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Conyngham Borough and Sugarloaf Township
Act 537 Sewage Facilities Plan

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INSTRUCTIONS FOR COMPLETING ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST

Remove and recycle these instructions prior to submission.

CHECKLIST INSTRUCTIONS

These instructions are designed to assist the applicant in completing the *Act 537 Plan Content and Environmental Assessment Checklist*.

This checklist is composed of three parts: one for "General Information," one for "Administrative Completeness," and one for "General Plan Content". A plan must be **administratively complete** in order to be formally reviewed by the Department of Environmental Protection (DEP). The "General Plan Content" portion of the checklist identifies each of the issues that must be addressed in your Act 537 Plan Update based on the pre-planning meeting between you and/or your consultant and DEP.

Use the right-hand column blanks in the checklist to identify the page in the plan on which each planning issue is found or to reference a previously approved update or special study (title and page number).

If you determine a planning issue is not applicable even though it was previously thought to be needed, please explain your decision within the text of the plan (or as a footnote) and indicate the page number where this documentation is found.

When information required as part of an official plan update revision has been developed separately or in a previous update revision, incorporate the information by reference to the planning document and page.

For specific details covering the Act 537 planning requirements, refer to 25 Pa. Code Chapters 71 and 73 of DEP's regulations.

Wastewater projects proposing funding through the following sources must prepare an "Environmental Report" as described in the Uniform Environmental Review (UER) process and include it with the plan submission designated as "Plan-Appendix A". The following funding programs use the UER process.

- The Clean Water State Revolving Loan Fund (PENNVEST, DEP, EPA)
- The RUS Water and Waste Disposal Grant and Loan Program (USDA-RD)
- The Community Development Block Grant Program (DCED, HUG)
- Other Federal Funding Efforts (EPA)

The checklist items or portions of checklist items required in the Act 537 Plan Update revision and that are also included in the UER process are indicated by **shading**. Most of the "Environmental Report" document may be constructed from the Act 537 Official Plan Update revision by using "copy & paste" techniques. The technical guidance document *Guidelines for the Uniform Environmental Review Process in Pennsylvania* (381-5511-111) is available electronically in DEP's eLibrary online at www.dep.pa.gov.

After Municipal Adoption by Resolution, submit 3 copies of the plan, any attachments or addenda and this checklist to DEP.

A copy of this completed checklist must be included with your Act 537 plan. DEP will use the "DEP USE ONLY" column during the completeness evaluation of the plan. This column may also be used by DEP during the pre-planning meeting with the municipality to identify planning elements that are not required to be included in the plan.



ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST

PART 1 GENERAL INFORMATION

A. Project Information

1. Project Name Conyngham Borough and Sugarloaf Township Act 537 Sewage Facilities Plan
2. Brief Project Description Development of an updated Act 537 Sewage Facilities Plan to address the short term and long term wastewater management needs of the Borough of Conyngham and Sugarloaf Township, Luzerne County.

B. Client (Municipality) Information

Municipality Name	County	City	Boro	Twp
Conyngham Borough and Sugarloaf Township	Luzerne	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Municipality Contact Individual - Last Name	First Name	MI	Suffix	Title
Conyngham Borough				
Additional Individual Last Name	First Name	MI	Suffix	Title
Sugarloaf Township				
Municipality Mailing Address Line 1	Mailing Address Line 2			
Address Last Line -- City	State	ZIP+4		
Phone + Ext.	FAX (optional)	Email (optional)		

C. Site Information

Site (or Project) Name	(Municipal Name) Act 537 Plan
Conyngham Borough, Sugarloaf Township	
Site Location Line 1	Site Location Line 2
Conyngham Borough	Sugarloaf Township

D. Project Consultant Information

Last Name	First Name	MI	Suffix
Killian	Bryon	A	
Title	Consulting Firm Name		
Principal	Entech Engineering Inc.		
Mailing Address Line 1	Mailing Address Line 2		
29 South Mountain Blvd.			
Address Last Line -- City	State	ZIP+4	Country
Mountaintop	PA	18707	US
Email	Phone + Ext.	FAX	
bkillian@entecheng.com	570-868-0275	570-868-0127	

PART 2 ADMINISTRATIVE COMPLETENESS CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	In addition to the main body of the plan, the plan must include items one through eight listed below to be accepted for formal review by DEP. Incomplete plans may be denied unless the municipality is clearly requesting an advisory review.
_____	<u>TOC</u>	<ol style="list-style-type: none"> 1. Table of Contents 2. Plan Summary
_____	<u>PS-1</u>	A. Identify the proposed service areas and major problems evaluated in the plan. (Reference - 25 Pa. Code §71.21(a)(7)(i)).
_____	<u>PS-3</u>	B. Identify the alternative(s) chosen to solve the problems and serve the areas of need identified in the plan. Also, include any institutional arrangements necessary to implement the chosen alternative(s). (Reference - 25 Pa. Code §71.21(a)(7)(ii)).
_____	<u>PS-5</u>	C. Present the estimated cost of implementing the proposed alternative (including the user fees) and the proposed funding method to be used. (Reference - 25 Pa. Code §71.21(a)(7)(ii)).
_____	<u>PS-6</u>	D. Identify the municipal commitments necessary to implement the Plan. (Reference - 25 Pa. Code §71.21(a)(7)(iii)).
_____	<u>PS-6</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 - 25 Pa. Code §71.21(a)(7)(iv)).
_____	_____	3. Municipal Adoption: <i>Original</i> , signed and sealed Resolution of Adoption by the municipality which contains, at a minimum, alternatives chosen and a commitment to implement the Plan in accordance with the implementation schedule. (Reference - 25 Pa. Code §71.31(f)) Section V.F. of the Planning Guide.
_____	_____	4. Planning Commission / County Health Department Comments: Evidence that the municipality has requested, reviewed and considered comments by appropriate official planning agencies of the municipality, planning agencies of the county, planning agencies with area wide jurisdiction (where applicable), and any existing county or joint county departments of health. (Reference - 25 Pa. Code §71.31(b)) Section V.E.1 of the Planning Guide.
_____	_____	5. Publication: Proof of Public Notice which documents the proposed plan adoption, plan summary, and the establishment and conduct of a 30-day comment period. (Reference - 25 Pa. Code §71.31(c)) Section V.E.2 of the Planning Guide.
_____	_____	6. Comments and Responses: Copies of <i>all</i> written comments received and municipal response to <i>each</i> comment in relation to the proposed plan. (Reference - 25 Pa. Code §71.31(c)) Section V.E.2 of the Planning Guide.
_____	_____	7. Implementation Schedule: A complete project implementation schedule with milestone dates specific for each existing and future area of need. Other activities in the project implementation schedule should be indicated as occurring a finite number of days from a major milestone. (Reference - 25 Pa. Code §71.31(d)) Section V.F. of the Planning Guide. Include dates for the future initiation of feasibility evaluations in the project's implementation schedule for areas proposing completion of sewage facilities for planning periods in excess of five years. (Reference - 25 Pa. Code §71.21(c)).
_____	_____	8. Consistency Documentation: Documentation indicating that the appropriate agencies have received, reviewed and concurred with the method proposed to resolve identified inconsistencies within the proposed alternative and consistency requirements in 25 Pa. Code §71.21.(a)(5)(i-iii). (Reference - 25 Pa. Code §71.31(e)). Appendix B of the Planning Guide.

PART 3 GENERAL PLAN CONTENT CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	Item Required
_____	<u>I-1</u>	I. Previous Wastewater Planning
_____		A. Identify, describe and briefly analyze all past wastewater planning for its impact on the current planning effort:
_____	<u>I-1</u>	1. Previously undertaken under the Pennsylvania Sewage Facilities Act (Act). (Reference - Act 537, 35 P.S. §750.5(d)(1)).
_____	<u>I-1</u>	2. Has not been carried out according to an approved implementation schedule contained in the plans. (Reference - 25 Pa. Code §71.21(a)(5)(i)(A-D)). Section V.F of the Planning Guide.
_____	<u>I-1</u>	3. Is anticipated or planned by applicable sewer authorities or approved under a Chapter 94 Corrective Action Plan. (Reference - 25 Pa. Code §71.21(a)(5)(i)(A&B)). Section V.D. of the Planning Guide.
_____	<u>I-1</u>	4. Through planning modules for new land development, planning “exemptions” and addenda. (Reference - 25 Pa. Code §71.21(a)(5)(i)(A)).
_____	<u>II-1</u>	II. Physical and Demographic Analysis utilizing written description and mapping (All items listed below require maps, and all maps should show all current lots and structures and be of appropriate scale to clearly show significant information).
_____	<u>II-1</u>	A. Identification of planning area(s), municipal boundaries, Sewer Authority/Management Agency service area boundaries. (Reference – 25 Pa. Code §71.21(a)(1)(i)).
_____	<u>II-1</u>	B. Identification of physical characteristics (streams, lakes, impoundments, natural conveyance, channels, drainage basins in the planning area). (Reference - 25 Pa. Code §71.21(a)(1)(ii)).
_____	<u>II-3</u>	C. Soils - Analysis with description by soil type and soils mapping for areas not presently served by sanitary sewer service. Show areas suitable for in-ground onlot systems, elevated sand mounds, individual residential spray irrigation systems (IRSIS), and areas unsuitable for soil dependent systems. (Reference - 25 Pa. Code §71.21(a)(1)(iii)). Show Prime Agricultural Soils and any locally protected agricultural soils. (Reference - 25 Pa. Code §71.21(a)(1)(iii)).
_____	<u>II-13</u>	D. Geologic Features - (1) Identification through analysis, (2) mapping and (3) their relation to existing or potential nitrate-nitrogen pollution and drinking water sources. Include areas where existing nitrate-nitrogen levels are in excess of 5 mg/L. (Reference - 25 Pa. Code §71.21(a)(1)(iii)).
_____	<u>II-15</u>	E. Topography - Depict areas with slopes that are suitable for conventional systems; slopes that are suitable for elevated sand mounds and slopes that are unsuitable for onlot systems. (Reference - 25 Pa. Code §71.21(a)(1)(ii)).
_____	<u>II-15</u>	F. Potable Water Supplies - Identification through mapping, description and analysis. Include public water supply service areas and available public water supply capacity and aquifer yield for groundwater supplies. (Reference - 25 Pa. Code §71.21(a)(1)(vi)). Section V.C. of the Planning Guide.
_____	<u>II-16</u>	G. Wetlands-Identify wetlands as defined in 25 Pa. Code Chapter 105 by description, analysis and mapping. Include National Wetland Inventory mapping and potential wetland areas per the United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) mapped hydric soils. Proposed collection, conveyance and treatment facilities and lines must be located and labeled, along with the identified wetlands, on the map. (Reference - 25 Pa. Code §71.21(a)(1)(v)). Appendix B, Section II.I of the Planning Guide.

- _____ III-1 **III. Existing Sewage Facilities in the Planning Area - Identifying the Existing Needs**
- _____ III-1 A. Identify, map and describe municipal and non-municipal, individual and community sewerage systems in the planning area including:
- _____ III-4 1. Location, size and ownership of treatment facilities, main intercepting lines, pumping stations and force mains including their size, capacity, point of discharge. Also include the name of the receiving stream, drainage basin, and the facility's effluent discharge requirements. (Reference - 25 Pa. Code §71.21(a)(2)(i)(A)).
- _____ III-6 2. A narrative and schematic diagram of the facility's basic treatment processes including the facility's National Pollutant Discharge Elimination System (NPDES) permitted capacity, and the Clean Streams Law permit number. (Reference - 25 Pa. Code §71.21(a)(2)(i)(A)).
- _____ III-7 3. A description of problems with existing facilities (collection, conveyance and/or treatment), including existing or projected overload under 25 Pa. Code Chapter 94 (relating to municipal wasteload management) or violations of the NPDES permit, Clean Streams Law permit, or other permit, rule or regulation of DEP. (Reference - 25 Pa. Code §71.21(a)(2)(i)(B)).
- _____ III-7 4. Details of scheduled or in-progress upgrading or expansion of treatment facilities and the anticipated completion date of the improvements. Discuss any remaining reserve capacity and the policy concerning the allocation of reserve capacity. Also discuss the compatibility of the rate of growth to existing and proposed wastewater treatment facilities. (Reference - 25 Pa. Code §71.21(a)(4)(i & ii)).
- _____ III-7 5. A detailed description of the municipality's operation and maintenance (O & M) requirements for small flow treatment facility systems, including the status of past and present compliance with these requirements and any other requirements relating to sewage management programs (SMPs). (Reference - 25 Pa. Code §71.21(a)(2)(i)(C)).
- _____ III-7 6. Disposal areas, if other than stream discharge, and any applicable groundwater limitations. (Reference - 25 Pa. Code §71.21(a)(4)(i & ii)).
- _____ III-8 B. Using DEP's publication titled *Act 537 Sewage Disposal Needs Identification* (3800-BK-DEP1949), identify, map and describe areas that utilize individual and community onlot sewage disposal and, unpermitted collection and disposal systems ("wildcat" sewers, borehole disposal, etc.) and retaining tank systems in the planning area including:
- _____ III-8 1. The types of onlot systems in use. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(A)).
- _____ III-9 2. A sanitary survey complete with description, map and tabulation of documented and potential public health, pollution, and operational problems (including malfunctioning systems) with the systems, including violations of local ordinances, the Act, the Clean Stream Law or regulations promulgated thereunder. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(B)).
- _____ III-11 3. A comparison of the types of onlot sewage systems installed in an area with the types of systems which are appropriate for the area according to soil, geologic conditions, topographic limitations sewage flows, and 25 Pa. Code Chapter 73 (relating to standards for sewage disposal facilities). (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)).
- _____ III-11 4. An individual water supply survey to identify possible contamination by malfunctioning onlot sewage disposal systems consistent with DEP's *Act 537 Sewage Disposal Needs Identification* publication. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(B)).

- | | | |
|---------------|---------------|---|
| <u> </u> | <u>III-12</u> | 5. Detailed description of O & M requirements of the municipality for individual and small volume community onlot systems, including the status of past and present compliance with these requirements and any other requirements relating to SMPs. (Reference - 25 Pa. Code §71.21(a)(2)(i)(C)). |
| <u> </u> | <u>III-12</u> | C. Identify wastewater sludge and septage generation, transport and disposal methods. Include this information in the sewage facilities alternative analysis including: |
| <u> </u> | <u>III-12</u> | 1. Location of sources of wastewater sludge or septage (Septic tanks, holding tanks, wastewater treatment facilities). (Reference – 25 Pa. Code §71.71). |
| <u> </u> | <u>III-13</u> | 2. Quantities of the types of sludges or septage generated. (Reference - 25 Pa. Code §71.71). |
| <u> </u> | <u>III-13</u> | 3. Present disposal methods, locations, capacities and transportation methods. (Reference - 25 Pa. Code §71.71). |
| <u> </u> | <u>IV-1</u> | IV. Future Growth and Land Development |
| <u> </u> | | A. Identify and briefly summarize all municipal and county planning documents adopted pursuant to the Pennsylvania Municipalities Planning Code (Act 247) including: |
| <u> </u> | <u>IV-1</u> | 1. All land use plans and zoning maps that identify residential, commercial, industrial, agricultural, recreational and open space areas. (Reference - 25 Pa. Code §71.21(a)(3)(iv)). |
| <u> </u> | <u>IV-2</u> | 2. Zoning or subdivision regulations that establish lot sizes predicated on sewage disposal methods. (Reference – 25 Pa. Code §71.21(a)(3)(iv)). |
| <u> </u> | <u>IV-6</u> | 3. All limitations and plans related to floodplain and stormwater management and special protection (25 Pa. Code Chapter 93) areas. (Reference - 25 Pa. Code §71.21(a)(3)(iv)) Appendix B, Section II.F of the Planning Guide. |
| <u> </u> | <u>IV-7</u> | B. Delineate and describe the following through map, text and analysis. |
| <u> </u> | <u>IV-7</u> | 1. Areas with existing development or plotted subdivisions. Include the name, location, description, total number of equivalent dwelling units (EDUs) in development, total number of EDUs currently developed and total number of EDUs remaining to be developed (include time schedule for EDUs remaining to be developed). (Reference - 25 Pa. Code §71.21(a)(3)(i)). |
| <u> </u> | <u>IV-9</u> | 2. Land use designations established under the Pennsylvania Municipalities Planning Code (35 P.S. 10101-11202), including residential, commercial and industrial areas. (Reference - 25 Pa. Code §71.21(a)(3)(ii)). Include a comparison of proposed land use as allowed by zoning and existing sewage facility planning. (Reference - 25 Pa. Code §71.21(a)(3)(iv)). |
| <u> </u> | <u>IV-10</u> | 3. Future growth areas with population and EDU projections for these areas using historical, current and future population figures and projections of the municipality. Discuss and evaluate discrepancies between local, county, state and federal projections as they relate to sewage facilities. (Reference - 25 Pa. Code §71.21(a)(1)(iv) and (a)(3)(iii)). |
| <u> </u> | <u>IV-13</u> | 4. Zoning, and/or subdivision regulations; local, county or regional comprehensive plans; and existing plans of any other agency relating to the development, use and protection of land and water resources with special attention to: (Reference - 25 Pa. Code §71.21(a)(3)(iv)).
--public ground/surface water supplies
--recreational water use areas
--groundwater recharge areas
--industrial water use
--wetlands |

_____ IV-14 5. Sewage planning necessary to provide adequate wastewater treatment for 5 and 10-year future planning periods based on projected growth of existing and proposed wastewater collection and treatment facilities. (Reference - 25 Pa. Code §71.21(a)(3)(v)).

_____ V-1 **V. Identify Alternatives to Provide New or Improved Wastewater Disposal Facilities**

_____ V-1 A. Conventional collection, conveyance, treatment and discharge alternatives including:

_____ V-2 1. The potential for regional wastewater treatment. (Reference - 25 Pa. Code §71.21(a)(4)).

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

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

_____ V-3 a. Repair. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(A)).

_____ V-3 b. Upgrading. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(B)).

_____ V-3 c. Reduction of hydraulic or organic loading to existing facilities. (Reference - 25 Pa. Code §71.71).

_____ V-3 d. Improved O & M. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(C)).

_____ V-3 e. Other applicable actions that will resolve or abate the identified problems. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(D)).

_____ V-6 4. Repair or replacement of existing collection and conveyance system components. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(A)).

_____ V-10 5. The need for construction of new community sewage systems including sewer systems and/or treatment facilities. (Reference - 25 Pa. Code §71.21(a)(4)(iii)).

_____ V-10 6. Use of innovative/alternative methods of collection/conveyance to serve needs areas using existing wastewater treatment facilities. (Reference - 25 Pa. Code §71.21(a)(4)(ii)(B)).

_____ V-10 B. The use of individual sewage disposal systems including IRSIS systems based on:

_____ V-11 1. Soil and slope suitability. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)).

_____ V-11 2. Preliminary hydrogeologic evaluation. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)).

_____ V-11 3. The establishment of a SMP. (Reference - 25 Pa. Code §71.21(a)(4)(iv)). See also Part "F" below.

_____ V-11 4. The repair, replacement or upgrading of existing malfunctioning systems in areas suitable for onlot disposal considering: (Reference - 25 Pa. Code §71.21(a)(4)).

_____ V-11 a. Existing technology and sizing requirements of 25 Pa. Code Chapter 73. (Reference - 25 Pa. Code §73.31-§73.72).

_____ V-11 b. Use of expanded absorption areas or alternating absorption areas. (Reference - 25 Pa. Code §73.16).

_____ V-12 c. Use of water conservation devices. (Reference - 25 Pa. Code §71.73(b)(2)(iii)).

- _____ V-12 C. The use of small flow sewage treatment facilities or package treatment facilities to serve individual homes or clusters of homes with consideration of: (Reference - 25 Pa. Code §71.64(d)).
- _____ V-12 1. Treatment and discharge requirements. (Reference - 25 Pa. Code §71.64(d)).
- _____ V-12 2. Soil suitability. (Reference - 25 Pa. Code §71.64(c)(1)).
- _____ V-12 3. Preliminary hydrogeologic evaluation. (Reference - 25 Pa. Code §71.64(c)(2)).
- _____ V-12 4. Municipal, Local Agency or other controls over O & M requirements through a SMP. (Reference - 25 Pa. Code §71.64(d)). See Part "F" below.
- _____ V-13 D. The use of community land disposal alternatives including:
- _____ V-13 1. Soil and site suitability. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)).
- _____ V-13 2. Preliminary hydrogeologic evaluation. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)).
- _____ V-13 3. Municipality, Local Agency or other controls over O & M requirements through a SMP. (Reference - 25 Pa. Code §71.21(a)(2)(ii)(C)). See Part "F" below.
- _____ V-13 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.
- _____ V-13 E. The use of retaining tank alternatives on a temporary or permanent basis including: (Reference - 25 Pa. Code §71.21(a)(4)).
- _____ V-13 1. Commercial, residential and industrial use. (Reference - 25 Pa. Code §71.63(e)).
- _____ V-13 2. Designated conveyance facilities (pumper trucks). (Reference - 25 Pa. Code §71.63(b)(2)).
- _____ V-13 3. Designated treatment facilities or disposal site. (Reference - 25 Pa. Code §71.63(b)(2)).
- _____ V-14 4. Implementation of a retaining tank ordinance by the municipality. (Reference - 25 Pa. Code §71.63(c)(3)). See Part "F" below.
- _____ V-14 5. Financial guarantees when retaining tanks are used as an interim sewage disposal measure. (Reference - 25 Pa. Code §71.63(c)(2)).
- _____ V-14 F. SMPs to assure the future O & M of existing and proposed sewage facilities through:
- _____ V-14 1. Municipal ownership or control over the O & M of individual onlot sewage disposal systems, small flow treatment facilities, or other traditionally non-municipal treatment facilities. (Reference - 25 Pa. Code §71.21(a)(4)(iv)).
- _____ V-14 2. Required inspection of sewage disposal systems on a schedule established by the municipality. (Reference - 25 Pa. Code §71.73(b)(1)).
- _____ V-14 3. Required maintenance of sewage disposal systems including septic and aerobic treatment tanks and other system components on a schedule established by the municipality. (Reference - 25 Pa. Code §71.73(b)(2)).
- _____ V-14 4. Repair, replacement or upgrading of malfunctioning onlot sewage systems. (Reference - 25 Pa. Code §71.21(a)(4)(iv) and §71.73(b)(5)) through:
- _____ V14 a. Aggressive pro-active enforcement of ordinances that require O & M and prohibit malfunctioning systems. (Reference - 25 Pa. Code §71.73(b)(5)).
- _____ V-14 b. Public education programs to encourage proper O & M and repair of sewage disposal systems.
- _____ V-14 5. Establishment of joint municipal SMPs. (Reference - 25 Pa. Code

§71.73(b)(8)).

- _____ V-15 6. Requirements for bonding, escrow accounts, management agencies or associations to assure O & M for non-municipal facilities. (Reference - 25 Pa. Code §71.71).
- _____ V-16 G. Non-structural comprehensive planning alternatives that can be undertaken to assist in meeting existing and future sewage disposal needs including: (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-16 1. Modification of existing comprehensive plans involving:
 - _____ V-16 a. Land use designations. (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-16 b. Densities. (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-16 c. Municipal ordinances and regulations. (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-16 d. Improved enforcement. (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-16 e. Protection of drinking water sources. (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-16 2. Consideration of a local comprehensive plan to assist in producing sound economic and consistent land development. (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-16 3. Alternatives for creating or changing municipal subdivision regulations to assure long-term use of on-site sewage disposal that consider lot sizes and protection of replacement areas. (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-17 4. Evaluation of existing local agency programs and the need for technical or administrative training. (Reference - 25 Pa. Code §71.21(a)(4)).
- _____ V-17 H. A no-action alternative which includes discussion of both short-term and long-term impacts on: (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-17 1. Water quality/public health. (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-17 2. Growth potential (residential, commercial, industrial). (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-18 3. Community economic conditions. (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-18 4. Recreational opportunities. (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-18 5. Drinking water sources. (Reference - 25 Pa. Code §71.21(a)(4)).
 - _____ V-18 6. Other environmental concerns. (Reference - 25 Pa. Code §71.21(a)(4)).

_____ VI-1 **VI. Evaluation of Alternatives**

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

- _____ VI-1 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 - 25 Pa. Code §71.21(a)(5)(i)(A)). Appendix B, Section II.A of the Planning Guide.
- _____ VI-2 2. Municipal wasteload management **Corrective Action Plans or Annual Reports** developed under 25 Pa. Code Chapter 94. (Reference - 25 Pa. Code §71.21(a)(5)(i)(B)). The municipality's recent Wasteload Management (25 Pa. Code Chapter 94) Reports should be examined to determine if the proposed alternative is consistent with the recommendations and findings of the report. Appendix B, Section II.B of the Planning Guide.
- _____ VI-3 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 - 25 Pa. Code §71.21(a)(5)(i)(C)). Appendix B, Section II.E of the Planning Guide.

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|-------|-------------|---|
| _____ | <u>VI-3</u> | 4. Comprehensive plans developed under the Pennsylvania Municipalities Planning Code. (Reference - 25 Pa. Code §71.21(a)(5)(i)(D)). The municipality's comprehensive plan must be examined to assure that the proposed wastewater disposal alternative is consistent with land use and all other requirements stated in the comprehensive plan. Appendix B, Section II.D of the Planning Guide. |
| _____ | <u>VI-3</u> | 5. Antidegradation requirements as contained in 25 Pa. Code Chapters 93, 95 and 102 (relating to water quality standards, wastewater treatment requirements and erosion control) and the Clean Water Act. (Reference - 25 Pa. Code §71.21(a)(5)(i)(E)). Appendix B, Section II.F of the Planning Guide. |
| _____ | <u>VI-4</u> | 6. State Water Plans developed under the Water Resources Planning Act (42 U.S.C.A. 1962-1962 d-18). (Reference - 25 Pa. Code §71.21(a)(5)(i)(F)). Appendix B, Section II.C of the Planning Guide. |
| _____ | <u>VI-4</u> | 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 - 25 Pa. Code §71.21(a)(5)(i)(G)). Appendix B, Section II.G of the Planning Guide. |
| _____ | <u>VI-4</u> | 8. County Stormwater Management Plans approved by DEP under the Storm Water Management Act (32 P.S. 680.1-680.17). (Reference - 25 Pa. Code §71.21(a)(5)(i)(H)). Conflicts created by the implementation of the proposed wastewater alternative and the existing recommendations for the management of stormwater in the county Stormwater Management Plan must be evaluated and mitigated. If no plan exists, no conflict exists. Appendix B, Section II.H of the Planning Guide. |
| _____ | <u>VI-5</u> | 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 - 25 Pa. Code §71.21(a)(5)(i)(I)) Appendix B, Section II.I of the Planning Guide. |
| _____ | <u>VI-6</u> | 10. Protection of rare, endangered or threatened plant and animal species as identified by the Pennsylvania Natural Diversity Inventory (PNDI). (Reference - 25 Pa. Code §71.21(a)(5)(i)(J)). Provide DEP with a copy of the completed <i>PNDI Manual Project Submission Form</i> . Also provide a copy of the response letters from the 4 jurisdictional agencies regarding the findings of the PNDI search. Appendix B, Section II.J of the Planning Guide. |
| _____ | <u>VI-6</u> | 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 (PHMC). (Reference - 25 Pa. Code §71.21(a)(5)(i)(K)). Provide DEP with a completed copy of a <i>Cultural Resource Notice</i> and a return receipt for its submission to PHMC. Provide a copy of the response letter or review stamp from the Bureau of Historic Preservation (BHP) indicating the project will have no effect on, or that there may be potential impacts on, known archaeological and historical sites and any avoidance and mitigation measures required. Appendix B, Section II.K of the Planning Guide. |

- _____ VI-7 B. Provide for the resolution of any inconsistencies in any of the points identified in Section VI.A. of this checklist by submitting a letter from the appropriate agency stating that the agency has received, reviewed and concurred with the resolution of identified inconsistencies. (Reference - 25 Pa. Code §71.21(a)(5)(ii). Appendix B of the Planning Guide.
- _____ VI-7 C. Evaluate alternatives identified in Section V of this checklist with respect to applicable water quality standards, effluent limitations or other technical, legislative or legal requirements. (Reference - 25 Pa. Code §71.21(a)(5)(iii)).
- _____ VI-8 D. Provide cost estimates using present worth analysis for construction, financing, ongoing administration, O & M and user fees for alternatives identified in Section V of this checklist. Estimates shall be limited to areas identified in the plan as needing improved sewage facilities within 5 years from the date of plan submission. (Reference - 25 Pa. Code §71.21(a)(5)(iv)).
- _____ VI-9 E. Provide an analysis of the funding methods available to finance the proposed alternatives evaluated in Section V of this checklist. Also provide documentation to demonstrate which alternative and financing scheme combination is the most cost-effective; and a contingency financial plan to be used if the preferred method of financing cannot be implemented. The funding analysis shall be limited to areas identified in the plan as needing improved sewage facilities within 5 years from the date of the plan submission. (Reference - 25 Pa. Code §71.21(a)(5)(v)).
- _____ VI-10 F. Analyze the need for immediate or phased implementation of each alternative proposed in Section V of this checklist including: (Reference - 25 Pa. Code §71.21(a)(5)(vi)).
- _____ VI-10 1. A description of any activities necessary to abate critical public health hazards pending completion of sewage facilities or implementation of SMPs. (Reference - 25 Pa. Code §71.21(a)(5)(vi)(A)).
- _____ VI-10 2. A description of the advantages, if any, in phasing construction of the facilities or implementation of a SMP justifying time schedules for each phase. (Reference - 25 Pa. Code §71.21(a)(5)(vi)(B)).
- _____ VI-10 G. Evaluate administrative organizations and legal authority necessary for plan implementation. (Reference - 25 Pa. Code §71.21(a)(5)(vi)(D)).
- _____ VII-1 **VII. Institutional Evaluation**
- _____ VII-1 A. Provide an analysis of all existing wastewater treatment authorities, their past actions and present performance including:
- _____ VII-1 1. Financial and debt status. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-1 2. Available staff and administrative resources. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-2 3. Existing legal authority to:
- _____ VII-2 a. Implement wastewater planning recommendations. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-2 b. Implement system-wide O & M activities. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-2 c. Set user fees and take purchasing actions. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-2 d. Take enforcement actions against ordinance violators. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-2 e. Negotiate agreements with other parties. (Reference - 25 Pa. Code §71.61(d)(2)).

- _____ VII-2 f. Raise capital for construction and O & M of facilities. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-3 B. Provide an analysis and description of the various institutional alternatives necessary to implement the proposed technical alternatives including:
- _____ VII-3 1. Need for new municipal departments or municipal authorities. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-3 2. Functions of existing and proposed organizations (sewer authorities, onlot maintenance agencies, etc.). (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-4 3. Cost of administration, implementability, and the capability of the authority/agency to react to future needs. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-4 C. Describe all necessary administrative and legal activities to be completed and adopted to ensure the implementation of the recommended alternative including:
- _____ VII-4 1. Incorporation of authorities or agencies. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-4 2. Development of all required ordinances, regulations, standards and inter-municipal agreements. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-4 3. Description of activities to provide rights-of-way, easements and land transfers. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-5 4. Adoption of other municipal sewage facilities plans. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-5 5. Any other legal documents. (Reference - 25 Pa. Code §71.61(d)(2)).
- _____ VII-5 6. Dates or timeframes for items 1-5 above on the project's implementation schedule.
- _____ VII-5 D. Identify the proposed institutional alternative for implementing the chosen technical wastewater disposal alternative. Provide justification for choosing the specific institutional alternative considering administrative issues, organizational needs and enabling legal authority. (Reference - 25 Pa. Code §71.61(d)(2)).

- _____ VIII-1 **VIII. Implementation Schedule and Justification for Selected Technical & Institutional Alternatives**
- _____ VIII-3 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:
- _____ VIII-4 1. Existing wastewater disposal needs. (Reference - 25 Pa. Code §71.21(a)(6)).
- _____ VIII-4 2. Future wastewater disposal needs. (5 and 10 year growth areas). (Reference - 25 Pa. Code §71.21(a)(6)).
- _____ VIII-4 3. O & M considerations. (Reference - 25 Pa. Code §71.21(a)(6)).
- _____ VIII-4 4. Cost-effectiveness. (Reference - 25 Pa. Code §71.21(a)(6)).
- _____ VIII-5 5. Available management and administrative systems. (Reference - 25 Pa. Code §71.21(a)(6)).
- _____ VIII-5 6. Available financing methods. (Reference - 25 Pa. Code §71.21(a)(6)).
- _____ VIII-5 7. Environmental soundness and compliance with natural resource planning and preservation programs. (Reference - 25 Pa. Code §71.21(a)(6)).

- _____ VIII-6 B. Designate and describe the capital financing plan chosen to implement the selected alternative(s). Designate and describe the chosen back-up financing plan. (Reference - 25 Pa. Code §71.21(a)(6))
- _____ VIII-6 C. Designate and describe the implementation schedule for the recommended alternative, including justification for any proposed phasing of construction or implementation of a SMP. (Reference – 25 Pa. Code §71.31(d))

- _____ IX-1
 - _____ IX-1
- IX. Environmental Report (ER) generated from the UER Process**
- A. Complete an ER as required by the UER process and as described in the DEP Technical Guidance (381-5511-111). Include this document as “Appendix A” to the Act 537 Plan Update Revision. **Note: An ER is required only for Wastewater projects proposing funding through any of the funding sources identified in the UER.**

ADDITIONAL REQUIREMENTS FOR PENNVEST PROJECTS

Municipalities that propose to implement their official sewage facilities plan updates with PENNVEST funds must meet 6 additional requirements to be eligible for such funds. See *A Guide for Preparing Act 537 Update Revisions* (362-0300-003), Appendix N for greater detail or contact the DEP regional office serving your county listed in Appendix J of the same publication.

DEP Use Only	Indicate Page #(s) in Plan	Item Required
_____	_____	1. Environmental Impact Assessment. (Planning Phase) The UER replaces the Environmental Impact Assessment that was a previous requirement for PENNVEST projects.
_____	_____	2. Cost Effectiveness (Planning Phase) The cost-effectiveness analysis should be a present-worth (or equivalent uniform annual) cost evaluation of the principle alternatives using the interest rate that is published annually by the Water Resources Council. Normally, for PENNVEST projects the applicant should select the most cost-effective alternative based upon the above analysis. Once the alternative has been selected the user fee estimates should be developed based upon interest rates and loan terms of the selected funding method.
_____	_____	3. Second Opinion Project Review. (Design Phase)
_____	_____	4. Minority Business Enterprise/Women's Business Enterprise (Construction Phase)
_____	_____	5. Civil Rights. (Construction Phase)
_____	_____	6. Initiation of Operation/Performance Certification. (Post-construction Phase)

I/A TECHNOLOGIES

PARTIAL LISTING OF INNOVATIVE AND ALTERNATIVE TECHNOLOGIES

TREATMENT TECHNOLOGIES

Aquaculture
Aquifer Recharge
Biological Aerated Filters
Constructed Wetlands
Direct Reuse (NON-POTABLE)
Horticulture
Overland Flow
Rapid Infiltration
Silviculture
Microscreens
Controlled Release Lagoons
Swirl Concentrator

SLUDGE TREATMENT TECHNOLOGIES

Aerated Static Pile Composting
Enclosed Mechanical Composting (In vessel)
Revegetation of Disturbed Land
Aerated Windrow Composting

ENERGY RECOVERY TECHNOLOGIES

Anaerobic Digestion with more than 90 percent
Methane Recovery
Cogeneration of Electricity
Self-Sustaining Incineration

INDIVIDUAL & SYSTEM-WIDE COLLECTION TECHNOLOGIES

Cluster Systems
Septage Treatment
Small Diameter Gravity Sewers
Step Pressure Sewers
Vacuum Sewers
Variable Grade Sewers
Septic Tank Effluent Pump with
Pressure Sewers

PLAN SUMMARY

This Act 537 Plan (Plan) has been prepared for the Conyngham Borough (Borough) and Sugarloaf Township (Township), Luzerne County, pursuant to the Pennsylvania Sewage Facilities Act (Act 537 of 1968 and the Pennsylvania Code, Chapters 71, 72, and 73). This Plan considers the long-term wastewater management alternatives for the Borough and Township, as identified and required by the Pennsylvania Department of Environmental Protection (PADEP) through a Task Activity Report, submitted January 26, 2017, which is located within **Appendix A** of the Plan.

The purpose of this Plan is to evaluate alternatives for providing short and long term wastewater management for both the Borough and Township.

- A. *Identify the proposed service areas and major problems evaluated in the plan. (Reference - 25 Pa. Code §71.21(a)(7)(i)).*

Service Area Evaluated

The Planning Area is geographically located in the southern region of Luzerne County and encompasses all of Sugarloaf Township and Conyngham Borough. Conyngham Borough is completely land locked by Sugarloaf Township. Sugarloaf Township is bound to the north by Nescopeck Township and Hollenback Township; to the east by Butler Township; to the south by Hazle Township; and to the west by Black Creek Township.

Sewage Needs Identification

A fundamental part of this Plan is the identification and documentation of the sewage disposal needs in the planning area. Adequate documentation of these sewage disposal needs is considered fundamental for all following work involving sewage disposal alternatives and solutions.

On-Lot Disposal Systems

The “Sewage Needs Assessment” was performed in a manner that is consistent with “Act 537 Sewage Disposal Needs Identification” in 2017. Sewage surveys were conducted for a total of 154 properties within the study area, 10 surveys in Conyngham Borough and 144 surveys in Sugarloaf Township. Each property’s on-lot disposal system was evaluated per DEP’s publication titled “Act 537 Sewage Disposal Needs Identification.”

While the overall malfunction rate was low, based upon the observations and area knowledge, a few areas were identified within the Borough and Township that needs to be addressed. Three homes located on School Lane in the Borough have on-lot cesspool systems. Based upon the age of the cesspools, no available replacement area on each lot and the lack of well isolation distance as required, it is recommended that these homes be connected to public sewer. In addition, there is a section of homes along Sugarloaf Avenue and Route 93, within the Borough and Township, which are also on on-lot systems. Majority of the system investigated with conventional in ground system, there is a history of system repair and poor soil conditions. Therefore, it is recommended that these homes also be connected to public sewer.

Wastewater Collection System

The existing collection and conveyance system, along with private sewer laterals, is known to contribute a significant amount of inflow and infiltration (I&I) to the WWTP. In 2016/2017, a Flow Metering Study within the sewer service area was conducted that focused on six drainage basins, which included Country Club, Luchi Manor, Brookhill II, The Meadows, Conyngham Borough, and Brookhill I areas. By utilizing portable flow meters, flow from each drainage basin and rainfall, was recorded from October 20, 2016 through January 24, 2017.

During the study, some portions of the collection and conveyance system were subject to surcharging; however, it was not possible to identify the exact cause. Surcharging could be the result of capacity limitations of the sewer main size or defects to the sewer main such as protruding laterals, root blockages, structural defects or other maintenance issues.

Wastewater Treatment Plants

There are two (2) wastewater treatment plants (WWTP) located within the Planning Area. One is owned and operated by the Conyngham Sugarloaf Joint Municipal Authority (CSJMA) and the other is a privately owned WWTP located in Sugarloaf Township at the existing hotel at the intersection of Interstate 80 and PA State Route 93

As discussed, the existing CSJMA collection and conveyance system, along with private sewer laterals, is known to contribute a significant amount of inflow and infiltration (I&I) to the CSJMA WWTP. This I&I is a contributor to the WWTP being both hydraulically and

organically overloaded within the past several years. Organic overload conditions are considered to be a result of the hydraulic overload conditions.

In addition, nutrient reduction requirements for the WWTP's discharge under the Chesapeake Bay Initiative is required. Pennsylvania's Chesapeake Bay Tributary Strategy will limit total nitrogen (TN) and total phosphorus (TP) discharges. According to the implementation and planning guidelines issued by Pennsylvania Department of Environmental Protection (PADEP) under the Chesapeake Bay Initiative, the Authority's WWTP falls under the Phase 4 category with the nutrient cap loads calculated based on an annual daily flow of 0.4 MGD and discharge concentrations of 6 mg/L TN and 0.8 mg/L TP. The cap load limits (7,306 lbs TN and 974 lbs TP per year) are in the form of rolling annual maximum values for compliance.

The private WWTP is a pre-manufactured treatment facility that utilizes the extended aeration process. This facility was only constructed for interim purposes and was not constructed nor permitted for long-term use.

- B. Identify the alternative(s) chosen to solve the problems and serve the areas of need identified in the plan. Also, include any institutional arrangements necessary to implement the chosen alternative(s). (Reference - 25 Pa. Code §71.21(a)(7)(ii))*

The identified alternatives are presented as follows:

1. Alternative C2 - Expansion and Upgrade with SBR Process and Credit Purchase

The Expansion and Upgrade with SBR Process and Credit Purchase will resolve the current WWTP hydraulic and organic overload issues and achieve compliance with the requirements of upcoming NPDES permit renewal, especially on nutrient discharge cap loads. This alternative includes the proposed modifications:

- New submersible influent pump station
- New enclosed screening facility
- New grit removal system
- New control building with lab, office, and process equipment areas
- New Sequencing Batch Reactor Tanks and Accessories
- New Post EQ Tanks and Pumps
- New blowers and aeration system
- New piping and valves
- New Chemical Feed Systems
- Rehab and convert existing tanks to aerobic digesters
- New digester covers and air diffuser system
- New UV disinfection system in existing clarifier tank
- New magmeter system in existing clarifier tank
- New plant water system in existing chlorine tanks
- Rehab of existing control building to become a new maintenance building
- New Process SCADA, instrumentation and electrical

2. School Lane Sewer Extension (Borough)

The School Lane sewer extension will eliminate a potential issue that was identified within the Needs Analysis.

3. Sugarloaf Avenue/Route 93 Sewer Extension (Borough and Township)

The Sugarloaf Ave/Route 93 sewer extension will eliminate a potential issue that was identified within the Needs Analysis.

4. Pilot Sewer Extension (Township)

The Pilot/Hotel sewer extension will allow elimination of the existing WWTP which was originally permitted as a temporary facility.

5. Inflow and Infiltration (I&I) Reduction and Sewer Rehabilitation Program

An Inflow and Infiltration (I&I) Reduction and Sewer Rehabilitation Program will reduce the amount of groundwater and stormwater entering the sanitary sewer collection system. The I&I Program will include systematic replacement and rehabilitation of the sanitary sewer mains and elimination of I&I from private sources. The I&I program will also include sewer main televising, flow monitoring, smoke testing and in-home inspections.

6. Sewage Management Plan

A Sewage Management Plan will be implemented for continued use of on-lot disposal systems that are in the areas that (1) are not already sewered by public wastewater collection systems, (2) cannot be feasibly connected to the centralized collection systems and (3) meet the requirements as outlined in PA Code 25, Chapters 71 through 73 governing the use of on-lot disposals systems.

Based on the evaluation and analyses presented throughout the plan, most notably within **Appendix E**, the selected alternatives are recommended as the most viable and cost effective ones.

- C. *Present the estimated cost of implementing the proposed alternative (including the user fees) and the proposed funding method to be used. (Reference - 25 Pa. Code §71.21(a)(7)(ii)).*

The estimated construction and project costs are found in the following Table.

Construction and Project Costs for Selected Alternatives

Selected Alternative	Construction Cost	Capital Project Cost	Rate Impact Cost/EDU/Month
Expansion and Upgrade with SBR (0.50 MGD)	\$6,661,200	\$7,993,440	\$36.12
School Lane Sewer Extension - Borough	\$74,100	\$88,900	\$0.38
Sugarloaf Ave/Route 93 Sewer Extension – Borough and Township	\$367,250	\$440,700	\$1.69
Pilot/Hotel Sewer Extension - Township	\$1,951,000	\$2,341,200	\$9.36
Inflow and Infiltration Reduction and Sewer Rehabilitation Program (Included in current rates and budget)	N/A	\$300,000 / yr. (Annual O & M)	\$19.01
Sewage Management Program	N/A	N/A	N/A
Total	\$9,053,550	\$10,864,240	\$66.56

The preliminary engineer's opinion of estimated project cost of implementing all the alternatives is \$10.86 million. The Selected Alternatives are expected to require an increase in user rates, which may vary depending on final incurred project costs and funding packages available for the project. This Planning Document is designed to evaluate a cost effective and implementable alternative and is not intended to set user rates. However, preliminary calculations show a user fee that will be need to be gradually increased from \$50 a month to \$85 a month per EDU to implement all the alternatives. Therefore, an overall increase of \$35 a month per EDU is required.

The envisioned method of financing is a financing package through PENNVEST. However, an attempt will also be made to secure grant funds from State and County sources.

- D. *Identify the municipal commitments necessary to implement the Plan. (Reference - 25 Pa. Code §71.21(a)(7)(iii)).*

Conyngnam Borough and Sugarloaf Township will need to adopt this Plan by resolution

- 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 - 25 Pa. Code §71.21(a)(7)(iv)).*

Refer to attached Implementation Schedule.

IMPLEMENTATION SCHEDULE

The following implementation schedule is proposed to undertake the selected alternatives.

TASK	COMPLETION DATE
Submit Act 537 Plan for Public and Planning Committee Review (CB/ST/Public)	January 2020
Public Comment Review Period– (30 days)	February 2020
Planning Committee Review Period (60 days)	March 2020
Respond All Comments	April 2020
Submit Revised Act 537 Plan to CSJMA	May 2020
Adopt Act 537 Plan by CB/ST (60 Days)	July 2020
Submit Act 537 Plan to DEP	August 2020
Begin Collection System Projects Survey and Preliminary Design	August 2020
Approve Act 537 Plan by PA-DEP (6- Months)	February 2021
Submit Part I NPDES for the WWTP Expansion and Upgrade (CSJMA/Entech – within 30 days of plan approval)	March 2021
Part I Issuance by PA-DEP (120 Days)	July 2021
Submit Water Quality Management Part II Permit Applications for the WWTP Upgrade/ Expansion Project and all other Collection System Projects (CSJMA/Entech – within 180 days of Part I issuance by PA-DEP)	January 2022
Part II Issuance by PA-DEP (150 Days)	June 2022
CSJMA to Apply and Obtain Financing (Within 120 days of Part II Issuance)	October 2022
Complete PennVest Certification form / Solicit Bids / Complete DBE solicitation and approval for Construction (CSJMA/Entech –Within 300 days of Part II Issuance by PA-DEP)	April 2023
Start Construction (CSJMA-Within 365 days of Part II Issuance by PA-DEP)	April 2023
Complete Construction (CSJMA-Within 2 years of Construction Start)	April 2025
Initiate Operation of Upgraded and Newly Constructed Facilities (CSJMA-At construction completion)	April 2025
Basis of Certification Report and Execute an Affirmative Project Performance Certificate (CSJMA/Entech-Within 90 days of construction completion)	July 2025
Construction Completion of all Collection System Projects (Within 180 days of WWTP construction completion)	October 2025

IMPLEMENTATION SCHEDULE

The following implementation schedule is proposed to undertake the selected alternatives.

TASK	COMPLETION DATE
Submit Act 537 Plan for Public and Planning Committee Review (CB/ST/Public)	January 2020
Public Comment Review Period– (30 days)	February 2020
Planning Committee Review Period (60 days)	March 2020
Respond All Comments	April 2020
Submit Revised Act 537 Plan to CSJMA	May 2020
Adopt Act 537 Plan by CB/ST (60 Days)	July 2020
Submit Act 537 Plan to DEP	August 2020
Begin Collection System Projects Survey and Preliminary Design	August 2020
Approve Act 537 Plan by PA-DEP (6- Months)	February 2021
Submit Part I NPDES for the WWTP Expansion and Upgrade (CSJMA/Entech – within 30 days of plan approval)	March 2021
Part I Issuance by PA-DEP (120 Days)	July 2021
Submit Water Quality Management Part II Permit Applications for the WWTP Upgrade/ Expansion Project and all other Collection System Projects (CSJMA/Entech – within 180 days of Part I issuance by PA-DEP)	January 2022
Part II Issuance by PA-DEP (150 Days)	June 2022
CSJMA to Apply and Obtain Financing (Within 120 days of Part II Issuance)	October 2022
Complete PennVest Certification form / Solicit Bids / Complete DBE solicitation and approval for Construction (CSJMA/Entech –Within 300 days of Part II Issuance by PA-DEP)	April 2023
Start Construction (CSJMA-Within 365 days of Part II Issuance by PA-DEP)	April 2023
Complete Construction (CSJMA-Within 2 years of Construction Start)	April 2025
Initiate Operation of Upgraded and Newly Constructed Facilities (CSJMA-At construction completion)	April 2025
Basis of Certification Report and Execute an Affirmative Project Performance Certificate (CSJMA/Entech-Within 90 days of construction completion)	July 2025
Construction Completion of all Collection System Projects (Within 180 days of WWTP construction completion)	October 2025

SECTION I. PREVIOUS WASTEWATER PLANNING

A. *Identify, describe and briefly analyze all past wastewater planning for its impact on the current planning effort:*

1. *Previously undertaken under the Pennsylvania Sewage Facilities Act.*
2. *Has not been carried out according to an approved implementation schedule contained in the plans.*
3. *Is anticipated or planned by applicable sewer authorities or approved under a Chapter 94 Corrective Action Plan.*
4. *Through planning modules for new land development, planning “exemptions” and addenda.*

This section identifies, describes and briefly analyzes past wastewater planning and its impact on the current planning effort for either Conyngham Borough and/or Sugarloaf Township, which are both located in Luzerne County as shown on the Study Area Location Map, located within **Appendix B.**

In particular, this section addresses wastewater planning adopted pursuant to the Act 537 Planning process, along with other municipal and county planning documents that potentially affect the proposed Plan’s implementation.

The following list presents the previous wastewater planning efforts that have occurred in Conyngham Borough and/or Sugarloaf Township:

- 1963 *Conyngham Borough* – “A Sewage Feasibility Study”, prepared by Roy F. Weston, Inc. determined the need for a Wastewater Treatment Plant (WWTP) to serve Conyngham Borough. The WWTP, which is still in operation, was completed in 1972.
- 1973 *Sugarloaf Township* – “An Engineering Study and Financial Feasibility Report for Sewage in Sugarloaf Township”, prepared by George R. Nelson Associate, determined the need for collecting sewage from the Sybertsville area and the conveyance to the existing Conyngham Borough Authority WWTP. This extension, that included a pumping station, was completed in 2000.
- 1973 *Conyngham Borough Authority and Sugarloaf Township* – “The Luzerne County Master Plan for Water Supply and Wastewater Management,” prepared by

Gilbert Associates, Inc. determined that the sewage collection system in Conyngham Borough needs to be improved and renovated. Sugarloaf Township should construct a wastewater treatment plant north of Conyngham. Sewage collection systems should be constructed in other areas on the Township to be served by the Conyngham Borough Authority, including an interceptor along State Route 93.

1990 *Conyngham Borough Authority* – “An Official Sewage Facilities Plan Update / Corrective Plan and Schedule”, prepared by Roy F. Weston, Inc. made the following recommendations:

To be completed in calendar year 1990

- The Authority will establish a program to ensure that damaged or abandoned cleanouts are repaired.
- Investigate potential cross-connection found between Pine Lane and Woodland Drive.
- The Authority will repair and/or rehabilitate the upper section of the collection system along South Main Street.
- The Authority will receive results of flow tests on the Brookhill sewer system and press the owner to repair any sections determined to have excessive infiltration / inflow.

To be completed in calendar year 1991

- The Authority will smoke test portions of its sewer lines to verify that previously disconnected roof drains, damaged or abandoned cleanouts, and sump pump connections were not reconnected to the system.
- The Authority will repair and/or rehabilitate the sewer lines located in easements on the east side of Main Street.

To be completed in calendar year 1992

- The Authority will repair and/or rehabilitate the section of its collection system along the access road to the park and swimming pool.

The Authority continues to monitor the repair of abandoned and damaged cleanouts and the potential cross connection was determined not to exist. The upper section of the collection system along South and East Main Street were repaired and grouted. The Brookhill flow tests revealed that a significant amount of inflow and infiltration (I&I) does exist within this area. However, repairs were never completed.

1992 *Conyngham Borough Authority* – “Wasteload Management Corrective Action Plan and Schedule”, prepared by RDK Engineering, Inc., outlined the following programs:

- Perform fieldwork to locate sewer lines, manholes, lift stations, and other pertinent items. Develop reference drawings for the identified items.
- Collect and review all available data.
- Perform I&I flow study.
- Perform sewer system evaluation.
- Identify previous rehabilitation and documentation.
- Present final recommendations for relieving the hydraulic overload.

The Authority completed the identified recommendations and concluded that there were four (4) primary areas that required rehabilitation/replacement to remove excessive I&I, which are listed below:

Area No. 1: Replacement of the sewer line between MH 188 and MH 78.

Area No. 2: Rehabilitation of Luchi Manor, including physical inspection, smoke testing, grouting, and/or replacement of defective lines.

Area No. 3: Sewer system evaluation and corrective action to the area contributing to MH 13.

Area No. 4: Sewer system evaluation of the remaining system.

Area No. 1 was grouted and RDK Engineering, Inc. estimated that over 45,000 GPD of I&I was removed from this short stretch of collection system. In Area No. 2, Authority personnel completed physical inspections and identified several fractured joints that were repaired within Luchi Manor. Area No. 3 and 4 were addressed by isolating suspected critical areas through visual inspections during heavy rains. Grouting was then completed on a select number of laterals, joints, and manholes, which RDK Engineering, Inc. estimated removed 453,400 GPD of I&I. Based upon these estimated reductions in I&I and on the Corrective Action Plan, PADEP released the remaining 200 EDUs to the Authority to issue for new development.

1996 *Conyngham Borough* – “Official Sewage Facilities Plan Update”, prepared by RDK Engineering, Inc., called for several measures to improve the conveyance and treatment of the Borough.

- Replacement of 1,200 feet of 8-inch vitrified clay pipe between Manhole No. 94 and No. 76 with 15-inch SDR 35 PVC sewer pipe, which will prevent the overflow of sanitary sewage in the area of Main Street and Sugarloaf Avenue.
- Installation of an overflow structure to be located at Manhole No. 2 on the Authority’s wastewater conveyance interceptor. This structure and associated conveyance line will facilitate the conveyance of excessively large wastewater flows, associated with wet-weather/high groundwater conditions, to a proposed additional chlorine contact tank at the Authority’s WWTP. The proposed additional chlorine contact tank will allow for the adequate treatment of wastewater received by the WWTP facility at the facility’s peak design flow of 0.875 MGD. The overflow structure, its associated conveyance line and proposed chlorine contact tank will prevent future, additional overflows of untreated wastewater from

the wastewater facility's treatment units, during high flow conditions, as has frequently occurred in the past.

- Replacement of existing electrical, mechanical, and other operational equipment at the Authority's WWTP.
- Eliminate the existing pump station located on Howard Avenue and replace with a gravity sewer line running along Route 93.
- Put 20 of Sugarloaf Township's EDUs in reserve for the Authority from the allocated 200 EDUs, which PADEP granted the Authority. This allotment was due to the Authority's continuing effort to remove its I&I. By putting the 20 EDUs in reserve on an as-needed basis, the Conyngham Borough Planning Commission's projected need for development within the Conyngham Borough will be secured until a plant expansion can occur for both Conyngham Borough and Sugarloaf Township.

The Authority completed the sewer line replacement, the construction of the overflow structure, replacement of select existing electrical, mechanical, and other operational equipment, and the elimination of the pump station.

1997 *Sugarloaf Township* – “Official Sewage Facilities Plan Update”, prepared by George R. Nelson Associate, proposed expanding the service area to include Sybertsville, which has 61 EDUs. The expansion of the service area into Sybertsville, as originally recommended within the identified 1973 report, consisted of approximately 4,935 linear feet of gravity and low-pressure sewer lines and was completed in the year 2000.

2002 *Conyngham Borough Authority* – “Wasteload Management Corrective Action Plan and Schedule and Task Activity Report”, prepared by RDK Engineering, Inc, stated that after the results of flow monitoring were analyzed that televising, grouting, and possible line replacement would be investigated within Conyngham Borough. This Plan also outlined the need for an update revision of the Act 537 Plan for additional hydraulic capacity at the WWTP.

The Authority is currently acting under this Wasteload Management Corrective Action Plan and Schedule and will begin or continue to implement these programs.

2009 *Conyngham Borough and Sugarloaf Township* - "The Act 537 Joint Official Sewage Facilities Plan Update," Prepared by Entech Engineering, Inc., Proposed to update and expand the WWTP from 0.350 MGD to 0.700 MGD utilizing the Modified Ludzack – Ettinger Process/Integrated Fixed Film Activated Sludge Process (MLE/IFAS). This plan was reviewed by PADEP, but was never approved and implemented.

SECTION II. PHYSICAL DESCRIPTION (Checklist Items II.A. thru II.G)

A. Planning Area Boundaries

Identification of planning area(s), municipal boundaries, Sewer Authority/Management Agency service area boundaries.

The Planning Area is geographically located in the southern region of Luzerne County and encompasses all of Sugarloaf Township and Conyngham Borough. Conyngham Borough is completely land locked by Sugarloaf Township. Sugarloaf Township is bound to the north by Nescopeck Township and Hollenback Township; to the east by Butler Township; to the south by Hazle Township; and to the west by Black Creek Township.

A portion of the Planning Area is serviced by centralized sewer systems. Majority of Conyngham Borough and the surrounding portions of Sugarloaf Township are within the Conyngham-Sugarloaf Joint Municipal Authority sewer service area. The southeast portion of Sugarloaf Township is serviced by the Greater Hazleton Joint Sanitary Authority and a small portion of Sugarloaf Township is serviced by a private system.

Refer to the Planning Area Map, **Drawing No. II.A-1.**

B. Physical Characteristics

Identification of physical characteristics (streams, lakes, impoundments, natural conveyance, channels, drainage basins in the planning area).

The planning area topography is dominated by mountainous terrain with elevations approaching 1,800 feet. The watershed includes the Nescopeck Creek, Little Nescopeck Creek, and the Black Creek along with their unnamed tributaries. The Little Nescopeck Creek meets the Nescopeck Creek near the center of the planning area. Black Creek is located within the southwest portion of Sugarloaf Township and continues into Hazle Township. The Nescopeck Creek is classified as a trout stocking fishery (TSF) while the Little Nescopeck Creek and Black Creek are classified as cold-water fisheries (CWF) per PA Code Title 25, Chapter 93. The watershed is located within the Susquehanna River Basin and is dominated by forestland. All major water bodies are depicted on **Drawing No. II.B-1.**

Total Maximum Daily Loads For Black Creek, Little Nescopeck Creek and Unnamed Tributary to Little Nescopeck Creek Watersheds.

The final Total Maximum Daily Load (TMDL) calculation was prepared by PADEP in May 2005 for segments of the Black Creek, Little Nescopeck Creek and unnamed tributaries to the Little Nescopeck Creek Watershed. A TMDL was established to address the impairments on these streams noted on the 1996 Pennsylvania 303(d) list as a result of acid drainage from abandoned coalmines. The TMDL addresses the three primary metals associated with acid mine drainage (AMD); iron, manganese, aluminum, along with pH.

There are active mining operations in the watershed. None of these active operations have a NPDES permit. The AMD impairments to the watershed are caused by abandoned mines and are treated as non-point sources. Each segment on the Section 303(d) list is addressed with a separate TMDL, expressed as long-term average loadings. The long-term average gives a better representation of data used for calculations due to the nature and complexity of mining effects on the watershed.

The TMDL for the segment of the Little Nescopeck Creek in Conyngham (referenced as LNEC6 in the report) is referenced in **Table II.B.1**.

Table II.B.1 Allowable Concentrations and Loads for Little Nescopeck Creek Station LNEC6

TMDL	Allowable Concentration (mg/L)	Allowable Load (lbs/day)
Aluminum	0.55	262.4
Iron	1.15	546.6
Manganese	0.71	339.0
Acidity	0.06	27.6

This load allocation was computed using water-quality sample data collected from the area and did not account for any loads from upstream.

The “Decision Rationale Total Maximum Daily Loads (TMDL) Black Creek, Little Nescopeck Creek and Unnamed Tributary (UNT) to Little Nescopeck Creek Watersheds for Acid Mine Drainage Affected Streams Segments, Luzerne County, Pennsylvania” was issued by the United States Environmental Protection Agency (USEPA) on September 20, 2006.

These waterbodies were submitted by the PADEP to the USEPA for combinations of the three primary metals associated with acid mine drainage (AMD) (i.e. iron, manganese, and aluminum), other inorganics, pH with suspended solids and flow alternations being added in subsequent years.

It was determined by the USEPA that the TMDL established by PADEP for the Black Creek, Little Nescopeck Creek and its unnamed tributaries are consistent with statutory and regulatory requirements and EPA policy and guidance.

C. Soils Analysis

Analysis with description by soil type and soils mapping for areas not presently served by sanitary sewer service. Show areas suitable for in-ground onlot systems, elevated sand mounds, individual residential spray irrigation systems (IRSIS), and areas unsuitable for soil dependent systems. Show Prime Agricultural Soils and any locally protected agricultural soils.

A soils analysis is important in preparing a wastewater facilities planning study as many aspects of land planning are influenced by soil characteristics. The United States Department of Agriculture Soil Conservation Service in cooperation with the Pennsylvania State University College of Agriculture and the Pennsylvania Department of Environmental Resources State Conservation Commission prepared the Luzerne County Soil Survey October 1981, re-issued June 1992. This document provides pertinent information dealing with soil stability, erosion potential, and suitability for on-lot disposal systems (OLDS), natural productivity, and potential impacts on community development.

Drawing No. II.C-1 shows the soils boundaries within the planning area. The following soil descriptions have been reproduced from the Luzerne County Soil Survey for Conyngham Borough and Sugarloaf Township:

Alvira Series

This series consist of deep, somewhat poorly drained, nearly level to gently sloping soils. These soils are on broad, rolling mountaintops and at the base of mountaintops and at the base of mountains in upland depressions and drainageways. They formed in thick, glacially influenced material derived from sandstone, conglomerate, and shale. The fragipan in these soils restricts downward movement of roots and water. Permeability is slow in the fragipan.

Available water capacity is moderate. The seasonal high water table is within a depth of 6 to 18-inches during wet periods. The surface area is 1 to 10 percent stones and boulders. Runoff is slow and the hazard of erosion is slight.

Arnot Series

This series consist of shallow, well-drained, nearly level to steep soils. These soils are on the convex tops of sides of hills, knolls, and mountain ridges. They formed in thin glacial till material from sandstone, conglomerate, and shale. Fractured gray sandstone and shale bedrock is at a depth of 17-inches. Permeability is moderate and available water capacity is very low. The soils in this series vary with slow to rapid runoff. The hazard of erosion is based upon the slope. Most areas of these soils are wooded. The very stony to extremely stony surface layer and the rock outcrop restrict the use of woodland equipment.

Basher Series

The Basher series consists of deep, moderately well drained and somewhat poorly drained, nearly level soils on flood plains. These soils formed in mixed alluvial material deposited by streams. Permeability is moderate and available water capacity is high. These soils are subject to occasional to frequent flooding. The surface layer is silt loam, loam, or fine sandy loam. Runoff is slow and the hazard of erosion is none to slight. Included with these soils in mapping are a few small remnants of old stream channels where water collects after flooding and heavy rainfall. These soils are medium in natural fertility and moderate in content of organic matter. The seasonal high water table and the flood hazard delay tillage during spring and wet periods. Artificial drainage is needed to remove excess water and improve use and management. Flooding is the main limitation to most uses. A history of flooding frequency is needed to determine the severity of the flood hazard.

Buchanan Series

This series consists of deep, moderately well drained, gently sloping to moderately steep soils. These soils are on broad, rolling mountaintops and foot slopes of mountains. They formed in thick, glacially influenced material derived from sandstone, conglomerate, and shale. The fragipan in these soils restricts downward movement of roots and water. Permeability is slow, and available water capacity is moderate to low. Runoff is slow to moderate for this series with the hazard of erosion slight to moderate.

Chippewa Series

The Chippewa series consists of deep, poorly drained and very poorly drained, nearly level and gently sloping soils. These soils are on broad, rolling mountaintops and in intermountain basins in low lying depressions and upland drainageways. They formed in thick glacial till material derived from conglomerate, sandstone, and shale. The fragipan in this series restricts downward movement of roots and water. Permeability is very slow in the fragipan. Available water capacity is moderate. The high water table is at a depth of 0 to 6-inches during wet periods. Runoff is very slow, ponding is common, and the hazard of erosion is slight.

Dekalb Series

This series consists of moderately deep, well drained, nearly level to very steep soils. These soils are on mountain ridges and the convex tops and sides of hills and knolls of broad, rolling mountaintops and intermountain basins. They formed in moderately thick glacial till material derived from sandstone, conglomerate, and some shale. Permeability is moderately rapid, and available water capacity is moderate to very low. Runoff is medium to rapid and the hazard of erosion is slight. Due to the extremely stony surface layer and slopes, the soils in this series are not suited to cultivated crops and are better suited to woodland, wildlife habitat, recreation and esthetic uses.

Holly Series

The Holly series consists of deep, poorly drained, nearly level soils on flood plains. These soils formed in mixed alluvial material deposited by streams. Permeability is moderate to moderately slow, and available water capacity is high. These soils are subject to frequent flooding. The seasonal high water table is within a depth of 6-inches during wet periods and after stream overflow. Runoff is slow and the hazard of erosion is slight. This soil is subject to frequent flooding. The hazard of flooding is the main limitation for most uses. Artificial drainage is needed to remove excess water and improve use and management. Most areas are in woodland or wetland shrubs.

Kedron Series

The Kedron series consists of deep, moderately well drained and somewhat poorly drained, nearly level to moderately steep soils. These soils are on uplands and in depressions and

drainageways of broad, rolling intermountain basins. They formed in thick old glacial till material derived from sandstone, siltstone and shale. The fragipan in these soils restricts downward movement of roots and water. Permeability is slow and available water capacity is moderate. Runoff for this series is slow to medium with the hazard of erosion slight to moderate. Most limitations for this series for non-farm use are related to the seasonal high water table, the slow permeability and the slope.

Lackawanna Series

This series consists of deep, well drained, gently sloping to very steep soils. These soils are on the convex uplands of broad, rolling mountaintops and intermountain basins and on the lower slopes of mountain ridges. They formed in thick glacial till material derived from sandstone and shale. The fragipan in these soils restricts downward movement of roots and water. Permeability is slow and available water capacity is moderate to low. Runoff is slow and the hazard of erosion is moderate. Soils in this series include a few wet areas and a few small areas of deep, well drained soil that does not have a fragipan. Most limitations for nonfarm use are related to the slow permeability and the content of coarse fragments.

Leck Kill Series

The Leck Kill series consists of deep, well drained, gently sloping to moderately steep soils. These soils are on the uplands and low ridges and knolls of broad, rolling intermountain basins. They formed in moderately thick old glacial till material derived from shale, siltstones, and sandstone. These soils have fractured or rippable bedrock at a depth of 48-inches. Permeability is moderately rapid, and available water capacity is moderate to high. Runoff is medium to rapid and the hazard of erosion is moderate. Most limitations for non-farm use are related to slope and depth to bedrock.

Linden Series

This series consists of deep, well drained, nearly level soils on flood plains. These soils formed in mixed alluvial material deposited by streams. Permeability is moderately rapid and available water capacity is high. These soils are subject to occasional flooding. The surface layer is very fine sandy loam, loam and silt loam. Runoff is slow and the hazard of erosion is slight. Included are areas that have been gouged and scoured during stream overflow. Flooding is the main limitation to most uses.

Meckesville Series

The Meckesville series consists of deep, well drained, gently sloping to moderately steep soils. These soils are on the uplands of broad, rolling intermountain basins. They formed in thick old glacial till material derived from sandstone, siltstone and shale. The fragipan in these soils restricts downward movement of roots. Permeability is moderately slow and available water capacity is moderate. Runoff is medium to rapid with the hazard of erosion slight to moderate. Most limitations for non-farm use are related to moderately slow permeability and the surface stoniness.

Mine Dump

Mine dump consists of nearly level to very steep, dark colored carbonaceous waste products of the Anthracite coal mining industry. The waste material is piled near the coal processing plant. The mine dump material ranges in size from a fraction of an inch to 6 to 8-inches in diameter. Runoff is slow to very rapid. Extremely acidic sulfur compound leachates are common in some of these dump areas. Onsite investigation is needed to determine the suitability, hazards, and degree of limitation for any intended use.

Oquaga Series

The Oquaga series consists of moderately deep, well drained, gently sloping to very steep soils. These soils are on the convex tops and sides of hills, knolls, and mountain ridges of broad, rolling mountaintops and intermountain basins. They formed in moderately thick glacial till material weathered from sandstone, shale, and conglomerate. These soils have bedrock within a depth of 40-inches. Permeability is moderate and available water capacity is moderate to low. Runoff for this series ranges from medium to very rapid with the hazard of erosion slight to moderate. Most limitations for non-farm use are related to the depth to bedrock, slope and surface stoniness.

Pocono Series

The Pocono series consists of deep, well drained, gently sloping to moderately steep soils. These soils are on the smooth, convex uplands of broad, rolling mountaintops and mountainsides. They formed in thick glacially influenced material derived from sandstone, conglomerate and shale. Permeability is moderate and available water capacity is moderate

to high. Runoff is slow to medium with the hazard of erosion slight to moderate. Most limitations for non-farm use are related to surface stoniness and slope.

Shelmadine Series

This series consists of deep, poorly drained, nearly level and gently sloping soils on old glacially influenced uplands. These soils are in low lying depressional areas on broad, rolling mountaintops. They formed in old glacial till more than 5-feet thick. The fragipan in these soils restricts downward movement of roots and water. Permeability is slow and available water capacity is moderate. Runoff is slow and the hazard of erosion is slight. The high water table restricts the use of some woodland equipment during wet periods. Most of these are in woodland or wetland shrubs, but a few small areas are in urban uses.

Strip Mine

Strip mine is a nearly level to very steep mixture of the bedrock and unconsolidated soil and rock material through surface mining to expose anthracite coal. Runoff is slow to very rapid and the hazard of erosion is moderate to severe. Most areas are extremely acid. Many of the older strip mines are steep and very steep piles of unconsolidated soil, broken rock material and exposed bedrock. Vegetation on these older mines varies, depending on the length of time the material has been exposed to weathering and the amount of soil material suitable for plant growth.

Weikert Series

This series consists of shallow, well drained, gently sloping to moderately steep soils. These soils are on the tops and sides of ridges, hills and knolls of broad, rolling intermountain basins. They formed in thin glacial till material derived from shale, siltstone, and some sandstone. These soils have a shallow root zone. Permeability is moderately rapid, and available water capacity is very low. Most limitations for non-farm use are related to slope and the depth to bedrock.

Soils Suitability for On-Lot Systems

The soil potential with respect to on-lot, elevated sand mounds, spray irrigation, along with the prime agricultural soils was shown for the entire planning area. However, the majority of Conyngham Borough currently is served by sanitary sewer service and a large portion of the Borough has been developed. Conversely, a large number of areas within Sugarloaf

Township have the potential to be developed and only several small areas are served by sanitary sewer service. Potential development for both Conyngham Borough and Sugarloaf Township will be further discussed in “**Section IV - Future Growth and Land Development**”.

The United States Department of Agriculture (USDA) Soil Conservation Service provides pertinent information dealing with soil stability, erosion potential, and suitability for on-lot disposal systems (OLDS), natural productivity, and potential impacts on community development. USDA analyzes the soil properties and site features considered that affect absorption of the effluent and construction and maintenance of the system. Factors include depth to a water table, depth to bedrock, content of rock fragments, flooding, slope, and saturated hydraulic conductivity (Ksat).

USDA defines the suitability for OLDs using a rating class that indicates the extent to which the soils are limited by all of the soil features that affect the specified use. The classes are defined as follows:

"Not limited" - indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected.

"Slightly limited" - indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected.

"Moderately limited" - indicates that the soil has features that are somewhat favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected.

"Very limited" - indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Soils Potentially Suitable for In-Ground Systems

In accordance with the requirements outlined in 25 PA Code Chapter 73, Standards for Sewage Disposal Facilities, two soil types within the planning area; Pocono gravelly sandy loam and the Pocono extremely stony sandy loam, appear to have moderate

limitations for the suitability of in-ground systems, however, an onsite investigation must be conducted to confirm. The limitations of the soils within the planning area with respect to their potential suitability for in-ground on-lot systems are presented in **Table II.C.1**. The locations of these soil types within the planning area, which appear to be suitable for in-ground systems, are shown highlighted on **Drawing No. II.C-2**.

Soils Potentially Suitable for Elevated Sandmound Systems

In accordance with the requirements outlined in 25 PA Code Chapter 73, Standards for Sewage Disposal Facilities, there are eight soil series within the planning area which appear to be suitable for elevated sandmound systems, however an onsite investigation must be conducted to confirm. These soil types with respect to their soil limitations for the suitability of elevated sand mound systems are presented in **Table II.C.1**. The location of soil types within the planning area which appears to be suitable for elevated sand mound systems are highlighted on **Drawing No. II.C-3**.

Soils Potentially Suitable for Spray Irrigation

In accordance with the requirements outlined in 25 PA Code Chapter 73, Standards for Sewage Disposal Facilities, several soil types within the planning area appear to be suitable for spray irrigation however an onsite investigation must be conducted to confirm. The limitations for each soil type are presented in **Table II.C.1**. **Drawing No. II.C-4** shows the location of soils suitable for spray irrigation systems within the planning area.

Prime Agricultural Soils

The prime agricultural classification is a grouping of soils to show, in a general way, their suitability for most kinds of farming. It is a practical classification based on limitations of the soils, the risk of damage to the soils when used, and the way they respond to treatment. Classes I thru IV soils are areas of prime agricultural soils. **Table II.C.2** shows all soils within the Study Area including prime agricultural soils. **Drawing No. II.C-5** highlights the location of prime agricultural soils within the planning Area.

TABLE II.C.1: SOIL DESCRIPTIONS AND LIMITATIONS FOR SOIL DEPENDANT SANITARY SYSTEMS

Soil Series	Slope Range	Depth to Bedrock or Fragipan (feet)	Permeability	Limitations for On-Site Waste Disposal	Comments on Limitations	Limitations for the Suitability of In-Ground On-Lot Systems	Limitations for the Suitability of Sand Mounds	Limitations for the Suitability of Spray Irrigation
Alvira	3-8%	>5	Slow	Severe	Seasonal high water table, slow permeability	Very	Very	Moderately
Arnot	0-25+%	1-1 ½	Moderate	Severe	Depth to bedrock, rocky, and slope	Very	Very	Moderately
Basher	0-3%	>6	Moderate	Severe	Seasonal high water table, possible flooding	Very	Very	Very
Buchanan	3-25%	>5	Slow	Severe	Seasonal high water table, slow permeability	Very	Moderately	Slightly/ Moderately
Chippewa	0-3%	>5	Slow	Severe	High water table, slow permeability	Very	Very	Very
Dekalb	0-25+%	1 ½ - 3 ½	Moderate	Severe	Depth to bedrock, stony, depth to bedrock	Very	Moderately	Slightly/ Moderately/ Very
Holly	Level	>6	Moderately slow	Severe	High water table, subject to flooding	Very	Very	Very
Kedron	0-20%	>5	Slow	Severe	Seasonal high water table, slow permeability	Very	Moderately	Slightly/ Moderately
Lackawanna	3-8%	>6	Slow	Severe	Slow permeability	Very	Moderately	Slightly/ Moderately
Leck Kill	3-25%	3 ½ - 5	Moderate	Moderate	Depth to bedrock, slope	Very	Slightly/ Moderately	Slightly/ Moderately
Linden	Level	>5	Moderate	Severe	Subject to flooding	Very	Very	Very
Meckesville	3-25%	>5	Moderate	Severe	Moderately slow permeability	Very	Slightly/ Moderately/ Very	Slightly/ Moderately
Mine Dump	Level to Steep	NA	NA	Severe	To variable to rate	Very	Very	Very
Oquaga	3-25+%	1 ½ - 3 ½	Moderate	Severe	Depth to bedrock	Very	Slightly/ Moderately/ Very	Slightly/ Moderately/ Very
Pocono	3-25%	>6	Moderate	Moderate	Slope, stony	Slightly/ Moderately/ Very	Slightly/ Moderately/ Very	Slightly/ Moderately
Shelmadine	0-5%	>5	Slow	Severe	High water table, slow permeability	Very	Very	Very
Strip Mine	Level to Steep	NA	NA	Severe	To variable to rate	Very	Very	Very
Weikert	15-25%	1 – 1 ½	Moderate	Severe	Depth to bedrock	Very	Very	Very

TABLE II.C.2: PRIME AGRICULTURAL SOILS

Soils	Map Symbol	Slope	Prime Agricultural
Alvira very stony silt loam	AnB	3-8%	
Arnot-Rock outcrop complex	ArB	0-8 %	
Arnot-Rock outcrop complex	ArD	8-25%	
Arnot-Rock outcrop complex, steep	ASF	Steep	
Basher soils	Bf	0-3%	X
Buchanan channery loam	BuB	3-8%	X
Buchanan extremely stony loam	BxB	3-8%	
Buchanan extremely stony loam	BxD	8-25%	
Chippewa silt loam	CIA	0-3%	
Chippewa soil	CnB	Nearly level	
Dekalb extremely stony sandy loam	DdB	0-8%	
Dekalb extremely stony sandy loam	DdD	8-25%	
Dekalb extremely stony sand loam	DEF	steep	
Holly silt loam	Ho	Nearly Level	
Kedron channery silt loam	KwB	0-8%	X
Kedron channery silt loam	KdB	3-8%	X
Kedron channery silt loam	KdC	8-15%	X
Kedron very stony silt loam	KeB	3-8%	
Kedron very stony silt loam	KeC	8-20%	
Kedron very stony silt loam	KxB	0-8%	X
Lackawanna channery silt loam	LaB	3-8%	X
Leck Kill channery silt loam	LkB	3-8%	X
Leck Kill channery silt loam	LkC	8-15%	
Leck Kill channery silt loam	LkD	15-25%	
Linden soils	Ln	Nearly level	X
Meckesville channery silt loam	MeB	3-8%	X
Meckesville channery silt loam	MeC	8-15%	X
Meckesville channery silt loam	MeD	15-25%	
Meckesville very stony silt loam	MfB	3-8%	
Meckesville very stony silt loam	MfD	8-25%	
Mine Dump	Mg	Level to steep	
Oquaga and Lordstown channery silt loams	OIC	8-15%	X
Oquaga and Lordstown extremely stony silt loams	OpB	3-8%	
Oquaga and Lordstown extremely stony silt loams	OpD	8-25%	
Oquaga and Lordstown extremely stony silt loams	OXF	Steep	
Pocono gravelly sandy loam	PoB	3-8%	X
Pocono gravelly sandy loam	PoC	8-15%	X
Pocono extremely stony sandy loam	PpB	3-8%	
Pocono extremely stony sandy loam	PpD	8-25%	
Shelmadine silt loam	ShA	0-5%	
Shelmadine very stony silt loam	SkB	0-5%	
Strip Mine	Sm	Level to steep	
Weikert and Klinesville channery silt loams	WeD	15-25%	

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.

The Commonwealth of Pennsylvania is divided into four (4) major physiographic provinces. These provinces include the Coastal Plain Province, the Piedmont Province, the Ridge and Valley Province and the Appalachian Plateau Province; and two (2) minor provinces known as the Blue Ridge Province and the New England Province. Both the Borough and Township are located in the Appalachian Mountain Section of the Ridge and Valley Province. The dominant topographic form is long, narrow ridges and broad to narrow valleys with some karstic terrain and moderate to very high local relief. This Section is underlain by a wide variety of sedimentary rocks including sandstone, siltstone, shale, conglomerate, limestone and dolomite.

The geological formation that underlies the planning area has important implications relating to water supply, foundation stability and excavation. Since an adequate supply of potable water is necessary for expansion and growth, it is essential that proper planning be coordinated to conserve and protect the groundwater resources for the future.

The primary underlying geologic formation within the planning area is the Mauch Chunk Formation. A portion of the Pocono Formation is located along the northern portion of the planning area and the Llewellyn Formation is partially located along the southern planning area. A basic description of each of these formations is below:

The Mauch Chunk Formation

Mauch Chunk Formation is from the Mississippian age of 330 to 365 million years ago. The dominant lithology is shale along with siltstone, sandstone, conglomerate and limestone. The Mauch Chunk Formation is predominantly very fine to fine-grained and is grayish-red-purple and grayish-red in color.

This formation creates relatively smooth, eroded surfaces and commonly occupies valleys. The Mauch Chunk Formation has been calculated at around 500 feet thick. Water in this formation is transmitted primarily through fractures, joints and permeable bedding zones.

The formation has low to moderate infiltration capacity with low to moderate aquifer potential.

The Pocono Formation

The Pocono formation outcrops along the ridge tops of the Moosic and West mountain ranges and is underlain with Catskill sandstones and shale. The Pocono formation is composed of very dense sandstones and conglomerates.

The Llewellyn Formation

The anthracite coals are contained in the Llewellyn formation which consists of alternate layers of sedimentary rocks: sandstone, shale, coal. The Llewellyn formation is underlain by the Pottsville, Mauch Chunk, Pocono and Catskill formations. The Llewellyn Formation is known to include numerous mineable coal layers.

Each of the underlying geologic formations do have the potential to lend themselves, along with their accompanying soil cover, to pollution of groundwater from above surface on-lot disposal systems. Most sandstones, conglomerates and shales are tightly cemented creating low primary porosity. However, since these rocks are hard and brittle, joint openings produce secondary porosity, which increases the permeability of the rock.

The presence of limestone and dolomites either at the surface or subsurface typically means a high potential for groundwater contamination. This is due to cave-ins or sinkholes allowing surface drainage to pass directly into the groundwater system.

Drawing No. II.D-1 shows the location of the described formations.

Existing or Potential Nitrate-Nitrogen Pollution and Drinking Water Sources

Potable water well sampling for bacteriological and/or nitrate-nitrogen concentrations was not performed as part of this Plan Update. However, there are 7 known sites within the Planning Area that have high nitrate-nitrogen concentrations (greater than 5 mg/L). Refer to **Drawing No. II.D-2** for locations of these sites.

E. Topography Analysis

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.

The topography of Conyngham Borough and Sugarloaf Township generally is classified as mountainous terrain with a minimal amount of land that can be classified as nearly level or flat. The elevations within the planning area range between 700 to 1,700 feet above mean sea level. **Drawing No. II.E-1** depicts the topography of the planning area, as taken from U.S.G.S. Topographic Quadrangles for Berwick, Conyngham, Nuremberg, and Sybertsville.

As described in Section C, “Soils Suitability for On-Lot Systems” limitations for on-lot systems is based on factors that include depth to a water table, depth to bedrock, content of rock fragments, flooding, slope, and saturated hydraulic conductivity (Ksat). Limitations for the suitability of on-lot systems was presented in **Table II.C.1**. **Drawing No. II.E-2** and **Drawing No. II.E-3** also depicts the areas with slopes that are suitable for on-lot systems; slopes that are suitable for conventional on-lot systems and slopes that are suitable for elevated sand mounds.

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.

The public water supply service area consists of the majority of Conyngham Borough, which has a handful of individual on-lot wells on School Lane, and several small areas within Sugarloaf Township, west of Conyngham Borough and southeast at the Conyngham Valley Country Club. However, the main potable water supply from Sugarloaf Township is individual on-lot wells. **Drawing No. II.F-1** and **Drawing No. II.F-2** depicts the existing public water system service area.

The public water supply system consists of a 175,000-gallon reservoir, a 350,000-gallon storage tank, and six (6) wells capable of producing the following aquifer yields and capacities:

- Well No. 1** Aquifer Yield: 35 gpm
Permitted Capacity: 23,000 GPD
- Well No. 2** Aquifer Yield: 24 gpm
Permitted Capacity: 6,000 GPD
- Well No. 3** Aquifer Yield: 35 gpm
Permitted Capacity: 78,000 GPD
- Well No. 5** Aquifer Yield: 80 gpm
Permitted Capacity: 80,000 GPD
- Well No. 6** Aquifer Yield: 150 gpm
Permitted Capacity: 175,000 GPD
- Well No. 7** Aquifer Yield: 150 gpm
Permitted Capacity: 351,000 GPD

It should be noted that Well No. 4 has been abandoned.

G. Wetlands

Identify wetlands as defined in 25 Pa. Code Chapter 105 by description, analysis and mapping. Include National Wetland Inventory mapping and potential wetland areas per the United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) mapped hydric soils. Proposed collection, conveyance and treatment facilities and lines must be located and labeled, along with the identified wetlands, on the map.

The U.S. Army Corps of Engineers in conjunction with the U.S. Environmental Protection Agency have defined the term “wetlands” as follows:

“Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated conditions. Wetlands

generally include swamps, marshes, bogs and similar areas. The three major characteristics of wetlands include vegetation, soil and hydrology”.

Wetlands and deep-water habitats are essential breeding, rearing and feeding grounds for many species of fish and wildlife. Wetlands also perform important flood protection functions by decreasing the peak flood flow and spreading out the discharge over a longer period of time. In this manner wetlands act as a natural form of stormwater detention and serve the same purpose as the detention facilities required in a new development. Wetlands also act to remove sediment and pollution from storm water by this reduction in the flow rate.

Section 404 of the Clean Water Act requires that anyone intending to deposit dredged or fill material into water of the United States, including wetlands, must apply for and receive a permit for such activities. The U.S. Army Corps of Engineers has been assigned the responsibility for administering the Section 404 permitting process. Activities in wetlands for which permits may be required include, but are not limited to:

1. Placement of fill material;
2. Ditching activities when the excavated material is sidecast;
3. Levee and dike construction
4. Land clearing involving relocation of soil;
5. Land leveling;
6. Road construction; and
7. Dam construction

As stated in the U.S. Corps of Engineers Wetland Delineation Manual, 1987, the U.S. Fish & Wildlife Service National Wetland Inventory (NWI) maps are the proper reference tools in conducting preliminary reviews by showing the approximate aerial extent of wetlands and their association with other communities. As depicted on **Drawing No. II.G-1**, mapped wetlands as referenced by NWI are located within the planning area. The classification description of each mapped wetland is as shown on **Table II.G.1**.

TABLE II.G.1: WETLAND CLASSIFICATION

CODE	ECO SYS	DESCRIPTION
U		Upland (may include unclassified wetlands)
PUBF	Palustrine	Unconsolidated bottom, semipermanently flooded
PUBFh	Palustrine	Unconsolidated bottom, semipermanently flooded, diked/impounded
PUBFx	Palustrine	Unconsolidated bottom, semipermanently flooded, excavated
PUBHh	Palustrine	Unconsolidated bottom, permanently flooded, diked/impounded
PUBHx	Palustrine	Unconsolidated bottom, permanently flooded, excavated
PUBZh	Palustrine	Unconsolidated bottom, intermittently exposed/permanent, diked/impounded
PEM5/UBFh	Palustrine	Emergent, narrow leaved persistent / Unconsolidated bottom, semipermanent, diked/impounded
PEM5C	Palustrine	Emergent, narrow leaved persistent, seasonal
PEM1F	Palustrine	Emergent, persistent, semipermanently flooded
PSS1A	Palustrine	Scrub/shrub, broad-leaved deciduous, temporarily flooded
PFO1/SS1C	Palustrine	Forested, broad-leaved deciduous, scrub/shrub, broad leaved deciduous, seasonal
PFO1A	Palustrine	Forested, broad-leaved deciduous, temporarily flooded
PFO1C	Palustrine	Forested, broad-leaved deciduous, seasonally flooded
PFO1Cd	Palustrine	Forested, broad-leaved deciduous, seasonally flooded, partially drained/ditched
PFO1E	Palustrine	Forested, broad-leaved deciduous, seasonally flooded / saturated
POWEh	Palustrine	Open water, seasonally flooded / saturated, diked/impounded
POWFh	Palustrine	Open water, semipermanently flooded, diked/impounded
POWZh	Palustrine	Open water, intermittently exposed/permanent, diked/impounded
R3UBH	Riverine	Upper perennial, unconsolidated bottom, permanently flooded
R5UBH	Riverine	Unknown perennial, unconsolidated bottom, permanently flooded
R3OWH	Riverine	Upper perennial, open water, permanently flooded

It is the intent of this Study that all of the conceptual alternatives described in **Section V** avoid regulated wetlands where possible. Refer to **Section VI.A.9** for more information on Wetland protection for the identified alternatives. If necessary, Chapter 105 Dam Safety and Waterway Management permits will be obtained from the proper regulatory agencies. Impacted wetlands will be addressed to meet the U.S. Army Corps of Engineers and PADEP's wetland mitigation requirements.

Hydric Soils

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

USDA rates hydric soils based on the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform.

USDA categorizes hydric soils based on the composition of hydric components. There are five (5) classes which are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components. As depicted on **Drawing No. II.G-2**, these classifications are mapped for each soil within the planning area. The hydric classification description of each mapped soils is as shown on **Table II.G.2**.

TABLE II.G.2: HYDRIC SOIL CLASSIFICATION

Soils	Map Symbol	Hydric Rating	Class
Alvira very stony silt loam	AnB	15	1-32%
Arnot-Rock outcrop complex	ArB	0	0%
Arnot-Rock outcrop complex	ArD	0	0%
Arnot-Rock outcrop complex, steep	ASF	0	0%
Basher soils	Bf	10	1-32%
Buchanan channery loam	BuB	5	1-32%
Buchanan extremely stony loam	BxB	5	1-32%
Buchanan extremely stony loam	BxD	3	1-32%
Chippewa silt loam	CIA	0	0%
Chippewa soil	CnB	95	66-99%
Dekalb extremely stony sandy loam	DdB	92	66-99%
Dekalb extremely stony sandy loam	DdD	0	0%
Dekalb extremely stony sand loam	DEF	0	0%
Holly silt loam	Ho	95	66-99%
Kedron channery silt loam	KwB	15	1-32%
Kedron channery silt loam	KdB	5	1-32%
Kedron channery silt loam	KdC	3	1-32%
Kedron very stony silt loam	KeB	5	1-32%
Kedron very stony silt loam	KeC	3	1-32%
Kedron very stony silt loam	KxB	15	1-32%
Lackawanna channery silt loam	LaB	0	0%
Leck Kill channery silt loam	LkB	0	0%
Leck Kill channery silt loam	LkC	0	0%
Leck Kill channery silt loam	LkD	0	0%
Linden soils	Ln	8	1-32%
Meckesville channery silt loam	MeB	0	0%
Meckesville channery silt loam	MeC	0	0%

Soils	Map Symbol	Hydric Rating	Class
Meckesville channery silt loam	MeD	0	0%
Meckesville very stony silt loam	MfB	0	0%
Meckesville very stony silt loam	MfD	0	0%
Oquaga and Lordstown channery silt loams	OIC	0	0%
Oquaga and Lordstown extremely stony silt loams	OpB	0	0%
Oquaga and Lordstown extremely stony silt loams	OpD	0	0%
Oquaga and Lordstown extremely stony silt loams	OXF	0	0%
Pocono gravelly sandy loam	PoB	0	0%
Pocono gravelly sandy loam	PoC	0	0%
Pocono extremely stony sandy loam	PpB	0	0%
Pocono extremely stony sandy loam	PpD	0	0%
Shelmadine silt loam	ShA	90	66-99%
Shelmadine very stony silt loam	SkB	90	66-99%
Strip Mine	Sm	0	0%
Weikert and Klinesville channery silt loams	WeD	0	0%

SECTION III. EXISTING SEWAGE FACILITIES IN THE PLANNING AREA

The focus of this Section of the Plan is to evaluate the existing wastewater management systems with regard to existing regulatory requirements.

A. Existing Sewerage Systems (Checklist Items III.A.1 thru III.A.6)

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

- 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.*

Wastewater Collection System

The Conyngham Sugarloaf Joint Municipal Authority (CSJMA) owns and operates majority of the sewers within Conyngham Borough and Sugarloaf Township. A very small portion of the collection system is owned by either Sugarloaf Township or privately owned by the property owner. The small portion of the sanitary sewer collection system owned and operated by Sugarloaf Township is part of the Greater Hazleton Joint Sanitary Authority's service area.

The entire collection and conveyance system consists of approximately 18 miles of gravity sanitary sewers, which are located approximately 66% within Conyngham Borough and 33% within Sugarloaf Township. The majority of the collection system is 8-inch diameter terra cotta sewer with small sections of PVC. Besides the 8-inch diameter sewers, there is a 10-inch, 12-inch, and 15-inch diameter interceptor and the possibility of several small collection system sections of 6-inches.

One (1) pump station within the collection and conveyance system is located along State Route (SR) 0093 that serves the Sybertsville area in Sugarloaf Township. The pump station discharges into a 4-inch force main, which connects into Manhole No. 258 along within the 12-inch interceptor. This pump station, which is rated at 80 gpm, was installed in 2000 and does not have any known operational problems at this time.

The original construction date of the system is unknown and the Part II Water Quality Management (WQM) Permit number for the construction is not documented on the PADEP eFACTS or EPA Envirofacts websites. A few Part II WQM permits for the collection and conveyance system were able to be obtained for a couple developments and subdivisions within the sewer service area. These include:

Table III.A.1 Part II Water Quality Management Permits

WQM PERMIT No.	ISSUE DATE	PROJECT
4070403	March 4, 1970	Sewer Extensions – Luchi and Woodland Manor
4074425	December 4, 1974	Sewer Extensions – Luchi Development
4076428	November 19, 1976	Sewer Extensions – Valley Associates Subdivisions
4077408	March 17, 1977	Sewer Replacement – Approx. 14,000 linear feet
4077426	October 28, 1977	Sewer Extensions – Knoll Subdivision
4079413	June 12, 1979	Sewer Extensions – Conyngham Terrace

Refer to **Drawing III.A-1** for a map of the collection and conveyance system displaying system ownership, manholes, pump station, and main sizes.

Wastewater Treatment Plants

There are two (2) wastewater treatment plants (WWTP) located within the Planning Area. One is owned and operated by the Conyngham Sugarloaf Joint Municipal Authority (CSJMA) and the other is a privately owned WWTP located in Sugarloaf Township at the existing hotel at the intersection of Interstate 80 and PA State Route 93

Conyngham Sugarloaf Joint Municipal Authority WWTP

The wastewater treatment plant (WWTP) is located within Sugarloaf Township and is owned and operated by the CSJMA. The WWTP was built in 1977 under Part II Water Quality Management Permit number 4072409, issued on August 11, 1972. An upgrade to the WWTP occurred in 1999 (Part II WQM Permit No unknown) and consisted of equipment replacement and the addition of a Dynamic Separator to provide some treatment for excessive flows during wet weather events.

The WWTP currently operates under NPDES Permit No. PA-0042048-A1 with a rated hydraulic capacity of 0.35 MGD, a CBOD₅ effluent limit of 73 lbs/day, and a TSS effluent limit of 87.6 lbs/day. The effluent is metered by a 10" Palmer Bowlus and a 15" Palmer Bowlus, which measures both the WWTP effluent flow and any flow from the Dynamic Separator. The effluent discharges into Little Nescopeck Creek, a tributary to Nescopeck Creek within the Susquehanna River Basin.

Effluent criteria for the WWTP are shown in **Table III.A.2**, as required by NPDES Permit No. PA-0042048.

Table III.A.2 CSJMA NPDES Permit Requirements

PARAMETER	MONTHLY AVERAGE	MAXIMUM WEEKLY AVERAGE	INSTANTANEOUS MAXIMUM
Flow	0.35 MGD		
PH	6.0 to 9.0 standard units at all times		
Dissolved Oxygen	5.0 mg/L minimum		
CBOD ₅	25 mg/l	40 mg/L	50 mg/l
Total Suspended Solids (TSS)	30 mg/l	45 mg/L	60 mg/l
Total Residual Chlorine	1.0 mg/l	-	2.0 mg/l
Ammonia-Nitrogen	Report	-	Report
Total Kjeldahl Nitrogen	Report Annual Average	-	-
Nitrite-Nitrate as N	Report Annual Average	-	-
Total Nitrogen	Report Annual Average	-	-
Total Phosphorus	Report Annual Average	-	-
Fecal Coliform (5/1 to 9/30)	200/100 ml as a geometric mean		
Fecal Coliform (10/1 to 4/30)	2,000/100 ml as a geometric mean		

Privately Owned Wastewater Treatment Plant

A privately owned wastewater treatment plant is located in Sugarloaf Township at the existing hotel at the intersection of Interstate 80 and PA State Route 93. The WWTP was constructed in 1989 along with a small section of 8-inch collection lines. The Part II

Water Quality Management Permit numbers for the construction is unknown and is not documented on the PADEP eFACTS or EPA Envirofacts websites.

The WWTP currently operates under NPDES Permit No. PA-0062235 with a rated hydraulic capacity of 25,000 gpd, a CBOD₅ limit of 5.2 lbs/day, and a TSS limit of 6.3 lbs/day. The effluent flow rate is measured through a weir and discharges into unnamed tributary to Nescopeck Creek, which is located within the Susquehanna River Basin.

Effluent criteria for the WWTP are shown in **Table III.A.3**, as required by NPDES Permit No. PA-0062235.

Table III.A.3 Private NPDES Permit Requirements

PARAMETER	MONTHLY AVERAGE	INSTANTANEOUS MAXIMUM
Flow	0.025 MGD	
PH	6.0 to 9.0 standard units at all times	
Dissolved Oxygen	5.0 mg/L minimum	
CBOD ₅	25 mg/l	50 mg/l
Total Suspended Solids (TSS)	30 mg/l	60 mg/l
Ammonia-Nitrogen (5/1 – Oct 31)	9	18
Fecal Coliform (5/1 to 9/30)	200/100 ml as a geometric mean	
Fecal Coliform (10/1 to 4/30)	2,000/100 ml as a geometric mean	

2. *A narrative and schematic diagram of the facility's basic treatment processes including the facility's National Pollutant Discharge Elimination System (NPDES) permitted capacity, and the Clean Streams Law permit number.*

CSJMA WWTP Process

Wastewater directly enters the influent pump station through a head works grinder system by gravity flow from the main interceptors. From there the wastewater is pumped to an above ground manual bar screen and then flows by gravity through the screen and into the Aeration Tanks (Contact Stabilization). A mechanical screen and grit chamber are located on-site but are not in use at this time. From the Aeration Tanks, the

wastewater flows to the Secondary Clarifiers. After clarification, the wastewater is either re-circulated back to the Aeration Tanks through the Stabilization Tanks to repeat the process or proceeds to the chlorine contact tank for final treatment. After chlorination, the flow is then metered and discharged to the Little Nescopeck Creek. Sludge from the bottom of the Secondary Clarifiers is pumped to the digester, where it is conditioned, thickened, and aerobically digested. After digestion, the sludge is then thickened and hauled off-site by an approved hauler. A schematic of the existing WWTP process (**Figure III.A.1**) is attached

As previously mentioned, a Dynamic Separator is also part of the existing WWTP operation during periods of excessive wet weather flow. The Dynamic Separator provides treatment by separating grit, sand, gross solids and floatables by using hydraulics to augment gravitational effects on to the excessive flow. A siphon action cleans screenings at Dynamic Separator and returns them to the regulator box and the remaining chlorinated and separated flow discharges to mix with the normal WWTP effluent flow. The combined effluent flow is monitored by an additional flow meter prior to discharge.

Private WWTP

The private WWTP is a pre-manufactured treatment facility that utilizes the extended aeration process. Wastewater enters the preliminary treatment process, which consists of a comminutor and bypass screen. From there the wastewater flows into a flow splitter box, which equally distributes the flow to either Aeration Tank No. 1 or No. 2 for treatment. After the aeration tanks, the wastewater flows to either Final Clarifier No. 1 or No. 2 and then to the post aeration tank. Wastewater then flows through an UV disinfection module and is then discharged into unnamed tributary to Nescopeck Creek, which is located within the Susquehanna River Basin. A schematic of the existing WWTP process (**Figure III.A.2**) is attached.

Sludge from the bottom of the clarifiers is pumped to a sludge holding tank, where it is periodically collected and disposed of off-site at an approved WWTP.

3. *A description of problems with existing facilities (collection, conveyance and/or treatment), including existing or projected overload under 25 Pa. Code Chapter 94 (relating to municipal wasteload management) or violations of the NPDES permit, Clean Streams Law permit, or other permit, rule or regulation of DEP.*

Wastewater Collection System

The existing collection and conveyance system, along with private sewer laterals, is known to contribute a significant amount of inflow and infiltration (I&I) to the WWTP. In 2016/2017, a Flow Metering Study within the sewer service area was conducted that focused on six drainage basins, which included Country Club, Luchi Manor, Brookhill II, The Meadows, Conyngham Borough, and Brookhill I areas. By utilizing portable flow meters, flow from each drainage basin and rainfall, was recorded from October 20, 2016 through January 24, 2017.

During the study, some portions of the collection and conveyance system were subject to surcharging; however, it was not possible to identify the exact cause. Surcharging could be the result of capacity limitations of the sewer main size or defects to the sewer main such as protruding laterals, root blockages, structural defects or other maintenance issues. Consequently, additional sewer and inflow and infiltration investigation is recommended for each area. A copy of the Flow Metering Study can be found in **Appendix C**.

CSJMA WWTP

The existing collection and conveyance system that contributes flow to the WWTP service area is known to contribute a significant amount of inflow and infiltration (I&I), which is most likely a contributor to the WWTP becoming hydraulically overloaded within the past several years. It should be noted that CSJMA recently completed a substantial I&I study and reduction project to reduce the amount of I&I and will continue to seek out and eliminate sources of extraneous flow.

The WWTP has been both hydraulically and organically overloaded within the past several years. Organic overload conditions are considered to be a result of the hydraulic overload conditions, caused by I&I. In evaluating the flows for the past 5 years, the average flow per equivalent dwelling unit (EDU) is 328 gallons per day (gpd), or 140 gallons per capita per day (gpcd) (based on Luzerne County Census data of 2.34 capita

per dwelling). According to the Environmental Protection Agency's Handbook for "Sewer System Infrastructure Analysis and Rehabilitation," domestic wastewater plus I&I should not exceed 120 gallons per capita per day (gpcd). Therefore, there is 20 gpcd of excessive flows within the system, which equates to approximately 60,000 gpd of additional I&I flow to the WWTP.

Private WWTP

To this date, there are no known problems in the collection and conveyance system and/or the privately owned treatment plant.

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.*

Due to the existing WWTP currently being overloaded, the actual connections made are limited based on the remaining EDU allocation granted by PADEP. As of 2019, there are approximately 4 remaining EDU allocations granted by PADEP.

5. *A detailed description of the municipality's operation and maintenance (O & M) requirements for small flow treatment facility systems, including the status of past and present compliance with these requirements and any other requirements relating to sewage management programs (SMPs).*

A small flow treatment facility is an individual or community sewerage system designed to adequately treat sewage flows not greater than 2,000 gpd. There are no small flow treatment facilities in either municipality; therefore, there are no operation and maintenance requirements.

6. *Disposal areas, if other than stream discharge, and any applicable groundwater limitations.*

Disposal field locations for all individual on-lot systems are located within the lot boundaries in which they are served. There are no known groundwater limitations.

B. Sewage Disposal Needs Identification (Checklist Items III.B.1 thru III.B.5)

Using DEP's publication titled Act 537 Sewage Disposal Needs Identification (3800-BK-DEP1949), identify, map and describe areas that utilize individual and community onlot sewage disposal and, unpermitted collection and disposal systems ("wildcat" sewers, borehole disposal, etc.) and retaining tank systems in the planning area including:

A fundamental part of this Plan is the identification and documentation of the sewage disposal needs in the planning area. Adequate documentation of these sewage disposal needs is considered fundamental for all following work involving sewage disposal alternatives and solutions. In addition, adequate needs documentation is required when competing for "needs" prioritized funding, such as PENNVEST.

The two general needs categories relating to sewage disposal that were considered were "Public Health Needs" and "Water Pollution Needs".

- Public Health Needs - Public health needs are considered to be health hazards and water pollution problems that involve discharging untreated or inadequately treated sewage to the surface of the ground or to the waters of the Commonwealth (including groundwater). Within this Plan, these needs were primarily investigated with respect to on-lot disposal systems (OLDs). However, several other situations such as wildcat sewers, borehole disposals, holding tanks, public complaints, and sanitary related illness were also investigated.
- Water Pollution Needs - Water pollution needs are violations of either the NPDES discharge criteria or the Clean Streams Law. In sewage facilities planning, any suspected water pollution, whether originating from existing WWTPs or malfunctioning OLDs, migrating into surface waters must be confirmed by appropriate sampling of the discharges or the receiving waters.

1. *The types of onlot systems in use.*

There are 12 known properties in Conyngham Borough and 653 properties present in Sugarloaf Township that utilize some form of on-lot wastewater disposal system. The types of on-lot systems present in both the Borough and the Township include conventional septic tanks with in-ground beds or trenches, elevated sand mounds, leech fields, seepage pits, or cesspools. The systems are located throughout the entire

Township and Borough at various locations outside of the Public Sewer Service Area. Refer to **Drawing III.B-1** for a map of the properties within the Planning Area that utilize on-lot systems.

- 2. A sanitary survey complete with description, map and tabulation of documented and potential public health, pollution, and operational problems (including malfunctioning systems) with the systems, including violations of local ordinances, the Act, the Clean Stream Law or regulations promulgated thereunder.*

The “Sewage Needs Assessment” was performed in a manner that is consistent with “Act 537 Sewage Disposal Needs Identification” in 2017. The field assessments were conducted by Mr. Brian Oram, a licensed PASEO, licensed Professional Geologist, and a Professional Member of the PA Professional Soil Scientists and Professional Geologists Association. The sewage system surveys compiled historic and current information about the existing systems within the study area.

B.F. Environmental visited and conducted a sewage surveys for a total of 154 properties within the study area, 10 surveys in Conyngham Borough and 144 surveys in Sugarloaf Township. Each property’s on-lot disposal system was evaluated per DEP’s publication titled “Act 537 Sewage Disposal Needs Identification.” The type of on-lot disposal system, the age, maintenance practices, soils, and well isolation distances were all factors thoroughly investigated to determine malfunction rates. Inventoried systems were broken down into four (4) different categories: Confirmed Malfunction, Suspected Malfunction, Potential Malfunction, and No Malfunction.

Conyngham Borough

This survey focused on the properties located in Conyngham Borough along School Lane, Sugarloaf Avenue, and Tomhicken Road, which utilize some form of on-lot wastewater disposal system to dispose of their wastewater. A door-to-door survey was conducted with a response from ten (10) of these properties.

Table III.B.1 Conyngham Borough Needs Survey Results

CLASSIFICATION	RESULTS	PERCENTAGE
No Malfunction	7	70%
Potential	2	20%
Suspected	1	10%
Confirmed	0	0%
Total	10	100%

The information listed on the survey forms, in conjunction with professional judgment, indicates that zero out of ten properties actually surveyed of the on-lot wastewater disposal systems are malfunctioning. Although the survey forms indicated a 0% malfunction rate, this does not concur with our professional recommendation. Based upon the observations and area knowledge, three homes located on School Lane have on-lot cesspool systems. Based upon the age of the cesspools, no available replacement area on each lot and the lack of well isolation distance as required, it is recommended that these homes be connected to public sewer. In addition, there is a section of homes along Sugarloaf Avenue that are also on on-lot systems. Majority of the system investigated with conventional in ground system, there is a history of system repair and poor soil conditions. Therefore, it is recommended that these homes also be connected to public sewer. These alternatives will be further discussed in **Section V** and **Section VI**.

Sugarloaf Township Report of Results

The survey focused on the 653 properties present in Sugarloaf Township that utilize some form of on-lot wastewater disposal system. Of this, 144 surveys were completed for the Township.

Table III.B.1 Sugarloaf Township Needs Survey Results

CLASSIFICATION	RESULTS	PERCENTAGE
No Malfunction	63	44%
Potential	59	41%
Suspected	11	8%
Confirmed	6	4%
Other*	5	3%
Total	144	100%

*Determined to be connected to public sewer system

Based upon information provided, it was determined that six (or 4%) are confirmed malfunctioning systems throughout the Township. The survey concluded that the malfunction rate of 4% does not necessarily require the Township to abandon its on-lot wastewater disposal systems in lieu of a centralized wastewater disposal system. However, a small portion of the Township along SR 93, indicated some issues with the on-lot systems. This area is located adjacent to the Sugarloaf Avenue area where a proposed sewer main is recommended. Therefore, it is also recommended to extend this sewer main along SR 93 to connect the homes in this area. This alternative will be further discussed in **Section V** and **Section VI**.

While the malfunction rate is low throughout the Township, these conditions do warrant that the Township continue to closely monitor the on-lot wastewater disposal systems and implement the procedures within their ordinance to minimize failures.

The Sewage Disposal Needs Analysis, and all supporting documentation, completed by Mr. Brian Oram, is located in **Appendix D** of this Plan.

- 3. A comparison of the types of onlot sewage systems installed in an area with the types of systems which are appropriate for the area according to soil, geologic conditions, topographic limitations sewage flows, and 25 Pa. Code Chapter 73 (relating to standards for sewage disposal facilities).*

As described in **Section II** of this Plan, there are many limitations for the suitability of on-lot disposal systems in regards to soils, geologic formations, and topography. In accordance with the requirements outlined in 25 PA Code Chapter 73, Standards for Sewage Disposal Facilities and as shown on **Drawing No. II.C-1** through **Drawing No. II.G-2**, many regions are unsuitable for many of the on-lot disposal systems currently in use.

- 4. An individual water supply survey to identify possible contamination by malfunctioning onlot sewage disposal systems consistent with DEP's Act 537 Sewage Disposal Needs Identification publication.*

Per PADEP, an individual water supply survey was not required to be conducted to identify possible contamination by malfunctioning on-lot disposal systems. However, during the door-to-door surveys, the SEO documented any water sampling performed by the home owner and if any contamination was found.

5. *Detailed description of O & M requirements of the municipality for individual and small volume community onlot systems, including the status of past and present compliance with these requirements and any other requirements relating to SMPs.*

Each municipality has operation and maintenance requirements established as part of their individual ordinances for their Sewage Management Plan. The purpose of these ordinances are to provide for the regulation, inspection, maintenance and rehabilitation of on-lot sewage disposal systems to further permit intervention in situations which may constitute a public nuisance or hazard to public health and to establish penalties and appeal procedures necessary for the proper administration of a sewage management program. Refer to **Section V.F** for more information on their Sewage Management Programs.

C. Wastewater Sludge and Septage (Checklist Items III.C.1 thru III.C.3)

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

1. *Location of sources of wastewater sludge or septage (Septic tanks, holding tanks, wastewater treatment facilities).*

Wastewater sludge and septage is produced at the Conyngham – Sugarloaf Joint Municipal Authority WWTP, at the Private WWTP, and also at the individual on-lot disposal systems located throughout the Planning Area.

CSJMA WWTP

Domestic wastewater sludge is accumulated within the bottom of the secondary clarifiers at the WWTP. After accumulation, the sludge is pumped to the digester, where it is aerobically digested, conditioned, and thickened.

Private WWTP

Sludge from the bottom of the clarifiers is pumped to a sludge holding tank, where it is periodically collected and disposed of off-site at an approved WWTP.

On-Lot Disposal Systems

With respect to on-lot disposal systems, septic tanks are pumped out on a periodic basis depending on the number of persons per dwelling and type of establishment. There are approximately 653 properties within the planning area that utilize OLDS. The total septage from these properties can be estimated by assuming each one has a 1,000-gallon septic tank and that the tanks are pumped out on average every three years. The total annual septage is estimated at 218,000 gallons.

2. *Quantities of the types of sludges or septage generated.*

Only municipal sludge is generated within the Planning Area.

CSJMA WWTP

The CSJMA wastewater treatment plant produces approximately 450,000 – 600,000 gallons of sludge per year. During 2017, approximately 555,700 gallons of liquid sludge was hauled off-site by an approved hauler to the Greater Hazleton WWTP.

Private WWTP

The private wastewater treatment plant produces approximately 50 gallons of sludge per day and is hauled off-site as liquid by an approved hauler.

On-Lot Disposal Systems

There are approximately 653 properties within the planning area that utilize on-lot disposal systems. The total septage from these properties can be estimated by assuming each one has a 1,000-gallon septic tank and that the tanks are pumped out on average every three years. The total annual septage is estimated at 218,000 gallons.

3. *Present disposal methods, locations, capacities and transportation methods.*

Sludge from both WWTPs is hauled off-site as liquid by an approved hauler that is licensed to transport and provide this service. Liquid sludge is transported to an approved WWTP for further digestion and disposal.

The removal of generated sludge and/or septage in all cases is currently the individual owner's responsibility and is usually performed by a commercial contractor licensed to transport and provide this service.

SECTION IV. FUTURE GROWTH AND LAND DEVELOPMENT

A. Municipal and County Planning Documents (Checklist Items IV.A.1 through IV.A.3)

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

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

Conyngham Borough and Sugarloaf Township both have individual zoning district designations and regulations and subdivision and land development plans. **Drawing No. IV.A-1** delineates these Zoning Districts for the entire Study Area.

Conyngham Borough

According to all land use plans and the Zoning Ordinance, the Borough is divided into 8 zoning districts, which include:

- | | |
|---|---|
| 1. Conservation (C) | 5. Community Neighborhood Business District (B-2) |
| 2. Low Density Residential (R-1) | 6. Highway Business District (B-3) |
| 3. Medium Density Residential (R-2) | 7. Floodplain Overlay Area (FP) |
| 4. Neighborhood Business District (B-1) | 8. Steep Slope Overlay Area (SS) |

Sugarloaf Township

According to all land use plans and the Zoning Ordinance, the Township is divided into 6 zoning districts, which include:

- | | |
|--------------------------------|---|
| 1. Conservation District (S-1) | 4. Highway Commercial District (C-1) |
| 2. Agricultural District (A-1) | 5. Interchange Commercial District (C-2) |
| 3. Residential District (R-1) | 6. General Industrial and Mining District (I-1) |

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

The zoning district ordinances for the Borough and the Township are separate in the requirements for on-lot systems. In each zoning district, different set back requirements and lot sizes are stated.

Conyngham Borough

According to the Zoning Ordinance, the Borough is divided into 8 zoning districts, which each district has its own building requirements for new or existing properties. **Table IV.A.1** lists the standards from the Borough’s zoning requirements with respect to lot sizes and also gives an indication on where potential development (additional sewage) will occur within the Borough.

Table IV.A.1 – Conyngham Borough Zoning Regulations

Zoning District	Minimum Lot Size (Sq. Ft)	Minimum Average Width (Feet)	Minimum Yard Setback (Feet)	Minimum Rear Setback (Feet)	Maximum Building Height (Feet)	Maximum Lot Coverage
C - Conservation	217,800	150	35	50	35	15%
R-1 – Low Density Residential	12,000	100	25	30	35	25%
R-2 – Medium Density Residential						
1-F	10,000	80	25	25	35	30%
2-F	6,000	100	25	25	35	30%
M-F	189,000	100	25	25	50	50%
Townhouse	6,000	100	25	25	35	35%
Other	10,000	100	25	25	35	35%
B-1 -Neighborhood Business District	10,000	100	35	25	45	90%
B-2 - Community Neighborhood Business District	20,000	100	50	50	35	90%
B-3 - Highway Business District	N/A	N/A	N/A	N/A	N/A	N/A
FP - Floodplain Overlay Area	N/A	N/A	N/A	N/A	N/A	N/A
SS - Steep Slope Overlay Area	N/A	N/A	N/A	N/A	N/A	N/A

Under Article 6 “Improvements”, in the Subdivision and Land Development Ordinance, dated September 2005, Subsection 612 and 613 address the Public and Private Sanitary Sewer Systems for the Borough. The following is an excerpt from this section:

§ 612. Public sanitary sewer systems.

- A. Within Conyngham Borough, in areas having an approved municipal sewer system, which is in the judgment of the Commission, reasonably accessible to the subdivision or land development, and which is of sufficient size, the subdivider shall provide the subdivision or land development with a complete sanitary sewer system to be connected to the Borough sanitary sewer system, in accordance with the rules and regulations of the Conyngham Borough Authority.
- B. Where the Conyngham Borough Authority sewer system is not reasonably accessible to the subdivision or land development, and where the Commission has received a recommendation that the subdivision be served by a sewer system other than individual conventional septic systems, the developer shall have prepared by a PA registered professional engineer, a sewage feasibility study which shall indicate whether a public sewer system is feasible or not. The engineer doing this study shall determine if a public sewage system should be installed prior to erection of homes or at some future time, or if a public sewage system is not feasible. This feasibility study shall take into account, but need not be limited to the following:
 1. Size of subdivision as submitted;
 2. Ultimate total anticipated future size of subdivision;
 3. Density of homes reasonable expected to be built in the subdivision within 5- year period;
 4. Character and type of subdivision, e.g. vacation or seasonal dwellings or year around permanent homes;
 5. Cost of the recommended sewer system; and
 6. Topography and subsurface conditions of the land.

After due consideration of said feasibility study, the Planning Commission may require the installation of a complete sewer system, should it deem it to be necessary. However, the Planning Commission shall give due consideration to the use of individual conventional septic tanks or aerobic systems, and disposal fields, and/or neighborhood disposal systems, subject to the minimum requirements of act 537, "The Pennsylvania Sewage Facilities Act," and the

standards and regulations adopted pursuant to such act, and as approved by P A DEP and the Borough Sewage Enforcement Officer.

- C. In this Section 613 "Public sanitary sewer systems" and the previous Section 611 "Water," the phrase "the developer shall provide" shall be interpreted to mean that the developer shall install the facility referred to, or whenever a separate sewage disposal unit or water supply on individual lots is to be provided, that the developer shall require, as a condition of the sale of each lot or parcel in the subdivision, that the facilities referred to in these Sections shall be installed by the owner of the lot in accordance with this Ordinance, when a principal building is constructed.

§ 613. Private sanitary sewer systems.

- A. If public sewer facilities are not available as specified in §613 hereof, the developer shall provide for sewage disposal on an individual-lot basis.
- B. On-lot sewage disposal facilities must comply with the provisions of Chapters 71,72 and 73, Administration of Sewage Facilities Program and Standards for Sewage Disposal Facilities, Pennsylvania Sewage Facilities Act (Act of January 24, 1966), P.L. 1535, No. 537, as amended (35 P.S. 750). Prior to the granting of final approval by the municipality, the proposed facilities shall be deemed satisfactory by the Pennsylvania Department of Environmental Protection or its successor agency and the Borough Sewage Enforcement Officer.
- C. The construction of on-lot systems shall be inspected by the Borough Sewage Enforcement Officer, as follows:
 - 1. Upon completion of the excavation.
 - 2. Upon installation of the major equipment such as septic tanks, distribution boxes and drain tiles before any back filling.
 - 3. After backfilling is complete and upon initial use of facilities.
- D. Each owner or occupant of a dwelling unit with on-lot facilities shall be provided by the developer with a plan of the system and an instruction manual for the use and proper maintenance of the system.

The local zoning and SALDO does not conflict with the existing and proposed sewage planning.

Sugarloaf Township

According to the Zoning Ordinance, the Township is divided into 6 zoning districts, which each district has its own building requirements for new or existing properties. **Table IV.A.2** lists the standards from the Township's zoning requirements with respect to lot sizes and also gives an indication on where potential development (additional sewage) will occur within the Township.

Table IV.A.2 – Sugarloaf Township Zoning Regulations

Zoning District	Minimum Lot Size (Sq. Ft)	Minimum Average Width (Feet)	Minimum Yard Setback (Feet)	Minimum Rear Setback (Feet)	Maximum Building Height (Feet)	Maximum Lot Coverage
S-1 - Conservation District	43,560	150	50	40	35	20%
A-1 - Agricultural District	43,560	150	50	30	35	20%
R-1 - Residential District						
Private Water and Onsite Sewer						
1-F	43,560	150	50	30	35	20%
Semi-Detach	43,560	200	50	30	35	20%
2-F	87,120	200	50	30	35	20%
M-F	130,680	200	50	30	35	20%
Townhouse	130,680	200	50	30	35	20%
Private Water and Public Sewer						
1-F	21,780	100	40	20	35	25%
Semi-Detach	21,780	100	40	20	35	25%
2-F	21,780	100	40	20	35	25%
M-F	130,680	100	40	20	35	25%
Townhouse	130,680	125	40	20	35	25%
Public Water and Public Sewer						
1-F	15,000	100	40	20	35	35%
Semi-Detach	15,000	100	40	20	35	35%
2-F	15,000	100	40	20	35	35%
M-F	43,560	100	40	20	35	35%
Townhouse	43,560	125	40	20	35	35%
C-1 (Highway) and C-2 - (Interchange) Commercial Districts						
Private Water and Onsite Sewer	43,560	150	30	30	35	50%
Private Water and Public Sewer	20,000	100	30	20	35	50%
Public Water and Public Sewer	20,000	100	30	20	35	50%
I-1 - General Industrial and Mining District	217,800	250	50	50	35	80%

Under Part 7 “Improvement and Construction Requirements”, in the Subdivision and Land Development Ordinance, dated August 2005, Subsection 22-705 addresses the Public and Private Sanitary Sewer Systems for the Township. The following is an excerpt from this section:

§22-705. Sewer and Water Supply Systems.

I. Private and Onsite Sewer System.

- A. All properties shall be connected to a public sanitary sewer system if the development submitted is located within 1,000 feet of an existing line and provided that treatment capacity is available or can be developed assuming reasonable/feasible cost as determined by the Township Engineer. Sanitary sewers shall be constructed in accordance with the specifications set forth in Exhibit "E" hereof.
- B. If connection to a public system is not possible, a report on the feasibility of constructing a separate sewage system may be required by the Township, and a report shall be submitted by the developer setting forth the findings. The plans for installation of a private water supply system shall be prepared by the developer and approved by the Pennsylvania Department of Environmental Protection.
- C. Where none of the above alternatives are possible or feasible, an individual sewage disposal system consisting of a septic tank and tile absorption field or other approved sewage disposal system shall be provided for each lot at the time improvements are erected or installed thereon. All such individual sewage disposal systems shall be constructed in accordance with the Pennsylvania Department of Environmental Protection regulations.

The local zoning and SALDO does not conflict with the existing and proposed sewage planning.

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

The Stormwater Management Ordinance (Ordinance No. 21) for Conyngham Borough requires all property owners to control the adverse impacts associated with increased stormwater and all regulated activities shall be designed, implemented, operated, and maintained to meet the requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law and the Storm Water Management Act.

The zoning and subdivision and land development ordinances for Sugarloaf Township require all property owners to follow the Township's Floodplain Control (No. 36) and Stormwater Management Ordinance (Chapter 21) to control the adverse impacts associated with increased stormwater. The ordinances provide protection for a 100-year flood and require all structures at a minimum of 1 ½ feet above the 100-year flood boundary.

Drawing No. IV.A-2 shows the floodplains for the entire study area.

The Floodplain and Stormwater Management Ordinance do not significantly impact development within the planning area.

B. Planning Based on Growth (Checklist Items IV.B.1 through IV.B.5)

Delineate and describe the following through map, text and analysis

1. *Areas with existing development or plotted subdivisions. Include the name, location, description, total number of equivalent dwelling units (EDUs) in development, total number of EDUs currently developed and total number of EDUs remaining to be developed (include time schedule for EDUs remaining to be developed). (Reference - 25 Pa. Code §71.21(a)(3)(i)).*

A substantial portion of Conyngham Borough has already been developed and remains an almost exclusive residential community; however there are still a few lots remaining for development.

Sugarloaf Township has a number of areas of potential development due to the large amount of acreage available from previous farms. **Table IV.B.1**, also as shown on **Drawing No. IV.B-1**, includes the existing subdivisions and the total number of lots developed and remaining for the Township.

Table IV.B.1 – Sugarloaf Township Subdivisions

SUBDIVISION		DATE	DEP APPROVAL	DEP CODE NUMBER	LOTS	LOTS REMAIN
1	Sugarloaf Heights	1972	NONE	NONE	36	15
2	Dennis Ganc	1989	4/20/2009	2N-40967-030-1	2	0
3	Buchman	1974	NONE	NONE	10	4
4	Lar-Mar	1974	None	None	41	7
5	Bogash	1997	3/7/1997	2N-10967-081-1	2	1
6	Frenchwood West	1986	12/1/1987	NONE	10	8
7	Wyndgate	1976	6/27/1977	2N-40967-012-3	44	5
8	Angelo-Stewart	1995	10/13/1995	2N-40967-073-1	2	1
9	Kisenwether	1993	NONE	NONE	9	3
10	ED & Pat Bogash	1999	2/12/1999	2N-40967-088-1	2	1
11	Drowns Grove	1975	6/9/1975	NONE	33	1
12	Ken Shaffer	1999	7/22/1999	2N-40967-091-1	4	2
13	Lambert	1986	12/29/1986	2N-40967-021-1	3	0
14	Knorr	2000	3/2/2000	2N-40967-097-1	4	0
15	Spaide	1998	6/16/1998	2N-40967-085-1	5	2
16	Zandlini	1994	8/6/1994	2N-40967-066-2	10	3
17	Croman	1996	8/21/1996	2N-40967-076-1	2	0
18	Milrose Realty	2000	3/27/2000	2N-40967-096-3	2	0
19	Trivedi-Interim Plant	1989	6/15/1989	2N-40967-033-4	1	0
19A	Karchner-Pilot Oil	1990	8/14/1990	2N-40967-038-4	4	0
20	Conyngham Mt. Estates	1974	NONE	NONE	11	2
21	Butler Enterprises	1972	NONE	NONE	27	4
22	Conyngham Crest	1990	11/26/1990	2N-40967-041-3	16	6
23	Foothill Acres	1977	NONE	NONE	21	11
24	Yamulla	2001	3/20/2001	2N-40967-104-1	5	3
25	Mt. Side Estates	1977	NONE	NONE	10	1
26	Prospect Park	1979	1/17/1979	C2N40967-017-3	42	13
27	Prospect Park West	1989	12/12/1988	2N-40967-027-3	9	3
28	Kormonick	1996	10/16/1996	2N-40967-078-1	7	2
29	Shuman	1996	2/13/1997	2N-40967-080-1	2	1
30	Hunsinger	1999	12/22/1999	2N-40967-095-1	1	0
31	Hunsinger	1995	10/11/1995	2N-40967-071-1	3	0
32	Larock	1989	NONE	NONE	2	1
33	Bachman	2002	12/18/2002	2N-40967-114-1	5	1
34	Merald Yost	1990	12/3/1990	2N-40967-044-1	2	0
35	Yost Acres	195	5/15/1995	2N-40967-070-1	4	0
36	Turnbach	1991	NONE	NONE	2	0
37	Turnbach	1996	6/19/1996	2N-40967-075-1	2	1

SUBDIVISION		DATE	DEP APPROVAL	DEP CODE NUMBER	LOTS	LOTS REMAIN
38	Groce-Hunsinger	1997	9/15/1997	2N-40967-083-1	3	1
39	Penn Valley	1972	NONE	NONE	9	1
40	Pleasant Ridge	1990	9/4/1990	2N-40967-036-3	18	0
41	Oakhill Village	1974	NONE	NONE	36	1
42	Wolk	2001	8/28/2001	2N-40967-106-1	2	0
43	McGill	1991	11/15/1991	2N-40967-050-1	2	1
44	Gabala	1993	7/30/1993	2N-40967-061-1	2	1
45	Rock Hill (P-1)	1990	10/12/1990	2N-40967-043-1	2	0
46	Rock Hill (P-2)	1992	8/31/1992	2N-40967-053-1	5	3
47	Kraska	1993	5/11/1994	2N-40967-069-2	6	0
48	Brutosky	1990	2/5/1991	2N-40967-045-1	3	0
49	Larock Mt. Estates	1977	8/9/1977	2N-40967-013-3	172	113
50	Amerkano Co.	1977	NONE	NONE	13	7
51	Schuster	1989	1/4/1989	NONE	0	0
TOTAL					670	230

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

The Pennsylvania Municipalities Planning Code (MPC), Act 247 of 1968, as amended, provides municipalities the basic authority for the adoption and enforcement of local planning and development through the use of ordinances. The MPC gives the local governing body the power to create and appoint a planning commission, adopt a comprehensive plan, prepare an official map to plan for acquisition of land for public purposes, regulate subdivisions and land developments, adopt zoning ordinances to control the location, type, and density of land uses, and allow flexible residential development.

As described in **Section IV.A**, Municipal and County Planning Documents, each Conyngham Borough and Sugarloaf Township both have zoning and subdivision and land development ordinances established for their municipality. Each municipality is separated into districts (**Drawing IV.A-1**) which include residential, commercial, industrial, agricultural, and conservation areas.

The land uses for each district are consistent with existing sewage facility planning. Each municipality has established building requirements for every property within a district. For new and existing development, where public sanitary sewer is available, the property shall connect to the sanitary sewer system, dependent upon available capacity at the wastewater treatment plant. In areas where public sewer is not available, onsite sewer is permitted.

3. *Future growth areas with population and EDU projections for these areas using historical, current and future population figures and projections of the municipality. Discuss and evaluate discrepancies between local, county, state and federal projections as they relate to sewage facilities. (Reference - 25 Pa. Code §71.21(a)(1)(iv) and (a)(3)(iii)).*

Historical Population

A substantial portion of Conyngham Borough has already been developed and remains an almost exclusive residential community; however there are still a few lots remaining for development.

Sugarloaf Township has a number of areas of potential development due to the large amount of acreage available from previous farms. The Township has experienced rapid growth in the past decade based on U.S. Department of Commerce, Bureau of Census (U.S. Census) data.

As shown on **Table IV.B.1**, historic population trends within the Borough have decreased while Sugarloaf Township and the County has increased over the past ten years, as prepared by the U.S. Census.

Table IV.B.1 – Census Data

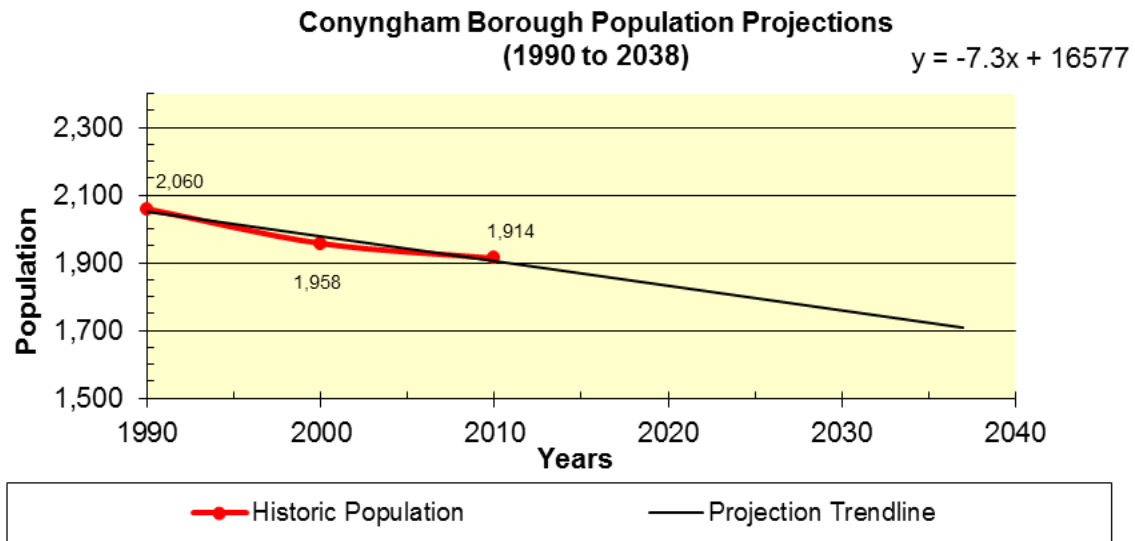
	2000	2010	Percent Change 2000-2010
Conyngham Borough	1,958	1,914	-2.25
Sugarloaf Township	3,652	4,211	+15.31
Luzerne County	319,250	320,918	+0.52

Conyngham Borough has experienced a relative decline in the rate of growth over the past 10-years, which may be attributed to the loss of local job opportunities and more recently the lack of adequate wastewater treatment capacity, due to the connection moratorium.

Sugarloaf Township has experienced substantial growth in the past 10-years. This can be attributed to the availability of new housing developments and easy access to Interstates 80 and 81 located within the Township.

Future Growth for Conyngham Borough

Population forecasts over the next 20-years are based on the historical estimates and an extension of recent population trends. The following graph shows the expected population of Conyngham Borough.



Based on historical data, it is anticipated that the population of Conyngham Borough will decrease on a Borough wide basis over this Study’s planning horizon. However, the historical and projected census data presents population statistics only. Planning for sewage facilities is based on the number of equivalent dwelling units (EDUs), the unit of measure which equates to the service provided to a typical single-family dwelling unit. While population seems to change with time, the number of EDUs within the Study Area has remained relatively stable.

As part of the 2010 Census data, Conyngham Borough has a population of 2.29 persons per dwelling, which will be equivalent to 1 EDU. While population trends are decreasing, growth within the Borough is anticipated due to the pending allowance of multi-unit complexes and the availability of wastewater capacity to support additional development. While sewage planning is not in place for these items, it is anticipated that there will be an additional 20 EDUs in Conyngham over the next 20-years.

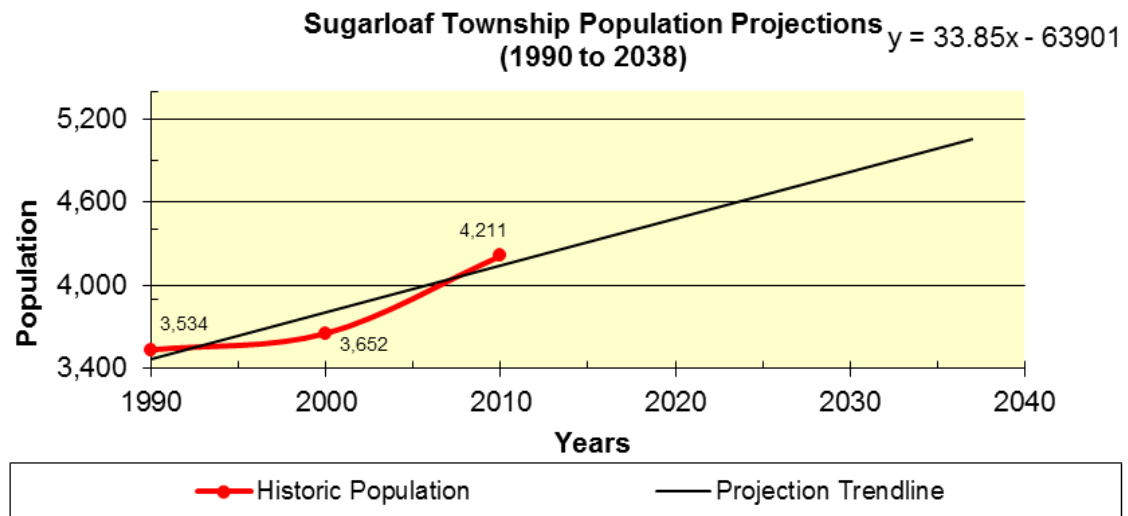
Table IV.B.2 - Conyngham Borough Population and EDU Forecast Connected to Sewer Service Area

Category	Present ⁽¹⁾	5 - Year	10 - Year	15 - Year	20 - Year
Population	1,853	1,864	1,876	1,887	1,899
New EDUs/5-year	-	5	5	5	5

(1) Estimated Population from Projection Trend Line for Conyngham Borough

Future Growth for Sugarloaf Township

Population forecasts over the next 20-years are based on the historical estimates and an extension of recent population trends. The following graph shows the expected population of Conyngham Borough.



Based on historical data, it is anticipated that the population of Sugarloaf Township will significantly increase on a Township wide basis over this Study’s planning horizon. However, as indicated before, the historical and projected census data presents population statistics only. Planning for sewage facilities is based on the number of EDUs connected. Approximately 35% of the Township is connected to the centralized sanitary sewer system.

As part of the 2010 Census data, Sugarloaf Township has a population of 2.51 persons per dwelling, which will be equivalent to 1 EDU. There is a substantial amount of undeveloped land with the potential for residential / commercial sites within the

Township. Based on current population trends and approved subdivisions, it is anticipated that there will be an additional 100 EDUs in the Township over the next 20-years.

Table IV.B.3 – Sugarloaf Township Population and EDU Forecast Connected to Sewer Service Area

Category	Present ⁽¹⁾	5 - Year	10 - Year	15 - Year	20 - Year
Population	1,531	1,594	1,657	1,719	1,782
New EDUs/5-year	-	25	25	25	25

Planning Discrepancies

Based on the Conyngham Borough and Sugarloaf Township Comprehensive Plan, 2005 - 2020 and the Lackawanna/Luzerne County Regional Plan, dated July 2012, the population trends are consistent with these documents. Population within Conyngham Borough has decreased and is anticipated to follow this trend. Sugarloaf Township has shown tremendous growth and will continue to grow as development occurs.

4. *Zoning, and/or subdivision regulations; local, county or regional comprehensive plans; and existing plans of any other agency relating to the development, use and protection of land and water resources with special attention to: (Reference - 25 Pa. Code §71.21(a)(3)(iv)).*

- public ground/surface water supplies*
- recreational water use areas*
- groundwater recharge areas*
- industrial water use*
- wetlands*

In order to further protect land and water resources and implement the policies and goals, regulatory provisions such as zoning, subdivision and land development ordinances are in place as well as non-regulatory initiatives. The main purpose for these ordinances, as stated in Sugarloaf Township's Subdivision and Land Development Ordinance, is that any approval of development shall be based on considerations as follows:

- A. Recognition of a desirable relationship of the development proposed to the general land form, topographic and geologic character, to natural drainage and surface water runoff and to the ground water table.

- B. Recognition of a desirable standard of subdivision design, including adequate provision for pedestrian and vehicular traffic, and for suitable building sites for the contemplated land use.
- C. Preservation of such natural assets as ponds, streams, shrubs, trees and watershed areas.
- D. Provisions for adequate and safe water supply sewage disposal, storm drainage and other utilities.

While the ordinances do not specifically address public ground/surface water supplies, recreational water use areas, groundwater recharge areas, industrial water use, and wetlands directly, any proposed development is reviewed by local planning commissions, and when applicable, the Department of Environment Protection (DEP), the Susquehanna River Basin Commission, Luzerne County Conservation District, and the United States Army Corp of Engineers.

5. *Sewage planning necessary to provide adequate wastewater treatment for 5 and 10-year future planning periods based on projected growth of existing and proposed wastewater collection and treatment facilities. (Reference - 25 Pa. Code §71.21(a)(3)(v)).*

Based on current population trends and approved subdivisions, it is anticipated that there will be an additional 20 EDUs from Conyngham Borough and 100 EDUs in Sugarloaf Township over the next 20-years. However, there are developed areas within the Study Area that have identified sewage disposal needs.

In Conyngham Borough, there is a stretch of homes along Sugarloaf Avenue that are not connected into the centralized sewer system. Based upon the most recent sewage disposal needs analysis, these properties have a high rate of suspected and/or potential malfunctions due to poor soils and steep slopes. This area of homes is proposed to connect into the sewer system, which will account for an additional 9 EDUs.

In addition, there are three homes located on School Lane within the Borough that have on-lot cesspool systems. Based upon the age of these cesspools, no available replacement area on each lot, and the lack of well isolation distance, these homes are all proposed to be connected to the public sewer through a sewer main extension, for an additional 3 EDUs.

In Sugarloaf Township, there is an Interim Private WWTP that serves the Hotel and Pilot Travel Center located along State Route (SR) 93 at the northern end of the Township near Interchange 256 of Interstate 80. It is proposed that the existing Interim WWTP will be discontinued and the Hotel and Pilot both be connected to the centralized sewer system owned and operated by Conyngham-Sugarloaf Joint Municipal Authority. As part of this project, the homes located along SR 93 between the existing service area and the Hotel/Pilot will also be connected. There will be a total of 82 EDUs connected as part of this project, 29 EDUs from the Hotel, 36 EDUs from Pilot, and 17 EDUs from the existing homes located along SR 93.

Table IV.B.4 shows the current wastewater flows for both Conyngham Borough and Sugarloaf Township and the progression of forecasted wastewater generation over the next 20-years using the wastewater projections based upon approved subdivisions within each municipality, and the identified sewage needs for existing developments.

The projected wastewater flows also take into account the elimination of the excessive infiltration and inflow and hydraulic overloads within the collection system and at the existing wastewater treatment facility, as discussed in **Section III**. Inflow and Infiltration reduction measures are discussed in more detail in **Section V.A.4**.

Table IV.B.4 – Wastewater Flow Projections

EXISTING CONDITIONS - (2018)	EDU's	Flow/EDU ⁽¹⁾ (gpd)	Total Flow (gpd)
CSJMA Total EDU's: 1,315			
Conyngam Borough Sewered Customers	933	328	306,024
Sugarloaf Township Sewered Customers	382	328	125,296
(Total Includes 60,000 gpd of Excessive I & I)		Total (gpd)	431,320
		Total (MGD)	0.431
5 - Year Projections (2023)	EDU's	Flow/EDU (gpd)	Total Flow (gpd)
CSJMA Total EDU's	1,315		431,320.00
Conyngam Borough New Sewered Customers ⁽²⁾	5	250	1,250
Conyngam Borough Sugarloaf Ave. ⁽²⁾	9	250	2,250
Conyngam Borough School Lane ⁽²⁾	3	250	750
Sugarloaf New Township Sewered Customers ⁽³⁾	25	250	6,250
Sugarloaf Township Pilot Travel Center Connection ⁽³⁾	36	250	9,000
Sugarloaf Township Hotel Connection ⁽³⁾	29	250	7,250
I & I Reduction (40%)			(24,000)
		Total (gpd)	434,070
		Total (MGD)	0.434
		Projected Flow/EDU (gpd)	305
10 - Year Projections (2028)	EDU's	Flow/EDU (gpd)	Total Flow (gpd)
CSJMA Total EDU's	1,422		434,070.00
Conyngam Borough New Sewered Customers ⁽²⁾	5	250	1,250
Sugarloaf New Township Sewered Customers ⁽³⁾	25	250	6,250
Sugarloaf Township Connections Along N, Main St. (Existing Homes) ⁽³⁾	30	250	7,500
I & I Reduction (20%)			(12,000)
		Total (gpd)	437,070
		Total (MGD)	0.437
		Projected Flow/EDU (gpd)	295
15 - Year Projections (2033)	EDU's	Flow/EDU (gpd)	Total Flow (gpd)
CSJMA Total EDU's	1,482		437,070.00
Conyngam Borough New Sewered Customers ⁽²⁾	5	250	1,250
Sugarloaf New Township Sewered Customers ⁽³⁾	25	250	6,250
I & I Reduction (10%)			(6,000)
		Total (gpd)	438,570
		Total (MGD)	0.439
		Projected Flow/EDU (gpd)	290

Table IV.B.4 – Wastewater Flow Projections (Continued)

20 - Year Projections (2038)	EDU's	Flow/EDU (gpd)	Total Flow (gpd)
CSJMA Total EDU's	1,512		438,570
Conyngham Borough New Sewered Customers ⁽²⁾	5	250	1,250
Sugarloaf New Township Sewered Customers ⁽³⁾	25	250	6,250
I & I Reduction (10%)			(6,000)
		Total (gpd)	440,070
		Total (MGD)	0.440
	Projected Flow/EDU (gpd)		285.39
Basis of Design	EDU's	Flow/EDU (gpd)	Total Flow (gpd)
CSJMA Total EDU's	1,542	285	440,070
		Safety Factor	50,000
		Total (gpd)	490,070
TOTAL PROJECTED ANNUAL AVERAGE DESIGN FLOW (MGD)			0.49
USE FOR BASIS OF DESIGN (MGD)			0.50
<p>(1) Existing Conditions Flow/EDU is based on the Average 5-Year Flow/EDU per the past Chapter 94 Reports. Projected Flow/EDU is based on 250 gpd.</p> <p>(2) Assume 5 new EDUs every 5 years based on Borough records for a total of 20 EDUs in the 20-year projection and the addition of Sugarloaf Ave (9 EDUs) and School Lane (3 EDUs) in the first 5 years for a total of 32 EDUs in the 20-year projection.</p> <p>(3) Assume 25 new EDUs every 5 years based on Township records and identified sewer service area and the addition of the Pilot Travel Center (36 EDUs), the Hotel (29 EDUs), and existing homes to be connected (30 EDUs) in the first 5 years for a total of 195 EDUs in the 20-year projection.</p> <p>(4) At the 20-year Projection, the Borough will have a total of 965 EDUs (or 62.6%) and the Township will have a total of 577 EDUs (or 37.4%) for a combined total of 1,542 EDUs.</p>			

Based on the projected sewage needs of the Study Area, the CSJMA wastewater treatment plant will need to have a minimum wastewater capacity of 0.500 MGD.

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

The purpose of this Plan is to evaluate alternatives for providing short and long term wastewater management for both Conyngham Borough and Sugarloaf Township. The following subsections outline several alternatives for addressing the short and long-term wastewater collection, treatment, and disposal needs of the Study Area. The alternatives considered are briefly described below. A detailed feasibility analysis and evaluation of the wastewater treatment process alternatives considered in this Plan to address subsections **V.A.3**, **V.A.4**, and **A.A.5** is located within **Appendix E**. The Preliminary Engineer's Opinion of Probable Costs and corresponding debt service estimates are presented in **Section VIII** of this Plan for the selected alternatives.

A. Conventional Collection, Conveyance, Treatment and Discharge Alternatives Identification (Checklist Item V.A.1 through V.A.6)

1. The potential for regional wastewater treatment.

This alternative considers the potential for regional wastewater treatment to eliminate the Borough and Township's sewage issues.

Regional wastewater management is an economic and viable alternative for sewage collection, treatment and disposal. The Conyngham Sugarloaf Joint Municipal Authority (CSJMA) wastewater treatment plant (WWTP) is considered a regional WWTP as it serves both the Borough and the Township. However, potential alternatives are available to further regionalize this area, including the Greater Hazleton Joint Sewer Authority (GHJSA) and Butler Township, Luzerne County.

The Greater Hazleton Joint Sewer Authority (GHJSA) presently services a small section of Sugarloaf Township within the south east portion of the Township. Based upon the identified issues and location of this area, on top of a mountain, no economic or financially feasible potential exists to connect into the GHJSA service area to eliminate the issues identified within this section. However, the GHJSA will continue to service the small section of Sugarloaf Township identified within the sewer service area mapping. Therefore, this alternative will not be discussed in detail hereafter.

Butler Township currently owns and operates a 2.2 million gallon per day (MGD) WWTP located in the adjacent municipality directly to the East of Sugarloaf Township. Based on the current flows and loadings at this facility, there is more than adequate capacity to handle and treat the flows from the CSJMA sewer service area (present and future development); consequently, the technical feasibility and cost-effectiveness for CSJMA to convey their wastewater to Butler Township for treatment was also evaluated.

In order for CSJMA to convey the flows to Butler Township, the WWTP would be converted to a pump station with equalization and pump to a secondary pump station along Saint John's Road by the Pilot Gas Station, at the Intersection of Route 93 and State Route 80. From there, wastewater would be pumped along Saint John's Road all the way to the Butler Township WWTP. Based upon the distance between these two (2) WWTPs and location of this area, on top of a mountain, it was determined that the estimated project cost is \$12,516,438. As this is more than \$4M over the other alternatives, it was concluded that it would not be financially feasible to connect into the Butler Township wastewater treatment facility. Therefore, this alternative will not be discussed in detail hereafter. Refer to **Table V.A.1** at the end of this section for the detailed cost analysis for this alternative.

2. *The potential for extension of existing municipal or non-municipal sewage facilities to areas in need of new or improved sewage facilities.*

According to the Conyngham Borough Zoning Ordinance, all existing and new growth and development at the designated zoning areas within the Borough are and will be connected to the existing centralized sewer collection and treatment system, refer to **Drawing II.A-1** and **Appendix B** for the sewer service area.

According to the Sugarloaf Township Zoning Ordinance, the existing and new growth and development located within the designated sewer service area (depicted on **Drawing II.A-1**) are and will be connected to the centralized sewer collection and treatment system. However, those existing and new growth and development areas located outside the public sewer service area in the Township are required to have on-lot or community sewage disposal systems.

Three (3) sewer main extensions are being proposed within this plan.

- A. The Hotel/Pilot sewer extension will convert the existing private WWTP into a pump station and pump wastewater through private property and along Main Street to a manhole within the existing wastewater collection system, as shown on **Drawing V.A-1**. This alternative will eliminate the need for a private WWTP and expand the existing wastewater collection system to serve more customers and provide sanitary sewer service to potential developers along this route.
 - B. Based upon the Sewage Needs Analysis, the three homes located on School Lane within the Borough have on-lot cesspool systems and it is recommended to provide public sewer for these homes. Based upon the age of these cesspools, no available replacement area on each lot and the lack of well isolation distance, these homes are all proposed to be connected to the public sewer through a sewer main extension, as shown on **Drawing V.A-2**.
 - C. Based upon the Sewage Needs Analysis, there are a cluster of homes along Sugarloaf Avenue within the Borough and Route 93 within the Township (all within the same area) that are also recommended to provide public sewer for these homes. Many of these properties had confirmed, suspected, and potential malfunctions due to the type, age, and geologic/topographic features within this area. A sewer extension alignment is shown on **Drawing V.A-2**.
3. *The potential for the continued use of existing municipal or non-municipal sewage facilities through one or more of the following for the wastewater treatment facilities:*
- a. *Repair.*
 - b. *Upgrading.*
 - c. *Reduction of hydraulic or organic loading to existing facilities.*
 - d. *Improved O & M.*
 - e. *Other applicable actions that will resolve or abate the identified problems.*

The existing WWTP was constructed in 1977 with a contact stabilization technology to achieve secondary wastewater treatment. The WWTP is owned

and currently operated by the Conyngham-Sugarloaf Joint Municipal Authority (CSJMA) under a NPDES Permit No. PA-0042048 with a rated hydraulic capacity of 0.350 MGD and an organic capacity of 595 lbs BOD5 per day. The Authority currently faces three wastewater management issues at their WWTP:

- Hydraulic Overload Conditions and reliance on a Dynamic Separator
- Organic Overload Conditions
- Nutrient reduction requirements under the Chesapeake Bay Initiative.

Moreover, as forecasted in **Section IV** of this Plan, the total municipal wastewater design flow is expected to increase to 0.50 MGD by Year 2038, due to growth and development in the Borough and Township. Based on this trend, it is recommended that the WWTP be upgraded and expanded to 0.50 MGD to meet the 20-year planning projections. This expansion will enable the Authority to eliminate the overload conditions, eliminate the need for their Dynamic Separator for extreme wet weather events, and meet the requirements of the Chesapeake Bay Initiative in a cost-effective manner.

Pennsylvania's Chesapeake Bay Tributary Strategy will limit total nitrogen (TN) and total phosphorus (TP) discharges. According to the implementation and planning guidelines issued by Pennsylvania Department of Environmental Protection (PADEP) under the Chesapeake Bay Initiative, the Authority's WWTP falls under the Phase 4 category with the nutrient cap loads calculated based on an annual daily flow of 0.4 MGD and discharge concentrations of 6 mg/L TN and 0.8 mg/L TP. The cap load limits (7,306 lbs TN and 974 lbs TP per year) are in the form of rolling annual maximum values for compliance. At 0.5 MGD annual average flow, the cap load limits would require an effluent TN concentration of 4.8 mg/l and an effluent TP concentration of 0.64 mg/l.

In addition to the proposed process upgrading as subsequently described; the existing facilities will be refurbished, repaired and reused as follows:

- Existing aeration tanks will be converted to aerobic digesters. Tanks, will be cleaned, concrete repaired and upgraded with the addition of covers to

minimize heat loss and control odors. A new coarse bubble diffused aeration system will be provided for both process air and mixing.

- Existing clarifiers will be used to provide a below grade room to house new UV disinfection equipment and a new effluent magmeter for flow measurement. The tanks will be cleaned and refurbished as necessary with a new a concrete roof, access hatches, ladders, lighting, and HVAC added.
- The existing chlorine contact tanks will be cleaned and repaired as necessary and will be converted to a new plant water wet well with a submersible pump.
- The existing control building will be refurbished and repurposed as a maintenance building to facilitate improved O & M procedures. The HVAC and electrical systems will be upgraded as necessary to satisfy current building code requirements.

In addition to the above items, there is a core scope of work that is typical to all the process alternatives that were evaluated. The typical items are identified as follows:

- New submersible Influent pump station
- New headworks with enclosed screening facility and grit removal system
- New control building with lab, office, electrical and process areas
- New chemical feed systems
- New Piping and valves
- New UV disinfection system
- New plant water system
- New effluent magnetic flow meter
- New process SCADA, instrumentation and electrical

- New electrical and process equipment building
- Rehab and modifications to existing control building

The following alternatives were evaluated for the required facility process upgrade:

- MLE process and nutrient credit purchase
- SBR process and nutrient credit purchase
- Membrane Bio-Reactor (MBR)

The three alternatives were evaluated and compared using a 20-year present value cost effective analysis approach with estimated construction costs and operational and maintenance (O&M) cost differentiators. It is concluded that the SBR process and nutrient credit purchase alternative has the lowest total of construction cost and O&M cost differentiator and thus is the most cost effective alternative. In addition to the core scope of work described above, the proposed SBR process will require specific process and support systems as follows:

- SBR reactor tanks
- Decant equalization tank with pumps
- Blower and diffuser systems for aeration
- SBR basin submersible mixers and decant systems

The wastewater treatment alternative cost analysis is included in **Appendix E**.

4. Repair or replacement of existing collection and conveyance system components.

As discussed in **Section III**, the existing collection and conveyance system that contributes flow to the WWTP service area is known to contribute a significant amount of inflow and infiltration (I&I), which is most likely a contributor to the WWTP becoming hydraulically overloaded within the past several years.

In evaluating the flows for the past 5 years, the average flow per equivalent dwelling unit (EDU) is 328 gallons per day (gpd), or 140 gallons per capita per day (gpcd) (based on Luzerne County Census data of 2.34 capita per dwelling). According to the Environmental Protection Agency's Handbook for "Sewer System Infrastructure Analysis and Rehabilitation," domestic wastewater plus I&I should not exceed 120 gallons per capita per day (gpcd). Therefore, there is 20 gpcd of excessive flows within the system, which equates to approximately 60,000 gpd of additional I&I flow to the WWTP.

The Authority has made minor attempts to reduce the inflow and infiltration (I&I) within the past 20 years. Small rehabilitation projects have been done, which did not make large impacts on the I&I problems. However, the Authority, on behalf of the Borough and Township, completed a comprehensive I&I Study in 2007 and 2008 to identify sources of excessive I&I flows to the sewer collection and conveyance system. The study included a GIS map of the entire sewer collection and conveyance system, inspections of all known manholes, and flow metering based on the GIS mapping. Areas of extraneous flows were then identified and televising of select sewer mains was completed. From the findings of the study, the Authority embarked on an I&I elimination project which was completed in December 2009. The results of these I&I reduction measures, based upon the 2009 wastewater flow figures, showed favorable results and substantially lowered the annual average and 3-month maximum flow at the WWTP.

In 2016/2017, a Flow Metering Study was conducted that focused on six drainage basins within the sewer service area. These included: Country Club, Luchi Manor, Brookhill II, The Meadows, Conyngham Borough, and Brookhill I Drainage Basins. By utilizing portable flow meters, flow from each drainage basin and rainfall, was recorded from October 20, 2016 through January 24, 2017. Based on the results from the flow meters, additional inflow and infiltration investigation is recommended for each area. A copy of the Flow Metering Study can be found in **Appendix C**.

To further continue flow monitoring, the Authority is committed to the installation of permanent flow monitors at critical locations which will include and supplement the previous flow monitoring locations as provided in **Appendix C**.

The following alternatives were evaluated to determine the most cost-effective alternative to eliminate excessive infiltration and inflow and hydraulic overloads within the collection system and at the existing wastewater treatment facility.

A. Total Sewer Main Replacement

Based on previous studies, review of smoke testing, and sewer main closed captioned televising (CCTV) data, it is estimated that 30% of the excessive inflow and infiltration is coming from the mains in the sanitary sewer collection system and the remaining 70% is estimated to come from private sources and failing service laterals. Therefore, total replacement of approximately 120,000 feet of sanitary sewer mains will only remove about 18,000 gpd of the 60,000 gpd of excessive inflow and infiltration. The estimated cost for this alternative is approximately \$35,000,000. This equates to approximately \$285 per linear foot of sewer main, which includes all construction costs of the sewer main, manholes, restoration, and related appurtenances (Based on current bid prices for similar dig and replace projects). Therefore, this alternative was deemed not cost-effective or financially viable.

B. Total Private Lateral Replacement

As discussed above, approximately 70%, or 42,000 gpd, of the excessive inflow and infiltration is estimated to come from private sources and failing service laterals. Based on field surveys and smoke testing, it is further broken down that approximately 30,000 gpd comes from illegally connected private sources, which include mostly downspouts and foundation drains, and 12,000 gpd comes from failing service laterals.

There is approximately 65,750 feet of private service lateral within the collection system. Total replacement of this portion will only remove about 12,000 gpd or 20% of the 60,000 gpd of excessive inflow and infiltration within the system. The estimated cost for this alternative is \$6,575,000 (\$100 per linear foot) and it is not cost-effective or financially viable.

C. Infiltration and Inflow Reduction and Sewer Rehabilitation Program

The Authority has presently committed to a comprehensive Inflow and Infiltration (I&I) Reduction and Sewer Rehabilitation Program. This program is necessary to eliminate approximately 60,000 gpd of excessive inflow and infiltration from the collection system, with an estimated 42,000 gpd coming from private sources. As indicated previously, it is estimated that approximately 30,000 gpd comes from illegally connected private sources, which include mostly downspouts and foundation drains, and 12,000 gpd comes from failing service laterals. The program includes investigation and both public and private source I&I reduction measures. The investigation will include, but not be limited to, smoke testing, in-home inspections, additional CCTV of both mains and service laterals, dye-testing and the installation of permanent flow monitors.

Vendor contracts for currently on-going smoke testing and CCTV work are included in **Appendix F**. Smoke testing for the entire collection system will be completed by the end of 2019 and approximately 25% of the main line sewer and service laterals will be CCTV inspected by the end of 2020. It is projected that the remainder of the system will be televised by the end of 2025. CCTV work is being prioritized for sections of sewer mains with high I&I probability, such as stream crossings, along streams, and in forested areas subject to root intrusion or line damage.

The I&I reduction measures will include mandatory removal of illegal connections, line grouting, point repairs, manhole to manhole sewer replacement, and mandatory private service lateral replacement for failing service laterals. It is anticipated that the proposed I&I Reduction and Sewer Rehabilitation Program will remove 24,000 gpd of excessive flow during the first 5 years, 12,000 gpd during the second 5 year period and 6,000 gpd for each subsequent 5 year period until all the excessive flows have been eliminated.

The I&I Reduction and Sewer Rehabilitation Program is the recommended alternative. CSJMA has currently budgeted \$1,500,000 for the first 5 years to implement this Program. This alternative will cost-effectively remove 24,000

gpd of excessive I&I and eliminate all existing collection system sanitary sewer overflows by the time the new WWTP comes on-line and the dynamic separator is abandoned. Additional program information is included in **Appendix F.**

5. *The need for construction of new community sewage systems including sewer systems and/or treatment facilities.*

As discussed in the previous sections, the existing and new growth / development areas located outside the designated sewer service area in Sugarloaf Township are required by the Township Zoning Ordinance to have on-lot or community sewage disposal systems.

The expected wastewater flow increase from new growth and development located within the designated sewer service area in the Borough and Township will be collected and conveyed to the WWTP for treatment and disposal.

There is currently no need for construction of new community sewage collection and/or treatment facilities based upon the wastewater management issues facing the Study Area.

6. *Use of innovative/alternative methods of collection/conveyance to serve needs areas using existing wastewater treatment facilities.*

Since the Borough and Township have an existing centralized collection and conveyance system, there is no need for innovative/alternative collection and conveyance methods to accomplish this task. Therefore, this alternative will not be discussed in detail hereafter.

B. Individual Sewage Disposal / Residential Spray Irrigation Systems (Checklist Items V.B.1 through V.B.4)

The use of individual sewage disposal systems including IRSIS systems:

Approximately 665 EDUs utilize On-lot Disposal Systems (OLDs) for wastewater disposal within the study area. Conyngham Borough consists of 12 and the other 653 OLDs are located in Sugarloaf Township. Individual Sewage Disposal/Residential Spray

Irrigation Systems are applicable only to the areas outside of the CSJMA Sewer Service Area and is considered a viable, long-term wastewater disposal alternative.

1. *Soil and slope suitability and*
2. *Preliminary hydrogeologic evaluation.*

As described in **Section II.C**, “Soils Suitability for On-Lot Systems” limitations for on-lot systems is based on factors that include depth to a water table, depth to bedrock, content of rock fragments, flooding, slope, and saturated hydraulic conductivity (Ksat). Limitations for the suitability of on-lot systems was presented in **Table II.C.1**. Refer to **Drawing II.C-1** through **Drawing II.C-5** for soils limitations for each type of on-lot system based on soils and also **Drawing II.E-1** through **Drawing II.E-3** for limitations due to slope.

3. *The establishment of a SMP.*

There is a continued need of management plans for On-lot Disposal Systems in both municipalities Refer to **Section V.F** Sewage Management Programs below for more information.

4. *The repair, replacement or upgrading of existing malfunctioning systems in areas suitable for onlot disposal considering:*

- a. *Existing technology and sizing requirements of 25 Pa. Code Chapter 73.*

Current malfunctioning systems should be replaced or repaired in accordance with the rules and regulations of PADEP and Title 25, Chapter 73. The size and type of system must be evaluated based on the type of establishment and also the physical site investigation based on the type of soils, slopes, and lot size. All future and existing OLDs must be installed and properly maintained by the requirements of the sewage management plan implemented by the Township and Borough, refer to **Section V.F**.

- b. *Use of expanded absorption areas or alternating absorption areas.*

The use of expanded absorption areas or alternating absorption areas will be considered based on the type of establishment, the size of the required

absorption field, size of the lot, and minimum isolation distance from the private well. As stated above, all future and existing OLDs must be installed and properly maintained by the requirements of the sewage management plan implemented by the Township and Borough, refer to **Section V.F.**

c. Use of water conservation devices.

Any resident that utilize OLDs within the Borough and Township will be advised of the importance of good water conservation practices. As stated in Title 25, Chapter 73, there is a large potential value of water conservation, recycle or reuse systems as a means of prolonging the life of the sewage system, as well as ensuring the availability of adequate water supplies in the future. Water conservation devices will be address in the sewage management plan implemented by the Township and Borough, refer to **Section V.F.**

C. Small Flow Sewage Treatment (Checklist Items V.C.1 through V.C.4)

The use of small flow sewage treatment facilities or package treatment facilities to serve individual homes or clusters of homes with consideration of:

1. *Treatment and discharge requirements.*
2. *Soil suitability.*
3. *Preliminary hydrogeologic evaluation.*
4. *Municipal, Local Agency or other controls over O & M requirements through a SMP.*

There is currently no small flow treatment systems located in either the Borough or Township and there is no need due to the total municipal wastewater design flow expected. Therefore, this alternative will not be discussed in detail hereafter.

D. Community Land Disposal Alternatives (Checklist Items V.D.1 through V.D.4)

The use of community land disposal alternatives including:

1. *Soil and site suitability.*
2. *Preliminary hydrogeologic evaluation.*
3. *Municipality, Local Agency or other controls over O & M requirements through a SMP.*
4. *The rehabilitation or replacement of existing malfunctioning community land disposal systems.*

Community Land Disposal Alternatives are not applicable for the same reasons discussed in **Section V.C.** In addition, as shown in **Section II**, there are also soil limitations for many of the different types of on-lot systems, which will provide a non-suitable site for land disposal. Therefore, this alternative will not be discussed in detail hereafter.

E. Use of Retaining Tanks (Checklist Items V.E.1 through V.E.5)

The use of retaining tank alternatives on a temporary or permanent basis including:

1. *Commercial, residential and industrial use.*

The use of retaining tanks is not a long-term solution for failing on-lot systems. Use of retaining tanks should be limited to short-term durations and emergency situations until the issues with the malfunctioning on-lot system is resolved.

2. *Designated conveyance facilities (pumper trucks).*

If a retainage tank is permitted to be in use due to emergency or short term use, the retainage tank shall be pumped and transported to the designated treatment facilities by licensed haulers.

3. *Designated treatment facilities or disposal site.*

Waste from the emergency or short term use retainage tanks shall be transported to the CSJMA WWTP.

4. *Implementation of a retaining tank ordinance by the municipality.*

The Township currently has a Holding Tank Ordinance, dated October 9, 1973, which does not have known PADEP approval. The Borough also has a Holding Tank Ordinance, dated June 22, 1973, which also does not have known PADEP approval. Therefore upon plan approval, the Holding Tank Ordinance will be updated by the Borough and Township using the Model Holding Tank Ordinance from PADEP; refer to **Appendix G**.

5. *Financial guarantees when retaining tanks are used as an interim sewage disposal measure.*

The updated Holding Tank Ordinance will also include a requirement for a financial guarantee.

F. Sewage Management Programs (Checklist Items V.F.1 through V.F.6)

SMPs to assure the future O & M of existing and proposed sewage facilities through:

1. *Municipal ownership or control over the O&M of individual onlot sewage disposal systems, small flow treatment facilities, or other traditionally non-municipal treatment facilities.*
2. *Required inspection of sewage disposal systems on a schedule established by the municipality.*
3. *Required maintenance of sewage disposal systems including septic and aerobic treatment tanks and other system components on a schedule established by the municipality.*
4. *Repair, replacement or upgrading of malfunctioning onlot sewage systems.*
 - a. *Aggressive pro-active enforcement of ordinances that require O & M and prohibit malfunctioning systems. .*
 - b. *Public education programs to encourage proper O & M and repair of sewage disposal systems.*
5. *Establishment of joint municipal SMPs.*

6. *Requirements for bonding, escrow accounts, management agencies or associations to assure O & M for non-municipal facilities.*

The focus of this Plan Update Revision is to address the wastewater management problems of the Borough and Township, which utilizes a collection and treatment approach to meet the majority of their wastewater needs. Management options that consider the continued use of OLDS are only valid in those areas that (1) are not already sewered by public wastewater collection systems, (2) cannot be feasibly connected to the centralized collection systems and (3) meet the requirements as outlined in PA Code 25, Chapters 71 through 73 governing the use of OLDS. It is recommended that the existing EDUs that meet these criteria continue to utilize OLDS via subsurface or sand mound disposal where soils permit.

Sewage Management Plan

Sewage application and installation procedures for Conyngham Borough are addressed through Ordinance No. 310 of July 17, 2018, located in **Appendix H**, titled “Conyngham Borough Sewage Management Ordinance”.

Sewage application and installation procedures for Sugarloaf Township are addressed through Ordinance No. 7 of 2004, located in **Appendix H**, titled “An Ordinance Governing Municipal Management of On-Lot Subsurface Sewage Disposal Facilities in Sugarloaf Township, Luzerne County, Pennsylvania” December 14, 2004.

The purpose of these ordinances are to provide for the regulation, inspection, maintenance and rehabilitation of on-lot sewage disposal systems to further permit intervention in situations which may constitute a public nuisance or hazard to public health and to establish penalties and appeal procedures necessary for the proper administration of a sewage management program. There is no need to establish a joint sewage management program between the two municipalities and there is currently one non-municipal operating facility, which is the Interim Private WWTP. Once the extension for the Pilot Gas Station is complete, this WWTP will be abandoned; therefore, there are no requirements for bonding, escrow amounts, management agencies or associations to assure operation and maintenance.

G. Non-Structural Comprehensive Planning Alternatives (Checklist Items V.G.1 through V.G.4)

Non-structural comprehensive planning alternatives that can be undertaken to assist in meeting existing and future sewage disposal needs including:

1. Modification of existing comprehensive plans involving:

- a. Land use designations.*
- b. Densities.*
- c. Municipal ordinances and regulations.*
- d. Improved enforcement.*
- e. Protection of drinking water sources.*

The Borough is almost completely within the sewer service area. The use of Non-Structural Comprehensive Planning Alternatives to meet the existing and future sewage disposal needs of the Borough is not considered a viable solution due to the issues noted in **Section III** of this Plan.

The use of Non-Structural Comprehensive Planning Alternatives to meet the existing and future sewage disposal needs of the Township is also not considered a viable solution due to limited issues outside the sewer service area as noted within the Needs Analysis. However, in cases of new development, increased levels of protection for new drinking water sources may be useful.

2. Consideration of a local comprehensive plan to assist in producing sound economic and consistent land development. .

The Conyngham Borough and Sugarloaf Township Joint Comprehensive Plan outline land use planning goals that outline land use designations, densities, municipal ordinances and regulations, improved enforcement, and protection of drinking water sources.

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.

Conyngham Borough and Sugarloaf Township both have individual zoning district designations and regulations and subdivision and land development plans, which state their own building requirements for new or existing properties. Each of the ordinances state requirements with respect to lot sizes and the establishment of either private or on-lot sewage systems. Therefore, this is not considered a viable solution due to existing plans that are already in place.

4. *Evaluation of existing local agency programs and the need for technical or administrative training.*

CSJMA has all the necessary experience and resources available to effectively operate and maintain the collection and conveyance systems and the proposed new SBR treatment process. However, the implementation of a more comprehensive Sewage Management Program, as noted in **Section V.F.** above, will require additional staff training.

H. No-Action Alternative (Checklist Items V.H.1 through V.H.6) H.

A no-action alternative which includes discussion of both short-term and long term impacts on:

1. *Water quality/public health.*

The No-Action approach is usually considered before proceeding to evaluate new alternatives. However, hydraulic and organic overload conditions are experienced at the existing WWTP. In addition, the Authority will not be able to comply with the upcoming nutrient reduction requirements with current operation of the existing WWTP without significant credit purchase/generation. Therefore, the No-Action approach in this case will not be considered a viable solution due to the severe short- and long-term water quality and public health issues that would be prevalent if nothing was done to address the aforementioned treatment and disposal issues.

2. *Growth potential (residential, commercial, industrial).*

The existing overload condition at the WWTP does not permit any growth due to PADEP's mandated connection moratorium. This growth limitation has had an adverse impact on the study area by capping potential investment and limiting the

tax base. Therefore, the No-Action approach in this case will not be considered a viable solution.

3. *Community economic conditions.*

The existing overload condition at the WWTP does not permit any new businesses to relocate to the area due to PADEP's mandated connection moratorium. This limitation has had an adverse impact on the study area by limiting potential capital investment in the community and also the potential for increased employment and job creation. Therefore, the No-Action approach in this case will not be considered a viable solution.

4. *Recreational opportunities.*

Short- and long-term water quality issues would be prevalent if nothing was done to address the aforementioned treatment and disposal issues. These water quality issues would impact and limit recreational use of streams and waterways within the study area. Consequently the No-Action approach will not be considered as a viable solution.

5. *Drinking water sources.*

Short- and long-term water quality and public health issues would be possible if nothing was done to address the aforementioned treatment and disposal issues which could result in contamination of wells and possible spread of disease. Consequently the No-Action approach will not be considered as a viable solution.

6. *Other environmental concerns.*

No other environmental concerns have been identified. However, if any additional environmental concerns were identified, the No-Action approach would be evaluated with regards to the identified concern.

SECTION VI. EVALUATION OF ALTERNATIVES

A. Consistency with Previous Planning (Checklist Items VI.A.1 through VI.A.11)

Technically feasible alternatives identified in Section V of this checklist must be evaluated for consistency with respect to the following:

Pennsylvania's Act 537 regulations require technically feasible alternatives described in **Section V** of this Study to be evaluated for consistency with existing local and regional planning efforts. For the most part, these efforts have been discussed in **Section V**. However, the following is a listing of the applicable documents and the consistency evaluation of the identified alternatives for sewage collection, treatment, and disposal.

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).*

The alternatives discussed in **Section V** of this Study are technically feasible to address the pollution problems of the Borough and Township with emphasis on preserving water quality and preventing stream degradation. Each alternative provides for the means and methods of properly collecting, treating, and disposing of wastewater with respect to current regulations and standards. The selected alternatives considered in this Plan are consistent with and will meet the requirements of the Clean Streams Law and Clean Water Act.

Listed below are the previous approved planning documents under Section 4 and 5 of The Clean Streams Law and the determination of the consistency of the alternatives addressed in **Section V**.

- Sewage Feasibility Study - Consistent
- An Engineering Study and Financial Feasibility Report for Sewage in Sugarloaf Township - Consistent
- The Luzerne County Master Plan for Water Supply and Wastewater Management – Consistent – The wastewater treatment alternatives are consistent with this plan; however, the WWTP was built with a different flow rate than what was specified in this document. In addition, the plan calls for an expanded capacity of 0.70 MGD,

which was never done or planned to be done by the Authority due to inaccurate population projections.

The interceptor along State Route 93 to the area of the Township at the intersection of State Route 93 and Interstate 81 was never constructed or is in planning to be constructed.

- An Official Sewage Facilities Plan Update / Corrective Plan and Schedule - Consistent
 - Official Sewage Facilities Plan Update (1996) - Consistent
 - Official Sewage Facilities Plan Update (1997) - Consistent
 - Wasteload Management Corrective Action Plan and Schedule and Task Activity Report - Consistent
2. *Municipal wasteload management Corrective Action Plans or Annual Reports developed under 25 Pa. Code Chapter 94. The municipality's recent Wasteload Management (25 Pa. Code Chapter 94) Reports should be examined to determine if the proposed alternative is consistent with the recommendations and findings of the report.*

The alternatives discussed in **Section V** of this Study include the Infiltration and Inflow Reduction and Sewer Rehabilitation Program, three (3) sewer main extensions, and expansion and upgrade of the existing WWTP. All of these alternatives are consistent with the requirements of PA Chapter 94 Regulations and the previous approved Corrective Action Plan (CAP); however, this Plan consists of more alternatives than what was previously indicated in the CAP.

The selected alternatives will address the need to eliminate the hydraulic and organic overloads experienced at the plant and meet the requirements of the Chesapeake Bay Initiative, as discussed in **Section V** and the Wastewater Treatment Systems Alternative Analysis in **Appendix E**, and provide public sewage to the residents on School Lane within the Borough, Sugarloaf Ave/State Route 93 in the Borough and Township, as well as along the proposed extension for Pilot including the elimination of the Interim private WWTP at the Hotel within the Township.

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).*

The alternatives considered in this Study are consistent with and will meet the requirements of the Clean Water Act and Water Quality Act. As discussed in **Section VI.A.1**, these alternatives are consistent with most planning documents with the exception of The Luzerne County Master Plan for Water Supply and Wastewater Management.

4. *Comprehensive plans developed under the Pennsylvania Municipalities Planning Code. 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.*

Conyngham Borough and Sugarloaf Township have a Joint Comprehensive Plan, which was reviewed and was determined not to be in conflict with the alternatives regarding land use and all other requirements.

5. *Antidegradation requirements as contained in 25 Pa. Code Chapters 93, 95 and 102 (relating to water quality standards, wastewater treatment requirements and erosion control) and the Clean Water Act.*

The Study Area is located in the Susquehanna River Watershed, which is part of the Susquehanna River Basin. PA Code, Title 25, Chapter 93 classifies the Little Nescopeck Creek as a Cold Water Fishery (CWF). The alternatives suggest the use of purchasing nutrient credits, which is a viable alternative capable of meeting the water quality requirements of the Chesapeake Bay Tributary Strategy and the standards established for this water body. Additional credit offsets, in addition to credit purchase, will be evaluated based upon the type and size of the proposed development project and will be negotiated between the developer and the Authority in order not to increase nutrient loadings for both TN and TP. The use of additional treatment and land application of effluent and recycle /reuse was deemed not viable due to the amount of flow, location of treatment plant, land availability near the plant, and local climate (winter storage). The Authority understands that the CAP loads will be based upon a flow of 0.4 MGD and that new sources must maintain this CAP load.

In addition to the Chesapeake Bay Tributary Strategy, the Authority has a TMDL requirement for the plant as noted in Section II for Total Iron, Dissolved Iron, Total Manganese, and Total Aluminum. The plant has never had issues regarding this TMDL and no projected issues are known.

6. *State Water Plans developed under the Water Resources Planning Act (42 U.S.C.A. 1962-1962 d-18)*

The Commonwealth is currently implementing the Water Resources Planning Act (ACT 220 of 2002), which calls for the State Water Plan to be updated.

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.*

As discussed in **Section II** of this Study, Prime Agricultural Land exists within the Borough and Township as shown on **Drawing No. II.C-6**. Minor disturbance to this land is common to all alternatives described in **Section V**. The selected alternative will have some minor disturbance within Prime Agricultural Land; however, it will be located on the CSJMA's existing WWTP property.

The proposed sewer extensions will have minor impacts to the Prime Agricultural Land. The installation of pipeline will occur in existing roadways and the pump station will be constructed outside of Prime Agricultural Land. Refer to **Drawings No. VI.A-1, VI.A-2, and VI.A-3** for a tentative layout of the proposed wastewater collection and conveyance systems for the Pilot/Hotel, School Lane, and Sugarloaf Avenue/Route 93 area sewer extensions.

8. *County Stormwater Management Plans approved by DEP under the Storm Water Management Act. 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.*

In June 2010, a Stormwater Management Plan has been developed for Luzerne County, Pennsylvania to comply with the requirements of the 1978 Pennsylvania Stormwater Management Act, Act 167. This Plan is the initial county-wide Stormwater Management

Plan for Luzerne County, and serves as a Plan Update for the portions of all of six (6) watershed-based previously approved Act 167 Plans including: Bowman's Creek, Lackawanna River, Mill Creek, Solomon's Creek, Toby Creek, and Wapwallopen Creek.

As stated within the Plan:

"The purpose and goals of this Luzerne County Stormwater Management Plan are to provide reasonable regulations of activities to control runoff from new development, redevelopment projects, and other regulated activities in order to protect the health, safety, and welfare of the public. Once implemented, the Plan will aid in preventing future costly flood damages by preventing new sources of local uncontrolled runoff, and will improve water quality and groundwater recharge. The Plan will help municipalities and developers become more aware of comprehensive planning in stormwater control and will help maintain the quality of the rivers and water bodies of Luzerne County."

The alternatives considered in this Study are consistent with and will meet the requirements of the Luzerne County Stormwater Management Plan.

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.*

Wetlands are identified and discussed in **Section II** of this Study. It is the intent of this Study that all of the conceptual alternatives described in **Section V** avoid regulated wetlands where possible. If necessary, Chapter 105 Dam Safety and Waterway Management permits will be obtained from the proper regulatory agencies. Impacted wetlands will be addressed to meet the U.S. Army Corps of Engineers and PADEP's wetland mitigation requirements.

Drawings No. VI.A-4, VI.A-5, and VI.A-6 are provided for the proposed sewer extensions and facilities within the planning area. No wetlands are anticipated to be impacted by these projects; however, if wetlands are encountered, impacted wetlands will meet the U.S. Army Corps of Engineers and PADEP's wetland mitigation requirements.

10. *Protection of rare, endangered or threatened plant and animal species as identified by the Pennsylvania Natural Diversity Inventory (PNDI). Provide DEP with a copy of the completed PNDI Manual Project Submission Form. Also provide a copy of the response letters from the 4 jurisdictional agencies regarding the findings of the PNDI search.*

Wastewater Treatment Plant Site

A Pennsylvania Natural Diversity Inventory (PNDI) search was performed by the Department of Conservation and Natural Resources on 4/30/2018. PNDI records indicate that no occurrences of species of special concern are known to exist within the Study Area.

The Pennsylvania Game Commission has been contacted to conduct a database search for species of special concern within their jurisdiction. The U.S. Fish and Wildlife Service review letter dated 4/30/2018 indicated no conflict.

The Pennsylvania Fish & Boat Commission has also been contacted for their review of the project. Results of this review, as described in the Pennsylvania Fish and Boat Commission letter dated 4/30/2018, state there are no conflicts.

The U.S. Fish and Wildlife Service has been contacted to conduct a database search for species of special concern within their jurisdiction. The U.S. Fish and Wildlife Service review letter dated 4/30/2018 indicated no conflict.

Copies of results of the PNDI search are included in **Appendix I** of this Plan.

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 (PHMC). Provide DEP with a completed copy of a Cultural Resource Notice and a return receipt for its submission to PHMC. Provide a copy of the response letter or review stamp from the Bureau of Historic Preservation (BHP) indicating the project will have no effect on, or that there may be potential impacts on, known archaeological and historical sites and any avoidance and mitigation measures required.*

The Pennsylvania Historical and Museum Commission (PHMC), Bureau of Historic Preservation has stated that they have reviewed the project location in accordance with

Section 106 of the National Historic Preservation Act of 1966, amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation. In a letter dated 5/18/2018, historic buildings, structures and/or archaeological resources were found to may be in the area of the WWTP, however, the project should have no effect on these resources.

A copy of the search results has been included in **Appendix J** of this Plan.

B. Resolution of Inconsistencies (Checklist Item VI.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.

There are no identified inconsistencies between the alternatives considered in this Study and the items described in **Section VI.A** above; therefore, no resolution is required.

C. Applicable Water Quality Standards (Checklist Item VI.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.

PADEP issued preliminary NPDES effluent water quality limits for the alternatives that include the discharge of treated effluent (see **Appendix K**), which were evaluated on a discharge of 0.500 MGD. It is CSJMA's intention to submit a Part I NPDES Permit Application for the 2038 design flow of 0.500 MGD, which includes the need for the entire service area including the Pilot Travel Center and Hotel, School Lane, and Sugarloaf Ave/Route 93. As noted in **Section VI.A.5**, CSJMA will meet the requirements of the Chesapeake Bay Tributary Strategy through nutrient credit purchase and/or generation depending upon actual connections. The Plan also evaluated the MBR treatment process that would not include the use of needing additional nutrient credits. However, it was determined not to be the most cost effective alternative. Refer to **Appendix E**, Wastewater Treatment Systems Alternative Analysis for detailed evaluation of alternatives and cost comparisons.

The scope of the treatment systems identified could meet the preliminary effluents limits prescribed by PADEP. The main concern that could affect the capability of the expanded

WWTP would be wastewater temperature. It is known that all biological activity and notably nitrification/denitrification is inhibited at temperatures below 10 degree Celsius. However, the existing WWTP has not had any issues related to meeting their NPDES limits with respect to CBOD and the Nutrient Loading is based upon an Annual Cap. Therefore, during the warmer months, nitrification/denitrification will be enhanced, which will balance the minimal time when the influent wastewater will drop below 10 degree Celsius, which is the rationale of not foreseeing a negative effect on the projected credit purchase shown in **Appendix E** for O&M calculations.

D. Detailed Cost Estimates and Present Worth Analysis (Checklist Item VI.D)

Provide cost estimates using present worth analysis for construction, financing, ongoing administration, O & M and user fees for alternatives identified in Section V of this checklist. Estimates shall be limited to areas identified in the plan as needing improved sewage facilities within 5 years from the date of plan submission.

Construction, project and life cycle cost comparisons for the WWTP expansion and upgrade alternatives, as well as the School Lane, Sugarloaf Ave/ Route 93, and Pilot/Hotel Sewer Extensions, is presented in detail within **Appendix E** of this Plan. A summary of the estimated project costs and differential operations costs are shown in **Table VI.D-1**.

Table VI. D-1 Expansion and Upgrade Alternatives Present Value Cost Comparison

Alternatives	Construction Cost	O&M Cost Differentiators	Total
MLE	\$7,994,050	\$2,607,079	\$10,601,129
SBR	\$6,661,200	\$1,504,613	\$8,165,813
MBR	\$8,149,600	\$2,583,084	\$10,732,684

Note: O&M cost differentiators calculated for a 20 year period with 6% interest.

As shown in the above Table, the SBR process and nutrient credit purchase alternative has the lowest total construction cost and Operation & Maintenance cost differentiator and thus is the most cost effective alternative for the expected WWTP expansion and upgrade.

Based on the evaluation and analyses detailed in **Appendix E**, the SBR process and nutrient credit purchase alternative will eliminate the current WWTP hydraulic and overload issues and

achieve compliance with the requirements of upcoming NPDES permit renewal, especially on nutrient discharge cap loads, for both existing WWTP operation and expected WWTP expansion.

The selected alternatives are summarized with estimated construction and project costs in **Table VI.D-2** below. The project cost is estimated based on a soft cost of 20% of the construction cost. The soft cost will be used for project survey, engineering, design, permits, funding, bidding, services during construction, and project management.

Table VI. D-2 Construction and Project Costs for Selected Alternatives

Selected Alternative	Construction Cost	Project Cost
Expansion and Upgrade with SBR (0.50 MGD)	\$6,661,200	\$7,993,440
School Lane Sewer Extension - Borough	\$74,100	\$88,900
Sugarloaf Ave/Route 93 Sewer Extension – Borough and Township	\$367,250	\$440,700
Pilot/Hotel Sewer Extension - Township	\$1,951,000	\$2,341,200
Total	\$9,053,550	\$10,864,240

E. Funding Methods (Checklist Item VI.E)

Provide an analysis of the funding methods available to finance the proposed alternatives evaluated in Section V of this checklist. Also provide documentation to demonstrate which alternative and financing scheme combination is the most cost-effective; and a contingency financial plan to be used if the preferred method of financing cannot be implemented. The funding analysis shall be limited to areas identified in the plan as needing improved sewage facilities within 5 years from the date of the plan submission.

The envisioned capital financing plan to implement the Selected Alternatives is a financing package through PENNVEST. An attempt will also be made to secure grant funds from Federal, State and County sources. A bank loan or municipal bond issue are other possible funding sources. In addition, RUS, a division of the U.S. Department of Agriculture, is

another possible funding source. RUS would be contacted to solicit a financing package to implement the chosen Alternative. The estimated impact on user rates based upon the envisioned PennVest funding package is outlined within **Table VIII.A.2** in **Section VIII**.

It is understood that PennVest will only fund wastewater treatment facility expansion capacities that are reasonable and substantiated.

F. Immediate or Phased Implementation of Alternative (Checklist Items VI.F)

Analyze the need for immediate or phased implementation of each alternative proposed in Section V of this checklist including:

1. *A description of any activities necessary to abate critical public health hazards pending completion of sewage facilities or implementation of SMPs.*

There are no activities necessary to abate critical public health hazards with implementing the selected alternatives of this Plan.

2. *A description of the advantages, if any, in phasing construction of the facilities or implementation of a SMP justifying time schedules for each phase.*

There are no immediate or phased implementation of the alternatives is proposed.

G. Administrative Organizations and Legal Authority Necessary for Plan Implementation (Checklist Item VI.G)

Evaluate administrative organizations and legal authority necessary for plan implementation.

Conyngham Borough and Sugarloaf Township have the responsibility and legal authority to implement the selected alternatives and resolve current overload issues and meet the forthcoming Chesapeake Bay nutrient limits for wastewater treatment effluent discharge.

The applicable Ordinances, Agreements, Articles of Incorporation, By-Laws and other legal documents that created the Conyngham Sugarloaf Joint Municipal Authority (CSJMA) and provide the legal authority to implement this plan, are included in **Appendix L**.

SECTION VII. INSTITUTIONAL EVALUATION

The Greater Hazleton Area Joint Sewer Authority (GHJSA) provides treatment of wastewater collected within a small section within the south eastern most portion of Sugarloaf Township at their Hazleton WWTP. This Plan does not propose to change or modify the existing sewer service within this area or any agreements between the Township and GHJSA. Therefore, this area and agreements will not be discussed further.

In 2014, the Conyngham Sugarloaf Joint Municipal Authority (CSJMA) was formed and replaced the Conyngham Borough Authority as the sewage service provider to the Borough and the Township, with the exception of the area served by GHJSA described above. This Plan recommends alternatives to expand the existing CSJMA WWTP from 0.35 MGD to 0.50 MGD and provide for three sewer extensions. The School Lane extension will be located within the Borough, the Sugarloaf Ave/Route 93 area extension will be within the Borough and Township, and the Pilot/Hotel extension will be located with the Township. It is planned that CSJMA will administer the construction, operation and maintenance of the Selected Alternative.

A. Existing Wastewater Treatment Authorities (Checklist Items VII.A.1 through VII.A.3) VII. Institutional Evaluation

Provide an analysis of all existing wastewater treatment authorities, their past actions and present performance including:

1. Financial and debt status.

CSJMA has an outstanding debt of \$610,574.91, Conyngham Borough has an outstanding debt of \$313,116.47, and Sugarloaf Township has an outstanding debt of \$467,121.83. Financial Reports are prepared in accordance with State Law. Revenues are sufficient to meet all operation and maintenance expenses and debt services.

2. Available staff and administrative resources.

CSJMA has a staff of three (3) full-time and two (2) part-time employees. The full-time employees include the Operations Manager, Water Operator and Apprentice Operator/serviceman. The Operations Manager is responsible for the wastewater system operation and maintenance, in addition to general management of all of the facilities. The water system operator is responsible for the water system operation and maintenance and an apprentice operator/serviceman conducts general maintenance, laboratory testing, wastewater treatment and equipment maintenance. The two (2) part-

time administrative assistants are responsible for billing, collection of revenues, general correspondence and filing.

Both the Township and the Borough each also employ a Sewage Enforcement Officer to enforce the sewage management plans.

3. *Existing legal authority to:*

- a. *Implement wastewater planning recommendations.*
- b. *Implement system-wide O & M activities.*
- c. *Set user fees and take purchasing actions.*
- d. *Take enforcement actions against ordinance violators.*
- e. *Negotiate agreements with other parties.*
- f. *Raise capital for construction and O & M of facilities.*

The CSJMA, incorporated in 2014, is a municipal authority organized under the provisions of the PA Municipal Authorities Act. This allows the Authority to acquire, hold, construct, improve, maintain, operate, own and lease, sewer systems, interceptor lines, sewage treatment works and works for the treatment and disposal of industrial waste.

Therefore, CSJMA has the legal authority to undertake the following:

- a) Implement wastewater planning recommendations (refer to Implementation Schedule in the Plan Summary),
- b) Implement system wide operation and maintenance activities,
- c) Set user fees as necessary (through the Borough and Township)
- d) Take enforcement actions against ordinance violators,
- e) Negotiate agreements with other parties,
- f) Raise capital for construction and operation and maintenance of facilities.

The Authority has these powers by mixture of Borough and Township Ordinances establishing the Authority and requiring mandatory connections. The Authority also has the power to set rates and borrow funds by virtue of the PA Municipal Authorities Act.

The Authority has the resources necessary to finance and implement the Selected Alternatives and address future wastewater management needs of the Borough and

Township. Both the Borough and the Township have agreed to provide joint (but separate) municipal guarantees, where necessary, for indebtedness incurred by the Authority in connection with any Authority projects.

B. Institutional Alternatives (Checklist Items VII.B.1 through VII.B.3)

Provide an analysis and description of the various institutional alternatives necessary to implement the proposed technical alternatives including:

1. *Need for new municipal departments or municipal authorities.*

The CSJMA owns, operates and maintains the sewage collection facilities located in both the Borough and Township which discharge to their WWTP. The Authority's administrative office staff and system operators collectively handle the requirements for the Authority's entire system.

2. *Functions of existing and proposed organizations (sewer authorities, onlot maintenance agencies, etc.).*

The roles of the Borough and Township as it relates to the existing central sewer system have been described in the above section.

Relative to management of on-lot systems, the Borough employs a Sewage Enforcement Officer (SEO) to regulate these activities and enforce the provisions of the Borough On-Lot Management rules and regulations. A copy of these rules and regulations are included in **Appendix G**.

The Township also employees a Sewage Enforcement Officer (SEO) who enforces the provisions of the Township's On Lot Management rules and regulations. A copy of these rules and regulations are included in **Appendix G**.

Both the Borough and the Township will continue to employ Sewage Enforcement Officers to enforce the provisions of on-lot management rules and regulations.

3. *Cost of administration, implementability, and the capability of the authority/agency to react to future needs.*

Currently, both the Township and the Borough support the cost of administering the on-lot management programs through fees for services and the taxing structure of the municipality. It is planned that these two municipal entities will continue to maintain, support and implement sewage management plans for on lot systems.

The Authority has the legal authority to raise capital and set user fees sufficient to collect revenues required for the payment of debt service on capital monies and the cost of operation and maintenance of the wastewater collection and treatment systems.

C. Administrative and Legal Activities (Checklist Items VII.C.1 through VII.C.6)

Describe all necessary administrative and legal activities to be completed and adopted to ensure the implementation of the recommended alternative including:

1. *Incorporation of authorities or agencies.*

Currently there is no need for the incorporation of new authorities or agencies to implement the plan as described. As described above, the Joint Authority through its agreements with the Borough and the Township can implement the plan.

2. *Development of all required ordinances, regulations, standards and inter-municipal agreements.*

Currently all required ordinances, regulations, and standards exist.

3. *Description of activities to provide rights-of-way, easements and land transfers.*

Currently the Authority owns the property surrounding the wastewater treatment facility. There is sufficient land area available to implement modifications at the facility and therefore no rights-of-way, easements or land transfers are required for modifications at the wastewater treatment facility.

The only proposed construction outside of the wastewater treatment facility is the sewer main extensions for School Lane, within the Borough right-of-way, and the Pilot located at the intersection of Route 93 and Interstate 80. It is the intent of this plan to have the design and construction of sewage collection facilities from the Pilot to the existing

sewage collection system performed by Pilot, under the approval of the Joint Authority. As such, it would be Pilots responsibility to provide easements and rights of way.

4. *Adoption of other municipal sewage facilities plans.*

Adoption of other municipal sewage facilities plans is not required to implement this plan.

5. *Any other legal documents.*

No other legal documentation is required to implement this plan.

6. *Dates or timeframes for items 1-5 above on the project's implementation schedule.*

The legal and administrative activities needed to implement the sewage management program and Selected Alternatives includes:

1. Act 537 Plan adoption by Conyngham Borough and Sugarloaf Township,
2. Secure PADEP approval of Act 537 Plan,
3. Apply for a New NPDES Part I Permit at increased capacity,
4. Retain engineering consultant for design engineering services,
5. Direct engineer and/or sewage enforcement officer to create and direct public education program,
6. Direct engineer to design wastewater treatment plant modifications,
7. Submit Part II water Quality Management Permit,
8. Secure funding for the Selected Alternative,
9. Solicit bids for construction,
10. Construct project.

D. Administrative and Legal Activities (Checklist Items VII.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.

The proposed institutional alternative to implement the chosen technical wastewater disposal alternative is to have the Joint Authority thru agreements with the Township and Borough construct the recommended improvements.

Both the Borough and the Township will continue to employ Sewage Enforcement Officers to enforce the provisions of on lot management rules and regulations.

SECTION VIII. IMPLEMENTATION SCHEDULE AND JUSTIFICATION FOR SELECTED TECHNICAL AND INSTITUTIONAL ALTERNATIVES

A. Identified Alternative (Checklist Items VIII.A.1 through VIII.A.7)

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:

The identified alternatives are presented and compared in Section VI, and selected alternatives are listed as follows:

- Alternative C2 - Expansion and Upgrade with SBR Process and Credit Purchase
- School Lane Sewer Extension (Borough)
- Sugarloaf Avenue/Route 93 Sewer Extension (Borough and Township)
- Pilot Sewer Extension (Township)
- Inflow and Infiltration (I&I) Reduction and Sewer Rehabilitation Program
- Sewage Management Plan

Based on the evaluation and analyses presented throughout the plan, most notably within **Appendix E**, the selected alternatives are recommended as the most viable and cost effective ones.

The Expansion and Upgrade with SBR Process and Credit Purchase will resolve the current WWTP overload issues and achieve compliance with the requirements of upcoming NPDES permit renewal, especially on nutrient discharge cap loads, for both existing WWTP operation and expected WWTP expansion. This alternative includes the proposed modifications:

- New submersible influent pump station
- New enclosed screening facility
- New grit removal system
- New control building with lab, office, and process equipment areas
- New Sequencing Batch Reactor Tanks and Accessories
- New Post EQ Tanks and Pumps
- New blowers and aeration system
- New piping and valves

- New Chemical Feed Systems
- Rehab and convert existing tanks to aerobic digesters
- New digester covers and air diffuser system
- New UV disinfection system in existing clarifier tank
- New magmeter system in existing clarifier tank
- New plant water system in existing chlorine tanks
- Rehab of existing control building to become a new maintenance building
- New Process SCADA, instrumentation and electrical

The School Lane and Sugarloaf Ave/Route 93 sewer extensions will eliminate a potential issue that was identified within the Needs Analysis, and the Pilot/Hotel sewer extension, will allow elimination of the their existing WWTP which was originally permitted as a temporary facility.

An Inflow and Infiltration (I&I) Reduction and Sewer Rehabilitation Program will reduce the amount of groundwater and stormwater entering the sanitary sewer collection system. The I&I Program will include systematic replacement and rehabilitation of the sanitary sewer mains and elimination of I&I from private sources. The I&I program will also include sewer main televising, flow monitoring, smoke testing and in-home inspections.

A Sewage Management Plan will be implemented for continued use of on-lot disposal systems that are in the areas that (1) are not already sewered by public wastewater collection systems, (2) cannot be feasibly connected to the centralized collection systems and (3) meet the requirements as outlined in PA Code 25, Chapters 71 through 73 governing the use of on-lot disposals systems.

The estimated construction and project costs with rate impacts are summarized in **Table VIII.A.1.**

Table VIII.A.1 Construction and Project Costs and Rate Impacts for Selected Alternatives

Selected Alternative	Construction Cost	Capital Project Cost	Rate Impact-Addl. Cost/EDU/Month
Expansion and Upgrade with SBR (0.50 MGD)	\$6,661,200	\$7,993,440	\$36.12
School Lane Sewer Extension - Borough	\$74,100	\$88,900	\$0.38
Sugarloaf Ave/Route 93 Sewer Extension – Borough and Township	\$367,250	\$440,700	\$1.69
Pilot/Hotel Sewer Extension - Township	\$1,951,000	\$2,341,200	\$9.36
Inflow and Infiltration Reduction and Sewer Rehabilitation Program	N/A	\$300,000 / yr. (Annual O & M)	\$19.01
Sewage Management Program	N/A	N/A	N/A
Total	\$9,053,550	\$10,864,240	\$66.56

The total construction costs, project costs and rate impact as shown in **Table VIII.A.1** shall be used for the preparation of project financing. Preliminary calculations show a user fee that will be need to be gradually increased from \$50 a month to \$85 a month per EDU to implement all the alternatives. Therefore, an overall increase of \$35 a month per EDU is required. Details are provided in **Appendix E**.

1. *Existing wastewater disposal needs. (0 to 5 year growth areas)*

The selected alternative for wastewater treatment and disposal for Conyngham Borough and Sugarloaf Township is Alternative C2, which is to expand and upgrade the existing WWTP with a SBR process for a design hydraulic load of 0.50 MGD. The proposed SBR process alternative will perform the majority of the required biological nutrient removal, but require CSJMA to purchase a small quantity of nutrient credits for cap load limit compliance. The upgraded WWTP, along with the I&I Reduction and Sewer Rehabilitation Program, will be able to adequately address the existing wastewater needs of the current CSJMA service area by eliminating the overload conditions at the WWTP which would allow the release of remaining EDU's for fill in of empty lots or

parcels with existing sewer availability. The expanded hydraulic capacity at the WWTP will provide additional service to the School Lane and Sugarloaf Ave/Route 93 sewer extensions, the Pilot/Hotel service area and also any population growth within the existing Sewer Service Area.

A Sewage Management Program will be implemented for continued use of on-lot disposal systems that are not already sewered by public wastewater collection systems.

2. *Future wastewater disposal needs. (5 to 10 year growth areas)*

The upgraded WWTP will be able to adequately address the future wastewater needs of Conyngham Borough and Sugarloaf Township by eliminating the overload conditions at the WWTP and by providing a more reliable treatment technology. It is anticipated that sewer and collection system projects started during the first 0 to 5 year period may finish construction during the 5 to 10 year period.

3. *O & M considerations.*

CSJMA has all the necessary experience and resources available to effectively operate and maintain the collection and conveyance systems and new SBR treatment process at the WWTP. As discussed in Section III, CSJMA currently provides the necessary operation and maintenance services for the Borough and Township collection and conveyance systems and existing WWTP. Likewise the Township has the necessary staff, experience and facilities for on-lot sewage management and enforcement for the unsewered areas within the Study Area.

4. *Cost-effectiveness.*

Capital and project cost comparisons for the WWTP expansion and upgrade alternatives are presented in **Section VI** and **Appendix E** of this Study. A summary of the estimated project costs and differential operations costs are shown in **Table VIII.A.2**. The Selected Alternative is expected to require a significant increase in user rates.

Table VIII. A.2 Expansion and Upgrade Alternatives Present Value Cost Comparison

Alternatives	Construction Cost	O&M Cost Differentiators	Total
MLE	\$7,994,050	\$2,607,079	\$10,601,129
SBR	\$6,661,200	\$1,504,613	\$8,165,813
MBR	\$8,149,600	\$2,583,084	\$10,732,684

Note: O&M cost differentiators calculated for a 20 year period with 6% interest.

5. *Available management and administrative systems.*

CSJMA has experienced management, licensed operators, and administrative staff that are capable of operating and maintaining the Selected Alternatives.

6. *Available financing methods.*

Five possible sources of funding are available for the proposed alternative:

- PENNVEST
- Rural Utilities Services (RUS)
- Bank Loan
- Municipal Bonds
- Federal, State and County Development Grants

7. *Environmental soundness and compliance with natural resource planning and preservation programs.*

PADEP encourages the use of its Water Quality Anti-Degradation Implementation Guidance document in evaluating the environmental soundness of alternative wastewater management options. The use of the Sanitary Committee's Sewage Enforcement Officers adequately addresses the desired environmental wastewater treatment and disposal for areas with adequate soils. The Selected Alternatives comply with current regulations governing wastewater treatment and disposal.

B. Capital Financing Plan (Checklist Items VIII.B)

Designate and describe the capital financing plan chosen to implement the selected alternative(s). Designate and describe the chosen back-up financing plan.

The likely capital financing plan to implement the Selected Alternative is a financing package through PENNVEST. An attempt will also be made to secure grant funds from Federal, State and County sources. A bank loan or municipal bond issue is other possible funding sources. In addition, RUS, a division of the U.S. Department of Agriculture, is another possible source which would be contacted to review possible loan and/or grant funding.

C. Implementation Schedule (Checklist Items VIII.D)

Designate and describe the implementation schedule for the recommended alternative, including justification for any proposed phasing of construction or implementation of a SMP.

An implementation schedule is included in the Preface to this report.

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

A. Uniform Environment Review (UER)

Complete an ER as required by the UER process and as described in the DEP Technical Guidance (381-5511-111).

The Uniform Environmental Report (UER) has replaced the Environmental Impact Assessment requirement for PENNVEST projects. The UER has been completed independent of this Plan and is attached at the end of this section.