United States
Environmental Protection
Agency

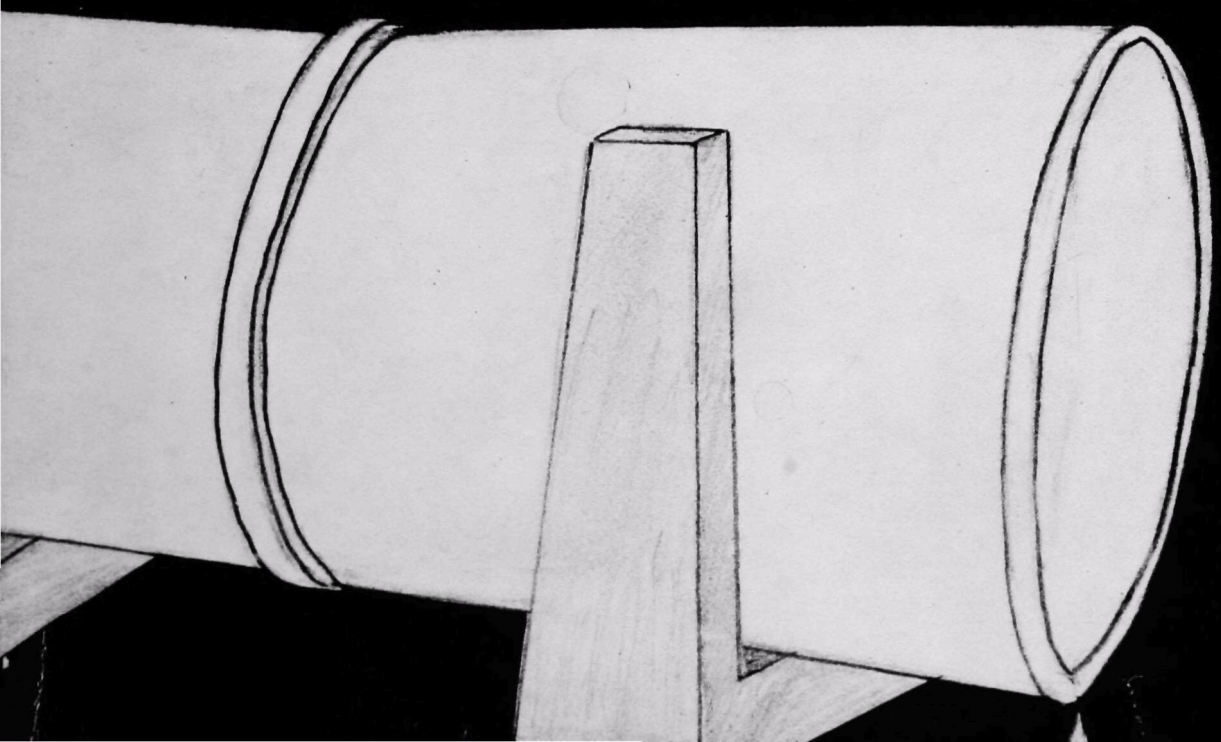
Region 3
6th and Walnut Streets
Philadelphia, PA 19106

August 1980

EPA

Final Environmental Impact Statement

Bushkill-Lower Lehigh Joint Sewer Authority and Borough of Nazareth Wastewater Treatment Facilities Northampton County, PA.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
6TH AND WALNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

JUL 28 1980

TO ALL INTERESTED AGENCIES, PUBLIC GROUPS, AND CITIZENS:

Enclosed is a copy of the Final Environmental Impact Statement (EIS) prepared by the U.S. Environmental Protection Agency (EPA) on the proposed construction of Federally funded wastewater management facilities for the Bushkill-Lower Lehigh Joint Sewer Authority and Borough of Nazareth, Northampton County, Pennsylvania.

I wish to thank the applicant for the assistance provided to EPA's staff during this EIS process. In addition, I wish to commend the performance of each Township and Borough representative for the guidance they provided EPA throughout this decision-making endeavor. Finally, I want to especially recognize the strong commitment of local citizens throughout the study. Their participation has contributed to the development of responsive solutions to sewage needs of the area.

This Final EIS is being issued pursuant to the National Environmental Policy Act of 1969, the Clean Water Act of 1977, and regulations promulgated by this Agency (40 CFR, Part 6, November 6, 1979). Comments or inquiries concerning this EIS should be submitted to the attention of Ms. Rochelle Volin (3IR61) at the above address by October 5, 1980.

The Final EIS has determined that the Applicant's Proposed Action is unacceptable for Federal funding due to its potential to cause significant adverse environmental impacts. The preferred project (Alternative 9) consists of conveyance of flows from portions of Plainfield Township, Stockertown and Tatamy Boroughs, and Palmer Township to the Existing Easton sewage treatment plant; conveyance of flows from Upper Nazareth Township and the Borough of Nazareth to a new sewage treatment plant in Nazareth Township: the use of multi-family filter fields (cluster systems) in portions of Plainfield and Bushkill Townships and individual on-site systems throughout the rest of the service area. This action complies with the President's energy conservation directive by minimizing the total energy demand of the service area and minimizing construction in streams thus decreasing potential adverse impacts to a popular local trout stream.

A public meeting regarding the Final EIS will be held on September 18, 1980, at 7:30 p.m., in the Nazareth Junior High School. Both the public and representatives of organizations are encouraged to attend and express their comments and opinions on the Final EIS.

Sincerely yours,

Jack J. Schramm
Regional Administrator

Enclosure

FINAL ENVIRONMENTAL IMPACT STATEMENT

on

BUSHKILL-LOWER LEHIGH JOINT
SEWER AUTHORITY AND BOROUGH OF NAZARETH
WASTEWATER TREATMENT FACILITIES
NORTHAMPTON COUNTY, PENNSYLVANIA

Prepared by:

US ENVIRONMENTAL PROTECTION AGENCY
REGION III
PHILADELPHIA, PENNSYLVANIA

Rochelle B. Volin, Project Monitor

Prepared with the Assistance of:

WAPORA, Inc.
Washington DC

Eric M. Hediger, Project Manager

Type of Action:

Legislative ( )
Administrative (X)

LIST OF PREPARERS

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Applicant

This Final Environmental Impact Statement (EIS) has been prepared by US Environmental Protection Agency (EPA) Region III. It concerns the Bushkill-Lower Lehigh Joint Sewer Authority's proposed plan to construct a regional collection system to serve the wastewater management needs of the following municipalities[1] in Northampton County, Pennsylvania:

- Bushkill Township
- Upper Nazareth Township
- Nazareth Borough
- Plainfield Township
- Stockertown Borough
- Tatamy Borough
- Palmer Township.

conclusions of Final EIS

The Bushkill-Lower Lehigh Joint Sewer Authority (B-LLJSA) has requested the participation of EPA in the funding of this plan, hereafter referred to as the Applicant's Proposed Action (APA), under the Construction Grants Program. In most cases, the conclusions of the Final EIS confirm those of its predecessor, the Draft EIS. Major findings are listed below.

- The APA does not represent an appropriate strategy to serve the wastewater management needs of the seven municipalities listed above[1] based on considerations of the need (as defined by the Construction Grants Program) for sewerage facilities, its induced growth potential, and its impacts (via the Bushkill Interceptor) on the naturally reporducing trout fishery of Bushkill Creek.

- The Modified Applicant's Proposed Action (MAPA) is not an acceptable wastewater management plan for funding under the Construction Grants Program on the basis of need (as defined above), cost-effectiveness, induced growth potential, and impact on the naturally reproducing trout fishery of Bushkill Creek.

- EIS Alternative 9 is determined to be the most cost-effective and environmentally acceptable approach to serve the documented wastewater management needs of the EIS Phase I Service Area. Therefore, it has been selected as the EIS Recommended Action. Growth induced by this alternative is reasonable, and associated secondary impacts are not excessive. Trout production and recreational areas along Bushkill Creek downstream from Tatamy Borough would not be disturbed by construction activities as would be the case if the MAPA were built. The alternative involves the replacement of the existing Nazareth sewage treatment plant (STP) with a new treatment facility and the construction of pump stations and force mains to avoid the installation of gravity sewers in the floodplain of Bushkill Creek.

Draft EIS

EPA published the Draft EIS during December 1979. The primary purposes of this document were to review and analyze the B-LLJSA's application for EPA funding of the APA and to develop and evaluate alternatives in view of the public issues surrounding the project. These issues include (see Section I.C., Draft EIS):

EIS issues

- Need documentation
- Cost-effectiveness[2]
- Induced growth and secondary impacts
- Groundwater supplies
- Public participation.

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[1]These municipalties are known collectively as the EIS Service Area.

[2]EPA's review of the cost-effectiveness of the APA and the development of potentially cost-effective alternatives was conducted under the precept that cost-effective wastewater management plans minimize the total cost of water pollution control to the public.

documentation of need by EPA

In response to the first issue, EPA devoted a substantial effort to document existing water quality problems and potential public health hazards that are associated directly with malfunctioning on-site wastewater management systems in the EIS Service Area. This effort included an aerial survey and field investigation of residential areas, sampling of streams and wells for pollution indicators, and interviews with municipal sewage enforcement officers and other local health officials. EPA concluded that an immediate need for sewers or other off-site facilities exists in the following communities: the Belfast-Edelman area, east Pen Argyl, and Rasleytown in Plainfield Township; Rismiller in Bushkill Township; Stockertown Borough; Tatamy Borough; Nazareth Borough; suburban areas and Christian Springs in Upper Nazareth Township; and the Newburg Homes subdivision in Palmer Township. The following areas that were proposed to be sewered by the Applicant do not have documented needs for off-site wastewater management facilities: Jacobsburg State Park and Cherry Hill in Bushkill Township; Route 115 north of Belfast in Plainfield Township; and the sparsely populated Northern Corridor of Palmer Township (with the exception of Newburg Homes).

wastewater management approaches for Phase I and Phase II areas

The results of the needs documentation effort were integral to the development of cost-effective, alternative wastewater management approaches for areas with immediate need for off-site facilities (Phase I areas) and for areas in which limited wastewater management problems can be solved best by on-site system replacement or rehabilitation (Phase II areas). Technologies that might reduce project costs or minimize adverse impacts (excessive induced growth, diminished groundwater supplies, etc.), while still solving existing problems, were examined first. Four categories of alternative technologies -- flow reduction, low-cost sewers, decentralization, and land application -- were considered. In addition, several specific areawide alternatives to the APA were developed, combining the alternative technologies into complete wastewater management systems that would meet the needs of the EIS Service Area.

ten EIS alternatives

A total of ten alternatives and a "no-action" plan were developed by EPA and the public during the EIS process. Five of these alternatives proposed the use of the up-graded and expanded Easton STP, and four alternatives involved the upgrading and expanding, or replacement, of the existing Nazareth STP.

MAPA

In order to compare the APA to feasible alternatives developed in this EIS with respect to costs and environmental impacts, certain basic assumptions used by the Applicant in the design of the APA were modified to comply with those used in the design of the alternatives. These assumptions pertained to wastewater flow per capita, areas to be sewered, and design (final) year of the project.[3] This plan is referred to as the MAPA.

purposes of Final EIS

The primary purposes of this Final EIS are to respond to all substantive public and Agency comments on the Draft EIS and to present new, or revised, information that has been made available, or was developed, since the Draft EIS was published. Modifications to some of the information contained in the Draft EIS have been required as a result of changing conditions in the EIS Service Area or because of public comments.

Major public comments received on the Draft EIS include the following:

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[3]Under the MAPA, wastewater flow per capita is 60 gallons for residential areas and 70 gallons for residential/commercial areas; the northern extension of the Bushkill Interceptor (through Jacobsburg State Park) is removed, and the design year is 2000. With the exception of these design parameters, the MAPA is identical to the APA.

- *zoning ordinances that prevent development in floodplains*
- *unit prices for sewerage components*
- *costs of the Nazareth plant*
- *the Easton treatment plant*
- *gravity sewer versus force main/pump stations*
- *induced growth estimates and impacts*
- *energy requirements.*

evaluation of Alternatives

The evaluation of alternatives focuses on the MAPA and EIS Alternative 9 because the MAPA is a redesign of the APA, which is the subject of this EIS, and because Alternative 9 is the Draft EIS Recommended Action. Two versions of Alternative 9 with slightly different engineering designs have been included in this final evaluation:

- Alternative 9 (RBC) a new rotating biological contactor treatment plant to replace the existing Nazareth STP; the wastewater conveyance system requires nine pump stations. This version was ultimately dropped from further consideration due to higher costs and energy impacts.
- Alternative 9 (Modified; OD) a new oxidation ditch (OD) treatment facility to replace the existing Nazareth STP; the wastewater conveyance system requires six pump stations. This version is hereinafter referred to as Alternative 9.

significant decision factors

The selection of Alternative 9 over the MAPA as the Final EIS Recommended Action is based on significant decision factors re-evaluated since the publication of the Draft EIS including the need for the project, cost-effectiveness, energy (electric power) requirements, and induced growth potential. Their significance was highlighted during the public comment period, which terminated 24 March 1980.

need for project

EPA considers Alternative 9 to be an acceptable wastewater management plan from the standpoint of needs documentation. This alternative serves only those areas where documented on-site system problems exist. The entire capacity of the Schoeneck Interceptor under the MAPA does not justify Federal funding under the provisions of EPA's Construction Grants Program. EPA would fund only interceptor capacity to serve the existing wastewater management needs of Nazareth Borough, Christian Springs and suburban areas (East Lawn) in Upper Nazareth Township, Newburg Homes in Palmer Township, and a reasonable rate of growth.

segmental cost-effectiveness analysis

A segmental cost-effectiveness analysis, independent of the alternatives cost-effectiveness analysis, was performed. It compared sewage treatment by a new Nazareth STP, conveyance to the Easton STP by a gravity interceptor, and conveyance to the Easton STP by a force main/pump station system. Flows originate at the Nazareth STP and end at the Penn Pump manhole. A new Nazareth STP is less expensive than a gravity interceptor along Schoeneck Creek; the cost savings are equivalent to approximately $0.70/month/family. A comparison of wastewater conveyance by gravity sewer and by a force main/pump station system (Tatamy Borough to Penn Pump Park manhole) also was performed. The pressurized conveyance along Tatamy Road is only slightly more expensive than gravity conveyance along Bushkill Creek. The difference in cost between the two conveyance methods is equivalent to $0.15/month/family. This represents the cost of insuring the preservation of the trout fishery in Bushkill Creek, as well as other recreational activities.

energy requirements

In view of significant public concern expressed during the Draft EIS comment period that EPA recommend a wastewater management plan that complies with the President's energy conservation directives, EPA considers it necessary to present a realistic energy evaluation of the MAPA and its EIS Alternatives. This evaluation includes energy consumption by project-associated residents as well as by project-associated wastewater conveyance and treatment components -- the Second Street pump station and Delaware Drive pump station in Easton and the Easton STP. These additional facilities are essential to the implementation of any alternative involving wastewater conveyance to the Easton STP, and should be considered in the comprehensive energy evaluation. Electric power requirements of the MAPA are five times larger than those of Alternative 9 on the basis of the following comprehensive energy budget:

	MAPA (kwh/yr)	Alternative 9 (kwh/yr)
B-LLJSA/EIS Service Area-associated wastewater conveyance and treatment components	723,860	461,004
Electric power consumption by induced residential development @ 21,600 kwh/yr for single family homes and 16,900 kwh/yr for multi-family homes	29,872,000	6,263,000
Total estimated energy requirements	30,595,860	6,724,004

induced growth

Implementation of the MAPA would induce the construction of approximately five times the number of dwelling units (1,515 units) beyond the baseline than would be the case under Alternative 9 (311 units). These estimates of induced growth include development that could occur in the designated 100-year floodplains of streams in Stockertown Borough and Tatamy Borough. Recently adopted floodplain management ordinances for these municipalities limit and condition, but do not prohibit, development in the 100-year floodplain.

Final EIS Recommended Action

The Applicant's proposed action is neither cost-effective nor environmentally acceptable and is therefore, not eligible for Federal funding. Alternative 9 has been determined to be the most cost-effective wastewater management plan, with a total present worth cost of $10.0 million. The MAPA, with a total present worth cost of $12.2 million, is $2.2 million (22%) more costly than Alternative 9 and is not acceptable for Federal financial assistance.

funding of EIS Recommended Action

The responsibility for final decision-making on funding eligibility rests with the EPA Regional Administrator. Following the close of the 30 day comment period on the Final EIS, EPA will prepare a formal Record of Decision, which will be distributed to the public. This Record will set forth the conclusions of the EIS process, the decisions made by EPA on funding of the EIS Recommended Action, and the actions by the Applicant that are eligible for Federal funding.

final public meeting

A public information meeting to discuss the recommendations presented in the Final EIS will be held in the EIS Service Area during the comment period on this document. The site of the meeting will be the Nazareth Junior High School. The date and time of the meeting are announced on the cover letter of this document.

Summary of beneficial environmental impacts[1] of alternative wastewater management plans evaluated in

Beneficial Environmental Impact (by Environmental Category)	Type of Impact				Probability of Impact Occurrence			MAPA	Alternatives									
	Primary		Secondary															
	ST[2]	LT[3]	ST[2]	LT[3]	High	Moderate	Low		1	2	3	4	5	6	7	8	9	10
Earth Resources																		
1. Preservation of prime agricultural land				●	●				X	X		X	X		X		X	
Water Resources																		
1. Improvement in quality of Schoeneck Creek below existing Nazareth STP		●			●			X	X	X	X	X	X	X	X	X	X	X
2. Recharge of groundwater resources				●	●				XX	XX	XX	XX	X	X	XX	X	X	X
3. Reduction in groundwater quality problems resulting from malfunctioning on-lot sewage disposal systems			●	●		●		XX	X	X	X	X	X	X	X	XX	X	X
Socioeconomic Conditions																		
1. Increase in long-term employment in EIS Service Area						●		XX										

[1] "XX" denotes very significant impacts; "X" denotes less significant impacts; a dot (●) indicates that a type, or level, of impact is expected to occur.

[2] ST = Short term

[3] LT = Long term

Adverse Environmental Impact (by Environmental Category)	Type of Impact				Probability of Impact Occurrence			MAPA	Alternatives									
	Primary		Secondary															
	ST[2]	LT[3]	ST[2]	LT[3]	High	Moderate	Low		1	2	3	4	5	6	7	8	9	10
Earth Resources																		
1. Conversion of prime agricultural land to developed uses				●	●			X			X							
2. Inducement for development on steep slopes, with subsequent erosion of soils				●			●	X			X			X		X		X
3. Inducement for development in flood-prone areas[4]				●		●		XX	X	X	X	X	X	X	X	X	X	X
4. Disruption and erosion of soils as a result of project construction	●				●			XX	X	X	X	X	X	X	X	X	X	X
Water Resources																		
1. Sedimentation of surface channels during project construction	●				●			XX										
2. Reduction in Schoeneck Creek flow induced by elimination of Nazareth STP discharge		●				●		X	X	X	X	X			X	X		
3. Potential to disrupt groundwater movement patterns and stream hydraulics		●			●			XX										
4. Potential reduction in water quality through sewer system malfunctions	●				●			X										

[1] "XX denotes very significant impacts; "X" denotes less significant impacts; a dot (●) indicates that a type, or level, of imapct is expected to occur.

[2] ST = Short term

[3] LT = Long term

[4] Except in flood-prone areas where development is specifically prohibited by municipal ordinance.

Summary of adverse impacts (continued).

Adverse Environmental Impact (by Environmental Category)	Type of Impact: Primary ST[2]	Primary LT[3]	Secondary ST[2]	Secondary LT[3]	Probability of Impact Occurrence: High	Moderate	Low	MAPA	Alternatives 1	2	3	4	5	6	7	8	9	10
Biotic Resources																		
1. Disruption of wild trout habitat	●	●	●	●	●			XX										
2. Loss or disturbance of wetlands through induced development				●							X							
3. Loss or disruption of wildlife habitats		●		●	●			XX	X									
Land Use																		
1. Inducement for conversion of undeveloped land to developed areas			●		●			X	X	X	X	X		X	X	X		X
2. Increase in residential density and changes in community character			●		●			X	X	X	X	X		X	X	X		X
Population																		
1. Project-induced growth to exceed baseline population in year 2000			●		●			XX	X	X	X	X		X	X	X		X
2. Financial burden on residents imposed by estimated local user charges	●					●				X	X							
3. Expenditure of public funds for sewerage needs not documented	●				●			X			X			X	X	X		X
Public Services																		
1. Induced need for school desk space in excess of baseline requirements			●		●			X	X	X	X	X		X	X	X		X

Summary of adverse impacts (concluded).

Adverse Environmental Impact (by Environmental Category)	Type of Impact				Probability of Impact Occurrence			MAPA	Alternatives									
	Primary		Secondary															
	ST[2]	LT[3]	ST[2]	LT[3]	High	Moderate	Low		1	2	3	4	5	6	7	8	9	10
Public Services (continued)																		
2. Induced need for police and fire protection in excess of baseline requirements			•		•			X	X	X	X	X		X	X	X		X
3. Increased traffic volumes to require region-wide highway improvements			•			•		X	X	X	X	X		X	X	X		X
4. Induced need for more extensive or improved recreational resources			•		•			X	X	X	X	X		X	X	X		X
Energy																		
1. Increased consumption of energy by wastewater management system components (kwh/yr)	•	•	•	•	•				XX	XX	X	X	X	X	XX	X	X	X

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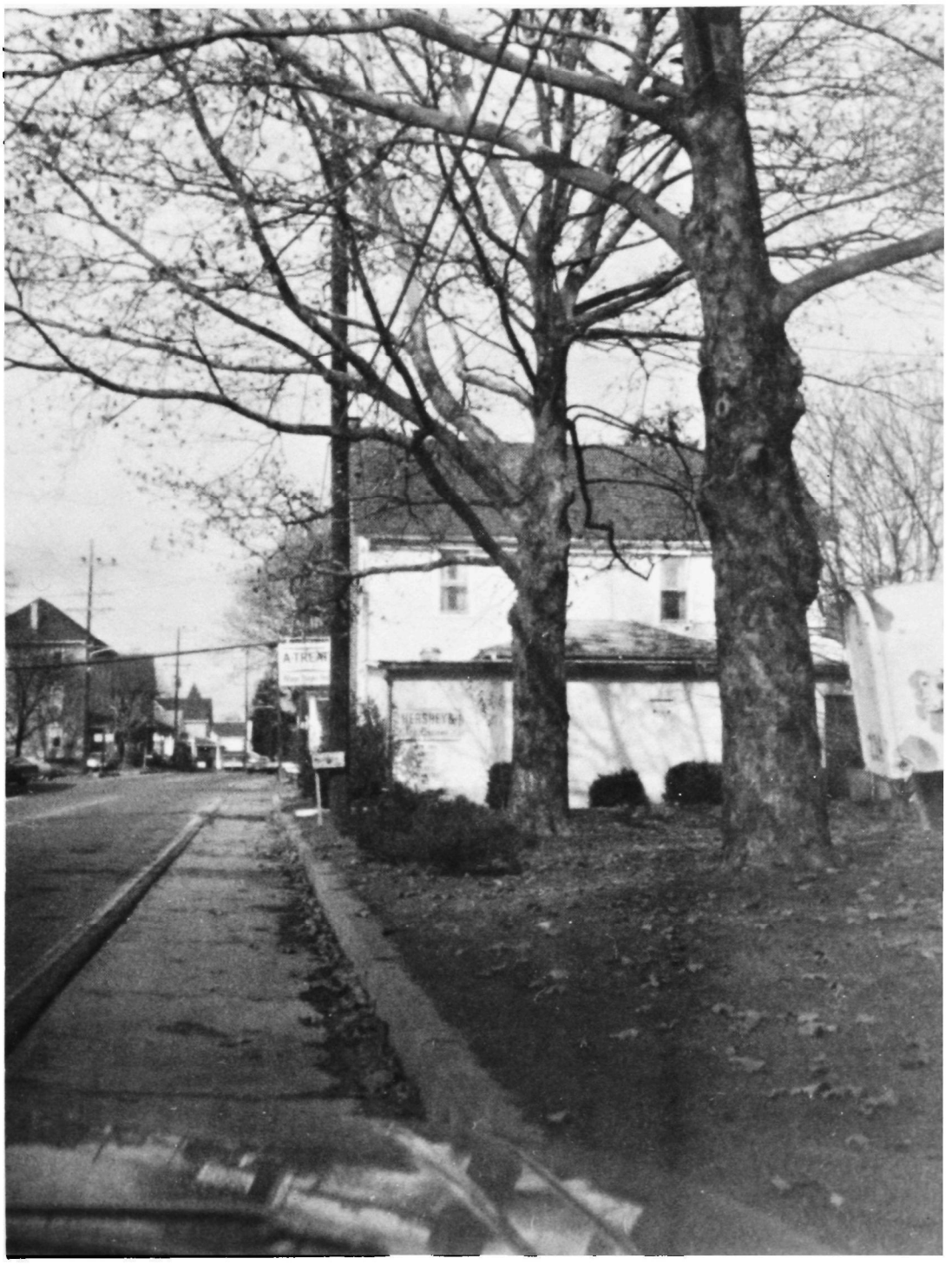
LIST OF ACRONYMS AND ABBREVIATIONS

APA	Applicant's Proposed Action
B-LLJSA	Bushkill-Lower Lehigh Joint Sewer Authority (the Applicant)
BOD	Biochemical oxygen demand
DER	Pennsylvania Department of Environmental Resources
EA	Environmental Assessment for Bushkill-Lower Lehigh Joint Sewer Authority and City of Easton (GAI, 1976)
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency (Region III)
EPIC	Environmental Photographic Interpretation Center
FM	Force main
GAI	Gilbert Associates, Inc.
gpm	Gallons per minute
i/a	Innovative/alternative
JPC	Lehigh-Northampton Counties Joint Planning Commission
kwh/yr	Kilowatt-hours per year
LF	Linear feet
LT	Long term (impacts)
MAPA	Modified Applicant's Proposed Action
mgd	Million gallons per day
Mg/l	Milligrams per litre
MOD	Modified (refers to wastewater conveyance system comprising 6 pump stations)
N/A	Not applicable
OD	Oxidation ditch sewage treatment plant
O&M	Operation and maintenance (costs)
PS	Pump station
PSI	Pounds per square inch
PVC	Polyvinyl chloride
RBC	Rotating biological contactor sewage treatment plant
ROW	Right of way
SCS	US Department of Agriculture, Soil Conservation Service
SFD	Small Flows District
STP	Sewage treatment plant
ST	Short term (impacts)
ST/SAS	Septic tank/soil adsorption system

INTRODUCTION



INTRODUCTION

Applicant

municipalities under study

This Final Environmental Impact Statement (EIS) has been prepared by the US Environmental Protection Agency, Region III (EPA). It addresses the availability of Federal funding for the construction of wastewater management facilities as proposed by the Bushkill-Lower Lehigh Joint Sewer Authority (B-LLJSA), representing the following municipalities of Northampton County, Pennsylvania (Figures 1 and 2): Bushkill Township, Plainfield Township, Upper Nazareth Township, Stockertown Borough, Tatamy Borough, and Palmer Township. These municipalities are charter members of the B-LLJSA. Although not a member of the B-LLJSA, Nazareth Borough has been included in this study because wastewater conveyance and treatment capacity for its approximately 5,700 residents was provided in the Applicant's Proposed Action (APA).

The application was submitted by the B-LLJSA for financial assistance to resolve the existing wastewater management problems of its participating municipalities. The cost for the project as proposed by the Applicant is estimated to cost $16,800,000 in 1980 dollars.

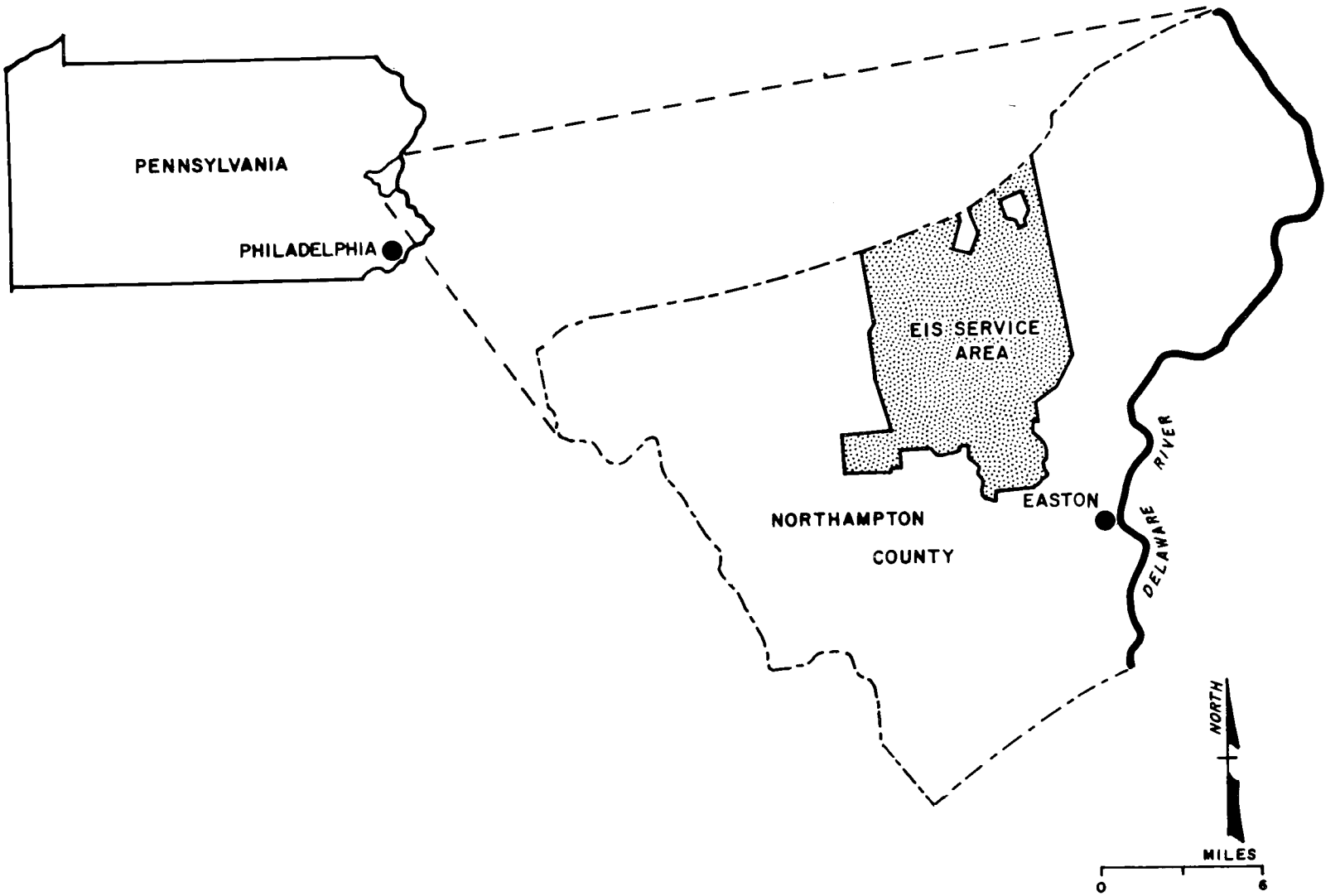
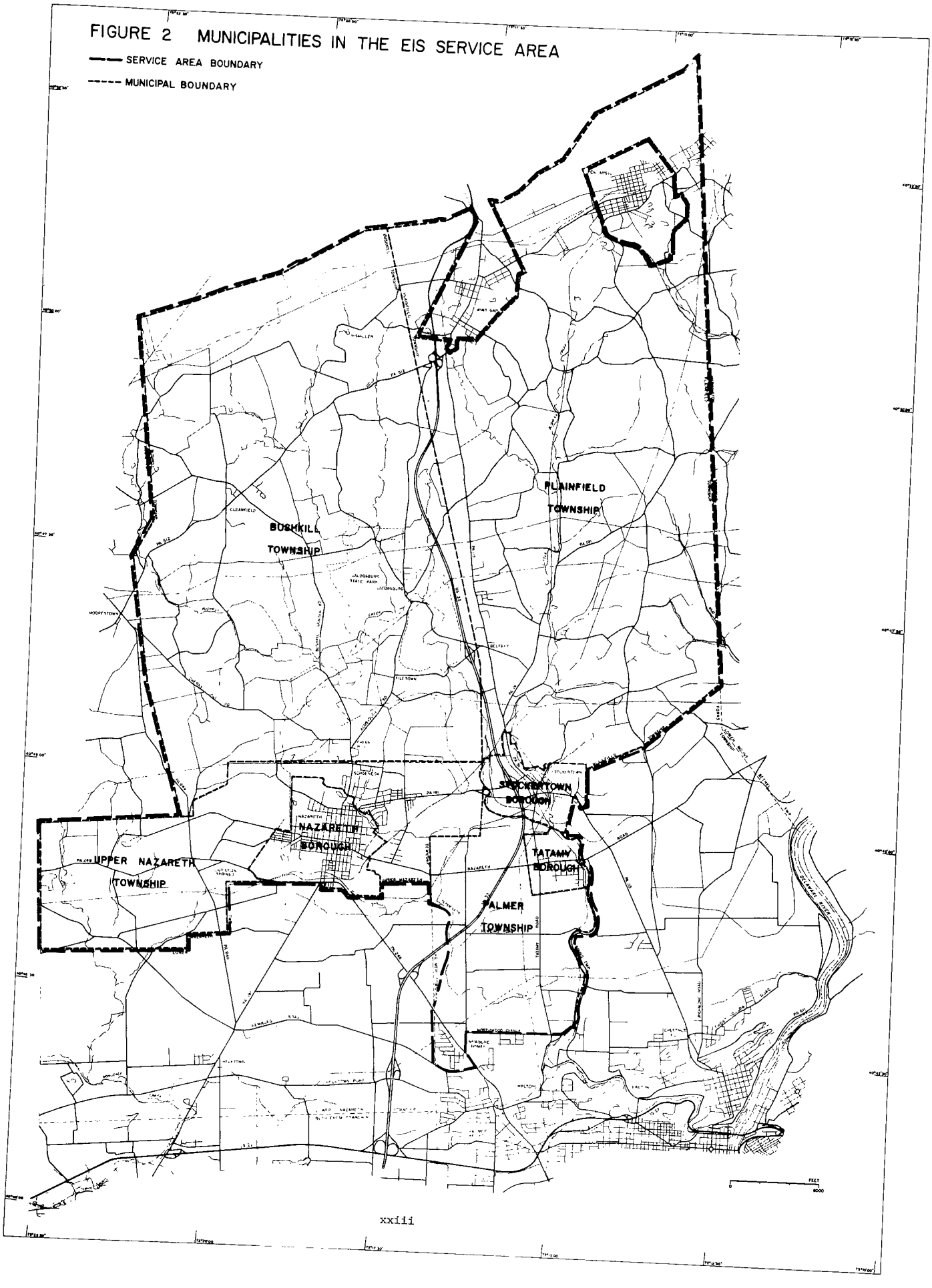


Figure 1. Location of the EIS Service Area in Northampton County, Pennsylvania.

FIGURE 2 MUNICIPALITIES IN THE EIS SERVICE AREA



CHAPTER I

Public Participation

CHAPTER I: PUBLIC PARTICIPATION

The participation of the public has been sought continuously throughout the preparation of this EIS. Suggestions and criticisms generated by local, state, and Federal agencies, citizen associations, private concerns, and individual citizens have been given full consideration in the following EIS processes:

- Documentation of need for sewerage facilities
- Development of alternative wastewater management strategies
- Assessment of environmental, economic, and social impacts
- Selection and implementation of an EIS Recommended Action.

public participation methods

Public participation methods utilized during preparation of the EIS included newsletters, public information meetings, workshops, interviews, and telephone contacts. These techniques insured involvement with as many citizens as possible at critical EIS decision points.

chronology of public participation activities

A chronology of EIS public participation activities is listed below:

8 November 1978	Preparation of EIS begins
15 December 1978	Notice of Intent to prepare an EIS issued by EPA
18 December 1978	Meeting with B-LLJSA
20 December 1978	Meeting with Plainfield Township Taxpayers Association
January 1979	EPA pamphlet discussing EIS published in newspaper
17 January 1979	EIS Public Information Meeting No. 1
28 February 1979	Meeting with Bushkill Township
9 March 1979	Meeting with Bushkill Township
April 1979	EIS Newsletter distributed
25 April 1979	EIS Public Information Meeting No. 2
14 June 1979	EIS Workshop No. 1
29 August 1979	EIS Workshop No. 2
18 September 1979	EIS Workshop No. 3
September 1979	EIS Newsletter distributed
24 September 1979	EIS Public Information Meeting No. 3
11 October 1979	Meetings with Nazareth Borough, B-LLJSA, and Palmer Township
18 December 1979	Meeting with B-LLJSA and Bushkill Township
December 1979	Draft EIS published and distributed
January 1980	Summary-of-Draft-EIS pamphlet distributed
7 February 1980	Meeting with B-LLJSA
21 February 1980	Public Hearing on Draft EIS
24 March 1980	End of public comment period on Draft EIS
March 1980	EIS Newsletter distributed
3 April 1980	Meeting with B-LLJSA
7 April 1980	Meeting with B-LLJSA, Palmer Township, and Congressman Donald Ritter
22 May 1980	Meeting with B-LLJSA
18 July 1980	Meeting with B-LLJSA and Nazareth Borough
August 1980	Final EIS published and distributed
August 1980	Summary of Final EIS pamphlet distributed
September 1980	EIS Public Information Meeting No. 4

The remainder of this chapter identifies the agencies, elected officials, media, citizens groups, libraries, and citizens which are on the EIS mailing list.

EIS MAILING LIST

FEDERAL AGENCIES

Advisory Council on Historic Preservation

Council on Environmental Quality

Federal Emergency Management Agency

National Agricultural Lands Study

National Environmental Health Association

US Bureau of Prisons

US Department of Agriculture
- Forest Service
- Soil Conservation Service

US Department of Commerce
- Office of Environmental Affairs

US Department of Defense

US Department of Energy

US Department of Helath, Education and Welfare

US Department of Housing and Urban Development

US Department of the Interior
- Bureau of Outdoor Recreation
- Fish and Wildlife Service
  - National Water Resource Analysis Group/Eastern Land Use Team
- National Park Service
- Heritage Conservation and Recreation Service

US Department of Justice
- E. MacTroutman, Esquire
- Ronald H. Gluck, Esquire
- Robert N. de Luca, Esquire
- Robert S. Forester, Esquire

US Department of Transportation
- Federal Highway Administration
- Marine Environmental Protection Division

US Department of Treasury

US General Services Administration

Water Resources Council

PENNSYLVANIA STATE AGENCIES

Department of Agriculture

Department of Commerce

Department of Community Affairs

Department of Environmental Resources
- Bureau of Air Quality and Noise Control
- Bureau of Community Environmental Control
- Bureau of Occupational Health
- Bureau of Radiological Health
- Bureau of Solid Waste Management
- Bureau of State Forestry
- Bureau of State Parks
- Bureau of Topographic and Geological Survey
- Bureau of Water Environmental Resources
- Bureau of Water Quality Management
- Coordinator for Environmental Protection & Regulation
- Division of Solid Waste Management
- Division of Water Supply & Sewerage
- Environmental Hearing Board
- Regional Director, Reading Region
- Sewage Facilities Consultant
- State Conservation Commission

Department of Health

Department of Transportation

Environmental Hearing Board

Fish Commission

Game Commission

Historical and Museum Commission

State Clearinghouse

LOCAL AGENCIES

Blue Mountain Consolidated Water Company

LOCAL AGENCIES (continued)

Bushkill-Lower Lehigh Joint Sewer Authority

Bushkill Township
- Board of Supervisors
- Engineer
- Planning Commission
- Secretary-Treasurer
- Solicitor

City of Easton
- Mayor
- Area Joint Sewer Authority
- Suburban Water Authority

Delaware River Basin Commission

Joint Planning Commission, Lehigh-Northampton Couties

Nazareth Sewerage Company

Nazareth Borough
- Council
- Engineer
- Mayor
- Secretary
- Solicitor
- Treasurer

Northampton County Conservation District

Palmer Tonwship
- Board of Supervisors
- Engineer
- Planning Commission
- Secretary
- Solicitor

Plainfield Township
- Board of Supervisors
- Engineer
- Planning Commission
- Secretary-Treasurer
- Solicitor

Stockertown Borough
- Council
- Mayor
- Planning Commission
- Secretary
- Solicitor
- Treasurer

Tatamy Borough
- Council
- Mayor
- Planning Commission
- Secretary
- Solicitor
- Treasurer

LOCAL AGENCIES (continued)

Upper Nazareth Township
- Board of Supervisors
- Engineer
- Planning Commission
- Solicitor
- Treasurer

ELECTED OFFICIALS

Honorable Richard Thornburgh, Governor of Pennsylvania

Honorable H. John Heinz, III, United States Senator

Honorable Richard S. Schweiker, United States Senator

Honorable Donald T. Ritter, United States House of Representatives

Honorable Jeannette D. Reibman, Senate of Pennsylvania, Easton

Honorable George J. Kanuck, Pennsylvania House of Representatives, Bethlehem

Honorable Russell Kowalyskyn, Pennsylvania House of Representatives, Northampton

Honorable James P. Ritter, Pennsylvania House of Representatives

Honorable Michael J. Schweder, Pennsylvania House of Representatives, Bethlehem

Honorable Edmund J. Sieminski, Pennsylvania House of Representatives, Easton

Honorable Joseph R. Zeller, Pennsylvania House of Representatives, Emmaus

Honorable Kurt D. Zwikl, Pennsylvania House of Representatives, Allentown

MEDIA

Newspapers
- Allentown Morning Call
- Bulletin
- Easton Express
- Emmaus & Allentown Times
- Evening Chronicle
- Globe Times

MEDIA (continued)

Newspapers (continued)
- Herald
- Home News
- Nazareth Key
- News
- Northampton Times
- Town Topic

Radio
- WEEX AM
- WEST AM
- WEZV FM
- WGPA AM
- WJRH FM
- WLEV FM
- WQQQ FM

Television
- WLVT TV

CITIZENS GROUPS

Air Pollution Control Association, Pittsburgh PA

America the Beautiful Fund, Washington DC

Appalachian Mountain Club, Easton PA

Audubon Naturalist Society of the Central Atlantic States, Inc., Washington DC

Brandywine River Conservancy, Chaddsford PA

Bushkill Anglers Chapter, Trout Unlimited, Nazareth PA

Bushkill Watershed Association, Easton PA

Bushkill Township Concerned Citizens Committee, Nazareth PA

Citizens' Advisory Council to the Pennsylvania Department of Environmental Resources, Harrisburg PA

Citizens Environmental Task Force, Pittsburg PA

Concerned Laymen for Environmental Action Now (CLEAN), Hellertown PA

Cooks Creek Watershed, Hellertown PA

Environmental Defense Fund, Washington DC

CITIZENS GROUPS

Environmental Defense Fund, Washington DC

Group Against Smog and Pollution (GASP), Pittsburgh PA

Leagure of Women Voters of PA, Philadelphia PA
Easton PA

Lehigh Valley Conservancy, Bethlehem PA

Monocacy Creek Watershed Association, Bethlehem PA

National Parks and Conservation Association, Washington DC

Natural Resources Defense Council, Inc., Washington DC

PA Forestry Association, Mechanicsburg PA

PA Horticultural Society, Philadelphia PA

PA Lung Association, Hershey PA

PA Roadside Council, Inc., Philadelphia PA

PA State Fish and Game Protective Association, Philadelphia PA

Plainfield Township Taxpayers Association, Wind Gap PA

Rachel Carson Trust for the Living Environment, Washington DC

Saucon Creek Watershed Association, Hellertown PA

Sierra Club
- PA Chapter, Philadelphia Pa
- PA Chapter, Pittsburgh PA
- Governor Pinchot Group, Mohuton PA
- Southerwestern Group, Pittsburgh PA

Trout Unlimited, Indiana PA

Upper Nazareth Citizens League, Nazareth PA

Water Pollution Control Association, Washington DC

Wilderness Society, Washington DC

The Wildlife Society, Washington DC

LIBRARIES

Easton Area Public Library

Lafayette College Library

Mary Meuser Memorial Library

Nazareth Memorial Library

Northampton County Area Community College Library

CITIZENS

Ms. Betty Abel
Mr. Robert Achenbach
Mr. Elwood Acherman
Ms. Mary Ann Achweitzer
Ms. Claire Adamson
Mr. Bernie Agner
Mr. William Agnew
Ms. Ruth Anderson
Mr. Sherwood Ashenfolder
Mr. Edwin Averback
Mr. L. R. Barlich
Mr. Paul Beahn, Jr.
Mr. Frederick C. Benfield
Ms. Joan Benter
Mr. John S. Bert
Mr. Dennis Bickirt
Mr. Wayne Billings
Mr. Lester Blean
Mr. Paul Bohlander
Mr. David Boskirk
Mr. Jeffrey C. Bosserman
Mr. R. Botrowsky
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Mr. Lee Graver
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Mr. John Gruff
Mr. John T. Guiffre
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Mr. Joseph M. Hale
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Mr. Terry Hannold
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Ms. Nancy Hower
Mr. Ronald & Arthur Hower
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Ms. Shirley M. Smith
Mr. William G. Smith
Ms. Patricia Snyder
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Mr. & Mrs. Sparrow
Mr. Charles Spohn
Ms. Carol Sprague
Mr. & Mrs. Allen Stahl
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Mr. R. Tenges
Mr. D. L. Thew

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Mr. Dale Wade
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Mr. D. D. Wallers
Mrs. Jeanette Walters
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Ms. Maureen White
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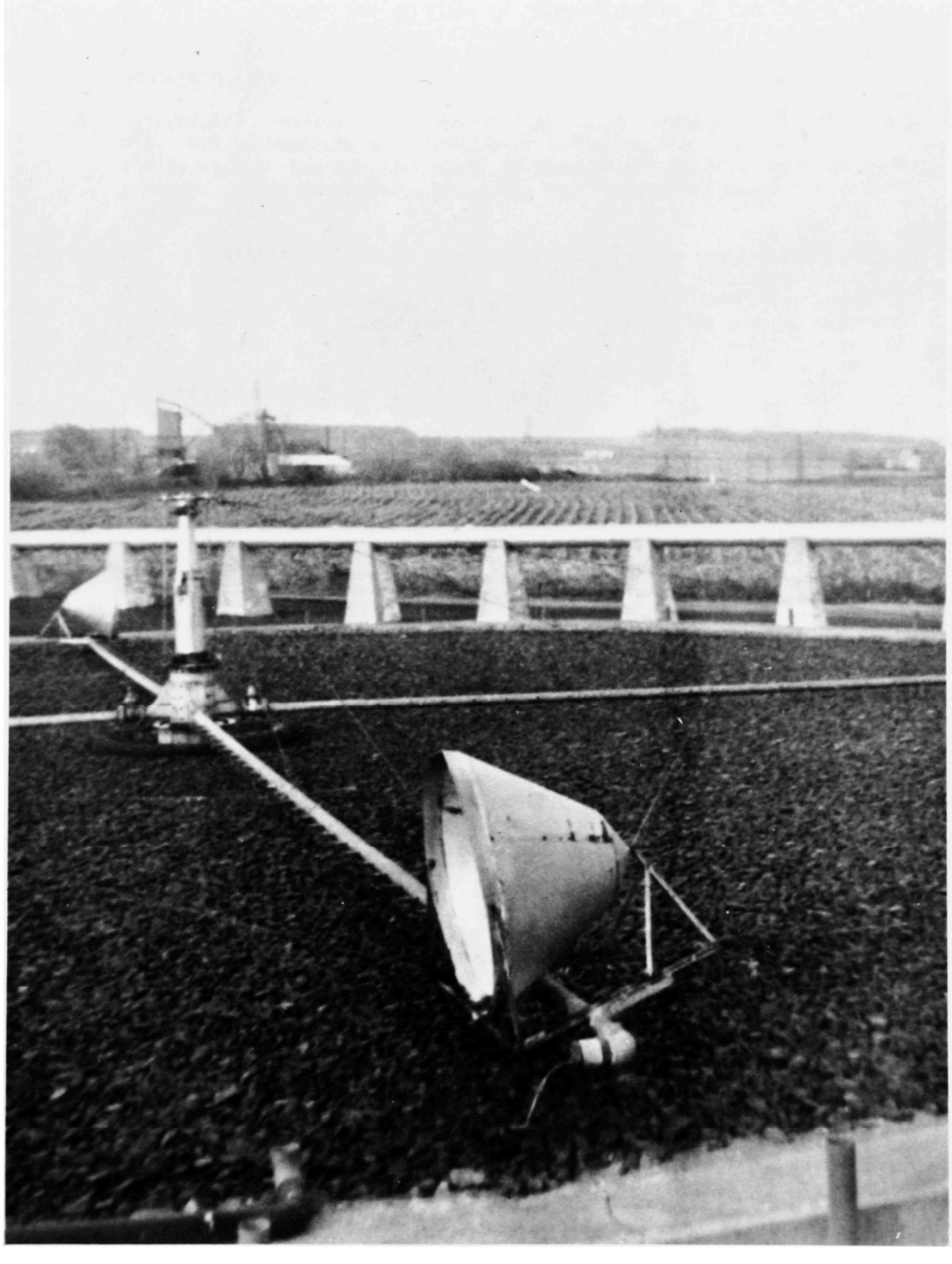
Mr. Ed Wilchner
Mr. Dale R. Williamson
Mrs. Ann Woehrle
Mr. Joseph J. Worner
Mr. Francis Wunderly
Ms. Jane Yeakel
Mr. M. A. Yeakel
Mr. Ronald M. Yeakel
Mr. Robert A. Young
Mr. Grant Zilena

CHAPTER II

Summary of Draft EIS



CHAPTER II: SUMMARY OF DRAFT EIS

This chapter briefly summarizes the Draft EIS (Appendix A).

BACKGROUND

A. In 1976, the BLLJSA submitted an application for Federal financial assistance for the construction of wastewater management facilities to the Pennsylvania Department of Environmental Resources and subsequently to the EPA. This application requested money to construct a collection system which would convey wastewater from the Boroughs of Stockertown and Tatamy, Plainfield, Upper Nazareth, Bushkill and Palmer Townships and Jacobsburg State Park to the Easton Sewage Treatment Plant. The plan also proposed to eventually abandon the Nazareth Sewage Treatment Plant and redirect wastewater flows from the already sewered Borough of Nazareth and portions of Upper Nazareth to the Easton Plant. EPA announced its decision, in December 1978, to prepare an Environmental Impact Statement on the proposed plan prior to any final action concerning the application for Federal money.

EIS ASSUMPTIONS

B. Several key assumptions/factors influenced the preparation of the Draft EIS. The assumptions were formulated to define the scope of the EIS and to improve the public's understanding of the Federal decision-making process. These assumptions have also been determined to be valid for the Final EIS.

Assumption 1
action being studied

- The Draft EIS addressed the actions proposed by the B-LLJSA (wastewater collection and transport facilities), but not the expansion of the Easton Treatment Plant and its enlarged interceptor and pump station system. These facilities were constructed under a separate EPA grant; however, the estimated B-LLJSA local share of the capital costs associated with the Easton construction, $1.3 million, is addressed in the Draft EIS.

Assumption 2
EIS Service Area

- The EIS Service Area includes the B-LLJSA Service Area (Bushkill Township, Plainfield Township, Upper Nazareth Township, Palmer Township (unsewered portion only), Stockertown Borough, and Tatamy Borough) and Nazareth Borough (see Figure 2). It is different from the area proposed to be served by the Applicant (see Figure II-1).

Assumption 3
Nazareth Borough

- Nazareth Borough was included in the EIS Service area for three reasons. First, the privately-owned Nazareth sewage treatment plant (STP), which serves most residents in the Borough has required upgrading and expansion for several years. Second, a significant number of citizens throughout the EIS Service Area believe that the Nazareth STP, if upgraded, could offer a cost-effective means of wastewater treatment. This belief stems from the STP's central location in the EIS Service Area and from the public assumption that selected STP facilities can be conserved. Third, even though Nazareth Borough is not a member of the B-LLJSA, the Applicant has provided capacity in its conveyance system for wastewater flows generated by Nazareth Borough under the assumption that the STP eventually will be abandoned.

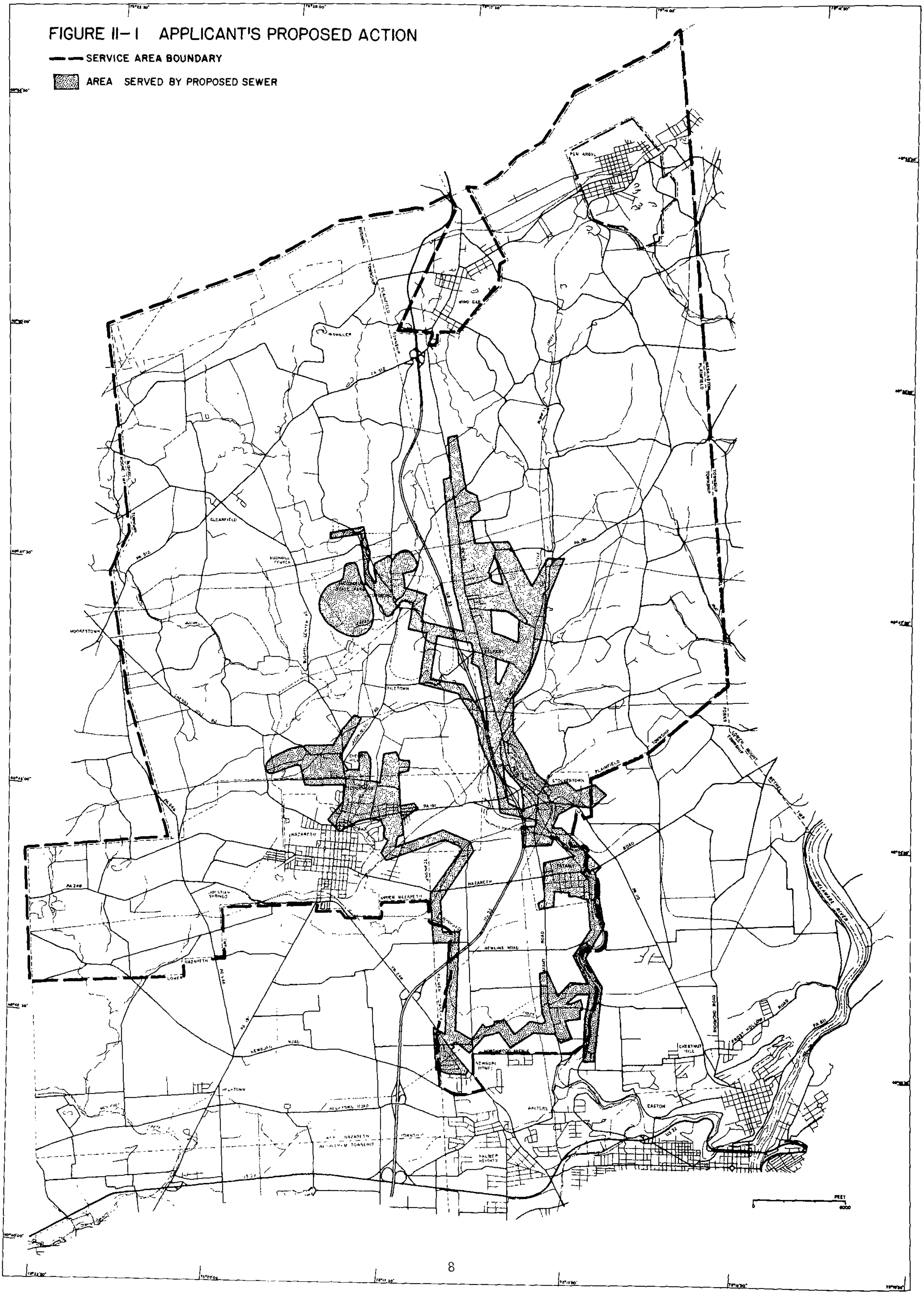
Assumption 4
status of ownership; Nazareth wastewater collection and treatment facilities

- The purchase of the privately-owned Nazareth sewage collection and treatment facilities by Nazareth Borough was considered imminent. This assumption was based on conversations with representatives of Nazareth Borough and the Pennsylvania Department of Environmental Resources (DER) Nazareth Borough is listed on the State priority list for Federal construction grant funds (Pennsylvania Bulletin, Volume 9, No. 8, 24 February 1979) with a rank of 70.

Assumption 5
purpose of EIS

- The primary purposes of the Draft EIS were to develop alternative wastewater management plans, to evaluate them in comparison to the Applicant's proposed plan, and to recommend the plan that is environmentally sound and represents the most cost-effective use of Federal funds. Although the Draft EIS incorporated the necessary concepts,

FIGURE II-1 APPLICANT'S PROPOSED ACTION



guidelines, and regulations sought in approved wastewater management facilities plans, it does not constitute a facilities plan by itself.

Assumption 6
alternatives approach

- Both centralized and decentralized wastewater management approaches were evaluated. These approaches incorporated innovative and alternative technologies, where possible, in accordance with the provisions of the Clean Water Act of 1977 and other applicable EPA guidance and regulations.

Assumption 7
design and costing

- The preliminary design and costing of wastewater management alternatives were completed under the assumption that an EIS recommended action would have to be returned to the Applicant for Step II design work unless the APA was the recommended action.[1] Step II design, which involves detailed on-site investigations, engineering, and costing, is outside the scope of a typical EIS. The Applicant, in order to receive Federal funds, must conform with the requirements of EPA's Construction Grants Program.

Assumption 8
documentation of need

- Federal funding of the APA, or of any alternative, is contingent on the documentation of need for improved wastewater management facilities. Need is defined when at least one of the following conditions exists: standing pools of septic tank effluent or raw domestic sewage, sewage in basements from inoperable sewage disposal systems, or measured contamination of private wells or surface waters by sewage disposal systems. Unsuitable site conditions, including high groundwater, rapidly or slowly permeable soils, or solution channels, are not sufficient documentation by themselves. Two levels of need were identified in the Draft EIS. "Phase I" areas demonstrated an immediate need for off-site wastewater management facilities, whereas low density "Phase II" areas only required improved on-site facilities.

Assumption 9
Jacobsburg State Park

- Future recreational plans for the 1,170-acre Jacobsburg State Park in Bushkill Township have been modified. The planned development of a 300-site camping area, a swimming complex, and a 94-acre lake have been terminated in response to public complaints that such facilities would be detrimental to the Park's environmental and historic resources. Instead, the Bureau intends to provide small-scale recreational opportunities at the Park (see Appendix B).

Assumption 10
Modified Applicant's Proposed Action

- The APA, by itself, cannot be compared directly to the other alternatives due to differences in design year, estimated wastewater flows per person, and service area configuration. The Modified Applicant's Proposed Action (MAPA) was developed to overcome these dissimilarities.

Assumption 11
costs

- The costs of the alternatives do not represent absolute construction costs of systems. Locally obtained estimates of unit costs for sewerage facilities have been applied uniformly to all wastewater management plans evaluated in the EIS. The focus of the costing effort was on the internal comparability of the MAPA and of the EIS alternatives.

Assumption 12
user charges

- User charges include the following items: debt service (repayment of principal and interest to cover the after-grant share of capital costs), operation and maintenance costs, and an annual reserve fund assumed to equal 20% of the annual debt service amount. The charges do not include front-foot assessments and are not in the true sense "user charges" because they are not based on actual construction costs. They are, instead, indexes of economic impact and financial burden.

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[1] Detailed design and costing of the APA were completed in 1977.

Assumption 13
population projections

- Estimates of future population associated with wastewater management alternatives were based on the municipal population projections developed by the Lehigh-Northampton Counties Joint Planning Commission (JPC) in 1973. The "baseline future" population projections for each municipality in the EIS Service Area are identical to JPC's 1973 figures.

Assumption 14
development in floodplains

- Future development was not assumed to be prohibited in designated floodplains of municipalities with enacted floodplain management ordinances unless such ordinances specifically prohibited floodplain development. The codified limiting, or conditioning, of development in the floodplain is not considered equivalent to the prohibition of such development.

ALTERNATIVES

C. In response to public concern over such issues as need documentation, cost-effectiveness, water quality and induced growth, EPA developed eleven alternatives to the Applicant's proposed action. On site system problems were identified from field investigations of aerial photography, groundwater quality, surface water quality, and soil suitability for wastewater disposal/treatment. Alternatives included various combinations of stream discharge, land application and decentralized schemes.

DRAFT EIS CONCLUSIONS

D. After extensive study and analysis, EPA determined that the BLLJSA's proposed plan was unacceptable for Federal funding due to the following:

- potential for loss of agricultural land
- potential for loss of valuable trout habitat
- other alternatives exist which do not have significant adverse impacts

The need for centralized wastewater collection and treatment facilities was assessed compared to the need to alleviate existing water quality or public health problems. The absence of documented water quality problems for the areas listed below suggested that centralized treatment and/or increased sewer service for these areas were not required.

- Plainfield Township north of T609 on Route 115 and Route 191 between Belfast Junction and Edelman
- Jacobsburg State Park
- The vicinity of Cherry Hill, Bushkill Township

An existing need for improved facilities was identified in the following areas:

- Belfast area of Plainfield Township
- Stockertown Borough
- Tatamy Borough
- Rasleytown
- an area east of Pen Argyl Borough (Plainfield Township)
- Rismiller (Bushkill Township)
- Christian Springs (Upper Nazareth Township)

DRAFT EIS RECOMMENDATIONS

E. Major elements of the plan recommended in the Draft EIS for Federal funding are:

- wastewater generated in the corridor running from the Belfast Area through Tatamy Borough, and the Newburg Homes area of Palmer Township would be conveyed to the Easton Plant for treatment.

- wastewater flows from the existing Nazareth Plant Service area as well as those from the East Lawn vicinity of Upper Nazareth Township could be treated at a new plant adjacent to the existing Nazareth Plant which would be abandoned

- sparsely developed segments along Route 115 north of the gravity sewer and communities of east Pen Argyl and Rasleytown (Plainfield Township) and Rismiller (Bushkill Township) would be served by small collection systems and multi-family area fields (cluster systems).

- the remainder of the area not served by a centralized collection system would remain an individual on-lot treatment systems.

The estimated cost for this project was $11,800,000 in dollars. It was calculated that yearly charges to users of the system would equal about $110 per household. Additional charges amounting to about $70 per household were calculated to cover previous costs incurred by the Applicant.

CHAPTER III

Evaluation of Alternatives

CHAPTER III: EVALUATION OF ALTERNATIVES

Comments and new information received during the Draft EIS public comment period were incorporated into the EIS process. This chapter indicates the new information and illustrates the subsequent evaluation of alternatives.

EXISTING ENVIRONMENT

A. The descriptions of the existing environment in the Draft EIS with regard to prime agricultural land, floodplain zoning, and recreation are updated in this section. These modifications largely represent new information that was not available, or that was in the process of being generated, during the preparation of the Draft EIS.

Inventory of Prime Agricultural Land

60%, not 75%, of EIS Service Area in prime agricultural lands

1. It was stated on page 45 of the Draft EIS that the Northampton County District Soil Conservation Service (SCS) was in the process of delineating prime agricultural lands based on the 1977 guidelines. Furthermore, it was noted that under the new guidelines, the Comly (CmB) soil series and the Clarksburg (ClB) soil series would no longer be considered prime agricultural lands. The net effect of these changes is that an estimated 60%, rather than 75%, of the EIS Service Area is classified as prime agricultural land (By letter, Mr. Graham T. Munkittrick, US Department of Agriculture (USDA)-SCS, 17 March 1980). This reduction in the amount of prime agricultural land is scattered evenly throughout the EIS Service Area. Another change in the inventory of Class I and Class II soils (Figure III-6, Draft EIS) is that the soils on which Newburg Homes (Palmer Township) was developed are no longer considered prime agricultural lands; the construction of homes has foreclosed agricultural opportunities (By telephone, Mr. John Bert, District Soil Conservationist, USDA-SCS, 16 April 1980).

Recently Adopted Floodplain Development Regulations

2. The Draft EIS (page 225) indicated that a number of municipalities in the EIS Service Area do not have zoning ordinances that prohibit development in flood-prone areas. This statement was based on EPA's interviews with municipal government officials, including planners and zoning officials, during the period from December 1978 through July 1979. Plainfield Township, Stockertown Borough, Tatamy Borough, Upper Nazareth Township, and Nazareth Borough did not have prohibitive floodplain development ordinances.

   Three of the five previously identified municipalities recently have amended or adopted floodplain regulations. They are:

   - Stockertown Borough (Ordinance No. 164) adopted 6 August 1979
   - Tatamy Borough (Ordinance No. 110) adopted 5 November 1979
   - Plainfield Township amended 10 January 1980.

   These new floodplain regulations are based on Flood Insurance Studies that were prepared by the Federal Insurance Administration during the summer of 1979. With its zoning ordinance amended, Plainfield Township now prohibits development in the 100-year floodplain. The referenced floodplain management regulations for Stockertown Borough and Tatamy Borough "limit and condition, but do not prohibit totally, development within the 100-year floodplain as defined by their respective Flood Insurance Studies" (By letter, Mr. Walter Pierson, Acting Director, Insurance & Mitigation Division, Federal Emergency Management Agency, 10 March 1980).

Plainfield Township

Stockertown Borough and Tatamy Borough

Nazareth Borough
Upper Nazareth Township

Nazareth Borough and Upper Nazareth Township still have not adopted floodplain ordinances. The Joint Planning Commission, Lehigh-

Northampton Counties, reported that these municipalities soon would have ordinances that will meet the requirements of the National Flood Insurance Program as well as the Pennsylvania Floodplain Management Act (By letter, Mr. Allen O'Dell, 6 March 1980). The above requirements stipulate that structures must be floodproofed or elevated above flood levels; they do not prohibit development in floodplain areas.

APPLICANT'S PROPOSED ACTION AND IMPACTS

B. Modifications have been made to the description and cost of the APA as stated in the Draft EIS. As a result, the impacts have changed.

Stream Crossings

1. The Draft EIS stated that the APA would require the construction of 29 stream crossings, six of which would involve the boring, or jacking, of sewer pipe beneath the streambed.[1] The remainder of the stream crossings were to involve the construction of cofferdams and excavation (including rock blasting where necessary) of the stream bottom. Subsequent discussions with the B-LLJSA and its engineer during the Draft EIS public comment period necessitate the following revisions:

number of stream crossings

- Inspection of the B-LLJSA plot plans[2] and bid sheets indicated that only 19 stream crossings were proposed to be bid for construction. The B-LLJSA informed EPA that three stream crossings in Jacobsburg State Park could be eliminated from the APA because of objections voiced by the Pennsylvania Fish Commission. The revised number of stream crossings (16) by channel is as follows: three on Bushkill Creek, one on a tributary to Bushkill Creek, six on Little Bushkill Creek, and six on Schoeneck Creek. The Applicant's engineer indicated that it might be possible to eliminate one or two more crossings on Schoeneck Creek, but the value in doing so is questionable; no stream crossings can be eliminated on Little Bushkill Creek [By letter, Mr. Hans Meinig, Jr., Gilbert Associates, Inc. (GAI), 11 April 1980]. Photographs of two of the Applicant's proposed stream crossings on Bushkill Creek are included as Figures III-1 and III-2. The revised locations of all stream crossings proposed for the APA are shown in Figure III-3.

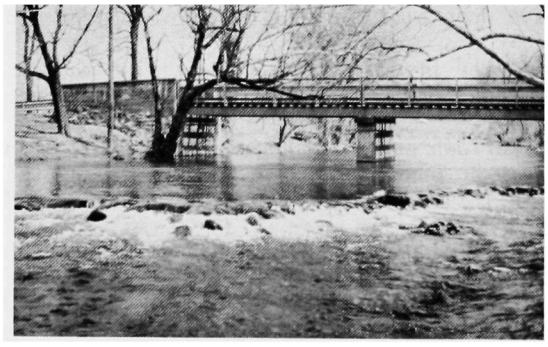


Figure III-1

Applicant's proposed stream crossing (manhole 210 to manhole 211) approximately 1 mile below Tatamy Borough.

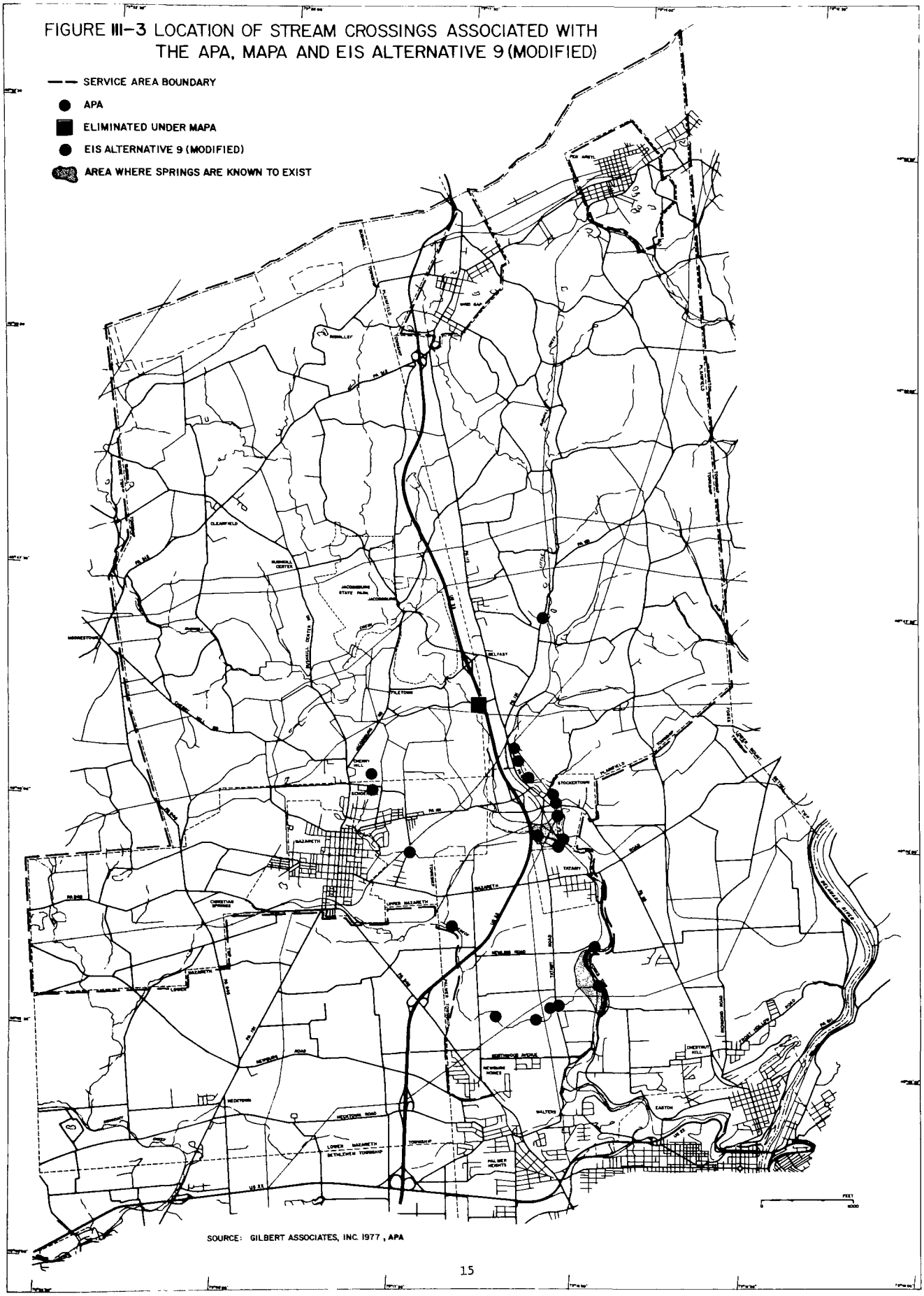
Figure III-2

Applicant's proposed stream crossi (manhole 219 to manhole 220) appro mately 1.5 miles below Tatamy Boro

[1] Drawings 06-6796 D-601-008 and 06-6796 D-601-009 (dated 1974, revised 1977).

[2] Drawings 06-6796 C-601-012 through C-601-019.

FIGURE III-3 LOCATION OF STREAM CROSSINGS ASSOCIATED WITH THE APA, MAPA AND EIS ALTERNATIVE 9 (MODIFIED)



SOURCE: GILBERT ASSOCIATES, INC. 1977, APA

types of stream crossings

- None of the stream crossings under the APA will require boring or jacking of sewer pipe beneath stream bottoms as previously proposed by the Applicant. Instead, all crossings will be constructed via cofferdam installation and excavation of stream bottoms according to procedures prescribed by the Pennsylvania Department of Environmental Resources (DER) and the Pennsylvania Fish Commission (By telephone, Mr. Hans Meinig, Jr., GAI, 17 April 1980). According to the Applicant's engineer, jacking of sewer pipe reportedly would require too much construction time in comparison to open trench excavation.

effect of stream crossing revisions on aquatic biota

- The Pennsylvania Fish Commission has described Bushkill Creek as "one of the better, if not the best, trout streams in eastern Pennsylvania and as such must be protected" (By letter, Mr. Jack Miller, Chief, Fisheries Environmental Services, Pennsylvania Fish Commission, to Mr. Robert Blanco, Chief, Water Planning Branch, EPA, 15 February 1977). As stated in the Draft EIS, this creek supports an intensive trout sport fishery. From May through August 1978, the Pennsylvania Fish Commission counted a total of 1,651 anglers along Bushkill Creek for a distance of approximately 2.3 miles downstream from Tatamy Borough.[3] During 1980, the fishing pressure on Bushkill Creek has increased despite a reduction by 8,000 fish in the number of stocked brown trout due to shortages of the species in the State. This intensive fishing pressure, which is attributed to current economic conditions that keep anglers close to their homes, is projected to increase in the near future.

wild trout population

Stocking is conducted to supplement the wild trout population. The Pennsylvania Fish Commission estimates that the number of naturally reproduced trout (mostly brown trout, Salmo trutta) in Bushkill Creek is high, with an average density of 250 trout per 100 meters[4] (By telephone, Mr. Terry Hannold, Waterways Patrolman, Pennsylvania Fish Commission, 2 June 1980). In their 1979 inventory of the "Fish for Fun" Area, the Pennsylvania Fish Commission captured brown trout, measuring 3 to 16 inches in length, and rainbow trout (Salmo gairdnerii), measuring 11 to 13 inches. As stated in the Draft EIS, the livelihood of the trout fishery downstream from Tatamy Borough is dependent on the underground springs known to exist in the vicinity of the Borough and at the confluence of Schoeneck Creek and Bushkill Creek (see Figure III-3).

The Applicant, in its detailed design of the sixteen stream crossings that are associated with the APA, has incorporated a number of measures that will minimize damage to the aquatic environment. The adverse impacts expected from the construction of the stream crossings, as well as the structural and non-structural measures recommended by the Applicant to mitigate these impacts, are summarized briefly below (By letter, Mr. Hans Meinig, Jr., GAI, 11 April 1980).

adverse impacts and mitigative measures recommended by Applicant

Impact	Mitigative Measures
• Erosion of stream banks and siltation of surface water channels during sewer installation.	• Streams will be crossed in two stages with water being diverted (by sand bags) to one side while sewer pipe is being installed on the other.

[3] Includes the "Fish for Fun" Area.

[4] Equivalent to approximately 4,000 naturally reproduced trout per mile.

Impact	Mitigative Measures
	Use of silt retention basins during construction.
	Follow soil erosion and sedimentation control specifications per Pennsylvania Fish Commission and DER rules and regulations.
	Obtain Section 404 permits from US Army Corps of Engineers prior to construction.
• Disruption of trout spawning habitat.	• Make stream crossings during time period recommended by the Pennsylvania Fish Commission.
• Diversion of spring flow away from the creek by gravel-filled trench and interception of groundwater.	• Install concrete curtain walls (seepage stops) approximately every 1,000 feet in areas where there is concern that groundwater will follow trench line and be diverted away from the adjacent stream.
• Hydraulic erosion around sanitary sewage pipeline.	• Encase stream crossings in concrete.

If proper construction methods are enforced, the adverse primary impacts can be expected to be of relatively short duration. The Applicant cites the construction of the Forks Township Interceptor on the east side of Bushkill Creek (Figures III-4 and III-5) 12 years ago as testimony to the fact that a gravity

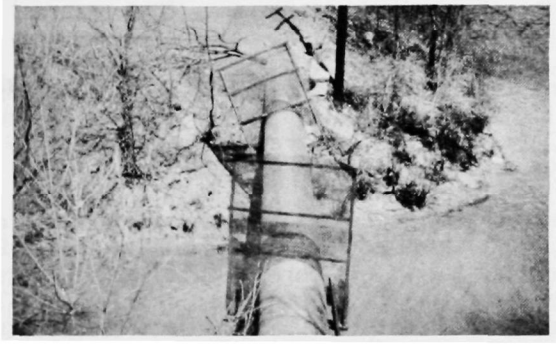


Figure III-4

Forks Township Interceptor

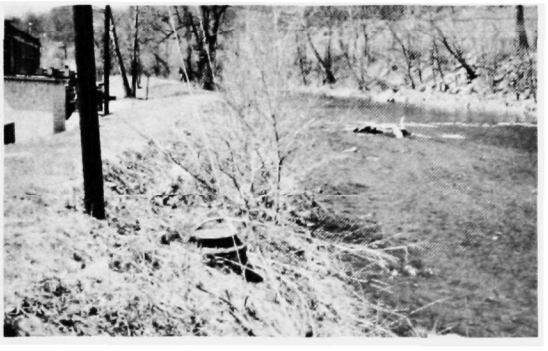


Figure III-5

Forks Township Interceptor

potential for spring/ channel diversion under APA

corridor study recommended

potential for additional stream crossings

interceptor along lower Bushkill Creek will not affect adversely this high-quality aquatic environment. The construction of stream crossings in limestone areas, involving the blasting of bedrock, must proceed with caution, because this activity could divert surface water and groundwater flow away from the stream. The short- and long-term potentials for such diversion in the B-LLJSA Service Area exist along Schoeneck Creek, along Little Bushkill Creek in the Stockertown area, and along Bushkill Creek downstream from Tatamy. Construction of sewer pipe adjacent to Bushkill Creek downstream from Tatamy and along Little Bushkill Creek should be permitted only after a detailed corridor study is completed. A qualified geologist and biologist, in collaboration with the Applicant's engineer, should determine the potential for spring and channel diversion and habitat disruption.

Development pressures in the future may result in the construction of stream crossings in addition to those proposed for B-LLJSA project start-up. The establishment of a permanently vegetated buffer zone adjacent to streams, in which construction of any kind would be controlled strictly, may reduce the impacts of future sewerage construction and non-point pollution. The width of this zone would be determined during the corridor study discussed above.

Prime Agricultural Land Conversion Under APA

2. In accordance with the reduction in the inventory of classified prime agricultural land in the EIS Service Area (see Section III.A.1), the amount of prime agricultural land converted to residential/ commercial/industrial uses under the APA is an estimated 3,200 acres. This is less than the amount of converted acreage reported in the Draft EIS (3,735 acres) and is approximately double the amount of prime agricultural land that would be converted to non-agricultural uses without the project.

Induced Growth Revisions Under APA

3. Induced dwelling unit and population estimates for Stockertown Borough and Tatamy Borough under the APA have been revised upward to reflect the fact that floodplain management ordinances recently adopted by these municipalities limit and condition, but do not prohibit, development in flood-prone areas (see Section III.A.2). Under the assumption that development could be induced legally in flood-prone areas, the revised total induced growth figures for Stockertown and Tatamy under the APA are:

- Stockertown Borough = 115 dwelling units (350 persons)
- Tatamy Borough = 252 dwelling units (756 persons).

This assumption was applied to the MAPA and the other alternatives. The derivation of the induced dwelling units (22 for Stockertown Borough, 68 for Tatamy Borough) in the 100-year floodplain for those alternatives is included in Appendix C-1.

Costs of APA

4. The capital, operation and maintenance, and present worth costs, as well as the salvage value of the APA, as stated in the Draft EIS, have been updated to reflect more realistic unit costs. The updated cost summary of the APA is presented in Table III-1. The unit costs were adapted from the B-LLJSA project bid sheets and do not reflect the comparatively low unit costs that were used to estimate the construction costs of the APA in the Draft EIS. The latter unit costs were obtained from engineer contractor firms located in the greater Easton area and were used in the costing of all wastewater management plans evaluated in the Draft EIS. This universal use of local unit costs ensured comparability among

all of the plans.[5] The data contained in the B-LLJSA project bid sheets represented the actual 1977 costs for which the APA would be constructed. These detailed and "realistic" costs were not applied universally to all alternatives in the Draft EIS because the site conditions and detailed design upon which they were based were not commensurate with the site conditions and preliminary designs upon which the alternatives were based.

updated cost summary of APA

Table III-1. Updated cost summary of APA ($).

Capital Cost	Annual O&M	Present Worth O&M (10.4919)	Salvage Value	Present Worth Salvage Value	Total Present Worth	Total Annual Equivalent (0.0953)
13,720,337	413,985	4,343,489	4,929,040	(1,244,583)	16,819,243	1,602,874

The effect of the updated capital costs on estimated local user charges for the APA is illustrated in Table III-2.

estimated local user charges of APA

Table III-2. Estimated local user charges associated with APA ($).

Capital Cost	Local Share (25%)	Annual Equivalent of Local Share (0.0953)	Annual O&M	Total Annual Cost to Local Citizens	Monthly Cost Per Family[6,7]
13,720,337	3,430,084	326,887	413,985	740,872	$13.20-22.40

The monthly cost per family for use of the APA system, $13.20 to $22.40, represents an estimated annual user charge of $158 to $269. These estimates contrast with the Draft EIS estimated annual user charge for the APA of $160. The calculation of the user charge is based on local capital costs being paid through the use of a 30-year bond at 7-1/8% interest rate.

The significant financial burden[8] and displacement pressure[9] associated with the revised costs of the APA, listed in Table III-3, have been

[5]The APA cannot be compared legitimately with the EIS alternatives, based on significant differences in design parameters and Service Area configurations. The development of the MAPA allows a direct comparison between the concept of the APA and its ten EIS alternatives.

[6]This information is presented for comparative purposes only. Actual user charges may vary with prevailing bond rates and market conditions.

[7]Monthly cost per family = $\frac{\text{Total Annual Cost}}{\text{No. Families x 12 mo/yr}}$; approximately 2,756 families without Nazareth and 4,677 families with Nazareth (year 1978). The Environmental Assessment (EA), page I-23, states that the estimated connected (APA) population includes Nazareth Borough.

[8]A project is likely to place "significant financial burden" on users when user charges equal or exceed the following criteria developed by the Federal government (The White House Rural Development Initiative 1978): 1.5% of median household incomes are less than $6,000; 2.0% of median household incomes are between $6,000 and $10,000; and when 2.5% of median household incomes are greater than $10,000.

[9]"Displacement pressure" is the economic pressure associated with user charges, which are high enough to cause lower income families to move. It is measured by determining the number of households having user charges in excess of 5% of their annual income.

estimated under two scenarios. The first scenario assumes a B-LLJSA Service Area population that includes Nazareth Borough (population 5,763, year 1978). The second scenario assumes that Nazareth Borough is not connected to the sewer system.

Table III-3. Significant financial burden and displacement pressure associated with APA.

Annual User Charge	Significant Financial Burden	Displacement Pressure
$158[10]	10-15%	5-10%
$269[11]	20-25%	5-10%

Additional Construction Costs Associated with APA

5. The APA costs presented in the Draft EIS and in Table III-1 are those associated with wastewater conveyance facilities in the B-LLJSA Service Area proper. They do not include the expansion (i.e., construction) of two pump stations in Easton (Second Street and Delaware Drive pump stations) and the upgrading/expansion of the Easton STP, both of which are prerequisites to satisfy the purpose for which the APA was intended: transport of wastewater generated in the B-LLJSA Service Area to the Easton STP for treatment. During the comment period on the Draft EIS, the B-LLJSA indicated that a deficiency of the EIS was the lack of consideration of the reconstruction of these and other conveyance facilities (interceptors and inverted siphons) in the evaluation of the APA and alternative wastewater management plans. Costs that should be added to the cost of the APA are presented in Table III-4. These were not included in the cost-effectiveness analysis for the APA in either the Draft EIS or in Table III-1 because they are not costs associated with construction of proposed facilities in the Applicant's Service Area. The expansion of the Easton STP and two pump stations is proceding under a separate EPA grant. However, these costs are essential to the operation of the APA and, therefore, should be considered in addition to those presented in Table III-1.[12] Costs for the reconstruction of interceptors and inverted siphons, which also are essential to the operation of the APA, are not included in Table III-4; therefore, the costs in that table are considered conservative. This reconstruction occurred under the Easton Federal grant mentioned earlier.

Table III-4. Expansion costs for the Second Street pump station, Delaware Drive pump station, and Easton STP that should be added to APA costs.[12]

Expansion of Second Street Pump Station (B-LLJSA portion)	= $ 249,429
Expansion of Delaware Drive Pump Station (B-LLJSA portion)	= 191,040
Expansion of Easton STP (B-LLJSA portion)	= 1,592,200
Total Additional Construction Costs	= $2,032,669
Total Additional Capital Costs (@ 127%)	= $2,581,490

Backup calculations for these costs are presented in Appendix D-1.

[10] Based on 1978 B-LLJSA estimated connected population including Nazareth Borough (EA, p. I-23, 1976).

[11] Based on 1978 B-LLJSA estimated connected population excluding Nazareth Borough (EA, 1976).

[12] These additional costs represent only the B-LLJSA portion of facilities expansion. B-LLJSA design flow 2.4 mgd (By telephone, Mr. Lewis Wolfe, Manager Consultant, B-LLJSA, 9 May 1980).

Energy Requirements of APA

6. The Draft EIS estimate of energy requirements associated with the APA, 5,950 kilowatt-hours per year (kwh/yr) was based on the proposed wastewater conveyance facilities in the B-LLJSA Service Area. The only energy-consumptive conveyance facilities in the B-LLJSA Service Area proper are the proposed Jacobsburg State Park and Edelman pump stations, with design flows[13] of 600 gallons per minute (gpm) and 180 gpm, respectively (By letter, Mr. Hans Meinig, Jr., GAI, 19 May 1980).

Re-evaluation of the APA's energy requirements revealed three problems with the Draft EIS estimate of 5,950 kwh/yr:

- The energy requirements of the two pump stations in the B-LLJSA Service Area were underestimated
- The energy requirements associated with wastewater conveyance and treatment facilities that were essential to the operation of the APA were not included
- The energy consumption by residential developments induced by the APA was not measured.

The revised energy budget for the proposed Jacobsburg State Park and Edelman pump stations is 139,991 kwh/yr. The energy requirements for the B-LLJSA portion of the expanded Second Street and Delaware Drive pump stations and Easton STP total 1,365,850 kwh/yr. The energy requirements directly associated with the operation of the wastewater management system proposed for the B-LLJSA Service Area are shown in Table III-5. Backup data for this table are in Appendix D-2.

revised energy requirements of APA's technical components

Table III-5. Revised energy budget for APA.

		kwh/yr
A.	Conveyance	
	1. Jacobsburg State Park Pump Station	7,938
	2. Edelman Pump Station	132,053
	3. Second Street Pump Station (B-LLJSA portion)	194,832
	4. Delaware Drive Pump Station (B-LLJSA portion)	437,290
B.	Treatment	
	Easton STP (B-LLJSA portion)	733,728
	TOTAL	1,505,841

A comprehensive evaluation of the energy requirements of the APA and its alternatives should include an estimate of the energy (electric power) consumed by residential development associated with the project under construction. This comprehensive approach to estimating the energy budgets for the APA and its EIS alternatives was precipitated by the significant public criticism of the Draft EIS for recommending the implementation of an alternative that required 93 times the amount of energy required by the APA. It is emphasized that the Draft EIS energy evaluation of alternative wastewater management plans considered

[13] Design peak flows.

only the sewerage system components in the B-LLJSA and EIS Service Areas. Given the public emphasis on implementing a Federally funded wastewater management plan that complies with the President's energy conservation directives, EPA believed it necessary to present a realistic energy evaluation[14] of the APA and its alternatives in this EIS -- one that includes energy consumption by project-associated residents as well as project-associated design components.

electric power consumption by residential development under APA

The estimated average electric power consumption by residential development[15] that is associated with the APA in the year 2000 is as follows: 247,810,000 kwh/yr for single family dwelling units and 49,488,000 kwh/yr for multi-family dwelling units; total electric power consumption by residential development is 297.2 million kwh/yr.

Projected electric power consumption by residential development without the APA is as follows: 165,570,000 kwh/yr for single family dwelling units and 23,069,000 kwh/yr for multi-family units; total electric power consumption by residential development is 188.6 million kwh/yr.

total energy requirements of APA

Assuming that energy requirements of the conveyance and treatment systems in Table III-5 remain constant over the 20-year project planning period, the total energy requirements of the APA are those included in Table III-6.

Table III-6. Total estimated energy requirements of APA.

B-LLJSA-associated wasteawter conveyance and treatment components	1,505,841 kwh/yr
Total electric power consumption by residential development induced[16] by APA	108,619,000 kwh/yr
Total estimated energy requirements of APA	110,124,841 kwh/yr

ALTERNATIVES

C. A detailed review of the design and costing of the wastewater management plans under study during the EIS process is embodied in the "Engineering Evaluation of the Bushkill Draft EIS" (Appendix D-3). Key tasks[17] undertaken during this evaluation included:

- An assessment of the conveyance systems presented in the Draft EIS that incorporated the use of force mains and pump stations
- Segmental cost-effectiveness analysis comparing a total of five alternative wastewater conveyance and treatment options for two

[14] This evaluation does not include the electric power requirements of project-associated commercial and industrial development.

[15] Electric power consumption by single family detached units 21,600 kwh/yr; Electric power consumption by multi-family units = 16,900 kwh/yr.

[16] Project electric power consumption by development with APA minus projected electric power consumption by development without APA (see Appendix D-4).

[17] While these tasks involve a more detailed approach to evaluating the EIS alternatives in light of critical public comment and input received on their design, cost, reliability, and energy requirements, EPA has not departed from its commitment to conduct such analysis within the framework of the Agency's Construction Grants Program guidelines and regulations for Step I-level projects.

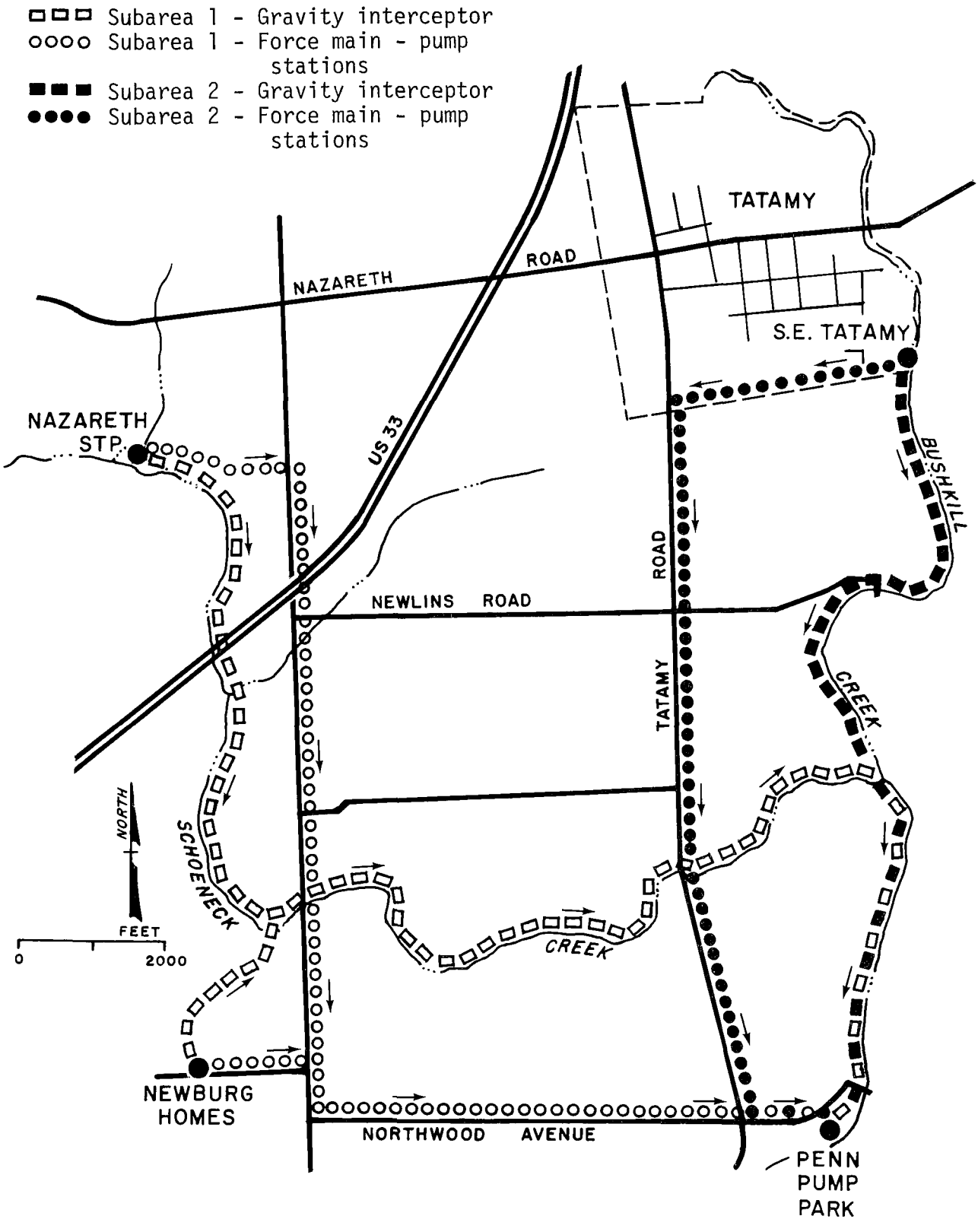


Figure III-6. Subareas associated with segmented cost-effectiveness analysis.

subareas in the EIS Service Area. The first subarea extends from the exsting Nazareth STP to the connection point with the Forks Township/Bushkill interceptor at Penn Pump Park in Palmer Township (hereafter referred to as Penn Pump Park). The second subarea extends from the southeast corner of Tatamy Borough at Bushkill Creek to Penn Pump Park. The two subareas are illustrated in Figure III-6.

- A reanalysis of the Draft EIS design and cost for the Nazareth RBC STP

- A review of the cost-effectiveness analysis presented in the Draft EIS, focusing on the APA, MAPA, and Draft EIS Alternative 9.

Assessment of Pressurized Wastewater Conveyance Systems

1. As assessment was made of the pump stations that were proposed for Alternative 9, the Draft EIS Recommended Action, because of critical public comments on the selection of a pressurized wastewater conveyance system. No major discrepancies were found.

   For the force mains associated with pump stations (PSs) #1 and #4, it was determined that the pressurized piping could be replaced by gravity sewers for a moderate distance, resulting in a more economical design (see Section III.D.2). Pump stations #3, #4, #7. and #8 involved successive lifting or pumping of sewage. A study was made of the Tatamy Borough/Stockertown Borough area to see if a more economical conveyance system was possible. The use of a gravity sewer along the right-of-way (ROW) of the Lehigh Valley Railroad between Stockertown Borough and Tatamy Borough would permit the elimination of PSs #4, #7, and #8, but would require enlargement of PS #3.[18] The enlarged PS #3 is termed PS #3 (Modified), and the conveyance system design using only six pump stations in lieu of nine is referred to as Alternative 9 (Modified). The substitution of a gravity sewer system for these three PSs reduced the energy requirement of the conveyance system as presented for Draft EIS Alternative 9 by nearly 50%.

Alternative 9 (Modified)

Segmental Cost-Effectiveness Analysis

2. A segmental cost-effectiveness analysis was made, which was totally independent of the analyses performed during the preparation of the Draft EIS. The study was conducted to determine the most cost-effective method to convey and to treat sewage generated in two of the subareas in the EIS Service Area.

   Subarea 1 comprises Nazareth Borough, Upper Nazareth Township, and Newburg Homes in Palmer Township (see Figure III-6). Three alternates were developed for this area:

Alternate A

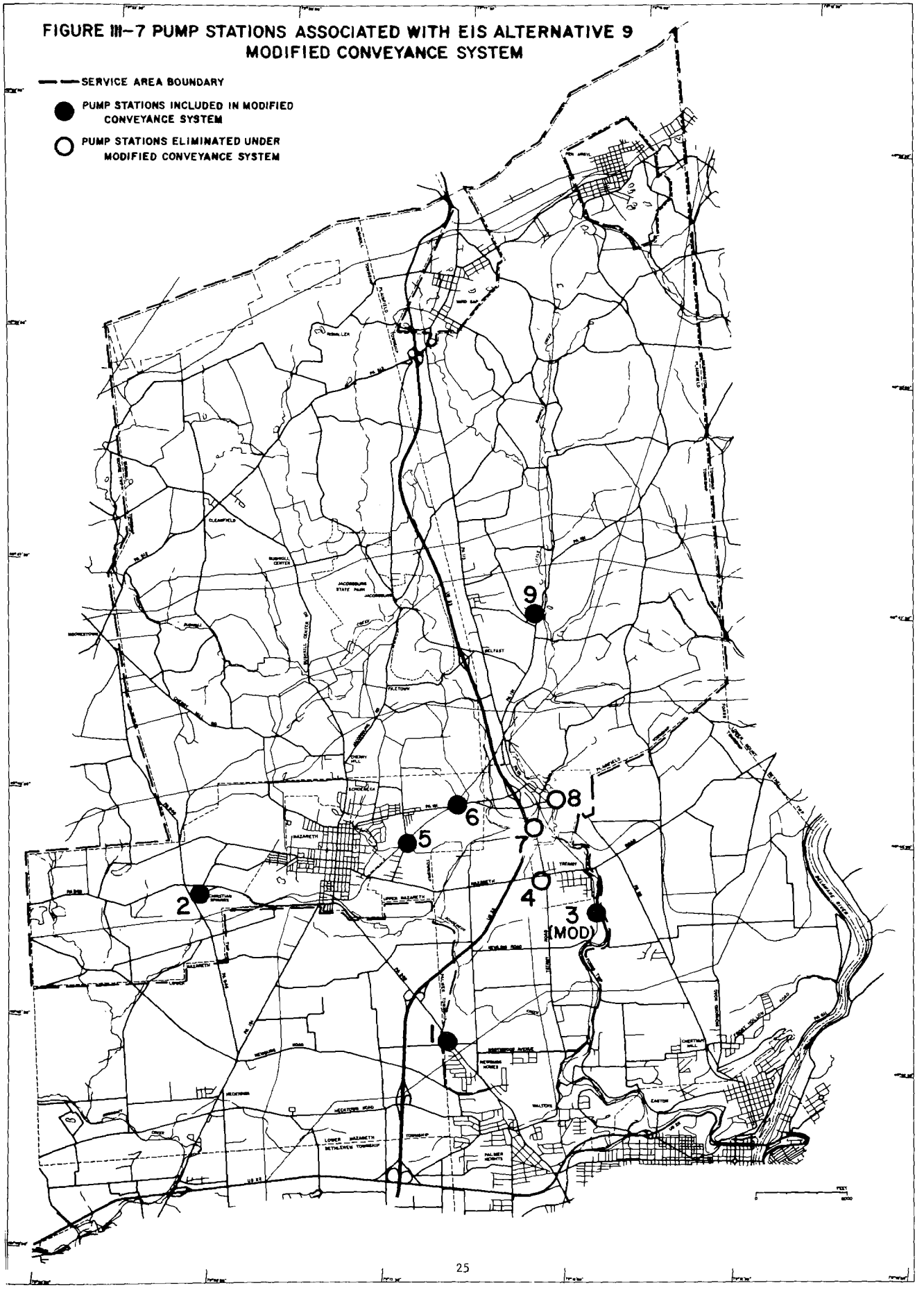
- Alternate A features a sewage treatment plant to handle wastewater flows from Nazareth Borough and Upper Nazareth Township. Four treatment plant options were analyzed: (a) a RBC plant with Lamella Settlers (see Appendix D-3), (b) an RBC plant with a conventional final clarifier, (c) a conventional activated sludge (AS) plant, and (d) an OD plant. Newburg Homes is served by pump station/force main and gravity sewer to Penn Pump Park.

Alternate B

- Alternate B includes gravity sewers along Schoeneck Creek serving Nazareth Borough and Upper Nazareth Township, and gravity sewers serving Newburg Homes.

[18] This railroad ROW is the same one through which the B-LLJSA proposed to construct interceptors under the APA.

FIGURE III-7 PUMP STATIONS ASSOCIATED WITH EIS ALTERNATIVE 9 MODIFIED CONVEYANCE SYSTEM



Alternate C

- Alternate C features a pump station/force main system, constructed along public roads, to serve Nazareth Borough, Upper Nazareth Township, and Newburg Homes.

Subarea 2 comprises the area between southeastern Tatamy Borough at Bushkill Creek and Penn Pump Park. Two alternates were developed for this area.

Alternate D

- Alternate D would convey all sewage generated north of Tatamy Borough to Penn Pump Park by gravity sewer along Bushkill Creek

Alternate E

- Alternate E would convey all sewage generated north of Tatamy Borough by means of a pump station/force main system down Tatamy Road to Penn Pump Park.

Separate cost-effectiveness analyses that compare Alternates A, B, and C, and Alternates D and E have been developed (see Table III-7).

Table III-7. Cost-effectiveness analysis of Alternates A, B, and C, and Alternates D and E.

Alternate	Capital Cost	Annual[1] O&M	Present Worth O&M (10.4919)	Salvage Value	Present Worth Salvage (0.2525)	Total Present Worth	Total Annual Equivalent (0.0953)
Schoeneck Creek Watershed							
Aa (RBC/LS)	$3,491,913	$145,620	$1,527,830	$ 996,939	($251,727)	$4,768,016	$454,392
Ab (RBC/CONV)	3,551,913	149,620	1,569,798	1,046,939	(264,352)	4,857,359	462,906
Ac (AS)	2,521,913	165,620	1,737,669	776,939	(196,177)	4,063,405	387,243
Ad (OD)	1,492,913	57,620	604,543	486,939	(122,952)	1,974,504	188,170
B (Gravity)	1,760,000	81,480	854,880	700,000	(176,750)	2,438,130	232,354
C (FM/PS)	1,714,694	101,071	1,060,427	461,327	(116,485)	2,658,636	253,368
Lower Bushkill Creek Watershed							
D (Bushkill Creek Gravity System)	$ 740,913	$ 4,150	$ 43,541	$ 295,698	($ 74,664)	$ 709,790	$ 67,643
E (Tatamy Road FM/PS System)	790,575	9,691	101,677	234,250	(59,148)	833,104	79,395

[1]The O&M costs presented in this table are considered the minimum allowable expenditures to keep the system operable. Replacement costs for components with service lives in excess of 20 years are not included. Preferred O&M Costs are presented in Appendix D-3.

Comparison of Subarea 1 Alternates

Comparing Alternates Aa and B is equivalent to comparing Alternative 9 (Draft EIS recommended alternative) and the MAPA with respect to serving the western portion of the EIS Service Area. The comparison indicates a gravity sewer (Alternate B) is less expensive than a treatment plant at Nazareth (Alternate Aa). The additional expense of the treatment plant is calculated as follows:

((capital $ Alternate Aa capital $ Alternate B) x (25% local share capital $) x discount factor) + (annual O&M $ Alternate Aa annual O&M $ Alternate B)) ÷ number of families x 12 month/year.

$$\frac{((\$3{,}491{,}913 - \$1{,}760{,}000)\ (2.5)\ (.0953)) + (\$145{,}620 - \$81{,}480)}{3{,}754 \text{ families} \times 12 \text{ month/year}}$$

$$= \$2.34/\text{month per family.}$$

Alternate Ad -- treatment of wastewater via an OD plant -- however, is the least expensive option. Using the preceding formula, it is estimated that an OD plant represents a savings of $0.67/month per family over the gravity sewer (Alternate B).

Comparison of Subarea 2 Alternates

The comparison of Alternate D (gravity system from Tatamy Borough to Penn Pump Park) and Alternate E (force main/pump station system from Tatamy Borough to Penn Pump Park) also is shown in Table III-6. The total annual equivalent cost of Alternate E is $11,752 more than for Alternate D. Therefore, it would cost $11,762/year for a conveyance system that would avoid a State-proclaimed trout stream -- Bushkill Creek.

There are 11,263 persons, or approximately 3,754 families, in the EIS Phase I Service Area that would pay the cost. On a monthly sewer bill basis, the added cost for avoiding Bushkill Creek downstream from Tatamy Borough would be:

((capital $ Alternate E capital $ Alternate D) x (25% local share capital $) x discount factor) + (annual O&M $ Alternate E annual O&M $ Alternate D)) ÷ number of families x 12 month/year.

$$\frac{((\$790{,}575 - \$740{,}913)\ (.25)\ (.0953)) + (\$9{,}691 - \$4{,}154)}{3{,}754 \text{ families} \times 12 \text{ month/year}}$$

$0.15 month per family.

extra monthly cost to avoid Bushkill Creek

The additional capital cost to EPA, through the 75% Construction Grant Program, would be:

($790,575 - $750,913) (.75) $37,247.

The additional capital cost to the B-LLJSA would be:

($790,575 $750,913) (.25) $9,916

Cost-Effectiveness Analysis

3. The review of the Draft EIS cost analysis focused on the APA, MAPA, and Draft EIS Alternative 9 for the following reasons:

- The APA is the subject of this EIS
- The MAPA is a redesign of that action
- Alternative 9 is the Draft EIS Recommended Action.[19]

focus

The costs associated with the above alternatives have been updated to reflect more realistic unit costs. The units costs used to revise these wastewater management plans were adapted from actual bid data upon which the original costs of the APA were based. The rationale behind using relatively lower unit costs during the costing of the Draft EIS alternatives is identical to the one given for use of these unit costs in the costing of the APA for the Draft EIS (see page 18 of this EIS).

[19] Two types of wastewater treatment facilities were considered to meet the needs of the Nazareth STP Service Area under Alternative 9. Combination with the modified conveyance system (Section III.C.1) results in four versions of Alternative 9.

Draft EIS costs too low

The present worth costs of all the alternatives reported in the Draft EIS consistently were found to be approximately 10% to 22% lower in relation to present worth costs based on construction bid costs. However, the cost ranking of the alternatives, as determined by the cost-effectiveness analysis, remains valid. The revised cost-effectiveness analysis is presented in Table III-8.

Alternative 9 RBC plant

Alternative 9 (RBC) has incorporated the use of conventional treatment components (preliminary treatment and primary clarifiers) to a greater extent than was the case in Draft EIS Alternative 9, which recommended the use of several innovative/alternative (i/a) technologies (wire screen in lieu of conventional preliminary treatment/primary clarification). Alternative 9 (Modified; RBC) further incorporates the modified conveyance system (six pump stations) that was discussed in Section III.C.1. Outside of these modifications, the remainder of Phase I is served as reported in the Draft EIS under both scenarios.

Alternative 9 OD plant

The least costly alternate treatment facility to replace the existing Nazareth STP is an OD plant. It can achieve the same effluent quality as the previously proposed RBC plant -- 10 mg/l BOD, 15 mg/l suspended solids, and 2 mg N/l ammonia. These levels are well within the effluent standards set by DER for discharge to Schoeneck Creek -- 20 mg/l BOD, 25 mg/l suspended solids, and 3 mg N/l ammonia. Except for the substituted treatment scheme to meet the needs of the Nazareth STP Service Area, Alternative 9 (OD) is identical to Draft EIS Alternative 9 in configuration. Alternative 9 (Modified; OD) includes the modified conveyance system described in Section III.C.1.

local user charges

Estimated local user charges for the APA, MAPA, and the four versions of Alternative 9 are presented in Table III-9. This information is presented for comparative purposes only. Actual user charges, once a system is operable, would depend on prevailing bond rates, bond life, and other market conditions.

IMPACTS

D. New or revised impacts associated with the implementation of the MAPA and EIS Alternative 9 (including its four versions) are discussed in this section in light of modifications described in Sections III.A, B, and C. As stated previously, the impacts associated with the APA cannot be compared to those associated with the EIS alternatives because of dissimilar design assumptions and service area configuration. The MAPA serves as a redesign of the APA that can be compared directly to the EIS Alternatives.

Conversion of Prime Agricultural Land Under MAPA and Alternative 9 *secondary impacts*

1. Implementation of the MAPA would induce the conversion of 14% more prime agricultural land to residential/commercial/industrial uses than would occur without its implementation. Implementation of EIS Alternative 9 would induce the conversion of less than 1% more prime agricultural land to developed uses than would occur without its implementation. These estimates account for the reduction in the amount of classified prime agricultural land in the EIS Service Area (Section III.A.1).

Induced Growth Under MAPA and EIS Alternative 9

2. The revised numbers of dwelling units induced by implementation of either the MAPA or Alternative 9 are presented in Table III-10. Revisions have been required as a result of the adoption by Stockertown Borough and Tatamy Borough of floodplain management ordinances which limit and condition, but do not prohibit, development in the 100-year floodplain. Further revisions of induced growth estimates under Alternative 9 have been made to reflect the substitution of gravity sewers for force main/pump stations at two locations in the EIS Service Area:

Table III-8. Cost-effectiveness analysis of APA, MAPA, and four versions of Alternative 9.

Alternative	Capital Cost	Annual O&M[1]	Present Worth O&M (10.4919)	Salvage Value	Present Worth Salvage (0.2525)	Total Present Worth	Total Annual Equivalent (0.0953)
Applicant's Proposed Action (APA)	13,720,337	413,985	4,343,489	4,929,040	(1,244,583)	16,819,243	1,602,874
Modified Applicant's Proposed Action (MAPA)	11,143,977	194,212	2,037,653	3,994,280	(1,008,556)	12,173,074	1,160,094
Alternative 9 (RBC)	11,553,579	238,934	2,506,872	3,565,566	(900,305)	13,160,146	1,254,162
Alternative 9 (Mod; RBC)	11,228,395	233,863	2,453,667	3,513,166	(887,074)	12,794,988	1,219,362
Alternative 9 (OD)	9,553,489	150,934	1,583,584	3,055,566	(771,530)	10,365,543	987,836
Alternative 9 (Mod; OD)	9,229,575	145,863	1,530,380	3,003,166	(758,299)	10,001,656	953,168

[1]The values in this column represent the minimum expenditures necessary to keep the corresponding system operating. Replacement costs for system components, such as gravity sewers and force mains that have service lives of more than 20 years were not included. Preferred O & M costs, which reflect replacement costs for all components, are presented in Appendix D-3. Regardless, the relative rank of the alternatives does not change.

Table III-9. Estimated local user charges for the APA, MAPA, and four versions of Alternative 9.

Alternative	Capital Cost	Local Share (25%)	Annual Equivalent of Local Share (0.0953)	Annual O&M[1]	Total Annual Cost to Local Citizens[2]	Annual Cost Per Family[2]	Monthly Cost Per Family[2]
Alternative 9 (RBC)	$ 11,553,579	$ 2,888,395	$ 275,264	$ 238,934	$ 514,198	$140.88	$ 11.74
Alternative 9 (OD)	9,553,489	2,388,372	227,612	150,934	378,546	103.68	8.64
Alternative 9 (Mod; RBC)	11,228,395	2,807,099	267,517	233,863	501,380	137.40	11.45
Alternative 9 (Mod; OD)	9,229,575	2,307,394	219,895	145,863	365,758	100.20	8.35
Modified Applicant's Proposed Action	11,143,977	2,785,994	265,505	194,212	459,717	126.00	10.50
Applicant's Proposed Action (without Nazareth)	13,720,337	3,430,084	326,887	413,985	740,872	268.80	22.40
(with Nazareth)	13,720,337	3,430,084	326,887	413,985	740,872	158.40	13.20

[1]These values represent the minimum expenditures necessary to keep a system operating. They are not the recommended amounts. Replacement costs for system components, such as gravity sewers and pressure pipes that have service lives of more than 20 years, were not included. O & M costs in Appendix D-3 reflect replacement costs for all components.

[2]This information is presented for comparative purposes only. Actual user charges may vary with prevailing bond rates, bond life, and market conditions.

ALT.	NO. OF FAMILIES
9	3,650
MPA	3,650
APA (without Nazareth)	2,756
APA (with Nazareth)	4,677

substitution of gravity sewers for force mains/ pump stations

- Northwood Avenue from its intersection with Van Buren Road east to Penn Pump Park (Palmer Township)
- Tatamy Road approximately 2,000 feet south of its intersection with Stocker Mill Road south through its intersection with Northwood Avenue east (on Northwood Avenue) to Penn Pump Park (Palmer Township).

Palmer Township development induced by gravity sewer under Alternative 9

Under the assumption that gravity sewers induce more growth than force main/pump station sytsems (see Appendix C-2), Palmer Township[20] was allocated an additional 192 dwelling units (592 persons) in addition to the Draft EIS induced growth rate estimate of zero (under Alternative 9). The derivation of these revised estimates of induced growth in Palmer Township under Alternative 9 is included in Appendix C-2. The revised estimates of induced growth for all alternatives are listed in Appendix C-3.

Table III-10. Dwelling units induced under MAPA and EIS Alternative 9.

Municipality	MAPA		Alternative 9	
	S*	M*	S*	M*
Bushkill	0	0	0	0
Nazareth	0	0	0	0
Palmer	395	395	96	96
Plainfield	128	32	25	0
Stockertown	115	0	47	0
Tatamy	252	0	47	0
Upper Nazareth	158	40	0	0
TOTALS	1,048	467	215	96

*S single family units
M multi-family units

Surface Water Quality Impacts

3. Induced growth revisions for Alternative 9 that were described in Section III.D.2 result in the consumption of 90 more acres of land than the 16 acres estimated in the Draft EIS. This increase is relatively insignificant in terms of non-point source pollution, particularly stormwater runoff from potential development. Therefore, the revised induced growth for Alternative 9 still is not expected to affect water quality adversely in terms of dissolved oxygen, bacteria, and phosphorus.

[20] Portion of Palmer Township currently not sewered.

Impacts on Aquatic Environment

4. There are 16 stream crossings associated with the MAPA (Figure III-3). Like the APA, all of them would involve the temporary diversion of stream flow and excavation (blasting where necessary) of the streambed for pipe installation. The primary impacts and mitigative measures related to the construction of these stream crossings are identical to those described for the APA in Section III.B.1. A study of the Tatamy-Penn Pump Park corridor by a geologist and a biologist, in concert with the Applicant's engineer, is recommended for the MAPA as well as the APA, because both wastewater management plans involve the construction of interceptors through limestone soils and through areas where springs are known to exist. There is the potential for spring diversion and/or stream diversion to occur as a result of sewer construction which involves blasting of hard rock to facilitate pipe installation. Blasting may possibly enlarge or close up solution channels, thereby altering groundwater flow.

Tatamy-Penn Pump Park corridor study

five stream crossings under Alternative 9 (Modified)

There would be five stream crossings (none on Bushkill Creek downstream from Tatamy Borough) under Alternative 9 (Modified); one less than under Draft EIS Alternative 9. Adverse impacts that are associated with these five crossings would be minimal and of relatively short duration. Following the acquisition of Section 404 permits from the US Army Corps of Engineers, all crossings would have to be made according to stipulations prescribed by the Pennsylvania DER and Pennsylvania Fish Commission. A corridor study (Tatamy Borough to Penn Pump Park) is not recommended for Alternative 9 because wastewater conveyance is by a system of force mains and pump stations down public roads, not by gravity sewer along Bushkill Creek.

The potential for future stream crossings is minimal under Alternative 9. Residential areas in the vicinity of Nazareth Borough, Stockertown Borough, and Tatamy Borough are practically at development capacity. Future connections would be made to force mains and pump stations, which generally are located away from streams.

Economic Impacts of MAPA and Alternative 9

5. The financial burden and displacement pressure (see footnotes 8 and 9, page 19 related to the MAPA and four versions of Alternative 9 are presented in Table III-11.

Table III-11. Financial burden and displacement pressure associated with MAPA and Alternative 9.

Alternative	Annual User Charge ($)	Financial Burden (%)	Displacement Pressure (%)
Alternative 9 (RBC)	141	10-15	5-10
Alternative 9 (OD)	104	5-10	1-5
Alternative 9 (Mod.; RBC)	137	10-15	5-10
Alternative 9 (Mod.; OD)	100	5-10	1-5
Modified Applicant's Proposed Action	126	10-15	5-10

Energy Requirments of MAPA and Alternative 9

6. The energy requirements of the MAPA, like the APA, have been updated to account for the expansion of the Second Street and Delaware Drive pump stations as well as the Easton STP. As indicated in Sections III.B.3 and III.B.4, the expansion of these facilities is essential

to the operation of any alternative involving the conveyance of wastewater from the B-LLJSA area to the Easton STP. Updated MAPA energy requirements also include a modified energy budget for the Edelman pump station and an estimate of energy consumption by residential development (Section III.B.6) induced by the MAPA. The energy requirements directly associated with the operation of the wastewater management system under the MAPA (Phase I area only) are listed in Table III-12.

conveyance and treatment system energy requirements of MAPA

Table III-12. Revised energy budget for Modified Applicant's Proposed Action: conveyance and treatment systems.

		kwh/yr
A.	Conveyance	
1.	Edelman Pump Station	14,576
2.	Second Street Pump Station (modified B-LLJSA flow)	100,176
3.	Delaware Drive Pump Station (modified B-LLJSA flow)	224,840
B.	Treatment	
1.	Easton STP (modified B-LLJSA portion)	377,258
2.	Cluster Systems	7,010
	TOTAL	723,860

Backup data for all energy evaluations performed during the preparation of the EIS are included in Appendix D-2.

electric power consumption by residential development under MAPA

The estimated average electric power demand by residential development associated with the MAPA in the year 2000 is as follows:[21] 187,550,000 kwh/yr for single family dwelling units and 30,961,000 kwh/yr for multifamily dwelling units; total electric power consumption by residential development is 218.5 million kwh/yr.[22]

conveyance and treatment system energy requirements under Alternative 9

The energy requirements of Alternative 9 (Modified; OD) were examined because this version of Alternative 9 was the least costly of all considered (see Table III-8). The analysis also includes energy demand by expanded conveyance and treatment facilities outside the EIS Service Area. The requirements are shown in Table III-13.

conveyance and treatment system energy requirements under Alternative 9

Table III-13. Energy budget for Alternative 9 (Modified; OD): conveyance and treatment systems.

		kwh/yr
A.	Conveyance	
1.	EIS Service Area Pump Stations (see Appendix D-2)	91,592[23]
2.	Second Street Pump Station (EIS Service Area flow)	20,701
3.	Delaware Drive Pump Station (EIS Service Area flow)	46,462

[21] See footnote 15, page III-11.

[22] Energy consumption by residential development includes both baseline and project-induced development (see Appendix D-4).

[23] Equivalent to electric power consumed by four single family dwelling units @ 21,600 kwh/yr per dwelling unit.

Table III-13 (continued).

B. Treatment	kwh/yr
1. Nazareth STP (OD)	215,900
2. Easton STP (EIS Service Area flow)	77,959
3. Cluster Systems	8,390
TOTAL:	461,004

electric power consumption by residential development under Alternative 9

Electric power consumption by residential development associated with Alternative 9 in the year 2000 is as follows:[24] 170,210,000 kwh/yr for single family dwelling units and 24,692,000 kwh/yr for multi-family dwelling units; total electric power consumption by residential development is 194.9 million kwh/yr.

total energy requirements of MAPA and Alternative 9

The estimated total energy requirements of the MAPA and Alternative 9 (Modified; OD) in the year 2000 are presented in Table III-14. It is assumed that energy requirements of the conveyance and treatment systems included in this table remain constant over EPA's 20-year project planning period.

Table III-14. Total estimated energy requirements of the MAPA and Alternative 9 (Modified; OD) in the year 2000.

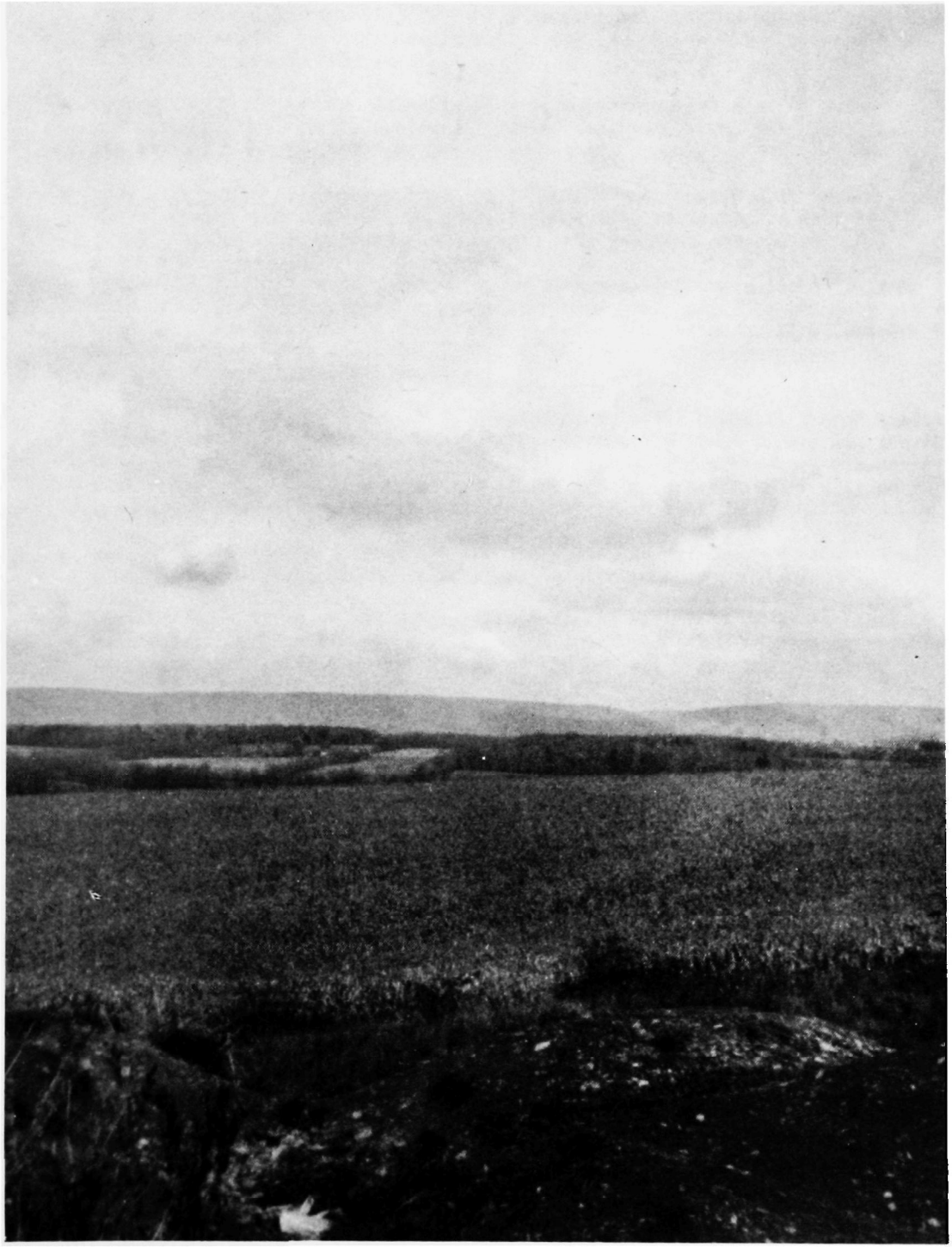
	MAPA (kwh/yr)	Alternative 9 (Modified; OD) (kwh/yr)
Essential wastewater conveyance and treatment components	723,860	461,004
Total electric power consumption by induced[25] residential development	29,872,000	6,263,000
Total estimated energy requirements	30,595,860	6,724,004

[24] See footnote 15, page 30; footnote 22, page 41.

[25] Project energy consumption by development with MAPA or Alternative 9 (Modified; OD) minus project energy consumption by development without MAPA or Alternative 9 (Modified; OD). See Appendix D-4.

CHAPTER IV

Comparison of Alternatives



CHAPTER IV: COMPARISON OF ALTERNATIVES

Significant factors that were considered by EPA in the final selection of an appropriate wastewater management plan for the EIS Service Area are presented in this chapter. Because the APA provides sewerage to areas for which there is not sufficiently documented need, the EIS focuses on the MAPA and EIS Alternative 9. This process included consideration of several key factors.

- Need for the project: Which wastewater management plan, the MAPA or Alternative 9, represents the best solution to existing documentable problems associated with on-site disposal/treatment systems in the EIS Service Area (see Assumption 8, page II-3)? In the absence of existing wastewater management needs, business development needs are not fundable under EPA's Construction Grants Program.

- Cost-effectiveness: The selected plan must minimize the cost of water pollution control to the public -- Federal taxpayers as well as sewerage system users -- and to the natural environment.

- Energy (electric power) requirements: The EPA-recommended plan should minimize energy consumption by project-associated residents as well as project-associated wastewater conveyance and treatment components.

- Degree of induced growth: The selected plan should provide for a reasonable rate of growth beyond existing wastewater management needs in the interest of floodplain protection (see Assumption 15, page 10), water quality, preservation of open space and prime agricultural land, and maintenance of the quality of existing public services.

- Aquatic environment: The intrinsic value of Bushkill Creek as a high quality stream capable of supporting a naturally-reproducing trout population should be weighed carefully in selecting the most appropriate wastewater management plan. Springs, which are essential to the continued presence of a large wild trout population, are an important element in this decision.

- Wastewater management: What are the operation and maintenance requirements (including staffing) of the selected wastewater management plan?

- Engineering: Although not determinative in the selection of an appropriate wastewater management plan, consideration should be given to Step II requirements and their effect on the timing of the project given the immediate needs of the Service Area.

MODIFIED APPLICANT'S PROPOSED ACTION

A. As described on page 166 of the Draft EIS, the MAPA is similar to the APA in concept but is different in terms of design year, estimated wastewater flows per person, and service area configuration. It provides for centralized collection of wastewater in the Belfast-Edelman area of Plainfield Township, the Cherry Hill area of Bushkill Township, Stockertown Borough Tatamy Borough, the East Lawn area of Upper Nazareth Township, and the Northern Corridor of Palmer Township. Capacity for wastewater generated in the Nazareth STP Service Area is provided by the Applicant's proposed Schoeneck Interceptor. Wastewater collected in Phase I communities listed above is conveyed, predominantly by gravity flow, to the upgraded and expanded Easton STP for treatment. Under the MAPA, cluster systems are provided in the following communities: east Pen Argyl and Rasleytown (Plainfield Township), Rismiller (Bushkill Township), and Christian Springs (Upper Nazareth Township). The MAPA's design flow of 1.234 million gallons per day (mgd) was estimated on the basis of a year 2000 service population and on the following per capita flows: 60 gallons per capita per day (gpcd) for residential areas and 70 gpcd for residential/commercial areas. A small waste flows district would be organized to manage the on-site systems in the outlying Phase II areas.

ALTERNATIVE 9

B. Under EIS Alternative 9,[1] Phase I area wastewater management needs are served by two STPs and twelve cluster systems. A new oxidation ditch (OD) treatment plant (0.85 mgd) replaces the existing Nazareth STP (see Figure IV-1), serving Nazareth Borough and the presently sewered East Lawn area of Upper Nazareth Township. Residents in the Belfast-Edelman communities of Plainfield Township, Stockertown Borough, and Tatamy Borough are served by the Easton STP (0.26 mgd). Wastewater conveyance is achieved by a combination of gravity sewers and six pump stations (including force main). Cluster systems serve the same communities served by cluster systems under the MAPA as well as other low-density areas north of Belfast in Plainfield Township. Outlying Phase II areas are served by new or rehabilitated on-site systems.

Note that the exact location of the new OD treatment facilities would be determined by Nazareth Borough officials during additional Step I efforts. Locations of these facilities, illustrated in Figure IV-I are only approximate.

The advantages and disadvantages of the MAPA and of Alternative 9 are summarized in Table IV-1. Data presented in this table were screened in the selection of the EIS Recommended Action, which is described in Chapter V.

[1] The components of Alternative 9 are described in detail in Appendix D-6. The version of this Alternative utilizing an RBC plant was eliminated from further evaluation due to higher costs.

Legend:

1. preliminary treatment
2. oxidation ditch
3. clarifier
4. chlorine contact chamber
5. chlorine storage bldg.
6. dechlorinator
7. sludge storage
8. sludge loading platform (contract hauling)
9. administration bldg.
10. laboratory
11a. outfall
11b. alternate outfall
12. sludge return pump

Proposed treatment units

Existing units

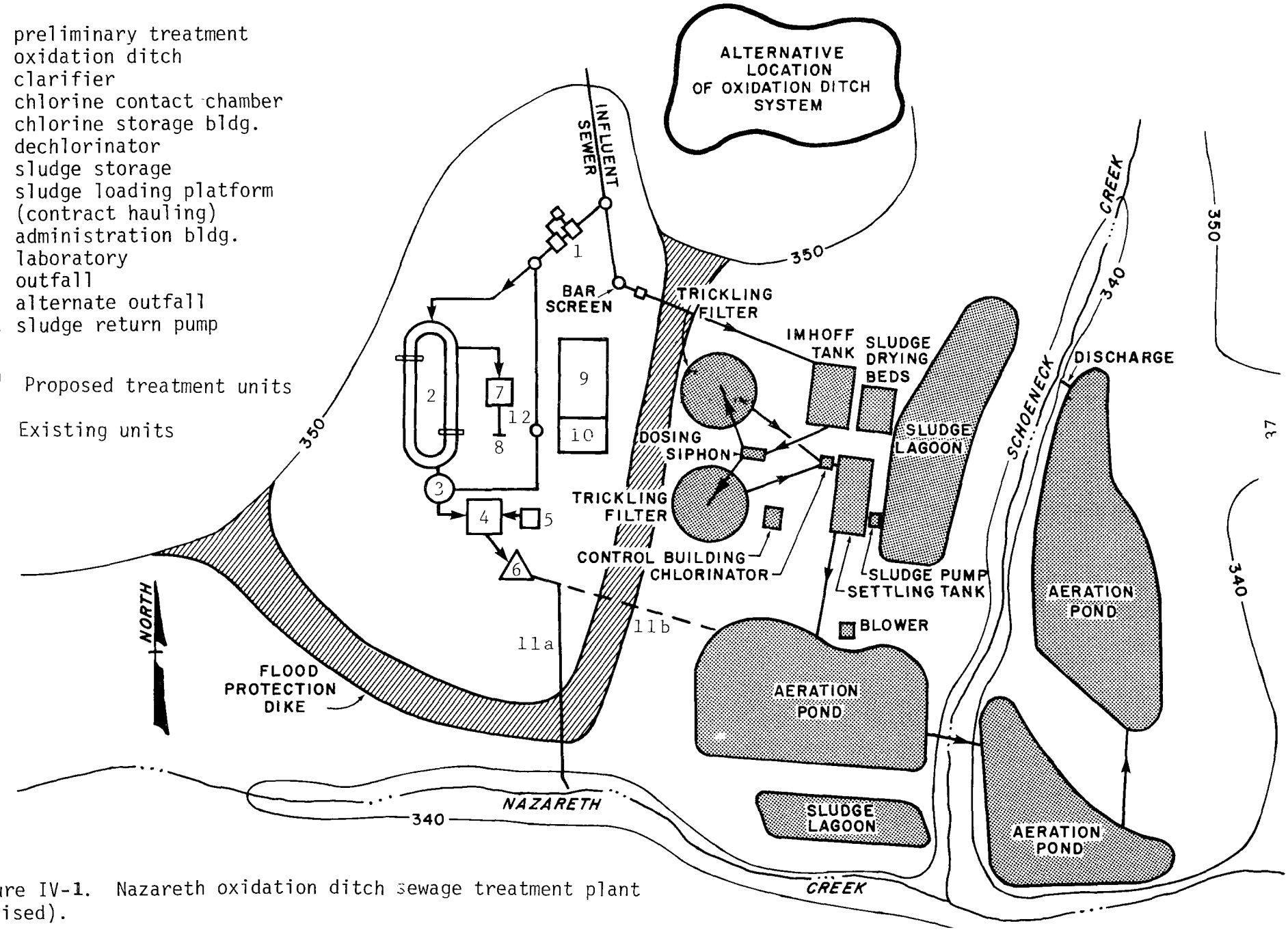


Figure IV-1. Nazareth oxidation ditch sewage treatment plant (revised).

Table IV-1. Significant factors to be considered in selection of Final EIS Recommended Action.

MAPA			Alternative 9	
Advantages	Disadvantages		Advantages	Disadvantages
NEED FOR PROJECT			NEED FOR PROJECT	
	• Entire capacity of Schoeneck Interceptor is not justified for Federal funding under EPA Construction Grants Program. EPA would fund only capacity for Nazareth Borough, Upper Nazareth Township, Newburg Homes, (Palmer Township), and a reasonable rate of growth.		• Serves only those areas where documentable need exists (Phase I).	
COST-EFFECTIVENESS			COST-EFFECTIVENESS	
	• Ranks second; 22% less cost-effective than Alternative 9 with total present worth of $12.2 million.		• Ranks first, with total present worth of $10.0 million.	
ENERGY REQUIREMENTS			ENERGY REQUIREMENTS	
• Requires one pump station (14,576 kwh/yr).	• Requires over 1.5 times as much energy as Alternative 9 for essential wastewater conveyance treatment facilities.[1]		• Essential wastewater conveyance and treatment facilities[1] require 461,004 kwh/yr.	• Requires six pump stations (91,592 kwh/yr).
	• Induced residential development requires 5 times as much electric power as Alternative 9[2].		• Induced residential development requires 6,263,000 kwh/yr.[2]	
	• Total requirements (year 2000) = 5 times as much as Alternative 9.		• Total requirements (year 2000) = 6,725,004 kwh/yr.	

[1]Facilities include pump stations in B-LLJSA/EIS Service Area, Delaware Drive/Second Street Pump Stations, and Easton STP (MAPA/EIS flow).

[2]Does not include electric power requirements of residential development without project.

Table IV-1. Significant factors to be considered in selection of Final EIS Recommended Action (continued).

MAPA			Alternative 9	
Advantages	Disadvantages		Advantages	Disadvantages
INDUCED GROWTH			INDUCED GROWTH	
	• Would induce construction of approximately 5 times more dwelling units (1,515 units) beyond baseline than Alternative 9		• Would induce construction of 311 dwelling units beyond baseline.	• Would limit growth in PIC zoning district in Palmer Township.
			• Growth would continue along recent past trends.	
	• Zoning challenges could be initiated.		• Relative less development pressure on Palmer Township RA zoning district.	
• Would provide capacity for commercial and industrial development in Palmer Township.				
AQUATIC ENVIRONMENT			AQUATIC ENVIRONMENT	
	• Involves construction of 16 stream crossings, two of which are downstream from Tatamy Borough in the "brown trout nursery and probable spawning area." Blasting and excavation in this area may disrupt channel hydraulics.		• Involves construction of 5 stream crossings; relatively less disruption of stream habitat than MAPA.	
	• Sewers parallel streams, increasing the potential for streambank erosion, and non-point pollution of streams.		• Sewers parallel roads as much as possible to avoid siltation of streams during construction and non-point source pollution as a result of construction.	

Table IV-1. Significant factors to be considered in selection of Final EIS Recommended Action.(concluded).

MAPA		Alternative 9	
Advantages	Disadvantages	Advantages	Disadvantages
WASTEWATER MANAGEMENT		WASTEWATER MANAGEMENT	
	• Wastewater management system is relatively simple, consisting of collection and conveyance (but no treatment) facilities in B-LLJSA Service Area proper; therefore, wastewater management staffing requirements are relatively minor.	• See Appendix D-5 for advantages of ODs.	• See Appendix D-5 for disadvantages of ODs. • Wastewater management system is more complex than MAPA; therefore, staffing requirements are relatively more complex than those associated with MAPA.
ENGINEERING		ENGINEERING	
• Requires relatively less Step II (detailed) design than Alternative 9.			• Requires relatively more Step II (detailed) design than MAPA.

CHAPTER V

Conclusions And Recommendations

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS

The Final EIS has found that the B-LLJSA's proposed action (APA) as well as the Modified Applicant's Proposed Action (MAPA) and ten of the alternatives developed in the EIS are neither cost-effective nor environmentally acceptable. Therefore, these are not acceptable for Federal funding under EPA's Construction Grants Program. An alternative wastewater management scheme, EIS Alternative 9 (Figure V-1) is acceptable for funding. This alternative plan was determined to be the most cost-effective (Figure V-2) and environmentally acceptable approach to serve the documented wastewater management needs of the EIS Phase I Service Area (Figure V-2). Growth induced by this alternative is reasonable, and associated secondary impacts are not excessive. The total energy requirements of the plan, including those of its wastewater conveyance and treatment components, as well as its induced residential population are less than for the MAPA. Trout production and recreational areas along Bushkill Creek downstream from Tatamy Borough would not be disturbed by construction activities as would be the case if the MAPA were built.

DESCRIPTION OF THE FINAL EIS RECOMMENDED ACTION

A. This section describes the EIS Recommended Action as it would serve both Phase I areas (i.e., community need areas which require off-site facilities) and Phase II areas (i.e., need areas which require only improved on-site facilities).

Bushkill Creek Watershed Phase I

1. Under the modified conveyance system[1] (See Section III.C.1) the Bushkill Creek watershed is served predominantly by gravity sewers (See Figure V-1). Gravity interceptors will serve the following areas: School Road, Route 115 from its intersection with T609 south of Stockertown Borough, LR48040, and Route 191 from its intersection with LR48040 south to Belfast Junction. A pump station and force main will transport wastewater flows from Edelman along Route 191 to a point just above its intersection with LR48040. The gravity interceptor then will parallel the main artery through Stockertown Borough and Tatamy Borough until it reaches PS #3 (MOD) southeast of Tatamy Borough. From PS #3 (MOD), wastewater generated in the Bushkill Creek watershed is transported under pressure along Tatamy Road until a point approximately one-third of a mile above Northwood Avenue. From this point, all sewage flows by gravity to the Penn Pump Park manhole. Flows will be treated at the upgraded and expanded Easton sewage treatment plant.

   The sparsely developed segments along Route 115 north of the gravity sewer and the communities of east Pen Argyl and Rasleytown (Plainfield Township) and Rismiller (Bushkill Township) will be served by small collection systems and multi-family filter fields (cluster systems). If geohydrolic site analyses do not confirm SCS soils ratings for indicated sites, other sites should be sought or marsh/pond systems should be considered.

[1]The modified conveyance system includes six pump stations within the EIS Service Area, instead of nine as presented in the Draft EIS.

FIGURE V-1 FINAL EIS RECOMMENDED ACTION

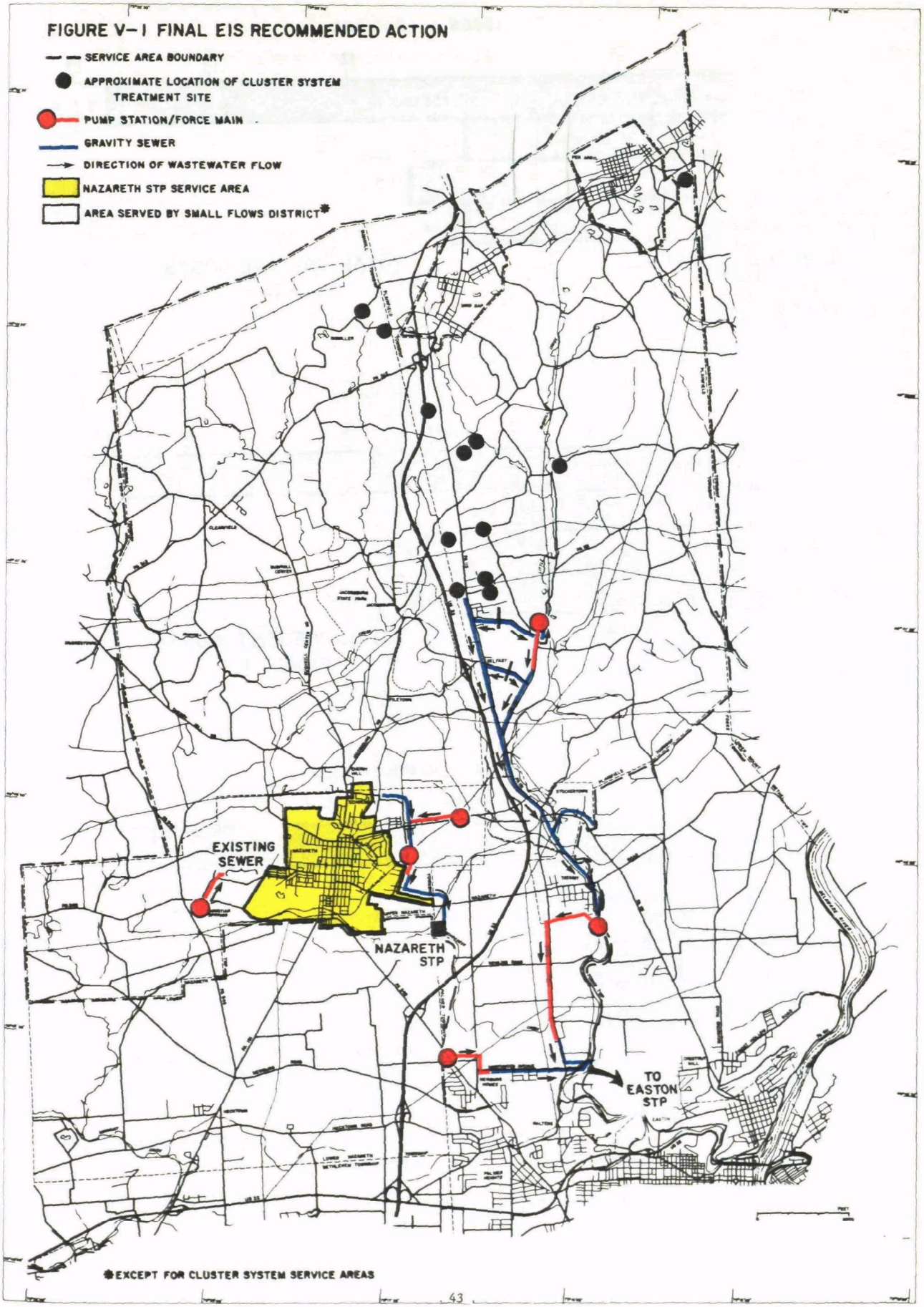
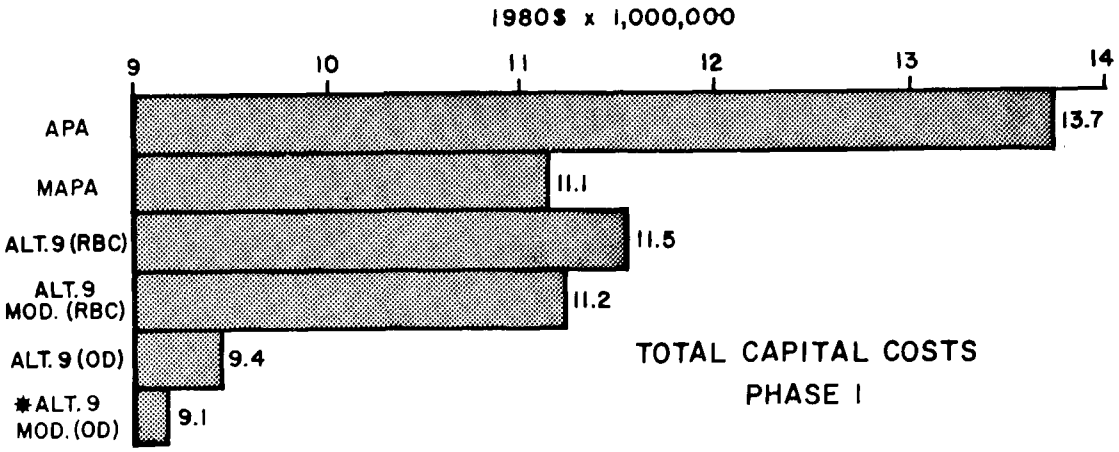
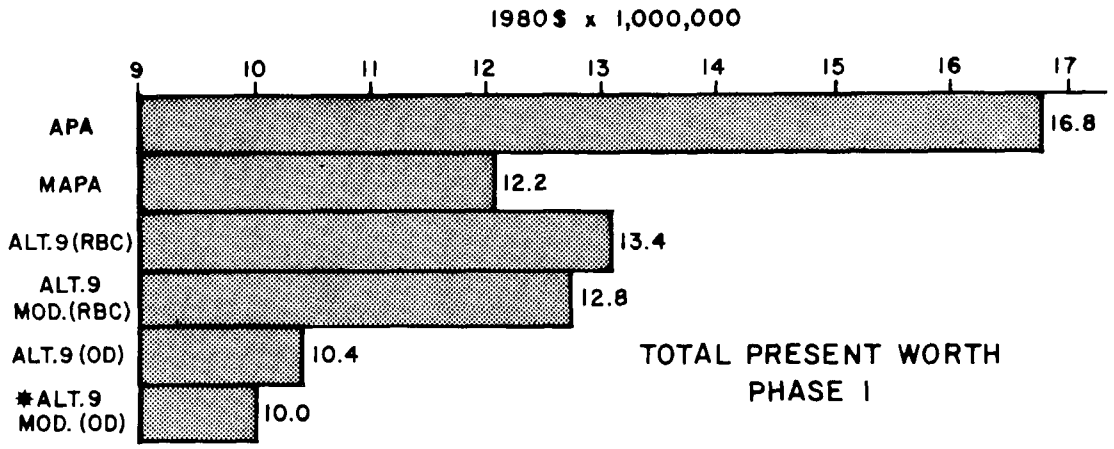
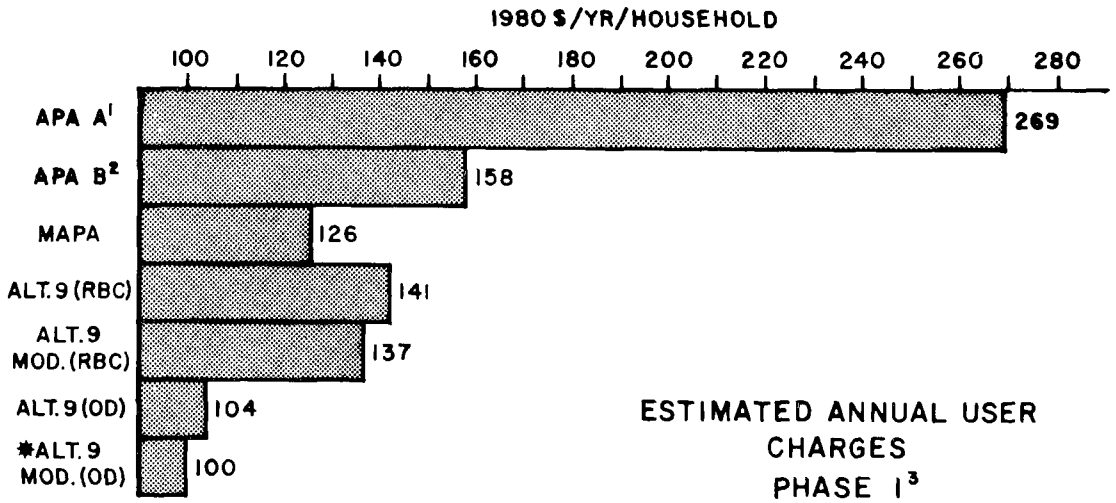


Figure V-2. Capital costs, present worth, and estimated user charges associated with APA, MAPA, and four versions of Alternative 9.







An (*) identifies the Final EIS Recommended Action. The graphs are based on data presented in Tables III-8, III-9, and Appendix D-3.

[1]Assumes Nazareth does not join the system.

[2]Assumes Nazareth is included in the system.

[3]Does not include approximately $70 per user incurred by previous Authority debts.

Schoeneck Creek Watershed Phase I

Schoeneck Interceptor not justified on basis of Construction Grants program needs definition

2. With the exception of need areas contiguous to the existing Nazareth STP Service Area, Christian Springs (Upper Nazareth Township), and Newburg Homes (Palmer Township), wastewater management needs in the Schoeneck Creek watershed are related to the collection system and treatment plant presently owned by the Nazareth Sewerage Company. On-site system problems in adjacent areas, Newburg Homes and Christian Springs, are not of sufficient importance to justify a new interceptor that would follow almost the entire length of Schoeneck Creek. The disposition of the Nazareth Sewerage Company's wastewater facilities has proven to be a decisive factor in wastewater management planning for the watershed (see Assumptions 3 and 4, page 7).

expanded Nazareth STP Service Area

Newburg Homes

Under the EIS Recommended Action, a combination of gravity interceptors and pump station/force main systems will serve Nazareth Borough, Upper Nazareth Township citizens currently connected to the Nazareth collection and treatment system, and the East Lawn area (Upper Nazareth Township). Wastewater flows from Newburg Homes should be transported along Northwood Avenue to Penn Pump Park via a combination of pump station/force mains and gravity sewers.

The purchase of the privately owned Nazareth STP by Nazareth Borough has been discussed for several years. Since Nazareth Borough has not yet purchased the Nazareth collection system system and has not applied for Construction Grant funds to remedy its needs (see Appendix H-2, Draft EIS), EPA cannot make a grant decision for specific construction activities. In April 1980, however, Nazareth Borough and the Pennsylvania DER discussed measures which could be taken immediately to assess the suitability of or to rehabilitate the Nazareth collection system (By telephone, John Parisi, F & M Associated, Inc., representing Nazareth Borough, 25 April 1980.)

facilities planning

If the facilities of the Nazareth Sewerage Company become publicly owned, the owners may apply to EPA for Step I and subsequent grants for planning, design and construction of wastewater facilities. The Facilities Planning Area boundaries and recommended scope of the Facilities Plan are discussed in Section V.C of this EIS. Alternatively, the owners may enter into an agreement with the B-LLJSA to amend the existing Application to include funds for the necessary new Step I planning effort.

A detailed, site-specific survey should be conducted of on-site system problems in Christian Springs as well as in the unsewered, developed portions of the Nazareth Borough-Upper Nazareth Township urban area. The results of this site-specific survey should determine whether on-site, or small scale off-site, facilities will best resolve existing needs. Total average Phase I area wastewater flows ot the Easton STP under the EIS Recommended Action equal 225,000 gallons per day.

total Phase I area flow

Phase II

3. Needs documentation studies conducted in support of this EIS revealed surface malfunctions of individual on-site systems and localized elevation of nitrate concentrations in groundwater that may be attributable to on-site systems. The responsible municipalities should investigate these problems and require appropriate remedies.

Federal funding to assist the municipalities and, if necessary, to augment the efforts of their Sewage Enforcement Officers (SEOs) is available if grant requirements discussed in Section V.C.3 are met. Topics related to the management of individual and small-scale facilities are discussed in Section V.C, including authority for management, local decisions that should be made when developing a management entity, functions that the entity could provide, and steps involved in implementing a management program.

EIS Recommended Action Cost Summary

4. The EIS Recommended Action has been estimated to cost (in 1980 dollars):

Total Capital Cost	$ 9,229,575
Federal share of capital cost	6,922,181
State share of capital cost	0
Local share of capital cost	2,307,394
Present Worth Cost	$10,001,656
Estimated Annual User Charge Per Household	$ 100

IMPACTS AND MITIGATIVE MEASURES OF THE FINAL EIS RECOMMENDED ACTION

B. Environmental, economic, and social impacts associated with Alternative 9 along with appropriate measures to mitigate and minimize them, are summarized in the section.

Impact	Mitigative Measures
AIR QUALITY	
• Temporary air quality contaminant emissions, including total suspended particles (dust, smoke) and gases (from construction equipment and interrupted traffic) will have insignificant effects on residential areas during sewerage construction and no effects during construction of an OD STP.	• Controlled speed of construction vehicles. • Periodic spraying of roads and construction debris with water to control dust. • Assistance by a traffic officer at potentially congested road intersections in Stockertown Borough and Tatamy Borough during sewer construction.
• Odor impacts from operation of an OD plant and cluster systems are minimal.	• Proper maintenance of OD plant. • Proper construction and maintenance of cluster systems (pump septic tanks every 3 years).
• Secondary air quality impacts are minimal.	• N/A
NOISE	
• Noise from construction of sewers, force mains, and pump stations (without use of explosives) may	• Sewerage facilities construction, involving excavation and blasting, should be limited to the hours

Impact	Mitigative Measures
NOISE (continued)	
cause adverse public reaction as much as 2,000 feet from a construction site. Blasting may cause extreme short-term annoyance for up to 2,000 feet from the source.	between 8 a.m. and 4 p.m. Use of blast mats and burial of primacord during demolition work may be necessary.
SOILS	
• Soil erosion, with resulting sedimentation and nutrient transport, during construction of on-site systems, cluster systems, sewers, OD plant, new roads, and housing.	• Compliance with provisions of Soil Erosion and Sedimentation Control Act. • Require individual plan approval for construction on steep slopes and adopt performance standards with specific slope-density provisions. • Proper placement, hauling, backfilling, and mulching of soil during sewer construction (see mitigation measures specified by the Northampton County Conservation District in Section VII.4.b, Draft EIS).
PRIME AGRICULTURAL LANDS	
• The amount of undeveloped (including prime agricultural) land that would be converted to residential/commercial/industrial uses under the EIS Recommended Action is 1,393 acres. This is only 13 acres more than the conversion that is estimated to occur without the project (1,380 acres).	• N/A
GROUNDWATER	
• Blasting or rock drilling that may be required during construction of the new OD STP (including clarifiers) may have potential adverse effects on local groundwater hydrology by altering paths of groundwater flow to Schoeneck Creek (see Section VII.A.6.a, Draft EIS).	• A detailed geological investigation of the OD plant site should be conducted to locate limestone outcrops or formations that may necessitate blasting during construction.

Impact	Mitigative Measures
• Wastewater recharge from on-site systems and cluster systems is projected to be approximately 1 mgd. Wastewater that is presently recharging groundwater supplies in Belfast (Plainfield Township), Stockertown Borough, and Tatamy Borough (0.30 mgd) would be exported to the Easton STP under the EIS Recommended Action. The sources of water for these communities lie outside the EIS Service Area in another groundwater drainage basin. Therefore, there are no local adverse effects on groundwater supplies associated with wastewater conveyance to Easton under the EIS Recommended Action. This conveyance may lower local water table elevations along Route 115 in Plainfield Township, which would be a beneficial impact. The conveyance of wastewater to the OD treatment plant also would have no impact on local groundwater supplies because the sources of water for communities served by the plant are also outside the EIS Service Area.	• N/A
• The potential exists for localized nitrate standard violations in private wells throughout Bushkill Township and Plainfield Township. This potential will increase as densities of wells and on-site wastewater management systems increase.	• Establishment of a surveillance program that includes routine monitoring of the performance of on-site systems and groundwater quality.
SURFACE WATER	
• The construction and operation of the new OD treatment facility will have a favorable impact on the water quality of Schoeneck Creek and Bushkill Creek. With proper maintenance, the plant will continuously attain the effluent limitations set for BOD, suspended solids, and ammonia.	• N/A
• Erosion and sedimentation due to the construction of sewerage facilities and the OD treatment plant may be significant if not properly controlled (see Section VII.A.4.b of the Draft EIS).	• Compliance with provisions of Soil Erosion and Sedimentation Control Act. • Mitigative measures recommended on pages 16 and 17 of the Final

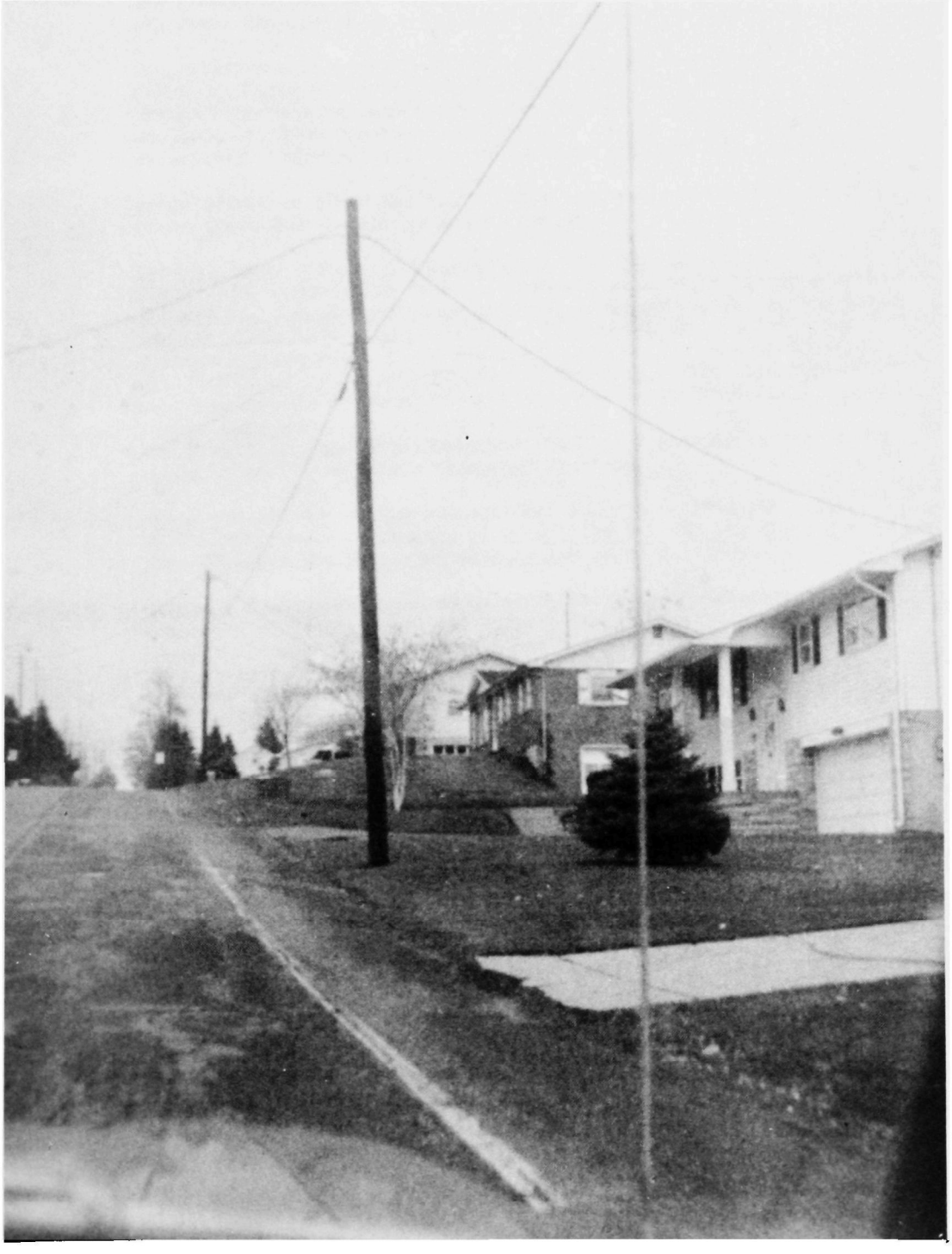
Impact	Mitigative Measures
SURFACE WATER (continued)	
	EIS should be followed closely. Construction of sewers through streams must be in accordance with Section 404 of the Clean Water Act (see Section II.A.9.a, Draft EIS).
• Stormwater effects on water quality are minimal as a result of the projected induced growth in the EIS Service Area. However, erosion and the resultant sedimentation due to changes in land use may be significant and may increase the sediment level in Bushkill Creek.	• Proper control of erosion and sedimentation is necessary during the construction period of sewage treatment upgrading and development of the growth area. • Establishment of permanent vegetation buffers along Schoeneck Creek. Little Bushkill, and particularly Bushkill Creek, may reduce sediment and non-point source pollution loads to these streams.
FLOOD-PRONE AREAS	
• The potential for development in flood-prone areas exists in Stockertown Borough and Tatamy Borough where ordinances do not prohibit such development. This potential is not increasing in Bushkill Township (no sewers provided).	• Construction of flood control facilities including stormwater detention ponds, vegetated drainage swales, and temporary water storage areas on building roofs (see Section VII.A.8.b, Draft EIS). • Establishment of permanent vegetated buffer zones to encompass flood-prone areas adjacent to Bushkill Creek. These buffer zones, which also could serve as parks or recreational areas, would preclude development in the floodplain (see Section VII.A.9.b, Draft EIS).
BIOTIC RESOURCES	
• Discharges of properly treated effluent (0.85 mgd) from the OD treatment plant may benefit aquatic life in Schoeneck Creek by augmenting channel flow during summer periods of low flow.	• N/A
• The construction of five interceptor stream crossings may adversely affect stream quality via siltation. (Figure III-3; also see Section VII.A.9.a, Draft EIS).	• See Section VII.A.9.b, Draft EIS. • Compliance with provisions of Section 404, Clean Water Act, administered in the Service

Impact	Mitigative Measures
BIOTIC RESOURCES (continued)	
	Area by the Philadelphia District, US Army Corps of Engineers.
• Potential for sewer-induced growth in flood-prone areas in Stockertown Borough and Tatamy Borough is accompanied by potential for stream conditions to become degraded with respect to temperature, dissolved oxygen, transparency, nutrient, and bottom habitat. If uncontrolled, streamside development may degrade Bushkill Creek, which is a high quality stream that supports a cold water (trout) fishery.	• See Section VII.A.9.b, Draft EIS.
HUMAN ENVIRONMENT	
• Population growth would be induced above basline by 927 persons. This represents a 3.4% increase.	• N/A
• Land use impacts would be minimal because only 69 acres of land in addition to that anticipated under baseline conditions would occur. Development density would increase as some municipal ordinances provide for density bonuses where sewer and water service exists.	• N/A
• The induced dwelling unit growth would amount to 311 units. The character of housing mix may be altered by the addition of some new multi-unit development.	• N/A
• The user charge of $100 per household per year has the potential of placing a financial burden of 5% to 10% of the Service Area population which could result in 1% to 5% of the population being forced to move from their homes.	• Loans or grants could be secured by the management authority from the Farmers Home Administration of the US Department of Labor, Economic Development Administration.
• Public services such as health facilities, public safety, water supply, electricity, solid waste, and transportation will have minimal impacts.	• N/A
• No direct impacts are anticipated on known archaeological sites, historic sites, or structures.	• Degree of impact to be determined following a detailed archaeological survey of EIS Sewer Survey Area.
• As this alternative induced a minimal amount of population growth,	• N/A

Impact	Mitigative Measures
HUMAN ENVIRONMENT (continued)	
additional recreation acreage will not be required in excess of defined baseline needs.	
ENERGY (ELECTRIC POWER)	
• Electric power requirements of six pump stations in EIS Service Area 91,592 kilowatt-hours/ year (equivalent to average electric power consumed by four single family homes in one year). An additional 215,900 kwh/yr are required by the Nazareth OD STP; cluster systems will consume 8,390 kwh/yr. A comprehensive energy evaluation of this alternative would also include electric power consumed by: (1) conveyance and treatment facilities outside the EIS Service Area (essential to treatment of flows from Belfast-Edelman (Plainfield Township), Stockertown Borough, Tatamy Borough, and Newburg Homes (Palmer Township) and (2) induced residential development. These energy requirements equal 145,122 kwh/yr and 6,263,000 kwh/yr, respectively. Total estimated energy requirements of this alternative = 6,724,004 kwh/yr.	• N/A

CHAPTER VI

Implementation of the Final EIS Recommended Action



Chapter VI: Implementation of the EIS Recommended Action

Suggested procedures for the implementation of the wastewater management facilities recommended in this Final EIS are discussed in this chapter.

Bushkill Creek Watershed Phase I

A. Phase I facilities recommended to serve parts of Plainfield Township, Bushkill Township, Stockertown Borough, and Tatamy Borough include both conventional and decentralized, alternative facilities. The conventional facilities would presumably be designed, constructed, and operated by the B-LLJSA using standard engineering, management, and financing methods. Easements previously not acquired for sewers and power sources at pump stations will have to be obtained.

Phase I staffing requirements

Inspection and maintenance of the two pump stations in the Bushkill Creek watershed would require 40% commitment of a full-time two-person B-LLJSA maintenance crew (the remaining 60% of their time would be spent on the four pump stations in the Schoeneck Creek watershed). Alarms installed in the pump stations could alert the crew to any operational problems, thereby facilitating the maintenance effort on these systems. These same two persons periodically could check the sewers for leaks, cracks, and other problems.

Design, construction, and operation of the cluster systems in Plainfield Township and Bushkill Township also could be coordinated through the B-LLJSA, although existing agreements with the Townships may not cover this responsibility. This point may require negotiation between the B-LLJSA and the Townships. Design of these facilities will require different engineering skills than those required for conventional facilities. The responsible party should insure that their employees or consultants have appropriate capabilities. Operations personnel should be trained in the maintenance of small wastewater management systems.

Since the designs of the conventional and alternative facilities differ from those previously proposed, the B-LLJSA may apply for a Step II grant for preparing designs and specifications.

Schoeneck Creek Watershed - Phase I

B. Nazareth Borough has been negotiating purchase of Nazareth Sewerage Company's facilities with the company for the past five years. Nazareth Borough also has been given a rating of 70 on the Pennsylvania DER Construction Grants priority list. These facts indicate that the facilities may become publicly owned, and an application for Federal funding may be made. Assuming this will occur, the Borough should prepare a Plan of Study and apply for a Step I grant to be followed by Step II and Step III applications. (If the cost for Step III construction is estimated in the Facilities Plan to be less than $2 million, the project may be eligible for a combined Step II and Step III grant per 40 CFR 35.909).

ıall Flows District ıase II

C. Designation of parts of the EIS Service Area as having immediate need for off-site treatment, the Phase I area, does not reduce the importance of dealing effectively and quickly with the scattered, improperly functioning on-site systems elsewhere. Proceeding with solutions for the Phase I areas should not detract from efforts to achieve long-term sanitation and water quality objectives in the remainder of the EIS Service Area.

The Clean Water Act of 1977 provides economic incentives to improve rural wastewater management by making repair and upgrading of on-site systems eligible for 85% Federal grants. Facilities Planning for rural wastewater management is eligible for 75% Federal grants.

Immediate needs in the Phase II area might be most expeditiously met without grant processes by inspections and enforcement actions conducted by SEOs and by owner funding of appropriate repairs. Long-term sanitation and water quality objectives could also be met without grant processes. This could be achieved first by adoption of local ordinances to require monitoring and periodic inspection of on-site systems and to allow access to individual on-site systems for inspection and maintenance. It could also be achieved by sufficient appropriations for additional skilled personnel to carry out the inspection, monitoring, and maintenance. For the reason that this additional effort has not traditionally been provided here or elsewhere, costs and manpower cannot be accurately estimated. A rough estimate of the costs is $30 per household per year. For the approximately 3,000 unsewered residences in the Phase II areas, this would provide an annual budget of $90,000 per year, $30,000 of which could go to septic tank pumping (each tank pumped once every three years) and $60,000 per year for professional salaries (full-time sanitarian at $18,000 per year, half-time soil scientist at $13,000 per year, and one-quarter time geohydrologist at $7,000 per year), clerical support (secretary at $12,000 per year) and office space, laboratory analyses, supplies, and transportation ($10,000 per year). Other combinations of fees and attendant services are feasible. Services provided could be:

- Lot inspection and resident interview every three years to detect problems with surface malfunctions and plumbing backups and to educate residents in the proper use of their systems
- Periodic well water sampling from properly constructed wells in representative locations
- Emergency septic tank pumping
- Routine septic tank pumping once every three years
- Professional consultation and design recommendations for problem systems.

These services would supplement the present regulatory functions of municipal SEOs.

The benefits of applying for Federal and State grant assistance to initiate such a program can be seen as:

- Initial planning, site analysis of existing problems and development of the management structure would be completed in an orderly manner and at relatively low costs to the municipalities

benefits of EPA-funded Phase II program

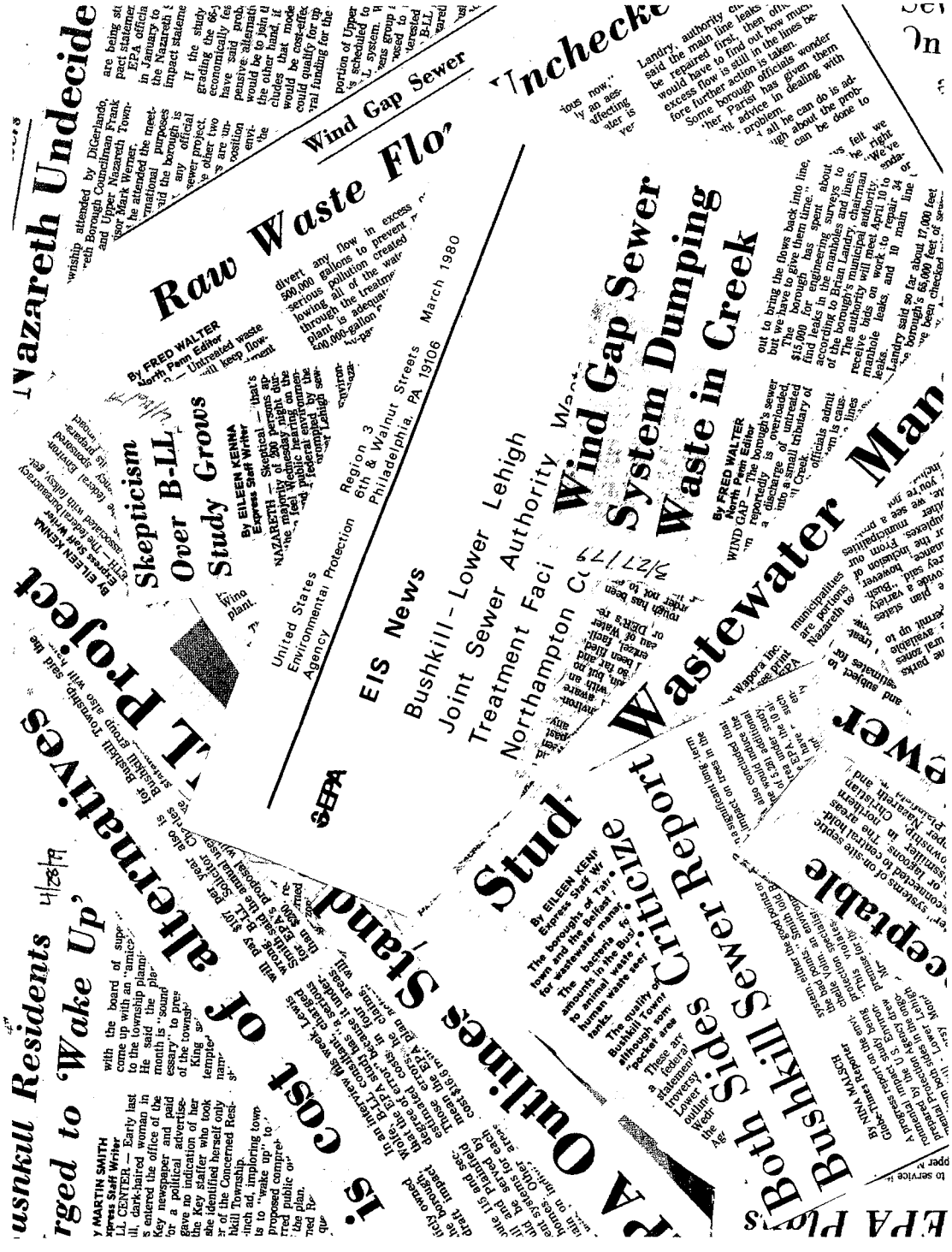
- Repair and replacement of malfunctioning systems would cost the homeowner a fraction of the total cost (applies only to homes built before December 1977)
- Public participation requirements would insure citizen input to the development of the management structure.

On the other hand, complying with Construction Grants regulations would result in a lead time during which existing problems could continue unabated.

To provide additional information on Construction Grants regulations for funding of Phase II, 40 CFR 35.918 "Individual Systems" is reproduced in Appendix A-2 of the Draft EIS.

CHAPTER VII

Public and Agency Comments On Draft EIS



CHAPTER VII: PUBLIC AND AGENCY COMMENTS ON DRAFT EIS

Substantive public and agency comments were received on the Draft EIS. They have been compiled and summarized in this chapter. Only those comments that were offered through testimony at the public hearing on the Draft EIS and through written correspondence, which are essential to the EIS decision-making process, are responded to herein. The comments and appropriate responses are organized by selected Draft EIS subject areas, including:

- Need for the project
- Water quality
- Land use
- Design and cost of the Alternatives
- Induced growth
- Energy

Citizens and agencies that offered substantive comments on the Draft EIS are listed below:

Name	Agency
Brenda Barrett	Office of Historic Preservation Pennsylvania Historical & Museum Commission
Patricia T. Bradt	Lehigh University Department of Biology
Wilmer Clewell, Resident	Plainfield Township
William H. Danner, Chairman; John A. Houck, Secretary; Robert F. Tenges	Plainfield Township Board of Supervisors
H. Robert Daws, Chairman	Palmer Township Board of Supervisors
Joseph DiGerlando, Chairman; Jane Gilbert, Vice-Chairman; William Morman; Anthony Kazmakites; Ralph Metz; R. Brent Alderfer, Special Counsel Gary Neil Asteak, Solicitor	Bushkill Township Board of Supervisors
Joseph T. Dorner	Plainfield Township Taxpayers Association
J. Michael Dowd, Executive Vice-President	Easton Area Chamber of Commerce
Clifford L. Jones, Secretary	Pennsylvania Department of Environmental Resources
R. Margaret Kennedy, President	BIP Inc.
William P. Kunkle, Resident	Plainfield Township
Elwood Lieberman, Chairman	Plainfield Township Planning and Zoning Commission
Richard D. Lieberman, President	Plainfield Farmers Fair Association

Name	Agency
• Frank S. Lisella, Ph.D., Chief	Environmental Affairs Group US Department of Health, Education and Welfare Public Health Service
• Edward J. Maher, Executive Vice President and Treasurer	C. C. Collins & Company, Inc.
• Thomas C. Maloney, Regional Administrator	US Department of Housing and Urban Development
• Bernard Merwarth	Upstream Farm Corporation, Inc.
• Jack G. Miller, Chief	Fisheries Environmental Services Section Pennsylvania Fish Commission
• John Molnar, Solicitor	Plainfield Township
• Graham T. Munkittrick	US Department of Agriculture Soil Conservation Service
• Allen R. O'Dell, Chief Planner	Joint Planning Commission Lehigh-Northampton Counties
• William Patterson, Regional Environmental Officer	US Department of Interior
• Walter P. Pierson, Acting Director	Insurance & Mitigation Division, Federal Emergency Management Agency
• Elaine Q. Rodger, Resident	Plainfield Township
• Mr. & Mrs. Gerald Roth, Residents	Plainfield Township
• Rodney W. Schreck, Resident	Plainfield Township
• Francis J. Schweitzer	Upper Nazareth Township
• Charles S. Smith, Attorney	Bushkill-Lower Lehigh Joint Sewer Authority
• Patty Sparrow, Resident	Plainfield Township
• Mr. & Mrs. Allen Stahl, Residents	Palmer Township
• Wayne A. Steinmetz, Resident	Plainfield Township
• Donald E. Walters	Board of Directors, Palmer Township Industrial and Professional Association

All letters or comments on the Draft EIS are included in Appendix D-1; a copy of the transcript of the public hearing is included in Appendix D-2.

ISSUE:
NEED FOR PROJECT

Comment 1
Jacobsburg State Park

Jacobsburg State Park has been removed from consideration for waste disposal. Obviously, the State has revised its recreation plans for the Park. What are the State's wastewater management plans for the future? [Bradt]

Response 1

The Pennsylvania Department of Environmental Resources (DER), Division of Outdoor Recreation, has removed Jacobsburg State Park from any consideration of centralized sewerage service in response to changes made in long-range recreation plans. Plans that formerly called for the construction of swimming and camping facilities were abandoned by DER in the face of substantial opposition from local citizens. When DER agreed not to provide overnight camping facilities, in response to public claims that such facilities would harm local environmental and archaeological resources, it was determined by the Department that connection to the proposed B-LLJSA system would not be necessary (By telephone, Mr. George Fogg, Chief, Division of Outdoor Recreation, DER, 27 May 1980).

Current recreation plans call for the provision of facilities to support hiking, cross-country skiing, nature and historic interpretation, and picnicking. Limited wastewater management needs will be served by comfort stations with on-site disposal. The Department's position regarding recreation and waste disposal plans for Jacobsburg State Park is documented in Appendix B.

Comment 2
definition of need

In order to qualify for EPA grant funding for sewage conveyance and treatment systems, the EPA regulations require a substantiation of "need." This generally means establishing that existing on-lot treatment systems are malfunctioning, causing surface or groundwater pollution, and that it is more cost-effective to centralize treatment than to attempt to continue on-lot treatment. [B-LLJSA]

Response 2

The documentation of need under EPA's Construction Grants Program has nothing to do with the cost-effectiveness of centralized versus decentralized treatment. Federal subsidy of sewerage facilities construction is awarded only if there are documentable water quality or public health problems associated with inoperable wastewater management facilities that can be corrected through such construction. Need is defined in EIS Assumption #8, page 9.

Comment 3
names and addresses of residents with confirmed malfunctions needed

The names and addresses of residents determined by EPA during the needs documentation process to have confirmed malfunctioning on-site wastewater management systems should have been included in the Draft EIS. Such information would facilitate municipal wastewater management planning by identifying known problem areas which must receive priority over other areas. [Morman, Dorner, DiGerlando]

Response 3

In the interest of privacy, EPA does not publish in an EIS the names and addresses of residents determined to have confirmed malfunctions. General locations of on-site system malfunctions are shown in Figure III-21, Draft EIS. However, the exact locations of malfunctions photographed and field-inspected by EPA's Environmental Photographic Interpretation Center (EPIC) can be requested from EPA's Project Monitor at the following address:

Ms. Rochelle B. Volin, Project Monitor
EIS Preparation Section
US Environmental Protection Agency,
Region III
Sixth and Walnut Streets
Philadelphia, Pennsylvania 19106
215/597-8335.

The locations of malfunctions verified by the Pennsylvania DER, and included in the EIS, are a matter of public record.

Comment 4
needs determination in suspect areas is unresolved
Response 4

For other than surface on-site system malfunctions, little or no determination of need was made in the Draft EIS. This leaves serious questions open in suspect areas with needs determination neither confirmed nor denied. [B-LLJSA]

As described on page 99 of the Draft EIS, there are three types of problems or malfunctions associated with on-site sewage treatment systems that are recognized in the Technical Manual for Sewage Enforcement Officers (Pennsylvania DER 1975). These include surface malfunctions, back-up malfunctions,[1] and water table malfunctions.[2] The comment focuses on the latter two types of problems.

Information regarding the extent of back-up malfunctions in the EIS Service Area was sought from municipal sewage enforcement officers (SEOs) who are most familiar with the performance of local on-site systems. Sewage system back-ups, along with surface malfunctions, were reported in the Belfast area of Plainfield Township (see Figure III-21, Draft EIS). These problems have been found to be most cost-effectively corrected via centralized sewerage.

EPA's determination of the extent of water table malfunctions during preparation of the EIS comprised the following tasks:

	Task	Purpose
1.	Interviews with Northampton County sanitarian and supervising sanitarian.	Obtain general perspective on wastewater management needs in EIS Service Area.
2.	Interviews with municipal SEOs and engineers, including tours of their jurisdictions.	To document location of groundwater quality problems associated with on-site sewage treatment systems.
3.	Review DER reports of bacteriological quality of private wells.	To identify location of wells potentially contaminated by on-site sewage treatment systems.
4.	Well sampling program (June 1979).	To measure groundwater quality in areas suspected of having water table malfunctions. Included analysis for nitrates and indicator bacteria.
5.	Interviews with local plumbers.	To survey the number of chlorinators installed in private water supply systems.

The results of these tasks do not indicate that on-site sewage treatment systems are causing widespread groundwater pollution sufficient enough to justify the construction of EPA-funded sewers. Individual groundwater quality problems (excessive nitrate levels) were limited. They were found (June 1979) to be remote from densely populated areas where wastewater management needs can be met by centralized sewerage. EPA believes that individual groundwater quality problems which are identified can be corrected through localized solutions within the framework of the Small Flows District (pages 274-275 of the Draft EIS). At least one "suspect area,"[3] Cherry Hill in Bushkill Township, was determined

[1] Sewage backing up into house plumbing presenting use of sanitary facilities.

[2] Effluent passing to the water table without adequate treatment.

[3] Includes areas with shallow depths to bedrock or groundwater.

by EPA to have no measurable groundwater quality problems. Three wells in this community, which is located just above the Bushkill-Upper Nazareth Township boundary, were found to have no water quality problems, based upon analysis of nitrates, bacteria, chlorides, and total dissolved solids. Nitrate levels ranged from 0.4 to 1.4 mg/l as N, which are well within safe drinking water standards. The US Public Health Service has determined "safe" drinking water to contain no more than 10 mg/l as N.

In sum, EPA does not agree with the comment. Adequate determination of the extent of back-up and water table malfunctions was made during the EIS process. The need of "suspect areas" for improved wastewater management facilities was evaluated with due caution. Problems, other than surface malfunctions, were not always deemed correctable via centralized sewerage facilities. Localized water table malfunctions can be corrected through the on-site system design, construction, and maintenance provisions of the Small Flows District program.

ISSUE:
WATER QUALITY

Comment 1
concern over chlorine concentration in effluent

Concern is expressed over residual chlorine in Schoeneck Creek as a result of effluent disinfection by chlorination at an upgraded Nazareth sewage treatment plant (Alternatives 5 and 6), or the new RBC plant (Alternatives 9 and 10). Treatment processes must achieve an effluent quality of a maximum of 3 parts per billion (0.003 mg/l) chlorine. [Miller]

Response 1

Chlorination at the RBC treatment plant would produce an effluent with a chlorine residual of 0.01 mg/l. After dechlorination, the residual chloride concentration would be practically zero or below the detection limit. With the stream flow in Schoeneck Creek to provide additional dilution, the residual chlorine level should certainly be below the 0.003 mg/l level specified in the EPA red book for protection of the aquatic environment. No chlorine residual would result from the operation of the EIS Recommended Action: Alternative 9.

Comment 2
source of bacteria and length of sample period questioned

More work should have been devoted in the Draft EIS to the identification of different types of bacterial pollution in Bushkill Creek (and its tributaries). What is the source of the bacteria -- human waste or domestic animals? The Draft EIS conclusions about the source of bacteria in the Bushkill Creek watershed are invalid because they are based on only 2 days of sampling. [Bradt]

Response 2

The stream sampling survey (June 1979) was one of four programs undertaken during the preparation of the Draft EIS to document the need for improved wastewater management facilities in the EIS Service Area. It was not intended to be a comprehensive water quality survey. Such a survey was unnecessary in light of the availability of water quality data collected over a 7-year period (see Appendix E-3, Draft EIS). Rather, its purpose was to complement the results of the most determinative needs documentation program--EPA's remote sensing (via aerial photography) and ground-checking of on-site system surface malfunctions throughout the EIS Service Area. The remote sensing/ground-checking program was completed by the Agency's Environmental Photographic Interpretation Center (EPIC) in March 1979. Needs documentation data gathered by EPIC were determinative because they enabled EPA to pinpoint the locations of on-site system failures.

Bacteriological data was collected to address the question of whether the sources of bacteria were human or non-human. The technique selected was analysis of both fecal coliform and fecal streptococci. Fecal coliform bacteria are found in the intestines of all warm-blooded animals but are

especially numerous in the human digestive tract. Fecal streptococci are similarly numerous in the intentines of many domestic animals. A ratio of fecal coliform to fecal streptococci, therefore, may indicate whether the dominant source is human or animal. The technique provides clear results only when the ratio is very high (human) or very low (animal). Intermediate values of the ratio are not decisive.

Ratios calculated from the June 1979 survey samples were intermediate but generally closer to the low end of the range. The results, therefore, are inconclusive but suggest that non-human sources predominate. Given this information, and the much more specific data from the remote sensing/ground-checking program, follow-up stream surveys using the bacteria ratio were not conducted.

Comment 3
STPs as nutrient sources

Both the Wind Gap and Nazareth sewage treatment plants (STPs) are potential sources of nitrate in ground and surface waters that should be examined carefully. [Bradt]

Response 3

All of the available water quality data that were analyzed during the preparation of the Draft EIS indicate no significant increase in the concentrations of nitrate nitrogen in Little Bushkill Creek and Schoeneck Creek as a result of wastewater discharge from the Wind Gap and Nazareth STP's, respectively. However, a more pronounced increase in nitrate level in Schoeneck Creek and Bushkill Creek would be expected as a result of the nitrification processes at the new, or upgraded, Nazareth treatment plant.

This increase of nitrate concentration in the receiving water would reach approximately 7 mg/l of nitrate nitrogen in Schoeneck Creek and 5 mg/l in Bushkill Creek under 7-day, 10-year low flow conditions. This calculation is based on a simple material balance considering nitrate as a conservative substance in the short stretch of the receiving stream. The calculated nitrate levels, although considered conservatively high, are less than the drinking water standard of 10 mg/l nitrate nitrogen. Therefore, nitrate nitrogen in the surface water should not be a cause for concern; the need for nitrogen removal as part of any new treatment scheme for the Nazareth STP does not appear to be warranted.

Comment 4
decrease in nutrients questioned

The Draft EIS states that nutrients in Bushkill Creek are decreasing. This statement is questioned in view of two long-term studies that indicate a doubling of nitrate and orthophosphate from 1973 to 1977. [Bradt]

Response 4

Comparison of nutrient data does show that orthophosphate, nitrate, and ammonia levels along Bushkill Creek generally decrease from 1972 and 1973 to 1979 during the summer months (see Appendices E-3, E-4, and E-9, Draft EIS).

For example, the orthophosphate concentration in the summers of 1972 and 1973 ranged from 0.02 mg P/l to about 0.8 mg P/l in Bushkill Creek (Appendices E-3 and E-4, Draft EIS). During the summer of 1979, the orthophosphate levels ranged from 0.01 mg P/l to less than 0.2 mg P/l (Appendix E-9, Draft EIS). Ammonia nitrogen levels in 1972 and 1973 ranged from 0.1 mg N/l to 0.5 mg N/l (Appendices E-3 and E-4, Draft EIS). On the other hand, EPA's 1979 survey shows that the average ammonia nitrogen concentration is 0.1 mg N/l (Appendix E-9, Draft EIS). Nitrate levels in Bushkill Creek in 1972 and 1973 were as high as 12 mg N/l, with most of the measurements above 5 mg N/l (Appendices E-3 and E-4, Draft EIS). During the summer of 1979, nitrate concentrations were all less than 5 ng N/l along the Creek (Appendix E-9, Draft EIS).

Comment 5
limestone area wells not sampled

Ninety-six percent of the wells sampled during the preparation of the Draft EIS were in Bushkill Township -- what about the limestone area wells? [Bradt]

Response 5

The sampling of 27 domestic wells for water quality during June 1979 was conducted on a strictly volunteer basis. Ninety-six percent of the volunteers who wished to have their wells sampled were residents of Bushkill Township. The remaining 4% lived in Plainfield Township.

Many of the residents of the limestone areas (Nazareth Borough, Upper Nazareth Township, Tatamy Borough, and Stockertown Borough) are connected to the Blue Mountain Consolidated Water Company's water supply system and, therefore, do not have private on-site wells.

Comment 6
Alternative 9 perpetuates deplorable conditions in Schoeneck Creek

The environmental state of Schoeneck Creek is deplorable, representing classic indications of pollution. No resolution of this stream pollution is recommended. In fact, recommendations perpetuate the condition. Bushkill Creek and Palmer Township unfortunately receive the unresolved results. [B-LLJSA]

Response 6

Elimination of the four sewage bypasses at the existing Nazareth sewage treatment plant would significantly improve the quality of Schoeneck Creek. The upgrading and expansion of treatment facilities at the plant, proposed under the EIS Alternative 9, would not only eliminate the direct raw wastewater discharges (bypasses) to Schoeneck Creek, but also would achieve an effluent quality well within the discharge limitations prescribed by DER of 20 mg/l BOD, 25 mg/l suspended solids, and 3 mg/l ammonia nitrogen. These discharge limitations must be met on a monthly average basis. With proper design, operation, and maintenance, either the RBC plant or the OD plant would achieve an effluent quality on a daily average basis that is better than that prescribed by DER.

Comment 7
Bushkill Creek needs protection from future stress

Trout habitat is rapidly disappearing from the northeast. The preservation of Bushkill Creek as a stream supporting reproducing trout must be insured. The pollution of groundwater and surface water from bacteria and nutrients must be prevented. The stream is still recovering from the stress of its rechanneling in the late 1960s. Bushkill Creek does not need any further stress from point and non-point discharges. [Bradt]

Response 7

Comment noted. The protection of Bushkill Creek's naturally reproducing trout habitat over the life of the project precipitated the planning of a force main/pump station system along Tatamy Road. On the average, this system would be separated from Bushkill Creek by a distance of approximately one-half mile. This minimizes siltation during project construction, and reduces non-point source pollution after construction by concentrating sewer-induced development away from the Creek.

ISSUE:
LAND USE

Comment 1
Northern Corridor, not zoned residential

Contrary to what is stated in the Draft EIS, the area to be served by the Schoeneck Creek interceptor (under the APA) is not zoned residential but commercial-industrial. [Kennedy, Daws, Walters].

Response 1

The Draft EIS did not state that the northern, currently unsewered, part of Palmer Township is zoned residential. The zoning map on page 177, Draft EIS Appendices, illustrated the existence of three different zoning districts in this portion of the Township in the EIS Service Area. They include:

- R-1 - low density residential
- RA rural agricultural
- PIC planned industrial-commercial.

The R-1 district is bounded by Northwood Avenue, Schoeneck Creek, and Bushkill Creek and permits residential development at a density of one dwelling unit per 20,000 square feet. The RA district in the northwestern and northeastern parts of the Township has agriculture as its major land use. The primary permitted use in this district, defined in the Palmer Township Zoning Ordinance (Chapter 55), is single-family dwellings on lots of not less than 30,000 square feet.

The PIC zone is bounded by Route 33, Tatamy Road, Northwood Avenue, and Schoeneck Creek; its purpose is to provide sufficient space to meet regional needs for large-site commercial and industrial developments. A special exception use permitted in this district is home occupation, the major existing land use, along with agriculture. The Code of the Township of Palmer, Chapter 36A, Planned Residential Development, encourages innovative residential development within the PIC district. Under a curative amendment, the Brenton Village subdivision currently proposes 358 townhouse units on 54 acres in the PIC area. It is anticipated that if sewer service capacity were introduced into this area with the limited amount of commercial and industrial subdivision proposals on record, additional curative amendments, downzoning, and resultant residential development would occur.

An R-2, medium-density residential district lies immediately south of Northwood Avenue, on the southern border of the EIS Service Area. It is added to the list of zoning districts addressed in the EIS because modifications in the conveyance system along Tatamy Road near Penn Pump Park could induce development within its boundary.

In sum, the EIS has addressed areas that have been zoned residential as well as areas which, though zoned either RA or PIC, can legitimately support single family or multi-family housing.

Comment 2
prime agricultural land overstated

The estimated amount of prime agricultural land in the EIS Service Area has been overstated by approximately 15% in the Draft EIS. [Munkittrick]

Response 2

Comment noted. See appropriate revisions in Sections III.A.1, III.B.2, and III.D.1 of the Final EIS.

Comment 3
JPC would agree with partial deletion of Bushkill interceptor from B-LLJSA project

The Joint Planning Commission, Lehigh-Northampton Counties (JPC) would agree with the EIS-deletion of the Bushkill Creek interceptor extension north from Stockertown into and beyond Jacobsburg State Park. If the Commission had not assumed that the B-LLJSA sewer project would be built, these areas would not have been recommended for urban development. [O'Dell]

Response 3

Comment noted.

ISSUE:
ALTERNATIVES

Comment 1
opposition to spray irrigation in Plainfield Township

Several citizens of Plainfield Township, including farm owners and local government representatives, are opposed to the concept and implementation of spray irrigation on valuable farmland. On 18 February 1980, the Plainfield Township Planning and Zoning Commission passed a resolution opposing any of the alternatives presented in the Draft EIS involving a spray irrigation system in Plainfield Tonwship. [R. Lieberman, E. Lieberman, Nagel]

Response 1:

None of the five alternatives involving the use of spray irrigation systems in the Draft EIS were determined to be cost-effective approaches to meeting the wastewater management needs of Plainfield Township or of any other municipality in the EIS Service Area. The present-worth costs of all spray irrigation alternatives were too high to be recommended and funded by EPA for implementation (even with the 115% cost preference given innovative and alternative technologies). The well-documented advantages of spray irrigation systems across the nation, as well as their potential advantages in the EIS Service Area, justified the development and evaluation of spray irrigation alternatives in the Draft EIS. These advantages include the recycling of water and nutrients for productive (crop) uses, low consumption of chemicals, low generation of sludge, preservation of large open-space areas with potential for multiple recreational use during non-irrigation seasons, and lower operating costs than other systems with the equivalent degree of treatment.

Comment 2:
water quality protection guarantees

What are the guarantees that land application systems, cluster systems, and other sewage treatment facilities will protect the surface water and groundwater from nitrate and bacterial contamination? [Bradt]

Response 2:

If properly designed, constructed, operated, and maintained, these wastewater management systems will protect the local water resources from nutrient and bacterial contamination. Land application (spray irrigation) systems, providing the equivalent of tertiary treatment, were not recommended for implementation in the EIS Service Area on the basis of the cost-effectiveness analysis (see above). Bacterial and nutrient contamination of surface water from new treatment plants serving the Nazareth Service Area should be insignificant if these facilities are constructed and operated in compliance with standards set by the Pennsylvania DER.

Detailed hydrogeologic investigations of any recommended cluster system (community drainfield) sites must be conducted before an assessment of the reliability of these systems can be made. These site investigations, which include detailed soils mapping, permeability tests, test borings, in-situ hydraulic testing, and as necessary, laboratory hydraulic testing , will be required prior to approval and installation of the systems. Key requirements for maximizing the reliability of cluster systems with regard to water quality protection include:

- Well-planned and -executed site analysis
- Measurement of and designing with the natural assimilative capacity of local soil and groundwater resources
- Provision of adequate community supervision of the installation, operation, and maintenance of the cluster systems.

The preliminary design of cluster treatment systems in the Draft EIS focused on providing system components that mitigate the potential for nutrient and bacterial contamination of groundwater and, ultimately, surface water. These components (for each system) are:

- Common septic tank (minimum 3,000 gallons)
- Dosing pump to control septic tank effluent flow to drainfields and insure effluent distribution to be the entire drainfield.
- Alternate drainfield area as backup and to allow resting of the primary drainfield.

Suggested procedures and criteria for designing community drainfield systems that may be followed during Step II design efforts were included in Appendix L-1 of the Draft EIS. These procedures alone will not guarantee water

quality protection. As indicated above, qualified supervision of installation, operation, and maintenance of cluster systems will significantly reduce the potential for water quality contamination by sewage-associated bacteria and nutrients.

Comment 3
gravity sewer leaks vs. pressure sewer leaks

When comparing a gravity interceptor to a pressure interceptor, considering breaks, cracks, etc., it is pertinent to note that a gravity interceptor leaks inward (i.e., into the line), whereas a pressure line leaks outward causing pollution of a given area. The fact that a gravity line leaks inward is illustrated by EPA regulations requiring infiltration/inflow studies and remedies. [Wolfe]

Response 3

Exception must be taken to the comment, because gravity lines can leak into the surrounding soil, depending on the hydraulic pressure and/or soil moisture content. In a very dry soil, wastewater may leak directly because of faulty joints, root intrusion, illegal connections, etc. Gravity line leaks are difficult to detect, difficult to locate, and in the case of deep gravity lines, expensive to repair. Another symptom of a gravity line leak is the flowing of extraneous water into the sewer. The first indication of a severe infiltration/inflow problem in a gravity sewer system is usually an overflowing manhole. Raw sewage has been known to spill into Little Lehigh Creek after manholes overflowed (By telephone, Mr. Fred Mussel, Waterways Patrolman, Pennsylvania Fish Commission, 3 June 1980).

Force mains are constructed of pressure pipe that results in few joint failures and no root intrusion. Leaks in force mains are quickly suspected due to drop in pressure and increased pumping time. Because force mains are constructed close to the surface, leaks are easily located and inexpensively repaired. As with any sewage collection and treatment system, it is hoped that a B-LLJSA system will be maintained properly and thus will not leak.

Comment 4
limit sewer along/ across streams

Sewer lines that parallel and cross streams should be limited to those absolutely required. [Jones]

Response 4

Comment noted. The EIS Recommended Action (Alternative 9) eliminates the gravity sewers along Schoeneck Creek and Bushkill Creek.

Comment 5
soil limitations for on-site systems overstated

The Draft EIS overstates the soil limitations for on-site wastewater treatment systems (see Figure III-4) through the use of broad geological data. This suggests unjustifiably that there are irreconcilable soil restrictions which preclude the use of such systems. [DiGerlando]

Response 5

The discussion and illustration in the Draft EIS of soil limitations for on-site wastewater management in the Service Area explicitly states (pages 38 and 29) that such limitations -- slight, moderate, and severe -- apply only to standard or conventional septic tank-soil absorption systems (ST/SAS). They do not apply to alternate effluent disposal systems including elevated sand mounds, sand-lined trenches and beds, oversize areas, and shallow placement areas. Therefore, the EIS does not suggest that the use of all on-site systems is precluded in areas, such as Cherry Hill, where the soils are reported to have severe limitations for standard ST/SAS. The Draft EIS concluded that the Cherry Hill vicinity could be served best by both rehabilitated standard ST/SAS, where feasible, and by alternate on-site systems under the Phase II wastewater management scheme (see page 161 of the Draft EIS). It is emphasized that the use of alternate systems is restricted to those areas where local site conditions are appropriate to the technology. The suitability of soil, slope, and area for on-site treatment will be determined during the detailed design phase of this project (Step II).

Comment 6
relationship of East Lawn area to Nazareth Borough

The fate of the Upper Nazareth Township East Lawn area is tied inseparably to Nazareth Borough because of economic, social, and physical reasons such as schools, the YMCA, community parks, garbage disposal, sports programs, and cooperation of police and fire departments. Therefore, nothing should deter their collaboration in a sewage collection and treatment system. [Schweitzer]

Response 6

Comment noted. This phenomenon underlies EPA's development of Alternatives 5, 6, 9, and 10 -- all of which involve the treatment of East Lawn area sewage flows at a new or upgraded/expanded Nazareth sewage treatment system. It was also an important consideration in the selection of the EIS Recommended Action (Alternative 9).

Comment 7
cost of new RBC-type Nazareth STP grossly understated

The cost of a new Nazareth STP (RBC plant) was grossly understated by almost $3 million. [B-LLJSA]

Response 7

The total capital expenditure associated with constructing a new RBC plant to replace the existing Nazareth STP has been revised from $1.32 million to $2.94 million. The $1.62 million increase in capital costs for the Nazareth RBC plant is attributed principally to: (1) the substitution of conventional, more costly wastewater treatment facilities (for example, preliminary treatment and primary clarifiers) for innovative/alternative, less costly facilities (for example, wire screens); (2) recosting of the RBC component; (3) additional excavation and backfilling costs; (4) provision for additional yard piping; and (5) increased effluent disinfection costs. Components of the $2.94 million (capital) RBC plant are illustrated in Figure IV-1. A detailed breakdown of revised RBC treatment plant component costs is furnished in Section 4.3.2 of the "Engineering Evaluation of the Draft EIS" (Appendix D-3).

Comment 8

inadequate discussion of Easton wastewater management system expansion

In the Draft EIS, the Easton STP is presented as a mere plant expansion from 5 million gallons per day (mgd) to 10 mgd capacity with a change in processing from trickling filters to rotating biological discs. The EIS completely ignores the construction of other sewerage facilities which are essential to the operation of the expanded and upgraded Easton STP. Such construction includes the doubling in size of two large pump stations, the emplacement of two inverted siphons on Bushkill Creek in addition to one across the Lehigh River, and the enlargement of interceptors to 42 inches in diameter. [B-LLJSA]

Response 8

The Easton wastewater management facilities referenced in the comment were not at issue in the Draft EIS because they were constructed under an EPA grant to the City of Easton, not to the B-LLJSA (see Assumption 1, page 7). EPA, in this EIS, has focused on wastewater management facilities in the B-LLJSA which are planned in the Environmental Assessment (1976), designed per the B-LLJSA's detailed drawings and plot plans, and costed per construction bid sheets submitted to EPA by the Applicant in 1977. These data, which were reviewed and analyzed by EPA, do not themselves include the Easton wastewater management facilities.

The local share (after Federal grants) of the capital costs associated with the expansion/upgrading of the Easton STP and the enlargement of sewage transport facilities in Easton -- $1.3 million -- was estimated in the Draft EIS as part of an overall B-LLJSA project cost (pages 125 and 239 of the Draft EIS). This overall B-LLJSA project cost, which must be borne entirely by local government, was estimated to be $2.2 million. The charge that would be levied on B-LLJSA system users in order to retire the $2.2 million debt was estimated to be $70 per household per year. It is clear

that the Draft EIS did address the wastewater management facilities constructed under the Easton grant.

In response to the comment, EPA developed capital costs and energy requirements associated with the expansion of the Easton STP and the Second Street and Delaware Drive pump stations (see Section III.B.5 of Final EIS). These facilities are essential to the operation of the proposed B-LLJSA system and, therefore, their capital costs ($2.6 million based on B-LLJSA design flow of 2.4 mgd) should be added to the capital costs of the APA (see Table III-1, page 19 of Final EIS).[4] Energy requirements of the Easton STP, Second Street pump station, and Delaware Drive pump station were estimated for the APA[5] (1,365,850 kwh/yr[6] -- B-LLJSA -- B-LLJSA portion), MAPA[7] (702,274 kwh/yr -- modified B-LLJSA portion), and Alternative 9[7] (Modified; Oxidation Ditch) (145,122 kwh/yr -- Phase I flow).

Comment 9
segmental cost-effectiveness analysis required

Two cost-effective analyses would facilitate the EIS decision-making process. These are as follows [Jones]:

a. A comparison of two methods of wastewater conveyance in vicinity of (lower) Bushkill Creek: gravity sewer vs. force main/pump station system.

b. A comparison of wastewater management alternatives for Nazareth sewage treatment plant (STP): renovate existing STP vs. build a new STP vs. convey Nazareth STP flows to Easton STP via Schoeneck Interceptor.

Response 9

Comment noted. In Section III.C.2 of the Final EIS, it has been determined that a force main/pump station system is 17% more expensive than a gravity sewer system to convey sewage flows between the same two points on Bushkill Creek. A cost-effectiveness comparison of four new treatment schemes to replace the Nazareth STP vs. conveyance to the Easton STP by either gravity flow or pumping demonstrated that replacement of the existing Nazareth STP with a new OD plant is the least expensive option (19% less expensive than gravity conveyance to Easton STP). It is noted that these are the results of cost-effectiveness analysis of sub-areas in the EIS Service Area, not of whole alternatives.

While these estimates of costs assist in the selection of a recommended course of action, they are not the only criteria by which such an action is selected. To be cost-effective and, therefore, selected as the EIS Recommended Action, a wastewater management plan must minimize the total cost of pollution control to the public <u>and</u> to the natural resources.

Comment 10
EIS used informal unit costs

The EIS used informal, estimating quality data costs, and compared these with actual bids received by the B-LLJSA. [B-LLJSA]

Response 10

The validity and comparability of unit costs data used in the determination of capital, operation and maintenance, and present worth costs for wastewater

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[4] It is noted that the estimated additional B-LLJSA capital costs ($2,581,490.00) were not added to APA costs, but merely suggested as legitimate additions.

[5] Kilowatt-hours per year.

[6] See Section III.B.6 of Final EIS.

[7] See Section III.D.6 of Final EIS.

management plans evaluated in the Draft EIS have been discussed (see Sections III.B.4 and III.D.3).

A comparison of unit costs used by the Applicant to determine B-LLJSA project construction costs and by EPA to determine construction costs for the APA, MAPA, and ten alternatives in the Draft EIS is presented in Table VI-1. The table focuses on several sewerage components (gravity sewer, force main, etc.) which are common to all wastewater management plans evaluated in the EIS. The construction bids received by the B-LLJSA in the second quarter of 1977 were inflated in the EIS to values representing conditions in the third quarter of 1977 -- the period during which EPA costed the APA, MAPA, and EIS alternatives. While B-LLJSA and EIS unit costs (3rd Q '79) appear to be similar, it is important to note that they reflect two different levels of design detail. The Applicant's costs are based on detailed survey of proposed sewer routes. They also include coverage for construction activities required to overcome unpredictable site conditions (rock blasting, highway pavement replacement, utility adjustment, etc.). Unit costs in typical EISs are not based on detailed survey of sewer routes and do not include local contingencies such as blasting, etc. Typical unit costs from the greater Easton area were applied uniformly to all wastewater management plans evaluated in the Draft EIS, including the APA, thereby insuring comparability among the plans. For further discussion, see Section III.B.4.

During preparation of the Final EIS, new cost information for the APA, MAPA, and EIS ALternative 9 was developed using unit costs adapted from B-LLJSA bid sheets. All wastewater management plans were recosted using the same unit costs. Revised unit costs now include provision for local construction contingencies, such as highway pavement replacement, blasting, etc. Although this level of effort is outside of the scope of a typical EIS, EPA developed this new cost information in response to local and state concerns.

Table VII-1. Comparison of B-LLJSA and EIS construction costs for sewers, stream crossings, and manholes.

Item	B-LLJSA				EIS
	Units		2nd Q '77[1]	3rd Q '79[2]	3rd Q '79[3]
8" gravity sewer	$/ft	Contract 1	$16.94	$21.45	$19
		Contracts 4, 5, 6	20.66	26.20	
10" gravity sewer	$/ft	Contract 1	16.42	20.82	21
		Contract 2	24.75	31.38	
		Contract 3	20.22	25.64	
		Contract 4, 5, 6	29.97	38.00	
12" gravity sewer	$/ft	Contract 1	18.57	23.55	24
		Contract 3	18.73	23.75	
15" gravity sewer	$/ft	Contract 1	20.59	26.11	28
		Contract 2	27.96	35.45	
18" gravity sewer	$/ft	Contract 2	33.09	41.96	34
21" gravity sewer	$/ft	Contract 2	38.85	49.26	48
		Contract 3	25.57	32.42	
24" gravity sewer	$/ft	Contract 2	37.16	47.12	60
		Contract 3	28.93	36.68	
30" gravity sewer	$/ft	Contract 2	48.36	61.32	110
6" force main	$/ft	Contract 1	15.60	19.78	12
8" force main	$/ft	Contract 1	18.00	22.82	14

[1]Weighted average of unit costs from "Part B Submittal" sheets. (EPA Form 5780-1B), dated 26 August 1977; low-bidder construction costs included therein are dated May 1977.

[2]Low-bidder construction costs have been inflated to September 1979 costs -- period in which APA, MAPA, and EIS Alternatives were costed -- for the sake of comparability. Source for 3rd Q '79 figures: "Construction Cost Indexes," 4th Quarter 1979, USEPA, Office of Water Program Operations.

[3]These figures were used to cost the APA, MAPA, and EIS Alternatives 1 to 10 in September 1979.

Table VII-1. Comparison of B-LLJSA and EIS construction costs (continued).

Item	B-LLJSA			EIS
	Units	2nd Q '77[1]	3rd Q '79[2]	3rd Q '79[3]
stream crossing	$/each:			
	Contract 1	2,500-5,000	3,170-6,340	5,800
	Contract 2	6,000-21,000	7,608-26,628	
	Contract 3	3,700-8,300	4,692-10,524	
manhole (MH)	$/each:			
	Contract 1:			700[4]
	MH walls	56.00		
	MH bases	350.00		
	MH frames/covers	170.00		
	Additional cost	70.00		
		646.00	819.00	
	Contract 2:			
	MH walls (4' dia.)	40.00		
	MH walls (5' dia.)	55.00		
	MH bases	320.00		
	MH frames/covers	150.00		
	Additional cost	110.00		
		675.00	856.00	
	Contract 3:			
	MH walls	30.00		
	MH bases	100.00		
	MH frames/covers	100.00		
	Additional cost	50.00		
		280.00	355.00	

[4]This is an average cost for a manhole. It includes costs for manhole walls, bases, frames, covers, and additional cost for ensuring water tightness, but does not include manhole drop connections.

Comment 11
JPC agrees with decentralized wastewater management for low-density areas such as Cherry Hill

JPC agrees with the concept of examining alternate methods of sewage disposal in lightly developed areas with malfunctioning septic systems instead of extending a regional sewer system into these areas. This comment would apply to portions of the EIS Service Area such as Cherry Hill, and the portions of Plainfield Township north of Belfast. [O'Dell]

Response 11

Comment noted.

Comment 12
floodplain regulations need to be observed in siting new Nazareth STP

The floodplain regulations set by the Delaware River Basin Commission and Pennsylvania DER should be reviewed before a new Nazareth STP is located. These regulations do not allow any construction in the "flood way" and require that any wastewater treatment plant or pump station in the "floodplain" be operable under 100-year flood conditions.

Response 12

EPA believes that the new treatment plant should be located outside of the designated 100-year floodplain. However, the exact location of the new treatment facilities would be determined by local officials during the preparation of a Step I facilities plan for Nazareth Borough.

The EIS has considered both the cost of building a new STP outside of the 100-year floodplain (i.e., cost of new land) and the cost of flood proofing a new STP at approximately the same location as the existing Nazareth STP through construction of a flood protection berm (dike) and an outfall line (see Figure IV-2). If the local officials choose to locate the new plant

management plans evaluated in the Draft EIS have been discussed (see Sections III.B.4 and III.D.3).

A comparison of unit costs used by the Applicant to determine B-LLJSA project construction costs and by EPA to determine construction costs for the APA, MAPA, and ten alternatives in the Draft EIS is presented in Table VI-1. The table focuses on several sewerage components (gravity sewer, force main, etc.) which are common to all wastewater management plans evaluated in the EIS. The construction bids received by the B-LLJSA in the second quarter of 1977 were inflated in the EIS to values representing conditions in the third quarter of 1977 -- the period during which EPA costed the APA, MAPA, and EIS alternatives. While B-LLJSA and EIS unit costs (3rd Q '79) appear to be similar, it is important to note that they reflect two different levels of design detail. The Applicant's costs are based on detailed survey of proposed sewer routes. They also include coverage for construction activities required to overcome unpredictable site conditions (rock blasting, highway pavement replacement, utility adjustment, etc.). Unit costs in typical EISs are not based on detailed survey of sewer routes and do not include local contingencies such as blasting, etc. Typical unit costs from the greater Easton area were applied uniformly to all wastewater management plans evaluated in the Draft EIS, including the APA, thereby insuring comparability among the plans. For further discussion, see Section III.B.4.

During preparation of the Final EIS, new cost information for the APA, MAPA, and EIS ALternative 9 was developed using unit costs adapted from B-LLJSA bid sheets. All wastewater management plans were recosted using the same unit costs. Revised unit costs now include provision for local construction contingencies, such as highway pavement replacement, blasting, etc. Although this level of effort is outside of the scope of a typical EIS, EPA developed this new cost information in response to local and state concerns.

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10" gravity sewer	$/ft	Contract 1	16.42	20.82	21
		Contract 2	24.75	31.38	
		Contract 3	20.22	25.64	
		Contract 4, 5, 6	29.97	38.00	
12" gravity sewer	$/ft	Contract 1	18.57	23.55	24
		Contract 3	18.73	23.75	
15" gravity sewer	$/ft	Contract 1	20.59	26.11	28
		Contract 2	27.96	35.45	
18" gravity sewer	$/ft	Contract 2	33.09	41.96	34
21" gravity sewer	$/ft	Contract 2	38.85	49.26	48
		Contract 3	25.57	32.42	
24" gravity sewer	$/ft	Contract 2	37.16	47.12	60
		Contract 3	28.93	36.68	
30" gravity sewer	$/ft	Contract 2	48.36	61.32	110
6" force main	$/ft	Contract 1	15.60	19.78	12
8" force main	$/ft	Contract 1	18.00	22.82	14

[1]Weighted average of unit costs from "Part B Submittal" sheets. (ERA Form 5780-1B), dated 26 August 1977; low-bidder construction costs included therein are dated May 1977.

[2]Low-bidder construction costs have been inflated to September 1979 costs -- period in which APA, MAPA, and EIS Alternatives were costed -- for the sake of comparability. Source for 3rd Q '79 figures: "Construction Cost Indexes," 4th Quarter 1979, USEPA, Office of Water Program Operations.

[3]These figures were used to cost the APA, MAPA, and EIS Alternatives 1 to 10 in September 1979.

Table VII-1. Comparison of B-LLJSA and EIS construction costs (continued).

Item	B-LLJSA			EIS
	Units	2nd Q '77[1]	3rd Q '79[2]	3rd Q '79[3]
stream crossing	$/each:			
	Contract 1	2,500-5,000	3,170-6,340	5,800
	Contract 2	6,000-21,000	7,608-26,628	
	Contract 3	3,700-8,300	4,692-10,524	
manhole (MH)	$/each:			
	Contract 1:			700[4]
	MH walls	56.00		
	MH bases	350.00		
	MH frames/covers	170.00		
	Additional cost	70.00		
		646.00	819.00	
	Contract 2:			
	MH walls (4' dia.)	40.00		
	MH walls (5' dia.)	55.00		
	MH bases	320.00		
	MH frames/covers	150.00		
	Additional cost	110.00		
		675.00	856.00	
	Contract 3:			
	MH walls	30.00		
	MH bases	100.00		
	MH frames/covers	100.00		
	Additional cost	50.00		
		280.00	355.00	

[4]This is an average cost for a manhole. It includes costs for manhole walls, bases, frames, covers, and additional cost for ensuring water tightness, but does not include manhole drop connections.

Comment 11
JPC agrees with decentralized wastewater management for low-density areas such as Cherry Hill

JPC agrees with the concept of examining alternate methods of sewage disposal in lightly developed areas with malfunctioning septic systems instead of extending a regional sewer system into these areas. This comment would apply to portions of the EIS Service Area such as Cherry Hill, and the portions of Plainfield Township north of Belfast. [O'Dell]

Response 11

Comment noted.

Comment 12
floodplain regulations need to be observed in siting new Nazareth STP

The floodplain regulations set by the Delaware River Basin Commission and Pennsylvania DER should be reviewed before a new Nazareth STP is located. These regulations do not allow any construction in the "flood way" and require that any wastewater treatment plant or pump station in the "floodplain" be operable under 100-year flood conditions.

Response 12

EPA believes that the new treatment plant should be located outside of the designated 100-year floodplain. However, the exact location of the new treatment facilities would be determined by local officials during the preparation of a Step I facilities plan for Nazareth Borough.

The EIS has considered both the cost of building a new STP outside of the 100-year floodplain (i.e., cost of new land) and the cost of flood proofing a new STP at approximately the same location as the existing Nazareth STP through construction of a flood protection berm (dike) and an outfall line (see Figure IV-2). If the local officials choose to locate the new plant

outside of the floodplain, then $120,000[8] is added to the rest of the plant components to cover the purchase of land. If the existing site is used, a floodproofing dike and new outfall line can be constructed for $70,000. This cost would be substituted for the land cost if the existing site is retained.[9]

Comment 13
varying peak factors should be used in sizing interceptors
Response 13

When sizing interceptor sewers, varying peak factors, according to load conditions, should be used instead of an assumed constant peaking factor of 2.5.

The variability of wastewater flows in the Service Area under any wastewater management plan has been accounted for in the estimation of average daily flow. Average daily flows for individual communities in the Service Area are determined, on the basis of several conditions, including type of housing, age of system, and amount of commercial and/or industrial development in the community. A peak factor of 2.5, which is well-documented in the literature, is then applied to the variable average daily flow to determine the size (diameter) of an interceptor or outfall sewer. It is not necessary to provide for additional flow variability given the relatively low quantities of commercial and industrial flow generated in the Service Area.

Peak daily flow factors for interceptor or outfall sewers are recommended to be 2.5 by several authorities including the following:

1. "The Federal government has set minimum average design flows at 75 gpcd. On this basis, laterals are designed for a peaking factor of 4.0, and outfall sewers are designed for a peaking factor of 2.5."

   Source: Metcalf & Eddy, Inc. Wastewater Engineering. McGraw-Hill Book Co. New York NY. 782 p.

2. "Laterals and minor sewers shall be designed, when flowing full, assuming flows equivalent to 4 times the average daily per capital flow. Main trunck, interceptor, and outfall sewers shall be designed to convey expected peak flow equivalent to 2.5 times the average daily per capital flow."

   Source: Texas Department of Health. Design Criteria for Sewerage Systems. TDOH. Austin TX. 63 p.

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[8] In 1971, the Nazareth STP had an assessed value of $6,000 per acre, based on its designation as "commercial property" (By telephone, Roslyn Kahler, NCCD, from Colar-Trumble, Inc., 23 April 1980). This land value has been inflated to reflect 1980 economic conditions.

[9] The calculations below present the costs associated with (a) floodproofing of the plant site and (b) construction of an outfall line.

(a) Flood protection berm (dike):

Length 1,200 ft.

Area $\frac{(50 + 20)}{2} \times 10$ 350 ft.^{2}

Volume = $\frac{1,200 \times 350}{27}$ = 15,556 cy.

Embankment Cost: Dec. 79/Mar 75 3,140/2,128 1.48 factor

1.48 x $2.50/cy. x 15,556 cy. $58,000.

(b) Outfall pipe:

12" pipe @ $32.81/ft. x 250' 8,203.

TOTAL: Floodproofing and outfall $66,203
$0.07 million

3. Page 20-2 of the ten states standards presents a graph which suggests using a peak factor of 3.0 when the design population is 10,000 persons. However, the ten states standards make no distinction in peak flows for laterals or interceptors.

Comment 14
Route 115: dual versus single sewer

The placement of a deep sewer in the center of Route 115, as proposed in the EIS Recommended Action, instead of along the sides of the road raises serious questions as to the financial feasibility of the project. [Maher]

Response 14

EPA agrees with the Pennsylvania DER's recommendation that the issue of dual sewer versus single sewer along Route 115 (including the depth of a single sewer) would be more appropriately resolved during Step II of this project when more detailed site and design information is available (By letter, Clifford Jones, Secretary, Pennsylvania DER, 3 April 1980). In its resolution of this issue during Step II, the Applicant could consider the feasibility of multiple house-to-sewer connections (to minimize road cuts) and the feasibility of boring house-to-sewer connections beneath the roadway (to eliminate road cuts). A typical single sewer serving Route 115 is illustrated below.

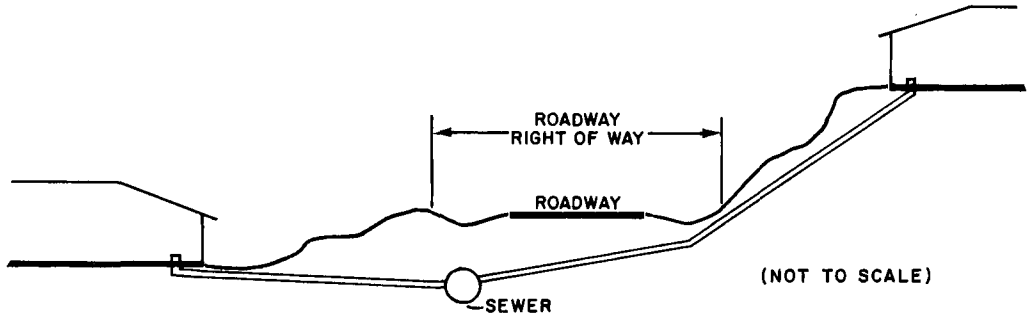


Figure VI-1. Typical sanitary sewer service (single sewer).

Comment 15
opposition to cluster systems in Plainfield Township

We oppose the prospect of cluster-type sewer systems in Plainfield Township. We wish our area to remain rural and do not want sewage pumped to valuable farmland. Sewers induce development which, in turn, overtax our public services and fiscal resources. The following questions regarding cluster systems need to be addressed: What odor and water quality problems are associated with cluster systems? Can normal farming operations (planting, grazing, plowing, etc.) be conducted over a cluster system? What are the land (area) requirements of a cluster system? How is land acquired for a cluster system? Is it just condemned? [Roth, Sparrow, Schreck]

Response 15

EPA's development of decentralized wastewater management alternatives which propose the use of cluster (community) treatment systems was pursued in the interest of preserving rural farmland and cost-effectively solving the wastewater management problems of remote areas. Cluster systems for small groups of homes can usually meet the sewage treatment needs of small lots without the large expense of a municipal or regional sanitary sewer. For community systems installed in Minnesota, the cost per lot has been approximately the same as for adequately sized on-site treatment systems (Machmeier 1977).

The number of homes to be served by a cluster system is usually decided by local government officials during Step II. Therefore, reserve capacity of these systems, and hence induced development, can be controlled.

The water quality considerations associated with cluster sytsems were discussed on page 63 . Odor problems associated with community treatment systems are no greater than those associated with on-site systems. Because the cluster systems proposed in the EIS involve the use of one large septic tank, instead of individual septic tanks, to serve individual homes, any odor problems are minimized. Proper maintenance of the septic tank, including pump-out of solids as required, should eliminate odor problems. The provision of a dosing pump (to insure distribution of septic tank effluent to the entire drainfield) and an alternate drainfield (to allow resting of the primary drainfield) are also measures proposed by EPA which should prevent clogging of the cluster system's drainfield component and, hence, any odor problems.

Typical farm operations, including the planting of trees, the grazing of domestic animals, and the driving of heavy vehicles, should not be permitted over cluster treatment systems under any weather conditions.

The land area requirements for a cluster system designed in the EIS to serve approximately 20 homes is typically less than four acres. The size of the cluster system soil treatment units is based on the percolation rate of the soil and the estimated total daily sewage flow.

Land for cluster systems can be acquired through purchase or other cooperative agreement between land owners and the local municipality, or through the power of eminent domain if it is established that the acquisition of such land is in the best interest of all citizens in the municipality. Easements may be required for cluster system maintenance operations. Design, operation, and maintenance of cluster systems (Machmeier 1976) are discussed in Appendix D-6.

ISSUE:
INDUCED GROWTH

Comment 1
justification of economic transport distance

Explain the rationale behind an economic transport distance of 4,800 feet--the distance from an interceptor that a subdivision developer would find economically justifiable to build a trunk sewer serving a new 100-house development [B-LLJSA].

Response 1

The estimation of an "economic transport distance" was presented to indicate the amount of land area "opened up" to new development by the installation of new sewers. The actual number of 4,800 feet is hypothetical because it is based on an assumption which, in fact, will vary considerably from one developer to another and from one site to another. The exercise is based on a very real economic factor, however. A developer makes decisions to buy land and build on it depending on how much profit he expects to make. His profit depends on his cost to build and the price people are willing to pay. While sewerage costs are only a part of the cost to build, they can be exhorbitant. Consider the builder who wants to develop 100 lots at the foot of Blue Mountain. His cost for sewerage includes hook-up fees, facilities which he must build in any case, i.e., house sewers and collector sewers on his properties, and facilities which depend on his development's distance to a public sewer. Under present conditions, he would have to build his own sewer to Easton or to an adequate sewage treatment plant, both of which would probably increase his total cost to build above the price people are willing to pay.

On the other hand, if public sewers are present at the boundary of his proposed development, his sewerage cost is at an absolute minimum. He has no extra transport cost and no new treatment plant costs.

In between the two extremes, there is a maximum incremental cost (marginal cost) that a developer could profitably pay for sewage transport. The marginal cost will be determined by all of his other costs, his expected sale price, and his desired profit. In order to illustrate the constraint that this marginal cost

places on the location of new developments relative to a proposed sewer system, a marginal cost of $1,000 per lot ($100,000 for 100 lots) was assumed and converted to the length (4,800 feet).

Many factors could increase or decrease the economic transport distance for any given parcel of land, or any developer's specific proposal. The analysis, however, is felt to be conservative (we expect the marginal cost to be higher than $1,000 in many parts of the EIS Service Area), and it serves the purpose for which it was intended: to relate the configuration of new, publicly funded sewers to the land area that could be developed because of public sewer availability.

Comment 2
force main versus gravity system

A reassessment of induced growth is needed in view of the fact that it is not that much more difficult to connect to a pressure system than it is to connect to a gravity system. [Jones]

Response 2

This comment can be addressed through a consideration of costs requires to serve single households or residential subdivisions with sewer service by tying into gravity sewers or force mains. For serving a single family residence, the cost of tying into a force main is approximately 500% more expensive than tying into a gravity sewer. This means that single unit structures will not develop along Tatamy Road (location of force main) as will occur adjacent to a gravity sewer along/in Bushkill Creek. Planned multi-unit facilities could develop along Tatamy Road. However, the multi-unit facilities must be occupied rather simultaneously. Otherwise, what does the person who buys the first house do for sewer service while waiting on the sale of 199 houses and activation of the lift station? With a force main along Tatamy Road, cluster development along Bushkill Creek will be limited if not non-existent. The 3,500 linear feet of force main required to serve cluster developments along Bushkill Creek would cost an additional $70,000 to $90,000.

Cost of Serving One Household

a. Gravity Sewer: The cost here consists of a property owner paying for his house lateral (4" PVC) and a tap fee. The developer or municipality will pay for a 6" x 8" tee at the sewer main, approximately 30' of 6" service lateral, and 1/2 of a 4" x 6" wye. The cost involved would be:

6" x 8" tee:	1 @ $75 each	=	$ 75.00
6" service:	30' @ $15/foot	=	450.00
1/2 (4" x 6") wye:	1 @ $17 each		17.00
4" house lateral:	50' @ $6/foot	=	300.00
Tap fee:	1 @ $150 each		150.00
	TOTAL		$992.00

b. Force Main: The cost here consists of the same items as for the gravity line, except that pressure pipe is needed. A pump unit is also needed to force the sewage into the force main. This pumping unit must operate at 30 to 40 psi, which is above the capacity of a typical low-pressure (10 psi) grinder pump unit. A pneumatic injector is commonly used. The cost involved would be:

1.5 HP pneumatic injector:	1 @ $3,500 each	=	$3,500.00
2" lateral:	50' @ $6/foot	=	300.00
Tap fee:	1 @ $150 each	=	150.00
1/4 (2" x 4") wye:	1 @ $25 each	=	25.00
4" service:	30' @ 20/foot	=	600.00
4" tap into FM:	1 @ $300 each	=	300.00
	TOTAL		$4,875.00

Cost of Serving a 200-Home Subdivision

a. Gravity Sewer: The developer must pay for the 8" street laterals, which will involve about 80 L.F. per lot. The cost of the house tie-in is also involved. The costs would be:

200 homes @ $992 each	=	$198,400.00
8" lateral: $28/L.F. x $\frac{80 \text{ L.F. x } 200 \text{ homes}}{2 \text{ sides of street}}$	=	224,000.00
TOTAL	=	$422,400.00

b. Force Main: To tie into a force main, the developer will build the above gravity system. Then a lift station would pump into the force main. The costs would be:

Gravity system (above)	=	$422,400.00
200 x 350 gpd = 0.07 mgd LS 0.07 x 694 x 50' TDH/1,000 F = 2.4 Cost		48,100.00
TOTAL	=	$470,500.00

Comment 3
adoption of new floodplain ordinances

To update the Draft EIS: Plainfield Township recently has amended its zoning ordinance by adopting a new floodplain zone. The prohibition of development now is applicable within the 100-year floodplain area defined by the Federal Insurance Administration's Flood Insurance Study for Plainfield Township. In addition, both Stockertown Borough and Tatamy Borough have adopted floodplain management ordinances in compliance with Section 60.3(d) of the National Flood Insurance Program. These ordinances limit and condition, but do not prohibit totally, development in the 100-year floodplain as defined by their respective Flood Insurance Studies. [Pierson]

Response 3

Comment noted.

See Sections III,B.3 for a discussion of how municipal induced growth estimates under the APA, MAPA, and Alternative 9 are affected by these new ordinances.

Comment 4
EIS overstates APA growth

Differences in induced growth estimates between the APA and Alternative 9 are significantly overstated in the Draft EIS. [B-LLJSA]

Response 4

See Appendix C-4.

ISSUE:
ENERGY

Comment 1
Alternative 9 consumes 400 times more energy than APA

The Draft EIS Recommended Action (Alternative 9) will consume 400 times more electric power than the proposed B-LLJSA conveyance system. [Smith]

Response 1

The table on page 196 of the Draft EIS indicates that the estimated energy consumed by the B-LLJSA conveyance system (the Applicant's Proposed Action) would be 5,950 kilowatt-hours per year (kwh/yr). The energy consumed by Alternative 9 would be 552,490 kwh/yr. Thus, the Draft EIS Recommended Action appears to consume 93 times more electric power than the APA. The energy budget of the APA has been revised, however, to 139,991 kwh/yr (see Appendix D-2 Final EIS), or approximately one-fourth of the energy required by the Draft EIS Recommended Action. It is noted that these comparisons are based on energy requirements of wastewater conveyance and treatment

components within the immediate B-LLJSA and EIS Service Areas. When energy set aside in the Easton system and energy utilization by induced development are added into the analysis, Alternative 9 consumes considerably less energy than the APA or MAPA (see Response 2).

Comment 2
Alternative 9 consumes too much energy to be EIS Recommended Action

The excessively high energy requirements of EIS Alternative 9 do not justify its selection over the APA as the EIS recommended wastewater management plan. This is particularly true in view of the President's directive to conserve energy. [B-LLJSA, Kennedy, Merwarth]

Response 2

The energy evaluation of wastewater management plans presented in the Draft EIS (page 196) considered only the electric power requirements of wastewater conveyance and/or treatment facilities in the immediate B-LLJSA and EIS Service Areas. Any facilities that were essential to the implementation of these plans and that were located outside of the B-LLJSA and EIS Service Areas proper were omitted purposely from the energy evaluation simply because they were not to be constructed under the B-LLJSA grant in question. In view of the substantial public support for implementing a Federally funded wastewater management plan which complies with the President's energy conservation directives, EPA has taken a more comprehensive approach in the Final EIS to assessing the energy needs of the APA, MAPA, and Alternative 9 (modified version). This approach includes the evaluations of:

- The energy requirements of the B-LLJSA and EIS Service Area (Phase I) portions of the expanded Second Street pump station, Delaware Drive pump station, and Easton STP. The expansion of these facilities is essential to the operation of <u>any</u> wastewater management system involving use of the expanded and upgraded Easton STP

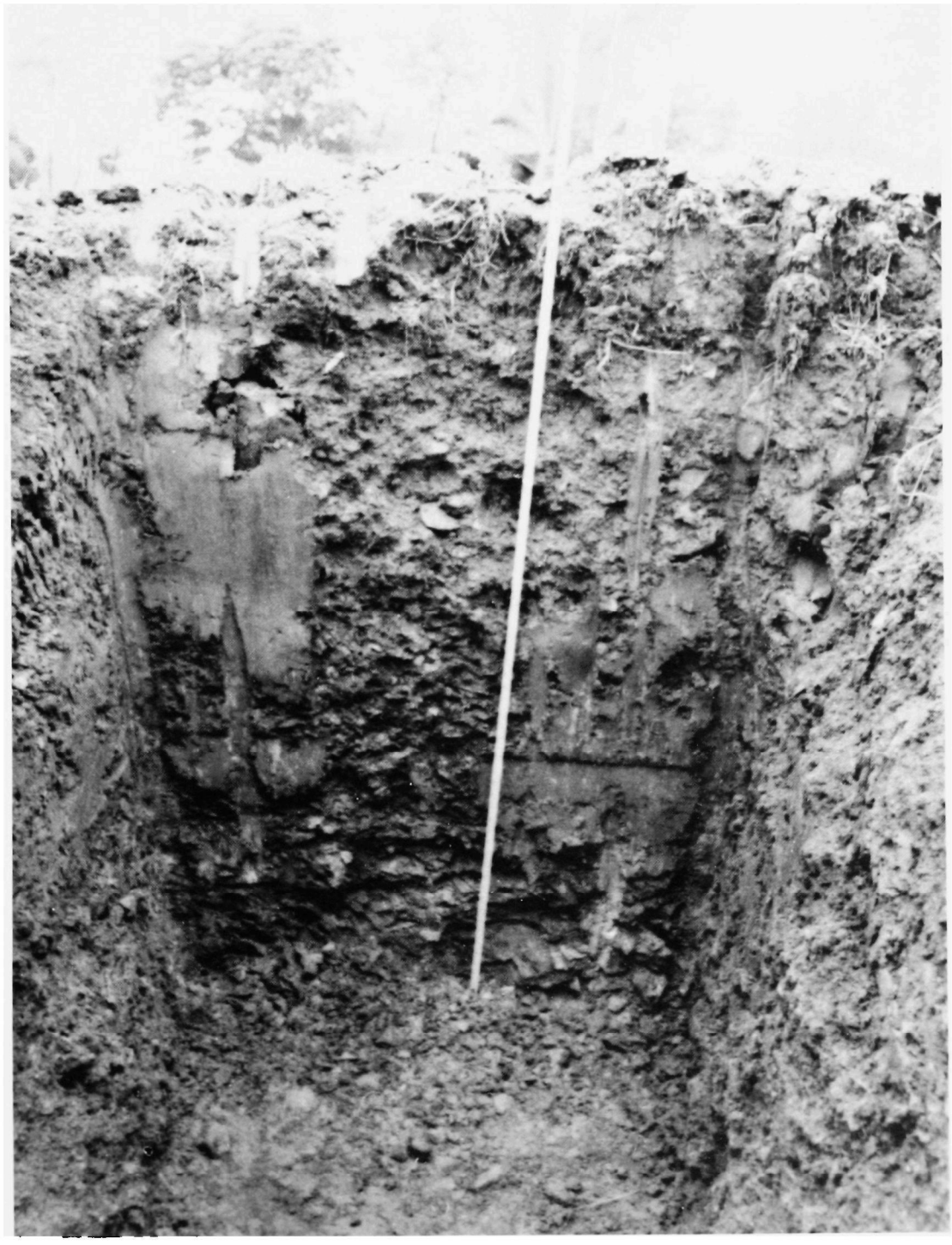
- The energy requirements of the residential development (single family and multi-family homes) induced by the construction of the APA, MAPA, and Alternative 9.

The revised energy budgets (kwh/yr) for the APA, MAPA, and Alternative 9 are as follows:

	APA (kwh/yr)	MAPA (kwh/yr)	Alternative 9 (kwh/yr)
B-LLJSA/EIS Service Area associated wastewater conveyance and treatment components	1,505,841	723,860	461,004
Electric power consumption by induced residential development @ 21,600 kwh/yr for single family homes and 16,900 kwh/yr for multi-family homes	108,619,000	29,872,000	6,263,000
Total estimated energy requirements	110,124,841	30,595,860	6,724,004

The revised APA energy budget is discussed in Section III.B.4 of the Final EIS, and the revised energy budgets for the MAPA and Alternative 9 are in Section III.D.5. Detailed energy analyses are included in Appendix D-2.

APPENDIXES



DRAFT ENVIRONMENTAL IMPACT STATEMENT
(included by reference)

APPENDIX B

RECREATION AND WASTEWATER MANAGEMENT PLANS FOR JACOBSBURG STATE PARK

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF ENVIRONMENTAL RESOURCES
P. O. BOX 1467
HARRISBURG, PENNSYLVANIA 17120

June 2, 1980
Refer to: RM-P-R
717-787-6674

Mr. Eric Hediger
Wapora, Inc.
6900 Wisconsin Avenue
Chevy Chase, Maryland 20015

Dear Mr. Hediger:

Enclosed are copies of two letters that state the Department's position regarding development at Jacobsburg State Park.

If you have any further questions, please do not hesitate to call me.

Sincerely,

George E. Fogg

George E. Fogg, Chief
Division of Outdoor Recreation

Enclosures: (2) Letters

In reply refer to
RM-R
S348:1

March 30, 1979

J. Ross Pilling III, Associate
Environmental Planner
WAPORA, Inc.
6900 Wisconsin Avenue, N.W.
Washington, D. C. 20015

Dear Mr. Pilling:

This is in response to your letter of March 7, 1979, concerning the Department's proposed development at Jacobsburg State Park.

Since the January 1978 telecon between Ms. Judith Ludington of your office and Mr. Larry Sharer of our staff, the construction scheduling of the wastewater facilities and budget constraints have made it necessary for the Department to reprogram developments at Jacobsburg State Park. We will complete the development of low density recreation facilities to complement the historic and natural aspects so that the facilities can be utilized. These facilities will include hiking, biking, cross country skiing, nature and historic interpretation, limited picnicking and necessary parking and comfort stations with on-site disposal.

The Department will maintain this direction until scheduling of the construction of wastewater facilities has been clarified. At that time, we will include funds in our capital budget for the design and construction of additional facilities.

We have enclosed a copy of our total yearly attendance at Jacobsburg State Park and other State parks as well as a 1978 attendance by activity at Jacobsburg State Park to assist in your environmental impact statement preparation. If you have any questions or need additional information, please contact Mr. Larry Sharer at 717-787-6674.

Sincerely yours,

C. H. McConnell, Deputy Secretary
Resources Management

Enclosures: (2) Attendance Information

In reply refer to
RM-R
SS 48:1G

April 16, 1979

Joseph DiCerlando, Chairman
of the Township
Board of Supervisors
Bushkill Township
1010 A Keller Road
Wind Gap, Pennsylvania 18091

Dear Mr. DiCerlando:

This is in response to your letter of March 30, 1979, concerning the Department's proposed development at Jacobsburg State Park.

It is the intent of the Department of Environmental Resources to complete development of low density recreational facilities which will complement the historic and natural aspects of the Park. We will provide facilities for hiking, cross country skiing, nature and historic interpretation, and picnicking. The necessary parking and comfort stations with vaults are installed.

Because of delays in the construction of wastewater facilities and budget constraints, we have reprogrammed developments at the Park. The low density facilities will be utilized until the scheduling of wastewater facilities has been clarified. At that time, we will review the Master Plan of the Park and program funds in our capital budget for the design of any additional facilities.

George F. Tomb, Chief of the Division of Outdoor Recreation will be happy to meet with you to review the plans at your convenience. He may be contacted at Pennsylvania Department of Environmental Resources, P. O. Box 1467, Harrisburg, Pennsylvania 17120, (717) 787-6674.

Sincerely,

CLIFFORD L. JONES

APPENDIX C

INDUCED GROWTH

INDUCED GROWTH POTENTIAL IN 100-YEAR FLOODPLAINS OF
STOCKERTOWN BOROUGH AND TATAMY BOROUGH, YEAR 2000
(APA, MAPA, All Alternatives)

I. Planimetric Measurement of Undeveloped Areas

A. Stockertown Borough

Use	Acreage	Zone	Density	Units	Population
Residential	6 acres	R-1	12,000 ft.^{2}	22	67
Industrial	5 acres	I-1			
Commercial	6 acres	C-2			
Open Space	15 acres	P-0			

B. Tatamy Borough

Residential	1 acre	R-2	7,800 ft.^{2}	6	18
Residential	17 acres	R-1	12,000 ft.^{2}	62	184
Total	18 acres			68	202

*NOTE: Recently adopted floodplain management ordinances do not prohibit degelopment in 100-year floodplain.

INDUCED GROWTH ASSOCIATED WITH SUBSTITUTION OF GRAVITY SEWER FOR FORCE MAIN/PUMP STATION IN PALMER TOWNSHIP, YEAR 2000
(Alternative 9)

I. Palmer Township

A. Northwood Avenue

1. R-I; 20,000 ft.^{2} lots - 22 existing units
24.7 acres - 10 developed acres 14.6 acres
14.6 acres ÷ 20,000 ft.^{2} = 32 units
32 units x 3.08 persons/du 99 people

2. G-2; 12,000 ft.^{2} lots 110 existing units
63.57 acres - 30.3 developed acres = 33.27 acres
33.27 acres ÷ 12,000 ft.^{2} lots = 121 units
121 units x 3.08 persons/du 373 persons

B. Tatamy Road

1. R-I; 20,000 ft.^{2} lots - 53 existing units
42.38 acres 24.33 developed acres = 18 acres
18 acres ÷ 20,000 ft.^{2} lots 39 units
39 units x 3.08 people/du 120 people

C. Total induced growth Alternatives 5 and 9

1. Population - 592
2. Dwelling Units - 192
3. Acres - 66

DWELLING UNITS INDUCED BY ALTERNATE WASTEWATER MANAGEMENT PLANS, YEAR 2000

Municipalities	Single(1)/Multi(2) Family Dwelling Unit	1980 Existing Dwelling Units	Baseline	APA	MAPA	EIS Alternative 1	2	3	4	5 & 9	6 & 10	7	8
Bushkill	1	1,355	1,876	901	0	0	0	36	0	0	0	0	0
	2	50	140	00	0	0	0	0	0	0	0	0	0
Nazareth	1	1,580	1,553	00	0	0	0	0	0	0	0	0	0
	2	658	643	00	0	0	0	0	0	0	0	0	0
Palmer*	1	45	115	925	395	177	177	177	0	96	177	0	0
	2	0	0	924	395	178	178	178	0	96	178	0	0
Plainfield	1	1,565	2,070	1,816	128	151	132	212	132	25	424	424	424
	2	165	252	454	32	38	38	53	0	0	106	106	106
Stockertown	1	207	209	115	115	115	115	115	115	47	115	115	115
	2	60	60	0	0	0	0	0	0	0	0	0	0
Tatamy	1	270	336	252	252	252	252	252	252	47	252	252	252
	2	74	98	0	0	0	0	0	0	0	0	0	0
Upper Nazareth	1	1,228	1,507	730	158	158	158	158	158	0	0	158	158
	2	120	172	183	40	40	40	40	40	0	0	40	40
TOTAL	1	6,250	7,666	4,769	1,048	853	834	950	657	215	968	949	949
	2	1,127	1,365	1,561	467	256	256	271	40	96	284	146	146

* Units within the proposed Service Area

SEWERS INDUCED GROWTH IN EIS SERVICE AREA

The basic assumption in the induced growth analysis is that sewers provide an inducement for growth due to excess capacity resulting from engineering and regulatory constraints on minimum pipe size diameters (in many instances, DER requires a minimum interceptor pipe size of eight inches regardless of flow). This analysis will further define the growth inducement data found in Appendix G-20, Draft EIS as well as further published documentation of the inducement effects sewers have in conjunction wtih market forces operative in this study area. Additionally, engineering economics of the differential effects of gravity versus force main growth inducement will be demonstrated.

The Draft EIS reported different amounts of growth that would be associated with the introduction of various wastewater collection and treatment facilities in the Service Area. Table B-1 shows the total year 2000 population projected by municipality for the original design of the APA, the MAPA, EIS Alternative 9, as well as the 1973 JPC population projections accepted as baseline and the 1978 JPC population forecasts. The 1973 population projections did contain the provision of sewer service as a variable in calculating population in Plainfield Township, Palmer Township, and Tatamy Borough but not elsewhere within the EIS Service Area. These projections have been demonstrated as accurately reflecting the growth trends of the area based on an analysis of past trends in population growth, recent housing construction activity and verification of the JPC population projection method itself (see Appendix G-1, Draft EIS).

Table B-1. Year 2000 population.

	1973 JPC Projections	1978 JPC Forecasts	APA Baseline Plus Induced Growth	MAPA Baseline Plus Induced Growth	EIS Alternative 9 Baseline Plus Induced Growth
Bushkill Township	6,200	9,400	9,057	6,200	6,200
Nazareth Borough	5,600	6,730	5,600	5,600	5,600
Palmer Township	17,800	25,500	23,514	20,234	18,392
Plainfield Tonwship	6,800	8,800	13,657	7,280	6,876
Stockertown Borough	800	1,500	1,157	1,157	875
Tatamy Borough	1,250	1,480	1,795	1,795	1,325
Upper Nazareth Township	5,100	6,150	7,957	5,721	5,100
Service Area	43,550	59,560	62,733	47,983	44,368

As shown in Table B-1, JPC has adopted a new set of population forecasts. These forecasts were developed in conjunction with the 1978 Comprehensive Plan for Lehigh-Northampton Counties and show a year 2000 population of 59,560 in the B-LLJSA Service Area. This represents a 36.8% increase over the 1973 projections. The increase was based largely on the assumption that "excess" sewer capacity would be available in all Service Area municipalities. These forecasts were evaluated in the EIS as an upper limit of the amount of induced growth that could occur in these municipalities.

As may be noted in evaluating the difference between the 1978 forecasts and the amount of growth anticipated under the original Applicant's Proposed Action (APA), the latter is 5% greater. It was concluded in the Draft EIS (page 123) and in Appendix G-20 (pages 168 and 170) that the amount of induced growth that could occur as a result of excess capacity in the APA is high. In order for this amount of growth to occur in the study area in a 20-year period, all growth in Northampton County would have to be directed to this Service Area. This excess capacity results from an original design that was conducted for a 40-year (2020 design year) population, larger per capita flows than are projected in the EIS, and a service area that is considerably larger than recent needs documentation indicate is necessary. As a result, the Draft EIS concluded that this design would not induce the amount of growth projected and would result in an underutilized system for an extended period of time.

Based upon the aforementioned assumptions, an estimated induced population growth of 44,368 under Alternative 9 and the 7.5% higher figure of 47,983 under the MAPA is a reasonable estimate of projected conditions. This is based upon the premise that sewers induce higher rates, higher absolute amounts, and higher densities of development. This is not to say that sewers alone induce growth, but in the presence of an adequate market for development, sewers do have an overwhelming influence on the amount and location of growth. This assumption has been documented in the literature on a national as well as local level.

In a "Manual for Evaluating Secondary Impacts of Wastewater Treatment Facilities," Fitzpatrick et al. (1977) state in Section 2.1, The Basic Issue: Sewers and Growth, 2.1.1. Review of the Literature, "from the standpoint of this manual on secondary impacts, the most important finding is that of the CEQ-funded study of interceptor sewer projects [CEQ Fifth Annual Report 1974], namely that, 'on the local scale, sewers actually induce growth that would not otherwise occur.'" In January 1975, JPC published a document titled The Relationship Between Land Use and the Availability of Utilities: An Issue Paper for the Comprehensive Plan Update which states, "the idea that sanitary sewers have an effect on the amount and density of development is already generally assumed." It states further that, of all utilities examined, "it becomes apparent that sanitary sewers have the most direct impact on growth in this [Allentown, Bethlehem, Easton, Standard Metropolitan Statistical Area] Region. . . . Out of the almost 10,300 new homes built in the two-county area during [1971-1974] . . . about 7,700 or 75% of the new units in the region had central sewerage available or anticipated soon. In conclusion, it is clear that the availability or anticipation of sewerage . . . had substantial impact on the location of recent residential growth."

Not only do sewers influence the amount of growth, they also influence development density, as most of the municipal zoning ordinances in the Service Area allow for many more units to the acre with the availability of central sewer service (for example, the Plainfield Township Zoning Ordinance of 1971). The 1975 JPC paper bears this out, stating "the gross density of proposed development with central sewers available or anticipated soon is higher than that of proposed developments with permanent on-lot sewage disposal systems." Even areas zoned primarily for purposes other than residential development will experience pressure. The 358-unit Brenton Village townhouse proposal in the PIC zone of Palmer Township is an example of the curative amendment-type zoning challenge that will be experienced with the advent or anticipation of sewers. If both the Schoeneck Interceptor and the Bushkill Interceptor were to be developed, the RA zone in Northern Palmer Township would be capable of absorbing all induced growth under either the MAPA or EIS Alternative 9.

It must be restated that new sewers are not capable of creating new people or of attracting residents from one end of the state to the other. New sewers are capable of dramatically rearranging growth within a region. The growth inducement analysis found in Appendix G-20, Draft EIS enumerates a number of attraction factors which demonstrate a greater potential development market than some neighboring areas. Route 33 is accessible to the whole Service Area and provides significant transportation capacity to employment (and potential employment) centers in the area. Housing development moratoria have been in effect in Bushkill and Upper Nazareth Townships for a number of years creating a pent-up demand. Vacancy rates for this Service Area are lower than the for the region, again indicating a demand (Housing Information Package: 1978 Edition JPC). JPC records show that a significant number of subdivision proposals are currently in active stages of review. Recent housing growth indicates that from 1971 to 1977, Forks Township housing increased by an average of 24 units per year whereas Palmer Township increased by an average of 78 units per year, thus indicating greater growth attraction to the B-LLJSA Service Area (JPC 1978). Additional public utilities, such as water, gas, and electricity, are in place and anticipate more than enough capacity for the projected development. Gilbert Commonwealth noted in their 1976 Environmental Assessment that "this lack of significant growth from 1972 to the present is apparently a result of the general unsuitability of the soils for on-lot sewage disposal systems, the lack of public sewage facilities and current economic conditions" (the 1973 to 1975 housing recession). If this development limitation by soils is circumvented, significant proposed subdivisions would proceed, a contention defended by local realtors as well as JPC (By telephone, Marie Morykin, 16 March 1979). Additionally, the carrying capacity analysis found in Appendix G-20, Draft EIS indicates more than enough vacant developable land exists within a reasonable transmission distance of the proposed interceptor lines to accommodate anticipated induced growth.

In order to evaluate the inducement effects of a gravity interceptor versus force main, costs were derived to serve single family households and subdivisions. For a single family, the cost of tying into a force main is approximately 500% more expensive than tying into a gravity sewer. For serving a subdivision of 200 homes, the cost of building a lift station and tying into a force main is

approximately 10% more expensive than tying into a gravity sewer (see Section for engineering analysis). Planned multi-unit facilties could thus be developed in the areas of force mains. However, these units would have to be occupied simultaneously to fully utilize the lift station and deliver relatively aerobic septage wastes to the treatment plant in Easton. The EIS maintains its contention that force mains will limit development.

INDUCED GROWTH REFERENCES

JPC. "The Relationship Between Land Use and the Availability of Utilities: An Issue Paper for the Comprehensive Plan." 1975.

Urban Systems Research and Engineering. Interceptor Sewers and Suburban Sprawl. CEQ: Washington, D.C. 1974.

Real Estate Research Corporation. The Costs of Sprawl. USGPO: Washington, D.C. 1974.

Brinkley, Clark, et al. Interceptor Sewers and Urban Sprawl. Lexington Books. 1975.

Grubisich, Thomas. "Sewer Grants: The Pipelines to Urban Sprawl." Washington Post. January 31, 1980.

Bascoń, S.E., et al. Secondary Impacts of Transportation and Wastewater Investments: Research Results. CEQ: Washington, D.C. 1975.

Hammer, T.R., et al. Growth Stimulation Study: An Analysis of Sewerage System Development and Residential Construction. Cheater-Bitz Engineers: Plymouth Meeting, Pennsylvania. 1977.

JPC. Housing Information Package: 1978 Edition. 1978.

APPENDIX D

ENGINEERING AND ENERGY ANALYSES

SUMMARY OF ADDITIONAL CONSTRUCTION COSTS ASSOCIATED WITH APA

The cost-effectiveness analysis presented as Section 5.2 of the "Engineering Evaluation of Bushkill Draft EIS" compares the costs of various alternatives. However, all costs included are cost associated with facilities inside of the established study area. In reality there are also additional costs associated with the applicant's Proposed Action that occur from construction of facilities outside of the study area. These costs are associated with the expansion (i.e., construction) of two pump stations in Easton and expansion of the Easton STP, both of which are required to complete the Proposed Action. The attached Table 2.1 presents additional construction costs (already incurred) that should be credited (added) to the cost of the Proposed Action.

Table 2.1 Cost of expansion of two pump stations and Easton STP which should be added to the cost associated with the Proposed Action.

(1) Second St. P.S.:

2.4/8.4 x $873,000 = $ 249,429

(2) Delaware Dr. P.S.:

2.4/10 x $796,000 = $ 191,040

(3) Expansion of Easton STP:

$$\text{Construction Cost} = \$4{,}889{,}000 \times \frac{3140\ (\text{Dec. } 80)}{2314\ (\text{Feb. } 76)}$$

= $6,634,166

Cost Associated with Bushkill = 2.4/10.0 x $6,634,166

= $1,592,200

Total Additional Construction Cost	$2,032,669
Total Additional Capital Cost (127%)	$2,581,490

---

1 Cost from B-LLJSA E.A. Page I-12

The location, capacity, and timing of the proposed project were reviewed with respect to the Joint Planning Commission's Water Supply and Sewage Facilities Plan Update - 1970.

LOCATION: The Joint Planning Commission's Regional Plan proposes to use the Easton Plant and plant site for serving the Bushkill Creek drainage basin as provided for in this expansion program application.

CAPACITY: The Regional Plan calls for expansion of the Easton Treatment Facility to handle upstream municipalities. The proposed expansion program would accomplish this.

TIMING: The JPC study indicates that the expansion should take place during the 1970-1975 time period. Funding of this application in 1973 would permit this timing to be met.

The Joint Planning Commission does question whether or not the relief interceptor that is proposed to be constructed along the Bushkill Creek will empty into a combined sanitary and storm sewage system. The Commission also wishes to draw Easton's attention to the fact that Palmer Township zoned an area in excess of 1,000 acres for industrial use and that the proposed sewage allocation for the Township should be evaluated carefully in view of that large amount of industrial zoning.

In light of the above review comments, the Joint Planning Commission wishes to offer its endorsement of this proposal."

The questions raised by JPC were answered in a letter from the Consultant indicating that the new interceptor would not empty into a combined sanitary and storm sewage system, and when and if Palmer Township's industrial area developed, the plant capacity could be expanded.

1.2.1.5 Estimated Project Costs

The estimated construction costs for the proposed work, based on estimates prepared at the completion of the design and updated to February, 1976 are:

Contract 1	-	Sewage Treatment Plant	$4,889,000
Contract 2	-	Interceptor Sewer	$1,932,000
Contract 3	-	Pumping Stations & Force Mains	$1,376,000

Total construction costs are estimated at $8,197,000. Legal, financial, administrative, and technical services provide an estimated total project costs of $9,616,000. Federal grants are anticipated to amount to $6,978,000, leaving a local bond issue amounting to approximately $2,638,000.

Gilbert/Commonwealth engineers and consultants

GILBERT ASSOCIATES, INC., P. O. Box 1498, Reading, PA 19603/Tel. 215 775-2600/Cable Gilasoc/Telex 836-431

May 19, 1980

WAPORA, Inc.
6900 Wisconsin Avenue
Chevy Chase, MD 20015

Attn: Mr. Eric M. Hediger

Re: B-LLJSA Project Information Requested by WAPORA by Letter Dated May 2, 1980
GAI W.O. No. 06-6796-073

Dear Mr. Hediger:

The following information is in response to your letter dated May 2, 1980 and our telephone conversation of the afternoon of May 16, 1980.

Information Needed	Pump Stations			
	Easton #1	Easton #2	JSP	Edelman
Design Flow (Peak Flow @ 250 gcd)	21 MGD	25 MGD	600 GPM	180[illegible] GPM
Size of Force Main	16" old-24" new	24" old-24" new	6" & 8"	6"
Length of Force Main	350 feet	1450 feet	-	-
Pump & Motor Efficiency	Variable Speed Pump	Variable Speed Pump	Variable Speed Pump	-
Construction Cost (Inc. PS & FM)	$873,000	$796,000	-	-

The information given for the Easton pump stations is referenced in the following data:

1. Design Flow — DER Permit Application
2. Size of Force Main — Construction Documents
3. Length of Force Main — Construction Documents

525 Lancaster Avenue, Reading, PA/Morgantown Road, Green Hills, Reading, PA 215 775-2600

ENERGY ANALYSIS OF APA, MAPA, AND ALTERNATIVE 9

1.0 Summary of Energy Requirements for B-LLJSA Alternatives.

2.0 Summary of Additional Capital Costs for Proposed Action.

3.0 Tabulation of Energy Requirement for Proposed Action.

4.0 Tabulation of Energy Requirement for Modified Proposed Action.

5.0 Tabulation of Energy Requirement for Alt. 9 (OD) (Mod.).

6.0 Design Flows for Proposed, Modified Proposed, and Alt. 9 (OD) (Mod.).

7.0 Projected Average Energy Consumption by Residential Development, Year 2000

1.0.

SUMMARY OF ENERGY REQUIREMENTS FOR B-LLJSA ALTERNATIVES
(KWH/YR)

ALTERNATIVE	SEWAGE TREATMENT (kwh/yr)	CONVEYANCE (kwh/yr)	CLUSTER SYSTEMS (kwh/yr)	TOTAL (kwh/yr)
Proposed Action (2.4 MGD)	733,728	772,113	--	1,505,841
Modified Proposed Action (1.234 MGD)	377,258	339,592	7,010	723,860
Alt. 9 (OD) (MOD) (1.234 MGD)	158,755	293,859	8,390	461,004

JCV

2.0.

SUMMARY OF ADDITIONAL CONSTRUCTION COSTS ASSOCIATED WITH PROPOSED ACTION

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Gilbert/Commonwealth engineers and consultants

GILBERT ASSOCIATES, INC., P. O. Box 1498, Reading, PA 19603/Tel. 215 775-2600/Cable Gilasoc/Telex 836-431

May 19, 1980

WAPORA, Inc.
6900 Wisconsin Avenue
Chevy Chase, MD 20015

Attn: Mr. Eric M. Hediger

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GAI W.O. No. 06-6796-073

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Information Needed	Pump Stations			
	Easton #1	Easton #2	JSP	Edelman
Design Flow (Peak Flow @ 250 gcd)	21 MGD	25 MGD	600 GPM	180[illegible] GPM
Size of Force Main	16" old-24" new	24" old-24" new	6" & 8"	6"
Length of Force Main	350 feet	1450 feet	-	-
Pump & Motor Efficiency	Variable Speed Pump	Variable Speed Pump	Variable Speed Pump	-
Construction Cost (Inc. PS & FM)	$873,000	$796,000	-	-

The information given for the Easton pump stations is referenced in the following data:

1. Design Flow — DER Permit Application
2. Size of Force Main — Construction Documents
3. Length of Force Main — Construction Documents

525 Lancaster Avenue, Reading, PA/Morgantown Road, Green Hills, Reading, PA 215 775-2600

3.0.

ENERGY ASSOCIATED WITH PROPOSED ACTION

I. CONVEYANCE

(1) Jacobsburg State Park P.S.: 7,938 kwh/yr.

(2) Edelman P.S.: 132,053 kwh/yr.

(3) Second St. P.S.:

$$\frac{2.4 \text{ mgd (Bushkill)}}{8.4 \text{ mgd (total)}} \times 681.912$$ 194,832 kwh/yr.

(4) Delaware Dr. P.S.:

$$\frac{2.4 \text{ (Bushkill)}}{10.0 \text{ (total)}} \times 1,822,040$$ 437,290 kwh/yr

II. TREATMENT

(1) Easton Plant (10 mgd)

Approximate Annual Power Cost =

$$\$48,000 \times \frac{\text{Dec. 79}}{\text{Sep. 76}} \times \frac{0.05 \text{ kwh}}{0.02 \text{ kwh}} =$$

$\$48,000 \times (3140/2465) \times 0.05/0.02 = \$152,860$

$\$152,860/.05/\text{kwh} = 3,057,200$ kwh/yr.

$$3,057,200 \times \frac{2.4 \text{ (Bushkill)}}{10.0 \text{ (total)}} =$$ 733,728 kwh/yr.

TOTAL 1,505,841 kwh/yr.

OJECT NO. 680
IENT Bushkill EIS
IBJECT

WAPORA, Inc.
Environmental/Energy/Economic Studies

OFFICE

SHEET ____ OF ____
PREPARED BY JCV
DATE 29 April 1980
CHECKED BY
DATE

PUMP STATION ANALYSIS

PUMP STATION # JSP (Proposed Action)
Dia. = 6'' + 8''

Pump Sta:

Q = 0.10 MGD Qp = 0.25 MGD

V = 0.4 fps V = 1.0 fps

H Static = 480 - 450 = 30'

H Friction = 2(5120) @ 0.04 % = 4

H Misc. = 10'

TDH = 44

F = 3.1

Pump Sta: Capital Cost 51,800 x .0953 = $ 4936

O & M 3330

Force Main: 5120 @ $45.00 /Ft. = 230,400 x .0953 = 21,957

O & M = 230,400 ÷ 50 yrs. = 4608

TOTAL ANNUAL COST = $34,831

Yearly Energy Requirement = $\frac{189 \text{ X TDH(ft.) X FLOW(mgd) X 365 days/yr.}}{0.75\text{(pump eff.) X } 0.85\text{(motor eff.) X } 60}$

= 1804 X 44 (TDH) X 0.10 (FLOW) = 7938 KWH/yr

PROJECT NO. 680
CLIENT Bushkill EIS
SUBJECT

WAPORA, Inc.
Environmental/Energy/Economic Studies
OFFICE

SHEET ____ OF ____
PREPARED BY JCV
DATE 29 April 1980
CHECKED BY
DATE

PUMP STATION ANALYSIS

PUMP STATION # EDELMAN (Proposed Action)

Dia. = 6''

Lift Sta:

Q = 0.3 MGD Qp = 0.75 MGD

V = 2.2 fps V = 5.5 fps

H Static = 540 - 460 = 80'

H Friction = 3500 @ 4.4 % = 154'

H Misc. = 10'

TDH = 244

F = 51

Pump Sta: Capital Cost $166,500 x .0953 = $ 15,867

O & M $ 11,100

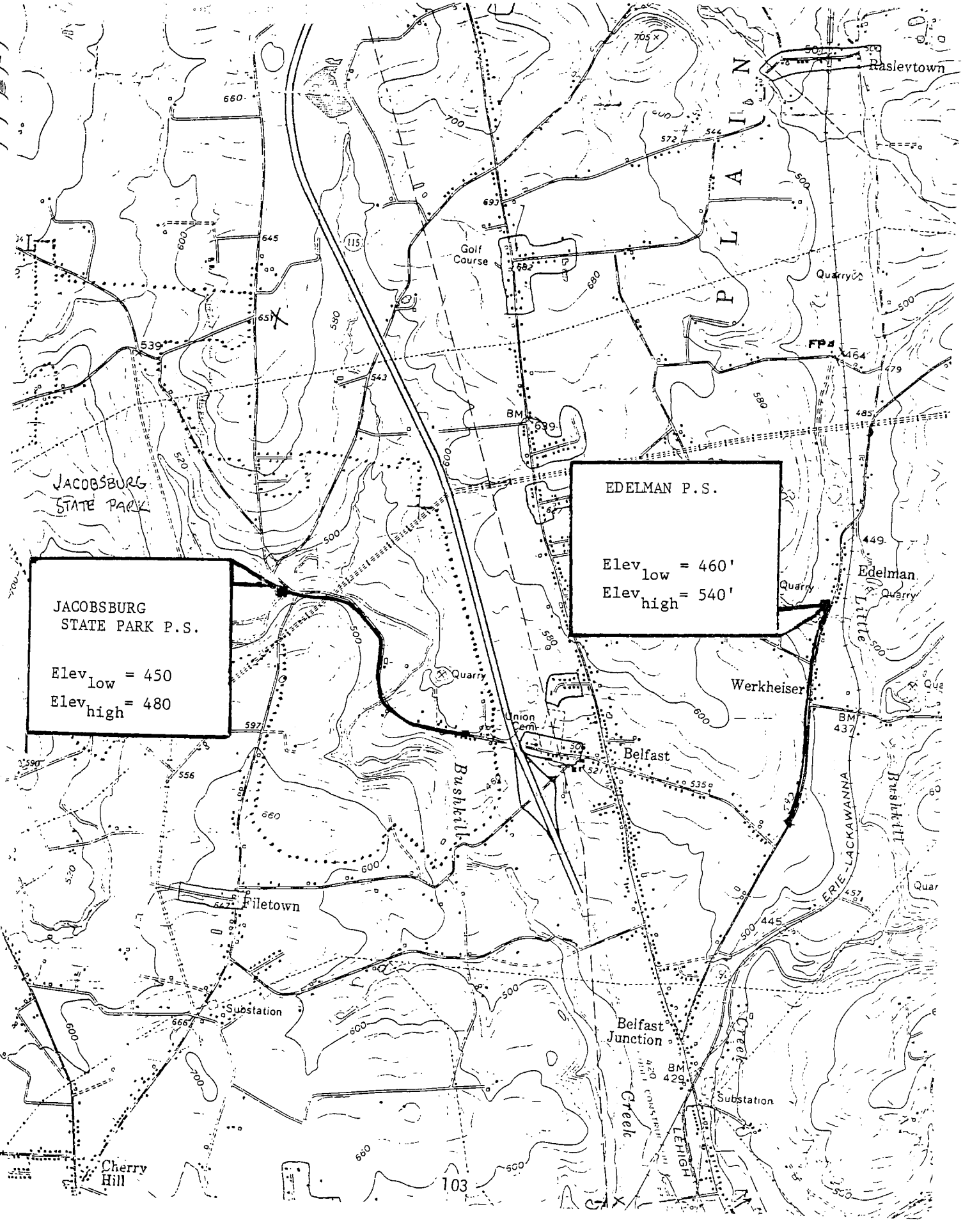
Force Main: 3500' @ $20.00 /Ft. = 70,000 x .0953 = 6671

O & M = 70,000 ÷ 50 yrs. = 1400

TOTAL ANNUAL COST = $ 35,038

Yearly Energy Requirement = $\frac{189 \text{ X TDH(ft.) X FLOW(mgd) X 365 days/yr.}}{0.75\text{(pump eff.) X } 0.85\text{(motor eff.) X } 60}$

= 1804 X 244 (TDH) X 0.3 (FLOW) = 132,053 KWH/


JACOBSBURG STATE PARK P.S.
Elev low = 450
Elev high = 480
EDELMAN P.S.
Elev low = 460'
Elev high = 540'
JACOBSBURG STATE PARK
Raslevtown
Golf Course
Quarries
Edelman
Quarry
Werkheiser
Union Cem.
Belfast
Bushkill
Filetown
Substation
Belfast Junction
Creek
Little
Bushkill
ERIE-LACKAWANNA
LEHIGH
Cherry Hill
PLAIN

PROJECT NO. 680

CLIENT Bushkill EIS

PROJECT

WAPORA, Inc.

Environmental/Energy/Economic Studies

OFFICE

SHEET ____ OF ____

PREPARED BY JCV

DATE 29 April 1980

CHECKED BY

DATE

PUMP STATION ANALYSIS

PUMP STATION # Second St. P.S.

Dia. = 16" & 24"

Equiv. Size = $\frac{(16)^2 + (24)^2}{2}$ = 20" (2 pipes)

Pump Sta:

Q = 8.4 MGD Qp = 21 MGD Qp/2 = 10.5 mgd

V = 2.8 fps. V = 7.1 fps

H Static = 210 - 180 = 30'

H Friction = 350' @ 1.5 % = 5'

H Misc. = 10'

TDH = 45'

Pump Sta: Capital Cost _____ x .0953 = _____

O & M _____

Force Main: _____ @ _____ /Ft. = _____ x .0953 = _____

O & M = _____ ÷ 50 yrs. = _____

TOTAL ANNUAL COST = _____

Yearly Energy Requirement = $\frac{189 \text{ X TDH(ft.) X FLOW(mgd) X 365 days/yr.}}{0.75\text{(pump eff.) X } 0.85\text{(motor eff.) X } 60}$

= 1804 X 45' (TDH) X 8.4 (FLOW) = 681,912 KWH/y

For Q avg. = 8.4 mgd

PROJECT
CLIENT Bushkill EIS
SUBJECT

WAPORA, Inc.
Environmental/Energy/Economic Studies

OFFICE

SHEET ____ OF ____
PREPARED BY JCV
DATE 29 April 1980
CHECKED BY
DATE

PUMP STATION ANALYSIS

PUMP STATION # DELAWARE Dr. P.S.

Dia. = 24" + 24"

Pump Sta:

Q = 10 MGD Qp = 25 MGD Qp/2 = 12.5 mgd

V = 2.4 fps V = 6.0 fps

H Static = 260 - 180 = 80

H Friction = 1450' @ 0.75 % = 11'

H Misc. = 10'

TDH = 101'

Pump Sta: Capital Cost _____ x .0953 = _____

O & M _____

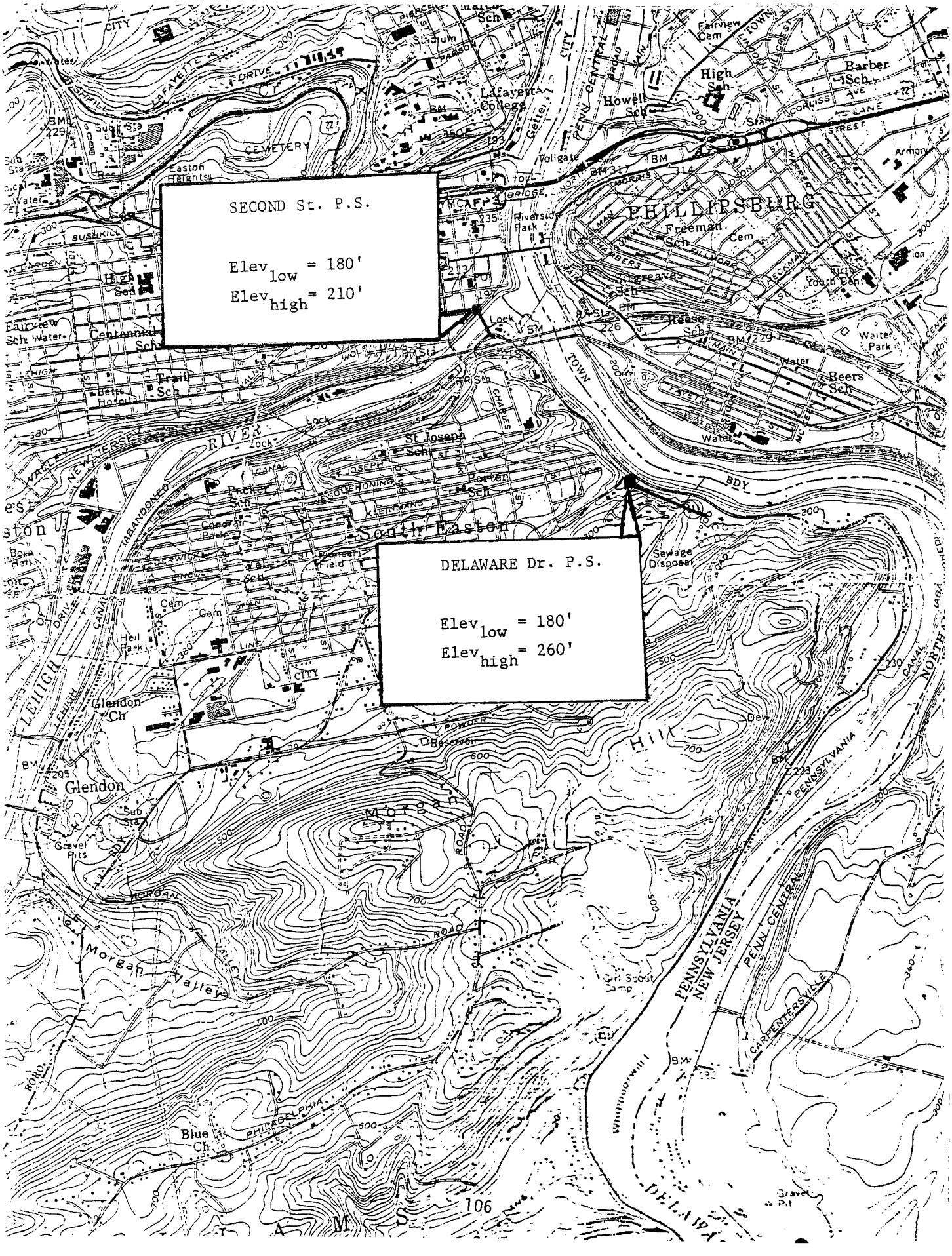
Force Main: _____ @ _____ /Ft. = _____ x .0953 = _____

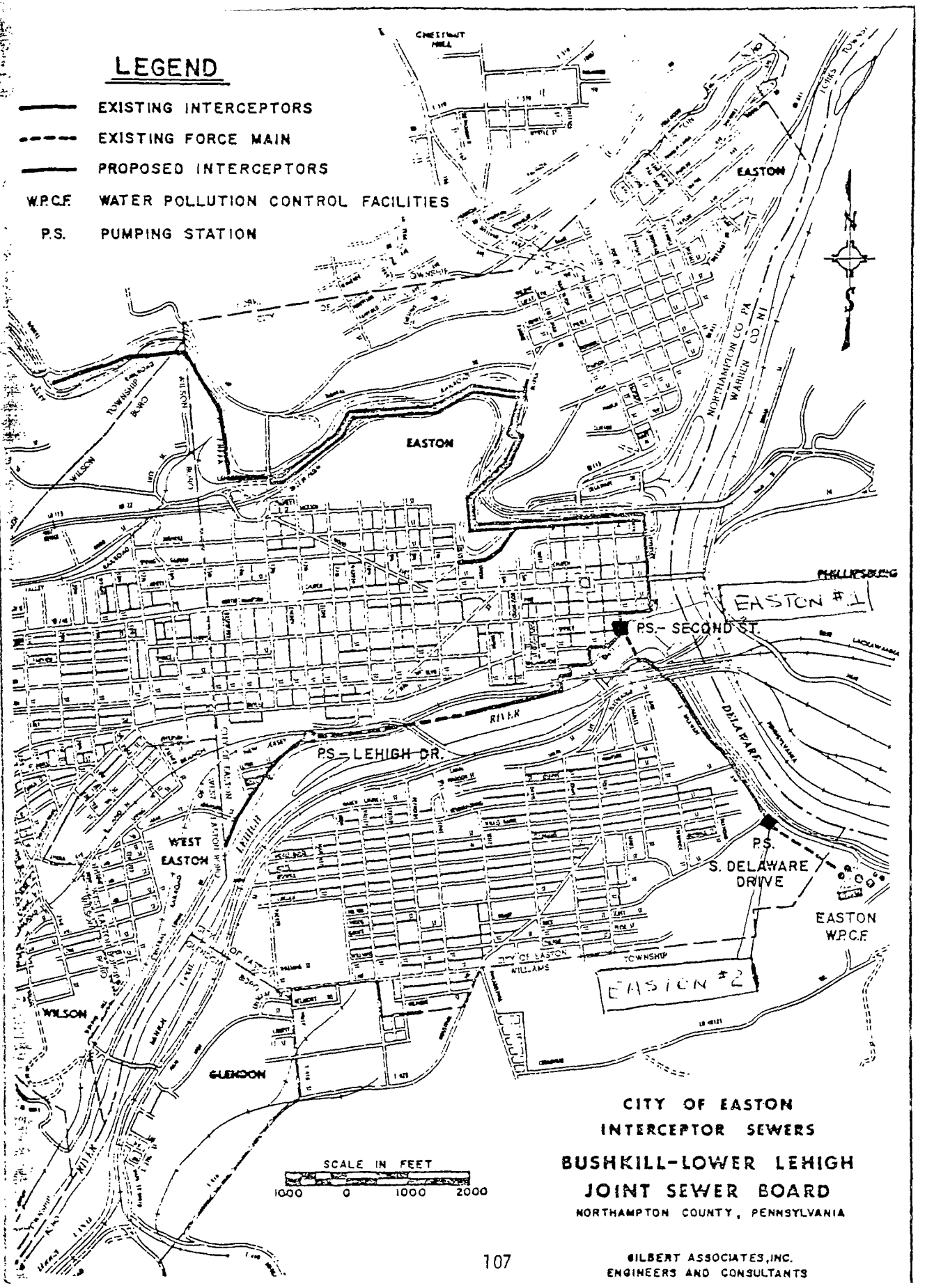
O & M = _____ ÷ 50 yrs. = _____

TOTAL ANNUAL COST = _____

Yearly Energy Requirement = $\frac{189 \text{ X TDH(ft.) X FLOW(mgd) X 365 days/yr.}}{0.75\text{(pump eff.) X } 0.85\text{(motor eff.) X } 60}$

= 1804 X $\frac{101'}{\text{TDH}}$ X $\frac{10}{\text{FLOW}}$ 1,828,040 KWH/y

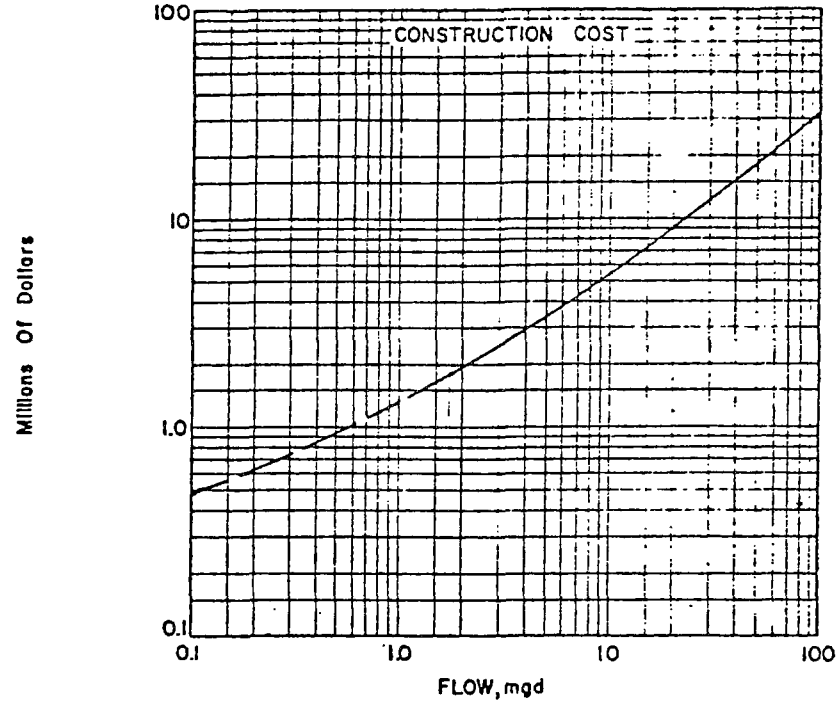

SECOND St. P.S.
Elev low = 180'
Elev high = 210'
DELAWARE Dr. P.S.
Elev low = 180'
Elev high = 260'
PHILLIPSBURG
South Easton
Lafayette College
Easton Heights
Centennial Sch
Glendon
Glendon Ch
Morgan Hill
Morgan Valley
Blue Ch
Beers Sch
Freeman Sch
Porter Sch
St Joseph Sch
Packer Sch
Barber Sch
High Sch
Howell Sch
Sewage Disposal
Gravel Pits
Water Park
Youth Cent
Armory
Fairview Cem
Riverside Park
Lock
Toll Bridge
Sub Sta
Water
Cem
Pennsylvania
New Jersey
Delaware River
Penn Central
Carpenterville
Philadelphia
Lehigh Valley
Abandoned Canal
Bushkill
Lehigh Canal
Powder Reservoir
Girl Scout Camp
Gravel Pit
Hell Park
Cloverair Park
Bowman Field
Hospital
Tolligate
Cemetery
Pierce
Parson
Coriss
Hudson
Hillcrest
Fillmore
Heckman
Chambers
Main
Bridge
Drive
Lafayette
Bdy
City
Town

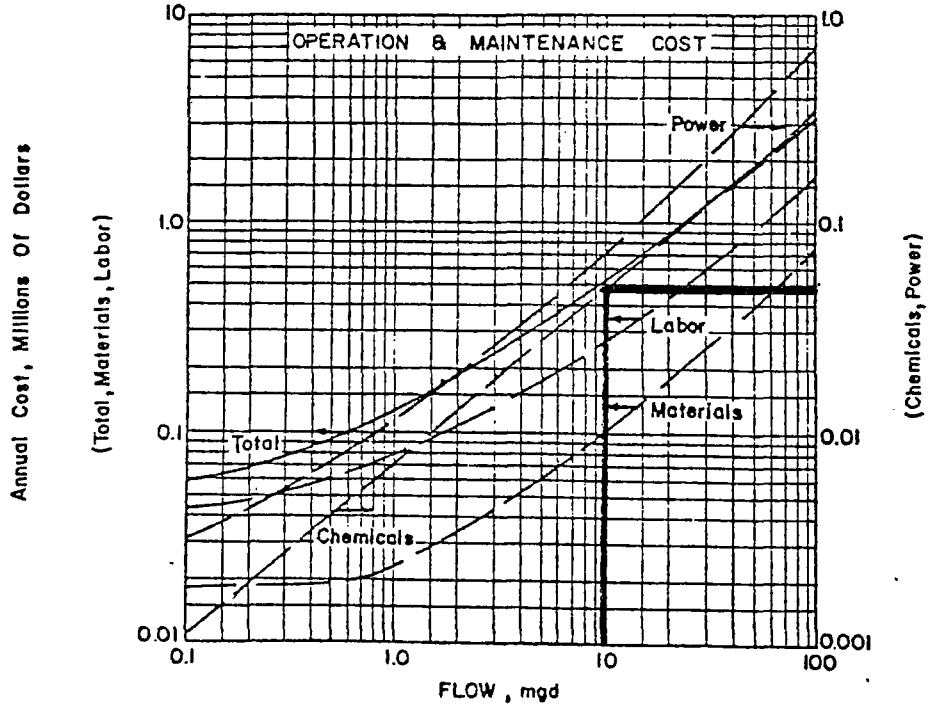


CITY OF EASTON
INTERCEPTOR SEWERS
BUSHKILL-LOWER LEHIGH
JOINT SEWER BOARD
NORTHAMPTON COUNTY, PENNSYLVANIA

GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS

FIGURE H-6 TREATMENT SYSTEM 5-
ACTIVATED SLUDGE





4.0.

ENERGY ASSOCIATED WITH MODIFIED ACTION

I. CONVEYANCE

(1) Edelman P.S.: 14,576 kwh/yr.

(2) Second St. P.S.:

$$\frac{1.234 \text{ (Bushkill)}}{8.4 \text{ (total)}} \times 681{,}912 = \quad 100{,}176 \text{ kwh/yr.}$$

(3) Delaware Dr. P.S.:

$$\frac{1.234 \text{ (Bushkill)}}{10.0 \text{ (Total)}} \times 1{,}822{,}040 = \quad 224{,}840 \text{ kwh/yr.}$$

(Subtotal = 339,592)

II. TREATMENT

(1) Easton STP

$$3{,}057{,}200 \text{ kwh/yr} \times \frac{1.234}{10} = \quad 377{,}258 \text{ kwh/yr.}$$

(2) Cluster Systems 7,010 kwh/yr.

Total: 723,860

PROJECT NO. 680

CLIENT Bushkill EIS

SUBJECT

WAPORA, Inc.

Environmental/Energy/Economic Studies

OFFICE

SHEET ____ OF ____

PREPARED BY JCV

DATE 29 April 1980

CHECKED BY

DATE

PUMP STATION ANALYSIS

PUMP STATION # Edelman (Modified)

Dia. = 6"

Pump Sta:

Q = 0.08 MGD Qp = 0.2 MGD

V = 0.65 fps V = 1.6 fps

H Static = 540 - 460 = 80'

H Friction = 3500 @ 0.3 % = 11'

H Misc. = 10'

TDH = 101'

F= 5.5

Pump Sta: Capital Cost $59,200 x .0953 = 5642

O & M 4070

Force Main: 3500 @ $20.00 /Ft. = 70,000 x .0953 = 6671

O & M = 70,000 ÷ 50 yrs. = 1400

TOTAL ANNUAL COST = $17,783

Yearly Energy Requirement = $\frac{189 \text{ X TDH(ft.) X FLOW(mgd) X 365 days/yr.}}{0.75\text{(pump eff.) X } 0.85\text{(motor eff.) X } 60}$

= 1804 X 101' (TDH) X 0.08 (FLOW) = 14,576 KWH/yr

5.0

ENERGY ASSOCIATED WITH ALT. 9

MODIFIED (OXIDATION DITCH)

I. CONVEYANCE

Alt. 9 (see Table 5.1 attached)	=	91,592 kwh/yr.
Second St. P.S.: (.255/8.4 x 681,912)	=	20,701 kwh/yr.
Delaware Dr. P.S.: (.255/10) x 1,822,040	=	46,462 kwh/yr.
	(subtotal = 158,755)	

II. TREATMENT

(1) Nazareth STP (Oxidation Ditch)

Power = $ 8,500 x 1.27 cost update = $10,795/yr. (see Figure H-15)

$10,795/$0.05/kwh = 215,900 kwh/yr.

(2) Easton STP:

$\frac{0.255 \text{ mgd (Bushkill)}}{10.0 \text{ mgd (total)}}$ x 3,057,200 = 77,959 kwh/yr

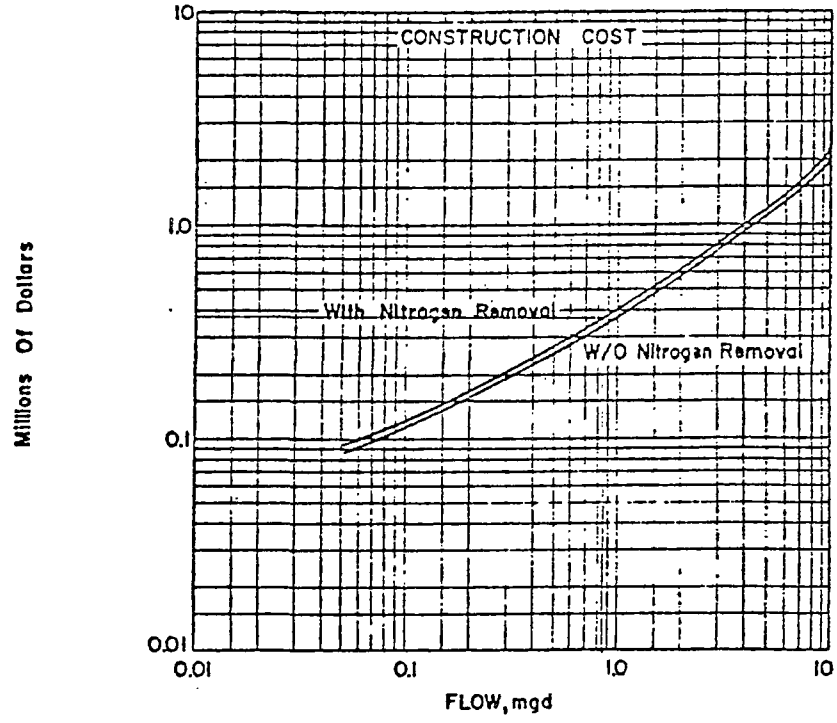
(subtotal = 293,859)

(3) Cluster Systems:

(see Table VI-3 of EIS) = 8,390 kwh/yr.

TOTAL 461,004 kwh/yr.

FIGURE H-15 TREATMENT SYSTEM 14-
OXIDATION DITCH (DESIGNED FOR NITRIFICATION)



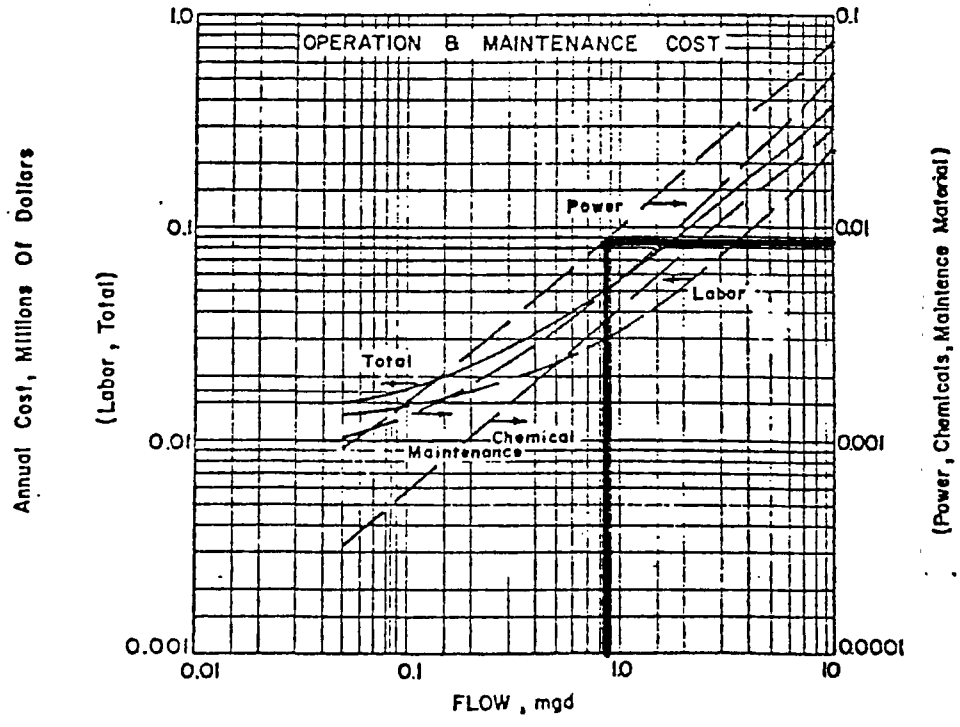
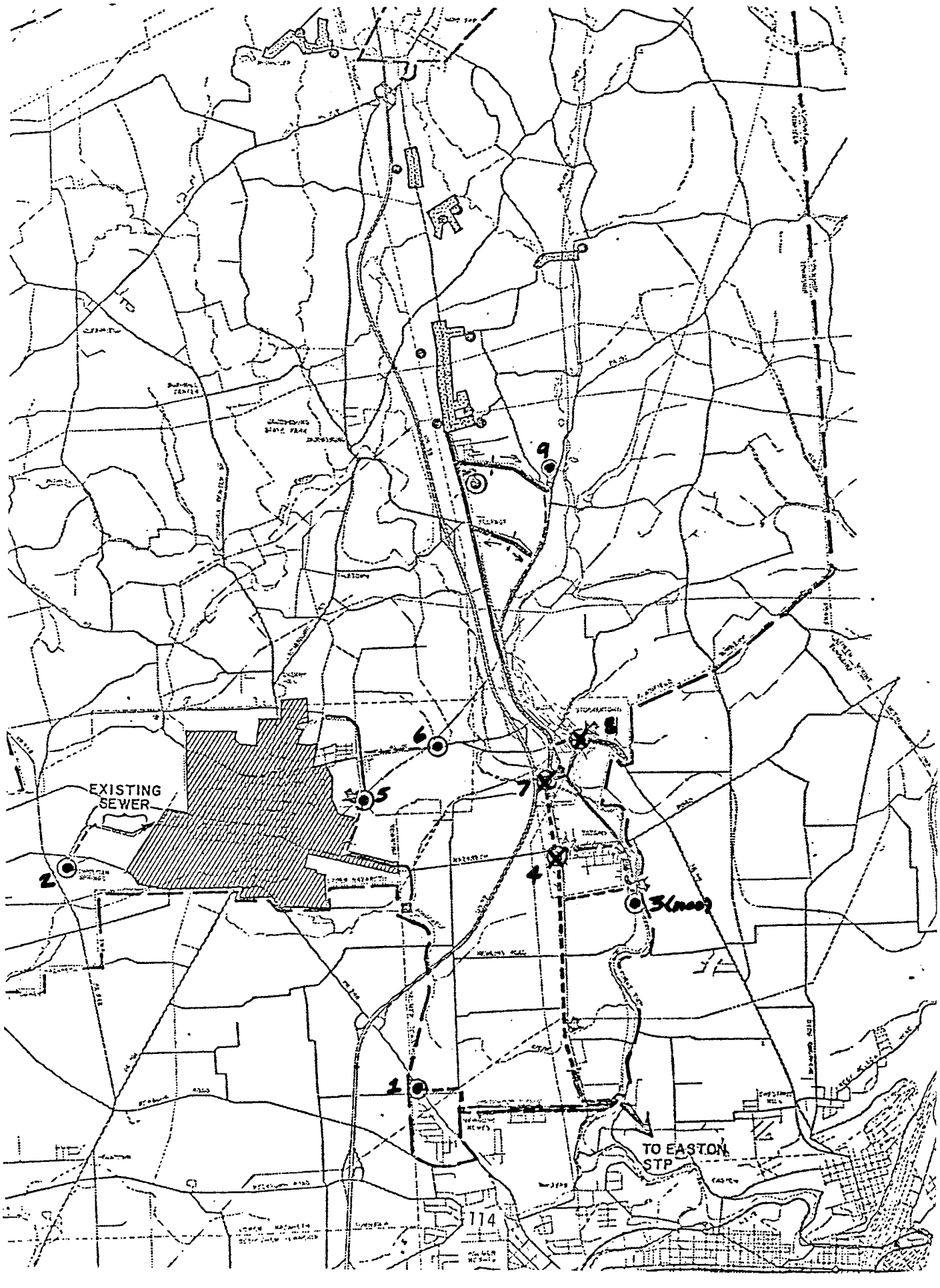


TABLE 5.1

2.4 ENERGY REQUIREMENTS OF CONVEYANCE SYSTEMS

ENERGY (KWH/YEAR)

Lift Station	Alt. 9	Alt. 9 (Mod.)
1	4,618	4,618
2	2,246	2,246
3	45,605	72,788
4	51,360	—
5	8,659	8,659
6	368	368
7	39,832	—
8	1,515	—
9	2,913	2,913
TOTAL USAGE:	157,116 KWH/Year	91,592 KWH/Year
Average Household Equiv:	8	4.5


EXISTING SEWER
TO EASTON STP
1
2
3(new)
4
5
6
7
8
9

PROJECT NO. 680
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WAPORA, Inc.
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PUMP STATION ANALYSIS

PUMP STATION # 1
Dia. = 4"

Pump Sta:

Q = 0.032 MGD Qp = 0.086 MGD
V = 0.55 fps V = 1.4 fps

H Static = 390 - 330 = 60'
H Friction = 2,400 @ 0.4 % = 10'
H Misc. = 10'

TDH = 80'
F = 1.3

Pump Sta: Capital Cost $40,700 x .0953 = 3,879

O & M 2,405

Force Main: 2,400 @ $14 /Ft. = $33,600 x .0953 = 3,202

O & M = $33,600 ÷ 50 yrs. = 672

TOTAL ANNUAL COST = $10,158

Yearly Energy Requirement = $\frac{189 \text{ X TDH(ft.) X FLOW(mgd) X 365 days/yr.}}{0.75\text{(pump eff.) X } 0.85\text{(motor eff.) X } 60}$

= 1804 X 80' (TDH) X 0.032 (FLOW) = 4,618 KWH/

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PUMP STATION ANALYSIS

PUMP STATION # 2

Dia. = 4"

Pump Sta:

Q = .015 MGD Qp = .037 MGD

V = 0.5 fps V = 0.7 fps

H Static = 500 - 430 = 70'

H Friction = 3,100 @ .09 % = 3'

H Misc. = 10'

TDH = 83'

F = 0.9

Pump Sta: Capital Cost $37,000 x .0953 = 3,526

O & M 2,220

Force Main: 3,100' @ $14 /Ft. = $43,400 x .0953 = $4,136

O & M = $43,400 ÷ 50 yrs. = 868

TOTAL ANNUAL COST = $10,750

Yearly Energy Requirement = $\frac{189 \text{ X TDH(ft.) X FLOW(mgd) X 365 days/yr.}}{0.75\text{(pump eff.) X } 0.85\text{(motor eff.) X } 60}$

= 1804 X 83' (TDH) X .015 (FLOW) = 2,246 KWH/

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PUMP STATION ANALYSIS

PUMP STATION # 3 (MOD.)
Dia. = 10"

Pump Sta:

Q = 0.308 MGD Qp = 0.77 MGD

V = 0.8 fps V = 2.1 fps

H Static = 395 - 310 = 85'

H Friction = 1,200 @ 0.3 % = 36'

H Misc. = 10'

TDH = 131'

F = 28

Pump Sta: Capital Cost $120,250 x .0953 = 11,460

O & M 8,325

Force Main: 12,000 @ $31 /Ft. = $372,000 x .0953 = 35,451

O & M = $372,000 ÷ 50 yrs. = 7,440

TOTAL ANNUAL COST = $62,676

Yearly Energy Requirement = $\frac{189 \text{ X TDH(ft.) X FLOW(mgd) X 365 days/yr.}}{0.75\text{(pump eff.) X } 0.85\text{(motor eff.) X } 60}$

= 1804 X 131 (TDH) X 0.308 (FLOW) = 72,788 KWH/y

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PUMP STATION ANALYSIS

PUMP STATION # 5
Dia. = 6"

Pump Sta:

Q = 0.10 MGD Qp = 0.25 MGD

V = 0.8 fps V = 2.0 fps

H Static = 430 - 395 = 35

H Friction = 700' @ 0.47 % = 3

H Misc. = 10'

TDH = 48

F = 3

Pump Sta: Capital Cost $51,800 x .0953 = 4,937

O & M 4,500

Force Main: 700' @ 20 /Ft. = $14,000 x .0953 = 1,334

O & M = $14,000 ÷ 50 yrs. = 280

TOTAL ANNUAL COST = $11,851

Yearly Energy Requirement = $\frac{189 \text{ X TDH(ft.) X FLOW(mgd) X 365 days/yr.}}{0.75\text{(pump eff.) X } 0.85\text{(motor eff.) X } 60}$

= 1804 X 48 (TDH) X 0.10 (FLOW) = 8,659 KWH/

PROJECT NO. 0011

CLIENT Bushkill EIS

SUBJECT

WAPORA, Inc.

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PREPARED BY JCV

DATE 29 April 1980

CHECKED BY

DATE

PUMP STATION ANALYSIS

PUMP STATION # 6

Dia. = 4"

Pump Sta:

Q = .004 MGD Qp = .011 MGD

V = .5 fps V = .5 fps

H Static = 470 - 430 = 40'

H Friction = 3000' @ .01 % = 1'

H Misc. = 10'

TDH = 51'

F = 0.15

Pump Sta: Capital Cost $27,750 x .0953 = 2,645

O & M 1,480

Force Main: 3000' @ $14 /Ft. = $42,000 x .0953 = 4,003

O & M = $42,000 ÷ 50 yrs. 840

TOTAL ANNUAL COST = $8,968

Yearly Energy Requirement = $\frac{189 \text{ X TDH(ft.) X FLOW(mgd) X 365 days/yr.}}{0.75\text{(pump eff.) X } 0.85\text{(motor eff.) X } 60}$

= 1804 X 51' (TDH) X .004 (FLOW) = 368 KWH/

PROJECT NO. 680
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DATE

PUMP STATION ANALYSIS

PUMP STATION # 9
Dia. = 4"

Pump Sta:

Q = 0.017 MGD Qp = 0.043 MGD

V = 0.3 fps V = 0.8 fps

H Static = 540 - 460 = 80'

H Friction = 3,800' @ 0.12 % = 5'

H Misc. = 10'

TDH = 95'

F = 1.1

Pump Sta: Capital Cost $40,700 x .0953 = 3,879

O & M 2,220

Force Main: 3,800' @ 14 /Ft. = $53,200 x .0953 = 5,070

O & M = $53,200 ÷ 50 yrs. = 1,064

TOTAL ANNUAL COST = $12,233

Yearly Energy Requirement = $\frac{189 \text{ X TDH(ft.) X FLOW(mgd) X 365 days/yr.}}{0.75\text{(pump eff.) X } 0.85\text{(motor eff.) X } 60}$

= 1804 X 95' (TDH) X .017 (FLOW) = 2,913 KWH/y

6.0 DESIGN FLOWS

(Average Flow in MGD)

Alternate	Flow @ Nazareth	Flow Compound To Easton	Total
1. Proposed Action	-	2.40[1]	2.40 mgd
2. Modified Action	-	1.234	1.234 mgd
3. Alt. 9 (MOD)	0.85	0.255	1.105 mgd

[1]Flow Value obtained from Eric Hediger by phone, 27 May 1980

Table V-1

EIS ALTERNATIVES
DESIGN POPULATION/AVERAGE DAILY FLOW (MGD)

Municipality	Modified EA Proposed Action	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternatives 5 & 9	Alternatives 6 & 10	Alternative 7	Alternative 8
Plainfield Township	2,288/0.185	1,938/0.128	1,986/0.127	2,288/0.185	1,938/0.141	1,938/0.141	2,288/0.185	2,288/0.185	2,288/0.185
Bushkill Township	860/0.041	165/0.010	165/0.010	508/0.026	165/0.010	165/0.010	508/0.024	508/0.024	508/0.024
Upper Nazareth Township	1,074/0.083	1,046/0.076	1,046/0.076	1,052/0.076	1,046/0.076	1,046/0.076	1,074/0.083	1,074/0.083	1,074/0.083
Nazareth Borough*	5,843/0.705	5,843/0.705	5,843/0.705	5,843/0.705	5,843/0.705	5,843/0.705	5,843/0.705	5,843/0.705	5,843/0.705
Palmer Township	634/0.046	90/0.006	90/0.006	435/0.031	435/0.031	90†/0.006	90/0.006	435/0.031	435/0.031
Tatamy Borough	1,360/0.107	1,360/0.102	1,360/0.102	1,360/0.102	1,360/0.102	1,360/0.102	1,360/0.102	1,360/0.102	1,360/0.102
Stockertown Borough	821/0.067	821/0.065	821/0.065	821/0.065	821/0.065	821/0.065	821/0.065	821/0.065	821/0.065
TOTAL	12,880[redacted]	11,263/1.092	11,311/1.091	12,307/1.190	11,608/1.130	11,263[redacted]	11,984/1.170	12,329/1.195	12,329/1.195

4293

*Includes entire existing sewered area for the Nazareth STP.

†For Alternative 9, Palmer Township: 435/0.031

Source: WAPORA Draft EIS

7.0 PROJECTED AVERAGE ENERGY CONSUMPTION BY RESIDENTIAL DEVELOPMENT, YEAR 2000
(in kilowatt-hours/year)

	SINGLE FAMILY UNIT DEVELOPMENT[1]		MULTI-FAMILY UNIT DEVELOPMENT[2] (apartments, etc.)		TOTAL DEVELOPMENT (single and multi-family units)	
	Projected Energy Consumption Without Project (kwh/yr)	Projected Energy Consumption With Project (kwh/yr)	Projected Energy Consumption Without Project (kwh/yr)	Projected Energy Consumption With Project (kwh/yr)	Projected Energy Consumption Without Project (kwh/yr)	Projected Energy Consumption With Project (kwh/yr)
Baseline	1,185,200,000		200,240,000		1,385,400,000	
APA		1,773,900,000		429,200,000		2,203,100,00
MAPA		1,342,500,000		268,740,000		1,611,200,00
ALT. 1		1,312,400,000		237,790,000		1,550,200,00
ALT. 2		1,309,400,000		237,790,000		1,547,200,00
ALT. 3		1,327,400,000		239,990,000		1,567,400,00
ALT. 4		1,282,100,000		206,100,000		1,488,200,00
ALT. 5		1,218,400,000		214,320,000		1,432,700,00
ALT. 6		1,330,200,000		241,900,000		1,572,100,00
ALT. 7		1,327,200,000		221,650,000		1,548,900,00
ALT. 8		1,327,200,000		221,650,000		1,548,900,00
ALT. 9		1,218,400,000		214,320,000		1,432,700,00
ALT. 10		1,330,200,000		241,900,000		1,572,100,00

[1] Energy consumption by single family units = 528 x 10^6 BTU/yr (154,600 kwh/yr)

[2] Energy consumption by multi-family units = 501 x 10^6 BTU/yr (146,690 kwh/yr)

Source: Manual for Evaluating Secondary Impacts of Wastewater Treatment Facilities, USEPA 1978.

ESTIMATED LOCAL USER CHARGES

Alternative	Capital Cost	Local Share (25%)	Annual Equiv. of Local Share (.0953)	Annual O & M	Total Annual Cost to Local Citizens	Monthl Cost Pe Famil
Alt. 9 (RBC)	$11,553,579	$2,888,395	$275,264	$358,678	$633,942	$14.47
Alt. 9 (OD)	$9,413,579	$2,353,395	$224,279	$248,678	$472,957	$10.80
Alt. 9 (MOD) (RBC)	$11,228,395	$2,807,099	$267,517	$345,677	$613,194	$14.00
Alt. 9 (MOD) (OD)	$9,088,395	$2,272,099	$216,531	$235,677	$452,208	$10.31
Modified Proposed Action	$11,143,977	$2,785,994	$265,505	$327,476	$592,981	$13.54
Proposed Action	$13,720,337	$3,430,084	$326,887	$582,658	$909,545	$27.5
					(w/Nacoth)	($16.28)

*Monthly Cost Per Family = $\frac{\text{Total Annual Cost}}{\text{Families x 12 mths/yr.}}$

	1990 Pop.	2000 Pop.	Families	Per/Family	
	10,951	11,263	3650	3.0	Alt. 9
	10,951	12,880	3650	3.0	MPA
	8268	25,000	2756	3.0	Prop A
	(14031)		4677	3.0	Prop A w Nat.

(REV.

ENGINEERING EVALUATION OF DRAFT EIS
(included by reference)

Projected Average Electric Power Consumption by Residental Development, Year 2000
(in kilowatt-hours/year)

	SINGLE FAMILY UNIT DEVELOPMENT[1]		MULTI-FAMILY UNIT DEVELOPMENT[2] (apartments, etc.)		TOTAL DEVELOPMENT (single and multi-family units)	
	Projected Energy Consumption Without Project (kwh/yr)	Projected Energy Consumption With Project (kwh/yr)	Projected Energy Consumption Without Project (kwh/yr)	Projected Energy Consumption With Project (kwh/yr)	Projected Energy Consumption Without Project (kwh/yr)	Projected Energy Consumption With Project (kwh/yr)
Baseline	165,570,000		23,069,000		188,639,000	
APA		247,810,000		49,448,000		297,258,000
MAPA		187,550,000		30,961,000		218,511,000
ALT. 1		183,340,000		27,396,000		210,736,000
ALT. 2		182,920,000		27,396,000		210,316,000
ALT. 3		185,440,000		27,649,000		213,089,000
ALT. 4		179,110,000		23,745,000		202,855,000
ALT. 5		170,210,000		24,692,000		194,902,000
ALT. 6		185,830,000		27,869,000		213,699,000
ALT. 7		185,410,000		25,536,000		210,946,000
ALT. 8		185,410,000		25,536,000		210,946,000
ALT. 9		170,210,000		24,692,000		194,902,000
ALT. 10		185,830,000		27,869,000		213,699,000

1 General electric power consumption by single family detached units (assumes units are electrically-heated) = 21,600 kwh/yr (Source: Pennsylvania Power and Light Company, 1980).

2 General electric power consumption by multi-family units (i.e., apartments) (assumes units are electrically-heated = 16,900 kwh/yr (Source: Hylton Enterprises, Inc., 1979 and Pennsylvania Power and Light Company, 1979).

Estimated Electrical Usage (kilowatt-hours/year) for New Residential Units in Lake Ridge (Sections 12-15) Woodbridge, Virginia

RATE (Source: Hylton Enterprises, Inc., 1979)

Single Family Detached	21,456 kwh/yr
Single Family Attached	19,872 kwh/yr
Apartment Units	16,800 kwh/yr

PROJECTED MAXIMUM RESIDENTIAL ELECTRICAL CONSUMPTION

TYPE HOUSING	NEW UNITS PROPOSED	CONSUMPTION RATE	TOTAL kwh/yr
Single Family Attached	1,663	1,656	33,047,136
Single Family Detached	983	1,788	21,091,248
Garden Apts./Townshouse Condominums	751	1,400	12,616,800
		TOTAL	66,755,184 kwh/yr

Average Daily Use = 2,225,172 kwh/yr

PROCESS ADVANTAGES AND DISADVANTAGES OF ROTATING BIOLOGICAL CONTACTORS AND OXIDATION DITCHES

Treatment Alternative	Advantages	Disadvantages
Oxidation Ditches	1. Stable process when proper sludge manage-mant is performed. 2. High quality effluent. 3. Predictable process.	1. Icing of aerator supports and nearby area must be con-sidered. 2. Major maintenance required crane to remove equipment. 3. Drive units require higher maintenance frequency. 4. Requires good operator skills and routine monitoring. 5. Sufficient oxygen supply should be pro-vided for nitrifica-tion and pH may need to be controlled. 6. Only one type of aera-tion device is applic-able.
Rotating Biological Media	1. Stable process. 2. Good quality effluent. 3. Simple operation. 4. Low maintenance, as a general rule.	1. Effluent quality is not as predictable as suspended growth process. 2. Heavy load on first cell may cause odors. 3. Multiple drives of larger plants afford propor-tionally higher mainte-nance requirements. 4. Shaft and drive failures have been experienced and require major mainte-nance. 5. Oil leaks from drive units are common. 6. Larger plants require more space than equal size suspended growth systems.

SOURCE: Design Seminar Handout, Small Wastewater Treatment Facilities. EPA, 1979

From Town and Country Sewage Treatment Agricultural Extension Service, University of Minnesota, Roger E. Machmeier.

Collector systems

Collector systems are used by two or more property owners jointly owning a soil treatment unit (figure 16). Individual septic tanks are used for each home to separate sewage solids. The effluent generally flows by gravity into the collector line to the main pumping station. Sometimes additional lift stations are required along the collector line. The sewage effluent is pumped to where the soil is suitable for the installation of a soil treatment unit, preferably a drainfield trench system having drop boxes.

When property owners join together in a project, competent legal advice is needed to develop an agreement on easements for the collector and pressure sewer lines, mutual ownership of portions of the sewage treatment system, operation and maintenance responsibilities for mutually owned portions, maintenance schedule for individual septic tanks, assessment of initial costs to each lot, other uses for the common soil treatment area, and similar questions.

Property owners must agree on organizational and operational details before the sewage treatment system can be designed. Success of the group system depends on mutual cooperation and understanding by all participants as well as proper design, installation, and maintenance.

The most trouble-free collector systems are where each residence has an adequately sized septic tank based on the values in table 1. Then the collector line carries only effluent, and the pipe grades are not as critical as when the sewer carries raw sewage. Also, because the solids have been retained in the septic tanks, sewage ejector or sewage grinder pumps are not required. High-quality submersible sump pumps, which are relatively inexpensive, are adequate for the lift stations and the main pumping station.

The collector sewage line must be watertight and strong enough to withstand any forces placed upon it. Protect the collector line against freezing. If soil conditions prohibit burying the line deep enough to avoid freezing, either insulate or provide heat.

The diameter of the collector line should be at least 4 inches, which is usually adequate unless more than 25 homes are involved. If more homes participate, the relative location of the homes and the pumping tank determines if a larger diameter collector line is needed.

The collector sewer line must be watertight so that infiltration or exfiltration (leakage) is not greater than 200 gallons per inch of pipe diameter per mile per day. To illustrate, a 4-inch collector 1/2 mile long should have no more leakage than 400 gallons per day (200 x 4 x 1/2).

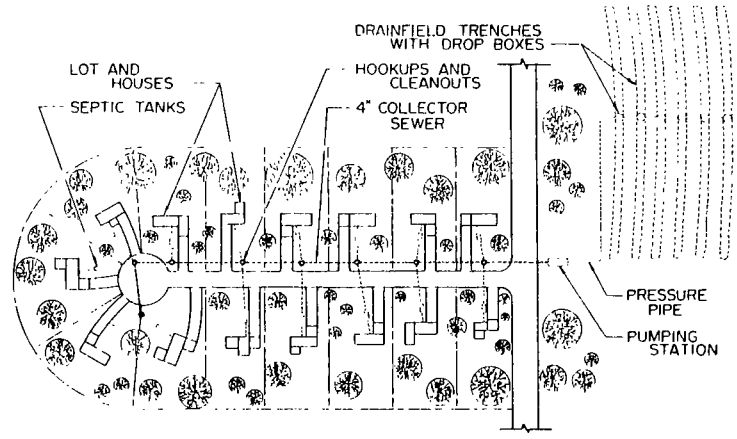
Install cleanouts on the collector sewer line. Cleanouts should extend flush with or above finished grade and must be located wherever an individual sewer connects to the collector line or every 100 feet, whichever is least. If manhole access is provided on the collector sewer, the manholes can be placed farther apart than 100 feet, depending upon the type of cleanout equipment.

Table 1. Recommended septic tank liquid capacities

Number of bedrooms	Minimum liquid capacity, gallons[a]
2	750
3	1,000
4	1,250
5 or 6	1,500
7, 8 or 9	2,000

[a]Liquid capacity is the tank volume below the outlet. An additional internal volume equal to 20 percent of the liquid capacity is needed for floating scum storage.

Figure 16. A collector sewer system with a common soil treatment unit

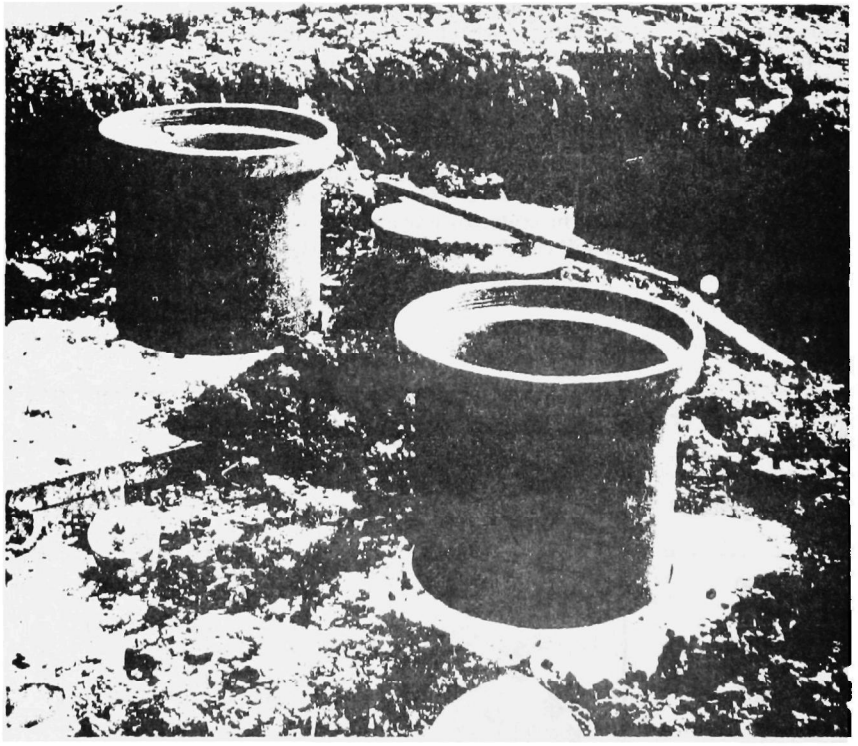


When raw sewage flows into a centrally located septic tank, the sewer must give mean velocities of not less than 2 feet per second at full flow. Cleanout or manhole access to the sewer is important. A local contractor or plumber can help select sewer line diameters and grades.

The septic tank effluent is collected into a main pumping station. The pumping tank must be watertight. Manhole access must be provided for cleaning and maintenance. The manhole cover must be flush with or above finished grade and secured to prevent unauthorized entry.

To estimate the amount of sewage flowing in a collector system, classify each home as type I, II, III, or IV (table 4). Estimate the sewage flow from each residence using table 4. Add a 3-bedroom type I home for each platted but undeveloped lot. Total the flows to determine the estimated daily sewage flow for the collector system.

Pumping tank capacity should include the pump-out quantity as well as reserve storage in case of power failure. A suggested minimum pump-out quantity is 10 percent of the daily sewage flow or 200 gallons, whichever is greater. A suggested reserve storage capacity is 25 percent of the daily sewage flow or 500 gallons, whichever is greater. The pumping



Manhole access is necessary for septic tank and pumping tank maintenance. The manhole cover should be secured to prevent unauthorized entry

tank capacity also must include the minimum submergence depth required for the pumps.

As an example, assume a collector system is to be designed for 20 homes; 5 are 3-bedroom type I (450 gallons per day per home, table 4); 10 are 3-bedroom type II (300 gpd); and 5 are 2-bedroom type III (180 gpd). The total estimated daily sewage flow is 5 x 450 + 10 x 300 + 5 x 180 = 6150 gallons.

For the 20 homes, the suggested minimum pump-out quantity would be 615 gallons (0.10 x 6150); the suggested reserve storage capacity would be 1040 gallons (0.25 x 6150). A 6-inch minimum submergence depth for the pump might be another 250 to 300 gallons, the actual amount depends on tank surface area. Thus, the suggested pumping tank size is approximately 2000 gallons. This volume could be obtained with a single tank or two or more tanks connected in series. Tanks in series must be connected by watertight pipe at both their tops and bottoms. One of the tanks must have a vent at least 2 inches in diameter to allow air to enter and leave the tank during filling and pumping.

For a group system, always install dual pumps that operate alternately. The pump control should have a warning device to advise of either pump failure. In addition, a liquid level warning device must be installed on a separate electrical circuit to warn of pump circuit failure.

In a collector system, use electrodes or mercury switches for pump controls. These allow for easy pump replacement and also simple adjustment of pump-out levels if the number of participants increases.

The pump will have to handle the maximum inflow rate of sewage to the pumping station. Sewage discharge data from residences suggest that the pump should be capable of pumping at least 25 percent of the total estimated daily sewage flow in a 1-hour period at a head adequate to overcome elevation and friction loss. The minimum pump capacity should be at least 1,200 gallons per hour. If the inflow becomes faster than a single pump can handle, the second pump will start.

Size the soil treatment unit based on the percolation rate of the soil and the estimated total daily sewage flow. For the example above with 20 homes and an estimated daily sewage flow of 6150 gallons, assume that a site is available with a percolation rate of 10 MPI.

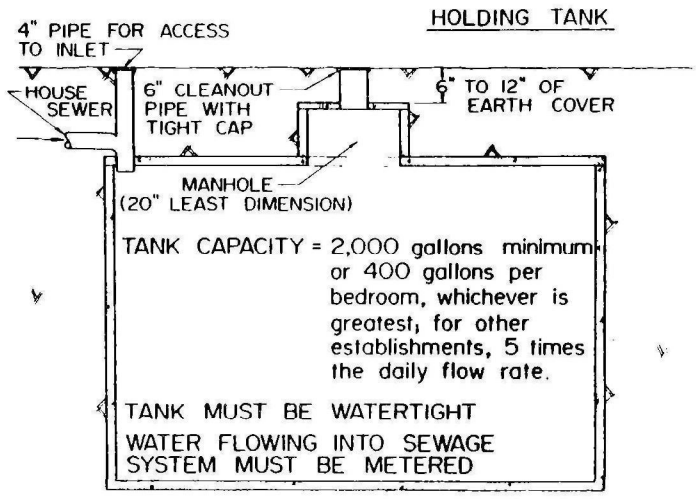
From table 4 on page 22, 1.27 square feet of soil treatment area is required for each gallon of waste per day. The total required trench bottom area is 7810 square feet (1.27 x 6150) if 6 inches of rock are used below the distribution pipe. If 12 inches of rock are used, the trench bottom area can be reduced by 20 percent to 6260 square feet (0.80 x 7810). This is 2083 lineal feet of 3-foot wide trenches, or 21 trenches each 100 feet long.

The trenches could extend 100 feet each way from a drop box. Thus, 11 drop boxes would be required and it would be advisable to install 22 trenches providing a small factor of safety. If the trenches were spaced 10 feet from center to center, a lawn area 110 feet wide by 200 feet long (1/2 acre) would be needed for the soil treatment unit.

Place the soil treatment unit as far as possible from any drinking water supplies. Sewage tank effluent can easily be pumped a mile if there are no natural barriers, such as rivers and swamps. If an adequate area is available, space the trenches 10 to 12 feet apart. Use 6 to 12 inches of soil cover to maximize evapotranspiration during the summer.

A collector sewer line for effluent serves these lakeshore cabins. Each cabin has its own septic tank.

Figure 17. Requirements for a holding tank



Each member of the group should own an undivided share of the soil treatment site. Since grass cover must be maintained over the trenches, the treatment site can be used as a playground or picnic area. However, do not allow heavy vehicles on the drainfield trenches, and prohibit foot traffic and snowmobiles on the trenches in the winter. Establish a good grass cover, and allow natural snow accumulation to protect against winter freezing.

Several collector systems have been installed in Minnesota, and more are under construction. It is a technically sound and economical alternative for sewage treatment. Collector systems for small groups of homes can usually solve sewage treatment problems on small lots without the large expense of municipal sanitary sewer.

Among group systems installed in Minnesota, the cost per lot has been about the same as for adequately sized individual systems. Costs of collector lines and the common soil treatment unit have ranged from $800 to $1,200 per lot, depending on treatment site accessibility, land cost, and the soil percolation rate (which determines soil treatment unit size).

LETTERS OF COMMENT ON THE DRAFT EIS

LAW OFFICES
CHARLES S. SMITH
SUITE 608
FIRST NATIONAL BANK BUILDING
4TH AND NORTHAMPTON STREETS
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CHARLES S. SMITH
CRAIG J. SMITH

AREA CODE 215
253-2715

March 21, 1980

Mr. Jack J. Schramm
Regional Administrator
Region 3
U.S. Environmental Protection Agency
Sixth and Walnut Streets
Philadelphia, Pennsylvania 19106

Re: B-LLJSA response to U.S. Protection Agency Environmental Impact Statement regarding B-LLJSA Project

Dear Mr. Schramm:

As counsel to B-LLJSA I enclose herewith the B-LLJSA comments pertaining to the above mentioned draft of the EIS.

You will note that the report consists of comments from the Authority and Appended technical commentaries from the Authority's engineers, Gilbert Associates, Inc.

The enclosed report speaks for itself. However, I should like to emphasis the Authority's deep concern about the erroneous data and conclusions found throughout the EIS. These pertain to many different facets of the EIS and effect conclusions on induced growth, environmental concerns, zoning and municipal flood plain zoning, and last but not least, costs. The Authority is also deeply concerned about the fact that although the basic configuration of the project as originally approved is reaffirmed, with the exception that Bushkill Township is to be studied further, and Upper Nazareth Township is to be studied with respect to a tie in with the proposed new Nazareth plant, the method of transportation of the sewage to the City of Easton has been recommended to consist primarily of high pressure lines and nine pumping stations, which contrast with the B-LLJSA's proposal of all gravity lines with the exceptions of two pumping stations. In view of the severe national concern for energy conservation, and in view of the fact that this will engender the necessity for very substantial redesign which will of course delay the project severely, we urge that the gravity system be reaffirmed. One final comment. The report recommends that Upper Nazareth Township which the report concedes has severe pollution problems, be connected to a proposed Nazareth Treatment Plant which is now privately owned. Our report sets forth the extreme problems to be encountered in such a proposal which will not only delay a solution to Upper Nazareth Township problems for many more years, but will also prevent Upper Nazareth Township and the Borough of Nazareth from considering any other alternative. By eliminating the North-South Schoeneck Inter-

ceptor and the East-West segment and substituting a high pressure line with a pump on Northwood Avenue and eliminating the gravity line on the Little Bushkill from Plainfield Township to Palmer Township and substituting a high pressure line with numerous pumps, will mean that if the Borough of Nazareth were to decide to acquire the present plant, demolish it and build a new one, this is the only alternative left no matter what the cost. We submit that by permitting the entire Schoeneck Interceptor to be built for Upper Nazareth Township this will provide an alternative in the event that the new plant proposal is never realized. Further, it provides a means of promptly elevating the present serious hazardous pollution problems in Upper Nazareth Township, which will otherwise of necessity be delayed 7 to 8 years before the new plant problem can be resolved.

Lastly, a P.L. 92-500 grant was awarded the City of Easton to expand its plant, interceptors and pumps to accommodate the B-LLJSA. To severely reduce the scope of the B-LLJSA project will engender extremely serious litigation problems by the Authority and the Easton Area Joint Sewer Authority with respect to reserve capacity, membership as a part of that Authority, and with respect to the amount of obligation owned to that Authority. I think it then becomes apparent that a consideration of a new plant in Nazareth while at the same time the Easton plant would be grossly oversized, and no chance of ever being utilized to its capability, is inconsistent with national concerns for energy conservation and prompt solutions to existing serious health problems.

Very truly yours,

Charles S. Smith
Solicitor for B-LLJSA

CSS/jaf

Enc.

cc: Mr. Wolfe
Mr. Alan Mead
c/o Gilbert Associates, Inc.
Each Authority member

BUSHKILL-LOWER LEHIGH JOINT SEWER AUTHORITY

NORTHAMPTON COUNTY, PENNA.

P. O. BOX 406, NAZARETH, PA. 18064

FORWARD

The commentary to the Draft EIS is designed to develop detail as progression is made through the document. In review it was found that scope of commentary by necessity is very broad. Condensed commentary can only be expressed in terms of serious errors in degree, omissions and resultant illogical recommendations. A short summary of salient points is made followed by more voluminous illustrated detail.

BUSHKILL-LOWER LEHIGH JOINT SEWER AUTHORITY
NORTHAMPTON COUNTY, PENNA.
P. O. BOX 406, NAZARETH, PA. 18064

OVERALL GENERAL SUMMARY

1. Serious errors with a high degree of magnitude (i.e. 100% to 400%) are present in the Draft EIS. These errors mislead the public in basic understanding of the B-LLJSA Proposed Action and in the alternatives addressed. The errors encompass floodplain, induced growth, stream environment and zoning as well as costs. The conclusions reached and actions recommended are accordingly effected.

2. Needs of the area were recognized 14 years ago and means of addressing those needs were initiated in 1966. The Draft EIS again confirms the needs with more advanced technology relative to surface malfunctions. For other than surface malfunctions (i.e. sub-surface) little or no determination was accomplished leaving serious questions open in suspect areas with needs determination neither confirmed nor denied.

3. The long standing needs and resultant health hazards are not being addressed and resolved in an expeditious manner.

4. Environmental conclusions are in part based upon grossly erroneous stream crossings (29) vs (17). 1973 initial planning vs "B" Submittal and detailed construction drawings apparently represents the fallacy in producing this vital statistic.

5. The environmental state of Schoeneck Creek is deplorable, representing classic indications of pollution. No resolution of this stream is recommended, in fact recommendations perpetuate the condition. The Bushkill Creek and Palmer Township unfortunately receive the unresolved results.

6. Induced growth evaluations attributed to the proposed action in the Draft EIS are not compatible with the existing experience of local municipalities, both sewered and unsewered. Serious discrepancies exist and are illustrated.

7. Floodplain evaluation in the Draft EIS ignores local ordinances, federal financing regulations and literal physical characteristics. This is even more pronounced in consideration of the Schoeneck Creek.

8. Citizens of Upper Nazareth are doomed to high premiums to resolve need problems due to erroneous and misleading cost comparisons.

9. Citizens of the Borough of Nazareth are not being informed of relative high costs of being restricted to a Nazareth Treatment Plant precluding a well based decision in resolving the existing serious problems.

10. When using established cost data from EPA Manuals, amongst other data, Nazareth and Upper Nazareth are being directed to pursue a course which represents a premium of 300 to 400%.

11. Wasted additional federal money is recommended in the Draft EIS to build a second plant at Nazareth where one at Easton is already designed, funded and built to accommodate the flow.

12. Federal Energy Directives are ignored in the Draft EIS through indiscriminate use of pumps, pump stations and force mains.

13. Many existing contracts, agreements, resolutions and ordinances involving vested interest, local voice in operation, local voice in control, obligations, responsibilities, highway occupancy, railroad crossings and extensive rights of way are being imperiled by the previously noted erroneous recommended actions and little or no consideration of the extensive delay.

14. The Easton Treatment Plant in the Draft EIS is treated as a mere plant expansion from 5 to 10 MGD with a change in processing to RBC. It completely ignores the reconstructed interceptors to 42" diameter. It completely ignores the construction of 2 inverted syphons on the Bushkill Creek. It completely ignores a second equally sized inverted syphon across the Lehigh River. It completely ignores doubling the size of two large pump stations. The plant is a mere 60% of the total Easton funded project.

15. The Draft EIS ignores the declined population of Easton and the agreement which provides less capacity for the city with some previously existing capacity and all new capacity allocated to the surrounding municipalities.

CHRONOLOGY

Needs of the study area are long standing, having been acted upon since the early 1960's. The twentieth anniversary will shortly be upon us while the hazards still persist. Solutions and studies have run the gauntlet from a multiplicity of local municipal and sub-municipal treatment sites to regional concepts and back again. City and suburban concepts have been studied. The regional concept has been, in the past and again in the Draft EIS, proven to be the most beneficial to the areas to be served.

Local, state, interstate and national agencies have made vacillation dictates known, gave strong dictates to planning and directed options as the scope was studied. These criteria have been documented with EPA and represent a history spanning over eight specific years.

Detailed needs of the study area were recognized with studies initiated in the early 1960's. A Forks Township report was completed April, 1963, recommending a treatment plant on the Bushkill Creek at Zuckvill. An addendum report dated April, 1965 reaffirmed a township treatment plant. A Palmer Township Feasibility Study was completed in 1965. It recommended towrship treatment plants on the Bushkill Creek and Lehigh River. A 1968 Forks Township report considered treatment in Easton.

The mid 1960's produced a Commonwealth of Pennsylvania requirement as noted in the Draft EIS known as the Pennsylvania Sewage Facilities Act. This act requires each municipality to file a sewer facility

plan. The resultant studies and plans produced municipal treatment sites on the horizon at Belfast, Stockertown, Tatamy, Nazareth, Palmer and Forks. An example of a treatment site realized in this period is the Wind Gap STP. The report is documented in the 1966 JPC Comprehensive Plan.

Naturally a concern arose by the late 1960's when viewing seven or eight local sites mainly effecting the Bushkill Creek. Environmental concern brought about the formation of the Bushkill-Lower Lehigh Joint Sewer Board in 1966 consisting of 14 municipalities of the area involved. This body meticulously selected an engineering firm (GAI) and a basic feasibility report was produced in 1970. The Pennsylvania Department of Health (fore-runner of DER) per Mr. John P. Durr's letter of 3-9-70 emphatically specified a regional approach to the solution along with the comprehensive plan of the Delaware River Basin Commission which as amended July 31, 1968 states "---The use of regional water pollution control facilities--- wil be required throughout the Delaware River Basin ----."

Forks and Palmer Townships initiated and built the initial segments toward the regional dictates. Both initial projects received significant federal grants through the Federal Water Pollution Control Administration (FWPCA) and The Department of Housing and Urban Development (HUD) for basic regional interceptor or trunk sewers.

Following all this basic endeavor the Bushkill- Lower Lehigh Joint Sewer Authority was formed the 12th of June, 1972. Initially it

was formed by four municipalities namely Plainfield and Palmer Townships along with the Boroughs of Tatamy and Stockertown. The Authority was expanded with the addition of Upper Nazareth and Bushkill Townships by 1974.

The Authority promptly initiated surveying and engineering of the interceptor and collector system; in later time to be designated Phase II. At this point in time Penn DER Parks Division issued a letter of intent to contract with the Authority to design and build an extension of the system into the State Park, following through on its approved master plan to protect the Bushkill Creek.

In 1974 the Commonwealth, in view of the even then long standing requirements, placed the BLLJSA in high priority and in the fundable area of the Pennsylvania sewer projects priority lists following similar priority with the Easton project. In addition, a DER construction permit was issued to the Authority with the proviso of treatment at Easton.

With all basic premises established a public meeting was held at Nazareth Area High School. It was also pertinent to establish and accomplish a multiple list of contracts and agreements to facilitate the premise. These agreements and contracts involved:

1. Treatment at Easton
2. Use of and transport through the regional, already built Forks-Palmer Bushkill Interceptor
3. Bank loans to accomplish the work, especially in view of the absence of Phase I & II (i.e. pipeline project)
4. State Park Contract
5. Sewer Extensions
6. Rights of Way

7. Permits - Blasting etc.
8. Highway Occupancy
9. Railroad Crossings

The agreement or contract with the City of Easton was one of prime importance. The City of Easton had a 5MGD sewer treatment plant and only needed 4MGD capacity. The city therefore would proceed to expand only if surrounding municipalities paid for all the costs. In fact, the agreement illustrates that 100,000 gallons per day were sold to the surrounding municipalities. The city retained 4MGD for their use. 6MGD is for use of surrounding communities. The city was not interested in transferring their grant to the surrounding municipalities for a second plant since the then existing plant required approximately $2,500,000 in significant repairs. Studies conducted by BLLJSA showed a 2nd plant to be a trade off with an expanded Easton Plant. The then Secretary of DER directed the Authority to participate in the expansion of the Easton Plant through his January, 1976 letter. The inter-municipal agreement then proceeded to completion in June of 1976. Eleven municipalities including the BLLJSA communities and the Authority signed the agreement.

The agreement takes into account two adequately sized inverted syphons crossing the Bushkill Creek in Easton. It provides for a 42" diameter interceptor from the inverted syphon to downtown Easton. It provides for expanding two large pumping stations in Easton. It provides for doubling the size of the line across the Lehigh River by installing a second equally sized crossing. It provides for increasing the sewage treatment capacity from 5 to 10 MGD.

An agreement with the Commonwealth of Pennsylvania relative to the Authority building and maintaining an interceptor sewer system in the park was completed in 1977 and signed by the Governor and eight additional officials. A special act was passed by the state legislature to accommodate rights of way in the park. Money was provided and park plans were reviewed with the Authority and its engineers. Interceptor sewer lines were carefully reviewed and in cases re-designed to assure minimum stream crossings and respecting the concerns of the Jacobsburg Historical Society.

A Forks - Palmer agreement was reached for use of the adequately sized Bushkill interceptor from Penn Pump Park to the 13th street stream crossing in Easton.

Bank loans and agreements were initiated by the Authority to pay for the required work necessary to make the "A" Submittal and to be in the position of having paid bills for fundable work when "A" approval was received. Provisions were made to fulfill the Easton Transport and Treatment Agreement. It additionally saved on the degree of interest money required. The loans were, and are, unsecured being based upon the written advice of DER and EPA that the project was fundable.

Some of the more significant requirements of the previously noted necessary work were represented by Rights of Way and the Environmental Assessment.

EPA and DER stated early in 1976 that a joint EIS by Easton and

BLLJSA be done. Easton and BLLJSA agreed and produced the document on file entitled Environmental Assessment for Bushkill-Lower Lehigh Joint Sewer Authority and the City of Easton, Northampton County, Pennsylvania. The assessment was depicted as one of the finest received in EPA Region III.

Extensive rights-of way work was accomplished through the requirement that necessary sites, easements and rights-of-way be obtained "not later than the time by which the Grantee requests approval to award construction contracts". Over 70% of approximately 200 rights-of-way have been accomplished. Highway occupancy and railroad crossing permits are on file.

The Joint Environmental Assessment was filed and in due time a Negative Declaration NDP - 179, January 3, 1977 which describes the projects as follows: "The total project consists of two individual construction grant projects. The first is a sewage collection system with interceptors to serve the member communities of the Bushkill- Lower Lehigh Joint Sewer Authority. The second is an expansion of the existing City of Easton sewage treatment plant (the designation involves a system of interceptors, pump stations, inverted syphons and sewage treatment plant) to 10 million gallons per day to serve the BLLJSA as well as the existing service area in and around the City of Easton.

The Joint Environmental Assessment Negative Declaration and Part "A" Grant Approval was handled jointly by EPA culminating in January, 1977 with the "A" Approval and Authority acceptance. Part "B" Approval was accordingly initiated by BLLJSA, processed through

DER and culminated in EPA with an unsent telegram to the Authority notifying it of approval. Legal action against EPA has, since September, 1977 held in abeyance further processing.

Other than legal and EIS delays the needs of the area were delayed through joint processing of the Environmental Assessment and again through waiting for a re-evaluation of treatment at the Easton plant in considering RBC. Total delays which were uncontrollable by the BLLJSA at this point exceeded four years.

II. Liability

The draft EIS Recommended Action (RA) proposes that Bushkill Township be studied further for future determination as to how best to serve certain areas of need. It proposes Upper Nazareth Township should not be connected to the B-LLJSA system at the present time, but its sanitary health problems should await a determination of whether the Nazareth Treatment Company plant and lines are acquired by the Borough of Nazareth and whether or not a new plant can be built to serve Upper Nazareth Township. However, the solution to this problem is a part of the RA. As to the balance of the B-LLJSA system, with minor exceptions, it is recommended to be constructed as B-LLJSA proposed, with sewage being transported to the Easton Area Joint Sewage Treatment Authority plant for treatment; however, the means of transporting sewage to this plant does differ radically from the B-LLJSA proposal. The B-LLJSA proposal to use all gravity lines except for two (2) pump stations, is discarded in the RA, and in its place basically all high pressure lines are proposed plus nine (9) pumping stations. In addition several areas of Plainfield Township, adjacent to the gravity lines are proposed in the RA for cluster systems rather than connection to the immediately adjacent approved gravity lines. Finally, also in Plainfield Township, one very deep line is proposed within the paved portion of Route #115 instead of the two (2) shallow parallel lines proposed by B-LLJSA, neither of which would be constructed within the pavement of Route #115.

The draft EIS RA recommends that the project be returned to Step II for redesign. Because of the nature of the RA changes in the B-LLJSA plan, extensive redesign will be required which will require at

least one (1) year of design alone.

But what are these delays, what are the reasons, what are the elements that will invoke such a threatening delay to the project?

1. Resolving the questions concerning the disposition of the privately owned Nazareth Sewage Treatment Company and how best to serve the citizens of Upper Nazareth Township and how best to solve their hazardous sanitary sewage problems will take years to accomplish.

The EIS makes it clear that the need for a central collection system for Upper Nazareth Township has been established. Likewise the need for a central collection system for the Townships of Plainfield and Palmer and the Boroughs of Tatamy and Stockertown have been established in the EIS.

However, the recommendation that a solution to the Nazareth Sewage Treatment Plant problem be a part of Phase I of the B-LLJSA project/to amounts gross misapplication of the basic purposes underlying NEPA and 92-500.

Upper Nazareth Township has present serious health hazards as a result of malfunctioning septic systems and the EIS recognizes this. There is a present, quick, cost effect means of solving those health problems, by looking into the B-LLJSA system. It is irresponsible to suggest that their present and future health needs are inextricably bound to a new Nazareth Treatment plant. The Borough of Nazareth has not agreed to buy the old plant or system, has not agreed to build a new plant, has not acquired any land for such a project, has not appropriated any funds to buy the old plant, has not designed a new plant, has not applied for a grant, and has not even held one public meeting on the entire project to

see how the people of the Borough of Nazareth and the people of Upper Nazareth Township feel about the idea. A written agreement would have to be developed between the Borough of Nazareth, Bushkill and Upper Nazareth Township as to who would pay the costs of such a venture. Experience with the expansion of the City of Easton Treatment shows that such an agreement would alone take several years to develop.

What happens to the health needs of Upper Nazareth Township citizens during this time? Is EPA going to accept responsibility for an epidemic that might break out? Is EPA going to be responsibile for the great difference in cost to the citizens of Upper Nazareth Township for hooking up to the B-LLJSA system compared to those of being a hostage to EPA and the Borough of Nazareth? If it is determined that the cost of a new Nazareth Treatment Plant is too great, what options have EPA left for Upper Nazareth and for the residents of the Borough of Nazareth for that matter.

If the old Nazareth Plant is phased out there would be no alternative except to build a new plant, which would then be in addition to the new Easton Area Joint Sewer Authority Treatment Plant and System already funded and constructed with a P.L. 92-500 grant and with reserved capacity for the BLL system. That new plant <u>would have to be built</u>, irrespective of the cost, because, there would be no Schoeneck Interceptor of B-LLJSA to tie in to, nor could a line be run east from Upper Nazareth Township to the B-LLJSA line along Route #115, because that line becomes a high pressure line at Tatamy, and could never accommodate such a quantity as required by the Borough of Nazareth and Upper Nazareth Township, or even just Upper Nazareth Township alone.

Therefore, EPA has imposed severe public health problems on Upper

Nazareth Township in proposing in the draft EIS that the Nazareth problem be solved as a part of the B-LLJSA system.

2. The draft EIS RA imposes tremendous costs due to loss of time and inflation, all upon the local share of the costs of the system. While it may be true the grant eligible portion of construction may be increased in accordance with bid costs, the local share, not grant eligible will go sky high. We have already seen a delay of three (3) years since B-LLJSA received bids. The draft EIS proposal that the project go back to Step II for redesign will impose another 3-4 years and may be more for the Nazareth matter to be resolved, redesign, and matters hereafter discussed. Can any project sustain such delays in todays or tomorrow's economic conditions of run away inflation and a drying up of market place funds. Is it stretching the imagination too far to propose it is possible, in the next year or so - that there may be no market for bond financing? Are the changes proposed by EPA so clearly necessary and so clearly correct as to warrant these contingencies?

Given all of these problems, what is EPA's liability for mandating such time consuming solutions under the circumstances, and are the solutions recommended in the EIS the only reasonable solutions. Put another way, bearing in mind the very substantial loss of time due to EPA's voluntary decision to do an EIS, and the fact it took EPA almost two (2) years to do a study they told the District Court it would take eight (8) months, and bearing in mind the serious questions raised concerning the validity of the data in the EIS and EIS conclusions, is the time consuming recommendations warranted under all the circumstances?

3. Another element of delay required by the EIS in recommending the project be returned to Step II is redesign of a large part of the project, which has been referred to above. In addition, new rights of way

must be negotiated for the cluster systems and also possibly outright acquisition of land for disposal in these areas. This is very costly from an engineering and legal standpoint and requires considerable time. Condemnation may be required. These same elements are involved in designing a new Nazareth Treatment Plant and acquiring land for the same. Resistance to condemnation from the owner and adjoining property owners can be expected.

4. The delays of B-LLJSA going back to Step II would have an effect with regard to B-LLJSA's written agreement with the Easton Area Joint Sewage Treatment Authority. It took several years to negotiate this agreement, and B-LLJSA after great difficulty and perseverance, was able to obtain capacity reservation and board representation. B-LLJSA had a commitment to pay its pro rata share of this plant expansion, and present delays have already resulted in claims by the Easton Area Joint Sewage Treatment Authority that the B-LLJSA delays have caused hundreds of thousands of dollars in increased interest charges for plant expansion financing. Further delays due to the EIS RA would swell these already significant demands.

Further delays will cause further complications with the Commonwealth of Pennsylvania, with whom B-LLJSA negotiated a written contract whereby in return for building lines within Jacobsburg State Park, the Commonwealth of Pennsylvania has agreed to share certain capital costs for the Little Bushkill Interceptor, interceptors within the City, and expansion of the Easton Treatment Plant.

The Bureau of State Parks cut back their immediate requirements in the Park as a result of the entanglements of B-LLJSA in the EIS, not

because their needs changed.

5. The delay in the B-LLJSA project has resulted in much additional cost related to EIS work and public participation. There was a period of almost one (1) year, after the February, 1978 announcement in court it would do an eight (8) month study, that EPA refused all contact with B-LLJSA and its respresentatives. There is substantial correspondence to substantiate this. During this same period private discussions were held with counsel for plaintiffs in the court action. Time after time B-LLJSA pleaded for private meetings with EPA in order to resolve the case, but EPA absolutely refused, even though it recognized that B-LLJSA could not meet in the presence of the plaintiffs under the circumstances.

It will be recalled that before the court action was filed by the plaintiffs, and after EPA had decided to issue, and in fact had prepared a telegraph to B-LLJSA awarding "B Approval", that at the request of plaintiffs' counsel, EPA agreed unilaterally with him to delay the issuance of this approval, to grant this counsels stated request for ten (10) days time to prepare his court papers for an injunction against EPA.

It is recalled that EPA's court counsel, advised the District Court in February, 1978, that EPA had decided to do an eight (8) month study, but Mr. Anderson, of EPA, in a court hearing on February 8, 1979 testified in fact EPA did not decide to do the same until September 25, 1978 some seven (7) months after the court was incorrectly advised. Further, Mr. Anderson in charge of the EIS for EPA, again stated under oath at that same hearing that the draft EIS would be completed the second

week in May, 1978 - some three (3) months hence. Instead it was issued two (2) years later.

III. Damage

B-LLJSA has suffered severe damages as a result of this delay. It will incur even greater damages if this project to relegated to Step II.

1. The credibility of B-LLJSA and its engineers, Gilbert/ Commonwealth has been damaged. EPA advised the district court that data in the Environmental Assessment was deliberately inaccurate. The EIS has shown this to be absolutely untrue.

2. The EIS used informal, estimating quality data on costs, and compared this with the actual bids received by B-LLJSA. In addition, statements as to the fact that Tatamy and Stockertown did not have flood plain ordinances were not true, they do have these ordinances. This misstatement on lack of flood zoning control was the basis for deleting the Little Bushkill Interceptor in favor of high pressure lines and nine (9) pump stations. Again this is a careless misstatement of fact on which an erroneous conclusion was enunciated in the EIS. This type of error on the part of EPA has wrongfully damaged the credibility of the B-LLJSA in the eyes of the public with whom it must work.

Further, B-LLJSA felt from the beginning, that an EIS was not required and pleaded to EPA that it be permitted to defend in open court against the allegation that it was needed. EPA swept aside this plea, and voluntarily decided unilaterally to prepare an EIS, subjecting B-LLJSA to three (3) years of delay so far. EPA RA proposes a further delay of an untold number of years by requiring the project go back to Step II.

B-LLJSA has sufferred financial loses already on account of EPA

imposed delays.

1. There are numerous grant eligible items for which application was made, and to which B-LLJSA is entitled, but EPA deferred payment pending the completion of the EIS.

2. B-LLJSA has been informed by letter from DER that the Commonwealth of Pennsylvania considered its written agreement with B-LLJSA null and void because the lines in the Park were not built within the specified time. Since the State had contracted to pay a percentage of the capital cost of certain interceptors and the expansion of the City of Easton Treatment Plant, B-LLJSA has lost these significant sums due to EPA's incorrect decision to do an EIS and its procrastination in developing the same, and further B-LLJSA has lost the State as a customer of its system.

3. B-LLJSA already has incurred financial loses to the Easton Area Sewage Treatment Authority and will incurr additional loses if the RA is made a part of the final draft. Also B-LLJSA may lose its voice as a member of that Authority.

4. B-LLJSA has already acquired about 90 right of ways for its system. If the RA is adopted, many of these will not be needed, and under Pennsylvania law it is uncertain whether the Authority can reconvey the same to the property owners, if not, it will have to pay for them, adding additional costs to the project. These are not grant eligible.

5. The financial consultants fee may be increased if further delay is encountered because it already did practically all the work required for a bond issue in 1977. It has indicated it will press for payment for work done if further delays are encountered.

6. Bond counsel has indicated its fee will substantially increase since in effect there will be two (2) projects, one for which it already did the work.

7. The same is true of all legal work and administrative work.

8. Redesign will add significantly to local share costs for engineering.

Finally, there is the prospect of bankruptcy which must be evaluated. The Authority does not have funds to keep up with interest payments on bank loans beyond this year. Both banks with whom the B-LLJSA has outstanding loans, First National Bank of Allentown and Nazareth National Bank and Trust Company, have stated legal action against B-LLJSA and all member municipalities will be taken when interest payments cease. Federal Banking regulations require this action on delinquent loans.

IV. Conclusions

1. The data contained in the EIS and its Appendices is invalid in many important areas, as set forth in detail under Commentaries on EIS Deficiencies.

2. The cost of a new Nazareth Treatment Plant was grossly understated by almost three million dollars.

3. The cost of repaving and rebuilding a part of Route #115 in Plainfield Township was never considered as a cost. It missed the fact that Tatamy and Stockertown both have flood plain ordinances to curtail significantly flood plain growth, P. 225 of EIS.

4. It was not aware of the fact that the area to the southeast of the Schoeneck Interceptor near the Little Bushkill Interceptor already is sewered by Palmer Township and hence new sewer lines will not have

significant growth impacts.

5. It failed to even relate the enormously high energy costs in the RA to the low energy costs of the B-LLJSA system.

6. The cost data on user charges and charges to pay off B-LLJSA debts under the RA are a mix up of figures, including municipalities not to be sewered.

7. The text statement that the annual user charge will be 107 is patently untrue even under the RA of the EIS, since a reference to the table on user charges at P. 237 shows it to be $200.00 a year for all communities to be sewered.

8. Growth inducement conclusions for BLL Modified Plan are not consistent with actual growth experience for Palmer and Forks Townships after sewers were constructed in 1978 and Bushkill Township without sewers is growing just as fast. In addition, its projection, in the northern part of Palmer under the BLL modified plan of 5714 new people, 1900 new homes is inconsistent with past experience in Palmer and inconsistent with the zoning of Planned Industrial Commercial in that area, the only zoned industrial area in the Township.

9. It is incomprehensible to eliminate the Schoeneck Creek Interceptor and destroy the only other option available to Upper Nazareth Township and the Borough of Nazareth, if the proposed new Nazareth Treatment Plant concept is rejected by the voters as too costly, while simultaneously EPA has funded a doubling of capacity in the Easton Area Sewage Treatment Plant for Nazareth, Upper Nazareth Township and the BLL.

10. EPA's announcement in U.S. District Court of an 8 month STAY

has so far taken slightly over 2 years and is still not completed. Since the basis concept, BLL's plan has been accepted in the EIS, except for Bushkill Township and Upper Nazareth Township, it is illogical to require additional extensive delays for redesign and reapproval to accommodate 9 energy inefficient pump stations, and a cluster system immediately adjacent to a gravity line in Plainfield Township, instead of approving an environmentally sound energy efficient and cost effective system of gravity lines.

11. In today's unsettled conditions, such a delay may result in the total abandonment of this project initialed 13 years ago, with a grant awarded based on an environmental assessment praised by EPA as the finest Region III ever received.

This would be a grievous commentary, since the pollution needs for the area and the basic solution concept is approved and confirmed by the EIS. The deathnell delay will be the result of needless window dressing changes which totally ignore and defiantly reject an environmentally sound,energy efficient and cost effective gravity system.

Comments From Other Interested Parties

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA FISH COMMISSION
Division of Fisheries
Fisheries Environmental Services Section
Robinson Lane
Bellefonte, PA 16823

814/359-2754

March 5, 1980

Ms. Rochelle Volin
U.S. Environmental Protection Agency
Region III
Sixth and Walnut Streets
Philadelphia, PA 19106

Re: Draft EIS, Bushkill-Lower Lehigh Joint Sewer Authority and Borough of Nazareth Wastewater Treatment Facilities, Northampton County, Pa.

Dear Ms. Volin:

The subject draft EIS has been reviewed by the Pennsylvania Fish Commission staff and attached are our comments on this document.

If it can be demonstrated that there is a need for the degree of sewage management recommended we concur with the Draft EIS Recommended Action. However, we do not believe the mitigative measures given for the biotic resources adequate to give these resources the protection they must have if the high quality fishery that now exists is not to be seriously damaged.

Sincerely,

Jack G. Miller, Chief
Fisheries Environmental Services Section

JGM:dms

cc: D. Graff
C. Billingsley
T. Hannold

Attachment

COMMENTS OF THE PENNSYLVANIA FISH COMMISSION ON THE "DRAFT ENVIRONMENTAL IMPACT STATEMENT, BUSHKILL-LOWER LEHIGH JOINT SEWER AUTHORITY AND BOROUGH OF NAZARETH WASTEWATER TREATMENT FACILITIES, NORTHAMPTON COUNTY, PENNSYLVANIA."

Report Prepared by: Jack G. Miller, Chief
Fisheries Environmental Services Section
Pennsylvania Fish Commission

Draft EIS Reviewed by and
Comments Received from: Jack G. Miller, Chief
Fisheries Environmental Services Section

Martin Marcinko, Fisheries Biologist
Fisheries Environmental Services Section

Craig Billingsley
Area Fisheries Manager, Area 5

In reviewing the Draft EIS there remains some doubt as to the necessity for the amount of construction proposed by either the Modified Applicant's Proposed Action or any of the alternatives given. We are concerned about any plan which transports sewage more than a minimum distance from its origin because of the negative groundwater recharge effect of such action. The placing of collector lines facilitates development and can result in a greater groundwater withdrawal while at the same time lessening recharge capabilities.

The EIS appears to adequately describe the effects which the different actions could have on the aquatic environment concerned, but does not adequately delineate methods to abate or minimize these deleterious impacts.

Discussion of Alternatives

1. No action - While this alternative would not solve existing problems, proper enforcement by the Sewage Enforcement Officer or other responsible agent would. The cost would be transferred from the Federal Government to those creating the problem. Perhaps the State or some local government entity should bear part of the cost for allowing the conditions to develop through improper regulation and/or enforcement.

2. Modified Applicant's Proposed Action - This plan is unacceptable for several reasons. There are too many stream crossings, water from too large an area would be transported too far downstream, the route for the interceptor lines could interrupt spring flows to the stream, and the lines follow the streams too closely.

Of the remaining alternatives, number 9 is most acceptable for the following reasons:

1. Releases much more of the water nearer the place where it is taken.

2. The lines do not follow the stream channels.

3. The crossings are reduced to six. If proper construction methods are enforced for the crossings, damage to the aquatic environment can be minimized and of relative short duration. Wherever crossings are made the disturbance of bank vegetation should be minimized and crossings located so larger trees which provide shade, etc., will not be disturbed.

Different methods of making stream crossings should be discussed in an attempt to find a method which will minimize both short and long-term adverse impacts upon the aquatic environment.

The feasibility of tunneling or jacking interceptor sewer pipe beneath the stream bed, as suggested in the recommendations, should be studied, but because of the presence of bed rock at or near stream bottom at some of the crossing locations would prevent the use of this method.

Mitigative measures which will help insure the continued high water quality of Bushkill Creek are very important. These should include siltation control, measures to keep the temperature of the water at desirable levels for salmonids, and control of land development to help minimize the chances for any form of pollution entering the stream.

The establishment of a permanent vegetated buffer zone along Bushkill Creek, especially in the Belfast-Stockerton-Tatamy corridor would help significantly to lessen degradation due to sewer induced growth. The needed size for such a buffer zone would require additional studies.

For the Nazareth plant, whether an upgraded STP or the proposed RBC, a method of dechlorinization should be installed which will insure a maximum of three parts per billion of chlorine in the effluent to prevent damage to the aquatic environment of Schoeneck Creek.

In summary, the Pennsylvania Fish Commission is opposed to the Modified Applicant's Proposed Action and basically supports the EIS recommended Action (Alternate 9, with slight modifications).

We wish to be kept informed of any action taken on this project.

INCORPORATED

FOR THE ADVANCEMENT OF BUSINESS, INDUSTRY, AND PROFESSIONS IN THE PALMER COMMUNITY

February 14, 1980

United States Environmental
Protection Agency
Region 3
6th & Walnut Streets
Philadelphia, Pa. 19106

Gentlemen: Attention: Ms. Rochelle Volin

The Palmer Township Business, Industrial, and Professional Association is a quasi-public organization incorporated under the laws of the Commonwealth of Pennsylvania. Our group has been in the forefront in promoting the growth of business and industry as means of providing employment opportunity for all of our area residents.

We take strong exception to the EPA Environmental Impact Statement produced for the Bushkill-Lower Lehigh Joint Sewer Authority project as it pertains to the area served by the Schoeneck Creek interceptor in Palmer. Contrary to the report as written, the area to be served by the Schoeneck Creek inceptor is not zoned residential but much is zoned commercial-industrial and has been so zoned for more than seven years.

There presently is a water system constructed and operational for the area which was funded by an EDA grant to Palmer. Without development, this quarter-million-dollar water system will stand unused as a monument to a combined federal and local effort to provide jobs on one hand and negating the process with the other. The Commonwealth of Pennsylvania through P.I.D.A. provided funding for in-the-ground utilities for this area and there presently are areas with dry-capped sewers that had been mandated in order to facilitate connections to the B-LL system.

That much of the residential area has already been developed and is in dire need of sewer service since most of it was developed based on the premise that the B-LL system would be built.

There are presently business establishments operating on holding tanks, sand mounds, and other modifications of on-lot systems due to the poor soil conditions in the area. Many of these problems would now be corrected had the noncontroversial portions of the B-LL project been permitted to proceed as originally designed.

61 SUTTON DRIVE / PALMER TOWNSHIP / EASTON, PENNSYLVANIA 18042 . (215) 258-7033 — 253-7191

We strongly object to the new concept that a gravity system for which the engineering has been completed and land acquired to construct be now scrapped in order to replace it with a forced main and pumping system. A pump system would be costly to install expensive to operate, and would use untold amounts of energy which America can ill-afford to waste on a system that could be better served by the gravity system already engineered.

We respectfully urge EPA to question the capability of the well-meaning people who have been charged with the responsibility of providing alternatives to the original B-LL plan.

In the true interest of solving environmental problems which should be the first priority of EPA, we urge the immediate approval of the B-LL plan for Palmer as developed by Gilbert Associates. It is imperative for the health and welfare of the area that time not be wasted on studies in an area where the need is already well-documented and has never been the topic of controversy.

Very truly yours,

R. Margaret Kennedy

R. Margaret Kennedy
President

SLM

DEPARTMENT OF THE TREASURY
WASHINGTON, D.C. 20220

January 30, 1980

Dear Ms. Volin:

Thank you for forwarding a copy of the draft environmental impact statement on Bushkill-Lower Lehigh Joint Sewer Authority and Borough of Nazareth Wastewater Treatment Facilities. This Department has no comment on the Statement.

Sincerely,

Anthony V. DiSilvestre
Assistant Director (Environmental Programs)
Office of Administrative Programs

Ms. Rochelle Volin (3IR61)
EPA, Region III
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

Fulmer Road
RD#3, Box 279B
Nazareth, Pa., 18064
March 20, 1980

Ms. Rochelle Volin
Environmental Impace Branch (31R61)
Environmental Protection Agency
Curtis Building
6th and Walnut Streets
Philadelphia, Pennsylvania, 19106

Dear Ms. Volin:

This letter is written to voice our opposition to the proposed cluster type sewer system to be located in Plainfield Township on property owned and farmed by Fulmer Bros.

Ten years ago we purchased three (3) acres of land in Plainfield Township located along Township Route 609. Two years later we built our house on these three acres. Our main purpose for buying three acres and building onnthis land was so that we could have a garden, plant fruit trees andalso that we would not be surrounded by other houses. We were both raised in a rural area and this is what we wish the surrounding areas adjacent to our property to remain. Just a week ago we were informed of the proposed Cluster Sewer System to be located within 1/4 mile of our house plus the fact that with the installation of this system approximately 12 new houses would be built nearby. We definitely oppose this action. We wish our area to remain rural.

We understand that this type system would take approximately 12 to 15 acres of our neighbors (Fulmer Bros.) prime farm land. At this point in time we feel that this type of action is unnecessary. The EPA is supposedly protecting this farm land from being developed unnecessarily and we feel with the installation of any type of large sewer system it only encourages development and growth of population. If this continues there will be no farm land or rural areas left and without the farm land who is going to supply us with our food plus raise crops for the animals which also supply us with a source of food.

What happens to the land when the system is installed? Is it just condemmed? Can some still be used for farming? Can trees be planted on it? What about any offensive odors emitted from the so-called holding tanks? How much? What is envolved in installation? Who is required to hook-up? Who must pay the tariff? There are so many questions that no one can seem to answer.

We feel there might be problems with individual on-site disposal of sewage, but why must a whole area be punished for a problem that could possibly have an alternate solution. Correction of these problem sites could be made by individuals themselves.

To sum up our feelings: We wish our area to remain rural. We don't want valuable farmland used for the dumping of sewage. Sewers bring development anddpopulation growth which in turn increases the services required by our local government and our TAXES go up and up.

We appreciate your time and possibly you could answer these questions for us.

Thank you.

Sincerely,

Mr & Mrs. Gerald H Roth

Mr. & Mrs. Gerald Roth

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION
WILLIAM PENN MEMORIAL MUSEUM AND ARCHIVES BUILDING
BOX 1026
HARRISBURG, PENNSYLVANIA 17120

March 20, 1980

Mr. Jack J. Schramn
Regional Administrator (III)
Environmental Protection Agency
Sixth and Walnut Streets
Philadelphia, Pennsylvania 19106

Dear Mr. Schramn:

The Office of Historic Preservation has reviewed the Draft EIS for the Bushkill-Lower Lehigh Joint Sewer Authority in Northampton, Pennsylvania. This document recognizes that the applicant's proposed action could adversely impact archeological resources eligible for the National Register of Historic Places. Our office will be available for consultation to develop mitigation proposals for the project.

Please notify us as to the present timetable for the project. Possible delays can be avoided, if our office is included at an early point.

Sincerely,

Brenda Barrett
Office of Historic Preservation

cc: Charlene Dwinn,
Advisory Council on Historic Preservation

BB:jek

RECEIVED
MAR 31 1980
WATER SUPPLY BRANCH
EPA REGION III

Commonwealth
of
Pennsylvania

GOVERNOR'S OFFICE
OFFICE OF THE BUDGET

Pennsylvania State Clearinghouse

P.O. BOX 1323 – HARRISBURG, PA. 17120 – (717) 787-8046
783-3133

RE: PSC-SAI# 58001008

APPLICANT: Bushkill-Lower Lehigh Joint Sewer Authority & Boro of Nazareth
PROJECT: Wastewater Treatment Facilities

LOCATION: Northampton County

Enclosed with this letter please find the comments of the following State Agencies relative to the project identified above:

DER

Please consider these the comments of the Pennsylvania State Clearinghouse at this time.

Thank you for your cooperation.

Sincerely,

Anne G. Ketchum
Supervisor

United States Environmental Protection Agency
Region III
6th and Walnut Streets
Philadelphia, PA 19106

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
P. O. Box 2063
Harrisburg, PA 17120

April 3, 1980

SUBJECT: Review and Evaluation of PSCH No.: 5-80-01-008
DEIS Bushkill-Lower Lehigh Joint Sewer Authority and Borough of Nazareth Wastewater Treatment Facilities
Northampton County

TO: Richard Heiss, Supervisor
Pennsylvania State Clearinghouse

FROM: CLIFFORD L. JONES
Secretary of Environmental Resources

The Department has reviewed the Draft Environmental Impact Statement for the Bushkill-Lower Lehigh Sewer Project and offers the following comments.

Gravity Conveyance vs. Pumping (Little Bushkill Creek)

As with most of the major issues surrounding this project, a positive decision on either alternative cannot be made based on the existing level of analysis. The Department recommends the following to assist in the decision-making process.

a. A breakout of the cost-effectiveness analysis for just the two methods of conveyance.

b. Revised and updated energy comparisons for only the two methods of conveyance.

c. A re-evaluation of the induced growth impacts recognizing that it is not that much more difficult to connect to a pressure system than it is to connect to a gravity system.

Should further analysis show similar initial costs and secondary growth impacts, the decision will then revolve around the energy issue favoring gravity conveyance. The Department is not overly concerned about the environmental impacts of the gravity interceptor construction on the Little Bushkill Creek since they are short-term and can be mitigated. The Department is concerned about the long-term secondary growth impacts on the water quality and natural trout reproduction capability of the creek. If the initial cost for these alternatives is similar, it must be more clearly shown that the difference in the secondary growth impacts of a gravity system is significant enough to offset the increased operation and maintenance costs of the EIS pumping alternative for the Department to endorse it.

Nazareth STP

The EIS proposes to replace this inadequate privately-owned plant with a new facility. Presently, the Department is negotiating a Consent Agreement regarding the purchase, renovation and operation of the existing Nazareth sewage treatment plant by the Borough. Controversy over the costs of renovating the existing plant vs. building a new plant vs. construction of sanitary sewers to convey sewage from this area to the Eastern plant must be resolved and be compared to determine the most cost-effective alternative. The present EIS does not provide convincing evidence that any one alternative should be selected over the other two.

Dual vs. Single line along Rt. 115

Bushkill-Lower Lehigh's proposal provided parallel gravity sewers along Rt. 115 because of the topographical difficulties in serving both sides of the highway with a single line. The recommended EIS action shows only a single gravity sewer line for this area. Although the Department realizes the detailed design of the EIS recommendation would occur in Step II, the Department does not feel that enough information comparing the cost and other differences between a single gravity and parallel lines was developed in the EIS study to support this recommendation. An extremely deep interceptor over a long distance presents very high cost risks. Expensive homeowner connections required by the single sewer alternative should also be considered.

To avoid further delays over this issue, the Department recommends resolution in Step II when more detailed site and design information is available.

General Cost Data

Credibility and acceptance of selected alternatives revolve around credible cost inputs and clear user charge data. Cost data complaints were made by representatives of the Bushkill-Lower Lehigh Joint Sewer Authority on many aspects of the three major preceding issues. The Department recommends the various cost inputs be closely scrutinized and revised if necessary.

The EIS consultant for the project should contact Mr. John Wroblewski at the Reading Office, Wernersville State Hospital, Building #10, Wernersville, PA 19565, Phone: (215) 670-0301, to review these comments.

Other Comments

Sewer lines following stream and crossings should be limited to those absolutely required.

Permits will be necessary for the utility facilities located in the 100 year floodplain.

The Nazareth Treatment Plant, which was constructed in 1929, operates on gravity. No electric motors are used in the plant. There is a possibility that the plant may qualify as a Civil Engineering Historical Site. Mr. Iran

M. Viest, Chairman of the Historical and Preservation Committee for the Lehigh Valley Section ASCE should be contacted at 215-694-2579 for information on the historical value of the existing Nazareth Sewage Treatment Plant.

The Department encourages municipalities along Schoeneck, Little Bushkill and Bushkill Creeks to establish streamside vegetation buffer zones. Streamside buffer zones will help reduce floodplain development, minimize water quality deterioration, protect fish and wildlife, and enhance water-based recreation opportunities along these streams.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333

March 3, 1980

Mr. Jack J. Schramm
Regional Administrator
U.S. Environmental Protection Agency
Region III
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

Dear Mr. Schramm:

We have reviewed the Draft Environmental Impact Statement (EIS) for the proposed construction of the Bushkill-Lower Lehigh Joint Sewer Authority and Borough of Nazareth Wastewater Treatment Facilities, Northampton County, Pennsylvania. We are responding on behalf of the Public Health Service and are offering the following comments for your use in the preparation of the final EIS.

We recognize that the "Applicant's Proposed Action" will have significant impacts upon the human environment and believe the "EIS Recommended Action" (modified Alternative 9) is very desirable from an environmental and economic standpoint.

With regard to the proposed construction of treatment facilities and sewers, we are particularly concerned with the induced population growth and construction of dwelling units within flood prone lands. It appears that certain communities and townships have no or ineffective regulations to control development in the 100 year flood plain. The potential development pressure by each alternative in flood prone areas should be described. As growth increases in the project area, the duration and area of flooding in the flood prone areas should also increase unless storm retention measures are incorporated into land development. What assurance does EPA have that satisfactory ordinances, regulations and technical measures will be developed and implemented to prevent induced growth and increased flooding in flood prone areas? Federal agencies are prohibited by Executive Order 11988 to support any activity that directly encourages adverse flood plain development.

We are also concerned that a satisfactory surveillance program be performed to monitor and prevent adverse nitrate levels in local public and private water supplies. In addition, periodic indicator bacteria testing of water supplies should be performed in those areas having high densities of onsite waste treatment systems and private wells. Improved building codes (minimum lot sizes and improved construction and location of wells, distribution lines, and onsite waste treatment systems) and permit and

inspection requirements should help prevent any cross contamination between water supplies and onsite waste treatment systems.

We appreciate the opportunity to review this draft EIS. Please send us one copy of the final document when it becomes available.

Sincerely yours,

Frank S. Lisella, Ph.D.
Chief, Environmental Affairs Group
Environmental Health Services Division
Bureau of State Services

3-17-80

U.S. Environmental Protection Agency.

Dear Sir

Concerning the sewage methods that are being used in our area at this time,

I don't see where there is a need, when there's plenty of room to put on site septems at this time.

We had a problem seven years ago due to the fact, bad septems had been installed by the building contractor, on our street, at least five homes.

There are some problems on our street at the present time which could be corrected as well as ours was.

We don't like putting money out for something we don't need, our on site septems are working fine.

We spend at least $900.00 and can't afford to spend more, we are on a fixed income.

We are strongly opposed to the sewage in our area.

I think it's ridiculous.

Sincerely

Mrs Wilmer Clewell
R.D. 3, Box 203
Nazareth, Pa.

Bushkill Township
Northampton County.

Opinion
DEP 250
SD" 3
Hogenbirk M
15064

March 21, 1986

Dear Mr Potter,

I'm writing this letter to show that I am very much opposed to the clustered sewage treatment being considered for Plainfield Twp.

We moved to a ten acre farm in Plainfield five years ago. Our goals were: (1. Pay for our farm. (2. Plant apple, peach, pear and plum orchards, set in blueberry bushes and hundreds of strawberry plants (all already planted) and in the future to turn our back five acre field into a "Pick your Own" strawberry business. (3. Lease off a pasture and raise enough beef for our own use and pay for farm upkeep. (Already done) (4. Establish a small dairy goat herd to provide our own dairy products and sell raw goats milk to people (babies thru adults) who cannot tolerate cow milk. (Already done)

We picked this particular farm for its rural appeal. We have a new septic system and have it

taken care of at our own expense.

We do not wish to have sewage pumped to our farm or anywhere near it and we do not favor an increase in our taxes to cover someones else sewage. (Many homes on Rt. 115 are still using cesspits. It's not fair that we have paid for a modern septic system at our farm and now have to take care of theirs one way or another!)

If indeed there is a problem in Plainfield Twp. I think they should put in the sewage line down Rt. 115 and send it to the already built Easton plant.

If you elect to keep our sewage in Plainfield we will be the ones smelling it.

We know that if this cluster septem is installed on or near our farm it will ruin any chances of our selling these things we are raising.

I urge you to eliminate the prospects of cluster sewage for Plainfield.

Yours truly,
Patty Spanow

Eileen D. Ridgeway
[illegible]
[illegible], Me 1[illegible]

March 22, 1980

To Richelle Colin, Regarding the proposed subdivision on Bayside north of Stockton Springs, route 175, in Prospect Township.

Now that waiting for someone, anyone, to react has proved that the subdivision is needed within a stretch of 175 exactly where we all have malfunctioning septics, how much left of?, and why isn't anyone here on the issue?

Within seven months ago we bought at Rt 4 Bayside, route 175 on Bayside. We lived there for twenty one years with the septic system properly maintained and we had absolutely no problems ever. We also own the property next to this, on the creek, for 20 years. The system was pumped every 5 years ago, when we properly maintained it with no trouble since. Over a period of time with the creek, the house had new septic and malfunctioning system, which was removed of 1974 & replaced with new system. No problems since. The neighbors to the creek, adjoining our property, had a malfunctioning system due to the roots and debris blocking the pipe. We completely replaced it. They also had a disposable new, properly constructed system in the summer of 1974. Again, no problems since. The Brackenridge across the street overflowing sewage — no problems. Our neighbors directly on Bayside. Also the Lewis, Bayside, a malfunctioning system which has been down for years. Another case of proper

[illegible] with absolutely no problem. There are other property owners to see with, ~~also~~ the Rohrer brothers, Jacob and Martin Rocker who just put in new septics. In fact, people all up and down north 115 to whom we have been talking can't understand who does have a problem and we can't find anyone who will give an opinion (since unknown to the res. questions) Why is this sewer line needed in Lafayette North of Stockton? Who, exactly, needs a malfunctioning septic? If there are any, are there really enough to justify the cost of a check-valve up sewer line? Either we can't know what situation is and the situation should be studied and the sewer should be undertaken without risk or a clear lack of need.

It is possible that when there is a problem the property owners are hesitating to correct the situation for fear that no sewer will that pay for their, they'll have to again pay to hook-up to the sewer line should it go through. Paying once is tough enough.

The solution in this case is not sewage, but surface water runoff which is causing erosion, flooding streets, and displacing asphalt on 115.

Eleanor C. Rettger

Mr. & Mrs. William Kunkle
R. D. 3, Box 8
Nazareth, PA 18064

HOWARD JOHNSON'S motor lodge
The Flavor of America ™

motor lodge
393 ROUTE 17
PARAMUS, NEW JERSEY 07652
(201) 265-4200

18 Mar 80

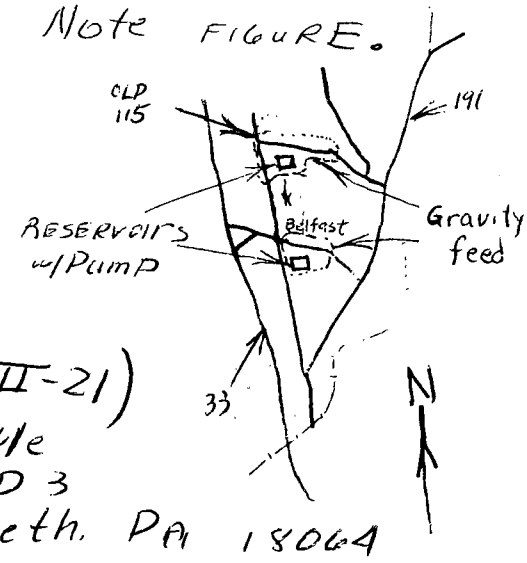
Rochelle Volin (3IR61)
EIS Project Monitor
U.S. E.P.A.
Curtis Bldg - 6th & Walnut Sts
Philadelphia, PA 19106

Dear Ms. Volin:

As a resident of Belfast, I have some questions about the sewer situation.

① Can a part gravity, part pressure system work and be cheaper?

Specifically, run gravity (shallow ones) sewers to a reservoir, where a pump can provide energy. Note FIGURE.



The eastern sections of the two (2) roads (Church Rd & Belfast Rd.) are not in need of sewers any way. (See your FIG. III-21)

William P. Kunkle
Box 8 RD 3
Nazareth, PA 18064

HOWARD JOHNSON'S motor lodges
TOLL-FREE RESERVATIONS 800-654-2000

P.S. How about loans-grants for windmills to make elec. to run the pumps. Innovate!!

GARY NEIL ASTEAK
ATTORNEYS AT LAW
ASSOCIATE
MILDRED A. MOLINO
726 WALNUT STREET
EASTON, PENNSYLVANIA 18042
215 252-0768
215 258-2901

February 21, 1980

Rochelle Volin
Environmental Protection Agency
6th & Walnut Streets
Curtiss Building
Philadelphia, Pennsylvania

RE: EIS - BLLJSA

Dear Ms. Volin:

Bushkill Township is pleased with the draft E.I.S. That is the virtually unanimous response of its citizens and government. The Township is pleased first and foremost that the difficult efforts it prompted to examine alternatives to regional sewage have been productive.

The E.I.S. shows that the regional interceptors would have ill served the future sewage need of the Township. At the same time, the interceptors would have carried untimely and unneeded development far into the rural township. By investigating the sewage needs with an eye towards straightforward, realistic, and environmentally sound sewage treatment, the Environment Impact Study has served all citizens in the surrounding area by directing federal and local dollars toward existing problems. For that the Township commends EPA.

Secondly, the Township is pleased that the EIS provides a foundation for sewage planning and design that has previously not been in place. Building first on a complete review of the existing community, public services, recreation, historical site, farm lands, stream and wild life, the E.I.S. placed present and future sewage needs solidly within the frame work of the community as a whole. It offers the Township the broad view and planning support necessary to meet its needs. In a few narrow areas the Township disagrees with conclusions drawn from this foundation. The Township will address each of these areas only briefly.

The Township is still concerned that the past assumptions of need focused in the Cherry Hill area not distort the true needs pictured in the Township. Only two of the twenty-one surface malfunctions investigated by EPA were in the Cherry Hill area, and no pattern or concentration emerged dispite exhaustive attempts through well

monitoring, on-site inspections, and other methods to confirm past suggestions of concentrated needs. The EIS solidly concludes that such is not the case.

Given the scattered needs of the Township, the precautionary language on the bottom of Page 104 and the inclusion of Cherry Hill in Table III-10 should not suggest that the lower portion of the Township needs more planning attention than any other part. To do so repeats the error of past regional planning.

In that connection, the Township repeats its requests for the location and addresses of confirmed malfunctions throughout the Township, which the Township requested most recently by letter of October 19. 1979.

Next, in a related area, the Township believes the E.I.S. section on soil suitability for waste water treatment overstates soil limitations by omitting proper explanations of the meaning of the broad geological data. Particularly Figure III-4 which appears to adopt the USDA-SCS "severe" soil limitation label throughout most of the Township. As the Township and its consultants have pointed out repeatedly including letters of March 9, 1979, March 12, 1979, June 6, 1979 and earlier workshops, the label cannotes strong or irreconcilible restrictions precluding on-site systems. That, they are not.

Those labels are based on soil types and are useful and helpful as a starting point for broad agronomic or even community planning; they should not be portrayed as a definite measure of suitability. They suggest only that indigenous soil conditions be further examined on site-by-site basis. The Township was of the understanding that EPA would either include other sewer treatment data in this section, or properly explain limitations of the labels. (March 12, 1979 letter to Eric Hediger). Interviews with County Conservation District Member Ross Kahler on June 11, 1979 and Carl Kislan confirmed that proper soil investigation and siting allow effective soil treatment throughout the Township. The suggestion of broad severe limitations on on-site systems portrayed in Figure III-4 is unjustified.

Regarding several other areas in the E.I.S. the Township offers the following brief comment. With regard to the cost figures, the E.I.S. does not clearly set out which Townships and which residents would bear the various projected user costs calculated in the E.I.S. for each alternative. Various local planning options and divisions should be presented with likely costs figures where available. The Township recognizes that precise costs figures cannot be expected at this first stage of planning. It does believe that comparison of estimates are meaningful and that additional clarity would be helpful.

With regard to the recommended proposed action, the Township believes that the tremendous savings and costs, induced growth and environmental damage make it a plan worthy of consideration, where the original proposed action was not. Moving the interceptors out of the streambeds was one of the original concerns of the Bushkill Township residents. Proper sizing and capacity limitations were also formerly ignored in Regional Planning.

The Township is still very concerned that local cost effective choices be preserved in the Nazareth and Upper Nazareth areas, the Township's neighbors to the South. As pointed out in the past, cost comparisons as set forth in the E.I.S. could continue to skew those comparisons toward regionalization because treatment costs have not been included in the original schemes. Particularly in the long term, any community tied into the regional system must consider the end-of-pipe costs associated with a decision to transport its wastes out of the area. The regional concept also means a loss of local autonomy. The E.I.S. has an obligation to point out and assess those and other costs important to the local decision making that must follow.

The Township believes that these remaining areas of concern are the types properly worked out in second stage sewage planning made possible by the E.I.S. Those remaining questions should not distract attention from the more general and fundamental questions by the E.I.S. The Township is anxious to move ahead with the planning, design, financing, and construction or appropriate facilities, consistent with the needs and desires of its citizens.

The E.I.S. presents the choices. The most urgent need seems to be in the Northern most part of the Township, the Rissmiller area. That area alone is recommended for immediate federal funding under Phase One. The E.I.S. recommends that homes in that area be served promptly with cluster systems or a community marsh pond.

Next, the E.I.S. points to the Cherry Hill area in the Southern part of the Township. The E.I.S. shows no concentrated problem and no need for Phase One or centralized sewers. It high lights the need for careful local planning and suggests a program to monitor, repair and up-grade existing system as necessary within the existing community.

The remainder of the Township is also included within the so called "small flow" district. For those areas, the E.I.S. points to the financial and environmental advantages of local waste management planning to provide service sporadic problems. The Township endorses these dispersed and innovative alternatives to its sewage needs and has already begun planning for them.

The E.I.S. leaves open the question of who can best implement these

now apparent choices. The E.I.S. recognizes that the sewer authority's engineers, management, and financing methods may not meet those needs promptly or effectively. The Township agrees. The Township firmly believes that the sewer authority's past planning, posture, and attitude show that it could not do so. In those circumstances, the Township has no alternative but to regain control of its sewage planning for the future. Accordingly, it has sent a Notice of Intent to Withdraw from the sewer authority.

In doing so, the Township commits itself to the sewage planning and recommendations in the E.I.S. and pledges to work with both E.P.A. and the sewer authority to implement those choices.

Once again, congratulations on a job well done.

Joseph DiGerlando, Chairman, Bushkill Township Board of Supervisors

SUPERVISORS

Jane Gilbert, Vice Chairman

William Morman

Anthony Kazmakites

Ralph Metz

R. Brent Alderfer, Special Counsel

Gary Neil Asteak, Solicitor

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
REGIONAL OFFICE
CURTIS BUILDING, SIXTH AND WALNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

REGION III

MAR 25 1980

IN REPLY REFER TO:

3CE

Mr. Jack J. Schramm
Regional Administrator
Environmental Protection Agency
Region III
Attn.: Ms. Rochelle Volin
6th & Walnut Streets
Philadelphia, Pennsylvania 19106

Dear Mr. Schramm:

This is to inform you that the Draft Environmental Impact Statement for the Bushkill-Lower Lehigh Joint Sewer Authority and Borough of Nazareth Wastewater Treatment Facilities has been reviewed and we have no comments to offer.

Thank you for the opportunity to review this statement.

Sincerely,

for Thomas C. Maloney
Regional Administrator

AREA OFFICES
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Insuring Offices
Charleston, West Virginia . Wilmington, Delaware

If you have something to say, please send your comments to:

Rochelle Volin (3IR61)
EIS Project Monitor
EIS Preparation Section
U.S. Environmental Protection Agency
Curtis Building
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

My comments are
if what they propose
say, upgrade the Magnetic
plant.
The line within hyde
park of it and it sure
doesn't make sense sending
the waste to Clinton.
At all this exaggerated cost
the cost keep up and man-fuel
increases. Good Mrs Allen Stahl

United States Department of Agriculture
Soil Conservation Service
P. O. Box 985
Federal Square Station
Harrisburg, Pennsylvania 17108

March 17, 1980

Mr. Jack J. Schramm
Regional Administrator
Attention: Ms. Rochelle Volin (Mail Code 3IR61)
U. S. Environmental Protection
Agency
Region 3
Sixth & Walnut Streets
Philadelphia, PA 19160

Dear Mr. Schramm:

The Soil Conservation Service has reviewed the December 1979 Draft Environmental Impact Statement for the Bushkill-Lower Lehigh Joint Sewer Authority and Borough of Nazareth Waste Water Treatment Facilities, Northampton County, Pennsylvania. The statement displays a good assessment of the items of concern to the SCS. We do feel that the prime farmlands were overestimated in the draft. According to the definition of prime farmlands in the Code of Federal Regulations, Title 7, Chapter VI, Section 657, 60 percent, rather than 75 percent, of the EIS Service Area is prime farmland. The land within this 15 percent difference does not qualify as prime farmland but does qualify as additional farmland of statewide importance. We appreciate the opportunity to comment on this project.

Sincerely,

Graham T. Munkittrick
State Conservationist

C. C. COLLINGS AND COMPANY INC
ESTABLISHED 1924
INVESTMENT BANKERS
THE FIDELITY BUILDING
PHILADELPHIA, PA. 19109
735-1000

March 17, 1980

United States Environmental Protection Agency
Region III
6th & Walnut Streets
Philadelphia, PA 19106

Attn: Ms. Rochelle B. Volin, Project Monitor

Gentlemen:

Our firm serves as Investment Bankers to the Bushkill-Lower Lehigh Joint Sewer Authority (the Authority) located in Northampton County, Pennsylvania. Our firm received a copy of the Draft Environmental Impact Statement (EIS) on the proposed construction by the Bushkill-Lower Lehigh Joint Sewer Authority and Borough of Nazareth Wastewater Management Facilities, Northampton County, Pa. In respect, thereto, we attended a public hearing on February 21, 1980 in the Nazareth Junior High School.

Our firm has attended meetings since such time with representatives of the Authority and Gilbert Associates, Reading, Pa., Consulting Engineers for the Authority. It is our understanding that the Authority has submitted to your office a request to make certain modifications to the EIS Recommended Action as set forth in Chapter IX of the Draft EIS.

Based upon information provided to us by the Authority and their Consulting Engineers and our analysis in respect thereto, we recommend your immediate approval of the segmentation as requested by the Authority for the following reasons:

1. The Authority's segmented proposal is financially feasible at present. The annual user rental charges would be less than $300 per year. This is low enough to make the sale of the Revenue Bonds that provide the private share of the construction money possible.

2. The Draft EIS of the Environmental Protection Agency (EPA) would not be financially feasible. This is because the additional costs engendered by changing to force mains and pumping stations from gravity flow, and a deeper collector in the road center

instead of along the sides, could drive the annual user rental charges over $400, thus raising serious questions as to the financial feasibility of the Project which could prevent the sale of Revenue Bonds which provide the private share of the construction money.

3. The changes requested would require a redesign of the Project which could delay the Project at least six months. We estimate that any prolonged delay will cause the costs to substantially rise because of inflation. Annual delays have increased construction costs approximately 12% compounded annually per year to date. This pattern is expected to accelerate in the future.

4. The Authority is presently obligated to local banks in the amount of $680,000. Further delays in the approval and construction of the Sewer System could result in serious financial consequences.

Very truly yours,

C. C. COLLINGS AND COMPANY, INC.

Edward J. Maher

Edward J. Maher
Executive Vice President & Treasurer

EJM/mab

United States Department of the Interior

OFFICE OF THE SECRETARY
15 State Street
Boston, Massachusetts 02109

March 11, 1980

ER-80/89

Mr. Jack J. Schramm
Regional Administrator
Environmental Protection Agency
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

Dear Mr. Schramm:

This responds to your letter of December 28, 1979, requesting our review and comments on the draft environmental statement for Bushkill-Lower Lehigh Joint Sewer Authority and Borough of Nazareth Wastewater Treatment Facilities, Northampton County, Pennsylvania. The Department of the Interior offers the following comments for your consideration.

Specific Comments

Page 52 - Under Surface Water Uses and Classification, the statement is made that "The water use classification. . .for Bushkill Creek and Little Bushkill Creek. . .has not yet been adopted." We believe this statement and the related material in Appendix E-2 should be revised to reflect adoption of standards referenced in the Pennsylvania Bulletin, 9(36):3051-3179 dated September 8, 1979.

Summary Comments

The discussion of potential project effects on known historic and archeological resources appears adequate, and there is some discussion of plans for "an historic sturctures survey" (page 247). However, we see no provisions for any further identification and evaluation of presently unknown archeological resources in the proposed project area that may be eligible for inclusion in the National Register. This identification would be especially important in siting decisions for any planned wastewater treatment facilities. We therefore urge that such a survey be planned as soon as possible, in consultation with the Pennsylvania State Historic Preservation Officer, so that EPA may fully

comply with historic preservation mandates under Executive Order 11593 and the National Historic Preservation Act, as amended. The results should be included in the final environmental statement or in any future environmental documents prepared for the proposed wastewater treatment project.

The State Historic Preservation Officer for Pennsylvania is Edward Weintraub, Executive Director, Pennsylvania Historical and Museum Commission, P.O. Box 1026, Harrisburg, Pennsylvania 17120 (telephone 717-787-2891).

Sincerely yours,

William Patterson
Regional Environmental Officer

JOINT PLANNING COMMISSION LEHIGH-NORTHAMPTON COUNTIES

ALLENTOWN-BETHLEHEM-EASTON AIRPORT, Government Building
LEHIGH VALLEY, PENNSYLVANIA 18103

March 6, 1980

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President, County Council

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215 264-4544

MICHAEL N. KAISER
Executive Director

Ms. Rochelle Volin
Environmental Impact Branch (3IR61)
U.S. Environmental Protection Agency
Curtis Building
6th and Walnut Streets
Philadelphia, PA 19106

Re: Draft Environmental Impact Statement - Bushkill-Lower Lehigh Sewer Project

Dear Ms. Volin:

The Joint Planning Commission reviewed the above-referenced draft report at its regular monthly meeting on February 28, 1980. The Commission's comments are outlined below.

1. Gravity Interceptor vs. Force Main

The EIS proposes a major modification to the project to provide service by a series of force mains and pumping stations along Tatamy Road rather than by the proposed gravity interceptor along the Bushkill Creek. The report presents four reasons for this change. These four reasons are listed below individually, followed by our comments on them.

a) Federal policies oppose direct Federal investment in flood-prone areas unless there are no possible alternatives - This is a sound policy as it applies to public investments which would prone to flood damages. However, the JPC believes that it is illogical to apply this policy to a gravity sewer interceptor which would not have significant flood damage potential.

b) The interceptor along the Creek would generate new development in flood plain areas - This would be a valid concern except that the problem is mitigated since all of the municipalities in the service area have or will have flood plain zoning provisions. Palmer, Forks, Lower Nazareth and Plainfield Townships, as well as the Boroughs of Stockertown and Tatamy, already have flood plain regulations meeting the standards of the National Flood Insurance Program. Bushkill and Upper Nazareth Townships already have planning

programs underway so they will have flood plain regulations in the fairly near future. Finally, the Borough of Nazareth is eligible for the National Flood Insurance Program so it will have to adopt flood plain regulations when its detailed flood study is prepared. Pennsylvania Act 166, adopted in 1978, requires all flood-prone municipalities to obtain and maintain eligibility for the flood insurance program so this Act will, in effect, require the municipalities to keep flood plain zoning in force. I understand that EPA has had some concern that there is no ironclad guarantee that such flood plain zoning provisions will remain in force. While this is true, we also believe that there is very little more certain in planning and zoning given the widespread support for flood plain zoning and the presence of Act 166.

c) The gravity interceptor would involve more construction in and across the Creek which would have harmful impacts on aquatic life - It is true that the stream crossings and construction near the Creek would have some adverse impacts on aquatic life. Through proper construction techniques, these impacts can be minimized and the stream should recover from the unavoidable damage over time. This negative short-term impact needs to be compared with the long-term negative impacts of the pumping stations including the high cost of maintenance and the energy use to operate the stations. On balance, the Commission believes that the gravity interceptor should be preferred.

(We would like to note here that we periodically receive grant applications for projects to construct a gravity interceptor in order to phase out an existing pumping station. Almost invariably, applicants support such applications by outlining problems with the pumping stations such as odors, frequent malfunctions, and the high cost of operation and maintenance including electricity costs.)

d) The gravity interceptor would tend to induce more growth in the service area - The Commission believes that sewers do tend to induce growth. If the area is recommended for

development, this growth inducement is a positive impact. If not, it is a negative impact. Our views on this are outlined in the following section entitled Growth Policies. It should also be noted that it is possible to connect to force mains and there could well be pressure to expand pumping stations. Therefore, even the force main proposal would have some growth impacts.

Based on the above reasoning, the JPC supports the concept of a gravity sewer interceptor along the Creek rather than the force main alternative.

2. Growth Policies

The JPC Regional Comprehensive Plan assumed that the B-LL sewer project would be constructed around 1980. Therefore, the Plan recommended a substantial amount of development in this corridor. The question which the EIS is asking is what the JPC's growth policies would have been for the service area if we had not assumed that the B-LL sewer system would be constructed. Answering this question fully would be time consuming since the assumption was a fundamental basis of the entire Plan. However, some of our preliminary indications are outlined below.

a) The JPC would still support urban development in the general corridor along the Bushkill Creek from the existing interceptor through Tatamy and Stockertown to the Village of Belfast in Plainfield Townsip. Therefore, the growth induced by the sewer in those areas would be desirable from the JPC Comprehensive Plan standpoint. This would involve more use of land including prime farmland in this corridor, but hopefully it will reduce the total amount of farmland converted to urban uses in the region by encouraging higher densities of development in appropriate areas.

b) We would agree with the idea of deleting the Bushkill Creek interceptor extension north from Stocerktown into and beyond Jacobsburg Park. If we had not assumed that sewer system would be built, these areas would not have been recommended for urban development.

c) We agree with the concept of examining alternate methods of sewage disposal in lightly developed areas with malfunctioning septic systems instead

of an extension of regional sewer systems into those areas. This comment would apply to portions of the service area such as Cherry Hill, and the portions of Plainfield Township north of Belfast. (See, for example, the relevant policies of the JPC Regional Comprehensive Plan and the 1978 Interim Update to the JPC Water Supply and Sewage Facilities Plan.)

d) Our policies concerning growth along the Schoeneck Creek corridor depend somewhat on what decisions are eventually made concerning the abandonment or replacement of the Nazareth Sewage Company treatment plant. If the Nazareth plant is to be phased out and the Schoeneck Creek interceptor constructed, then our policies would probably recommend development in that corridor. If the most cost-effective alternative turns out to be replacing the treatment plant at the current site, then we would probably not recommend development in that Schoeneck Creek corridor. In this case, we would still recommend continued urban development in and immediately adjacent to the Borough of Nazareth.

3. Other Issues

There are a number of other cost and technical issues which need to be resolved. These include the question of the dual or single lines along Route 115, the replacement or abandonment of the Nazareth plant, and serving the Newburg homes area by a pump station or a gravity sewer along the lower Schoeneck Creek. We believe that these issues ought to be resolved by a thorough consideration of the costs and engineering advantage and disadvantages. We don't believe that growth policies issues are major ones in these considerations.

Please contact the JPC offices if you have any questions concerning these comments.

Very truly yours,

Allen R. O'Dell

Allen R. O'Dell
Chief Planner

cc: Mr. Thomas Goldsmith
Attorney Charles Smith
Mr. Lewis Wolfe
Bushkill Twp. Supervisors
Plainfield Twp. Supervisors
Palmer Twp. Supervisors
Upper Nazareth Twp. Supervisors
Nazareth Sewer Authority
Nazareth Borough Council
Stockertown Borough Council
Mr. Joseph McHale
Mr. Douglas McGuil

R. D. 3, Getz Road
Township Municipal Building
Nazareth, Pennsylvania 18064
March 21, 1980

Ms. Rochelle B. Volin
Project Monitor
Environmental Protection Agency
Region III
Sixth and Walnut Streets
Philadelphia, Pennsylvania 19106

Dear Ms. Volin:

This letter supplements the oral statement given by our Township Solicitor, John Molnar, at the recent public hearing on February 21, 1980. The comments made in this letter are a compilation of the various positions and statements made at public meetings of the Board of Supervisors of Plainfield Township.

Our immediate concern lies with the finances of this project, and we can state this concern in simple terms. We are opposed to additional costs of inflation, restudy and reengineering of this project. We will not consent to the progression of this project, if the citizens of Plainfield Township will have to bear the responsibility of the past debts of the Bushkill-Lower Lehigh Joint Sewer Authority and also bear the responsibility of increased future costs of this project.

As our Solicitor stated in the oral statement presented at the Draft Environmental Impact Statement public hearing, we believe that the Environmental Protection Agency has acted irresponsibly in this project, and have been the cause of the delays and the problems that have been encountered. Therefore, Plainfield Township will be looking directly toward the Environmental Protection Agency to resolve this troubled project without any further costs to the citizens of Plainfield Township.

We are not prepared to discuss the merits of the Draft Environmental Impact Statement, until the Environmental Protection Agency explains how it plans to pay the past debts of the Bushkill-Lower Lehigh Joint Sewer Authority and pay the additional costs of inflation and redesign of this project.

In conclusion, we will not cooperate with the progress of this project, until the Environmental Protection Agency explains how and when the past debts and additional costs of this project will be paid.

Sincerely yours,

PLAINFIELD TOWNSHIP BOARD OF SUPERVISORS

William H. Danner

William H. Danner, Chairman

John A. Houck

John A. Houck, Secretary

Robert F. Tenges

Robert F. Tenges

cc. John Molnar, Esquire
Richard T. Rutt, P.E.
Mason Klinger

Ms. Rochelle Volin
Environmental Impact Branch(31R61)
U. S. Environmental Protection Agency
Curtis Building
6th & Walnut Streets
Philadelphia, Pennsylvania 19106

February 16, 1980

Dear Ms. Volin,

This letter is to let you know I am essentially in agreement with your conclusion of EIS Alternative #9 being the most suitable for funding. There are, however, some comments I would like to make which are relative:

1. I would like to re-iterate that the fate of Upper Nazareth Township East Lawn Area is tied inseparably to the Nazareth Boro because of economic,social and physical reasons such as schools, YMCA, community parks,garbage disposal, sports programs, and cooperation of police and fire departments; therefore, nothing should deter their collaboration in a sewage collection and treatment system.

2. I agree with building a new Nazareth Sewage Treatment Plant and with subsequent continued local treatment. The current dry winter we are experiencing locally points all the more to keeping treated water in the area to help the water table. In addition, the Easton Treatment Plant, according to recent radio reports are already experiencing sludge removal problems which might be indicative of future problems. It would be ironic to send waste to Easton to treat and have to return it to the outlying areas for disposal.

3. The need for a collector line as far east as shown on E. Lawn Rd. (Rt. 191 to Stockertown) may not be necessary and could eliminate a force main and pumping station. The railroad track has been razed between Friedensthal Rd. and Rt. 191 and the Hercules Cement Co. is buying the right-of-way obviously to expand their quarry. This would curtail the development shown on Fig. III-13, year 2000 as heavy residential south of East Lawn Rd. and east of Eley St.

4. Map III-23 which shows constraints on development and Map III-21 which shows on-site problems indicate unsuitable soil and a possible malfunction East Lawn Road (Rt. 191 towards Stockertown). This possibly might be corrected by up-grading the on lot systems. Most of these homes are 50 or more years old and may never have had proper on lot systems installed. There are also drainage problems in this area caused by improper grading and lack of storm sewers. Correction of the above problems may negate the need for a collector line for a large portion of E. Lawn Rd.

(cont.)

5. Recent newspaper articles indicate that the proposed Sears Mall at the intersection of Rts. 248 and 33 would rival the existing Lehigh Valley Mall in size. If this is true, these concerns should be made a part of the overall plan and help pay their share of the costs.

6. Since the EIS was not originally performed before allowing the grant to the BLL-JSA and relied on the Gilfert Associates Feasibility Study, I think the EPA should earnestly consider the possibility of helping defray the cost of liabilities of the various communities to the BLL-JSA to make up for this "oversite".

7. I believe there is a large amount of public distrust of the BLL-Jsa and therefore question its usefullness to solve all of the sewer problems in question. Specifically I believe a separate sewer authority should be formed to administer the needs of the Nazareth Boro-Upper Nazareth Township built-up area. This was previously recommended by independent studies made by consultants for these communities.

I am enclosing recent newspaper article copies which have a direct bearing on the draft EIS. Thank you for considering these items. I hope they will prove useful.

Sincerely,

Francis J. Schweitzer

Francis J. Schweitzer
24 S. Eley St.
Nazareth, Pa. 18064

(Upper Nazareth Township)

CC: Francis Wunderly
President Of Upper Nazareth
Citizens League

Upper Nazareth Township
Board of Supervisors
c/o Robert Recker

UPSTREAM

Producing
A Truly Pure Milk
from
Registered Holstein Cattle
Grade AA Milk

Upstream Farm Corporation, Inc.

R. Bernard Merwarth
Timothy B. Merwarth
Robert C. Starke

BUSHKILL DRIVE, R. D. 2, EASTON, PA. 18042

Feb 22, 1980

Miss Rochelle Volm.
U.S. Environmental Protection Agency
6th & Walnut St.
Philadelphia, Penna. 19106

Dear Miss Volm.

I wish to have this recorded as testimony the same as if presented at the open meeting held last evening at the Nazareth school.

I think, in light of the presented alternatives and discussion that it is more obvious that the B.L.L. plan represented a great deal of foresight and is an intelligent and comprehensive plan for the area.

Listening to the testimony at the meeting I think it quite out of order & improper for the E.P.A. to be critical of the B.L.L. plan while presenting a counter plan which I think was out of your scope.

Listening to the testimony I gather that your plan is a hodge podge of compromises. It is good to try to satisfy everyone but I don't think it can be done and I think

Cont.

UPSTREAM

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from
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Upstream Farm Corporation, Inc.

R. Bernard Merwarth
Timothy B. Merwarth
Robert C. Starke

2 BUSHKILL DRIVE, R. D. 2, EASTON, PA. 18042

the E.P.A. plan in trying to do so has substituted plans that just are not feasible and will result in a great deal of dissatisfaction and be obsolete in a few years.

The innovative techniques you talked about I assume are the spray irrigation of wastes and the marsh disposal plan. These don't show much knowledge of bacteriology and are an invitation to a recurrence of middle ages epidemics. The old outhouses common in the area are a far better disposal system than these two proposals.

I believe that your system of sewer lines although avoiding flood plains are an energy and operating cost system that cannot be considered.

To give much credence to avoiding the flood plains does not denote much knowledge of the flood plain area. I certainly cannot see any limitation to using the gravity flow terrain.

Yours truly,

Bernard Merwarth

February 22, 1980

Ms. Rochelle Volin
Environmental Impace Branch (31R61)
U.S. Environmental Protection Agency
Curtis Building
6th & Walnut Streets
Philadelphia, PA 19106

Dear Ms. Volin:

We attended the Hearing last evening in Nazareth Junior High with various neighbors from Plainfield Township.

We live on Kesslersville Road within smelling distance of that one option (open field spraying) which you said is no longer viable.

Our immediate area is violently opposed to such an option should it ever resurface again. We consider it a very indelicate manner to solve the excreta problems of mankind.

We enjoyed the portion we heard and realize that you have a tough job humoring the various engineering approaches.

Thank you and good luck.

Sincerely,

Robert C. Nagel

Robert C. Nagel
Box 371B, R. D. 3
Nazareth, PA 18064

cc: J. Rampulla

Plainfield Township Planning &
Zoning Commission
R. D. 3, Getz Road
Nazareth, Pennsylvania 18064
February 20, 1980

Ms. Rochelle B. Volin
Project Monitor
United States Environmental Protection Agency
Region III
Sixth and Walnut Streets
Philadelphia, Pennsylvania 19106

Dear Ms. Volin:

I have been authorized by the Plainfield Township Planning & Zoning Commission to correspond with you in regard to the draft Environmental Impact Statement as prepared for Bushkill-Lower Lehigh Joint Sewer Authority and Borough of Nazareth Waste Water Treatment Facilities.

On February 18, 1980, the Plainfield Township Planning & Zoning Commission passed a Resolution opposing any of the alternatives listed in the Impact Statement which permits spray irrigation in Plainfield Township. We are strongly opposed to usage of valuable farmland in Plainfield Township for spray irrigation. The Plainfield Township Farmers' Association and adjoining farm owners to the proposed spray irrigation site are extremely upset with the proposed alternatives.

We trust that no further consideration will be given to spray irrigation in Plainfield Township.

Sincerely yours,

Elwood Lieberman

Elwood Lieberman, Chairman
Plainfield Township Planning & Zoning Commission

cc. Plainfield Township Board of Supervisors
Ernest Ibarra, Secretary, Plainfield Township Plg. & Zng. Com.
John Molnar, Esquire
Richard T. Rutt, P.E.
Charles Smith, Esquire
Lewis H. Wolfe
Jack J. Schramm

Plainfield Farmers Fair Association

PRESIDENT
Richard D. Lieberman
R.D. 1, Box 159-B
Pen Argyl, Pa. 18072

SECRETARY
Fay Fulmer
R.D. 3, Box 281
Nazareth, Pa. 18064

VICE PRESIDENT
Donald Mack
R.D. 1
Pen Argyl, Pa. 18072

TREASURER
Nancy Hower
R.D. 3, Box 345
Nazareth, Pa. 18064

February 20, 1980

Ms. Rochelle B. Volin
Project Monitor
United States Environmental Protection Agency
Region III
Sixth and Walnut Streets
Philadelphia, Pennsylvania 19106

Dear Ms. Volin:

I am currently the President of the Plainfield Farmers Fair Association.

The Plainfield Farmers Fair Association has been holding an annual Fair at the Plainfield Farmers Grove on Route 191 for over thirty (30) years. In reviewing the Environmental Impact Statement, we find that there are a number of alternatives proposed by the Environmental Protection Agency recommending spray irrigation on lands adjoining the Plainfield Farmers Fair Association real estate.

The citizens of Plainfield Township and citizens of Northampton County have enjoyed and looked forward to the holding of this annual affair. There are approximately 20,000 to 30,000 people who attend this annual event. We are opposed to having a spray irrigation site adjoining our Farmers Fair Association real estate. We believe that a spray irrigation site in the close proximity of our real estate will have an adverse effect on the Fair.

We are also opposed to the taking of approximately 100 acres of valuable farmland for the purpose of spray irrigation.

We recommend that the Environmental Protection Agency dismiss any thoughts of using farmland in Plainfield Township for spray irrigation.

Sincerely yours,

Richard D. Lieberman, President
Plainfield Farmers Fair Association

cc. Plainfield Township Board of Supervisors
Ernest Ibarra, Secretary, Plainfield Township Plg. & Zng. Com.
Jack J. Schramm
Lewis H. Wolfe

FEDERAL EMERGENCY MANAGEMENT AGENCY
FEDERAL INSURANCE AND HAZARD MITIGATION

CURTIS BUILDING, SIXTH AND WALNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

March 10, 1980

REGION III

IN REPLY REFER TO:
51

Ms. Rochelle Worin
United States Environmental
Protection Agency
Region III
6th and Walnut Streets
Philadelphia, Pa. 19106

re: Draft Environmental Impact Statement for Upsmith - Lower Lehigh Joint Sewer Authority and Borough of Nazareth Wastewater Treatment Facilities, Northampton County, Pa.

Dear Ms. Worin:

We have reviewed the Draft Environmental Impact Statement for Upsmith - Lower Lehigh Joint Sewer Authority and Borough of Nazareth Wastewater Treatment Facilities, Northampton County, Pa. We are in agreement with your analysis and conclusions that both the applicant's proposed action and the Corrigan Applicant's proposed action are unacceptable in that they both would induce development in flood prone areas as well as having significant adverse effects upon floodplain environments. These effects would result from the construction of interceptor sewers along Bushkill and Shoeneck Creek and through their respective flood plain areas.

We also concur with your selection of the Alternative 5, with slight modification, as the the recommended action. The Alternative 5 purports to minimize the adverse effects upon floodplain environments and to minimize induced development in the floodplain by the construction of interceptor sewers along roads instead of streams and through the use in Palmer Township of force mains to convey wastewater to the Easton sewage treatment plant. Although not noted directly in the DEIS, induced development in the floodplain would be minimized through Plainfield Township's prohibition of floodplain development (the area of greatest potential for sewer-induced growth).

In an editorial vein, we would like to update certain statements on flood prone areas made on pages 225 and 226. Please note that Plainfield Township recently has adopted its zoning ordinance by adding a new flood plain zone. The prohibition of development now is applicable within the one hundred (100) year floodplain area defined by the Flood Insurance Study for Plainfield Township as prepared by the Federal Insurance Administration. In addition, both Bethlehem Borough and Tatamy Borough

have adopted floodplain management ordinances in compliance with Section 60.3(d) (formerly designated 1910.3(d)) of the regulations for the National Flood Insurance Program. These ordinances limit and condition, but do not prohibit totally, development within the one hundred (100) year flood plain as defined by their respective Flood Insurance Study. Copies of these ordinances and studies are available in the offices of our Insurance and Mitigation Division (Curtis Building, Room 700).

We appreciate the opportunity to review this Environmental Impact Statement. Please feel free to contact us if you have any questions.

Sincerely yours,

Walter P. Pierson

Walter P. Pierson
Acting Director
Insurance and Mitigation Division

LEHIGH UNIVERSITY
Bethlehem, Pennsylvania 18015

Telephone: (215) 861-3680
861-3681

Department of Biology
Williams Hall #31

February 28, 1980

Ms. Rochelle Volin (3IR61)
United States Environmental Protection Agency
Region III
6th and Walnut Streets
Philadelphia, PA 19106

Dear Ms. Volin:

Enclosed please find my comments on the Draft Environmental Impact Statement on the Bushkill-Lower Lehigh Joint Sewer Authority Project. I presented most of this statement at the February 21st hearing at the Nazareth Junior High School. Hopefully these comments will be helpful to you in the preparation of the Final Impact Statement. I hope that you will be able to conduct more bacterial tests in order to ascertain the cause of coliform bacteria pollution in the creek and nitrate contamination of the wells.

Thank you for your time and consideration.

Sincerely yours,

Patricia T. Bradt, Ph.D.

Patricia T. Bradt, Ph.D.
Adjunct Assistant Professor

PTB:ams

Comments on the Draft Environmental Impact Statement on
Bushkill Lower Lehigh Joint Sewer Authority

by

Patricia T. Bradt, Ph.D.
February 21, 1980

Good evening. My name is Dr. Patricia Bradt and I live in Palmer Township at 10 Ivy Court, Easton. I guess I can represent the inactive Bushkill Watershed Association, but I would rather represent myself, a concerned biologist. I have taught biology at both Lafayette and Lehigh and am currently doing research at Lehigh.

I have conducted several long term studies on the biology and water quality of the Bushkill Creek and am continuing these studies. I documented my work on the stream at the January 1979 public hearings. My purpose tonight is to address the draft environmental impact statement prepared by EPA and Wapora. I have spent hours pouring over the 597 pages and I feel that I have not yet grasped the entire subject.

In deciding the best method of solving the human waste disposal problems in the upper portions of the Bushkill drainage basin, it is imperative that the water quality in the Bushkill Creek and its tributaries be preserved or even better - improved over the present quality. Only by preserving or improving the existing water quality, will the future of the Bushkill Creek as a reproducing trout stream be insured. The DEIS considers water quality in the stream as a high priority and I am very pleased with that part of the statement. In addition both the placing of sewage effluent on the land and the prevention of water loss from the drainage basin are two ecologically sound recommended actions. Ideally the nutrients in sewage effluent should be returned to the land where they can fertilize land plants rather than put into the water where they only fertilize algae. Unfortunately there are problems with land disposal of effluents i.e., heavy metals build up and virus survival. If land disposal is selected the effluent must be free of heavy metals and pathogenic viruses. The cost of the land under consideration for land application may be prohibitive. The retaining of water in the drainage basin - by cluster systems and by land disposal - will insure adequate recharge of the ground water. A minimum of water should be exported from the drainage basin via centralized sewage to the Easton treatment plant.

I have many comments and questions which I will submit in formal form for the Final Environmental Impact Statement. I will briefly summarize my questions.

I. Will the land disposal, cluster systems and other sewage treatments quarantee that there will be no problems with nitrates in ground water and coliforms in the creek from these systems? The DEIS mentions mitigation - how do we know these mitigation methods will prevent further ground water and surface water contamination? What are the guarantees?

II. I am pleased that the areas of route 115 in Belfast, Stockertown and Tatamy have a high priority for sewers. The need is these areas is well documented.

III. Jacobsburg State Park has been removed from consideration for waste disposal. Originally Jacobsburg was to have many overnight camping facilities and would not open until sanitary sewers were completed. Obviously the state has revised its plans for Jacobsburg. Does the state plan not to have any sewage treatment for the park? What are the plans?

IV. One of the key issues is the issue of malfunctioning septic systems and deteriorating water quality. If this is a key issue, I think more work should have been done on the identification of the type of bacterial pollution in the stream. Are the bacteria from humans or domestic animals? In order to identify more precisely the source of the bacteria, more fecal coliform and fecal streptococcus samples should be taken - over many months - not just over a few days. No valid conclusions can be drawn from a few days of sampling! Bacterial sampling should be done during high water, low water and at high water temperatures Because of the infrequent sampling for fecal coliform and fecal streptococcus, I am not convinced that it is agricultural runoff and not septic tanks and sewage plant effluents that are contributing both bacteria and nutrients (nitrates and orthophosphate) to the stream. I question the data from which these conclusions are drawn. With all the money spent on this impact statement I think more attention should have been given to determining more definitely the source of bacterial and nutrients inputs to the stream and ground water. If it is agricultural runoff causing the problems, perhaps all this waste water treatment will not significantly improve and protect water quality in the stream and wells. There are studies which can be done to pinpoint sources of nitrogen and bacteria and I strongly urge that these studies be done.

V. Nitrates in both ground water and surface water are a cause for concern. I think we should take a long hard look at both the Wind Gap and Nazareth sewage treatment plants as a potential source of nitrate in both ground and surface water.

I am concerned about the nitrate content of ground water in the limestone areas and urge that this problem be addressed. Ninety-six percent of the wells sampled were in Bushkill Township - what about the limestone area wells? Some testing we did in 1976-77 indicated that the limestone springs may be a source of nitrates.

VI. I must question the statement that nutrients in the stream are decreasing. My two long term studies (16 months each) indicate at least a doubling of nitrate and orthophosphate from 1973 to 1977. These determinations were taken in the exact same place and cover about 60 chemical analyses.

There should be no more sewage effluents discharged to the stream and I am pleased that the DEIS agrees. Nutrient input into the stream must be curtailed. I hope that whichever alternative is chosen, the nutrients entering the stream will be drastically reduced. The future of the stream is at stake.

VII. The DEIS has given top priority to the preservation of agricultural lands. I heartily agree with this priority! The annual loss of farmland in the United States is enormous and with the increasing shortage of food, arable land is a valuable resource for both the United States and the world.

VIII. The Nazareth sewage plant obviously has problems and is contributing to the deterioration of both the Schoeneck and the mainstream Bushkill. We have been studying the Schoeneck and very recently recorded very high fecal coliform, ammonia, nitrite, nitrate and orthophosphate levels - the highest I have ever recorded in the drainage basin! The Schoeneck contribures up to 25% of the flow of the Bushkill and as such injects a large load of bacteria and nutrients to the Bushkill.

Even with a new treatment plant at Nazareth there will still be nutrient input into the stream. Perhaps nutrient removal should be considered if we really want to preserve the Bushkill and improve the Schoeneck.

IX. The biological survey has several problems. In the case of the plants, the Jacobsburg survey omits many plants found in the park - such as trout lily, Jack-in-the-pulpit, dwarf ginseng, butterfly weed and many ferns and mosses. I have had students do studies there and have also taken classes there on field trips

In the fish survey the fairly common Johnny Darter, Etheostoma nigrum, was omitted. The invertebrate survey is apparently complete.

The American toad's name is Bufo americanus, not Bufo terrestris as stated in the DEIS. Bufo terrestris is found only south of the Mason Dixon Line.

Other changes in the biota list are as follows:

Plant Species in Jacobsburg Park:

There are many species of mosses and liverworts in the Park, also many species of fern not mentioned. I enclose a list of flowering plants (Angiospermae) found in the Park during a student survey in 1975.

In conclusion, the preservation of the Bushkill Creek as a stream supporting reproducing trout must be insured. The pollution of both ground water and surface streams from bacteria and nutrients must be prevented. The stream is still recovering from the stress of the rechanneling in the late 1960's.

The solving of the waste problems in the northern part of the drainage basin must be compatible with the future health of the stream. The Bushkill Creek does not need any further stress, both point and nonpoint discharges must be reduced.

Trout habitat is rapidly disappearing from the northeast. Whatever alternative is selected, let us be assured that the valuable natural resource, trout habitat in the Bushkill Creek, is preserved for future generations. Thank you.

F & M ASSOCIATES, INC.

Consulting Civil Engineers

STRUCTURAL
SANITARY
INDUSTRIAL
MUNICIPALS

Frank W. Moyer, P. E.
John C. Parisi, P. E.
Donald J. Shurilla, P. E.

David B. Nuss, P. E.
Douglas H. Gordon, P. E.
Monroe W. Frey, R. A.
Peter P. Brungard, Jr., R. S
John S. Heiny, R. S.

1132 Hamilton Street
Allentown, Penna. 18101
Phone 215 432-4531

February 7, 1980

U. S. Environmental Protection Agency
Region III
6th & Walnut Street
Philadelphia, Pa. 19106

Atn: Rochelle B. Volin
3IR61

Re: Draft Environmental Impact Statement
Bushkill-Lower Lehigh
Joint Sewer Authority and Borough of Nazareth

Dear Ms. Volin:

I have received a draft of the EIS for the referenced project and offer the following comments in regards to the effects on the Borough of Nazareth.

I agree with the conclusion that EIS Alternative 9 with slight modification is the best alternative and feel the Borough of Nazareth will concur with that selection.

I also concur in the elimination of the Schoeneck Creek interceptor and the replacement of the Nazareth Treatment Plant. This is consistent with the conclusions reached in our previous reports the the Borough of Nazareth.

I also note the comment in the EIS that if the Nazareth Sewerage Company becomes publicly owned, the owners may apply to EPA for Step I and subsequent grants for planning, design and construction of wastewater facilities. There is even a clause that the owners may enter into an agreement with the Bushkill-Lower Lehigh Joint Sewer Authority to amend the existing application to include funds for necessary Step I planning effort. Since the purchase of the Nazareth Sewerage Company by the Borough of Nazareth is imminent, we anticipate this is the procedure they would follow.

In summary, I concur with the scope of the EIS and look forward to the utilization of the selected Alternative to provide the proper wastewater management.

Very truly yours,

John C. Parisi, P.E.

cc: Nazareth Borough Municipal Authority (5)
cc: Conrad C. Shimer, Esq.
cc: Alfred S. Pierce, Esq.
cc: Thomas Coughlin

Gentlemen,

March 22, 1956

This letter is sent as a formal protest against the proposed cluster sewer system designed and planned for Plainfield Township, Northampton County.

We feel that this type of sewage system will not benefit all the taxpayers of the township, but all will have to pay for the benefit of a few.

We realize that some residents along Rt 115 are in need of a cleaner system, however, those of us not using such system, should not be obligated to finance their solution to their situation.

Let those who need and want pay for it.

Since Plainfield township is a rural community we wish to keep it as such, and a cluster system will only bring in more homes to take away our farmland and open spaces, country into lagoons will only tend to pollute not only our wells through seepage but also our air.

We moved into the country and began our 12 acre homestead to escape the pollution and problems of towns and wish to remain that way, away from people in general.

Please help us.

Sincerely

Robert J. Schrack
& family

209A

PLAINFIELD TOWNSHIP TAXPAYERS ASSOCIATION
Box 164
Wind Gap, Pa. 18091

Ms. Rochelle Volin (3IR60)
U.S. Environmental Protection Agency
Curtis Building
6th & Walnut Streets
Philadelphia, Pennsylvania 19106

We wish to thank Ms. Rochelle Volin and her fellow workers in the E.P.A. for the in depth study which resulted in the draft envrionmental impact statement for the BLL project. Our thanks also to Eric Hediger and the planners, geologists demographers and associates from Wapora, Inc., who contributed so greatly to this study.

It was very gratifying to find that all of this work found the BLL proposal completely unacceptable for the variety of reasons outlined in the E.I.S.

The one area in which we think additional information would have been desirable, is in identifying the potential and confirmed malfunctions with names and addresses. I will point out the reasons for this a bit later.

We attended our last Supervisors meeting and pointed out to them that after wasting all this time, to say nothing of the thousands of dollars they have expended on the BLL project, all that has been achieved is an unacceptable BLL plan. In view of this fact we cannot condone any plan involving the BLL. If the recommended action were taken all of the people from our Township who would be forced to use it would not only be paying for a massive sewer system which we do not need, but they would also find themselves captive payees to amortize the enormous debt BLL has run up with bank loans.

In order to preclude this we have suggested to our Supervisors that they cut any additional losses and pull out of the BLL project entirely.

We have always recognized the fact that there are some problem areas in the Township, and urged our Supervisors to solve them by embracing a waste water management concept as

enunciated in the E.I.S. Incidentally we made this same recommendation to our Supervisors several years ago.

As part of this waste water management plan we think the problems in the southern end of the Township could also be addressed and solved, hence the earlier request for identification of malfunctions so that the new Board could begin with the known problem areas first.

Rochelle, I am now retired and if necessary you may reach me on my home phone 1-215-863-4422.

Thank you again for all your hard work, and an excellent job.

Sincerely yours,

JOSEPH T. DORNER

Plainfield Farmers Fair Association

PRESIDENT
Richard D. Lieberman
R.D. 1, Box 159-B
Pen Argyl, Pa. 18072

SECRETARY
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R.D. 3, Box 281
Nazareth, Pa. 18064

VICE PRESIDENT
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Nancy Hower
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February 20, 1980

Ms. Rochelle B. Volin
Project Monitor
United States Environmental Protection Agency
Region III
Sixth and Walnut Streets
Philadelphia, Pennsylvania 19106

Dear Ms. Volin:

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The Plainfield Farmers Fair Association has been holding an annual Fair at the Plainfield Farmers Grove on Route 191 for over thirty (30) years. In reviewing the Environmental Impact Statement, we find that there are a number of alternatives proposed by the Environmental Protection Agency recommending spray irrigation on lands adjoining the Plainfield Farmers Fair Association real estate.

The citizens of Plainfield Township and citizens of Northampton County have enjoyed and looked forward to the holding of this annual affair. There are approximately 20,000 to 30,000 people who attend this annual event. We are opposed to having a spray irrigation site adjoining our Farmers Fair Association real estate. We believe that a spray irrigation site in the close proximity of our real estate will have an adverse effect on the Fair.

We are also opposed to the taking of approximately 100 acres of valuable farmland for the purpose of spray irrigation.

We recommend that the Environmental Protection Agency dismiss any thoughts of using farmland in Plainfield Township for spray irrigation.

Sincerely yours,

Richard D. Lieberman

Richard D. Lieberman, President
Plainfield Farmers Fair Association

cc. Plainfield Township Board of Supervisors
Ernest Ibarra, Secretary, Plainfield Township Plg. & Zng. Com.
Jack J. Schramm
Lewis H. Wolfe

TRANSCRIPT (COPY) OF
PUBLIC HEARING ON DRAFT EIS,
21 February 1980

(Included by Reference)