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EXHIBIT P7

NEWTOWN TOWNSHIP ACT 537 PLAN

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# pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOUTHEAST REGIONAL OFFICE

SEP 24 2013

## CERTIFIED MAIL NO. 7008 1300 0002 4008 1932

Mr. Michael Trio, Manager  
Newtown Township  
209 Bishop Hollow Road  
Newtown Square, PA 19073

Re: Act 537 Official Plan Update  
STATUS: Issued  
APS ID 459295, SITE ID 603740  
Newtown Township  
Delaware County

Dear Mr. Trio:

We have completed our review of your municipality's updated official sewage facilities plan titled *Act 537 Official Plan Update* (Plan). The Plan was prepared by Herbert E. MacCombie, Jr., P.E., Consulting Engineers and Surveyors, Inc., and is dated October 2012, revised February 2013. The review was conducted in accordance with the provisions of the Pennsylvania Sewage Facilities Act.

Approval of the Plan is hereby granted. This approval provides for the following:

1. The establishment of an expanded public sewer service area that will be served by the Central Delaware County Authority (CDCA) sewage conveyance system. Sewage from the CDCA public sewer service area will be conveyed to the DELCORA wastewater treatment facility for treatment and disposal. Capacity for the expanded CDCA service area is provided under the December 21, 2007, Supplemental Agreement by and between the Central Delaware County Authority and Morton Borough, Prospect Park Borough, Ridley Park Borough, Rutledge Borough, Swarthmore Borough, Edgmont Township, Marple Township, Nether Providence Township, Newtown Township, Ridley Township, Springfield Township and Upper Providence Township.

The drainage basins within the expanded CDCA service area are described as follows:

- a. Ashford Pump Station Service Area: All proposed sewage facilities within the Ashford Pump Station Service Area are depicted on the plan titled *Ashford P.S. Service Area - Opt. 2*, prepared by Herbert E. MacCombie, Jr., P.E., Consulting Engineers and Surveyors, Inc., dated February 11, 2013. The proposed improvements are described as follows:
  - i. The Melmark Pump Station: The Melmark Pump Station, a.k.a. Pump Station No. 1, will be located on the Melmark campus, south of Hunt Valley Lane. This pump station will be privately owned and will have annual average design flows of 25,000 gallons per day. The Melmark Pump Station will connect to a gravity sewer line that will be constructed in the campus' driveway. The gravity line will also provide access to public sewers to 3 residential parcels south of the Melmark campus.

Southeast Regional Office | 2 East Main Street | Norristown, PA 19401-4915

484.250.5970 | Fax 484.250.5971

[www.depweb.state.pa.us](http://www.depweb.state.pa.us)

Mr. Michael Trio, Manager

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- ii. The Newtown Hunt Pump Station: The Newtown Hunt Pump Station, a.k.a. Pump Station No. 2, will be located southeast of the Melmark campus and south of Hunt Valley Circle. This pump station will have annual average design flows of 33,150 gallons of sewage per day and will receive flows from Pump Station No. 1 and the gravity collection system that will serve properties along Hunt Valley Lane and Hunt Valley Circle. The Newtown Hunt Pump Station's force main will extend to a proposed gravity sewer that will be constructed in Echo Valley Lane.
  - iii. The Goshen Road Pump Station: The Goshen Road Pump Station, a.k.a. Pump Station No. 3, will be located near the terminus of the Crum Creek Lane cul-de-sac, north of Goshen Road. This pump station will have annual average design flows of 81,500 gallons per day and will receive flows from Pump Station No. 2 and the gravity sewer system that will serve Echo Valley Lane, Battles Lane, Meadow Lane, Crum Creek Lane, Partridge Lane, Fox Hill Lane and portions of Goshen and Boot Roads. The Goshen Road Pump Station's force main will extend to a gravity manhole to be located in Goshen Road. This manhole is associated with the Ashford Development. Flows from the Goshen Road Pump Station are ultimately tributary to the Ashford Pump Station.
  - iv. The Ashford Pump Station will be expanded to accommodate an annual average flow of 207,500 gallons of sewage per day. The Ashford Pump Station will receive sewage from Pump Station Nos. 1-3, the Episcopal Academy campus and the Ashford Subdivision. The Ashford Pump Station's location and force main route remain unchanged from the March 2, 2012, DEP planning module approval of the Ashford Subdivision.
- b. Camelot Pump Station Service Area: All proposed sewage facilities within the Camelot Pump Station Service Area are depicted on the plan titled *Camelot P.S. Service Area – Opt. 2*, prepared by Herbert E. MacCombie, Jr., P.E., Consulting Engineers and Surveyors, Inc., dated February 11, 2013. The proposed improvements are described as follows:
- i. The Olde Masters Pump Station, a.k.a. Pump Station No. 4, will be located on the Olde Masters property, northwest of the Garrett Williamson Tract and west of Florida Park. Pump Station No. 4 will have annual average design flows of 211,910 gallons per day and will receive flows from the gravity sewer lines that will serve the Newtown Business Center, the Olde Masters Site, the Marville Property, Florida Park, Boot Road and a portion of Campus Drive. The Olde Masters Pump Station's force main will discharge to a proposed gravity sewer in Campus Boulevard.
  - ii. The Springton Pointe Estates Pump Station, a.k.a. Pump Station No. 5, will be located at the site of the Springton Pointe Estates Wastewater Treatment Facility, which will be decommissioned. Pump Station No. 5 will have annual average design flows of 285,860 gallons per day and will accept flows from a portion of Campus Boulevard, the gravity sewer system serving the Springton Pointe Estates Development and the

SEP 04 2013

Hunters Run Development. The community on-lot sewage disposal system that currently serves the Hunters Run Development will also be decommissioned.

- iii. The Camelot Pump Station will be expanded to accommodate an annual average flow of 535,860 gallons of sewage per day. The Camelot Pump Station will accept flows from Pump Stations 4 and 5. The pump station's force main is tributary to an existing CDCA manhole located at the intersection of Route 252 and Media Line Road.
2. The Township will implement a sewage management program (SMP). The SMP is described in the draft Chapter 130, Article III of the Newtown Township code. The draft code revision will address the proper operation and maintenance of on-lot sewage disposal systems, sewage grinder pumps and sewage holding tanks. The draft code revision is included with Appendix P of the Plan.

The plan references the White Horse, Llangolen, Springton Pointe/Sleepy Hollow/Frog Hollow and Gradyville Road areas as potential future public sewer service needs areas. Please note that additional Act 537 planning will be required in order to connect these areas to public sewers. In addition, sewage facilities planning modules or planning exemptions will be required for any new subdivisions or increased flows from properties within the study area.

Newtown Township should coordinate sewer extension projects with CDCA in order to assure that adequate capacity exists in CDCA's infrastructure to accept new flows prior to adding connections to the CDCA system.

The Newtown Township Sewer Authority must secure Clean Streams Law permits from the Department for the construction and operation of the proposed sewage facilities.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717.787.3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800.654.5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717.787.3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

IMPORTANT LEGAL RIGHTS ARE AT STAKE; HOWEVER, SO YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD (717-787-3483) FOR MORE INFORMATION.



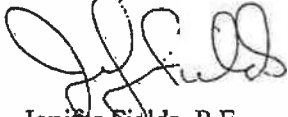
SEP 24 2013

Mr. Michael Trio, Manager

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If you have any questions, please contact Ms. Elizabeth Mahoney of this office at 484.250.5177.

Sincerely,



Jenifer Fields, P.E.  
Regional Manager  
Clean Water

cc: Delaware County Planning Department  
Marple Township  
Mr. Lillicrap – CDCA  
Mr. Salvucci – DELCORA  
Mr. MacCombie  
Ms. Wilson, **CERTIFIED MAIL NO. 7008 1300 0002 4008 1956**  
Mr. Lopez, **CERTIFIED MAIL NO. 7008 1300 0002 4008 1949**  
Bill Gerlach, Esq. – DEP OCC  
Ms. Vollero - RCSOB, 11th Floor, Sewage Facilities  
Ms. Mahoney  
Planning Section  
Re 30 (GJE13CLW)263

SOUTHEAST REGION

MAR 29 2013

**ACT 537 OFFICIAL PLAN UPDATE**

**FOR**

**NEWTOWN TOWNSHIP  
DELAWARE COUNTY, PA**

**VOLUME 1**

**OCTOBER 2012**

**REVISED FEBRUARY 2013**

Prepared by:  
HERBERT E. MACCOMBIE, J.R., P.E.  
CONSULTING ENGINEERS AND SURVEYORS, INC.  
P.O. Box 118  
BROOMALL, PA 19008  
610-356-9550



COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

## Act 537 Plan Content and Environmental Assessment Checklist

### PART 1 GENERAL INFORMATION

#### A. Project Information

1. Project Name Newtown Township Act 537 Plan Update 2012
2. Brief Project Description Development of an updated Act 537 Plan of Study which enhances as well as supplement the existing 2002 Act 537 Plan to largely address the needs within Crum Creek Watershed for conveyance to the CDCA Central Delaware County Conveyance Line for disposal at the Delaware County Regional Authority Wastewater Treatment Plant.

#### B. Client (Municipality) Information

Municipality Name	County	City	Boro	Twp
Newtown Township	Delaware	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Municipality Contact Individual - Last Name	First Name	MI	Suffix	Title
Trio	Michael			Township Manager
Additional Individual Last Name	First Name	MI	Suffix	Title
Municipality Mailing Address Line 1		Mailing Address Line 2		
Bishop Hollow Road				
Address Last Line - City		State	ZIP+4	
Newtown Square		PA	19073	
Phone + Ext.	FAX (optional)	Email (optional)		
610-356-0200	610-356-8722	triom@newtowntwpdco.org		

#### C. Site Information

Site (or Project) Name	(Municipal Name) Act 537 Plan
Newtown Township Act 537 Plan Update 2012	
Site Location Line 1	Site Location Line 2
Western Portion of Township	

#### D. Project Consultant Information

Last Name	First Name	MI	Suffix
MacCombie	James	W	
Title	Consulting Firm Name		
Township Consultant	Herbert E. MacCombie, Jr., P.E.		
	Consulting Engineers & Surveyors, Inc.		
Mailing Address Line 1	Mailing Address Line 2		
P.O. Box 118			
Address Last Line - City	State	ZIP+4	Country
Broomall	PA	19008	
Email	Phone + Ext.	FAX	
h.engineers@verizon.net	610-356-9550	610-356-5032	

## 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 the department. Incomplete Plans will be returned unless the municipality is clearly requesting an advisory review.

- |               |                                |  |
|---------------|--------------------------------|--|
| <u>      </u> | <u>T.O.C.</u>                  | 1. <b>Table of Contents</b>  |
| <u>      </u> |                                | 2. <b>Plan Summary</b>   |
| <u>      </u> | <u>4</u>                       | A. Identify the proposed service areas and major problems evaluated in the plan. (Reference - Title 25, §71.21.a.7.i).   |
| <u>      </u> | <u>4</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 Title 25 §71.21.a.7.ii).   |
| <u>      </u> | <u>2,43-50</u><br><u>App O</u> | C. Present the estimated cost of implementing the proposed alternative (including the user fees) and the proposed funding method to be used. (Reference Title 25, §71.21.a.7.ii).  |
| <u>      </u> | <u>2,51</u>                    | D. Identify the municipal commitments necessary to implement the Plan. (Reference Title 25, §71.21.a.7.iii).   |
| <u>      </u> | <u>2</u>                       | E. Provide a schedule of implementation for the project that identifies the MAJOR milestones with dates necessary to accomplish the project to the point of operational status. (Reference Title 25, §71.21.a.7.iv).   |
| <u>      </u> | <u>App U</u>                   | 3. <b>Municipal Adoption: Original</b> , 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 Title 25, §71.31.f) Section V.F. of the Planning Guide.  |
| <u>      </u> | <u>App Q</u><br><u>App R</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-Title 25, §71.31.b) Section V.E.1 of the Planning Guide.   |
| <u>      </u> | <u>App S</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-Title 25, §71.31.c) Section V.E.2 of the Planning Guide.  |
| <u>      </u> | <u>App CC</u>                  | 6. <b>Comments and Responses:</b> Copies of ALL written comments received and municipal response to EACH comment in relation to the proposed plan. (Reference-Title 25, §71.31.c) Section V.E.2 of the Planning Guide.   |
| <u>      </u> | <u>2</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-Title 25, §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 Title 25, §71.21.c). |
| <u>      </u> | <u>43</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 71.21.(a)(5)(i-iii). (Reference-Title 25, §71.31.e). Appendix B of the Planning Guide.  |

**PART 3 GENERAL PLAN CONTENT CHECKLIST**

<b>DEP Use Only</b>	<b>Indicate Page #(s) in Plan</b>	<b>Item Required</b>
_____	<u>12</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>12</u>	1. Previously undertaken under the Sewage Facilities Act (Act 537). (Reference-Act 537, Section 5 §d.1).
_____	<u>13</u>	2. Has not been carried out according to an approved implementation schedule contained in the plans. (Reference-Title 25, §71.21.a.5.i.A-D). Section V.F of the Planning Guide.
_____	<u>13</u>	3. Is anticipated or planned by applicable sewer authorities or approved under a Chapter 94 Corrective Action Plan. (Reference-Title 25, §71.21.a.5.i.A&B). Section V.D. of the Planning Guide.
_____	<u>13</u>	4. Through planning modules for new land development, planning "exemptions" and addenda. (Reference-Title 25, §71.21.a.5.i.A).
_____	<u>16</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>16</u>	A. Identification of planning area(s), municipal boundaries, Sewer Authority/Management Agency service area boundaries. (Reference-Title 25, §71.21.a.1.i).
_____	<u>16</u>	B. Identification of physical characteristics (streams, lakes, impoundments, natural conveyance, channels, drainage basins in the planning area). (Reference-Title 25, §71.21.a.1.ii).
_____	<u>17</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, and areas unsuitable for soil dependent systems. (Reference-Title 25, §71.21.a.1.iii). Show Prime Agricultural Soils and any locally protected agricultural soils. (Reference-Title 25, §71.21.a.1.iii).
_____	<u>18</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-Title 25, §71.21.a.1.iii).
_____	<u>18</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-Title 25, §71.21.a.1.ii).
_____	<u>19</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-Title 25 §71.21.a.1.vi). Section V.C. of the Planning Guide.

19

- G. Wetlands-Identify wetlands as defined in Title 25, Chapter 105 by description, analysis and mapping. Include National Wetland Inventory mapping and potential wetland areas per USDA, SCS 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-Title 25, §71.21.a.1.v). Appendix B, Section II.I of the Planning Guide.

21

### III. Existing Sewage Facilities in the Planning Area - Identifying the Existing Needs

- A. Identify, map and describe municipal and non-municipal, individual and community sewerage systems in the planning area including:

21

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-Title 25, §71.21a.2.i.A).

22

2. A narrative and schematic diagram of the facility's basic treatment processes including the facility's NPDES permitted capacity, and the Clean Streams Law permit number. (Reference-Title 25, §71.21.a.2.i.A).

23

3. A description of problems with existing facilities (collection, conveyance and/or treatment), including existing or projected overload under Title 25, 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-Title 25, §71.21.a.2.i.B).

23

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-Title 25, §71.21.a.4.i & ii).

24

5. A detailed description of the municipality's operation and maintenance 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. (Reference-Title 25, §71.21.a.2.i.C).

24.App D

6. Disposal areas, if other than stream discharge, and any applicable groundwater limitations. (Reference-Title 25, §71.21.a.4.i & ii).

24

- B. Using DEP's publication titled *Sewage Disposal Needs Identification*, 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:

App BB

1. The types of onlot systems in use. (Reference-Title 25, §71.21.a.2.ii.A).

App BB

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 Sewage Facilities Act, the Clean Stream Law or regulations promulgated thereunder. (Reference-Title 25, §71.21.a.2.ii.B).

App BB

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 Title 25 Chapter 73 (relating to standards for sewage disposal facilities). (Reference-Title 25, §71.21.a.2.ii.C).







N.A.

4. An individual water supply survey to identify possible contamination by malfunctioning onlot sewage disposal systems consistent with DEP's *Sewage Disposal Needs Identification* publication. (Reference-Title 25 §71.21.a.2.ii.B).

N.A.

5. Detailed description of operation and maintenance 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 sewage management programs. (Reference-Title 25, §71.21.a.2.i.C).

25

- C. Identify wastewater sludge and septage generation, transport and disposal methods. Include this information in the sewage facilities alternative analysis including:

25

1. Location of sources of wastewater sludge or septage (Septic tanks, holding tanks, wastewater treatment facilities). (Reference-Title 25 §71.71).

25

2. Quantities of the types of sludges or septage generated. (Reference-Title 25 §71.71).

25

3. Present disposal methods, locations, capacities and transportation methods. (Reference-Title 25 §71.71).

26

#### **IV. Future Growth and Land Development**

- A. Identify and briefly summarize all municipal and county planning documents adopted pursuant to the Pennsylvania Municipalities Planning Code (Act 247) including:

26

1. All land use plans and zoning maps that identify residential, commercial, industrial, agricultural, recreational and open space areas. (Reference-Title 25, §71.21.a.3.iv).

28

2. Zoning or subdivision regulations that establish lot sizes predicated on sewage disposal methods. (Reference – Title 25§71.21.a.3.iv).

29

3. All limitations and plans related to floodplain and stormwater management and special protection (Ch. 93) areas. (Reference-Title 25 §71.21.a.3.iv) Appendix B, Section II.F of the Planning Guide.

- B. Delineate and describe the following through map, text and analysis.

29

1. Areas with existing development or plotted subdivisions. Include the name, location, description, total number of EDU's in development, total number of EDU's currently developed and total number of EDU's remaining to be developed (include time schedule for EDU's remaining to be developed). (Reference-Title 25, §71.21.a.3.i).

29

2. Land use designations established under the Pennsylvania Municipalities Planning Code (35 P.S. 10101-11202), including residential, commercial and industrial areas. (Reference-Title 25,§71.21.a.3.ii). Include a comparison of proposed land use as allowed by zoning and existing sewage facility planning. (Reference-Title 25, §71.21.a.3.iv).

30

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-Title 25, §71.21.a.1.iv). (Reference-Title 25, §71.21.a.3.iii).

31

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-Title 25, §71.21.a.3.iv).

- public ground/surface water supplies

- recreational water use areas

- groundwater recharge areas

- industrial water use

- wetlands

32

5. Sewage planning necessary to provide adequate wastewater treatment for five and ten year future planning periods based on projected growth of existing and proposed wastewater collection and treatment facilities. (Reference-Title 25, §71.21.a.3.v).

34

## **V. Identify Alternatives to Provide New or Improved Wastewater Disposal Facilities**

- A. Conventional collection, conveyance, treatment and discharge alternatives including:

36

1. The potential for regional wastewater treatment. (Reference-Title 25, §71.21.a.4).

36

2. The potential for extension of existing municipal or non-municipal sewage facilities to areas in need of new or improved sewage facilities. (Reference-Title 25, §71.21.a.4.i).

37

3. The potential for the continued use of existing municipal or non-municipal sewage facilities through one or more of the following: (Reference-Title 25, §71.21.a.4.ii).

37

- a. Repair. (Reference-Title 25, §71.21.a.4.ii.A).

37

- b. Upgrading. (Reference-Title 25, §71.21.a.4.ii.B).

37

- c. Reduction of hydraulic or organic loading to existing facilities. (Reference-Title 25, §71.71).

37

- d. Improved operation and maintenance. Reference-Title 25, §71.21.a.4.ii.C).

37

- e. Other applicable actions that will resolve or abate the identified problems. (Reference-Title 25, §71.21.a.4.ii.D).

38

4. Repair or replacement of existing collection and conveyance system components. (Reference-Title 25, §71.21.a.4.ii.A).

38

5. The need for construction of new community sewage systems including sewer systems and/or treatment facilities. (Reference-Title 25, §71.21.a.4.iii).

38

6. Use of innovative/alternative methods of collection/conveyance to serve needs areas using existing wastewater treatment facilities. (Reference-Title 25, §71.21.a.4.ii.B).

39

- B. The use of individual sewage disposal systems including individual residential spray irrigation systems based on:

App D

1. Soil and slope suitability. (Reference-Title 25, §71.21.a.2.ii.C).

N.A.

2. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.21.a.2.ii.C).

App P

3. The establishment of a sewage management program. (Reference-Title 25, §71.21.a.4.iv). See also Part "F" below.

39

4. The repair, replacement or upgrading of existing malfunctioning systems in

areas suitable for onlot disposal considering: (Reference-Title 25, §71.21.a.4).

N.A.

a. Existing technology and sizing requirements of Title 25 Chapter 73. (Reference-Title 25, §73.31-73.72).

N.A.

b. Use of expanded absorption areas or alternating absorption areas. (Reference-Title 25, §73.16).

N.A.

c. Use of water conservation devices. (Reference-Title 25, §71.73.b.2.iii).

39

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-Title 25, §71.64.d).

N.A.

1. Treatment and discharge requirements. (Reference-Title 25, §71.64.d).

N.A.

2. Soil suitability. (Reference-Title 25, §71.64.c.i).

N.A.

3. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.64.c.2).

N.A.

4. Municipal, Local, Agency or other controls over operation and maintenance requirements through a Sewage Management Program. (Reference-Title 25, §71.64.d). See Part "F" below.

39

D. The use of community land disposal alternatives including:

App D

1. Soil and site suitability. (Reference-Title 25, §71.21.a.2.ii.C).

N.A.

2. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.21.a.2.ii.C).

App P

3. Municipality, Local Agency or Other Controls over operation and maintenance requirements through a Sewage Management Program (Reference-Title 25, §71.21.a.2.ii.C). See Part "F" below.

39

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.

41

E. The use of retaining tank alternatives on a temporary or permanent basis including: (Reference-Title 25, §71.21.a.4).

41

1. Commercial, residential and industrial use. (Reference-Title 25, §71.63.e).

41

2. Designated conveyance facilities (pumper trucks). (Reference-Title 25, §71.63.b.2).

41

3. Designated treatment facilities or disposal site. (Reference-Title 25, §71.63.b.2).

41

4. Implementation of a retaining tank ordinance by the municipality. (Reference-Title 25, §71.63.c.3). See Part "F" below.

41

5. Financial guarantees when retaining tanks are used as an interim sewage disposal measure. (Reference-Title 25, §71.63.c.2).

41

F. Sewage Management Programs to assure the future operation and maintenance of existing and proposed sewage facilities through:

App P

1. Municipal ownership or control over the operation and maintenance of individual onlot sewage disposal systems, small flow treatment facilities, or other traditionally non-municipal treatment facilities. (Reference-Title 25, §71.21.a.4.iv).

App P

2. Required inspection of sewage disposal systems on a schedule established by the municipality. (Reference-Title 25, §71.73.b.1.).

App P

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-Title 25, §71.73.b.2).

App P

4. Repair, replacement or upgrading of malfunctioning onlot sewage systems. (Reference-Title 25, §71.21.a.4.iv) and §71.73.b.5 through:

App P

- a. Aggressive pro-active enforcement of ordinances that require operation and maintenance and prohibit malfunctioning systems. (Reference-Title 25, §71.73.b.5).

N.A.

- b. Public education programs to encourage proper operation and maintenance and repair of sewage disposal systems.

N.A.

5. Establishment of joint municipal sewage management programs. (Reference-Title 25, §71.73.b.8).

App P

6. Requirements for bonding, escrow accounts, management agencies or associations to assure operation and maintenance for non-municipal facilities. (Reference-Title 25, §71.71).

41

- G. Non-structural comprehensive planning alternatives that can be undertaken to assist in meeting existing and future sewage disposal needs including: (Reference-Title 25, §71.21.a.4).

1. Modification of existing comprehensive plans involving:

41

- a. Land use designations. (Reference-Title 25, §71.21.a.4).

41

- b. Densities. (Reference-Title 25, §71.21.a.4).

41

- c. Municipal ordinances and regulations. (Reference-Title 25, §71.21.a.4).

41

- d. Improved enforcement. (Reference-Title 25, §71.21.a.4).

41

- e. Protection of drinking water sources. (Reference-Title 25, §71.21.a.4).

41

2. Consideration of a local comprehensive plan to assist in producing sound economic and consistent land development. (Reference-Title 25, §71.21.a.4).

41

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-Title 25, §71.21.a.4).

41

4. Evaluation of existing local agency programs and the need for technical or administrative training. (Reference-Title 25, §71.21.a.4).

41

- H. A no-action alternative which includes discussion of both short-term and long-term impacts on: (Reference-Title 25, §71.21.a.4).

41

1. Water Quality/Public Health. (Reference-Title 25, §71.21.a.4).

42

2. Growth potential (residential, commercial, industrial). (Reference-Title 25, §71.21.a.4).

42

3. Community economic conditions. (Reference-Title 25, §71.21.a.4).

42

4. Recreational opportunities. (Reference-Title 25, §71.21.a.4).

42

5. Drinking water sources. (Reference-Title 25, §71.21.a.4).

42

6. Other environmental concerns. (Reference-Title 25, §71.21.a.4).

43

## VI. Evaluation of Alternatives

- A. Technically feasible alternatives identified in Section V of this check-list must be evaluated for consistency with respect to the following: (Reference-Title 25, §71.21.a.5.i.).

43

1. Applicable plans developed and approved under **Sections 4 and 5 of the Clean Streams Law or Section 208 of the Clean Water Act** (33 U.S.C.A. 1288). (Reference-Title 25, §71.21.a.5.i.A). Appendix B, Section II.A of the

## Planning Guide.

- 43 2. **Municipal wasteload management Corrective Action Plans or Annual Reports** developed under PA Code, Title 25, Chapter 94. (Reference-Title 25, §71.21.a.5.i.B). The municipality's recent Wasteload Management (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.
- 43 3. Plans developed under **Title II of the Clean Water Act** (33 U.S.C.A. 1281-1299) or **Titles II and VI of the Water Quality Act of 1987** (33 U.S.C.A. 1251-1376). (Reference-Title 25, §71.21.a.5.i.C). Appendix B, Section II.E of the Planning Guide.
- 44 4. **Comprehensive plans** developed under the Pennsylvania Municipalities Planning Code. (Reference-Title 25, §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.
- 44 5. **Antidegradation requirements** as contained in PA Code, Title 25, Chapters 93, 95 and 102 (relating to water quality standards, wastewater treatment requirements and erosion control) and the Clean Water Act. (Reference-Title 25, §71.21.a.5.i.E). Appendix B, Section II.F of the Planning Guide.
- 44 6. **State Water Plans** developed under the Water Resources Planning Act (42 U.S.C.A. 1962-1962 d-18). (Reference-Title 25, §71.21.a.5.i.F). Appendix B, Section II.C of the Planning Guide.
- 44 7. **Pennsylvania Prime Agricultural Land Policy** 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-Title 25, §71.21.a.5.i.G). Appendix B, Section II.G of the Planning Guide.
- 44 8. **County Stormwater Management Plans** approved by DEP under the Stormwater Management Act (32 P.S. 680.1-680.17). (Reference-Title 25, §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.
- 45 9. **Wetland Protection.** 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-Title 25, §71.21.a.5.i.I) Appendix B, Section II.I of the Planning Guide.
- 45 10. **Protection of rare, endangered or threatened plant and animal species** as identified by the Pennsylvania Natural Diversity Inventory (PNDI). (Reference-Title 25, §71.21.a.5.i.J). Provide DEP with a copy of the completed Request For PNDI Search document. Also provide a copy of the response letter from the Department of Conservation and Natural Resources' Bureau of Forestry regarding the findings of the PNDI search. Appendix B, Section II.J of the Planning Guide.
- 45 11. **Historical and archaeological resource protection** under P.C.S. Title 37, Section 507 relating to cooperation by public officials with the Pennsylvania Historical and Museum Commission. (Reference-Title 25, §71.21.a.5.i.K). Provide the department with a completed copy of a Cultural Resource Notice

request of the Bureau of Historic Preservation (BHP) to provide a listing of known historical sites and potential impacts on known archaeological and historical sites. Also provide a copy of the response letter from the BHP. Appendix B, Section II.K of the Planning Guide.

- \_\_\_\_\_ 45 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-Title 25, §71.21.a.5.ii). Appendix B of the Planning Guide.
- \_\_\_\_\_ 46 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-Title 25, §71.21.a.5.iii).
- \_\_\_\_\_ 46 D. Provide cost estimates using present worth analysis for construction, financing, on going administration, operation and maintenance 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 five years from the date of plan submission. (Reference-Title 25, §71.21.a.5.iv).
- App O \_\_\_\_\_ 47 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 five years from the date of the plan submission. (Reference-Title 25, §71.21.a.5.v).
- \_\_\_\_\_ 50 F. Analyze the need for immediate or phased implementation of each alternative proposed in Section V of this checklist including: (Reference-Title 25, §71.21.a.5.vi).
- \_\_\_\_\_ 50 1. A description of any activities necessary to abate critical public health hazards pending completion of sewage facilities or implementation of sewage management programs. (Reference-Title 25, §71.21.a.5.vi.A).
- \_\_\_\_\_ 50 2. A description of the advantages, if any, in phasing construction of the facilities or implementation of a sewage management program justifying time schedules for each phase. (Reference-Title 25, §71.21.a.5.vi.B).
- \_\_\_\_\_ 50 G. Evaluate administrative organizations and legal authority necessary for plan implementation. (Reference - Title 25, §71.21.a.5.vi.D.).
- \_\_\_\_\_ 51 VII. Institutional Evaluation
- \_\_\_\_\_ 51 A. Provide an analysis of all existing wastewater treatment authorities, their past actions and present performance including:
- \_\_\_\_\_ 51 1. Financial and debt status. (Reference-Title 25, §71.61.d.2).
- \_\_\_\_\_ 51 2. Available staff and administrative resources. (Reference-Title 25, §71.61.d.2)
- \_\_\_\_\_ 51 3. Existing legal authority to:
- \_\_\_\_\_ 51 a. Implement wastewater planning recommendations. (Reference-Title 25, §71.61.d.2).
- \_\_\_\_\_ 51 b. Implement system-wide operation and maintenance activities. (Reference-Title 25, §71.61.d.2).
- \_\_\_\_\_ 51 c. Set user fees and take purchasing actions. (Reference-Title 25, §71.61.d.2).
- \_\_\_\_\_ 51 d. Take enforcement actions against ordinance violators. (Reference-Title 25,

§71.61.d.2).

- 51 e. Negotiate agreements with other parties. (Reference-Title 25, §71.61.d.2).
- 51 f. Raise capital for construction and operation and maintenance of facilities. (Reference-Title 25, §71.61.d.2).
- 52 B. Provide an analysis and description of the various institutional alternatives necessary to implement the proposed technical alternatives including:
  - 52 1. Need for new municipal departments or municipal authorities. (Reference-Title 25, §71.61.d.2).
  - 52 2. Functions of existing and proposed organizations (sewer authorities, onlot maintenance agencies, etc.). (Reference-Title 25, §71.61.d.2).
  - 52 3. Cost of administration, implementability, and the capability of the authority/agency to react to future needs. (Reference-Title 25, §71.61.d.2).
- 52 C. Describe all necessary administrative and legal activities to be completed and adopted to ensure the implementation of the recommended alternative including:
  - 52 1. Incorporation of authorities or agencies. (Reference-Title 25, §71.61.d.2).
  - 52 2. Development of all required ordinances, regulations, standards and inter-municipal agreements. (Reference-Title 25, §71.61.d.2).
  - 53 3. Description of activities to provide rights-of-way, easements and land transfers. (Reference-Title 25, §71.61.d.2).
  - 53 4. Adoption of other municipal sewage facilities plans. (Reference-Title 25, §71.61.d.2).
  - 53 5. Any other legal documents. (Reference-Title 25, §71.61.d.2).
  - 53 6. Dates or timeframes for items 1-5 above on the project's implementation schedule.
- 53 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-Title 25, §71.61.d.2).

54 **VIII. Implementation Schedule and Justification for Selected Technical & Institutional Alternatives**

- 54 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:
  - 54 1. Existing wastewater disposal needs. (Reference-Title 25, §71.21.a.6).
  - 54 2. Future wastewater disposal needs. (five and ten years growth areas). (Reference-Title 25, §71.21.a.6).
  - 54 3. Operation and maintenance considerations. (Reference-Title 25, §71.21.a.6).
  - 55 4. Cost-effectiveness. (Reference-Title 25, §71.21.a.6).
  - 55 5. Available management and administrative systems. (Reference-Title 25, §71.21.a.6).
  - 55 6. Available financing methods. (Reference-Title 25, §71.21.a.6).

55

7. Environmental soundness and compliance with natural resource planning and preservation programs. (Reference-Title 25, §71.21.a.6).

68

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-Title 25, §71.21.a.6)

2.54

C. Designate and describe the implementation schedule for the recommended alternative, including justification for any proposed phasing of construction or implementation of a Sewage Management Program. (Reference – Title 25 §71.31d)

**IX. Environmental Report (ER) generated from the Uniform Environmental Review Process (UER)**

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.*



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## EXECUTIVE SUMMARY

This Act 537 Update was prepared at the request of the Board of Supervisors of Newtown Township (Township) in order to address current and future planning needs, as well as concerns raised by the Pennsylvania Department of Environmental Protection (PA DEP) as more recently noted in the Department's letter dated November 29, 2010 as well as concerns raised by the general public. The intent of the Study contained herein is to supplement the service area previously identified in the Newtown Township 2002 Act 537 Plan and be in substantial compliance with Act 537 entitled *The Pennsylvania Sewage Facilities Act, PA Code Title 25, Chapter 71*, in order to appropriately plan for the future needs of the Township, as well as its residents.

The Plan contains the requisite Environmental Checklist with the Study addressing the planning requirements necessary in order to provide public sanitary sewer services, where appropriate, to meet the immediate needs within the newly established Central Delaware County Authority (CDCA) service area, while at the same time addressing future needs, flow capacity, and existing community sewage systems, as well as the continuing use of Individual On-lot Sewage Disposal Systems under the guise of a newly established Township-wide "On-lot and Community Sewage System" Operation and Maintenance Ordinance. Refer to the accompanying service map (Appendix B).

The Plan of Study is comprised of the following components:

- I. Previous Wastewater Planning
- II. Physical and Demographic Analysis
- III. Existing Sewage Facilities in the Planning Area
- IV. Future Growth and Development
- V. Alternatives to Provide New or Improved Wastewater Disposal Facilities
- VI. The Evaluation of Alternatives
- VII. Institutional Evaluation
- VIII. Selected Wastewater Treatment and Institutional Alternatives

The Plan Update identifies and evaluates various aspects of alternatives in a prudent manner by which public sewer service currently exists as well as the merits of providing future service to residential, commercial, and institutional development within the overall planning area considered. Since the collection and conveyance of sewage is paramount, locations of these collection and conveyance systems from a practical usage basis, as well as

cost effectiveness standpoint, are extremely important in order to transport projected wastewater flows.

Other available methods of treatment, including that of community wastewater treatment facilities and on lot sewage disposal systems, were also considered and evaluated.

In order to meet current, as well as future, wastewater disposal needs regarding future projections within the planning area, the Township is in agreement that the Central Delaware County Authority (CDCA) as well as limited reallocation of flow from a portion of the BPG site to Radnor-Haverford-Marple (RHM) conveyance and Delaware County Regional Water Quality Authority (DELCORA) treatment alternative is the most responsible and cost effective to the residents and the most prudent, from a treatment standpoint, for environmental sensitivity. A network of gravity mains, pump stations and force mains will need to be in place in order to use this alternative.

Section 172-116 of the Zoning Ordinance states that "any lot in any district on which is built a dwelling which is not an accessory building and for which there is not public water supply or public sewer shall have an area of not less than 12,000 square feet. Further, all relevant state regulations governing the placement of on-site septic in relation to on-site water supply are incorporated herein by reference." In addition, Section 148-38 of the Subdivision and Land Development Ordinance governs sewage treatment and disposal by connection to the public sewer system or by on-site sanitary sewage facilities. The Township also has other ordinances in effect related to the public sewer system: "Chapter 5, Article I – Sewer Authority," "Chapter 121 – Plumbing," and "Chapter 130 – Sewers."

Individual development properties to be connected to the system will be the responsibility of the prospective owners of the proposed developments.

Additional information and details regarding the selected alternative can be found in Section V of this document.

The implementation Schedule for the completion of public sewer for the remainder of the Township is anticipated as follows<sup>1</sup>:

	<b><u>Schedule Item</u></b>	<b><u>Months from PA DEP Planning Approval</u></b>
1.	Receipt of PA DEP Approval of Act 537 Plan.	
2.	Design of proposed collection and conveyance Systems for immediate needs area.	On-going as Projects Evolve six (6) to nine (9) months after Act 537 approval & appeal period.

<sup>1</sup> It should be noted that due to the uncertainty of economic times the above schedule is the current best available information. Timing may differ slightly due to funding availability as well as product demand.

	<b><u>Schedule Item</u></b>	<b><u>Months from PA DEP Planning Approval</u></b>
3.	Submit Plan for Erosion & Sediment Control and NPDES Permit to Delaware County Conservation District.	On-going as part of the design process and in conjunction with future subdivisions and Land Development Process.
4.	Receipt of Erosion & Sedimentation Control and NPDES Permits, appropriate approval after each submission.	Six (6) Months after submission.
5.	Submission of Part II WQM Permit application to PA DEP will need to be evaluated on an individual basis depending on the scope of the project. Projects requiring a Pump Station and/or connection of future projected services to 250 or more EDU's or equivalent in the future will mandate such a submission.	Once design is completed.
6.	Receipt of Part II Application Approval. Prepare Bidding Documents and at the same time start the process of securing funding. At this juncture it appears that a bond secured by the Municipal Authority to be the most prudent and flexible. (The project may have to be phased depending upon funding availability. Also, it appears that any bond funding should take advantage of capitalized interest for a period of two (2) to three (3) years.	Three (3) to six (6) months after approval.
7.	Place project out to bid. Once bids are received close on Municipal Bond Issue. It appears a 120 day holding period for Bid Award will allow sufficient time to get all documents in order prior to issuance of notice to proceed.	Once all permits are received.
8.	Construct the Project. If phasing of the overall scope of the service area is required, Items two (2) through eight (8) may have to be repeated various times as funding may allow.	
9.	Begin Sanitary Sewer extension based upon permit approval, funding and demand.	
10.	Depending on timing of other projects it may be necessary to apply for Pump and Haul Permit(s).	As Applicable for each subdivision and individual basis.
11.	Receive Pump and Haul Permits.	As Applicable.
12.	Completion of Collection and Conveyance Systems.	As required on an individual basis.

## **Alternative of Choice**

The selected alternative which best meets the immediate and future wastewater treatment needs of the properties within the planning area is the CDCA Alternative. For this alternative, it is proposed that a network of gravity mains, pump stations, and force mains, as shown in Appendix K, be constructed to collect and convey the wastewater to the DELCORA WWTP.

### **Melmark School**

Pump (from Pump Station #1 on the Melmark School campus) to a gravity line within the driveway that provides access to three (3) residential parcels south of the Melmark School campus and west of the Newtown Hunt area development. The gravity main will service the three (3) residential lots and the Melmark School campus and will drain to Pump Station #2. The Newtown Hunt will be provided with gravity sewers. Hunt Valley Lane and Hunt Valley Circle will be provided with a gravity collection system which would require a gravity line be constructed adjacent to an existing drainage ditch and adjacent to homes in the central portion of Hunt Valley Circle. Easements will be required for the system to drain through the southerly portion of the community, south of an existing pond/stormwater management basin, to the property southwest of the pond property where proposed Pump Station #2 is proposed to be located. The Pump Station #2 would be required to handle an average daily flow of 33,150 GPD. The Pump Station would utilize a force main that would pass through the same easement parallel to the gravity main draining from Newtown Hunt adjacent to the pond/stormwater management basin, through other existing easements, where possible, and ultimately discharge to a proposed gravity line on the westerly portion of Echo Valley Lane as can be seen on the "Ashford P.S. Service Area Option 2" Plan in Appendix "K". An 8" Sanitary Sewer gravity collection system is to be constructed to drain to a proposed Pump Station #3, which is proposed to be located just south of the Crum Creek Lane cul-de-sac and north of Goshen Road. This flow path would allow for approximately 28 homes in the Hunt Valley Circle area and all of the Echo Valley Development to be connected by gravity.

### **Hunt Valley Lane and Circle**

Methods of providing public sewer to the Hunt Valley Lane and Circle areas included an evaluation of the use of low pressure sewers with connection into a low pressure sewer system within the Echo Valley community with ultimate conveyance to the Ashford Pump Station or to tie in to the proposed Melmark School Pump Station which would require conveyance to the Ashford Pump Station. An additional alternative, as part of the Melmark School would be to provide gravity service to the Hunt Valley Circle area which would allow for the connection of the Melmark School. However, this option would require additional easement acquisitions. In



addition, some minor interaction with steep slopes, and an existing drainage ditch posed concerns of the proximity of the spine of the collection system to the existing homes. It is felt these issues can be resolved and is therefore part of the alternative of choice by providing a gravity service in a cost effective manner with minimal environmental impact. In addition, a sewage lift station (Pump Station #2) would be required. It is anticipated that the lift station would be required to handle an average daily flow of 33,150 GPD.

### Echo Valley Area

The Echo Valley Service Area now includes properties along a portion of Goshen Road, Echo-Valley Lane, Battles Lane, Meadow Lane, Pheasant Lane, Crum Creek Lane, Partridge Lane, Spring Water Lane and Fox Hill Lane.

Although the method of gravity sewers for public sewer service within the Echo Valley community at first blush may not be the most cost effective method from a public infrastructure standpoint, this alternative was further explored in order to compare the cost and environmental impact of providing gravity service as it relates to cost and environmental impact relative to the cost and environmental impact of providing a low pressure sewer system, taking into consideration the costs that would be the responsibility of the individual resident for grinder pumps and service connections.

With the gravity alternative several easements would be required to allow connectivity of the system and ultimate drainage to the Goshen Road Pump Station #3. In addition, 112 grinder pumps would no longer be needed; instead, it is anticipated that as many as eight (8) properties would require sewage ejector pumps to make connection to the gravity mains within the street. A number of these may be eliminated depending upon the elevation difference between the service connection to the residence and the elevation of the sewer main, which would be determined during design of the system.

Because of the undulating topography within the Echo Valley Development, dual gravity lines, will be needed which will require private easements. A meeting was held with residents in this area which met with a favorable response regarding the need for easements in order to allow for a gravity line. The dual line would be situated between the residences along the northerly side of Crum Creek Lane and Lewis Run, which approximately follows the rear lot lines of these residences. This dual line is critical to allow gravity sewer to approximately 79 residences in the northeastern, eastern, and southeastern portions of the Echo Valley Development. In addition it will allow gravity lateral connections for eight (8) residences along the northerly side of Crum Creek Lane as well as two (2) residences along Echo Valley Lane, which the dual line will pass between to allow gravity service for the southeast portion of the Development. A gravity main will be connected to the Crum Creek Lane dual line from Battles Lane to the north through an existing 50 foot wide right-

of-way between two (2) of the properties along the southerly side of Battles Lane. A utility stream crossing of Lewis Run will be necessary to make this connection. Easements will be necessary to allow for connection of the northeasterly portion of Echo Valley between residences along the westerly side of Echo Valley Lane just north of Spring Water Lane through to the easterly end of Battles Lane, and again residents have been contacted in this regard. The Foxhill Lane cul-de-sac is situated lower in elevation than its intersection with Echo Valley Lane. This would require a small low pressure sewer system to service four (4) homes if the connection point were to be the gravity main in Echo Valley Lane. However, easements will allow gravity sewer service to the Foxhill Lane cul-de-sac with possible connection along Echo Valley Lane north of the intersection at Foxhill Lane since the elevation along Echo Valley Lane will allow this to be possible.

Once previously considered to be a possible significant environmental impact, a site walk on February 8, 2013 with several members of the community along with representatives from the Township through environmentally sensitive areas as well as through properties where easements may be necessary resulted in constructive dialogue which affirmed the ability to use gravity sewer mains to be better situated with respect to proximity to surface waters, wooded areas, and individual residences to minimize environmental impact, cost of construction, and easement acquisition.

In addition to the previously mentioned gravity scenario regarding the Melmark School and Hunt Valley Circle, the alternative of choice for this area with total flow of approximately 35,700 GPD is gravity sewer scenario which will drain to the Goshen Road Pump Station (Pump Station #3).

#### **Goshen Road Area**

The anticipated flow to the Goshen Road Pump Station (Pump Station #3) which would include flow from a portion of the Boot Road area, the Melmark School, Hunt Valley Lane and Circle, and all of Echo Valley would be approximately 81,500 GPD.

The Goshen Road Pump Station is proposed to discharge to a terminal manhole at the end of a gravity line off of the northerly side of Goshen Road situated within the Ashford (Liseter) Development, which will convey the flow to the Ashford Pump Station.

#### **The Boot Road Area**

The Boot Road Service Area, which includes homes along Boot Road, as well as Philips Lane have been identified to contain 32 units some of which are anticipated to flow by gravity to the Goshen Road Pump Station #3 and follow the flow pattern identified therein. The remaining flow is to flow directly by gravity through the Marville Property to a proposed Pump Station #4 located near on the Olde Masters

Site. The discharged flow from Pump Station #4 will then travel by gravity to a proposed Pump Station #5 at the Springton Pointe Estates Sewage Treatment Facility along Stoney Brook Blvd. and then pumped to a proposed modified and/or relocated Camelot Pump Station #6 for conveyance to the CDCA line located at the southeast corner of Media Line Road (SR 1030) and Newtown Street Road (SR 0252) In Marple Township, Delaware County, PA.

#### **The Episcopal Academy**

Representatives of the Episcopal Academy have requested flow of 11,000 GPD. It should be pointed out that the pump and haul records provided by the Episcopal Academy for review indicates flows of approximately 6,700 GPD. Therefore, it appears the flows requested to be reasonable.

The Episcopal Academy proposes the construction of a pump station and force main to be connected with the infrastructure within the Ashford Development at a point that would minimize interaction with sensitive environmental concerns such as stream crossings and steep slopes. The public sewer option appears to be an environmentally sound one and financing will be provided by the Episcopal Academy.

#### **The Ashford Group**

The Ashford Development situated along the Northwest corner of Goshen Road (SR 1034) and Newtown Street Road (SR 0252) proposes the construction of 449 residential units with other connections totaling 460 EDUs that would generate 115,000 GPD of flow. The Ashford Group has made an application for Sewage Facilities Planning Module and a Part II Water Quality Permit for a pump station that will ultimately discharge flow to the CDCA line at a sanitary sewer manhole situated at the southeast corner of Media Line Road (SR 1030) and Newtown Street Road (SR 0252) adjoining the Delaware County Community College in Marple Township, Delaware County, PA. Ashford has received approval for both the Sewage Facilities Planning Module, as well as their Part II Permit. Although connection of flow up to 213,000 GPD is included as part of the Pump Station design capability, 115,000 GPD was approved with the Water Quality Management Part II Permit by the PA DEP with the requirement that additional planning be conducted and approved to allow for connection of the additional flow to the Ashford Pump Station. However, the Pump Station, by agreement, was designed and is to be constructed in anticipation of receiving the additional flow.

Flow to the Ashford Pump Station is anticipated to be able to handle flow from the following:

- |    |                     |             |
|----|---------------------|-------------|
| 1. | Ashford Development | 115,000 GPD |
| 2. | Episcopal Academy   | 11,000 GPD  |
| 3. | Melmark School      | 25,000 GPD  |

4.	Hunt Valley Circle	7,350 GPD
5.	Echo Valley Area	<u>47,775 GPD</u> – Originally

Total Anticipated Flow      206,125 GPD

The Ashford Group has worked with the Township to provide an appropriate Developer's Agreement, as well as post financial surety so that the project can move forward. It is anticipated that the Ashford Pump Station and Force Main Project will be under construction shortly.

#### **The Marville Development, Newtown Business Center and Olde Masters Site**

The Marville Development and the Newtown Business Center are located along the northwestern side of West Chester Pike (SR 003) in the western portion of the Township adjacent to Crum Creek and the Edgmont Township boundary line. The Olde Masters Site is situated along the southeasterly side of West Chester Pike (SR 003) and adjacent to Crum Creek and the Edgmont Township boundary. These properties are owned by National Developers Realty, Inc. with associated sewage flows of 3,500 GPD from the existing Newtown Business Center, 83,950 GPD for the Marville Development and 78,100 GPD for the Olde Masters Property. These properties are contained within various zoning districts such as SUZ, I, R4 and R5.

The property owner has received approval to construct a 50,000 GPD wastewater treatment plant at the Marville site but has expressed his interest in connecting to the public sewer system.

These properties would drain to Pump Station #4, which is proposed to be located on the Olde Masters Site and discharging to a proposed gravity sewer line to be constructed along Campus Boulevard. The flow then will follow the route described in the Boot Road Service Area Scenario.

#### **The Florida Park Area**

The Florida Park Service Area consists of 127 dwelling units.

Anticipated flow from this development based upon 262.50 GPD/unit is 33,338 GPD.

The Florida Park Service Area includes properties along West Chester Pike between Florida Park up to and including the Boot Road intersection, Florida Avenue, Park Avenue, Columbia Avenue, Tuxedo Avenue, Pomona Avenue and Fairview Avenue. Because of the smaller lot sizes, the lack of additional ground by which a replacement "On-Site" sewage disposal system can be utilized, a gravity sewer system is being recommended for providing sewer services to this area.

Flow from the Florida Park Service Area is to be by gravity to a proposed Pump Station #4 at the Olde Masters Site and then pumped to a proposed gravity sewer main proposed for Campus Boulevard. Flow would then travel by gravity to the new Springton Pointe Estates Pump Station #5 along Stoney Brook Boulevard and then transport the sewage to the Camelot Pump #6 for conveyance to the CDCA line located at the southeasterly intersection of Media Line Road (SR 1030) and Newtown Street Road (SR 0252).

#### **Newtown Square Corporate Campus**

The Newtown Square Corporate Campus is located along Campus Boulevard with a flow allocation of 26,000 GPD. The individual buildings along Campus Boulevard each have individual "On-Site" sewage disposal systems.

This area is proposed to be serviced by gravity sewer and will ultimately flow through the Camelot Pump Station #6 for transport to the CDCA System as noted above.

#### **Hunters Run**

Hunters Run is a community of 76 existing homes with anticipated flow of 19,950 GPD. The existing homes are serviced by a community "On-Site" sewage disposal treatment and land application system which would be abandoned and connected by gravity to the sanitary sewer line in Stoney Brook Boulevard. Flow from Hunters Run would flow by gravity to the Springton Pointe Estates Pump Station #5 that is proposed to be discharged to the Camelot Pump Station #6 and utilizing the CDCA System.

#### **Springton Pointe Estates**

The Springton Pointe Estates Sewage Treatment and Disposal System rated to handle 35,000 GPD is proposed to be retired and replaced with Pump Station #5 for conveyance of sewage to the Camelot Pump Station #6 so that sewage may be conveyed to the CDCA system located at the southeast corner of Media Line Road (SR 1030) and Newtown Street Road (SR 0252).

### **Sewer Service Areas Infrastructure – Pump Stations, Sewer Mains and Routing (Alternative of Choice)**

#### **Proposed Pump Station No. One "Melmark"**

This pump station is proposed to convey 25,000 gallons per day from the site. The forcemain will discharge sewage to a gravity line within the driveway that provides access to three (3) residential parcels south of the Melmark School campus and west of the Newtown Hunt development. The gravity main will service the three (3) residential lots and the Melmark School campus and will drain to Pump Station #2.

The Pump Station would utilize a force main that would pass through the same easement parallel to the gravity main draining from Newtown Hunt adjacent to the existing pond/stormwater management basin, through other existing easements, where possible, and ultimately discharge to a proposed gravity line on the westerly portion of Echo Valley Lane.

**Proposed Pump Station No. Two "Hunt Valley Circle"**

This pump station is proposed to convey sewage from the Melmark School, as well as Hunt Valley Lane and Hunt Valley Circle with the amount of 33,150 GPD where the discharge will pass through an existing easement for connection with a gravity line within Echo Valley Lane, which will ultimately discharge to Pump Station #3 along Goshen Road.

**Proposed Pump Station No. Three "Goshen Road"**

This pump station is proposed to convey sewage from the Hunt Valley Circle Pump Station in the amount of 33,150 GPD, approximately 35,700 GPD from the Echo Valley area and 12,350 GPD from the Goshen Road area, and a portion of Boot Road for a total flow of 81,500 GPD. Flow from this pump station is to be pumped to a terminal manhole at the end of a gravity line off of the northerly side of Goshen Road situated within the Ashford (Liseter) Development, which will convey the flow to the Ashford Pump Station with ultimate conveyance to the CDCA line located at the southeasterly intersection of Media Line Road (SR 1030) and Newtown Street Road (SR 0252).

**Proposed Pump Station No. Four "Olde Masters Site"**

This pump station is proposed to take flow from the Newtown Business Center, Boot Road, the Marville Property, The Olde Masters Site and Florida Park, and a portion of Campus Boulevard in the total amount of approximately 211,910 GPD. The pump station will convey flow to a proposed gravity line in Campus Boulevard. Gravity flow will discharge to a proposed Pump Station #5 at the Springton Pointe Estates.

**Proposed Pump Station No. Five "Springton Pointe Estates"**

This pump station will receive flow from the Olde Masters Pump Station #4 in the amount of 211,910 GPD, in addition to the remainder of Campus Boulevard, the Hunters Run Development and the Springton Pointe Estates for a total flow of 285,860 GPD. This flow is to be pumped to the Camelot Pump Station #6.

**Proposed Pump Station No. Six "Camelot"**

Pump Station No. Six is the existing Camelot Pump Station that is proposed to be modified to accept additional flow from the CDCA Service Area in the amount of 285,860 GPD. Therefore, the total flow to the Camelot Pump Station will be 535,860 GPD which will be conveyed to the CDCA line located at the southeast corner of Media Line Road and Newtown Street Road in Marple Township, Delaware County, PA.

**Proposed Pump Station No. Seven "Ashford"**

This pump station was scheduled to convey 206,125 gallons per day from the site, receiving flow from Melmark (25,000), Echo Valley Service Area (47,775), Hunt Valley Circle Area (7,350), Episcopal (11,000) and the Ashford Development (115,000). The forcemain from the pump station will traverse along the Ashford Property to Route 252. The forcemain will terminate at the terminus manhole of the Central Delaware County Authority. By re-evaluating the service area anticipated flow to the Ashford Pump Station is 207,500 GPD.

**I. PREVIOUS WASTEWATER PLANNING**

**A. Identify and Discuss Existing Wastewater Planning**

**1. Previous Act 537 Planning**

The Official Sewage Facilities Plan of Newtown Township was updated by "Act 537 Sewage Facilities Plan, Newtown Township, Delaware County," dated March 20, 2002, and prepared by Peter Krasas, Jr. & Associates, Inc. and approved by DEP on August 29, 2002 (2002 Plan). The 2002 Plan was an update to "The Sewage Facilities Plan for Newtown Township, Delaware County, Act 537 Study" dated June 1986. The 2002 Plan incorporated revisions to the 1986 Plan which included sewerage of the Aronimink Golf Club, SAP North America Tract, Ivy Lane, and Oak Hill Lane, as well as community sewage disposal systems owned and operated by Homeowners Associations for the Springton Pointe Estates Subdivision and the Hunters Run Development. The 2002 Plan also addressed the existing and future wastewater disposal needs of the Township and its residents at the time the plan was implemented.

On February 6, 2009 the DEP approved the (2009 Plan) "Official Act 537 Plan Sewerage Facilities Plan Update for Newtown Township for CDCA Membership" dated May 21, 2007 with supplements. The Department incorporated by reference into the 2009 Plan Article V of the December 21, 2007 Supplemental Agreement between Newtown Township and the CDCA providing for the construction of improvements by CDCA to CDCA's Crum Creek Interceptor, CDCA's November, 2006 Capital Improvement Program & Comprehensive Trunkline Assessment, and CDCA's August 8, 2007 letter to the Department regarding the coordination of construction of the facilities in light of the interceptor capacity needs of member municipalities.

On December 7, 2009 the Newtown Township Board of Supervisors voted to direct its engineers to pursue a revision of its Act 537 Plan (the 2009 Plan). Furthermore, the 2009 Plan was appealed by three (3) parties and the appeal has been upheld which, in essence, struck down the PA DEP Approval of the 2009 Plan.

This update is intended to address concerns raised with the 2009 Plan as well as address the immediate and future needs of the Township not addressed in previous Act 537 Plans and Updates.



**2. Planning Not Done in Accordance with an Approved Implementation Schedule**

For the most part the approved planning currently in place (the 2002 Plan) and implementation schedule for such planning has been followed by the Township and Municipal Authority.

The 2002 Plan identified areas of the Township with existing development where public sewage collection and disposal facilities will be extended, such as Florida Park, Echo Valley, West Goshen Road, and Newtown Hunt (Hunt Valley Circle). At the time of preparation of the 2002 Plan public sewer was not in close proximity or readily available to these areas.

**3. Additional Planning**

This Act 537 Plan Update addresses immediate (Phase I) and future (Phase II) needs largely within the CDCA service area in Newtown Township. It is anticipated that areas outside of Phases I and II will be the subject of future planning beyond the scope of this Act 537 Plan Update.

**4. Planning via Planning Module Addendum**

The Township's current Act 537 was approved in 2002. In addition, planning modules and/or exemptions from planning for the Sunrise Facility, Pulte Residential and Commercial Developments (Springton Pointe Woods), Alberto's Restaurant, Terrazza Developments, and Ashford Development, among some other minor amendments, have been approved since the 2002 Plan, which now form the basis of the Township's current Plan.

**B. Identification of Municipal and County Planning**

**1. Identify Land Use Plans and Zoning Maps as they pertain to Newtown Township.**

Land Use within the Township is regulated by the following:

- a) Newtown Township, Delaware County, PA Comprehensive Plan, dated December 27, 2001.
- b) Newtown Township Zoning Ordinance (Chapter 172), adopted October 14, 1974, last amended June 8, 2009.

- c) Newtown Township Zoning Map, last revised 2011.
- d) Newtown Township Subdivision and Land Development Ordinance (Chapter 148), adopted June 9, 1986.

**2. Identify Zoning Regulations that Establish Lot Sizes**

<b>Zoning District</b>		<b>Minimum Lot Area</b>
R-1	Residence District (Single Family Detached Dwellings (SFDD))	60,000 s.f. Lot Area; 30,000 s.f. Contiguous Buildable Lot Area
R-1A	Residence District SFDD	45,000 s.f. Lot Area; 22,500 s.f. Contiguous Buildable Lot Area
R-2	Residence District SFDD	25,000 s.f. Lot Area; 12,500 s.f. Contiguous Buildable Lot Area
R-3	Residence District SFDD	12,000 s.f. Lot Area; 6,000 s.f. Contiguous Buildable Lot Area
R-4	Residence District SFDD Townhouses or Row Houses	10 Acres with 4 DUs/Ac Max
R-4A	Residence District SFDD Townhouses or Row Houses	10 Acres with 2.25 DUs/Ac Max
R-5	Residence District Housing for the Elderly: SFDD Townhouses or Row Houses Apartment House Buildings	10 Acres with 10 DUs/Ac Max
A	Apartment District <sup>1</sup> Apartment House Buildings	2 Acres with 12 DUs/Ac Max where Public Sewer is available; 7 DUs/Ac Max where Public Sewer not available
A-O	Apartment Office District <sup>1</sup> Apartment House Buildings Service Office Buildings	2 Acres with 12 DUs/Ac Max where Public Sewer is available
O	Office District	35,000 s.f. Lot Area
C-1	Commercial District Residential Uses by Special Exception: SFDD Two-Family Dwellings Multi-Family Dwellings	For On-Lot Sewage Disposal: 6,000 s.f. per Family Unit, Store, or combination of Store and

Zoning District		Minimum Lot Area
	Apartment House Buildings	Family Unit
C-2	Commercial District Non-motel, non-hotel, and non-office/clinic uses Motel/Hotel uses Lifestyle Village	30 Contiguous Acres 5 Contiguous Acres 50 Acres Gross Tract
I	Light Industrial	2 Acres
SU-1	Special Use District Residential Uses by Conditional Use: Any Use Permitted in R-5	3 Acres
SU-2	Special Use District Residential Uses by Conditional Use: Any Use Permitted in SU-1	3 Acres

Zoning Overlay Districts and Development Options		Minimum Lot Area
	Open Space Option	
	Lots in R-1 Base Zoning District	36,000 s.f.
	Lots in R-2 Base Zoning District	15,000 s.f.
	Lots in R-3 Base Zoning District	7,200 s.f.
	Flood Hazard District	Subject to Base Zoning District Area Requirements
	Slope Conservation District	Subject to Base Zoning District Area Requirements and Chapter 134 Slope Conservation
	Cluster Development Community Option	Tracts at least 50 acres in area within the R-1 Residence District
	Planned Residential Development <sup>2</sup> (as set forth on the PRD Overlay District Map)	Total Tract Area at least 200 acres.

1. Locations that do not have access to available connection to an operating municipal sewage treatment plant, one or more on-site sewage treatment plants shall be provided, excluding septic tanks and cesspools, subject to the approval of the Board of Supervisors and the requirements of the Sanitary Water Board and/or the Department of Health of the Commonwealth of Pennsylvania.
2. Area and dimensional regulations dependent upon use.

## **II. PHYSICAL AND DEMOGRAPHIC ANALYSIS**

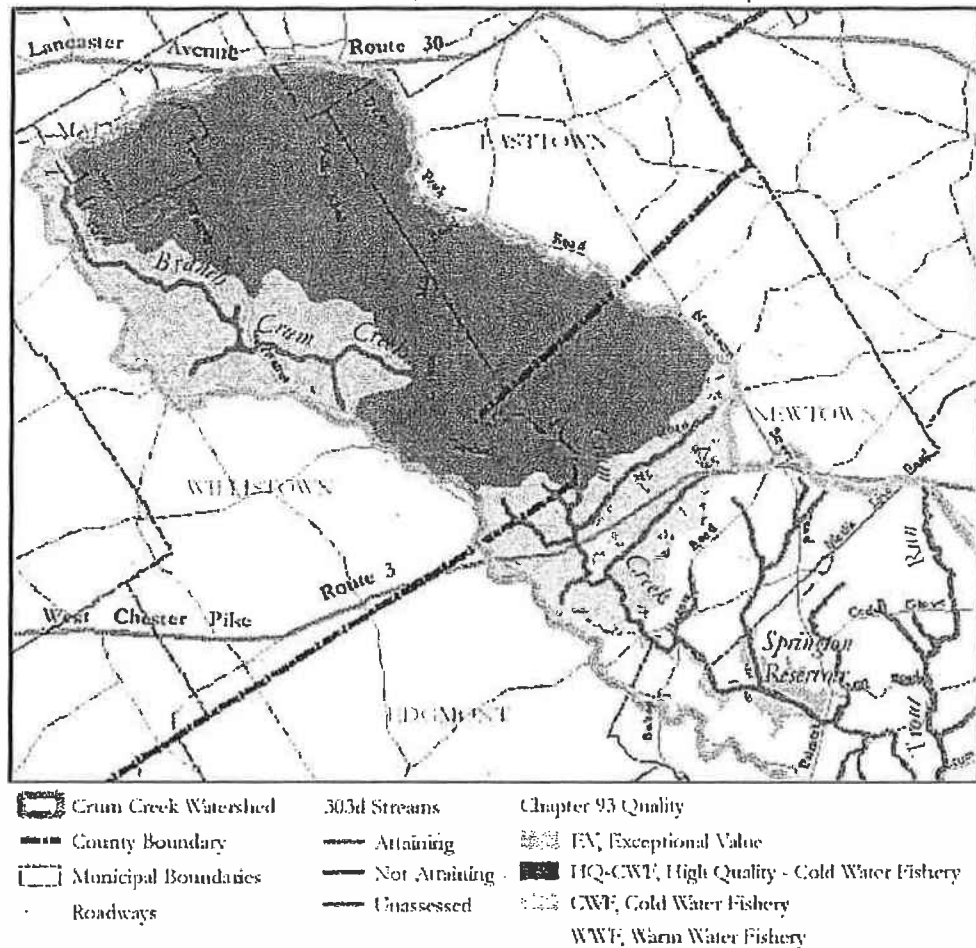
### **A. Identify Planning Area, Municipal Boundaries, and Service Area Boundaries Through Mapping**

This Act 537 Plan Update is being prepared to address the sewage facilities needs of existing and proposed development in the CDCA Service Area within the Township as defined by the CDCA Service Area Map for New Members, dated March 26, 2012 and last revised May 15, 2012. Note that a portion of the SAP America property and a portion of the Ellis Preserve (BPG) property is serviced by the R-H-M Sewer Authority and is excluded from this study. Those portions of the aforementioned properties currently serviced by or intended to be serviced by the CDCA have been included in this study. Refer to the Plan in Appendix B that shows the boundaries for the planning area addressed in this Act 537 Plan Update.

### **B. Identify the Physical Characteristics of the Planning Area**

Newtown Township is located in Delaware County, north of the Borough of Media. The Township is bounded to the north and west by Willistown Township, Chester County, to the northwest by Easttown Township, Chester County, to the northeast by Radnor Township, to the southeast by Marple Township, and to the southwest by Upper Providence Township, and to the west by Edgmont Township.

There are several Chapter 93 Water Quality Classifications for the Crum Creek Basin within the study area. The northern most portion of the study area is classified as High Quality – Cold Water Fishes and Migratory Fishes (HQ-CWF, MF). This is the Crum Basin from the West Branch Crum Creek to junction of Newtown, Edgmont, and Willistown Township Borders including tributaries such as Lewis Run. The central portion of the study area is designated as Cold Water Fishes and Migratory Fishes (CWF, MF) from junction of Newtown, Edgmont, and Willistown Township borders to the Springton Reservoir. This includes tributaries such as Reeses Run and Preston Run. The southern portion of the study area is classified as Warm Water Fishes and Migratory Fishes (WWF, MF) including non-tidal portions of the basin from the Springton Reservoir to the mouth, which includes tributaries such as Hunters Run.



(Map references Commonwealth of Pennsylvania Code,  
 Title 25 Environmental Protection, Chapter 93 Water Quality Standards)

### Crum Creek Watershed Map<sup>1</sup>

## C. Soils Analysis

Refer to the Soils Map and tabulation of soils limitations in Appendix D.

The study area is comprised of soils that are considered to be moderately and severely limited with regard to capability for on-lot sewage disposal according to soil characteristics found in the Soil Survey of Chester and Delaware Counties, United States Department of Agriculture, 1963 and NRCS Soils 2009. The soils with severe limitations are generally situated adjacent to watercourses and in areas of steep slopes.

<sup>1</sup> *Crum Creek Watershed Conservation Plan, Chester and Delaware Counties, Pennsylvania* – Figure 11, Water Quality (<http://crcwatersheds.org/crum>); Chester – Ridley – Crum Watersheds Association,.

#### D. Geological Features of the Planning Area

Refer to Geologic Formations Map in Appendix E.

The following geologic formations are present within the Planning Area:

Map Symbol	Name	Description
fgh	Felsic and intermediate gneiss	Light, medium grained; includes rocks of probable sedimentary origin.
fgp	Felsic gneiss	Light, medium grained; includes rocks of probable sedimentary origin.
mgh	Mafic gneiss	Dark, medium grained; includes rocks of probable sedimentary origin.
mgp	Mafic gneiss	Dark, medium grained; includes rocks of probable sedimentary origin.
Xu	Ultramafic rocks	Includes serpentine, steatite, and other products of alteration of peridotites and pyroxenites.
Xw	Wissahickon Formation	Includes oligoclase-mica schist, some hornblende gneiss, some augen gneiss, and some quartz-rich and feldspar-rich members due to various degrees of granitization.

#### E. Topography

Refer to Topographic Map in Appendix F.

The study area in general drains from the watershed boundary separating the Crum Creek and Darby Creek basins, which more or less follows Newtown Street Road (S.R. 0252), in a westerly direction toward the Crum Creek. The topography within the study area varies between a high elevation of 480 in the northern corner of the study area and a low elevation of 200 in the southern portion of the study area adjacent to the Springton Reservoir. The western/southwestern portion of the Township and study area are bounded by the Crum Creek, which drains in a southeasterly direction emptying into the Springton Reservoir. There are a number of tributaries to the Crum Creek, which drain in a westerly direction traversing the study area. Lewis and Reeses Run are located within the study area north of West Chester Pike. Preston Run and Hunter Run are located within the study area south of West Chester Pike. Topography is undulating between each tributary, which makes planning for public sewer challenging.

#### **F. Potable Water Supply Information<sup>1</sup>**

Currently public water is provided to most of the Township by AQUA, PA. Although the entire Township lies within the AQUA, PA franchise service area, there are areas within the Township that are not currently serviced by public water. The areas currently not serviced are predominantly located within the study area of this Act 537 Plan Update (portion of the Township on the westerly side of Newtown Street Road). The areas not serviced include the following:

- Large Farm Properties along White Horse Road
- Ellis Preserve/BPG Properties (water service to be provided with proposed development)
- Boot Road Area
- Southwestern portion of Township between Florida Park and Gradyville Road
- Route 252 south of Newtown Square Area (Springton Pointe Woods is currently serviced and the properties/developments along the easterly side of Route 252 are proposed to have public water service as part of development)

Public water service would be extended to generally service the same areas as that of anticipated public sewer within the Act 537 Plan Area. It is anticipated that all public potable water service will be provided by AQUA, PA. (Appendix H).

#### **G. Wetlands**

Refer to Water Resources Map in Appendix G. Wetlands were taken from the National Wetlands Inventory prepared by the United States Fish and Wildlife Service. While these maps do not provide a complete wetlands delineation, they serve as indications and are considered satisfactory for planning purposes. In areas where new sewage facilities are being considered, an actual Wetlands Delineation must be performed in the field prior to final design.

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<sup>1</sup> *Comprehensive Plan December 27, 2001, Newtown Township, Chester County, PA.*

### Wetlands Identification:

Symbol (Mapped Code)	New Code	System	Subsystem	Class	Subclass	Water Regime	Modifying Terms	General Description
L1UBKHh	L1UBKh	Lacustrine	Limnetic	Unconsolidated Bottom		Artificially Flooded	Diked/Impounded	Lake
L2UBKGh	L2UBKh	Lacustrine	Littoral	Unconsolidated Bottom		Artificially Flooded	Diked/Impounded	Lake
PEM5A		Palustrine		Emergent	Phragmites australis	Temporary Flooded		Freshwater Emergent Wetland
PEM5C		Palustrine		Emergent	Phragmites australis	Seasonally Flooded		Freshwater Emergent Wetland
PEM5Eh		Palustrine		Emergent	Phragmites australis	Seasonally Flooded/Saturated	Diked/Impounded	Freshwater Emergent Wetland
PSS1/EM5A		Palustrine		Scrub-Shrub	Broad- Leaved Deciduous			Freshwater Forested/Shrub Wetland
		Palustrine		Emergent	Phragmites australis	Temporary Flooded		
PUBFh		Palustrine		Unconsolidated Bottom		Semipermanently Flooded	Diked/Impounded	Freshwater Pond
PUBFx		Palustrine		Unconsolidated Bottom		Semipermanently Flooded	Excavated	Freshwater Pond
PUBHh		Palustrine		Unconsolidated Bottom		Permanently Flooded	Diked/Impounded	Freshwater Pond
PUBHx		Palustrine		Unconsolidated Bottom		Permanently Flooded	Excavated	Freshwater Pond
PUBKGh	PUBKh	Palustrine		Unconsolidated Bottom		Artificially Flooded	Diked/Impounded	Freshwater Pond



### **III. EXISTING SEWAGE FACILITIES IN THE PLANNING AREA**

#### **A. Identify and Describe Sewerage Systems in the Planning Area**

Where sewerage systems are available within the study area of this plan, the majority are public sewers which ultimately drain to the Camelot Pump Station before being pumped to the CDCA collection and conveyance system. There is one community, Springton Pointe Estates, which is serviced by a community sewerage system. The sewerage system contains gravity sewer infrastructure that drains to a community wastewater treatment facility, which is permitted for 35,000 gpd of disposal by underground land disposal. The community contains approximately 170 dwelling units, which includes approximately 22 residences in the Hempstead Road and Circle areas and 20 townhomes along Wiltshire Lane that were added to the system. Average monthly flows at the treatment plant are typically just under 30,000 gpd. However, for purposes of planning, the permitted capacity of the plant was used in this Plan. Hunters Run Townhome development is another community serviced by multiple on-lot disposal systems with gravity sewer infrastructure in place. Hunters Run contains 60 townhome units and 16 single-family detached dwelling units. Additionally, the Newtown Corporate Campus on Campus Boulevard contains 15 corporate office buildings generating an estimated total of 26,000 gpd which is treated and disposed of at several separate on-lot disposal systems. Other existing residential and commercial properties are serviced by individual on-lot disposal systems.

##### **1. Location, Size, and Ownership of Facilities**

Newtown Township is divided into two (2) drainage basins, the Crum Creek Basin and Darby Creek Basin. The Crum Creek Basin contains approximately 20% of the sewer collection system with a gravity sewer connection through Marple Township via the Crum Creek Interceptor in the CDCA service area. The existing CDCA service area is situated in the south-central portion of the Township.

There are approximately 42.5 miles of eight (8) inch diameter sewer within the Township. Approximately 70% was constructed between 40 to 50 years ago between 1960 and 1970 with a total length of 157,080 l.f., approximately 15% was constructed between 20 to 40 years ago between 1970 and 1980 with a total length of 33,600 l.f., and the remaining 15% was constructed within the past 20 years between the 1990s through present with a total length of 33,600 l.f.. The large majority, about 90%, of the pipe is vitrified clay pipe (VCP) and transite pipe. The remainder of the system is comprised of PVC pipe. The CDCA service area covers about two (2) square miles and contains approximately 10.6 miles of pipe.

Newtown Township does not own, however, does assist with the operation of a wastewater treatment facility. The Township Municipal Authority owns and the Township maintains and operates a dedicated sanitary sewage collection system and does not utilize a combined sewer system. There are two (2) pumping stations owned by the Municipal Authority and operated by the Township within the CDCA service area.

The wastewater collection system in the CDCA service area within Newtown Township is comprised of eight (8) inch diameter pipe, drains to the Camelot Pumping Station, and sewage is then pumped to the CDCA Interceptor and is conveyed to the DELCORA system for treatment at their Western Regional WWTP. In addition to the Camelot Pumping Station, the Township Municipal Authority also owns and the Township maintains and operates, the Newtown Heights Pump Station (Hickory Lane P.S.). There are three (3) private pump stations, located in the CDCA service area as well. All of the public pump stations and WWTP are operated and maintained by AQUA, PA under a service contract with the Township. AQUA, PA also operates and maintains the Springton Pointe Estates WWTP. The Township took ownership of the Springton Pointe Estates WWTP, which has subsurface effluent disposal and is located within the CDCA Service Area. In addition, the Hunters Run Development uses two (2) community On-Lot disposal systems (COLDS) to service the existing 76 units. The systems are privately owned and maintained by the Owners Association.

All of the current CDCA service area within the Township drains to the Camelot Pump Station. The station is equipped with two (2) submersible Fairbanks Morse pumps. The conditions of service of the pumps are as follows: 850 gpm each @ 194' TDH @ 1760 RPM. The station is in good operating condition with no current problems. There were no overload conditions and no major repairs in 2011.

## **2. Narrative and Schematic Diagram of the Basic Treatment Process**

Refer to Appendix I for a Schematic of the treatment process. The Springton Pointe Estates WWTP (Water Quality Management Permit No. 2394406) is a Sequencing Batch Reactor (SBR) treatment facility with a Decant Equalization Tank, Sand Filtration, Chlorine Contact Tank Disinfection, Effluent Dosing Tank, with discharge to three (3) different subsurface absorption areas. In addition, a Waste Sludge is held in an Aerated Holding Tank and is removed from the site by a permitted hauler for ultimate treatment and disposal at an approved

facility. The wet well of the Influent Lift Station at the WWTP is equipped with two (2) F.E. Meyers, Inc. submersible pumps able to handle 90 GPM at 30 feet TDH. The Effluent Dosing Pumps consist of two (2) Goulds Pumps, Inc. vertical turbine pumps capable of 300 gpm at 200 feet TDH.

**3. Description of Problems with the Existing Facilities**

The Township has staff available that does periodic monitoring of the sewer system in addition to the long-term maintenance of all of the lines. The Township includes sewer repair and/or rehabilitation in its annual capital improvement program. Work is performed on an as needed basis, by Township staff or private contractors.

The Township follows up on all complaints and inspections to repair I&I sources on an as-needed basis. The Radnor-Haverford-Marple (RHM) Sewer Authority also assists the Township in identifying and repairing sources of I&I during video inspection of sewer pipe. There have not been any major maintenance, repair, and/or rehabilitation projects performed in the CDCA service area in the past five (5) years.

**4. On-Going Upgrades or Expansion of Facilities**

The existing system is in good working condition. At present, no long-term plan has been developed by the Township to address I&I detection. Any portions of the system that appears to be experiencing I&I problems are addressed on a case by case basis. As the system grows and evolves it would be advisable that an ongoing I/I Infiltration and Inflow Program be established in order to monitor and maintain extraneous flow from entering the system.

**5. Operations and Maintenance Requirements and the Status of Past and Present Compliance**

Newtown Township contracts with AQUA, PA, a PADEP licensed operator, to maintain the Township's pump stations. The Springton Pointe Estates Community Association contracts with AQUA, PA to operate and maintain the Springton Pointe Community WWTP. The rest of the system is monitored by the Township Municipal Authority and The Township Public Works Department. As previously mentioned the Camelot Pump Station is in good working order with no current or anticipated overload conditions.

**B. Individual and Community On-Lot Disposal Systems**

DEP's publication titled *Sewage Disposal Needs Identification* was used to identify, map, and describe areas that utilize individual and community on-lot sewage disposal. The reported results of the sewage needs survey can be found in Appendix Z of this Plan. In addition, the results of an existing survey conducted in 2009 by Pennoni Associates for the Echo Valley Area were used in preparation of this Plan Update. A copy of the 2009 Survey can also be found in Appendix Z.

The Florida Park Area and Echo Valley Area survey results indicate the most immediate sewage disposal needs from a public health standpoint. Results indicate that, based on percentages, the Echo Valley Area (including areas along West Goshen Road and Boot Road) has the highest percentage, by survey area, of Confirmed Malfunctions with 8% (or 9 OLDS). The Florida Park Area has the second highest at 8% (or 1 OLDS of 12 field verified within Florida Park) and was the only Confirmed Malfunction as part of this survey. When considered with respect to the total surveys sent, or properties inventoried in the Florida Park Area, the one (1) Confirmed Malfunction represents 1% of the 131 properties. In addition, OLDS were categorized as Suspected Malfunctions in 41% (or 21 OLDS) of the Florida Park Area and 30% (or 6 OLDS) in the Llangollen Area. The Echo Valley Area results indicated that 20% (or 23 OLDS) are Suspected Malfunctions. The Florida Park Area and Echo Valley Area survey results indicate the most immediate sewage disposal needs from a public health standpoint.

Although the Llangollen Area indicates a relatively high percentage of "suspected malfunctions" by survey area, the Llangollen Area only contains 6 of the total 33 "suspected malfunctions" of the survey. By comparison, the Florida Park Area contains 21 of the total 33 "suspected malfunctions" of the survey. In addition, no systems within the Llangollen Area were confirmed to be malfunctioning. Furthermore, results of the survey for communities adjacent to the Llangollen Area indicates a lower Public Health Need than the Llangollen Area and, therefore, does not warrant the need to provide public sewer to this portion of the Township. However, because of the limitations of the soils for OLDS in this area as well as the relatively steep topography, and limited lot sizes, this area should be considered a priority for public sewer in the future.

**C. Wastewater Sludge and Septage Generation, Transport, and Disposal**

Private haulers are contracted by individual on-lot disposal system owners for sludge/septage removal. The Township currently is in the process of considering for adoption an ordinance governing on-lot and community sewage systems contained in Appendix P.

#### **IV. FUTURE GROWTH AND LAND DEVELOPMENT**

##### **A. Description of Future Growth and Land Development**

###### **1. Areas with Existing Development and Plotted Subdivisions**

The plan included in Appendix J shows the location of proposed and existing development within the planning area. These subdivisions (and land developments) include:

###### **Immediate Needs Planning:**

###### **Existing Development:**

- Florida Park Area
- NBC Business Park
- Old Masters Properties
- Campus Boulevard
- Hunters Run
- Echo Valley/Boot Road Area/West Goshen Road Area
- Newtown Hunt (Hunt Valley Lane/Circle)
- Melmark School
- Episcopal Academy
- Township Park Area
- Dogwood Lane Area

###### **Proposed Development:**

- Ashford Development
- Ellis Preserve (BPG Properties)
- Claude DeBotton properties along Fox Trail Farms (Marville)
- Old Masters Properties

###### **Future Needs Planning:**

- Garrett Williamson Tract
- Springton Pointe/Sleepy Hollow/Frog Hollow
- Llangollen
- Whitehorse (Nolen)
- Claude DeBotton properties along 252 between Gradyville Road and Media Line Road (Four Seasons and other residential lots)

### **Echo Valley Service Area**

Due to the varied terrain, larger lots, steep slopes, and the presence of Lewis Run, practical cost effective alternatives including the use of "On-Site Sewage" Disposal Systems to be maintained only where their use is viable, not constrained, and properly maintained tempered by an ongoing "On Lot" Sewage Operation and Maintenance Program may be continued on a limited basis in accordance with the Township's proposed deferred connection ordinance. The 2002 Act 537 Plan required this area to be provided with public sewage using the area adjacent to Lewis Run as a focal point of a gravity conveyance system and a possible Sewage Pump Station in the vicinity of Lewis Run and Boot Road. More recently, other draft iterations of the plan call for the use of low pressure sewers as an attempt to have less environmental intrusions, while at the same time, providing public sewer service to the entire Echo Valley area because of its varied and diverse terrain.

A combination of gravity (southwest portion of Echo Valley Area) and low pressure lines may be an option depending on the schedule of adjacent proposed development but this plan will focus on all gravity sewers as the schedule of development is unknown at this time.

### **Florida Park**

The Florida Park area has been identified to be of smaller lots with a substantial amount of suspected and potential failing "On Site" Sewage Disposal Systems with limited space for replacement. Public sewer appears to be ideal for this area. Prior drafts of this plan included this area to be serviced by a low pressure sewer system, however, because of the density of the development, a gravity approach with a singular pump station appears to be the most cost effective approach for the residents.

A pump station location which could sewer Florida Park, as well as the Old Masters Site, among others, appears to be the most cost effective approach especially for future maintenance. However, this option could involve multiple stream crossings.

### **Campus Boulevard (Newtown Square Corporate Campus)**

The Business Park accessing both West Chester Pike and Bishop Hollow Road needs a further look at the most practical and reasonable approach. It appears that the Southern portion of the business park

could be serviced with gravity sewer with connection across Bishop Hollow Road into the existing gravity sewer in Stoney Brook Boulevard. It appears that the existing gravity sewer drains to the existing Springton Pointe Estates Community WWTF, therefore, the WWTF would need to be decommissioned and a gravity connection constructed to tie the system into the Camelot Pump Station prior to connection of the Newtown Corporate Campus being connected or in the alternative, convert to a pump station. As gravity sewer is the preferred method of collection for Florida Park, the northern portion of the business park could tie in to the gravity line that would service Florida Park which, would likely run along Preston Run.

### **Business Users**

The Commercial and Office users will play an important role in integrating the most reasonable cost effective approach to residential connections. Although some routing locations may not be the most prudent from a residential service area aspect, the coordination with the Business Community (existing and proposed development) will be needed in order to provide for a more regional approach in the most effective manner.

Additional easements and sewer agreements may be necessary to have the project come to fruition. In addition, a phased approach may also be needed for the project to reach completion due to the current economic times.

## **2. Land Use Designations**

Land use in Newtown Township is governed by the Township's Subdivision and Land Development Ordinance, as well as the Township's Zoning Ordinance. Refer to Section I.B.2 of this Act 537 Plan for the minimum lot sizes associated with these zoning designations. Land use is given the following designations per the Zoning Ordinance:

- R-1 Residence District
- R-1A Residence District
- R-2 Residence District
- R-3 Residence District
- R-4 Residence District
- R-4A Residence District
- R-5 Residence District



- A Apartment District1
- A-O Apartment Office District1
- O Office District
- C-1 Commercial District
- C-2 Commercial District
- I Light Industrial
- SU-1 Special Use District
- SU-2 Special Use District

In addition, the following districts may overlay the previously listed base zoning districts:

- Open Space Option
  - Lots in R-1 Base Zoning District
  - Lots in R-2 Base Zoning District
  - Lots in R-3 Base Zoning District
- Flood Hazard District
- Slope Conservation District
- Cluster Development Community Option
- Planned Residential Development
  - PRD Overlay District Map
  - Area and dimensional regulations dependent upon use

### **3. Future Growth Areas, Population and EDU Projections**

Within the planning area identified in this Act 537 Plan, there are areas that have existing development and areas that are planned for growth.

Table 1 lists the proposed development and the Equivalent Dwelling Units (EDUs) associated with the respective developments. Table 2 details the projected population increase based on the EDU projections.

**Table 1**  
**Projected Dwelling Unit Connections Per Year**  
 (Based on active proposed subdivisions with current applications to the Township)

Subdivision	Year					Future
	2013	2014	2015	2016	2017	
Ashford Development	0	30	30	30	30	340
Ellis Preserve (BPG)	0	0	50	50	50	555
Terrazza/Somerset/Cornerstone	0	0	40	40	40	267
National Developers Realty, Inc.						
Marville Site	0	0	13 <sup>1</sup>	32	32	256
Old Masters Site	0	0	0	0	30	268
"Four Seasons" and Gradyville Rd. Development	0	0	0	0	0	36

**Table 2**  
**Population Projections**  
 (Based on active proposed subdivisions with current applications to the Township)

Subdivision	Year					Future
	2013	2014	2015	2016	2017	
Ashford Development	0	75	75	75	75	850
Ellis Preserve (BPG)	0	0	125	125	125	1,388
Terrazza/Somerset/Cornerstone	0	0	100	100	100	668
National Developers Realty, Inc.						
Marville Site	0	0	0	80	80	640
Old Masters Site	0	0	0	0	75	670
"Four Seasons" and Gradyville Rd. Development	0	0	0	0	0	90

Per 2010 Census Data: 2.49 persons per dwelling

This Act 537 Plan addresses active, as well as potential subdivisions that the Township is aware of filed with the Township in the planning area. These developments include Ashford, Ellis Preserve (BPG), Della Porta (Cornerstone/Terrazza), and Episcopal Academy. Although at present the National Developers Realty, Inc. does not have any official subdivision or land development applications filed with the Township, National Developers Realty has filed several Sewage Facilities Planning Modules and since they control several large tracts of land within the study area, the potential effects on dwelling units and population increase are depicted in Table 1 and Table 2 above.

<sup>1</sup> Existing Newtown Business Center at 3,500 gpd

**4. Subdivision Regulations as they Pertain to Planned Developments**

Newtown Township has established guidelines for development, use, and protection of land within the Township's boundaries. The guidelines are established in the Township's Comprehensive Plan (October 25, 2001) and the Subdivision and Land Development Ordinance (June 9, 1986).

The purpose set forth in the Subdivision and Land Development Ordinance (Chapter 148-2.A-I), is as follows:

- A. To assure that development occurs only on sites suitable for building purposes and human occupancy.
- B. To assure that development of the Township is orderly, efficient, integrated and harmonious with the environment.
- C. To coordinate proposed streets with existing streets or other proposed streets, parts or other features of the Township.
- D. To assure that adequate open spaces are retained for recreation and for the proper distribution of population.
- E. To ensure coordination of subdivision and land development plans with Township, intermunicipal, count and commonwealth improvement plans.
- F. To eliminate or minimize adverse effects or damage to the environment and biosphere and to encourage productive and enjoyable harmony between man and his environment, consistent with the mandates of the National Environmental Policy Act of 1969 and Article 1, Section 27 (the Environmental Amendment), of the Pennsylvania Constitution.
- G. To secure equitable handling of all subdivision and land development plans by providing uniform procedures and standards.
- H. To protect the social and economic stability of the Township and conserve the value of land and buildings in the Township.
- I. To create conditions favorable to the health, safety and general welfare of the citizens of Newtown Township.

## 5. Required Sewage Planning

The following sections of this Act 537 Plan will examine the technical alternatives necessary to meet the sewage facilities needs of the planning area. Projected wastewater flows for the planning area are classified as either residential or commercial. Included in the analysis and alternatives thereto is a chart of anticipated sewage flows. In the past, stemming from information contained with PA DEP Chapter 73 from the 1970, as well as viewing the PA DEP Domestic Waste Water Design Manual, anticipated flows for individual residences as a methodology to determine the basis of an EDU was arrived at using the 3.5 persons per household as previously noted within Chapter 73 from the 1970's coupled with anticipated flow of 75 GPCD identified in the Domestic Wastewater Design Manual for households. As a result, a typical design flow of 262.50 GPD was used for design purposes in establishing flow design. In addition, it should be pointed out that for overall sewage flows for municipalities at that time flows of 100 GPCD were considered appropriate for design consideration in establishing needs for new sewer systems which account for infiltration and inflow.

More recently with the advent of low flow fixtures, measured flows in the neighborhood of 200-225 GPD per household seem to be the norm. This improvement has to do with the use of low flow fixtures and appropriate piping vents, trap assembly and the use of manhole inserts.

With the advent of PA Act 57, as amended, flow usage under these regulations have been prescribed to be determined by one (1) or two (2) methodologies of which states the use of 90 GPCD, as well as the anticipated population per household based upon the most recent census. The 2010 Census stipulates 2.49 persons per household for Newtown Township. Therefore, adjustments to flows per household for this methodology is 224.1 GPD, therefore, using 225 GPD is appropriate. Note: Ashford Development has utilized a flow of 250 GPD which has been approved through a sewage facilities planning module.

In addition, based upon anticipated flow provided by PA DEP in their letter dated May 29, 2008, flows are estimated as follows:

- |    |  |         |
|----|--|---------|
| 1. | Apartment                              | 200 GPD |
| 2. | Age Restricted                         | 200 GPD |
| 3. | Townhouse                              | 200 GPD |
| 4. | Single Family Dwelling                 | 225 GPD |
| 5. | Non-Residential-Based upon Chapter 73. |         |

However, based upon the flows per household and anticipating/accounting for some infiltration and inflow (I&I), it is recommended that, from a planning standpoint, a flow of 225 gpd/EDU be used for all new residential development.

See Appendix "N" for anticipated flows and future needs.

The means for serving the needs of the planning area will be dependent upon the technical alternative that is selected and the capacity of that alternative to satisfy the needs.

The technical alternatives that are analyzed as part of this Act 537 Plan Update include:

- Installation of a sanitary sewer collection and conveyance system to convey wastewater to the DELCORA Western Regional Wastewater Treatment Plant via CDCA conveyance line.
- The construction and installation of a Community Sewage System.
- On-Site Sewage Disposal System
- Holding Tanks

**V. ALTERNATIVES TO PROVIDE NEW OR IMPROVED WASTEWATER DISPOSAL FACILITIES**

**A. Identify Alternatives**

In evaluating the most appropriate methodology for Sewage Disposal, several alternatives of treatments need to be considered in order to protect the health safety and welfare of the public, and protect the waterways of the Commonwealth of Pennsylvania. The alternatives are:

1. Connection to Public Sewer via gravity sewer and pump station conveyance system.
2. Consideration of low pressure sewer grinder pumps and operation and maintenance requirements.
3. On-Site Sewage Disposal System Community Disposal.
4. On-Site Sewage Disposal System.
5. Holding Tanks.
6. No Action Alternative.

In evaluating alternatives, each area of the Township presents a unique situation relative to diversity of houses, adequacy of existing systems, future needs, topography, and environmental constraints such as wetlands, steep slopes, and endangered species.

An area currently moving forward with Public Sewers is the Ashford Development which has Sewage Planning approval from DEP for connection to the CDCA Sewer System currently terminated at the Southeast corner of Media Line Road of Newtown Street Road (SR0252) adjacent to the Delaware County Community College in Marple Township, Delaware County, PA.

In addition, the Episcopal Academy located along Newtown Street Road (S.R. 0252) at St. Davids Road is currently using a pump and haul system with the desire to connect to the public sewer system to Ashford Development Pump Station. The Episcopal Academy has recently received a Conditional Use and Special Exception to allow the school to connect to the Ashford System which required traversing environmental areas such as wetlands and steep slopes. However, the Ashford Development has agreed to modify the sanitary sewer line location in such a manner which avoids these environmental interactions.

The Episcopal Academy currently anticipates usage of 11,000 GPD based upon approved planning module. However, average daily pump and haul figures indicate a usage of approximately 6,700 GPD.

Included in the alternative analysis is a chart of anticipated sewage flows. In the past, stemming from information contained with PA DEP Chapter 73 from the 1970, as well as viewing the PA DEP Domestic Waste Water Design Manual, anticipated flows for individual residences as a methodology to determine the basis of an EDU was arrived at using the 3.5 persons per household as previously noted within Chapter 73 from the 1970's coupled with anticipated flow of 75 GPD identified in the Domestic Wastewater Design Manual for households. As a result, a typical design flow of 262.50 GPD was used for design purposes in establishing flow design. In addition, it should be pointed out that for overall sewage flows for municipalities at that time flows of 100 GPCD were considered appropriate for design consideration in establishing needs for new sewer systems which account for infiltration and inflow.

It should be pointed out that more recently, with the use of SDR-35 and SDR-26 pipes that typically come in 20 foot lengths, the former use of Vitrified Clay Pipe (VCP) or Transite Pipe with four (4) foot joints has significantly reduced root intrusion in the lines as well as minimized infiltration.

However, lateral connections still pose issues relative to Infiltration and Inflow I&I – plus the discharge of sump pumps illegally connected to the system still pose concerns relative to I&I.

More recently, with the advent of measuring discharge for individual subdivisions, flow within the newer developments have shown that flow in the neighborhood of 200-225 GPD per household is not uncommon. This improvement has to do with the use of low flow fixtures and appropriate piping vents, trap assembly, and the use of manhole inserts.

With the advent of PA Act 57, as amended by Act 149, flow usage under these regulations has prescribed two (2) methodologies for determining household flow, one of which is the use of 90 GPCD, as well as the anticipated population per household based upon the most recent census 2010, that stipulates 2.49 for Newtown Township. Therefore, adjustments to flows per household for this methodology is 224.1 GPD (use 225 GPD). Note: Ashford Development is using a flow of 250 GPD.

In addition, based upon anticipated flow provided by PA DEP in their letter of response dated May 29, 2008 to metered testing performed by Pennsylvania American Water Company within the Coatesville area Wastewater Treatment Plant service area flows are anticipated to be estimated as follows:

- |    |  |         |
|----|--|---------|
| 1. | Apartment                              | 200 GPD |
| 2. | Age Restricted                         | 200 GPD |
| 3. | Townhouse                              | 200 GPD |
| 4. | Single Family Dwelling                 | 225 GPD |
| 5. | Non-Residential-Based upon Chapter 73. |         |

Therefore, in evaluating the most appropriate alternative from both an economic and environmental standpoint for sewage disposal needs as it pertains to the Melmark School, Hunt Valley Circle, Echo Valley Development, Goshen and Boot Roads area, Florida Park Subdivision, Hunters Run, Springton Pointe Estates, as well as other portions of the Township within the study area, the following flow usage serves as a basis for determining allocation needs.

As a basis of flow projections for older developments constructed prior to 2002, a flow of 262.50 is recommended for flow allocations per household, and for newer developments constructed after 2002, flow projections of 225 GPD is recommended with the acknowledgement of 250 GPD relative to the Ashford Development that is noted in their Sewage Facilities Planning Module.

On Lot Sewage Disposal Systems need to be governed by an Operation and Maintenance Program that will be applicable Township-wide. (See Appendix P)

BPG is the process of requesting a flow alternative allowing a portion of their flow to be transported to the RHM system, thus minimizing flow to the CDCA System.

#### **1. New Regional Wastewater Treatment Concept**

Once considered a viable alternative to be located at the Garrett Williamson Tract, there does not appear to be sufficient land area to handle all the areas of concern.

The area of concern in this document was identified as Area "H", in COWAMP 208 from 1978, that provided for connection to the Sanitary Sewer System at the Delaware County Community College as Alt 5.

#### **2. Extension of Existing Municipal Sewage Facilities to Areas in Need**



As part of this Act 537 Plan Update a Needs Survey was sent to residents and business owners of the municipality to identify areas where public sewer is needed.

*a. Existing Collection and Conveyance Facilities*

Currently, there are public collection and conveyance facilities that serve the eastern portion of the CDCA Sewer Service Area. As discussed in Part A.1 of this section, wastewater collected in these facilities is conveyed to the CDCA system for conveyance, and treatment. To extend these facilities to existing and proposed development within the planning area, a network of gravity sewer, pump stations, and force mains will be required. Refer to the plan found in Appendix K that shows the proposed collection and conveyance system improvements that would allow for the extension of these facilities.

**3. Springton Pointe Decommissioning**

The Springton Pointe Estate currently has an SBR treatment facility that utilizes subsurface land applications for disposal of its effluent. The current facility has a design capacity of 35,000 GPD. In evaluating future needs within the area, although the treatment facility is currently being adequately maintained by AQUA, PA Wastewater pursuant to a contract with Newtown Township, effluent disposal is within the drainage area to Hunters Run, which is tributary to Springton Lake (Geist Reservoir) that serves as a public drinking water holding area owned by AQUA, PA.

With the advent of Newtown Township obtaining additional flow capacity with the CDCA conveyance system, as well as DELCORA for treatment, from a public safety standpoint this allows the Township of Newtown to provide public sewer services to the Springton Pointe Estates Development. The removal of the existing treatment facility and the construction of a pump station that would transport wastewater to the Camelot Pump Station for conveyance to the CDCA System. This would allow wastewater to be transported out of the Hunters Run, Springton Lake drainage area, thus eliminating the potential for wastewater being discharged from the SBR treatment facility into Hunters Run.

From an environmental standpoint, this represents a superior alternative than that which currently exists or the no action alternative. The Hunters Run community on-lot sewage system currently sewers 76 residents with an approximate flow of 19,950 GPD. The COLDS

system is being maintained by the Homeowners Association, based upon recent surveys and needs analysis.

Information provided by the Hunters Run Homeowners Association is the desire of Hunters Run to tie into a public sewer system due to the ages of their existing system and the maintenance required regarding same.

The alternative of tying into the public sewer system with the existing Springton Pointe Estates to allow flow to enter the existing collection system and be transported to the Springton Pointe Estates proposed pump station for transport to the Camelot Pump Station. Again, the alternative will eliminate potential future failures with the Hunters Run COLDS for inadvertent discharges into the Hunters Run drainage basin.

**4. Analysis of New Community Sewage System**

Community Sewage Systems could pose a hazard to the drinking water supply of the Springton Reservoir, especially those systems that are located in closest proximity to the reservoir, Crum Creek, and or the numerous tributaries that feed into Crum Creek and the reservoir. In addition, these systems are generally the responsibility of a Homeowners Association or Condo Association to operate and maintain which may or may not be overseen by the Township. This option is being discarded for the environmental reasons previously stated and the availability of public sewers.

**5. Analysis of Alternatives for Repair and Replacement of existing Collection/Conveyance**

Within the service area, several existing sewer lines which contain existing, capped sewer and in some cases active sewer, will need to be replaced and upgraded. Based upon anticipated flow in conjunction with peaking factors, the gravity portion of the line within Campus Boulevard and along Stoney Brook Blvd., the diameter of the conveyance system line appears to warrant a 10" minimum diameter line at this juncture.

**6. Analysis of Alternatives Identified in the Municipal Wide Act 537 Needs Analysis**

Area of needs and survey evaluations are contained in Appendix "Z" of this document.

**B. Use of Individual Disposal Systems**

With the investigation of the public or community sewerage system options, individual on-lot disposal systems will be considered for this Act 537 Plan Update for areas with larger lots and not located within reasonable proximity to existing or future anticipated public sewer areas. In addition, new residential developments, such as the Nolen subdivision and the Stoney Knoll subdivision both located off of White Horse Road, were approved for on-lot disposal systems. Since these systems are new, the service life of the systems will most likely extend beyond the timeframe of this Act 537 Plan Update, and the cost of connection would exceed the benefit of connecting to public sewer now, public sewer will not be considered for these developments at this time. However, their needs can be reassessed as part of a future Act 537 Plan Update.

**C. Small Flow Sewage Treatment Facilities**

Refer to the discussion and text in Section V.A.4 above. This section assesses the use of a small flow sewage treatment facility and land application to serve future areas of development within the planning area. Because of the fact that recent agreements with CDCA provided additional flow capacity within their system to Newtown Township, the continued use of small flow treatment facilities that were once considered the most economical and viable method for wastewater treatment and disposal are now being considered obsolete. The Public Sanitary Sewer option is felt to be a more appropriate and viable alternative both from an economic standpoint, as well as environmental. Although the construction of a new public collection and conveyance system may require some interactions with environmentally sensitive areas such as steep slopes, wetlands and waters of the U.S., these interactions are for a minimal amount of time during the construction process. Typical line installations of this nature have a 60 to 75 year life expectancy. Although there would still be a possibility of a sewage overflow, the possibility is extremely minimal when compared to the use of that of a small treatment plant flow overflows. Removal of the small treatment plant from the Crum Creek drainage basin provides a more sound approach of wastewater management by removal of discharge possibility to the public water storage facility Springton Lake (Geist Reservoir). Also the required operation and maintenance of these systems will no longer be needed which relieves the burden for the end users.

**D. Community Land Disposal**

Refer to Section V.A.4 and V.C for a discussion and analysis of this concept. Similar to that of small treatment plants the ability of land application of wastewater effluent is limited to the amount of viable land available. At one

time consideration of the use of the Garrett Williamson tract in this regard appeared to be a viable option. However, site limitations would allow for disposal of wastewater in the amount of approximately 300,000 GPD making use of drip dispersion. Since the entire service area needs are approximately 961,975 GPD available land area sufficient to support this type of flow is not available. In addition, any failure in regards to this system would ultimately discharge wastewater into the Springton Lake (Geist Reservoir).

<sup>1</sup>Cost estimates for the proposed selected alternatives can be found in the Appendix. The cost estimate for the proposed regional wastewater treatment facility to be built by Aqua of PA on the Garrett Williamson tract and designed to treat 300,000 gallons per day is as follows:

Plant and associated drip fields	\$7,500,000.00
Conveyance and piping in Newtown Township	\$9,436,000.00
Total Project	\$16,936,000.00

Construction Cost / EDU

Plant (credit of \$1.50 million contributions by Aqua) (\$6 million divided by 1144 EDUs)	\$5,245.00
Conveyance and piping for Newtown Township	\$9,936.00
Total Cost/EDU	\$15,181.00

Estimated projected sewer rates for Newtown Township would involve a monthly charge to Aqua of \$33.33 per EDU plus \$1.00 per 1,000 gallons of waste water metered at the pump station. Based on average per EDU, estimated annual charge for Aqua would be \$460.00 to \$470.00 plus Newtown Township's administrative costs.

With the advent of Newtown Township backing and agreement with CDCA for flow capacity of 961,975 GPD, from an environmental, operation and maintenance, as well as economic standpoint, the CDCA option for the discharge of wastewater appears to be the most appropriate and therefore is the alternative of choice.

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<sup>1</sup> Taken from the Draft Act 537 Plan Update dated July 7, 2011 prepared by Kelly & Close Engineers.

**E. Retaining Tank**

Given consideration for implementation of the CDCA option, a "pump and haul" program would be considered as a temporary means of sewage disposal until the primary means of wastewater disposal is complete and functional. However, isolated commercial development generating less than 800 GPD not required to hook into a public sewer system by ordinance will be considered on a case by case basis. For use of a retaining tank subject to the provisions of an ordinance regarding same, a sample ordinance is contained in the Appendix P.

**F. Septage Management**

An "On-lot and Community Sewage System" Operation and Maintenance Ordinance is currently being considered for adoption and implementation by the Township. In addition refer to Appendix P for a sample Holding Tank ordinance, as well as an Operation and Maintenance Ordinance.

**G. Non-Structural Comprehensive Planning Alternatives**

The Township Comprehensive Plan has been updated December 27, 2001. From a comprehensive planning perspective, the updated Plan places more emphasis on utilizing groundwater recharge via the most current stormwater management practices. This places less emphasis on implementation of land application of wastewater effluent for ground water recharge. Non-structural comprehensive planning alternatives are not being addressed as part of this Act 537 Plan Update.

**H. No Action Alternative**

**1. Water Quality and Public Health**

If a wastewater collection and conveyance system is not implemented and wastewater treatment and disposal is not available, water quality and public health may be impacted. No public sewer systems would be constructed. Other than the adoption of an Operation and Maintenance Ordinance for "On-Lot" systems, and the implementation thereof, the limited land availability of existing lots for the construction of a replacement system, particularly in the Florida Park area of the Township, may leave a homeowner with only a pump and haul option, which is not considered a viable option for an individual homeowner, both from an environmental, as well as economic standpoint.

**2. Growth Potential**

The potential for growth in the planning area would be impacted by a no action alternative. All proposed subdivisions may not go forward if appropriate wastewater collection, conveyance, and treatment are not available.

**3. Community and Economic Conditions**

With no-action to provide any means for collection, conveyance, and treatment of wastewater, development may not go forward. Consequently, future connections would be limited, thus restricting growth that would otherwise supplement the Township tax base.

**4. Recreational Opportunities**

At this juncture, it appears that a no action alternative would not necessarily pose any adverse effects to existing park facilities both passive and active.

**5. Drinking Water Sources**

If the proposed collection and conveyance systems are not constructed, there may be a direct impact on the drinking source. If the existing land application systems are not properly operated and maintained, or even if they have the potential for failure within a community system, may allow the discharge of wastewater to funnel into adjacent streams and wetlands, as well as directly into the Springton Lake (Geist Reservoir). This situation would be precluded if the CDCA option were chosen or at least minimized the chance of such an occurrence.

**6. Other Environmental Issues**

If the proposed collection and conveyance system is not constructed, there appears to be no other direct impact on environmental issues, other than what has been identified in paragraph 5 above.

## **VI. EVALUATION OF ALTERNATIVES**

For the CDCA Alternative and the community treatment alternative, consistency was evaluated based on each of the following:

### **A. Consistency Determination**

#### **1. Clean Streams Law**

The construction of a sanitary sewer collection, conveyance and/or treatment system for the Planning area does not conflict with the Clean Streams Law. Flow generated by the planning area will ultimately be treated at the DELCORA wastewater treatment plant, community wastewater treatment plant, or on-site sewage disposal system and disposed of in accordance with requirements and limits set forth by PADEP.

#### **2. Chapter 94 Report**

The Township Annual Wasteload Management (Chapter 94) Report does not conflict with this plan in that the report identifies new developments, such as Ashford, which is proposing extension of the sewer system, a new pump station, and the capability to service other developments, such as the Episcopal Academy, the Melmark School, Hunt Valley Circle and the Echo Valley via this new system. However, there is inconsistency with regard to the total projection of EDUs and flows. Since the time of filing of the 2011 Chapter 94 Wasteload Management Report in March of 2012 new information was presented and other areas for connection were identified in preparation of this report, in particular with regard to the table of projected EDUs and flow that resulted in projected flows inconsistent with the previously filed Chapter 94 Report. Furthermore, the anticipated connections to the expanded public sewer system that would be tributary to the Camelot Pump Station would ultimately result in a flow that would be beyond the capacity of the current pump station.

#### **3. Clean Water Act (Title II)**

This Act and the Federal Water Quality Act establish specific planning requirements for wastewater facilities planning. These requirements only apply to municipalities intending to apply for financial assistance from the Federal Government for the construction of sewage facilities. The funding of the construction of the alternatives would be through financial contributions by developers and the Township and/or

Municipality Authority through loans or a Municipal Bond issue through the auspices of the Municipal Authority. Each alternative is therefore consistent with these criteria.

**4. Comprehensive Plans**

This Act 537 Plan Update is consistent with the Newtown Township, Delaware County, Comprehensive Plan dated December 27, 2001.

**5. Antidegradation Requirements Contained in Chapters 93, 95 and 102 of the Clean Water Act**

Implementation of any of the alternatives for this Study will not impact the antidegradation requirements contained in Chapters 93, 95, 102 of the Clean Water Act. In fact, connection to the Public Sewer option will mitigate pollutants entering streams within Newtown Township such as Lewis Run, Reeses Run, Hunters Run, and Crum Creek, as well as the groundwater.

**6. State Water Plans**

For the alternatives considered in this Study, there are no anticipated conflicts with the State Water Plan for this submission.

**7. Pennsylvania's Prime Agricultural Land Policy**

4 PA Code, Ch. 7 is the Agricultural Land Preservation Policy which was enacted by Executive Order of Governor Rendell on March 20, 2003 states "It is the policy of the Commonwealth to protect through the administration of all agency programs and regulations, the Commonwealth's "prime agricultural land" from irreversible conversion to uses that result in its loss as an environmental and essential food and fiber resource." There are no anticipated conflicts with the Agricultural Land Preservation Policy for the chosen alternative. There are no known prime agricultural sites that are to be impacted by the public sewer option.

**8. County Stormwater Management Plan**

The alternative of providing a public sanitary sewer system to the CDCA conveyance system for treatment and disposal at the DELCORA WWTP is consistent with the Counties Act 167 Studies for Crum Creek, as well as the Darby and Cobbs Creeks Watersheds.



**9. Wetlands Protection**

As referenced in Section II.G of this Plan, wetlands within the planning area (as identified on the national Water Resources Map in Appendix G) are located primarily along tributaries to Crum Creek, along Crum Creek, and adjacent to the Springton Reservoir. It is anticipated that construction associated with the implementation of this Plan may have a temporary impact on the wetlands. Wetlands interaction is to be minimized to the extent practical so that there will be no permanent damage to the wetlands area. Any wetlands anticipated to be impacted as part of a particular project shall secure appropriate permits and/or approvals prior to impact or disturbance to any wetlands.

**10. Protection of Threatened, Rare, and Endangered Plant and Animal species (PNDI)**

As a large project, A Large Project Pennsylvania National Diversity Inventory (PNDI) search was completed for the study area as a whole See Appendix M. A PNDI search will need to be completed for each proposed improvement project to the public sewer collection and conveyance system identified in this Act 537 Plan Update.

**11. Historic and Archaeological Resource Protection**

The Pennsylvania Historic and Museum Commission (PHMC) has been contacted to determine if there are any potential conflicts with the primary development sites. All potential concerns regarding these sites have been resolved. A PHMC review for the proposed sewerage facilities has been completed. The results of the PHMC's review for the proposed sewerage facilities can be found in Appendix N.

**B. Resolution of Inconsistencies**

The inconsistency with regard to the projection of EDU connections and flows between this plan and the Chapter 94 Annual Wasteload Management Report for the CDCA service area within Newtown Township will be resolved by incorporating the projections identified in this plan into the 2012 Chapter 94 Report. In addition, the Camelot Pump Station will be upgraded in anticipation of receiving additional flow from the expanded public sewer service area so that the pump station does not enter into a hydraulic overload condition.

**C. Alternative Evaluation with Respect to Applicable Water Quality Standards and Effluent Limitations**

The planned alternatives to provide a sanitary sewer collection and conveyance system for this Study will not impact water quality standards or effluent limitation, other than to improve any illicit discharge to AQUA PA's Springton Reservoir. Wastewater will be discharged to the existing public collection and conveyance system, and treatment system, on-site sewage disposal systems to remain will be consistent with applicable requirements. Ultimately, wastewater will be treated at the DELCORA WWTP for the public sewer option.

**D. Preliminary Cost Opinions**

Preliminary cost opinions for the implementation of this Act 537 Plan Update, are included in the appendix. As previously provided by the August 13, 2012 meeting the "tap in fee" is anticipated to be estimated between \$4,500.00 and \$6,000.00

The annual user fee is anticipated to be approximately \$500.00 to \$750.00 per year, but is dependent upon debt service requirement of the bond issue that is directly related to the construction cost of the project, as well as debt services and operation and maintenance fee of CDCA as well as administrative fees.

**1. CDCA Alternative**

Construction of a wastewater collection and conveyance system network (refer to plans in Appendix K) to serve new and existing developments would convey wastewater to the DELCORA WWTP via the CDCA conveyance line in the Chester or Philadelphia Water Department (PWD) Plant in S.W. Philadelphia. Detailed construction cost estimates can be found in Appendix "O".

**2. Community Treatment System Alternative**

No new community wastewater collection, conveyance, treatment and disposal system are proposed as part of this Act 537 Update. Costs for such a system will be paid for by private funding as the need arises for future development and as such, no cost analysis will be provided for this disposal methodology.

## **E. Analysis of Available Funding Methods**

This section of the Plan addresses methods available for financing alternatives. Three financing alternatives appear to be reasonable for future projects as the need arises.

### **1. Municipal Bond Issue**

#### *a. General*

There are several types of bonds; some are taxable and some are tax-exempt. However, the general classification of municipal bonds usually refers to tax-exempt bonds. There are three types of municipal bonds generally used in financing public works.

- *General Obligation Bonds* are tax-free bonds that are secured by the pledge of the full faith, credit, and taxing authority of the issuing agency. This means that this type of bond is backed by all of the taxes on real estates and personal property within the jurisdiction of the issuing agency. It involves minimum risk to the investor and therefore provides for a lower rate of interest than other types of bonds.
- *Dedicated Tax Bonds* are payable only from the proceeds from a special tax and are not guaranteed by the full faith, credit and taxing power of the issuing agency. Examples of special dedicated taxes are the special assessments against property which is adjacent to and the principal beneficiary of the improvement used to finance the project.
- *Revenue Bonds* (self-liquidating debt) are payable from revenues derived from the use of the improvement, sewer bills, or rents paid by the users of the improvement and do not otherwise represent an obligation of the issuing agency. Revenue bonds are typically self-liquidating and are not ordinarily subject to statutory or constitutional debt limitations. They are often issued by commissions, authorities, and other public agencies created for the specific purpose of financing, constructing, and operating essential public projects.

Typically, municipal bonds are sold to an investment-banking firm, which then resells the bonds to individual investors. The advantage of municipal bonds to the investor is their tax-free status. A bond discount (a percentage of the total bond issue) serves as the investment banker's commission. Before bonds are sold, they must be rated on the basis of risk to the investor by a rating agency such as Standard and Poor's or Moody's. The higher the rating, the lower the risk to the investor and, consequently, the lower the interest rate paid on the bond.

The legal instrument, which sets the rules that must be observed by the issuing agency, is the Trust Indenture. The Trust Indenture is prepared by the Bond Counsel and must be printed along with the bonds. Due to specific requirements as to the denominations of the bonds and methods and materials for printing, printing costs can be substantial. A Trustee is required to administer the bond issue and insure the terms of the Trust Indenture are observed. This results in an Annual Trustee Fee. Bond issues of this nature typically run 20, 25 or 30 years.

*b. Advantages of Municipal Bond Issue Funding*

- This program affords long-term fixed rate financing.
- Tax-exempt municipal bonds are in high demand.
- There is local investment opportunity.
- Municipal credit is established.
- It retains flexibility for future borrowing.

*c. Disadvantages of Municipal Bond Issue Funding*

- A Debt Service Reserve Fund is generally required.
- There are trustee fees and costs of preparing a Trust Indenture.

An anticipated budget using Revenue Bond (self liquidating debt) is contained within Appendix 'O'.

**2. Bank Loan**

Another financing option for the implementation of future projects is the bank loan. There are four basic categories of bank loans:

- Real Estate Loans (Mortgage)
- Participation and Interbank Loans

- Installment Loans (Personal)
- Commercial and Industrial Loans

Of the four types, a commercial and industrial loan would be the most applicable. Commercial and industrial loans may be made on a demand or time basis. A demand basis loan allows the bank to call for repayment at any time, or the borrower can repay when convenient. A time basis loan provides for a specific loan maturity date. Most commercial and industrial loans are unsecured. The credit is extended on the basis of an analysis of all available information pertaining to the customer and the bank's confidence in that customer's ability and willingness to repay.

#### Advantages of the Bank Loan or Other Loan Financing

- Ability to shop around for a loan structure that best fits the customer's needs.
- Flexibility in establishing repayment schedules.
- Working with and through a local financial institution or Authority.
- Municipal credit is established.
- Ability to obtain fixed rate financing.

#### Disadvantages of Bank Loan Financing

- (Project cost may exceed the amount of financing available).
- Shorter term loan repayment than Bonds.
- Interest rates are charged for loan repayment.
- Processing fees may be required.
- Processing and issuances fees may be expensive.
- Less flexible payment schedule.

Delaware Valley Regional Finance Authority (DVRFA) is a loan with a combination of floating and fixed interest rates-Based upon DVRFA Bonds.

### **3. Direct Funding by Developers**

A third financing option for the implementation of any anticipated project is direct funding by those who are developing the property in the planning area. This would involve capital expenditures by the developer from their own capital funds.

#### Advantages of Direct Funding by Developer

- Avoid any third party involvement. Payment for services can be made directly to the contractor by the Developer.
- Bank processing and issuance fees are avoided.
- Removes the financial burden from the Township/ Authority.
- Can lower financing requirements by Township/ Authority.

#### Disadvantages of Direct Funding

- There appear to be no municipal disadvantages to this method of financing.

#### **F. Immediate or Phased Implementation**

Construction of the facilities infrastructure may need to be completed in phases in an effort to make sewage facilities available for the Immediate Needs identified in this Plan Update. Refer to the schedule listed in the Executive Summary. A pump and haul program can be put in place at each of the developments, as a temporary wastewater collection measure, until the infrastructure is complete and in place.

#### **G. Ability of the Township to Implement the Alternative**

The Township is well established and has the ability to implement future alternatives as the need arises.

## **VII. INSTITUTIONAL EVALUATION**

### **A. Analysis of the Township, Past Actions, and Present Performance**

#### **1. Financial and Debt Status**

The Township in conjunction with the Municipal Authority is a well-established entity that will be able to oversee the implementation of the proposed technical alternative. Financially, developers will be funding a portion of the overall project as construction will service the needs of their respective developments with the ability to provide infrastructure to enable other areas within the Township to tie into the system. It is anticipated the private (developer) financing, in conjunction with the Township / Municipal Authority financing (bond issue), will be needed for the overall project to come to fruition.

#### **2. Available Staff and Administrative Resources**

The Township is governed by five (5) Supervisors. This Board consists of a Chairman, Vice Chairman, and three (3) supervisors. Others associated with the Township are:

- Township Manager/Secretary/Treasurer/Zoning Officer
- Public Works Department
- Solicitor
- Township Engineer
- Municipal Authority

The Township has the necessary staff and administrative resources already in place. No further evaluation of staffing and resources appears to be necessary at this time:

#### **3. Existing Legal Authority**

As provided for under Pennsylvania Law the Township, as well as the Newtown Township Municipal Authority has the necessary legal authority to oversee the implementation of the technical alternatives presented in this Update.

**B. Institutional Alternatives Necessary to Implement Technical Alternatives**

**1. Need for a New Authority**

Newtown Township Municipal Authority as owners of the system is already in place at this time to secure funding and implement the project. Therefore, there is no need for a new Authority.

**2. Function of the Township**

The Township is and will be in charge of operating and maintaining any new infrastructure components such as gravity collection, sewer interceptors, pump stations, and force mains.

**3. Cost of Administration**

The Township Municipal Authority will be given charge of obtaining financing and construction of the project. The Township will be ultimately responsible for the operation and maintenance of the system once constructed.

**C. Administrative and Legal Activities to be Completed and Adopted to Ensure the Implementation of the Technical Alternatives**

**1. Legal Authorities of Incorporation**

No new wastewater Authorities of Incorporation are necessary and there will be no changes to the current Township procedures to implement any projects.

**2. Required Ordinances, Standards, Regulations, and Intermunicipal Agreements**

Marple Township has acknowledged the necessity for Newtown to make connection to the CDCA manhole in Marple Township at the intersection of Newtown Street Road (S.R. 0252) and Media Line Road within Marple Township.

The following ordinances are currently being considered for adoption by Newtown Township (Appendix P):

- Governing On-Lot and Community Sewage Systems
- Regulating Grinder Pumps
- Amendment to Section 130-3 – Connections



- Holding Tanks Ordinance

**3. Provisions of Rights-of-Way, Easements, and Land Transfers**

The wastewater collection and conveyance system that will serve potential development will extend along Township or State Roads and within easements where necessary. Any proposed future pump stations or lines may require the acquisition of rights-of-way and easements at their respective locations.

**4. Other Sewage Facilities Plan Adoptions**

It is anticipated that Sewage Facilities Planning Modules will be needed to be adopted as part of future projects within the planning area.

**5. Legal Documents**

It is not anticipated at this time that any further legal documentation will be necessary, other than what has been previously mentioned, for the implementation of the selected alternatives.

**6. Dates and Timeframes of 1 Through 5 Above**

The dates and timeframes for the items in this section are found in the implementation schedule in the Executive Summary of this Plan.

**D. Institutional Alternative for Implementing the Selected Technical Alternative**

The Newtown Township Municipal Authority (NTMA) is the selected Institutional Alternative to implement the selected technical alternative of this Plan. The NTMA has the legal and administrative ability to obtain financing for construction of the expansion of the public sewer system. The NTMA has previously developed expansions to the collection and conveyance system within the CDCA service area of the Township and continues to have that capability. As stated previously, the Township will operate and maintain the system, once constructed and has the ability to do so, legally and administratively.

## **VIII. SELECTED WASTEWATER TREATMENT AND INSTITUTIONAL ALTERNATIVE**

### **A. Identify the Chosen Technical Alternative**

The selected alternative which best meets the immediate and future wastewater treatment needs of the properties within the planning area is the CDCA Alternative. For this alternative, it is proposed that a network of gravity mains, pump stations, force mains and low pressure sewers, as shown in Appendix K, be constructed to collect and convey the wastewater to the DELCORA WWTP.

This public sewer alternative is recommended based on the following:

#### **1. Existing Wastewater Disposal Needs**

Within the planning area, wastewater disposal needs are met through the use of individual on-lot disposal systems for larger lots. However, the CDCA alternative could meet existing wastewater needs in areas where malfunctioning sewer systems and soils provide constraints to replacement systems. The CDCA alternative is more viable because it is an established and permitted system and capacity is available at the DELCORA facility, as evidenced by the recently-approved Connection Management Plan and Sewer Service Agreement.

#### **2. Future Wastewater Treatment Needs**

Future wastewater disposal needs are approximately 961,975 GPD. Under the CDCA alternative and agreement, on-lot disposal systems may be abandoned and wastewater diverted to the DELCORA WWTP once the collection and conveyance system upgrades would be completed. Additionally, future capacity may be available as the need arises, subject to a revised Sewer Agreement and Planning Module Approval.

#### **3. Operations and Maintenance Considerations**

Any proposed wastewater facilities will be dedicated to Newtown Township Municipal Authority upon completion. Operations and maintenance of the new facilities will be the responsibility of the Township, which currently operates and maintains other existing wastewater facilities within the Township. The CDCA alternative provides for appropriate wastewater treatment for the Township. Wastewater will ultimately be treated by DELCORA at a permitted facility that is operated and maintained by DELCORA.

**4. Cost Effectiveness**

In areas of sewer malfunctions and future development as presented in Section VI of this study, the CDCA Alternative that collects and conveys wastewater for treatment at the DELCORA WWTP appears to be the most cost effective.

**5. Available Management and Administrative Systems**

The Township and CDCA have the management and administrative staff in place to implement the selected alternative. The agreement between CDCA and the Township will be revised to reflect future flow requirements. A copy of the Addendum to Sewage Treatment between CDCA and the Township can be found within this document. In addition, a developer's agreement will be prepared between the developer of the properties that are part of the future needs as they arise, and the Township.

**6. Available Financing Methods**

Of the financing methods discussed in Section VI, each method can provide the necessary funding for a future project. Refer to Section VIII.B for the selected capital financing plan.

**7. Environmental Soundness**

Environmentally, the DELCORA WWTP can adequately treat the average and peak flows within the permitted concentration limits. The fact that the DELCORA facility is in place and permitted by the DEP makes this alternative a viable option.

In addition, there was initial concern about the potential for lost groundwater recharge if the CDCA alternative is implemented. Given recent stormwater management regulations and practices that require stormwater retention, as well as infiltration and also given that proposed development will be using a public water system that draws primarily on water supplies from the adjacent municipalities, the groundwater will not be affected by the implementation of the selected alternative.

**8. Identify the Alternative and Choose Alternative**

Within the overall CDCA service area sub areas have been established to particularly evaluate the wastewater service needs on a

neighborhood basis, as well as the effect on the overall areas. These sub-areas have been identified as follows:

1. Melmark School
2. Hunt Valley Lane and Circle
3. Echo Valley
4. Goshen Road Area
5. Boot Road Area
6. Episcopal Academy
7. Ashford Development
8. BPG
9. Marville Development
10. Newtown Business Center
11. Olde Master Property
12. Florida Park
13. Newtown Square Corporate Center
14. Hunters Run
15. Springton Pointe Estates
16. Dogwood Avenue
17. Gradyville Road
18. Four Seasons
19. Township Park Area
20. Whitehorse Development
21. Llangollen Area
22. Springton Pointe  
Sleepy Hollow and Frog Hollow

**1. The Melmark School**

The Melmark School service area is situated at the northwest corner of the Township along Wayland Road and is adjacent to Easttown Township in Chester County.

Representatives of the Melmark School have expressed concerns with malfunctions of some of their existing "On-Site" Sewage Facilities and their desire to connect to the public sewer system. Although currently the school has an existing "On-Site" Treatment Facility with the capability of handling 10,000 GPD of which only 5,000 GPD capacity is currently being used, the 5,000 GPD is not nearly enough to handle the 25,000 GPD of need expressed by the School.

There is limited land area on the property by which existing malfunctioning systems can be replaced. With the systems being pumped on a regular basis, it appears the public sewer

option is the most pragmatic from an environmental standpoint. Therefore, the no action alternative is not a real option in this particular case.

In order to tie into the public sewer system, the Melmark School, at their cost and expense, will need to construct a pump station with a capacity of 25,000 GPD. Because of the site's location being the northwest corner of the Township, there does not appear that future expansion of the pump station would be necessary.

Currently, the Melmark School has an existing capped sewer system which can be utilized for the future sewer collection and discharge to the pump station. Since the Echo Valley Development is being proposed as a gravity sewer area, the interconnections of the two systems is logical. However, several alternatives were evaluated:

- a. Possible modification to allow for this interconnection would be to abandon the intended use of the existing capped sewer system and construct a new low pressure sewer system to interconnect with Hunt Valley Circle and Echo Valley if these communities were to be provided with low pressure sewers.
- b. Provide septic tanks for each facility so that the flow being discharged will be that similar to a low pressure system by which an inter-connection can be taken. This option would require operation and maintenance to maintain the septic tanks with a routine pumping schedule and the use of a "Zabel Filter" system by which the integrity of the low pressure line can be maintained.
- c. Provide a separate force main that would run through the Hunt Valley Circle and Echo Valley Development to discharge directly into the Ashford Pump Station.
- d. Pump to a gravity line within the driveway that provides access to three (3) residential parcels south of the Melmark School campus and west of the Newtown Hunt development. The gravity main will service the three (3) residential lots and the Melmark School campus and will drain to Pump Station #2. Newtown Hunt will be provided with gravity sewers, which will

also drain to Pump Station #2. Pump Station #2 would be required to handle an average daily flow of 33,150 GPD. The Pump Station would utilize a force main that would pass through the same easement parallel to the gravity main draining from Newtown Hunt adjacent to the pond/stormwater management basin, through other existing easements, where possible, and ultimately discharge to a proposed gravity line on the westerly portion of Echo Valley Lane. It appears this 8" Sanitary Sewer gravity collection system can be constructed to drain to proposed Pump Station #3, which is proposed to be located just south of the Crum Creek Lane cul-de-sac and north of Goshen Road.

## **2. Hunt Valley Lane and Circle**

Hunt Valley Lane and Circle Development is situated along the northwesterly section of the Township located off Wayland Road and is adjacent to the Melmark School property and northwest of the Echo Valley Development.

Residents within this development have expressed a desire to connect to the public sanitary sewer system, because of topographic constraints, limited area for replacement systems exist. As such, the 28 units involved are anticipated to generate 7,350 GPD based upon 262.5 GPD/home. Alternatives considered for providing sanitary sewer services were as follows;

- a. The low pressure sewer option is definitely one to consider by which this area can be directly connected to the proposed Echo Valley Lane system through an existing easement and routed through Echo Valley, Spring Water Lane for connection to the Ashford Pump Station. This option would require the residents to install operate and maintain an individual grinder pump for each home. However, this type of system (low pressure) would preclude the Melmark School from connecting to the system while utilizing their existing gravity capped sewer system.
- b. An additional alternative, as previously discussed, as part of the Melmark School would be to provide gravity service to the area which would allow for the connection of the Melmark School. However, this

option would require easement acquisitions. Also, some interaction with steep slopes, an existing drainage ditch and pose concerns relative to the proximity of the spine of the collection system to the existing homes. In addition, a sewage lift station (pump station) #2 would be required. As previously discussed as part of the Melmark alternatives, three (3) units would be accommodated by the pump station by the gravity main connecting the school campus to the pump station. It is anticipated that the pump station would be required to handle an average daily flow of 33,150 GPD.

### **3. Echo Valley Area**

The original flow allocation for the Echo Valley Service Area was 47,775 GPD but has since been revised downward when evaluating a partial gravity and partial low pressure sewer system which would redirect flows to different sub drainage area pump stations because this partial gravity option that would be proposed for the homes along Goshen Road including Woolman Drive, Springton Lane and Carriage Lane.

The revised Echo Valley Service Area would include properties along a portion of Goshen Road, Echo Valley Lane, Battles Lane, Meadow Lane, Pheasant Lane, Crum Creek Lane, Partridge Lane, Spring Water Lane and Fox Hill Lane. (Option 2 alternative of choice Echo Valley)

Because of the undulating topography within the Echo Valley Development, dual gravity lines, which will require private easements will be necessary in certain areas of the development. The dual line would be situated between the residences along the northerly side of Crum Creek Lane and Lewis Run, which approximately follows the rear lot lines of these residences. The dual lines are critical to allow gravity sewer to approximately 79 residences in the northeastern, eastern, and southeastern portions of the Echo Valley Development. In addition it will allow gravity lateral connections for eight (8) residences along the northerly side of Crum Creek Lane as well as two (2) residences along Echo Valley Lane, which the dual line will pass between to allow gravity service for the southeast section the Development. A gravity main will be connected to the Crum Creek Lane dual line from Battles Lane to the north through an existing 50 foot wide right-of-way between two (2) of the properties along the

southerly side of Battles Lane. A utility stream crossing of Lewis Run will be necessary to make this connection. Easements will be necessary to allow for connection of the northeasterly portion of Echo Valley between residences along the westerly side of Echo Valley Lane just north of Spring Water Lane through to the easterly end of Battles Lane. The Foxhill Lane cul-de-sac is situated lower in elevation than its intersection with Echo Valley Lane. This would require a small low pressure sewer system to service four (4) homes if the connection point were to be the gravity main in Echo Valley Lane. However, easements will allow gravity sewer service to the Foxhill Lane cul-de-sac with possible connection along Echo Valley Lane north of the intersection at Foxhill Lane since the elevation along Echo Valley Lane will allow this to be possible.

Once previously considered to be a significant environmental impact, a site walk through on February 8, 2013 with several members of the community along with representatives from the Township resulted in constructive dialogue by which gravity sewer mains could be better situated with respect to proximity to surface waters, wooded areas, and individual residences thereby minimizing, which was once felt to be significant, environmental impact and cost.

In addition to the previously mentioned gravity scenario regarding the Melmark School and Hunt Valley Circle, the alternative of choice for this area with total flow of approximately 35,700 GPD is gravity sewer which will drain to the Goshen Road Pump Station (Pump Station #3).

#### **4. Goshen Road Area**

The Goshen Road Area which has identified 38 units to generate 9,975 GPD is proposed to be serviced by a gravity sanitary sewer system which will flow to a proposed Pump Station #3 to be located just south of the Crum Creek Lane cul-de-sac and north of Goshen Road. The construction of this system will mitigate the illicit discharge of failing "On-Site" Sewage Disposal Systems within the vicinity of the Crum Creek and Lewis Run.

The service area includes a portion of the homes along Goshen Road, Carriage Lane, Spring House Lane and Woolman Drive as can be seen on the accompanying Service Area Mapping.



The total anticipated flow to the Goshen Road Pump Station (Pump Station #3) which would include flow from a portion of the Boot Road area, the Melmark School, Hunt Valley Lane and Circle, and all of Echo Valley would be approximately 81,500 GPD.

The Goshen Road Pump Station is proposed to discharge to a terminal manhole at the end of a gravity line off of the northerly side of Goshen Road situated within the Ashford (Liseter) Development, which will convey the flow to the Ashford Pump Station.

**5. The Boot Road Service Area**

The Boot Road Service Area, which includes homes along Boot Road, as well as Philips Lane have been identified to contain 32 units some of which are anticipated to flow by gravity to the Goshen Road Pump Station #3 and follow the flow pattern identified therein, mapping for this service area can be found in Appendix "K". The remaining flow is proposed to flow directly by gravity through the Marville Property to a proposed pump station #4 located near on the Olde Masters Site. The flow will then travel by gravity to a proposed Pump Station #5 at the Springton Pointe Estates Sewage Treatment Facility along Stoney Brook Blvd. and then pumped to a proposed modified and/or relocated Camelot Pump Station #6 for conveyance to the CDCA line located at the southeast corner of Media Line Road (SR 1030) and Newtown Street Road (SR 0252) In Marple Township, Delaware County, PA.

**6. The Episcopal Academy**

Representatives of the Episcopal Academy have requested flow of 11,000 GPD. It should be pointed out the pump and haul records provided for review indicates flows of approximately 6,700 GPD. Therefore, it appears the flows requested to be reasonable.

The Episcopal Academy proposes the construction of a pump station and force main to be connected with the infrastructure within the Ashford Development at a point that would

minimize interaction with sensitive environmental concerns such as stream crossings and steep slopes. The public sewer option appears to be an environmentally sound one and financing will be provided by the Episcopal Academy.

#### 7. The Ashford Group

The Ashford Development situated along the Northwest corner of Goshen Road (SR 1034) and Newtown Street Road (SR 0252) proposes the construction of 460 units residential with other connections that would generate 115,000 GPD of flow. The Ashford Group has made an application for Sewage Facilities Planning Module and a Part II Water Quality Permit for a pump station that will ultimately discharge flow to the CDCA line at a sanitary sewer manhole situated at the southeast corner of Media Line Road (SR 1030) and Newtown Street Road (SR 0252) adjoining the Delaware County Community College in Marple Township, Delaware County, PA. Ashford has received approval for both the Sewage Facilities Planning Module, as well as their Part II Permit. Although connection of flow up to 213,000 GPD was requested; 115,000 GPD was approved with the Water Quality Management Part II Permit by the PA DEP with the requirement that additional planning be conducted and approved to allow for connection of the additional flow to the Ashford Pump Station. However, the Pump Station, by agreement, was designed and is to be constructed in anticipation of receiving the additional flow.

Flow to the Ashford Pump Station is anticipated to be able to handle flow from the following:

1.	Ashford Development	115,000 GPD
2.	Episcopal Academy	11,000 GPD
3.	Melmark School	25,000 GPD
4.	Hunt Valley Circle	7,350 GPD
5.	Echo Valley Area	<u>47,775 GPD</u> – Originally

Total Anticipated Flow      206,125 GPD

The Ashford Group has worked with the Township to provide an appropriate Developer's Agreement, as well as post financial surety so that the project can move forward. It is anticipated that the Ashford Pump Station and Force Main Project will be under construction shortly.

**8. The Berwind Property Group**

The Berwind Property Group has requested flow of 185,000 GPD for consideration to discharge to the CDCA facilities. Various development proposals for both commercial and residential concerns have been submitted to the Township and currently the Berwind Property Group is evaluating the most prudent way to proceed with their development. At this juncture, it is anticipated that the Berwind Property Group will construct a pump station on the property for their anticipated flow of 185,000 GPD that will be coordinated with the Ashford force main to be constructed along Newtown Street Road (SR 0252).

The Berwind Property Group Development site is situated along the southwesterly side of Newtown Street Road (SR 0252). Southeast of Goshen Road and adjacent to the northwesterly side of West Chester Pike (SR 003).

**9, 10, 11. The Marville Development, Newtown Business Center and Olde Masters Site.**

The Marville Development and the Newtown Business Center are located along the northwestern side of West Chester Pike (SR 003) in the western portion of the Township adjacent to Crum Creek and the Edgmont Township boundary line. The Olde Masters Site is situated along the southeasterly side of West Chester Pike (SR 003) and adjacent to Crum Creek and the Edgmont Township boundary. These properties are owned by National Developers Realty, Inc. with associated sewage flows of 3,500 GPD from the existing Newtown Business Center, 83,950 GPD for the Marville Development and 78,100 GPD for the Olde Masters Property. These properties are contained within various zoning districts such as SUZ, I, R4 and R5.

The property owner has received approval to construct a 50,000 GPD wastewater treatment plant at the Marville site but has expressed his interest in connecting to the public sewer system.

These properties would drain to Pump Station #4, which is proposed to be located on the Olde Masters Site and discharging to a proposed gravity sewer line to be constructed

along Campus Boulevard. The flow then will follow the route described in the Boot Road Service Area Scenario.

## **12. The Florida Park Area**

The Florida Park Service Area consists of 127 dwelling units.

Anticipated flow from this development based upon 262.50 GPD/unit is 33,338 GPD.

The Florida Park Service Area includes properties along West Chester Pike between Florida Park up to and including the Boot Road intersection, Florida Avenue, Park Avenue, Columbia Avenue, Tuxedo Avenue, Pomona Avenue and Fairview Avenue. Because of the smaller lot sizes, the lack of additional ground by which a replacement "On-Site" sewage disposal system can be utilized, a gravity sewer system is being recommended for providing sewer services to this area.

Flow from the Florida Park Service Area is to be by gravity to a proposed Pump Station #4 at the Olde Masters Site and then pump to a proposed gravity sewer main proposed for Campus Boulevard. Flow would then travel by gravity to the new Springton Pointe Estates Pump Station #5 along Stoney Brook Boulevard and then transport the sewage to the Camelot Pump #6 for conveyance to the CDCA line located at the southeasterly intersection of Media Line Road (SR 1030) and Newtown Street Road (SR 0252).

## **13. Newtown Square Corporate Campus**

The Newtown Square Corporate Campus is located along Campus Boulevard with a flow allocation of 26,000 GPD. The individual buildings along Campus Boulevard each have individual "On-Site" sewage disposal systems.

This area is proposed to be serviced by gravity sewer and will ultimately flow through the Camelot Pump Station #6 for transport to the CDCA System as noted above.

## **14. Hunters Run**

Hunters Run is a community of 76 existing homes with anticipated flow of 19,950 GPD. The existing homes are serviced by a community "On-Site" sewage disposal treatment

and land application system which would be abandoned and connected by gravity to the sanitary sewer line in Stoney Brook Boulevard. Flow from Hunters Run would flow by gravity to the Springton Pointe Estates Pump Station #5 that is proposed to be discharged to the Camelot Pump Station #6 and utilizing the CDCA System.

**15. Springton Pointe Estates**

The Springton Pointe Estates Sewage Treatment and Disposal System rated to handle 35,000 GPD is proposed to be retired and replaced with Pump Station #5 for conveyance of sewage to the Camelot Pump Station #6 so that sewage may be conveyed to the CDCA system located at the southeast corner of Media Line Road (SR 1030) and Newtown Street Road (SR 0252).

**16. The Dogwood Avenue Area**

This is an area of older homes with aging "On-Site" Sewage Disposal Systems. It is anticipated that this area will be served by gravity sanitary sewer flow into Phase II of the Terrazza Development (Part of 7 Party and Agreement) once it would be constructed.

**17 & 18 The Gradyville Road Area and that of Four Seasons**

This area of the Township will be the subject of future planning whereby flow could be conveyed to the Camelot Pump Station or in the alternative to flow through the Four Seasons Development for ultimate connection through a proposed development within Marple Township, Delaware County. The development in Marple Township is owned by the same owner as the Four Seasons.

**19. Township Park Area**

This area located along Bishop Hollow Road across the street from the Township Municipal Building is proposed to be serviced by a gravity sewer line connecting to the existing sewer line along Ellis Road.

**20. Whitehorse Development and the Area along Whitehorse Road**

The Whitehorse Development located along the central northwestern section of the Township is comprised of 57 lots located along Whitehorse Road in close proximity to Darby Paoli Road (SR 0252). This development is approximately ten (10) years old with limited residential development still taking place. There are currently approximately ten (10) buildings lots yet to be built on. A needs survey on the survey that the existing "On-Site" sewage disposal systems are adequate to serve current needs.

This area and the area along Whitehorse Road to the southwestern largely undeveloped should remain for the present time as "On-Site" sewage disposal as the primary means of Wastewater Treatment and Disposal subject to an Operation and Maintenance Agreement. A draft of which is contained in this document.

This area should be the subject of future planning which when and if the need arises, appears that connection to the Ashford Pump Station may prove to be the most viable alternative.

#### **21 & 22 The Llangollen Area and Springton Pointe – Sleepy Hollow and Frog Hollow**

The Llangollen area adjacent to Bishop Hollow and Gradyville Road consists of 51 lots with aging "On-Site" sewage disposal systems. This area as well as that of Springton Pointe, Sleepy Hollow and Frog Hollow consists of 56 lots along Gradyville Road, Frog Hollow Drive, Sleepy Hollow Lane, Sleepy Hollow Lane and Springton Pointe Drive have noted through the needs survey a significant amount of potential malfunction and/or suspected malfunction lots.

At one time, consideration was being given to combining this area with a force main serving Edgmont Township as a means of providing for public sewer service. Since that time, Edgmont Township has moved forward with their Act 537 Sewage Facilities Plan and this possibility was once considered no longer a viable option.

However, more recently, officials at Edgmont Township, as well as Delcora were contacted in this regard, and it now appears, based upon those discussions with Edgmont Township and Delcora that a 10" force main is being sized to run along Gradyville Road that would allow these areas to connect to the

public sewer system in the future. After reviewing the Sewage Needs Survey results, this area that was previously considered for future planning appears to have a more immediate need.

As such, even though the area has been identified as future needs, these future needs should be considered a priority once additional planning is undertaken. For the time being, the properties would benefit from an Operation and Maintenance Agreement with the Township until such time public sewer can be made available.

Even though these areas would be the subject of future planning, it appears that a pump station strategically placed near the intersection of Gradyville and Bishop Hollow Roads that would pump sewage through a force main along Gradyville Road for a possible interconnection with the future Four Seasons area sanitary sewer system which may prove to be the most practical and cost effective.

**\*Existing properties and neighborhoods which are currently connected into the CDCA system include:**

**Newtown Heights**

Properties along Hickory Lane, Main Street, Chestnut Street, Walnut Street, Locust Street, Pine Street, College Avenue, Tennis Avenue, Fairview Avenue and Summit Avenue are currently connected into the C.D.C.A. system.

**Newtown Woods (Elgin Park)**

Properties along Newtown Woods, Ellis, Poplar and Clearbrook, Ellis Ave., Elgin Road, a portion of School Lane, Wisteria Drive, Bishop Hollow Road are currently connected into the C.D.C.A. system.

**Dudie Drive, Greenbriar Lane, Mary Jane Drive**

Properties along these streets are currently connected into the C.D.C.A. system.

**\*Taken from the Draft Act 537 Sewage Facilities Plan Update prepared by Kelly & Close Engineers, dated July 7, 2011**

### **The Springton Woods**

Properties along Arthur Court, Lancelot Lane, Merlin Road, Troop Farm Road and Guinevere Drive are currently connected into the C.D.C.A. system.

Commercial Areas associated with the Pulte Subdivision (Phase Five) along Route 252 are currently connected into the C.D.C.A. system.

The Camelot Pump Station is currently operational, and discharges flow to the C.D.C.A. System. Additional flow is scheduled to be routed into the Camelot Pump Station, as part of this Act 537 Plan.

### **Newtown Street Road (Route 252) Properties**

Several properties along Newtown Street Road are currently connected to the C.D.C.A. System.

The Albertos' Restaurant property is currently connected to the C.D.C.A. System.

The Terrazza Condominiums (103 Units) property is currently connected to the C.D.C.A. System. An additional (103) are proposed to be constructed.

The Office Building (formerly "Medstaff") is currently connected to the C.D.C.A. System.

The Office Building (formerly "Drexel Technical") is currently connected to the C.D.C.A. System.

The "Sunrise, Senior Living" facility is currently connected to the C.D.C.A. System.

The D.R Horton Site is a proposed land development – and is **NOT** currently connected to the C.D.C.A. System.

## **B. Selected Capital Financing Plan**

Future projects through the public sewer alternative will be paid for and financed through the use of the private funds of the developer and Municipal Bonds covered as self-liquidating debt by tapping and user fees.



## APPENDIX A

### STUDY AREA

## Study Area

Act 537 Plan Study Area

Data:  
1. Study Boundary - HEM Engineers  
2. Parcels - Delaware County Board of Assessment  
3. Other Data - DCPD

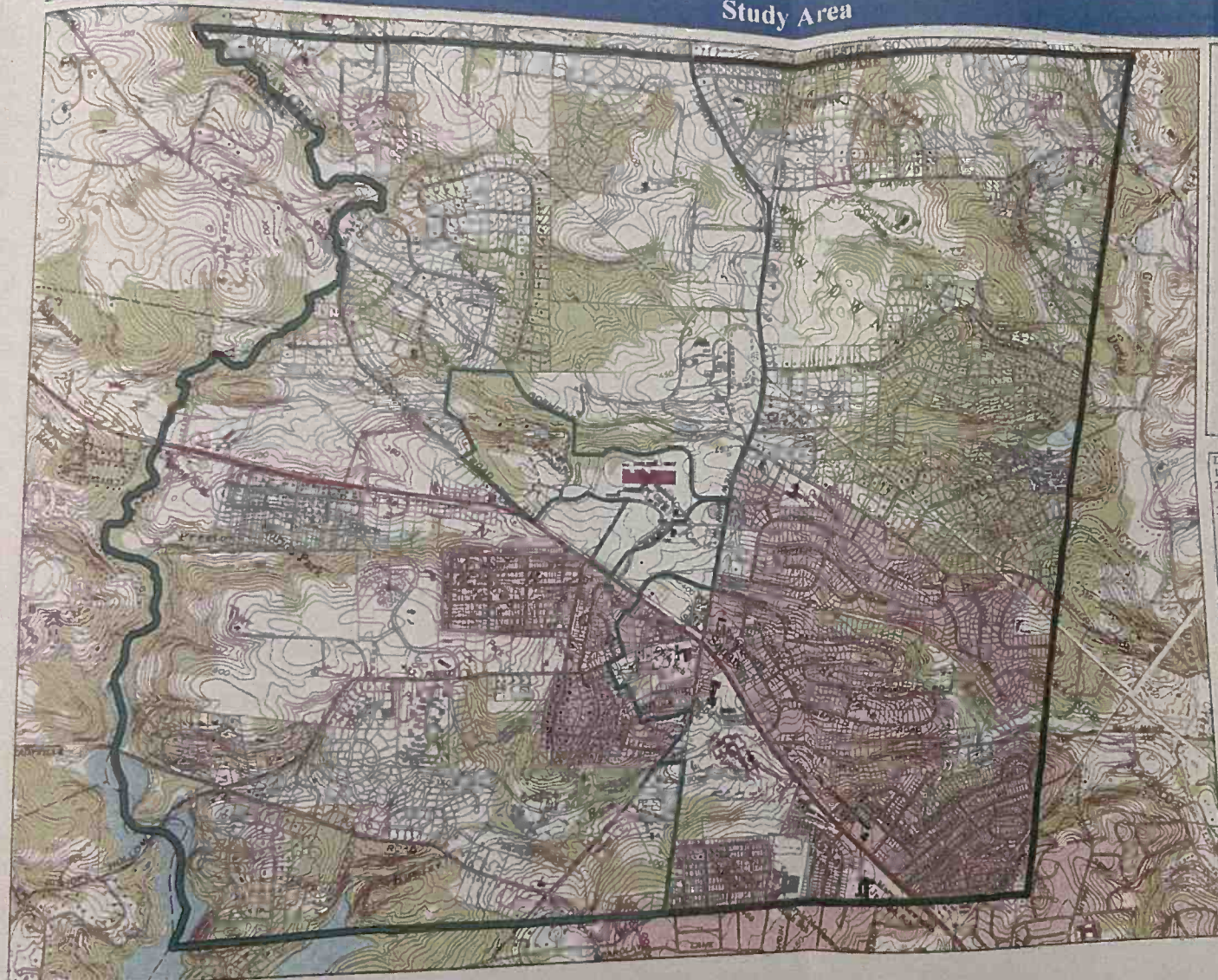
**Important**  
This map is for analytical purposes only. It is not intended for navigation or exact location of infrastructure. The reliability of this map depends on the accuracy of its underlying data sources which have not been verified. Unauthorized duplication or distribution is prohibited.



Prepared by  
Delaware County  
Planning Department  
2012

0 300 600 1,200 1,800 2,400 Feet



## Study Area



-  Newtown Township Boundary
-  Act 537 Plan Study Boundary

Data:  
1. Study Boundary - HEM Engineers  
2. Topography - USGS Quadrangle Maps, 7.5 Minute Series, Valley Forge, Norristown, Media, and Lansdowne  
3. Other Data - DCPD

**Important**  
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Prepared by  
Delaware County  
Planning Department  
2012

0 100 200 300 400 Feet

**APPENDIX B**

**ZONING MAP**



# Zoning Map

Act 537 Plan Study Area

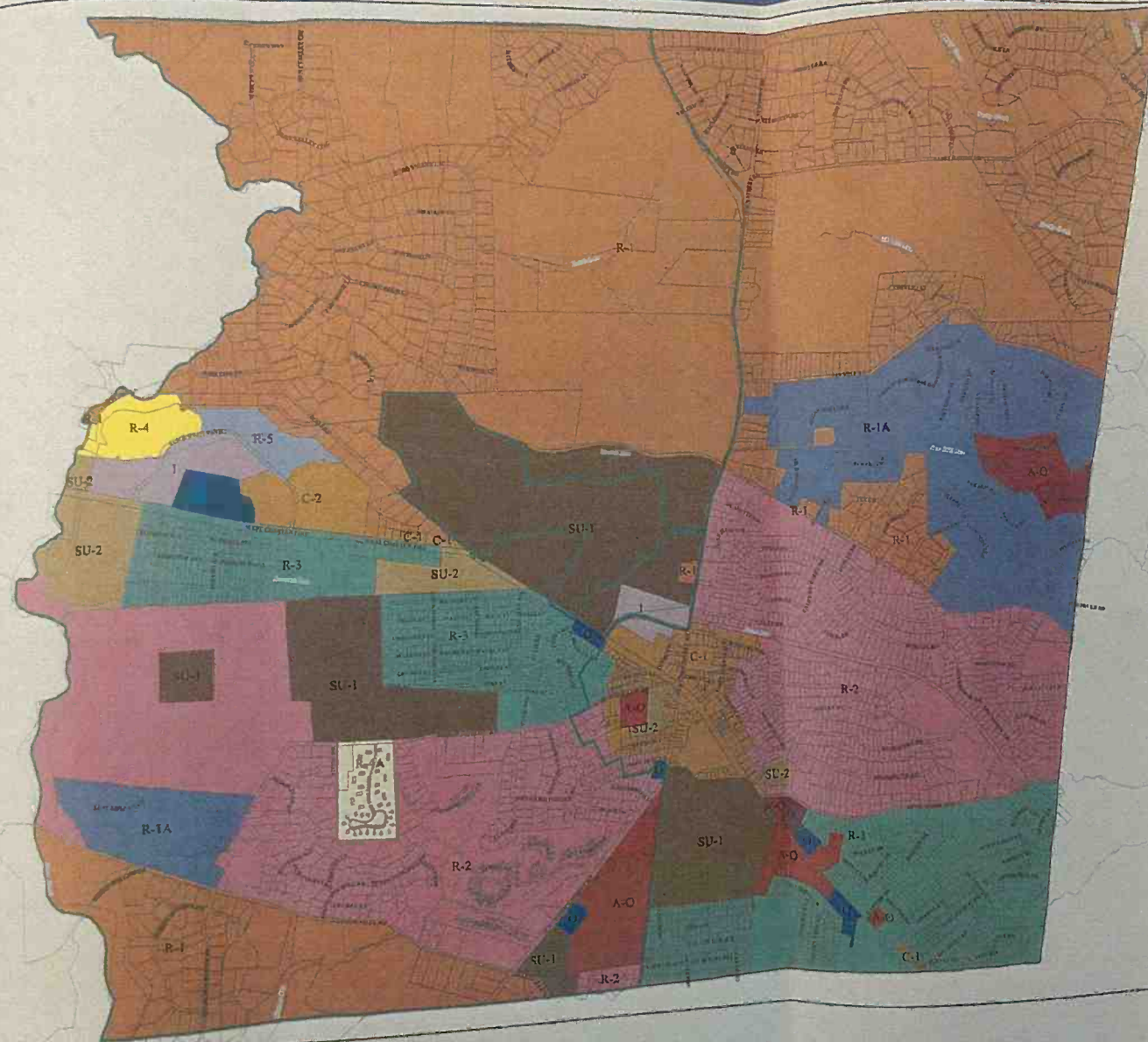
- R-1 Residence
- R-1A Residence
- R-2 Residence
- R-3 Residence
- R-4 Residence
- R-4A Residence
- R-5 Residence
- A Apartment
- A-O Apartment/Office
- O Office
- C-1 Commercial
- C-2 Commercial
- SU-1 Special Use
- SU-2 Special Use
- I Industrial

Date:  
 1. Zoning \* Digitized by DCPD from the official Township Zoning Map, Created July 1986, Revised, February 2004  
 5. Parcels - Delaware County Board of Assessment

**Important**  
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 Delaware County  
 Planning Department  
 2012

0 600 1200 1800 2400 Feet

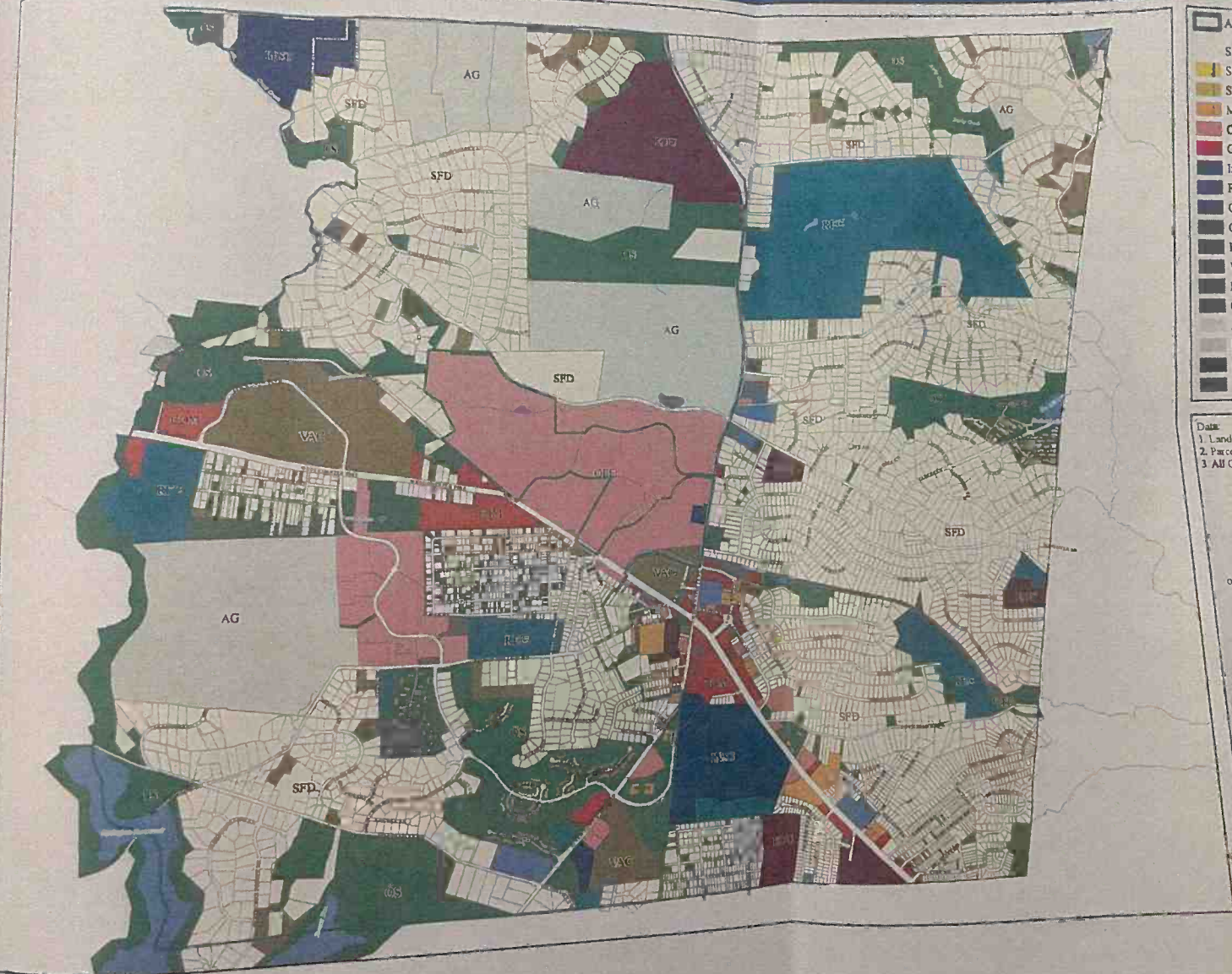


## APPENDIX C

### 2010 LAND USE



## 2010 Land Use



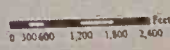
- Act 537 Plan Study Area
- Single-family Detached
  - Single-family Semi-detached
  - Single-family Attached
  - Multi-family
  - Office
  - Commercial
  - Institutional
  - Religious
  - Government
  - Cemetery
  - Educational
  - Warehouse/Storage
  - Recreation
  - Open Space
  - Agriculture
  - Road
  - Utility & Parking Lots
  - Vacant

Data:

1. Land Use 2010 - Delaware County Planning Department
2. Parcels - Delaware County Board of Assessment
- 3 All Other Data - Delaware County Planning Department

**Important**  
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Planning Department  
2012



## **APPENDIX D**

### **SOILS, SOIL LIMITATIONS FOR ON-LOT DISPOSAL SYSTEMS**



# Soils Map



- Act 577 Plan Study Area
- Prime & Significant Farmland Soils
- Class I
- Class II & III

- Soils**
- Brandywine loess
- Brandywine very stony loam
- Chester silt loam
- Cherwell silt loam
- Clinton gravelly silty clay loam
- Conestoga silt loam
- Crawley cherty silt loam
- Crawley silt loam
- Crawley very stony silt loam
- Madison loam and cherty loam
- Madison loam
- Madison silt
- Mashumet gravelly silt loam
- Mashumet very stony silt loam
- Michoud silt loam
- Wardman silt loam
- Wardman very stony silt loam
- Water
- Wetland

## Data:

1. Soils, 2009 - NRCS
2. Soil Characteristics - Soil Survey of Chester and Delaware Counties, US Department of Agriculture, 1963, ArcGIS Online
3. Parcels - Delaware County Board of Assessment
4. All Other Data - Delaware County Planning Department

## Important

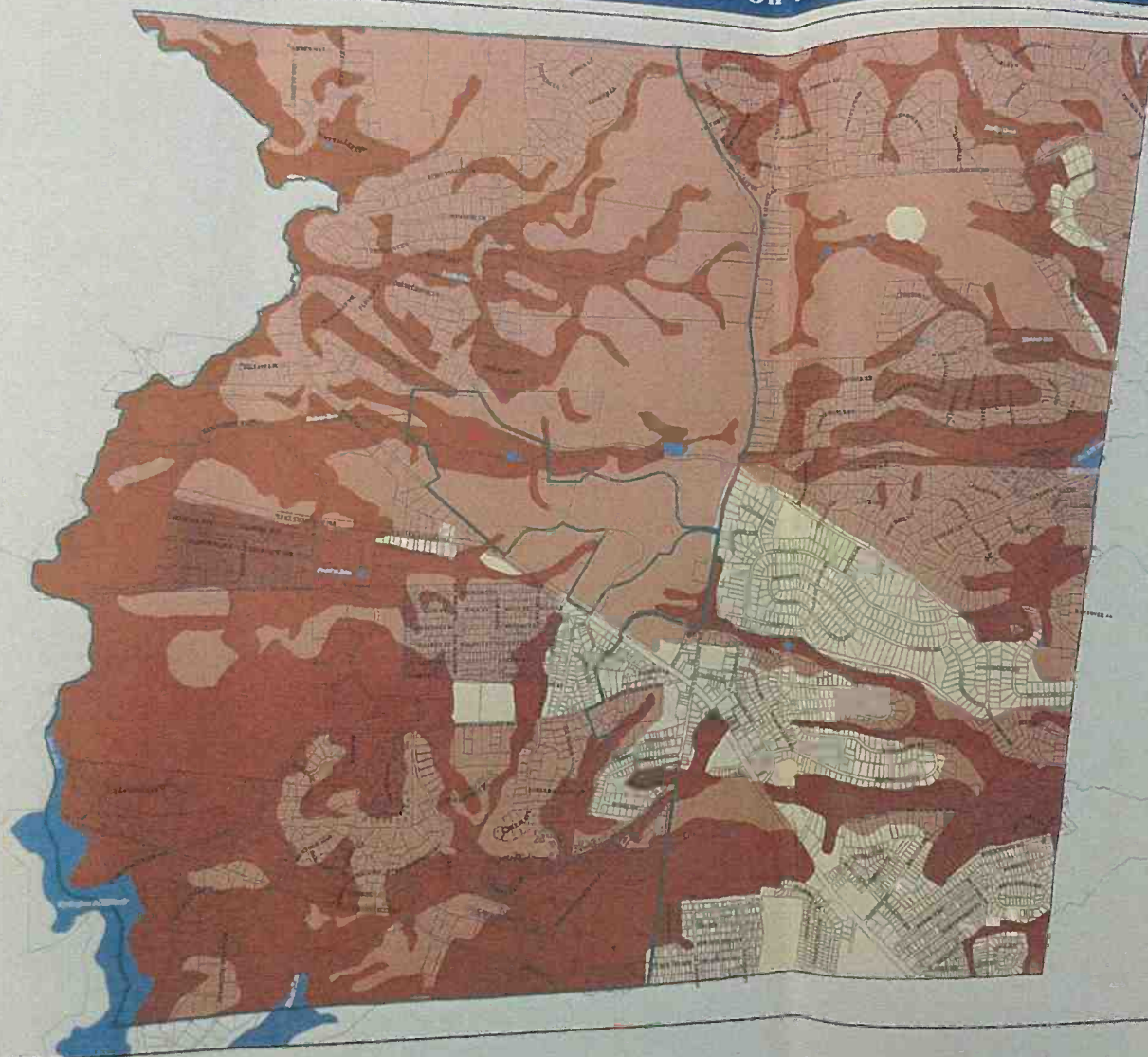
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Planning Department  
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0 500 1,000 1,500 2,000 Feet



# Soil Limitations for On-Lot Disposal Systems



Act 537 Plan Study Area

Soil Limitations

Moderate

Severe

Made Land

Water

## Data

1. Soils, 2009 - NRCS
2. Soil Characteristics - Soil Survey of Chester and Delaware Counties, US Department of Agriculture, 1963
3. Parcels - Delaware County Board of Assessment
4. All Other Data - Delaware County Planning Department

## Important

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Prepared by  
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Planning Department  
2012

0 300 600 1,200 1,800 2,400 Feet

**TABLE OF SOILS WITHIN NEWTOWN TOWNSHIP  
AND LIMITATIONS FOR ON-LOT SEWAGE DISPOSAL**

Mapping Symbol	Soil Name	Limitation for On-Lot Sewage Disposal	Depth to Seasonally High Water Table (Ft)	Depth to Bedrock (Ft)	Description of Soil	Depth from Surface (inches)
Brandywine Series			10+	3-4	Well drained loam and silt loam, 1 to 2 feet thick; underlain by igneous and metamorphic rocks of the Piedmont Plateau; the stony soils have boulders, 1 to 2 feet in diameter, on the surface throughout the profile.	0-6 6-20 20-32
BrB2	Brandywine loam, 3 to 8 percent slopes, moderately eroded.	Severe				
BrC2	Brandywine loam, 8 to 15 percent slopes, moderately eroded.	Severe				
BrD	Brandywine loam, 15 to 25 percent slopes.	Severe; Steep Slopes				
BrD2	Brandywine loam, 15 to 25 percent slopes, moderately eroded.	Severe; Steep Slopes				
BrD3	Brandywine loam, 15 to 25 percent slopes, severely eroded.	Severe; Steep Slopes				
BrE	Brandywine loam, 25 to 40 percent slopes.	Severe; Steep Slopes				
BsD	Brandywine very stony loam, 8 to 40 percent slopes.	Severe; Steep Slopes				
BsF	Brandywine very stony loam, 25 to 50 percent slopes.	Severe; Steep Slopes				
Chester Series			5+	5-6	Well-drained silt loam and silty clay loam, 3 to 5 feet thick; underlain by micaceous loam; developed over schist and gneiss of the Piedmont Plateau; the very stony areas have boulders, ranging from 1 to 2 feet in diameter, on the surface and throughout the profile	0-8 8-36 36-60
CdA2	Chester silt loam, 0 to 3 percent slopes, moderately eroded.	Moderate				
CdB2	Chester silt loam, 3 to 8 percent slopes, moderately eroded.	Moderate				
Chewacla Series			0-1	0-3	Moderately well drained material of flood plains, 3 to 6 feet thick; washed from uplands of the Piedmont Plateau; subject to periodic overflow.	0-60
Ch	Chewacla silt loam,	Severe				
Chrome Series			5+	1-2 ½	Well drained gravelly silty clay loam and silty clay loam, 1 to 2 feet thick; underlain by serpentine of uplands in the lower Piedmont Plateau; fragments of rock from 1 to 3 inches in diameter, make up 50 percent or more, by volume, of the lower part of the profile in places.	0-7 7-15 15-30
CkB2	Chrome gravelly silty clay loam, 3 to 8 percent slopes, moderately eroded.	Severe				

**TABLE OF SOILS WITHIN NEWTOWN TOWNSHIP  
AND LIMITATIONS FOR ON-LOT SEWAGE DISPOSAL**

Mapping Symbol	Soil Name	Limitation for On-Lot Sewage Disposal	Depth to Seasonally High Water Table (Ft)	Depth to Bedrock (Ft)	Description of Soil	Depth from Surface (inches)
CkC2	Chrome gravelly silty clay loam, 8 to 15 percent slopes, moderately eroded.	Severe				
CkC3	Chrome gravelly silty clay loam, 8 to 15 percent slopes, severely eroded.	Severe				
CkD2	Chrome gravelly silty clay loam, 15 to 25 percent slopes, moderately eroded.	Severe; Steep Slopes				
CkD3	Chrome gravelly silty clay loam, 15 to 25 percent slopes, severely eroded.	Severe; Steep Slopes				
Congaree Series			3+	3-6	Well drained materials of flood plains, 3 to 6 feet thick; washed from uplands in the Piedmont Plateau; subject to occasional overflow.	0-60
Cn	Congaree silt loam	Severe; Hydric Inclusions				
Conowingo Series			1-2	3-4	Moderately well drained silt loam and silty clay loam, 3 to 4 feet thick; underlain by serpentine and hornblende of the lower Piedmont Plateau.	0-8 8-46 46-60
CoB2	Conowingo silt loam, 3 to 8 percent slopes, moderately eroded	Severe; Hydric Inclusions				
Glenelg Series			5+	3-5	Well drained channery silt loam and silty clay loam; 2 to 3 feet thick; underlain by schist, gneiss, gabbro, and granite of uplands in the Piedmont Plateau; the stony soils have cobbles and stones, 6 inches to 2 feet in diameter, on the surface and throughout the profile.	0-8 8-26 26-42
GeA	Glenelg channery silt loam, 0 to 3 percent slopes.	Moderate				
GeB	Glenelg channery silt loam, 3 to 8 percent slopes.	Moderate				
GeB2	Glenelg channery silt loam, 3 to 8 percent slopes, moderately eroded.	Moderate				
GeB3	Glenelg channery silt loam, 3 to 8 percent slopes, severely eroded.	Moderate				
GeC	Glenelg channery silt loam, 8 to 15 percent slopes.	Moderate				
GeC2	Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded.	Moderate				
GeC3	Glenelg channery silt loam, 8 to 15 percent slopes, severely eroded.	Moderate				

**TABLE OF SOILS WITHIN NEWTOWN TOWNSHIP  
AND LIMITATIONS FOR ON-LOT SEWAGE DISPOSAL**

Mapping Symbol	Soil Name	Limitation for On-Lot Sewage Disposal	Depth to Seasonally High Water Table (Ft)	Depth to Bedrock (Ft)	Description of Soil	Depth from Surface (Inches)
GeD	Glenelg channery silt loam, 15 to 25 percent slopes.	Severe; Steep Slopes				
GeD2	Glenelg channery silt loam, 15 to 25 percent slopes, moderately eroded.	Severe; Steep Slopes				
GeD3	Glenelg channery silt loam, 15 to 25 percent slopes, severely eroded.	Severe; Steep Slopes				
GeE	Glenelg channery silt loam, 25 to 35 percent slopes.	Severe; Steep Slopes				
GeE3	Glenelg channery silt loam, 25 to 35 percent slopes, severely eroded.	Severe; Steep Slopes				
Glenville Series			1-1 ½	3-6	Moderately well drained silt loam and silty clay loam, 3 to 5 feet thick; underlain by schist, gneiss, gabbro, quartzite, and granite of uplands of the Piedmont Plateau; the stony soil has cobbles and stones, 3 inches to 3 feet in diameter, on the surface and throughout the profile.	0-10 10-50 50-72
GnA	Glenville silt loam, 0 to 3 percent slopes.	Severe; Hydric Inclusions				
GnB	Glenville silt loam, 3 to 8 percent slopes.	Severe; Hydric Inclusions				
GnB2	Glenville silt loam, 3 to 8 percent slopes, moderately eroded.	Severe; Hydric Inclusions				
GnC2	Glenville silt loam, 8 to 15 percent slopes, moderately eroded.	Severe				
GsB	Glenville very stony loam, 0 to 8 percent slopes.	Severe; Hydric Inclusions				
Made Land			3+	4+	Well drained to moderately well drained, mixed coastal plain materials, 3 to 8 feet thick; underlain by unconsolidated coastal plain deposits of clay, silt, sand, and gravel ranging from 4 to 40 feet or more in thickness.	Variable
Md	Made land, gabbro and diabase materials.	Made Land				
Me	Made land, schist and gneiss materials.	Made Land				

**TABLE OF SOILS WITHIN NEWTOWN TOWNSHIP  
AND LIMITATIONS FOR ON-LOT SEWAGE DISPOSAL**

Mapping Symbol	Soil Name	Limitation for On-Lot Sewage Disposal	Depth to Seasonally High Water Table (Ft)	Depth to Bedrock (Ft)	Description of Soil	Depth from Surface (inches)
Manor Series			5+	2-7	Well drained loam, very fine sandy loam, and saprolite, 2 to 7 feet thick; underlain by schist, gneiss, and granite of uplands of the Piedmont Plateau; the channery and stony soils have varying amounts of fragmented rock, from 1 inch to 2 feet in diameter, on the surface and throughout the profile.	0-7 7-21 21-50
MgB2	Manor loam, 3 to 8 percent slopes, moderately eroded.	Moderate				
MgC	Manor loam, 8 to 15 percent slopes.	Moderate				
MgC2	Manor loam, 8 to 15 percent slopes, moderately eroded.	Moderate				
MgD	Manor loam, 15 to 5 percent slopes.	Severe; Steep Slopes				
MgD2	Manor loam, 15 to 5 percent slopes, moderately eroded.	Severe; Steep Slopes				
MgD3	Manor loam, 15 to 5 percent slopes, severely eroded.	Severe; Steep Slopes				
MhE	Manor loam and channery loam, 25 to 35 percent slopes.	Severe; Steep Slopes				
MhE3	Manor loam and channery loam, 25 to 35 percent slopes, severely eroded.	Severe; Steep Slopes				
MkF	Manor soils, 35 to 60 percent slopes.	Severe; Steep Slopes				
Neshaminy Series			5+	4-6	Well drained gravelly silt loam and silty clay loam, 3 to 4 feet thick; underlain by gabbro and granodiorite of uplands in the lower Piedmont Plateau; the stony soils have cobbles and stones, from 3 inches to 3 feet in diameter, on the surface and throughout the profile.	0-8 8-37 37-54
NaA	Neshaminy gravelly silt loam, 0 to 3 percent slopes.	Severe				
NaB2	Neshaminy gravelly silt loam, 3 to 8 percent slopes, moderately eroded.	Severe				
NaC2	Neshaminy gravelly silt loam, 8 to 15 percent slopes, moderately eroded.	Severe				
NaC3	Neshaminy gravelly silt loam, 8 to 15 percent slopes, severely eroded.	Severe				
NaD	Neshaminy gravelly silt loam, 15 to 25 percent slopes.	Severe; Steep Slopes				

**TABLE OF SOILS WITHIN NEWTOWN TOWNSHIP  
AND LIMITATIONS FOR ON-LOT SEWAGE DISPOSAL**

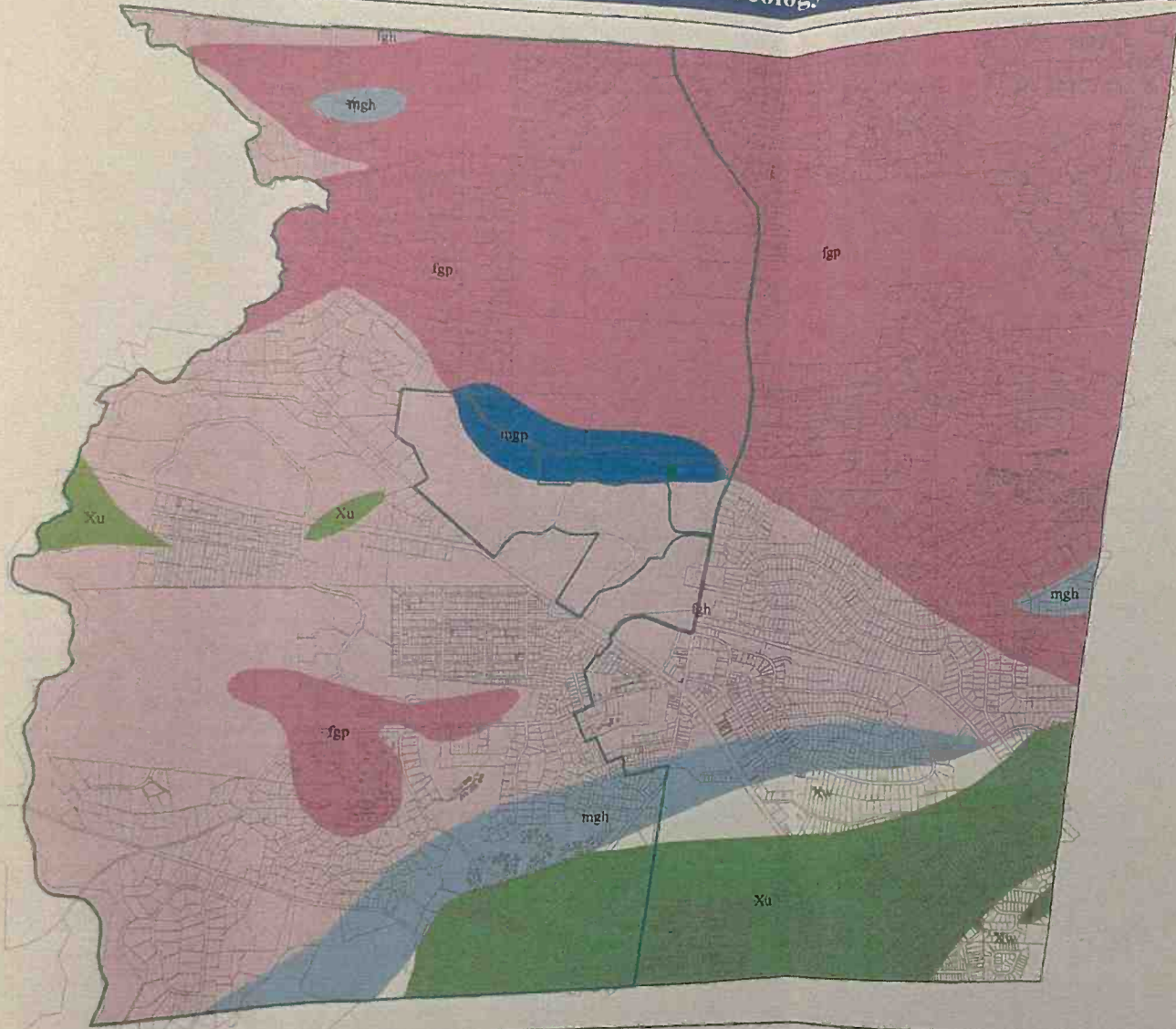
Mapping Symbol	Soil Name	Limitation for On-Lot Sewage Disposal	Depth to Seasonally High Water Table (Ft)	Depth to Bedrock (Ft)	Description of Soil	Depth from Surface (inches)
NaD3	Neshaminy gravelly silt loam, 15 to 25 percent slopes, severely eroded.	Severe; Steep Slopes				
NsD	Neshaminy very stony silt loam, 8 to 25 percent slopes.	Severe; Steep Slopes				
NsF	Neshaminy very stony silt loam, 25 to 45 percent slopes.	Severe; Steep Slopes				
Water						
W	Water	Water				
Wehadkee Series			0-1	5-8	Poorly drained silt loam, silty clay loam, stratified sands, and mixed flood plain materials, 5 to 8 feet thick; washed from schist and gneiss of uplands; subject to frequent overflow.	0-70
We	Wehadkee silt loam.	Severe; Hydric				
Worsham Series			0-1	3-5	Poorly drained silt loam and clay loam, 3 to 5 feet thick; underlain by schist and gneiss of the Piedmont Plateau; the stony soil has cobbles and stones that range from 3 inches to 3 feet in diameter on the surface and throughout the profile.	0-9 9-56 56-72
WoA	Worsham silt loam, 0 to 3 percent slopes.	Severe; Hydric				
WsB	Worsham very stony silt loam, 0 to 8 percent slopes.	Severe; Hydric				

**APPENDIX E**

**GEOLOGY**



# Geology



- Act 537 Plan Study Area
- Ultramafic Rock
- Wissahickon Formation
- Felsic and Intermediate gneiss
- Felsic gneiss
- Mafic gneiss
- Mafic gneiss

Date:  
 1. Geology - DCNR, 2001, PASDA Website  
 2. Parcels - Delaware County Board of Assessment

**Important**  
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Prepared by  
 Delaware County  
 Planning Department  
 2012

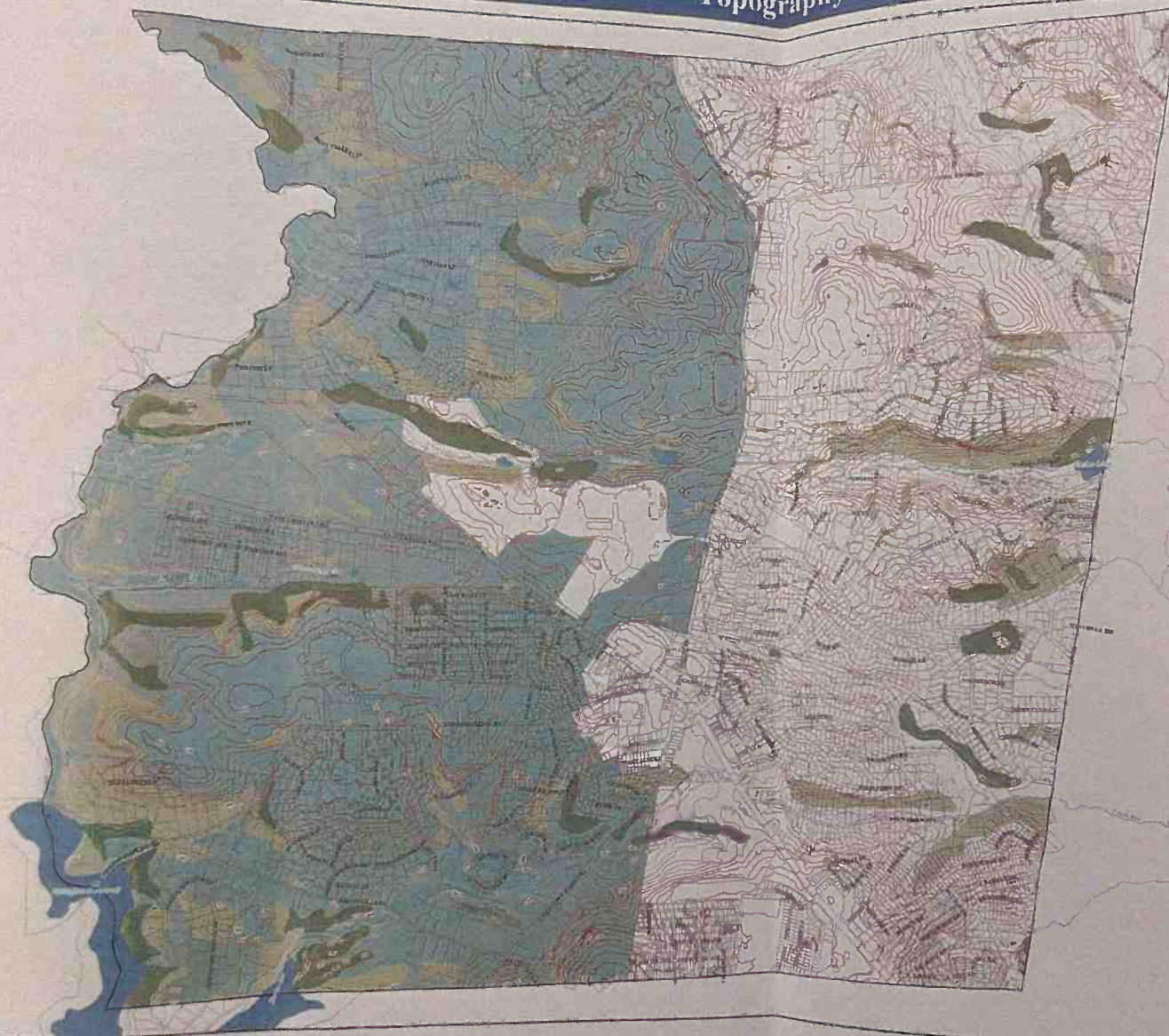
0 800ft 1,200 1,600 2,400 Feet

**APPENDIX F**

**TOPOGRAPHY**



# Topography

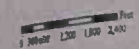


- Act 537 Plan Study Area
- Steep Slope Soils
- 15% to 25%
- >25%
- Major Contour  
(10 Foot Interval)

- Data:
1. Soils, 2009 - NRCS
  2. Soil Characteristics - Soil Survey of Chester and Delaware Counties, US Department of Agriculture, 1963
  3. Contours - PAMAP
  4. Parcels - Delaware County Board of Assessment
  5. All Other Data - Delaware County Planning Department

**Important**  
This map is for analytical purposes only. It is not intended for navigation or exact location of infrastructure. The reliability of this map depends on the accuracy of its underlying data sources which have not been verified. Unauthorized duplication or distribution is prohibited.

Prepared by  
Delaware County  
Planning Department  
2012

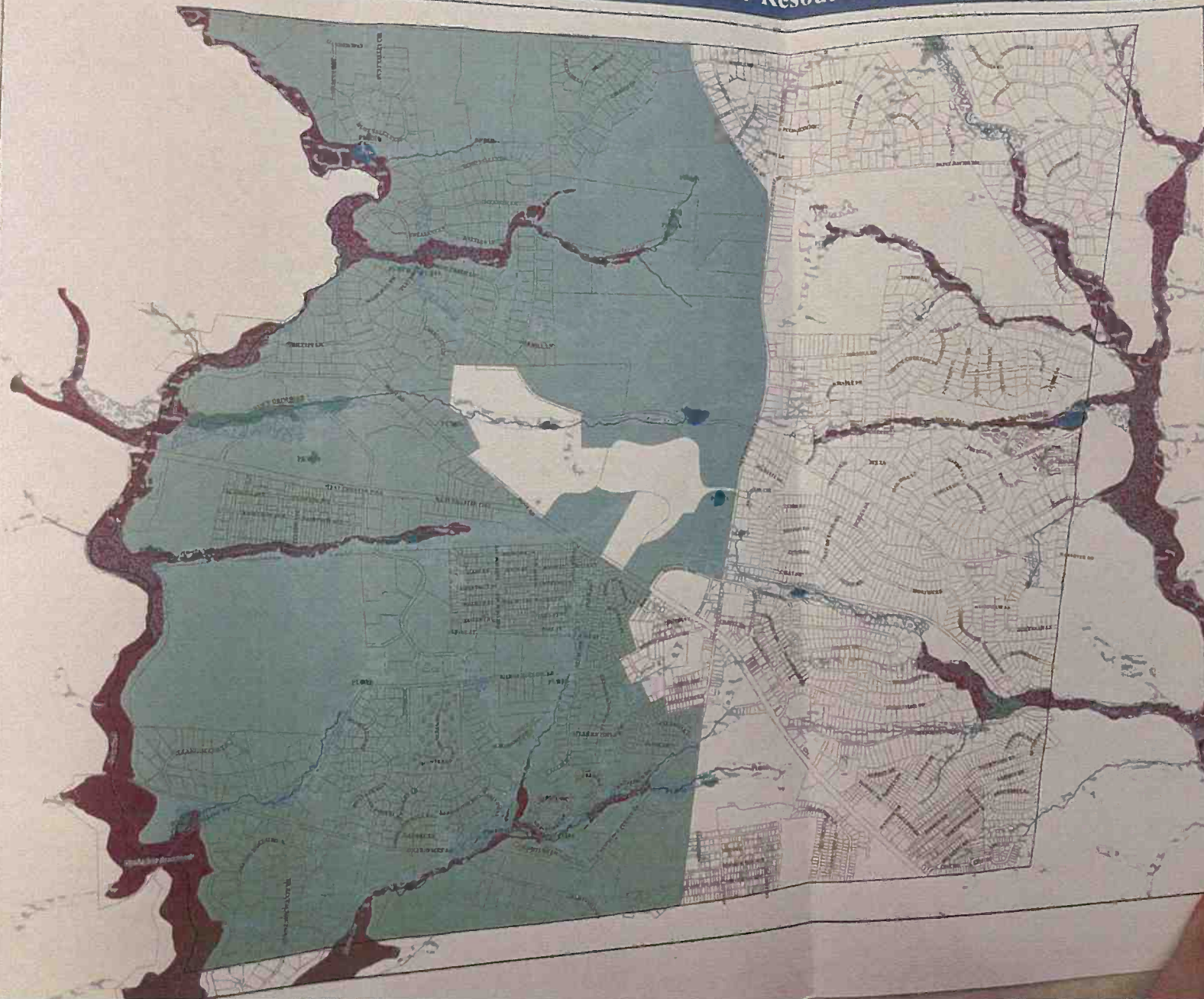


**APPENDIX G**

**WATER RESOURCES**



# Water Resources

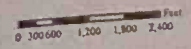


- Act 537 Plan Study Area
- Hydric Soils
- Soils with Hydric Inclusions
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- 100 Year Floodplain
- 500 Year Floodplain

- Data:
1. Soils, 2009 - NRCS
  2. Soil Characteristics - Soil Survey of Chester and Delaware Counties, US Department of Agriculture, 1963
  3. Floodplains - FEMA Q3
  4. Wetlands - NWI
  5. Parcels - Delaware County Board of Assessment
  6. All Other Data - Delaware County Planning Department

**Important**  
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Prepared by  
 Delaware County  
 Planning Department  
 2012

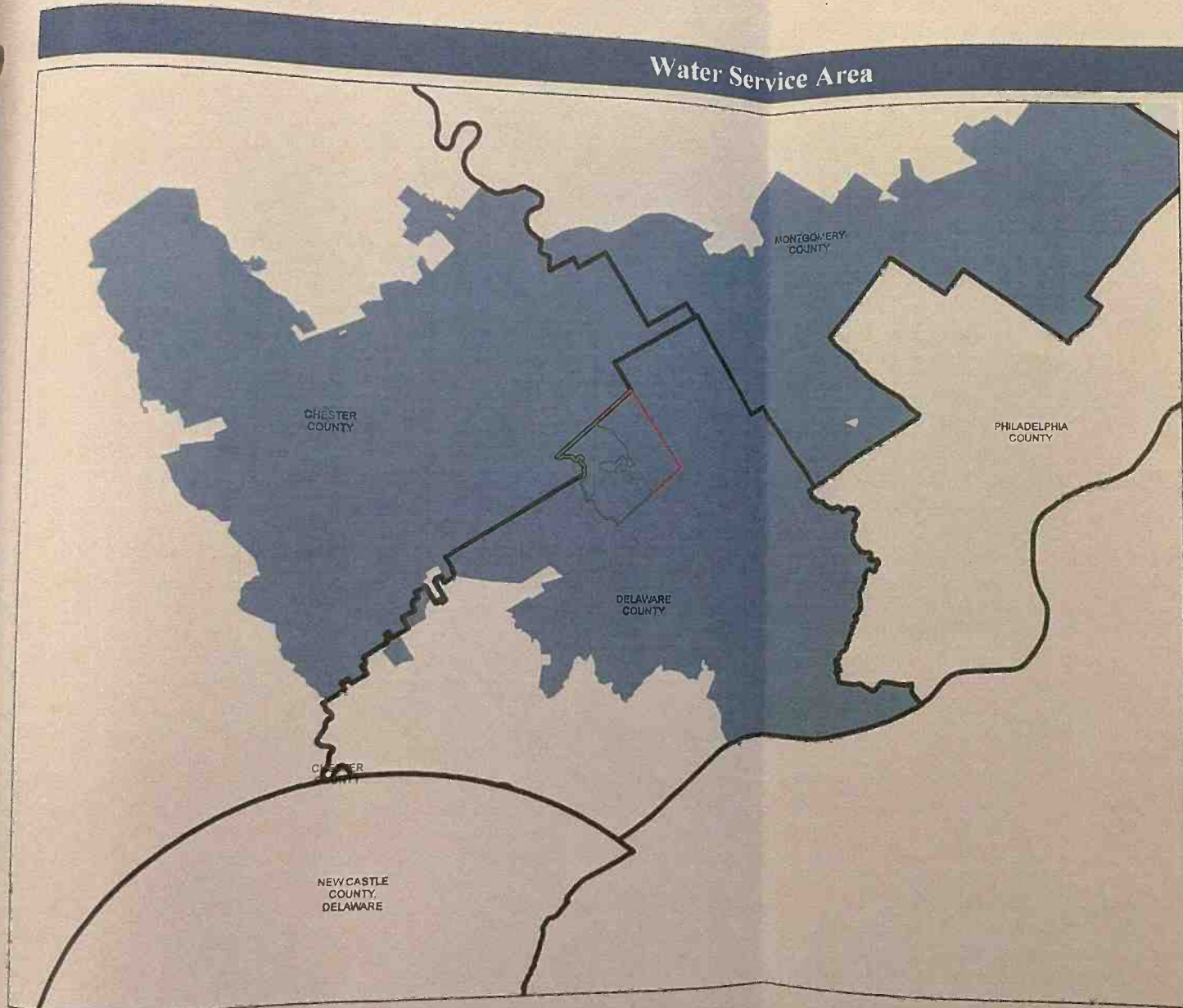


## **APPENDIX H**

### **PUBLIC WATER SUPPLY**



# Water Service Area



- Study Area
- Newtown Township
- Aqua PA Water Service Area

Data  
 1. Study Boundary - HEM Engineers  
 2. Water Service Area - DEP, PASDA  
 3. Other Data - DCPD

**Important**  
 This map is for analytical purposes only. It is not intended for navigation or exact location of infrastructure. The reliability of this map depends on the accuracy of its underlying data sources which have not been verified. Unauthorized duplication or distribution is prohibited.

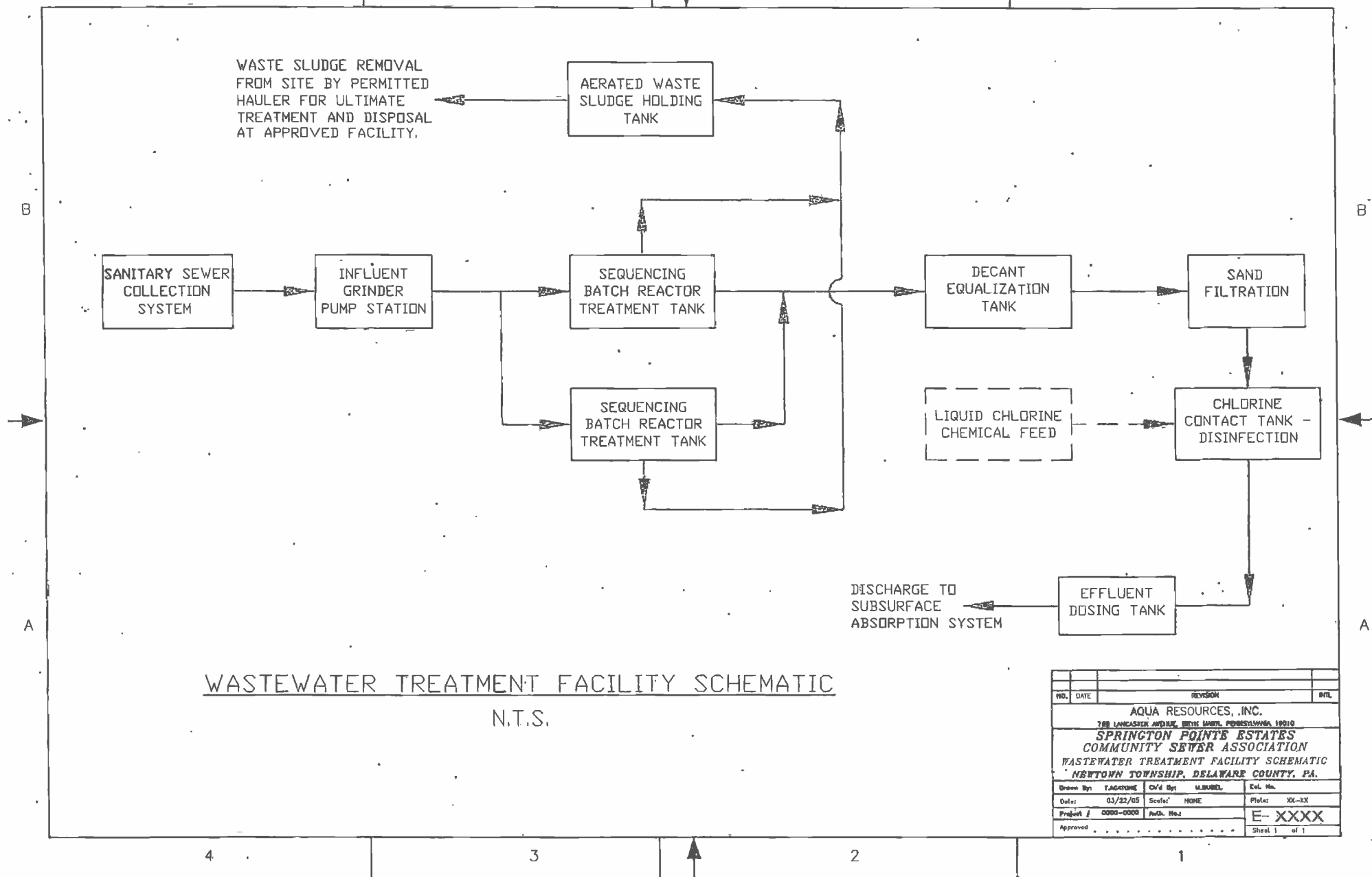
Prepared by  
 Delaware County  
 Planning Department  
 2012

0 0.5 1 2 3 4 Miles

## APPENDIX I

### SCHEMATIC OF SPRINGTON POINTE ESTATES WWTP

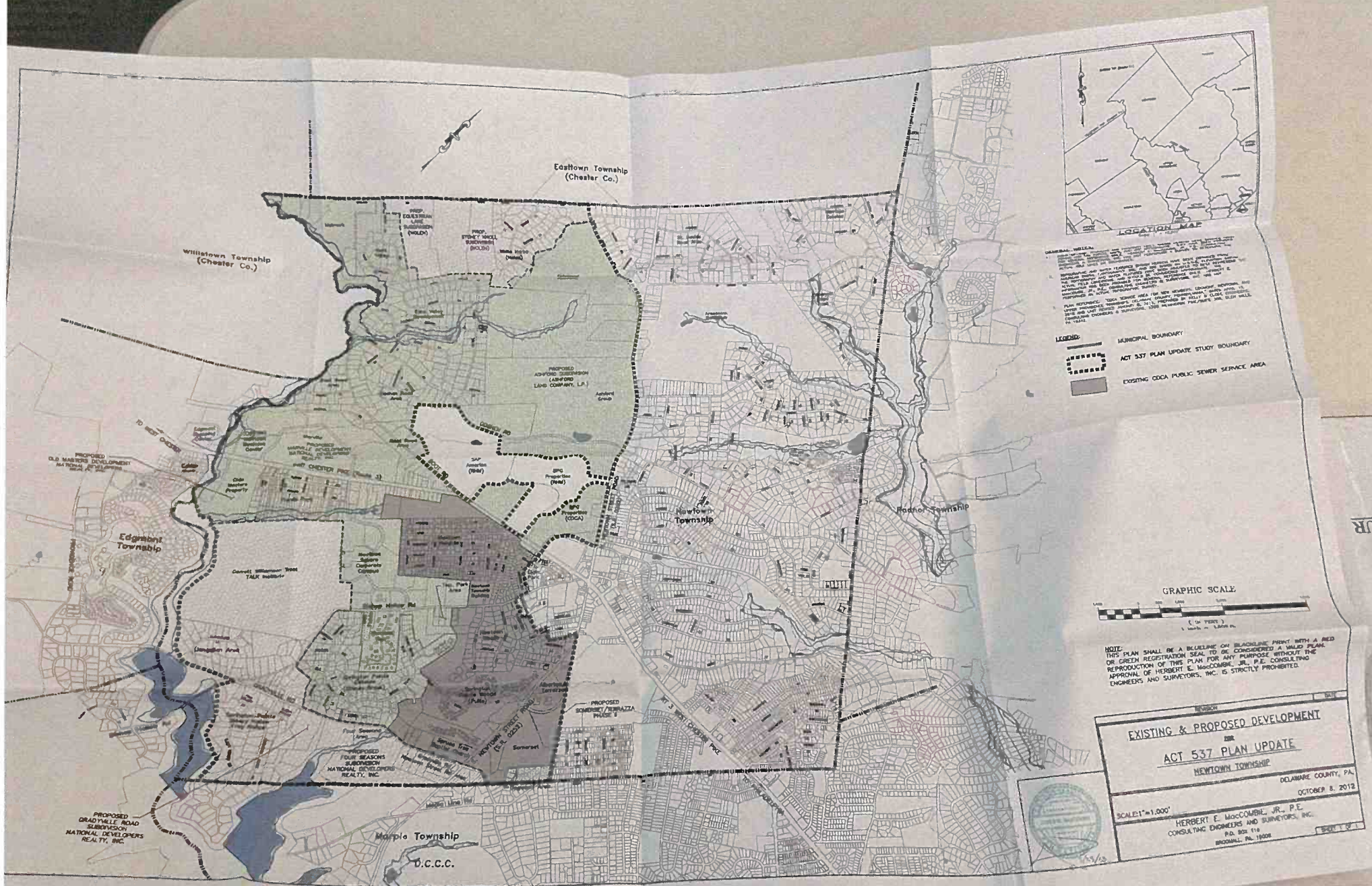




NO.	DATE	REVISION	BY
AQUA RESOURCES, INC.			
788 LANCASTER AVENUE, BETH LEWIS, PENNSYLVANIA 19010			
SPRINGTON POINTE ESTATES			
COMMUNITY SEWER ASSOCIATION			
WASTEWATER TREATMENT FACILITY SCHEMATIC			
NEWTOWN TOWNSHIP, DELAWARE COUNTY, PA.			
Drawn By	TACCHIONE	CV'd By	W. BUREL
Date:	03/12/05	Scale:	NONE
Project #	0000-0000	Arch. No:	
Approved			
			Sheet 1 of 1

**APPENDIX J**

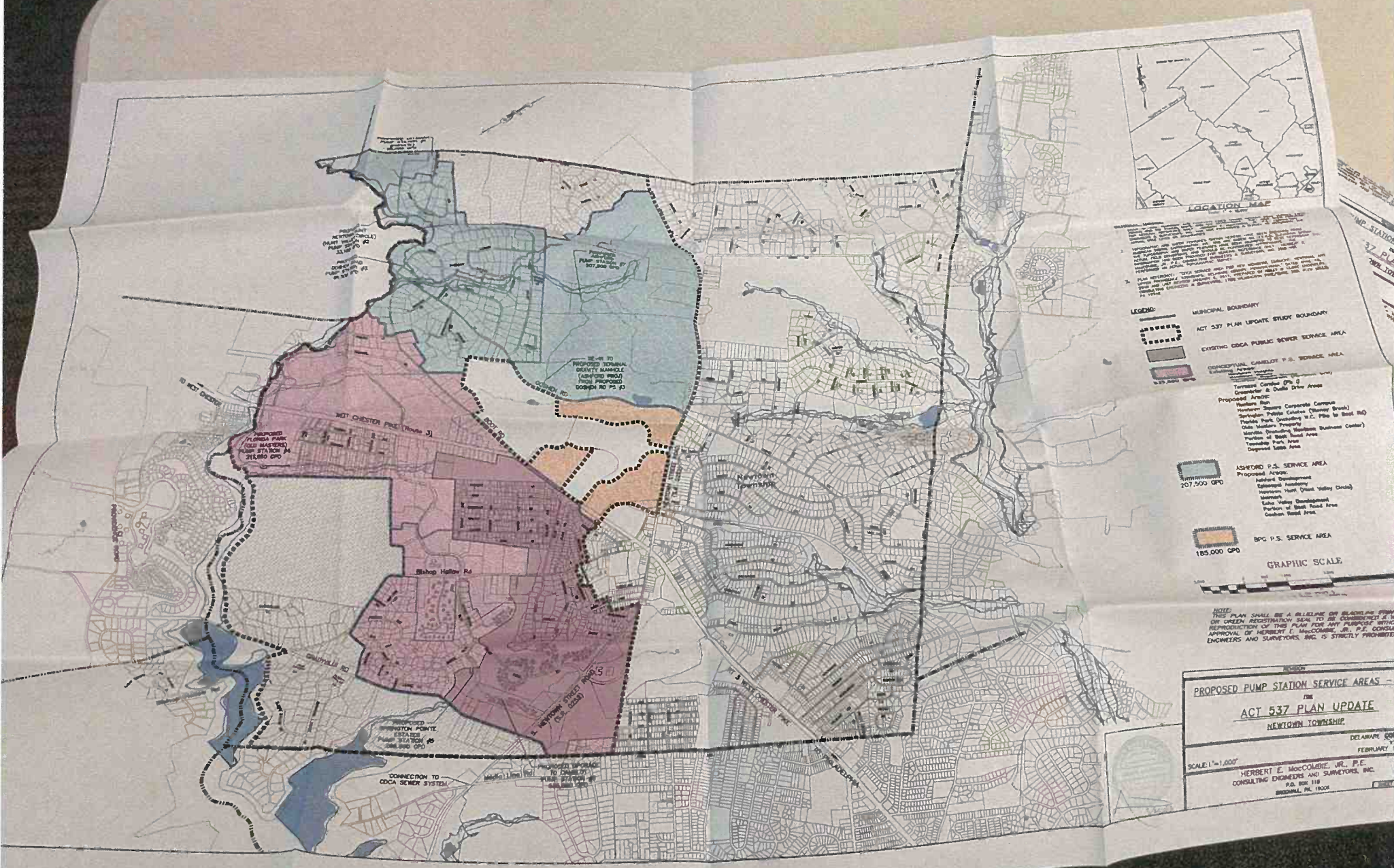
**PROPOSED AND EXISTING DEVELOPMENT**











THIS PLAN IS A PRELIMINARY DESIGN AND IS NOT TO BE USED FOR CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE ENGINEER TO OBTAIN ALL NECESSARY PERMITS AND APPROVALS. THE TOWNSHIP ENGINEER AND SURVEYOR, INC. IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS. THE TOWNSHIP ENGINEER AND SURVEYOR, INC. IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS.

- LEGEND:**
- MUNICIPAL BOUNDARY
  - ACT 537 PLAN UPDATE STUDY BOUNDARY
  - EXISTING OCA PUBLIC SEWER SERVICE AREA
  - CONCEPTUAL CHARLOTTE P.S. SERVICE AREA
  - PROPOSED FLORIDA PARK (OLD HARTFORD) PUMP STATION #4 211,880 GPD
  - PROPOSED PUMP STATION #5 207,500 GPD
  - PROPOSED PUMP STATION #6 185,000 GPD
  - PROPOSED PUMP STATION #7 185,000 GPD
  - PROPOSED PUMP STATION #8 185,000 GPD
  - PROPOSED PUMP STATION #9 185,000 GPD
  - PROPOSED PUMP STATION #10 185,000 GPD
  - PROPOSED PUMP STATION #11 185,000 GPD
  - PROPOSED PUMP STATION #12 185,000 GPD
  - PROPOSED PUMP STATION #13 185,000 GPD
  - PROPOSED PUMP STATION #14 185,000 GPD
  - PROPOSED PUMP STATION #15 185,000 GPD
  - PROPOSED PUMP STATION #16 185,000 GPD
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  - PROPOSED PUMP STATION #98 185,000 GPD
  - PROPOSED PUMP STATION #99 185,000 GPD
  - PROPOSED PUMP STATION #100 185,000 GPD

NOTE: THIS PLAN SHALL BE A BLUELINE OR BLACKLINE PRINT ON GREEN ARCHITECTURAL PAPER. IT IS THE RESPONSIBILITY OF THE ENGINEER TO OBTAIN ALL NECESSARY PERMITS AND APPROVALS. THE TOWNSHIP ENGINEER AND SURVEYOR, INC. IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS. THE TOWNSHIP ENGINEER AND SURVEYOR, INC. IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS.

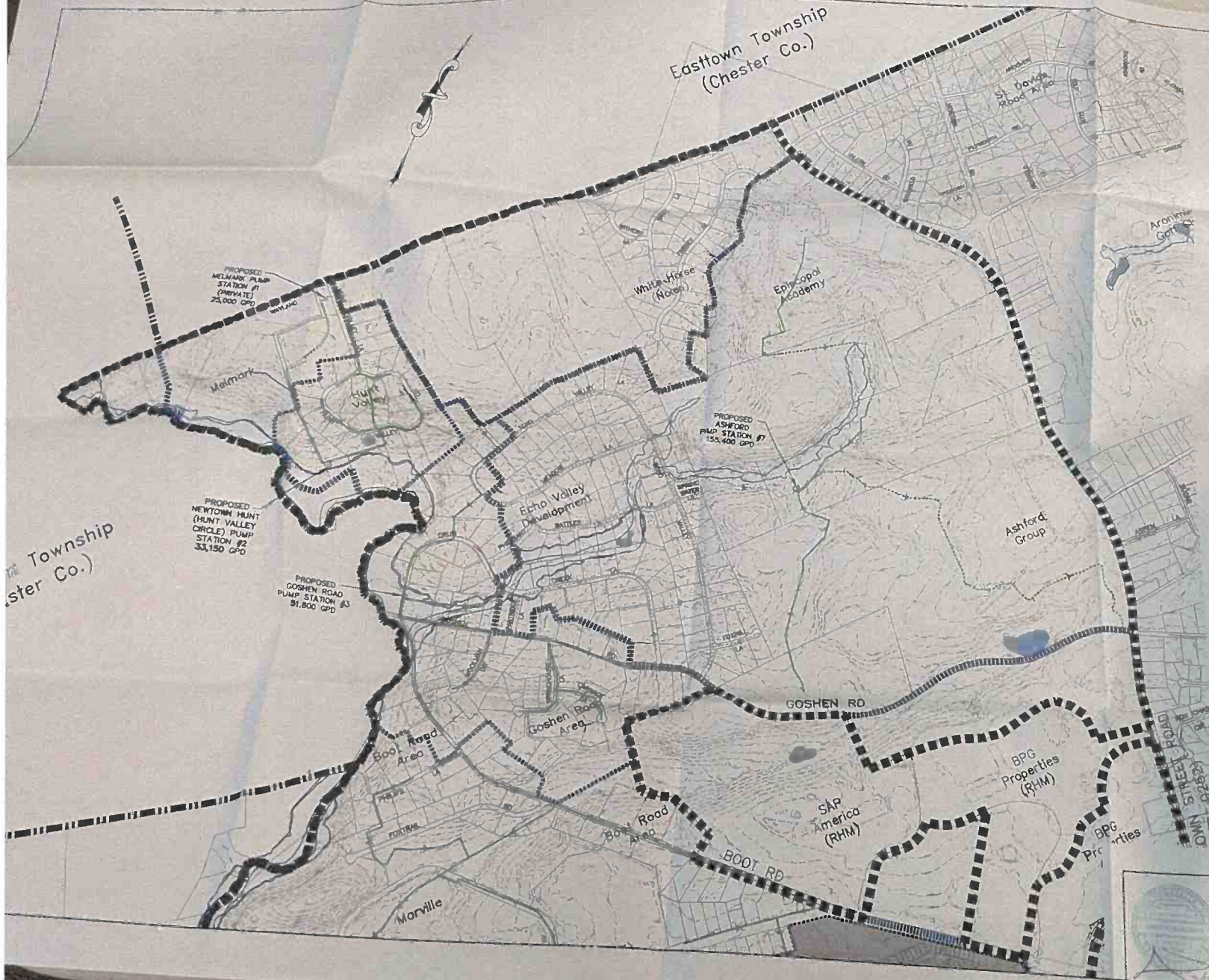
**PROPOSED PUMP STATION SERVICE AREAS**  
THE  
**ACT 537 PLAN UPDATE**  
NEWTOWN TOWNSHIP

SCALE: 1"=1,000'

HERBERT E. MACCOMBIE, JR., P.E.  
CONSULTING ENGINEERS AND SURVEYORS, INC.  
P.O. BOX 110  
BROOKLYN, PA 19008

DELAWARE 600  
FEBRUARY 1





1. TOPOGRAPHIC AND HYDROLOGIC INFORMATION WAS OBTAINED FROM THE DELAWARE COUNTY HEALTH DEPARTMENT AND THE CHESTER COUNTY HEALTH DEPARTMENT. THE INFORMATION WAS USED TO DETERMINE THE ACTUAL FLOW CAPACITY OF THE EXISTING SANITARY SEWER SYSTEM. THE INFORMATION WAS ALSO PROVIDED FOR THE DESIGN OF THE PROPOSED SANITARY SEWER SYSTEM. THE INFORMATION WAS OBTAINED FROM THE DELAWARE COUNTY HEALTH DEPARTMENT AND THE CHESTER COUNTY HEALTH DEPARTMENT. THE INFORMATION WAS USED TO DETERMINE THE ACTUAL FLOW CAPACITY OF THE EXISTING SANITARY SEWER SYSTEM. THE INFORMATION WAS ALSO PROVIDED FOR THE DESIGN OF THE PROPOSED SANITARY SEWER SYSTEM.

- LEGEND:**
- MUNICIPAL BOUNDARY
  - ACT 537 PLAN UPDATE STUDY BOUNDARY
  - DC, CDCA PUBLIC SEWER SERVICE AREA
  - EXISTING SEWER SERVICE AREA TO EXTENDING PIONEER ESTATES W/PT
  - PROPOSED GANESLOT AND ASHFORD P.S. SERVICE AREA BOUNDARIES
  - EXISTING SANITARY FORCE MAIN
  - PROPOSED GRAVITY SANITARY SEWER
  - PROPOSED SANITARY FORCE MAIN
  - PROPOSED LOW PRESSURE SEWER

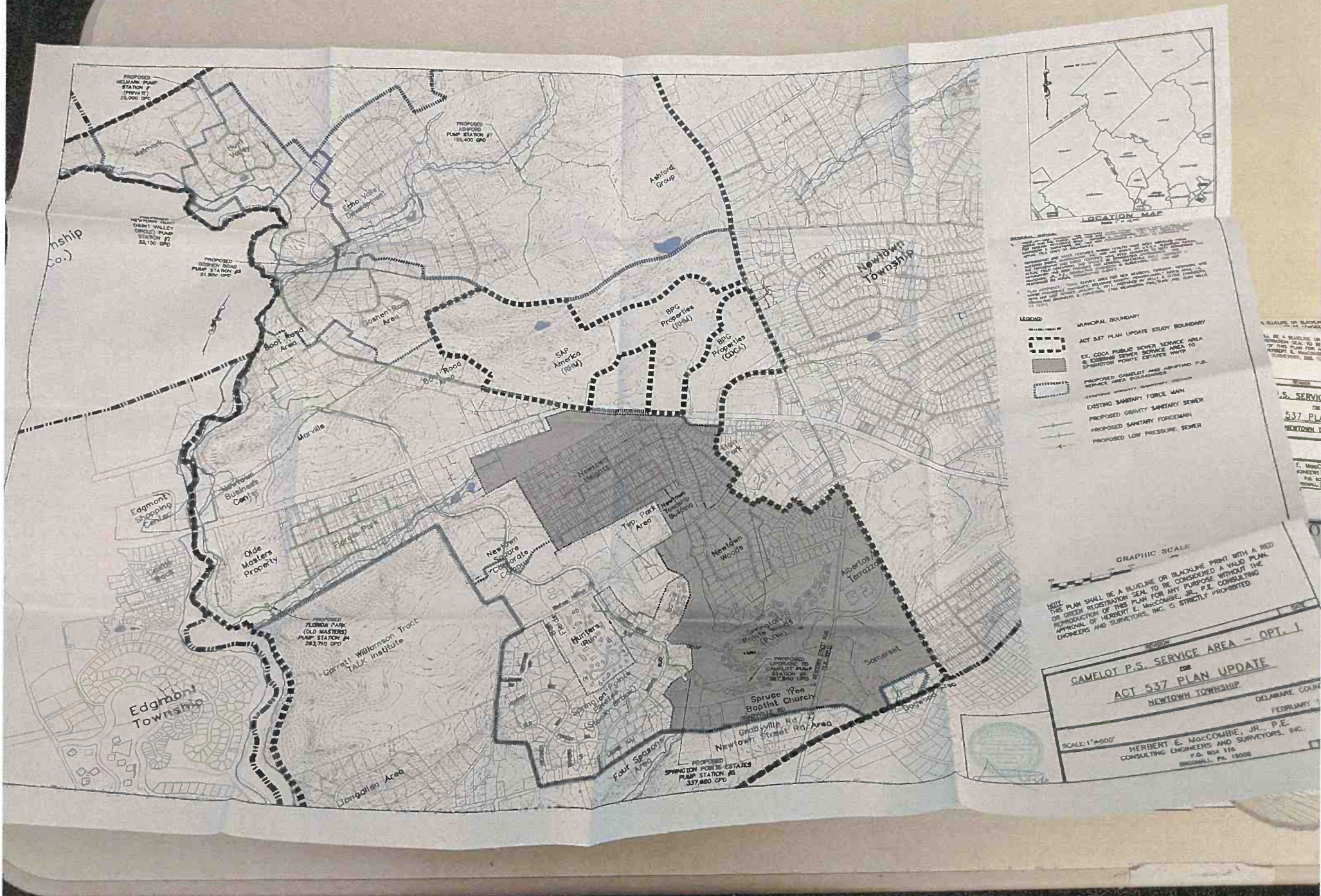


NOTE: THIS PLAN SHALL BE A BLUELINE OR BLACKLINE PRINT WITH A RED OR GREEN REGISTRATION SEAL TO BE CONSIDERED A VALID PLAN. THE REPRODUCTION OF THIS PLAN FOR ANY PURPOSE WITHOUT THE APPROVAL OF HERBERT E. MACCOMBIE, JR., P.E. CONSULTING ENGINEERS AND SURVEYORS, INC. IS STRICTLY PROHIBITED.

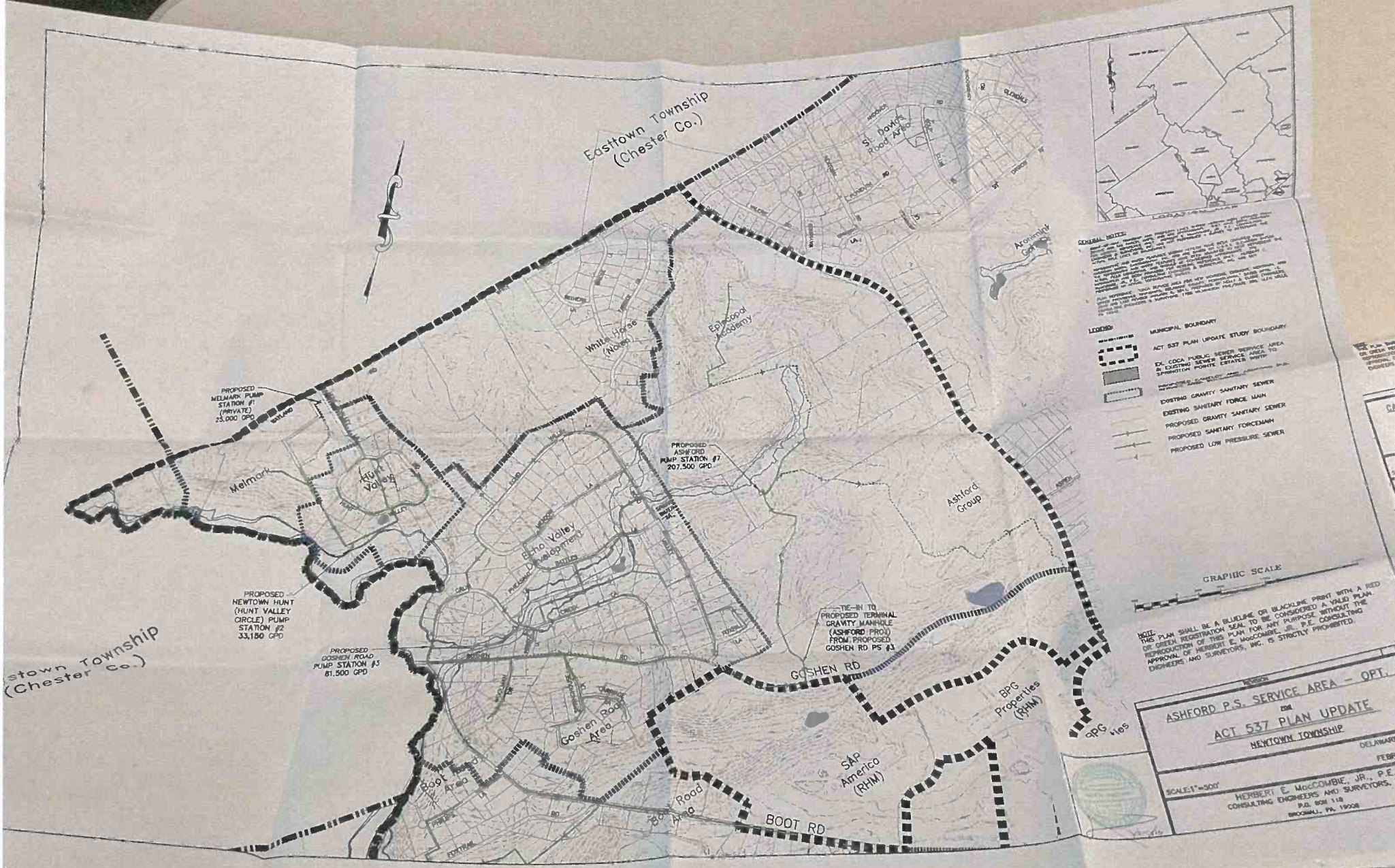
**ASHFORD P.S. SERVICE AREA - OPT. 1**  
 OR  
**ACT 537 PLAN UPDATE**  
 NEWTOWN TOWNSHIP  
 DELAWARE COUNTY, PA.  
 FEBRUARY 11, 2013

SCALE: 1"=500'  
 HERBERT E. MACCOMBIE, JR., P.E.  
 CONSULTING ENGINEERS AND SURVEYORS, INC.  
 P.O. BOX 118  
 BROOKLYN, PA. 19008









- GENERAL NOTES:**
1. THIS PLAN IS A PRELIMINARY DESIGN AND IS NOT TO BE USED FOR CONSTRUCTION WITHOUT THE APPROVAL OF THE BOARD OF SUPERVISORS.
  2. THE BOARD OF SUPERVISORS HAS REVIEWED THIS PLAN AND HAS APPROVED IT FOR THE PURPOSES OF THE ACT 537 PLAN UPDATE.
  3. THE BOARD OF SUPERVISORS HAS REVIEWED THIS PLAN AND HAS APPROVED IT FOR THE PURPOSES OF THE ACT 537 PLAN UPDATE.
  4. THE BOARD OF SUPERVISORS HAS REVIEWED THIS PLAN AND HAS APPROVED IT FOR THE PURPOSES OF THE ACT 537 PLAN UPDATE.
  5. THE BOARD OF SUPERVISORS HAS REVIEWED THIS PLAN AND HAS APPROVED IT FOR THE PURPOSES OF THE ACT 537 PLAN UPDATE.
- LEGEND:**
- MUNICIPAL BOUNDARY
  - ACT 537 PLAN UPDATE STUDY BOUNDARY
  - EX. COCA PUBLIC SEWER SERVICE AREA TO AN EXISTING POWER SERVICE AREA TO A PORTFOLIO SERVICE AREA
  - EXISTING GRAVITY SANITARY SEWER
  - EXISTING SANITARY FORCE MAIN
  - PROPOSED GRAVITY SANITARY SEWER
  - PROPOSED SANITARY FORCE MAIN
  - PROPOSED LOW PRESSURE SEWER



NOTE: THIS PLAN SHALL BE A BLUELINE OR BLACKLINE PRINT WITH A RED OR GREEN REGISTRATION MARK TO BE CONSIDERED A VALID PLAN. REPRODUCTION OF THIS PLAN FOR ANY PURPOSE WITHOUT THE APPROVAL OF HERBERT E. McCOMBIE, JR., P.E. CONSULTING ENGINEERS AND SURVEYORS, INC. IS STRICTLY PROHIBITED.

**ASHFORD P.S. SERVICE AREA - OPT.**

**ACT 537 PLAN UPDATE**

**NEWTOWN TOWNSHIP**

SCALE: 1"=500'

HERBERT E. McCOMBIE, JR., P.E.  
CONSULTING ENGINEERS AND SURVEYORS, INC.  
P.O. BOX 118  
BROOKLYN, PA. 19008





NOTES:  
1. THIS PLAN IS A PRELIMINARY DESIGN AND IS NOT TO BE USED FOR CONSTRUCTION.  
2. THE PLAN IS BASED ON THE LATEST AVAILABLE DATA AND IS NOT TO BE USED FOR CONSTRUCTION.  
3. THE PLAN IS BASED ON THE LATEST AVAILABLE DATA AND IS NOT TO BE USED FOR CONSTRUCTION.  
4. THE PLAN IS BASED ON THE LATEST AVAILABLE DATA AND IS NOT TO BE USED FOR CONSTRUCTION.  
5. THE PLAN IS BASED ON THE LATEST AVAILABLE DATA AND IS NOT TO BE USED FOR CONSTRUCTION.

- LEGEND
- MONICIPAL BOUNDARY
  - ACT 537 PLAN UPDATE STUDY BOUNDARY
  - COCA PUBLIC SEWER SERVICE AREA
  - EXISTING SEWER SERVICE AREA TO SPRINGTON-POINTE ESTATES W/IN
  - PROPOSED CAMELOT P.S. SERVICE AREA
  - EXISTING SANITARY FORCE MAIN
  - PROPOSED SANITARY FORCE MAIN
  - PROPOSED SANITARY FORCE MAIN
  - PROPOSED LOW PRESSURE SEWER

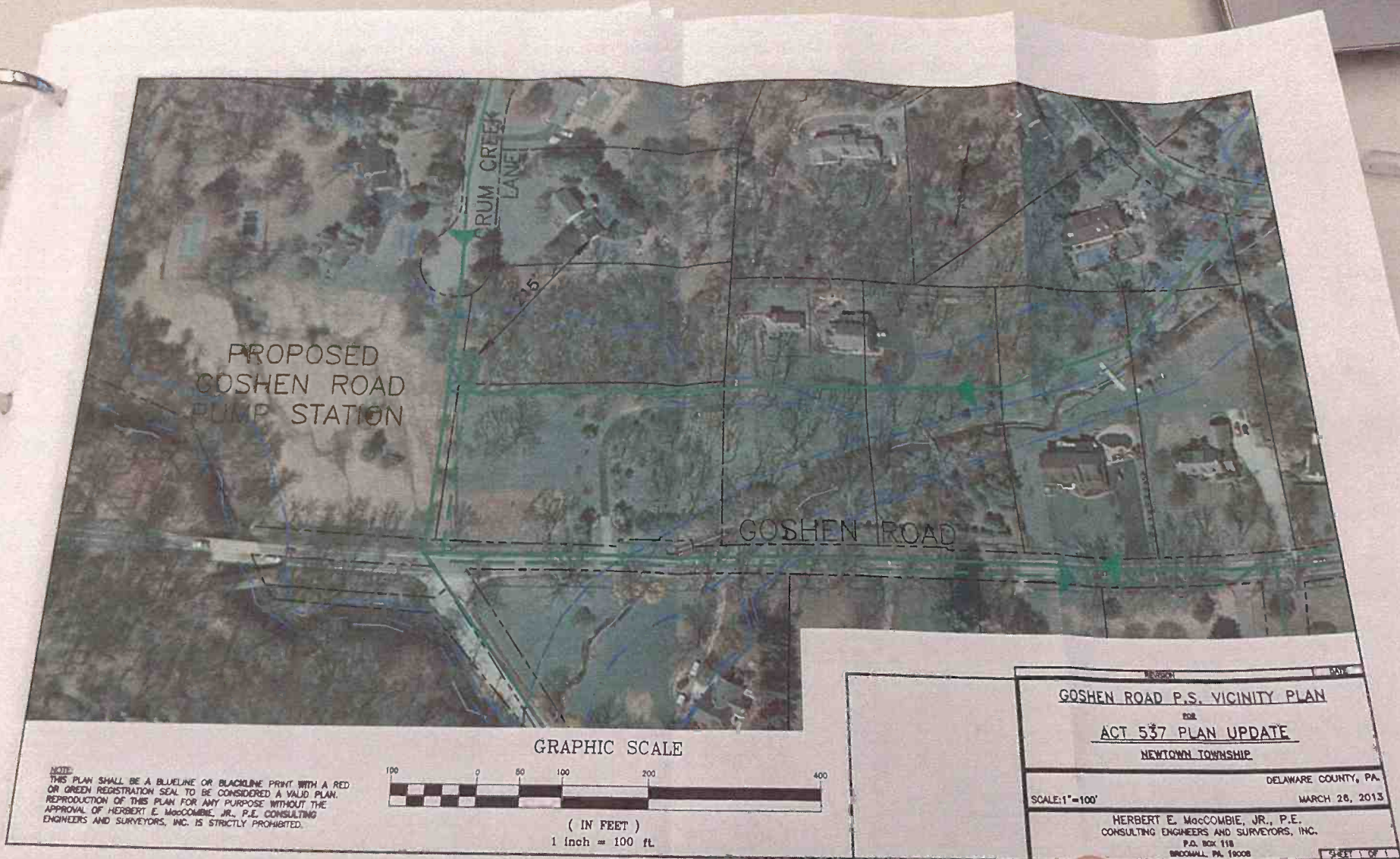
GRAPHIC SCALE  
1" = 100'  
NOTE: THIS PLAN SHALL BE A BLUELINE OR BLACKLINE PRINT WITH A RED OR GREEN REGISTRATION SEAL TO BE CONSIDERED A VALID PLAN. REPRODUCTION OF THIS PLAN FOR ANY PURPOSE WITHOUT THE APPROVAL OF HERBERT E. MACCOMBIE, JR., P.E. IS STRICTLY PROHIBITED.

CAMELOT P.S. SERVICE AREA - OP  
ACT 537 PLAN UPDATE  
NEWTOWN TOWNSHIP  
SCALE: 1" = 600'  
HERBERT E. MACCOMBIE, JR.  
CONSULTING ENGINEER AND SURVEYOR  
P.A. 108 118  
BRIDGEMAN, PA. 19008

**APPENDIX K**

**PROPOSED COLLECTION AND CONVEYANCE SYSTEM**

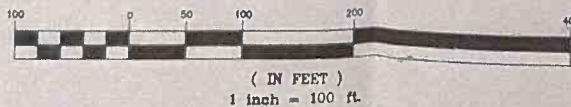








NOTE:  
THIS PLAN SHALL BE A BLUELINE OR BLACKLINE PRINT WITH A RED  
OR GREEN REGISTRATION SEAL TO BE CONSIDERED A VALID PLAN.  
REPRODUCTION OF THIS PLAN FOR ANY PURPOSE WITHOUT THE  
APPROVAL OF HERBERT E. MacCOMBIE, JR., P.E. CONSULTING  
ENGINEERS AND SURVEYORS, INC. IS STRICTLY PROHIBITED.



NEWTOWN HUNT P.S. VICINITY PLAN

FOR  
ACT 537 PLAN UPDATE  
NEWTOWN TOWNSHIP

DELAWARE COUNTY, PA.

MARCH 28, 2013

SCALE: 1"=100'

HERBERT E. MacCOMBIE, JR., P.E.  
CONSULTING ENGINEERS AND SURVEYORS, INC.  
P.O. BOX 116  
BROOMALL, PA. 19008

**APPENDIX L**

**FLOW PROJECTION SUMMARY TABLE**

**Projection of IMMEDIATE NEEDS**  
**Anticipated Units of Allocation and Flows**  
**(gpd)**

Project Name	Plan Status	Total Flow (gpd)	Total Units of Allocation	Prior to 2012	2012	Remaining Units of Allocation	2013	2014	2015	2016	2017	Total in 5 Years	Total Beyond 5 Years
Echo Valley Development	Existing Neighborhood	35,700	136	0	0	136	0	50	50	25	11	136	0
Goshen Road Area	Existing Neighborhoods	9,975	38	0	0	38	0	0	25	10	3	38	0
Boot Road Area	Existing Neighborhoods	8,400	32	0	0	32	0	0	22	5	5	32	0
Florida Park	Existing Neighborhood	33,338	127	0	0	127	0	0	40	30	30	100	27
Hunt Valley Circle	Existing Neighborhood	8,138	31	0	0	31	0	0	10	5	5	20	11
Hunter's Run	Existing Neighborhood	19,950	76	0	0	76	0	0	76	0	0	76	0
Campus Boulevard	Existing Commercial Office	26,000	99	0	0	99	0	0	33	33	33	99	0
Springton Pointe Estates	Existing Neighborhood	35,000	133	0	0	133	0	133	0	0	0	133	0
Township Park Area (Bishop Hollow Rd)	Existing Neighborhood	1,050	4	0	0	4	0	0	0	0	0	0	4
Dogwood Area	Existing Neighborhood	2,100	8	0	0	8	0	0	0	0	0	0	8
Melmark School	Existing School	25,000	95	0	0	95	0	0	0	50	45	95	0
Episcopal Academy	Existing School (Currently Pump & Haul)	11,000	42	0	0	42	0	42	0	0	0	42	0
Ashford Development (250 gpd/EDU)	Prop. Mixed Use Development SFPM Approval (1-23943-171-3/)	115,000	460	0	0	460	0	30	30	30	30	120	340
BPG (additional 24,754 gpd will connect to RHM)	Prop Mixed Use Development SFPM Under Review	185,000	705	0	0	705	0	0	50	50	50	150	555
National Developers Realty, Inc.													
1.a. Marville Site Existing	Existing Newtown Business Center	3,500	13	0	0	13	0	0	13	0	0	13	0
1.b. Marville Site Proposed	Marville, Parcels D-1 & D-2, and Lot A	83,950	320	0	0	320	0	0	0	32	32	64	256
2. Olde Masters Property	Ex. Golf Course - Prop. Development	78,100	298	0	0	298	0	0	0	0	30	30	268
3. "Four Seasons" - Gradyville Rd	Prop. 5 Lots and 37 Lots	9,450	36	0	0	36	0	0	0	0	0	0	36
CAMELOT P.S. EXISTING FLOWS													
Camelot P.S. Existing Developments	Newtown Heights, Newtown Woods, Dudle Drive, Mary Jane Lane, Greenbriar Lane	71,900	-	-	-	-	-	-	-	-	-	-	-
Pulte Residential & Commercial	Existing Residential & Commercial	43,100	164	164	0	0	0	0	0	0	0	0	0
Existing Alberto/Terrazza													
Existing Albertos Restaurant	300 Seats	1,520	-	-	-	-	-	-	-	-	-	-	-
Existing Phase I Terrazza Condos	103 of 206 Units @ 200 gpd	20,600	103	103	0	0	0	0	0	0	0	0	0
Proposed Somerset/Cornerstone (109,600 gpd - PA DEP)	250 Apartments @ 200 gpd	50,000	250	0	0	250	0	0	20	20	20	60	190
	137 Townhomes @ 225 gpd	30,825	137	0	0	137	0	0	20	20	20	60	77
	Remaining Flow not Assigned	28,775	128	0	0	128	0	0	0	0	0	0	128
	Remaining from 7-Party Agreement	3,280	15	0	0	15	0	0	0	0	0	0	15
Newtown Twp - CDCA	Misc Existing (Infill)	21,325	95	-	-	95	2	2	5	5	5	19	76
TOTAL Units of Allocation			3,544	267	0	3,277	2	257	394	315	319	1,287	1,996
TOTAL FLOW (GPD) @ 262.5 GPD/Unit (Unless Otherwise Noted)		961,975		137,070	0	824,905	450	66,988	100,863	80,125	81,238	329,663	495,243

**Projection of FUTURE NEEDS**  
**Anticipated Units of Allocation and Flows**  
**(gpd)**

Project Name	Plan Status	Total Flow (gpd)	Total Units of Allocation	Prior to 2012	2012	Remaining Units of Allocation	2013	2014	2015	2016	2017	Total in 5 Years	Total Beyond 5 Years
White Horse (Nolen)	Existing New Residential Development (53 total lots @ 225 gpd)	11,925	53	0	0	53	0	0	0	0	0	0	53
Llangollen Area	Existing Neighborhood	13,390	51	0	0	51	0	0	0	0	0	0	51
Springton Pointe/Sleepy Hollow/ Frog Hollow	Existing Neighborhood	14,700	56	0	0	56	0	0	0	0	0	0	56
Gradyville Road Area	Existing Neighborhood	3,150	12	0	0	12	0	0	0	0	0	0	12
TOTAL Units of Allocation			172	0	0	172	0	0	0	0	0	0	172
TOTAL FLOW (GPD) @ 262.5 GPD/Unit (Unless Otherwise Noted)		43,165		0	0	43,165	0	0	0	0	0	0	43,165

**APPENDIX M**

**PNDI RESPONSE**



610-356-9550  
FAX 610-356-5032

## Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS & SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

James W. MacCombie, P.E., P.L.S.  
Herbert E. MacCombie, III, Technician

REPLY TO:  
P.O. BOX 118  
BROOMALL, PA 19008-0118

June 4, 2012

US Fish and Wildlife Service  
Endangered Species Biologist  
315 South Allen St., Suite 322  
State College, PA 16801

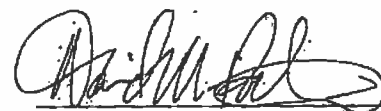
To Whom It May Concern:

On behalf of Newtown Township, Delaware County we are preparing an update to their Act 537 Sewage Facilities Plan. A Pennsylvania Natural Diversity Inventory (PNDI) search is required as part of the Plan update. Please find enclosed the requisite completed "Large Project Form", supplemental narrative, U.S.G.S. 7.5-Minute Quadrangle Map with the study area indicated, and a Water Resources Map with National Wetlands Inventory Wetlands, and Study Area depicted.

Please process the PNDI search and respond with the results at your earliest convenience. We understand the response time to be approximately 30 days from the date of Agency receipt of the review request.

Feel free to contact our office with any questions or for any additional information.

Very truly yours,



David M. Porter, E.I.T.

Copy: Michael Trio, Newtown Township Manager  
File

610-356-9550  
FAX 610-356-5032

**Herbert E. MacCombie, Jr., P.E.**  
CONSULTING ENGINEERS & SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

James W. MacCombie, P.E., P.L.S.  
Herbert E. MacCombie, III, Technician

REPLY TO:  
P.O. BOX 118  
BROOMALL, PA 19008-0118

June 4, 2012

PA Fish and Boat Commission  
Natural Diversity Section  
450 Robinson Lane  
Bellefonte, PA 16823

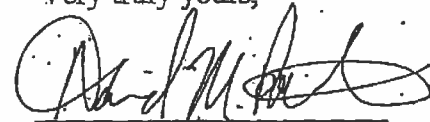
To Whom It May Concern:

On behalf of Newtown Township, Delaware County we are preparing an update to their Act 537 Sewage Facilities Plan. A Pennsylvania Natural Diversity Inventory (PNDI) search is required as part of the Plan update. Please find enclosed the requisite completed "Large Project Form", supplemental narrative, U.S.G.S. 7.5-Minute Quadrangle Map with the study area indicated, and a Water Resources Map with National Wetlands Inventory Wetlands, and Study Area depicted.

Please process the PNDI search and respond with the results at your earliest convenience. We understand the response time to be approximately 30 days from the date of Agency receipt of the review request.

Feel free to contact our office with any questions or for any additional information.

Very truly yours,



David M. Porter, E.I.T.

Copy: Michael Trio, Newtown Township Manager  
File

810-356-9550  
FAX 610-356-5032

**Herbert E. MacCombie, Jr., P.E.**  
CONSULTING ENGINEERS & SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

James W. MacCombie, P.E., P.L.S.  
Herbert E. MacCombie, III, Technician

REPLY TO:  
P.O. BOX 118  
BROOMALL, PA 19008-0118

June 4, 2012

Dept. of Conservation and Natural Resources  
Bureau of Forestry, Ecological Services Section  
400 Market Street  
P.O. Box 8552  
Harrisburg, PA 17105

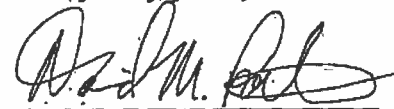
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Very truly yours,



David M. Porter, E.I.T.

Copy: Michael Trio, Newtown Township Manager  
File

610-356-9550

FAX 610-356-5032

## Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS & SURVEYORS, INC.

1000 PALMERS MILL ROAD

MEDIA, PA 19063

James W. MacCombie, P.E., P.L.S.

Herbert E. MacCombie, III, Technician

REPLY TO:

P.O. BOX 118

BROOMALL, PA 19008-0118

June 4, 2012

PA Game Commission  
Bureau of Wildlife Habitat Management  
Division of Environmental Planning & Habitat Protection  
2001 Elmerton Avenue  
Harrisburg, PA 17110-9797

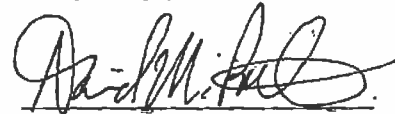
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Please process the PNDI search and respond with the results at your earliest convenience. We understand the response time to be approximately 30 days from the date of Agency receipt of the review request.

Feel free to contact our office with any questions or for any additional information.

Very truly yours,



David M. Porter, E.I.T.

Copy: Michael Trio, Newtown Township Manager  
File

**SENDER: COMPLETE THIS SECTION**

Complete Items 1, 2, and 3. Also complete Item 4 if Restricted Delivery is desired.

Print your name and address on the reverse so that we can return the card to you.

Attach this card to the back of the mailpiece, or on the front if space permits.

**COMPLETE THIS SECTION ON DELIVERY**

Signature Brittany Bee ☐ Agent ☐ Addressee

B. Received by (Printed Name) Brittany Bee C. Date of Delivery 11-7-12

1. Article Addressed to:

PA Fish & Boat Commission  
Natural Diversity Section  
450 Robinson Lane  
Bellefonte, PA  
16823

D. Is delivery address different from Item 1? ☐ Yes  
 If YES, enter delivery address below: ☐ No

3. Service Type  
☒ Certified Mail ☐ Express Mail  
☐ Registered ☐ Return Receipt for Merchandise  
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number 7010 1870 0000 0267 5576  
 (Transfer from service label)

**SENDER: COMPLETE THIS SECTION**

Complete Items 1, 2, and 3. Also complete Item 4 if Restricted Delivery is desired.

Print your name and address on the reverse so that we can return the card to you.

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**COMPLETE THIS SECTION ON DELIVERY**

A. Signature Diana B. Doe ☐ Agent ☐ Addressee

B. Received by (Printed Name) Diana B. Doe C. Date of Delivery 11/7/12

1. Article Addressed to:

U.S. Fish and Wildlife Service  
Endangered Species Biologist  
315 South Allen St.  
Suite 322  
State College, PA  
16801

D. Is delivery address different from Item 1? ☐ Yes  
 If YES, enter delivery address below: ☐ No

3. Service Type  
☒ Certified Mail ☐ Express Mail  
☐ Registered ☐ Return Receipt for Merchandise  
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number 7010 1870 0000 0267 5569  
 (Transfer from service label)

**U.S. Postal Service CERTIFIED MAIL RECEIPT**  
 (Domestic Mail Only. No Insurance Coverage Provided.)

**OFFICIAL USE**

Postage	\$1.30	0008
Certified Fee	\$2.95	01
Return Receipt Fee (Endorsement Required)	\$2.35	
Restricted Delivery Fee (Endorsement Required)	\$0.00	
Total Postage & Fees	\$6.60	06/05/2012

Sent to PA Fish & Boat Commission  
Natural Diversity Section  
 Street, Apt. No., or PO Box No. 450 Robinson Lane  
 City, State, ZIP+4 Bellefonte, PA 16823

**U.S. Postal Service CERTIFIED MAIL RECEIPT**  
 (Domestic Mail Only. No Insurance Coverage Provided.)

**OFFICIAL USE**

Postage	\$1.30	0008
Certified Fee	\$2.95	01
Return Receipt Fee (Endorsement Required)	\$2.35	
Restricted Delivery Fee (Endorsement Required)	\$0.00	
Total Postage & Fees	\$6.60	06/05/2012

Sent to U.S. Fish and Wildlife Service  
Endangered Species Biologist  
 Street, Apt. No., or PO Box No. 315 South Allen St. Suite 322  
 City, State, ZIP+4 State College, PA 16801

SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY		SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
<input checked="" type="checkbox"/> Complete Items 1, 2, and 3. Also complete Item 4 if Restricted Delivery is desired. <input checked="" type="checkbox"/> Print your name and address on the reverse so that we can return the card to you. <input checked="" type="checkbox"/> Attach this card to the back of the mailpiece, or on the front if space permits.		A. Signature <b>X</b> <i>[Signature]</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee B. Received by (Printed Name) _____ C. Date of Delivery <b>FEB 05 2012</b> D. Is delivery address different from Item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No		<input checked="" type="checkbox"/> Complete Items 1, 2, and 3. Also complete Item 4 if Restricted Delivery is desired. <input checked="" type="checkbox"/> Print your name and address on the reverse so that we can return the card to you. <input checked="" type="checkbox"/> Attach this card to the back of the mailpiece, or on the front if space permits.		A. Signature <b>X</b> <i>[Signature]</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee B. Received by (Printed Name) <b>D. Harris</b> C. Date of Delivery <b>FEB 05 2012</b> D. Is delivery address different from Item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No	
1. Article Addressed to: <b>Dept. of Conservation  and Natural Resources  Bureau of Forestry, Ecological  Services Section  400 Market Street  P.O. Box 8552  Harrisburg, PA 17105</b>		3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D. 4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes		1. Article Addressed to: <b>PA Game Commission  Bureau of Wildlife  Habitat Management  Division of Environmental  Planning &amp; Habitat Protection  2001 Elmerton Ave.  Harrisburg, PA 17110-9797</b>		3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D. 4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes	
2. Article Number (Transfer from service label) <b>7010 1870 0000 0267 5590</b>				2. Article Number (Transfer from service label) <b>7010 1870 0000 0267 5583</b>			

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540 PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

7010 1870 0000 0267 5590

**U.S. Postal Service**  
**CERTIFIED MAIL RECEIPT**  
(Domestic Mail Only, No Insurance Coverage Provided)

**OFFICIAL USE**

Postage	\$ 1.30	0008	
Certified Fee	\$2.95	01	
Return Receipt Fee (Endorsement Required)	\$2.35		Postmark Here
Restricted Delivery Fee (Endorsement Required)	\$0.00		
Total Postage & Fees	\$ 4.60	06/05/2012	

Sent To **Dept. of Conservation & Natural Resources**  
**Bureau of Forestry, Ecological Services Section**  
 Street, Apt. No., or PO Box No. **400 Market Street**  
 City, State, ZIP+4 **Harrisburg, PA 17105**

7010 1870 0000 0267 5583

**U.S. Postal Service**  
**CERTIFIED MAIL RECEIPT**  
(Domestic Mail Only, No Insurance Coverage Provided)

**OFFICIAL USE**

Postage	\$ 1.30	0008	
Certified Fee	\$2.95	01	
Return Receipt Fee (Endorsement Required)	\$2.35		Postmark Here
Restricted Delivery Fee (Endorsement Required)	\$0.00		
Total Postage & Fees	\$ 4.60	06/05/2012	

Sent To **PA Game Commission**  
**Habitat Mgmt. Div. of Environmental Planning**  
 Street, Apt. No., or PO Box No. **2001 Elmerton Ave.**  
 City, State, ZIP+4 **Harrisburg, PA 17110-9797**

## SUPPLEMENTAL PROJECT NARRATIVE

### DESCRIPTION OF OVERALL PROJECT

An Act 537 Update is being prepared at the request of the Board of Supervisors of Newtown Township (Township) in order to address current and future planning needs, as well as concerns raised by the Pennsylvania Department of Environmental Protection (PA DEP) and concerns raised by the general public. The intent of this Act 537 Plan Update to supplement the service area previously identified in the Newtown Township 2002 Act 537 Plan and be in substantial compliance with Act 537 entitled *The Pennsylvania Sewage Facilities Act, PA Code Title 25, Chapter 71*, in order to appropriately plan for the future needs of the Township, as well as their residents. Refer to attached USGS Location Map.

This Plan addresses the planning requirements necessary in order to provide public sanitary sewer services, where appropriate, to meet the immediate needs within the newly established Central Delaware County Authority (CDCA) service area, while at the same time addressing future needs, flow capacity, and existing community sewage systems, as well as the continuing use of Individual On-lot Sewage Disposal Systems under the guise of a newly established Township-wide "On-lot and Community Sewage System" operation and maintenance ordinance.

### WORK TO BE PERFORMED

This Plan Update identifies and evaluates various aspects of alternatives in a prudent manner by which public sewer service currently exists as well as the merits of providing future service to residential, commercial, and institutional development within the overall planning area considered. Since the collection and conveyance of sewage is paramount, locations of these collection and conveyance systems from a practical usage basis, as well as a cost effectiveness standpoint, are extremely important in order to transport projected wastewater flows. Other available methods of treatment, including that of community wastewater treatment facilities and on lot sewage disposal systems, were also considered and evaluated.

In order to meet current, as well as future, wastewater disposal needs regarding future projections within the planning area, the Township is in agreement that the Central Delaware County Authority (CDCA) as well as limited reallocation of flow from a portion of the BPG site to Radnor-Haverford-Marple (RHM) conveyance and Delaware County Regional Water Quality Authority (DELCORA) treatment alternative is the most responsible and cost-effective to the residents and the most prudent, from a treatment standpoint, for environmental sensitivity. A network of low pressure sewers, gravity mains, pump stations, and force mains will need to be in place in order to use this alternative. Individual development properties to be connected to the system will be the responsibility of the perspective owners of the proposed developments.

## PHYSICAL CHARACTERISTICS

Newtown Township is located in Delaware County, north of the Borough of Media. The Township is bounded to the west by Willistown Township, Chester County, to the northwest by Easttown Township, Chester County, to the northeast by Radnor Township, to the southeast by Marple Township, and to the southwest by Upper Providence Township.

There are several Chapter 93 Water Quality Classifications for the Crum Creek Basin within the study area. The northern most portion of the study area is classified as High Quality - Cold Water Fishes and Migratory Fishes (HQ-CWF, MF). This is the Crum Basin from the West Branch Crum Creek to junction of Newtown, Edgmont, and Willistown Township Borders including tributaries such as Lewis Run. The central portion of the study area is designated as Cold Water Fishes and Migratory Fishes (CWF, MF) from junction of Newtown, Edgmont, and Willistown Township borders to the Springton Reservoir. This includes tributaries such as Reeses Run and Preston Run. The southern portion of the study area is classified as Warm Water Fishes and Migratory Fishes (WWF, MF) including non-tidal portions of the basin from the Springton Reservoir to the mouth.

The study area in general drains from the watershed boundary separating the Crum Creek and Darby Creek basins, which more or less follows Newtown Street Road (S.R. 0252), in a westerly direction toward the Crum Creek. The topography within the study area varies between a high elevation of 480 in the northern corner of the study area and a low elevation of 200 in the southern portion of the study area adjacent to the Springton Reservoir. The western/southwestern portion of the Township and study area are bounded by the Crum Creek, which drains in a southeasterly direction emptying into the Springton Reservoir. There are a number of tributaries to the Crum Creek, which drain in a westerly direction traversing the study area. Lewis and Reeses Run are located within the study area north of West Chester Pike. Preston Run and Hunters Run are located within the study area south of West Chester Pike. Topography is undulating between each tributary, which makes planning for public sewer challenging.

Wetlands appear to be present within the study area according to the National Wetlands Inventory Maps prepared by the United States Fish and Wildlife Service. While these maps do not provide a complete wetlands delineation, they serve as indications and are considered satisfactory for planning purposes. In areas where new sewage facilities are being considered, an actual Wetlands Delineation must be performed in the field prior to final design. Refer to attached Water Resources Map.

## AREA TO BE IMPACTED

The area to be impacted will be evaluated on a case-by-case basis as specific projects commence. Each specific project will need to address potential environmental impacts specifically related to that particular project, such as PNDI searches, wetlands delineation, general permits, and/or erosion and sediment pollution control and NPDES permitting, etc., as applicable.





# Pennsylvania Natural Diversity Inventory LARGE PROJECT FORM

State of Pennsylvania

This form provides site information necessary to perform an Environmental Review for special concern species and resources listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, the Pennsylvania Fish and Boat Code or the Pennsylvania Game and Wildlife Code.

## Applicant Information

Name: Newtown Township, Delaware County, Pa C/O Michael Trio  
Address: 209 Bishop Hollow Road, Newtown Square, Pa 19073  
Phone Number: 610-356-0200 Fax Number: 610-356-8722

## Contact Person Information - if different from applicant

Name: James W. Mac Combie, P.E., P.L.S. (Twp. Sewer Consultant)  
Address: P.O. Box 118, Broomall, Pa 19008  
Phone Number: 610-356-9550 Fax Number: 610-356-5032  
Email:

## Project Information

Project Name: Newtown Township Act 537 Plan Update 2012

Project Reference Point (center point of project): Latitude: Longitude: Datum:

Municipality: Newtown Township County: Delaware

☒ Attach a copy of a U.S.G.S. 7 1/2 Minute Quadrangle Map with Project Boundaries clearly marked.  
U.S.G.S. Quad Name: Media

Provide GIS shapefiles showing the project boundary (strongly recommended)

## Project Description

Proposed Project Activity (including ALL earth disturbance areas and current conditions)

Development of an updated Act 537 Plan of Study which enhances, as well as supplements, the existing 2002 Act 537 Plan to largely address the needs within Crum Creek Watershed for conveyance to the CDCA Central Delaware County Conveyance Line for disposal at the Delaware County Regional Authority Wastewater Treatment Plant.

Total Acres of Property: Acreage to be Impacted:

- Will the entire project occur in or on an existing building, parking lot, driveway, road, maintained road shoulder, street, runway, paved area, railroad bed, or maintained lawn? Yes ☐ No ☒
- Are there any waterways or waterbodies (intermittent or perennial rivers, streams, creeks, tributaries, lakes or ponds) in or near the project area, or on the land parcel? If so, how many feet away is the project? Yes ☒ Not Known Feet No ☐
- Are wetlands located in or within 300 feet of the project area? Yes ☒ No ☐ If No, is this the result of a wetland delineation? Per N.W.I. Mapping
- How many acres of tree removal, tree cutting or forest clearing will be necessary to implement all aspects of this project? Not Known At This Time

### Dept. of Conservation and Natural Resources

#### Bureau of Forestry, Ecological Services Section

400 Market St., PO Box 8552

Harrisburg, PA 17105

fax: 717-772-0271

#### PA Game Commission

Bureau of Wildlife Habitat Management

Division of Environmental Planning & Habitat Protection

2001 Elmerton Avenue

Harrisburg, PA 17110-9797

### PA Fish and Boat Commission

Natural Diversity Section

450 Robinson Lane

Bellefonte, PA 16823

### US Fish and Wildlife Service

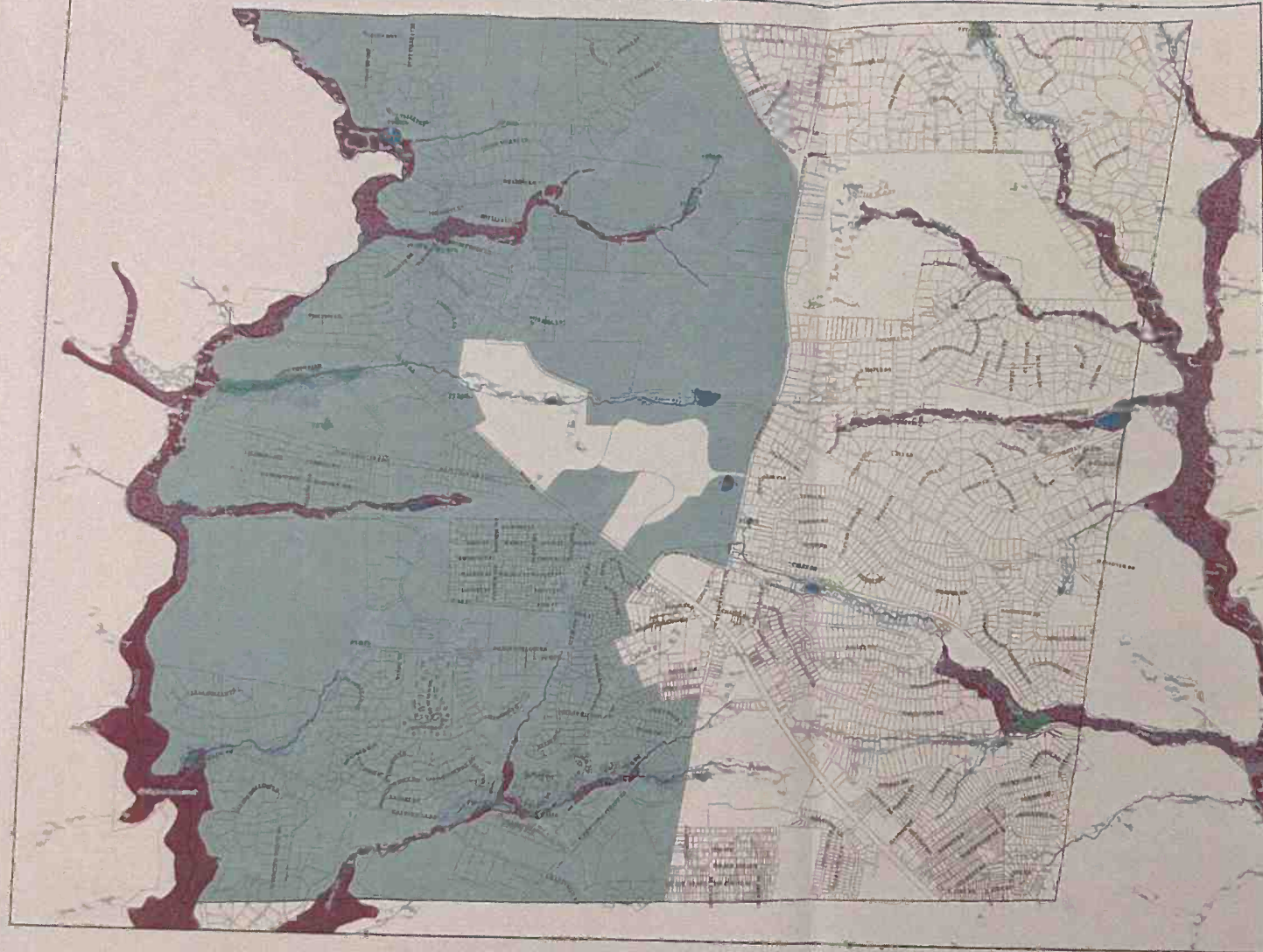
Endangered Species Biologist

315 South Allen St., Suite 322

State College, PA 16801

no faxes please

## Water Resources



Act 537 Plan Study Area

Hydric Soils

Soils with Hydric Inclusions

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

100 Year Floodplain

500 Year Floodplain

### Data

1. Soils, 2009 - NRCS
2. Soil Characteristics - Soil Survey of Chester and Delaware Counties, US Department of Agriculture, 1963
3. Floodplains - FEMA Q3
4. Wetlands - NWI
5. Parcels - Delaware County Board of Assessment
6. All Other Data - Delaware County Planning Department

### Important

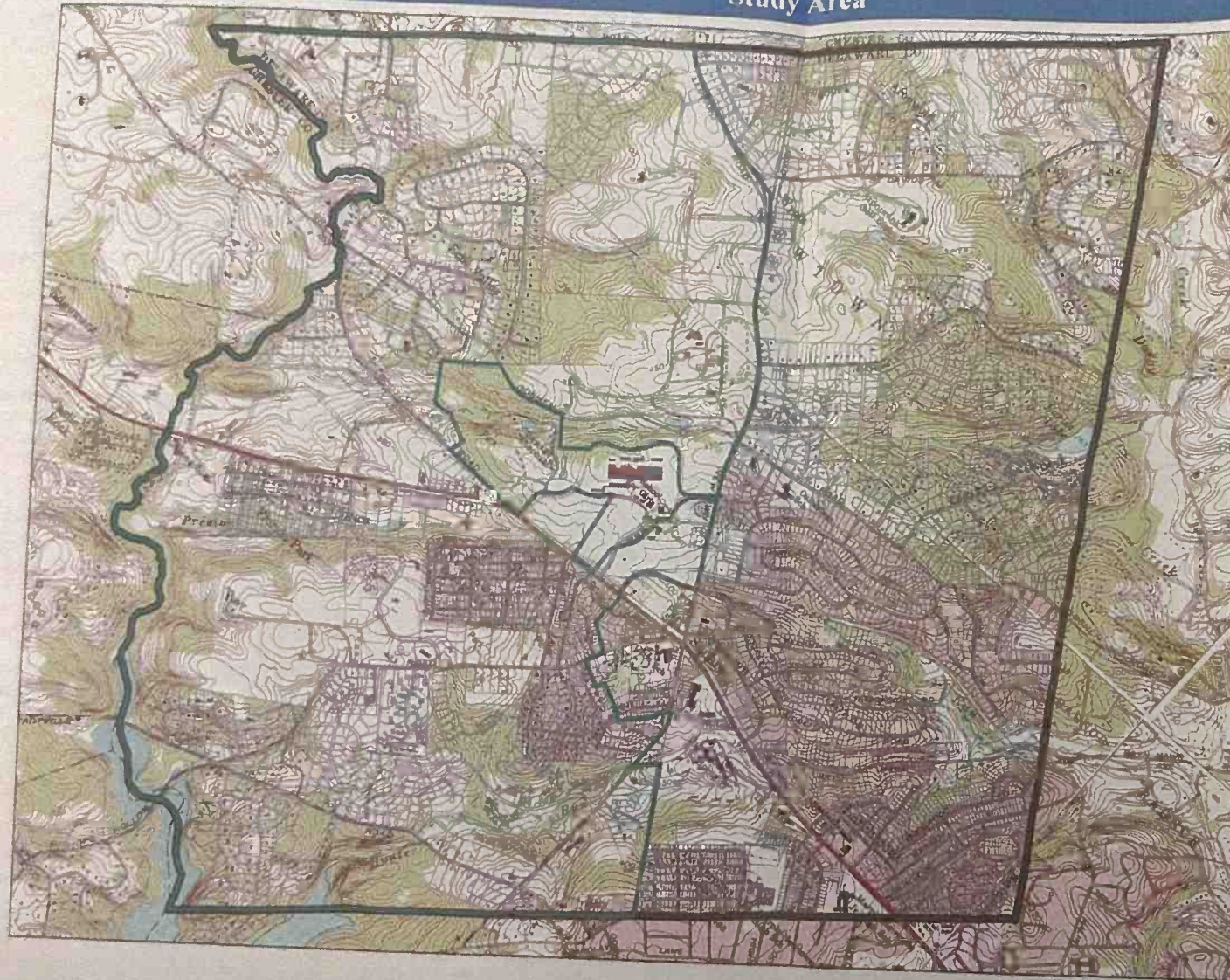
This map is for analytical purposes only. It is not intended for navigation or exact location of infrastructure. The reliability of this map depends on the accuracy of its underlying data sources which have not been verified. Unauthorized duplication or distribution is prohibited.

Prepared by  
Delaware County  
Planning Department  
2012

0 300 600 1,200 1,800 2,400 Feet



## Study Area



- ☒ Newtown Township Boundary
- ☐ Agt 537 Plan Study Boundary

Data  
 1. Study Boundary - HEM Engineers  
 2. Topography - USGS Quadrangle Maps, 7.5 Minute Series, Valley Forge, Norristown, Media, and Lansdowne  
 3. Other Data - DCPD

**Important**  
 This map is for analytical purposes only. It is not intended for navigation or exact location of infrastructure. The reliability of this map depends on the accuracy of its underlying data sources which have not been verified. Unauthorized duplication or distribution is prohibited.

Prepared by  
 Delaware County  
 Planning Department  
 2012

0 300 600 1,200 1,800 2,400 Feet

ADMINISTRATIVE BUREAUS:

ADMINISTRATION.....717-787-5670  
HUMAN RESOURCES.....717-787-7836  
FISCAL MANAGEMENT.....717-787-7314  
CONTRACTS AND  
PROCUREMENT.....717-787-6594  
LICENSING.....717-787-2084  
OFFICE SERVICES.....717-787-2116  
WILDLIFE MANAGEMENT.....717-787-5529  
INFORMATION & EDUCATION.....717-787-6286  
WILDLIFE PROTECTION.....717-783-6528  
WILDLIFE HABITAT  
MANAGEMENT.....717-787-6818  
REAL ESTATE DIVISION.....717-787-6568  
AUTOMATED TECHNOLOGY  
SERVICES.....717-787-4076

[www.pgc.state.pa.us](http://www.pgc.state.pa.us)



Division of Environmental  
Planning and Habitat  
Protection  
717-783-5957

COMMONWEALTH OF PENNSYLVANIA  
**Pennsylvania Game Commission**  
2001 ELMERTON AVENUE  
HARRISBURG, PA 17110-9797

*"To manage all wild birds, mammals and their habitats  
for current and future generations."*

July 26, 2012

**Large Project PNDI Review**

Mr. James MacCombie  
P.O. Box 118  
Broomall, Pennsylvania 19008

Re: Newtown Township Act 537 Plan Update 2012  
Newtown Township, Delaware County, Pennsylvania

Dear Mr. MacCombie,

Thank you for submitting your Pennsylvania Natural Diversity Inventory (PNDI) Large Project Environmental Review request. The Pennsylvania Game Commission (PGC) screened this project for potential impacts to species and resources of concern under PGC responsibility, which includes birds and mammals only.

**No Impact Anticipated**

PNDI records indicate species or resources of concern are located in the vicinity of the project. However, based on the information you submitted concerning the nature of the project, the immediate location, and our detailed resource information, the PGC has determined that no impact is likely. Therefore, no further coordination with the PGC will be necessary for this project at this time.

This response represents the most up-to-date summary of the PNDI data files and is valid for two (2) years from the date of this letter. An absence of recorded information does not necessarily imply actual conditions on site. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered.

Should the proposed work continue beyond the period covered by this letter, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative and accurate map). If the proposed work has not changed and no additional information concerning listed species is found, the project will be cleared for PNDI requirements under this agency for two additional years.

This finding applies to impacts to birds and mammals only. To complete your review of state and federally-listed threatened and endangered species and species of special concern, please be sure that the U.S. Fish and Wildlife Service, the PA Department of Conservation and Natural

Mr. James MacCombie

-2-

July 26, 2012

Resources, and/or the PA Fish and Boat Commission have been contacted regarding this project as directed by the online PNHI ER Tool found at [www.naturalheritage.state.pa.us](http://www.naturalheritage.state.pa.us).

Sincerely,



Olivia A. Mowery

Environmental Planner

Division of Environmental Planning & Habitat Protection

Bureau of Wildlife Habitat Management

Phone: 717-787-4250, Extension 3128

Fax: 717-787-6957

E-mail: OMowery@pa.gov

A PNHP Partner



Pennsylvania Natural Heritage Program

OAM/oam

cc: File





# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Pennsylvania Field Office  
315 South Allen Street, Suite 322  
State College, Pennsylvania 16801-4850

July 11, 2012

David Porter  
Herbert E. MacCombie, Jr.  
1000 Palmers Mill Road  
Media, PA 19063

RE: USFWS Project #2012-0942

Dear Mr. Porter:

This responds to your letter of June 4, 2012, requesting information about federally listed and proposed endangered and threatened species within the area affected by the proposed Newtown Township Act 537 Plan update project located in Newtown Township, Delaware County, Pennsylvania. The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species.

The project is within the known range of the bog turtle, a species that is federally listed as threatened. Bog turtles inhabit shallow, spring-fed fens, sphagnum bogs, swamps, marshy meadows, and pastures characterized by soft, muddy bottoms; clear, cool, slow-flowing water, often forming a network of rivulets; high humidity; and an open canopy. Bog turtles usually occur in small, discrete populations occupying suitable wetland habitat dispersed along a watershed. The occupied "intermediate successional stage" wetland habitat is usually a mosaic of micro-habitats ranging from dry pockets, to areas that are saturated with water, to areas that are periodically flooded. Some wetlands occupied by bog turtles are located in agricultural areas and are subject to grazing by livestock.

To determine the potential effects of the proposed project on bog turtles and their habitat, begin by identifying all wetlands in, and within 300 feet of, the project area. The project area includes all areas that will be permanently or temporarily affected by any and all project features, including building, roads, staging areas, utility lines, outfall and intake structures, wells, stormwater retention or detention basins, parking lots, driveways, lawns, etc. The area of investigation should be expanded when project effects might extend more than 300 feet from the project footprint. For example, the hydrological effects of some projects (*e.g.*, large residential or commercial developments; golf courses; community water supply wells) might extend well beyond the project footprint due to the effects that impervious surfaces or groundwater pumping may have on the hydrology of nearby groundwater-dependent wetlands. Wetlands should be included on a map showing existing as well as proposed project features.



*If someone qualified to identify and delineate wetlands has, through a field investigation, determined that no wetlands are located in or within 300 feet of the project area (or within the expanded investigation area, as described above), it is not likely that your project will adversely affect the bog turtle. If this is the case, no further consultation with the Fish and Wildlife Service is necessary, although we would appreciate receiving a courtesy copy of the wetland investigator's findings for our files.*

If wetlands have been identified in or within 300 feet of the project area (or in an expanded investigation area, as described above), assess their potential suitability as bog turtle habitat, as described under "*Bog Turtle Habitat Survey*" (Phase 1 survey) of the *Guidelines for Bog Turtle Surveys* (revised April 2006). Survey results should be submitted to the Service for review and concurrence. The survey guidelines, as well as a Phase 1 field form and report template, are available from the Service upon request.

Due to the skill required to correctly identify potential bog turtle habitat, we recommend that the Phase 1 survey be done by a qualified surveyor (see enclosed list). If the Phase 1 survey is done by someone who is not on this list, it is likely that a site visit by a Fish and Wildlife Service biologist will be necessary to verify their findings. *Due to the limited availability of staff from this office, such a visit may not be possible for some time. Use of a qualified surveyor will expedite our review of the survey results.*

If potential bog turtle habitat is found in or near the project area, efforts should be made to avoid any direct or indirect impacts to those wetlands (see enclosed *Bog Turtle Conservation Zones*). Avoidance of direct and indirect effects means no disturbance to or encroachment into the wetlands (e.g., filling, ditching or draining) for any project-associated features or activities. Adverse effects may also be anticipated to occur when lot lines include portions of the wetland; when an adequate upland buffer is not retained around the wetland (see *Bog Turtle Conservation Zones*); or when roads, stormwater/sedimentation basins, impervious surfaces, or wells affect the hydrology of the wetland.

If potential habitat is found, submit (along with your Phase 1 survey results) a detailed project description and detailed project plans documenting how direct and indirect impacts to the wetlands will be avoided. If adverse effects to these wetlands cannot be avoided, a more detailed and thorough survey should be done, as described under "*Bog Turtle Survey*" (Phase 2 survey) of the *Guidelines*. The Phase 2 survey should be conducted by a qualified biologist with bog turtle field survey experience (see enclosed list of qualified surveyors). Submit survey results to the Service for review and concurrence.

In cases where adverse effects to federally listed species cannot be avoided, further consultation with the Service would be necessary to avoid potential violations of section 9 (prohibiting "take" of listed species) and/or section 7 (requiring federal agencies to consult) of the Endangered Species Act. Information about the section 7 and section 10 consultation processes (for federal and non-federal actions, respectively) can be obtained by contacting this office or accessing the Service's Endangered Species Home Page (<http://endangered.fws.gov>).

This response relates only to endangered and threatened species under our jurisdiction, based on an office review of the proposed project's location. No field inspection of the project area has been conducted by this office. Consequently, this letter is not to be construed as addressing potential Service concerns under the Fish and Wildlife Coordination Act or other authorities. A compilation of certain federal status species in Pennsylvania is enclosed for your information.

*To avoid potential delays in reviewing your project, please use the above-referenced USFWS project tracking number in any future correspondence regarding this project.*

Please contact Bonnie Dershem of my staff at 814-234-4090 if you have any questions or require further assistance regarding this matter.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Clinton Riley', is written over the typed name.

Clinton Riley  
Field Office Supervisor

Enclosures

**U.S. FISH AND WILDLIFE SERVICE  
& PENNSYLVANIA FISH AND BOAT COMMISSION**

**QUALIFIED BOG TURTLE SURVEYORS**

The following list includes persons known by the U.S. Fish and Wildlife Service and the Pennsylvania Fish and Boat Commission to have the skills and experience to search for and successfully find bog turtles and their habitat. This list includes individuals who do bog turtle survey work in Pennsylvania on a contractual basis. Any individuals handling or conducting surveys for bog turtles must first obtain from the Pennsylvania Fish and Boat Commission a Scientific Collector's Permit, and a Special Permit to survey for endangered and threatened species pursuant to 58 PA Code 75.4. All permitted collector's encounters with bog turtles must be reported in writing to the Commission and Service within 48 hours.

Contracted bog turtle surveys and research will be overseen by a qualified surveyor, who will be present in the field at all times during the investigation. Qualified surveyors are the individuals who act in the capacity of Principal Investigator (PI), having in-field oversight responsibility for surveys, bog turtle captures, turtle identification and marking, telemetry studies, and safe handling procedures. They are also the individuals responsible for ensuring 1) they and their assistants have the appropriate permits to conduct bog turtle work, 2) surveys are carried out in accordance with survey protocols, and 3) reports are accurate and complete and submitted to the appropriate agencies. Phase 1 and Phase 2 surveys should be carried out in accordance with the Service's *Guidelines for Bog Turtle Surveys* (dated April 2006); exceptions should be reviewed and approved by the Service and Commission.

This information is not to be construed as an endorsement of individuals or firms by the Service, the Commission, or any of its employees. Persons not on this list, but who have documented experience in conducting scientific studies of, or successful searches for, bog turtles and their habitat may submit their qualifications to the Service and the Commission for review. Additions to and deletions from this list are at the sole discretion of the Service and Commission. This list is subject to revision at any time without prior notice.

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# BOG TURTLE CONSERVATION ZONES<sup>1</sup>

(revised April 18, 2001)

Projects in and adjacent to bog turtle habitat can cause habitat destruction, degradation and fragmentation. Of critical importance is evaluating the potential direct and indirect effects of activities that occur in or are proposed for upland areas adjacent to bog turtle habitat. Even if the wetland impacts from an activity are avoided (i.e., the activity does not result in encroachment into the wetland), activities in adjacent upland areas can seriously compromise wetland habitat quality, fragment travel corridors, and alter wetland hydrology, thereby adversely affecting bog turtles.

The following bog turtle conservation zones have been designated with the intent of protecting and recovering known bog turtle populations within the northern range of this species. The conservation suggestions for each zone are meant to guide the evaluation of activities that may affect high-potential bog turtle habitat, potential travel corridors, and adjacent upland habitat that may serve to buffer bog turtles from indirect effects. *Nevertheless, it is important to recognize that consultations and project reviews will continue to be conducted on a case-by-case basis, taking into account site- and project-specific characteristics.*

## Zone 1

This zone includes the wetland and visible spring seeps occupied by bog turtles. Bog turtles rely upon different portions of the wetland at different times of year to fulfill various needs; therefore, this zone includes the entire wetland (the delineation of which will be scientifically based), not just those portions that have been identified as, or appear to be, optimal for nesting, basking or hibernating. In this zone, bog turtles and their habitat are most vulnerable to disturbance, therefore, the greatest degree of protection is necessary.

Within this zone, the following activities are likely to result in habitat destruction or degradation and should be avoided. These activities (not in priority order) include:

- ▶ development (e.g., roads, sewer lines, utility lines, storm water or sedimentation basins, residences, driveways, parking lots, and other structures)
- ▶ wetland draining, ditching, tiling, filling, excavation, stream diversion and construction of impoundments
- ▶ heavy grazing
- ▶ herbicide, pesticide or fertilizer application<sup>2</sup>
- ▶ mowing or cutting of vegetation<sup>2</sup>
- ▶ mining
- ▶ delineation of lot lines (e.g., for development, even if the proposed building or structure will not be in the wetland)

Some activities within this zone may be compatible with bog turtle conservation but warrant careful evaluation on a case-by-case basis:

- ▶ light to moderate grazing
- ▶ non-motorized recreational use (e.g., hiking, hunting, fishing)

## Zone 2

The boundary of this zone extends *at least 300 feet* from the edge of Zone 1 and includes upland areas adjacent to Zone 1. Activities in this zone could indirectly destroy or degrade wetland habitat over the short or long-term, thereby adversely affecting bog turtles. In addition, activities in this zone have the potential to cut off travel corridors between wetlands occupied or likely to be occupied by bog turtles, thereby isolating or dividing populations and increasing the risk of turtles being killed while attempting to disperse. Some of the indirect effects to wetlands resulting from activities in the adjacent uplands include: changes in hydrology (e.g., from roads, detention basins, irrigation, increases in impervious surfaces, sand and gravel mining); degradation of water quality (e.g., due to herbicides, pesticides, oil and salt from various sources including roads, agricultural fields, parking lots and residential developments); acceleration of succession (e.g., from fertilizer runoff); and introduction of exotic plants (e.g., due to soil disturbance and roads). This zone acts as a filter and buffer, preventing or minimizing the effects of land-use activities on bog turtles and their habitat. This zone is also likely to include at least a portion of the groundwater recharge/supply area for the wetland.

Activities that should be avoided in this zone due to their potential for adverse effects to bog turtles and their habitat include:

- ▶ development (e.g., roads, sewer lines, utility lines, storm water or sedimentation basins, residences, driveways, parking lots, and other structures)
- ▶ mining
- ▶ herbicide application<sup>2</sup>
- ▶ pesticide or fertilizer application
- ▶ farming (with the exception of light to moderate grazing - see below)
- ▶ certain types of stream-bank stabilization techniques (e.g., rip-rapping)
- ▶ delineation of lot lines (e.g., for development, even if the proposed building or structure will not be in the wetland)

Careful evaluation of proposed activities on a case-by-case basis will reveal the manner in which, and degree to which activities in this zone would affect bog turtles and their habitat. Assuming impacts within Zone 1 have been avoided, evaluation of proposed activities within Zone 2 will often require an assessment of anticipated impacts on wetland hydrology, water quality, and habitat continuity.

Activities that are likely to be compatible with bog turtle conservation, but that should be evaluated on a case-by-case basis within this zone include:

- ▶ light to moderate grazing
- ▶ non-motorized recreational use (e.g., hiking, hunting, fishing)
- ▶ mowing or cutting of vegetation

## Zone 3

This zone includes upland, wetland, and riparian areas extending either to the geomorphic edge of the drainage basin or at least one-half mile beyond the boundary of Zone 2. Despite the distance from Zone 1, activities in these areas have the potential to adversely affect bog turtles and their habitat. This particularly applies to activities affecting wetlands or streams connected to or contiguous with Zone 1, because these areas may support undocumented occurrences of bog turtles and/or provide travel corridors. In addition, some activities (e.g., roads, groundwater withdrawal, water/stream diversions, mining, impoundments, dams, "pump-and-treat" activities) far beyond Zone 1 have the potential to alter



the hydrology of bog turtle habitat, therefore, another purpose of Zone 3 is to protect the ground and surface water recharge zones for bog turtle wetlands. Where the integrity of Zone 2 has been compromised (e.g., through increases in impervious surfaces, heavy grazing, channelization of stormwater runoff), there is also a higher risk of activities in Zone 3 altering the water chemistry of bog turtle wetlands (e.g., via nutrient loading, sedimentation, and contaminants).

Activities occurring in this zone should be carefully assessed in consultation with the Fish and Wildlife Service and/or appropriate State wildlife agency to determine their potential for adverse effects to bog turtles and their habitat. Prior to conducting activities that may directly or indirectly affect wetlands, bog turtles and/or bog turtle habitat surveys should be conducted in accordance with accepted survey guidelines.

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<sup>1</sup> These guidelines are taken directly from the final "Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan" (dated May 15, 2001).

<sup>2</sup> Except when conducted as part of a bog turtle habitat management plan approved by the Fish and Wildlife Service or State wildlife agency

# GUIDELINES FOR BOG TURTLE SURVEYS<sup>1</sup>

(revised April 2006)

## RATIONALE

A bog turtle survey (when conducted according to these guidelines) is an attempt to determine presence or probable absence of the species; it does not provide sufficient data to determine population size or structure. Following these guidelines will standardize survey procedures. It will help maximize the potential for detection of bog turtles at previously undocumented sites at a minimum acceptable level of effort. Although the detection of bog turtles confirms their presence, failure to detect them does not absolutely confirm their absence (likewise, bog turtles do not occur in all appropriate habitats and many seemingly suitable sites are devoid of the species). Surveys as extensive as outlined below are usually sufficient to detect bog turtles; however, there have been instances in which additional effort was necessary to detect bog turtles, especially when habitat was less than optimum, survey conditions were less than ideal, or turtle densities were low.

## PRIOR TO CONDUCTING ANY SURVEYS

If a project is proposed to occur in a county of known bog turtle occurrence (see attachment 1), contact the U.S. Fish and Wildlife Service (Service) and/or the appropriate State wildlife agency (see attachment 2). They will determine whether or not any known bog turtle sites occur in or near the project area, and will determine the need for surveys.

- < If a wetland in or near the project area is *known* to support bog turtles, measures must be taken to avoid impacts to the species. The Service and State wildlife agency will work with federal, state and local regulatory agencies, permit applicants, and project proponents to ensure that adverse effects to bog turtles are avoided or minimized.
- < If wetlands in or adjacent to the project area are *not* known bog turtle habitat, conduct a bog turtle habitat survey (Phase 1 survey) if:
  1. The wetland(s) have an emergent and/or scrub-shrub wetland component, or are forested with suitable soils and hydrology (see below), *and*
  2. Direct and indirect adverse effects to the wetland(s) cannot be avoided.

See *Bog Turtle Conservation Zones*<sup>2</sup> for guidance regarding activities that may affect bog turtles and their habitat. In addition, consult with the Fish and Wildlife Service and/or appropriate State wildlife agency to definitively determine whether or not a Phase 1 survey will be necessary.

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<sup>1</sup> These guidelines are a modification of those found in the final "Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan" (dated May 15, 2001). Several minor revisions were made to facilitate survey efforts and increase searcher effectiveness. As additional information becomes available regarding survey techniques and effectiveness, these survey guidelines may be updated and revised. Contact the Fish and Wildlife Service or one of the state agencies listed in Attachment 1 for the most recent version of these guidelines.

<sup>2</sup> See Appendix A of the "Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan" (dated May 15, 2001).

## BOG TURTLE HABITAT SURVEY (= Phase 1 survey)

The purpose of this survey is to determine whether or not the wetland(s) are *potential* bog turtle habitat. These surveys are performed by a recognized, qualified bog turtle surveyor (contact the Service or the appropriate State wildlife agency to receive a list of recognized, qualified bog turtle surveyors). The following conditions and information apply to habitat surveys.

- < Surveys can be performed any month of the year (except when significant snow and/or ice cover is present). This flexibility in conducting Phase 1 surveys allows efforts during the Phase 2 survey window to be spent on wetlands most likely to support bog turtles (*i.e.*, those that meet the criteria below).
- < Potential bog turtle habitat is recognized by three criteria (*not all of which may occur in the same portion of a particular wetland*):
  1. **Suitable hydrology.** Bog turtle wetlands are typically spring-fed with shallow surface water or saturated soils present year-round, although in summer the wet area(s) may be restricted to near spring head(s). Typically these wetlands are interspersed with dry and wet pockets. There is often subsurface flow. In addition, shallow rivulets (less than 4 inches deep) or pseudo-rivulets are often present.
  2. **Suitable soils.** Usually a bottom substrate of permanently saturated organic or mineral soils. These are often soft, mucky-like soils (this does not refer to a technical soil type); you will usually sink to your ankles (3-5 inches) or deeper in muck, although in degraded wetlands or summers of dry years this may be limited to areas near spring heads or drainage ditches. In some portions of the species' range, the soft substrate consists of scattered pockets of peat instead of muck.
  3. **Suitable vegetation.** Dominant vegetation of low grasses and sedges (in emergent wetlands), often with a scrub-shrub wetland component. Common emergent vegetation includes, but is not limited to: tussock sedge (*Carex stricta*), soft rush (*Juncus effusus*), rice cut grass (*Leersia oryzoides*), sensitive fern (*Onoclea sensibilis*), tearthumbs (*Polygonum* spp.), jewelweeds (*Impatiens* spp.), arrowheads (*Sagittaria* spp.), skunk cabbage (*Symplocarpus foetidus*), panic grasses (*Panicum* spp.), other sedges (*Carex* spp.), spike rushes (*Eleocharis* spp.), grass-of-Parnassus (*Parnassia glauca*), shrubby cinquefoil (*Dasiphora fruticosa*), sweet-flag (*Acorus calamus*), and in disturbed sites, reed canary grass (*Phalaris arundinacea*) or purple loosestrife (*Lythrum salicaria*). Common scrub-shrub species include alder (*Alnus* spp.), red maple (*Acer rubrum*), willow (*Salix* spp.), tamarack (*Larix laricina*), and in disturbed sites, multiflora rose (*Rosa multiflora*). Some forested wetland habitats are suitable given hydrology, soils and/or historic land use. These forested wetlands include red maple, tamarack, and cedar swamps.

**Suitable hydrology and soils are the critical criteria (*i.e.*, the primary determinants of potentially suitable habitat).**

- < Suitable hydrology, soils and vegetation are necessary to provide the critical wintering sites (soft muck, peat, burrows, root systems of woody vegetation) and nesting habitats (open

areas with tussocky or hummocky vegetation) for this species. It is very important to note, however, that one or more of these criteria may be absent from portions of a wetland or wetland complex supporting bog turtles. Absence of one or more criteria does not preclude bog turtle use of these areas to meet important life functions, including foraging, shelter and dispersal.

- < If these criteria (suitable soils, vegetation and hydrology) are present in the *wetland*, then the *wetland* is considered to be potential bog turtle habitat, regardless of whether or not that portion of the wetland occurring within the project boundaries contains all three criteria. If the *wetland* is determined to be potential habitat and the project will directly or indirectly impact *any portion* of the wetland (see *Bog Turtle Conservation Zones*), then either:
  - < Completely avoid all direct and indirect effects to the wetland, in consultation with the Service and appropriate State wildlife agency, OR
  - < Conduct a Phase 2 survey to determine the presence of bog turtles.
- < The Service and appropriate State wildlife agency (see list) should be sent a copy of survey results for review and comment including: a USGS topographic map indicating location of site; project design map, including location of wetlands and stream and delineation of wetland type (PEM, PSS, PFO, POW) and "designated survey areas"<sup>3</sup>; color photographs of the site; surveyor's name; date of visit; opinion on potential/not potential habitat; a description of the hydrology, soils, and vegetation. A phase 1 report template and field form are available from the States and Service.

#### **BOG TURTLE SURVEY (= Phase 2 survey)**

If the wetland(s) are identified as potential bog turtle habitat (see Phase 1 survey), and direct and indirect adverse effects cannot be avoided, conduct a bog turtle survey in accordance with the specifications below. Note that this is *not* a survey to estimate population size or structure; a long-term mark/recapture study would be required for that.

Prior to conducting the survey, contact the appropriate State agency (see attached list) to determine whether or not a scientific collector's permit valid for the location and period of the survey will be required.

The Phase 2 survey will focus on the areas of the wetland that meet the soils, hydrology and vegetation criteria, as defined under the Phase 1 survey guidelines. Those areas that meet the criteria are referred to as "designated survey areas" for Phase 2 and Phase 3 survey purposes.

1. Surveys should only be performed during the period from April 15-June 15. For the Lake Plain Recovery Unit (see Recovery Plan), surveys should only be performed during the period from May 1 to June 30. This coincides with the period of greatest annual turtle activity (spring emergence and breeding) and before vegetation gets too dense to accurately survey. While turtles may be found outside of these dates, a result of no turtles would be

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<sup>3</sup> "Designated survey areas" are those areas of the wetland that meet the soils, hydrology and vegetation criteria for potential bog turtle habitat. These areas may occur within the emergent, scrub-shrub or forested parts of the wetland.

considered inconclusive. Surveys beyond June also have a higher likelihood of disruption or destruction of nests or newly hatched young.

2. Ambient air temperature at the surface in the shade should be  $\geq 55^{\circ}$  F.
3. Surveys should be done during the day, at least one hour after sunrise and no later than one hour before sunset.
4. Surveys may be done when it is sunny or cloudy. In addition, surveys may be conducted during and after light rain, provided air temperatures are  $\geq 65^{\circ}$  F.
5. At least one surveyor must be a recognized qualified bog turtle surveyor<sup>4</sup>, and the others should have some previous experience successfully conducting bog turtle surveys or herpetological surveys in wetlands. To maintain survey effort consistency and increase the probability of encountering turtles, the same surveyors should be used for each wetland.
6. A minimum of four (4) surveys per wetland site are needed to adequately assess the site for presence of bog turtles. At least two of these surveys must be performed in May. From April 15 to April 30, surveys should be separated by six or more days. From May 1 to June 15, surveys should be separated by three or more days. The shorter period between surveys during May and June is needed to ensure that surveys are carried out during the optimum window of time (*i.e.*, before wetland vegetation becomes too thick).

Note that bog turtles are more likely to be encountered by spreading the surveys out over a longer period. For example, erroneous survey results could be obtained if surveys were conducted on four successive days in late April due to possible late spring emergence, or during periods of extreme weather because turtles may be buried in mud and difficult to find.

Because this is solely a presence/absence survey, survey efforts at a particular wetland may cease once a bog turtle has been found.

7. Survey time should be at least four (4) to six (6) person-hours per acre of designated survey area per visit. Additional survey time may be warranted in wetlands that are difficult to survey or that have high quality potential habitat. The designated survey area includes all areas of the wetland where soft, mucky-like soils are present, regardless of vegetative cover type. This includes emergent, scrub-shrub, and forested areas of the wetland.

If the cover is too thick to effectively survey using Phase 2 survey techniques alone (*e.g.*, dominated by multiflora rose, reed canary grass, *Phragmites*), contact the Service and State wildlife agency for guidance on Phase 3 survey techniques (trapping) to supplement the Phase 2 effort. In addition, Phase 3 (trapping) surveys may also be warranted if the site is in

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<sup>4</sup> Searching for bog turtles and recognizing their habitat is a skill that can take many months or years of field work to develop. This level of expertise is necessary when conducting searches in order to ensure that surveys are effective and turtles are not harmed during the survey (*e.g.*, by stepping on nests). Many individuals that have been recognized as qualified to conduct bog turtle surveys obtained their experience through graduate degree research or employment by a state wildlife agency. Others have spent many years actively surveying for bog turtles as amateur herpetologists or consultants.

the Lake Plain-Prairie Peninsula Recovery Unit. Check with the Service or State wildlife agency for further guidance.

8. Walk quietly through the wetland. Bog turtles will bask on herbaceous vegetation and bare ground, or be half-buried in shallow water or rivulets. Walking noisily through the wetland will often cause the turtles to submerge before they can be observed. Be sure to search areas where turtles may not be visible, including under mats of dead vegetation, shallow pools, underground springs, open mud areas, vole runways and under tussocks. Do not step on the tops of tussocks or hummocks because turtle nests, eggs and nesting microhabitat may be destroyed. Both random opportunistic searching and transect surveys should be used at each wetland.

The following survey sequence is recommended to optimize detection of bog turtles:

- Semi-rapid walk through the designated survey area using visual encounter techniques.
  - If no bog turtles are found during visual survey, while walking through site identify highest quality habitat patches. Within these highest quality patches, begin looking under live and dead vegetation using muddling and probing techniques.
  - If still no bog turtles are found, the rest of the designated survey area should be surveyed using visual encounter surveys, muddling and probing techniques.
9. Photo-documentation of each bog turtle located will be required; a macro lens is highly recommended. The photos should be in color and of sufficient detail and clarity to identify the bog turtle to species and individual. Therefore, photographs of the carapace, plastron, and face/neck markings should be taken of each individual turtle. Do not harass the turtle in an attempt to get photos of the face/neck markings; if gently placed on the ground, most turtles will slowly extend their necks if not harassed. If shell notching is conducted, do the photo-documentation after the notching is done.
  10. The following information should be collected for each bog turtle: sex, carapace length-straight line and maximum length, carapace width, weight, and details about scars/injuries. Maximum plastron length information should also be collected to differentiate juveniles from adults as well as to obtain additional information on recruitment, growth, and demography.
  11. Each bog turtle should be marked (e.g., notched, PIT tagged) in a manner consistent with the requirements of the appropriate State agency and/or Service. Contact the appropriate State wildlife agency prior to conducting the survey to determine what type of marking system, if any, should be used.
  12. All bog turtles must be returned to the point of capture as soon as possible on the same day as capture. They should only be held long enough to identify, measure, weigh, and photograph them, during which time their exposure to high temperatures must be avoided. No bog turtles may be removed from the wetland without permission from the Service and appropriate State agency.



13. The Fish and Wildlife Service and appropriate State agency should be sent a copy of survey results for review and concurrence, including the following: dates of site visits; time spent per designated survey area per wetland per visit; names of surveyors; a site map including wetlands and delineations of designated survey areas; a table indicating the size of each wetland, the designated survey area within each wetland, and the survey effort per visit; a description of the wetlands within the project area (*e.g.*, acreage, vegetation, soils, hydrology); an explanation of which wetlands or portions of wetlands were or were not surveyed, and why; survey methodology; weather per visit at beginning and end of survey (air temperature, wind, and precipitation); presence or absence of bog turtles, including number of turtles found and date, and information and measurements specified in item 10 above; and other reptile and amphibian species found and date.

#### **ADDITIONAL SURVEYS / STUDIES**

Proper implementation of the Phase 2 survey protocol is usually adequate to determine species presence or probable absence, especially in small wetlands lacking invasive plant species.

Additional surveys, however, may be necessary to determine whether or not bog turtles are using a particular wetland, especially if the Phase 2 survey results are negative but the quality and quantity of habitat are good and in a watershed of known occurrence. In this case, additional surveys (Phase 2 and/or Phase 3 (trapping) surveys), possibly extending into the following field season, may be recommended by the Service or appropriate State agency.

If bog turtles are documented to occur at a site, additional surveys/studies may be necessary to characterize the population (*e.g.*, number, density, population structure, recruitment), identify nesting and hibernating areas, and/or identify and assess adverse impacts to the species and its habitat, particularly if project activities are proposed to occur in, or within 300 feet of, wetlands occupied by the species.

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**CONTACT AGENCIES - BY STATE**

(April 2006)

STATE	FISH AND WILDLIFE SERVICE	STATE AGENCY
Connecticut	U.S. Fish and Wildlife Service New England Field Office 22 Bridge Street, Unit #1 Concord, NH 03301	Department of Environmental Protection Env. & Geographic Information Center 79 Elm Street, Store Floor, Hartford, CT 06106 <i>(info about presence of bog turtles in or near a project area)</i>  Department of Environmental Protection Wildlife Division, Sixth Floor 79 Elm Street, Store Floor, Hartford, CT 06106 <i>(to get a Scientific Collectors Permit or determine what type of marking system to use)</i>
Delaware	U.S. Fish and Wildlife Service Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401	Nongame & Endangered Species Program Delaware Division of Fish and Wildlife 4876 Hay Point Landing Road Smyrna, DE 19977
Maryland	U.S. Fish and Wildlife Service Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401	Maryland Department of Natural Resources Wildlife & Heritage Division PO Box 68, Main Street Wye Mills, MD 21679
Massachusetts	U.S. Fish and Wildlife Service New England Field Office 22 Bridge Street, Unit #1 Concord, NH 03301	Division of Fisheries and Wildlife Dept. Fisheries, Wildlife and Env Law Enforcement Rt. 135 Westboro, MA 01581
New Jersey	U.S. Fish and Wildlife Service New Jersey Field Office 927 North Main Street, Bldg. D-1 Pleasantville, NJ 08232	New Jersey Division of Fish and Wildlife Endangered and Nongame Species Program 143 Van Syckels Road Hampton, NJ 08827
New York	U.S. Fish and Wildlife Service 3817 Luker Road Cortland, NY 13045	New York Natural Heritage Program 625 Broadway, 5th Floor Albany, NY 12233-4757 Phone: (518) 402-8935 <i>(info about presence of bog turtles in or near a project area)</i>  NYS Department of Environmental Conservation Division of Fish, Wildlife, and Marine Resources Special Licenses Unit 600 Broadway, 5th Floor Albany, NY 12233-4752 <i>(for endangered species permit applications)</i>
Pennsylvania	U.S. Fish and Wildlife Service Pennsylvania Field Office 315 South Allen Street, Suite 322 State College, PA 16801	Natural Diversity Section Pennsylvania Fish and Boat Commission 450 Robinson Lane Bellefonte, PA 16823

**BOG TURTLE COUNTIES OF OCCURRENCE OR LIKELY OCCURRENCE<sup>1</sup>**  
*(April 2006)*

STATE	COUNTY	
Connecticut	Fairfield	Litchfield
Delaware	New Castle	
Maryland	Baltimore	Cecil
	Carroll	Harford
Massachusetts	Berkshire	
New Jersey	Burlington	Ocean
	Gloucester	Salem
	Hunterdon	Somerset
	Middlesex	Sussex
	Monmouth	Union
	Morris	Warren
New York	Albany	Seneca
	Columbia	Sullivan
	Dutchess	Ulster
	Genesee	Wayne
	Orange	Westchester
	Oswego	
	Putnam	
Pennsylvania	Adams	Lancaster
	Berks	Lebanon
	Bucks	Lehigh
	Chester	Monroe
	Cumberland	Montgomery
	Delaware	Northampton
	Franklin	Schuylkill
		York

<sup>1</sup> This list is valid for one year from the date indicated. It may, however, be revised more frequently if new counties of occurrence are documented. Updates to this list are available from the Service upon request.



**pennsylvania**  
DEPARTMENT OF CONSERVATION  
AND NATURAL RESOURCES

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BUREAU OF FORESTRY

Date: June 27, 2012

PNDI Number: 21884

David M. Porter, E.I.T.  
Herbert E. MacCombie, Jr. P.E.  
1000 Palmers Mill Road  
Media, PA 19063  
Fax: 610-356-5032 (hard copy will not follow)

Re: Newtown Township Act 537 Sewage Facilities Plan  
County: Delaware Township: Newtown

Dear Mr. Porter,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number 21884 for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources of concern under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

PNDI records indicate the following species of concern are located in the vicinity of the project.

*Vernonia glauca*, Tawny Ironweed (Pennsylvania Endangered) – The habitat is dry fields, upland wooded slopes or clearings and it flowers in July through October.

*Poa autumnalis*, Autumn Bluegrass (Pennsylvania Endangered) – The habitat is moist woods and it flowers in late May through June.

*Rumex hastatulus*, Heart-winged Sorrell (Pennsylvania Tentatively Undetermined) – The habitat is meadows.

*Tipularia discolor*, Crane-fly Orchid (Pennsylvania Rare) – The habitat is deciduous forests and stream banks. It flowers in July through August.

As we discussed on June 26, 2012, the project is in the planning stage. The species of concern and their habitats are provided for your use during this stage of your project. When you have more detailed information of areas to be disturbed for your project, please contact this office for further coordination.

This response represents the most up-to-date review of the PNDI data files and is valid for one year only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. For PNDI project updates, please see the PNHP website at [www.naturalheritage.state.pa.us](http://www.naturalheritage.state.pa.us) for guidance. As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review. Should you have any questions or concerns, please don't hesitate to contact me at 717-772-0263 or c-shockey@pa.gov.

Sincerely,

Richard L. Shockey, Environmental Review Specialist  
Pennsylvania Natural Heritage Program  
DCNR Bureau of Forestry, Ecological Services Section

Rebecca H. Bowen, Section Chief  
Pennsylvania Natural Heritage Program  
DCNR Bureau of Forestry, Ecological Services Section

conserve

sustain

enjoy

---

P.O. Box 8552, Harrisburg, PA 17015-8552 717-787-3444 (fax) 717-772-0271



# Pennsylvania Fish & Boat Commission

Division of Environmental Services  
Natural Diversity Section  
450 Robinson Lane  
Bellefonte, PA 16823-9620  
(814) 359-5237 Fax: (814) 359-5175

July 5, 2012

IN REPLY REFER TO  
SIR# 38939

DAVID PORTER  
HERBERT E. MACCOMBIE  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species  
PNDI Search No. LARGE PROJECT REVIEW  
NEWTON TOWNSHIP ACT 537 PLAN UPDATE 2012  
NEWTOWN Township, DELAWARE County, Pennsylvania

Dear Mr. PORTER:

I have examined the map accompanying your recent correspondence which shows the location for the above referenced project. Based on records maintained in the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files, the state threatened eastern redbelly turtle (*Pseudemys rubriventris*) is known from the vicinity of the project site.

The eastern redbelly turtle is one of Pennsylvania's largest native aquatic turtles. This turtle species is known to inhabit relatively large, deep streams, rivers, ponds, lakes and marshes with permanent water and ample basking sites. Redbelly turtles are restricted to the southcentral and southeastern regions of the Commonwealth. The existence of this turtle species is threatened by habitat destruction, poor water quality, and competition with aggressive non-native turtle species that share its range and habitat (e.g., red-eared slider, *Trachemys scripta elegans*).

Redbelly turtles are known from near the project area. It is possible that they could also occur in any wetlands and water bodies on-site. **Therefore, if wetlands with open water areas, streams, or ponds or the area within 300ft of these water features are to be disturbed from the project activity, we will need to conduct a more thorough evaluation of the potential adverse impacts to the redbelly turtle. Items such as:** basic project plans, project narrative, general habitat descriptions, and color photographs keyed to a site map or diagram of the project area, wetlands identification and delineation, stream characterization (flow velocity, width, depth, substrate type, pools and riffles, identification of basking areas, logs, woody debris, presence of aquatic vegetation) would expedite our review process. Pending the review of information, a survey for targeting the presence of the species of concern may be warranted.

However, if wetlands or water bodies or the area within 300ft of these water features are not to be disturbed in any way by the proposed activity, and provided that best management practices are employed and strict erosion and sedimentation measures are maintained, I do not foresee any adverse impacts to eastern redbelly turtle or any other rare or protected species under Pennsylvania Fish and Boat Commission jurisdiction.

Our Mission:

[www.fishandboat.com](http://www.fishandboat.com)

*To protect, conserve and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities.*

Note that this office performed no field inspection of the project area. Consequently, comments in this letter are not meant to address other issues or concerns that might arise concerning matters under Pennsylvania Fish and Boat Commission jurisdiction or that of other authorities. This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system is continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this response, please contact Kathy Gipe at 814-359-5186 and refer to the SIR number at the top of this letter. Thank you for your cooperation and attention to this matter of endangered species conservation and habitat protection.

Sincerely,

A handwritten signature in dark ink, appearing to read "Christopher A. Urban". The signature is stylized with a large "C" and "U".

Christopher A. Urban, Chief  
Natural Diversity Section

CAU/KDG/kn



APPENDIX N

PHMC RESPONSE

610-356-9550  
FAX 610-356-5032

## Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS & SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

James W. MacCombie, P.E., P.L.S.  
Herbert E. MacCombie, III, Technician

REPLY TO:  
P.O. BOX 118  
BROOMALL, PA 19008-0118

July 18, 2012

Pennsylvania Historical and Museum Commission  
Bureau of Historic Preservation  
400 North Street, Second Floor  
Harrisburg, PA 17120-0093

RE: Cultural Resource Notice  
Newtown Township, Delaware County  
Act 537 Plan Update

To Whom it May Concern:

An Act 537 Update is being prepared at the request of the Board of Supervisors of Newtown Township (Township), Delaware County in order to address current and future sewage planning needs. The Plan Update addresses the planning requirements necessary in order to provide public sanitary sewer services, where appropriate, to meet the immediate needs within the newly established Central Delaware County Authority (CDCA) service area, while at the same time addressing future needs, flow capacity, and existing community sewage systems, as well as the continuing use of Individual On-lot Sewage Disposal Systems.

Section VI.A.(11) of the General Plan Content Checklist identifies the requirement of PHMC Coordination. Please find attached for your reference a copy of the following documents:

1. Completed Cultural Resource Notice
2. Project Narrative
3. USGS Site Location Map
4. Historic Resources Map

We request a review for potential impact on historical and archaeological resources for this Act 537 Plan Update. No federally based funding will be used for this project. Funding is anticipated to be in the form of a bond in the name of the Newtown Township Municipal Authority (NTMA).

PHMC Coordination  
Newtown Township Act 537 Plan Update  
7/18/12

Please review this documentation and respond with any comments or concerns at your earliest convenience. Thank you for your cooperation in this matter.

Very Truly Yours,

A handwritten signature in dark ink, appearing to read "David M. Porter", written over a horizontal line.

David M. Porter, E.I.T.

copy: File

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<p><input checked="" type="checkbox"/> Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</p> <p><input checked="" type="checkbox"/> Print your name and address on the reverse so that we can return the card to you.</p> <p><input checked="" type="checkbox"/> Attach this card to the back of the mailpiece, or on the front if space permits.</p> <p>1. Article Addressed to:</p> <p style="margin-left: 40px;"> <i>Pennsylvania Historical and Museum Commission Bureau of Historic Preservation 400 North Street, 2nd Floor Harrisburg, PA 17120-0093</i> </p>	<p>A. Signature  <input checked="" type="checkbox"/> Agent  <input checked="" type="checkbox"/> Addressee </p> <p>B. Received by (Printed Name)</p> <p>C. Date of Delivery  <i>Jul 26 2012</i> </p> <p><input checked="" type="checkbox"/> Is delivery address different from item 1? <input type="checkbox"/> Yes  <input checked="" type="checkbox"/> If YES, enter delivery address below: <input type="checkbox"/> No </p> <p>3. Service Type  <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail  <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise  <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D. </p> <p>4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes</p>
<p>2. Article Number  <small>(Transfer from service label)</small> </p>	<p><i>7010 1670 0000 0267 5620</i></p>
<p>PS Form 3811, February 2004      *Domestic Return Receipt      102595-02-M-1540</p>	

<b>U.S. Postal Service</b> <b>CERTIFIED MAIL RECEIPT</b> <small>(Domestic Mail Only; No Insurance Coverage Provided)</small>								
<small>For delivery information visit our website at <a href="http://www.usps.com">www.usps.com</a></small>								
<b>OFFICIAL USE</b>								
<div style="display: flex; justify-content: space-between;"> <div>Postage</div> <div>\$ 1.50</div> <div>0008</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>Certified Fee</div> <div>\$2.95</div> <div>01</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>Return Receipt Fee <small>(Endorsement Required)</small></div> <div>\$2.35</div> <div></div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>Restricted Delivery Fee <small>(Endorsement Required)</small></div> <div>\$0.00</div> <div></div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>Total Postage &amp; Fees</div> <div>\$ 6.80</div> <div>07/24/2012</div> </div>	<div style="text-align: center; margin-bottom: 20px;"> <small>Postmark Here</small> </div>							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; padding: 2px;"><small>Sent To</small></td> <td style="padding: 2px;"><i>Pennsylvania Historical &amp; Museum Commission</i></td> </tr> <tr> <td style="padding: 2px;"><small>Street, Apt. No., or PO Box No.</small></td> <td style="padding: 2px;"><i>Bureau of Historic Preservation 400 North Street - 2nd Floor</i></td> </tr> <tr> <td style="padding: 2px;"><small>City, State, ZIP+4</small></td> <td style="padding: 2px;"><i>Harrisburg, PA 17120-0093</i></td> </tr> </table>			<small>Sent To</small>	<i>Pennsylvania Historical &amp; Museum Commission</i>	<small>Street, Apt. No., or PO Box No.</small>	<i>Bureau of Historic Preservation 400 North Street - 2nd Floor</i>	<small>City, State, ZIP+4</small>	<i>Harrisburg, PA 17120-0093</i>
<small>Sent To</small>	<i>Pennsylvania Historical &amp; Museum Commission</i>							
<small>Street, Apt. No., or PO Box No.</small>	<i>Bureau of Historic Preservation 400 North Street - 2nd Floor</i>							
<small>City, State, ZIP+4</small>	<i>Harrisburg, PA 17120-0093</i>							
<small>PS Form 3800, August 2005      See Reverse for Instructions</small>								

7010 1670 0000 0267 5620

## SUPPLEMENTAL PROJECT NARRATIVE FOR CULTURAL RESOURCES NOTICE

### DESCRIPTION OF OVERALL PROJECT

An Act 537 Update is being prepared at the request of the Board of Supervisors of Newtown Township (Township) in order to address current and future planning needs, as well as concerns raised by the Pennsylvania Department of Environmental Protection (PA DEP) and concerns raised by the general public. The intent of this Act 537 Plan Update to supplement the service area previously identified in the Newtown Township 2002 Act 537 Plan and be in substantial compliance with Act 537 entitled *The Pennsylvania Sewage Facilities Act, PA Code Title 25, Chapter 71*, in order to appropriately plan for the future needs of the Township, as well as their residents. Refer to attached USGS Location Map.

This Plan addresses the planning requirements necessary in order to provide public sanitary sewer services, where appropriate, to meet the immediate needs within the newly established Central Delaware County Authority (CDCA) service area, while at the same time addressing future needs, flow capacity, and existing community sewage systems, as well as the continuing use of Individual On-lot Sewage Disposal Systems under the guise of a newly established Township-wide "On-lot and Community Sewage System" operation and maintenance ordinance.

### WORK TO BE PERFORMED

This Plan Update identifies and evaluates various aspects of alternatives in a prudent manner by which public sewer service currently exists as well as the merits of providing future service to residential, commercial, and institutional development within the overall planning area considered. Since the collection and conveyance of sewage is paramount, locations of these collection and conveyance systems from a practical usage basis, as well as a cost effectiveness standpoint, are extremely important in order to transport projected wastewater flows. Other available methods of treatment, including that of community wastewater treatment facilities and on lot sewage disposal systems, were also considered and evaluated.

In order to meet current, as well as future, wastewater disposal needs regarding future projections within the planning area, the Township is in agreement that the Central Delaware County Authority (CDCA) as well as limited reallocation of flow from a portion of the BPG site to Radnor-Haverford-Marple (RHM) conveyance and Delaware County Regional Water Quality Authority (DELCORA) treatment alternative is the most responsible and cost-effective to the residents and the most prudent, from a treatment standpoint, for environmental sensitivity. A network of low pressure sewers, gravity mains, pump stations, and force mains will need to be in place in order to use this alternative. Individual development properties to be connected to the system will be the responsibility of the perspective owners of the proposed developments.

## PHYSICAL LOCATION

Newtown Township is located in Delaware County, north of the Borough of Media. The Township is bounded to the west by Willistown Township, Chester County, to the northwest by Easttown Township, Chester County, to the northeast by Radnor Township, to the southeast by Marple Township, and to the southwest by Upper Providence Township and Edgmont Township.

## AREA TO BE IMPACTED

The area to be impacted will be evaluated on a case-by-case basis as specific projects commence. Each specific project will need to address potential impacts specifically related to that particular project, such as PHMC coordination for historic and archaeological resources, PNDI searches, wetlands delineation, general permits, and/or erosion and sediment pollution control and NPDES permitting, etc., as applicable.





## CULTURAL RESOURCE NOTICE

DEP USE ONLY
Date Received

Read the instructions before completing this form.

### SECTION A. APPLICANT IDENTIFIER

Applicant Name Newtown Township  
Street Address 209 Bishop Hollow Road  
City Newtown Square State PA Zip 19073  
Telephone Number 610-356-0200  
Project Title Newtown Township Act 537 Plan Update 2012

### SECTION B. LOCATION OF PROJECT

Municipality Newtown Township County Name Delaware County DEP County Code 23

### SECTION C. PERMITS OR APPROVALS

Name of Specific DEP Permit or Approval Requested:

Anticipated federal permits:

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Mining                  | <input type="checkbox"/> 404 Water Quality Permit                     |
| <input type="checkbox"/> Army Corps of Engineers         | <input type="checkbox"/> Federal Energy Regulatory Commission         |
| <input type="checkbox"/> 401 Water Quality Certification | <input checked="" type="checkbox"/> Other: <u>Act 537 Plan Update</u> |

### SECTION D. GOVERNMENT FUNDING SOURCES

☐ State: (Name) \_\_\_\_\_ ☒ Local: (Name) Municipal Authority Bond  
☐ Federal: (Name) \_\_\_\_\_ ☐ Other: (Name) \_\_\_\_\_

### SECTION E. RESPONSIBLE DEP REGIONAL, CENTRAL, DISTRICT MINING or OIL & GAS MGMT OFFICE

DEP Regional Office Responsible for Review of Permit Application ☐ Central Office (Harrisburg)  
☒ Southeast Regional Office (Norristown) ☐ Northeast Regional Office (Wilkes-Barre)  
☐ Southcentral Regional Office (Harrisburg) ☐ Northcentral Regional Office (Williamsport)  
☐ Southwest Regional Office (Pittsburgh) ☐ Northwest Regional Office (Meadville)  
☐ District Mining Office: \_\_\_\_\_ ☐ Oil & Gas Office: \_\_\_\_\_

### SECTION F. RESPONSIBLE COUNTY CONSERVATION DISTRICT, if applicable.

County Conservation District Delaware County Conservation District Telephone Number, if known (610) 892-9484

### SECTION G. CONSULTANT

Consultant, if applicable Herbert E. MacCombie, Jr., P.E., Consulting Engineers & Surveyors, Inc.  
Street Address P.O. Box 118  
City Broomall State PA Zip 19008  
Telephone Number 610-356-9550

**SECTION H. PROJECT BOUNDARIES AND DESCRIPTION**

**REQUIRED**

Indicate the total acres in the property under review. Of this acreage, indicate the total acres of earth disturbance for the proposed activity.

Attach a 7.5' U.S.G.S. Map indicating the defined boundary of the proposed activity:

Attach photographs of any building over 50 years old. Indicate what is to be done to all buildings in the project area.

Attach a narrative description of the proposed activity.

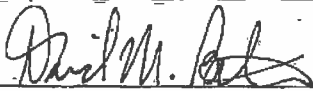
Attach the return receipt of delivery of this notice to the Pennsylvania Historical and Museum Commission.

**REQUESTED**

Attach photographs of any building over 40 years old.

Attach site map, if available.

**SECTION I. SIGNATURE BLOCK**



Applicant's Signature

7/23/12

Date of Submission of Notice to PHMC

NOTE: This site is under re-development



## Complete Inventory

## HISTORIC RESOURCES MAP I.D. #

Search:

	STREET #	STREET	NAME	DATE
	218	2nd Avenue	The Courtney House	1847
	123	Ashley Road	Farm Workers' House	1870
	42	Ashley Road	Double Farm Workers' House (North)	c. 1900
	40	Ashley Road	Double Farm Workers' House (South)	c. 1900
8	395	Bishop Hollow Road	The Daniel Williamson House	1692
18	395	Bishop Hollow Road	Garrett Williamson Lodge	1916
20	202	Bishop Hollow Road	Fiero House	1897
21	395	Bishop Hollow Road	Gate House - Garrett Williamson	1700s
22		Bishop Hollow Road	Spring House - Garrett Williamson	1700s
23	395	Bishop Hollow Road	Stone Carriage House - Garrett Williamson	1801
24	395	Bishop Hollow Road	Stone Barn - Garrett Williamson	1794
	105	Bishop Hollow Road	Llewellyn House	1870
	107	Bishop Hollow Road	Thompson House	1892
	101	Bishop Hollow Road	Robinson House	c. 1895
33	411	Bishop Hollow Road	Grim-Foster House	1857
46	541	Bishop Hollow Road	Gothic Revival Springhouse	c. 1850
2		Boot and Goshen Roads	Barn Covered Bridge	1860
5	6	Boot Road	The Jonas Preston Mansion	1763, 1805
6	43	Boot Road	High Larches	1734
25	88	Boot Road	Piersol/Valde	c. 1870-5
	14	Bryn Mawr Avenue	Ashley Springhouse	c. 1800
	3523	Caley Road	The Samuel Caley House	1768
	3535	Caley Road	PA Hospital Manager's House	c. 1892
7	405	College Avenue	The John Hunter House	1722

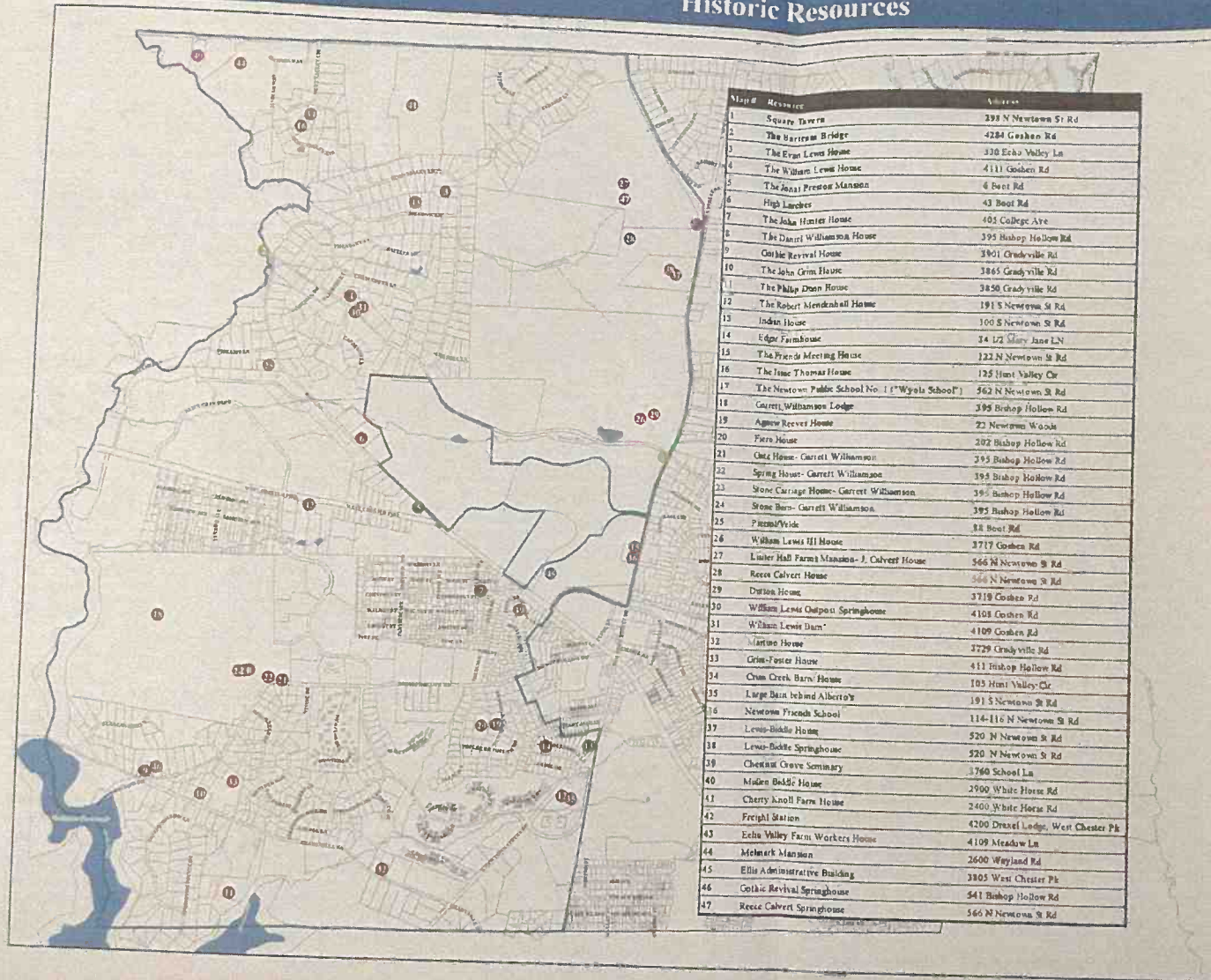
	STREET #	STREET	NAME	DATE
42		Drexel Lodge, West Chester Pike	Freight Station	1895
26		DuPont/Rouse Property	William Lewis III House	1766, 1854
29		DuPont/Rouse Property	Dutton House	1832
	307	Earles Lane	The Lewis Lewis House	1700
	303	Earles Lane	Allen Tenant Springhouse	c.1710
3	330	Echo Valley Lane	The Evan Lewis House	1719
	11	Fox Chase Circle	Henry Pratt House (Tannery Hill)	c.1775
1		Goshen and N. Newtown Street Roads	Square Tavern	1742
4	4111	Goshen Road	The William Lewis House	c.1708
	3200	Goshen Road	The Jacob Horton House	1801
	3523	Goshen Road	The Heysham House	1785
30		Goshen Road	William Lewis Outpost Springhouse	c.1710
31	4109	Goshen Road	William Lewis Barn	c.1710
	3515	Goshen Road	Italianate Brick House	c.1892
	3501	Goshen Road	Smedley Butler House	
	3405	Goshen Road	Alfred Yarnell House	c.1870
	3406	Goshen Road	Gate House	1870
9	3901	Gradyville Road	Gothic Revival House	1850, 1865?
10	3865	Gradyville Road	The John Grim House	1735
11	3850	Gradyville Road	The Philip Dunn House	1743
32	3729	Gradyville Road	Martino House	1848
	38	Harrison Drive	The Iddings House	c.1700
	35	Harrison Drive	Frank Furness Carriage House and Stables	1890
	5	Hidden Springs Circle	The Richard Fawkes House	1715
	3400	Horton Road	The John Horton House	1693
	3402	Horton Road	John Horton II Barn House	1850
16	125	Hunt Valley Circle	The Isaac Thomas House	1756
34	105	Hunt Valley Circle	Crum Creek Barn House	c.1756
	464	Malin Road	Strawbridge Mansion	c.1895
14	341/2	Mary Jane Lane	Edgar Farmhouse	1863
43	4109	Meadow Lane	Echo Valley Farm Workers House	1850
	6	N. Newtown Street Road	The Horace Lewis House	1850
15	122	N. Newtown Street Road	The Friends Meeting House	1711, 1791

	STREET #	STREET	NAME	DATE
	209	N. Newtown Street Road	The Pratt Lewis Springhouse	1745
	311	N. Newtown Street Road	The Thomas Thomas House	1720
	313	N. Newtown Street Road	7th Day Baptist Cemetery	1717
	545	N. Newtown Street Road	The Joseph Lewis House	1750
	561	N. Newtown Street Road	The Wheelwright Shop	1806
	571	N. Newtown Street Road	The James Price House	c.1700 to 1703
17		N. Newtown Street Road	The Newtown Public School No. 1 ("Wyola School")	1870
27	566	N. Newtown Street Road	Lisiter Hall Farms Mansion- J. Calvert House	1866
28	566	N. Newtown Street Road	Reece Calvert House	c.1700
	121	N. Newtown Street Road	Lewis/ Rottenbury House	1707
36	114-116	N. Newtown Street Road	Newtown Friends School	1885
	401	N. Newtown Street Road	William Neal House	c.1845
	405	N. Newtown Street Road	Charles Neal House	c.1876
37	520	N. Newtown Street Road	Lewis-Biddle House	c.1819
38	520	N. Newtown Street Road	Lewis-Biddle Springhouse	
	611	N. Newtown Street Road	Leedom House (Mineral Springs Farm)	c.1848
47	566	N. Newtown Street Road	Reece Calvert Springhouse	c. 1715
	515	N. Newtown Street Road	Birchknoll Estate	1947
19	22	Newtown Woods	Agnew Reeves House	1892
	2	Paper Mill Road	Paper Mill House	1770, 1845
	28	Paper Mill Road	Dr. Rose/ Millworkers House	c.1835
		Paper Mill Road	Moore Mill Ruins	c.1835
		Paper Mill Road	Settlers Cabin/ Miller's House	c.1715
	149	Ridgefield Road	The Tenant House	c.1788
12	191	S. Newtown Street Road	The Robert Mendenhall House	1798
13	100	S. Newtown Street Road	Indian House	1804
35	191	S. Newtown Street Road	Large Barn behind Alberto's	c.1800
	121	S. Newtown Street Road	Beatty House	1848
	101-103	S. Newtown Street Road	Red Brick School House	1896
	105	S. Newtown Street Road	Benner House (Apt. Building)	
	25	S. Valley Forge Road	The Thomas Moore House	1783
	763	S. Valley Forge Road	Old St. Davids Church	1715
	763	S. Valley Forge Road	Grave of Anthony Wayne	1809

	STREET #	STREET	NAME	DATE
	3421	Saw Mill Road	Thomas/Deweese/Olgetree House	c.1800, 1850
	3319	Saw Mill Road	David Pratt House	c.1700
	3316	Saw Mill Road	Sawmill Road House	c.1700s
39	3760	School Lane	Chestnut Grove Seminary	c.1869
	3401	St. David's Road	The Roberts Harrison House	1700
	3600	St. David's Road	Aronimink Golf Club Main House	1928
	3420	St. David's Road	Dunminning Mansion	1897
	3210	St. David's Road	Dunminning Carriage House	1887
	103	Tanglewood Lane	The Nathaniel Newlin House	1760
	661	Valerie Drive	Hibbard/ McNeal House	1828
40	2900s	Wayland Road	Mullen-Biddle House	c.1800
44	2600s	Wayland Road	Melmark Mansion	1916
	3500	West Chester Pike	Hood Octagonal Schoolhouse	1842
	3500	West Chester Pike	The Hood Fawkes House	1770
	3201	West Chester Pike	Federal Stone House	c.1800
	3405	West Chester Pike	The Fox Chase Inn	1724
	3207	West Chester Pike	Charlotte's Restaurant (Barrell Inn)	c.1815
	3500	West Chester Pike	Dunwoody Barn	
45	3805	West Chester Pike	Ellis-Administrative Building	1932
	3805	West Chester Pike	Betsy Ross Cottage (Ellis College)	1922
	3805	West Chester Pike	McCoy House (Ellis College)	1922
	3805	West Chester Pike	Hedge House (Ellis College)	1922
	3805	West Chester Pike	Clara Barton Cottage (Ellis College)	1922
	3805	West Chester Pike	Elizabeth Fry Cottage (Ellis College)	1932
	3805	West Chester Pike	Linden House (Ellis College)	1932
41	2400s	White Horse Road	Cherry Knoll Farm House	c.1820
	3520	Woodcrest Avenue	Pressey House	c.1880
	3533	Woodcrest Avenue	Calf Barn	c.1890

Showing 1 to 118 of 118 entries

# Historic Resources



Map #	Resource	Address
1	Square Tower	299 N Newtown St Rd
2	The Harrison Bridge	4284 Goshen Rd
3	The Evan Lewis Home	330 Echo Valley Ln
4	The William Lewis Home	4111 Goshen Rd
5	The Josai Preston Mansion	6 Boot Rd
6	High Larches	43 Boot Rd
7	The John Hunter House	405 College Ave
8	The Daniel Williamson House	395 Bishop Hollow Rd
9	Catholic Revival House	3901 Gradyville Rd
10	The John Grim House	3865 Gradyville Rd
11	The Philip Dixon House	3850 Gradyville Rd
12	The Robert Mendelhall House	191 S Newtown St Rd
13	Indian House	100 S Newtown St Rd
14	Edgar Farmhouse	34 1/2 Story Jane Ln
15	The Francis Meeting House	122 N Newtown St Rd
16	The Isaac Thomas House	125 Hunt Valley Cir
17	The Newtown Public School No. 1 ("Wyele School")	563 N Newtown St Rd
18	Garrett Williamson Lodge	395 Bishop Hollow Rd
19	Agnes Reeve House	22 Newtown Woods
20	Farm House	202 Bishop Hollow Rd
21	Oniz House - Garrett Williamson	395 Bishop Hollow Rd
22	Spring House - Garrett Williamson	395 Bishop Hollow Rd
23	Stone Carriage House - Garrett Williamson	395 Bishop Hollow Rd
24	Stone Barn - Garrett Williamson	395 Bishop Hollow Rd
25	Pinecroft	88 Boot Rd
26	William Lewis III House	3717 Goshen Rd
27	Linier Hall Farm Mansion - J. Calvert House	566 N Newtown St Rd
28	Reece Calvert House	566 N Newtown St Rd
29	Dutton House	3719 Goshen Rd
30	William Lewis Outpost Springhouse	4108 Goshen Rd
31	William Lewis Dam	4109 Goshen Rd
32	Martine House	3729 Gradyville Rd
33	Grim-Foster House	411 Bishop Hollow Rd
34	Crum Creek Barn House	103 Hunt Valley Cir
35	Large Barn behind Alberto's	191 S Newtown St Rd
36	Newtown Friends School	114-116 N Newtown St Rd
37	Lewis-Biddle House	520 N Newtown St Rd
38	Lewis-Biddle Springhouse	520 N Newtown St Rd
39	Chestnut Grove Seminary	3760 School Ln
40	Mudra Baldie House	2900 White Horse Rd
41	Cherry Knoll Farm House	2400 White Horse Rd
42	Freight Station	4200 Draxel Lodge, West Chester Pk
43	Echo Valley Farm Workers House	4109 Meadows Ln
44	Melmark Mansion	2600 Weyland Rd
45	Ellis Administrative Building	3805 West Chester Pk
46	Catholic Revival Springhouse	541 Bishop Hollow Rd
47	Reece Calvert Springhouse	566 N Newtown St Rd

- Act 537 Plan Study Area
- National Register Resource
- Eligible Resource
- Significant Historic Resource

Data:  
 1. Historic Sites - Newtown Historic Society  
 2. Parcels - Delaware County Board of Assessment  
 3. All Other Data - Delaware County Planning Department

**Important**  
 This map is for analytical purposes only. It is not intended for navigation or exact location of infrastructure. The reliability of this map depends on the accuracy of its underlying data sources which have not been verified. Unauthorized duplication or distribution is prohibited.

Prepared by  
 Delaware County  
 Planning Department  
 2012





Commonwealth of Pennsylvania  
Pennsylvania Historical and Museum Commission  
Bureau for Historic Preservation  
Commonwealth Keystone Building, 2<sup>nd</sup> Floor  
400 North Street  
Harrisburg, PA 17120-0093  
[www.phmc.state.pa.us](http://www.phmc.state.pa.us)

August 22, 2012

David M. Porter, E.I.T.  
Herbert E. MacCombie, Jr., P.E.  
Consulting Engineers & Surveyors, Inc.  
1000 Palmers Mill Road  
Media, PA 19063

TO EXPEDITE REVIEW  
BHP REFERENCE NUMBER

Re: File No. ER 2002-1421-045-C  
DEP Act 537 Plan Update: Central  
Delaware County Authority Service Area  
Future Sewage Planning Needs, Newtown  
Twp., Delaware Co.

Dear Mr. Porter:

Thank you for submitting information concerning the above referenced project. The Bureau for Historic Preservation (the State Historic Preservation Office) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 *et seq.* (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

Thank you for submitting information concerning the above referenced project. This project is a planning study; therefore this office cannot assess the effects on specific historic and archaeological resources until more detailed plans are developed. During the project planning stages, you should make provisions to identify historic and archaeological resources listed in or eligible for the National Register of Historic Places, as well as to assess the effects of the project on these resources. To assist you in your identification of known historic and archaeological resources, the Bureau for Historic Preservation maintains records of National Register listed and eligible resources as well as archaeological surveys (P.A.S.S. files) and historic resource survey files. Information on many of these resources is available on our web based Cultural Resources Geographic Information System (CRGIS) <http://crgis.state.pa.us>.

Page 2  
August 22, 2012  
David M. Porter, E.I.T.

If you need further information regarding archaeological resources, please contact Mark Shaffer at (717) 783-9900. If you need further information concerning historic structures, please contact Ann Safley at (717) 787-9121.

Sincerely,



Douglas C. McLearn, Chief  
Division of Archaeology &  
Protection

cc: DEP, Southeast Regional Office

DCM/tmw

**APPENDIX O**

**DETAILED COST OPINIONS**



## **NEWTOWN TOWNSHIP**

### **ACT 537 PLANNING UPDATE (Sewer Planning)**

**August 13, 2012**

#### **Background:**

- Act 537 Planning –environmental protection laws require that a Township undertake a very technical planning process to demonstrate how the Township intends to ensure adequate sewer facilities, either private or public, to protect the environment
- Current Plan – Approved in 2002, divides the Township to general sewer service areas, the Crum Creek Basin area (serviced by Central Delaware County Authority “CDCA”) and the Darby Creek Basin area (Radnor Haverford Marple “RHM”)
- Due to septic failures in certain neighborhoods and large anticipated developments (e.g. BPG, Ashford, Marville) in the CDCA service area, the Township purchased 961,975 gallons of capacity from CDCA to provide for sewer needs and seeks to update the existing plan

#### **Current Status:**

- In February 2012, Township received “Plan of Study” approval from DEP, allowing Township to move forward with developing new plan
- Sewer Engineer has sent out surveys to all neighborhoods in the CDCA service area that not are currently serviced, and which have not been previously surveyed, to confirm information regarding sewer needs with approximately 30% response
- Currently developing cost estimates to build infrastructure, to allow completion of comparing alternatives (i.e. low pressure versus gravity, routing of sewer mains, locations of pump stations)
- Goal is to have a completed plan for public review by late August or early September. Public will have the opportunity to comment on the proposed plan, but public input is welcomed now
- Goal is DEP submission by mid October and DEP approval by the end of 2012
- If approval is obtained by 2012, and not appealed, the goal is for system construction to begin within 12 months of approval date (including system design, bidding and contract negotiation)

#### **Draft Working Details:**

- The planning process is not yet complete. Alternatives are still being considered and compared.
- Draft capacity allocation analysis.
- Public sewer will be provided in Echo Valley
  - most likely low pressure system
  - resident must obtain, install and maintain their own grinder pumps and laterals
  - like all new users, must pay fee for fair share of system construction and rehabilitation “tap in fee” (funds bond repayment)
- Public sewer will be provided in Florida Park
  - most likely gravity system (no grinder pumps-only laterals, maybe some exceptions)
  - like all new users, must pay fee for fair share of system construction and rehabilitation “tap in fee” (funds bond repayment)

- Recommended ordinance amendment
  - when sewer is available, “opting-out” of the system will not be permitted
  - homeowner that has a functioning system and passes annual inspections, may be able to defer connection (postpone costs of connecting and grinder pump purchase and installation, with agreement to pay tap-in fee immediately)
  - deferment will end at sale of property or 15 years, whichever is sooner

**Cost Estimates:**

- Overall system cost is dependent upon certain decisions which will be made in the next 2 to 4 weeks
  - location and route of main sewer lines and pump stations
  - costs will not be certain until after the project is actually bid
- Homeowners serviced by low pressure systems
  - grinder pump - \$5,500 - \$6,000
  - laterals – purchase and installation is estimated at \$4,900 to \$6,700 (excluding cost of pump), financing this portion is the homeowner’s responsibility, may be more or less based on distance from house to sewer line
  - tap in fee – estimated between \$4,500 and \$6,000 depending on final cost of overall system and bond requirements, same for all new users
  - annual sewer rents upon connection
- Homeowners serviced by gravity systems
  - lateral – purchase and installation is estimated at \$2,000 to \$3,000, financing this portion is the homeowner’s responsibility, may be more less based on distance from house to sewer line
  - tap in fee – estimated between \$4,500 and \$6,000 depending on final cost of overall system and bond requirements, same for all new users
  - annual sewer rents upon connection

**Tap in Fees in local areas:**

- Current tap in fees of nearby Townships
  - some nearby Townships (Easttown and Willistown), have districts with tap in fees as high as \$14,830 to \$19,470
  - some nearby Townships with older systems (Marple, Haverford, Radnor and Springfield) have tap in fees ranging from \$850 to \$1500
  - Edgmont, similar to Newtown, is currently in the process of identifying the cost to construct its system, but it is currently believed that Edgmont’s tap in fee will be similar to that being considered by Newtown (\$4,500.00 to \$6,000.00)

***Any comments or questions should be provided to the township in writing for consideration in finalizing township planning.***

***Thank you for your participation!***

NEWTOWN TOWNSHIP MUNICIPAL AUTHORITY

ALTERNATIVE 1

CDCA SANITARY SEWER SERVICE AREA  
CONSULTING ENGINEER'S PROJECTED BUDGET

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>INCOME:</b>										
Bond Issue (Loan)	\$24,000,000	-	-	-	-	-	-	-	-	-
Ashford Contribution	\$2,777,500	-	-	-	-	-	-	-	-	-
Usage Rate (1,000 Gal.)	-	\$7.00	\$7.00	\$7.00	\$7.00	\$9.00	\$9.00	\$9.00	\$9.00	\$9.00
New EDU's	-	255	349	270	274	225	210	195	180	165
Connected EDU's	-	255	604	874	1148	1373	1583	1778	1958	2123
Annual Cost per EDU	-	\$574	\$574	\$574	\$574	\$738	\$738	\$738	\$738	\$738
Gallons Treated (GPD)	-	57375	135900	196650	258300	308925	356175	400050	440550	477675
Usage Fee	-	\$146,370	\$346,696	\$501,676	\$658,952	\$1,013,274	\$1,168,254	\$1,312,164	\$1,445,004	\$1,566,774
Tapping Fees	-	\$552,000	\$1,914,000	\$1,440,000	\$1,464,000	\$1,170,000	\$1,080,000	\$990,000	\$900,000	\$810,000
Interest	-	\$29,888 (3)	\$8,998	\$343	\$396	\$705	\$1,048	\$1,433	\$1,843	\$2,250
Interest on DSRF	-	-	-	-	-	-	-	-	-	-
Reserve Prior Year	-	\$14,943,962	\$4,498,868	-	-	-	-	-	-	-
<b>TOTAL INCOME</b>	\$26,777,500	\$15,672,220	\$6,768,562	\$1,942,019	\$2,123,348	\$2,183,979	\$2,249,302	\$2,303,597	\$2,346,847	\$2,379,024
<b>EXPENSES:</b>										
Construction Costs	\$9,945,500	\$9,945,500	\$4,972,757	-	-	-	-	-	-	-
Administration	\$25,000	\$50,000	\$51,250	\$52,530	\$53,850	\$55,190	\$56,570	\$57,985	\$59,435	\$60,920
Maintenance	-	\$75,000	\$95,000	\$97,400	\$99,830	\$102,320	\$104,880	\$107,500	\$110,190	\$112,950
Miscellaneous	\$800,886 (1)	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800
	-	-	-	-	-	-	-	-	-	-
CDCA Sewer Rent	-	\$37,402	\$90,824	\$134,654	\$181,299	\$222,245	\$262,738	\$302,404	\$341,380	\$379,388
Debt Service Payment	\$786,928	\$786,928	\$1,106,928	\$1,353,248	\$1,355,268	\$1,355,698	\$1,354,488	\$1,351,888	\$1,352,858	\$1,352,545
CDCA Debt Service Expansion	\$235,325	\$233,749	\$235,361	\$232,890	\$234,659	\$232,467	\$233,470	\$234,186	\$234,555	\$234,607
CDCA Debt Service Rehab	\$39,899	\$39,973	\$39,973	\$39,895	\$39,291	\$39,888	\$39,780	\$39,970	\$39,759	\$39,848
Debt Service Reserve	-	-	-	-	-	-	-	-	-	-
<b>TOTAL EXPENSES</b>	\$11,833,538	\$11,173,352	\$6,596,893	\$1,915,417	\$1,968,997	\$2,012,608	\$2,056,726	\$2,098,733	\$2,142,977	\$2,185,058
Annual Surplus	\$14,943,962	\$4,498,868	\$171,669	\$26,602	\$154,351	\$171,371	\$192,576	\$204,864	\$203,870	\$193,966
Cumulative Surplus	\$14,943,962	\$4,498,868	\$171,669	\$198,271	\$352,622	\$523,993	\$716,569	\$921,433	\$1,125,303	\$1,319,269
Annual Debt Service Coverage	Capitalized	Capitalized	1.16	1.02	1.11	1.13	1.14	1.15	1.15	1.14
Cumulative Debt Service Coverage	-	-	-	1.15	1.26	1.39	1.53	1.68	1.83	1.97

(1) Includes Cost of Issuance as well as CDCA Cash Reserve Deposit and Debt Service from 2011 and 2012

(2) Anticipated Sewer Usage Rate of \$7.00 per 1000 gallons to cover Debt Service and Treatment and conveyance cost

(3) Assumes 0.20% Interest on cumulative surplus

(4) Represents annual sewer rent of \$1.70/1000gal from CDCA based upon 2012 Budget (assumes rent increases at 2.5% annually for future increases)

# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

## CONSTRUCTION COST ESTIMATE

### Newtown Hunt Pump Station

### Camelot P.S. Service Area - OPT 1 (Alternate PS Location)

Act 537 Plan Update

Newtown Township, Delaware County, PA

Item	Description	Unit	Quantity	Unit Cost	Total Cost
<b>A</b>	<b>SANITARY SEWER</b>				
1	8" SDR-35 - PVC				
	Hunt Valley Lane	L.F.	650	\$ 110.00	\$ 71,500.00
	Hunt Valley Circle	L.F.	3,350	\$ 110.00	\$ 368,500.00
	Hunt Valley Circle to PS	L.F.	1,000	\$ 110.00	\$ 110,000.00
	Melmark Access to PS	L.F.	800	\$ 110.00	\$ 88,000.00
	<b>SUBTOTAL</b>	L.F.	<b>5,800</b>	<b>\$ 110.00</b>	<b>\$ 638,000.00</b>
2	6" C-900 - Forcemain				
	Hunt Valley Circle PS to Hunt Valley Circle	L.F.	800	\$ 85.00	\$ 68,000.00
	Hunt Valley Circle	L.F.	650	\$ 85.00	\$ 55,250.00
	Hunt Valley Circle Connection to Echo Valley	L.F.	1,200	\$ 85.00	\$ 102,000.00
	<b>SUBTOTAL</b>	L.F.	<b>2,650</b>	<b>\$ 85.00</b>	<b>\$ 225,250.00</b>
3	Sanitary Manhole (w/Frame & Cover)				
	Hunt Valley Lane	EA.	3	\$ 4,000.00	\$ 12,000.00
	Hunt Valley Circle	EA.	18	\$ 4,000.00	\$ 72,000.00
	Hunt Valley Circle to PS	EA.	3	\$ 4,000.00	\$ 12,000.00
	Melmark Access to PS	EA.	4	\$ 4,000.00	\$ 16,000.00
	<b>SUBTOTAL</b>	EA.	<b>28</b>	<b>\$ 4,000.00</b>	<b>\$ 112,000.00</b>
4	Forcemain Air Release Valve Manhole				
	Hunt Valley Circle PS to Hunt Valley Circle	EA.	1	\$ 12,500.00	\$ 12,500.00
	Hunt Valley Circle	EA.	1	\$ 12,500.00	\$ 12,500.00
	Hunt Valley Circle Connection to Echo Valley	EA.	1	\$ 12,500.00	\$ 12,500.00
	<b>SUBTOTAL</b>	EA.	<b>3</b>	<b>\$ 12,500.00</b>	<b>\$ 37,500.00</b>
4	Sanitary Lateral Wyes - 8"x4"				
	Hunt Valley Circle (Newtown Hunt Dev.)	EA.	28	\$ 150.00	\$ 4,200.00
	Melmark Access to PS	EA.	3	\$ 150.00	\$ 450.00
	<b>SUBTOTAL</b>	EA.	<b>31</b>	<b>\$ 150.00</b>	<b>\$ 4,650.00</b>
5	Sanitary Laterals - 4" SDR-35 PVC				
	Hunt Valley Circle (Newtown Hunt Dev.)	L.F.	700	\$ 100.00	\$ 70,000.00
	Melmark Access to PS	L.F.	75	\$ 100.00	\$ 7,500.00
	<b>SUBTOTAL</b>	L.F.	<b>775</b>	<b>\$ 100.00</b>	<b>\$ 77,500.00</b>
6	Pump Stations				
	Hunt Valley Circle PS	L.S.	1	\$ 350,000.00	\$ 350,000.00
	<b>SUBTOTAL</b>				<b>\$ 350,000.00</b>
7	Testing				
		L.S.	1	\$ 5,000.00	\$ 5,000.00
	<b>SUBTOTAL</b>				<b>\$ 5,000.00</b>



# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

Item	Description	Unit	Quantity	Unit Cost	Total Cost
<b>B</b>	<b>SITE</b>				
1	Maintenance & Protection of Traffic				
	Hunt Valley Lane & Hunt Valley Circle	L.S.	1	\$ 2,000.00	\$ 2,000.00
	<b>SUBTOTAL</b>				<b>\$ 2,000.00</b>
2	Erosion & Sedimentation Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
	<b>SUBTOTAL</b>				<b>\$ 10,000.00</b>
3	Trench Restoration (Local Road)				
	Hunt Valley Lane	L.F.	650	\$ 30.00	\$ 19,500.00
	Hunt Valley Circle	L.F.	2,600	\$ 30.00	\$ 78,000.00
	Hunt Valley Circle (FM)	L.F.	650	\$ 30.00	\$ 19,500.00
	<b>SUBTOTAL</b>		<b>3,900</b>		<b>\$ 117,000.00</b>
4	Trench Restoration Outside Paving (Local Road)				
	Hunt Valley Circle Connection to Echo Valley	L.F.	1,200	\$ 15.00	\$ 18,000.00
	Hunt Valley Circle	L.F.	750	\$ 15.00	\$ 11,250.00
	Hunt Valley Circle to PS	L.F.	1,000	\$ 15.00	\$ 15,000.00
	Melmark Access to PS	L.F.	800	\$ 15.00	\$ 12,000.00
	<b>SUBTOTAL</b>		<b>3,750</b>		<b>\$ 56,250.00</b>

	<b>SUBTOTAL</b>	<b>\$ 1,635,150.00</b>
<b>5% BOND COUNSEL, LEGAL, EASEMENT ACQUISITION</b>	<b>\$</b>	<b>81,757.50</b>
<b>5% FIELD SURVEY</b>	<b>\$</b>	<b>81,757.50</b>
<b>7.5% ENGINEERING DESIGN</b>	<b>\$</b>	<b>122,636.25</b>
<b>5% INSPECTIONS</b>	<b>\$</b>	<b>81,757.50</b>
<b>10% CONTINGENCY</b>	<b>\$</b>	<b>163,515.00</b>
<b>TOTAL</b>	<b>\$</b>	<b>2,166,573.75</b>

# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

## CONSTRUCTION COST ESTIMATE

### Goshen Road Pump Station (Alternate PS Location)

#### Camelot P.S. Service Area - OPT 1

Act 537 Plan Update

Newtown Township, Delaware County, PA

Item	Description	Unit	Quantity	Unit Cost	Total Cost
<b>A</b>	<b>SANITARY SEWER</b>				
1	8" SDR-35 - PVC				
	Boot Road West	L.F.	1,500	\$ 110.00	\$ 165,000.00
	Goshen Road	L.F.	3,700	\$ 110.00	\$ 407,000.00
	Woolman Drive	L.F.	825	\$ 110.00	\$ 90,750.00
	Springhouse Lane	L.F.	1,250	\$ 110.00	\$ 137,500.00
	Carriage Lane	L.F.	750	\$ 110.00	\$ 82,500.00
	Echo Valley Lane	L.F.	1,400	\$ 110.00	\$ 154,000.00
	Crum Creek Lane	L.F.	1,500	\$ 110.00	\$ 165,000.00
	Crum Creek Lane to Goshen Rd PS	L.F.	1,350	\$ 110.00	\$ 148,500.00
	<b>SUBTOTAL</b>	L.F.	<b>12,275</b>	<b>\$ 110.00</b>	<b>\$ 1,350,250.00</b>
2	8" C-900 - Forcemain				
	Boot Road West	L.F.	2,250	\$ 85.00	\$ 191,250.00
	<b>SUBTOTAL</b>	L.F.	<b>2,250</b>	<b>\$ 85.00</b>	<b>\$ 191,250.00</b>
3	Sanitary Manhole (w/Frame & Cover)				
	Boot Road West	EA.	8	\$ 4,000.00	\$ 32,000.00
	Goshen Road	EA.	11	\$ 4,000.00	\$ 44,000.00
	Woolman Drive	EA.	4	\$ 4,000.00	\$ 16,000.00
	Springhouse Lane	EA.	6	\$ 4,000.00	\$ 24,000.00
	Carriage Lane	EA.	4	\$ 4,000.00	\$ 16,000.00
	Echo Valley Lane	EA.	6	\$ 4,000.00	\$ 24,000.00
	Crum Creek Lane	EA.	9	\$ 4,000.00	\$ 36,000.00
	Crum Creek Lane to Goshen Rd PS	EA.	5	\$ 4,000.00	\$ 20,000.00
	<b>SUBTOTAL</b>	EA.	<b>53</b>	<b>\$ 4,000.00</b>	<b>\$ 212,000.00</b>
4	Forcemain Air Release Valve Manhole				
	Boot Road West	EA.	3	\$ 12,500.00	\$ 37,500.00
	<b>SUBTOTAL</b>	EA.	<b>3</b>	<b>\$ 12,500.00</b>	<b>\$ 37,500.00</b>

# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

Item	Description	Unit	Quantity	Unit Cost	Total Cost
5	Sanitary Lateral Wyes - 8"x4"				
	Echo Valley Development	EA.	17	\$ 150.00	\$ 2,550.00
	Goshen Road Area	EA.	38	\$ 150.00	\$ 5,700.00
	Boot Road Area - West	EA.	12	\$ 150.00	\$ 1,800.00
	<b>SUBTOTAL</b>	EA.	<b>67</b>	<b>\$ 150.00</b>	<b>\$ 10,050.00</b>
6	Sanitary Laterals - 4" SDR-35 PVC				
	Echo Valley Development	L.F.	425	\$ 100.00	\$ 42,500.00
	Goshen Road Area	L.F.	950	\$ 100.00	\$ 95,000.00
	Boot Road Area - West	L.F.	300	\$ 100.00	\$ 30,000.00
	<b>SUBTOTAL</b>	L.F.	<b>1,675</b>	<b>\$ 100.00</b>	<b>\$ 167,500.00</b>
7	Pump Stations				
	Goshen Road PS	L.S.	1	\$ 750,000.00	\$ 750,000.00
	<b>SUBTOTAL</b>				<b>\$ 750,000.00</b>
8	Testing	L.S.	1	\$ 5,000.00	\$ 5,000.00
	<b>SUBTOTAL</b>				<b>\$ 5,000.00</b>
<b>B</b>	<b>SITE</b>				
1	Maintenance & Protection of Traffic				
	Springhouse Lane, Carriage Lane, Woolman Drive, Echo Valley Lane & Crum Creek Lane	L.S.	1	\$ 2,000.00	\$ 2,000.00
	Goshen Road (State Hwy)	L.S.	1	\$ 10,000.00	\$ 10,000.00
	Boot Road (Twp Road)	L.S.	1	\$ 4,000.00	\$ 4,000.00
	<b>SUBTOTAL</b>				<b>\$ 16,000.00</b>
2	Erosion & Sedimentation Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
	<b>SUBTOTAL</b>				<b>\$ 10,000.00</b>
3	Trench Restoration (State Hwy)				
	Goshen Road	L.F.	3,250	\$ 50.00	\$ 162,500.00
	<b>SUBTOTAL</b>				<b>\$ 162,500.00</b>
4	Trench Restoration Outside Paving (State Hwy)				
	Goshen Road	L.F.	100	\$ 20.00	\$ 2,000.00
	<b>SUBTOTAL</b>				<b>\$ 2,000.00</b>

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CONSULTING ENGINEERS SURVEYORS, INC.

1000 PALMERS MILL ROAD

MEDIA, PA 19063

Item	Description	Unit	Quantity	Unit Cost	Total Cost
5	Trench Restoration (Local Road)				
	Boot Road West	L.F.	1,800	\$ 30.00	\$ 54,000.00
	Woolman Drive	L.F.	825	\$ 30.00	\$ 24,750.00
	Springhouse Lane	L.F.	1,250	\$ 30.00	\$ 37,500.00
	Carriage Lane	L.F.	750	\$ 30.00	\$ 22,500.00
	Echo Valley Lane	L.F.	1,400	\$ 30.00	\$ 42,000.00
	Crum Creek Lane	L.F.	1,500	\$ 30.00	\$ 45,000.00
	<b>SUBTOTAL</b>	L.F.	<b>7,525</b>	\$ 30.00	\$ <b>225,750.00</b>
6	Trench Restoration Outside Paving (Local Road)				
	Crum Creek Lane to Goshen Rd PS	L.F.	1,350	\$ 15.00	\$ 20,250.00
	<b>SUBTOTAL</b>		<b>1,350</b>	\$ 15.00	\$ <b>20,250.00</b>

<b>SUBTOTAL</b>	<b>\$ 3,160,050.00</b>
<b>5% BOND COUNSEL, LEGAL, EASEMENT ACQUISITION</b>	<b>\$ 158,002.50</b>
<b>5% FIELD SURVEY</b>	<b>\$ 158,002.50</b>
<b>7.5% ENGINEERING DESIGN</b>	<b>\$ 237,003.75</b>
<b>5% INSPECTIONS</b>	<b>\$ 158,002.50</b>
<b>10% CONTINGENCY</b>	<b>\$ 316,005.00</b>
<b>TOTAL</b>	<b>\$ 4,187,066.25</b>

# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.

1000 PALMERS MILL ROAD

MEDIA, PA 19063

## CONSTRUCTION COST ESTIMATE

Florida Park (Old Masters) Pump Station

Camelot P.S. Service Area

Act 537 Plan Update

Newtown Township, Delaware County, PA

Item	Description	Unit	Quantity	Unit Cost	Total Cost
<b>A</b>	<b>SANITARY SEWER</b>				
1	8" SDR-35 - PVC				
	Campus Blvd - North	L.F.	2,250	\$ 110.00	\$ 247,500.00
	WC Pike & Boot Rd	L.F.	1,625	\$ 110.00	\$ 178,750.00
	WC Pike through Florida Park	L.F.	6,025	\$ 110.00	\$ 662,750.00
	Florida Park - Fairview Ave	L.F.	2,700	\$ 110.00	\$ 297,000.00
	Florida Park - Florida Ave	L.F.	1,840	\$ 110.00	\$ 202,400.00
	Florida Park - Pomona Ave	L.F.	400	\$ 110.00	\$ 44,000.00
	Florida Park - Tuxedo Ave	L.F.	650	\$ 110.00	\$ 71,500.00
	Florida Park - Columbia Ave	L.F.	550	\$ 110.00	\$ 60,500.00
	Florida Park - Park Ave	L.F.	1,260	\$ 110.00	\$ 138,600.00
	Old Masters	L.F.	3,600	\$ 110.00	\$ 396,000.00
	Marville	L.F.	3,750	\$ 110.00	\$ 412,500.00
	Alice Grimm	L.F.	1,825	\$ 110.00	\$ 200,750.00
	Fox Trail	L.F.	1,175	\$ 110.00	\$ 129,250.00
	Phillips Lane West	L.F.	1,400	\$ 110.00	\$ 154,000.00
	Phillips Lane East	L.F.	1,700	\$ 110.00	\$ 187,000.00
	Boot Road East	L.F.	2,400	\$ 110.00	\$ 264,000.00
	<b>SUBTOTAL</b>	L.F.	<b>33,150</b>	<b>\$ 110.00</b>	<b>\$ 3,646,500.00</b>
2	8" C-900 - Forcemain				
	Garrett Williamson	L.F.	2,250	\$ 85.00	\$ 191,250.00
	<b>SUBTOTAL</b>	L.F.	<b>2,250</b>	<b>\$ 85.00</b>	<b>\$ 191,250.00</b>
3	Sanitary Manhole (w/Frame & Cover)				
	Campus Blvd - North	EA.	12	\$ 4,000.00	\$ 48,000.00
	WC Pike & Boot Rd	EA.	4	\$ 4,000.00	\$ 16,000.00
	WC Pike through Florida Park	EA.	30	\$ 4,000.00	\$ 120,000.00
	Florida Park - Fairview Ave	EA.	12	\$ 4,000.00	\$ 48,000.00
	Florida Park - Florida Ave	EA.	8	\$ 4,000.00	\$ 32,000.00
	Florida Park - Pomona Ave	EA.	2	\$ 4,000.00	\$ 8,000.00
	Florida Park - Tuxedo Ave	EA.	5	\$ 4,000.00	\$ 20,000.00
	Florida Park - Columbia Ave	EA.	1	\$ 4,000.00	\$ 4,000.00
	Florida Park - Park Ave	EA.	6	\$ 4,000.00	\$ 24,000.00
	Marville	EA.	16	\$ 4,000.00	\$ 64,000.00
	Alice Grimm	EA.	9	\$ 4,000.00	\$ 36,000.00
	Fox Trail	EA.	7	\$ 4,000.00	\$ 28,000.00
	Phillips Lane West	EA.	6	\$ 4,000.00	\$ 24,000.00
	Phillips Lane East	EA.	8	\$ 4,000.00	\$ 32,000.00
	Boot Road East	EA.	7	\$ 4,000.00	\$ 28,000.00
	<b>SUBTOTAL</b>	EA.	<b>133</b>	<b>\$ 4,000.00</b>	<b>\$ 532,000.00</b>

# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

Item	Description	Unit	Quantity	Unit Cost	Total Cost
4	Forcemain Air Release Valve Manhole				
	Garrett Williamson	EA.	3	\$ 12,500.00	\$ 37,500.00
	<b>SUBTOTAL</b>	EA.	3	\$ 12,500.00	\$ 37,500.00
5	Sanitary Lateral Wyes - 8"x4"				
	Boot Road Area - East	EA.	20	\$ 150.00	\$ 3,000.00
	Florida Park Area	EA.	127	\$ 150.00	\$ 19,050.00
	Campus Boulevard - North	EA.	6	\$ 150.00	\$ 900.00
	<b>SUBTOTAL</b>	EA.	153	\$ 150.00	\$ 22,950.00
6	Sanitary Laterals - 4" SDR-35 PVC				
	Boot Road Area - East	L.F.	500	\$ 100.00	\$ 50,000.00
	Florida Park Area	L.F.	3,175	\$ 100.00	\$ 317,500.00
	Campus Boulevard - North	L.F.	150	\$ 100.00	\$ 15,000.00
	<b>SUBTOTAL</b>	L.F.	3,825	\$ 100.00	\$ 382,500.00
7	Pump Stations				
	Florida Park PS	L.S.	1	\$ 1,000,000.00	\$ 1,000,000.00
	<b>SUBTOTAL</b>				\$ 1,000,000.00
8	Testing	L.S.	1	\$ 15,000.00	\$ 15,000.00
	<b>SUBTOTAL</b>				\$ 15,000.00
<b>B</b>	<b>SITE</b>				
1	Maintenance & Protection of Traffic				
	West Chester Pike (State Hwy)	L.S.	1	\$ 15,000.00	\$ 15,000.00
	Boot Road (Twp Road)	L.S.	1	\$ 4,000.00	\$ 4,000.00
	<b>SUBTOTAL</b>				\$ 19,000.00
2	Erosion & Sedimentation Control	L.S.	1	\$ 20,000.00	\$ 20,000.00
	<b>SUBTOTAL</b>				\$ 20,000.00
3	Trench Restoration (State Hwy)				
	WC Pike & Boot Rd Area	L.F.	1,625	\$ 50.00	\$ 81,250.00
	<b>SUBTOTAL</b>				\$ 81,250.00

# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

Item	Description	Unit	Quantity	Unit Cost	Total Cost
4	Trench Restoration (Local Road)				
	Campus Blvd - North	L.F.	2,250	\$ 30.00	\$ 67,500.00
	Florida Park - Fairview Ave	L.F.	2,700	\$ 30.00	\$ 81,000.00
	Florida Park - Florida Ave	L.F.	1,840	\$ 30.00	\$ 55,200.00
	Florida Park - Pomona Ave	L.F.	400	\$ 30.00	\$ 12,000.00
	Florida Park - Tuxedo Ave	L.F.	650	\$ 30.00	\$ 19,500.00
	Florida Park - Columbia Ave	L.F.	550	\$ 30.00	\$ 16,500.00
	Florida Park - Park Ave	L.F.	1,260	\$ 30.00	\$ 37,800.00
	Old Masters	L.F.	3,600	\$ 30.00	\$ 108,000.00
	Marville	L.F.	3,750	\$ 30.00	\$ 112,500.00
	Alice Grimm	L.F.	1,825	\$ 30.00	\$ 54,750.00
	Fox Trail	L.F.	1,175	\$ 30.00	\$ 35,250.00
	Phillips Lane West	L.F.	1,400	\$ 30.00	\$ 42,000.00
	Phillips Lane East	L.F.	1,700	\$ 30.00	\$ 51,000.00
	Boot Road East	L.F.	2,400	\$ 30.00	\$ 72,000.00
	<b>SUBTOTAL</b>				<b>\$ 765,000.00</b>
5	Trench Restoration Outside Paving (Local Road)				
	Garrett Williamson	L.F.	2,250	\$ 15.00	\$ 33,750.00
	WC Pike through Florida Park	L.F.	6,025	\$ 15.00	\$ 90,375.00
	<b>SUBTOTAL</b>				<b>\$ 124,125.00</b>

	SUBTOTAL	\$	6,837,075.00
5% BOND COUNSEL, LEGAL, EASEMENT ACQUISITION	\$	341,853.75	
5% FIELD SURVEY	\$	341,853.75	
7.5% ENGINEERING DESIGN	\$	512,780.63	
5% INSPECTIONS	\$	341,853.75	
10% CONTINGENCY	\$	683,707.50	
<b>TOTAL</b>	<b>\$</b>	<b>9,059,124.38</b>	



# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

## CONSTRUCTION COST ESTIMATE

### Springton Estates Pump Station

### Camelot P.S. Service Area

Act 537 Plan Update

Newtown Township, Delaware County, PA

Item	Description	Unit	Quantity	Unit Cost	Total Cost
<b>A</b>	<b>SANITARY SEWER</b>				
1	8" SDR-35 - PVC				
	Hunters Run	L.F.	950	\$ 110.00	\$ 104,500.00
	<b>SUBTOTAL</b>	L.F.	950	\$ 110.00	\$ 104,500.00
2	10" SDR-35 - PVC				
	Campus Blvd - South	L.F.	2,250	\$ 125.00	\$ 281,250.00
	Stoney Brook Blvd. to Springton Estates PS	L.F.	2,600	\$ 125.00	\$ 325,000.00
	<b>SUBTOTAL</b>	L.F.	4,850	\$ 125.00	\$ 606,250.00
3	8" C-900 - Forcemain				
	Springton Pointe Estates PS to Camelot PS	L.F.	1,250	\$ 85.00	\$ 106,250.00
	<b>SUBTOTAL</b>	L.F.	1,250	\$ 85.00	\$ 106,250.00
4	Sanitary Manhole (w/Frame & Cover)				
	Campus Boulevard - South	EA.	12	\$ 4,000.00	\$ 48,000.00
	Hunters Run	EA.	2	\$ 4,000.00	\$ 8,000.00
	Stoney Brook Blvd. to Springton Estates PS	EA.	12	\$ 4,000.00	\$ 48,000.00
	<b>SUBTOTAL</b>	EA.	26	\$ 4,000.00	\$ 104,000.00
5	Forcemain Air Release Valve Manhole				
	Springton Pointe Estates PS to Camelot PS	EA.	1	\$ 12,500.00	\$ 12,500.00
	<b>SUBTOTAL</b>	EA.	1	\$ 12,500.00	\$ 12,500.00
5	Sanitary Lateral Wyes - 8"x4"				
	Campus Boulevard - South	EA.	9	\$ 150.00	\$ 1,350.00
	<b>SUBTOTAL</b>	EA.	9	\$ 150.00	\$ 1,350.00
6	Sanitary Laterals - 4" SDR-35 PVC				
	Campus Boulevard - South	L.F.	225	\$ 100.00	\$ 22,500.00
	<b>SUBTOTAL</b>	L.F.	225	\$ 100.00	\$ 22,500.00
7	Tie in to Existing Manhole				
	Hunters Run	EA.	5	\$ 2,500.00	\$ 12,500.00
	<b>SUBTOTAL</b>	EA.	5	\$ 2,500.00	\$ 12,500.00
8	Pump Stations				
	Springton Pointe Estates WWTP PS	L.S.	1	\$ 650,000.00	\$ 650,000.00
	<b>SUBTOTAL</b>				\$ 650,000.00
9	Testing				
		L.S.	1	\$ 15,000.00	\$ 15,000.00
	<b>SUBTOTAL</b>				\$ 15,000.00

# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.

1000 PALMERS MILL ROAD

MEDIA, PA 19063

Item	Description	Unit	Quantity	Unit Cost	Total Cost
B	SITE				
1	Maintenance & Protection of Traffic				
	Bishop Hollow Road	L.S.	1	\$ 2,500.00	\$ 2,500.00
	SUBTOTAL				\$ 2,500.00
2	Erosion & Sedimentation Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
	SUBTOTAL				\$ 5,000.00
3	Trench Restoration (State Hwy)				
	Bishop Hollow Road	L.F.	100	\$ 50.00	\$ 5,000.00
	SUBTOTAL				\$ 5,000.00
4	Trench Restoration (Local Road)				
	Campus Blvd - South	L.F.	2,250	\$ 30.00	\$ 67,500.00
	Stoney Brook Blvd. to Springton Pointe Estates PS	L.F.	2,600	\$ 30.00	\$ 78,000.00
	SUBTOTAL				\$ 145,500.00
5	Trench Restoration Outside Paving (Local Road)				
	Hunters Run	L.F.	950	\$ 15.00	\$ 14,250.00
	SUBTOTAL				\$ 14,250.00

SUBTOTAL	\$ 1,807,100.00
5% BOND COUNSEL, LEGAL, EASEMENT ACQUISITION	\$ 90,355.00
5% FIELD SURVEY	\$ 90,355.00
7.5% ENGINEERING DESIGN	\$ 135,532.50
5% INSPECTIONS	\$ 90,355.00
10% CONTINGENCY	\$ 180,710.00
TOTAL	\$ 2,394,407.50

**Herbert E. MacCombie, Jr., P.E.**

CONSULTING ENGINEERS SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

**CONSTRUCTION COST ESTIMATE****Camelot P.S. Upgrade****Camelot P.S. Service Area****Act 537 Plan Update****Newtown Township, Delaware County, PA**

Item	Description	Unit	Quantity	Unit Cost	Total Cost
<b>A</b>	<b>SANITARY SEWER</b>				
1	8" SDR-35 - PVC				
	Dogwood Area	L.F.	1,000	\$ 110.00	\$ 110,000.00
	Township Park Area	L.F.	1,150	\$ 110.00	\$ 126,500.00
	<b>SUBTOTAL</b>	L.F.	<b>2,150</b>	<b>\$ 110.00</b>	<b>\$ 236,500.00</b>
2	Sanitary Manhole (w/Frame & Cover)				
	Dogwood Area	EA.	4	\$ 4,000.00	\$ 16,000.00
	Township Park Area	EA.	4	\$ 4,000.00	\$ 16,000.00
	<b>SUBTOTAL</b>	EA.	<b>8</b>	<b>\$ 4,000.00</b>	<b>\$ 32,000.00</b>
3	Sanitary Lateral Wyes - 8"x4"				
	Dogwood Area	EA.	8	\$ 150.00	\$ 1,200.00
	Township Park Area	EA.	4	\$ 150.00	\$ 600.00
	<b>SUBTOTAL</b>	EA.	<b>12</b>	<b>\$ 150.00</b>	<b>\$ 1,800.00</b>
4	Sanitary Laterals - 4" SDR-35 PVC				
	Dogwood Area	L.F.	200	\$ 100.00	\$ 20,000.00
	Township Park Area	L.F.	100	\$ 100.00	\$ 10,000.00
	<b>SUBTOTAL</b>	L.F.	<b>300</b>	<b>\$ 100.00</b>	<b>\$ 30,000.00</b>
5	Tie in to Existing Manhole				
	Dogwood Lane to Cornerstone Proj.	EA.	1	\$ 2,500.00	\$ 2,500.00
	Township Park Area	EA.	1	\$ 2,500.00	\$ 2,500.00
	<b>SUBTOTAL</b>	EA.	<b>2</b>	<b>\$ 2,500.00</b>	<b>\$ 5,000.00</b>
6	Pump Stations				
	Camelot PS Improvements	L.S.	1	\$ 1,250,000.00	\$ 1,250,000.00
	<b>SUBTOTAL</b>				<b>\$ 1,250,000.00</b>
7	Testing	L.S.	1	\$ 10,000.00	\$ 10,000.00
	<b>SUBTOTAL</b>				<b>\$ 10,000.00</b>
<b>B</b>	<b>SITE</b>				
1	Maintenance & Protection of Traffic				
	Township Park Area (State Hwy)	L.S.	1	\$ 2,000.00	\$ 2,000.00
	<b>SUBTOTAL</b>				<b>\$ 2,000.00</b>
2	Erosion & Sedimentation Control	L.S.	1	\$ 2,500.00	\$ 2,500.00
	<b>SUBTOTAL</b>				<b>\$ 2,500.00</b>

# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

Item	Description	Unit	Quantity	Unit Cost	Total Cost
2	Trench Restoration (State Hwy)				
	Township Park Area (Bishop Hollow Rd)	L.F.	1,125	\$ 50.00	\$ 56,250.00
	<b>SUBTOTAL</b>				<b>\$ 56,250.00</b>
3	Trench Restoration (Local Road)				
	Dogwood Area	L.F.	550	\$ 30.00	\$ 16,500.00
	<b>SUBTOTAL</b>				<b>\$ 16,500.00</b>
3	Trench Restoration Outside Paving (Local Road)				
	Dogwood Area	L.F.	250	\$ 15.00	\$ 3,750.00
	<b>SUBTOTAL</b>				<b>\$ 3,750.00</b>

	<b>SUBTOTAL</b>	<b>\$ 1,646,300.00</b>
<b>5% BOND COUNSEL, LEGAL, EASEMENT ACQUISITION</b>	<b>\$</b>	<b>82,315.00</b>
<b>5% FIELD SURVEY</b>	<b>\$</b>	<b>82,315.00</b>
<b>7.5% ENGINEERING DESIGN</b>	<b>\$</b>	<b>123,472.50</b>
<b>5% INSPECTIONS</b>	<b>\$</b>	<b>82,315.00</b>
<b>10% CONTINGENCY</b>	<b>\$</b>	<b>164,630.00</b>
<b>TOTAL</b>	<b>\$</b>	<b>2,181,347.50</b>

# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

## CONSTRUCTION COST ESTIMATE

Ashford P.S. Service Area

Ashford P.S. Service Area - OPT 1

Act 537 Plan Update

Newtown Township, Delaware County, PA

Item	Description	Unit	Quantity	Unit Cost	Total Cost
<b>A</b>	<b>SANITARY SEWER</b>				
1	Low Pressure Sewer Main				
	Crum Creek Lane	L.F.	2,850	\$ 80.00	\$ 228,000.00
	Meadow Lane	L.F.	1,925	\$ 80.00	\$ 154,000.00
	Echo Valley Lane	L.F.	5,050	\$ 80.00	\$ 404,000.00
	Foxhill Lane	L.F.	575	\$ 80.00	\$ 46,000.00
	Echo Valley to Ashford PS	L.F.	1,700	\$ 80.00	\$ 136,000.00
	Partridge Lane	L.F.	325	\$ 80.00	\$ 26,000.00
	Battles Lane	L.F.	1,925	\$ 80.00	\$ 154,000.00
	<b>SUBTOTAL</b>	L.F.	<b>14,350</b>	<b>\$ 80.00</b>	<b>\$ 1,148,000.00</b>
2	Low Pressure Sewer Air Release Valve Manhole				
	Crum Creek Lane	EA.	3	\$ 6,000.00	\$ 18,000.00
	Meadow Lane	EA.	2	\$ 6,000.00	\$ 12,000.00
	Echo Valley Lane	EA.	4	\$ 6,000.00	\$ 24,000.00
	Foxhill Lane	EA.	1	\$ 6,000.00	\$ 6,000.00
	Echo Valley to Ashford PS	EA.	2	\$ 6,000.00	\$ 12,000.00
	Partridge Lane	EA.	1	\$ 6,000.00	\$ 6,000.00
	Battles Lane	EA.	2	\$ 6,000.00	\$ 12,000.00
	<b>SUBTOTAL</b>	EA.	<b>15</b>	<b>\$ 6,000.00</b>	<b>\$ 90,000.00</b>
3	Low Pressure Sewer Main Flusing Manhole				
	Echo Valley	EA.	40	\$ 4,000.00	\$ 160,000.00
	<b>SUBTOTAL</b>	EA.	<b>40</b>	<b>\$ 4,000.00</b>	<b>\$ 160,000.00</b>
4	Low Pressure Sewer Lateral Connection Assembly				
	Echo Valley	EA.	119	\$ 1,300.00	\$ 154,700.00
	<b>SUBTOTAL</b>	EA.	<b>119</b>	<b>\$ 1,300.00</b>	<b>\$ 154,700.00</b>
5	Testing	L.S.	1	\$ 20,000.00	\$ 20,000.00
	<b>SUBTOTAL</b>				<b>\$ 20,000.00</b>
6	Ashford Pump Station <sup>1</sup>	L.S.	1	\$ 1,725,000.00	\$ 1,725,000.00
	<b>SUBTOTAL</b>				<b>\$ 1,725,000.00</b>
7	Ashform Forcemain it CDCA <sup>1</sup>	L.S.	1	\$ 800,000.00	\$ 800,000.00
	<b>SUBTOTAL</b>				<b>\$ 800,000.00</b>

# Herbert E. MacCombie, Jr., P.E.

CONSULTING ENGINEERS SURVEYORS, INC.  
1000 PALMERS MILL ROAD  
MEDIA, PA 19063

Item	Description	Unit	Quantity	Unit Cost	Total Cost
B	SITE				
1	Maintenance & Protection of Traffic				
	Echo Valley	L.S.	1	\$ 7,500.00	\$ 7,500.00
	SUBTOTAL				\$ 7,500.00
2	Erosion & Sedimentation Control	L.S.	1	\$ 20,000.00	\$ 20,000.00
	SUBTOTAL				\$ 20,000.00

<sup>1</sup> Estimated Cost taken from Draft "Act 537 (PA Sewage Facilities Act) Sewerage Facilities Plan Update for Newtown Township," prepared by Kelly & Close Engineers, Consulting Engineers & Surveyors, dated July 7, 2011.

SUBTOTAL	\$ 4,125,200.00
5% BOND COUNSEL, LEGAL, EASEMENT ACQUISITION	\$ 206,260.00
5% FIELD SURVEY	\$ 206,260.00
7.5% ENGINEERING DESIGN	\$ 309,390.00
5% INSPECTIONS	\$ 206,260.00
10% CONTINGENCY	\$ 412,520.00
TOTAL	\$ 5,465,890.00

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CONSULTING ENGINEERS SURVEYORS, INC.

1000 PALMERS MILL ROAD

MEDIA, PA 19063

## CONSTRUCTION COST ESTIMATE

### Alternative 1

Act 537 Plan Update

Newtown Township, Delaware County, PA

	OPTION 1
Newtown Hunt Pump Station	\$ 2,166,573.75
Goshen Road Pump Station (Alternate PS Location)	\$ 4,187,066.25
Florida Park (Old Masters) Pump Station	\$ 9,059,124.38
Springton Estates Pump Station	\$ 2,394,407.50
Camelot P.S. Upgrade	\$ 2,181,347.50
Ashford P.S. Service Area	\$ 5,465,890.00
<b>TOTAL</b>	<b>\$ 25,454,409.38</b>



CDCA SANITARY SEWER SERVICE AREA  
CONSULTING ENGINEER'S PROJECTED BUDGET

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>INCOME:</b>										
Bond Issue (Loan)	\$27,500,000	-	-	-	-	-	-	-	-	-
Ashford Contribution	\$2,777,500									
Usage Rate (1,000 Gal.)	-	\$6.00	\$6.00	\$6.00	\$7.00	\$7.00	\$7.00	\$9.00	\$9.00	\$9.00
New EDU's	-	255	349	270	274	225	210	195	180	165
Connected EDU's	-	255	604	874	1148	1373	1583	1778	1958	2123
Annual Cost per EDU	-	\$493	\$493	\$493	\$574	\$574	\$574	\$738	\$738	\$738
Gallons Treated (GPD)	-	57375	135900	196650	258300	308925	356175	400050	440550	477675
Usage Fee	-	\$125,715	\$297,772	\$430,882	\$658,952	\$788,102	\$908,642	\$1,312,164	\$1,445,004	\$1,566,774
Tapping Fees	-	\$552,000	\$1,914,000	\$1,440,000	\$1,464,000	\$1,170,000	\$1,080,000	\$990,000	\$900,000	\$810,000
Interest	-	\$35,527 (3)	\$12,327	\$2,301	\$2,143	\$2,401	\$1,492	\$932	\$906	\$882
Interest on DSRF	-	-	-	-	-	-	-	-	-	-
Reserve Prior Year	-	\$17,763,261	\$6,184,204	\$1,150,645	\$1,071,789	\$1,012,360	\$745,921	\$466,285	\$453,041	\$440,869
<b>TOTAL INCOME</b>	<b>\$30,277,500</b>	<b>\$18,476,503</b>	<b>\$8,408,303</b>	<b>\$3,203,828</b>	<b>\$3,196,884</b>	<b>\$2,972,863</b>	<b>\$2,736,055</b>	<b>\$2,768,449</b>	<b>\$2,798,951</b>	<b>\$2,818,525</b>
<b>EXPENSES:</b>										
Construction Costs	\$10,903,160	\$10,903,160	\$5,451,580	-	-	-	-	-	-	-
Administration	\$25,000	\$50,000	\$51,250	\$52,530	\$53,850	\$55,190	\$56,570	\$57,985	\$59,435	\$60,920
Maintenance	-	\$75,000	\$95,000	\$97,400	\$99,830	\$102,320	\$104,880	\$107,500	\$110,190	\$112,950
Miscellaneous	\$826,420	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800	\$4,800
CDCA Sewer Rent	-	\$37,402	\$90,824	\$134,654	\$181,299	\$222,245	\$262,738	\$302,404	\$341,380	\$379,388
Debt Service Payment	\$484,435	\$968,870	\$1,288,870	\$1,569,870	\$1,570,795	\$1,570,032	\$1,567,532	\$1,568,563	\$1,567,963	\$1,571,005
CDCA Debt Service Expansion	\$235,325	\$233,749	\$235,361	\$232,890	\$234,659	\$232,467	\$233,470	\$234,186	\$234,555	\$234,607
CDCA Debt Service Rehab	\$39,899	\$39,973	\$39,973	\$39,895	\$39,291	\$39,888	\$39,780	\$39,970	\$39,759	\$39,848
Debt Service Reserve	-									
<b>TOTAL EXPENSES</b>	<b>\$12,514,239</b>	<b>\$12,312,954</b>	<b>\$7,257,658</b>	<b>\$2,132,039</b>	<b>\$2,184,524</b>	<b>\$2,226,942</b>	<b>\$2,269,770</b>	<b>\$2,315,408</b>	<b>\$2,358,082</b>	<b>\$2,403,518</b>
Annual Surplus	\$17,763,261	\$6,163,549	\$1,150,645	\$1,071,789	\$1,012,360	\$745,921	\$466,285	\$453,041	\$440,869	\$415,007
Cumulative Surplus	<b>\$17,763,261</b>	<b>\$6,163,549</b>	<b>\$1,150,645</b>	<b>\$1,071,789</b>	<b>\$1,012,360</b>	<b>\$745,921</b>	<b>\$466,285</b>	<b>\$453,041</b>	<b>\$440,869</b>	<b>\$415,007</b>
Annual Debt Service Coverage	Capitalized	Capitalized	1.89	1.68	1.64	1.48	1.3	1.29	1.28	1.26
Cumulative Debt Service Coverage	-	-	1.89	1.68	1.64	1.48	1.3	1.29	1.28	1.26

(1) Includes Cost of Issuance as well as CDCA Cash Reserve Deposit and Debt Service from 2011 and 2012

(2) Anticipated Sewer Usage Rate of \$7.00 per 1000 gallons to cover Debt Service and Treatment and conveyance cost

(3) Assumes 0.20% Interest on cumulative surplus

(4) Represents annual sewer rent of \$1.70/1000gal from CDCA based upon 2012 Budget (assumes rent increases at 2.5% annually for future increases)

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## CONSTRUCTION COST ESTIMATE

### Newtown Hunt Pump Station (Alternate PS Location)

### Camelot P.S. Service Area - OPT 2

Act 537 Plan Update

Newtown Township, Delaware County, PA

Item	Description	Unit	Quantity	Unit Cost	Total Cost
<b>A</b>	<b>SANITARY SEWER</b>				
1	8" SDR-35 - PVC				
	Hunt Valley Lane	L.F.	650	\$ 110.00	\$ 71,500.00
	Hunt Valley Circle	L.F.	3,350	\$ 110.00	\$ 368,500.00
	Hunt Valley Circle to PS	L.F.	1,000	\$ 110.00	\$ 110,000.00
	Melmark Access to PS	L.F.	800	\$ 110.00	\$ 88,000.00
	<b>SUBTOTAL</b>	L.F.	<b>5,800</b>	<b>\$ 110.00</b>	<b>\$ 638,000.00</b>
2	6" C-900 - Forcemain				
	Hunt Valley Circle PS to Hunt Valley Circle	L.F.	800	\$ 85.00	\$ 68,000.00
	Hunt Valley Circle	L.F.	650	\$ 85.00	\$ 55,250.00
	Hunt Valley Circle Connection to Echo Valley	L.F.	1,200	\$ 85.00	\$ 102,000.00
	<b>SUBTOTAL</b>	L.F.	<b>2,650</b>	<b>\$ 85.00</b>	<b>\$ 225,250.00</b>
3	Sanitary Manhole (w/Frame & Cover)				
	Hunt Valley Lane	EA.	3	\$ 4,000.00	\$ 12,000.00
	Hunt Valley Circle	EA.	18	\$ 4,000.00	\$ 72,000.00
	Hunt Valley Circle to PS	EA.	3	\$ 4,000.00	\$ 12,000.00
	Melmark Access to PS	EA.	4	\$ 4,000.00	\$ 16,000.00
	<b>SUBTOTAL</b>	EA.	<b>28</b>	<b>\$ 4,000.00</b>	<b>\$ 112,000.00</b>
4	Forcemain Air Release Valve Manhole				
	Hunt Valley Circle PS to Hunt Valley Circle	EA.	1	\$ 12,500.00	\$ 12,500.00
	Hunt Valley Circle	EA.	1	\$ 12,500.00	\$ 12,500.00
	Hunt Valley Circle Connection to Echo Valley	EA.	1	\$ 12,500.00	\$ 12,500.00
	<b>SUBTOTAL</b>	EA.	<b>3</b>	<b>\$ 12,500.00</b>	<b>\$ 37,500.00</b>
4	Sanitary Lateral Wyes - 8"x4"				
	Hunt Valley Circle (Newtown Hunt Dev.)	EA.	28	\$ 150.00	\$ 4,200.00
	Melmark Access to PS	EA.	3	\$ 150.00	\$ 450.00
	<b>SUBTOTAL</b>	EA.	<b>31</b>	<b>\$ 150.00</b>	<b>\$ 4,650.00</b>
5	Sanitary Laterals - 4" SDR-35 PVC				
	Hunt Valley Circle (Newtown Hunt Dev.)	L.F.	700	\$ 100.00	\$ 70,000.00
	Melmark Access to PS	L.F.	75	\$ 100.00	\$ 7,500.00
	<b>SUBTOTAL</b>	L.F.	<b>775</b>	<b>\$ 100.00</b>	<b>\$ 77,500.00</b>
6	Pump Stations				
	Hunt Valley Circle PS	L.S.	1	\$ 350,000.00	\$ 350,000.00
	<b>SUBTOTAL</b>				<b>\$ 350,000.00</b>
7	Testing				
		L.S.	1	\$ 5,000.00	\$ 5,000.00
	<b>SUBTOTAL</b>				<b>\$ 5,000.00</b>

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Item	Description	Unit	Quantity	Unit Cost	Total Cost
B	SITE				
1	Maintenance & Protection of Traffic				
	Hunt Valley Lane & Hunt Valley Circle	L.S.	1	\$ 2,000.00	\$ 2,000.00
	SUBTOTAL				\$ 2,000.00
2	Erosion & Sedimentation Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
	SUBTOTAL				\$ 10,000.00
3	Trench Restoration (Local Road)				
	Hunt Valley Lane	L.F.	650	\$ 30.00	\$ 19,500.00
	Hunt Valley Circle	L.F.	2,600	\$ 30.00	\$ 78,000.00
	Hunt Valley Circle (FM)	L.F.	650	\$ 30.00	\$ 19,500.00
	SUBTOTAL		3,900		\$ 117,000.00
4	Trench Restoration Outside Paving (Local Road)				
	Hunt Valley Circle Connection to Echo Valley	L.F.	1,200	\$ 15.00	\$ 18,000.00
	Hunt Valley Circle	L.F.	750	\$ 15.00	\$ 11,250.00
	Hunt Valley Circle to PS	L.F.	1,000	\$ 15.00	\$ 15,000.00
	Melmark Access to PS	L.F.	800	\$ 15.00	\$ 12,000.00
	SUBTOTAL		3,750		\$ 56,250.00

SUBTOTAL	\$ 1,635,150.00
5% BOND COUNSEL, LEGAL, EASEMENT ACQUISITION	\$ 81,757.50
5% FIELD SURVEY	\$ 81,757.50
7.5% ENGINEERING DESIGN	\$ 122,636.25
5% INSPECTIONS	\$ 81,757.50
10% CONTINGENCY	\$ 163,515.00
<b>TOTAL</b>	<b>\$ 2,166,573.75</b>

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1000 PALMERS MILL ROAD  
MEDIA, PA 19063

## CONSTRUCTION COST ESTIMATE

Goshen Road Pump Station (Alternate PS Location)

Camelot P.S. Service Area - OPT 2

Act 537 Plan Update

Newtown Township, Delaware County, PA

Item	Description	Unit	Quantity	Unit Cost	Total Cost
<b>A</b>	<b>SANITARY SEWER</b>				
<b>1</b>	<b>8" SDR-35 - PVC</b>				
	Crum Creek Lane	L.F.	3,925	\$ 110.00	\$ 431,750.00
	Crum Creek Lane to Goshen Rd PS	L.F.	1,350	\$ 110.00	\$ 148,500.00
	Echo Valley Lane to Crum Creek Lane (South)	L.F.	2,450	\$ 110.00	\$ 269,500.00
	Echo Valley Lane to Crum Creek Lane (North)	L.F.	675	\$ 110.00	\$ 74,250.00
	Echo Valley Lane to Battles Lane	L.F.	700	\$ 110.00	\$ 77,000.00
	Echo Valley Lane	L.F.	5,800	\$ 110.00	\$ 638,000.00
	Fox Hill Lane	L.F.	975	\$ 110.00	\$ 107,250.00
	Meadow Lane	L.F.	1,550	\$ 110.00	\$ 170,500.00
	Partridge Lane	L.F.	200	\$ 110.00	\$ 22,000.00
	Battles Lane to EV Ln/Crum Creek Ln (South)	L.F.	425	\$ 110.00	\$ 46,750.00
	Battles Lane	L.F.	1,975	\$ 110.00	\$ 217,250.00
	Boot Road West	L.F.	1,500	\$ 110.00	\$ 165,000.00
	Goshen Road West	L.F.	3,700	\$ 110.00	\$ 407,000.00
	Goshen Road East	L.F.	800	\$ 110.00	\$ 88,000.00
	Woolman Drive	L.F.	825	\$ 110.00	\$ 90,750.00
	Springhouse Lane	L.F.	1,250	\$ 110.00	\$ 137,500.00
	Carriage Lane	L.F.	750	\$ 110.00	\$ 82,500.00
	<b>SUBTOTAL</b>	L.F.	<b>28,850</b>	<b>\$ 110.00</b>	<b>\$ 3,173,500.00</b>
<b>2</b>	<b>8" C-900 - Forcemain</b>				
	Goshen Road	L.F.	4,600	\$ 85.00	\$ 391,000.00
	<b>SUBTOTAL</b>	L.F.	<b>4,600</b>	<b>\$ 85.00</b>	<b>\$ 391,000.00</b>