EPA—430/9-76-004

MODEL
PLAN OF STUDY

Supplement to: Guidance for Preparing A Facility Plan

MUNICIPAL WASTEWATER TREATMENT WORKS CONSTRUCTION GRANTS PROGRAM

March 1976

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Water Program Operations
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NOTES

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This publication should be placed in Part III, Guidelines of the Municipal Wastewater Treatment Works Construction Grants Program manual.

FOREWORD

A Plan of Study (POS) is the most important element required as part of an application for a Federal grant to prepare a Facility Plan for construction of publicly-owned treatment works. The POS must describe the local needs for treatment works, the scope of the required planning effort (including a list of principal tasks to be accomplished), a schedule, and estimated costs. Approval of the POS by the Regional Administrator is a prerequisite for award of a Step 1 grant (40 CFR 35.917(e)).

The POS is required to assure that a Facility Plan will be completed in accordance with applicable rules and regulations, and also to provide EPA with a basis to judge any requested grant increases for additional work that may be necessary because of unforeseen circumstances. The POS is not intended, however, to be a Facility Plan or even a part thereof. The cost of preparing a POS is ineligible for grant assistance (40 CFR35.917-3(a) and 35.925-18(a)(1)).

This model POS for James City (a fictitious community) is illustrative of the amount of detail required from a grant applicant to fulfill regulatory requirements (40 CFR 35.920-3(a)(1)) for preparing a POS for a small or medium-sized community. For a larger city (for example, a population of 100,000 or more) with very complex pollution problems and numerous environmental concerns, the POS should reflect greater detail commensurate with the problem.

I would note that other elements required in an application for a Step 1 Facility Planning grant are administrative in nature and include: (1) State Priority Certification (EPA Form 5700-28); (2) Application for Federal Assistance (Construction Grants) (EPA Form 5700-32); (3) a description of proposed subagreements or methods of awarding subagreements; and (4) comments or approvals of relevant State, local, and Federal agencies (including "clearinghouse" requirements of OMB Circular A-95).

EPA and the States schedule pre-application conferences with grant applicants and consultants as time allows. The conferences are to discuss facility planning requirements in detail. Grant applicants (and consultants) are encouraged to request such pre-application assistance from the State or EPA regional office where conferences are not already scheduled.

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for Water Program Operations (WH-546)

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1. FACILITY PLANNING AREA

1.1 Planning Area and Political Jurisdictions

James City, one of four incorporated cities in Smith County, is situated approximately midway between San Francisco and Eureka.

Local officials of the City, the County, and the State Water Quality Management Planning Agency (responsible for Section 208 planning in non-designated areas and Section 303(e) basin planning of the Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500) discussed several geographic areas upon which the Facility Plan might focus to analyze cost-effective alternative methods and environmental effects of waste transport, treatment, effluent disposal, and sludge disposition. It was determined that the facility planning area (Figure I) should include all of James City and a large portion of the county. The 1970 population of the facility planning area was 5,500. The population was determined by the Smith County Planning Department based on the 1970 Census.

1.2 Entities that will Conduct the Planning

James City operates and maintains the existing waste treatment and collection facilities within the multi-jurisdictional Municipal Improvement District No. 1 (Figure II). James City and the nearby areas experiencing urban growth constitute the District.

The Smith County Health Department has jurisdiction over all other wastewater treatment facilities within the County, and the North Coast Regional Water Quality Control Board exercises over-all jurisdiction. James City, with the support and concurrence of the County Health Department and the North Coast Regional Water Quality Control Board, has been authorized by the State Water Resources Control Board, Division of Water Quality, to act as the lead agency for developing the facility plan.

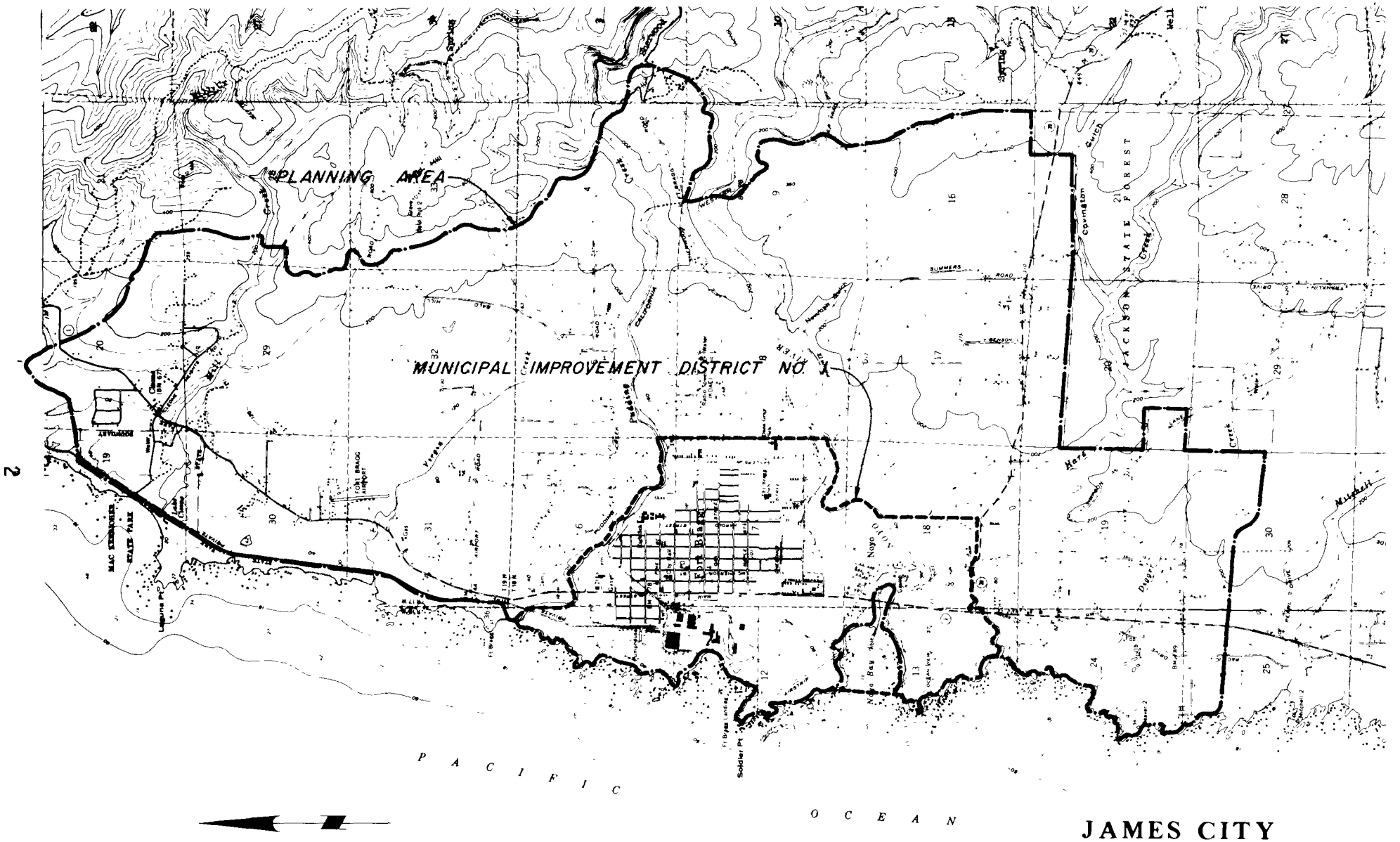
Development of the Facility Plan will be coordinated closely with the County, the Regional Water Quality Control Board and the State Water Quality Management Planning Agency. Population and economic projections for the planning area will be consistent with the approved interim-output projections, if available, from the State Water Quality Management Program.

Pursuant to 40 CFR Part 35.936-19 and 35.937, Copan Architects & Engineers, Inc., 1550 Main Street, James City, California, has been selected by the City to assist in the development of the Facility Plan.

2. NATURE AND SCOPE OF THE PROBLEM

2.1 Existing Systems (brief summary of major features)

The City's wastewater treatment facility, completed in 1971, is a modified secondary treatment plant utilizing a single primary clarifier and a single biofilter followed by effluent disinfection and with separate



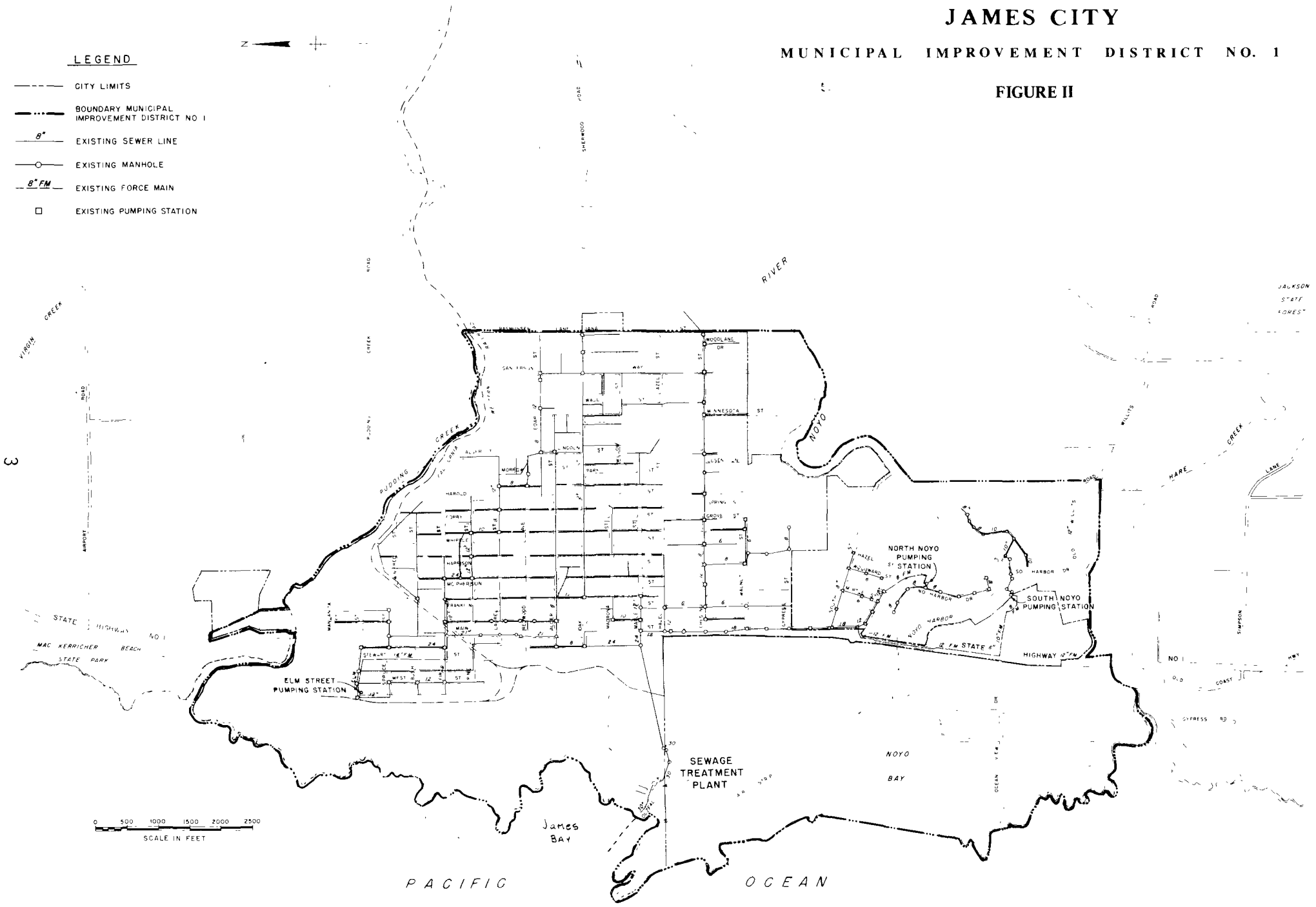
JAMES CITY
CALIFORNIA
PLANNING AREA

FIGURE I

JAMES CITY

MUNICIPAL IMPROVEMENT DISTRICT NO. 1

FIGURE II



sludge digestion. Treated effluent is discharged through a relatively short ocean outfall to James Bay. Digested sludge is mixed with wood chips and dried on paved sludge drying pads. The dried sludge and wood chip mixture is disposed of as land fill.

The treatment plant was originally designed to handle an average daily flow of 1.0 MGD and a peak daily flow of 5.0 MGD. Presently, the average daily flow ranges from about 0.5 MGD in July to more than 2.0 MGD in January. Several times a year the instantaneous peak wet weather flow exceeds 5.0 MGD.

The treatment plant was designed to remove approximately 160 mg/l of the Biochemical Oxygen Demand (BOD_5) and suspended solids (SS) from essentially domestic sewage. The plant achieves a 60 percent reduction of the influent BOD_5 and SS waste loads. The treatment plant was designed also to be upgraded to provide full secondary treatment by the possible future addition of a secondary clarifier and sludge thickener.

More than seventy-five percent (75%) of the existing sewer system was constructed before 1960. With the exception of the sewers built in the last 15 years, the City's sewer collection system contains a large proportion of small pipes in poor or questionable condition.

2.2 Nature of the Problem

The treatment plant has reached its average daily flow design capacity and frequently encounters flows exceeding its peak design flow because of high infiltration/inflow rates. Further, the treatment plant cannot meet the secondary treatment effluent limitations for discharge to the ocean nor the water quality standards for ocean disposal established by the State Regional Water Quality Control Board.

No serious environmental concerns have been identified by the local communities at this time.

2.3 Tentative Treatment Works Needs

Tentative treatment works needs include expansion of the existing capacity to accommodate future flows from expected population increases and adequate treatment capability to meet secondary treatment and other ocean discharge effluent limitations.

The Facility Plan will analyze alternative Best Practicable Waste Treatment Technology (BPWTT) techniques (flow reduction measures, expansion and upgrading of the existing treatment system, treatment and discharge or reuse, and treatment by land application) to determine the most cost-effective and environmentally sound solution to the problem.

2.4 Facility Planning Requirements

A Facility Plan will be prepared in accordance with the Title II Final Construction Grants Regulation, 40 CFR Part 35, Subpart E, dated February 11, 1974; Guidance for Preparing a Facility Plan, revised May 1975; Final Regulations for Preparation of Environmental Impact Statements, 40 CFR Part 6.512, dated April 14, 1975; and Regulations for Public Participation, 40 CFR Part 105, dated August 17, 1973.

The environmental assessment included as part of the Facility Plan is expected to provide sufficient information to assist in selecting a cost-effective and environmentally sound alternative without significant adverse impacts.

3. TASKS, SCHEDULE, AND COSTS

Preparation of the Facility Plan will entail the following tasks:

Task	Effort (Man-Weeks)	Schedule	Costs[1]
1. Effluent Limitations (to be provided by the State)	0	-	$
2. Assess Current Situation	10	----	
a. Evaluate existing system (Optimum Performance)			
b. Planning Area Description			
c. Demographic and Economic Data			
d. Water Quality Data			
e. Environmental Inventory (including cultural resources)			
f. Infiltration/Inflow Analysis			
g. Sewer System Survey[2]			
3. Assess Future Situation	5	--	
a. Future environment with "No Action"			
b. Land Use Projections			
c. Demographic and Economic Projections			
d. Flow and Wasteload Forecasts (Basis for Industrial Flow Forecasts)			
4. Develop and Evaluate Alternatives	15	----	
a. Alternative BPWTT Waste Management Techniques (Expanding and Upgrading Existing System, Regional Solutions, Alternative Treatment Sizes and Configurations, Alternative Residual Waste Management Techniques; Environmental Effects)			
b. Public Participation			
5. Select Plan	2	-	
a. Public Meetings and Hearings			
b. Environmental Impacts of Selected Plan			
c. Summary of Public Participation			

0 1 2 3 4 5 6
Months

3. TASKS, SCHEDULE, AND COSTS (CONT'D)

Task	Effort (Man-Weeks)	Schedule	Costs[1]
6. Preliminary Design of Selected Treatment Works a. Full Process Design Layout, Design Criteria, Sizing, Loading Rates, Detention Times b. Detailed Cost Estimates (Design, Construction, and Operation & Maintenance)	6	----▬▬	
7. Implementation Arrangements a. Institutional and Legal Requirements b. Preliminary Operation & Maintenance Plan c. Non-Federal Costs, User Charges and Debt-Service Charges d. Financial Arrangements to meet Non-Federal Costs e. Resolutions of Plan Acceptance	2	------▬▬	
8. Report Preparation and Printing	2	----------▬▬	
	42	0 1 2 3 4 5 6 Months	$

[1]The grant applicant and its consultant should consider carefully the nature and scope of the problem and the Federal and State requirements for addressing the problem. The level of effort, the time schedule and the costs should be commensurate to the tasks.

[2]The Infiltration/Inflow Analysis (following procedures outlined in EPA Technical Report, EPA 430/9-75-021, Handbook for Sewer System Evaluation and Rehabilitation, dated December 1975) will determine the need for a Sewer System Survey. If such a survey is required, then a request for an amendment to the Step 1 Facility Planning Grant will be submitted requesting additional funds for the timely completion of this element.

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