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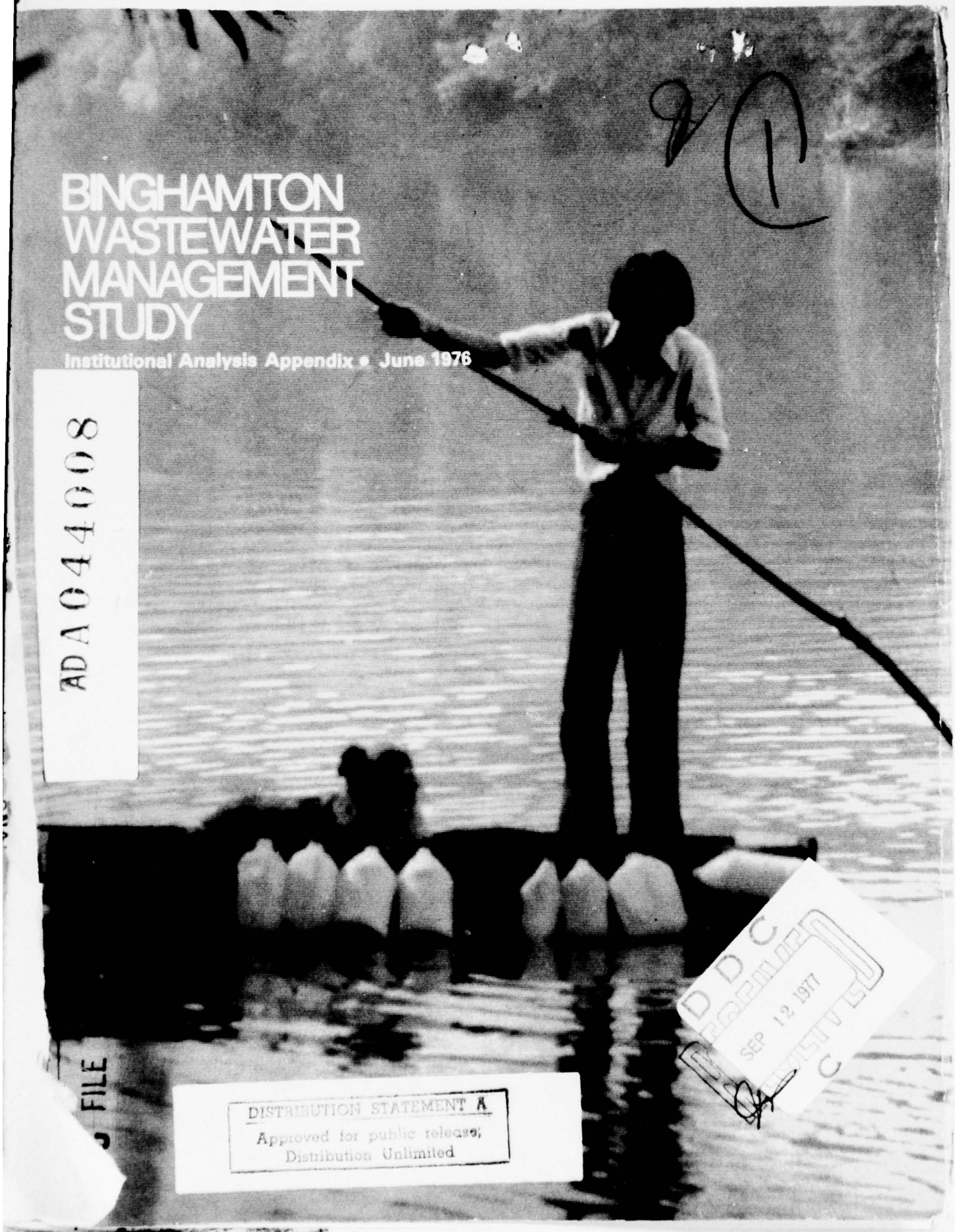

BINGHAMTON WASTEWATER MANAGEMENT STUDY

Institutional Analysis Appendix • June 1976

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"The Raft of Summer"
Courtesy of Paul Smith, Binghamton, New York

Someone once said a picture is worth a thousand words, and the cover photograph summarizes the study in a simple but graphic manner. Today, the modern Huck Finn can enjoy many scenic and recreational opportunities associated with a Susquehanna River relatively free of pollutants. But tomorrow when the boy is grown, will the river still offer clean water for his children's enjoyment? This study suggests some ways to keep the Susquehanna clean and to ensure that future generations in Broome and Tioga Counties can enjoy "The Raft of Summer."

The report for the Binghamton Wastewater Management Study consists of nine appendices. The Summary Report, Background Information Appendix, Plan Formulation Appendix, and Comments Appendix constitute the primary study documents. The five remaining documents support the Plan Formulation Appendix. The relationship of the Institutional Analysis Appendix to the other documents is indicated in the diagram below.

The Institutional Analysis Appendix presents a concise description of existing Federal and State interests in wastewater management including information about existing Broome and Tioga County wastewater management institutions. It also offers alternative arrangements to these existing institutions for the implementation of various wastewater management plans for the two counties.

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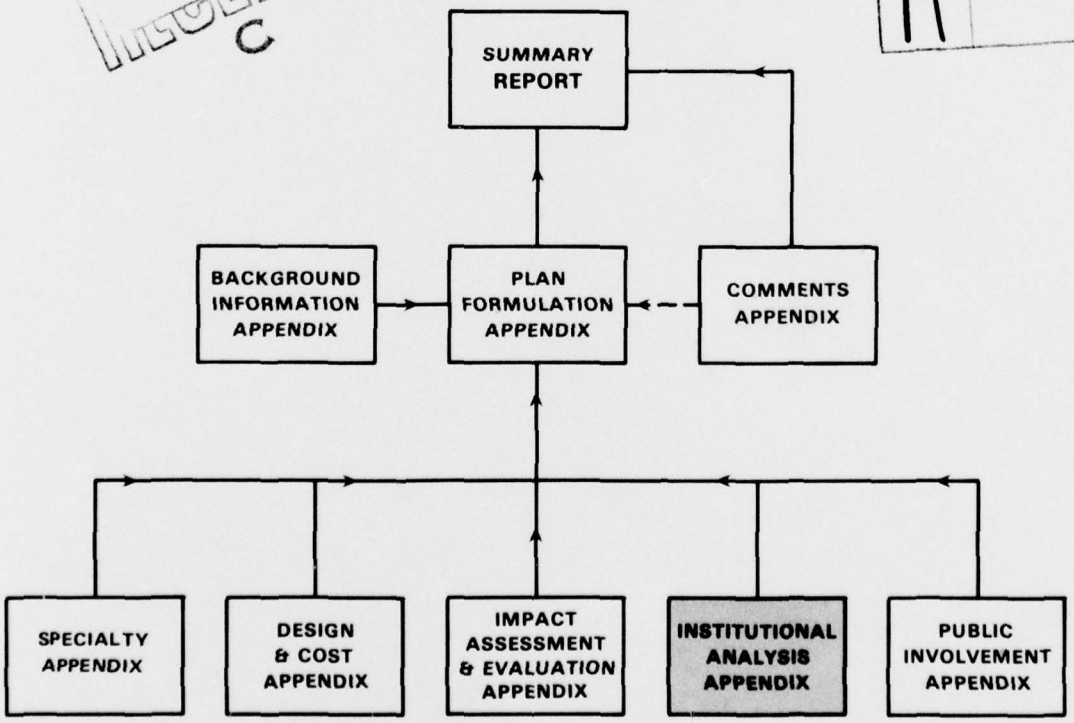

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BINGHAMTON WASTEWATER MANAGEMENT STUDY

INSTITUTIONAL ANALYSIS APPENDIX

(11) JUNE 1976

(12) 249p.

Prepared by the

BALTIMORE DISTRICT, CORPS OF ENGINEERS

DEPARTMENT OF THE ARMY

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BINGHAMTON WASTEWATER MANAGEMENT STUDY

INSTITUTIONAL ANALYSIS APPENDIX

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CHAPTER I

INTRODUCTION

INSTITUTIONAL ANALYSIS FOR WASTEWATER MANAGEMENT – AN OVERVIEW

DEFINITION

For the purposes of this study, an *institution* is an organization which uses certain administrative, political, and social processes to implement and control wastewater management systems. An institution may be a formal (*i.e.*, formed by law or contract) or an informal (*i.e.*, formed by consensus of people, usually with no strict legal basis) body, group or agency. For wastewater management, the institution is usually formal. State governmental agencies, bi-state agencies and local planning agencies are examples.

The processes utilized by these institutions may be formal (*i.e.*, in the charter or by-laws) or informal (*i.e.*, not written down but assumed) practices, procedures, customs or traditions. The establishing of rates or a general attitude by the institution toward financial obligations are examples.

PURPOSE AND OBJECTIVES

The purpose of this study is to analyze the existing institutional arrangements in Broome and Tioga Counties, New York for wastewater management in the Urban Study Area, and to assess their capability for implementing recommended technical plans. Only those existing institutions concerned with water supply and wastewater management in the Bicounty Area will be studied. Where shortcomings in the existing institutional arrangements are identified, the study will suggest ways in which the institutions can be modified, and will suggest new institutional arrangements to provide the needed direction. These suggestions are made to provide a minimum amount of disruption to the existing arrangements, while aiming for the achievement of public acceptance.

This study is intended for those individuals, agencies, and decision-making bodies involved with water quality management in Broome and Tioga Counties, New York, to help them determine the capability of institutions to manage any of the technical plans for the Binghamton study area. It is therefore important to emphasize that this report is an information document as opposed to a decision document. Its objective is to provide a base of information as well as to suggest means which may be utilized to evaluate institutional forms.

SCOPE OF APPENDIX

This "institutional arrangement" report is divided into these chapters:

The Study Area – This section lists the communities in the Urban Study Area, and differentiates them from the outlying areas.

Chapter 2 – The Wastewater Management Institutions – Current water quality management legislation has provided for the creation of various agencies and institutions with political and/or geographical jurisdiction within the study area. These institutions, and their programs that influence wastewater management in Broome and Tioga Counties are not only Federal, but are also on State, regional and local levels as well.

The first part of this chapter will deal with current wastewater legislation and will present a synopsis of existing institutions. Several tables will be utilized to present data about wastewater management on a National, State and local level. The second part will be an analysis of existing institutions according to selected criteria (*e.g.*, jurisdiction, function, structure, programs, policies and so forth).

Chapter 3 – Synopsis of Wastewater Management Technical Plans – The recommended wastewater management technical plans will be briefly discussed, highlighting designated treatment processes, facility locations and capacities.

Chapter 4 – Impacts of Plans on Existing Institutions – Having presented the recommended technical plans and the institutional capabilities of wastewater management organizations, an evaluation will be presented examining the ability of existing institutions to implement comprehensive wastewater technical plans. A tabular presentation of the information will be utilized.

Chapter 5 – Evaluation of technical plans with Additional Management Schemes – Five forms of institutional management will be discussed to provide comprehensive water quality related services to the Urban Study Area. They are:

1. A Minor Modification Scheme – resulting primarily from: a) service contracts and negotiated agreements between existing institutions, and b) adoption of ordinances and resolutions which do not result in any major shifts of plan implementation responsibilities.

2. An Expanded County Sewer District Scheme – for full implementation and

some planning responsibilities. The possibility of incorporating some of the surrounding suburban areas into the existing districts will be investigated.

3. A Part County Sewer Authority Scheme – similar to the County district functions but created as a separate institution by State legislation,

4. A Two "One-County Sewer Department Scheme – which would create separate county sewer departments for both Broome and Tioga Counties, and

5. A One "Two-County Authority" Scheme – for full planning and implementation, created by a legislative enactment. One authority would manage the sewer systems of both counties.

Chapter 6 – Detailed Refinement of Plans – The purpose of this chapter is to refine the set of technical plans by specifying the necessary institutions which will be required to implement the technical plans. Such refinement will detail the actions which will be required by selected institutions in order to obtain funding, to function in construction, to operate the components of a technical plan, and to provide a revisionary program for the future. The refinement will also include a time estimate for plan implementation.

Chapter 7 – Summary – This section will show how a chosen plan relates to the Federal planning; design, and construction grant procedure administered by EPA.

METHODOLOGY AND LIMITATIONS

Letters and interviews, along with basic library research and the collection of pertinent documents were the methods employed in the data collection process. Although it was difficult to acquire a complete "sense of the politics" for the area, nevertheless drafts were submitted to the involved agencies for their comments. This was especially valuable as institutional analysis is highly subjective; not everything can be easily quantified.

BICOUNTY STUDY AREA

Figure I-1 delineates the communities in the Bicounty Study Area, and Table I-1 lists the communities both within and outside the study area.

Figure I-1

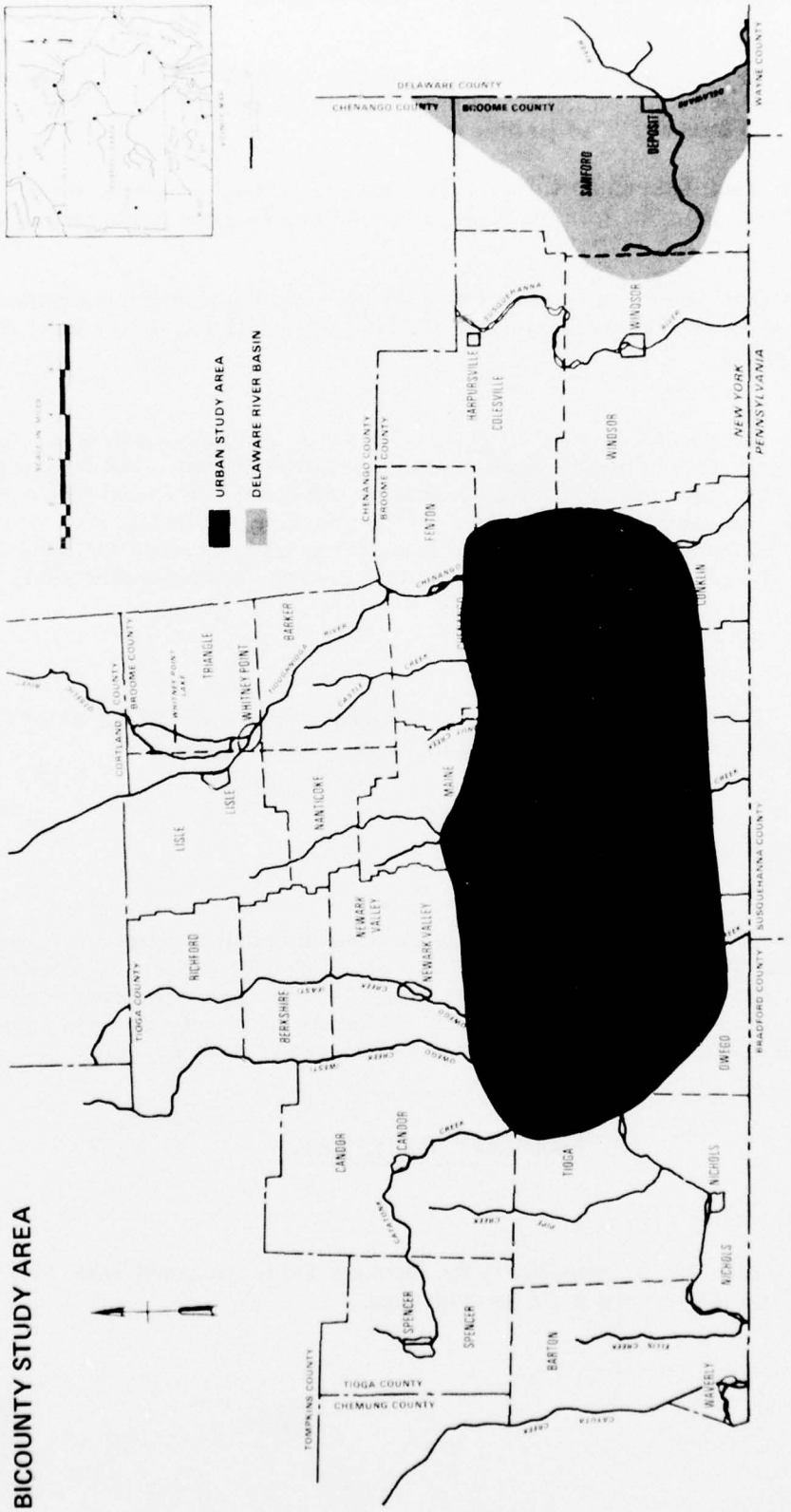

BICOUNTY STUDY AREA
URBAN STUDY AREA
DELAWARE RIVER BASIN
BROOME COUNTY
TIOGA COUNTY
CHEMUNG COUNTY
TOMPKINS COUNTY
CORTLAND COUNTY
CHENANGO COUNTY
DELAWARE COUNTY
SUSQUEHANNA COUNTY
BRADFORD COUNTY
WAYNE COUNTY
NEW YORK
PENNSYLVANIA
SANFORD
DEPOSIT
WINDSOR
HARPURSVILLE
COLESVILLE
FENTON
CONKLIN
LISLE
TRIANGLE
WHITNEY POINT
BARKER
NANTICOKE
MAINE
RICHFORD
NEWARK VALLEY
BERKSHIRE
CANDOR
SPENCER
BARTON
TIOGA
NICHOLS
OWEGO
WAVERLY

TABLE I-1

URBAN STUDY AREA AND OUTLYING COMMUNITIES

URBAN STUDY AREA	OUTLYING COMMUNITIES
Towns and City	**Villages**
Broome County	Broome County
Binghamton City	Harpursville
*Binghamton Town	Lisle
Chenango	Whitney Point
Conklin	Windsor
Dickinson	
*Fenton	
*Kirkwood	Tioga County
Maine	
Union (including Villages of Endicott and Johnson City)	Candor
	Newark Valley
*Vestal	Nichols
	Spencer
	Waverly
Tioga County	
*Owego (includes Village of Owego)	

*Portion of Town

SUMMARY

The problems of water quality management are complex, especially in the Binghamton study area where there are several agencies and institutions with varying degrees of geographical and political interests, primarily defined by existing wastewater legislation.

Through a coordinated intergovernmental program of water resource management, it is possible to attain an amenable water environment encompassing maximum utilization of this resource.

This report will examine these institutions in the light of specific parameters (defining comprehensive wastewater management) which will hopefully encourage objective decision-making.

CHAPTER II

WASTEWATER MANAGEMENT

INSTITUTIONS WITH WASTEWATER MANAGEMENT INTERESTS

Wastewater management in the Binghamton study area is affected by the various water quality programs of institutions and agencies having National, State and local jurisdiction. Because of this, it is appropriate to examine a number of wastewater management programs and/or interests of selected agencies prior to discussing management for the Urban Study Area. To do this, the following major headings will be utilized in chart form for analysis.

Classification of Institutions. Denotes the major segments or levels of organizations and agencies with interests related to wastewater management. Three categories have been selected: institutions on a National scale, institutions on a State level, and institutions in the Urban Study Area.

Appropriate Act/Statute/Pending Legislation. Refers to the legislative act or statute that allows for the creation or establishment of wastewater management interests, and defines their institutional capabilities.

Designated Institution. Refers to the designated institution specified in the appropriate legislation which is responsible for establishing certain wastewater management agencies, or for carrying out wastewater management functions.

Administrator. Refers to the specific institution or person with the responsibility of carrying out various tasks. An example of an Administrator would be the director of the county department of public works, or the Director of the DEC.

Comprehensive Wastewater Interests. The objective or purpose in this portion of the report is to analyze the extent of the organization's interest in fields relating to water quality. The following categories have been determined to comprise the essential functions for comprehensive wastewater management.

1) Planning, policies and related services – Refers to comprehensive wastewater management planning. Institutions which have an interest in planning wastewater facilities (collection/transmission and/or treatment) and/or related land use considerations are included. Policy making will be included in each category. Comprehensive planning includes land use, water supply, solid waste and related energy facility operations.

2) Financing, Policies, Grants, Related Services – Refers to financing wastewater projects; from the actual administration of grant programs, to selling or having the ability to sell bonds, assessing various service charges, and related financial measures.

3) Property acquisition, Policies – Refers to various powers for acquiring property for wastewater management programs. On local levels of institutional interaction, definite acquisition policies are defined; while on a National level, policies are general in nature.

4) Construction, Maintenance, Related Services – Refers to those policies and programs which allow institutions to construct and maintain treatment facilities. While local institutions are directly concerned with the actual engineering aspects of facility construction, operation and maintenance; policy decisions on a National scale are general in nature.

5) Wastewater Management Administrative Policies, Budgetary – Refers to the ability to establish administrative policies for the operation of the instiution. Included in this category are responsibilities of developing a budget with minimal review, establishing the necessary technical and administrative staff for operation and management of systems, and assuring adequate representation concerning decision-making.

6) System Operation, Policies – Refers to the management of a treatment system in reference to political interaction with other units of government and individual interests.

7) Water Supply, Services, Management – Refers to water supply management as an integral part of a comprehensive wastewater management operation. This section relates to the ability of an institution to manage a water supply operation, in addition to construction and maintenance abilities.

8) Solid Waste Management

MANAGEMENT ON A NATIONAL SCALE

Table II-1 lists the institutions involved with wastewater management on a National level.

MANAGEMENT IN NEW YORK STATE

There are several Congressional committees, agencies and commissions in the State of New York which have varied interests in wastewater management. Table II-2 summarizes these institutions. An organization chart for the New York State Department of Environmental Conservation is shown on Figure II-1.

MANAGEMENT IN BROOME AND TIOGA COUNTIES –

Although sovereign responsibility over the water resources of the State is vested in the State Legislature, water supply and its distribution along with wastewater management has traditionally been a local function. Counties, towns, cities and villages are municipal subdivisions of the State and therefore exercise powers delegated to them by the New York Legislature. General powers and responsibilities in respect to water supply and wastewater management are contained in the County Law, the Town Law, the General City Law and the Village Law. More specific authorization for water supply and wastewater management facilities may be found in county and city charters. Related statutory provisions bearing on this matter are contained in the Municipal Home Rule Law, the Statute of Local Governments, the General Municipal Law, the Public Authorities Law, the Local Finance Law, the Real Property Tax Law, and the Unconsolidated Laws.

Counties which have not yet adopted county charters may engage in water supply and distribution activities by creating county water districts. Those counties which have adopted county charters have established Departments of Public Works with Commissioners empowered to engage in such activities on a county-wide basis.

Towns operate under somewhat similar statutory constraints. A town may furnish water supply or provide wastewater management to town residents by creating a town water district, but it may also provide this service as a town function under provisions added to the Town Law during the last ten years. Unlike counties however, statutory authorization does not exist for towns to adopt charters providing for alternative forms of town government.

Cities and villages engage in water supply and wastewater management activities as a general function of their respective units of local government. As such, they are constitutionally guaranteed the right to realize a "fair return" on the value of property used for such purposes. Profits derived by cities and villages in their operation of a water utility may be

applied for any lawful purpose. Revenues derived from the operation of a county or town water district, on the other hand, must be applied against operation and maintenance expenses of the district and then against debt service.

All units of local government are authorized to contract indebtedness for water supply and wastewater management purposes. There is no limit to the amount of indebtedness which may be contracted, but indebtedness may not be contracted for a period in excess of the period of probable usefulness which the Local Finance Law designates for water supply and wastewater management facilities.

Keeping these general statements in mind, the institutions listed in Table II-3 are concerned with wastewater management in Broome and Tioga Counties. These institutions will be those other than the sewage treatment plants in Broome and Tioga County. Coverage of the treatment plants will be made in an analysis of the existing institutions chapter. Organization charts for the Southern Tier East Regional Planning Board, Tioga County & Broome County are shown in Figures II-2, II-3, and II-4, respectively.

SYNOPSIS OF WASTEWATER MANAGEMENT LEGISLATION

Table II-4 illustrates the extent to which various institutions consider comprehensive wastewater management. The legislative list represents those acts and statutes most often utilized in this field and is drawn from a number of sources. The purpose in developing such information is to understand the capability of existing institutions to implement the technical plans.

EXISTING INSTITUTIONS

Both Broome and Tioga Counties have a large number of districts and departments which have been created to finance and manage both water supply and wastewater management. Departments are generally used to help single communities manage water and wastewater systems, whereas districts usually encompass more than one municipal entity.

As these arrangements do not vary between water supply and wastewater management functions, the following descriptions may be applicable to both areas.

SINGLE COMMUNITY ARRANGEMENTS

The most common method of providing services is that of single community ownership, operations, and administration.

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE WASTEWATER MANAGEMENT

U.S. SENATE COMMITTEES

Appropriate Act/Statute/	*Designated* Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
	Agriculture and Forestry	Appropriate Subcommittees:									Legislation and policies concerning farm mgt., land disposal areas, development of agric., crop production, spray irrigation, suitable soils for disposals, land use policies
		–Conservation and Forestry	X		X		X	X			
		–Agricultural Research and General Legislation;	X		X		X	X			
		–Rural Development.	X		X		X	X			
	Appropriations	Subcommittees:									Appropriations for wastewater mgt., agency R&D, grants and loans
		–Agriculture		X							
		–Public Works		X							
	Commerce	Subcommittees:									Wastewater mgt. as it relates to inland waterways, interstate and foreign commerce fisheries and wildlife policies, and National legislation
		–Oceans and Atmosphere;	X				X	X			
		–Environment	X				X	X			

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE
WASTEWATER MANAGEMENT (Continued)

U.S. SENATE COMMITTEES (Continued)

Appropriate Act/Statute/	Designated Institution	Administrator	Planning, Policies, Related Services	Financing, Policies, *Grants*, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
	Interior and Insular Affairs	Subcommittees: –Parks & Recreation, –Public Lands, –Water & Power Resources	X X X		X X X		X X X	X X X			Recreational and additional land use potential from comprehensive wastewater management; water & power reuse and potential reclaimed lands, policies, R&D.
	Public Works	Subcommittees: –Air & Water pollution, –Panel on Environmental Science & Technology	X X	X	X	X	X	X X			All proposed wastewater management legislation development: *Federal Water Pollution Control Act Admendments* 1972; R&D, goals and policies.

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE
WASTEWATER MANAGEMENT (Continued)

U.S. HOUSE COMMITTEES

Appropriate Act/Statute/	Designated Institution	Administrator	Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
	Agriculture	Subcommittees: –Family Farms and Rural Development	X		X		X	X			Refer to Senate Committee on Agric. and Forestry for explanation.
	Appropriations	Subcommittees: –Public Works, –Agriculture–Environmental & Consumer Protection		X X							Refer to Senate Committee on Appropriations for comments
	Interior & Insular Affairs	Subcommittees: –Public Lands, –Irrigation & Reclamation –Environment	X X X		X		X X	X X X			Refer to Senate Committee on Interior and Insular Affairs for comments.

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE
WASTEWATER MANAGEMENT (Continued)

U.S. HOUSE COMMITTEES (Continued)

Appropriate Act/Statute/	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
	Public Works		X	X	X	X	X	X			Responsible for House version of *Fed. Water Pollution Control Act;* see comment for the Senate.

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE WASTEWATER MANAGEMENT (Continued)

FEDERAL AGENCIES

Appropriate Act/Statute/	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
Executive Order No. 11472 of 1969. *Environmental Quality Improvement Act* of 1970 (P.L. 91-224)	Citizen's Advisory Committee on Environmental Quality	Chairman	X				X				Advise the President of the citizen viewpoint, recommend roles which citizen groups play in formulation of evnironmental goals & policies. Committee may push for wastewater management policy.
National Environmental Policy Act of 1969 (P.L. 91-190)	Council on Environmental Quality	Chairman	X				X				Operates in similar manner to Advisory Committee on Envtal. Quality. Coordinates environmental programs and policies among the particular Federal agencies concerned with wastewater mgt. and environmental protection. With an increased focus on Environmental Impact Statements and considering that comprehensive wastewater mgt. relates to sound resource mgt., the Council also concerns itself with the requirements on industry for water pollution abatement & the international aspects of wastewater mgt.

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE WASTEWATER MANAGEMENT (Continued)

FEDERAL AGENCIES (Continued)

Appropriate Act/Statute/	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
Agriculture Act of 1935. *Soil Conservation Act* (P.L. 46 of 1935) *Consolidated Farmer's Home Adminis. Act* of 1961. *Forest Mgt. Act.* (P.L. 86-517)	Department of Agriculture	Farmers Home Administration	X	X			X	X			Grant assistance to rural units of gov't for sewage system; loans also applicable to related wastewater mgt. program in areas of recreation, resource conservation, crop selection, production, etc.
	Department of Agriculture	Soil Conservation Service	X		X		X	X			The Soil Conservation Service (SCS) provides assistance related to wastewater mgt. in areas of soil surveys, cropping for agricultural land use, and related data.
Reorganization Plan No. 4 of 1970	Department of Commerce	National Oceanic and Atmospheric Administration (NOAA)	X					X			In fields related to comprehensive wastewater mgt., NOAA assists in the surveillance of polluted waters through both the Marine Fisheries Service and the Environmental Research Laboratories

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE
WASTEWATER MANAGEMENT (Continued)

FEDERAL AGENCIES (Continued)

Appropriate Act/Statute/	Designated Institution	Administrator	Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
			COMPREHENSIVE WASTEWATER INTERESTS								
											(investigation of environmental effects of wastewater pollution—global pollution data).
	Dept. of Commerce	Public Works and Economic Dev. Facilities. (Econ. Dev. & Technical Asst. Planning)	X	X							Dept. of Commerce Grant Program. 1 (42 USC 1351-Z).
Public Works & Economic Act of 1965	Department of Commerce	Economic Dev. Administration (EDA)	X	X							EDA administers certain Federal aids for areas the Asst. Secretary designates as redevelopment areas and centers. These include public works grants & loans. The primary function of EDA is the long-range economic development and programming for areas & regions of substantial and persistent unemployment by developing new and expanding existing facilities and services in such areas & regions.

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE
WASTEWATER MANAGEMENT (Continued)

FEDERAL AGENCIES (Continued)

Appropriate Act/Statute/	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
Water Resources Plng. Act of 1965 *NEPA* of 1969 (P. L. 91-190). (P. L. 89-298 approved 27 Oct 65; Section 206). *Rivers & Harbors Act* of 1966 (P.L. 89-789, 7 Nov 66; Sect. 102). *Federal Water Pollution Contr. Act Amend. of 1972* (P.L. 92-500) approved 18 Oct 72; Sect. 404	Department of Defense	U.S. Army Corps of Engineers	X		X	X	X	X	X		In addition to its comprehensive water resources mgt. program (including flood control, storm water runoff, disposal areas for dredge material) the Corps is involved with a study of alternative means to manage wastewater on a regional basis, in various portions of the country. In a field somewhat related to comprehensive wastewater mgt., the Corps issues permits for the discharge of wastes, other than municipal, into navigable waters of the U.S.
Section 204 of the *Demonstration Cities & Metrop. Dev. Act* of 1966. Title IV of the *Intergovernmental Cooperation Act* of 1968. *Housing Act* of 1954	Department of Housing and Urban Development (HUD)	–Office of Community Devel. –Office of Community Plng. Both under the Office of Community Plng. & Mgt.	X X	X X		X X					HUD has a number of grant programs available for community planning, loans for public works construction – including sewer and water facility construction. Both agencies administer the 701 Planning programs under the *Housing Act* of 1954. The following is a listing of wastewater mgt.

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE WASTEWATER MANAGMENT (Continued)

COMPREHENSIVE WASTEWATER INTERESTS

FEDERAL AGENCIES (Continued)

Appropriate Act/Statute/	Designated Institution	Administrator	Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
											programs; Open Space Program (42 USC 1500 - 1500C). Basic Sewer Facility Construction (42 USC 3101-3108). Comprehensive Planning Asst. (40 USC 461) Public Works Plng. Advances (42 USC 462). Community Renewal Programs (42-USC 1463,d). Public Facility Loan Program (42 USC 1491-97) Advance Acquisition of Land (42 USC 3101-3108) New Communities (P.L. 90-448 82 Stat. 513).

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE
WASTEWATER MANAGEMENT (Continued)

FEDERAL AGENCIES (Continued)

Appropriate Act/Statute/	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
Water Resources Research Act (P.L. 88-379)	Department of Interior	Office of Water Resources & Technology	X	X							The Department of the Interior has a number of grant programs available for comprehensive planning & field projects akin to comprehensive wastewater Mgt. These grants are: Waste Treatment Facilities (35 USC 466C-1). River Basin Pollution Control and Abatement Planning. (33 USC 466a). The Office of Water Resources & Technology provides funds for wastewater management.
–Executive Reorganizing Plan No. 3 –*FWPCA* of 1948 –P.L. 84-660 of 1956 –*FWPA* of 1965 –*Water Resources Planning Act* of 1965	Environmental Protection Agency	Office of Water Programs Office of Water Enforcement	X X	X	X	X X	X X	X X			EPA has: *Construction Grants for Wastewater Treatment Works:* grants for partial construction costs to eligible units of govt. –Water Pollution Control Comprehensive Basin Planning Grants (66.401) –Water Pollution Control Research Dev. & Demonstration (66.407) *Water Pollution*

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE
WASTEWATER MANAGEMENT (Continued)

FEDERAL AGENCIES (Continued)			COMPREHENSIVE WASTEWATER INTERESTS								
Appropriate Act/Statute/	Designated Institution	Administrator	Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
–*Clean Water Restoration Act* –*Water Quality Improvement Act* of 1970 (P.L. 91-224) –P.L. 92-500 –Exec. Order 11345 –*Water Resources Planning Act* (P.L. 89-80) –*Federal Water Pollution Control Act Amendm. of* 1972 (P.L. 92-500).											*Control Comprehensive Basin Planning Grants* Wastewater Treatment Works (66.404) –*Water Pollution Control-Research, Development and Demonstration Grants* (66.400 Basically enforcement and training).

TABLE II-1 MANAGEMENT ON A NATIONAL SCALE
WASTEWATER MANAGEMENT (Continued)

REGIONAL AGENCIES

Appropriate Act/Statute/	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
Susquehanna River Basin Compact (84 Stat. 1509) 24 Dec 70, and By-laws adopted by Md., N.Y., & Pa.	Susquehanna River Basin Commission	Commission					X		X	X	The Commission has been functional on an interstate basis in dealing with stream quality standards, wastewater treatment, etc. The central purpose however, has been in reviewing & coordinating Federal and State management efforts.
Water Resources Planning Act (P.L. 89-80)	Water Resources Council		X	X				X			Provides Federal assistance in the development of river basin plans and related wastewater programs; prepares an assessment of the Nation's water condition-recommending policies to the President.

TABLE II-2 WASTEWATER MANAGEMENT ON A STATE SCALE

NEW YORK STATE
SENATE COMMITTEES

Appropriate Act/Statute Designated Statute	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
		Senate Committee on Finance		X							Appropriate money for wastewater management budgets for particular State Agencies.
		Senate Committee on Agriculture	X		X		X	X			Provides technical assistance in wastewater management related programs; deliberating on wastewater mgt. policies and programs as they affect agricultural considerations.
		Senate Committee on Health	X					X			Coordinates with local units of government in the development of policies and programs where wastewater mgt. relates to the health, welfare & safety of the State's inhabitants.

TABLE II-2 WASTEWATER MANAGEMENT ON A STATE SCALE (Continued)

NEW YORK STATE
SENATE COMMITTEES (Continued)

Appropriate Act/Statute/ Designated Statute	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
		Senate Committee on Judiciary	X				X				Handles the responsibility of changes in existing legislation having to do with wastewater management.
		Senate Committee on Local Government	X		X		X	X	X	X	Handles all categories of wastewater management from a local perspective. *Generally, from a policy making viewpoint.*
		Senate Committee on Taxation		X							Re-evaluates existing methods of taxation for wastewater management treatment and alters the policy of existing arrangements if necessary.
		Senate Committee on Conservation and Recreation	X				X	X	X	X	Is generally a policy-making group as it must be responsible for legislation and legislative actions that amend the Environmental Conservation Law, the Parks and

TABLE II-2 WASTEWATER MANAGEMENT ON A STATE SCALE (Continued)

NEW YORK STATE
SENATE COMMITTEES (Continued)

Appropriate Act/Statute/ Designated Statute	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
											Recreation Law, the Canal Law, the Soil and Conservation Districts Law and portions of the Navigation Law.

TABLE II-2 WASTEWATER MANAGEMENT ON A STATE SCALE (Continued)

NEW YORK STATE
ASSEMBLY COMMITTEES

Appropriate Act/Statute/ Designated Statute	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
		Assembly Committee on Health	X					X			see explanation for senate committee
		Assembly Committee on the Judiciary	X				X				see senate explanation
		Assembly Committee on Agriculture	X		X		X	X			see explanation for the senate
		Assembly Committee on Environmental Conservation	X				X	X	X	X	see explanation for the senate
		Assembly Committee on Local Governments	X		X		X	X	X	X	see senate explanation
		Assembly Committee on Real Property Taxation		X							see senate explanation on Taxation Committee

TABLE II-2 WASTEWATER MANAGEMENT ON A STATE SCALE (Continued)

NEW YORK STATE
ASSEMBLY COMMITTEES (Continued)

Appropriate Act/Statute/ Designated Statute	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
		Assembly Committee on Ways & Means		X							see senate explanation for Finance Committee

TABLE II-2 WASTEWATER MANAGEMENT ON A STATE SCALE (Continued)

NEW YORK STATE
STATE AGENCIES

Appropriate Act/Statute/	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
Environmental Conservation Law Ch. 140. 1 Jul 70	Dept. of Environmental Conservation (See Figure II-1)	Commissioner	X	X		X	X	X	X	X	Is responsible for the program of comprehensive water supply studies in New York State. Approves plans for public water supply systems and approves completed works. Recommends standards for water works; recommends rules and regulations for contamination and aids in the financing of sewage treatment plants.
Public Health Law – Ch. 879, Laws Of 1953	New York State Dept. of Health	Commissioner	X	X			X	X	X	X	Approves plans for water supply systems and approval of completed works. Promulgates watershed rules & regulations.
Executive Law, Art. 4 secs. 40-45	Department of Audit & Control	Comptroller		X			X				Has the authority to approve the creation of all new water and sewer districts. The Dept. acts as the State surveillant over local, municipal, financial affairs.

TABLE II-2 WASTEWATER MANAGEMENT ON A STATE SCALE (Continued)

NEW YORK
STATE AGENCIES (Continued)

Appropriate Act/Statute/	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
Chapt. 744, L. 1970; last amended by Chap. 285, L. 1 1971	NY State Environmental Facilities Corporation		X	X		X	X	X	X	X	Public benefit corporation for the planning, financing, construction, maintenance and operation of sewage treatment works, air pollution control facilities, water management facilities, storm water collecting systems, and solid waste disposal facilities, on behalf of and in assistance to municipalities & State agencies

TABLE II-3 WASTEWATER MANAGEMENT INSTITUTIONS
LOCAL LEVEL

MANAGEMENT IN BROOME & TIOGA COUNTIES

[See figures II-3 and II-4 for Broome and Tioga County Structure]

Appropriate Act/Statute/	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
Resolution 730 (27 June 1967) (See Figure II-2 for organization chart).	Southern Tier East Regional Planning Board	Director	X	X							Provides A-95 review as implementer of Section 204 of the Demonstration Cities & Metropolitan Government Act of 1966. Is a Board with general review and educative functions.
Resolution by Broome Co. Bd. of Supervisors April 1937 Revised Co. Chapter	Broome Co. Department of Planning	Commissioner	X								Offers technical & professional services to the localities *e.g.*, comment and review of agricultural projects, wastewater mgt. projects, and general comprehensive planning, flood plain mgt.
	Broome Co. & Tioga Co. Depts. of Health	Commissioner	X				X	X	X	X	Regulatory and monitoring agency for water quality & air pollution
County Law Art. 5-A 5/67	Broome Co. Sewer Agency	set of professionals	X		X	X	X	X	X		Can operate and manage wastewater treatment in a district

TABLE II-3 WASTEWATER MANAGEMENT INSTITUTIONS
LOCAL LEVEL (Continued)

MANAGEMENT IN BROOME & TIOGA COUNTIES (Continued)

Appropriate Act/Statute/	Designated Institution	Administrator	COMPREHENSIVE WASTEWATER INTERESTS: Planning, Policies, Related Services	Financing, Policies, Grants, Related Services	Property Acquisition Policies	Construction, Maintenance, Related Services	Wastewater Management Administrative Policies, Budgetary Considerations	System Operation, Policies	Water Supply Services, Management	Solid Waste Management	IS CONCERNED WITH:
New York State Industrial Development Act Article 18-A.	Broome Co. Municipal Industrial Agency	Director		X							Finances the construction of pollution control facilities for industries
Same as above	Tioga Co. Municipal Industrial Agency	Director		X							Same as above
	Broome Co. Environmental Mgt. Council	17 individuals	X								To inventory wetlands, open space and natural resources, and to act in an advisory capacity to the county legislature and executive
County Law Article 50, Section 223	Broome Co. Soil & water Conservation District	Chairman, Broome Co. Soil & Water Conservation Dist.	X			X			X		
	Tioga Co. Soil & Water Conservation District	Chairman, Tioga Co. Soil & Water Conservation Dist.	X			X			X		

FIGURE II-1 NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ORGANIZATION CHART

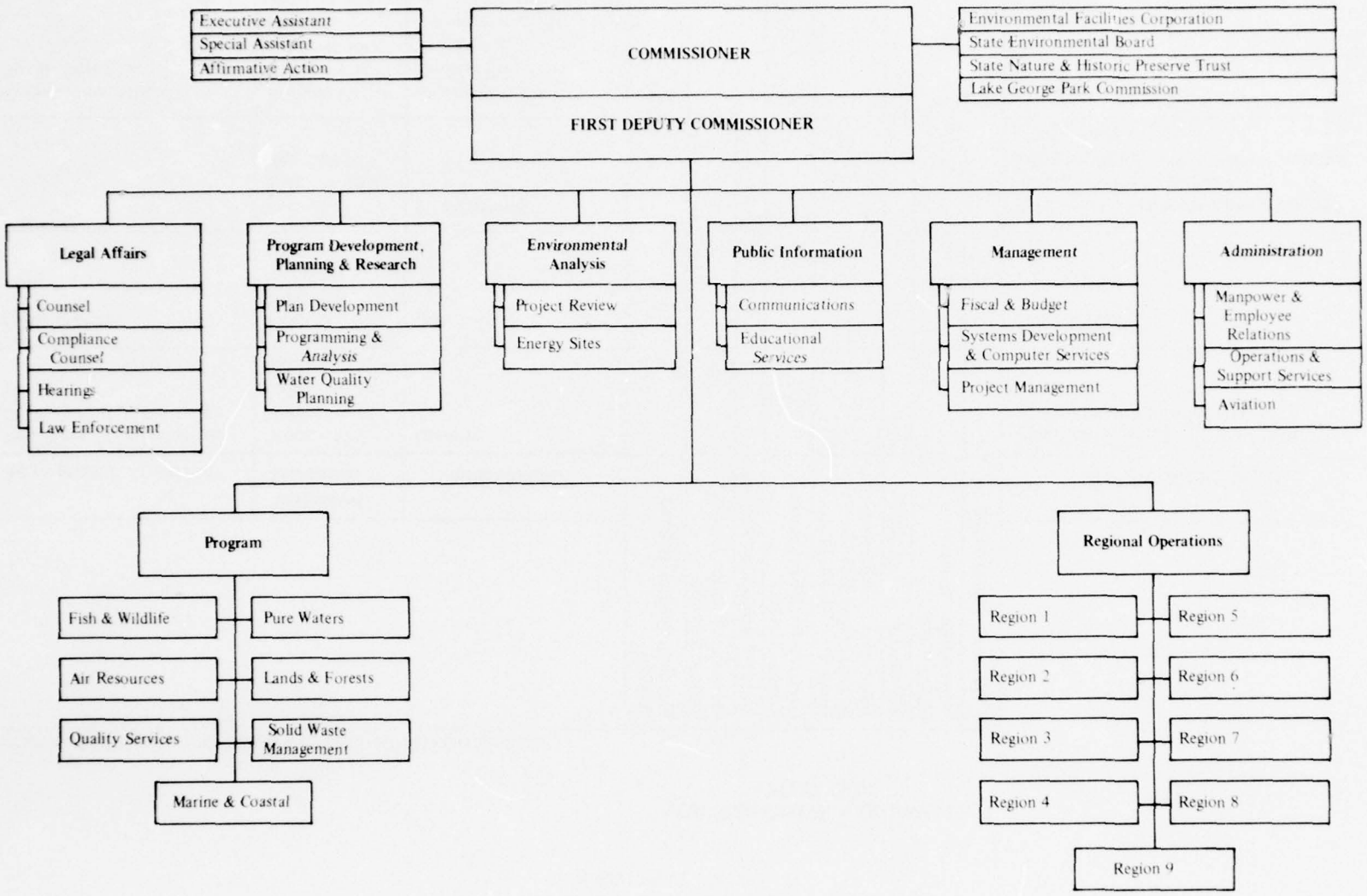
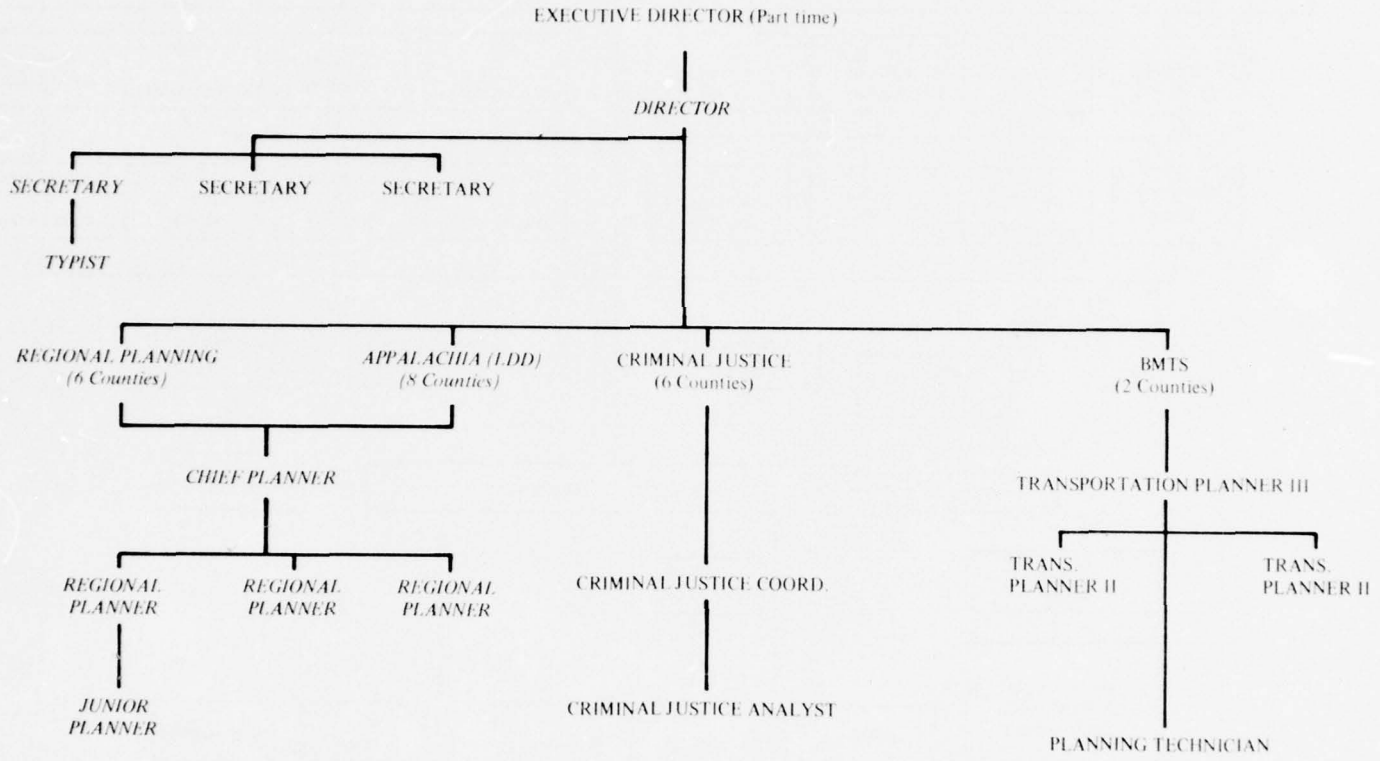


FIGURE II-2 PROPOSED STAFFING

FOR

SOUTHERN TIER EAST REGIONAL PLANNING BOARD



Criminal Justice and BMTS are 100% funded by State and Federal Grants

Positions indicated in italics will be supported by HUD, Appalachia (LDD), and local cash monies

January 8, 1975

FIGURE II-3 TIOGA COUNTY ORGANIZATION CHART

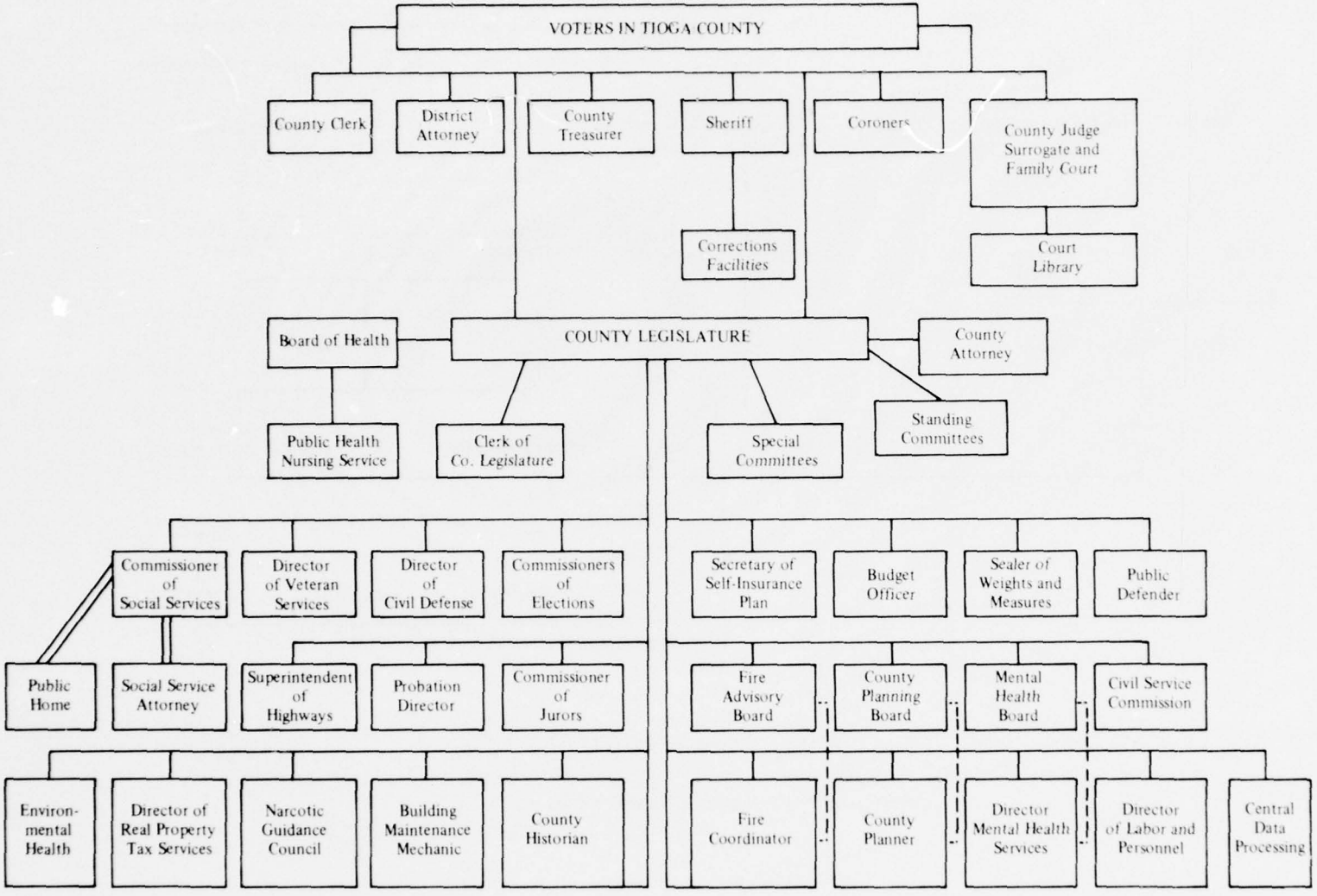
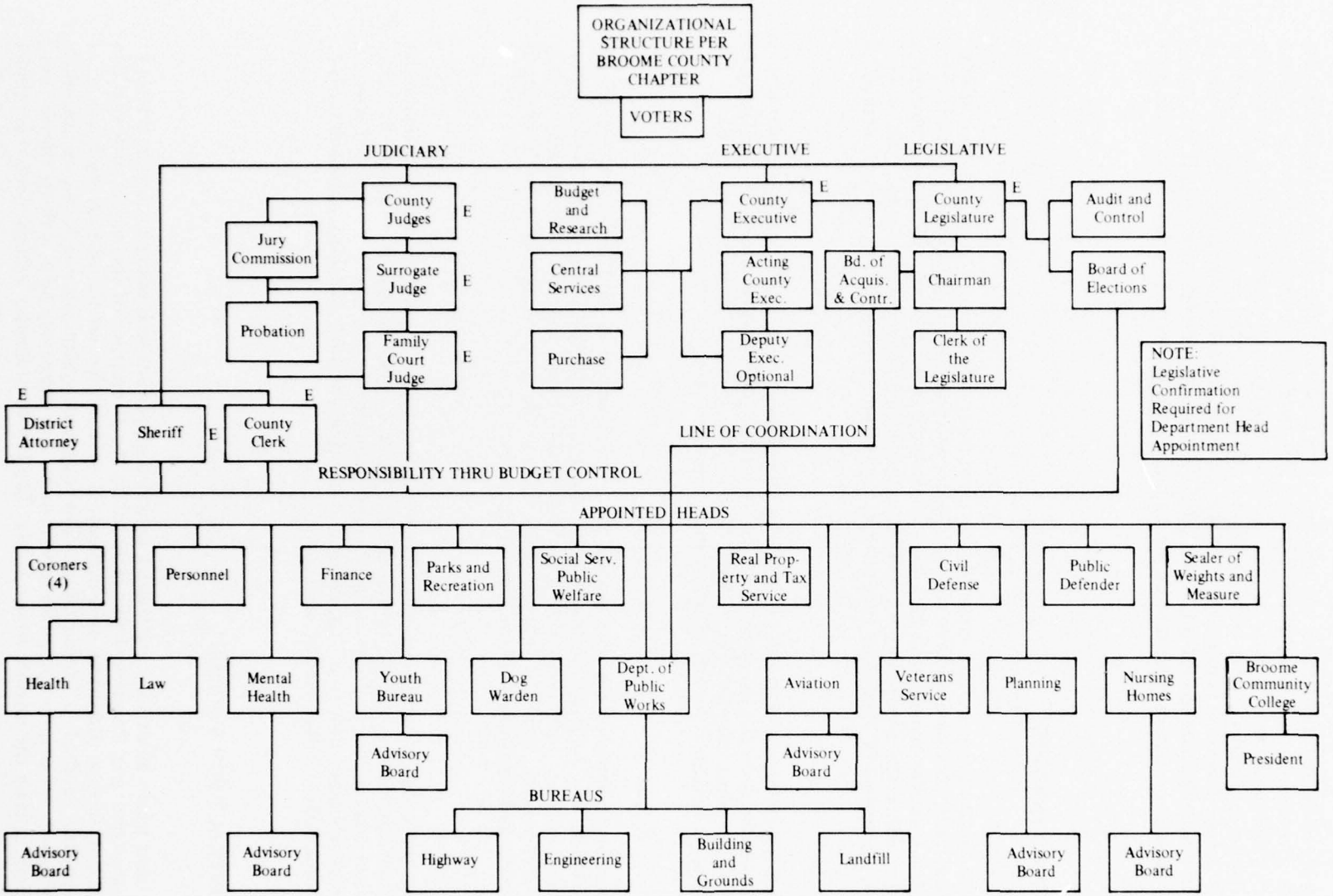


FIGURE II-4



PREPARED BY: BROOME COUNTY PLANNING – MARCH 1973

E–ELECTED OFFICIALS

The governing bodies of many communities exercise the administration of wastewater and water management systems directly, through municipal public works departments, separate wastewater departments, clerks or managers. In other cases, this administration, particularly in day-to-day matters, rests with an appointed board, committee, commission, or similar body whose functions may also include the provision of municipal utilities, drainage and so forth. Generally, the elected municipal officials retain the ultimate responsibility for policy and review procedure even though the appointed board exercises much of the decision-making.

JOINT OWNERSHIP

There are several instances where two or more communities or a community and another entity (such as a governmental agency) have constructed and jointly operate wastewater facilities. In the organization of a joint wastewater effort, the individual local governing bodies define the procedures for administration and financing and usually create a joint body comprised of elected or appointed officials from the cooperating governmental units.

Joint ownership and operation of facilities differs from the district approach in that vested title remains with the individual units in proportion to their expenditures of capital, or to the cooperating communities as joint tenants. Likewise, indebtedness is incurred by the individual communities rather than by the created joint body.

Methods of apportioning cost among the participants to a joint agreement are usually defined in the agreement. In many cases, the apportionment method or formula differs for capital costs and operating costs. Joint bodies rarely assess and collect the charges directly from consumers, but rather apportion the costs to the cooperating parties for the raising of revenue, and the parties, in turn, make the charges.

Joint ownership is particularly advantageous in the case of a small number of communities located adjacent to or close to one another because they can take advantage of the lower cost of construction and operation of a joint treatment facility or of a jointly used sewer. If a relatively large number of communities is involved, the joint ownership approach tends to become rather cumbersome to administer.

CONTRACT FOR SERVICE

In cases where an existing wastewater or water supply entity is asked to provide service to an area that was theretofore not included in the boundaries of the entity, such as urban facilities serving surburban development, a contract for service may provide the most acceptable method of organization. The contract system approach allows for inter-community cooperation on either a permanent or a temporary basis without the necessity of reorganizing the original service entity. The key to utilization of this method is mutual

agreement on the terms of a contract that should clearly define the quantity and standards of service, the determination and magnitude of charges, the liabilities of the contracting parties and duration of the agreement, and provisions for renegotiation.

The contract system is particulary advantageous for temporary service to a growing community until development indicates the need for the provision of local treatment facilities, but it is also widely used as a means of long range agreement between communities, sanitary districts, and other entities as a basis for the use of facilities. The contract for service is often mutually advantageous in the area of municipal-industrial cooperation in the construction of treatment facilities. Based on a long-term contract stipulating guaranteed levels of minimum revenue from the industry, municipalities often use their bonding ability, particularly revenue bonds, to construct and finance the facilities required by industry.

One disadvantage to the contract system is the problem of representation. Usually, the secondary contracting party is not involved in the policy decisions of the entity providing service, even though such decisions may affect the secondary party as well. In addition, the contract system does not function well in providing for the necessary capital funds to anticipate long-range capacity needs. Despite these shortcomings, the contract system has become a common and useful means for providing inter-entity cooperation.

DISTRICT

Topographic and demographic considerations frequently are more important in the solution of a problem than are political boundaries. The cooperative effort of a number of communities in solving a problem has given rise to the district.

In effect, the district approach is similar to joint ownership, but with more power given to the governing body for combining the resource of and providing planning for the communities that are or will be served.

The district, often termed a sanitary district or water district, is particularly adapted to situations where a large capital expenditure is required for joint works. In the organizing of such a district, provisions are made for a method of joint financing, including the apportionment of benefit charges; a basis for administrative organization for planning, construction, and operation of the district's facilities; and means for altering boundaries, enlarging facilities, or otherwise managing its affairs.

The district is usually organized with an elected or appointed board that is representative of the communities involved and has the authority to levy charges as required to finance the

district's needs. Debt undertaken to finance the district's capital improvement is often a full faith and credit obligation of all the communities involved, even though the bonds are issued in the name of the district. Some districts do not issue bonds directly; rather, the member communities finance their district obligations directly, as in the joint ownership arrangement.

The district's activities rarely include the construction, operation, and maintenance of individual member communities' conveyance facilities, but rather are confined to sewers and treatment facilities used by more than one community.

While the district arrangement is not a panacea for intergovernmental problem solving in the field of water pollution control, the number of successfully operating districts attests to the advantages of the approach, particularly in the case of a larger municipality and its environs cooperatively engaged in the pursuit of a common end.

The above mentioned institutional arrangements are currently active in the Urban Study Area. Other institutional arrangements which could evolve at some time in the area could consist of multi-purpose districts, independent authorities, and regional agencies.

ANALYSIS OF EXISTING ORGANIZATIONS

BROOME COUNTY

Binghamton-Johnson City Joint Treatment Plant

In 1967, the Binghamton-Johnson City Joint Sewage Board (BJCJSB) was created by an intermunicipal agreement in order to jointly treat their wastes. At this time, the Binghamton primary treatment plant was expanded to handle wastewater flows from both communities. The primary expansion, which was installed in 1967 cost $1.5 million and brought the capacity from 10 mgd to 25 mgd. In 1973, the secondary upgrading was completed to bring secondary capacity to 18 mgd. The cost was $10.3 million of which $6.3 million was provided by the State and Federal governments. The bond issues for the secondary upgrading averaged around 6%.

In establishing the Board, an equity of $550,000 was paid by Johnson City to Binghamton to establish the partnership. Furthermore, Johnson City financed the construction of the additional treatment capacity at the plant as well as the needed force main and pump station. Because of this arrangement, the affairs of the Board have usually been influenced by Binghamton which owns 54.8% of the joint facilities, and Johnson City, which owns the remainder (45.2%). Both municipalities have an equal voice in deciding the affairs of the treatment system, and both municipalities have appointed members to the Board (3 Binghamton, 3 Johnson City).

Jurisdiction. The Binghamton-Johnson City plant encompasses a service area of Binghamton City, Johnson City, the Town of Binghamton (sewer districts 1, 2, 3, 4, 6, & 8), the Town of Kirkwood (sewer district 1), the Town of Dickinson (sewer districts 2, 3, and Stella District), the Town of Port Dickinson, the Town of Union (Westover sewer district), and the State University of New York (Harpur College).

At present, a plan is being considered for the unsewered Chenango Valley area; the Chenango Valley may be regionalized into the Binghamton system. This arrangement, if chosen over a separate Valley plant arrangement, would alter the jurisdictional boundaries of the B-JC plant; establishing a new agreement between the Chenango area and the BJCJSB.

Functions. The agreements between Binghamton and Johnson City specify required operations by each and by the outside users with respect to use of the sewers. All outside users are required to finance the connection of their local systems to the Binghamton or Johnson City sewerage systems, even if part of the connection line is in Binghamton or Johnson City.

Each municipality is required to enforce a sewer use ordinance which restricts the strengths of various materials in the sewage. The biochemical oxygen demand (BOD) and suspended solids (SS) restriction has been waived, because there is now a surcharge formula in effect as a result of the Frito Lay Plant in Kirkwood. Otherwise each municipality is responsible for enforcing the ordinance.

With reference to extending and maintaining connections, the agreements by which a new major connection is executed are made by the mayors of both owning municipalities. The agreement between Binghamton and Johnson City, creating the Board, makes each responsible for all the flows to the plant from their systems.

Consideration was given by Binghamton to monitor the suburban communities adjacent to its system, however, the City Council, which had to approve the budget for the sewer department to execute such an activity, was unwilling to go to the expense for which there would be little direct cost recuperation. This matter was then turned over to the Board for a decision, however, Johnson City did not approve expenditures to monitor the system, making sewer ordinances for such an inspection valid only within the individual municipality.

The responsibilities necessary to manage the sewers in Binghamton are assigned to the engineering department for design, to the Department of Public Works for planning, and to the sewer department for operations. However, while the city water department has a commissioner who has responsibility for the entire array of functions necessary to supply water, there is no one person who can be considered responsible for the wastewater systems, other than the mayor.

TABLE II-4 ANALYSIS OF WASTEWATER M

*An examination of those institutional statutes and laws which afford various units of government the responsibility to perform wastewater management. The following tabulation of laws, although not entirely comprehensive, provides a synopsis of wastewater management on Broome and Tioga Counties

CURRENT WASTEWATER LEGISLATION				Planning	
Law/Statute Pending	Designated Institution	Administering WWM Function	Geographic Jurisdiction	Zoning Ordinances Contract for Services Maintain Planning Capability Recreation Flood Control/Drainage Power Energy Solid Waste Water Supply Comprehensive Land Use Collection/Transmission Wastewater Facilities Water Quality Standards	
McKinney's Consolidated Gen. City Law BK. 20	City	City	City & possible regions outside		
Environmental Conservation Law Title 5	DEC	Commissioner	State water resources planning boards	X X X X X X X X X X	
Conservation Law Article V Part V-A	N.Y.S. Dept. of Health	Commissioner	state	X X X X X	

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ANALYSIS OF WASTEWATER MANAGEMENT - LEGISLATION*

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Counties

Planning	Finance	Property Acquisition	Construction Maintenance	Administration	Operation	Additional Service	Comments
	Provide for Various meth.	Utilize rts. of way to outside access	Maintain Staff for above func.	Issue Facility Operat. Permits	Other water qual. respon.	Water Supply	
	Raise O&M Costs	Utilize Existing/Proposed rts of way	Contract for Construction	Wastewater mgt. Training	Pollution Surveill Enforcm. Cap.		
	Finance Treatment Facilities	Acquire Property by Various methods	Construct & Maintain collection/trns. fac.	Undertake Services W/Adeq. Review	Sell by-product of WWM		
	Finance Collection facilities		Construct & Maintain treatment facil.	Establish Budgetary Procedure	Negotiate for WWM Servs.		
	Finance System Expans/alter.			Establish administr. procedures	Operate Collection facility		
	Administers WWM Grants for Institutions			Employ mgt. staff	Operate Treatment facility		
Zoning Ordinances	X X X	X X X	X X X		X X		
Contract for Services							
Maintain Planning Capability	X			X X X	X X	X	
Recreation							
Flood Control/Drainage							
Power Energy							
Solid Waste							
Water Supply							
Comprehensive Land Use							
Collection/Transmission							
Wastewater Facilities							
Water Quality Standards	X X X X X X X	X		X X X	X X	X	
	X X X X X X			X X X	X X		

TABLE II-4 ANALYSIS OF WASTEWATER MANAGEME

*An examination of those institutional statutes and laws which afford various units of government the responsibility to perform wastewater management. The following tabulation of laws, although not entirely comprehensive, provides a synopsis of wastewater management on Broome and Tioga Counties

| CURRENT WASTEWATER LEGISLATION | | | | Planning | | | | | | | | | | | | | | | | Financ | | | | | | | | | | | | | | | |

YSIS OF WASTEWATER MANAGEMENT - LEGISLATION* (Continued)

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Planning			Finance		Property Acquisition	Construction Maintenance		Administration	Operation		Additional Service	Comments
Zoning Ordinances Contract for Services Maintain Planning Capability Recreation Flood Control/Drainage Power Energy Solid Waste Water Supply Comprehensive Land Use Collection/Transmission			Provide for Various meth. Raise O&M Costs Raise Capital Costs Finance Treatment Facilities Finance Collection facilities Finance System Expans/alter. Administers WWM Grants for Institutions		Utilize rts. of way to outside access Utilize Existing/Proposed rts of way Acquire Property by Various methods	Maintain Staff for above func. Contract for Construction Construct & Maintain collection/trns. fac. Construct & Maintain treatment facil.		Issue Facility Operat. Permits Wastewater mgt. Training Undertake Services W/Adeq. Review Establish Budgetary Procedure Establish administr. procedures Employ mgt. staff	Other water qual. respon. Pollution Surveill/Enforcm. Cap. Sell by-product of WWM Negotiate for WWM Servs. Operate Collection facility Operate Treatment facility		Water Supply	
X	X	X	X	X		X	X X	X X	X X X			contracting may be only if municipality or agency has power to do so
X		X X		X	X X X							powers granted in this statute may be repealed only by Legislature

TABLE II-4 ANALYSIS OF WASTEWATER MANAGEMENT - L

* An examination of those institutional statutes and laws which afford various units of government the responsibility to perform wastewater management. The following tabulation of laws, although not entirely comprehensive, provides a synopsis of wastewater management on Broome and Tioga Counties

| CURRENT WASTEWATER LEGISLATION | | | | Planning | | | | | | | | | | | | | | | | | | Finance | | | | | | | | | | | | | | | | | |

NALYSIS OF WASTEWATER MANAGEMENT - LEGISLATION* (Continued)

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TABLE II-4 ANALYSIS OF WASTEWATER MANA

*An examination of those institutional statutes and laws which afford various units of government the responsibility to perform wastewater management. The following tabulation of laws, although not entirely comprehensive, provides a synopsis of wastewater management on Broome and Tioga Counties

CURRENT WASTEWATER LEGISLATION				Planning												F
Law/Statute Pending	Designated Institution	Administering WWM Function	Geographic Jurisdiction	Zoning Ordinances	Contract for Services	*Maintain Planning Capability*	Recreation	Flood Control/Drainage	Power Energy	Solid Waste	Water Supply	Comprehensive Land Use	Collection/Transmission	Wastewater Facilities	Water Quality Standards	Finance System Expans/alter. Administers WWM Grants for Institutions
Village Law	Village District	Bd. of water commissioners (appointed by Bd. of Trustees)	village and other jurisdictional areas including state institutions	X	X				X		X	X				
Local Finance Laws §11	village, county, town, city	officer or agency	All municipalities													X

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NALYSIS OF WASTEWATER MANAGEMENT - LEGISLATION* *(Continued)*

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Financing. Except for a couple of large users, General Electric in Union and the State University at Binghamton in Vestal, the bills for debt service and operation and maintenance are sent to each municipality, which in turn charges the local users.

The billings are charged to each municipality, including Binghamton and Johnson City. Then, credits for expenses incurred by each municipality for debt service and interceptor costs are made to adjust the billings. Tables II-5 to II-8 will further explain the financial aspects.

Costs are allocated on the basis of metered water consumption. The metered consumption is modified in two cases: 1) the municipality has a master sewer meter in its connection into the regional system (as is the case in an area) and, 2) one of the users in a municipal area has a separate sewage meter or meter for discharges to storm sewers. Because the bills are allocated on water consumption, everybody pays a proportionate amount (based on water consumption) of the costs of treating infiltration and in-flow into the system.

Table II-5 shows the actual billings by the Board for the year 1974. In the first column, one can see the names of those entities to which bills are sent. These names are listed according to which sewerage system (Johnson City or Binghamton) serves them. In the next column are the yearly flows in 100 cubic feet, on which the billings are made and the relative proportion of the Binghamton and Johnson City system flows. In the next column is the total debt service for the primary and secondary treatment facilities: $543,763.80 for 1974. Below that total are the charges in dollars per hundred cubic feet. The charge is 25% higher for areas other than Binghamton, Johnson City and Vestal. Binghamton and Johnson City require the reduced rate in order to recover costs of carrying costs of the excess capacity of the treatment facility. Vestal and SUNY, which is in Vestal, receive the preferential rate because the sewage treatment plant is located in Vestal. In exchange for this rate, Vestal agreed not to tax the facility.

The formula used to calculate the unit charge for Binghamton, Vestal, SUNY and Johnson City is: $P_1 = \frac{D}{Q_1 + 1.25Q_2}$ where: P_1 = unit price to Binghamton, Vestal, SUNY and Johnson City,

D = debt service on the treatment plant,

Q_1 = flow from Binghamton, Vestal, SUNY and Johnson City,

Q_2 = flow from outside users.

The unit price (p_2) to outside users for debt service on the treatment facility is: $p_2 = 1.25p_1$

The next debt service item on Table II-5 is for the terminal pump station and interceptor (force main) from Johnson City to the plant. Only users of the Johnson City system pay for this item by the above formula.

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TABLE II-5

SCHEDULE I
PART I

BINGHAMTON-JOHNSON CITY JOINT SEWAGE BOARD
SUMMARY OF 1974 FLOW RATES AND BILLINGS

BINGHAMTON SERVICE AREA	Flow in 100 Cu. Ft.	%	DEBT SERVICE PLANT $543,763.80	DEBT SERVICE INTERCEPTOR —0—	PUMPING $18,000.00	PLANT OPERATION $613,387.19	LOCAL SYSTEM $493,221.38	TOTAL RATE	BILLINGS
City of Binghamton	2,785,037	58.11%	.11040	—	.00511	.12798	.14001	.38350	$1,068,061.69
State U. at Binghamton	255,651		.11040	—	.00511	.12798	.14001	.38350	98,042.16
Town of Vestal	142,197		.11040	—	.00511	.12798	.14001	.38350	54,532.55
Town of Binghamton	57,024		.13800	—	.00511	.12798	.14001	.41110	23,442.57
Town of Dickinson	32,028		.13800	—	.00511	.12798	.14001	.41110	13,166.71
Village of Port Dickinson	51,105		.13800	—	.00511	.12798	.14001	.41110	21,009.27
Town of Kirkwood	199,657		.13800	—	.00511	.12798	.14001	.41110	82,078.99
Total Bing. Service Area	3,522,699	73.50%							
JOHNSON CITY SERVICE AREA				$14,558.26	$15,041.07		$ 85,774.75		
Village of Johnson City	788,126	16.44%	.11040	.01105	.01184	.12798	.06753	.32880	259,135.83
Town of Dickinson	71,048		.13800	.01381	.01184	.12798	.06753	.35916	25,517.60
Town of Union	118,116		.13800	.01381	.01184	.12798	.06753	.35916	42,422.54
Town of Vestal	292,934		.11040	.01105	.01184	.12798	.06753	.32880	96,316.69
Total J.C. Service Area	1,270,224	26.50%							
GRAND TOTAL — ALL AREAS	4,792,923	100.00%							$1,783,726.60

TABLE II-6

SCHEDULE I **BINGHAMTON-JOHNSON CITY JOINT SEWAGE BOARD**
PART II **SUMMARY OF 1974 BILLINGS (NET)**

City of Binghamton		$267,372.23	
State U. at Binghamton		98,042.16	
Town of Vestal			
Binghamton Service Area	$54,532.55		
J.C. Service Area	96,316.69	150,849.24	
Town of Binghamton		23,442.57	
Town of Dickinson			
Binghamton Service Area	13,166.71		
J.C. Service Area	25,517.60	38,684.31	
Village of Port Dickinson		21,009.27	
Town of Kirkwood		82,078.99	
Town of Union		42,422.54	
Village of Johnson City		Cr. (77,492.90)	
TOTAL			$646,408.41

BINGHAMTON-JOHNSON CITY SUMMARY

	Binghamton		Johnson City	
Gross Billings		$1,068,061.69		$259,135.83
Less Credits				
Local System	$493,221.38		$ 85,774.75	
Debt Service				
Interceptor Lines			14,558.26	
Plant	307,468.08		87,009.11	
Excess Debt Service			149,286.61	
Total Credits		800,689.46		336,628.73
Net Billings		$ 267,372.23		Cr. ($77,492.90)

TABLE II-7

BINGHAMTON-JOHNSON CITY JOINT SEWAGE BOARD
SUMMARY OF BILLINGS – 1974 – PAYMENTS & CREDITS

	1974 Actual Billings	Less 1973 State Aid Rec'd 1974	Balance	Payments On Accounts 1974	Balance As of 12/31/74	Payments On Account 1975	Balance To Be Billed
City of Binghamton	$267,372.23	$ 97,097.89	$170,274.34	$100,000.00	$ 70,274.34	$50,648.05	$ 19,626.29
Village of Johnson City	(77,492.90)	29,225.73	(106,718.63)	–	(106,718.63)		(106,718.63)
State U. at Binghamton	98,042.16	7,410.28	90,631.88	75,000.00	15,631.88		15,631.88
Town of Vestal							
Binghamton Service Area	54,532.55						
Johnson City Service Area	96,316.69						
Total	150,849.24	15,734.38	135,114.36	143,000.00	(7,885.14)		(7,884.14)
Town of Binghamton	23,442.57	1,943.95	21,498.62	21,000.00	498.62		498.62
Town of Dickinson							
Binghamton Service Area	13,166.71						
Johnson City Service Area	25,517.60						
Total	38,684.31	2,508.86	36,173.45	25,000.00	11,173.45		11,175.45
Village of Port Dickinson	21,009.27	2,010.41	18,998.86	22,000.00	(3,001.14)		(3,001.14)
Town of Kirkwood	82,078.99	6,413.38	75,665.61	70,000.00	5,665.61		5,665.61
Town of Union	42,422.54	3,804.83	38,617.71	26,250.00	12,367.71	8,750.00	3,617.71
TOTALS	$646,408.41	$166,149.71	$480,258.70	$482,250.00	($ 1,991.30)	$59,398.05	($ 61,389.35)

TABLE II-8

SCHEDULE III 1973

BREAKDOWN OF STATE OPERATION AND MAINTENANCE AID RECEIVED 11/4/74 – $166,149.71

		1973 Flow	% Of Total	Credit Due
City of Binghamton		2,813,694	58.44	$ 97,097.89
State U. at Binghamton		214,577	4.46	7,410.28
Town of Vestal				
Binghamton Service Area	164,867			
Johnson City Service Area	290,875	455,742	9.47	15,734.38
Town of Binghamton		56,152	1.17	1,943.95
Town of Dickinson				
Binghamton Service Area	33,059			
Johnson City Service Area	39,627	72,686	1.51	2,508.86
Village of Port Dick		58,097	1.21	2,010.41
Town of Kirkwood		185,877	3.86	6,413.38
Village of Johnson City		846,882	17.59	29,225.73
Town of Union		110,522	2.29	3,804.83
Total Flow		4,814,229	100.00%	$166,149.71

The remaining charges, pumping, plant operations, and local systems, are paid with the same unit charges for all users. The pumping costs are decided by each sewerage system; for example, the pumping costs for the Johnson City system is the cost of electricity and labor to operate the terminal pump station.

The plant O&M costs for 1974 were $613,387.19. This cost includes services at a fee of $17,000 rendered by the finance department in Binghamton City which acts as the general accountant for the Board. All users pay a proportionate share of the plant operation which for 1974 was 14¢ per 100 cubic feet. The last cost item is the local system for which two costs are provided: Binghamton and Johnson City. The cost for each system is the funds spent by the sewer department and the debt service for the sewers in Binghamton and Johnson City. Each user of the system (Binghamton or Johnson City) pays the same unit rate for their respective system. The current debt service for sewers is for interceptors. The sewer department budget includes maintenance of the local collectors and interceptors.

The last two columns in Table II-5 are simply the addition of the unit rates across the board for the "total rate", and the multiplication of the total rate by the flow for the total billing.

Table II-6 is a summary of net billings to each user with a special summary for Binghamton and Johnson City. Beginning with the bottom part of the table ("Binghamton-Johnson City Summary"), the gross billings to Binghamton and Johnson City are given from the previous table. In the next lines, credits for the local sewer system and debt service are made to the billings. The local system credits are those funds actually spent by the sewer departments and debt service for the internal sewers.

Actually, the individual municipalities, not the Board, have floated the bonds for the treatment plant. Therefore, the debt service which each pays is also applied as a credit. The last credit is an excess debt service credit which accrues to Johnson City. All the debt service collected from outside users constitutes this excess credit. The reason for Johnson City receiving the entire credit is that its ownership in the treatment plant is about double the relative proportion of its flow. Binghamton's flow is in excess of its ownership of the facility. The result is that Johnson City receives a credit in excess of $77,000.

The top of the table contains the net billings which summarize the bottom of the table and Table II-5.

The next table, II-7, summarizes the payments and credits which must be issued. In the first column are the users. In the next column are the net billings from Table II-6. Adjustments are made for the one-third operation and maintenance aid received from the Department of Environmental Conservation and for payments received in advance from the users. The advance payments are necessary to give the Board some working capital.

The last table of this series, Table II-8, specifies the allocation of state aid. The aid received in 1974 is the grant for operating year 1973. This aid is shared proportionately among the users according to their 1973 flows.

The budget of the Board is subject to approval by both Binghamton and Johnson City. The suburban communities have absolutely no voice in determining the policies of the Board. The budgets of the local sewerage system are subject to approval by individual municipalities. The Johnson City budget is approved by a mayor and four trustees, and the Binghamton budget by a mayor and nine councilmen.

Programs & Policies. The City of Binghamton has completed an infiltration-inflow analysis of its system & is awaiting EPA approval before starting the analysis portion of the study. Like Binghamton, Johnson City also has initiated an infiltration-inflow analysis of its sewerage system. An amount of $19,500 has been earmarked for the first phase and approximately $600,000 in grant funds was received from the State. This extra grant is in a reserved account and normally can only be used for the bond debt service for which the grant was originally intended.

The cost of the full study in Johnson City could reach $415,000, meaning that the problems of infiltration-inflow in Johnson City will only be slowly solved with the existing institutions.

Endicott Water Pollution Control Plant (WPCP)

The original 12 mgd primary plant was built between 1964 and 1966 at a cost of $4,157,700. Outside funding received was $1,286,800 which helped to support a $4,005,000 general obligation bond issue at 3.2% @ 30 years. The secondary upgrading to 7.7 MGD was completed at a cost of approximately $4 million. Federal and State aid was about $2.9 million and was more than expected. The higher than expected grant allowed Endicott to finance the entire project with bond anticipation notes without actually issuing serial bonds. The notes were issued December 1971 to May 1972 and ranged from 2.75% to 2.95%. The final bond was 4.7%.

Jurisdiction and functions. Endicott presently serves the areas of the Village of Endicott, Endwell, Park Manors, North Endicott, West Endicott, West Corners and Airport Heights.

The plant is owned by the Village of Endicott and operated by a subdepartment of the Village. Other responsibilities of the public works department are water, streets, parks and the golf course. The street subdepartment is responsible for planning, construction and cleaning of lateral sewers.

Financing and future programs. All budgets are approved by the Mayor and six Village Trustees. The revenue producing departments such as the water and sewage departments have a separate volunteer commission which reviews and makes recommendations concerning the budget. This mechanism reportedly has resulted in the sewage department never having any problems of receiving requested budgets. In fact, funds have usually been returned to the Village treasury at the end of the fiscal year.

The sewage department budget is equal to the debt service and operation and maintenance of the treatment plant and regional interceptors. The street department budget, allocated to sewers for other than debt service is $27,580.

The sewage operation is not a profit maker for the Village. The year by year expenses are allocated equally among the users. Vestal has an agreement with the Town of Union which signed in behalf of Endwell, Park Manor, North Endicott, West Endicott Nos. 1 and 2, West Corners and Airport Heights districts. The cost apportionment is specified in the agreement: "Debt service charges and costs of operation and maintenance for all affected facilities under this agreement shall be shared by the parties hereto on a basis which shall be directly proportionate to the annual full valuation of all taxable property within the sewer service area of each of the parties."

As for future and continuing programs, the Village has made considerable attempts to eliminate the combined sewer system. In addition, a joint infiltration-inflow study may be undertaken with the Town of Union although that study is not now a condition of the plant's discharge permit.

The Town of Vestal will be closing its primary plant in the future & sending its flows to the Endicott WPCP for secondary treatment. On March 5, 1975, Vestal and Endicott signed an agreement whereby Vestal would pay the Endicott Sewer Fund the following amounts for sewer services. These amounts were based on Vestal's projected proportion of flows in the year 1998:

Vestal Share in Primary Capital Construction Cost Debt	$1,139,000.00
Vestal Share in Secondary Facility Captial Construction Cost Debt	87,842.00
5% Administration, engineering, legal and contingency expense	61,342.00

These costs will be made in annual installments. If new construction is financed at the plant, Vestal will pay a 5% surcharge on its share of the construction cost. Operation and maintenance costs will be assigned to Vestal based on its proportion of metered flows at the plant relative to the entire plant flow, and a 10% annual surcharge will be added for administration, engineering, legal and contingency expenses.

All sewers have a sewer use ordinance which regulates discharges into the sewers. Each municipality is responsible for enforcing the ordinance within its own limits. Currently, there is a possibility that an individual user may be discharging heavy metal to the system. Special tests are underway to confirm or disprove this theory. As Endicott does not directly bill for sewage to its users; there are few mechanisms available to police or discourage such discharge.

TIOGA COUNTY

Village of Owego Water Pollution Control Plant (WPCP)

The Village of Owego built a primary treatment facility in 1966. The cost of the plant was $625,000 for which a 30% grant was received from the Federal government in addition to a $180,000 State grant. Since a serial bond financed the expenditure, the project was subject to a permissive referendum which was held and approved. The bonds were floated at 6% and will mature in 1994. Since that time a number of other serial bonds were issued for improvements and extensions to the local sewer system. These improvements were bonded for five years.

Function and financing. The plant is operated by a sewage department. Other departments in the Village are police and public works. All budgets are approved by the elected mayor

and six trustees. The operation and maintenance budget at the treatment plant for 1975 is $43,802, and for the sanitary sewer system — $13,102. Administration is $14,549. Staffing at the Village plant has been reported to be a problem. There are only three workers at the plant in addition to the operator who is also the public works superintendent.

As there are no outside users of the Village system, the costs of treatment are paid entirely by the local population by a metered rate. The metered rate is 150% of the water bill to each resident from the Owego Water Works, the private water supplier serving Owego Village. A local bank in the Village computes the bills and for a fee of $600, Owego Water Works does the billing for the Village.

Comments. There has not been much cooperation on any service function between Owego Village and Owego Town. An attempt to share laboratory expenses at the sewage treatment plant failed when no agreement could be reached.

The lack of structured cooperation is evident in the wastewater planning for the Village and the Town. In 1967, the Stearns and Wheler study entitled "Town of Owego Comprehensive Sewerage Study, WPC-CS-112 (1976)" recommended that Owego Town make the improvements to Plant #1 in order to produce secondary treatment. The alternative of regionalizing at the Village was not evaluated though the suggestion was made.

Programs. There have been plans made about sewering a small part of the Glen Mary Drive in Tioga Town and part of the Owego Creek area in Owego Town. However, the areas are currently sparsely populated though rapidly developing, and their remoteness suggests that new interceptors would have to be built to bypass the lines which are currently at or close to surcharge during wet weather flows. Service to these areas may be possible though the flows would not contribute significantly to the total plant influent.

Owego Town Water Pollution Control Plant #1 (West) and Water Pollution Control Plant #2 (East).

The treatment plants in East and West Owego are financed by the sewer districts tributary to them. The Town government provides administrative support for the districts. The treatment plants and sewerage are referred to as constituting the responsibilities of the sewer department, though the reference is actually a misnomer. Actions are being considered to make sewage treatment a Town function.

The Town is governed by the four elected councilmen and an elected Supervisor. The head of the sewer "department" is appointed by these five persons, and the budget of the department is also approved by the elected officials.

As for plant operation, the two plants have one operator and one laboratory which are located at the East Owego plant.

Financing. Financing is restricted by the Town Law. Serial bonds of about $300,000 each helped to finance the treatment plants. Interest rates were 3.1% for treatment plant #1 and 7% for #2. No outside grants were received by plant #2. Some surplus funds of the Town were used to defray the construction of the plants.

Revenues to support the plants are by flat rate user fees for residences, by metered rates for IBM and by estimated consumption from other nonresidential users in West Owego. There is a sewer use ordinance, but no hook-up ordiances for the districts.

SUMMARY OF INSTITUTIONS IN BROOME AND TIOGA COUNTIES

Predominant Management Institution. The Broome-Tioga region is generally characterized by a large number of town districts which were created to finance water distribution and sewage collection. Management of this water supply and sewage treatment arrangement is generally by a municipal department. In essence, except for the case of private water supply companies, water supply and distribution and sewage collection and treatment is managed by municipal departments in villages and cities. In towns, the town districts and municipal departments usually operate together.

As districts are separate corporate entities, a separate set of accounts is maintained by each district showing bonded indebtedness, services charged to the district, payment schedules, etc. As the district can raise revenues with *ad valorem* taxes against property owners in the district, a referendum is required as part of its formation. In essence, the requirement of a referendum and the power to tax real property are two features which make districts distinct from other service arrangements such as authorities, intermunicipal agreements, municipal departments etc. The particular laws which relate to these governing institutions may be found in *McKinney's Consolidated Laws of New York.*

Functions. Maintenance of water or sewer lines is the responsibility of the local engineering department. In no case is the periodic cleaning etc. arranged by an outside municipality; maintenance is funded through the general revenues of the local town. In towns where the districts are managed and maintained by the one local municipality, charges are passed on to the districts through the yearly bill.

Financing–Coordination. In most municipalities, the districts are financially managed by the local municipal engineering or clerk's departments. The bills paid by customers of the district are managed in these departments. Payment bonds through the real estate tax is sometimes coordinated through the assessor and tax collector. In some cases, a district in

one municipality is managed by a different municipality. For example, Johnson City and Endicott manage the Town of Union water and sewer districts.

Financing — Revenue. If bonds are floated to construct any facility for the utility, the payment generally comes from the general revenues of the municipality, although there may be special revenues earmarked for debt service.

There is an important difference between the revenues which can be derived from municipal departments and districts. While village or city departments may realize a fair return on their investments in wastewater management, town districts may only raise such revenues as to cover debt service and operating maintenance costs. If there is a deficit, revenues must be raised by added levees against the property in the district; however, the revenues may never exceed the costs.

In cities and villages, the revenues from sewer rents only contribute to the general fund along with the property taxes and other sources of funds. Rents may be charged to create funds less than the costs of debt service, operation and maintenance, and furnish additional funds via the property tax. Rents may exceed costs and the department may make a profit; thereby lowering the property tax.

Ad valorem taxes are usually relied upon to pay back bonded indebtedness for sewers and water mains. This method is presumed equitable if the owners of the most valuable property receive the most benefit and create the most cost from capital construction. Thus, a manufacturing plant will pay more than a residence because there is a greater cost incurred in serving the plant (*e.g.*, a larger main for increased flow, a longer main for just one connection).

Special assessment formulae are usually more equitable because of the sensitivity in which they can be applied to charging for costs and benefits. As an example, in the Town of Owego Sewer District #8, a charge is levied based on the frontage of a lot. Thus the owner of a larger lot pays exactly that amount attributable to the added length of pipe necessary to service his property.

Flat rates are used for recouping operation and maintenance and bond payments. One rate, equal for all homeowners who are connected to a system, is charged for operation and maintenance. The other flat rate is levied against all property owners in a district whether or not they are connected to a system.

Metered rates may just pay for the annual cost of operation and maintenance, or may be used to pay for all costs of the utility. The metered rate can be the same for all uses or can vary for different sizes of users. Usually, the larger user pays a lower unit charge for the service. Reduced rates for increased usage has its equitibility based on the economics of scale inherent in serving large users. Additionally, low rates for large users is one method to attract industry to an area.

Rates are based on estimated water consumption in areas where there are no water meters. The number of appliances, faucets, swimming pools etc. can be used to estimate water consumption.

Finally, another method of financing is outside subsidization, be it from the Federal construction grants or from a general public paying for the maintenance of one district.

Financing — Restrictions. There are a number of restrictions under which indebtedness and other expenses may be incurred by different local institutions. The amount of indebtedness which may be incurred by a county, town, city or village is restricted by law and is referred to as Constitutional Debt Limit or debt ceiling. However, in computing the debt of a municipality, there are certain exclusions for debts incurred for certain purposes. Debts incurred for water supply are excluded from the debt ceiling (*State Constitution*, Art. 8, § 5-6). Debt exclusion is provided for sewers and the exclusion is also provided for sewage treatment upon special application to the State Comptroller. (*Local Finance Law*, § 124.10).

Financing—Bonding. Three types of bonding techniques, which have special applicability for local wastewater management are: serial bonds, bond anticipation notes, and revenue bonds. Section 21 of the *Local Finance Law* provides that "no installment of serial bonds shall be fifty per centum in excess of the smallest prior installment." The impact of this requirement is that total payments for debt service are largest during the first few years. For wastewater management projects, one typically finds that projects service an area whose population is expected to grow. In these cases, the yearly debt service payments are highest when the population is at the lowest level, and the payments are lowest when there are more people available to share the costs.

One method to avoid this debt service schedule is to finance with a revenue bond. The debt service for a revenue bond can be scheduled to equalize total yearly payments. In order to maintain the same yearly payment, the principal repayment is very small initially. Conceivably, a debt service could be constructed to finance a project in an area where population is growing whereby the per capita payments would be equal each year, based on a population projection. This latter route is not taken in practice because of the obvious difficulty in finding people who would purchase such bonds.

Revenue bonds, unlike serial bonds, are not general obligations of a municipality and, therefore, have a higher interest rate. Municipalities may not generally issue revenue bonds, however, Article 14-C of the *General Municipal Law* provides that counties, cities and villages may issue revenue bonds for self-sustaining (from user fees) undertakings. Another restriction in the use of a serial bond is that the period for bonding for financing a facility cannot exceed the useful life of that facility. The useful life of sewer systems, including purification facilities, is to be thirty years, while the useful life for replacement of the equipment is 10 years. The costs for planning wastewater management can be bonded and the useful life of a plan is three years.

Bond anticipation notes (BAN) are issued a number of years before a full bond issue. As construction progresses for a project, bond anticipation notes will be floated to pay the contractor. At the end of the project, the notes may be renewed and finally a full bond issue (serial bond) will be made. Bond anticipation notes are convenient because their use can defer payment by the local area for up to five years.

Other than district assessments, property taxes are not heavily relied upon locally for wastewater management. Counties may not tax beyond 1½% of the full valuation of taxable use property, though that limit may be increased to 2% by State legislative approval or local referendum.

Tables II-9 to II-13 summarize the finances of the local municipalities according to the latest special report on municipal affairs from the State Comptroller.

Table II-14 and Table II-15 summarize the institutional characteristics of water and sewer service areas respectively. The subtitles for Table II-14 are:

Name – Name of the district or service area.

Managed by – Name of the agency which manages the service area. (M.D. = Municipal department)

Type – type of service area: district, municipal, department, service, exchange

Referendum Required – answers "yes" or "no" as to whether a referendum is required to create or extend a district

Ad Valorem Tax – indicates "yes" or "no" as to whether this method is used

Metered – notes if bill is based on metered consumption

Charges To City Buildings – notes arrangements made to charge municipal buildings for services

Flat Rate – indicates "yes" or "no" if yearly bill is charged according to a flat rate

Comments – notes any additional information

The subtitles for Table II-15 are roughly the same as for Table II-14 only with the following additions:

Treatment Plant – notes local treatment name

Treatment Charge – notes how individual residents (or property owners) pay the cost of sewage treatment. This does not refer to how the district or department is billed on the whole

Sewer Charge – notes how residents pay the cost of the local sewers.

TABLE II-9

BOND AMORTIZATION SCHEDULE
for
$1,000,000 BOND ISSUE 06.5% INTEREST RATE
and
30 YEAR AMORTIZATION PERIOD

YEAR	REMAINING DEBT	PRINCIPAL	INTEREST	TOTAL
0	$1,000,000	$ —	$ —	$ —
1	974,000	26,000	65,000	91,000
2	948,000	26,000	63,132	89,132
3	921,000	27,000	61,447	88,447
4	894,000	27,000	59,697	86,697
5	866,000	28,000	57,946	85,946
6	837,000	29,000	56,132	85,132
7	808,000	29,000	54,252	83,252
8	778,000	30,000	52,373	82,373
9	748,000	30,000	50,428	80,428
10	717,000	31,000	48,484	79,484
11	685,000	32,000	46,474	78,474
12	653,000	32,000	44,400	76,400
13	620,000	33,000	42,995	75,995
14	587,000	33,000	40,187	73,187
15	554,000	33,000	38,048	71,048
16	520,000	34,000	35,909	69,909
17	486,000	34,000	33,705	67,705
18	451,000	35,000	31,501	66,501
19	416,000	35,000	29,232	64,232
20	380,000	36,000	26,965	62,965
21	344,000	36,000	24,631	60,631
22	307,000	37,000	22,297	59,297
23	270,000	37,000	19,899	56,899
24	232,000	38,000	17,501	55,501
25	194,000	38,000	15,037	53,037
26	156,000	38,000	12,574	50,574
27	117,000	39,000	10,112	49,112
28	78,000	39,000	7,583	46,583
29	39,000	39,000	5,055	44,055
30	—	39,000	2,528	41,528
		$1,000,000	$1,075,524	$2,075,524

Average Annual Debt Cost = $69,184.13

Maximum Annual Debt Cost = $91,000.00

Equivalent Yearly Payment = $76,577.50

TABLE II-10

VILLAGE FINANCES (1971)

Village	1970 Census population $	1970 Census population rank	land area	Assessed Valuation of fully Taxable Real Property	State Equalization Rate	Constitutional Real Estate Tax Limit Provisions: Limitation for Operating Purposes	Constitutional Real Estate Tax Limit Provisions: Total Taxing Power	Total Tax Levey for Village Purposes	Tax Collection Performance	Constitutional Debt Limit	Debt Outstanding: subject to limit: bonds	Debt Outstanding: subject to limit: BAN*	Debt Outstanding: subject to limit: other	Debt Outstanding: not subject to limit: bonds	Debt Outstanding: not subject to limit: BAN*	Debt Outstanding: not subject to limit: other	Debt Outstanding: Total
Broome																	
Port Dickinson	2,132	221	1.9	2,547,107	29	88,765	103,998	98,618	97.17	306,501	32,870	1,995	---	315,000	---	---	349,865
Lisle	336	537	.9	247,926	26	18,352	22,352	2,464	94.69	45,141	11,900	---	---	---	---	---	11,908
Deposit	2,061	233	2.5	2,352,686	34	129,917	157,387	70,163	95.79	461,278	---	6,000	---	30,000	34,400	3,000	73,400
Witney Point	1,058	361	1.5	1,185,008	31	64,681	70,539	21,330	93.38	236,859	---	---	---	23,000	---	---	23,000
Endicott	16,556	19	3.1	32,939,415	35	1,983,945	2,695,152	1,776,752	99.41	6,877,042	1,972,000	50,000	---	5,475,000	---	---	7,497,000
Johnson City	18,025	18	4.5	25,478,540	29	1,731,422	2,030,357	1,075,361	98.34	6,060,411	1,699,300	1,605,500	62,000	3,280,700	---	---	6,646,300
Windsor	1,098	353	1.2	920,480	26	64,131	64,131	20,400	99.90	231,495	---	---	---	---	---	6,463	6,463
Tioga																	
Waverly	5,261	94	1.4	4,948,825	31	311,999	318,799	181,650	98.28	1,096,305	---	27,200	2,794	---	---	---	29,994
Candor	939	386	1.5	924,681	35	49,948	51,397	16,519	96.93	177,717	---	---	---	---	---	---	---
Newark Valley	1,256	326	1.0	1,214,804	27	83,885	83,885	29,707	98.84	300,874	---	---	---	---	---	---	---
Nichols	638	459	1.0	829,147	37	38,668	38,668	18,271	97.82	141,109	---	---	---	---	---	---	---
Owego	5,152	98	2.8	2,223,445	37	135,112	135,112	73,374	99.16	393,186	54,522	---	---	127,810	---	9,500	191,822
Spencer	854	408	1.5	3,465,622	130	55,303	55,303	20,334	97.29	179,646	30,700	---	---	---	---	---	30,700

*BAN – Bond Anticipation Notes

TABLE II-11

TOWN FINANCES (1971)

Town	1970 Census		land area	Assessed Valuation of Real Property			Equalization rate	
	%	rank		Fully Taxable	Taxable for Schools	Wholly Exempt	state	county
Broome								
Barker	2,032	525	41.3	1,497,466	1,515,216	344,100	22	25
Binghamton	4,844	252	25.6	18,270,148	18,479,836	914,315	77	83
Chenango	12,267	91	33.5	14,219,337	14,940,557	1,220,675	23	25
Colesville	4,420	280	79.4	4,997,350	5,071,200	509,910	31	36
Conklin	5,399	235	36.1	1,152,867	1,179,031	63,875	32	36
Dickerson	5,687	222	5.2	7,039,168	7,448,560	3,950,480	23	25
Fenton	6,719	177	32.4	6,271,495	6,513,805	4,693,150	20	21
Kirkwood	5,687	223	30.9	8,477,187	8,663,274	1,768,176	23	25
Lisle	1,317	548	46.8	1,416,779	1,447,579	136,590	22	76
Maine	5,842	210	46.1	5,595,154	5,725,859	3,872,576	25	28
Nanticoke	1,020	750	24.4	1,006,141	1,035,851	76,800	30	38
Sanford	2,479	446	51.4	3,283,549	3,365,424	724,517	18	27
Triangle	2,285	475	33.7	1,973,333	2,017,249	874,670	23	26
Union	64,480	16	335.1	103,326,471	106,160,521	25,130,150	25	27
Vestal	26,909	40	51.8	38,175,062	39,857,102	24,009,052	22	24
Windsor	5,646	226	93.3	5,172,167	5,324,992	1,606,825	26	29
Tioga								
Barton	8,526	138	61.0	9,549,305	9,902,580	3,979,948	34	37
Berkshire	1,090	732	30.1	966,694	982,044	306,730	27	30
Candor	4,190	299	95.8	4,505,369	4,664,279	659,460	38	42
Newark Valley	3,323	369	50.9	3,067,139	3,175,789	1,250,425	25	28
Nichols	2,271	484	33.8	2,913,299	2,971,799	351,600	35	37
Owego	0,336	59	105.3	32,927,784	33,599,834	4,723,670	29	31
Richford	916	775	38.6	774,148	806,573	79,810	26	29
	2,232	493	49.8	9,092,669	9,162,094	419,170	118	136
Tioga	3,621	341	59.6	4,038,007	4,146,257	3,963,050	29	32

TABLE II-11 (Continued)

Constitutional Debt Limit	Debt Outstanding at end of fiscal year*						Total debt outstanding
	subject to limit			not subject to limit			
	bonds	BAN	other	bonds	BAN	other	
402,773	20,050	---	---	---	---	---	20,050
1,446,191	47,484	300,00	---	6,000		---	353,484
3,922,345	47,000	---	---	1,033	149,300	---	197,333
969,606	10,000	---	---	---	---	---	10,000
1,624,559	12,400	---	---	855,000	85,545	---	952,945
2,011,602	1,000	422,300	---	30,280	95,000	---	548,580
2,001,007	68,111	82,000	15,000	28,000	---	---	193,111
2,212,058	19,000	20,612	---	1,010,000	---	---	1,049,612
376,310	---	22,104	30,940	---	---	---	53,044
1,353,915	27,410	---	---	---	---	---	27,410
182,611	13,200	---	---	---	---	---	13,200
978,554	69,450	---	4,600	---	---	---	74,050
501,687	---	---	---	---	---	---	---
26,303,117	6,265,739	918,824	38,000	1,512,000	---	527,145	9,261,709
10,149,679	2,505,315	206,750	32,768	4,041,175	59,800	---	6,845,808
1,201,370	25,000	---	69,500	---	---	---	94,500
1,783,349	29,000	---	---	---	---	---	29,000
221,312	32,130	---	---	---	---	6,000	38,130
731,904	---	---	---	---	---	---	---
740,180	60,500	---	---	---	---	---	60,500
527,974	62,790	---	4,000	---	---	---	66,790
6,864,778	830,000	1,436,425	---	---	283,060	---	2,549,485
170,683	16,400	---	---	---	---	---	16,400
469,728	19,325	---	---	---	---	---	19,325
846,910	---	---	---	---	---	---	---

TABLE II-12 COUNTY FINANCES (1971)

COUNTY	1970 CENSUS POPULATION			ASSESSED VALUATION OF REAL PROPERTY				CONSTITUTIONAL REAL ESTATE TAX LIMIT PROVISIONS			Line No.
	Number	Rank	Land Area (Sq. mi.)	Fully Taxable	Taxable for Schools	Wholly Exempt from Taxation	State Equalization Rate	Limitations for Operating Purposes	Total Taxing Power	Real Property Tax Levy for County Properties	
Broome	221,815	12	710	363,840,227	373,677,513	12,976,899	29	16,552,504	17,496,171	8,872,431	3
Tioga	46,513	42	325	6,791,414	69,411,249	15,741,863	34	2,830,461	4,023,084	1,223,440	49

DEBT OUTSTANDING AT END OF YEAR*

Constitutional Debt Limit	Subject to Limit			Not Subject to Limit			Total Debt Outstanding	Line No.
	Bonds	Bond Anticipation Notes	Other Notes	Bonds	Bond Anticipation Notes	Other Notes		
79,854,793	10,000,000	5,123,200	41,750	----	----	580,376	15,745,326	3
12,356,819	----	----	----	----	----	----	----	49

REVENUES

County	Real Property Taxes and Assessments	Other Real Property Tax Items	Non-Property Taxes (a)	State Aid	Federal Aid	Special Activity Revenues	Other Revenues	Total	Line No.
Broome	6,935,898	1,314,473	2,434,978	4,819,615	2,709,129	3,474,386	2,689,366	24,377,845	3
Tioga	910,257	203,149	1,066,268	1,806,360	1,276,078	----	382,178	5,643,183	49

BORROWINGS

County	Bonds	Bonds Anticipation Notes	Capital Notes	Premiums and Accrued Interest	Total	Tax and Revenue Anticipation and Budget Notes	Revenue Balance at Beginning of Year (b)	Line No.
Broome	$8,380,000	6,022,200	41,750	535,737	14,479,687	$530,370	1,698,118	3
Tioga	----	----	----	----	----	----	1,219,360	49

EXPENDITURES

County	CURRENT OPERATIONS			Capital Outlay	DEBT SERVICE			Operating Balance at Close of Year	Line No.
	General	Special Activities Amount	Special Activities Type		Principal	Interest	Total		
Broome	16,967,738	3,526,686	5,6,8	9,512,168	6,608,530	392,089	37,007,212	729,272	3
Tioga	5,582,870	----	----	655,115	29,490	1,327	6,268,802	929,681	49

TABLE II-13 CITY OF BINGHAMTON FINANCES (1971)

ASSESSED VALUATION OF REAL PROPERTY			EQUALIZATION RATES		CONSTITUTIONAL REAL ESTATE PROVISIONS		Real Property Tax Levy for City Purposes (Excl. Schools)*	Tax Collector Performance (%)
Fully Taxable	Taxable for Schools	Wholly Exempt from Taxation	State	County	Limitation for Operating Purposes	Total Taxing Power		
135,682,336	138,438,781	57,620,720	38	40	6,893,504	9,806,979	9,785,120	96.83

DEBT OUTSTANDING AT END OF FISCAL YEAR

Constitutional Debt Limit	Subject to Limit (a)			Not Subject to Limit			Total Debt Outstanding
	Bonds	Bond Anticipation Notes	Other Notes	Bonds	Bond Anticipation Notes	Other Notes	
24,170,500	8,488,000	3,222,000	30,000	14,520,000	1,475,000	2,811,040	30,552,040

BORROWINGS

Bonds	Bond Anticipation Notes	Capital Notes	Premiums and Accrued Interest	Total	Tax and Revenue Anticipation and Budget Notes (a)	Operating Balance at Beginning of Year	
27,034,000	7,608,632	----	729,436	35,372,068	----	(d) 27,505	(Deficit)

EXPENDITURES

CURRENT OPERATIONS				Capital Outlay	DEBT SERVICE		Total	Operating Balance at Close of Year	
General	Special Activities				Principal	Interest			
	Water	Other	Type						
23,639,933	717,933	9,702,390	8,13.16	17,800,467	18,678,400†	723,638	71,262,760	(d)1,191,856	Deficit

Real Property Taxes and Assessments	Other Real Property Tax Items	Non-Property Taxes	State Aid	Federal Aid	Special Activity Revenues	Other Revenues	Total
9,809,831	-----	2,904,215	6,346,123	7,153,914	10,704,191	1,950,005	38,868,279

TABLE II-14 ORGANIZATION FOR WATER SUPPLY

NAME	MANAGED BY	TYPE	REFERENDUM REQUIRED	AD VALOREM TAX
Binghamton City	Bing. City MD	MD	no	no
Binghamton Town WD#1	Bing. Town MD	district	yes	no
Binghamton Town WD#2	Bing. Town MD	district	no	no
Binghamton Town WD#3	Bing. Town MD	district	no	no
Binghamton Town WD#4	Bing. Town MD	district	yes	no
Binghamton Town WD#5	Bing. Town MD	district	no	no
Binghamton Town WD#6	Bing. Town MD	district	no	no
Chenango Machine Accounts #1,2,3,4,5,6,7 8,9, 10, 15, 16	Chenango MD	district	yes	yes
Dickinson WD #1,4,5	Dickerson MD	district	- - -	no
Dickinson WD #2,3,6	Dickinson MD	district	- - -	no
Areas of Dickinson not in any WD	Johnson City MD	service exchange	- - -	no
Kirkwood WD #1	Kirkwood MD	district	no	- - -
Kirkwood WD #2	Kirkwood MD	district	no	- - -
Kirkwood WD #3	Kirkwood MD	district	- - -	charge to each unit
Johnson City	Johnson City	MD	no	no
Nichols Water Works		private	no	no
Owego Town WD #1,2 3,4,6	Owego Town MD	district	yes	no
Owego Town WD #5	Owego Town MD	district	yes	yes
Port Dickinson	Port Dickinson MD	MD	no	no
Union	Endicott Village and Johnson City MD's	service exchange	no	yes
Vestal Water Dist. #1,2,3,4,5,7,8,9	Vestal MD	district	yes	yes
Twin Orchards	Endicott MD	district	?	?
Endicott Water Works	Endicott MD	MD	no	no
Hale Subdivision	Bert Hale	private	no	no
Owego Water Works	Bert Hale	private	no	no

Other Public Not Studies
Waverly - MD - 98% metered
Candor (Village) - MD - 98% metered
Newark Vally (Village) - MD - 99% metered
Windsor
Deposit
Whitney Point
Lisle
Hillcrest - Penton

Other Private Not Studied
State Rd. Assoc.
Riverside Coop Water Assoc
Penn View
Broome County Airport
Applewood Acres
Keeler Avenue
Riverside Park
Applewood Acres
Sycamore Gardens

TABLE II-14 ORGANIZATION FOR WATER SUPPLY *(Continued)*

METERED	CHARGES TO CITY BUILDINGS	FLAT RATE	COMMENTS
100%	yes	no	
100%	- - -	no	
100%	- - -	no	
100%	- - -	no	
100%	- - -	no	
100%	- - -	no	
100%	- - -	no	
100%	yes	no	Machine Account Numbers do not correspond to Legal Districts) (M.A.#1,3, comprise ID #1) (M.A. #3,4,5, comprise WD #2) (W.A. #6, - WD#3) M.A. #7 - WD#4) (M.A. #6 - WD#5) (all other M.A. #'s correspond to WD #'s)
100%	yes	no	supplied by Johnson City
100%	yes	no	supplied by Binghamton City
100%	- - -	no	supplied by Johnson City
0	- - -	yes	called "Valley Vista District"
0	- - -	yes	called "Langdon Park"
100%	- - -	no	additional "per unit" charge
100%	no	no	additional charge for hydrants
0	yes	yes	
100%	yes	yes	
100%	- - -	no	
100%	yes - schools no others	no	supplied by Binghamton City and Fenton
100%	yes	no	supplied by Endicott Village and Johnson City. Town maintains distribution lines.
100%	- - -	for unmetered	
100%	yes	no	supplied by Endicott, maintained by Vestal
100%	yes	no	
no	- - -	yes	located in Chenango
100%	yes	no	serves Owego Villege and parts of town

TABLE II-15 ORGANIZATION FOR SEWAGE COLLECTION

NAME	MANAGED BY	TYPE	TREATMENT PLANT	TREATMENT CHARGE
Binghamton City	Binghamton City	MD	Bing-John City	metered site
Binghamton Town, SD#1	Binghamton Town MD	district	Bing-John City	metered site
Binghamton Town, SD#2	Binghamton Town MD	district	Bing-John City	metered site
Binghamton Town, SD#3	Binghmaton Town MD	district	Bing-John City	metered site
Binghmaton Town, SD#4	Binghamton Town MD	district	Bing-John City	metered site
Binghamton Town, SD#5	Binghamton Town MD	district	Bing-John City	metered site
Binghamton Town, SD#6	Binghamton Town MD	district	Bing-John City	metered site
Binghamton Town, SD#7	Binghamton Town MD	district	Bing-John City	flat rate
Binghamton Town, SD#8	Binghamton Town MD	district	Bing-John City	flat rate
Kirkwood SD#1	Kirkwood MD	district	Bing-John City	flat rate
Owego Town SD#1	Owego Town	district	#1	flat rate some adjustments
Owego Town SD#2	Owego Town	district	#2	flat rate
Owego Town SD#3	Owego Town	district	#1	flat rate
Owego Town SD#5	Owego Town	district	#1	by appliance
Owego Town SD#6	Owego Town	district	#2	flat rate
Owego Town SD#8	Owego Town	district	#2	flat rate
Owego Town non-district	Owego Town	service	#2	flat rate
Port Dickinson	Port Dickinson MD	MD	Bing-John City	flat rate
Dickinson SD#1	Dickinson MD	district	Bing-John City	flat rate
Dickinson SD#2	Dickinson MD	district	Bing-John City	flat rate
Dickinson SD#3	Dickinson MD	district	Bing-John City	flat rate
Dickinson "part near Johnson City	Johnson City	service	Bing-John City	flat rate
Endicott	Endicott MD	MD	Endicott	advaloren
Johnson City	Johnson City MD	MD	Bing-John City	metered
Owego Village	Owego Village MD	MD	Owego Village	metered rate
Westover (Union)	Johnson City	service	Bing-John City	metered rate
Airport Heights SD (Union)	Endicott MD	district	Endicott	advalorem
North Endicott 3D (Union)	Endicott MD	district	Endicott	advalorem
Park Manor SD (Union)	Endicott MD	district	Endicott	advalorem
West Corner SD (Union)	Endicott MD	district	Endicott	advalorem
West Endicott SD (Union)	Endicott MD	district	Endicott	advalorem
Endwell SD (Union)	Endicott MD	district	Endicott	advalorem
Vestal SD #1	Vestal MD	district	Vestal	metered
Vestal SD #2	Vestal MD	district	Vestal	metered
Vestal SD #3	Vestal MD	district	Vestal	metered
Vestal SD #4	Vestal MD	district	Bing-John City	metered
Vestal SD #5	Vestal MD	district	Vestal	metered
Vestal SD #6	Vestal MD	district	Vestal	metered
Vestal SD #7	Vestal MD	district	Bing-John City	metered
Vestal SD #8	Vestal MD	district	Vestal	metered
Vestal SD #9	Vestal MD	district	Vestal	metered
Vestal SD #11	Vestal MD	district	Bing-John City	metered
Vestal SD #12	Vestal MD	district	Bing-John City	metered

TABLE II-15 (Continued)

SEWER CHARGE	CHARGE TO CITY	REFERENDUM	HOOK UP ORDINANCE	COMMENTS
metered site	no	no	no	
metered site	--	no	yes	
metered site	--	no	yes	
metered site	--	no	yes	
metered site	--	yes	yes	
metered site	--	no	yes	
metered site	--	no	yes	
flat rate	--	yes	yes	
flat rate	--	yes	yes	
property tax	--	yes	no	
charge/property	yes	--	no	treatment plant and interceptor bonds paid by general town tax; schools pay by attendance
no charge				industry pays
no charge	--		no	by appliance
	--	--	no	non-residential
charge property	--	--	no	
front foot annual	--	--	no	large hook-up fee
one large hook up charge		--	no	
charge/property	--	--	no	
none	only schools	no	--	
none				sewers paid off - called "Stelle Sewer District"
				sewers paid off - called "Sunrise Terrace"
advalorem	?		no	
metered				
metered rate	--	no	no	different rate in Valley View; surcharge for areas with new sewers
town property tax				sewers maintained by J.C.
town property tax				sewers maintained by J.C.
town property tax				sewers maintained by J.C.
town property tax				sewers maintained by J.C.
town property tax				sewers maintained by J.C.
town property tax				sewers maintained by J.C.
town property tax				sewers maintained by J.C.
advalorem	yes	yes	yes	
advalorem	yes	yes	yes	
advalorem	yes	yes	yes	
advalorem	yes	yes	yes	
advalorem	yes	yes	yes	
advalorem	yes	yes	yes	
advalorem	yes	yes	yes	
advalorem	yes	yes	yes	
advalorem	yes	yes	yes	
advalorem	yes	yes	yes	
advalorem	yes	yes	yes	

CHAPTER III

SYNOPSIS OF WASTEWATER MANAGEMENT TECHNICAL PLANS

TECHNICAL PLAN 1 – BASELINE CONDITION

This plan consists of a static physical system; it is assumed that no wastewater treatment plants will be added, other than those that have already been approved by the New York State Department of Environmental Conservation for construction in the years 1975 and 1976. In this case, five wastewater management areas would be included: Binghamton – Johnson City, Endicott, East Owego, West Owego and Owego Village. Figures III-1 to III-3 delineate these management areas and Table III-1 lists the sewage treatment plants with their corresponding management areas and the type of treatment provided by each plant.

The following is a description of the facilities to be included in the Baseline Condition which presently do not exist:

Owego Village – An interceptor, pump station, and a force main to serve all areas south of the river and within the Village, part of River Road and the Valley View Heights Subdivision, the area within the Villiage lying west of the creek, and the low area lying east of the Court Street Bridge. The existing primary treatment plant will be upgraded to secondary treatment.

Town of Union – Extension of sanitary sewer to the Choconut Center area of the Town of Union was assumed to be in the Baseline Condition.

Town of Vestal – An interceptor sewer to Endicott sewage treatment plant from the Vestal STP. This interceptor will serve the westerly portion of the Town of Vestal currently served by a primary treatment plant which will be abandoned.

Town of Owego – An interceptor serving the eastern part of the Town and connection to sewage treatment plant #2.

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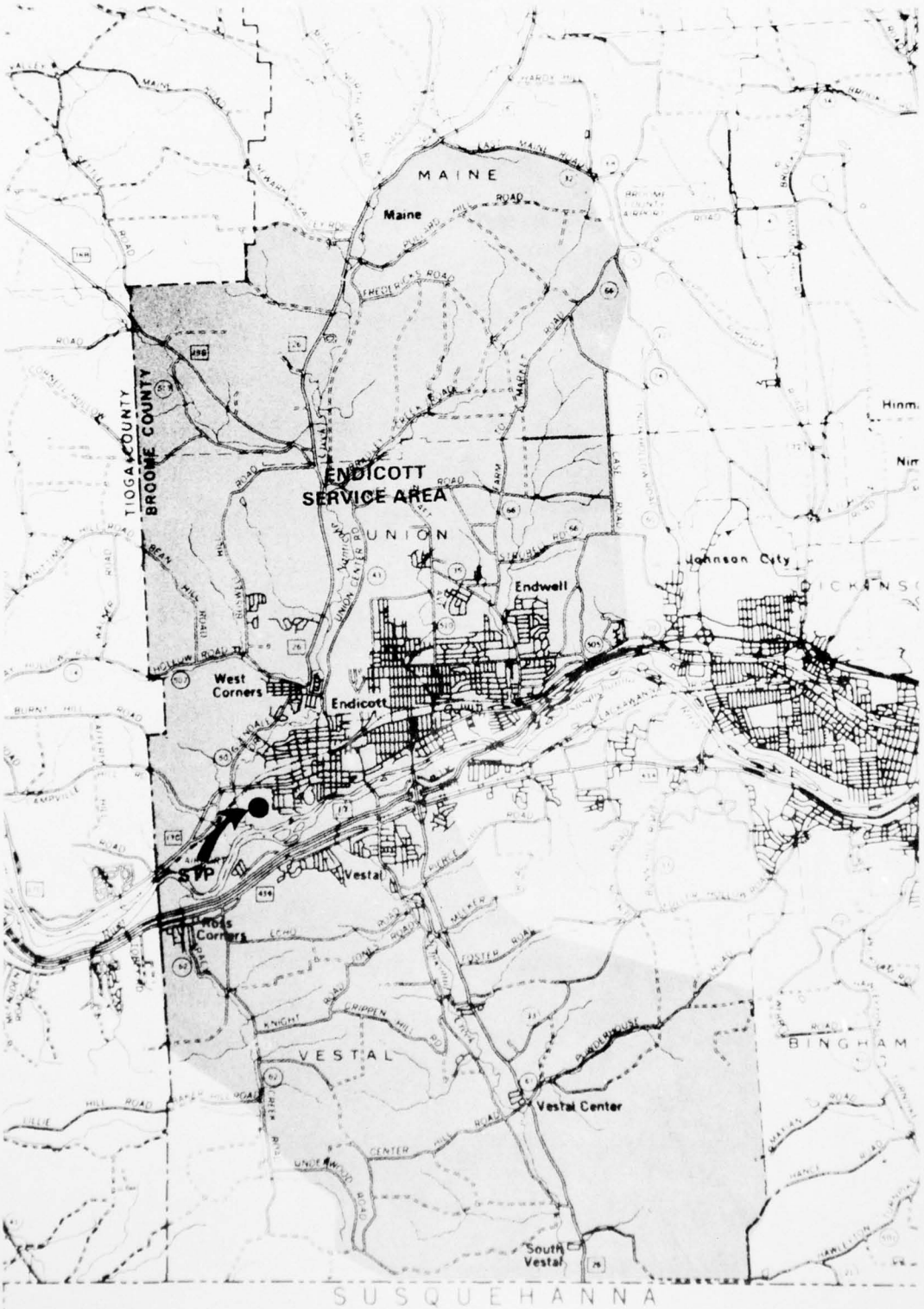
FIGURE III-1

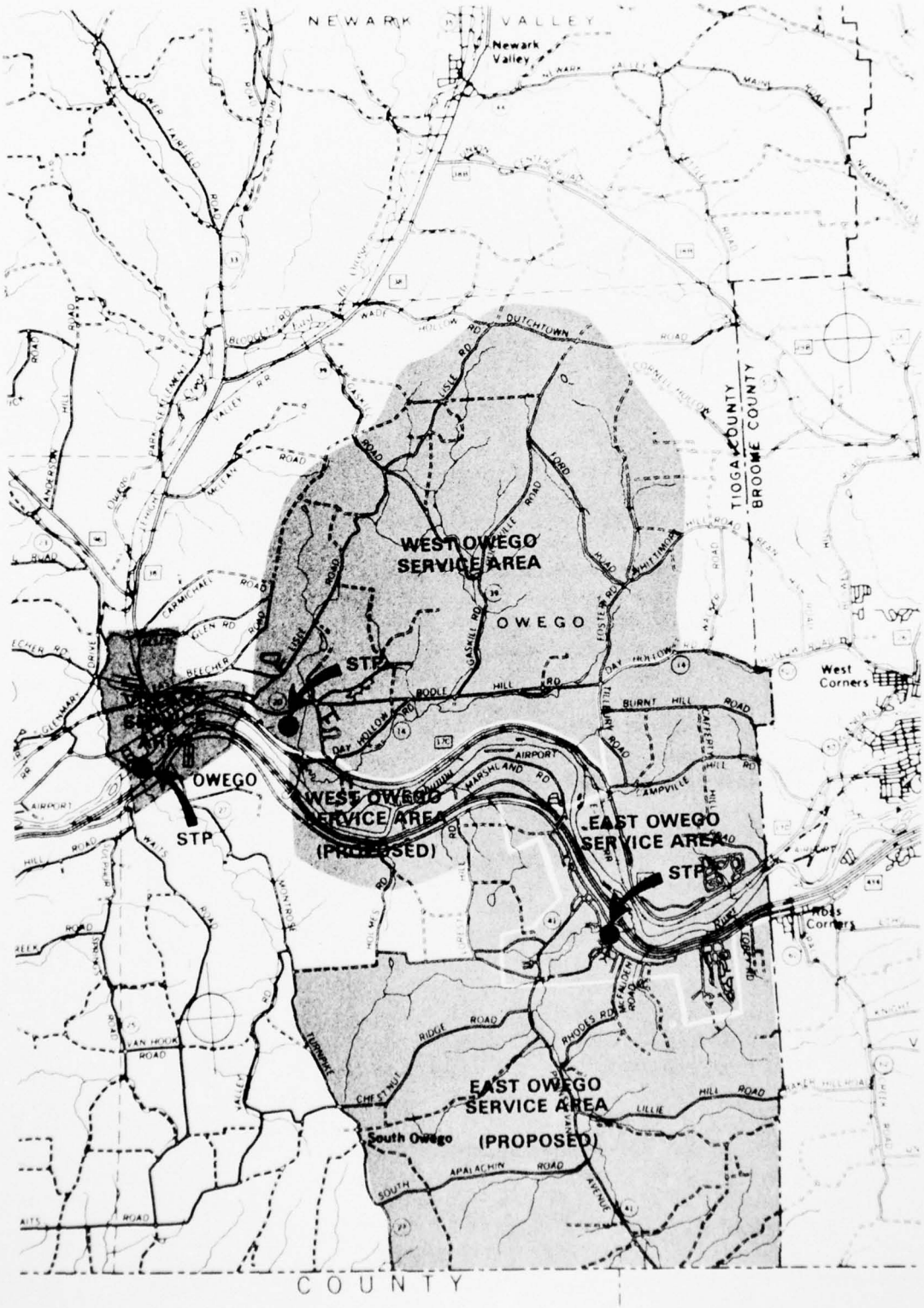
BINGHAMTON-JOHNSON CITY SERVICE AREA
CHENANGO VALLEY SERVICE AREAS

FIGURE III-2



ENDICOTT SERVICE AREA

FIGURE III



OWEGO SERVICE AREAS

TABLE III-1

SERVICE AREAS

STP SERVICE AREA	COUNTY	EXISTING SEWAGE TREATMENT	MAJOR PLACE NAMES INCLUDED
Binghamton-Johnson City	Broome	B–JC STP Secondary treatment (Activated Sludge)	City of Binghamton Town of Binghamton Kirkwood Port Dickinson Dickinson Johnson City Westover Portions of Vestal
Chenango Valley	Broome	None (no sewers existing)	Broadacres Chenango Bridge Fenton – Kattellville Nimmonsburg Sunrise Terrace
Endicott	Broome	a) Endicott STP Secondary Treatment (trickling filter)	Endicott Town of Union (except Westover)
		b) Vestal STP Primary Treatment	Most of Vestal
East Owego (#2)	Tioga	Town of Owego STP #2 Secondary Treatment (Activated Sludge)	Eastern Portions of Town of Owego (See Figure III-3)
West Owego (#1)	Tioga	Town of Owego STP #1 Secondary Treatment (Trickling filter)	Western portions of Town of Owego (See Figure III-3)
Owego Village	Tioga	Owego (V) STP Primary treatment (to be upgraded to secondary in Baseline Plan)	Owego Village Valley View

In summary, the wastewater management plans for the Baseline Condition include:

1) Abandonment of the Vestal plant and diversion of its influent sewage via a new interceptor to the Endicott plant;

2) Upgrading of the Owego Village plant to provide secondary treatment;

3) Abandonment of the Owego Valley View plant and diversion of its influent sewage to an upgraded Owego Village plant;

4) The remaining plants, including Binghamton-Johnson City, Owego Town #2, and Owego Town #1 and Endicott will not be expanded or upgraded;

5) The Chenango Valley area will continue on septic systems;

6) Extensions of sewage collection and treatment services will take place within the Nanticoke Creek Valley and toward Five-Mile Point;

7) The sewered population to all plants will continue to grow and sewage flows will increase.

TECHNICAL PLAN 2 – SECONDARY TREATMENT WITH OPTIONS

Secondary treatment would be applied to all sewage treatment plants. This would maintain a 4 mg/l minimum DO level in the Susquehanna River throughout the planning period to the year 2020.

In addition, the Secondary Treatment Technical Plan includes other features. First, structural measures for flow reduction and wastewater treatment would be used. Non-structural measures such as pricing would not be considered. Second, micro-screening devices and chlorination facilities would be provided at major stormwater overflow sites. Third, land application of sludge would be utilized.

There are various options by which secondary treatment may be applied. The first, or what can be referred to as 2A involves two plants in Broome County and three plants in Tioga County. This means that Chenango Valley would connect to the Binghamton-Johnson City (BJC) plant for treatment of its wastes. The service areas would be: Binghamton – Johnson City – Chenango Valley, Endicott, Owego Village, West Owego, and East Owego.

The second, or option 2B, involves three plants in Broome County and three plants in Tioga County. In this case, Chenango Valley would have its own treatment plant instead of regionalizing with Binghamton-Johnson City. The service areas would be: Binghamton-Johnson City, Chenango Valley, Endicott, Owego Village, West Owego, and East Owego.

The third option, denoted as 2C, would consist of a Phased plan (1 mgd plant) designed to serve the communities with an immediate need for wastewater treatment in the Chanango Valley area. Other communities would be phased into the Chenango Valley service area as the need would arise.

TECHNICAL PLAN 3 – NITRIFICATION WITH OPTIONS

The objective of this technical plan is to maintain a minimum DO of 5 mg/l during low flow periods, and 4 mg/l during storm overflow conditions. In order to maintain a 5 mg/l minimum DO level, addition of nitrification facilities to the existing secondary treatment at the Binghamton-Johnson City sewage treatment plant would be required by the mid 1990's. Secondary treatment would be sufficient at the other sewage treatment plants.

In addition, the Nitrification plan includes other features. First, structural measures for flow reduction and wastewater treatment would be used. Non-structural measures for flow reduction, such as water pricing, would not be considered. Second, micro-screening devices and chlorination facilities would be provided at the major stormwater overflow sites. Third, application of sludge would be utilized.

There are various options for the Nitrification plan. The first, or what can be referred to as 3A, involves two plants in Broome County and three plants in Tioga County. This means that Chenango Valley would connect to the Binghamton-Johnson City plant for treatment of its wastes. The service areas would be: Binghamton-Johnson City-Chenango Valley, Endicott, Owego Village, West Owego, and East Owego.

The second, or Option 3B, involves three plants in Broome County and three plants in Tioga County. In this case, Chenango Valley would have its own treatment plant instead of regionalizing with Binghamton-Johnson City. The service areas would be: Binghamton-Johnson City, Chenango Valley, Endicott, Owego Village, West Owego, and East Owego.

The third option, denoted as 3C, would consist of a Phased plan (1 mgd plant) designed to serve the communities with an immediate need for wastewater treatment in the Chenango Valley area. Other communities would be phased into the Chenango Valley service areas as the need would arise.

TECHNICAL PLAN 4 – BIOLOGICAL ADVANCED WASTE TREATMENT

This plan provides for the application of Best Practicable Waste Treatment Technology (BPWTT) by the year 1983 and Advanced Waste Treatment Technology (AWT) by the year 1985 at all municipal wastewater plants to achieve the zero discharge goal of Public Law 92-500. The AWT process used in this plan is biologically based.

Storm overflow management facilities are provided to maintain a 5.0 mg/l minimum DO in the Susquehanna River during storm conditions. The minimum cost regionalization schemes

for Broome and Tioga Counties are selected in this alternative. Flow reduction techniques, including both infiltration control and non-structural measures, are considered.

This plan includes two sewage treatment plants at Broome County and two at Tioga County. The two Tioga plants would be the #1 and #2 plants in the Town of Owego; the two Broome County plants would be the Binghamton-Johnson City STP and the Endicott WPCP.

The selection of this regionalization scheme was based on the economies of scale of AWT systems. The minimum cost regionalization scheme is the one that provides for treatment of Chenango waste at Binghamton-Johnson City and treatment of Owego Village waste at Owego No. 1 sewage treatment plant.

BPWTT would provide for the nitrification of the secondary effluent while AWT would provide for denitrification, phosphorus removal, filtration and carbon adsorption.

Analysis of the application of non-structural measures indicates that implementing a water pricing system and a public education program to maintain the current per capita wastewater generation are cost effective. Besides the use of non-structural measures, microscreening devices followed by chlorinating facilities would be provided at stormwater overflow sites.

Investigation of alternative infiltration control levels indicates that the economically justifiable infiltration flow reduction is 3 MGD.

Table III-2 is a summary of what has been presented in the wastewater management technical plan discussion. Detailed technical data about all of these plans is contained in the *Design and Cost Appendix*.

TABLE III-2 – SUMMARY OF TECHNICAL PLANS

Technical Plan No.	Treatment Objectives	Treatment Process	Regionalization (Broome & Tioga)	Infiltration Level of reduction MGD	Non-structural (% attained)	Sludge disposal method	Dissolved Oxygen (mg/l)	Stormwater Treatment
1	None	Varied	2+3	0	0	Varied	3-4	
2 Option A	Water Quality Standards (4 mg/l)	Secondary	2+3	1.0	0%	Land application	4-5	Micro-screening & chlorination
Option B	"	"	3+3	"	"	"	"	"
Option C	"	"	3+3 (phased plan)	"	"	"	"	"
3 Option A	Water Quality Standards (5 mg/l)	Secondary & nitrification at BJC	2+3	3.0	0%	Land application	5-6	Micro-screening & chlorination
Option B	"	"	3+3	"	"	"	"	"
Option C	"	"	3+3 (phased plan)	"	"	"	"	"
4	Zero Discharge	Bio-AWT	2+2	3.0	100%	Land application	>6	Micro-screening & chlorination

CHAPTER IV

IMPACTS OF TECHNICAL PLANS UPON EXISTING INSTITUTIONS

GENERAL

To this point, the report has focused upon the wastewater management responsibilities of institutions and organizations provided by current legislation, and has reviewed the recommended technical plans. This chapter will be a blending of the technical plans with the existing institutions. Chapter V will propose additional institutions that may implement some of the technical plans in a more effective manner.

The "existing institutions" setting is analogous to the "baseline" condition and is defined to be those existing organizations and functions discussed in Chapter II.

In order to consider the ability of the existing institutions to implement the technical plans which could require consolidation in the West Owego-Owego Village area and the Binghamton-Chenango Valley area, the existing institutions have the following channels available:

1) for the Advanced Waste Treatment Alternative at the Owego Town #1 Water Pollution Control Plant, Owego Village could finance the connection to the plant and the additional primary and secondary capacity needed at West Owego. All operation and maintenance, replacement, and future construction could be shared by Owego Village and West Owego on the basis of metered water consumption or average volumetric flow.

2) for alternatives which merge Chenango Valley into the Binghamton system, the standard agreement used by the Binghamton-Johnson City Joint Sewage Board could implement the plan.

CRITERIA FOR ANALYSIS AND METHODOLOGY FOR IMPACT ASSESSMENT

A number of criteria were used to demonstrate the ability of an institution to deal effectively with the impacts of a technical plan. The more an institution was considered to be able to meet those criteria, the better the chances were for effective implementation of the technical plan by the given institution.

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There were six major criteria selected to best define comprehensive wastewater management. These were: planning capabilities, financial capabilities, property acquisition, construction and facility maintenance, administration, and system operation. These six criteria were further expanded to the following:

a. *Ability to plan for entire service area and area affected by the technical plan.* The service areas are those serviced by an individual treatment facility or planning agency, depending on the context of the institution and the technical plan.

b. *Ability to utilize revenues for operation.* This criterion refers to the management of treatment plants. An institution should be able to receive adequate funds for operation and dispense the money to properly maintain the facilities.

c. *Ease of obtaining Federal funds.* The institutions should be capable of following guidelines necessary for obtaining grants; presenting a clear case for the need of grant assistance, and being able to get on priority lists.

d. *Ability to achieve economies of scale.* The institutions should be capable of building and operating facilities that have high economies of scale given a system of logistics and treatment levels. The ability to achieve economic levels of infiltration control is considered to be integral to this criterion.

e. *Ability to acquire rights-of-way and implementation capabilities.* The institutions should be capable of acquiring land by eminent domain and/or negotiation, and have the authority for the implementation of a given technical plan.

f. *Ability to construct and maintain wastewater management facilities.* The institutions should have the financial and administrative capability to construct and maintain facilities.

g. *Ability to acquire and maintain staff.* The institutions should be able to attract and keep properly trained professional personnel to operate, maintain, and monitor facilities.

h. *Decision-making capabilities.* The institution should be able to make decisions relevant to its functioning without having to gain the approval or review of too many other higher agencies.

i. *Ability to operate facilities.* The institutions with responsibility to operate facilities should be able to perform such activities.

j. *Ability to negotiate for or maintain a spectrum of services.* There should be opportunities and provisions to provide other services in addition to wastewater management.

k. *Ability to enforce powers.* The institution should be capable of enforcing agreements and control factors necessary to the proper execution of its responsibilities.

l. *Compatibility with existing levels of government.* The institutions should be capable of being modified or created with a minimum amount of negotiations, legislative changes, and shifts of decision-making authority.

m. *Ability to promote public participation.* The institution should be favorable toward and encourage public participation in the development of its programs, and have arrangements to do so.

n. *Political compatibility.* An institution must be capable of integrating its functions with political processes that might place demands upon it.

o. *Ability to assign costs to those who receive benefits.* The institution should be capable of enforcing a change mechanism whereby everyone who receives the benefits from wastewater management will contribute towards the economic costs of implementing a technical plan. Every person who would benefit from an improvement in water quality or a maintenance of high quality conditions should contribute to the costs of achieving such quality. Generally, the region as a whole will benefit from improved quality and more specifically, individuals down-stream of discharges will benefit.

p. *Ability to assign costs to those who create costs.* The institutions should be capable of enforcing a charge mechanism whereby those who create the needs for a given technical plan will pay the economic costs of implementing that plan. Every individual who discharges wastes to a treatment plant should incur the financial cost of treating those wastes.

[It should be noted that criteria "o" and "p" are closely related and sometimes conflict with each other. Those who receive the benefits are not necessarily those who pay the costs. The purpose of using the two criteria instead of a single benefit/cost criteria for accounting purposes is to demonstrate the advantages and disadvantages of fragmented institutions and a regional approach.]

FRAMEWORK FOR ANALYSIS

The framework of the analysis is presented in matrix form, investigating the degree to which each of the existing local institutions meet the requirements for each technical plan. Other institutions which are deemed capable of handling the technical plan will be mentioned in the next chapter.

The graphical presentation of the matrix helps to simplify the complex issues that arise when institutional analyses are conducted. Along with the matrix, an explanation will be provided in the text to help the reader understand the impact analysis.

It will be noted that measurement against the criteria takes the form of a ranking – "0, 5, and 10." The numbers are used to indicate the degree to which the institution achieves the stated criteria. The number "0" indicates that an institution has a minimal ability to achieve a criterion; "5" indicates a moderate ability; and "10" indicates a maximum ability to achieve stated criteria. Only three ratings were used so that the comparisons among institutions would be more evident.

The numbers are used for discriptive purposes and are *generally comparable only within a* single criterion. The ratings for all the charts can be compared for one criterion, but a comparison among criteria based on the ratings should not be made (i.e., if the chart indicates that one institution receives a "10" for a certain criterion and other institutions receive a "5", the interpretation should not be made that one institution is "twice as good" as the other.) The purpose of the charts is to highlight the differences between the technical plans and institutional alternatives, but *not* to rank the institutions on a numerical scale.

While the matrix chart is the most feasible way in which to display the impact of technical alternatives upon the existing institutions, there are certain problems with this approach.

The Institute of Public Administration gives insight into this process through a publication entitled *Organizational, Legal and Public Finance Aspects of Regional Water Supply:*

> The effects (desired or undesired) of various organizational options are probabalistic. The organizational structure selected will influence, but not determine the outcome of the policy system. Personnel behavior, political vectors, economic and fiscal trends, and circumstantial events are all factors that may cause a given organizational framework to perform in unpredicted fashion. (Only) tendencies of various organizational options-not their certain assets and liabilities–can be identified.

> Futhermore, even the criteria for judging governmental options are probabalistic . . . Hence, identification and selection of alternatives is not an optimization task, but a process of strategic trade-offs, taking into account that each arrangement may satisfy several criteria and short-change some others in ways that cannot be objectively measured.

DISCUSSION OF THE IMPACTS OF THE PLANS UPON THE EXISTING INSTITUTIONS

Table IV-1 lists the existing institutions and compares them with the various technical plans according to the selected criteria.

Criterion A. Ability to Plan for Entire Service Area and Area Affected by the Technical Plan.

The existing institutions have had moderate success in planning and are expected to continue to do so in spite of several short comings. For example, the Binghamton-Johnson City Board has made agreements with several municipalities to treat their wastes. However, in the agreements, the municipalities have the responsibility of monitoring (sewer ordinance) the concentrations of various materials in sewage. Several communities have refused to do this because of expense involved and the Sewer Board and City Councils cannot agree as to whether the Board should assume this function. Endicott has the same arrangement as BJC in that the municipalities served are responsible for enforcing their own sewer ordinances. As Endicott does not bill for sewage to its sewer users, there is little mechanism available to police or discourage such discharges. The Owego areas are all quite small, and in cases where the Town and Village might benefit from sharing the expenses on any service function, little cooperation is in evidence.

Criterion B. Ability to Use Revenue for Operation.

Because more than one agency must approve the Binghamton-Johnson City Joint Sewer Board budget for the existing institutions, only moderate ability to utilize revenues are inherent in the Binghamton-Johnson City service area. In essence, budgets approved by the Sewer Board must then be approved by the two municipalities. In the cases of Endicott and the Owego budgets are usually passed by a multi-member committee in those municipalities, and there is no need for approval to go through more than one decision-making body as with Binghamton-Johnson City.

Criterion C. Ease of Obtaining Federal Funds.

The existing institutions have minimal funding ability because of the non-compliance with Federal regulations that require user fees, metering *and* industrial cost recovery by treatment plants. Cost-effectiveness is also a major factor for EPA approval for construction grants. Where a non cost-effective technical alternative is proposed, a zero is assigned. In

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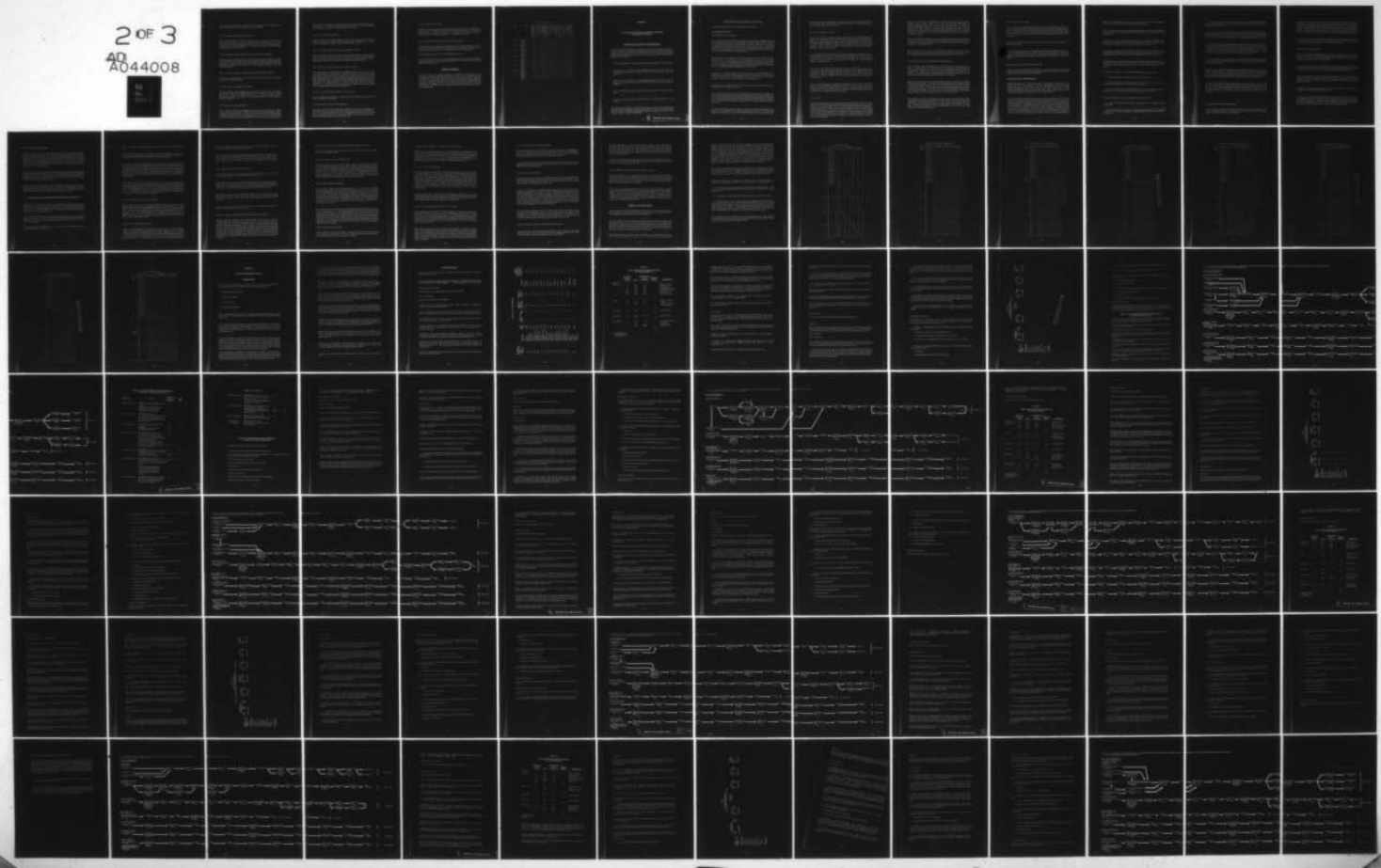

analyzing the treatment plants, only BJC has a user fee schedule, the other plants do not. And, none of the plants have an industrial cost recovery program.

Criterion D. Ability to Achieve Economies of Scale.

The existing institutions have moderate ability to achieve economies of scale for all the technical plans except in those cases which are not cost-effective (*i.e.*, 3 + 3 arrangements). The Owego and Endicott service areas are quite small and the Binghamton-Johnson City service area, although large, is too fragmented to achieve economies, especially with regard to *the local* sewer system.

Criterion E. Ability to Acquire Rights of Way and Implementation Capabilities.

All institutions have maximum ability to acquire rights of way. Except for Chenango Valley, all treatment plant sites are already owned or are readily available for expansion. The major factor for this determination is that all construction would take place within the geographical jurisdiction of all the agencies for each institutional alternative. This is also provided for by law.

Criterion F. Ability to Construct and Maintain Wastewater Management Facilities.

For the same reasoning presented in Criterion E, all the institutions have maximum ability to construct and maintain facilities.

Criterion G. Ability to Acquire and Maintain Staff.

The large institutions were estimated to have a maximum ability to acquire staff, whereas the institutions with small geographical jurisdiction were considered to have a minimal ability. This is because of a limited amount of money available and a limited area for recruitment. In addition, larger service areas would be more able to procure training grants than the smaller areas.

Criterion H. Discision-making Capabilities.

For the existing institutions, the Binghamton-Johnson City service areas have minimal ability because of the dual approval process by the two principle municipalities. Endicott and Chenango Valley (for the 3 + 3 alternatives) should have moderate decision-making capabilities resulting from the multi-municipal nature of the service. The Owego's have maximum ability because only one municipality is involved in the decision making process

for sewers and sewage treatment. The existing institutions rating for the AWT alternative is only moderate in the Owego Village-West Owego service areas because the proposed facilities and sewers would not be the responsibility of one agency.

Criterion I. Ability to Operate Facilities.

All the institutions have maximum ability to operate facilities proposed for all technical alternatives, including the AWT alternative, which requires operating skills commonly available in personnel with expertise in municipal wastewater treatment.

Criterion J. Ability to Negotiate for or Maintain a Spectrum of Services.

Ability to meet this criterion corresponds to the size of the institution. A large institution will have the ability to specialize because of more available personnel in order to provide services. The small areas such as Owego or Chenango (for a separate plant) will have a minimal ability to provide such services for the other water-related alternatives.

Criterion K. Ability to Enforce Powers (*e.g.*, surveillance, hook-up).

The existing institutional arrangements in the Binghamton-Johnson City service areas result in a minimal ability to enforce sewer use ordinances. No effective mechanism exists other than service severance to enforce the sewer use ordinances in the adjacent serviced municipalities. Endicott has a moderate ability limited by the independence of Vestal and Union. The Owego service areas, with the existing institutions, have maximum enforcement powers because of the integration of sewage collection and treatment within one municipality. For technical plans with a separate Chenango plant, the Chenango Valley service area would have a moderate ability because three towns would have control over the regional collection system and treatment plant.

Criterion L. Compatibility with Existing Levels of Government.

Since no changes are achieved in the "existing institutions" alternatives, this criterion is not evaluated as indicated by the dashes.

Criterion M. Ability to Promote Public Participation.

The existing institutions have minimal public participation procedures in the Binghamton-Johnson City service areas. This rating results from the fact that the other municipalities are able to make decisions affecting a whole area. In Binghamton-Johnson City, the plans for public participation efforts must be approved by more than one decision-making body. Therefore, Binghamton-Johnson City, has a lower rating.

Criterion N. Political Compatibility.

Generally, the existing institutions have maximum political compatibility. A possibility of management of the Village of Owego plant by Owego Town is expected to result in only moderate political compatibility. Problems in cost sharing, potential conflict of interest, and reduced decision-making compatabilities are responsible for this rating.

Criterion O. Ability to Assign Costs to Those Who Receive Benefits.

Since each service area is segmented and managed separately, while the region, as a whole, receives the benefits of improved water quality; there is no general overall ability of one agency to assign costs to those who receive the benefits, hence the minimal rating.

Criterion P. Ability to Recover Costs from those Who Create Costs.

Except for the Endicott service area, where the property tax funds wastewater treatment, the existing institutions, either through the metered rate or flat rate user fees, have a fairly high ability for cost recovery.

SUMMARY COMMENTS

The weak areas of the existing institutions are basically with Federal grants, the maintenance of adequate staff, and in being able to assign costs in an equitable way those who receive the benefits. The most apparent detriment to the existing system is the fact that in order to obtain construction grants, a treatment system must meet several requirements (see point C explanation) and none of the systems have completely complied with these requirements. In addition, the size of the area and population affected are criteria for receiving grants, and in the case of the existing institutions, it must be kept in mind that the areas are fragmented.

TABLE IV-1 EXISTING INSTITUTIONS WITH TECHNICAL PLANS

Technical Plan	Service Area	A Ability to plan for entire service area & area affected by technical plans	B Ability to utilize revenue for operation	C Ease of obtaining Federal funds	D Ability to achieve economies of scale	E Ability to acquire rts. of way and implement capabilities	F Ability to construct & maintain waste-water management facilities	G Ability to acquire & maintain staff	H Decision making capabilities	I Ability to operate facilities	J Ability to negotiate for or maintain a spectrum of services	K Ability to enforce powers (eg. surveillance, hook up etc.)	L Compatibility with existing levels of government	M Ability to promote public participation	N Political compatibility	O Ability to assign Costs to those who receive benefits	P Ability to recover costs from those who create costs
1	Binghamton-Johnson City	5	5	–	5	10	10	5	0	10	5	0	–	0	10	0	10
Baseline Condition	Chenango Valley	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Endicott	5	10	0	5	10	10	5	5	10	5	5	–	5	10	0	5
	Owego Village	5	10	0	5	10	10	0	10	10	10	10	–	5	10	0	10
	West Owego	5	10	–	5	10	10	0	10	10	0	10	–	5	10	0	10
	East Owego	5	10	–	5	10	10	0	10	10	0	10	–	5	10	0	10
2A	Binghamton-Johnson City and																
Secondary 2 + 3	Chenango Valley	5	5	0	5	10	10	5	0	10	5	0	–	0	10	0	10
(4 mg/l)	Endicott	5	10	0	5	10	10	5	5	10	5	5	–	5	10	0	5
	Owego Village	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
	West Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
	East Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
2B	Binghamton-Johnson City	5	5	0	0	10	10	5	0	10	5	0	–	0	10	0	10
Secondary 3 + 3	Chenango Valley	5	10	0	0	10	10	0	5	10	0	5	–	5	10	0	10
(4 mg/l)	Endicott	5	10	0	5	10	10	5	5	10	5	5	–	5	10	0	10
	Owego Village	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
	West Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
	East Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
2C	Binghamton-Johnson City	5	5	0	5	10	10	5	0	10	5	0	–	0	10	0	10
Secondary 3 + 3	Chenango Valley	5	10	0	5	10	10	0	5	10	0	5	–	5	5	0	10
Phased Sewering	Endicott	5	10	0	5	10	10	5	5	10	5	5	–	5	10	0	5
	Owego Village	5	10	0	5	10	10	0	10	10	0	10	–	5	10	–	10
	West Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
	East Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
3A	Binghamton-Johnson City and																
Nitrification 2 + 3	Chenango Valley	5	5	0	5	10	10	5	0	10	5	0	–	0	10	0	10
(5 mg/l)	Endicott	5	10	0	5	10	10	5	5	10	5	5	–	5	10	0	5
	Owego Village	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
	West Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
	East Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
3B	Binghamton-Johnson City	5	5	0	0	10	10	5	0	10	5	0	–	0	10	0	10
Nitrification 3 + 3	Chenango Valley	5	10	0	0	10	10	0	5	10	0	5	–	5	10	0	10
(5 mg/l)	Endicott	5	10	0	5	10	10	5	5	10	5	5	–	5	10	–	5
	Owego Village	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
	West Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
	East Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
3C	Binghamton-Johnson City	5	5	0	0	10	10	5	0	10	5	0	–	0	10	0	10
Nitrification 3 + 3	Chenango Valley	5	10	0	0	10	10	0	5	10	0	5	–	5	10	0	10
Phased Sewering	Endicott	5	10	0	5	10	10	5	5	10	5	5	–	5	10	0	5
	Owego Village	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
	West Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
	East Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10
4	Binghamton-Johnson City and																
Bio-AWT 2 + 2	Chenango Valley	5	5	0	5	10	10	5	0	10	5	0	–	0	10	0	10
	Endicott	5	10	0	5	10	10	5	5	10	5	5	–	5	10	0	5
	Owego Village and																
	West Owego	5	10	0	5	10	10	0	5	10	0	5	–	5	5	0	10
	East Owego	5	10	0	5	10	10	0	10	10	0	10	–	5	10	0	10

CHAPTER V

EVALUATION OF TECHNICAL PLANS WITH ADDITIONAL INSTITUTIONAL SCHEMES

ADDITIONAL INSTITUTIONAL ARRANGEMENTS

A number of alternative arrangements to the existing institutions are available to implement the technical plans. These institutional modifications can range from slight changes to the existing institutions, such as an inter-municipal agreement, to rather radical structural changes from the existing institutions, such as a two-county sewer authority. The additional arrangements considered are:

1) *minor modifications* to the existing institutions in either Broome or Tioga Counties,

2) *part-county sewer district* for the Binghamton-Johnson City service area. The Endicott treatment plant and the plants in Tioga County maintain their jurisdictional boundaries.

3) *part-county sewer authority* for the Binghamton-Johnson City service area. The Endicott treatment plant and the Tioga County plants maintain their jurisdictional boundaries.

4) *county departments* in Broome and Tioga Counties to absorb wastewater functions, and a

5) *one two-county authority* to absorb functions of existing institutions in both counties.

The institutional alternatives are defined below. Because the details of each institutional alternative will vary depending on which technical plan is chosen, the definitions will be generalized. The next chapter will define the institutional arrangements in a more specific manner in relation to a specific technical plan.

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MODIFICATIONS TO THE EXISTING INSTITUTIONS

A variety of minor changes can be made to the existing institutions.

MINOR MODIFICATIONS

Metered Rates for Sewage Treatment.

Existing Situation. Currently, Endicott and Owego Town (other than for IBM in Owego) do not charge metered rates to users of the sanitary sewer system. Endicott and Union finance the construction and operation and maintenance (O & M) in proportion to the assessed valuation of properties served by the facility. These charges are then passed along through the property tax to Endicott and Union sewer district property owners. Owego Town finances current expenditures via flat rate user fees. The IBM Owego manufacturing plant, however, is charged on the basis of a sewage meter rate.

Proposed Situation. The alternative to this method of revenue raising would be to charge for treatment service by a metered rate. As the metered rate is usually based on water consumption, and as water supply meters are installed in the Endicott and Owego Town service areas, the cost of converting to charges based on metered rates would be quite small. The water departments could be responsible for coordinating the billing, as is now the case for the Owego Village and Binghamton-Johnson City service areas.

Advantages. The reasons for relying on a metered system are: 1) to fulfill the EPA user fee requirements as a condition for Federal construction grants (detailed in "User Charges and Industrial Cost Recovery." Federal Register Vol. 38, No. 163, August 21, 1973), 2) to promote economic efficiency and, 3) to promote equity of charges.

The metered rate can apply to both user charges which cover O & M and replacement costs, and charges to recover construction costs.

At a minimum, user charges should be used to fulfill the Federal requirements. However, the use of a metered rate to also cover debt service payments for construction attributed to the use of facilities by industry will be necessary to satisfy Federal requirements for industrial users. For non-industrial users, the use of a metered rate to recover debt service payments (*e.g.*, as practiced in Owego Village), would better meet economic efficiency and equity objectives.

As some technical plans have been designed to achieve non-structural flow reduction, this would be best accomplished by pricing sewage treatment services via a metered rate. Without the metered rate, one may expect higher discharges to the sewer system with a

correspondingly higher requirement for sewage treatment investment. Users of the sewer system would be more efficient in their overall use of resources if confronted with direct costs which reflect their use of the resource.

User Fees and Industrial Cost Recovery.

The metered rate will only apply to average volumetric flow in a billing period. Where industrial users discharge wastes with high strength or peak load characteristics, the user charges must reflect such characteristics in order to fulfill Federal construction grant requirements. Only the Binghamton-Johnson City Joint Sewer Board has constructed a user fee schedule which reflects the strength of waste discharges to the sewer system. This schedule is called a "surcharge formula", and currently, only the Frito Lay plant in Kirkwood is assessed with a surcharge.

As a condition for the discharge permits under the National Pollutant Discharge Elimination System (NPDES) program, all the municipalities must complete an industrial survey to inventory the waste characteristics of each industrial discharge. The inventories, when completed, should be used to construct the user fee schedules as a step in fulfilling construction grant requirements.

The user fees must reflect the O & M expenses and can reflect the debt service for construction, as does the Binghamton surcharge. In addition, the Federal grant attributed to each industry must be recovered from that industry. As the Federal grant is for construction, a separate surcharge formula based on construction costs, not just O & M, would have to be written to reflect how various components of a waste flow contribute to construction costs.

None of the local institutions responsible for wastewater activities currently have such formulas, so the institutional modifications would be to create such user fee and cost recovery mechanisms. (At present, HR 9560 is being considered which would permit municipalities to use ad volorem tax-based user-charge systems for funding operation and maintenance costs. The bill has not yet been passed.)

Reserve Funds

Reserve funds are special accounts used by organizations to accumulate money for a future expenditure. The funds may be accumulated in interest bearing bank accounts or by other means such as short term bonds. The use of reserve funds for wastewater management is somewhat analogous to savings accounts used by individuals. The reserve fund provides readily available capital for emergency expenditures, evens the burden of financing large expenditures as they periodically accrue, and provides a large down payment for bonding new construction with an attendant lower interest rate charged for this debt service. For service areas with industrial users, Federal requirements for construction grants now demand that such funds be created.

The reserve fund would be most important for those plans with heavy construction schedules, and in particular, would be necessary for the effective implementation of advanced wastewater plans. The reason is that the effectiveness of pricing in reducing consumption would have to be accurately measured. If the reserve fund were created in 1977, the effectiveness of pricing could be determined by 1985. The amount which should be allocated to the reserve fund is that amount which, when recovered by the metered rate, would produce a unit charge approximately equal to the charges levied at the time AWT is instituted.

There are both advantages and disadvantages to reserve funds. The institutional modifications of the heavy reliance on metered rates and reserve funds are not radical proposals as the existing agencies are capable of implementing such measures. The Endicott-Union agreement would have to be modified, however.

Reserve funds are subject to abuse. The accumulation of funds in accounts for some future use can result in a large temptation to divert such funds to other uses. Therefore, for other than the AWT plan, reserve funds should not be relied upon *entirely* for replacement.

Binghamton-Johnson City Joint Sewage Board Standard Agreement.

Existing Situation. The standard agreement of the Board states that Binghamton and Johnson City will provide the "up-front money" for construction at the treatment plant. ("Up-front funds" refer to the finances that must be expended for planning, design and construction of facilities prior to the full use of such facilities). In response to this obligation, a 25% surcharge is levied against outside users in order to help defray the costs of the initial financing and carrying costs until the facilities are fully used.

Proposed Situation. Revision of the standard agreement may be advantageous to both the Board and Chenango Valley. If the latter enters the Binghamton system, Chenango Valley could finance the added secondary capacity at the plant. In return, the Valley would be considered part owner of the secondary portion of the treatment facility as far as billing is concerned. The advantage to other users would involve less financing and would involve a greater population available to pay the fixed costs of plant operations. The advantage to Chenango Valley could be a reduced rate for service at the treatment plant.

Decision-making of the Board could be improved if the outside users of the plant were given voting rights on the Board. One suggestion is for the outside municipalities to appoint one representative to the Board. Thus, with seven votes, instead of the existing six, decisions that currently cannot be agreed upon (from a 3-3 split) would be resolved (from a 4-3 vote). Such a change would not only improve decision-making, but also increase public involvement in the Joint Board activities.

Subsidies to Low Income Families.

Since only 80% of the locally retained Federal grant funds recovered from industry are reserved for replacement, the remaining 20% may be used to subsidize the payments from low income families for sewer service. This would be most effective for the AWT technical plan because that alternative would require the highest charges and would generate a large fund for subsidy as a result of the high degree of Federal funding for the large capital expenditures.

The allotment would be under the control of each institution responsible for operation of the treatment facilities.

Overall, this subsidy would not be very large for the secondary treatment plans because only limited construction schedules are needed. Although from an institutional viewpoint, the subsidy as outlined may not be necessary for effective plan implementation, lessening the burden on low income families will reduce some of the adverse social impact of construction financing.

Modification of the Southern Tier East Regional Plan.

The plan selected for implementation should become an element in the Regional Plan. Such inclusion will allow future proposals impacting upon wastewater management to be judged against the explicit provisions of the modified plan.

EXPANDED COUNTY SEWER DISTRICT

Binghamton-Johnson City. A part county district, encompassing the entire Binghamton-Johnson City service area is proposed to elevate responsibilities for future wastewater management in that service area to the county level. Although the other institutions would remain substantially the same as those proposed in the "minor modifications to existing institutions" alternative, the area of Chenango Valley could be incorporated into this scheme depending upon the technical plan selected for implementation.

The expanded district concept would provide for complete ownership and control of sewage collection and treatment systems by the district. The district would be responsible for construction, operation, and maintenance of all treatment facilities including stormwater overflow control units. Regional and local collection would be operated and maintained by the expanded district. If regionalization is chosen, new extensions to the regional collection system would be financed by a small sewer district (proposed for Chenango Valley connecting to the Binghamton system). Local collection systems would be financed by separate town districts. The smaller county districts and town districts would only be vehicles to finance new sewerage, not to maintain facilities or control discharges into them.

Whereas the "modified institutions" alternative continues to provide for the Joint Board sending bills to municipalities, the district would bill individual users.

The expanded district would assume the remaining indebtedness for the treatment plant and regional collection facilities. All other indebtedness would remain the responsibility of the local institutions.

Inspection and control of individual discharges would be quite readily accomplished by this institution with complete jurisdiction over the sewerage and sewage treatment system. General pricing for collection and treatment would be set on a uniform rate.

Some payment to Binghamton and Johnson City may have to be made to compensate those municipalities for carrying the costs of a partly underused facility. This statement is made particularly in regard to the primary units; the secondary facility is now near capacity.

The preferable route would be not to make equity payments which would put an added financial burden on a newly created district. However, some compensation to the corporate owners of the treatment facility may be necessary to facilitate the negotiations for district formation.

To summarize, the rationale for compensation to Binghamton and Johnson City is:

1) both municipalities are corporate owners of the treatment plant;

2) both municipalities have carried the bulk of the burden of excess capacity in the treatment facility in anticipation of connection by outside users;

3) both municipalities have the largest percentages of low income families for whom a preferential rate or compensation would have other advantageous social effects.

The reasoning against compensation to Binghamton and Johnson City is:

1) to date, outside users have generally been paying the 25% surcharge to both municipalities;

2) the fact that outside users have been subsidizing both municipalities by contributing to local sewer maintenance in addition to regional collection costs has already resulted in compensation;

3) the storm water overflow control and infiltration control would be financed by all users served by the treatment plant although such I/I problems are generally confined to Binghamton and Johnson City.

There is no "best" solution to this problem in terms of equitability. The formation of the proposed district would entail negotiations between all the concerned communities and the Broome County Sewer Agency in order to arrive at an agreeable solution. The advantages of unified control of sewers and treatment make an attempt at such negotiations worth while.

The removal of certain municipal functions (local sewers) to the county (district) level is not without precedent. Definitely, the formation would be subject to a permissive referendum. However, the transfer of the local sewer functions from the municipalities may be subject to a mandatory referendum analogous to the requirements for formation of a county department by the *County Law*. In either case, the State Comptroller should be contacted at an early date if the expanded district is selected for plan implementation.

Owego. As part of the institutional alternative defined under this subheading "Expanded County Sewer District," certain possible changes are suggested for Tioga County relative to the three plant Tioga plans.

Currently, the two Owego Town plants have one operator. A possibility exists that this operator could also manage the Owego Village facility. If one person can operate the three plants, an obvious savings in operating expenses could be achieved. The institutional modification would be that Owego Village would pay Owego Town for managing, operating, maintaining and staffing the Village plant, as arranged by an intermunicipal agreement.

Generally speaking, there would be a disadvantage to such an arrangement. Control over the local sewers and treatment plant planning would remain the responsibility of Owego Village. With a loss of the integral management of sewers and treatment, Owego Town would only have jurisdiction at the treatment plant. At least for the three plant Tioga County plans, "modified institutions" would maintain unified management over Village sewers and treatment.

EXPANDED COUNTY SEWER AUTHORITY

This institutional arrangement would function similarly to the expanded district institution. The only difference would be in the Binghamton-Johnson City service area where the authority would operate instead of a county district.

An authority is created by a special enactment of the State Legislature. The formation of an authority is thus not subject to the referendum requirements of the district. The authority can provide a streamlined budgetary process which would not be subject to yearly approval by the local municipalities in the "modified institutions" alternative, or by the Broome County Legislature in the "expanded sewer district" alternative. Since the budgeting is not subject to the political fluctuations in concern over wastewater management, the authority can be an effective vehicle to implement intricate plans with complex capital improvements.

The general tradeoff for such advantages is that the authority can only float a revenue bond (at a higher interest rate than a general obligation bond) and the independence could result in the authority losing touch with the concerns of local institutions.

COUNTY SEWER DEPARTMENTS

Subject to a mandatory referendum (requiring approval by Binghamton City voters, the approval by the majority of villages and the approval by the majority of towns), a county department may be created to absorb all sewage collection treatment functions which are now the responsibilities of the local municipalities.

Local collection extensions may be financed by the county department. Sewer rates would be equalized across the county for users of sewers. As an example, Endicott users would pay the same unit charges for use of the sewers as the Binghamton-Johnson City users.

The county department would also assume existing indebtedness of the existing treatment facilities and regional collectors. The ability also exists to assume local collection indebtedness; however, the description of the department alternative in this report does not provide such a feature.

In addition to the referendum requirements, negotiations would be necessary to transfer ownership of the treatment facilities to the county.

A major difference between the department from the authority and district viewpoint is that department financing would not be "self-contained." In other words, revenues generated by special user fees to support operations would not be the only financial source. The county department may receive its capital expenditure funds via the general county property tax, and O & M expenses from a metered rate of sewer system users.

TWO-COUNTY SEWER AUTHORITY

The State legislature may create an authority having a complete array of wastewater functions in the Bicounty Area. The authority would own, operate and maintain all sewerage and treatment facilities, and would assume remaining indebtedness of existing treatment and regional collection facilities in Broome and Tioga Counties. The authority would continue to rely on town districts to finance new sewerage extensions, and would continue to rely on existing municipal corporations to repay existing local system extension bonds. Rates of sewer system operations and all treatment plant functions would be equalized across the two-county region.

Only persons served by a treatment plant would contribute revenues to the authority, and revenue bonds would be used to finance new treatment construction. Although this institution is conceived to equalize the cost of sewage treatment across the region, the negotiations necessary to transfer ownership of the treatment facilities from the existing corporate owners may result in preferential rates.

Authorities are most advantageous where stream-lined decision-making is necessary However, the process of creating an authority is not easy since, in New York State, there is considerable distrust of large, semi-autonomous agencies and a considerable amount of politicing at the State level can be encountered in establishing an authority.

EVALUATION OF THE ADDITIONAL INSTITUTIONAL ALTERNATIVES

The institutional evaluation and discussion for the additional institutional alternatives is founded on the same tabular format as was presented for the existing institutions in Chapter IV. Tables V-1 through V-4 consider each of the four technical plans. It should also be noted that the 3 + 3 Chenango Plant and the 3 + 3 Phased technical plans are essentially the same under the respective treatment levels.

Table V-1 represents evaluations for the existing institutions as they handle the Baseline conditions. It was also assumed for the Baseline Condition, Plan 1, that there would be no motivation to change the existing institutional arrangements merely to continue a static physical configuration.

The other tables V-2A through V-4 show evaluations for the existing institutions in implementing the other technical plans.

Criterion A. Ability to Plan for the Entire Service Area and Area Affected by Technical Plans.

The existing institutions have had moderate success in planning and are expected to continue in spite of the shortcomings already documented in Chapter IV. Therefore "5's" are registered for this institutional arrangement for all the technical plans.

The modified arrangements should improve the rating for all but the Binghamton-Johnson City service areas. For the Binghamton-Johnson City area more structural changes in the institutions would be needed because of the more complex nature of that institution. And, the modified institutional arrangements would produce only a limited improvement in overall planning because they would not place the sewers and sewage treatment under the responsibility of one agency. Instead, the three decision-making bodies of Binghamton, Johnson-City, and the Joint Sewer Board would be relied upon for the management of sewage treatment.

The expanded district, the part-county authority, the county departments, and the two-county authority alternatives are expected to have maximum planning ability for all the technical plans for all of the service areas. This is because they will be more consolidating to the decision making process (*i.e.*, in most cases, the decision-making will be made on a county level). Management will not be as fragmented, and with the opportunity to create a new institution to manage an alternative, the inequity of the rate system, voting and composition of the institution could be improved.

Criterion B. Ability to Utilize Revenues for Operation.

Because more than one agency must approve the Binghamton-Johnson City Joint Sewer Board budgets for the existing and modified institutions, only moderate ability to utilize revenues will be inherent in the Binghamton-Johnson City service area. The other service areas would have maximum ability because of the more simplified budgetary process. For example, in order for the Binghamton-Johnson City Board to utilize its revenues, the budgetary decision must first be made by each municipality and then approved by the Board. Whereas, in a district or authority arrangement, the decision can be made on one level – by the institutional body itself.

Criterion C. Ease of Obtaining Federal Funds.

Agencies with small geographical jurisdictions are expected to have less of an ability to compete for limited Federal and State aid than the larger agencies because of a smaller "grantsmanship" ability and smaller populations affected. "Grantsmanship" refers to the know-how of being able to deal with State and Federal requirements and forms in order to be awarded grants. Thus, the Owego service areas receive lower ratings than the larger Broome County service areas for all institutions except the two-county authority which has

the largest jurisdiction of all the institutional alternatives and would perhaps be able to make its desires better known in reference to financing.

The existing institutions have minimal funding ability because of the non-compliance with Federal regulations concerning user fees, metering and industrial cost recovery. And, as cost-effectiveness is also a major factor for EPA approval for construction grants, where a non-cost-effective technical alternative is proposed a zero is assigned to the affected service areas.

Criterion D. Ability to Achieve Economies of Scale.

The existing institutions have moderate ability to achieve economies of scale for all the technical plans except in those cases which are not cost-effective.

The modifications to the existing institutions should improve only the Endicott rating. The Owego service areas would remain too small for this institution to improve their economies significantly. The Binghamton-Johnson City service area, though large, would still be too fragmented to achieve economies, especially with regard to the local sewer systems.

The expanded district however would operate with one "local sewer division" in the Binghamton-Johnson City service areas so the ability would be maximized. If Owego Town would manage the Owego Village plant, the Owego economies could also be maximized.

Although not indicated by the tables, the smaller scope of the phased Chenango Valley plans would result in a smaller economy of scale.

Criterion E. Ability to Acquire Rights of Way and Implementation Capabilities.

All the institutional alternatives have maximum ability for this criterion. Except for Chenango Valley, all treatment plant sites are already owned or readily available for expansion. The major factor for this determination is that all construction would take place within the geographical jurisdiction of all the agencies for each institutional alternative. Property for sewers and treatment facilities is generally acquired from private ownership by purchase or eminent domain and from public ownership by right of way or transfer through other mechanisms (*e.g.* lease). Although one municipality must receive written permission to condemn land in another municipality, the county and authority institutions may acquire land anywhere in their jurisdictions. Since only county or authority institutions are proposed for the Chenango Valley regional systems there should be no problem with land acquisition.

Criterion F. Ability to Construct and Maintain Wastewater Management Facilities.

For the same reasoning presented in Criterion E, all the institutions have maximum ability to construct and maintain facilities.

Criterion G. Ability to Acquire and Maintain Staff.

The larger institutions have a maximum ability to acquire staff, whereas the institutions with small geographical jurisdiction have a minimal ability. Large institutions, with large staffs, can cultivate a high degree of specialization in their personnel. Small institutions have a limited choice for recruitment. Therefore, the existing institutions, modified institutions, expanded district, and part-county authority receive "5's" in Binghamton-Johnson City service areas and "0's" in the Owego and Chenango (3+3 plans) service areas. The county departments and two-county authority, by virtue of their large geographical jurisdictions should have maximum ability to acquire and maintain staff.

Criterion H. Decision-making Capabilities.

For the existing institutions, the Binghamton-Johnson City service areas have minimal decision making ability because of the dual approval process by the two principle municipalities (Binghamton and Johnson City). Endicott and Chenango Valley (for the 3+3 plans) should have moderate decision-making capabilities resulting from the multi-municipal nature of the services; and the Owego's have maximum ability because only one municipality is involved in the decision-making relative to sewers and sewage treatment. The existing institution rating for the AWT plan is only moderate in the Owego Village – West Owego service area because the proposed facilities and sewers would not be the responsibility of one agency.

The modifications to the existing institutions should improve the Binghamton-Johnson City service area rating to a five. The remaining institutional alternatives should generally maximize decision-making in the Binghamton-Johnson City service areas because of the comprehensive responsibilities of the proposed agencies. Endicott service area ratings would only be improved for the county department and two-county authority alternative because management of sewers and sewage treatment would be formally integrated into one agency. The Owego Town management of the Owego Village plant (all three-plant Tioga plans) would decrease decision-making efficiency because management of sewers and treatment would no longer be integrated.

Criterion I. Ability to Operate Facilities.

All the institutions have maximum ability to operate facilities proposed for all technical plans, including the AWT plan, which requires operating skills commonly available in personnel with expertise in municipal wastewater treatment.

Criterion J. Ability to Negotiate for or Maintain a Spectrum of Services.

Ability to meet this criterion corresponds to size of the institution. A large institution will have the ability to specialize with certain personnel in order to provide community services such as water conservation education. Therefore, for all technical plans, the assumption of responsibilities by the county or bi-county level will provide maximum ability for such activities. The small areas, such as the Owego's or Chenango Valley (separate plant), have a minimal ability to provide such services for the other institutional alternatives.

Criterion K. Ability to Enforce Powers.

The existing institutional arrangements in the Binghamton-Johnson City service areas result in a minimal ability to enforce sewer use ordinances. No effective mechanism exists other than service severance to enforce the sewer use ordinances in the serviced municipalities. Endicott has a moderate ability limited by the independence of Vestal and Union. The Owego service areas with the existing institutions have maximum enforcement powers because of the integration of sewage collection and treatment within one municipality. For technical plans with a separate Chenango plant, the Chenango Valley service area would have a moderate ability because three towns would control the separate collection systems whereas the county would have control over the regional collection system and treatment plant.

Institutional modifications should result in the Binghamton-Johnson City service areas having moderate enforcement powers. The district and part-county authority would provide maximum enforcement power in the Binghamton-Johnson City service areas as a result of the integration of sewage collection and treatment responsibilities.

Criterion L. Compatibility with Existing Levels of Government.

Since no changes are achieved in the "existing institutions" alternative, this criterion is not evaluated as indicated by the dashes. Maximum compatability is achieved by the modified institutions for all the technical plans except in the Binghamton-Johnson City service area. In that area, the negotiations which would be necessary to solidify the proposals would be quite cumbersome. The rating of the district in the Binghamton-Johnson City service area is low because the existing functions of wastewater management at the local level would be removed to the county level.

The authorities (part and bi-county) and the county departments would have minimal ability in the affected service areas for all technical alternatives. As authorities derive their powers from State legislative enactment, they can be quite independent from the prevailing political climate which could make authorities both effective in decision-making and yet ineffective in gaining agreement in policies. The county departments would completely remove all wastewater management functions in the region to the county level from the local municipal level.

Criterion M. Ability to Promote Public Participation.

The existing institutions have minimal public participation procedures in the Binghamton-Johnson City service areas. This rating results from the fact that only two municipalities make the decisions affecting all serviced areas. With some changes in the standard agreement, the ability to promote public participation should improve.

The remaining service areas for the existing institutional alternatives are expected to have moderate public participation ability, which results from the routine nature of activities to fulfill State and Federal requirements.

Criterion N. Political Compatibility.

Generally, the existing institutions have maximum political compatability. Modifications to the Binghamton-Johnson City Joint Sewer Board agreements can be expected to create some short-term political problems which result in the modified institutions having moderate political compatability in that service area.

In the case of the creation of an expanded district in Broome County, wastewater functions would be undertaken by the county level, but the district would retain the same degree of political compatability as the modified institutions in the Binghamton-Johnson City service area. The independence of a part-county authority in that service area and the need for a State legislative enactment could result in minimal political compatability in this service area because decision-making power is being shifted and the status quo is being upset. Management of the Village plant by Owego Town is expected to result in only moderate political compatability. Problems in cost-sharing, potential conflict of interest, and reduced decision-making capabilities are responsible for this rating.

The county sewer departments and the two-county sewer authority are expected to have minimal political compatability. In the case of the departments, the interests of rural populations not serviced by sewers will enter into the political arena. Rural villages may not be pleased at the fact that they will be provided with service by a county institutional arrangement which may seem unresponsive and removed from the local level.

Criterion O. Ability to Assign Costs to Those Who Receive Benefits.

Since the region, as a whole, receives the benefits of improved water quality, the two-county authority and the county departments have moderate assignment abilities in this regard. The local institutions, being more fragmented, have a minimal ability.

The county departments can partially fund wastewater management via the property tax, so that those whose properties would be most affected by improved water quality could be accordingly assessed. Generally, the county departments can be expected to make the assessment uniform throughout the county. However, since Tioga County will receive the benefits from Broome County efforts, (improved water quality downstream) the assignment ability will only be moderate.

The two-county authority can equalize sewer rates across the region. However, only those serviced by sewer will contribute funds and these people are not necessarily the ones who benefit the most from improved water quality.

Criterion P. Ability to Recover Costs from Those Who Create Costs.

Except for the Endicott service area, where the property tax funds wastewater treatment, the existing institutions, either through the metered rate or flat rate user fees, have a fairly high ability for cost recovery. The modified institutions, the expanded district and the part-county authority will also have a maximum cost recovery ability especially through the implementation of Federal user fee requirements.

The county sewer departments and the two-county sewer authority will have only minimal cost recovery ability which results from rate equalization throughout the region. Different locations in the region have various advantages and disadvantages relative to the locational decisions of industry, commerce, the general population, etc. Urban concentration results in a high economy of scale being attained in wastewater management. Suburban areas are served by a proportionately higher number of smaller facilities than urban areas which, of course, results in higher unit treatment costs.

SUMMARY AND CONCLUSIONS

The technical plans and institutional alternatives which have been mentioned in this report will be combined in the next chapter. For each technical plan, two institutional alternatives will be suggested for implementation & effective management.

In essence, Plans 2 and 3, the modified arrangements for Tioga and Broome Counties and the expanded Broome County Sewer District with modified or existing arrangements for Tioga County appear to offer the most promising contributions toward plan implementation. Since the capital improvements required by these plans are not particularly large and the local institutions are quite capable with regards to construction and operation, the inclusion of a "minimal institutional change plan" is advisable.

The expanded Broome County district is recommended since only the Binghamton-Johnson City service area is affected. This service area is that with the most severe management

problems which the district will do much to eliminate. Relative to the part-county authority, the district has the advantage of being formed by local initiative without State Legislative approval, but has the disadvantage of a less streamlined budgetary and decision-making process. This latter disadvantage of the district relative to the authority is not that significant since the capital programming of the plans beyond the year 1977 is not that great. Additionally, with Plan 4 and 5, the district has an advantage over the county department and two-county authority by not involving other service areas with Binghamton-Johnson City problems, and such an involvement would delay plan implementation. In essence then, the district is recommended over the department and the bicounty authority because it represents the minimal institutional changes necessary to integrate wastewater collection and treatment in the most complex service area.

The county department and bicounty authority arrangements are recommended for detailed plan refinement for Plan 4. To undertake the expense of this treatment alternative, the institutions should be capable of completely integrating the waste collection and treatment functions, and take a regional approach in programming facilities and hiring personnel.

Although the AWT plans are designed to provide AWT by 1985, realistically, the construction would be phased. The phasing would be desirable for a number of reasons:

1) A heavy influx of construction workers, followed by their complete departure, would not occur. A phased program would allow for local workers to be employed for a long period of time.

2) A large number of operating personnel would not have to be recruited at one time.

3) The indebtedness in any given year would be less, which might result in lower interest rates in the bond market. Thus, with the two institutional alternatives with the broadest regional perspective, a priority could be established by initiating construction where the most benefits would accrue; *i.e.*, the Binghamton-Johnson City plant. The region, as a whole, would finance AWT, irrespective of which treatment facility would be improved first. The institutions of lesser geographic scope would not provide these features.

In summary then, AWT, which would be a radical departure from existing treatment practices should be accompanied by equally radical institutional changes in order to manage the alternative as efficiently and equitably as possible.

TABLE V-1 PLAN 1 BASELINE CONDITION

	Institutional	Institutional Alternatives					
Service Area	Arrangement Criteria	Existing	Modification of Exist	Expanded Co. District	Part Co. Authority	Two One Co. Dept	One Two Co. Auth.
Binghamton Johnson City	A. Ability to plan for entire service area	5					
	B. Ability to use revenues for operation	5					
	C. Ease of obtaining Federal Funds	-					
	D. Ability to achieve Economies of scale	5					
	E. Ability to acquire rts. of way & implementation capabilities	10					
	F. Ability to construct & maintain WWM facilities	10					
	G. Ability to acquire & maintain staff	5					
	H. Decision-making capab.	0					
	I. Ability to operate facilities	10					
	J. Ability to negotiate for or maintain a spectrum of services	5					
	K. Ability to enforce powers	0					
	L. Compatability with existing levels of Government	-					
	M. Ability to promote public participation	0					
	N. Political Compatability	10					
	O. Ability to assign costs to those who receive benefits	0					
	P. Ability to assign costs to those who create costs	10					
Endicott	A	5					
	B	10					
	C	0					
	D	5					
	E	10					
	F	10					
	G	5					
	H	5					
	I	10					
	J	5					
	K	5					
	L	-					
	M	5					
	N	10					
	O	0					
	P	5					
Owego Village	A	5					
	B	10					
	C	0					
	D	5					
	E	10					
	F	10					
	G	0					
	H	10					
	I	10					
	J	0					
	K	10					
	L	-					
	M	5					
	N	10					
	O	0					
	P	10					
West Owego	A	5					
	B	10					
	C	-					
	D	5					
	E	10					
	F	10					
	G	0					
	H	10					
	I	10					
	J	0					
	K	10					
	L	-					
	M	5					
	N	10					
	O	0					
	P	10					
East Owego	A	5					
	B	10					
	C	-					
	D	5					
	E	10					
	F	10					
	G	0					
	H	10					
	I	10					
	J	0					
	K	10					
	L	-					
	M	5					
	N	10					
	O	0					
	P	10					

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TABLE V-2A PLAN 2 SECONDARY TREATMENT – OPTION 2A 2+3 INTERCEPTOR

	Institutional	Institutional Alternatives					
Service Area	Arrangement Criteria	Existing	Modification of Exist	Expanded Co. District	Part Co. Authority	Two One Co. Dept	One Two Co. Auth.
Binghamton Johnson City Chenango Valley	A. Ability to plan for entire service area	5	5	10	10	10	10
	B. Ability to use revenues for operation	5	5	10	10	10	10
	C. Ease of obtaining Federal Funds	0	5	5	5	10	10
	D. Ability to achieve Economies of scale	5	5	10	10	10	10
	E. Ability to acquire rts. of way & implementation capabilities	10	10	10	10	10	10
	F. Ability to construct & maintain WWM facilities	10	10	10	10	10	10
	G. Ability to acquire & maintain staff	5	5	5	5	10	10
	H. Decision-making capab.	0	5	10	10	10	10
	I. Ability to operate facilities	10	10	10	10	10	10
	J. Ability to negotiate for or maintain a spectrum of services	5	5	5	5	10	10
	K. Ability to enforce powers	0	5	10	10	10	10
	L. Compatability with existing levels of Government	–	5	0	0	0	0
	M. Ability to promote public participation	0	5	5	5	0	5
	N. Political Compatability	10	5	5	0	0	0
	O. Ability to assign costs to those who receive benefits	0	0	0	0	5	5
	P. Ability to assign costs to those who create costs	10	10	10	10	5	5
Endicott	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	5	5	5	10	10
	D	5	10	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	5	5	5	5	10	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	5	5	5	5	10	10
	K	5	5	5	5	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	0	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	5	10	10	10	5	5
Owego Village	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	10
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	5	5	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
West Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	10
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	5	5	10	10
	J	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	5	5	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
East Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	10
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	10	10	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5

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TABLE V-28 PLAN 2 SECONDARY TREATMENT — OPTION 2B 3+3 FULL SCALE CHENANGO PLANT

	Institutional	Institutional Alternatives					
Service Area	Arrangement Criteria	Existing	Modification of Exist	Expanded Co. District	Part Co. Authority	Two One Co. Dept	One Two Co. Auth
Binghamton Johnson City	A. Ability to plan for entire service area	5	5	10	10	10	10
	B. Ability to use revenues for operation	5	5	10	10	10	10
	C. Ease of obtaining Federal Funds	0	0	0	0	0	0
	D. Ability to achieve Economies of scale	0	0	10	0	0	0
	E. Ability to acquire its of way & implementation cap abilities	10	10	10	10	10	10
	F. Ability to construct & maintain WWM facilities	10	10	10	10	10	10
	G. Ability to acquire & maintain staff	5	5	5	5	10	10
	H. Decision-making capab	0	5	10	10	10	10
	I. Ability to operate facilities	10	10	10	10	10	10
	J. Ability to negotiate for or maintain a spectrum of services	5	5	5	5	10	10
	K. Ability to enforce powers	0	5	10	10	10	10
	L. Compatability with existing levels of Government		5	0	0	0	0
	M. Ability to promote public participation	0	5	5	0	0	0
	N. Political Compatability	10	5	5	0	5	5
	O. Ability to assign costs to those who receive benefits	0	0	0	0	5	5
	P. Ability to assign costs to those who create costs	10	10	10	10	5	5
Chenango Valley	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	0	0	0	0
	D	0	0	0	0	0	0
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	10	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	10	10
	K	5	5	5	5	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	0	0
	N	10	10	10	10	5	5
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
Endicott	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	5	5	5	5	5
	D	5	10	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	5	5	5	5	10	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	5	5	5	5	10	10
	K	5	5	5	5	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	0	0
	N	10	10	10	10	5	5
	O	0	0	0	0	5	5
	P	5	10	10	10	5	5
Owego Village	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	5
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	10	0	0	5	10
	H	10	0	5	5	10	10
	I	10	10	10	10	10	10
	J	0	10	0	0	5	10
	K	10	0	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	10	5	0	0
	N	10	10	5	5	5	5
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
West Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	5
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	0	0
	N	10	10	5	5	5	5
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
East Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	5
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	10	10	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	0	0
	N	10	10	10	10	5	5
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5

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TABLE V-2C PLAN 2 SECONDARY TREATMENT — OPTION 2C-3+3 PHASED CHENANGO PLANT

	Institutional	Institutional Alternatives					
Service Area	Arrangement Criteria	Existing	Modification of Exist	Expanded Co. District	Part Co. Authority	Two One Co. Dept	One Two Co. Auth
Binghamton Johnson City	A. Ability to plan for entire service area	5	5	10	10	10	10
	B. Ability to use revenues for operation	5	5	10	10	10	10
	C. Ease of obtaining Federal Funds	0	0	0	0	0	0
	D. Ability to achieve Economies of scale	0	0	0	0	0	0
	E. Ability to acquire rts. of way & implementation capabilities	10	10	10	10	10	10
	F. Ability to construct & maintain WWM facilities	10	10	10	10	10	10
	G. Ability to acquire & maintain staff	5	5	5	5	10	10
	H. Decision-making capab.	0	5	10	10	10	10
	I. Ability to operate facilities	10	10	10	10	10	10
	J. Ability to negotiate for or maintain a spectrum of services	5	5	5	5	10	10
	K. Ability to enforce powers	0	5	10	10	10	10
	L. Compatability with existing levels of Government		5	0	0	0	0
	M. Ability to promote public participation	0	5	5	0	0	0
	N. Political Compatability	10	5	5	0	5	5
	O. Ability to assign costs to those who receive benefits	0	0	0	0	5	5
	P. Ability to assign costs to those who create costs	10	10	10	10	5	5
Chenango Valley	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	0	0	0	0
	D	0	0	0	0	0	0
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	10	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	10	10
	K	5	5	5	5	10	10
	L		10	10	10	0	0
	M	5	5	5	5	0	0
	N	10	10	10	10	5	5
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
Endicott	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	5	5	5	5	5
	D	5	10	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	5	5	5	5	10	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	5	5	5	5	10	10
	K	5	5	5	5	10	10
	L		10	10	10	0	0
	M	5	5	5	5	0	0
	N	10	10	10	10	5	5
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
Owego Village	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	5
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L		10	10	10	0	0
	M	5	5	5	5	0	0
	N	10	10	5	5	5	5
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
West Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	5
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L		10	10	10	0	0
	M	5	5	5	5	0	0
	N	10	10	5	5	5	5
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
East Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	5
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	10	10	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L		10	10	10	0	0
	M	5	5	5	5	0	0
	N	10	10	10	10	5	5
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5

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TABLE V-3A PLAN 3 NITRIFICATION WITH OPTIONS – OPTION 3A – 2+3 INTERCEPTOR

	Institutional	Institutional Alternatives					
Service Area	Arrangement Criteria	Existing	Modification of Exist	Expanded Co. District	Part Co. Authority	Two One Co. Dept	One Two Co. Auth
Binghamton Johnson City – Chenango Valley	A. Ability to plan for entire service area	5	5	10	10	10	10
	B. Ability to use revenues for operation	5	5	10	10	10	10
	C. Ease of obtaining Federal Funds	0	5	5	5	10	10
	D. Ability to achieve Economies of scale	5	5	10	10	10	10
	E. Ability to acquire rts. of way & implementation capabilities	10	10	10	10	10	10
	F. Ability to construct & maintain WWM facilities	10	10	10	10	10	10
	G. Ability to acquire & maintain staff	5	5	5	5	10	10
	H. Decision-making capab.	0	5	10	10	10	10
	I. Ability to operate facilities	10	10	10	10	10	10
	J. Ability to negotiate for or maintain a spectrum of services	5	5	5	5	10	10
	K. Ability to enforce powers	0	5	10	10	10	10
	L. Compatability with existing levels of Government	–	5	0	0	0	0
	M. Ability to promote public participation	0	5	5	0	5	5
	N. Political Compatability	10	5	5	0	0	0
	O. Ability to assign costs to those who receive benefits	0	0	0	0	5	5
	P. Ability to assign costs to those who create costs	10	10	10	10	5	5
Endicott	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	5	5	5	10	10
	D	5	10	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	5	5	5	5	10	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	5	5	5	5	10	10
	K	5	5	5	5	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	5	10	10	10	5	5
Owego Village	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	10
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	5	5	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
West Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	10
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	5	5	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
East Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	10
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	10	10	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5

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TABLE V-3B PLAN 3 NITRIFICATION WITH CAPTIONS – OPTION 3B 3+3 FULL SCALE CHENANGO PLANT

Service Area	Institutional Arrangement Criteria	Institutional Alternatives: Existing	Modification of Exist	Expanded Co. District	Part Co. Authority	Two One Co. Dept	One Two Co. Auth.
Binghamton Johnson City	A. Ability to plan for entire service area	5	5	10	10	10	10
	B. Ability to use revenues for operation	5	5	10	10	10	10
	C. Ease of obtaining Federal Funds	0	0	0	0	0	0
	D. Ability to achieve Economies of scale	5	0	0	0	0	0
	E. Ability to acquire rts. of way & implementation capabilities	10	10	10	10	10	10
	F. Ability to construct & maintain WWM facilities	10	10	10	10	10	10
	G. Ability to acquire & maintain staff	5	5	5	5	10	10
	H. Decision-making capab.	0	5	10	10	10	10
	I. Ability to operate facilities	10	10	10	10	10	10
	J. Ability to negotiate for or maintain a spectrum of services	5	5	5	5	10	10
	K. Ability to enforce powers	0	5	10	10	10	10
	L. Compatability with existing levels of Government	–	5	0	0	0	0
	M. Ability to promote public participation	0	5	5	0	5	5
	N. Political Compatability	10	5	5	0	0	0
	O. Ability to assign costs to those who receive benefits	0	0	0	0	5	5
	P. Ability to assign costs to those who create costs	10	10	10	10	5	5
Chenango Valley	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	0	0	0	0
	D	0	0	0	0	0	0
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	10	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	10	10
	K	5	5	5	5	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
Endicott	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	5	5	5	5	5
	D	5	10	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	5	5	5	5	10	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	5	5	5	5	10	10
	K	5	5	5	5	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	5	10	10	10	5	5
Owego Village	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	5
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	5	5	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
West Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	5
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	5	5	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
East Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	5
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	10	10	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5

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TABLE V-3C PLAN 3 NITRIFICATION WITH OPTIONS – OPTION 3C-3-3 PHASED CHENANGO PLANT

Service Area	Institutional Arrangement Criteria	Institutional Alternatives: Existing	Modification of Exist	Expanded Co. District	Part Co Authority	Two One Co. Dept	One Two Co. Auth.
Binghamton Johnson City	A. Ability to plan for entire service area	5	5	10	10	10	10
	B. Ability to use revenues for operation	5	5	10	10	10	10
	C. Ease of obtaining Federal Funds	0	0	0	5	0	0
	D. Ability to achieve Economies of scale	0	0	0	0	0	0
	E. Ability to acquire rts. of way & implementation capabilities	10	10	10	10	10	10
	F. Ability to construct & maintain WWM facilities	10	10	10	10	10	10
	G. Ability to acquire & maintain staff	5	5	5	5	10	10
	H. Decision-making capab.	0	5	10	10	10	10
	I. Ability to operate facilities	10	10	10	10	10	10
	J. Ability to negotiate for or maintain a spectrum of services	5	5	5	5	10	10
	K. Ability to enforce powers	0	5	10	10	10	10
	L. Compatability with existing levels of Government		5	0	0	0	0
	M. Ability to promote public participation	0	5	5	0	5	5
	N. Political Compatability	10	5	5	0	0	0
	O. Ability to assign costs to those who receive benefits	0	0	0	0	5	5
	P. Ability to assign costs to those who create costs	10	10	10	10	5	5
Chenango Valley	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	0	0	0	0
	D	0	0	0	0	0	0
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	10	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	10	10
	K	5	5	5	5	10	10
	L		10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
Endicott	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	5	5	5	5	5
	D	5	10	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	5	5	5	5	10	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	5	5	5	5	10	10
	K	5	5	5	5	10	10
	L		10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	5	10	10	10	5	5
Owego Village	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	5
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L		10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	5	5	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
West Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	5
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L		10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	5	5	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
East Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	10
	D	5	5	10	10	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	10	10	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L		10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5

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TABLE V-4 PLAN 4 BIOLOGICAL AWT (2+2)

	Institutional	Institutional Alternatives					
Service Area	Arrangement Criteria	Existing	Modification of Exist	Expanded Co. District	Part Co. Authority	Two One-Co. Dept	One Two-Co. Auth.
Binghamton — Johnson City — Chenango Valley	A. Ability to plan for entire service area	5	5	10	10	10	10
	B. Ability to use revenues for operation	5	5	10	10	10	10
	C. Ease of obtaining Federal Funds	0	5	5	5	10	10
	D. Ability to achieve Economies of scale	5	5	5	5	10	10
	E. Ability to acquire rts. of way & implementation capabilities	10	10	10	10	10	10
	F. Ability to construct & maintain WWM facilities	10	10	10	10	10	10
	G. Ability to acquire & maintain staff	5	5	5	5	10	10
	H. Decision-making capab.	0	5	10	10	10	10
	I. Ability to operate facilities	10	10	10	10	10	10
	J. Ability to negotiate for or maintain a spectrum of services	5	5	5	5	10	10
	K. Ability to enforce powers	0	5	10	10	10	10
	L. Compatability with existing levels of Government	–	5	0	0	0	0
	M. Ability to promote public participation	0	5	5	0	5	5
	N. Political Compatability	10	5	5	0	0	0
	O. Ability to assign costs to those who receive benefits	0	0	0	0	5	5
	P. Ability to assign costs to those who create costs	10	10	10	10	5	5
Endicott	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	5	5	5	10	10
	D	5	5	5	5	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	5	5	5	5	10	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	5	5	5	5	10	10
	K	5	5	5	5	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	5	10	10	10	5	5
Owego Village — West Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	10
	D	5	5	5	5	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	5	5	5	5	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	5	5	5	5	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	5	5	5	5	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5
East Owego	A	5	10	10	10	10	10
	B	10	10	10	10	10	10
	C	0	0	5	5	5	10
	D	5	5	5	5	10	10
	E	10	10	10	10	10	10
	F	10	10	10	10	10	10
	G	0	0	0	0	5	10
	H	10	10	10	10	10	10
	I	10	10	10	10	10	10
	J	0	0	0	0	5	10
	K	10	10	10	10	10	10
	L	–	10	10	10	0	0
	M	5	5	5	5	5	5
	N	10	10	10	10	0	0
	O	0	0	0	0	5	5
	P	10	10	10	10	5	5

CHAPTER VI

DETAILED REFINEMENT OF PLANS

INTRODUCTION

The detailed refinement of plans specifies the activities which should be undertaken for proper plan execution. The refinement is divided into the following programs:

1) capital improvements program,

2) management program,

3) revision program,

4) implementation program.

1. The *capital improvements program* of a wastewater management plan includes capital requirements for new facilities as well as capital improvements to existing facilities requiring modification.

2. The *management program* includes a broad range of activities that does not necessarily involve major construction or engineering activities. These programs specify 1) the powers and membership composition of the institutions, 2) the fiscal programs such as user fees, cost-sharing, development financing etc., 3) public education, and 4) manpower requirements and training.

3. The *revision program* specifies the continuing planning activities which should be undertaken with respect to needs identification, alternatives, and evaluation. In assuring the flexibility of the plan, and providing a continuing responsiveness to changing needs, the revision program embraces the activities of those institutions charged with the continuous function of wastewater planning. This is particularly important to promote and establish a continuing planning process for the Study area in Broome and Tioga Counties. Each plan will state what organizations will be responsible for the revision program.

The *revision program* is divided into two sections. One is called the "five year revision" section and specifies various activities to be undertaken to monitor the plans. The second is called the "decision-oriented revision" section which specifies various analyses which should be undertaken when future conditions arise. This section differs from the five year revision in that activities address conditions which can only be speculated about at this date.

4. The *implementation program* focuses upon major actions needed to carry out the plan. In its simplest form, the implementation program is a set of discrete actions that takes the plan from the drawing board conceptual stage and places it into actual operation. The program specifies the steps which must be taken to create new institutions, and it delineates other activities (primarily to meet grant requirements) necessary for plan implementation.

The steps necessary for plan implementation can be categorized under: 1) agreements, 2) the fulfillment of State and Federal planning requirements, 3) the fulfillment of State procedures and laws as found in "McKinney's Statutes, Annotated," for establishing districts, and setting bonding regulations, and 4) the scheduling of construction time.

There is a well-defined ordering within some of the steps such as in the formation of a town district, however, the ordering between the four categories mentioned above is not well defined. For example, there is not an established order for decision-making between the State Comptroller and the DEC. And, one may withhold district approval and fund allocation for a certain area until the other acts first.

Though some attempt will be made to estimate the time necessary for plan implementation, no definitive statement can be made. For example, in the formation of agreements, there can be no exact time limit given, because agreements are affected by the time necessary for political bodies to arrive at a decision. Sometimes agreements are made rapidly on the order of a month; at other times years are involved.

Fulfilling State and Federal requirements is likewise affected, particularly by the time necessary to organize and complete the 201 planning process. If consultants are hired, some effort can be expected in negotiating contracts and preparing properly organized documents such as an environmental assessment which involves a significant amount of time.

With regard to State laws, however, specific times are shown for various activities such as notices and public hearings for various municipal activities. It must be kept in mind however, that these procedures are not significant if the political agreements have not already been made.

In reference to the scheduling of construction time, these schedules can be estimated, but strikes, shortages of materials, and unanticipated soil conditions are just a few of the occurrences which will distort plan implementation time estimates.

Generally, time schedules will be provided to indicate the time necessary to complete the steps.

INDIVIDUAL PLANS

Table VI-1 entitled "Plan Definitions" summarizes the plans and applicable institutional arrangements for each plan

2-A-1; 4mg/l PLAN SECONDARY WITH INTERCEPTOR – IMPLEMENTED BY MODIFIED INSTITUTIONAL ARRANGEMENTS – 2 PLANTS BROOME, 3 PLANTS TIOGA

Capital Improvements Program

Table VI-2 presents the capital improvements required by this Plan.

Management Program

Institutional Composition and Responsibilities

Federal. The Environmental Protection Agency (EPA), through the Administrator, continues regulatory and funding activities.

State. The Department of Environmental Conservation (DEC), through the Executive, continues training, monitoring of wastes, regulatory, standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (*e.g.*, town districts).

Local. The Southern Tier East Regional Planning Board (STERPB) continues to refine a comprehensive plan for project notification and review process and coordinates future wastewater planning.

The Broome County Health Department (BCHD), through its Executive continues monitoring and inspection activities of industrial and municipal wastes. The existing treatment facilities will assure adequate pretreatment along with BCHD and DEC.

The Broome County Sewer Agency (BCSA), through the County Executive, manages the Chenango Valley regional collection system and acts as an intermediary between the Binghamton-Johnson City Joint Sewage Board (BJCJSB) and Fenton, Chenango and Dickinson users.

The Towns of Chenango, Fenton, and Dickinson, by their supervisors and town boards, manage new collection districts.

TABLE VI-1 PLAN DEFINITIONS

Institutional Alternative With Plan Designation	Description	Water Quality	Number of Plants Broome	Number of Plants Tioga	Binghamton Infiltration Control (mgd)	Non-structural Measures Considered	Institutions	Averaged Implementation Time Frame From Figures In Chapter VI
1	Baseline	4 mg/l	2	3	0.0	none	Existing	
2-A-1	Secondary (Interceptor)	4 mg/l	2	3	1.0	none	Modified	3-5 yrs.
2-A-2	Secondary (Interceptor)	4 mg/l	2	3	1.0	none	District	3-6½ yrs
2-B-1	Secondary (Chenango Plant)	4 mg/l	3	3	1.0	none	Modified	4-5½ yrs.
2-B-2	Secondary (Chenango Plant)	4 mg/l	3	3	1.0	none	District	4-5½ yrs.
2-C-1	Secondary (Phased Chenango)	4 mg/l	3	3	1.0	none	Modified	4-6 yrs.
2-C-2	Secondary (Phased Chenango)	4 mg/l	3	3	1.0	none	District	4-6 yrs.
3-A-1	Nitrification (Interceptor)	5 mg/l	2	3	3.0	none	Modified	3½-5 yrs
3-A-2	Nitrification (Interceptor)	5 mg/l	2	3	3.0	none	District	3-6½ yrs.
3-B-1	Nitrification (Chenango Plant)	5 mg/l	3	3	3.0	none	Modified	4-5½ yrs.
3-B-2	Nitrification (Chenango Plant)	5 mg/l	3	3	3.0	none	District	4-5½ yrs.
3-C-1	Nitrification (Phased Chenango)	5 mg/l	3	3	3.0	none	Modified	4-6 yrs.
3-C-2	Nitrification (Phased Chenango)	5 mg/l	3	3	3.0	none	District	4-6 yrs.
4-1	Advanced Waste Treatment	AWT	2	2	3.0	100%	County Department	Varies
4-2	Advanced Waste Treatment	AWT	2	2	3.0	100%	Two-County Authority	Varies

TABLE VI-2

CAPITAL IMPROVEMENTS PROGRAM FOR PLANS 2-A-1 AND ALSO FOR 2-A-2

	NEW TOTAL CAPACITY (MGD)	YEAR	CONSTRUCTION COST ($ MILLION)	PRESENT* WORTH	DESCRIPTION
Binghamton-Johnson City	2.2	1977	2.50		Chenango Interceptor
	1.0	1977	0.21		Infiltration Control
		1977	3.58		Storm Overflow
	29.0	1977	0.05		Raw Wastewater Pumping
	26.5	1977	1.42		Aerator and Clarifier
	29.0	1997	0.39		Primary Tank
	30.5	2025	0.71		Aeration and Clarifier
				7.9	
Endicott	0.8	1977	1.57		Nanticoke Valley Interceptor
	9.2	1983	1.95	–	Additional Secondary Treatment Capacity
				2.9	
East Owego	3.0	1992	1.26	–	General Expansion
				0.5	
West Owego	0.7	2000	0.47	–	General Expansion
				0.1	
Owego Village	1.0	1977	1.02		New Secondary treatment capability
	3.0	1977	0.42		Micro-screening
	–	1977	0.58	–	Inflow Control
				2.0	
				13.5	

*Total Present Worth
In the Baseline year 1977
at 6 1/8% interest

The Binghamton-Johnson City Joint Sewage Board (BJCJSB), by the mayors and legislators of Binghamton and Johnson City, manage the treatment plant. There may also be a possibility of the outside municipalities coming together and voting as one member on the Joint Board. The BJCJSB is responsible for industrial monitoring.

The municipalities adjacent to the Binghamton-Johnson City plant will continue to manage the local collection facilities and act as intermediaries between the Joint Board and individual users (other than industries requiring surcharges or special rates).

Endicott, through its Mayor and Village board, will continue managing the Endicott STP. The adjacent municipalities, through their local executives and boards, will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges or special rates).

The Town of Owego, through its Town Supervisor and Town Board, will continue to manage the WPCP #1 and #2 and collection districts.

The Village of Owego, through the Mayor and Village Board, will continue to manage the plant and collection system.

Fiscal Activities

Metering and User Fees. Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements). The Broome County Sewer Agency should institute metered rates and user fees in Chenango Valley.

Reserve Funds. All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery can subsidize low income families at the discretion of individual grant recipients.

Bonding. All managers will continue to use bond anticipation notes and serial bonds as restricted by State law.

Cost Sharing. The Federal share of eligible construction will continue at 75% of the construction cost. The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The BJCJSB will continue with its existing cost sharing agreement with the following modifications:

1) The Broome County Sewer Agency should finance in 1977 the portion of the new construction at the Binghamton plant attributable to Chenango Valley (one set of aeration and clarifier units) and should only bill according to the existing policy for the primary plant debt service (with the 25% surcharge), O & M and collection.

2) All debt service contributions by outside municipalities on *new* construction should be kept exempt from the 25% surcharge.

Endicott Sewage Treatment Plant cost-sharing should continue as arranged with the metering modification.

The Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment or property tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Public Education

There are no formal public education activities proposed by this plan.

Manpower

Skills commonly available with municipal waste treatment personnel should be sufficient to operate the proposed facilities. Manpower training will continue to be provided by the DEC and by on-the-job experience. Table VI-3 details the manpower requirements of this plan.

Revision Program

Five-Year Revision

The STERPB and the DEC will be instrumental in coordinating the five-year revision plan as well as the continuing planning process in cooperation with the existing institutions. The following activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities or cost-sharing arrangements. The areas of variation are: population migration, industrial relocation, extension of sewerage, infiltration-inflow and price-demand relationships relative to achieving the nonstructural alternatives.

2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continued rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extensions should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards and water quality monitoring. The information generated during the five years of Susquehanna River monitoring should be assessed for the development of new stream standards.

5. Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of landfill.

Decision-Oriented Revision

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation into a particular revision.

1. Condition – Binghamton-Johnson City STP Reaches Capacity. Possible plan revision investigations:

a) Change in-plant process (*e.g.*, pure oxygen systems),

b) Expand plant size with due concern given to land availability,

c) Construct new, sub-regional facility to lessen the load (*e.g.*, a Chenango Plant).

2. Condition – West Owego WPCP Reaches Capacity or Needs Major Repairs. Possible plan revision investigations:

a) expansion

b) abandonment and connection to Owego Village

TABLE VI-3

MANPOWER REQUIREMENTS
PLAN 2-A-1 and also for PLAN 2-A-2 (2+3, 4 mg/l)

	BINGHAMTON-JOHNSON CITY			ENDICOTT		CHENANGO VALLEY	E. OWEGO		W. OWEGO		OWEGO VILLAGE
YEAR	1977-1996	1997-2024	2025-2026	1977-1983	1984-2026		1977-1991	1992-2026	1977-1997	1998-2026	1977-2026
CAPACITY (MGD)	25.5	27.5	28.7	7.4	9.3		1.9	2.9	1.6	.73	.98
STP TYPE											
STAFF	Activated Sludge			Trickling Filter			Activated Sludge		Trickling Filter		Trickling Filter
REQUIREMENTS											
Superintendent	1	1	1	1	1		–	1	–	–	–
Clerk Typist	1	1	1	–	–		–	–	–	–	–
Operator II	6	6	6	2	3		1	2	1	1	2
Operator I	10	10	10	4	5		4	5	4	4	3
Auto Equipment Operator	3	3	3	1	1		–	–	–	–	–
Maintenance Mechanic II	1	1	1	–	1		–	–	–	–	–
Maintenance Mechanic I	1	1	1	–	–		–	–	–	–	–
Electrician II	1	1	1	–	–		–	–	–	–	–
Maintenance Helper	2	2	2	1	1		–	–	–	–	–
Laborer	3	3	3	1	2		1	1	–	–	–
Laboratory Technician	2	2	2	1	1		1	1	–	–	–
TOTAL STAFF COMPLEMENT	31	31	31	11	15		7	10	5	5	5

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3. Condition – Frequent Violations of Water Quality. Possible plan revision investigations:

a) increase in treatment levels at the Binghamton-Johnson City STP.

4. Condition – New Stream Standards and/or Effluent Limitations. Possible plan revision investigations:

a) change in treatment plant logistics,

b) change in treatment levels.

5. Condition – Major Interceptors Reach Capacity. Possible plan revision investigations:

a) new treatment plant to relieve load,

b) Infiltration control,

c) flow equalization/storage at pump stations or with industrial users.

Implementation Program

Figure VI-1 illustrates the sequence of steps to be taken to achieve construction and implementation for all sewage treatment areas. Table VI-4 lists the requirements for 201 Facilities Planning which have been fulfilled. Table VI-5 details the establishment of County districts, and Table VI-6 details the establishment of Town districts.

TABLE VI-4 201 FACILITIES PLANNING "PLAN OF STUDY" REQUIREMENTS FOR GRANTS

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. (Completed)

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

c) Provide the 1970 population in the planning area. (Completed)

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. (Completed)

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

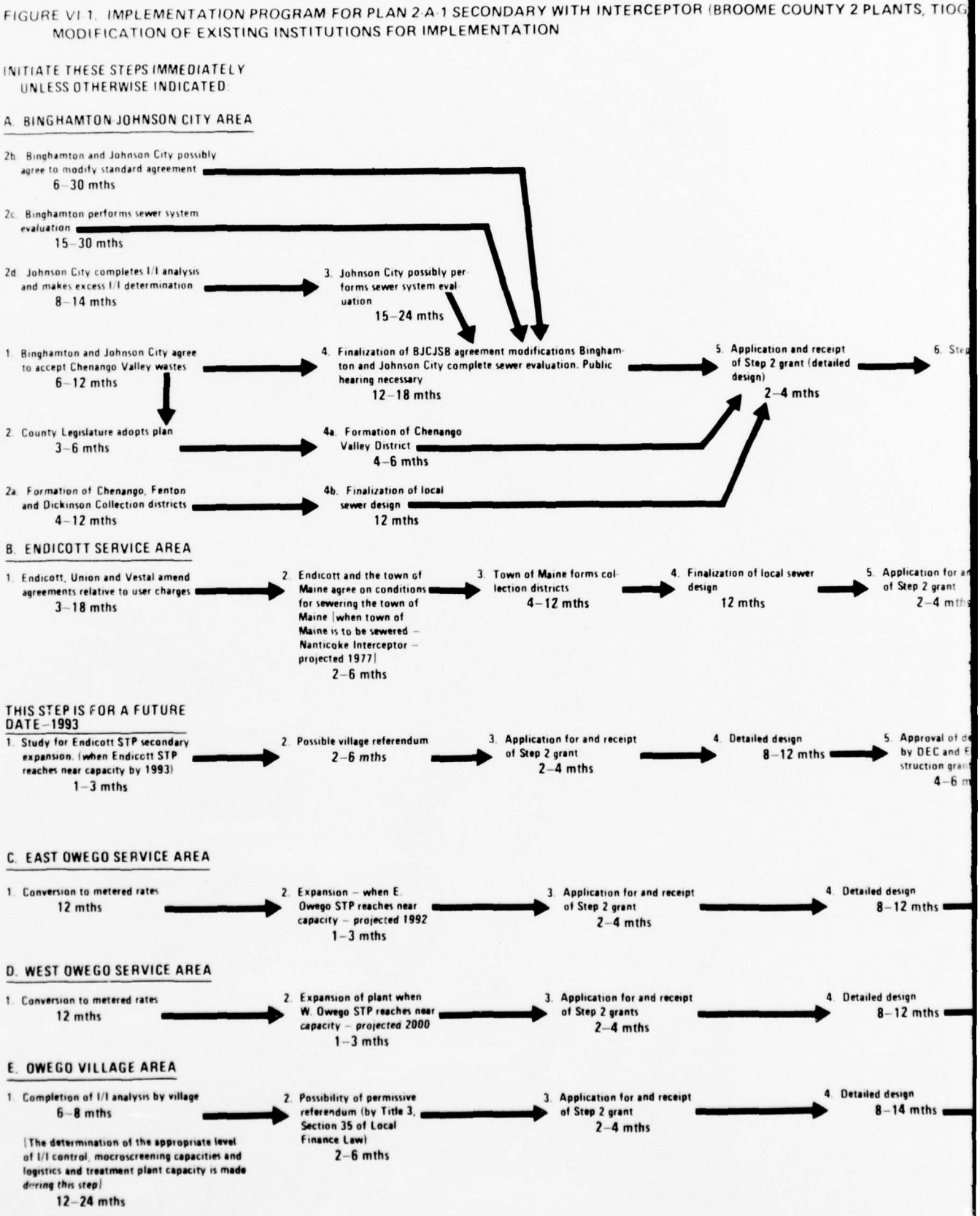
f) Describe date, plans and other information available to assist with facility planning.(Completed)

g) If the applicant believes that "excessive infiltration/inflow" exists and a detailed sewer evaluation is necessary, the Plan of Study should so state. (Partially completed)

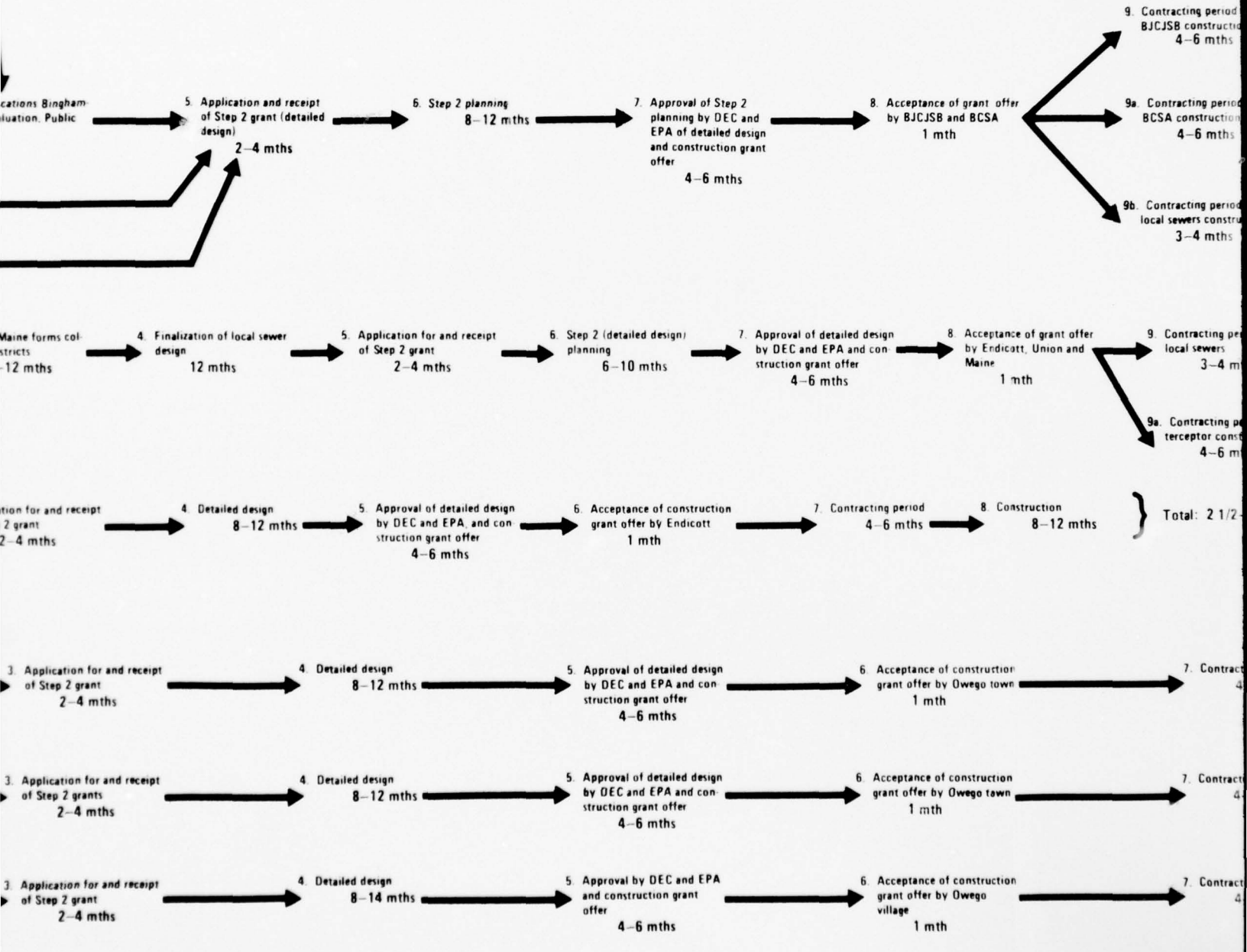
h) Provide a schedule for completion of the specific tasks necessary to prepare the facility plan. (Partially completed)

i) Estimate the cost for each task and the total costs for the facility plan. (Partially completed)

FIGURE VI-1. IMPLEMENTATION PROGRAM FOR PLAN 2-A-1 SECONDARY WITH INTERCEPTOR (BROOME COUNTY 2 PLANTS, TIOG
MODIFICATION OF EXISTING INSTITUTIONS FOR IMPLEMENTATION



WITH INTERCEPTOR (BROOME COUNTY 2 PLANTS, TIOGA COUNTY 3 PLANTS)
ON



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ANTS)

7. Approval of Step 2 planning by DEC and EPA of detailed design and construction grant offer
4–6 mths
8. Acceptance of grant offer by BJCJSB and BCSA
1 mth
9. Contracting period for BJCJSB construction
4–6 mths
10. Construction by BJCJSB
8–10 mths
9a. Contracting period for BCSA construction
4–6 mths
10a. Construction by BCSA
8–10 mths
9b. Contracting period for local sewers construction
3–4 mths
10b. Construction of local sewers
10 mths
Total: 5–7 years
ep 2 (detailed design) anning
6–10 mths
7. Approval of detailed design by DEC and EPA and construction grant offer
4–6 mths
8. Acceptance of grant offer by Endicott, Union and Maine
1 mth
9. Contracting period for local sewers
3–4 mths
10. Construction of local sewers
10 mths
11. Hook-up
9a. Contracting period for interceptor construction
4–6 mths
10a. Construction of interceptor
8–10 mths
11a. Hook-up
Total: 3–6 years
Acceptance of construction grant offer by Endicott
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 2 1/2–4 years
Approval of detailed design by DEC and EPA and construction grant offer
4–6 mths
6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years
Approval of detailed design by DEC and EPA and construction grant offer
4–6 mths
6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years
Approval by DEC and EPA and construction grant offer
4–6 mths
6. Acceptance of construction grant offer by Owego village
1 mth
7. Contracting period
4–6 mths
8. Construction
14–18 mths
Total: 4–6 years

3

TABLE VI-5 ESTABLISHMENT OF COUNTY DISTRICTS BY ARTICLE 5A OF THE COUNTY LAW

Organization	Action	County Law Article 5A Section No.	Req'd Days
1. Bd. of Supervisors	APPOINTS or ESTABLISHES county agency	251	
	DIRECTS agency to prepare maps and plans for a project or establishment of a county district.	253	
2. County Agency	TRANSMITS maps, plans, reports and recommendations, including recommendation for administrative head or body of proposed district, to the Bd. of Supervisors.	254	
3. Bd. of Supervisors	CALLS public hearing upon district proposal.	254	10-20
	PUBLISHES notice of hearing	254	
	HOLDS public hearing.		
4. Bd. of Supervisors	DETERMINES by resolution as to satisfactoriness, sufficiency of proposed facilities, benefit to property and property owners, boundaries of district, and public interest served	256	
	RESOLVES to the approval of the establishment of the district and the construction of improvement subject to permissive referendum.	256	
5. Bd. of Supervisors	PUBLISHES notice of resolution, stating that it is subject to permissive referendum.	257	10
	PROVIDES for permissive referendum on its own motion.	101, 102, 257	30
6. Bd. of Supervisors	PROVIDES for referendum vote if petitioned by 100 or 5 per cent of owners of taxable real property within proposed districts.	101, 102, 257	45
	RESOLUTION approving district becomes effective 30 days after its adoption, or if referendum held upon approval by majority of voters.		
7. Bd. of Supervisors	APPLIES for permission to establish district from Department of Audit and Control after resolution approving district becomes effective.	258	

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TABLE VI-5 (Continued)

8. State Comptroller	DETERMINES public interest and question of undue burden upon property within the district. GRANTS or DENIES PERMISSION for establishment of district.	258	
9. Bd. of Supervisors	ADOPTS order establishing district after Comptroller grants permission.	258	
	RECORDS order establishing district	259	10
	AWAITS applications for Article 78 C.P.L.R. reviews.	260	30
10. Bd. of Supervisors	APPOINTS or ESTABLISHES administrative head or body of district.	261	
11. Administrative Head or Body	PREPARES detailed plans, specifications and contact documents. LETS contracts.	262	

TABLE VI-6 ESTABLISHMENT OF TOWN DISTRICTS BY ARTICLE 12A OF THE TOWN LAW

The following is performed separately for each town district.

1. Establishment of maps and plans by resolution of Town Board.

2. Send map and plan to the State Department of Health for review (Before construction, however, approval by the NYHD must be made).

3. File maps and plans with town clerks.

4. Notice of Public Hearing (10 to 20 days before hearing).

5. Public hearing.

6. Approval by town board subject to public hearing.

7. Permissive referendum.

8. Within ten days of approval send resolution to State Comptroller.

9. Approval or disapproval by State Comptroller.

2-A-2; 4 mg/l PLAN SECONDARY WITH INTERCEPTOR – IMPLEMENTED BY EXPANDED COUNTY DISTRICT – 2 PLANTS BROOME, 3 PLANTS TIOGA.

Capital Improvement Program

Table VI-2 presents the capital improvements for this plan.

Management Program

Institutional Composition and Responsibilities.

Federal. The EPA, through the Administrator, continues regulatory and funding activities.

State. The DEC, through the Executive, continues training, monitoring of wastes, regulatory, standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (*e.g.* town districts).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordinates future wastewater planning.

The BCHD, through its Executive, continues monitoring and inspection activities of industrial and municipal wastes. The existing treatment facilities will assure adequate pre-treatment along with the BCHD and DEC.

The BCSA, through the County Executive, is responsible for writing standards for new sewer system construction and connections, and oversees local construction for the Binghamton-Johnson City Service Area.

Local communities, through executives and boards, are responsible for financing new collection extensions and old collection debt service.

Endicott, through its Mayor and Village Board will continue managing the Endicott sewage treatment plant. The adjacent municipalities, through their local executives and boards will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges or special rates).

The Town of Owego, through its Supervisor and Town Board, will continue to manage the WPCP #1 and #2 and collection districts.

The Village of Owego, through the Mayor and Village Board, will continue to manage the treatment plant and collection system.

Fiscal Activities

Metering and user fees. – Endicott, Union, and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements). The BCSA should institute metered rates and user fees in Chenango Valley.

Reserve funds – All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery can subsidize low income families at the discretion of individual grant recipients.

Bonding – All managers will continue to use bond anticipation notes and serial bonds as restricted by State law.

Cost sharing – The Federal share of eligible construction will continue at 75% of the construction cost.

The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The Binghamton-Johnson City service area will do the following:

1. all individual users (metered and industrial user fees) contribute towards all treatment plant debt service, all treatment and collection, O & M, and all sewer system rehabilitation and operations.

2. new regional collectors are financed via separate county districts,

3. existing and new local collection debt service financed by local municipalities.

Endicott STP cost-sharing should continue as arranged with the metering modification.

Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment or property tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Public Education

There are no formal public education activities proposed by this plan.

Manpower

Skills commonly available with municipal waste treatment personnel should be sufficient to operate the proposed facilities. Manpower training will continue to be provided by the DEC and by on-the-job experience. Table VI-3 details the manpower requirements of this plan.

Revision Program

Five-year Revision

Same as Plan 2-A-1 except that BCSA, as treatment plant manager, is responsible for the Binghamton-Johnson City STP. The STERPB and the DEC will be instrumental in coordinating the five-year revision plan as well as the continuing planning process along with the existing institutions and the expanded County District. The following activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities or cost-sharing arrangements. The areas of variation are: population migration, industrial relocation, extension of sewerage, infiltration-inflow and price-demand relationships relative to achieving the nonstructural alternatives.

2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continued rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extension should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards and water quality monitoring. The information generated during the five years of Susquehanna River monitoring should be assessed for the development of new stream standards.

5. Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of land fill.

Decision Oriented Revision

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation into a particular revision.

1. Condition: Binghamton-Johnson City STP Reaches Near Capacity. Possible plan revision investigations:

a) Change in plant process (*e.g.*, pure oxygen systems),

b) Expand plant size with due concern given to land availability,

c) Construct new, sub-regional facility to lessen the load (*e.g.*, a Chenango Plant).

2. Condition: West Owego WPCP Reaches Capacity or Needs Major Repairs. Possible plan revision investigations:

a) expansion,

b) abandonment and connection to Owego Village

3. Condition: Frequent Violations of Water Quality. Possible plan revision investigations:

a) increase in treatment levels at the Binghamton-Johnson City STP.

4. Condition: New Stream Standards and/or Effluent Limitations. Possible plan revision investigation:

a) Change in treatment plant logistics

b) Change in treatment levels.

5. Condition: Major Interceptors Reach Capacity. Possible plan revision investigations:

a) new treatment plant to relieve load,

b) infiltration control,

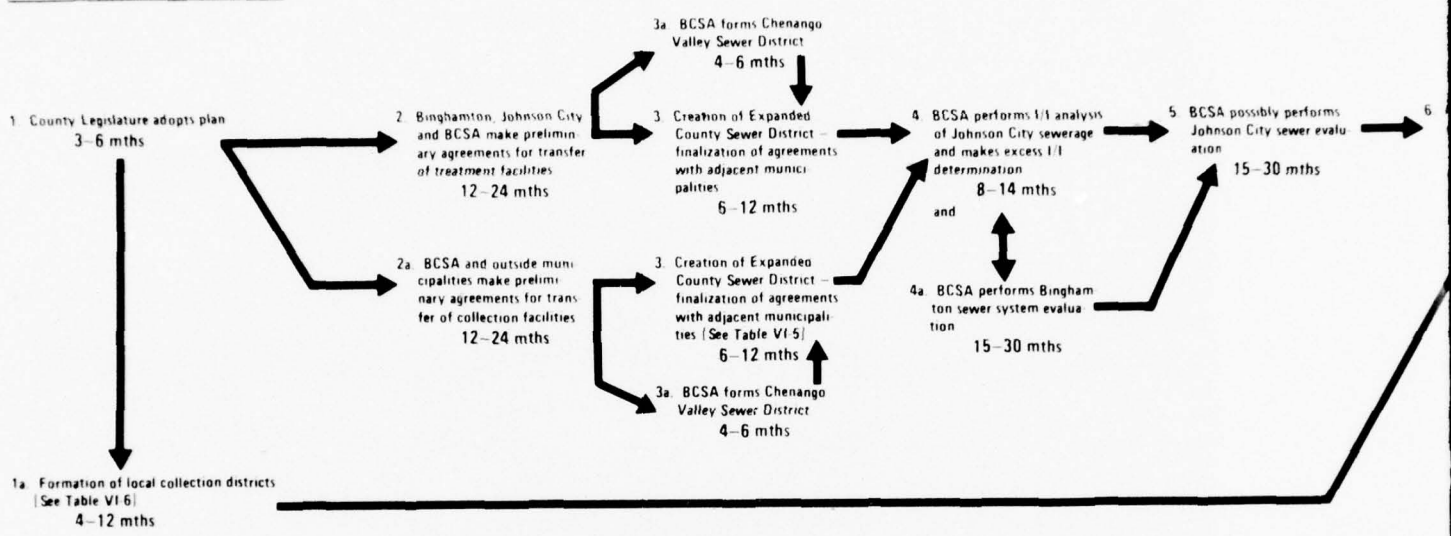
c) flow equalization (storage at pump stations or with industrial users).

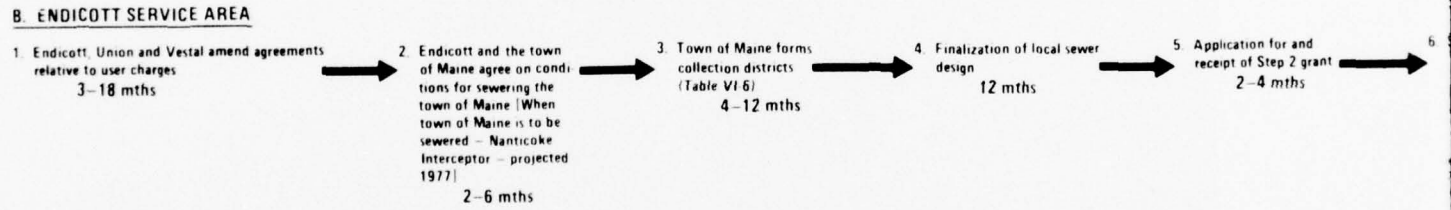
Implementation Program

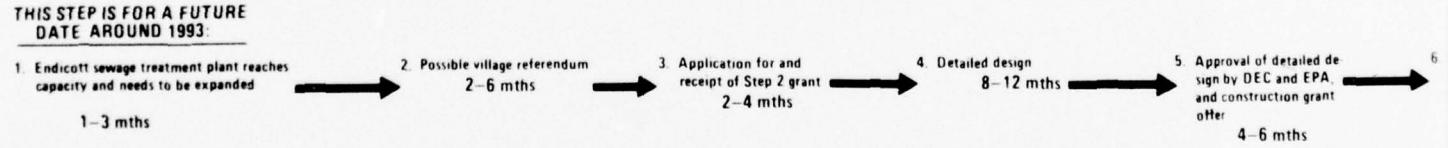
Figure VI-2 shows the implementation steps for construction and for formation of a managing institution.

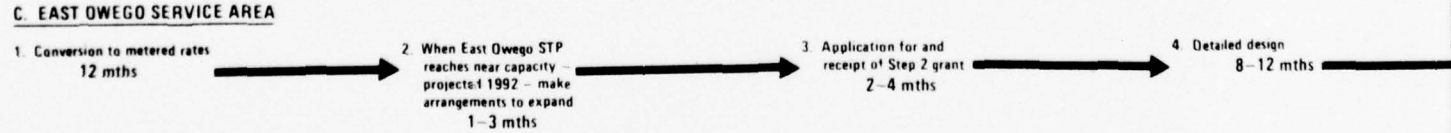
FIGURE VI-2 IMPLEMENTATION PROGRAM FOR PLAN 2 A 2 SECONDARY WITH INTERCEPTOR (2 PLANTS BROOME COUNTY, 3 PLANTS TIOGA COUNTY) COUNTY DISTRICT AS FORM OF IMPLEMENTATION

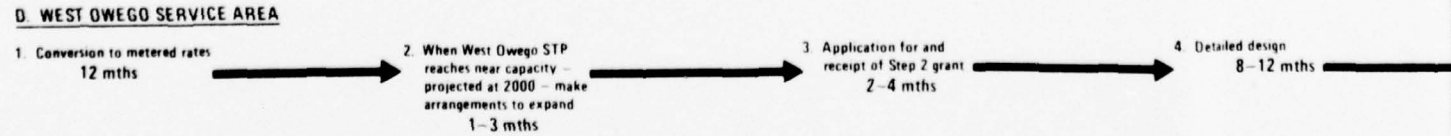
INITIATE THESE STEPS IMMEDIATELY UNLESS OTHERWISE INDICATED

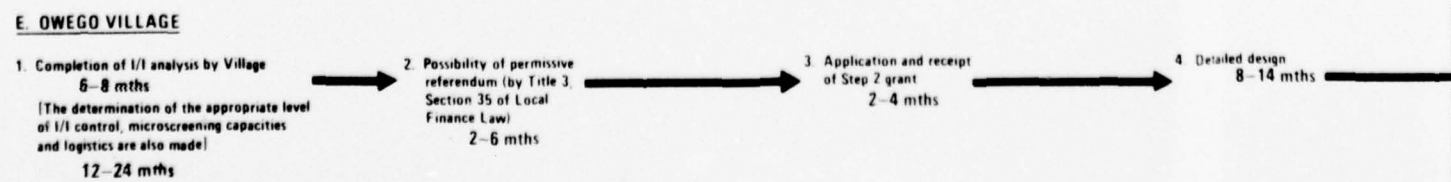




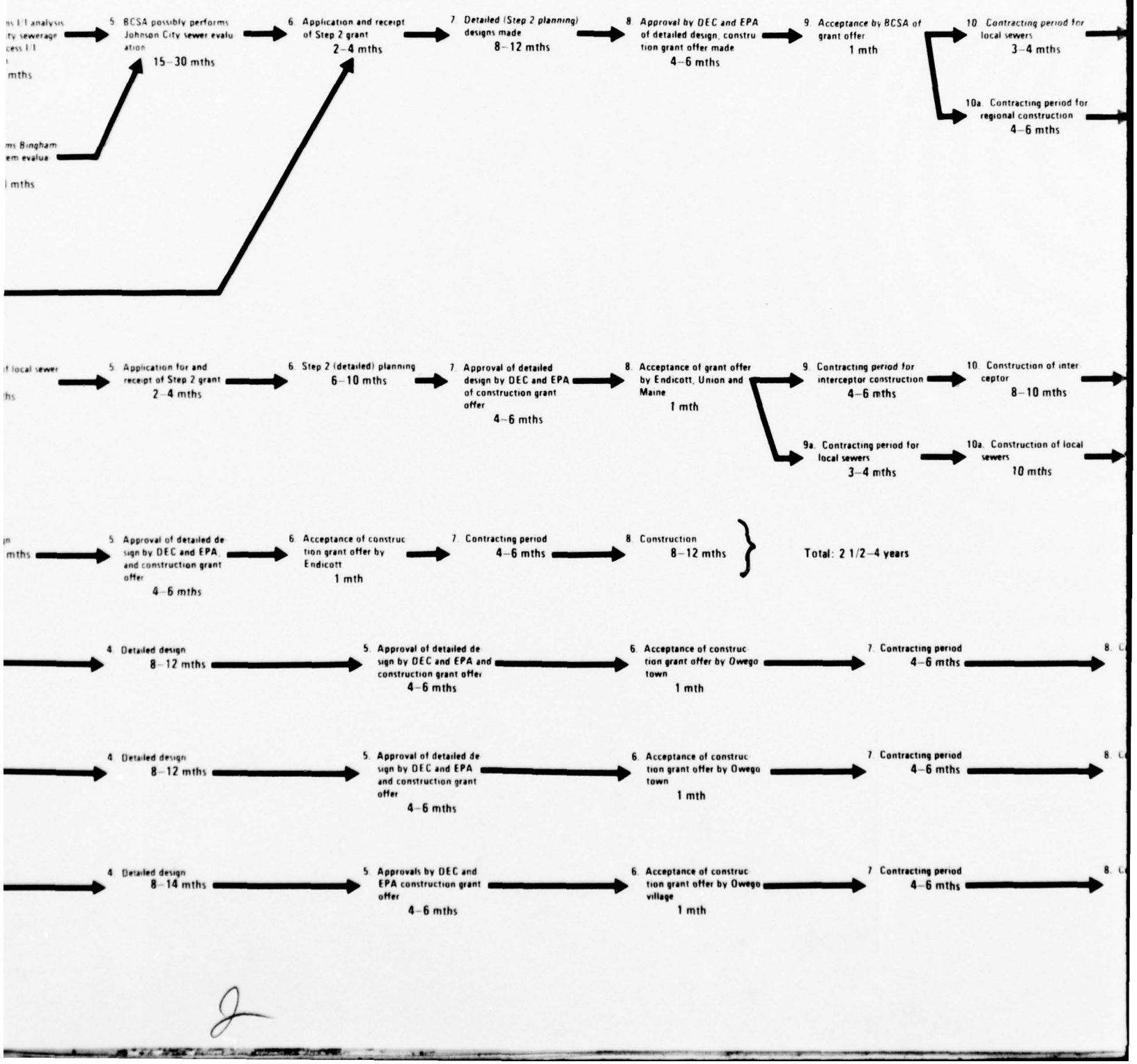


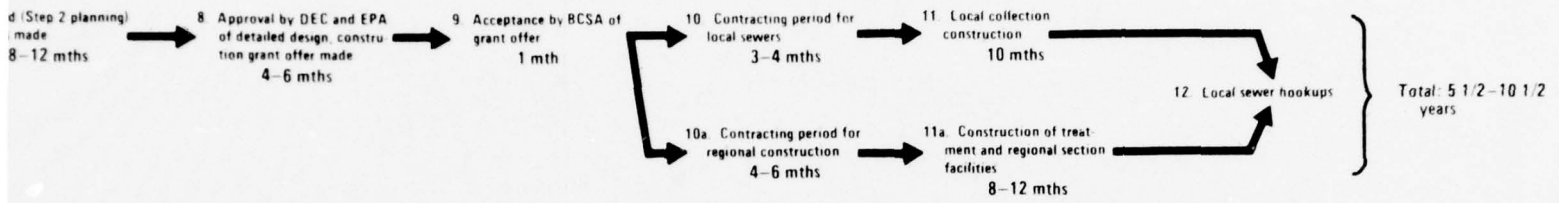


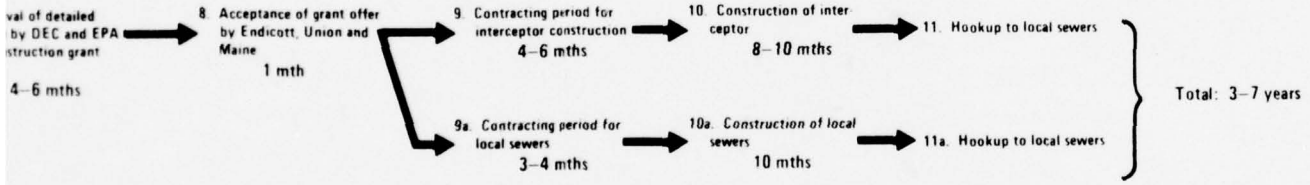


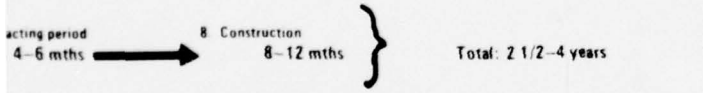


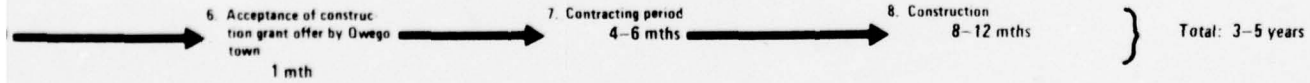
BROOME COUNTY, 3 PLANTS

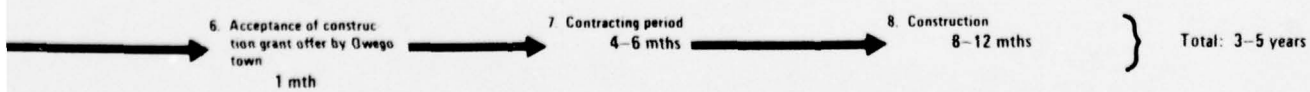


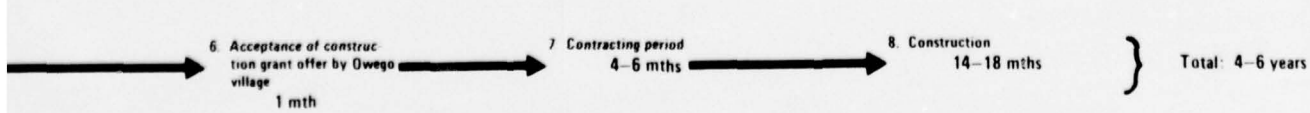

d (Step 2 planning)
made
8–12 mths
8. Approval by DEC and EPA of detailed design, construction grant offer made
4–6 mths
9. Acceptance by BCSA of grant offer
1 mth
10. Contracting period for local sewers
3–4 mths
11. Local collection construction
10 mths
12. Local sewer hookups
10a. Contracting period for regional construction
4–6 mths
11a. Construction of treatment and regional section facilities
8–12 mths
Total: 5 1/2–10 1/2 years


val of detailed
by DEC and EPA
struction grant
4–6 mths
8. Acceptance of grant offer by Endicott, Union and Maine
1 mth
9. Contracting period for interceptor construction
4–6 mths
10. Construction of interceptor
8–10 mths
11. Hookup to local sewers
9a. Contracting period for local sewers
3–4 mths
10a. Construction of local sewers
10 mths
11a. Hookup to local sewers
Total: 3–7 years


acting period
4–6 mths
8. Construction
8–12 mths
Total: 2 1/2–4 years


6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


6. Acceptance of construction grant offer by Owego village
1 mth
7. Contracting period
4–6 mths
8. Construction
14–18 mths
Total: 4–6 years

3

2-B-1; 4 mg/l PLAN-SECONDARY SEPARATE PLANT FOR CHENANGO VALLEY – IMPLEMENTED BY MODIFIED INSTITUTIONAL ARRANGEMENTS – 3 PLANTS BROOME, 3 PLANTS TIOGA.

Capital Improvements Program

Table VI-7 presents the capital improvemts for this plan:

TABLE VI-7

CAPITAL IMPROVEMENTS PROGRAM FOR PLANS 2-B-1 AND ALSO FOR 2-B-2

	NEW TOTAL CAPACITY (MGD)	YEAR	CONSTRUCTION COST ($ MILLION)	PRESENT* WORTH	DESCRIPTION
Binghamton-Johnson City	1.0	1977	0.21		Infiltration control
	–	1977	3.58		Storm overflow
	29.0	1977	0.05		Raw wastewater pumping
	22.2	1977	0.71		Aerator and clarifier
	25.4	1991	0.71		Aerator and clarifier
				4.9	
Endicott	0.8	1977	1.57		Nanticoke Valley Interceptor
	9.2	1983	1.95		Additional Secondary Treatment Capacity
				2.9	
East Owego	3.0	1992	1.26		General Expansion
				0.5	
West Owego	0.7	2000	0.47		General Expansion
				0.1	
Owego Village	1.0	1977	1.02		New Secondary Treatment Capacity
	3.0	1977	0.42		Micro-screening
	–	1977	0.58		Inflow control
				2.0	
Chenango Valley	1.7	1977	1.90		New Secondary Treatment plant
	2.2	1985	.46		General Expansion
				2.2	
				12.6	

*Total Present Worth in the Baseline year 1977 at 6-1/8% interest.

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Management Program

Institutional Composition and Responsibilities.

Federal. EPA, through the administrator, continues regulatory and funding activities.

State. DEC, through the Executive, continues training, monitoring of wastes, regulatory standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (*e.g.*, town districts).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordination of future wastewater planning.

BCHD, through its Executive, continues monitoring and inspection activities of industrial and municipal wastes. The existing treatment facilities will assure adequate pre-treatment along with the BCHD and DEC.

BJCJSB, through the mayors and legislatures of Binghamton and Johnson City, manage the treatment plant, with the possibility of outside municipalities, through their executives and municipal boards, together, as one member, joining the Joint Board. BJCJSB is responsible for industrial monitoring in its area of jurisdiction.

The municipalities associated with the Binghamton-Johnson City plant continue to manage local collection and act as intermediaries between the Joint Board and individual users (other than industries requiring surcharges or special rates).

BCSA, through the County Executive, manages Chenango Valley regional system and treatment plant.

Towns of Fenton, Chenango and Dickinson, through supervisors and town boards, manage local collection systems.

Endicott, through its Mayor and Village Board, will continue managing the Endicott STP. The adjacent municipalities through their local executives and boards, will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges or special rates).

The Town of Owego, through its Supervisor and Town Board, will continue to manage the WPCP #1 and #2 and collection districts.

The Village of Owego, through the Mayor and Village Board, will continue to manage the treatment plant and collection system.

Fiscal Activities

Metering and user fees. – Endicott, Union, and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements). The BCSA should institute metered rates and user fees in Chenango Valley.

Reserve Funds – All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery can subsidize low income families at the discretion of individual grant recipients.

Bonding – All managers will continue to use bond anticipation notes and serial bonds as restricted by State Law.

Cost Sharing – The Federal share of eligible construction will continue at 75% of the construction cost.

The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The BJCJSB will continue with its existing cost sharing agreement with the following modification:

1. All debt service contributions by outside municipalities on *new* construction should be exempt from the 25% surcharge.

Endicott STP cost-sharing should continue as arranged with the metering modification.

Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment or property tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Public Education

There are no formal public education activities proposed by this plan.

Manpower

Skills commonly available with municipal waste treatment personnel should be sufficient to operate the proposed facilities. Manpower training will continue to be provided by the DEC and by on-the-job experience. Table VI-8 details the manpower requirements of this plan.

TABLE VI-8

MANPOWER REQUIREMENTS
PLAN 2-B-1 and also for PLAN 2-B-2 (3+3, 4 mg/l)

	BINGHAMTON-JOHNSON CITY			ENDICOTT		CHENANGO VALLEY		E. OWEGO		W. OWEGO		OWEGO VILLAGE
YEAR	1977-1996	1997-2024	2025-2026	1977-1983	1984-2026	1977-1984	1985-2026	1977-1991	1992-2026	1977-1997	1998-2026	1977-2026
CAPACITY (MGD)	21.3	25.3	26.5	7.4	9.3	1.7	2.2	1.9	2.9	.6	.73	.98
STP TYPE	Activated Sludge			Trickling Filter		Activated Sludge		Activated Sludge		Trickling Filter		Trickling Filter
STAFF REQUIREMENTS												
Superintendent	1	1	1	1	1	–	–	–	1	–	–	–
Clerk Typist	1	1	1	–	–	–	–	–	–	–	–	–
Operator II	5	6	6	2	3	1	1	1	2	1	1	2
Operator I	9	10	10	4	5	4	4	4	5	4	4	3
Auto Equipment Operator	3	3	3	1	1	–	–	–	–	–	–	–
Maintenance Mechanic II	1	1	1	–	1	–	–	–	–	–	–	–
Maintenance Mechanic I	1	1	1	–	–	–	–	–	–	–	–	–
Electrician II	1	1	1	–	–	–	–	–	–	–	–	–
Maintenance Helper	2	2	2	1	1	–	–	–	–	–	–	–
Laborer	3	3	3	1	2	1	1	1	1	–	–	–
Laboratory Tehcnician	2	2	2	1	1	1	1	1	1	–	–	–
TOTAL STAFF COMPLEMENT	29	31	31	11	15	7	7	7	10	5	5	5

Revision Program

Five-Year Revision

The STERPB and the DEC will be instrumental in coordinating the five-year revision plan as well as the continuing planning process in conjunction with the existing institutions. The following activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities or costsharing arrangements. The areas of variation are: population migration, industrial relocation, extension of sewerage, infiltration-inflow and price-demand relationships relative to achieving the non-structural alternatives.

2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continued rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extension should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards and water quality monitoring. The information generated during the five years of Susquehanna River monitoring should be assessed for the development of new stream standards.

5. Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of land fill.

7. Assessment by BCSA and DEC of water quality conditions on the Chenango River and the impact of such conditions on the River use (particularly adjacent to the Park) with a view towards:

a) additional treatment beyond secondary

b) relocation of the outfall below the park.

Decision Oriented Revision

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation into a particular revision.

1. Condition: Binghamton-Johnson City STP Reaches Near Capacity. Possible plan revision investigations:

a) Change in-plant process (*e.g.*, pure oxygen systems),

b) Expand plant size with due concern given to land availability,

2. Condition: Chenango Plant reaches capacity.

a) Expansion of the facility

3. Condition: Chenango Plant Operation & Maintenance is Disproportionately Expensive:

a) abandonment, then make connection with Binghamton,
b) changes in operating procedures

4. Condition: Reduced Water Quality in the Chenango River Impacting Upon Recreation for example:

a) additional treatment necessary

b) relocation of outfall below park

c) abandonment and *Binghamton connection*

5. Condition: West Owego WPCP Reaches Capacity or Needs Major Repairs:

a) expansion,

b) abandonment and connection to Owego Village

6. Condition: Frequent Violations on Water Quality

a) increase in treatment levels at the Binghamton-Johnson City STP

7. Condition: New Stream Standards and/or Effluent Limitations Develop:

a) change in treatment plant logistics,

b) change in treatment levels.

8. Condition: Major Interceptors Reach Capacity

a) new treatment plant to relieve load,

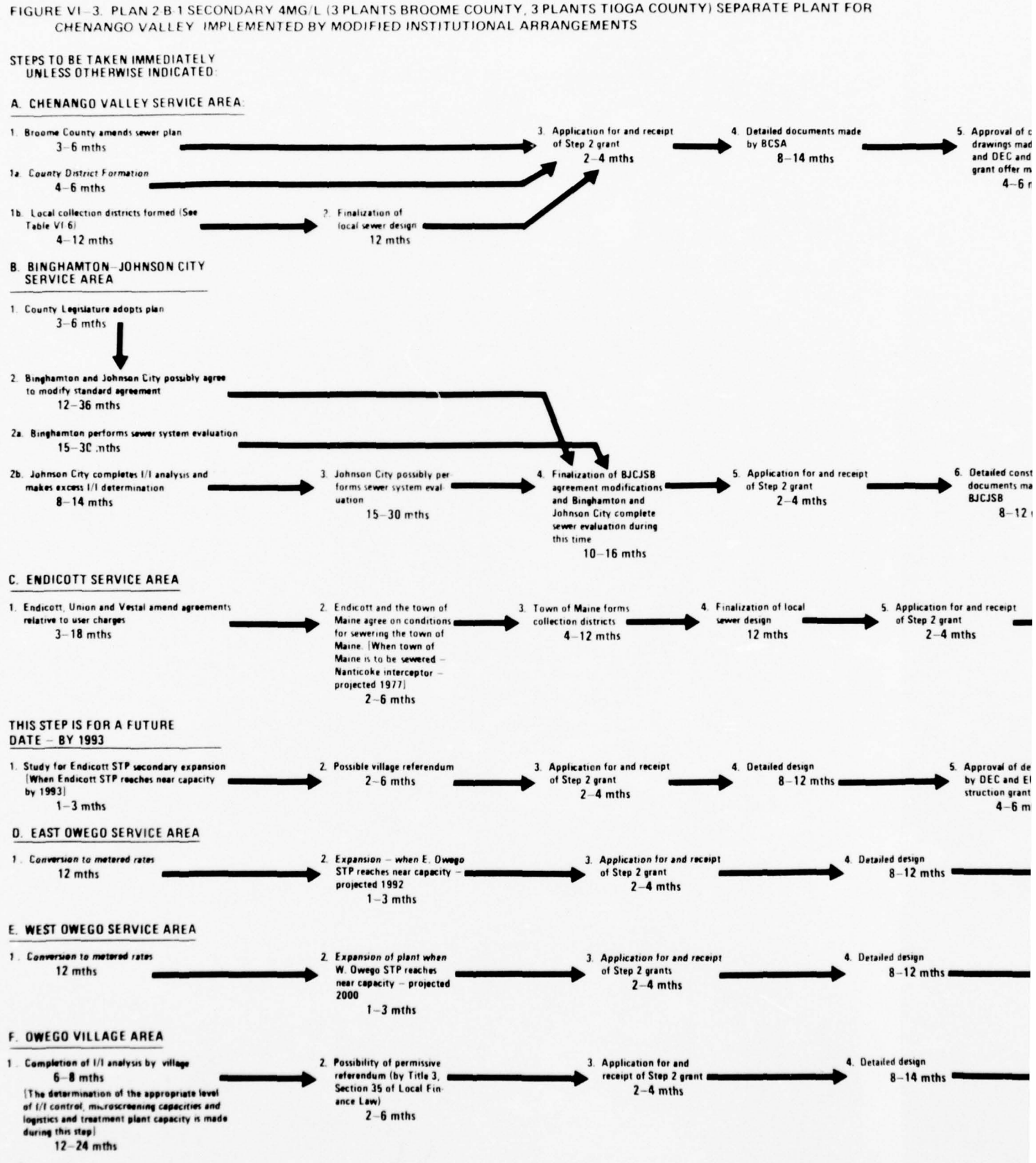
b) infiltration control,

c) flow equalization/storage at pump stations or with industrial users.

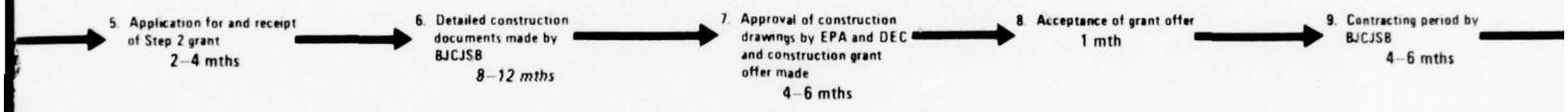
Implementation Program

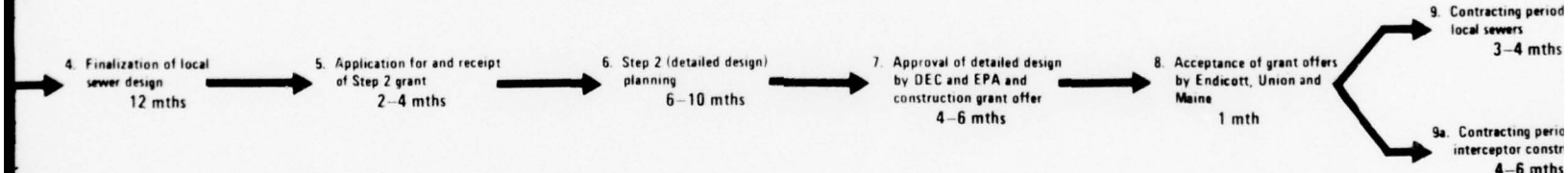
Figure VI-3 shows the implementation steps for construction and for formation of a *managing institution.*

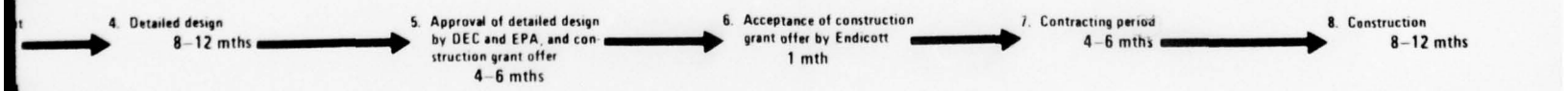
FIGURE VI–3. PLAN 2 B-1 SECONDARY 4MG/L (3 PLANTS BROOME COUNTY, 3 PLANTS TIOGA COUNTY) SEPARATE PLANT FOR CHENANGO VALLEY IMPLEMENTED BY MODIFIED INSTITUTIONAL ARRANGEMENTS

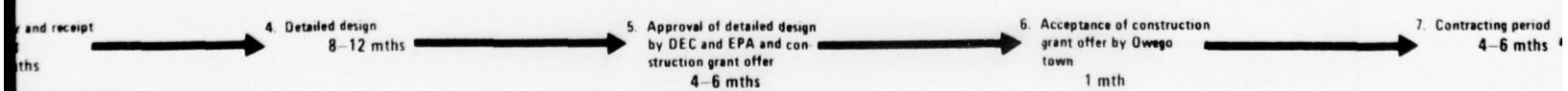


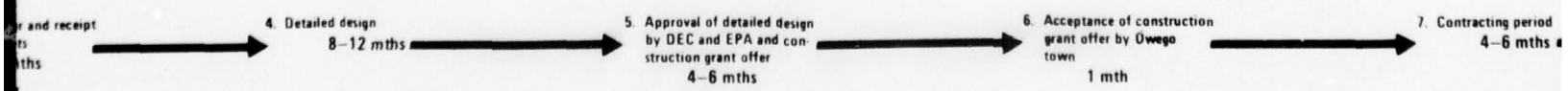
UNTY) SEPARATE PLANT FOR

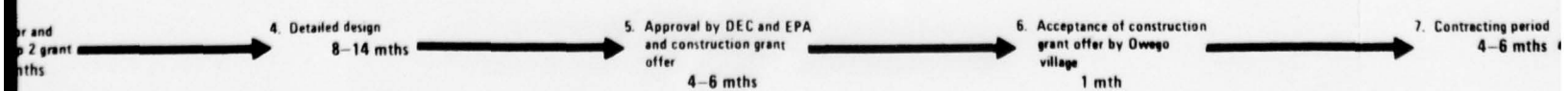


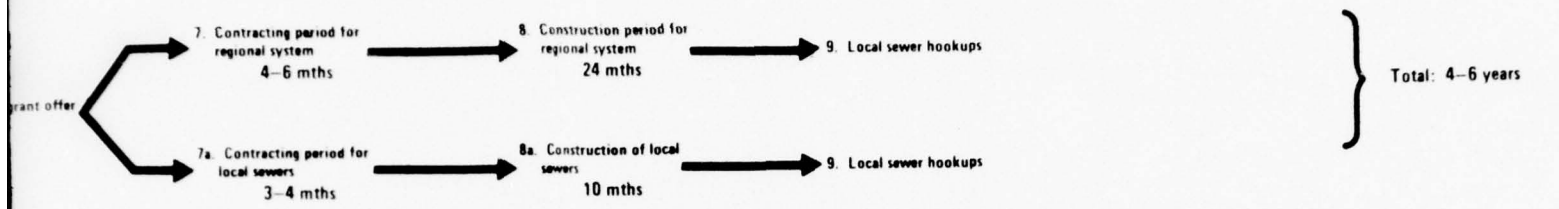


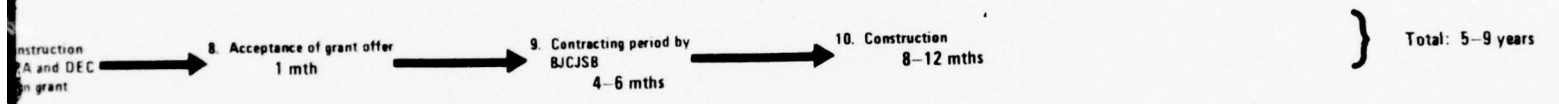


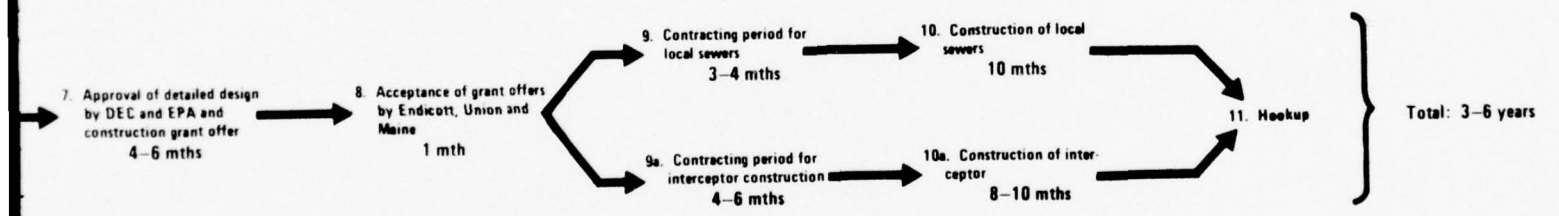




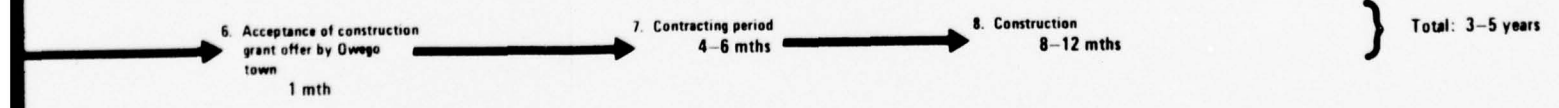


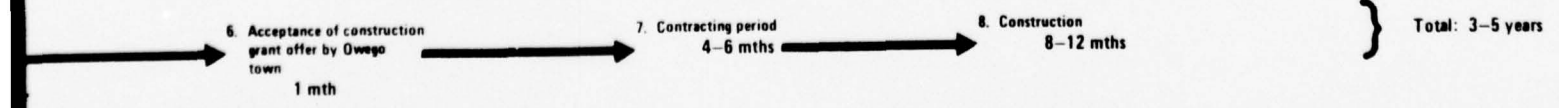

rant offer
7. Contracting period for regional system
4–6 mths
8. Construction period for regional system
24 mths
9. Local sewer hookups
7a. Contracting period for local sewers
3–4 mths
8a. Construction of local sewers
10 mths
9. Local sewer hookups
Total: 4–6 years

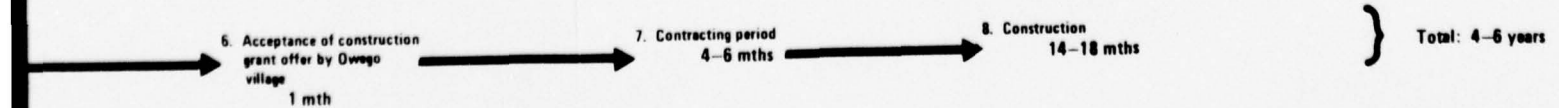

nstruction
A and DEC
n grant
ths
8. Acceptance of grant offer
1 mth
9. Contracting period by BJCJSB
4–6 mths
10. Construction
8–12 mths
Total: 5–9 years


7. Approval of detailed design by DEC and EPA and construction grant offer
4–6 mths
8. Acceptance of grant offers by Endicott, Union and Maine
1 mth
9. Contracting period for local sewers
3–4 mths
10. Construction of local sewers
10 mths
9a. Contracting period for interceptor construction
4–6 mths
10a. Construction of interceptor
8–10 mths
11. Hookup
Total: 3–6 years

construction
Endicott
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 2 1/2–4 years


6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


6. Acceptance of construction grant offer by Owego village
1 mth
7. Contracting period
4–6 mths
8. Construction
14–18 mths
Total: 4–6 years

2-B-2; 4 mg/l PLAN-SECONDARY – SEPARATE PLANT FOR CHENANGO VALLEY – IMPLEMENTED BY AN EXPANDED COUNTY DISTRICT – 3 PLANTS BROOME, 3 PLANTS TIOGA

Capital Improvements Program

Table VI-7 presents the capital improvements for this plan.

Management Program

Institutional composition and responsibilities.

Federal. EPA, through the Administrator, continues regulatory and funding activities.

State. DEC, through the Executive, continues training, monitoring of wastes, regulatory, standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (*e.g.*, town districts).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordinates future wastewater planning.

BCHD, through its Executive, continues monitoring and inspection activities of industrial and municipal wastes. The existing treatment facilities will assure adequate pre-treatment, along with the BCHD and DEC.

BCSA, through the County Executive, is responsible for managing treatment and all collection in the Binghamton-Johnson City service area and assumes all outstanding treatment plant and regional collection indebtedness of Binghamton and Johnson City.

The local communities, through executives and boards, are responsible for financing new collection extensions and old collection debt service.

BCSA is responsible for writing standards for new sewer system construction and connections, and oversees local construction.

Endicott, through its Mayor and Village Board, will continue managing the Endicott STP. The adjacent municipalities, through their local executives and boards, will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges or special rates).

The Town of Owego, through its Supervisor and Town Board, will continue to manage the treatment plant and collection system.

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Fiscal Activities

Metering and user fees. – Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements). The BCSA should institute metered rates and user fees in Chenango Valley.

Reserve Funds – All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery can subsidize low income families at the discretion of individual grant recipients.

Bonding – All managers will continue to use bond anticipation notes and serial bonds as restricted by State law.

Cost-sharing – The Federal share of eligible construction will continue at 75% of the construction cost.

The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The BJCJSB will continue with its existing cost sharing agreement with the following modification:

1. All debt service contributions by outside municipalities on new construction should be exempt from the 25% surcharge.

In Binghamton-Johnson City, all individual users (metered and industrial user fees) contribute towards all treatment plant debt service, all treatment and collection O&M, and all sewer system rehabilitation and operations.

a) new regional collectors are financed via separate county districts,

b) existing and new local collection debt service is financed by local municipalities.

Endicott STP cost-sharing should continue as arranged with the metering modification.

Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment or property tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Expanded Broome Sewer District and Chenango Sewer District, though both managed by the BCSA, have separate finances.

Public Education

There are no formal public education activities proposed by this plan.

Manpower

Table VI-8 gives the manpower requirements for this plan.

Revision Program

Five-Year Revision

BCSA, as treatment plant manager, is responsible for the Binghamton-Johnson City STP.

The STERPB and the DEC will be instrumental in coordinating the five-year revision plan as well as the continuing planning process along with the existing institutions and the expanded County District. The following activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities or cost-sharing arrangements. The areas of variation are: population migration, industrial relocation, extension of sewerage, infiltration – inflow and price-demand relationships relative to achieving the non-structural alternatives.

2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continued rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extension should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards and water quality monitoring. The information generated during the five years of Susquehanna River monitoring should be assessed for the development of new stream standards.

5. Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of land fill.

7. Assessment by BCSA and DEC of water quality conditions on the Chenango River and the impact of such conditions on the River use (particularly adjacent to the Park) with a view towards:

a) additional treatment beyond secondary,

b) relocation of the outfall below the park.

Decision Oriented Revision

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation into a particular revision.

1. Condition: Binghamton-Johnson City STP Reaches Near Capacity. Possible plan revision investigations:

a) Change in-plant process (*e.g.*, pure oxygen systems),

b) Expand plant size with due concern given to land availability,

2. Condition: West Owego WPCP Reaches Capacity or Needs Major Repairs. Possible plan revision investigations:

a) expansion,

b) abandonment and connection to Owego Village.

3. Condition: Frequent Violations of Water Quality. Possible plan revision investigations:

a) increase in treatment levels at the Binghamton-Johnson City STP.

4. Condition: New Stream Standards and/or Effluent Limitations: Possible plan revision investigations:

a) change in treatment plant logistics

b) change in treatment levels.

5. Condition: Major Interceptor Reach Capacity. Possible plan revision investigations:

a) new treatment plant to relieve load

b) infiltration control,

c) flow equalization/storage at pump stations or with industrial users.

6. Condition: Chenango Plant Reaches Capacity. Possible revision investigations:

a) expansion of the facility.

7. Condition: Chenango Plant O&M is Disproportionately Expensive. Possible revisions:

a) abandonment

b) changes in operating procedures.

8. Condition: Reduced Water Quality in the Chenango River Impacting Upon Recreation. Possible revision investigations:

a) additional treatment necessary

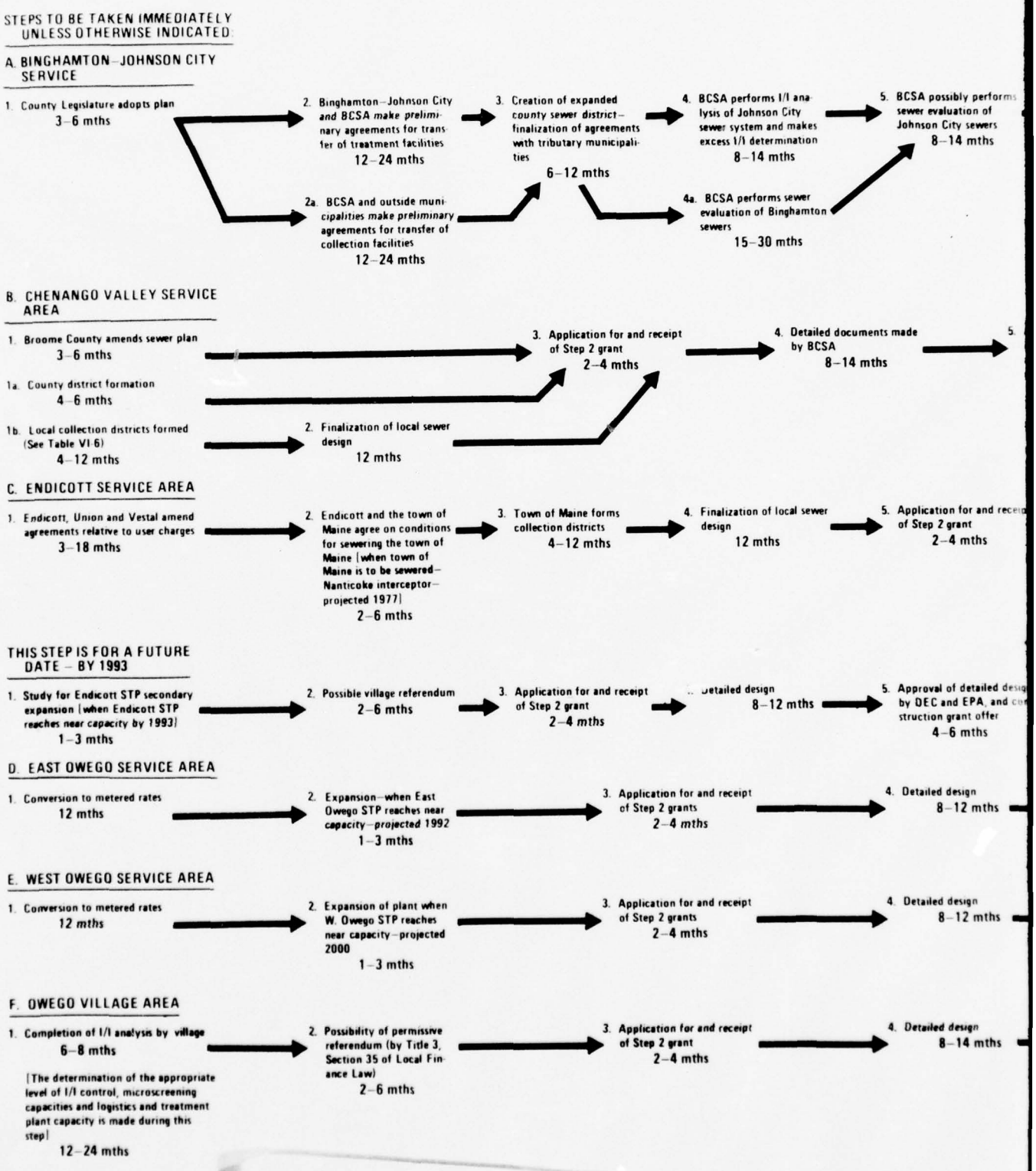
b) relocation of outfall below park

c) abandonment and Binghamton connection

Implementation Program

Figure VI-4 shows the implementation program for Plan 2-B-2.

FIGURE VI-4 2-B-2 PLAN 4 MG/L – SECONDARY (3 PLANTS BROOME COUNTY, 3 PLANTS TIOGA COUNTY) SEPARATE PLANT FOR CHENA
IMPLEMENTED BY AN EXPANDED COUNTY DISTRICT



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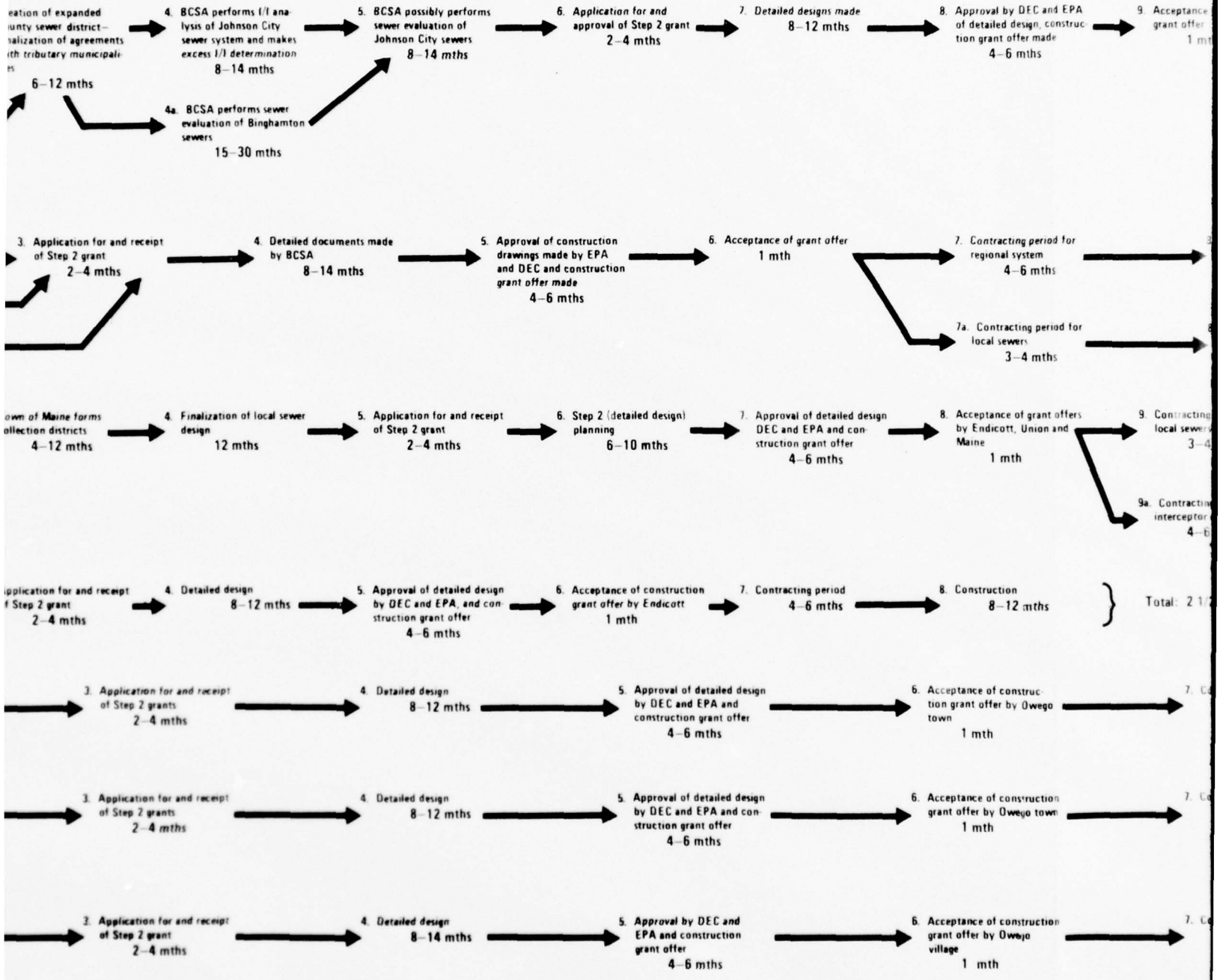
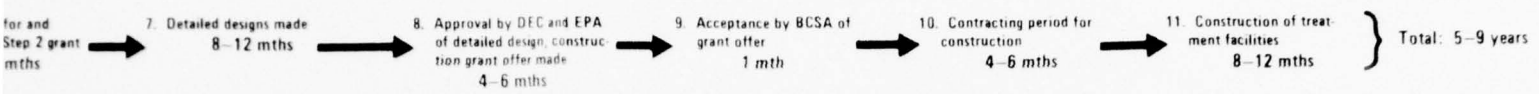
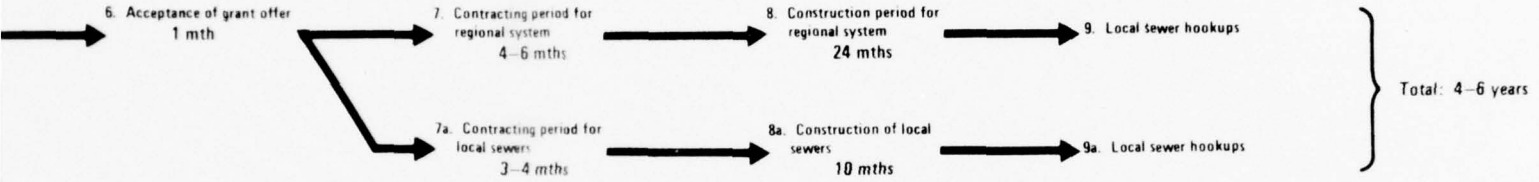
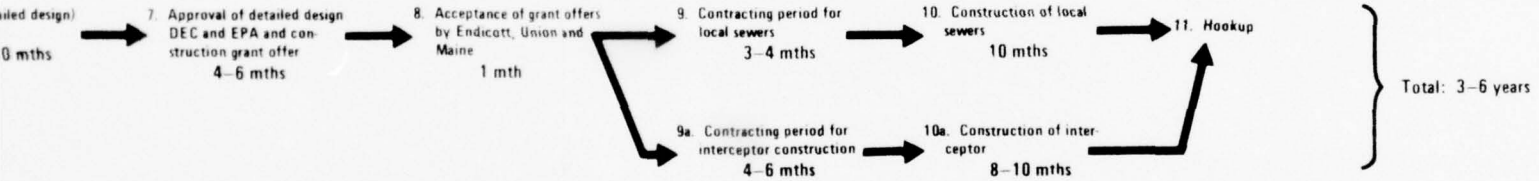
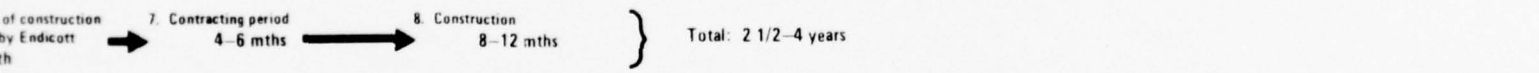
COUNTY, 3 PLANTS TIOGA COUNTY) SEPARATE PLANT FOR CHENANGO VALLEY –

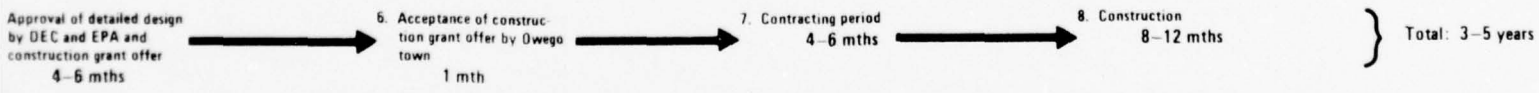


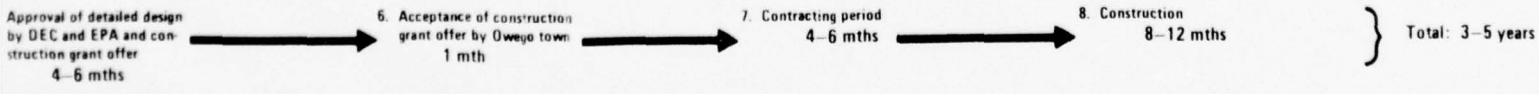

for and
Step 2 grant
mths
7. Detailed designs made
8–12 mths
8. Approval by DEC and EPA of detailed design, construction grant offer made
4–6 mths
9. Acceptance by BCSA of grant offer
1 mth
10. Contracting period for construction
4–6 mths
11. Construction of treatment facilities
8–12 mths
Total: 5–9 years

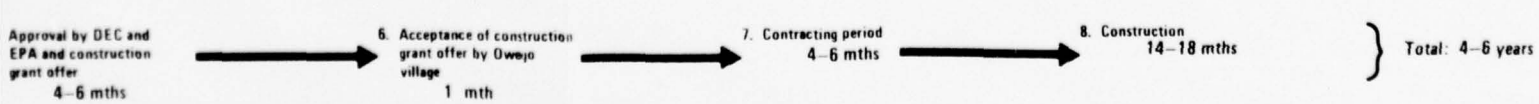

6. Acceptance of grant offer
1 mth
7. Contracting period for regional system
4–6 mths
8. Construction period for regional system
24 mths
9. Local sewer hookups
7a. Contracting period for local sewers
3–4 mths
8a. Construction of local sewers
10 mths
9a. Local sewer hookups
Total: 4–6 years


iled design)
0 mths
7. Approval of detailed design DEC and EPA and construction grant offer
4–6 mths
8. Acceptance of grant offers by Endicott, Union and Maine
1 mth
9. Contracting period for local sewers
3–4 mths
10. Construction of local sewers
10 mths
11. Hookup
9a. Contracting period for interceptor construction
4–6 mths
10a. Construction of interceptor
8–10 mths
Total: 3–6 years


of construction
by Endicott
th
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 2 1/2–4 years


Approval of detailed design by DEC and EPA and construction grant offer
4–6 mths
6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


Approval of detailed design by DEC and EPA and construction grant offer
4–6 mths
6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


Approval by DEC and EPA and construction grant offer
4–6 mths
6. Acceptance of construction grant offer by Owego village
1 mth
7. Contracting period
4–6 mths
8. Construction
14–18 mths
Total: 4–6 years

3

2-C-1; 4 mg/l PLAN – SECONDARY – PHASED SEWERING OF CHENANGO VALLEY – IMPLEMENTED BY MODIFIED INSTITUTIONS – 3 PLANTS BROOME, 3 PLANTS TIOGA

Capital Improvements

Table VI-9 presents the capital improvements for this plan.

TABLE VI-9

CAPITAL IMPROVEMENTS PROGRAM FOR PLANS 2-C-1 AND ALSO FOR 2-C-2

	NEW TOTAL CAPACITY (MGD)	YEAR	CONSTRUCTION COST ($ MILLION)	PRESENT* WORTH	DESCRIPTION
Binghamton-Johnson City	1.0	1977	0.21		Infiltration control
	–	1977	3.58		Storm overflow
	29.0	1977	0.05		Raw wastewater pumping
	22.2	1977	0.71		Aerator and clarifier
	25.4	1991	0.71		Aerator and clarifier
				4.9	
Endicott	0.8	1977	1.57		Nanticoke Valley Interceptor
	9.2	1983	1.95		Additional Secondary Treatment Capacity
				2.9	
East Owego	3.0	1992	1.26		General Expansion
				0.5	
West Owego	0.7	2000	0.47		General Expansion
				0.1	
Owego Village	1.0	1977	1.02		New Secondary Treatment capability
	3.0	1977	0.42		Micro-screening
	–	1977	0.58		Inflow control
				2.0	
Chenango Valley	1.0	1977	1.3		New Secondary Treatment plant
	2.2	1982	1.2		General Expansion
				2.2	
				12.6	

*Total Present Worth
In Baseline year 1977
at 6-1/8% interest

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Management Program

Institutional Composition and Responsibilities.

Federal. EPA, through the Administrator, continues regulatory and funding activities.

State. DEC, through the Executive, continues training, monitoring of wastes, regulatory, standard setting and funding activities.

The Comptroller of New York State continues monitoring and approves of local finances and institutional changes (*e.g.*, town districts).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordinates future wastewater planning.

BCHD, through its Executive, continues monitoring and inspection activities of industrial and municipal wastes. The existing treatment facilities will assure adequate pre-treatment along with the BCHD and DEC.

BJCJSB, through the mayors and legislatures of Binghamton and Johnson City, manage the treatment plant, with the possibility of the outside municipalities, through their executives and municipal boards, together, as one member, joining the Joint Board. BJCJSB is responsible for industrial monitoring.

The municipalities associated with the Binghamton-Johnson City plant continue to manage local collection and act as intermediaries between the Joint Board and individual users (other than industries requiring surcharges or special rates).

BCSA, through the County Executive, manages Chenango Valley regional system and treatment plant.

Towns of Fenton, Chenango and Dickinson, through supervisors and town boards, manage local collection systems.

Endicott, through its Mayor and Village Board, will continue managing the Endicott STP. The adjacent municipalities through their local executives and boards, will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges or special rates).

The Town of Owego, through its supervisor and Town Board, will continue to manage the WPCP #1 and #2 and collection districts.

The Village of Owego, through the Mayor and Village Board, will continue to manage the treatment plant and collection system.

Fiscal Activities

Metering and user fees. Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements). The BCSA should institute metered rates and user fees in Chenango Valley.

Reserve Funds — All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery can subsidize low income families at the discretion of individual grant recipients.

Bonding. All managers will continue to use bond anticipation notes and serial bonds as restricted by State law.

Cost-sharing. The Federal share of eligible construction will continue at 75% of the construction cost.

The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The BJCJSB will continue with its existing cost sharing agreement with the following modification:

1. All debt service contributions by outside municipalities on new construction should be exempt from the 25% surcharge.

Endicott STP cost-sharing should continue as arranged with the metering modification.

Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment on preperty tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Public Education

There are no formal public education activities proposed by this plan.

Manpower

Skills commonly available with municipal waste treatment personnel should be sufficient to operate the proposed facilities. Manpower training will continue to be provided by the DEC and by on-the-job experience. Table VI-10 details the manpower requirements of this plan.

TABLE VI-10

MANPOWER REQUIREMENTS

PLAN 2-C-1 and also for PLAN 2-C-2 (3+3, 4 mg/l, phased sewering – Chenango Valley)

	BINGHAMTON-JOHNSON CITY			ENDICOTT		CHENANGO VALLEY		E. OWEGO		W. OWEGO		OWEGO VILLAGE
YEAR	1977-1996	1997-2024	2025-2026	1977-1983	1984-2026	1977-1982	1983-2026	1977-1991	1998-2026	1977-1997	1998-2026	1977-2026
CAPACITY (MGD)	21.3	25.3	26.5	7.4	9.3	1.7	2.2	1.9	2.9	.6	.73	.98
STP TYPE												
STAFF	Activated Sludge			Trickling Filter		Activated Sludge		Activated Sludge		Trickling Filter		Trickling Filter
REQUIREMENTS												
Superintendent	1	1	1	1	1	–	–	–	1	–	–	–
Clerk Typist	1	1	1	–	–	–	–	–	–	–	–	–
Operator II	5	6	6	2	3	1	1	1	2	1	1	2
Operator I	9	10	10	4	5	4	4	4	5	4	4	3
Auto Equipment Operator	3	3	3	1	1	–	–	–	–	–	–	–
Maintenance Mechanic II	1	1	1	–	1	–	–	–	–	–	–	–
Maintenance Mechanic I	1	1	1	–	–	–	–	–	–	–	–	–
Electrician II	1	1	1	–	–	–	–	–	–	–	–	–
Maintenance Helper	2	2	2	1	1	–	–	–	–	–	–	–
Laborer	3	3	3	1	2	1	1	1	1	–	–	–
Laboratory Technician	2	2	2	1	1	1	1	1	1	–	–	–
TOTAL STAFF COMPLEMENT	29	31	31	11	15	7	7	7	10	5	5	5

Revision Program

Five-Year Revision

The STERPB and the DEC will be instrumental in coordinating the five-year revision plan as well as the continuing planning process in conjunction with the existing institutions. The following activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities or cost-sharing arrangements. The areas of variation are: population migration, industrial relocation, extension of sewerage, infiltration-inflow and price-demand relationships relative to achieving the non-structural alternatives.

2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continued rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extension should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards and water quality monitoring. The information generated during the five years of Susquehanna River monitoring should be assessed for the development of new stream standards.

5. Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed. Recommendations should be provided relative to possible structural modifications to these facilities as changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of land fill.

7. Assessment by BCSA and DEC of water quality conditions on the Chenango River and the impact of such conditions on the River use with a view towards: 1) additional treatment beyond secondary and, 2) relocation of the outfall below the park.

8. Reassessment of second phase of regional collection and treatment plant expansion needs, in Chenango Valley.

Decision Oriented Revision

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation into a particular revision:

1. Condition: Binghamton-Johnson City STP Reaches Near Capacity. Possible plan revision investigations:

a) Change in-plant process (*e.g.*, pure oxygen systems),

b) Expand plant size with due concern given to land availability,

2. Condition: West Owego WPCP Reaches Capacity or Needs Major Repairs. Possible plan revision investigations:

a) expansion,

b) abandonment and connection to Owego Village

3. Condition: Frequent Violations of Water Quality. Possible plan revision investigations:

a) increase in treatment levels at the Binghamton-Johnson City STP.

4. Condition: New Stream Standards and/or Effluent Limitations. Possible Plan Revision investigations:

a) change in treatment plant logistics

b) change in treatment levels

5. Condition: Major Interceptors Reach Capacity. Possible plan revision investigations:

a) new treatment plant to relieve load,

b) infiltration control,

c) flow equalization/storage at pump stations or with industrial users.

6. Condition: Chenango Plant reaches capacity. Possible revision investigations:

a) expansion of the facility

7. Condition: Chenango Plant O&M is Disproportionately Expensive. Possible revision investigations:

a) abandonment

b) changes in operating procedures

8. Condition: Reduced Water Quality in the Chenango River Impacting Upon Recreation. Possible revision investigations:

a) additional treatment necessary

b) relocation of outfall below park

c) abandonment and Binghamton connection.

9. Condition: Dangerous Public Health Condition Resulting from Withholding Sewer Service In Chenango Valley. Possible plan revision investigation:

a) sewerage extensions and update of proposed plant expansion.

Implementation Program.

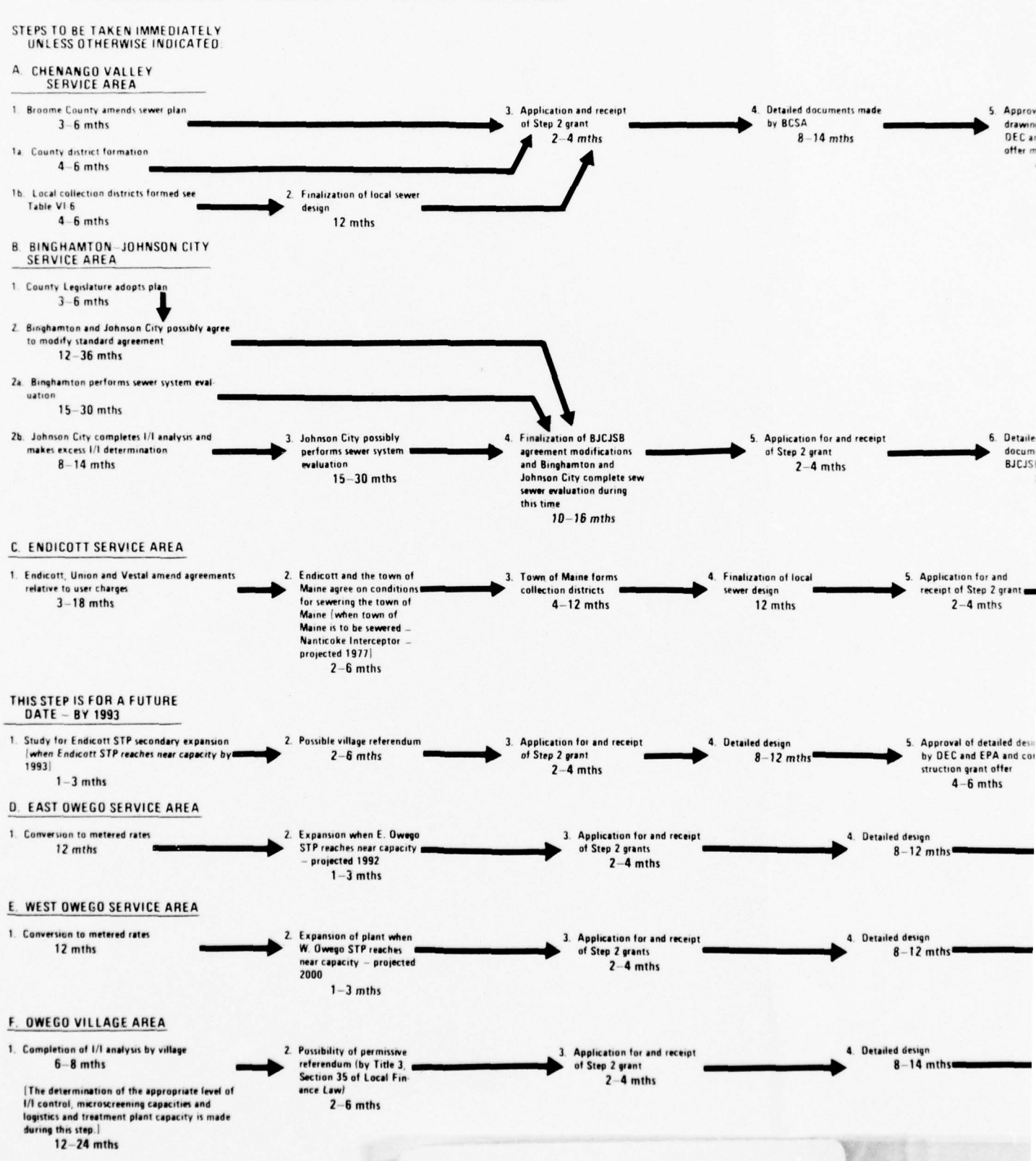
Figure VI-5 illustrates the implementation program for construction steps and institutional formation.

These additional points are to be kept in mind:

a) Town district and county district borders will conform to limited scope sewering initially

b) This program also applies to new district formations (or extensions of older districts after five years with corresponding implementation of the capital improvements program.

FIGURE VI-5, PLAN 2-C-1 4 MG/L – SECONDARY (3 PLANTS BROOME COUNTY, 3 PLANTS TIOGA COUNTY) – PHASED SEWERING FOR CHENANGO VALLEY – IMPLEMENTED BY MODIFIED INSTITUTIONS



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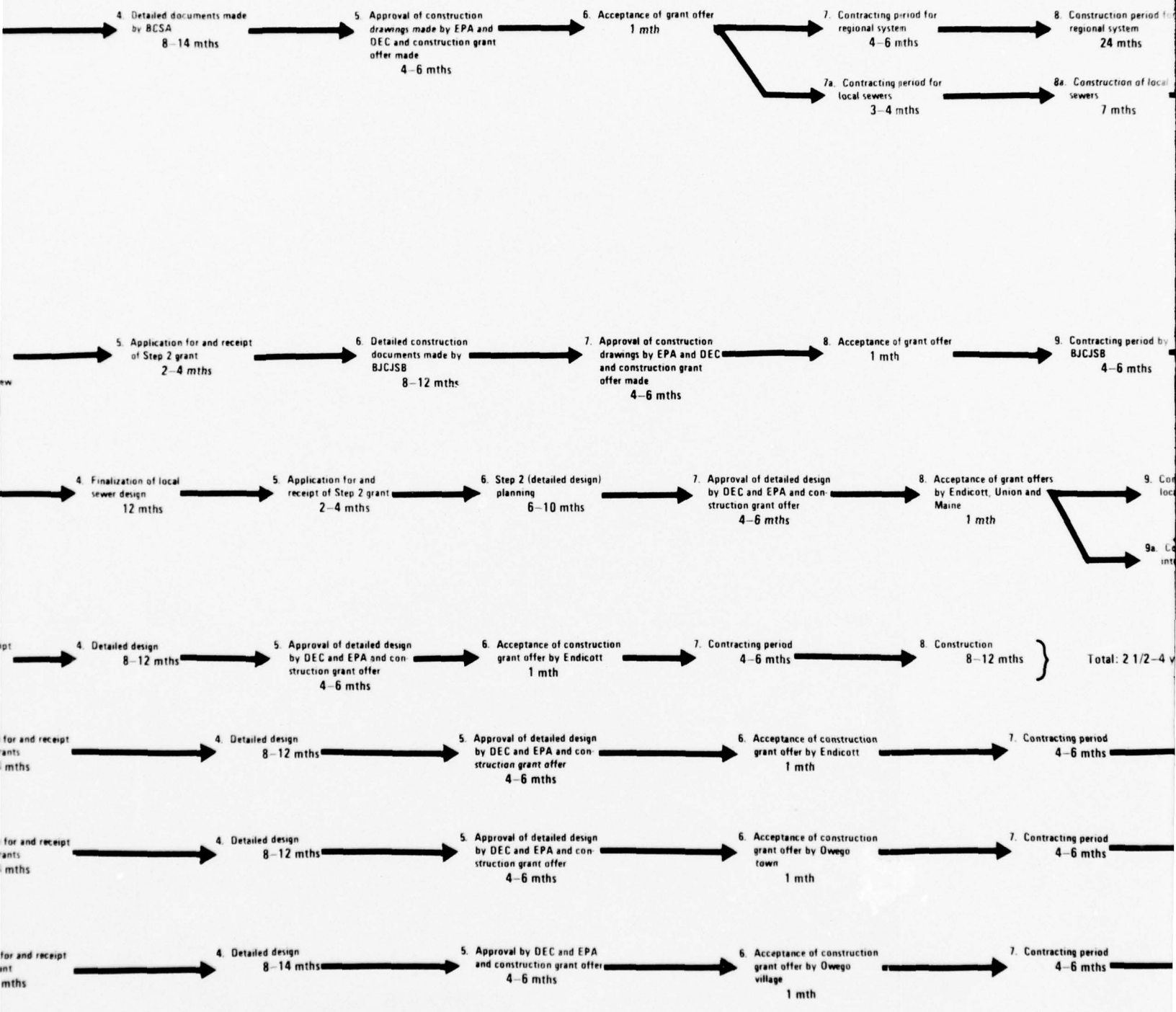
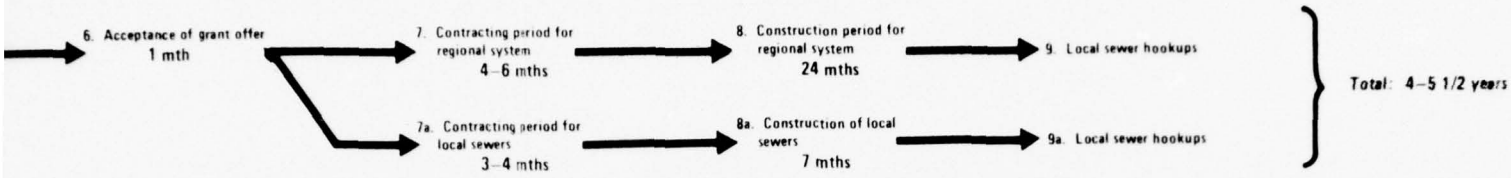
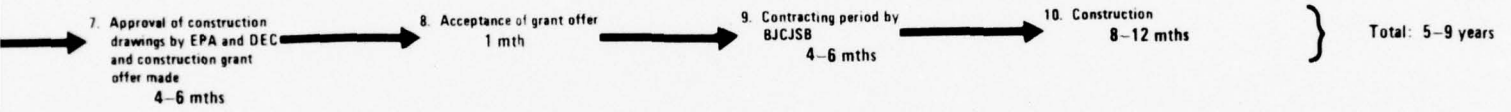
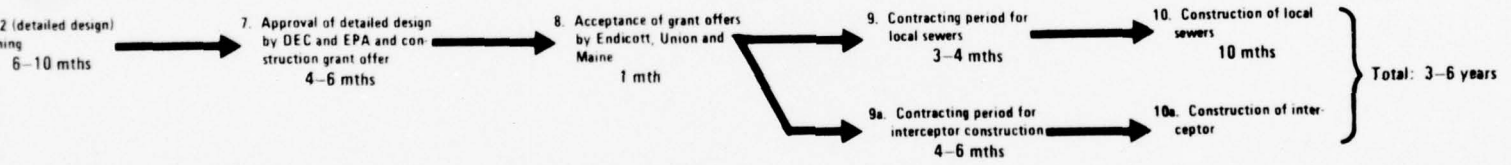
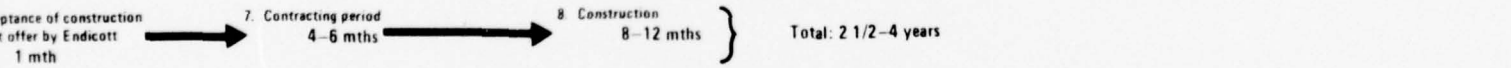
TIOGA COUNTY) – PHASED SEWERING

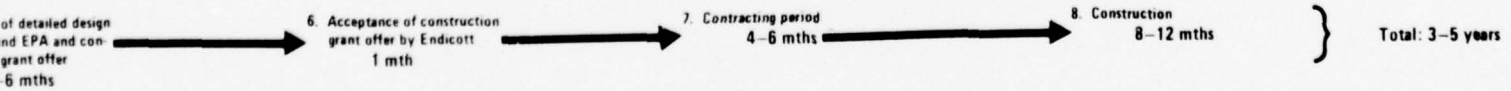


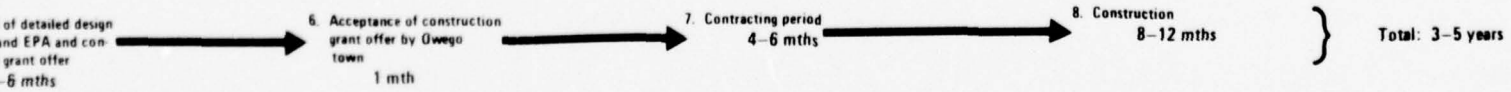

6. Acceptance of grant offer
1 mth
7. Contracting period for regional system
4–6 mths
8. Construction period for regional system
24 mths
9. Local sewer hookups
7a. Contracting period for local sewers
3–4 mths
8a. Construction of local sewers
7 mths
9a. Local sewer hookups
Total: 4–5 1/2 years

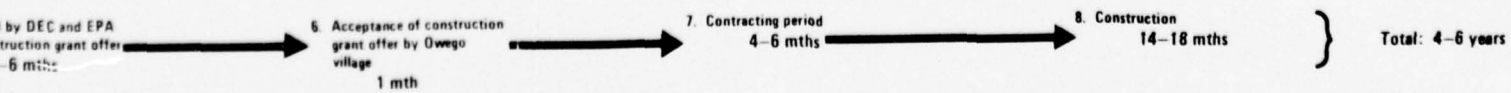

7. Approval of construction drawings by EPA and DEC and construction grant offer made
4–6 mths
8. Acceptance of grant offer
1 mth
9. Contracting period by BJCJSB
4–6 mths
10. Construction
8–12 mths
Total: 5–9 years


2 (detailed design)
ning
6–10 mths
7. Approval of detailed design by DEC and EPA and construction grant offer
4–6 mths
8. Acceptance of grant offers by Endicott, Union and Maine
1 mth
9. Contracting period for local sewers
3–4 mths
10. Construction of local sewers
10 mths
9a. Contracting period for interceptor construction
4–6 mths
10a. Construction of interceptor
Total: 3–6 years


ptance of construction
offer by Endicott
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 2 1/2–4 years


of detailed design
nd EPA and construction grant offer
6 mths
6. Acceptance of construction grant offer by Endicott
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


of detailed design
nd EPA and construction grant offer
6 mths
6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


by DEC and EPA
truction grant offer
6 mths
6. Acceptance of construction grant offer by Owego village
1 mth
7. Contracting period
4–6 mths
8. Construction
14–18 mths
Total: 4–6 years

2-C-2; 4 mg/l PLAN – SECONDARY TREATMENT – PHASED SEWERING OF CHENANGO VALLEY – IMPLEMENTED BY EXPANDED COUNTY DISTRICT – 3 PLANTS BROOME, 3 PLANTS TIOGA

Capital Improvements Program

Refer to Table VI-9 for the capital improvements program.

Management Program

Institutional Composition and Responsibilities.

Federal. EPA, through the administrator, continues regulatory and funding activities.

State. DEC, through the Executive, continues training, monitoring of wastes, regulatory, standard setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (*e.g.*, town districts).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordinates future wastewater planning.

BCHD, through its Executive, continues monitoring and inspection activities of industrial and municipal wastes. The existing treatment facilities and expanded district will assure adequate pre-treatment along with the BCHD and DEC.

BCSA, through the County Executive, is responsible for managing treatment and all collection in the Binghamton-Johnson City service area and assumes all outstanding treatment plant and regional collection indebtedness of Binghamton and Johnson City.

The local communities, through executives and boards, are responsible for financing new collection extensions and old collection debt service.

BCSA is responsible for writing standards for new sewer system construction and connections, and oversees local construction.

Endicott, through its Mayor and Village Board, will continue managing the Endicott STP. The adjacent municipalities through their local executives and boards, will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges or special rates).

The Town of Owego, through its Supervisor and Town Board, will continue to manage the treatment plant and collection system.

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Fiscal Activities

Metering and user fees. Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements). The BCSA should institute metered rates and user fees in Chenango Valley.

Reserve Funds. All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery can subsidize low income families at the discretion of individual grant recipients.

Bonding – All managers will continue to use bond anticipation notes and serial bonds as restricted by State law.

Cost-sharing – The Federal share of eligible construction will continue at 75% of the construction cost.

The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The BJCJSB will continue with its existing cost sharing agreement with the following modification:

1. All debt service contributions by outside municipalities on new construction should be exempt from the 25% surcharge.

In Binghamton-Johnson City, all individual users (metered and industrial user fees) contribute towards all treatment plant debt service, all treatment and collection, O & M, and all sewer system rehabilitation and operations.

a) new regional collectors are financed via separate county districts

b) existing and new local collection debt service is financed by local municipalities

Endicott STP cost-sharing should continue as arranged with the metering modification.

Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment or property tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Expanded Broome Sewer District and Chenango Sewer District, though both managed by the BCSA, have separate finances.

Public Education

There are no formal public education activities proposed by this plan.

Manpower

Table VI-10 gives the manpower requirements for this plan.

Revision Program

BCSA, as treatment plant manager, is responsible for the Binghamton-Johnson City STP.

The STERPB and the DEC will be instrumental in coordinating the five-year revision plan as well as the continuing planning process in conjunction with the existing institutions and the expanded County District. The following activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities or cost-sharing arrangements. The areas of variation are: population migration, industrial relocation, extension of sewerage, infiltration-inflow and price-demand relationships relative to achieving the non-structural alternatives.

2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continued rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extension should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards and water quality monitoring. The information generated during the five years of the Susquehanna River monitoring should be assessed for the development of new stream standards.

5. Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of landfill.

7. Assessment by BCSA and DEC of water quality conditions on the Chenango River and the impact of such conditions on the River use (particularly adjacent to the Park) with a view towards:

a) additional treatment beyond secondary

b) relocation of the outfall below the park.

8. Reassessment of second phase of regional collection and treatment plant expansion needs in Chenango Valley.

Decision-Oriented Revision

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation into a particular revision.

1. Condition: Dangerous Public Health Conditions Resulting from Withholding Sewer Service in Chenango Valley. Possible plan revision investigation:

a) sewerage extension & update of proposed plant expansion.

2. Condition: Binghamton-Johnson City STP Reaches Near Capacity. Possible plan revision investigations:

a) Change in-plant process (*e.g.*, pure oxygen systems),

b) Expand plant size with due concern given to land availability.

3. Condition: West Owego WPCP Reaches Capacity or Needs Major Repairs. Possible plan revision investigations:

a) expansion,

b) abandonment and connection to Owego Village

4. Condition: Frequent Violations of Water Quality. Possible plan revision investigations:

a) increase in treatment levels at the Binghamton-Johnson City STP.

5. Condition: New Stream Standards and/or Effluent Limitations. Possible Plan Revision investigations:

a) change in treatment plant logistics

b) change in treatment levels.

6. Condition: Major Interceptors Reach Capacity. Possible plan revision investigations:

a) new treatment plant to relieve load,

b) infiltration control,

c) flow equalization/storage at pump stations or with industrial users.

7. Condition: Chenango Plant Reaches Capacity. Possible revision investigations:

a) expansion of the facility

8. Condition: Chenango Plant O & M is Disproportionately Expensive. Possible revision:

a) abandonment,

b) changes in operating procedures

9. Condition: Reduced Water Quality in the Chenango River Impacting Upon recreation. Possible revision investigations:

a) additional treatment necessary,

b) relocation of outfall below park,

c) abandonment and Binghamton connection.

Implementation Program.

Figure VI-6 illustrates the implementation program for construction steps and institutional formation.

EXPLANATION FOR NITRIFICATION ALTERNATIVES

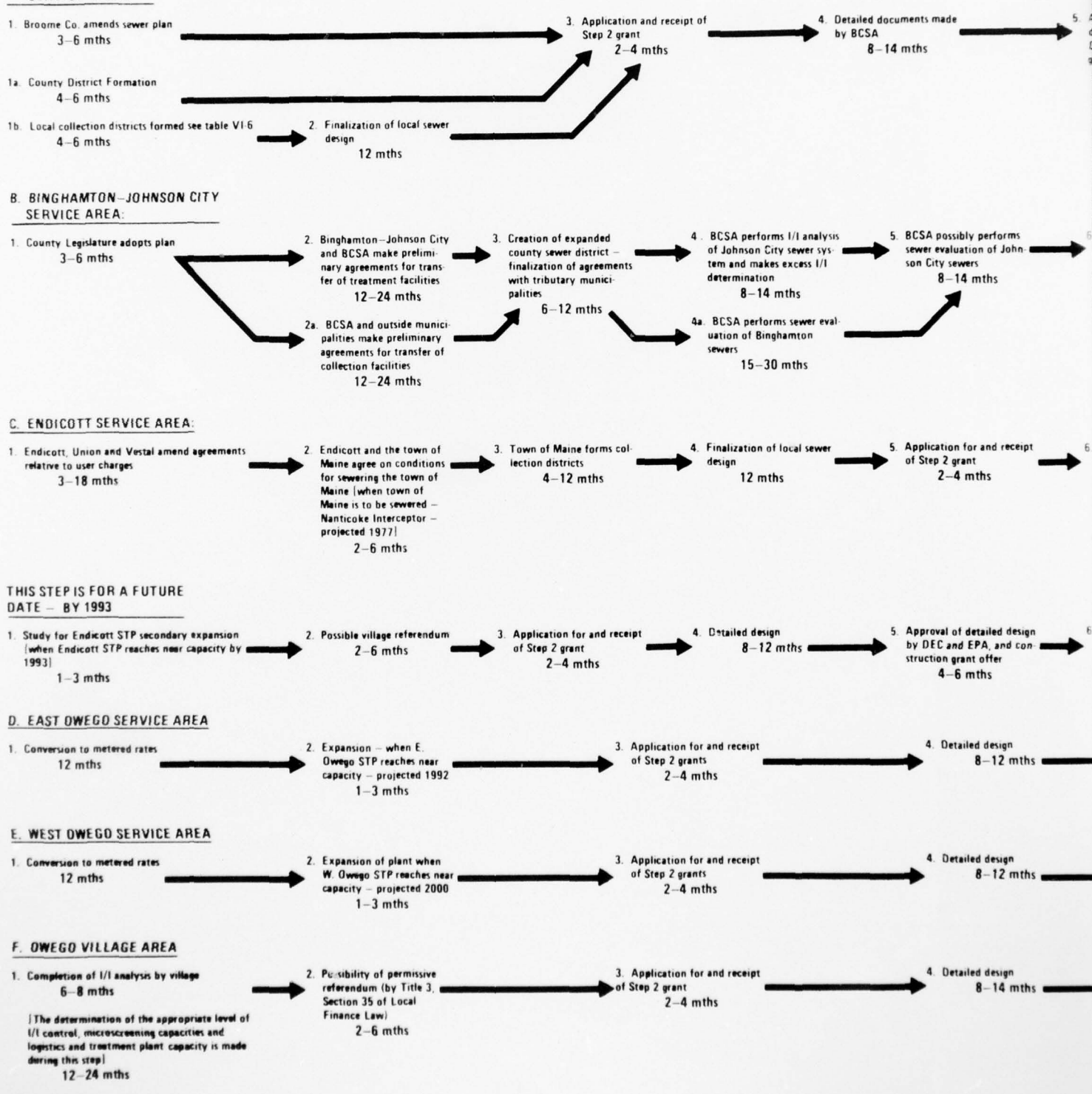
Other than the modifications in the capital improvements programs and manpower requirements, the detailed refinement of the 5 mg/l plans is virtually identical to the 4 mg/l plans. The only additional requirements imposed by the 5 mg/l plans over the 4 mg/l plans is the provision of nitrification (ammonia removal) facilities at the Binghamton-Johnson City STP during the 1990's. Exactly the same for both treatment strategies are the responsibilities of various organizations of each treatment facility, fiscal activities and education programs. Since the institutions are the same, the implementation programs to create such institutions are the same.

Since the stream standard is different in these plans, the revision programs (decision oriented) are modified to reflect this change.

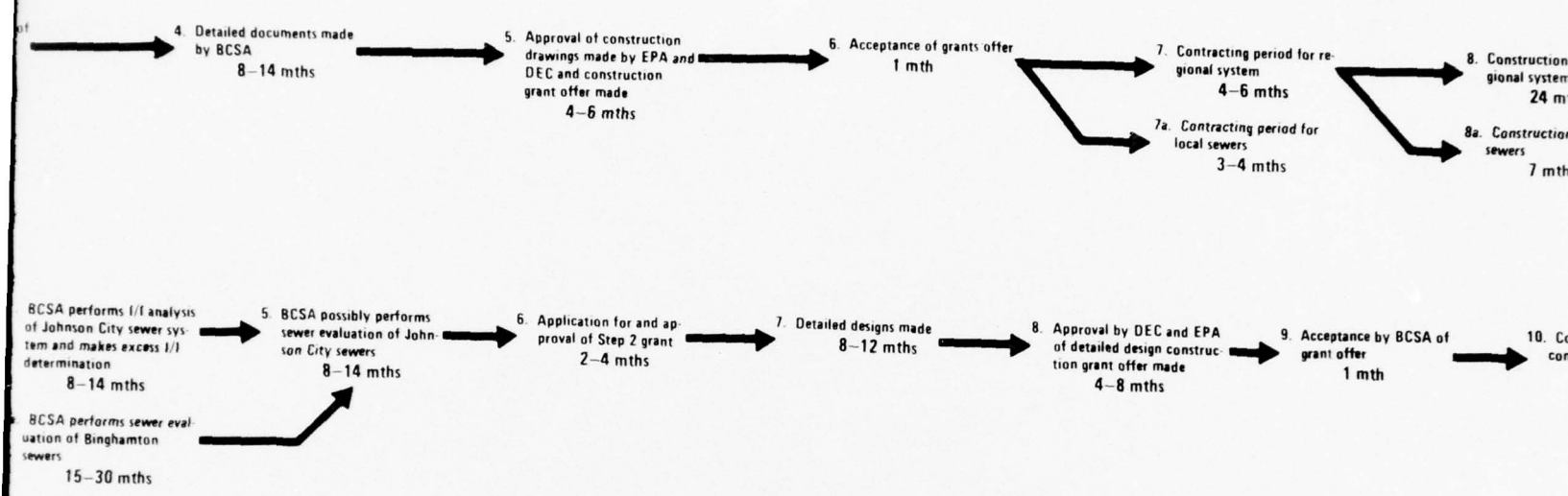
For that plan which regionalizes Chenango into the Binghamton system with the modified institutions (Plan 3-A-1), the complete financing by Chenango Valley of one set of aeration and clarification tanks in 1977 is maintained. Thus the 5 mg/l plan results in Chenango Valley completely financing the 1977 construction at the Binghamton plant.

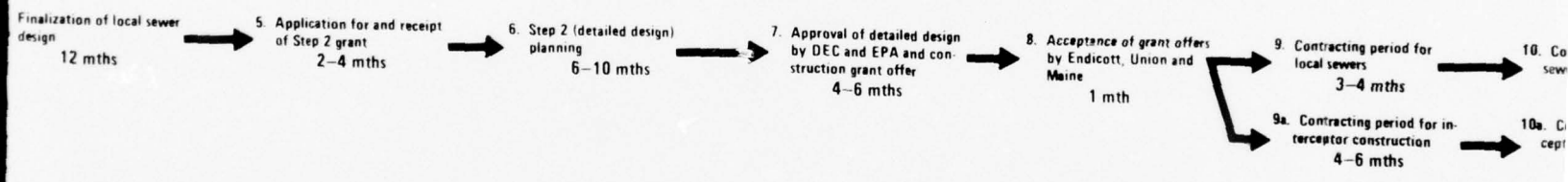
FIGURE VI-6 PLAN 2-C-2 4MG/L – SECONDARY (3 PLANTS BROOME, 3 PLANTS TIOGA) – PHASED SEWERING FOR CHENANGO VALLEY – IMPLEMENTED BY EXPANDED COUNTY DISTRICT

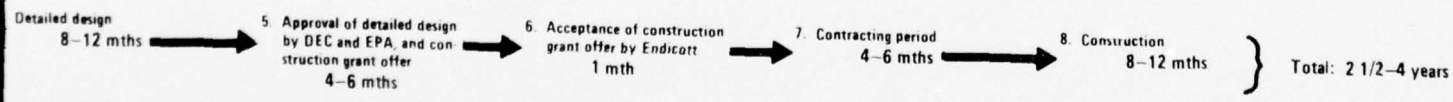
STEPS TO BE TAKEN IMMEDIATELY UNLESS OTHERWISE INDICATED:

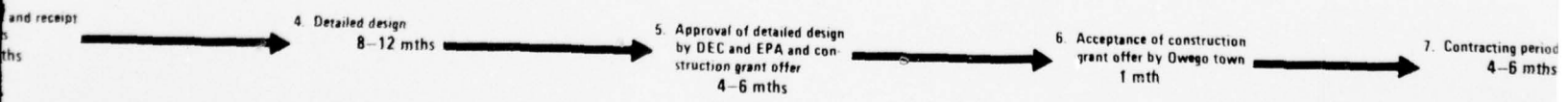


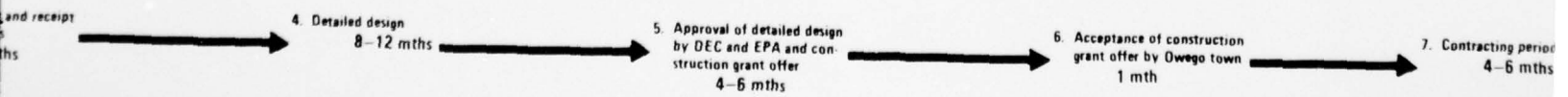
D SEWERING FOR CHENANGO VALLEY –

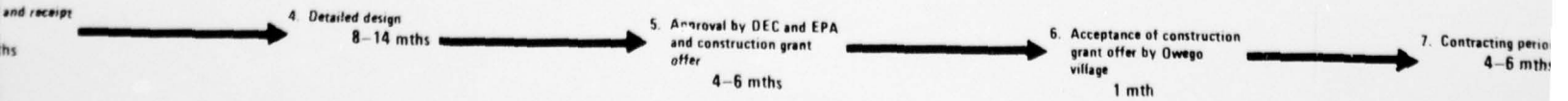


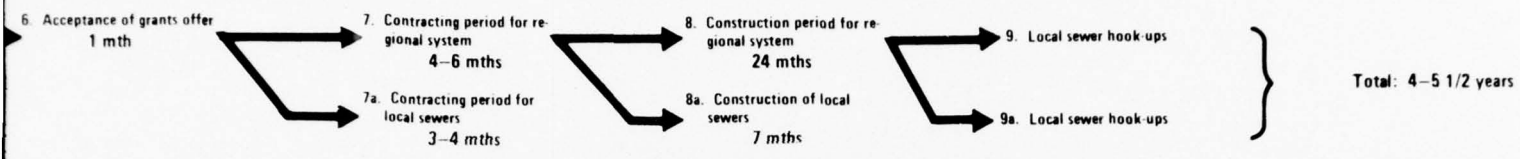


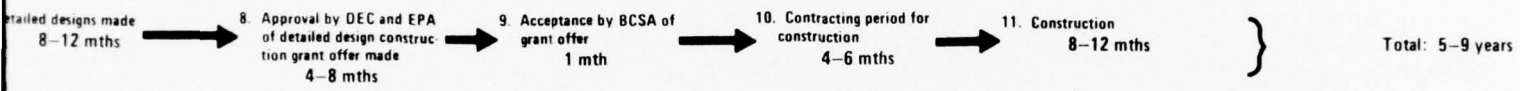


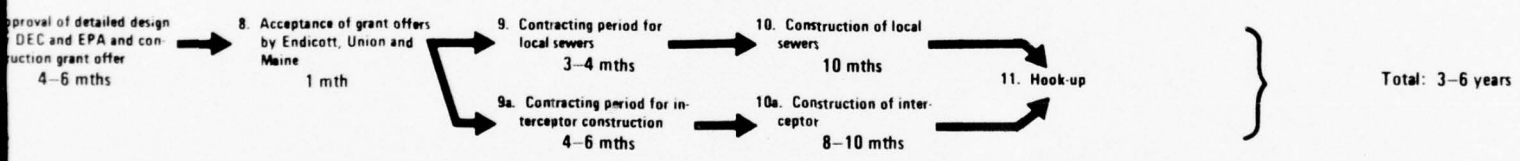


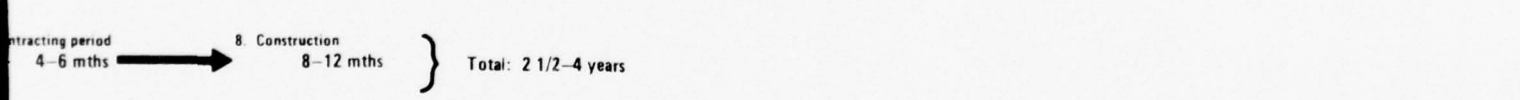


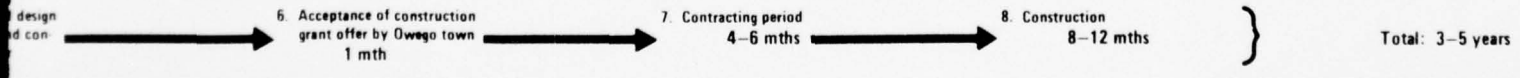


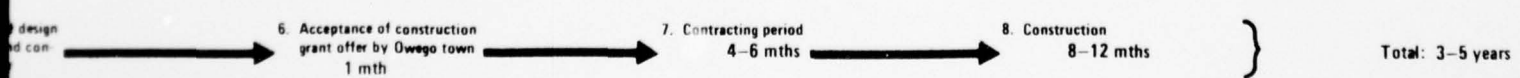

6. Acceptance of grants offer
1 mth
7. Contracting period for regional system
4–6 mths
7a. Contracting period for local sewers
3–4 mths
8. Construction period for regional system
24 mths
8a. Construction of local sewers
7 mths
9. Local sewer hook-ups
9a. Local sewer hook-ups
Total: 4–5 1/2 years

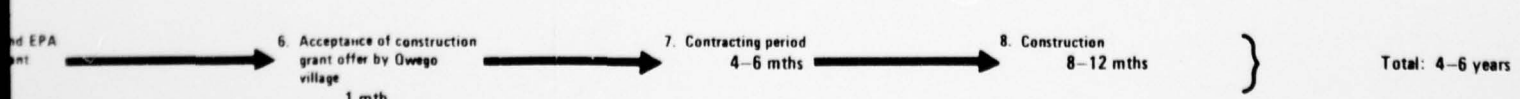

tailed designs made
8–12 mths
8. Approval by DEC and EPA of detailed design construction grant offer made
4–8 mths
9. Acceptance by BCSA of grant offer
1 mth
10. Contracting period for construction
4–6 mths
11. Construction
8–12 mths
Total: 5–9 years


proval of detailed design
DEC and EPA and con-
uction grant offer
4–6 mths
8. Acceptance of grant offers by Endicott, Union and Maine
1 mth
9. Contracting period for local sewers
3–4 mths
9a. Contracting period for interceptor construction
4–6 mths
10. Construction of local sewers
10 mths
10a. Construction of interceptor
8–10 mths
11. Hook-up
Total: 3–6 years


ntracting period
4–6 mths
8. Construction
8–12 mths
Total: 2 1/2–4 years


design
d con
6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


design
d con
6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


d EPA
nt
6. Acceptance of construction grant offer by Owego village
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 4–6 years

3-A-1; 5 mg/l PLAN – INTERCEPTOR – IMPLEMENTED BY MODIFIED INSTITUTIONS – 2 PLANTS BROOME, 3 PLANTS TIOGA

Capital Improvements Program

Table VI-11 presents the capital improvements program of this plan.

Management Program

Institutional Composition and Responsibilities.

Federal. The EPA, through the Administrator, continues regulatory and funding activities.

State. The DEC, through the Executive, continues training, monitoring of wastes, regulatory, standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (*e.g.*, town districts).

Local. The STERPB continues to refine a comprehensive plan for project notification and review process and coordinates future wastewater planning.

The BCHD, through its Executive, continues monitoring and inspection activities of industrial and municipal wastes. The existing treatment facilities will assure adequate pre-treatment along with the BCHD and DEC.

The BCSA, through the County Executive, manages the Chenango Valley regional collection system and acts as an intermediary between the Binghamton-Johnson City Joint Sewage Board (BJCJSB) and Fenton, Chenango and Dickinson users.

The Towns of Chenango, Fenton and Dickinson by their supervisions and town boards, manage new collection districts.

The Binghamton-Johnson City Joint Sewage Board (BJCJSB), by the mayors and legislatures of Binghamton and Johnson City, manage the treatment plant.

There may also be a possibility of the outside municipalities coming together and voting as one member on the Joint Board. The BJCJSB is responsible for industrial monitoring.

The municipalities adjacent to the Binghamton-Johnson City plant will continue to manage the local collection facilities and act as intermediaries between the Joint Board and individual users (other than industries requiring surcharges or special rates).

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TABLE VI-11

CAPITAL IMPROVEMENTS PROGRAM FOR PLANS 3-A-1 AND ALSO FOR 3-A-2

	NEW TOTAL CAPACITY (MGD)	YEAR	CONSTRUCTION COST ($ MILLION)	PRESENT* WORTH	DESCRIPTION
Binghamton-Johnson City	2.2	1977	2.50		Chenango Interceptor
	3.0	1977	1.21		Infiltration control
	—	1977	3.58		Storm overflow
	29.0	1977	0.05		Raw wastewater pumping
	26.9	1977	1.41		Aerator and clarifier
	24.4	1994	4.05		Nitrification
				10.2	
Endicott	0.8	1977	1.57		Nanticoke Valley Interceptor
	9.2	1983	1.95		Additional Secondary
				2.9	
East Owego	3.0	1992	1.26		General Expansion
				0.5	
West Owego	0.7	2000	0.47		General Expansion
				0.1	
Owego Village	1.0	1977	1.02		New Secondary treatment capability
	3.0	1977	0.42		Micro-screening
	—	1977	0.58		Inflow control
				2.0	
				15.7	

*Total Present Worth In Baseline year 1977 at 6-1/8%.

Endicott, through its Mayor and Village Board, will continue managing the Endicott STP. The adjacent municipalities, through their local executives and boards, will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges or special rates).

The Town of Owego, through its Town Supervisor and Town Board, will continue to manage the WPCP #1 and #2 and collection districts.

The Village of Owego, through the Mayor and Village Board, will continue to manage the treatment plant and collection system.

Fiscal Activities

Metering and User Fees. Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements). The Broome County Sewer Agency should institute metered rates and user fees in Chenango Valley.

Reserve funds – All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery can subsidize low income familiies at the discretion of individual grant recipients.

Bonding. All managers will continue to use bond anticipation notes and serial bonds as restricted by State law.

Cost Sharing. The Federal share of eligible construction will continue at 75% of the construction cost. The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The BJCJSB will continue with its existing cost sharing agreement with the following modifications:

1. The Broome County Sewer Agency should finance in 1977 the portion of the new construction at the Binghamton plant attributable to Chenango Valley (one set of aeration and clarifier units) and should only bill according to the existing policy for the primary plant debt service (with the 25% surcharge), O&M and collection.

2. All debt service contributions by outside municipalities on *new* construction should be kept exempt from the 25% surcharge.

Endicott Sewage Treatment Plant cost-sharing should continue as arranged with the metering modification.

The Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow-attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment or property tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Public Education

There are no formal public education activities proposed by this plan.

TABLE VI-12

MANPOWER REQUIREMENTS
PLAN 3-A-1 and also for PLAN 3-A-2 (2+3, 5 mg/l)

	BINGHAMTON-JOHNSON CITY		ENDICOTT		CHENANGO VALLEY	E. OWEGO		W. OWEGO		OWEGO VILLAGE
YEAR	1977-1993	1994-2026	1977-1983	1984-2026		1977-1991	1992-2026	1977-1997	1998-2026	1977-2026
CAPACITY (MGD)	22.3	25.4	7.4	9.3		1.9	2.9	.6	.73	.98
STP TYPE										
STAFF	Activated Sludge		Trickling Filter			Activated Sludge		Trickling Filter		Trickling filter
REQUIREMENTS										
Superintendent	1	1	1	1			1	-	-	-
Clerk Typist	1	1								
Operator II	6	6	2	3		1	2	1	1	2
Operator I	10	10	4	5		4	5	4	4	3
Auto Equipment Operator	3	3	1	1			-	-	-	-
Maintenance Mechanic II	1	1		1				-	-	-
Maintenance Mechanic I	1	1						-	-	-
Electrician II	1	1						-	-	-
Maintenance Helper	2	2	1	1				-	-	-
Laborer	3	3	1	2		1	1	-	-	-
Laboratory Technician	2	2	1	1		1	1	-	-	-
TOTAL STAFF COMPLEMENT	31	31	11	15		7	10	5	5	5

Manpower

Skills commonly available with municipal waste treatment personnel should be sufficien
operate the proposed facilities. Manpower training will continue to be provided by the I
and on-the-job experience. Table VI-12 details the manpower requirements of this plan.

Revision Program

Five-Year Revision.

The STERPB and DEC will be instrumental in coordinating the five-year revision as well as
the continuing planning process in conjunction with the existing institutions. The following
activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities or cost-sharing arrangements. The areas of variation are: population migration, industrial relocation, extension of sewerage, infiltration-inflow, and price-demand relationships relative to achieving the non-structural alternatives.

2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continued rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extension should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards. The information generated during the five years of Susquehanna River monitoring should be assessed for:

a) development of new stream standards,

b) updating the construction of nitrification facilities at Binghamton

5. Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed for past performance. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of land fill.

Manpower

Skills commonly available with municipal waste treatment personnel should be sufficient to operate the proposed facilities. Manpower training will continue to be provided by the DEC and on-the-job experience. Table VI-12 details the manpower requirements of this plan.

Revision Program

Five-Year Revision.

The STERPB and DEC will be instrumental in coordinating the five-year revision as well as the continuing planning process in conjunction with the existing institutions. The following activities should be considered five years after plan selection:

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2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continued rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extension should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards. The information generated during the five years of Susquehanna River monitoring should be assessed for:

a) development of new stream standards,

b) updating the construction of nitrification facilities at Binghamton

5. Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed for past performance. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of land fill.

Decision Oriented Revision.

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation into a particular revision.

1. Condition: Binghamton-Johnson City STP Reaches Near Capacity. Possible plan revision investigations:

a) change in plant process (*e.g.*, pure oxygen systems).

b) expansions in plant size with due concern given to land availability

c) construction of a new, sub-regional facility to reduce the load (*e.g.*, a Chenango Plant).

2. Condition: West Owego WPCP Reaches Capacity or Needs Major Repairs. Possible plan revision investigations:

a) expansion

b) abandonment and connection to Owego Village

3. Condition: Frequent Violations of Water Quality. Possible plan revision investigations:

a) increase in treatment levels at the Binghamton-Johnson City STP.

b) update construction of nitrification facilities at Binghamton

4. Condition: New Stream Standards and/or Effluent Limitations. Possible plan revision investigations:

a) change in treatment plant logistics

b) change in treatment levels.

5. Condition: Major Interceptors Reach Capacity. Possible plan revision investigations:

a) new treatment plant to relieve load

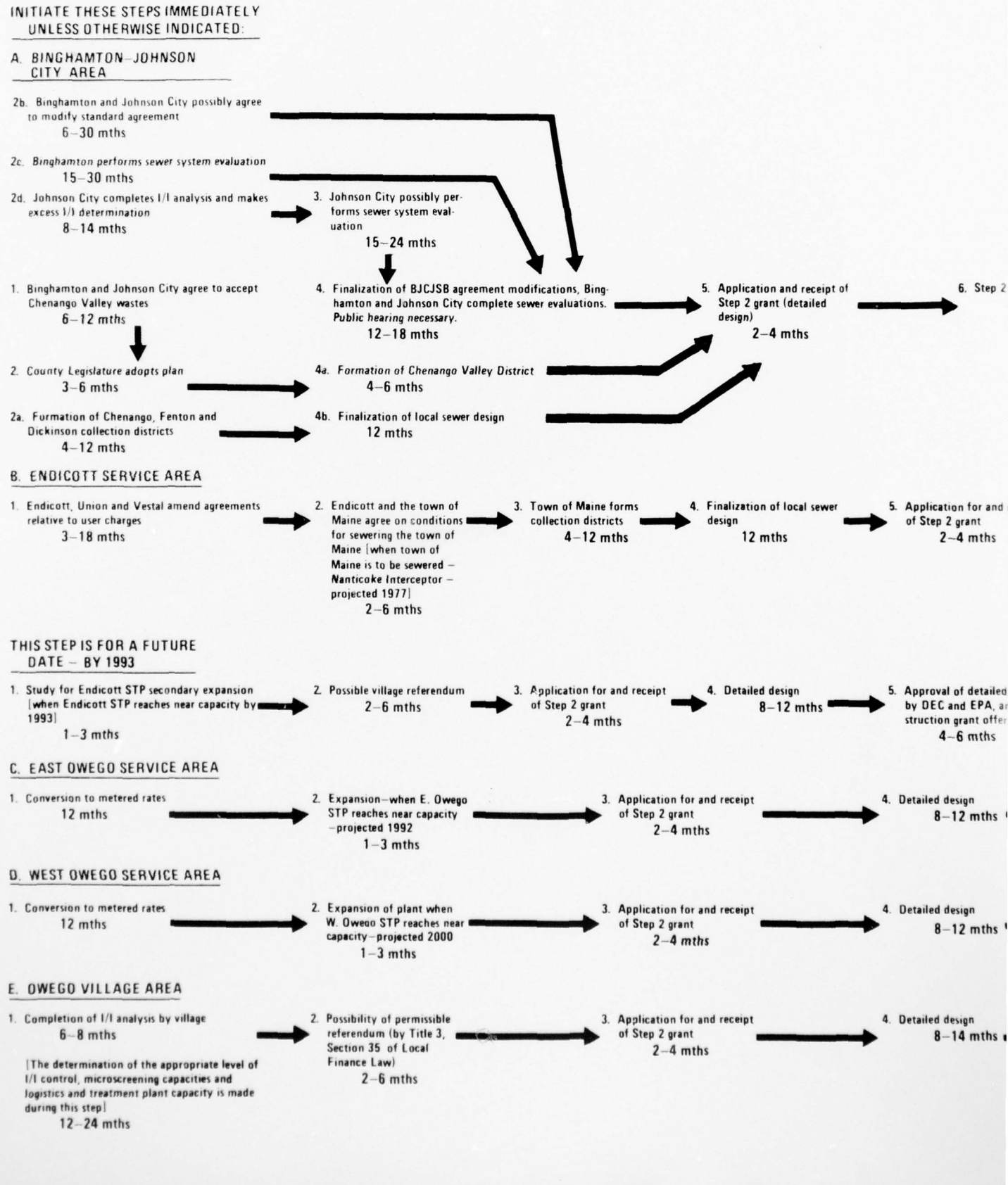
b) infiltration control

c) flow equalization/storage at pump stations or with industrial users.

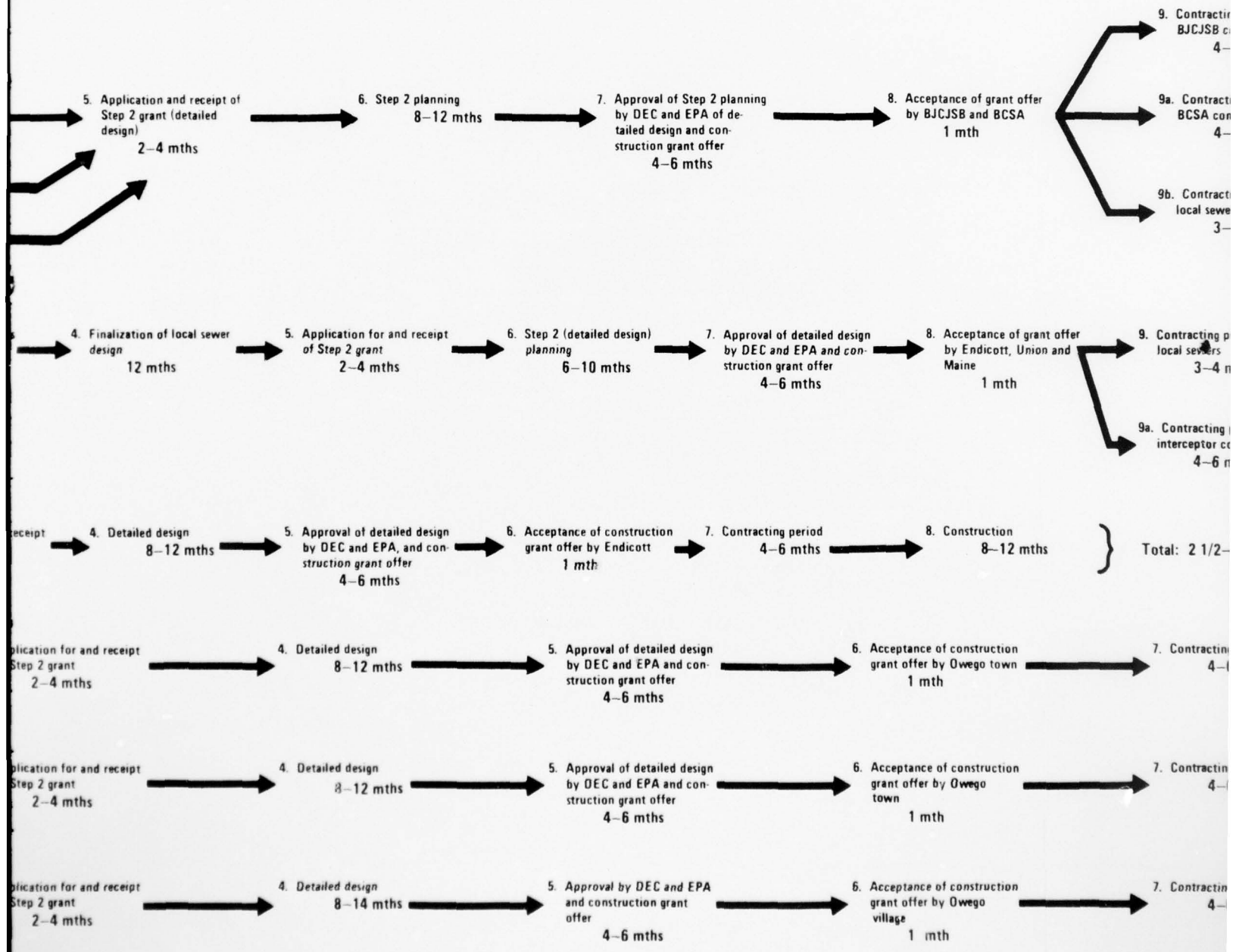
Implementation Program

Figure VI-7 illustrates the sequences of steps to be taken to achieve construction and implementation for all sewage treatment areas.

FIGURE VI-7. IMPLEMENTATION PROGRAM FOR PLAN 3-A-1 NITRIFICATION WITH INTERCEPTOR (2 PLANTS BROOME COUNTY, 3 P
5MG/L IMPLEMENTED BY MODIFIED INSTITUTIONS



INTERCEPTOR (2 PLANTS BROOME COUNTY, 3 PLANTS TIOGA COUNTY)



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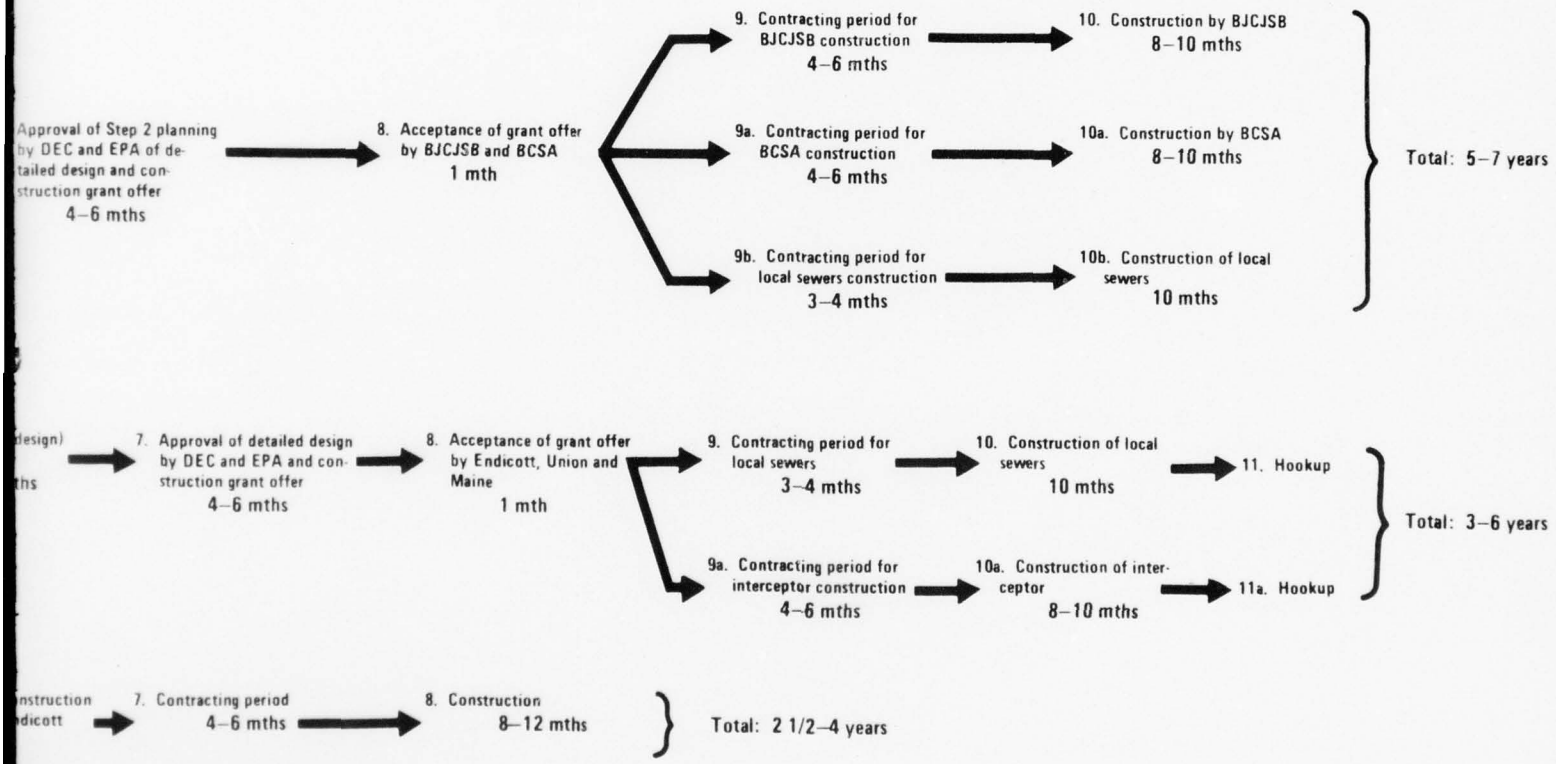

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BINGHAMTON WASTEWATER MANAGEMENT STUDY. INSTITUTIONAL ANALYSIS --ETC(U)
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3-A-2; 5 mg/l PLAN – INTERCEPTOR – IMPLEMENTED BY EXPANDED COUNTY DISTRICT – 2 PLANTS BROOME, 3 PLANTS TIOGA

Capital Improvements Program

Table VI-11 presents the capital improvements program of this plan.

Management Program

Institutional Composition and Responsibilities.

Federal. EPA, through the Administrator, continues regulatory and funding activities.

State. DEC, through the Executive, continues training, monitoring of wastes, regulatory standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (e.g., town districts).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordinates future wastewater planning.

The BCHD, through its Executive, continues monitoring and inspection activities of industrial and municipal wastes. The existing treatment facilities will assure adequate pre-treatment along with the BCHD and DEC.

The BCSA, through the County Executive, is responsible for writing standards for new sewer system construction and connections, and oversees local construction for the Binghamton-Johnson City Service Area.

Local communities, through executives and boards, are responsible for financing new collection extensions and old collection debt service.

Endicott, through its Mayor and Village Board will continue managing the Endicott STP. The adjacent municipalities, through their local executives and boards will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges or special rates).

The Town of Owego, through its Supervisor and Town Board, will continue to manage the WPCP #1 and #2 and collection districts.

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The Village of Owego, through the Mayor and Village Board, will continue to manage the treatment plant and collection system.

Fiscal Activities

Metering and user fees – Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements). The BCSA should institute metered rates and user fees in Chenango Valley.

Reserve Funds – All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery can subsidize low income families at the discretion of individual grant recipients.

Bonding – All managers will continue to use bond anticipation notes and serial bonds as restricted by State law.

Cost sharing – The Federal share of eligible construction will continue at 75% of the construction cost.

The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The Binghamton-Johnson City service area will do the following:

1. All individual users (metered and industrial user fees) contribute towards all treatment plant debt service, all treatment and collection, O&M, and all sewer system rehabilitation and operations.

2. New regional collections are financed via separate county districts.

3. Existing and new local collection debt service is financed by local municipalities.

Endicott STP cost-sharing should continue as arranged with the metering modifications.

Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment or property tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Public Education

There are no formal public education activities proposed by this plan.

Manpower

Skills commonly available with municipal waste treatment personnel should be sufficient to operate the proposed facilities. Manpower training will continue to be provided by the DEC and on-the-job experience. Table VI-12 details the manpower requirements of the plan.

Revision Program

Five-Year Revision

BCSA, as treatment plant managers, is responsible for the Binghamton-Johnson City STP.

The STERPB and the DEC will be instrumental in coordinating the five-year revision plan as well as the continuing planning process along with the existing institutions and the expanded County District. The following activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities or cost-sharing arrangements. The areas of variation are: *population migration*, industrial relocation, extension of sewerage, infiltration-inflow, and price-demand relationships relative to achieving the non-structural alternatives.

2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continued rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extensions should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards and water quality monitoring. The information generated during the five years of Susquehanna River monitoring should be assessed for the development of new stream standards.

5. Performance facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operationai procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of landfill.

Decision-Oriented Revision

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation into a particular revision.

1. Condition – Binghamton-Johnson City STP Reaches Capacity. Possible plan revision investigations:

a) Change in-plant process (*e.g.*, pure oxygen systems),

b) Expand plant size with due concern given to land availability,

c) Construct new, sub-regional facility to lessen the load (*e.g.*, a Chenango Plant).

2. Condition – West Owego WPCP Reaches Capacity or Needs Major Repairs. Possible plan revision investigations:

a) expansion

b) abandonment and connection to Owego Village

3. Condition – Frequent Violations of Water Quality. Possible plan revision investigations:

a) increase in treatment levels at the Binghamton-Johnson City STP

4. Condition: New Stream Standards and/or Effluent Limitations. Possible plan revision investigations:

a) change in treatment plant logistics,

b) change in treatment levels.

5. Condition: Major Interceptors Reach Capacity. Possible plan revision investigations:

a) new treatment plant to relieve load,

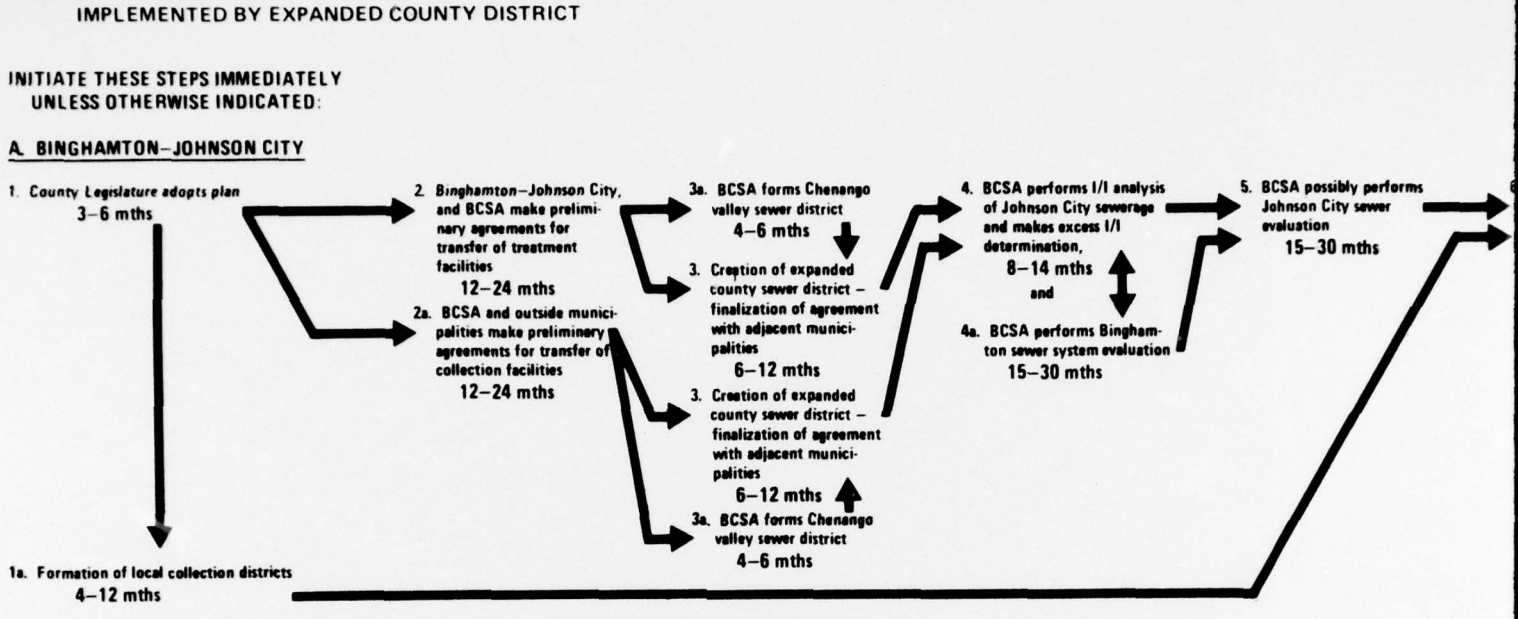
b) infiltration control,

c) flow equalization/storage at pump stations or with industrial users.

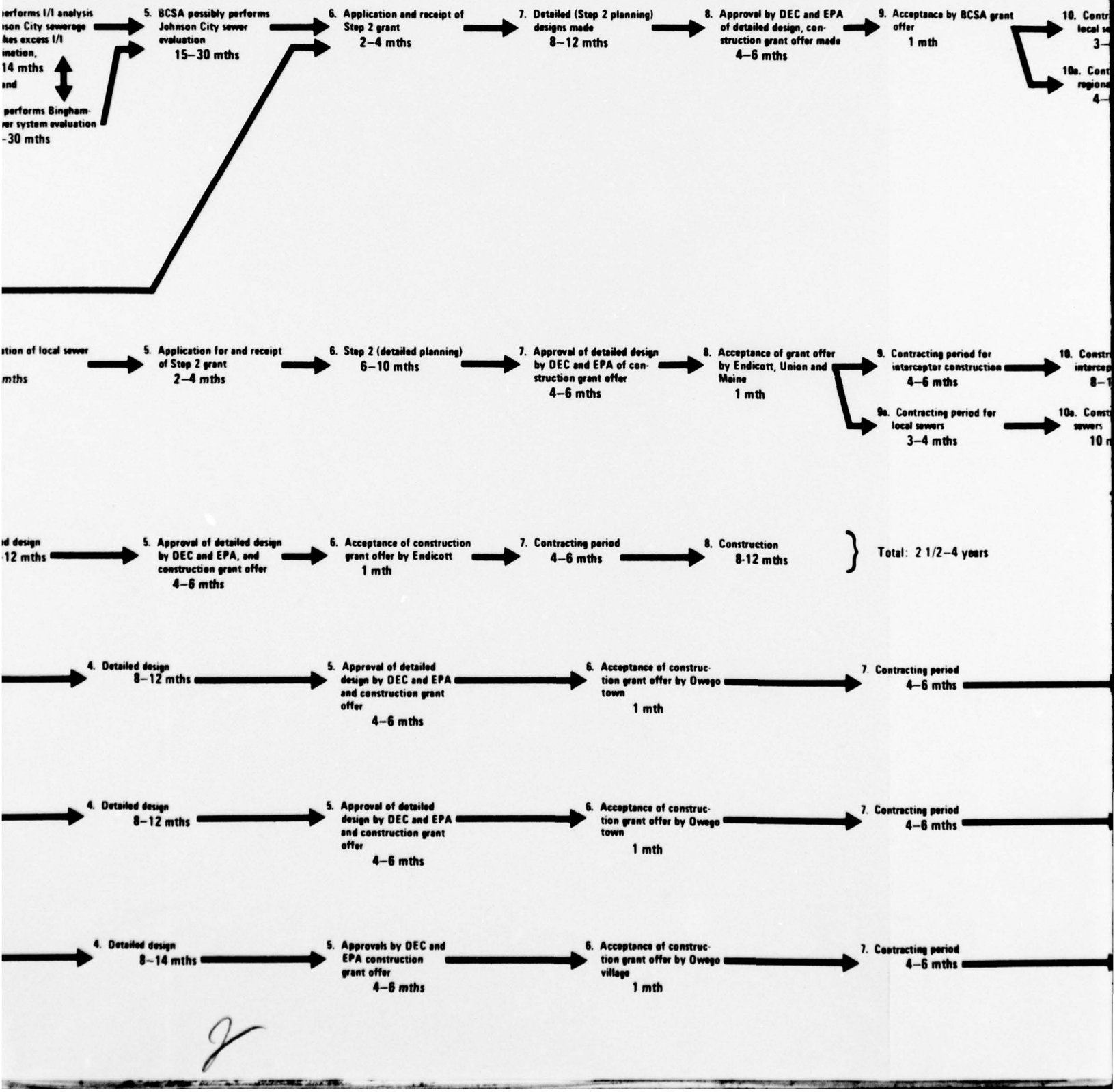
Implementation Program

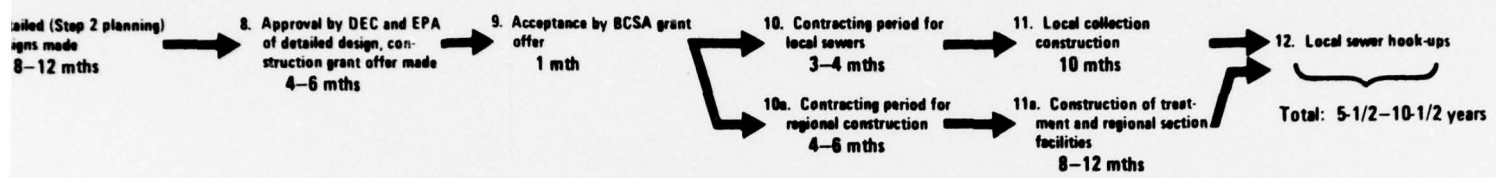
Figure VI-8 illustrates the sequence of steps to be taken to achieve construction and implementation for all sewage treatment areas.

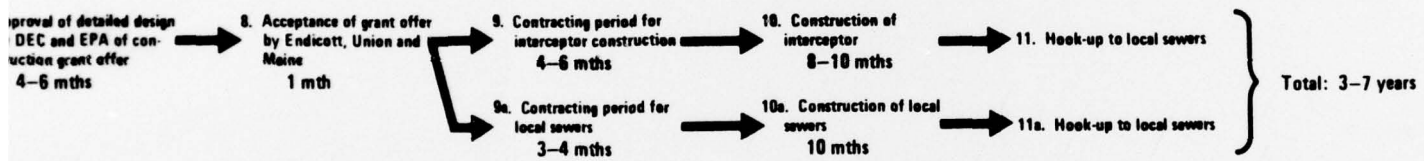
FIGURE VI-8 5MG/L PLAN 3-A-2 – NITRIFICATION WITH INTERCEPTOR – 2 PLANTS BROOME COUNTY, 3 PLANTS TIOGA COUNTY – IMPLEMENTED BY EXPANDED COUNTY DISTRICT

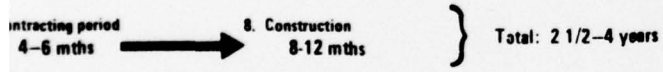


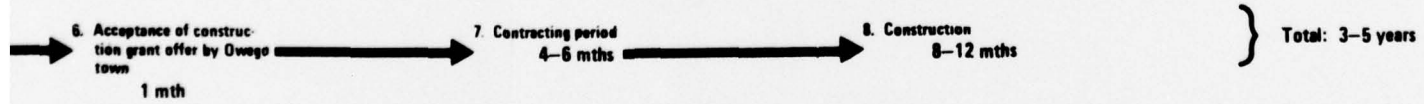
, 3 PLANTS TIOGA COUNTY –

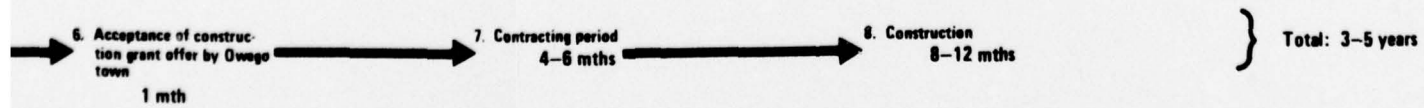


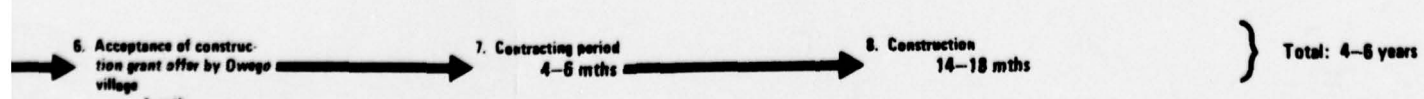

ailed (Stop 2 planning)
igns made
8–12 mths
8. Approval by DEC and EPA of detailed design, construction grant offer made
4–6 mths
9. Acceptance by BCSA grant offer
1 mth
10. Contracting period for local sewers
3–4 mths
11. Local collection construction
10 mths
10a. Contracting period for regional construction
4–6 mths
11a. Construction of treatment and regional section facilities
8–12 mths
12. Local sewer hook-ups
Total: 5-1/2–10-1/2 years


pproval of detailed design
DEC and EPA of construction grant offer
4–6 mths
8. Acceptance of grant offer by Endicott, Union and Maine
1 mth
9. Contracting period for interceptor construction
4–6 mths
9a. Contracting period for local sewers
3–4 mths
10. Construction of interceptor
8–10 mths
10a. Construction of local sewers
10 mths
11. Hook-up to local sewers
11a. Hook-up to local sewers
Total: 3–7 years


ntracting period
4–6 mths
8. Construction
8-12 mths
Total: 2 1/2–4 years


6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


6. Acceptance of construction grant offer by Owego village
1 mth
7. Contracting period
4–6 mths
8. Construction
14–18 mths
Total: 4–6 years

3-B-1: 5 mg/l PLAN – SEPARATE PLANT AT CHENANGO VALLEY – IMPLEMENTED BY MODIFIED INSTITUTIONS – 3 PLANTS BROOME, 3 PLANTS TIOGA

Capital Improvements Program

Table VI-13 presents the capital improvements program of this plan.

TABLE VI-13

CAPITAL IMPROVEMENTS PROGRAM FOR PLANS 3-B-1 AND ALSO FOR 3-B-2

	NEW TOTAL CAPACITY (MGD)	YEAR	CONSTRUCTION COST ($ MILLION)	PRESENT* WORTH	DESCRIPTION
Binghamton-Johnson City	3.0	1977	1.21		Infiltration Control
	–	1977	3.58		Storm overflow
	29.0	1977	0.05		Raw wastewater pumping
	21.5	1977	0.71		Aerator and clarifier
	22.3	1994	3.79		Nitrification
	24.5	2000	0.71		Aerator and clarifier
				7.1	
Endicott	0.8	1977	1.57		Nanticoke Valley Interceptor
	9.2	1983	1.95		Additional Secondary Treatment Capacity
				2.9	
East Owego	3.0	1992	1.26		General Expansion
				0.5	
West Owego	0.7	2000	0.47		General Expansion
				0.1	
Owego Village	1.0	1977	1.02		New Secondary treatment capacity
	3.0	1977	0.42		Micro-screening
	–	1977	0.58		Inflow control
				2.0	
Chenango Valley	1.7	1977	1.90		New Secondary treatment plant
	2.2	1985	0.46		Genaral Expansion
				2.2	
				14.8	

*Total Present Worth In the Baseline year 1977 at 6-1/8%

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Management Program

Institutional Composition and Responsibilities

Federal. EPA, through the Administrator, continues regulatory and funding activities.

State. DEC, through the Executive, continues training, montoring of wastes, regulatory, standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (*e.g.* town districts).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordinates future wastewater planning.

BCHD, through its Executive, continues monitoring and inspection activities of industrial and municipal wastes. The existing and treatment facilities will assure adequate pre-treatment along with the BCHD and DEC.

BJCJSB, through the mayors and legislatures of Binghamton and Johnson City, manage the treatment plant, with the possibility of outside municipalities, through their executives and municipal boards, together, as one member joining the joint board. BJCJSB is responsible for industrial monitoring in its area of jurisdiction.

The municipalities associated with the Binghamton-Johnson City plant continue to manage local collection and act as intermediaries between the Joint Board and individual users (other than industries requiring surcharges or special rates).

BCSA, through the County Executive, manages Chenango Valley regional system and treatment plant.

Towns of Fenton, Chenango and Dickinson, through supervisors and town boards, manage local collection systems.

Endicott, through its Mayor and Village Board, will continue managing the Endicott STP. The adjacent municipalities through their local executives and boards, will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges on special rates).

The Town of Owego, through its Supervisor and Town Board, will continue to manage the WPCP #2 and collection districts.

The Village of Owego, through the Mayor and Village Board, will continue to manage the treatment plant and collection system.

Fiscal Activities

Metering and user fees. – Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharge (according to EPA requirements). The BCSA should institute metered rates and user fees in Chenango Valley.

Reserve funds. All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery could subsidize low income families at the discretion of individual grant recipients.

Bonding – All managers will continue to use bond anticipation notes and serial bonds as restricted by State Law.

Cost Sharing – The Federal share of eligible construction will continue at 75% of the construction cost.

The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The BJCJSB will continue with its existing cost sharing agreement with the following modification:

1. All debt service contributions by outside municipalities on *new* construction should be exempt from the 25% surcharge.

Endicott STP cost-sharing should continue as arranged with the metering modification.

Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment on property tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Public Education

There are no formal public education activities proposed by this plan.

Manpower

Skills commonly available with municipal waste treatment personnel should be sufficient to operate the proposed facilities. Manpower training will continue to be provided by the DEC and on-the-job experience. Table VI-14 details the manpower requirements of the plan.

TABLE VI-14

MANPOWER REQUIREMENTS

PLAN 3-B-1 and also for PLAN 3-B-2 (3+3, 5 mg/l)

	BINGHAMTON-JOHNSON CITY		ENDICOTT		CHENANGO VALLEY		E. OWEGO		W. OWEGO		OWEGO VILLAGE
YEAR	1977-1993	1994-2026	1977-1983	1984-2026	1977-1984	1985-2026	1977-1991	1992-2026	1977-1997	1998-2026	1977-2026
CAPACITY (MGD)	20.3	22.5	7.4	9.3	1.7	2.2	1.9	2.9	.6	.73	.98
STP TYPE			Trickling Filter		Activated Sludge		Activated Sludge		Trickling Filter		Trickling Filter
STAFF REQUIREMENTS											
Superintendent	1	1	1	1	–	–	–	1	–	–	–
Clerk Typist	1	1	–	–	–	–	–	–	–	–	–
Operator II	5	5	2	3	1	1	1	2	1	1	2
Operator I	9	9	4	5	4	4	4	5	4	4	3
Auto Equipment Operator	3	3	1	1	–	–	–	–	–	–	–
Maintenance Mechanic II	1	1	–	1	–	–	–	–	–	–	–
Maintenance Mechanic I	1	1	–	–	–	–	–	–	–	–	–
Electrician II	1	1	–	–	–	–	–	–	–	–	–
Maintenance Helper	2	2	1	1	–	–	–	–	–	–	–
Laborer	3	3	1	2	1	1	1	1	–	–	–
Laboratory Technician	2	2	1	1	1	1	1	1	–	–	–
TOTAL STAFF COMPLEMENT	29	29	11	15	7	7	7	10	5	5	5

Revision Program

Five-Year Revision

The STERPB and the DEC will be instrumental in coordinating the five-year revision plan as well as the continuing planning process in conjunction with the existing institutions. The following activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities or cost-sharing arrangements. The areas of variation are: population migration, industrial relocation, extension of sewerage, infiltration-inflow and price-demand relationships relative to achieving the non-structural alternatives.

2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continuous rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extensions should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards and water quality monitoring. The information generated during the five years of Susquehanna River monitoring should be assessed for the development of new stream standards.

5. Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of landfill.

7. Assessment by BCSA and DEC of water quality conditions on the Chenango River and the impact of such conditions on the River use (particularly adjacent to the Park) with a view towards:

   a) additional treatment beyond secondary

   b) relocation of the outfall below the park

Decision Oriented Revision

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation into a particular revision.

1. Condition: Binghamton-Johnson City STP Reaches Capacity. Possible plan revision investigations:

a) Change in-plant process (*e.g.*, pure oxygen systems).

b) Expand plant size with due concern given to land availability,

2. Condition: West Owego WPCP Reaches Capacity or Needs Major Repairs. Possible plan revision investigations:

a) expansion,

b) abandonment and connection to Owego Village

3. Condition: Frequent Violations of Water Quality. Possible plan revision investigations.

a) increase in treatment levels at the Binghamton-Johnson City STP.

4. Condition: New Stream Standards and/or Effluent Limitations. Possible plan revision investigations:

a) change in treatment plant logistics,

b) change in treatment levels.

5. Condition: Major Interceptors Reach Capacity. Possible plan revision investigations:

a) new treatment plant to relieve load,

b) infiltration control

c) flow equalization/storage at pump stations or with industrial users.

6. Condition: Chenango Plant Reaches Capacity. Possible revision investigations:

a) expansion of the facility

7. Condition: Chenango Plant O&M is disproportionately expensive. Possible revision investigations:

a) new operational procedures

b) abandonment

8. Condition: Reduced Water Quality in the Chenango River Impacting Upon Recreation. Possible revision investigations:

a) additional treatment necessary

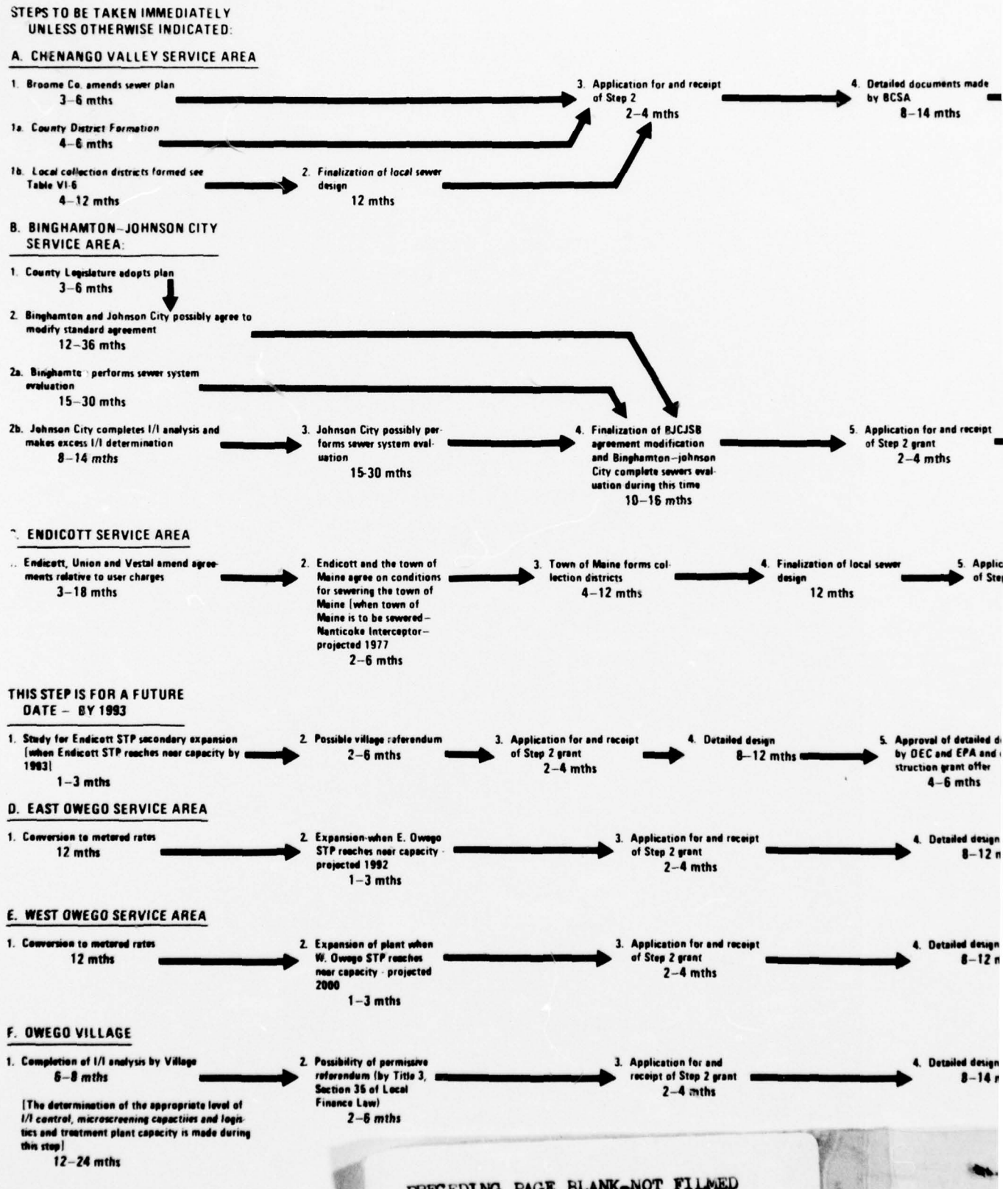
b) relocation of outfall below park

c) abandonment and Binghamton connection.

Implementation Program

Figure VI-9 shows the implementation steps for construction and for formation of a managing institution.

FIGURE VI-9. PLAN 3-B-1 – NITRIFICATION WITH SEPARATE TREATMENT PLANT AT CHENANGO VALLEY – 5MG/L (3 PLANTS BROOME C
3 PLANTS TIOGA COUNTY) IMPLEMENTED BY MODIFIED INSTITUTIONS



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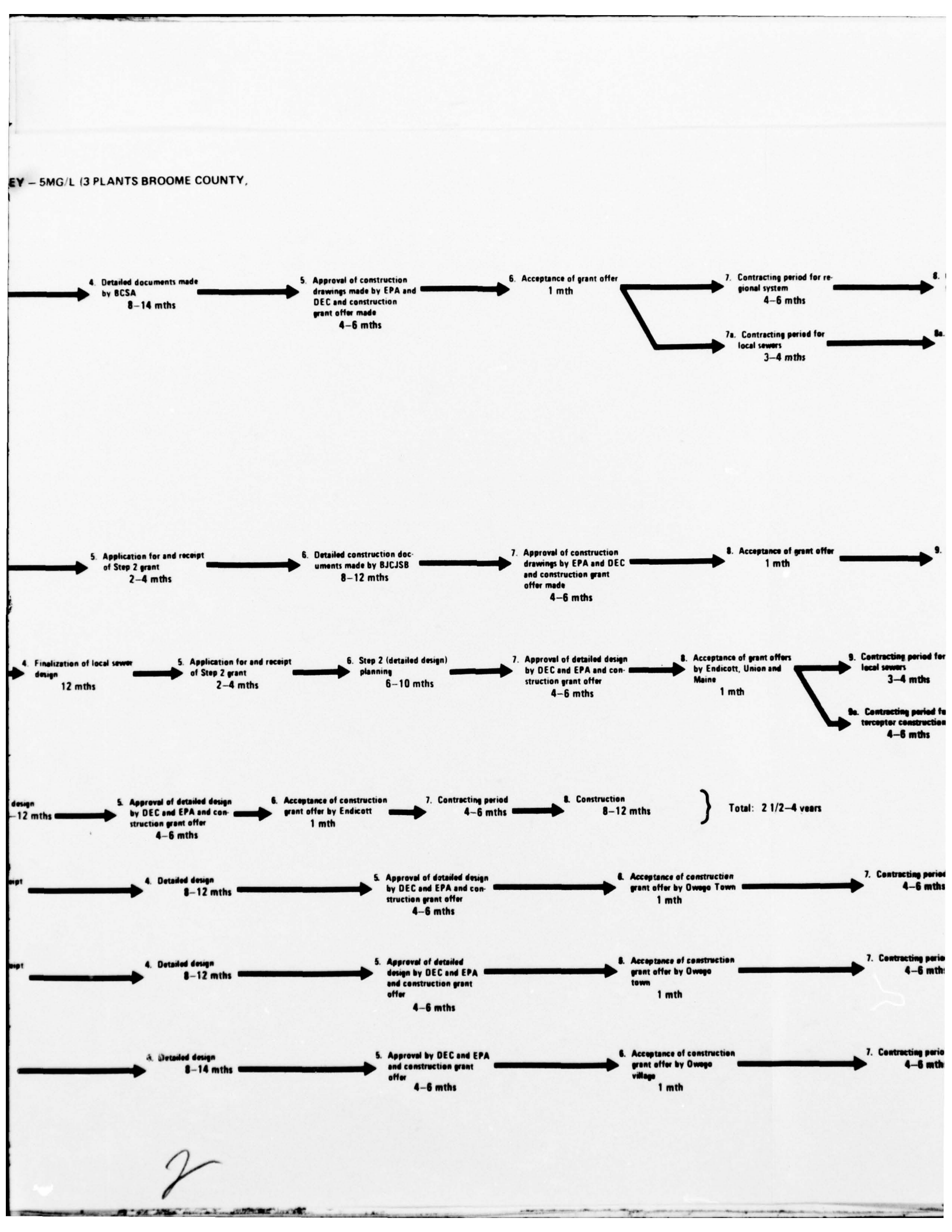
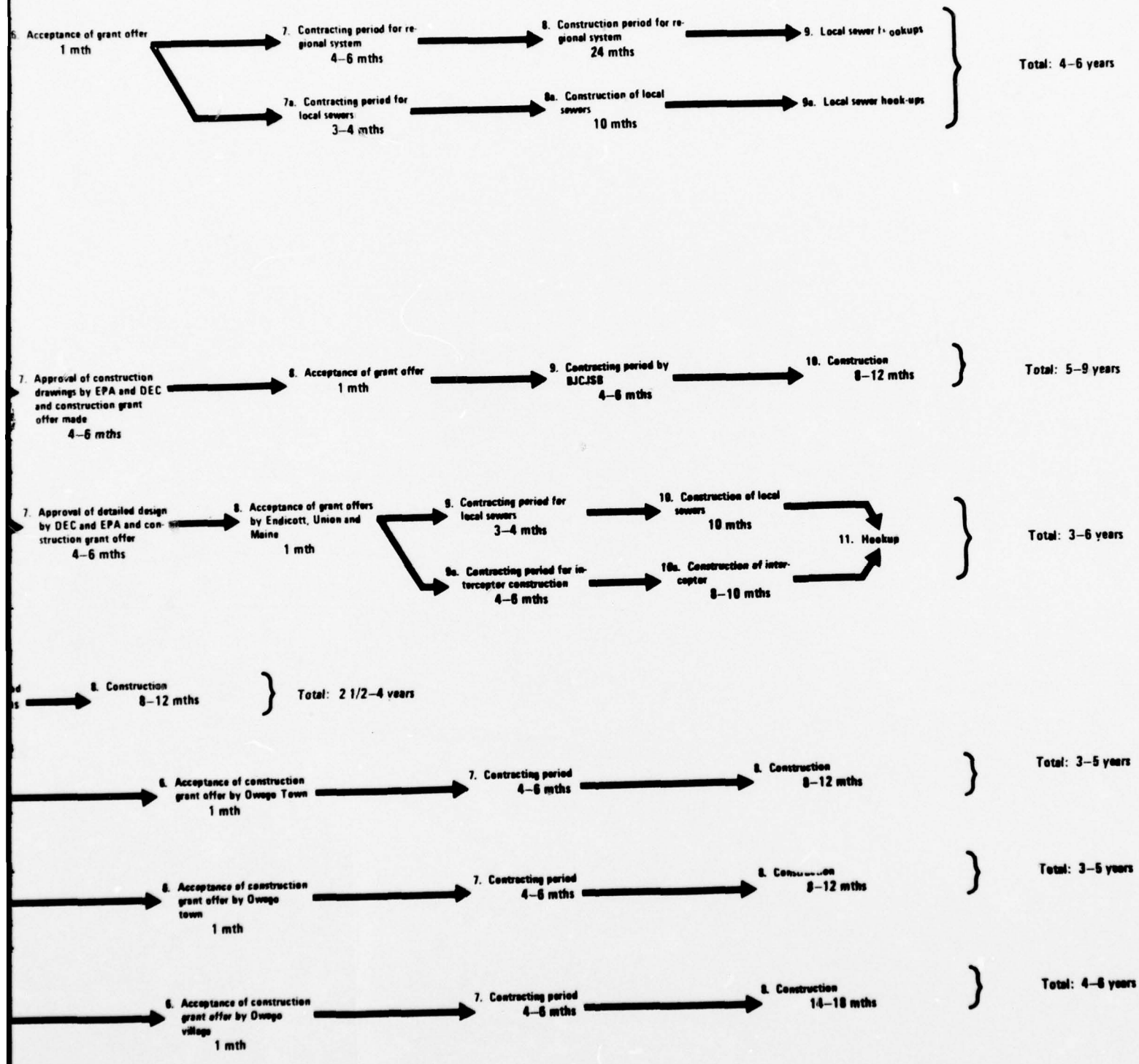
EY – 5MG/L (3 PLANTS BROOME COUNTY,




6. Acceptance of grant offer
1 mth
7. Contracting period for regional system
4–6 mths
8. Construction period for regional system
24 mths
9. Local sewer hookups
7a. Contracting period for local sewers
3–4 mths
8a. Construction of local sewers
10 mths
9a. Local sewer hook-ups
Total: 4–6 years
7. Approval of construction drawings by EPA and DEC and construction grant offer made
4–6 mths
8. Acceptance of grant offer
1 mth
9. Contracting period by BJCJSB
4–6 mths
10. Construction
8–12 mths
Total: 5–9 years
7. Approval of detailed design by DEC and EPA and construction grant offer
4–6 mths
8. Acceptance of grant offers by Endicott, Union and Maine
1 mth
9. Contracting period for local sewers
3–4 mths
10. Construction of local sewers
10 mths
9a. Contracting period for interceptor construction
4–6 mths
10a. Construction of interceptor
8–10 mths
11. Hookup
Total: 3–6 years
8. Construction
8–12 mths
Total: 2 1/2–4 years
6. Acceptance of construction grant offer by Owego Town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years
6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years
6. Acceptance of construction grant offer by Owego village
1 mth
7. Contracting period
4–6 mths
8. Construction
14–18 mths
Total: 4–6 years

3-B-2; 5 mg/l PLAN – SEPARATE TREATMENT PLANT AT CHENANGO VALLEY – IMPLEMENTED BY EXPANDED COUNTY DISTRICT – 3 PLANTS BROOME, 3 PLANTS TIOGA

Capital Improvements

Table VI-13 presents the capital improvements program of this plan.

Management Program

Institutional Composition and Responsibilities.

Federal. EPA, through the Administrator, continues regulatory and funding activities.

State. DEC, through the Executive, continues training, monitoring of wastes, regulatory, standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (*e.g.*, town districts).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordinates future wastewater planning.

BCHD, through its Executive, continues monitoring and inspection activities of industrial and municipal wastes. The existing treatment facilities will assure adequate pre-treatment, along with the BCHD and DEC.

BCSA, through the County Executive, is responsible for managing treatment and all collection in the Binghamton-Johnson City service area and assumes all outstanding treatment plant and regional collection indebtedness of Binghamton and Johnson City.

The local communities, through executives and boards, are responsible for financing new collection extensions and old collection debt service.

BCSA is responsible for writing standards for new sewer system construction and connections, and oversees local construction.

Endicott, through its Mayor and Village Board, will continue managing the Endicott STP. The adjacent municipalities through their local executives and boards, will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges or special rates).

The Town of Owego, through its Supervisor and Town Board, will continue to manage the treatment plant and collection system.

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Fiscal Activities

Metering and user fees – Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements). The BCSA should institute metered rates and user fees in Chenango Valley.

Reserve Funds – All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery can subsidize low income families at the discretion of individual grant recipients.

Bonding – All managers will continue to use bond anticipation notes and serial bonds as restricted by State law.

Cost-sharing – The Federal share of eligible construction will continue at 75% of the construction cost.

The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The BJCJSB will continue with its existing cost sharing agreement with the following modification:

1. All debt service contributions by outside municipalities on new construction should be exempt from the 25% surcharge.

In Binghamton-Johnson City, all individual users (metered and industrial user fees) contribute towards all treatment plant debt service, all treatment and collection, O&M, and all sewer system rehabilitation and operations.

a) new regional collectors are financed via separate county districts.

b) existing and new local collection debt service financed by local municipalities.

Endicott STP cost-sharing should continue as arranged with the metering modification.

Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment or property tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Expanded Broome Sewer District and Chenango Sewer District, though both managed by the BCSA, have separate finances.

Public Education

There are no formal public education activities proposed by this plan.

Manpower

Skills commonly available with municipal waste treatment personnel should be sufficient to operate the proposed facilities. Manpower training will continue to be provided by the DEC and on-the-job experience. Table VI-14 details the manpower requirements of the plan.

Revision Program

Five-Year Revision

BCSA, as treatment plant manager, is responsible for the Binghamton-Johnson City STP.

The STERPB and the DEC will be instrumental in coordinating the five-year revision plan as well as the continuing planning process along with the existing institutions and the expanded County District.

The following activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities or cost-sharing arrangements. The areas of variation are: population migration, industrial relocation, extension of sewerage, infiltration – inflow and price-demand relationships relative to achieving the non-structural alternatives.

2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continuous rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extensions should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standard and water quality monitoring. The information generated during the five years of Susquehanna River monitoring should be assessed for the development of new stream standards.

5. Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of landfill.

7. Assessment by BCSA and DEC of water quality conditions on the Chenango River and the impact of such conditions on the River use (particularly adjacent to the Park) with a view towards:

a) additional treatment beyond secondary

b) relocation of the outfall below the park

Decision Oriented Revision

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation with a particular revision.

1. Condition: Binghamton-Johnson City STP Reaches Capacity. Possible plan revision investigations:

a) Change in-plant process (*e.g.*, pure oxygen systems),

b) Expand plant size with due concern given to land availability,

2. Condition: West Owego WPCP Reaches Capacity or Needs Major Repairs. Possible plan revision investigations:

a) expansion,

b) abandonment and connection to Owego Village

3. Condition: Frequent Violations of Water Quality. Possible plan revision investigations:

a) increase in treatment levels at the Binghamton-Johnson City STP.

4. Condition: New Stream Standards and/or Effluent Limitations. Possible plan revision investigations:

a) change in treatment plant logistics,

b) change in treatment levels

5. Condition: Major Interceptors Reach Capacity. Possible plan revision investigations:

a) new treatment plant to relieve load,

b) infiltration control

c) flow equalization/storage at pump stations or with industrial users.

6. Condition: Chenango Plant Reaches Capacity. Possible revision investigations:

a) expansion of the facility

7. Condition: Chenango Plant O&M is Disproportionately Expensive. Possible revision investigations:

a) new operational procedures

b) abandonment

8. Condition: Reduced Quality in the Chenango River Impacting Upon Recreation. Possible revision investigations:

a) additional treatment necessary,

b) relocation of outfall below park,

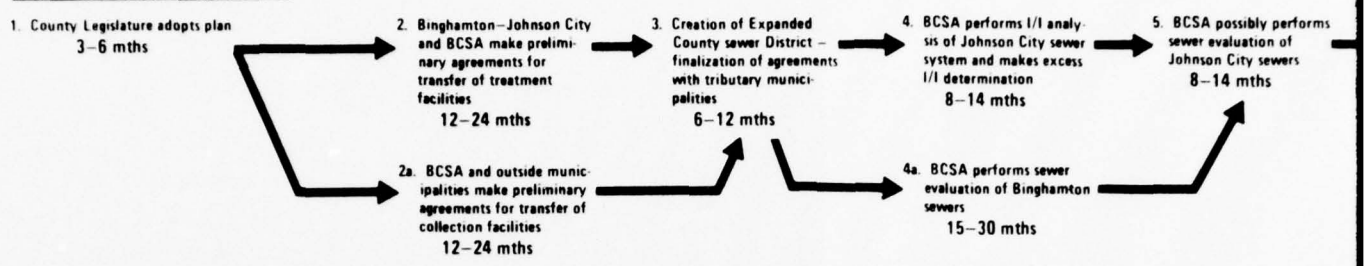
c) abandonment and Binghamton connection

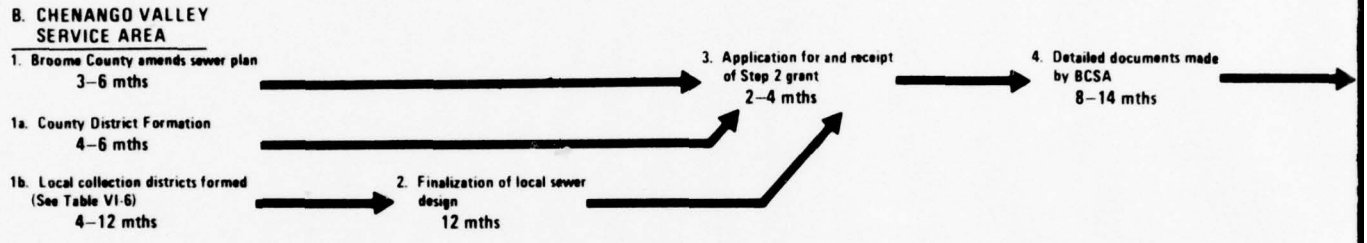
Implementation Program

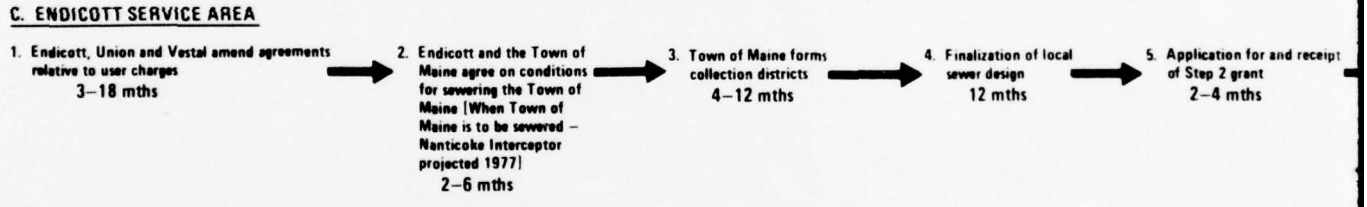
Figure VI-10 shows the implementation steps for construction and for formation of a managing institution.

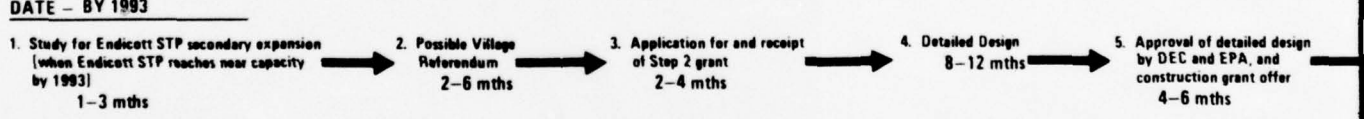
FIGURE VI-10 3-B 2.5MG/L PLAN – NITRIFICATION WITH SEPARATE TREATMENT PLANT AT CHENANGO VALLEY – 3 PLANTS BROOME CO
IMPLEMENTED BY EXPANDED COUNTY DISTRICT

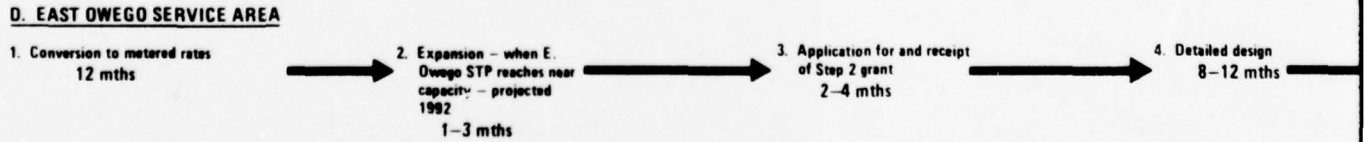
STEPS TO BE TAKEN IMMEDIATELY
UNLESS OTHERWISE INDICATED:

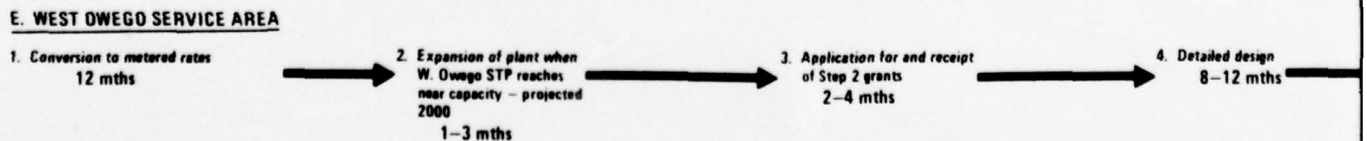












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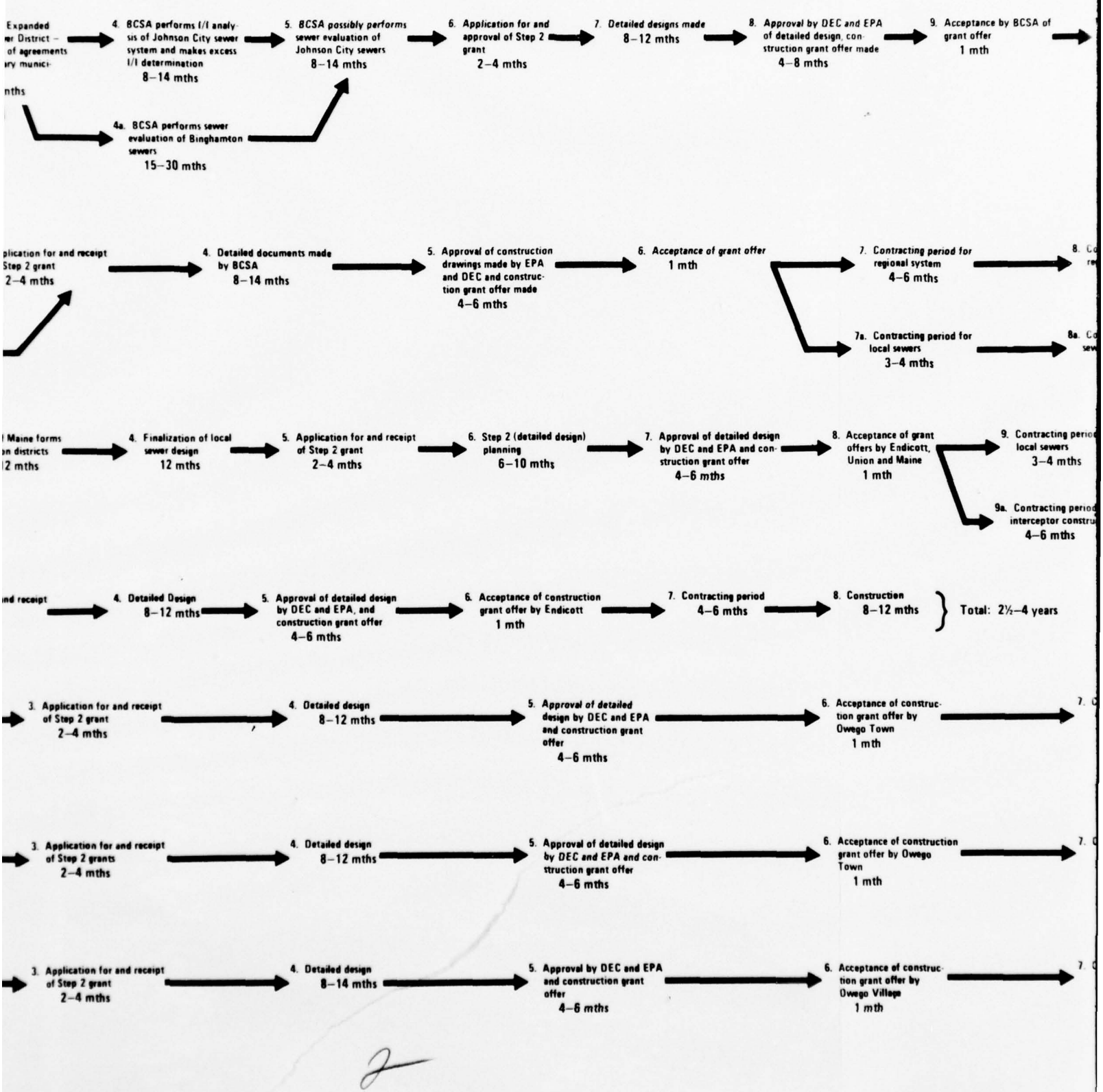
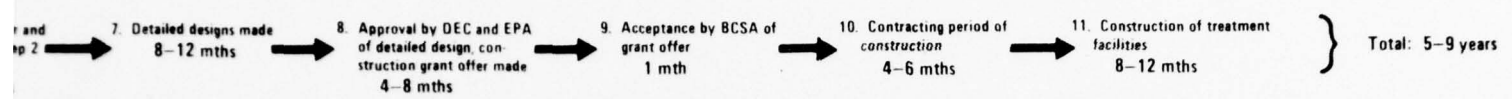
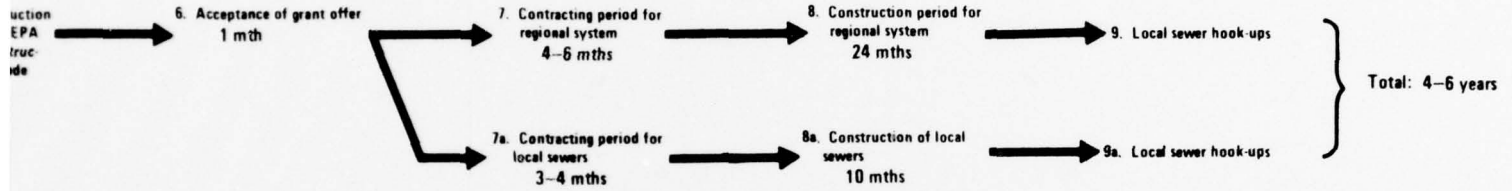
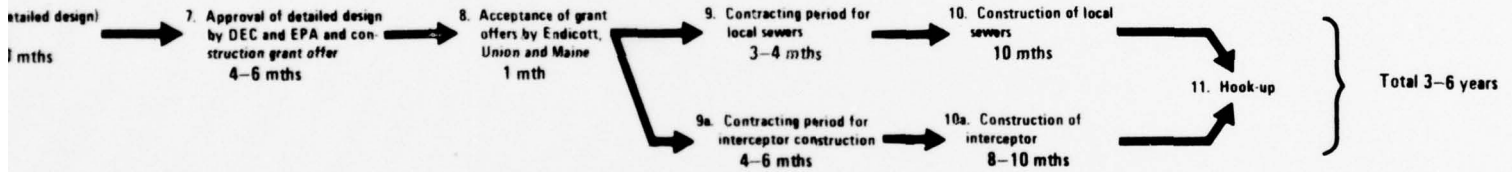
MENT PLANT AT CHENANGO VALLEY – 3 PLANTS BROOME COUNTY, 3 PLANTS TIOGA COUNTY

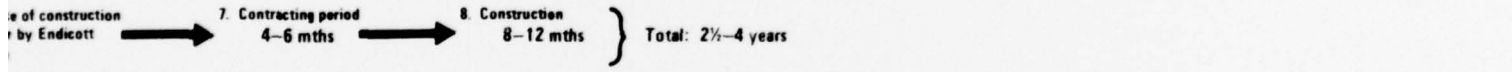


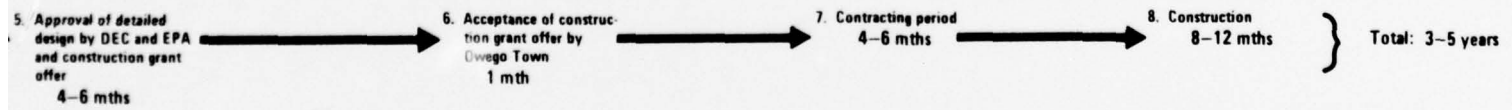
TS TIOGA COUNTY

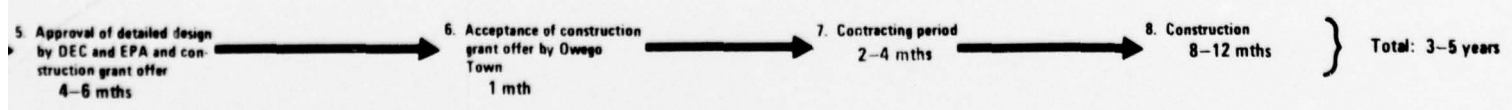


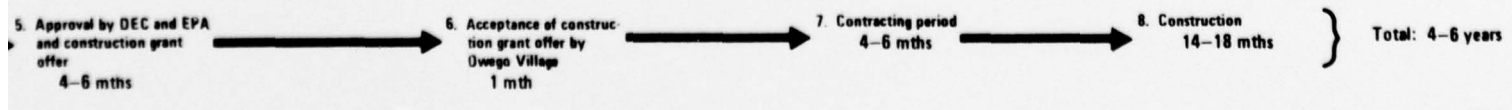












3-C-1; 5 mg/l PLAN – PHASED SEWERING OF CHENANGO VALLEY – IMPLEMENTED BY MODIFIED INSTITUTIONS – 3 PLANTS BROOME, 3 PLANTS TIOGA

Capital Improvements Program

Table VI-15 presents the capital improvements program of this plan.

TABLE VI-15

CAPITAL IMPROVEMENTS PROGRAM FOR PLANS 3-C-1 AND ALSO FOR 3-C-2

	NEW TOTAL CAPACITY (MGD)	YEAR	CONSTRUCTION COST ($ MILLION)	PRESENT* WORTH	DESCRIPTION
Binghamton-Johnson City	3.0	1977	1.21		Infiltration control
	–	1977	3.58		Storm overflow
	29.0	1977	0.05		Raw wastewater pumping
	21.5	1977	0.71		Aerator and clarifier
	22.3	1994	3.79		Nitrification
	24.5	2000	0.71		Aerator and clarifier
				7.1	
Endicott	0.8	1977	1.57		Nanticoke Valley Interceptor
	9.2	1983	1.95		Additional Secondary Treatment Capacity
				2.9	
East Owego	3.0	1992	1.26		General Expansion
				0.5	
West Owego	0.7	2000	0.47		General Expansion
				0.1	
Owego Village	1.0	1977	1.02		New Secondary treatment capacity
	3.0	1977	0.42		Micro-screening
	–	1977	0.58		Inflow control
				2.0	
Chenango Valley	1.0	1977	1.3		New Secondary treatment plant
	2.2	1985	1.2		General Expansion
				2.2	
				14.8	

*Total Present Worth (P.W.)

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Management Program

Institutional Composition and Responsibilities

Federal. EPA, through the Administrator, continues regulatory and funding activities.

State. DEC, through the Executive, continues training, monitoring of wastes, regulatory, standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approves of local finances and institutional changes (*e.g.*, town districts).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordinates future wastewater planning.

BCHD, through its Executive, continues monitoring and inspection activities of industrial and municipal wastes. The existing treatment facilities and expanded district will assure adequate pre-treatment along with the BCHD and DEC.

BJCJSB, through the mayors and legislatures of Binghamton and Johnson City, manage the treatment plant, with the possibility of the outside municipalities, through their executives and municipal boards, together, as one member, joining the Joint Board. BJCJSB is responsible for industrial monitoring.

The municipalities associated with the Binghamton-Johnson City plant continue to manage local collection and act as intermediaries between the Joint Board and individual users (other than industries requiring surcharges or special rates).

BCSA, through the County Executive, manages Chenango Valley regional system and treatment plant.

Towns of Fenton, Chenango and Dickinson, through supervisors and town boards, manage local collection systems.

Endicott, through its Mayor and Village Board, will continue managing the Endicott STP. The adjacent municipalities through their local executives and boards, will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges or special rates).

The Town of Owego, through its Supervisor and Town Board, will continue to manage the WPCP #1 and #2 and collection districts.

The Village of Owego, through the Mayor and Village Board, will continue to manage the treatment plant and collection system.

Fiscal Activities

Metering and user fees. Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements). The BCSA should institute metered rates and user fees in Chenango Valley.

Reserve Funds. All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery can subsidize low income families at the discretion of individual grant recipients.

Bonding. All managers will continue to use bond anticipation notes and serial bonds as restricted by State law.

Cost sharing. The Federal share of eligible construction will continue at 75% of the construction cost.

The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The BJCJSB will continue with its existing cost-sharing agreement with the following modification:

1. All debt service contributions by outside municipalities on new construction should be exempt from the 25% surcharge.

Endicott STP cost-sharing should continue as arranged with the metering modification.

Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment or property tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Public Education

There are no formal public education activities proposed by this plan.

Manpower

Table VI-16 details the manpower requirements of the plan.

Skills commonly available with municipal waste treatment personnel should be sufficient to operate the proposed facilities. Manpower training will continue to be provided by the DEC and by on-the-job experience.

Revision Program

Five-Year Revision

The STERPB and the DEC will be instrumental in coordinating the five-year revision plan as well as the continuing planning process in conjunction with the existing institutions. The following activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities on cost-sharing arrangements. The areas of variation are: population-migration, industrial relocation, extension of sewerage, infiltration-inflow and price-demand relationships relative to achieving the non-structural alternatives.

2. Effectivenes of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continuous rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extensions should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards and water quality monitoring. The information generated during the five years of Susquehanna River monitoring should be assessed for the development of new stream standards.

5. Performance of facilities. With regard to the possible formation of new stream standards, the performances of the treatment plant and stormwater overflow facilities should be reviewed. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of landfill.

7. Assessment by BCSA and DEC of water quality conditions on the Chenango River and the impact of such conditions on the River use (particularly adjacent to the Park) with a view towards:

a) additional treatment beyond secondary

b) relocation of the outfall below the park

TABLE VI-16

MANPOWER REQUIREMENTS
PLAN 3-C-1 and also for PLAN 3-C-2 (3+3, 5 mg/l, interim sewering Chenango – Valley)

	BINGHAMTON-JOHNSON CITY		ENDICOTT		CHENANGO VALLEY		E. OWEGO		W. OWEGO		OWEGO VILLAGE
	1977-	1994-	1977-	1984-	1977-	1985-	1977-	1992-	1977-	1998-	1977-
YEAR	1993	2026	1983	2026	1984	2026	1991	2026	1997	2026	2026
CAPACITY (MGD)	20.3	22.5	7.4	9.3	1.0	2.2	1.9	2.9	.6	.73	.98
STP TYPE											
STAFF			Trickling Filter		Activated Sludge		Activated Sludge		Trickling Filter		Trickling Filter
REQUIREMENTS											
Superintendent	1	1	1	1	–	–	–	1	–	–	–
Clerk Typist	1	1	–	–	–	–	–	–	–	–	–
Operator II	5	5	2	3	1	1	1	2	1	1	2
Operator I	9	9	4	5	4	4	4	5	4	4	3
Auto Equipment Operator	3	3	1	1	–	–	–	–	–	–	–
Maintenance Mechanic II	1	1	–	1	–	–	–	–	–	–	–
Maintenance Mechanic I	1	1	–	–	–	–	–	–	–	–	–
Electrician II	1	1	–	–	–	–	–	–	–	–	–
Maintenance Helper	2	2	1	1	–	–	–	–	–	–	–
Laborer	3	3	1	2	1	1	1	1	–	–	–
Laboratory Technician	2	2	1	1	1	1	1	1	–	–	–
TOTAL STAFF COMPLEMENT	29	29	11	15	7	7	7	10	5	5	5

8. Reassessment of second phase of regional collection and treatment plant expansion needs in Chenango Valley.

Decision Oriented Revision

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation into a particular revision.

1. Condition: Binghamton-Johnson City STP Reaches Capacity. Possible plan revision investigations:

a) Change in-plant process (*e.g.*, pure oxygen systems),

b) Expand plant size with due concern given to land availability,

2. Condition: West Owego WPCP Reaches Capacity or Needs Major Repairs. Possible plan revision investigations:

a) expansion,

b) abandonment and connection to Owego Village

3. Condition: Frequent Violations of Water Quality. Possible plan revision investigations:

a) increase in treatment levels at the Binghamton-Johnson City STP.

4. Condition: New Stream Standards and/or Effluent Limitations. Possible plan revision investigations:

a) change in treatment plant logistics,

b) change in treatment levels.

5. Condition: Major interceptors reach capacity. Possible plan revision investigations:

a) new treatment plant to relieve load,

b) infiltration control

c) flow equalization/storage at pump stations or with industrial users.

6. Condition: Chenango Plant Reaches Capacity. Possible revision investigations:

a) expansion of the facility

7. Condition: Chenango Plant O&M is Disproportionately Expensive. Possible revision investigations:

a) new operational procedures

b) abandonment

8. Condition: Reduced Water Quality in the Chenango River Impacting Upon Recreation. Possible revision investigations:

a) additional treatment necessary

b) relocation of outfall below park

c) abandonment and Binghamton connection.

9. Condition: Dangerous Public Health Conditions Resulting From Withholding Sewer Service in Chenango Valley. Possible plan revision investigation:

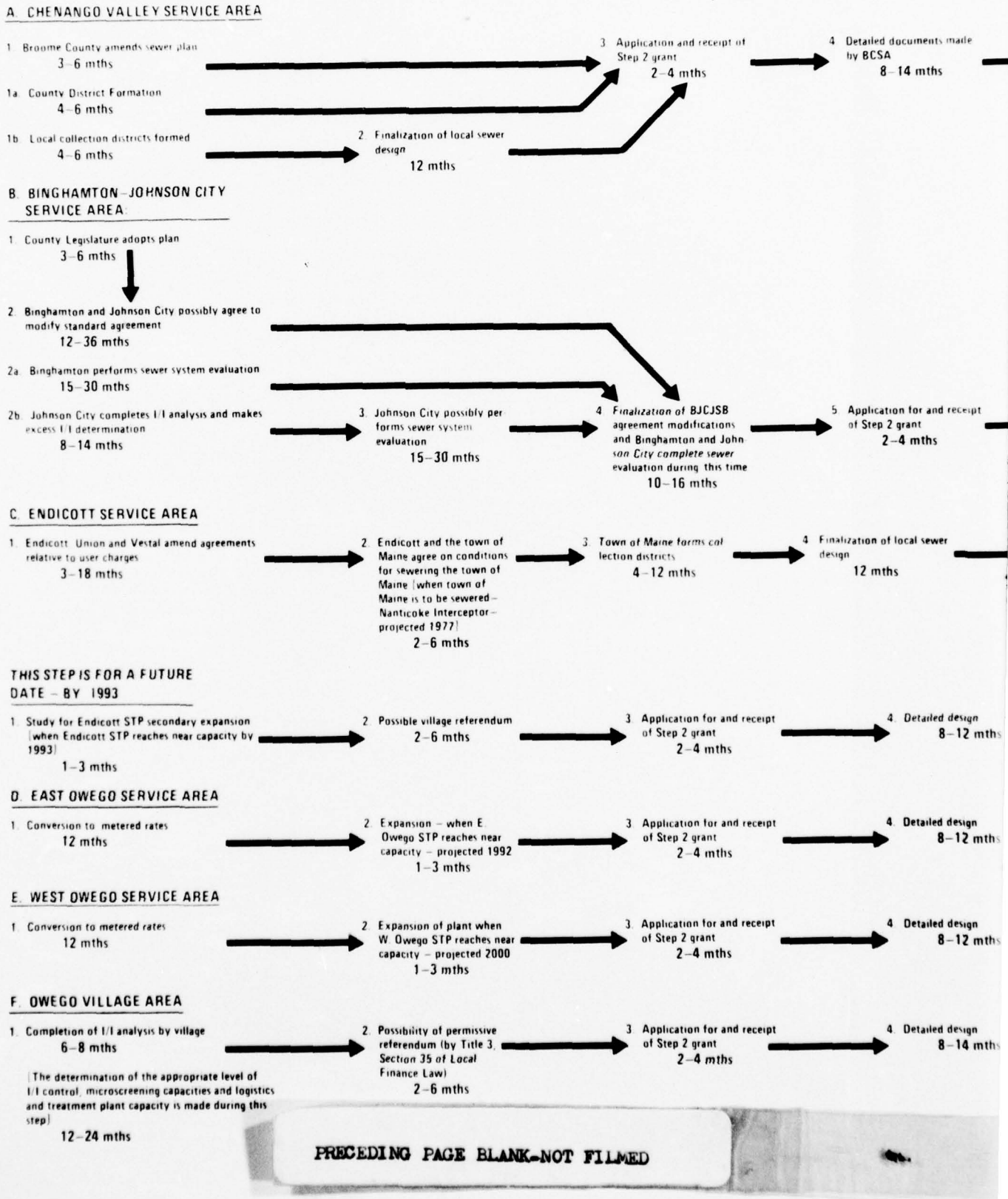
a) sewerage extension and update of proposed plant expansion.

Implementation Program

Figure VI-11 shows the implementation steps for construction and for formation of a managing institution.

FIGURE VI-11 PLAN 3-C-1 5 MG/L – NITRIFICATION – 3 PLANTS BROOME COUNTY, 3 PLANTS TIOGA COUNTY – PHASED SEWERING FOR CH
IMPLEMENTED BY MODIFIED INSTITUTIONS

STEPS TO BE TAKEN IMMEDIATELY
UNLESS OTHERWISE INDICATED



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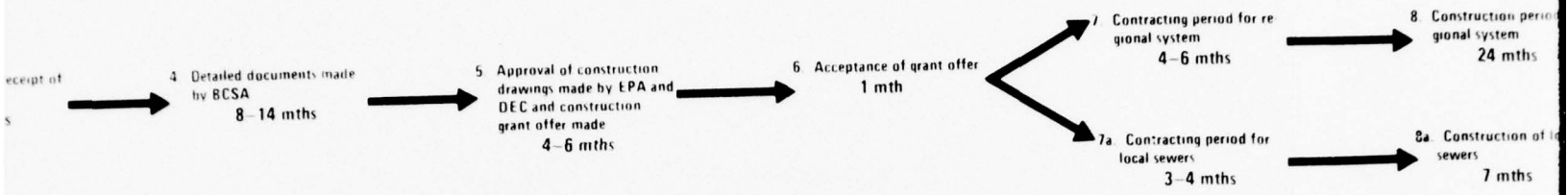
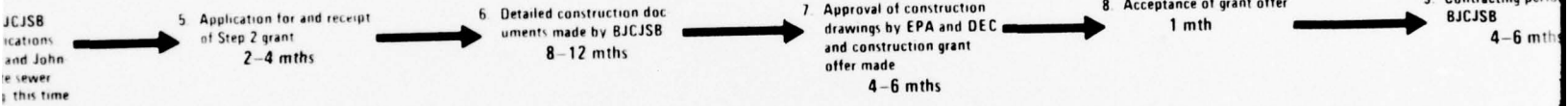
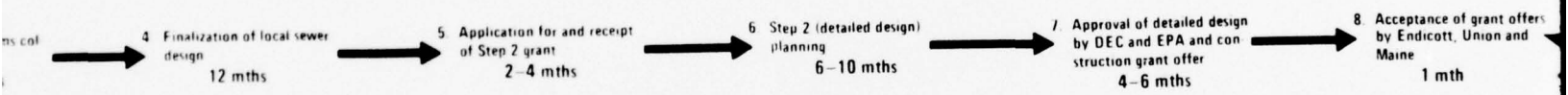
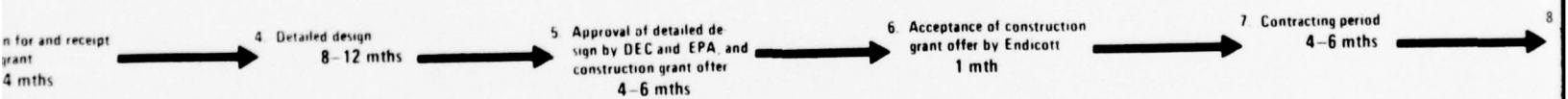
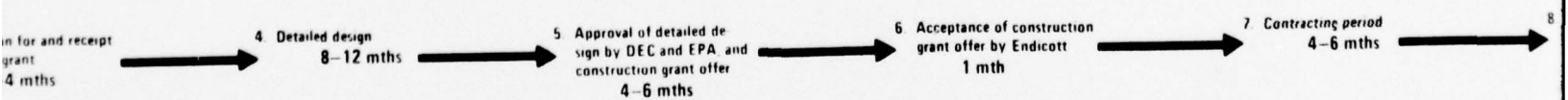
GA COUNTY – PHASED SEWERING FOR CHENANGO VALLEY

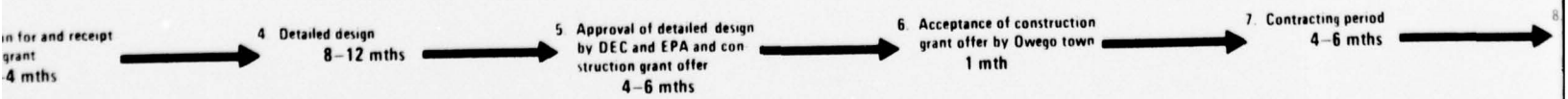


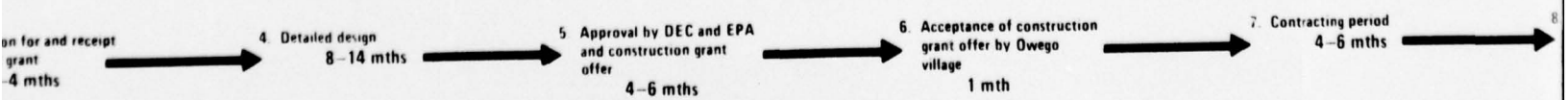












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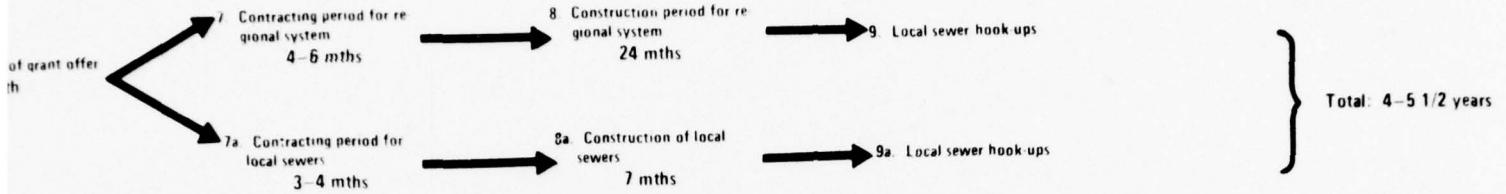
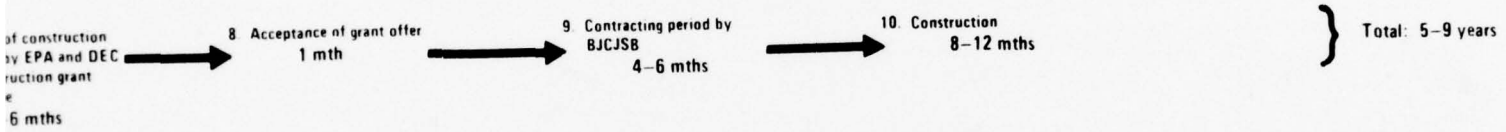
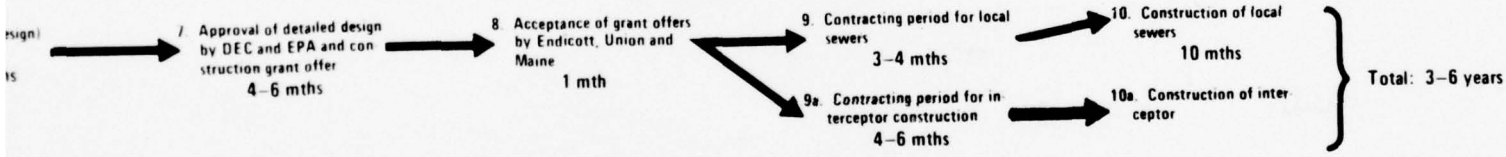
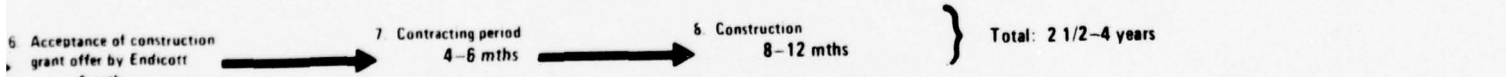
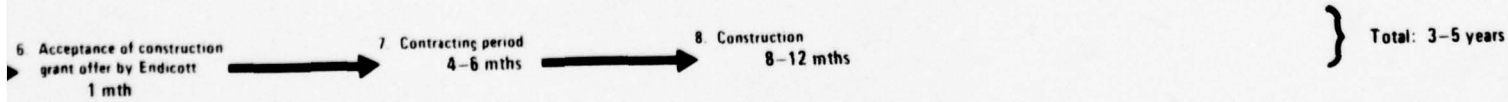
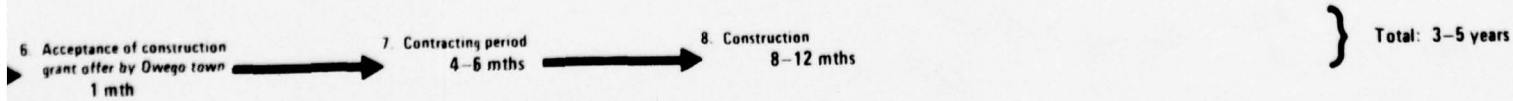

of grant offer
th
7. Contracting period for regional system
4–6 mths
8. Construction period for regional system
24 mths
9. Local sewer hook-ups
7a. Contracting period for local sewers
3–4 mths
8a. Construction of local sewers
7 mths
9a. Local sewer hook-ups
Total: 4–5 1/2 years

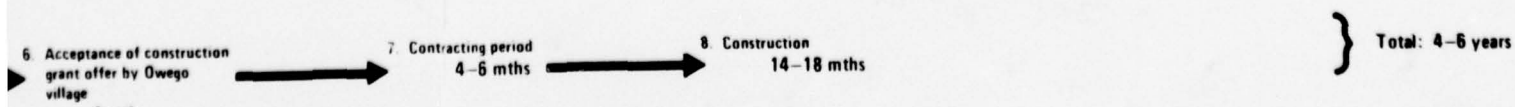

of construction
by EPA and DEC
truction grant
e
6 mths
8. Acceptance of grant offer
1 mth
9. Contracting period by BJCJSB
4–6 mths
10. Construction
8–12 mths
Total: 5–9 years


esign)
ts
7. Approval of detailed design by DEC and EPA and construction grant offer
4–6 mths
8. Acceptance of grant offers by Endicott, Union and Maine
1 mth
9. Contracting period for local sewers
3–4 mths
10. Construction of local sewers
10 mths
9a. Contracting period for interceptor construction
4–6 mths
10a. Construction of interceptor
Total: 3–6 years


6. Acceptance of construction grant offer by Endicott
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 2 1/2–4 years


6. Acceptance of construction grant offer by Endicott
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


6. Acceptance of construction grant offer by Owego village
1 mth
7. Contracting period
4–6 mths
8. Construction
14–18 mths
Total: 4–6 years

3

3-C-2; 5 mg/l PLAN – CHENANGO VALLEY PHASED SEWERING – IMPLEMENTED BY AN EXPANDED COUNTY DISTRICT – 3 PLANTS BROOME, 3 PLANTS TIOGA

Capital Improvements Program

Table VI-15 presents the capital improvements program of this plan.

Management Program

Institutional Composition and Responsibilities

Federal. EPA, through the Administrator, continues regulatory and funding activities.

State. DEC, through the Executive, continues training monitoring of wastes, regulatory, standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (*e.g.*, town districts).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordinates future wastewater planning.

BCHD, through its Executive, continues monitoring and inspection activities of industrial and municipal wastes. The existing treatment facilities and expanded district will assure adequate pre-treatment along with the BCHD and DEC.

BCSA, through the County Executive, is responsible for managing treatment and all collection in the Binghamton-Johnson City service area and assumes all outstanding treatment plant and regional collection indebtedness of Binghamton and Johnson City.

The local communities, through executives and boards, are responsible for financing new collection extensions and old collection debt service.

BCSA is responsible for writing standards for new sewer system construction and connectors, and oversees local construction.

Endicott, through its Mayor and Village Board, will continue managing the Endicott STP. The adjacent municipalities through their local executives and boards, will continue to manage the local collection system and act as intermediaries between Endicott and individual users (other than industries requiring surcharges or special rates).

The Town of Owego, through its Supervisor and Town Board, will continue to manage the treatment plant and collection system.

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Fiscal Activities

Metering and user fees. Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements). The BCSA should institute metered rates and user fees in Chenango Valley.

Reserve funds. All Federal grant recipients should implement industrial grant recovery and create reserve funds. Portions of grant recovery can subsidize low income families at the discretion of individual grant recipients.

Bonding. All managers will continue to use bond anticipation notes and serial bonds as restricted by State law.

Cost-sharing. The Federal share of eligible construction will continue at 75% of the construction cost.

The State share of eligible construction will continue at 12½% of the construction cost.

The State will continue to fund 33% of eligible operation and maintenance costs.

The BJCJSB will continue with its existing cost sharing agreement with the following modification:

1. All debt service contributions by outside municipalities on *new* construction should be exempt from the 25% surcharge.

In Binghamton-Johnson City, all individual users (metered and industrial user fees) contribute towards all treatment plant debt service, all treatment and collection, O&M, and all sewer system rehabilitation and operations.

a) new regional collectors are financed via separate county districts

b) existing and new local collection debt service financed by local municipalities.

Endicott STP cost-sharing should continue as arranged with the metering modification.

Town of Maine and Union should share Nanticoke Valley Interceptor costs according to proportions of projected flow attributable from each municipality to the interceptor.

Local collection financing should continue through special assessment or property tax in other than Binghamton and Johnson City where collection is generally financed with a metered rate.

Expanded Broome Sewer District and Chenango Sewer District, though both managed by the BCSA, have separate finances.

Public Education

There are no formal public education activities proposed by this plan.

Manpower

Table VI-16 details the manpower requirements of the plan.

Skills commonly available with municipal waste treatment personnel should be sufficient to operate the proposed facilities. Manpower training will continue to be provided by the DEC and by on-the-job experience.

Revision Program

Five-Year Revision

The STERPB and the DEC will be instrumental in coordinating the five-year revision plan as well as the continuing planning process along with the existing institutions and the expanded County District. The following activities should be considered five years after plan selection:

1. Revised waste flow projections. The wastewater flow projections of this study should be reconsidered for variations which may affect the performance of existing facilities or cost-sharing arrangements. The areas of variation are: population-migration, industrial relocation, extension of sewerage, infiltration-inflow and price-demand relationships relative to achieving the non-structural alternatives.

2. Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continuous rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

3. Need for new sewerage extensions. Most of the anticipated sewerage extensions should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

4. Stream standards and water quality monitoring. The information generated during the five years of Susquehanna River monitoring should be assessed for the development of new stream standards.

5. Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

6. Sludge disposal. The land application of sludge should be reassessed for possible modifications to the land application practices or for complete abandonment in favor of landfill.

7. Assessment by BCSA and DEC of water quality conditions on the Chenango River and the impact of such conditions on the River use (particularly adjacent to the Park) with a view towards:

a) additional treatment beyond secondary

b) relocation of the outfall below the park.

8. Reassessment of second phase of regional collection and treatment plant expansion needs in Chenango Valley.

Decision Oriented Revision

The following issues may appear at any time and may require plan revision. Since these revisions may occur at any time, they are listed according to the conditions which necessitate an investigation into a particular revision.

1. Condition: Binghamton-Johnson City STP Reaches Capacity. Possible plan revision investigation:

a) Change in-plant process (*e.g.*, pure oxygen systems),

b) Expand plant size with due concern given to land availability,

2. Condition: West Owego WPCP Reaches Capacity or Needs Major Repairs. Possible plan revision investigations:

a) expansion,

b) abandonment and connection to Owego Village

3. Condition: Frequent Violations of Water Quality. Possible plan revision investigations:

a) increase in treatment levels at the Binghamton-Johnson City STP.

4. Condition: New Stream Standards and/or Effluent Limitations. Possible plan revision investigations:

a) change in treatment plant logistics,

b) change in treatment levels

5. Condition: Major Interceptors Reach Capacity. Possible plan revision investigations:

a) new treatment plant to relieve load,

b) infiltration control

c) flow equalization/storage at pump stations or with industrial users

6. Condition: Chenango Plant Reaches Capacity. Possible revision investigations:

a) expansion of the facility

7. Condition: Chenango Plant O&M is Disproportionately Expensive. Possible revision investigations:

a) new operational procedures

b) abandonment.

8. Condition: Reduced Water Quality in the Chenango River Impacting Upon Recreation. Possible revision investigations.

a) additional treatment necessary

b) relocation of outfall below park

c) abandonment and Binghamton connection

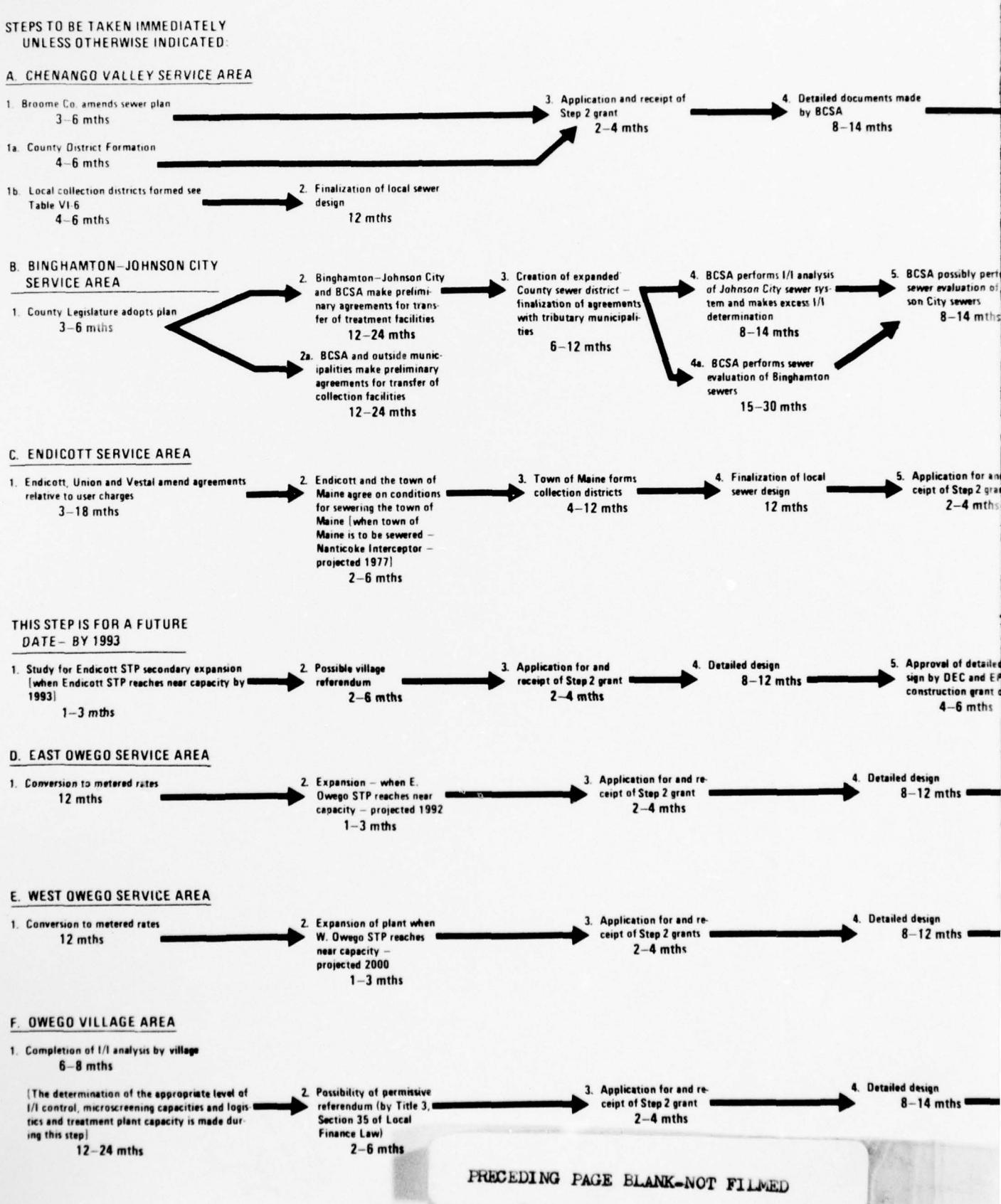
9. Condition: Dangerous Public Health Conditions Resulting from Withholding Sewer Services on Chenango Valley. Possible plan revision investigation:

a) sewerage extension and update of proposed plant expansion in Chenango Valley.

Implementation Program

Figure VI-12 shows the implementation steps for construction and for formation of a managing institution.

FIGURE VI-12 PLAN 3-C-2 5 MG/L – NITRIFICATION – 3 PLANTS BROOME COUNTY, 3 PLANTS TIOGA COUNTY – PHASED SEWERING FOR CHENA
IMPLEMENTED BY AN EXPANDED COUNTY DISTRICT



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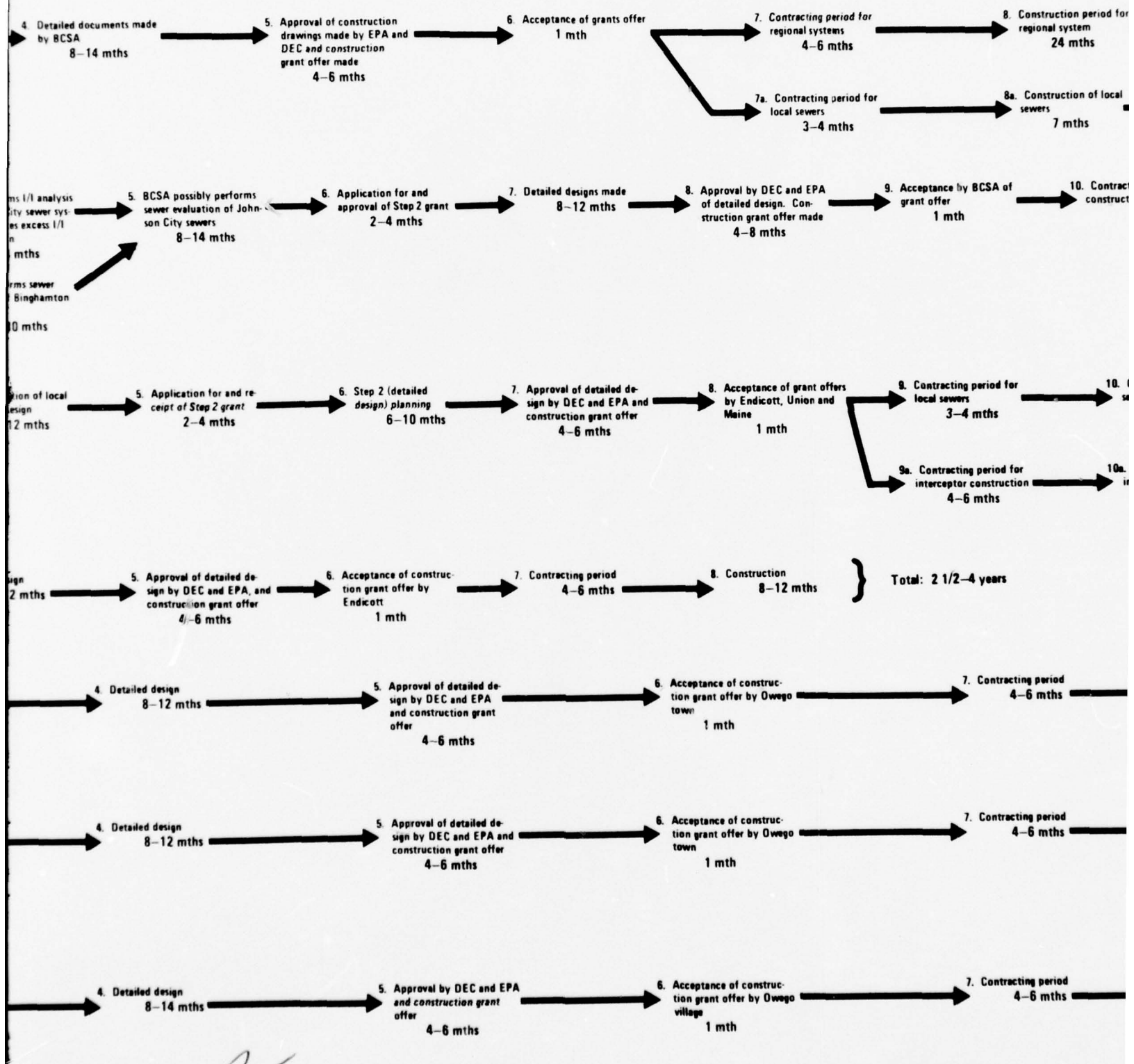
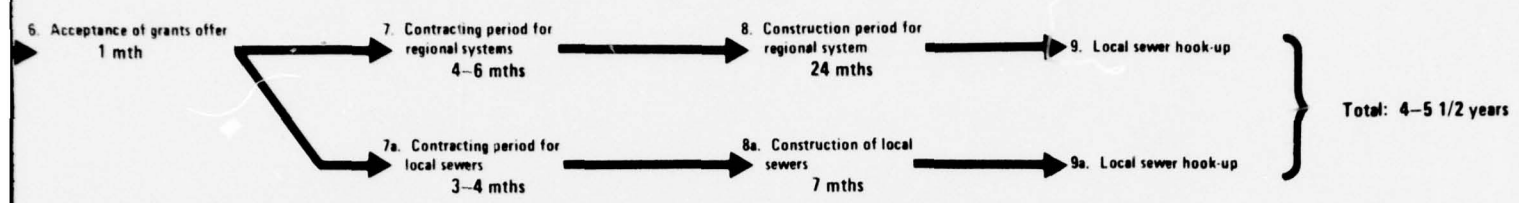
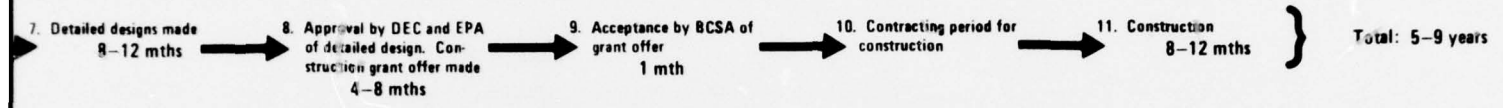
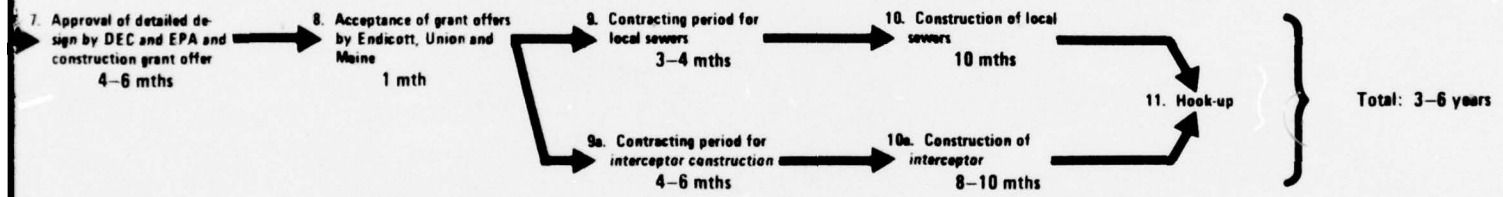
PHASED SEWERING FOR CHENANGO VALLEY

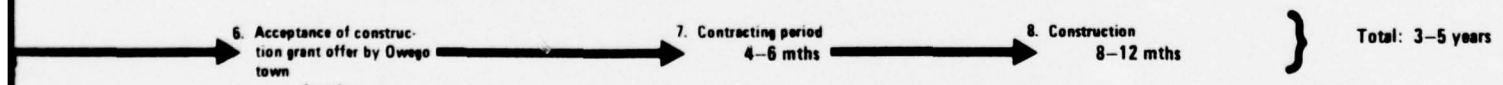


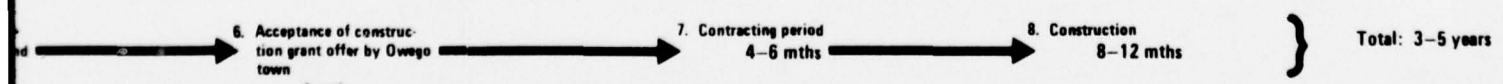

6. Acceptance of grants offer
1 mth
7. Contracting period for regional systems
4–6 mths
8. Construction period for regional system
24 mths
9. Local sewer hook-up
7a. Contracting period for local sewers
3–4 mths
8a. Construction of local sewers
7 mths
9a. Local sewer hook-up
Total: 4–5 1/2 years

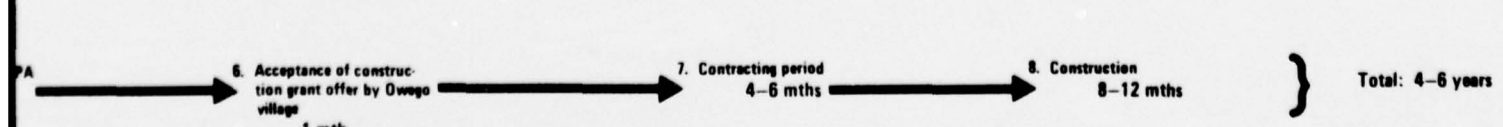

7. Detailed designs made
8–12 mths
8. Approval by DEC and EPA of detailed design. Construction grant offer made
4–8 mths
9. Acceptance by BCSA of grant offer
1 mth
10. Contracting period for construction
11. Construction
8–12 mths
Total: 5–9 years


7. Approval of detailed design by DEC and EPA and construction grant offer
4–6 mths
8. Acceptance of grant offers by Endicott, Union and Maine
1 mth
9. Contracting period for local sewers
3–4 mths
10. Construction of local sewers
10 mths
11. Hook-up
9a. Contracting period for interceptor construction
4–6 mths
10a. Construction of interceptor
8–10 mths
Total: 3–6 years

7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 2 1/2–4 years


6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


6. Acceptance of construction grant offer by Owego town
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 3–5 years


6. Acceptance of construction grant offer by Owego village
1 mth
7. Contracting period
4–6 mths
8. Construction
8–12 mths
Total: 4–6 years

4-1: AWT PLAN - 2 PLANTS BROOME COUNTY, 2 PLANTS TIOGA COUNTY - IMPLEMENTED BY COUNTY DEPARTMENTS

Capital Improvements Program

Table VI-17 presents the capital improvements required by this plan.

TABLE VI-17

CAPITAL IMPROVEMENTS PROGRAM FOR PLANS 4-1 AND ALSO FOR 4-2

	NEW TOTAL CAPACITY (MGD)	YEAR	CONSTRUCTION COST ($ MILLION)	PRESENT* WORTH	DESCRIPTION
Binghamton-Johnson City	2.2	1977	2.50		Chenango Interceptor
	3.0	1977	1.21		Infiltration Control
	–	1977	3.58		Storm overflow
	24.4	1977	1.42		Aeration and clarification
	29.0	1977	0.05		Raw Wastewater pumping
	20.5	1983	3.69		Nitrification
	20.5	1985	7.99		*AWT Add-Ons*
				16.2	
Endicott	0.8	1977	1.57		Nanticoke Valley Interceptor
	7.5	1983	2.26		Nitrification
	7.5	1985	3.58		AWT Add-Ons
				5.4	
East Owego	2.0	1983	0.84		Nitrification
	2.5	1985	1.58		AWT Add-Ons
	2.5	2000	1.05		Secondary & Nitrification
				1.8	
West Owego	0.9	1977	0.66		Pressure Main from Owego Village
	–	1977	0.58		Inflow Control
	3.0	1977	0.42		Micro-screening
	1.5	1977	1.29		General Expansion
	1.5	1983	0.68		Nitrification
	1.5	1985	1.2		AWT Add-Ons
				4.1	
				27.5	

*Total Present Worth (P.W.) in Baseline year 1977 at 6-1/8% interest

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Management Program

Institutional Composition and Responsibilities

Federal. EPA, through the Administrator, continues regulatory and funding activities.

State. The DEC, through its Executive, continues training, monitoring of wastes, regualtory, standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (*e.g.*, town district).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordinates future wastewater planning.

Broome County Sewer Department, through the Broome County Executive, is responsible for planning and managing all sewage collection and treatment facilities in Broome County; assumes all outstanding indebtedness for existing regional collection and treatment facilities.

The local communities, through executives and boards, are responsible for financing new collection extensions and old collection debt service.

The County Sewer Departments are responsible for writing standards for new sewer system construction and connections; oversees all local construction.

The BCHD continues monitoring and inspection activities of industrial and municipal wastes. It also coordinates with the sewer department in these related matters.

Tioga County Sewer Department, through the Tioga County Executive, is responsible for planning, monitoring and managing all sewer collection and treatment facilities in Tioga County and assumes all outstanding indebtedness for existing regional collection and treatment facilities.

Fiscal Activities

Metering and user fees – Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements).

Reserve Funds. Funds should be created as per Federal grant recovery requirements (re: industrial users) and as required to finance new construction and replacement. Portions of Federal grants recovered from industry can subsidize low income families.

Bonding. Bond anticipation notes and serial bonds, guaranteed by county governments, will be relied upon.

Cost Sharing. The Federal share of eligible construction will continue at 75% of the construction cost:

The State share of eligible construction will continue at 12½% of the construction costs.

The State will continue to fund 33% of eligible operation and maintenance costs.

Local cost sharing for treatment expenses and collection O&M will be apportioned equally by all users of all facilities in each county.

A composite unit charge for BOD (Biochemical Oxygen Demand), SS (Suspended Solids) etc., construction and O&M of all facilities will be derived for industrial users in each county.

Public Education

A limited education program is provided in this plan. STERPB will be responsible for supporting a program which will demonstrate the advantages to the consumers of installing water-saving plumbing devices in the home. The major features of the program are:

1. orient towards residences,

2. stress the dollar savings of reduced water, sewer and water heating bills to individual users by installing water saving devices,

3. differentiate between homeowners, renters and landlords,

4. disseminate information with mailings once a year,

5. operate for 10-15 years,

6. coordinate with local hardware suppliers to ensure fixture availabilities,

7. promote local building code, amendments with maximum water-use specifications.

Manpower

The manpower requirements are shown in Table VI-18. The AWT processes proposed in this plan are not commonly used in municipal waste treatment. However, the qualifications of operators for such facilities should be the same as for conventional facilities, since the personnel activities required for AWT operation are not significantly more complex. Standard contracts with designing engineers of these facilities to ensure the proper transfer of operating procedures to the plant personnel should be sufficient to guarantee manpower training.

Revision Program

Five Year Revision

The County Departments, the STERPB and the DEC will be instrumental in coordinating this program as well as the continuing planning process.

1. Price/demand relationships and revised waste flow projections. Detailed plant design for the AWT facilities should be initiated after this revision. A major input into the design will be the needed capacities of the facilities. The creation of the sinking fund at the beginning of plan implementation will stimulate the long term prices in the the local economy. After five years of such fees for treatment, a major investigation should be made into estimating the effectiveness of such prices in reducing demand. The capacities proposed for the AWT facilities of this plan should be revised accordingly.

a) effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continued rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

b) Need for new sewerage extensions. Most of the anticipated sewerage extension should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

c) Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed for past performance. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

d) Change in capital improvement program. New priorities should be examined with regard to delaying the installation of certain AWT processes at one or all of the treatment plants.

Decision Oriented Revision

1. Condition: Capital Improvement Program Results in Heavy Financial Burden to System Users Without Commensurate Improvements in Water Quality. Possible plan revision investigation:

a) delay construction schedules

2. Condition: Major Interceptors Reach Capacity. Possible plan revision investigation:

a) new treatment plant to relieve load,

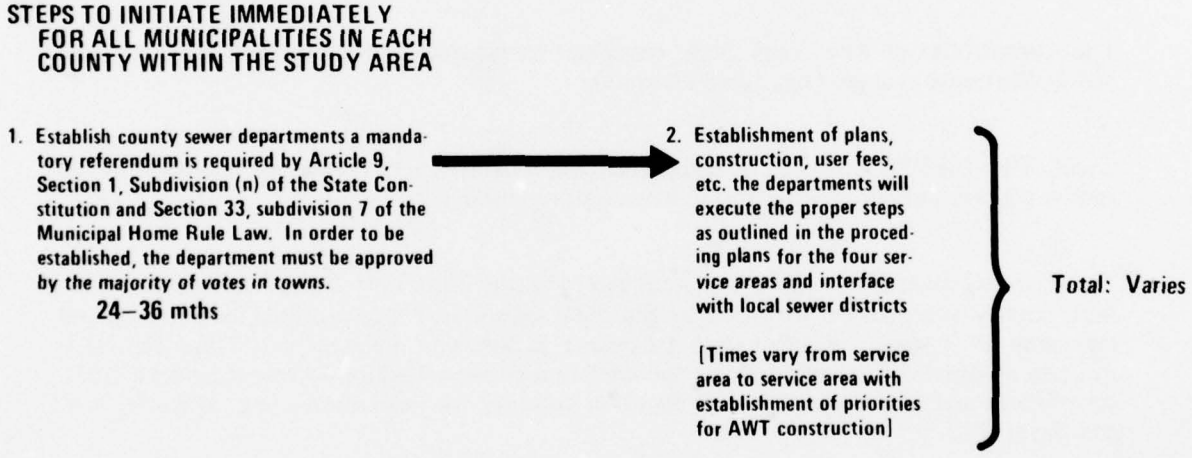
b) infiltration control,

c) flow equalization/storage at pump stations or with industrial users.

Implementation Program

Figure VI-13 shows the implementation steps for construction and for formation of a managing institution.

FIGURE VI–13. 4-1 AWT PLAN (2 PLANTS BROOME COUNTY, 2 PLANTS TIOGA COUNTY) IMPLEMENTED BY COUNTY DEPARTMENTS



4-2: AWT PLAN – 2 PLANTS BROOME COUNTY, 2 PLANTS TIOGA – IMPLEMENTED BY A TWO-COUNTY AUTHORITY

Capital Improvements Program

Table VI-17 presents the capital improvements required by this plan.

Management Program

Institutional Composition and Responsibilities.

Federal. The EPA, through the Administrator, continues regulatory and funding activities.

State. The DEC, through its Executive, continues training, monitoring of wastes, regulatory, standard-setting and funding activities.

The Comptroller of New York State continues monitoring and approval of local finances and institutional changes (*e.g.*, town districts).

Local. The STERPB continues to refine the comprehensive plan for project notification and review process and coordinates future wastewater planning.

The bicounty authority, through its Executive (by the New York State Legislature and by local county executives if provided by the State legislature) is responsible for planning and managing all sewage collection and treatment facilities in Broome and Tioga Counties; assumes all outstanding indebtedness for existing regional collection and treatment facilities; coordinates and enters agreements with other counties for joint service (*e.g.*, Waverly, N.Y. and Sayre, Pa.).

The BCHD continues monitoring and inspection activities of industrial and municipal wastes in co-operation with the bicounty authority.

The local communities, through executives and boards, are responsible for financing new collection extensions and old collection debt service.

Fiscal Activities

Metering and user fees – Endicott, Union and Owego Town should convert from flat rates and property tax to metered rates and industrial surcharges (according to EPA requirements).

Reserve Funds – Funds should be created as per Federal grant recovery requirements (re: industrial users) and as required to finance new construction and replacement. Portions of Federal grants recovered from industry can subsidize low income families.

Bonding – Revenue bonds and bond anticipation notes will be used.

Cost-sharing – Sewage rates will be equalized throughout Broome and Tioga Counties. Basically, the other comments made under Plan 4-1 for this section remain the same.

Public Education

A limited education program is provided in this plan. The bicounty authority will be responsible for supporting a program which will demonstrate the advantages to the consumer of installing water saving plumbing devices in the home. The major features of the program are:

1. orient towards residences,

2. stress the dollar savings of reduced water, sewer and water heating bills to individual users by installing water saving devices,

3. differentiate between homeowners, renters, and landlords,

4. disseminate information with mailings once a year,

5. operate for 10-15 years,

6. coordinate with local hardware suppliers to ensure fixture availabilities,

7. promote local building code amendments with maximum water-use specification

Manpower

The manpower requirements are shown in Table VI-18. The AWT processes proposed in this plan are not commonly used in municipal waste treatment. However, the qualifications of operators for such facilities should be the same as for conventional facilities, since the personnel activities required for AWT operation are not significantly more complex.

Revision Program

Five Year Revision

The Bicounty authority, the STERPB and the DEC will be instrumental in coordinating this program as well as the continuing planning process.

TABLE VI-18

MANPOWER REQUIREMENTS
PLAN 4-1 and also for 4-2 (2+2, BIO-AWT)

	BINGHAMTON-JOHNSON CITY			ENDICOTT			CHENANGO VALLEY	E. OWEGO			W. OWEGO		
YEAR	1977-1982	1983-1984	1985-2026	1977-2982	1983-1984	1985-2026	1977-1982	1983-1984	1985-1999	2000-2026	1977-1982	1983-1984	1985-2026
CAPACITY (MGD)	18.8	18.8	20.6	7.0	7.1	7.5	1.3	1.4	2.0	2.4	1.3	1.3	1.3
STP TYPE													
STAFF REQUIREMENTS	BIO-AWT (A/S)			BIO-AWT (TF)			BIO-AWT (A/S)				BIO-AWT (TF)		
Superintendent	1	1	1	1	1	1	–	–	–	–	–	–	–
Clerk Typist	1	1	1	–	–	–	–	–	–	–	–	–	–
Operator II	5	5	8	2	2	3	1	1	2	3	1	1	1
Operator I	9	12	25	4	6	13	4	5	8	9	4	5	8
Auto Equipment Operator	3	3	3	1	1	1	–	–	–	–	–	–	–
Maintenance Mechanic II	1	1	3	–	–	1	–	–	–	–	–	–	–
Maintenance Mechanic I	1	1	3	–	–	1	–	–	–	–	–	–	–
Electrician II	1	1	1	–	–	–	–	–	–	–	–	–	–
Maintenance Helper	2	2	11	1	2	4	–	–	3	3	–	–	3
Laborer	3	3	3	1	1	1	1	1	1	1	–	–	1
Laboratory Technician	2	2	3	1	1	2	1	1	1	1	–	–	1
TOTAL STAFF COMPLEMENT	29	33	62	11	14	27	7	8	15	17	5	6	15

1. Price/demand relationships and revised waste flow projections. Detailed plant design for the AWT facilities should be initiated after this revision. A major input into the design will be the needed capacities of the facilities. The creation of the sinking fund at the beginning of plan implementation will stimulate the long term prices in the local economy. After five years of such fees for treatment, a major investigation should be made into estimating the effectiveness of such prices in reducing demand. The capacities proposed for the AWT facilities of this plan should be revised accordingly:

a) Effectiveness of infiltration control measures. After five years, an assessment should be made of the effectiveness of the proposed infiltration control measures and the desirability of continued rehabilitation. Infiltration control is economically efficient if the cost of control is less than or equal to the cost of treating the infiltration at the treatment plant.

b) Need for new sewerage extensions. Most of the anticipated sewerage extension should occur during the first five years of plan implementation. A reassessment of the need for extensions beyond that date should be performed.

c) Performance of facilities. With regard to the possible formation of new stream standards, the performance of the treatment plant and stormwater overflow facilities should be reviewed for past performance. Recommendations should be provided relative to possible structural modifications to these facilities or changes in operational procedures.

d) Change in capital improvement program. New priorities should be examined with regard to delaying the installation of certain AWT processes at one or all of the treatment plants.

Decision Oriented Revision

1. Condition: Capital Improvement Program Results in Heavy Financial Burden to System Users Without Commensurate Improvements in Water Quality. Possible plan revision investigation:

a) delay construction schedules

2. Condition: Major Interceptors Reach Capacity. Possible plan revision investigation:

a) new treatment plant to relieve load,

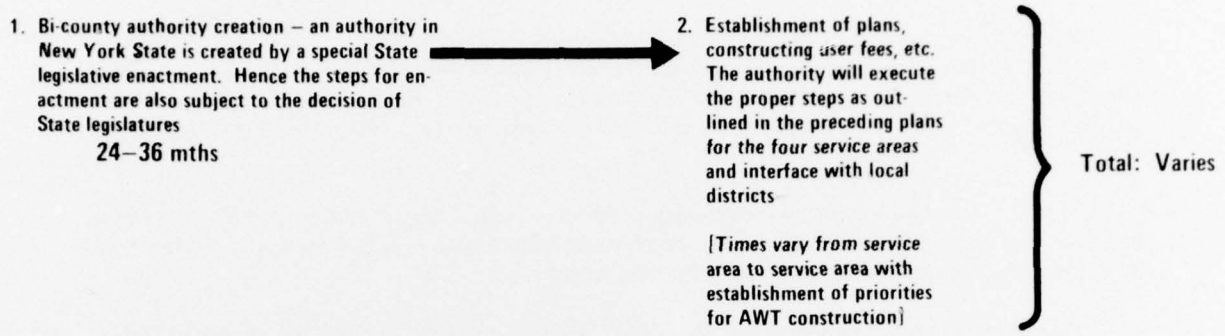
b) infiltration control,

c) flow equalization/storage at pump stations or with industrial users.

Implementation Program

Figure VI-14 shows the implementation steps for construction and for formation of a managing institution.

FIGURE VI–14. 4-2 AWT PLAN (2 PLANTS BROOME COUNTY, 2 PLANTS TIOGA COUNTY) IMPLEMENTED BY A TWO–COUNTY AUTHORITY



SUMMARY

The following Table is a summary of the plans which were considered:

TABLE VI-19 SUMMARY OF CONSIDERED PLANS

INSTITUTIONAL ALTERNATIVE W. PLAN DESIGNATION	DESCRIPTION	IMPLEMENTING INSTITUTION	AVERAGE ANNUAL COST ($ MILLIONS)	TIME FOR IMPLEMENTATION AVERAGED FOR ALL AREAS
1	Baseline	Existing	2.1	–
2-A-1	Secondary Interceptor	Modified	3.0	3-5 years
2-A-2	Secondary Interceptor	District	3.0	3-6½ years
2-B-1	Secondary Chenango Plant	Modified	3.1	4-5½ years
2-B-2	Secondary Chenango Plant	District	3.1	4-5½ years
2-C-1	Secondary *Phased*	Modified	3.1	4-6 years
2-C-2	Secondary Phased	District	3.1	4-6 years
3-A-1	Nitrification Interceptor	Modified	3.3	3½-5 years
3-A-2	Nitrification Interceptor	District	3.3	3-6½ years
3-B-1	Nitrification Chenango Plant	Modified	3.3	4-5½ years
3-B-2	Nitrification Chenango Plant	District	3.3	4-5½ years
3-C-1	*Nitrification* Phased	Modified	3.3	4-6 years
3-C-2	Nitrification Phased	District	3.3	4-6 years
4-1	AWT	County Dept.	5.8	varies
4-2	AWT	Two-County Authority	5.8	varies

As can be noted, neither the time nor the cost estimates are substantially different from one another between the secondary and nitrification plans. The AWT shows a significant difference both in time and cost from the lower levels of treatment because of the high level of treatment and the fact that implementation mechanisms must be created and passed by the State Legislature.

An essential determinant of plan choice relates to the need for sewering in the Chenango Valley area. The phased sewering of Chenango Valley lends itself to immediate implementation, whereas the separate plant and interceptor approach lends itself to decisions that can take time to be implemented.

In most plans, (except for AWT Plans) the institutional arrangements for implementation are those placing the least demand for change upon the existing institutions.

Chapter VII will detail how one of these plans may fit into the overall construction grant process of EPA.

CHAPTER VII

PLAN IMPLEMENTATION AND THE CONSTRUCTION GRANT PROCESS

The water pollution control program as defined in P.L. 92-500 and administered by the Environmental Protection Agency can be viewed as consisting of three broad strategies:

**planning* water pollution control on a facility, area, river basin, and state basis;

**improving* the level of waste water treatment via the construction grants program;

**regulating* the degree of waste water treatment via discharge permits.

To carry out these strategies in a cohesive manner, the planning process has been designed to set water quality standards within river basin areas (303e planning), to provide an area-wide waste management plan (208 planning), and develop a complete waste treatment facility plan (201 planning). The Binghamton Wastewater Management Study is an example of a 208 area-wide study, with technical data to fulfill some of the requirements for a 201 plan.

These plans interface in the following manner:

1) a 303e river basin plan is developed by each state to provide water quality standards for the National Pollutant Discharge Elimination System program and to provide input to the state project priority system.

2) The 208 area-wide waste water management plan is developed by an area-wide waste management agency, to plan all water quality needs for a designated area. The 208 plan also includes input from the National Pollutant Discharge Elimination System permit program relating to permit requirements and schedules of compliance. The 208 agency, must determine if a facility plan in its designated area has been developed in accordance with its area-wide plan, and finally EPA regions and states are required to take cognizance of area-wide plans before issuing permits or awarding construction grants.

3) The 201 facility plan prepared by a locality is a common element to both the planning functions and the construction grants program, in that it is a plan related to the effluent quality of a planned facility within an area and river basin, and also is a major step in the construction grants planning and application process.

The following is a brief description of each plan with an indication as to whether or not the BWMS has met each requirement for the Plan. It may be noted that the requirements of the 208 plan and the 201 plan overlap, however, the basic difference is in the technical data level required.

THE 208 PLAN

The 208 Plan is designed by a regional agency specifically designated as a 208 agency. Its purpose is to provide a guideline for municipalities to follow in their wastewater planning efforts. The contents for a 208 plan are required as follows:

TABLE VII-1—208 PLAN REQUIREMENTS

a) Identification of anticipated municipal and industrial treatment works construction over a 20 year period (complete);

b) Planning for facilities eligible under 40 CFR 35.917-1(a) – (i) and 40 CFR 35.1062 and for which Step 2 or Step 3 grant assistance is expected during the five year period following 208 plan approval (complete);

c) Identification of required urban stormwater runoff control systems (complete);

d) Establishment of construction priorities over five and twenty year periods (complete).

e) Establishment of a regulatory program to: 1) provide for waste treatment management on an area-wide basis and for identification, evaluation and control or treatment of all point and non-point pollution sources; 2) regulate the location modification and construction of waste-discharging facilities; and 3) assure that industrial or commercial wastes discharged into publicly-owned treatment works meet applicable pretreatment requirements (partially complete);

f) Identification of agencies necessary to construct, operate, and maintain facilities required by the plan and otherwise carry out the plan (complete)

g-j) Identification of non-point sources of pollution related to agriculture, silviculture, mining, construction, and certain forms of saltwater intrusion, and procedures and methods (including land use requirements) to control those sources to the extent feasible (not complete).

k+l) Processes to control the disposition of residual waste and land disposal of pollutants to protect ground and surface water quality (complete);

m) Selection of a management agency(s) and institutional arrangement to implement the plan and identification of the major management alternatives (including enforcement, financing, land use and other regulatory measures and associated management authorities and practices) (partially complete);

n) A schedule for implementing all elements of the plan, including identification of the monetary costs and economic, social and environmental impact of implementation (complete);

o+p) Required certifications relating to consistency with other plans and to public participation in the planning process and plan adoption (state responsibility);

q) Recommendation of a plan by appropriate local governing bodies for state certification and EPA approval (partially complete);

THE 201 PLAN

There are four parts to this plan which are written by a municipality, regional or state wastewater management institution. The four parts are 1) a definition of the proposed planning area, 2) an identification of the entity or entities that will be conducting the planning; 3) a description of the nature and scope of the proposed project, including a schedule for the completion of specific tasks; and 4) an itemized description of the estimated costs for the project.

The required contents for a facility plan, listed in *Water Pollution Control Construction Grants for Waste Treatment Works* "Rules and Regulations," are as follows:

TABLE VII-2 – 201 FACILITIES PLAN REQUIREMENTS

a) A description of the treatment works for which construction drawings and specifications are to be prepared. To include preliminary engineering data, cost estimates and a schedule for completion of design and construction (complete);

b) A description of the selected complete waste treatment system of which the proposed treatment works is a part (complete);

c) Infiltration/inflow documentation in accordance with § 35.927 (partially complete);

d) A cost-effectiveness analysis of alternatives for the treatment works and for the waste treatment system(s) of which the treatment works is a part. To also include:

1) relationship of size and capacity of alternative works to the needs to be served;
2) evaluation of alternative flow and waste reduction measures;

3) evaluation of improved effluent quality attainable by upgrading the operation and maintenance and efficiency of existing facilities;

4) evaluation of the capability of each alternative to meet applicable effluent limitations;

5) identification of, and provision for, applying the best practicable waste treatment technology included under each of the following techniques:

i) Biological or physical chemical treatment
ii) Treatment and reuse; and
iii) Land application techniques.

The plan must provide for secondary treatment as a minimum appropriate application of Best Practical Waste Treatment Technology in accordance with technical criteria established by EPA or for application of any more stringent effluent limitations required to meet water quality standards.

6) Evaluation of alternative means by which ultimate disposal can be effected for treated wastewater and for sludge materials.

7) Assessment of environmental impact.

(All of the above under section d complete)

e) Identification of effluent discharge limitations, or a copy of the NYPDES permit if one has been issued; (complete)

f) Required comments or approvals of relevant State, interstate, regional and local agencies; (partially complete)

g) Summary of any public meetings or hearings held during the planning process (complete)

h) Statement of how the plan will be implemented within the time period proposed (complete)

i) Statement specifying that Title VI requirements of the Civil Rights Act of 1964 has been satisfied and that Part 7 has been satisfied. (complete)

In order to fulfill these requirements, the 201 Facilities planning process is carried out in 3 steps:

Step 1—An application for funds is made by a municipality to EPA to develop a Plan of Study; the requirements of which are listed on page 126 of this report. After review of this Plan of Study by appropriate regional, state, and Federal agencies, funding is provided to take the next step.

Step 2—plans and specifications are drawn up, with EPA being responsible for reviewing the plans and specifications. After reviewing these plans, EPA grants money for Step 3.

Step 3—actual construction. This includes the selection of a contractor, the building of the facilities, payment by EPA and the closing out of the construction project with a final inspection.

PLAN IMPLEMENTATION AND THE CONSTRUCTION GRANT PROCESS

The accompanying Table VII-3 illustrates in a comprehensive manner, the steps that must be taken by the municipalities after a plan has been agreed upon and shows how these steps fit into the overall EPA grant process for planning, design and construction of wastewater systems. The top part of the Table follows the steps, at various governmental levels, for the construction grant program. The lower part of the chart is a representative example of the steps (with responsible decision-makers,) that must be taken to form an institution that will manage the technical plan.

The steps that are heavily outlined are those that have been fulfilled by the Binghamton Wastewater Management Study Report. These steps are those that apply to the fulfillment of 208 plan requirements. The heavily lined arrows designate the direct decision making steps. The time elements under the appropriate boxes indicate how long it will take to accomplish that part of the process toward implementation. The lines connecting the institutional part of the chart with the construction grant portion indicate that the steps in forming an institution should be accomplished by the time a particular step is to be taken for construction.

AN EXAMPLE (B-JC Expansion)

As envisioned by law, the facility plan (Step 6A) is to be the point at which the overall water quality planning process develops into a specification of individual treatment projects. The municipalities must agree to the facilities plan. This means that the village mayor and board, the Town board and supervisor, the mayors and legislatures of cities (along with the Joint Sewer Board of Binghamton-Johnson City) will need to approve of their portions of the overall plan.

While agreement is made for the design & construction part of the plan, agreement will also have to be made between the municipalities to standardize their charge mechanisms, to proceed to form the districts, that will manage the technical plan plus other modifications necessary to indicate to the Department of Environmental Conservation (DEC) and EPA that there is general agreement on the mechanism for management (see Steps 1B-10B).

The groups to be guided into making these agreements would be the village mayors and boards, town boards, city mayors, county legislatures and the Joint Sewer Board.

With an agreement on the facility plans and a general agreement toward the institutional part of the process, the plan is then submitted to the State agency (7A, 8A) for review and portions are certified. Then it goes to EPA for approval (9A).

The review criteria that must be met are the following:

1. The plan must be consistent with existing state and NPDES permits;

2. The plan must be consistent with 303e Basin Plan;

3. The plan must be consistent with the areawide plan;

4. All requirements for public participation regarding plan development and approval must have been fulfilled;

5. The plan should provide for secondary treatment as a minimum, with appropriate application of BPWTT in accordance with EPA criteria;

6. The plan should be cost-effective and environmentally sound;

7. Excessive infiltration/inflow (I/I) should not exist or, if it does, a detailed sewer evaluation survey and necessary measures should be accomplished;

8. Implementation of the plan should be institutionally feasible;

9. The plan should be compatible with others developed for contiguous areas of other states.

After EPA review, the plan can be submitted for A-95 review by STERPB (10A).

While the review process is going on, steps should be taking place for the formation of the necessary town districts, county districts and other modifications to manage the plan (9B, 10B). These Steps, at the earliest must be accomplished at this time because when the municipality applies for its Step 2 grant (11A) and plans and specs are drawn up (16A), there will be ample time for agreements to be reached. The 9B and 10B steps should be completed by Step 3 because in order to get a Step 3 grant, not only must plans and specs be suitable, but there must also be the development of evidence of compliance with an institutional arrangement.

The rest of the steps continue so that by the time construction is ready to begin (24A), an institution is ready to manage. If it is not ready, then a municipality could temporarily manage the technical portion of the plan.

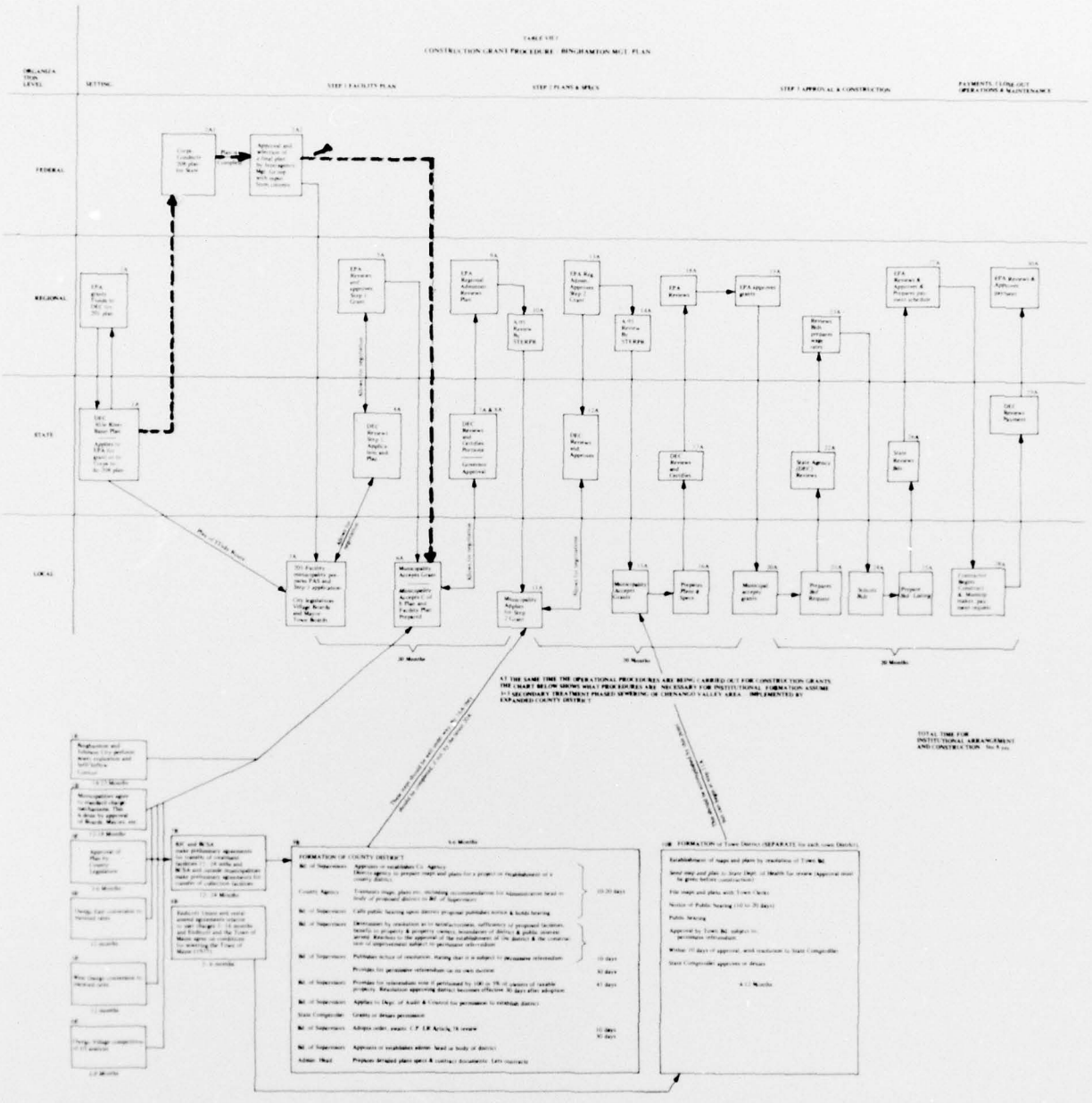
SUMMARY

The purpose of the institutional appendix has been to delineate the technical plans and to discuss institutional arrangements for the implementation of the technical plans.

Four major programs of the institutional analysis were also discussed in each plan: 1) capital improvements, 2) management, 3) revision and 4) implementation.

In the last chapter, a sample plan was related to the overall EPA grant program.

Essentially, the appendix attempts to take specific plans and relate them to the decisions that need to be taken by the different decision making bodies on all levels of government. The appendix provides some of the basic information needed for plan selection as well as plan implementation.



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