the future:

a. projections of economic and population growth

b. an estimate of non-excessive infiltration/inflow

c. analysis of pollutant content and flows in the existing system.

d. an analysis of the rate, duration, pollutant content and location of combined sewer overflows in the existing system during storms of different magnitude. The analysis should be linked to the drainage area tributary to the combined sewer system. This would facilitate forecasting of flow and wasteload increases from future changes in the nature and extent of the drainage area.

e. projection of future changes in flow and wasteloads from industries to be served by the municipality. This projection should take into account reductions in industrial flow and waste which will result from Federal, State and local pretreatment requirements and from imposition of user and cost recovery charges.

f. projection of gains possible from selected measures to reduce flow and wastes.

4.3.5 Future Environment of the Planning Area Without the Project

The future environmental conditions for the delineated planning area under the "no project" alternative should be predicted, covering the same areas considered under Section 4.2.2.

4.4 Step 4. Develop and Evaluate Alternatives

4.4.1 Baseline: Optimum Operation of Existing Facilities

The alternative of optimizing performance of existing facilities should be considered first. The level of treatment attainable with optimum performance should serve as a baseline for planning additions or modifications to the treatment system.

4.4.2 Regional Solutions

The possibility of a regional solution to wastewater treatment problems should be explored early in the planning process to reduce the number of options requiring detailed consideration to a manageable number. Regional solutions may include interconnection of facilities, construction of one or more large facilities to eliminate the need for many small facilities and joint management of facilities to improve operation and maintenance and reduce costs. Joint facilities may involve interceptors, treatment plants and sludge and effluent disposal systems.

Existing plans which address regional options should be referenced and important conclusions summarized in the facility plan. Further analysis of options will not be necessary if regional questions are resolved by existing plans.

Where regional questions have not been resolved, discharge combinations and effluent limitations related to each combination should be estimated by the applicant or the State. Any simplifying assumptions needed for such preliminary analyses should be documented. Monetary costs and environmental impacts should be estimated.

The analysis of regional solutions should address the following special considerations:

a. effects of interceptor location on land use within and between urban areas, particularly where land is undeveloped.

b. effects of alternative combinations on stream flows in the regions.

c. possible limitation on future expansion due to unavailability of land.

d. differences in reliability, operation and maintenance of facilities.

e. environmental and economic costs of delays likely to be associated with efforts to achieve a regional solution.

A map of treatment system configurations should be prepared on the basis of the above analysis. It should show the boundaries of political jurisdictions and service areas for each treatment plant.

4.4.3 Alternative Waste Treatment Systems

Alternative waste treatment systems for each service area should be considered in addition to the regional questions outlined above.

First, the implication of the "no action" plan should be set forth with respect to potential effects on:

a. surface water quality

b. groundwater quality (if applicable)

c. land use limitation if "no action" alternative is selected

d. socio-economic factors (e.g., residential, industrial development and health hazards).

Second, the plan should consider, where applicable, the primary options for:

a. flow and waste reduction

b. configuration of sewers and interceptors

c. treatment and disposal of effluent

d. sludge disposal.

Options should be rejected from the outset if they fail to meet physical constraints of the planning area, such as climate, soils or topography, or if they are incompatible with air and water quality plans. These options should be presented in the plan, however, with a very brief summary of the reasons for their rejection.

Alternative waste treatment systems must be considered in accordance with information included in references o and s. The following three alternatives must be considered, as a minimum, to meet the requirements for best practicable waste treatment technology:

a. treatment and discharge of effluent

b. treatment and reuse

c. land application

Options for treatment and discharge should, as appropriate, take into account and allow to the extent practicable for the application of technology at a later date to provide for the reclaiming or recycling of water or otherwise eliminate the discharge of pollutants.

Following initial screening of the alternative systems, a limited number of the most feasible options should be evaluated in detail. The evaluation should follow the guidance on monetary costs in Chapter 6 and on environmental and other considerations in the remainder of this chapter.

Proposals should be re-evaluated and compared after refinement and estimation of monetary costs, environmental effects and other considerations. Features should be added where practicable to each alternative to offset or mitigate adverse environmental impacts. Each alternative, including its costs and environmental effects, will then be displayed to inform the public and solicit public opinions to help select a plan.

4.4.4 Environmental Impacts

4.4.4.1 General

Alternatives should be evaluated and screened for their environmental impacts. Adverse impacts could be a basis for rejecting an option and, thus, reducing the number of alternatives. Other impacts may require further study and should be identified, to the extent possible, early in the planning process.

The evaluation should assess both beneficial and adverse primary and secondary environmental impacts. A definition and examples of each type follows:

4.4.4.2 Primary Impacts

Primary impacts are those directly related to construction and operation of the treatment works. Some examples are:

a. Destruction of historical, archaeological, geological, cultural or recreational areas during construction.

b. Destruction of sensitive ecosystems including wetlands and the habitats of endangered species during construction.

c. Damage and pollution of surface waters due to erosion during construction.

d. Displacement of households, businesses or services.

e. Noise pollution, air pollution and odor and public health problems associated with construction and operation.

f. Direct violation during construction or operation of Federal, State or local environmental and land-use statutes, or regulations and plans imposed by such statutes and regulations.

4.4.4.3 Secondary Impacts

Secondary impacts of a project are (1) indirect or induced changes in the patterns of land-use and population growth, and (2) other environmental effects resulting from changes in land use and population growth.

Examples of secondary impacts are:

a. changes in the rate, density, or type of development, including residential, commercial, industrial development, or changes in the use of open space or other categories of land.

b. air, water, noise, solid waste or pesticide pollution stemming from the induced changes in population and land use.

c. damage to sensitive ecosystems (wetlands, habitats of endangered species) and environmentally protected areas (parks, historic sites) resulting from changes in population and land use.

Primary attention in the environmental assessment should be given to determining if secondary impacts will possibly contravene environmental and land use statutes or regulations, or standards, limitations and plans imposed by such statutes and regulations. Relevant Federal, State and local environmental and land use statutes and regulations should be considered.

4.4.5 Additional Guidance on Evaluation of Alternatives

4.4.5.1 Institutional Arrangements

Evaluation of alternatives should include a comparison of existing institutional arrangements and authorities with those necessary to implement each option. The organization to be responsible for management of the waste treatment facilities also should be identified with each option. Further, the costs to each jurisdiction for construction, operation and maintenance of the facilities should be estimated. These matters, as well as the total costs and effects of each proposal, should be discussed with representatives of local government units, and the views of other interested parties solicited during public review.

4.4.5.2 Industrial Service

Industrial use of municipal facilities should be encouraged when environmental and monetary costs would be minimized. Costs of separate treatment of industrial waste should be compared with costs of pretreatment plus the cost to the municipality for joint treatment, when industrial flow to be handled by municipal systems is significant. Pretreatment is required in accordance with Federal pretreatment standards (reference g) and any existing State and local standards. The analysis should focus on those industries which desire municipal service but are not yet so served when facility planning is initiated.

4.4.5.3 Flow and Waste Reduction

Some types of flow and waste reduction measures are listed below:

a. measures for reducing sewer system infiltration/inflow

b. household water-saving devices

c. water meters

d. land use and development regulations

e. industrial reuse and recycling

f. on-site (private) facilities such as septic tanks

Procedures for determining the cost effectiveness of measures for reducing infiltration/inflow are found in EPA "Guidance for Sewer System Evaluation" (reference t). The cost-effectiveness of water conservation measures can be determined by comparing the cost with resultant savings for both waste treatment and water supply.

4.4.5.4 Sewers

Alternative arrangements of interceptors and trunk lines should be compared to determine the most cost-effective configuration. Sewers in developing areas should be planned on the basis of anticipated changes in land use and density.

Analysis should be made, whenever possible, of the residential, commercial and industrial land use changes that a centralized project will induce.

The sizes of interceptors should be based on cost-effective analysis of alternative pipe sizes. The analysis should reflect the expected useful life of the pipe, all costs related to future pipe installation, and induced growth effects of initial provision of substantial excess capacity.

4.4.5.5 Sludge Disposal

Environmentally acceptable methods of sludge utilization and disposal include stabilization and subsequent land application for

agriculture, enhancement of parks and forests, reclamation of poor or damaged terrain, sanitary land fill, or sludge incineration and disposal of resulting ash. Ocean disposal may be allowed under special circumstances (subject to reference k).

4.4.5.6 Location of Facilities

Evaluation and choice of sites for treatment plants, interceptors, transmission lines, outfalls, pumping stations, and other major works should take into account the factors cited below and discussed further in references p, q, and y.

a. minimize odors and locate away from residential areas which would be affected by odors

b. minimize aesthetic problems by design and landscaping

c. locate outfalls where they will not affect public water supply, shellfishing beds, and contact recreational waters. Where alternative sites are unavailable, special precautions must be taken in accordance with references p and y.

d. locate treatment plants and other facilities in general outside of floodplains. Where such locations are not practicable or would lead to excessive costs, the plant and equipment will be protected against flooding as described in reference p.

4.4.5.7 Revision of Wasteload Allocation

Wasteload allocations are the basis for determining effluent limitations to be achieved by a treatment plant. They are normally prepared as part of the State basin planning process and are reflected in the discharge permit. Facility planning may result in a change in the discharge locations and the wasteload distribution among the locations. The wasteload allocation, in this case, should be reviewed by the State or EPA and modified to reflect the configuration of discharges in the proposed plan.

4.4.5.8 Phased Construction

Adding capacity in phases during a planning period will be more cost-effective in some cases than providing sufficient capacity in initial construction for the entire planning period. A method for cost analysis of phased development is discussed in Chapter 6. Factors to be considered are:

a. relative cost of providing excess capacity initially compared with the present worth of deferred costs for providing capacity when needed.

b. uncertainties of projected long-term wastewater flows, and possible technological advances or flow and waste reduction measures which may limit need for excess capacity.

Modular development of operable components of a treatment plant is advisable in areas where high growth rates are projected, where treatment must become more stringent later in the planning period, or where existing facilities are to be used initially but phased out later.

4.4.5.9 Flexibility

Facility planning should consider providing sufficient land and choosing layouts and siting to allow for expansion of the plant to handle unforeseen increases in wastewater flows and required treatment levels.

Interceptors and collection systems may be planned to meet unforeseen expansions of the service area. Consideration should be given, for example, to obtaining extra sewer rights-of-way for staged parallel pipes and pipe extensions and temporary treatment plants.

4.4.5.10 Reliability

Emphasis on reliability should focus on the most critical processes in accordance with the requirements in reference p.

4.5 Step 5. Select Plan

4.5.1 Selection Process

The public should be provided with alternative proposals, and a public meeting or hearing held to explain each proposal and obtain the views of all concerned (see Chapter 5). The opinions expressed should be weighed with estimated environmental effects, monetary costs, feasibility, resources and energy use, and reliability. The alternative proposals should be ranked on the basis of these considerations and a plan selected. Additional guidance on selection of a plan is provided in Chapter 8.

4.5.2 Environmental Impacts of the Selected Plan

The primary and secondary impacts of the selected plan should be summarized. Special attention should be given in the summary to the following:

a. Any unavoidable adverse impacts resulting from the project.

b. Relationship between local short term uses of the environment and the maintenance and enhancement of long-term productivity. This should include a description of the extent to which the action involves tradeoffs between short term environmental gains at the expense of long term gains or vice-versa, and the extent to which the proposed action forecloses future options. Special attention should be given to effects which narrow the range of future uses of land and water resources or pose long-term risks to health or safety.

c. Irreversible and irretrievable commitments of resources. An evaluation should be made of the extent to which the proposed action requires commitment of construction materials, man-hours, energy and other resources, and curtails the range of future uses of land and water resources.

d. Steps to minimize adverse effects. Structural and nonstructural measures, if any, should be described to mitigate or eliminate significant adverse effects on the human and natural environments.

4.6 Step 6: Preliminary Design of Treatment Works

Preliminary engineering designs will be prepared in accordance with references p, q, and y for those treatment works proposed for initial construction and scheduled for preparation of drawings and specifications. Such information would include, as appropriate, a schematic flow diagram, unit processes, plant site plans, sewer pipe plans and profiles, and design data regarding detention times, flow rates, sizing of units and so forth. It would also include a summary of requirements for operation and maintenance of the treatment works. Cost estimates for final design, preparation of plans and specifications, and construction of the treatment works, together with a schedule for completion of all such work, should be presented.

4.7 Step 7: Arrangements for Implementation

Following selection of plan and design, existing institutional arrangements should be reviewed and a financial program developed, including preliminary allocation of the costs among various classes of users of the system (see Appendix B). Agreement should be reached among participating entities on arrangements for implementing the plan. The State and Regional Administrator may approve the plan, however, even in the absence of final agreement on such arrangements.

A preliminary plan of operation should be prepared to provide for staffing, management, training, sampling and analysis for effective operation and maintenance of the facility.

5. PUBLIC PARTICIPATION

5.1 Introduction

Minimum requirements for the public role in facility planning are described in the Construction Grants regulation (Appendix B) and the regulation entitled "Public Participation in Water Pollution Control" (reference f). The public should participate from the beginning in facility planning so that interests and potential conflicts may be identified early and considered as planning proceeds.

5.2 Relationships between Planner and Public

The planner should define issues and analyze information so that the public will clearly understand the costs and benefits of alternatives considered during the planning process. He also should ensure that the interests of a broad spectrum of the public are represented in the planning process.

The public can be involved through a variety of means, including the following:

-advisory groups	-public hearings	-news media
-information contacts	-task forces	-speeches
-correspondence	-workshops	-seminars
-interviews	-exhibitions	-depositions
-liaison with citizen groups	-mailings	-surveys
-public meetings	-newsletters	-polls

5.3 Requirement for Public Hearings

A public hearing must be held on the facility plan unless EPA has waived the requirement in advance (see section 35.917-5 of Appendix B). The location of the hearing should be easily accessible and facilitate attendance and testimony by a cross-section of interested or affected organizations and interests. Notice will generally be given at least

thirty calendar days before the hearing is to be held to obtain formal comments of all concerned interests on the alternative proposals. It is suggested that the notice include mention of where information on the facility plan may be obtained before the hearing.

5.4 Summary of Public Participation

A report summarizing public participation should be prepared and submitted as part of the facility plan. It should as a minimum contain a brief description of the views expressed at any public hearings held on the project. It also may describe other measures taken to provide for, encourage concerned interests; and the disposition of the issues raised.

6. EVALUATION OF COSTS

6.1 Introduction

Appendix A to the construction grants regulation (see Appendix B in this guidance) describes basic methodology for calculation of direct monetary costs. This chapter provides supplemental guidance for applying this methodology in practice.

6.2 Sunk Costs

Appendix A to the construction grants regulation provides comprehensive instructions for cost evaluation, except with respect to sunk costs. Any investments or commitments made prior to our concurrent with facility planning will be regarded as sunk costs and not included as monetary costs in the plan. Such investments and commitments include:

a. investments in existing wastewater treatment facilities and associated lands even though incorporated in the plan.

b. outstanding bond indebtness.

c. cost of preparing the facility plan.

6.3 Present Worth and Equivalent Annual Costs

The following examples show how to calculate present worth and equivalent annual costs for a project. Present worth may be thought of as the sum, which if invested now at a given rate, would provide exactly the funds required to make all necessary expenditures during the life of the project. Equivalent annual cost is the expression of a non-uniform series of expenditures as a uniform annual amount to simplify calculation of present worth. Detailed procedures for making these calculations are well known and explained in such books as Principles of Engineering Economy by Eugene L.

Grant and W. Grant Ireson (reference aa), and Economics of Water Resource Planning by L. Douglas James and Robert Lee (reference bb).

The three cases described below include: (1) a simplistic one, assuming constant O & M costs; (2) a case with varying O & M costs; and (3) a third case assuming varying O & M, phased construction and a positive salvage value. Note that the second and third cases actually compare two alternatives for treating a given community's waste.

In order to perform the following analysis, you will need a table of 7.0 percent compound interest factors and a table of factors to compute the present worth of a gradient series. These tables may usually be found in an engineering economics textbook.

The interest rate of 7.0 percent is used for these examples only. The actual interest rate which must be used for evaluating costs in a facility plan is published annually by the United States Water Resources Council (see reference 1).

6.4 Example 1: Constant O & M Costs

GIVEN:

sewage treatment plant #1
capacity: 10 mgd
average flow through plant: 9 mgd
planning period: 20 years
salvage value at the end of 20 years: $0
initial cost of plant: $3 million
average annual operation and maintenance cost: $190,000
interest rate: 7.0 percent

DETERMINE: Present worth and equivalent annual cost of this plant over 20 years.

METHOD: Present worth equals initial cost plus the present worth of the operating and maintenance costs. Equivalent annual costs equals the present worth times the appropriate capital recovery factor.

Step 1

Initial cost = $3,000,000

Step 2

Present worth of annual O & M cost equals annual O & M costs times the uniform series present worth factor @ 7.0% for 20 years. Thus:

$190,000 (10.594) = $2,013,000

Step 3

Sum of numbers obtained in the above steps yields present worth

initial cost =	$3,000,000
present worth of O & M cost =	$2,013,000
present worth =	$5,013,000

Step 4

To find equivalent annual cost, multiply present worth obtained above times the capital recovery factors @ 7.0% for 20 years. Thus:

$5,013,000 (.09439) = $ 474,000

is the average annual equivalent cost of the plant over 20 years.

6.5 Example 2: Varying O & M Costs

GIVEN:

sewage treatment plant #2
capacity: 10 mgd
average flow through plant: increase linearly from 2 mgd to 10 mgd over 20 years
planning period: 20 years
salvage value at end of 20 years: $0
initial cost of plant: $3,000,000
constant annual operation and maintenance cost: $126,000
variable annual operation and maintenance cost: increases linearly from $0 to $68,000 in year 20
interest rate: 7.0 percent

DETERMINE: Present worth and average annual equivalent cost of this plant over 20 years.

METHOD: Present worth equals the sum of initial cost, present worth of constant O & M cost, and the present worth of the gradient series of the variable O & M cost. Equivalent annual cost is derived as in the first case.

Step 1

Initial cost = $3,000,000

Step 2

To find the present worth of operating costs, it will be necessary to calculate the present worths of the constant costs and the variable costs separately.

a. Present worth of constant annual costs equals that cost times the uniform series present worth factor @ 7.0% for 20 years. Thus:

$126,000 (10.594) = $1,335,000

b. Present worth of a variable cost increasing linearly is found by first finding the amount of increase per year. This amount is $68,000/20 years or $3,400 per year. This increase is known as a gradient series. This series times the correct gradient series present worth factor @ 7.0% for 20 years yields the present worth of the variable cost. Thus:

$3,400 (77.5091) = $ 264,000

Step 3

Sum of numbers obtained in the steps above yields present worth:

initial cost =	$3,000,000
present worth of constant O & M costs	$1,335,000
present worth of variable O & M costs	$ 264,000
present worth =	$4,599,000

Step 4

As before, the present worth just derived times the capital recovery factor @ 7.0% for 20 years will yield the average annual equivalent cost. Thus:

$4,599,000 (.09439) = $ 434,100

which is the average annual equivalent cost of the plant for 20 years.

6.6 Example 3: Varying O & M Costs, Phased Construction, and Salvage Value

GIVEN:

sewage treatment plant #3
capacity: years 1-10, 5 mgd; years 11-20, 10 mgd
average flow through plant: increases linearly from 2 mgd to 10 mgd over 20 years
planning period: 20 years
salvage value at the end of 20 years: $750,000
initial cost of plant (5 mgd): $2,000,000
cost to upgrade at year 10 to 10 mgd: $1,500,000
operation and maintenance costs:

a. constant annual 0 & M cost, years 1-10: $84,000

b. variable annual 0 & M cost, years 1-10: increases linearly from 0 - $29,000 in year 10

c. constant annual 0 & M cost, years 11-20: $165,000

d. variable annual 0 & M cost, years 11-20: increases linearly from 0 to $29,000 in year 20

interest rate: 7.0 percent

DETERMINE: Present worth and annual equivalent cost of this plant over 20 years.

METHOD: Present worth is derived as in the previous example; however, this time calculate 0 & M costs from year 1 to 10 and 0 & M costs from year 11-20 separately. It is necessary also to add the present worth of the expansion and subtract the present worth of the salvage value from the present worth of the costs. Average annual equivalent costs are calculated as before.

Step 1

Initial cost = $2,000,000

Step 2

Calculate the present worth of the 0 & M costs as follows:

a. Present worth of constant annual cost years 1-10 equals given cost times uniform series present worth factors @ 7.0% for 10 years. Thus:

$84,000 (7.024) = $ 590,000

b. Present worth of the variable 0 & M costs years 1-10 equals the gradient series ($2900) times the present worth factor of a gradient series @ 7.0% for 10 years. Thus:

$2,900 (27.7156) = $ 80,400

c. The present worth of the constant 0 & M costs year 11-20 are first calculated as in (a) above using the given cost for years 11-20. This, however, yields present worth in year 11 which must be converted to present worth in year 1. This is accomplished by multiplying the present worth (year 11) times the single payment present worth factor @ 7.0% for 10 years (.5083). Thus, present worth in year 1 equals:

$165,000 (7.024)(.5083) = $ 589,100

d. The present worth of the variable O & M costs years 11-20 are first calculated as in (b) above using the gradient series for years 11-20 which is $2900. This yields the present worth in year 11 which again must be converted to present worth in year 1 by multiplying the present worth (year 11) times the single payment present worth factor @ 7.0% for 10 years (.5083). Thus:

$2,000 (27.7156)(.5083) = $ 40,900

Step 3

To determine the present worth of the upgrade cost which occurs at year 10, multiply the upgrade cost times the single payment present worth factors @ 7.0% for 10 years. Thus:

$1,500,000 (.5083) = $ 763,000

Step 4

The present worth of the salvage value at the end of 20 years equals that value times the single payment present worth factor @ 7.0% for 20 years. Thus:

$750,000 (.2584) = $ 194,000

Step 5

The sums of the values obtained in Steps 1, 2, and 3 minus the value obtained in Step 4 will equal the present worth of the plan. Thus:

initial cost =	$2,000,000
present worth of constant O & M year 1-10	590,000
present worth of variable O & M year 1-10 =	$ 80,400
present worth of constant O & M year 11-20 =	$ 589,100
present worth of variable O & M year 11-20 =	40,900
present worth of upgrade at year 10 =	$ 763,000
TOTAL	$4,063,400

Subtract from the total the present worth of salvage value

present worth of salvage value =	- $ 194,000
present worth of plant =	$3,869,400

Step 6

As before, the present worth just derived times the capital recovery factor @ 7.0% for 20 years will yield the average annual equivalent cost. Thus:

$3,869,400 (.09439) = $ 365,200

which is the average annual equivalent cost of the plant over 20 years.

7. ENVIRONMENTAL EVALUATION

7.1 Purpose

This part summarizes the requirements for evaluation of environmental impacts in the facility planning process and describes the reasons for these requirements.

The environmental evaluation serves two purposes:

a. to provide comparative data to assist selection of the best alternative plan.

b. to meet the requirements for an environmental assessment in the regulation published by EPA, "Preparation of Environmental Impact Statements" (reference a).

7.2 Facility Planning and the Environmental Assessment

The facility plan should contain sufficient information to meet the requirements for an environmental assessment in reference a. Environmental considerations should be addressed during each step of the facility planning process. A separate section of the plan, however, should summarize environmental considerations.

7.3 Environmental Impact Statements

The Regional Administrator may determine while the facility plan is in preparation or after it is completed and submitted to EPA for approval that the project is highly controversial or may have significant adverse environmental effects. EPA will prepare an environmental impact statement in these cases in accordance with the regulation, "Preparation of Environmental Impact Statements" (reference a). The applicant may be asked to provide supplemental information on the project to assist with preparation of the Environmental Impact Statement.

7.4 Environmental Considerations

The facility plan should contain a summary of environmental considerations. The summary should include references to other portions of the plan where these considerations are discussed in more detail.

The following are the major topics to be discussed in the summary:

a. Description of the existing environment without the project (see Section 4.2.2 in this Guidance).

b. Description of the future environment without the project (see Section 4.3.5).

c. Evaluation of alternatives (see Section 4.4.4).

d. Environmental impacts of the proposed action, including steps to minimize adverse effects (see Section 4.5.2).

8. PLAN SELECTION

8.1 Introduction

This chapter discusses the principal considerations for selecting a plan. It assumes that each of the alternatives being compared would, if implemented, result in compliance with all the applicable regulatory requirements (i.e., effluent limitations, load allocations, compliance schedules, and so forth).

8.2 Comparison and Ranking of Proposals

Plan selection will involve making choices among alternatives based on a display of the significant costs, effects and benefits of each. Common units are lacking for measuring environmental, social, economic and other costs, and therefore selection of the most cost-effective alternative requires careful judgment.

Figure 1 provides an example of how costs and effects may be displayed. The effects should be listed, wherever possible, in quantitative terms, and be based on the supporting analysis elsewhere in the plan. Where quantification is not possible, the comparison should be made by brief narrative description.

The alternatives may be ranked after they are displayed to aid final selection of a plan.

The following are suggestions on the ranking procedure:

a. Environmental effects: All significant primary and secondary effects should be weighed to derive a value judgment as to the net overall effect of each alternative relative to other plans. Alternatives which have secondary effects with a high potential for contravening an environmental or land-use statute or regulation, or plan imposed by such statute or regulation should be ranked below those which do not.

b. Monetary costs: Total costs should be the primary factor in determining the cost-effectiveness of the plan.

c. Implementation capability: The ability of and agreement among the State, regional and local governmental units or management agencies to implement the alternatives should be weighed carefully. The necessary institutions must exist or be created in time to carry out the plan, and the local governmental unit must be capable of bearing the local share of the costs.

d. Other considerations: Each plan must meet applicable regulatory requirements, and design and reliability criteria. Performance better than these minimal standards should not be taken into account when selecting an alternative unless environmental and monetary costs and benefits, and the feasibility of implementing the alternatives are roughly equal. Other considerations, in other words, may be used to break ties.

These other considerations include the contribution to water quality objectives beyond regulatory requirements, reliability, use of resources and energy, and public acceptability.

Figure 1

COSTS AND BENEFITS OF ALTERNATIVE PROPOSALS

	PROPOSALS			
	A	B	C	D
1. Environmental Effects				
a. Primary				
b. Secondary				
2. Monetary Costs				
a. Capital costs				
1. public				
2. total				
b. O & M costs				
1. public				
2. total				
c. Net revenue (public)				
d. Average annual costs				
1. public				
2. total				
3. Implementation Capability				
a. Institutional				
b. Financial				
c. Legal				
4. Other considerations				
a. Contributions to Water Quality Objectives and Other Water Management Goals				
b. Energy and Resources Use				
1. Energy (power)				
2. Chemicals				
3. Land commitment for planned features				
c. Reliability				
1. Frequency of plant upsets				
2. Frequency of spills				
3. Frequency of effects of combined sewer overflows				

9. FORMAT FOR SUBMISSION OF PLAN

9.1 Outline of Plan

The following outline for the plan is suggested. It meets the requirements of the Construction Grants regulation (Appendix B) and follows the planning steps presented in this guidance. Items inapplicable to a specific case may be deleted.

1. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

2. INTRODUCTION

   2.1 Study Purpose and Scope
   2.2 Planning Area (Map)

3. EFFLUENT LIMITATIONS (Section 4.1)

4. CURRENT SITUATION (Section 4.2)

   4.1 Conditions in Planning Area

      4.1.1 Planning area description
      4.1.2 Organizational context
      4.1.3 Demographic and land-use data
      4.1.4 Water quality and uses
      4.1.5 Other environmental conditions

   4.2 Existing Wastewater Flows and Treatment Systems
   4.3 Infiltration and Inflow
   4.4 Performance of Existing System

5. FUTURE SITUATION (Section 4.3)

   5.1 Land Use
   5.2 Demographic and Economic Projections
   5.3 Forecast of Flow and Waste Load
   5.4 Future Environment of the Planning Area Without the Project

6. ALTERNATIVES (Section 4.4)

   6.1 Optimum Operation of Existing Facilities
   6.2 Regional Solutions
   6.3 Waste Treatment Systems
   6.4 Evaluation (monetary, environmental, implementation)

7. PLAN SELECTION (Section 4.5)

   7.1 Views of Public and Concerned Interests on Alternatives
   7.2 Evaluation and Ranking of Proposals
   7.3 Selected Plan (major feature summary) and Reasons for Selection
   7.4 Environmental Impacts of Selected Plan

8. COST ESTIMATES, PRELIMINARY DESIGNS (Section 4.6)

8.1 Description of Design, with Maps
8.2 Summary of Cost Estimates

9. ARRANGEMENTS FOR IMPLEMENTATION (Section 4.7)

9.1 Institutional Responsibilities
9.2 Implementation Steps
9.3 Operation and Maintenance
9.4 Financial Requirements

10. SUMMARY OF ENVIRONMENTAL CONSIDERATIONS (Section 7)

10.1 Existing Environmental Conditions
10.2 Future Environment Without the Project
10.3 Evaluation of Alternatives
10.4 Environmental Effects of Selected Plan

9.2 Appendices

The following information, cross-referenced in the text of the plan, may be placed in appendices:

a. Preliminary designs, technical data and cost estimates for alternatives.

b. Agreements, resolutions and comments.

c. Supplemental engineering feasibility data on the details of the adopted plan.

d. Infiltration/inflow analyses.

e. Sewer evaluation surveys.

f. Copy of the permit for the facility.

For a simple planning situation, the information included in items (a) and (c) may be incorporated in the main report.

The technical appendices (item c above) should include, but not necessarily be limited to:

a. description of the configuration of collector and interceptor systems, profiles, sizes and cost breakdowns.

b. treatment plant data, including site plan, layouts of unit processes, flow charts, design and performance data.

10. REVIEW, CERTIFICATION AND APPROVAL OF PLANS

10.1 Purpose

This chapter describes the administrative procedures and requirements for submission of a facility plan (and revisions thereof) to State receiving agencies and to EPA. It also describes the actions States and EPA take on the plan.

10.2 Three Levels of Review

The three levels of review of a facility plan are as follows:

a. review by a clearinghouse of interested agencies at the local level as required by Circular A-95, "Federal and Federally Assisted Programs and Projects", of the Federal Office of Management and Budget (reference z).

b. review by the State for compliance with State requirements, and Federal statutory and regulatory requirements.

c. review by EPA for compliance with Federal requirements.

10.3 Compliance with OMB Circular A-95

EPA will not conduct a final review of an application for a grant to conduct facility planning or completed facility plans for approval unless the agency submitting the grant application or plan to the State and EPA has first complied with all applicable requirements of OMB Circular A-95 (reference z).

10.4 Submission to State

The agency desiring review and approval of a facility plan shall submit the following documents to the State Water Pollution Control Authority or its equivalent:

a. Four (4) copies of the facility plan

b. Two (2) copies of all relevant documents required by OMB Circular A-95

c. One (1) original and one (1) copy of a letter from the chief official of the agency preparing the plan. The letter should request review and approval and state:

1. that the agency has met all requirements for public participation relating to the plan;

2. the names of all jurisdictions within the planning area which either oppose the plan or have failed to approve the plan.

10.5 Submission to EPA

EPA will review for approval only those facility plans which have received State approval and are properly submitted to the appropriate regional office by the chief official of the State Water Pollution Control Authority having jurisdiction over the planning area. The following documents should be submitted to EPA by the State:

a. a letter signed by the chief official of the State Water Pollution Control Authority requesting review and approval, and certifying that:

1. the plan conforms with the requirements of the construction grants regulation (Appendix B)

2. the plan conforms with the applicable basin plan prepared or being prepared in accordance with reference i.

3. the concerned areawide planning agency, if any, has been afforded the opportunity to comment on the plan, and the plan conforms with any completed areawide plan which has been approved in accordance with the requirements of section 208 of FWPCA.

b. Two (2) copies of the plan

c. One (1) copy of the letter from the local agency to the State required under paragraph 10.4 above.

10.6 Revisions to Plans

Facility plan should be reviewed regularly and brought up to date as required by changing conditions. As a minimum, a facility plan which has served as the basis for award of a Step 2 or 3 grant shall be reviewed by the State prior to application for any subsequent Step 2 or 3 grant to determine if substantial changes have occurred which warrant revision or amendment of the plan. The plan should then be revised or amended as necessary.

Revisions to the plan should be accompanied by a statement on the status of implementation of the plan as of the date of the revision. The appropriate EPA Regional Administrator, A-95 Clearinghouse, and State should be notified at least 30 days in advance of initiating a modification to a plan. Processing of revised plans will follow the procedures as outlined above.

10.7 EPA Review

The review by EPA will ascertain that the requirements of FWPCA and applicable amendments are met, including specific determination that:

a. the plan is consistent with existing State and NPDES permits.

b. the plan is consistent with the requirements of the applicable final plan prepared under reference i, "Preparation of Water Quality Management Basin Plans."

c. the plan is consistent with any completed areawide plan approved in accordance with section 208 of FWPCA.

d. all requirements for public participation have been met.

e. the plan will provide for secondary treatment, as a minimum, as well as appropriate application of Best Practicable Waste Treatment Technology in accordance with technical criteria established by EPA, or for more stringent treatment levels required to meet water quality standards.

f. the plan is cost-effective and environmentally sound.

g. excessive infiltration/inflow does not exist, or that a detailed sewer evaluation survey and necessary sewer rehabilitation measures will be accomplished in accordance with the Construction Grants regulation (Appendix B).

h. implementation of the plan is institutionally feasible within the time period proposed.

i. the plan is compatible with facility plans and completed and approved areawide plans developed for contiguous areas of other States.

j. the plan includes an adequate environmental assessment.

k. the treatment works will comply with applicable requirements of the Clean Air Act and other applicable environmental laws and regulations.

10.8 EPA Approval

The EPA Regional Administrator has authority to approve any facility plan submitted to him by a State within his region.

After review of a properly submitted plan or amendment and compliance with the requirements of the National Environmental Policy Act (see reference a), the EPA Regional Administrator will notify the chief official of the appropriate State Water Pollution Control Authority of his concurrence and approval, or the EPA regional office will work closely with the State to provide advice to the municipality on how the plan may be improved so that approval will be possible.

APPENDIX A - REFERENCES

A.1 FEDERAL REGULATIONS

a. 40 CFR Part 6, "Preparation of Environmental Impact Statements," Federal Register, Vol. 40, No. 72, April 14, 1975, pp. 16811-16827

b. 40 CFR Part 35, Subpart B, "State and Local Assistance", Federal Register, Vol. 38, No. 125, June 29, 1973, pp. 17219-27225

c. 40 CFR Part 35, Subpart E, "Grants for Construction of Treatment Works--Federal Water Pollution Control Act Amendments of 1972", Federal Register, Vol. 39, No. 29, February 11, 1974, pp. 5252-5270

d. 40 CFR Part 35, Subpart E, Appendix A "Cost Effectiveness Analysis Guidelines", Federal Register, Vol. 38, No. 174, September 10, 1973, pp. 24639-24640

e. 40 CFR Part 35, Subpart E, Appendix B "User Charges and Industrial Cost Recovery", Federal Register, Vol. 38, No. 161, August 21, 1973, pp 22524-22527

f. 40 CFR Part 105, "Public Participation in Water Pollution Control", Federal Register, Vol. 38, No. 163, August 23, 1973, pp. 22756-22758

g. 40 CFR Part 128, "Pretreatment Standards", Federal Register, Vol. 38, No. 215, November 8, 1973, pp. 30982-30984

h. 40 CFR Part 130, "Policies and Procedures for State Continuing Planning Process", Federal Register, Vol. 39, No. 107, June 3, 1974, pp. 19634-19639

i. 40 CFR Part 131, "Preparation of Water Quality Management Basin Plans", Federal Register, Vol. 39, No. 107, June 3, 1974, pp. 19639-19644

j. 40 CFR Part 133, "Secondary Treatment Information", Federal Register, Vol. 38, No. 159, August 17, 1973, pp. 22298-22299.

k. 40 CFR Part 220-227, "Ocean Dumping, Final Regulations and Criteria", Federal Register, Vol. 38, No. 198, October 15, 1973, pp. 28609-28621.

l. 18 CFR 704.39, "Discount Rate", Federal Register, Vol. 39, No. 158, August 14, 1974, p. 29242. (Published annually under this title by U.S. Water Resources Council)

m. 50 CFR Part 17, "Conservation of Endangered Species and Other Fish or Wildlife", Federal Register, Vol. 39, No. 3., January 4, 1974, pp. 1171-1177

A.2 EPA DOCUMENTS

o. "Alternative Waste Management Techniques for Best Practicable Waste Treatment", Technical Information Report, U.S. EPA, March 1974

p. "Design Criteria for Mechanical, Electric, and Fluid System and Component Reliability, Technical Bulletin, EPA-430-99-74-001

q. "Design, Operation and Maintenance of Wastewater Treatment Facilities", Technical Bulletin, U.S. EPA, September 1970

r. "EPA Policy to Protect the Nation's Wetlands", Administrators Decision Statement No. 4, Federal Register, Vol. 38, No. 84, p. 10834

s. "Evaluation of Land Application Systems", Technical Bulletin, EPA-430/9-75-001, March 1975

t. "Guidance for Sewer System Evaluation", U.S. EPA, March 1974

u. "Guidelines for the Preparation of Water Quality Management Plans", EPA, September 1974

v. "Manual for Preparation of Environmental Impact Statements for Wastewater Treatment Works, Facilities Plans, and 208 Areawide Waste Treatment Management Plans", U.S. EPA, July 1974

w. "Survey of Facilities Using Land Application of Wastewater", EPA-430/9-73-006, July 1973

x. Water Quality Strategy Paper, second edition, "A Statement of Policy for Implementing the Requirements of the 1972 Federal Water Pollution Control Act Amendments and Certain Requirements of the 1972 Marine Protection, Research and Sanctuaries Act", U.S. EPA, March 1974

y. "Protection of Shellfish Waters," Technical Bulletin, EPA 430/9-74-010, July 1974.

NOTE: A copy of the references listed in A.1 and A.2 may be obtained from the Regional Offices listed in Appendix C.

A.3 CIRCULARS, AND MISCELLANEOUS PUBLICATIONS

z. OMB Circular A-95, "Federal and Federally Assisted Programs and Projects, " Federal Register, Vol 38., No. 228, November 28, 1973

aa. Grant, E.L. and Ireson, W.G., Principles of Engineering Economy, 5th Edition, New York: Ronald Press, 1970.

bb. James, L.D., and Lee, R., Economics of Water Resources, New York: McGraw-Hill, 1971