

**WARWICK TOWNSHIP ACT 537 SEWAGE FACILITIES  
PLAN UPDATE**

**FOR**

**WARWICK TOWNSHIP**

**LOCATED IN**

**WARWICK TOWNSHIP,  
BUCKS COUNTY, PENNSYLVANIA**

**Ebert Engineering, Inc.**

**Water and Wastewater Engineering**

**P.O. Box 540  
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**EE, INC. PROJECT NO. 050-073**

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Revised March 9, 2019  
Last Revised July 27, 2020**

## **TABLE OF CONTENTS**

### **EXECUTIVE SUMMARY**

i to vii

### **CHAPTER**

I.	PREVIOUS SEWAGE FACILITIES PLANNING	I-1 to I-4
II.	PHYSICAL AND DEMOGRAPHIC ANALYSIS	II-1 to II-26
III.	EXISTING SEWAGE FACILITIES	III-1 to III-22
IV.	FUTURE GROWTH AND LAND DEVELOPMENT	IV-1 to IV-16
V.	IDENTIFICATION OF ALTERNATIVES	V-1 to V-19
VI.	EVALUATION OF ALTERNATIVES	VI-1 to VI-6
VII.	INSTITUTIONAL EVALUATION	VII-1
VIII.	SELECTED ALTERNATIVE AND IMPLEMENTATION SCHEDULE	VIII-1 to VIII-6

### **MAPS**

1.	EXISTING SEWAGE FACILITIES AND SERVICE AREAS
2.	WOODLANDS AND FLOODPLAINS
3.	WATER FEATURES MAP
4.	SOIL MAP
4A.	SOIL LIMITATIONS FOR OLDS IN-GROUND BED
4B.	SOIL LIMITATIONS FOR SAND MOUNDS
4C.	SOIL LIMITATIONS FOR DRIP IRRIGATION
4D.	SOIL LIMITATIONS FOR SPRAY IRRIGATION
5.	PRIME FARMLAND MAP
6.	GEOLOGY MAP
7.	GENERAL TOPOGRAPHY
8.	2016 WELL ANALYSIS FOR WATER SAMPLE RESULTS
8A.	2020 WELL ANALYSIS FOR WATER SAMPLE RESULTS

9. EXISTING LAND USE MAP
10. ZONING MAP
11. BCHD SANITARY SURVEY MAP

## **APPENDICES**

- A. ON-LOT SEWAGE MANAGEMENT ORDINANCE
- B. SANITARY NEEDS SURVEY
- C. WARWICK TOWNSHIP PLANNING COMMISSION CORRESPONDENCE
- D. BUCKS COUNTY DEPARTMENT OF HEALTH CORRESPONDENCE
- E. BUCKS COUNTY PLANNING COMMISSION CORRESPONDENCE
- F. PUBLIC NOTICE
- G. WARWICK TOWNSHIP RESOLUTION FOR PLAN REVISION
- H. ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST
- I. LOW PRESSURE SANITARY SEWER LAYOUTS FOR GERMINAL COLONY AND VALLEY ROAD STUDY AREAS

## **EXECUTIVE SUMMARY**



## 2018 ACT 537 PLAN UPDATE

### EXECUTIVE SUMMARY

Warwick Township is updating the Township's Act 537 Official Sewage Facilities Plan, which was last updated in 1995. Warwick Township took this opportunity to review its existing and proposed areas to be included in public sanitary sewer service area, existing and future needs, resolve zoning inconsistencies, and provide guidance to future wastewater disposal policies and procedures. Through these analyses, Warwick Township has identified alternatives that will best serve its needs now and into the future. Warwick Township has commissioned its consultants to prepare an Updated Act 537 Plan to address areas that were identified in previous Act 537 Plan(s) to be service by public sewer, increase Fish Creek current permitted capacity by 47,790 gpd and to further define the boundaries of the existing public sanitary sewer system.

Warwick Township has a total of four areas that are serviced by public sewer which include the Fish Creek, Country Crossing, Warminster, and Warrington Service Areas. The purpose of this Township Act 537 Plan Update was to further evaluate the two main public sewer service areas, Fish Creek Wastewater Treatment Plant (WWTP) and Country Crossing WWTP Service Areas in relation to the areas previously noted in the 1995 Act 537 Plan as future public sewer service areas to be served by the Fish Creek and Country Crossing WWTPs. The areas noted in the 1995 Act 537 Plan are Germinal Colony, Warwick Commons - Industrial Park, and a residential development located in the northeast portion of the site along Valley Road.

A PADEP Tier I Evaluation was conducted throughout the areas currently serviced by on-lot sewage disposal systems, which include Germinal Colony, Warwick Commons (industrial park), and a residential development off of Valley Road. A PADEP Tier II Evaluation was also conducted in the Germinal Colony and Valley Road areas. Based on the evaluation performed, the vast majority of the results from the water sampling provide evidence that the Sewage Management Ordinance enacted by the Township has been effective. The Tier I and Tier II Evaluations are further discussed in the following Chapters.

Warwick Township also took this opportunity to further evaluate the entire Township as a whole to identify potential development and future connections to the two main public sewer service areas, Fish Creek WWTP and Country Crossing WWTP. In this Act 537 Plan update, the Township has five Study Areas to facilitate the analysis of potential improved wastewater alternatives for each. The Study Areas were chosen based partially upon existing land use, existing wastewater disposal methods, and potential needs.

Revised July 27, 2020

The five Study Areas are identified as follows:

1. Fish Creek Public Sewer Service Area

This area of the Township has the highest development and redevelopment potential for future growth based upon the existing Zoning Ordinance and Subdivision and Land Development Ordinance along with current development proposals. This area is currently serviced by the existing Fish Creek WWTP and is the largest service area. The selected alternatives for this study area are as follows:

There is an existing residential development located on Valley Road, identified on Map No. 1 as Area "H" which is currently serviced by individual on-lot sewage disposal systems. This area was previously identified in the 1995 Township Act 537 Plan to be provided with public sewer. Since the 1995 Plan, the Township passed a Sewage Management Ordinance in 2011 requiring the property owners with individual on-lot sewage disposal system to pump their system every three years. The Township also held an educational program for on-lot sewage disposal systems and maintenance of the system to promote longevity of the system.

This area was previously listed in the 1995 Township 537 Plan to be provided with public sewer. Based on the evaluation of the Tier I and Tier II sampling that was performed, the results of the sampling provide evidence that the Sewage Management Ordinance is effective and the existing on-lot sewage disposal systems area currently functioning. Therefore, the Township will not provide public sewer service to this area at this time. The area will remain within the Fish Creek Sewer Service Area, but will continue to be monitored through the Sewage Management Ordinance.

Warwick Township will continue to re-evaluate the Valley Road Study Area every six years through sanitary and well surveys. At that time, a sanitary and well survey will be conducted and data will be analyzed to identify potential on-lot malfunctions or evidence of water quality impacts such as elevated fecal coliform or nitrate levels in well water.

To determine when this area should be connected to the public sanitary sewer system, Warwick Township has identified the following trigger conditions:

1. When fecal coliform results in 25% of the wells are greater than 1, or
2. When nitrogen results in 25% of the wells are greater than 10 mg/L, or
3. When 25% of the on-lot systems malfunction with no suitable replacement area or repair

If the analysis identifies that the above listed triggers have been reached for the Valley Road Study Area, the selected public sanitary sewer alternative for the Study Area will be implemented to provide these properties with access to public sewer. As described within Chapter V of this Act 537 Plan, a low pressure sanitary sewer system was selected as the

preferred public sewer alternative to service this area. The Fish Creek WWTP has available treatment capacity should this area connect to public sewer. The proposed low pressure sanitary sewer system will connect to the existing gravity sanitary sewer system for conveyance to the Valley Road Pump Station for ultimate conveyance to the Fish Creek WWTP. The estimated construction cost to install a low pressure sanitary sewer system in the Valley Road Study Area is \$350,956.00. Given that the existing on-lot systems are functioning, connection of this area to the public sanitary sewer system does not appear to be a financially viable alternative at this time.

Several potential development areas are identified on Map No. 1, and the following revisions to the Fish Creek Public Sewer Service Area have been proposed as outlined within this Act 537 Plan Update:

- The Fish Creek Public Sewer Service Area will encompass Warwick Mills (identified on Map No. 1 as Area “A”) as Warwick Mills obtained PADEP planning approval on April 27, 2016 under PADEP Code No. 1-09951-193-3J and starting to connect to the system.
- The public sewer service area will be extended to include the developed and undeveloped areas south of Mill Road to eliminate spot zoning. A portion of this area is identified on Map No. 1 as Area “B”.
- Public sanitary sewer service will be provided to the Fetzer Tract (identified on Map No. 1 as Area “G”). Planning approval will be obtained through the Act 537 Special Study currently being conducted.
- The property along Stony Road (identified on Map No. 1 as Area “F”) will remain in the public sewer service area. Connection to public sewer will be funded by the developer of this tract of land.
- Breton Hills (identified on Map No. 1 as Area “J”) will continue to utilize on-lot sewage disposal systems and monitored under the Sewage Management Ordinance No. 2011-7. The area will remain within the public sewer service area as outlined in the Approved Special Study dated February 2011.
- Central Park at Warwick (Prestige Property), located at Guinea Lane and Brook Lane, will be provided public sewer service. Planning approval will be obtained through the Act 537 Special Study currently being conducted. The area is identified on Map No. 1 as Area “C”.
- The Sailor Tract (identified on Map No. 1 as Area “D”) obtained PADEP planning approval on January 11, 2017 under PADEP Code No. 1-09951-196-3J

Revised July 27, 2020

and connected to the system. The four adjacent parcels will be included into the public sewer service area to eliminate spot zoning.

The existing Fish Creek WWTP has the capacity to service the additional projected flow of 47,790 gpd from the proposed expansion of the sewer service area. This Act 537 Plan Update will provide the necessary planning to allow Fish Creek WWTP to revise and increase the NPDES Permit from 0.85 mgd to 0.879 mgd if the additional capacity is needed in the future.

## 2. Country Crossing Public Sewer Service Area

This area consists of residential homes along with a large industrial complex located in the southeastern portion of the Township. The majority of this service area is serviced by public sewer which is treated and disposed of at the Country Crossing WWTP.

The selected alternatives for this study area are as follows:

There is a commercial/industrial park known as Warwick Commons located along Stout Drive and Mearns Road which was identified in the 1995 Act 537 Plan to be serviced by public sewer in the future. This area currently utilizes on-lot sewage disposal systems to service the existing lots. Based on the evaluation of the Tier 1 sampling, the enacted Sewage Management Ordinance has proven to be effective in the area. The water sampling results will be further discussed in later chapters.

Given that the existing on-lot systems are functioning, connection of the Warwick Commons Industrial Park to the sewer system is not a financially viable alternative at this time. Existing public sanitary sewer is also available for these properties to connect in the future. This area will remain within the Country Crossing Public Sewer Service Area and will continue to be monitored through the Sewage Management Ordinance.

Germinal Colony was also identified in the 1995 Act 537 Plan to be provided public sewer. Based on the evaluation of the Tier I and Tier II sampling performed, the enacted Sewage Management Ordinance is effective in this area. For this 537 Plan Update, Germinal Colony will remain in the Country Crossing public sewer service area, however these properties will continue to utilize their on-lot sewage disposal systems under the Sewage Management Ordinance.

Warwick Township will continue to re-evaluate the Germinal Colony Study Area every six years through sanitary and well surveys. At that time, a sanitary and well survey will be conducted and data will be analyzed to identify potential on-lot malfunctions or evidence of water quality impacts such as elevated fecal coliform or nitrate levels in well water.

To determine when this area should be connected to the public sanitary sewer system, Warwick Township has identified the following trigger conditions:

1. When fecal coliform results in 25% of the wells are greater than 1, or
2. When nitrogen results in 25% of the wells are greater than 10 mg/L, or
3. When 25% of the on-lot systems malfunction with no suitable replacement area or repair

If the analysis identifies that the above listed triggers have been reached for the Germinal Colony Study Area, the selected public sanitary sewer alternative for the Study Area will be implemented to provide these properties with access to public sewer. As described within Chapter V of this Act 537 Plan, a low pressure sanitary sewer system was selected as the preferred public sewer alternative to service this area. The Country Crossing WWTP has available treatment capacity should these two areas connect to public sewer. The proposed low pressure sanitary sewer system will connect to the existing gravity sanitary sewer system which will convey wastewater to the Creek Road Pump Station for ultimate conveyance to the Country Crossing WWTP. The estimated construction cost to install a low pressure sanitary sewer system in the Germinal Colony Study Area is \$740,761.86. Given that the existing on-lot systems are functioning, connection of this area to the public sanitary sewer system does not appear to be a financially viable alternative at this time.

3. Warminster Public Sewer Service Area

A residential area located in the southern portion of the Township along Old York Road between Eddowes Road and Bristol Road is serviced by Warminster Municipal Authority.

The selected alternatives for this study area are as follows:

The existing residences will remain connected to public sewer with no current planned redevelopments.

4. Warrington Public Sewer Service Area

The most western portion of the Township, located at the intersection of Bristol Road and Guinea Lane, is serviced by Warrington Township.

The selected alternatives for this study area are as follows:

The existing residences will remain connected to public sewer with no current planned redevelopments.

Revised July 27, 2020

## 5. On-Lot Sewage Disposal Service Area

The on-lot sewage disposal service area will continue to utilize existing on-lot sewage disposal systems (OLDS) and monitored under the existing Sewage Management Program. The 2011 Sewage Management Ordinance requires property owners to have their septic system pumped every three years and to provide the Township with a copy of the pump receipt. The Township keeps the records and track of the program.

Connection of proposed developments to the public sewer service areas will be dependent upon the final land development approvals and construction timelines of the proposed developments. In general, the planning, permitting, and construction schedule for proposed developments will take at least two years. The proposed implementation schedule for this Act 537 Plan Update includes the following:

Act 537 Planning Task	Estimated Time from DEP Approval of 537 Plan
PADEP Act 537 Plan Approval	Month 1
Municipal Notification of NPDES Permit Revision (Act 14 Notices)	Month 3
Submission of NPDES Permit Revision	Month 6
Approval of NPDES Permit Revision	Month 11
Final Land Development Approvals and Permits (Fetzer Tract)	Year 1
Construction of Fetzer Tract and Extension of Public Sewer to Fetzer Tract Study Area	Year 2 to 3
Final Land Development Approvals and Permits (Prestige Property)	Year 3 to 4
Construction of Prestige Property and Extension of Public Sewer To Prestige Property Study Area	Year 5 to 6
Re-evaluate needs within the Germinal Colony and Valley Road Study Areas	Year 6

The remainder of this 537 Plan Update, in accordance with PA DEP requirements, presents a detailed analysis of the economic, environmental, and institutional factors that have resulted in the chosen alternatives. The selected alternatives can be implemented under the existing administrative structure of both the Municipal Authorities (Warwick Township Water & Sewer Authority and the Warminster Municipal Authority) and Warwick Township. As identified throughout this Act 537 Plan Update, discussions pertaining to the various aspects of sewage

planning have been relatively specific to the two main public sewer service areas, which include Fish Creek and Country Crossing, both of which are owned and operated by Warwick Township Water and Sewer Authority. Previously approved planning efforts, as discussed in Chapter 1, are still relevant of portions of the areas within Warwick Township.

**CHAPTER I**  
**PREVIOUS SEWAGE FACILITIES PLANNING**



## **CHAPTER I**

### **PREVIOUS SEWAGE FACILITIES PLANNING**

#### **A. PREVIOUS WASTEWATER PLANNING**

##### **1. Previously Planning Undertaking Under the PA Sewage Facilities Act**

###### **a. Earliest Sewage Facilities Planning**

The earliest Act 537 related planning for Warwick Township dates back to 1960 when Bucks County released its Master Plan for Water Supply and Sewer Facilities. This Plan evaluated the needs at that time in a very broad fashion, recommending only large areas ("sub-regions") for consideration to the nearest WWTP, and construction of new WWTPs in isolated areas that would be affected by continuing growth in the region.

Warwick Township's first Official Act 537 Plan was the result of a June 1970 update to the 1960 Master Plan and recommended an interim treatment facility to connect the Jamison village area, Bucks County Vo-Tech School, and Camp Neumann. The interim treatment facility would be replaced by a regional WWTP after 1980.

As some of the recommendations in the 1970 Plan were not implemented by 1976, a private developer created the next Act 537 planning document, which proposed spray irrigation of treated wastewater at the Bucks County Country Club to service a proposed 69 acre development adjacent to Old York Road. DEP's review of this plan ordered Warwick Township to address other problem areas that were documented. In response, another developer funded report presented additional alternatives to provide sewage facilities, but was still not adequate to address all of DEP's concerns.

In continuation of the above plans, a Carroll Engineering Corporation (CEC) report from June of 1977 recommended a new WWTP discharging to Fish Creek, with a capacity of 0.51 MGD. Treated effluent would be dispersed at the County Club, with the WWTP receiving flows that were above the capacity of the spray system. Warwick Township further refined the CEC report in late 1977, and concluded that a 0.525 MGD WWTP discharging to Fish Creek was the most viable alternative, and would be sufficient for the 10 year needs of the planning area. DEP independently concurred with the Fish Creek WWTP concept in their draft Comprehensive Water Quality Management Plan (COWAMP) that was released in 1978.

Construction financing of the Fish Creek WWTP was the responsibility of a private company (Warwick Water & Sewer, Inc.), with the ultimate transfer of ownership to the Warwick Township Water and Sewer Authority. The Fish Creek WWTP began operations in 1985.

**b. Act 537 Plan Phase I and II (1995)**

Warwick Township's current Act 537 Plan (phases I and II) was prepared in February of 1995 and contained planning intended for the 5 year period from 1995 to 2000. The 1995 Act 537 Plan addressed existing sewage facilities in response to "increased pressure for land development and a moderately high number of on-site sewage system failures." Final recommendations were to expand the existing Fish Creek WWTP and design and construct a second WWTP to serve the Little Neshaminy Creek drainage area of the Township. This new facility would become the Country Crossing WWTP.

**c. Act 537 Plan Phase III Part A (1996) Phase III Part B (1998)**

Subsequent Act 537 planning efforts in June 1996 and July 1998, entitled Phase III Part A and Phase III Part B, respectively, were also completed. Phase III A pertained to the Fish Creek WWTP service area of the Township, and Phase III B pertained to the Country Crossing WWTP service area. These smaller Act 537 efforts continued with the implementation of the selected alternatives identified in the February 1995 Act 537 Plan noted above, namely the expansion of the Fish Creek and Country Crossing WWTPs, respectively.

It should also be noted that a Township wide Sewage Management Ordinance (SMO) was proposed within the Phase III Part B Act 537 Update to encompass all properties utilizing on-lot sewage disposal that were outside of the public sewer service area or not proposed for immediate connection to the Fish Creek WWTP.

**d. Eddowes Road and Breton Hills Special Study**

Subsequent Act 537 planning efforts in March 2010, entitled Breton Hills and Eddowes Road Study Areas, were also completed. Breton Hills Study Area for Phase I (comprised of 4 edus) is a gravity sanitary sewer line that flows to the Fish Creek WWTP. Eddowes Road Study Area Phase I (comprised of 22 edus) flows to the Warminster Municipal Authority WWTP for treatment and disposal. PADEP Approval was obtained in February 2011 for this Special Study.

Breton Hills Phase II of this Special Study indicates the remaining 20 parcels will remain to be serviced by on-lot systems. At the time of the preparation of the Breton Hills and Eddowes Road Special Study, the residents in this area expressed a desire to work under a sewage management program to determine the actual need and timing of when and if the public sanitary sewer system needs to be extended to service all or a portion of Phase II of the study area.

2. **Approved Implementation Schedule Contained within The Plans**

Based on the current Act 537 Plan, there are three areas that were noted in the Township 537 Plan prepared in 1995 that have not been provided sewer within the projected time frame allotted in the Plan. The areas noted in the 1995 Plan are Germinal Colony (Letter K), Warwick Commons - Industrial Park (letter L), and a residential development located in the northeast portion of the Township along Valley Road (letter H). These three areas are identified with the above reference letters on Map No. 1, Existing Sewage Facilities and Service Areas and addressed in this Act 537 Plan Update.

3. **Anticipated or Planned By Application Sewer Authorities or Approved Under A Chapter 94 Corrective Action Plan**

Warwick Township does not have a consent order for a Corrective Action Plan.

4. **Official Sewage Facilities Plan Revisions (Planning Modules)**

Following is a list of documented PA DEP Act 537 related planning documents:

<b>Fish Creek Service Area - Approved For Land Development</b>		
<b>DEP Code Number</b>	<b>Approval Date</b>	<b>Description</b>
1-09951-193-3J	4/27/16	40 Lot Residential Development Located at Corner of School Road and Mill Road
1-09951-196-3J	1/11/2017	7 Lot Residential Development Located at 2195-2199 Warwick Road
-	-	Prestige Property (Not Approved for Land Development) *
-	-	Fetzer Tract (Not Approved for Land Development) *

<b>Country Crossing Service Area - Approved For Land Development</b>		
<b>DEP Code Number</b>	<b>Approval Date</b>	<b>Description</b>
-	-	Currently there are not planning module, or exemption approved for connection in this service area

\* - These two parcels are being addressed under a Special Study prepared by the Township for inclusion of the two projects into the Fish Creek Public Sewer Service Area. A brief description of each project is provided below:

The Prestige Property is a proposed thirteen (13) single family residential homes with a projected sewage flow of 3,510 gpd (13 edus x 270 gpd/edu as defined by WTWSA). The development will connect to the existing Fish Creek public sewer service area.

The Fetzner Tract is a proposed seventy eight (78) townhomes development with a clubhouse and pool. The projected sewage flow is 21,600 gpd (80 edus x 270 gpd/edu as defined by WTWSA). The development will connect to the existing Fish Creek public sewer service area.

## **5. Summary of Previous Act 537 Planning Documents**

Warwick Township has two main public sewer service areas located within the Township that are owned and operated by Warwick Township Water & Sewer Authority, Fish Creek WWTP and Country Crossing WWTP. The Township is also serviced by Warrington Township Public Sewer Service Area and Warminster Municipal Authority Sewer Service Area.

There are three areas that were noted in the Township's 1995 Act 537 Plan that have not been provided public sewer within the projected time frame allotted in the 1995 Plan. The areas noted in the 1995 Plan are Germinal Colony, Warwick Commons - Industrial Park, and a residential development located in the northeast portion of the Township along Valley Road.

The purpose of this current Township Act 537 Plan to address areas that were identified in previous Act 537 Plan(s) to be service by public sewer, increase Fish Creek current permitted capacity and to further define the boundaries of the existing public sanitary sewer system.

At the time of the preparation of the Breton Hills and Eddowes Road Special Study in 2010, the residents in the Breton Hills Phase II area expressed a desire to work under a sewage management program to determine the actual need and timing of when and if the public sanitary sewer system needs to be extended to service all or a portion of Phase II of the study area. Warwick Township re-evaluated this area as part of this Act 537 Update to determine whether public sewer should be extended to this area and the currently approved special study will remain as the planning document for this area.

**CHAPTER II**  
**PHYSICAL AND DEMOGRAPHIC ANALYSIS**

## CHAPTER II

### PHYSICAL AND DEMOGRAPHIC ANALYSIS

#### A. Designation of Study Areas

Warwick Township has two main public sewer service areas located within the Township which are owned and operated by Warwick Township Water & Sewer Authority. These two public sewer service areas include Fish Creek WWTP and Country Crossing WWTP.

The Township is also serviced by the Warrington Township Public Sewer Service Area and Warminster Municipal Authority Sewer Service Area. The most western portion of the Township, located at the intersection of Bristol Road and Guinea Lane, is serviced by Warrington Township. A residential area located in the southern portion of the Township along Old York Road between Eddowes Road and Bristol Road is serviced by Warminster Municipal Authority.

As Warwick Township does not have any proposed developments or redevelopments in the Warrington Township Public Sewer Service Area or Warrington Municipal Authority, the two service areas will remain the same.

The purpose of this Act 537 Plan Update is to further evaluate the three areas that were noted in the Township's 1995 Act 537 Plan that have not been provided public sewer within the projected time frame allotted in the Plan. The areas noted in the 1995 Plan are Germinal Colony and Warwick Commons - Industrial Park located within the Country Crossing Sewer Service Area, and a residential development located in the northeast portion of the Township along Valley Road within the Fish Creek Sewer Service Area.

Warwick Township also took this opportunity to further evaluate the entire Township as a whole to identify potential development and future connections within the two main public sewer service areas, Fish Creek WWTP and Country Crossing WWTP.

At the time of the preparation of the Breton Hills and Eddowes Road Special Study in 2010, the residents in the Breton Hills Phase II area expressed a desire to work under a sewage management program to determine the actual need and timing of when and if the public sanitary sewer system needs to be extended to service all or a portion of phase II of the study area. Warwick Township re-evaluated this area as part of this Act 537 Update to determine whether public sewer should be extended to this area.

For this Act 537 Plan Update, the Study Areas include the following areas.

**1. Fish Creek Study Area**

The Fish Creek Study Area is located in the northwestern portion of the Township and the largest public sewer service area. This study area includes the Valley Road residential area identified in the 1995 Act 537 Plan to be provided public sewer in the future, as well as Breton Hills Phase II, Warwick Mills, and other potential developments located within and outside the current public sewer service area.

**2. Country Crossing Study Area**

The Country Crossing Study Area is located in the southeastern portion of the Township. This study area includes the Germinal Colony and Warwick Commons – Industrial Park which were identified in the 1995 Act 537 Plan to be provided public sewer in the future, as well as the Stout Drive area.

**3. Warminster Study Area**

The Warminster Study Area is located along the southern edge of the Township. This study area includes the Eddowes Road area which was previously identified in the 2010 Breton Hills and Eddowes Road Special Study to remain on individual on-lot systems under the Township's Sewage Management Ordinance.

**4. Warrington Study Area**

The Warrington Study Area is located in the most western portion of the Township near the intersection of Bristol Road and Guinea Lane. This area is currently developed, and Warwick Township is not aware of any planned redevelopment.

**5. On-Lot Sewage Disposal Study Area**

The on-lot sewage disposal study area includes properties throughout the Township that are serviced by existing on-lot sewage disposal systems (OLDS). According to Township records, there are approximately 320 OLDS in the Township.

The existing Sewer Service Areas and identification of potential developments are identified on Map No. 1, "Existing Sewage Facilities and Service Areas".

**B. Identification of Physical Characteristics**

Warwick Township is located within the southwestern region of Bucks County. Warwick Township is situated south of Doylestown Township, north of Warminster Township, east of Warrington Township, and west of Buckingham and Northampton Townships.

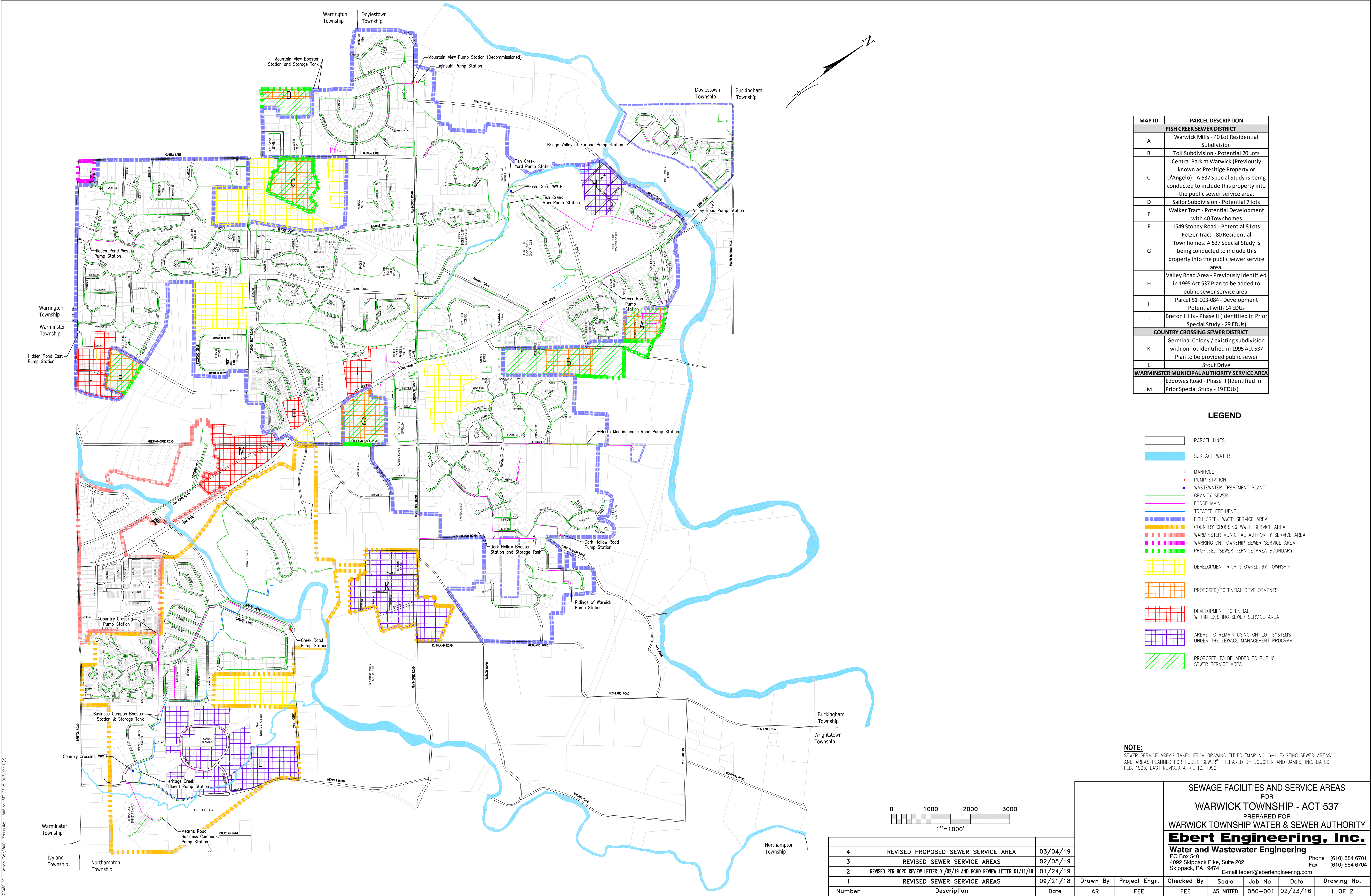
The existing physical aspects of Warwick Township include an abundance of woodlands near the Neshaminy Creek and Little Neshaminy Creek that bi-sect the Township. The Township woodlands and floodplains are identified on Map 2.

There are two watershed boundaries in Warwick Township, including the Neshaminy Creek and Little Neshaminy Creek watersheds. The Little Neshaminy Creek watershed encompasses the southern portion of the Township, while the Neshaminy Creek watershed encompasses northern portion of the Township. The water features throughout the Township are provided on Map 3.



**MAP 1**  
**EXISTING SEWAGE FACILITIES AND SERVICE AREAS**





MAP ID	PARCEL DESCRIPTION
FISH CREEK SEWER DISTRICT	
A	Warwick Mills - 40 Lot Residential Subdivision
B	Toll Subdivision - Potential 20 Lots
C	Central Park at Warwick (Previously known as Prestige Property or D'Angelo) - A 537 Special Study is being conducted to include this property into the public sewer service area.
D	Sailor Subdivision - Potential 7 lots
E	Walker Tract - Potential Development with 40 Townhomes
F	1549 Stoney Road - Potential 8 Lots
G	Fetzer Tract - 80 Residential Townhomes. A 537 Special Study is being conducted to include this property into the public sewer service area.
H	Valley Road Area - Previously identified in 1995 Act 537 Plan to be added to public sewer service area.
I	Parcel 51-003-084 - Development Potential with 14 EDUs
J	Breton Hills - Phase II (identified in Prior Special Study - 29 EDUs)
COUNTRY CROSSING SEWER DISTRICT	
K	Germinal Colony / existing subdivision with on-lot identified in 1995 Act 537 Plan to be provided public sewer
L	Stout Drive
WARMINSTER MUNICIPAL AUTHORITY SERVICE AREA	
M	Eddowes Road - Phase II (identified in Prior Special Study - 19 EDUs)

LEGEND

- PARCEL LINES
- SURFACE WATER
- MANHOLE
- PUMP STATION
- WASTEWATER TREATMENT PLANT
- GRAVITY SEWER
- FORCE MAIN
- TREATED EFFLUENT
- FISH CREEK WWTP SERVICE AREA
- COUNTRY CROSSING WWTP SERVICE AREA
- WARMINSTER MUNICIPAL AUTHORITY SERVICE AREA
- WARRINGTON TOWNSHIP SEWER SERVICE AREA
- PROPOSED SEWER SERVICE AREA BOUNDARY
- DEVELOPMENT RIGHTS OWNED BY TOWNSHIP
- PROPOSED/POTENTIAL DEVELOPMENTS
- DEVELOPMENT POTENTIAL WITHIN EXISTING SEWER SERVICE AREA
- AREAS TO REMAIN USING ON-LOT SYSTEMS UNDER THE SEWAGE MANAGEMENT PROGRAM
- PROPOSED TO BE ADDED TO PUBLIC SEWER SERVICE AREA

NOTE:  
SEWER SERVICE AREAS TAKEN FROM DRAWING TITLED "MAP NO. 6-1 EXISTING SEWER AREAS AND AREAS PLANNED FOR PUBLIC SEWER" PREPARED BY BOUCHER AND JAMES, INC. DATED FEB. 1995, LAST REVISED APRIL 10, 1999.

SEWAGE FACILITIES AND SERVICE AREAS  
FOR  
WARWICK TOWNSHIP - ACT 537  
PREPARED FOR  
WARWICK TOWNSHIP WATER & SEWER AUTHORITY

Ebert Engineering, Inc.

Water and Wastewater Engineering  
PO Box 540  
4092 Skippack Pike, Suite 202  
Skippack, PA 19474  
E-mail febert@ebertengineering.com

Phone (610) 584 6701  
Fax (610) 584 6704

Drawn By	Project Engr.	Checked By	Scale	Job No.	Date	Drawing No.
AR	FEE	FEE	AS NOTED	050-001	02/23/16	1 OF 2

23-050-001 - Warwick, Pa 050001 - Warwick Map - 2016, Act 537 (05-26-2016) SHEET 123



**MAP 2**  
**WOODLANDS AND FLOODPLAINS**



DOYLESTOWN

BUCKINGHAM

WRIGHTSTOWN

NORTHAMPTON

WARRINGTON

WARMINSTER

WYLAND

**LEGEND**

-  State Roads
-  Local Roads
-  Municipal Boundary
-  Water Bodies
-  Streams
-  Tax Parcels
-  100-Year Floodplain
-  Woodlands



1,000 0 1,000 2,000  
Scale in Feet

Sources:  
Tax parcels, hydrography, and road centerlines are from Bucks County Planning Commission dated Nov.2016.  
Woodlands are from Delaware Valley Regional Planning Commission DVRPC's 2015 Land Use dated August 3, 2016,  
<http://arcgis.dvrpc.org/arcgis/rest/services/Planning>.

*Warwick Township  
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Act 537 Sewage Facilities Plan*

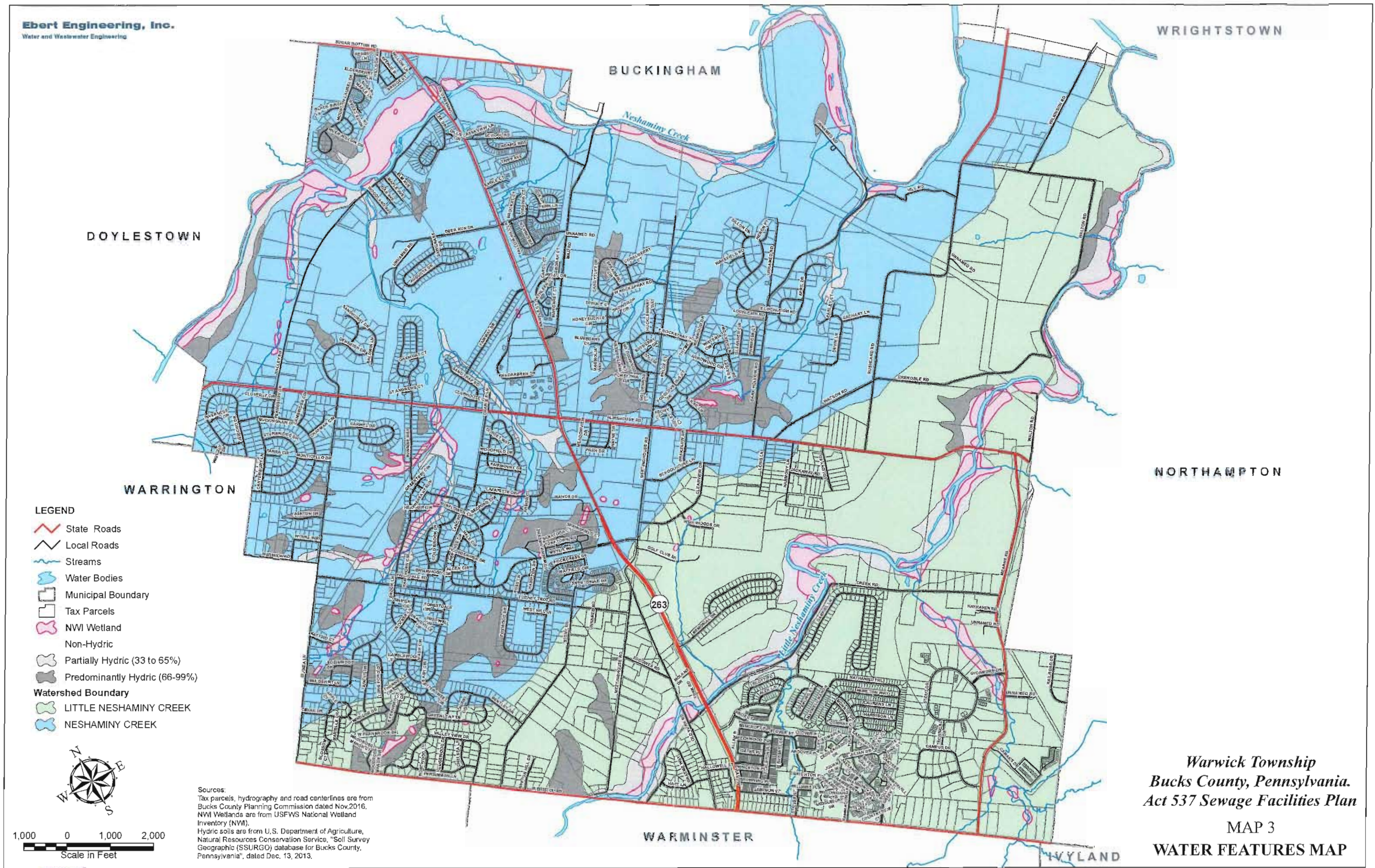
MAP 2

**WOODLANDS AND FLOODPLAINS**



**MAP 3**  
**WATER FEATURES**





*Warwick Township  
Bucks County, Pennsylvania.  
Act 537 Sewage Facilities Plan*

MAP 3  
WATER FEATURES MAP

Sources:  
Tax parcels, hydrography and road centerlines are from Bucks County Planning Commission dated Nov. 2016.  
NWI Wetlands are from USFWS National Wetland Inventory (NWI).  
Hydric soils are from U.S. Department of Agriculture, Natural Resources Conservation Service, "Soil Survey Geographic (SSURGO) database for Bucks County, Pennsylvania", dated Dec. 13, 2013.



### C. Soils

In order to present the most current information relative to soils, a map has been prepared to show the public sanitary sewer service study areas along with the soil types for the overall Township. For the purpose of this report, the official USDA-NRCS on-line database was queried to indicate the overall base soil mapping for the area and is presented on the soils map, Map 4. This information is usually extrapolated for general suitability considerations.

The generalized descriptions of each map unit shown on Map 4 are presented as follows:

#### Abbottstown

The Abbottstown component makes up 90 percent of the map unit. This component is on valleys, hillslopes. The parent material consists of acid reddish brown residuum weathered from shale and siltstone. Depth to a root restrictive layer, bedrock, paralithic, is 40 to 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during January, February, March, November, and December. Organic matter content in the surface horizon is about 2 percent. Non-irrigated land capability classification is 3w. This soil does not meet hydric criteria.

#### Amwell

The Amwell series consists of deep and very deep, somewhat poorly and moderately well drained soils on uplands. They formed mainly in colluvial material derived from basic igneous rocks. Slopes range from 0 to 15 percent.

#### Bedington

The Bedington series consists of very deep, well drained soils. Bedington soils formed in residuum from dark brown, gray and olive acid, sedimentary, siltstone and shale, with some sandstone interbeds. They are on nearly level to steep convex uplands and on the sideslopes of hills and ridges. Permeability is moderate.

#### Bowmansville-Knauers

The Bowmansville series consists of very deep, poorly and somewhat poorly drained soils. They formed in recent alluvial deposits derived from upland soil materials weathered from dolerite or basalt. They are on floodplains with smooth slopes of 0 to 3 percent. Saturated hydraulic conductivity is moderately high above stratified sand and gravel and high in stratified sand and gravel.

The Knauers series consists of very deep, poorly drained soils formed in recent alluvial deposits derived from sandstones and shales. They are on the backwater areas of floodplains with slightly depressed slopes of 0 to 3 percent. Saturated hydraulic conductivity is moderately high and high in the A and B horizons, and high to very high in the C horizon

#### Brownsburg

The Brownsburg series consists of deep, well drained soils on hills. They are formed in a thin mantle of loess and in the underlying material weathered from red shale and siltstone residuum. Permeability is moderate. Slope ranges from 0 to 15 percent.

#### Chalfont

The Chalfont series consists of deep and very deep, somewhat poorly drained soils formed in a loess mantle and the underlying residuum of shale and sandstone. Slopes range from 0 to 25 percent. Somewhat poorly drained. Saturated hydraulic conductivity is moderately high in the fragipan and high above and below the fragipan. Permeability (obsolete) is moderately slow or slow in the fragipan, and moderate above and below. Index surface runoff class is high or very high (depending on slope). A perched water table is at a depth of 0.5 to 1.5 feet from November through March.

#### Culleoka-Weikert

The Culleoka series consists of moderately deep, well drained, soils formed in colluvium or residuum from siltstone or interbedded shale, limestone, siltstone, and fine grained sandstone. Slope ranges from 2 to 70 percent. Well drained. The potential for surface runoff is negligible to very high. Permeability is moderate to moderately rapid.

The Weikert series consist of shallow, well drained soils formed in material that weathered from interbedded gray and brown acid shale, siltstone, and fine-grained sandstone on gently sloping to very steep areas on uplands. Slope ranges from 0 to 100 percent. Permeability is moderately rapid.

#### Doylestown

The Doylestown series consists of deep, poorly drained soils. These soils formed in silty materials, presumably eolian deposits, over soil materials weathered from a variety of parent materials, but principally red shale. They are on concave upland slopes of 0 to 5 percent. Permeability is slow.



### Duncannon

The Duncannon series consists of deep, well drained soils that formed in silty to very fine sandy loam material, presumed to be eolian, overlying a variety of residuum materials, stream deposits and glacial deposits. The soils are on nearly level to moderately steep uplands and terraces. Permeability is moderate. Slope ranges from 0 to 35 percent.

### Fountainville

The Fountainville series consists of deep, moderately well drained soils on hills. They are formed in a thin mantle of loess and in the underlying material weathered from red and brown shale and siltstone residuum. Permeability is moderate above the fragipan, and slow to moderately slow in the fragipan. Slope ranges from 0 to 15 percent.

### Klinesville

The Klinesville series consists of shallow, somewhat excessively drained soils formed in residuum derived from red shale, siltstone, slate, and fine-grained sandstone. They are on dissected uplands. Slopes range from 3 to 80 percent. Saturated hydraulic conductivity is high.

### Lansdale

The Lansdale series consists of deep and very deep, well drained soils on uplands. They formed in residuum weathered from sandstone and/or conglomerate. Slopes are 0 to 25 percent. Saturated hydraulic conductivity is moderately high to high.

### Lawrenceville

The Lawrenceville series consists of deep and very deep, moderately well drained soils formed in silty transported materials. Slopes range from 0 to 15 percent. Permeability is moderately slow.

### Penn

The Penn series consists of moderately deep, well drained soils formed in residuum weathered from noncalcareous reddish shale, siltstone, and fine-grained sandstone normally of Triassic age. Slopes range from 0 to 60 percent. Saturated hydraulic conductivity is moderately high to high.

### Penn-Klinesville

The Penn series consists of moderately deep, well drained soils formed in residuum weathered from noncalcareous reddish shale, siltstone, and fine-grained

sandstone normally of Triassic age. Slopes range from 0 to 60 percent. Saturated hydraulic conductivity is moderately high to high.

The Klinesville series consists of shallow, somewhat excessively drained soils formed in residuum derived from red shale, siltstone, slate, and fine-grained sandstone. They are on dissected uplands. Slopes range from 3 to 80 percent. Saturated hydraulic conductivity is high

#### Penn-Lansdale

The Penn series consists of moderately deep, well drained soils formed in residuum weathered from noncalcareous reddish shale, siltstone, and fine-grained sandstone normally of Triassic age. Slopes range from 0 to 60 percent. Saturated hydraulic conductivity is moderately high to high.

The Lansdale series consists of deep and very deep, well drained soils on uplands. They formed in residuum weathered from sandstone and/or conglomerate. Slopes are 0 to 25 percent. Saturated hydraulic conductivity is moderately high to high

#### Readington

The Readington series consists of deep and very deep, moderately well drained soils formed in medium textured residuum weathered from noncalcareous shale, siltstone, and fine-grained sandstone. Slopes range from 0 to 15 slopes. Saturated hydraulic conductivity is moderately slow.

#### Reaville

The Reaville series consists of moderately deep, moderately well and somewhat poorly drained soils formed in residuum weathered from red Triassic, interbedded shale, siltstone, and fine-grained sandstone. Slopes range from 0 to 15 percent. Saturated hydraulic conductivity is moderately low.

#### Rowland

The Rowland series consists of very deep, moderately well and somewhat poorly drained soils formed in alluvial sediments weathered from red and brown shale, sandstone, and conglomerate. Slopes range from 0 to 3 percent. Saturated hydraulic conductivity is moderately high to high above about 40 inches and high in the underlying stratified sand and gravel.

#### Towhee

The Towhee series consist of deep and very deep, poorly drained soils formed in colluvium from diabase, diorite or gabbro. Slopes range from 0 to 8 percent. Saturated hydraulic conductivity is moderately low to moderately high.

## Urban

Urban land is land mostly covered by streets, parking lots, buildings, and other structures of urban areas.

Maps 4A, 4B, 4C and 4D outline the soil limitations for on-lot sewage disposal systems, sand mounds, drip irrigation, and spray irrigation.

According to this information, most of the soils are designated as "well drained, moderately well drained and somewhat poorly drained". According to the Natural Resource Conservation Services (NRCS) defines the drainage below:

### Well Drained

Water is removed from the soil readily but not rapidly. Internal free water occurrence commonly is deep or very deep; annual duration is not specified. Water is available to plants throughout most of the growing season in humid regions. Wetness does not inhibit growth of roots for significant periods during most growing seasons. The soils are mainly free of the deep to redoximorphic features that are related to wetness.

### Moderately Well Drained

Water is removed from the soil somewhat slowly during some periods of the year. Internal free water occurrence commonly is moderately deep and transitory through permanent. The soils are wet for only a short time within the rooting depth during the growing season, but long enough that most mesophytic crops are affected. They commonly have a moderately low or lower saturated hydraulic conductivity in a layer within the upper 1 m, periodically receive high rainfall, or both.

### Somewhat Poorly Drained

Water is removed slowly so that the soil is wet at a shallow depth for significant periods during the growing season. The occurrence of internal free water commonly is shallow to moderately deep and transitory to permanent. Wetness markedly restricts the growth of mesophytic crops, unless artificial drainage is provided. The soils commonly have one or more of the following characteristics: low or very low saturated hydraulic conductivity, a high water table, additional water from seepage, or nearly continuous rainfall.

Above all, these designations should be recognized as general guidelines based on typical soil and landscape composition, and should not be interpreted as areas where on-lot sewage disposal systems are not permitted. Maps 4A, 4B, 4C and 4D provided outline the soil limitations for on-lot sewage disposal systems for sand mounds, drip irrigation, and spray irrigation. Site-specific soil testing performed by the Sewage Enforcement Officer

(SEO) may result in the approval of on-lot disposal within these soil types, particularly in consideration of the on-going development of new alternate technologies by PADEP for more restrictive soils.

### Prime Farmland

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied.

In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

The table below lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance, as defined by the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, who has inventoried land that can be used for the production of the Nation's food supply.

### **Bucks County, Pennsylvania**

Map Symbol	Map Unit Name	Farmland Classification
AbA	Abbottstown silt loam, 0 to 3 percent slopes	Farmland of statewide importance
AbB	Abbottstown silt loam, 3 to 8 percent slopes	Farmland of statewide importance
AbC	Abbottstown silt loam, 8 to 15 percent slopes	Farmland of statewide importance
AmA	Amwell silt loam, 0 to 3 percent slopes	Farmland of statewide importance
AmB	Amwell silt loam, 3 to 8 percent slopes	Farmland of statewide importance
BeA	Bedington channery silt loam, 0 to 3 percent slopes	All areas are prime farmland
BeB	Bedington channery silt loam, 3 to 8 percent slopes	All areas are prime

## Bucks County, Pennsylvania

		farmland
BeC	Bedington channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
Bo	Bowmansville-Knauers silt loams	Not prime farmland
BsA	Brownsburg silt loam, 0 to 3 percent slopes	All areas are prime farmland
BsB	Brownsburg silt loam, 3 to 8 percent slopes	All areas are prime farmland
BwB	Buckingham silt loam, 3 to 8 percent slopes	Farmland of statewide importance
CbA	Chalfont silt loam, 0 to 3 percent slopes	Farmland of statewide importance
CbB	Chalfont silt loam, 3 to 8 percent slopes	Farmland of statewide importance
CyB	Culleoka-Weikert channery silt loams, 3 to 8 percent slopes	Farmland of statewide importance
CyC	Culleoka-Weikert channery silt loams, 8 to 15 percent slopes	Farmland of statewide importance
DdA	Doylestown silt loam, 0 to 3 percent slopes	Not prime farmland
DdB	Doylestown silt loam, 3 to 8 percent slopes	Not prime farmland
DuA	Duncannon silt loam, 0 to 3 percent slopes	All areas are prime farmland
DuB	Duncannon silt loam, 3 to 8 percent slopes	All areas are prime farmland
FoA	Fountainville silt loam, 0 to 3 percent slopes	All areas are prime farmland
FoB	Fountainville silt loam, 3 to 8 percent slopes	All areas are prime farmland
KIB	Klinesville very channery silt loam, 3 to 8 percent slopes	Farmland of statewide importance
KIC	Klinesville very channery silt loam, 8 to 15 percent slopes	Not prime farmland
LgB	Lansdale loam, 3 to 8 percent slopes	All areas are prime farmland
LgC	Lansdale loam, 8 to 15 percent slopes	Farmland of statewide importance
LhE	Lansdale loam, 25 to 50 percent slopes, extremely stony	Not prime farmland
LkA	Lawrenceville silt loam, 0 to 3 percent slopes	All areas are prime farmland
LkB	Lawrenceville silt loam, 3 to 8 percent slopes	Farmland of statewide importance
PeB	Penn channery silt loam, 3 to 8 percent slopes	All areas are prime farmland
PeC	Penn channery silt loam, 8 to 15 percent slopes	Farmland of statewide

### Bucks County, Pennsylvania

		importance
PeD	Penn channery silt loam, 15 to 25 percent slopes	Not prime farmland
PkC	Penn-Klinesville channery silt loams, 8 to 15 percent slopes	Farmland of statewide importance
PkD	Penn-Klinesville channery silt loams, 15 to 25 percent slopes	Not prime farmland
PIE	Penn-Klinesville channery silt loams, 25 to 45 percent slopes, extremely stony	Not prime farmland
PnB	Penn-Lansdale complex, 3 to 8 percent slopes	All areas are prime farmland
PnC	Penn-Lansdale complex, 8 to 15 percent slopes	Farmland of statewide importance
PnD	Penn-Lansdale complex, 15 to 25 percent slopes	Not prime farmland
ReA	Readington silt loam, 0 to 3 percent slopes	All areas are prime farmland
ReB	Readington silt loam, 3 to 8 percent slopes	Farmland of statewide importance
ReC	Readington silt loam, 8 to 15 percent slopes	Farmland of statewide importance
RIB	Reaville channery silt loam, 3 to 8 percent slopes	Farmland of statewide importance
RIC	Reaville channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
Ro	Rowland silt loam	All areas are prime farmland
UfuB	Urban land, 0 to 8 percent slopes	Not prime farmland
Ufw	Urban land, occasionally flooded	Not prime farmland
UgB	Urban land-Abbottstown complex, 0 to 8 percent slopes	Not prime farmland
UkB	Urban land-Chester complex, 0 to 8 percent slopes	Not prime farmland
UnB	Urban land-Duffield complex, 0 to 8 percent slopes	Not prime farmland
UrB	Urban land-Lansdale complex, 0 to 8 percent slopes	Not prime farmland
UrC	Urban land-Lansdale complex, 8 to 15 percent slopes	Not prime farmland
UsB	Urban land-Lawrenceville complex, 0 to 8 percent slopes	Not prime farmland
W	Water	Not prime farmland
WfD	Weikert-Culleoka complex, 15 to 25 percent slopes	Not prime farmland

\*-Table taken from the Websoil Survey

**MAP 4**  
**NRCS SOIL SURVEY MAPPING**



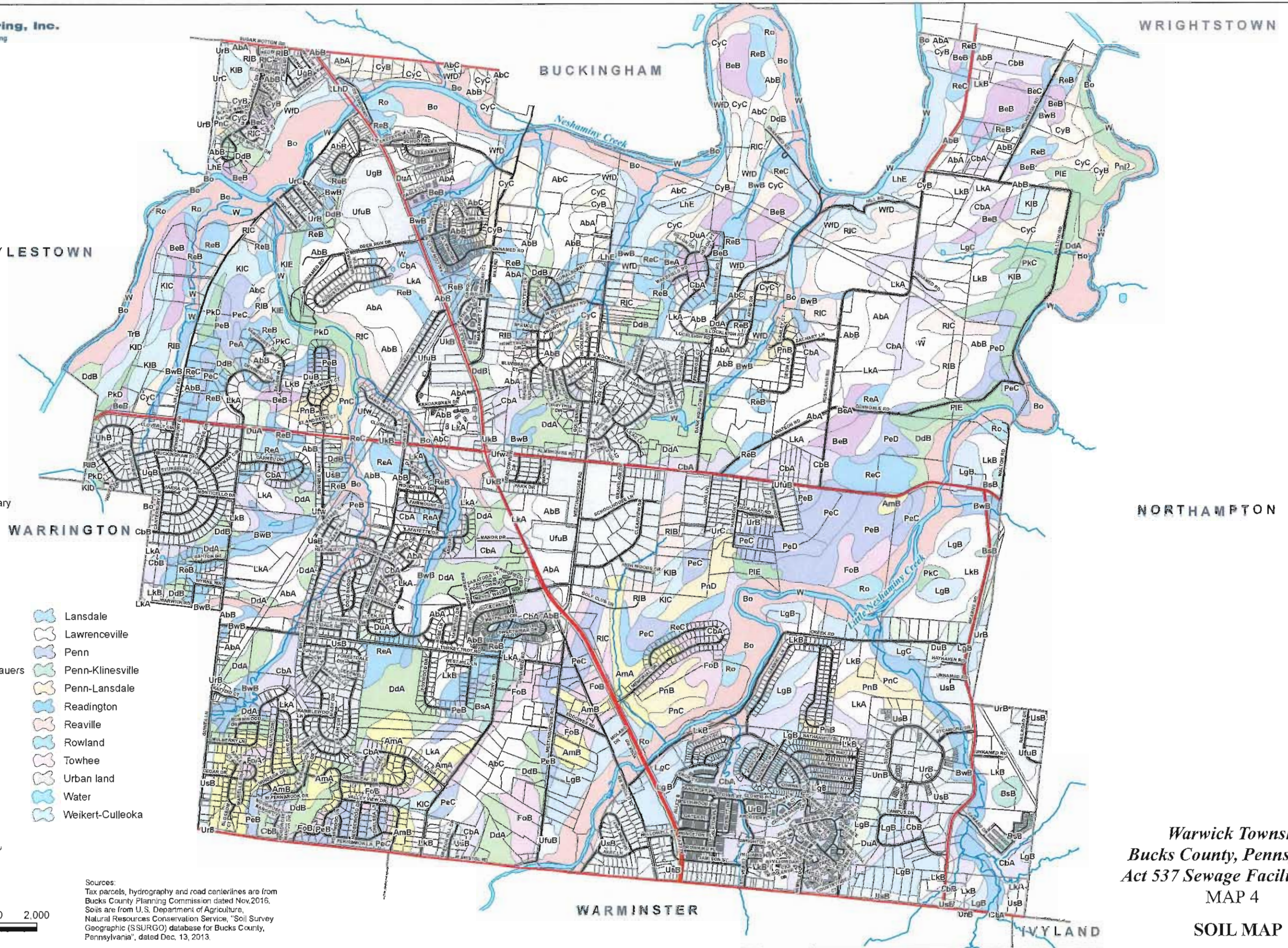
- LEGEND**
- State Roads
  - Local Roads
  - Municipal Boundary
  - Water Bodies
  - Streams
  - Tax Parcels

- SOIL LEGEND**
- |                     |                  |
|---------------------|------------------|
| Abbottstown         | Lansdale         |
| Amwell              | Lawrenceville    |
| Bedington           | Penn             |
| Bowmansville-Knaurs | Penn-Klinesville |
| Brownsburg          | Penn-Lansdale    |
| Buckingham          | Readington       |
| Chalfont            | Reaville         |
| Culleoka-Weikert    | Rowland          |
| Doylestown          | Towhee           |
| Duncannon           | Urban land       |
| Fountainville       | Water            |
| Klinesville         | Weikert-Culleoka |



1,000 0 1,000 2,000  
Scale in Feet

Sources:  
Tax parcels, hydrography and road centerlines are from Bucks County Planning Commission dated Nov. 2016.  
Soils are from U.S. Department of Agriculture, Natural Resources Conservation Service, "Soil Survey Geographic (SSURGO) database for Bucks County, Pennsylvania", dated Dec. 13, 2013.

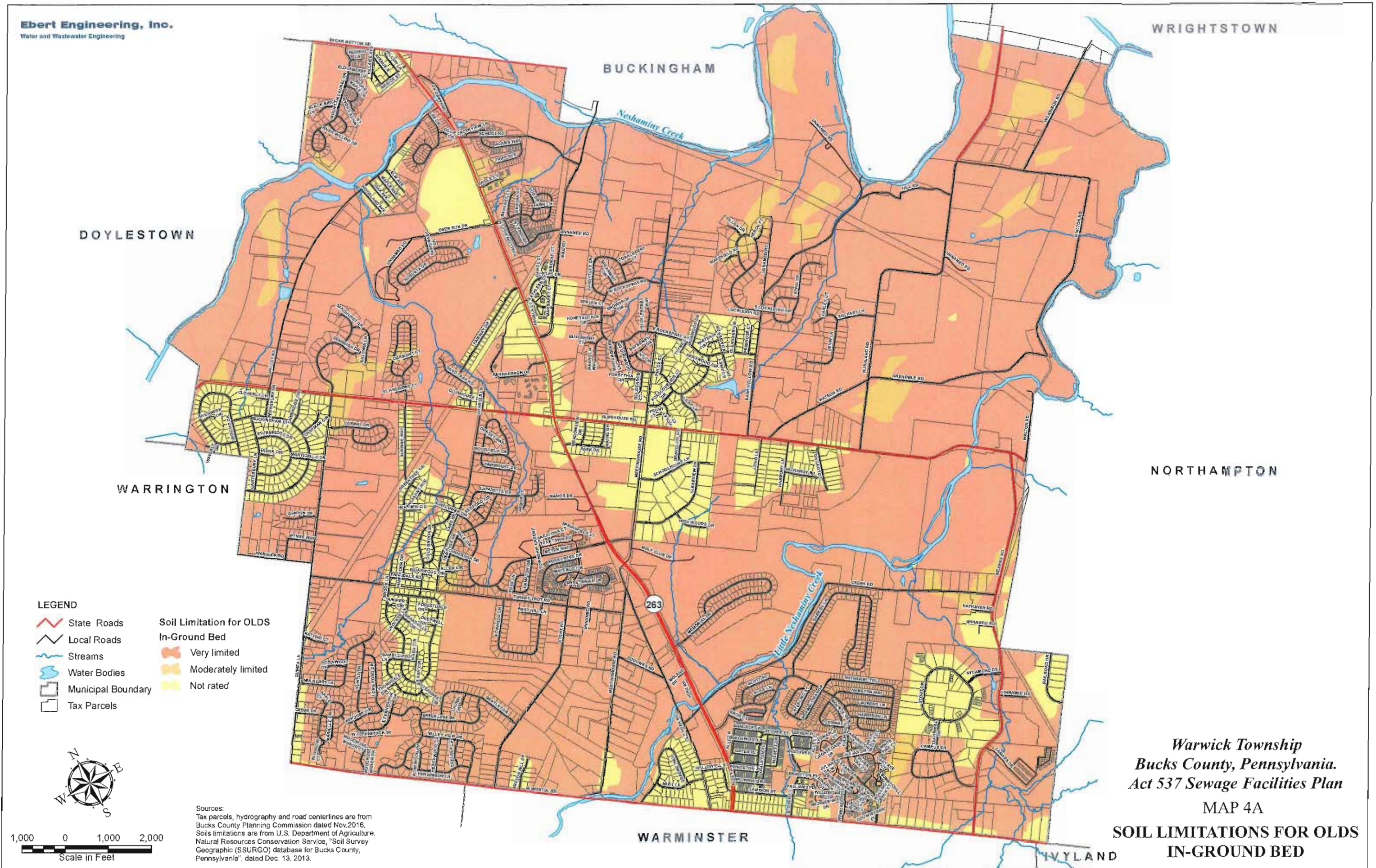


Warwick Township  
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MAP 4  
SOIL MAP



**MAP 4A**  
**SOIL LIMITATION FOR ON-LOT DISPOSAL SYSTEMS**





Sources:  
Tax parcels, hydrography and road centerlines are from Bucks County Planning Commission dated Nov. 2016.  
Soils limitations are from U.S. Department of Agriculture, Natural Resources Conservation Service, "Soil Survey Geographic (SSURGO) database for Bucks County, Pennsylvania", dated Dec. 13, 2013.

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Bucks County, Pennsylvania.  
Act 537 Sewage Facilities Plan

MAP 4A

SOIL LIMITATIONS FOR OLDS  
IN-GROUND BED



**MAP 4B**  
**SOIL LIMITATION FOR ELEVATED SAND MOUNDS**



LEGEND

-  State Roads
-  Local Roads
-  Streams
-  Water Bodies
-  Municipal Boundary
-  Tax Parcels

Soil Limitation for OLDS Sand Mounds

-  Very limited
-  Moderately limited
-  Slightly limited
-  Not rated



1,000 0 1,000 2,000  
Scale in Feet

Sources:  
Tax parcels, hydrography and road centerlines are from Bucks County Planning Commission dated Nov. 2016.  
Soils limitations are from U.S. Department of Agriculture, Natural Resources Conservation Service, "Soil Survey Geographic (SSURGO) database for Bucks County, Pennsylvania", dated Dec. 13, 2013.

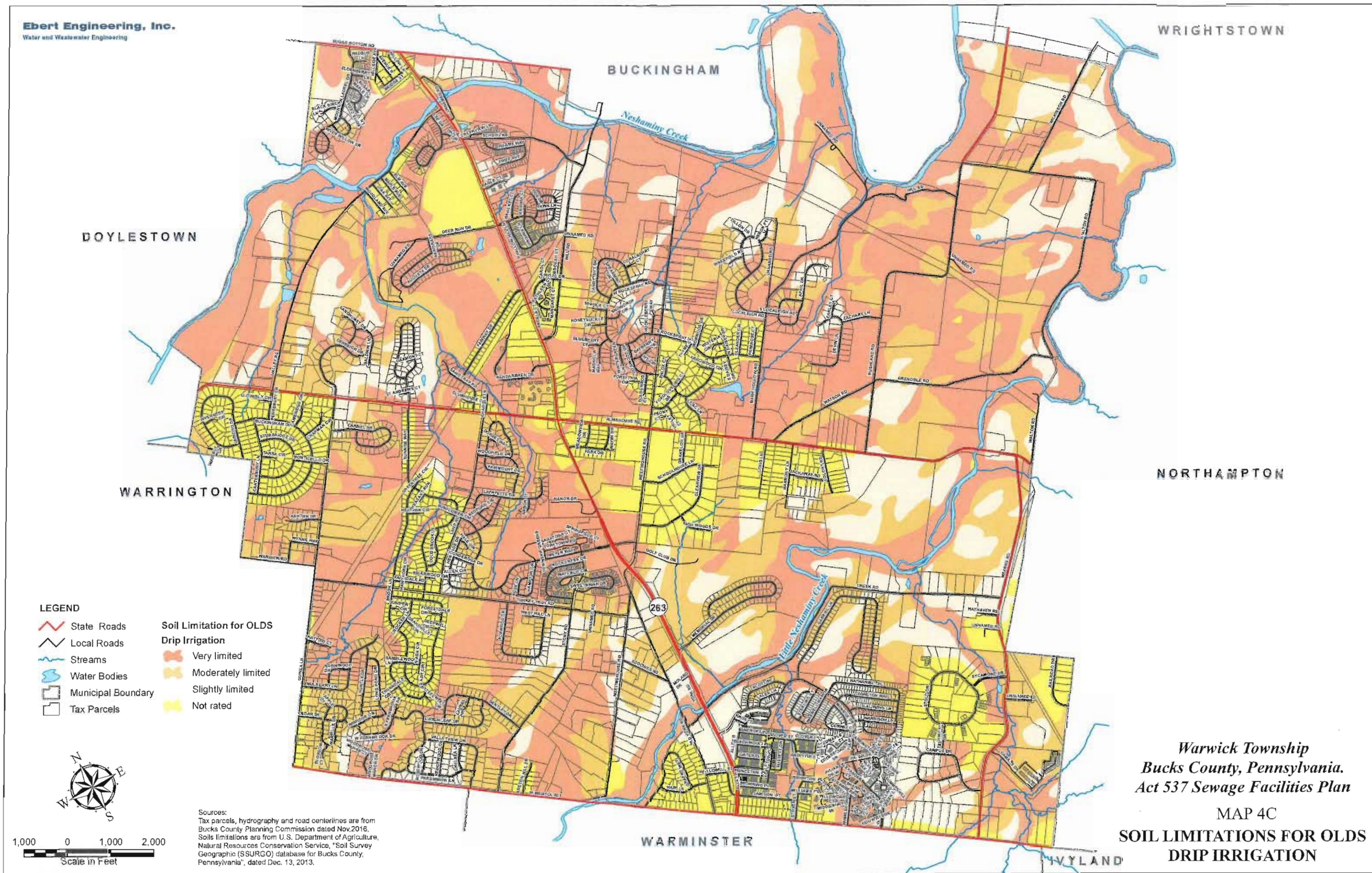
Warwick Township  
Bucks County, Pennsylvania.  
Act 537 Sewage Facilities Plan

MAP 4B  
SOIL LIMITATIONS FOR OLDS  
SAND MOUNDS



**MAP 4C**  
**SOIL LIMITATION FOR DRIP IRRIGATION**





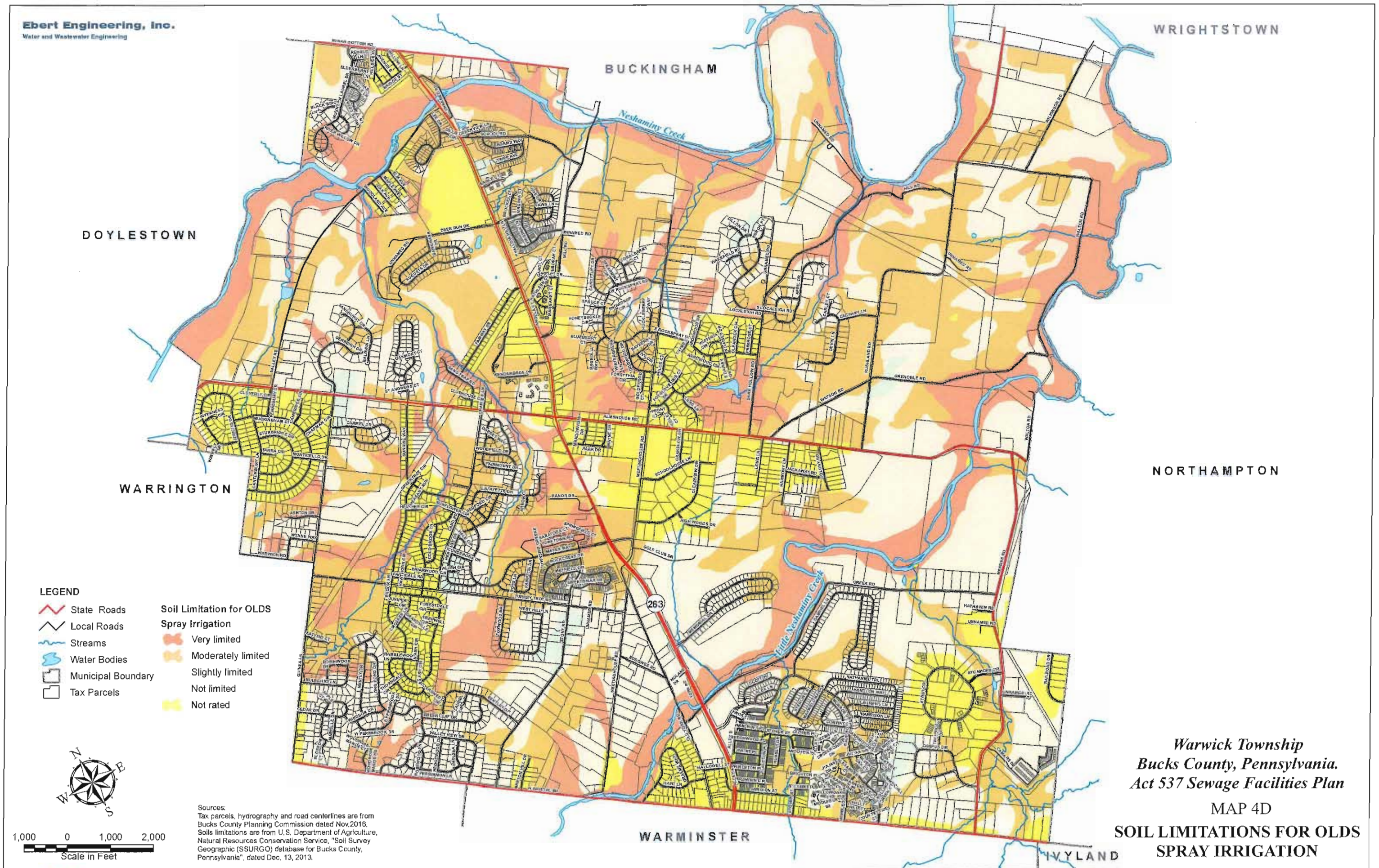
*Warwick Township  
Bucks County, Pennsylvania.  
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MAP 4C  
**SOIL LIMITATIONS FOR OLDS  
DRIP IRRIGATION**



**MAP 4D**  
**SOIL LIMITATION FOR SPRAY IRRIGATION**

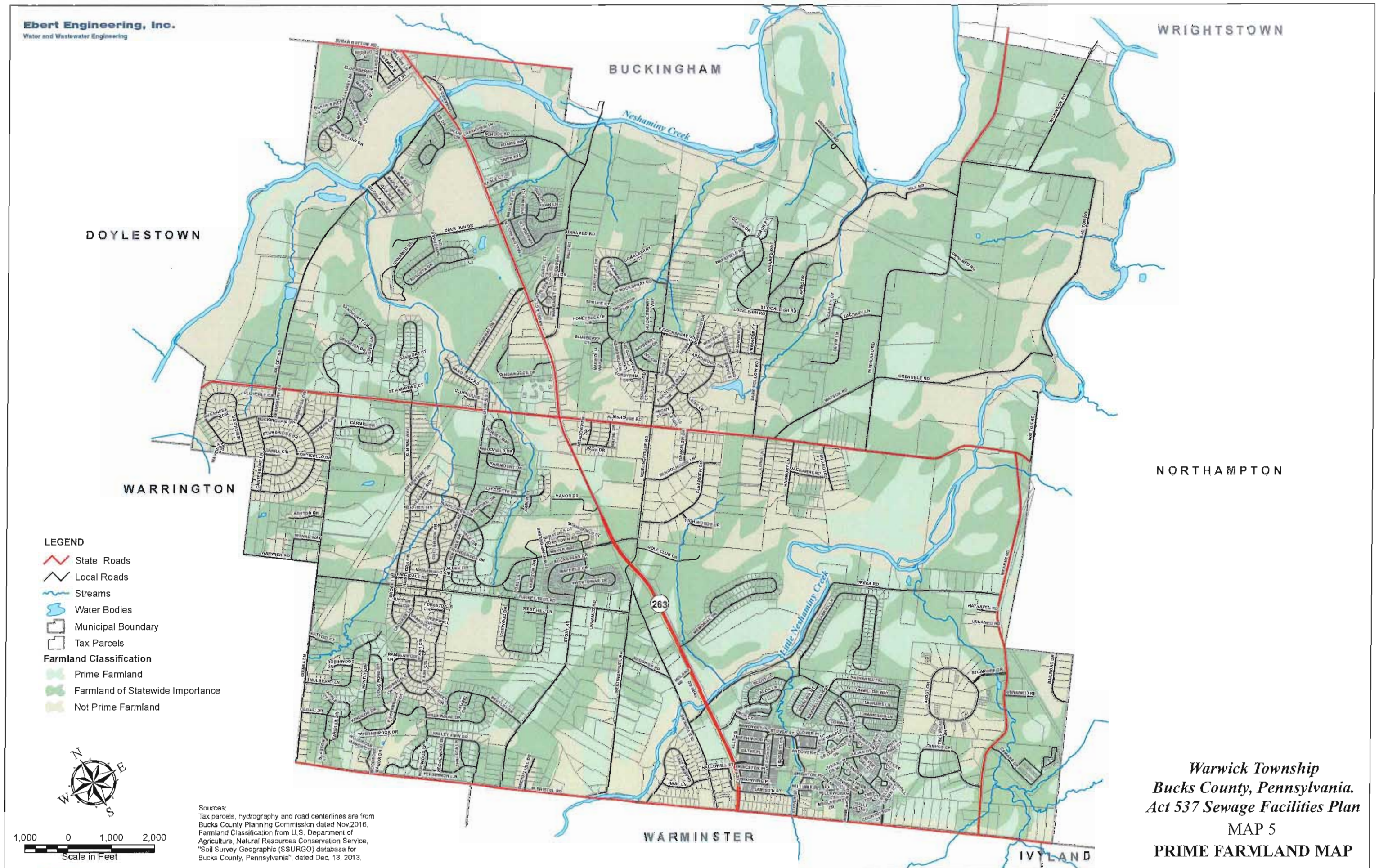






**MAP 5**  
**PRIME FARMLAND**







#### **D. Geology Features**

According to the Pennsylvania Department of Conservation and Natural Resources (DCNR), Warwick Township is underlain by the Lockatong Formation in the northeast portion of the Township and the Stockton Formation in the southwestern portion of the Township. The underlying geologic formations are presented on Map 6, entitled "Geology Map".

A brief description of both formations is provided below.

##### Lockatong Formation

Lockatong Formation - Dark-gray to black, thick-bedded argillite containing a few zones of thin-bedded black shale; locally has thin layers of impure limestone and calcareous shale. Lockatong Formation Geologic age is Triassic with a primary rock type of argillite. Major Metamorphic Metasedimentary, Metaclastic, Argillite (Bed) Dark-gray to black, thick-bedded argillite containing a few zones of thin-bedded black shale, locally has thin layers of impure limestone and calcareous shale.

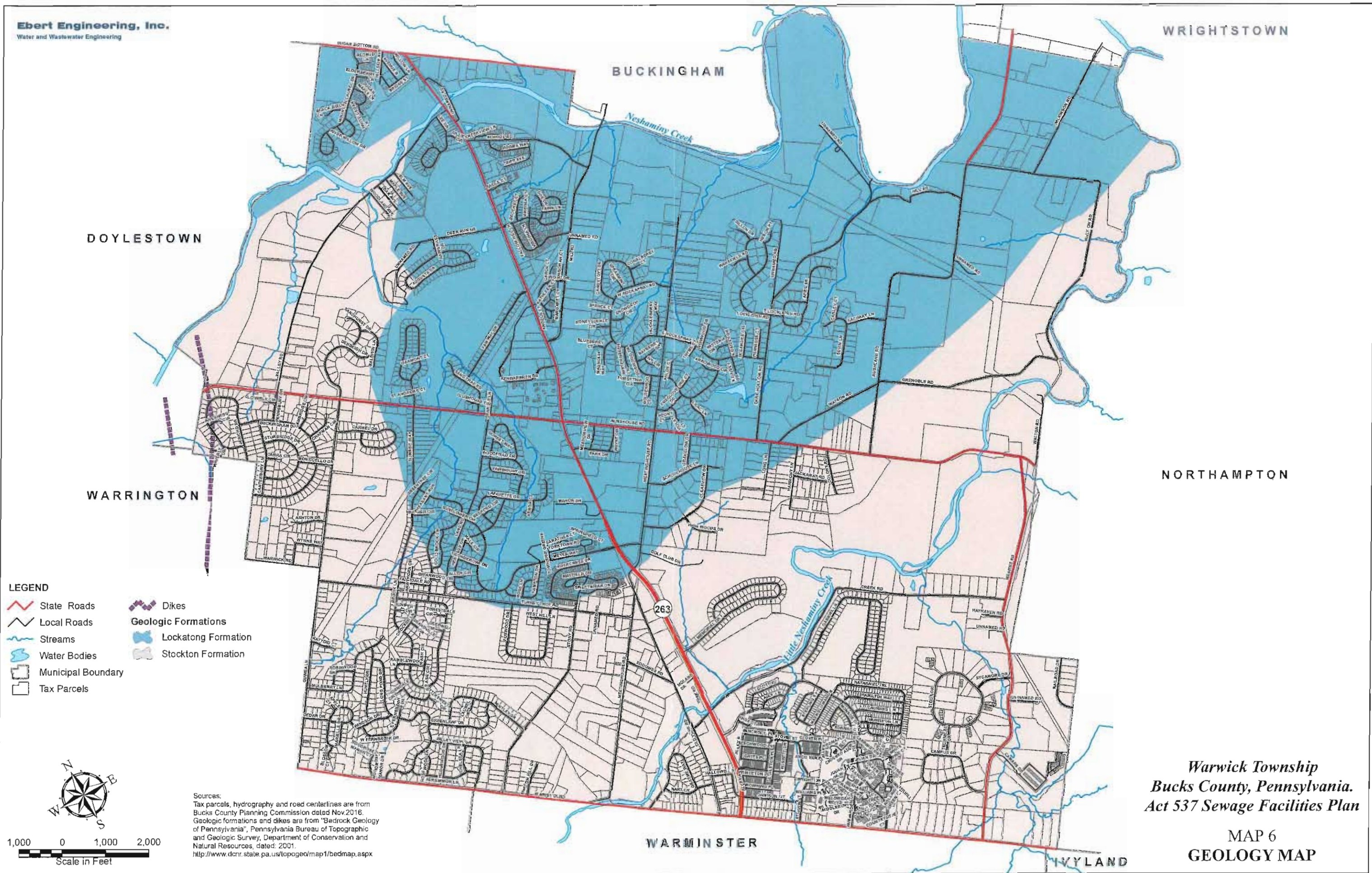
The Lockatong Formation has no primary porosity or permeability. All ground water moves through fractures and joints that generally are widely spaced, relatively tight, and poorly interconnected, which accounts for the relatively low well yields in the Lockatong. The Lockatong weathers to a dense, clayey soil that plugs fractures and joints in the weathered zone and commonly causes ground water to be confined. Plugging of openings by clay impedes recharge; to a lesser extent, recharge also is impeded by the generally higher elevations of the Lockatong Formation.

##### Stockton Formation

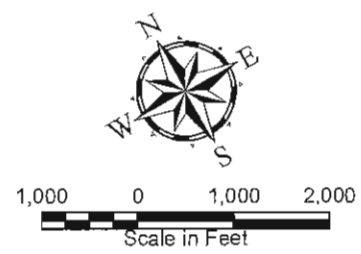
Stockton Formation - Light-gray to buff, coarse-grained, arkosic sandstone; includes reddish-brown to grayish-purple sandstone, siltstone, and mudstone. The Geologic age is Triassic with primary rock type of arkose and secondary rock type of siltstone. Major Sedimentary is Clastic, Sandstone and Arkose. Minor is Sedimentary, Clastic, Sandstone includes reddish-brown to grayish-purple sandstone.

In the Stockton, the beds are lensshaped, overlapping, and discontinuous in all directions along the plane of bedding. The arkosic sandstones and conglomerates of the lower part of the Stockton are poorly cemented and easily fractured, resulting in high transmissivity and high well yields.





- LEGEND**
- State Roads
  - Local Roads
  - Streams
  - Water Bodies
  - Municipal Boundary
  - Tax Parcels
  - Dikes
  - Geologic Formations**
  - Lockatong Formation
  - Stockton Formation

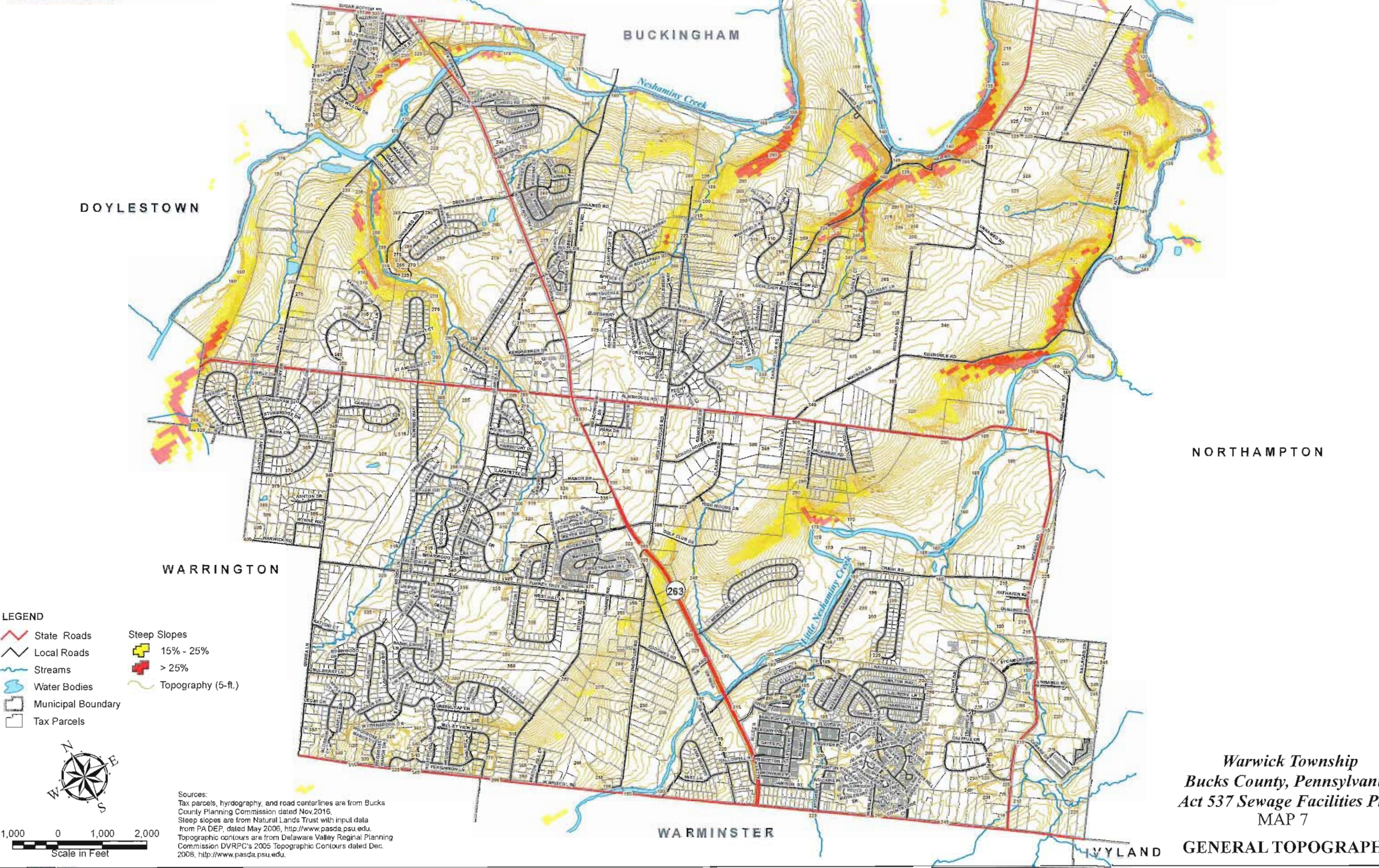


Sources:  
Tax parcels, hydrography and road centerlines are from Bucks County Planning Commission dated Nov.2016.  
Geologic formations and dikes are from "Bedrock Geology of Pennsylvania", Pennsylvania Bureau of Topographic and Geologic Survey, Department of Conservation and Natural Resources, dated: 2001.  
<http://www.dcnr.state.pa.us/topogeo/map1/bedmap.aspx>

*Warwick Township  
Bucks County, Pennsylvania.  
Act 537 Sewage Facilities Plan*

**MAP 6  
GEOLOGY MAP**







## **E. Topography Features**

The topography of Warwick Township is characterized by gentle to steeper hills, valleys, and drainageways as depicted on Map 7, entitled “General Topography”.

As noted earlier in this chapter, slopes can have a significant effect on the applicability of land based wastewater disposal systems. Generally, slopes exceeding 25% are considered unsuitable for individual on-lot sewage systems due to potential hydraulic gradients and construction issues. However, community based systems have allowances for increased slopes, but they should be limited to inclusions within larger areas that are less than 25%. These factors should be taken into consideration whenever land based disposal options are being considered, as they may effectively limit or constrain available areas for these methods of sewage disposal.

As a vast majority of the Township is serviced by public sewer, the topographic limitations would apply to areas within the Township serviced by on-lot sewage disposal systems. Site-specific soil testing performed by the Sewage Enforcement Officer (SEO) may result in the approval of on-lot disposal within these soil types, particularly in consideration of the on-going development of new alternate technologies by PADEP for more restrictive soils.

**MAP 7**  
**TOPOGRAPHY**

be allowed to cross any wetlands, watercourses, floodplains, etc., without prior approval by the appropriate township, state and federal agencies. Map 2 identifies the woodlands and flood plains within Warwick Township. Wetland areas in Warwick Township are presented on Map 3, entitled "Water Features Map".



**CHAPTER III**  
**EXISTING SEWAGE FACILITIES**

## CHAPTER III

### EXISTING SEWAGE FACILITIES

To visually illustrate the facilities discussed in this Chapter, Map 1 entitled “Existing Sewage Facilities and Service Areas” has been prepared and is included in this submission. The mapping provides information on Warwick Township Water & Sewer Authority’s existing collection and conveyance system, noted WWTP service areas, sewage pumping stations, and WWTP locations. The Township is also serviced by Warrington Township Public Sewer Service Area and Warminster Municipal Authority Sewer Service Area.

#### **A. Warwick Township Municipal Sewage Facilities**

There are two Municipal Wastewater Treatment Plants in Warwick Township, which are the Fish Creek WWTP and the Country Crossing WWTP. The following information was obtained from the 2017 Warwick Township Water and Sewer Authority Municipal Wasteload Management Report, as prepared by Ebert Engineering, Inc. and submitted to PA DEP on March 28, 2018.

#### **Fish Creek WWTP**

##### **1. Location, Size, Ownership**

The Fish Creek Treatment Plant (WWTP) is located just west of Augusta Drive in Warwick Township, Bucks County, PA. Sewage flows within the northwestern portion of Warwick Township are treated at the Fish Creek WWTP. The Fish Creek Service Area is identified on Map No. 1 in blue.

The Fish Creek WWTP was put into operation in late 1985 and had an initial hydraulic capacity of 0.6 mgd. The plant was expanded to a capacity of 0.85 mgd in August 1998. The hydraulic capacity of the plant has been rerated to a three month maximum flow rate of 1.26 mgd; however the permit still includes the annual average rating of 0.85 mgd. The facility has an organic capacity of 2,727 lbs/day.

The PA DEP has approved a Water Quality Management (Part II) permit amendment by letter dated July 31, 2013. The permit amendment is to convert the existing influent equalization tank and sludge holding tank into a third SBR and a smaller two stage sludge holding tank allowing either one of the two SBR treatment basins to be taken off line for maintenance and repairs.

The treatment plant is owned and operated by Warwick Township Water & Sewer Authority (WTWSA). The Fish Creek WWTP is well maintained and has adequate staff, and effluent quality is well within the limits established by NPDES Permit No. PA0050148. The 2017 annual average flow to the plant was 0.588 mgd, which is below the 0.85 mgd annual average rated capacity of the treatment facility. The three

Revised July 27, 2020

III - 1

**EE, Inc.**

month maximum average flow was 0.666 mgd and occurred in the months of March, April and May. This is well below the rated capacity of 1.26 mgd.

The Authority owns and operates ten (10) sewage pumping stations within the Fish Creek WWTP Service Area. Each is provided with constant speed pumps operating between high and low level switches within the wet wells. Flow data for each pump station is summarized below, along with additional projected flows to each pump station as identified in this Act 537 Plan Update:

A. Yard Pumping Station

This submersible pumping station is located within the Fish Creek WWTP site and serves the Diamond Ridge Camp, wastewater treatment plant service building drainage and supernatant from the existing aerobic digester. The station pumps directly in to the headworks of the Fish Creek facility, upstream from the main plant influent meter. The station is equipped with two submersible pumps, each with a nominal capacity of 580 gpm (835,200 gpd). Emergency power is provided by the generator set, which serves the wastewater treatment facility. Sewage flow is usually the highest during the summer months when Diamond Ridge Camp is in use.

The average flow rate for the pump station in 2017 was 35,050 gpd, and the maximum monthly flow was 54,500 gpd. There are no additional flows projected to be added to this pumping station.

B. Mountain View II Pumping Station

The Mountain View Pump Station was decommissioned in 2011 and replaced with the new Mountain View II Pump Station, which went on line on February 8, 2011. The new pump station is located on the opposite side of the road from the original pump station, and utilizes the original force main and discharge point.

This submersible pumping station is located along Almshouse Road, near Pennsbury Drive, and it serves a portion of the Mountain View residential development. The collected sewage is pumped to the sanitary sewer along Buckingham Drive. The pumping station is equipped with two submersible pumps, each with a nominal capacity of 131 gpm (188,640 gpd). Minimal future connections are anticipated at this pump station.

The Mountain View II pump station has a flow meter which is calibrated annually. The average monthly flow rate for the pump station in 2017 was 23,183 gpd, and the maximum monthly flow was 31,900 gpd.

The Sailor Property subdivision is a seven (7) lot residential subdivision which received sewage facilities planning approval to be added to the Fish Creek Public Sewer Service area. Wastewater flows from the subdivision would be conveyed to

the Mountain View II Pump Station. The addition of the Sailor Property subdivision would increase the average daily flow by 1,890 gpd (7 edus x 270 gpd/edu). To eliminate spot zoning, the four parcels adjacent to the Sailor Property will also be included in the Fish Creek Service Area. These parcels are currently improved with existing single family homes and would therefore increase the flow to the Mountain View Pump Station by an additional 1,080 gpd (4 edus x 270 gpd/edu).

As shown in the calculations below, the projected annual average flow rate does not exceed the annual average flow capacity of the pump station.

$$\begin{aligned}\text{Peak Pump Capacity} &= 131 \text{ gpm} \\ &= 131 \text{ gpm} \times 1,440 \text{ min/day} \\ &= 188,640 \text{ gpd}\end{aligned}$$

$$\text{PADEP Peak Factor} = 3.9$$

$$\begin{aligned}\text{Annual Average (AA) Flow} &= 188,640 \text{ gpd} / 3.9 \text{ peak factor} \\ &= 48,369 \text{ gpd}\end{aligned}$$

$$\text{Existing Flows (AA)} = 23,183 \text{ gpd}$$

$$\begin{aligned}\text{Projected Flows (AA)} &= 2,970 \text{ gpd}^* \\ * - 11 \text{ edu(s) from Sailor} + \text{Existing Adjacent Parcels (Area "D")}\end{aligned}$$

$$\text{Total Flows} = 26,153 \text{ gpd}$$

$$\begin{aligned}\text{Available Capacity (AA)} &= 48,369 \text{ gpd} - 26,153 \text{ gpd} \\ &= 22,216 \text{ gpd}\end{aligned}$$

### C. North Meetinghouse Road Pumping Station

This pumping station is located along north Meetinghouse Road and serves the Jamison Hunt residential development as well as some residences along north Meetinghouse Road. The wastewater collected at the pump station is then pumped to the gravity sanitary sewer in Meetinghouse Road near Dogwood Drive. The pumping station is a prefabricated steel wet well/dry well design and is equipped with two non-clog pumps, each with a nominal capacity of 215 gpm (309,600 gpd). An on-site generator provides emergency power.

The average flow rate for the pump station in 2017 was 62,517 gpd, and the peak monthly flow in 2017 was 82,000 gpd. Minimal future connections from existing homes along North Meetinghouse Drive are anticipated at this pump station, and the maximum projected flows to this pump station are not expected to increase over the next two years.

Revised July 27, 2020

#### D. Hidden Pond West Pumping Station

This submersible pumping station is located on Long Pond Drive, near Bristol Road, and serves a portion of the Hidden Pond residential development along with all of the Warwick Estates development. The collected wastewater is pumped to the gravity sanitary sewer at the intersection of Long Pond Drive and Windsor Lane. The pumping station is equipped with two submersible pumps, each with a nominal capacity of 190 gpm (273,600 gpd). Emergency power is provided by an on-site generator set.

The average flow rate for the pump station in 2017 was 23,242 gpd, and the maximum monthly flow was 33,800 gpd. There are no additional flows projected to be added to this pumping station.

#### E. Hidden Pond East Pumping Station

This submersible pumping station is located on Valley View Road, near Bristol Road, and serves the remaining portion of the Hidden Pond residential development. The collected sewage is pumped to the sanitary sewer along Persimmon Lane. The pumping station is equipped with two submersible pumps, each with a nominal capacity of 130 gpm (187,200 gpd). An on-site generator provides emergency power.

The average flow rate for the pump station in 2017 was 21,550 gpd, and the maximum monthly flow was 26,100 gpd.

Phase I of the Breton Hills development collection lines have been installed. Phase II of the Breton Hills development could potentially connect to this pump station in the future adding twenty five (25) new connections. As discussed throughout this Act 537 Plan Update, these properties will continue to be serviced by their existing on-lot sewage disposal systems and overseen by the Township Sewage Management Program, which is proving to be effective. Should Breton Hills Phase II connect to the Hidden Pond East Pump Station, the wastewater from this development would increase the flow at the pump station by 6,750 gpd ( $25 \text{ edus} \times 270 \text{ gpd/edu} = 6,750 \text{ gpd}$ ). As shown in the calculations below, the projected annual average flow rate does not exceed the annual average flow capacity of the pump station.

$$\begin{aligned}\text{Peak Pump Capacity} &= 130 \text{ gpm} \\ &= 130 \text{ gpm} \times 1,440 \text{ min/day} \\ &= 187,200 \text{ gpd}\end{aligned}$$

$$\text{PADEP Peak Factor} = 3.9$$

$$\begin{aligned}\text{Annual Average (AA) Flow} &= 187,200 \text{ gpd} / 3.9 \text{ peak factor} \\ &= 48,000 \text{ gpd}\end{aligned}$$

Revised July 27, 2020

Existing Flows (AA) = 21,550 gpd

Projected Flows (AA) = 6,750 gpd\*

\* - 25 edu(s) from Breton Hills Phase II (Area "J")

Total Flows = 28,300 gpd

Available Capacity (AA) = 48,000 gpd - 28,300 gpd  
= 19,700 gpd

#### F. Valley Road Pumping Station

This submersible pumping station is located on Valley Road, near Old York Road, and serves the existing Bridge Valley residential area, the Middle Bucks Vocational Technical School, the Bridge Valley at Furlong residential development, the Bridge Valley Elementary School, and flow from the Deer Run Pumping Station. The collected wastewater is pumped to the sanitary sewer located in an easement through the Bucks County Country Club property. The Valley Road Pumping Station was upgraded in 2005. This upgrade included replacement of the existing submersible pumps, controls, wet well appurtenances, and installation of a new emergency pump and associated underground piping. This upgrade was necessary to accommodate additional flows from the Bridge Valley Elementary School as well as the Bridge Valley at Furlong residential development. The pump station upgrade was substantially complete in December 2005. The upgraded pumping station is equipped with two submersible pumps, each with a nominal capacity of 282 gpm (406,080 gpd).

In the Spring of 2016 a flow meter was installed at the Valley Road Pump Station and is calibrated annually. The average flow rate for the pump station in 2017 was 89,542 gpd, and the maximum monthly flow was 110,500 gpd.

The Warwick Mills development is a 40-lot residential subdivision which has obtained planning approval to connect to the public sewer system. Wastewater from the Warwick Mills development would flow to this pump station. Collection lines for the Warwick Mills development have been installed, and three connections were added in 2017 with additional connections to follow as the homes are constructed and sold. There will be a total of thirty-seven (37) new connections to this pump station from the Warwick Mills development, which would increase the daily flow by 9,990 gpd (37 edus x 270 gpd/edu).

Should the property along Mill Road, identified as the Toll Subdivision be developed and connected to the Fish Creek Service Area, an additional 5,400 gpd (20 edus x 270 gpd/edu) would flow to the Valley Road Pump Station.

Revised July 27, 2020

III - 5

**EE, Inc.**

As discussed in Chapter VII, there are existing residential properties along Valley Road that will continue to be serviced by their existing on-lot sewage disposal systems under the Township Sewage Management Program, which is proving to be effective. Should these properties connect to the public sewer system, an additional 14,040 gpd of wastewater (52 edus x 270 gpd/edu) would flow to the Valley Road Pump Station.

As shown in the calculations below, the projected annual average flow rate does not exceed the annual average flow capacity of the pump station with the current and future flow projections.

$$\begin{aligned}\text{Peak Pump Capacity} &= 282 \text{ gpm} \\ &= 282 \text{ gpm} \times 1,440 \text{ min/day} \\ &= 406,080 \text{ gpd}\end{aligned}$$

$$\text{PADEP Peak Factor} = 3.0$$

$$\begin{aligned}\text{Annual Average (AA) Flow} &= 406,080 \text{ gpd} / 3.0 \text{ peak factor} \\ &= 135,360 \text{ gpd}\end{aligned}$$

$$\text{Existing Flows (AA)} = 89,542 \text{ gpd}$$

$$\text{Projected Flows (AA)} = 29,430 \text{ gpd}^*$$

- \* includes the following developments:
  - 37 edu(s) from Warwick Mills (Area "A")
  - 20 edu(s) from Potential Toll Subdivision (Area "B")
  - 52 edu(s) from Valley Road Area (Area "H")

$$\text{Total Flows} = 118,972 \text{ gpd}$$

$$\begin{aligned}\text{Available Capacity (AA)} &= 135,360 \text{ gpd} - 118,972 \text{ gpd} \\ &= 16,388 \text{ gpd}\end{aligned}$$

#### G. Deer Run (Mill Ridge) Pumping Station

This submersible pumping station is located on York Road, near Deer Run Drive, and services the Deer Run development area. Collected sewage is pumped to the sanitary sewer system tributary to the Valley Road Pump Station. The pumping station is equipped with two submersible pumps which pump an average of 233 gpm (335,520 gpd) each. An on-site generator will provide emergency power.

The average flow rate for the pump station in 2017 was 42,483 gpd, and the maximum monthly flow was 49,300 gpd. Based on the twenty year planning

Revised July 27, 2020

projections, it is anticipated that an additional 20 edus or 5,460 gpd of wastewater (20 edus x 270 gpd/edu) would be conveyed to this pump station.

As shown in the calculations below, the projected annual average flow rate does not exceed the annual average flow capacity of the pump station with the current and future flow projections.

$$\begin{aligned}\text{Peak Pump Capacity} &= 233 \text{ gpm} \\ &= 233 \text{ gpm} \times 1,440 \text{ min/day} \\ &= 335,520 \text{ gpd}\end{aligned}$$

$$\text{PADEP Peak Factor} = 3.9$$

$$\begin{aligned}\text{Annual Average (AA) Flow} &= 335,520 \text{ gpd} / 3.9 \text{ peak factor} \\ &= 86,030 \text{ gpd}\end{aligned}$$

$$\text{Existing Flows (AA)} = 42,483 \text{ gpd}$$

$$\text{Projected Flows (AA)} = 5,400 \text{ gpd}^*$$

\* - 20 edu(s) from Potential Toll Development (Area "B")

$$\text{Total Flows} = 47,883 \text{ gpd}$$

$$\begin{aligned}\text{Available Capacity (AA)} &= 86,030 \text{ gpd} - 47,883 \text{ gpd} \\ &= 38,147 \text{ gpd}\end{aligned}$$

#### H. Bridge Valley at Furlong Pumping Station

This submersible pump station was brought on-line in 2005. Located on Mountain Laurel Drive, this pump station services the Bridge Valley at Furlong development. Collected sewage is pumped to the sanitary sewer located within the Bridge Valley at Furlong development which flows by gravity to the Valley Road Pump Station for eventual treatment at the Fish Creek Wastewater Treatment Plant. The pumping station is equipped with two submersible pumps, with a design capacity of 289 gpm (416,160 gpd). Emergency power is provided by an on-site generator set. The Authority has taken dedication of the Bridge Valley Pumping Station.

The average flow rate for the pump station in 2017 was 32,775 gpd, and the maximum monthly flow was 38,700 gpd. There are no additional flows projected to be added to this pumping station.

Revised July 27, 2020

III - 7

**EE, Inc.**



#### I. Ridings of Warwick Pumping Station

The Authority took dedication of this pump station in 2007, at the time it was brought on-line. Located off of April Drive in the Ridings of Warwick development, this station handles flows generated by the Ridings of Warwick development as well as Hampton Chase and Dark Hollow Estates. Collected sewage is pumped to a sanitary sewer located on Almshouse Road which flows by gravity to the Fish Creek Wastewater Treatment Plant. The pumping station is equipped with two submersible pumps, with a design capacity of 105 gpm (151,200 gpd). Emergency power is provided by an on-site portable emergency pump.

The average flow rate for the pump station in 2017 was 24,858 gpd, and the maximum monthly flow was 32,500 gpd. There are no additional flows projected to be added to this pumping station.

#### J. Fish Creek Main Pumping Station

This submersible pumping station is the influent Pump Station for the Fish Creek WWTP site. The station is equipped with three submersible pumps, each with a nominal capacity of 1,040 gpm (628,742 gpd). The average flow rate for the pump station in 2017 was 628,742 gpd, and the maximum monthly flow was 735,300 gpd. Based on the current and twenty year planning projections, it is anticipated that an additional 180 edus or 48,600 gpd of wastewater (180 edus x 270 gpd/edu) would be conveyed to this pump station. The table below outlines the projections from potential developments.

Potential Development			
Map ID	Project Name	No. of EDUs	Projected Flow
C	Prestige	13	3,510
G	Fetzer	80	21,600
E	Walker Tract	40	10,800
I	York Road Potential Development	14	3,780
J	Breton Hills Phase II	25	6,750
F	Stoney Road	8	2,160
Totals		180	48,600

As shown in the calculations below, the projected annual average flow rate does not exceed the annual average flow capacity of the pump station with the current and future flow projections.

$$\begin{aligned}
 \text{Peak Pump Capacity} &= 2,080 \text{ gpm} \\
 &= 2,080 \text{ gpm} \times 1,440 \text{ min/day} \\
 &= 2,995,200 \text{ gpd}
 \end{aligned}$$

$$\text{PADEP Peak Factor} = 3.0$$

$$\begin{aligned}
 \text{Annual Average (AA) Flow} &= 2,995,200 \text{ gpd} / 3.0 \text{ peak factor} \\
 &= 998,400 \text{ gpd}
 \end{aligned}$$

$$\text{Existing Flows (AA)} = 628,742 \text{ gpd}$$

$$\text{Projected Flows (AA)} = 48,600 \text{ gpd}^*$$

- \* includes the following developments:
- 13 edu(s) from Prestige Property (Area "C")
  - 80 edu(s) from Fetzner Tract (Area "G")
  - 40 edu(s) from Walker Tract (Area "E")
  - 14 edu(s) from Potential Development (Area "T")
  - 25 edu(s) from Breton Hills Phase II (Area "J")
  - 8 edu(s) from Stoney Road (Area "F")

$$\text{Total Flows} = 677,342 \text{ gpd}$$

$$\begin{aligned}
 \text{Available Capacity (AA)} &= 998,400 \text{ gpd} - 677,342 \text{ gpd} \\
 &= 321,058 \text{ gpd}
 \end{aligned}$$

## **2. Narrative and Schematic Diagram of Facility**

The Fish Creek Wastewater Treatment Plant is an activated sludge process utilizing a two (2) basin sequencing batch reactor (SBR) system which treats the wastewater and discharges out of outfall 001 into an un-named tributary to the Neshaminy Creek under Clean Streams Law No. 0906407.

## **3. Descriptions and Schematic of Treatment Process**

The Fish Creek Wastewater Treatment Plant is an activated sludge process utilizing a two (2) basin sequencing batch reactor (SBR) system with a Omniflo programmable logic controller (PLC) provided by Evoqua/Jet Tech. The facility is comprised of a Headworks Building for screening, an influent SBR Lift Station, an influent equalization tank, two SBR basins (SBR No. 1 and SBR No. 2), an aerobic digester, and ultraviolet disinfection unit. Effluent is discharged by gravity into Fish Creek. Digested sludge is removed offsite by a licensed sludge hauler.

Revised July 27, 2020

#### **4. Scheduled Expansion of Treatment**

The PA DEP has approved a Water Quality Management (Part II) permit amendment by letter dated July 31, 2013. The permit amendment is to convert the existing influent equalization tank to a sequencing batch reactor (432,000 gal.), and the aerobic digester tank will be divided into a sequencing batch reactor (250,000 gal.), a first stage aerobic digester (250,000 gal.), and a second stage aerobic digester (60,000 gal.). The purpose of the project is to allow either one of the two SBR treatment basins to be taken off line for maintenance and repairs. The annual average flow, hydraulic rated capacity, and organic capacity of the WWTP will remain the same.

#### **5. Municipality Operation and Maintenance Requirements**

The WTW&SA video inspects and jet cleans pipes in the collection system on an as-needed basis. The Authority also conducts a periodic maintenance program of cleaning collector lines in areas downstream of restaurants or food preparation facilities for accumulation of grease. The collection and conveyance systems owned by the Authority are generally in good condition.

The WWTP is well maintained by certified operators from the WTWSA, and any issues that arise are immediately corrected and fixed.

#### **6. Disposal Areas and Applicable Groundwater Limitations**

The wastewater treated at the Fish Creek WWTP is discharged through outfall 001 into an un-named tributary to the Neshaminy Creek under Clean Streams Law No. 0906407. Therefore, there are no dedicated land based disposal fields or groundwater limitations.

### **Country Crossing WWTP**

#### **1. Location, Size, Ownership**

The Country Crossing WWTP is located on Mearns Road south of Warwick Business Campus in Warwick Township, Bucks County, PA. Sewage flows within the southwest corner of Warwick Township are treated at the Country Crossing WWTP. The Country Crossing Service Area is identified on Map No. 1 in orange.

The Country Crossing WWTP, which began operating on January 1, 1998, was designed to provide wastewater treatment for the Country Crossing residential subdivision and the Warwick Business Campus. The plant was originally designed to treat 0.12 million gallons per day (mgd). The Country Crossing WWTP was later upgraded to a treatment capacity of 0.32 mgd. This treatment plant expansion accommodates the Heritage Creek and Heritage Creek II projects, which are located

to the north of the Country Crossing subdivision. Currently, only three of the four sequencing batch reactor (SBR) treatment trains are operational at the plant.

The treatment plant is owned and operated by Warwick Township Water & Sewer Authority (WTWSA). The Country Crossing WWTP is well maintained and has adequate staff, and effluent quality is well within the limits established in NPDES Permit No. PA0056421. The 2017 annual average flow to the plant was 0.150 mgd. The three month maximum average flow was 0.158 mgd and occurred in the months of October, November, and December. This is below the rated capacity of the treatment facility of 0.32 mgd.

The collection and conveyance system for the Country Crossing area includes approximately eight miles of eight inch PVC and ductile iron gravity sanitary sewer mains with precast concrete manholes.

The Authority owns and operates three (3) sewage pumping stations which are tributary to the Country Crossing WWTP. Each is provided with constant speed pumps operating between high and low level switches within the wet wells.

Flow data for each pump station is outlined below:

A. Country Crossing Pumping Station

This submersible pumping station is located in the Country Crossing residential development of Red Maple Court and serves the Country Crossing development. The pump station is equipped with two submersible pumps, each having a nominal capacity of 246 gpm (354,240 gpd) and an emergency generator.

The average flow rate for the pump station in 2017 was 41,300 gpd. The maximum monthly flow in 2017 for the pump station was 46,600 gpd. No additional connections are proposed, and the projected maximum flows for the next two years should remain the same.

B. Creek Road Pumping Station

This submersible pump station was brought on-line in 2001. Located on Creek Road, this station services the Heritage Creek development area. Collected sewage is pumped to the sanitary sewer located within Warwick Business Campus upstream of the Country Crossing Wastewater Treatment Plant. The pumping station is equipped with two submersible pumps which pump an average of 464 gpm (668,160 gpd) each. Emergency power is provided by an on-site generator set.

The average flow rate for the pump station in 2017 was 149,367 gpd. The maximum monthly flow in 2017 for the pump station was 164,800 gpd.

As discussed in Chapter VIII, the area identified as Germinal Colony consists of existing residential properties that will continue to be serviced by their existing on-lot sewage disposal systems under the Township Sewage Management Program, which is proving to be effective. Should the on-lot systems fail and require these properties to connect to the public sewer system, an additional 20,250 gpd (75 edus x 270 gpd/edu) would flow to the Creek Road Pump Station.

As shown in the calculations below, the projected annual average flow rate does not exceed the annual average flow capacity of the pump station with the current and future flow projections.

$$\begin{aligned}\text{Peak Pump Capacity} &= 464 \text{ gpm} \\ &= 464 \text{ gpm} \times 1,440 \text{ min/day} \\ &= 668,160 \text{ gpd}\end{aligned}$$

$$\text{PADEP Peak Factor} = 3.0$$

$$\begin{aligned}\text{Annual Average (AA) Flow} &= 668,160 \text{ gpd} / 3.0 \text{ peak factor} \\ &= 222,720 \text{ gpd}\end{aligned}$$

$$\text{Existing Flows (AA)} = 149,367 \text{ gpd}$$

$$\text{Projected Flows (AA)} = 22,410 \text{ gpd}^*$$

- \* includes the following developments:
  - 75 edu(s) from Germinal Colony (Area "K")
  - 8 edu(s) from Stout Drive (Area "L")

$$\text{Total Flows} = 171,777 \text{ gpd}$$

$$\begin{aligned}\text{Available Capacity (AA)} &= 222,720 \text{ gpd} - 171,777 \text{ gpd} \\ &= 50,943 \text{ gpd}\end{aligned}$$

#### C. Mearns Road Business Campus Pump Station

This submersible pump station was brought on-line in 2005. Located in the Mearns Road Business Campus development, this station services the Mearns Road Business Campus development. Collected sewage is pumped to the sanitary sewer tributary to the Country Crossing Wastewater Treatment Plant. The pump station is equipped with two submersible pumps with a design capacity of 129 gpm (185,760 gpd).

The average flow rate for the pump station in 2017 was 6,900 gpd. The peak monthly flow in 2017 for the pump station was 9,000 gpd in the month of

Revised July 27, 2020

October. No additional connections are proposed, and the projected maximum flows for the next two years should remain the same.

## **2. Narrative and Schematic Diagram of Facility**

The Country Crossing Wastewater Treatment Plant is an activated sludge process utilizing a four (4) basin sequencing batch reactor (SBR) system which treats the wastewater and discharges through outfall 001 into an un-named tributary, which then flows to the Little Neshaminy Creek under Clean Streams Law No.099426.

## **3. Descriptions and Schematic of Treatment Process**

The Country Crossing Wastewater Treatment Plant is an activated sludge process utilizing a four (4) basin sequencing batch reactor (SBR) system with a controller provided by Aqua Aerobic. The facility is composed of a headworks building for screening, two (2) influent equalization tanks, four (4) SBR basins (SBR "A" through "D"), a post equalization tank, a sludge thickening tank, a traveling bridge filter, and an ultraviolet disinfection unit. The primary effluent discharge is by gravity into an unnamed tributary then to the Little Neshaminy Creek under Clean Streams Law No.099426. Digested sludge is removed offsite by a licensed sludge hauler.

## **4. Scheduled Expansion of Treatment**

The Country Crossing WWTP began operating on January 1, 1998 and is in good condition. No plant expansion is proposed at this time.

## **5. Municipality Operation and Maintenance Requirements**

The WTW&SA video inspects and jet cleans pipes in the collection system on an as-needed basis. The Country Crossing collection and system is of relatively recent construction, and is in excellent condition, needing little maintenance.

The WWTP is well maintained by certified operators from the WTW&SA, and any issues that arise are immediately corrected and fixed.

## **6. Disposal Areas and Applicable Groundwater Limitations**

The wastewater treated at the Country Crossing WWTP is discharged through outfall 001 into an un-named tributary to the Little Neshaminy Creek under Clean Streams Law No. 0999426. This outfall is the primary outlet source for the WWTP.

Therefore, there are no dedicated land based disposal fields or groundwater limitations.

**B. Warrington Township Municipal Sewage Facilities**

The most western portion of the Township, located at the intersection of Bristol Road and Guinea Lane, is serviced by Warrington Township. The Warrington Township Service Area is identified on Map No. 1 in magenta. This service area includes five (5) parcels of land in Warwick Township which are currently developed with single family homes. As these properties are currently developed and Warwick Township is not aware of any planned redevelopment, these properties will continue to be serviced by Warrington Township.

**C. Warminster Municipal Authority Sewage Facilities**

Warminster Municipal Authority services a residential area in the southern portion of Warwick Township in the vicinity of Old York Road between Eddowes Road and Bristol Road. The Warminster Service Area is identified on Map No. 1 in pink.

Service to this area is provided by the Graeme Way Pump Station, which in turn discharges to the Log College WWTP. Warwick Township currently does not have any proposed developments or redevelopments within this service area.

In accordance with the 2010 Breton Hills and Eddoes Road Special Study, Eddowes Road Phase II will remain using their existing on-lot systems under the Township's Sewage Management Program which has proven to be an effective program. Should Phase II connect to public sewer, an additional 19 edus would be added to the public sewer system.

**D. Warwick Township Sewage Disposal Needs**

In accordance with Act 537 guidelines and DEP's publication titled *Act 537 Sewage Disposal Needs Identification* (guidance document 3800-BK-DEP1949), Warwick Township initiated a well sampling program. The scope of work was to acquire updated information on the general condition of the properties serviced by individual onlot sewage disposal systems and to assess potential needs based on the resulting data.

According to the Township Records, there are approximately 320 on-lot sewage disposal systems (OLDS) in the Township. In accordance with the DEP's *Act 537 Sewage Disposal Needs Identification* document, a minimum of 25% of the wells and OLDS are required to be surveyed to meet the requirements of a "municipality-wide" Tier 1 survey.

Based on the Tier 1 survey performed for the Township, 80 OLDS and wells were either surveyed or sampled, which represents 25% of the total number of on-lot systems meeting the Tier 1 survey requirement.

To further evaluate the Germinal Colony and Valley Road Study Areas, Warwick Township also initiated a Tier 2 survey in these two study areas. Beginning in February 2020, Warwick Township mailed a well survey to each of the residents in the Germinal Colony and Valley Road Study Areas requesting participation in the sampling program.

A second follow up letter was submitted in March 2020 to each resident who failed to respond to the first request.

The Germinal Colony Study Area contains 65 OLDS and wells. In accordance with the DEP's *Act 537 Sewage Disposal Needs Identification* document, sampling of a minimum of 35% of the wells is required for Tier 2 evaluations for areas with 50 to 100 wells. After two rounds of well surveys were sent out, the number of residents who responded to the survey and were willing to participate in the sampling was 19, which represents 29% of the total wells in the Germinal Colony Study Area.

The Valley Road Study Area contains 23 OLDS and wells. In accordance with the DEP's *Act 537 Sewage Disposal Needs Identification* document, sampling of a minimum of 50% of the wells is required for Tier 2 evaluations for areas with up to 50 wells. After two rounds of well surveys were sent out, the number of residents who responded to the survey and were willing to participate in the sampling was 4, which represents 17% of the total wells in the Valley Road Study Area.

While the above response rates do not meet the minimum requirements for a Tier 2 evaluation, Warwick Township followed the guidance provided by DEP during the January 10, 2020 meeting and submitted two rounds of surveys to residents requesting their participation in the sampling program. Warwick Township provided residents ample time to respond to the surveys, though many of residents were not willing to participate in the program. Therefore, Warwick Township has fulfilled the requirements for the Tier 2 Evaluation.

The results of the Tier 1 and Tier 2 surveys are presented in Item Number 4 below.

#### **1. Types of Onlot Systems**

The types of onlot systems located within the Township range from an elevated sand-mound to drip irrigation. Maps 4A, 4B, 4C, and 4D outline the soil limitations for on-lot sewage disposal systems for sand mounds, drip irrigation, and spray irrigation within the Township Boundaries.

#### **2. Sanitary Survey Completed**

Given the scope of this Act 537 Plan Update and the sewage disposal needs evaluations previously conducted by the Township, an on-lot sanitary survey was not completed as part of this Act 537 Plan Update. Additionally, on October 3, 2011, the Township adopted a Sewage Management Ordinance, and a copy of the Ordinance is included in Appendix A. The comprehensive ordinance provides requirements for the permitting and operation of holding tanks, privies, and individual and community on-lot sewage disposal systems and also identifies the responsible party for basic routine maintenance, which includes a pump out at an interval not to exceed three years.



Participation by Township residents is typical for programs of this nature, and is estimated to be around 100% compliance. As part of the On-lot Management Program driven by the Township, the Township was divided into three Sewage Management Districts (I, II, and III) to monitor on-lot systems and compliance with the Ordinance. The On-lot Management Program has been an effective tool to manage existing on-lot systems within the Township as evidenced by the results of the individual well survey discussed below.

As part of this Act 537 Plan Update, Bucks County Department of Health (BCDH) provided sanitary survey information including documented malfunctions, properties that have been issued for repairs, experimental systems, alternate systems, and holding tanks. The information was provided in the January 11, 2019 letter included in Appendix D. The information was summarized on the BCHD Sanitary Survey Map which is included at the end of this chapter. Each of the properties is identified with a numerical identification and color coded to identify the following categories: documented malfunctions, permits for repairs, experimental systems, alternate systems, and holding tanks. As illustrated by the map, the majority of these properties are located within the Germinal Colony and Valley Road Study Areas. As discussed within this Chapter, both of these study areas have been evaluated through the Tier 2 Evaluation. The remaining properties are located within the existing public sewer service areas.

### **3. Comparison of the Types of Onlot Sewage Systems**

The overall base soil mapping for the Township is presented on the soils map, Map 4 and extrapolated for general suitability considerations. Maps 4A, 4B, 4C and 4D provided outline the soil limitations for on-lot sewage disposal systems for sand mounds, drip irrigation and spray irrigation within the Township Boundaries.

### **4. Individual Water Supply Survey**

#### **Tier I Survey**

The water sampling was conducted over a four month period ending in January 2017. All properties were notified within Districts I, II, and III designated for on-lot sewage disposal. Water sampling was performed on the properties which elected to participate in the sampling event.

Water sampling was performed with care to avoid contamination of samples and strict chains of custody were maintained on every sample. All samples were tested for total coliform, fecal coliform, and nitrate-nitrogen. Samples were stored in iced coolers during collection and were submitted to the laboratory within six hours of sampling. A state certified test laboratory was utilized for all analysis of the well samples.

The documentation of the well survey, well sample test results, and the chain of custody forms for each property are available at the Warwick Township administration building for public review. Tabular data of the sampling results are

Revised July 27, 2020

III - 16

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provided in Appendix B, and a map summarizing the results of the well survey is included as Map No. 8, Existing Well Analysis for Water Sample Results.

The table below summarizes the well water survey results:

Summary of Tier 1 Well Sampling		
Category	Number of Samples	Percentage of Total Samples*
Fecal Coliform > 1 cfu/100mL	1	1.2%
Fecal Coliform < 1 cfu/100mL	79	98.7%
<b>Total</b>	<b>80</b>	<b>100%</b>
Total Coliform < 1 MPN/100mL	61	76.2%
Total Coliform 1 to 10 MPN/100mL	13	16.2%
Total Coliform > 10 MPN/100mL	6	7.5%
<b>Total</b>	<b>80</b>	<b>100%</b>
Nitrate Nitrogen < 5 mg/L	74	92.6%
Nitrate Nitrogen 5 to 10 mg/L	5	6.2%
Nitrate Nitrogen > 10 mg/L	1	1.2%
<b>Total</b>	<b>80</b>	<b>100%</b>

\* A total of 80 samples were collected for laboratory analysis

As noted above, only one well tested positive for fecal coliform (1.2%); 13 wells tested positive for total fecal coliform greater than 1 and less than 10 (16.2%); 6 wells tested positive for total coliform greater than 10 (7.5%). Five wells tested for nitrate-nitrogen levels from 5 mg/L to 10 mg/L (6.2%) and one well for nitrate greater than 10 mg/L (1.2%).

#### Tier II Survey

All properties within the Germinal Colony and Valley Road Study Areas were notified and provided a survey to complete and return. For those residents which elected to participate in the sampling program, the residential well sampling was conducted in March, April, and July 2020.

Water sampling was performed with care to avoid contamination of samples and strict chains of custody were maintained on every sample. All samples were tested for total coliform, fecal coliform, and nitrate-nitrogen. Samples were stored in iced coolers during collection and were submitted to the laboratory within six hours of sampling. A state certified test laboratory was utilized for all analysis of the well samples.

The documentation of the well survey, well sample test results, and the chain of custody forms for each property are available at the Warwick Township administration building for public review. Tabular data of the sampling results are

Revised July 27, 2020

III - 17

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provided in Appendix B, and a map summarizing the results of the well survey is included as Map No. 8A, 2020 Well Analysis for Water Sample Results. Samples were collected from drilled wells and available well depths are included on the data table summary in Appendix B.

The tables below summarize the well water survey results for each of the study areas.

<b>Summary of Tier 2 Well Sampling – Germinal Colony</b>		
<b>Category</b>	<b>Number of Samples in Germinal Colony*</b>	<b>Percentage of Total Samples</b>
Fecal Coliform < 1 cfu/100mL	18	95%
Fecal Coliform > 1 cfu/100mL	1	5%
<b>Total</b>	<b>19</b>	<b>100%</b>
Total Coliform < 1 MPN/100mL	11	58%
Total Coliform 1 to 10 MPN/100mL	4	21%
Total Coliform >10 MPN/100mL	4	21%
<b>Total</b>	<b>19</b>	<b>100%</b>
Nitrate Nitrogen <5 mg/L	19	100%
Nitrate Nitrogen 5 to 10 mg/L	0	0 %
Nitrate Nitrogen >10 mg/L	0	0 %
<b>Total</b>	<b>19</b>	<b>100%</b>

\* A total of 19 samples were collected for laboratory analysis

Within the Germinal Colony Study Area, only one (1) well tested positive for fecal coliform, which represents five percent (5%) of the samples. Four (4) wells reported total coliform above 10, which represents twenty one percent (21%) of the samples. Lastly, all of the wells reported nitrate concentrations below 5 mg/L.

<b>Summary of Tier 2 Well Sampling – Valley Road</b>		
<b>Category</b>	<b>Number of Samples in Valley Road*</b>	<b>Percentage of Total Samples</b>
Fecal Coliform < 1 cfu/100mL	3	75%
Fecal Coliform > 1 cfu/100mL	1	25%
<b>Total</b>	<b>4</b>	<b>100%</b>
Total Coliform < 1 MPN/100mL	3	75%
Total Coliform 1 to 10 MPN/100mL	1	25%
Total Coliform >10 MPN/100mL	0	0%
<b>Total</b>	<b>4</b>	<b>100%</b>
Nitrate Nitrogen <5 mg/L	4	100%
Nitrate Nitrogen 5 to 10 mg/L	0	0 %
Nitrate Nitrogen >10 mg/L	0	0 %

Revised July 27, 2020

III - 18

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<b>Total</b>	<b>4</b>	<b>100%</b>
--------------	----------	-------------

\* A total of 4 samples were collected for laboratory analysis

Within the Valley Road Study Area, only one (1) well tested positive for fecal coliform, which represents twenty-five percent (25%) of the samples. All of the wells reported total coliform less than 10 and nitrate concentrations below 5 mg/L.

### Summary

Based on the PADEP Tier I Evaluation performed in the areas previously identified in the 1995 Act 537 Plan (Germinal Colony, Warwick Commons Industrial Park, and Valley Road existing development) the Sewage Management Ordinance enacted by the Township is proving to be effective. The majority of the results for total coliform and fecal coliform were both less than 1 ppm. The Nitrate levels ranged from less than 1 mg/L to 5 mg/L.

The Tier II Evaluation performed in the Germinal Colony and Valley Road Study Areas provided further evidence that the Sewage Management Ordinance is providing to be effective. The majority of results for total coliform and fecal coliform were both less than 1 ppm. All of the nitrate concentrations were less than 5 mg/L.

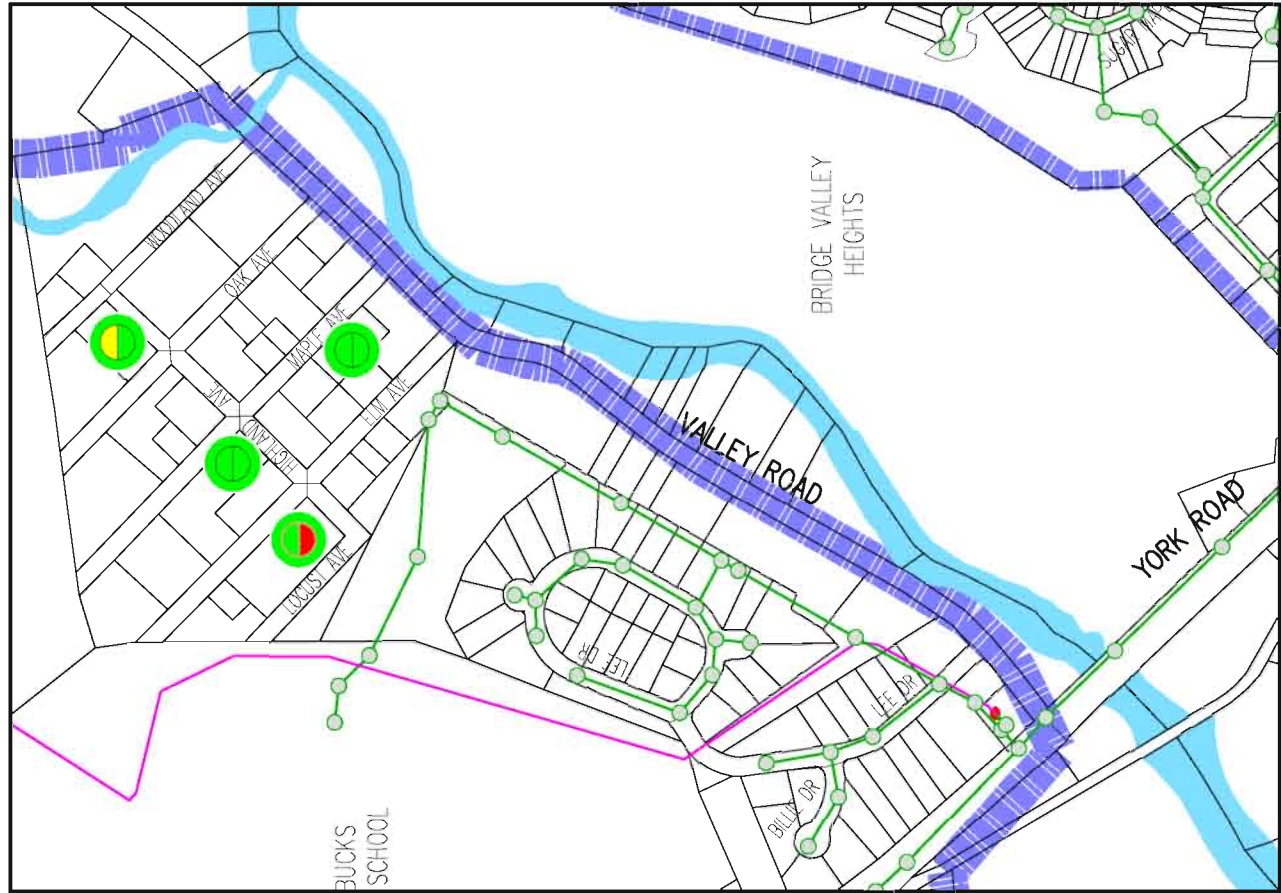
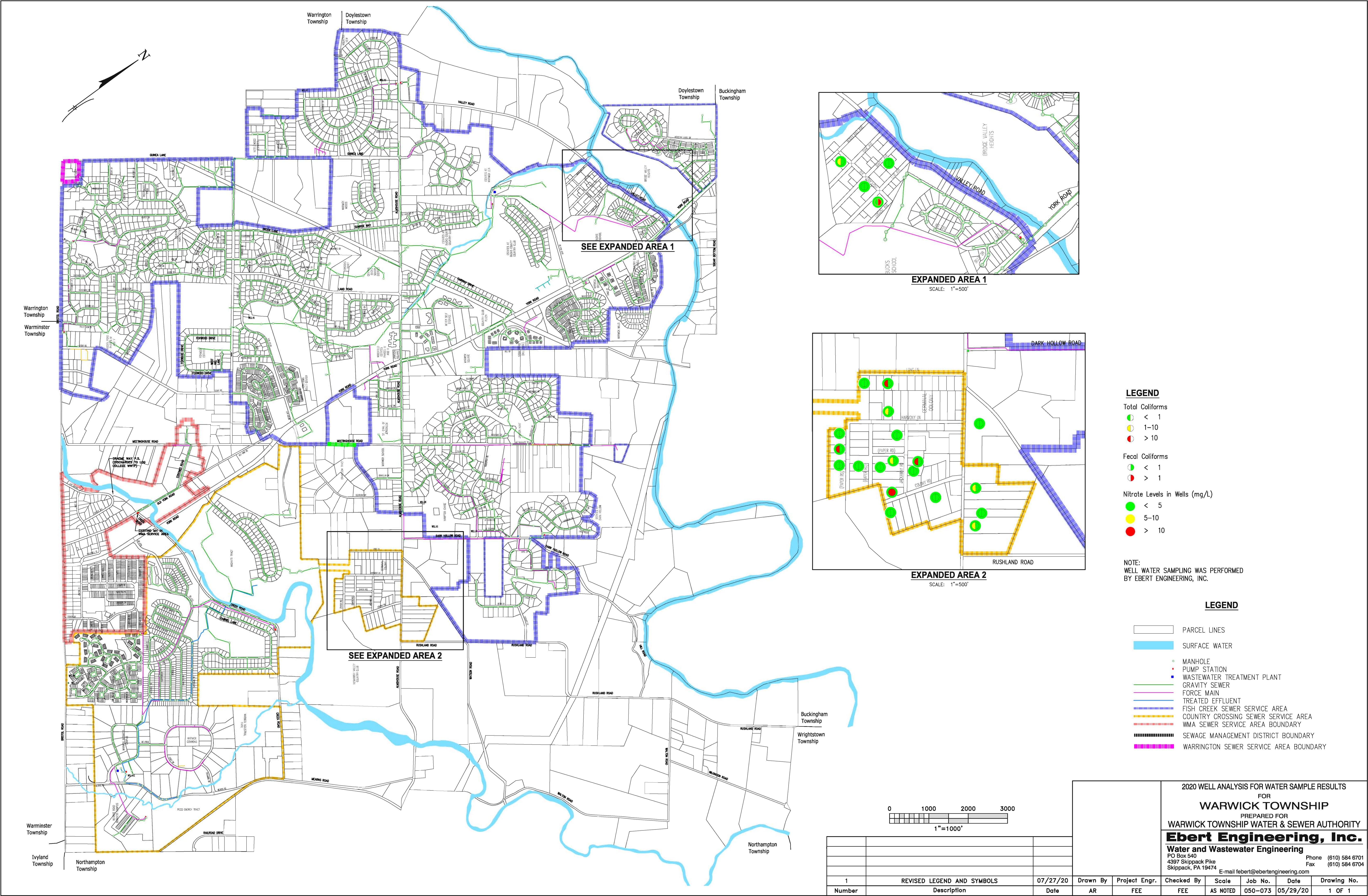
As part of the Sewage Management Ordinance enacted in 2011, property owners are required to pump their septic system every three years and provide the Township with a copy of the pump receipt. Since the Sewage Management Ordinance was enacted, it appears the ordinance has benefited the Township residents and educated them on how to maintain their disposal systems and has been a successful program.

**MAP 8 AND 8A**  
**EXISTING WELL ANALYSIS FOR WATER SAMPLE RESULTS**

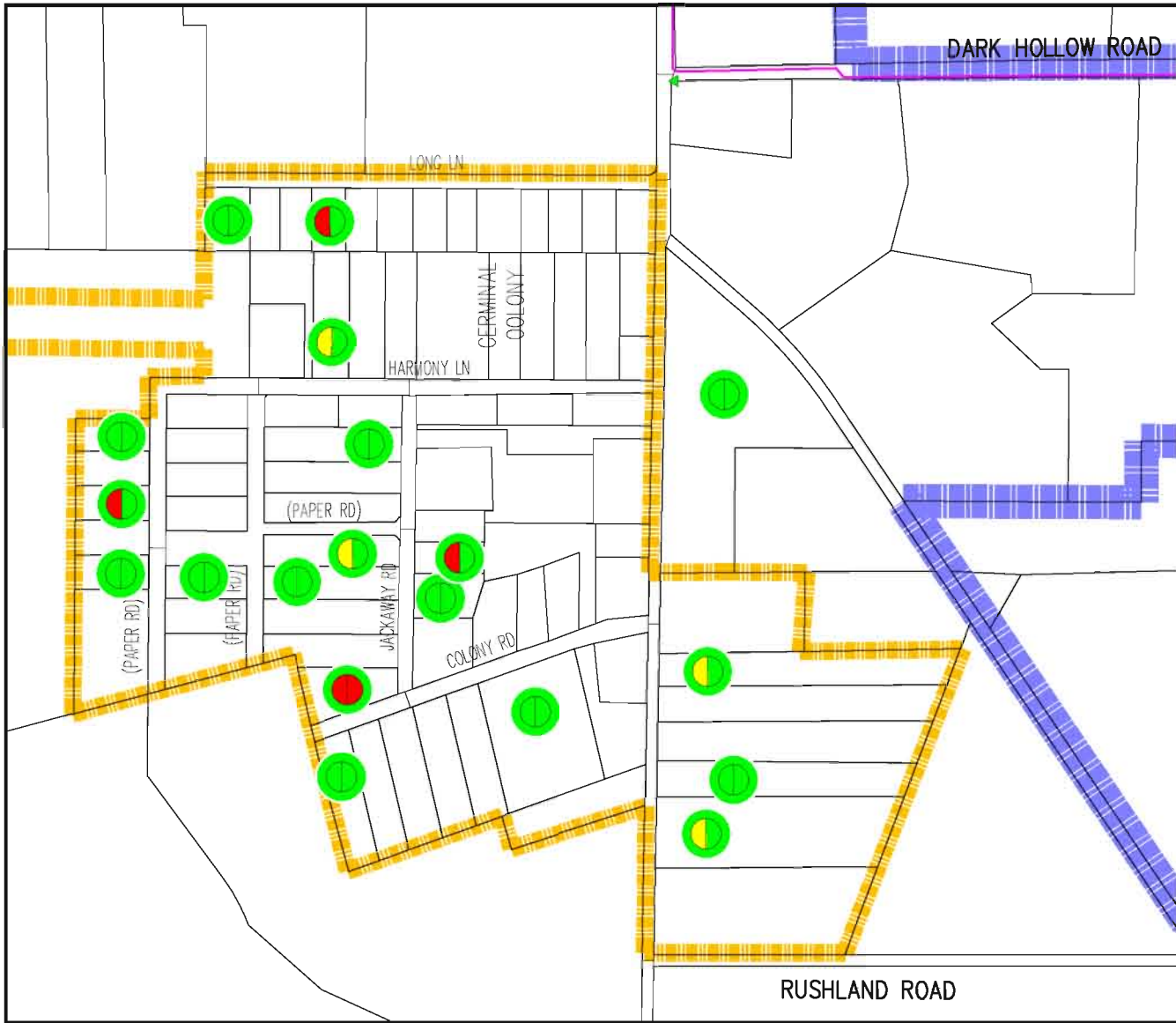








EXPANDED AREA 1  
SCALE: 1"=500'



EXPANDED AREA 2  
SCALE: 1"=500'

LEGEND

Total Coliforms

- < 1
- 1-10
- > 10

Fecal Coliforms

- < 1
- > 1

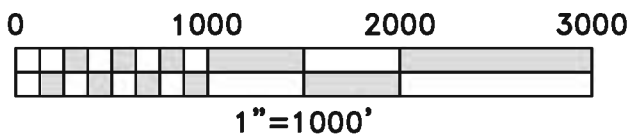
Nitrate Levels in Wells (mg/L)

- < 5
- 5-10
- > 10

NOTE:  
WELL WATER SAMPLING WAS PERFORMED  
BY EBERT ENGINEERING, INC.

LEGEND

- PARCEL LINES
- SURFACE WATER
- MANHOLE
- PUMP STATION
- WASTEWATER TREATMENT PLANT
- GRAVITY SEWER
- FORCE MAIN
- TREATED EFFLUENT
- FISH CREEK SEWER SERVICE AREA
- COUNTRY CROSSING SEWER SERVICE AREA
- WMA SEWER SERVICE AREA BOUNDARY
- SEWAGE MANAGEMENT DISTRICT BOUNDARY
- WARRINGTON SEWER SERVICE AREA BOUNDARY



2020 WELL ANALYSIS FOR WATER SAMPLE RESULTS FOR WARWICK TOWNSHIP PREPARED FOR WARWICK TOWNSHIP WATER & SEWER AUTHORITY <b>Ebert Engineering, Inc.</b> Water and Wastewater Engineering PO Box 540 4987 Skippack Pike Skippack, PA 19474 Phone (610) 584 6701 Fax (610) 584 6704 E-mail febert@ebertengineering.com									
1	REVISED LEGEND AND SYMBOLS	07/27/20	Drawn By	Project Engr.	Checked By	Scale	Job No.	Date	Drawing No.
Number	Description	Date	AR	FEE	FEE	AS NOTED	050-073	05/29/20	1 OF 1



## **5. Detailed Description of Operation and Maintenance Requirements**

As previously discussed, the Township adopted a Sewage Management Ordinance. The comprehensive ordinance provides requirements for the permitting and operation of holding tanks, privies, and individual and community on-lot sewage disposal systems and also identifies the responsible party for basic routine maintenance, which includes a pump out at an interval not to exceed three years. Waste haulers must be registered with the Bucks County Health Department and are required to complete on a standard form, prepared by Warwick Township, the results of a visual inspection in accordance with the Sewage Management Ordinance. Participation by Township residents is typical for programs of this nature, and is estimated at 100% compliance.

Warwick Township receives visual inspection forms for on-lot systems in accordance with the Sewage Management Ordinance. These inspection forms provide information on the condition of the on-lot system. These inspection forms will be utilized to identify and track on-lot system malfunctions within the Germinal Colony and Valley Road Study Areas. In addition, Warwick Township has requested that the Bucks County Health Department notify the Township when they receive permit applications for septic system repairs within the Township.

Small flow treatment facilities are monitored through the Bucks County Health Department (BCHD) and the Warwick Township On-lot Sewage Management Program. There are currently five small flow treatment facilities located within Warwick Township which includes the following systems:

- Haaz Property: 1878 Sugar Bottom Road
- Howard Kuntz Property: 1348 Highwoods Drive
- Gorman & Rouse Property: 1483 Meetinghouse Road
- Coggiola Property: 1651 Stony Road
- Grasso Property: 1631 Stony Road

The BCHD receives annual reports from the septic haulers for each of the SFTFs and provides copies of these reports to Warwick Township. Each of these five systems will continue to be monitored in the future, and annual reports will be submitted to BCHD and Warwick Township as they are completed.

### **E. Wastewater Sludge Generation**

For those properties currently served by individual on-lot sewage disposal systems, individual homeowner's contract with private, PADEP approved haulers to pump and dispose of septage generated from the on-lot septic systems. For a typical residential on-lot system, the amount of septage generated is estimated at 2,000 gallons per home every three years.

Revised July 27, 2020

III - 21

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The Fish Creek Wastewater Treatment Plant and the Country Crossing Wastewater Treatment Plant are both activated sludge processes, and the digested sludge is removed offsite by a licensed sludge hauler.







**CHAPTER IV**  
**FUTURE GROWTH AND LAND DEVELOPMENT**

## CHAPTER IV

### **FUTURE GROWTH AND LAND DEVELOPMENT**

#### **A. Warwick Township Existing Land Use**

The Comprehensive Plan identifies major characteristics of land use, Township environment, and recent development. The plan examines regional forces that affect the Township and explains population changes and development trends. The plan sets the community goals and objectives for the future. To achieve the future goals, the plan examines past policies and land use controls and makes recommendations for guiding growth and development toward desired outcomes.

Warwick has engaged in Township-wide planning since 1957 and first adopted a Comprehensive Plan in 1990, when nearly 60 percent of the land was used for farming or remained open. By 2000, the Township had 6,062 additional residents and 2,111 new dwelling units. Growth in the commercial sector resulted in the Township's first shopping center and other new businesses, changing the landscape of Warwick and transforming it from a rural area to a suburban community. The 2007 plan focused on accommodating future growth and a fresh analysis of available land and anticipated development, with goals and guidelines for future growth and change.

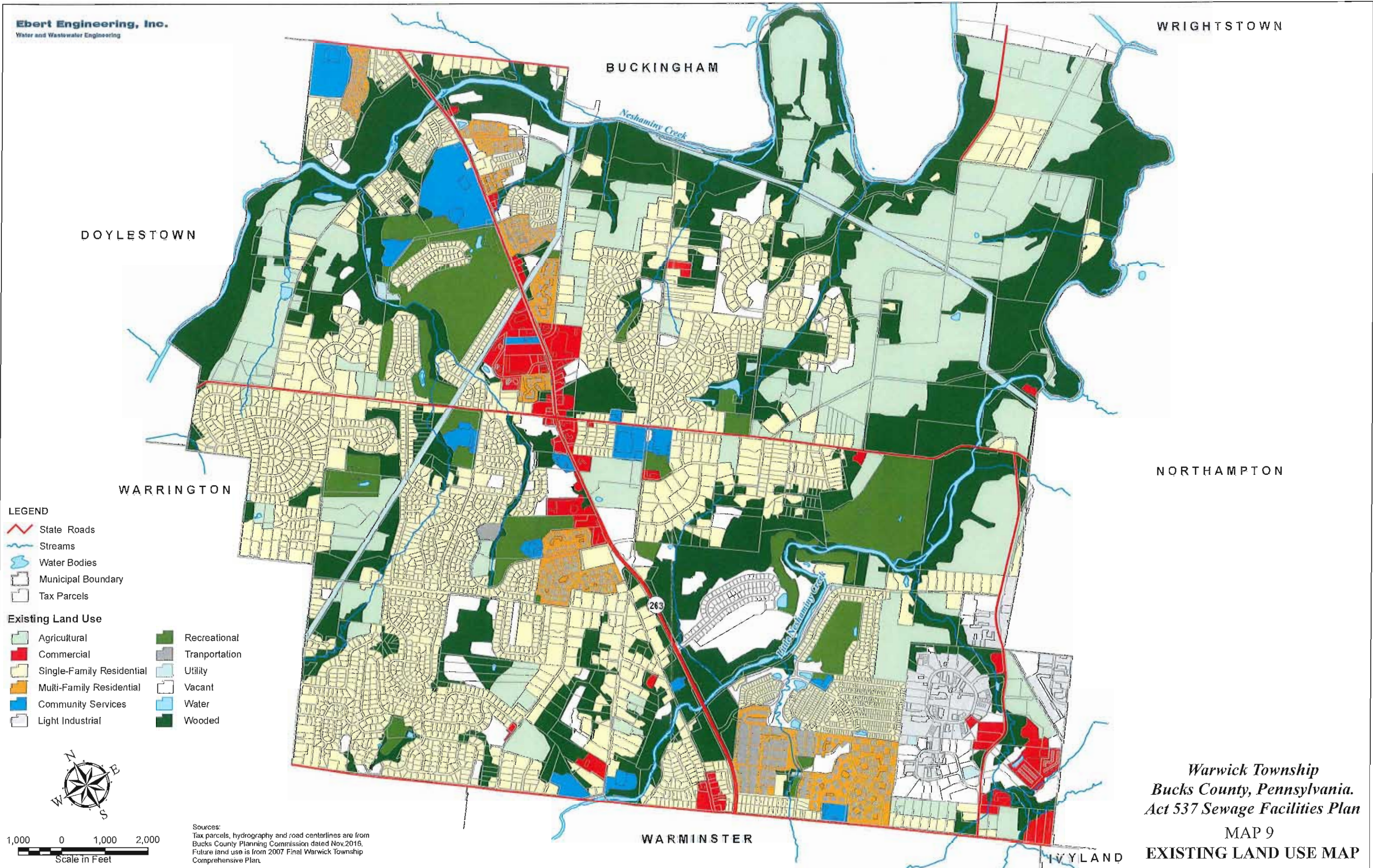
The comprehensive plan update for Warwick Township began in 2005 with the Township long-range comprehensive planning committee. The planning committee developed a resident survey and distributed it to Township residents in the summer of 2005 to gain input into community goals. The Comprehensive Plan was adopted in 2007.

With much of the Township land committed to development, the attention of Township officials and residents will be on maintaining and enhancing a stable and desirable community with the necessary services and facilities to provide a safe and convenient living environment. The plan brings together other township studies and reports such as the Open Space Plan, Parks and Recreation Plan, and the Sewage Facilities Plan. The existing land uses are shown on Map 9 entitled "Existing Land Use Map."

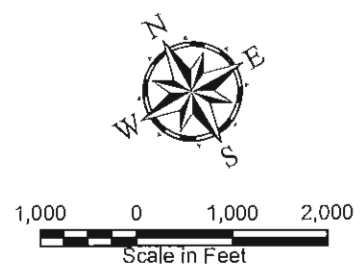


**MAP 9**  
**EXISTING LAND USE**





- LEGEND**
- State Roads
  - Streams
  - Water Bodies
  - Municipal Boundary
  - Tax Parcels
- Existing Land Use**
- |   |  |
|---|--|
| <span style="background-color: #d9ead3;"> </span> Agricultural              | <span style="background-color: #f4cccc;"> </span> Recreational   |
| <span style="background-color: #f4cccc;"> </span> Commercial                | <span style="background-color: #cccccc;"> </span> Transportation |
| <span style="background-color: #fff2cc;"> </span> Single-Family Residential | <span style="background-color: #d9ead3;"> </span> Utility        |
| <span style="background-color: #fff2cc;"> </span> Multi-Family Residential  | <span style="background-color: #ffffff;"> </span> Vacant         |
| <span style="background-color: #cfe2f3;"> </span> Community Services        | <span style="background-color: #cfe2f3;"> </span> Water          |
| <span style="background-color: #d9ead3;"> </span> Light Industrial          | <span style="background-color: #4daf4a;"> </span> Wooded         |



Sources:  
Tax parcels, hydrography and road centerlines are from  
Bucks County Planning Commission dated Nov. 2016.  
Future land use is from 2007 Final Warwick Township  
Comprehensive Plan.

*Warwick Township  
Bucks County, Pennsylvania.  
Act 537 Sewage Facilities Plan*

**MAP 9  
EXISTING LAND USE MAP**



## **B. Warwick Township Zoning Ordinance**

The current Township Zoning Ordinance recognizes various zoning districts which outline specific types of land uses. The districts include residential agricultural, residential, residential golf, restricted residential, multi-family, multi-family residential, local commercial, highway commercial, commercial-multifamily, village commercial, limited industrial, office and historical. The Zoning Ordinance contains specific requirements for the use of certain types of sewage facilities depending on the zoning district. Factors such as lot size, slopes, proposed land use, density and floodplains are taken into consideration when determining appropriate sewage facilities. The current Township Zoning Map is included as Map 10 Zoning Districts. The following Zoning Districts are represented in the Ordinance:

**Warwick Township Zoning Districts**

<b>Zoning District</b>	<b>Selected By-Right Uses</b>	<b>General Minimum Lot Size of District</b>	<b>Intended Purpose</b>
RA (Residential Agricultural)	A1-A7, A9, A10 B1, B10A-D, B10H B11, B12, C1, C3, C9, D1, I3, I4, I7, I11, I12, I13	2 Acres	Agricultural uses, detached dwellings permitting home occupations, civic uses and accessory uses.
R-1 (Residential District)	A1-A3, A5, A6, A10, B1, B10D, B10H, B11, B12, C1, C3, C9, D1, I3, I4, I11-I13	2 Acres	Agricultural uses, detached dwellings permitting home occupations, civic uses and accessory uses with the addition of bed and breakfast.
R-1A (Residential District)	A1, A2, A5, B1, B10D, B10H, B11, B12, C1, C3, C9, D1, I3, I4, I7, I11-I13	1 Acre	Limited agricultural uses, detached dwellings permitting home occupations, civic uses and accessory uses with the addition of bed and breakfast.
R-2 (Residential District)	A1-A7, A9, A10 B1, B10A-D, B10H B11, B12, C3, C9, D1, E2, I3, I4, I7, I11, I12, I13	2 Acres	Agricultural uses, detached dwellings permitting home occupations, civic uses and accessory uses.

<b>Zoning District</b>	<b>Selected By-Right Uses</b>	<b>General Minimum Lot Size of District</b>	<b>Intended Purpose</b>
RG (Residential Golf District)	A1-A7, A9, A10 B1, B10A-D, B10H B11, B12, C3, C9, D1, I3, I4, I7, I11, I12, I13	1 Acre	Agricultural uses, detached dwellings permitting home occupations, bed and breakfast, civic uses and accessory uses.
RR (Restricted Residential District)	A1-A3, A5, A6, A9, A10, B1, B10D, B10H, B11, B12, C3, C9, D1, I3, I4, I7, I11-I13	1 Acre	Limited agricultural uses, detached dwellings permitting home occupations, civic uses and accessory uses with the addition of bed and breakfast.
MF-1 (Multi-Family District)	A1, A3, A5, A6, B1, B1A, B1B, B10D, B10H, B11, B12, C9, D1, I3, I4, I7, I11, I12, I13	1 Acre	Limited agricultural uses, detached dwellings permitting home occupations, multi-family semidetached and detached dwellings, civic uses and accessory uses with the addition of bed and breakfast.
MF-2 (Multi-Family Residential District)	A1, A3, A5, A6, B1, B1A, B1B, B10D, B10H, B11, B12, C9, D1, I3, I4, I7, I11, I12, I13	1 Acre	Limited agricultural uses, detached dwellings permitting home occupations, multi-family semidetached and detached dwellings, civic uses and accessory uses with the addition of bed and breakfast.
C-1 (Local-Commercial District)	A1, A5, A6, A8, B6, B10H, C1, C2, C4-C7, C9, D1, D3, D6, E2, F1-F3, G2, G3, G5-G9, G11, G12, G14, G15, G27, G31, H7, H16, I1, I2, I4	10,000 sf (public sewer), 1 Acre (on-lot sewer)	Retail-convenience-type establishments which serve primarily the day-to-day needs of the immediately surrounding neighborhood and encourage attractive, compact, retail commercial development in locations close to the residences served.

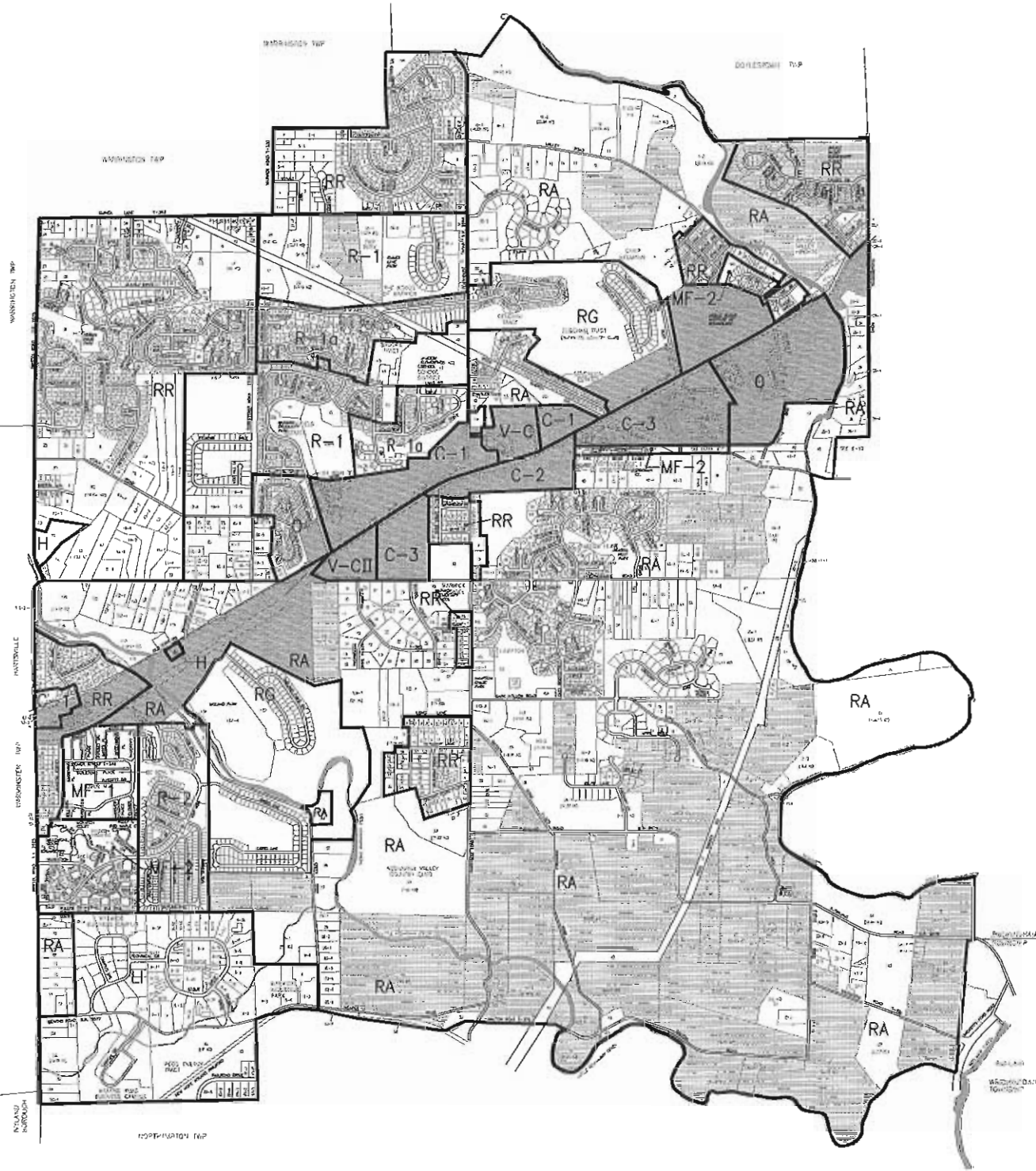


<b>Zoning District</b>	<b>Selected By-Right Uses</b>	<b>General Minimum Lot Size of District</b>	<b>Intended Purpose</b>
C-2 (Highway Commercial District)	A1, A5, A6, A8, B6, B10H, C1, C2, C4-C7, C9, D1, D3, D6, E2, F1-F3, G2, G3, G5-G15, G19, G22-G25, G27, G28, G31, G32, H3-H5, H7, H8, H16, I1, I2, I4	20,000 sf (public sewer), 1 Acre (on-lot sewer)	May make appropriate provisions for a wide range of highway or oriented retail, automotive and heavier service type business activities which ordinarily require main highway locations and cater to the transient as well as to local customers.
C-3 (Commercial/Multifamily District)	A1, A5, A6, B1A, B1B, B3, B10H, B11, B12, C1, C2, C4-C7, C9, D1, F1-F3, G3, G5-G12, G17, G19, G22-G28, G31, G32, H7, H16, I1, I2, I4, I7	2 Acres	Retail-convenience-type establishments which serve primarily the day-to-day needs of the immediately surrounding neighborhood and encourage attractive, compact, retail commercial development in locations close to the residences served. Also includes a variety of residential housing options.
V-C (Village Commercial District)	A5, A6, B10H, B11, C1-C4, C9, D1-D3, D6, E2, F1-F4, G1-G3, G5-G9, G11, G14-G16, G29, H7, I9, I11, I13	30,000 sf (4 Acres for motel-hotel)	Intended to promote a mix of commercial, institutional and recreational uses in Jamison Village in the vicinity of the intersection of York Road & Almshouse Road.
V-CII (Village Commercial II District)	A5, A6, B10H, B11, C1-C4, C9, D1, D3, D6, E2, F1-F4, G1-G3, G5-G9, G11, G14, G15, G21, G29, G31, H7, I9	30,000 sf	Intended to promote a mix of commercial, municipal and recreational uses in Jamison Village along the York Road corridor.
LI (Limited Industrial District)	A1, A5, A8, B10H, C5, C6, C7, C9, D1, E2, F1-F3, G6, G12, G15, G17, G23-G26, G30, H1-H9, H13, H16, I1, I2, I4, I11-I13	3 Acres	A mix of industrial, agricultural, commercial, civic, office and accessory uses but no residential.

<b>Zoning District</b>	<b>Selected By- Right Uses</b>	<b>General Minimum Lot Size of District</b>	<b>Intended Purpose</b>
O (Office District)	A1, A3, A5, A6, B1, B1A, B1B, B3, B8, B10D, B10H, B11, B12, C9, D1, F1-F3, G30, H2, H16, I1, I4	5 Acres	A mix of various residential housing types, agricultural, civic, office and accessory uses.
H (Historical District)	Site Specific	Site Specific	Preservation and protection of historic places, including properties and areas of unique and historic architectural interest to preserve cultural, economic and general welfare of the community.



**MAP 10**  
**ZONING MAP**



#### DISTRICTS

- RA RESIDENTIAL-AGRICULTURAL DISTRICT
- R-1 RESIDENTIAL DISTRICT
- R-1a RESIDENTIAL DISTRICT
- R-2 RESIDENTIAL DISTRICT
- RG RESIDENTIAL-GOLF DISTRICT
- RR RESTRICTED RESIDENTIAL DISTRICT
- MF-1 MULTI-FAMILY DISTRICT
- MF-2 MULTI-FAMILY RESIDENTIAL DISTRICT
- C-1 LOCAL COMMERCIAL DISTRICT
- C-2 HIGHWAY COMMERCIAL DISTRICT
- C-3 COMMERCIAL-MULTI-FAMILY DISTRICT
- V-C VILLAGE COMMERCIAL DISTRICT
- V-CII VILLAGE COMMERCIAL II DISTRICT
- LI LIMITED INDUSTRIAL DISTRICT
- O OFFICE DISTRICT
- H HISTORICAL DISTRICT

AGRICULTURAL SECURITY AREA (OVERLAY OF OTHER DISTRICTS)

- ACT 43 AGRICULTURAL SECURITY AREA
- CORRIDOR OVERLAY DISTRICT

## ZONING MAP FOR WARWICK TOWNSHIP

BUCKS COUNTY PENNSYLVANIA

0 1000 2000 4000 6000 10000  
SCALE IN FEET



MAP 10  
Zoning Map

**C. Limitations and Plans Related to Flood Plain, Stormwater Management and Special Protection**

As outlined in the Warwick Township Zoning Ordinance, the minimum area required for protected open space within the different uses are demonstrated below:

- B1 Single-Family Detached Dwelling – Subdivisions or land developments of 10 lots or more: The developer shall provide a minimum of five acres of open space for each 100 units or fractional percentage thereof. In no case shall there be less than 2.5 acres of active open space. Subdivision or land developments of more than five lots and less than 10 lots: The developer shall provide a minimum of 1.5 acres of active open space. Subdivisions or land developments of more than 3 lots: the developer shall set aside 20% of the area of the site for common open space.
- B1a Single-Family Semidetached (Twin) – Subdivisions or land developments of 10 lots or more: The developer shall provide a minimum of five acres of open space for each 100 units or fractional percentage thereof. In no case shall there be less than 2.5 acres of active open space. Subdivision or land developments of more than five lots and less than 10 lots: The developer shall provide a minimum of 1.5 acres of active open space. Subdivisions or land developments of more than 3 lots: the developer shall set aside 20% of the area of the site for common open space.
- B1b Two-Family Detached (Duplex) - Subdivisions or land developments of 10 lots or more: The developer shall provide a minimum of five acres of open space for each 100 units or fractional percentage thereof. In no case shall there be less than 2.5 acres of active open space. Subdivision or land developments of more than five lots and less than 10 lots: The developer shall provide a minimum of 1.5 acres of active open space. Subdivisions or land developments of more than 3 lots: the developer shall set aside 20% of the area of the site for common open space.
- B2 Cluster Subdivision – See Below
- B3 Performance Standard Development – Varies per zoning district, when in C3, MF-2, MF-1 and O a minimum of 5 acres active open space for each 100 dwelling units plus fractional percentage thereof is required. In C3 and MF-2 minimum common open space is 25%. In MF-1 and O minimum common open space is 50%.
- B9 Golf Course Community – Not less than 50% of the tract area shall be open space.
- C6 Continuing Care Facility/Assisted Living – Open space and passive recreational area: At least 50% of the site area must be maintained as open space which shall not include detention basins, parking lots, accessory buildings, or any impervious surfaces except those use for recreational purposes.



- C7 Skilled Care/Nursing Home Facility - Open space and passive recreational area: At least 50% of the site area must be maintained as open space which shall not include detention basins, parking lots, accessory buildings, or any impervious surfaces except those use for recreational purposes.
- F4 Business Park – Open space: 20% of the base site area shall be reserved as common open space. In addition, at least 5% of the gross site area shall be devoted to civic or recreational use in the form of a park, plaza, inemorial garden, sculpture garden, or like amenity, which shall be centered in the business park, and, where possible, accessible by trail systems on adjacent properties.
- G27 Shopping Center – Open space: 20% of the base site area shall be reserved as common open space. In addition, at least 5% of the gross site area shall be devoted to civic or recreational use in the form of a park, plaza, memorial garden, sculpture garden, or like amenity, which shall be located in a center area of the shopping center.
- H13 Industrial Park - Open space: A minimum of 20% of the base site area shall be reserved as common open space. In addition, at least 5% of the gross site area shall be devoted to civic or recreational use in the form of a park, plaza, memorial garden, sculpture garden, or like amenity, which shall be located in the center area of the H13 Industrial Park use.

Floodplain protection regulations:

- It shall be unlawful for any person, partnership, business or corporation to undertake, or cause to be undertaken, any construction or development anywhere within the identified floodplain area of Warwick Township unless a floodplain permit has been obtained from the Floodplain Administrator.

The Floodplains located within the Township are presented on Map 2 Prime farmland protection or common open space regulations for a B2 Cluster Subdivision:

- No less than 50% of the base site area or 50% of the prime farmland, whichever is the greater area of land, shall be kept as open space.
- Where less than 50% of the site is prime farmland, 50% of the site shall be designated as common open space and the provisions of Subsection B(2)(e)[4] above shall be met.
- Where 50% or greater of the site is comprised of prime farmland, the standards for farmland preservation, and §195-60, Natural resource protection standards, Subsection J, Prime Farmland in the RA District, shall be met.

- Stormwater detention and retention basins shall not be located in any area of protected prime farmland.

Prime farmland located within the Township is presented on Map 5.

**D. Evaluation of Land-Use and Zoning vs. Public Sewer Service Areas**

Implicit within the preparation of any Act 537 Plan is the review of public sanitary sewer service areas. Also discussed in other areas of this current Act 537 update, Warwick Township has devised public sewer service areas to incorporate existing and planned land use and development, as well as in consideration of the existing Township planning documents discussed above.

The table below outlines the sanitary sewer service areas within Warwick Township and the zoning designations within each service area:

<b>Sanitary Sewer Service Area</b>	<b>Zoning Designation</b>
Fish Creek	RA, R-1, R-1a, RR, R-1a, RG, C-1, C-2, C-3, V-C, O, MF-2, V-CII
Country Crossing	MF-2, R-2, LI, RG, RR
Warrington Township	RR
Warminster Municipal Authority	MF-1, C-1, RA

The current zoning designations are consistent with the Township's 537 planning. The future flow projections presented in this Chapter have been developed in consideration of the zoning designations and sanitary sewer service area designations.

**E. Water Quality Designations**

According to PA Code Title 25 Chapter 93, the current water quality designations for the receiving streams in Warwick Township as are follows:

<b>Waterway</b>	<b>Segment</b>	<b>Chapter 93 Designation</b>
Little Neshaminy Creek	Basin	WWF, MF
Neshaminy Creek	Main Stem, Confluence of West and North Branches to RM	TSF, MF

TSF = Trout Stocking; MF = Migratory Fishes; WWF = Warm Water Fishes; HQ-WWF = High Quality Waters – Warm Water Fishes; Source: Chapter 93, Source: Water Quality Standards, PA Code Title 25, Chapter 93. PA Dept. of Environmental Protection.

According to the above stream designations, exceptional value or high quality streams are not located within the Township.

#### **F. Future Growth and Population Projections**

According to the most recent Census, Warwick Township had a population of 14,632 persons in 2016. The Township has grown in population size over the past several decades, and the Township's population increased at a slower rate of 17 percent from 2000 to 2010. The average household size was 3.04 and the average family size was 3.38.

Population Change							
Area (sq mi)	Population 1980	Population 1990	Population 2000	Population 2010	% Change 1980 - 1990	% Change 1990 - 2000	% Change 2000 - 2010
11.1	2,307	5,916	11,977	14,437	61%	50%	17%

\* - 2010 Census Results

An alternative growth projection is presented in Section G below, which identifies the existing and planned future connections within the two major sewer districts, Fish Creek and Country Crossing. This alternative projection was used as the basis of estimating future capacity needs. Additionally, the data provided in the table above is non-specific in terms of public sanitary sewer service areas versus on-lot sewage disposal areas. The growth projections in Section G are based within the public sanitary sewer service areas.

#### **G. Future Growth / Planned Development**

Warwick Township's public sewer service areas were evaluated to determine the development potential within each sewer service area and existing planned developments. The two main areas that were evaluated are the Fish Creek Sewer Service Area and Country Crossing Sewer Service Area. The 2017 Chapter 94 Reports for the Fish Creek and Country Crossing WWTPs were used to determine the number of EDUs presented in the table below.



<b>Sanitary Sewer Service Area</b>	<b>EDU(s) Connected in 2017</b>	<b>Additional EDU(s)</b>	<b>EDU(s) Connected in 2022</b>
Fish Creek	3,334	266	3,600
Country Crossing	1,099	103	1,202

Based on the 2017 Chapter 94 Reports, the total EDUs necessary to service the two main sanitary sewer service areas over the next five years is 4,802 EDUs (3,600 EDUs + 1,202 EDUs).

Fish Creek Service Area Table									
PROJECT	TOTAL NUMBER OF CONNECTIONS	NUMBER OF UNITS CONNECTED	2018	2019	2020	2021	2022	6+ YEARS	TOTAL REMAINING FOR FULL BUILD OUT
Miscellaneous (Failing Systems)	33	0	7	7	7	6	6	0	33
Warwick Village Commons	19	14	0	5	0	0	0	0	5
Breton Hills Phase I	4	0	0	0	4	0	0	0	4
Breton Hills Phase II	25	0	0	0	10	10	5	0	25
Warwick Mills	40	3	0	15	12	10	0	0	37
Sailor Property	7	0	0	3	4	0	0	0	7
Prestige Property	13	0	0	7	6	0	0	0	13
Fetzer Tract	80	0	0	24	24	24	8	0	80
Neshaminy Woods – Yorkfield Minor Subdivision	2	0	0	0	2	0	0	0	2
Yorktown II	60	0	0	0	20	20	20	0	60
<b>Subtotal</b>	--	--	7	61	89	70	39	0	266

Country Crossing Service Area Table									
PROJECT	TOTAL NUMBER OF CONNECTIONS	NUMBER OF UNITS CONNECTED	2018	2019	2020	2021	2022	6+ YEARS	TOTAL REMAINING FOR FULL BUILD OUT
Warwick Business Campus	31	9	1	5	5	5	6	0	22
Stout Dr./Mearns Rd. Industrial Area	26	6	0	4	10	6	0	0	20
Woodlands at Warwick (Heritage Creek II- Phase II) (As of 3/21/17 - 25 homes have been constructed and connected)	90	29	25	18	18	0	0	0	61
Ivyland Industrial Park	40	0	0	0	0	0	0	40	40
<b>Subtotal</b>	--	--	26	27	33	11	6	40	143

### **Potential Development**

In addition to the planned or known developments identified in the 2017 Chapter 94 Report, Warwick Township evaluated parcels for potential future development over the 20 year planning period. These parcels are identified on Map No. 1. The following tables present the projections for the undeveloped lands within the Fish Creek and Country Crossing Public Sewer Service Areas as well as existing developments with the potential to connect to the Fish Creek or Country Crossing public sewer system.



Fish Creek Service Area – 20 Year Planning Projections						
MAP ID	PARCEL NO.	PARCEL DESCRIPTION	DEVELOPMENT STAGE	ZONING DISTRICT	PROJECTED EDU(S)	PROJECTED FLOW
B	51-010-048-001 51-010-048-002	Potential 20 Lot Residential Subdivision	Not formally submitted	RA	20	5,400
-	51-001-003 51-001004 51-001-006 51-001-006-001	Existing Adjacent Parcels to Sailor Property	Existing Development	RR	4	1,080
E	51-003-088-010	Walker Tract – Potential 40 Townhomes	Not formally submitted	O	40	10,800
H	Multiple	Valley Road Area - Previously identified in 1995 537 Plan to be serviced	Existing Development served by On-Lot	RR	52	14,040
I	51-003-084	Development Potential	Potential Development	C-1	14	3,780
				TOTAL	130	35,100

Note: 1 EDU = 270 GPD

Country Crossing Service Area – 20 Year Planning Projections						
MAP ID	PARCEL NO.	PARCEL DESCRIPTION	DEVELOPMENT STAGE	ZONING DISTRICT	PROJECTED EDU(S)	PROJECTED FLOW
L	Multiple	Germinal Colony	Existing Development Served by On-Lot	RA	75	20,250
M	Multiple	Stout Drive	Constructed and main is constructed, waiting for 9 parcels to connect	LI	9	2,430
				TOTAL	84	22,680

Note: 1 EDU = 270 GPD

<b>OVERALL SUMMARY OF WTWSA PUBLIC SEWER SERVICE AREAS</b>					
<b>Service Area</b>	<b>2017 Average Daily Flow (mgd)</b>	<b>2022 Average Daily Flow (mgd)</b>	<b>20 Year Flow Projection (mgd)</b>	<b>Total Combined Flow (mgd)</b>	<b>Permitted Capacity (mgd)</b>
Fish Creek WWTP	0.588	0.779	0.0351	0.814	0.85
Country Crossing WWTP	0.150	0.171	0.0335	0.205	0.32

<b>SCHEDULE OF POTENTIAL CONNECTIONS</b>					
<b>SERVICE AREA</b>	<b>FUTURE</b>				<b>TOTAL CONNECTIONS</b>
	<b>0 TO 5 YEARS</b>	<b>5 TO 10 YEARS</b>	<b>10 TO 15 YEARS</b>	<b>15 TO 20 YEARS</b>	
Fish Creek Service Area	266	44	34	52	396
Country Crossing Service Area	103	40	9	75	227
<b>TOTAL CONNECTIONS</b>	<b>369</b>	<b>84</b>	<b>43</b>	<b>127</b>	<b>623</b>

The Fish Creek Public Sewer Service Area in 2017 had a total of 3,334 edus connected to the system. The annual average flow to the Fish Creek WWTP was 0.588 mgd, which is below the annual average rated capacity of the treatment facility of 0.85 mgd. The five year projected annual flow to the Fish Creek WWTP is 0.779 mgd. With the additional 130 edus identified in the table above, the total projected wastewater flow over the 20 year planning period is 0.814 mgd, which remains below the permitted hydraulic capacity of 0.850 mgd. Based on a flow projection analysis, the Fish Creek WWTP has sufficient disposal capacity to service the Fish Creek Service Area without creating an organic or hydraulic overload to the system within the next twenty year planning period. While the existing Fish Creek WWTP has the capacity to service the additional flows generated by the proposed expansion of the sewer service area, this Act 537 Plan Update will provide the necessary planning to allow Fish Creek WWTP to revise and increase the NPDES Permit from 0.85 mgd to 0.879 mgd if the additional capacity is needed in the future.

The Country Crossing Pubic Sewer Service Area in 2017 had a total of 1,099 edus connected to the system. The annual average flow to the Country Crossing WWTP was 0.150 mgd in 2017, which is below the annual average rated capacity of the treatment facility of 0.32 mgd. The three month maximum average flow was 0.158 mgd and occurred in the months of October, November, and December. The five year projected annual average flow to the Country Crossing WWTP is 0.171 mgd. With the additional 84 edus identified in the table above, the total projected wastewater flow over the 20 year planning period is 0.205 mgd, which remains below the permitted hydraulic capacity of 0.32 mgd. Based on a flow projection analysis, the Country Crossing WWTP has sufficient disposal capacity to service the Country Crossing Service Area without creating an organic or hydraulic overload to the system within the next twenty years.

**CHAPTER V**  
**IDENTIFICATION OF ALTERNATIVES**



## CHAPTER V

### **IDENTIFICATION OF ALTERNATIVES**

This chapter will present the wastewater alternatives that are environmentally, financially, and technically feasible to meet the needs of the Study Areas identified in Chapter II. Alternatives for discussion have been selected based upon potential environmental impacts, local site conditions, existing wastewater infrastructure, the known success or limitations of each technology, and consistency with the Township's land use and natural resource protection policies, which are discussed earlier in this Plan and PA DEP guidelines. The following alternatives are discussed for each Study Area:

- Regional Wastewater Treatment
- Individual Sewage Disposal Systems
- Small Flow Treatment Facilities
- Community Sewage Systems
- Use of Retaining Tanks
- Sewage Management Programs
- Non Structural Alternatives
- No Action Alternative

After discussion of each alternative for each Study Area, Chapter VI will provide an evaluation of identified alternatives, in accordance with Act 537 planning requirements.

#### **A. Fish Creek WWTP Study Area**

As noted in earlier Chapters, Fish Creek WWTP Study Area contains the largest and greatest density of improved areas, and it is also the subject of the largest proposed increase in improvements over the next 20 years. The Fish Creek WWTP was evaluated and determined there is sufficient capacity at the treatment plant to service the 20 year projected sewage flows. The alternatives evaluated are outlined based on PA DEP guidelines:

## *1. Regional Wastewater Treatment*

As the majority of the Fish Creek Study Area has been extensively developed and has existing public sanitary sewer infrastructure in place within the service area, utilizing the existing regional Fish Creek WWTP is the selected alternative for this service area.

To determine the potential projected sewage flows for the next 20 years within the Fish Creek Service Area, open parcels were evaluated to determine development potential along with known proposed developments that were submitted to the Township. The areas currently not served by the Fish Creek Public Sewer Service Area include the Fetzer Tract and Prestige Property. These two properties will connect to the Fish Creek Service Area by the approval of the Special Study. The Sailor Tract and Warwick Mills both obtained PADEP Planning Approval are connected to the Fish Creek Service Area public sewer and identified on the Map No. 1 entitled Sewage Facilities Study Area Plan. Lastly, the area along Stony Road and Bristol Road obtained approval to connect for 4 edus through a Special Study that was approved in February 2011.

The Fish Creek WWTP was expanded to a capacity of 0.85 mgd in August 1998. The hydraulic capacity of the plant has been related to a three month maximum flow rate of 1.26 mgd; however the permit still includes the annual average rating of 0.85 mgd. The facility has an organic capacity of 2,727 lbs/day. The Fish Creek Public Sewer Service Area in 2017 had a total of 3,334 edus connected to the system. The annual average flow to the Fish Creek WWTP was 0.588 mgd, which is below the annual average rated capacity of the treatment facility of 0.85 mgd. The five year projected annual flow to the Fish Creek WWTP is 0.779 mgd. With the additional 130 edus identified in Chapter IV, the total projected wastewater flow over the 20 year planning period is 0.814 mgd, which remains below the permitted hydraulic capacity of 0.850 mgd. Based on a flow projection analysis, the Fish Creek WWTP has sufficient disposal capacity to service the Fish Creek Service Area without creating an organic or hydraulic overload to the system within the next twenty year planning period. While the existing Fish Creek WWTP has the capacity to service the additional flows generated by the proposed expansion of the sewer service area which is projected to be 47,790 gpd, this Act 537 Plan Update will provide the necessary planning to allow Fish Creek WWTP to revise and increase the NPDES Permit from 0.85 mgd to 0.879 mgd if the additional capacity is needed in the future.

In an effort to improve existing flow capacity at the Fish Creek WWTP, Warwick Township Water & Sewer Authority (WTW&SA) submitted PADEP to amend the NPDES permit to convert the existing influent equalization tank and sludge holding tank into a third SBR and a smaller two stage sludge holding tank. The purpose of the project is to allow either one of the two SBR treatment basins to be taken off line for maintenance and repairs. The annual average flow, hydraulic rated capacity and organic capacity of the WWTP will remain the same. The PA DEP has approved a Water Quality Management (Part II) permit amendment by letter dated July 31, 2013.

The construction of the upgrade to the Fish Creek WWTP began in the Spring of 2016 and continued through to Spring 2018. The construction contracts were awarded to LB Industries, Inc. (structural mechanical contract) and Philips Brothers Electrical Contractors (electrical contract). The construction started with sand blasting and repairs to the steel walls of the tank, and this work was completed in July of 2016 by the structural mechanical contractor. The surface preparation of the future SBR 3B and the two sludge processing tanks work continued into August and through the end of the year. The mechanical equipment for the SBRs and the aeration equipment, pumps and mixers were installed in 2017. System testing and startup continues through the Spring of 2018. The contractor is currently working on punch list items and will also be returning in the Spring 2018 to repaint the tank where it was determined that the second layer of the paint is not adhering to the base layer by the third party paint inspection firm (The Merrick Group) which was brought in to perform independent testing (NACE II Inspection).

Beginning in November 2008, the influent equalization tank was utilized as a means of equalizing daily flow. The influent equalization tank fills during the high flow morning hours, in order to increase treatment efficiency of the existing sequencing batch reactors. The influent equalization tank empties back into the system, later in the day, based on influent flow rate to the WWTP. This cycle repeats daily with the influent equalization tank reaching minimum water level early each morning. Therefore, average daily flow is evenly spread out through the entire day by the equalization facility. The system has been effective in reducing daily peak flows to the plant. The future third SBR reactor will be used to accomplish the same objective after the construction project is complete. The construction is anticipated to be complete in 2018.



To more accurately define the necessary infrastructure and associated costs, and to assist in the alternative selection, the extension of public sanitary sewer facilities was evaluated for the Valley Road Study Area which is currently utilizing individual on-lot disposal systems. Based on the evaluation, an all gravity sanitary sewer system is not feasible due to elevations of the existing homes and sanitary sewers. The estimated cost to include a combination of gravity and low pressure sewers in this residential development is \$747,988.38. The estimated cost to install a low pressure sanitary sewer system in this residential development is \$350,956.00.

Based on the evaluation, the selected public sewer alternative to service this area is a low pressure sanitary sewer system which would connect to the existing gravity sanitary sewer system within the Fish Creek Service Area. From the existing gravity sanitary sewer system, wastewater would be conveyed to the Valley Road Pump Station for ultimate conveyance to the Fish Creek WWTP. The layout of the proposed low pressure sanitary sewer system is included in Appendix I. The proposed sanitary sewer system will consist of two inch and three inch diameter forcemains located within the existing right of ways. The proposed forcemains would be stubbed for future connection of the existing residences. Each of the existing homes would be responsible for the installation of an individual grinder pump and lateral connection to the common forcemains. The property owners would be responsible to own and maintain their grinder pumps, however the low pressure forcemains would be owned and maintained by Warwick Township Water and Sewer Authority. All of the wastewater generated by the Valley Road Study Area will discharge into existing gravity manhole 1018 located just east of the development, where wastewater will be conveyed through the existing public sanitary sewer system to Fish Creek WWTP for treatment and disposal.

Given that the existing on-lot systems are functioning, connection of this area to the sewer system does not appear to be a financially viable alternative at this time. Warwick Township will continue to monitor this area under the Sewage Management Ordinance.

Warwick Township will also re-evaluate the connection of the Valley Road Study Area to public sewer every six years through sanitary and well surveys. At that time, a sanitary and well survey will be conducted and data will be analyzed to identify potential on-lot malfunctions or evidence of water quality impacts such as elevated fecal coliform or nitrate levels in well water.

Revised July 27, 2020

V- 4

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To determine when this area should be connected to the public sanitary sewer system, Warwick Township has identified the following trigger conditions:

1. When fecal coliform results in 25% of the wells are greater than 1, or
2. When nitrogen results in 25% of the wells are greater than 10 mg/L, or
3. When 25% of the on-lot systems malfunction with no suitable replacement area or repair

If the analysis identifies that the above listed triggers have been reached for the Valley Road Study Area, the selected public sanitary sewer alternative for the Study Area will be implemented to provide these properties with access to public sewer.

The Valley Road Study Area was evaluated with regard to the above proposed triggers to determine if this area should be connected to the public sanitary sewer system. The well sampling data from 2016 and 2020 was reviewed to determine the total number of wells in each study area where fecal coliform was reported above 1 cfu/100mL and nitrate nitrogen was reported above 10 mg/L. Existing malfunctions and holding tanks were determined based on the sanitary survey information provided by Bucks County Department of Health, as previously discussed in Chapter III. A summary of the evaluation is provided on the table below.

<b>EVALUATION OF TRIGGERS IN VALLEY ROAD STUDY AREA</b>				
<b>Category</b>	<b>Total Wells and Septic Systems</b>	<b>Number of Wells/Septic Systems to Reach Trigger</b>	<b>Current Number of Wells/Septic Systems</b>	<b>Percentage of Total Wells/Septic Systems</b>
Fecal Coliform > 1 cfu/100mL	23	6	1	4.3 %
Nitrate Nitrogen >10 mg/L	23	6	0	0 %
Existing Malfunctions / Holding Tanks	23	6	3	13.0 %

Based on the evaluation for the Valley Road Study Area, none of the proposed trigger points have been reached. Therefore, this area will remain using their existing on-lot sewage disposal systems under the Sewage Management Ordinance. Warwick Township will conduct another evaluation of the Valley Road Study Area in 2026.

Based upon the detailed needs analysis in Chapter IV, along with the Fish Creek service area projected needs for the next 20 years can be serviced by the existing Fish Creek WWTP, the construction of a new regional wastewater treatment plant is not a viable option.

## *2. Individual Sewage Disposal Systems*

There is an existing residential development located on Valley Road which is serviced by individual on-lot sewage disposal systems. This area is identified as Area "H" on Map No. 1 entitled Sewage Facilities Study Area. This area was previously identified in the 1995 Township Act 537 Plan to be provided with public sewer. Since the 1995 Plan, the Township has passed a Sewage Management Ordinance requiring the property owners with individual on-lot sewage disposal system to pump their system every three years. The Township also held an educational program for on-lot sewage disposal systems and maintenance of the system to promote longevity of the system. Since the launch of the Sewage Management Ordinance, the Township has had 100% participation from the residents in the program.

As discussed in Chapter III of this 537 Plan Update, a PADEP Tier I Evaluation was performed throughout the areas currently serviced by on-lot sewage disposal systems. Additionally, a Tier II Evaluation was conducted in the Valley Road Study Area. Within the Valley Road Study Area, only one (1) well tested positive for fecal coliform, which represents twenty-five percent (25%) of the samples. All of the wells reported total coliform less than 10 and nitrate concentrations below 5 mg/L. The results provide evidence that the Sewage Management Ordinance is effective within this area.

As the sampling results provide evidence the Sewage Management Ordinance is effective and the existing on-lot sewage disposal systems area currently functioning, the Township will not provide public sewer service to this area at this time. The area will continue to be within the Fish Creek Study area, but will be monitored by the Sewage Management Ordinance. Warwick Township will continue to re-evaluate this area every six years through sanitary and well surveys. Should the evaluation identify increases in on-lot malfunctions or impacts to individual water supply wells, a low pressure sanitary sewer system could be installed to provide access to public sewer as described in Item 1 above.



The use of individual sewage disposal systems is not consistent with other planning documents and goals for the Fish Creek Study Area. Therefore, new individual onlot systems are not considered to be a viable alternative for this Study Area for new developments or redevelopments. The only permitted use of on-lot sewage disposal systems are the existing on-lot sewage disposal systems currently being monitored under the Sewage Management Ordinance.

3. *Small Flow Treatment Facilities*

The use of small flow treatment facilities to service areas of higher density and zoning is not considered a viable alternative due to long term operation and maintenance issues, and the availability of public sanitary sewer facilities. This alternative is not a viable means of sewage disposal.

4. *Community Land Application*

The majority of the land within the Fish Creek Service Area has been developed. Community Land application is unlikely to be a viable alternative in the Fish Creek Study Area due to the implicit need to acquire large tracts of open space for disposal areas. These needs are in conflict with the established and planned zoning for this area.

5. *Use of Retaining Tanks*

Retaining tanks should be used only on an emergency basis, as they require regular maintenance to prevent overflows. Only situations meeting the requirements of Title 25, Chapter 71.63, pertaining to "by-right" use of retaining tanks for commercial applications generating less than 800 gallons per day, should be considered. Given the proximity of existing infrastructure in the Fish Creek Public Sewer Service Area, the use of retaining tanks, other than on a temporary basis prior to connection, appears unlikely.

6. *Sewage Management Programs*

Warwick Township enacted a Sewage Management Ordinance in 2011, and a copy is provided in Appendix A. As part of the Sewage Management Ordinance, property owners are required to pump their septic system every three years and provide the Township with a copy of the pump receipt. Since the Sewage Management Ordinance was enacted, it

appears the ordinance has been a benefit to the Township residents and provided them educational information teaching how to maintain their disposal systems and is a successful program.

Sewage Management Programs generally pertain to the municipal oversight of on-lot sewage disposal systems. The sewage management program will only apply to the existing residential subdivision located on Valley Road as discussed above. Routine maintenance and upkeep of the public sanitary sewer system is the responsibility of the WTWSA.

7. *Non-Structural Alternatives*

Non-structural alternatives include the continued use of the Township's and the Warwick Township Water and Sewer Authority's existing planning documents to manage the public sewer system. Programs to minimize leaks, encourage or require the use of low flow fixtures and water conservation, and illicit discharge detection and elimination should continue to be evaluated and enforced. The Township will also utilize the Sewage Management Ordinance to monitor the Valley Road existing residential development which is currently being serviced by functioning on-lot sewage disposal systems.

8. *No Action Alternative*

Though generally required to be evaluated as part of any Act 537 planning, no-action alternatives in municipalities that have identified needs are usually without merit. The projected growth in the Fish Creek Service Area, coupled with the Fish Creek WWTP having treatment capacity for the projected sewage disposal needs of the service area, renders this alternative without merit.

**B. Country Crossing Study Areas**

The Country Crossing Study Area is located in the south-western portion of Warwick Township. This study area contains residential developments and an industrial complex which are serviced by the Country Crossing WWTP. This study area is significantly smaller than the Fish Creek Study Area.

The Country Crossing WWTP was evaluated to determine if the projected flows within the next 15 years could be serviced by the treatment plant and the possible alternatives.

1. Regional Wastewater Treatment

The Country Crossing Public Sewer Service Area in 2017 had a total of 1,099 edus connected to the system. The annual average flow to the Country Crossing WWTP was 0.150 mgd in 2017, which is below the annual average rated capacity of the treatment facility of 0.32 mgd. The three month maximum average flow was 0.158 mgd and occurred in the months of October, November, and December. The five year projected annual average flow to the Country Crossing WWTP is 0.171 mgd.

The majority of the Country Crossing Service Area has been developed and given the existing infrastructure within the service area, Country Crossing WWTP appears to be the most desirable alternative. This alternative includes "traditional" wastewater treatment facilities such as gravity sewer lines, pumping stations to overcome topographic changes, and the use of low pressure sewers as an alternate collection and conveyance option.

The WTW&SA video inspects and jet cleans pipes in the collection system on an as-needed basis. The Country Crossing collection and conveyance system is of relatively recent construction, and is in excellent condition, needing little maintenance.

To more accurately define the necessary infrastructure and associated costs, and to assist in the alternative selection, the extension of public sanitary sewer facilities was evaluated for the Germinal Colony Study Area which is currently utilizing individual on-lot disposal systems. Based on the evaluation, the estimated cost to include gravity sewers in this residential development is \$1,460,235.39. The estimated cost to install a low pressure sanitary sewer system in this residential development is \$740,761.86.

Based on the evaluation, the selected public sewer alternative to service the Germinal Colony Study Area is a low pressure sanitary sewer system which would connect to the existing gravity sanitary sewer system within the Country Crossing Service Area. The layout of the proposed low pressure sanitary sewer system is included in Appendix I. The proposed sanitary sewer system will consist of two inch, three inch, and four inch diameter forcemains located within the existing right of ways. The proposed forcemains would be stubbed for future connection of the existing residences. Each of the existing homes would be responsible for the installation of an individual grinder pump and lateral



connection to the common forcemains. The property owners would be responsible to own and maintain their grinder pumps, however the low pressure forcemains would be owned and maintained by Warwick Township Water and Sewer Authority. All of the wastewater generated by the Germinal Colony Study Area will discharge into existing gravity manhole 2537 located just south of the development, where wastewater will be conveyed through the existing public sanitary sewer system to Country Crossing WWTP for treatment and disposal.

Given that the existing on-lot systems are functioning, connection of this area to the sewer system does not appear to be a financially viable alternative at this time. Warwick Township will continue to monitor this area under the Sewage Management Ordinance.

Warwick Township will also re-evaluate the connection of the Germinal Colony Study Area to public sewer every six years through sanitary and well surveys. At that time, a sanitary and well survey will be conducted and data will be analyzed to identify potential on-lot malfunctions or evidence of water quality impacts such as elevated fecal coliform or nitrate levels in well water.

To determine when this area should be connected to the public sanitary sewer system, Warwick Township has identified the following trigger conditions:

1. When fecal coliform results in 25% of the wells are greater than 1, or
2. When nitrogen results in 25% of the wells are greater than 10 mg/L, or
3. When 25% of the on-lot systems malfunction with no suitable replacement area or repair

If the analysis identifies that the above listed triggers have been reached for the Germinal Colony Study Area, the selected public sanitary sewer alternative for the Study Area will be implemented to provide these properties with access to public sewer.

The Germinal Colony Study Area was evaluated with regard to the above proposed triggers to determine if this area should be connected to the public sanitary sewer system. The well sampling data from 2016 and 2020 was reviewed to determine the total number of wells in each study area where fecal coliform was reported above 1 cfu/100mL and nitrate nitrogen was reported above 10 mg/L. Existing malfunctions and holding tanks were determined based on the sanitary survey information provided by Bucks County

Department of Health, as previously discussed in Chapter III. A summary of the evaluation is provided on the table below.

<b>EVALUATION OF TRIGGERS IN GERMINAL COLONY STUDY AREA</b>				
<b>Category</b>	<b>Total Wells and Septic Systems</b>	<b>Number of Wells/Septic Systems to Reach Trigger</b>	<b>Current Number of Wells/Septic Systems</b>	<b>Percentage of Total Wells/Septic Systems</b>
Fecal Coliform > 1 cfu/100mL	65	17	1	1.5 %
Nitrate Nitrogen >10 mg/L	65	17	0	0 %
Existing Malfunctions / Holding Tanks	65	17	4	6.2 %

Based on the evaluation for the Germinal Colony Study Area, none of the proposed trigger points have been reached. Therefore, this area will remain using their existing on-lot sewage disposal systems Sewage Management Ordinance. Warwick Township will conduct another evaluation of the Germinal Colony Study Area in 2026.

With the additional 84 edus identified on the table in Chapter IV, the total projected wastewater flow over the 20 year planning period is 0.205 mgd, which remains below the permitted hydraulic capacity of 0.32 mgd. Based on the projected edus outlined in Chapter IV and projected flow analysis, the Country Crossing Treatment Plant will not have a projected hydraulic overload or projected organic overload within the system in the next 20 years.

Based upon the detailed needs analysis in Chapter IV, along with the Country Crossing service area projected needs for the next 20 years, the construction of a new community system is not a viable option.

## 2. Individual Sewage Disposal Systems

There are two existing locations within the Country Crossing Study Area which are serviced by on-lot sewage disposal systems. One of these areas is Warwick Commons Industrial Park, which is located along Mearns Road. The Warwick Commons Industrial Park is identified as letter L in purple the hatching on Map No. 1 entitled Sewage Facilities Study Areas. A second area currently serviced by on-lot sewage disposal systems is Germinal Colony, which is a residential area located along Almshouse Road.

Revised July 27, 2020

V- 11

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Germinal Colony is identified as letter K also in purple hatching on Map No. 1 entitled Sewage Facilities Study Areas.

The Germinal Colony area was previously identified in the 1995 Township Act 537 Plan to be provided with public sewer. Since the 1995 Plan, the Township has passed a Sewage Management Ordinance requiring the property owners with individual on-lot sewage disposal system to pump their system every three years. The Township also held an educational program for on-lot sewage disposal systems and maintenance of the system to promote longevity of the system.

As discussed in Chapter III of this 537 Plan Update, a PADEP Tier I Evaluation was performed throughout the areas currently serviced by on-lot sewage disposal systems. Additionally, a Tier II Evaluation was conducted in the Germinal Colony Study Area. Within the Germinal Colony Study Area, only one (1) well tested positive for fecal coliform, which represents five percent (5%) of the samples. Four (4) wells reported total coliform above 10, which represents twenty one percent (21%) of the samples. Lastly, all of the wells reported nitrate concentrations below 5 mg/L.

Based on the evaluation performed, the vast majority of the results from the water sampling conducted in Germinal Colony provides evidence that the Sewage Management Program enacted by the Township is effective. Sampling results from the Warwick Commons Industrial Park also provide evidence that the Sewage Management Ordinance enacted by the Township is working.

Germinal Colony area was previously listed in the 1995 Township 537 Plan to be provided with public sewer. As the sampling results provide evidence the Sewage Management Ordinance is effective, and the existing on-lot sewage disposal systems area currently functioning, the Township will not provide public sewer service to this area at this time. The area will continue to be within the Country Crossing Service area but monitored by the Sewage Management Ordinance. Warwick Township will continue to re-evaluate this area every six years through sanitary and well surveys. Should the evaluation identify increases in on-lot malfunctions or impacts to individual water supply wells, a low pressure sanitary sewer system will be installed to provide access to public sewer as described in Item 1 above.



The use of individual sewage disposal systems is not consistent with other planning documents and goals for the Country Crossing Service Area. Therefore, this is not considered a viable alternative for this Study Area for new developments or redevelopments. The only permitted use of the on-lot sewage disposal systems are within the existing Warwick Commons Industrial Park and Germinal Colony, as they will be monitored under the Sewage Management Ordinance as noted above.

3. *Small Flow Treatment Facilities*

The use of small flow treatment facilities to service areas of higher density and zoning is not considered a viable alternative, due to long-term operation and maintenance issues, and the availability of existing public sanitary sewer facilities. This alternative is not a viable means of sewage disposal.

4. *Community Land Application*

The majority of the land within the Country Crossing Service Area has been developed. Community Land application is unlikely to be a viable alternative in the Country Crossing Service Area, due to the implicit need to acquire large tracts of open space for disposal areas. These needs are in conflict with the established and planned zoning for this area.

5. *Use of Retaining Tanks*

Retaining tanks should be used only on an emergency basis, as they require regular maintenance to prevent overflows. Only situations meeting the requirements of Title 25, Chapter 71.63, pertaining to "by-right" use of retaining tanks for commercial applications generating less than 800 gallons per day, should be considered. Because the Country Crossing Service Area is included in the public sewer service area, the use of retaining tanks, other than on a temporary basis prior to connection, appears unlikely.

6. *Sewage Management Programs*

Warwick Township enacted a Sewage Management Ordinance in 2011, and a copy is provided in Appendix A. As part of the Sewage Management Ordinance, property owners are required to pump their septic system every three years and provide the Township with

a copy of the pump receipt. Since the Sewage Management Ordinance was enacted, it appears the ordinance has been a benefit the Township residents and provided them educational information teaching how to maintain their disposal systems and is successful program.

Sewage Management Programs generally pertain to the municipal oversight of on-lot sewage disposal systems. As such, this alternative is generally not applicable to the Country Crossing Service Area, as this area is serviced by public sewer. This will only apply to the existing Warwick Commons Industrial Park and Germinal Colony residential subdivision as discussed above. Routine maintenance and upkeep of the public sanitary sewer system is the responsibility of the WTWSA.

#### 7. Non-Structural Alternatives

Non-structural alternatives include the continued use of the Township's and the Warwick Township Water and Sewer Authority's existing planning documents to manage the public sewer system. Programs to minimize leaks, encourage or require the use of low flow fixtures and water conservation, and illicit discharge detection and elimination should continue to be evaluated and enforced. The Township will also utilize the Sewage Management Ordinance to monitor the existing industrial park and Germinal Colony residential development, which are currently being serviced by functioning on-lot sewage disposal systems.

#### 8. No Action Alternative

Though generally required to be evaluated as part of any Act 537 planning, no-action alternatives in municipalities that have identified needs are usually without merit. The projected growth in the Country Crossing Service Area, coupled with the Country Crossing WWTP having treatment capacity for the projected sewage disposal needs of the service area, renders this alternative without merit.

### C. **Warminster Municipal Authority Service Area**

Warminster Municipal Authority services an area in the southern portion of Warwick Township. This study area is located in the vicinity of Old York Road between Eddowes

Road and Bristol Road. The area consists of residential homes, and no land development proposals have been presented to the Township.

1. Regional Wastewater Treatment

The homes in this area are currently serviced by the Warminster Township public sewer service area and will continue to be service by public sewer. Construction of a regional wastewater regional plant to service these properties is not financially feasible or a viable option.

2. Individual Sewage Disposal Systems

The homes in this Study Area are currently served by public sewer facilities. None of the homes in the area currently utilized on-lot sewage disposal systems. Therefore, the use of individual sewage disposal systems is not consistent with other planning documents and goals for this area. As such, this is not considered a viable alternative for this Study Area.

3. Small Flow Treatment Facilities

The use of small flow treatment facilities to service areas of higher density and zoning is not considered a viable alternative, due to long term operation and maintenance issues and the availability of public sanitary sewer facilities. This alternative is not a viable means of sewage disposal.

4. Community Land Application

The majority of the land within the Warminster Study Area has been developed. Community land application is unlikely to be a viable alternative, due to the implicit need to acquire large tracts of open space for disposal areas. Furthermore, the area is already serviced by existing public sanitary sewer facilities. Therefore, these needs are in conflict with the established and planned zoning for this area.



5. Use of Retaining Tanks

Retaining tanks should be used only on an emergency basis, as they require regular maintenance to prevent overflows. Only situations meeting the requirements of Title 25, Chapter 71.63, pertaining to "by-right" use of retaining tanks for commercial applications generating less than 800 gallons per day, should be considered. Because the Study Area is included in the Warminster Township public sewer service area, the use of retaining tanks, other than on a temporary basis prior to connection, appears unlikely.

6. Sewage Management Programs

Warwick Township enacted a Sewage Management Ordinance in 2011, and a copy is provided in Appendix A. As part of the Sewage Management Ordinance, property owners are required to pump their septic system every three years and provide the Township with a copy of the pump receipt. Since the Sewage Management Ordinance was enacted, it appears the ordinance has been a benefit the Township residents and provided them educational information teaching how to maintain their disposal systems and is successful program.

Sewage Management Programs generally pertain to the municipal oversight of on-lot sewage disposal systems. As such, this alternative is not applicable to the Warminster Township Study Area as this area is serviced by public sewer. Routine maintenance and upkeep of the public sanitary sewer system is the responsibility of the Warminster Township Water and Sewer Authority.

7. Non-Structural Alternatives

Non-structural alternatives include the continued use of Warwick Township's and Warwick Township Water and Sewer Authority's existing planning documents to manage the public sewer system. Programs to minimize leaks, encourage or require the use of low flow fixtures and water conservation, and illicit discharge detection and elimination should continue to be evaluated and enforced.

8. No Action Alternative

Though generally required to be evaluated as part of any Act 537 planning, no-action alternatives in municipalities that have identified needs are usually without merit. The existing development and the continued available capacity in the Warminster Township sewer service area, renders this alternative without merit.

**D. Warrington Township Service Area**

The most western portion of the Township, located at the intersection of Bristol Road and Guinea Lane, is serviced by Warrington Township. This service area includes five (5) parcels of land in Warwick Township which are currently developed with single family homes. Warwick Township is not aware of any planned redevelopment.

1. Regional Wastewater Treatment

The homes in this area are currently serviced by the Warrington Township public sewer service area and will continue to be service by public sewer. Construction of a regional wastewater regional plant to service these properties is not financially feasible or a viable option.

2. Individual Sewage Disposal Systems

The homes in this Study Area are currently served by public sewer facilities. None of the homes in the area currently utilized on-lot sewage disposal systems. Therefore, the use of individual sewage disposal systems is not consistent with other planning documents and goals for this area. As such, this is not considered a viable alternative for this Study Area.

3. Small Flow Treatment Facilities

The use of small flow treatment facilities to service areas of higher density and zoning is not considered a viable alternative, due to long term operation and maintenance issues and the availability of public sanitary sewer facilities. This alternative is not a viable means of sewage disposal.

4. Community Land Application

The land within the Warrington Study Area has been developed. Community land application is not a viable alternative, due to the implicit need to acquire large tracts of open space for disposal areas. Furthermore, the area is already serviced by existing public sanitary sewer facilities. Therefore, these needs are in conflict with the established and planned zoning for this area.

5. Use of Retaining Tanks

Retaining tanks should be used only on an emergency basis, as they require regular maintenance to prevent overflows. Only situations meeting the requirements of Title 25, Chapter 71.63, pertaining to "by-right" use of retaining tanks for commercial applications generating less than 800 gallons per day, should be considered. Because the Study Area is included in the Warrington Township public sewer service area, the use of retaining tanks, other than on a temporary basis prior to connection, appears unlikely.

6. Sewage Management Programs

Warwick Township enacted a Sewage Management Ordinance in 2011, and a copy is provided in Appendix A. As part of the Sewage Management Ordinance, property owners are required to pump their septic system every three years and provide the Township with a copy of the pump receipt. Since the Sewage Management Ordinance was enacted, it appears the ordinance has been a benefit the Township residents and provided them educational information teaching how to maintain their disposal systems and is successful program.

Sewage Management Programs generally pertain to the municipal oversight of on-lot sewage disposal systems. As such, this alternative is not applicable to the Warrington Township Study Area as this area is serviced by public sewer.

7. Non-Structural Alternatives

Non-structural alternatives include the continued use of Warwick Township's and Warwick Township Water and Sewer Authority's existing planning documents to manage the public sewer system. Programs to minimize leaks, encourage or require the use of



low flow fixtures and water conservation, and illicit discharge detection and elimination should continue to be evaluated and enforced.

8. No Action Alternative

Though generally required to be evaluated as part of any Act 537 planning, no-action alternatives in municipalities that have identified needs are usually without merit. The existing development and the continued available capacity in the Warrington Township Sewer Service Area, renders this alternative without merit.

**CHAPTER VI**  
**EVALUATION OF ALTERNATIVES**

## CHAPTER VI

### ALTERNATIVES EVALUATION

#### A. Comprehensive Water Quality Management Plans (COWAMP)

Originally developed many years ago under Sections 4 and 5 of the Clean Streams Law and 208 of the Clean Water Act, COWAMP plans have not been subjected to continuing updates unlike some of the other planning documents listed below. Due to their early development, regional wastewater treatment was a common theme in the 1995 Part I and II Act 537 Plan for Warwick Township where the regional wastewater treatment options are discussed, and conclude that expansion of the Fish Creek WWTP is the best alternative for its commensurate basin. To the extent of its limited applicability, the evaluated alternatives are not inconsistent with these indications.

#### B. Chapter 94 Municipal Wasteload Management Plan

As presented in Chapter III, municipal WWTPs that are the subject of this planning effort have not been shown to be under any current or projected hydraulic or organic overloads, nor are they under any limitations from DEP. Therefore, no inconsistencies exist.

#### C. State Water Plan

The State Water Plan was recently updated, and provides the following general guidelines:

- Identify and prioritize water resource and water supply development projects
- Provide information to public and private decision makers regarding water availability
- Identify opportunities for improving operation of the Commonwealth's existing water resources infrastructure
- Guide the development and implementation of policies and programs by State agencies that will reduce the risk of flooding and water shortages
- Guide policies on activities that directly and significantly affect the quantity and quality of water available
- Educate public officials and the public at large regarding the sources and uses of water in this Commonwealth

Revised July 27, 2020

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**EE, Inc.**



Due to the nature of the subject planning effort, no inconsistencies are apparent.

**D. Warwick Township Comprehensive Plan**

The 2007 Warwick Township Comprehensive Plan presents the following five guiding principles:

1. Protect the character and sense of community in Warwick
2. Improve Mobility
3. Build and maintain a livable community with good services and facilities
4. Ensure the economic vitality of the community
5. Conserve Warwick's natural and cultural resources

Under 'Wastewater Disposal and Sewage Facilities Planning', the document goes on to state that "the connection between land use planning and wastewater or sewage facilities planning in the Commonwealth of Pennsylvania is weak due to the structure of state laws. Townships are required to have a Sewage Facilities Plan, in accordance with Act 537. Land use planning regulations fall under the authority of a different state law, Act 247. Municipalities should make sound land use decisions about density and location of developments, based on a broad list of planning factors, such as natural features, neighborhood character, transportation considerations, and overall development intensity, and then support those decisions with a consistent sewage facilities plan. The township Act 537 Sewage Facilities Plan should be reviewed for consistency with current township land use policy and revised as needed."

The evaluated alternatives do not present any inconsistencies with these statements.

**E. Anti-degradation Requirements of Pa Code Title 25 Chapters 93, 95, and 102**

These chapters are primarily concerned with water quality issues as they relate to point discharges (Chapter 93 and 95) and erosion and sedimentation control regulations (Chapter 102). In particular, they are concerned with maintaining existing water quality standards, which are typically enforced via NPDES discharge permits. As the public sewer options presented in Chapter 5 involve connection to an existing WWTP which is in compliance with the current permit limits, no inconsistencies currently exist. None of the receiving waterways in Warwick Township are classified as high quality (HQ) or

exceptional value (EV), and no additional point discharges (i.e. small flow treatment facilities) are proposed in the alternatives.

Individual conventional and alternate on-lot sewage disposal systems are not subjected to NPDES permitting requirements, and would not generate any inconsistencies.

For the purposes of this report, Chapter 102 states that an erosion and sedimentation control plan shall be developed for any “disturbance activity that will result in a total earth disturbance of 5,000 square feet (464.5 square meters) or more.” Within the scope of the public sewer options, this amount of disturbance could occur. In that event, Warwick Township (or the appropriate entity) will be responsible for ensuring full compliance with the requirements of this part.

**F. Pennsylvania Prime Agricultural Land Policy**

Warwick Township’s 2007 Comprehensive Plan recognizes the requirements of the Pennsylvania Municipalities Planning Code to facilitate comprehensive plans that “address the protection of natural resources including wetlands, woodlands, steep slopes, prime agricultural land, and steep slopes.”

To that end, Warwick Township has established an Agricultural Security Area within which property owners may voluntarily enter if minimum criteria have been met, namely property size and the inclusion of prime soils. Under this program, Warwick Township has 38 farms and 1,194 acres under Agricultural Security Areas. Additionally, the Township Zoning Ordinance standards seek to protect farmland by requiring protection of prime agricultural soils as part of cluster development in the RA district. Additionally, the RA district also permits accessory uses that support farming activities.

Based on Warwick Township Zoning Plan, the Prestige Property is located within R-1, residential district and the Fetzer Tract is located within C-3, commercial-multi-family district. None of these properties are listed in the RA district and based upon these facts, the alternatives presented, and Warwick Township’s active recognition of Prime Agricultural Soils as noted above, no inconsistencies exist.

**G. County Stormwater Management Plan**

County stormwater management plans are an extension of Act 167 of 1978, and facilitate more localized provisions to address issues such as existing and future hydrologic conditions, land development patterns, floodplain issues, existing stormwater management issues, and provide for periodic updates to identified concerns and needed improvements. Within the scope of this planning effort and identified alternatives, no inconsistencies are expected.

**H. Wetland Protection under Chapter 105**

No alternatives have been identified which will have a direct impact on any wetlands, therefore there are no inconsistencies that exist.

Regardless of this information, it is acknowledged that any activities within any wetland areas will be in full compliance with all applicable Federal and Local regulations.

**I. Pennsylvania Natural Diversity Inventory (PNDI)**

Given that no new structures or construction activities are currently planned as part of the selected alternatives, a PNDI search was not conducted.

It is noted that any future projects, wastewater alternatives, or changes that fall under the jurisdiction of the Pennsylvania Natural Diversity Inventory Program will be required to document consistency.

**J. Pennsylvania Historic Preservation Act of 1978**

Given that no new structures or construction activities are currently planned as part of the selected alternatives, notification under the Pennsylvania Historic Preservation Act of 1978 is not required.

It is noted that any future projects, wastewater alternatives, or changes that fall under the jurisdiction of Pennsylvania's Historic Preservation Act will be required to document consistency.



**K. Resolution of Inconsistencies**

Based on the above information and within the scope of the identified alternatives, no inconsistencies are noted and no resolutions are necessary.

**L. Costs**

The estimated costs to implement the public sewer alternative for the Germinal Colony and Valley Road are based on the preliminary design and construction cost estimates as provided in Chapter V. This includes \$740,761.86 for the Germinal Colony low pressure sanitary sewer system and \$350,956.00 for the Valley Road low pressure sanitary sewer system. As presented throughout this Act 537 Plan Update, the Germinal Colony and Valley Road Study Areas will remain using their existing on-lot sewage disposal systems under the Warwick Township Sewage Management Ordinance. The public sanitary sewer alternative will be implemented when these areas are identified as in need of public sanitary sewer to address malfunctioning on-lot systems and/or affected individual water supplies as presented within Chapter V.

**M. Funding**

Other than the future sanitary sewer facilities to serve the Germinal Colony and Valley Road Study Areas, the public sewer alternatives to be implemented as part of this Act 537 Plan will be constructed and privately funded by the developers of the proposed land development projects. Warwick Township will expand the public sewer service area to include these properties into the Public Sewer Service Area. Therefore, Warwick Township will not draw on its capital funds to implement these selected alternatives.

For the Germinal Colony and Valley Road Study Areas, Warwick Township will seek out and apply for potential grant opportunities including the PA Small Water and Sewer Grant and H2O PA Grant programs. These grant programs, if awarded, would assist Warwick Township in project funding and will offset the financial burden to its residents. Warwick Township will draw on its capital funds to implement the selected public sewer alternatives for the Germinal Colony and Valley Road Study Areas.

**N.    Phasing**

Given the parameters that have been identified in this Plan update, a phased approach does not appear warranted.

**O.    Administrative and Legal Authority**

The administrative and legal authority to effect the alternatives discussed in this report include, but are not limited to, the provisions of Pa Code Title 25 Chapter 71.

**CHAPTER VII**  
**INSTITUTIONAL EVALUATION**



## CHAPTER VII

### INSTITUTIONAL EVALUATION

#### **A. Existing Authorities**

Warwick Township has a fully functional Municipal Authority, created under the PA Municipal Authorities Act. The existing Authority is fully capable of managing the implementation of the public sewer alternatives selected by this Act 537 Plan Update.

#### **B. Institutional Alternatives**

Warwick Township Water and Sewer Authority employs adequate personnel necessary for the implementation of any of the selected alternatives, and to provide continued operation and maintenance on the sanitary sewer system.

Projected costs for implementation of the alternatives are presented in Chapter VI.

#### **C. Implementation**

The existing municipal and authority departments are capable of implementing the selected alternatives. No new municipal departments are expected to be created for the implementation of the selected alternatives. Existing township and authority personnel are capable of implementing and administering the selected alternatives.

#### **D. Proposed Institutional Alternative**

Use of the existing Municipal Authority noted in the above Section A, in conjunction with existing Warwick Township staff, are the selected institutional alternative for implementation of the alternatives in this Act 537 Plan Update.

**CHAPTER VIII**  
**SELECTED ALTERNATIVE AND IMPLEMENTATION SCHEDULE**

## CHAPTER VIII

### **SELECTED ALTERNATIVES AND IMPLEMENTATION SCHEDULE**

For each of the Study Areas identified in Chapter II, the following wastewater alternatives have been selected as the alternative to best meet the needs of the Township and its residents. The following sections identify the selected alternative and provide a brief explanation as to why other identified alternatives were not selected.

#### **A. Fish Creek Study Area Selected Alternative**

The selected alternative for the Fish Creek Study Area is to remain as a public sewer service area served by the Fish Creek WWTP. As identified below, one area will continue use of on-lot sewage disposal systems and monitored under the Sewage Management Ordinance. The following changes are proposed to the Fish Creek public sanitary sewer service area:

- The Fish Creek Public Sewer Service Area will encompass Warwick Mills (identified on Map No. 1 as Area “A”) as Warwick Mills obtained PADEP planning approval on April 27, 2016 under PADEP Code No. 1-09951-193-3J and starting to connect to the system.
- The public sewer service area will be extended to include the developed and undeveloped areas south of Mill Road to eliminate spot zoning. A portion of this area is identified on Map No. 1 as Area “B”.
- Public sanitary sewer service will be provided to the Fetzner Tract (identified on Map No. 1 as Area “G”). Planning approval will be obtained through the Act 537 Special Study is currently being conducted.
- The property along Stony Road (identified on Map No. 1 as Area “F”) will remain in the public sewer service area. Connection to public sewer will be funded by the developer of this tract of land.
- Breton Hills (identified on Map No. 1 as Area “J”) will continue to utilize on-lot sewage disposal systems and monitored under the Sewage Management



Ordinance No. 2011-7. The area will remain within the public sewer service area as outlined in the Approved Special Study dated February 2011.

- Central Park at Warwick (Prestige Property), located at Guinea Lane and Brook Lane, will be provided public sewer service. Planning approval will be obtained through the Act 537 Special Study is currently being conducted. The area is identified on Map No. 1 as Area “C”.
- The Sailor Tract (identified on Map No. 1 as Area “D”) obtained PADEP planning approval on January 11, 2017 under PADEP Code No. 1-09951-196-3J and connected to the system. The four adjacent parcels will be included into the public sewer service area to eliminate spot zoning.

The existing Fish Creek WWTP has the capacity to service the additional projected flow of 47,790 gpd from the proposed expansion of the sewer service area. This Act 537 Plan Update will provide the necessary planning to allow Fish Creek WWTP to revise and increase the NPDES Permit from 0.85 mgd to 0.879 mgd if the additional capacity is needed in the future.

Given the existing infrastructure and dense development of the Study Area, providing public sanitary sewer is the preferred alternative. The existing Fish Creek WWTP has enough capacity available to service each of the above described sewer service areas. No upgrades to the WWTP are proposed at this time. While the existing Fish Creek WWTP has the capacity to service the additional flows generated by the proposed expansion of the sewer service area, this Act 537 Plan Update will provide the necessary planning to allow Fish Creek WWTP to revise and increase the NPDES Permit from 0.85 mgd to 0.879 mgd if the additional capacity is needed in the future.

While the timing of the possible future connection of Area “H” (Valley Road Area) to public sewer would be based on the needs as they are identified by the Sewage Management Program, this Act 537 Plan will provide the necessary sewage facilities planning for the future extension of the public sanitary sewer system to this area of the Township. Warwick Township will continue to re-evaluate this area every six years through sanitary and well surveys. Should the evaluation identify increases in on-lot malfunctions or impacts to individual water supply wells, a low pressure sanitary sewer system will be installed to provide these properties with access to public sewer. During

the evaluation process, if any of the following conditions are identified, the selected public sanitary sewer alternative will be implemented:

1. When fecal coliform results in 25% of the wells are greater than 1, or
2. When nitrogen results in 25% of the wells are greater than 10 mg/L, or
3. When 25% of the on-lot systems malfunction with no suitable replacement area or repair

Upon connection of these properties to the public sanitary sewer system, the existing on-lot sewage disposal systems would be properly abandoned. .

**B. Country Crossing Study Area Selected Alternative**

The selected alternative for the Country Crossing Study Area is to remain as a public sewer service area served by the Country Crossing WWTP, with the exception of two areas where existing on-lot systems will continue to be used. The following changes are proposed to the Country Crossing public sanitary sewer service area:

Germinal Colony (identified on Map No. 1 as Area “K”) will continue to be serviced by existing on-lot sewage disposal systems and monitored under the existing Sewage Management Ordinance No. 2011-7. This area will remain within the Country Crossing Public Sewer Service Area. While the timing of the possible future connection of Germinal Colony to public sewer would be based on the needs as they are identified by the Sewage Management Program, this Act 537 Plan will provide the necessary sewage facilities planning for the future extension of the public sanitary sewer system to this area of the Township. Warwick Township will continue to re-evaluate this area every six years through sanitary and well surveys. Should the evaluation identify increases in on-lot malfunctions or impacts to individual water supply wells, a low pressure sanitary sewer system will be installed to provide these properties with access to public sewer. During the evaluation process, if any of the following conditions are identified, the selected public sanitary sewer alternative will be implemented:

1. When fecal coliform results in 25% of the wells are greater than 1, or
2. When nitrogen results in 25% of the wells are greater than 10 mg/L, or
3. When 25% of the on-lot systems malfunction with no suitable replacement area or repair

Upon connection of these properties to the public sanitary sewer system, the existing on-lot sewage disposal systems would be properly abandoned.

- The Warwick Commons Industrial Park (identified on Map No. 1 by letter L in purple hatching) will continue to be serviced by existing on-lot sewage disposal systems and monitored under the existing Sewage Management Ordinance No. 2011-7. This area will remain within the Country Crossing Public Sewer Service Area. Properties in this area currently have access to public sanitary sewer and may connect at any time.

Given the existing infrastructure and dense development of the Study Area, providing public sanitary sewer is the preferred alternative. The existing Country Crossing WWTP has enough capacity available to service each of the above described sewer service areas. No upgrade to the WWTP is proposed at this time.

Based on a flow projection analysis, the Fish Creek WWTP has sufficient disposal capacity to service the Fish Creek Service Area without creating an organic or hydraulic overload to the system within the next twenty year planning period. While the existing Fish Creek WWTP has the capacity to service the additional flows generated by the proposed expansion of the sewer service area which is projected to be 47,790 gpd, this Act 537 Plan Update will provide the necessary planning to allow Fish Creek WWTP to revise and increase the NPDES Permit from 0.85 mgd to 0.879 mgd if the additional capacity is needed in the future.

**C. Warminster Township Study Area Selected Alternative**

The selected alternative for the Warminster Township Study Area is to remain as a public sewer service area served by the Warminster Township Municipal Authority. The existing residences will remain connected to public sewer with no current planned redevelopments.

**D. Warrington Township Study Area Selected Alternative**

The selected alternative for the Warrington Township Study Area is to remain as a public sewer service area served by Warrington Township. The existing residences will remain connected to public sewer with no current planned redevelopments.



**E. On-Lot Sewage Disposal Service Area**

The on-lot sewage disposal service area will continue to utilize existing on-lot sewage disposal systems (OLDS) and monitored under the existing Sewage Management Program. The 2011 Sewage Management Ordinance requires property owners to have their septic system pumped every three years and to provide the Township with a copy of the pump receipt. The Township keeps the records and track of the program.

**F. Implementation of a Township Wide Sewage Management Program**

As discussed throughout this report, Warwick Township enacted a Sewage Management Ordinance in 2011. The Ordinance requires property owners to have their septic system pumped every three years and to provide the Township with a copy of the pump receipt. Since the Sewage Management Ordinance was enacted, it appears the ordinance has been a benefit the Township residents and provided them educational information teaching how to maintain their disposal systems and is a successful program.

Well sampling results conducted as part of this update provide evidence that the program has been effective. Therefore, the Sewage Management Program will remain in place along with the above selected alternatives.

**G. Designation of Capital Financing Plan**

As noted in Chapter VI, the only proposed public sewer alternatives to be implemented as part of this Plan Update that will not be constructed and privately funded by the developers of the land development projects, are the future connection of the Valley Road and Germinal Colony Study Areas to the Fish Creek and Country Crossing public sanitary sewer systems. Warwick Township will draw upon its capital funds to implement the selected public sewer alternatives and will supplement the financial expense through seeking out and applying for grant opportunities such as the PA Small Water and Sewer Grant and H2O PA Grant Programs.

For the remaining proposed public sewer alternatives to be implemented as part of this Plan Update, Warwick Township will expand the public sewer service area to include these developments into the Fish Creek Public Sewer Service Area. Given that the proposed sewage facilities will be constructed and financed by the developers, Warwick Township will not draw on its capital funds to implement the selected alternatives.

## H. Implementation Schedule

Connection of proposed developments to the public sewer service areas will be dependent upon the final land development approvals and construction timelines of the proposed developments. In general, the planning, permitting, and construction schedule for proposed developments will take at least two years. The proposed implementation schedule for this Act 537 Plan Update includes the following:

Act 537 Planning Task	Estimated Time From DEP Approval of 537 Plan
PADEP Act 537 Plan Approval	Month 1
Municipal Notification of NPDES Permit Revision (Act 14 Notices)	Month 3
Submission of NPDES Permit Revision	Month 6
Approval of NPDES Permit Revision	Month 11
Final Land Development Approvals and Permits (Fetzer Tract)	Year 1
Construction of Fetzer Tract and Extension of Public Sewer to Fetzer Tract Study Area	Year 2 to 3
Final Land Development Approvals and Permits (Prestige Property)	Year 3 to 4
Construction of Prestige Property and Extension of Public Sewer To Prestige Property Study Area	Year 5 to 6
Re-evaluate needs within the Germinal Colony and Valley Road Study Areas	Year 6

**APPENDIX A**  
**ONLOT SEWAGE MANAGEMENT ORDINANCE**



ARTICLE II  
**On-Lot Sewage Management Facilities**  
**[Adopted 10-3-2011 by Ord. No. 2011-7]**

**§ 153-13. Title; authority; purpose.**

- A. This article shall be known and may be cited as "An Ordinance Providing for an On-Lot Sewage Management Program for Warwick Township."
- B. In accordance with municipal codes, the Clean Streams Law (act of June 27, 1937, P.L. 1987, No. 394, as amended, 35 P.S. §§ 691.1 to 691.1001), and the Pennsylvania Sewage Facilities Act (act of January 24, 1966, P.L. 1535, as amended, 35 P.S. § 750.1 et seq., known as "Act 537"), it is the power and the duty of Warwick Township to provide for adequate sewage treatment and disposal facilities and for the protection of the public health by preventing the discharge of untreated or inadequately treated sewage. The Official Sewage Facilities Plan for Warwick Township indicates that it is necessary to formulate and implement a sewage management program to effectively prevent and abate water pollution and hazards to the public health caused by improper treatment and disposal of sewage.
- C. The purpose of this article is to provide for the regulation, inspection, maintenance and rehabilitation of on-lot sewage disposal systems; to further allow intervention in situations which may constitute a public nuisance or hazard to the public health; and to establish penalties and appeal procedures necessary for the proper administration of a sewage management program.

**§ 153-14. Definitions.**

- A. As used in this article, the following terms shall have the meanings indicated:

ACT 537 — The act of January 24, 1966, P.L. 1535, as amended, 35 P.S. § 750.1 et seq., known as the "Pennsylvania Sewage Facilities Act."

AUTHORIZED AGENT — A person with demonstrated knowledge and experience regarding on-lot sewage disposal system design, operation, and maintenance who is authorized by the Warwick Township Board of Supervisors to carry out the provisions of this article. An authorized agent must be a certified sewage enforcement officer.

BOARD — The Board of Supervisors, Warwick Township, Bucks County, Pennsylvania.

COMMUNITY ON-LOT SEWAGE SYSTEM — A sewage system which serves two or more lots, or two or more equivalent dwelling units, and uses a system of piping, tanks, or other facilities for collecting, treating, and disposing of sewage into a soil absorption area, retaining tank, or cesspool.

DEPARTMENT — The Department of Environmental Protection of the Commonwealth of Pennsylvania (DEP).

INDIVIDUAL ON-LOT SEWAGE SYSTEM — A sewage system which serves a single lot and a single equivalent dwelling unit and uses a system of piping, tanks, or other facilities for collecting, treating, and disposing of sewage into a soil absorption area, spray field, retaining tank, or cesspool.

INDIVIDUAL RESIDENTIAL SPRAY IRRIGATION SYSTEM (IRSIS) — An individual sewage system which serves a single dwelling and which treats and disposes of sewage through using a system of piping, treatment tanks, and soil renovation through spray irrigation.

INITIAL TREATMENT UNIT — A term used to describe the on-lot disposal system receiving unit to which sewage is delivered from a sewage generating facility. The term includes but is not limited to septic tanks, aerobic treatment units, and cesspools.

LIQUID WASTE — Septage pumped from septic tanks, cesspools, holding tanks, privies, or chemical toilets which does not include any toxic, industrial, or hazardous wastes.

LIQUID WASTE HAULER — Any person engaged in the business of pumping and transporting liquid waste within Bucks County. Each vehicle used for such purpose shall be licensed by the Bucks County Health Department and shall also be registered with Warwick Township. Haulers are required to complete an inspection form every time they service an on-lot system in Warwick Township. Haulers will be provided with an inspection form upon registration with Warwick Township.

LOT — A parcel of land, used or set aside and available for use as the site of one or more buildings and any building accessory thereto or for any other purpose, in one ownership and not divided by a street, nor including any land within the right-of-way of a public street upon which said lot abuts, even if the ownership to such right-of-way is in the owner of the lot. A "lot," for the

purpose of this article may or may not coincide with a lot of record. A lot shall front on a public street.

**MAINTENANCE CONTRACTOR** — A private independent contractor who has been given training by the original equipment manufacturer of applicable sewage system components, has been authorized by the manufacturer to service said components, or has demonstrated technical expertise in the field of on-lot sewage system maintenance.

**MALFUNCTION** — A condition which occurs when an on-lot sewage disposal system discharges sewage onto the surface of the ground, into groundwaters of this Commonwealth, or into surface waters of this commonwealth or in any manner causes a nuisance or hazard to the public health or pollution of groundwater or surface water or contamination of public or private drinking water wells.

**OFFICIAL SEWAGE FACILITIES ACT 537 PLAN** — A comprehensive plan for the provision of adequate sewage disposal systems, adopted by the Board and approved by the Pennsylvania Department of Environmental Protection, pursuant to the Pennsylvania Sewage Facilities Act.

**ON-LOT SEWAGE DISPOSAL SYSTEM** — Any community on-lot sewage system or individual on-lot sewage system, as defined herein.

**PERSON** — An individual or an unincorporated organization, partnership, association, corporation, trust or estate.

**REHABILITATION** — Work done to modify, alter, repair, enlarge or replace an existing on-lot sewage disposal system.

**RETAINING TANK** — A watertight receptacle that receives and retains sewage and is designed and constructed to facilitate the ultimate disposal of the sewage at another site. This term is synomomous with the term "holding tank."

**SEPTAGE** — The residual scum, sludge, and other materials pumped from, but not limited to, initial treatment units, other treatment tanks, retaining tanks, pump tanks, and the systems they serve.

**SEWAGE** — Any substance that contains any of the waste products or excrement or other discharge from the bodies of human beings or animals and any noxious or deleterious substances being harmful or inimical to the public health, or to animal or aquatic life, or to the use of water for domestic water supply or for recreation, or which constitutes pollution under the



Act of June 22, 1937 (P.L. 1987, No. 394), known as the "Clean Streams Law," as amended.

SEWAGE ENFORCEMENT OFFICER (SEO) — A person certified by the Pa. DEP under Pa. Code Title 25, Chapter 72, Subchapter D.

SEWAGE MANAGEMENT DISTRICT — Any area or areas of the Township adopted by the Board as an area for which a sewage management program is to be implemented.

SEWAGE MANAGEMENT PROGRAM — A comprehensive set of legal and administrative requirements encompassing the requirements of this article, the Sewage Facilities Act, the Clean Streams Law, the regulations promulgated thereunder and such other requirements adopted by the Board to effectively enforce and administer this article.

SUBDIVISION — The division or redivision of a lot, tract or parcel of land by any means into two or more lots, tracts, parcels or other divisions of land, including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership or building lot development.

TOWNSHIP — The Township of Warwick, Bucks County, Pennsylvania.

- B. For the purposes of this article, any term which is not defined herein shall have that meaning attributed to it under the Sewage Facilities Act and regulations promulgated thereto.

### **§ 153-15. Applicability.**

- A. From the effective date of this article, its provisions shall apply to all portions of the Township served by on-lot sewage disposal systems. The implementation of the provisions shall be in accordance with the following time periods for the areas indicated on the most recent version of the Sewage Management Districts Map:

- (1) District I: one-year cycle to begin from the effective date of this article.
- (2) District II: one-year cycle to begin 365 days (one year) after the effective date of this article.
- (3) District III: one-year cycle to begin 730 days (two years) after the effective date of this article.

- B. Within such an area or areas, the provisions of this article shall apply to all persons owning any property serviced by an on-lot sewage disposal system and to all persons installing or rehabilitating on-lot sewage disposal systems. Beginning with District I and the remaining schedule defined above, and within 90 days of written notification by Warwick Township or its authorized agent, all persons with an on-lot sewage disposal system shall be required to register with Warwick Township and complete the required registration form and submit it to Warwick Township. The Township may establish a fee for registration of on-lot sewage disposal systems.

**§ 153-16. Registration and permit requirements.**

- A. No building permit shall be issued for a new building which will utilize an on-lot sewage disposal system until Act 537 planning approval has been issued by the Department and the appropriate on-lot sewage disposal system permit has been issued by the Bucks County Health Department SEO. Proof of on-lot sewage disposal system permit issuance shall be presented to the Township in the form of a properly executed permit signed by the Bucks County Health Department SEO.
- B. No occupancy permit shall be issued for a new building which will utilize an on-lot sewage disposal system until the sewage disposal system has been installed and the completed installation is approved by the Bucks County Health Department SEO. Proof of on-lot sewage disposal system final installation approval shall be presented to the Township in the form of a properly executed permit signed by the Bucks County Health Department SEO.
- C. No building or occupancy permit shall be issued and no work shall begin on any alteration or conversion of any existing structure, if said alteration or conversion will result in the increase or potential increase in sewage flows from the structure, until either the structure's owner receives a permit from the Bucks County Health Department SEO for alteration or replacement of the existing sewage disposal system or until the structure's owner and the appropriate officials of the Township receive written notification from the Bucks County Health Department SEO that such a permit will not be required. The Bucks County Health Department SEO shall determine whether the proposed alteration or conversion of the structure will result in increased sewage flows.

- D. Sewage permits may be issued only by a Sewage Enforcement Officer employed by the Bucks County Health Department per the requirements of Pa. Code Title 25, Chapter 72.

**§ 153-17. Inspections.**

- A. Any on-lot sewage disposal system may be inspected by the Township or its authorized agent at any reasonable time as of the effective date of this article.
- B. Such inspection may include a physical tour of the property and examination of any or all on-lot sewage disposal system components for the purpose of identifying maintenance needs and functional status.
- C. An authorized agent, with the approval of the Township, and with proper legal authority, shall have the right to enter upon land for the purposes of inspections described in this section.

**§ 153-18. Operation requirements.**

- A. In accordance with the requirements of Pa. Code, Title 25, Chapter 73, Standards for On-Lot Sewage Treatment Facilities, only normal domestic wastes, including kitchen, bathroom, and laundry wastes and water softener backwash water, shall be discharged to any on-lot sewage disposal system. Examples of the types of wastes that may harm or increase the need for pumping or repair of an on-lot sewage disposal system include, but are not limited to, the following, which are prohibited from being discharged to any on-lot sewage disposal system:
  - (1) Automobile oil and other nondomestic oil.
  - (2) Toxic or hazardous substances or chemicals, including but not limited to pesticides, disinfectants (excluding household cleaners), acids, paints, paint thinners, herbicides, gasoline and other solvents.
  - (3) Clean surface water or groundwater, including water from roof or cellar drains, springs, basement sump pumps and french drains.
  - (4) Wastewater resulting from hair treatment at beauty shops.
  - (5) Any nonbiodegradable materials.
- B. All new construction must comply with the Uniform Construction Code (UCC) requirements for water-conserving plumbing fixtures

and fittings. The Township may require the installation of water-conserving devices, consistent with the UCC, and other operation and/or maintenance procedures to improve the performance of on-lot; sewage disposal systems.

**§ 153-19. Maintenance.**

- A. Beginning with District I, as defined in § 153-15, each person owning a building served by an on-lot sewage disposal system shall have the initial treatment unit pumped within one year of the effective date of this article by a Bucks County Health Department and Township registered liquid waste hauler. Thereafter, that person shall have the system pumped at least once every three years or whenever an inspection reveals that the initial treatment unit is filled with solids or with scum in excess of 1/3 of the liquid depth. Liquid waste haulers are required to complete, on a standard form prepared by Warwick Township, the results of a visual inspection pursuant to Subsection C(8) of this section. These forms may be utilized by the Township to document all pumping and maintenance requirements and remedies described herein. Copies of the form shall be provided to the owner by the licensed liquid waste hauler.
- B. The required pumping frequency may be modified at the discretion of the Township if the initial treatment unit is undersized, if an inspection reveals solids or scum in excess of 1/3 of the liquid depth of the tank, if the hydraulic load on the system increases significantly above average, if a garbage grinder is used in the building, if the system malfunctions or for other good cause shown. If any person can prove that such person's tank had been pumped within one year of the effective date of this article, then that person's initial required pumping may be delayed to conform to the general three-year frequency requirement, except where an inspection reveals a need for shorter pumping intervals.
- C. All on-lot sewage disposal system pumping shall be performed in accordance with Bucks County Health Department regulations and shall also conform to the following minimum standards, unless other standards are specified by an equipment manufacturer:
  - (1) At all times, the pumper truck operator's personal safety, as well as protection of the environment and the landowner's property, shall receive the highest priority.



- (2) Tanks shall only be pumped from or through the manhole or access port (i.e., the largest tank opening).
  - (3) Tanks shall not be pumped from or through the observation or inspection port.
  - (4) When necessary to break up solids, backwashing with clean water or material of a similar nature already on board the pumper truck may be employed. Mechanical means (scraping, raking, etc.) are not necessary but may be employed, provided that appropriate safeguards are taken to prevent injury.
  - (5) When backwashing, care shall be taken not to fill or refill the tank to a level greater than 12 inches below the elevation of the outlet pipe.
  - (6) No liquids or solids are to be discharged into or through the outlet pipe.
  - (7) Tanks shall be deemed to be cleaned when all organic solids are removed and the total average liquid depth remaining in the tank is less than one inch.
  - (8) Every pumping shall include a visual inspection by the maintenance contractor or liquid waste hauler to determine the presence and condition of treatment tank baffles, the physical condition of the treatment tank, and the absorption field, as applicable. It shall be the responsibility of each resident to submit this form to Warwick Township within 30 days of the inspection.
  - (9) At all times, and in all phases of operations, the maintenance contractor shall comply with all laws and regulations regarding the activities associated with on-lot sewage disposal system maintenance and disposal of materials removed therefrom.
- D. Any person owning a building served by an on-lot sewage disposal system which contains an aerobic treatment tank shall follow the operation and maintenance recommendations of the equipment manufacturer. A copy of the manufacturer's recommendations and a copy of the service agreement shall be submitted to the Township within six months of the effective date of this article. Thereafter, service receipts shall be submitted to the Township at the intervals specified by the manufacturer's recommendations or by agreement.

- E. Any person owning a building served by an on-lot sewage disposal system which utilizes any components or technologies deemed by DEP to require more-detailed operation and maintenance requirements than provided for in this article, including but not limited to individual residential spray irrigation systems (IRSIS), alternate systems, or experimental systems, shall be further subject to the maintenance responsibilities recommended by DEP for said system. These responsibilities shall be memorialized in individual operation and maintenance agreements for each such use, to which both the Township and the property owner shall be party. The Township may impose additional requirements as deemed necessary, including but not limited to collection of an annual fee and additional financial security.
- F. Surface contouring shall be required as necessary to direct surface water and drainageways away from all components of on-lot sewage disposal systems.
- G. Additional maintenance activity may be required as needed, including but not limited to providing reasonable access to the initial treatment unit, cleaning and unclogging of piping, servicing and the repair of mechanical and electrical equipment, leveling of distribution boxes, tanks and lines, removal of obstructing roots or trees, etc.

#### **§ 153-20. System rehabilitation.**

- A. No person shall operate or maintain an on-lot sewage disposal system in such a manner that it malfunctions. Any person owning a building served by an on-lot sewage disposal system determined to be in a state of malfunction by the Township's authorized agent or the Bucks County Health Department SEO shall, after authorization of the Township, perform all corrective measures required by the authorized agent or Bucks County Health Department SEO to abate the malfunction. The authorized agent, with authorization of the Township, or Bucks County Health Department SEO shall have the authority to require abatement of any malfunction by the following methods: cleaning, repair or replacement of components of the existing system, adding capacity or otherwise altering or replacing the system's initial treatment unit, expanding the existing disposal areas, replacing the existing disposal area, replacing the system with a retaining tank, frequent pumping, or any other alternative appropriate for the specific site.

- B. In lieu of or in combination with the remedies described in this section, the Bucks County Health Department's Sewage Enforcement Officer and/or the Township 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.
- C. Should none of the remedies described in this section be totally effective in eliminating the malfunction of an existing on-lot sewage disposal system, the property owner is not absolved of responsibility for that malfunction. The authorized agent, with authorization of the Township or the Bucks County Health Department, may require whatever action is necessary to lessen or mitigate the malfunction to the extent necessary.
- D. There may arise geographic areas where numerous on-lot sewage disposal systems are known or are suspected to be malfunctioning. A resolution of these area-wide problems may necessitate detailed planning and a revision to the portion of the sewage facilities plan pertaining to areas affected by such malfunctions. When a DEP authorized official sewage facilities plan revision has been undertaken, mandatory repair or replacement of individual malfunctioning sewage disposal systems within the area affected by the revision may be delayed, pending the outcome of the plan revision process. However, immediate corrective action may be compelled whenever a malfunction, as determined by the Bucks County Health Department, Department, or authorized agent, represents a serious public health or environmental threat.

#### **§ 153-21. Retaining tanks.**

- A. Retaining tanks shall only be utilized as needed to remedy a malfunctioning on-lot sewage disposal system when it has been determined by the Bucks County Health Department SEO and the Township that no other remedy is viable.
- B. Retaining tank installation and use shall be subject to all the requirements of Pa. Code Title 25, Chapter 71.63 (relating to retaining tanks) and the requirements of the Bucks County Health Department and Warwick Township Ordinance 91-7.<sup>1</sup>

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1. Editor's Note: See Art. I, Holding Tanks, of this chapter.

- C. Any person owning a building served by a retaining tank shall annually provide to the Township a copy of a maintenance contract with an authorized maintenance contractor. For the purposes of this section, a maintenance contractor shall be a Bucks County Health Department licensed liquid waste hauler. The contract shall provide for regular removal of the retaining tank contents in accordance with this section and with a frequency sufficient to prevent the contents from overflowing on the ground surface and shall further specify the Bucks County Health Department license number of the maintenance contractor.

#### **§ 153-22. Liens.**

The Township, upon written notice from an authorized agent or from the Bucks County Health Department's Sewage Enforcement Officer that an imminent health hazard exists due to failure of property owner to maintain an on-lot sewage disposal system as provided under the terms of this article, shall have the authority to perform, or contract to have performed, the work required by the authorized agent or the Bucks County Health Department's Sewage Enforcement Officer. The owner shall be charged for the work performed and, if necessary, a lien shall be entered therefor in accordance with law.

#### **§ 153-23. Disposal of septage.**

- A. All septage originating within the Sewage Management District shall be disposed of in accordance with the requirements of the Solid Waste Management Act (Act 97 of 1980, 35 P.S. § 6018.101 et seq.) and all other applicable laws and at sites or facilities approved by DEP.
- B. Liquid waste haulers operating within the Sewage Management District shall operate in a manner consistent with the provisions of the Pennsylvania Solid Waste Management Act (Act 97 of 1980, 35 P.S. §§ 6018.101-6018.1003), all other applicable laws, and Bucks County Health Department regulations.

#### **§ 153-24. Administration.**

- A. The Township shall fully utilize those powers it possesses through enabling statutes and ordinances to effect the purposes of this article.
- B. The Township shall employ qualified individuals to carry out the provisions of this article. Those employees may include an authorized agent and may include an administrator and such



other persons as may be necessary. The Township may also contract with private qualified persons or firms as necessary to carry out the provisions of this article.

- C. All records, reports, files and other written materials relating to the inspection, operation and maintenance of on-lot sewage disposal systems in the Sewage Management District shall become the property of, and be maintained by the Township.
- D. The Board or authorized agent, following authorization of the Board of Supervisors, shall establish all administrative procedures necessary to properly carry out the provisions of this article.
- E. The Board or authorized agent may establish a fee schedule, and authorize the collection of fees, to cover the cost to the Township of administering this article, consistent with the local municipal code.

#### **§ 153-25. Appeals.**

- A. Appeals from final decisions of the Township, including decisions of its authorized agents, under this article shall be made to the Board of Supervisors in writing within 30 days from the date of written notification of the decision in question.
- B. The appellant shall be entitled to a hearing before the Board of Supervisors at its next regularly scheduled meeting, if a written appeal is received at least 14 days prior to that meeting. If the appeal is received within 14 days of the next regularly scheduled meeting, the appeal shall be heard at the next regularly scheduled meeting. The municipality shall thereafter affirm, modify, or reverse the aforesaid decision. The hearing may be postponed for a good cause shown by the appellant or the Township. Additional evidence may be introduced at the hearing provided that it is submitted with the written notice of appeal.
- C. A decision shall be rendered in writing within 30 days of the date of the hearing.
- D. Hearings under this subsection shall be conducted pursuant to the act of December 2, 1968 (P.L. 1133, No. 353) known as the "Pennsylvania Local Agency Act".

#### **§ 153-26. Violations and penalties.**

In addition to a proceeding under any other remedy available to the Township at law or in equity for a violation of any provision of this

article or any rule or regulation promulgated under this article or any order or permit issued by the Township pursuant to this article, the Township, after notices and hearing, may assess a civil penalty of not less than \$300 against any person for that violation. All proceedings by the Township to impose civil penalties pursuant to this section shall be governed in all respects by the provisions of Section 13.1 of Act 537 (35 P.S. § 750.13a), which are incorporated herein by reference in their entirety.

## **APPENDIX B**

### **SANITARY NEEDS EVALUATION**

## WARWICK TOWNSHIP ACT 537 PLAN UPDATE OLDS SURVEY

Map Ref	Resident	Address	Well Depth	FC	TC		NO3
					E. coli MPN/100 mL	Total Coliform MPN/100 mL	
District One							
1	REIFF	1881 GUINEA LANE	N/A				
2	REIFF	1921 GUINEA LANE	N/A				
3	REGENHARD	1941 GUINEA LANE	N/A	<1	Absent	Absent	2.55
4	TULL	2046 GUINEA LANE	N/A				
5	FRY	1901 GUINEA LANE	N/A				
6	LORIA	1586 STONY ROAD	N/A				
7	LORIA	1598 STONY ROAD	N/A				
8	GIAMO (GUISEPPE)	1622 STONY ROAD	N/A				
9	GIAMO (ANTHONY)	1650 STONY ROAD	N/A				
10	GIAMO (SALVATORE)	1676 STONY ROAD	300				
11	BETHEL	1690 STONY ROAD	N/A				
12	COGGIOLA	1651 STONY ROAD	158	<1	Absent	Absent	2.33
13	PETRI	1669 STONY ROAD	118	<1	Absent	Absent	2.51
14	BELUCH	1671 STONY ROAD	N/A				
15	STEINBERG	1685 STONY ROAD	130	<1	Absent	1	<1.00
16	ROBBINS	1707 STONY ROAD	120	<1	Absent	Absent	1.91
17	MCCOMBE	1725 STONY ROAD	N/A				
18	KOHLENBERG	1749 STONY ROAD	90				
19	UHLE	1452 TURKEY TROT	100	<1	Absent	Absent	3.76
20	BUCK (THOMAS)	1492 TURKEY TROT	N/A				
21	AHRENS	1474 TURKEY TROT	N/A				
22	RICHTER	1405 TURKEY TROT	120				
23	WALKER ((ELAINE)	1425 TURKEY TROT	140				
24	RENTZ	1453 TURKEY TROT	N/A	<1	Absent	Absent	2.33
25	CONRAD & MILLER	1792 MEETINGHOUSE	N/A				
26	PALM	1650 MEETINGHOUSE	N/A				
27	EABY	1520 MEETINGHOUSE	85				
28	ROBERTS	1488 MEETINGHOUSE	220				
29	1460 ASSOCIATES	1460 MEETINGHOUSE	N/A				
30	GIAMO(GIUSEPPE)	1434 MEETINGHOUSE	50				
31	REGUL/CARR	1408 MEETINGHOUSE	N/A				
32	HIGGINS	1402 MEETINGHOUSE	152				
33	EVANS	2132 YORK ROAD	N/A	<1	Absent	Absent	<1.00
34	RICKNER	1531 MEETINGHOUSE	200	<1	Absent	Absent	<1.00
35	RICKNER (TED)	1523 MEETINGHOUSE	N/A	<1	Absent	Absent	1.81
36	EDGAR	1555 MEETINGHOUSE	N/A				
37	RICKNER (LLOYD)	1541 MEETINGHOUSE **	N/A	<1	Absent	Present	<1.00
					Absent	1	
38	MCKEOWN	1577 MEETINGHOUSE	N/A	<1	Absent	Absent	1.63
39	CARLETON	1575 MEETINGHOUSE **	300	<1	Absent	Present	<1.00
				<1	Absent	5	<1.00
40	PALMER(STEPHANIE)	1619 MEETINGHOUSE	200	<1	Absent	Absent	1.93



Map Ref	Resident	Address	Well Depth	FC	TC		NO3
				cfu/100ml	E. coli MPN/100 mL	Total Coliform MPN/100 mL	mg/l
41	ELLIOTT(ELIZABETH)	1625 MEETINGHOUSE	175				
42	NESHAMINY WARWICK	MEETINGHOUSE	N/A				
43	WEINSTEIN	1410 BRETON HILLS DR	180				
44	KRZYSZTZF	1567 W. BRISTOL	N/A				
45	PESCATORE	1424 BRETON HILLS DR	N/A				
46	HERMANN	1432 BRETON HILLS DR **	45	<1	Absent	Present	5.66 M2
					Absent	>2420	5.42
47	HAGAN	1440 BRETON HILLS DR	N/A				
48	HAMVAS	1454 BRETON HILLS DR	75	<1	Absent	194	7.93
49	MCANALLY	1455 BRETON HILLS DR					
50	MCCOOG	1441 BRETON HILLS DR	N/A				
51	LINDEMAN	1431 BRETON HILLS DR	N/A				
52	HOFFMAN	1423 BRETON HILLS DR	N/A				
53	KLEIN	1409 BRETON HILLS DR	N/A				
54	WEEKS	1533 BRISTOL ROAD	120				
55	MCILVAINE	1495 BRISTOL ROAD	N/A				
56	ROBBINS (ROGER)	1705 OLD YORK ROAD	200				
57	ROSENE	1699 OLD YORK ROAD	N/A				
58	SAMIOS	1700 OLD YORK ROAD	N/A				
59	RICKERS	1601 STONY ROAD	N/A	<1	Absent	Absent	2.82
60	CLINTON	2040 LAND ROAD	N/A				
61	SOLANA	2171 WARWICK ROAD	N/A				
62	SOLANA	2181 WARWICK ROAD	N/A				
63	SAILOR	2195 WARWICK ROAD	N/A				
64	SAILOR	2199 WARWICK ROAD	140				
65	STONYVIEW LLC	1605 W. BRISTOL ROAD	120				
66	VON GROSSEN	1754 OLD YORK ROAD	200				
67	RICKERS	1601 STONY ROAD	170				
68	THOMPSON	1850 GUINEA LANE	N/A	<1	Absent	Absent	2.68
69	VANPELT	1755 MEETINGHOUSE	N/A	<1	Absent	Absent	2.50
70	ROGERS	1433 STONY ROAD	250				
71	SINISI	1465 STONY ROAD	100	<1	Absent	Absent	2.53
72	WYSHWANICK	1549 STONY ROAD	200				
73	GUEIROS	1956 TURKEY TROT ROAD	200				
74	HARTZ	1421 STONY ROAD	N/A	<1	Absent	2	1.84
75	LOGAN	1805 OLD YORK	N/A				
76	GAINES	1760 MEETINGHOUSE RD.	200				
77	LOUGHERY	1660 MEETINGHOUSE RD	N/A				
78	RAMOS	1560 MEETINGHOUSE ROAD	90				
79	SPEARING	1459 STONY ROAD	N/A				
80	LORIA	1580 STONY ROAD	N/A				
District Two							
81	DEGROOT	2584 VALLEY ROAD	N/A	<1	Absent	Absent	<1.00
82	COLEMAN	2550 VALLEY ROAD	N/A				
83	PETRI	2520 VALLEY ROAD	N/A				
84	ZIMMER LUGINBUHL	2283 ALMSHOUSE ROAD **	103	<1	Present	Present	5.65
				7	18	1200	
85	SPRUANCE	2349 VALLEY ROAD	N/A				
86	BLACK/KOSTACOS	2260 VALLEY ROAD	400+	<1	Absent	30	3.41
87	COLEMAN	2460 VALLEY ROAD	N/A				
88	KANE	2494 VALLEY ROAD	N/A	<1	Absent	Absent	2.73
89	NEMER	2291 VALLEY ROAD	56				

Map Ref	Resident	Address	Well Depth	FC	TC		NO3
				cfu/100ml	E. coli MPN/100 mL	Total Coliform MPN/100 mL	mg/l
90	KEENAN	2365 VALLEY ROAD	N/A				
91	BRODERICK	2395 VALLEY ROAD	N/A	<1	Absent	Absent	2.54
92	POWELL	2425 VALLEY ROAD	N/A	<1	Absent	Absent	2.91
93	PHILLIPS	2475 VALLEY ROAD	N/A				
94	ALBERT	2545 VALLEY ROAD	100				
95	PATTON	2619 VALLEY ROAD	140				
96	SERRATO	2995 OLD YORK ROAD	N/A	<1	Absent	Absent	<1.00
97	SENF	2985 OLD YORK ROAD	N/A				
98	BUCKLEY	1940 SUGARBOTTOM ROAD	N/A				
99	BOURKE	1922 SUGARBOTTOM ROAD	N/A				
100	GUAGLIARDO	1900 SUGARBOTTOM ROAD	pump at 90 ft				
101	PICCILLO	1886 SUGARBOTTOM ROAD	N/A				
102	FOIK	2935 OLD YORK ROAD	80				
103	GESEMYER	1872 SUGARBOTTOM ROAD	N/A	<1	Absent	Absent	1.07
104	ELLIOTT	1850 SUGARBOTTOM ROAD	160				
105	WEISE	1824 SUGARBOTTOM ROAD	N/A				
106	HELLER	1796 SUGARBOTTOM ROAD	N/A				
107	SCHMUCKER	1674 SUGARBOTTOM ROAD	N/A				
108	MCDONALD	1610 SUGARBOTTOM ROAD	N/A				
109	SALLADA	2779 MILL ROAD	75				
110	NAPPI	2689 MILL ROAD	N/A	<1	Absent	Absent	4.17
111	LINEY	2673 MILL ROAD**	N/A	<1	Absent	Present	<1.00
				<1	Absent	4	<1.00
112	SAMIOS	2601 MILL ROAD	N/A	<1	Absent	Absent	2.14
113	PARKHEMCHUK	2565 MILL ROAD	N/A				
114	SOCACIU	2533 MILL ROAD	200	<1	Absent	Absent	2.60
115	KAUFMAN	2511 MILL ROAD	200				
116	WILCOX	2501 MILL ROAD	625				
117	PAISTE	2455 MILL ROAD	N/A				
118	KERN	2709 MILL ROAD	380				
119	MCILVAINE	2712 MEETINGHOUSE ROAD	700				
120	HAUG	2695 MEETINGHOUSE ROAD	150				
121	THORNE	2565 MEETINGHOUSE ROAD					
122		5349 OLD EASTON RD	N/A				
123	FOSTER/LONG	2655 VALLEY ROAD	75				
124	MARKS	1800 SUGARBOTTOM ROAD	N/A				
125	SCHROEDER BROS.	1980 ELM AVENUE	N/A	<1	Absent	1	<1.00
126	DEL HOLDING LLC	2539 YORK ROAD	N/A				
127	BELL	2030 ELM STREET	N/A				
128	ARMINIO	2511 MEETINGHOUSE ROAD	N/A				
129	MEYERS	2792 YORK ROAD	N/A				
130	MAURER	1955 ELM AVE	110				
131	TINO	1989 ELM AVE	300				
132	HUNTER(RICHARDS?)	1765 ALMSHOUSE ROAD	165				
133	CELOTTO	2063 MAPLE AVENUE	160				
134	HAAZ	1878 SUGARBOTTOM ROAD	N/A				
135	MCILHINNEY	2015 MAPLE AVENUE	N/A				
District Three							
136	NESH VALLEY GOLF	440 Almshouse Road	N/A	<1	Absent	Absent	2.36
137	HEYBACH	800 Almshouse Road	N/A	<1	Absent	Absent	3.46
138	RUSSO	841 Almshouse Road	N/A				
139	ROLAND	857 Almshouse Road	N/A				

Map Ref	Resident	Address	Well Depth	FC	TC		NO3
				cfu/100ml	E. coli MPN/100 mL	Total Coliform MPN/100 mL	
140	DOUGHERTY	863 Almshouse Road	360				
141	LOUNSBERRY	877 Almshouse Road	N/A				
142	MARSHALL	881 Almshouse Road	N/A				
143	PEARCE	901 Almshouse Road	N/A	<1	Absent	Absent	2.11
144	KROUSE	910 Almshouse Road	N/A				
145	MATTHEW	944 Almshouse Road	N/A				
146	KEMPER	Jamison	175	<1	Absent	Absent	2.69
147	GOTTLÖB	992 Almshouse Road	N/A				
148	LONG	1005 Almshouse Road	150				
149	EARNEST	1026 Almshouse Road	425				
150	BITTING	1090 Almshouse Road	215				
151	ATKINSON	PO BOX 532; 3087 Rustlyn Rd	240	<1	Absent	Absent	9.83
152	DIODATI	305 Bristol Road	300				
153	JOHN MEYER	335 Bristol Road	N/A				
154	PEOPLES	363 Bristol Road	106				
155	AMMONS	605 Bristol Road	200	<1	Absent	Absent	4.36
156	GREENHOUSE	415 Bristol Road	120	<1	Absent	1	1.99
157	CONSTRUCTION	491 Bristol Road	spring				
158	KLEIN/STACEY	1308 Clearview Drive		<1	Absent	Absent	3.05
159	COLOSIMO	1315 Clearview Drive					
160	FOX	1318 Clearview Drive					
161	FORTNER	1321 Clearview Drive		<1	Absent	Absent	1.06
162	ENRIGHT	1324 Clearview Drive					
163	NORR	1332 Clearview Drive					
164	KWIATKOWSKI	1333 Clearview Drive		<1	Absent	Absent	1.24
165	BAKER	1340 Clearview Drive		<1	Absent	Absent	<1.00
166	COX	1345 Clearview Drive		<1	Absent	2	1.35
167	ROSENWALD	1350 Clearview Drive					
168	VINING	1367 Clearview Drive					
169	SAILOR	1372 Clearview Drive					
170	ANDRUCHIW	1378 Clearview Drive					
171	LARSON	1379 Clearview Drive					
172	WEBSTER	1384 Clearview Drive					
173	YOUNG	2109 Colony Road **		<1	Absent	Present	2.51
					Absent	3	
174	APPEL	2117 Colony Road					
175	FLAHERTY	2122 Colony Road		<1	Absent	Absent	<1.00
176	FITZPATRICK	2126 Colony Road					
177	BRAUER	2129 Colony Road					
178	SEAMAN	2137 Colony Road		<1	Absent	Absent	2.17
179	KRAJEWSKI	2140 Colony Road					
180	SOLTYS	2143 Colony Road					
181	WOLF	2151 Colony Road					
182	YATES	2160 Colony Road					
183	KATES	2165 Colony Road					
184	HAYNES	2170 Colony Road					
185	GARDYASZ	2173 Colony Road					
186	GARRARD	2176 Colony Road					
187	BYARD	551 Creek Road					
188	STAVRIDES	571 Creek Road					
189	CORNELL	591 Creek Road					
190	GOURLEY	611 Creek Road					



Map Ref	Resident	Address	Well Depth	FC	TC		NO3
				cfu/100ml	E. coli MPN/100 mL	Total Coliform MPN/100 mL	mg/l
191	WEBER	627 Creek Road					
192	TAURINO	643 Creek Road					
193	SORACE	665 Creek Road					
194	VANINGEN	716 Creek Road					
195	BUCK	727 Creek Road					
196	BUCK	747 Creek Road					
197	JARRETT	680 Creek Road					
198	CORNELL	871 Creek Road					
199	HIRSCHBUHL	655 Creek Road					
200	CONTE	2215 Dark Hollow Road					
201	SALDAN	2301 Dark Hollow Road					
202	COMIRE	2475 Dark Hollow Road					
203	SOUTHARD	2543 Dark Hollow Road					
204	LAKE	2552 Dark Hollow Road					
205	TANNER	2560 Dark Hollow Road					
206	ZASLAVSKY	2602 Dark Hollow Road					
207	BERNAT	2610 Dark Hollow Road					
208	WERTMAN	2624 Dark Hollow Road		<1	Absent	Absent	<1.00
209	FOX	2655 Dark Hollow Road**		<1	Absent	Present	2.44
				<1	Absent	Absent	1.87
210	DONATO/HERVISH	2681 Dark Hollow Road**		<1	Absent	Present	1.81
				<1	Absent	Absent	1.76
211	MARLEY	2750 Dark Hollow Road					
212	KEYSER	2795 Dark Hollow Road					
213	CRYNE	2830 Dark Hollow Road					
214	EHRET	2832 Dark Hollow Road		<1	Absent	3	7.49
215	DORSEY	2046 Harmony Lane		<1	Absent	Absent	1.20
216	TIERNEY	2049 Harmony Lane					
217	GODFREY	2050 Harmony Lane					
218	FITZGERALD	2062 Harmony Lane					
219	KARABIN	2094 Harmony Lane					
220	FENDLER	2097 Harmony Lane					
221	ALEIXO	2106 Harmony Lane					
222	VERDOLINI	2116 Harmony Lane					
223	COSTELLO	2126 Harmony Lane					
224	KIN	2140 Harmony Lane					
225	O'BRIEN/SCHLEYER	2143 Harmony Lane		<1	Absent	Absent	3.29
226	ZAKUSILO	2154 Harmony Lane					
227	FLEISCH	2164 Harmony Lane					
228	STANCU	2167 Harmony Lane					
229	CORRIGAN	2184 Harmony Lane					
230	SALAMONE	2194 Harmony Lane					
231	SPROAT	1160 Highwood Drive					
232	GARTLING	1309 Highwood Drive		<1	Absent	Absent	1.11
233	STIEBER	1310 Highwood Drive					
234	D'ALONZO	1328 Highwood Drive					
235	RAPP	1338 Highwood Drive					
236	KUNTZ	1348 Highwood Drive					
237	RIEDERS	900 Hill Road					
238	Redante	926 Jackaway Road					
239	HARTKORN	945 Jackaway Road		<1	Absent	Absent	1.31
240	PISTON	948 Jackaway Road					



Map Ref	Resident	Address	Well Depth	FC	TC		NO3
				cfu/100ml	E. coli MPN/100 mL	Total Coliform MPN/100 mL	mg/l
241	KURMAN	953 Jackaway Road					
242	MANZO	958 Jackaway Road		<1	Absent	Absent	2.96
243	TRUSH	965 Jackaway Road					
244	SENF	970 Jackaway Road					
245	HOFREITER	979 Jackaway Road					
246	SNYDER/HALL	988 Jackaway Road					
247	INLANDER	2060 Long Lane					
248	HUTTENLOCK	2075 Long Lane					
249	BECKER	2095 Long Lane					
250	ECKERT	2096 Long Lane		<1	Absent	4	1.40
251	SCARPILL	2105 Long Lane		<1	Absent	Absent	<1.00
252	HUDSON	2130 Long Lane		<1	Absent	Absent	2.32
253	MESSINA	2152 Long Lane		<1	Absent	Absent	2.99
254	LOCKETT	2155 Long Lane					
255	BURANICH	2174 Long Lane					
256	BRANCH	2195 Long Lane		<1	Absent	Absent	2.35
257	PEDICONE	1440 Mearns Road					
258	DEPALMA	1446 Mearns Road		<1	Absent	Absent	3.75
259	AULD	1447 Mearns Road		<1	Absent	Absent	11.7
260	ROTONDO/calhoun	1976 Meetinghouse Road					
261	FROMAN	2015 Meetinghouse Road		<1	Absent	Absent	1.65
262	YERKES	2035 Meetinghouse Road					
263	SCHMIDT	2039 Meetinghouse Road					
264	GALZINSKI	2091 Meetinghouse Road					
265	DATECH-DIVITA	141 Railroad Drive					
266	AMMANN	145 Railroad Drive					
267	REUTER & HANNEY	149 Railroad Drive		<1	Absent	4	3.36
268	VISCO	153 Railroad Drive					
269	LYNN ELECTRONICS	154 Railroad Drive					
270	VISCO	157 Railroad Drive					
271	SCHENK	90-150 Railroad Drive		<1	Absent	Absent	<1.00
272	RIEDERS	2555 Rushland Road					
273	CROWERS	2601 Rushland Road					
274	RITTER	2616 Rushland Road					
275	ULLMAN	2665 Rushland Road					
276	FELDMAN	2753 Rushland Road					
277	RIEDERS	2850 Rushland Road					
278	WILKINSON	3025 Rushland Road					
279	WILKINSON	3025 Rushland Road					
280	CONTE	1234 Schoolhouse Lane		<1	Absent	Absent	2.57
281	FERRANTE	1311 Schoolhouse Lane					
282	ENAMA	1333 Schoolhouse Lane					
283	KELLY	1342 Schoolhouse Road		<1	Absent	Absent	2.55
284	PLUMLY	1360 Schoolhouse Road		<1	Absent	Absent	1.84
285	EDGAR	1380 Schoolhouse Road		<1	Absent	Absent	1.72
286	PRIMODIE	1321 Schoolhouse Road Lane					
287	MCALDER	465 West Bristol Road					
288	IANIERI	565 West Bristol Road		<1	Absent	5	<1.00
		585 West Bristol Road		<1	Absent	Absent	2.90
289	NORELLI	625 West Bristol Road					
290	DAWICKI	645 West Bristol Road					
291	MAGIDSON	2480 (2464) Walton Road					

Map Ref	Resident	Address	Well Depth	FC	TC		NO3
				cfu/100ml	E. coli MPN/100 mL	Total Coliform MPN/100 mL	mg/l
292	JENKINS	2755 Walton Road					
293	GRUBER	2775 Walton Road					
294	IRVIN	2960 Walton Road					
295	DISCHINGER/CARROLL	3005 Walton Road					
296	MANION	3010 Wilkinson Road		<1	Absent	Absent	<1.00
297	NEGRO	3015 Walton Road					
298	SHEEHAN	3035 Walton Road					
299	LANNON	915 Watson Road **		<1	Absent	Present	2.89
				<1	Absent	261	2.80
300	KOUTSOUROS	970 Watson Road					
301	SPINDLER	995 Watson Road					
302	HANISCO	2930 Wilkinson Road		<1	Absent	Absent	<1.00
303	CONYNE	2955 Wilkinson Road					
304	LIPINSKI	2960 Wilkinson Road					
305	FALCONE	2990 Wilkinson Road		<1	Absent	12	<1.00
306	BRASKO(halderman)	3080 Wilkinson Road		<1	Absent	Absent	<1.00
307	MYERS	3159 Wilkinson Road					
308	HEY	1800 Mearns Road					
309	ATKINSON	3094 Rushland Road					
310	ASA PARTNERSHIP	1808-1836 Mearns Road					
311	PODGURSKI	2049 Stout Drive, B-3					
312	HARRY HEY & SONS	1800 Mearns Road, Bld 2					
313	HARRY HEY & SONS	1800 Mearns Road, Bld 3					
314	HARRY HEY & SONS	5					
315	ALLOTTA	2175 Long Lane					
316	HEYBACH	850 Almshouse Road					
317	DAWICKI	665 West Bristol Road		<1	Absent	Absent	5.49
318	DAWICKI	685 West Bristol Road					
319	SKELLY/FETZER	2059 Old York Road					
320	METRO STORAGE	1600 Mearns Road					
321	METRO STORAGE	1634 Mearns Road					
322	MCKEON	1887 Stout Drive					
323	YANNY	2092 Long Lane		<1	Absent	Absent	<1.00
324	LISZEWSKI	1710 Stout Drive					
380	MATTHEWS	2150 Grakelow Drive		<1	Absent	Absent	2.48
Germinal (Results listed about in the District III)							
325	KROUSE	910 ALMSHOUSE ROAD					
326	MATTHEW	944 ALMSHOUSE ROAD					
327	KEMPER	964 ALMSHOUSE ROAD					
328	GOTTLOB	992 ALMSHOUSE ROAD					
329	EARNEST	1026 ALMSHOUSE ROAD					
330	YOUNG	2109 COLONY ROAD					
331	APPEL	2117 COLONY ROAD					
332	FLAHERTY	2122 COLONY ROAD					
333	FITZPATRICK	2126 COLONY ROAD					
334	BRAUER	2129 COLONY ROAD					
335	SEAMAN	2137 COLONY ROAD					
336	KRAJEWSKI	2140 COLONY ROAD					
337	SOLTYS	2143 COLONY ROAD					
338	WOLF	2151 COLONY ROAD					
339	YATES	2160 COLONY ROAD					
340	KATES	2165 COLONY ROAD					

Map Ref	Resident	Address	Well Depth	FC	TC		NO3
				cfu/100ml	E. coli MPN/100 mL	Total Coliform MPN/100 mL	mg/l
341	HAYNES	2170 COLONY ROAD					
342	GARDYASZ	2173 COLONY ROAD					
343	GARRARD	2176 COLONY ROAD					
344	DORSEY	2046 HARMONY LANE					
345	TIERNEY	2049 HARMONY LANE					
346	GODFREY	2050 HARMONY LANE					
347	FITZGERALD	2062 HARMONY LANE					
348	KARABIN	2094 HARMONY LANE					
349	FENDLER	2097 HARMONY LANE					
350	ALEIXO	2106 HARMONY LANE					
351	VERDOLINI	2116 HARMONY LANE					
352	COSTELLO	2126 HARMONY LANE					
353	KIN	2140 HARMONY LANE					
354	O'BRIEN/SCHLEYER	2143 HARMONY LANE					
355	ZAKUSILO	2154 HARMONY LANE					
356	FLEISCH	2164 HARMONY LANE					
357	STANCU	2167 HARMONY LANE					
358	CORRIGAN	2184 HARMONY LANE					
359	SALAMONE	2194 HARMONY LANE					
360	LINDINGER	926 JACKAWAY ROAD					
361	HARTKORN	945 JACKAWAY ROAD					
362	PISTON	948 JACKAWAY ROAD					
363	KURMAN	953 JACKAWAY ROAD					
364	MANZO	958 JACKAWAY ROAD					
365	TRUSH	965 JACKAWAY ROAD					
366	SENF	970 JACKAWAY ROAD					
367	HOFREITER	979 JACKAWAY ROAD					
368	SNYDER/HALL	989 JACKAWAY ROAD					
369	INLANDER	2060 LONG LANE					
370	HUTTENLOCK	2075 LONG LANE					
371	BECKER	2095 LONG LANE					
372	ECKERT	2096 LONG LANE					
373	SCARPILL	2105 LONG LANE					
374	HUDSON	2130 LONG LANE					
375	MESSINA	2152 LONG LANE					
376	LOCKETT	2155 LONG LANE					
377	BURANICH	2174 LONG LANE					
378	BRANCH	2195 LONG LANE					
379	ALLOTTA	2175 LONG LANE					

Total number of letters sent out 320

Total number of participants 80

Notes:

Properties noted in BLACK did NOT participate in the survey or sampling event

Properties noted in BLUE did participate in the survey or sampling event

Parcel	Property Address	Well Depth	Fecal cfu/100ml	E. coli MPN/100mL	Total Coliform MPN/100mL	Nitrate mg/l
51-016-001	1026 Almshouse Road	425				
51-016-002	2194 Harmony Lane	N/A				
51-015-001	2184 Harmony Lane	N/A				
51-015-002	2174 Harmony Lane	N/A				
51-015-003	2164 Harmony Lane	N/A				
51-015-004	2154 Harmony Lane	N/A				
51-015-005	2140 Harmony Lane	N/A				
51-015-006	2126 Harmony Lane	370	<1	<1	20	2.64
51-015-007	2116 Harmony Lane	N/A				
51-015-008	2106 Harmony Lane	N/A	<1	<1	1	2.36
51-015-009	2094 Harmony Lane	N/A				
51-015-011-001	2046 Harmony Lane	N/A				
51-015-011-002	2062 Harmony Lane	350	<1	<1	<1	1.27
51-015-036	992 Almshouse Road	N/A	<1	<1	<1	2.79
51-015-045	2167 Harmony Lane	N/A				
51-015-034	2143 Harmony Lane	N/A				
51-015-032-001	988 Jackaway Road	N/A				
51-015-033	2097 Harmony Lane	N/A				
51-015-018	2049 Harmony Lane	N/A				
51-015-032	980 Jackaway Road (908 Jackaway)	375	<1	<1	<1	2.60
51-015-030	970 Jackaway Road	N/A				
51-015-037	979 Jackaway Road	N/A				
51-016-002.001	964 Almshouse Road	175				
51-016-003	944 Almshouse Road	N/A				
51-016-004	910 Almshouse Road	N/A				
51-015-038	2176 Colony Road	N/A				
51-015-038-001	2170 Colony Road	N/A				
51-015-038-002	2160 Colony Road	N/A				
51-015-038-003	2140 Colony Road	N/A				
51-015-038-004	2126 Colony Road	N/A				
51-015-038-005	945 Jackaway Road	N/A	<1	<1	<1	3.95
51-015-038-006	953 Jackaway Road	N/A	<1	<1	11	1.23
51-015-038-007	965 Jackaway Road	N/A				
51-015-029	958 Jackaway Road	400	<1	<1	2	2.98
51-015-028	948 Jackaway Road	450	<1	<1	<1	2.08
51-015-026	926 Jackaway Road	N/A				
51-015-025	2122 Colony Road	N/A	6	3	261	1.78
51-015-024	Paper Road off Harmony Lane	N/A				
51-015-022	2074 Harmony Lane (2079 Harmony)	400	<1	<1	<1	2.10
51-015-014	2080 Harmony Lane	260				
51-015-013	2090 Harmony Lane	400	<1	<1	<1	2.47
51-015-039-002	2109 Colony Road	400	<1	<1	<1	3.14
51-015-039-001	2117 Colony Road	N/A				



Parcel	Property Address	Well Depth	Fecal cfu/100ml	E. coli MPN/100mL	Total Coliform MPN/100mL	Nitrate mg/l
51-015-039	2129 Colony Road	N/A				
51-015-040	2137 Colony Road	N/A				
51-015-041	2143 Colony Road	N/A				
51-015-042	2151 Colony Road	400	<1	<1	<1	3.65
51-015-043	2165 Colony Road	300				
51-015-044	2173 Colony Road	N/A				
51-013-022	850 ALMSHOUSE RD	N/A				
51-013-029	ALMSHOUSE RD	N/A				
51-013-030	841 ALMSHOUSE RD	350	<1	<1	6	3.15
51-013-031	857 ALMSHOUSE RD	330	<1	<1	<1	3.92
51-013-032	863 ALMSHOUSE RD	N/A				
51-013-033	877 ALMSHOUSE RD	N/A				
51-013-034	881 ALMSHOUSE RD	N/A	<1	<1	2	3.37
51-013-035	901 ALMSHOUSE RD	N/A				
51-009-001	2195 LONG LN	N/A				
51-008-008	2185 LONG LN	N/A				
51-008-007	2175 LONG LN	N/A				
51-008-006-001	2155 LONG LN	N/A				
51-008-005	2135 LONG LN	N/A				
51-008-002	2105 LONG LN	450	<1	<1	24	3.03
51-008-001	2095 LONG LN	N/A				
51-008-056	2075 LONG LN	N/A	<1	<1	<1	1.02

Notes:

Properties noted in **black** did not participate in the survey or sampling event

Properties noted in **blue** did participate in the survey or sampling event

Total number of letters sent out 65

Total number of participants 19

Parcel	Property Address	Well Depth	Fecal cfu/100ml	E. coli MPN/100mL	Total Coliform MPN/100mL	Nitrate mg/l
51-011-012	2034 Woodland Ave	N/A				
51-011-014-001	2050 Oak Avenue	N/A				
51-011-045	2030 Oak Avenue	150	<1	<1	1	2.49
51-011-047	2010 Oak Avenue	N/A				
51-011-017	2071 Oak Avenue	N/A				
51-011-019	2070 Maple Avenue	N/A				
51-011-020	2055 Oak Avenue	N/A				
51-011-015	2020 Maple Avenue	N/A				
51-011-055	1994 Maple Avenue	N/A				
51-011-053	2027 Oak Avenue	400				
51-011-048	2015 Oak Avenue	N/A				
51-011-025	2063 Maple Avenue	N/A	<1	<1	<1	4.40
51-011-030	2046 Elm Avenue	N/A				
51-011-024	2057 Elm Avenue	N/A				
51-011-031	2030 Elm Avenue	N/A				
51-011-023	2015 Maple Avenue	N/A				
51-011-062	1991 Maple Avenue	N/A	<1	<1	<1	<1.00
51-011-063	1980 Maple Avenue	N/A				
51-001-064	1940 Elm Avenue	N/A				
51-011-036-001	2065 Elm Avenue	N/A				
51-011-035	2033 Elm Avenue	N/A				
51-011-066	1989 Elm Avenue	300	1	<1	<1	3.80
51-011-065	1955 Elm Avenue	110				

Notes:

Properties noted in **black** did not participate in the survey or sampling event

Properties noted in **blue** did participate in the survey or sampling event

Total number of letters sent out 23

Total number of participants 4

**APPENDIX C**

**WARWICK TOWNSHIP PLANNING COMMISSION CORRESPONDENCE**



## TOWNSHIP OF WARWICK

Administration Building, 1733 Township Greene, Jamison, PA 18929-1621

phone: 215/343-6100  
fax: 215/343-4407  
[www.warwick-bucks.org](http://www.warwick-bucks.org)

November 15, 2018

Mr. Evan J. Stone  
Bucks County Planning Commission  
Neshaminy Manor Center  
1260 Almshouse Road  
Doylestown, PA 18901

RE: Warwick Township Act 537 Plan Update  
Bucks County

Dear Mr. Stone,

The Warwick Township Planning Commission met on November 7<sup>th</sup>, 2018 to discuss the Act 537 Plan update. The Commission reviewed the plan and found it to be consistent resulting in a recommendation of approval to be considered by the Board of Supervisors.

Sincerely,

Warwick Township Planning Commission

CC: Tara Bernard, Ebert Engineering, Inc.





## TOWNSHIP OF WARWICK

Administration Building, 1733 Township Greene, Jamison, PA 18929-1621

phone: 215/343-6100  
fax: 215/343-4407

[www.warwick-bucks.org](http://www.warwick-bucks.org)

November 15, 2018

Ms. Genevie A. Kostick  
Bucks County Health Department  
Neshaminy Manor Center  
1282 Almshouse Road  
Doylestown, PA 18901

RE: Warwick Township Act 537 Plan Update  
Bucks County

Dear Ms. Kostick,

The Warwick Township Planning Commission met on November 7<sup>th</sup>, 2018 to discuss the Act 537 Plan update. The Commission reviewed the plan and found it to be consistent resulting in a recommendation of approval to be considered by the Board of Supervisors.

Sincerely,

Warwick Township Planning Commission

CC: Tara Bernard, Ebert Engineering, Inc.

**APPENDIX D**

**BUCKS COUNTY DEPARTMENT OF HEALTH CORRESPONDENCE**



# TOWNSHIP OF WARWICK

Administration Building, 1733 Township Greene, Jamison, PA 18929-1621

phone: 215/343-6100

fax: 215/343-4407

[www.warwick-bucks.org](http://www.warwick-bucks.org)

[kseckinger@warwick-township.org](mailto:kseckinger@warwick-township.org)

Kyle W. Seckinger, Township Manager

March 7, 2019

Mr. Eric Brosius  
Bucks County Department of Health  
Neshaminy Manor Center  
1282 Almshouse Road  
Doylestown, PA 18901

Subject: Warwick Township Act 537 Plan Update  
Warwick Township, Bucks County

Re: Response to Warwick Township Official Act 537 Plan Update Review

Dear Mr. Brosius,

Warwick Township is in receipt of Bucks County Department of Health (BCDH) review letter dated January 11, 2019 on the Warwick Township Official Act 537 Plan review. Each review comment has been outlined below along with a response to each comment. Please note, the individual tax parcel outlined in the January 11, 2019 review letter have been omitted from the response letter for ease of review however they have all been reviewed and considered into the responses.

***BCDH Comment No. 1: Breton Hill Drive Area - This area of concern consists of 12 parcels; 9 parcels that have lot sizes between 17,500 ft<sup>2</sup> and 29,800 ft<sup>2</sup>, 1 parcel at 32,219 ft<sup>2</sup>, 1 parcel at 77,840 ft<sup>2</sup> and 1 parcel at 91,056 ft<sup>2</sup>. The homes were constructed between 1955 and 1957 and are currently serviced by on-lot disposal systems (OLDS) and individual water supplies (on-lot well).***

*After reviewing the OLDS records for this area, there is only one parcel that has an OLDS that meets current PA CODE TITLE 25 Chapter 73 standards which is parcel 51-004-011 and the OLDS is a Retaining Tank/Holding Tank. All the repairs for OLDS in this area have been permitted as Best Technical Guidance, Site-Specific Alternate or Experimental OLDS. The properties that have not undergone repair evaluations and still retain the original OLDS are over 60 years old and are well past the normal lifetime for an OLDS. All the OLDS that have not undergone repair evaluations recently are subsurface systems.*

*The Township's On-Lot Wastewater Management Program may prevent surface malfunctions in this area, however, not connecting these properties to a Public Sanitary Sewer System over the 10 year plan of this ACT 537 review would result in OLDS that would be approaching 70 years old. Furthermore, as these aging OLDS require replacement, the parcel size, parcel configuration, soils conditions and other site conditions greatly limits the type of OLDS repairs that can be permitted as has been demonstrated by the Retaining Tank/Holding Tank installed on parcel 51 -004-011.*

*In concluding, this BCDH recommends the Township provide Public Sanitary Sewer System to the homes in the Breton Hill Drive area.*

**Township Response No. 1:** In accordance with the approved March 2010 Act 537 Special Study entitled Breton Hills and Eddowes Road Study Areas, the Breton Hills area will continue to remain on individual on-lot systems under the Warwick Township On-Lot Sewage Management Program. While some of these on-lot systems have been repaired and/or replaced using Best Technical Guidance, Site Specific Alternate, or Experimental OLDS, these systems continue to function. Connection of these properties to public sewer will be based on the development of the adjacent tract. Upon development of the adjacent tract, the Breton Hills area will also be provided public sewer at that time. Therefore, Warwick Township will not include the Breton Hills area in the public sewer service area as part of this Act 537 Plan.

**BCDH Comment No. 2:** *Almshouse Road near Charles Lane - This area of concern consists of 2 parcels; TM# 51-018-012 and TM# 51-018-013 with lot sizes of 45,737 ft<sup>2</sup> and 17,859 ft<sup>2</sup> respectively. The homes were constructed 1940 and 1948 and are currently serviced by on-lot sewage disposal systems (OLDS) and individual water supplies (on-lot well).*

*No soils evaluations were conducted by the BCDH in the area, however, soil mapping indicates Bowmansville and Lawrenceville soils. The Bowmansville soils, as per the USDA-NRCS description, consists of poorly and so mew bat poorly drained soils. The Lawrenceville soils, as per the USDA-NRCS description, consists of moderately drained soils. These soil types are mapped across both properties. Due to a typical seasonal high water table in these soil types the existing subsurface OLDS on these parcels are discharging into the seasonal high water table which is considered Waters of the Commonwealth.*

*In concluding, this BCHD recommends the Township provide Public Sanitary Sewer System to these two homes along Almshouse Road.*

**Township Response No. 2:** These two properties (Tax Map Parcel #51-018-012 and #51-018-013) are currently located within the existing Fish Creek Public Sewer Service Area. The individual property owners have chosen to remain on individual on-lot systems under the Warwick Township On-lot Sewage Management Program. Should evidence of malfunction arise, these properties could connect to public sewer at that time.

**BCHD Comment No. 3:** *Meetinghouse Road near Schoolhouse Lane - This area of concern consists of 2 parcels; TM# 51-003-093 and TM# 51-003-094 with lot sizes of 120,660 ft<sup>2</sup> and 12,327 ft<sup>2</sup> respectively. The homes were constructed 1988 and 1942. and are currently serviced by on-lot sewage disposal systems (OLDS) and individual water supplies (on-lot well).*

*Both of these parcels are located next to the Fetzer Tract which is planned for public sewer service. TM# 51-003-094 is only 12,327 ft<sup>2</sup> with dimensions of 75 ft. by 240.65 ft. with an existing subsurface OLDS and on-lot well in soils mapped Abbottstown classified by the US DANRCS as somewhat poorly drained. Due to a typical seasonal high water table in this*



*soil type the existing subsurface OLDS on this parcel is discharging into the seasonal high water table which is considered Waters of the Commonwealth. The possibility of a replacement OLDS for the property is severely limited.*

*TM# 51-003-093 at 240.65 ft. by 500 ft. with an existing OLDS and on-lot well may allow a replacement OLDS on the property that may meet P A CODE Title 25 Chapter 73 standards. However, OLDS have limited functioning life even with proper maintenance. The current subsurface OLDS is more than likely discharging into a seasonal high water table, which is considered Waters of the Commonwealth, as soils evaluations by the BCDH on neighboring properties have demonstrated a shallow depth to seasonal high water table.*

*In concluding, the BCDH recommends the Township provide Public Sanitary Sewer System to these properties when reviewing the planned development of the Fetzer Tract.*

**Township Response No. 3:** The Fish Creek Public Sewer Service area will be expanded as part of the Fetzer Tract and Prestige Property Special Study to also include these two parcels adjacent to the Fetzer Tract (Tax Map Parcel # 51-003-093 and # 51-003-094.) The Sewage Facilities and Service Areas (Map No. 1) included in the current Act 537 Plan Update has been revised to reflect the addition of this area to the Fish Creek Public Sewer Service Area. A copy of the revised Map No. 1 is attached.

**BCDH Comment No. 4:** *Valley Road & Creeklyn Section - This area of concern consists of 45 parcels; located along Valley Road, Woodland Avenue, Oak Avenue, Maple Avenue and Elm Avenue. The homes were constructed between 1860 and 2008 with the majority being constructed in the 1930s, 1940s and 1950s. All the homes are currently serviced by on-lot sewage disposal systems (OLDS) and individual water supplies (on-lot well). Of the 45 parcels 17 parcels are vacant land. Of the 17 vacant land parcels 6 of the parcels (51-011-013, 51-011-014, 51-011-018, 51-011-027, 51-011-037 & 51-011-043) are owned by Bucks County as open land, 1 parcel (51-011-016) contains the OLDS for parcel 51-011-020 and of the remaining 11 vacant parcels, eight are less than 10,000 ft<sup>2</sup>. There are three vacant parcels 51-011-061, 51-011-032, 51-011-069 that are 36,000 ft<sup>2</sup>, 19,000 ft<sup>2</sup> and 29,564 ft<sup>2</sup> respectively. The 28 vacant parcels range in lot size from 10,000 ft<sup>2</sup> to 70,439 ft<sup>2</sup> with half of the 28 under 20,000 ft<sup>2</sup>.*

*The soils in this area have demonstrated shallow limiting zones to seasonal high water table and fractured red shale with voids. There are 14 parcels that contain OLDS where there is no record of the OLDS. All of these parcels have OLDS that are subsurface and surely discharge into Waters of the Commonwealth as demonstrated by those parcels that have had deep test holes evaluated and evidence has shown a seasonal high water table or fractured red shale with voids.*

*Of the permitted OLDS three properties contain holding tanks (51-011-024, 51-011-063, 51-011-065). There are four parcels (51-011-045, 51-011-004, 51-011-036-001 & 51-011-035) that have permitted OLDS prior to 1974 and do not meet PA CODE Title 25 Chapter 73*

*requirements, two parcels (51-011-020/016 & 51-011-066) with current PA CODE Title 25 Chapter 73 elevated sand mounds, five parcels (51-011-014-001, 51-011-047, 51-011-045, 51-011-053, & 51-011-048) with Alternate System At-Grade Beds with Ecoflo Biofilters that were installed to overcome specific site characteristics and parcel 51-011-062 with an Experimental DRIP Micro Mound as the only option for a replacement OLDS. All OLDS that have met the current PA CODE Title 25 Chapter 73 requirements were fortunate to have parcel sizes large enough to accommodate the repair or have combined parcels to have room to construct the OLDS. The size of the remaining parcels and the lot configuration with well locations extremely limits any type of replacement OLDS other than a Retaining Tank/Holding Tank. Those parcels that have not approached the life time of their existing OLDS may not have enough room for an OLDS other than a Retaining Tank/Holding Tank.*

*In concluding, the BCDH recommends the Township provide Public Sanitary Sewer System to the homes in the Valley Road and Creeklyn section.*

**Township Response No. 4:** Based on the Tier I Evaluation Performed as part of this Act 537 Plan, the nitrates within this area resulted in less than 1 mg/L. This provides evidence the enactment of the On-Lot Sewage Management Program is working within this area. Each of the identified parcels in the Valley Road area will continue to remain on individual on-lot systems under the Warwick Township On-Lot Sewage Management Program (SMP).

Warwick Township will continue to monitor these systems under the On-Lot SMP, and should evidence of malfunction be identified in the future, Warwick Township will evaluate the connection of these properties to the Fish Creek Public Sewer System. Until such time, the Valley Road area will continue to remain on individual on-lot sewage disposal systems as described within the Act 537 Plan Update. Warwick Township will not provide public sewer to these properties as part of the current Act 537 Plan Update.

Regarding the lots that are sized from 10,000 sf to 20,000 sf, they will be subject to all current PA CODE Title 25 Chapter 73 requirements and detailed testing with the Health Department would be required if the lots are developed.

**BCDH Comment No. 5:** *Long Lane off Almshouse Road - This area of concern consists of 12 parcels that have lot sizes between 21,000 ft<sup>2</sup> and 42,000 ft<sup>2</sup>. There is 1 parcel at 42,000 ft<sup>2</sup>, 1 parcel at 26,250 ft<sup>2</sup>, 1 parcel at 24,360 ft<sup>2</sup> and 9 parcels at 21,000 ft<sup>2</sup>. The homes were constructed between 1949 and 2000 and are currently serviced by on-lot sewage disposal systems (OLDS) and individual water supplies (on-lot well). There are three vacant properties in this area.*

*The soils in this area have demonstrated shallow limiting zones to seasonal high water table and fractured shale with voids. There are only four parcels (TM# 51-009-001, 51-008-008, 51-008-003 and 51-008-056) that have OLDS meeting current PA CODE Title 25 Chapter 73 Standards for Sewage Disposal Facilities in regards to soils. The remaining parcels contain OLDS discharging to the seasonal high water table which is considered Waters of the*

*Commonwealth as indicated by the properties that have had soils evaluations. Although maintenance through pumping may prolong the lifetime of the OLDS in this area, most of the parcel's OLDS are approaching the end of their lifetime and some parcel's OLDS are approaching 70 years old. The parcel size, parcel configuration, soils conditions and other site conditions of the parcels in this Long Lane area prohibits any type of replacement OLDS other than Retaining Tanks/Holding Tanks.*

*In concluding, this Department recommends the Township provide Public Sanitary Sewer System to the homes listed in this review of Long Lane.*

**Township Response No. 5:** Based on the Tier I Evaluation Performed as part of this Act 537 Plan, the nitrates within this area resulted in 0 to 5 mg/L. This provides evidence the enactment of the On-Lot Sewage Management Program is working within this area.

These twelve parcels are included within the Germinal Colony Area (identified by the letter "K" on Map No. 1) in the Act 537 Plan and will continue to be serviced by individual on-lot systems. Warwick Township will continue to monitor these systems under the On-lot Sewage Management Program, and should evidence of malfunction be identified in the future, Warwick Township will evaluate the connection of these properties to the Country Crossing Public Sewer System. Until such time, this area will continue to remain on individual on-lot sewage disposal systems. Warwick Township will not provide public sewer to these properties as part of the current Act 537 Plan Update.

**BCDH Comment No. 6:** *Germinal Colony Section - This area of concern consists of 59 parcels that have lot sizes between 15,000 ft<sup>2</sup> up to 21.9 acres. There are 3 parcels of less than 22,000 ft<sup>2</sup>, 23 parcels with an area between 22,000 ft<sup>2</sup> and 40,000 ft<sup>2</sup>, 11 parcels with an area between 40,000 ft<sup>2</sup> and 135,000 ft<sup>2</sup>, 1 parcel at 13.38 acres and 1 parcel at 21.92 acres. There are 38 homes which were built before 1972, 3 homes were built between 1972 and 2000 and 11 homes have been built from 2000 to the present date. All the homes are currently serviced by on-lot sewage disposal systems (OLDS) and individual water supplies (on-lot well). There are 7 vacant parcels that exist in this section under review.*

*The soils in this area have demonstrated shallow limiting zones to seasonal high water table and fractured shale with voids. The contaminated drinking water supply for parcel 51-015-039-001 in 1965 indicates the OLDS in the area are contaminating Waters of the Commonwealth. The drinking water wells in this area of concern were replaced when a public water line was routed along Harmony Lane when the large properties along Dark Hollow Road were developed in the late 1990's through early 2000's. Therefore, the drinking water testing results indicated in the proposed ACT 537 plan are misleading. Well construction for these new wells is likely up to current standards. These new wells are also drawing from an aquifer that is below the one that is of a seasonal high water table as has been shown in recent deep test hole evaluations. Please note: the seasonal high water table is still considered Waters of the Commonwealth. The locations of the new wells in the Germinal Colony area greatly restrict some of the properties from having enough suitable space for a replacement OLDS if*

*needed. Furthermore, some of the parcels in the Germinal Colony are so small or the lot configuration is so convoluted or the soils so restrictive that the only alternative for a replacement OLDS would be limited to a Retaining Tank/Holding Tank.*

*The new homes that have been built since 2000 mostly use Alternate type OLDS to overcome site constraints of limiting zones to seasonal high water table, fractured shale or slope. Without the alternate type technology these parcels would not have been developed. Of those parcels that have new homes constructed, the parcels have no area for a replacement OLDS if the need arises. These parcels would be limited to a Retaining Tank/Holding Tank for a repair system.*

*The proposed Micro Brewery currently being planned on parcel 51-013-023 is proposing to use Alternate Type Technology for the OLDS to overcome site restrictions. This type of use of an OLDS does require a significant amount of maintenance in order for the OLDS to remain adequate. The BCDH generally recommends any restaurant type facility to try and connect to a public sewer system if at all possible to avoid the problems associated with OLDS malfunctions that the BCDH has experienced over the years with food facilities.*

*There is a significant percentage of older homes in this area that have not had their original OLDS replaced with current PA CODE Title 25 Chapter 73 OLDS. Maintenance alone will not prevent these OLDS from being replaced. If there is area for a suitable OLDS it most likely would be either a Best Technical Guidance OLDS or some Site Specific Alternate/Experimental OLDS as has already been demonstrated on several properties in this area. Those parcels that do not qualify for any of the OLDS options would be limited to a Retaining Tank/Holding Tank as a repair.*

*In concluding, this Department recommends the Township provide Public Sanitary Sewer System to the homes listed in this review of the Germinal Colony.*

**Township Response No. 6:** As indicated in Response No. 5, a Tier I Evaluation Performed as part of this Act 537 Plan, the nitrates within this area resulted in 0 to 5 mg/L. This provides evidence the enactment of the On-Lot Sewage Management Program is working within this area.

As described within the Act 537 Plan Update, the Germinal Colony area will continue to remain on individual on-lot systems under the Warwick Township On-Lot Sewage Management Program. Warwick Township will continue to monitor these systems under the On-lot SMP, and should evidence of malfunction be identified in the future, Warwick Township will evaluate the connection of these properties to the Country Crossing Public Sewer System. Until such time, the Germinal Colony area will continue to remain on individual on-lot sewage disposal systems. Warwick Township will not provide public sewer to these properties as part of the current Act 537 Plan Update.



The proposed Micro Brewery is located outside of the Country Creek Public Sanitary Sewer Service Area. The Micro Brewery project area is identified in the Act 537 Plan to be service by On-Lot Sewage Disposal Systems. While an alternative type of technology may be proposed, it is a feasible means of sewage disposal.

If you need any additional information or have any questions concerning the matter, please feel free to contact our office.

Sincerely,

A handwritten signature in black ink, appearing to read 'K. Seckinger', written in a cursive style.

Kyle W. Seckinger, Manager  
Warwick Township

Enclosure

CC: Tara Bernard, Ebert Engineering, Inc.



Number	Description	Date
1	REVISED SEWER SERVICE AREAS	08/21/18
2	REVISED HO 100 RORR UNDER DRAINAGE AND RORR DRAIN 31/1/18	07/25/19
3	REVISED SEWER SERVICE AREAS	02/05/19
4	REVISED PROPOSED SEWER SERVICE AREA	03/04/19



# COUNTY OF BUCKS

## DEPARTMENT OF HEALTH

Neshaminy Manor Center, 1282 Almshouse Road, Doylestown, PA 18901 - 215-345-3318

### FIELD OFFICES

Bucks County Government Services Center, 7321 New Falls Road, Levittown, PA 19055 - 267-580-3510

Bucks County Government Services Center, 261 California Road, Suite #2, Quakertown, PA 18951 - 215-529-7000

#### County Commissioners

ROBERT G. LOUGHERY, Chairman

CHARLES H. MARTIN, Vice-Chairman

DIANE M. ELLIS-MARSEGLIA, LCSW

#### Director

DAVID C. DAMSKER, M.D., M.P.H.

January 11, 2019

Warwick Township  
Attn: Kyle Seckinger, Township Manager  
1733 Township Greene  
Jamison, PA 18929-1621

RECEIVED

JAN 14 2019

WARWICK TOWNSHIP OFFICE  
JAMISON, PA

RE: Warwick Township Act 537 Plan Update  
Plan Review

Dear Mr. Seckinger,

The Bucks County Department of Health (BCDH) has completed the review of the proposed Warwick Township Act 537 plan update. The review involved evaluating the on-lot disposal system (OLDS) records for each parcel in the areas of concern along with my own personal observation in responding to sewage nuisance complaints, conducting repair evaluations and soils evaluations throughout the Township. Following is a list of areas the BCDH has determined necessary for consideration to connect to a public sewer service. Note: Parcel owner names, parcel sizes and the year the home was built have been obtained through the Bucks County Board of Assessment web site.

#### Breton Hill Drive Area

This area of concern consists of 12 parcels; 9 parcels that have lot sizes between 17,500 ft<sup>2</sup> and 29,800 ft<sup>2</sup>, 1 parcel at 32,219 ft<sup>2</sup>, 1 parcel at 77,840 ft<sup>2</sup> and 1 parcel at 91,056 ft<sup>2</sup>. The homes were constructed between 1955 and 1957 and are currently serviced by on-lot disposal systems (OLDS) and individual water supplies (on-lot well).

TM# 51-004-001	Weinstein	1410 Breton Hill Drive	House built in 1956.
No Record of OLDS.			

TM# 51-004-002	Mielcarz	1567 Bristol Road	House built in 1955,
remodeled in 2007. No Record of original OLDS, A Permit to repair in 2003 for Experimental DRIP Irrigation OLDS on 17" Limiting Zone of seasonal high water table. Permit expired without installation.			

TM# 51-004-003	Pescatore	1424 Breton Hill Drive	House built in 1956.
1973 Permit to repair the original OLDS. Issued for a Seepage Pit 8 ft. deep by 10 ft. by 10 ft.			

TM# 51-004-004     Hermann     1432 Breton Hill Drive     House built in 1956.  
1973 Permit to repair the original OLDS. Issued for a Seepage Pit 8 ft. deep by 10 ft. by 10 ft.

TM# 51-004-005     Hagan     1440 Breton Hill Drive     House built in 1955.  
1972 Permit to repair the original OLDS. Issued for a Seepage pit 8 ft. deep by 15 ft. by 15 ft.  
1977 Permit to repair the 1972 Seepage Pit. Permit issued for the addition of 3, 3 ft. by 60 ft.  
Seepage Trenches 26 inches deep.

TM# 51-004-006     Hamvas     1454 Breton Hill Drive     House built in 1955.  
No Record of OLDS.

TM# 51-004-007     McNally     1455 Breton Hill Drive     House built in 1955.  
No Record of OLDS. Applied for repair evaluation in 2005 but was not pursued.

TM# 51-004-008     McCoog     1441 Breton Hill Drive     House built in 1955.  
No Record of original OLDS. 1974 Permit to repair original OLDS for a 20 ft. by 50 ft. Seepage  
Bed 24 inches deep. 2000 Permit to replace original septic tank with a 1500 Gal. 2 compartment  
tank.

TM# 51-004-009     Lindeman     1431 Breton Hill Drive     House built in 1956.  
No Record of original OLDS. 1974 Permit to repair original OLDS for a 20 ft. by 50 ft. Seepage  
Bed 24 inches deep. 1999 Permit to replace OLDS with a Best Technical Guidance (Failed  
Percolation Test) Elevated Sand Mound 40 ft. by 60 ft. with 24 inches of sand on a 24 inch  
limiting zone of seasonal high water table.

TM# 51-004-010     Hoffman     1423 Breton Hill Drive     House built in 1955.  
No Record of OLDS.

TM# 51-004-011     Kepner     1409 Breton Hill Drive     House built in 1955.  
No Record of original OLDS. 2018 Permit to replace original OLDS with a 2000 Gal. Holding  
Tank. No area for a repair due to lot layout and 12 inch limiting zone of seasonal high water  
table.

TM# 51-004-012     Bramer     1533 Bristol Road     House built in 1957.  
No Record of original OLDS. 2011 Permit to replace original OLDS with a Site Specific  
Alternate Split DRIP Irrigation Micromound with 14 inch limiting zone of seasonal high water  
table.

After reviewing the OLDS records for this area, there is only one parcel that has an OLDS that meets current PA CODE TITLE 25 Chapter 73 standards which is parcel 51-004-011 and the OLDS is a Retaining Tank/Holding Tank. All the repairs for OLDS in this area have been permitted as Best Technical Guidance, Site-Specific Alternate or Experimental OLDS. The properties that have not undergone repair evaluations and still retain the original OLDS are over 60 years old and are well past the normal lifetime for an OLDS. All the OLDS that have not undergone repair evaluations recently are subsurface systems.

The Township's On-Lot Wastewater Management Program may prevent surface malfunctions in this area, however, not connecting these properties to a Public Sanitary Sewer System over the 10 year plan of this ACT 537 review would result in OLDS that would be approaching 70 years old. Furthermore, as these aging OLDS require replacement, the parcel size, parcel



configuration, soils conditions and other site conditions greatly limits the type of OLDS repairs that can be permitted as has been demonstrated by the Retaining Tank/Holding Tank installed on parcel 51-004-011.

In concluding, this BCDH recommends the Township provide Public Sanitary Sewer System to the homes in the Breton Hill Drive area.

#### **Almshouse Road near Charles Lane**

This area of concern consists of 2 parcels; TM# 51-018-012 and TM# 51-018-013 with lot sizes of 45,737 ft<sup>2</sup> and 17,859 ft<sup>2</sup> respectively. The homes were constructed 1940 and 1948 and are currently serviced by on-lot sewage disposal systems (OLDS) and individual water supplies (on-lot well).

TM# 51-018-012      Hunter      1765 Almshouse Road      House built in 1940.  
No Record of OLDS. This BCDH has responded to numerous complaints of a malfunctioning OLDS since 2012. Investigation reports indicated no sewer connection (closest is on Charles Lane approximately 100 ft. away) available to replace the deteriorated Seepage Pit. Lot layout severely limits any type of OLDS repair except a Retaining Tank/Holding Tank.

TM# 51-018-013      Helsel      1745 Almshouse Road      House built in 1948.  
No Record of OLDS. This 17,859 ft<sup>2</sup> parcel's Bucks County Department of Health records reveal a contaminated drinking water supply in 1976. Lot layout severely limits any type of OLDS repair except a Retaining Tank/Holding Tank.

No soils evaluations were conducted by the BCDH in the area, however, soil mapping indicates Bowmansville and Lawrenceville soils. The Bowmansville soils, as per the USDA-NRCS description, consists of poorly and somewhat poorly drained soils. The Lawrenceville soils, as per the USDA-NRCS description, consists of moderately drained soils. These soil types are mapped across both properties. Due to a typical seasonal high water table in these soil types the existing subsurface OLDS on these parcels are discharging into the seasonal high water table which is considered Waters of the Commonwealth.

In concluding, this BCDH recommends the Township provide Public Sanitary Sewer System to these two homes along Almshouse Road.

#### **Meetinghouse Road near Schoolhouse Lane**

This area of concern consists of 2 parcels; TM# 51-003-093 and TM# 51-003-094 with lot sizes of 120,660 ft<sup>2</sup> and 12,327 ft<sup>2</sup> respectively. The homes were constructed 1988 and 1942 and are currently serviced by on-lot sewage disposal systems (OLDS) and individual water supplies (on-lot well).

TM# 51-003-093      Randazzo      2090 Meetinghouse Road      House built in 1988.  
No Record of OLDS.

TM# 51-003-094      Brahmadesam      2070 Meetinghouse Road      House built in 1942.  
No Record of OLDS.

Both of these parcels are located next to the Fetzer Tract which is planned for public sewer service. TM# 51-003-094 is only 12,327 ft<sup>2</sup> with dimensions of 75 ft. by 240.65 ft. with an existing subsurface OLDS and on-lot well in soils mapped Abbottstown classified by the USDA-NRCS as somewhat poorly drained. Due to a typical seasonal high water table in this soil type the existing subsurface OLDS on this parcel is discharging into the seasonal high water table which is considered Waters of the Commonwealth. The possibility of a replacement OLDS for the property is severely limited.

TM# 51-003-093 at 240.65 ft. by 500 ft. with an existing OLDS and on-lot well may allow a replacement OLDS on the property that may meet PA CODE Title 25 Chapter 73 standards. However, OLDS have limited functioning life even with proper maintenance. The current subsurface OLDS is more than likely discharging into a seasonal high water table, which is considered Waters of the Commonwealth, as soils evaluations by the BCDH on neighboring properties have demonstrated a shallow depth to seasonal high water table.

In concluding, the BCDH recommends the Township provide Public Sanitary Sewer System to these properties when reviewing the planned development of the Fetzer Tract.

### Valley Road & Creeklyn Section

This area of concern consists of 45 parcels; located along Valley Road, Woodland Avenue, Oak Avenue, Maple Avenue and Elm Avenue. The homes were constructed between 1860 and 2008 with the majority being constructed in the 1930s, 1940s and 1950s. All the homes are currently serviced by on-lot sewage disposal systems (OLDS) and individual water supplies (on-lot well). Of the 45 parcels 17 parcels are vacant land. Of the 17 vacant land parcels 6 of the parcels (51-011-013, 51-011-014, 51-011-018, 51-011-027, 51-011-037 & 51-011-043) are owned by Bucks County as open land, 1 parcel (51-011-016) contains the OLDS for parcel 51-011-020 and of the remaining 11 vacant parcels, eight are less than 10,000 ft<sup>2</sup>. There are three vacant parcels 51-011-061, 51-011-032, 51-011-069 that are 36,000 ft<sup>2</sup>, 19,000 ft<sup>2</sup> and 29,564 ft<sup>2</sup> respectively. The 28 vacant parcels range in lot size from 10,000 ft<sup>2</sup> to 70,439 ft<sup>2</sup> with half of the 28 under 20,000 ft<sup>2</sup>.

TM# 51-011-013	Bucks County	Valley Road	Vacant Land
TM# 51-011-012	Lazar	2034 Woodland Avenue	House built in 1977.
No Record of OLDS			
TM# 51-011-011	Lazar	Woodland Avenue	Vacant Land
TM# 51-011-014	Bucks County	2685 Valley Road	Vacant Land
TM# 51-011-014-001	Smith	2050 Oak Avenue	House built in 1953.
Alternate At-Grade Bed with Ecoflo Biofilter on 20" limiting zone. Installed and permitted as a repair in 2007.			
TM# 51-011-045	McCallister	2030 Oak Avenue	House built in 1969.
7 Seepage Trenches 2 ft. deep by 2 ft. wide by 45 ft. long permitted in 1968.			

TM# 51-011-047	Dickerson	2010 Oak Avenue	House built in 2006. Alternate At-Grade Bed with Ecoflo Biofilter on 20" limiting zone. Permitted in 2005 for a new home after 5 parcels were combined to make a buildable parcel.
TM# 51-011-018	Bucks County	2703 Valley Road	Vacant Land
TM# 51-011-017	McLaughlin	2071 Oak Avenue	House built in 1950, remodeled in 1990. No Record of OLDS, Permit to replace septic tank in 1975. Contaminated drinking water sample (240 coliform count) in 1959.
TM# 51-011-019	Hoelper	2070 Maple Avenue	House built in 1950. No Record of OLDS, Testing for a repair OLDS in 2005 with 21" limiting zone but well would need to be relocated.
TM# 51-011-020	Reynolds	2055 Oak Avenue	House built in 1940. No room to install the replacement Elevated Sand Mound Trenches on 28" limiting zone of fractured shale with voids. The elevated sand mound was Permitted in 1993 on the neighboring parcel 51-011-016 owned by the same.
TM# 51-011-016	Reynolds	Oak Avenue	Vacant Land but contains the 1993 Permitted Elevated Sand Mound Trenches on 28" limiting zone of fractured red shale with voids for the dwelling on parcel 51-011-020.
TM# 51-011-021	Carey	Maple Avenue	Vacant Land
TM# 51-011-022	Carey	Maple Avenue	Vacant Land
TM# 51-011-015	Carey	2020 Maple Avenue	House built in 1940. At-Grade Bed with Ecoflo Biofilter on 24" limiting zone. Permitted in 2009 to replace a malfunctioning OLDS.
TM# 51-011-055	Elsner	1994 Maple Avenue	House built in 1930. No Record of OLDS
TM# 51-011-057	Godshalk	Maple Avenue	Vacant Land
TM# 51-011-053	McLaughlin	2027 Oak Avenue	House built in 2008. At-Grade Bed with Ecoflo Biofilter on 20" limiting zone. Permitted in 2008 for a new home after 4 parcels were combined to make a buildable parcel.
TM# 51-011-048	Anzalone	2015 Oak Avenue	House built in 2007. At-Grade Bed with Ecoflo Biofilter on 20" limiting zone. Permitted in 2006 for a new home after 5 parcels were combined to make a buildable parcel.
TM# 51-011-027	Bucks County	Valley Road	Vacant Land
TM# 51-011-025	Celotto	2063 Maple Avenue	House built in 1985. No Record of OLDS

TM# 51-011-030	Stoltz	2046 Elm Avenue	House built in 1940. No Record of OLDS
TM# 51-011-024	Peppelman	2057 Maple Avenue	House built in 1988. Holding Tank Permitted in 1986 to replace a privy since there was no room to install an OLDS.
TM# 51-011-031	Manz	2030 Elm Avenue	House built in 1947. No Record of OLDS
TM# 51-011-023	McIlhinney	2015 Maple Avenue	House built in 1940. 2 Seepage Pits 7ft. deep by 8 ft. by 8 ft. Permitted in 1957.
TM# 51-011-062	Godshalk	1991 Maple Avenue	House built in 1950. Experimental Micro DRIP Irrigation Mound on 10" limiting zone. Installed in 2006 as a replacement for a malfunctioning OLDS.
TM# 51-011-063	Schroeder Brothers	1980 Elm Avenue	House built in 1949. No Record of OLDS. Permit for a Bull Run Valve to a Holding Tank in 2004 as a repair for a failed septic certification for a real estate transaction.
TM# 51-011-061	Manz	Elm Avenue	Vacant Land
TM# 51-011-064	Manz	1940 Elm Avenue	House built in 1973. 4 Seepage Trenches 2 ½ ft. deep by 3 ft. wide by 84 ft. long. Installed in 1971 to replace a Seepage Pit OLDS installed in 1957.
TM# 51-011-036-001	Williams	2065 Elm Avenue	House built in 1963. Double Seepage Pit (2 cones in one excavation) 6 ft. deep by 10 ft. by 20 ft. Permitted in 1962.
TM# 51-011-035	Hamilton	2033 Elm Avenue	House built in 1940. Seepage Pit 8 ft. by 8 ft. no record of depth. Permitted in 1960. In 1968 there was also an investigation of a sewage surface malfunction of the OLDS.
TM# 51-011-034	Price	Elm Avenue	Vacant Land
TM# 51-011-033	Mott	Elm Avenue	Vacant Land
TM# 51-011-032	Ciocca	Elm Avenue	Vacant Land
TM# 51-011-066	Tino	1989 Elm Avenue	House built in 2006. Elevated Sand Mound on 23" limiting zone. Permitted in 1994 as a new system for a new home that replaced a razed structure.
TM# 51-011-066-001	Maurer	Elm Avenue	Vacant Land
TM# 51-011-065	Maurer	1955 Elm Avenue	House built in 1960, remodeled in 1997. No Record of original Seepage Pit OLDS. Permit to reface the Seepage Pit and install a Bull Run Valve to a Holding Tank in 1994.
TM# 51-011-069	Tino	Elm Avenue	Vacant Land



TM# 51-011-037	Bucks County	Valley Road	Vacant Land
TM# 51-011-041 No Record of OLDS	Prater	2769 Valley Road	House built in 1940.
TM# 51-011-042 No Record of OLDS	Baker	2725 Valley Road	House built in 1940.
TM# 51-011-043	Bucks County	Valley Road	Vacant Land
TM# 51-011-044 No Record of OLDS. A repair evaluation was conducted in 1988. Deep Test Holes revealed a limiting zone of 6" to seasonal high water table.	Smith	2785 Valley Road	House built in 1950.
TM# 51-010-004 No Record of OLDS	Bucks County	2835 Valley Road	House built in 1900.
TM# 51-010-005 remodeled in 1997. No Record of OLDS	George	2851 Valley Road	House built in 1897,

The soils in this area have demonstrated shallow limiting zones to seasonal high water table and fractured red shale with voids. There are 14 parcels that contain OLDS where there is no record of the OLDS. All of these parcels have OLDS that are subsurface and surely discharge into Waters of the Commonwealth as demonstrated by those parcels that have had deep test holes evaluated and evidence has shown a seasonal high water table or fractured red shale with voids.

Of the permitted OLDS three properties contain holding tanks (51-011-024, 51-011-063, 51-011-065). There are four parcels (51-011-045, 51-011-004, 51-011-036-001 & 51-011-035) that have permitted OLDS prior to 1974 and do not meet PA CODE Title 25 Chapter 73 requirements, two parcels (51-011-020/016 & 51-011-066) with current PA CODE Title 25 Chapter 73 elevated sand mounds, five parcels (51-011-014-001, 51-011-047, 51-011-045, 51-011-053, & 51-011-048) with Alternate System At-Grade Beds with Ecoflo Biofilters that were installed to overcome specific site characteristics and parcel 51-011-062 with an Experimental DRIP Micro Mound as the only option for a replacement OLDS. All OLDS that have met the current PA CODE Title 25 Chapter 73 requirements where fortunate to have parcel sizes large enough to accommodate the repair or have combined parcels to have room to construct the OLDS. The size of the remaining parcels and the lot configuration with well locations extremely limits any type of replacement OLDS other than a Retaining Tank/Holding Tank. Those parcels that have not approached the life time of their existing OLDS may not have enough room for an OLDS other than a Retaining Tank/Holding Tank.

In concluding, the BCDH recommends the Township provide Public Sanitary Sewer System to the homes in the Valley Road and Creeklyn section.

This area of concern consists of 12 parcels that have lot sizes between 21,000 ft<sup>2</sup> and 42,000 ft<sup>2</sup>. There is 1 parcel at 42,000 ft<sup>2</sup>, 1 parcel at 26,250 ft<sup>2</sup>, 1 parcel at 24,360 ft<sup>2</sup> and 9 parcels at 21,000 ft<sup>2</sup>. The homes were constructed between 1949 and 2000 and are currently serviced by on-lot sewage disposal systems (OLDS) and individual water supplies (on-lot well). There are three vacant properties in this area.

TM# 51-009-001	Branch	2195 Long Lane	House built in 1989.
Elevated Sand Mound on 21" limiting zone to seasonal high water table. Permitted in 1988 as a new system for a new home.			

TM# 51-008-008	Zebrowski	2185 Long Lane	House built in 1977.
Elevated Sand Mound on 20" limiting zone to seasonal high water table. Permitted in 1975 as a new system for a new home. In 2012 a permit was issue to rehabilitate the Elevated Sand Mound by replacing the sand in an attempt to provide an adequate OLDS.			

TM# 51-008-007	Flannelly	2175 Long Lane	House built in 1973.
No record of OLDS.			

TM# 51-008-006-002	Lockett	Long Lane	Vacant Land
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TM# 51-008-006-001	Lockett	2155 Long Lane	House built in 1971.
8 3ft. wide 30" deep seepage trenches 990 ft <sup>2</sup> . Permitted in 1970 as a new system for a new home. Soils evaluation revealed grey clay at 24" likely seasonal high water table.			

TM# 51-008-005	Migueluez	2135 Long Lane	House built in 1970.
No record of OLDS.			

TM# 51-008-004	OConnor	Long Lane	Vacant Land
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TM# 51-008-003	OConnor	Long Lane	House built in 2000.
Elevated San Mound on 22" limiting zone to seasonal high water table. Permitted in 2000 as a new system for a new home. NOTE: Bucks County Board of Assessment has the property listed as Vacant Land.			

TM# 51-008-002	Scarpill	2105 Long Lane	House built in 1949.
No record of OLDS.			

TM# 51-008-001	Becker	2095 Long Lane	House built in 1950.
No record of OLDS.			

TM# 51-008-057	Becker	Long Lane	Vacant Land
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TM# 51-008-056	Huttenlock	2075 Long Lane	House built in 1976.
Elevated Sand Mound on 32" limiting zone of fractured shale. Permitted in 1975 as a new system for a new home.			

The soils in this area have demonstrated shallow limiting zones to seasonal high water table and fractured shale with voids. There are only four parcels (TM# 51-009-001, 51-008-008, 51-008-003 and 51-008-056) that have OLDS meeting current PA CODE Title 25 Chapter 73 Standards for Sewage Disposal Facilities in regards to soils. The remaining parcels contain OLDS

discharging to the seasonal high water table which is considered Waters of the Commonwealth as indicated by the properties that have had soils evaluations. Although maintenance through pumping may prolong the lifetime of the OLDS in this area, most of the parcel's OLDS are approaching the end of their lifetime and some parcel's OLDS are approaching 70 years old. The parcel size, parcel configuration, soils conditions and other site conditions of the parcels in this Long Lane area prohibits any type of replacement OLDS other than Retaining Tanks/Holding Tanks.

In concluding, this Department recommends the Township provide Public Sanitary Sewer System to the homes listed in this review of Long Lane.

### **Germinal Colony Section**

This area of concern consists of 59 parcels that have lot sizes between 15,000 ft<sup>2</sup> up to 21.9 acres. There are 3 parcels of less than 22,000 ft<sup>2</sup>, 23 parcels with an area between 22,000 ft<sup>2</sup> and 40,000 ft<sup>2</sup>, 11 parcels with an area between 40,000 ft<sup>2</sup> and 135,000 ft<sup>2</sup>, 1 parcel at 13.38 acrea and 1 parcel at 21.92 acres. There are 38 homes which were built before 1972, 3 homes were built between 1972 and 2000 and 11 homes have been built from 2000 to the present date. All the homes are currently serviced by on-lot sewage disposal systems (OLDS) and individual water supplies (on-lot well). There are 7 vacant parcels that exist in this section under review.

TM# 51-016-001      Earnest                      1026 Almshouse Road              House built in 1920.  
No record of OLDS. The property had a documented surface malfunction in 1984 along with testing for a replacement OLDS area. No suitable area for an OLDS could be delineated. In 2010 the property once again had a documented surface malfunction. The owner at the time made a plea to the Pennsylvania Department of Environmental Protection for public sewers. Warwick Township Manager Gail Weniger indicated that the property is in a public sewer area and to be patient as the sewer authority evaluates the situation. The property is currently for sale and real estate transaction requirements forced site testing for a replacement OLDS. One area meeting current PA Code Title 25 Chapter 73 was delineated with a 24" limiting zone to seasonal high water table. No permit has been issued.

TM#51-016-002      Salamone                      2194 Harmony Lane              House built in 1920.  
No record of OLDS. The property had a documented surface malfunction in 1999 along with testing for a replacement OLDS area. No suitable area for an OLDS could be delineated. A Holding Tank is the only option for a repair for the property. The owner is currently pumping the existing OLDS to eliminate any surface malfunction.

TM# 51-015-001      Makarski                      2184 Harmony Lane              House built in 1940.  
No record of OLDS.

TM# 51-015-002      Visco                              2174 Harmony Lane              House built in 2018.  
Elevated Sand Mound on 20" limiting zone of seasonal high water table. Permitted in 2017 as a new OLDS for a new home.

TM# 51-015-003      Guerry                              2164 Harmony Lane              House built in 2018  
after the existing home was razed. Elevated Sand Mound on 26" limiting zone to seasonal high water table. Permitted in 2017 as a new OLDS for the new home.

TM# 51-015-004	Zakusilo	2154 Harmony Lane	House built in 1933 remodeled in 2016. No record of original OLDS. Permit to replace building sewer and septic tank in 1984.
TM# 51-015-005	Kin	2140 Harmony Lane	House built in 2016 after the existing home built in 1940 was razed. Elevated Sand Mound on 20" limiting zone to seasonal high water table. Permitted in 2016 as a new OLDS for the new home.
TM# 51-015-006	Costello	2126 Harmony Lane	House built in 1910. No record of OLDS.
TM# 51-015-007	Stanley	2116 Harmony Lane	House built in 1940. No record of OLDS.
TM# 51-015-008	Aleixo	2106 Harmony Lane	House remodeled in 1990. Elevated Sand Mound on 17" limiting zone of seasonal high water table. Permitted in 1989 as a repair OLDS in an attempt to provide something adequate for the existing home.
TM# 51-015-009	Karabin	2094 Harmony Lane	House built in 1950. No record of OLDS.
TM# 51-015-010	Pereira	Harmony Lane	Vacant Land. Site testing for a new OLDS conducted in 2018. Permit issued in 2018 for an Alternate DRIP Irrigation OLDS on 28" limiting zone to seasonal high water table and 19% slope.
TM# 51-015-011-001	Dorsey	2046 Harmony Lane	House built in 2004. Alternate DRIP Irrigation on 22" limiting zone to seasonal high water table and 15% slope. Permitted in 2003 as a new OLDS for a new home.
TM# 51-015-011	Godfrey	2050 Harmony Lane	House built in 1999. Elevated Sand Mound on 24" limiting zone to seasonal high water table and 10% slope. Permitted in 1998 as a new OLDS for a new home.
TM# 51-015-011-002	Fitzgerald	2062 Harmony Lane	House built in 2004. Alternate DRIP Irrigation on 22" limiting zone to seasonal high water table and 15% slope. Permitted in 2003 as a new OLDS for a new home.
TM# 51-015-036	GRN Investments, LLC	992 Almshouse Road	House built in 1925. No record of OLDS.
TM# 51-015-045	Stancu	2167 Harmony Lane	House built in 1940. No record of OLDS.
TM# 51-015-034	O'Brien	2143 Harmony Lane	House built in 1940. No record of OLDS. Site testing for a new OLDS in 2012 for a Real Estate transaction with a Permit issued for an Elevated Sand Mound on 20" limiting zone to seasonal high water table. Permit expired in 2016 without the new OLDS being installed.
TM# 51-015-032-001	Hall	988 Jackaway Road	House built in 1927. No record of OLDS.



TM# 51-015-033 Fendler 2097 Harmony Lane House built in 1940, remodeled in 1994. No record of OLDS.

TM# 51-015-018 Tierney 2049 Harmony Lane House built in 2005. Elevated Sand Mound on 20" limiting zone to seasonal high water table and 12% slope. Permitted as a new OLDS for a new home in 2005 after combining 4 parcels to create a buildable parcel.

TM# 51-015-017 Silva Unnamed Paper Road off Harmony Lane Vacant land. Site testing in for a new OLDS conducted in 2014. Proposed Alternate DRIP Irrigation on 22" limiting zone to seasonal high water table and fractured shale on 20% slope. No Permit has been issued.

TM# 51-015-016 Silva Unnamed Paper Road off Harmony Lane Vacant land. Site testing for a new OLDS conducted in 2013. Proposed Alternate DRIP Irrigation on 21" limiting zone to seasonal high water table and fractured shale on 15% slope. No Permit has been issued.

TM# 51-015-032 Kostaras 908 Jackaway Road House built in 2007. Elevated Sand Mound on 20" limiting zone to seasonal high water table. Permitted in 2004 as a new OLDS for a new home.

TM# 51-015-030 Senf 970 Jackaway Road House built in 1900. No record of original OLDS. Two Deep Trenches 2ft wide by 50ft long by 4ft deep on 15" limiting zone to seasonal high water table. Permitted in 1981 as a repair in an attempt to provide an adequate OLDS for the existing home.

TM# 51-015-037 Hofreiter 979 Jackaway Road House built in 1948. No record of OLDS.

TM# 51-015-038-008 Gleason Jackaway Road Vacant Residential Land except for an outbuilding.

TM# 51-016-002.001 Gleason 964 Almshouse Road House built in 1900. Elevated Sand Mound on 20" limiting zone to seasonal high water table. Permitted in 2017 as a replacement OLDS for a malfunctioning OLDS since 1982. No record of the original OLDS.

TM# 51-016-003 Mathew 944 Almshouse Road House built in 1957. No record of OLDS.

TM# 51-016-004 Amanna 910 Almshouse Road House built in 1940. Seepage Pit 8 ft. by 8 ft. by 12 ft. deep. Permitted in 1969 as a repair to the existing OLDS Cesspool.

TM# 51-015-038 Garrard 2176 Colony Road House built in 1965. Five Seepage Trenches 2 ft. wide by 94 ft. long by 3 ft. deep. Permitted in 1964 as a new OLDS for a new home.

TM# 51-015-038-001 Haynes 2170 Colony Road. House built in 1957. Best Technical Guidance Elevated Sand Mound on 13" limiting zone to seasonal high water

table. Permitted in 2001 to replace the malfunctioning original OLDS permitted in 1957 as a Single Seepage Pit 8 ft. by 8 ft. by 9 ft. deep.

TM# 51-015-038-002 Yates                      2160 Colony Road                      House built in 1957.  
Single Seepage Pit 8 ft. by 8 ft. by 12 ft. deep. Permitted in 1957 as a new OLDS for a new home.

TM# 51-015-038-003 Krajewski                      2140 Colony Road                      House built in 1957.  
Single Seepage Pit 8 ft. by 8 ft. by 12 ft. deep. Permitted in 1957 as a new OLDS for a new home.

TM# 51-015-038-004 Fitzpatrick                      2126 Colony Road                      House built in 1950.  
Alternate Elevated Sand Mound on 21" limiting zone to seasonal high water table. Permitted in 1975 as a replacement OLDS to the malfunctioning original OLDS Single Seepage Pit 8 ft. by 8 ft. by 12 ft. deep that was permitted in 1957.

TM# 51-015-038-005 Hartkorn                      945 Jackaway Road                      House built in 1958.  
Three Seepage Pits 5 ft. by 5 ft. by 8 ft. deep. Permitted in 1958 as a new OLDS for a new home.

TM# 51-015-038-006 Kurman                      953 Jackaway Road                      House built in 1961.  
Two Seepage Pits 8 ft. by 8 ft. by 9 ft. deep. Permitted in 1961 as a new OLDS for a new home.

TM# 51-015-038-007 Trush                      965 Jackaway Road                      House built in 1968.  
Elevated Sand Mound on 20" limiting zone to seasonal high water table. Permitted in 2012 as a replacement OLDS for the malfunctioning original OLDS permitted in 1968 as 2 Seepage Pits 1 pit was 8 ft. by 24 ft. by 7 ft. deep and 1 pit 12 ft. by 19 ft. by 7 ft. deep.

TM# 51-015-029 Manzo                      958 Jackaway Road                      House built in 1975.  
No record of original OLDS. Permit in 1997 to repair the original OLDS Alternate Elevated Sand Mound by replacing the clogged piping and stone.

TM# 51-015-028 Piston                      948 Jackaway Road                      House built in 1960.  
Single Seepage Pit 10 ft. by 10 ft. by 7 ft. deep. Permitted in 1966 as a new OLDS for the home.

TM# 51-015-027 Redante                      Jackaway Road                      Vacant Land. Site testing for a new OLDS conducted in 2016. Proposed Alternate DRIP Irrigation on 29" limiting zone to seasonal high water table and fractured shale on 15% slope. No Permit has been issued.

TM# 51-015-026 Redante                      926 Jackaway Road                      House built in 1961.  
Alternate DRIP Irrigation on 24" limiting zone to seasonal high water table. Permitted in 2016 as a replacement OLDS for the malfunctioning original OLDS Permitted in 1961 as Two Seepage Pits 8 ft. by 8 ft. by 10 ft. deep.

TM# 51-015-025 Flaherty                      2122 Colony Road                      House built in 1963.  
Alternate DRIP Irrigation on 20" limiting zone to seasonal high water table. Permitted in 2013 as a replacement OLDS for the malfunctioning original OLDS Permitted in 1960 as a Single Seepage Pit 8 ft. by 8 ft. by 12 ft. deep.

TM# 51-015-024 Prime Dev. Group Paper Road off Harmony Lane. House built in 2018. Alternate Micro DRIP Irrigation Mound on 16" limiting zone to seasonal high water table on 15% slope. Permitted in 2016 as a new OLDS for a new home.

TM# 51-015-023 Silva Paper Road off Harmony Lane. Vacant Land. Site testing for a new OLDS conducted in 2013. Proposed Alternate DRIP Irrigation on 24" limiting zone to seasonal high water table on 15% slope. No Permit has been issued.

TM# 51-015-022 Tsypuk 2079 Harmony Lane House built in 2018. Alternate DRIP Irrigation Mound on 12" limiting zone to seasonal high water table and 14% slope. Permitted in 2016 as a new OLDS for a new home.

TM# 51-015-014 Silva 2080 Harmony Lane House built in 2015. Alternate DRIP Irrigation on 21" limiting zone to seasonal high water table. Permitted in 2012 as a new OLDS for a new home.

TM# 51-015-013 Davis 2090 Harmony Lane House built in 2018. Alternate DRIP Irrigation on 23" limiting zone to seasonal high water table. Permitted in 2016 as a new OLDS for a new home.

TM# 51-015-012 Warwick Golf Farm, Inc. Harmony lane Vacant Land.

TM# 51-015-039-002 Young 2109 Colony Road House built in 1958. Single Seepage Pit 8 ft. by 8 ft. by 11ft. deep. Permitted in 1957 as a new OLDS for a new home.

TM# 51-015-039-001 Appel 2117 Colony Road House built in 1958. Single Seepage Pit 8 ft. by 8 ft. by 11 ft. deep. Permitted in 1957 as a new OLDS for a new home. In 1965 the well water for the property became contaminated after the OLDS for the neighboring property was installed. The BCDH and State Health Department confirmed the contamination via dye testing.

TM# 51-015-039 Brauer 2129 Colony Road House built in 1965. Five Seepage Trenches 2 ft. by 90 ft. by 4 ft. deep. Soil description indicates loose gray gravel at 40". Permitted in 1965 as a replacement OLDS after the original OLDS of a Single Seepage Pit 8 ft. by 8 ft. by 6 ft. deep, also permitted in 1965 was found to contaminate the drinking water of parcel 51-015-039-001. The original OLDS was then replaced by a Single Triple Cone Seepage Pit 8ft. by 24 ft. by 6 ft. deep also permitted in 1965. This OLDS was also found to contaminate the drinking water of parcel 51-015-039-001.

TM# 51-015-040 Seaman 2137 Colony Road House built in 1961. Deep Trench 2 ft. by 130 ft. by 40" deep. Permitted in 1981 in an attempt to provide an adequate OLDS for the property after the owner of the time was found to be installing a repair trench off the original Two Seepage Pit OLDS 8 ft. by 8 ft. by 8 ft. deep that was malfunctioning without obtaining a permit. Original OLDS permitted in 1960.

TM# 51-015-041 Soltys 2143 Colony Road House built in 1961. Three Seepage Pits 8 ft. by 8 ft. by 10 ft. deep. Permitted in 1961 as a new OLDS for a new home.

TM# 51-015-042      Wolf                      2151 Colony Road                      House built in 1925.  
Seepage Bed w/Sand 30 ft. by 30 ft. by 5 ft. deep. Permitted in 1969 as a new OLDS.

TM# 51-015-043      Kates                      2165 Colony Road                      House built in 2005.  
Elevated Sand Mound on 20" limiting zone to seasonal high water table. Permitted in 2004 as a new OLDS for a new home.

TM# 51-015-044      Gardyas                      2173 Colony Road                      House built in 1970.  
Elevated Sand Mound permit is missing from BCDH records but was installed at the same time as the ESM for parcel 51-015-043. Permitted as a replacement OLDS in order to create a buildable lot for parcel 51-015-043.

TM# 51-013-022      Kates                      850 Almshouse Road                      House built in 1966.  
No record of OLDS.

TM# 51-013-023      Robins Nest Prop., LLC      800 Almshouse Road      House built in 1920. Also contains a former butcher shop. No record of OLDS. Site testing for two new Alternate DRIP Irrigation Mounds on 10" and 12" limiting zones to seasonal high water table in 2018 for a proposed Micro Brewery/Restaurant along with the existing home. The property is currently under Land Development Planning Review by the Pennsylvania Department of Environmental Protection.

The soils in this area have demonstrated shallow limiting zones to seasonal high water table and fractured shale with voids. The contaminated drinking water supply for parcel 51-015-039-001 in 1965 indicates the OLDS in the area are contaminating Waters of the Commonwealth. The drinking water wells in this area of concern were replaced when a public water line was routed along Harmony Lane when the large properties along Dark Hollow Road were developed in the late 1990's through early 2000's. Therefore, the drinking water testing results indicated in the proposed ACT 537 plan are misleading. Well construction for these new wells is likely up to current standards. These new wells are also drawing from an aquifer that is below the one that is of a seasonal high water table as has been shown in recent deep test hole evaluations. Please note: the seasonal high water table is still considered Waters of the Commonwealth. The locations of the new wells in the Germinal Colony area greatly restrict some of the properties from having enough suitable space for a replacement OLDS if needed. Furthermore, some of the parcels in the Germinal Colony are so small or the lot configuration is so convoluted or the soils so restrictive that the only alternative for a replacement OLDS would be limited to a Retaining Tank/Holding Tank.

The new homes that have been built since 2000 mostly use Alternate type OLDS to overcome site constraints of limiting zones to seasonal high water table, fractured shale or slope. Without the alternate type technology these parcels would not have been developed. Of those parcels that have new homes constructed, the parcels have no area for a replacement OLDS if the need arises. These parcels would be limited to a Retaining Tank/Holding Tank for a repair system.

The proposed Micro Brewery currently being planned on parcel 51-013-023 is proposing to use Alternate Type Technology for the OLDS to overcome site restrictions. This type of use of an OLDS does require a significant amount of maintenance in order for the OLDS to remain adequate. The BCDH generally recommends any restaurant type facility to try and connect to a public sewer system if at all possible to avoid the problems associated with OLDS malfunctions that the BCDH has experienced over the years with food facilities.



There is a significant percentage of older homes in this area that have not had their original OLDS replaced with current PA CODE Title 25 Chapter 73 OLDS. Maintenance alone will not prevent these OLDS from being replaced. If there is area for a suitable OLDS it most likely would be either a Best Technical Guidance OLDS or some Site Specific Alternate/Experimental OLDS as has already been demonstrated on several properties in this area. Those parcels that do not qualify for any of the OLDS options would be limited to a Retaining Tank/Holding Tank as a repair.

In concluding, this Department recommends the Township provide Public Sanitary Sewer System to the homes listed in this review of the Germinal Colony.

Overall, this department has reviewed the records of 132 parcels in the areas that the BCDH is recommending for a public sanitary sewer connection. Of those 132 parcels, 105 parcels contain residential homes. Of the 105 parcels that contain residential homes 66 homes were built prior to 1972 when the state first established the current Sewage Facilities ACT. Of those 66 homes all 66 have subsurface OLDS in soils that have demonstrated a seasonal high water table only inches to the ground surface. That seasonal high water table is also considered Waters of the Commonwealth that the Sewage Facilities ACT was created to protect.

Therefore, the BCDH is strongly recommending that Warwick Township consider these areas for connection to a public sanitary sewer system.

Should you have any questions or require copies of the actual permits or individual files for any of the properties evaluated, feel free to contact me.

Sincerely,

  
Eric Brosius

Sewage Enforcement Officer #02049

Phone: 215-345-3328

Email: <ejbrosius@buckscounty.org>

Cc/ Central  
District  
Ebert Engineering, Inc.  
Bucks County Planning Commission  
Elizabeth Mahoney, PA DEP  
Mary Eberle, Esq., Grim, Biehn & Thatcher, Warwick Township Solicitor

## **APPENDIX E**

### **BUCKS COUNTY PLANNING COMMISSION CORRESPONDENCE**



# TOWNSHIP OF WARWICK

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Kyle W. Seckinger, Township Manager

March 7, 2019

Mr. Edward Kisselback, Jr., Chairman  
Bucks County Planning Commission  
1260 Almshouse Road  
Doylestown, PA 18901

Subject: Warwick Township Act 537  
Warwick Township, Bucks County

Re: Response to Warwick Township Official Act 537 Review

Dear Mr. Kisselback,

Warwick Township is in receipt of Bucks County Planning Commission (BCPC) review letter dated January 2, 2019 for the Warwick Township Official Act 537 Plan. Each review comment has been outlined below along with a response to each comment:

***BCPC Comment No. 1:*** *Comprehensive Plan and proposed service areas – The Warwick Township Comprehensive Plan (2007) notes that the township should make sound land use decisions about density and location of development based on a broad list of planning factors such as natural features, neighborhood character, transportation consideration, and overall development intensity and then support those decisions with a consistent sewage facilities plan. A recommended action of the comprehensive plan is to review and revise the Act 537 sewage facilities plan to ensure its consistency with established planning policies.*

*The comprehensive plan divides the township into two distinct areas: Development and Natural Resources/Agricultural. The Development area is primarily served by public water and sewer and has sewer lines throughout. Some larger parcels within the Development area are not served by public sewer, including some open space parcels and older vacation subdivisions still served by functioning on-lot systems. Within the Natural Resources/Agricultural areas, permitted residential development must rely on on-lot water and sewer facilities.*

*There are some potential conflicts between the Act 537 update and the comprehensive plan that the township should be aware of, they are noted below:*

- a. The submitted Sewage Facilities and Services Areas map that supplements the Act 537 update is generally consistent with the comprehensive plan's Future Land Use Plan. However, there are several areas designated as Development areas on the comprehensive plan's Future Land Use plan that are not in a specific sewer service area:*

- 1) *TMPs #51-10-45, 51-10-46, 51-10-47, 51-10-48, 51-10-48-1, 51-10-48-2, 51-10-48-3, 51-10-48-4, and 51-10-48-5, located south of Mill Road between the Jamison Hunt and Stonebridge 1 developments.*

**Township Response No. 1(a)(1):** Based on the Tier I evaluation, Warwick Township has not identified a current need for public sewer service for these nine properties. With the potential of a residential subdivision in this area and the identification of these properties as development areas in the Comprehensive Plan, Warwick Township has expanded the Fish Creek Public Sewer Service Area to include these developed and undeveloped lots within the Public Sewer Service Area. This area will continue to utilize their existing on-lot sewage disposal systems and they will be monitored under the Warwick Township On-lot Sewage Management Program.

Connection of the existing developed and undeveloped lots to public sewer in this area will be developer driven in this area. If the parcel identified as "Map ID B" on the attached Overall Sewer Plan is developed, then public sewer will be available at that time to the surrounding parcels for connection.

The revised Map No. 1 showing the inclusion of this area in the Fish Creek Public Sewer Service Area is attached.

- 2) *TMPs #51-13-29, 51-13-30, 51-13-31, 51-13-32, 51-13-33, 51-13-34, 51-13-35, 51-13-35-1, 51-13-36, 51-13-36-1, and 51-13-37, located between Rushland, Watson and Almshouse roads*

**Township Response No. 1(a)(2):** This area is known as Germinal Colony. Based on the Tier I evaluation performed, this area will continue to remain on individual on-lot systems under the Warwick Township On-Lot Sewage Management Program (SMP). Warwick Township will continue to monitor these systems under the On-Lot SMP, and should evidence of malfunction be identified in the future, Warwick Township will re-evaluate the connection of these properties to the Country Crossing Public Sewer System. Until such time, the Germinal Colony area will continue to remain on individual on-lot sewage disposal systems and monitored under the sewage management program.

The four lots adjacent to the Germinal Colony area (Tax Map Parcel #51-013-036, #51-013-036-001, #51-013-035-001, and #51-013-037) will also continue to remain on individual on-lot systems under the Warwick Township On-lot SMP. These four lots are large enough for potential replacement areas and/or repair should the existing on-lot systems malfunction. Should evidence of malfunction be identified in the future, Warwick Township will evaluate the connection of these properties to the Country Crossing Public Sewer System at that time.

- 3) *TMPs #51-13-11 through 51-13-20-2, located east of Bristol Road between Mearns Road and the Country Crossing development.*

**Township Response No. 1(a)(3):** Warwick Township has not identified a current need for public sewer service for Tax Map Parcel #51-13-11 through 51-13-20-2 located east of Bristol Road



between Mearns Road and the Country Crossing development. These properties will continue to utilize existing individual on-lot systems under the Warwick Township On-Lot Sewage Management Program (SMP). Should evidence of malfunction be identified in the future, Warwick Township will evaluate the connection of these properties to the Country Crossing Public Sewer System at that time.

***BCPC Comment No. 2: Contaminated Well*** – *The submitted Existing Well Analysis for Water Sample Results Map identifies two parcels located to the North of the intersection of Valley and Almshouse roads (TMPs #51-1-10-4 and 51-1-10-9) which are noted as having total coliform counts greater than the minimum acceptable limits, Soil limitation Maps 4A, B, C and D indicate that the area where the two tracts are located has moderate to very limited suitability for on-lot disposal systems. Although these tracts are located within the Natural Resources/Agricultural area on the Future Land Use Plan in the comprehensive plan, the township should consider including these two tracts within a public sewer service area and connecting them to public services in the future.*

**Township Response No. 2:** Warwick Township has considered the connection of this property to the existing public sewer system and has not identified a current need for public sewer service for this property given the size of the lot. This property will continue to be monitored under the Warwick Township On-lot Sewage Management Program. Should evidence of malfunction arise, Warwick Township will re-evaluate the addition of this property to the Fish Creek Public Sewer Service Area at that time.

***BCPC Comment No. 3: Sewer services areas*** – *Numerous sites are planned for development that lie outside the sewer service areas boundaries. The future development parcels include the Fetzer Tract, Prestige Properties, Walker Tract, and Toll Brothers parcels and are designated as special study areas (proposed/potential development). These special study areas are surrounded on two or more sides by public sewer service areas.*

*Chapter III, Existing Sewage Facilities, of the update provides an analysis of the capacity of the sewage treatment facilities in the township and indicated that sufficient capacity is available to treat the projected flow for the special study areas mentioned above. We understand that these properties are being studied for inclusion in the sewer services area, so including them in the sewer service area at this time appears reasonable. We suggest that the township consider expanding the public sewer service areas to include these parcels in this plan.*

*In addition, within the designated sewer service areas, there are several sites which are to remain using on-lot systems under a sewage management program. These areas include older, small lot communities and the Mearns Road Industrial Park and are in the designated Development area, as identified by the comprehensive plan. We suggest that these areas not be part of the sewer service areas because they are currently served by on-lot systems and public sewer service is not planned.*

*We suggest that an additional sewer service map be included for better understanding. This map would include parcels within the sewer service areas that are currently served, or will be served,*

*within a designated time frame and areas outside the sewer service area that are, or will be, served by on-lot systems, unless these systems are proven to be failing.*

**Township Response No. 3:** The Fetzer Tract and Prestige Property will be included into the Fish Creek Public Sanitary Sewer Service Area through a Special Study. When evaluating the existing infrastructure, these two development potentials were taken into consideration. The Walker Tract ("Map ID E") is located within the Fish Creek Public Sewer Service area. The potential residential development ("Map ID B") has been included within the Fish Creek Public Sanitary Sewer Service Area. The revised Map No. 1 showing the inclusion of these areas in the Fish Creek Public Sewer Service Area is attached.

Regarding the Mearns Road Industrial Park, based on the Tier I evaluation performed, Warwick Township has not identified a current need for these lots. This area is located within the Country Creek Sanitary Sewer Service Area and will continue to utilize the existing functioning onlot sewage disposal systems and monitored under the sewage management program.

The map included in the Act 537 Plan identifies these areas that will remain within the public sewer service area but will also remain served by on-lot systems under the on-lot sewage management program. These areas are identified by purple hatching.

If you need any additional information or have any questions concerning the matter, please feel free to contact our office.

Sincerely,

A handwritten signature in black ink, appearing to read 'K. Seckinger', with a stylized flourish at the end.

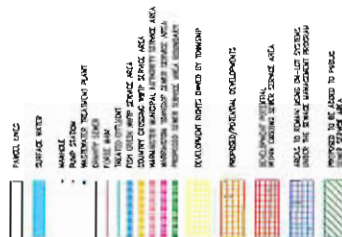
Kyle W. Seckinger, Manager  
Warwick Township

Enclosure

CC: Tara Bernard, Ebert Engineering, Inc.

[illegible]

### LEGEND



**NOTE:**  
ANDERSON, GEORGE, ARRESTED 10/20/1935; 10/21/1935; 10/22/1935; 10/23/1935; 10/24/1935; 10/25/1935; 10/26/1935; 10/27/1935; 10/28/1935; 10/29/1935; 10/30/1935; 10/31/1935; 11/1/1935; 11/2/1935; 11/3/1935; 11/4/1935; 11/5/1935; 11/6/1935; 11/7/1935; 11/8/1935; 11/9/1935; 11/10/1935; 11/11/1935; 11/12/1935; 11/13/1935; 11/14/1935; 11/15/1935; 11/16/1935; 11/17/1935; 11/18/1935; 11/19/1935; 11/20/1935; 11/21/1935; 11/22/1935; 11/23/1935; 11/24/1935; 11/25/1935; 11/26/1935; 11/27/1935; 11/28/1935; 11/29/1935; 11/30/1935; 12/1/1935; 12/2/1935; 12/3/1935; 12/4/1935; 12/5/1935; 12/6/1935; 12/7/1935; 12/8/1935; 12/9/1935; 12/10/1935; 12/11/1935; 12/12/1935; 12/13/1935; 12/14/1935; 12/15/1935; 12/16/1935; 12/17/1935; 12/18/1935; 12/19/1935; 12/20/1935; 12/21/1935; 12/22/1935; 12/23/1935; 12/24/1935; 12/25/1935; 12/26/1935; 12/27/1935; 12/28/1935; 12/29/1935; 12/30/1935; 12/31/1935; 1/1/1936; 1/2/1936; 1/3/1936; 1/4/1936; 1/5/1936; 1/6/1936; 1/7/1936; 1/8/1936; 1/9/1936; 1/10/1936; 1/11/1936; 1/12/1936; 1/13/1936; 1/14/1936; 1/15/1936; 1/16/1936; 1/17/1936; 1/18/1936; 1/19/1936; 1/20/1936; 1/21/1936; 1/22/1936; 1/23/1936; 1/24/1936; 1/25/1936; 1/26/1936; 1/27/1936; 1/28/1936; 1/29/1936; 1/30/1936; 1/31/1936; 2/1/1936; 2/2/1936; 2/3/1936; 2/4/1936; 2/5/1936; 2/6/1936; 2/7/1936; 2/8/1936; 2/9/1936; 2/10/1936; 2/11/1936; 2/12/1936; 2/13/1936; 2/14/1936; 2/15/1936; 2/16/1936; 2/17/1936; 2/18/1936; 2/19/1936; 2/20/1936; 2/21/1936; 2/22/1936; 2/23/1936; 2/24/1936; 2/25/1936; 2/26/1936; 2/27/1936; 2/28/1936; 2/29/1936; 2/30/1936; 3/1/1936; 3/2/1936; 3/3/1936; 3/4/1936; 3/5/1936; 3/6/1936; 3/7/1936; 3/8/1936; 3/9/1936; 3/10/1936; 3/11/1936; 3/12/1936; 3/13/1936; 3/14/1936; 3/15/1936; 3/16/1936; 3/17/1936; 3/18/1936; 3/19/1936; 3/20/1936; 3/21/1936; 3/22/1936; 3/23/1936; 3/24/1936; 3/25/1936; 3/26/1936; 3/27/1936; 3/28/1936; 3/29/1936; 3/30/1936; 3/31/1936; 4/1/1936; 4/2/1936; 4/3/1936; 4/4/1936; 4/5/1936; 4/6/1936; 4/7/1936; 4/8/1936; 4/9/1936; 4/10/1936; 4/11/1936; 4/12/1936; 4/13/1936; 4/14/1936; 4/15/1936; 4/16/1936; 4/17/1936; 4/18/1936; 4/19/1936; 4/20/1936; 4/21/1936; 4/22/1936; 4/23/1936; 4/24/1936; 4/25/1936; 4/26/1936; 4/27/1936; 4/28/1936; 4/29/1936; 4/30/1936; 5/1/1936; 5/2/1936; 5/3/1936; 5/4/1936; 5/5/1936; 5/6/1936; 5/7/1936; 5/8/1936; 5/9/1936; 5/10/1936; 5/11/1936; 5/12/1936; 5/13/1936; 5/14/1936; 5/15/1936; 5/16/1936; 5/17/1936; 5/18/1936; 5/19/1936; 5/20/1936; 5/21/1936; 5/22/1936; 5/23/1936; 5/24/1936; 5/25/1936; 5/26/1936; 5/27/1936; 5/28/1936; 5/29/1936; 5/30/1936; 5/31/1936; 6/1/1936; 6/2/1936; 6/3/1936; 6/4/1936; 6/5/1936; 6/6/1936; 6/7/1936; 6/8/1936; 6/9/1936; 6/10/1936; 6/11/1936; 6/12/1936; 6/13/1936; 6/14/1936; 6/15/1936; 6/16/1936; 6/17/1936; 6/18/1936; 6/19/1936; 6/20/1936; 6/21/1936; 6/22/1936; 6/23/1936; 6/24/1936; 6/25/1936; 6/26/1936; 6/27/1936; 6/28/1936; 6/29/1936; 6/30/1936; 7/1/1936; 7/2/1936; 7/3/1936; 7/4/1936; 7/5/1936; 7/6/1936; 7/7/1936; 7/8/1936; 7/9/1936; 7/10/1936; 7/11/1936; 7/12/1936; 7/13/1936; 7/14/1936; 7/15/1936; 7/16/1936; 7/17/1936; 7/18/1936; 7/19/1936; 7/20/1936; 7/21/1936; 7/22/1936; 7/23/1936; 7/24/1936; 7/25/1936; 7/26/1936; 7/27/1936; 7/28/1936; 7/29/1936; 7/30/1936; 7/31/1936; 8/1/1936; 8/2/1936; 8/3/1936; 8/4/1936; 8/5/1936; 8/6/1936; 8/7/1936; 8/8/1936; 8/9/1936; 8/10/1936; 8/11/1936; 8/12/1936; 8/13/1936; 8/14/1936; 8/15/1936; 8/16/1936; 8/17/1936; 8/18/1936; 8/19/1936; 8/20/1936; 8/21/1936; 8/22/1936; 8/23/1936; 8/24/1936; 8/25/1936; 8/26/1936; 8/27/1936; 8/28/1936; 8/29/1936; 8/30/1936; 8/31/1936; 9/1/1936; 9/2/1936; 9/3/1936; 9/4/1936; 9/5/1936; 9/6/1936; 9/7/1936; 9/8/1936; 9/9/1936; 9/10/1936; 9/11/1936; 9/12/1936; 9/13/1936; 9/14/1936; 9/15/1936; 9/16/1936; 9/17/1936; 9/18/1936; 9/19/1936; 9/20/1936; 9/21/1936; 9/22/1936; 9/23/1936; 9/24/1936; 9/25/1936; 9/26/1936; 9/27/1936; 9/28/1936; 9/29/1936; 9/30/1936; 10/1/1936; 10/2/1936; 10/3/1936; 10/4/1936; 10/5/1936; 10/6/1936; 10/7/1936; 10/8/1936; 10/9/1936; 10/10/1936; 10/11/1936; 10/12/1936; 10/13/1936; 10/14/1936; 10/15/1936; 10/16/1936; 10/17/1936; 10/18/1936; 10/19/1936; 10/20/1936; 10/21/1936; 10/22/1936; 10/23/1936; 10/24

## WAGE FACILITIES AND SERVICE AREAS FOR

WARWICK TOWNSHIP - ACT 537

PREPARED FOR  
WARWICK TOWNSHIP WATER & SEWER AUTHORITY  
**Ebert Engineering, Inc.**  
Water and Wastewater Engineering

**Water and Wastewater Engineering**  
P.O. Box 502  
Seattle, WA 98101-0502  
Phone (206) 368-0700  
Fax (206) 368-0704

Checked By	Scale	Job No.	Date	Drawing No.
CHP	1/8" UNITS	100-004	09/03/00	

Member	Description	Rate
1	REVISED SEWER SERVICE AREAS	09/21/18
2	EXPANDED SEWER SERVICE AREAS	07/24/19
3	REVISED SEWER SERVICE AREAS	02/05/19
4	REVISED PROPOSED SEWER SERVICE AREA	03/04/19

Run	Location	Date	Time	File	AS Number	U2/43/16	1 of 2
1						100-00	
2						030-00	



The Almshouse Neshaminy Manor Center 1260 Almshouse Road  
Doylestown, Pennsylvania 18901 215.345.3400 FAX 215.345.3886  
E-mail: bcpc@buckscounty.org

PLANNING COMMISSION:  
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Walter S. Wydro

Evan J. Stone  
*Executive Director*

050-043

January 2, 2019  
BCPC #51-18-WS1

#### MEMORANDUM

TO: Warwick Township Board of Supervisors  
Warwick Township Planning Commission

FROM: Bucks County Planning Commission

SUBJECT: Proposal to Update the Official Act 537 Sewage Facilities Plan for Warwick Township  
Applicant: Board of Supervisors  
Received: November 19, 2018  
Hearing Date: Not set

In accordance with the provisions of the Pennsylvania Sewage Facilities Planning Act (Act 537) and Section Sections 304 of the Pennsylvania Municipalities Planning Code, this proposal was sent to the Bucks County Planning Commission for review. The following review was prepared by the staff and endorsed by the Bucks County Planning Commission at a meeting held on January 2, 2019.

#### GENERAL INFORMATION

Proposed Action: Amend and update the official Act 537 sewage facilities plan for Warwick Township which was last updated in 1995. The intent of the plan was to review the township's existing and proposed public sanitary sewer service areas, existing and future needs, resolve zoning inconsistencies, and provide guidance to future wastewater disposal policies and procedures.

Highlights from the *Warrington Township Act 537 Sewage Facilities Plan Update* include the following:

- A. Three areas are proposed to be added to the Fish Creek Sewer WWTP services area, they are identified by the following tax parcels:
1. TMPs #51-1-3, 51-1-4, 51-1-6-1, 51-1-7, and 51-1-7-1, located northeast of Warwick Road at its intersection with Sarah's Lane.
  2. TMP #51-3-62, located southeast of Stony Road at its intersection with Bentley Drive.
  3. TMPs #51-10-24-1 through -41, located approximately 900 feet west of the School and Mill roads intersection.
- B. The update outlines a number of 537 Special Studies that are currently being conducted to include future sewage flow projections associated with the Central Park at Warwick subdivision (TMPs #51-3-31-2, 51-3-31-3, and 51-3-31-4) and Fetzer Tract properties (TMPs #51-3-89 and 51-3-89-2) into public sewer services areas.





- C. The update establishes four sewer service study areas: Fish Creek, Country Crossing, Warminster and Warrington service areas. The township is served by both the Fish Creek and Country Crossing WWTPs. It is noted that two small areas of Warwick are within the Warminster and Warrington public sewer services areas and sewage flows from these areas are conveyed to treatment facilities within those two respective townships.

## COMMENTS

We commend the township officials for undertaking this update to the township's official Act 537 Plan. The plan is comprehensive and generally consistent with the township's comprehensive plan and sewage facilities plans as discussed below.

1. **Comprehensive Plan and proposed service areas**—The *Warwick Township Comprehensive Plan* (2007) notes that the township should make sound land use decisions about density and location of development based on a broad list of planning factors such as natural features, neighborhood character, transportation considerations, and overall development intensity and then support those decisions with a consistent sewage facilities plan. A recommended action of the comprehensive plan is to review and revise the Act 537 sewage facilities plan to ensure its consistency with established planning policies.

The comprehensive plan divides the township into two distinct areas: Development and Natural Resources/Agricultural. The Development area is primarily served by public water and sewer and has sewer lines throughout. Some larger parcels within the Development area are not served by public sewer, including some open space parcels and older vacation subdivisions still served by functioning on-lot systems. Within the Natural Resources/Agricultural areas, permitted residential development must rely on on-lot water and sewer facilities.

There are some potential conflicts between the Act 537 update and the comprehensive plan that the township should be aware of, they are noted below:

- a. The submitted Sewage Facilities and Services Areas map that supplements the Act 537 update is generally consistent with the comprehensive plan's Future Land Use Plan. However, there are several areas designated as Development areas on the comprehensive plan's Future Land Use plan that are not in a specific sewer service area:
  - 1) TMPs #51-10-45, 51-10-46, 51-10-47, 51-10-47-1, 51-10-48, 51-10-48-1; 51-10-48-2, 51-10-48-3, 51-10-48-4, and 51-10-48-5, located south of Mill Road between the Jamison Hunt and Stonebridge 1 developments
  - 2) TMPs #51-13-29, 51-13-30, 51-13-31, 51-13-32, 51-13-33, 51-13-34, 51-13-35, 51-13-35-1, 51-13-36, 51-13-36-1, and 51-13-37, located between Rushland, Watson and Almshouse roads
  - 3) TMPs #51-13-11 through 51-13-20-2, located east of Bristol Road between Mearns Road and the Country Crossing development
2. **Contaminated well**—The submitted Existing Well Analysis for Water Sample Results Map identifies two parcels located to the north of the intersection of Valley and Almshouse roads (TMPs #51-1-10-4 and 51-1-10-9) which are noted as having total coliform counts greater than the minimum acceptable limits. Soil limitation Maps 4 A, B, C and D indicate that the area where the two tracts are located has moderate to very limited suitability for on-lot disposal systems. Although these tracts are located within the Natural Resources/Agricultural area on the Future Land Use Plan in the comprehensive

plan, the township should consider including these two tracts within a public sewer service area and connecting them to public services in the future.

3. Sewer services areas—Numerous sites are planned for development that lie outside the sewer service areas boundaries. These future development parcels include the Fetzer Tract, Prestige Properties, Walker Tract, and Toll Brothers parcels and are designated as special study areas (proposed/potential development). These special study areas are surrounded on two or more sides by public sewer service areas.

Chapter III, Existing Sewage Facilities, of the update provides an analysis of the capacity of the sewage treatment facilities in the township and indicates that sufficient capacity is available to treat the projected flow for the special study areas mentioned above. We understand that these properties are being studied for inclusion in the sewer services area, so including them in the sewer service area at this time appears reasonable. We suggest that the township consider expanding the public sewer service areas to include these parcels in this plan.

In addition, within the designated sewer services areas, there are several sites which are to remain using on-lot systems under a sewage management program. These areas include older, small lot communities and the Mearns Road Industrial Park and are in the designated Development area, as identified by the comprehensive plan. We suggest that these areas not be part of the sewer service areas because they are currently served by on-lot systems and public sewer service is not planned.

We suggest that an additional sewer service map be included for better understanding. This map would include parcels within the sewer service areas that are currently served, or will be served, within a designated time frame and areas outside the sewer service area that are, or will be, served by on-lot systems, unless these systems are proven to be failing.

Once the plan is approved by the Pennsylvania Department of Environmental Protection, we request that the township send a final copy of the Act 537 plan to our office for our files.

DCZ:dc/rml

cc: Mike Sullivan, Ebert Engineering, Inc.  
Genevieve Kostick, BCDH  
Elizabeth Mahoney, PaDEP  
Mary Eberle, Esq., Grim, Biehn & Thatcher, Township Solicitor  
Kyle Seckinger, Township Manager (via email)

**APPENDIX F**  
**PUBLIC NOTICE**


**PUBLIC COMMENT**  
**WARWICK TOWNSHIP ADOPTION**  
**OF**  
**WARWICK TOWNSHIP ACT 537 PLAN**

Public Comment Period:

First Day: August 23, 2020

Last Day: September 22, 2020

Number of Comments Received: No public comments were received.

Certified By:  Kyle Seckinger

Date of Certification: 9/23/20



## Bucks County, SS.

### NOTICE

In accordance with the requirements of Title 25, Chapter 71 of the Pennsylvania Code, Warwick Township is accepting written comments over the next 30 days on the proposed adoption of the Warwick Township Official Sewage Facilities (Act 537) Plan Update.

The Warwick Township Act 537 Plan Update specifically addresses defining the public sewer service areas within the Township limits, expanding the Fish Creek Service Area, sewage facilities planning to increase Fish Creek Wastewater Treatment Plant current permitted annual average capacity by 47,790 gpd and addressing three areas outlined in the 1995 Plan proposed to be connected to public sanitary sewer service.

Warwick Township is broken up into five service areas: Fish Creek Service Area, Country Crossing Service Area, Warrington Township Service Area, Warminster Township Service Area and On-Lot Sewage Disposal Service Area. The selected alternatives for each service area are outlined below:

The Fish Creek Service Area has one area outlined in the 1995 plan (Valley Road) that was proposed to be connected to public sewer. The selected alternative for this area is to remain in the public sanitary sewer service area but continue to utilize their existing on-lot sewage disposal system. This area will be monitored under the Sewage Management Ordinance. Warwick Township will continue to re-evaluate this area every six years through sanitary and well surveys. Should the evaluation identify increases in on-lot malfunctions or impacts to individual water supply wells, the selected alternative is to provide these properties with access to public sewer through installation of a low pressure sanitary sewer system which will connect to the existing Fish Creek public sanitary sewer system. The Fish Creek WWTP has available treatment capacity should this area need to connect to public sewer.

Bretton Hills previously obtained PADEP planning approval by a Special Study to be included in the Fish Creek Public Sanitary Sewer Service Area. This area will be provided with public sanitary sewer when the public sanitary sewer is extended by an adjacent proposed development.

The potentially developable areas within and around the Fish Creek Service Area were evaluated. The Fish Creek Public Sanitary Sewer Service Area was expanded to include the potentially developable areas identified on the Overall Sewer Plan along with the inclusion of the Feizer Tract and the Prestige Property proposed. The Act 537 Plan identified the new boundaries of the Fish Creek Public Sanitary Sewer Service Area. The existing Fish Creek WWTP has the capacity to service the additional flows created by the service area expansion. This Act 537 Plan Update will provide the necessary planning to allow Fish Creek WWTP to revise and increase the NPDES Permit from an annual average of 0.85 mgd to 0.878 mgd.

The Country Crossing Service Area has two areas outlined in the 1995 plan (Gorminal Colony and Warwick Commons) that were proposed to be connected to public sewer. The selected alternative for these two properties is for them to remain in the public sanitary sewer service area but continue to utilize their existing on-lot sewage disposal

at system. These areas will be monitored under the Sewage Management Ordinance. Warwick Township will continue to re-evaluate the Gorminal Colony area every six years through sanitary and well surveys. Should the evaluation identify increases in on-lot malfunctions or impacts to individual water supply wells, the selected alternative is to provide these properties with access to public sewer through installation of a low pressure sanitary sewer system which will connect to the existing Country Crossing public sanitary sewer system. Existing public sanitary sewer is available for properties within the Warwick Commons Industrial Park to connect in the future. The Country Crossing WWTP has available treatment capacity should these two areas need to connect to public sewer.

The selected Alternative for the Warminster Township Service Area is the existing residences will remain connected to public sewer with no currently planned additional connection in the service area.

The selected Alternative for the Warrington Township Service Area is the existing residences will remain connected to public sewer with no currently planned additional connections in the service area.

The selected Alternative for the On-Lot Service Area will continue to be service by on-lot sewage disposal systems and monitored by the Sewage Management Ordinance. Public sanitary sewer will not be provided to this service area.

There is a 30-day period during which the Act 537 Plan is available to be viewed at the Warwick Township building, at 1733 Township Greene, Jamison, PA 18929 between the normal hours of operation. The review period shall extend until the close of business on the thirtieth day after the date of this public notice. Written comments may be submitted to Kyle Seckinger, Township Manager, at the above Township Building address or by email to Catherine Topley at ctopley@warwick-township.org.  
11 Aug 23 7357647

WARWICK TOWNSHIP  
1733 TOWNSHIP GREENE ATTN ASHLEY  
CASEY

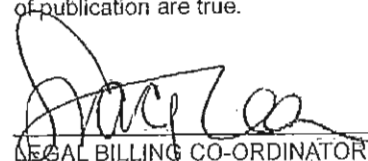
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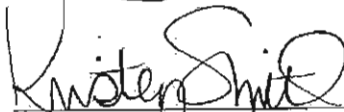
0007357647-01

Stacey Lear being duly affirmed according to law, deposes and says that he/she is the Legal Billing Co-ordinator of the INTELLIGENCER INCORPORATED, Publisher of The Intelligencer, a newspaper of general circulation, published and having its place of business at Doylestown, Bucks County, Pa. and Horsham, Montgomery County, Pa.; that said newspaper was established in 1886; that securely attached hereto is a facsimile of the printed notice which is exactly as printed and published in said newspaper on

August 23, 2020

and is a true copy thereof; and that this affiant is not interested in said subject matter of advertising; and all of the allegations in this statement as to the time, place and character of publication are true.

  
LEGAL BILLING CO-ORDINATOR



Affirmed and subscribed to me before me this  
23rd day of August 2020 A.D.

Commonwealth of Pennsylvania - Notary Seal  
Kristen Smith, Notary Public  
Bucks County  
My commission expires March 5, 2022  
Commission number 1324227

RECEIVED

AUG 31 2020

WARWICK TOWNSHIP OFFICE  
JAMISON, PA

## **PUBLIC NOTICE**

In accordance with the requirements of Title 25, Chapter 71 of the Pennsylvania Code, Warwick Township is accepting written comments over the next 30 days on the proposed adoption of the Warwick Township Official Sewage Facilities (Act 537) Plan Update.

The Warwick Township Act 537 Plan Update specifically addresses defining the public sewer service areas within the Township limits, expanding the Fish Creek Service Area, sewage facilities planning to increase Fish Creek Wastewater Treatment Plant current permitted annual average capacity by 47,790 gpd and addressing three areas outlined in the 1995 Plan proposed to be connected to public sanitary sewer service.

Warwick Township is broken up into five service areas: Fish Creek Service Area, Country Crossing Service Area, Warrington Township Service Area, Warminster Township Service Area and On-Lot Sewage Disposal Service Area. The selected alternatives for each service area are outlined below:

The Fish Creek Service Area has one area outlined in the 1995 plan (Valley Road) that was proposed to be connected to public sewer. The selected alternative for this area is to remain in the public sanitary sewer service area but continue to utilize their existing on-lot sewage disposal system. This area will be monitored under the Sewage Management Ordinance. Warwick Township will continue to re-evaluate this area every six years through sanitary and well surveys. Should the evaluation identify increases in on-lot malfunctions or impacts to individual water supply wells, the selected alternative is to provide these properties with access to public sewer through installation of a low pressure sanitary sewer system which will connect to the existing Fish Creek public sanitary sewer system. The Fish Creek WWTP has available treatment capacity should this area need to connect to public sewer.

Breton Hills previously obtained PADEP planning approval by a Special Study to be included in the Fish Creek Public Sanitary Sewer Service Area. This area will be provided with public sanitary sewer when the public sanitary sewer is extended by an adjacent proposed development.

The potentially developable areas within and around the Fish Creek Service Area were evaluated. The Fish Creek Public Sanitary Sewer Service Area was expanded to include the potentially developable areas identified on the Overall Sewer Plan along with the inclusion of the Fetzer Tract and the Prestige Property proposed. The Act 537 Plan identified the new boundaries of the Fish Creek Public Sanitary Sewer Service Area. The existing Fish Creek WWTP has the capacity to service the additional flows created by the service area expansion. This Act 537 Plan Update will provide the necessary planning to allow Fish Creek WWTP to revise and increase the NPDES Permit from an annual average of 0.85 mgd to 0.879 mgd.

The Country Crossing Service Area has two areas outlined in the 1995 plan (Germinal Colony and Warwick Commons) that were proposed to be connected to public sewer.

The selected alternative for these two properties is for them to remain in the public sanitary sewer service area but continue to utilize their existing on-lot sewage disposal system. These areas will be monitored under the Sewage Management Ordinance. Warwick Township will continue to re-evaluate the Germinal Colony area every six years through sanitary and well surveys. Should the evaluation identify increases in on-lot malfunctions or impacts to individual water supply wells, the selected alternative is to provide these properties with access to public sewer through installation of a low pressure sanitary sewer system which will connect to the existing Country Crossing public sanitary sewer system. Existing public sanitary sewer is available for properties within the Warwick Commons Industrial Park to connect in the future. The Country Crossing WWTP has available treatment capacity should these two areas need to connect to public sewer.

The selected Alternative for the Warminster Township Service Area is the existing residences will remain connected to public sewer with no currently planned additional connection in the service area.

The selected Alternative for the Warrington Township Service Area is the existing residences will remain connected to public sewer with no currently planned additional connections in the service area.

The selected Alternative for the On-Lot Service Area will continue to be service by on-lot sewage disposal systems and monitored by the Sewage Management Ordinance. Public sanitary sewer will not be provided to this service area.

There is a 30-day period during which the Act 537 Plan is available to be viewed at the Warwick Township building at 1733 Township Greene, Jamison, PA 18929 between the normal hours of operation. The review period shall extend until the close of business on the thirtieth day after the date of this public notice. Written comments may be submitted to Kyle Seckinger, Township Manager, at the above Township Building address or by email to Catherine Topley at [ctopley@warwick-township.org](mailto:ctopley@warwick-township.org).

**APPENDIX G**

**WARWICK TOWNSHIP RESOLUTION FOR PLAN REVISION**



**WARWICK TOWNSHIP, BUCKS COUNTY**  
**RESOLUTION NO. 2020-27**  
**OFFICIAL ACT 537 SEWAGE FACILITIES PLAN**

Resolution of the Supervisors of Warwick Township, Bucks County, Pennsylvania (herein after the Municipality).

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Protection (Department) adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, requires the municipality to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality, and

WHEREAS, Warwick Township, has prepared said Official Act 537 Sewage Facilities Plan Update which specifically addresses defining the public sewer service areas within the Township limits, expanding the Fish Creek Service Area, sewage facilities planning to increase Fish Creek Wastewater Treatment Plant current permitted annual average capacity by 47,790 gpd and addressing three areas outlined in the 1995 Plan proposed to be connected to public sanitary sewer service.

Warwick Township is broken up into five service areas: Fish Creek Service Area, Country Crossing Service Area, Warrington Township Service Area, Warminster Township Service Area and On-Lot Sewage Disposal Service Area. The selected alternatives for each service area are outlined below:

The Fish Creek Service Area has one area outlined in the 1995 plan (Valley Road) that was proposed to be connected to public sewer. The selected alternative for this area is to remain in the public sanitary sewer service area but continue to utilize their existing on-lot sewage disposal system. This area will be monitored under the Sewage Management Ordinance. Warwick Township will continue to re-evaluate this area every six years through sanitary and well surveys. Should the evaluation identify increases in on-lot malfunctions or impacts to individual water supply wells, the selected alternative is to provide these properties with access to public sewer through installation of a low pressure sanitary sewer system which will connect to the existing Fish Creek public sanitary sewer system. The proposed low-pressure sanitary sewer system will connect to the existing gravity sanitary sewer system for conveyance to the Valley Road Pump Station for ultimate conveyance to the Fish Creek WWTP.

Breton Hills previously obtained PADEP planning approval by a Special Study to be included in the Fish Creek Public Sanitary Sewer Service Area. This area will be provided with public sanitary sewer when the public sanitary sewer is extended by an adjacent proposed development.

The Fish Creek Public Sanitary Sewer Service Area was expanded to include the potentially developable areas identified on the Overall Sewer Plan along with the inclusion of the Fetzer Tract and the Prestige Property. The Act 537 Plan identified the new boundaries of the Fish Creek Public Sanitary Sewer Service Area. The existing Fish Creek WWTP has the capacity to

service the additional flows created by the service area expansion. This Act 537 Plan Update will provide the necessary sewage facilities planning approval to allow Fish Creek WWTP to amend and increase the NPDES Permit from an annual average flow of 0.85 mgd to 0.879 mgd.

The Country Crossing Service Area has two areas outlined in the 1995 plan (Germinal Colony and Warwick Commons) that were proposed to be connected to public sewer. The selected alternative for these two areas is for them to remain in the public sanitary sewer service area but continue to utilize their existing on-lot sewage disposal system. These areas will be monitored under the Sewage Management Ordinance.

Warwick Township will continue to re-evaluate the Germinal Colony area every six years through sanitary and well surveys. Should the evaluation identify increases in on-lot malfunctions or impacts to individual water supply wells, the selected alternative is to provide these properties with access to public sewer through installation of a low pressure sanitary sewer system which will connect to the existing Country Crossing public sanitary sewer system. The proposed low-pressure sanitary sewer system will connect to the existing gravity sanitary sewer system which will convey wastewater to the Creek Road Pump Station for ultimate conveyance to the Country Crossing WWTP. Existing public sanitary sewer is available for the properties within the Warwick Commons Industrial Park to connect in the future. Country Crossing WWTP has available treatment capacity should these two areas need to connect to public sewer.

The selected Alternative for the Warrington Township Service Area and Warminster Municipal Authority Service Area are no proposed changes to the existing public sanitary sewer area with no currently planned additional connection in each of the service area.

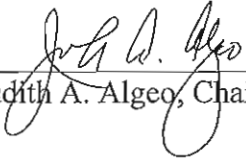
The selected Alternative for the On-Lot Service Area will continue to be service by on-lot sewage disposal systems and monitored by the Sewage Management Ordinance. Public sanitary sewer will not be provided to this service area.

WHEREAS, Warwick Township finds that the Official Act 537 Plan described above conforms to applicable zoning, subdivision, other municipal ordinances and plans and to a comprehensive program of pollution control and water quality management.

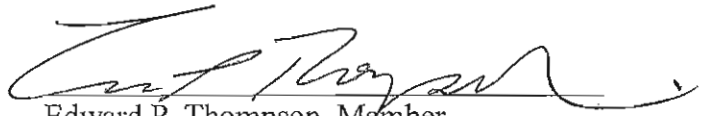
NOW, THEREFORE, BE IT RESOLVED that the Township of Warwick hereby adopts and submits to the Department of Environmental Protection for its approval as a revision to the "Official Plan" of the Municipality, the above referenced Facility Plan. The Municipality hereby assures the Department of the complete and timely implementation of the said plan as required by law. (Section 5, Pennsylvania Sewage Facilities Act as amended).

I, Kyle Seckinger, Secretary, Warwick Township Board of Supervisors, hereby certify that the foregoing is a true copy of the Township's Resolution No. 2020-27, adopted this 23<sup>rd</sup> day of **September**, 2020.

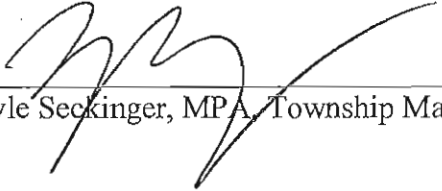
Warwick Township Board of Supervisors

  
\_\_\_\_\_  
Judith A. Algeo, Chair

\_\_\_\_\_  
John W. Cox, Vice Chair

  
\_\_\_\_\_  
Edward P. Thompson, Member

Attest:

  
\_\_\_\_\_  
Kyle Seckinger, MPA, Township Manager/Secretary



## **APPENDIX H**

### **ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST**





## INSTRUCTIONS FOR COMPLETING ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST

*Remove and recycle these instructions prior to submission.*

### CHECKLIST INSTRUCTIONS

These instructions are designed to assist the applicant in completing the *Act 537 Plan Content and Environmental Assessment Checklist*.

This checklist is composed of three parts: one for "General Information," one for "Administrative Completeness," and one for "General Plan Content". A plan must be **administratively complete** in order to be formally reviewed by the Department of Environmental Protection (DEP). The "General Plan Content" portion of the checklist identifies each of the issues that must be addressed in your Act 537 Plan Update based on the pre-planning meeting between you and/or your consultant and DEP.

Use the right-hand column blanks in the checklist to identify the page in the plan on which each planning issue is found or to reference a previously approved update or special study (title and page number).

If you determine a planning issue is not applicable even though it was previously thought to be needed, please explain your decision within the text of the plan (or as a footnote) and indicate the page number where this documentation is found.

When information required as part of an official plan update revision has been developed separately or in a previous update revision, incorporate the information by reference to the planning document and page.

For specific details covering the Act 537 planning requirements, refer to 25 Pa. Code Chapters 71 and 73 of DEP's regulations.

Wastewater projects proposing funding through the following sources must prepare an "Environmental Report" as described in the Uniform Environmental Review (UER) process and include it with the plan submission designated as "Plan-Appendix A". The following funding programs use the UER process.

- The Clean Water State Revolving Loan Fund (PENNVEST, DEP, EPA)
- The RUS Water and Waste Disposal Grant and Loan Program (USDA-RD)
- The Community Development Block Grant Program (DCED, HUG)
- Other Federal Funding Efforts (EPA)

The checklist items or portions of checklist items required in the Act 537 Plan Update revision and that are also included in the UER process are indicated by **shading**. Most of the "Environmental Report" document may be constructed from the Act 537 Official Plan Update revision by using "copy & paste" techniques. The technical guidance document *Guidelines for the Uniform Environmental Review Process in Pennsylvania* (381-5511-111) is available electronically in DEP's eLibrary online at [www.dep.pa.gov](http://www.dep.pa.gov).

After Municipal Adoption by Resolution, submit 3 copies of the plan, any attachments or addenda and this checklist to DEP.

A copy of this completed checklist must be included with your Act 537 plan. DEP will use the "DEP USE ONLY" column during the completeness evaluation of the plan. This column may also be used by DEP during the pre-planning meeting with the municipality to identify planning elements that are not required to be included in the plan.



COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF CLEAN WATER

## ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST

### PART 1 GENERAL INFORMATION

#### A. Project Information

1. Project Name Township-wide Act 537 Plan Update

2. Brief Project Description This 537 Plan Update evaluates the sewage needs for the Township including areas currently utilizing on-lot sewage disposal systems and undeveloped tracts. The needs evaluation included an on-lot sewage system survey, well sampling, and analysis of available capacity in the current systems and wastewater treatment plants.

#### B. Client (Municipality) Information

Municipality Name	County	City	Boro	Twp
Warwick Township	Bucks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Municipality Contact Individual - Last Name	First Name	MI	Suffix	Title
Seckinger	Kyle	W	Mr.	Township Manager
Additional Individual Last Name	First Name	MI	Suffix	Title
Municipality Mailing Address Line 1		Mailing Address Line 2		
1733 Township Greene				
Address Last Line -- City		State	ZIP+4	
Jamison		PA	18929	
Phone + Ext.	FAX (optional)	Email (optional)		
215-343-6100		kseckinger@warwick-township.org		

#### C. Site Information

Site (or Project) Name	(Municipal Name) Act 537 Plan
Warwick Township	
Site Location Line 1	Site Location Line 2

#### D. Project Consultant Information

Last Name	First Name	MI	Suffix
Bernard	Tara	A	Ms.
Title	Consulting Firm Name		
Planning Specialist	Ebert Engineering, Inc.		
Mailing Address Line 1	Mailing Address Line 2		
4092 Skippack Pike, Suite 202	P.O. Box 540		
Address Last Line -- City	State	ZIP+4	Country
Skippack	PA	19475	USA
Email	Phone + Ext.	FAX	
tbernard@ebertengineering.com	610-584-6701	610-584-6704	

## PART 2 ADMINISTRATIVE COMPLETENESS CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	In addition to the main body of the plan, the plan must include items one through eight listed below to be accepted for formal review by DEP. Incomplete plans may be <b>denied</b> unless the municipality is clearly requesting an advisory review.
_____	<u>TOC</u>	1. <b>Table of Contents</b>
_____		2. <b>Plan Summary</b>
_____	<u>i</u>	A. Identify the proposed service areas and major problems evaluated in the plan. (Reference - 25 Pa. Code §71.21(a)(7)(i)).
_____	<u>ii - iv</u>	B. Identify the alternative(s) chosen to solve the problems and serve the areas of need identified in the plan. Also, include any institutional arrangements necessary to implement the chosen alternative(s). (Reference - 25 Pa. Code §71.21(a)(7)(ii)).
_____	<u>ii - v</u>	C. Present the estimated cost of implementing the proposed alternative (including the user fees) and the proposed funding method to be used. (Reference - 25 Pa. Code §71.21(a)(7)(ii)).
_____	<u>ii - v</u>	D. Identify the municipal commitments necessary to implement the Plan. (Reference - 25 Pa. Code §71.21(a)(7)(iii)).
_____	<u>v</u>	E. Provide a schedule of implementation for the project that identifies the <b>major</b> milestones with dates necessary to accomplish the project to the point of operational status. (Reference - 25 Pa. Code §71.21(a)(7)(iv)).
_____	<u>Apdx G</u>	3. <b>Municipal Adoption:</b> <i>Original</i> , signed and sealed Resolution of Adoption by the municipality which contains, at a minimum, alternatives chosen and a commitment to implement the Plan in accordance with the implementation schedule. (Reference - 25 Pa. Code §71.31(f)) Section V.F. of the Planning Guide.
_____	<u>Apdx C, D, E</u>	4. <b>Planning Commission / County Health Department Comments:</b> Evidence that the municipality has requested, reviewed and considered comments by appropriate official planning agencies of the municipality, planning agencies of the county, planning agencies with area wide jurisdiction (where applicable), and any existing county or joint county departments of health. (Reference - 25 Pa. Code §71.31(b)) Section V.E.1 of the Planning Guide.
_____	<u>Apdx F</u>	5. <b>Publication:</b> Proof of Public Notice which documents the proposed plan adoption, plan summary, and the establishment and conduct of a 30-day comment period. (Reference - 25 Pa. Code §71.31(c)) Section V.E.2 of the Planning Guide.
_____	<u>Apdx F</u>	6. <b>Comments and Responses:</b> Copies of <i>all</i> written comments received and municipal response to <i>each</i> comment in relation to the proposed plan. (Reference - 25 Pa. Code §71.31(c)) Section V.E.2 of the Planning Guide.
_____	<u>v</u>	7. <b>Implementation Schedule:</b> A complete project implementation schedule with milestone dates specific for each existing and future area of need. Other activities in the project implementation schedule should be indicated as occurring a finite number of days from a major milestone. (Reference - 25 Pa. Code §71.31(d)) Section V.F. of the Planning Guide. Include dates for the future initiation of feasibility evaluations in the project's implementation schedule for areas proposing completion of sewage facilities for planning periods in excess of five years. (Reference - 25 Pa. Code §71.21(c)).
_____	<u>Apdx C, D, E</u>	8. <b>Consistency Documentation:</b> Documentation indicating that the appropriate agencies have received, reviewed and concurred with the method proposed to resolve identified inconsistencies within the proposed alternative and consistency requirements in 25 Pa. Code §71.21.(a)(5)(i-iii). (Reference - 25 Pa. Code §71.31(e)). Appendix B of the Planning Guide.

### PART 3 GENERAL PLAN CONTENT CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	Item Required
_____	<u>Ch I</u>	<b>I. Previous Wastewater Planning</b>
_____		A. Identify, describe and briefly analyze all past wastewater planning for its impact on the current planning effort:
_____	<u>I-1 to I-2</u>	1. Previously undertaken under the Pennsylvania Sewage Facilities Act (Act). (Reference - Act 537, 35 P.S. §750.5(d)(1)).
_____	<u>I-2</u>	2. Has not been carried out according to an approved implementation schedule contained in the plans. (Reference - 25 Pa. Code §71.21(a)(5)(i)(A-D)). Section V.F of the Planning Guide.
_____	<u>I-2</u>	3. Is anticipated or planned by applicable sewer authorities or approved under a Chapter 94 Corrective Action Plan. (Reference - 25 Pa. Code §71.21(a)(5)(i)(A&B)). Section V.D. of the Planning Guide.
_____	<u>I-2</u>	4. Through planning modules for new land development, planning "exemptions" and addenda. (Reference - 25 Pa. Code §71.21(a)(5)(i)(A)).
_____	<u>Ch II</u>	<b>II. Physical and Demographic Analysis utilizing written description and mapping</b> (All items listed below require maps, and all maps should show all current lots and structures and be of appropriate scale to clearly show significant information).
_____	<u>II-1 to II-2</u>	A. Identification of planning area(s), municipal boundaries, Sewer Authority/Management Agency service area boundaries. (Reference - 25 Pa. Code §71.21(a)(1)(i)).
_____	<u>II-2</u>	B. Identification of physical characteristics (streams, lakes, impoundments, natural conveyance, channels, drainage basins in the planning area). (Reference - 25 Pa. Code §71.21(a)(1)(ii)).
_____	<u>II-6 to II-13</u>	C. Soils - Analysis with description by soil type and soils mapping for areas not presently served by sanitary sewer service. Show areas suitable for in-ground onlot systems, elevated sand mounds, individual residential spray irrigation systems (IRSIS), and areas unsuitable for soil dependent systems. (Reference - 25 Pa. Code §71.21(a)(1)(iii)). Show Prime Agricultural Soils and any locally protected agricultural soils. (Reference - 25 Pa. Code §71.21(a)(1)(iii)).
_____	<u>II-20</u>	D. Geologic Features - (1) Identification through analysis, (2) mapping and (3) their relation to existing or potential nitrate-nitrogen pollution and drinking water sources. Include areas where existing nitrate-nitrogen levels are in excess of 5 mg/L. (Reference - 25 Pa. Code §71.21(a)(1)(iii)).
_____	<u>II-22</u>	E. Topography - Depict areas with slopes that are suitable for conventional systems; slopes that are suitable for elevated sand mounds and slopes that are unsuitable for onlot systems. (Reference - 25 Pa. Code §71.21(a)(1)(ii)).
_____	<u>II-24</u>	F. Potable Water Supplies - Identification through mapping, description and analysis. Include public water supply service areas and available public water supply capacity and aquifer yield for groundwater supplies. (Reference - 25 Pa. Code §71.21(a)(1)(vi)). Section V.C. of the Planning Guide.
_____	<u>II-24</u>	G. Wetlands-Identify wetlands as defined in 25 Pa. Code Chapter 105 by description, analysis and mapping. Include National Wetland Inventory mapping and potential wetland areas per the United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) mapped hydric soils. Proposed collection, conveyance and treatment facilities and lines must be located and labeled, along with the identified wetlands, on the map. (Reference - 25 Pa. Code §71.21(a)(1)(v)). Appendix B, Section II.I of the Planning Guide.



_____	<u>Ch III</u>	<b>III. Existing Sewage Facilities in the Planning Area - Identifying the Existing Needs</b>
_____	<u>III-1 to III-14</u>	A. Identify, map and describe municipal and non-municipal, individual and community sewerage systems in the planning area including:
_____	<u>III-1 to III-14</u>	1. Location, size and ownership of treatment facilities, main intercepting lines, pumping stations and force mains including their size, capacity, point of discharge. Also include the name of the receiving stream, drainage basin, and the facility's effluent discharge requirements. (Reference - 25 Pa. Code §71.21(a)(2)(i)(A)).
_____	<u>III-1 to III-14</u>	2. A narrative and schematic diagram of the facility's basic treatment processes including the facility's National Pollutant Discharge Elimination System (NPDES) permitted capacity, and the Clean Streams Law permit number. (Reference - 25 Pa. Code §71.21(a)(2)(i)(A)).
_____	<u>III-1 to III-14</u>	3. A description of problems with existing facilities (collection, conveyance and/or treatment), including existing or projected overload under 25 Pa. Code Chapter 94 (relating to municipal wasteload management) or violations of the NPDES permit, Clean Streams Law permit, or other permit, rule or regulation of DEP. (Reference - 25 Pa. Code §71.21(a)(2)(i)(B)).
_____	<u>III-1 to III-14</u>	4. Details of scheduled or in-progress upgrading or expansion of treatment facilities and the anticipated completion date of the improvements. Discuss any remaining reserve capacity and the policy concerning the allocation of reserve capacity. Also discuss the compatibility of the rate of growth to existing and proposed wastewater treatment facilities. (Reference - 25 Pa. Code §71.21(a)(4)(i & ii)).
_____	<u>III-1 to III-14</u>	5. A detailed description of the municipality's operation and maintenance (O & M) requirements for small flow treatment facility systems, including the status of past and present compliance with these requirements and any other requirements relating to sewage management programs (SMPs). (Reference - 25 Pa. Code §71.21(a)(2)(i)(C)).
_____	<u>III-1 to III-14</u>	6. Disposal areas, if other than stream discharge, and any applicable groundwater limitations. (Reference - 25 Pa. Code §71.21(a)(4)(i & ii)).
_____	<u>III-14 to III-16</u>	B. Using DEP's publication titled <i>Act 537 Sewage Disposal Needs Identification</i> (3800-BK-DEP1949), identify, map and describe areas that utilize individual and community onlot sewage disposal and, unpermitted collection and disposal systems ("wildcat" sewers, borehole disposal, etc.) and retaining tank systems in the planning area including:
_____	<u>III-14 to III-16</u>	1. The types of onlot systems in use. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(A)).
_____	<u>III-14 to III-16</u>	2. A sanitary survey complete with description, map and tabulation of documented and potential public health, pollution, and operational problems (including malfunctioning systems) with the systems, including violations of local ordinances, the Act, the Clean Stream Law or regulations promulgated thereunder. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(B)).
_____	<u>III-14 to III-16</u>	3. A comparison of the types of onlot sewage systems installed in an area with the types of systems which are appropriate for the area according to soil, geologic conditions, topographic limitations sewage flows, and 25 Pa. Code Chapter 73 (relating to standards for sewage disposal facilities). (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)).
_____	<u>III-14 to III-16</u>	4. An individual water supply survey to identify possible contamination by malfunctioning onlot sewage disposal systems consistent with DEP's <i>Act 537 Sewage Disposal Needs Identification</i> publication. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(B)).

_____	<u>III-18</u>	5. Detailed description of O & M requirements of the municipality for individual and small volume community onlot systems, including the status of past and present compliance with these requirements and any other requirements relating to SMPs. (Reference - 25 Pa. Code §71.21(a)(2)(i)(C)).
_____	<u>III-18</u>	C. Identify wastewater sludge and septage generation, transport and disposal methods. Include this information in the sewage facilities alternative analysis including:
_____	<u>III-18</u>	1. Location of sources of wastewater sludge or septage (Septic tanks, holding tanks, wastewater treatment facilities). (Reference - 25 Pa. Code §71.71).
_____	<u>III-18</u>	2. Quantities of the types of sludges or septage generated. (Reference - 25 Pa. Code §71.71).
_____	<u>III-18</u>	3. Present disposal methods, locations, capacities and transportation methods. (Reference - 25 Pa. Code §71.71).
_____	<u>Ch IV</u>	<b>IV. Future Growth and Land Development</b>
_____	<u>IV-1</u>	A. Identify and briefly summarize all municipal and county planning documents adopted pursuant to the Pennsylvania Municipalities Planning Code (Act 247) including:
_____	<u>IV-2 to IV-6</u>	1. All land use plans and zoning maps that identify residential, commercial, industrial, agricultural, recreational and open space areas. (Reference - 25 Pa. Code §71.21(a)(3)(iv)).
_____	<u>IV-8 to IV-9</u>	2. Zoning or subdivision regulations that establish lot sizes predicated on sewage disposal methods. (Reference - 25 Pa. Code §71.21(a)(3)(iv)).
_____	<u>IV-12 to IV-15</u>	3. All limitations and plans related to floodplain and stormwater management and special protection (25 Pa. Code Chapter 93) areas. (Reference - 25 Pa. Code §71.21(a)(3)(iv)) Appendix B, Section II.F of the Planning Guide.
_____	<u>IV-12 to IV-15</u>	B. Delineate and describe the following through map, text and analysis.
_____	<u>IV-12 to IV-15</u>	1. Areas with existing development or plotted subdivisions. Include the name, location, description, total number of equivalent dwelling units (EDUs) in development, total number of EDUs currently developed and total number of EDUs remaining to be developed (include time schedule for EDUs remaining to be developed). (Reference - 25 Pa. Code §71.21(a)(3)(i)).
_____	<u>IV-1 to IV-15</u>	2. Land use designations established under the Pennsylvania Municipalities Planning Code (35 P.S. 10101-11202), including residential, commercial and industrial areas. (Reference - 25 Pa. Code §71.21(a)(3)(ii)). Include a comparison of proposed land use as allowed by zoning and existing sewage facility planning. (Reference - 25 Pa. Code §71.21(a)(3)(iv)).
_____	<u>IV-10 to IV-11</u>	3. Future growth areas with population and EDU projections for these areas using historical, current and future population figures and projections of the municipality. Discuss and evaluate discrepancies between local, county, state and federal projections as they relate to sewage facilities. (Reference - 25 Pa. Code §71.21(a)(1)(iv) and (a)(3)(iii)).
_____	<u>IV-9 to IV-10</u>	4. Zoning, and/or subdivision regulations; local, county or regional comprehensive plans; and existing plans of any other agency relating to the development, use and protection of land and water resources with special attention to: (Reference - 25 Pa. Code §71.21(a)(3)(iv)). --public ground/surface water supplies --recreational water use areas --groundwater recharge areas --industrial water use --wetlands

_____	<u>IV-15</u>	5. Sewage planning necessary to provide adequate wastewater treatment for 5 and 10-year future planning periods based on projected growth of existing and proposed wastewater collection and treatment facilities. (Reference - 25 Pa. Code §71.21(a)(3)(v)).
_____	<u>Ch V</u>	<b>V. Identify Alternatives to Provide New or Improved Wastewater Disposal Facilities</b>
_____	<u>V-1 to V-12</u>	A. Conventional collection, conveyance, treatment and discharge alternatives including:
_____	<u>V-1 to V-12</u>	1. The potential for regional wastewater treatment. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	2. The potential for extension of existing municipal or non-municipal sewage facilities to areas in need of new or improved sewage facilities. (Reference - 25 Pa. Code §71.21(a)(4)(i)).
_____	<u>V-1 to V-12</u>	3. The potential for the continued use of existing municipal or non-municipal sewage facilities through one or more of the following: (Reference - 25 Pa. Code §71.21(a)(4)(ii)).
_____	<u>V-1 to V-12</u>	a. Repair. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(A)).
_____	<u>V-1 to V-12</u>	b. Upgrading. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(B)).
_____	<u>V-1 to V-12</u>	c. Reduction of hydraulic or organic loading to existing facilities. (Reference - 25 Pa. Code §71.71).
_____	<u>V-1 to V-12</u>	d. Improved O & M. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(C)).
_____	<u>V-1 to V-12</u>	e. Other applicable actions that will resolve or abate the identified problems. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(D)).
_____	<u>V-1 to V-12</u>	4. Repair or replacement of existing collection and conveyance system components. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(A)).
_____	<u>V-1 to V-12</u>	5. The need for construction of new community sewage systems including sewer systems and/or treatment facilities. (Reference - 25 Pa. Code §71.21(a)(4)(iii)).
_____	<u>V-1 to V-12</u>	6. Use of innovative/alternative methods of collection/conveyance to serve needs areas using existing wastewater treatment facilities. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(B)).
_____	<u>V-1 to V-12</u>	B. The use of individual sewage disposal systems including IRSIS systems based on:
_____	<u>V-1 to V-12</u>	1. Soil and slope suitability. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)).
_____	<u>V-1 to V-12</u>	2. Preliminary hydrogeologic evaluation. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)).
_____	<u>V-1 to V-12</u>	3. The establishment of a SMP. (Reference - 25 Pa. Code §71.21(a)(4)(iv)). See also Part "F" below.
_____	<u>V-1 to V-12</u>	4. The repair, replacement or upgrading of existing malfunctioning systems in areas suitable for onlot disposal considering: (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	a. Existing technology and sizing requirements of 25 Pa. Code Chapter 73. (Reference - 25 Pa. Code §73.31-§73.72).
_____	<u>V-1 to V-12</u>	b. Use of expanded absorption areas or alternating absorption areas. (Reference - 25 Pa. Code §73.16).
_____	<u>V-1 to V-12</u>	c. Use of water conservation devices. (Reference - 25 Pa. Code §71.73(b)(2)(iii)).

- |       |                    |   |
|-------|--------------------|---|
| _____ | <u>V-1 to V-12</u> | C. The use of small flow sewage treatment facilities or package treatment facilities to serve individual homes or clusters of homes with consideration of: (Reference - 25 Pa. Code §71.64(d)).                                       |
| _____ | <u>V-1 to V-12</u> | 1. Treatment and discharge requirements. (Reference - 25 Pa. Code §71.64(d)).   |
| _____ | <u>V-1 to V-12</u> | 2. Soil suitability. (Reference - 25 Pa. Code §71.64(c)(1)).  |
| _____ | <u>V-1 to V-12</u> | 3. Preliminary hydrogeologic evaluation. (Reference - 25 Pa. Code §71.64(c)(2)).  |
| _____ | <u>V-1 to V-12</u> | 4. Municipal, Local Agency or other controls over O & M requirements through a SMP. (Reference - 25 Pa. Code §71.64(d)). See Part "F" below.  |
| _____ | <u>V-1 to V-12</u> | D. The use of community land disposal alternatives including:   |
| _____ | <u>V-1 to V-12</u> | 1. Soil and site suitability. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)).  |
| _____ | <u>V-1 to V-12</u> | 2. Preliminary hydrogeologic evaluation. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)).   |
| _____ | <u>V-1 to V-12</u> | 3. Municipality, Local Agency or other controls over O & M requirements through a SMP. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)). See Part "F" below.   |
| _____ | <u>V-1 to V-12</u> | 4. The rehabilitation or replacement of existing malfunctioning community land disposal systems. (See Part "V", B, 4, a, b, c above). See also Part "F" below.  |
| _____ | <u>V-1 to V-12</u> | E. The use of retaining tank alternatives on a temporary or permanent basis including: (Reference - 25 Pa. Code §71.21(a)(4)).  |
| _____ | <u>V-1 to V-12</u> | 1. Commercial, residential and industrial use. (Reference - 25 Pa. Code §71.63(e)).   |
| _____ | <u>V-1 to V-12</u> | 2. Designated conveyance facilities (pumper trucks). (Reference - 25 Pa. Code §71.63(b)(2)).  |
| _____ | <u>V-1 to V-12</u> | 3. Designated treatment facilities or disposal site. (Reference - 25 Pa. Code §71.63(b)(2)).  |
| _____ | <u>V-1 to V-12</u> | 4. Implementation of a retaining tank ordinance by the municipality. (Reference - 25 Pa. Code §71.63(c)(3)). See Part "F" below.  |
| _____ | <u>V-1 to V-12</u> | 5. Financial guarantees when retaining tanks are used as an interim sewage disposal measure. (Reference - 25 Pa. Code §71.63(c)(2)).  |
| _____ | <u>V-1 to V-12</u> | F. SMPs to assure the future O & M of existing and proposed sewage facilities through:  |
| _____ | <u>V-1 to V-12</u> | 1. Municipal ownership or control over the O & M of individual onlot sewage disposal systems, small flow treatment facilities, or other traditionally non-municipal treatment facilities. (Reference - 25 Pa. Code §71.21(a)(4)(iv)). |
| _____ | <u>V-1 to V-12</u> | 2. Required inspection of sewage disposal systems on a schedule established by the municipality. (Reference - 25 Pa. Code §71.73(b)(1)).  |
| _____ | <u>V-1 to V-12</u> | 3. Required maintenance of sewage disposal systems including septic and aerobic treatment tanks and other system components on a schedule established by the municipality. (Reference - 25 Pa. Code §71.73(b)(2)).                    |
| _____ | <u>V-1 to V-12</u> | 4. Repair, replacement or upgrading of malfunctioning onlot sewage systems. (Reference - 25 Pa. Code §71.21(a)(4)(iv) and §71.73(b)(5)) through:  |
| _____ | <u>V-1 to V-12</u> | a. Aggressive pro-active enforcement of ordinances that require O & M and prohibit malfunctioning systems. (Reference - 25 Pa. Code §71.73(b)(5)).  |
| _____ | <u>V-1 to V-12</u> | b. Public education programs to encourage proper O & M and repair of  |



	<u>12</u>	sewage disposal systems.
_____	<u>V-1 to V-12</u>	5. Establishment of joint municipal SMPs. (Reference - 25 Pa. Code §71.73(b)(8)).
_____	<u>V-1 to V-12</u>	6. Requirements for bonding, escrow accounts, management agencies or associations to assure O & M for non-municipal facilities. (Reference - 25 Pa. Code §71.71).
_____	<u>V-1 to V-12</u>	G. Non-structural comprehensive planning alternatives that can be undertaken to assist in meeting existing and future sewage disposal needs including: (Reference - 25 Pa. Code §71.21(a)(4)).
		1. Modification of existing comprehensive plans involving:
_____	<u>V-1 to V-12</u>	a. Land use designations. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	b. Densities. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	c. Municipal ordinances and regulations. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	d. Improved enforcement. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	e. Protection of drinking water sources. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	2. Consideration of a local comprehensive plan to assist in producing sound economic and consistent land development. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	3. Alternatives for creating or changing municipal subdivision regulations to assure long-term use of on-site sewage disposal that consider lot sizes and protection of replacement areas. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	4. Evaluation of existing local agency programs and the need for technical or administrative training. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	H. A no-action alternative which includes discussion of both short-term and long-term impacts on: (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	1. Water quality/public health. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	2. Growth potential (residential, commercial, industrial). (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	3. Community economic conditions. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	4. Recreational opportunities. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	5. Drinking water sources. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>V-1 to V-12</u>	6. Other environmental concerns. (Reference - 25 Pa. Code §71.21(a)(4)).
_____	<u>Ch VI</u>	<b>VI. Evaluation of Alternatives</b>
		A. Technically feasible alternatives identified in Section V of this checklist must be evaluated for consistency with respect to the following: (Reference - 25 Pa. Code §71.21(a)(5)(i)).
_____	<u>VI-1 to VI-2</u>	1. Applicable plans developed and approved under <b>Sections 4 and 5 of the Clean Streams Law or Section 208 of the Clean Water Act</b> (33 U.S.C.A. 1288). (Reference - 25 Pa. Code §71.21(a)(5)(i)(A)). Appendix IB, Section

II.A of the Planning Guide.

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|-------|---------------------|--|
| _____ | <u>VI-2</u>         | 2. Municipal wasteload management <b>Corrective Action Plans or Annual Reports</b> developed under 25 Pa. Code Chapter 94. (Reference - 25 Pa. Code §71.21(a)(5)(i)(B)). The municipality's recent Wasteload Management (25 Pa. Code Chapter 94) Reports should be examined to determine if the proposed alternative is consistent with the recommendations and findings of the report. Appendix B, Section II.B of the Planning Guide.  |
| _____ | <u>VI-1 to VI-2</u> | 3. Plans developed under <b>Title II of the Clean Water Act</b> (33 U.S.C.A. 1281-1299) or <b>Titles II and VI of the Water Quality Act of 1987</b> (33 U.S.C.A. 1251-1376). (Reference - 25 Pa. Code §71.21(a)(5)(i)(C)). Appendix B, Section II.E of the Planning Guide.   |
| _____ | <u>VI-2</u>         | 4. <b>Comprehensive plans</b> developed under the Pennsylvania Municipalities Planning Code. (Reference - 25 Pa. Code §71.21(a)(5)(i)(D)). The municipality's comprehensive plan must be examined to assure that the proposed wastewater disposal alternative is consistent with land use and all other requirements stated in the comprehensive plan. Appendix B, Section II.D of the Planning Guide.   |
| _____ | <u>VI-2 to VI-3</u> | 5. <b>Antidegradation requirements</b> as contained in 25 Pa. Code Chapters 93, 95 and 102 (relating to water quality standards, wastewater treatment requirements and erosion control) and the Clean Water Act. (Reference - 25 Pa. Code §71.21(a)(5)(i)(E)). Appendix B, Section II.F of the Planning Guide.   |
| _____ | <u>VI-1 to VI-2</u> | 6. <b>State Water Plans</b> developed under the Water Resources Planning Act (42 U.S.C.A. 1962-1962 d-18). (Reference - 25 Pa. Code §71.21(a)(5)(i)(F)). Appendix B, Section II.C of the Planning Guide.   |
| _____ | <u>VI-3</u>         | 7. <b>Pennsylvania Prime Agricultural Land Policy</b> contained in Title 4 of the Pennsylvania Code, Chapter 7, Subchapter W. Provide narrative on local municipal policy and an overlay map on prime agricultural soils. (Reference - 25 Pa. Code §71.21(a)(5)(i)(G)). Appendix B, Section II.G of the Planning Guide.  |
| _____ | <u>VI-4</u>         | 8. <b>County Stormwater Management Plans</b> approved by DEP under the Storm Water Management Act (32 P.S. 680.1-680.17). (Reference - 25 Pa. Code §71.21(a)(5)(i)(H)). Conflicts created by the implementation of the proposed wastewater alternative and the existing recommendations for the management of stormwater in the county Stormwater Management Plan must be evaluated and mitigated. If no plan exists, no conflict exists. Appendix B, Section II.H of the Planning Guide.  |
| _____ | <u>VI-4</u>         | 9. <b>Wetland Protection.</b> Using wetland mapping developed under Checklist Section II.G, identify and discuss mitigative measures including the need to obtain permits for any encroachments on wetlands from the construction or operation of any proposed wastewater facilities. (Reference - 25 Pa. Code §71.21(a)(5)(i)(I)) Appendix B, Section II.I of the Planning Guide.   |
| _____ | <u>VI-4</u>         | 10. <b>Protection of rare, endangered or threatened plant and animal species</b> as identified by the Pennsylvania Natural Diversity Inventory (PNDI). (Reference - 25 Pa. Code §71.21(a)(5)(i)(J)). Provide DEP with a copy of the completed <i>PNDI Manual Project Submission Form</i> . Also provide a copy of the response letters from the 4 jurisdictional agencies regarding the findings of the PNDI search. Appendix B, Section II.J of the Planning Guide.   |
| _____ | <u>VI-4</u>         | 11. <b>Historical and archaeological resource protection</b> under P.C.S. Title 37, Section 507 relating to cooperation by public officials with the Pennsylvania Historical and Museum Commission (PHMC). (Reference - 25 Pa. Code §71.21(a)(5)(i)(K)). Provide DEP with a completed copy of a <i>Cultural Resource Notice</i> and a return receipt for its submission to PHMC. Provide a copy of the response letter or review stamp from the Bureau of Historic Preservation (BHP) indicating the project will have no effect on, or that there |

may be potential impacts on, known archaeological and historical sites and any avoidance and mitigation measures required. Appendix B, Section II.K of the Planning Guide.

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|-------|-------------|---|
| _____ | <u>VI-5</u> | B. Provide for the resolution of any inconsistencies in any of the points identified in Section VI.A. of this checklist by submitting a letter from the appropriate agency stating that the agency has received, reviewed and concurred with the resolution of identified inconsistencies. (Reference - 25 Pa. Code §71.21(a)(5)(ii)). Appendix B of the Planning Guide.  |
| _____ | <u>VI-5</u> | C. Evaluate alternatives identified in Section V of this checklist with respect to applicable water quality standards, effluent limitations or other technical, legislative or legal requirements. (Reference - 25 Pa. Code §71.21(a)(5)(iii)).   |
| _____ | <u>VI-5</u> | D. Provide cost estimates using present worth analysis for construction, financing, ongoing administration, O & M and user fees for alternatives identified in Section V of this checklist. Estimates shall be limited to areas identified in the plan as needing improved sewage facilities within 5 years from the date of plan submission. (Reference - 25 Pa. Code §71.21(a)(5)(iv)).   |
| _____ | <u>VI-5</u> | E. Provide an analysis of the funding methods available to finance the proposed alternatives evaluated in Section V of this checklist. Also provide documentation to demonstrate which alternative and financing scheme combination is the most cost-effective; and a contingency financial plan to be used if the preferred method of financing cannot be implemented. The funding analysis shall be limited to areas identified in the plan as needing improved sewage facilities within 5 years from the date of the plan submission. (Reference - 25 Pa. Code §71.21(a)(5)(v)). |
| _____ | <u>VI-5</u> | F. Analyze the need for immediate or phased implementation of each alternative proposed in Section V of this checklist including: (Reference - 25 Pa. Code §71.21(a)(5)(vi)).   |
| _____ | <u>VI-5</u> | 1. A description of any activities necessary to abate critical public health hazards pending completion of sewage facilities or implementation of SMPs. (Reference - 25 Pa. Code §71.21(a)(5)(vi)(A)).  |
| _____ | <u>VI-5</u> | 2. A description of the advantages, if any, in phasing construction of the facilities or implementation of a SMP justifying time schedules for each phase. (Reference - 25 Pa. Code §71.21(a)(5)(vi)(B)).   |
| _____ | <u>VI-5</u> | G. Evaluate administrative organizations and legal authority necessary for plan implementation. (Reference - 25 Pa. Code §71.21(a)(5)(vi)(D)).  |

\_\_\_\_\_ Ch VII      **VII. Institutional Evaluation**

- |       |              |  |
|-------|--------------|--|
| _____ | <u>VII-1</u> | A. Provide an analysis of all existing wastewater treatment authorities, their past actions and present performance including: |
| _____ | <u>VII-1</u> | 1. Financial and debt status. (Reference - 25 Pa. Code §71.61(d)(2)).  |
| _____ | <u>VII-1</u> | 2. Available staff and administrative resources. (Reference - 25 Pa. Code §71.61(d)(2)).                                       |
| _____ | <u>VII-1</u> | 3. Existing legal authority to:  |
| _____ | <u>VII-1</u> | a. Implement wastewater planning recommendations. (Reference - 25 Pa. Code §71.61(d)(2)).                                      |
| _____ | <u>VII-1</u> | b. Implement system-wide O & M activities. (Reference - 25 Pa. Code §71.61(d)(2)).   |
| _____ | <u>VII-1</u> | c. Set user fees and take purchasing actions. (Reference - 25 Pa. Code §71.61(d)(2)).  |
| _____ | <u>VII-1</u> | d. Take enforcement actions against ordinance violators. (Reference - 25 Pa. Code §71.61(d)(2)).                               |
| _____ | <u>VII-1</u> | e. Negotiate agreements with other parties. (Reference - 25 Pa. Code §71.61(d)(2)).  |

§71.61(d)(2)).

- |       |              |   |
|-------|--------------|---|
| _____ | <u>VII-1</u> | f. Raise capital for construction and O & M of facilities. (Reference - 25 Pa. Code §71.61(d)(2)).  |
| _____ | <u>VII-1</u> | B. Provide an analysis and description of the various institutional alternatives necessary to implement the proposed technical alternatives including:  |
| _____ | <u>VII-1</u> | 1. Need for new municipal departments or municipal authorities. (Reference - 25 Pa. Code §71.61(d)(2)).   |
| _____ | <u>VII-1</u> | 2. Functions of existing and proposed organizations (sewer authorities, onlot maintenance agencies, etc.). (Reference - 25 Pa. Code §71.61(d)(2)).  |
| _____ | <u>VII-1</u> | 3. Cost of administration, implementability, and the capability of the authority/agency to react to future needs. (Reference - 25 Pa. Code §71.61(d)(2)).   |
| _____ | <u>VII-1</u> | C. Describe all necessary administrative and legal activities to be completed and adopted to ensure the implementation of the recommended alternative including:  |
| _____ | <u>VII-1</u> | 1. Incorporation of authorities or agencies. (Reference - 25 Pa. Code §71.61(d)(2)).  |
| _____ | <u>VII-1</u> | 2. Development of all required ordinances, regulations, standards and inter-municipal agreements. (Reference - 25 Pa. Code §71.61(d)(2)).   |
| _____ | <u>VII-1</u> | 3. Description of activities to provide rights-of-way, easements and land transfers. (Reference - 25 Pa. Code §71.61(d)(2)).  |
| _____ | <u>VII-1</u> | 4. Adoption of other municipal sewage facilities plans. (Reference - 25 Pa. Code §71.61(d)(2)).   |
| _____ | <u>VII-1</u> | 5. Any other legal documents. (Reference - 25 Pa. Code §71.61(d)(2)).   |
| _____ | <u>VII-1</u> | 6. Dates or timeframes for items 1-5 above on the project's implementation schedule.  |
| _____ | <u>VII-1</u> | D. Identify the proposed institutional alternative for implementing the chosen technical wastewater disposal alternative. Provide justification for choosing the specific institutional alternative considering administrative issues, organizational needs and enabling legal authority. (Reference - 25 Pa. Code §71.61(d)(2)). |

\_\_\_\_\_ Ch VIII

**VIII. Implementation Schedule and Justification for Selected Technical & Institutional Alternatives**

- |       |                         |   |
|-------|-------------------------|---|
| _____ | <u>VIII-1 to VIII-3</u> | A. Identify the technical wastewater disposal alternative which best meets the wastewater treatment needs of each study area of the municipality. Justify the choice by providing documentation which shows that it is the best alternative based on: |
| _____ | <u>VIII-1 to VIII-3</u> | 1. Existing wastewater disposal needs. (Reference - 25 Pa. Code §71.21(a)(6)).  |
| _____ | <u>VIII-1 to VIII-3</u> | 2. Future wastewater disposal needs. (5 and 10 year growth areas). (Reference - 25 Pa. Code §71.21(a)(6)).  |
| _____ | <u>VIII-1 to VIII-3</u> | 3. O & M considerations. (Reference - 25 Pa. Code §71.21(a)(6)).  |
| _____ | <u>VIII-1 to VIII-3</u> | 4. Cost-effectiveness. (Reference - 25 Pa. Code §71.21(a)(6)).  |
| _____ | <u>VIII-1 to VIII-3</u> | 5. Available management and administrative systems. (Reference - 25 Pa. Code §71.21(a)(6)).   |
| _____ | <u>VIII-1 to VIII-3</u> | 6. Available financing methods. (Reference - 25 Pa. Code §71.21(a)(6)).   |
| _____ | <u>VIII-1 to VIII-3</u> | 7. Environmental soundness and compliance with natural resource planning and  |

preservation programs. (Reference - 25 Pa. Code §71.21(a)(6)).

- |       |                         |   |
|-------|-------------------------|---|
| _____ | <u>VIII-1 to VIII-3</u> | B. Designate and describe the capital financing plan chosen to implement the selected alternative(s). Designate and describe the chosen back-up financing plan. (Reference - 25 Pa. Code §71.21(a)(6))                  |
| _____ | <u>VIII-1 to VIII-3</u> | C. Designate and describe the implementation schedule for the recommended alternative, including justification for any proposed phasing of construction or implementation of a SMP. (Reference - 25 Pa. Code §71.31(d)) |

\_\_\_\_\_ N/A

**IX. Environmental Report (ER) generated from the UER Process**

\_\_\_\_\_ N/A

- A. Complete an ER as required by the UER process and as described in the DEP Technical Guidance (381-5511-111). Include this document as "Appendix A" to the Act 537 Plan Update Revision. ***Note: An ER is required only for Wastewater projects proposing funding through any of the funding sources identified in the UER.***



### ADDITIONAL REQUIREMENTS FOR PENNVEST PROJECTS

Municipalities that propose to implement their official sewage facilities plan updates with PENNVEST funds must meet 6 additional requirements to be eligible for such funds. See *A Guide for Preparing Act 537 Update Revisions* (362-0300-003), Appendix N for greater detail or contact the DEP regional office serving your county listed in Appendix J of the same publication.

DEP Use Only	Indicate Page #(s) in Plan	Item Required
_____	_____	1. Environmental Impact Assessment. (Planning Phase) The UER replaces the Environmental Impact Assessment that was a previous requirement for PENNVEST projects.
_____	_____	2. Cost Effectiveness (Planning Phase) The cost-effectiveness analysis should be a present-worth (or equivalent uniform annual) cost evaluation of the principle alternatives using the interest rate that is published annually by the Water Resources Council. Normally, for PENNVEST projects the applicant should select the most cost-effective alternative based upon the above analysis. Once the alternative has been selected the user fee estimates should be developed based upon interest rates and loan terms of the selected funding method.
_____		3. Second Opinion Project Review. (Design Phase)
_____		4. Minority Business Enterprise/Women's Business Enterprise (Construction Phase)
_____		5. Civil Rights. (Construction Phase)
_____		6. Initiation of Operation/Performance Certification. (Post-construction Phase)

## I/A TECHNOLOGIES

### PARTIAL LISTING OF INNOVATIVE AND ALTERNATIVE TECHNOLOGIES

#### TREATMENT TECHNOLOGIES

Aquaculture  
Aquifer Recharge  
Biological Aerated Filters  
Constructed Wetlands  
Direct Reuse (NON-POTABLE)  
Horticulture  
Overland Flow  
Rapid Infiltration  
Silviculture  
Microscreens  
Controlled Release Lagoons  
Swirl Concentrator

#### SLUDGE TREATMENT TECHNOLOGIES

Aerated Static Pile Composting  
Enclosed Mechanical Composting (In vessel)  
Revegetation of Disturbed Land  
Aerated Windrow Composting

#### ENERGY RECOVERY TECHNOLOGIES

Anaerobic Digestion with more than 90 percent  
Methane Recovery  
Cogeneration of Electricity  
Self-Sustaining Incineration

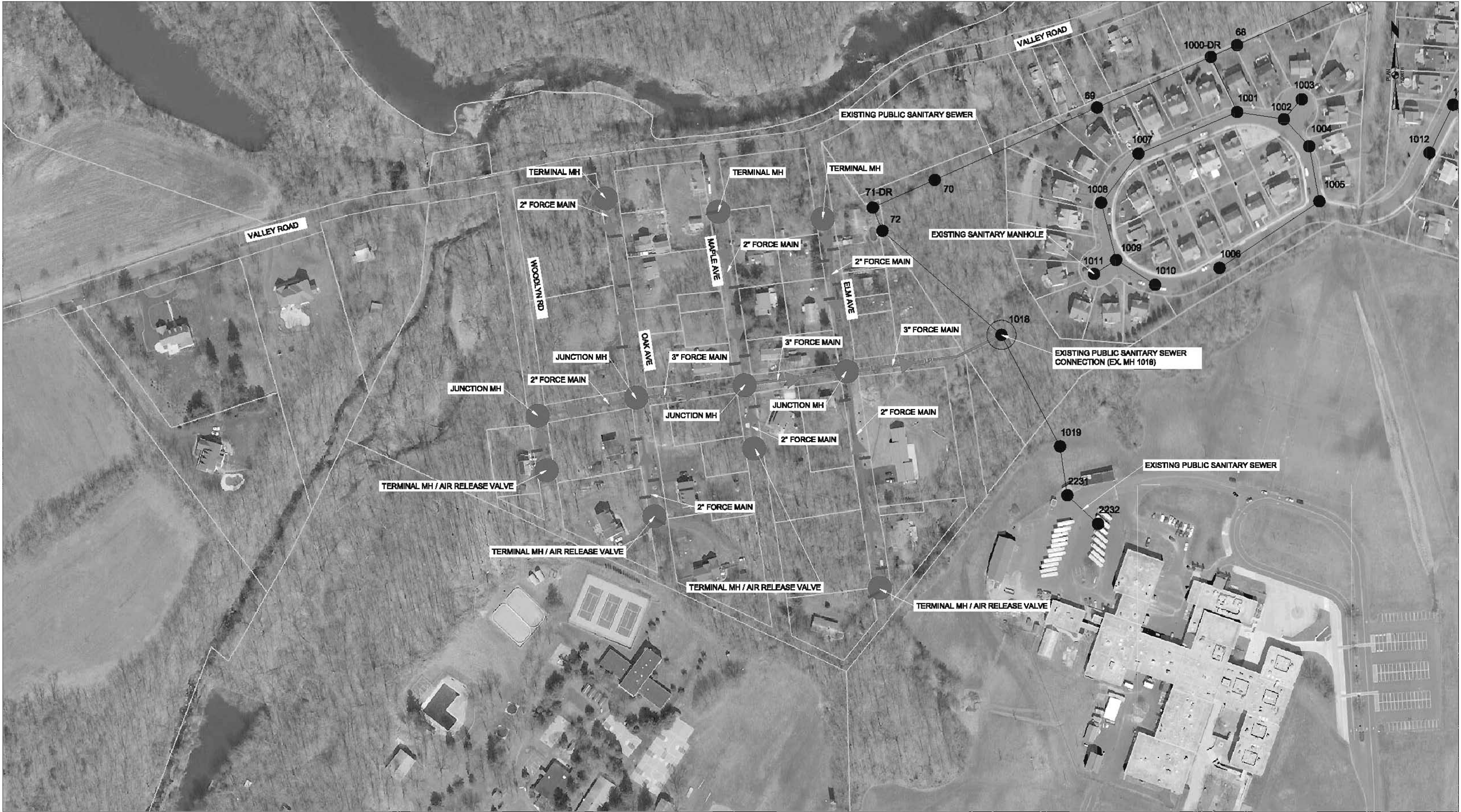
#### INDIVIDUAL & SYSTEM-WIDE COLLECTION TECHNOLOGIES

Cluster Systems  
Septage Treatment  
Small Diameter Gravity Sewers  
Step Pressure Sewers  
Vacuum Sewers  
Variable Grade Sewers  
Septic Tank Effluent Pump with  
Pressure Sewers

**APPENDIX I**

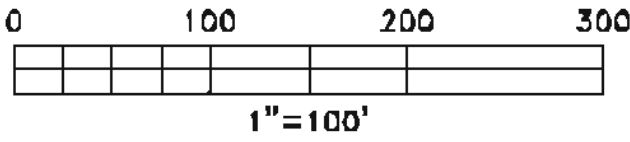
**LOW PRESSURE SANITARY SEWER LAYOUTS FOR GERMINAL COLONY  
AND VALLEY ROAD STUDY AREAS**





LEGEND

	2" FORCE MAIN		3" FORCE MAIN
	EXISTING PUBLIC SANITARY SEWER		SANITARY SEWER LATERAL



VALLEY ROAD AREA LOW PRESSURE FORCE MAIN  
FOR THE  
**WARWICK TOWNSHIP - ACT 537**  
PREPARED FOR  
WARWICK TOWNSHIP WATER & SEWER AUTHORITY  
**Ebert Engineering, Inc.**  
Water and Wastewater Engineering  
PO Box 640 Phone (610) 584 6701  
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1	REVISED FORCE MAIN LAYOUT	7/20/20	Drawn By	Project Engr.	Checked By	Scale	Job No.	Date	Drawing No.				
Number	Description	Date	JB	CR	CR	AS NOTED	050-073	6/15/20	1 of 1				



