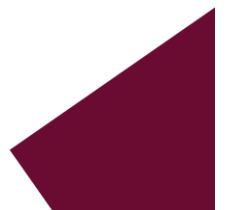


Appendix A:
Uniform
Environmental
Review



**ACT 537 OFFICIAL SEWAGE FACILITIES PLAN
EASTERN PIKE COUNTY
Pennsylvania**

ENVIRONMENTAL REPORT

1.0 PROJECT DESCRIPTION AND NEED

1.1 Purpose of and Need for Project

Enacted by Pennsylvania Legislature in 1966, The Pennsylvania Sewage Facilities Act (Act 537) requires every municipality within the Commonwealth to develop and maintain an up-to-date Sewage Facilities Plan. Westfall Township, Pike County, Pennsylvania, had previously adopted a Sewage Facilities Plan in 2000 and approved the PADEP in May 2001. Westfall Township Municipal Authority has authorized the preparation of this Environmental Report as a portion of the Act 537 Official Sewage Facilities Plan (Act 537 Plan) for Westfall Township, the Borough of Matamoras, and the Borough of Milford. This authorization was a voluntary decision primarily based on mandated requirements, but also due to growth patterns, increasing sewage disposal needs of the Township and to be consistent with other municipal planning objectives set forth by the municipalities. The Act 537 Plan examines options for extending public sanitary sewer to areas of the three municipalities currently served by OLDS. The Planning Area for this Act 537 Plan (Planning Area) consists of portions of Westfall Township and Matamoras Borough and Milford Borough in their entirety, a map of which is provided in Section 6.0 of this Report.

All of the properties in the planning area are served by private On-Lot Sewage Disposal Systems (OLDS). Some of these systems were installed prior to the enactment of Title 25 and are not permitted systems. A majority of the systems appear to be functioning properly; however, a few systems installed after permitting regulations appear to be malfunctioning. The ability for a system to function properly depends on the construction techniques used during the installation of the system and subsequently the preventative maintenance applied to the system throughout its life. As further described below, there are also three (3) additional sewerage system and wastewater treatment facilities that are located within the Planning Area.

This Report has been prepared in accordance with the *Guidelines for the Uniform Environmental Review Process in Pennsylvania* published by the Pennsylvania Department of Environmental Protection (PA DEP). Section 1.0 of the Report summarizes activities and analyses completed during preparation of the Eastern Pike County Regional Act 537 Plan Update. A summary of alternatives considered by the Act 537 Plan is included as Section 2.0 of this Report. Environmental consequences of the alternatives selected for implementation by the Act 537 Plan are included in Section 3.0 of this Report.

1.1.1 Existing Community Wastewater Facilities

There are currently three (3) community sewage systems and wastewater treatment facilities located within Westfall Township, both municipal and non-municipal. Maps containing the locations of these areas are provided in Section 6.0 of this Report. The majority of the Township utilizes on-lot disposal systems as further described in Section 1.1.4.

The sewerage systems and facilities consist of the following:

1. The Municipal Authority of Westfall Township (MATW)

- a. The Municipal Authority of Westfall Township's (MATW) sewage collection and conveyance systems conveys wastewater from approximately 1,343 EDUs within MATW's Wastewater Treatment Plant (WWTP), where the wastewater is treated and is discharged into the Delaware River. All wastewater from the Service Area in Westfall Township (see Map 1 in Exhibit B) discharge to the sanitary sewer system and to the Westfall Township the MATW's WWTP.

The plant discharges into the Delaware River via the outfall structure. The outfall structure is comprised of twin 12-inch pipes that convey the effluent flow into the midstream of the river. The outfall structure is constructed and permitted for an average daily flow of 374,000 gpd to the Delaware River.

- b. The MATW's WWTP discharges treated effluent to the Delaware River under National Pollutant Discharge Elimination System (NPDES) permit number PA0061611. The current NPDES permit is valid from September 1, 2019 through August 31, 2024. The DRBC docket renewal was submitted in June 2018, and the WWTP's current annual permitted discharge flow is 0.374 million gallons per day (mgd), with a design capacity for organic loading at 1,081 pounds per day. Table 1-1 presents the current NPDES discharge limits for the MATW's WWTP.
 - i. The original collection system was constructed in the 1990's and consists of approximately 5 miles of gravity sewer and force mains ranging in sizes from 4 inches through 8 inches in diameter. Map 1 in Exhibit C shows the location of the existing Township collection and conveyance mains, pump stations, and WWTP.
- c. MATW has six (6) pump stations and currently utilizes four (4) pump stations throughout the sanitary sewer system. Katz and Rosetown Pump stations have been offline since they were constructed in 2011 and 2007 respectively. The pump stations throughout the Westfall Township service area are visited regularly to monitor the operation and maintain the equipment in good condition.
 - i. **Westfall #1 Pump Station** is located on Westfall Town Drive and conveys flow directly to MATW WWTP. The original pump decommissioned in 2012 and replaced with a new pump station in April 2013. It has variable pump speeds from 360,000 to 1,209,000 gpd. There are 747.5 EDUS directly connected to it, and since all of the Authority's pump stations are tributaries to it, any new EDUs will increase the flow through the pump station.

- ii. **Westfall #2 Pump Station** is located along US Route 6/209. It has a design pumping rate of 302,400 gpd. There is no sewage metering, so average daily flow data is not available. There are no EDUs directly connected but there are 314 connected to the pump station.
 - iii. **River's Edge Pump Station** serves the River's Edge residential development. It has a capacity of 141,120 gpd. There are currently 208 EDUs connected to the pump station.
 - iv. **Rosetown Pump Station** was designed to serve the Katz Rosetown Estate property when it was built in 2007 with a design pumping rate of 1,083,888 gpd. However, it has not been operated yet due to a lack of development of the Katz property.
 - v. **Katz Pump Station** was designed to serve the Katz Commercial property when it was constructed in 2011 with a pumping rate of 230,400 to 432,000 gpd. Due to a lack of development in the area, the pump has been offline since it was built.
 - vi. **Westfall Senior Apartments Pump Station** serves the Westfall Senior Apartment Building Complex. It was built in 2017 and has a pumping rate of 60,480 gpd. It currently serves 11.5 EDUs.
- d. The MATW WWTP (PA0024457) is located at 155 Westfall Town Drive within the Township of Westfall. The plant utilizes an SBR Treatment process for wastewater treatment and an open channel ultraviolet light system for disinfection. The treated sewage is discharged into the Delaware River.
- i. The WWTP is rated at 0.374 MGD and is composed of an influent wet well and pumping station, a comminutor and bar screen, two (2) reactor tanks (each with a central clarifier and ringed by aerated zones and an aerobic sludge digester for biological treatment), control building connected to the chlorine contact tank, and sludge beds.
 - ii. **EPA's ECHO website was searched to determine any permit violations incurred by the Authority. While some violations have occurred in the past five years, they are being resolved and the facility is not in significant non-compliance.**

Table 1-1 NPDES Effluent Limits and Discharge Characteristics for MATW's WWTP

Parameter	NPDES Effluent Limits ⁽¹⁾	Average Discharge Characteristics ⁽²⁾
Flow, mgd	0.374	0.103
pH (standard units)	6.0 (minimum) 8.5 (maximum)	7.14 8.26
CBOD5, mg/L	10.0 ⁽¹⁾	2.85
TSS, mg/L	10.0 ⁽¹⁾	1.90 ⁽³⁾
TDS, mg/L (quarterly)	1,000	421.01
Fecal Coliform, CFU/100 ml (Geometric Mean)	50	4.62
Nitrite-Nitrate as N, mg/L	7.5	1.00
Total Nitrogen	10	2.65
Ammonia-Nitrogen	1.5	1.02
Total Phosphorus, mg/L	2.0 (monthly) ⁽¹⁾	0.819

Notes:

- ⁽¹⁾ NPDES Permit Discharge Limits, average monthly values.
- ⁽²⁾ Average discharge characteristics from the period January 2023 through December 2023
- ⁽³⁾ Due to sampling errors, the TSS samples from March and June 2023 were excluded.

2. Milford Senior Care and Rehabilitation

Milford Senior Care and Rehabilitation Center (NPDES Permit #PA0060020) has a non-municipal package treatment facility and is permitted to have 18,000 GPD of flow. There have been no reported issues or violations.

3. Delaware Valley School District

The Delaware Valley School District (NPDES Permit #PA0032166) has a non-municipal package treatment facility and is permitted to have 20,000 GPD of flow. There have been no reported issues or violations, but a **Component 3M Sewage Planning Module** has been submitted in 2024 to PADEP to allow for connection into the MATW Sewer System.

1.1.2 Existing Individual On-Lot Systems

Based on the well water and sewage survey performed for the preparation of this Plan, there are several types of on-lot sewage disposal systems in use within the Township, including septic tank

with conventional trench or bed system, elevated sand mound, cesspool, and seepage pit. In addition, there are gray water disposal systems in use in the planning area, including conventional bed systems, seepage pits, bore holes and pipe to surface or ditch.

1.1.3 Types of On-lot Disposal Systems in Use

Westfall Township, Matamoras Borough, and Milford Borough utilize on-lot disposal systems (OLDS) for treatment and disposal of domestic wastewater. The type of system implemented varies, but is classified as one of the following:

- **In-Ground** – Systems consisting of absorption areas, trenches and other disposal systems that rely solely on the surrounding soil for treatment.
- **Elevated Sand Mound** – Systems utilizing a bed of sand, elevated above the existing surface, to enhance the treatment provided by the underlying soil.
- **Holding Tanks** – Holding tanks and privies that require periodic pumping for removal of waste and residual solids.
- **Aerobic Treatment Tanks** – Systems that use either mechanical or diffused aeration to increase the level of effluent treatment by encouraging aerobic bacteria growth prior to treatment provided by the underlying soil of a drainage field.

Types of systems observed during the sanitary survey (as described in Section 1.1.5) included:

1. Standard in-ground systems (septic tank with below-grade seepage bed).
2. Elevated Sand Mounds (septic tank with above-grade seepage bed or trench)
3. Cesspools
4. Drywell
5. Holding tank
6. Seepage Pit

Current regulations regarding on-lot disposal systems began in 1966, and most systems that were installed before 1972 did not use best available technologies or methods that would be acceptable today.

Westfall Township has ordinances for the periodic maintenance of holding tanks and privies; however, the Township does not have ordinances for the periodic maintenance requirements for the on-lot sewage disposal systems. Matamoras and Milford Borough do not have holding tank ordinances, but it is recommended that a holding tank ordinance is adopted.

1.1.4 Public Health Needs

The DEP has designated “public health needs” as a general needs category relating to sewage disposal that must be considered. The definitions and requirements stated in this section are taken from the DEP’s SDNIG document. Public health needs are considered to be those health

hazards and water pollution problems that involve discharging untreated or inadequately treated sewage to the surface of the ground or waters of the Commonwealth, including groundwater. Most commonly, these needs are found to be malfunctioning OLDS and malfunctioning community on-lot disposal systems (COLDS). On-lot disposal system malfunctions are classified into three categories: confirmed, suspected, and potential. When determining the public health needs of an area using OLDS/COLDS, all systems inventoried, mapped, and analyzed must be placed into one of four categories:

1. Confirmed Malfunctions are malfunctions documented by dye testing, laboratory test results, observation by a Sewage Enforcement Officer (SEO) or a professional with experience in OLDS, "Best Technical Guidance" repair permits, and seasonally wet absorption areas. Also included are piped discharges from a single structure with direct evidence of sewage (i.e. direct observation of soap suds, food residue, solids, odors, etc.), reported system backups, malfunctions with photographic documentation, or other similar evidence.
2. Suspected Malfunctions are systems exhibiting some malfunction characteristics such as abnormally green grass in the vicinity of an absorption area, piped discharges from a dwelling without direct evidence of sewage (i.e. no observation of soap suds, food residue, solids, odors, etc.), absorption areas located in known unsuitable soils (observed wetlands, rock outcropping, etc.), cesspools in high-density development areas, and pit privies.
3. Potential Malfunctions are systems that appear to be operating satisfactorily but were constructed prior to system permitting requirements, systems located in areas extremely unlikely to receive permitting by current standards, systems constructed in areas having soils mapped as unsuitable or with severe limitations for OLDS and systems located on exceptionally steep slopes greater than 25 percent. Included as potential malfunctions are permits issued for OLDS repairs that meet Chapter 73 standards. While this needs category does not represent "stand alone" existing needs, the information may be utilized in a needs analysis to locate areas affected by poorly defined adverse circumstances. For example, clusters of legitimate repairs will often indicate areas requiring closer scrutiny.
4. No Malfunction are those systems that appear to be operating satisfactorily, were constructed since the implementation of system permitting requirements, and appear to have been constructed in accordance with the permitting requirements in effect at the time of construction. For the purpose of needs identification, OLDS permitting under Act 537 became effective on May 15, 1972.

Several other situations exist that must be inventoried, mapped, and analyzed when identifying public health needs for an Act 537 Official Plan or Plan Update Revision. These include wildcat sewers, borehole disposal, holding tanks, public complaints, and sanitation-related illnesses.

1. Wildcat Sewers are collection systems (community sewers) serving more than one

equivalent dwelling unit (EDU) and discharging untreated or partially treated sewage to the surface of the ground, storm sewers, or other waters of the Commonwealth.

2. Borehole Disposal is an individual or community system that discharges to a borehole, abandoned water well, dry well, ventilation shaft, or other subterranean structure.
3. Holding Tanks are watertight receptacles designed to retain sewage for disposal at another location. All holding tanks installed as repairs are counted as "needs." Specifically excluded are holding tanks installed to serve new land development or low flow commercial facilities. While not actually discharging sewage into the environment, properly maintained holding tanks, when used in OLDS repair situations, are included in the confirmed malfunction category.
4. Public Complaints are legitimate complaints received by the PA DEP or the municipality concerning improper sewage disposal. The number, nature, and location of public complaints concerning improper sewage disposal are important, yet often overlooked indicators of sewage disposal problem areas.
5. Sanitation Related Illness is any reported illness, either resulting from or suspected to be resulting from improper sewage disposal. Records and incidents in which polluted water supplies have been suspected or confirmed as the cause of disease is documentation establishing a community's wastewater treatment needs. Confirmed or suspected vector-borne disease that may be attributed to surface ponding of sewage should also be considered.

1.1.5 Sanitary Survey

In order to determine the extent of the conditions as stated above in the planning area that could endanger public health, a sanitary sewage survey was completed in the areas utilizing OLDS systems. There are approximately 1,882 residences within the area served by OLDS. A total of 450 surveys were collected from random property owners throughout the planning area. The survey inquired about the age, type and condition of the OLDS and water systems on the property. A summary of the surveys is included in Exhibit D.

Follow-up field verifications ("door-to-door surveys") were performed for a percentage of the properties based on guidelines set forth in the SDNIG document. According to the SDNIG document, a recommended minimum number of properties with OLDS within each Sewage Management Area (SMA) should be surveyed in order to conduct a "representative", or "valid" door-to-door sanitary sewage survey of the SMA. The minimum percentage of the properties that should be surveyed varies with the total number of properties in the SMA in accordance with the requirements published in the SDNIG (Table 1-2).

Table 1-2 Minimum OLDS Requirements for Door-To-Door Sanitary Survey – Tier 2

OLDS in the MATW	Minimum Percentage of OLDS to Survey
Up to 50	50%

51 to 100	35%
101 to 500	25%
501 to 1,000	20%
Greater than 1,000	15%

In accordance with the SDNID, a Tier 2 survey was conducted for the entire Planning area and more than the minimum percentages of the OLDS were surveyed for each Planning area. In total, approximately 21.8% of the OLDS (411 properties) in all of the planning area were surveyed. At each home where the sewage survey was completed, the field inspectors made general observations of the properties and performed closer investigations of sites that demonstrated evidence of sewage malfunctions including direct observation of sewage, soapsuds, food residues, solids, or odors. Other environmental conditions including abnormally green grass, piped discharges and swampy or wet areas in the vicinity of the on-lot systems were also noted.

During the survey, a total of 411 properties were surveyed. The number and percentage of the properties in the planning area that were determined to have confirmed, suspected, potential, and no suspected malfunctions are summarized in Table 1-3.

Table 1-3 Summary of Tier 2 Survey Malfunction Categories

Planning Area	OLDS in Planning Area	OLDS Surveyed	Malfunction (% of OLDS Surveyed)							
			Confirmed		Suspected		Potential		None	
			No.	Percent	No.	Percent	No.	Percent	No.	Percent
Milford Borough	551	116 (21%)	5	4%	64	55%	0	0%	47	41%
Westfall Township-Northeast	142	39 (27.5%)	3	8%	13	33%	0	0%	23	59%
Westfall Township-Southwest	201	55 (27.4%)	0	0%	20	36%	0	0%	35	64%
Matamoras Borough	988	201 (20.3)	8	4%	90	45%	0	0%	103	51%
Total	1,882	411 (21.8%)	16	4%	187	45%	0	0%	208	51%

1.1.6 Soil Suitability for On-Lot Sewage Disposal

The characteristics of the soils located in the Township were compiled using information presented in GIS mapping provided by Pike County and the United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS), and the NRCS's online Soil Data Mart and the Pennsylvania State University's Soil Map. These characteristics were used to determine the areas of the Township suitable for the use of OLDS. Factors taken into consideration for OLDS suitability include the following:

1. Depth to limiting zone (bedrock or water table).
2. Percent slope.
3. Hydric soils (soils with hydric components or inclusions of hydric components).

The criteria used to determine areas suitable for the use of either elevated sand mound OLDS or in-ground OLDS, are presented in Table 1-4. Using these criteria, in combination with the soil characteristics presented in the USDA's Soil Survey, a determination was made regarding the suitability of areas of the Township for the use of elevated sand mound OLDS, or in-ground OLDS. (See Table 1-4).

Table 1-4 Suitability Criteria for On-Lot Sewage Disposal Systems

System	Hydric Soils	Depth To Bedrock	Depth to Seasonal High Water Table	Slope
Unsuitable for Any System	Yes	< 16 Inches	< 10 Inches	> 25%
Suitable for Elevated Sand Mound	No	20 Inches or Greater	20 Inches or Greater	<12%
Suitable for Conventional In-Ground System	No	60 Inches or Greater	60 Inches or Greater	<25% for Standard Trenches <8% for Seepage Beds

Note: In addition to limitations relating to soils, subsurface conditions, and slopes, absorption areas shall not be located within 100-year floodways.

1.1.7 Well Water Survey

The Matamoras Municipal Authority supplies water to all of the Borough of Matamoras and an adjacent portion of Westfall Township (Westfall Township Northeast). The Milford Municipal Authority supplies water to all of the Borough of Milford and parts of Westfall Township in the planning area. In the Study Area of Westfall Township Southwest, there are a number of wells in the Study Area.

According to the guidelines for well water surveys published in the SDNIG document, well water

surveys may be completed in two tiers (or steps). In tier one, a minimum of 15 percent of the wells in the study area must be sampled. For the second tier, representative sampling must be completed with percentages the same as for the Door-to-Door Survey. Each well water sample was analyzed for total coliform bacteria, fecal coliform bacteria and nitrate-nitrogen concentration.

The Sewage Disposal Needs Identification Guidance requires representative sampling, or second tier sampling in any Study Area, if:

1. The total coliform bacteria contamination rate is 10 percent or greater in the first tier well water samples; and
2. The fecal coliform bacteria contamination rate is 20 percent or greater in the first tier well water samples that had total coliform bacteria contamination.

A total of 32 wells were sampled during the Tier 1 and 2 analysis of Westfall Township Southwest and the results are summarized in Table 1-5. No well water samples in the Study Areas indicated elevated levels of Nitrate or any detectable amounts of Fecal Coliform. The results are shown on the Survey Result Map in Exhibit C.

Table 1-5 Summary of Tier 2 Well Water Sampling Results

Planning Area	Approximate # of Wells	# of Water Samples needed		# of Water Samples Completed	Nitrate Test Results				Total Coliform	Fecal Coliform
					Non-Detectable (<0.05 mg/l)	0-5 mg/L	5-10 mg/L	10+ mg/l	Detectable >1	Detectable >1
Westfall Township-Southwest	128	25%	32	32	8	24	0	0	7	0

Ultimately, while there were some detectable levels of Nitrate as well as Total Coliform, there were no results that indicated well water was contaminated from failing on lots in Westfall Township Southwest. While Nitrate was detected, it was at levels less than 5 mg/L, which is not an indication of malfunctioning OLDs.

1.1.8 Milford Borough Lot Size Analysis

An analysis was performed regarding Milford Borough in the context of needs areas. There were suspected systems for a variety of reasons including the prevalence of cesspools. In Milford Borough, the primary soil is 89B which is Chenango and well drained. Assuming an average percolation rate of 60 minutes per inch, the minimum square feet per gallon per day was calculated to be 2.66 square feet (per the State Code Chapter 73 Section 73.16 Absorption and Spray Field Area Requirements Table A). Using a value of 1 EDU as 200 gallons per day, 532 square feet are needed for an absorption area for a Septic Tank, and therefore, 1,064 square feet are required to have capacity for an OLDs replacement. Using Pike County Tax Parcel Data, it was determined that there were 35 parcels that did not have adequate area to have a replacement OLDs. Of those parcels, all were either identified as townhouses and/or apartments with enough room on the cumulative property for replacement (each townhouse/ apartment

had its own parcel), vacant lots with no room for buildings, or they are located on Broad Street and Harford Street, which has been identified as a needs area. As a result, the main needs area in Milford Borough is along the commercial district on Broad Street and Harford Street. Replacement of malfunctioning of OLDS appears to be a viable solution for Milford Borough.

1.1.9 Summary and Conclusions

Table 1-3 displays the results of the sanitary surveys completed for the planning area. Map No. 1 in Exhibit C "OLDS Malfunction Exhibit" displays the locations where the sanitary surveys were completed and the corresponding malfunction category. The Tier 2 survey indicated a 4% confirmed malfunction rate based on field observations.

None of the three municipalities currently have an On-Lot Management Program. There is no standard maintenance or regulation. As a result, it is recommended that an On-lot Sewage Management Program be implemented by each municipality to assist homeowners in developing a regular maintenance schedule to help maintain the functionality of the existing OLDS. The implementation of a Sewage Management Program for each Municipality and construction of public sanitary sewer to areas of the Study Area currently served by OLDS is further discussed and evaluated in this Report.

1.2 Project Description

The Study Area for this Act 537 Sewage Facilities Plan consists of the Northeast Branch and Southwest Branch within Westfall Township, Matamoras Borough, and Milford Borough. This Study Area is surrounded by the Delaware River and New Jersey to the East, Shohola Township and Dingman Township to the West, and the State of New York to the North. Milford Township borders Milford Borough and Westfall Township. The map of the Study area is detailed on Map No. 1 in Exhibit A. Only portions of Westfall Township have public sewage, which is provided by the Municipal Authority of Westfall Township. However, that portion of Westfall Township is not in the Study Area. None of the other municipalities have any existing wastewater collection or conveyance systems.

An evaluation of existing on-lot disposal systems throughout the Planning Area indicated that there is a need for improved wastewater disposal in Matamoras Borough, Westfall Township Southwest, and Milford Borough. The results of the sanitary survey are summarized in Section 1.1.6. The maps summarizing the results of the surveys and a complete summary of the results of the sanitary survey are presented in Section 6.0 of this Report.

The needs areas were identified based on needs derived from the number of on-lot malfunctions, potential growth, and commercial needs. Structural alternatives for providing improved sewage facilities to these study areas were evaluated on the basis of environmental soundness, cost-effectiveness, and structural feasibility.

1.2.1 Potential Wastewater Treatment Alternatives

Rules and regulations pertaining to the content of Act 537 plans are contained in Title 25 Pennsylvania Code Chapter 71. These rules and regulations require that each Act 537 plan present and evaluate alternatives for sewage service within the project area. The following sections present several alternatives available to the Region for meeting the wastewater

planning needs identified. The topics covered in this chapter include the following:

1. No Action.
2. Increased OLDS/Decentralized System Management.
3. Community On-lot Disposal Systems (COLDS).
4. Extension of new public sewers with connection to Authority's system.
5. Potential Land-Based Alternatives such as spray irrigation.

For planning areas outside of the proposed sewer extension areas, alternatives to be evaluated during the plan preparation for these areas include:

1. No Action
2. Increased OLDS/Decentralized System Management

The above referenced wastewater alternatives have been considered for areas within the planning area currently served by OLDS. Initially, many alternatives such as sewerage the entire planning area were considered, however some were dismissed immediately and eliminated from further consideration in the Plan due to cost and technical infeasibility. Eight (8) sewer extension alternatives to provide public sewer service to these areas of the planning area currently served by OLDS have been evaluated to identify whether they are cost-effective, environmentally sound, and structurally feasible. These alternatives are listed below and exhibits are included in Exhibit G:

Alternative No. 1A:

Alternative No. 1A provides public sewer service to Matamoras Borough along Pennsylvania Avenue and Westfall Township Northeast along Route 6/209 along with the primary identified needs areas in Matamoras Borough. The municipal roads included in this alternative were determined based on the needs identification surveys described in Section 1. For this alternative, the entire extension is a conventional gravity system. Due to the topographical features of this extension, no additional pump stations will be required with this alternative. All flows would be conveyed via gravity to MATW's WWTP through MATW Pump Station #1 on Route 6/209. For Alternatives 1A, there are 205 projected connections (308 EDUs) with this alternative.

Alternative No. 1B:

Alternative No. 1B provides public sewer service to Matamoras Borough and Westfall Township Northeast along Pennsylvania Avenue along with the primary identified needs areas in Matamoras Borough. For this alternative, the entire extension is a low pressure system, so all properties require a grinder pump and low pressure sewer laterals. The low pressure main will tie into the existing force main where Pennsylvania Avenue and Route 6/209 merge with this alternative. For Alternatives 1B, there are 205 projected connections (308 EDUs) with this alternative.

Alternative No. 2A:

Alternative No. 2A provides public sewer service to the entirety of Matamoras Borough and a portion of Westfall Township Northeast along Pennsylvania Avenue. Conventional gravity sewer is proposed to collect the wastewater and convey it to Westfall Authority Pump Station #1 along Route 6/209. No additional pump stations are assumed to be required for this alternative. For Alternatives 2A, there are 1,091 projected connections (1,163 EDUs).

Alternative No. 2B:

Alternative No. 2B provides public sewer service to service to the entirety of Matamoras Borough and a portion of Westfall Township Northeast along Pennsylvania Avenue. Low pressure sewer is proposed to collect the wastewater and convey it to the existing force main where Pennsylvania Avenue and Route 6/209 merge. As a result, all proposed connections will require a low pressure lateral connection and a grinder pump. For Alternatives 2A, there are 1,091 projected connections (1,163 EDUs).

Alternative No. 3A:

Alternative No. 3A provides public sewer service to the Westfall Township Southwest planning area along Route 6/209 to the Milford/Westfall Township border. A combination of gravity collection lines and a pump station, proposed to be located on Route 6/209 near Kittatinny Canoes, are proposed to collect the wastewater and convey it to the existing system, which currently terminates near the McDonalds on Route 6/209. Properties will directly connect to the force main via lower pressure sewer with grinder pumps following the proposed pump station with this alternative. The flow would then be treated at the MATW WWTP. For Alternative 3A, there are 13 projected connections (219 EDUs).

Alternative No. 3B:

Alternative No. 3B provides public sewer service to the Westfall Township Southwest planning area along Route 6/209 to the Milford/Westfall Township border. Low pressure sewer is proposed to collect the wastewater and convey it to the existing conveyance system, which currently terminates by the McDonald's on Route 6/209. The flow would then be treated at the MATW WWTP. For Alternative 3A, there are 13 projected connections (219 EDUs).

Alternative No. 4A:

Alternative No. 4A provides public sewer service to the Westfall Township Southwest and Milford Borough planning areas. In Westfall Township Southwest, the area proposed is along Route 6/209, and in Milford Borough, it serves the properties primarily in the commercial district that are along Broad Street, East Harford Street, and West Harford Street. Specifically, a low pressure sewer force main runs along East Harford Street until it transitions to gravity at Blackberry Alley. The proposed gravity continues to run through the Blackberry Alley before eventually transitioning onto Broad Street, where it eventually flows into a proposed pump Station. A proposed gravity line also runs through West Harford Street before collecting the sewer along Gooseberry Alley (serving Broad Street properties) and tying into the proposed pump station. The

proposed pump station would then pump the wastewater and tie into MATW's collection system at the point where Alternatives 3A and 3B terminate (Westfall Township/ Milford Township Border). The flow would then be conveyed to the existing MATW conveyance system and ultimately the MATW WWTP. For Alternative 4A, there are 147 projected connections (284 EDUs). While a pump station is including in this alternative, the location of a potential site was not further investigated because it was determined that Alternative 4B would be selected.

Alternative No. 4B:

Alternative No. 4B modifies Alternative No. 4A by replacing the pump stations, gravity collection systems, and force main with a low pressure sewer system and grinder pumps. It would connect to the proposed force main in Alternative 3B, which is located along Route 6/209 at the Westfall Township/ Milford Township Line. The low pressure force main in Alternative 3B would convey the flow from the Westfall Township/ Milford Township Line to the existing MATW conveyance system, where the flow would be treated at the MATW WWTP. For Alternative 4A, there are 147 projected connections (284 EDUs).

All of the alternative extensions presented above are proposed to be conveyed to the Municipal Authority of Westfall Township wastewater treatment plant and system as described in 1.1.1.

A hydraulic analysis was performed to confirm if the plant, pump stations, and conveyance system have sufficient capacity to accept flows from the proposed extensions. The conveyance system capacity is further explored in this Report.

Using the 2023 Westfall Township Chapter 94 Report data for the MATW Plant, there is sufficient hydraulic and organic capacity for the plant. Figures 1.1 and 1.2 show the projected hydraulic and organic demands of the selected alternatives (1B, 3B, and 4B) based on projected connections, using a 200 GPD/EDU basis. The MATW WWTP is in good operating condition and undergoes routine maintenance as noted in the Chapter 94 Reports that are submitted to DEP annually and included in Exhibit E.

Figure 1.1: Projected Hydraulic Loads (Alternatives 1B, 3B, and 4B)- Each EDU projected as 200 GPD

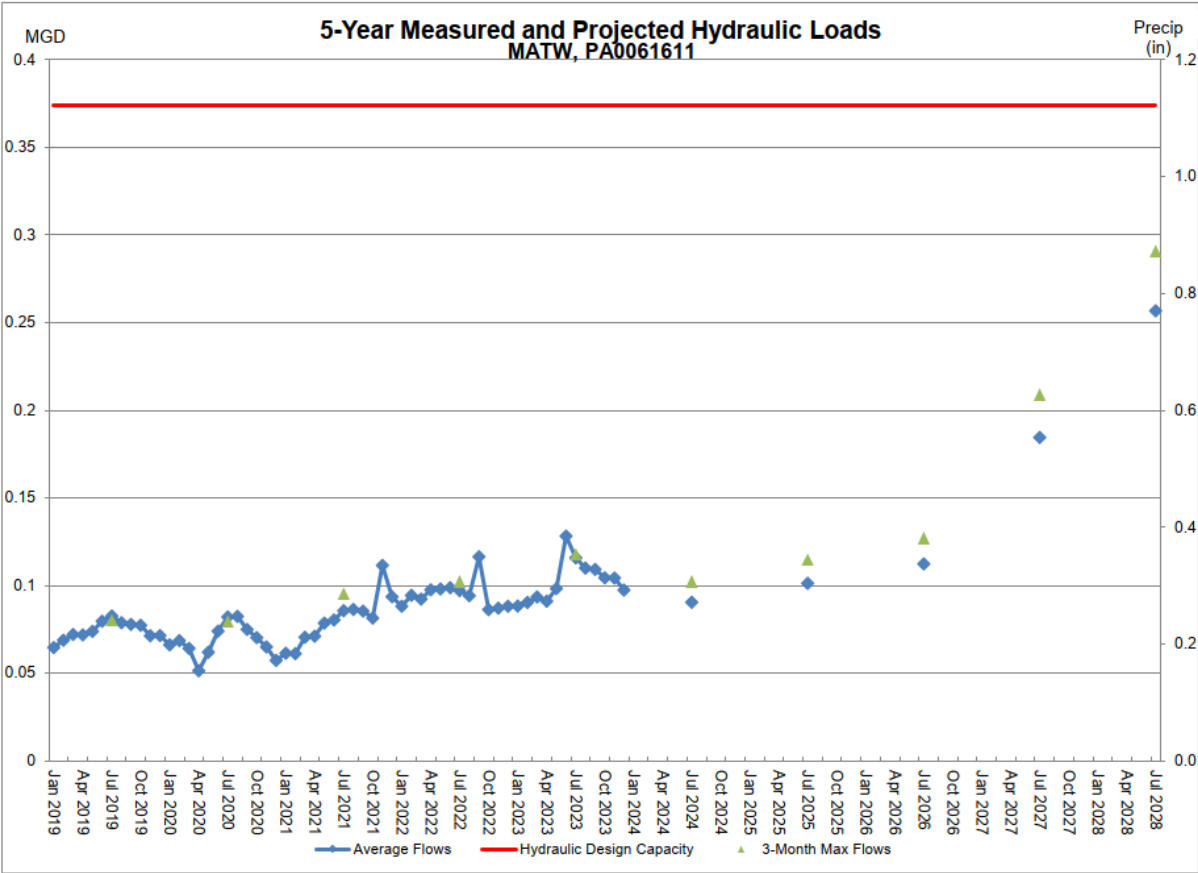
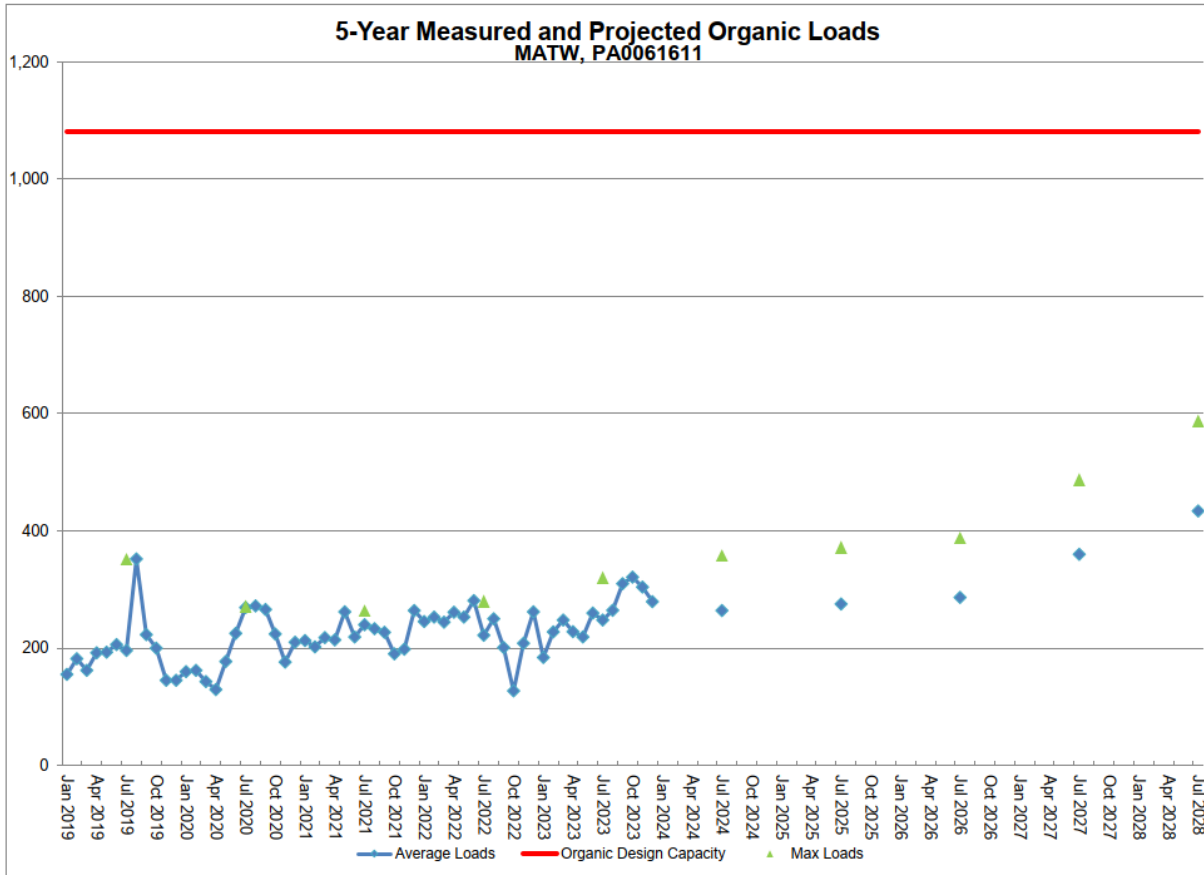


Figure 1.2: Projected Organic Loads (Alternatives 1B, 3B, and 4B)



A hydraulic analysis was performed to confirm that the plant, pump stations, and conveyance have enough capacity to accept flows from the proposed extensions. No WWTP upgrades are planned or needed for any of the proposed alternatives.

Presently, public sewers only exist within part of Westfall Township along Route 6/209, which merges into Pennsylvania Avenue. This area is outside of the Study Areas. The Westfall Township Municipal Authority's system begins at the McDonald's Restaurant on Route 6/209 and extends northeast to the Price Chopper located on Pennsylvania Avenue. The entirety of the study area is served by OLDS.

1.2.2 Conveyance Alternatives

New collection and conveyance facilities were evaluated to extend public sewer and are required to serve the sewer service areas identified by this Act 537 Plan. The apparent needs areas are the major roads and commercial zoning areas which are along Route 6/209, Broad Street and Harford Street in Milford Borough, and Pennsylvania Avenue in Matamoras Borough.

The primary needs areas in Matamoras Borough are addressed in Alternatives 1A-1B, which include Pennsylvania Avenue as well as residential areas where the immediate needs are based on the OLDS surveys. Alternatives 2A-2B contemplates proposing central sewer for the entirety of the Borough as Matamoras has a smaller lot size.

The needs areas in Westfall Township Southwest are addressed in Alternatives 3A and 3B. Milford Borough's needs are addressed in Alternatives 4A-4B. The plant can handle more flow than projected. Therefore, no upgrades are proposed at the time of the Plan. The extensions are proposed to be completed by year 7 after the Plan's approval as indicated in the implementation provided in this Report.

Conventional Gravity Sewers

Conventional gravity sewers convey wastewater by using gravity. The sewers must be set deep enough to receive flows from individual buildings. The building sewer or lateral is typically comprised of 4-inch or 6-inch diameter pipe laid at a minimum slope of 1%. Building sewers connect directly to the collecting sewers. Where financially feasible, the collecting sewer is set at a depth that is capable of receiving basement flows. Conventional gravity sewers are constructed to meet minimum state and local requirements. Generally, they are constructed of 8-inch diameter or larger pipe with access manholes spaced a maximum of 400 feet apart and at each change of direction. Conventional systems are connected directly to existing or proposed conveyance and treatment systems. The feasibility of conventional gravity sewers is dependent on factors such as topography, presence of rock, high groundwater tables, and density of homes. The costs of a conventional gravity system can vary dramatically depending on the above noted factors.

Low-pressure Systems

Low-pressure systems which rely on Grinder Pumps (GP) are an alternative to conventional gravity systems. The GP systems shred or reduce the size of raw wastewater solids, producing a pumpable slurry which is conveyed to the treatment plant through low-pressure sewer lines. Pressure sewers are most cost-effective in areas where the terrain is rolling, or the line needs to be close to the surface due to low depth to bedrock or a high water table. Pressure sewers have disadvantages such that the sewage may be septic and odor problems may arise depending on the length of the system. The homeowner would be responsible for the maintenance of their grinder pump.

When discussing GP systems, it is necessary to consider both the on-lot element as well as the collection system elements. The on-lot elements of a GP system consist of a 4-inch or 6-inch building sewer that conveys business / household sewage to the GP. On existing homes, either a new connection is made to the existing plumbing system or the existing building sewer is intercepted by the new building sewer and directed to the GP. The GP typically consists of a fiberglass basin with a minimum capacity of 50 gallons. The pumps are either centrifugal or semi-positive displacement units with 1-2 HP motors. The basin includes appropriate valves for isolation of the pump. Each basin package is provided with a pump control panel, which can either be located remotely at the business / house or locally at the GP. For single-family homes, there is only one pump. The homeowner would be responsible for extending the power out to the

control panel, and if a new electrical service would be required, it would be the homeowner's responsibility.

The second component of any GP system is the collection system. A typical low-pressure sewer system consists of small diameter, less than 4 inches in diameter, high-density polyethylene (HDPE) pressure piping. All piping downstream of the grinder pump is under low pressure, usually 60 psi or less. The low-pressure collection system is arranged as a branch network with no loops in the system. Appurtenances of a low-pressure system consist of in-line and terminal clean-outs located at 400'-600' intervals, at changes in direction or at changes in pipe size. Air release valves are located within the system at all high points. Isolation valves are installed strategically throughout the system to facilitate maintenance. GP systems have been most applicable in areas where the topography is very flat, has rolling hills, significant rock may be present, high groundwater table is present, or where the system outfall is at a higher elevation than the service area. In this planning area, the elevation changes suddenly at multiple points along the proposed alternatives, so the utilization of the GP system would eliminate the need for multiple pump stations.

The purchase and installation of grinder pumps is included in the project cost. Once the project is complete, the grinder pumps become the homeowner's property, and they are responsible for the O&M. The homeowner would be responsible for extending power out to the control panel, and in some instances, a new service is required as well, which would be the homeowner's responsibility.

Collection System Construction Costs

Typically, an authority or municipality would be responsible for the construction and funding of an extension of public facilities to a previously developed area. In the case of a new development, sewage facilities are generally extended by the developer at their cost and dedicated to the authority or municipality under a written agreement. Estimates of construction cost and overall project costs are included in the focused assessment of the needs areas in Section 2.1.

1.2.3 Repair or Replacement of Existing Collection and Conveyance System Components

No alternatives are anticipated which would facilitate the need for repair or replacement of existing collection or conveyance system mains or interceptors. As none of the three municipalities directly own or operate a collection and conveyance system, it is owned and operated by MATW. In the Authority's existing SewerCAD Model, the flows from the selected Alternatives were included in the SewerCAD model and there were no projected overloads. The projected velocities in the existing 6-inch and 8-inch diameter force main pipe are less than 10 feet per second but greater than 2 feet per second. It is included in Exhibit J.

Analysis was also performed in terms of pipe size for the recommended low-pressure alternatives. For Milford Borough in Alternative 4B, there are 284 projected EDUs. Using E One's Design Manual, an area with between 279 and 311 grinders would project to have 14 grinder pumps on simultaneous at a maximum. At a pumping rate of 11 gallons per minute, the projected peak flow rate in the lines is 154 gallons per minute. This equates to a velocity of 3.93 feet per second in a 4-inch diameter pipe, so there would still be future capacity in the line.

For Alternative 3B which will contain the Milford Borough flows as well as the additional Westfall Township which is 503 projected EDUs. Utilizing the same E-One Low Pressure Guide, there would be 20 grinder pumps that could be on simultaneously as a flow rate of 11 gallons per minute, leading to a peak flow of 220 gallons per minute. With a 6-inch low pressure pipe, the peaking velocity would be 2.5 feet per second, which exceeds the minimum recommended velocity of 2 feet per second.

In Alternative 1B, there are 308 projected connections, resulting in a projected peak flow of 165 gallons per minute (14 pumps on at 11 gallons per minute). A 4-inch sewer line would also be optimal as the projected velocity would be 4.21 feet per second.

1.2.4 Upgrade of Existing Wastewater Treatment Plant

Westfall Township Municipal Authority currently has a hydraulic capacity of 0.374 MGD, and its 2023 average flow was 0.10255 MGD. The organic capacity of the WWTP is 1,081 lbs BOD5/day, and the average organic loading in 2023 was 258 lbs BOD5/day. Based on the chosen alternatives, the WWTP has sufficient hydraulic and organic capacity to implement the alternatives as further identified in Section 5.1. The WWTP is in good operating condition as noted in the Chapter 94 Reports and regular maintenance occurs.

The wastewater flow projections developed for this Act 537 Plan were based on the following conditions and assumptions:

- Wastewater flows generated for all Structural Alternatives are based on 200 GPD per equivalent dwelling unit (EDU).
 - The 2023 MATW Chapter 94 Report indicates a five-year annual average flow per EDU is 77 GPD per EDU.
 - While this is lower than typical, the MATW system is nearly entirely pressurized force main and initial system was not constructed until the 1990's.
 - The water billing data from Milford Water Authority and Matamoras Municipal Authority also indicate that single-family homes water usage was under 100 GPD.
 - 200 GPD was used conservatively as a planning number.
- Delaware Valley High School connection is based on an annual average flow of 18,000 GPD, per review of their existing flow records.
- Milford Senior Care Rehabilitation Center connection is based on an annual average flow of 15,000 GPD, per review of their existing flow records.
- For Milford Borough, the existing water meter usage was used to project wastewater flow for commercial buildings.
- For Matamoras Borough, Matamoras Municipal Authority provided water meter usage data, which was used to project wastewater flow for non-residential buildings.
- For Westfall Township, PA Title 25 Chapter 73: Standards for On Lot Sewage Treatment Facilities was used to project wastewater flow for non-residential buildings.
- Each residential building was assumed to be equivalent to one EDU.

Table 1-6: Projected Flows and WWTP Capacity

Selected Alternative	5-10 Year Planning Projected Flows (GPD) *
1B (Matamoras Borough)	63,200
3B (Westfall Township)	45,000
4B (Milford Borough)	59,200
Average Daily Flow at MATW WWTP (2023)	102,555
Projected Flow at MATW WWTP with Selected Alternatives	269,955
Katz Reserve Capacity (Not a part of Planning Areas)	68,000
Projected Flow with Katz Reserve	337,955
MATW WWTP Capacity	374,000

*Projected flows based on 10 year planning projections and historical population trends from each Municipality.

1.2.5 Continued Use of On-Lot Disposal Systems

Additional On-lot disposal systems (OLDS) were not considered as an option in this Act 537. It was not being considered further since OLDS would be done on an individual basis. It is anticipated that the existing OLDS will remain in use when they are non-failing and permissible in Areas where sewer extensions are not proposed. As part of the recommended alternatives in the Plan, Westfall Township, Milford Borough, and Matamoras Borough shall adopt an OLDS Management Ordinance as mentioned later in this Report.

1.2.6 Repair, Replacement or Upgrade of Existing Malfunctioning Systems

Each municipality's SEO is authorized to require the repair of any on-lot malfunction by the following methods approved by Title 25, Chapter 73 of the Pennsylvania Code: cleaning, repair or replacement of components of the existing system, adding capacity or otherwise altering or replacing the system's treatment tank, expanding the existing disposal area, replacing the existing disposal area, replacing the gravity distribution system with a pressurized system, replacing the system with a holding tank, or other alternatives as appropriate for the specific site.

It is recommended that the confirmed malfunctions be rehabilitated and/or repaired by providing a suitably sized drainage bed or replaced. The municipal SEO shall be responsible for further investigating the site and determining the best course of action. The replacements and/or repairs shall be properly permitted. The rehabilitation and repair will be done on a case

by case depending on the nature of the malfunction as well as lot size and soil conditions. The suspected and potential malfunctions are recommended to be further investigated by the SEO to determine the needs for rehabilitation, replacement, or upgrades. Because this is done on an individual basis dependent on system condition and site conditions, additional details cannot be provided at this time. In scenarios where confirmed failures are part of a proposed sewer alternative, options will be evaluated including the potential use of a holding tank as a temporary solution before the proposed structural alternatives are built.

1.2.7 Water Conservation

Another method for improving the operation of on-lot systems is to encourage the use of water conservation devices. In lieu of repair by methods mentioned above, the SEO may require the installation of water conservation equipment and the institution of water conservation practices in structures served. Water using devices and appliances in the structure may be required to be retrofitted with water saving appurtenances or they may be required to be replaced by water conserving devices and appliances. Wastewater generation in the structure may also be reduced by requiring changes in water use patterns in the structure served. The use of laundry facilities may be limited to one load per day or discontinued altogether.

1.2.8 Community On-Lot, Small Flow or Package Treatment

According to the Tier 2 surveys, Green Acres Community on Roberts Lane, Milford PA has two Community On-lot Disposal Systems, or COLDS, for the mobile-home park community, which consists of 55 mobile-homes. COLDS are essentially small, centralized collection systems that serve isolated developed areas and involve the discharge of treated effluent to the subsurface. Many COLDS simply consist of a large septic tank followed by an absorption bed, while others consist of a conventional treatment plant with effluent discharged into the subsurface. COLDS commonly service relatively small, isolated communities (i.e. less than 50 EDU's); however, there are some large COLDS that service larger communities of several hundred households. Since the majority of the planning areas already have individual on-lot systems, this alternative would be too expensive and lack funding sources. As a result, additional COLDS are not recommended. Therefore, no further evaluations were completed, and no COLDS are proposed.

There are two (2) non-municipal package or small flow treatment facilities located within Westfall Township as described in Chapter 3. Milford Senior Care and Rehabilitation Center (NPDES Permit #PA0060020) and Delaware Valley School District (NPDES Permit #PA0032166) own and operate the two Wastewater Treatment Facilities. Milford Senior Care and Rehabilitation Center is permitted for 18,000 GPD, and Delaware Valley School District is permitted for 20,000 GPD. Both facilities intend to connect to the MATW WWTP, and furthermore, both facilities' actual flows are significantly lower than the capacity. The two package facilities intend to connect once public sewer is available. As a result, upgrades to these facilities were not considered as part of this planning effort.

No costs associated with the abandonment and acceptance of flows from existing wastewater treatment facilities are included in the cost opinions because each of the NPDES permits for these respective facilities indicates the following within Paragraph D, under "Other Requirements," *"If, after the issuance of this permit, DEP approves a municipal sewage facilities official plan or an amendment to an official plan under Act 537 (Pennsylvania Sewage Facilities Act, the Act of January 24, 1966, P.L. 1535 as amended) in which sewage from the herein*

approved facilities will be treated and disposed of at other planned facilities, the permittee shall, upon notification from the municipality or DEP, provide for the conveyance of its sewage to the planned facilities, abandon use and decommission the herein approved facilities including the proper disposal of solids, and notify DEP accordingly."

1.2.9 Holding Tanks

Holding tanks are vessels designed and constructed to store sewage prior to ultimate disposal at another site. Pumper trucks are the preferred method of conveyance of holding tank wastes. Due to the high maintenance costs resulting from frequent pumping, holding tanks are not considered to be a viable long-term alternative for typical residential demands. However, they may be viable solutions for transient residential, commercial or industrial sites with minimal wastewater flow.

Installation of a holding tank may be required by the municipality's SEO as a rehabilitative measure to repair an OLDS. In the event that rehabilitative or replacement measures are not feasible or do not prove effective, the municipality may require the owner to apply for a permit to construct a holding tank. It is recommended that the municipality should issue holding tank permits only as required for the temporary repair of malfunctioning OLDS. The issuance of holding tank permits shall continue in accordance with DEP regulations and requirements of Westfall Township's Ordinances. Westfall Township's existing Holding Tank Ordinance is provided in Exhibit A. Matamoras Borough and Milford Borough do not have holding tank ordinances but shall adopt a similar one to Westfall Township's existing ordinance.

1.2.10 Sewage Management Programs

The OLDS management Ordinance would intend to provide requirements for the permitting, inspection, operation, maintenance, and rehabilitation of OLDS within the study area and throughout each Municipality. A draft Ordinance Template is included in Exhibit F. Select items from the Ordinance may include the following:

- No person shall install, construct, or request bid proposals for construction, or alter an individual sewage system or community sewage system or construct or request bid proposals for construction or install or occupy any building or structure for which an individual sewage system or community sewage system is to be installed without first obtaining a permit from the Municipality's Sewage Enforcement Office. The permit shall indicate that the site and the plans and specifications of such system are in compliance with the provisions of the Clean Streams Law and the Pennsylvania Sewage Facilities Act and the regulations adopted pursuant to those Acts.
- Applicants for sewage permits will be required to notify the Sewage Enforcement Officer of the schedule for construction of the permitted OLDS so that inspection(s) in addition to the final inspection required by the Sewage Facilities Act may be scheduled and performed by the Sewage Enforcement Officer.
- Any On-lot Sewage System may be inspected by an authorized agent at any reasonable time as of the effective date of the Ordinance. Such inspection may include a physical tour of the property, the taking of samples from surface water, wells and /or, other groundwater sources, the sampling of the contents of the sewage disposal system itself and/or the

introduction of a traceable substance into the interior plumbing of the structure served to ascertain the path and ultimate destination of wastewater generated in the structure.

- An authorized agent shall inspect systems known to be, or alleged to be, malfunctioning. Should said inspections reveal that the system is indeed malfunctioning; the authorized agent shall order action to be taken to correct the malfunction.
- Each person owning a building served by an On-lot Sewage Disposal System which contains a septic tank shall have the septic tank pumped by an authorized pumper/hauler within three years of the effective date of the Ordinance. Thereafter that person shall have the tank pumped at least once every five years or whenever an inspection reveals that the septic tank is filled with solids or scum in excess of 1/3 of the liquid depth of the tank. Justification, including sufficient evidence that the septic tank does not require pumping every five years, may be submitted to the SEO for review and approval. Receipts from the authorized pumper/hauler shall be submitted to the Township within the prescribed one and five year pumping periods.
- The required pumping frequency may be increased or decreased at the discretion of the municipality if the septic tank is undersized, if solids buildup in the tank is above average, if the hydraulic load on the system increases significantly above average, if a garbage disposal is used in the building, if the system malfunctions or for other good cause shown.
- Within seven (7) days of notification by the municipality that a malfunction has been identified, the property owner shall make application to the Sewage Enforcement Officer for a permit to repair or replace the malfunctioning system. Within 30 days of initial notification by the municipality, construction of the permitted repair or replacement shall commence.

Please refer to the template Ordinance – included in Section 6.0 of this Report – that will be considered for the preparation of each Municipality's Draft On-Lot Sewage Management Ordinance.

1.2.11 Public Education

Each municipality will publicly educate residents on the potential requirements of a proposed OLDS Management Ordinance and provide resources to the municipality's residents as necessary.

Each municipality will publicly advertise and make the Plan available at both the municipality Office and through the municipality's website, where the public will have an opportunity to review and comment on the Plan during a 30-day public comment period. The Plan is also proposed to be posted on each municipality's website. Following adoption of the Plan by the municipality, a copy will remain on file at each municipal Office.

1.2.12 Non-Structural/Planning Activities

There will be mandatory connection ordinances in Matamoras and Milford Boroughs. Westfall Township currently has a mandatory connection ordinance but exempts Residential users as long as the existing OLDS is in good working condition. The proposed sewer line through Milford Township will be considered to be a transmission line, meaning that no connections from Milford

Township shall be permitted unless a formal planning submission has been approved by PADEP. The existing rules, regulations and planning activities in each Municipality appear sufficient to sustain the anticipated level of development in the municipalities as long as sufficient public sewage facilities are provided to handle anticipated growth and development as described in Section 1. Each Municipality's development and adoption of the On-lot Sewage Management Program will require regular maintenance of on-lot systems in each municipality thereby reducing the frequency of malfunctioning systems. It does not appear that any other additional non-structural planning activities are needed at this time.

1.2.13 No Action Alternative

The no action alternative is the continued use of residential and commercial on-lot systems. The impacts of no action to address existing, short-term, and long-term sewage facilities include several considerations. Most of the discussion within this Plan has focused on the environmental and public health and safety concerns associated with the functionality of the existing on-lot sewage systems. The impacts of no action include possible degradation of ground water, possible loss of recreational use of waterways and environmental hazards. Economically, the no action alternative could result in substantial fines and/or penalties and restrict or prohibit growth to the planning area's potential growth and development areas. Several businesses have informed the municipalities that it is not financially feasible to stay in the area without central sewage. Assessing the economic viability of businesses is outside the scope of this study. The No Action Alternative was briefly considered and rejected.

2.0 SUMMARY OF REASONABLE ALTERNATIVES CONSIDERED

2.1 Structural Alternatives for Un-Sewered Areas

Alternatives to provide public sewer service to Matamoras Borough, Westfall Southwest, Westfall Northeast, and Milford Borough Planning Areas are provided in the sections below. These Areas are all needs Areas due to the density of potential, suspected, and confirmed OLDS malfunctions, zoning classifications, and potential growth. The Planning Areas are shown on Map 1 in Exhibit A.

The eight (8) focused alternatives for providing public sewer service to the areas defined above are presented below and are evaluated on the basis of cost-effectiveness, environmental soundness, and structural feasibility. Cost estimates for the alternatives are provided in the tables provided below. Maps of each of the structural alternatives which identified proposed facilities are presented in Exhibit G. Cost estimates are presented for comparative purposes when applicable and are detailed in the tables provided. Present worth, annual debt service, annual O&M and total annual cost per EDU for each alternative are also presented in the tables provided. O&M costs include the O&M costs associated with gravity sewer mains, low pressure system mains, force mains, and pump stations. Annual debt service is estimated based on a 20-year, 1.743% term as provided by PENNVEST cap rate funding for Pike County, a 40-year, 3.250% term as provided by USDA, and a 30-year, 5.0% term as assumed by tax exempt (Bond) financing. A bank loan for a 20-year term, 6.0% term was also considered. Actual debt service will depend on the financing scheme chosen and the actual finances of the project when completed. Present worth is estimated based on a 20-year, 4.25% term.

Section 2.2 provides an analysis of the proposed funding methods available to finance the alternatives evaluated in this section. The preparation of detailed funding scenarios, analyses of financial service charges, cash flow analyses based on anticipated revenues, a user service charge system, administrative costs, and personnel costs would require additional information beyond the scope of this Plan. Please refer to Section 2.2 for the funding analysis.

2.1.1 Alternatives for the Matamoras Borough Planning Area

As mentioned in this Plan, Matamoras Borough is considered a needs area, especially along Pennsylvania Avenue. This area is considered to be of the highest need with the largest concentration of OLDS issues observed where there is also concentrated commercial demand for central sewage. Some residential streets were also included in some of the alternatives based on the Needs Identification Study in Section 1. Alternatives 1A and 1B focus on the areas on the older portion of the Borough where the OLDS are in the worst condition. Alternatives 2A and 2B contemplate the entirety of Matamoras Borough connecting to central sewer. However as the financial analysis indicates later in the chapter, Alternatives 2A and 2B are not financially feasible. Alternatives 1A-2B are the proposed alternatives in this planning area and are described at the end of this Section.

2.1.2 Alternatives for Westfall Township Southwest

Westfall Township Southwest is also a needs area along Route 6/209. There are a number of businesses and commercial buildings with high sewage demand with needs and desires to connect to MATW's system. In addition, it would allow Milford Borough to connect into the MATW System. Alternatives 3A-3B are the proposed alternatives in this planning area and are described earlier in this Report.

2.1.3 Alternatives for Milford Borough

Milford Borough is another needs area, especially along Broad Street and East and West Harford Street. Milford Borough is one of the larger needs areas in the Study due to commercial zoning and demands as well as needs areas identified in the Tier 2 Surveys. While the lots that are in the needs area are along Broad Street and East and West Harford Streets, the sewer mains that serve the Broad Street properties are located on the alleys behind Broad Street (Blackberry Alley and Gooseberry Alley). The sewer main being proposed along the alleys behind Broad Street have the advantage of lower projected restoration costs since they are not PennDOT roads. In addition, having the sewer main along the alleys behind Broad Street would also likely result in lower connection costs for property owners to tie into the proposed the sewer system because most building's existing OLDs are located in the back of the property. The proposed sewer lines are proposed to be on East and West Harford Street because there is no other viable alternative to serve all of the properties on East and West Harford Street without having the sewer main run along those streets. The proposed sewer line would continue along Route 6/209 in Milford Township until it tied into the proposed sewer line in Westfall Township in Alternatives 3A and 3B. Since Milford Township is not in this Plan and is not part of the sewer area for the MATW WWTP, the sewer line is a transmission line through Milford Township and no connections can be made without additional and formal sewage planning to PADEP such as an Act 537 Special Study. Alternatives 4A and 4B are the proposed alternatives in this planning area

2.1.4 Alternative for Future Flow Capacity

The proposed systems outlined in the alternatives address current needs and provide for only minimal growth in the planning area. While there is still capacity available at the MATW WWTP, the flow projections do not consider future developments. Both Milford Borough and Matamoras Borough are limited in terms of available lots to be developed. The study areas of Westfall Township are largely built out. Due to lack of lots to build out and the generally good soil for OLDs as well as the scale of the alternatives proposed in this section.

2.1.5 No Action Alternative

The No Action structural alternative represents the status quo. It proposes the continued repair and construction of on-lot sewage disposal systems in compliance with Chapter 72 Standards and under the guidance and permitting of the Municipal SEO. In some cases, these systems will not be feasible based on the site limitations, including unsuitable soil, slope, and space restrictions.

This option is the least disruptive to the community, however, it does not address the issues raised in the Tier 2 survey – malfunctioning systems and business economic viability in the Plan Areas.

Costs for repair and replacement of individual on lot sewage disposal systems vary greatly from property to property; therefore, a realistic cost estimate for comparison purposes could not be prepared for this alternative.

2.1.6 Alternative for Future Flow

The proposed alternatives outlined in this report address both the current needs and addresses the future 5-10 year planning window needs identified. Based on the limited growth in Milford Borough, Matamoras, and the Southwest and Northeast Planning Areas in Westfall Township, the proposed alternatives can sufficiently meet the future flow needs in the 5-10 year planning window.

2.2 COMPARISON OF ALTERNATIVES

2.2.1 Comparative Cost Estimates of Study Area Structural Alternatives

The following assumptions were used to develop the cost estimates presented in this report and were replicated in the Act 537 Plan:

- 1 Based on 2024 Dollars
- 2 The proposed extensions and cost estimate are conceptual and not final design.
- 3 It is assumed that all proposed utility work in a Structural Alternative will be completed as one project.
- 4 Length of HDD Laterals: 25' per connection
- 5 Inline cleanout required every 500 feet.
- 6 Assume 1 Air Release Valve and vault per 5,280 feet.
- 7 Gravity, Force Main, and LPS Main - assume 50% suitable backfill, 50% aggregate backfill.
- 8 Depth of Manholes: 10 feet.
- 9 Manhole is required every 350 lineal feet.

- 10 Length of gravity lateral connections: 20' per connection; Aggregate Backfill 50% of total length and Suitable Backfill 50% of total length.
- 11 Temporary Paving is assumed to be 2" of 19.5mm HMA.
- 12 Municipal Paving is assumed to be 3" 25mm base course and 1.5" 9.5mm wearing course.
- 13 PennDOT Paving is assumed to be 5" 37.5mm base and 2" 12.5mm wearing mill and overlay).
- 14 Assume one Clay Dike between every manhole
- 15 It was assumed that an Equivalent Dwelling Unit is equal to 200 GPD.
- 16 Flows were calculated using PA Code 25 Chapter 73 for dwellings in Westfall Township and Matamoras Borough. A single family home was classified as 1 EDU. In Milford Borough, water usage data from the Milford Water Authority was used to calculate the flow of businesses.
- 17 Every residential dwelling had one simplex grinder pump. Every non-residential dwelling had one duplex grinder pump.
- 18 For Gravity Sewer alternatives, assume one cleanout for each lateral connection.
- 19 Borings should be 10 feet deep with standard penetration resistance testing.
- 20 Test pits every 400 feet and at every pump station.
- 21 Assume Low Pressure Sewer and Force Main are HDD and vegetative restoration included in costs.
- 22 Assume all grinder pumps are outside of 100-year floodplain and will not require risers.

Using the assumptions outlined above, several cost opinions were prepared to use as a basis to compare the cost effectiveness of each structural alternative. Where applicable, a direct cost comparison of alternatives has been provided. Annual costs per EDU are based on these project costs and an assumed loan on the full project cost. It should be noted that the cost estimates prepared in this Act 537 Plan are first level cost estimates appropriate for planning level detail and should not be considered as final costs for financing purposes. The estimated tapping fees of \$1,600.00 (current MATW tapping fees) and a wholesale rate of \$25/EDU have been used for the financial alternative comparisons.

Tables No. 2-1 through 2-8 present the cost estimates for the structural alternatives and Table No. 2-9 provide a summarization and comparison of the estimates. Present Worth is calculated by adding the Estimated Project Cost and the Present Worth of Annual O & M. The Annual Cost is the sum of the annual loan payment required and the annual O&M costs. The without assistance note projects the project costs on user with the assumption that there is no grant funding. Table No. 2-10 includes the estimated annual cost and payment of annual debt service for several funding scenarios of the recommended alternatives. As a means of comparison, the Westfall Township Municipal Authority currently charges residential users \$60 per month (per EDU).

TABLE 2-1 COST OPINION FOR MATAMORAS BOROUGH (FOCUSED NEEDS AREAS) ALTERNATIVE 1A

OPINION OF PROBABLE PROJECT COST					
FOR					
EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN					
MATAMORAS RESIDENTIAL AND WESTFALL GRAVITY					
ALTERNATIVE 1A: GRAVITY SEWER					
SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 638,300.00	\$ 638,300.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 319,200.00	\$ 319,200.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 191,500.00	\$ 191,500.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	8,425	L.F.	\$ 230.00	\$ 1,937,750.00
5	8" PVC MAIN - SUITABLE BACKFILL	8,547	L.F.	\$ 175.00	\$ 1,495,725.00
6	8" X 6" WYE	205	EA.	\$ 330.00	\$ 67,650.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	2,050	L.F.	\$ 155.00	\$ 317,750.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	2,050	L.F.	\$ 115.00	\$ 235,750.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	205	L.F.	\$ 1,500.00	\$ 307,500.00
10	CONNECTION TO EXISTING PUMP STATION	1	EA.	\$ 4,000.00	\$ 4,000.00
11	CLAY DIKE	24	EA.	\$ 500.00	\$ 12,000.00
MANHOLE					
12	MANHOLE - 4 FT DIAMETER	57	EA.	\$ 10,000.00	\$ 570,000.00
13	MANHOLE FRAME AND COVER	57	EA.	\$ 1,000.00	\$ 57,000.00
14	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
15	PENNDOT CROSSING	1	L.S.	\$ 35,000.00	\$ 35,000.00
16	STREAM CROSSING	0	L.S.	\$ 15,000.00	\$ -
SURFACING					
17	TEMPORARY PAVING	10,475	L.F.	\$ 15.00	\$ 157,125.00
18	PENNDOT PAVING RESTORATION (BASE)	5,445	L.F.	\$ 90.00	\$ 490,062.15
19	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	6,050	S.Y.	\$ 25.00	\$ 151,253.75
20	MUNICIPAL PAVING RESTORATION	5,030	L.F.	\$ 65.00	\$ 326,941.22
21	VEGETATIVE RESTORATION	10,597	L.F.	\$ 20.00	\$ 211,940.00
ESTIMATED CONSTRUCTION COSTS					\$ 7,532,000.00
CONSTRUCTION CONTINGENCY @ 20%					\$ 1,507,000.00
ENGINEERING, ADMIN. & LEGAL FEES @ 25%					\$ 2,260,000.00
TOTAL ESTIMATED PROJECT COSTS					\$ 11,299,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					308
ESTIMATED CAPITAL COST PER EDU					\$ 37,000.00

TABLE 2-2 COST OPINION FOR MATAMORAS BOROUGH (FOCUSED NEEDS AREAS) ALTERNATIVE 1B

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MATAMORAS RESIDENTIAL AND WESTFALL LOW PRESSURE ALTERNATIVE 1B LOW PRESSURE SEWER SEWER EXTENSION						
ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	EXTENSION		
GENERAL						
1	MOBILIZATION @ 10%	1	L.S. \$ 513,500.00	\$	513,500.00	
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S. \$ 256,800.00	\$	256,800.00	
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S. \$ 154,100.00	\$	154,100.00	
LOW PRESSURE SEWER						
4	4" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	6,642	L.F. \$ 75.00	\$	498,150.00	
5	4" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	6,642	L.F. \$ 70.00	\$	464,940.00	
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	5,600	L.F. \$ 55.00	\$	308,000.00	
7	AIR/VACUUM RELEASE VALVES	14	EA. \$ 12,000.00	\$	168,000.00	
8	INLINE CLEANOUT	27	EA. \$ 8,000.00	\$	216,000.00	
9	TERMINAL CLEANOUT	2	EA. \$ 7,000.00	\$	14,000.00	
10	GRINDER PUMP- SIMPLEX	180	EA. \$ 9,000.00	\$	1,620,000.00	
11	GRINDER PUMP- DUPLEX	44	EA. \$ 15,000.00	\$	660,000.00	
12	LOW PRESSURE LATERAL CONNECTION	224	EA. \$ 1,200.00	\$	268,800.00	
13	CURBSTOP AND CHECK VALVE ASSEMBLY	224	EA. \$ 1,000.00	\$	224,000.00	
14	TEST PITS	34	EA. \$ 950.00	\$	32,300.00	
15	CONNECTION TO EXISTING FORCE MAIN	1	EA. \$ 2,500.00	\$	2,500.00	
CROSSING						
16	PENNDOT CROSSING	0	L.S. \$ 35,000.00	\$	-	
17	STREAM CROSSING	0	L.S. \$ 15,000.00	\$	-	
SURFACING						
18	TEMPORARY PAVING	6,642	L.F. \$ 15.00	\$	99,630.00	
19	PENNDOT PAVING RESTORATION (BASE)	2,397	L.F. \$ 90.00	\$	215,730.00	
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	2,663	S.Y. \$ 25.00	\$	66,583.33	
21	MUNICIPAL PAVING RESTORATION	4,245	L.F. \$ 65.00	\$	275,925.00	
22	VEGETATIVE RESTORATION	0	L.F. \$ 20.00	\$	-	
				ESTIMATED CONSTRUCTION COSTS	\$	6,059,000.00
				CONSTRUCTION CONTINGENCY @ 20%	\$	1,212,000.00
				ENGINEERING, ADMIN, & LEGAL FEES @ 25%	\$	1,818,000.00
				TOTAL ESTIMATED PROJECT COSTS	\$	9,089,000.00
				ESTIMATED NUMBER OF EDUs TO BE SERVED		308
				ESTIMATED CAPITAL COST PER EDU	\$	30,000.00

TABLE 2-3 COST OPINION FOR MATAMORAS BOROUGH (ENTIRE BOROUGH) ALTERNATIVE 2A

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MATAMORAS BOROUGH GRAVITY ALTERNATIVE 2A: GRAVITY SEWER SEWER EXTENSION						
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION	
GENERAL						
1	MOBILIZATION @ 10%	1	L.S.	\$ 1,943,500.00	\$ 1,943,500.00	
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 971,800.00	\$ 971,800.00	
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 583,100.00	\$ 583,100.00	
GRAVITY SEWER						
4	8" PVC MAIN - AGGREGATE BACKFILL	22,522	L.F.	\$ 230.00	\$ 5,180,060.00	
5	8" PVC MAIN - SUITABLE BACKFILL	22,522	L.F.	\$ 175.00	\$ 3,941,350.00	
6	8" X 6" WYE	1,091	EA.	\$ 330.00	\$ 360,030.00	
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	10,910	L.F.	\$ 155.00	\$ 1,691,050.00	
8	6" SERVICE LATERAL - SUITABLE BACKFILL	10,910	L.F.	\$ 115.00	\$ 1,254,650.00	
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	1,091	L.F.	\$ 1,500.00	\$ 1,636,500.00	
10	CONNECTION TO EXISTING PUMP STATION	1	EA.	\$ 4,000.00	\$ 4,000.00	
11	CLAY DIKE	112	EA.	\$ 500.00	\$ 56,000.00	
MANHOLE						
12	MANHOLE - 4 FT DIAMETER	154	EA.	\$ 10,000.00	\$ 1,540,000.00	
13	MANHOLE FRAME AND COVER	154	EA.	\$ 1,000.00	\$ 154,000.00	
14	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00	
CROSSING						
15	PENNDOT CROSSING	1	L.S.	\$ 35,000.00	\$ 35,000.00	
16	STREAM CROSSING	0	L.S.	\$ 15,000.00	\$ -	
SURFACING						
17	TEMPORARY PAVING	33,432	L.F.	\$ 15.00	\$ 501,480.00	
18	PENNDOT PAVING RESTORATION (BASE)	4,432	L.F.	\$ 90.00	\$ 398,854.95	
19	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	4,924	S.Y.	\$ 25.00	\$ 123,103.38	
20	MUNICIPAL PAVING RESTORATION	29,000	L.F.	\$ 65.00	\$ 1,885,018.09	
21	VEGETATIVE RESTORATION	33,432	L.F.	\$ 20.00	\$ 668,640.00	
					ESTIMATED CONSTRUCTION COSTS	\$ 22,934,000.00
					CONSTRUCTION CONTINGENCY @ 20%	\$ 4,587,000.00
					ENGINEERING, ADMIN, & LEGAL FEES @ 25%	\$ 6,881,000.00
					TOTAL ESTIMATED PROJECT COSTS	\$ 34,402,000.00
					ESTIMATED NUMBER OF EDUs TO BE SERVED	1,163
					ESTIMATED CAPITAL COST PER EDU	\$ 30,000.00

TABLE 2-4 COST OPINION FOR MATAMORAS BOROUGH (ENTIRE BOROUGH) ALTERNATIVE 2B

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MATAMORAS BOROUGH LOW PRESSURE ALTERNATIVE 2B LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	EXTENSION	
GENERAL					
1	MOBILIZATION @ 10%	1	L.S. \$ 1,996,800.00	\$	1,996,800.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S. \$ 998,400.00	\$	998,400.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S. \$ 599,100.00	\$	599,100.00
LOW PRESSURE SEWER					
4	4" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	20,678	L.F. \$ 75.00	\$	1,550,850.00
5	4" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	20,678	L.F. \$ 70.00	\$	1,447,460.00
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	27,275	L.F. \$ 55.00	\$	1,500,125.00
7	AIR/VACUUM RELEASE VALVES	42	EA. \$ 12,000.00	\$	504,000.00
8	INLINE CLEANOUT	83	EA. \$ 8,000.00	\$	664,000.00
9	TERMINAL CLEANOUT	2	EA. \$ 7,000.00	\$	14,000.00
10	GRINDER PUMP- SIMPLEX	1,049	EA. \$ 9,000.00	\$	9,441,000.00
11	GRINDER PUMP- DUPLEX	42	EA. \$ 15,000.00	\$	630,000.00
12	LOW PRESSURE LATERAL CONNECTION	1,091	EA. \$ 1,200.00	\$	1,309,200.00
13	CURBSTOP AND CHECK VALVE ASSEMBLY	1,091	EA. \$ 1,000.00	\$	1,091,000.00
14	TEST PITS	104	EA. \$ 950.00	\$	98,800.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA. \$ 2,500.00	\$	2,500.00
CROSSING					
16	PENNDOT CROSSING	0	L.S. \$ 35,000.00	\$	-
17	STREAM CROSSING	0	L.S. \$ 15,000.00	\$	-
SURFACING					
18	TEMPORARY PAVING	20,678	L.F. \$ 15.00	\$	310,170.00
19	PENNDOT PAVING RESTORATION (BASE)	1,142	L.F. \$ 90.00	\$	102,735.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	1,268	S.Y. \$ 25.00	\$	31,708.33
21	MUNICIPAL PAVING RESTORATION	19,537	L.F. \$ 65.00	\$	1,269,872.50
22	VEGETATIVE RESTORATION	0	L.F. \$ 20.00	\$	-
ESTIMATED CONSTRUCTION COSTS					\$ 23,562,000.00
CONSTRUCTION CONTINGENCY @ 20%					\$ 4,713,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%					\$ 7,069,000.00
TOTAL ESTIMATED PROJECT COSTS					\$ 35,344,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					1,163
ESTIMATED CAPITAL COST PER EDU					\$ 31,000.00

TABLE 2-5 COST OPINION FOR WESTFALL TOWNSHIP SOUTHWEST ALTERNATIVE 3A

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN WESTFALL TOWNSHIP EXTENSION GRAVITY/FORCE MAIN ALTERNATIVE 3A: COMBINATION OF PUMP STATION, GRAVITY SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 397,000.00	\$ 397,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 198,500.00	\$ 198,500.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 119,100.00	\$ 119,100.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	3,021	L.F.	\$ 230.00	\$ 694,830.00
5	8" PVC MAIN - SUITABLE BACKFILL	3,021	L.F.	\$ 175.00	\$ 528,675.00
6	8" X 6" WYE	7	EA.	\$ 330.00	\$ 2,310.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	70	L.F.	\$ 155.00	\$ 10,850.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	70	L.F.	\$ 115.00	\$ 8,050.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	7	L.F.	\$ 1,500.00	\$ 10,500.00
10	CURBSTOP AND CHECK VALVE ASSEMBLY	7	EA.	\$ 1,000.00	\$ 7,000.00
11	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 4,000.00	\$ 4,000.00
12	CLAY DIKE	25	EA.	\$ 500.00	\$ 12,500.00
MANHOLE					
13	MANHOLE - 4 FT DIAMETER	26	EA.	\$ 10,000.00	\$ 260,000.00
14	MANHOLE FRAME AND COVER	26	EA.	\$ 1,000.00	\$ 26,000.00
15	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
16	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
17	STREAM CROSSING	2	L.S.	\$ 15,000.00	\$ 30,000.00
PUMP STATION					
18	PUMP STATION	1	L.S.	\$ 750,000.00	\$ 750,000.00
FORCE MAIN					
19	6" HDPE FORCE MAIN - AGGREGATE BACKFILL	1,721	L.F.	\$ 125.00	\$ 215,156.25
20	6" HDPE FORCE MAIN - SUITABLE BACKFILL	5,164	L.F.	\$ 115.00	\$ 593,831.25
21	1.25" HDPE LOW PRESSURE SEWER LATERAL	100	L.F.	\$ 55.00	\$ 5,500.00
22	GRINDER PUMP - SIMPLEX	2	EA.	\$ 9,000.00	\$ 18,000.00
23	GRINDER PUMP - DUPLEX	4	EA.	\$ 15,000.00	\$ 60,000.00
24	LATERAL CONNECTION	6	EA.	\$ 500.00	\$ 3,000.00
25	CURBSTOP AND CHECK VALVE ASSEMBLY	6	EA.	\$ 1,000.00	\$ 6,000.00
26	TEST PITS	18	EA.	\$ 950.00	\$ 17,100.00
SURFACING					
27	TEMPORARY PAVING	4,812	L.F.	\$ 15.00	\$ 72,183.75
28	PENNDOT PAVING RESTORATION (BASE)	4,812	L.F.	\$ 90.00	\$ 433,102.50
29	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	5,347	S.Y.	\$ 25.00	\$ 133,673.61
30	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
31	VEGETATIVE RESTORATION	3,091	L.F.	\$ 20.00	\$ 61,820.00
ESTIMATED CONSTRUCTION COSTS					\$ 4,684,000.00
CONSTRUCTION CONTINGENCY @ 20%					\$ 703,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%					\$ 1,347,000.00
TOTAL ESTIMATED PROJECT COSTS					\$ 6,734,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					219
ESTIMATED CAPITAL COST PER EDU					\$ 31,000.00

TABLE 2-6 COST OPINION FOR WESTFALL TOWNSHIP SOUTHWEST ALTERNATIVE 3B

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN WESTFALL TOWNSHIP EXTENSION LOW PRESSURE ALTERNATIVE 3B LOW PRESSURE SEWER SEWER EXTENSION						
ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE		EXTENSION
GENERAL						
1	MOBILIZATION @ 10%	1	L.S.	\$ 118,100.00	\$	118,100.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 59,100.00	\$	59,100.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 59,100.00	\$	59,100.00
LOW PRESSURE SEWER						
4	6" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	6,457	L.F.	\$ 75.00	\$	484,275.00
5	6" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	6,457	L.F.	\$ 60.00	\$	387,420.00
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	325	L.F.	\$ 55.00	\$	17,875.00
7	AIR/VACUUM RELEASE VALVES	13	EA.	\$ 12,000.00	\$	156,000.00
8	INLINE CLEANOUT	26	EA.	\$ 8,000.00	\$	208,000.00
9	TERMINAL CLEANOUT	2	EA.	\$ 7,000.00	\$	14,000.00
10	GRINDER PUMP - SIMPLEX	8	EA.	\$ 9,000.00	\$	72,000.00
11	GRINDER PUMP - DUPLEX	5	EA.	\$ 15,000.00	\$	75,000.00
12	LOW PRESSURE LATERAL CONNECTION	13	EA.	\$ 1,200.00	\$	15,600.00
13	CURBSTOP AND CHECK VALVE ASSEMBLY	13	EA.	\$ 1,000.00	\$	13,000.00
14	TEST PITS	33	EA.	\$ 950.00	\$	31,350.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 2,500.00	\$	2,500.00
CROSSING						
16	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$	-
17	STREAM CROSSING	2	L.S.	\$ 15,000.00	\$	30,000.00
SURFACING						
18	TEMPORARY PAVING	6,457	L.F.	\$ 15.00	\$	96,855.00
19	PENNDOT PAVING RESTORATION (BASE)	6,407	L.F.	\$ 90.00	\$	576,664.58
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	7,119	S.Y.	\$ 25.00	\$	177,982.89
21	MUNICIPAL PAVING RESTORATION	50	L.F.	\$ 65.00	\$	3,225.03
22	VEGETATIVE RESTORATION	0	L.F.	\$ 20.00	\$	-
					ESTIMATED CONSTRUCTION COSTS	\$ 2,599,000.00
					CONSTRUCTION CONTINGENCY @ 20%	\$ 520,000.00
					ENGINEERING, ADMIN, & LEGAL FEES @ 25%	\$ 780,000.00
					TOTAL ESTIMATED PROJECT COSTS	\$ 3,899,000.00
					ESTIMATED NUMBER OF EDUs TO BE SERVED	219
					ESTIMATED CAPITAL COST PER EDU	\$ 18,000.00

TABLE 2-7 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 4A

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH EXTENSION W/ HARFORD AND BROAD ST ALLEYS LOW PRESSURE, GRAVITY, FORCE MAIN ALTERNATIVE 4A LOW PRESSURE SEWER, GRAVITY, FORCE MAIN, PUMP STATION SEWER EXTENSION					
ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE		EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 478,200.00	\$ 478,200.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 239,100.00	\$ 239,100.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 143,500.00	\$ 143,500.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	477	L.F.	\$ 70.00	\$ 33,355.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	477	L.F.	\$ 65.00	\$ 30,972.50
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	1,075	L.F.	\$ 65.00	\$ 69,875.00
7	AIR/VACUUM RELEASE VALVES	0	EA.	\$ 12,000.00	\$ -
8	INLINE CLEANOUT	2	EA.	\$ 4,500.00	\$ 9,000.00
9	TERMINAL CLEANOUT	1	EA.	\$ 3,000.00	\$ 3,000.00
10	GRINDER PUMP - SIMPLEX	37	EA.	\$ 9,000.00	\$ 333,000.00
11	GRINDER PUMP - DUPLEX	6	EA.	\$ 15,000.00	\$ 90,000.00
12	TEST PITS	22	EA.	\$ 950.00	\$ 20,900.00
13	LATERAL CONNECTION	43	EA.	\$ 500.00	\$ 21,500.00
14	CURBSTOP AND CHECK VALVE ASSEMBLY	43	EA.	\$ 850.00	\$ 36,550.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 5,000.00	\$ 5,000.00
GRAVITY SEWER					
16	8" PVC MAIN - AGGREGATE BACKFILL	2,556	L.F.	\$ 230.00	\$ 587,880.00
17	8" PVC MAIN - SUITABLE BACKFILL	2,556	L.F.	\$ 175.00	\$ 447,300.00
18	8" X 6" WYE	98	EA.	\$ 435.00	\$ 42,630.00
19	6" SERVICE LATERAL - AGGREGATE BACKFILL	980	L.F.	\$ 140.00	\$ 137,200.00
20	6" SERVICE LATERAL - SUITABLE BACKFILL	980	L.F.	\$ 125.00	\$ 122,500.00
21	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	98	EA.	\$ 1,500.00	\$ 147,000.00
22	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 12,000.00	\$ 12,000.00
23	CLAY DIKE	10	EA.	\$ 600.00	\$ 6,000.00
MANHOLE					
24	MANHOLE - 4 FT DIAMETER	17	EA.	\$ 8,000.00	\$ 136,000.00
25	MANHOLE FRAME AND COVER	17	EA.	\$ 1,000.00	\$ 17,000.00
26	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
27	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
28	STREAM CROSSING	2	L.S.	\$ 15,000.00	\$ 30,000.00
PUMP STATION					
29	PUMP STATION	1	L.S.	\$ 750,000.00	\$ 750,000.00
FORCE MAIN					
30	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	2,011	L.F.	\$ 110.00	\$ 221,237.50
31	4" HDPE FORCE MAIN - SUITABLE BACKFILL	6,034	L.F.	\$ 100.00	\$ 603,375.00
32	1.25" HDPE LOW PRESSURE SEWER LATERAL	175	L.F.	\$ 40.00	\$ 7,000.00
33	GRINDER PUMP - SIMPLEX	7	EA.	\$ 8,000.00	\$ 56,000.00
34	GRINDER PUMP - DUPLEX	0	EA.	\$ 12,500.00	\$ -
35	LOW PRESSURE LATERAL CONNECTION	7	EA.	\$ 900.00	\$ 6,300.00
36	CURBSTOP AND CHECK VALVE ASSEMBLY	7	EA.	\$ 850.00	\$ 5,950.00
SURFACING					
37	TEMPORARY PAVING	6,024	L.F.	\$ 15.00	\$ 90,358.25
38	PENNDOT PAVING RESTORATION (BASE)	4,650	L.F.	\$ 90.00	\$ 418,533.22
39	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	5,167	S.Y.	\$ 25.00	\$ 129,178.92
40	MUNICIPAL PAVING RESTORATION	1,373	L.F.	\$ 65.00	\$ 89,269.76
41	VEGETATIVE RESTORATION	3,033	L.F.	\$ 20.00	\$ 60,650.00
ESTIMATED CONSTRUCTION COSTS					\$ 5,643,000.00
CONSTRUCTION CONTINGENCY @ 15%					\$ 1,129,000.00
ENGINEERING, ADMIN. & LEGAL FEES @ 25%					\$ 1,693,000.00
TOTAL ESTIMATED PROJECT COSTS					\$ 8,465,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					284
ESTIMATED CAPITAL COST PER EDU					\$ 30,000.00

TABLE 2-8 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 4B

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH EXTENSION W/ HARFORD AND BROAD ST ALLEYS LOW PRESSURE ALTERNATIVE 4B LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	EXTENSION	
GENERAL					
1	MOBILIZATION @ 10%	1	L.S. \$ 419,500.00	\$	419,500.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S. \$ 209,800.00	\$	209,800.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S. \$ 125,900.00	\$	125,900.00
LOW PRESSURE SEWER					
4	4" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	7,055	L.F. \$ 75.00	\$	529,125.00
5	4" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	7,055	L.F. \$ 70.00	\$	493,850.00
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	3,675	L.F. \$ 55.00	\$	202,125.00
7	AIR/VACUUM RELEASE VALVES	1	EA. \$ 12,000.00	\$	12,000.00
8	INLINE CLEANOUT	29	EA. \$ 8,000.00	\$	232,000.00
9	TERMINAL CLEANOUT	1	EA. \$ 7,000.00	\$	7,000.00
10	GRINDER PUMP - SIMPLEX	124	EA. \$ 9,000.00	\$	1,116,000.00
11	GRINDER PUMP - DUPLEX	23	EA. \$ 15,000.00	\$	345,000.00
12	TEST PITS	36	EA. \$ 950.00	\$	34,200.00
13	LOW PRESSURE LATERAL CONNECTION	147	EA. \$ 1,200.00	\$	176,400.00
14	CURBSTOP AND CHECK VALVE ASSEMBLY	147	EA. \$ 1,000.00	\$	147,000.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA. \$ 2,500.00	\$	2,500.00
CROSSING					
16	PENNDOT CROSSING	0	L.S. \$ 35,000.00	\$	-
17	STREAM CROSSING	3	L.S. \$ 15,000.00	\$	45,000.00
SURFACING					
18	TEMPORARY PAVING	7,055	L.F. \$ 15.00	\$	105,825.00
19	PENNDOT PAVING RESTORATION (BASE)	5,447	L.F. \$ 90.00	\$	490,185.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	6,052	S.Y. \$ 25.00	\$	151,291.67
21	MUNICIPAL PAVING RESTORATION	1,609	L.F. \$ 65.00	\$	104,552.50
22	VEGETATIVE RESTORATION	0	L.F. \$ 20.00	\$	-
ESTIMATED CONSTRUCTION COSTS				\$	4,950,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	990,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,485,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	7,425,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					284
ESTIMATED CAPITAL COST PER EDU				\$	27,000.00

Table 2-9 Summary of Costs (Assumes Loan of 1.743% for 20 Years)

Summary of Cost Opinions for Structural Alternatives													
Study Area	Alternative	Estimated Project Cost	Tapping Fee Towards Project	Estimated Project Cost Less Tapping Fee	Estimated Annual Debt Service	Estimated Annual O&M Cost	Estimated Annual Cost	Present Worth of Annual O&M	Total Present Worth	Number of EDUs	Estimated Present Worth Per EDU	Estimated Annual Cost Per EDU	Cost per EDU without Assistance
Matamoras Commercial and Needs Areas	Alternative 1A	\$11,300,000	\$0	\$11,300,000	\$670,000	\$21,000	\$691,000	\$279,182	\$11,579,182	308	\$37,595	\$2,244	\$212
	Alternative 1B	\$9,100,000	\$0	\$9,100,000	\$540,000	\$8,000	\$548,000	\$106,355	\$9,206,355	308	\$29,891	\$1,779	\$173
Matamoras Borough - Entire Borough	Alternative 2A	\$34,500,000	\$0	\$34,500,000	\$2,045,000	\$56,000	\$2,101,000	\$744,484	\$35,244,484	1,163	\$30,305	\$1,807	\$176
	Alternative 2B	\$35,400,000	\$0	\$35,400,000	\$2,098,000	\$25,000	\$2,123,000	\$332,359	\$35,732,359	1,163	\$30,724	\$1,825	\$177
Westfall Southwest	Alternative 3A	\$6,800,000	\$400,000	\$6,400,000	\$380,000	\$18,000	\$398,000	\$239,299	\$7,039,299	219	\$32,143	\$1,817	\$151
	Alternative 3B	\$3,900,000	\$400,000	\$3,500,000	\$208,000	\$8,000	\$216,000	\$106,355	\$4,006,355	219	\$18,294	\$986	\$82
Milford Borough	Alternative 4A	\$8,500,000	\$0	\$8,500,000	\$504,000	\$18,000	\$522,000	\$239,299	\$8,739,299	284	\$30,772	\$1,838	\$178
	Alternative 4B	\$7,500,000	\$0	\$7,500,000	\$445,000	\$9,000	\$454,000	\$119,649	\$7,619,649	284	\$26,830	\$1,599	\$158

Notes:

1. Annual Debt Service Calculations Assuming 1.743% for 20 Years
2. Tapping Fees are based on the existing MATW tapping fee of \$1600/EDU and the number of EDUs
3. Present Worth Calculations Assume 4.25% for 20 Years
4. Annual O&M Estimated based on typical common usage
5. Wholesale rate of \$25/edu.

Table 2-10 Summary of Financing Options for Selected Alternatives

Milford - Selected Alternative 4B							Project Cost: \$ 7,500,000	Annual O&M Cost: \$ 102,200	No. of EDUs 284	
Option	Description	Tapping Fee Towards Pjt	Grant	Loan	Interest Rate	Term (Yrs)	Annual DS Cost	Resulting Annual User Rate/EDU*	Resulting Monthly User Rate/EDU*	Total Interest over Term of Loan
4B - 1a	PENNVEST - w/ no grant	\$ -	\$ -	\$ 7,500,000	1.743%	20	\$447,379	\$ 2,277	\$ 190	\$1,447,572
4B- 1b	PENNVEST - w/ Targeted 45% Grant	\$ -	\$ 3,375,000	\$ 4,125,000	1.743%	20	\$246,058	\$ 1,443	\$ 120	\$796,164
4B- 2	USDA - w/ Targeted 45% Grant	\$ -	\$ 3,375,000	\$ 4,125,000	3.250%	40	\$185,740	\$ 1,193	\$ 99	\$3,304,610
4B- 3	Bank Loan	\$ -	\$ -	\$ 7,500,000	6.000%	20	\$653,884	\$ 3,132	\$ 261	\$5,577,684
4B- 4	Bond Issue	\$ -	\$ -	\$ 7,500,000	5.000%	30	\$487,886	\$ 2,444	\$ 204	\$7,136,573

Matamoras - Selected Alternative 1B							Project Cost: \$ 9,100,000	Annual O&M Cost: \$ 113,400	No. of EDUs 308	
Option	Description	Tapping Fee Towards Pjt	Grant	Loan	Interest Rate	Term (Yrs)	Annual DS Cost	Resulting Annual User Rate/EDU*	Resulting Monthly User Rate/EDU*	Total Interest over Term of Loan
1B - 1a	PENNVEST - w/ no grant	\$ -	\$ -	\$ 9,100,000	1.743%	20	\$542,819	\$ 2,507	\$ 209	\$1,756,387
1B - 1b	PENNVEST - w/ Targeted 45% Grant	\$ -	\$ 4,095,000	\$ 5,005,000	1.743%	20	\$298,551	\$ 1,574	\$ 131	\$966,013
1B - 2	USDA - w/ Targeted 45% Grant	\$ -	\$ 4,095,000	\$ 5,005,000	3.250%	40	\$225,365	\$ 1,294	\$ 108	\$4,009,594
1B - 3	Bank Loan	\$ -	\$ -	\$ 9,100,000	6.000%	20	\$793,379	\$ 3,464	\$ 289	\$6,767,589
1B - 4	Bond Issue	\$ -	\$ -	\$ 9,100,000	5.000%	30	\$591,968	\$ 2,694	\$ 225	\$8,659,042

Westfall - Selected Alternative 3B							Project Cost: \$ 3,900,000	Annual O&M Cost: \$ 727,200	No. of Total EDUs 1212	No. of New EDUs 219
Option	Description	Reserve Funds & Tapping Fee Towards Pjt	Grant	Loan	Interest Rate	Term (Yrs)	Annual DS Cost	Resulting Annual User Rate/EDU*	Resulting Monthly User Rate/EDU*	Total Interest over Term of Loan
3B - 1a	PENNVEST - W/ No Grant Funding	\$ 1,038,080	\$ -	\$ 2,861,920	1.743%	20	\$170,715	\$ 801	\$ 67	\$552,378
3B - 1b	PENNVEST - w/ Max Grant	\$ 1,038,080	\$ -	\$ 2,861,920	1.743%	20	\$170,715	\$ 801	\$ 67	\$552,378
3B - 2	USDA	\$ 1,038,080	\$ -	\$ 2,861,920	3.250%	40	\$128,866	\$ 764	\$ 64	\$2,292,734
3B - 3	Bank Loan	\$ 1,038,080	\$ -	\$ 2,861,920	6.000%	20	\$249,515	\$ 871	\$ 73	\$2,128,385
3B - 4	Bond Issue	\$ 1,038,080	\$ -	\$ 2,861,920	5.000%	30	\$186,172	\$ 815	\$ 68	\$2,723,240

Notes:

1. Rate projections assumes 7.25% delinquency rate for retail customers and 15% for wholesale.
2. Assumes existing Westfall Authority reserve funds put towards capital project costs and used to lower amount financed by debt.
3. Assumes tapping fee revenue received by Westfall from new connections will be set aside in a reserve account for future capital improvement needs
4. Assumes annual retail and wholesale user charges from Westfall Authority are reduced by \$20/month and \$10/month respectively to eliminate budgeted depreciation expense for the initial years of service.
5. Assumes initial wholesale rate of \$25/EDU/month.

As discussed throughout the Act 537 Plan and UER, there is adequate documentation available and reasoning to justify the provision of public to sewer within the Study Areas, specifically Matamoras Borough, Route 6/209 in Westfall Township, and Broad and Harford Street in Milford Borough. The most advantageous alternative for Matamoras Borough is Alternative No. 1B, Alternative No. 3B for Westfall Township, and Alternative No. 4B for Milford Borough.

Alternative No. 1B provides public sewer to the Matamoras Borough Planning Area along Pennsylvania Avenue as well as municipal roads that had been identified as needs areas in the Tier 2 Surveys. These areas are proposed to be collected through low-pressure sewer which is directly conveyed to the existing MATW force main near McDonald's, where the flows would be fed to the MATW Pump Station #1. MATW Pump Station #1 would then convey the wastewater flow into MATW WWTP. Alternatives 2A and 2B were considered but due to the high cost and grant money required to make it financially feasible, it is recommended that Matamoras focuses on the immediate needs. Alternatives 2A and 2B would be difficult to implement due to financial feasibility, and Alternative 1B provides a solution to the major needs areas in the Borough. Both the WWTP and MATW Conveyance System have the hydraulic capacity to handle projected flows from Alternatives No. 1B, No. 3B and No. 4B.

Alternative No. 3B provides sewer to Westfall Township Southwest along Route 6/209 using a low-pressure system. The low-pressure line would extend the existing MATW force main to the Milford Township/ Westfall Township border.

Alternative 4B provides sewer to Milford Borough along Route 6/209, Broad Street, and East and West Harford Street. The low-pressure sewer line is proposed to extend through Milford Township along Route 6/209 before connecting with the proposed sewer line in Alternative No. 3B. Milford Township is not a part of this Act 537 Plan, so no connections from the Township are projected. The force main that goes through Milford Township along Route 6/209 is only a projected transmission line, meaning that no connections are permitted as part of this Planning Effort. Future connections would only be considered through a separate planning effort (Planning Module or Act 537 Plan Special Study) to DEP.

Each selected institutional alternative is responsible for operation and maintenance of the sewer conveyance lines. MATW is responsible for the operation and maintenance of the WWTP. The homeowners are responsible for the operation and maintenance of the grinder pumps after construction. The estimated cost per EDU for each proposed structural alternative are presented in Tables 2-12 in this section of the Report.

The implementation of Alternatives No. 1B, No. 3B, and No. 4B has been chosen and is anticipated to be completed in accordance with the projected implementation schedule. The implementation schedule shall begin after DEP Plan Approval.

As previously stated, Milford Borough, Westfall Township, and Matamoras Borough have chosen to implement an official On-Lot Sewage Management Ordinance. The implementation is shown in Table 2-11.

Table 2-11 Implementation Schedule (OLDS Sewage Management Ordinance)

Years from DEP Approval	OLDS Sewage Management Ordinance Phase I
0	Develop Draft On-Lot Disposal System Management Ordinance
	Provide Public Education for On-Lot Disposal System Management Ordinance
1	Finalize and Adopt On-Lot Disposal System Management Ordinance
2	Implement On-lot Disposal System Management Ordinance, Begin Pumping Cycles

Table 2-12 Implementation Schedule (Sewer System Extensions)

Years after DEP Approval (1)	Selected Alternatives Phase II
0	Finalize Inter-municipal Agreements with MATW
	Pursue Funding Opportunities for Construction of Alternative 1B, 3B, 4B Facilities
2	Design and Submit Part II WQM Permit for Alternative 1B, 3B, and 4B Facilities
3	Receive Part II WQM Permit Approval
3.5	Apply for and Obtain Project Financing
4	Bidding of Project
4.1	Finance Closing
4.5	Initiation of Construction
6.5	Substantial Completion
7	Construction Completion/ Final Restoration and connections

2.2.2 Conclusions

Based on the discussion above, the following are recommendations for the wastewater planning needs enumerated in Sections 1 and 2 of the UER.

Based on the discussion above, the following are recommendations for the wastewater planning needs enumerated in above in the UER. All of the selected alternatives make it feasible for future growth and collection of future flows. These alternatives are environmentally favorable, resulting in the abandonment of malfunctioning OLDS in the study area as well as two package facilities that the DEP requires to connect if public sewer is available.

- 1. Public sewer service shall be provided for Matamoras Borough (Alternative No. 1B) along Pennsylvania Avenue and select municipal roads.**

The provision of public sewer service to Matamoras Borough along Pennsylvania Avenue (Alternative No. 1B) with a targeted 45% grant amount and USDA financing would be an estimated monthly cost of \$108/EDU. USDA is the primary financing source with PennVEST

selected as the alternate financing source. Matamoras Borough shall pursue grants from Commonwealth Financing Authority (CFA) programs such as PA Small Water and Sewer as well as H2O PA- Water and Sewer as well as Local Share Account (LSA) for Monroe County and Statewide. A complete list of potential grant targets is included in Exhibit I.

The structural alternatives evaluated in this Act 537 Plan to provide public sewer service to Matamoras Borough, represent technically feasible solutions for wastewater management in these areas, but not all of the solutions are cost effective as presented. Of the structural alternatives evaluated for Matamoras Borough, it is recommended that Matamoras Borough pursue Alternative No. 1B. Alternative No. 1B utilizes a low-pressure system that has the lowest estimated cost per user among the alternatives that serve all the immediate needs areas within the Borough. In Matamoras Borough, the Matamoras Municipal Authority will own and maintain Matamoras' Collection System and be responsible for any tasks related to the upkeep of the system.

2. Public sewer service has been selected for Westfall Township (Alternative 3B) along Route 6/209

The provision of public sewer service to Westfall Township along Route 6/209 (Alternative No. 3B) with USDA financing would be an estimated monthly cost of \$64/EDU, which is nearly the same as the existing MATW user rate of \$60/EDU. For the Structural Alternatives Financial Estimates, the Westfall Authority reserve funds would be utilized for the project costs to lower the amount financed by debt.

The structural alternatives evaluated in this Act 537 Plan to extend public sewer service in Westfall Township, represent technically feasible solutions for wastewater management in Westfall Township, but not all of the solutions are cost effective as presented. Of the structural alternatives evaluated for Westfall Township, it is recommended that Westfall Township pursue Alternative No. 3B. Alternative No. 3B utilizes a low-pressure system that has the lowest estimated cost per user among the alternatives that serve all of the needs areas within Westfall Township, specifically the remainder of the commercial district.

In Westfall Township, the Municipal Authority of the Township of Westfall (MATW) will continue to be sewer authority for the Township and will be responsible for setting user fees, raising capital, implementing planning recommendations, maintaining constructed infrastructures, collection of user fees, and management of debt service. MATW shall also continue to be the institution responsible for owning and maintaining the MATW WWTP.

3. Public sewer service shall be provided for Milford Borough along Broad and Harford Street (Alternative No. 4B).

The provision of public sewer service to Milford Borough along Broad Street and Harford Street (Alternative No. 4B) with a targeted 45% grant and USDA financing would be an estimated monthly cost of \$99/EDU. USDA is the primary financing source with PennVEST selected as the alternate financing source. Milford Borough shall pursue grants from Commonwealth Financing Authority (CFA) programs such as PA Small Water and Sewer as well as H2O PA- Water and Sewer as well as Local Share Account (LSA) for Monroe County and Statewide. A complete list of potential grant options is included in Exhibit I.

The structural alternatives evaluated in this Act 537 Plan to provide public sewer service to Milford Borough, represent technically feasible solutions for wastewater management in these areas, but not all of the solutions are cost effective as presented. Of the structural alternatives evaluated for Milford Borough, Milford Borough has selected Alternative No. 4B. Alternative No. 4B utilizes a low-pressure system that has the lowest estimated cost per user among the alternatives that serve all the needs areas within the Borough, in particular, the commercial district. Prior to connections for Alternative No. 4B, Alternative No. 3B (Westfall Township) would need to be completed.

Milford Water Authority will own and maintain the Sewer Collection System in Milford Borough as well as the transmission line through Milford Township and be responsible for any tasks related to the upkeep of the system. Milford Township shall not be responsible to bear any costs associated with the design, installation, and/or maintenance of the subject transmission line through their municipality. The transmission line refers to the proposed low pressure force main that runs through Route 6/209 In Milford Township to convey flow from Milford Borough to Westfall Township. However, Milford Township is not a part of the Plan, so therefore, there are no planned connections from Milford Township and all future connections would require a separate planning submission to the PADEP.

4. Milford Borough, Westfall Township, and Matamoras Borough shall implement an OLDS Management Ordinance.

Milford Borough, Westfall Township, and Matamoras Borough shall implement an OLDS management ordinance. The Ordinance would provide requirements for the permitting, inspection, operation, maintenance, and rehabilitation of OLDS within the Study Areas and throughout the municipalities. Recommended periodic pumping of OLDS would be included within the Ordinance. Successful implementation of such an Ordinance would be expected to have a positive impact on surface water and drinking water supplies in areas of the three Municipalities where OLDS systems are utilized. Periodic pumping of the tanks will provide for improved operation of the systems and will help to eliminate the occurrence of OLDS malfunctions. Currently, none of the municipalities have any ordinances or regulations requiring mandatory OLDS pumping. The implementation of an OLDS Management Ordinance would allow the Municipalities to further evaluate the need for improved sewage facilities after tank pumping activities have commenced for some period of time.

5. Milford Borough shall conduct a shallow groundwater study and submit an Act 537 Plan Special Study to DEP

Milford Borough shall hire a hydrogeologist to prepare a Shallow Groundwater Study to evaluate the shallow groundwater (0 to 80 feet deep) in Milford Borough, especially in the residential areas. Monitoring wells will be drilled in the residential areas that are not a part of the proposed sewer service area in this Plan. The groundwater will be analyzed for contaminants such as nitrate to identify if there are issues associated with OLDS that are below the surface. Once the Groundwater Study is complete, an Act 537 Special Study shall be submitted to DEP.

2.2.3 Sources of Up-Front Revenue

For smaller communities, it is important to obtain as much up-front revenue as reasonably possible to reduce the total amount of the project that must be financed. In the past, there were several federal programs that provided grants for these types of projects. Over the years, these programs have been gradually eliminated as the federal government has transferred most of the financial responsibility for these programs to the state and local level. Consequently, competition for these funds is strong, and the majority of available grant money is generally funneled to the most economically distressed communities. As a result, most up-front revenue is now generated locally through tapping fees and contributions by land developers, as applicable.

A. Pennsylvania Infrastructure Investment Authority (PENNVEST)

The PENNVEST program was established by the Pennsylvania State Legislature to address the health risks posed by inadequate water and wastewater facilities within the Commonwealth. The principal mission of the PENNVEST program is to provide financial assistance for projects that protect the public health and promote economic development in Pennsylvania. Since its inception, PENNVEST has been primarily a low-interest revolving loan program. Grant funding, in the form of a principal forgiveness loan, is available in some instances where PENNVEST has determined that an all-loan offer is not affordable for an applicant and its residents. The recent Bipartisan Infrastructure Law (BIL) has allowed PENNVEST to allocate additional loan funds to eligible infrastructure development projects.

B. Developer Contributions

Contributions by land developers are becoming a relatively common source for up-front revenue. The funds provided by the developer are directly related to the benefits that the development will derive from the use of the public facilities. In some cases, the developer may actually construct the necessary improvements at his expense and then transfer ownership of the improvements to the local municipality. In other cases, in lieu of actually constructing the improvements, the developer may make a cash payment to the municipality to offset a portion of the costs for the improvements.

C. Capital Charges Fees

Capital charges fees, or tapping fees, are an equitable means by which a system can assess a portion of the capital costs of constructing the new facilities to all users of the proposed system. The imposition of these fees is based upon the concept that all users of the system derive a benefit from this use, and that the costs of this benefit should be allocated among all users without prejudice or penalty. For this reason, tapping fees are usually based on a measure of the total flow contributed by the service connection or lateral.

PA Act 57 of 2003 contains extensive provisions regarding calculation and types of fees that may be charged by municipalities and authorities. Each community must establish its own fee criteria in accordance with this Act. Capital charges fees are an established method for raising up-front revenue and would be an appropriate part of the community's financing plan for the proposed project.

Connection and tapping fees have the greatest financial impact on residents of existing homes.

Unlike new residential development, where the connection and tapping fee costs are included in total construction costs and financed accordingly, existing residents must pay these fees from their own resources or by securing a loan from a local bank. In addition to these fees, the residents must also pay the costs to extend a sewer lateral from the lateral stub provided to the point of interconnection with the building sewer.

2.2.4 Sources of Financing

After all sources of up-front revenue have been identified, a reasonable forecast of the amount of the project that must be financed can be determined. There are several alternatives for financing a public sewer project. Not all of these alternatives are equally suitable for application to the project. The choice of financing method varies from project to project, and is dependent upon the financial specifics of each situation and the amount to be borrowed. A summary of the various means of financing public sewer projects follows.

A. Pennsylvania Infrastructure Investment Authority (PENNVEST)

The PENNVEST program offers below market-rate interest financing for public sewer projects in the Commonwealth of Pennsylvania. Grant funding, in the form of principal forgiveness loans, may be available as well to applicants who qualify based on PENNVEST's financial analysis. PENNVEST may receive funds from the following sources:

1. State funds appropriated to the Municipality;
2. Federal funds appropriated to or granted to the State or Municipality; and
3. Proceeds from the sale of bonds.

In accordance with the requirements of the Water Quality Act of 1987, PENNVEST has established and administers their Clean Water State Revolving Fund. PENNVEST's Board may also establish non-revolving funds and accounts. The monies deposited with PENNVEST as repayment of the principal and interest due on loans issued from the program are used to pay PENNVEST's indebtedness. The criteria considered by the PENNVEST Board when evaluating applications are summarized as follows:

1. The project's ability to improve the health, safety, welfare, or economic well-being of the citizens of the Commonwealth.
2. The project's ability to lead to an effective or complete solution to the problems of the system and bring it into compliance with state and federal regulations.
3. The cost-effectiveness of the proposed project when compared with other alternatives.
4. The consistency of the project with state and regional resource management and economic development plans.
5. Demonstration of the applicant's ability to operate and maintain the project in the proper manner.
6. The ability to promote consolidation of water and wastewater systems where consolidation would provide more effective service of the customers.
7. The availability of other sources of funds at reasonable rates to finance all or portions of the project.

During the preparation of this Plan, PENNVEST County Cap Rates for Pike County were listed at 1.000% for years 1-5 and 1.743% for years 6-20. This loan may cover the entire project costs or only a portion of the total costs at the discretion of PENNVEST, and based on community need. Applications are typically received, and PENNVEST funding granted, four times per year.

PENNVEST financing offers several advantages in addition to below-market interest rates and possible grants. For example, PENNVEST funding is available, for eligible applicants, to pay for engineering and planning costs prior to the completion of the final design under their advance funding loan procedure. Construction inspection costs are also eligible under the PENNVEST program. Participation in this program does, however, impose additional responsibilities upon the municipality. Good accounting and administrative procedures must be followed and the use of funds from this program is subject to audit at any time by the State Comptroller's office. Additionally, PENNVEST relies on PA DEP to evaluate the cost effectiveness of the proposed project and verify that PENNVEST funds are being utilized in the appropriate manner. PA DEP will conduct occasional site visits on PENNVEST's behalf and they also provide input to PENNVEST on whether or not to approve payment for changes made during construction.

In order for PENNVEST to maximize the use of its funds, public sewerage projects must meet federal requirements as well as state requirements since PENNVEST receives funds from the federal government to capitalize the Water Pollution Control Revolving Loan Fund. In addition to an approved Act 537 Plan, the following additional planning assessments and investigations must be completed:

1. Assessment of innovative and alternative technologies.
2. Investigation of open space and recreational opportunities in conjunction with the public sewer project.
3. Alternative evaluation that provides thorough justification for the selected alternative.
4. Environmental assessment to assure that the project complies with the Water Quality Act and will undergo a review in accordance with the National Environmental Policy Act (NEPA).
5. Public participation.

Other special requirements of the PENNVEST program include the following:

1. A value engineering review of all projects having an estimated construction cost exceeding \$10 million to verify that the proposed work is cost-effective.
2. The applicant must have adequate rates in place for the system's users, sewer use ordinance, and financial capability. The applicant must demonstrate sufficient legal, institutional, managerial, and financial capability to construct, operate, and maintain the proposed project.
3. The applicant must comply with the federal Davis-Bacon Act regarding labor wage rates.
4. The applicant must comply with MBE/WBE/DBE affirmative action steps.

5. Currently the applicant must comply with BABA Act requirements.
6. One (1) year after the completion of construction and the initiation of operation, the applicant must certify that the treatment facility meets all design specifications and effluent limitations stipulated in its operation permit.

To initiate a request for PENNVEST financial assistance, an electronic application must be completed. The information provided in this application would be the basis by which PENNVEST makes its decision on whether the project is eligible for funding.

The decision to seek PENNVEST funding must be analyzed on an individual basis depending on the terms and interest rate of the loan. If a decision is made to seek PENNVEST funding, the implementing party must be prepared to comply with the regulatory requirements that are inherent to the program. Documentation requirements for a PENNVEST financing are quite extensive.

Rural Utility Service (RUS) – U.S. Department of Agriculture

The R.U.S. Loan Program makes funding available for the development of water and waste disposal systems in rural areas and towns with populations less than 10,000. The funds are available to public entities such as municipalities, counties, special-purpose districts, Indian tribes, and corporations not operated for profit. R.U.S. also guarantees water and waste disposal loans made by banks and other eligible lenders.

Three interest rates are used. They are set periodically based on an index of current market yields for municipal obligations. The rates are as follows:

1. The *Poverty Rate* interest rate applies when:
 - a. The primary purpose of the loan is to upgrade existing facilities or construct new facilities required to meet applicable health or sanitary standards; and
 - b. The median household income (MHI) of the service area is below the poverty line for a family of four or below 80 percent of the Statewide Nonmetropolitan MHI (SNMHI).
2. The *Market Rate* is set quarterly based on the average of the "Bond Buyer" 1-Bond Index over a four week period prior to the beginning of the quarter. It applies to loans for projects where the MHI of the service area exceeds the SNMHI.
3. The *Intermediate Rate* is the poverty rate plus approximately half of the difference between the poverty rate and the market rate, but not to exceed 7 percent. It applies to loans that do not meet the criteria for either the poverty rate or the market rate.

The law authorizing the R.U.S. program allows a maximum repayment period of 40 years. However, the repayment period cannot exceed the useful life of the facilities financed or any statutory limitation on the applicant's borrowing authority.

To initiate a request for R.U.S. financial assistance, an application form must be completed and filed with the USDA Rural Development office serving the applicant's area. The information provided in this application would be the basis by which R.U.S. makes its decision on whether the

project is eligible for funding.

Municipal Bond Issue

There are several types of bonds, some are taxable and some are tax-exempt. The general classification of municipal bonds usually refers to tax-exempt bonds. There are three (3) types of municipal bonds generally used to finance public works projects:

1. *General Obligation Bonds* are tax-free bonds that are secured by the pledge of the full faith, credit, and taxing power of the issuing municipality. This means that this type of bond is backed by all of the taxes on real estate and personal property within the jurisdiction of the issuing municipality. It involves minimum risk to the investor and, therefore, can be issued at a lower rate of interest than other types of bonds.
2. *Dedicated Tax Bonds* are payable only from the proceeds from a special tax and they are not guaranteed by the full faith, credit, and taxing power of the issuing agency. An example of a special dedicated tax is the special assessment against property, which is adjacent to, and the principal beneficiary of the improvement. The gasoline tax used to finance highway construction is another example.
3. *Revenue Bonds* are payable from revenues derived from the use of the improvement such as tolls, sewer bills, or rent paid by users of the improvement and do not otherwise represent an obligation of the issuing municipality. Revenue Bonds are not ordinarily subject to statutory or constitutional debt limitations. They are often issued by commissions, authorities, and other public agencies created for the specific purpose of financing, constructing, and operating essential public projects.

Typically, municipal bonds are sold to an investment-banking firm, which then resells the bonds to individual investors. The advantage of municipal bonds to the investor is their tax-free status. A bond discount (a percentage of the total bond issue) serves as the investment banker's commission. Before bonds are sold, they must be rated on the basis of the risk to the investor by a rating agency such as Standard and Poor's or Moody's. The higher the rating, the lower the risk to the investor and, consequently, the lower the interest rate that must be paid on the bond. The legal instrument that sets forth the rules that must be observed by the issuing agency is the Trust Indenture. The Trust Indenture is prepared by the Bond Counsel and must be printed along with the bonds. Due to specific requirements as to the denominations of the bonds and the methods and materials used to print the bonds and Trust Indenture, the printing costs can be substantial. A Trustee is required to administer the bond issue and ensure the terms of the Trust Indenture are observed. For these services, the municipality/authority will incur an annual Trustee fee.

Interest rates on bond issues vary depending upon market trends, the rating of the issuing agency, and other factors. The longer the repayment period is extended, the lower the annual debt service and the higher the total amount of interest that must be paid.

A municipal bond issue offers the advantage of long-term fixed rate financing and the opportunity for local investment. The financing arrangement and approval period is shorter than what it is with the PENNVEST program and the three municipalities or MATW would retain more

flexibility for future borrowing. The disadvantage of a municipal bond issue is that the interest rates are often higher than the maximum USDA or PENNVEST interest rates. Since there are no grants involved, the cost of the bond issuance is 100% locally funded. The additional costs incurred to prepare the Trust Indenture, pay the Trustee Fees, fund the cover percentage, and to establish a Debt Service Reserve Fund must also be considered. The financial services costs associated with the issuance of a municipal bond issue are also much higher than the costs for USDA or PENNVEST funding.

Bank Loan

Because of favorable interest rates, bank loans can be a viable source for funding small to medium-sized public works projects. The terms of a bank loan may vary depending upon the bank and the amount of money to be borrowed. The interest rate available from banks varies depending upon market conditions; however, the rate available to municipalities will generally be at a discount due to the tax advantages received by the bank. Terms and conditions of bank loans vary in a manner similar to personal loans and home mortgages.

The principle advantage of a bank loan is that it can usually be obtained at a favorable interest rate without the cumbersome requirements of a bond issuance. The financial service costs associated with obtaining the loan are also typically lower than that for a similar bond issuance. Since these financial service costs are generally included in the total project costs, the impact of these charges can be minimized. Another advantage of the bank loan is that it does not have restrictive coverage requirements, trustee fees, and Trust Indenture preparation charges, as does a bond issue.

2.2.5 Funding Considerations

The funding options available to finance the proposed structural alternative been examined in this section. The primary source of financing for all three alternatives is USDA Financing. PENNVEST Financing would be the secondary selected financing source. The available grants for the municipalities were reviewed and a complete list of targeted grant opportunities are included in Exhibit I.

3.0 ENVIRONMENTAL CONSEQUENCES OF THE PROJECTS

Selected Sanitary Sewer Collection and Conveyance Alternative

The sanitary survey conducted as part of this report and replicated in the Act 537 Plan indicated the existence of malfunctioning OLDS. The greatest areas of concern are the Matamoras Borough, Westfall Township Southwest, and Milford Borough Planning Areas due to their close proximity to the Delaware River, commercial needs, and potential development and growth.

Sewage Management Program

As previously stated, three of the municipalities in the Planning Area have proposed to develop and eventually adopt an On-lot Sewage Management Ordinance as a method to prevent further malfunction of OLDS and degradation of drinking water supplies in throughout the Planning Area.

Milford Borough Groundwater Study

Milford Borough shall hire a hydrogeologist to prepare a Shallow Groundwater Study to evaluate the shallow groundwater (0 to 80 feet deep) in Milford Borough, especially in the residential areas. Monitoring wells will be drilled in the residential areas that are not a part of the proposed sewer service area in this Plan. The groundwater will be analyzed for contaminants such as nitrate to identify if there are issues associated with OLDS that are below the surface. Once the Groundwater Study is complete, an Act 537 Special Study shall be submitted to DEP.

Table 3-1 Implementation Schedule (OLDS Sewage Management Ordinance)

Years from DEP Approval	OLDS Sewage Management Ordinance Phase I
0	Develop Draft On-Lot Disposal System Management Ordinance
	Provide Public Education for On-Lot Disposal System Management Ordinance
1	Finalize and Adopt On-Lot Disposal System Management Ordinance
2	Implement On-lot Disposal System Management Ordinance, Begin Pumping Cycles

Table 3-2 Implementation Schedule (Milford Borough Shallow Groundwater Analysis)

Years from DEP Approval (1)	Milford Borough Groundwater Study/ Special Study Phase III
0-1	Pursue Grant Opportunities for Groundwater Study
2	Perform Shallow Groundwater Study
3	Submit Results to PADEP as a Special Study

Note (1): The Timeline for the implementation schedule begins on the Approval of the Act 537 Plan.

Description of the Affected Area

The majority of the properties within the Alternative 1B, 3B, and 4B sewer service area are commercial. The collection system portion of the proposed projects will be placed within the State, Township and private rights-of-way. A portion of the private rights-of-way will be along managed lawns.

Environmental Consequences of the Reasonable Alternatives

The potential environmental consequences of the reasonable alternatives include direct, indirect, and cumulative effects. Direct effects are consequences directly related to project activity. These typically include vegetation clearing, earth disturbance, and stream crossings. Indirect effects occur later in time or removed in distance from the project area and include community growth, population density changes, altered land use practices, and other changes in the natural environment. Cumulative effects are the total changes to the environment resulting from the selected alternative when added to other past, present, and future actions.

An Erosion and Sedimentation (E&S) Plan will be established and submitted to the Pike County Conservation District to ensure the preservation of surrounding natural environments. In order to minimize the potential for soil erosion and resulting sediment pollution from leaving the construction site, a construction sequence will be outlined in the E&S Plan. The contractor shall minimize the area of disturbed soil at any one time by following the construction sequence, and shall prevent sediment pollution by installing pollution control measures as detailed in the E&S Plan.

3.1 Land Use/Important Farmland/Formally Classified Lands

3.1.1 Land Use

Since there are three municipalities in the planning area, there are three different Land Use Plans that formally establish the desired land uses, real estate orientations, and development design guidelines in each township or borough. The Land Use Plan also outlines in more detail the location of land use planning districts and describes how each municipality should be developed in the future. Parallel to County and Regional population and economic growth, the Comprehensive Plan anticipates continued increases in population, housing units, and other economic activity within the planning area. The planning area municipalities as well as Pike County itself have experienced significant growth in the population since its last Act 537 Plan. Pike County is the second fastest growing county Pennsylvania according to its 2006 Comprehensive Plan.

A generalized classification of the planning area's land base was determined following a review and analysis of the physical features maps, environmental limitations maps, municipality comprehensive plans, Planning Commission input and other community input. Westfall Township, Matamoras Borough, and Milford Borough each have their own Land Use Plan with each area being designated for residential, commercial, or conservation. The Land Use in Matamoras Borough and Westfall Township is shown below as well as the zoning maps for every municipality in the planning area.

Figure 3.1: Westfall Township and Matamoras Borough Land Use Plan Tables

Land Use	Matamoras Borough		Westfall Township	
	Acres	% of Total	Acres	% of Total
Residential - Single-Family	165.25	37.95%	1321.06	6.97%
Residential - Multi-Family/Townhome	9.42	2.16%	82.07	0.43%
Commercial	14.58	3.35%	390.91	2.06%
Institutional	7.00	1.61%	141.03	0.74%
Forestland/Agriculture	77.68	17.84%	8024.96	42.32%
Recreation (Federal/State/Local/ Community Assoc.)	63.65	14.62%	5817.86	30.68%
Club (Rod & Gun Clubs)	0	0.00%	1828.91	9.64%
Conservation Easement	0	0.00%	662.62	3.49%
Utility/Railroad	0	0.00%	191.53	1.01%
Roadway	97.93	22.49%	503.74	2.66%
Total	435.49	100.00%	18964.69	100.00%

Existing Land Use - 2008 (Source: Consultant/Planning Committee Analysis)

Land Use	Matamoras Borough		Westfall Township	
	Acres	% of Total	Acres	% of Total
Residential - Single-Family	211.16	48.49%	5073.06	26.75%
Residential - Multi-Family/Townhome	9.42	2.16%	82.07	0.43%
Commercial	16.05	3.69%	442.75	2.33%
Institutional	7.00	1.61%	141.03	0.74%
Forestland/Agriculture	30.30	6.96%	4221.12	22.26%
Recreation (Federal/State/Local/ Community Assoc.)	63.65	14.62%	5817.86	30.68%
Club (Rod & Gun Clubs)	0	0.00%	1828.91	9.64%
Conservation Easement	0	0.00%	662.62	3.49%
Utility/Railroad	0	0.00%	191.53	1.01%
Roadway	97.93	22.49%	503.74	2.66%
Total	435.49	100.00%	18964.69	100.00%

Conservation Zoning Potential Build-Out

Land Use	Matamoras Borough		Westfall Township	
	Acres	% of Total	Acres	% of Total
Residential - Single-Family	211.16	48.49%	6791.06	35.81%
Residential - Multi-Family/Townhome	9.42	2.16%	82.07	0.43%
Commercial	16.05	3.69%	442.75	2.33%
Institutional	7.00	1.61%	141.03	0.74%
Forestland/Agriculture	30.30	6.96%	2503.12	13.20%
Recreation (Federal/State/Local/ Community Assoc.)	63.65	14.62%	5817.86	30.68%
Club (Rod & Gun Clubs)	0	0.00%	1828.91	9.64%
Conservation Easement	0	0.00%	662.62	3.49%
Utility/Railroad	0	0.00%	191.53	1.01%
Roadway	97.93	22.49%	503.74	2.66%
Total	435.49	100.00%	18964.69	100.00%

Existing Zoning Potential Build-Out

Figure 3.2: Westfall Township Zoning Map

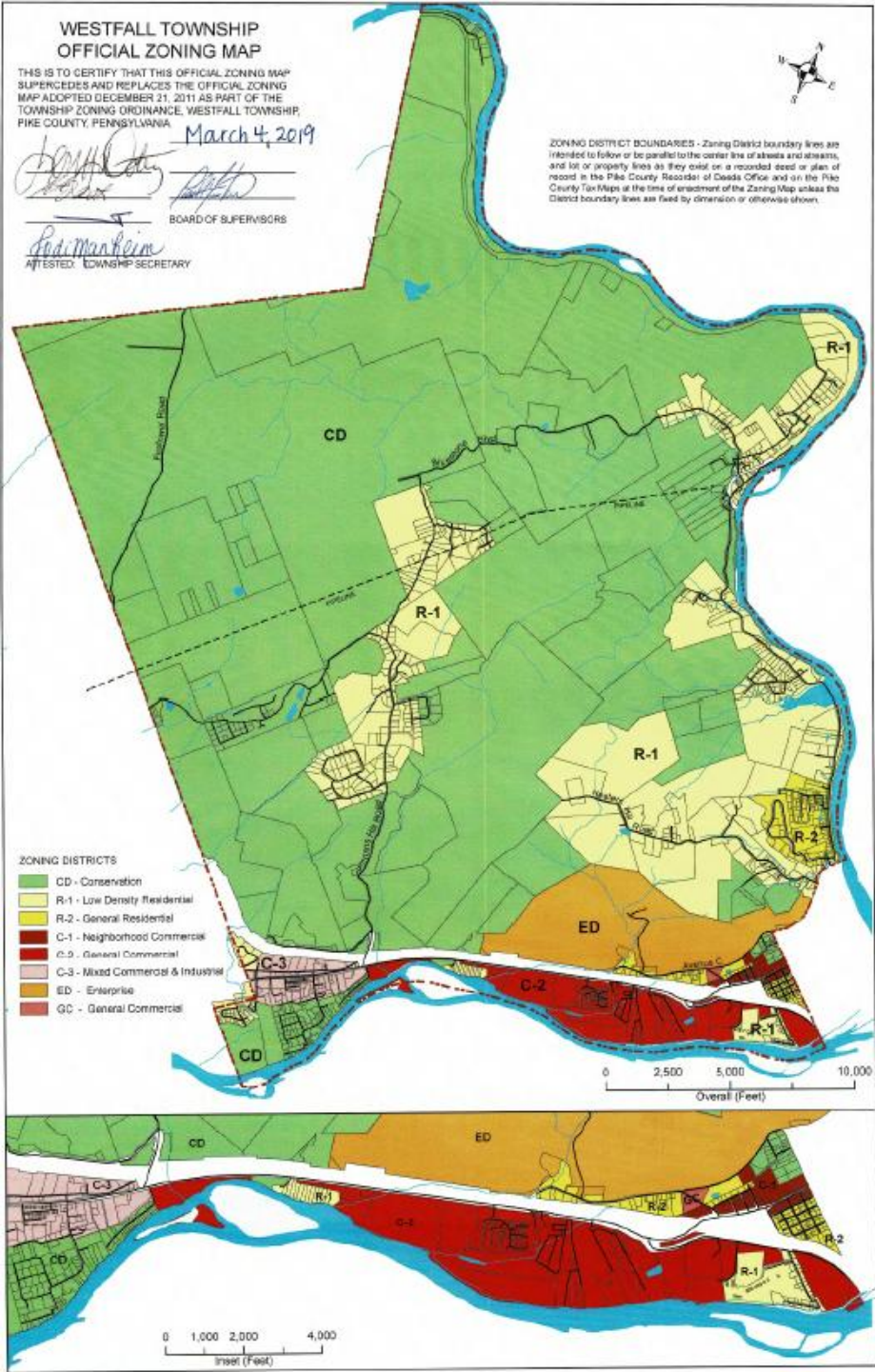


Figure 3.3: Zoning Map of Matamoras Borough

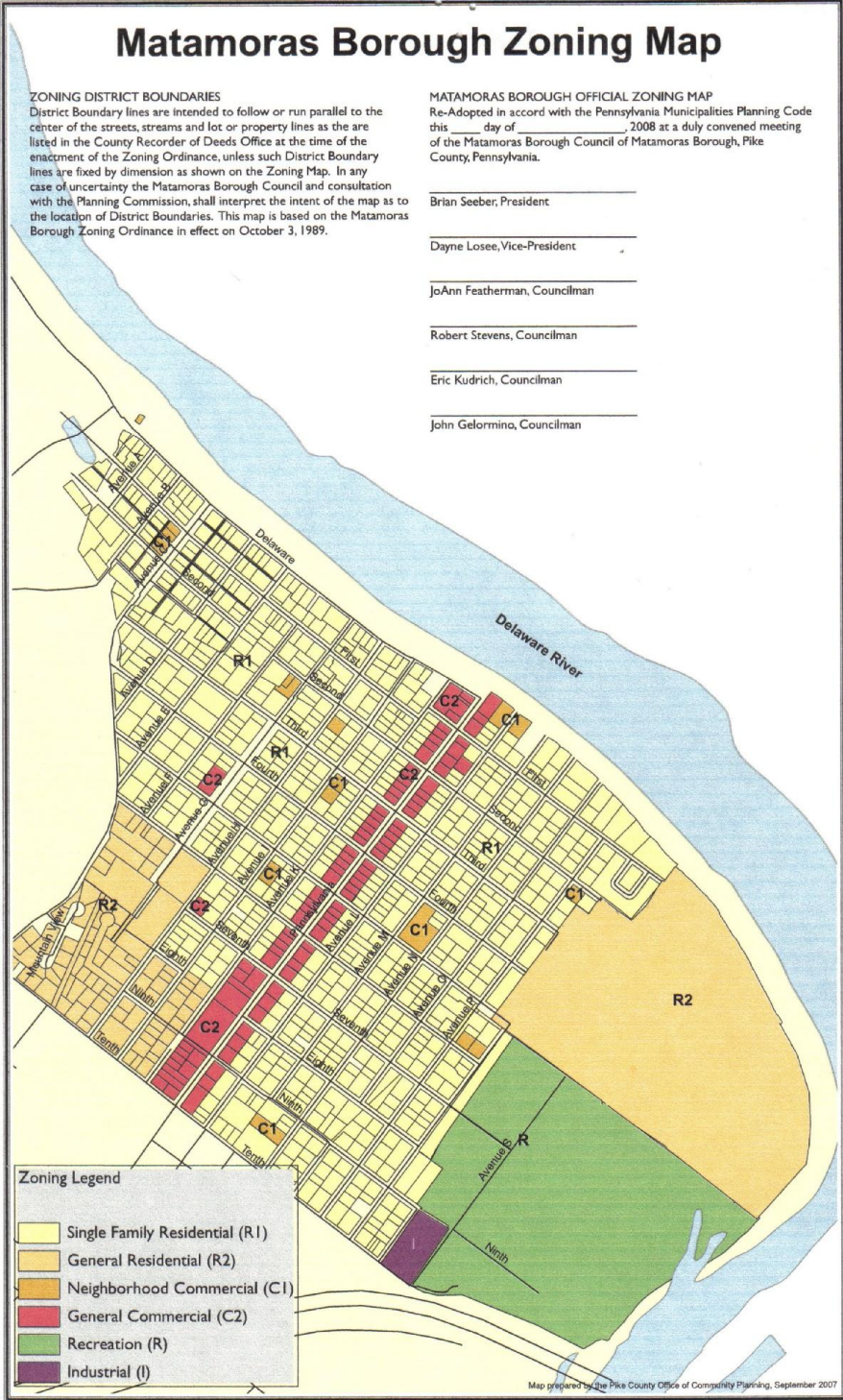
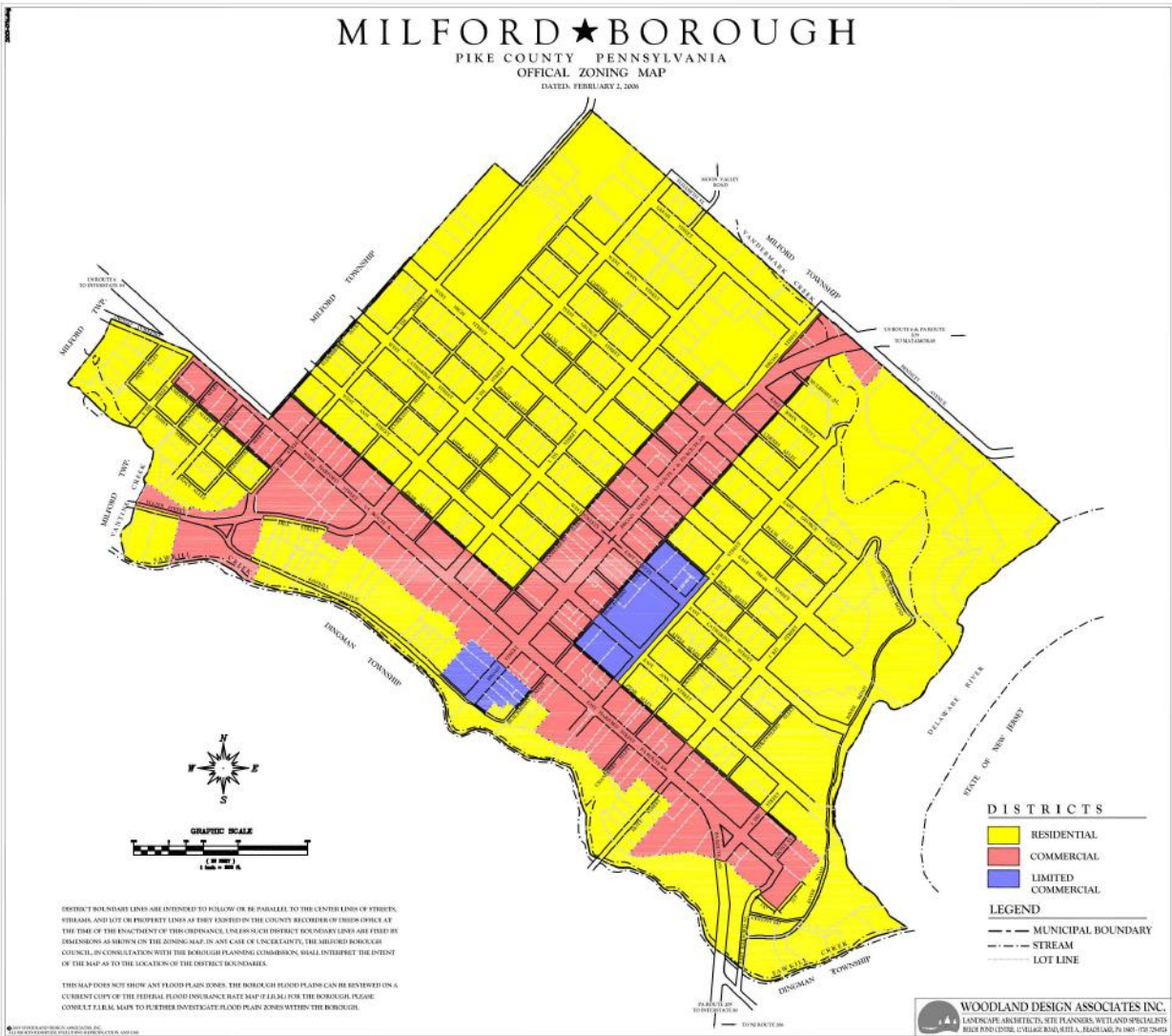


Figure 3.4: Zoning Map of Milford Borough



Based on the zoning maps for each municipality in the figures above, the proposed alternatives predominately are almost entirely through the commercial zoning districts.

3.1.2 Important Farmland

Prime farmland, as defined by the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), is the land that is best suited for producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and water supply needed to economically produce a sustained high yield of crops when it is treated and managed using acceptable farming methods. According to the NRCS, prime farmlands generally include Class I and II soils, which produce the highest yields with minimal inputs of energy and economic resources. Qualities that characterize prime agricultural soils include high permeability to water and air, few or no rocks, optimum levels of acidity and alkalinity, 0 to 8

percent slopes, and the absence of flooding during the growing season. These soils may currently be utilized for crops, pasture, woodland, or land covers other than urban land or water areas.

Prime agricultural soils within the planning area are depicted in Map 4 in Exhibit B. The following soils are considered to be prime agricultural soils in the Municipalities:

- Barbour fine sandy loam (Ba)
- Braceville fine sandy loam (Br)
- Chenango gravelly fine sandy loams (ChB)
- Delaware fine sandy loams (DeA, DeB)
- Mardin channery silt loams (MrB)
- Philo loam (Ph)
- Pope fine sandy loam (Po)
- Unadilla silt loam (Un)

The following soils are considered to be farmlands of statewide importance in the Municipalities:

- Chenango gravelly fine sandy loams (ChC)
- Mardin channery silt loams (MrC)
- Suncook loamy sand (SuB)
- Wyoming cobbly sandy loams (WyB)

The characteristics of the soils in the Municipalities were reviewed and analyzed to determine the probable limitations for OLDS based upon the Pike County Soil Survey Report as prepared by the USDA-NRCS. Additional soils information was provided by the NRCS's Web Soil Survey. Each soil was assigned a suitability based on the presence of hydric soils, depth to bedrock and seasonally high water table, and slope.

The results of this analysis are presented in Table 3-2 and Map 5 in Exhibit B. In order to compare the Chapter 73 and Soil Survey information to determine the suitability classification, the following criteria were used.

Table 3-2 – Soil Limitations for On-Lot Sewage Disposal Systems

Soil Symbol	Soil Name	Description	Slope (%)	Depth to Seasonal High Water Table (inches)	Depth to Bedrock (inches)	Hydric Soil (H) or Inclusions (I)	General Limitations					
							Conventional In-Ground Systems			Elevated Sand Mounds		
							Suitable	Marginal	Unsuitable	Suitable	Marginal	Unsuitable
ArC2	Arnot	Channery Loam	9	> 80	17	-			X		X	
ArE2	Arnot	Channery Loam	25	> 80	17	-			X			X
Ba	Barbour*	Fine Sandy Loam	2	54	> 80	-		X		X		
Br	Braceville*	Fine Sandy Loam	2	21	27	I			X	X		
ChB3	Chenango*	Gravelly Fine Sandy Loam	4	> 80	> 80	-	X			X		
ChC3	Chenango**	Gravelly Fine Sandy Loam	12	> 80	> 80	-	X			X		
ChD3	Chenango	Gravelly Fine Sandy Loam	20	> 80	> 80	-	X			X		
CrB	Craigsville – Wyoming	Complex	3	72	85	I	X			X		
DeA3	Delaware*	Fine Sandy Loam	2	> 80	85	-	X			X		
DeB3	Delaware*	Fine Sandy Loam	6	> 80	85	-	X			X		
DeC3	Delaware	Fine Sandy Loam	14	> 80	85	-	X			X		
EdA	Edgemere	Stony Loam	2	0	24	H			X			X
EgB	Edgemere – Shohola	Complex	9	0	24	H			X			X
Fr	Freetown	Mucky Peat	1	0	> 80	H			X			X
LrB2	Lordstown – Swartwood	Complex	4	> 80	30	-			X	X		
LrC2	Lordstown – Swartwood	Complex	12	> 80	30	-			X		X	
MaB2	Manlius	Channery Silt Loam	6	> 80	30	I			X	X		
MaC2	Manlius	Channery Silt Loam	12	> 80	30	I			X		X	
MdB2	Mardin	Stony Loam	4	15	21	I			X		X	
MdC2	Mardin	Stony Loam	12	15	21	I			X			X
MnD2	Manlius – Arnot	Rock Outcrop Complex	23	> 80	30	-			X	X		
MnF2	Manlius – Arnot	Rock Outcrop Complex	55	> 80	30	-			X			X
MoB	Morris	Channery Loam	4	10	16	I			X			X
MrB2	Mardin*	Channery Silt Loam	4	15	21	I			X		X	
MrC2	Mardin**	Channery Silt Loam	12	15	21	I			X			X
Pa	Paupack	Muck Peak	1	0	> 80	H			X			X
Ph	Philo*	Loam	2	27	> 80	I			X	X		
Pi	Pits, shale, and gravel	-	20	> 80	1	-			X			X

Soil Symbol	Soil Name	Description	Slope (%)	Depth to Seasonal High Water Table (inches)	Depth to Bedrock (inches)	Hydric Soil (H) or Inclusions (I)	General Limitations					
							Conventional Inground Systems			Elevated Sand Mounds		
							Suitable	Marginal	Unsuitable	Suitable	Marginal	Unsuitable
Po	Pope*	Fine Sandy Loam	2	> 80	> 80	I	X			X		
ShB2	Shohola - Edgemere	Complex	4	12	24	I			X		X	
ShC2	Shohola – Edgemere	Complex	12	12	24	I			X			X
SuB	Suncook**	Loamy Sand	3	> 80	> 80	I	X			X		
SwB	Swartswood	Fine Sandy Loam	4	30	32	-			X	X		
Un	Unadilla*	Silt Loam	2	> 80	> 80	-	X			X		
W	Water	-	0	-	-	-	-	-	-	-	-	-
Wa	Wyalusing	Fine Sandy Loam	2	3	> 80	H			X			X
Wu	Wurtsboro	Fine Sandy Loam	4	19	22	-			X		X	
WyB2	Wyoming**	Cobbly Sandy Loam	5	> 80	> 80	-	X			X		
WyF2	Wyoming	Cobbly Sandy Loam	23	> 80	> 80	-	X			X		

The soil limitations presented in Table 3-1 are graphically shown in the On-Lot Septic Suitability Map included in Section 6.0 of this Report. As shown on the On-Lot Septic Suitability Map.

Hydric soils are poorly drained soils that develop an anaerobic (limited oxygen) surface layer because of long periods of saturation or inundation by water. These soils display slow permeability. A seasonal high water table is often commonplace in areas where hydric soils are dominant. Hydric soils are typically an indication of wetland areas. The following planning area soils have major hydric components:

- Edgemere stony loam (EdA)
- Edgemere – Shohola complex (EgB)
- Freetown mucky peat (Fr)
- Paupack muck peak (Pa)
- Wyalusing fine sandy Loam (Wa)

The following planning area soils have inclusions of hydric components:

- Braceville fine sandy loam (Br)
- Craigs ville – Wyoming complex (CrB)
- Manlius channery silt loams (MaB, MaC)
- Mardin channery silt loams (MrB, MrC)
- Mardin stony loams (MdB, MdC)
- Morris channery loam (MoB)
- Philo loam (Ph)
- Pope fine sandy loam (Po)
- Shohola – Edgemere complex (ShB, ShC)
- Suncook loamy sand (SuB)

The areas in the Municipalities with soils having major hydric components or inclusions of hydric components are shown on Map 2 in Exhibit B.

3.2 Floodplains

Floodplains are located along the Delaware River, Sawkill Creek, Vandermark Creek and a fragment of the Deep Brook, and a portion of the Cummins Creek. In accordance with the policies and procedures of the National Flood Insurance Program, the Federal Emergency Management Agency (FEMA) has prepared mapping of the 100-year floodplains for the Delaware River, Sawkill Creek, Vandermark Creek, and the Cummins Creek, as well as some of their tributaries (see Map 2 in Exhibit B).

The majority of the properties in the Planning Area are located outside of the 100-year floodplains of the Municipalities; however, there are some properties in the Planning Area within the 100-year floodplains of the Delaware River and its tributaries. The 100-year floodplain is an area based on past experience and high statistical probability that a destructive flood event will occur. The Planning Area is currently in compliance with the Federal Flood Insurance Program, and the State Flood Plain Management Act. Map provided in Section 6.0 of this Report.

3.3 Wetlands

Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration to support a prevalence of vegetation typically adapted for life in saturated soils. Wetlands generally include swamps, marshes, bogs, and other areas that exhibit the three criteria for defining a wetland area: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology.

As more information has become available about the beneficial aspects of wetland habitats, scientists, engineers, environmental interest groups, and governmental agencies have worked to protect and maintain the unique environments. Along with the traditional uses of wetlands as fish and wildlife habitat, wetlands are now being used for stormwater management and wastewater treatment.

Wetlands are a critical component in many ecological processes and are consequently protected by the federal government. Wetlands provide the following benefits or functions:

- Fish and Wildlife Habitat
- Water Quality Maintenance
- Pollution Filter
- Oxygen Production
- Nutrient Recycling
- Chemical and Nutrient Absorption
- Aquatic Productivity
- Flood Control
- Recreational Land Preservation
- Educational Opportunities
- Microclimate Regulation
- World Climate Regulation
- Sediment Removal
- Energy Source (Peat)
- Open Space Preservation

The National Wetlands Inventory (NWI) mapping, as compiled by the U.S. Fish and Wildlife Service, is useful as a background source of information regarding wetland locations. The maps are prepared through the use of color infrared aerial photographs, and the quality of the maps varies dependent upon the time of year that the photos were taken and other factors. Field investigation, conducted by a trained scientist or engineer, is necessary to determine the actual presence or absence of wetland areas. Map 2 in Exhibit B includes the available NWI information for the Planning Area.

The following wetland types (NWI mapping codes) are found in the Planning Area:

- PEM1Ad – Palustrine, Emergent, Persistent, Temporary Flooded, Partially Drained/Ditched
- PEM1E – Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated
- PFO1A – Palustrine, Forested, Broad-Leaved Deciduous, Temporary Flooded
- PUBF – Palustrine, Unconsolidated Bottom, Semi permanently Flooded
- PUBHh – Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded
- PUBHx – Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated
- PSS1A – Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Temporary Flooded
- R2UBH – Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded
- R3UBH – Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded
- R5UBH – Riverine, Unknown Perennial, Unconsolidated Bottom, Permanently Flooded

Based on the National Wetlands Inventory mapping, wetlands are located along stream corridors in the planning area. However, the recommended alternatives are not located in any of the National Wetlands Inventory Mapping. All protocol required for proper wetlands investigation/identification will be followed during the design phase. Based on preliminary comparison of NWI mapping to proposed alternative areas, no wetland impacts are perceived (based on NWI mapping and best information currently available), yet this will be validated and determined with certainty during design. In the event wetlands are determined to be present, all proper regulatory guidance and protocol will be followed, and all permitting will be received prior to any construction. Overall, no wetland impacts are anticipated and therefore no Plan inconsistencies would be expected.

3.4 Historic Resources

The Pennsylvania Historic and Museum Commission (PHMC) was consulted to review the potential impact of the alternatives evaluated by this Plan. On October 1, 2020, the Plan and USGS Mapping was submitted to PHMC for review. On October 15, 2020, their review letter was received and they indicated that the project will have no effect on historic properties (Exhibit H). The Plan was re-submitted for review on August 24th, 2022, and no above ground or archaeological concerns were found. The review is included in Exhibit H as well.

3.5 Sensitive Biological Resources.

The Act 537 and all relevant mapping was submitted to the Pennsylvania Natural Diversity Inventory (PNDI) for Pennsylvania listed species, and the US Fish and Wildlife Services for federally listed species. No major conflicts were determined other than taking efforts to minimize erosion, sedimentation, and pollution during construction for the endangered dwarf wedgemussel per the USFWS response. The responses are included in Exhibit H. The request was originally submitted in 2022, and review was renewed in 2024 with the same results. Updated clearance letters were received for all relevant agencies.

3.6 Water Quality Issues

Implementation of the structural alternatives will not require new public wastewater treatment facilities or stream discharges as wastewater from these areas will be conveyed to the existing MATW WWTP.

No permanent, deleterious water quality issues are anticipated to occur as a result of implementation of the selected alternative(s) in the Planning Area. During construction activities, sedimentation to surface waters will be controlled by accepted erosion and sedimentation control methods outlined in an approved E&S Control Plan. Once completed, the proposed project may enhance water quality in the Planning Area by reducing the number of active, improperly functioning septic systems in the Township.

Water supplies, both public and private, will not be negatively impacted by the selected alternatives proposed in this report and replicated in the Act 537 Plan. In fact, water supplies may be positively impacted through elimination of pollution entering the groundwater from existing malfunctioning on-lot systems.

3.7 Coastal Resources

There are no coastal areas within planning area; therefore, no impacts to coastal resources are expected.

3.8 Socio-Economic Issues

The proposed alternative is anticipated to promote community viability, improve public health, and to protect property investments.

The locations of the proposed collection facilities are based entirely upon the topography of the land with no consideration given to race or household income. The proposed projects will have no unjust impacts on minorities or disadvantaged populations.

3.9 Recreation and Open Space

The alternatives recommended by this report and replicated in the Act 537 Plan will not themselves create any new recreational or open space opportunities.

3.10 Air Quality

With the exception of the minimal dust and exhaust during the construction of new sewer lines and pumping stations, the proposed projects will not create any significant impacts on air quality.

3.11 Transportation

There will be no permanent impact on transportation. There will be minimal disruption of traffic patterns during construction of the recommended structural alternative. All traffic control and construction methods will be permitted as required by the Pennsylvania Department of Transportation and each Municipality.

3.12 Noise Abatement and Control

Noise will only be an issue during construction activities. Noise will be controlled by best management practices and engineering controls outlined in the construction contract. Construction noise is of a fixed duration and ceases at the completion of the construction phase of the project. Noise from construction vehicles differs from normal vehicular traffic noise in that it is usually limited to normal working hours (8 a.m. to 5 p.m.), whereas traffic noise is usually continuous.

3.13 Wild and Scenic Rivers

There are no Pennsylvania or Federally designated Scenic Rivers in the Planning Area according to the Pennsylvania Scenic Rivers Program.

3.14 Miscellaneous Environmental Considerations

There are no other environmental issues, such as biosolids generation, treatment, and disposal; impacts on or from local landfills; impacts on or from Superfund/HSCA sites; and generation of hazardous, explosive, flammable, toxic, radioactive materials which pertain to the projects proposed by this report and were replicated in the Regional Act 537 Plan.

Appropriate state and federal permits, where required, will be obtained prior to the construction of the proposed projects.

4.0 SUMMARY OF MITIGATION

Due to the temporary nature of all environmental disturbances associated with the construction of the alternatives proposed by this report and replicated in the Act 537 Plan, mitigation is not necessary.

5.0 PUBLIC PARTICIPATION

As part of the Act 537 Planning process, a 30-day public comment period was advertised and held. During this time, the public reviewed and submitted written comments regarding the Act 537 Plan. The comments and responses are included in Exhibit L.

6.0 EXHIBITS

The following exhibits have been included in this Environmental Report:

- EXHIBIT A – MUNICIPAL ORDINANCES AND COMPREHENSIVE PLAN
- EXHIBIT B – MUNICIPAL MAPPING
- EXHIBIT C – SURVEY RESULT MAP
- EXHIBIT D – SUMMARY OF SURVEYS
- EXHIBIT E – MATW INFORMATION
- EXHIBIT F – DRAFT SEWAGE MANAGEMENT ORDINANCE TEMPLATE
- EXHIBIT G – ALTERNATIVE EXHIBITS
- EXHIBIT H – CONSISTENCY DOCUMENTATION
- EXHIBIT I – FUNDING OPPORTUNITIES
- EXHIBIT J – SEWERCAD CAPACITY ANALYSIS
- EXHIBIT K – PLANNING COMMISSION REVIEW PERIOD
- EXHIBIT L – PUBLIC REVIEW PERIOD