

5.1 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 in Chapter 4. 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 Appendix I:

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 Chapter 3. 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 (204 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 (204 EDUs). Alternatives 3A and 3B include a number of higher usage commercial users.

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).

Wastewater Treatment Capacity

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 Chapter 3.

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 Section 5.2.2.

Using the 2023 Westfall Township Chapter 94 Report data for the MATW Plant, there is sufficient hydraulic and organic capacity for the plant. Figures 5.1 and 5.2 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 Chapter 3 and in the Chapter 94 Reports that are submitted to DEP annually and included in Appendix D.

Figure 5.1: Projected Hydraulic Loads (Alternatives 1B, 3B, and 4B)- Each EDU projected as 200 GPD

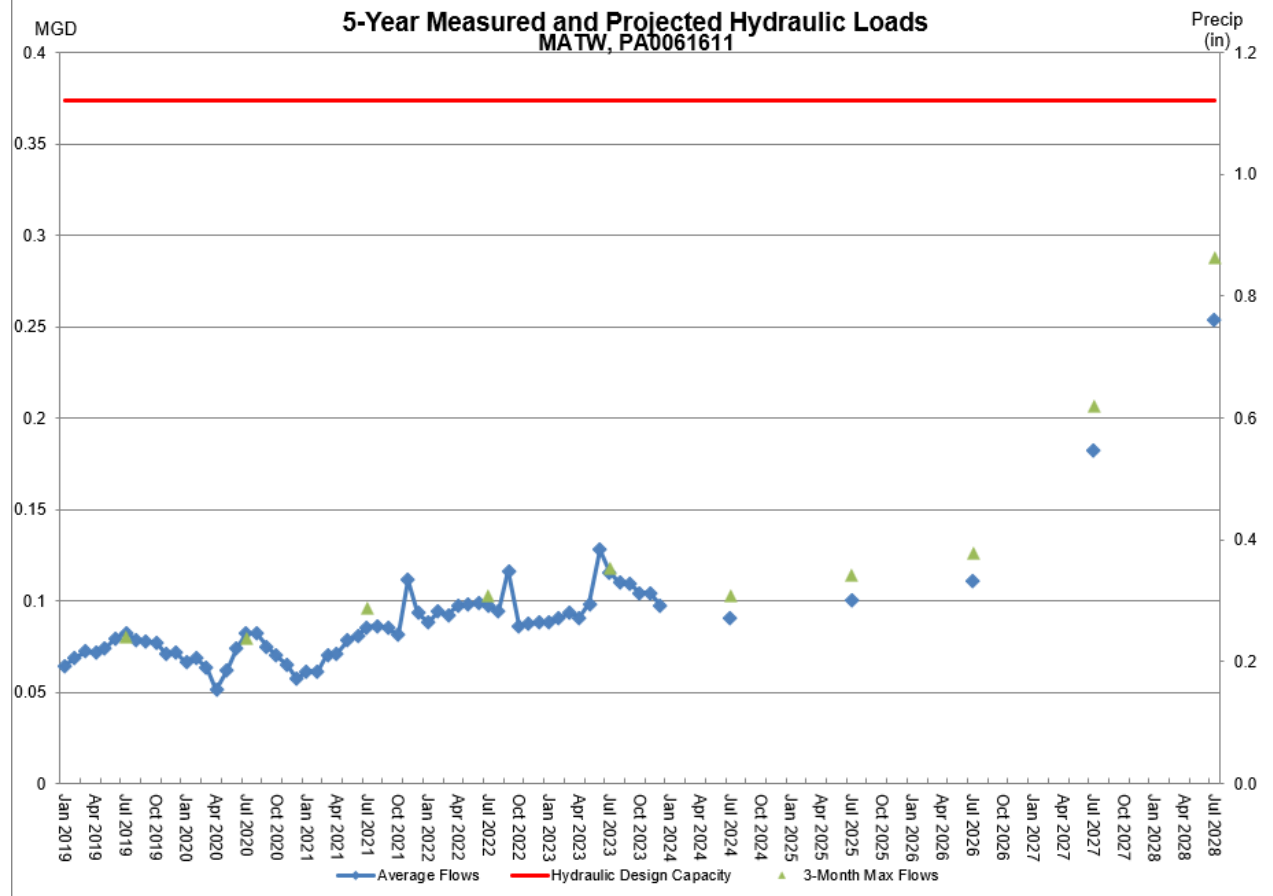
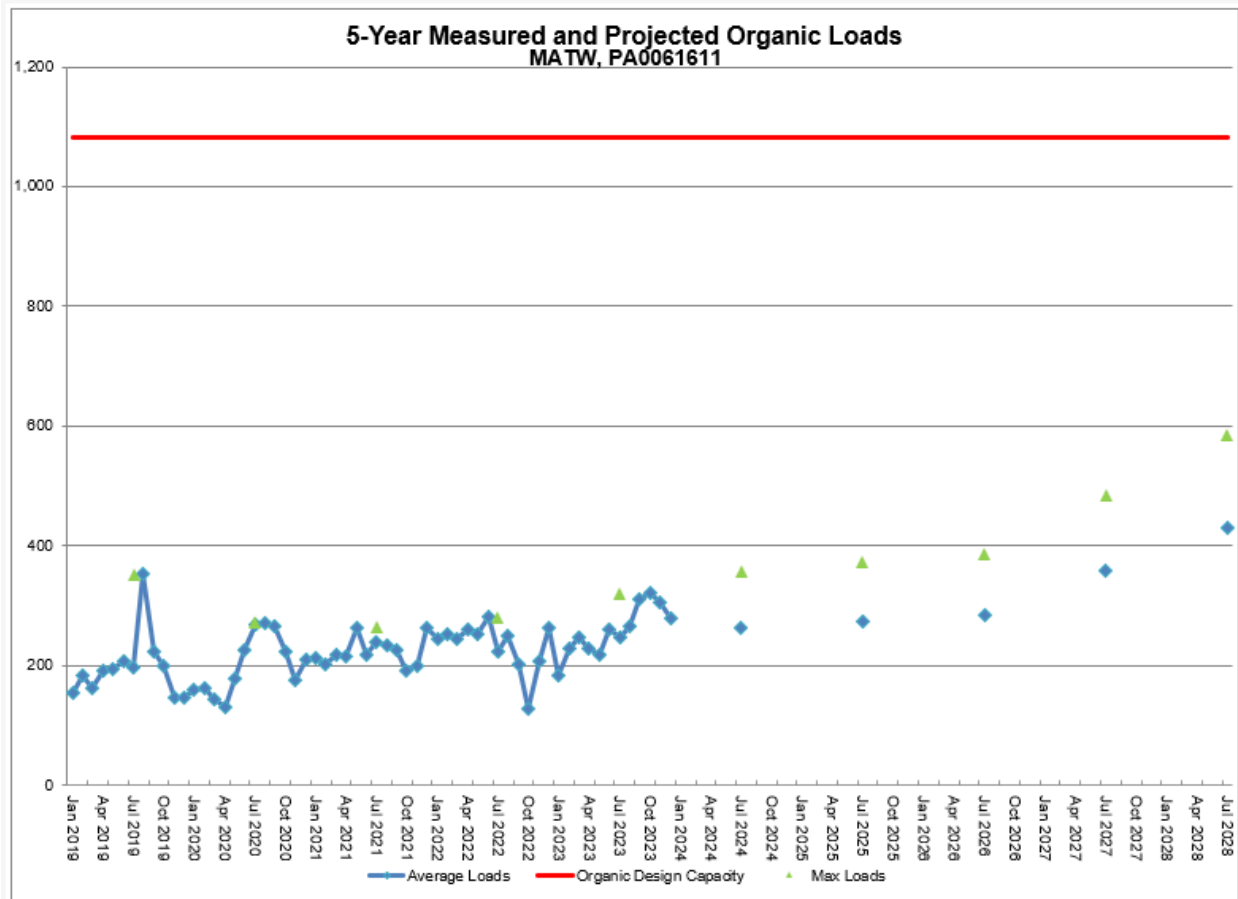


Figure 5.2: Projected Organic Loads (Alternatives 1B, 3B, and 4B)



5.2 NEW COLLECTION AND CONVEYANCE FACILITIES

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.

5.2.1 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 significantly 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 Chapter 8.

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 5.10.

5.2.2 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. A table of the projected pipe velocities for the SewerCAD analysis is included in Appendix Q.

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 488 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 3.93 feet per second.

5.3 UPGRADE OF EXISTING WASTEWATER TREATMENT

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 15,000 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.
- The Katz Development has a reserve capacity of 68,000 GPD (340 EDUs at 200 GPD)
- Each residential building was assumed to be equivalent to one EDU.

Table 5-1: Projected Flows and WWTP Capacity

Selected Alternative	5-10 Year Planning Projected Flows (GPD) *
1B (Matamoras Borough)	63,200
3B (Westfall Township)	42,200
4B (Milford Borough)	59,200
Average Daily Flow at MATW WWTP (2023)	102,555
Projected Flow at MATW WWTP with Selected Alternatives	267,155
Katz Reserve Capacity (Not a part of Planning Areas)	68,000
Projected Flow with Katz Reserve	335,155
MATW WWTP Capacity	374,000

*Flows and basis are described in Table 4.11 in Chapter 4.

5.4 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 detailed in Section 5.8 of this chapter.

5.4.1 – 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.

5.5 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."

5.6 SPRAY IRRIGATION SYSTEM

On-lot drip irrigation systems appear to be a viable alternative based on the soil survey data for replacement of existing OLDS. However, the expense would solely be on the homeowner. Drip irrigation takes excessive space, is expensive, and can cause issues in the winter. As a result, this alternative is not recommended due to the cost to residents and the need to establish system requirements when there are cheaper and more viable alternatives for individuals that are outside of the recommended structural alternatives.

A spray irrigation system was briefly considered to serve Milford Borough as a means of wastewater treatment discharge. It was proposed that the treatment facility could be located in an empty lot owned by Pike County in Milford Township (Tax Parcel ID: 113.00-01-05.010). Since the same conveyance lines as a conventional sewage system would still need to be built, it is not cost effective to build a separate facility, when the flows could be conveyed to a regional WWTP that has excess capacity. Therefore, no further evaluations were completed, and no spray irrigation systems are proposed.

5.7 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 Appendix B. Matamoras Borough and Milford Borough do not have holding tank ordinances but shall adopt a similar one to Westfall Township's existing ordinance.

5.8 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 Appendix H. 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.

5.8.1 Public Education

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

5.9 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. 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 Chapter 4. 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.

5.10 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. The No Action Alternative was briefly considered and rejected.

5.11 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 Appendix C.

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 Appendix I. 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.

Chapter 6 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 Chapter 6 for the funding analysis.

5.11.1 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 Chapter 3. 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 in Section 5.1 of this chapter.

5.11.2 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 in Section 5.1 of this chapter.

5.11.3 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 and are described in Section 5.1 of this chapter.

5.11.4 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 chapter.

5.11.5 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.

5.11.6 Alternative for Future Flow

The proposed alternatives outlined in this chapter address both the current needs and addresses the future 5-10 year planning window needs identified in Chapter 4. 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.

5.11.7 Comparative Cost Estimates of Study Area Structural Alternatives

The following assumptions were used to develop the cost estimates presented in this 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. 5-2 through 5-9 present the cost estimates for the structural alternatives and Table No. 5-10 provide a summary 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. 5-11 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 5-2 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 5-3 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 5-4 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 5-5 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 5-6 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				204
ESTIMATED CAPITAL COST PER EDU				\$ 34,000.00

TABLE 5-7 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	204
					ESTIMATED CAPITAL COST PER EDU	\$ 20,000.00

TABLE 5-8 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 8" WYE	98	EA. \$ 435.00	\$	42,830.00
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	\$	138,000.00
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	\$	90,356.25
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%	\$ 1,893,000.00
				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 5-9 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 5-10 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	204	\$34,506	\$1,951	\$163
	Alternative 3B	\$3,900,000	\$400,000	\$3,500,000	\$208,000	\$8,000	\$216,000	\$106,355	\$4,006,355	204	\$19,639	\$1,059	\$88
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 5-11 Summary of Financing Options for Chosen Alternatives (Each Municipality applying separately)

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: \$ 718,200	No. of Total EDUs 1197		No. of New EDUs 204
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	\$ 1,018,880	\$ -	\$ 2,881,120	1.743%	20	\$171,860	\$ 804	\$ 67	\$556,084	
3B - 1b	PENNVEST - w/ Max Grant	\$ 1,018,880	\$ -	\$ 2,881,120	1.743%	20	\$171,860	\$ 804	\$ 67	\$556,084	
3B - 2	USDA	\$ 1,018,880	\$ -	\$ 2,881,120	3.250%	40	\$129,731	\$ 766	\$ 64	\$2,308,116	
3B - 3	Bank Loan	\$ 1,018,880	\$ -	\$ 2,881,120	6.000%	20	\$251,189	\$ 876	\$ 73	\$2,142,663	
3B - 4	Bond Issue	\$ 1,018,880	\$ -	\$ 2,881,120	5.000%	30	\$187,421	\$ 818	\$ 68	\$2,741,510	

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.

5.12 CONCLUSIONS

The following are recommendations for the wastewater planning needs enumerated in Chapter 4. All of the selected alternatives make it feasible for future growth and collection of future flows outlined in Chapter 4. The low-pressure lines are sized, so that the peak velocities are between 2 and 8 feet per second. 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.**

As shown in the cost analyses, 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 options is included in Appendix P. Alternatives 2A and 2B were considered but due to the overall estimated project cost (over \$34 million) and the high level of grant funding required to make it financially feasible, it would not be implementable. Since Alternative 1B requires less total grant funding and is for the immediate needs area, it is recommended.

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 needs areas within the Borough. It is most cost effective because it can tie into the existing 6-inch force main without having to extend further to an existing pump station.

Alternatives 1A and 1B represent the areas with the greatest need in Matamoras Borough which was specifically the commercial district as well as the residential areas with the greatest needs as determined by the OLDS Surveys. Provisions of central sewage to the entire Borough were considered in Alternatives 2A and 2B. However, the overall costs of either alternative being both upwards of \$34 million would create a financial burden on the Borough and its residents and not be financially feasible. If only PennVEST funding was secured at County Cap Rates without any grants, the cost per EDU would be \$176. As a result, the recommended alternative for Matamoras Borough is Alternative 1B.

2. **Public sewer service shall be provided for Westfall Township (Alternative 3B) along Route 6/209**

As shown in the cost analyses, 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 \$60/EDU, which matches the existing MATW user rate. 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 the needs areas within Westfall Township, specifically the remainder of the commercial district.

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 Appendix P.

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 of the needs areas within the Borough, in particular, the commercial district. Prior to connections for Alternative No. 4B, Alternative No. 3B would need to be completed by Westfall Township.

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 levels to identify if there are any subsurface issues that could be associated with failing OLDS that are not apparent at the surface. Once the Groundwater Study is complete, an Act 537 Special Study shall be submitted to DEP.